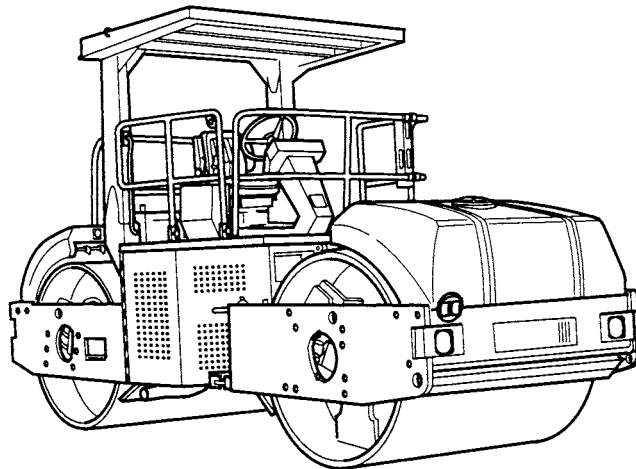


TECHNICAL MANUAL

Unit and Direct Support Maintenance

FOR

ROLLER, MOTORIZED, VIBRATING TANDEM STEEL DRUMS CATERPILLAR MODEL CB534B (NSN 3895-01-396-2822) CATERPILLAR MODEL CB534C (NSN 3895-01-502-4005)



SUPERSEDURE NOTICE - This manual supersedes TM 5-3895-379-20, dated 28 March 2000,

DISTRIBUTION STATEMENT A - Approved for public release; distribution is unlimited

HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 2005

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in injury or death. Also included are explanations of safety and hazardous materials icons used within the technical manual.



BIOLOGICAL - abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.



CHEMICAL - drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.



EAR PROTECTION - Headphones over ears show that noise level will harm ears.



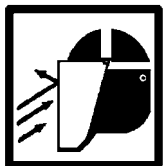
ELECTRICAL - electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.



EYE PROTECTION - person with goggles shows that the material will injure the eyes.



FIRE - flame shows that a material may ignite and cause burns.



FLYING PARTICLES - arrows bouncing off face with face shield shows that particles flying through the air will harm face.



HEAVY PARTS - hand with heavy object on top shows that heavy parts can crush and harm.



HOT AREA - hand over object radiating heat shows that part is hot and can burn.



HYDRAULIC FLUID PRESSURE - hydraulic fluid spraying human figure shows that fluid escaping under great pressure can cause injury or death.



RADIOACTIVE - identifies a material that emits radioactive energy and can injure human tissue or organs.



VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.



HEAVY PARTS - heavy object on human figure shows that heavy parts present a danger to life or limb.



SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger from falling.

FOR INFORMATION ON FIRST AID, REFER TO FM 4-25.11.



WARNING

CARBON MONOXIDE (EXHAUST GASES) CAN KILL!

- Carbon monoxide is a colorless, odorless, deadly poison which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air containing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death can result from severe exposure.
 - Carbon monoxide occurs in exhaust fumes of internal combustion engines. Carbon monoxide can become dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to ensure safety of personnel when engine of roller is operated.
1. DO NOT operate roller engine in enclosed areas.
 2. DO NOT idle roller engine without adequate ventilation.
 3. DO NOT drive roller with inspection plates or cover plates removed.
 4. BE ALERT for exhaust poisoning symptoms. They are:
 - Headache
 - Dizziness
 - Sleepiness
 - Loss of muscular control
 5. If you see another person with exhaust poisoning symptoms:
 - Remove person from area.
 - Expose to fresh air.
 - Keep person warm.
 - Do not permit physical exercise.
 - Administer cardiopulmonary resuscitation (CPR), if necessary.
 - Notify a medic.
 6. BE AWARE. The field protective mask for nuclear-biological-chemical (NBC) protection will not protect you from carbon monoxide poisoning.

The Best Defense Against Carbon Monoxide Poisoning Is Good Ventilation!



- To avoid injury, eye protection and acid-resistant gloves must be worn when working around batteries. Do not smoke, use open flame, make sparks or create other ignition sources around batteries. If a battery is giving off gases, it can explode and cause injury to personnel. Remove all jewelry such as rings, ID tags, watches, and bracelets. If jewelry or a tool contacts a battery terminal, a direct short will result in instant heating, damage to equipment, and injury.
 - Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may cause injury or death.
- a. **Eyes.** Flush with cold water for no less than 15 minutes and seek medical attention immediately.
 - b. **Skin.** Flush with large amounts of cold water until all acid is removed. Seek medical attention as required.
 - c. **Internal.** If corrosion or electrolyte is ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Seek medical attention immediately.
 - d. **Clothing/Equipment.** Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.



Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.



- DO NOT smoke or permit any open flame in area of machine while you are servicing diesel fuel system. Be sure hose nozzle is grounded against filler tube during refueling to prevent static electricity. Failure to follow this warning may cause injury to personnel, or equipment damage.
- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing damage to machine and injury or death to personnel.
- Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, promptly wash exposed skin and change fuel-soaked clothing.



WARNING

DRY CLEANING SOLVENT



- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- NOTE: P-D-680 Type II is no longer in use and has been replaced by MIL-PRF-680 Type III.



WARNING

ELECTRICAL SYSTEM MAINTENANCE

Turn battery disconnect switch to OFF before working on any electrical system component. Failure to follow this warning could result in personal injury or damage to equipment.



WARNING

ETHER COLD START SYSTEM



Ether fuel is extremely flammable and toxic. DO NOT smoke and make sure you are in a well-ventilated area away from heat, open flames or sparks. Wear eye protection. Avoid contact with skin and eyes and avoid breathing ether fumes. If fluid enters or fumes irritate the eyes, wash immediately with large quantities of clean water for 15 minutes. Seek medical attention immediately if ether is inhaled or causes eye irritation. Failure to follow this warning may cause injury or death.



WARNING

EYE PROTECTION

- Eye protection must be worn when performing maintenance where components or particles could fly out during procedure. Failure to take precautions could cause injury to personnel.
- Some components are under spring tension. Wear eye protection and use caution when disassembling them, to avoid injury.



WARNING

HAZARDOUS WASTE DISPOSAL

When servicing this machine, performing maintenance, or disposing of materials such as engine coolant, hydraulic fluid, lubricants, battery acids or batteries, and CARC paint, consult your unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact The Army Environmental Hotline at 1-800-872-3845.



WARNING

HEARING PROTECTION

Your hearing can be PERMANENTLY DAMAGED if you are exposed to constant high noise levels of 85 DB or greater. Hearing protection is required when operating machine or when working on machine while it is operating. Failure to wear hearing protection may cause hearing loss.



WARNING

HOT COMPONENTS



Hot oil or metal parts can cause severe burns. Wear insulated gloves, long sleeves and eye protection when working with heated parts.



WARNING

HYDRAULIC SYSTEM PRESSURE



- Do NOT remove hydraulic tank filler cap or disconnect or remove any hydraulic system line or fitting unless hydraulic system pressure has been relieved. Hydraulic system pressure can be over 2500 psi (17,237 kPa), even with engine and pump OFF. To relieve pressure, lower all hydraulic attachments to the ground and shut down engine. Move control levers through all operating positions, then SLOWLY loosen hydraulic tank filler cap. After maintenance, tighten all connections before applying pressure. Escaping hydraulic fluid under pressure can penetrate the skin, causing injury or death.
- At operating temperature hydraulic oil is hot. Allow hydraulic oil to cool before disconnecting any hydraulics. Failure to do so could result in injury.

WARNING

MACHINE OPERATION

This machine must be operated only by authorized personnel who have satisfactorily completed a program of training which must include familiarity with safe operating procedures, characteristics and a knowledge of applicable codes, regulations and facilities directives. Untrained personnel subject themselves and others to the possibility of death or injury from the improper operation of this machine. Understand the equipment, its function and the controls before operation.



WARNING
NBC EXPOSURE



- If NBC exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.
- NBC contaminated filters must be handled using adequate precautions (FM 21-40) and must be disposed of by trained personnel.



To order this NBC decal use:

National Stock Number (NSN) - 7690-01-114-3702

Part Number (PN) - 12296626

Commercial and Government Entity Code (CAGEC) - 19207



WARNING

PRESSURIZED COOLING SYSTEM



- DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant may cause serious burns.
- DO NOT remove radiator cap when engine is hot. Allow engine to cool down. Loosen cap to first stop and let any pressure out of cooling system, then remove cap. Failure to follow this warning may cause serious burns.
- Wear effective eye, glove, and skin protection when handling coolants. Failure to do so may cause injury.



WARNING

LIFTING HEAVY PARTS



- Lifting equipment used for lifting machine must be in good condition and of suitable load capacity. Failure to follow this warning may cause injury or death, or damage to equipment.
- Improper use of lifting equipment and improper attachment to machine can result in injury, or equipment damage. Observe all standard rules of safety.
- Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.



WARNING

PROTECTIVE HEAD GEAR

Operators and maintainers must wear protective head gear. Failure of operators and maintainers to wear protective head gear may result in serious injury or death.

WARNING

OPERATION AND MAINTENANCE

Do not operate or maintain this machine unless you have read and understand the instructions and warnings in the operation and maintenance sections of this manual. Failure to follow the instructions or heed the warnings could result in injury or death.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

Date of issue for original manual is 15 July 2005

Original 15 July 2005

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 126 AND TOTAL NUMBER OF WORK PACKAGES IS 222 CONSISTING OF THE FOLLOWING:

Page/WP No.	*Change No.
Cover (Back Blank)	0
A (B Blank)	0
a to h	0
i to x	0
WP 0001 00 to 0220 00	0
Index-1 thru Index-10	0
Authentication Page	0
DA Form 2028 Sample	0
DA Form 2028	0
Metric Conversion Chart	0
Back Cover	0

* Zero in this column indicates an original page or work package.

A/(B Blank)

Unit and Direct Support Maintenance

FOR

**ROLLER, MOTORIZED,
VIBRATING TANDEM STEEL DRUMS**

**CATERPILLAR MODEL CB534B (NSN 3895-01-396-2822)
CATERPILLAR MODEL CB534C (NSN 3895-01-502-4005)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (*Recommended Changes to Equipment Technical Publications*), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <http://aeeps.ria.army.mil>. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter, DA Form 2028 direct to: AMSTA-LC-CI/TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is: TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

SUPERSEDURE NOTICE - This manual supersedes TM 5-3895-379-20, dated 28 March 2000.

DISTRIBUTION STATEMENT A - Approved for public release; distribution is unlimited.

Table of Contents

	Page Number
Warning Summary	a
How To Use This Manual	ix
 CHAPTER 1 INTRODUCTORY INFORMATION WITH THEORY OF OPERATION	
WP 0001 00 General Information	0001 00-1
WP 0002 00 Equipment Description and Data.	0002 00-1
WP 0003 00 Theory Of Operation	0003 00-1
 CHAPTER 2 TROUBLESHOOTING PROCEDURES	
WP 0004 00 Troubleshooting Introduction	0004 00-1
WP 0005 00 Troubleshooting Symptom Index	0005 00-1
WP 0006 00 Troubleshooting Procedures	0006 00-1

Table of Contents - Continued

	Page Number
CHAPTER 3 UNIT MAINTENANCE	
WP 0007 00 Service Upon Receipt	0007 00-1
WP 0008 00 Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction	0008 00-1
WP 0009 00 Field Maintenance Preventive Maintenance Checks and Services (PMCS) . . .	0009 00-1
<i>Group 01 - Engine</i>	
WP 0010 00 Engine Lifting Plates Replacement	0010 00-1
WP 0011 00 Front Engine Mount Replacement.	0011 00-1
WP 0012 00 Rear Engine Mount Replacement	0012 00-1
WP 0013 00 Engine Oil Service.	0013 00-1
WP 0014 00 Gage Rod (Dipstick) Tube Assembly Replacement	0014 00-1
WP 0015 00 Engine Oil Filler Replacement	0015 00-1
WP 0016 00 Valve Cover and Breather Tube Replacement	0016 00-1
WP 0017 00 Engine Oil Cooler Replacement	0017 00-1
WP 0018 00 Oil Filter Head Assembly Replacement (CB534B)	0018 00-1
WP 0019 00 Oil Filter Head Assembly Replacement (CB534C)	0019 00-1
WP 0020 00 Oil Pan Replacement	0020 00-1
WP 0021 00 Oil Strainer and Suction Tube Replacement	0021 00-1
WP 0022 00 Engine Oil Cooler Lines and Fittings Replacement (CB534B)	0022 00-1
WP 0023 00 Engine Oil Cooler Lines and Fittings Replacement (CB534C)	0023 00-1
WP 0024 00 Engine Oil Sampling Valve and Fittings Replacement.	0024 00-1
WP 0025 00 Intake Manifold Replacement	0025 00-1
WP 0026 00 Exhaust Manifold Replacement (CB534B).	0026 00-1
WP 0027 00 Exhaust Manifold Replacement (CB534C).	0027 00-1
<i>Group 03 - Fuel System</i>	
WP 0028 00 Fuel Lift Pump Replacement.	0028 00-1
WP 0029 00 Fuel Lines and Fittings Replacement (CB534B).	0029 00-1
WP 0030 00 Fuel Lines and Fittings Replacement (CB534C).	0030 00-1
WP 0031 00 Air Cleaner Cap Replacement.	0031 00-1
WP 0032 00 Air Cleaner Elements and Air Cleaner Assembly Replacement.	0032 00-1
WP 0033 00 Air Cleaner Support Assembly Replacement	0033 00-1
WP 0034 00 Air Cleaner Service Indicator Replacement	0034 00-1
WP 0035 00 Turbocharger Replacement	0035 00-1
WP 0036 00 Turbocharger Oil Lines, Hoses and Fittings Replacement	0036 00-1
WP 0037 00 Fuel/Hydraulic Oil Tank Drain/Fill.	0037 00-1
WP 0038 00 Fuel/Hydraulic Oil Tank and Drain Lines Replacement.	0038 00-1
WP 0039 00 Fuel Cap Assembly Maintenance	0039 00-1
WP 0040 00 Fuel Filter Assembly Maintenance	0040 00-1
WP 0041 00 Priming Fuel System	0041 00-1
WP 0042 00 Fuel/Water Separator Assembly Service.	0042 00-1
WP 0043 00 Cold Start Heater Replacement.	0043 00-1
WP 0044 00 Engine Block Heating Element Replacement	0044 00-1
WP 0045 00 Throttle Cable Replacement (CB534B)	0045 00-1
WP 0046 00 Low Idle Speed Adjustment	0046 00-1
WP 0047 00 Throttle Control Replacement (CB534C).	0047 00-1

Table of Contents - Continued

	Page Number
<i>Group 04 - Exhaust System</i>	
WP 0048 00 Muffler and Tailpipe Replacement	0048 00-1
<i>Group 05 - Cooling System</i>	
WP 0049 00 Coolant System Pressure Test	0049 00-1
WP 0050 00 Radiator Assembly Replacement	0050 00-1
WP 0051 00 Radiator Hoses Replacement	0051 00-1
WP 0052 00 Coolant System Service	0052 00-1
WP 0053 00 Thermostat Maintenance (CB534B)	0053 00-1
WP 0054 00 Thermostat Maintenance (CB534C)	0054 00-1
WP 0055 00 Thermostat Housing Replacement (CB534B)	0055 00-1
WP 0056 00 Thermostat Housing Replacement (CB534C)	0056 00-1
WP 0057 00 Water Pump Replacement	0057 00-1
WP 0058 00 Fan Drive Housing Assembly Replacement	0058 00-1
WP 0059 00 Fan Assembly and Guard Replacement	0059 00-1
WP 0060 00 Fan V-Belts Maintenance	0060 00-1
<i>Group 06 - Electrical System</i>	
WP 0061 00 Alternator Replacement	0061 00-1
WP 0062 00 Alternator Test	0062 00-1
WP 0063 00 Alternator Bracket Replacement	0063 00-1
WP 0064 00 Alternator Circuit Breaker Replacement	0064 00-1
WP 0065 00 Starter Replacement	0065 00-1
WP 0066 00 Starter Relay Switch Assembly Replacement	0066 00-1
WP 0067 00 Main Relay Replacement	0067 00-1
WP 0068 00 Relay Replacement	0068 00-1
WP 0069 00 Parking Brake Switch Replacement	0069 00-1
WP 0070 00 Water Spray Switch Replacement	0070 00-1
WP 0071 00 Drum Select Switch Replacement	0071 00-1
WP 0072 00 Vibration Control Switch Replacement	0072 00-1
WP 0073 00 Amplitude Select Switch Replacement	0073 00-1
WP 0074 00 Propel Speed Range Switch Replacement	0074 00-1
WP 0075 00 Work Light Control Switch Replacement	0075 00-1
WP 0076 00 Intermittent Water Spray Timer Replacement	0076 00-1
WP 0077 00 Fuse and Fuse Holder Replacement	0077 00-1
WP 0078 00 Starting Aid Switch Replacement	0078 00-1
WP 0079 00 Engine Start Switch Replacement	0079 00-1
WP 0080 00 Vibration Push Switch Replacement	0080 00-1
WP 0081 00 Fuel Level Gauge Replacement	0081 00-1
WP 0082 00 Service Meter Replacement	0082 00-1
WP 0083 00 Vibrations Per Minute (VPM) Tachometer and Feet Per Minute (FPM) Meter Replacement	0083 00-1
WP 0084 00 Hourmeter Pressure Switch Replacement	0084 00-1
WP 0085 00 Engine Oil Pressure Switch Replacement	0085 00-1
WP 0086 00 Lights Circuit Breaker Replacement	0086 00-1
WP 0087 00 Starting Aid Resistor Replacement	0087 00-1
WP 0088 00 Fuel Solenoid Resistor Replacement	0088 00-1
WP 0089 00 Alternator Light Replacement	0089 00-1

Table of Contents - Continued

	Page Number
WP 0090 00 Functional Indicator Light Assembly Replacement	0090 00-1
WP 0091 00 Work Light Assembly Maintenance	0091 00-1
WP 0092 00 Work Light Bulb Replacement	0092 00-1
WP 0093 00 Warning Lights Assembly Replacement	0093 00-1
WP 0094 00 Backup Alarm Sending Unit Replacement	0094 00-1
WP 0095 00 Water Temperature Sending Unit Replacement	0095 00-1
WP 0096 00 Fuel Level Sending Unit Replacement	0096 00-1
WP 0097 00 Vibration Sensor Maintenance	0097 00-1
WP 0098 00 Hydraulic Oil Temperature Sensor Replacement	0098 00-1
WP 0099 00 Warning Horn Assembly Replacement	0099 00-1
WP 0100 00 Backup Alarm Replacement	0100 00-1
WP 0101 00 Horn Switch Replacement	0101 00-1
WP 0102 00 Horn Assembly Replacement	0102 00-1
WP 0103 00 Battery Maintenance	0103 00-1
WP 0104 00 Battery Disconnect Switch Replacement	0104 00-1
WP 0105 00 Battery Cable Replacement	0105 00-1
WP 0106 00 NATO Connector Replacement	0106 00-1
WP 0107 00 Ground Cable Replacement	0107 00-1
WP 0108 00 General Wiring Repair	0108 00-1
WP 0109 00 Engine Wiring Harness Replacement	0109 00-1
WP 0110 00 Front Chassis Wiring Harness Replacement	0110 00-1
WP 0111 00 Rear Chassis Wiring Harness Replacement	0111 00-1
WP 0112 00 Instrument Wiring Harness Replacement	0112 00-1
<i>Group 07 - Transmission</i>	
WP 0113 00 Propel Control Lever Assembly Maintenance	0113 00-1
WP 0114 00 Propel Control Lever Vibratory System Engagement Stops Adjustment	0114 00-1
WP 0115 00 Propel Control Lever Tension Adjustment	0115 00-1
<i>Group 08 - Transfer System</i>	
WP 0116 00 Front and Rear Propel Gearbox Service	0116 00-1
<i>Group 12 - Brake System</i>	
WP 0117 00 Manual Brake Release Pump maintenance	0117 00-1
WP 0118 00 Brake Control Valve Replacement	0118 00-1
WP 0119 00 Brake Hoses, Lines and Fittings Replacement	0119 00-1
<i>Group 14 - Steering System</i>	
WP 0120 00 Steering Wheel and Column Replacement	0120 00-1
WP 0121 00 Hydraulic Steering Cylinders Replacement	0121 00-1
<i>Group 15 - Frame</i>	
WP 0122 00 Front and Rear Supports (Bumpers) Replacement	0122 00-1
<i>Group 18 - Body and Cab</i>	
WP 0123 00 Door Assembly Maintenance	0123 00-1
WP 0124 00 Left- and Right-Side Handrail Assemblies Replacement	0124 00-1
WP 0125 00 Front Handrail Assembly Replacement	0125 00-1
WP 0126 00 Rollover Protection Structure (ROPS) Assembly Replacement	0126 00-1
WP 0127 00 Rotate Lock Replacement	0127 00-1

Table of Contents - Continued

	Page Number
WP 0128 00 Raise/Lower Operator Platform Assembly	0128 00-1
WP 0129 00 Operator Platform Mount Replacement	0129 00-1
WP 0130 00 Vandal Guard Replacement	0130 00-1
WP 0131 00 Decontamination Kit Bracket Replacement	0131 00-1
WP 0132 00 Seat Assembly Replacement	0132 00-1
WP 0133 00 Seat Assembly Repair	0133 00-1
WP 0134 00 Seat Suspension Replacement	0134 00-1
WP 0135 00 Seat Suspension Repair	0135 00-1
WP 0136 00 Seat Belt and Lanyard Replacement	0136 00-1
WP 0137 00 Toolbox Replacement	0137 00-1
WP 0138 00 Rifle Mounting Bracket Replacement	0138 00-1
<i>Group 22 - Body, Chassis, and Hull</i>	
WP 0139 00 Vehicle Classification Sign Kit Replacement	0139 00-1
WP 0140 00 Data Plate and Decal Replacement	0140 00-1
<i>Group 24 - Hydraulic System</i>	
WP 0141 00 Hydraulic Oil Sampling Valve Replacement	0141 00-1
WP 0142 00 Hydraulic Oil Sampling	0142 00-1
WP 0143 00 Hydraulic Oil Filter Replacement	0143 00-1
WP 0144 00 Hydraulic Filter Assembly Replacement	0144 00-1
WP 0145 00 Hydraulic Oil Cooler and Fan Shroud Replacement	0145 00-1
WP 0146 00 Hydraulic Oil Cap Assembly Maintenance	0146 00-1
WP 0147 00 Vibratory Bearing Reservoir Service	0147 00-1
WP 0148 00 Water Spray Check Valve Replacement	0148 00-1
WP 0149 00 Water Spray Strainer Assembly Maintenance	0149 00-1
<i>Group 57 - Water System</i>	
WP 0150 00 Water Spray Strainer Assembly Maintenance	0150 00-1
WP 0151 00 Water Tank Screen Assembly Maintenance (CB534C)	0151 00-1
WP 0152 00 Water Spray Pipe Assembly Maintenance	0152 00-1
WP 0153 00 Water Tank Strainer Assembly Replacement	0153 00-1
WP 0154 00 Water Tank Replacement	0154 00-1
WP 0155 00 Water Spray Pump Replacement	0155 00-1
WP 0156 00 Water Level Gauge Replacement	0156 00-1
WP 0157 00 Drain Cock and Tee Replacement	0157 00-1
WP 0158 00 Side Drain Cock and Valve Replacement	0158 00-1
WP 0159 00 Water Spray Tubes and Fittings Replacement	0159 00-1
<i>Group 73 - Concrete and Asphalt System</i>	
WP 0160 00 Drum Scraper Replacement	0160 00-1

CHAPTER 4 DIRECT SUPPORT MAINTENANCE

Group 01 - Engine

WP 0161 00 Engine, Turbo, Diesel Tests	0161 00-1
WP 0162 00 Engine Assembly Replacement	0162 00-1
WP 0163 00 Cylinder Head Replacement	0163 00-1
WP 0164 00 Engine Oil Pump Replacement	0164 00-1
WP 0165 00 Crankshaft Front Oil Seal Replacement	0165 00-1

Table of Contents - Continued

	Page Number
WP 0166 00 Crankshaft Rear Oil Seal Replacement	0166 00-1
WP 0167 00 Crankshaft Pulley Replacement	0167 00-1
WP 0168 00 Flywheel Assembly Replacement	0168 00-1
WP 0169 00 Flywheel Housing Replacement	0169 00-1
WP 0170 00 Idler Gear and Hub Replacement	0170 00-1
WP 0171 00 Rocker Shaft Assembly Replacement	0171 00-1
WP 0172 00 Rocker Arm Assembly Repair.	0172 00-1
WP 0173 00 Valve Lash (Clearance) Adjustment	0173 00-1
WP 0174 00 Timing Gear Case Cover Replacement	0174 00-1
<i>Group 03 - Fuel System</i>	
WP 0175 00 Fuel Injector and Nozzle Replacement (CB534B)	0175 00-1
WP 0176 00 Fuel Injector and Nozzle Replacement (CB534C)	0176 00-1
WP 0177 00 Fuel Injection Pump Gear Replacement	0177 00-1
WP 0178 00 Fuel Injection Pump Replacement.	0178 00-1
WP 0179 00 Fuel Injection Pump Test and Adjustment	0179 00-1
WP 0180 00 Turbocharger Repair	0180 00-1
<i>Group 05 - Cooling System</i>	
WP 0181 00 Radiator Assembly Repair.	0181 00-1
<i>Group 06 - Electrical System</i>	
WP 0182 00 Main Wiring Harness Replacement (CB534B).	0182 00-1
WP 0183 00 Main Wiring Harness Replacement (CB534C).	0183 00-1
<i>Group 07 - Transmission</i>	
WP 0184 00 Propel and Vibratory Valve Tests and Adjustments	0184 00-1
WP 0185 00 Pressure Override Relief (POR) Valve Pressure Test (CB534C)	0185 00-1
WP 0186 00 Separate and Connect Vibratory and Propel Pumps	0186 00-1
WP 0187 00 Vibratory and Propel Pumps Replacement	0187 00-1
WP 0188 00 Propel and Speed Control Valve Repair	0188 00-1
WP 0189 00 Hydraulic Pump Drive Replacement.	0189 00-1
<i>Group 09 - Propel System</i>	
WP 0190 00 Universal Joint and Shaft Maintenance.	0190 00-1
WP 0191 00 Separate and Connect Propel Motor and Torque Hub.	0191 00-1
WP 0192 00 Rear Propel Motor Replacement	0192 00-1
WP 0193 00 Propel Motor and Torque Hub Replacement.	0193 00-1
<i>Group 12 - Brake System</i>	
WP 0194 00 Brake Control Valve Repair	0194 00-1
<i>Group 14 - Steering System</i>	
WP 0195 00 Steering Control Unit (SCU) Maintenance	0195 00-1
WP 0196 00 Steering Pivot Replacement	0196 00-1
WP 0197 00 Steering Hoses, Lines and Fittings Replacement	0197 00-1
WP 0198 00 Yoke Replacement.	0198 00-1
WP 0199 00 Brake Control Valve Coil Replacement	0199 00-1
WP 0200 00 Power Steering Pump Replacement	0200 00-1
WP 0201 00 Steering Cylinder Repair.	0201 00-1
WP 0202 00 Operator Platform and Operator Station Replacement	0202 00-1

Table of Contents - Continued

	Page Number
<i>Group 24 - Hydraulic System</i>	
WP 0203 00 Hydraulic Vibratory Tests	0203 00-1
WP 0204 00 Vibratory Cooling/Control Valve Repair	0204 00-1
WP 0205 00 Vibratory Cooling/Control Valve Replacement	0205 00-1
WP 0206 00 Vibratory Motor Replacement	0206 00-1
WP 0207 00 Hydraulic Hoses, Lines and Fittings Replacement	0207 00-1
WP 0208 00 Vibratory Control Solenoid Replacement	0208 00-1
<i>Group 73 - Concrete and Asphalt System</i>	
WP 0209 00 Drum Assembly Repair	0209 00-1
WP 0210 00 Drum Assembly Replacement	0210 00-1
WP 0211 00 Resilient Drum Mounts Replacement	0211 00-1
CHAPTER 5 GENERAL MAINTENANCE INSTRUCTIONS	
WP 0212 00 General Maintenance Instructions	0212 00-1
WP 0213 00 Electrical General Maintenance Instructions	0213 00-1
WP 0214 00 Preparation for Storage and Shipment	0214 00-1
WP 0215 00 Torque Limits	0215 00-1
CHAPTER 6 SUPPORTING INFORMATION	
WP 0216 00 References	0216 00-1
WP 0217 00 Maintenance Allocation Chart (MAC) Introduction	0217 00-1
WP 0218 00 Maintenance Allocation Chart (MAC)	0218 00-1
WP 0219 00 Expendable and Durable Items List	0219 00-1
WP 0220 00 Tool Identification List	0220 00-1
WP 0221 00 Illustrated List Of Manufactured Items	0221 00-1
WP 0222 00 Schematics	0222 00-1

HOW TO USE THIS MANUAL

INTRODUCTION

1. This manual is designed to help you perform lubrication, troubleshooting and maintenance on the CB534 Rollers, Motorized, Vibrating Tandem Steel Drum. Both the CB534B and CB534C Rollers are covered in this manual. If the work package title does not contain a “B” or “C” model designator, the work package applies to both models. If (CB534B) or (CB534C) is listed after the title, then the work package applies only to the model listed.
2. This manual is written in work package format.
3. Chapters divide the manual into major categories of information (e.g., *Introductory Information with Theory of Operation*, *Troubleshooting Procedures*, *Unit Level Field Maintenance*, *Direct Support Level Field Maintenance*, *General Maintenance Instructions*, and *Supporting Information*).
 - a. Each chapter is divided into work packages, which are identified by a 6-digit number (e.g. 0001 00, 0002 00, etc.) located on the upper right-hand corner of each page. The work package page number (e.g. 0001 00-1, 0001 00-2, etc.) is located centered at the bottom of each page.
 - b. If a Change Package is issued to this manual, added work packages use the 5th and 6th digits of their number to indicate new material. For instance, work packages inserted between WP 0001 00 and WP 0002 00 are numbered WP 0001 01, WP 0001 02, etc.
4. Scan through this manual to become familiar with its organization and contents before attempting to operate or maintain the Roller.

CONTENTS OF THIS MANUAL

1. A *Warning Summary* is located at the beginning of this manual. Become familiar with these warnings before operating or performing troubleshooting or maintenance on the machine.
2. A *Table of Contents*, located in the front of the manual, lists all chapters and work packages in the publication.
 - a. The Table of Contents also provides *Reporting Errors and Recommending Improvements* information and DA Form 2028 addresses, for the submittal of corrections to this manual.
 - b. If you cannot find what you are looking for in the Table of Contents, refer to the alphabetical *Index* at the back of the manual.
3. Chapter 1, *Introductory Information with Theory of Operation*, provides general information on the manual and the equipment.
4. Chapter 2 covers *Troubleshooting Procedures*. WP 0005 00 contains a *Troubleshooting Symptom Index*. If the machine malfunctions, this index should always be consulted to locate the appropriate troubleshooting procedure.
5. Chapter 3 deals with *Unit Level Field Maintenance Procedures*. Major areas covered are *Preventive Maintenance Checks and Services (PMCS)*, *Service Upon Receipt* and all maintenance procedures authorized by the Maintenance Allocation Chart (MAC) for this manual, organized in Functional Group Code (FGC) sequence. Refer to the *Table of Contents* for a complete listing of maintenance procedures.
6. Chapter 4 deals with *Direct Support Level Field Maintenance Procedures*. Major areas covered are all maintenance procedures authorized by the MAC for this manual, organized in Functional Group Code Sequence. Refer to the *Table of Contents* for a complete listing of maintenance procedures.
7. Chapter 5 deals with *General Maintenance Instructions*, including electrical GMI, preparation for storage and shipment, and torque limits.
8. Chapter 6 includes *Supporting Information: References; Maintenance Allocation Chart (MAC) Introduction; Maintenance Allocation Chart (MAC); Expendable and Durable Items List; Tool Identification List, Illustrated List of Manufactured Items, and Schematics*.

HOW TO USE THIS MANUAL - Continued

FEATURES OF THIS MANUAL

1. WARNINGS, CAUTIONS, NOTES, subject headings, and other important information are highlighted in **BOLD** print as a visual aid.

WARNING

A WARNING indicates a hazard which may cause injury or death.

CAUTION

A CAUTION directs attention to usage practices that may cause damage to equipment.

NOTE

A NOTE is a statement containing information that will make the procedures easier to perform.

2. Statements and words of particular interest may be printed in CAPITAL LETTERS to create emphasis.
3. Within a procedural step, reference may be made to another work package in this manual or to another manual. These references indicate where you should look for more complete information.
If you are told: "Replace engine oil filler (WP 0015 00)", go to Work Package 0015 00 in this manual for instructions on replacing the filler.
4. Illustrations are placed after, and as close to, the procedural steps to which they apply. Callouts placed on the art may be text or numbers, or both; whichever method is easier for the soldier.
5. Numbers located at lower right corner of art (e.g. 401-001; 401-002, etc.) are art control numbers and are used for tracking purposes. Disregard these numbers.
6. Dashed leader lines used in the Lubrication Chart (WP 0008 00) indicate lubrication points that are located on both sides of the equipment.
7. Technical instructions include metric units as well as standard units. For your reference, a *Metric Conversion Chart* is located on the inside back cover of the manual.

NOTE

If at any time you are unsure how to use this manual or you cannot locate the information you need, notify your supervisor.

CHAPTER 1
INTRODUCTORY INFORMATION WITH
THEORY OF OPERATION

GENERAL INFORMATION

0001 00

SCOPE

1. **Type of Manual.** This manual is for use in performing Field Maintenance on the CB534B and CB534C Rollers, Motorized, Vibrating Tandem Steel Drums.
2. **Equipment Name and Model Number.** Roller, Motorized, Vibrating Tandem Steel Drums: Caterpillar Models CB534B and CB534C.
3. **Purpose of Equipment.** The CB534B and CB534C Rollers are self-propelled and designed to compact asphalt and gravel bases for parking lots, streets, roads, and highways.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, *Functional User's Manual for the Army Maintenance Management System (TAMMS)*, as contained in the Maintenance Management Update.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

If your roller needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF Form 368 (*Product Quality Deficiency Report*). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, Illinois 61299-7630. We'll send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

1. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.
2. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.
3. If a corrosion problem is identified, it can be reported using SF Form 368 (Product Quality Deficiency Report). Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-3.

WARRANTY INFORMATION

1. Caterpillar warrants the following products sold by it and operating within the area specified under "Limitations" to be free from defects in material and workmanship:
 - a. New earthmoving, construction materials handling, and paving product machines designated by Caterpillar as having a 6 month/unlimited hour warranty. See your Caterpillar dealer for a complete listing of covered models.
 - b. New engines used as replacements in such Caterpillar machines.
 - c. Attachments installed on such machines prior to delivery.
2. An additional warranty against breakage is applicable to certain Caterpillar Ground Engaging Tools. An additional warranty against wear is also applicable to certain weld-on landfill compactor plus tips. Refer to the appropriate warranty statement for coverage details. This warranty does not apply to Caterpillar brand batteries which are covered by a different Caterpillar warranty.

WARRANTY INFORMATION - CONTINUED

3. The warranty is subject to the following:
- a. **Warranty Period.**
 - (1) For the CB534B Roller, the warranty period is 6 months, starting from date of delivery to the first user.
 - (2) For the CB534C Roller, the warranty period is 12 months, starting from the date of delivery to the first user.
 - b. **Caterpillar Responsibilities.** If a defect in material or workmanship is found during the warranty period, Caterpillar will, during normal working hours and at a place of business of a Caterpillar or other authorized source:
 - (1) Provide (at Caterpillar's expense) new, Major Component Exchange (MCE), Remanufactured, or Caterpillar-approved repaired parts or assembled components needed to correct the defect.

NOTE

Items replaced under this warranty become the property of Caterpillar.

- (2) Replace lubricating oil, filters, antifreeze and other service items made unusable by the defect.
 - (3) Provide labor needed to correct the defect except in the case of a new replacement engine originally installed by other than a Caterpillar dealer or other authorized source. In that case, labor is limited to repair only, and removal and installation is the user's responsibility.
- c. **User Responsibilities.** The user is responsible for:
- (1) The costs associated with transporting the machine.
 - (2) Labor costs, except as stated under "Caterpillar Responsibilities."
 - (3) Local taxes, if applicable.
 - (4) Parts shipping charges in excess of those which are usual and customary.
 - (5) Costs to investigate complaints unless the problem is caused by a defect in Caterpillar material or workmanship.
 - (6) Giving timely notice of a warrantable failure and promptly making the product available for repair.
 - (7) Performance of the required maintenance and use of proper fuel, oil, lubricants and coolant.
- d. **Limitations.** Caterpillar is not responsible for failures resulting from:
- (1) Any use or installation which Caterpillar judges improper.
 - (2) Attachments, accessory items and parts not sold by Caterpillar.
 - (3) Abuse, neglect and/or improper repair.
 - (4) User's unreasonable delay in making the product available after being notified of a potential product problem.

NEITHER THE FOREGOING EXPRESS WARRANTY NOR ANY OTHER WARRANTY BY CATERPILLAR, EXPRESS OR IMPLIED, IS APPLICABLE TO ANY ITEM CATERPILLAR SELLS WHICH IS WARRANTED TO THE USER BY ITS MANUFACTURER.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISION OF MATERIAL AND SERVICES, AS SPECIFIED HEREIN. CATERPILLAR IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

GENERAL INFORMATION - CONTINUED

0001 00

WARRANTY INFORMATION - CONTINUED

4. This warranty applies to all the geographic areas covered by the U.S.A. and Canadian dealers only. In other areas, different warranties may apply. Copies of applicable warranties may be obtained by writing Caterpillar Inc., 100 N.E. Adams Street, Peoria, IL 61829-3345.
5. As used in this warranty, the term "Caterpillar" means Caterpillar Inc., or one of its subsidiaries, except Caterpillar Overseas S.A., Caterpillar France S.A., Caterpillar (U.K.) Limited, or Caterpillar Belgium S.A., whichever last sold the product involved.

NOMENCLATURE CROSS-REFERENCE

COMMON NAME

OFFICIAL NOMENCLATURE

Roller Roller, Motorized, Vibrating Tandem Steel Drums
Caterpillar Model CB534B and Model CB534C

LIST OF ABBREVIATIONS

NOTE

Refer to ASME Y14.38-1999 for standard abbreviations.

ABBREVIATION

DEFINITION

AC	Alternating Current
AAL	Additional Authorization List
BII	Basic Issue Items
CW	Clockwise
CCW	Counterclockwise
daN	deka Newton
fpm	Feet Per Minute
hp	horsepower
in	inches
kg	kilograms
lb	pounds
KPH	Kilometers Per Hour
mm	millimeters
MPH	Miles Per Hour
No	Number
pli	pounds per linear inch
ROPS	Rollover Protective Structure
rpm	revolutions per minute
RPSTL	Repair Parts and Special Tools Lists
Vac	Volts of alternating current
Vdc	Volts of direct current
VPM	Vibrations Per Minute

GLOSSARY

Amplitude	The amount of vibratory movement measured from the start of one stroke to the start of the next
Articulate	Move or shift at pivot point or joint
Compaction	The state of being pressed or packed together
Eccentric	Offset
Hydrostatic	Pressure exerted or transmitted by liquid at rest
Static	Without movement

END OF WORK PACKAGE

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES**NOTE**

Characteristics, capabilities and features are the same for the CB534B and CB534C Rollers, Motorized, Vibrating Tandem Steel Drums, except as noted.

1. Characteristics.

- a. The roller is designed to be operated by one operator.
- b. The motion of the roller is controlled by the operator using a steering wheel and propel control lever (joystick).
- c. The roller is propelled by a hydrostatic transmission driven by a four-cylinder, turbocharged engine.
- d. Compaction is achieved with two cylindrical drums. Hydraulic motor-driven eccentric weights produce vibration in the drums which enhances compaction.

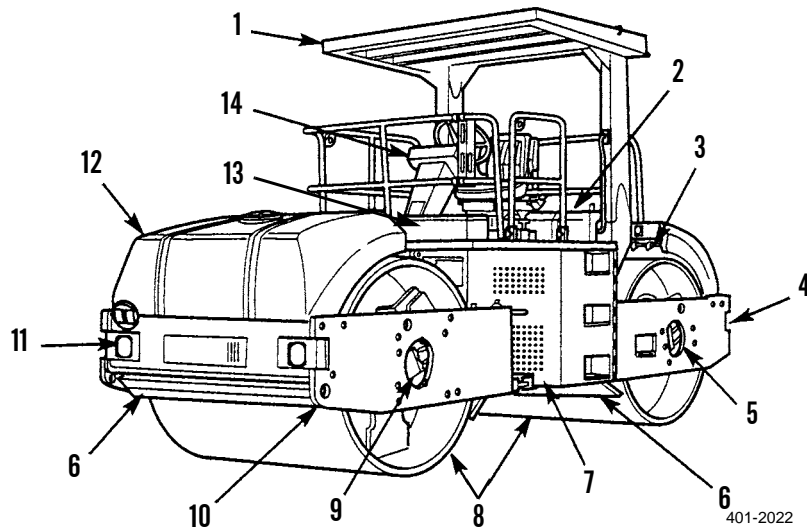
2. Capabilities and Features.

- a. The roller has a static tip angle range of 40 to 50 degrees. The static tip angle is the slope angle where a stationary roller will begin to tip over to the side when it is parallel to the slope, in straight-ahead travel position.
 - (1) Roller operating stability depends upon many factors including operating speed, steering, braking, terrain conditions, fluid levels, and most of all, operator's skill and judgement.
 - (2) The best operating roller stability indicator is the human operator with the ability to comprehend working conditions based on the relevant environmental situation and the operator's feel for the roller to predetermined situations potential hazards and determine the proper operating decisions to keep the roller in a safe operating mode.
- b. Vibration selection allows independent vibratory or static operation of either drum.
- c. Two amplitudes of vibration (high and low) are always available to the operator to accommodate the needs of a variety of operations.
- d. A water spray system wets the drum to help prevent hot asphalt from sticking to the drum surfaces during the compacting operation. Water spray can be constant or intermittent to accommodate the needs of a variety of environments. Two identical but separate tanks, each with their own pump and filter, are located on the front and rear of the roller and allow for extended operation between fill-ups. A tie line is provided allowing the operator to use one pump and tank to supply water to spray both drums in the event of failure of the other pump.
- e. 60/40 articulation simplifies maneuvering of the roller. Sixty percent of the roller is behind the pivot, while forty percent is ahead of the pivot. This allows the operator to concentrate on only one drum when entering or leaving a curve, and decreases the risk of damage when moving roller away from curbs or other stationary objects.
- f. The operator station pivots 90 degrees in either direction to allow the operator to view drum surfaces and edges during back-and-forth rolling operation. The gauges and controls move with the operator station.
- g. The Rollover Protective Structure (ROPS) canopy helps protect the operator from potential hazards resulting from equipment rollover and falling objects.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

NOTE

Location and description of major components are the same for the CB534B and CB534C Rollers. CB534B Roller is shown.



KEY	COMPONENT	DESCRIPTION
1	Rollover Protective Structure (ROPS)	The ROPS canopy helps protect operator from potential hazards resulting from equipment rollover and falling objects.
2	Hydraulic/Fuel Tank	The fuel and hydraulic tanks are connected, yet separate. Fuel is stored in the right-side. The left-side stores hydraulic oil.
3	Water Spray Bars	The water spray bars spray the drum surfaces with water to help prevent hot asphalt from sticking to drums. There is a water spray bar located above front and rear drum.
4	Frame Assembly	The frame assembly provides a means of support for roller components.
5	Vibratory Motors	The vibratory motors turn eccentric weights inside drums which create vibrating force that aids in surface material compaction. They are located on left-side of the rear drum and right-side of the front drum.
6	Scrapers	The scrapers keep drums clean to provide a smooth compacted surface.
7	Engine Compartment	The engine and hydraulic pumps are located in this compartment. The engine and pumps power the steering, propulsion, and vibratory systems.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

KEY	COMPONENT	DESCRIPTION
8	Drums	The drums provide a smooth surface for surface material compaction.
9	Propel Motors	The propel motors provide power to drums to move roller. They are located on right-side of rear drum and left-side of front drum.
10	Yoke Assembly	The yoke assembly provides support for front drum and pivots on frame assembly for steering.
11	Work Lights	The work lights provide light for use in poor visibility situations. They are located at front and rear of roller.
12	Water Spray Tanks	The water spray tanks hold water for delivery to drums via water spray nozzles on spray bars. A water spray tank is mounted above each drum.
13	Toolbox	The toolbox holds tools the operator needs to do all authorized maintenance.
14	Operator Station	The pivoting console may be moved 90 degrees left or right to increase visibility. The gauges and controls move with console for easy operation.

DIFFERENCES BETWEEN MODELS

ITEM	CB534B	CB534C
Throttle	Mechanically controlled by cable	Electronic toggle switch (high/low)
Speedometer	No	Yes
Starting Aid	Water heater jacket	Air inlet heater
Handrails	Design differences; same function, different look	Design differences; same function, different look

EQUIPMENT DATA

General:

Type	Roller, Motorized, Vibrating Tandem Steel Drums
Model	Caterpillar, CB534B and CB534C Rollers
Length (CB534B Roller)	203 in. (5156 mm)
Length (CB534C Roller)	195 in. (4953 mm)
Height	118 in. (2997 mm)
Width	73 in. (1854 mm)
Height at Steering Wheel	95 in. (2413 mm)
Operating Weight (CB534B Roller)	21232 lb (9631 kg)

EQUIPMENT DESCRIPTION AND DATA - CONTINUED

0002 00

EQUIPMENT DATA - CONTINUED

General - Continued:

Operating Weight (CB534C Roller)	21832 lb (9903 kg)
Static Tip Angle	40-50°

Functional:

Drum Width	67 in. (1700 mm)
Drum Diameter	51 in. (1300 mm)
Drum Shell Thickness	0.71 in. (18 mm)
Curb Clearance	16 in. (406 mm)
Side Clearance	3 in. (76 mm)
Wheelbase	124 in. (3150 mm)
Steering Angle - Left/Right	+/-35°
Minimum Turning Angle:	
Inside Drum Edge	164 in. (4166 mm)
Outside Drum Edge	231 in. (5867 mm)
Weight at Front Drum	10330 lb (4686 kg)
Weight at Rear Drum	11530 lb (5230 kg)

Refill Capacities:

Engine Oil	2.3 gal. (9 l)
Fuel Tank	55 gal. (208 l)
Hydraulic Tank (CB534B Roller)	15.5 gal. (59 l)
Hydraulic Tank (CB534C Roller)	24 gal. (91 l)
Front and Rear Vibratory Bearing Reservoirs	3.1 gal. (12 l)
Water Spray Tank	132 gal. (500 l) each
Cooling System	7.3 gal. (28 l)
Front Propel Gearbox	0.5 gal. (2 l)
Rear Propel Gearbox	0.6 gal. (2.4 l)

Power Train:

Engine	Caterpillar 3045T Turbocharged, Four-cylinder, diesel
Horsepower	107 hp (80 kw)@ 2200 RPM
Displacement	243 cu in. (4.0 l)
Transmission	Hydrostatic
Speed in Low Range	4.5 mph (7.2 kph)
Speed in High Range	7.0 mph (11.2 kph)

Vibratory System:

Electrical System	24 Volt
Frequency	2520 vpm (42 Hz)
Nominal Amplitude:	
Low	0.022 in. (0.56 mm)
High	0.043 in. (1.092 mm)
Centrifugal Force per Drum:	
Low	13480 lb (6000 daN)
High	26550 lb (11810 daN)

EQUIPMENT DESCRIPTION AND DATA - CONTINUED

0002 00

EQUIPMENT DATA - CONTINUED

Vibratory System - Continued:

Pli:

Static	161 lb/in. (28.8 kg/cm)
Centrifugal (max)	396 lb/in. (70.7 kg/cm)

Water Spray System:

Tank Material	Polyethylene
Number of Pumps	2
Number of Nozzles per Drum	7
Number of Draincocks	3
Number of Screens	2

END OF WORK PACKAGE

INTRODUCTION

1. This work package explains how components of the Roller, Motorized, Vibrating Tandem Steel Drums work together. A functional description is given for the engine system, fuel system, electrical system, propel system, steering system, vibratory system and water spray system.
2. Theory of operation is the same for the CB534B and CB534C Rollers. CB534B Roller is shown unless otherwise indicated.

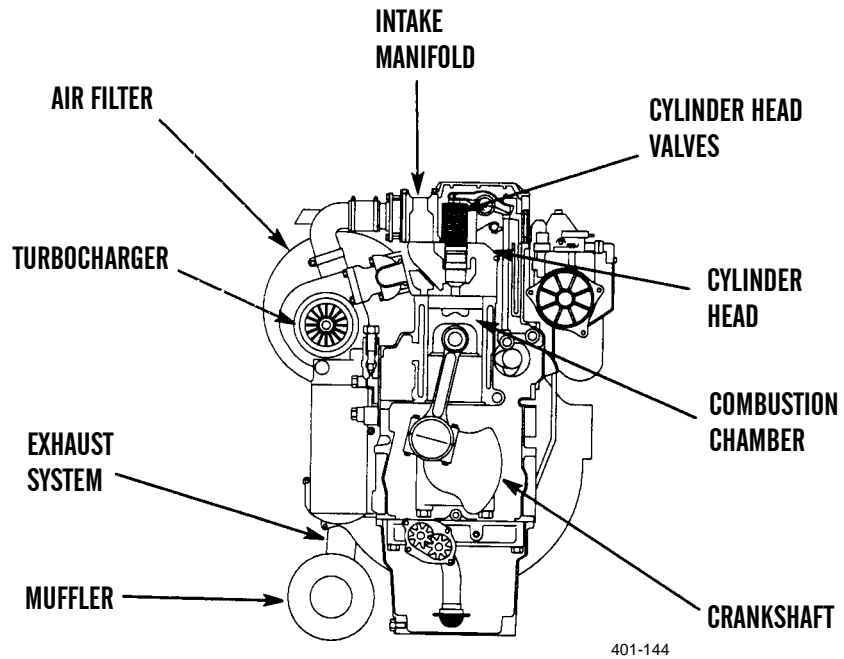
BASIC OPERATION

1. The roller is designed to compact asphalt and gravel bases for constructing parking lots, roads, landing strips, and other asphalt-paved areas.
2. The roller is controlled by a single operator.
3. An on-board water spray system is provided to prevent hot asphalt from sticking to the drum surfaces.
4. The roller operates in vibratory mode, using twin vibrating drums, as the means for compacting surface material.
5. The roller operates in static-mode in order to smooth surface material.

ENGINE SYSTEM

1. **General.**
 - a. The engine system provides power for the roller. The engine combines fuel and pressurized air together and compresses it until ignition occurs, creating mechanical energy. The internal explosion from the ignited air/fuel mixture pushes the pistons down, turning the crankshaft. The crankshaft is connected to a pulley and gear on the front of the engine and an output shaft on the rear of the engine. The pulley forces belts to turn the alternator which keeps the electrical system fully charged with electricity. The front gear also turns both the power steering hydraulic pump and the fuel injection pump. The output shaft turns both of the main hydraulic pumps. A cam lobe operates the fuel lift pump.
 - b. The engine is turbocharged. When the ignited air is pushed out of the engine, it is routed to the turbocharger. The exhaust from the engine turns the turbocharger which forces high pressure air into the engine intake manifold.
2. **Turbocharger.** The turbocharger forces air into the intake manifold. Exhaust gases coming out of the combustion chamber force a rotor inside the turbocharger to spin at a very high rate of speed. This rotor is attached to the intake impeller. The impeller pulls air in from the air filter and forces it into the intake manifold at a high pressure. The faster the engine runs, the faster the turbocharger spins and the higher the air pressure it produces.
3. **Cylinder Head.** The fuel/air mixture is ignited in the combustion chambers of the cylinder head, located directly over each piston. The intake ports of the cylinder head route air into the combustion chamber while the injectors supply the fuel to the mixture. The exhaust ports route burned gases out of the engine.
4. **Cylinder Head Valves.** The cylinder head valves open or close the passages in the cylinder head that allow flow from the intake manifold or to the exhaust manifold. Valve lash must be adjusted periodically.
5. **Combustion Chamber.** The combustion chamber is where combustion and ignition occur. Ignition occurs when diesel fuel or JP-8 is injected into air heated by being compressed by the piston. When the air/fuel is ignited, it pushes down the piston, turning the crankshaft.
6. **Crankshaft.** The crankshaft is an eccentric shaft that changes the up-and-down piston motion into a rotating motion. The crankshaft uses this motion at the front of the engine to power the alternator, cooling system, and steering and fuel pumps.
7. **Exhaust System.** The exhaust system allows the exhaust gases to be drawn out of the combustion chamber. The exhaust is pushed out of the cylinder by the piston. It then goes into the turbocharger and makes it spin. The exhaust is then vented into the air out of an exhaust pipe.
8. **Air Filter.** The air filter cleans the air entering the engine. The filter consists of a primary element and a secondary element. Air is pulled through both elements to remove particulates that could damage the engine.

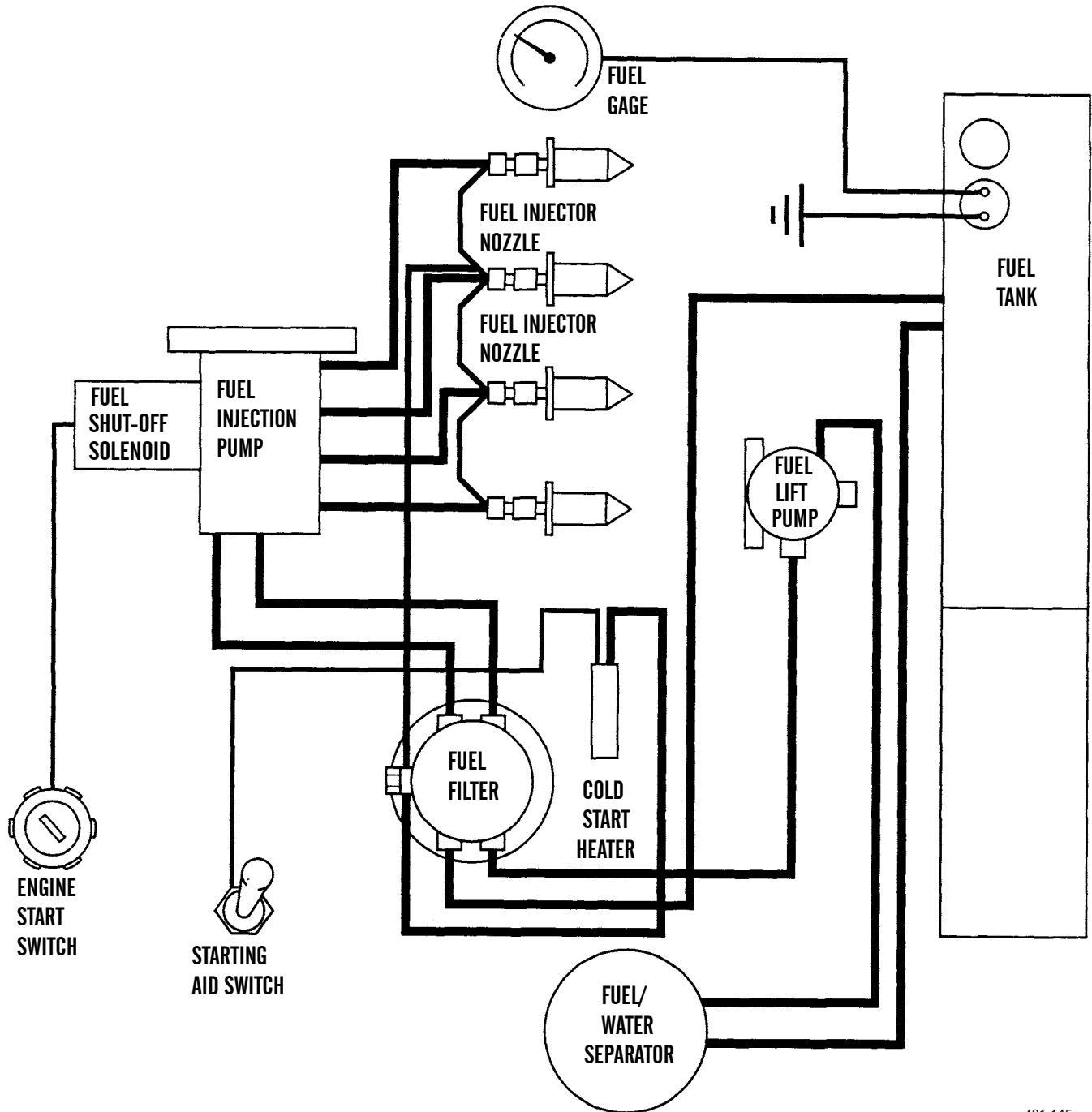
ENGINE SYSTEM - CONTINUED



FUEL SYSTEM

1. **General.**
 - a. When the engine is turning, fuel is pulled from the fuel tank through the fuel/water separator by the fuel lift pump. The fuel lift pump sends the fuel at low pressure to the fuel filter. From the fuel filter, the fuel is sent to the fuel injection pump. The fuel injection pump sends high pressure fuel through the high pressure fuel lines to the fuel injector nozzles. The four fuel injector nozzles spray fuel into the cylinders of the engine. Any fuel not used by the fuel injection pump is returned to the inlet side of the fuel filter.
 - b. The engine is equipped with a cold start heater to warm fuel for starting the engine in cold weather.
2. **Fuel Tank.** The fuel tank is part of the fuel/hydraulic tank assembly. The fuel tank is located on the right side of the assembly. The fuel and hydraulic tanks are welded together, but are separate containers. The capacity of the fuel tank is 55 gal. (208 l) of diesel fuel or JP-8.
3. **High Pressure Fuel Lines.** The high pressure fuel lines deliver fuel from the fuel injection pump to the fuel injector nozzles.
4. **Fuel/Water Separator.** The fuel/water separator separates any water from the fuel before reaching the fuel filter and the engine. The water that is separated from the fuel collects at the bottom of a glass bowl located on the bottom of the separator. A drain valve is located at the bottom of the bowl and can be used to drain the water from the fuel/water separator.
5. **Fuel Lift Pump.** The fuel lift pump delivers fuel to the fuel injection pump. The manually-operated lever primes the pump by removing air and introducing fuel. Priming is needed after the fuel system has been opened or air is in the system.
6. **Fuel Filter.** The fuel filter removes foreign matter from the fuel before fuel enters the fuel injection pump.
7. **Fuel Injection Pump.** The fuel injection pump forces high pressure fuel into the fuel injector nozzles. The fuel injection pump is gear-driven from the crankshaft. The fuel injection pump needs fuel for lubrication. The precision parts are easily damaged. For this reason, the engine must NOT be started until the fuel injection pump is full of fuel that is free of air.
8. **Fuel Injectors.** The fuel injectors spray fuel into the cylinders of the engine.
9. **Cold Start Heater.** The cold start heater is installed in the inlet manifold to heat inlet air in cold weather. When activated by operator controls, the current from the electrical wire causes the coil inside the heater to become very hot. A small amount of fuel will flow through the heater as the engine is cranking.

FUEL SYSTEM - CONTINUED

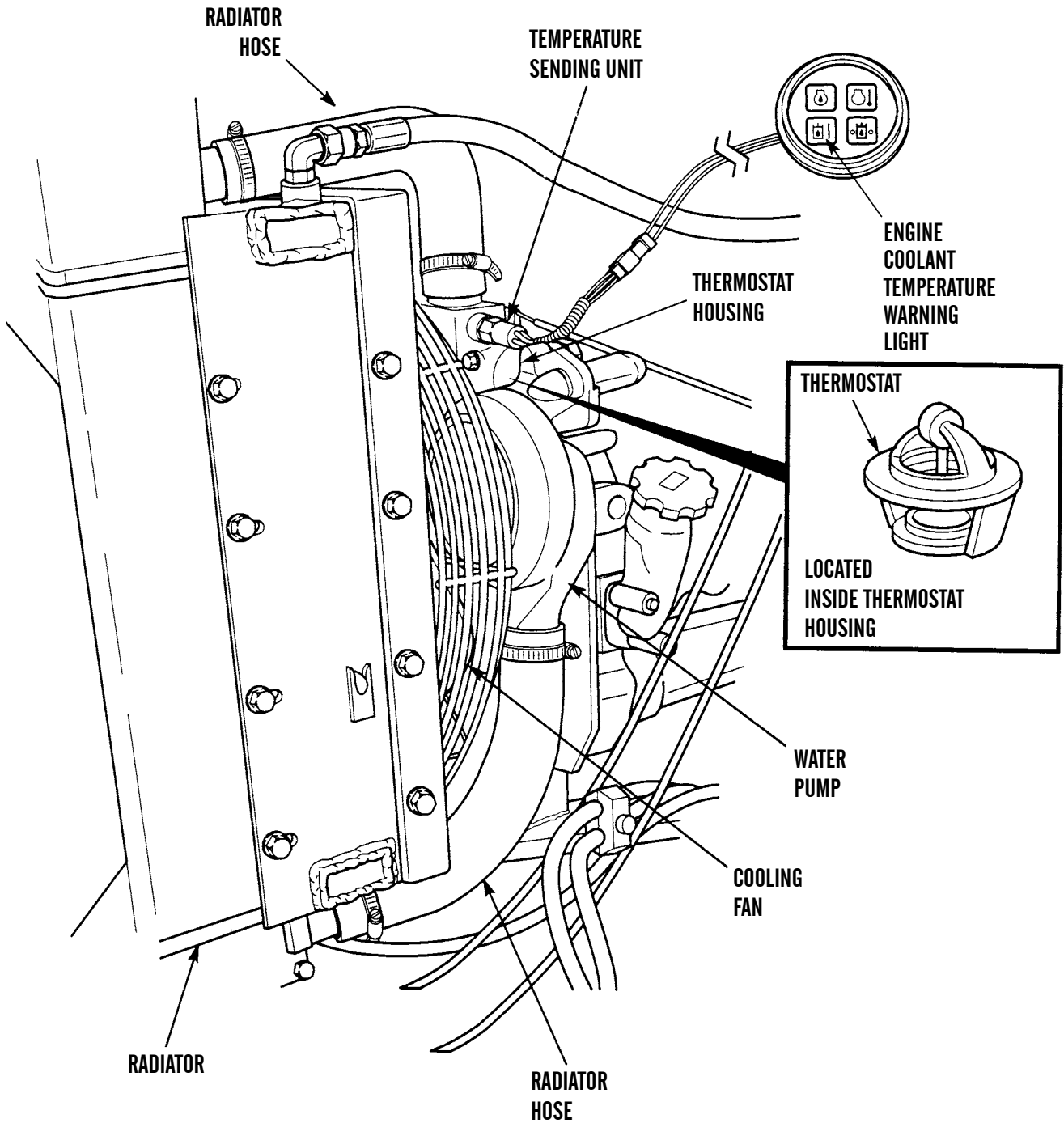


401-145

COOLING SYSTEM

1. **General.** Coolant from the bottom of the radiator passes through the centrifugal water pump which is installed on the front of the engine timing case. The pump is gear-driven from the gear of the fuel injection pump and assists the flow of coolant through the system. From the pump, coolant goes through a passage in the timing case to the front of the cylinder block. The coolant passes through a passage in the left-side of the cylinder block. Some of the coolant passes through a lubricating oil cooler before going to the rear of the cylinder block. The coolant then passes around the cylinder and up to the cylinder head. Coolant leaves the front of the cylinder head and passes to the thermostat housing. If the thermostat is closed, the coolant goes directly through a by-pass to the inlet side of the water pump. If the thermostat is open, the coolant passes to the top of the radiator. A push-type fan forces air through the radiator, relieving the coolant of heat.
2. **Radiator.** The radiator acts as a coolant reservoir. The radiator cools the heater coolant from the engine while it is being stored.
3. **Water Pump.** The centrifugal water pump draws coolant from the radiator and forces it into the coolant passages in the engine. After the coolant has flowed through the entire engine, pressure from the water pump pushes it back into the radiator. The water pump is gear driven from the engine.
4. **Radiator Hose (Two Hoses).** The radiator hoses connect the radiator to the water pump and engine. These hoses provide a passage for coolant transfer between the radiator and the engine.
5. **Fan.** The cooling fan pushes air through the radiator to aid in helping lower the temperature of the coolant by relieving heat from the coolant.
6. **Temperature Sending Unit.** The temperature sending unit sends a signal to the engine coolant temperature warning light when the engine coolant temperature is too high for safe operation.
7. **Engine Coolant Temperature Warning Light.** The engine coolant temperature warning light is connected to the temperature sending unit. When the sending unit signals high operating temperature, the warning light will illuminate to alert the operator. A warning horn is connected to the light for both a visual and an audible warning.
8. **Thermostat.** The thermostat controls the temperature of the coolant and engine. The thermostat blocks the path of the coolant traveling back to the radiator. Until the engine reaches proper operating temperature, the thermostat will not allow the coolant to pass into the radiator.

COOLING SYSTEM - CONTINUED



ELECTRICAL SYSTEM1. **General.**

- a. Two batteries wired in series provide the roller with a 24-volt electrical system. Battery cables connect the batteries to the starter and the alternator. From the starter, electricity is sent to the engine wiring harness and to the operator station. When the roller is running, the alternator produces 24 volts that are sent to the batteries to maintain a full charge. Control switches at the operator station allow the flow of electricity to power the roller systems through the wiring harnesses. There are four wiring harnesses on the roller: the instrument, engine, and front and rear harnesses. Electricity is sent through the harnesses to the electrical systems then returned to the harness, which ground the electricity to the roller chassis. Fuses are used to protect the electrical systems from an overload. The negative battery cable is attached to the chassis, completing the circuit. A NATO connector on the battery positive side allows the roller to be connected to another vehicle. This connector allows another roller's electrical system to be connected to the roller if, for example, the roller does not have enough electrical energy to start the motor with its own batteries.
- b. The starting system is used to start the engine. When the start switch is turned to the start position, electricity is sent from the battery to the fuses and then through the main relay, the neutral start relay and the starter relay. The starter relay engages the starter solenoid. The starter solenoid sends electricity to the electric starter motor and forces it to turn the engine crankshaft. The engine will crank until the start switch is turned to the center or off position.

2. **Batteries.** Two 12-volt batteries provide stored electricity to the electrical system. Combined, the two batteries provide 24 volts. The batteries are negatively grounded.

3. **Battery Cables.** The positive battery cable is connected to the NATO connector and the starter. The negative cable is connected to the battery disconnect switch which is then connected to the roller chassis.

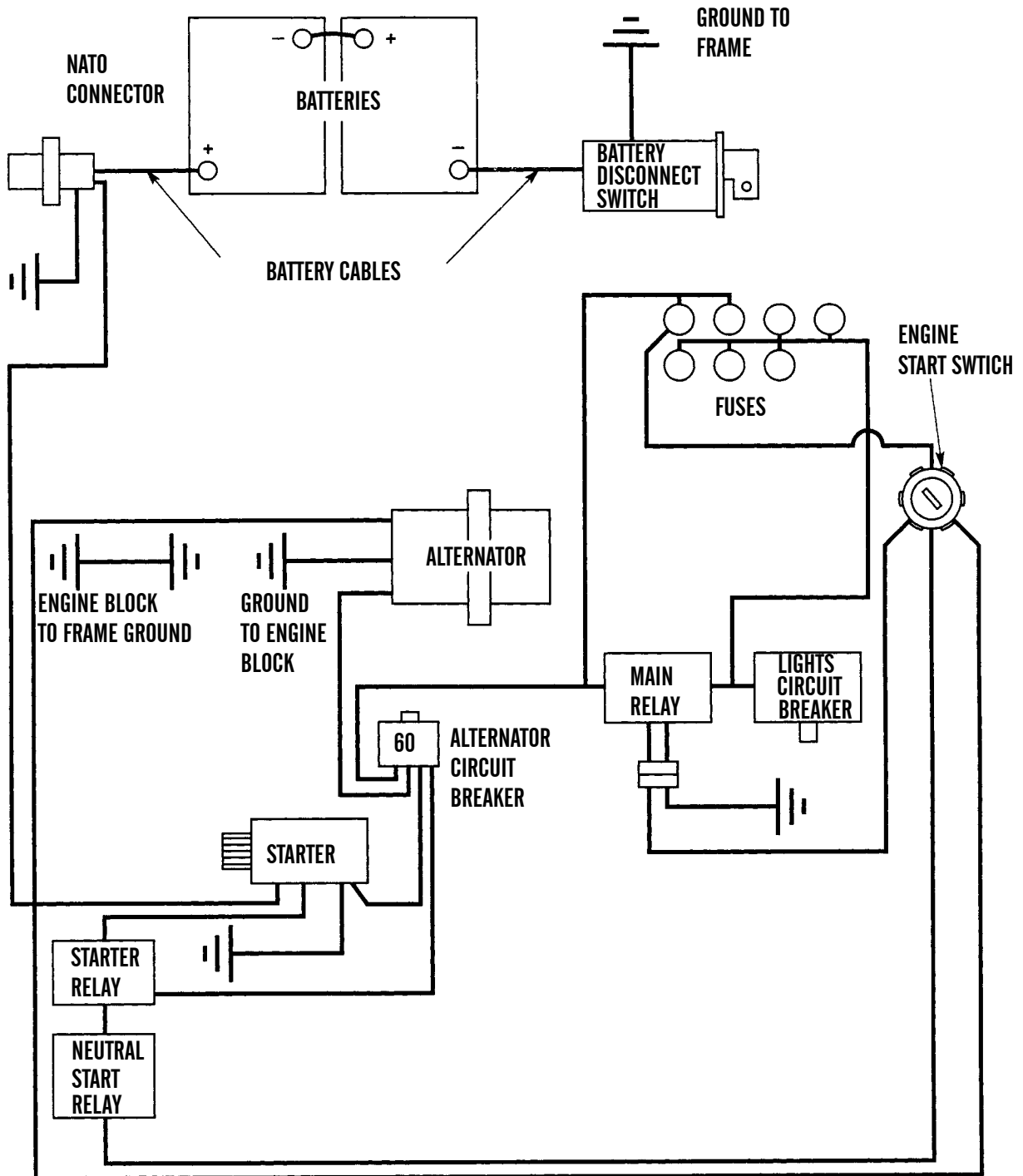
4. **NATO Connector.** The NATO connector is a standard receptacle with which NATO jumper cables can be used to "jump start" one roller by another roller in the event of battery failure.

5. **Alternator.**

- a. The alternator is an electrical and mechanical component driven by a belt from engine rotation. The alternator is used to charge the storage batteries during engine operation. The alternator is cooled by an external fan mounted behind the pulley. The fan pulls air through holes in the back of the alternator and exits to the front, cooling the alternator.
- b. The alternator converts mechanical and magnetic energy to Alternating Current (AC) and voltage by rotating a Direct Current (DC) field inside a three-phase stator. The alternating current and voltage are changed to direct current by a three-phase, full wave rectifier system. Direct current flows to the alternator output terminal. The rectifier has three exciter diodes that rectify the current needed to start the charging process.
- c. A solid state regulator is installed in the back of the alternator. A capacitor protects the rectifier from high voltages.
- d. The alternator is connected to the battery through the engine start switch for alternator turn-on. Therefore, alternator excitation occurs when the engine start switch is turned on.

6. **Alternator Circuit Breaker.** The alternator circuit breaker is a heat-triggered switch that opens the battery circuit when the current in the electrical system goes higher than the rating of the circuit breaker (60 amps). Push the reset button to close the circuit again.

ELECTRICAL SYSTEM - CONTINUED



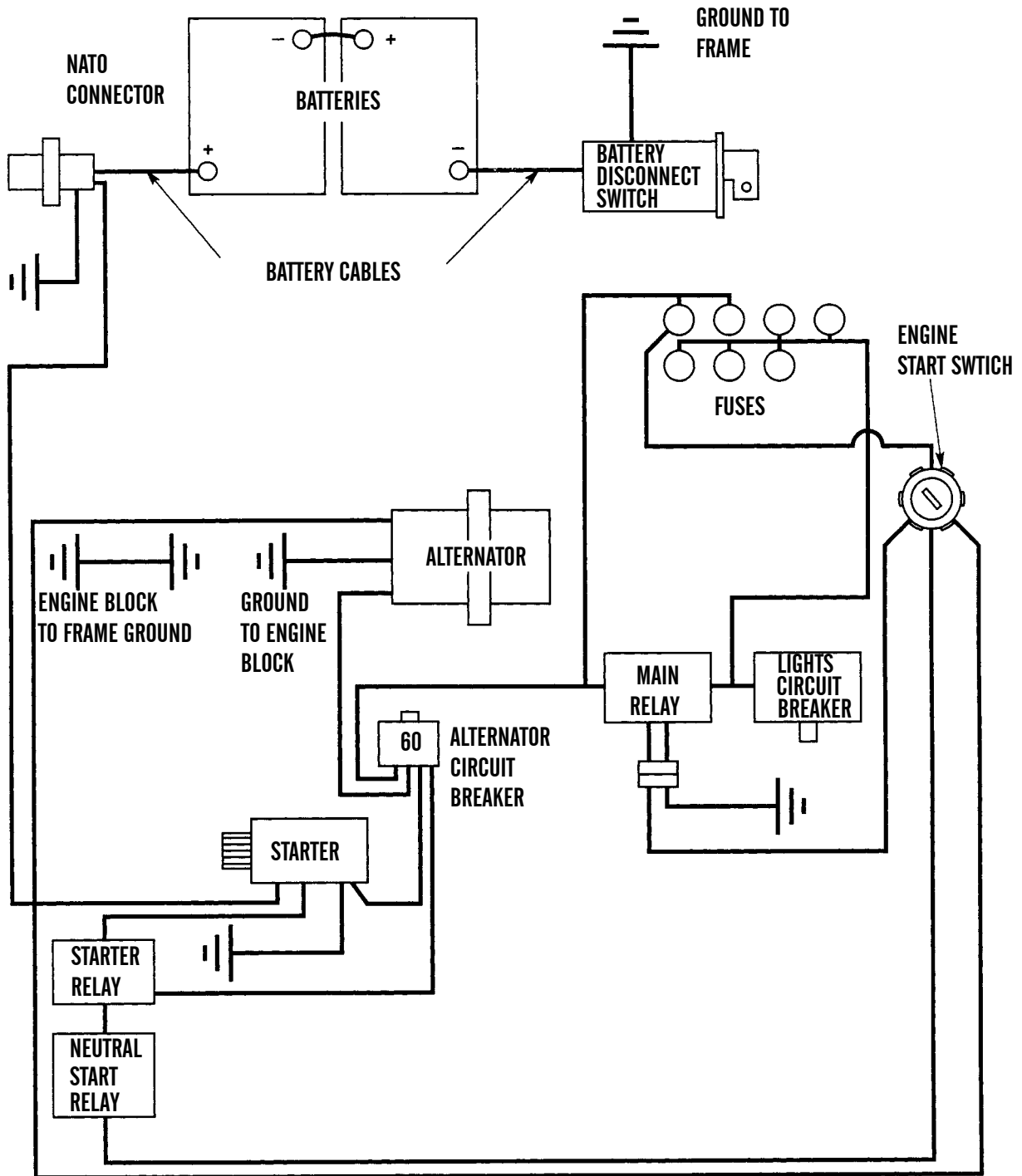
401-147

ELECTRICAL SYSTEM - CONTINUED7. **Starter.**

- a. The starter is used to turn the engine flywheel fast enough to start the compression/ignition process and make the engine run. When the engine start switch is activated, voltage from the electrical system causes a solenoid to move a pinion toward the flywheel ring gear of the engine. The electrical contacts in the solenoid close the circuit between the battery and the starter just before the pinion engages the ring gear causing the starter to rotate. A starter with this type of turn-on is known as a positive shift starting motor.
- b. When the engine begins to run, the overrunning clutch portion of the pinion drive prevents damage to the starter caused by excessive speeds by breaking the mechanical connection. The pinion will stay meshed with the ring gear until the engine start switch is released from the start position. A return spring in the overrunning clutch returns the clutch to its rest position.

8. **Fuses.** Fuses are safety devices which open an electrical circuit in the event of a short or malfunction to protect the system from damage. A filament inside the fuse allows a measured amount of current to travel through the circuit. The filament disintegrates when too much current attempts to pass through the fuse. Once a fuse has “blown” it must be replaced. Fuses are provided for each of the major system circuits.
9. **Engine Start Switch.** The engine start switch is a rotary key-type switch that turns the electrical system on or off and activates the starter. When the start switch is turned to the start position (held to far right), electricity is sent through the neutral start and main relays. After these relays, the electricity then goes to the starter.
10. **Starter Relay.** The starter relay allows electricity to flow to the starter when the engine start switch is in the start position.
11. **Neutral Start Relay.** The neutral start relay is a safety device that stops the flow of electricity to the starter when the propel control lever is set in a position other than neutral.
12. **Lights Circuit Breaker.** The lights circuit breaker is a heat-triggered switch that opens the lights circuit when the current in the electrical system goes higher than the rating of the circuit breaker (20 amps). Push the reset button to close the circuit again.
13. **Main Relay.** The main relay allows electricity to flow to all circuits only when the engine start switch is in the accessory, run or start positions.

ELECTRICAL SYSTEM - CONTINUED



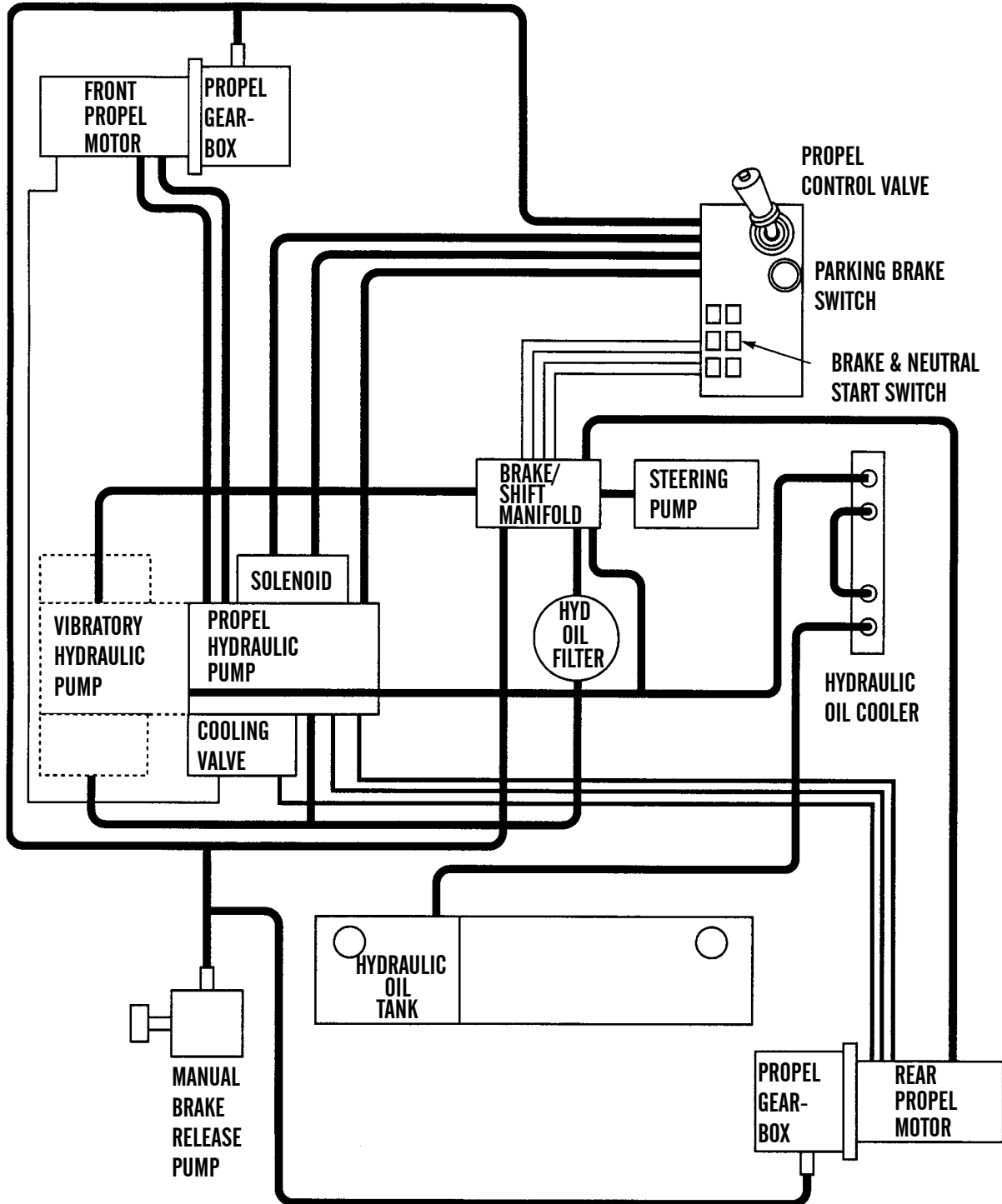
401-147

PROPEL SYSTEM

1. **General.** The propel system allows the roller to move either forward or backward. When the engine is started, oil under pressure from the charge (control) circuit flows to the propel control valves. When the propel control lever (which is connected to the propel control valves) is in the forward or reverse position, oil is sent to the propel hydraulic pump. The further the lever is pushed, the higher the oil pressure sent to the hydraulic pump. The more pressure there is, the faster the roller will move. The hydraulic pump pushes oil through hydraulic lines until the oil enters the propel motors. The front and rear propel motors turn the propel gearboxes which turn the roller drums. Inside each propel gearbox is a brake. This brake is always engaged unless pressure from the brake/shift manifold is present. This pressure is controlled by the propel control valve.
If the roller needs to move while the engine is not able to supply the pump with power, there is a manual brake release pump on the roller. This manual brake release pump pressurizes the hydraulic lines releasing the brakes. Also, there are brake and neutral start relays in the system which prevent movement of the roller during the starting procedure.
2. **Fuel/Hydraulic Oil Tank.** The fuel/hydraulic oil tank consists of the hydraulic tank (located on the right-side) and the fuel tank (located on the right-side). Although the tanks are welded together, they are separate in their function. The CB534B Roller hydraulic oil tank holds 15.5 gal. (59 l) of hydraulic oil. The CB534C Roller hydraulic oil tank holds 24 gal. (91 l) of hydraulic oil.
3. **Propel Hydraulic Pump.** The propel hydraulic pump is a variable displacement, piston-type pump mounted in tandem with the vibratory hydraulic pump to the engine. Both run at engine speed and rotate clockwise as seen from the drive end of the pump.
4. **Propel Motors.** The hydraulic propel motors are located on the left-side of the front drum and the right-side of the rear drum. The front motors is a fixed displacement axial piston-type motor. The rear motor is a variable displacement axial piston-type motor.
5. **Propel Control Lever and Valve.** The propel control lever controls the direction of the roller. If the lever is pushed forward, the control valve, which is connected to the lever, directs fluid to the propel hydraulic pump in such a way that the hydraulic pump sends oil to the propel motor to turn forward. This propel pump sends fluid the opposite direction if the control lever is pulled backward. The further the lever is pulled, the higher the oil pressure being sent from the control valve is. The more control valve pressure, the more volume of fluid the pump sends to the motors and the faster the roller travels.
6. **Parking Brake Switch.** The parking brake switch keeps the roller from moving by interrupting the inputs from the control valve. The hydraulic pump will not send oil to the motors that the brake will not disengage while the parking brake is on. The parking brake switch glows red when parking brake is engaged.
7. **Brake and Neutral Start Relays.** The brake and neutral start relays are safety devices that interrupt the electrical signal to the starter if the control lever is not in the neutral, or center position. This ensures that the roller will not move while the engine is being started.
8. **Steering Pump.** The steering pump provides a charge pressure to the propel system. This charge pressure sends source pressure to the brake/shift valves. The charge pressure is used to supply the propel control valve with signal oil, and to disengage the brakes.
9. **Brake/Shift Valves.** The brake/shift valves distribute the charge pressure to the propel control valve and the brakes. When pressure is sent from the control valve, the brake/shift valve sends pressure to release the brakes. The brake/shift valves also control the speed range of the roller operates. The operator controls the speed range by an electrical switch that operates the valve solenoid. This solenoid either opens or closes the brake/shift valve changing the fluid pressure to the propel control valve which effectively changes the speed range.
10. **Manual Brake Release Pump.** The manual brake release pump is a manually operated plunger-type pump that forces hydraulic oil to the brakes. The manual brake release pump is used when normal means of brake disengagement are not possible.
11. **Cooling Valve.** The cooling valve is a two-position pilot-operated valve. Pilot oil from the high pressure side of the closed loop circuit opens the valve, allowing some of the hydraulic oil in the return side of the closed loop circuit to be directed to the oil cooler.

PROPEL SYSTEM - CONTINUED

12. **Propel Gearbox.** The propel gearboxes are attached to the drums. The propel motors turn the gearboxes which turn the drums. There is a brake inside the gearbox that is always engaged until hydraulic pressure from the brake/shift valves is present.

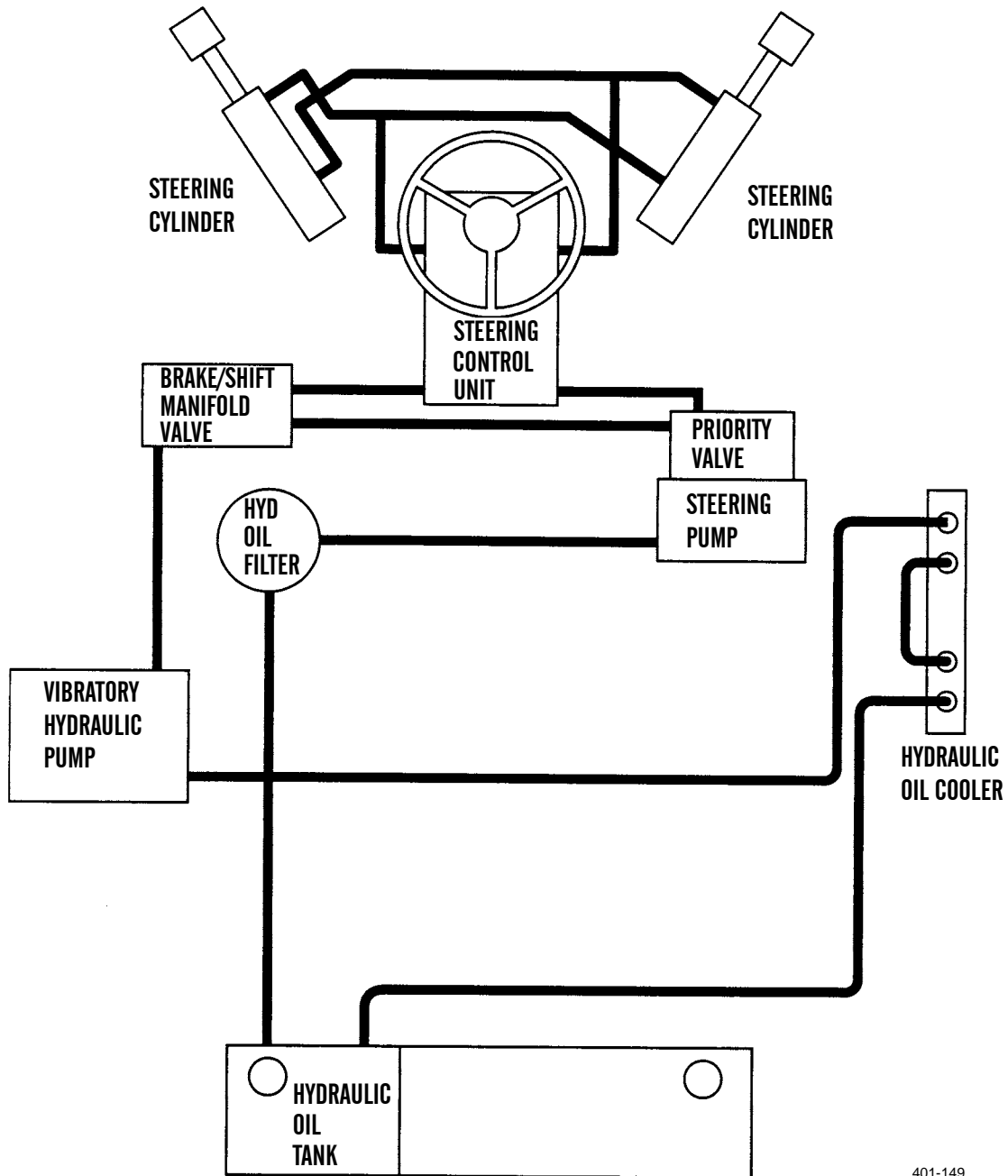


401-148

HYDRAULIC STEERING SYSTEM

1. **General.** The hydraulic steering system has two functions. The primary purpose is for steering the roller. The steering pump receives oil from the hydraulic oil tank after it has been cleaned by a hydraulic filter. Oil from the steering pump flows through a priority valve and continues on in two directions. The primary path for the oil is to the steering control unit. The steering control unit sends hydraulic oil to the steering cylinders. When the steering wheel is turned, the steering control unit sends hydraulic oil through the steering hydraulic lines to force the steering cylinders to turn the roller.
The secondary flow of oil and return oil from the steering control unit is combined with the parking brake and two-speed shift manifold by way of an oil line. This oil is used for the charge system. The charge system supplies the control circuit and replenishes the main closed loop and cooling circuit of the vibratory system.
2. **Steering Control Unit.** The steering control unit is a spring-centered, non-load, reaction-type pump which sends pressurized hydraulic oil to the steering cylinders. The steering control unit has two sections: the control section and the metering section. Oil from the steering pump goes into the control section. As the steering wheel is turned, the control sends oil out from the metering section. Metered oil from the metering section is directed by the control section to either the left turn port or right turn port.
3. **Steering Pump.** The steering pump is a gear-type pump mounted to the accessory drive on the engine and turns clockwise as the engine is running. The steering pump supplies pressurized hydraulic oil to the steering system and charge oil to the propel and vibratory systems. A priority valve gives the steering system priority over the propel charge circuits. A pressure compensator valve regulates a constant 6 gallons per minute flow to the steering system.
4. **Priority Valve.** Inside the steering pump is the priority valve which is a pressure compensated flow divider. The priority valve divides flow between the steering circuit and the propel charge circuits. The steering circuit has priority.
5. **Brake/Shift Manifold Valve.** The brake/shift manifold valve is part of the propel system, yet receives its charge from the steering pump.
6. **Steering Cylinders.** The steering cylinders are piston-type hydraulic cylinders mounted at the pivot joint of the frame and yoke assemblies. When the steering control unit sends pressurized oil to them, the steering cylinders force the yoke assembly to shift its relative placement on the frame assembly, causing the roller to steer either left or right.
7. **Fuel/Hydraulic Oil Tank.** The fuel/hydraulic oil tank consists of the hydraulic tank (located on the left side) and the fuel tank (located on the right side). Although the tanks are welded together, they are separate in their function. The CB534B Roller hydraulic oil tank holds 15.5 gal. (59 l) of hydraulic oil. The CB534C Roller hydraulic oil tank holds 24 gal. (91 l) of hydraulic oil.
8. **Hydraulic Oil Filter.** The hydraulic oil filter cleans all hydraulic oil used in the propel, vibratory and steering systems. When the filter element is clogged, or oil is cold, the bypass valve opens and oil flows past the element and a signal is sent to the warning light. On the CB534B Roller, an indicator is mounted on the filter assembly to display the condition of the filter element.

HYDRAULIC STEERING SYSTEM - CONTINUED

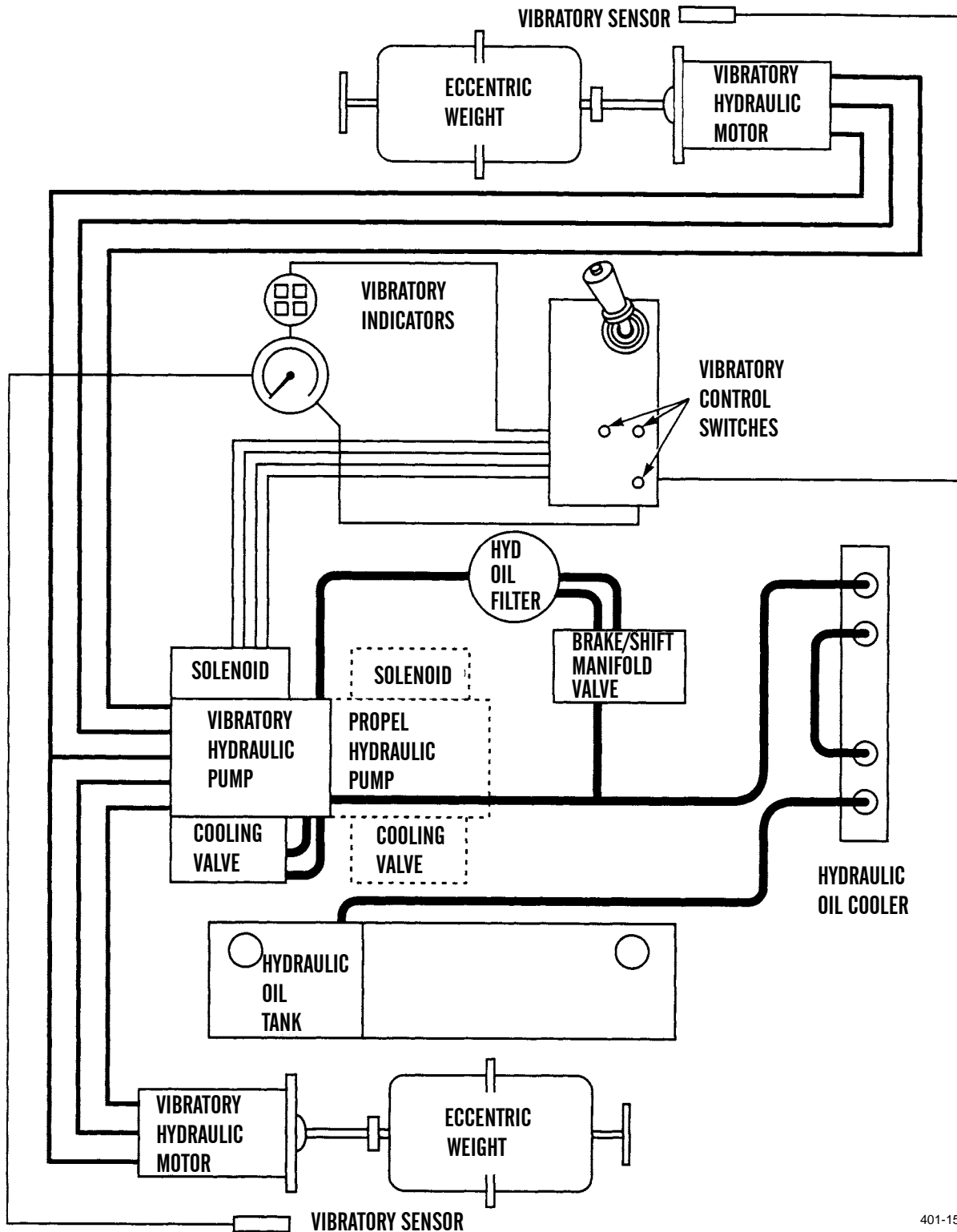


401-149

VIBRATORY SYSTEM

1. **General.**
 - a. The drum vibration is produced by the turning of an eccentric weight mounted inside each drum. Hydraulic motors, mounted on the left-side of the axis of the front drum and on the right-side of the axis of the rear drum, turn the eccentric weights. A hydraulic pump provides power to the motors. Controls are provided for the operator to implement the use of the vibratory system in high or low range.
 - b. The vibratory system is a hydrostatic, closed loop system. Oil for the vibratory system is supplied by the steering charge circuit pressure created by the steering pump. Charge pressure is used to supply the control circuit and replenish the main closed loop and cooling circuits of the vibratory system.
2. **Vibratory Hydraulic Pump.** The vibratory hydraulic pump is a variable displacement, piston-type pump mounted in tandem with the propel hydraulic pump to the engine. Both run at engine speed and rotate clockwise as seen from the drive end of the pump.
3. **Vibratory Hydraulic Motor.** The vibratory hydraulic motors are located on the right-side of the front drum and the left-side of the rear drum. The front and rear motors are fixed displacement bidirectional motors that are identical.
4. **Eccentric Weights.** As the eccentric weight spins, kinetic energy creates forces that cause the drum to vibrate, which intensifies the roller compaction of surface material. The eccentric weight is a chamber filled with steel shot and has a weight attached to one side. Inside the chamber are baffles. As the weight is turned one direction, the baffle collects the steel shot on the same side as the weight to produce a severe imbalance in the rotation. The imbalance causes the entire drum to vibrate. This is the high amplitude range. As the weight is turned the other direction, the baffle collects the steel shot on the opposite side as the weight to produce a mild imbalance in the rotation causing less vibration. This is the low amplitude range.
5. **Vibratory Indicators.** The vibratory indicators allow the operator to monitor the vibratory system. A vibratory sensor is located on each drum and measures how many Vibrations Per Minute (VPM) the drums produce. This sensor is connected to a VPM meter on the control panel. The VPM meter points to a number which shows the vibrations per minute reading. A system light is also illuminated whenever the vibratory system is engaged.
6. **Brake/Shift Manifold Valve.** The brake/shift manifold valve will not allow the vibratory system to engage when the system is in automatic mode until the propel lever is positioned for roller movement.
7. **Cooling Valve.** The cooling valve is a two-position pilot operated valve. Pilot oil from the high pressure side of the closed loop circuit opens the valve allowing some of the oil in the return side of the closed loop circuit to be directed to the oil cooler.
8. **Hydraulic Oil Cooler.** The hydraulic oil cooler is mounted between the fan shroud and the radiator and is a heat transfer device which cools the oil in the hydraulic system.

VIBRATORY SYSTEM - CONTINUED

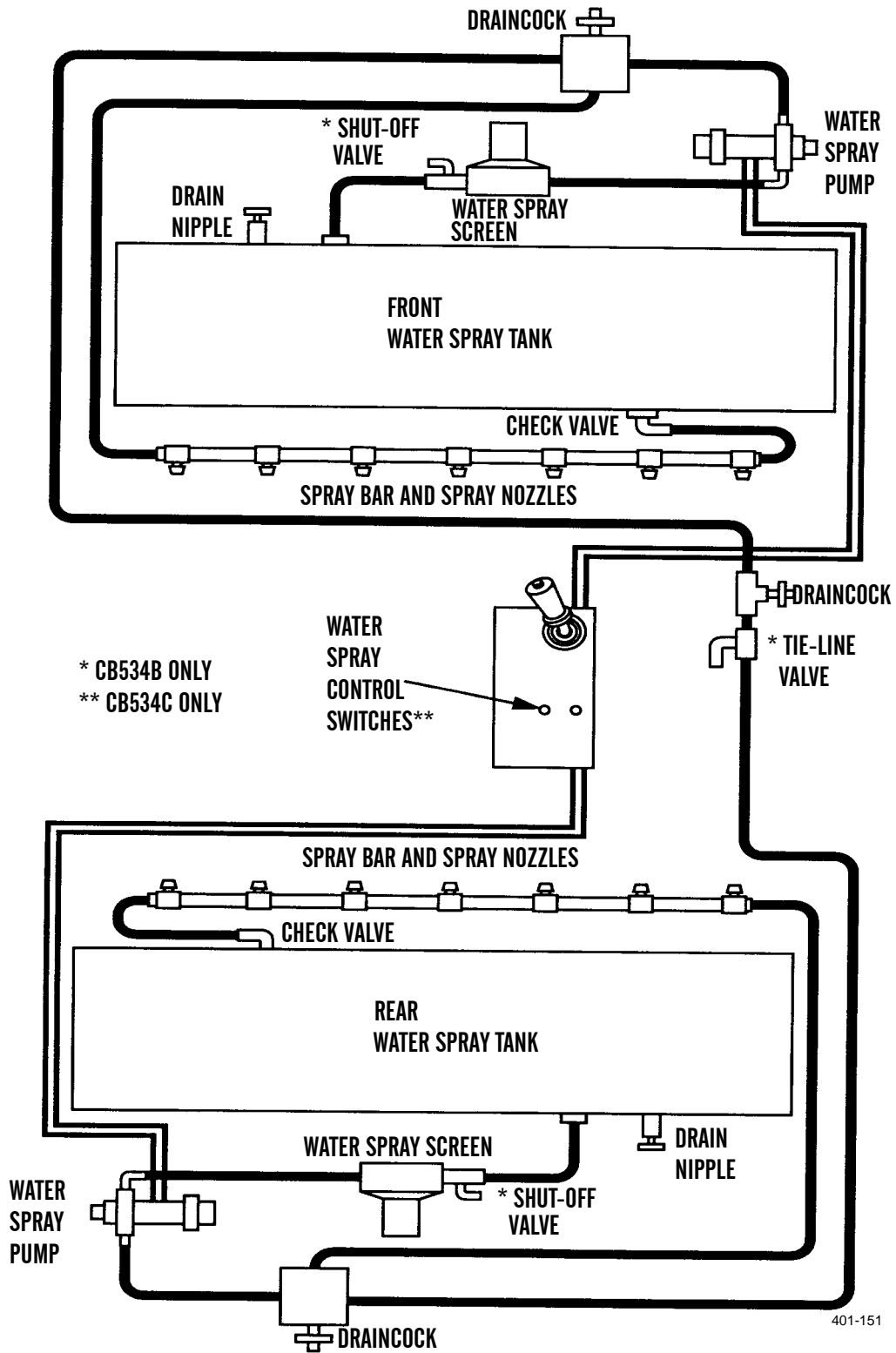


401-150

WATER SPRAY SYSTEM

1. **General.** The water spray system is used to wet the front and rear drums to help prevent hot asphalt from sticking to the drum surfaces during compaction. The water spray system consists of two identical, but separate systems, one at each end of the roller. The water spray system uses pumps that provide pressurized water flow. Only one pump operates at a time. The pumps are controlled by a switch on the operator console. This switch has three positions: off, continuous spray and intermittent spray. The continuous spray setting turns on the water spray system and water sprays on the drums continuously. The intermittent spray switch position uses fifteen-second on/off cycles of water spraying on the drums to reduce water consumption. There are three draincocks that allow the water to be drained from the system. The pumps pull water from two tanks and water spray screens which filter foreign material from the water. The water then enters the pump and is pumped to the spray bar. There are seven spray nozzles in each spray bar which distribute the water evenly over the surface of the drums. A check valve is located at the end of the spray bar to control the pressure of the water in the spray bars. Excess water is sent past the check valve and back into the water tank. On the CB534B Roller only, the front and rear water spray systems are connected by a tie-line valve, which allows one water spray system to supply pressurized water to the nozzles of the other water spray system, in the event of failure of one of the pumps.
2. **Water Spray Pumps.** The water spray pumps are electrically activated positive displacement piston-type pumps that operate on 24 Vdc. When activated, the pumps provide pressurized water flow to the water spray system.
3. **Water Spray Screens.** The water spray screens filter foreign matter from the water supply. There are two screens at the water tank fill port and two in the water spray system.
4. **Water Spray Tanks.** The water spray tanks store water to be used in the water spray system. There is a screen on top of the tank at the fill cap that acts as an initial filtering device at the tank.
5. **Check Valves.** A check valve is installed in each water tank at the end of each spray bar. The check valve regulates the water pressure in the spray bar and allows excess water to flow back into the water tank.
6. **Water Spray Bars.** The spray bars distribute water to the spray nozzles. There are seven outlets on each spray bar where the spray nozzles are attached. The spray bar is adjustable to change the coverage of water to the drums.
7. **Water Spray Nozzles.** The water spray nozzles spray water in a fan pattern onto the drums. The nozzles are made of polyethylene and brass and contain a wire mesh screen to filter foreign material. There are fourteen nozzles and all are adjustable.
8. **Draincocks.** The draincocks are directional valves that allow the water spray system to be drained. There are three draincocks on the roller. One is located near each of the two water pumps and a third is located near the tie-line valve.
9. **Tie-Line Valve.** On the CB534B Roller, the tie-line valve is located in the center of the roller. The on/off valve allows the front and rear water spray systems to interact. When this valve is open, one pump can send water to both the front and rear spray bar and nozzles.
10. **Drain Nipples.** The drain nipples are located on the bottom of each water tank. Each tank can be completely drained by removing the cap assembly from the nipple.
11. **Shut Off Valves.** On the CB534B Roller, shut off valves interrupt the flow of water from the water spray tank to the water spray screen and spray pump. When turned off, water from the water tank cannot reach the rest of the system.
12. **Water Spray Control Switches.** On the CB534C Roller, the water spray control switches are toggle-type switches mounted on the operator station. The intermittent/continuous switch controls the time interval that the system sprays the water. Continuous mode sprays continuously, while the intermittent mode sprays water for fifteen seconds and stops for fifteen seconds. The drum select switch sets whether the front, rear or both pumps are activated.

WATER SPRAY SYSTEM - CONTINUED



END OF WORK PACKAGE

CHAPTER 2
TROUBLESHOOTING PROCEDURES

INTRODUCTION

1. Troubleshooting procedures in this chapter contain information you need to locate malfunctions on the CB534B and CB534C Rollers, Motorized, Vibrating Tandem Steel Drums and components.
2. Troubleshooting procedures in WP 0006 00 are located as follows:
 - a. Table 1. Engine Troubleshooting
 - b. Table 2. Electrical Troubleshooting
 - c. Table 3. Hydraulic Troubleshooting
 - d. Table 4. Steering Troubleshooting
 - e. Table 5. Propel Troubleshooting
 - f. Table 6. Vibratory System Troubleshooting
 - g. Table 7. Water Spray System Troubleshooting
3. A *Troubleshooting Symptom Index* in WP 0005 00 is provided to aid in locating a malfunction or symptom and directs you to the appropriate troubleshooting procedure in WP 0006 00.
4. Troubleshooting procedures in this manual cannot provide all the answers or correct all malfunctions encountered. However, these procedures are an organized step-by-step approach to a problem, that direct tests and inspections toward the source of the problem and its successful resolution.
5. If a malfunction is not listed in the *Troubleshooting Symptom Index* in WP 0005 00, or stated tests or inspections and corrective actions do not correct the problem, notify your supervisor.
6. Before performing troubleshooting, read and follow all safety instructions found in the Warning Summary at the front of this manual.

PRELIMINARY TROUBLESHOOTING PROCEDURES

1. Before starting any specific troubleshooting procedures, perform the following:

NOTE

Fluid leaks are classified as either Class I, Class II or Class III.

Class I: Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

Class II: Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being checked/inspected.

Class III: Leakage of fluid great enough to form drops that fall from item being checked/inspected.

- a. Visually check for ruptured fluid hoses or tubes and for Class II or Class III leaks.
 - b. Check for mechanical jamming or binding caused by rocks or other foreign matter.
 - c. Check fluid levels in subject area and service as required (TM 5-3895-379-10 or WP 0008 00 and WP 0009 00 in this manual).
2. Ensure all applicable Operator Troubleshooting has been performed before proceeding.

EXPLANATION OF TROUBLESHOOTING TABLE COLUMNS

The columns in troubleshooting tables are defined as follows:

1. **MALFUNCTION**. Indicates fault that has occurred in system/equipment.
2. **TEST OR INSPECTION**. Indicates test or inspection to be performed to isolate probable cause for fault symptom.
3. **CORRECTIVE ACTION**. Indicates procedure to correct the problem.

ELECTRICAL TROUBLESHOOTING--GENERAL INFORMATION**NOTE**

Refer to *Electrical General Maintenance Instructions* (WP 0213 00) for instructions on using a multimeter to check for continuity or shorts and to perform voltage checks. Analyze the symptoms and conditions and use common sense and logic to determine the most likely cause for the problem, then troubleshoot that circuit first. The more information you have concerning the problem, the easier it will be to troubleshoot.

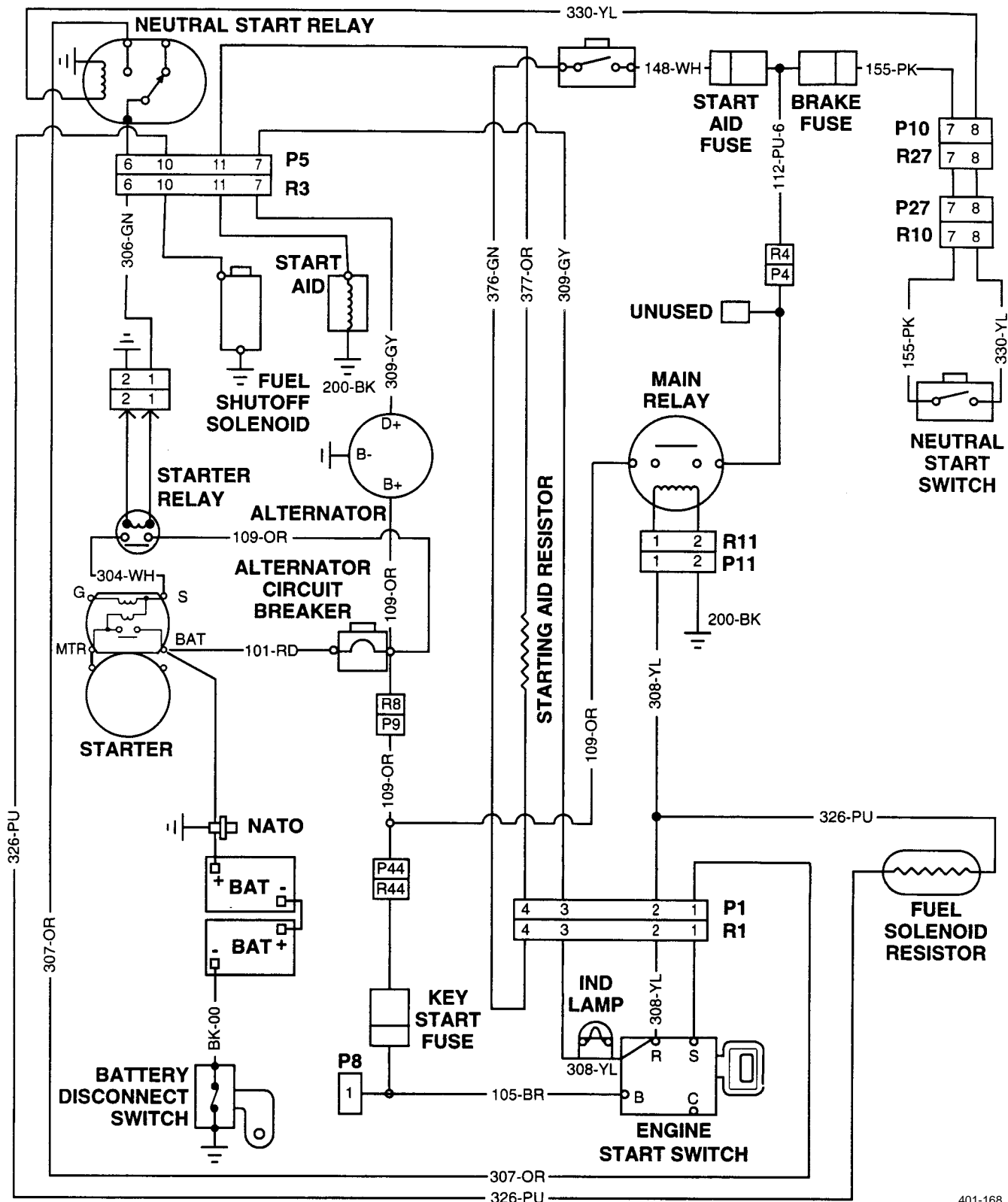
4. Isolate to the subsystem level (in cases where more than one subsystem is involved); next isolate the problem to a single circuit within the subsystem; then, isolate the problem to the faulty component using the troubleshooting symptom index (WP 0005 00).
5. Frayed, broken, loose or corroded wiring is a common source of problems in any electrical circuit. Always make visual inspection before starting detailed troubleshooting. Pay particular attention to contacts to ground and components with case grounds.

CAUTION

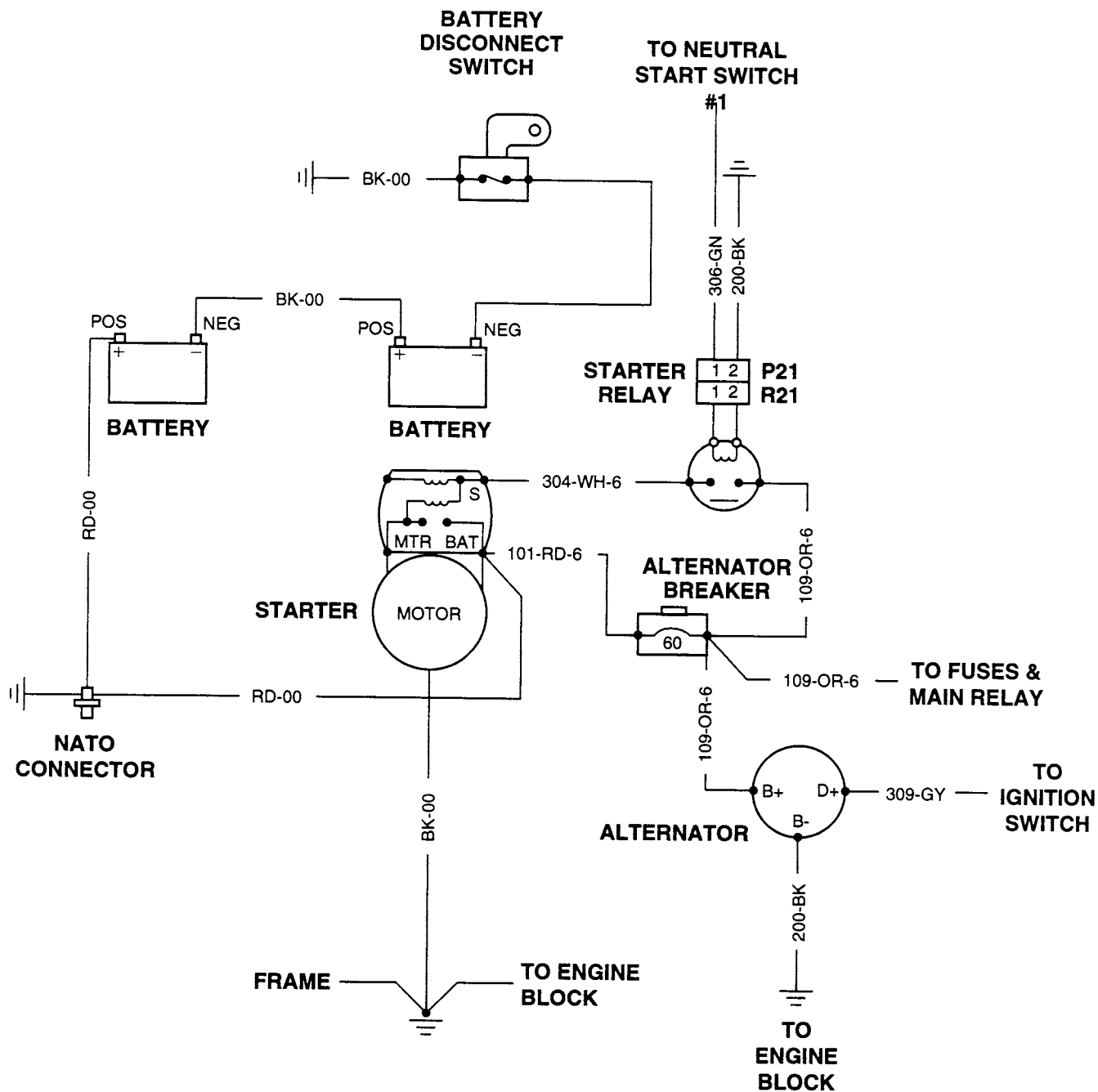
When making continuity checks, make sure the test equipment is isolated from power source or damage to multimeter will occur.

6. Most of checks made are voltage checks. Pay particular attention to voltages being checked in procedures. This equipment is a 24 volt system. Instructions prior to the step instruct to disconnect at test point from the potential malfunctioning component. Once the check has been made, either repair the component or go to the referenced step. If going to another step, reconnect connection or do as otherwise instructed, such as install jumper wires using jumper wire kit. When ready to make the prescribed check, apply power to the circuit (if required). A helper may be required if the switch or power source is out of reach. Release the power function prior to going on, to avoid damage to equipment.
7. Refer to the following simplified electrical schematics when performing electrical troubleshooting.

ELECTRICAL TROUBLESHOOTING - GENERAL INFORMATION - CONTINUED



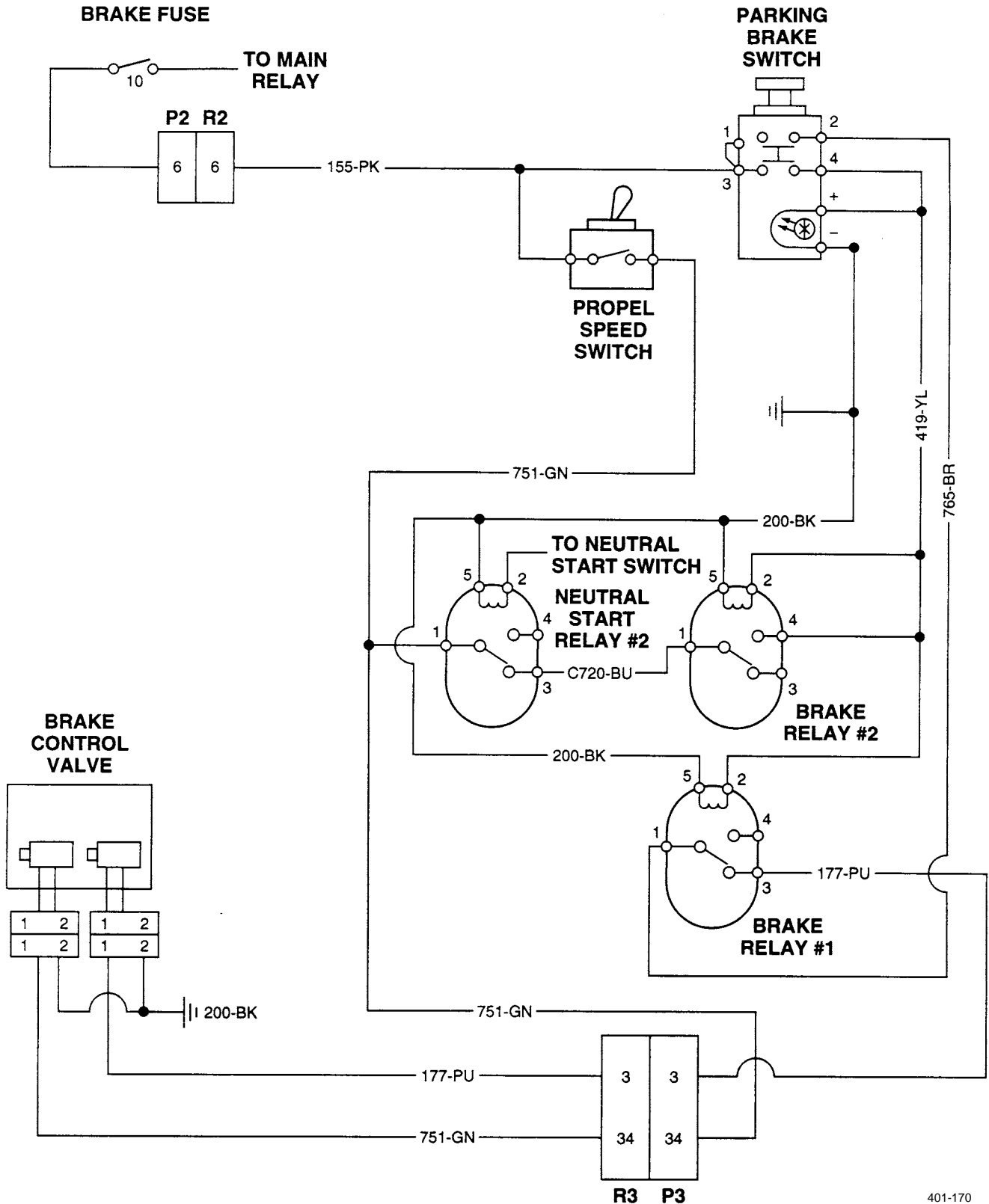
ELECTRICAL TROUBLESHOOTING - GENERAL INFORMATION - CONTINUED



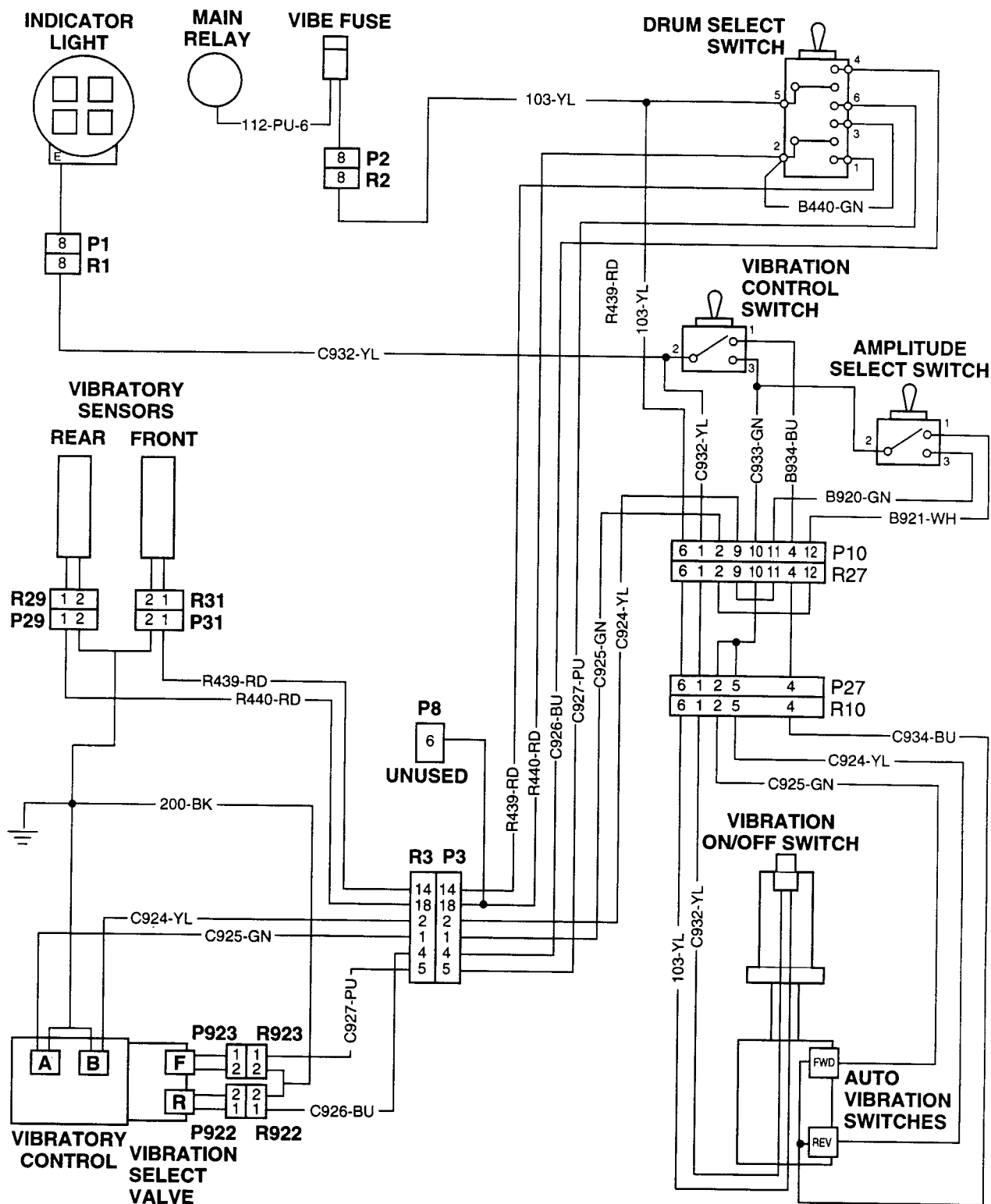
401-169

ELECTRICAL TROUBLESHOOTING--GENERAL INFORMATION - CONTINUED

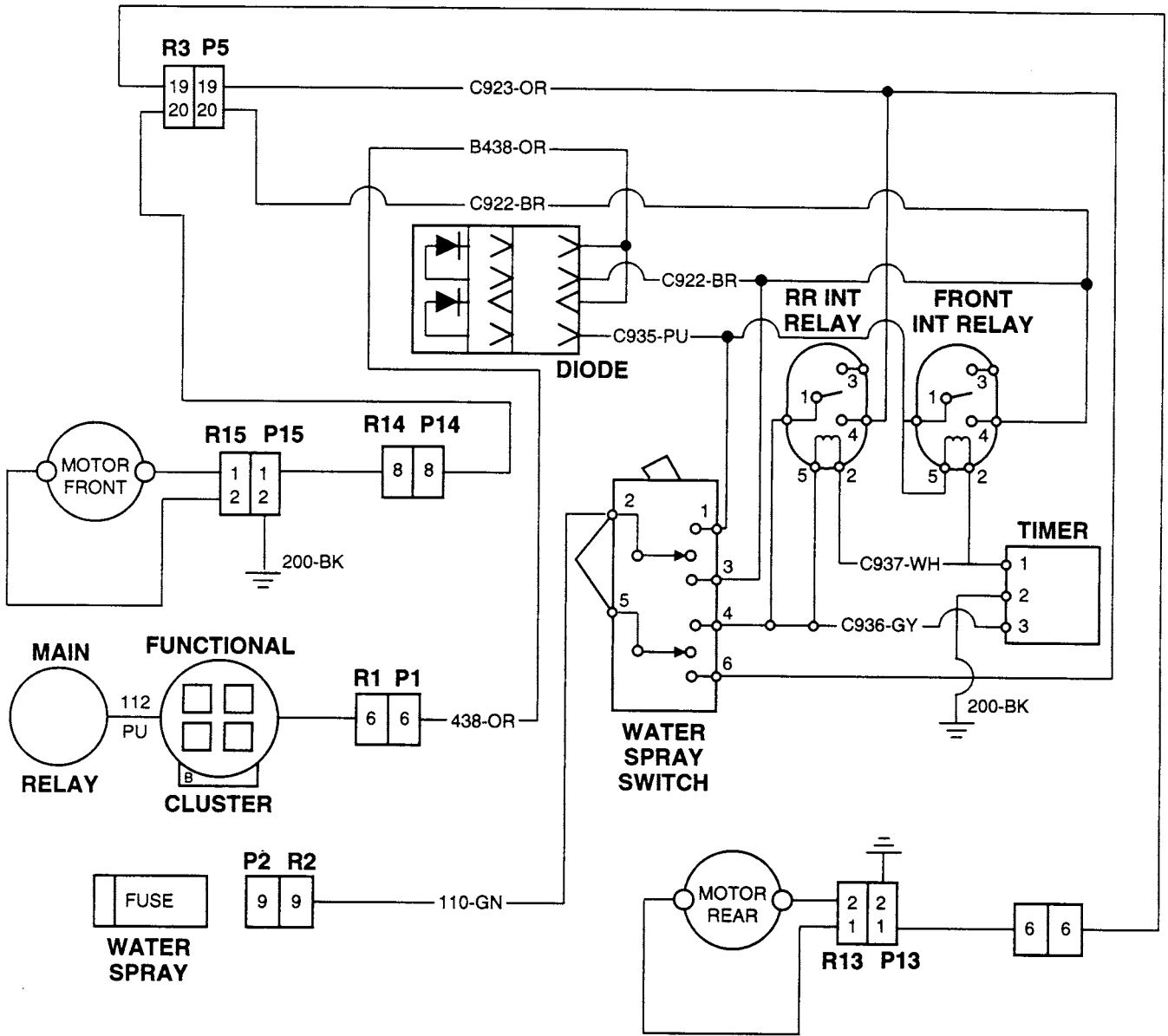
BRAKE FUSE



ELECTRICAL TROUBLESHOOTING--GENERAL INFORMATION - CONTINUED

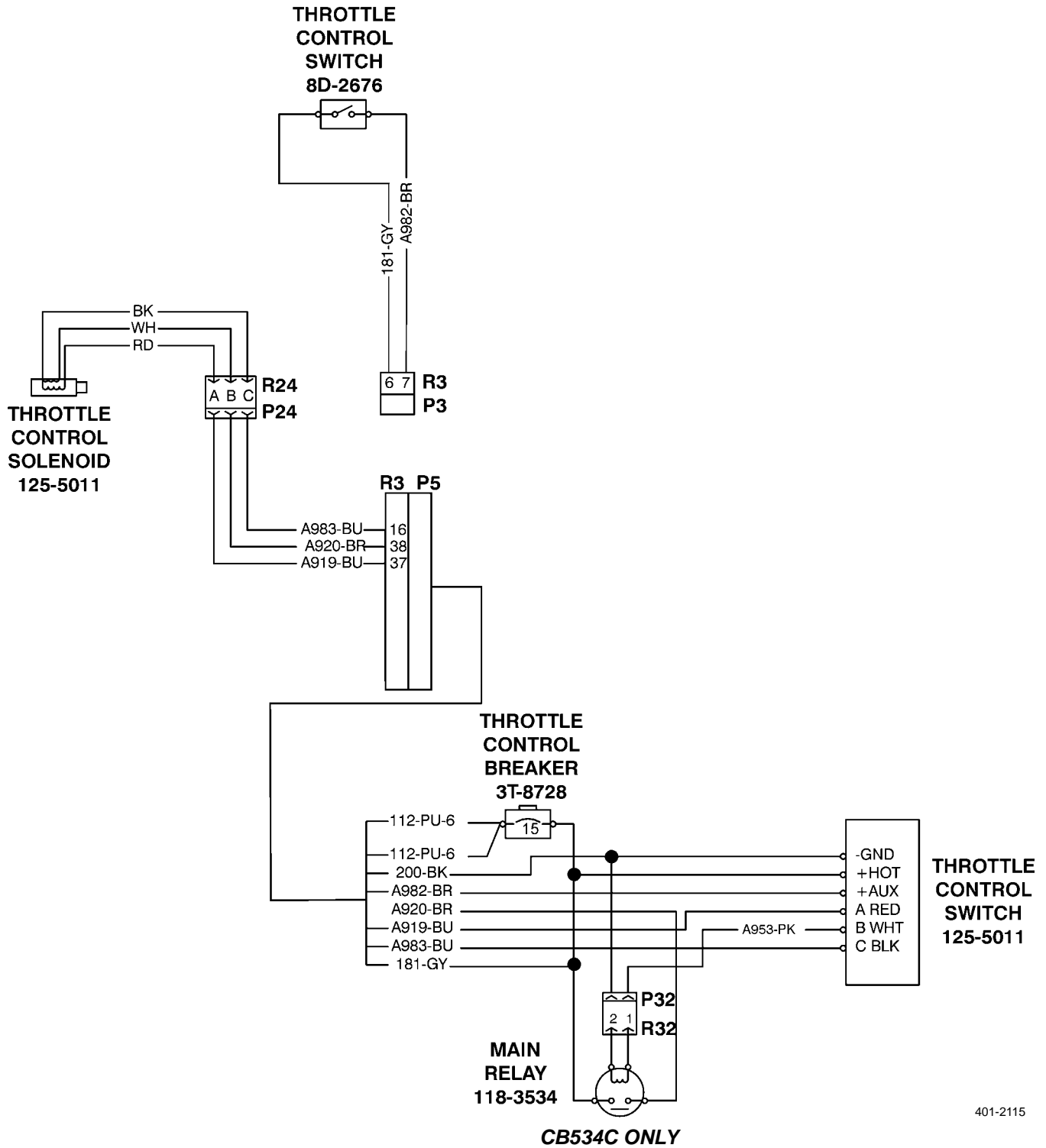


ELECTRICAL TROUBLESHOOTING--GENERAL INFORMATION - CONTINUED



401-172

ELECTRICAL TROUBLESHOOTING--GENERAL INFORMATION - CONTINUED



END OF WORK PACKAGE

Malfunction/Symptom Troubleshooting Procedure Page

ENGINE

Coolant in Engine Oil/Engine Oil in Coolant 0006 00-16

Engine Cranks But Will Not Start or is Hard to Start 0006 00-2

Engine Exhaust Smokes Excessively (Black or Gray Smoke) 0006 00-18

Engine Exhaust Smokes Excessively (White or Blue Smoke) 0006 00-20

Engine is Sluggish 0006 00-12

Engine is Unusually Noisy 0006 00-31

Engine is Using More Fuel Than Usual 0006 00-35

Engine is Using More Oil Than Usual 0006 00-35

Engine Misfires or Idles Rough 0006 00-25

Engine Oil Pressure is Low (Warning Light and Warning Horn On) 0006 00-28

Engine Operating Temperature is Too High (Warning Light and Warning Horn On) 0006 00-38

Engine Starts But Will Not Keep Running 0006 00-9

Engine Surges (Speed Changes) 0006 00-34

Engine Vibrates Excessively 0006 00-43

Engine Will Not Stop Running 0006 00-45

Oil Leaking From Exhaust 0006 00-17

Throttle Control Will Not Change Engine Speed 0006 00-37

ELECTRICAL SYSTEM

Alternator Indicator is On 0006 00-76

Alternator is Noisy 0006 00-79

Backup Alarm Does Not Work 0006 00-74

Feet Per Minute (FPM) Meter Does Not Work 0006 00-90

Fuel Gauge Does Not Work 0006 00-85

Horn Does Not Work 0006 00-83

No Power to Accessories with the Engine Running 0006 00-91

Roller Has No Electrical Power 0006 00-46

Starter Continues to Run After Engine Start Switch Key is Released 0006 00-62

Starter Does Not Turn or Turns Slowly 0006 00-53

Starter Turns, But Does Not Crank Engine 0006 00-61

Starting Aid Switch Does Not Work 0006 00-72

Vibrations Per Minute (VPM) Tachometer Does Not Work 0006 00-88

Warning and Indicator Lights Do Not Operate 0006 00-64

Work Lights and Gauge Lights Do Not Operate 0006 00-81

HYDRAULIC SYSTEM

Hydraulic Oil Pressure is Low (Warning Light and Warning Horn On) 0006 00-94

Hydraulic Oil Temperature is High (Warning Light and Warning Horn On) 0006 00-93

Malfunction/Symptom

Troubleshooting Procedure Page

STEERING SYSTEM

Power Steering Pump Makes Noise and Steering Cylinder Rods Do Not Move Smoothly 0006 00-95
 Roller Does Not Turn When Steering Wheel is Turned 0006 00-95
 Roller Turns Slowly in Both Directions 0006 00-95
 Too Much Force is Needed to Turn Steering Wheel 0006 00-95

PROPEL SYSTEM

Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up 0006 00-99
 Parking Brake Does Not Engage When Parking Brake Switch is Pushed Down 0006 00-104
 Propel Motor is Noisy 0006 00-104
 Propel Motor Leaks Oil 0006 00-104
 Propel System Does Not Change Speeds When Propel Speed Switch is Moved 0006 00-97
 Propel System Engages Very Quickly When Making a Shift 0006 00-96
 Propel System Engages Very Slowly When Making a Shift 0006 00-96
 Propel System Operates in Forward Speeds Only 0006 00-96
 Propel System Operates in Reverse Speeds Only 0006 00-96
 Roller Will Not Move When Propel Control Lever is Operated 0006 00-96

VIBRATORY SYSTEM

Noisy Vibrator Motor 0006 00-105
 Vibration Does Not Occur While Amplitude Select Switch is Set to High Pitch 0006 00-116
 Vibration Does Not Occur While Amplitude Select Switch is Set to Low Pitch 0006 00-119
 Vibration Does Not Stop When Travel Stops 0006 00-111
 Vibration Does Not Work in Forward or Reverse Travel 0006 00-105
 Vibration Frequency Start-up is Slow, Time Lag After Travel Starts is Excessive 0006 00-105
 Vibration Occurs in Only One Drum 0006 00-122
 Vibration Only Occurs While Vibration Control Switch is Set to Automatic Mode 0006 00-113
 Vibration Only Occurs While Vibration Control Switch is Set to Manual Mode 0006 00-111
 Vibration Stops Too Soon Before Travel Stops 0006 00-111
 Vibratory System Engages Harshly 0006 00-111

WATER SPRAY SYSTEM

No Spray at Either Drum When Water Spray Switch is in Intermittent Spray Position 0006 00-127
 Nozzle Spray Pattern is Inconsistent 0006 00-137
 Spray Does Not Occur in Either Drum When Water Spray Switch is in Continuous Spray Position 0006 00-125
 Water Consumption Unequal Between Tanks 0006 00-134
 Water Spray Occurs On One Drum Only 0006 00-131
 Water Spray Pressure is Low 0006 00-133

END OF WORK PACKAGE

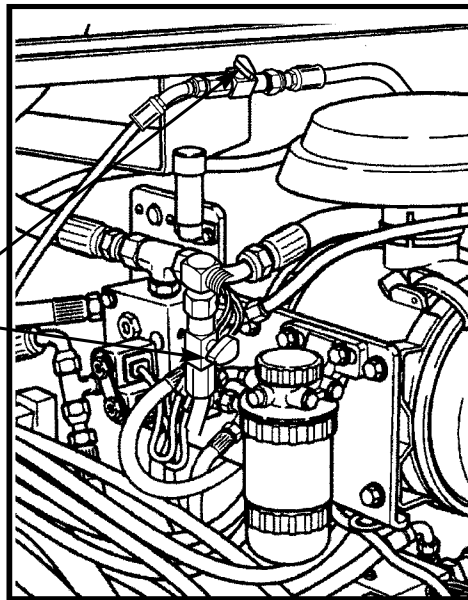
Table 1. Engine Troubleshooting Procedures.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	<div> </div> <div> <p>WARNING</p> </div> <div> <ul style="list-style-type: none"> • Use caution when working under operator platform assembly. Falling platform may cause injury or death. • There is no clearance for personnel between frame and yoke when roller turns. Injury or death from crushing could occur. • Steering frame must be locked before lifting, transporting or servicing roller in articulation area with engine running. Failure to follow this warning may cause injury or death from crushing. • Unlock steering frame before operation to prevent loss of steering. Failure to follow this warning may cause injury or death. • When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing, or hands can get caught and cause injury. </div> <div> <p>NOTE</p> </div> <div> <p>Fuel shutoff valves may be seen without raising operator platform with use of a flashlight.</p> </div>	

Table 1. Engine Troubleshooting Procedures - Continued.

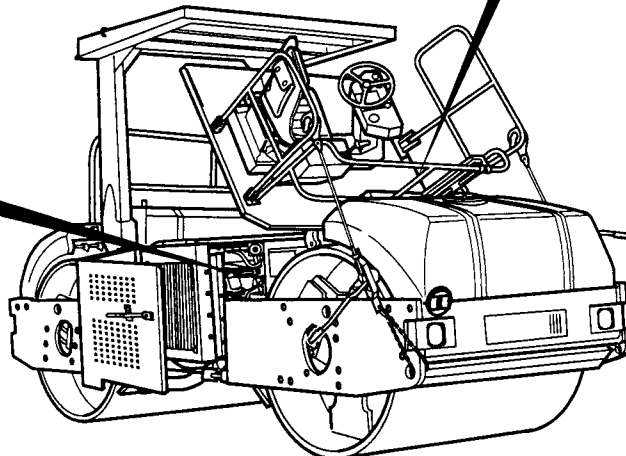
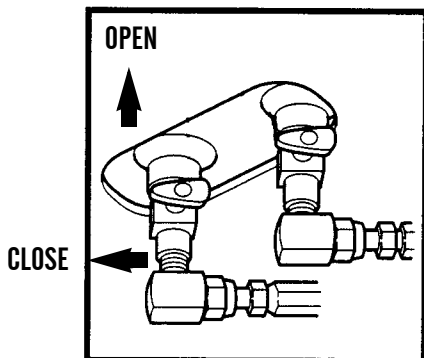
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start.</p>	<p>1. Open right-side door for CB534B Roller and left-side door for CB534C Roller (TM 5-3895-379-10). Check that fuel shutoff valves are in open position.</p>	<p>1. If valves are in closed position, raise operator platform (WP 0128 00), and open fuel shutoff valves. Lower operator platform (WP 0128 00). 2. If fuel shutoff valves are in open position, prime fuel system (WP 0041 00). If symptom persists, go to step 2.</p>

VALVES SHOWN IN CLOSED POSITION





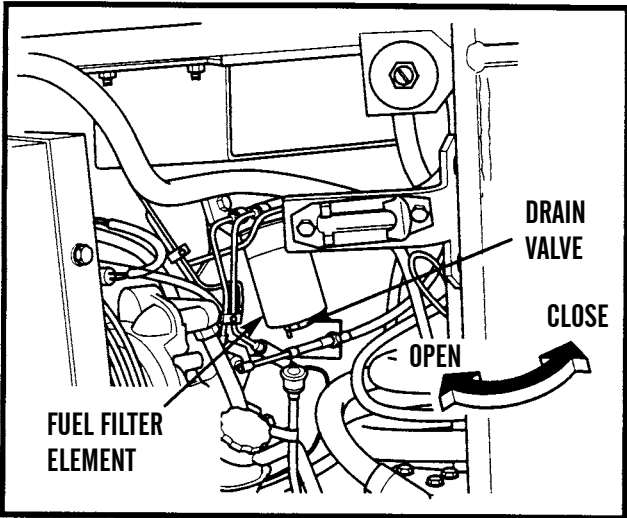
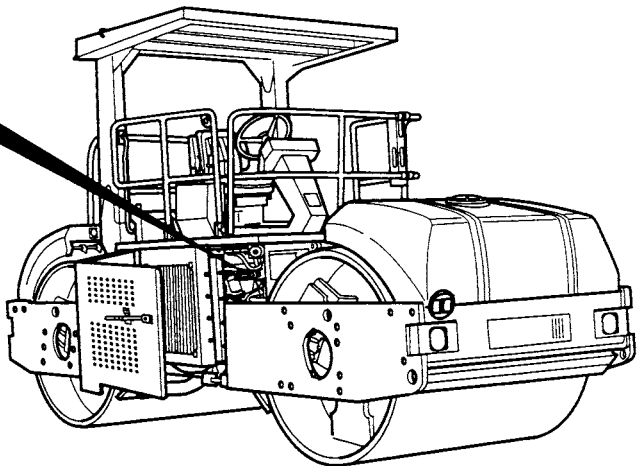
CB534C ROLLER

CB534B ROLLER



401-2161

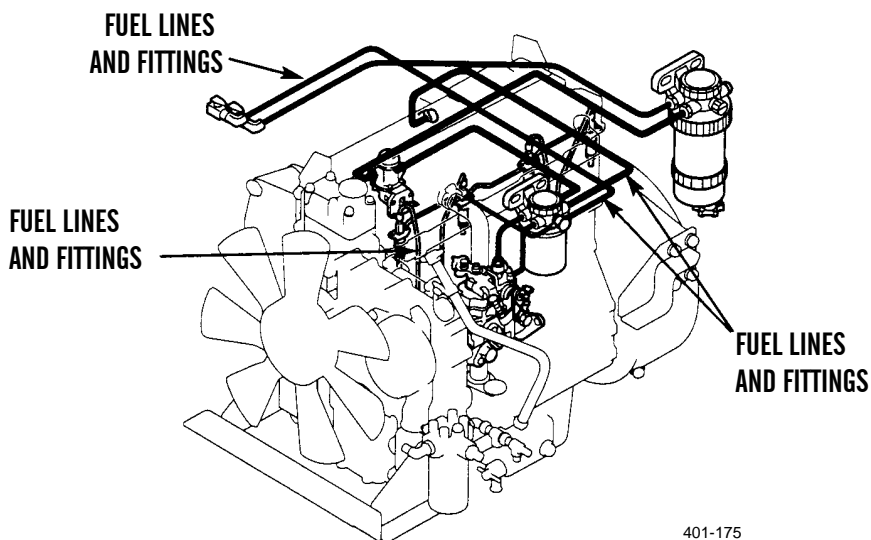
Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p> <ul style="list-style-type: none"> DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p>NOTE</p> <p>Use container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned.</p> </div>  </div> <p>2. Check fuel filter for contaminated fuel. Place container under fuel filter element. Open drain valve on bottom of fuel filter and collect sample in container. Close drain valve.</p>	<p>1. If fuel is contaminated, drain and flush the fuel tank (WP 0037 00). Replace fuel filter element (WP 0040 00) and fuel/water separator element (WP 0042 00). Dispose of drained fluids in accordance with local regulations.</p> <p>2. If fuel is not contaminated, go to Step 3.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  </div> </div>		

401-174

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<p>3. Open left-side door assembly (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears and restrictions.</p>	<p>1. If fuel injector lines or fittings are loose or damaged, Tighten or replace (WP 0175 00 or WP 0176 00).</p> <p>2. If fuel lines or fittings (other than fuel injector) are loose, tighten. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00 or WP 0030 00).</p> <p>3. If fuel lines or fittings are not loose or damaged, go to Step 4.</p>



401-175

<p>4. Check fuel lift pump filter on inlet side of fuel injection pump for obstruction and damage.</p>	<p>Replace filter if obstructed or damaged (WP 0028 00).</p>
--	--

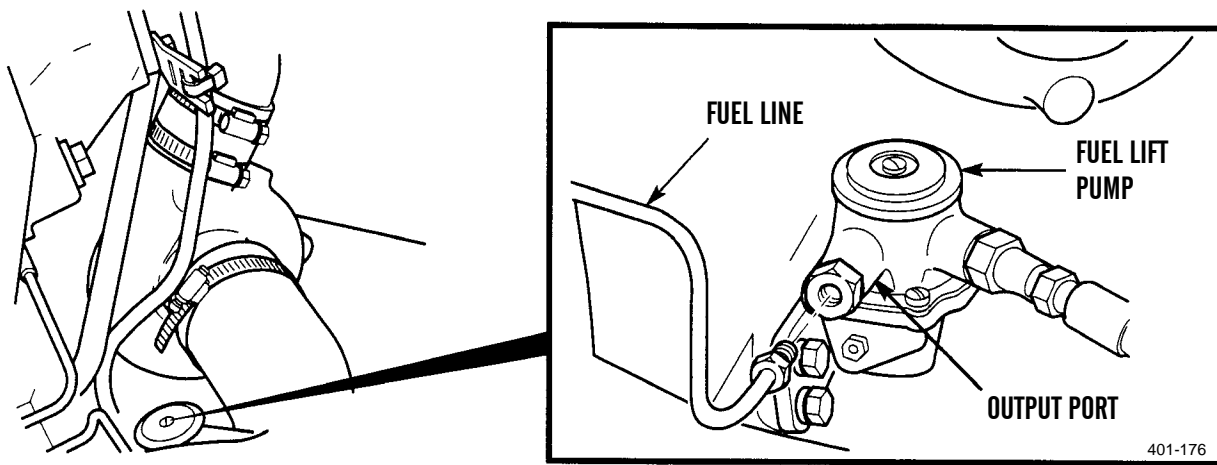


Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<p>5. Check fuel lift pump pressure. Remove fuel line from output port of fuel lift pump (WP 0028 00). Attach pressure gauge to output port of fuel lift pump. Turn battery disconnect switch to ON position and lock steering frame (TM 5-3895-379-10). Have assistant crank engine for 10 seconds. Observe pressure gauge. Note highest indication on pressure gauge. Normal pressure is 6-10 psi (40-70 kPa). Minimum pressure is 4.5 psi (30 kPa). Turn engine start switch to OFF position (TM 5-3895-379-10). Observe amount of time for maximum pressure noted during cranking to drop by one half. Time should be greater than 30 seconds. Remove pressure gauge from fuel lift pump.</p>	<p>1. If fuel lift pump outlet pressure is below 4.5 psi (30 kPa), replace fuel lift pump (WP 0028 00).</p> <p>2. If time for maximum pressure (noted during cranking) to drop by one half is less than 30 seconds, replace fuel lift pump (WP 0028 00).</p> <p>3. If fuel lift pump pressure checks are OK, install fuel line on fuel lift pump (WP 0028 00) and go to Step 6.</p>

Table 1. Engine Troubleshooting Procedures - Continued.

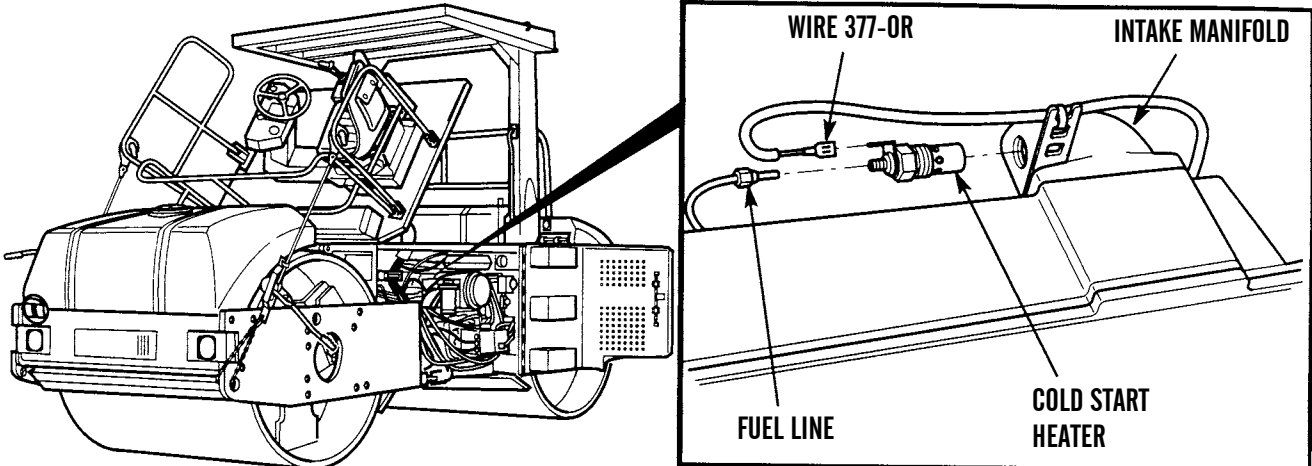
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<p>NOTE</p> <p>Cold start heater is used only when ambient temperatures are below 32°F (0°C). If cold start heater was not operated when malfunction was noted, skip Steps 2 through 5. Notify Direct Support Maintenance that engine exhaust smokes excessively (too much black or gray smoke).</p> <p>6. Check cold start heater operation. Turn battery disconnect switch ON. Turn engine start switch and starting aid switch to ON positions for not more than 20 seconds. Turn engine start switch and starting aid switch to OFF position. Check cold start heater and area of intake manifold around cold start heater for warmth.</p>	<p>1. If cold start heater and area of inlet manifold around cold start heater are not warm, turn battery disconnect switch OFF. Close left and right-side door assemblies. Fault not corrected, notify Field Support Maintenance that engine cranks but will not start or is hard to start.</p> <p>2. If cold start heater and area of intake manifold around cold start heater are warm, turn battery disconnect switch OFF. Go to Step 6.</p>
<div style="display: flex; align-items: center;">  </div> <p style="text-align: right; font-size: small;">401-177</p>		

Table 1. Engine Troubleshooting Procedures - Continued.




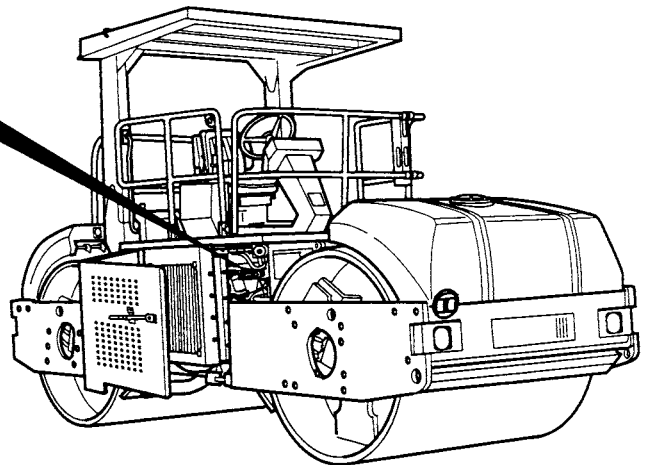
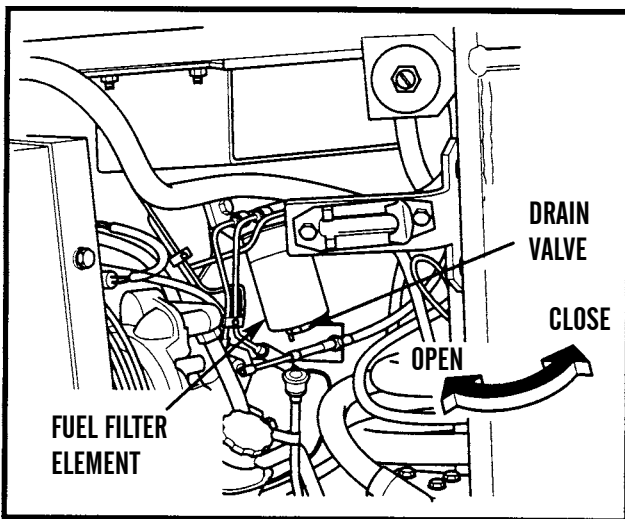
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> </div> <p>7. Check power to cold start heater. Raise operator platform (WP 0128 00). Have assistant turn engine start switch and starting air switch to ON positions. Touch positive (+) probe of multimeter to wire 377-OR and the negative (-) probe of the multimeter to engine block.</p>	<p>1. If less than 12 - 14 Vdc are measured at wire 377-OR, turn battery disconnect switch OFF. Lower operator platform (WP 0128 00). Turn engine start switch to OFF position (TM 5-3895-379-10). Go to Electrical Malfunction No. 6, <i>Starting Aid Switch Does Not Work</i>.</p> <p>2. If more than 14 Vdc are measured at wire 377-OR, starting aid resistor and cold start heater are damaged. Turn battery disconnect switch to OFF position. Lower operator platform (WP 0128 00). Turn engine start switch to OFF position (TM 5-3895-379-10). Replace cold start heater (WP 0043 00) and starting aid resistor (WP 0087 00).</p> <p>3. If 12 - 14 Vdc are measured at wire 377-OR, go to Step 8.</p>

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Engine Cranks But Will Not Start or is Hard to Start - Continued.</p>	<p>8. Check current draw of cold start heater. Attach clamp-on ammeter to wire 377-OR. Have assistant turn engine start switch and starting aid switch to ON positions. The current draw should be 16-18 amperes at 12 volts. Turn engine start switch to OFF position and turn battery disconnect switch to OFF position (TM 5-3895-379-10).</p> <div style="text-align: center;"> </div> <p>WARNING</p> <p>Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.</p> <p>9. Check cold start heater for leakage. Remove fuel line and cold start heater from inlet manifold (WP 0025 00). Connect an air supply with maximum 20 psi (140 kPa) to the fuel inlet passage of cold start heater. Submerge cold start heater in a container of clean diesel fuel for 10 seconds. No air bubbles should be visible from the cold start heater.</p>	<p>1. If current draw is more than 18 or less than 16 amperes, replace cold start heater (WP 0043 00) with a new one. Close left and right-side door assemblies.</p> <p>2. If current draw is between 18-16 amperes, remove clamp-on ammeter and go to Step 9.</p> <p>If bubbles are visible from the cold start heater, replace cold start heater (WP 0043 00).</p>

Table 1. Engine Troubleshooting Procedures - Continued.

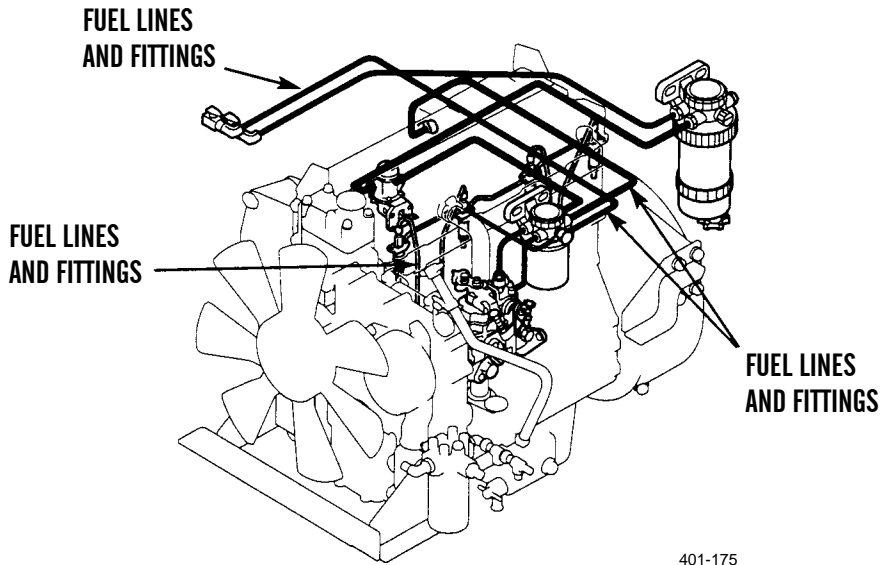
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Engine Starts But Will Not Keep Running.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p>  </div> </div> <ul style="list-style-type: none"> DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p style="text-align: center;">NOTE</p> <p>Use container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned.</p>	<ol style="list-style-type: none"> 1. Check fuel filter and fuel/water separator for contaminated sediment or fuel. Open right-side door assembly (TM 5-3895-379-10). Place container under fuel filter element. Open drain valve on bottom of fuel filter, and collect sample in container. Close drain valve. 1. If fuel is not clear but is cloudy, showing evidence of contamination, drain and flush the fuel tank (WP 0037 00). Replace fuel filter element (WP 0040 00) and fuel/water separator element (WP 0042 00). 2. If fuel is not contaminated, go to Step 2.



401-174


Table 1. Engine Troubleshooting Procedures - Continued.

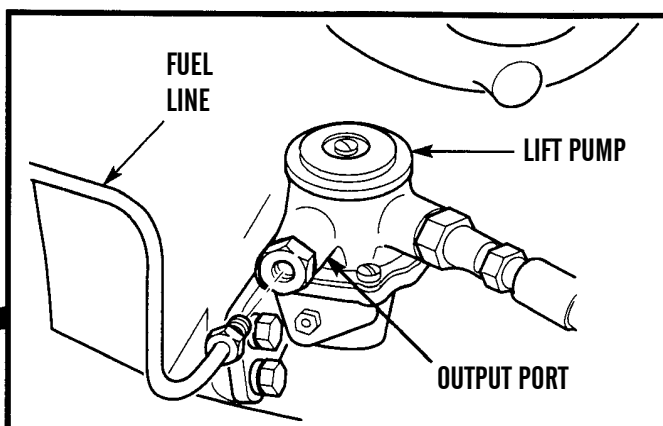
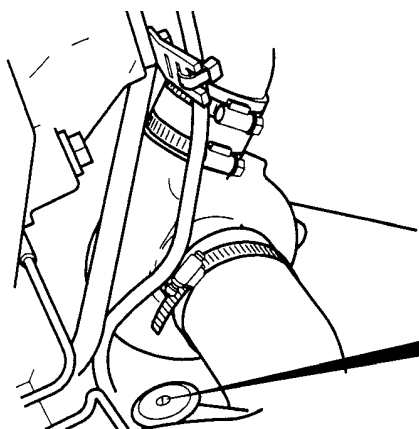
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Engine Starts But Will Not Keep Running - Continued.</p>	<p>2. Open left-side door assembly (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p> <p>3. Remove muffler and exhaust system (WP 0048 00) and inspect for restrictions such as bent or torn pipes and blocked muffler.</p>	<p>If fuel lines or fittings are loose, tighten fuel lines or fittings. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p> <p>1. If muffler and exhaust system are restricted, remove restriction. Replace any damaged parts. Install or replace exhaust system (WP 0048 00).</p> <p>2. If muffler and exhaust system are not restricted, install muffler and exhaust system (WP 0048 00). Go to Step 4.</p>



401-175



Table 1. Engine Troubleshooting Procedures - Continued.

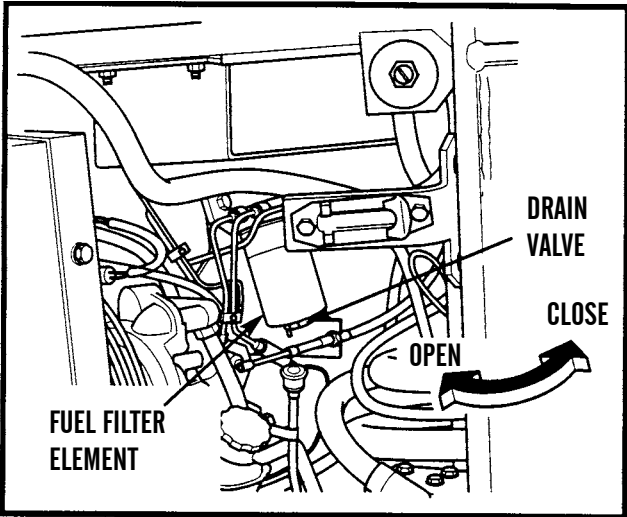
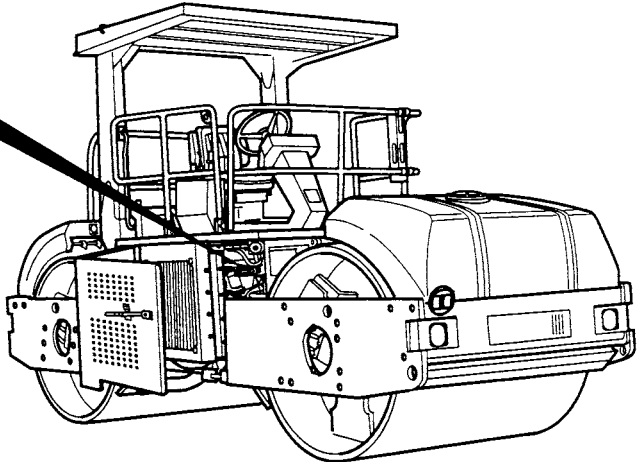
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Engine Starts But Will Not Keep Running - Continued.</p>	<div style="text-align: center;">  <p>WARNING</p> <ul style="list-style-type: none"> • There is no clearance for personnel between frame and yoke when roller turns. Injury or death from crushing could occur. • Steering frame must be locked before lifting, transporting or servicing roller in articulation area with engine running. Failure to follow this warning may cause injury or death from crushing. • Unlock steering frame before operation to prevent loss of steering. Failure to follow this warning may cause injury or death. • When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing, or hands can get caught and cause injury. </div> <p>4. Check fuel lift pump pressure. Remove fuel line from output port of fuel lift pump (WP 0028 00). Attach a pressure gauge to output port of fuel lift pump. Turn on battery disconnect switch and lock steering frame. Have an assistant crank engine for 10 seconds. Observe pressure gauge. Note highest indication on pressure gauge. Normal pressure is 6 - 10 psi (40 - 70 kPa). Minimum pressure is 4.5 psi (30 kPa). Turn engine start switch OFF. Observe amount of time for maximum pressure noted during cranking to drop by one half. Time should be greater than 30 seconds. Remove pressure gauge from fuel lift pump.</p>	<ol style="list-style-type: none"> 1. If fuel pump outlet pressure is below 4.5 psi (30 kPa), replace fuel lift pump (WP 0028 00). 2. If time for maximum pressure noted during cranking to drop by one half is less than 30 seconds, replace fuel lift pump (WP 0028 00).



401-176

Table 1. Engine Troubleshooting Procedures - Continued.

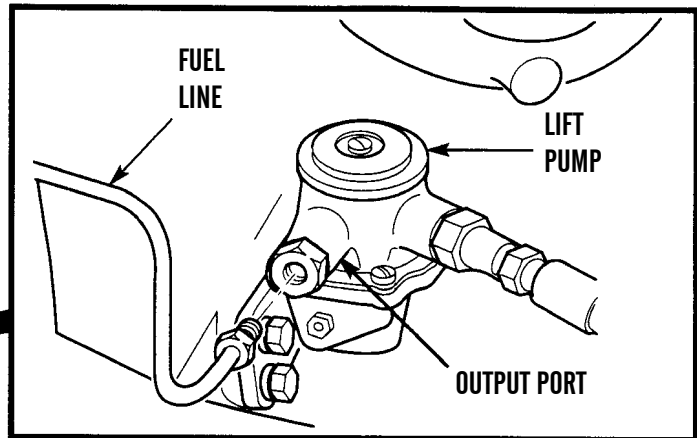
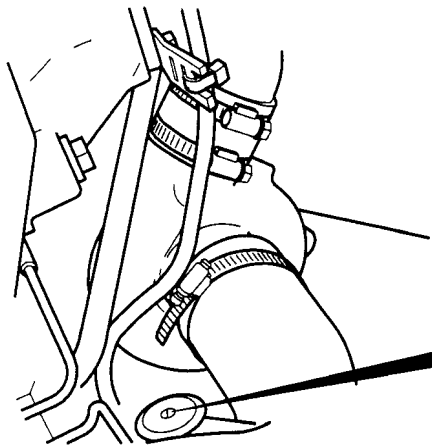
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Engine is Sluggish.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p> <ul style="list-style-type: none"> DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p>NOTE</p> <p>Use a container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned.</p> </div>  </div> <ol style="list-style-type: none"> 1. Check fuel filter for contaminated fuel. Open right-side door assembly (TM 5-3895-379-10). Place container under fuel filter element. Open drain valve on bottom of fuel filter and collect sample in container. Close drain valve. 	<ol style="list-style-type: none"> 1. If fuel is contaminated, drain and flush fuel tank (WP 0037 00). Replace fuel filter element (WP 0040 00) and fuel/water separator element (WP 0042 00). 2. If fuel is not contaminated, go to Step 2.

401-174

Table 1. Engine Troubleshooting Procedures - Continued.

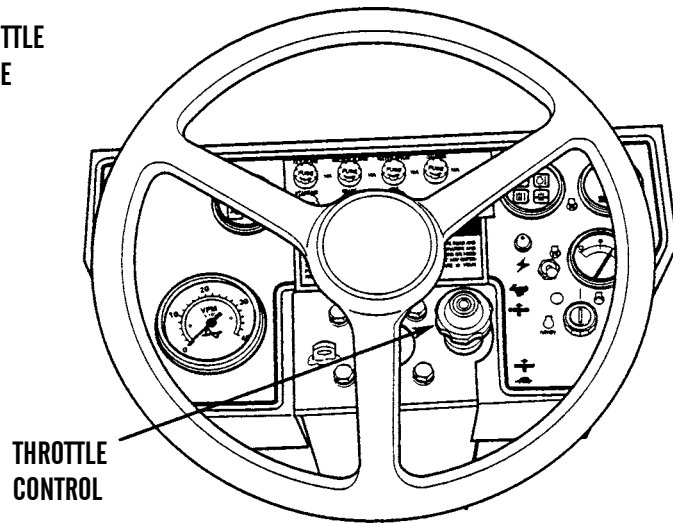
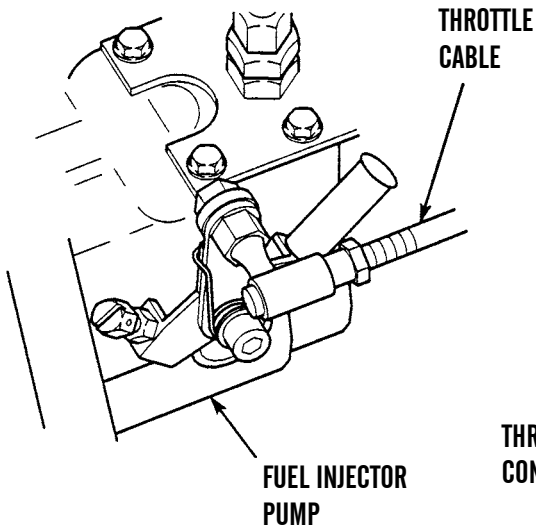
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Engine is Sluggish - Continued.</p>	<p>2. Open left-side door assembly (TM 5-3895-379-10). Check fuel lines and fittings for looseness and damage such as kinks, tears or restrictions.</p> <p>3. Check fuel lift pump pressure. Remove fuel line from output side of fuel lift pump (WP 0028 00). Attach pressure gauge to output side of fuel lift pump. Turn battery disconnect switch to ON position and lock steering frame (TM 5-3895-379-10). Have assistant crank engine for 10 seconds. Observe pressure gauge. Note highest indication on pressure gauge. Normal pressure is 6-10 psi (40-70 kPa). Minimum pressure is 4.5 psi (30 kPa). Turn engine start switch to OFF position. Observe amount of time for maximum pressure noted during cranking to drop by one half. Time should be greater than 30 seconds. Remove pressure gauge from fuel lift pump.</p>	<p>1. If fuel lines or fittings are loose, tighten. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p> <p>2. If fuel lines or fittings are not loose or damaged, go to Step 3.</p> <p>1. If fuel lift pump outlet pressure is below 4.5 (30 kPa), replace fuel lift pump (WP 0028 00).</p> <p>2. If time for maximum pressure noted during cranking to drop by one half is less than 30 seconds, replace fuel lift pump (WP 0028 00).</p> <p>3. If lift pump pressure checks are OK, install fuel line on fuel lift pump (WP 0028 00) and go to Step 4.</p>



401-176

Table 1. Engine Troubleshooting Procedures - Continued.

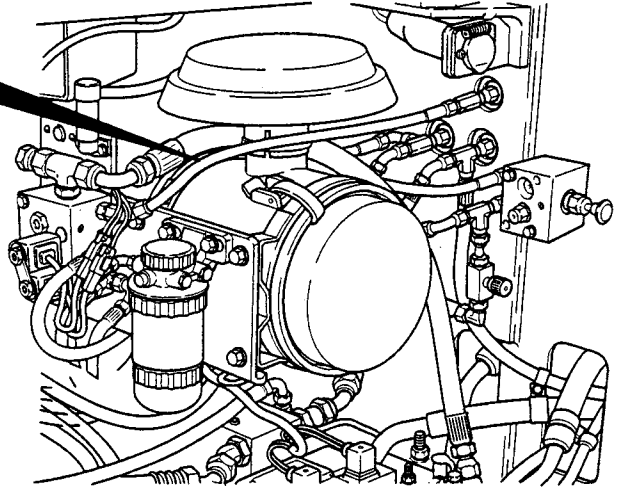
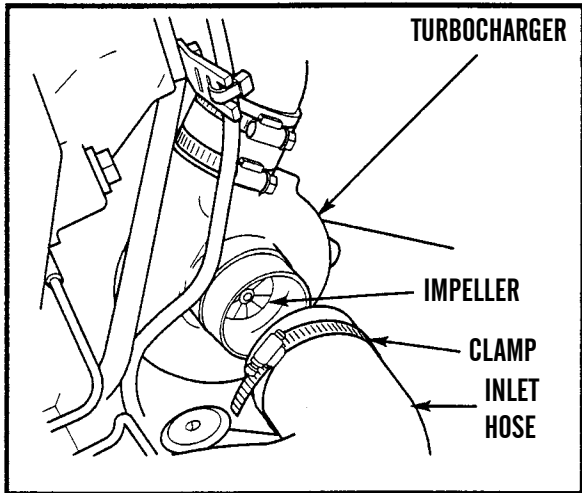
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Engine is Sluggish - Continued.</p>	<p>4. On CB534B Roller, check throttle cable for damage such as kinking, bent condition, stripped threads or broken sleeve. Check for full travel of throttle cable at fuel injection pump while assistant operates throttle control fully up and fully down. Check throttle cable adjustment (WP 0045 00).</p>	<p>1. If throttle cable is not properly adjusted, adjust linkage (WP 0045 00).</p> <p>2. If throttle cable is damaged, replace throttle cable (WP 0045 00).</p> <p>3. If throttle cable is not damaged and does require further adjustment, close right-side door assembly. Go to Step 5.</p>



401-179

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Engine is Sluggish - Continued.</p>	<p>5. Check turbocharger impeller for damage and restrictions. Loosen clamp and remove inlet hose from turbocharger. Inspect impeller for cracks. The impeller should spin freely. Measure impeller shaft play. Acceptable impeller shaft end play is 0.001-0.004 inches (0.03-0.10 mm). Acceptable impeller shaft radial play is 0.003-0.006 inches (0.08-0.15 mm).</p>	<p>1. If impeller is restricted, remove restriction. Install hose on turbocharger and tighten clamp. Close left-side door assembly (TM 5-3895-379-10).</p> <p>2. If turbocharger impeller is cracked, does not spin freely, or has too much shaft play, replace turbocharger (WP 0035 00).</p>



401-180

Table 1. Engine Troubleshooting Procedures - Continued.

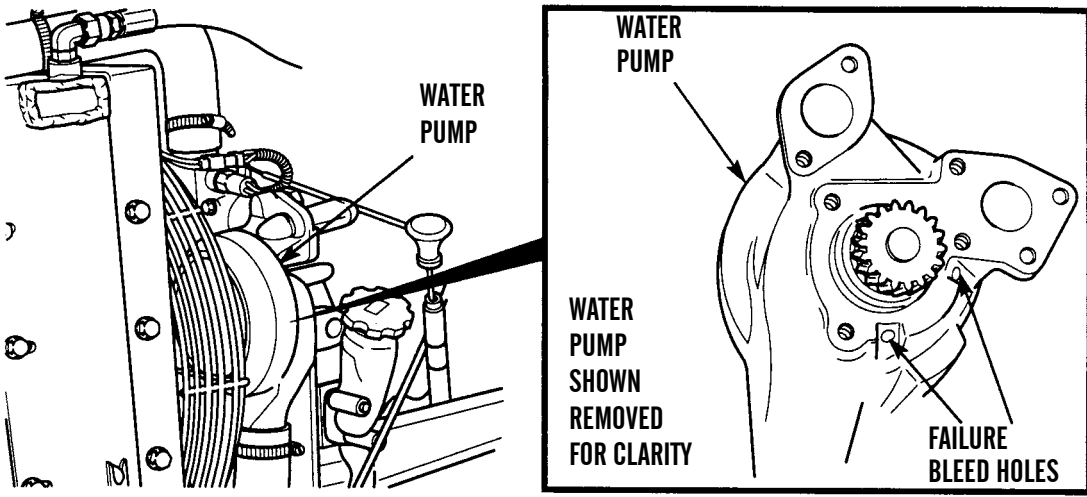
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. Coolant in Engine Oil/Engine Oil in Coolant.</p>	<p style="text-align: center;">NOTE</p> <p>Class I leakage at water pump bleed holes is normal. Any Class II or Class III leakage represents a problem with the water pump.</p> <ol style="list-style-type: none"> 1. Open right-side door assembly (TM 5-3895-379-10). Check water pump for signs of leakage (discoloration, corrosion, wetness). There are two failure bleed holes located on engine side of water pump. Check failure bleed holes for Class II and Class III leakage of engine oil or coolant. 2. Remove and inspect engine oil cooler (WP 0017 00). 	<ol style="list-style-type: none"> 1. If engine oil or coolant is leaking from either failure bleed hole or water pump shows signs of leakage, water pump has failed. Replace water pump (WP 0057 00). Change engine oil and filter (WP 0008 00 and WP 0009 00). Replace coolant system fluid (WP 0009 00). 2. If engine oil or coolant is not leaking from either failure bleed hole or water pump, go to Step 2. <p>If engine oil cooler or components are damaged, replace oil cooler or components with new parts (WP 0017 00). Change engine oil and filter (WP 0008 00 and WP 0009 00). Replace coolant system fluid (WP 0009 00).</p>
<div style="display: flex; align-items: center; justify-content: center;">  </div> <p style="text-align: right; font-size: small;">401-186</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

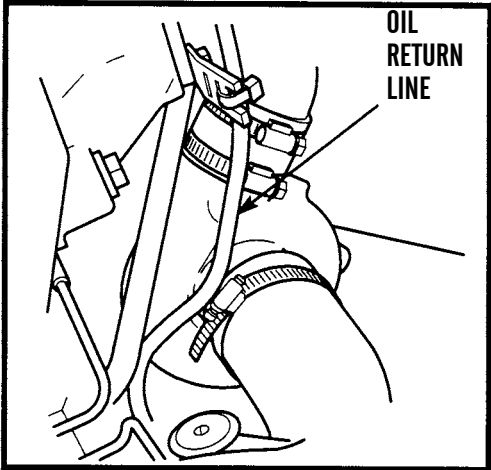
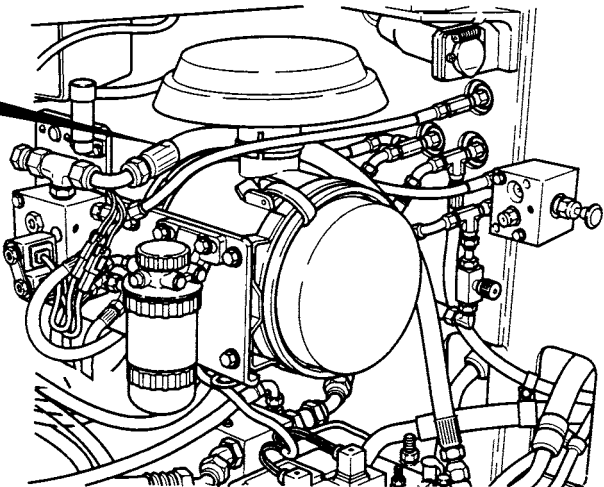
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Oil Leaking From Exhaust.</p>	<p>1. Check turbocharger impeller for damage and restrictions. Loosen clamp and remove inlet hose from turbocharger. Inspect impeller for cracks. The impeller should spin freely. Measure impeller shaft end play. Acceptable impeller shaft end play is 0.001-0.004 inches (0.03-0.10 mm). Acceptable impeller shaft radial play is 0.003-0.006 inches (0.08-0.15 mm).</p>	<p>1. If impeller is restricted, remove restriction. Install hose on turbocharger and tighten clamp. Lower operator platform (WP 0128 00).</p> <p>2. If turbocharger impeller is cracked, does not spin freely, or has too much shaft play, replace turbocharger (WP 0035 00).</p>
		<p style="text-align: right;">401-821</p>

Table 1. Engine Troubleshooting Procedures - Continued.




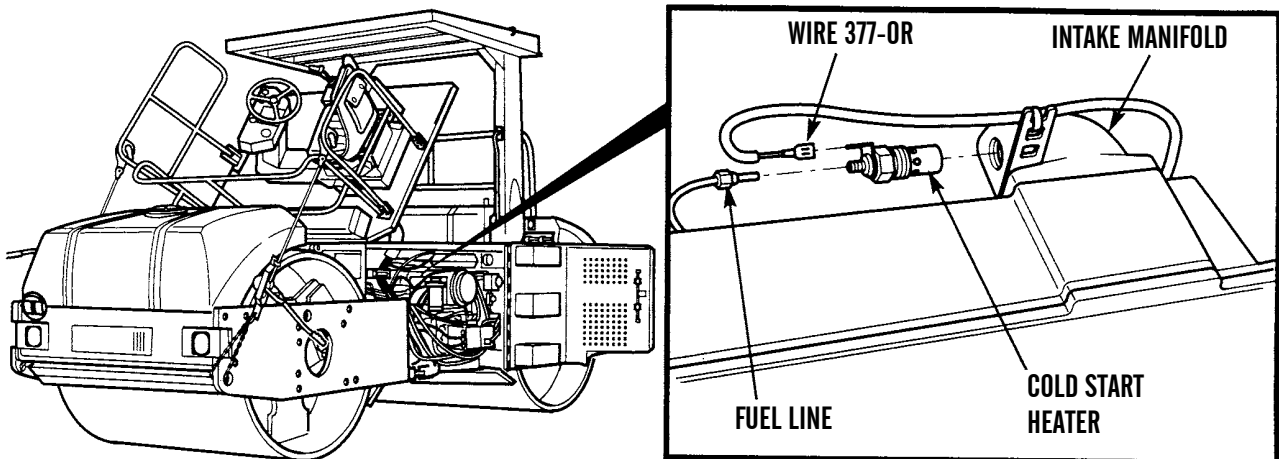
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Engine Exhaust Smokes Excessively (Black or Gray Smoke).</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1. Check turbocharger impeller for damage and restrictions. Raise operator platform (WP 0128 00). Loosen clamp and remove inlet hose from turbocharger. Inspect impeller for cracks. Impeller should spin freely. Measure impeller shaft play. Acceptable impeller shaft end play is 0.001-0.004 inches (0.03-0.10 mm). Acceptable impeller shaft radial play is 0.003-0.006 inches (0.08-0.15 mm).</p> </div> <div style="width: 45%;"> <p>1. If impeller is restricted, remove restriction. Install hose on turbocharger and tighten clamp. Lower operator platform (WP 0128 00).</p> <p>2. If turbocharger impeller is cracked, does not spin freely or has too much shaft play, replace turbocharger (WP 0035 00).</p> <p>3. If impeller is not damaged or restricted, install inlet hose on turbocharger and tighten clamp. Go to Step 2.</p> </div> </div> <div style="text-align: center; margin-top: 20px;"> <div style="display: flex; justify-content: space-around;">  <p>WARNING</p>  </div> <ul style="list-style-type: none"> • DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. • Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. • Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. </div> <div style="text-align: center; margin-top: 20px;"> <p>NOTE</p> <p>Cold start heater is used only when ambient temperatures are below 32°F (0°C). If cold start heater was not operated when malfunction was noted, skip tests 2 through 5. Notify Direct Support Maintenance.</p> </div>	

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Engine Exhaust Smokes Excessively (Black or Gray Smoke) - Continued.</p>	<ol style="list-style-type: none"> 1. Check cold start heater operation. Turn battery disconnect switch, engine start switch, and starting aid switch to ON positions for not more than 20 seconds. Turn engine start switch and starting aid switch to OFF position. Check cold start heater and area of intake manifold around cold start heater for warmth. 2. Check electrical input to cold start heater. Have assistant turn engine start switch and starting aid switch to ON positions (TM 5-3895-379-10). Touch positive (+) probe of multimeter to wire 377-OR and the negative (-) probe of the multimeter to engine block. 	<ol style="list-style-type: none"> 1. If cold start heater and area of intake manifold around cold start heater are warm, turn battery disconnect switch to OFF position. 2. If cold start heater and area of intake manifold around cold start heater are not warm, turn battery disconnect switch to OFF position. Go to Step 3. 1. If 12 to 14 Vdc are not measured at wire 377-OR, turn battery disconnect switch and engine start switch to OFF position (TM 5-3895-379-10). Go to Electrical Malfunction No. 6, Starting Aid Switch Does Not Work. 2. If more than 14 Vdc are measured at wire 377-OR, starting aid resistor and cold start heater are damaged. Turn battery disconnect switch and engine start switch to OFF position (TM 5-3895-379-10). Replace cold start heater (WP 0043 00) and starting aid resistor (WP 0087 00). 3. If 12 to 14 Vdc are measured at wire 377-OR, go to Step 4.



401-178

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Engine Exhaust Smokes Excessively (Black or Gray Smoke) - Continued.</p>	<p>3. Check current draw of cold start heater. Attach clamp-on ammeter to wire 377-OR. Have assistant turn engine start switch and starting aid switch to ON positions (TM 5-3895-379-10). The current draw should be 16 to 18 amperes at 12 volts. Turn engine start switch to OFF position and turn off battery disconnect switch.</p> <p>Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.</p> <p>4. Check cold start heater for leakage. Remove fuel line and cold start heater from intake manifold (WP 0025 00). Connect an air supply with maximum 20 psi (140 kPa) to fuel inlet passage of cold start heater. Submerge cold start heater in a container of clean diesel fuel for 10 seconds. No air bubbles should be visible from cold start heater.</p>	<p>1. If current draw is more than 18 or less than 16 amperes, replace cold start heater (WP 0043 00) with a new one. Close left- and right-side door assemblies (TM 5-3895-379-10).</p> <p>2. If current draw is between 18 and 16 amperes, remove clamp-on ammeter and go to Step 4.</p> <p>If bubbles are visible from the cold start heater, replace cold start heater (WP 0043 00) with a new one.</p>
<p>7. Engine Exhaust Smokes Excessively (White or Blue Smoke).</p>	<p>1. Check engine oil level (TM 5-3895-379-10).</p> <p>2. Remove and test thermostat (WP 0053 00 or WP 0054 00).</p>	<p>1. If engine oil level is too high, drain engine oil until level is correct (WP 0009 00).</p> <p>2. If engine oil level is correct, go to Step 2.</p> <p>1. If thermostat is bad, install thermostat (WP 0053 00 or WP 0054 00).</p> <p>2. If thermostat is OK, replace thermostat gasket (WP 0053 00 or WP 0054 00). Fault not corrected, go to Step 3.</p>

Table 1. Engine Troubleshooting Procedures - Continued.



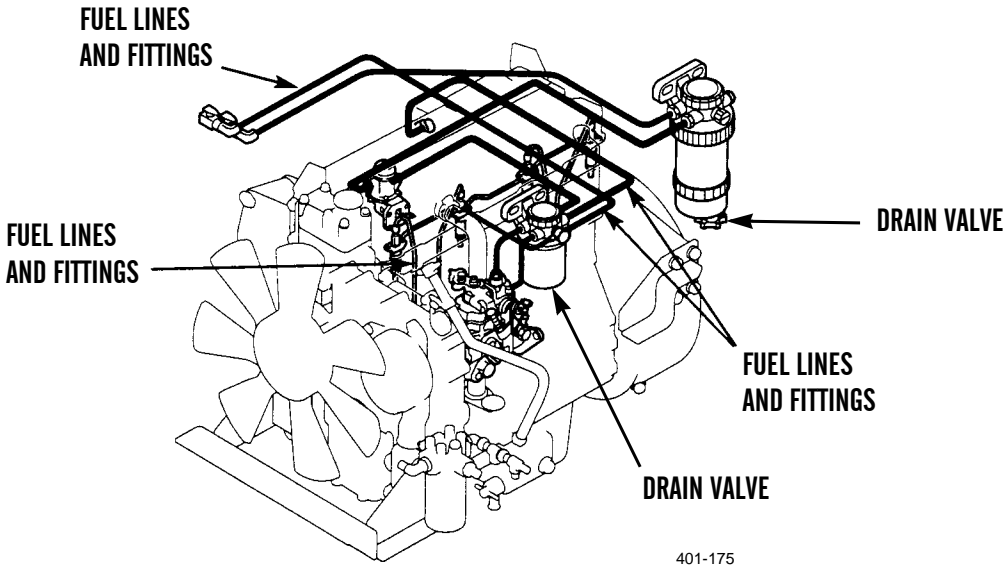
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Engine Exhaust Smokes Excessively (White or Blue Smoke) - Continued.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p> </div>  </div> <ul style="list-style-type: none"> • DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. • Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p>3. Open left and right-side door assemblies (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p>	<ol style="list-style-type: none"> 1. If fuel lines or fittings are loose, tighten fuel lines or fittings. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00). 2. If fuel lines or fittings are not loose or damaged, got to step 4.
 <p style="text-align: right; margin-right: 100px;">401-175</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

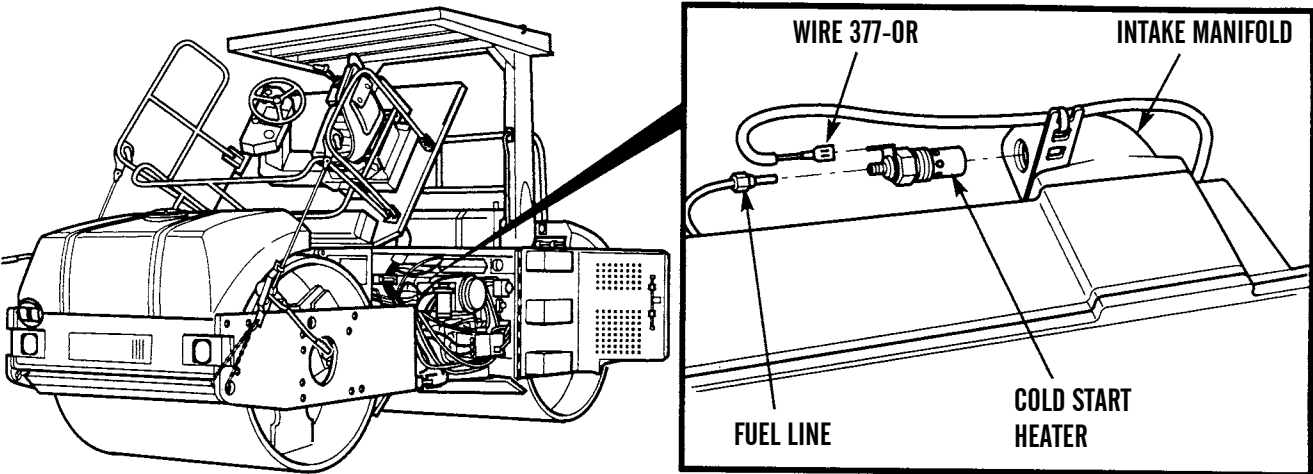
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Engine Exhaust Smokes Excessively (White or Blue Smoke) - Continued.</p>	<p>NOTE</p> <p>Cold start heater is used only when ambient temperatures are below 32°F (0°C). If cold start heater was not operated when malfunction was noted, skip Steps 4 through 7.</p> <p>4. Check cold start heater operation. Turn engine start switch and starting aid switch to ON positions for not more than 20 seconds. Turn engine start switch and starting aid switch to OFF position. Check cold start heater and area of intake manifold around cold start heater for warmth.</p>	<p>If cold start heater and area of intake manifold around cold start heater are not warm, turn off battery disconnect switch and go to Step 5.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>401-178</p> </div> </div>		

Table 1. Engine Troubleshooting Procedures - Continued.




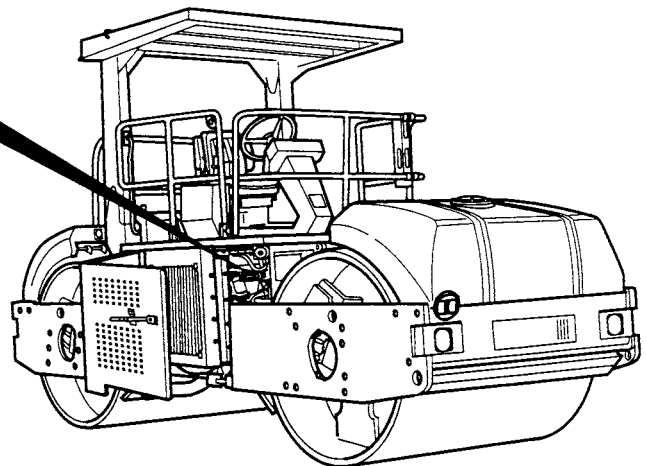
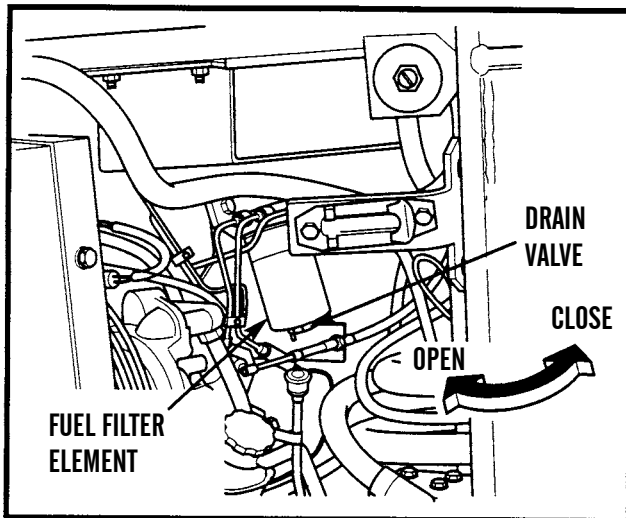
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Engine Exhaust Smokes Excessively (White or Blue Smoke) - Continued.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform. Falling platform could cause injury or death.</p> </div> <ol style="list-style-type: none"> 5. Check electrical input to cold start heater. Raise operator platform (WP 0128 00). Turn on battery disconnect switch (TM 5-3895-379-10). Have assistant turn engine start switch and starting aid switch to ON positions. Touch positive (+) probe of multimeter to wire 377-OR and the negative (-) probe of the multimeter to engine block. 6. Check current draw of cold start heater. Attach clamp-on multimeter to wire 377-OR. Have assistant attempt to start engine (TM 5-3895-379-10). Note the current draw indication. The current draw should be 16 to 18 amperes at 12 volts. Connect wire 377-OR to cold start heater. Turn engine start switch to OFF position and turn battery disconnect switch OFF (TM 5-3895-379-10). 	<ol style="list-style-type: none"> 1. If less than 12 to 14 Vdc are measured at wire 377-OR, turn OFF battery disconnect switch. Lower operator platform (WP 0128 00). Turn engine start switch to OFF position (TM 5-3895-379-10). Go to Electrical Malfunction No. 6, <i>Starting Aid Switch Does Not Work</i>. 2. If more than 14 Vdc are measured at wire 377-OR, starting aid resistor and cold start heater are damaged. Turn off battery disconnect switch (TM 5-3895-379-10). Lower operator platform (WP 0128 00). Turn engine start switch to OFF position (TM 5-3895-379-10). Replace cold start heater (WP 0043 00) and starting aid resistor (WP 0087 00). 3. If 12 to 14 Vdc are measured at wire 377-OR, go to Step 6. 1. If current draw is more than 16 or less than 18 amperes, replace cold start heater (WP 0043 00) with a new one. Lower operator platform (WP 0128 00). 2. If current draw is between 18 and 16 amperes, remove clamp-on ammeter. Go to Step 7.

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Engine Exhaust Smokes Excessively (White or Blue Smoke) - Continued.</p>	<div> </div> <p>WARNING</p> <p>Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.</p> <p>7. Check cold start heater for leakage. Remove fuel line and cold start heater from intake manifold (WP 0025 00). Connect an air supply with maximum 20 psi (140 kPa) to fuel inlet passage of cold start heater. Submerge cold start heater in a container of clean diesel fuel for 10 seconds. No air bubbles should be visible from cold start heater.</p>	<p>If bubbles are visible from cold start heater, replace cold start heater (WP 0043 00).</p>
<div> </div> <div> </div>		
<p style="text-align: right;">401-178</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

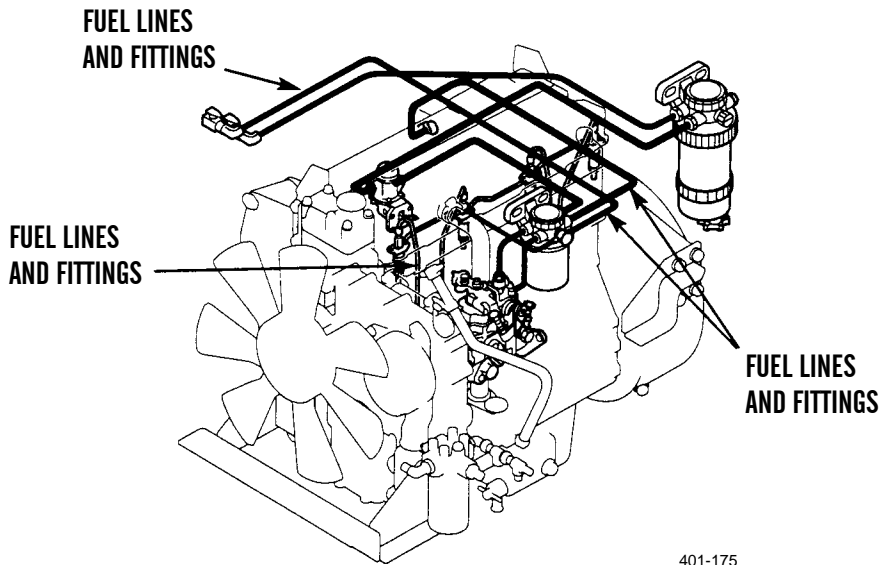
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Engine Misfires or Idles Rough.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p>  </div> </div> <ul style="list-style-type: none"> DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p style="text-align: center;">NOTE</p> <p>Use container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned.</p> <ol style="list-style-type: none"> 1. Check fuel filter for contaminated fuel. Open right-side door assembly (TM 5-3895-379-10). Place container under fuel filter element. Open drain valve on bottom of fuel filter, and collect sample in container. Close drain valve. Dispose of drained fluids in accordance with local regulations. 	<ol style="list-style-type: none"> 1. If fuel is contaminated, drain and flush fuel tank (WP 0037 00). Replace fuel filter element (WP 0040 00) and fuel/water separator element (WP 0042 00). 2. If fuel is not contaminated, go to Step 2.



401-174

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Engine Misfires or Idles Rough - Continued.</p>	<p>2. Open left-side door assembly (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p>	<p>1. If fuel lines or fittings (other than fuel injector) are loose, tighten. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p> <p>2. If fuel lines or fittings are not loose or damaged, go to Step 3.</p>

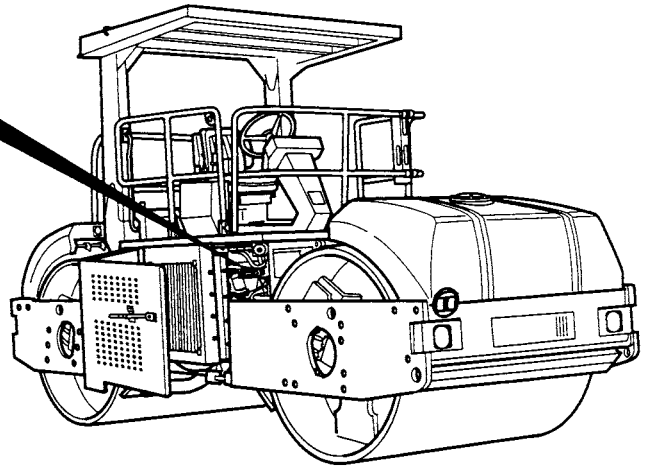
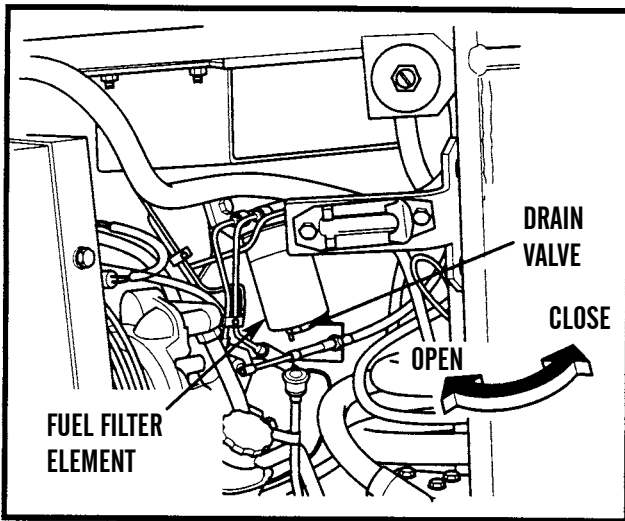


WARNING

- There is no clearance for personnel between frame and yoke when roller turns. Injury or death from crushing could occur.
- Steering frame must be locked before lifting, transporting or servicing roller in articulation area with engine running. Failure to follow this warning may cause injury or death from crushing.
- Unlock steering frame before operation to prevent loss of steering. Failure to follow this warning may cause injury or death.
- When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing, or hands can get caught and cause injury.

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Engine Misfires or Idles Rough - Continued.</p>	<p>3. Check fuel lift pump pressure. Remove fuel line from output port of fuel lift pump (WP 0028 00). Attach pressure gauge to output port of fuel lift pump. Turn on battery disconnect switch and lock steering frame (TM 5-3895-379-10). Have assistant crank engine for 10 seconds. Observe pressure gauge. Note highest indication on pressure gauge. Normal pressure is 6 to 10 psi (40 to 70 kPa). Minimum pressure is 4.5 psi (30 kPa). Turn engine start switch OFF (TM 5-3895-379-10). Observe amount of time for maximum pressure noted during cranking to drop by one half. Time should be greater than 30 seconds. Remove pressure gauge from fuel lift pump.</p>	<p>1. If fuel lift pump outlet pressure is below 4.5 psi (30 kPa), replace fuel lift pump (WP 0028 00). 2. If time for maximum pressure noted during cranking to drop by one half is less than 30 seconds, replace fuel lift pump (WP 0028 00). 3. If lift pump pressure checks are OK, install fuel line (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p>



401-174

Table 1. Engine Troubleshooting Procedures - Continued.

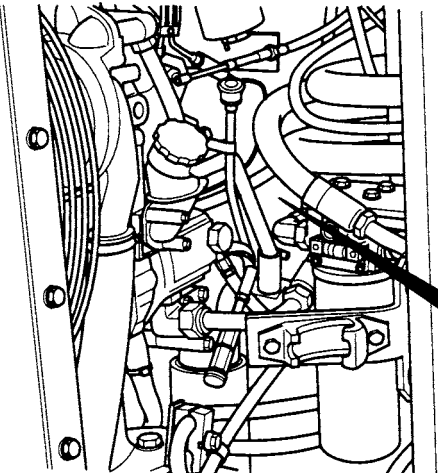

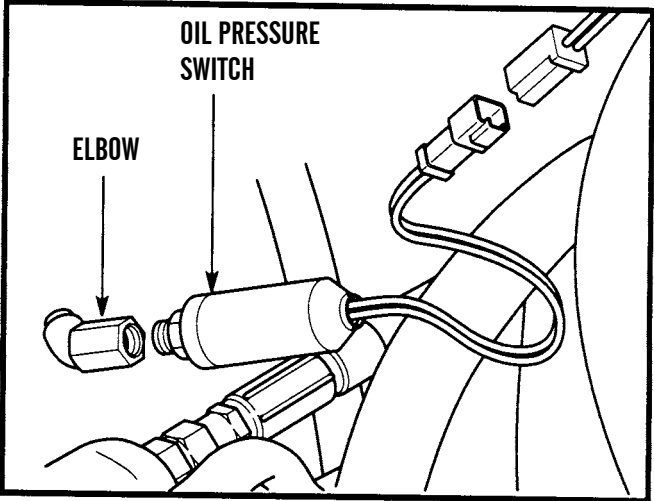


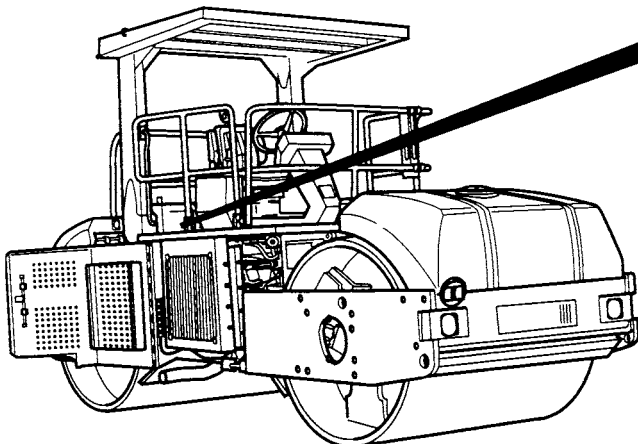
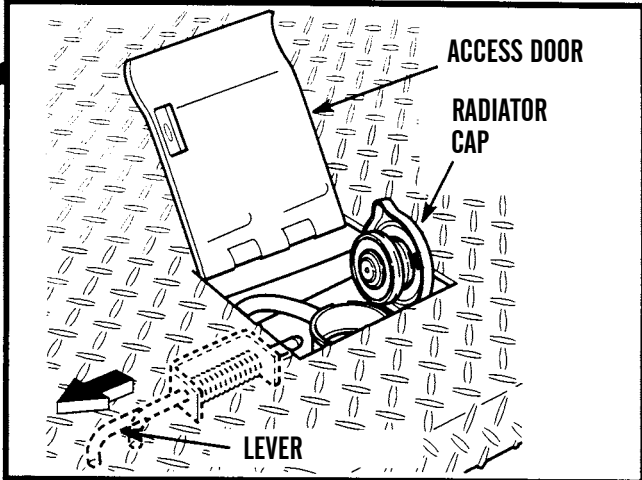
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Engine Oil Pressure is Low (Warning Light and Warning Horn On).</p> 	 <p>WARNING</p> <ul style="list-style-type: none"> • There is no clearance for personnel between frame and yoke when roller turns. Injury or death from crushing could occur. • Steering frame must be locked before lifting, transporting or servicing roller in articulation area with engine running. Failure to follow this warning may cause injury or death from crushing. • Unlock steering frame before operation to prevent loss of steering. Failure to follow this warning may cause injury or death. • When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing, or hands can get caught and cause injury. <p>1. Check engine oil for contamination and proper level.</p>	<p>Add oil as required or change engine oil and filter (WP 0013 00). If oil pressure is still low, go to Step 2.</p>  <p style="text-align: right;">401-182</p>

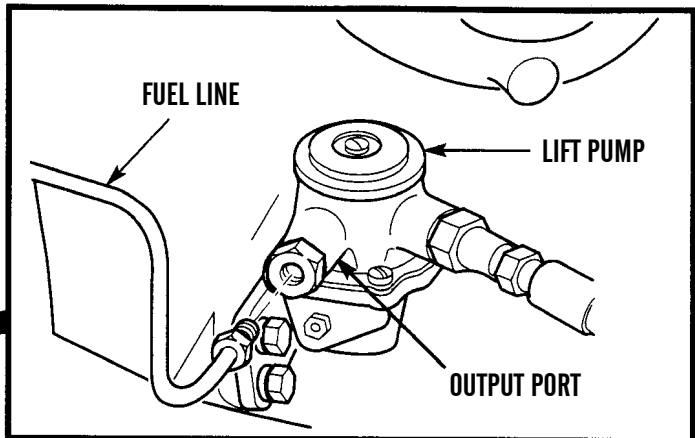
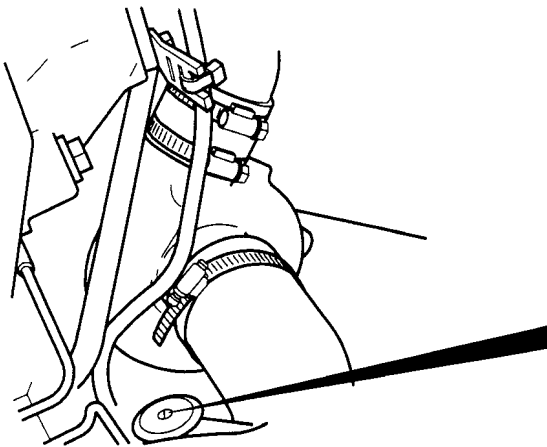
Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Engine Oil Pressure is Low (Warning Light and Warning Horn On) - Continued.</p>	<div style="display: flex; align-items: center; justify-content: center;">  <div style="margin: 0 10px;">WARNING</div>  </div> <ul style="list-style-type: none"> • DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant will cause serious burns. • DO NOT remove cooling system radiator cap when engine is hot. Allow engine to cool down. Loosen cap to first stop and let any pressure out of cooling system, then remove cap. Failure to follow this warning may cause serious burns. • Wear effective eye, glove, and skin protection when handling coolants. Failure to do so may cause injury. <p>2. Verify engine oil pressure switch is operating properly. Remove engine oil pressure switch from elbow (WP 0085 00). Attach pressure gauge to elbow. Start engine and allow engine to warm up. Engine oil pressure should be 13-40 psi (90-276 kPa). Shut engine off.</p>	<p>1. If oil pressure is not 13-40 psi (90-276 kPa), install engine oil pressure switch on elbow (WP 0085 00). Tighten switch to 15-18 lb-ft (20-25 Nm). Go to Step 3.</p> <p>2. If oil pressure is 13-40 psi (90-276 kPa), remove pressure gauge from elbow and replace engine oil pressure switch (WP 0085 00).</p>
		

401-183

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Engine Oil Pressure is Low (Warning Light and Warning Horn On) - Continued.</p>	<p>3. Check for oil in coolant. Pull back lever and open access door on operator's platform. Release lever and remove radiator cap. Check for oil in coolant.</p> <p>4. Remove fuel lift pump (WP 0028 00) and check for cracks or damage which would allow fuel to leak into engine crankcase.</p>	<p>1. If oil is present in coolant, go to Engine Malfunction 4, <i>Coolant in Engine Oil/Engine Oil in Coolant</i>.</p> <p>2. If oil is not present in coolant, fault not corrected. Install radiator cap. Pull back lever and close access door. Close right-side door assembly (TM 5-3895-379-10). Go to Step 4.</p> <p>1. If fuel lift pump is cracked, damaged or is allowing fuel to leak into engine crankcase, replace fuel lift pump (WP 0028 00) and change oil (WP 0009 00).</p>



401-176

Table 1. Engine Troubleshooting Procedures - Continued.

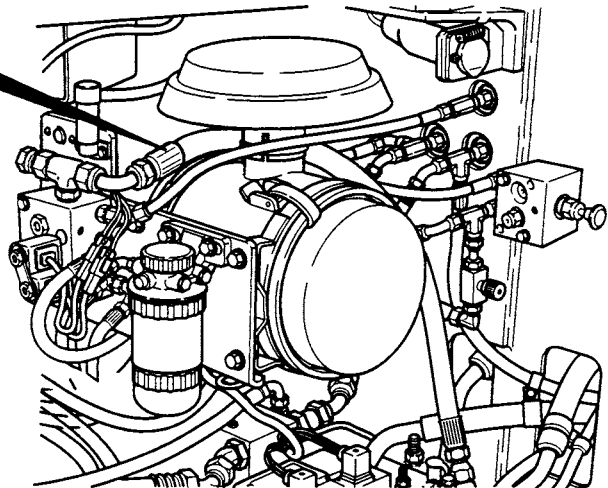
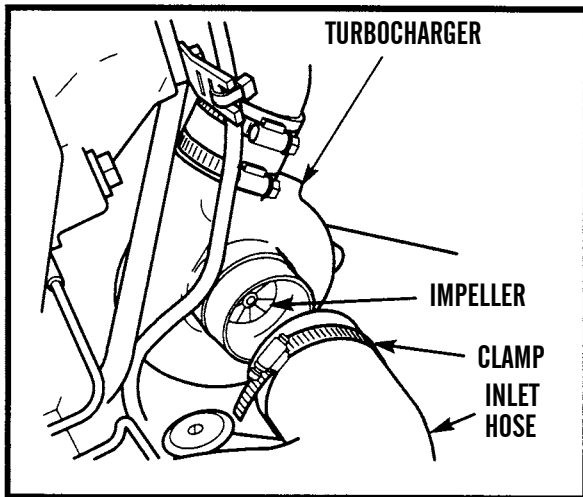
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Engine is Unusually Noisy.</p>	<p>1. Check muffler and exhaust system for loose or damaged components. Damage may include holes rusted through muffler or pipes, torn muffler or pipes, or bent muffler or pipes.</p> <div style="text-align: center;"> </div> <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> <p>2. Raise operator platform (WP 0128 00). Check fan assembly and guard for looseness or damage such as cracked or missing fan blade(s), loose nuts and screws, bent or cracked fan pulley, or damage or wear from extreme fan blade wobble.</p>	<p>1. If muffler or exhaust system is loose, tighten loose components.</p> <p>2. If muffler or exhaust is damaged, replace damaged components (WP 0048 00).</p> <p>3. If muffler and exhaust system are not loose or damaged, go to Step 2.</p> <p>1. If fan assembly and guard are loose or damaged, tighten or replace loose or damaged parts (WP 0059 00). Lower operator platform (WP 0128 00).</p> <p>2. If fan assembly and guard are not loose or damaged, go to Step 3.</p>
<p style="text-align: right;">401-184</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Engine is Unusually Noisy - Continued.</p>	<p>3. Check fan V-belts for damage or looseness. Check fan V-belts for damage such as cracks to the belt fiber, one or more cracks 1/8 inch in depth or 50% of belt thickness, splits, grease buildup, glazed sides, and peeling. Attach belt tension gauge to fan V-belts. Correct belt tension is 80 lbs.</p>	<p>1. If fan V-belts are damaged, replace fan V-belts (WP 0060 00). 2. If belt tension is 50 lbs or less, adjust fan V-belt tension (WP 0060 00). 3. If fan V-belts are not damaged or loose, remove belt tension gauge from fan V-belts. Go to Step 4.</p>

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Engine is Unusually Noisy - Continued.</p>	<p>4. Open left-side door assembly (TM 5-3895-379-10). Check turbocharger inlet hose for damage or leakage.</p> <p>5. Check turbocharger impeller for damage and restrictions. Loosen clamp and remove inlet hose from turbocharger. Inspect impeller for cracks. The impeller should spin freely. Measure impeller shaft end play. Acceptable impeller shaft end play is 0.001-0.004 inches (0.03-0.10 mm). Acceptable impeller shaft radial play is 0.003-0.006 inches (0.08-0.15 mm).</p>	<p>1. If turbocharger inlet hose is damaged or leaking, replace turbocharger inlet hose (WP 0036 00).</p> <p>2. If turbocharger inlet hose is not damaged or leaking, go to Step 5.</p> <p>1. If impeller is restricted, remove restriction. Install hose on turbocharger and tighten clamp. Close left-side door assembly.</p> <p>2. If turbocharger impeller is cracked, does not spin freely, or has too much shaft play, replace turbocharger (WP 0035 00).</p> <p>3. If impeller is not damaged or restricted, install inlet hose on turbocharger and tighten clamp. Go to Step 6.</p>



401-823

Table 1. Engine Troubleshooting Procedures - Continued.

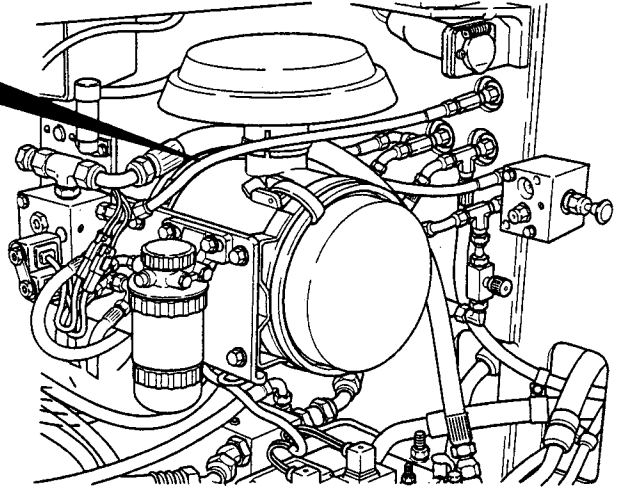
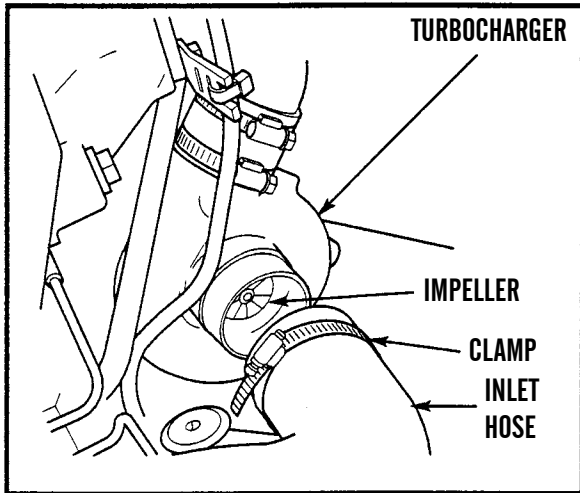
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Engine is Unusually Noisy - Continued.</p> <div style="text-align: center;"> <p style="text-align: center;">401-175</p> </div>	<p>6. Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p> <div style="text-align: center;"> <p>WARNING</p> </div> <ul style="list-style-type: none"> • DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. • Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. • Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. 	<p>If fuel lines or fittings, other than fuel injector lines or fittings, are loose, tighten fuel lines or fittings. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p>
<p>11. Engine Surges (Speed Changes).</p>	<p>Open left-side door assembly (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p>	<p>If fuel lines or fittings are loose, tighten. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p>

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>12. Engine is Using More Oil Than Usual.</p>	<p>Open left- and right-side door assemblies (TM 5-3895-379-10) and check engine for oil leaks. Leaks may come from loose components, damaged or decayed gaskets or seals, broken turbocharger oil lines or loose fittings.</p>	<p>1. Tighten items found to be loose. Replace items found to be damaged. 2. If problem persists, problem is probably internal engine wear. Notify Supervisor.</p>
<p>13. Engine is Using More Fuel Than Usual.</p>	<p>1. Check air cleaner assembly for restriction (WP 0032 00). Open left-side door assembly and remove and inspect air cleaner elements. Check air cleaner assembly for damage or blockage.</p> <p>2. Check turbocharger inlet hose for damage or leakage.</p>	<p>1. If air cleaner elements are damaged or clogged, replace elements with new parts. 2. If air cleaner assembly is damaged, replace air cleaner assembly (WP 0032 00). 3. If any air blockage is found in assembly, remove blockage and install elements (WP 0032 00). 4. If air cleaner assembly is OK, install elements and go to Step 2.</p> <p>1. If turbocharger inlet hose is damaged or leaking, replace turbocharger inlet hose (WP 0036 00). 2. If turbocharger inlet hose is not damaged or leaking, go to Step 3.</p>

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>13. Engine is Using More Fuel Than Usual - Continued.</p>	<p>3. Check turbocharger impeller for damage and restrictions. Loosen clamp and remove inlet hose from turbocharger. Inspect impeller for cracks. The impeller should spin freely. Measure impeller shaft end play. Acceptable impeller shaft end play is 0.001-0.004 inches (0.03-0.10 mm). Acceptable impeller shaft radial play is 0.003-0.006 inches (0.08-0.15 mm).</p>	<p>1. If impeller is restricted, remove restriction. Install hose on turbocharger and tighten clamp. Close left-side door assembly.</p> <p>2. If turbocharger impeller is cracked, does not spin freely, or has too much shaft play, replace turbocharger (WP 0035 00).</p>



401-180

Table 1. Engine Troubleshooting Procedures - Continued.



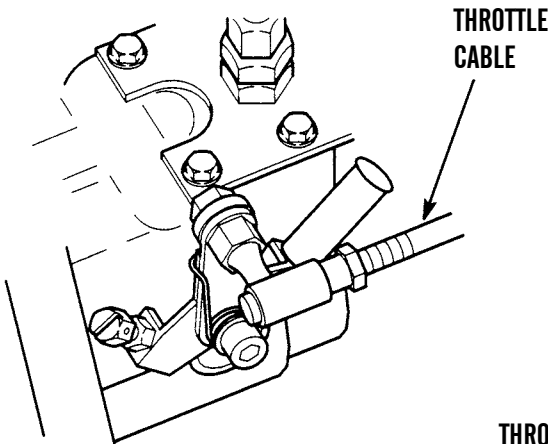
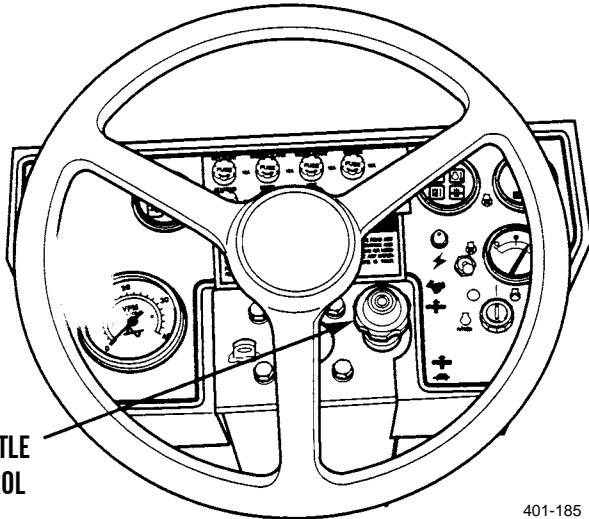
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>14. Throttle Control Will Not Change Engine Speed.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p> <ul style="list-style-type: none"> DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. </div>  </div> <p>On CB534B, open right-side door assembly (TM 5-3895-379-10). Check throttle cable for damage such as kinking, bent condition, stripped threads, or broken sleeve. Check for full travel of throttle cable at fuel injection pump while assistant operates throttle control fully up and fully down. Check throttle cable adjustment (WP 0045 00).</p>	<ol style="list-style-type: none"> 1. If throttle cable is not properly adjusted, adjust linkage (WP 0045 00). 2. If throttle cable is damaged, replace throttle cable (WP 0045 00).
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: right;">401-185</p>		

Table 1. Engine Troubleshooting Procedures - Continued.



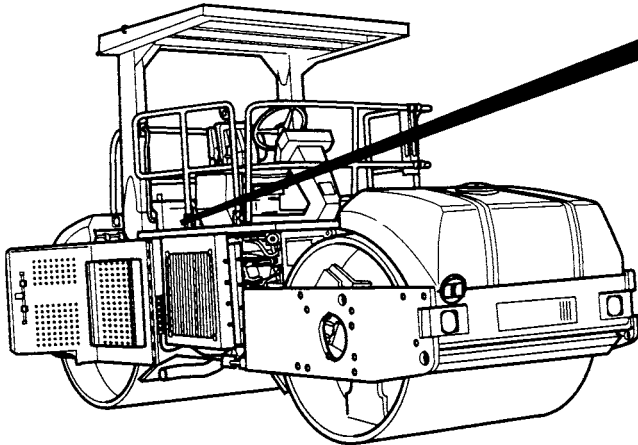
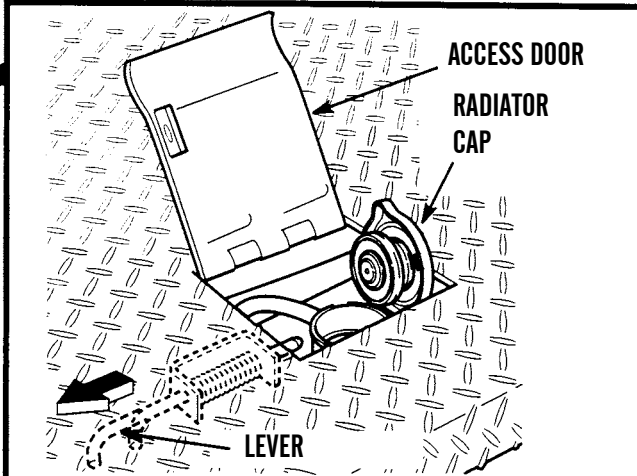
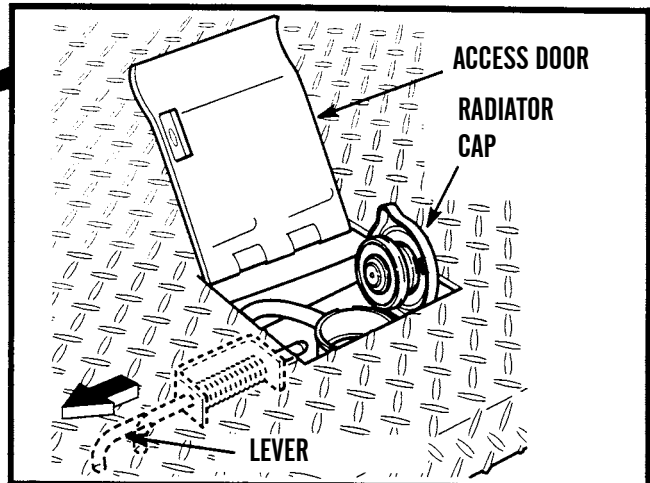
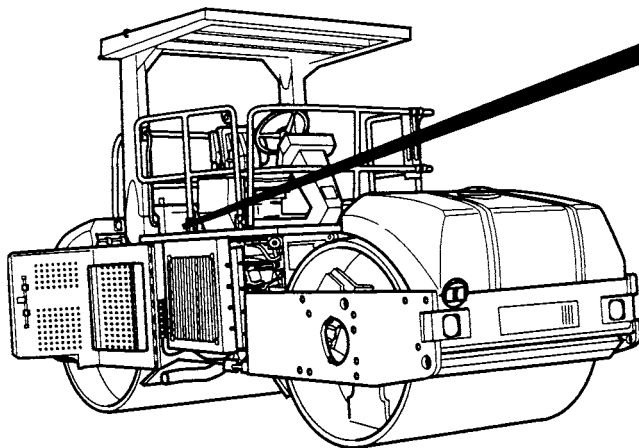
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. Engine Operating Temperature is Too High (Warning Light and Warning Horn On).</p>	<div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>WARNING</p> </div>  </div> <ul style="list-style-type: none"> • DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant will cause serious burns. • DO NOT remove cooling system radiator cap when engine is hot. Allow engine to cool down. Loosen cap to first stop and let any pressure out of cooling system, then remove cap. Failure to follow this warning may cause serious burns. • Wear effective eye, glove, and skin protection when handling coolants. Failure to do so may cause injury. <ol style="list-style-type: none"> 1. Open right-side door assembly (TM 5-3895-379-10). Pull back lever and open access door. Check radiator coolant level (WP 0009 00). Coolant level should be approximately 3 in. (7.6 cm) below fill port. The sealing surface of radiator cap should be clean and free of cracks, nicks or dents. 	<ol style="list-style-type: none"> 1. If coolant level is not correct, add coolant. 2. If sealing surface of radiator cap is cracked, nicked, or dented, replace radiator cap. Pull back lever and close access door. Release lever and close right-side door assembly. 3. If coolant level is correct and pressure cap is OK, pull back lever and close access door. Release lever and go to Step 2.
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: right; margin-right: 50px;">401-183</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. Engine Operating Temperature is Too High (Warning Light and Warning Horn On) - Continued.</p>	<p>2. Inspect radiator assembly and hoses for leaks, damage and deterioration. Check radiator assembly for bent fins, restrictions and holes. Check radiator hoses for cuts, cracks, leaks and loose clamps.</p> <p>3. Perform coolant system pressure test (WP 0049 00).</p>	<p>1. If radiator assembly fins are bent, straighten fins. Go to Step 3.</p> <p>2. If radiator assembly air flow is restricted, remove restriction. Go to Step 3.</p> <p>3. If radiator assembly has leaks, repair or replace radiator assembly (WP 0050 00).</p> <p>4. If hose clamps are loose, tighten hose clamps. Close right-side door assembly (TM 5-3895-379-10).</p> <p>5. If radiator hoses are cut, cracked, or leaking, replace radiator hoses (WP 0051 00).</p> <p>6. If radiator assembly and hoses are OK, go to Step 3.</p> <p>1. If coolant system is OK, go to Step 4.</p> <p>2. If coolant system shows signs of leaks, repair or replace faulty components.</p>



401-183

Table 1. Engine Troubleshooting Procedures - Continued.


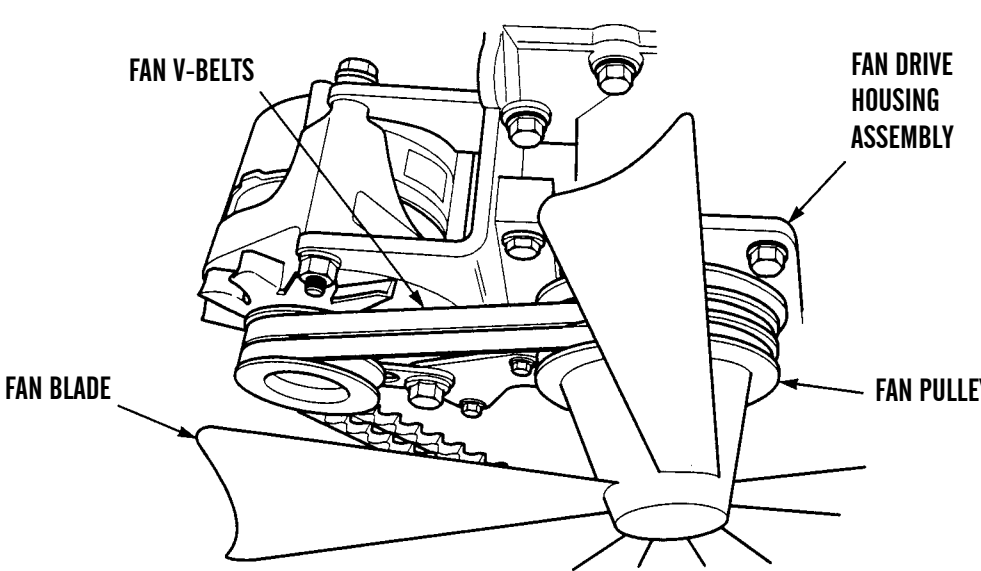
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. Engine Operating Temperature is Too High (Warning Light and Warning Horn On) - Continued.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> </div> <ol style="list-style-type: none"> 4. Raise operator platform (WP 0128 00). Check fan V-belts for damage such as cracks to belt fiber, one or more cracks 1/8 inch in depth or 50% of belt thickness, splits, grease buildup, glazed sides and peeling. Attach belt tension gauge to fan V-belts. Correct belt tension is 80 lbs. 5. Check fan assembly, fan drive housing, and fan guard for looseness or damage such as cracked or missing fan blades, loose nuts and screws, bent or cracked fan pulley, or damage or wear resulting from extreme fan blade wobble. 	<ol style="list-style-type: none"> 1. If fan V-belts are damaged, replace fan V-belts (WP 0060 00). 2. If belt tension is 50 lbs or less, adjust alternator V-belt tension (WP 0060 00). 3. If fan V-belts are not damaged or loose, go to Step 5. <ol style="list-style-type: none"> 1. If fan assembly, fan drive housing, and fan drive guard are loose or damaged, tighten or replace loose or damaged parts (WP 0058 00 and WP 0059 00). Lower operator platform (WP 0128 00). 2. If fan assembly, fan drive housing and fan guard are not loose or damaged, go to Step 6.
 <p style="text-align: right;">401-184</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

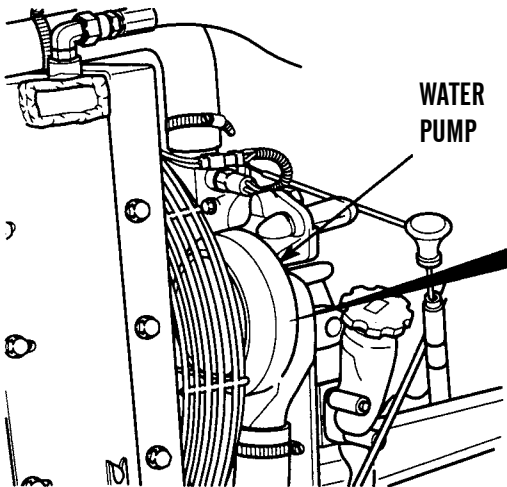
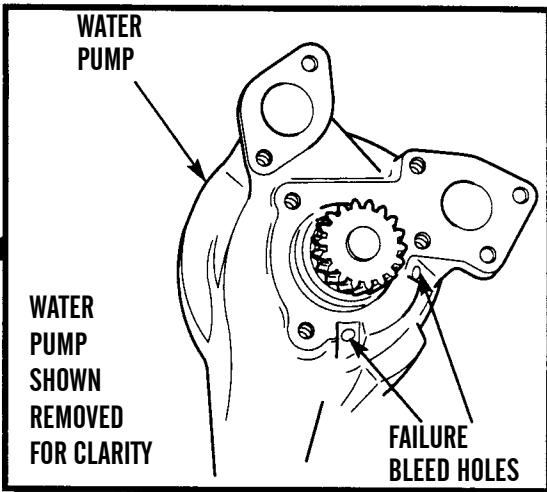
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. Engine Operating Temperature is Too High (Warning Light and Warning Horn On) - Continued.</p>	<p style="text-align: center;">NOTE</p> <p>Class I leakage at water pump bleed holes is normal. Any Class II or Class III leakage represents a problem with water pump.</p> <p>6. Check water pump for signs of leakage (discoloration, corrosion, wetness). There are two failure bleed holes located on engine side of water pump. Check failure bleed holes for Class II and Class III leakage of engine oil or coolant.</p> <p>7. Test thermostat (WP 0053 00 or WP 0054 00).</p>	<p>1. If engine oil or coolant is leaking from either failure bleed hole or water pump shows signs of leakage, water pump has failed. Replace water pump (WP 0057 00). Change engine oil and filter (WP 0013 00). Replace coolant system fluid (WP 0009 00).</p> <p>2. If engine oil or coolant is not leaking from either failure bleed hole and engine oil or coolant is not leaking from either hole or water pump, go to Step 7.</p> <p>1. If thermostat is bad, replace thermostat (WP 0053 00 or WP 0054 00).</p> <p>2. If thermostat is OK, fault not corrected. Go to Step 8.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  <p style="text-align: right; font-size: small;">401-186</p> </div> </div>		

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. Engine Operating Temperature is Too High (Warning Light and Warning Horn On) - Continued.</p>	<p>8. Check engine oil cooler and lines for signs of leakage or damage. Damage can include torn, cracked or bent lines and cooler components.</p>	<p>1. If engine oil cooler lines are leaking or damaged, replace faulty components (WP 0022 00 or WP 0023 00). Tighten loose components.</p> <p>2. If engine oil cooler or components are damaged, replace oil cooler or components (WP 0017 00). Change engine oil and filter (WP 0015 00). Replace coolant system fluid (WP 0009 00). Lower operator platform (WP 0128 00).</p>
<p style="text-align: right;">401-187</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>16. Engine Vibrates Excessively.</p>	<p>1. Check front and rear engine mounts for damage and loose or missing nuts and bolts.</p>	<p>1. If nuts or bolts are loose, tighten or replace nuts or bolts.</p> <p>2. If front or rear engine mount(s) are damaged, replace mount(s) (WP 0011 00 or WP 0012 00).</p> <p>3. If front and rear engine mounts are not damaged and no nuts, bolts or screws are loose or missing, fault not corrected. Close left- and right-side door assemblies. Go to Step 2.</p>

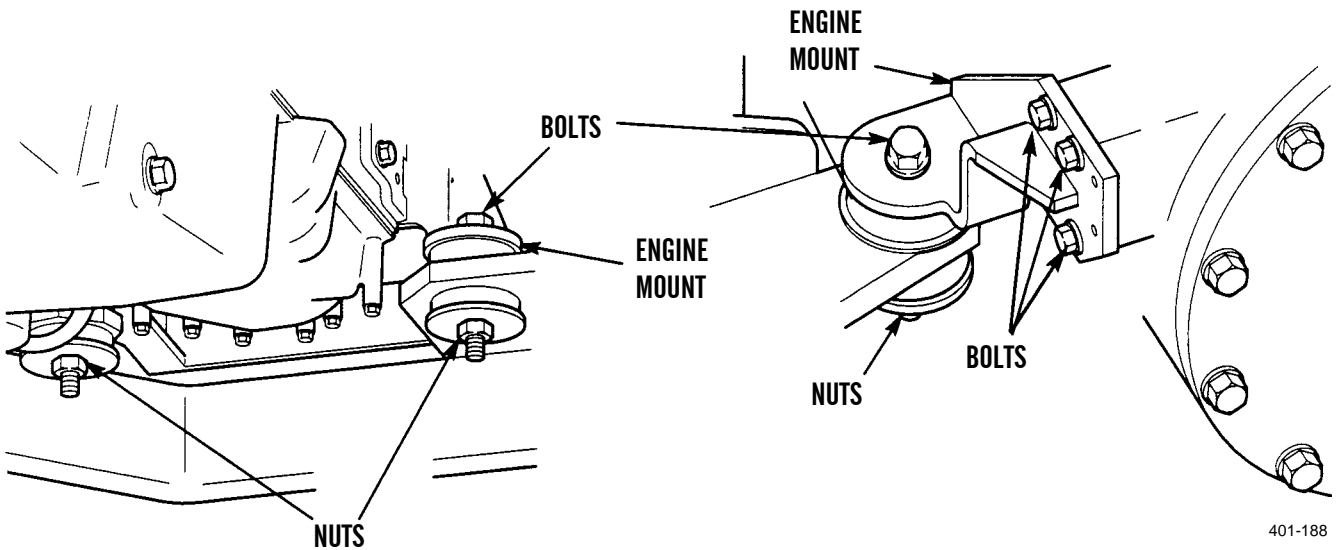


Table 1. Engine Troubleshooting Procedures - Continued.



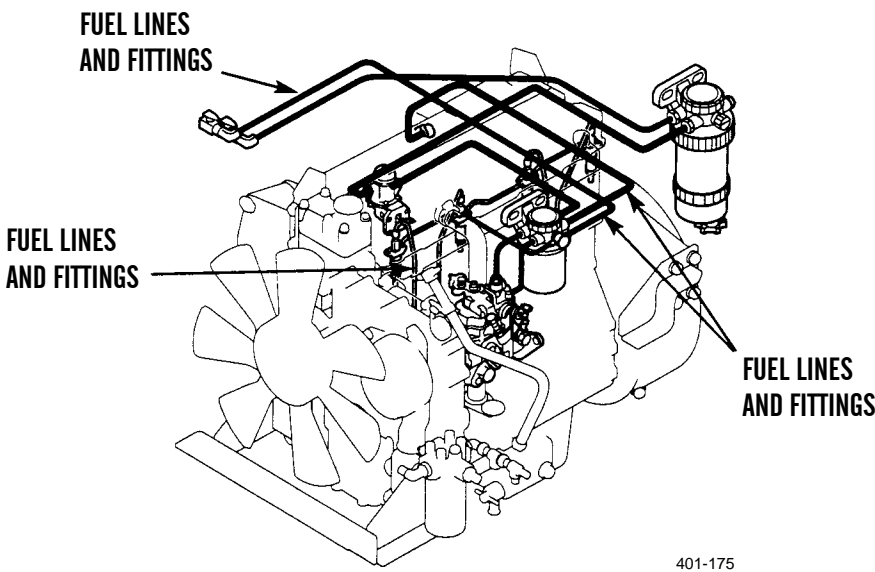
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>16. Engine Vibrates Excessively Continued.</p>	<div style="text-align: center;">  WARNING  </div> <ul style="list-style-type: none"> • DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. • Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. • Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p>2. Open left- and right-side door assemblies (TM 5-3895-379-10). Check fuel lines and fittings for looseness or damage such as kinks, tears or restrictions.</p>	<p>If fuel lines or fittings are loose, tighten fuel lines or fittings. If fuel lines or fittings are damaged, replace fuel lines (WP 0029 00, WP 0030 00, WP 0175 00 or WP 0176 00).</p>
 <p style="text-align: right; margin-right: 100px;">401-175</p>		

Table 1. Engine Troubleshooting Procedures - Continued.

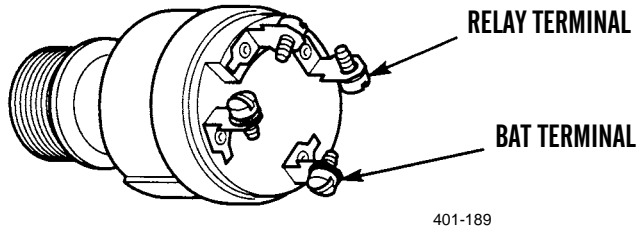
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>17. Engine Will Not Stop Running.</p>	<p>Check for faulty engine start switch. Remove engine start switch (WP 0079 00). Set multimeter to measure ohms. Turn engine start switch to OFF position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to RELAY terminal and negative (-) probe of multimeter to BAT terminal.</p>	<p>1. If less than infinite ohms are measured, replace engine start switch (WP 0079 00).</p>
 <p>401-189</p>		

Table 2. Electrical Troubleshooting Procedures.




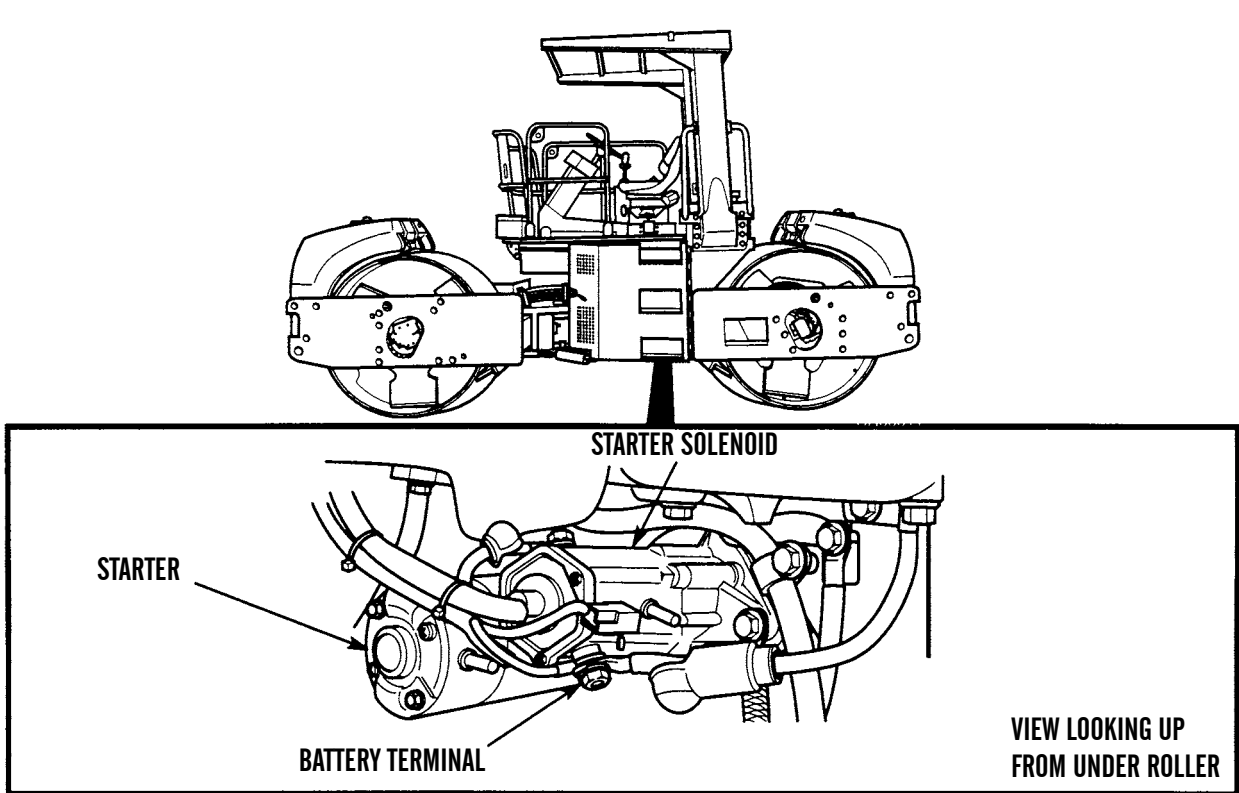
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power.</p>	<div style="display: flex; align-items: center; justify-content: center; gap: 10px;">   <div style="text-align: center;"> <p>WARNING</p> </div>  </div> <ul style="list-style-type: none"> • To avoid injury, eye protection and acid-resistant gloves must be worn when working around batteries. Do not smoke, use open flame, make sparks or create other ignition sources around batteries. If a battery is giving off gases, it can explode and cause injury to personnel. Remove all jewelry such as rings, ID tags, watches, and bracelets. If jewelry or a tool contacts a battery terminal, a direct short will result in instant heating, damage to equipment, and injury. • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may cause death or injury. <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <ol style="list-style-type: none"> 1. Check for power at starter. Chock drums. Lock steering frame (TM 5-3895-379-10). Turn battery disconnect switch ON (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to battery terminal of starter solenoid. Touch negative (-) probe of multimeter to good ground. </div> <div style="width: 45%;"> <ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not present at battery terminal of starter solenoid, go to Step 2. 2. If 24 to 28 Vdc are present at battery terminal of starter solenoid, go to Step 5. </div> </div>	

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>2. Inspect batteries (WP 0103 00) and test batteries.</p>	<p>1. If batteries are damaged or bad, replace batteries (WP 0103 00). 2. If batteries are OK, go to Step 3.</p>
 <p>The diagram shows a top-down view of a roller. Below it is a callout box titled "VIEW LOOKING UP FROM UNDER ROLLER" showing a close-up of the engine compartment. Labels with leader lines point to the "STARTER", "STARTER SOLENOID", and "BATTERY TERMINAL".</p>		
	<p>3. Check battery cables and connectors for looseness or damage such as corrosion, fraying, broken terminals, cracked or missing insulation or kinking.</p>	<p>1. If battery cable connectors are loose, tighten connectors (WP 0105 00). If battery cables or cable connectors are damaged, replace cable(s) (WP 0105 00). 2. If battery cables are not damaged and connectors are not loose, lower operator platform (WP 0128 00). Go to Step 4.</p>

401-190

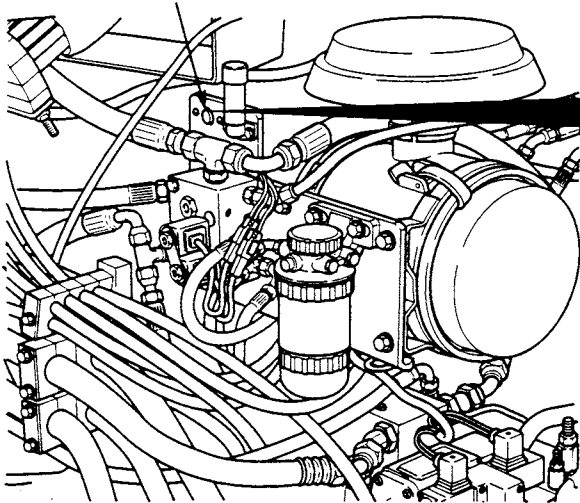
Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>4. Check for defective battery disconnect switch. Turn off battery disconnect switch. Remove nut, lockwasher and cable from battery-side terminal. Discard lockwasher. Set multimeter to measure ohms. Touch positive (+) probe of multimeter to battery-side terminal and negative (-) probe of multimeter to frame-side terminal of battery disconnect switch. Multimeter should measure infinite ohms. Turn on battery disconnect switch. Multimeter should measure zero ohms.</p>	<p>1. If infinite ohms are not present across battery disconnect switch terminals in disconnect position, replace battery disconnect switch (WP 0104 00).</p> <p>2. If more than 5 ohms are present across battery disconnect switch terminals in connect position, replace battery disconnect switch (WP 0104 00).</p> <p>3. If both ohms checks are OK, install cable on battery disconnect switch with lockwasher and nut. Repeat Step 3.</p>
<div style="text-align: center;"> </div> <p style="text-align: right; font-size: small;">401-191</p>		

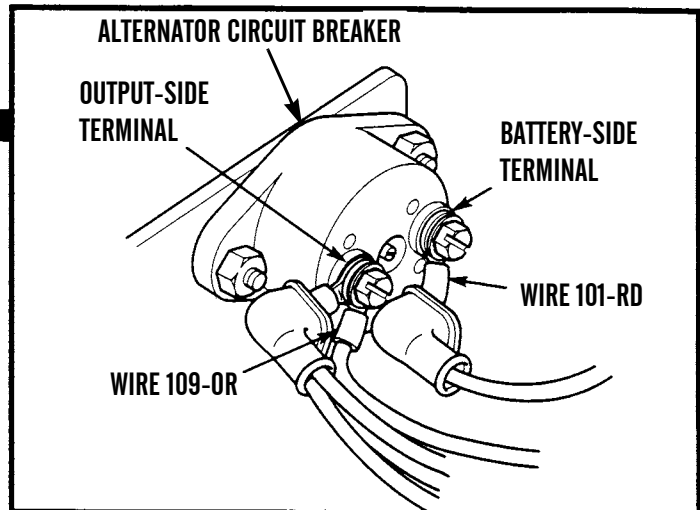
Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>5. Check power to alternator circuit breaker. Open left-side door assembly (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to battery-side terminal (wire 101-RD) and negative (-) probe of multimeter to good ground.</p> <p>6. Check power output of alternator circuit breaker. Touch positive (+) probe of multimeter to output-side terminal (wire 109-OR) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not present at battery-side terminal (wire 101-RD), replace or repair wire 101-RD and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are present at battery-side terminal (wire 101-RD), go to Step 6.</p> <p>1. If 24 to 28 Vdc are not present at output-side terminal (wire 109-OR), press alternator circuit breaker button and repeat Step 6. If 24 to 28 Vdc are still not present at output-side terminal (wire 109-OR), replace alternator circuit breaker (WP 0064 00).</p> <p>2. If 24 to 28 Vdc are present at output-side terminal (wire 109-OR), go to Step 7.</p>

ALTERNATOR CIRCUIT BREAKER BUTTON



ALTERNATOR CIRCUIT BREAKER



401-192

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>7. Check for power to main relay from alternator circuit breaker. Remove seven screws and washers and two screws and washers and remove panel from operator station. Touch positive (+) probe of multimeter to input terminal (wire 109-OR) and negative (-) probe of multimeter to good ground.</p> <p>8. Check power to coil of main relay. Disconnect main relay connector from harness connector. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire 308-YL) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at input terminal (wire 109-OR), replace or repair wire 109-OR and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at input terminal (wire 109-OR), go to Step 8.</p> <p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire 308-YL) and KEY START fuse is good, turn off engine start switch (TM 5-3895-379-10) and go to Step 10.</p> <p>2. If 24 to 28 Vdc are measured at terminal 2, connect main relay connector to harness connector. Go to Step 9.</p>

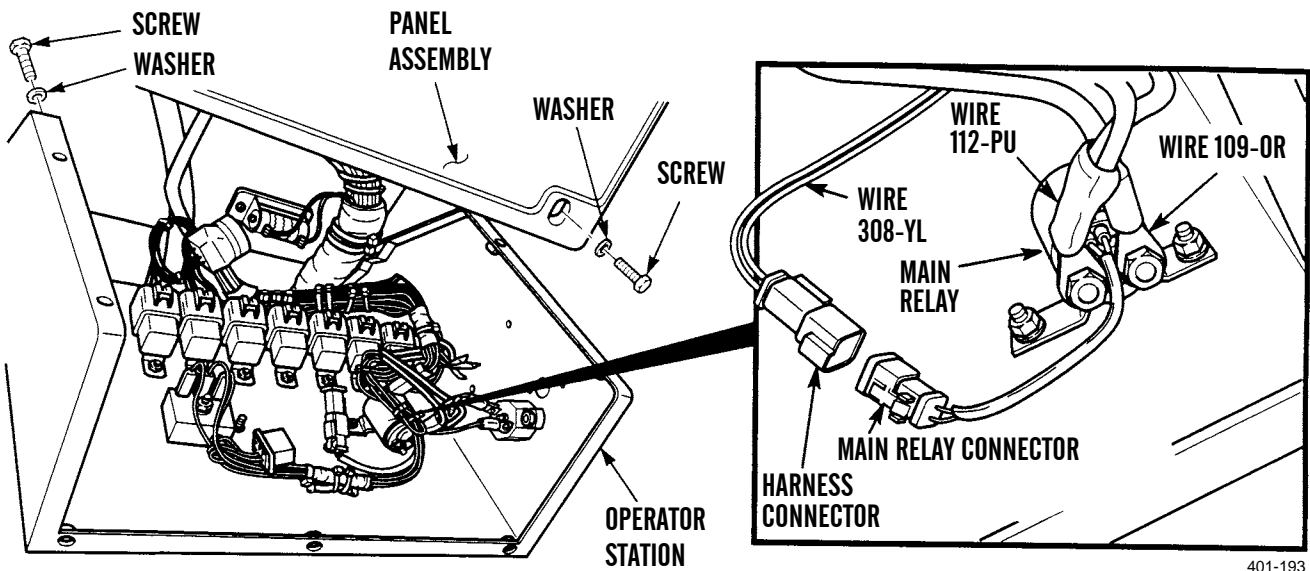
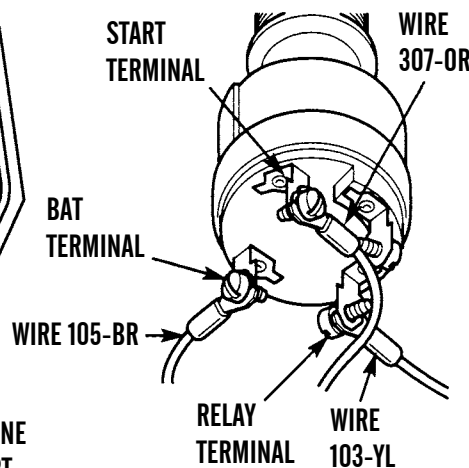
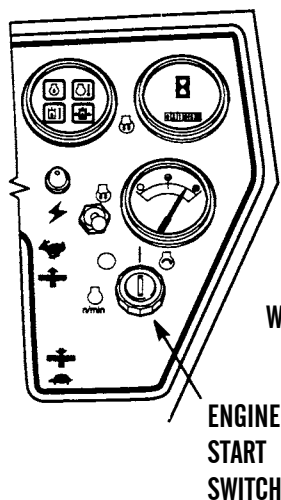
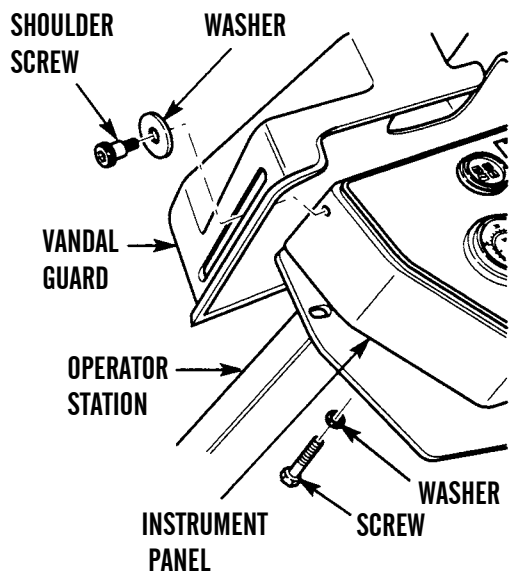


Table 2. Electrical Troubleshooting Procedures - Continued.

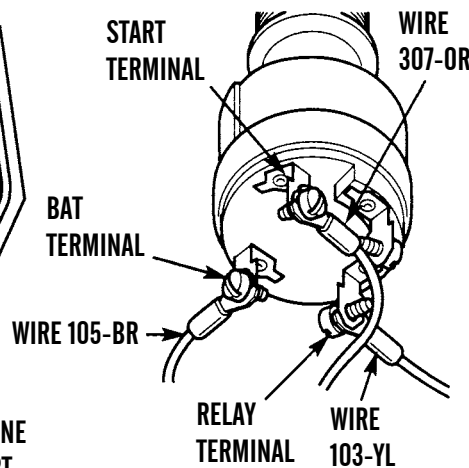
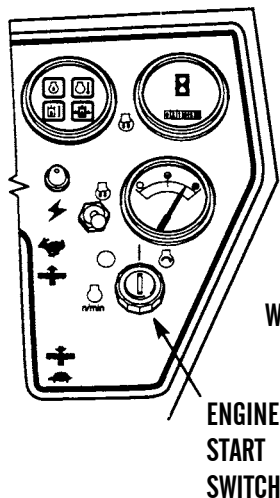
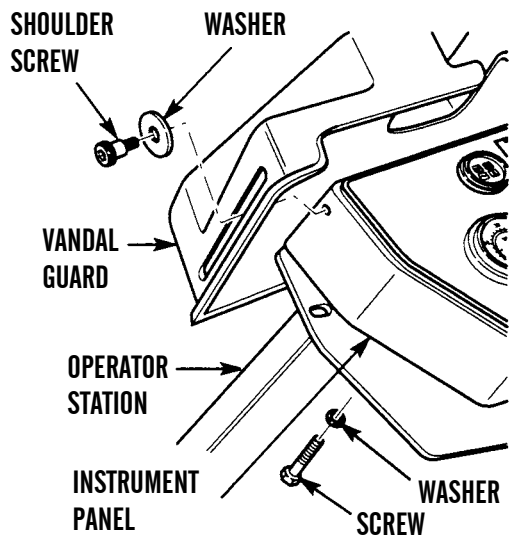
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>9. Check main relay output. Connect main relay connector to harness connector. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to output terminal of main relay (wire 112-PU) and negative (-) probe of multimeter to good ground.</p> <p>10. Check for power to engine start switch. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Touch positive (+) probe of multimeter to BAT terminal (wire 105-BR) of engine start switch. Touch negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at output terminal of main relay (wire 112-PU), replace main relay (WP 0067 00).</p> <p>2. If 24 to 28 Vdc are measured at output terminal of main relay, replace or repair wire 112-PU and connectors (WP 0108 00) to fuses.</p> <p>1. If 24 to 28 Vdc are not present at BAT terminal wire 105-BR), and KEY START fuse is good, replace or repair wiring and connectors to KEY START fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are present at BAT terminal, go to Step 11.</p>



401-194

Table 2. Electrical Troubleshooting Procedures - Continued.

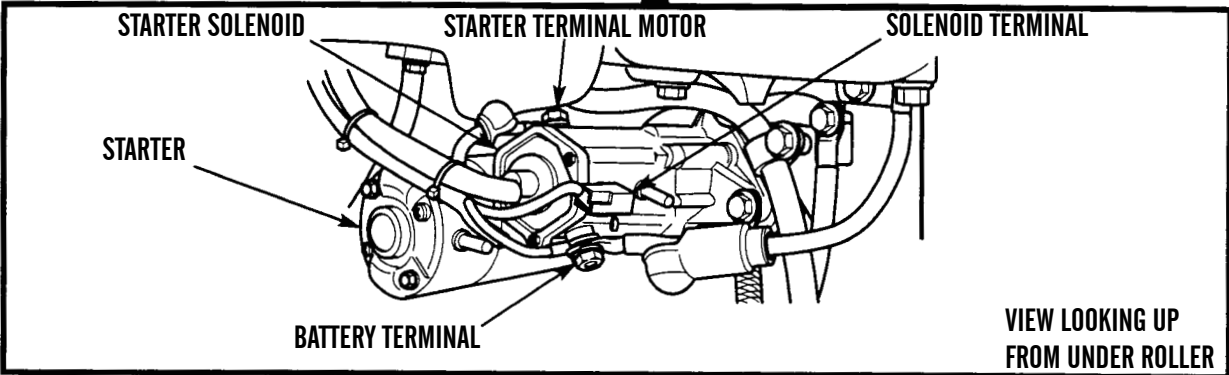
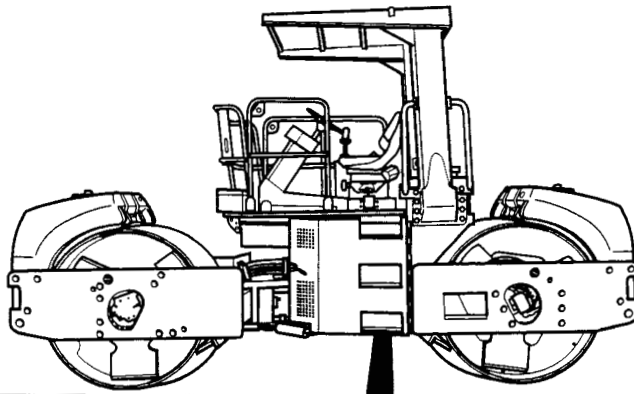
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Has No Electrical Power - Continued.</p>	<p>11. Check for power output at engine start switch. Push propel control lever forward to prevent engine start-up. Touch positive (+) probe of multimeter to RELAY terminal (wire 103-YL) of engine start switch. Touch negative (-) probe of multimeter to good ground. Turn and hold engine start switch to start (full right) position (TM 5-3895-379-10). Measure voltage output. Move positive (+) probe of multimeter to START terminal (wire 307-OR) of engine start switch. Measure voltage. Turn engine start switch to OFF position (TM 5-3895-379-10).</p>	<p>1. If 24 to 28 Vdc are not present at RELAY terminal (wire 103-YL), replace engine start switch (WP 0079 00).</p> <p>2. If 24 to 28 Vdc are not present at START terminal (wire 307-OR), replace engine start switch (WP 0079 00).</p> <p>3. If 24 to 28 Vdc are present at START and RELAY terminals, replace or repair wiring (wire 103-YL or 307-OR) and connectors to engine start switch (WP 0108 00).</p>



401-194

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly.</p>	<ul style="list-style-type: none"> Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment. When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury to personnel. Never lay under roller when engine is running or while attempting to start engine. Roller may accidentally move forward or back and cause injury or death from crushing. 	<p style="text-align: center;">CAUTION</p> <p>Operating starter for more than 30 seconds at a time can cause starter damage due to heat buildup. After 30 seconds, starter must be stopped for 2 minutes to allow starter to cool.</p>



401-195

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<ol style="list-style-type: none"> 1. Before doing next step, read WARNINGS on previous page. 2. Check for power at starter during cranking. Engage parking brake (TM 5-3895-379-10). Set multimeter to measure Vdc. Attach positive (+) probe of multimeter to battery terminal of starter. Attach negative (-) probe of multimeter to engine block. Move from under Roller. Have assistant turn on battery disconnect switch and turn and hold engine start switch to start position for not more than 30 seconds. Measure voltage at battery terminal. Have assistant turn engine start switch to OFF position (TM 5-3895-379-10). Move positive (+) probe of multimeter to starter terminal of starter. Move from under roller. Have assistant turn on battery disconnect switch and turn and hold engine start switch to start position (TM 5-3895-379-10) for not more than 30 seconds. Measure voltage at starter terminal. Have assistant then turn engine start switch to OFF position (TM 5-3895-379-10). 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not present at battery terminal of starter solenoid, go to Step 3. 2. If 24 to 28 Vdc are not present at starter terminal of starter solenoid, go to Step 6. 3. If 24 to 28 Vdc are present at starter and battery terminal of starter solenoid, replace starter (WP 0066 00).

Table 2. Electrical Troubleshooting Procedures - Continued.

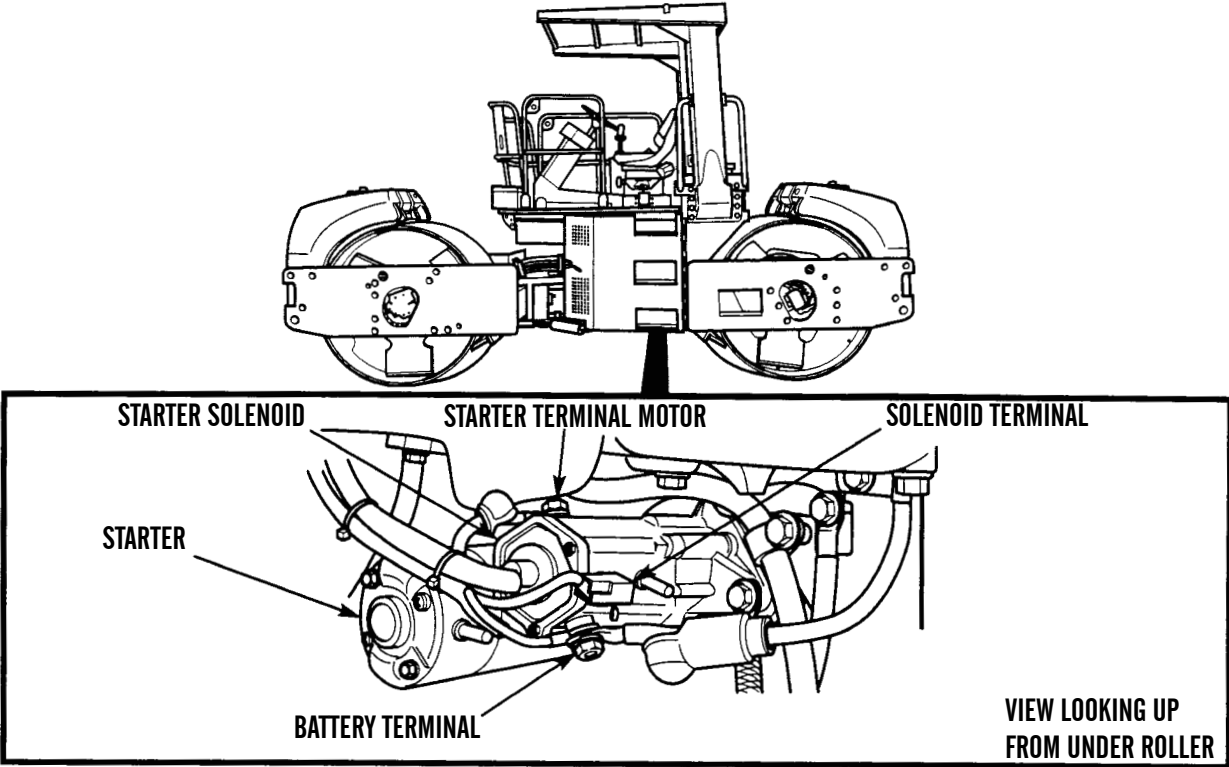

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION		
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>				
<div style="text-align: center;">  </div>				
<p>401-195</p>				
				
<p>WARNING</p>				
<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death to personnel and damage to equipment. • Use caution while working under operator platform assembly. Falling platform may cause injury or death. <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>3. Inspect batteries (WP 0103 00) and test batteries (WP 0103 00).</p> </td> <td style="width: 50%; vertical-align: top;"> <p>1. If batteries are damaged or bad, replace batteries (WP 0103 00). 2. If batteries are OK, go to Step 4.</p> </td> </tr> </table>			<p>3. Inspect batteries (WP 0103 00) and test batteries (WP 0103 00).</p>	<p>1. If batteries are damaged or bad, replace batteries (WP 0103 00). 2. If batteries are OK, go to Step 4.</p>
<p>3. Inspect batteries (WP 0103 00) and test batteries (WP 0103 00).</p>	<p>1. If batteries are damaged or bad, replace batteries (WP 0103 00). 2. If batteries are OK, go to Step 4.</p>			

Table 2. Electrical Troubleshooting Procedures - Continued.

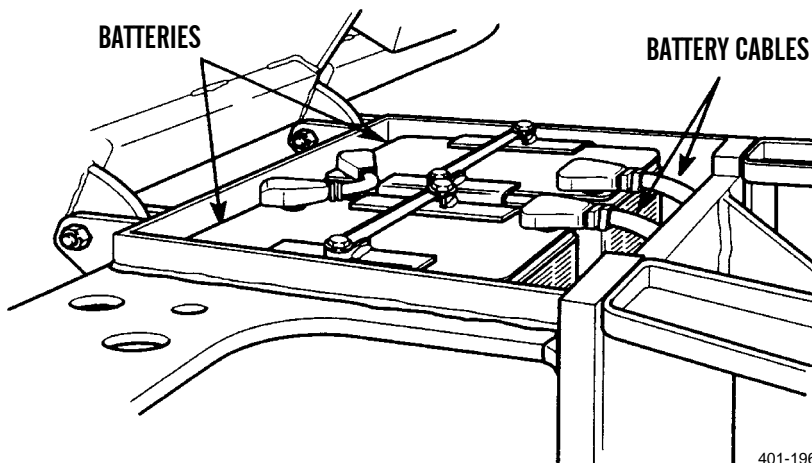
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<p>4. Check battery cables and connectors for looseness or damage such as corrosion, fraying, broken terminals, cracked or missing insulation or kinking.</p> <p>5. Check voltage drop during cranking. Touch positive (+) probe of multimeter and negative (-) probe of multimeter to locations below. Have assistant turn on battery disconnect switch and engine start switch to start positions (TM 5-3895-379-10) and hold for not more than 30 seconds, then turn engine start switch to OFF position (TM 5-3895-379-10).</p>	<p>1. If battery cable connectors are loose, tighten connectors (WP 0105 00). If battery cable or cable connectors are damaged, replace cable(s) (WP 0105 00).</p> <p>2. If battery cables are not damaged and connectors are not loose, go to Step 5.</p> <p>1. If voltage drop is greater than shown below, replace starter (WP 0066 00).</p> <p>2. If voltage drop is not greater than shown below, go to Step 6.</p>

MAXIMUM ACCEPTABLE SYSTEM VOLTAGE DROPS DURING CRANKING

CIRCUIT

24V SYSTEM

Battery (-) post to starter (-) terminal	1.4 Volts
Drop across battery disconnect switch	1.0 Volts
Battery (+) post to starter solenoid (+) terminal	1.0 Volts
Starter solenoid BAT terminal to MTR terminal	0.8 Volts

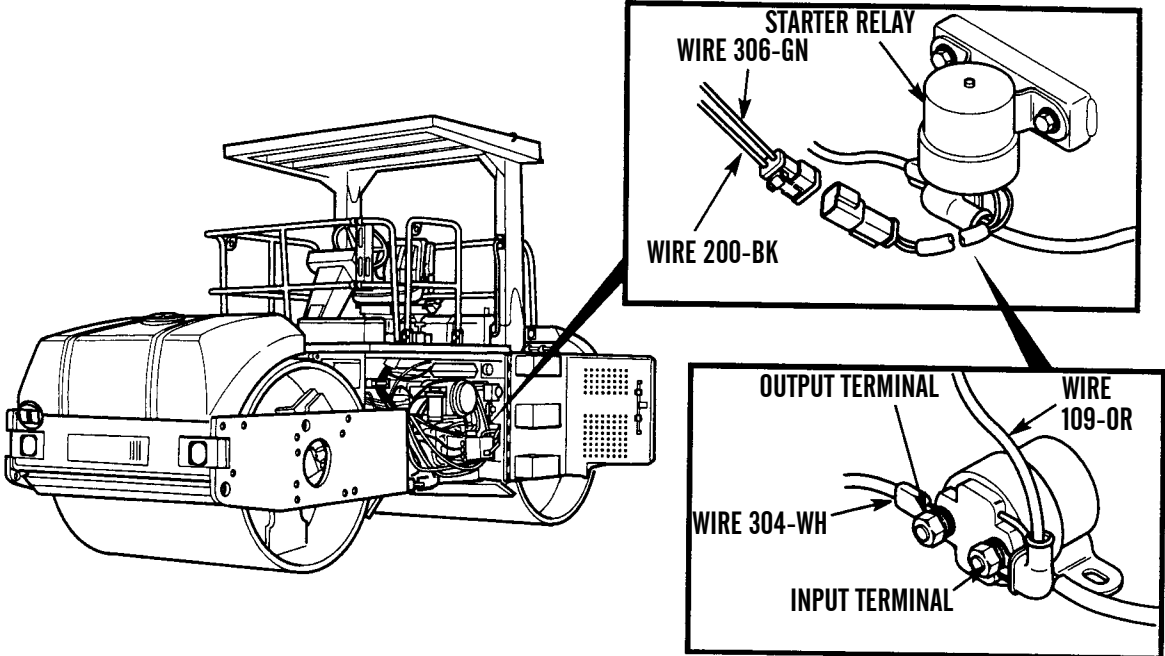


401-196

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<p>6. Check power at starter relay. Open left-side door assembly. Attach positive (+) probe of multimeter to input terminal (wire 109-OR) of starter relay. Attach negative (-) probe of multimeter to frame. Measure voltage. Attach positive (+) probe of multimeter to output terminal (wire 304-WH) of starter relay. Move back from roller. Have assistant turn and hold engine start switch to start (full right) position (TM 5-3895-379-10) for not more than 30 seconds. Measure voltage. Have assistant turn engine start switch to OFF position (TM 5-3895-379-10).</p> <p>7. Check ground to starter relay connector. Remove starter relay connector from wiring harness connector. Set multimeter to check ohms. Touch positive (+) probe of multimeter (wire 200-BK). Touch negative (-) probe of multimeter to frame. Zero ohms should be measured.</p> <p>8. Check power to coil of starter relay. Have assistant turn and hold engine start switch to start (full right) position. Touch positive (+) probe of multimeter (wire 306-GN). Touch negative (-) probe of multimeter to frame.</p>	<p>1. If 24 to 28 Vdc are present at input terminal (wire 109-OR), go to Step 7.</p> <p>2. If 24 to 28 Vdc are not present at input terminal (wire 304-WH) and roller otherwise has power, replace or repair wire 304-WH and connectors (WP 0108 00).</p> <p>3. If 24 to 28 Vdc are present at output terminal (wire 109-OR), replace or repair wire 109-OR and connectors (WP 0108 00).</p> <p>4. If 24 to 28 Vdc are present at both terminals, close left-side door assembly. Go to Step 9.</p> <p>1. If infinite ohms are measured, replace or repair wire 200-BK and connectors (WP 0108 00).</p> <p>2. If zero ohms are measured, go to Step 8.</p> <p>1. If 24 to 28 Vdc are not present at start relay output, replace or repair wire 304-WH and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are present at (wire 306-GN), replace starter relay (WP 0068 00).</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p> 	<p>9. Check power to neutral start relay no. 1. Remove nine screws and washers. Remove panel assembly from operator station. Remove harness connector from neutral start relay no. 1. Turn and hold engine start switch to start (full right) position. Touch positive (+) probe of multimeter to terminal 4 (wire 307-OR) and negative (-) probe of multimeter to good ground. Measure voltage. Ensure propel control lever is in neutral position (TM 5-3895-379-10). Move positive (+) probe of multimeter to terminal 3 (wire 330-YL) and measure. Turn engine start switch to OFF position (TM 5-3895-379-10).</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 4 (wire 307-OR), go to Step 11.</p> <p>2. If 24 to 28 Vdc are not measured at terminal 3 (wire 330-YL) and BRAKE fuse is good, go to step 10.</p> <p>3. If 24 to 28 Vdc are measured at terminals 3 and 4, turn engine start switch to OFF position (TM 5-3895-379-10).</p>

401-197

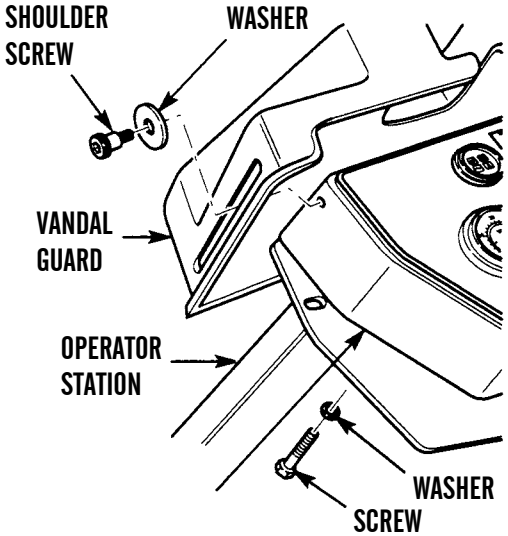
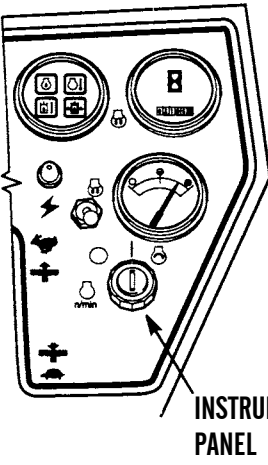
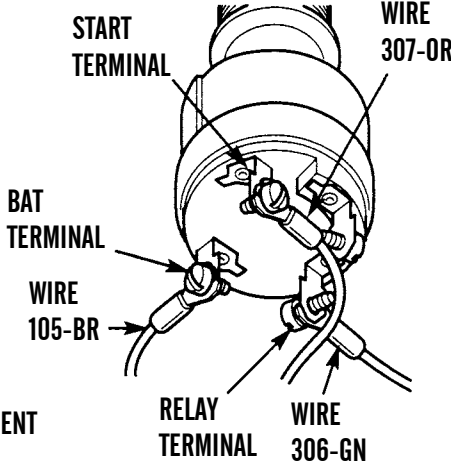
Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<p>10. Check continuity of neutral start relay no. 1. Remove neutral start relay no. 1 from operator station (WP 0068 00). Set multimeter to check ohms. Touch positive (+) probe of multimeter to terminal 85 and negative (-) probe of multimeter to terminal 86 of neutral start relay no. 1. Multimeter should measure zero ohms.</p> <p>11. Touch positive (+) probe of multimeter to terminal 87A and negative (-) probe of multimeter to terminal 30 of neutral start relay no. 1. Multimeter should measure zero ohms. Move positive (+) probe of multimeter to terminal 87 while negative (-) probe of multimeter stays at terminal 30 of neutral start relay no. 1. Multimeter should measure infinite ohms.</p>	<p>1. If multimeter does not measure zero ohms, replace neutral start relay no. 1 (WP 0068 00).</p> <p>2. If multimeter measures zero ohms, go to Step 11.</p> <p>1. If multimeter does not measure zero ohms between terminals 30 and 87A, replace neutral start relay no. 1 (WP 0068 00).</p> <p>2. If multimeter does not measure infinite ohms between terminals 30 and 87, replace neutral start relay no. 1 (WP 0068 00).</p> <p>3. If all continuity checks are OK, install neutral start relay no. 1 (WP 0068 00). Go to Step 12.</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<p>12. Check for good ground to neutral start relay no. 1 coil. Touch positive (+) probe of multimeter to terminal 2 (wire 200-BK) of harness connector and negative (-) probe to good ground. Multimeter should measure zero ohms.</p>	<p>1. If multimeter measures infinite ohms, repair or replace wire 200-BK and connectors (WP 0108 00). 2. If multimeter does read zero ohms, go to Step 13.</p>
<p>The diagram illustrates the electrical components and their connections. It shows the Neutral Start Relay #1 and the Operator Station. Labels include SCREW, WASHER, PANEL ASSEMBLY, HARNESS CONNECTOR, and RELAY. Two terminal diagrams are provided: the top one shows terminals 1, 2, 3, 4, and 5; the bottom one shows terminals 86, 87, 30, and 85.</p>		
	<p>13. Check for power to engine start switch. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Touch positive (+) probe of multimeter to BAT terminal (wire 105-BR) of engine start switch. Touch negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not present at BAT terminal (wire 105-BR), and KEY START fuse is good, replace or repair wiring and connectors to KEY START fuse holder (WP 0079 00). 2. If 24 to 28 Vdc are present at BAT terminal, go to Step 14.</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. Starter Does Not Turn or Turns Slowly - Continued.</p>	<p>14. Check for power output at engine start switch. Push propel control lever forward (TM 5-3895-379-10) to prevent engine start-up. Touch positive (+) probe of multimeter to RELAY terminal (wire 103-YL) of engine start switch. Touch negative (-) probe of multimeter to good ground. Turn and hold engine start switch to start (full right) position (TM 5-3895-379-10). Measure voltage output. Move positive (+) probe of multimeter to START terminal (wire 307-OR) of engine start switch. Measure voltage. Turn engine start switch to OFF position (TM 5-3895-379-10).</p>	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not present at RELAY terminal (wire 306-GN), replace engine start switch (WP 0079 00). 2. If 24 to 28 Vdc are not present at START terminal (wire 307-OR), replace engine start switch (WP 0079 00). 3. If 24 to 28 Vdc are present at RELAY and START terminals, replace or repair wiring (wire 103-YL or 307-OR) and connectors to engine start switch (WP 0108 00).
		
<p>3. Starter Turns, But Does Not Crank Engine.</p>	<p>Remove starter (WP 0065 00). Inspect flywheel ring gear for looseness or missing teeth.</p>	<ol style="list-style-type: none"> 1. If flywheel ring gear is not loose or missing teeth, replace starter (WP 0066 00). 2. If flywheel ring gear is loose or missing teeth, component is faulty. Notify Direct Support Maintenance.

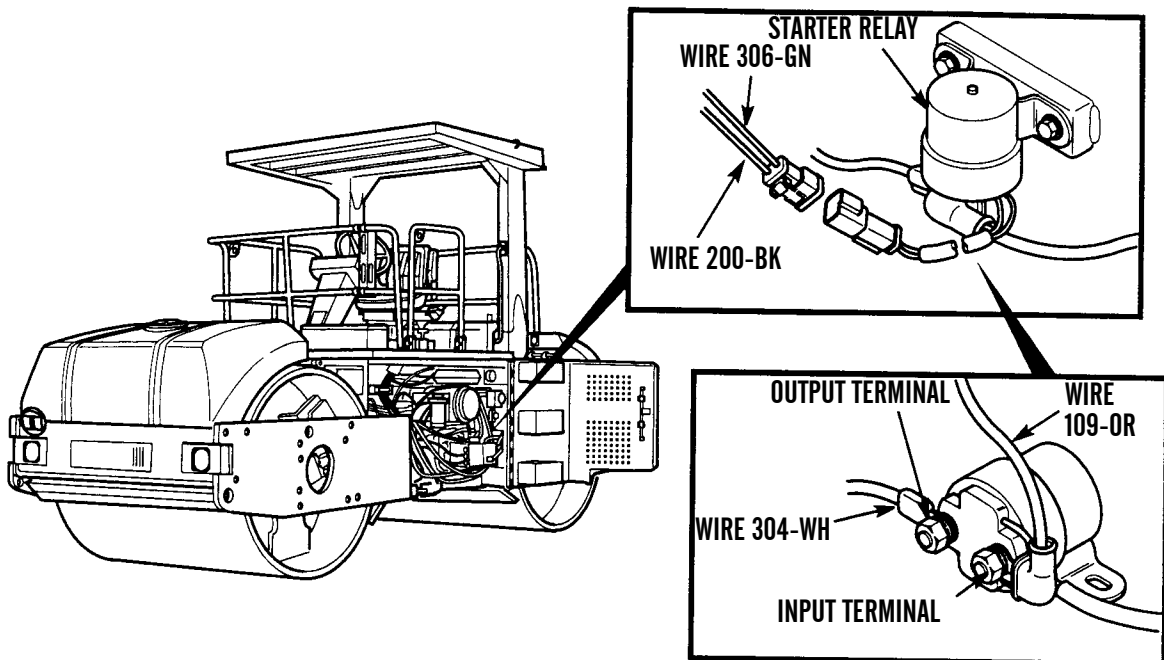
401-194

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. Starter Continues to Run After Engine Start Switch Key Is Released.</p>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death, or damage to equipment. • Use caution while working under operator platform assembly. Falling platform may cause injury or death. <p style="text-align: center;">CAUTION</p> <p>Operating starter for more than 30 seconds at a time can cause starter damage due to heat buildup. After 30 seconds, starter must be stopped for 2 minutes to allow starter to cool.</p> <ol style="list-style-type: none"> 1. Check for power to starter relay. Open left-side door assembly (TM 5-3895-379-10). Remove harness connector from starter relay switch assembly. Turn battery disconnect switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter (wire 306-GN) of harness connector. Touch negative (-) probe of multimeter to good ground. Have assistant turn engine start switch to start position until voltage is measurable on multimeter. Have assistant turn engine start switch to OFF position (TM 5-3895-379-10). Voltage should drop to zero Vdc. 	<ol style="list-style-type: none"> 1. If voltage does drop to zero Vdc, go to Step 2. 2. If voltage does not drop to zero Vdc, replace engine start switch (WP 0079 00).

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. Starter Continues to Run After Engine Start Switch Key Is Released - Continued.</p>	<p>2. Check for defective starter relay switch assembly. Turn battery disconnect switch to OFF position (TM 5-3895-379-10). Remove nut, washer and wire 304-WH (to starter) from starter relay switch assembly. Turn battery disconnect switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire 306-GN) of starter relay switch assembly. Touch negative (-) probe of multimeter to good ground. Have assistant turn engine start switch to start position until voltage is measurable on multimeter. Have assistant turn engine start switch to OFF position (TM 5-3895-379-10). Voltage should drop to zero Vdc.</p>	<p>1. If voltage does drop to zero Vdc, replace starter (WP 0066 00). 2. If voltage does not drop to zero Vdc, replace starter relay switch assembly (WP 0065 00).</p>



401-197

Table 2. Electrical Troubleshooting Procedures - Continued.


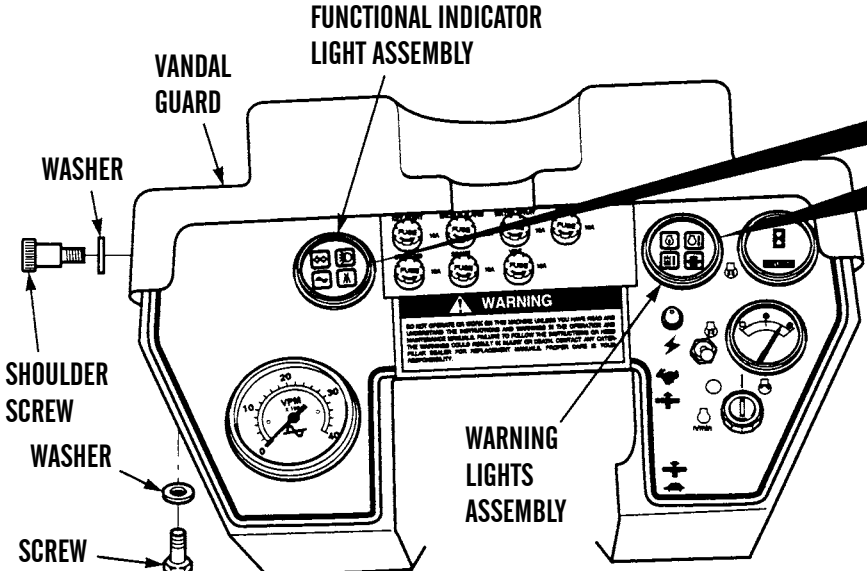
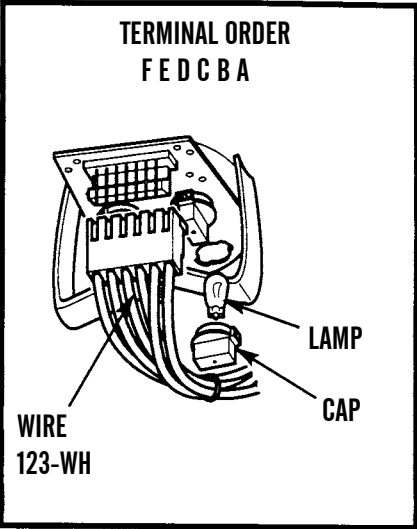
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment.</p> </div> <p>1. Check for broken lamps. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Turn lamp assembly caps clockwise and remove lamps. Check lamps for damage such as broken filaments or smoky condition.</p>	<p>1. If lamps are damaged, replace lamps with new parts and turn lamp assembly caps to left. Install box assembly on operator station with three washers and screws. Install vandal guard on box assembly with two washers and shoulder screws.</p> <p>2. If lamps are not damaged, go to Step 2.</p>
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">TERMINAL ORDER F E D C B A</p>  <p style="text-align: center;">WIRE 123-WH</p> <p style="text-align: right;">LAMP CAP</p> </div> </div> <p style="text-align: right; font-size: small;">401-199</p>		

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
5. Warning and Indicator Lights Do Not Operate - Continued.	2. Check for defective functional indicator lights assembly or warning lights assembly. Remove wiring harness connector(s) from functional indicator lights assembly or warning lights assembly. Set multimeter to diode check. Attach probes to light assemblies as noted below.	1. If any diode checks are not OK, replace functional indicator lights assembly (WP 0090 00) or warning lights assembly (WP 0093 00). 2. If all diode checks are OK, go to Step 3.

DIODE CHECKS

FUNCTIONAL INDICATOR LIGHTS ASSEMBLY

WARNING LIGHTS ASSEMBLY

Positive (+) Probe	Negative (-) Probe	Positive (+) Probe	Negative (-) Probe
Terminal A	Terminal C	Terminal B	Terminal D
Terminal B	Terminal C	Terminal E	Terminal D
Terminal E	Terminal C	Terminal A	Terminal D
Terminal F	Terminal C	Terminal F	Terminal D

5. Warning and Indicator Lights Do Not Operate - Continued.	3. Check for continuity of functional indicator lights assembly or warning lights assembly internal wiring. Set multimeter to measure ohms. Attach probes to light assemblies as noted below. Multimeter should measure zero ohms.	1. If any continuity check reads infinite, replace functional indicator lights assembly (WP 0090 00) or warning lights assembly (WP 0093 00). 2. If all continuity checks are OK, connect wiring harness connector(s) to go to functional indicator lights assembly or warning lights assembly Step 4.
---	--	---

CONTINUITY CHECKS

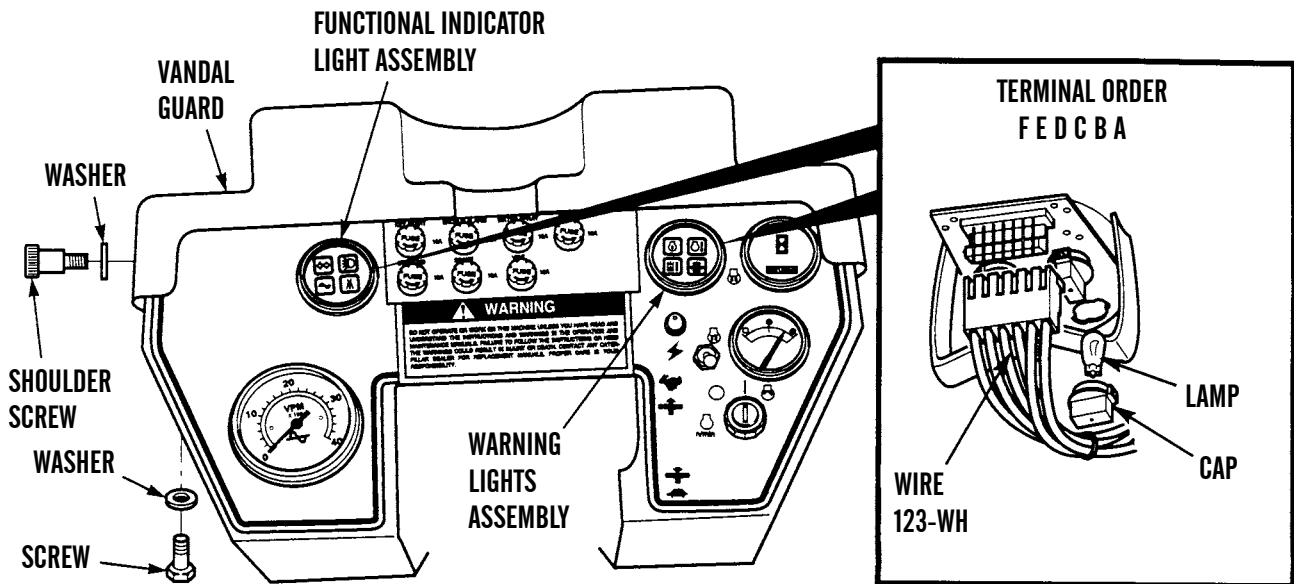
FUNCTIONAL INDICATOR LIGHTS ASSEMBLY

WARNING LIGHTS ASSEMBLY

Positive (+) Probe	Negative (-) Probe	Positive (+) Probe	Negative (-) Probe
Terminal A	Terminal C	Terminal A	Terminal D
Terminal B	Terminal C	Terminal B	Terminal D
Terminal D	Terminal C	Terminal C	Terminal D
Terminal E	Terminal C	Terminal E	Terminal D
Terminal F	Terminal C	Terminal F	Terminal D

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>4. Check for power to functional indicator light or warning light circuit. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal C (wire 123-WH) of harness warning light connector and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal C (wire 123-WH) and GAUGES fuse is good, turn engine start switch to OFF position and turn off battery disconnect switch. Repair or replace wire 123-WH and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal C, connect connector to lights assembly and go to Step 5.</p>



401-199

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>5. Check for power to functional light relay. Remove nine screws and washers remove panel from operator station. Remove harness connector from functional light relay. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire 123-WH) and negative (-) probe of multimeter to good ground.</p> <p>6. Check continuity of functional light relay. Remove functional light relay from operator station (WP 0068 00). Set multimeter to check ohms. Touch positive (+) probe of multimeter to terminal 85 and negative (-) probe of multimeter to terminal 86 of functional light relay. Multimeter should measure zero ohms.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire 123-WH) and GAUGES fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire 123-WH and connectors to GAUGES fuse holder (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 1, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Go to Step 6.</p> <p>1. If multimeter does not measure zero ohms, replace functional light relay (WP 0068 00).</p> <p>2. If multimeter measures zero ohms, go to Step 7.</p>

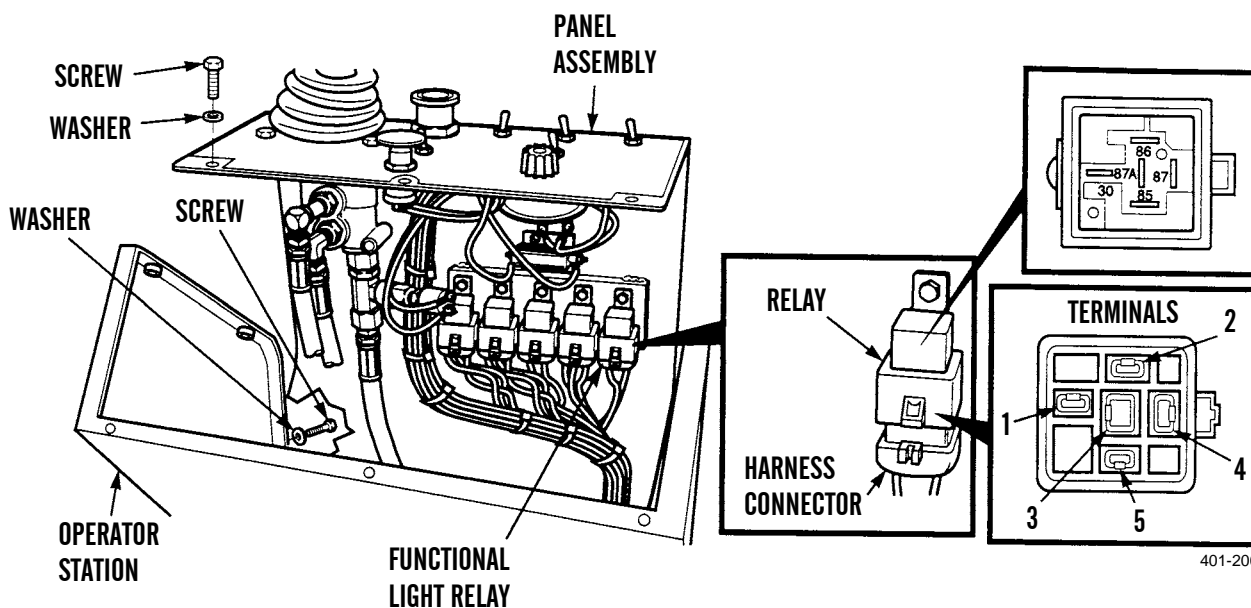


Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>7. Touch positive (+) probe of multimeter to terminal 87A and negative (-) probe of multimeter to terminal 30 of functional light relay. Multimeter should measure zero ohms. Move positive (+) probe of multimeter to terminal 87 while negative (-) probe of multimeter stays at terminal 30 of brake relay no. 1. Multimeter should measure infinite ohms.</p> <p>8. Check for good ground to functional light relay coil. Touch positive (+) probe of multimeter to terminal 2 (wire 200-BK) of harness connector and negative (-) probe to operator station. Multimeter should measure zero ohms.</p> <p>9. Check for power to warning light relay. Remove nine screws and washers, and remove panel from operator station. Remove harness connector from warning light relay. Turn ON battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire C931-OR) and negative (-) probe of multimeter to good ground.</p> <p>10. Check continuity of warning light relay. Remove warning light relay from operator station (WP 0068 00). Set multimeter to check ohms. Touch positive (+) probe of multimeter to terminal 85 and negative (-) probe of multimeter to terminal 86 of warning light relay. Multimeter should measure zero ohms.</p>	<p>1. If multimeter does not measure zero ohms between terminals 30 and 87A, replace functional light relay (WP 0068 00).</p> <p>2. If multimeter does not measure infinite ohms between terminals 30 and 87, replace functional light relay (WP 0068 00).</p> <p>3. If all continuity checks are OK, install functional light relay (WP 0068 00). Go to Step 8.</p> <p>1. If multimeter does not measure zero ohms, repair or replace wire 200-BK and connectors (WP 0108 00).</p> <p>2. If multimeter does read zero ohms, go to Step 9.</p> <p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire C931-OR) and GAUGES fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C931-OR (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 1, go to Step 10.</p> <p>1. If multimeter does not measure zero ohms, replace warning light relay (WP 0068 00).</p> <p>2. If multimeter does not measure zero ohms, go to Step 11.</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>11. Touch positive (+) probe of multimeter to terminal 87A and negative (-) probe of multimeter to terminal 30 of warning light relay. Multimeter should measure zero ohms. Move positive (+) probe of multimeter to terminal 87 while negative (-) probe of multimeter stays at terminal 30 of warning light relay. Multimeter should measure infinite ohms.</p> <p>12. Check for good ground to warning light relay. Touch positive (+) probe of multimeter to terminal 2 (wire 200-BK) of harness connector and negative (-) probe to good ground. Multimeter should measure zero ohms. Move positive (+) probe of multimeter to terminal 4 (wire 200-BK) of harness connector and negative (-) probe to good ground. Multimeter should measure zero ohms.</p>	<p>1. If multimeter does not measure zero ohms between terminals 30 and 87A, replace warning light relay (WP 0068 00).</p> <p>2. If multimeter does not measure infinite ohms between terminals 30 and 87, replace warning light relay (WP 0068 00).</p> <p>3. If all continuity checks are OK, install functional light relay (WP 0068 00). Go to Step 12.</p> <p>1. If multimeter does not measure zero ohms at both terminals 2 and 4, repair or replace wire 200-BK and connectors (WP 0108 00).</p> <p>2. If multimeter does read zero ohms, go to Step 13.</p>

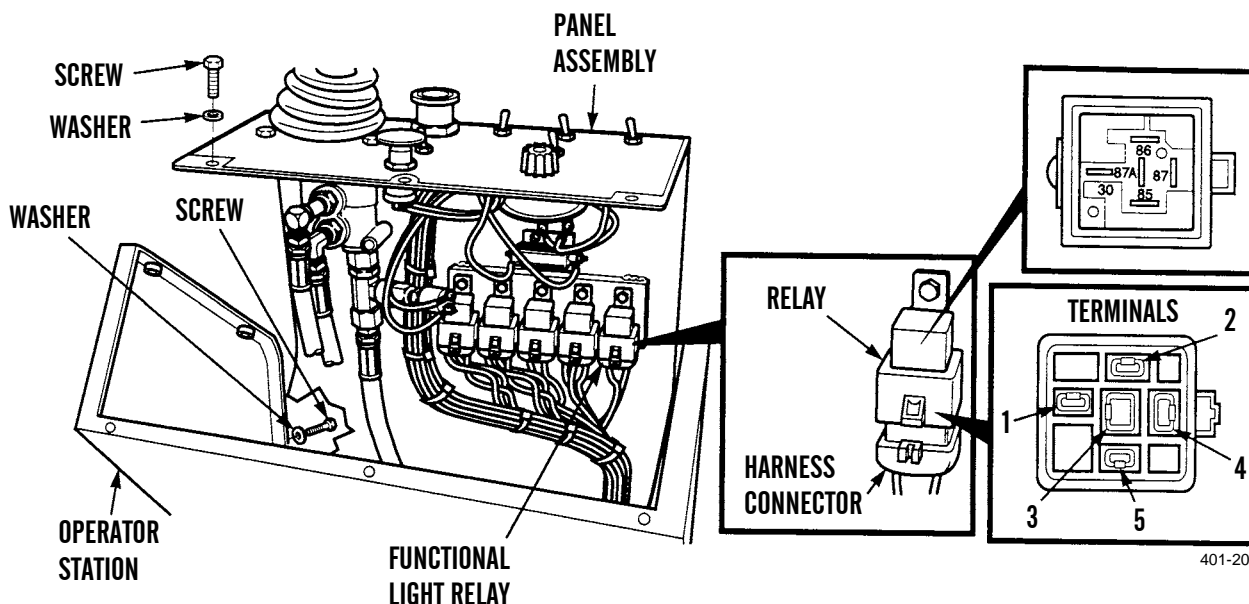
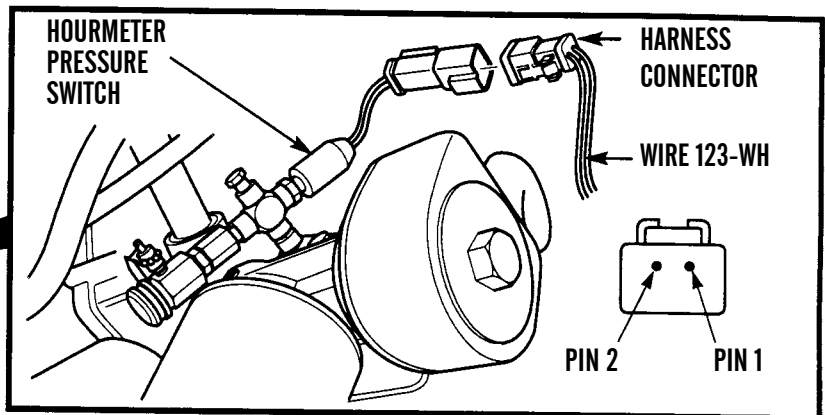
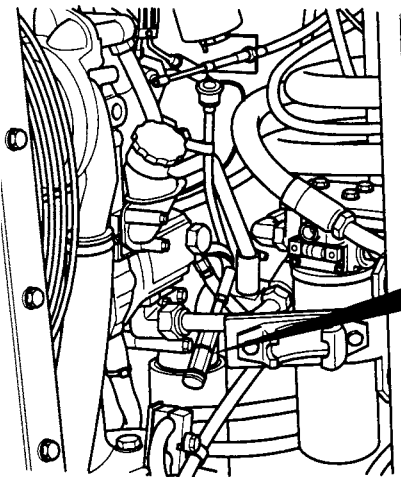


Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>13. Check for power to hourmeter pressure switch. Disconnect harness connector from hourmeter pressure switch connector. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 2 (wire 123-WH) and negative (-) probe of multimeter to good ground.</p> <p>14. Connect a jumper wire from terminal 1 to terminal 2 of harness connector. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10).</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire 123-WH), turn engine start switch to OFF position and turn battery disconnect switch OFF. Repair or replace wire 123-WH and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2, go to Step 14.</p> <p>1. If warning and indicator light operate, replace hourmeter pressure switch (WP 0084 00).</p> <p>2. If warning and indicator light do not operate, remove jumper wire. Connect harness connector to hourmeter pressure switch connector. Go to Step 15.</p>



401-201

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Warning and Indicator Lights Do Not Operate - Continued.</p>	<p>15. Check for power to diode. Remove four screws, washers and cover from operator station. Remove diode from harness connector. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to input terminal (wire 400-GN) and negative (-) probe of multimeter to good ground.</p> <p>16. Check diode for correct operation. Set multimeter to diode check. Touch positive (+) probe of multimeter to cathode terminal and negative (-) probe to corresponding anode terminal. Repeat test for each set of terminals.</p>	<p>1. If 24 to 28 Vdc are not measured at input terminal (wire 400-GN), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire 400-GN and connectors from diode to hourmeter pressure switch (WP 0084 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2, go to Step 16.</p> <p>1. If any diode checks are not OK, replace diode with new part. Install cover on operator station with four washers and screws.</p> <p>2. If diode checks are OK, repair or replace wire 938-BR and connectors (WP 0108 00).</p>

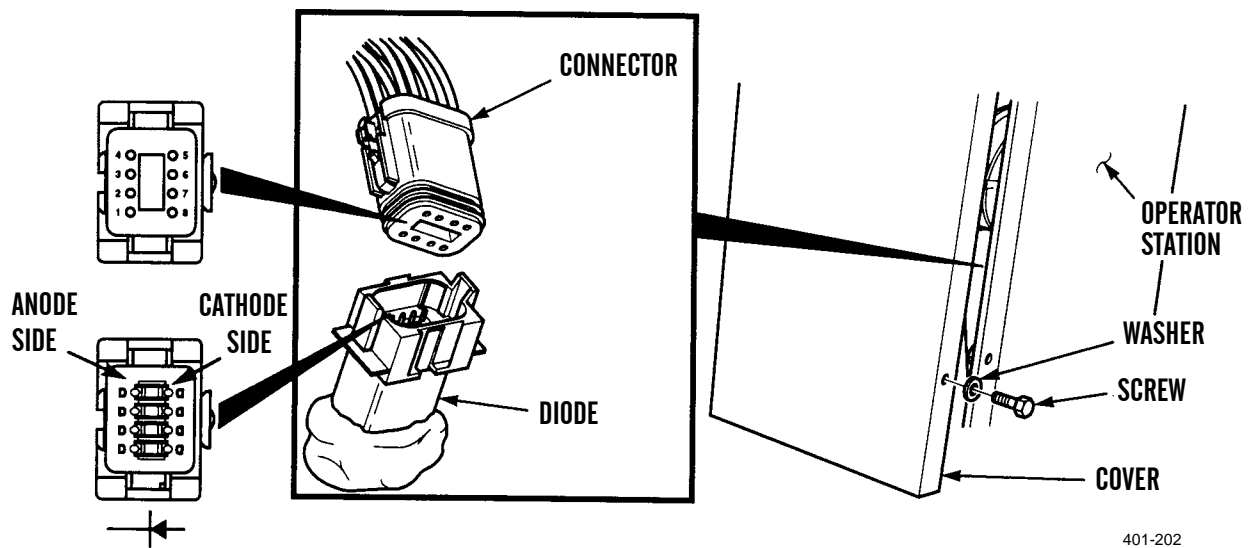


Table 2. Electrical Troubleshooting Procedures - Continued.


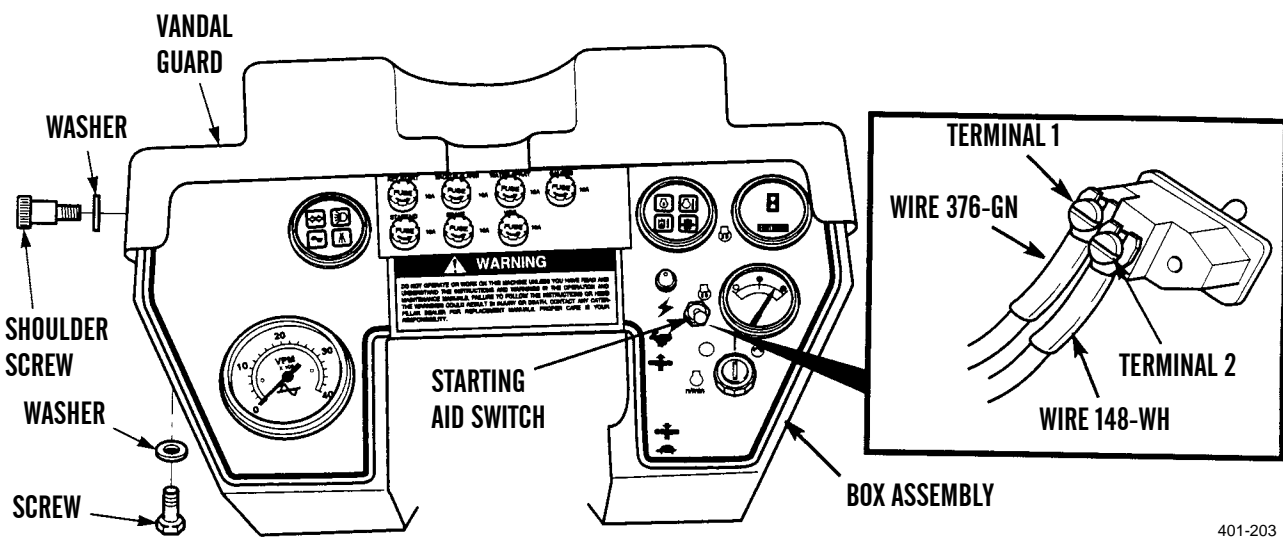
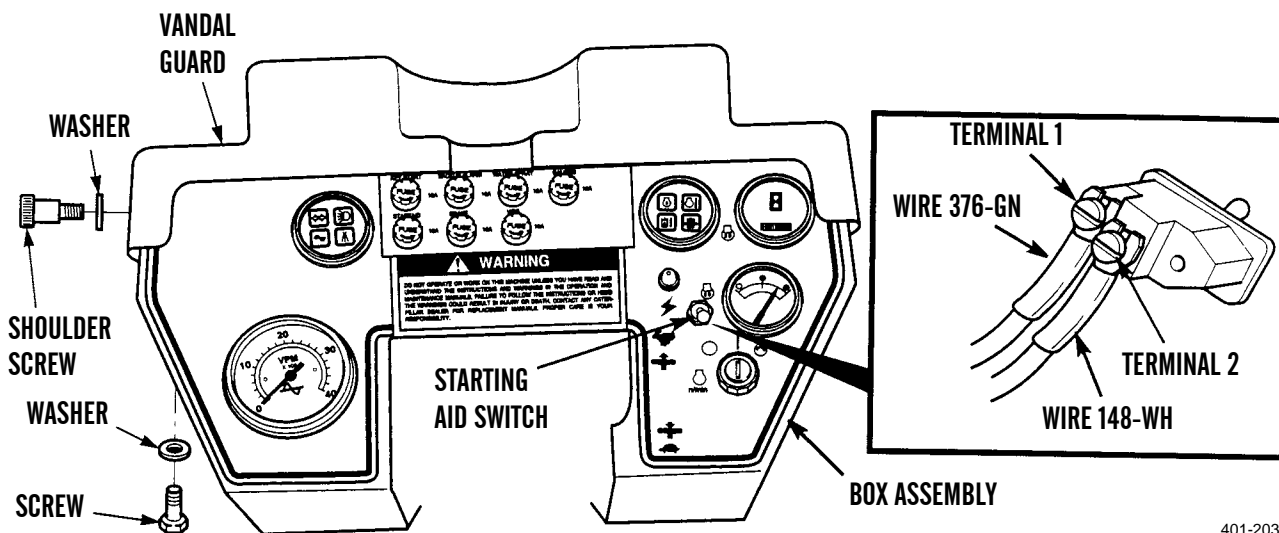
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Starting Aid Switch Does Not Work.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment.</p> </div> <ol style="list-style-type: none"> 1. Check for power to starting aid switch. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 2 (wire 148-WH) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at terminal 2 and START AID fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to starting aid switch (WP 0078 00). 2. If 24 to 28 Vdc are measured at terminal 2, go to Step 2.
<div style="text-align: center;">  </div> <p style="text-align: right;">401-203</p>		


Table 2. Electrical Troubleshooting Procedures - Continued.

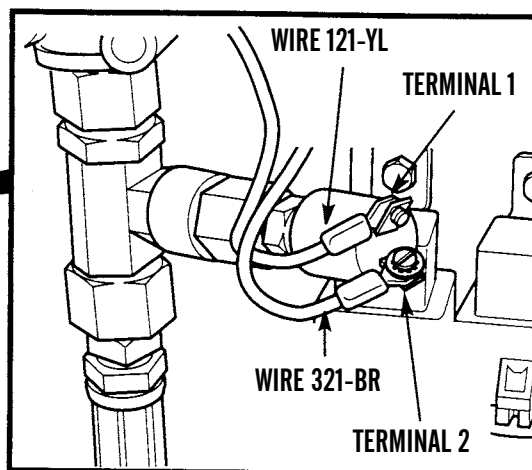
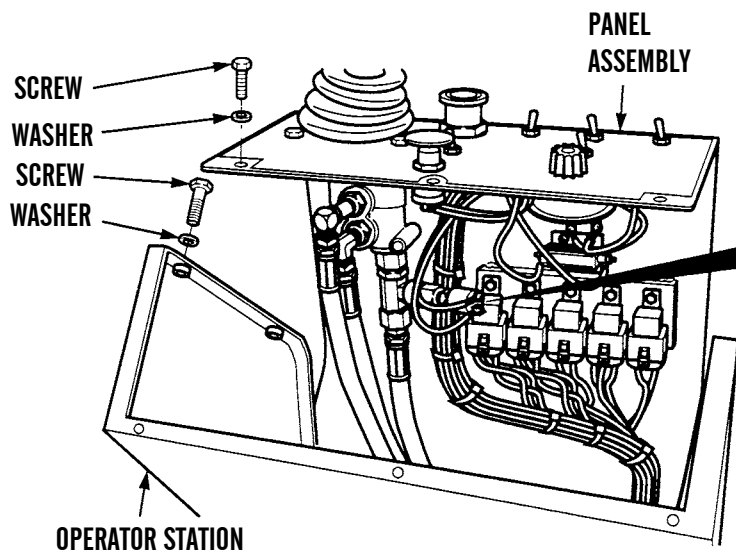
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Starting Aid Switch Does Not Work - Continued.</p>	<p>2. Check for power at starting aid switch. Press starting aid switch forward to start position (TM 5-3895-379-10). Set multimeter to measure Vdc, touch positive (+) probe of multimeter to terminal 1 (wire 376-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 1, turn engine start switch and battery disconnect to OFF position (TM 5-3895-379-10). Replace start aid switch (WP 0078 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors from starting aid switch to starting aid resistor (WP 0087 00). Install box assembly on operator station with three washers and screws. Install vandal guard on box assembly with two washers and shoulder screws.</p>



401-203

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Backup Alarm Does Not Work.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment.</p> </div> <ol style="list-style-type: none"> 1. Check for power to backup alarm sending unit. Remove nine screws and washers remove panel from operator station. Turn battery disconnect switch on. Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire 121-YL) and negative (-) probe of multimeter to good ground. 2. Connect a jumper wire across terminal 1 (wire 121-YL) and terminal 2 (wire 321-BR). 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at terminal 1 and BACKUP ALARM fuse is good, turn engine start switch to OFF position and battery disconnect switch OFF (TM 5-3895-379-10). Repair or replace wiring and connectors to BACKUP ALARM fuse holder (WP 0077 00). 2. If 24 to 28 Vdc are measured at terminal 1, go to Step 2. <ol style="list-style-type: none"> 1. If backup alarm sounds, turn battery disconnect switch off. Replace backup alarm sending unit (WP 0094 00). 2. If backup alarm does not sound, go to Step 3.



401-204

Table 2. Electrical Troubleshooting Procedures - Continued.

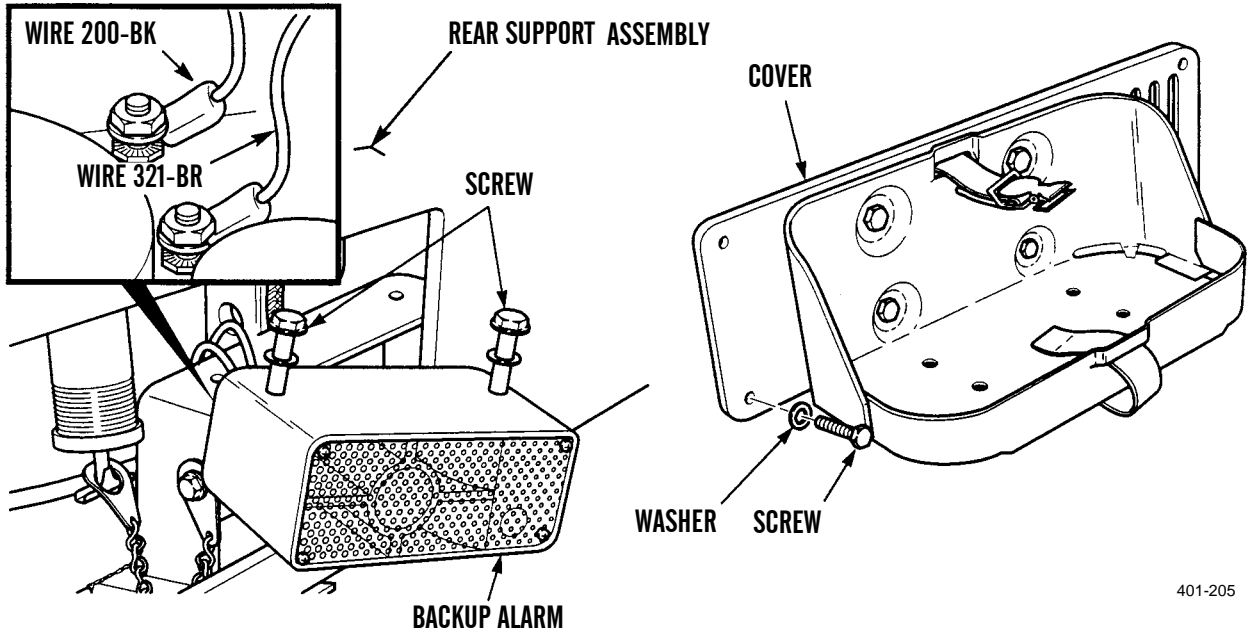
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Backup Alarm Does Not Work - Continued.</p>	<p>3. Check for power at backup alarm. Remove decontamination kit from decontamination kit bracket. Remove four screws, washers and plate assembly from rear support assembly. Loosen two screws and pull backup alarm from rear support assembly. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire 321-BR) and negative (-) probe of multimeter to support assembly.</p>	<p>1. If 24 to 28 Vdc are not measured at wire 321-BR, wire is bad. Repair or replace wiring and connectors from backup alarm to backup alarm sending unit (WP 0094 00). 2. If 24 to 28 Vdc are measured at wire 321-BR, go to Step 4.</p>
 <p>401-205</p>	<p>4. Check for good ground at backup alarm. Loosen screw and remove wire 200-BK from backup alarm. Set multimeter to read ohms. Touch positive (+) probe of multimeter to 200-BK and negative (-) probe of multimeter to good ground.</p>	<p>1. If zero ohms are measured, ground is OK. Replace backup alarm (WP 0100 00). 2. If infinite ohms are measured, ground is bad. Repair or replace wire 200-BK and connectors from backup alarm to ground connection at frame (WP 0100 00).</p>

Table 2. Electrical Troubleshooting Procedures - Continued.


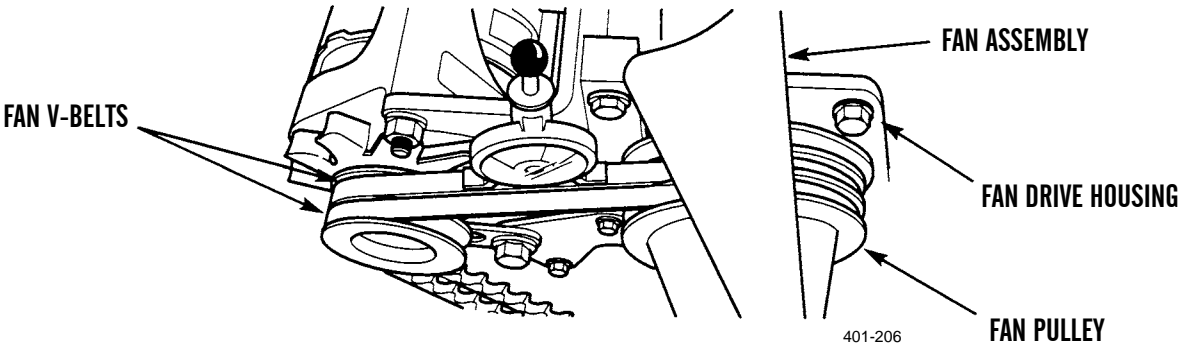
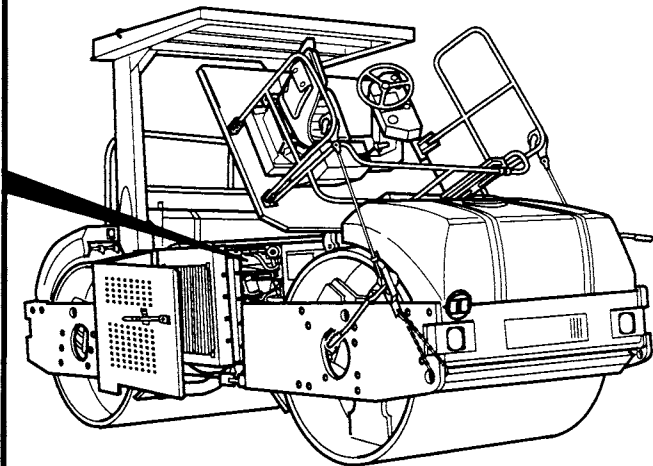
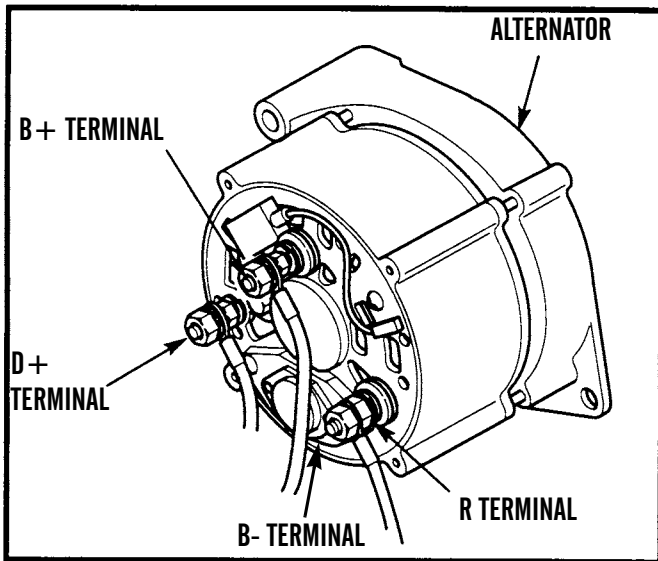
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Alternator Indicator Is On.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> </div> <ol style="list-style-type: none"> 1. Raise operator platform (WP 0128 00). Check fan V-belts for damage such as cracks to belt fiber, one or more cracks 1/8 inch in depth or 50% of belt thickness, splits, grease buildup, glazed sides and peeling. Attach belt tension gauge to fan V-belts. Correct belt tension is 80 lbs. <div style="text-align: center;">  </div> <ol style="list-style-type: none"> 2. Check fan assembly, fan drive housing, and fan pulley for looseness or damage such as cracked or missing fan blades, loose nuts and screws, bent or cracked fan pulley, damage or wear resulting from extreme fan blade wobble. 	<ol style="list-style-type: none"> 1. If fan V-belts are damaged, replace fan V-belts (WP 0060 00). 2. If belt tension is 50 lbs or less, adjust alternator V-belt tension (WP 0060 00). 3. If fan V-belts are not damaged or loose, go to Step 2. <ol style="list-style-type: none"> 1. If fan assembly, fan drive housing and fan pulley are loose or damaged, tighten or replace loose or damaged parts (WP 0059 00). 2. If fan assembly, fan drive housing and fan pulley are not loose or damaged, go to Step 3.

Table 2. Electrical Troubleshooting Procedures - Continued.

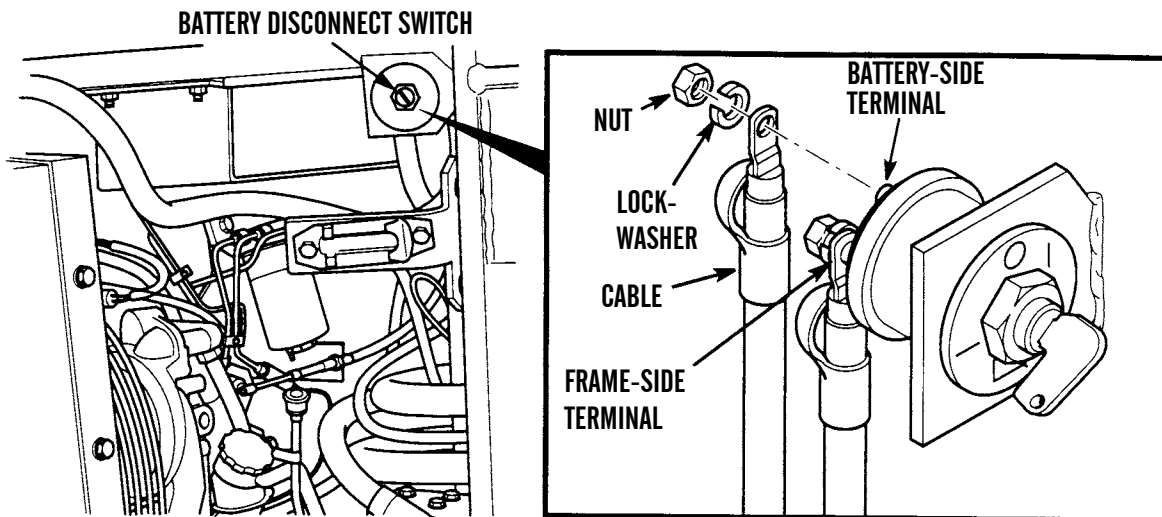
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Alternator Indicator Is On - Continued.</p>	<p>3. Check for loose or damaged wiring connections at alternator.</p> <p>4. Inspect and test batteries (WP 0103 00).</p> <p>5. Check battery cables and connectors for looseness or damage such as corrosion, fraying, broken terminals, cracked or missing insulation or kinking.</p>	<p>1. If connections are loose, tighten connections.</p> <p>2. If connectors or wiring is damaged, replace or repair connectors or wiring (WP 0108 00).</p> <p>3. If there are not loose or damaged connections or damaged wiring, go to Step 4.</p> <p>1. If batteries are damaged or bad, replace batteries (WP 0103 00).</p> <p>2. If batteries are OK, go to Step 5.</p> <p>1. If battery cable connectors are loose, tighten connectors (WP 0105 00). If battery cable or cable connectors are damaged, replace cable(s) (WP 0105 00).</p> <p>2. If battery cables are not damaged and connectors are not loose, go to Step 6.</p>



401-207

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8 Alternator Indicator Is On - Continued.</p>	<p>6. Check for defective battery disconnect switch. Turn battery disconnect switch OFF (TM 5-3895-379-10). Remove nut, lockwasher and cable from battery-side terminal. Discard lockwasher. Set multimeter to measure ohms. Touch positive (+) probe of multimeter to battery-side terminal and negative (-) probe of multimeter to frame-side terminal of battery disconnect switch. Multimeter should measure infinite ohms. Turn battery disconnect switch on. Multimeter should measure zero ohms.</p>	<ol style="list-style-type: none"> 1. If infinite ohms are not present across battery disconnect switch terminals in disconnect position, replace battery disconnect switch (WP 0104 00). Lower operator platform (WP 0128 00). 2. If infinite ohms are present across battery disconnect switch in connect position, replace battery disconnect switch (WP 0104 00). Lower operator platform (WP 0128 00). 3. If both ohms checks are OK, install cable on battery disconnect switch with lockwasher and nut. Replace alternator (WP 0061 00). Lower operator platform (WP 0128 00).



401-208

Table 2. Electrical Troubleshooting Procedures - Continued.


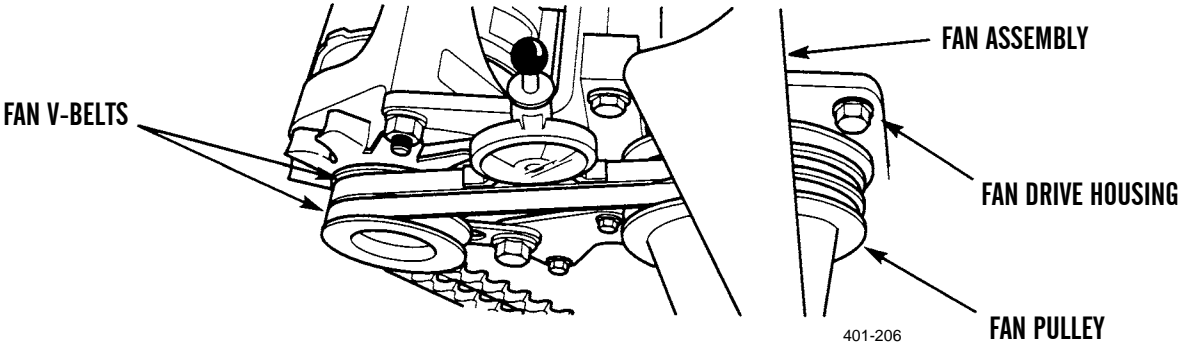
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Alternator is Noisy.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Use caution while working under operator platform assembly. Falling platform may cause injury or death.</p> </div> <ol style="list-style-type: none"> 1. Check fan V-belts for damage or looseness. Raise operator platform (WP 0128 00). Check fan V-belts for damage such as cracks to belt fiber, one or more cracks 1/8 inch in depth or 50% of belt thickness, splits, grease buildup, glazed sides and peeling. Attach belt tension gauge to fan V-belts. Correct belt tension is 80 lbs. 	<ol style="list-style-type: none"> 1. If fan V-belts are damaged, replace fan v-belts (WP 0060 00). 2. If belt tension is 50 lbs or less, adjust alternator V-belt tension (WP 0060 00). 3. If alternator is not damaged or loose, remove belt tension gauge from fan V-belts. Go to Step 2.
		

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Alternator is Noisy - Continued.</p>	<p>2. Check alternator bracket, fan assembly and guard, and fan drive housing assembly for looseness or damage such as cracked or missing fan blade(s), loose nuts and screws, bent or cracked fan pulley, or damage or wear resulting from extreme fan blade wobble.</p>	<p>1. If alternator bracket is loose or damaged, tighten or replace alternator bracket (WP 0063 00).</p> <p>2. If fan assembly and guard are loose or damaged, tighten or replace damaged parts (WP 0059 00).</p> <p>3. If fan drive housing assembly is loose or damaged, tighten or replace fan drive housing assembly (WP 0058 00).</p> <p>4. If fan assembly and guard are not loose or damaged, replace alternator (WP 0061 00).</p>

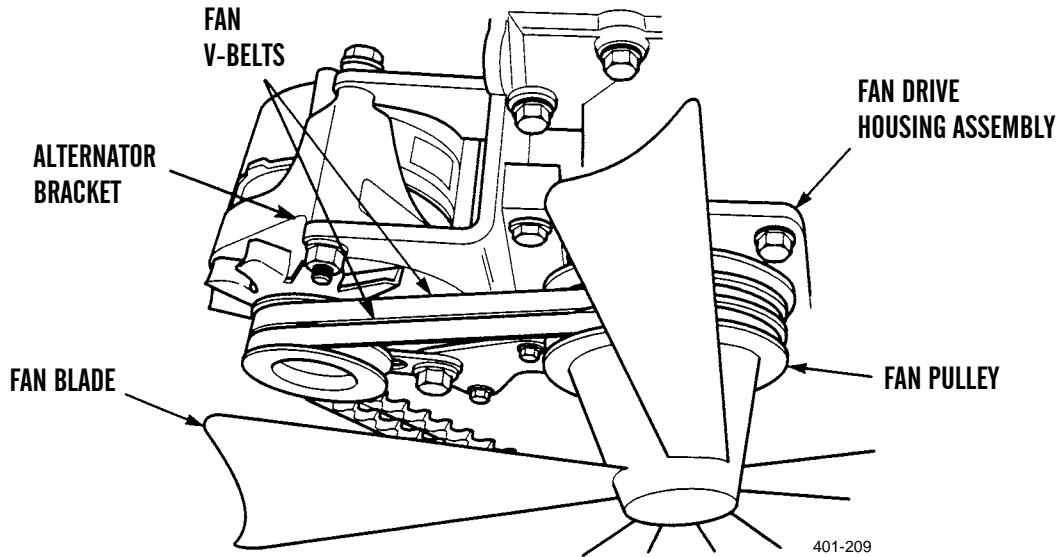


Table 2. Electrical Troubleshooting Procedures - Continued.


MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Work Lights and Gauge Lights Do Not Operate.</p>	<div style="text-align: center;">  <p>WARNING</p> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment.</p> </div> <ol style="list-style-type: none"> 1. Battery disconnect and start switches in ON position (TM 5-3895-379-10). Check for power to lights circuit breaker. Remove nine screws and washers remove panel from operator station. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to input terminal (wire 122-PU) of lights circuit breaker and negative (-) probe of multimeter to good ground. 2. Battery disconnect and start switches in ON position (TM 5-3895-379-10). Check for power at lights circuit breaker. Press circuit breaker button to reset. Touch positive (+) probe of multimeter to output terminal (wire 114-GN) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at input terminal (wire 112-PU), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire 112-PU and connectors from main relay to alternator circuit breaker (WP 0064 00). 2. If 24 to 28 Vdc are measured at input terminal (wire 112-PU), go to Step 2. 1. If 24 to 28 Vdc are not measured at output terminal (wire 114-GN), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace lights circuit breaker (WP 0086 00). 2. If 24 to 28 Vdc are measured at output terminal (wire 114-GN), go to Step 3.

Table 2. Electrical Troubleshooting Procedures - Continued.

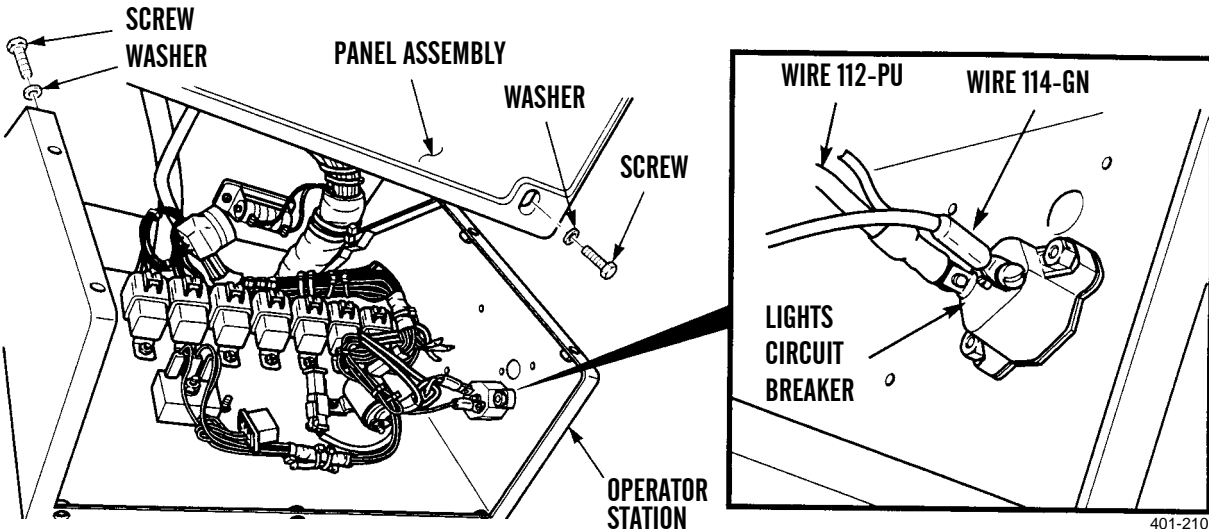
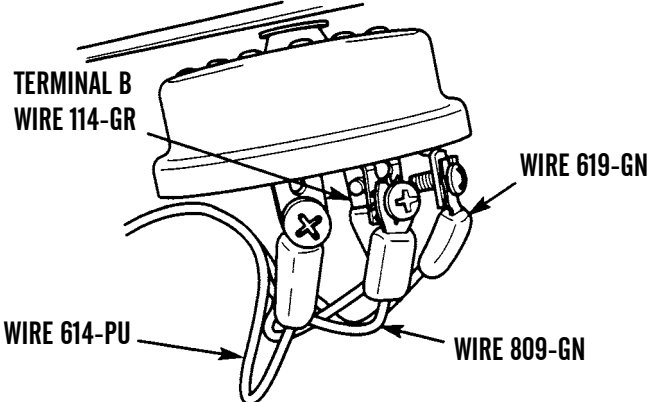

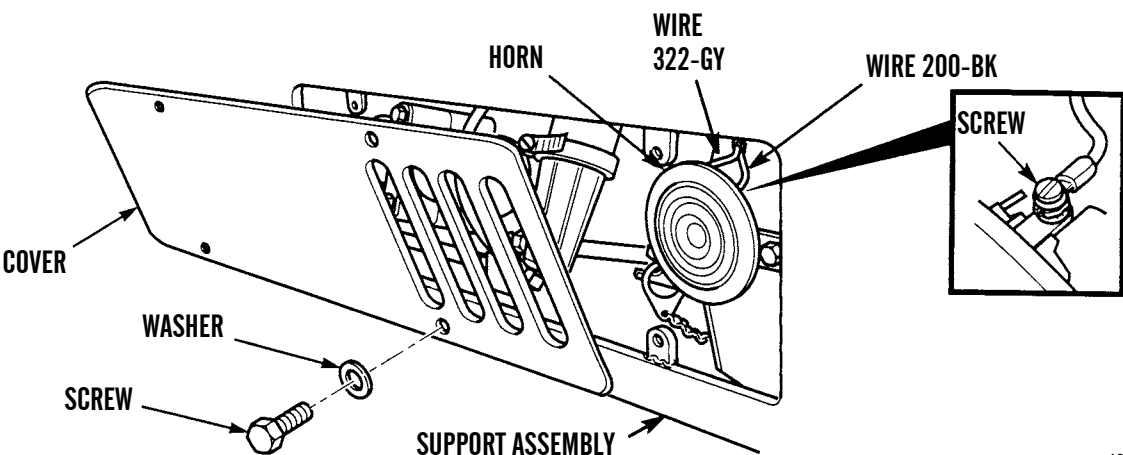
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Work Lights and Gauge Lights Do Not Operate - Continued.</p>  <p>Diagram labels: SCREW, WASHER, PANEL ASSEMBLY, WASHER, SCREW, OPERATOR STATION, WIRE 112-PU, WIRE 114-GN, LIGHTS CIRCUIT BREAKER.</p> <p>401-210</p>	<p>3. Battery disconnect and start switches in ON position (TM 5-3895-379-10). Check for power to work light control switch. Touch positive (+) probe of multimeter to terminal B (wire 114-GR) of lights circuit breaker and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal B (wire 114-GR), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire 114-GR and connectors from lights circuit breaker to work light control switch (WP 0086 00).</p> <p>2. If 24 to 28 Vdc are measured at input terminal B (wire 114-GR), replace work light control switch (WP 0075 00).</p>  <p>Diagram labels: TERMINAL B WIRE 114-GR, WIRE 614-PU, WIRE 619-GN, WIRE 809-GN.</p> <p>401-211</p>

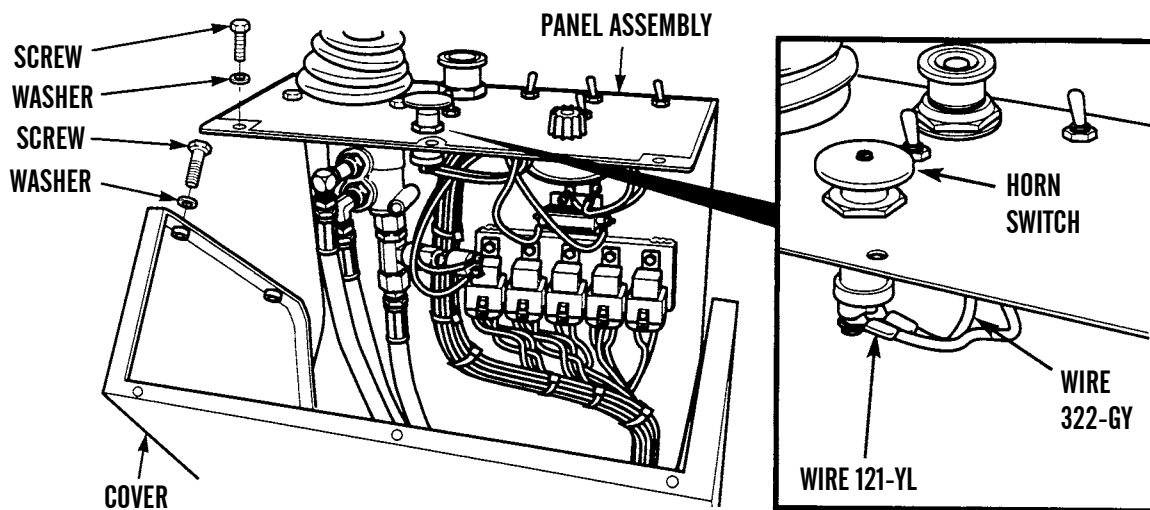
Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. Horn Does Not Work.</p>	<div style="text-align: center;">  <p>WARNING</p> </div> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death and damage to equipment.</p> <ol style="list-style-type: none"> 1. Check for power at horn. Remove four screws, washers, and cover from front support assembly. Have an assistant turn battery disconnect switch and engine start switch ON, and press down horn switch (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire 322-GY) and negative (-) probe of multimeter to good ground. 2. Check for good ground at horn. Loosen screw and remove wire 200-BK from horn assembly. Set multimeter to read ohms. Touch positive (+) probe of multimeter to 200-BK and negative (-) probe of multimeter to good ground. 	<p>If 24-28 Vdc are measured, ground is OK. Replace horn assembly (WP 0102 00).</p> <p>If less than zero ohms are measured, ground is bad. Repair or replace wiring and connectors from horn to ground connection at frame (WP 0108 00).</p>
		

401-212

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. Horn Does Not Work - Continued.</p>	<p>3. Check for power to horn switch. Remove seven screws and washers and two screws and washers and remove panel from operator station. Turn battery disconnect switch and engine start switch to on position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 1 (wire 121-YL) and negative (-) probe of multimeter to good ground.</p> <p>4. Check for power at horn switch. Press and hold horn switch down. Touch positive (+) probe of multimeter to (wire 322-GY) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured (wire 121-YL) and BACKUP ALARM fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to water spray fuse holder (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured (wire 121-YL), go to Step 4.</p> <p>1. If 24 to 28 Vdc are not measured at (wire 322-GY), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace horn switch (WP 0101 00).</p> <p>2. If 24 to 28 Vdc are measured at (wire 322-GY), repair or replace wire 322-GY and connectors from horn switch to horn assembly (WP 0108 00).</p>



401-213

Table 2. Electrical Troubleshooting Procedures - Continued.

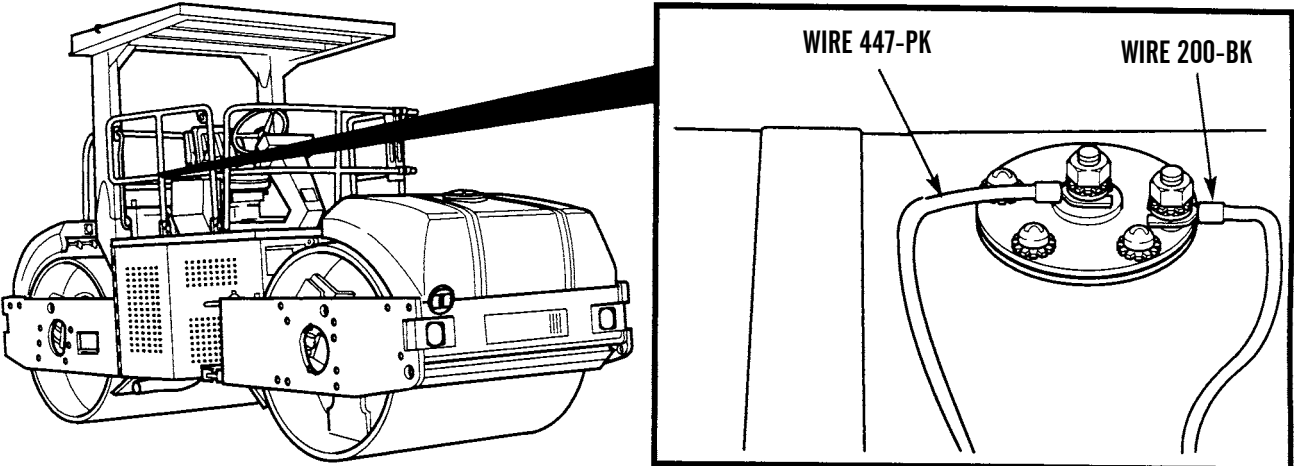
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>12. Fuel Gauge Does Not Work.</p>	<p>1. Check ground connection at fuel level sending unit. With multimeter set to measure ohms, touch positive (+) probe of multimeter to wire 200-BK and negative (-) probe of multimeter to good ground.</p>	<p>1. If infinite ohms are measured, repair or replace wire 200-BK and connectors to fuel level sending unit (WP 0096 00). 2. If zero ohms are measured, go to Step 2.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>401-214</p> </div> </div>		

Table 2. Electrical Troubleshooting Procedures - Continued.



MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>12. Fuel Gauge Does Not Work - Continued.</p>	<div style="text-align: center;">   <p>WARNING</p> </div> <ul style="list-style-type: none"> • DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine. • Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, properly wash exposed skin and change fuel-soaked clothing. • Fuel and oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury. <p>2. Check fuel level sending unit operation. Remove fuel level sending unit (WP 0096 00). Cap hole in fuel tank with clean rags. Dry fuel from fuel level sending unit. Check float for damage such as nicks, cuts and gouges. Set multimeter to measure ohms. Touch positive (+) probe of multimeter to input terminal and negative (-) probe of multimeter to ground terminal. Move float up and down while observing multimeter. Float should move freely. Ohms should vary as float moves.</p>	<p>1. If float is damaged or does not move freely, replace fuel level sending unit with new parts (WP 0096 00).</p> <p>2. If ohms does not change as float is moved up and down, replace fuel level sending unit (WP 0096 00).</p> <p>3. If fuel level sending unit operates correctly, install fuel level sending unit (WP 0096 00). Go to Step 3.</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>12. Fuel Gauge Does Not Work - Continued.</p>	<p>3. Check for power in fuel level gauge. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal + (wire 123-WH) of fuel level gauge. Touch negative (-) probe of multimeter to good ground.</p> <p>4. Check for good connection from fuel level gauge to fuel sending unit. Set multimeter to measure Vdc. Remove nut, lockwasher and wire 447-PK from terminal SIG of fuel level gauge. Remove nut, lockwasher and wire 447-PK from center terminal of fuel level sending unit. Touch positive (+) probe of multimeter to wire 447-PK at fuel level gauge. Touch negative (-) probe of multimeter to wire 447-PK at fuel level sending unit.</p>	<p>1. If 24 to 28 Vdc are not present at terminal + (wire 123-WH), and GAUGES fuse is good, replace or repair wiring and connectors to GAUGES fuse holder (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are present at terminal + (wire 123-WH), go to Step 4.</p> <p>1. If zero ohms are measured, install wire 447-PK on fuel level sending unit and fuel level gauge with two lockwashers and nut. Replace fuel level gauge (WP 0081 00).</p> <p>2. If infinite ohms are measured, replace or repair wire 447-PK and connectors from fuel level gauge to fuel level sending unit (WP 0096 00).</p>

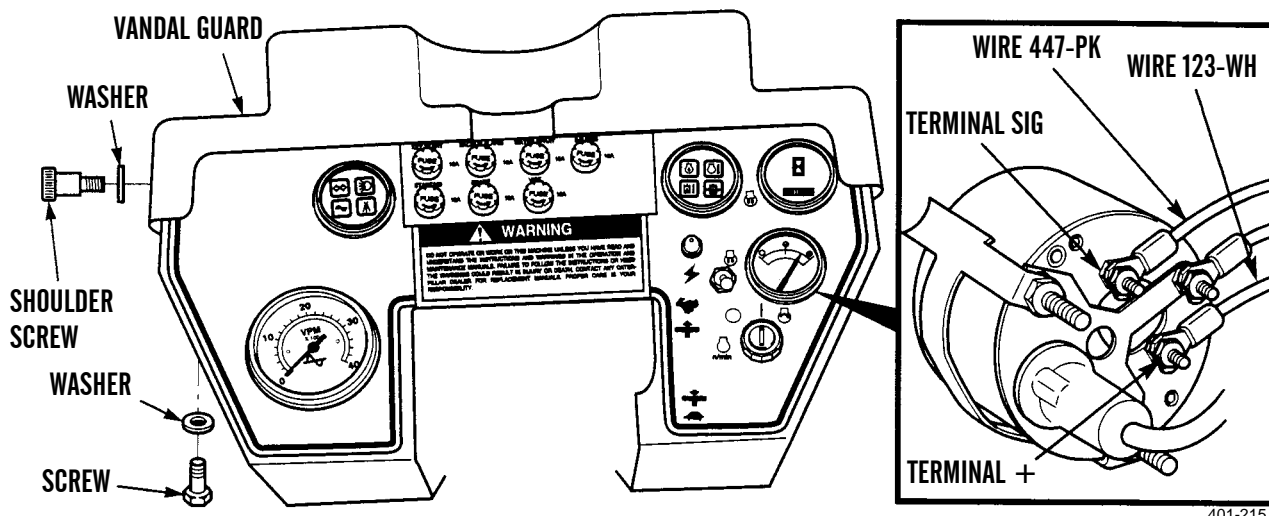

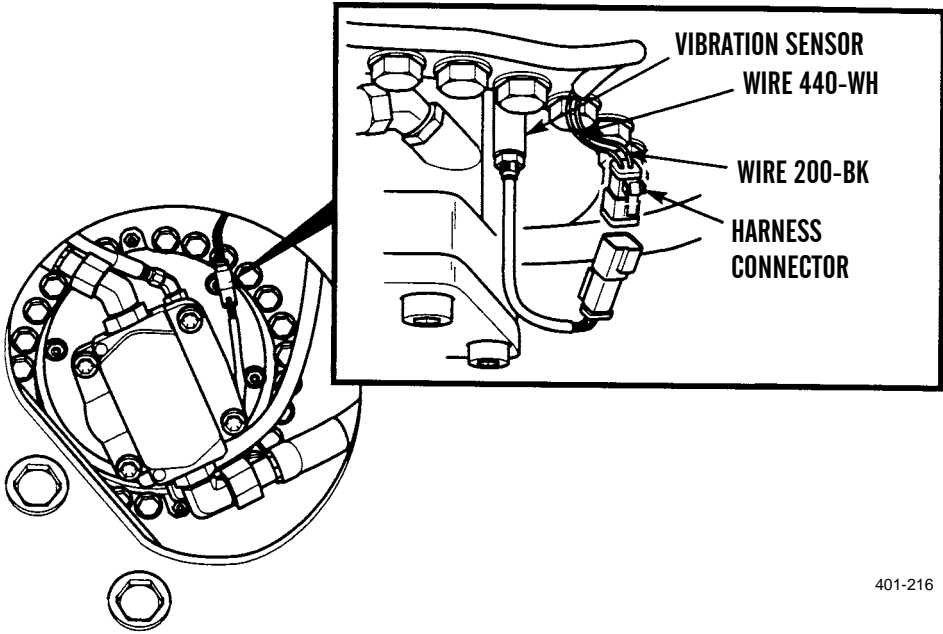


Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>13. Vibrations Per Minute (VPM) Tachometer Does Not Work.</p>	<ol style="list-style-type: none"> 1. Check adjustment of vibration sensor (WP 0097 00). Check for obvious signs of damage such as cracks, scrape marks on plate or broken wires.  <p>WARNING</p> <p>Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection, a direct short may occur resulting in injury or death to personnel and damage to equipment.</p> <ol style="list-style-type: none"> 2. Check ground connection to vibration sensor. Disconnect vibration sensor connection from wiring harness connector. With multimeter set to measure ohms, touch positive (+) probe of multimeter to harness connector (wire 200-BK) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If adjustment is OK, go to Step 2. 2. If adjustment is not OK, adjust vibration sensor (WP 0097 00). 3. If vibration sensor is damaged, replace vibration sensor (WP 0097 00). <ol style="list-style-type: none"> 1. If infinite ohms are measured, repair or replace wire 200-BK and connectors to vibration sensor (WP 0108 00). Connect vibration sensor connector to wiring harness connector. 2. If zero ohms are measured, go to Step 3.



VIBRATION SENSOR
WIRE 440-WH
WIRE 200-BK
HARNESS CONNECTOR

401-216

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>13. Vibrations Per Minute (VPM) Tachometer Does Not Work - Continued</p>	<p>3. Check for power from vibration sensor. Set multimeter to measure Vac. Connect a jumper wire from terminal 1 (black wire) to frame of roller. Touch positive (+) probe of multimeter to terminal 1 (white wire) and negative (-) probe of multimeter to frame. Turn battery disconnect switch on. Have assistant start engine and turn vibratory system on for not more than 10 seconds. Multimeter should measure minimum 2.4 Vac peaks. Have assistant turn engine off.</p>	<p>1. If minimum 2.4 Vac peaks are not measured, remove jumper wire. Replace vibration sensor (WP 0097 00).</p> <p>2. If minimum 2.4 Vac peaks are measured, remove jumper wire. Connect vibration sensor connector to wiring harness connector. Go to Step 4.</p>

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>14. Feet Per Minute (FPM) Meter Does Not Work.</p>	<p style="text-align: center;">NOTE</p> <p>Wire 449 (part of instrument wiring harness) becomes wire 449-RD (part of main wiring harness) at connector (R1/P1).</p> <p>4. Check for signal power at FPM tachometer. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Start engine and turn vibratory system on for not more than 10 seconds. Touch positive (+) probe of multimeter to terminal S (449-WH) of FPM tachometer. Touch negative (-) probe of multimeter to good ground. Multimeter should measure minimum of 2.4 Vac peaks. Turn engine off.</p> <p>5. Check for power to FPM meter. Set multimeter to measure Vdc. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal + (wire 123-WH) of FPM meter. Touch negative (-) probe of multimeter to good ground.</p>	<p>1. If minimum 2.4 Vac peaks are not measured at terminal S (wire 449-WH), replace or repair wire 449-WH/449-RD and connectors from FPM meter to speed sensor (WP 0108 00).</p> <p>2. If minimum 2.4 Vac peaks are not measured at terminal S (wire 449-GN), go to Step 5.</p> <p>1. If 24 to 28 Vdc are not measured at terminal + (wire 123-WH) and GAUGES fuse is good, replace or repair wiring and connectors to GAUGES fuse holder (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are present at terminal + (wire 123-WH), replace FPM meter (WP 0083 00).</p>

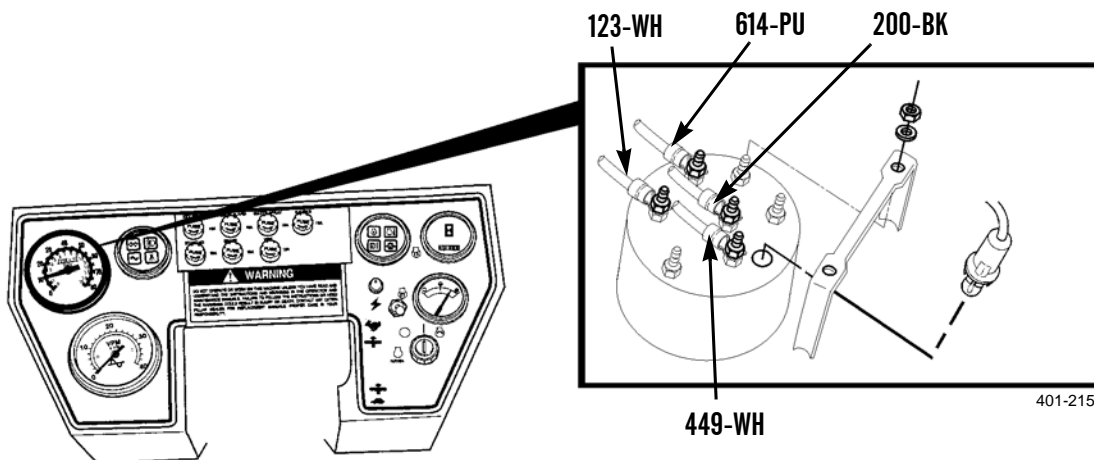
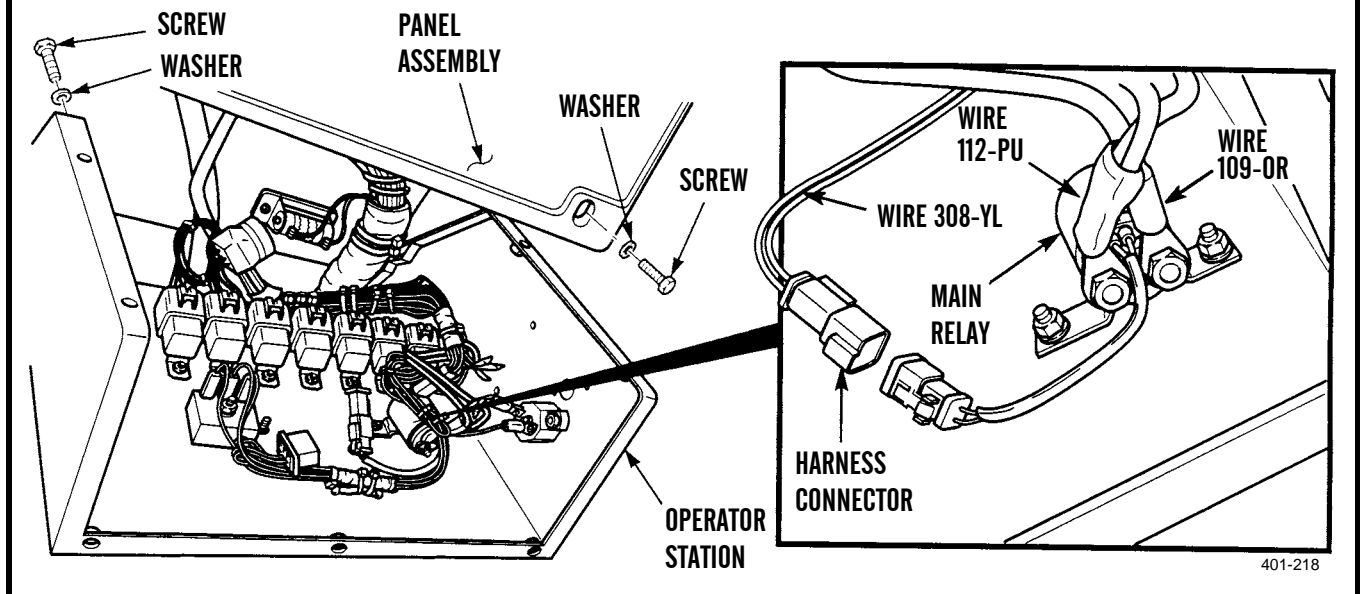


Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. No Power to Accessories With The Engine Running.</p>	<ol style="list-style-type: none"> 1. Check for power to main relay from alternator circuit breaker. Remove nine screws and washers and remove panel from operator station. Touch positive (+) probe of multimeter to input terminal (wire 109-OR) and negative (-) probe of multimeter to good ground. 2. Check power to coil of main relay. Disconnect main relay connector from harness connector. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to (wire 308-YL) and negative (-) probe of multimeter to good ground. 3. Check main relay output. Connect main relay connector to harness connector. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to output terminal of main relay (wire 112-PU) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at input terminal (wire 109-OR), replace or repair wire 109-OR and connectors (WP 0108 00). 2. If 24 to 28 Vdc are measured at input terminal (wire 109-OR), go to Step 2. 1. If 24 to 28 Vdc are not measured at terminal 1 (wire 308-YL) and KEY START fuse is good, turn engine start switch off and go to Step 4. 2. If 24 to 28 Vdc are measured at terminal 1, go to Step 3. 1. If 24 to 28 Vdc are not measured at output terminal of main relay (wire 112-PU), replace main relay (WP 0067 00). 2. If 24 to 28 Vdc are measured at output terminal of main relay, replace or repair wire 112-PU and connectors (WP 0108 00) to fuses.



401-218

Table 2. Electrical Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. No Power to Accessories With The Engine Running - Continued.</p>	<p>4. Check for power to engine start switch. Remove two shoulder screws, washers and vandal guard from box assembly. Remove three screws and washers and lift box assembly up from operator station. Touch positive (+) probe of multimeter to BAT terminal (wire 105-BR) of engine start switch. Touch negative (-) probe of multimeter to good ground.</p> <p>5. Check for power output at engine start switch. Push propel control lever forward to prevent engine start-up. Touch positive (+) probe of multimeter to RELAY terminal (wire 103-YL) of engine start switch. Touch negative (-) probe of multimeter to good ground. Turn and hold engine start switch to start (full right) position. Measure voltage output. Move positive (+) probe of multimeter to START terminal (wire 307-OR) of engine start switch. Measure voltage. Turn engine start switch to OFF position (TM 5-3895-379-10).</p>	<p>1. If 24 to 28 Vdc are not present at BAT terminal (wire 105-BR) and KEY START fuse is good, replace or repair wiring and connectors to KEY START fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are present at BAT terminal, go to Step 5.</p> <p>1. If 24 to 28 Vdc are not present at RELAY terminal (wire 103-YL), replace engine start switch (WP 0079 00).</p> <p>2. If 24 to 28 Vdc are not present at START terminal (wire 307-OR), replace engine start switch (WP 0079 00).</p> <p>3. If 24 to 28 Vdc are present at START and RELAY terminals, replace or repair wiring (wire 103-YL or 307-OR) and connectors to engine start switch (WP 0108 00).</p>

Table 3. Hydraulic Troubleshooting Procedures.

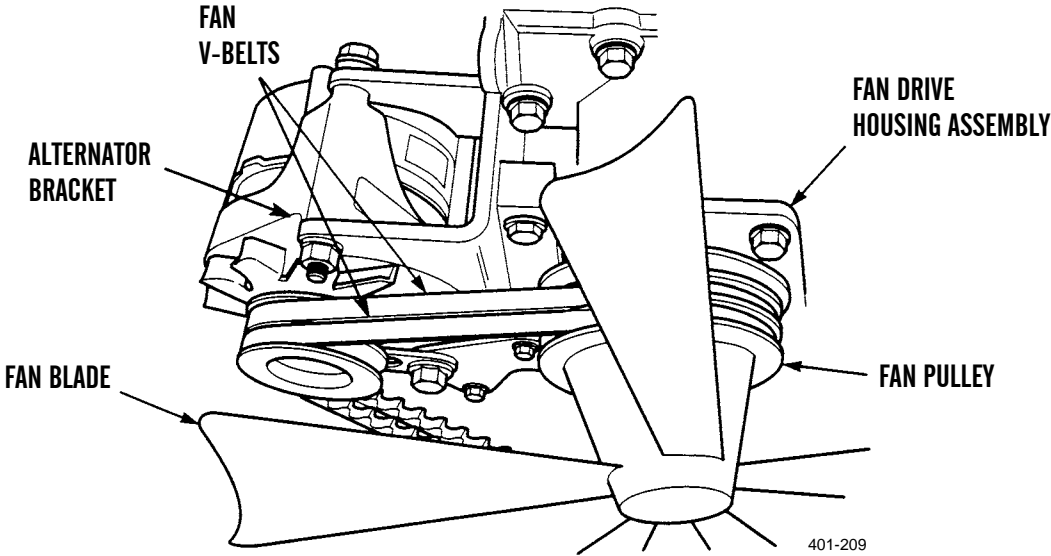
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Hydraulic Oil Temperature Is High (Warning Light and Warning Horn On).</p>	<p style="text-align: center;">WARNING</p> <p>When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.</p> <ol style="list-style-type: none"> 1. Open right-side door assembly and check hydraulic oil filter indicator with engine running at high idle. 2. Check fan V-belts for damage such as cracks to belt fiber, one or more cracks 1/8 inch in depth or 50% of belt thickness, splits, grease buildup, glazed sides and peeling. Raise operator platform (WP 0128 00). Attach belt tension gauge to fan V-belts. Correct belt tension is 80 lbs. 	<ol style="list-style-type: none"> 1. If filter indicator is in red zone, turn engine OFF and replace filter (WP 0143 00). 2. If filter indicator is not in red zone, turn engine OFF and go to Step 2. 1. If fan V-belts are damaged, replace fan V-belts (WP 0060 00). 2. If belt tension is 50 lbs or less, adjust fan V-belt tension (WP 0060 00). 3. If fan V-belts are not damaged or loose, remove belt tension gauge from fan V-belts. Go to Step 3.
<div style="text-align: center;">  <p>401-209</p> </div>		

Table 3. Hydraulic Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Hydraulic Oil Temperature Is High (Warning Light and Warning Horn On) - Continued.</p> <p>2. Hydraulic Oil Pressure Is Low (Warning Light and Warning Horn On).</p>	<p>3. Check fan assembly and guard for looseness or damage such as cracked or missing fan blade(s), loose nuts and screws, bent or cracked fan pulley or damage or wear resulting from extreme fan blade wobble.</p> <p>Open right-side door assembly (TM 5-3895-379-10) and check hydraulic oil filter indicator with engine running at high idle.</p>	<p>1. If fan assembly and guard are loose or damaged, tighten or replace loose or damaged parts (WP 0059 00). Lower operator platform (WP 0128 00).</p> <p>2. If fan assembly and guard are not loose or damaged, lower operator platform (WP 0128 00) and notify supervisor.</p> <p style="text-align: center;">WARNING</p> <p>When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.</p> <p>1. If filter indicator is in red zone, replace filter (WP 0143 00).</p> <p>2. If filter indicator is not in red zone, close right-side door assembly and notify supervisor.</p>

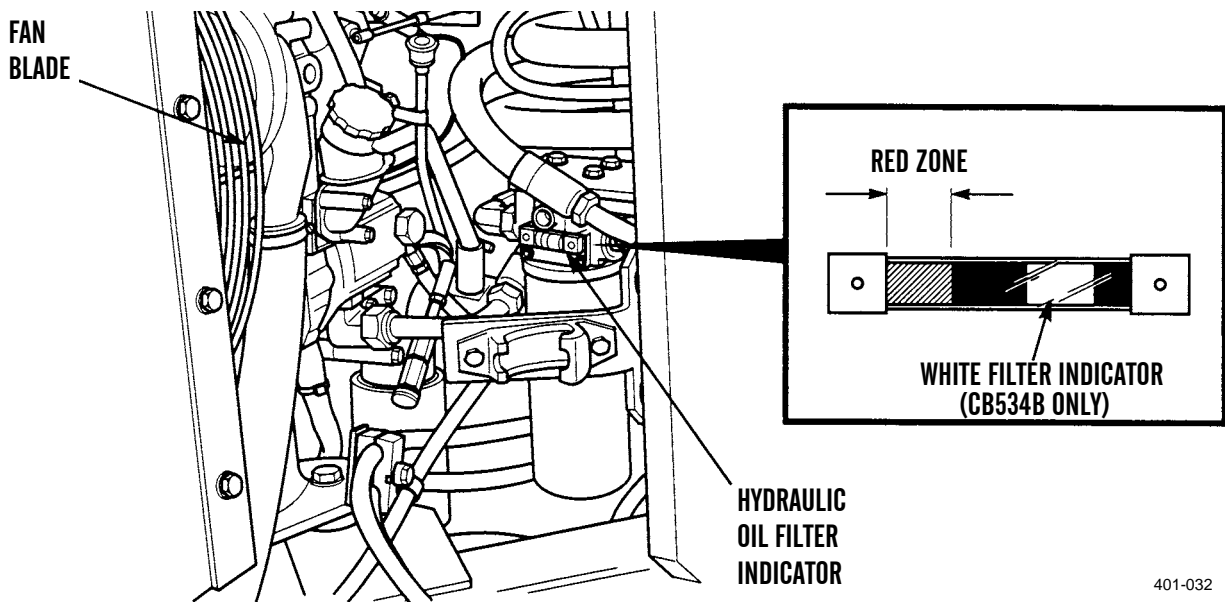
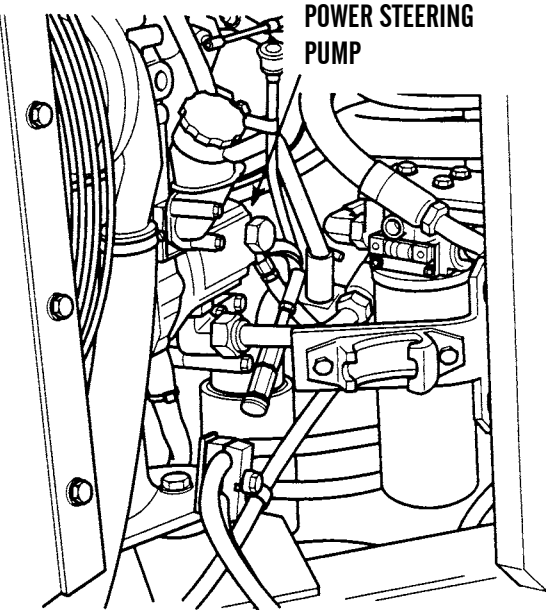


Table 4. Steering Troubleshooting Procedures.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. Power Steering Pump Makes Noise and Steering Cylinder Rods Do Not Move Smoothly.	Open right-side door assembly (TM 5-3895-379-10). Check power steering pump for damage or leakage.	If power steering pump is damaged or leaking, replace pump assembly (WP 0200 00).
2. Too Much Force Is Needed To Turn Steering Wheel.	Open right-side door assembly (TM 5-3895-379-10). Check power steering pump for damage or leakage.	If power steering pump is damaged or leaking, replace pump assembly (WP 0200 00).
 <p>POWER STEERING PUMP</p>		
3. Roller Does Not Turn When Steering Wheel Is Turned.	Open right-side door assembly (TM 5-3895-379-10). Check power steering pump for damage or leakage.	If power steering pump is damaged or leaking, replace pump assembly (WP 0200 00).
4. Roller Turns Slowly In Both Directions.	Open right-side door assembly (TM 5-3895-379-10). Check power steering pump for damage or leakage.	If power steering pump is damaged or leaking, replace pump assembly (WP 0200 00).

401-220

Table 5. Propel Troubleshooting Procedures.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Roller Will Not Move When Propel Control Lever Is Operated.</p>	<p style="text-align: center;">WARNING</p> <p>When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.</p> <p>Open right-side door assembly (TM 5-3895-379-10) and check hydraulic oil filter indicator with engine running at high idle.</p>	<p>1. If filter indicator is in red zone, replace filter (WP 0143 00). 2. If filter indicator is not in red zone, notify supervisor.</p>
<p>2. Propel System Engages Very Slowly When Making A Shift.</p>	<p style="text-align: center;">WARNING</p> <p>When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.</p> <p>Open right-side door assembly (TM 5-3895-379-10) and check hydraulic oil filter with engine running at high idle.</p>	<p>1. If filter indicator is in red zone, replace filter (WP 0143 00). 2. If filter indicator is not in red zone, notify supervisor.</p>
<p>3. Propel System Engages Very Quickly When Making A Shift.</p>	<p style="text-align: center;">WARNING</p> <p>When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.</p> <p>Open right-side door assembly (TM 5-3895-379-10) and check hydraulic oil filter indicator with engine running at high idle.</p>	<p>1. If filter indicator is in red zone, replace filter (WP 0143 00). 2. If filter indicator is not in red zone, notify supervisor.</p>
<p>4. Propel System Operates In Forward Speeds Only.</p>	<p>Adjust propel control lever (WP 0114 00 and WP 0115 00).</p>	<p>1. Fault not corrected Replace propel control lever (WP 0113 00). 2. Replace propel control valve (WP 0188 00). 3. Replace propel pump assembly (WP 0187 00).</p>
<p>5. Propel System Operates In Reverse Speeds Only.</p>	<p>Adjust propel control lever (WP 0114 00 and WP 0115 00).</p>	<p>1. Fault not corrected. Replace propel control lever (WP 0113 00). 2. Fault not corrected. Replace propel control valve (WP 0188 00). 3. Fault not corrected. Replace propel pump assembly (WP 0187 00).</p>

Table 5. Propel Troubleshooting Procedures - Continued.


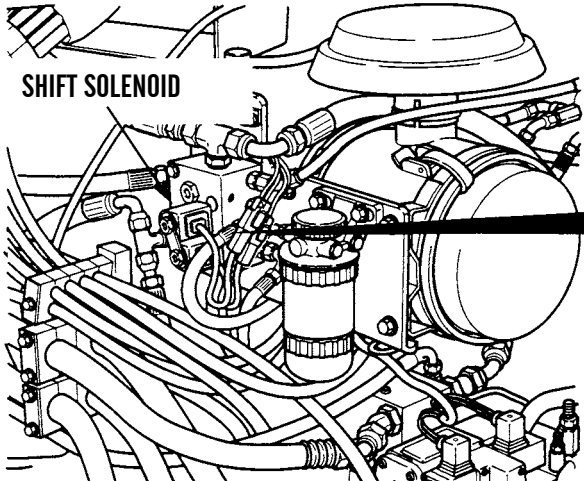
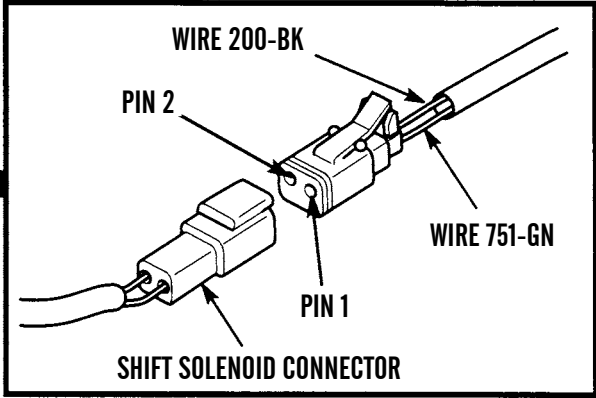
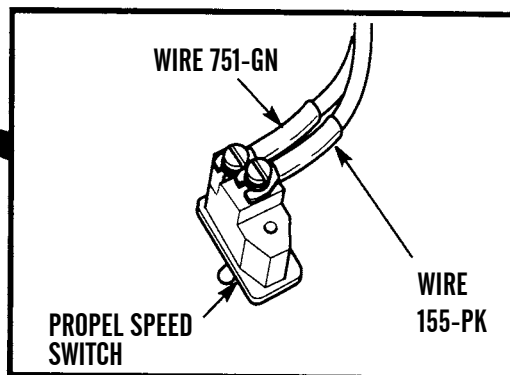
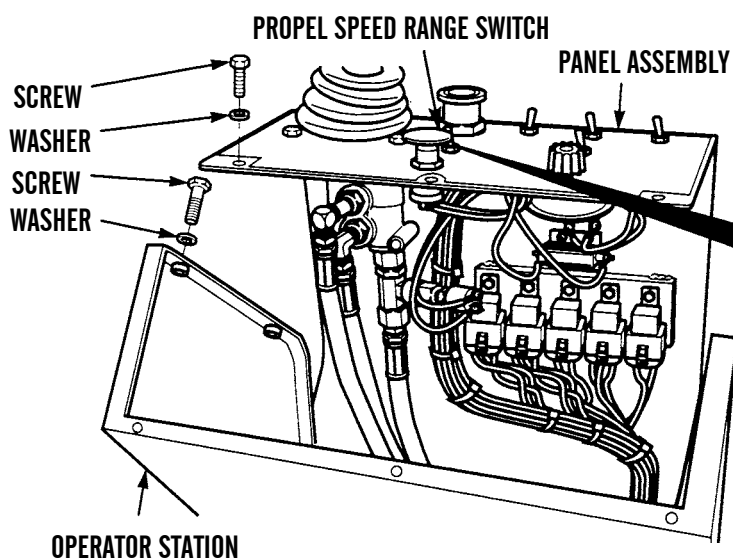
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Propel System Does Not Change Speeds When Propel Speed Switch Is Moved.</p>	<div style="text-align: center;">  <p>WARNING</p> </div> <ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment. • Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death to personnel may occur. <ol style="list-style-type: none"> 1. Check for shift solenoid operation. With propel speed switch in high (hare) position, turn battery disconnect switch and engine start switch to on position (TM 5-3895-379-10). Open left-side door assembly. Place blade end of screwdriver approximately 1/4 inch (6 mm) from center of hex nut on shift solenoid. Magnetic force should pull screwdriver to shift solenoid. 	<ol style="list-style-type: none"> 1. If magnetic force pulls screwdriver to shift solenoid, replace propel control valve (WP 0188 00). 2. If magnetic force does not pull screwdriver to shift solenoid, go to Step 2.
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  </div> </div> <p style="text-align: right; font-size: small;">401-221</p>		

Table 5. Propel Troubleshooting Procedures - Continued.

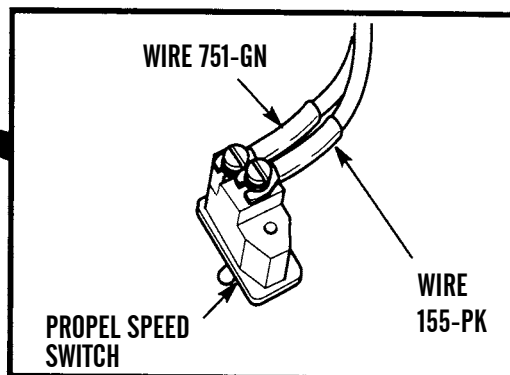
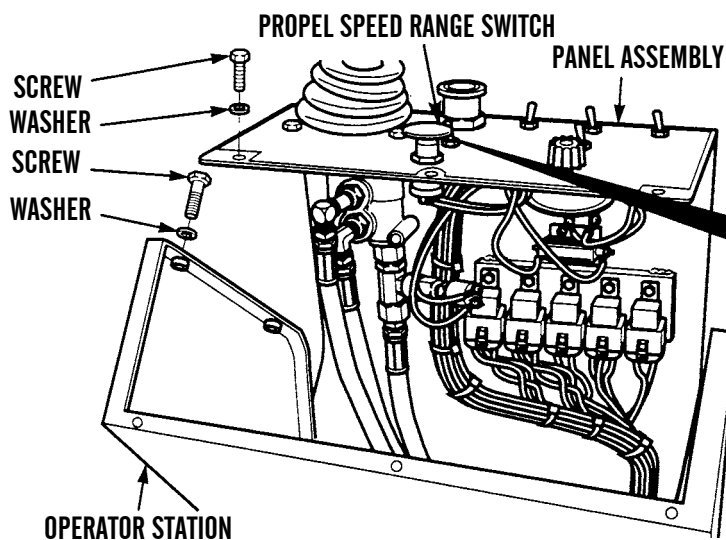
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Propel System Does Not Change Speeds When Propel Speed Switch Is Moved - Continued.</p>	<p>2. Check for power to shift solenoid connector. Disconnect harness connector from brake control connector. Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to, pin 1 wire 751-GN and negative (-) probe of multimeter to good ground.</p> <p>3. Check for power to propel speed switch. Remove nine screws and washers and remove panel from operator station. With propel speed switch in high (hare) position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to wire 155-PK and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are measured at wire 751-GN, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace brake control valve (WP 0118 00).</p> <p>2. If 24 to 28 Vdc are not measured at wire 751-GN, close left-side door assembly. Turn battery disconnect switch and engine start switch to OFF position (TM 5-3895-379-10). Go to Step 3.</p> <p>1. If 24 to 28 Vdc are not measured at wire 155-PK and BRAKE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to BRAKE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at wire 155-PK, go to Step 4.</p>



401-222

Table 5. Propel Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Propel System Does Not Change Speeds When Propel Speed Switch Is Moved - Continued.</p>	<p>4. Check for power at propel speed switch. Touch positive (+) probe of multimeter to wire 751-GN and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at wire 751-GN, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace propel speed switch (WP 0074 00).</p> <p>2. If 24 to 28 Vdc are measured at wire 751-GN, install panel on operator station with nine screws and washer. Turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire 751-GN and connectors from propel switch to brake control valve (WP 0118 00).</p>

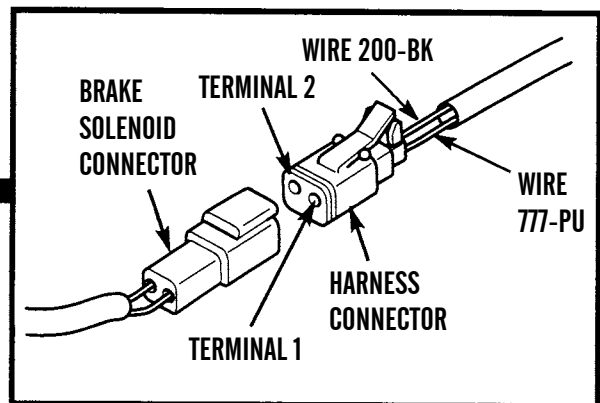
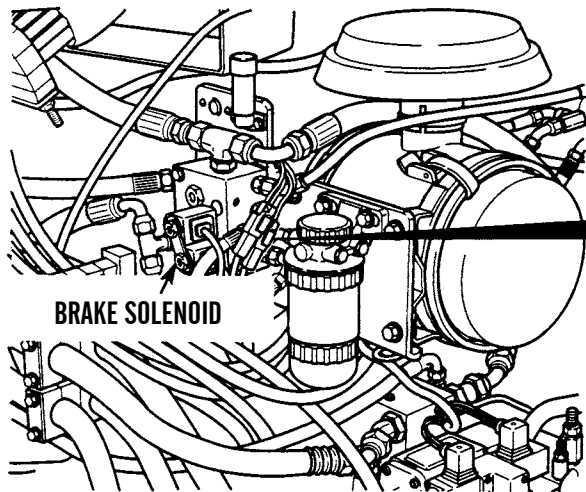


401-222

<p>7. Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up.</p>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment. • Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death to personnel may occur.
---	--

Table 5. Propel Troubleshooting Procedures - Continued.

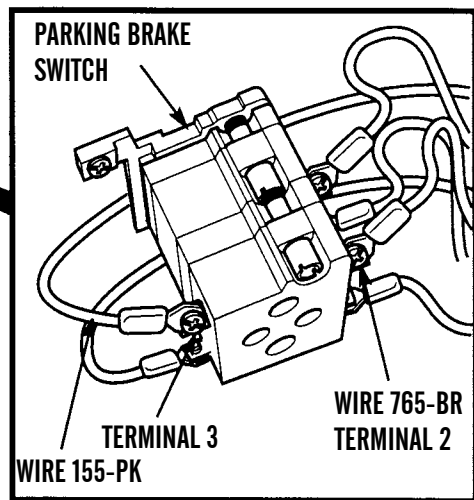
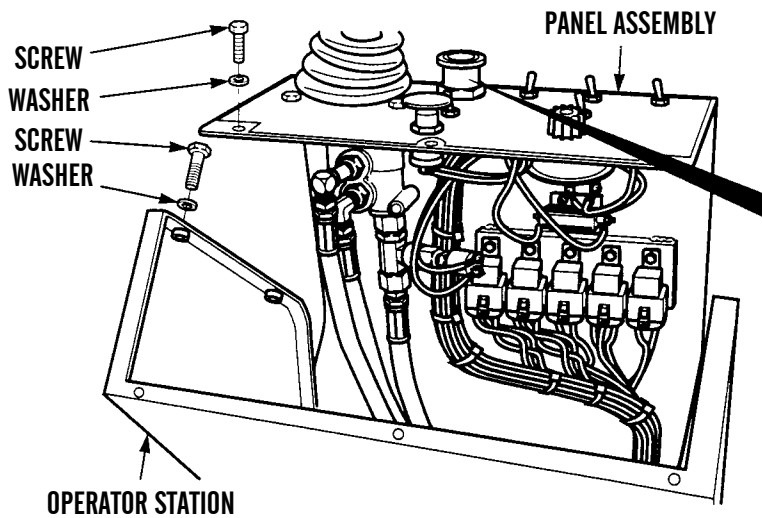
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up - Continued.</p>	<ol style="list-style-type: none"> 1. Open left-side door assembly (TM 5-3895-379-10) and check for brake solenoid operation. With propel speed switch in high (hare) position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Place blade end of screwdriver approximately 1/4 inch (6 mm) from center of hex nut on brake solenoid. Magnetic force should pull screwdriver to brake solenoid. 2. Check for power at brake control valve connector. Disconnect harness connector from brake control connector (wire 777-PU). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to connector P20, pin 1 (wire 777-PU) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If magnetic force pulls screwdriver to brake solenoid, replace brake control valve (WP 0118 00). 2. If magnetic force does not pull screwdriver to shift solenoid, go to Step 2. <ol style="list-style-type: none"> 1. If 24 to 28 Vdc are measured at brake control connector, (wire 777-PU), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace brake control valve (WP 0118 00). 2. If 24 to 28 Vdc are not measured at brake control connector (wire 777-PU), close left-side door assembly. Turn battery disconnect switch and engine start switch to OFF position (TM 5-3895-379-10). Go to Step 3.



401-824

Table 5. Propel Troubleshooting Procedures - Continued.

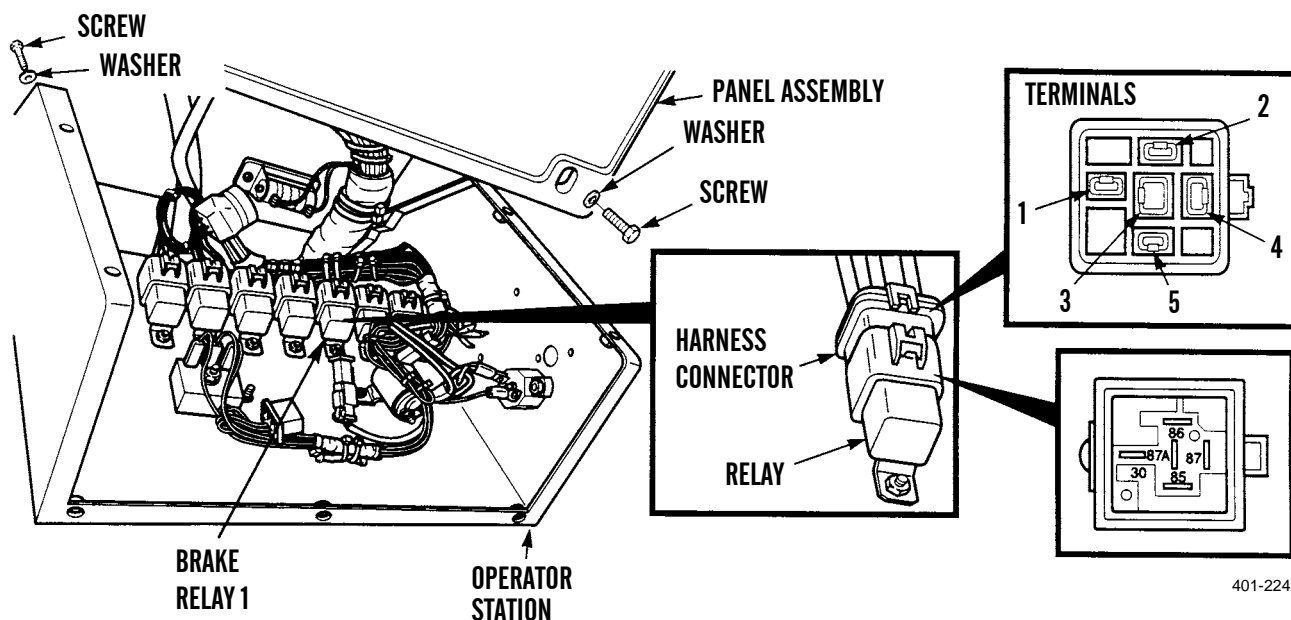
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up - Continued.</p>	<p>3. Check for power to parking brake switch. Remove nine screws and washers and remove panel from operator station. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 3 (wire 155-PK) and negative (-) probe of multimeter to good ground.</p> <p>4. Check for power at parking brake switch. With parking brake switch pulled up, touch positive (+) probe of multimeter to terminal 2 (wire 765-BR) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 3 (wire 155-PK) and BRAKE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to BRAKE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 3, go to Step 4.</p> <p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire 765-BR) and BRAKE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace parking brake switch (WP 0069 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2, go to Step 5.</p>



401-223

Table 5. Propel Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up - Continued.</p>	<p>5. Remove harness connector from brake relay no. 1. With parking brake switch pulled up, touch positive (+) probe of multimeter to terminal 1 (wire 765-BR) and negative (-) probe of multimeter to good ground.</p> <p>6. Check continuity of brake relay no. 1. Remove brake relay no. 1 from operator station (WP 0070 00). Set multimeter to check ohms. Touch positive (+) probe of multimeter to terminal 85 and negative (-) probe of multimeter to terminal 86 of brake relay no. 1. Multimeter should measure zero ohms.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire 765-BR) and BRAKE fuse is good, turn engine start switch to OFF position and battery disconnect switch OFF (TM 5-3895-379-10). Repair or replace wiring and connectors from brake relay no. 1 to parking brake switch (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 1, turn engine start switch to OFF position and battery disconnect switch OFF (TM 5-3895-379-10). Go to Step 6.</p> <p>1. If multimeter does not measure zero ohms, replace brake relay no. 1 (WP 0068 00).</p> <p>2. If multimeter does not measure zero ohms, go to Step 7.</p>



401-224

Table 5. Propel Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Parking Brake Does Not Disengage When Parking Brake Switch is Pulled Up - Continued.</p>	<p>7. Touch positive (+) probe of multimeter to terminal 87A and negative (-) probe of multimeter to terminal 3 of brake relay no. 1. Multimeter should measure zero ohms. Move positive (+) probe of multimeter to terminal 87 while negative (-) probe of multimeter stays at terminal 30 of brake relay no. 1. Multimeter should measure infinite ohms.</p>	<p>1. If multimeter does not measure zero ohms between terminals 30 and 87A, replace brake relay no. 1 (WP 0068 00).</p> <p>2. If multimeter does not measure infinite ohms between terminals 1 and 4, replace brake relay no. 1 (WP 0068 00).</p>

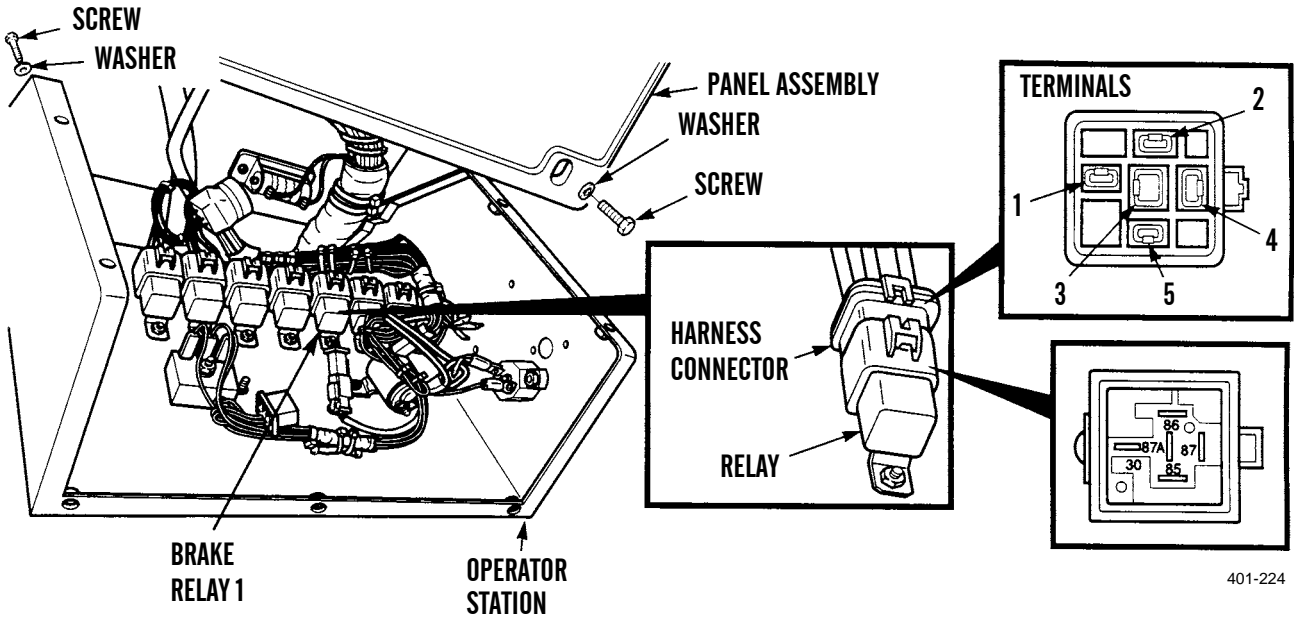
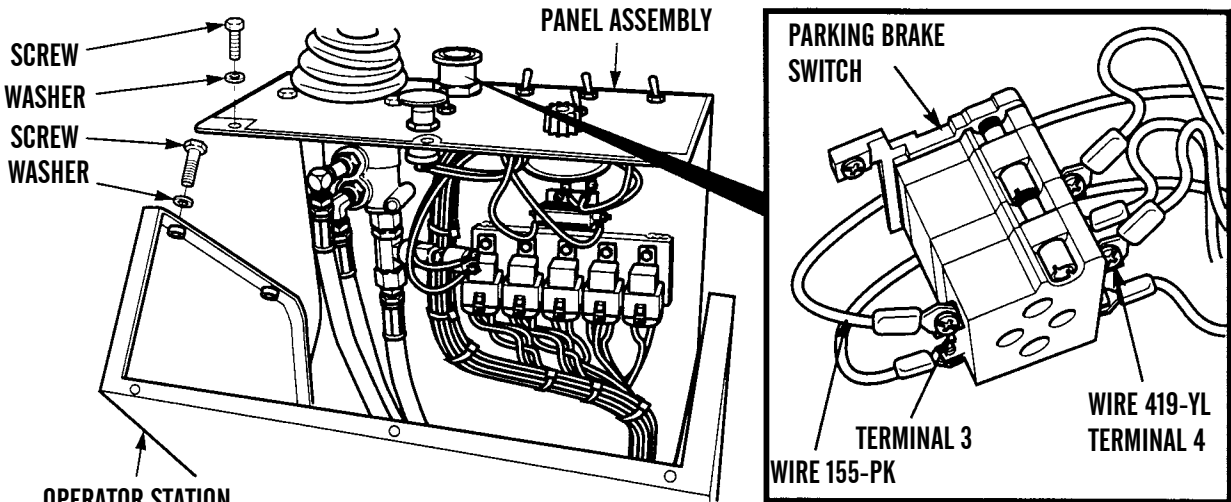



Table 5. Propel Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Parking Brake Does Not Engage When Parking Brake Switch Is Pushed Down.</p> 	 <p>WARNING</p> <p>Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death to personnel may occur.</p> <p>Check for power at parking brake switch. Remove nine screws and washers and remove panel from operator station. With parking brake switch pushed down, touch positive (+) probe of multimeter to terminal 4 (wire 419-YL) and negative (-) probe of multimeter to good ground.</p>	<p>If 24 to 28 Vdc are not measured at terminal 4 (wire 419-YL), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace parking brake switch (WP 0069 00).</p>
<p>9. Propel Motor is Noisy.</p> <p>10. Propel Motor Leaks Oil.</p>	<p>Check oil level in fuel/hydraulic tank (WP 0009 00).</p> <p>Check propel motor hydraulic hose and fittings.</p>	<p>Add hydraulic oil if low. If oil level is found to be correct replace propel motor (WP 0193 00).</p> <ol style="list-style-type: none"> 1. Tighten any hose and fittings found to be loose. 2. Replace propel motor (WP 0193 00).

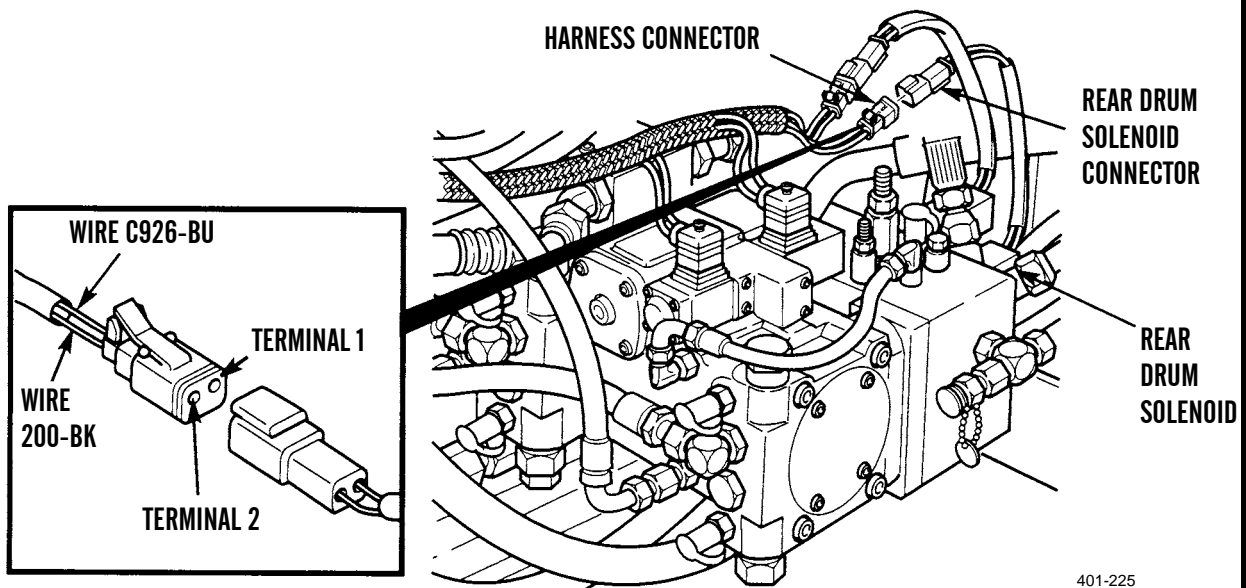
401-223

Table 6. Vibratory System Troubleshooting Procedures.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Vibration Frequency Start-Up Is Slow, Time Lag After Travel Starts Is Excessive.</p>	<p>Perform hydraulic vibratory test and adjustments (WP 0203 00).</p>	<p>1. Fault not corrected. Replace vibratory control solenoid assembly (WP 0208 00). 2. Fault not corrected. Replace vibratory cooling/control valve (WP 0205 00).</p>
<p>2. Noisy Vibratory Motor.</p>	<p>Remove and inspect vibratory motor (WP 0206 00).</p>	<p>If vibratory mechanism is found to be damaged, replace motor (WP 0206 00).</p>
<p>3. Vibration Does Not Work In Forward or Reverse Travel.</p>	<p>1. Check power to vibratory control. Open left-side door assembly. Disconnect harness connector from rear drum solenoid connector. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set drum select switch to rear position. Set vibration control switch to manual (MAN) position. Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire C926-BU) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are measured at terminal 1 (wire C926-BU), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Connect harness connector to solenoid connector. Go to Step 2.</p>

WARNING

Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death may occur.



401-225

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Vibration Does Not Work In Forward or Reverse Travel - Continued.</p>	<p>2. Check vibration push switch. Remove vibration push switch (WP 0080 00). Touch positive (+) probe of multimeter to terminal and negative (-) probe of multimeter to other terminal. With multimeter set to measure ohms, press button of vibration push switch several times.</p>	<p>2. If 24 to 28 Vdc are not measured at wire terminal 1 (wire C926-BU), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at wire terminal 1 (wire C926-BU) and VIBE fuse is good, turn engine start switch to OFF position (TM 5-3895-379-10). Connect harness connector to solenoid connector. Close left-side door assembly. Go to Step 2.</p> <p>1. If zero ohms followed by infinite ohms are not measured as button is pressed and pressed again, replace vibration push switch (WP 0080 00).</p> <p>2. If zero ohms followed by infinite ohms are measured as button is pressed and pressed again, go to Step 3.</p>

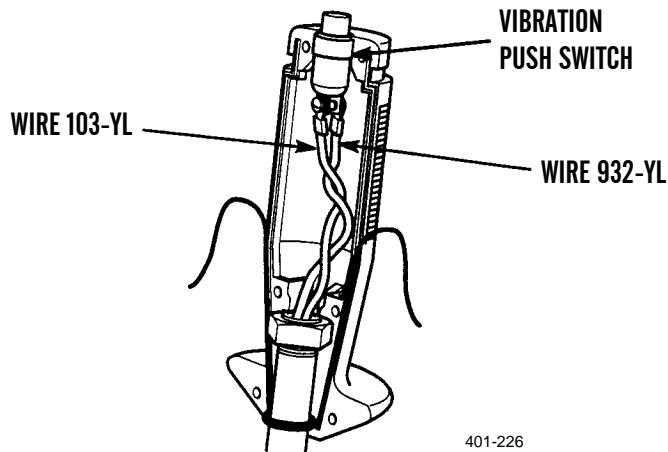


Table 6. Vibratory System Troubleshooting Procedures - Continued.

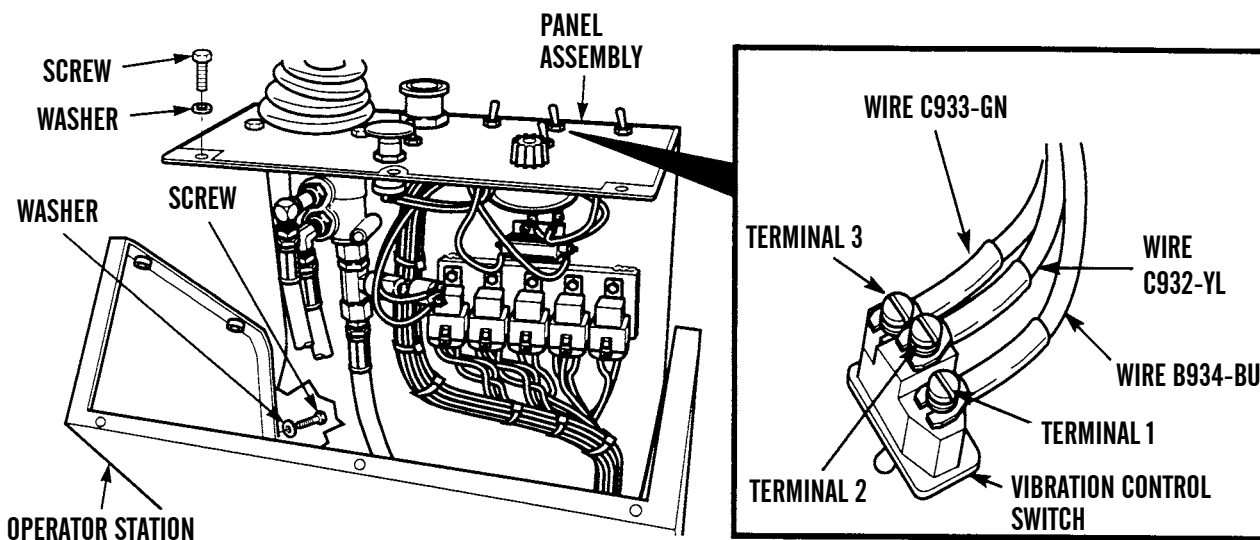
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Vibration Does Not Work In Forward or Reverse Travel - Continued.</p>	<p>3. Turn engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to wire 103-YL and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at wire 103-YL and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to VIBE fuse holder (WP 0077 00) and install vibration push switch (WP 0083 00).</p> <p>2. If 24 to 28 Vdc are measured at wire 103-YL, turn engine start switch to OFF position (TM 5-3895-379-10). Install vibration push switch (WP 0083 00) and go to Step 4.</p>
<p style="text-align: right;">401-227</p>		
	<p>4. Check for power to drum select switch. Remove nine screws and washers and remove panel from operator station. Turn engine start switch and battery disconnect switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 5 (wire 103-YL) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 5 and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to VIBE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 5, go to Step 5.</p>

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Vibration Does Not Work In Forward or Reverse Travel - Continued.</p>	<p>5. Check for power at drum select switch. Touch positive (+) probe of multimeter to terminal 4 (wire C926-BU) and negative (-) probe of multimeter to good ground while drum select switch is pulled back to rear position to check rear vibratory circuit. Touch positive (+) probe of multimeter to terminal 6 (wire C927-PU) and negative (-) probe of multimeter to good ground while drum select switch is pushed forward to front position to check front vibratory circuit. Touch negative (-) probe of multimeter to good ground and positive (+) probe of multimeter to terminal 6 (wire C927-PU) and then to terminal 4 (wire C926-BU) while drum select switch is in center position to check vibratory circuit to both drums.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 4 while drum select switch is pulled back to rear position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>2. If 24 to 28 Vdc are not measured at terminal 6 while drum select switch is pushed forward to front position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>3. If 24 to 28 Vdc are measured at terminals 4 and 6 while drum select switch is in center position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>4. If all voltage output checks at drum select switch are OK, go to Step 6.</p>

Table 6. Vibratory System Troubleshooting Procedures - Continued.

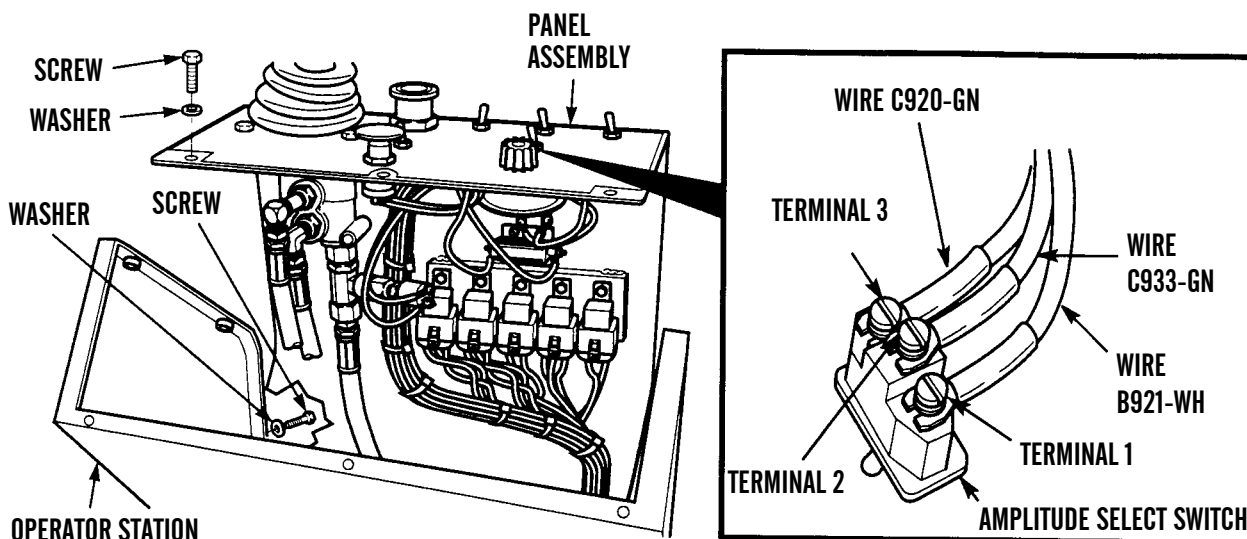
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Vibration Does Not Work In Forward or Reverse Travel - Continued.</p>	<p>6. Check for power to vibration control switch. Touch positive (+) probe of multimeter to terminal 2 (wire C932-YL) and negative (-) probe of multimeter to good ground.</p> <p>7. Check for power at vibration control switch. Set vibration control switch to AUTO position. Touch positive (+) probe of multimeter to terminal 1 (wire B934-BU) and negative (-) probe of multimeter to good ground. Measure Vdc. Set vibration control switch to manual (MAN) position. Touch positive (+) probe of multimeter to terminal 3 (wire C933-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C932-YL), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 2 (wire 932-YL), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C932-YL and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2 (wire C932-YL), go to Step 7.</p> <p>1. If 24 to 28 Vdc are not measured at terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1 and 3, go to Step 8.</p>



401-228

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Vibration Does Not Work In Forward and Reverse Travel - Continued.</p>	<p>8. Check for power to amplitude select switch. Touch positive (+) probe of multimeter to terminal 2 (wire C933-GN) and negative (-) probe of multimeter to good ground.</p> <p>9. Check for power at amplitude select switch. Set amplitude select switch to high pitch (push forward). Touch positive (+) probe of multimeter to terminal 1 (wire B921-WH) and negative (-) probe of multimeter to good ground. Measure Vdc. Set amplitude select switch to low pitch (pull back). Touch positive (+) probe of multimeter to terminal 3 (wire B920-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C933-GN), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 2 (wire C933-GN) and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C933-GN and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2 (wire 933-GN), go to Step 9.</p> <p>1. If 24 to 28 Vdc are not measured at both terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors from amplitude select switch (WP 0073 00).</p>

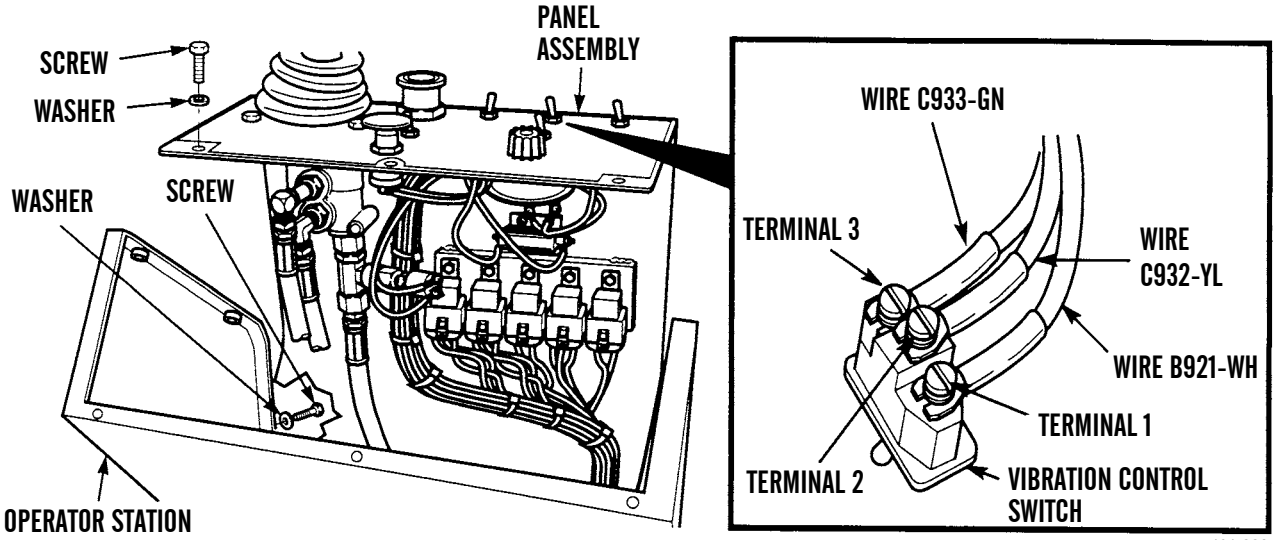


401-229

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. Vibratory System Engages Harshly.	Perform hydraulic vibrator test and adjustments (WP 0203 00).	Fault not corrected. Replace vibratory control solenoid assembly (WP 0208 00).
5. Vibration Does Not Stop When Travel Stops.	Adjust propel control lever engagement stop (WP 0114 00).	If symptom persists, replace propel control lever assembly (WP 0113 00).
6. Vibration Stops Too Soon Before Travel Stops.	Adjust propel control lever engagement stop (WP 0114 00).	If symptom persists, replace propel control lever assembly (WP 0113 00).
7. Vibration Only Occurs While Vibration Control Switch Is Set To Manual Mode.	<ol style="list-style-type: none"> 1. Check for power to vibration control switch. Remove nine screws and washers and remove panel from operator station. Turn battery disconnect switch ON and engine start switch to ON position (TM 5-3895-379-10) Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 2 (wire 932-YL) and negative (-) probe of multimeter to good ground. 2. Check for power at vibration control switch. Set vibration control switch to manual (MAN) position. Touch positive (+) probe of multimeter to terminal 1 (wire B934-BU) and negative (-) probe of multimeter to good ground. Measure Vdc. Set vibration control switch to manual (MAN) position. Touch positive (+) probe of multimeter to terminal 3 (wire C933-GN) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at terminal 2 (wire C932-YL), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 2 (wire C932-YL), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C932-YL and connectors (WP 0108 00). 2. If 24 to 28 Vdc are measured at terminal 2 (wire C932-YL), go to Step 2. 1. If 24 to 28 Vdc are not measured at terminal 3 (wire C933-GN), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00). 2. If 24 to 28 Vdc are measured at terminals 1 and 3, go to Step 3.

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Vibration Only Occurs While Vibration Control Switch Is Set To Manual Mode - Continued.</p> 	<p>3. Check for power to amplitude select switch. Touch positive (+) probe of multimeter to terminal 2 (wire C933-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C933-GN), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C933-GN and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2 (wire C933-GN), go to Step 4.</p>

401-228

Table 6. Vibratory System Troubleshooting Procedures - Continued.

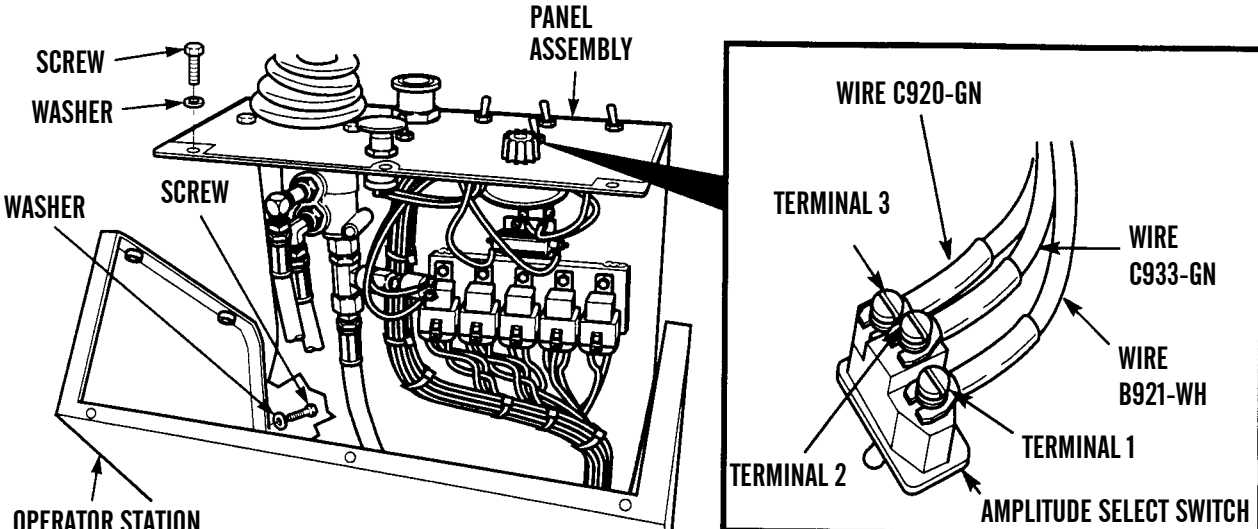
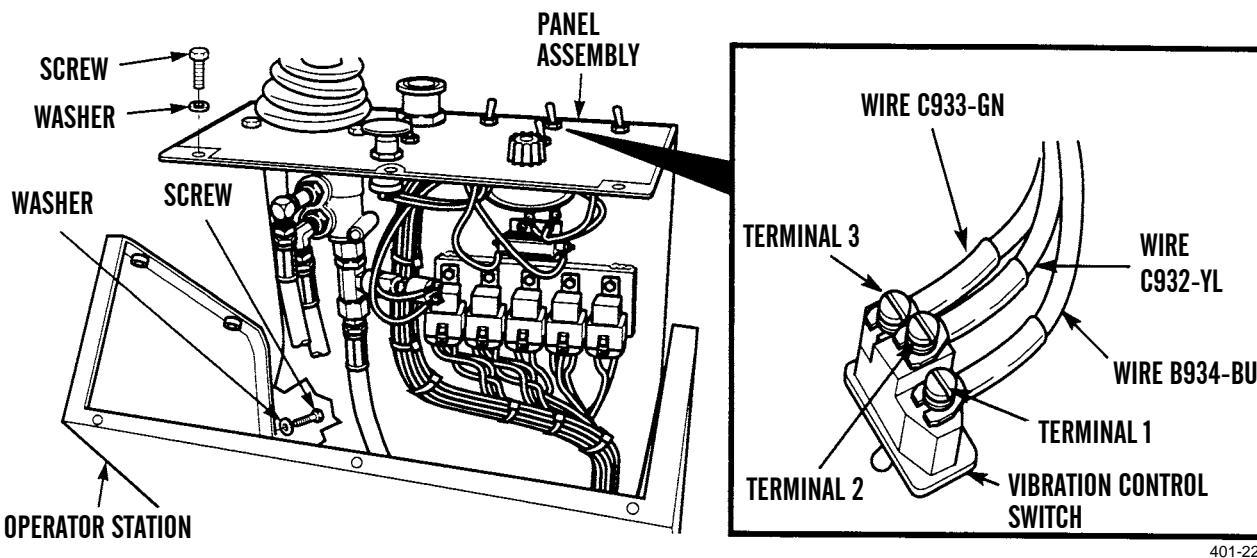
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>7. Vibration Only Occurs While Vibration Control Switch Is Set To Manual Mode - Continued.</p>	<p>4. Check for power at amplitude select switch. Set amplitude select switch to high pitch (push forward). Touch positive (+) probe of multimeter to terminal 1 (wire B921-WH) and negative (-) probe of multimeter to good ground. Measure Vdc. Set amplitude select switch to low pitch (pull back). Touch positive (+) probe of multimeter to terminal 3 (wire C920-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1 and 3, repair or replace wiring and connectors from amplitude select switch (WP 0108 00).</p>
<div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p style="text-align: right; font-size: small;">401-229</p>		
<p>8. Vibration Only Occurs While Vibration Control Switch Is Set To Automatic Mode.</p>	<p>1. Adjust propel control lever vibratory system engagement stops (WP 0114 00).</p>	<p>If vibration still does not occur, go to Step 2.</p>

Table 6. Vibratory System Troubleshooting Procedures - Continued.

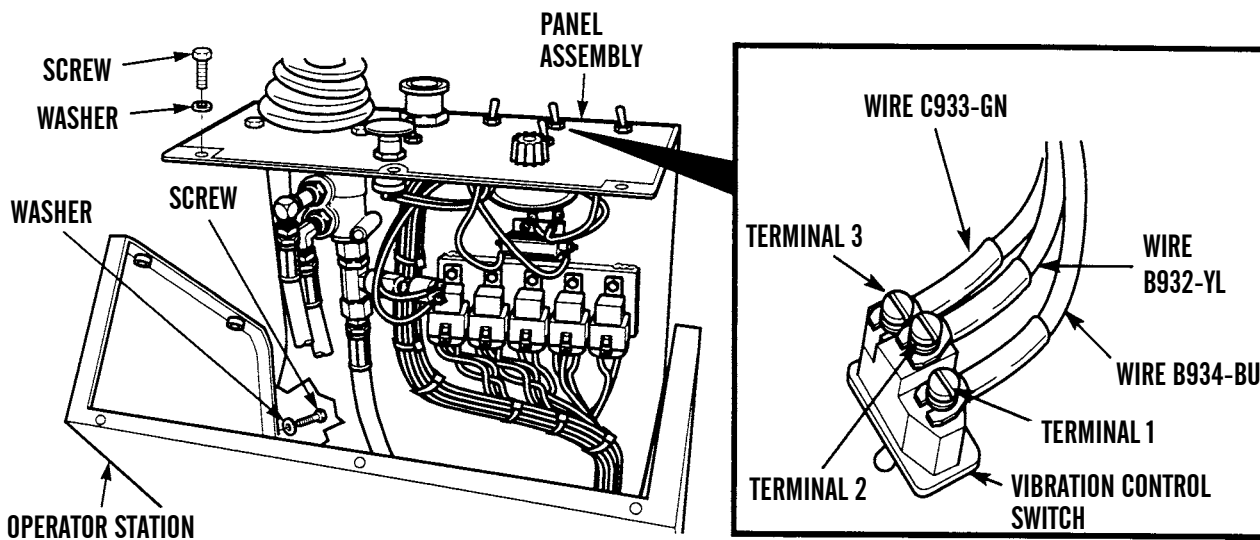
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Vibration Only Occurs While Vibration Control Switch Is Set To Automatic Mode - Continued.</p>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment. • Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death may occur. <p>2. Check for power to vibration control switch. Remove nine screws and washers and remove panel from good ground. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 2 (wire C932-YL) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C932-YL), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Install panel on operator station with seven screws and washers and two screws and washers. Repair or replace wire C932-YL and connectors (WP 0108 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2, go to Step 3.</p>



401-228

Table 6. Vibratory System Troubleshooting Procedures - Continued.

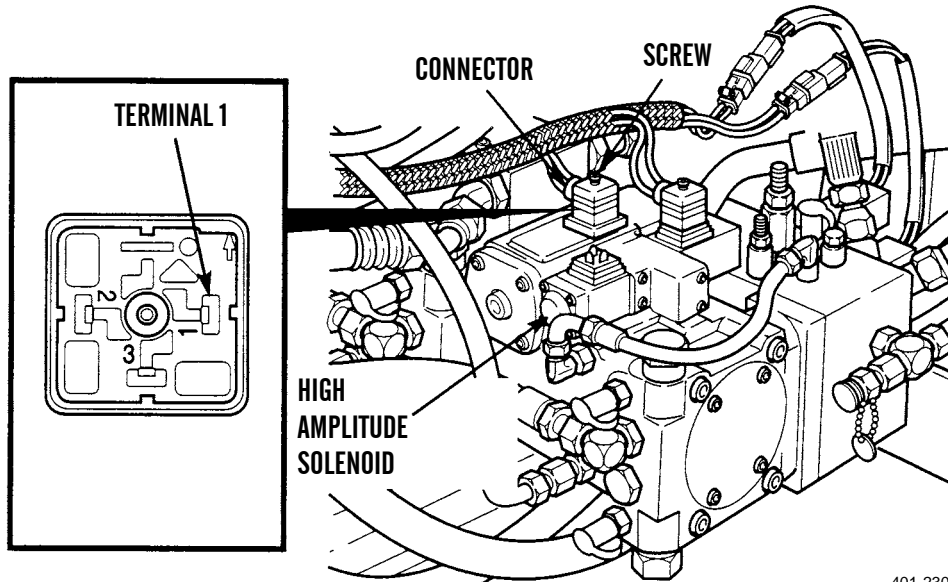
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>8. Vibration Only Occurs While Vibration Control Switch Is Set To Automatic Mode - Continued.</p>	<p>3. Check for power at vibration control switch. Push vibration control switch forward to automatic (AUTO) position. Touch positive (+) probe of multimeter to terminal 1 (wire B934-BU) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire B934-BU), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace vibration control switch (WP 0072 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 1 (wire B934-BU), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Install panel on operator station with nine screws and washers and notify supervisor.</p>



401-228

Table 6. Vibratory System Troubleshooting Procedures - Continued.

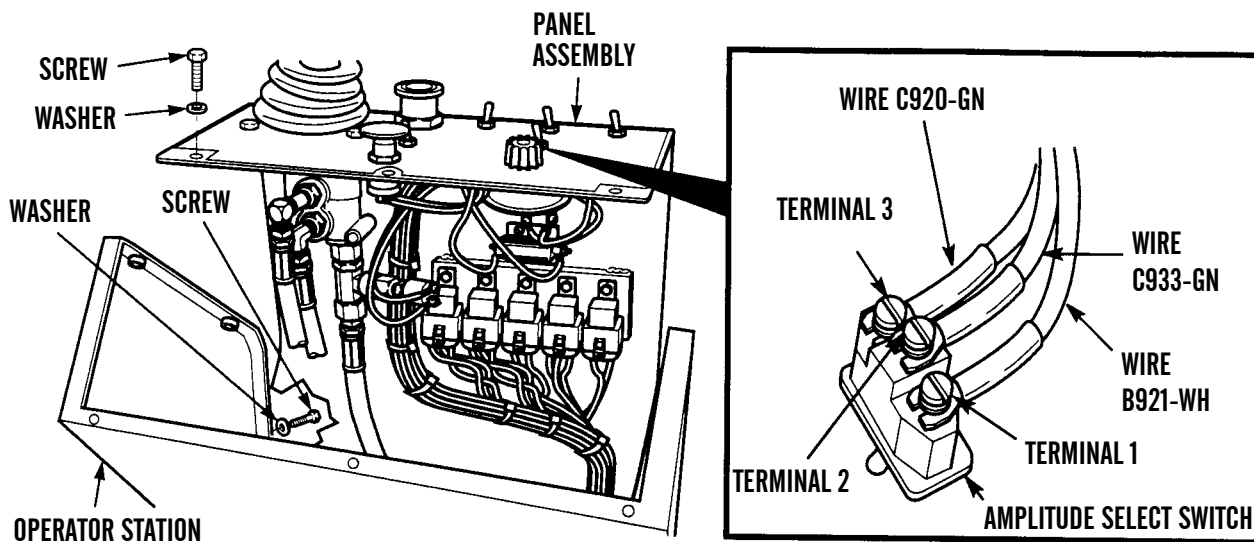
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Vibration Does Not Occur While Amplitude Select Switch Is Set To High Pitch.</p>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment. • Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death may occur. <p>1. Check power to vibratory control. Open left-side door assembly (TM 5-3895-379-10). Loosen screw and disconnect connector from high amplitude solenoid. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set vibration control switch to manual (MAN) position and amplitude select switch to HI position. Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire C925-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are measured at terminal 1 (wire C925-GN), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Connect connector to high amplitude solenoid and tighten screw. Go to Step 2.</p>



401-230

Table 6. Vibratory System Troubleshooting Procedures - Continued.

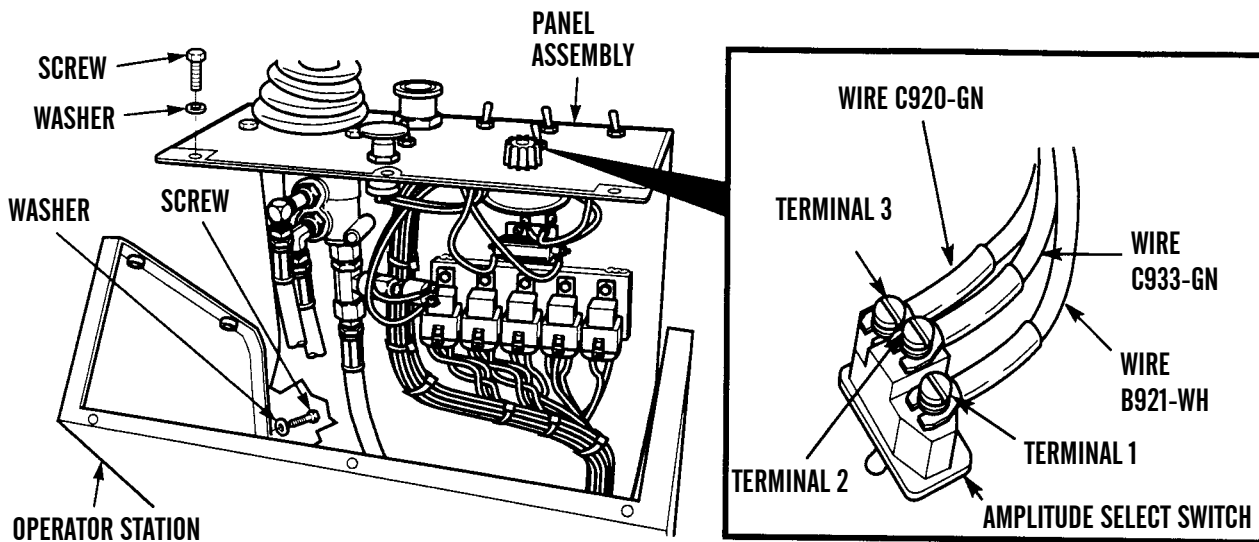
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Vibration Does Not Occur While Amplitude Select Switch Is Set To High Pitch- Continued.</p>	<p>2. Check for power to amplitude select switch. Remove nine screws and washers and remove panel from operator station. Turn vibration control switch to manual (MAN) position. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 2 (wire C933-GN) and negative (-) probe of multimeter to good ground.</p>	<p>2. If 24 to 28 Vdc are not measured at terminal 1 (wire C925-GN), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 1 (wire C925-GN) and VIBE fuse is good, turn engine start switch to OFF position (TM 5-3895-379-10). Connect connector to high amplitude solenoid and tighten screw. Close left-side door assembly and go to Step 2.</p> <p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C933-GN), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 2 (wire C933-GN) and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C933-GN and connectors to VIBE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2 (wire C933-GN), go to Step 3.</p>



401-229

Table 6. Vibratory System Troubleshooting Procedures - Continued.

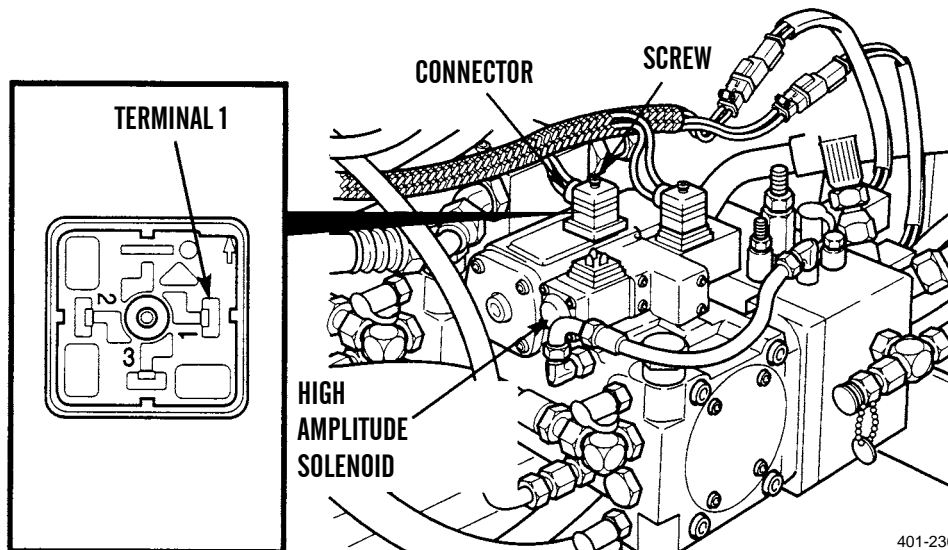
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>9. Vibration Does Not Occur While Amplitude Select Switch Is Set To High Pitch- Continued.</p>	<p>3. Check for power at amplitude select switch. Set amplitude select switch to high pitch (push forward). Touch positive (+) probe of multimeter to terminal 1 (wire B921-WH) and negative (-) probe of multimeter to good ground. Measure Vdc. Set amplitude select switch to low pitch (pull back). Touch positive (+) probe of multimeter to terminal 3 (wire C920-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1 and 3, repair or replace wiring and connectors from amplitude select switch (WP 0073 00).</p>



401-229

Table 6. Vibratory System Troubleshooting Procedures - Continued.

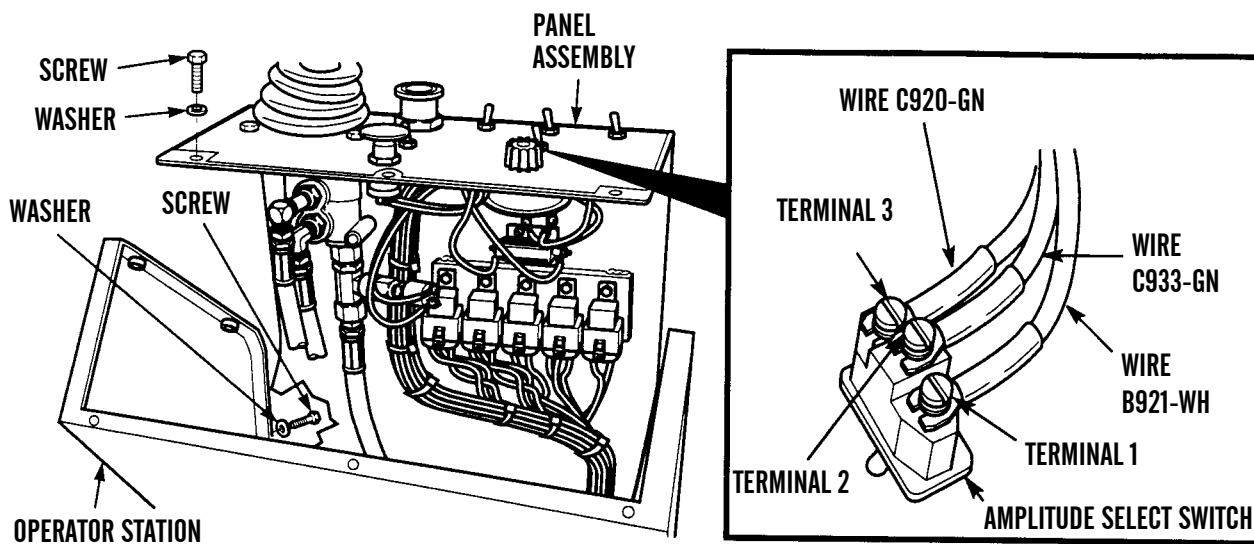
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Vibration Does Not Occur While Amplitude Select Switch Is Set To Low Pitch.</p>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment. • Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death may occur. <ol style="list-style-type: none"> 1. Check power to vibratory control. Open left-side door assembly (TM 5-3895-379-10). Loosen screw and disconnect connector from low amplitude solenoid. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set vibration control switch to manual (MAN) position and amplitude select switch to LOW position. Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire C924-YL) and negative (-) probe of multimeter to good ground. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are measured at terminal 1 (wire C924-YL), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Connect connector to low amplitude solenoid and tighten screw. 2. If 24 to 28 Vdc are not measured at terminal 1 (wire C924-YL), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at wire terminal 1 (wire C924-YL) and VIBE fuse is good, turn engine start switch to OFF position (TM 5-3895-379-10). Connect connector to low amplitude solenoid and tighten screw. Close left-side door assembly and go to Step 2.



401-230

Table 6. Vibratory System Troubleshooting Procedures - Continued.

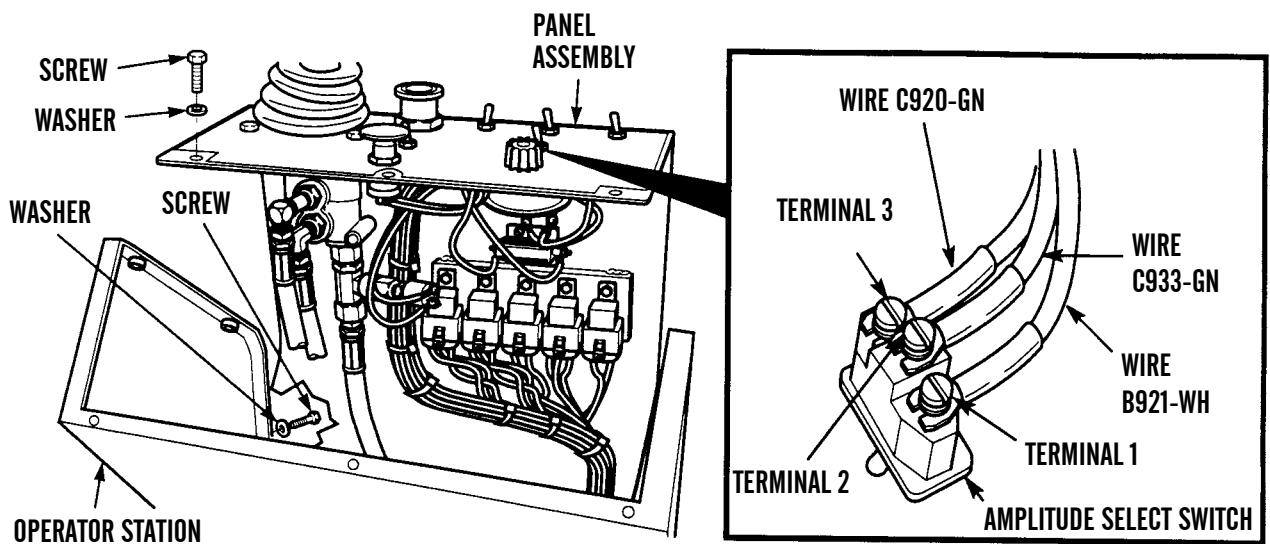
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Vibration Does Not Occur While Amplitude Select Switch Is Set To Low Pitch - Continued.</p>	<p>2. Check for power to amplitude select switch. Remove nine screws and washers and remove panel from operator station. Turn vibration control switch to manual (MAN) position. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 2 (wire C933-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 2 (wire C933-GN), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 2 (wire C933-GN) and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wire C933-GN and connectors to VIBE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 2 (wire C933-GN), go to Step 3.</p>



401-229

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>10. Vibration Does Not Occur While Amplitude Select Switch Is Set To Low Pitch - Continued.</p>	<p>3. Check for power at amplitude select switch. Set amplitude select switch to high pitch (push forward). Touch positive (+) probe of multimeter to terminal 1 (wire B921-WH) and negative (-) probe of multimeter to good ground. Measure Vdc. Set amplitude select switch to low pitch (pull back). Touch positive (+) probe of multimeter to terminal 3 (wire C920-GN) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminals 1 and 3, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace amplitude select switch (WP 0073 00).</p> <p>2. If 24 to 28 Vdc are measured at terminals 1 and 3, repair or replace wiring and connectors from amplitude select switch (WP 0073 00).</p>

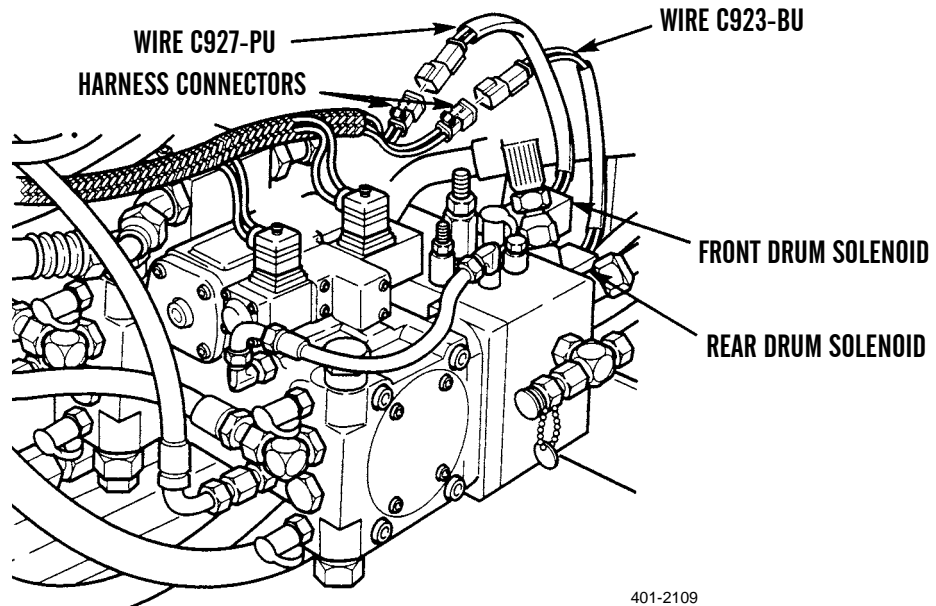


401-229

- Remove all jewelry such as rings, dog tags and bracelets. If jewelry contacts electrical connection a direct short may occur resulting in injury or death, and damage to equipment.
- Ensure that parking brake is engaged and propel control lever is in neutral position before turning engine start switch to ON position. If roller accidentally starts or rolls, injury or death may occur.

Table 6. Vibratory System Troubleshooting Procedures - Continued.

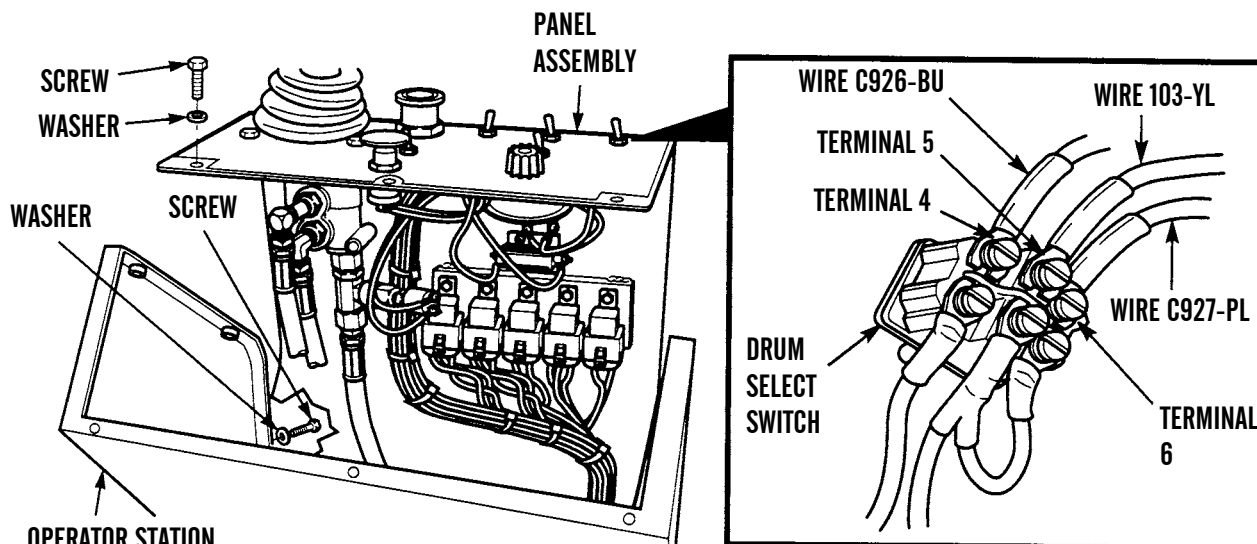
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. Vibration Occurs In Only One Drum.</p>	<p>1. Check power to vibratory control. Open left-side door assembly (TM 5-3895-379-10). If rear drum does not vibrate, disconnect harness connector from rear drum solenoid connector. If front drum does not vibrate, disconnect harness connector from front drum solenoid connector. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Set multimeter to measure Vdc. Touch positive (+) probe of multimeter to terminal 1 (wire C923-BU for rear drum or C927-PU for front drum) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 1 (wire C923-BU for rear drum or C927-PU for front drum), turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Connect harness connector to solenoid connector.</p> <p>2. If 24 to 28 Vdc are not measured at terminal 1 (wire C923-BU for rear drum or C927-PU for front drum), press vibration on/off switch once and try again. If 24 to 28 Vdc are still not measured at terminal 1 (wire C923-BU for rear drum or C927-PU for front drum) and VIBE fuse is good, turn engine start switch to off position (TM 5-3895-379-10). Connect harness connector to solenoid connector. Go to Step 2.</p>



401-2109

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. Vibration Occurs In Only One Drum - Continued.</p>	<p>2. Check for power to drum select switch. Remove nine screws and washers and remove panel from operator station. Turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 5 (wire 103-YL) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 5 (wire 103-YL) and VIBE fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to VIBE fuse holder (WP 0077 00).</p> <p>2. If 24 to 28 Vdc are measured at terminal 5 (wire 103-YL), go to Step 3.</p>



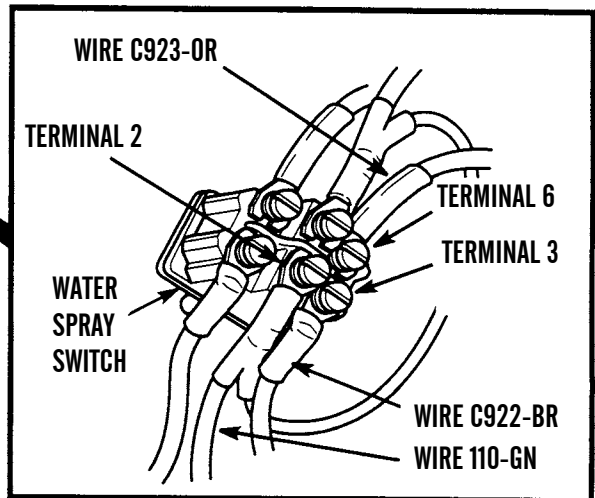
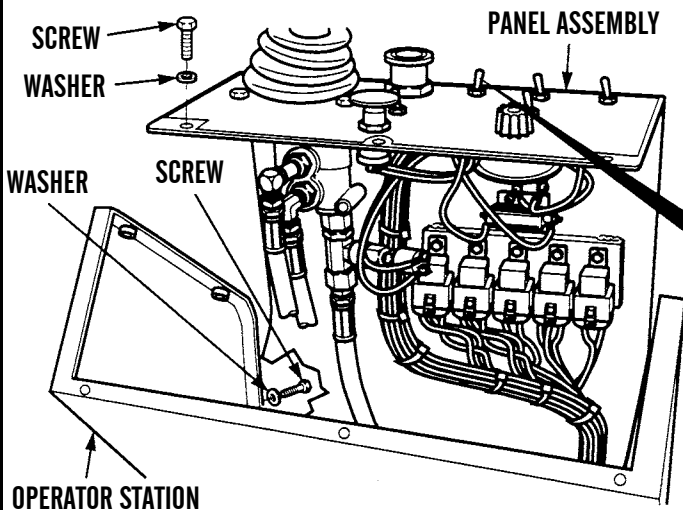
401-227

Table 6. Vibratory System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. Vibration Occurs In Only One Drum - Continued.</p>	<p>3. Check for power at drum select switch. Touch positive (+) probe of multimeter to terminal 4 (wire C926-BU) and negative (-) probe of multimeter to good ground while drum select switch is pulled back to rear position to check rear vibratory circuit. Touch positive (+) probe of multimeter to terminal 6 (wire C927-PU) and negative (-) probe of multimeter to good ground while drum select switch is pushed forward to front position to check front vibratory circuit. Touch negative (-) probe of multimeter to good ground and positive (+) probe of multimeter to terminal 6 (wire C927-PU) and then to terminal 4 (wire C926-BU) while drum select switch is in center position to check vibratory circuit to both drums.</p>	<p>1. If 24 to 28 Vdc are not measured at terminal 4 (wire C926-BU) while drum select switch is pulled back to rear position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>2. If 24 to 28 Vdc are not measured at terminal 6 (wire C927-PU) while drum select switch is pushed forward to front position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>3. If 24 to 28 Vdc are measured at terminals 4 and 6 while drum select switch is in center position, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace drum select switch (WP 0071 00).</p> <p>4. If all voltage output checks at drum select switch are OK, notify supervisor.</p>

Table 7. Water Spray System Troubleshooting Procedures.

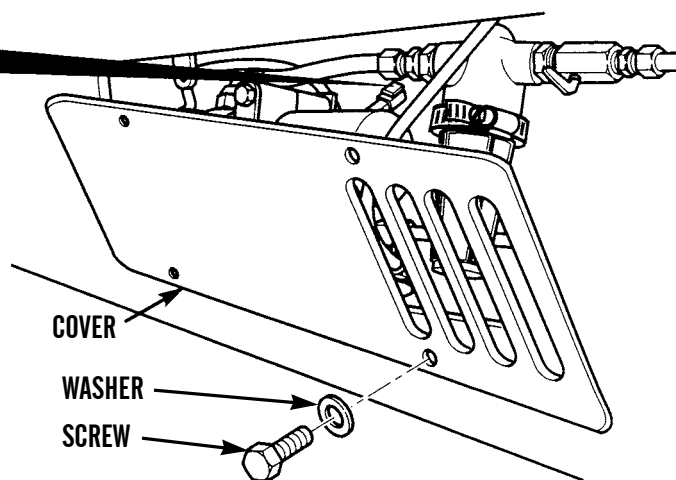
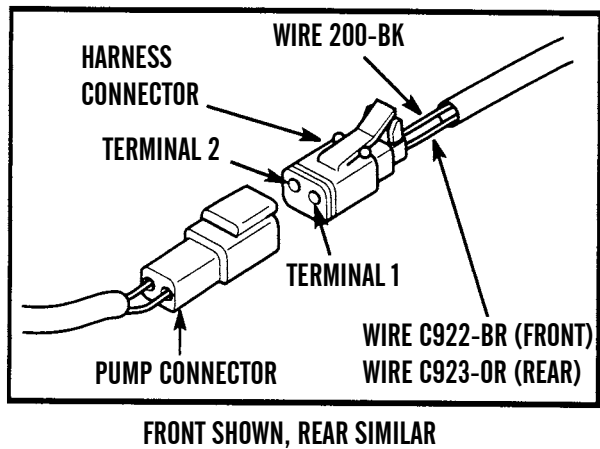
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Spray Does Not Occur At Either Drum When Water Spray Switch Is In Continuous Spray Position.</p>	<ol style="list-style-type: none"> 1. Check for power to water spray switch. Remove nine screws and washers and remove panel from operator station. With water spray switch in continuous spray (full back) position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 2 (wire 110-GN) and negative (-) probe of multimeter to good ground. 2. Check for power at water spray switch. Touch positive (+) probe of multimeter to terminal 3 (wire C922-BR) and negative (-) probe of multimeter to operator station to check front water spray pump. Touch positive (+) probe of multimeter to terminal 6 (wire C923-OR) and negative (-) probe of multimeter to good ground to check rear water spray pump. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at terminal 2 and WATER SPRAY fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to water spray fuse holder (WP 0077 00). 2. If 24 to 28 Vdc are measured at terminal 2, go to Step 2. 1. If 24 to 28 Vdc are not measured at terminals 3 and 6, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace water spray switch (WP 0070 00). 2. If 24 to 28 Vdc are measured at terminals 3 and 6, install panel on operator station with nine screws and washers and go to Step 3.



401-232

Table 7. Water Spray System Troubleshooting Procedures - Continued.

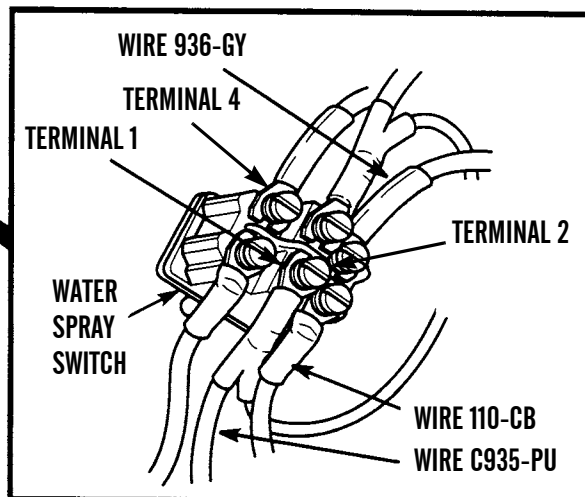
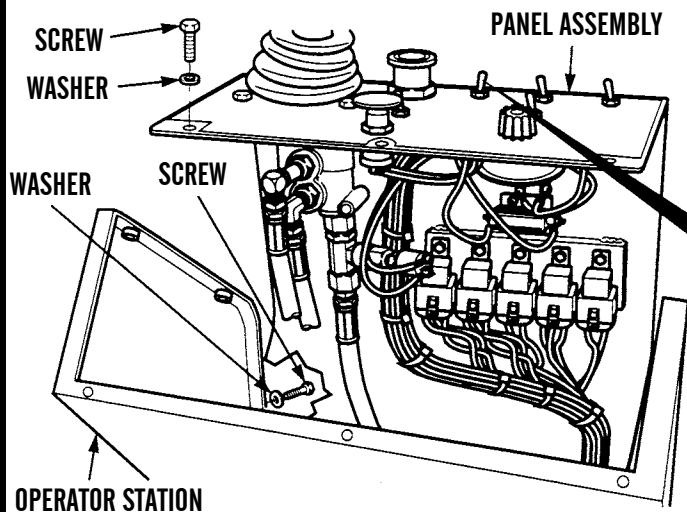
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. Spray Does Not Occur At Either Drum When Water Spray Switch Is In Continuous Spray Position - Continued.</p>	<p>3. Check for power at front and rear wiring harness water spray pump connectors. Remove four screws, washers and cover from each bumper assembly. Disconnect connector from harness connector. To check front water spray pump connector, touch positive (+) probe of multimeter to harness connector, pin 1 (wire C922-BR) and negative (-) probe of multimeter to frame. To check rear water spray pump connector, touch positive (+) probe of multimeter to harness connector, pin 1 (wire C923-OR) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are measured at water spray pump connectors, turn engine start switch to OFF position and battery disconnect switch OFF (TM 5-3895-379-10). Replace water spray pumps (WP 0155 00).</p> <p>2. If 24 to 28 Vdc are not measured at water spray pump connectors, turn engine start switch to OFF position and battery disconnect switch OFF (TM 5-3895-379-10). Repair or replace wiring and connectors from water spray switch to water spray pumps (WP 0108 00).</p>



401-233

Table 7. Water Spray System Troubleshooting Procedures - Continued.

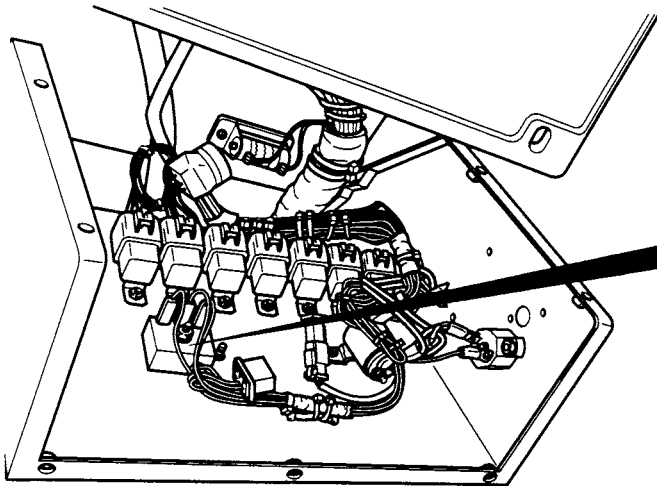
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. No Spray At Either Drum When Water Spray Switch Is In Intermittent Spray Position.</p>	<ol style="list-style-type: none"> 1. Check for power to water spray switch. Remove nine screws and washers and remove panel from operator station. With water spray switch in intermittent spray position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Touch positive (+) probe of multimeter to terminal 2 (wire 110-GN) and negative (-) probe of multimeter to good ground. 2. Check for power at water spray switch. Touch positive (+) probe of multimeter to terminal 1 (wire C935-PU) and negative (-) probe of multimeter to operator station to check front water spray pump. Touch positive (+) probe of multimeter to terminal 4 (wire C936-GY) and negative (-) probe of multimeter to good ground to check rear water spray pump. 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are not measured at terminal 2 and WATER SPRAY fuse is good, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors to WATER SPRAY fuse holder (WP 0077 00). 2. If 24 to 28 Vdc are measured at terminal 2, go to Step 2. 1. If 24 to 28 Vdc are not measured at terminals 1 and 4, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace water spray switch (WP 0070 00). 2. If 24 to 28 Vdc are measured at terminals 1 and 4, install panel on operator station with nine screws and washers and go to Step 3.



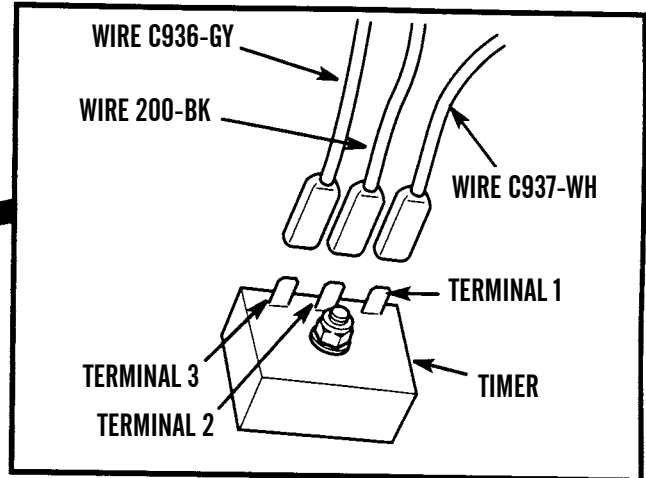
401-2110

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. No Spray At Either Drum When Water Spray Switch Is In Intermittent Spray Position - Continued.</p>	<p>3. Remove wire C937-WH from terminal 1 and wire 200-BK from terminal 2 of intermittent water spray timer. With multimeter set to measure ohms, touch positive (+) probe of multimeter to terminal 1 and negative (-) probe of multimeter to good ground.</p>	<p>1. If cycles of 15 seconds of zero ohms followed by 15 seconds of infinite ohms are not found, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace intermittent water spray timer (WP 0076 00).</p> <p>2. If cycles of 15 seconds of zero ohms followed by 15 seconds of infinite ohms are found, turn engine start switch to off position and install wire C937-WH on terminal 1 and go to Step 4.</p>



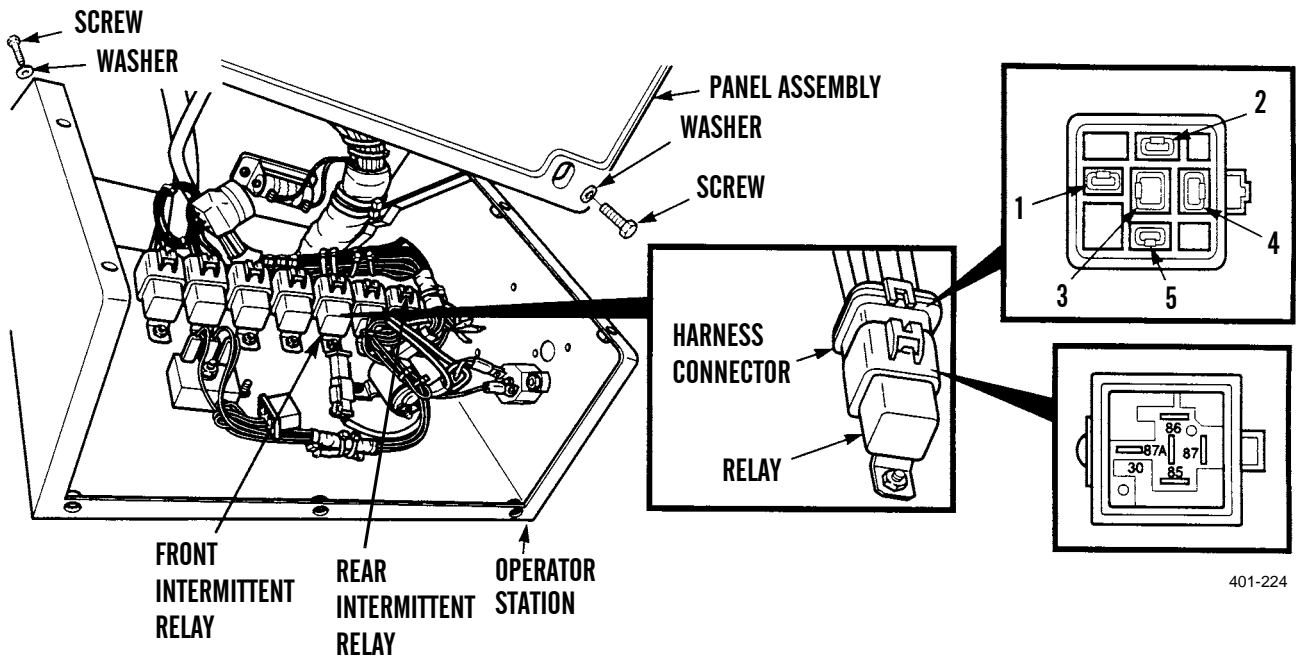
VIEW FROM DRIVER'S SEAT



401-234

Table 7. Water Spray System Troubleshooting Procedures - Continued.

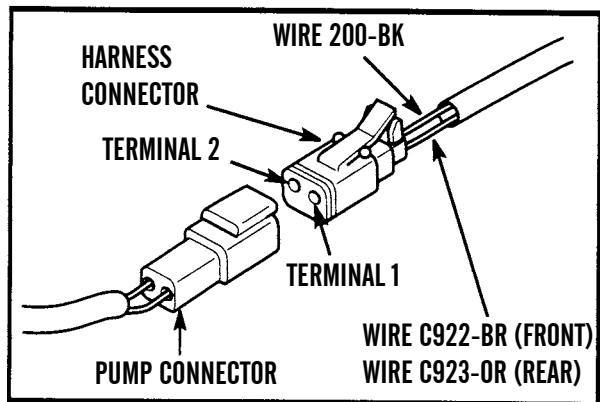
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. No Spray At Either Drum When Water Spray Switch Is In Intermittent Spray Position - Continued.</p>	<p>4. Remove harness connector from front or rear intermittent relay. Remove both connectors if water spray system on both drums is malfunctioning. Attach a jumper wire from terminal 1 to terminal 4. With water spray switch in intermittent run position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10).</p>	<p>1. If water spray system operates at drum, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace relay (WP 0068 00).</p> <p>2. If water spray does not operate at drum, install panel on operator station with nine screws and washers. Go to Step 5.</p>



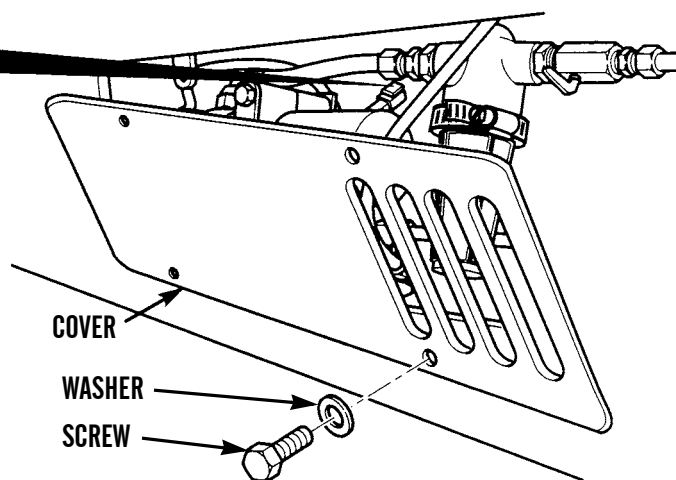
401-224

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. No Spray At Either Drum When Water Spray Switch Is In Intermittent Spray Position - Continued.</p>	<p>5. Check for power at front and rear wiring harness water spray pump connectors. Remove four screws, washers and cover from each bumper assembly. Disconnect pump connector from harness connector. To check front water spray pump connector, touch positive (+) probe of multimeter to harness connector, pin 1 (wire C922-BR) and negative (-) probe of multimeter to good ground. To check rear water spray pump connector, touch positive (+) probe of multimeter to pump connector, pin 1 (wire C923-OR) and negative (-) probe of multimeter to good ground.</p>	<p>1. If 24 to 28 Vdc are measured at water spray pump connectors, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace water spray pumps (WP 0155 00).</p> <p>2. If 24 to 28 Vdc are not measured at water spray pump connectors, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Repair or replace wiring and connectors from water spray switch to water spray pumps (WP 0108 00).</p>



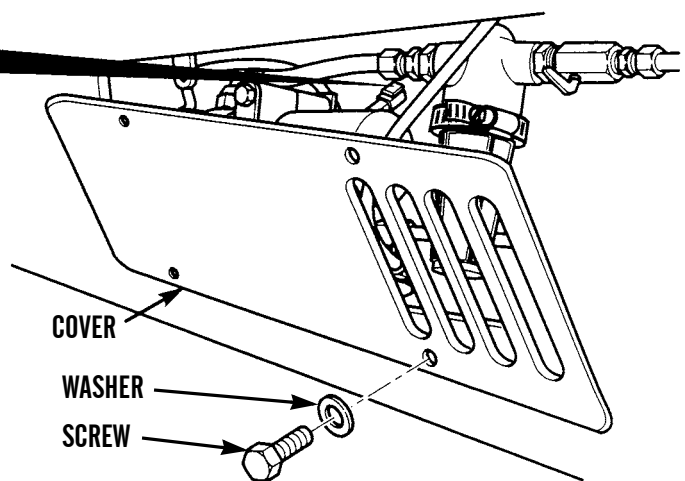
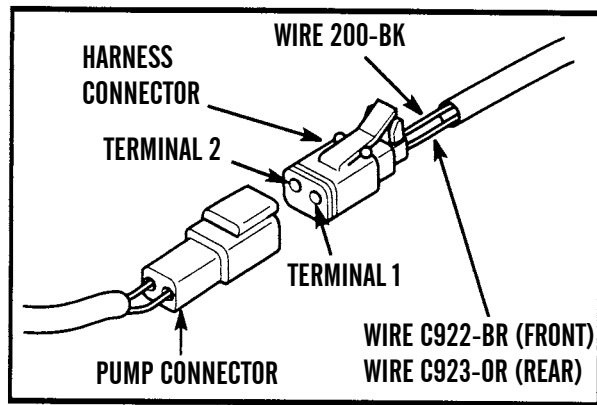
FRONT SHOWN, REAR SIMILAR



401-233

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Water Spray Occurs On One Drum Only.</p>	<ol style="list-style-type: none"> 1. Check for power at wiring harness water spray pump connector at drum that is not getting water spray. Remove four screws, washers and cover from each bumper assembly. With water spray switch in continuous run position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Disconnect pump connector from harness connector. To check front water spray pump connector, touch positive (+) probe of multimeter to harness connector, pin 1 (wire C922-BR) and negative (-) probe of multimeter to good ground. To check rear water spray pump connector, touch positive (+) probe of multimeter to pump connector, pin 1 (wire C923-OR) and negative (-) probe of multimeter to good ground. 2. Clean and inspect water spray check valve (WP 0148 00). 	<ol style="list-style-type: none"> 1. If 24 to 28 Vdc are measured at water spray pump connectors, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Replace water spray pumps (WP 0155 00). 2. If 24 to 28 Vdc are not measured at water spray pump connectors, turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Connect pump connector to harness connector. Install cover on bumper assembly with four washers and screws. Go to Step 2. <ol style="list-style-type: none"> 1. If water spray check valve is damaged, replace valve (WP 0148 00). 2. If water spray check valve is not damaged, go to Step 3.



401-233

Table 7. Water Spray System Troubleshooting Procedures - Continued.

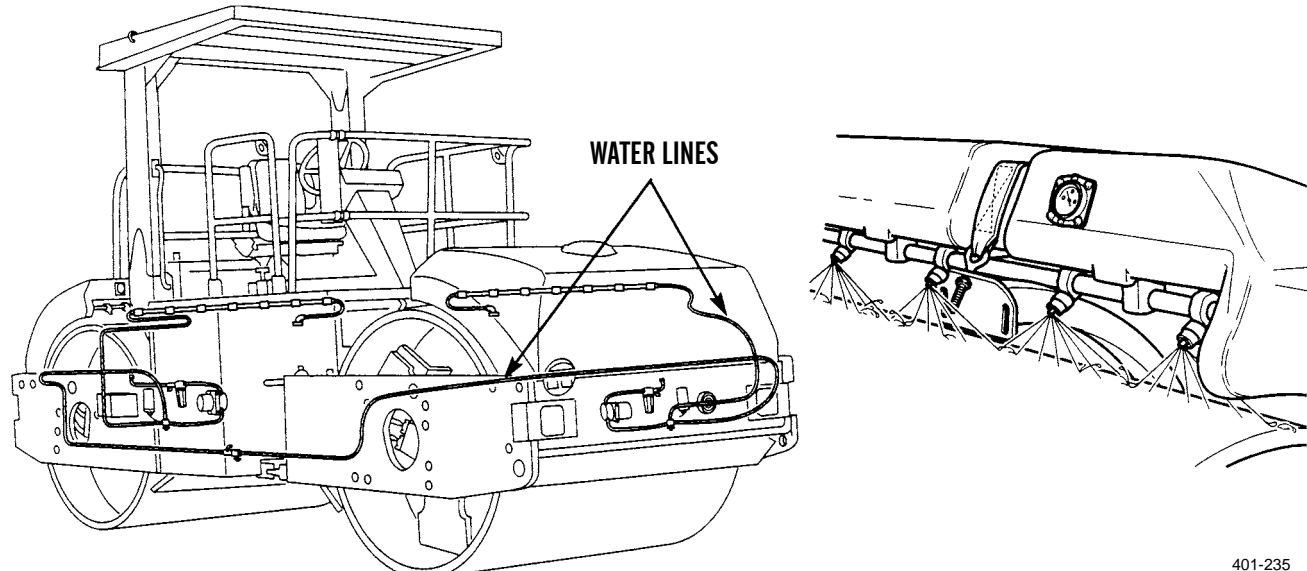
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. Water Spray Occurs On One Drum Only - Continued.</p>	<p>3. Check for pinched or damaged water lines.</p>	<p>1. If water line(s) is pinched or damaged, replace water line(s) (WP 0159 00).</p> <p>2. If water line(s) is not pinched or damaged, go to Malfunction No.1 - <i>Spray Does Not Occur In Either Drum When Water Spray Switch Is In Continuous Spray Position.</i></p>
<div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p style="text-align: right; margin-right: 50px;">401-235</p>		

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. Water Spray Pressure Is Low.</p>	<ol style="list-style-type: none"> 1. Clean and inspect water spray check valves (WP 0148 00). 2. Check for pinched or damaged water lines. 3. Check for discharge of water spray pump of fullest tank. Remove four screws, washers and cover from each bumper assembly. Loosen two hose clamps and disconnect input and output water lines from water spray pump. Attach a line from input side of pump to a 5 gal. bucket full of clean water. Attach a line from output side of pump to a pressure gauge and plug cock. Open plug cock. With water spray switch in continuous run position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Close plug cock slowly until pressure gauge reads 20 psi. Place an empty five gallon bucket under plug cock for 60 seconds. Remove bucket from stream of water. Turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Measure amount of water collected in bucket. Pump should discharge 1.5 gallons in 60 seconds at 20 psi. 	<ol style="list-style-type: none"> 1. If water spray check valve is damaged, replace valve (WP 0148 00). 2. If water spray check valve is not damaged, go to Step 2. 1. If water line(s) is pinched or damaged, replace water line(s) (WP 0159 00). 2. If water line(s) is not pinched or damaged, go to Step 3. 1. If 1 gallon or less of water is collected, replace water spray pump (WP 0155 00). 2. If 1.0 to 1.5 gallons of water is collected, remove plug cock, pressure gauge and line. Install input and output water lines on water spray pump with two hose clamps. Install cover on bumper assembly with four washers and screws. Clean and inspect water spray pipe assembly (WP 0152 00).

Table 7. Water Spray System Troubleshooting Procedures - Continued.

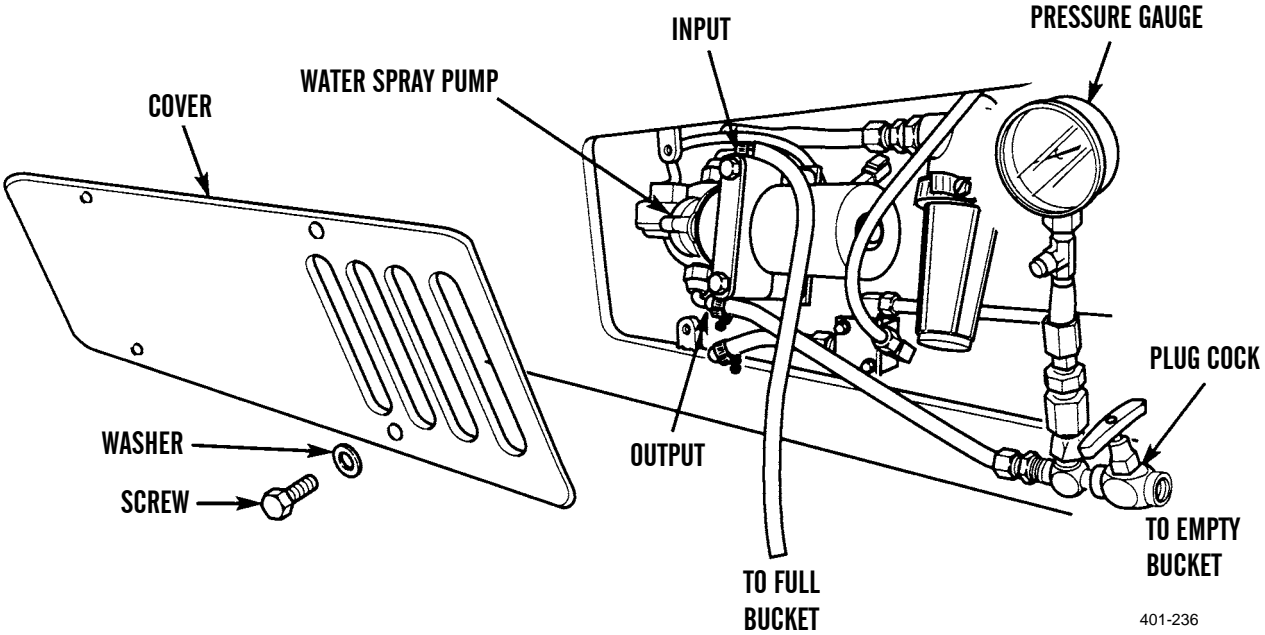
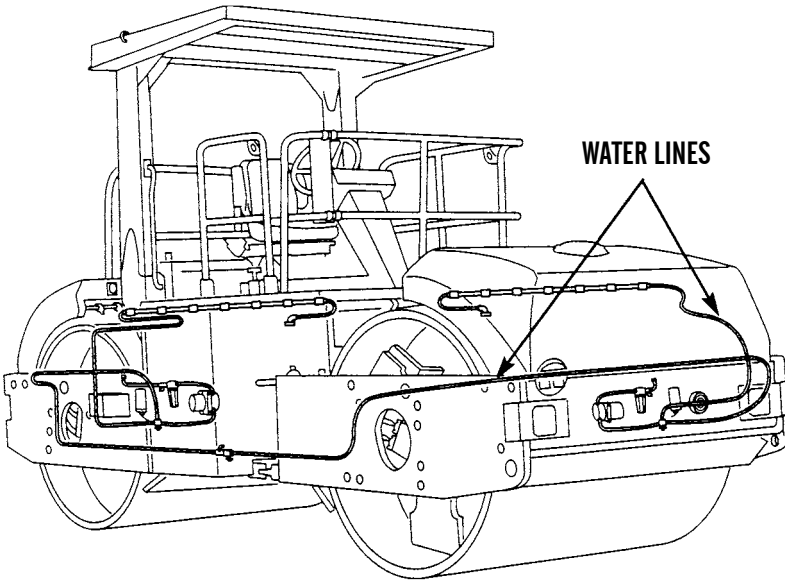
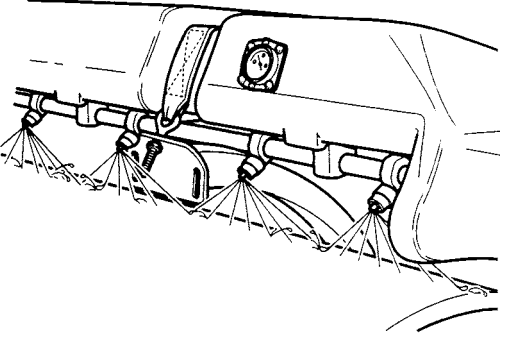
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. Water Spray Pressure Is Low - Continued.</p>  <p style="text-align: right;">401-236</p>		
<p>5. Water Consumption Unequal Between Tanks.</p>	<ol style="list-style-type: none"> 1. Clean and inspect water spray strainer assembly of tank which is fullest (WP 0150 00). 2. Clean and inspect water spray check valve (WP 0148 00). 	<ol style="list-style-type: none"> 1. If water spray strainer assembly or components are damaged, replace water spray strainer assembly or components (WP 0150 00). 2. If water spray strainer assembly is not damaged, go to Step 2. 1. If water spray check valve is damaged, replace valve (WP 0148 00). 2. If water spray check valve is not damaged, go to Step 3.

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Water Consumption Unequal Between Tanks - Continued.</p>	<p>3. Check for pinched or damaged water lines.</p>	<p>1. If water line(s) is pinched or damaged, replace water line(s) (WP 0159 00).</p> <p>2. If water line(s) is not pinched or damaged, go to Malfunction No. 1, <i>Spray Does Not Occur In Either Drum When Water Spray Switch Is In Continuous Spray Position.</i></p>

401-235

Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. Water Consumption Unequal Between Tanks - Continued.</p>	<p>4. Check discharge of water spray pump of fullest tank. Remove four screws, washers and cover from each bumper assembly. Loosen two hose clamps and disconnect input and output water lines from water spray pump. Attach a line from input side of pump to a 5 gallon bucket full of clean water. Attach a line from output side of pump to a pressure gauge and plug cock. Open plug cock. With water spray switch in continuous run position, turn battery disconnect switch and engine start switch to ON position (TM 5-3895-379-10). Close plug cock slowly until pressure gauge reads 20 psi. Place an empty five gallon bucket under plug cock for 60 seconds. Remove bucket from stream of water. Turn engine start switch and battery disconnect switch to OFF position (TM 5-3895-379-10). Measure amount of water collected in bucket. Pump should discharge 1.5 gallons in 60 seconds at 20 psi.</p>	<p>1. If 1 gal. or less of water is collected, replace water spray pump (WP 0155 00).</p> <p>2. If 1.0 to 1.5 gallons of water is collected, remove plug cock, pressure gauge and line. Install input and output water lines on water spray pump with two hose clamps. Install cover on bumper assembly with four washers and screws. Clean and inspect spray pipe assembly (WP 0152 00).</p>

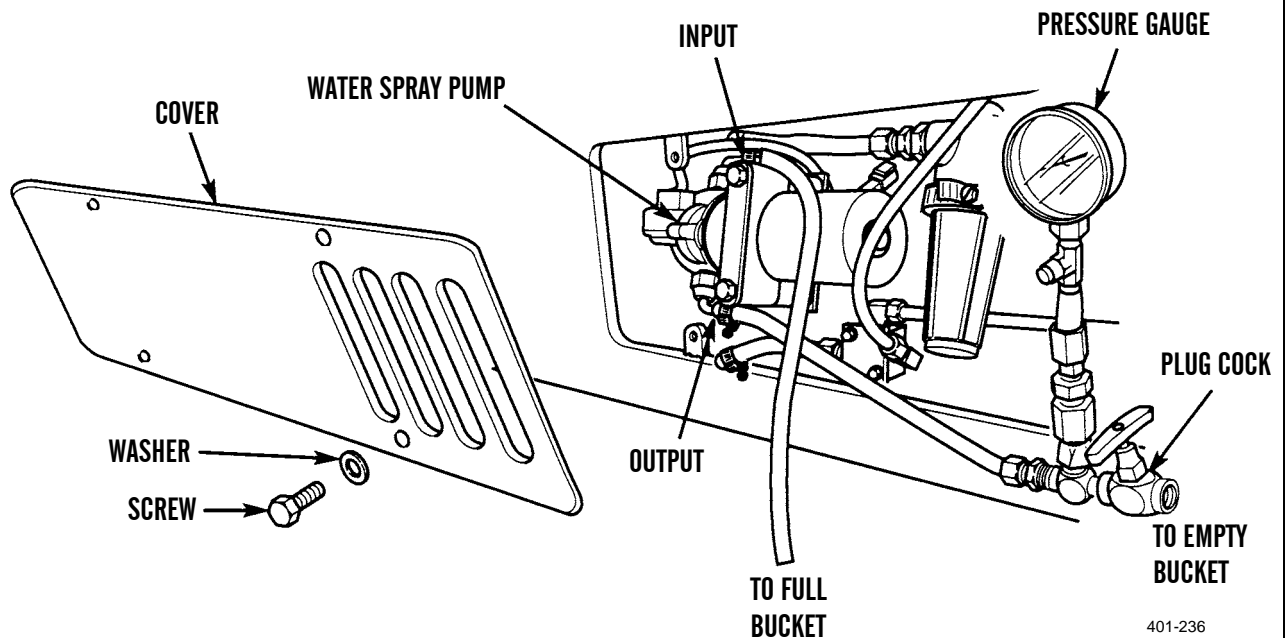


Table 7. Water Spray System Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>6. Nozzle Spray Pattern Is Inconsistent.</p>	<ol style="list-style-type: none"> 1. Clean and inspect water spray pipe assembly (WP 0152 00). 2. Clean and inspect water spray check valves (WP 0148 00). 	<ol style="list-style-type: none"> 1. If water spray pipe assembly is damaged, replace pipe assembly (WP 0152 00). 2. If water spray pipe assembly is not damaged, go to Step 2. 1. If water spray check valve is damaged, replace valve (WP 0148 00). 2. If water spray check valve is not damaged, repeat Step 1.

END OF WORK PACKAGE

CHAPTER 3
UNIT MAINTENANCE

GENERAL

1. When a used or reconditioned CB534B or CB534C Roller is first received, determine whether it has been properly prepared for service and is in condition to perform its mission.
2. Follow the inspection and servicing instructions that follow.

INSPECTION INSTRUCTIONS

1. Read and follow all precautions and instructions on DD Form 1397.
2. Remove all packing and shipping material, such as tape, tie downs, protective covers and shipping seals.

**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

3. Clean any exposed metal parts coated with rust preventive compound. Use cleaning compound, solvent (Item 9, WP 0219 00).
4. Inspect equipment for any damage incurred during shipment. Check if equipment has been modified.
5. Check equipment against packing slip to ensure that shipment is complete. Report any discrepancies on SF Form 364.
6. Clean all external surfaces as needed. Touch up any paint scratches.
7. Remove all Basic Issue Item (BII), Additional Authorization List (AAL), and Components of End Item (COEI) equipment and stow in accordance with TM 5-3895-379-10.

SERVICING INSTRUCTIONS

1. Service roller in accordance with PMCS instructions in TM 5-3895-379-10 and PMCS instructions in this manual (WP 0008 00 and WP 0009 00). Schedule the next PMCS on DA Form 5986-E.
2. Refer to TM 5-3895-379-10 and perform functional checks of all major roller systems to ensure roller is ready for operation. Remove all warning tags.

END OF WORK PACKAGE

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS) INTRODUCTION**

0008 00

GENERAL

1. To ensure that the CB534B and CB534C Rollers, Motorized, Vibrating Tandem Steel Drums are ready for operation at all times, they must be lubricated and inspected on a regular basis so that defects may be found before they result in damage, equipment failure or injury.
2. The Lubrication Chart at the end of this work package shows all Field Maintenance level lubrication points for the CB534B and CB534C Rollers. Localized views are provided at the end of this package.
3. The *KEY* in this work package lists the types, amounts and temperature ranges of the lubricants required for specified intervals.
4. Table 1 in WP 0009 00 contains systematic instructions on lubrications, inspections, adjustments and corrections to be performed by Field Maintenance to keep the CB534B and CB534C in good operating condition and ready for their primary mission.
5. For information on Corrosion Prevention and Control (CPC), refer to WP 0001 00.

EXPLANATION OF TABLE ENTRIES

1. **Item Number (Item No.) Column.** Numbers in this column are for reference. When completing DA Form 2404 or DA Form 5988-E (*Equipment Inspection and Maintenance Worksheet*), include the item number for the check/service indicating a fault. Item numbers also appear in the order you must perform checks and services for the interval listed.
2. **Interval Column.** This column tells you when you must perform the procedure in the procedure column. Intervals are based on calendar dates or hours.
 - a. *Hours* procedures must be performed at the hour interval specified.
 - b. *Quarterly* procedures must be performed once every three months.
 - c. *Semiannual* procedures must be performed once every six months.
 - d. *Annual* procedures must be performed once each year.
 - e. *Biennial* procedures must be performed once every two years.
3. **Man-Hours Column.** This column indicates man-hours required to complete prescribed lubrication service.
4. **Item to Check/Service Column.** This column identifies the item to be checked or serviced.

NOTE

The WARNINGS and CAUTIONS appearing in your PMCS table should always be observed. WARNINGS and CAUTIONS appear before applicable procedures. These WARNINGS and CAUTIONS must be observed to prevent injury to yourself and others or to prevent your equipment from being damaged.

5. **Procedure Column.** This column gives the procedure you must perform to check or service the item listed in the Item to Check/Service column, to know if the equipment is ready or available for its intended mission or for operation. You must perform the procedure at the time stated in the interval column.

GENERAL LUBRICATION PROCEDURES**NOTE**

Lubrication instructions contained in this PMCS are MANDATORY.

1. Recommended intervals are based on normal conditions of operation, temperature, and humidity. When operating under extreme conditions, such as high or low temperatures or exposure to sand or dust, lubricants should always be changed more frequently. Lubricants that have become contaminated will be changed regardless of interval. When in doubt, notify your supervisor.

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS) INTRODUCTION - CONTINUED**

0008 00

GENERAL LUBRICATION PROCEDURES - CONTINUED**WARNING**

When servicing this roller, performing maintenance or disposing of materials such as engine coolant, hydraulic fluid, lubricants, battery acids or batteries, and CARC paint, consult your field/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact The Army Environmental Hotline at 1-800-872-3845.

2. Ensure that all fluids drained as a result of lubrication or maintenance are collected in container and disposed of in accordance with local policy and ordinances. Clean up any spills immediately.
3. Keep all lubricants in a closed container and store in a clean, dry place away from extreme heat. Keep container covers clean and do not allow dust, dirt or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.
4. Maintain a good record of all lubrication performed and report any problem noted during lubrication. Refer to DA Pam 738-750 for maintenance forms and procedures to record and report any findings.

**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

5. Keep all external parts of equipment not requiring lubrication free of lubricants. Before lubrication, wipe lubrication fittings with a clean rag (Item 31, WP 0219 00) and cleaning compound, solvent (Item 9, WP 0219 00). After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.
6. Refer to FM 9-207 for lubrication instructions in cold weather.
7. Refer to AR 70-12 for use of standardized fuels and lubricants.
8. Engine, transmission and hydraulic system oil filters shall be changed when:
 - a. they are known to be contaminated or clogged;
 - b. service is directed by Army Oil Analysis Program (AOAP) laboratory analysis; or
 - c. at prescribed hardtime intervals.
9. Engine, transmission and hydraulic system oil must be sampled as prescribed by DA Pam 738-750. Thereafter, they are sampled as AOAP results dictate.
10. For equipment under manufacturer's warranty, hardtime oil service intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated or if operation is under adverse conditions (i.e., longer-than-usual operating hours, extended idling periods or dust).

GENERAL PMCS PROCEDURES

1. Always perform PMCS in the same order so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry. If any deficiency is discovered, perform the appropriate troubleshooting task in Chapter 2 of this manual. If any component or system is not serviceable, or if the given service does not correct the deficiency, notify your supervisor.

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS) INTRODUCTION - CONTINUED**

0008 00

GENERAL PMCS PROCEDURES - CONTINUED

2. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare all tools needed to make all checks. Have several clean rags (Item 31, WP 0219 00) handy. Perform ALL inspections at the applicable interval.
 - a. **Keep It Clean.** Dirt, grease, oil and debris get in the way and may cover up a serious problem. Clean as you work and as needed. Use detergent (Item 14, WP 0219 00) and water when you clean.
 - b. **Rust and Corrosion.** Check metal parts for rust and corrosion. If any bare metal or corrosion exists, clean and apply a light coat of lubricating oil (Item 24, WP 0219 00). Report it to your supervisor.
 - c. **Bolts, Nuts and Screws.** Check bolts, nuts and screws for obvious looseness, missing, bent or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal or rust around bolt heads. If you find one you think is loose, tighten it.
 - d. **Welds.** Look for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.
 - e. **Electric Wires and Connectors.** Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connectors and ensure that the wires are in good condition.
 - f. **Hydraulic Hoses and Lines.** Look for wear, damage, and signs of leaks. Ensure that clamps and fittings are tight. Wet spots indicate leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, correct it if authorized by the Maintenance Allocation Chart (WP 0218 00). If not authorized, notify your supervisor.
 - g. **Fluid Leakage.** It is necessary for you to know how fluid leakage affects the status of your roller. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your roller. Learn and be familiar with them, and remember - when in doubt, notify your supervisor.

Leakage Definitions for PMCS

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being checked/inspected.
Class III	Leakage of fluid great enough to form drops that fall from item being checked/inspected.

CAUTION

Operation is allowable with Class I and Class II leakage. **WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR.** When operating with Class I or Class II leaks, check fluid levels more frequently. Class III leaks must be reported immediately to your supervisor. Failure to do this will result in damage to vehicle and/or components.

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS) INTRODUCTION - CONTINUED**

0008 00

PMCS INITIAL SETUP

Tools and Test Equipment

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Antifreeze (Item 4, WP 0219 00)

Cleaning compound, solvent (Item 9, WP 0219 00)

Detergent (Item 14, WP 0219 00)

Grease, GAA (Item 19, WP 0219 00)

Oil, lubricating, gear, GO-75 (Item 22, WP 0219 00)

Oil, lubricating, gear, GO-80/90 (Item 23, WP 0219 00)

Oil, lubricating, OE/HDO-10 (Item 24, WP 0219 00)

Materials/Parts - Continued

Oil, lubricating, OE/HDO-15/40 (Item 25, WP 0219 00)

Oil, lubricating, OE/HDO-30 (Item 26, WP 0219 00)

Oil, lubricating, OEA-30 (Item 27, WP 0219 00)

Oil, synthetic, ISO 220 (Item 29, WP 0219 00)

Petrolatum (Item 30, WP 0219 00)

Rags (Item 31, WP 0219 00)

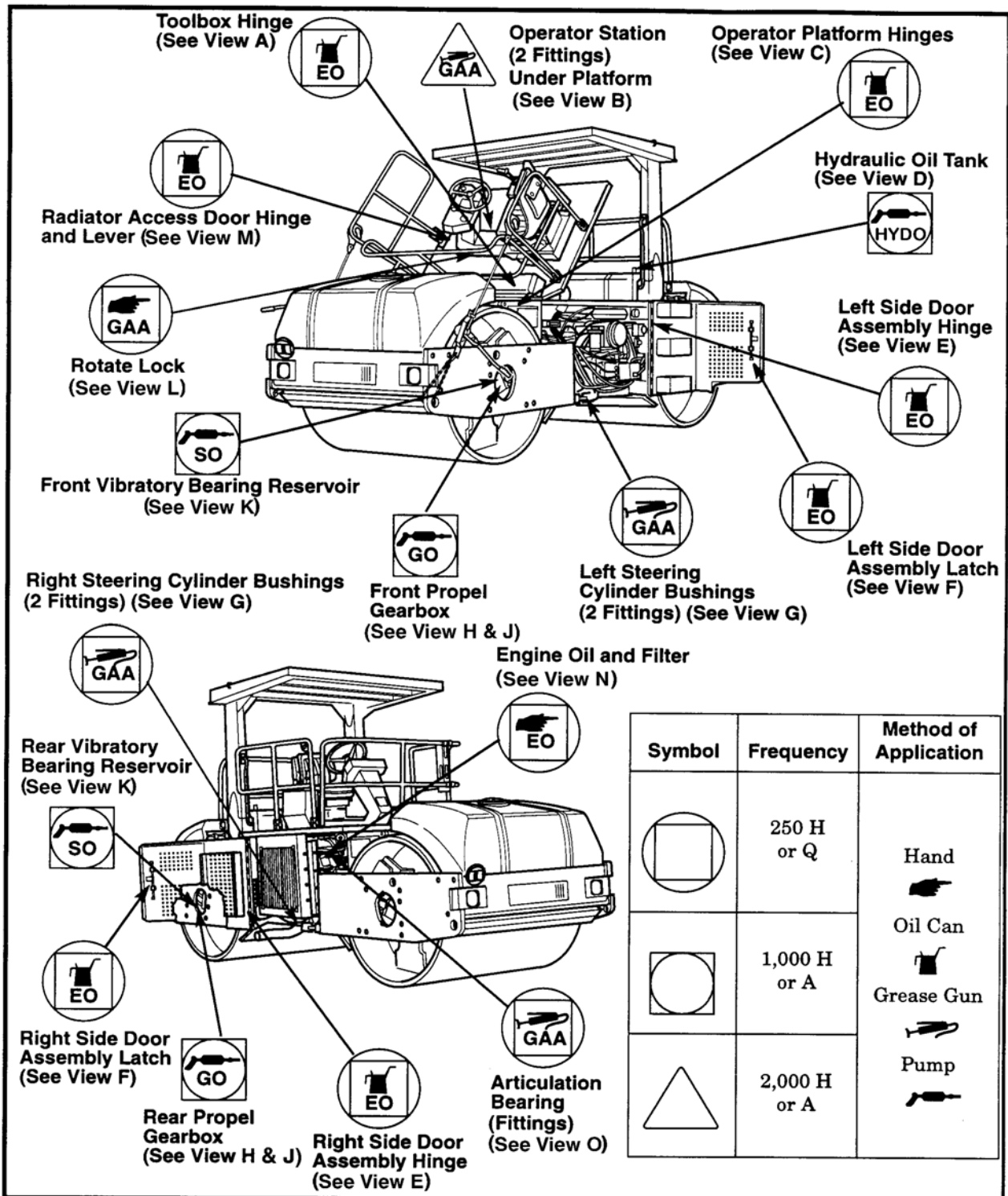
AOAP sampling kit

Personnel Required

Driver/operator

Field maintenance mechanic

LUBRICATION CHART



401-152

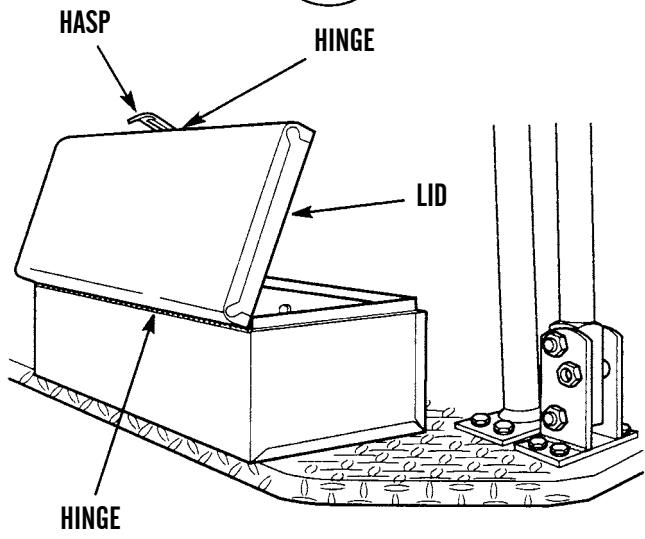
- KEY -

Location	Temperature Range	Lubricant MIL Symbol (NATO Code) Specification	Capacity	Interval
Operator station swivel, rotate lock, lubrication bearing and steering cylinder bearings	Above -25°F (-32°)	GAA M-10924 MIL-G-23827	As required	Q
Door assembly hinges and latches, toolbox hinges, operator platform hinges, radiator access door hinges	Above -25°F (-32°C)	EO SAE 30 MIL-PRF-2104	As required	Q
Front propel gearbox	Above -25°F (-32°C)	GO 75W MIL-PRF-2105	.8 gal. (3.2 l)	After first 250 H or Q then 1000 H or A
	Above 0°F (-18°C)	GO 80W/90 MIL-PRF-2105		
Rear propel gearbox	Above -25°F (-32°C) to 0°F (-18°C)	GO 75W MIL-PRF-2105	.8 gal. (3.2 l)	After first 250 H or Q, then 1000 H or A
	Above 0°F (-18°C)	GO 80W/90 MIL-PRF-2105		
Front and rear vibratory bearing reservoirs	Above -4°F (-20°C)	Synthetic Oil 4C6767	3.2 gal. (12 l)	3000 H or 3 y BARS
Hydraulic oil tank	Above 0°F (-18°C)	HYDO SAE 10W MIL-PRF-2104	15.5 gal. (59 l) (CB534B)	A*
	-25°F (-32°C) to 0°F (-18°C)	EO OEA-30 MIL-L-46167 or MIL-PRF-46167	14 gal. (53 l) (CB534C)	
Engine crankcase	Above 32°F (0°C)	EO 15W 40 MIL-PRF-2104	2.3 gal. (9 l)	250 H** or Q
	0°F (-18°C) to 32°F (0°C)	EO SAE 10W MIL-PRF-2104		
	-25°F (-32°C) to 0°F (-18°C)	EO Sub-zero MIL-L-46167		

*During warranty period, hydraulic oil and filter shall be changed at 1,000 hour intervals. After expiration of warranty, AOAP will be in effect for all active and reserve Army Fields and National Guard activities. AOAP hydraulic sampling will be taken annually.

**During warranty period, engine oil and filter shall be changed at 250 hour intervals. After expiration of warranty, AOAP will be in effect for all active and reserve Army Fields and National Guard activities. AOAP engine oil sampling will be taken at 250 hour intervals or quarterly, whichever comes first, for all active Army Fields. All reserve Army Fields and National Guard activities will take AOAP engine oil sampling at 500 hour intervals or semiannually, whichever comes first.

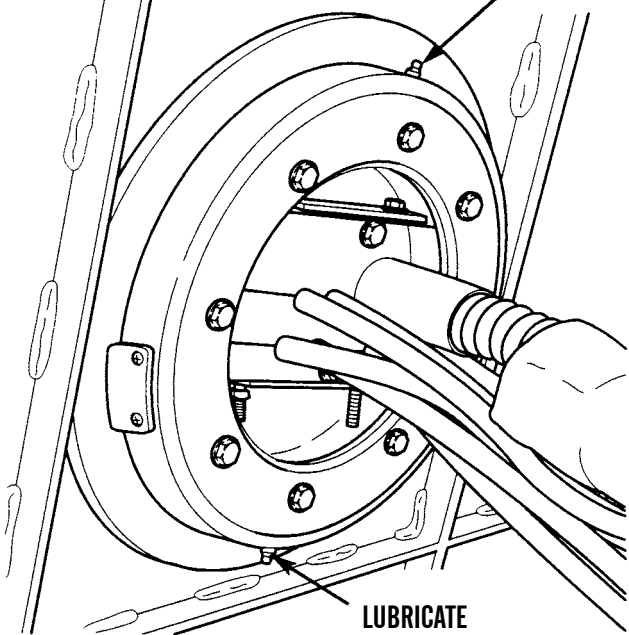
A TOOLBOX HINGES 



OPEN AND CLOSE LID AND LIFT AND DROP HASP WHILE APPLYING A FEW DROPS OF OIL TO HINGES

401-154

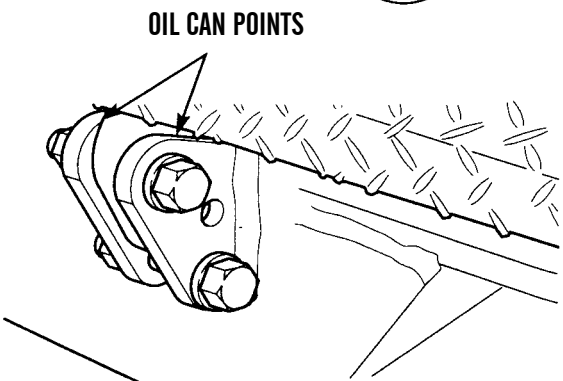
B OPERATOR STATION  LUBRICATE



OPERATOR PLATFORM MUST BE RAISED (WP 0128 00)

401-155


C OPERATOR PLATFORM HINGES 

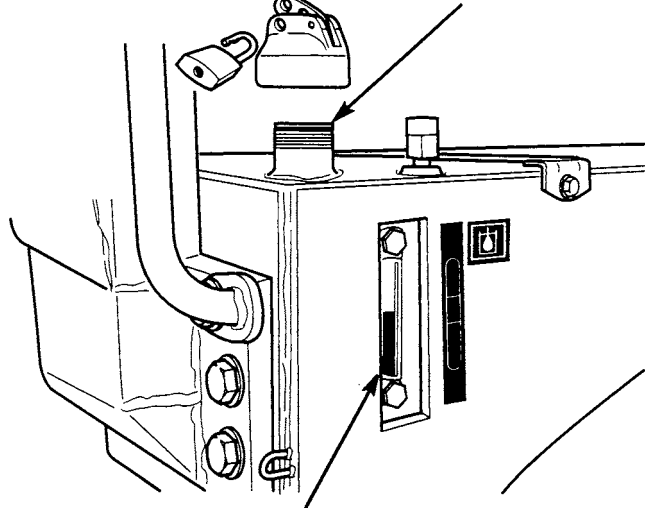


LEFT HINGE SHOWN
RIGHT HINGE SIMILAR

APPLY A FEW DROPS OF OIL AT THE TOP OF HINGES TO OIL CAN POINTS

401-156

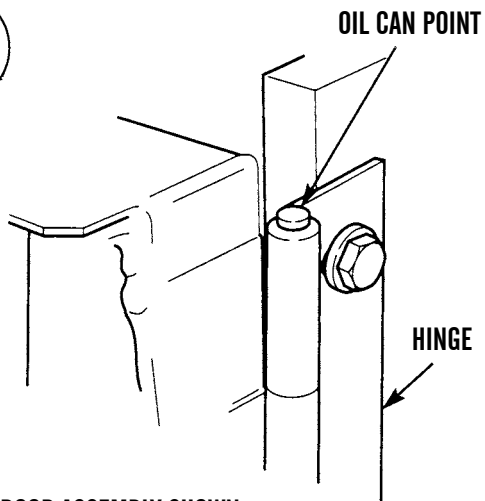
D HYDRAULIC TANK  ADD HYDRAULIC OIL



CHECK HYDRAULIC OIL LEVEL
INSTRUCTIONS FOR DRAINING AND FILLING HYDRAULIC OIL TANK ARE FOUND IN WP 0037 00

401-157

E LEFT- AND RIGHT-SIDE DOOR ASSEMBLY HINGES

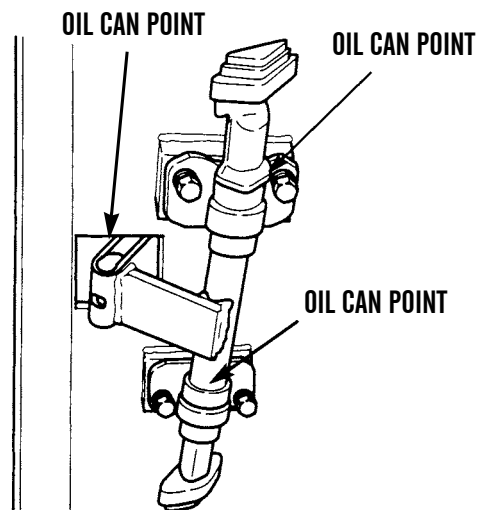


RIGHT-SIDE DOOR ASSEMBLY SHOWN
LEFT-SIDE DOOR ASSEMBLY SIMILAR

APPLY A FEW DROPS OF OIL TO TOP OF HINGE WHILE
OPENING AND CLOSING DOOR ASSEMBLY

401-159

F LEFT- AND RIGHT-SIDE DOOR ASSEMBLY LATCHES

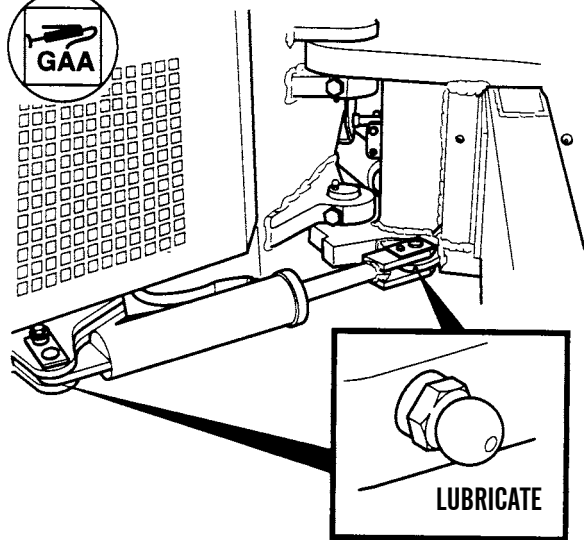


RIGHT-SIDE DOOR ASSEMBLY SHOWN
LEFT-SIDE DOOR ASSEMBLY SIMILAR

APPLY A FEW DROPS OF OIL TO OIL CAN POINTS WHILE OPENING
AND CLOSING DOOR ASSEMBLY

401-159

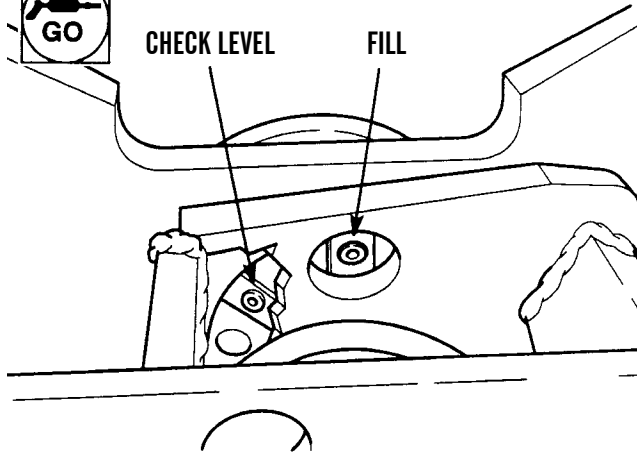
G LEFT AND RIGHT STEERING CYLINDER BUSHINGS



RIGHT-SIDE STEERING CYLINDER SHOWN
LEFT-SIDE STEERING CYLINDER SIMILAR

401-160

H FRONT AND REAR PROPEL GEARBOXES (CB534B)



FRONT PROPEL GEARBOX SHOWN
REAR PROPEL GEARBOX SIMILAR

INSTRUCTIONS FOR SERVICING FRONT AND REAR PROPEL
GEARBOXES ARE FOUND IN WP 0116 00

401-161

J FRONT AND REAR PROPEL GEARBOXES (CB534C)

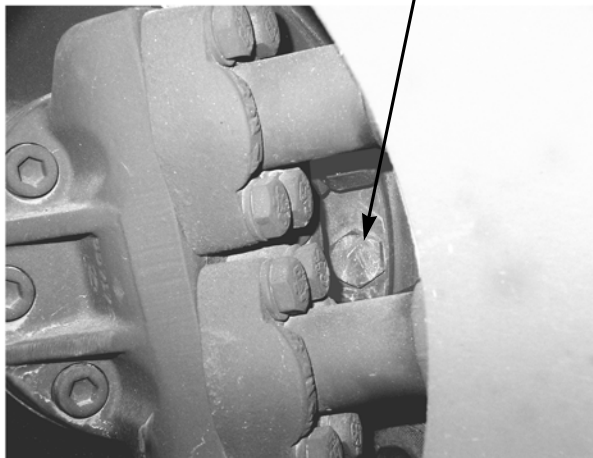


FILL - DRAIN IS LOCATED
180 DEGREES OPPOSITE



401-2113

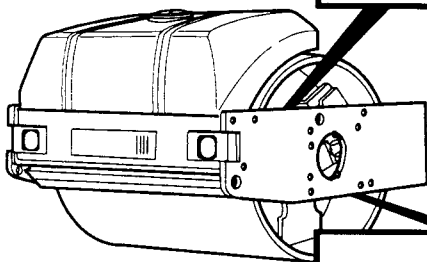
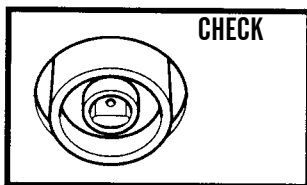
CHECK
LEVEL



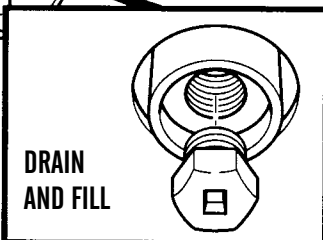
401-2112

FRONT PROPEL GEARBOX SHOWN, REAR PROPEL GEARBOX SIMILAR
INSTRUCTIONS FOR SERVICING FRONT AND REAR PROPEL GEARBOXES ARE FOUND IN WP 0116 00

K FRONT AND REAR VIBRATORY BEARING RESERVOIRS



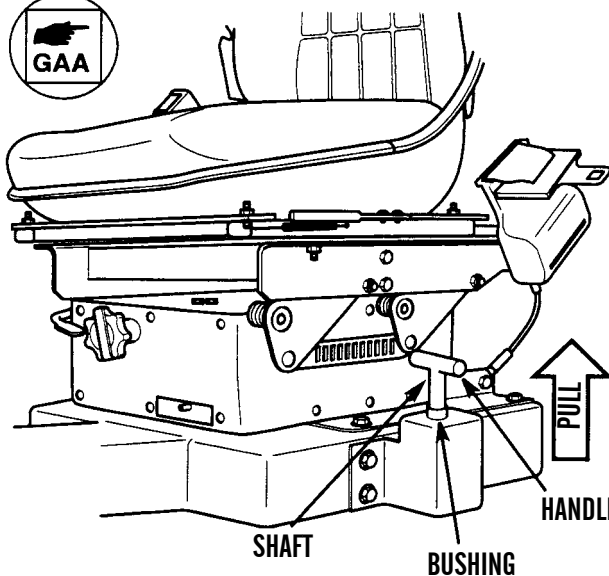
LOCATED ON BOTH ENDS
OF ROLLER



INSTRUCTIONS FOR SERVICING FRONT AND REAR VIBRATORY
BEARING RESERVOIRS ARE FOUND IN WP 0147 00

401-162

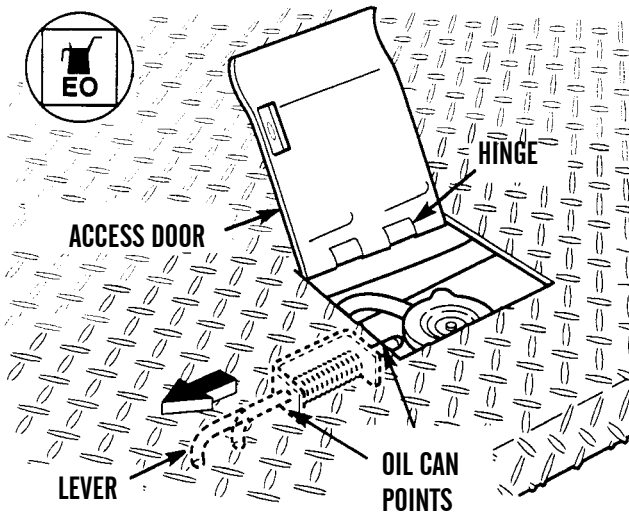
L ROTATE LOCK



LIFT HANDLE AND APPLY GREASE TO SHAFT OF ROTATE LOCK
AT TOP OF BUSHING. RELEASE HANDLE

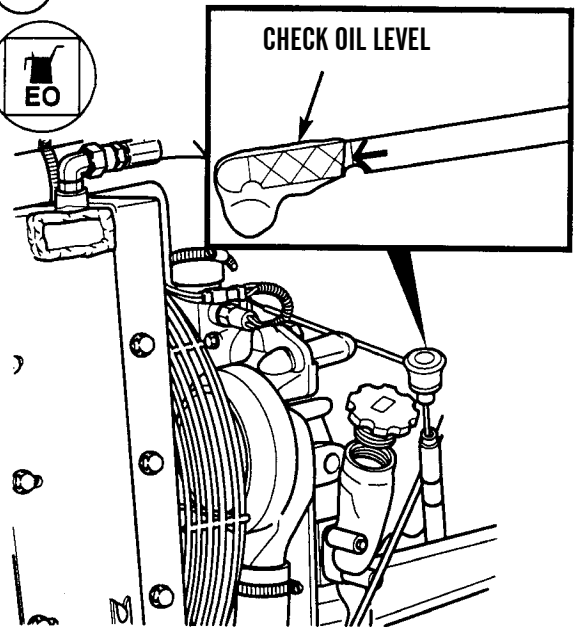
401-163

M RADIATOR ACCESS DOOR HINGE AND LEVER



401-164

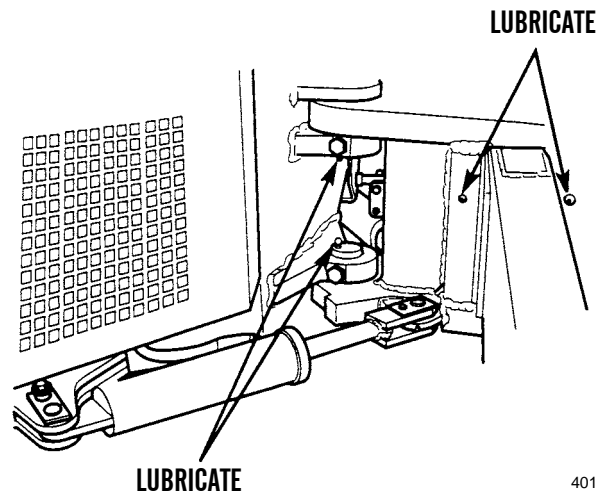
N ENGINE OIL AND FILTER



INSTRUCTIONS FOR ENGINE OIL SERVICES ARE FOUND IN WP 0013 00

401-165

O ARTICULATION BEARING



401-166

END OF WORK PACKAGE

Table 1. Field Maintenance Preventive Maintenance Checks and Services (PMCS) for CB534 Roller.

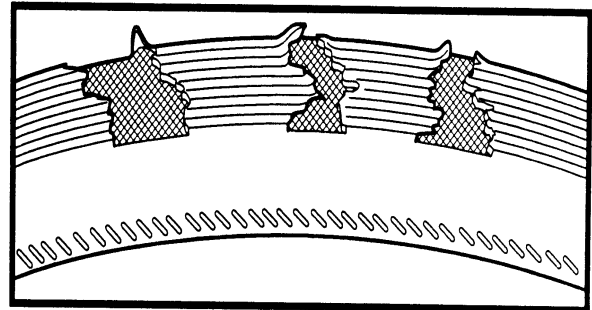
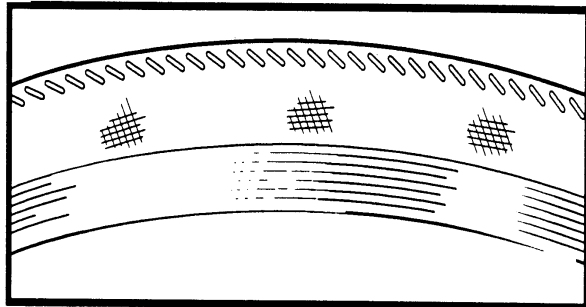
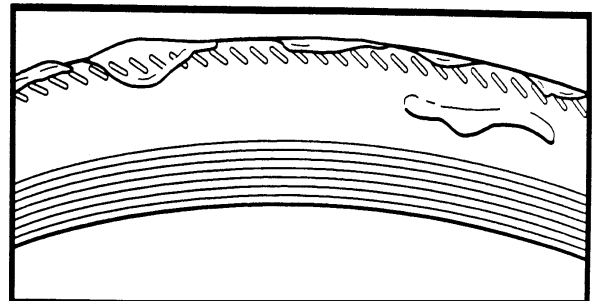
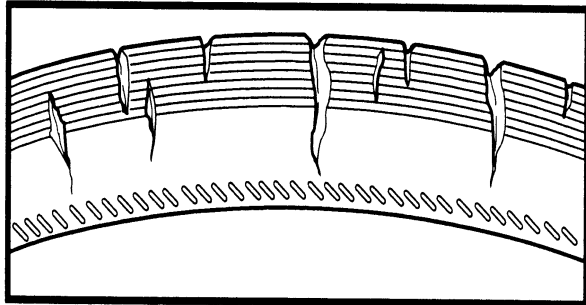
ITEM NO.	INTERVAL	MAN-HOURS	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
NOTE					
<ul style="list-style-type: none"> • Review all WARNINGS, CAUTIONS and NOTES before performing Field PMCS on the DSWR. • Unless other wise indicated, perform all lubrication and preventive maintenance with roller parked on level ground, propel control lever in N (Neutral), parking brake applied and engine shut down. • Perform Operator PMCS prior to or in conjunction with Field Maintenance if: <ul style="list-style-type: none"> a. There is a delay between daily operation of the roller and Field Maintenance PMCS. b. The regular operator is not assisting. • Refer to DA Pam 738-750 for oil sampling requirements. • Hardtime intervals for engine oil PMCS apply only during warranty period. After expiration of warranty, active and reserve Army Fields will send engine oil sample to an AOAP laboratory for analysis after 250 hours or quarterly, whichever comes first. National Guard activities will use 500 hours or semiannually, whichever comes first, as the prescribed interval. • Intervals for sampling as well as draining and refilling lubricants may be changed by an AOAP laboratory. • If AOAP laboratory support is not available, change engine oil and filter after 250 hours of operation. 					
1	250 H or Q		Engine Oil	Take engine oil sample from sampling valve for AOAP analysis.	
2	250 H	1.5 H	Engine Oil	Change oil and filter (WP 0013 00).	
3	At First 250 H		Engine	At first oil change, adjust low idle speed (WP 0046 00) and adjust valve lash (WP 0173 00).	

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS) - CONTINUED**

0009 00

Table 1. Field Preventive Maintenance Checks and Services (PMCS) for CB534 Roller - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
4	At First 250 H	0.5 H	Hydraulic Oil Filter	Change hydraulic oil filter (WP 0143 00).	
5	250 H or Q		Fan Belts	Check fan V-belts for excessive wear and belt tightness. Replace or adjust accordingly. If any belt is loose, missing, broken, greasy, peeling, glazed, cracked to the belt fiber, has more than one crack (1/8 in. in depth or 50% of belt thickness), or has frays more than 2 in. long, replace belts as a set. Adjust belts as needed (WP 0060 00).	



401-022

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS) - CONTINUED**

0009 00

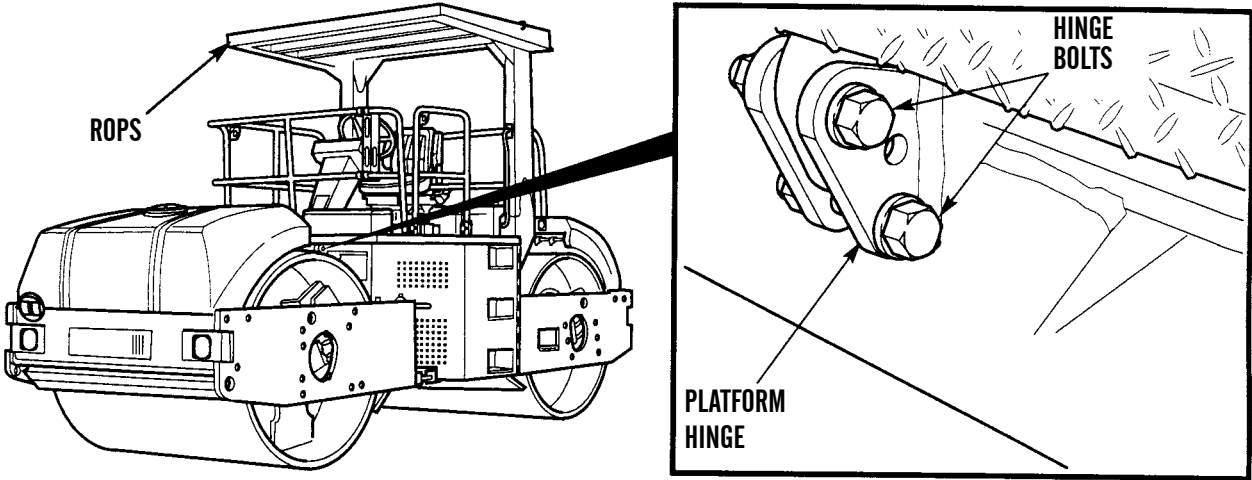
Table 1. Field Preventive Maintenance Checks and Services (PMCS) for CB534 Roller - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
CAUTION					
6	At First 250 H	1.5 H	Front and Rear Propel Gearboxes (CB534B)	Change propel gearbox oil (WP 0116 00).	<ul style="list-style-type: none"> • The drum drive gear reducer and the propel gearboxes generate a large amount of contaminants during the first 250 hours of operation. Oil sample taken from the gearboxes will generally show a high iron PPM count. This initial break-in wear is considered normal. • If the initial 250 hour oil change is not done, these contaminant particles will cause accelerated wear and can reduce the service life of the gearbox. • Make every effort to complete the initial 250 hour, and 1000 hour, gearbox oil changes to the rollers listed above. • If the gearbox oil is changed <u>before</u> the initial 250 hour interval, the oil should be sampled and changed again at 250 hours.
7	500 H or S 500 H or S	0.5 H 0.4 H	Fuel System	a. Clean fuel lift pump inlet screen (WP 0028 00). b. Replace fuel/water separator elements (WP 0042 00). c. Replace fuel filter element (WP 0040 00). d. Clean fuel tank cap and fill-screen strainer (WP 0039 00).	
8	500 H or S		Coolant System	Check coolant for adequate freeze protection IAW TB 750-651. Add or replace coolant if needed (WP 0052 00).	
9	1,000 H		Engine Air Intake System	Replace air cleaner primary and secondary elements (WP 0032 00).	
10	1,000 H or A	0.7 H	Hydraulic Oil	Change hydraulic oil and filter (WP 0037 00 and WP 0143 00).	

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS) - CONTINUED**

0009 00

Table 1. Field Preventive Maintenance Checks and Services (PMCS) for CB534 Roller - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
11	1,000 H or A	1.5 H	Front and Rear Propel Gearboxes	Change propel gearbox oil (WP 0116 00).	
12	1,000 H or A		Rollover Protective Structure (ROPS)	Check for damage such as cracks or broken welds. Check attaching bolts for tightness. Ensure structural integrity: no compromising dents, holes or bends.	
13	1,000 H or A		Platform	Raise platform assembly (WP 0128 00). Check platform hinges for cracks, welds and missing bolts. If rust is present, wipe away with wire brush or abrasive material and repaint (TM 43-0139).	
 <p>The diagram shows a side view of a roller with a ROPS (Rollover Protective Structure) on top. A callout box provides a detailed view of the platform hinge mechanism, highlighting the hinge bolts and the platform hinge itself.</p>					
14	1,000 H or A		Batteries	Inspect/service batteries (WP 0103 00). Check battery cables for wear or damage (WP 0105 00).	
15	1,000 H	0.5 H	Vibratory Bearing Reservoirs	Change vibratory bearing reservoir oil (WP 0147 00).	
16	1,000 H or A		Drum Scrapers	Check scraper and replace if damaged or worn beyond adjustment (WP 0160 00).	

401-167

**FIELD MAINTENANCE PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS) - CONTINUED**

0009 00

Table 1. Field Preventive Maintenance Checks and Services (PMCS) for CB534 Roller - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	1,000 H or A		Water Spray System	Drain and flush system (TM 5-3895-379-10). Check for damaged parts. Replace or service damaged parts.	
18	1,000 H or A		Radiator	Pressure test radiator (WP 0049 00). Replace radiator cap as needed.	
19	1,000 H or A		Fuel Tank	Drain tank and flush out sediment (WP 0037 00).	
NOTE					
<ul style="list-style-type: none"> • Refer to DA Pam 738-750 for sampling requirements. • After expiration of warranty, active and reserve Army Fields and National Guard activities will send a hydraulic oil sample to an AOAP laboratory for analysis once a year. • Intervals for sampling as well as draining and refilling lubricants may be changed by an AOAP laboratory. • If AOAP laboratory support is not available, change hydraulic oil and filter (WP 0143 00) after 1,000 hours of operation. 					
20	A		Hydraulic Oil	Take hydraulic oil sample for AOAP analysis (WP 0142 00).	
21	1,000 H or B		Engine	Adjust valve lash (WP 0173 00).	
22	2,000 H or A		Engine Crankcase Breather Tube	Remove and clean (WP 0016 00).	
23	2,000 H or B		Radiator	Change coolant (WP 0052 00). Inspect for leaks or loose hoses. Check for excessive corrosion.	
24	2,000 H or B		Water Spray System	Thoroughly clean water spray system lines, valves, drain cocks, spray bars, water tanks, screens, and nozzles. Check for damaged parts. Replace any damaged parts. a. Check and service water spray system (TM 5-3895-379-10). b. Check and service water spray screen (TM 5-3895-379-10). c. Check and service water spray nozzles (TM 5-3895-379-10).	

END OF WORK PACKAGE

ENGINE LIFTING PLATES REPLACEMENT

0010 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (CB534B Roller only)

References

TM 5-3895-379-23P, Figure 1

Equipment Condition

Engine off (TM 5-3895-379-10)
 Operator platform assembly raised (WP 0128 00)



WARNING

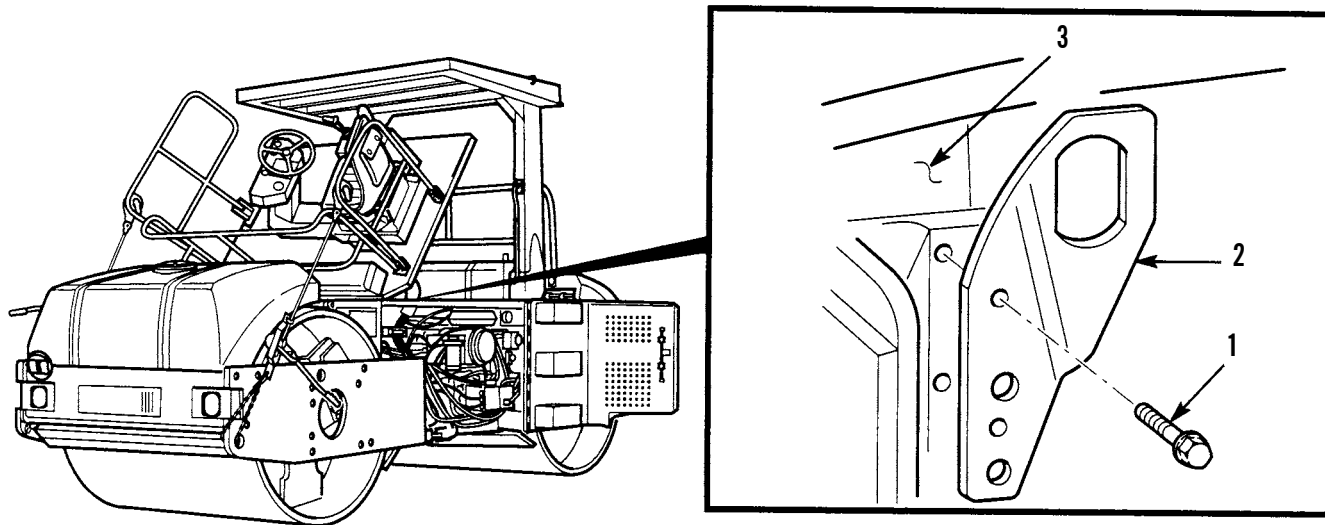
Use caution and allow engine to cool before removal of components. Failure to follow this warning may cause injury.

NOTE

Engine lifting plates are replaced the same way for CB534B and CB534C Rollers except where noted. CB534B Roller is shown.

REMOVAL

1. Remove two screws (1) and left engine lifting plate (2) from cylinder head (3).



LEFT ENGINE LIFTING PLATE

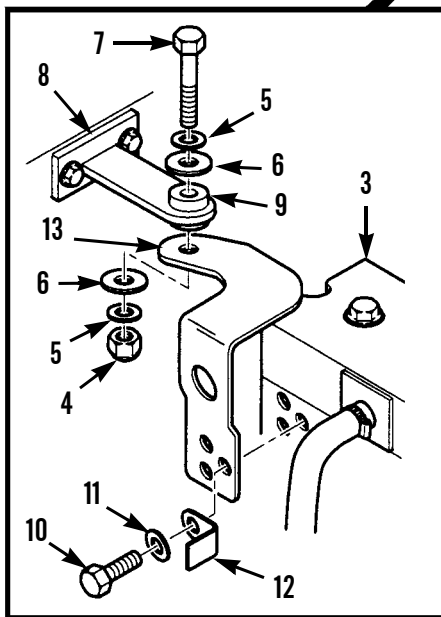
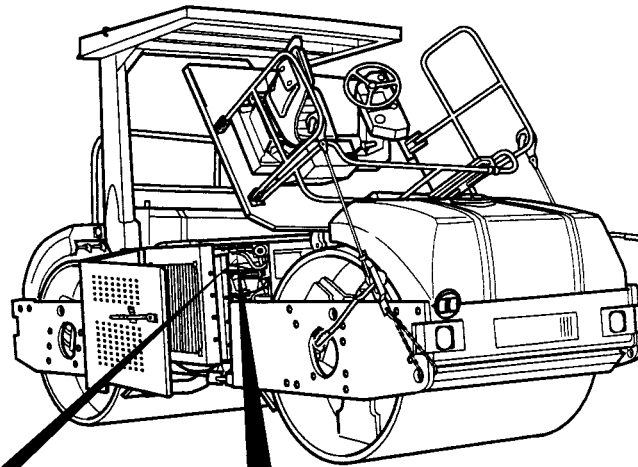
401-237

ENGINE LIFTING PLATES REPLACEMENT - CONTINUED

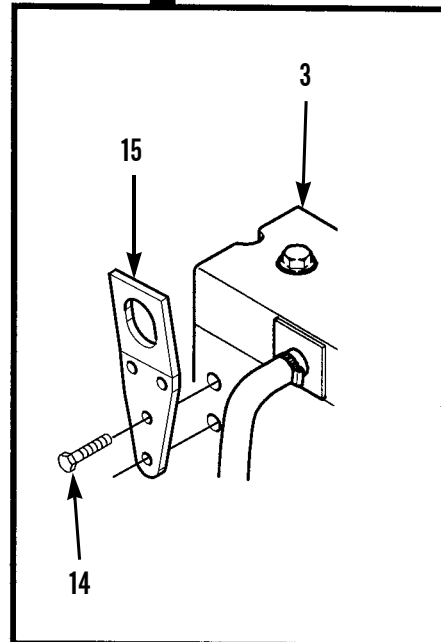
0010 00

REMOVAL - CONTINUED

2. For CB534B Roller, remove locknut (4), washer (5), washer (6), bolt (7), washer (5), washer (6), and grommet (9) from radiator bracket (8). Discard locknut.
3. For CB534B Roller, remove three screws (10), washers (11), clip (12) and right engine lifting bracket (13) from cylinder head (3).
4. For CB534C Roller, remove two screws (14) and right engine lifting bracket (15) from cylinder head (3).



**CB534B ROLLER
RIGHT ENGINE LIFTING BRACKET**

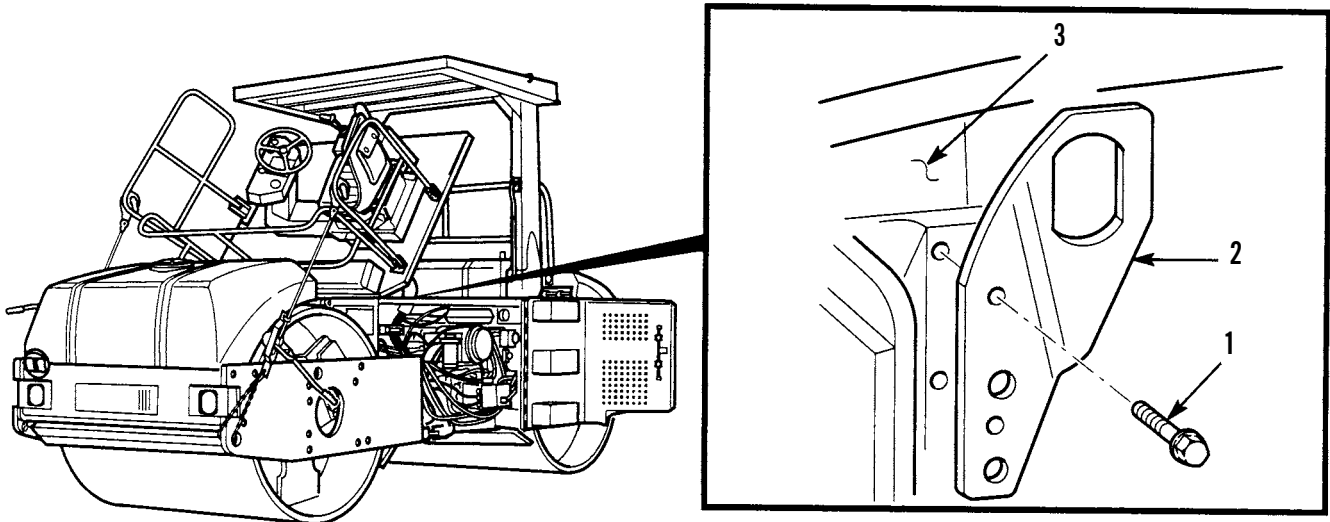


**CB534C ROLLER
RIGHT ENGINE LIFTING BRACKET**

401-374

ENGINE LIFTING PLATES REPLACEMENT - CONTINUED**0010 00****INSTALLATION**

1. For CB534C Roller only, install right engine lifting bracket (15) and two screws (14) to cylinder head (3).
2. For CB534B Roller only, install right engine lifting bracket (13) and clip (12) on cylinder head (3) with three washers (11) and screws (10). Tighten screws to 33-47 lb-ft (45-64 Nm).
3. For CB534B Roller only, attach lifting bracket (13) to radiator bracket (8) with grommet (9), washer (6), washer (5), bolt (7), washer (6), washer (5) and new locknut (4). Tighten locknut to 33-47 lb-ft (45-64 Nm).
4. Install left engine lifting plate (2) on cylinder head (3) with two screws (1). Tighten screws to 33-47 lb-ft (45-64 Nm).

**LEFT ENGINE LIFTING PLATE**

401-237

5. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

FRONT ENGINE MOUNT REPLACEMENT

0011 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Lifting device

Personnel Required

Two

References

TM 5-3895-379-23P, Figure 1

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Hydraulic oil cooler removed (WP 0145 00)

**WARNING**

Use caution and allow engine to cool before removal of component. Failure to follow this warning may cause injury.

NOTE

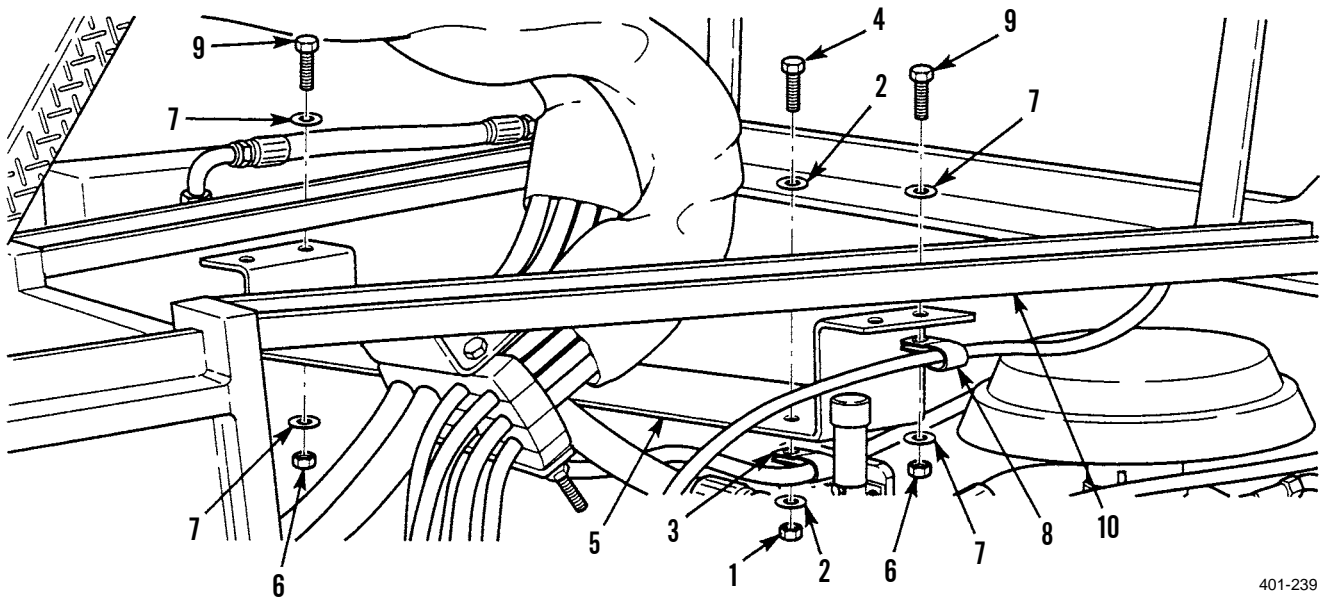
Front engine mount is replaced the same way for CB435B and CB534C Rollers, except where noted. CB534B Roller is shown.

FRONT ENGINE MOUNT REPLACEMENT - CONTINUED

0011 00

REMOVAL

1. For CB534B Roller only, remove nut (1), washer (2), clip (3), screw (4) and washer (2) from upper cross brace (5).
2. Remove four nuts (6), washers (7), two clips (8), upper cross brace (5), four screws (9) and washers (7) from upper frame assembly (10).



401-239

**WARNING**

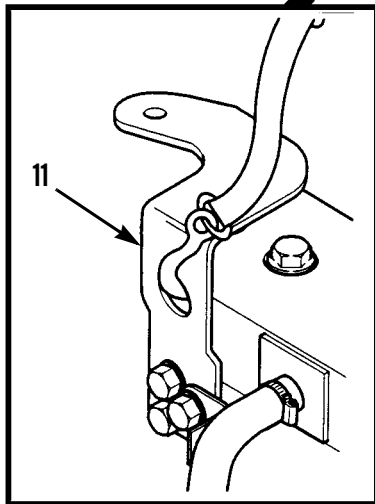
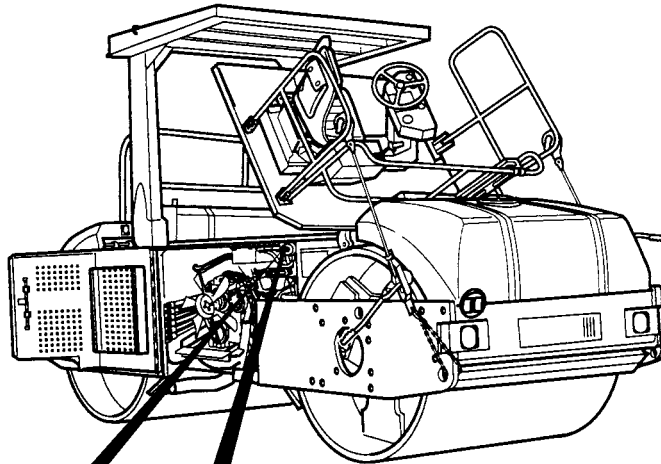
Use caution when handling heavy parts. Provide adequate support and assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

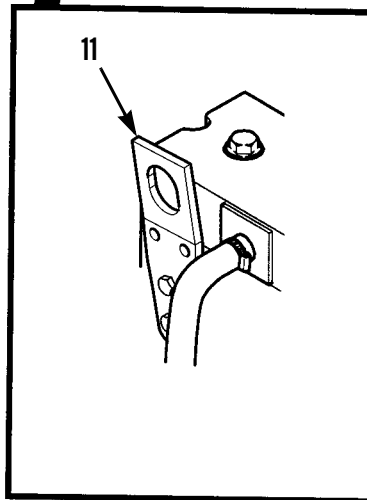
Engine weighs 2,000 lb (907 kg).

REMOVAL - CONTINUED

3. Attach lifting device to right engine lifting bracket (11).



**CB534B ROLLER
RIGHT ENGINE LIFTING BRACKET**



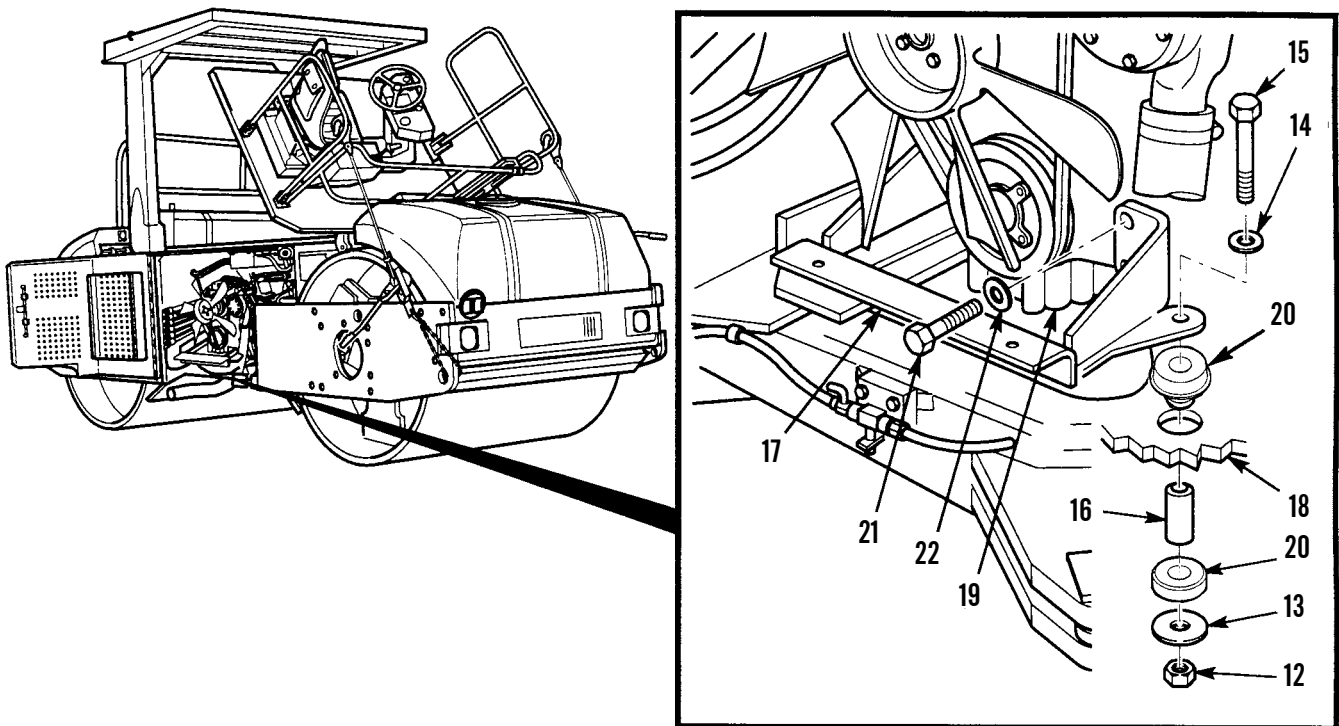
**CB534C ROLLER
RIGHT ENGINE LIFTING BRACKET**

401-240

REMOVAL - CONTINUED**NOTE**

Sleeves may stay with mount assembly.

4. Remove two nuts (12), washers (13), bolts (15), washers (14), and spacer sleeves (16) from front engine mount (17) and frame assembly (18).
5. With assistance, use a lifting device to raise engine (19) until there is space between resilient mount (20) and front engine mount (17) or frame assembly (18).



401-241

**WARNING**

Do not place fingers between engine mount and frame assembly. Shifting engine may cause injury.

6. Remove four screws (21), washers (22), front engine mount (17), two resilient mounts (20) and remaining spacer sleeves (16) from engine (19) and frame assembly (18).

INSTALLATION

1. Install front engine mount (17) on engine (19) with four washers (22) and screws (21). Tighten screws to 145-205 lb-ft (197-278 Nm).

INSTALLATION - CONTINUED**WARNING**

Do not place fingers between engine mount and frame assembly. Shifting engine may cause injury.

2. Position two resilient mounts (20) between front engine mount (17) and frame assembly (18).
3. Install two spacer sleeves (16) washers (14), bolts (15), washers (13) and nuts (12) in front engine mount (17) and frame assembly (18). DO NOT tighten nuts.

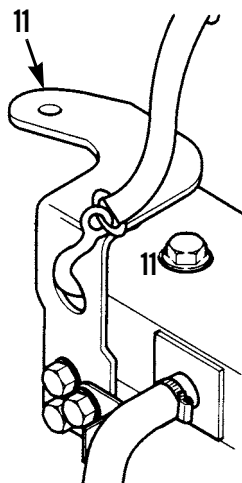
**WARNING**

Use caution when handling heavy parts. Provide adequate support and assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

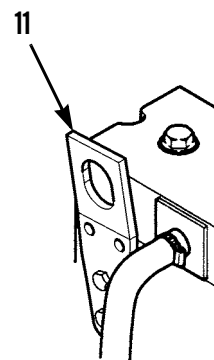
NOTE

Engine weighs 2,000 lb (907 kg).

4. With assistance, use a lifting device to lower engine (19).
5. Tighten nuts (12) to 145-205 lb-ft (197-278 Nm).
6. Remove lifting device from front engine bracket (11).



**CB534B ROLLER
RIGHT ENGINE LIFTING BRACKET**



**CB534C ROLLER
RIGHT ENGINE LIFTING BRACKET**

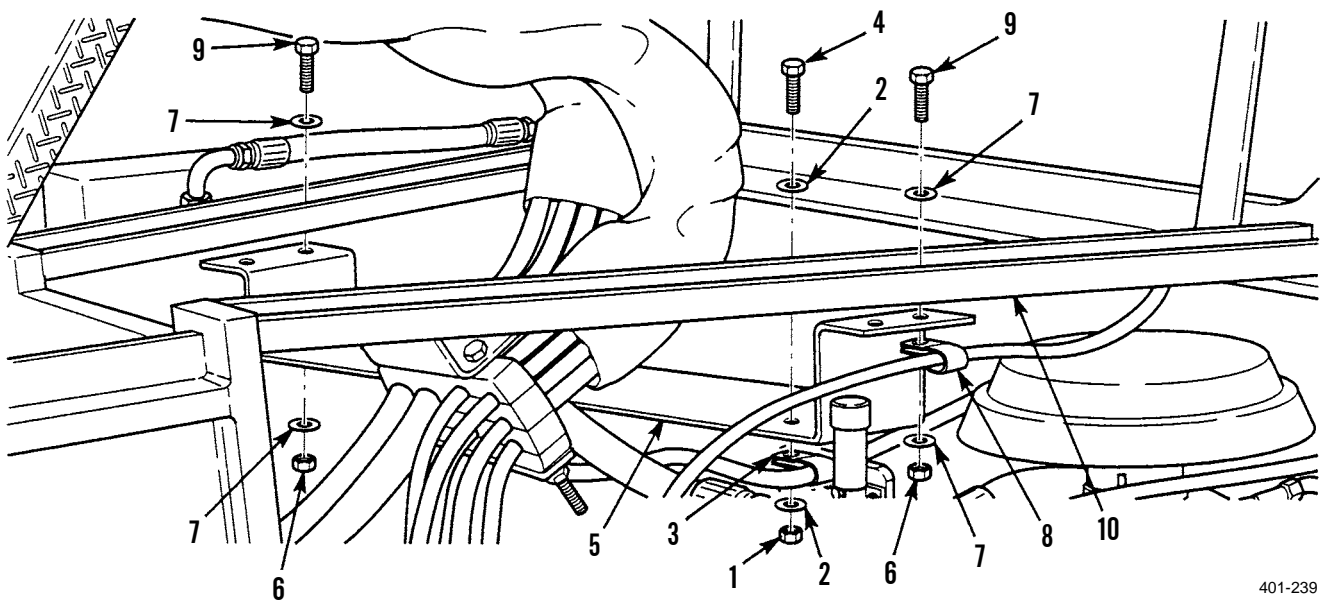
401-242

FRONT ENGINE MOUNT REPLACEMENT - CONTINUED

0011 00

INSTALLATION - CONTINUED

7. Install upper cross brace (5) on upper frame assembly (10) with four washers (7), screws (9), two clips (8), four washers (7) and nuts (6).
8. For CB534B Roller, install clip (3) on upper cross brace (5) with washer (2), screw (4), washer (2) and nut (1).



401-239

9. Install hydraulic oil cooler (WP 0145 00).
10. Lower operator platform (WP 0128 00).
11. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

REAR ENGINE MOUNT REPLACEMENT

0012 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Lifting device

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

ReferenceTM 5-3895-379-23P, Figure 1

**WARNING**

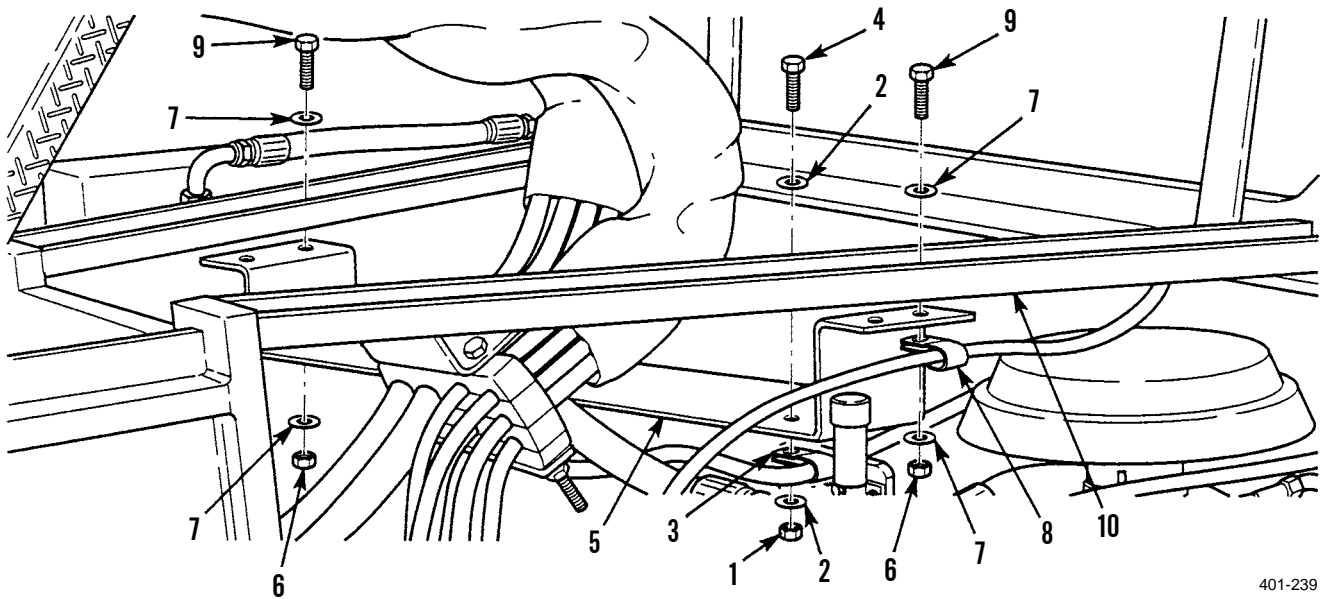
Use caution and allow engine to cool before removal of components. Failure to follow this warning may cause injury.

NOTE

Left and right engine mounts are replaced the same way. Left side is shown.

REAR ENGINE MOUNT REPLACEMENT - CONTINUED**0012 00****REMOVAL**

1. For CB534B Roller, remove nut (1), washer (2), clip (3), screw (4) and washer (2) from upper cross brace (5).
2. Remove four nuts (6), washers (7), two clips (8), upper cross brace (5), four screws (9) and washers (7) from upper frame assembly.



401-239

REMOVAL - CONTINUED



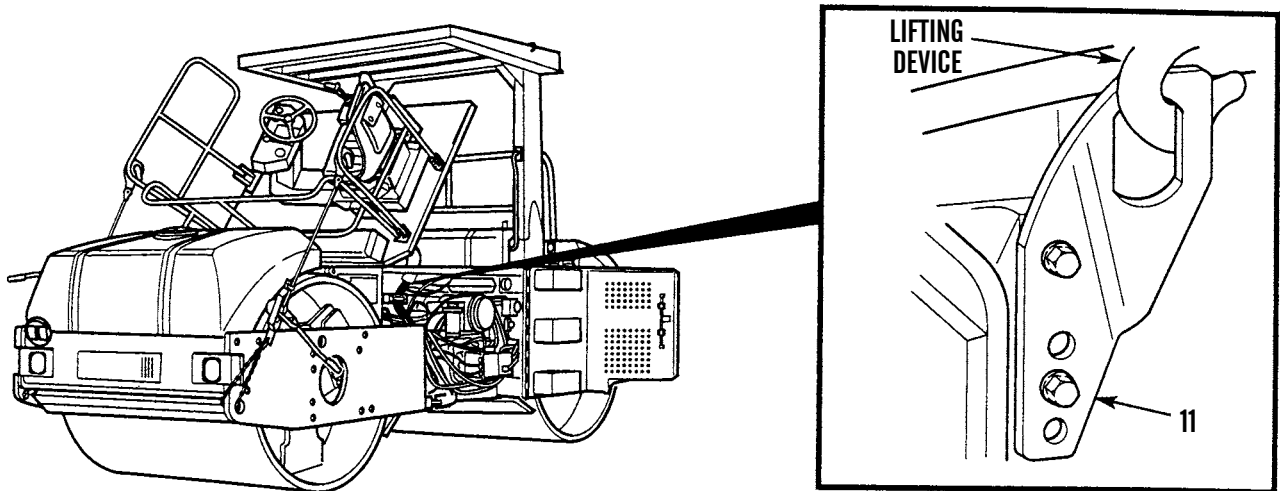
WARNING

Use caution when handling heavy parts. Provide adequate support and assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

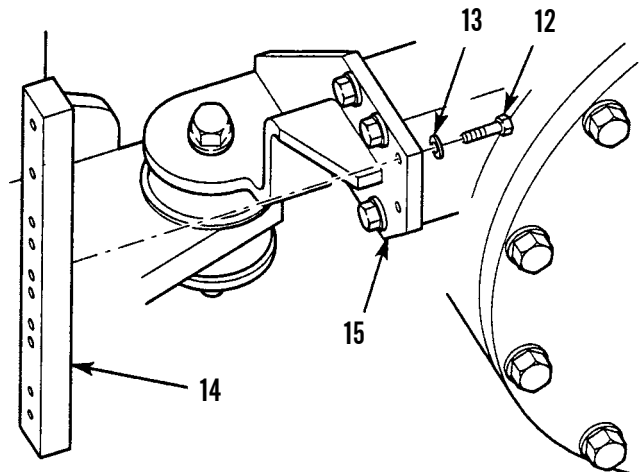
Engine weighs 2,000 lb (907 kg).

3. Attach lifting device to rear engine lifting plate (11).



401-243

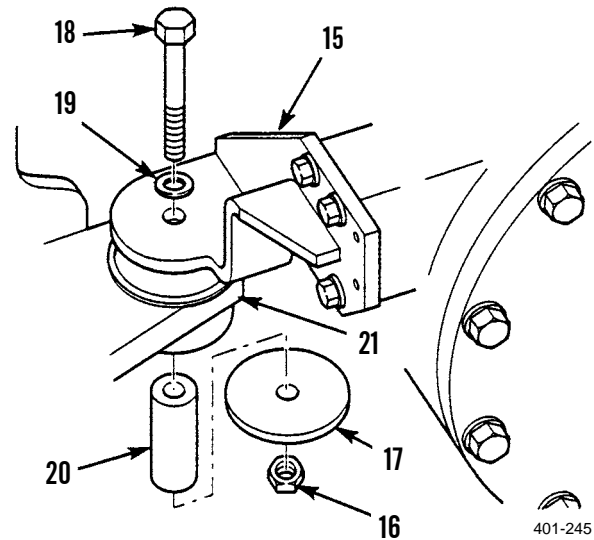
4. Remove two screws (12), washers (13) and hose assembly mounting bracket (14) from left rear engine mount (15).



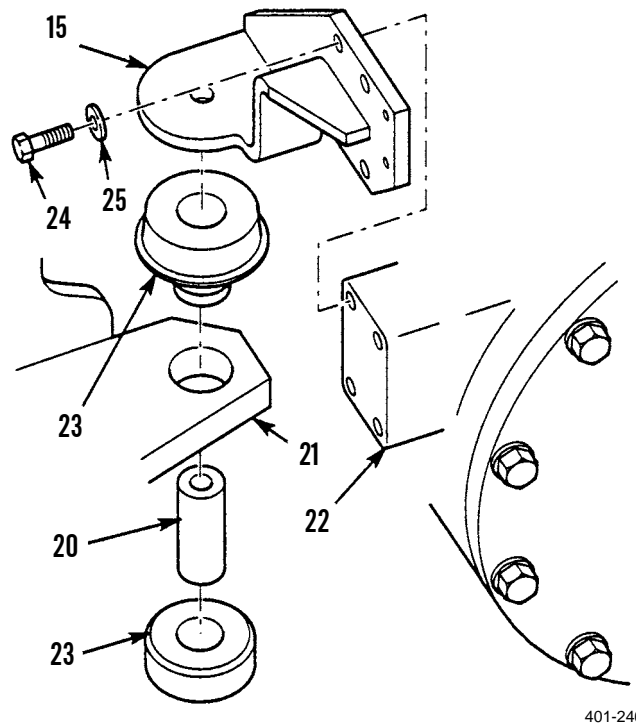
401-244

REMOVAL

5. Remove two nuts (16), washers (17), bolts (18), washers (19) and spacer sleeves (20) from two rear engine mounts (15) and frame assembly (21).



6. With assistance, use lifting device to raise engine (22) until there is a space between resilient mounts (23) and rear engine mounts (15) or frame assembly (21).



REMOVAL - CONTINUED**WARNING**

Do not place fingers between engine mount and frame assembly. Shifting engine may cause injury.

- Remove eight bolts (24), washers (25), two rear engine mounts (15), two resilient mounts (23) and remaining spacer sleeves (20) from engine (22) and frame assembly (21).

INSTALLATION

- Install two rear engine mounts (15) on engine (22) with eight washers (25) and bolts (24). Tighten bolts to 60-90 lb-ft (80-120 Nm).

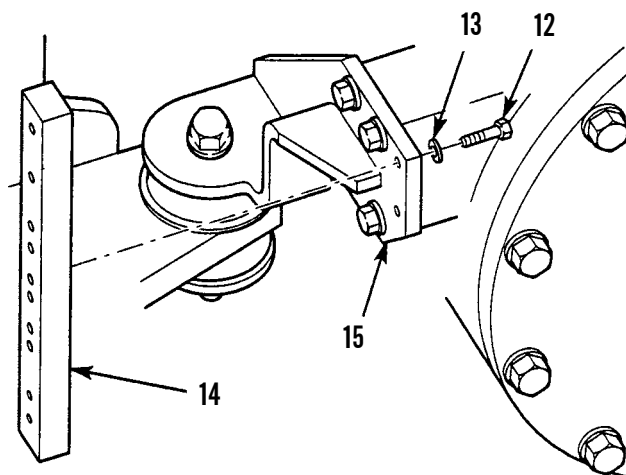
**WARNING**

Use caution when handling heavy parts. Provide adequate support and assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Engine weighs 2,000 lb (907 kg).

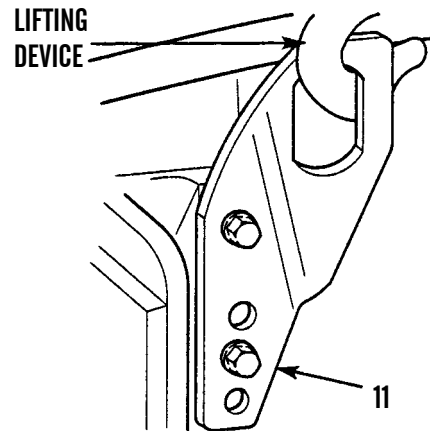
- Position two resilient mounts (23) between two rear engine mounts (15) and frame assembly (21).
- With assistance, use lifting device to lower engine (22).
- Install two spacer sleeves (20), washers (19), bolts (18), washers (17) and nuts (16) in two rear engine mounts (15) and frame assembly (21).
- Tighten nuts (16) to 145-205 lb-ft (197-278 Nm).
- Install hose assembly mounting bracket (14) to left-rear engine mount (15) with two washers (13) and bolts (12).



401-244

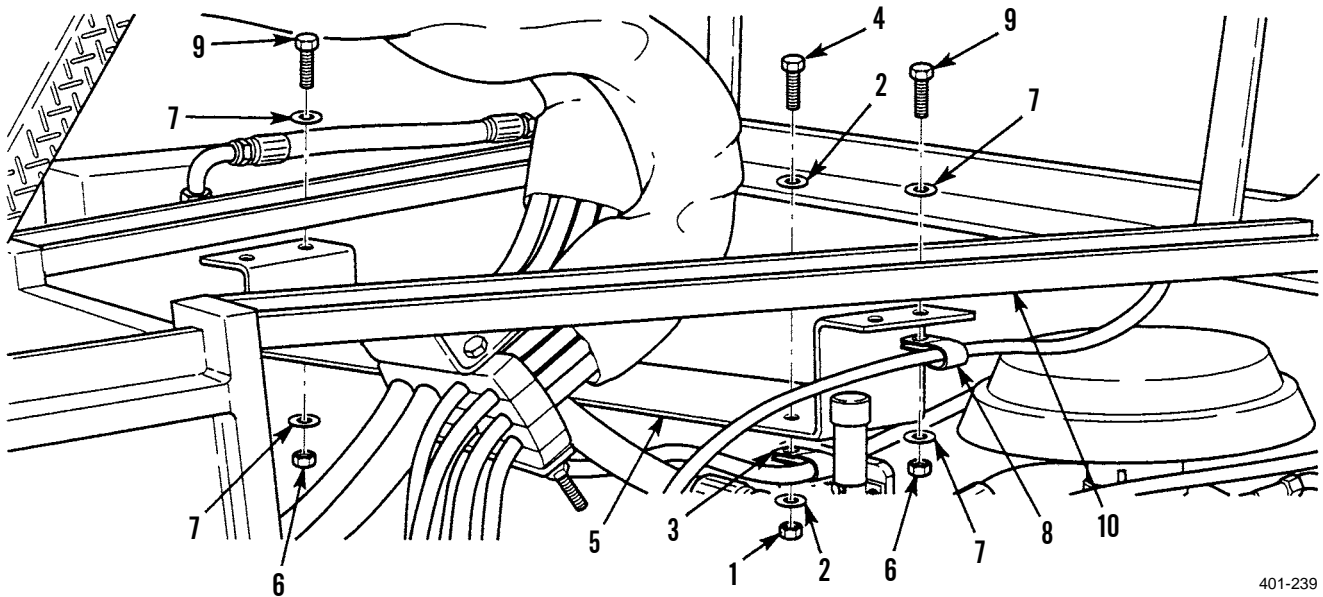
INSTALLATION - CONTINUED

7. Remove lifting device from rear engine lifting plate (11).



401-247

8. Install upper cross brace (5) on upper frame assembly (10) with four washers (7), screws (9), two clips (8), four washers (7) and nuts (6).
9. For CB534B Roller, install clip (3) on upper cross brace (5) with washer (2), screw (4), washer (2) and nut (1).



401-239

10. Lower operator platform (WP 0128 00).
11. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL SERVICE

0013 00

THIS WORK PACKAGE COVERS

Drain/Filter Removal, Fill/Filter Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Oil, engine lubricating (Item 25 or 26, WP 0219 00)

Filter, oil

References

TM 5-3895-379-23P, Figures 8 and 15

Equipment Condition

Engine off (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right-side door assembly open (TM 5-3895-379-10)

DRAIN/FILTER REMOVAL**WARNING**

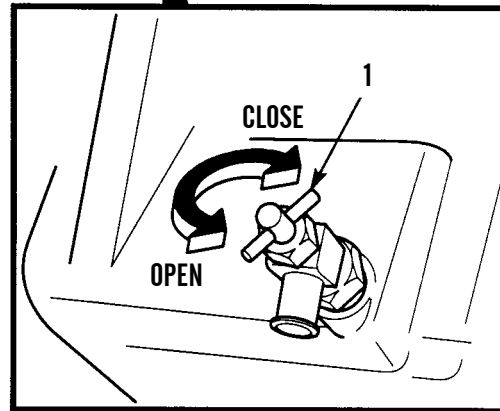
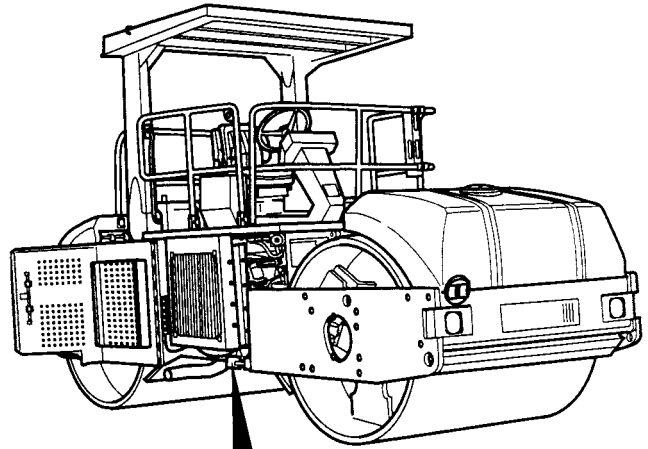
- Do not drain engine oil while engine is hot, injury may result.
- Prolonged contact with lubricating oil, MIL-L-2105, may cause a skin rash. Skin and clothing that come in contact with lubricating oil should be thoroughly washed immediately. Saturated clothing should be removed immediately. Areas in which lubricating oil is used should be well ventilated to keep fumes to a minimum.
- Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

CAUTION

Drain the crankcase with the oil warm, not HOT, to allow for draining of waste particles that are suspended in oil. As oil cools, suspended particles settle on the bottom of the crankcase or oil pan and cannot be removed by draining the oil. Failure to follow this recommendation procedure can result in waste particles being recirculated through the engine lubrication system with the new oil.

DRAIN/FILTER REMOVAL - CONTINUED

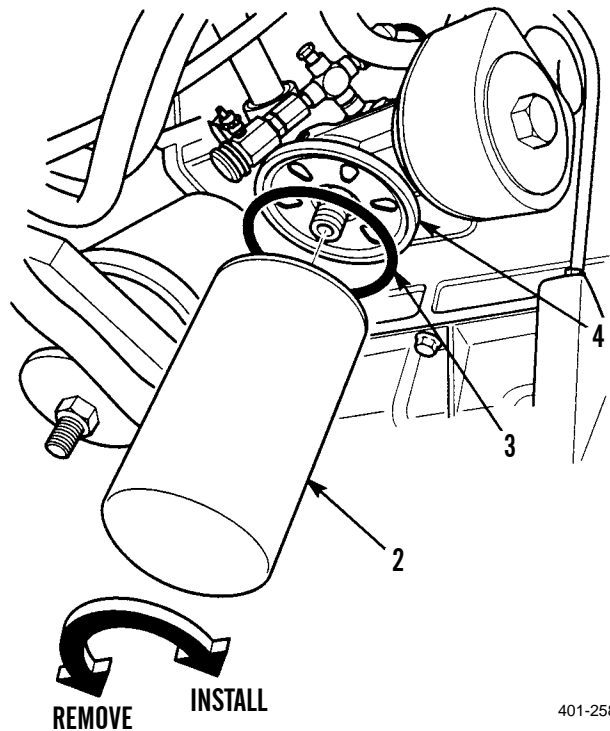
1. Place container under oil pan drain valve (1) and open valve by turning valve to counterclockwise.
2. After engine oil has drained, close oil pan drain valve (1) by turning valve to full clockwise.



401-257

DRAIN/FILTER REMOVAL - CONTINUED

3. Remove oil filter (2) and seal (3) from oil filter assembly (4).
4. Dispose of drained oil and filter in accordance with local regulations.



401-258

FILL/FILTER INSTALLATION

1. Clean the gasket mating surface of the oil filter assembly (4). Ensure all of the old filter gasket is removed.

NOTE

Refer to Lubrication Chart in WP 0008 00 to determine correct grade of oil.

2. Fill the oil filter (2) with clean engine oil.
3. Apply a light coating of clean engine oil to the gasket (3) of new oil filter (2).

CAUTION

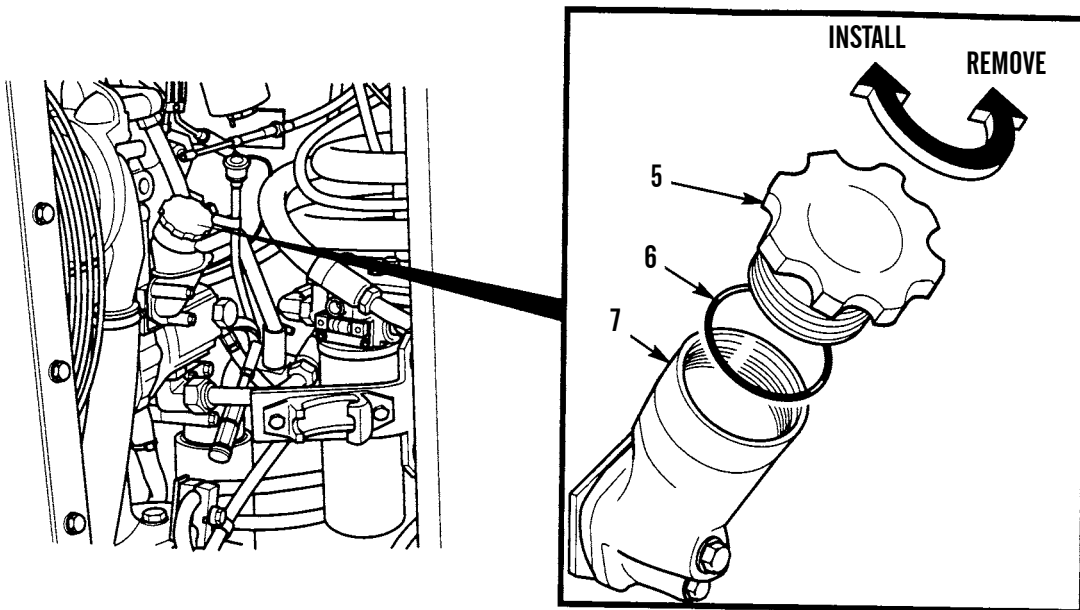
Tighten the oil filter element by hand only. Do not use a filter wrench to install the filter.

4. Install new oil filter (2) and seal (3) on oil filter assembly (4). When the gasket contacts the oil filter assembly, tighten filter 3/4 turn more.

FILL/FILTER INSTALLATION - CONTINUED**CAUTION**

Do not overfill crankcase with engine oil or serious engine damage will occur.

5. Remove filler cap (5) and seal (6) from filler assembly (7) by turning filler cap clockwise.
6. Add oil according to Lubrication Instructions (WP 0008 00 and WP 0009 00).
7. Install seal (6) and filler (5) on filler assembly (7).



401-259

8. Check engine oil level (TM 5-3895-379-10).
9. Start engine and check for leaks (TM 5-3895-379-10).
10. Close right-side door assembly (TM 5-3895-379-10).
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

GAUGE ROD (DIPSTICK) TUBE ASSEMBLY REPLACEMENT

0014 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Reference

TM 5-3895-379-23P, Figure 14

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Left- and right-side door assembly opened (TM 5-3895-379-10)

**WARNING**

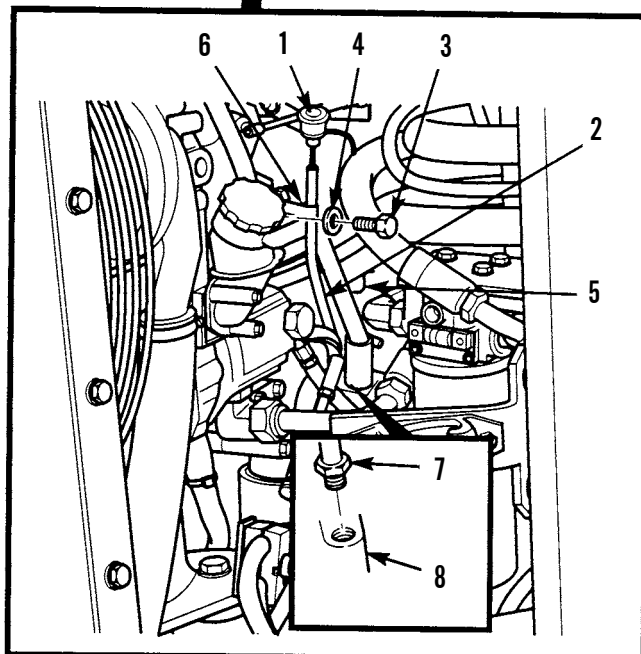
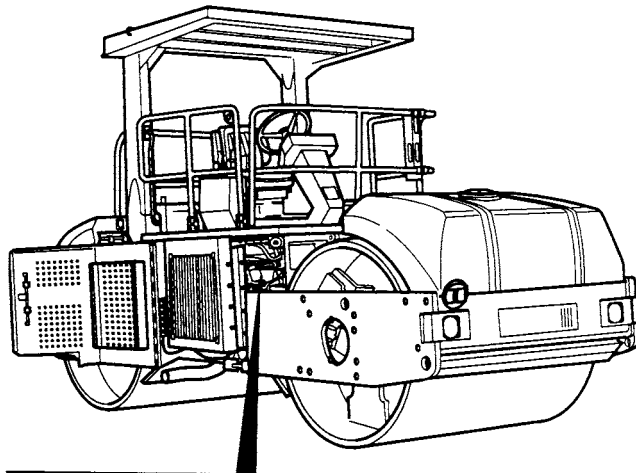
Use caution and allow engine to cool before removal of components. Failure to follow this warning may cause injury.

DIPSTICK TUBE ASSEMBLY REPLACEMENT - CONTINUED

0014 00

REMOVAL

1. Remove gauge rod (dipstick) (1) from tube assembly (2).
2. Remove screw (3) and washer (4) from bracket (5) and clip (6).
3. Loosen fitting (7) and remove tube assembly (2) with clip (6) from oil pan (8).
4. Remove clip (6) from tube assembly (2).



401-248

INSTALLATION

1. Position clip (6) on tube assembly (2).
2. Install tube assembly (2) in oil pan (8). Do not tighten fitting.
3. Install tube assembly (2) and clip (6) on bracket (5) with washer (4) and screw (3). Tighten screw to 15 lb-ft (20 Nm).
4. Tighten fitting (7) securely.
5. Install gauge rod (dipstick) (1) in tube assembly (2).
6. Close left- and right-side door assemblies (TM 5-3895-379-10).
7. Start engine and check for leaks (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL FILLER REPLACEMENT

0015 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

Gasket (2)

References

TM 5-3895-379-23P, Figure 13

Equipment Condition

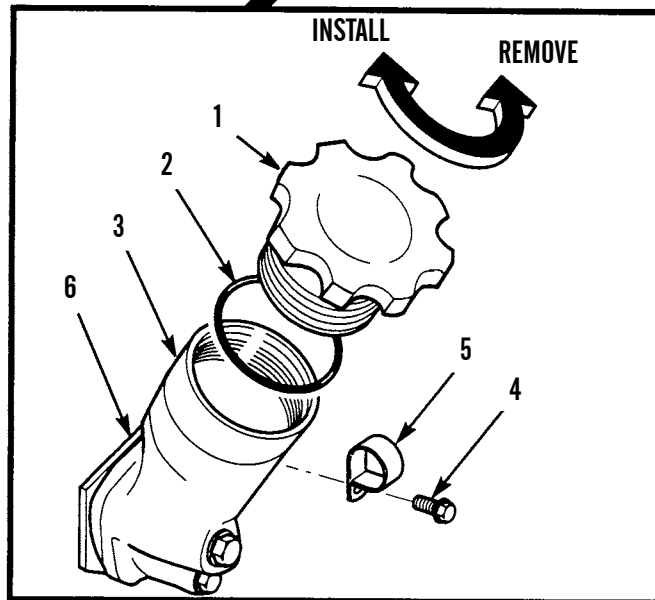
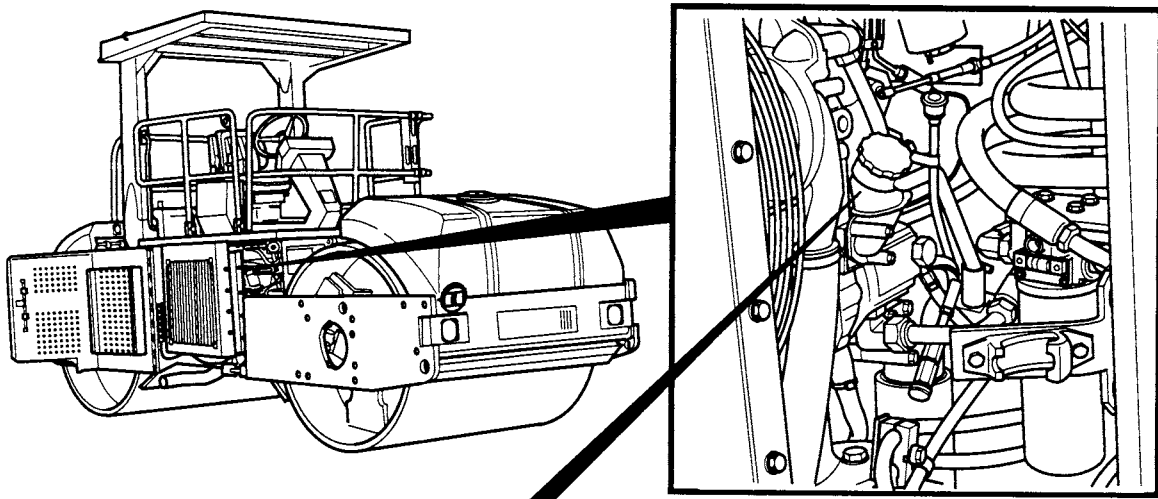
Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove filler cap (1) and seal (2) from filler assembly (3). Inspect seal and replace if damaged.
2. Remove screw (4) and clip (5) from bracket (6).



ENGINE OIL FILLER REPLACEMENT - CONTINUED

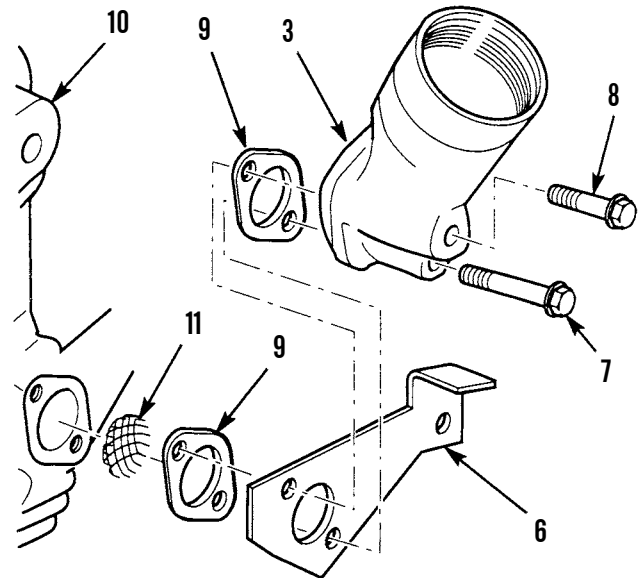
0015 00

REMOVAL - CONTINUED

3. Remove bolt (7), screw (8), filler assembly (3), gasket (9), bracket (6) and gasket (9) from engine (10). Discard gaskets.
4. Remove screen (11) from engine (10). Inspect and clean screen as required.

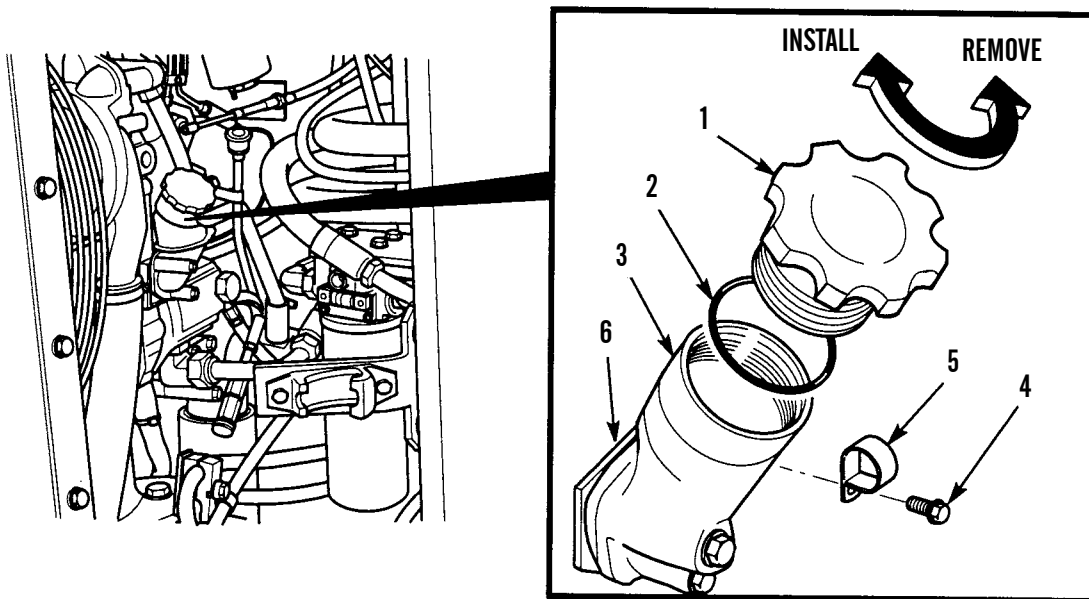
INSTALLATION

1. Install screen (11) into engine (10).
2. Install new gasket (9), bracket (6), gasket (9) and filler assembly (3) on engine (10) with screw (8) and bolt (7).
3. Install clip (5) on bracket (6) with screw (4).



401-250

4. Install seal (2) and filler cap (1) on filler assembly (3).



401-251

5. Close right-side door assembly (TM 5-3895-379-10).
6. Start engine and check for leaks (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VALVE COVER AND BREATHER TUBE REPLACEMENT

0016 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Oil, lubricating (Item 26, WP 0219 00)
- Rag, wiping (Item 31, WP 0219 00)

Materials/Parts-Continued

- Gasket (2)
- Locknut

References

- TM 5-3895-379-10
- TM 5-3895-379-23P, Figure 8
- TM 5-3895-379-23P, Figure 12

Equipment Condition

- Operator platform assembly raised (WP 0128 00)
-



WARNING

Use caution and allow engine to cool before removal of components. Failure to follow this warning may cause injury.

NOTE

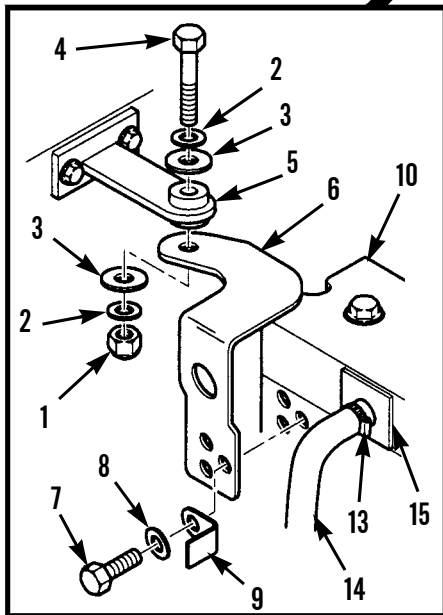
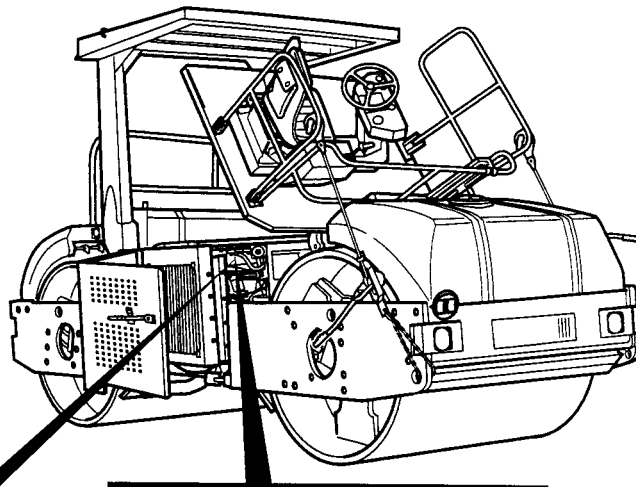
Valve cover and breather tube are replaced the same way for CB534B and CB534C Rollers except where noted. CB534B Roller is shown.

REMOVAL

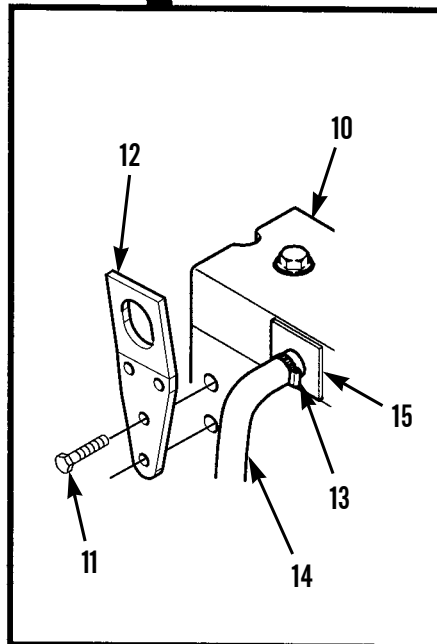
NOTE

If removing breather tube only, go to step 3.

1. For CB534B Roller, remove locknut (1), washer (2), washer (3), bolt (4), washer (2) and washer (3) from radiator bracket (5) and engine lifting bracket (6). Discard locknut.
2. Remove three screws (7), washers (8), clip (9) and engine lifting bracket (6) from cylinder head (10).
3. For CB534C Roller, remove two bolts (11) and engine lifting bracket (12).
4. Loosen hose clamp (13) and remove breather tube (14) from valve cover connector (15).



CB534B ROLLER

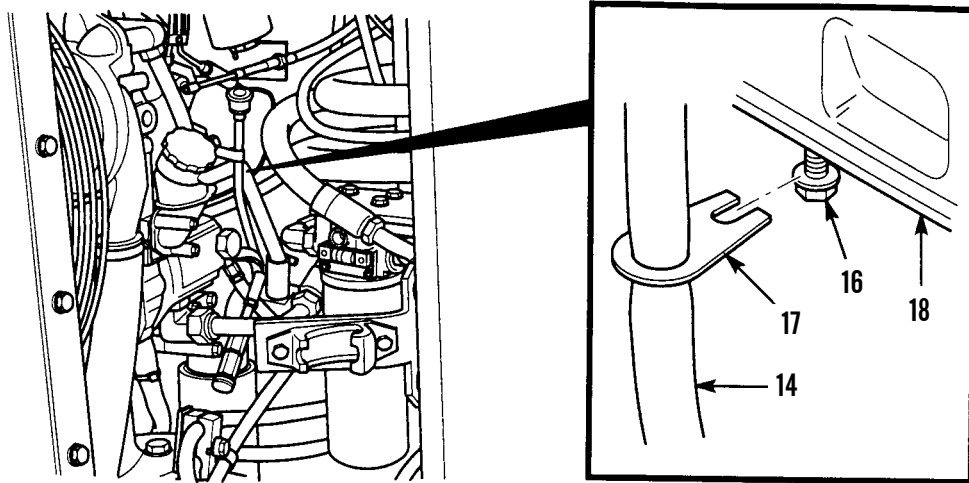


CB534C ROLLER

401-374

REMOVAL - CONTINUED

5. Loosen screw (16) and remove bracket (17) from engine (18).
6. Remove breather tube (14) from bracket (17).



401-253

NOTE

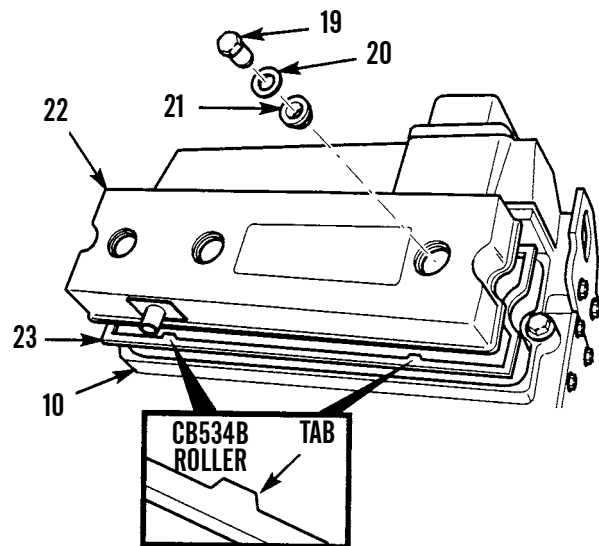
When performing step 7, ensure that the rocker bracket nuts are not loosened. Check rocker bracket nuts for tightness each time valve cover is removed.

7. Remove three bolts (19), washers (20) and seals (21) from valve cover (22). Inspect and replace seals if damaged.

CAUTION

Use care that contaminants do not enter valves when cover is removed. Failure to follow this caution may cause damage to equipment.

8. Remove valve cover (22) and gasket (23) from cylinder head (10). Discard gasket.



401-254

INSTALLATION

NOTE

- If installing the breather tube only, go to step 4.
- Grooved side of gasket must face cylinder head.

1. For CB534B Roller, position three tabs of new gasket (23) into three notches in valve cover (22).
2. For CB534C Roller, position new gasket (23) in valve cover (22).

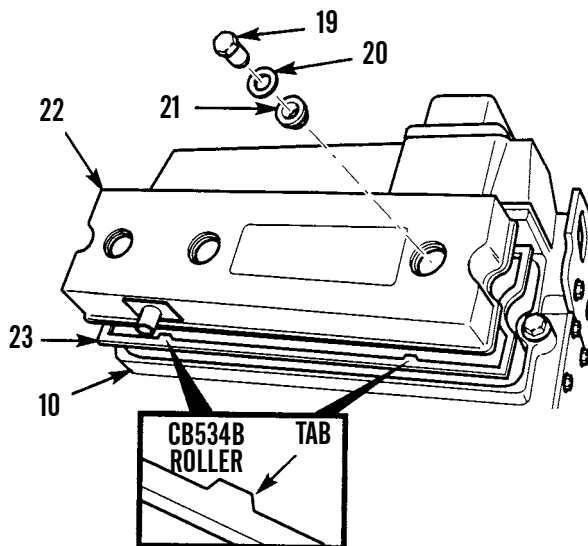
CAUTION

Do not overtighten valve cover nuts. Failure to follow this caution may cause rocker bracket nuts being overtightened.

NOTE

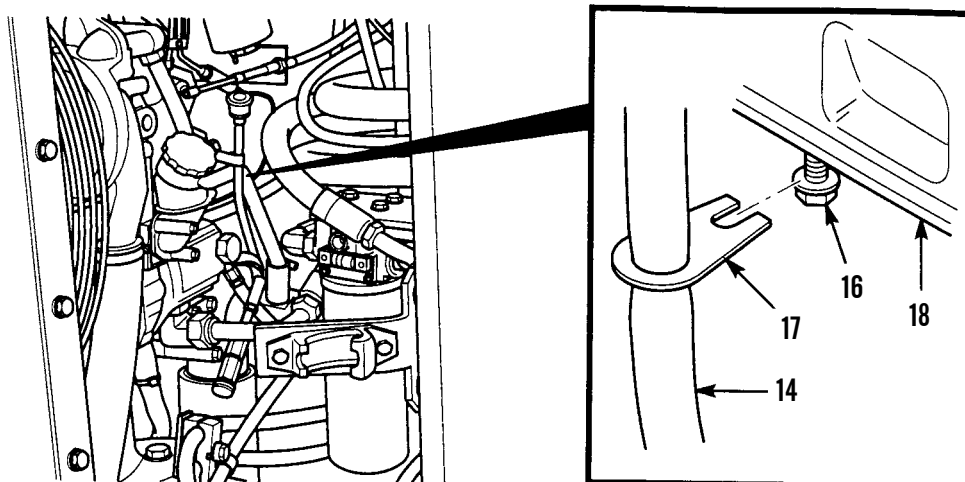
Lubricate seals with clean engine oil prior to installation.

3. Install valve cover (22) and gasket (23) on cylinder head (10) with three seals (21) if damaged, washers (20) and nuts (19). Tighten nuts to 22 lb-ft (30 Nm).



401-254

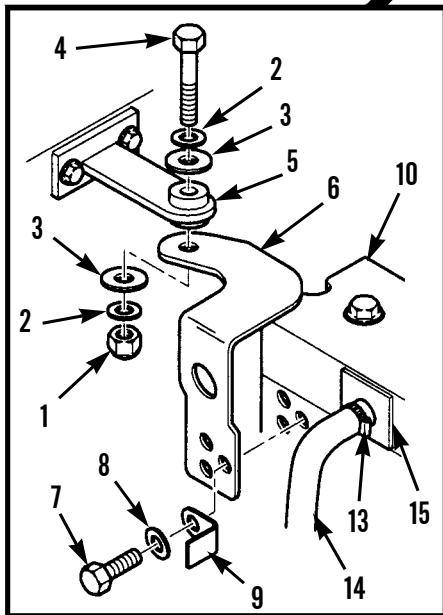
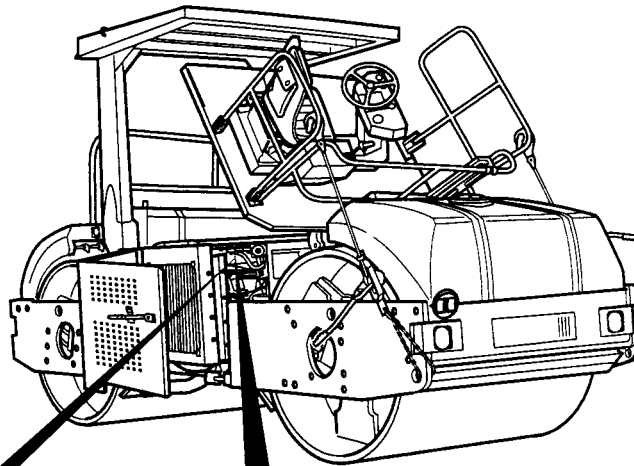
4. Position breather tube (14) through bracket (17).
5. Feed breather tube (14) from bottom to valve cover connector (15).
6. Install bracket (17) to engine (18) and tighten screw (16) to 22 lb-ft (30 Nm).



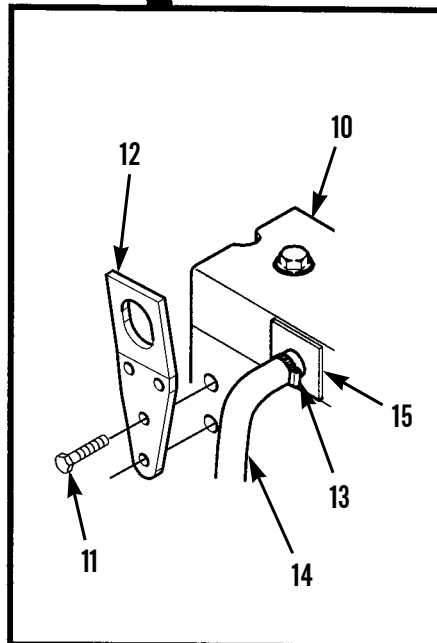
401-253

INSTALLATION - CONTINUED

7. Install breather tube (14) to valve cover connector (15) with hose clamp (13). Tighten hose clamp.
8. CB534B Roller, install engine lifting bracket (6) and clip (9) to cylinder head (10) with three washers (8) and screws (7). Tighten screws to 33-47 lb-ft (45-64 Nm).
9. CB534B Roller, Install engine lifting bracket (6) on radiator bracket (5) with washer (3), washer (2), bolt (4), washer (3), washer (2) and new locknut (1). Tighten locknut to 33-47 lb-ft (45-64 Nm).
10. CB534C Roller, install engine lifting bracket (12) and two bolts (11). Tighten bolts to 33-47 lb-ft (45-64 Nm).



CB534B ROLLER



CB534C ROLLER

401-374

INSTALLATION - CONTINUED

11. Lower operator platform assembly (WP 0128 00).
12. Operate roller and check for leaks (TM 5-3895-379-10).
13. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL COOLER REPLACEMENT

0017 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Cleaning compound, solvent (Item 9, WP 0219 00)

Cloth, cleaning (Item 10, WP 0219 00)

Oil, lubricating (Item 25, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Gasket

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 15

Equipment Condition

Engine coolant drained (WP 0052 00)

Engine oil drained (WP 0013 00)

Right-side door assembly opened (TM 5-3895-379-10)

NOTE

- Oil cooler is replaced the same way for CB534B and CB534C Rollers except where noted.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped treads and cuts. Replace all damaged parts.

REMOVAL**NOTE**

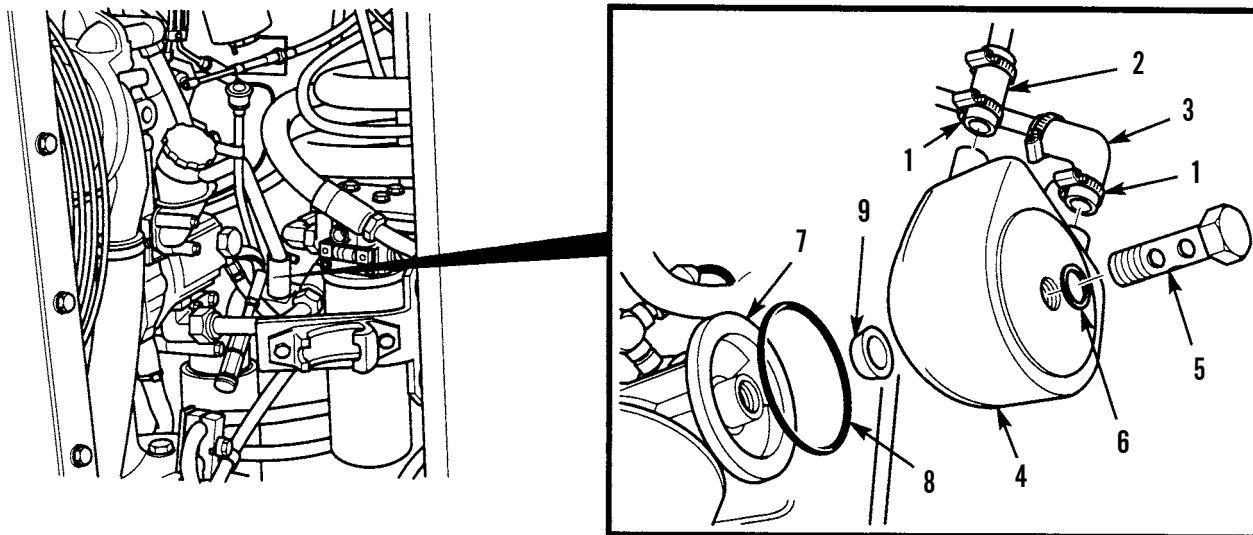
Tag and mark hoses to aid in installation.

1. Loosen two clamps (1) and remove hose assemblies (2) and (3) from oil cooler (4).
2. Remove connector (5).

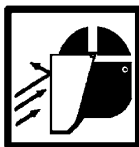
NOTE

On CB534B Roller, item 6 is a ring. On CB534C Roller, item 6 is a washer.

3. Remove connector ring (6) or gasket (6). Discard ring or washer.
4. Remove oil cooler (4), gasket (8) and rubber housing bushing (9) from oil filter head assembly (7).
5. Remove gasket (8) from oil cooler (4). Discard gasket.



401-256

CLEANING AND INSPECTION**WARNING**

- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

1. Clean all metal parts with cleaning compound, solvent.

CLEANING AND INSPECTION - CONTINUED

2. Use cleaning cloth or compressed air to dry all metal parts.
3. Check oil cooler and connector for nicks and cracks that could cause leakage. Check for stripped threads. Replace any damaged parts.

INSTALLATION

1. Apply a light coat of lubricating oil to new gasket (8) and rubber bushing (9) and install gasket and rubber bushing on oil cooler (4).
2. Position oil cooler (4) on oil filter head assembly (7).

NOTE

On CB534B Roller, item 6 is a ring. On CB534C Roller, item 6 is a washer.

3. Install new connector ring or washer (6) on oil cooler (4).
4. Install connector (5).
5. Install hose assemblies (2) and (3) on oil cooler (4) and tighten two clamps (1).
6. Close right-side door assembly (TM 5-3895-379-10).
7. Fill cooling system to proper level (WP 0052 00).
8. Fill engine with oil (WP 0008 00 and WP 0009 00).
9. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket

References

TM 5-3895-379-10

References - Continued

TM 5-3895-379-23P, Figure 15

Equipment Condition

Engine oil drained and oil filter removed (WP 0013 00)

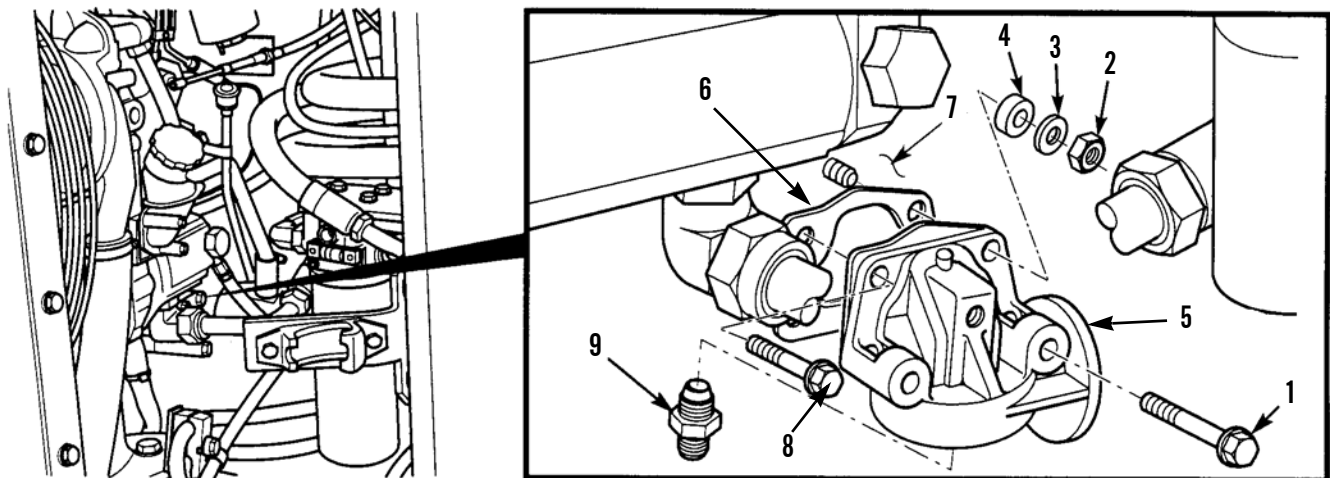
Engine oil sampling valve and tee removed (WP 0024 00)

Hourmeter pressure switch removed (WP 0084 00)

Engine oil cooler removed (WP 0017 00)

REMOVAL

1. Remove two bolts (1), nut (2), washer (3), spacer (4), oil filter head assembly (5) and gasket (6) from engine (7). Discard gasket.
2. Remove bolt (8) connector (9) from oil filter head assembly (5).



401-260

INSTALLATION

1. Install bolt (8), connector (9) on oil filter head assembly (5). Tighten securely.
2. Install new gasket (6) and oil filter head assembly (5) on engine (7) with spacer (4), washer (3) and nut (2). Tighten bolts to 33-47 lb-ft (45-64 Nm).

INSTALLATION - CONTINUED

3. Install engine oil cooler (WP 0017 00).
4. Install hourmeter pressure switch (WP 0084 00).
5. Install tee and engine oil sampling valve (WP 0024 00).
6. Install oil filter and refill engine crankcase (WP 0013 00).
7. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

OIL FILTER HEAD ASSEMBLY REPLACEMENT (CB534C)

0019 00

THIS WORK PACKAGE COVERS

Removal, Cleaning, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cleaning compound, solvent (Item 9, WP 0219 00)
 Rag, wiping (Item 31, WP 0219 00)
 Gasket (2)

References

TM 5-3895-379-10
 TM 5-3895-379-23P, Figure 15

Equipment Condition

Engine oil sampling valve and tee removed (WP 0024 00)
 Hourmeter pressure switch removed (WP 0084 00)
 Engine oil cooler removed (WP 0017 00)



WARNING

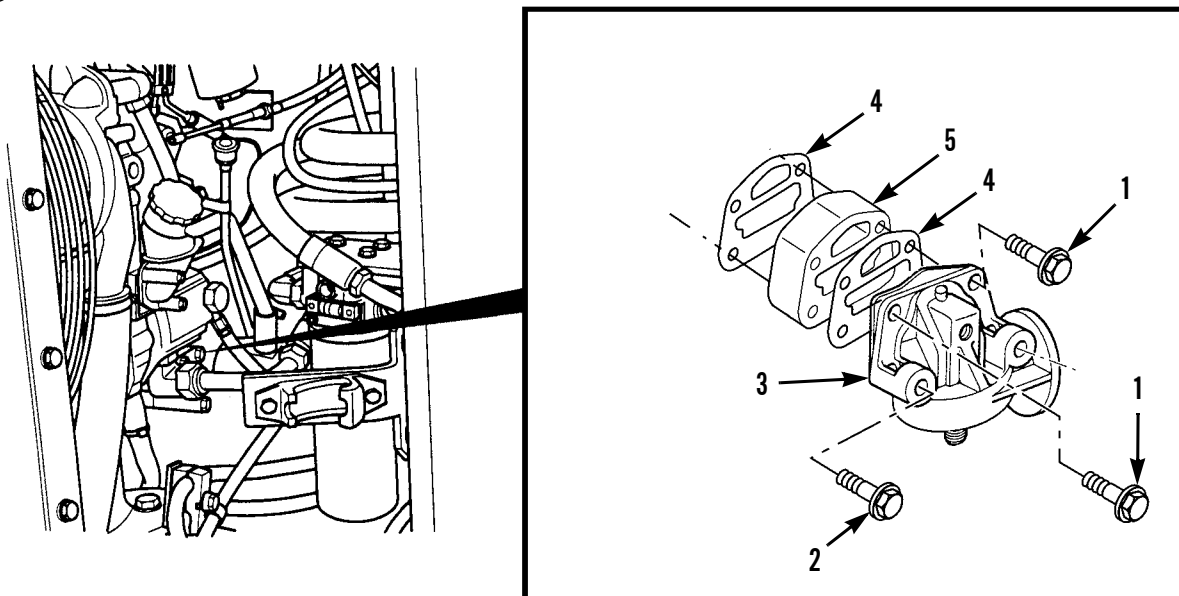
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

OIL FILTER HEAD ASSEMBLY REPLACEMENT (CB534C) - CONTINUED

0019 00

REMOVAL

1. Remove oil filter (WP 0013 00).
2. Remove two bolts (1), two bolts (2), oil filter head assembly (3), gasket (4), access cover (5) and gasket (4). Discard gaskets.



401-2185

CLEANING**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

1. Remove any original gasket material from oil filter head assembly.
2. Clean all surfaces with cleaning compound, solvent.
3. Allow surfaces to air dry before installation.

INSTALLATION

1. Install new gasket (4), access cover (5), new gasket (4), oil filter head assembly (3) with two bolts (2) and two bolts (1). Tighten bolts to 33-47 lb-ft (45-64 Nm).
2. Install engine oil cooler (WP 0017 00).
3. Install hourmeter pressure switch (WP 0084 00).
4. Install tee and oil sampling valve (WP 0024 00).
5. Install oil filter and refill engine crankcase (WP 0013 00).
6. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

OIL PAN REPLACEMENT

0020 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket cement (Item 18, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Gasket

O-ring (2)

Seal, felt

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 14

Equipment Condition

Engine off (TM 5-3895-379-10)

Gauge rod (dipstick) tube assembly removed (WP 0014 00)

Engine oil drained (WP 0013 00)

**WARNING**

Use caution and allow engine to cool before removal of components. Failure to follow this warning may cause injury.

NOTE

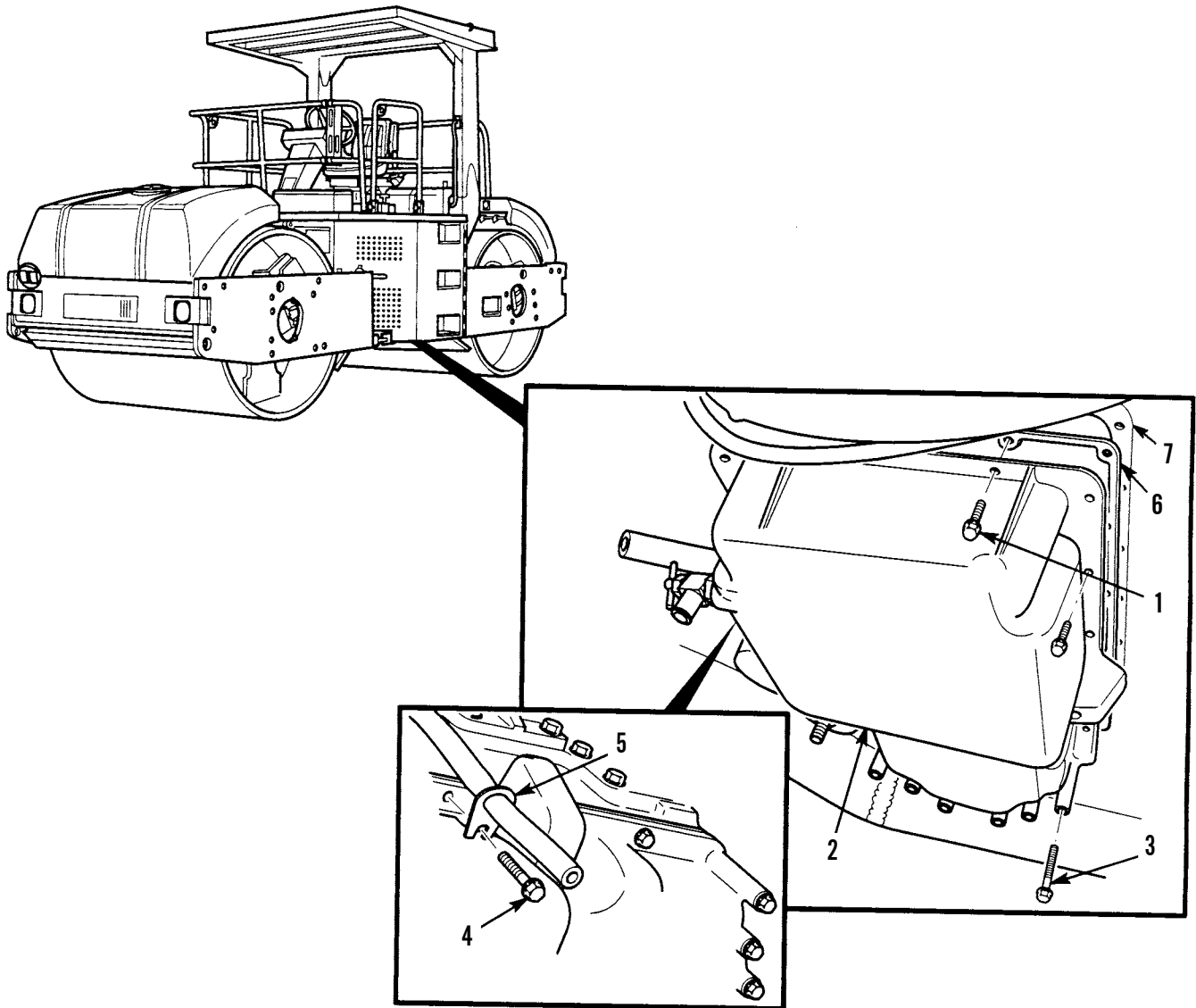
Oil pan is replaced the same way for CB534B and CB534C Rollers. CB534B Roller is shown.

OIL PAN REPLACEMENT - CONTINUED

0020 00

REMOVAL

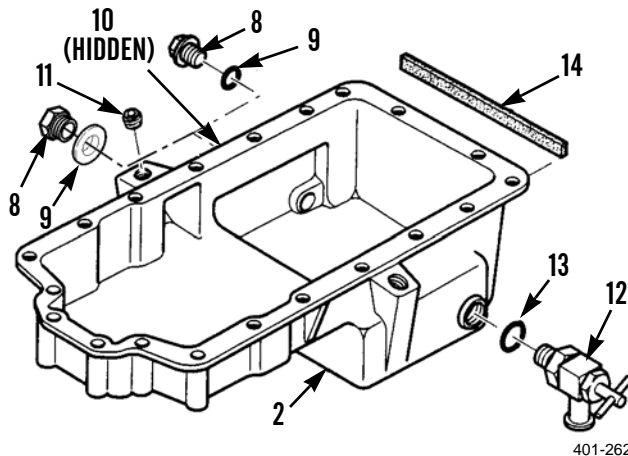
1. Remove four bolts (1) from oil pan (2).
2. Remove six bolts (3) from oil pan (2).
3. Remove twelve screws (4), breather tube bracket (5), oil pan (2) and gasket (6) from engine (7). Discard gasket.



401-261

REMOVAL - CONTINUED

4. Remove plug (8) and O-ring (9) from oil pan (2). Discard O-ring.
5. Remove insert (10) and plug (11) from oil pan (2).
6. Remove drain valve (12) and O-ring (13) from oil pan (2). Discard O-ring.
7. Remove felt dust seal (14) from oil pan (2). Discard seal.

**INSTALLATION****WARNING**

- Adhesive causes immediate bonding on contact with eyes, skin or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.
- Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Ensure mating surfaces are clean.

1. Install new felt dust seal (14) on oil pan (2) using gasket cement.

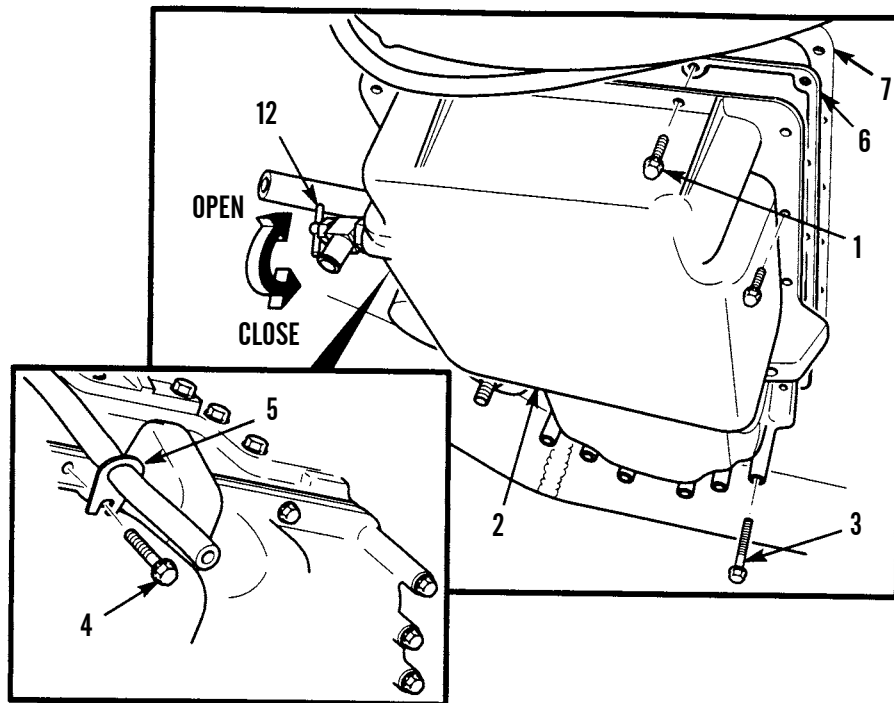
CAUTION

Ensure drain valve is in the closed (full right) position after installation. Failure to follow this caution may cause damage to equipment.

2. Install new O-ring (13) and drain valve (12) on oil pan (2). Place drain valve in closed position.
3. Install plug (11) and insert (10) on oil pan (2).
4. Install new O-ring (9) and plug (8) on oil pan (2).

INSTALLATION - CONTINUED

5. Install gasket (6), breather tube bracket (5) and oil pan (2) on engine (7) with twelve screws (4). Tighten screws to 15-25 lb-ft (20-34 Nm).
6. Install six bolts (3) on oil pan (2). Tighten bolts to 15-25 lb-ft (20-34 Nm).
7. Install four bolts (1) on oil pan (2). Tighten bolts to 15-25 lb-ft (20-34 Nm).



401-263

8. Install gauge rod (dipstick) tube assembly (WP 0014 00).
9. Fill engine with oil (WP 0008 00 and WP 0009 00).
10. Operate roller and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

OIL STRAINER AND SUCTION TUBE REPLACEMENT

0021 00

THIS WORK PACKAGE COVERS

Removal, Cleaning, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cleaning compound, solvent (Item 9, WP 0219 00)

Gasket

References

TM 5-3895-379-10

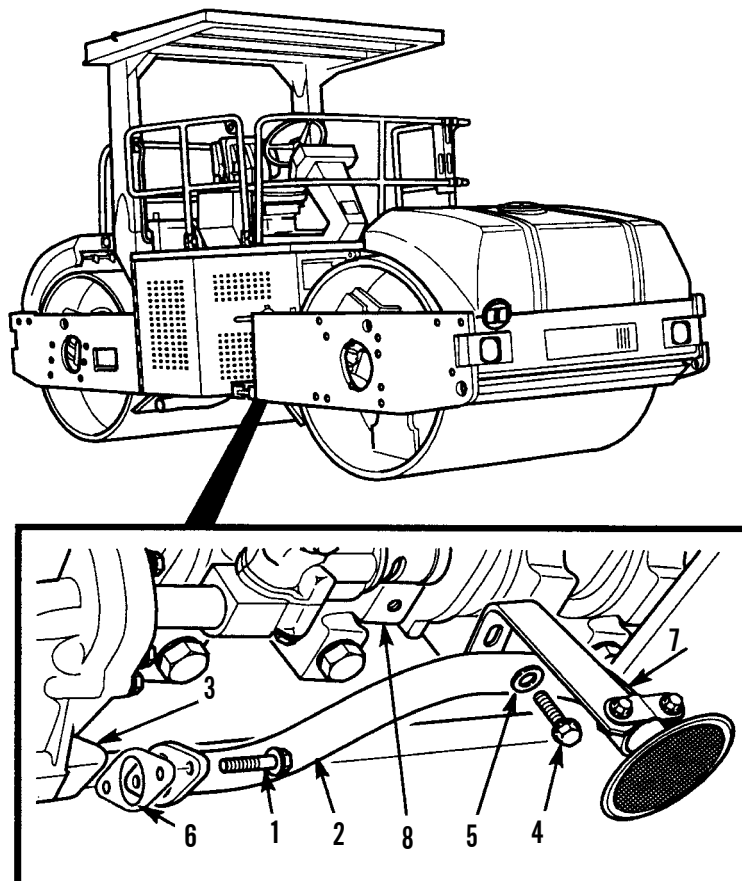
TM 5-3895-379-23P, Figure 14

Equipment Condition

Oil pan removed (WP 0020 00)

REMOVAL

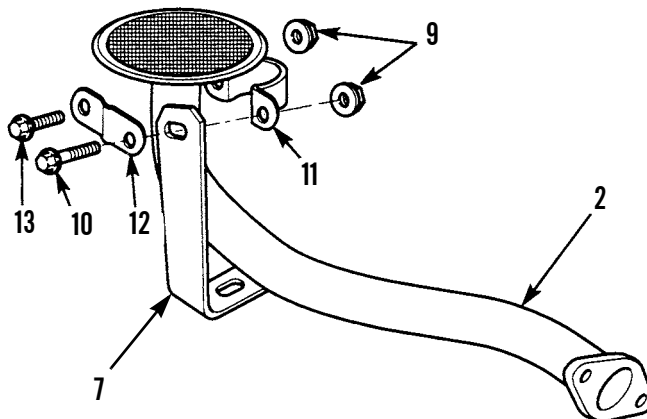
1. Remove two screws (1) from strainer and suction tube assembly (2) and oil pump (3).
2. Remove screw (4), washer (5), strainer and suction tube assembly (2), gasket (6) and bracket (7) from bridge (8). Discard gasket.



401-264

REMOVAL - CONTINUED

3. Remove nut (9), screw (10) and bracket (7) from retaining clip (11) and mounting plate (12).
4. Remove nut (9), screw (13), retaining clip (11) and mounting plate (12) from strainer and suction tube assembly (2).



401-265

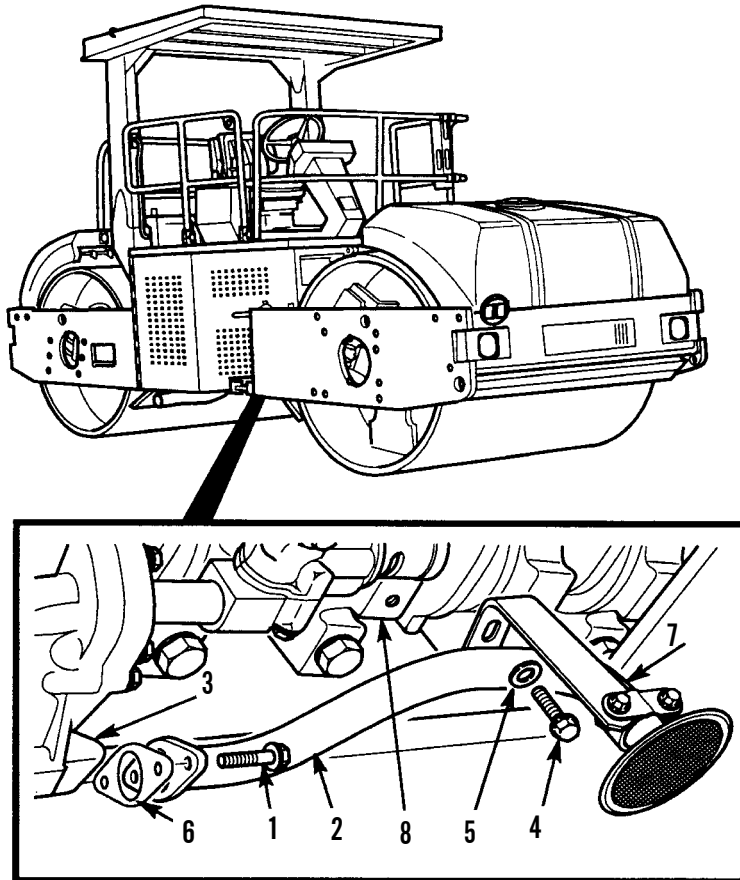
CLEANING**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

1. Clean strainer and suction tube assembly with cleaning compound, solvent.
2. Dry strainer and suction tube assembly and ensure that all cleaning compound is removed prior to installation.

INSTALLATION

1. Install retaining clip (11) and mounting plate (12) on strainer and suction tube assembly (2) with screw (13) and nut (9). Do not tighten nut.
2. Install bracket (7) on retaining clip (11) and mounting plate (12) with screw (10), and nut (9). Do not tighten nut.
3. Install new gasket (6) and strainer and suction tube assembly (2) on oil pump (3) with two screws (1). Tighten screws to 16 lb-ft (22 Nm).
4. Install bracket (7) and strainer and suction tube assembly (2) on bridge (8) with washer (5) and screw (4). Tighten screw to 16 lb-ft (22 Nm).
5. Tighten two nuts (9).



401-264

6. Install oil pan (WP 0020 00).
7. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL COOLER LINES AND FITTINGS REPLACEMENT (CB534B)**0022 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

References - Continued

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 15

Equipment Condition

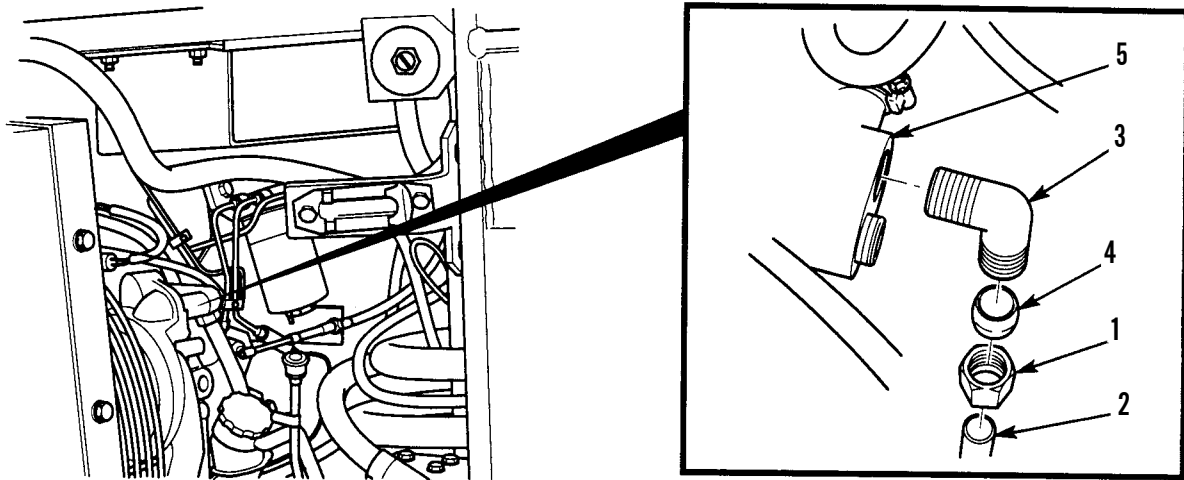
Engine off (TM5-3895-379-10)

Coolant system drained (WP 0052 00)

Operator platform assembly raised (WP 0128 00)

REMOVAL

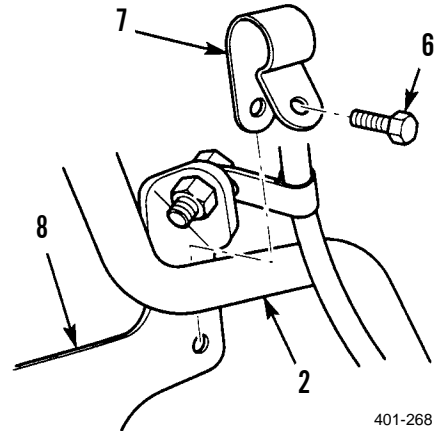
1. Loosen nut (1) and remove tube (2) from elbow (3).
2. Remove compression sleeve (4) and nut (1) from hose (2).
3. Remove elbow (3) from connector (5).



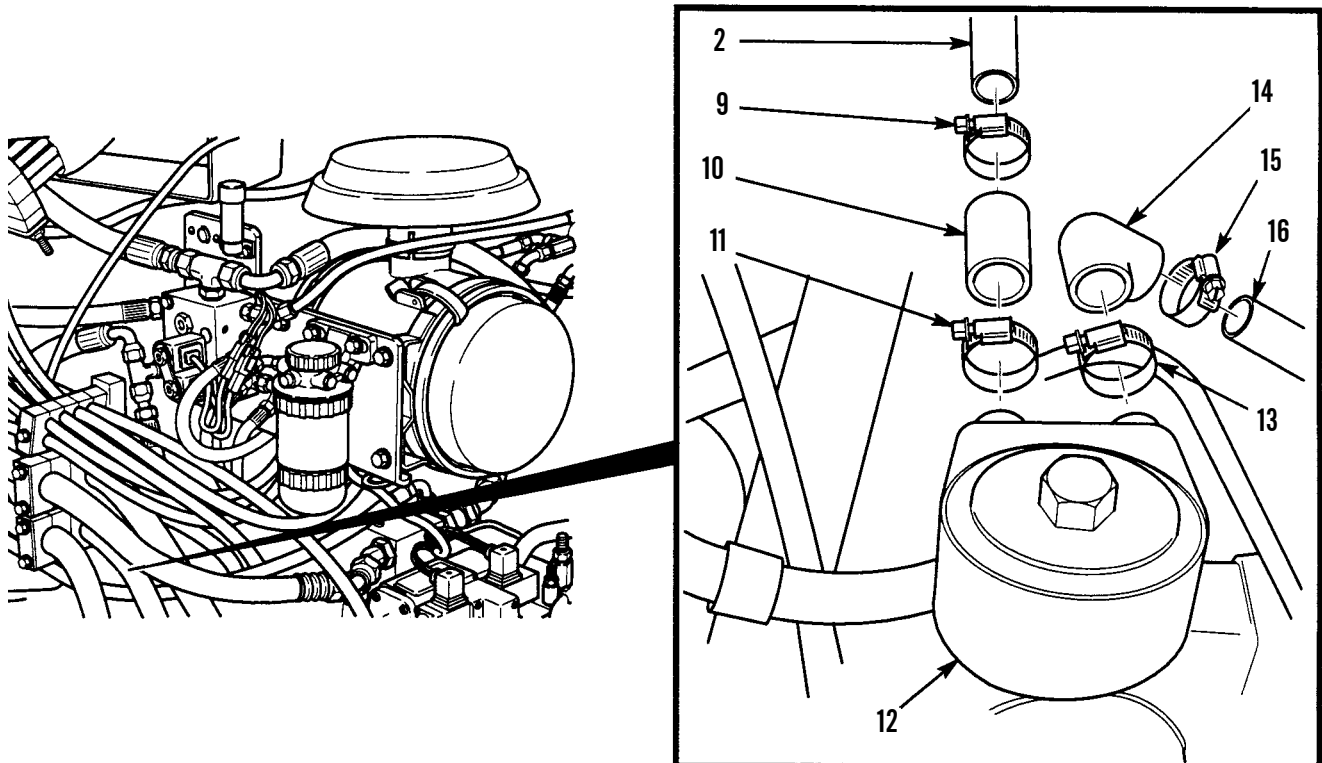
401-267

REMOVAL - CONTINUED

4. Remove screw (6), clamp (7) and tube (2) from bracket (8).
5. Remove clamp (7) from tube (2).

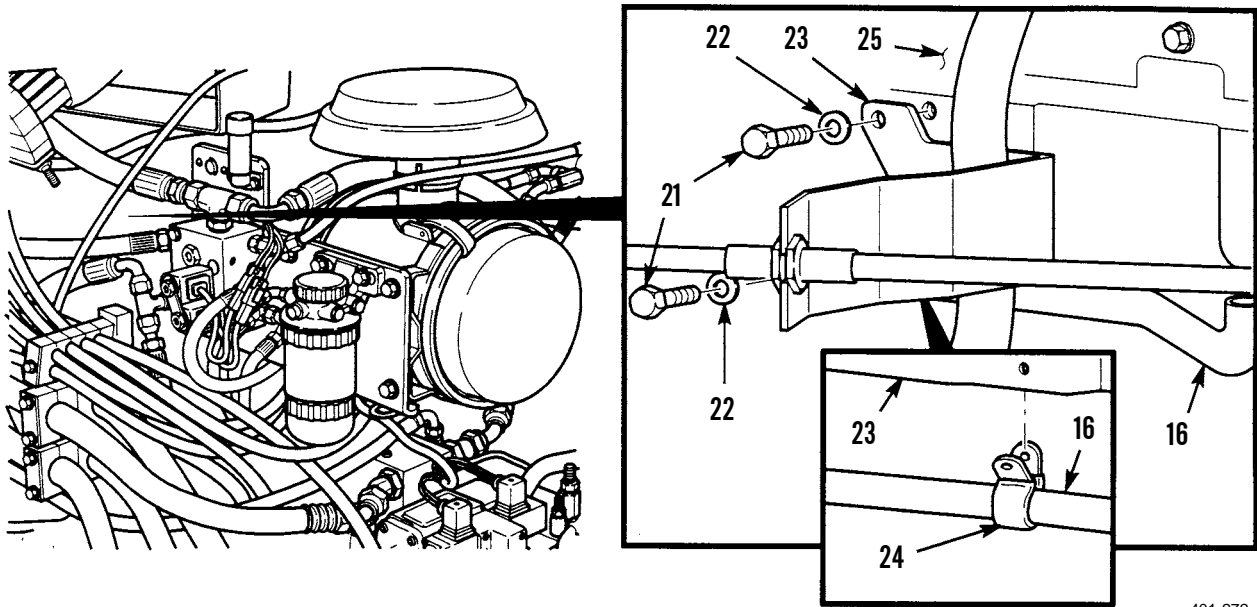


6. Loosen clamp (9) and remove tube (2) from hose (10).
7. Remove clamp (9) from hose (10).
8. Loosen clamp (11) and remove hose (10) from oil cooler assembly (12).
9. Remove clamp (11) from hose (10).
10. Loosen clamp (13) and remove hose (14) from oil cooler assembly (12).
11. Remove clamps (13) from hose (14).
12. Loosen clamp (15) and remove hose (14) from hose (16).
13. Remove clamp (15) from hose (14).



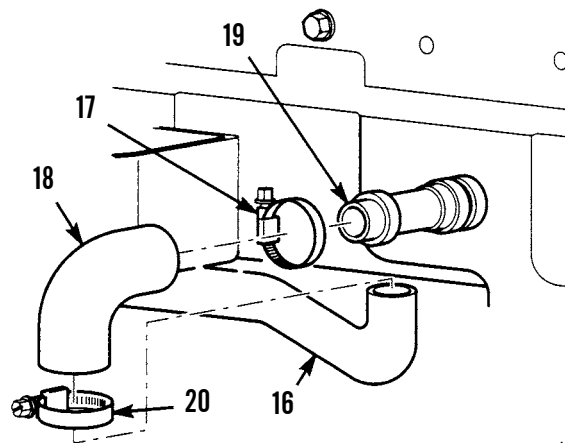
INSTALLATION

1. Place clamp (24) on tube (16).
2. Install hose (16), clamp (24) and throttle cable bracket (23) on engine block (25) with two washers (22) and screws (21). Tighten screws to 15-25 lb-ft (20-34 Nm).



401-272

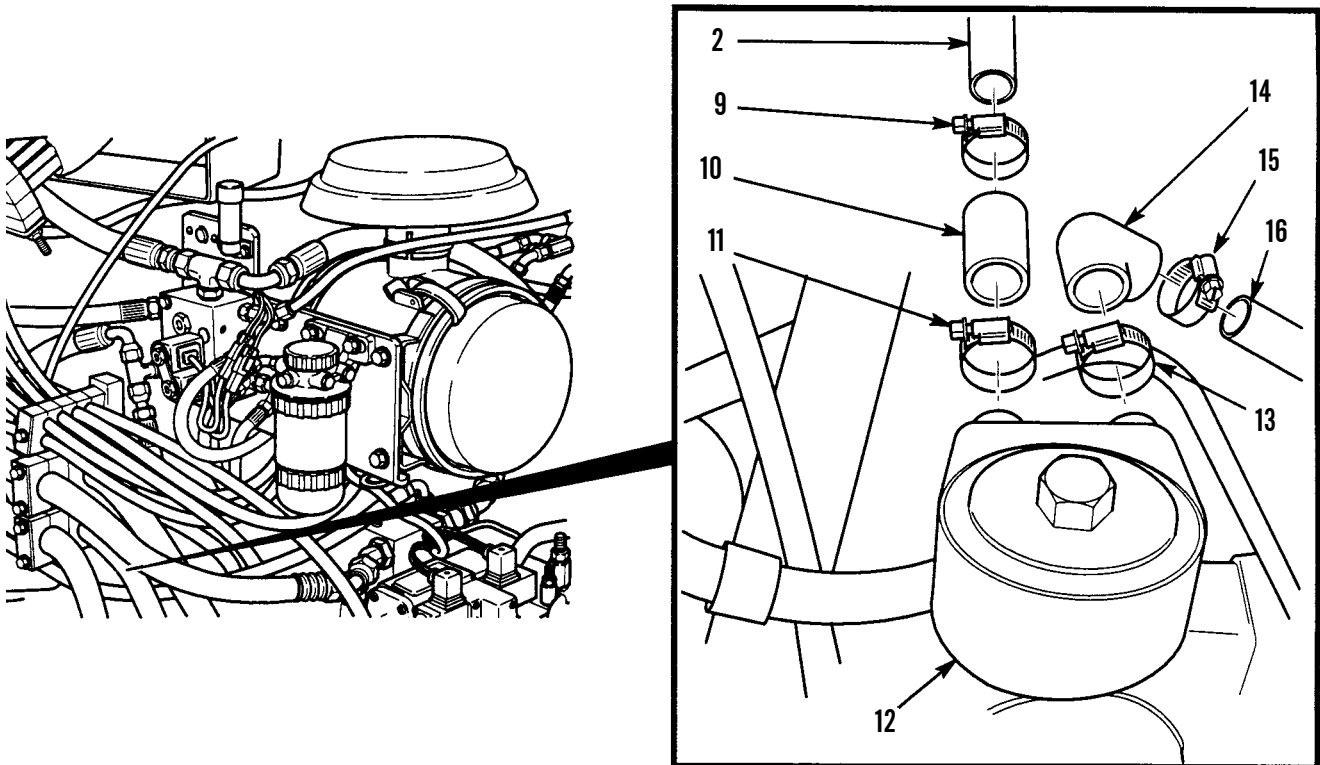
3. Place clamp (20) on hose (18).
4. Install hose (18) on tube (16) and tighten clamp (20).
5. Place clamp (17) on hose (18).
6. Install hose (18) on adapter (19) and tighten clamp (17).



401-273

INSTALLATION - CONTINUED

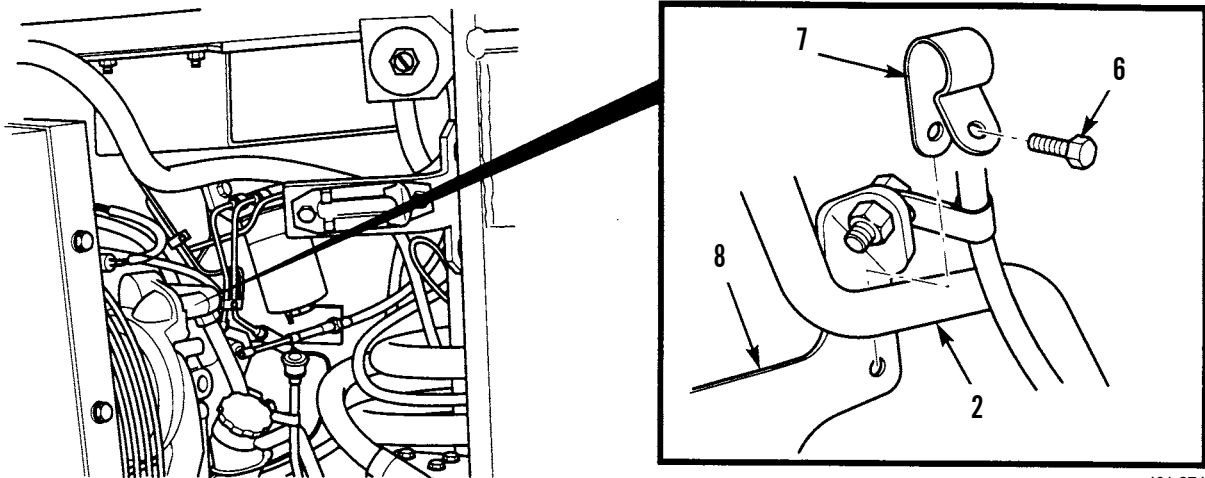
7. Place clamp (15) on hose (14).
8. Install hose (14) on hose (16) and tighten clamp (15).
9. Place clamp (13) on hose (14).
10. Install hose (14) on oil cooler assembly (12) and tighten clamp (13).
11. Place clamp (11) on hose (10).
12. Install hose (10) on oil cooler assembly (12) and tighten clamp (11).
13. Place clamp (9) on hose (10).
14. Install hose (2) in hose (10) and tighten clamp (9).



401-269

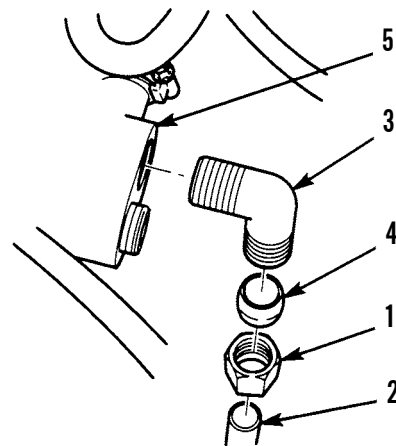
INSTALLATION - CONTINUED

15. Place clamp (7) on hose (2).
16. Install clamp (7) and hose (2) on bracket (8) with screw (6). Tighten screw to 15-25 lb-ft (20-34 Nm).



401-274

17. Install adapter (3) on connector (5).
18. Place nut (1) and compression sleeve (4) on hose (2).
19. Install hose (2) on adapter (3) and tighten nut (1).



401-275

20. Lower operator platform assembly (WP 0128 00).
21. Fill coolant system (WP 0008 00 and WP 0009 00).
22. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL COOLER LINES AND FITTINGS REPLACEMENT (CB534C)**0023 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 15

Equipment Condition

Engine off (TM5-3895-379-10)

Coolant system drained (WP 0052 00)

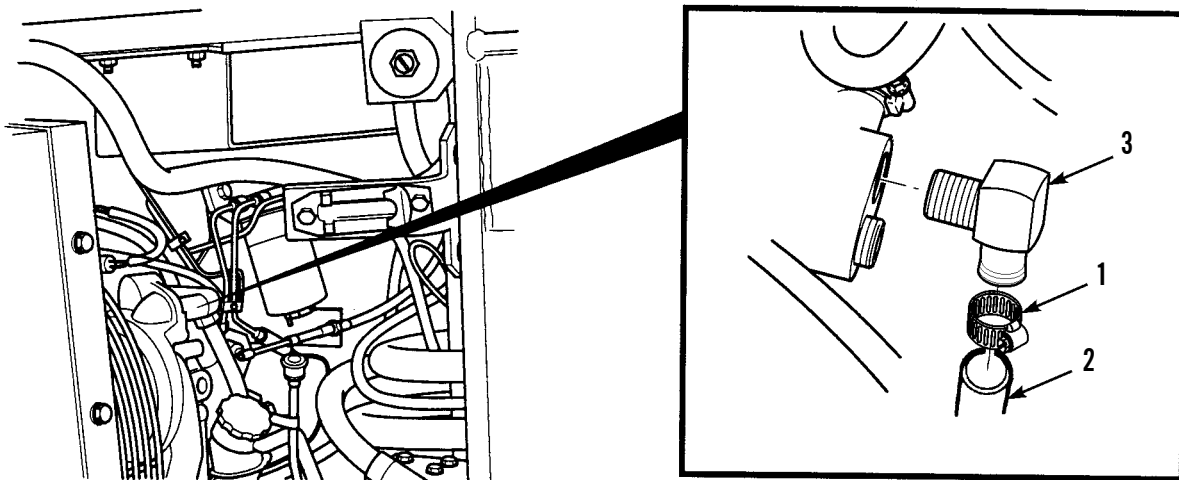
Operator platform assembly raised (WP 0128 00)

**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL

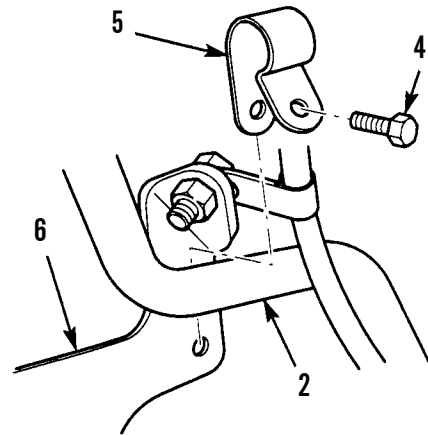
1. Loosen clamp (1) and remove hose (2) from elbow (3).
2. Remove clamp (1) from hose (2).



401-2039

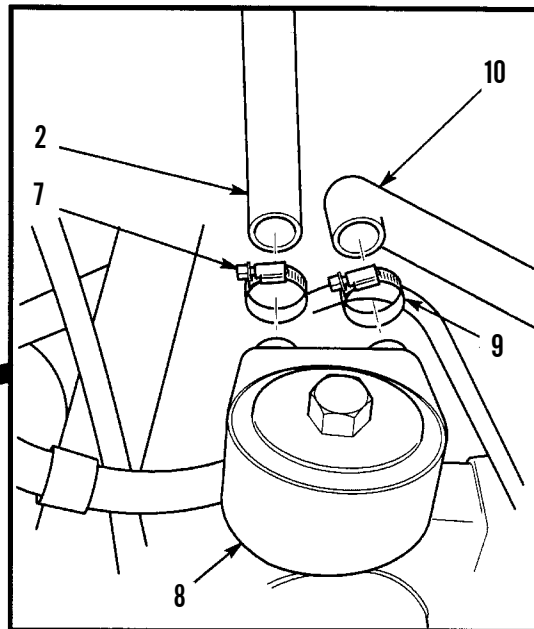
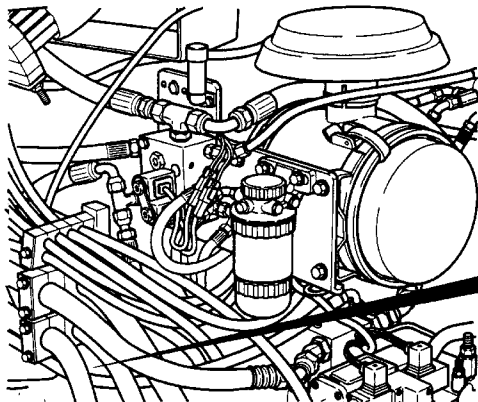
REMOVAL - CONTINUED

3. Remove bolt (4) and fastener (5) from mounting bracket (6).
4. Remove fastener (5) from hose (2).



401-268

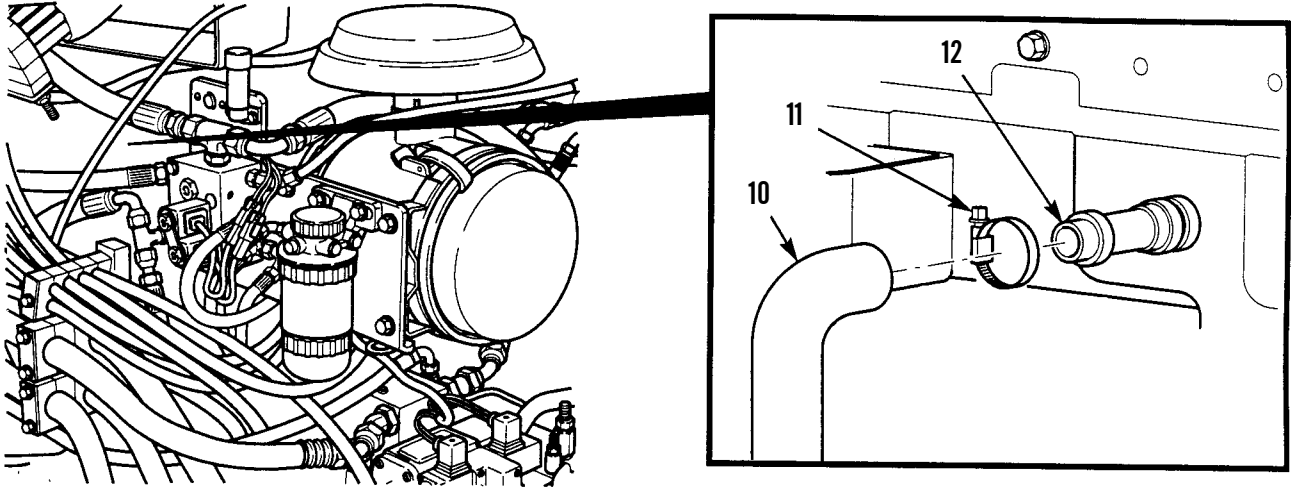
5. Loosen clamp (7) and remove hose (2) from oil cooler assembly (8).
6. Remove clamp (7) from hose (2).
7. Loosen clamp (9) and remove hose (10) from oil cooler assembly (8).
8. Remove clamp (9) from hose (10).



401-2038

REMOVAL - CONTINUED

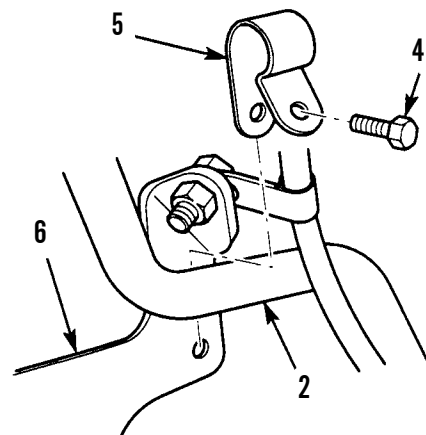
9. Loosen clamp (11) and remove hose (10) from adapter (12).
10. Remove clamp (11) from hose (10).



401-2037

INSTALLATION

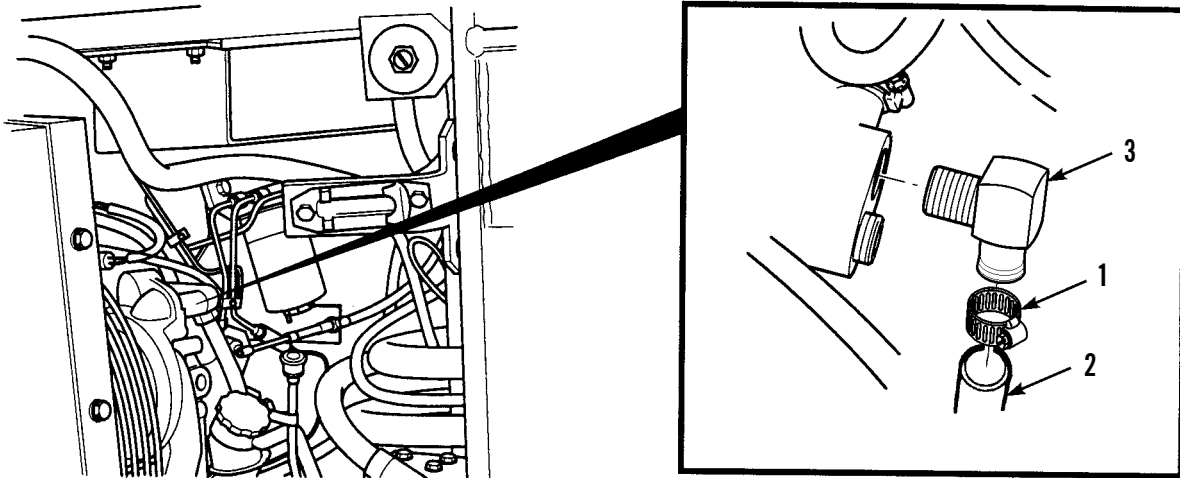
1. Place clamp (11) on hose (10).
2. Install hose (10) on adapter (12) and tighten clamp (11).
3. Place clamp (9) on hose (10).
4. Install hose (10) on oil cooler assembly (8) and tighten clamp (9).
5. Place clamp (7) on hose (2).
6. Install hose (2) on oil cooler assembly (8) and tighten clamp (7).
7. Install fastener (5) on hose (2).
8. Install fastener (5) on mounting bracket (6) with bolt (4). Tighten bolt to 15-25 lb-ft (20-34 Nm).



401-268

INSTALLATION - CONTINUED

9. Place clamp (1) on hose (2).
10. Install hose (2) on elbow (3) and tighten clamp (1).



401-2039

11. Lower operator platform assembly (WP 0128 00).
12. Fill cooling system to proper level (WP 0009 00).
13. Refill oil (WP 0008 00 and WP 0009 00).
14. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL SAMPLING VALVE AND FITTINGS REPLACEMENT

0024 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, sealing (Item 13, WP 0219 00)

Oil, lubricating (Item 26, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

O-ring

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services

TM 5-3895-379-23P, Figure 15

Equipment Condition

Engine off (TM 5-3895-379-10)

Engine oil drained (WP 0013 00)

REMOVAL

1. Remove engine oil sampling valve drain cap (1) from engine oil sampling valve (2).

NOTE

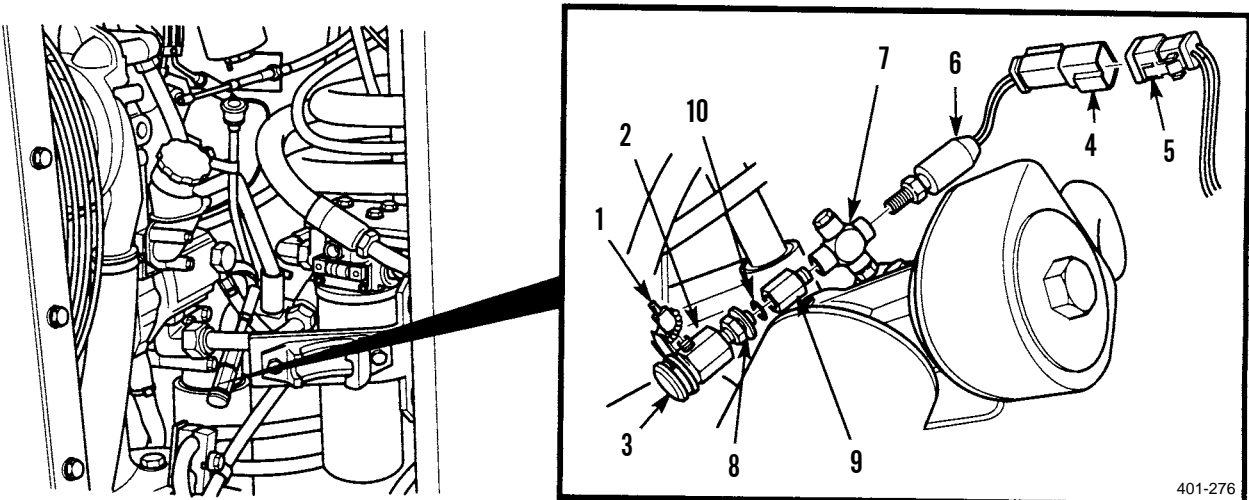
Use a container to catch any oil that may drain from engine oil sampling valve. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

2. Place container with 1 qt (0.9 l) minimum capacity under engine oil sampling valve (2).
3. Turn and hold knurled knob (3) in direction of arrow and allow remainder of engine oil to drain.
4. Disconnect hourmeter pressure switch connector (4) from connector (5).
5. Remove hourmeter pressure switch (6) from tee (7).
6. Loosen locking nut (8) on engine oil sampling valve (2) and remove engine oil sampling valve from connector (9).
7. Remove O-ring (10) from engine oil sampling valve (2). Discard O-ring.

NOTE

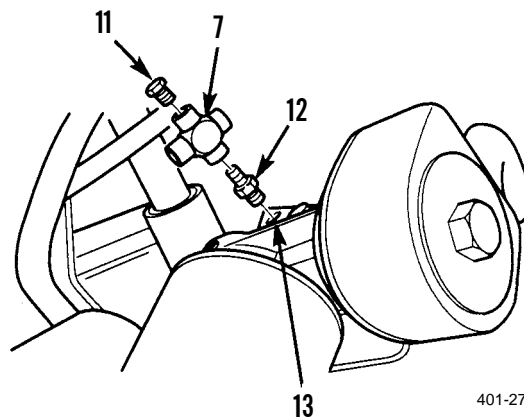
Replace any damaged parts.

8. Remove connector (9) from tee (7).



REMOVAL - CONTINUED

9. Remove plug (11) from tee (7).
10. Remove tee (7) and connector (12) from oil filter head assembly (13).
11. Remove connector (12) from tee (7).

**INSTALLATION**

1. Apply sealing compound to threads of connector (12) and install connector and tee (7) to oil filter head assembly (13).
2. Apply sealing compound to threads of plug (11) and install in tee (7).
3. Apply sealing compound to threads of connector (9) and install in tee (7).
4. Coat new O-ring (10) with oil and install on engine oil sampling valve (2).

NOTE

When installing engine oil sampling valve, position drain of valve downward to ease in collection of sample.

5. Apply sealing compound to threads of engine oil sampling valve (2) and install on connector (9). Tighten locking nut (8).
6. Install hourmeter pressure switch (6) on tee (7) and tighten to 5-9 lb-ft (7-12 Nm).
7. Connect hourmeter pressure switch connector (4) to connector (5).
8. Install engine oil sampling valve drain cap (1) on engine oil sampling valve (2).
9. Fill engine to capacity with engine oil (WP 0008 00 and WP 0009 00).
10. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

INTAKE MANIFOLD REPLACEMENT

0025 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Gasket (3)

Personnel Required

Two

References

TM 5-3895-379-10

TM 5-3895-379-23P, Figure 16

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Exhaust manifold removed (WP 0026 00 or WP 0027 00)

NOTE

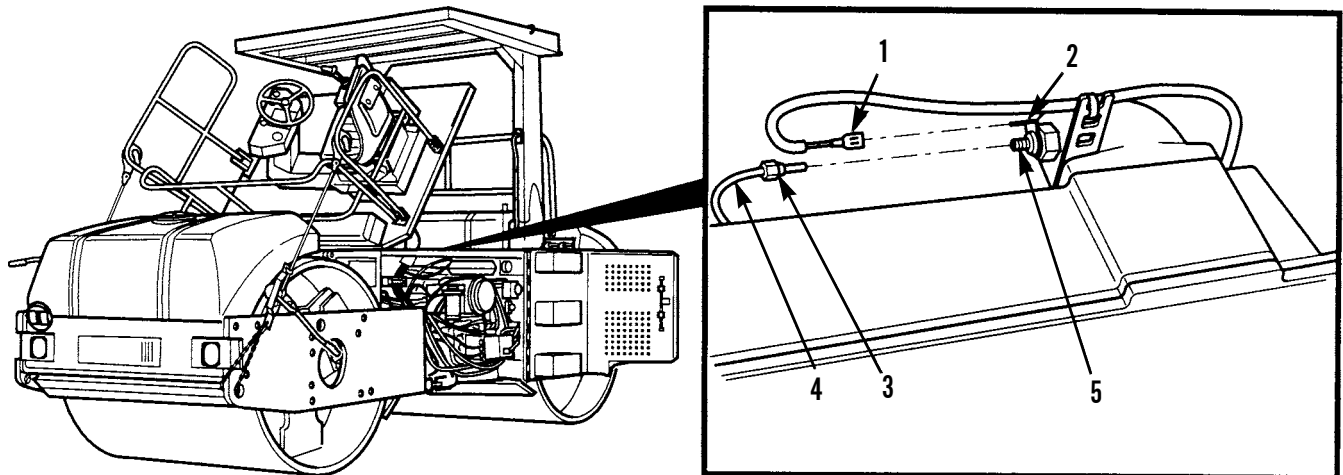
Intake manifold is replaced the same way for CB534 and CB534C Rollers, except where noted. CB534B Roller is shown.

REMOVAL

NOTE

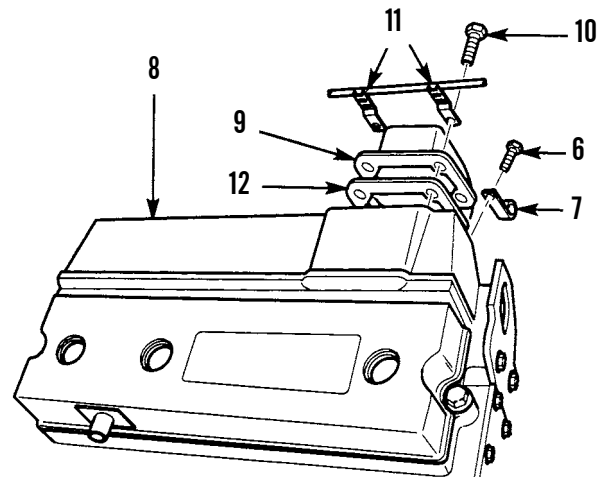
Tag and mark all wires prior to removal.

1. Disconnect wire (1) from cold start heater connector (2).
2. Loosen nut (3) and disconnect fuel line (4) from cold start heater (5).



401-279

3. Loosen two hose clamps and slide hose at intake manifold flange (6) toward the turbocharger.
4. For CB534B Roller, remove screw (7) and clip (8) from intake manifold (9).
5. Remove four bolts (10).
6. Remove clip (11), clip (12) (CB534B Roller), intake manifold flange (6) and gasket (13) from intake manifold (9). Discard gasket.



401-280

INTAKE MANIFOLD REPLACEMENT - CONTINUED

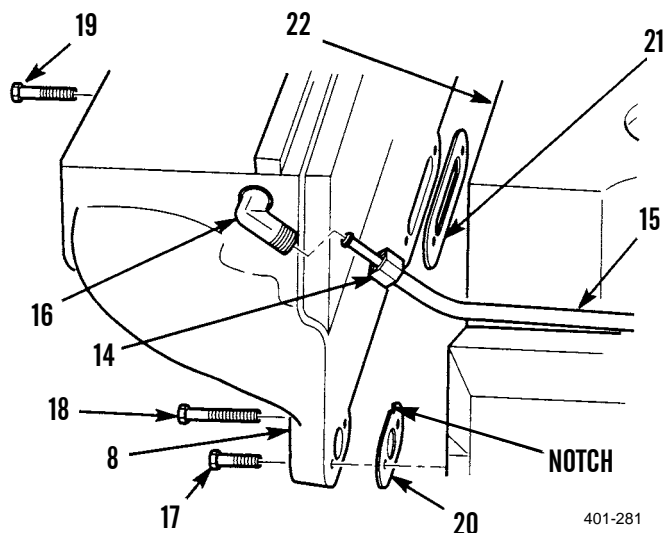
0025 00

REMOVAL - CONTINUED

7. Loosen nut (14) and disconnect tube (15) from intake manifold nipple (16).
8. Remove four screws (17), screw (18) and screw (19), two gaskets (20), gasket (21) and intake manifold (9) from cylinder head (22). Discard gaskets.

INSTALLATION**NOTE**

- Ensure gasket surfaces are clean and dry before installation.
- Ensure manifold gaskets for front and rear are positioned with notch at top left when installed on cylinder head. Center gasket can be installed either way.
- Do not use any sealant when installing gaskets.



1. Install two new gaskets (20), new gasket (21) and intake manifold (8) on cylinder head (22) using four screws (17), screw (18) and screw (19). Tighten screws to 24 lb-ft (33 Nm).
2. Connect tube (15) to intake manifold nipple (16) and tighten nut (14) to 35-71 lb-ft (47-96 Nm).
3. Install new gasket (13) and intake manifold flange (16).
4. Install clip (11) and for CB534B Roller, clip (12) on intake manifold (9) using four bolts.
5. Slide hose at intake manifold flange (6) into position and tighten two hose clamps.
6. For CB534B Roller, install clip (8) and screw (7) to intake manifold (9).
7. Connect fuel line (4) to cold start heater (5) and tighten nut (3).
8. Connect wire (1) to cold start heater connector (2).
9. Install exhaust manifold (WP 0026 00 or WP 0027 00).
10. Lower operator platform assembly (WP 0128 00).
11. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

EXHAUST MANIFOLD REPLACEMENT (CB534B)

0026 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, antiseize (Item 11, WP 0219 00)

Materials/Parts - Continued

Gasket (2)

References

TM 5-3895-379-23P, Figure 16

Equipment Condition

Turbocharger removed (WP 0035 00)

EXHAUST MANIFOLD REPLACEMENT (CB534B) - CONTINUED

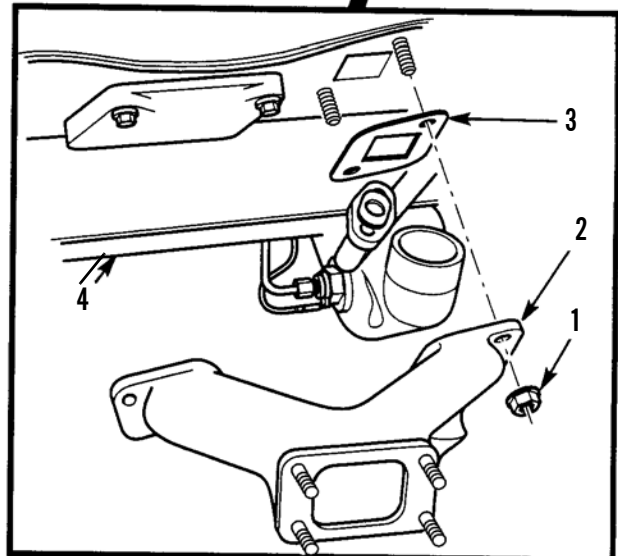
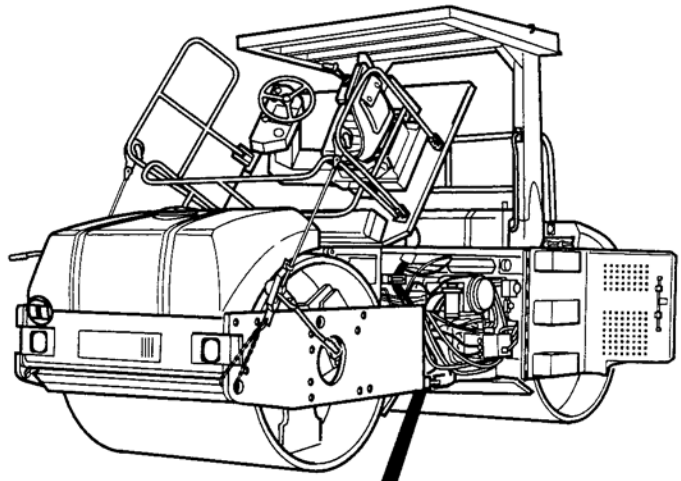
0026 00

REMOVAL

Remove four nuts (1), exhaust manifold (2) and two gaskets (3) from engine (4). Discard gaskets.

INSTALLATION

1. Install two new gaskets (3) and exhaust manifold (2) on engine (4) with four nuts (1). Tighten nuts to 32 lb-ft (44 Nm).
2. Install turbocharger (WP 0035 00).



401-283

END OF WORK PACKAGE

EXHAUST MANIFOLD REPLACEMENT (CB534C)

0027 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, antiseize (Item 11, WP 0219 00)

Gasket

References

TM 5-3895-379-10

TM 5-3895-379-23P, Figure 16

Equipment Condition

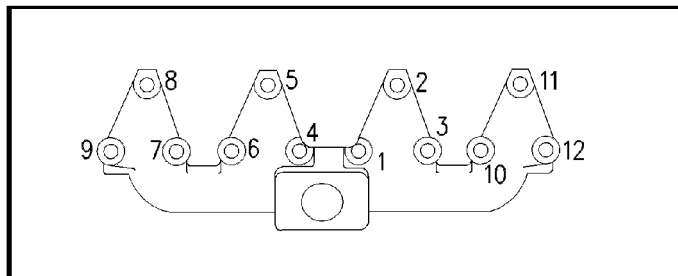
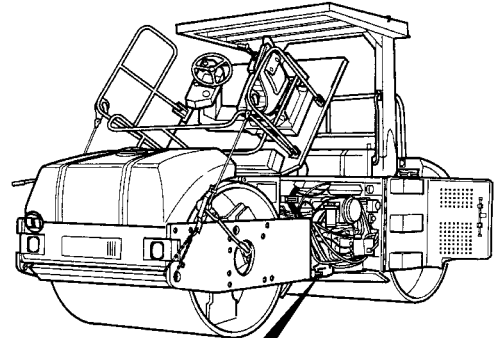
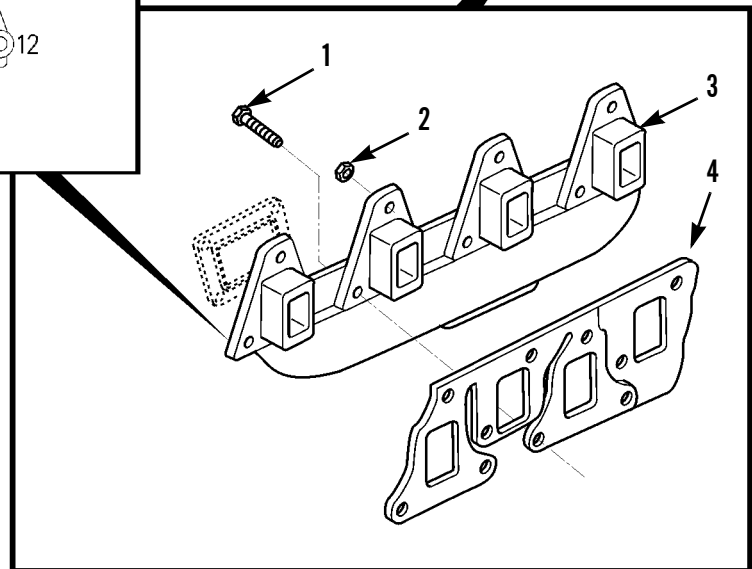
Turbocharger removed (WP 0035 00)

Intake manifold removed (WP 0025 00)

REMOVAL**NOTE**

Note number and location of bolts (1) or nuts (2) to insure proper installation.

1. Remove bolts (1) and nuts (2) in reverse order (see Tightening Sequence).
2. Remove exhaust manifold (3) and gasket (4) from engine. Discard gasket.

**TIGHTENING SEQUENCE**

401-2173

INSTALLATION

1. Apply antiseize compound to stud threads.
2. Install new gasket (4) and exhaust manifold (3) on engine with bolts (1) and nuts (2). Tighten nuts (2) and bolts (3) to 33 lb-ft (45 Nm) in sequence shown.
3. Install intake manifold (WP 0025 00).
4. Install turbocharger (WP 0035 00).
5. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL LIFT PUMP REPLACEMENT

0028 00

THIS WORK PACKAGE COVERSRemoval, Cleaning, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Compound, cleaning, solvent (Item 9, WP 0219 00)

Compound, sealing (Item 12, WP 0219 00)

Materials/Parts - Continued

Gasket

Preformed packing

Seal

References

TM 5-3895-379-23P, Figures 19 and 27

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

**WARNING**

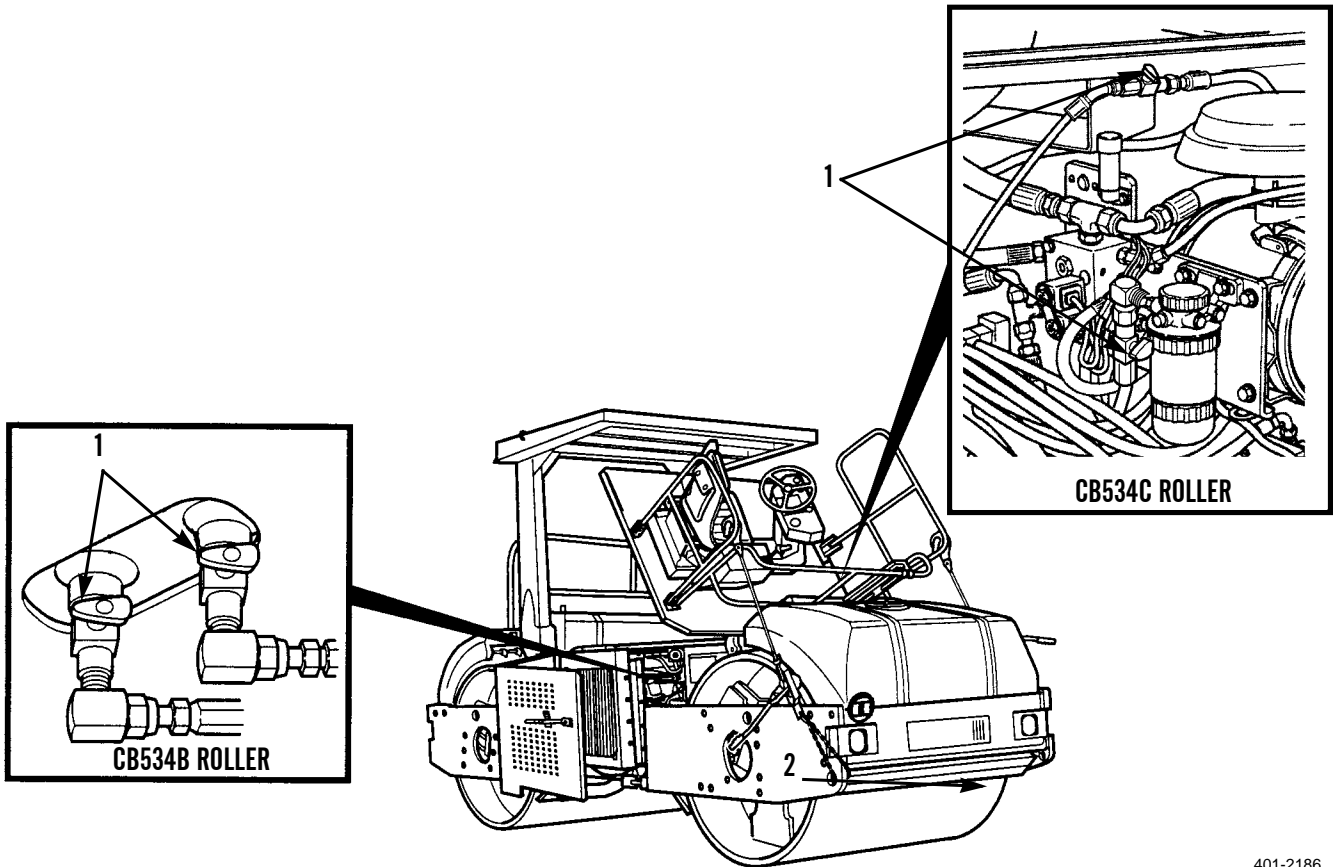
- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel and oil are slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use a container to catch any fuel that may drain from the system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned up.

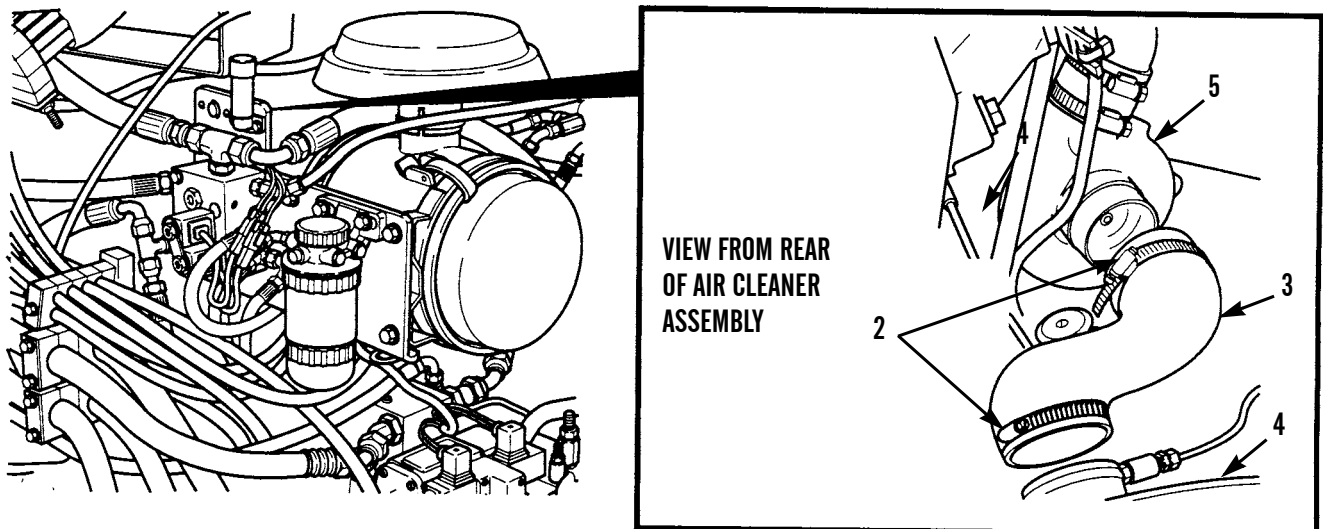
REMOVAL

1. Close fuel supply valves (1).



401-2186

2. Loosen two clamps (2). Remove hose (3) from air filter assembly (4) and turbocharger (5).



386-285

REMOVAL - CONTINUED

NOTE

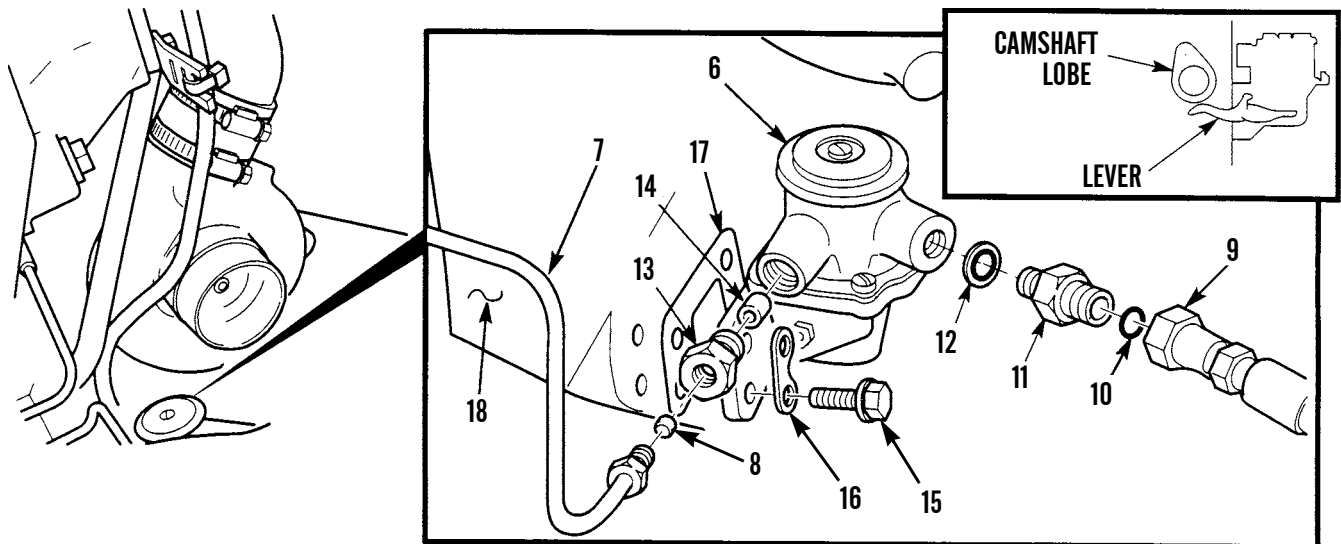
Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

3. Position container under fuel lift pump (6).
4. Remove fuel line (7) and bushing (8) from fuel lift pump (6).
5. Cap fuel line (7).
6. Remove fuel hose (9) and preformed packing (10) from adapter (11). Discard performed packing.
7. Plug fuel hose (9).
8. Remove adapter (11) and seal (12) from fuel lift pump (6). Discard seal.
9. Remove adapter (13) and fuel tube (14) from fuel lift pump (6).

NOTE

If fuel lift pump is difficult to remove, rotate crankshaft until camshaft lobe is in a position which will free fuel lift pump lever.

10. Remove four screws (15), two plates (16), fuel lift pump (6) and gasket (17) from engine (18). Discard gasket.



401-286

CLEANING**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

Clean fuel tube (14) with cleaning compound, solvent.

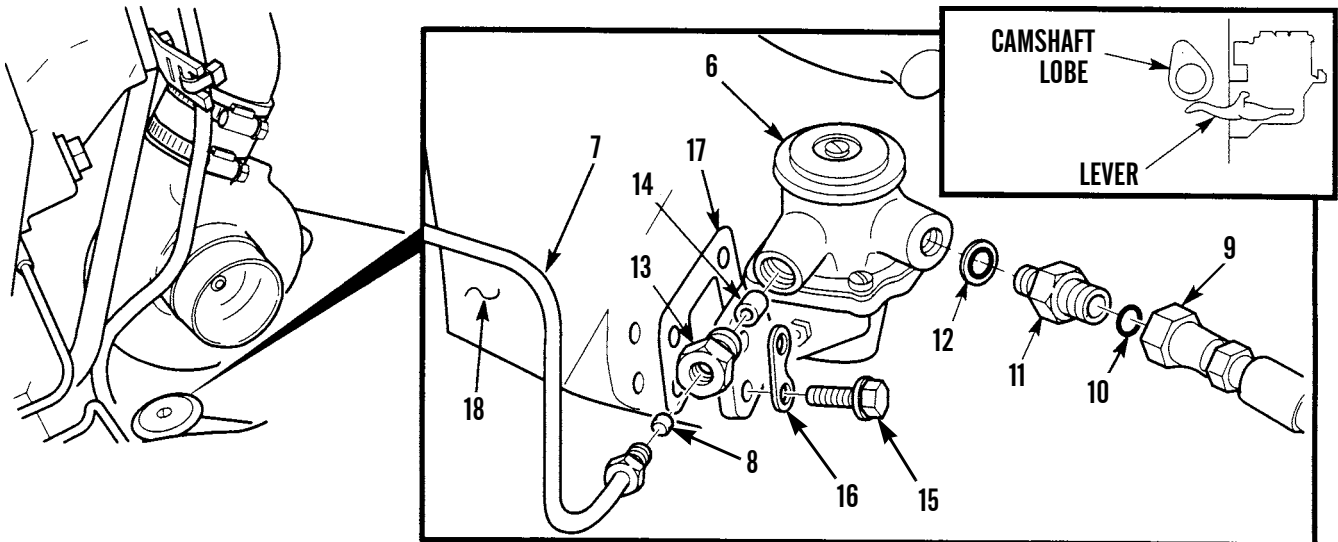
INSTALLATION**CAUTION**

- The fuel injection pump needs fuel for lubrication. The precision parts of the fuel injection pump are easily damaged. For this reason, the engine must NOT be started until the fuel injection pump is full of fuel that is free of air.
- The system must be primed any time any part of the system is drained of fuel. For example, when the fuel system is changed or a fuel line is removed or when the inspection cover on the fuel injection pump is removed for service or repair, the fuel system must be primed (air removed).

NOTE

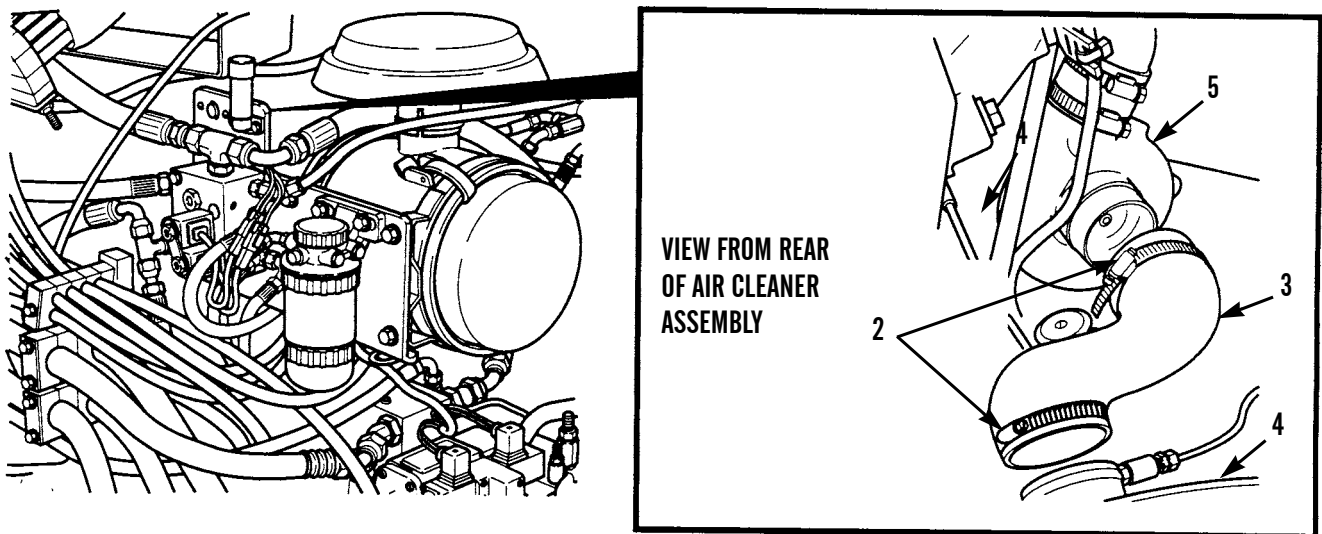
- Ensure camshaft lobe is turned away from lever before installing fuel lift pump.
 - Ensure mating surfaces of engine block and fuel lift pump are clean and free of old gasket and oil material prior to installation.
1. Install gasket (17) and fuel lift pump (6) on engine (18) with two plates (16) and four screws (15). Tighten screws to 15-25 lb-ft (20-34 Nm).
 2. Install adapter (11) and new seal (12) in fuel lift pump(6).
 3. Install adapter (11) and fuel tube (14) in fuel lift pump (6).
 4. Install fuel hose (9) and new preformed packing (10) on adapter.
 5. Install fuel line (7) and new seal (8) in fuel lift pump (6).

INSTALLATION - CONTINUED



401-286

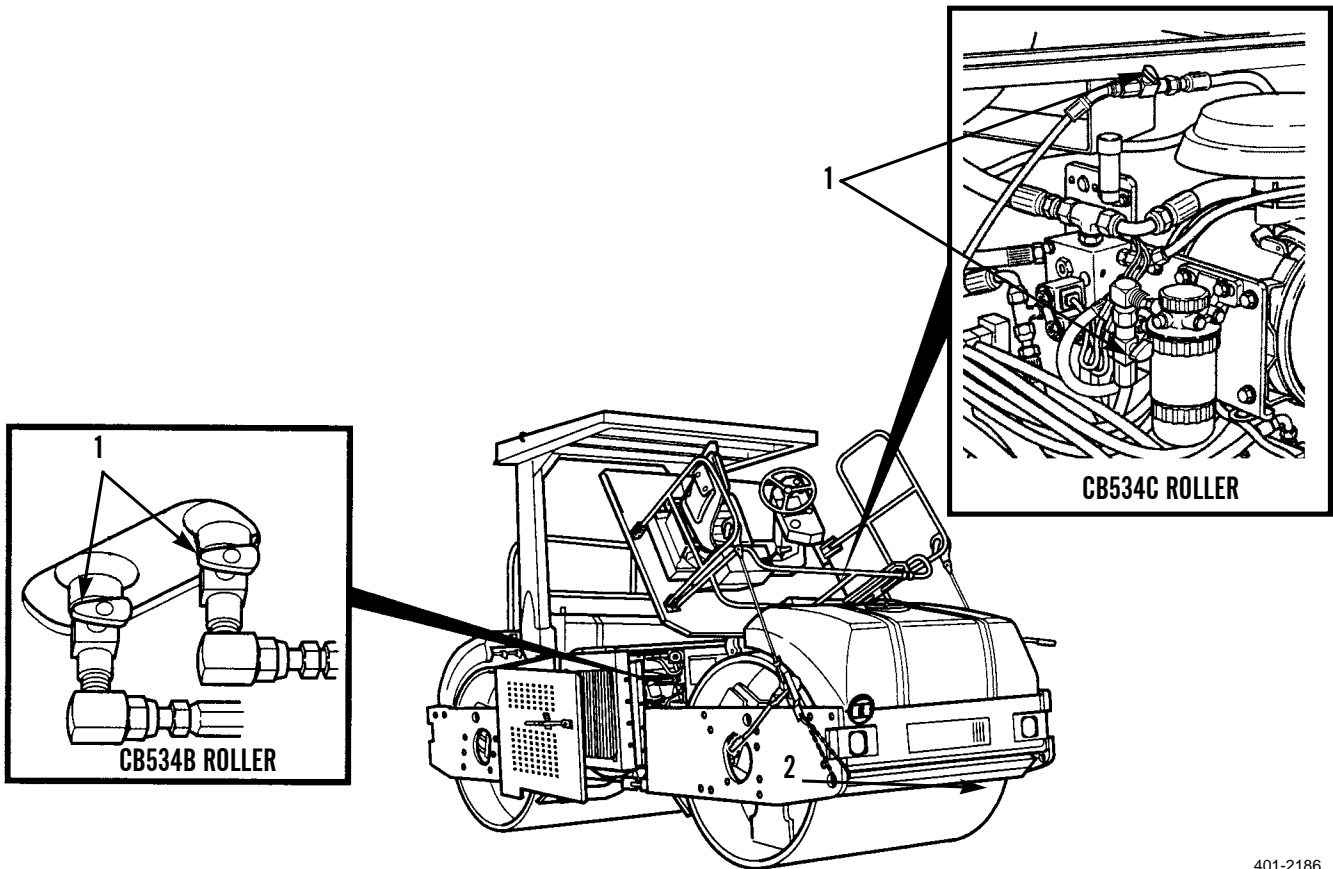
6. Install hose (3) and two clamps (2) to air filter (4) and turbocharger (5). Tighten clamps securely.



386-285

INSTALLATION - CONTINUED

7. Open fuel supply valves (1).



401-2186

8. Lower operator platform assembly (WP 0128 00).
9. Prime fuel system (WP 0041 00).
10. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL LINES AND FITTINGS REPLACEMENT (CB534B)

0029 00

THIS WORK PACKAGE COVERS

Fuel Lines and Fittings Removal, Installation

Fuel Injector Lines and Fittings Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

O-ring (5)

Packing, preformed (3)

References

WP 0028 00, Fuel Lift Pump Replacement

WP 0040 00, Fuel Filter Assembly Maintenance

TM 5-3895-379-23P, Figure 27

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right- and left-side door assemblies opened (TM 5-3895-379-10)

Fuel tank drained (WP 0037 00)



WARNING



- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

FUEL LINES AND FITTINGS REMOVAL**CAUTION**

Wipe area clean around all fuel connections to be opened during removal. Cap lines and plug openings after removing lines. Contamination of fuel system could result in premature failure.

NOTE

- When removing fuel shut-off valve, fuel drain valve or fuel return lines, drain fuel side of tank completely (WP 0037 00). Capacity of fuel tank is 55 gal. (208 l).
- Use container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances.

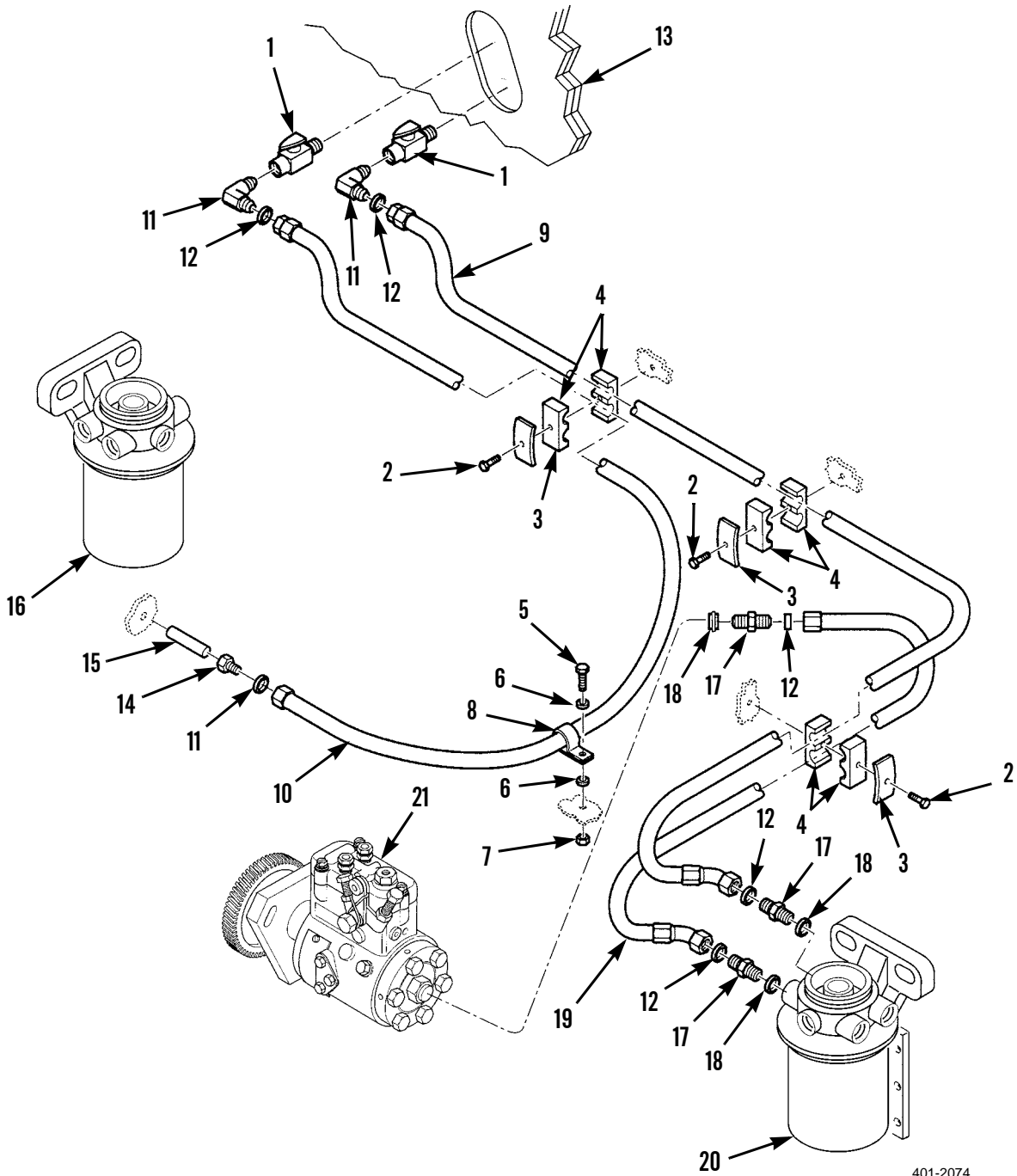
1. Turn two fuel shut-off valves (1) to OFF position (WP 0028 00).
2. Remove three bolts (2), three plates (3) and six block clamps (4).
3. Remove bolt (5), two washers (6) and nut (7) from loop clamp (8).
4. Disconnect hose (9) and hose (10) from two elbows (11) and remove O-rings (12). Discard O-rings.
5. Remove two elbows (11) and two valves (1) from fuel tank (13).
6. Disconnect hose (10) from connector (14) and remove O-ring (12). Discard O-ring.
7. Remove connector (14) and tube (15) from secondary water separator (16).
8. Remove loop clamp (8) from hose (10).
9. Disconnect hose (9) from adapter (17).
10. Remove O-ring (12) and preformed packing (18). Discard O-ring and preformed packing.
11. Disconnect hose (19) from adapter (17) at primary water separator (20).
12. Remove O-ring (12) and preformed packing (18). Discard O-ring and preformed packing.
13. Disconnect hose (19) from adapter (17) at fuel pump (21).
14. Remove O-ring (12) and preformed packing (18). Discard O-ring and preformed packing.
15. Remove and inspect hoses (9, 10 and 19).

FUEL LINES AND FITTINGS INSTALLATION

1. Install new O-ring (12) and new preformed packing (18) on adapter (17).
2. Connect adapter (17) to hose (19) and fuel pump (21).
3. Install new O-ring (12) and new preformed packing (18).
4. Connect adapter (17) to hose (19) and primary water separator (20).
5. Install new O-ring (12) and new preformed packing (18).
6. Connect hose (9) to adapter (17) and install hose (9).
7. Install loop clamp (8) to hose (10).
8. Install connector (14) and tube (15) to secondary water separator (16).
9. Connect hose (10) from connector (14) and install new O-ring (12).
10. Install two elbows (11) and two valves (1) to fuel tank (13).
11. Connect hose (9) and hose (10) to two elbows (11) and install new O-rings (12).
12. Install bolt (5), two washers (6) and nut (7) to loop clamp (8).

FUEL LINES AND FITTINGS INSTALLATION - CONTINUED

13. Install three bolts (2), three plates (3) and six block clamps (4).
14. Turn two fuel shut-off valves (1) to ON position (WP 0028 00).



401-2074

FUEL INJECTOR LINES AND FITTINGS REMOVAL**NOTE**

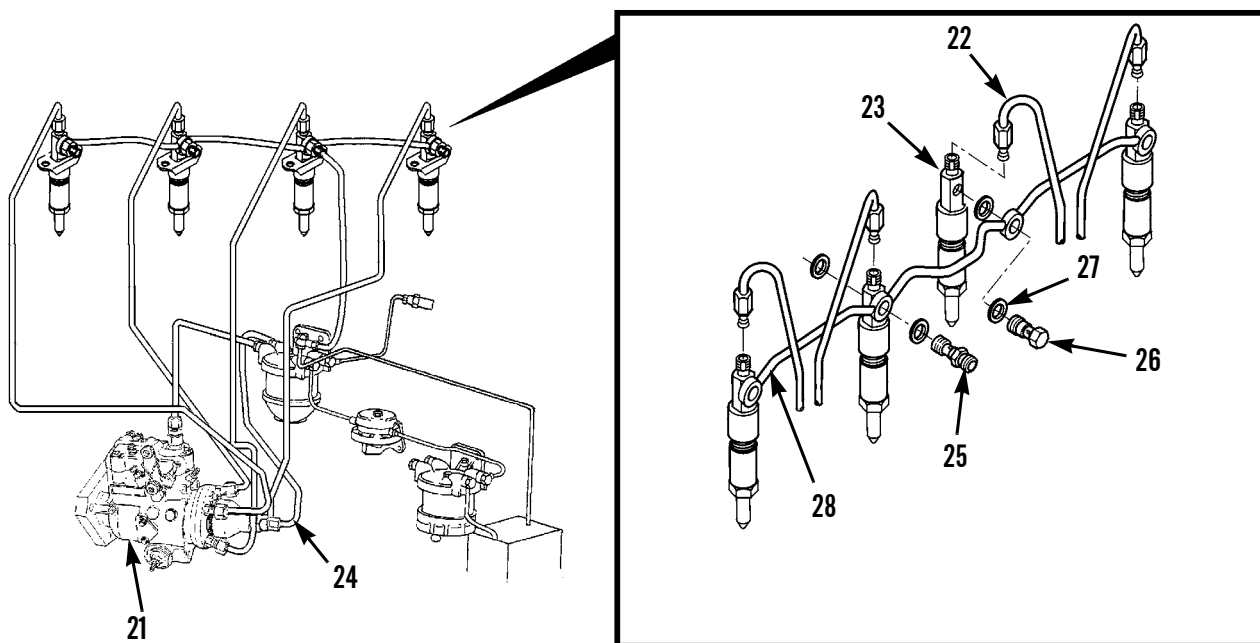
Cap all openings or plug all openings immediately.

1. Remove fuel filter assembly (WP 0040 00 Fuel Filter Assembly Maintenance).
2. Disconnect four fuel injection lines (22) from fuel injections nozzles (23).

NOTE

Secure fittings (24) with a wrench when removing fuel injection lines (22) at the fuel injection pump (21).

3. Disconnect four fuel injection lines (22) from fuel injection pump (21).
4. Remove four fuel injection lines (22) from roller.
5. Remove bolt (25), three bolts (26) and eight washers (27) from fuel return line (28). Discard washers.
6. Remove fuel return line (28).



401-2159

FUEL INJECTOR LINES AND FITTINGS INSTALLATION

1. Install fuel return lines (28).
2. Install eight washers (27), three bolts (26) and bolt (25).
3. Install four fuel injection lines (22) to roller.

NOTE

Secure fittings (24) with a wrench when connecting fuel injection line (22) to fuel injection pump.

4. Install four fuel injection lines (22) to fuel injection pump (21).

FUEL INJECTOR LINES AND FITTINGS INSTALLATION - CONTINUED

5. Install four fuel injection lines (22) to fuel injection nozzles. Tighten fuel injection line fittings to 13 lb-ft (18 Nm).
6. Install fuel filter assembly (WP 0040 00).
7. Place battery disconnect switch in ON position (TM 5-3895-379-10).
8. Lower operator platform (WP 0128 00).
9. Close left and right-side door assemblies (TM 5-3895-379-10).
10. Fill fuel tank (WP 0037 00).
11. Prime fuel system (WP 0041 00).
12. Start engine and check for proper operation and fuel leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL LINES AND FITTINGS REPLACEMENT (CB534C)

0030 00

THIS WORK PACKAGE COVERS

Fuel Lines and Fittings Removal, Installation

Fuel Injector Lines and Fittings Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

O-ring (10)

Seal (3)

References

WP 0040 00, Fuel Filter Assembly Maintenance

WP 0041 00, Priming Fuel System

TM 5-3895-379-23P, Figure 27

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right- and left-side door assemblies opened (TM 5-3895-379-10)

Fuel tank drained (WP 0037 00)



WARNING



- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

FUEL LINES AND FITTINGS REMOVAL**CAUTION**

Wipe area clean around all fuel connections to be opened during removal. Cap lines and plug openings after removing lines. Contamination of fuel system could result in premature failure of engine.

NOTE

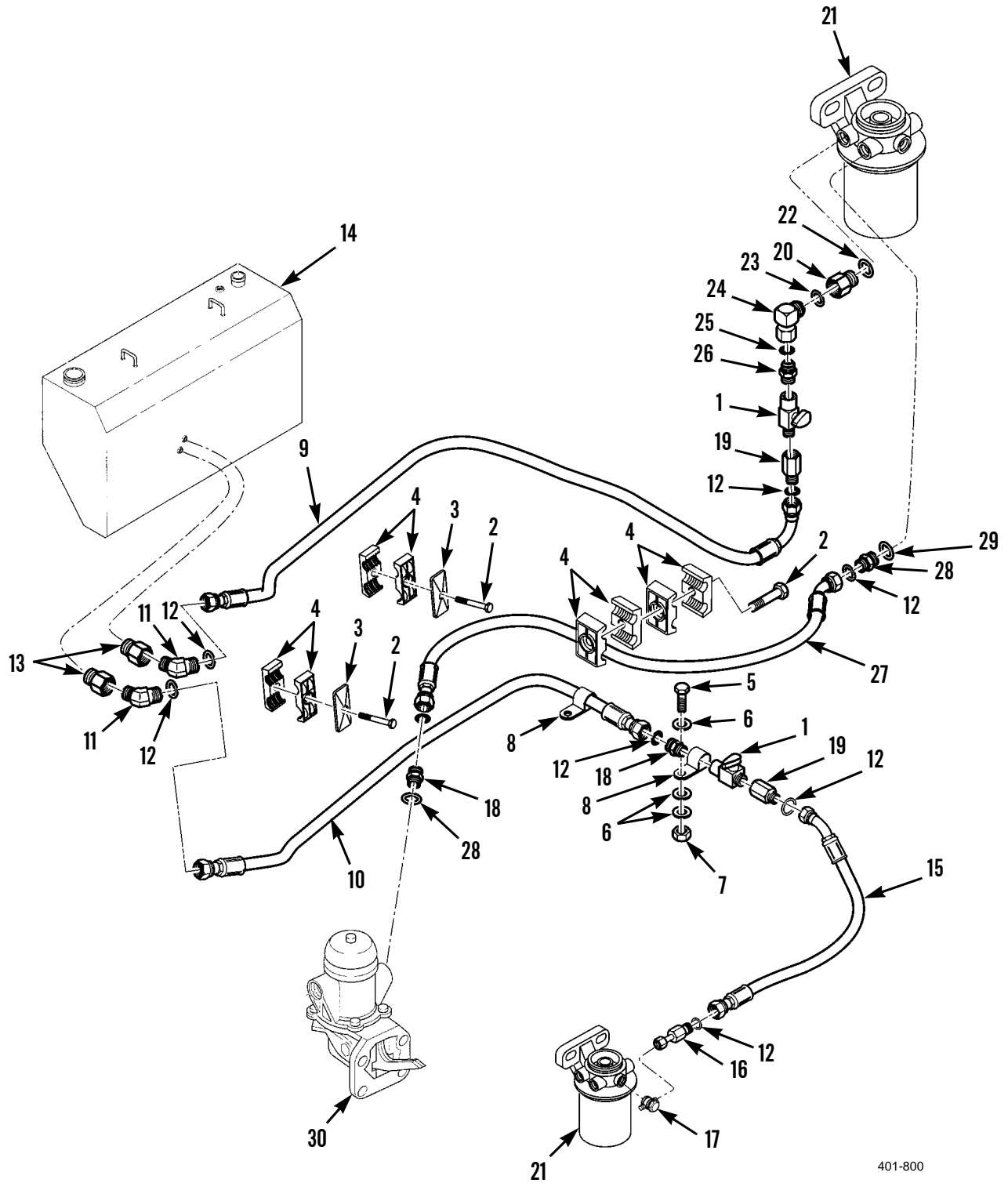
Use container to catch any fuel that may drain from fuel system. Dispose of fuel IAW local policy and ordinances.

1. Turn two fuel shut-off valves (1) to OFF position (WP 0037 00).
2. Remove three bolts (2), three plates (3) and six block clamps (4) from frame.
3. Remove two bolts (5), six washers (6) and two nuts (7) from two loop clamps (8).
4. Disconnect hose (9) and hose (10) from two adapters (11).
5. Remove two O-rings (12) from adapters (11). Discard O-rings.
6. Remove two adapters (13) from fuel side of tank (14).
7. Remove hose (15), connector (16) and O-ring (12) from connector (17). Discard O-ring.
8. Disconnect hose (15) from adapter (19).
9. Remove connector (18), two O-rings (12), valve (1), adapter (19) and two loop clamps (8) from hose (10). Discard O-rings.
10. Disconnect adapter (20) from fuel/water separator (21).
11. Remove O-ring (22), adapter (20), seal (23), elbow (24), O-ring (25), connector (26), valve (1), adapter (19) and O-ring (12) from hose (9). Discard O-rings and seal.
12. Remove hose (27), connector (28), O-ring (12), and seal (29) from fuel/water separator (21). Discard O-ring and seal.
13. Remove hose (27), connector (28), O-ring (12), and seal (29) from fuel pump (30). Discard O-ring and seal.
14. Remove and inspect hoses (9, 10, 15 and 27).

FUEL LINES AND FITTINGS INSTALLATION

1. Install hose (27), connector (28), new O-ring (12), and new seal (29) on fuel pump (30).
2. Install hose (27), connector (28), new O-ring (12), and new seal (29) to fuel/water separator (21).
3. Install new O-ring (22), adapter (20), new seal (23), elbow (24), new O-ring (25), connector (26), valve (1), adapter (19) and new O-ring (12) to hose (9).
4. Connect adapter (20) to fuel/water separator (21).
5. Install connector (18), two new O-rings (12), valve (1), adapter (19) and two loop clamps (8) on hose (10).
6. Install hose (15), connector (16) and new O-ring (12) on fuel/water separator (21).
7. Connect hose (15) to adapter (19).
8. Install two adapters (13) on fuel tank (14).
9. Install two new O-rings (12) to adapters (11).
10. Connect hose (9) and hose (10) to two adapters (11).
11. Install two bolts (5), six washers (6) and two nuts (7) to two loop clamps (8).
12. Install three bolts (2), three plates (3) and six block clamps (4).
13. Turn two fuel shut-off valves (1) to ON position (WP 0037 00).

FUEL LINES AND FITTINGS INSTALLATION - CONTINUED



401-800



WARNING



- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

FUEL INJECTOR LINES AND FITTINGS REMOVAL

CAUTION

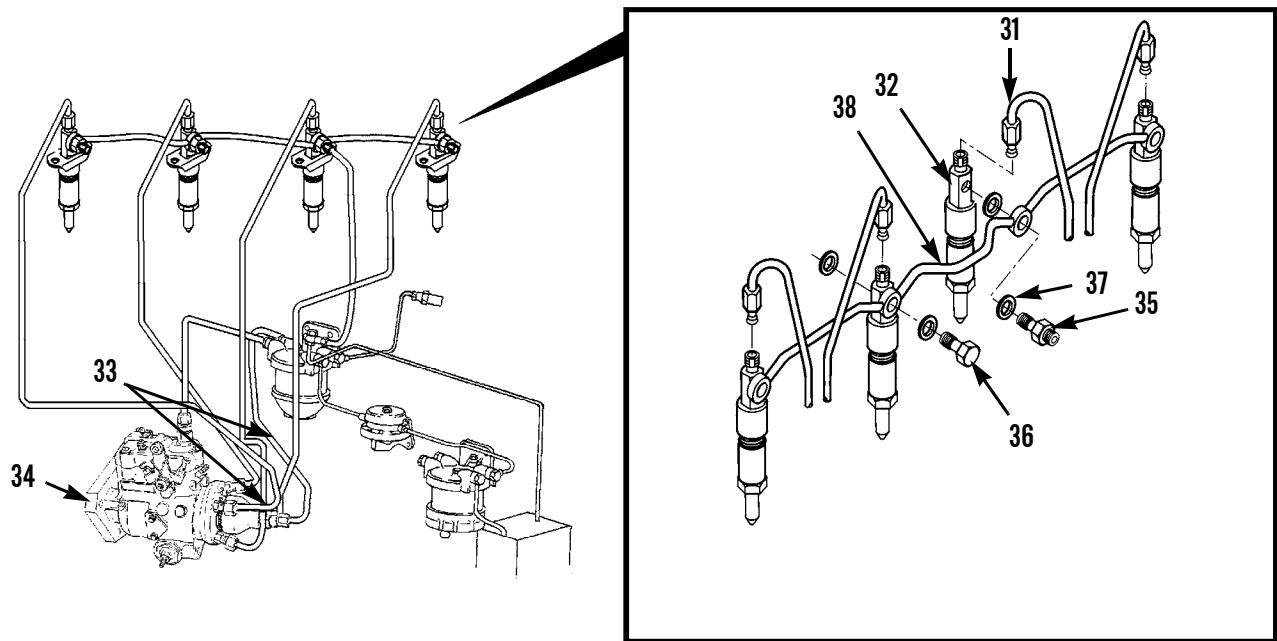
Cap or plug all openings immediately to prevent contamination. Contamination may cause damage to the equipment.

1. Remove fuel filter assembly (WP 0040 00, Fuel Filter Assembly Maintenance).
2. Disconnect four fuel injection lines (31) from fuel injection nozzles (32).

NOTE

Secure fittings with a wrench when removing fuel injection lines at the fuel injection pump.

3. Disconnect four fuel injection lines (31) from fuel injection pump (34).
4. Remove four fuel injection lines (31) from roller.
5. Remove bolt (35), three bolts (36) and eight washers (37) from fuel return line (38).
6. Remove fuel return line (38).



401-2160

FUEL INJECTOR LINES AND FITTINGS INSTALLATION

1. Install fuel return line (38) to fuel injectors (32).
2. Install eight washers (37), three bolts (36) and bolt (35) to fuel injectors (32).
3. Install four fuel injection lines (31) to roller.

NOTE

Secure fittings (33) with a wrench when connecting fuel injection line (31) to fuel injection pump.

4. Install four fuel injection lines (31) on fuel injection pump (34).
5. Install four fuel injection lines (31) on fuel injection nozzles. Tighten fuel injection line fittings to 13 lb-ft (18 Nm).
6. Install fuel filter assembly (WP 0040 00, Fuel Filter Assembly Maintenance).
7. Place battery disconnect switch in ON position (TM 5-3895-379-10).
8. Lower operator platform (WP 0128 00).
9. Close left and right-side door assemblies (TM 5-3895-379-10).
10. Fill fuel tank (WP 0037 00).
11. Prime fuel system (WP 0041 00, Priming Fuel System).
12. Start engine and check for proper operation and fuel leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

AIR CLEANER CAP REPLACEMENT

0031 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 23

Equipment Condition

Engine off (TM 5-3895-379-10)

Left-side door assembly opened (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

**WARNING**

- If NBC exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.
- NBC contaminated filters must be handled using adequate precautions (FM 21-40) and must be disposed of by trained personnel.

CAUTION

Area around filter must be very clean. Any contaminants entering filter housing will damage equipment.

AIR CLEANER CAP REPLACEMENT - CONTINUED

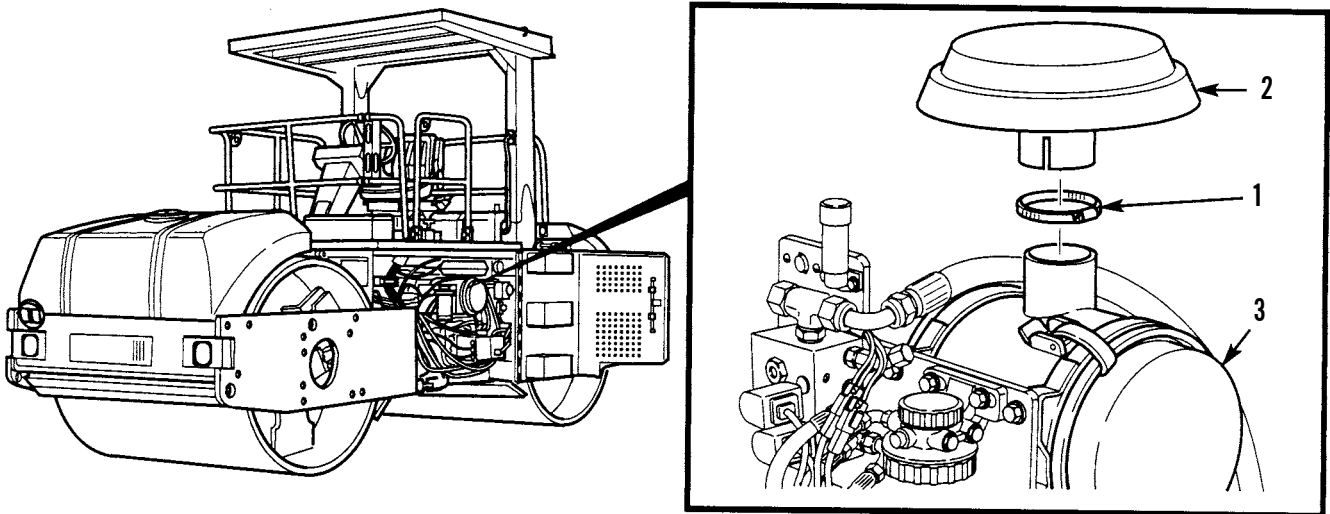
0031 00

REMOVAL

1. Loosen clamp (1) and remove cap (2) from air cleaner assembly (3).
2. Cover air cleaner assembly (3) opening with rag.

INSTALLATION

1. Remove rag from air cleaner assembly (3) opening.
2. Position clamp (1) on cap (2).
3. Install cap (2) on air cleaner assembly (3) and tighten clamp (1).



401-289

4. Close left-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)
 Filter element, primary
 Filter element, secondary

References

TM 5-3895-379-23P, Figures 23 and 24

Equipment Condition

Engine off (TM 5-3895-379-10)
 Drums chocked (TM 5-3895-379-10)
 Left-side door assembly opened (TM 5-3895-379-10)



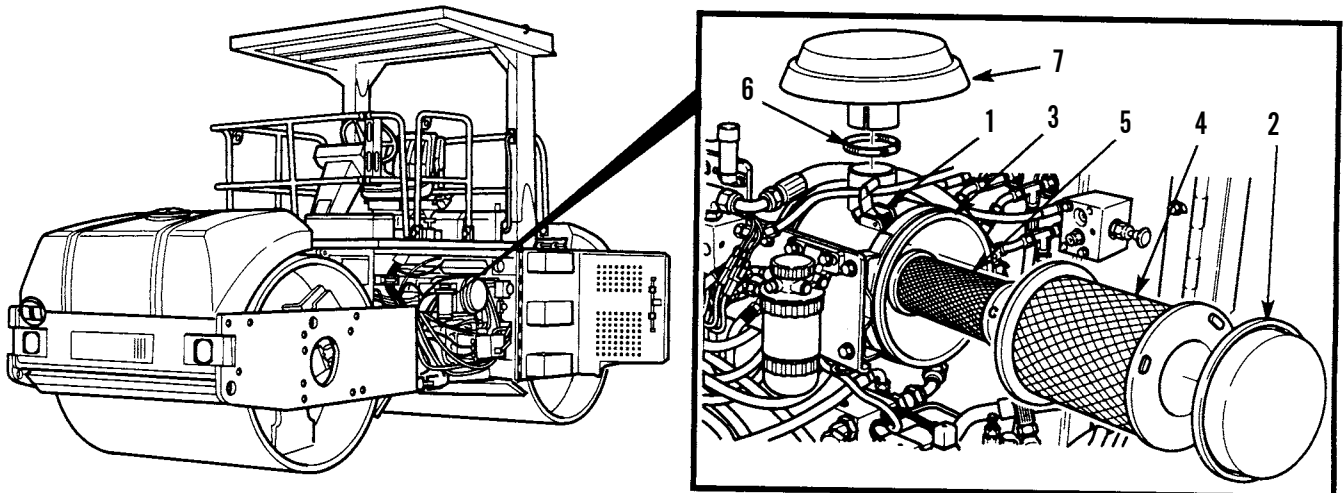
WARNING



- If NBC exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.
- NBC contaminated filters must be handled using adequate precautions (FM 21-40) and must be disposed of by trained personnel.

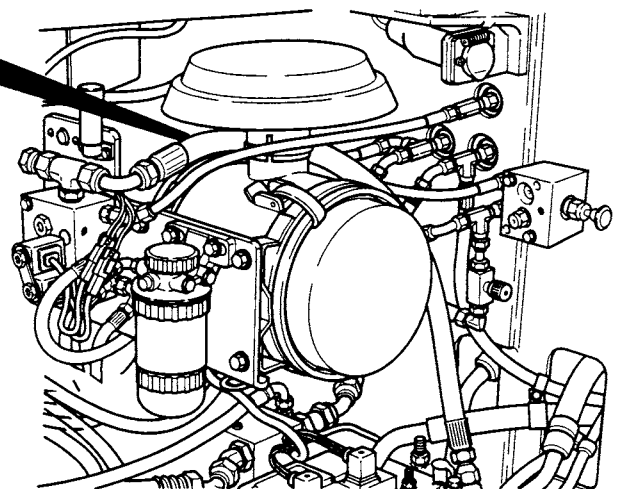
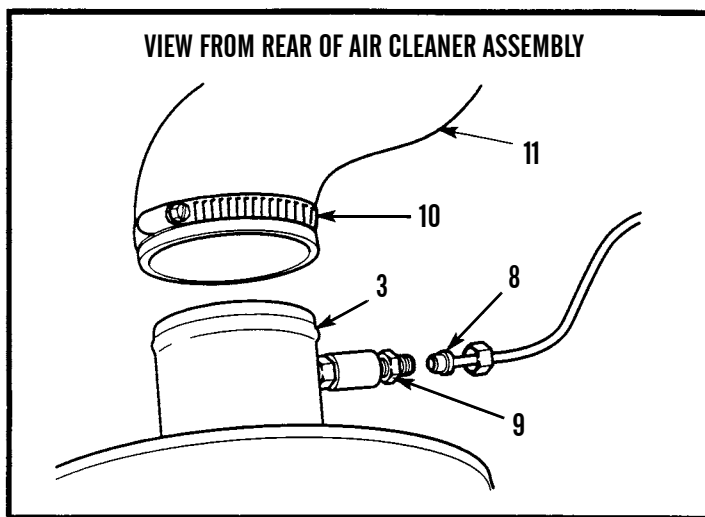
REMOVAL

1. Release two latches (1) and remove cover (2) from air cleaner body assembly (3).
2. Remove primary air cleaner element (4) from air cleaner body assembly (3).
3. Remove secondary air cleaner element (5) from air cleaner body assembly (3).
4. Loosen clamp (6) and remove cap (7) from air cleaner body assembly (3).



401-290

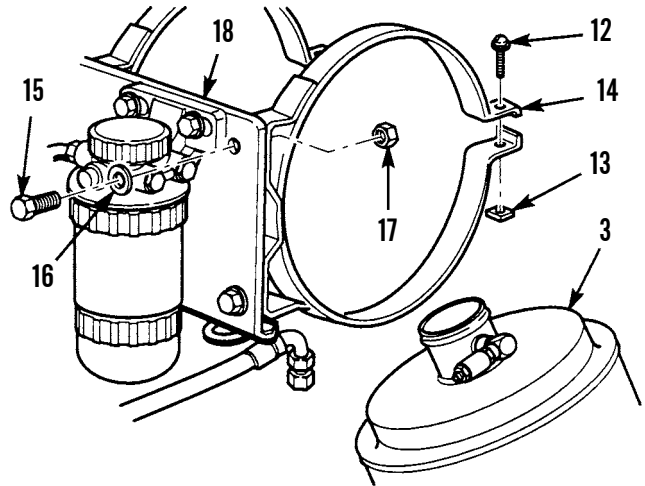
5. Remove tube (8) from tube connector (9).
6. Loosen clamp (10) and remove hose (11) from air cleaner body assembly (3).



401-291

REMOVAL - CONTINUED

7. Remove two screws (12) and nuts (13) from two air cleaner clamps (14).
8. Remove two screws (15), washers (16), nuts (17) and front air cleaner band (14) from support assembly (18).
9. Remove air cleaner body assembly (3) from rear air cleaner clamp (14).
10. Remove two screws (15), washers (16), nuts (17) and rear air cleaner clamp (14) from support assembly (18).



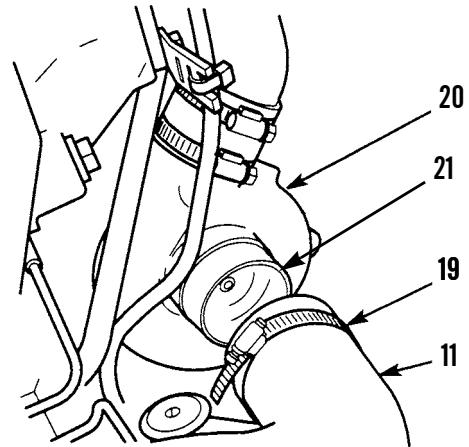
401-292

11. Loosen clamp (19) and remove hose (11) from turbocharger assembly (20).

CAUTION

Ensure that dirt or other contaminants do not enter turbocharger or exposed hoses and lines. Cover openings with a clean rag to prevent contamination.

12. Cover turbocharger inlet opening (21) with clean rag.



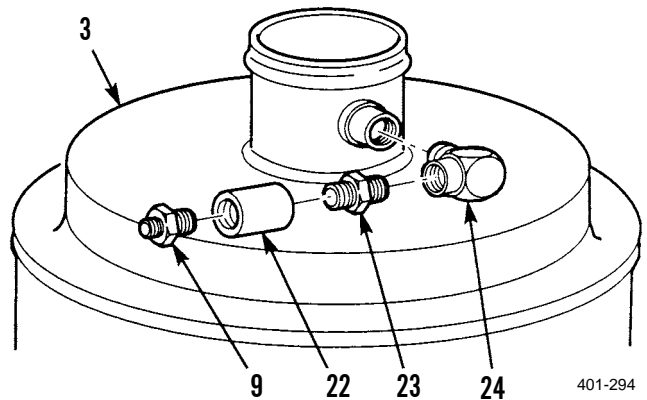
401-293

REMOVAL - CONTINUED

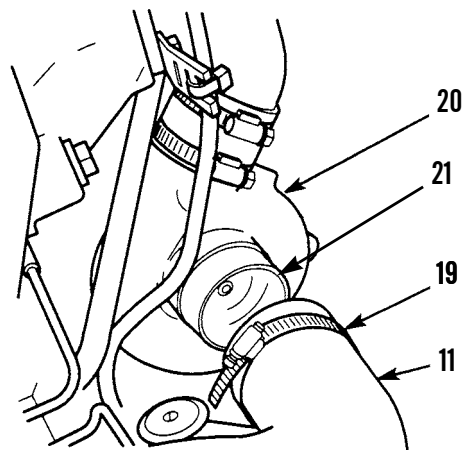
13. Remove nut (9) from pipe coupling (22).
14. Remove pipe coupling (22) from nipple (23).
15. Remove nipple (23) from elbow (24).
16. Remove elbow (24) from air cleaner body assembly (3).

INSTALLATION

1. Install elbow (24) on air cleaner body assembly (3).
2. Install nipple (23) on elbow (24).
3. Install pipe coupling (22) on nipple (23).
4. Install nut (9) on pipe coupling (22).

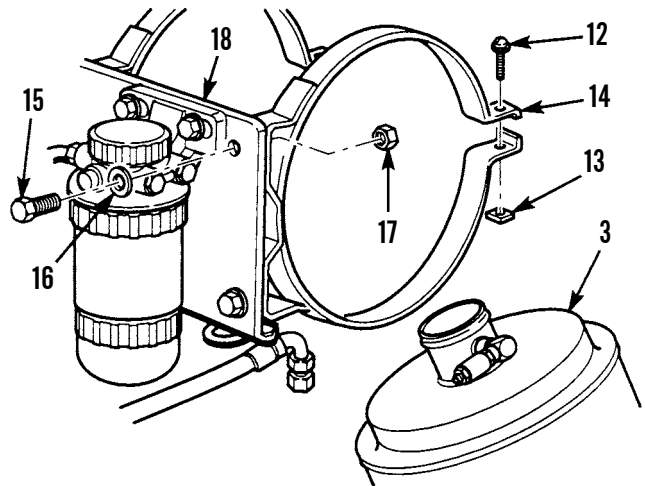


5. Remove rag from turbocharger inlet opening (21).
6. Install hose (11) on turbocharger assembly (20) and tighten clamp (19).



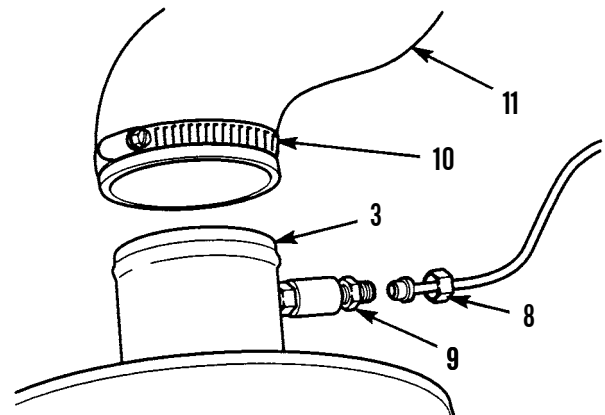
INSTALLATION - CONTINUED

7. Install rear air cleaner clamp (14) on support assembly (18) with two screws (15), washers (16) and nuts (17). Tighten nuts to 45-65 lb-ft (61-88 Nm).
8. Position air cleaner body assembly (3) on rear air cleaner clamp (14).
9. Install front air cleaner clamp (14) on support assembly (18) with two washers (16), screws (15) and nuts (17). Tighten nuts to 45-65 lb-ft (61-88 Nm).
10. Install two screws (12) and nuts (13) in two air cleaner clamp assemblies (14). Tighten nuts to 21-35 lb-ft (28-47 Nm).



401-292

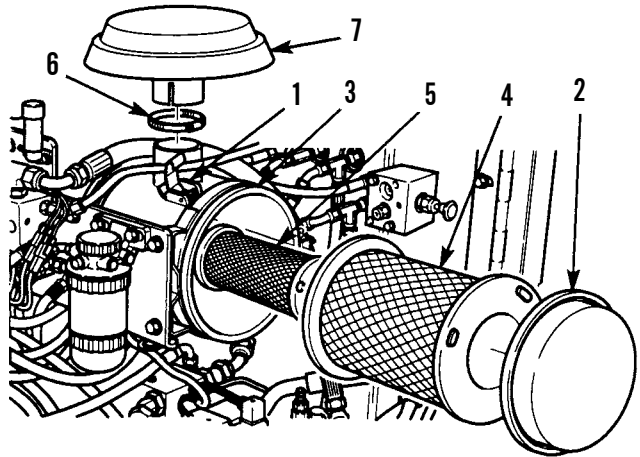
11. Install hose (11) on air cleaner body assembly (3) and tighten clamp (10).
12. Install tube (8) on tube connector (9).



401-295

INSTALLATION - CONTINUED

13. Install cap (7) on air cleaner body assembly (3) and tighten clamp (6).
14. Install secondary air cleaner element (5) in air cleaner body assembly (3).
15. Install primary air cleaner element (4) in air cleaner body assembly (3).
16. Install cover (2) on air cleaner body assembly (3) and close two latches (1).



401-296

17. Close left-side door assembly (TM 5-3895-379-10).
18. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figures 23, 27, 83 and 84

Equipment Condition

Fuel/water separator removed (WP 0042 00)

Air cleaner assembly removed (WP 0032 00)

Air cleaner service indicator removed (WP 0034 00)

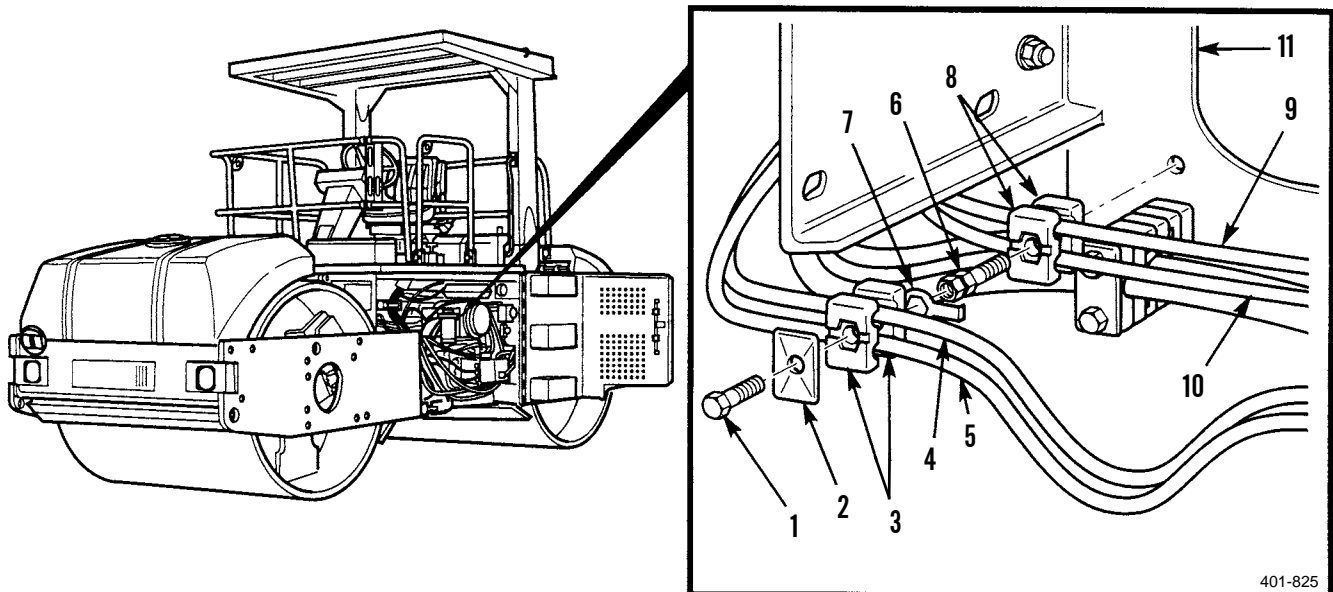
Alternator circuit breaker removed (WP 0064 00)

REMOVAL

NOTE

Tag and mark hose positions in clamps prior to removal.

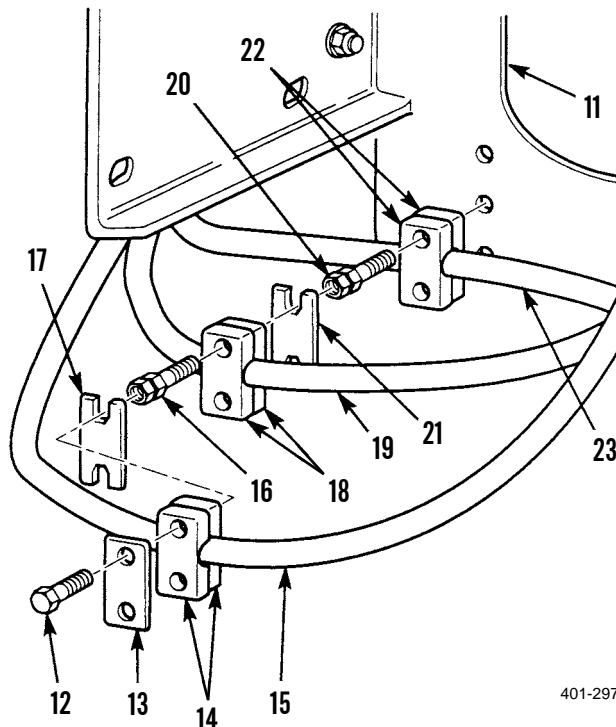
1. Remove screw (1), plate (2), clamp (3) and two hoses (4 and 5) from screw (6).
2. Remove plate (7), screw (6), clamp (8) and two hoses (9 and 10) from mounting bracket (11).



401-825

REMOVAL - CONTINUED

3. Remove two screws (12), plate (13), clamp (14) and hose (15) from two screws (16).
4. Remove plate (17), two screws (16), clamp (18) and hose (19) from two screws (20).
5. Remove plate (21), two screws (20), clamp (22) and hose (23) from mounting bracket (11).



401-297

NOTE

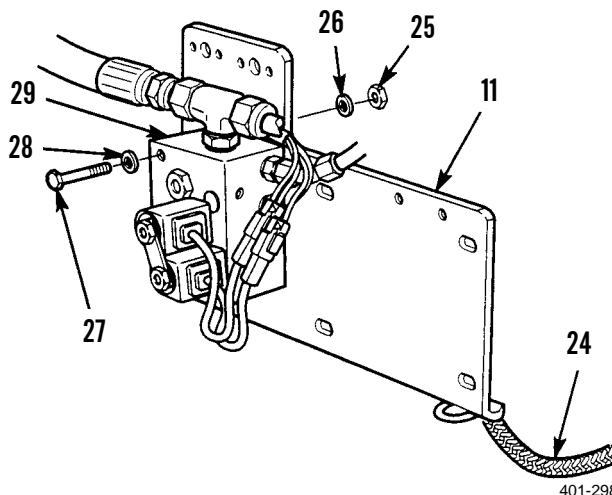
Remove tiedown straps from wiring harness as required. Discard tiedown straps.

6. Remove wiring harness (24) from air cleaner support assembly (11).

NOTE

Do not remove hydraulic lines.

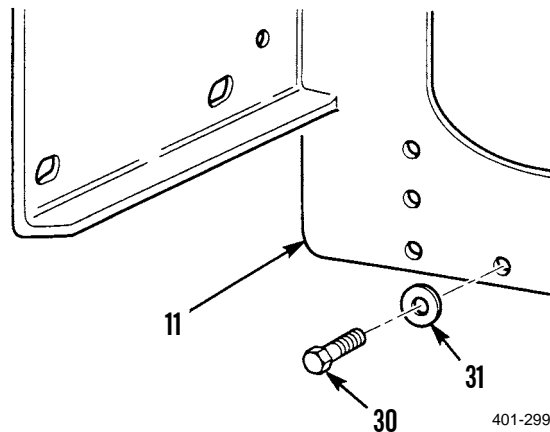
7. Remove two nuts (25), washers (26), screws (27), washers (28) and brake control valve (29) from mounting bracket (11).



401-298

REMOVAL - CONTINUED

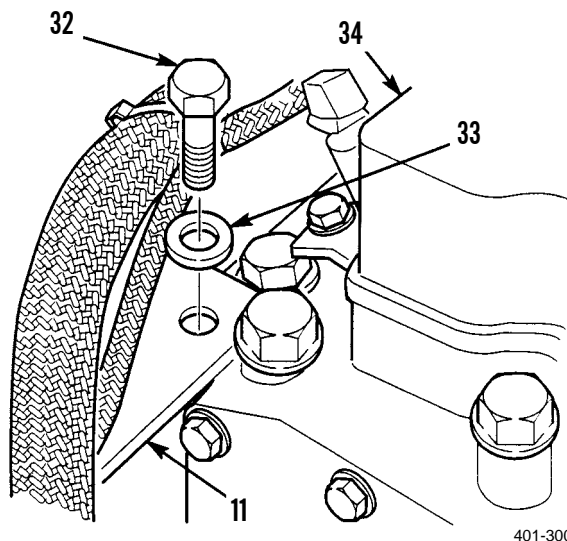
8. Remove two screws (30) and washers (31) from mounting bracket (11).



9. Remove screw (32), washer (33) and mounting bracket (11) from engine (34).

INSTALLATION

1. Install mounting bracket (11) on engine (34) with washer (33) and screw (32). Do not tighten screw.
2. Install two washers (31) and screws (30) on mounting bracket (11). Tighten screws to 33-47 lb-ft (45-64 Nm).
3. Tighten screw (32) to 33-47 lb-ft (45-64 Nm).



4. Install brake control valve (29) on air cleaner support assembly (11) with two washers (28), screws (27), washers (26) and nuts (25). Tighten nuts to 33-47 lb-ft (45-64 Nm).

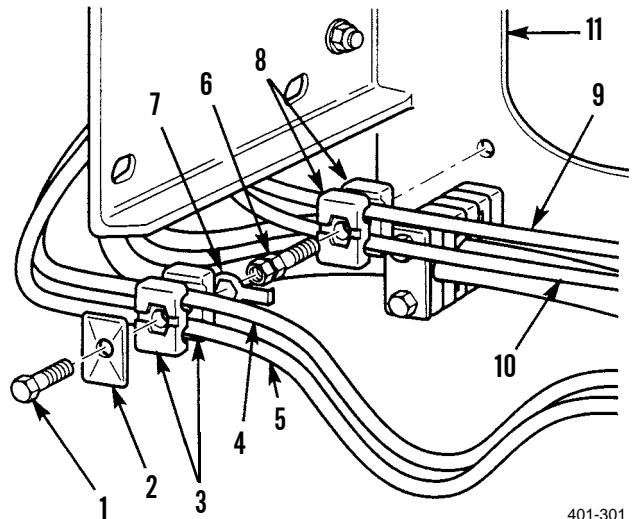
NOTE

Install new tiedown straps on wiring harness as required.

5. Install wiring harness (24) on mounting bracket (11).
6. Position hose (23) in clamp (22) and install clamp on mounting bracket (11) with two screws (20) and plate (21).
7. Position hose (19) in clamp (18) and install clamp on two screws (20) with two screws (16) and plate (17).
8. Position hose (15) in clamp (14) and install clamp and plate (13) on two screws (16) with two screws (12).

INSTALLATION - CONTINUED

9. Position two hoses (9 and 10) in clamp (8) and install clamp on mounting bracket (11) with screw (6) and plate (7).
10. Position two hoses (4 and 5) in clamp (3) and install clamp and plate (2) on screw (6) with screw (1).



11. Install alternator circuit breaker (WP 0064 00).
12. Install air cleaner service indicator (WP 0034 00).
13. Install air cleaner assembly (WP 0032 00).
14. Install fuel/water separator (WP 0042 00).

END OF WORK PACKAGE

AIR CLEANER SERVICE INDICATOR REPLACEMENT

0034 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

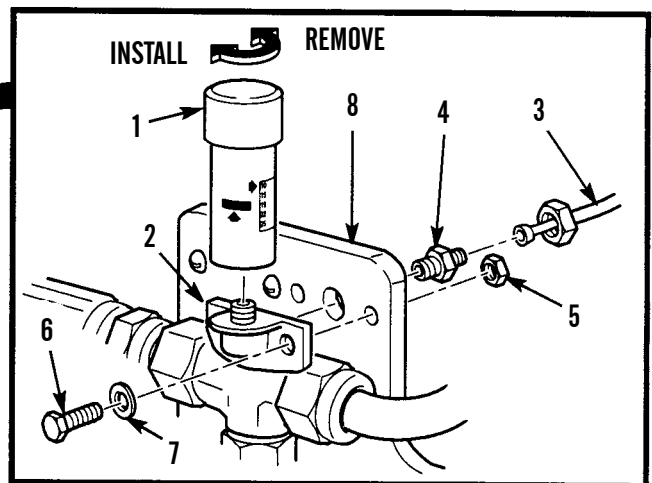
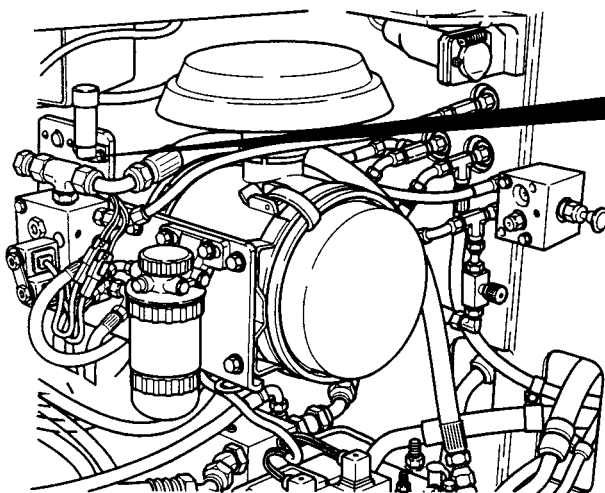
TM 5-3895-379-23P, Figure 23

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Left-side door assembly opened (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)

REMOVAL

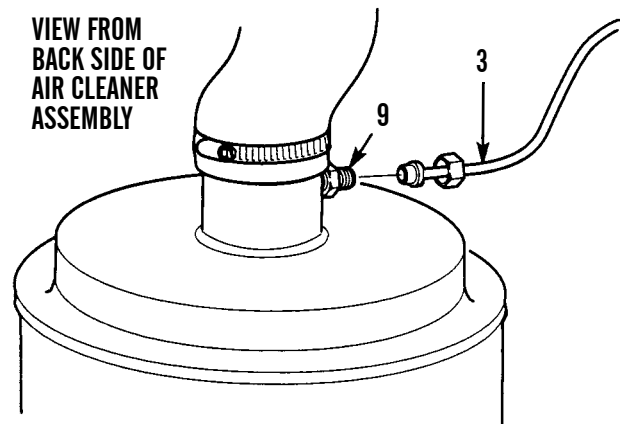
1. Remove service indicator (1) from adapter (2) by turning to the left.
2. Remove tube (3) from adapter (4).
3. Remove two nuts (5), screws (6), washers (7) and adapter (2) from mounting bracket (8).
4. Remove adapter (4) from adapter (2).



401-302

REMOVAL - CONTINUED

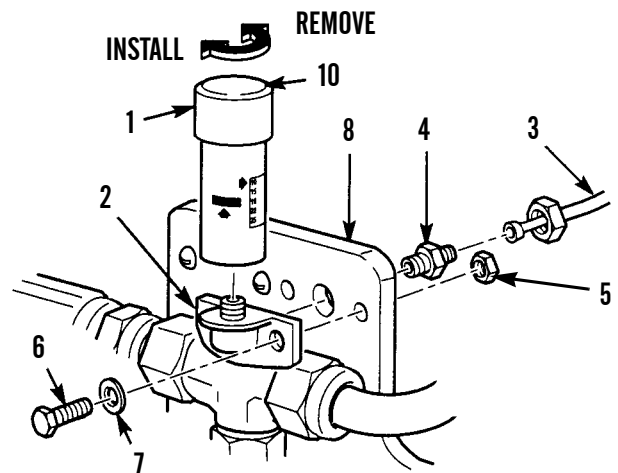
5. Remove tube (3) from tube connector (9).



401-303

INSTALLATION

1. Install tube (3) on tube connector (9).
2. Install adapter (4) on adapter (2).
3. Install adapter (2) on mounting bracket (8) with two washers (7), screws (6) and nuts (5). Tighten screws to 9-15 lb-ft (12-20 Nm).
4. Install tube (3) on adapter (4).
5. Install service indicator (1) on adapter (2) by turning clockwise.
6. Push button (10) on service indicator (1) to reset.



401-304

7. Close left-side door assembly (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

TURBOCHARGER REPLACEMENT

0035 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, antiseize (Item 11, WP 0219 00)
Gasket (2)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services

References - Continued

TM 5-3895-379-23P, Figure 25

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)
Operator platform assembly raised (WP 0128 00)
Muffler and tailpipe removed (WP 0048 00)
Starter removed (WP 0065 00)

NOTE

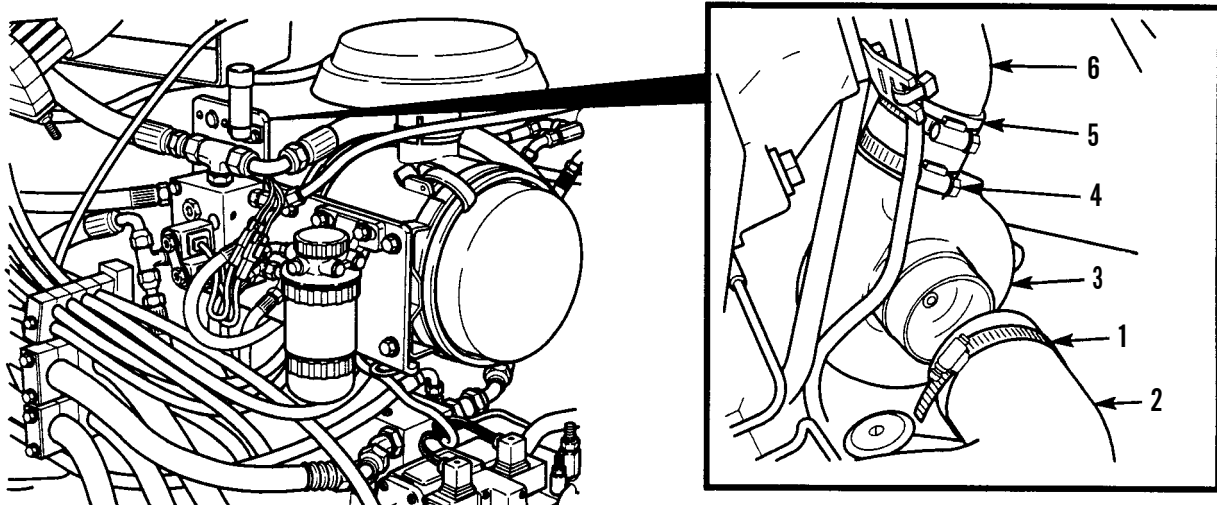
Turbocharger is replaced the same way for CB534B and CB534C Rollers, except where noted. CB534B Roller is shown.

REMOVAL

CAUTION

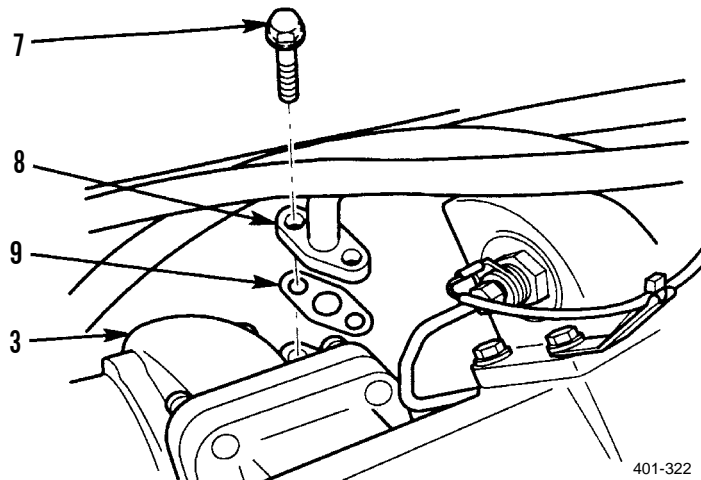
Ensure that dirt or other contaminants do not enter turbocharger or exposed hoses and lines. Cover openings with a clean rag to prevent contamination.

1. Loosen clamp (1) and remove hose (2) from turbocharger (3).
2. Loosen two clamps (4) and remove hose (5) from intake manifold elbow (6).



401-321

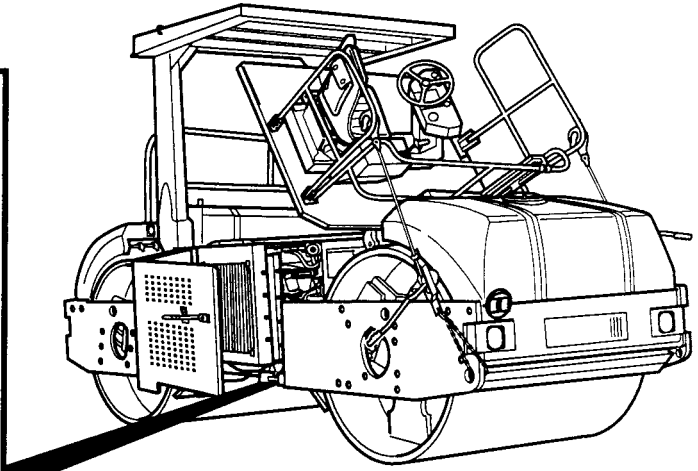
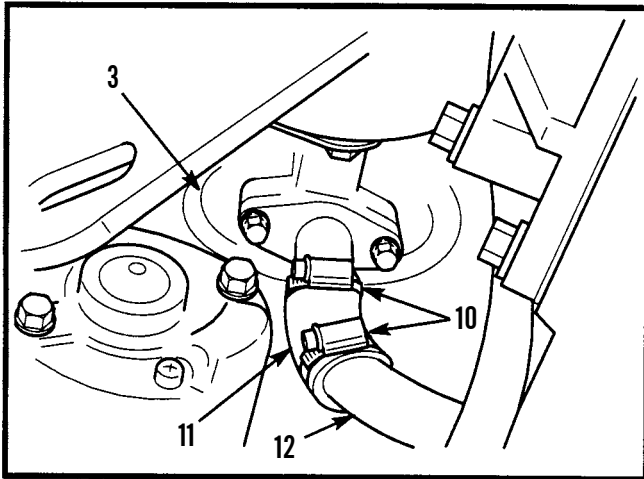
3. Remove two screws (7), tube assembly (8) and gasket (9) from turbocharger (3). Discard gasket.



401-322

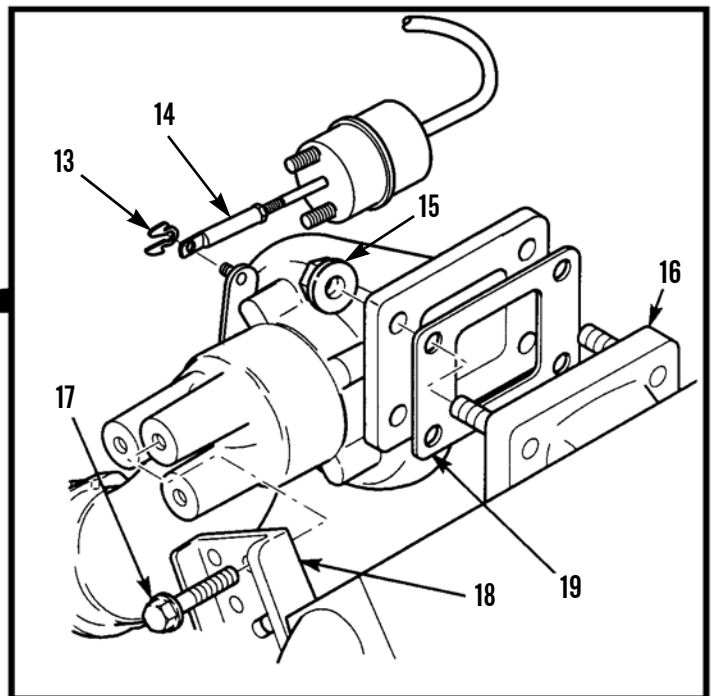
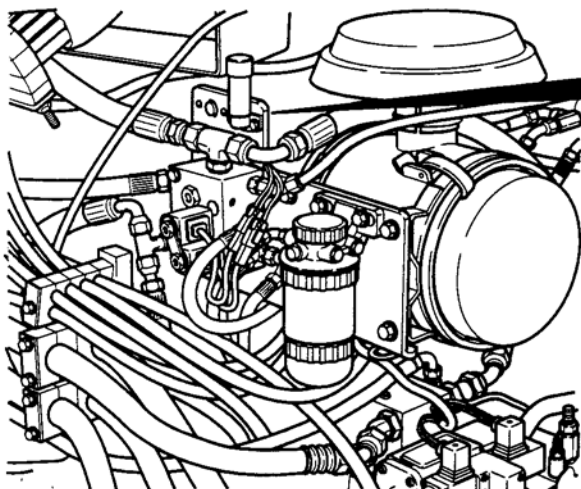
REMOVAL - CONTINUED

4. Loosen two clamps (10) and slide hose (11) down tube (12) away from turbocharger (3).



401-323

5. For CB534C Roller, remove clip (13) and disconnect actuator arm (14) from turbocharger (3).
6. With assistance, remove four nuts (15) from exhaust manifold (16).
7. Remove three screws (17) from turbocharger bracket (18) and remove turbocharger (3) and gasket (19). Discard gasket.



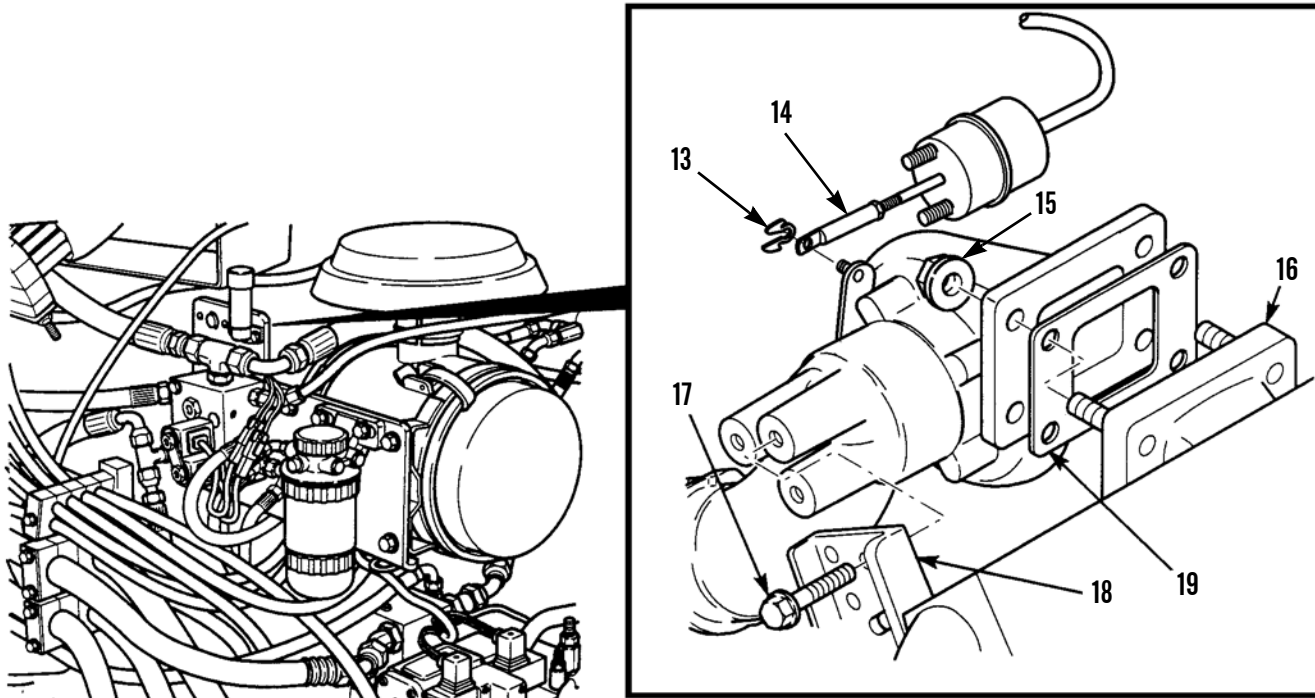
401-2220

INSTALLATION

NOTE

Apply antiseize compound to threads of studs and screws before installation.

1. With assistance, install new gasket (19) and turbocharger (3) on exhaust manifold (16) with four nuts (15). Tighten nuts to 32 lb-ft (44 Nm).
2. For CB534C Roller only, connect actuator arm (14) to turbocharger any install clip (13).
3. With assistance, install turbocharger bracket (18) with three screws (15). Tighten screws to 22-30 lb-ft (30-41 Nm).



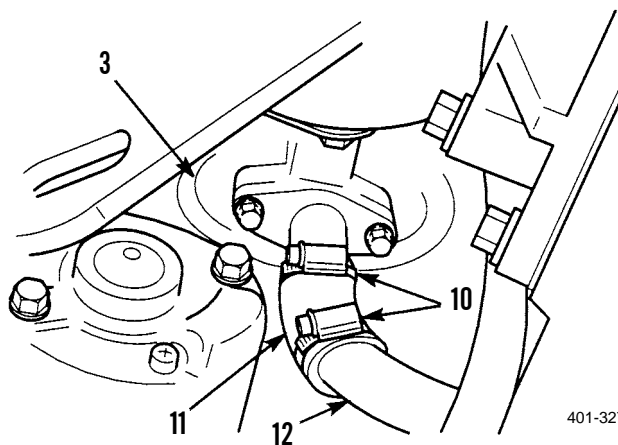
401-2220

4. Slide hose (11) up tube (12) and tighten two hose clamps (10) to connect hose to turbocharger (3) and tube.

CAUTION

Turbocharger must be pre-lubricated or damage to turbocharger will occur when engine is started.

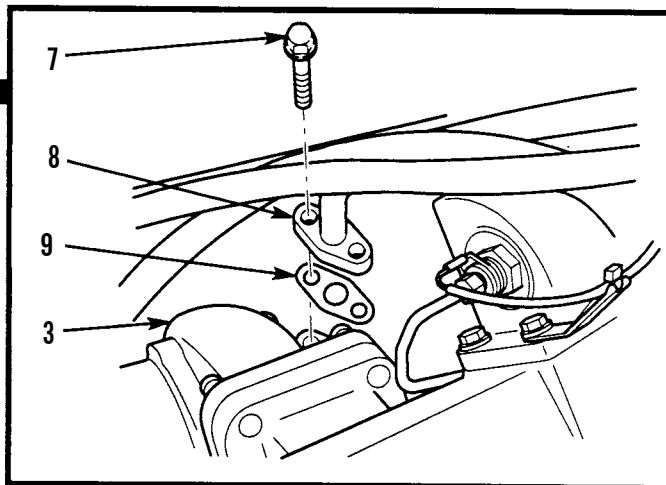
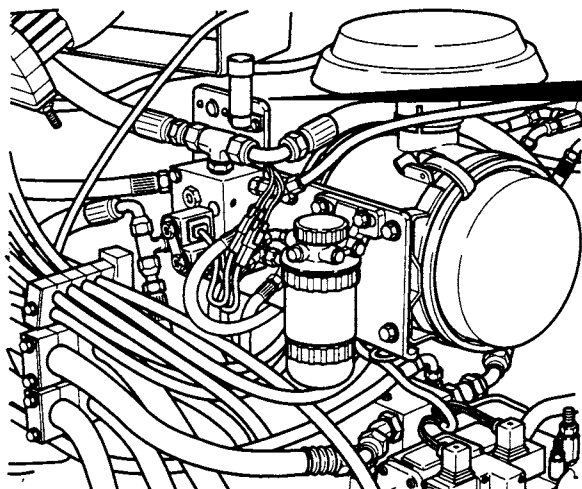
5. Add clean engine oil to oil inlet on turbocharger (3) until full. Refer to KEY in WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction, for correct grade of oil. Spin turbine wheel several times in order to lubricate the bearing.
6. Refill oil inlet with oil.



401-327

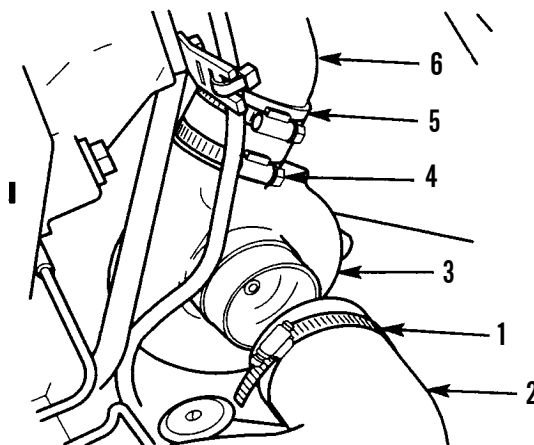
INSTALLATION - CONTINUED

7. Install new gasket (9) and tube assembly (8) on turbocharger (3) with two screws (7). Tighten screws to 25 lb-ft (34 Nm).



401-328

8. Install hose (5) on intake manifold (6) and tighten two hose clamps (4).
9. Install hose (2) on turbocharger (3) and tighten hose clamp (1).
10. Install starter (WP 0065 00).
11. Install muffler and tailpipe (WP 0048 00).
12. Lower operator platform assembly (WP 0128 00).
13. Check engine oil level and add as needed (WP 0008 00 and WP 0009 00).
14. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).



401-329

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket (3)

References

TM 5-3895-379-10

References - Continued

TM 5-3895-379-23P, Figure 25

Personnel Required

Two

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Muffler and tailpipe removed (WP 0048 00)

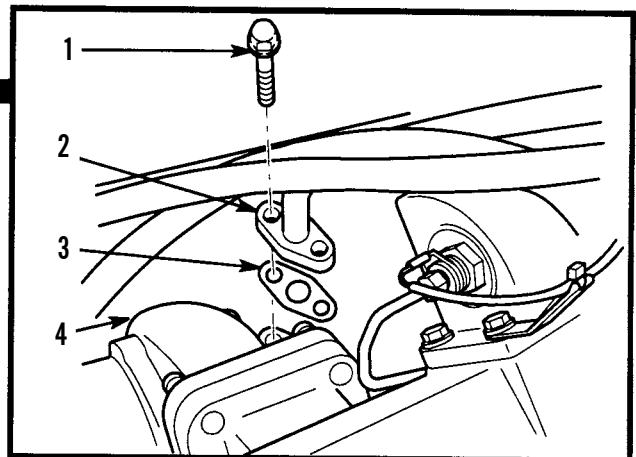
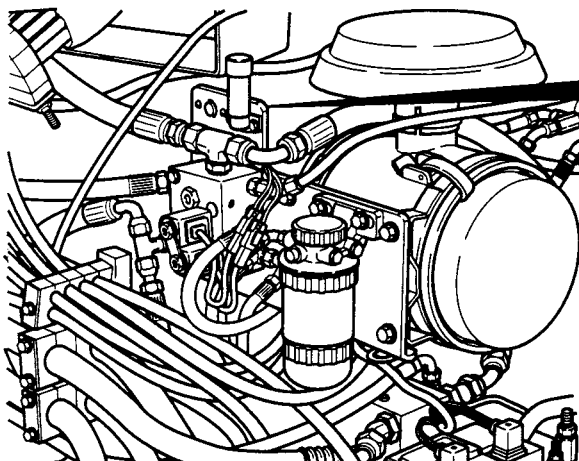
REMOVAL



WARNING

Use caution and allow all components to cool before removal. Failure to follow this warning may cause injury.

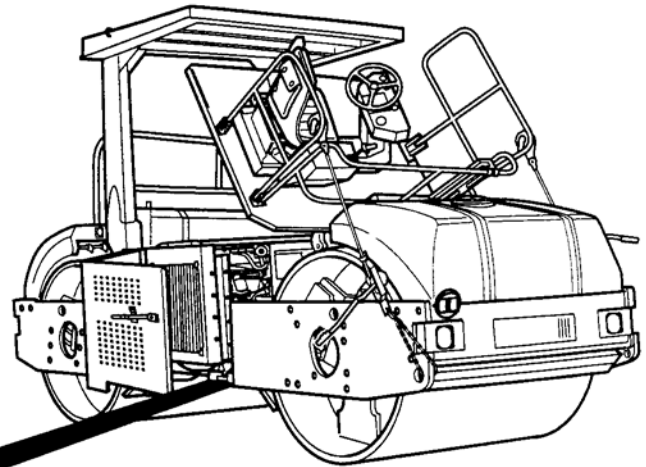
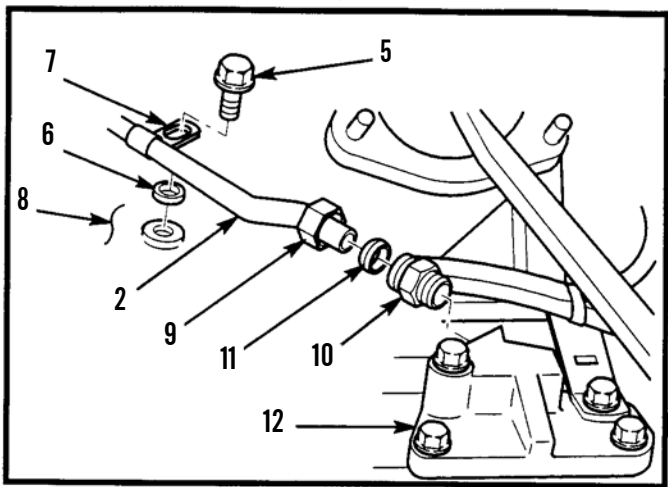
1. Remove two screws (1), tube assembly (2) and gasket (3) from turbocharger (4). Discard gasket.



401-330

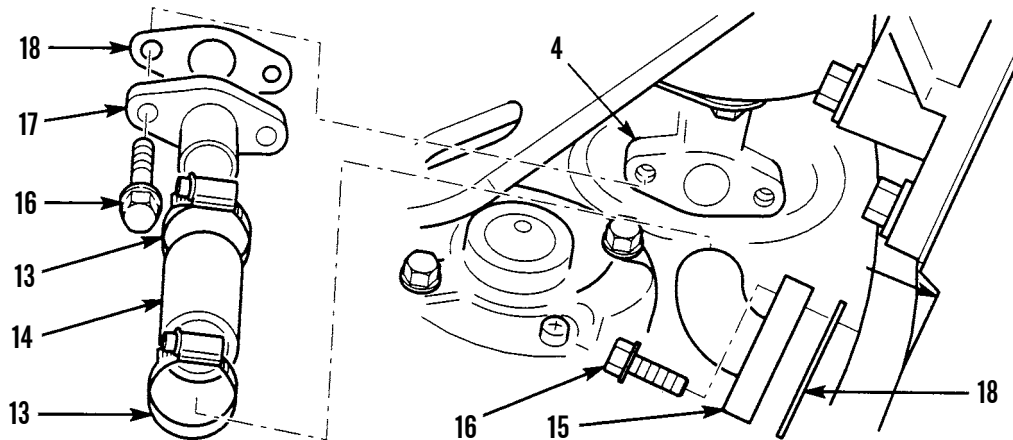
REMOVAL - CONTINUED

2. Remove screw (5), spacer (6) and clamp (7) from engine block (8) and tube assembly (2).
3. Loosen nut (9) and remove tube assembly (2) from nipple (10).
4. If damaged, remove compression sleeve (11) and nut (9) from tube assembly (2).
5. Remove adapter (10) from manifold (12).



401-331

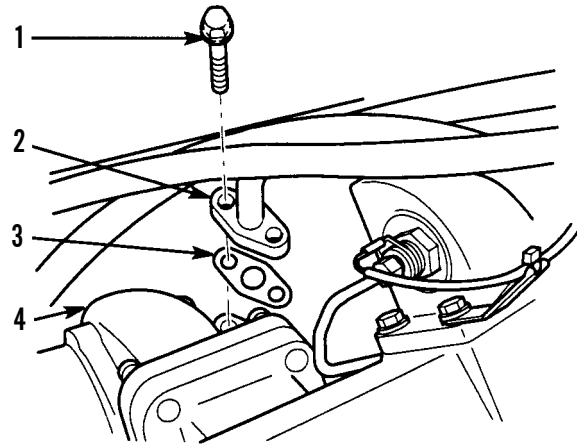
6. Remove two hose clamps (13) and hose (14) from tube (17) and elbow (15).
7. Remove two screws (16), tube (17) and gasket (18) from turbocharger (4). Discard gasket.
8. Remove two screws (16), elbow (15) and gasket (18) from engine block (8). Discard gasket.



401-332

INSTALLATION

1. Install new gasket (18) and elbow (15) on engine block (8) with two screws (16). Tighten screws to 15-25 lb-ft (20-34 Nm).
2. Install new gasket (18) and tube (17) on turbocharger (4) with two screws (16). Tighten screws to 15-25 lb-ft (20-34 Nm).
3. Install hose (14) on tube (17) and elbow (15) and tighten two hose clamps (13).
4. Install adapter (10) on manifold (12). Tighten adapter to 22-28 lb-ft (30-38 Nm).
5. If removed, install compression sleeve (11) and nut (9) on tube assembly (2). Do not tighten nut.
6. Install tube assembly (2) on adapter (10).
7. Install clamp (7) on tube assembly (2).
8. Install spacer (6), clamp (7) and tube assembly (2) on engine block (8) with screw (5). Tighten screw to 25 lb-ft (34 Nm).
9. Tighten nut (9) to 10-12 lb-ft (14-16 Nm).
10. Install new gasket (3) and tube assembly (2) on turbocharger (4) with two screws (1). Tighten two screws (1) to 25 lb-ft (34 Nm).



401-334

11. Lower operator platform assembly (WP 0128 00).
12. Install muffler and exhaust pipes (WP 0048 00).
13. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL/HYDRAULIC OIL TANK DRAIN/FILL

0037 00

THIS WORK PACKAGE COVERS

Drain Fuel Tank, Drain Hydraulic Oil Tank, Cleaning and Inspection, Fill Hydraulic Oil Tank, Fill Fuel Tank

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

Material/Parts

Fuel (Item 15, 16 or 17, WP 0219 00)
Oil, lubricating (Item 24, 25 or 27, WP 0219 00)
Rag, wiping (Item 31, WP 0219 00)
Packing, preformed (2)
Container, 15.5 gal (59 l) minimum capacity
(CB534B Roller)
Container, 24 gal (91 l) minimum capacity
(CB534C Roller)
Container, 55 gal. (208 l) minimum capacity

References

WP 0008 00, Field Maintenance Preventive
Maintenance Checks and Services (PMCS)
Introduction

TM 5-3895-379-23P, Figure 28

Equipment Condition

Engine off (TM 5-3895-379-10)
Drums chocked (TM 5-3895-379-10)
Right-side door assembly opened (for hydraulic oil
tank service) (TM 5-3895-379-10)
Left-side door assembly opened (for fuel tank ser-
vice) (TM 5-3895-379-10)

**WARNING**

- DO NOT smoke or permit any open flame while you are servicing fuel system. Be sure hose nozzle is grounded against filler tube during refueling to prevent static electricity. Failure to follow this warning may cause injury, or equipment damage.
- Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, promptly wash exposed skin and change fuel-soaked clothing.

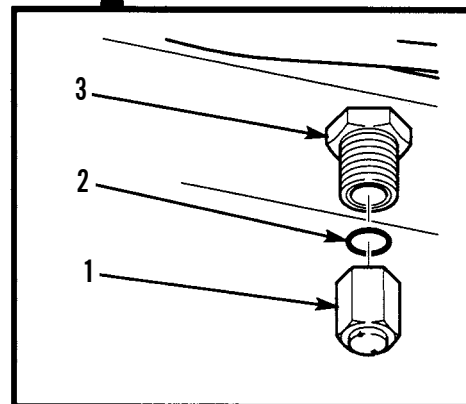
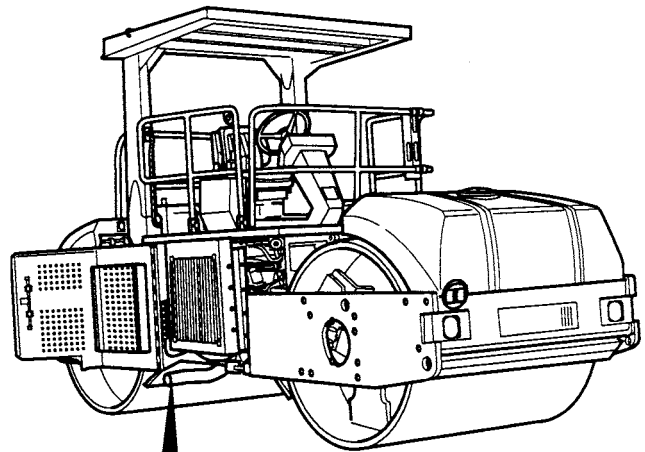
DRAIN FUEL TANK**WARNING**

Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use a container to catch fuel that drains from system. Dispose of fuel IAW local policy and ordinances.

1. Remove fuel drain cap (1) and preformed packing (2) from adapter (3). Discard preformed packing
2. Allow fuel to drain completely into containers.



401-337

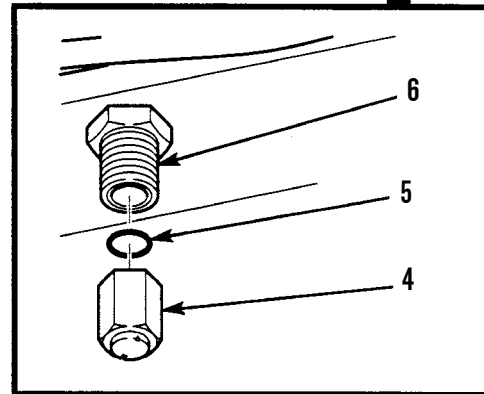
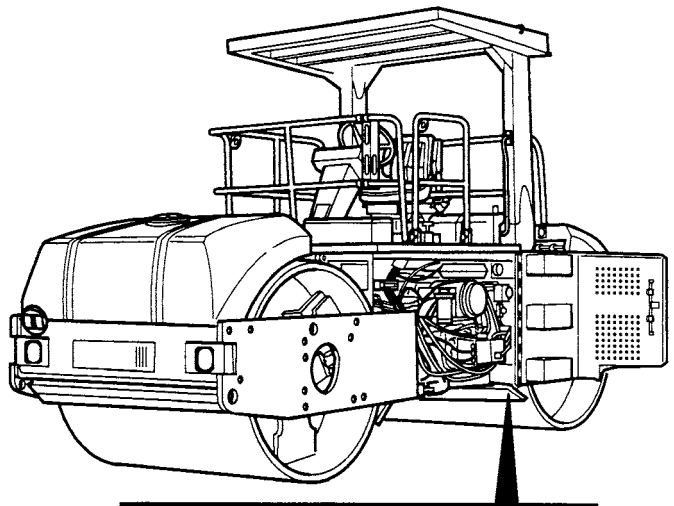
DRAIN HYDRAULIC OIL TANK**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use container to catch oil that drains from system. Dispose of oil IAW local policy and ordinances.

1. Remove hydraulic oil drain cap (4) and preformed packing (5) from adapter (6). Discard preformed packing.
2. Allow hydraulic oil to drain completely into container.



401-338

CLEANING AND INSPECTION

CAUTION

Dirt, grit and metallic particles can cause damage to hydraulic components. Clean cap and hose assembly before cap is installed.

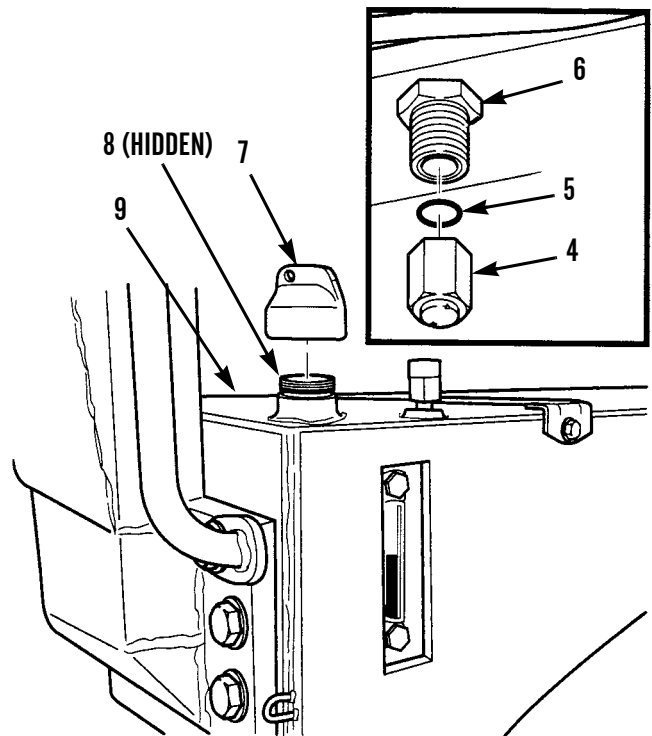
1. Inspect for metallic particles in cap.
2. Inspect strainer for damage and remove any debris.
3. Inspect adapter threads and cap threads for damage.
4. Clean caps, adapters and around adapters with rags.
5. Clean cap threads and hydraulic tank hose assembly threads with clean hydraulic oil and rags.

FILL HYDRAULIC OIL TANK

1. Install new preformed packing (5) and hydraulic oil drain cap (4) on adapter (6).
2. Remove cap (7) and strainer (8) from hydraulic tank (8).

NOTE

- Refer to KEY in WP 0008 00 to determine correct grade of oil.
 - Hydraulic tank capacity is 15.5 gal. (59 l) for the CB534B Roller.
 - Hydraulic tank capacity is 24 gal. (91 l) for the CB534C Roller.
3. Fill hydraulic tank (9) with correct grade of oil.
 4. Install cap (7) on hydraulic tank (9).

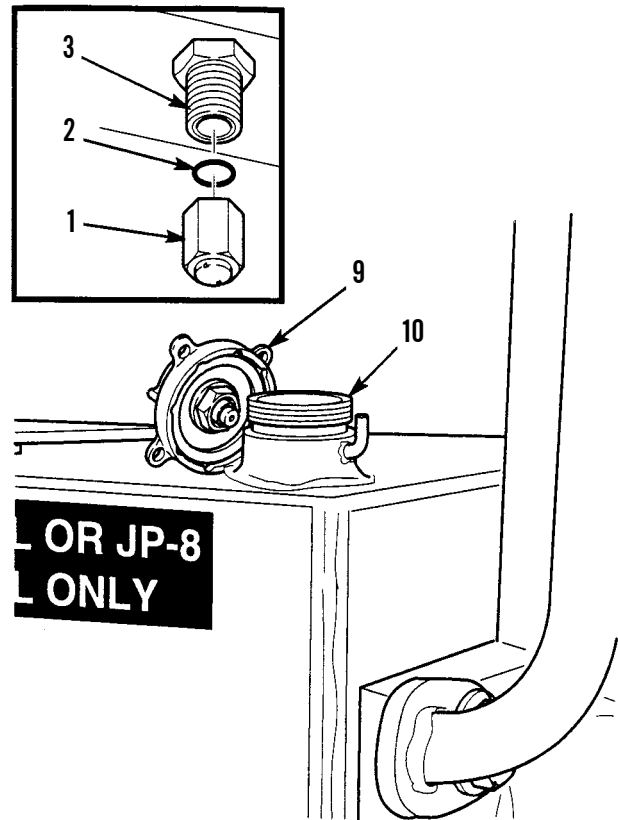


401-339

FILL FUEL TANK**NOTE**

Fuel tank capacity is 55 gal. (208 l).

1. Install new preformed packing (2) and fuel drain cap (1) on adapter (3).
2. Remove cap (9) from fuel tank (10).
3. Fill fuel tank (10) with 55 gal. (208 l) of fuel.
4. Install cap (9) on fuel tank (10).



401-340

5. Close right- and left-side door assemblies (TM 5-3895-379-10).
6. Start engine and check for leaks (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL/HYDRAULIC OIL TANK AND DRAIN LINES REPLACEMENT**0038 00****THIS WORK PACKAGE COVERS**

Drain Lines Removal, Installation
 Tank Removal, Installation

Cleaning and Inspection

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)
 Block, wooden, 6x6x18 in. (15x15x45 cm) (2)

Materials/Parts

Compound, cleaning, solvent (Item 9, WP 0219 00)
 Cloth, cleaning (Item 10, WP 0219 00)
 Compound, sealing (Item 12, WP 0219 00)
 Gasket, cement (Item 18, WP 0219 00)
 Strap, tiedown (Item 36, WP 0219 00)
 Tag, marker (Item 37, WP 0219 00)
 Lifting device, minimum capacity 360 lb (163 kg)
 Locknut (2)
 O-ring (10)

Materials/Parts - Continued

Packing, preformed (18)
 Washer (2)

References

WP 0041 00, Priming Fuel System
 TM 5-3895-379-23P, Figures 27, 28, 29, 30, 52, 91 and 128

Personnel Required

Three

Equipment Condition

Engine off (TM 5-3895-379-10)
 Fuel/hydraulic oil tank drained (WP 0037 00)
 Operator platform assembly raised (WP 0128 00)
 Fuel level sending unit removed (WP 0096 00)
 Air cleaner assembly removed (WP 0032 00)

**WARNING**

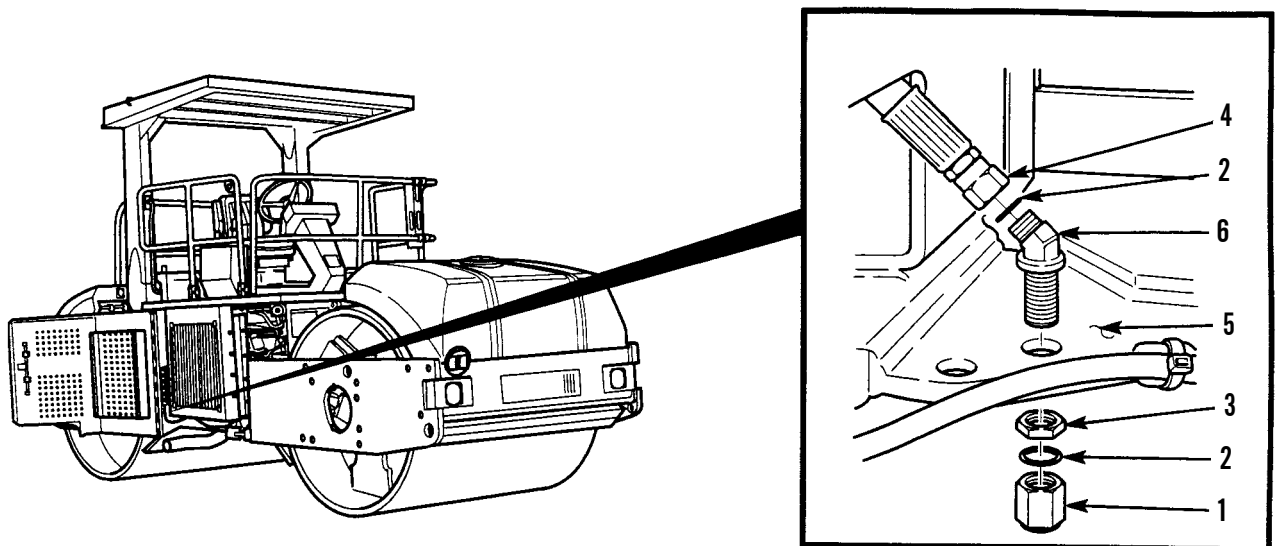
- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing damage to machine and injury or death to personnel.
- Fuel and hydraulic oil are very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

- The CB534B and CB534C Rollers fuel/hydraulic oil tanks and drain lines are replaced the same way, except where noted.
- Tag and mark all fuel and hydraulic hoses prior to removal.
- Place container under hose assemblies to catch any fuel and hydraulic oil that may drain from tank. Dispose of fuel and oil IAW local policy and ordinances.

DRAIN LINES REMOVAL

1. Remove fuel drain cap (1), O-ring (2), nut (3) and hose assembly (4) from frame assembly (5). Discard O-ring.
2. If damaged, remove elbow (6) and O-ring (2) from hose assembly (4). Discard O-ring.

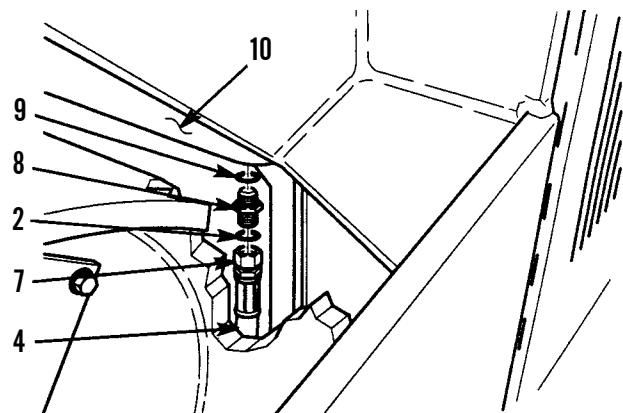


401-341

NOTE

Hose assembly and fuel tank connection are located between rear roller drum and operator platform.

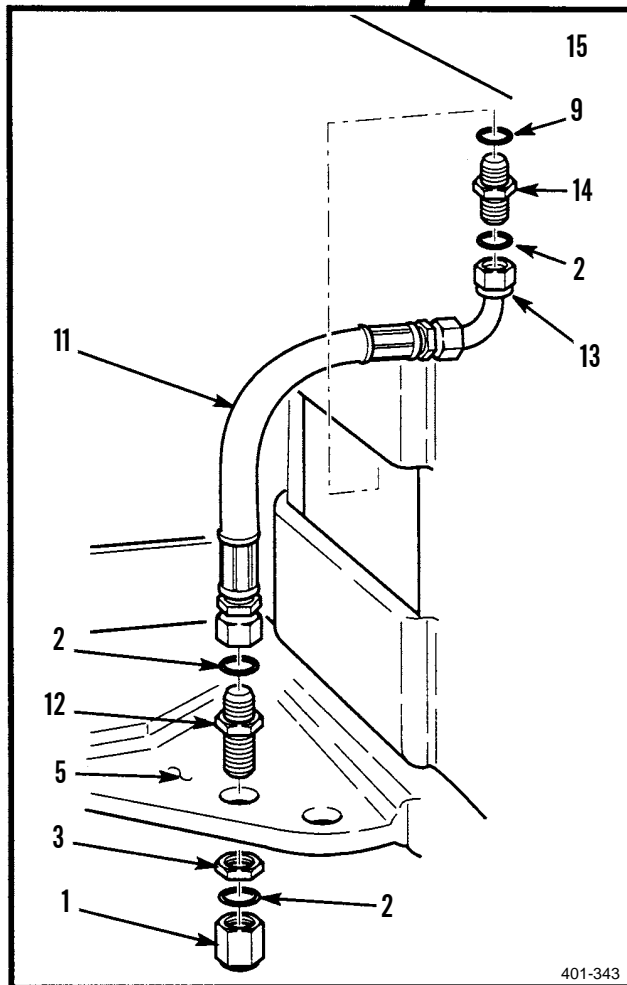
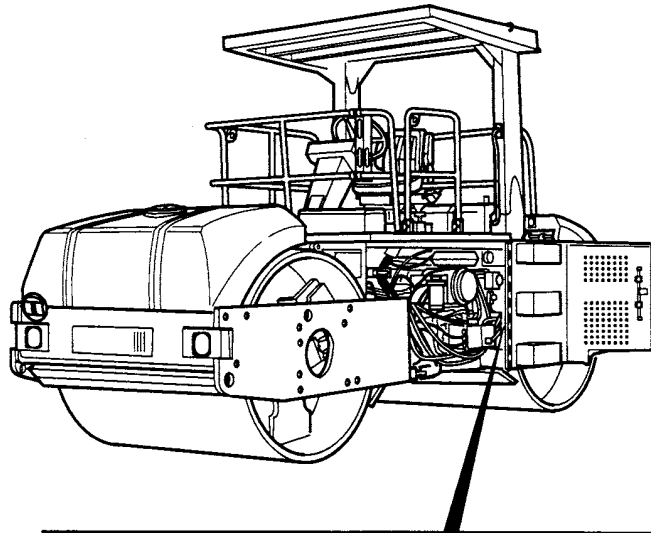
3. Loosen nut (7) and remove hose assembly (4) and O-ring (2) from fuel tank connector (8). Discard O-ring.
4. If damaged, remove fuel tank connector (8) and O-ring (9) from fuel tank (10). Discard O-ring.



401-342

5. Remove hydraulic oil drain cap (1), O-ring (2), nut (3) and hose assembly (11) from frame assembly (5). Discard O-ring.
6. If damaged, remove adapter (12) and O-ring (2) from hose assembly (11). Discard O-ring.
7. Loosen nut (13) and remove hose assembly (11) and O-ring (2) from hydraulic oil tank connector (14). Discard O-ring.
8. If damaged, remove hydraulic oil tank connector (14) and O-ring (9) from hydraulic oil tank (15).

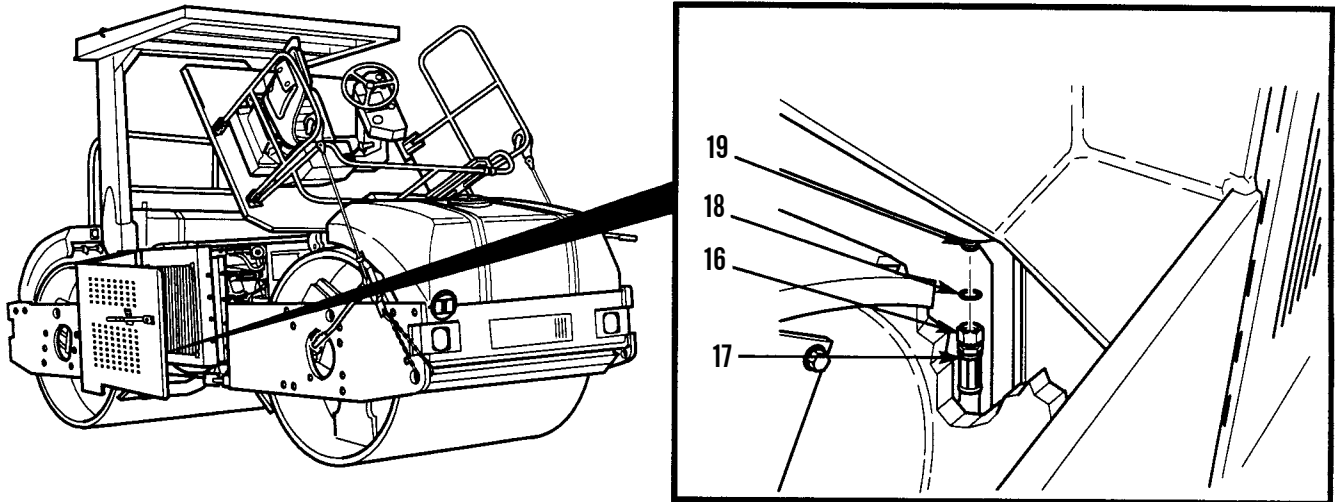
DRAIN LINES REMOVAL - CONTINUED



401-343

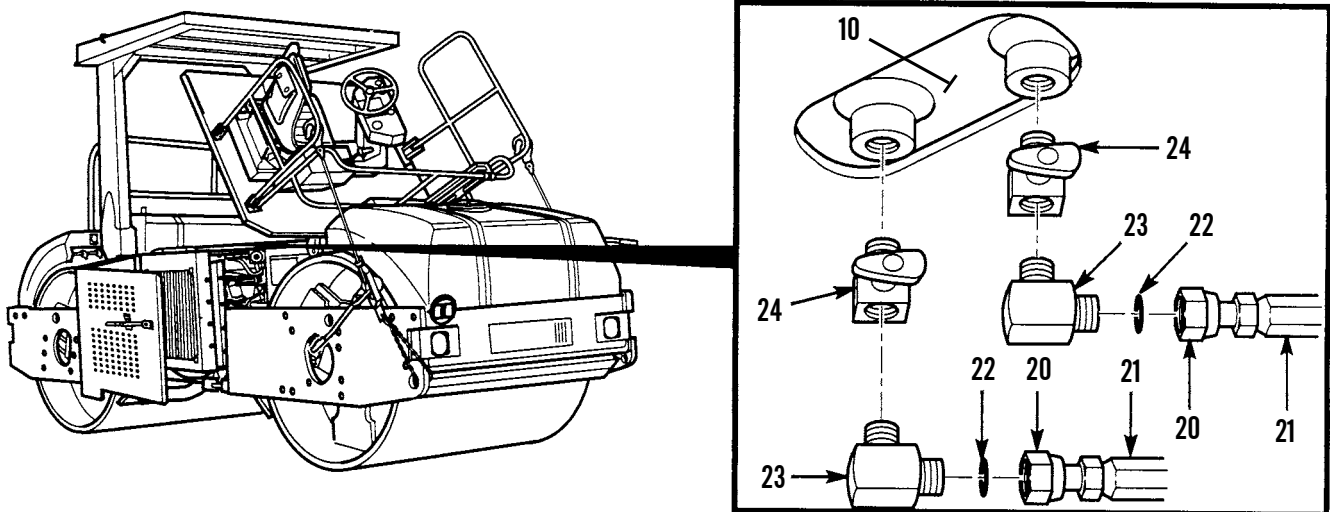
TANK REMOVAL

1. Loosen nut (16) and remove hose assembly (17) and O-ring (18) from fuel tank connector (19). Discard O-ring.



401-345

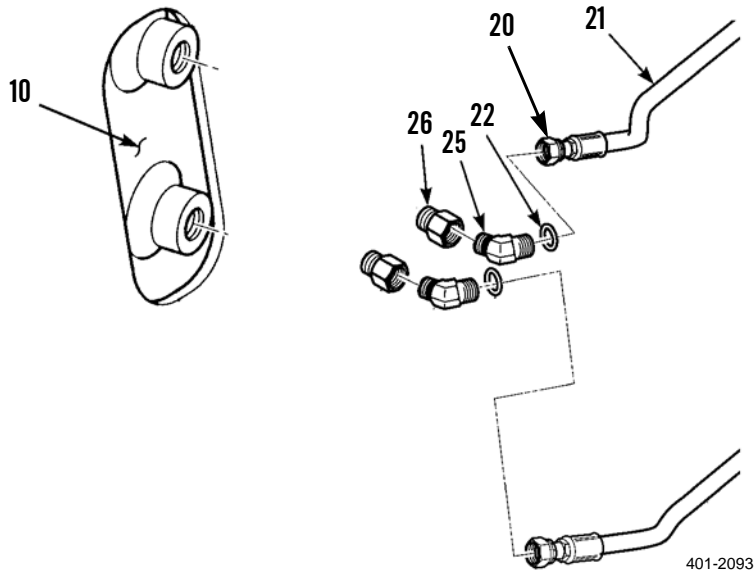
2. For CB534B Roller, loosen two nuts (20) and remove two hose assemblies (21) and preformed packings (22) from elbows (23). Discard preformed packings.
3. For CB534B Roller, remove two elbows (23) from two valves (24).
4. For CB534B Roller, remove two valves (24) from fuel tank (10).



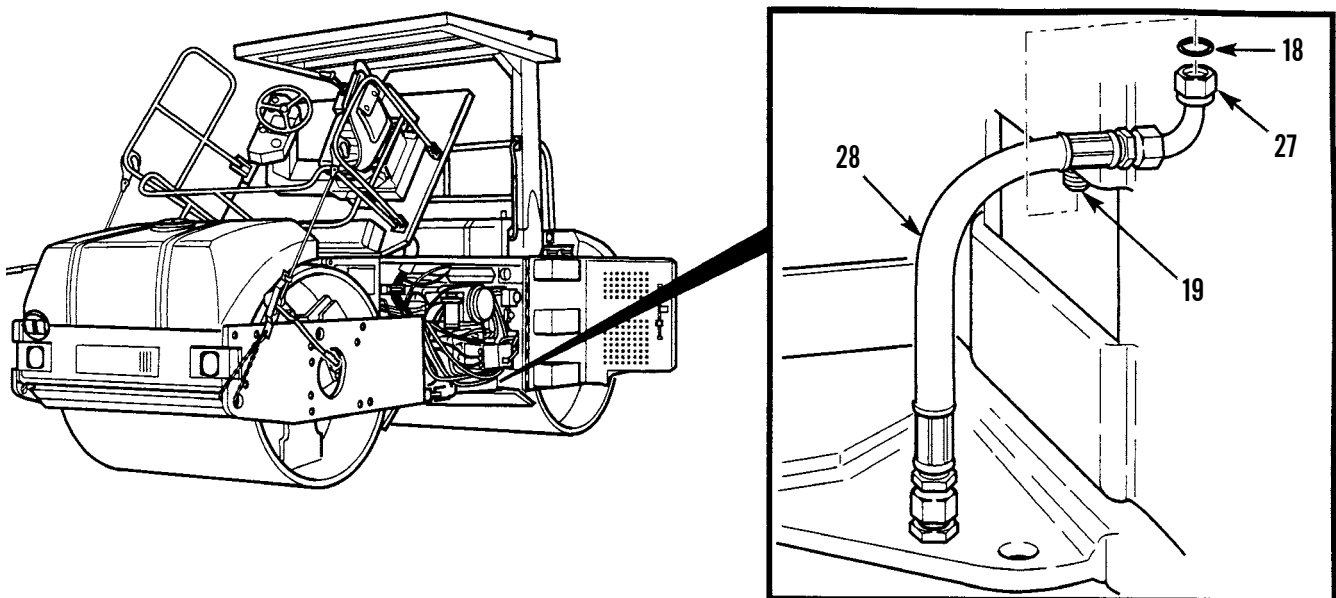
401-346

TANK REMOVAL - CONTINUED

5. For CB534C Roller, loosen two nuts (20) and remove two hose assemblies (21) and preformed packings (23) from two adapters (25). Discard preformed packings.
6. For CB534C Roller, remove two adapters (25) and two adapters (26) from fuel tank (10).



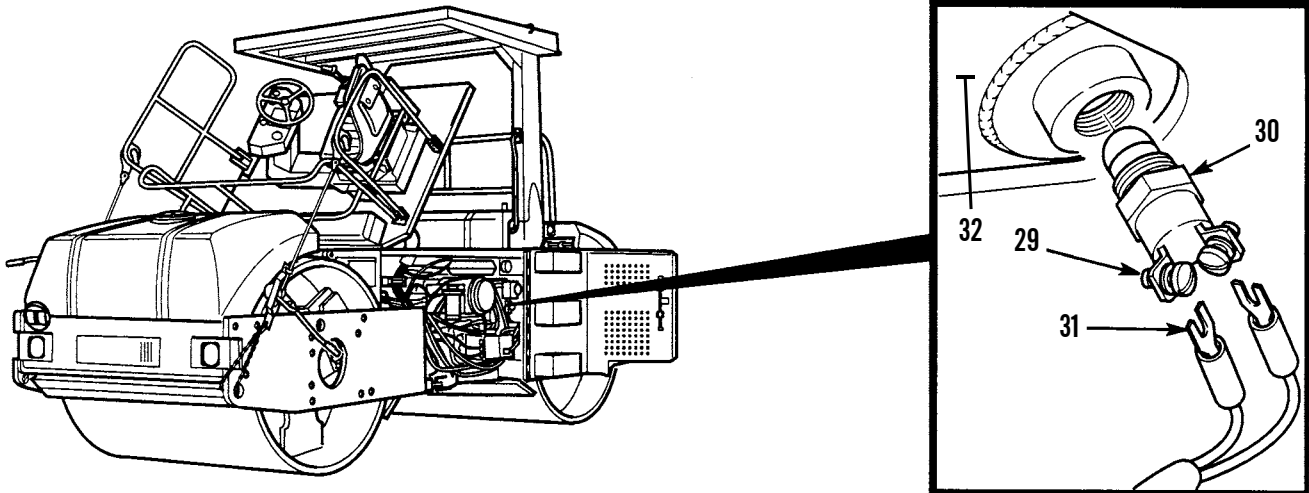
7. Loosen nut (27) and remove hose assembly (28) and O-ring (18) from fuel/hydraulic tank connector (19). Discard O-ring.



TANK REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

8. Loosen two screws (29) on hydraulic oil temperature sensor (30) and remove two wires (31).
9. Remove hydraulic oil temperature sensor (30) from fuel/hydraulic oil tank (32).



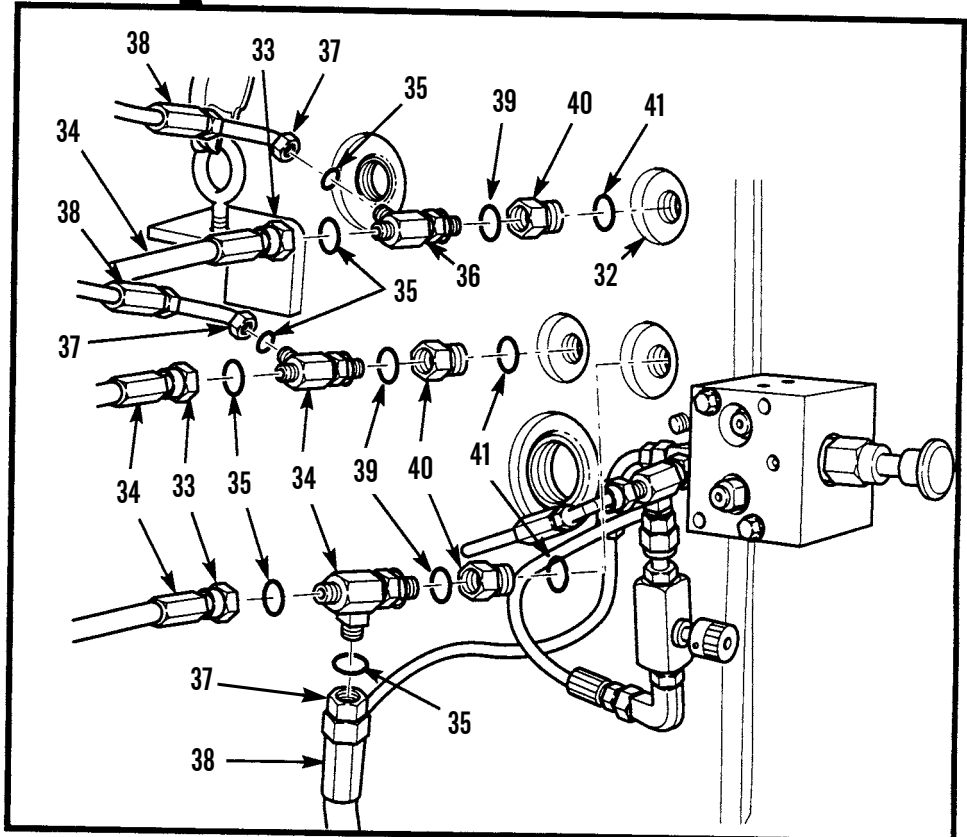
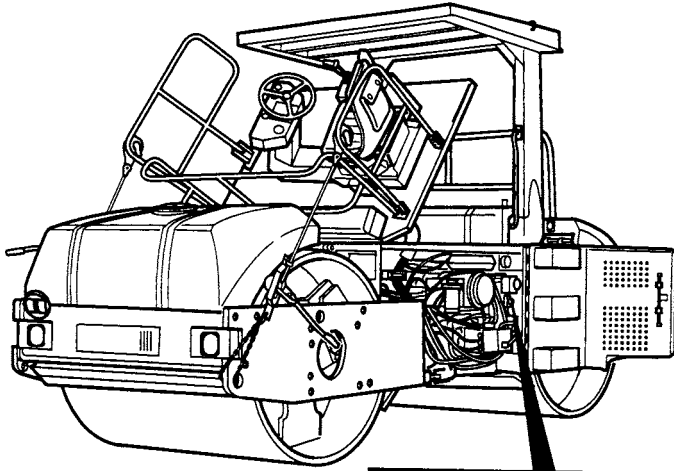
401-348

NOTE

Tag and mark all hoses prior to removal.

10. Loosen three nuts (33) and remove hose assemblies (34) and preformed packings (35) from tees (36). Discard preformed packings.
11. Loosen three nuts (37) and remove hose assemblies (38) and preformed packings (35) from tees (36). Discard preformed packings.
12. Remove three tees (36) and O-rings (39) from boss reducers (40). Discard O-rings.
13. Remove three boss reducers (40) and O-rings (41) from fuel/hydraulic oil tank (32). Discard O-rings.

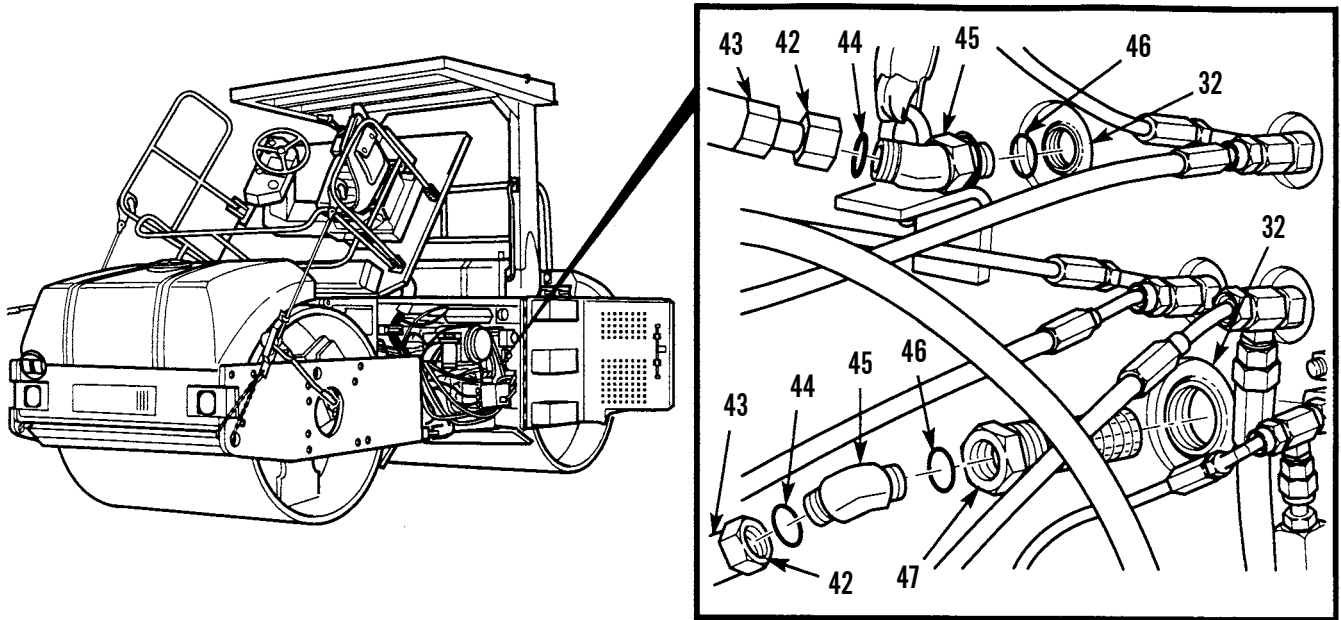
TANK REMOVAL - CONTINUED



401-349

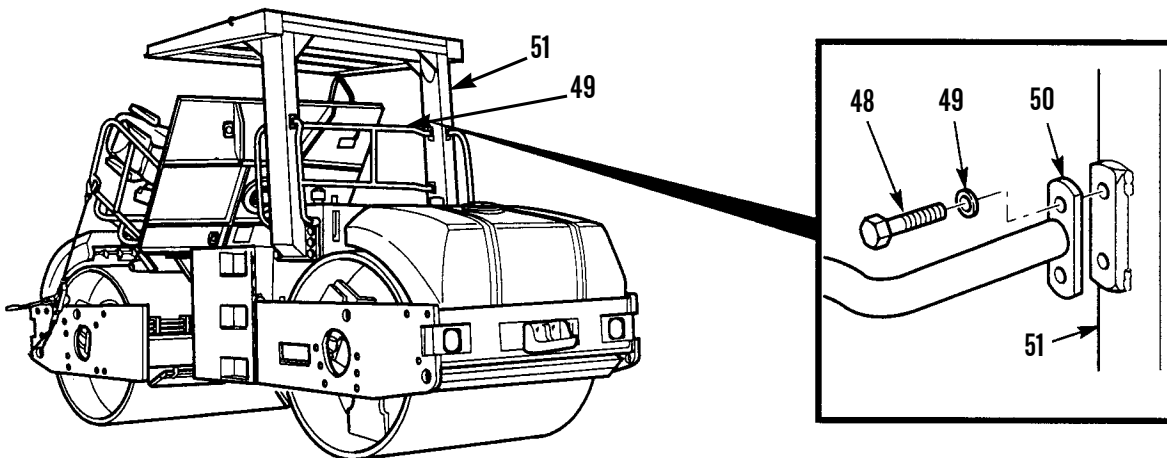
TANK REMOVAL - CONTINUED

14. Loosen two nuts (42) and remove hose assemblies (43) and preformed packings (44) from two elbows (45). Discard preformed packings.
15. Remove elbow (45) and O-ring (46) from suction strainer (47). Discard O-ring.
16. Remove elbow (45) and O-ring (46) from fuel/hydraulic oil tank (32). Discard preformed packing.
17. Remove suction strainer (47) from fuel/hydraulic oil tank (32).



401-350

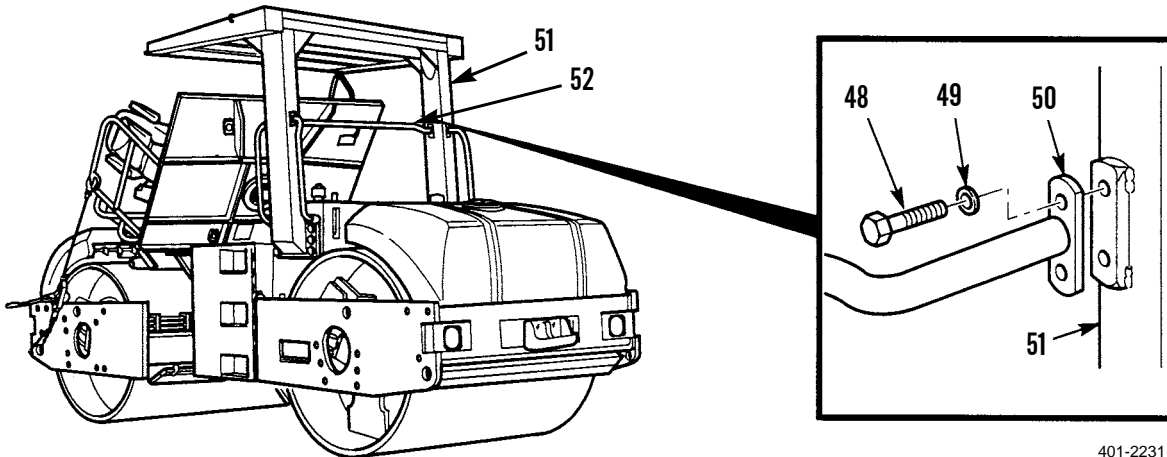
18. For the CB534B Roller, remove eight screws (48), washers (49) and rear handrail assembly (50) from ROPS (51).



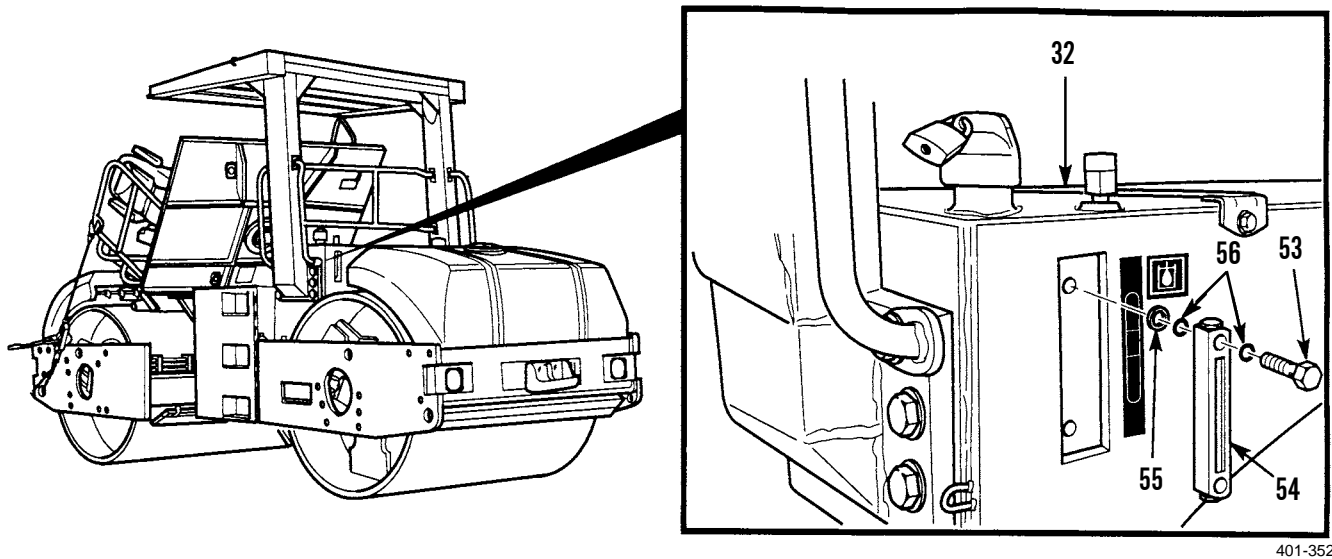
401-351

TANK REMOVAL - CONTINUED

19. For the CB534C Roller, remove four screws (48), washer (49) and rear handrail assembly (52) from ROPS (51).

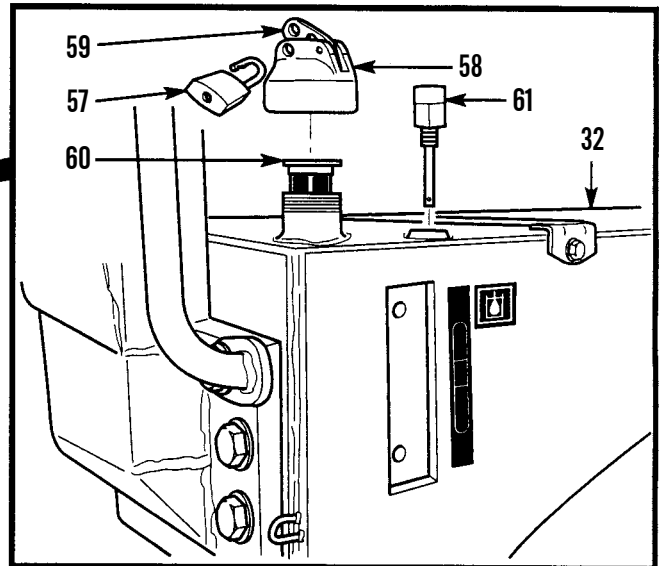
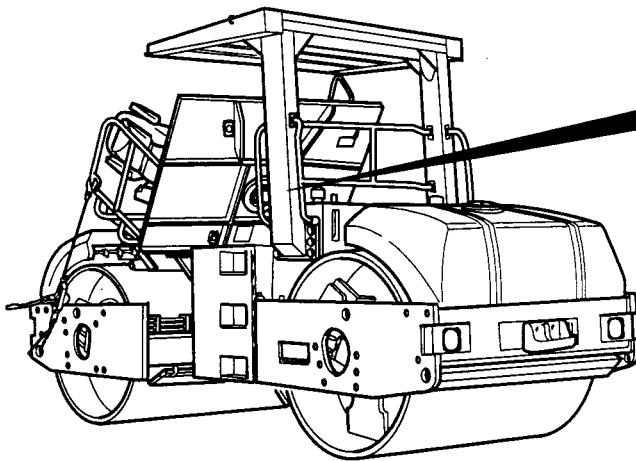


20. Loosen two screws (53) on hydraulic oil level indicator (54) and remove hydraulic oil indicator, two washers (55) and four preformed packings (56) from fuel/hydraulic oil tank (32). Discard washers and preformed packings.



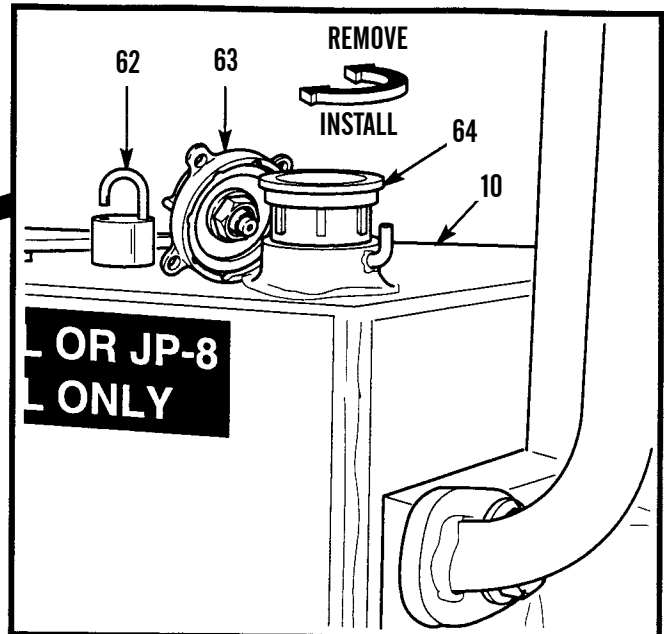
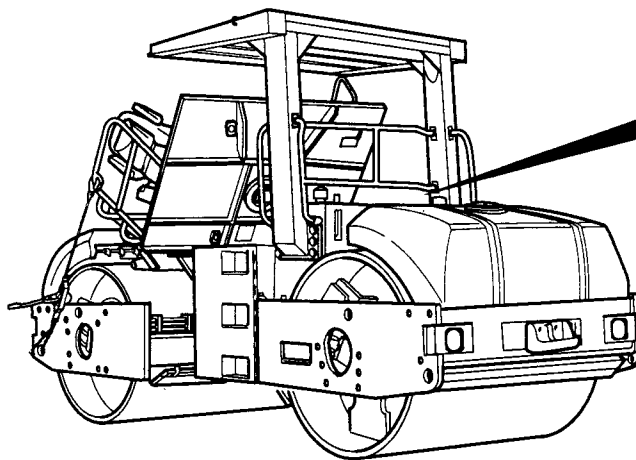
TANK REMOVAL - CONTINUED

21. Remove lock (57) from hydraulic oil cap (58).
22. Lift lever (59) and turn hydraulic oil cap (58) to the left until hydraulic oil cap can be removed from fuel/hydraulic oil tank (32).
23. Remove strainer (60) from fuel/hydraulic oil tank (32).
24. Remove vent (61) from fuel/hydraulic oil tank (32).



401-353

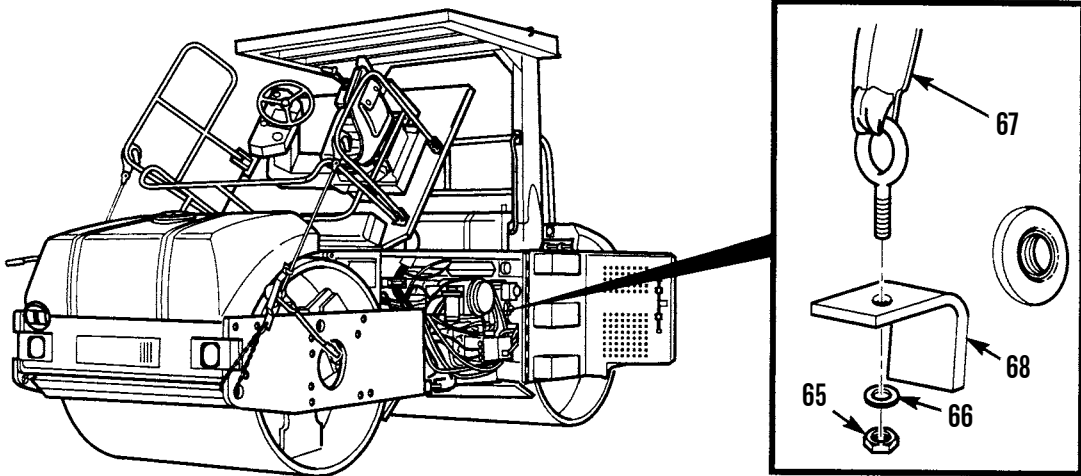
25. Remove lock (62) from fuel cap (63).
26. Turn fuel cap (63) to the left until fuel cap can be removed from fuel tank (10).
27. Remove strainer (64) from fuel tank (10).



401-354

TANK REMOVAL - CONTINUED

28. Remove two locknuts (65), washers (66) and strap assemblies (67) from frame assembly (68). Discard locknuts.



401-355

TANK REMOVAL - CONTINUED

29. Remove two nuts (69), washers (70), screws (71) and strap assemblies (67) from frame assembly (68).

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

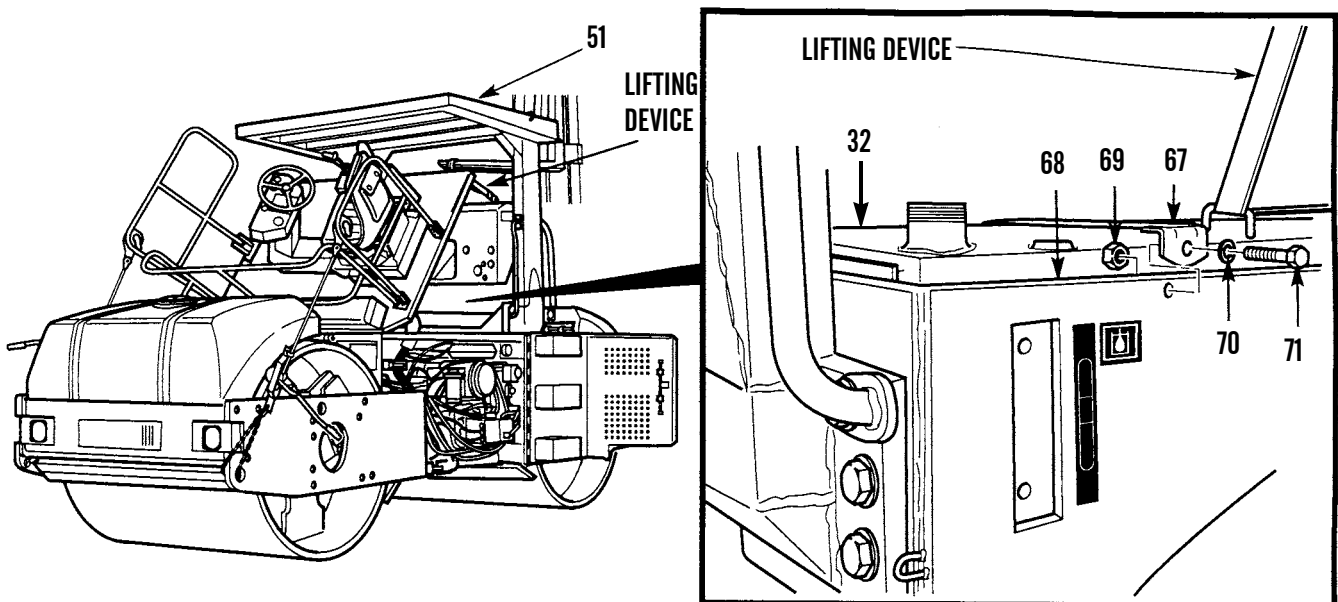
CAUTION

Place fuel/hydraulic oil tank on blocks and position tank so that connectors and hoses can be removed and installed. Do not allow weight of tank to rest on connectors. Failure to follow this caution may cause damage to tank and connectors.

NOTE

- Fuel/hydraulic oil tank weighs 360 lb (163 kg).
- Fuel/hydraulic oil tank must be pushed or pried toward rear of roller to allow fuel/hydraulic oil tank bosses to clear cut-outs in frame assembly during removal.

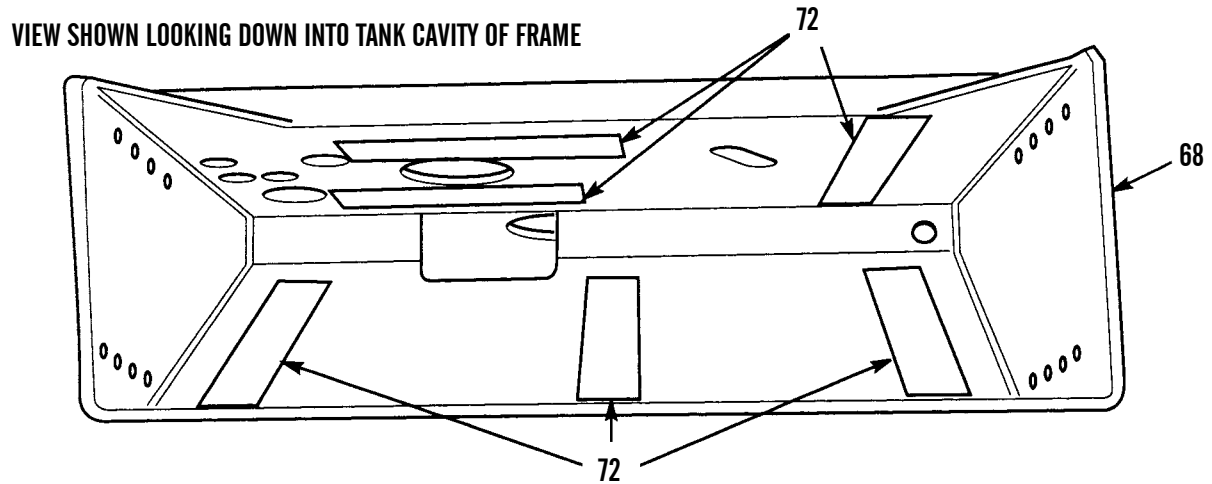
30. Attach a lifting device to lift points of fuel/hydraulic oil tank (32). Remove tank from frame assembly (68) with lifting device while assistants pry tank free from frame assembly (68) and guide tank through ROPS (51).



401-356

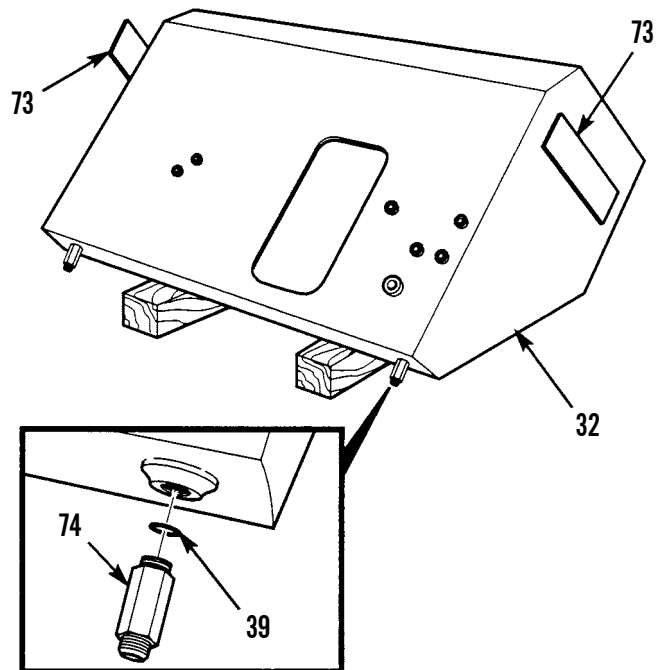
TANK REMOVAL - CONTINUED

31. Remove six rubber sheets (72) from frame assembly (68).



401-357

32. Remove two rubber sheets (73), connectors (74) and O-rings (18) from fuel/hydraulic oil tank (32). Discard O-rings.



401-358

CLEANING AND INSPECTION

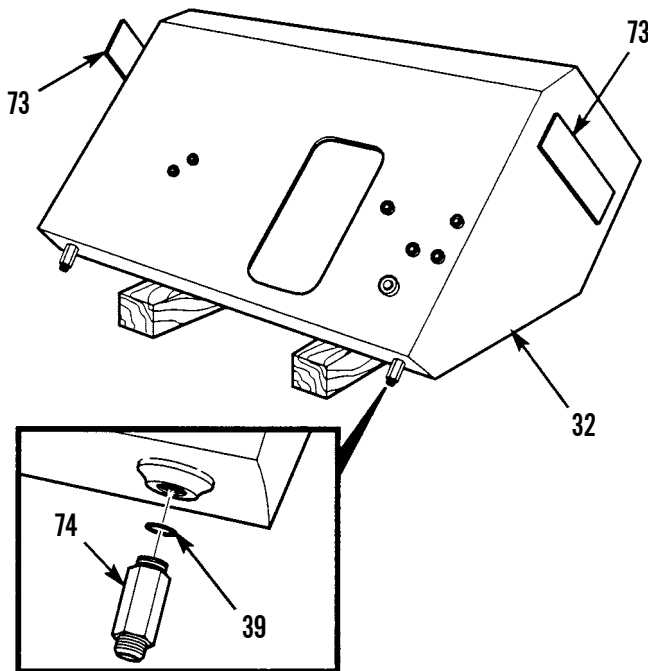


- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

1. Clean all metal parts with cleaning compound, solvent.
2. Dry all parts with compressed air.
3. Inspect tank for rust, cracks, dents and holes.
4. Inspect strainers for holes, tears and debris.
5. Inspect all fittings and connectors for stripped threads.
6. Repair or replace all damaged parts.

TANK INSTALLATION

1. Apply sealing compound to threads of two connectors (74) and install connectors and new O-rings (39) on fuel/hydraulic oil tank (32). Install two rubber sheets (73) on fuel/hydraulic oil tank with gasket cement.
2. Install six rubber sheets (72) on fuel/hydraulic oil tank (32) using gasket cement.



401-358

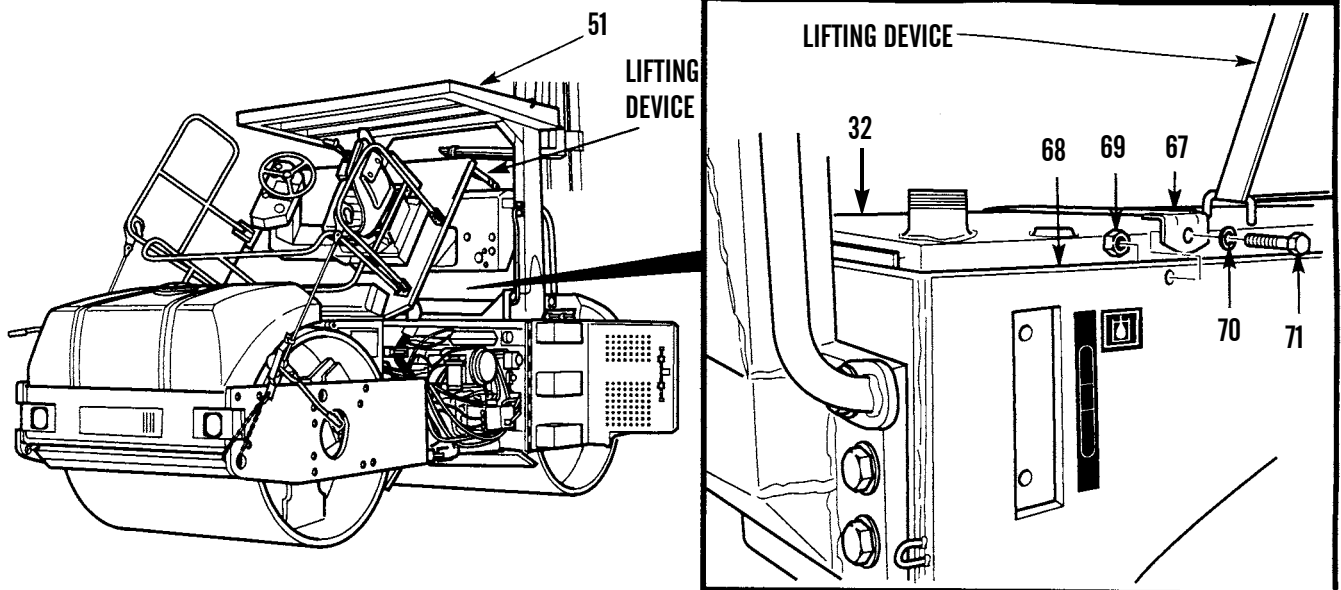
TANK INSTALLATION - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Fuel/hydraulic oil tank weighs 360 lb (163 kg).

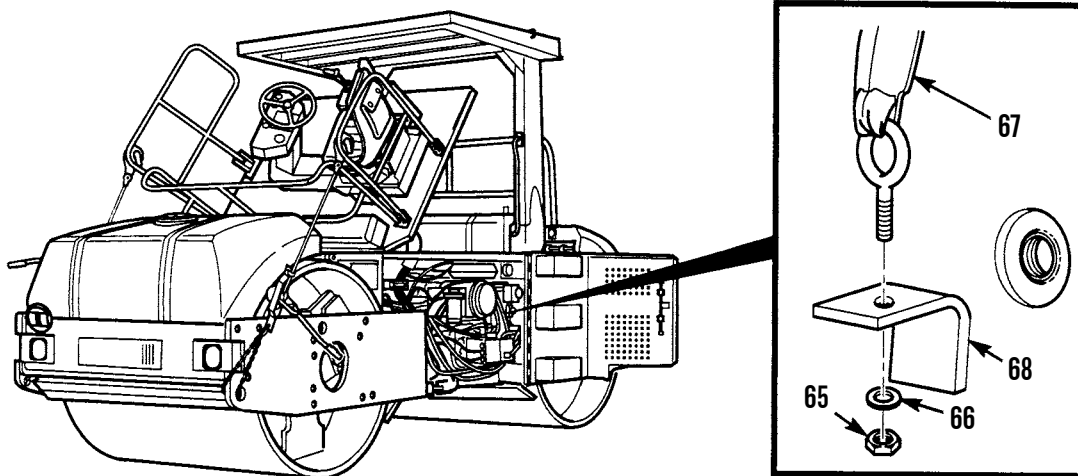
3. Attach a lifting device to lift points of fuel/hydraulic oil tank (32). One person lifts tank with lifting device while assistants position tank in frame assembly (68).
4. Install two strap assemblies (67) on frame assembly (68) with washers (70), nuts (69) and screws (71).



401-356

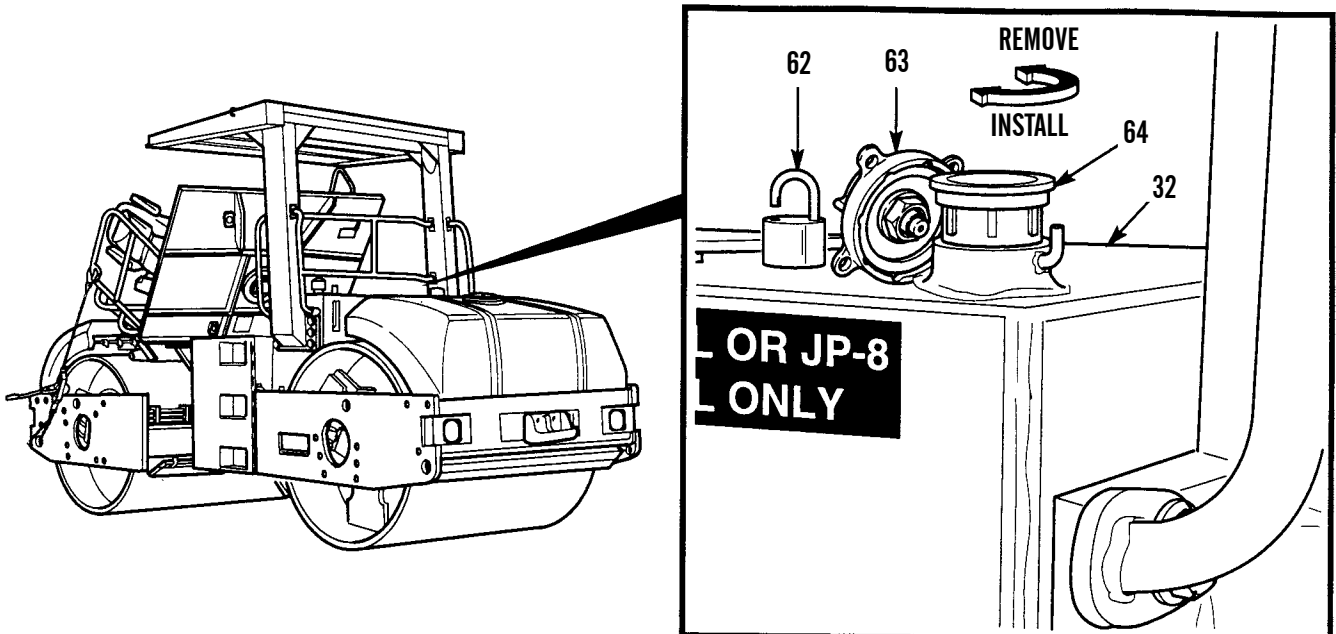
TANK INSTALLATION - CONTINUED

5. Install two strap assemblies (67) on frame assembly (68) using two washers (66) and locknuts (65).



401-355

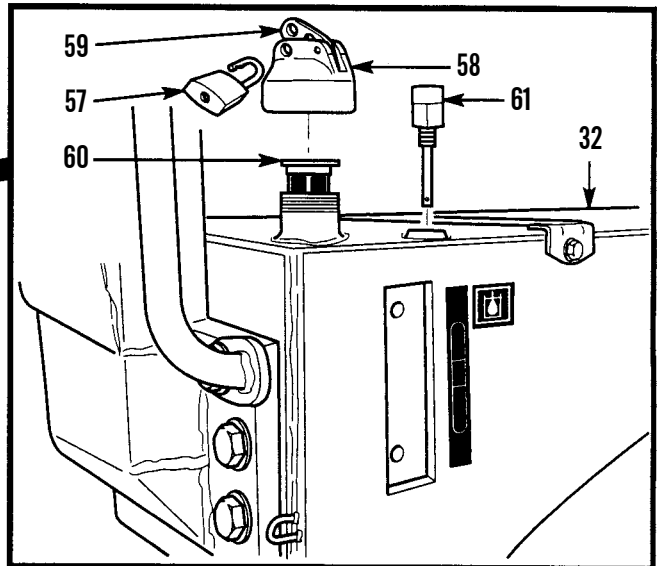
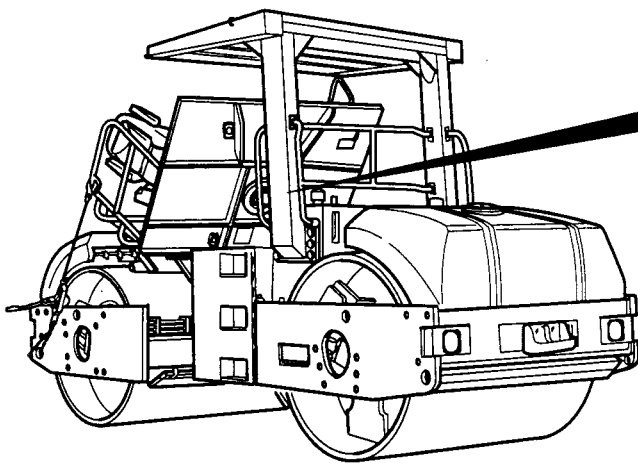
6. Install filter (64) into fuel/hydraulic oil tank (32).
7. Turn fuel cap (63) clockwise until cap is secure on fuel tank (32).
8. Install lock (62) on fuel cap (63).



401-354

TANK INSTALLATION - CONTINUED

9. Apply sealant to threads of vent (61) and install vent on fuel/hydraulic oil tank (32).
10. Install strainer (60) into fuel/hydraulic oil tank (32).
11. Lift lever (59) and turn hydraulic oil cap (58) clockwise until cap is secure on fuel/hydraulic oil tank (32).
12. Install lock (57) on hydraulic oil cap (58).

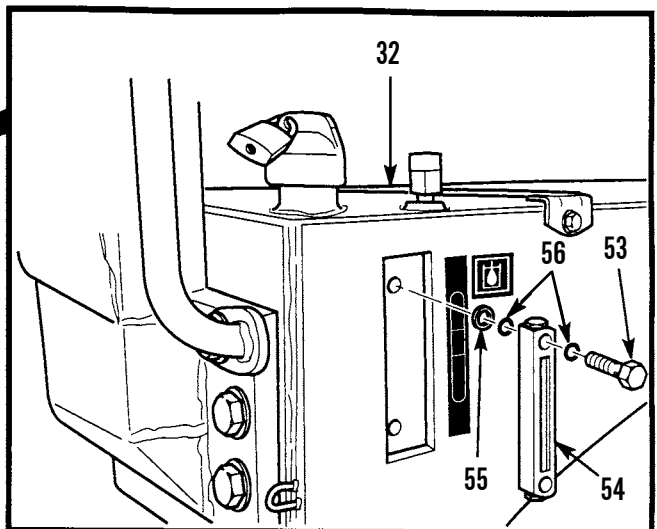
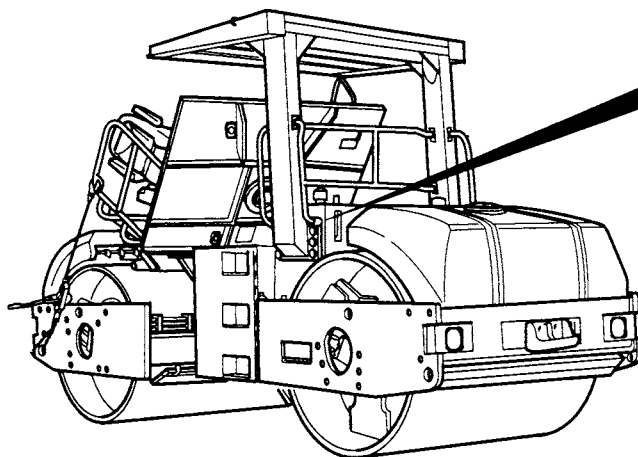


401-353

NOTE

Ensure hydraulic oil level indicator is installed with HIGH readable at the top of the indicator and LOW readable at the bottom of the indicator.

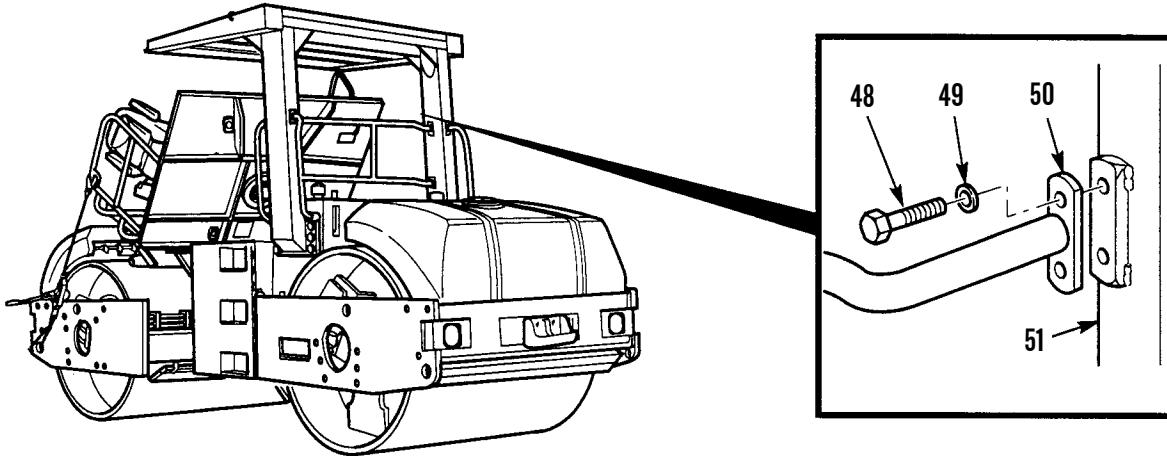
13. Install two washers (55), four new preformed packings (56) and hydraulic oil level indicator (54) on fuel/hydraulic oil tank (32) using two screws (53).



401-352

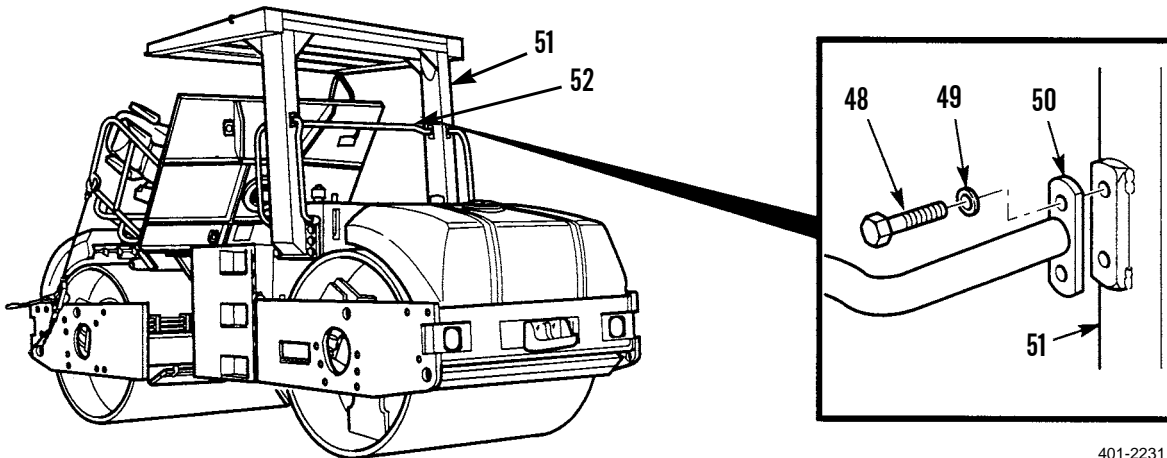
TANK INSTALLATION - CONTINUED

14. For CB534B Roller, install rear handrail assembly (50) on ROPS (51) using eight washers (49) and screws (48). Tighten screws to 33-47 lb-ft (45-64 Nm).



401-351

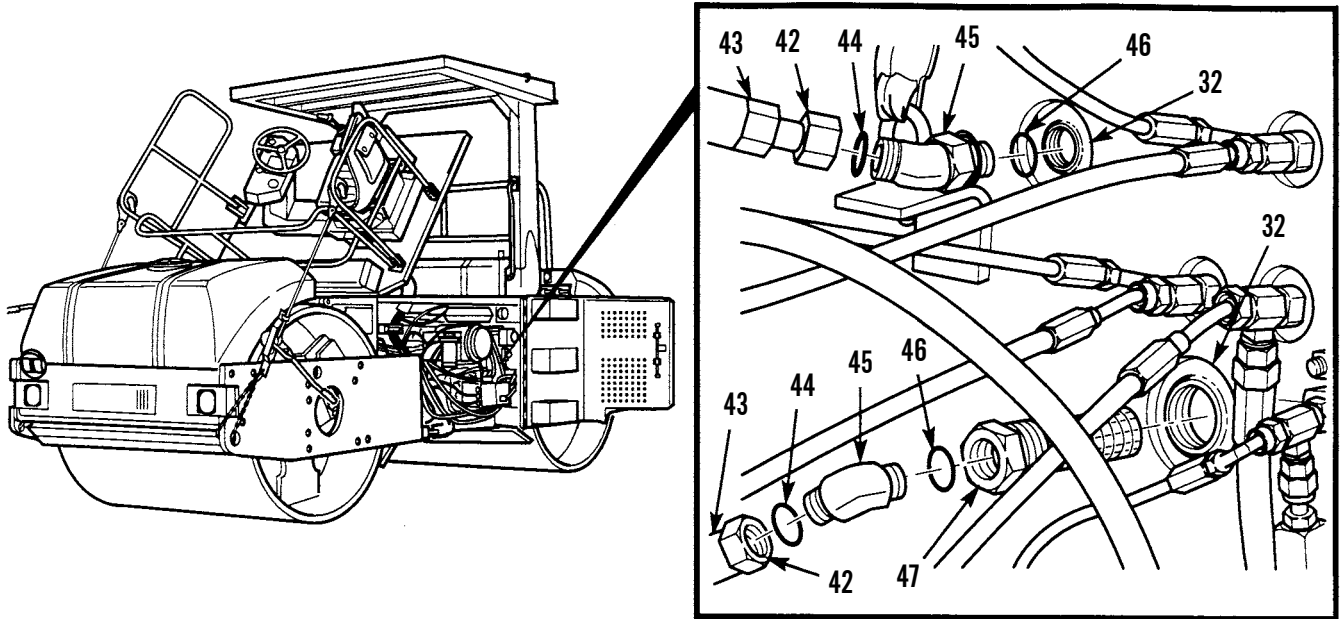
15. For the CB534C Roller, install rear handrail assembly (52) using four washers (49) and screw (48). Tighten screws 33-47 lb-ft (45-64 Nm).



401-2231

TANK INSTALLATION - CONTINUED

16. Install suction strainer (47) in fuel/hydraulic oil tank (32).
17. Install new O-ring (46) and elbow (45) on fuel/hydraulic oil tank (32).
18. Install new O-ring (46) and elbow (45) on suction strainer (47).
19. Install two new preformed packings (44) and hose assemblies (43) on two elbows (45) and tighten two nuts (42).



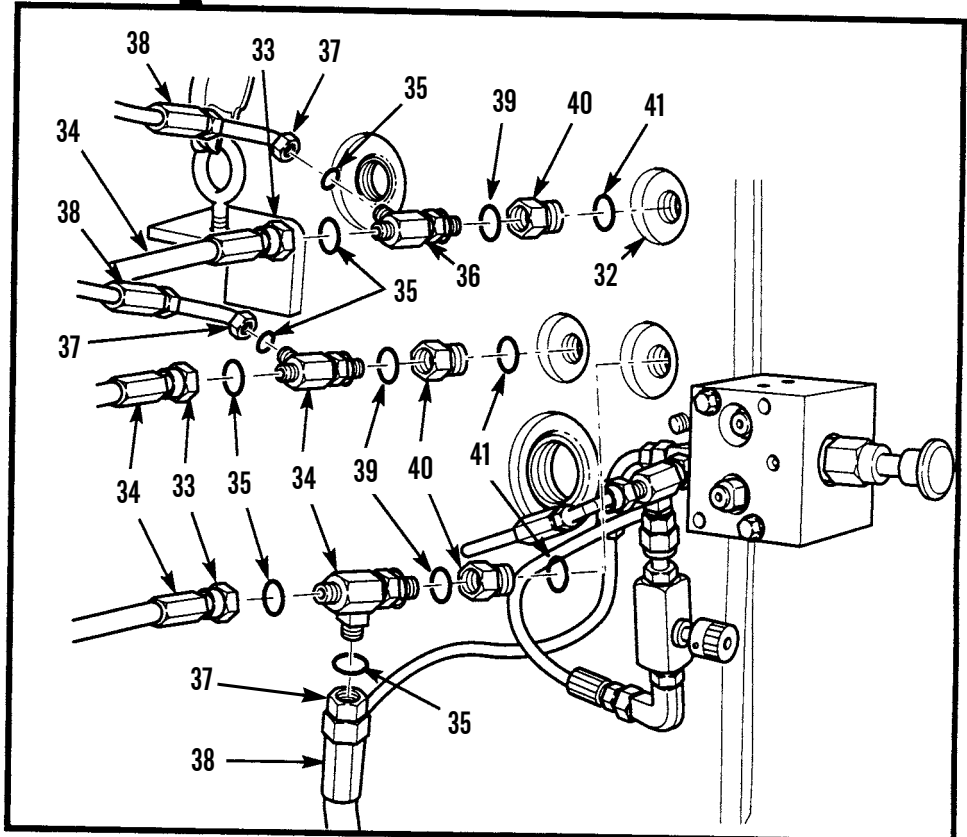
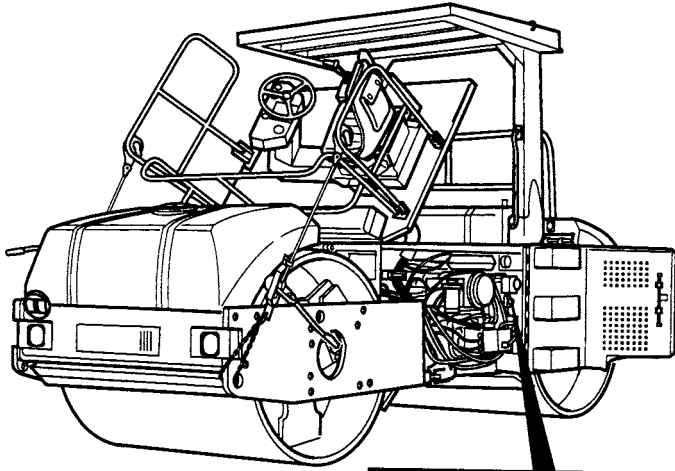
401-350

TANK INSTALLATION - CONTINUED**CAUTION**

Apply sealing compound to threads of all fittings and connections prior to installation. Failure to do so can result in fuel and hydraulic leaks, equipment damage and failure.

20. Install three new O-rings (41) and boss reducers (40) on fuel/hydraulic oil tank (32).
21. Install three new O-rings (39) and tees (36) on three boss reducers (40).
22. Install six new preformed packings (35) and three hose assemblies (38) on tees (36). Tighten nuts (37).
23. Install three new preformed packings (35) and hose assemblies (34) on tees (36). Tighten nuts (33).

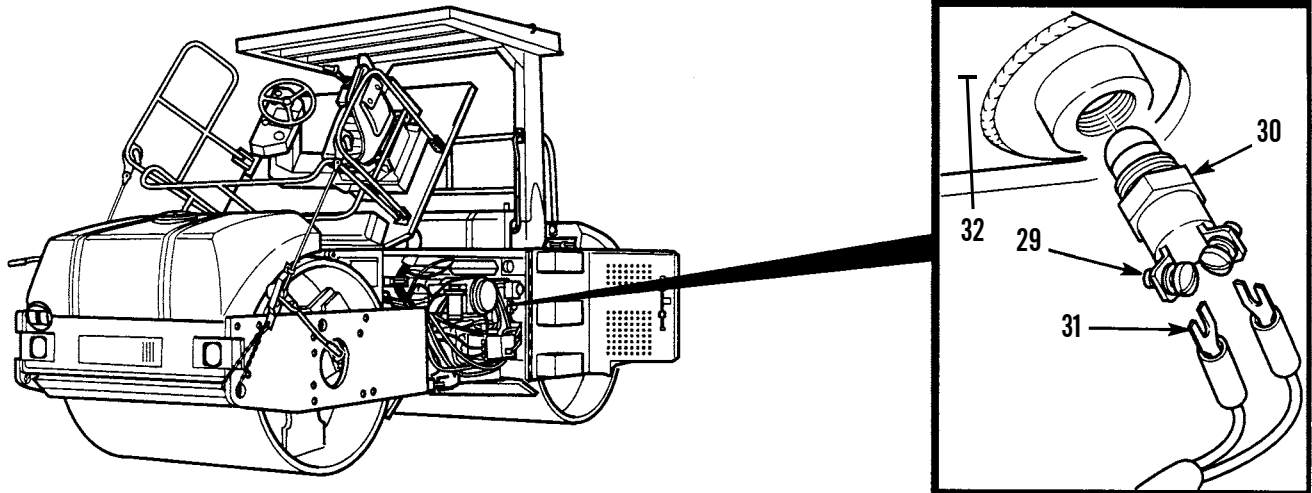
TANK INSTALLATION - CONTINUED



401-349

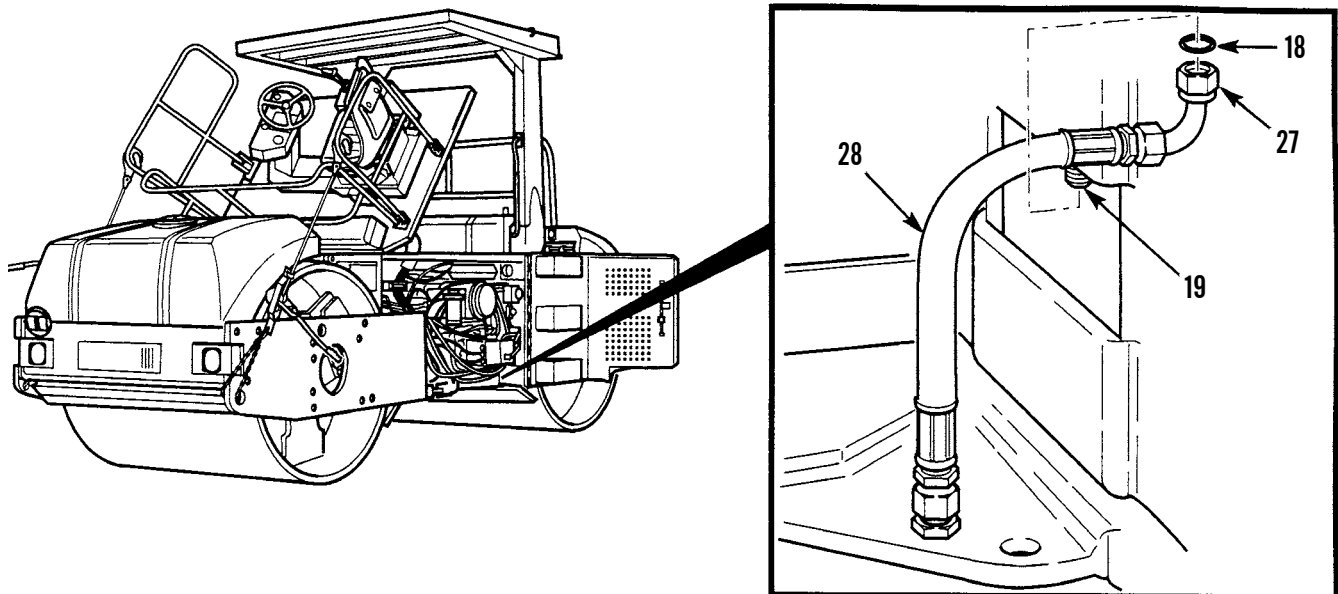
TANK INSTALLATION - CONTINUED

24. Install hydraulic oil temperature sensor (30) in fuel/hydraulic oil tank (32). Tighten sensor to 26-33 lb-ft (35-45 Nm).
25. Install two wires (31) on hydraulic oil temperature sensor (30) and tighten two screws (29) to 0.6-0.9 lb-ft (0.8-1.2 Nm).



401-348

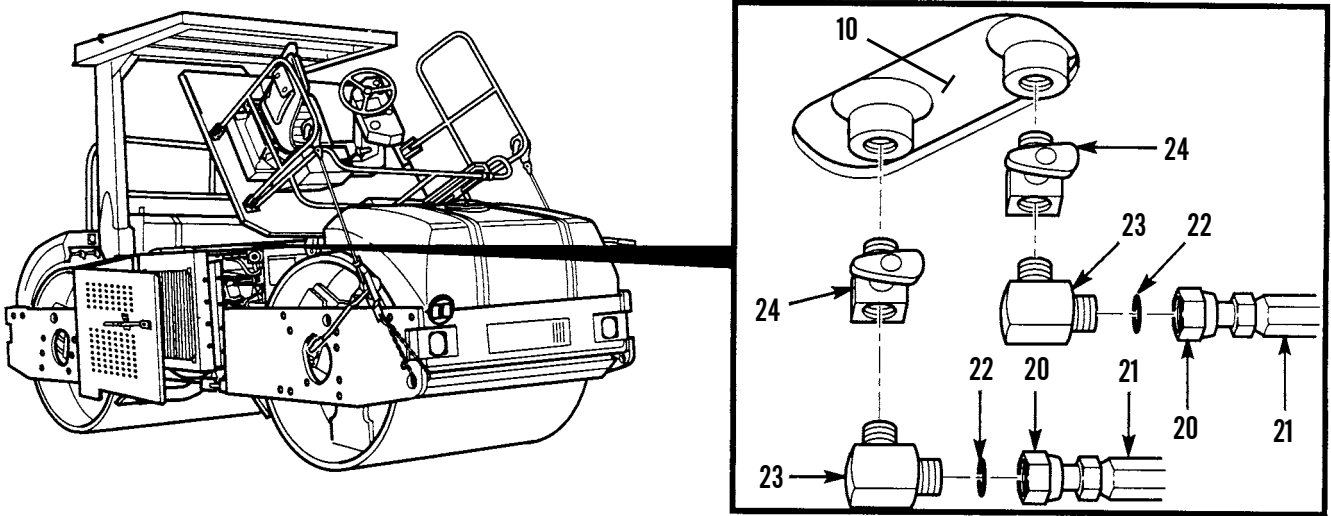
26. Install new O-ring (18) and hose assembly (28) on fuel/hydraulic oil tank connector (19) and tighten nut (27).



401-347

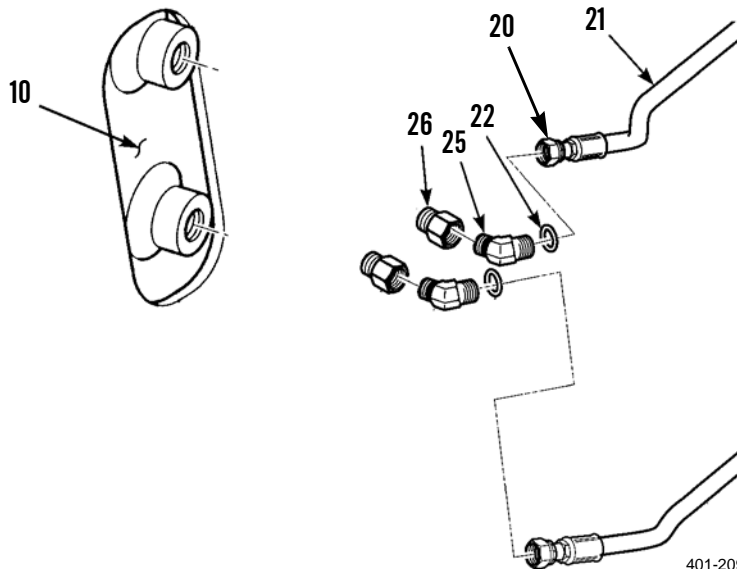
TANK INSTALLATION - CONTINUED

27. On CB534B Roller, install two valves (24) to fuel tank (10) and tighten.
28. On CB534B Roller, install two elbows (23) to valves (24).
29. For CB534B Roller, install two new preformed packings (22) and hose assemblies (21) to two elbows (23) and tighten two nuts (20).



401-346

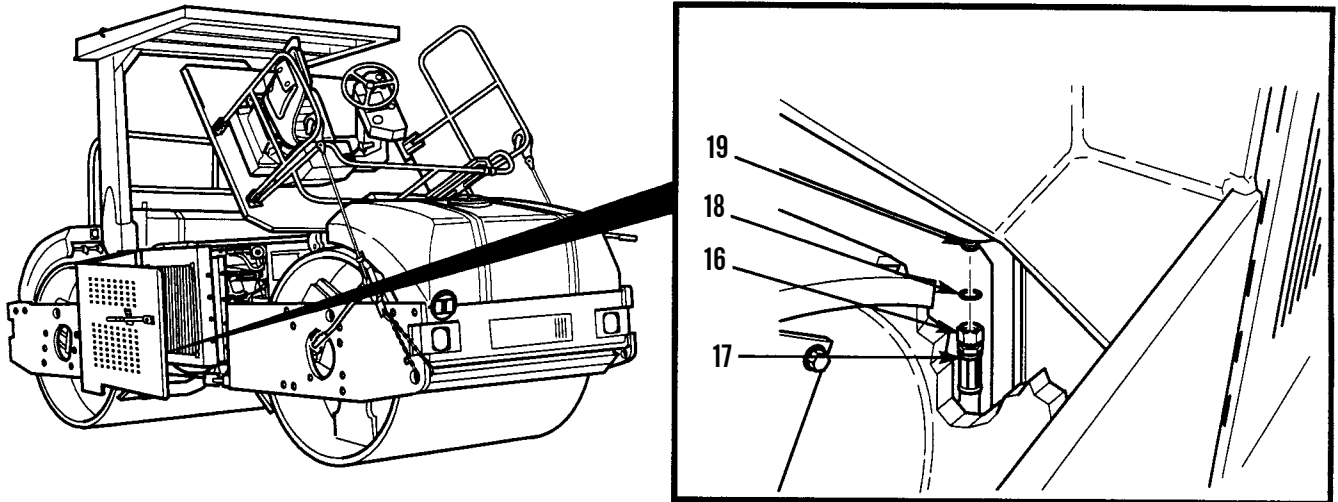
30. For CB534C Roller, install two adapters (25) to fuel tank (10) and tighten.
31. For CB534C Roller, install two adapters (26) to adapters (25).
32. For CB534C Roller, install two new preformed packings (23) and hose assemblies (21) to two adapters (25) and tighten two nuts (20).



401-2093

TANK INSTALLATION - CONTINUED

33. Install new O-ring (18) and hose assembly (17) to fuel tank connector (19) and tighten nut (16).

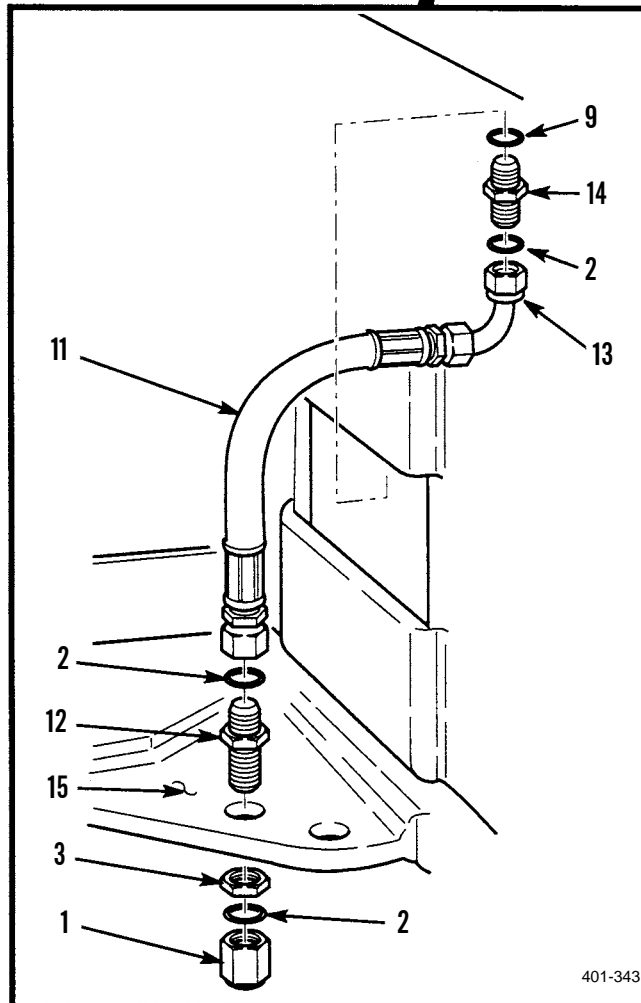
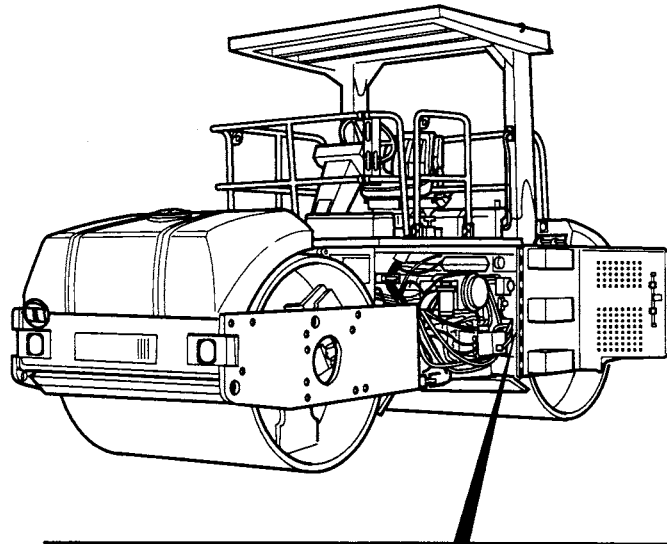


401-345

DRAIN LINE INSTALLATION

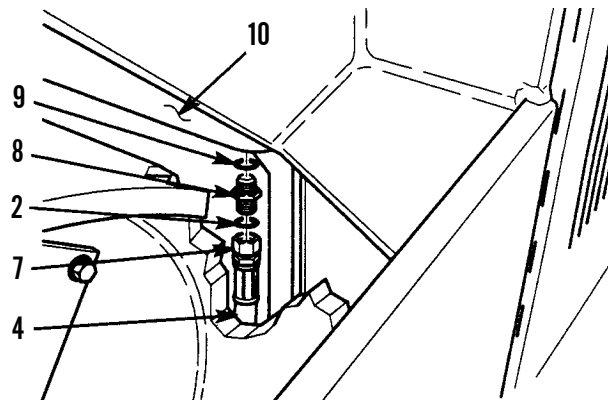
1. Install new O-ring (9) and hydraulic oil tank connector (14) in hydraulic oil tank.
2. Install new O-ring (2) and hose assembly (11) on hydraulic oil tank connector (14) with nut (13).
3. Install new O-ring (2) and adapter (12) on hose assembly (11).
4. Install hose assembly (11) on frame assembly (15) using nut (3).
5. Install new O-ring (2) and hydraulic oil drain cap (1) to hose assembly (11).

DRAIN LINE INSTALLATION - CONTINUED



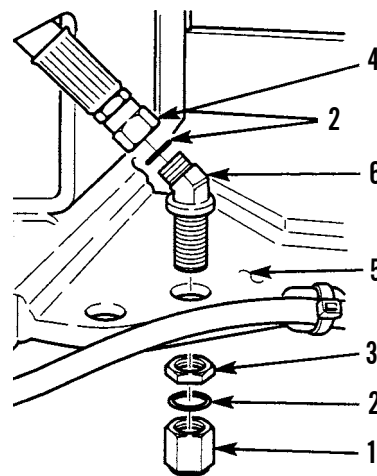
DRAIN LINE INSTALLATION - CONTINUED

6. Install new O-ring (9) and fuel tank connector (8) on fuel tank (10).
7. Install new O-ring (2) and hose assembly (4) on fuel tank connector (8) with nut (7).



401-342

8. Install new O-ring (2) and elbow (6) on hose assembly (4).
9. Install hose assembly (4) on frame assembly (5) with nut (3).
10. Install new O-ring (2) and fuel drain cap (1) on hose assembly (4).



401-344

11. Install air cleaner assembly (WP 0032 00).
12. Lower operator platform assembly (WP 0128 00).
13. Install fuel level sending unit (WP 0096 00).
14. Fill fuel/hydraulic oil tank and check for leaks (WP 0037 00).

CAUTION

- The fuel injection pump needs fuel for lubrication. The precision parts of the pump are easily damaged. For this reason, the engine must NOT be started until the injection pump is full of fuel that is free of air.
- The system must be primed any time any part of the system is drained of fuel. For example, when the fuel system is changed or a fuel line is removed or when the inspection cover on the fuel injection pump is removed for service or repair, the fuel system must be primed (air removed).

15. Prime fuel system (WP 0041 00).
16. Start engine and check for leaks (TM 5-3895-379-10).
17. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL CAP ASSEMBLY MAINTENANCE

0039 00

THIS WORK PACKAGE COVERS

Removal, Disassembly, Cleaning and Inspection, Assembly, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound cleaning, solvent (Item 9, WP 0219 00)

Cloth, cleaning (Item 10, WP 0219 00)

Gasket (2)

References

TM 5-3895-379-23P, Figure 30

Equipment Condition

Engine off (TM 5-3895-379-10)

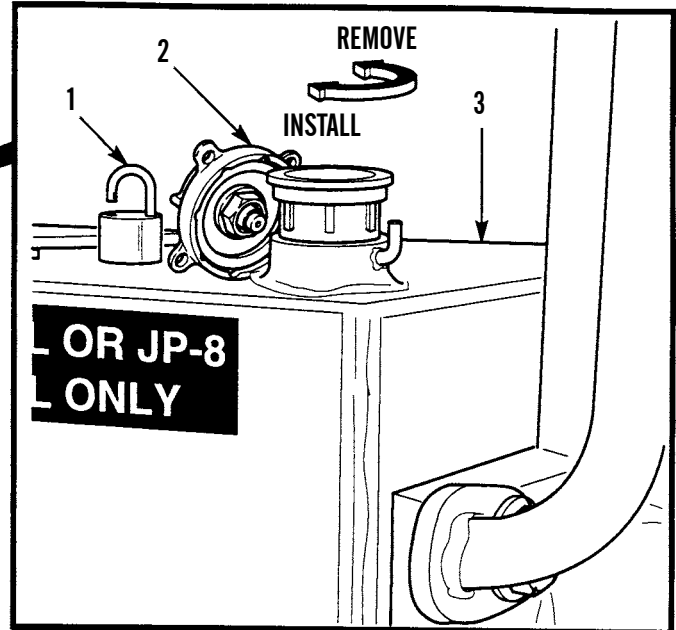
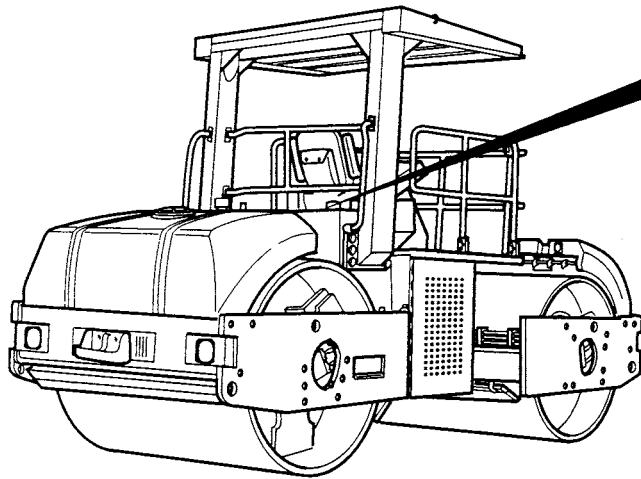
Drums chocked (TM 5-3895-379-10)

**WARNING**

- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or equipment damage.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL

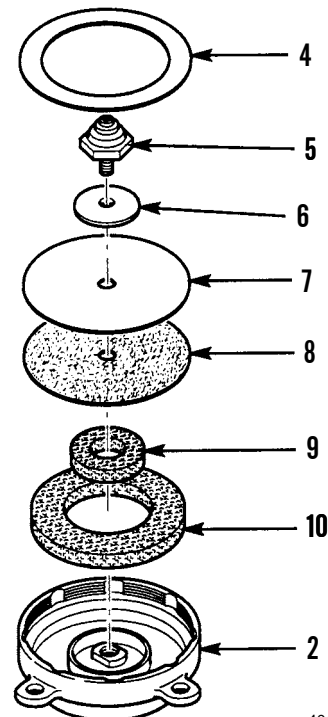
1. Remove lock (1) from fuel cap assembly (2).
2. Turn fuel cap assembly (2) to the left until fuel cap assembly can be removed from fuel tank (3).



401-359

DISASSEMBLY

1. Remove gasket (4) from fuel cap assembly (2). Discard gasket.
2. Remove valve assembly (5), washer (6), baffle (7) and gasket (8) from fuel cap assembly (2). Discard gasket.
3. Remove filter elements (9) and filter (10) from fuel cap assembly (2).



401-360

CLEANING AND INSPECTION**WARNING**

- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

1. Clean all metal parts with cleaning compound, solvent.
2. Use cleaning cloth or compressed air to dry all metal parts.
3. Check cap for nicks, cracks, dents and stripped threads. Replace any damaged parts.

ASSEMBLY

1. Install filter element (9) and filter (10) in fuel cap assembly (2).
2. Install new gasket (8), baffle (7), washer (6) and valve assembly (5) in fuel cap assembly (2). Tighten valve assembly securely.
3. Install new gasket (4) in fuel cap assembly (2).

INSTALLATION

1. Install fuel cap assembly (2) on fuel tank (3) by turning fuel cap assembly clockwise.
2. Install lock (1) in eye of fuel cap assembly (2), one eye left of lock stop.
3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL FILTER ASSEMBLY MAINTENANCE

0040 00

THIS WORK PACKAGE COVERS

Fuel Filter Element Removal, Installation

Cleaning and Inspection

Fuel Filter Assembly Removal, Disassembly,
Assembly, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220
00)

Materials/Parts

Cloth, cleaning (Item 10, WP 0219 00)

Fuel, diesel (Item 15, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Bushing (6)

Damper

Materials/Parts - Continued

Element

Packing, preformed (2)

Seal

Sleeve

Washer (4)

References

WP 0041 00, Priming Fuel System

TM 5-3895-379-23P, Figures 32 and 33

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

NOTE

Fuel filter assembly is maintained the same way for CB534B and CB534C Rollers. CB534B Roller is shown.

FUEL FILTER ELEMENT REMOVAL



WARNING

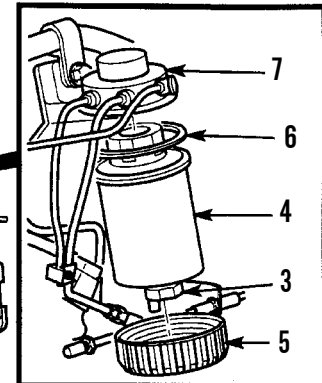
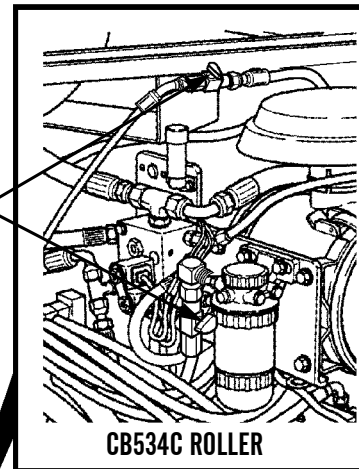
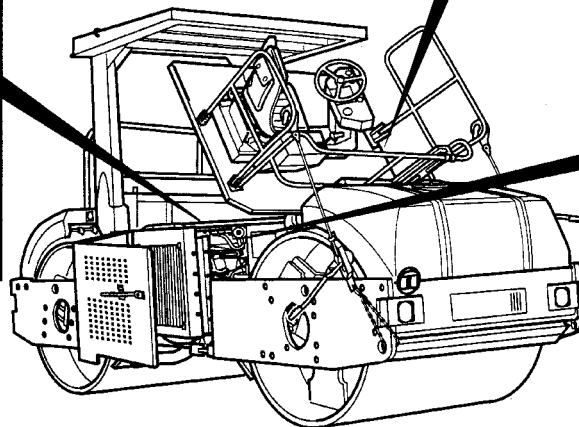
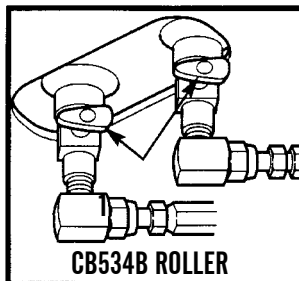


- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

- Use a container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned up.
- Use funnel to direct fuel drainage into container with 1 qt (0.9 l) minimum capacity.

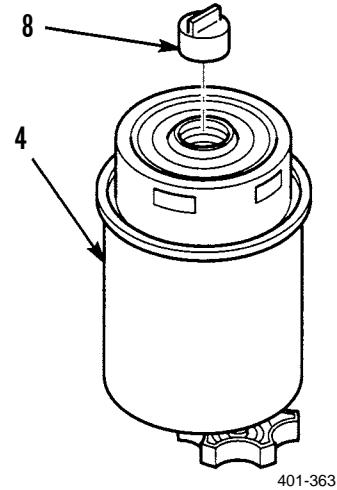
1. For CB534B Roller, close fuel supply valves (1).
2. For CB534C Roller, close fuel supply valves (2).
3. Turn drain valve (3) on bottom of filter element (4) to left and drain fuel into container.
4. Remove ring (5), filter element (4) and seal (6) from filter assembly (7). Discard seal.



401-2224

FUEL FILTER ELEMENT INSTALLATION

1. Remove shipping plug (8) from top of new filter element (4).



2. Install new seal (6), filter element (4) and ring (5) on filter assembly (7). Tighten ring until it snaps into place.
3. For CB534B Roller, open fuel supply valves (1).
4. For CB534C Roller, open fuel supply valves (2).

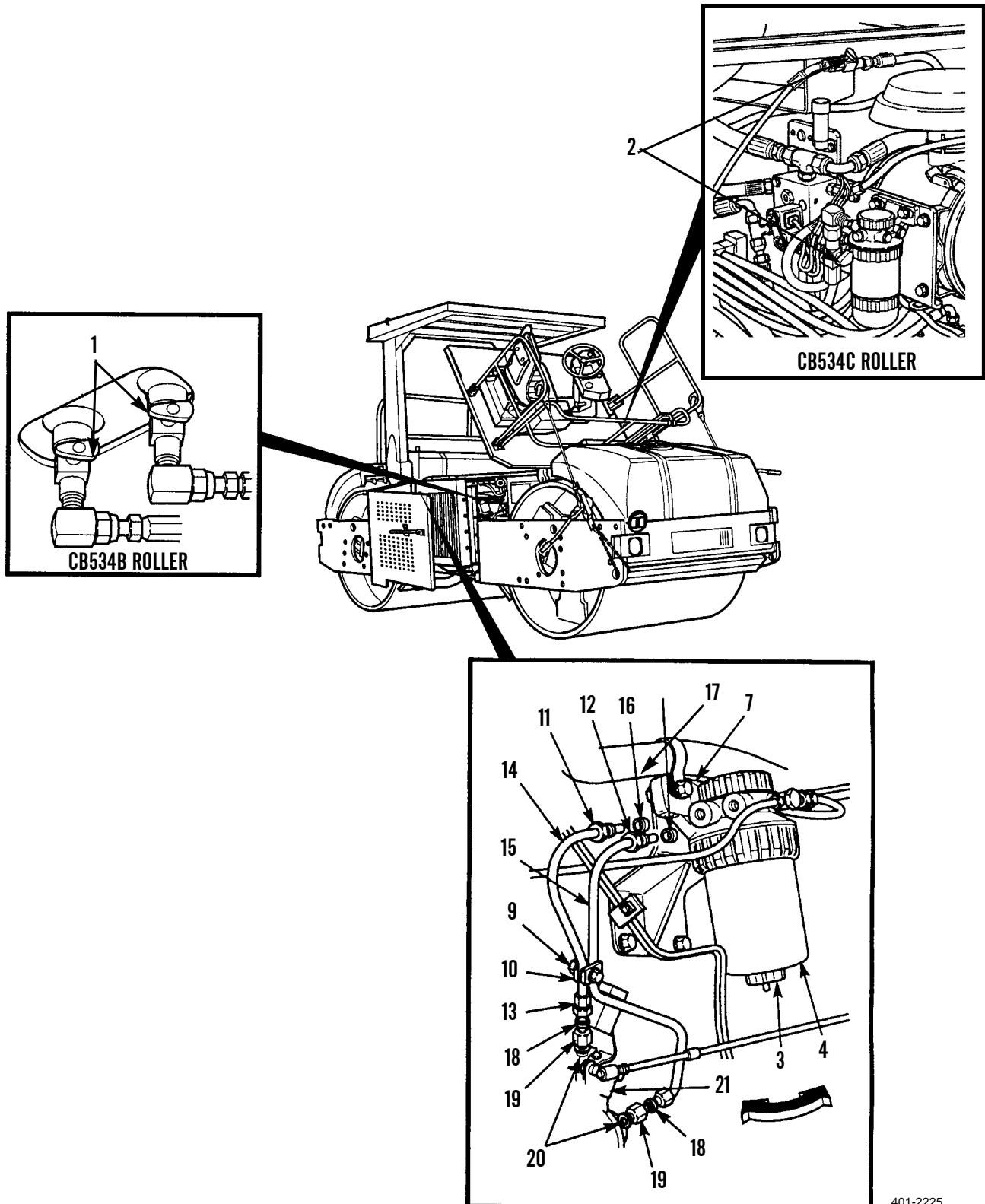
FUEL FILTER ASSEMBLY REMOVAL

1. For CB534B Roller, close fuel supply valves (1).
2. For CB534C Roller, close fuel supply valves (2).
3. Place container under drain valve (3).
4. Open drain valve (3) on bottom of filter element (4) and drain fuel into container.
5. Loosen nut (9) and slide clamp (10) up to provide clearance for fuel line removal.

NOTE

- Tag and mark all hoses prior to removal.
 - Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.
6. Loosen two nuts (11) and (12), two nuts (13) and remove two tubes (14) and (15), two bushings (16) and (17) and two bushings (18) from fuel filter assembly (7) and two adapters (19). Discard bushings.
 7. If damaged, remove two adapters (19) and washers (20) from fuel injection pump (21). Discard washers.

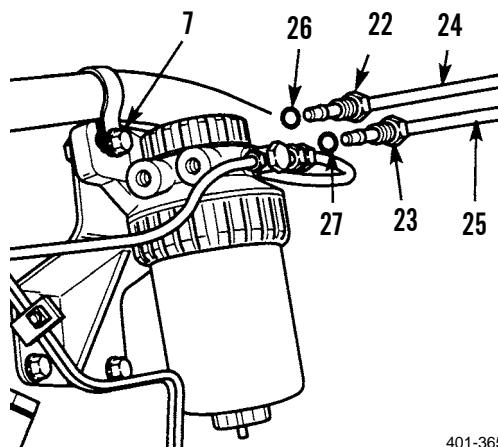
FUEL FILTER ASSEMBLY REMOVAL - CONTINUED



401-2225

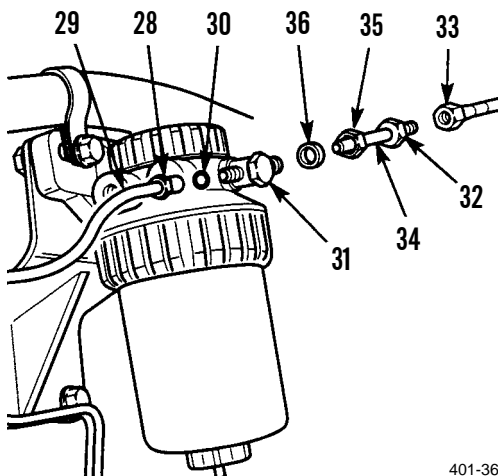
FUEL FILTER ELEMENT ASSEMBLY REMOVAL - CONTINUED

8. Loosen two nuts (22) and (23) and remove two tubes (24) and (25) and bushings (26) and (27) from fuel filter assembly (7). Discard bushings.



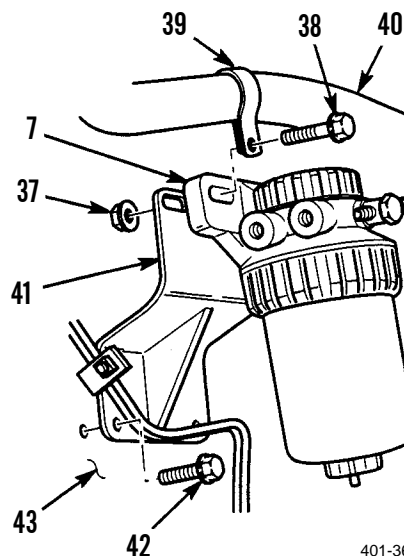
401-365

9. Loosen nut (28) and remove tube (29) and sleeve (30) from connector (31). Discard sleeve.
10. Loosen connector (32) and remove hose (33) from tube (34).
11. Loosen nut (35) and remove tube (34) and damper (36) from connector (31). Discard damper.



401-366

12. Remove two nuts (37), two screws (38), clip (39), hose (40) and fuel filter assembly (7) from bracket (41).
13. If damaged, remove two screws (42) and bracket (41) from engine block (43).



401-367

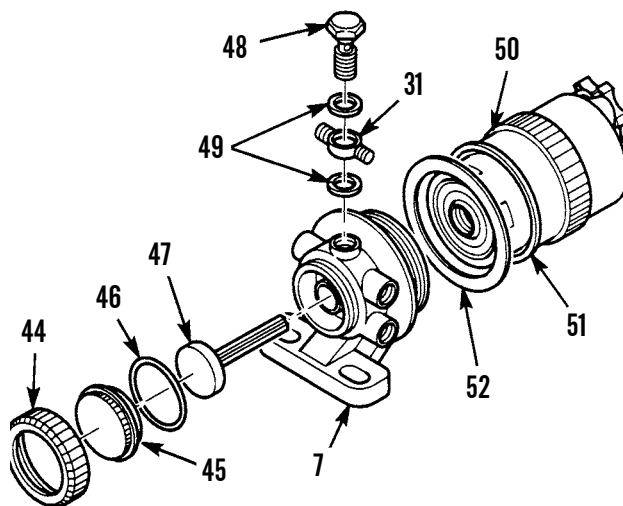
FUEL FILTER ELEMENT DISASSEMBLY

1. Place fuel filter assembly (7) on a clean work bench.
2. Remove barrel nut (44), cap (45) and preformed packing (46) from fuel filter assembly (7). Discard preformed packing.
3. Remove plug (47) from fuel filter (7).

NOTE

Note position of connector before removal.

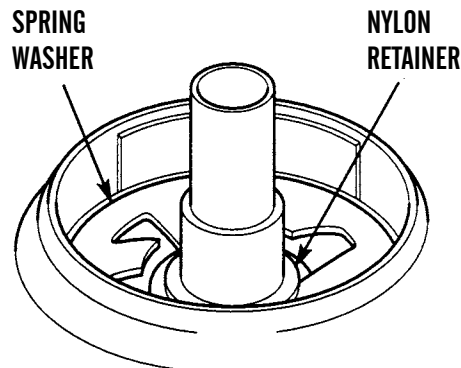
4. Remove bolt (48), washer (49), connector (31) and washer (49) from fuel filter assembly (7). Discard washers.
5. Remove ring (50), filter element (51) and seal (52) from fuel filter assembly (7). Discard seal.



401-368

CLEANING AND INSPECTION

1. Wipe off all parts with a cleaning cloth.
2. Inspect fuel filter assembly for cracks, nicks, dents and stripped threads. If damage is found, replace fuel filter assembly.
3. Inspect that spring washer is firmly seated in nylon retainer in fuel filter assembly.
4. Inspect nylon retainer for cracking and hardening.
5. Inspect plug, barrel nut and ring for cracks, nicks, dents and stripped threads. Replace all damaged parts.
6. Inspect screw and connector for cracks, nicks, dents and stripped threads. Replace all damaged parts.
7. Inspect hoses and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.



401-369

FUEL FILTER ASSEMBLY ASSEMBLY**CAUTION**

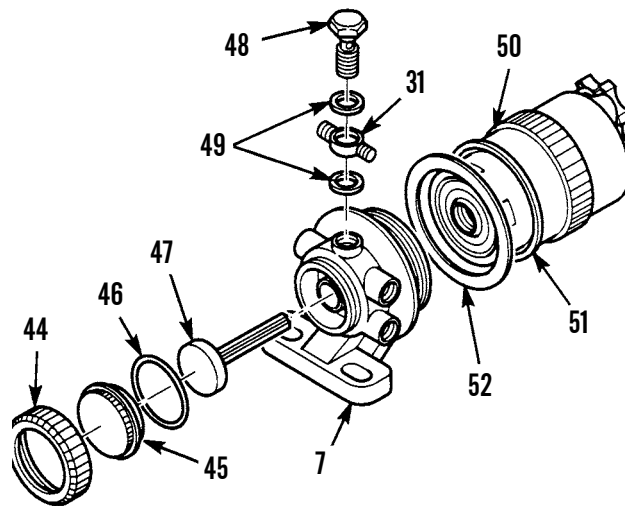
Area around filter element must be very clean. Any contaminants entering fuel filter assembly will cause damage to equipment.

1. Place fuel filter assembly (7) on a clean work bench.
2. Remove shipping plug from filter element (51).
3. Install new seal (52), filter element (51) and ring (50) on fuel filter (7).

NOTE

Note position of connector before installation.

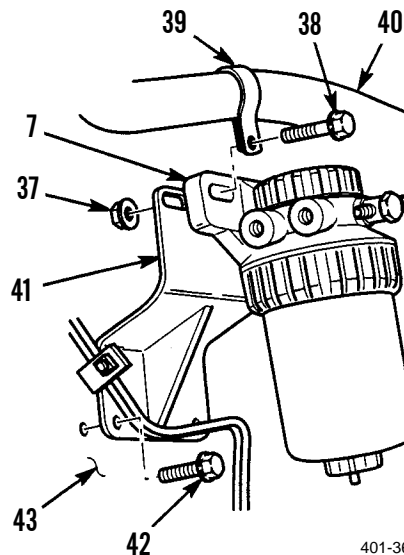
4. Install bolt (48), washer (49), connector (31) and washer (49) in fuel filter assembly (7).
5. Install plug (47) in fuel filter assembly (7).
6. Install preformed packing (46), cap (45) and barrel nut (44) on fuel filter assembly (7).



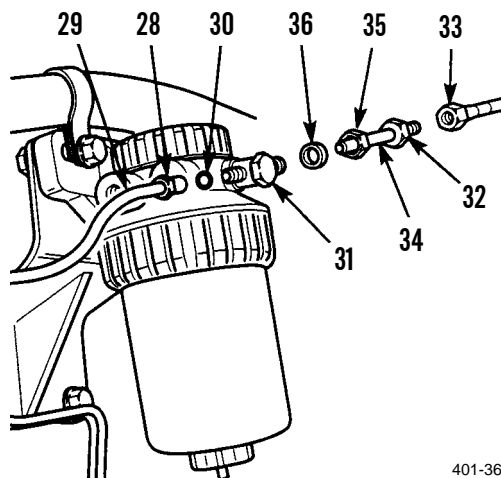
401-368

FUEL FILTER ASSEMBLY INSTALLATION

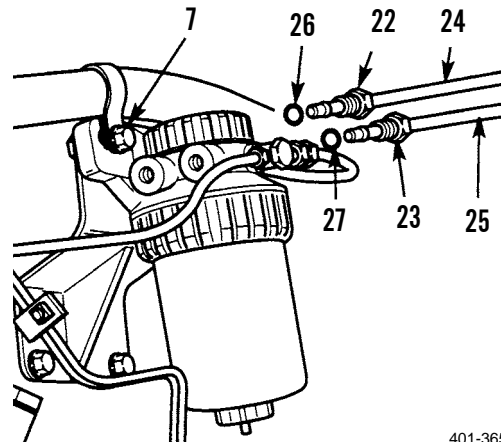
1. If removed, install bracket (41) with two screws (42) on engine block (43).
2. Install fuel filter assembly (7), clip (39) and hose (40) on bracket (41) with two screws (38) and nuts (37).



3. Install damper (36), connector (32) and tube (34) on connector (31) and tighten nut (35).
4. Install hose (33) on tube (34) and tighten connector (32).
5. Install new sleeve (30) and tube (29) on connector (31) and tighten nut (28).



6. Install two new bushings (26) and (27) and tubes (24) and (25) in fuel filter assembly (7) and tighten two nuts (22) and (23).

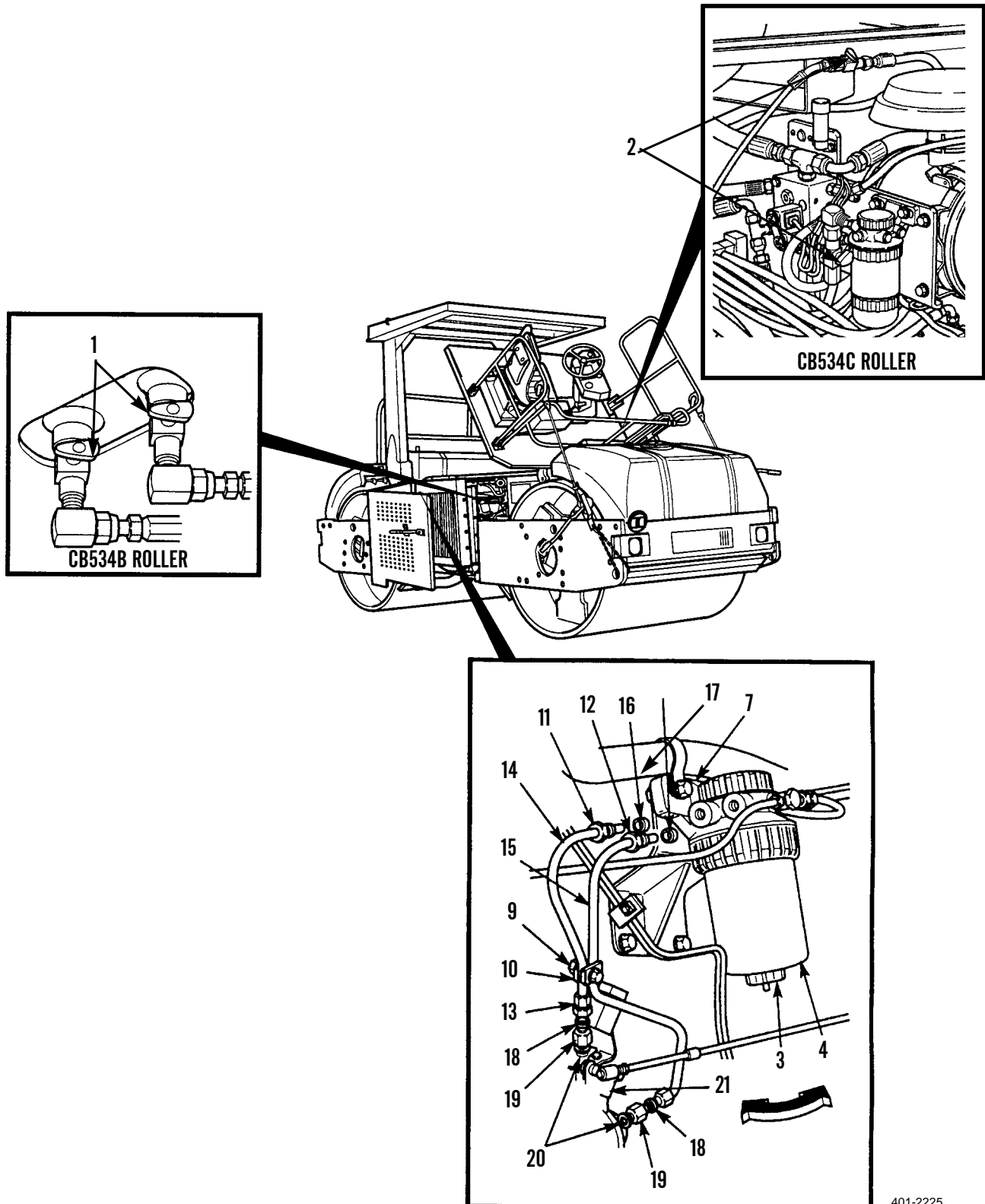


FUEL FILTER ASSEMBLY MAINTENANCE - CONTINUED

0040 00***FUEL FILTER ASSEMBLY INSTALLATION - CONTINUED***

7. Ensure that drain valve (3) on bottom of filter element (4) is closed. If drain valve is open, close drain valve.
8. If removed, install two new washers (20) and adapters (19) in fuel injection pump (21).
9. Install two new bushings (16) and (17), two new bushings (18) and two tubes (14) and (15) in fuel filter assembly (7) and on two adapters (19). Tighten two nuts (11) and (12) and two nuts (13).
10. Slide clamp (10) up and tighten nut (9).
11. For CB534B Roller, open fuel supply valves (1).
12. For CB534C Roller, open fuel supply valves (2).

FUEL FILTER ASSEMBLY INSTALLATION - CONTINUED



401-2225

FUEL FILTER ASSEMBLY INSTALLATION - CONTINUED**CAUTION**

- The fuel injection pump needs fuel for lubrication. The precision parts of the pump are easily damaged. For this reason, engine must NOT be started until lubrication pump is full of fuel that is free of air.
- The system must be primed any time any part of system is drained of fuel. For example, when fuel system is changed or a fuel line is removed or when inspection cover on fuel injection pump is removed for service or repair, fuel system must be primed (air removed).

13. Prime fuel system (WP 0041 00).
14. Lower operator platform assembly (WP 0128 00).
15. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

PRIMING FUEL SYSTEM

0041 00

THIS WORK PACKAGE COVERS

Priming

INITIAL SETUP

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Left-side door assembly opened (TM 5-3895-379-10)



WARNING



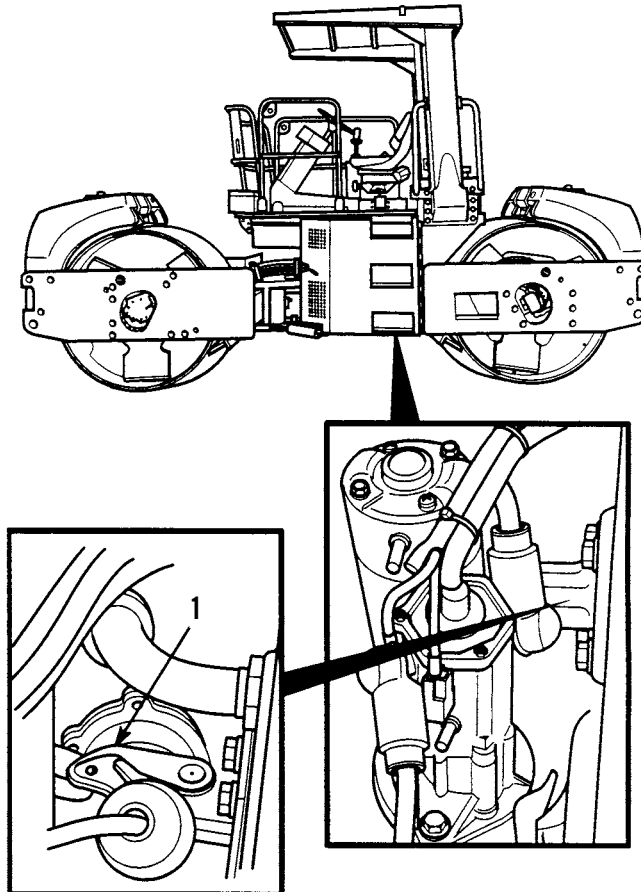
- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

PRIMING**WARNING**

Use caution and allow engine to cool before priming fuel system. Failure to follow this warning may cause injury.

NOTE

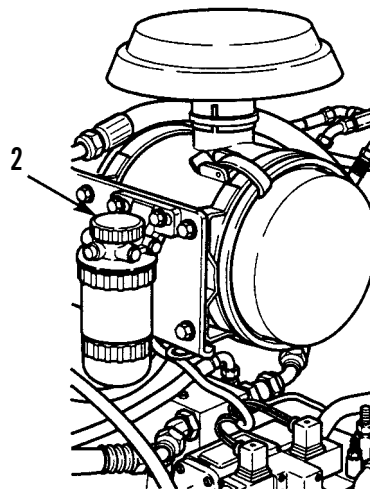
- Fuel lift pump is located above engine starter. To prime pump, reach up from under engine and around starter.
 - If fuel system components have recently been serviced or replaced, perform step 2 while performing step 1; otherwise, step 2 may be skipped.
 - Fuel system priming is performed the same way for CB534B and CB534C Rollers. CB534B Roller is shown.
1. Operate fuel lift pump handle (1) for approximately two minutes or until resistance is felt.



401-371

PRIMING - CONTINUED

2. Loosen cap (2) on fuel filter or fuel/water separator to allow air to escape while performing step 1. Close cap when all air is replaced with fuel.

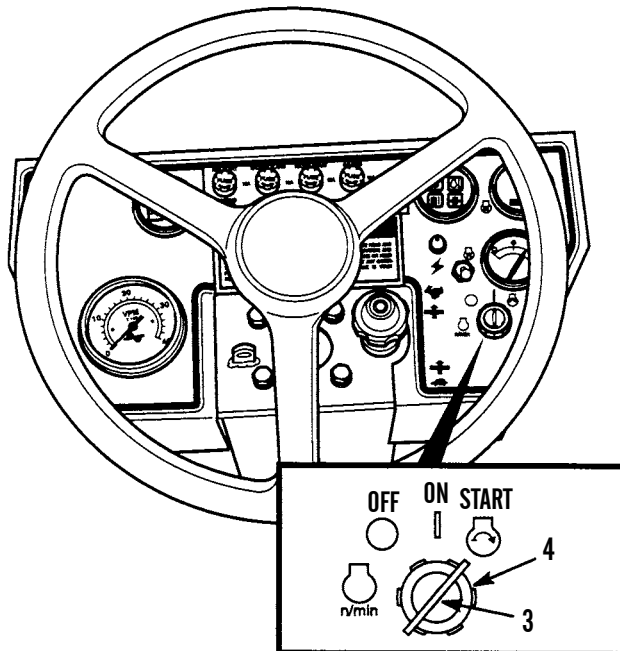


401-372

CAUTION

- The fuel injection pump needs fuel for lubrication. The precision parts of the pump are easily damaged. For this reason, the engine must NOT be started until the lubrication pump is full of fuel that is free of air.
- The system must be primed any time the fuel system has been sealed or repaired.

3. Insert key (3) in engine start switch (4) and turn key to start (full right) position. Crank engine for 30 seconds.
4. If engine is not started after 30 seconds, release key (3) and wait two minutes for starter to cool.
5. Repeat steps 3 and 4 until engine starts. If engine does not start after three tries, the high pressure fuel lines must be bled.
6. If engine starts but runs rough, continue running engine at low idle (TM 5-3895-379-10) until engine runs smoothly.



401-373

PRIMING FUEL SYSTEM - CONTINUED

0041 00

PRIMING - CONTINUED

7. Close left-side door assembly (TM 5-3895-379-10).
8. Start engine and check for leaks (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Element Removal	Cleaning and Inspection
Element Installation	Fuel/Water Separator Assembly Assembly
Fuel/Water Separator Assembly Removal	Fuel/Water Separator Assembly Installation
Fuel/Water Separator Assembly Disassembly	

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Cloth, cleaning (Item 10, WP 0219 00)
- Fuel, diesel (Item 14, 15 or 17, WP 0219 00)
- Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

- Packing, preformed (7)
- Seal (3)
- Washer

References

TM 5-3895-379-23P, Figures 33 and 34

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Operator platform assembly raised (WP 0128 00)



WARNING



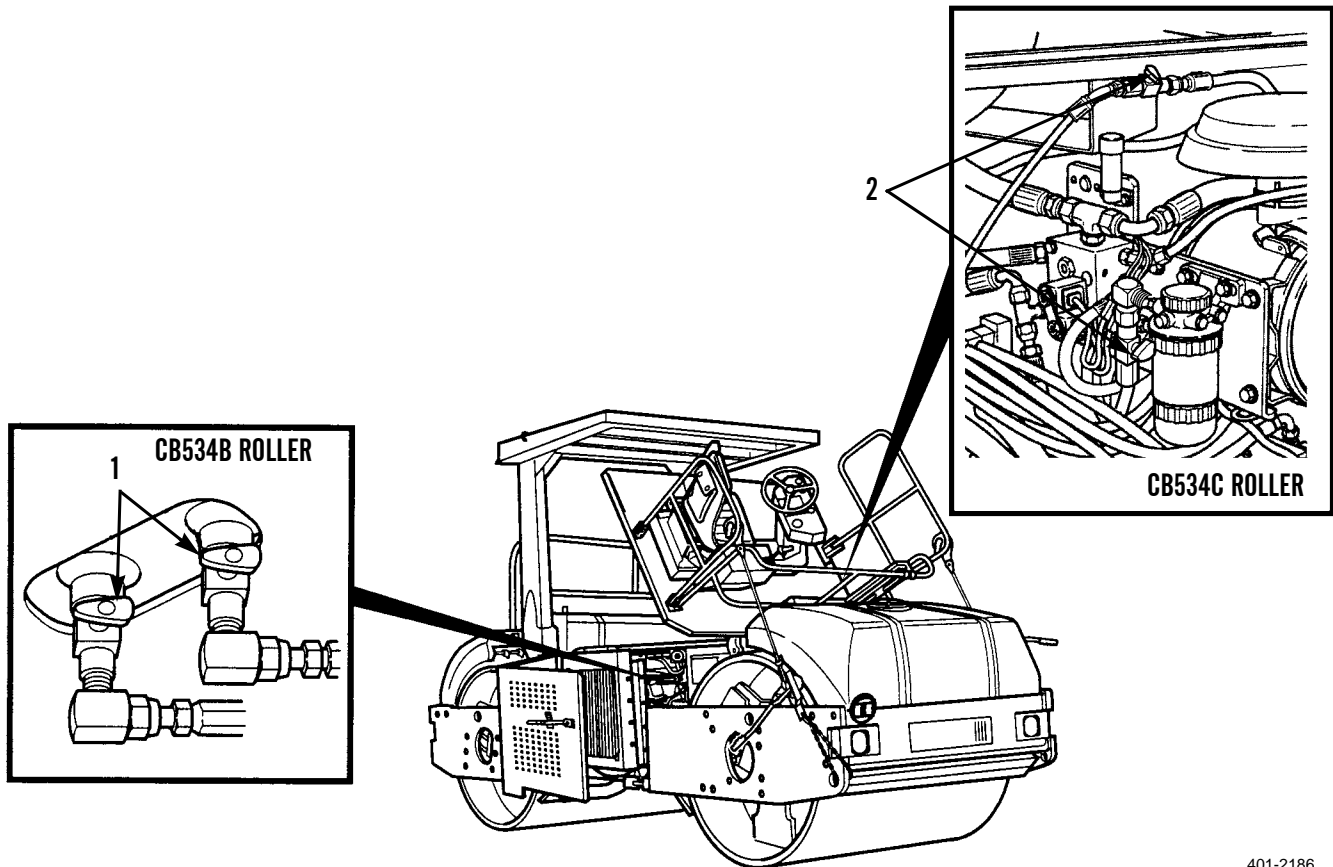
- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Fuel/water separator assembly service is performed the same way for CB534B and CB534C Rollers. CB534B Roller is shown.

ELEMENT REMOVAL

1. For CB534B Roller, close fuel supply valves (1). For CB534C Roller, close fuel supply valves (2).



401-2186

NOTE

Place a container beneath fuel/water separator to catch any fuel/water that may drain from system. Dispose of fuel/water IAW local policy and ordinances. Ensure all spills are cleaned up.

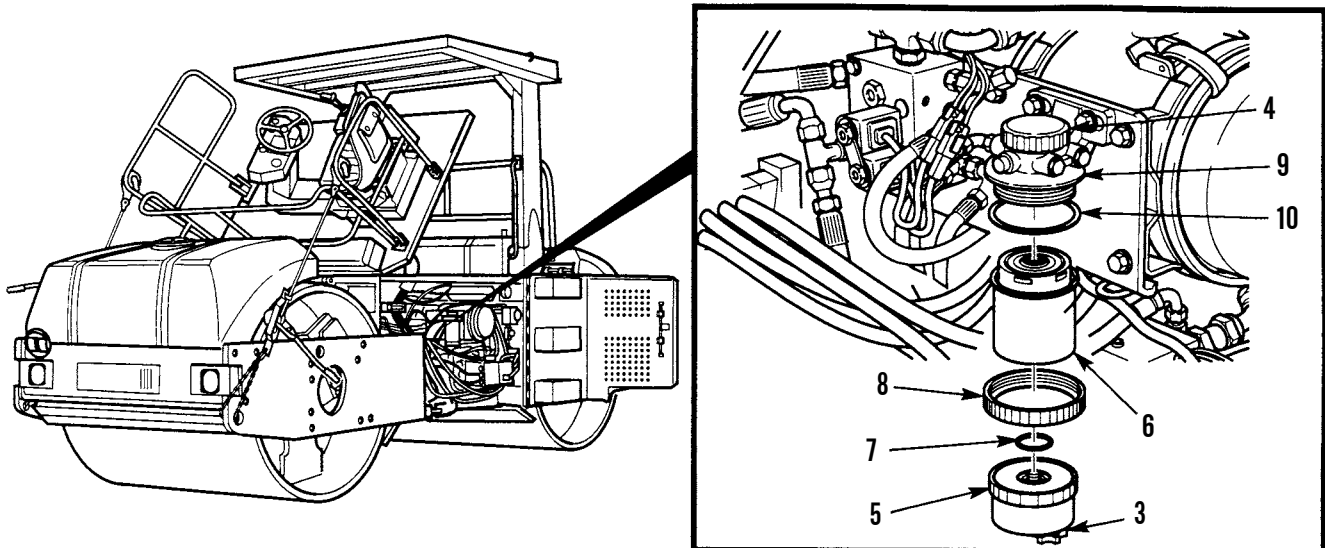
2. Open drain valve (3), loosen nut (4) and drain fuel/water separator into container.
3. Remove water separator bowl (5) from fuel/water separator element (6).
4. Remove and discard washer (7) from water separator bowl (5).
5. Remove ring (8) from fuel/water separator head (9).

CAUTION

Area around filter must be very clean. Any contaminants entering filter head will damage equipment. Wipe area with cleaning cloth.

6. Remove fuel/water separator element (6) and seal (10) from fuel/water separator head (9). Discard seal and element.

ELEMENT REMOVAL - CONTINUED



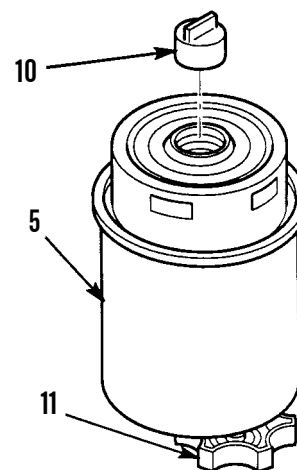
401-376

ELEMENT INSTALLATION

CAUTION

Area around filter must be very clean. Any contaminant entering filter element or filter assembly will damage equipment.

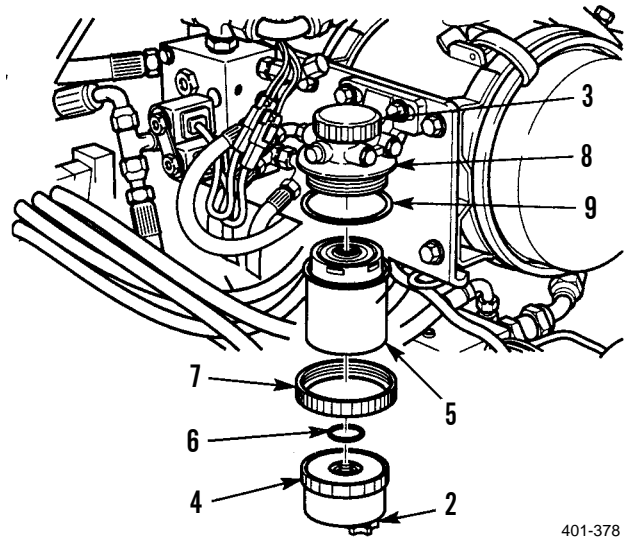
1. Remove plug (10) and drain (11) from new element (5).



401-377

ELEMENT INSTALLATION - CONTINUED

2. Apply fuel oil on new seal (9) and install on fuel/water separator head (8).
3. Install fuel/water separator element (5) on fuel/water separator head (8).
4. Install ring (7) on fuel/water separator head (8).
5. Apply fuel oil on washer (6) and install on water separator bowl (4).
6. Install water separator bowl (4) on fuel/water separator element (5).
7. Tighten nut (3) and close drain valve (2) on water separator bowl (4).

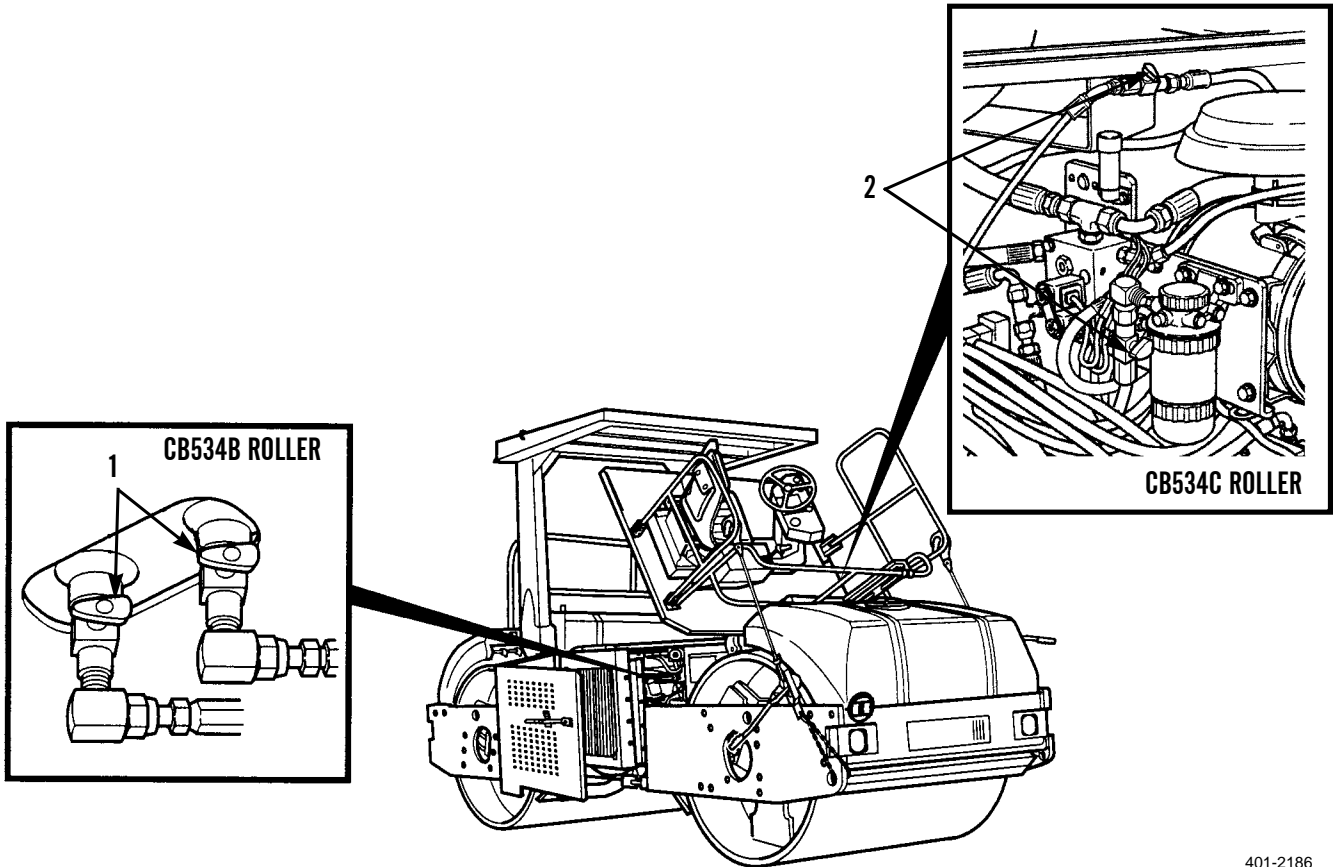


401-378

8. On the CB534B Roller, open fuel supply valves (1). On the CB534C Roller, open fuel supply valves (2).

FUEL/WATER SEPARATOR ASSEMBLY REMOVAL

1. For CB534B Roller, close fuel supply valves (1). For the CB534C Roller, close fuel supply valves (2).



401-2186

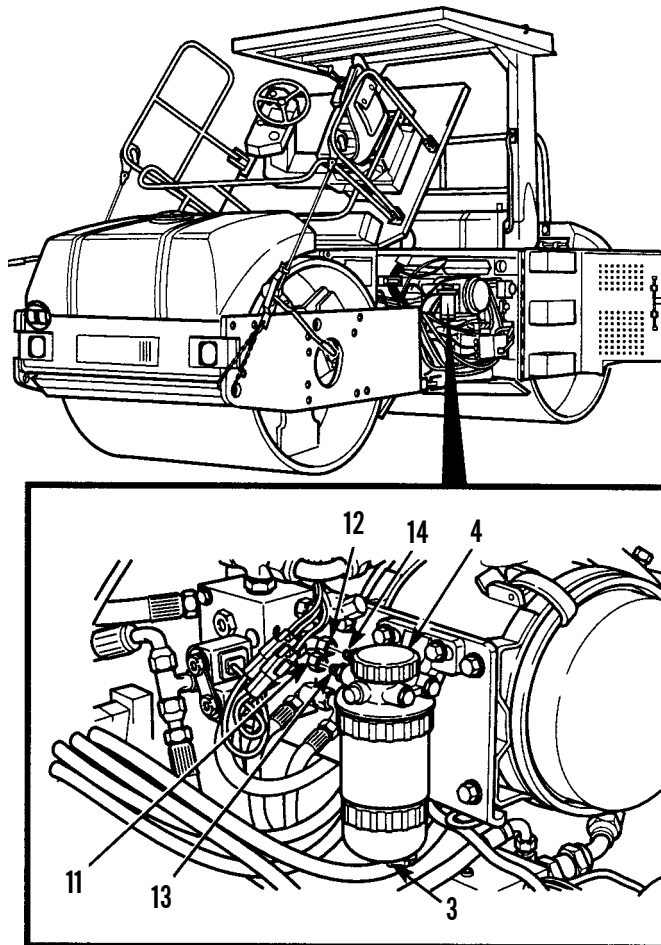
FUEL/WATER SEPARATOR ASSEMBLY REMOVAL - CONTINUED**NOTE**

Place a container beneath fuel/water separator to catch any fuel/water that may drain from system. Dispose of fuel/water IAW local policy and ordinances. Ensure all spills are cleaned up.

2. Place container under drain valve (3).
3. Open drain valve (3), loosen nut (4) and drain fuel/water separator into container.

NOTE

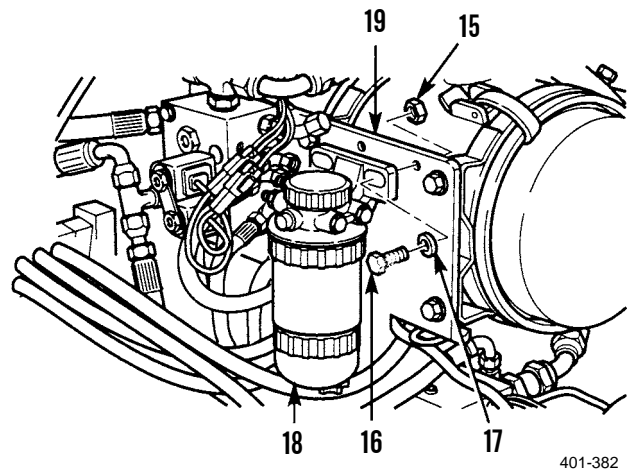
- Tag and mark all hoses prior to removal.
 - Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.
4. Remove two hoses (11) and (12) from connectors (13) and (14).



401-381

FUEL/WATER SEPARATOR ASSEMBLY REMOVAL - CONTINUED

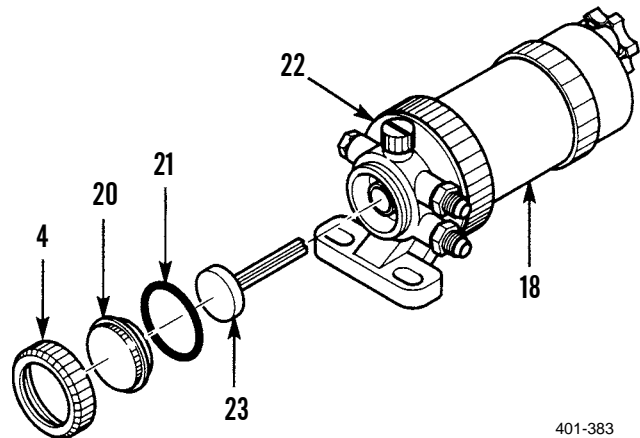
- Remove two nuts (15), screws (16), washers (17) and fuel/water separator assembly (18) from support (19).



401-382

FUEL/WATER SEPARATOR ASSEMBLY DISASSEMBLY

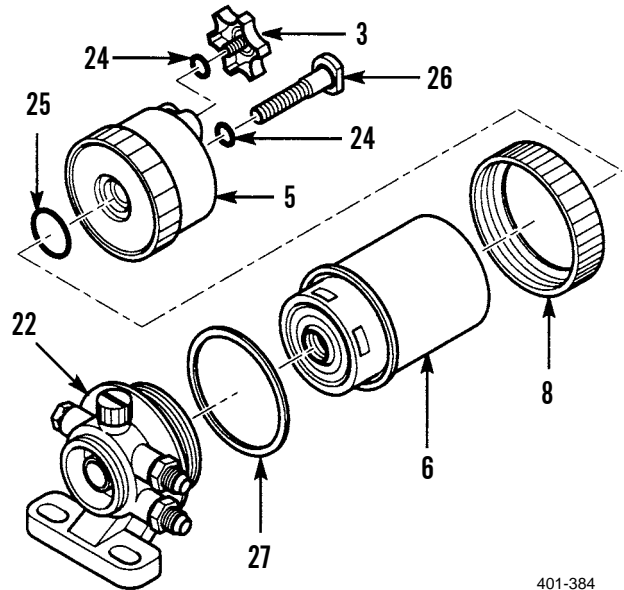
- Place fuel/water separator assembly (18) on a clean work bench.
- Remove nut (4), cap (20) and preformed packing (21) from fuel/water separator head (22). Discard preformed packing.
- Remove plug (23) from fuel/water separator head (22).



401-383

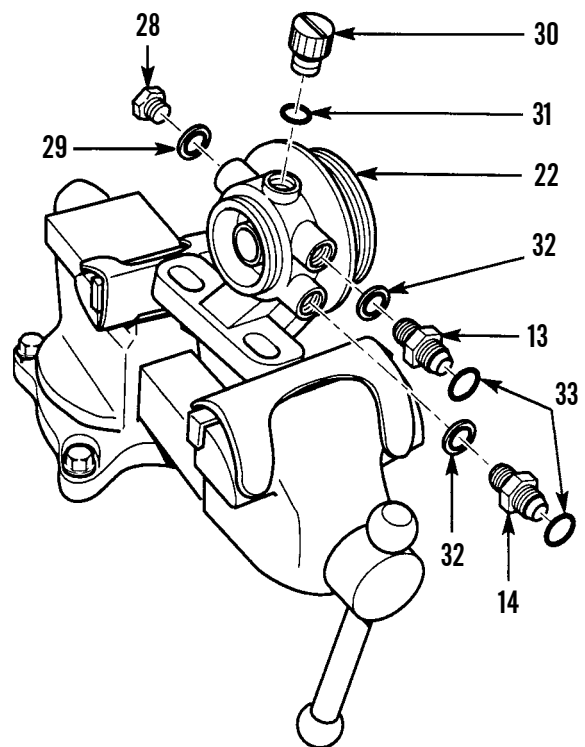
FUEL/WATER SEPARATOR ASSEMBLY DISASSEMBLY - CONTINUED

4. Remove drain valve (3) and preformed packing (24) from water separator bowl (25). Discard preformed packing.
5. Remove water separator bowl (5) from fuel/water separator element (6).
6. Remove and discard preformed packing (25) from water separator bowl (5).
7. Remove screw (26) from water separator bowl (5).
8. Remove and discard preformed packing (24) from screw (25).
9. Remove collar (8) from fuel/water separator head (22).
10. Remove fuel/water separator element (6) and seal (27) from fuel/water separator head (22). Discard seal.
11. Place fuel/water separator head (22) in a soft-jawed vise.



401-384

12. Remove two plugs (28) and seals (29) from fuel/water separator head (22). Discard seals.
13. Remove plug (30) and preformed packing (31) from fuel water separator head (22). Discard preformed packing.
14. Remove two connectors (13) and (14) and seals (32) from fuel/water separator head (22). Discard seals.
15. Remove two preformed packings (33) from connectors (13) and (14). Discard preformed packings.
16. Remove fuel/water separator head (22) from soft-jawed vise.



401-385

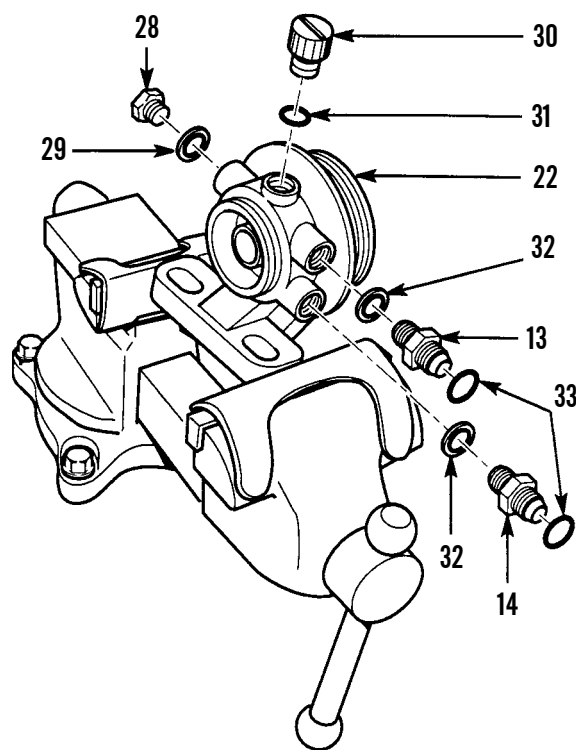
CLEANING AND INSPECTION

1. Wipe off all parts with cleaning cloth.
2. Inspect fuel/water separator head fittings for cracks, nicks, dents and stripped threads. If damage is found, replace fuel/water separator head.
3. Inspect all plugs and washers for cracks, nicks, dents and stripped threads. Replace all damaged parts.
4. Inspect nut, screw, cap and collar for cracks, nicks, dents and stripped threads. Replace all damaged parts.
5. Inspect water separator bowl for cracks, nicks and dents. Replace if necessary.
6. Inspect hoses and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

FUEL/WATER SEPARATOR ASSEMBLY ASSEMBLY**CAUTION**

Area around filter must be very clean. Any contaminant entering filter element or filter assembly will damage equipment.

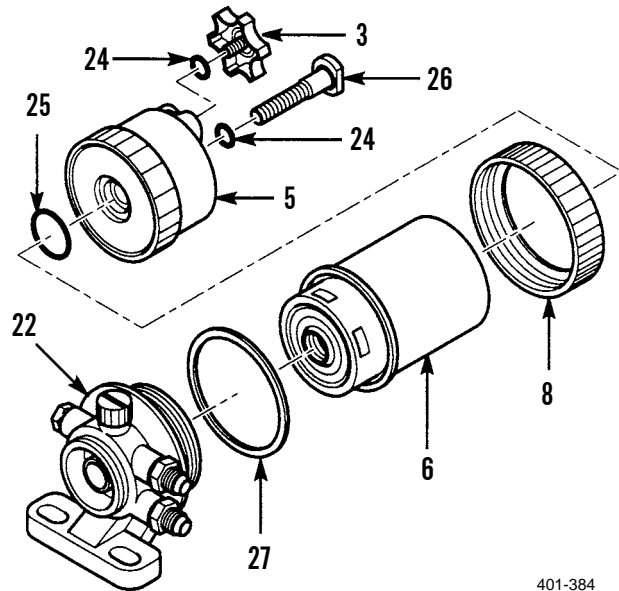
1. Place fuel/water separator head (22) in a soft-jawed vise.
2. Install two new preformed packings (33) into connectors (13 and 14).
3. Install two seals (32) and connectors (13 and 14) in fuel/water separator head (22).
4. Install new preformed packing (31) and plug (30) in fuel/water separator head (22). Tighten plug securely.
5. Install two seals (29) and plugs (28) in fuel/water separator head (22). Tighten plugs securely.



401-385

FUEL/WATER SEPARATOR ASSEMBLY ASSEMBLY - CONTINUED

6. Remove fuel/water separator head (22) from soft-jawed vise.
7. Apply fuel on seal (27) and install on fuel/water separator head (22).
8. Install fuel/water separator element (6) on fuel/water separator head (22).
9. Install ring (8) on fuel/water separator head (22).
10. Apply fuel on preformed packing (24) and install on screw (26).
11. Install screw (26) through water separator bowl (5).
12. Apply fuel on preformed packing (25) and install on water separator bowl (5).

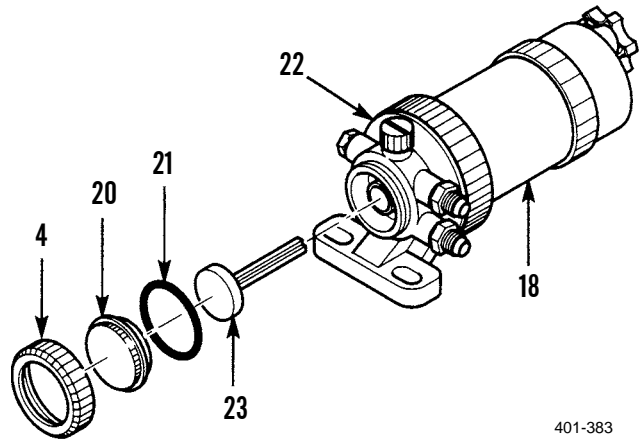


401-384

CAUTION

Area around filter must be very clean. Any contaminant entering filter element or filter assembly will damage equipment.

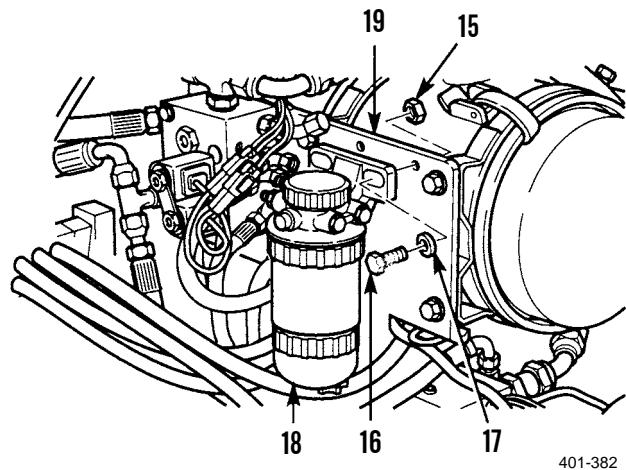
13. Install water separator bowl (25) on fuel/water separator element (6).
14. Install new preformed packing (24) on drain valve (3).
15. Install drain valve (3) on water separator bowl (25). Tighten securely.
16. Install plug (23) in fuel/water separator head (22).
17. Apply fuel on preformed packing (21).
18. Install new preformed packing (21), cap (20) and nut (4) on fuel/water separator head (22). Tighten nut securely.
19. Remove fuel/water separator assembly (18) from work bench.



401-383

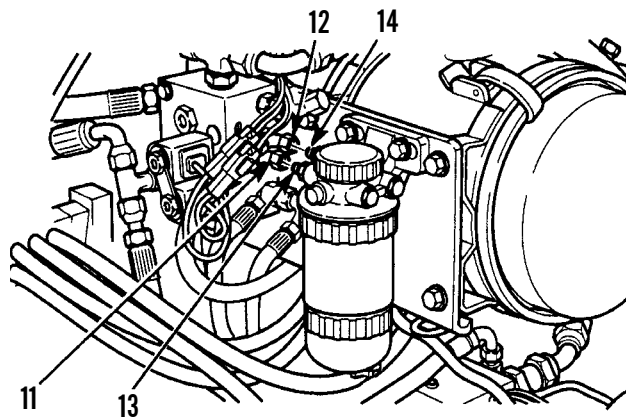
FUEL/WATER SEPARATOR ASSEMBLY INSTALLATION

1. Install fuel/water separator assembly (18) on support (19) with two washers (17), screws (16) and nuts (15). Tighten screws to 25 lb-ft (34 Nm).



401-382

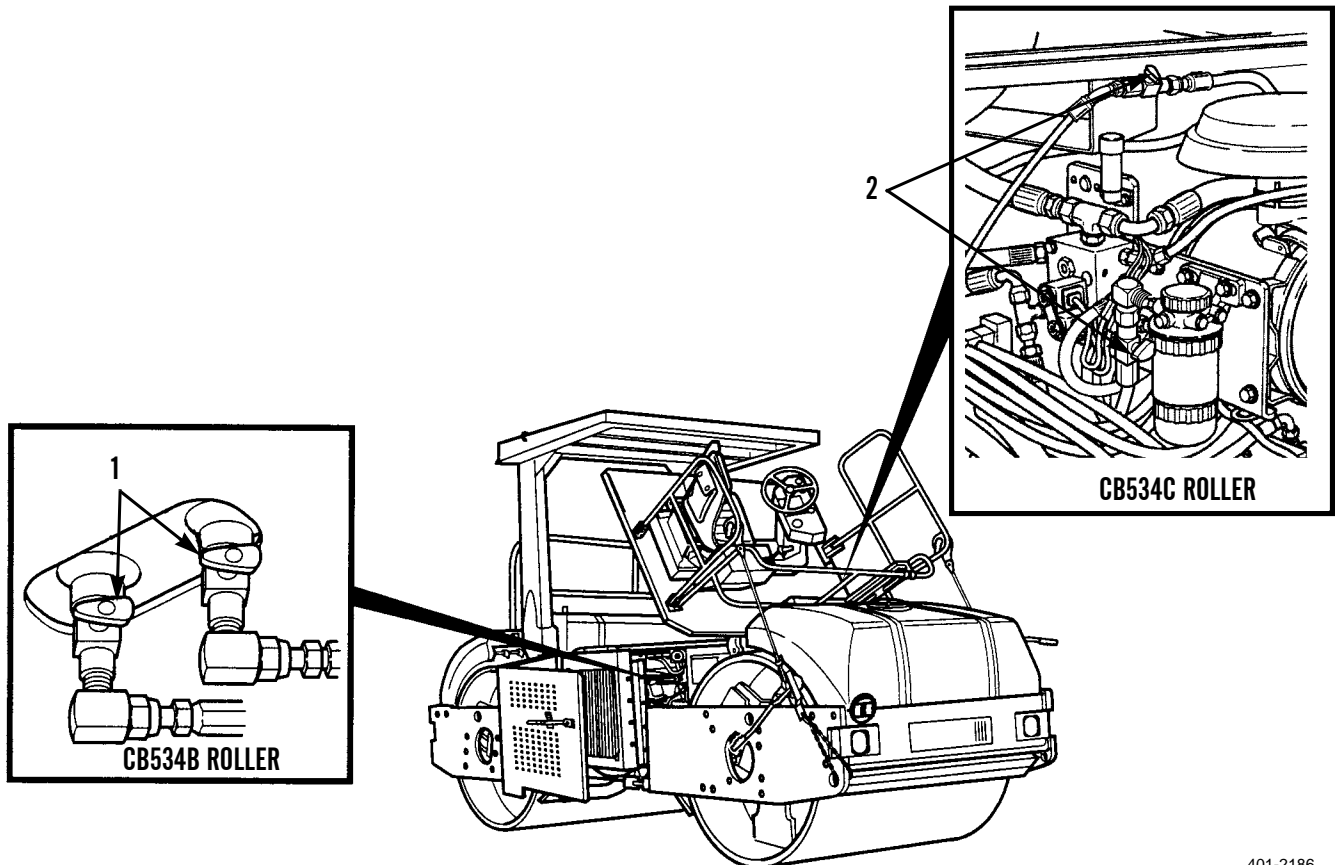
2. Install two hoses (11) and (12) on fittings (13) and (14).



401-386

FUEL/WATER SEPARATOR ASSEMBLY INSTALLATION - CONTINUED

3. For CB534B Roller, open fuel supply valves (1). For CB534C Roller, open fuel supply valves (2).



401-2186

CAUTION

- The fuel injection pump needs fuel for lubrication. The precision parts of pump are easily damaged. For this reason, engine must NOT be started until lubrication pump is full of fuel that is free of air.
 - The system must be primed any time any part of system is drained of fuel. For example, when fuel system is changed or a fuel line is removed or when inspection cover on fuel injection pump is removed for service or repair, fuel system must be primed (air removed).
4. Prime fuel system (WP 0041 00).
 5. Lower operator platform assembly (WP 0128 00).
 6. Start engine and check for leaks (TM 5-3895-379-10).
 7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

COLD START HEATER REPLACEMENT

0043 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figures 16 and 34

Equipment Condition

Engine off (TM 5-3895-379-10)

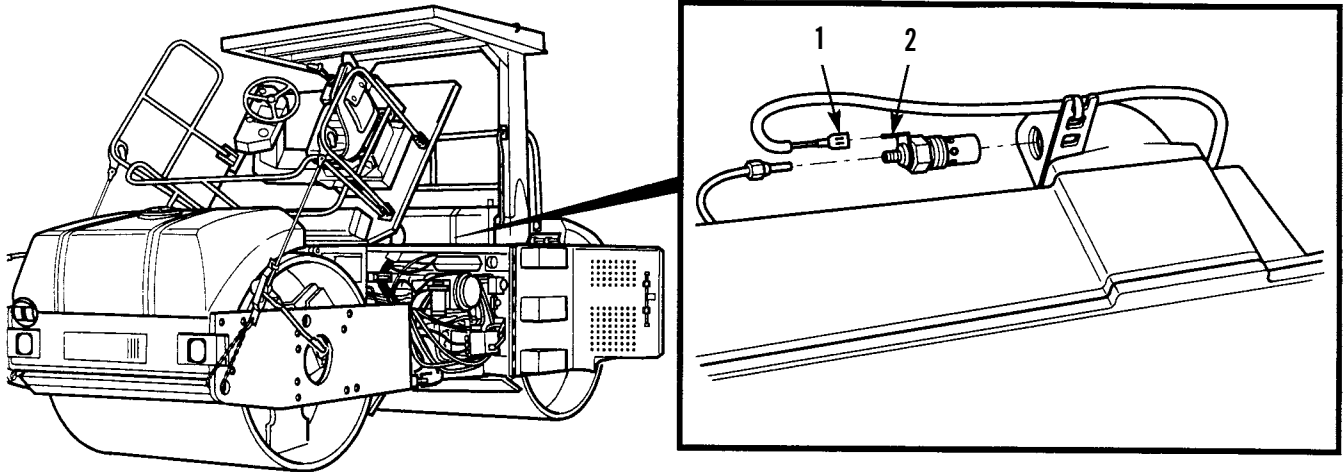
Operator platform assembly raised (WP 0128 00)

**WARNING**

- DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death, or damage to machine.
- Fuel is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL

1. Disconnect wire (1) from cold start heater connector (2).



401-335

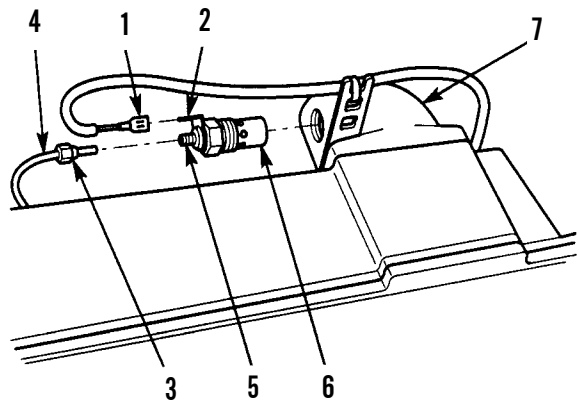
CAUTION

Cap fuel line to prevent foreign material from entering lines to prevent damage to equipment.

NOTE

Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

2. Loosen nut (3) and remove fuel line (4) from cold start heater nipple (5).
3. Remove cold start heater (6) from intake manifold elbow (7).



401-336

INSTALLATION

1. Install cold start heater (6) into intake manifold elbow (7). Tighten to 17-28 lb-ft (23-38 Nm).
2. Install fuel line (4) into cold start heater nipple (5) and tighten nut (3) to 35-71 lb-ft (47-96 Nm).
3. Connect wire (1) to cold start heater connection (2).
4. Lower operator platform assembly (WP 0128 00).
5. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE BLOCK HEATING ELEMENT REPLACEMENT

0044 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut (2)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services

TM 5-3895-379-23P, Figure 110

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Left-side door assembly opened (TM 5-3895-379-10)

Air cleaner cap removed (WP 0031 00)

**WARNING**

Ensure that external power cable is unplugged from receptacle before beginning replacement of engine block heating element. Working on the engine block heating element while external power cable is attached may cause injury or death.

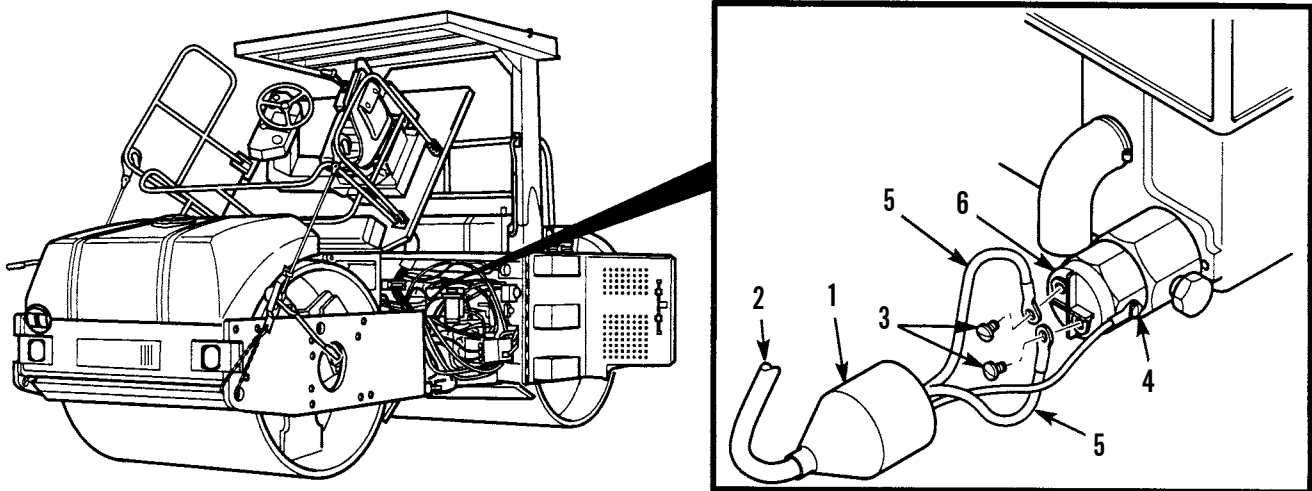
REMOVAL - CONTINUED

- Slide boot (1) on cable (2) back to expose two screws (3) and screw (4).

NOTE

- Do not remove the screw holding the ground wire to the engine block heating element. The ground wire can be removed without removing the screw.
- Tag and mark all wires prior to removal.

- Remove two screws (3) and wires (5) from engine block heating element (6).
- Loosen screw (4) and remove wire (7) from engine block heating element (6).

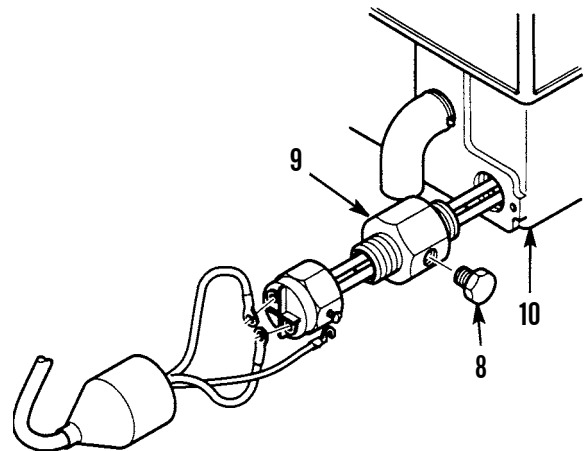


401-388

NOTE

Position funnel to allow controlled draining of the engine block into a container with a minimum 1 qt (0.9 l) capacity.

- Remove drain plug (8) from engine block fitting (9) and engine block (10).
- Remove engine block heating element (6) from engine block (10).
- Remove engine block fitting (9) from engine block (10).



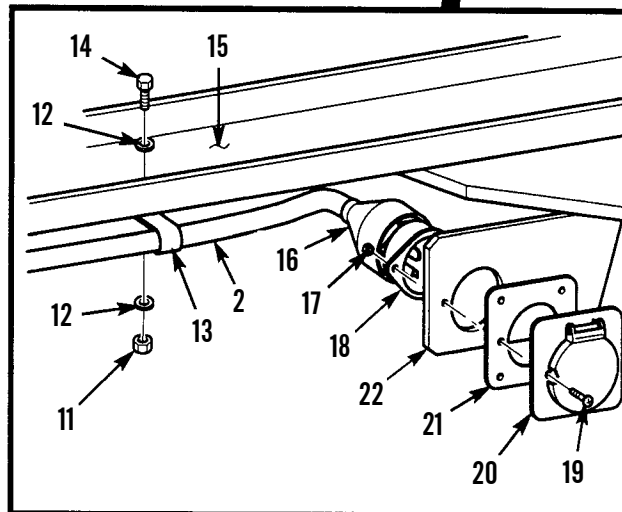
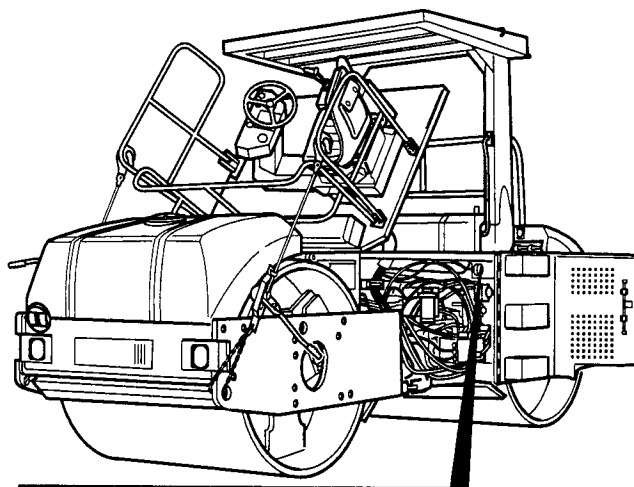
401-389

REMOVAL - CONTINUED

7. Remove three nuts (11), washers (12), clips (13), screws (14) and washers (12) from frame assembly (15).
8. Slide boot (16) on cable (2) back to expose two locknuts (17).
9. Remove two locknuts (17), receptacle (18), two screws (19), receptacle cover (20) and seal (21) from bracket (22). Discard locknuts.

INSTALLATION

1. Install seal (21), receptacle cover (20), two screws (19), receptacle (18) and two new locknuts (17) on bracket (22).
2. Slide boot (16) on cable (2) to cover two locknuts (17).
3. Install cable (2) into three clips (13).
4. Install three washers (12), screws (14), clips (13), washers (12) and nuts (11) to frame assembly (15).
5. Install drain plug (8) into engine block fitting (9).
6. If removed, install engine block fitting (9) into engine block (10).
7. Install engine block heating element (6) into engine block fitting (9).



401-390

8. Install wire (7) to engine block heating element (6) and tighten screw (4).
9. Install two wires (5) and screws (3) to engine block heating element (6).
10. Slide boot (1) on cable (2) to cover three screws (3 and 4).
11. Fill engine with coolant (WP 0008 00 and WP 0009 00).
12. Install air cleaner cap (WP 0031 00).
13. Lower operator platform assembly (WP 0128 00).
14. Close left-side door assembly (TM 5-3895-379-10).
15. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

THROTTLE CABLE REPLACEMENT (CB534B)

0045 00

THIS WORK PACKAGE COVERS

Removal, Installation, Adjustment

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut

Materials/Parts - Continued

Lockwasher

Equipment Condition

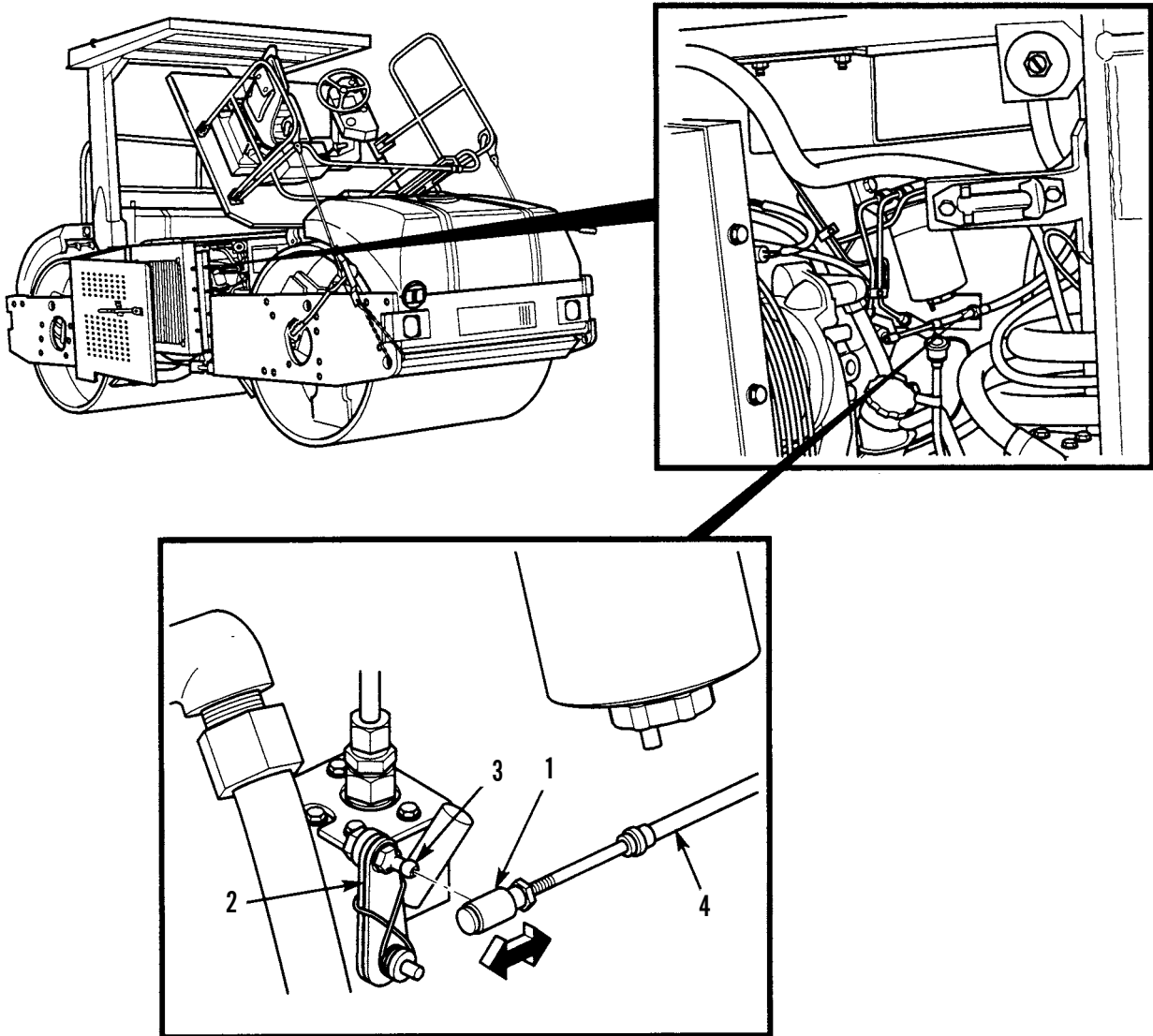
Engine off (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

REMOVAL

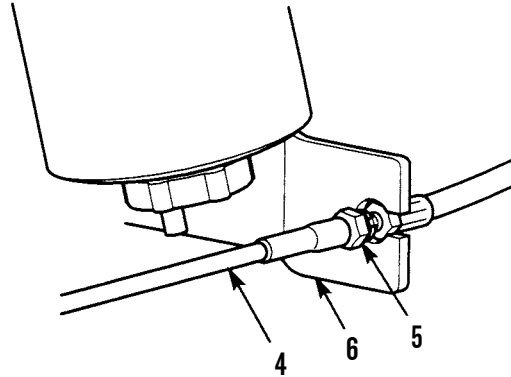
1. Slide spring-loaded sheath (1) away from governor lever (2) and disconnect ball joint assembly (3) on throttle cable (4) from governor lever.



401-305

REMOVAL - CONTINUED

2. Loosen nut (5) and remove throttle cable (4) from bracket (6).

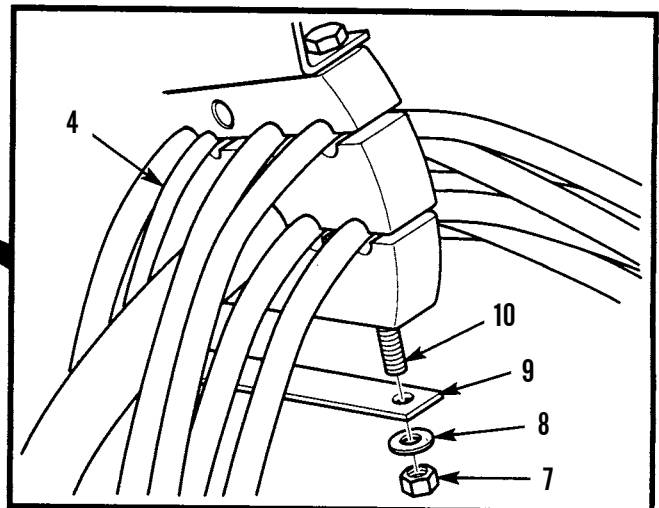
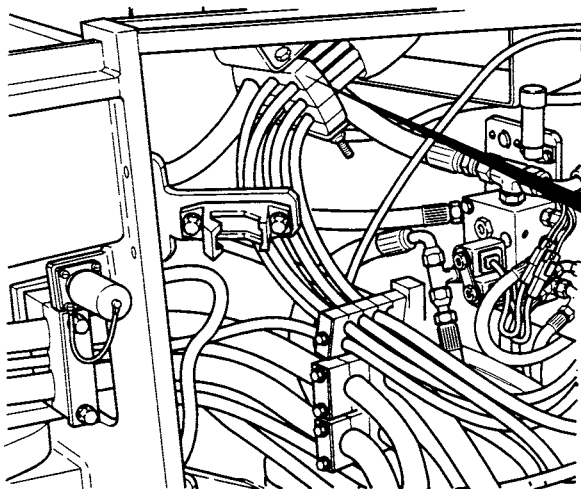


401-306

NOTE

Tag and mark clamp position of all cables and hoses prior to removal.

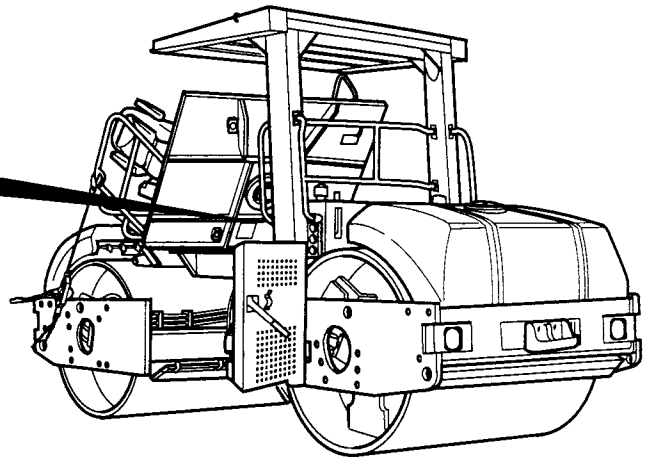
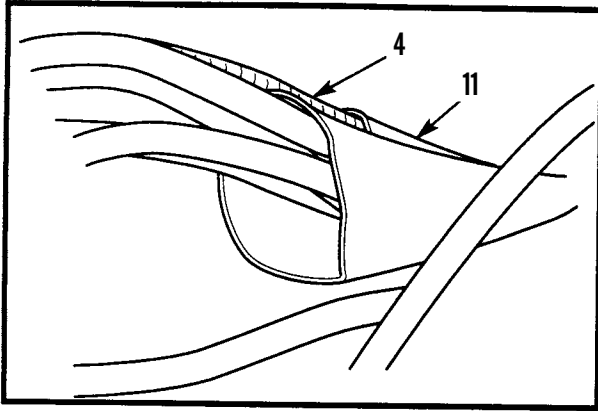
3. Remove two nuts (7), washers (8) and one plate (9) from clamp (10).
4. Remove throttle cable (4) from clamp (10).



401-307

REMOVAL - CONTINUED

5. Remove throttle cable (4) from sock (11).

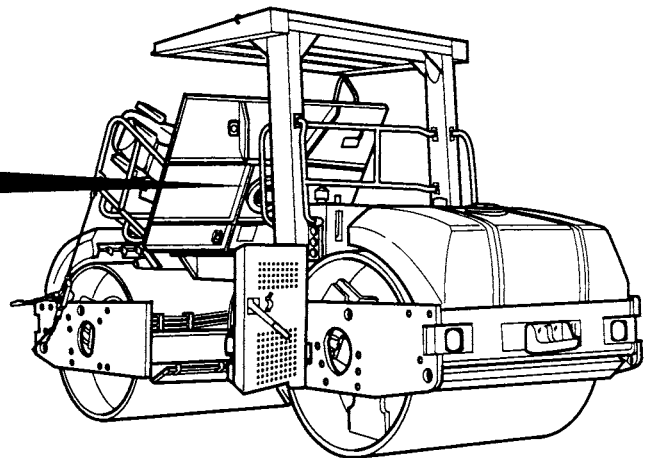
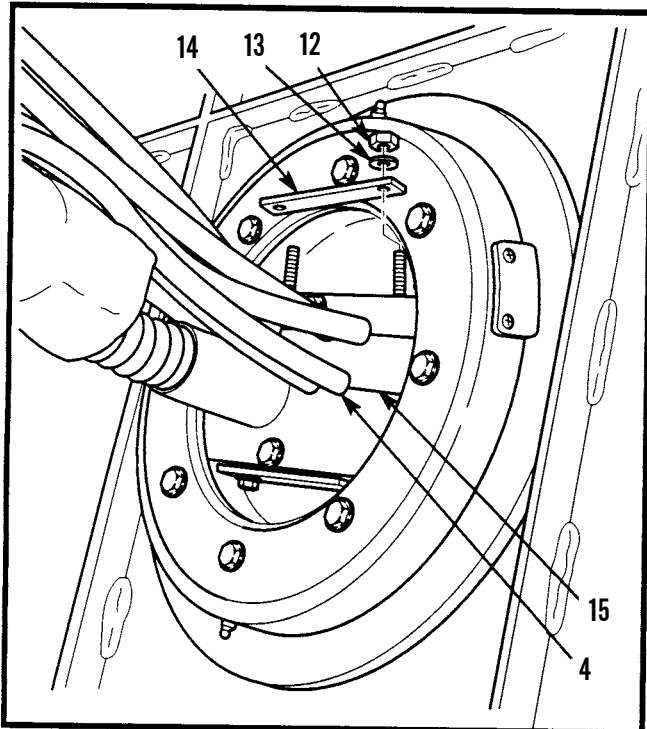


401-308

NOTE

Tag and mark clamp position of all cables and hoses prior to removal.

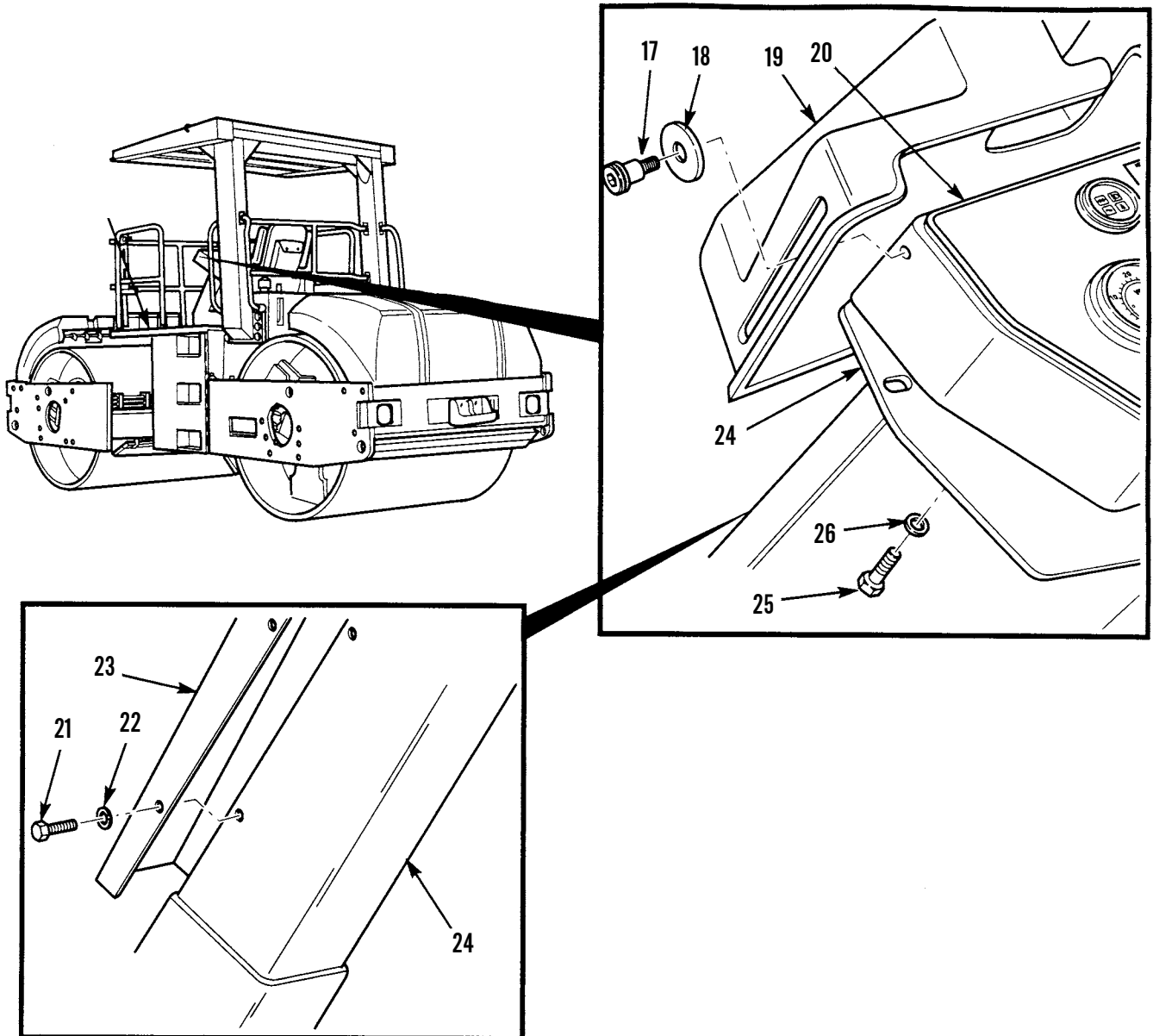
6. Remove two nuts (12), washers (13) and plate (14) from clamp (15).
7. Remove throttle cable (4) from clamp (15).



401-309

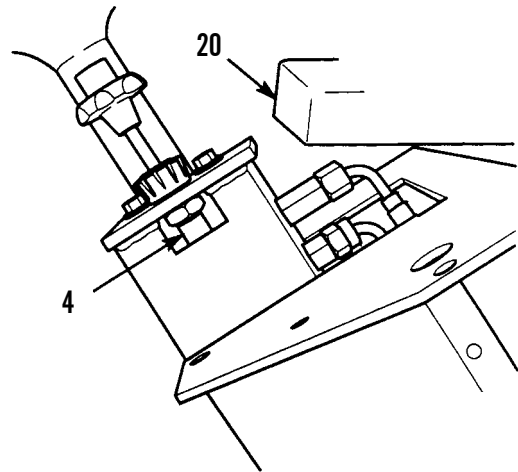
REMOVAL - CONTINUED

8. Lower operator platform assembly (16) (WP 0128 00).
9. Remove two shoulder screws (17), washers (18) and vandal guard (19) from instrument box assembly (20).
10. Remove four screws (21), washers (22) and cover (23) from operator station (24).
11. Remove three screws (25) and washers (26) from operator station (24) and instrument box assembly (20).



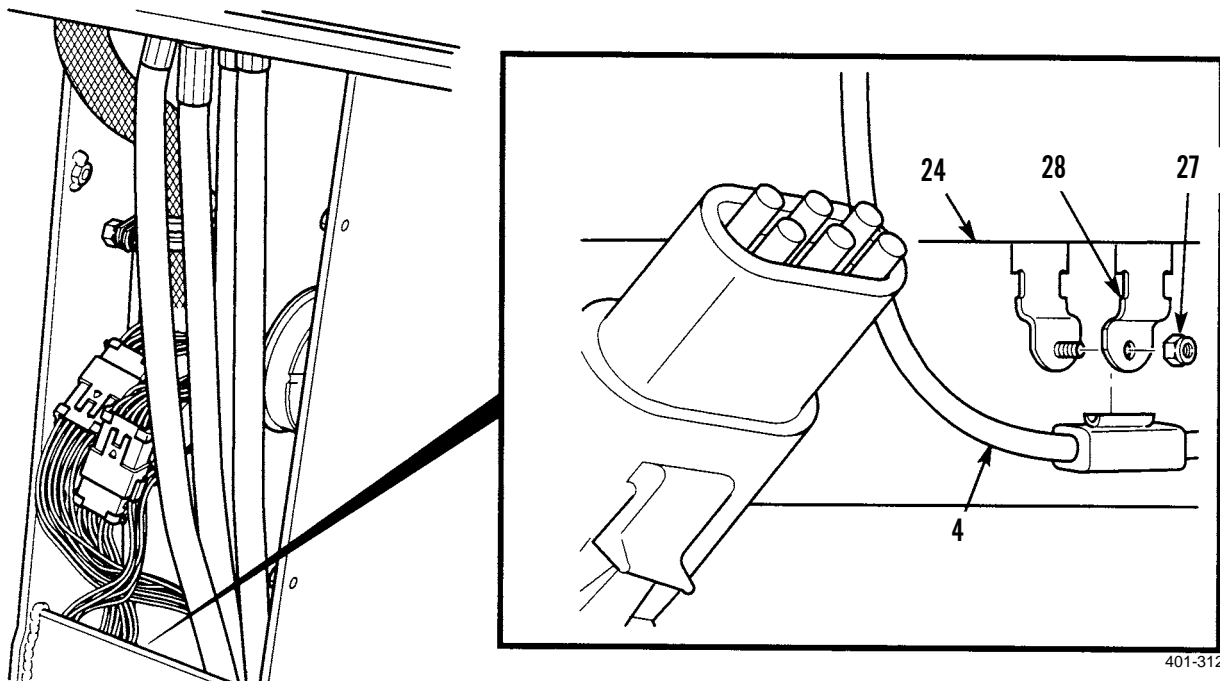
REMOVAL - CONTINUED

12. Lift and tilt back instrument box assembly (20) to gain access to throttle cable (4).



401-311

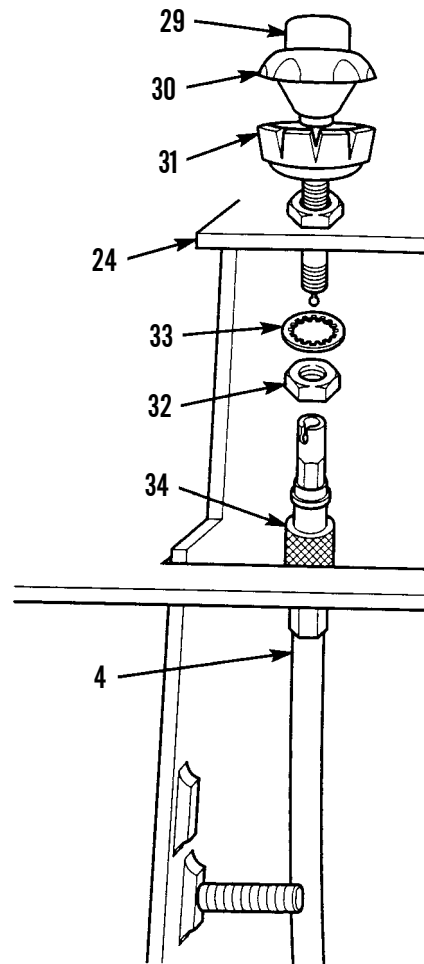
13. Remove locknut (27), clamp (28) and throttle cable (4) from operator station (24). Discard locknut.
14. Pull throttle cable (4) free.



401-312

REMOVAL - CONTINUED

15. Push button (29) and throttle cable handle (30) down as far as possible.
16. Turn friction lock (31) to left until it is loose on throttle cable handle (30).
17. Loosen locking nut (32) and lockwasher (33) on throttle cable handle (30).
18. Loosen knurled nut (34) on throttle cable (4) and allow knurled nut to drop free on throttle cable.
19. Remove throttle cable handle (30) from throttle cable (4).
20. Remove locking nut (32) and lockwasher (33) from throttle cable handle (30). Discard lockwasher.
21. Remove throttle cable handle (30) from operator station (24).
22. Remove throttle cable (4) from operator station (24).



401-313

INSTALLATION

1. Guide throttle cable (4) through operator station (24).
2. Position throttle cable handle (30) on operator station (24).
3. Position new lockwasher (33) and new locking nut (32) on throttle cable handle (30).
4. Install throttle cable handle (30) on throttle cable (4) and tighten knurled nut (34).

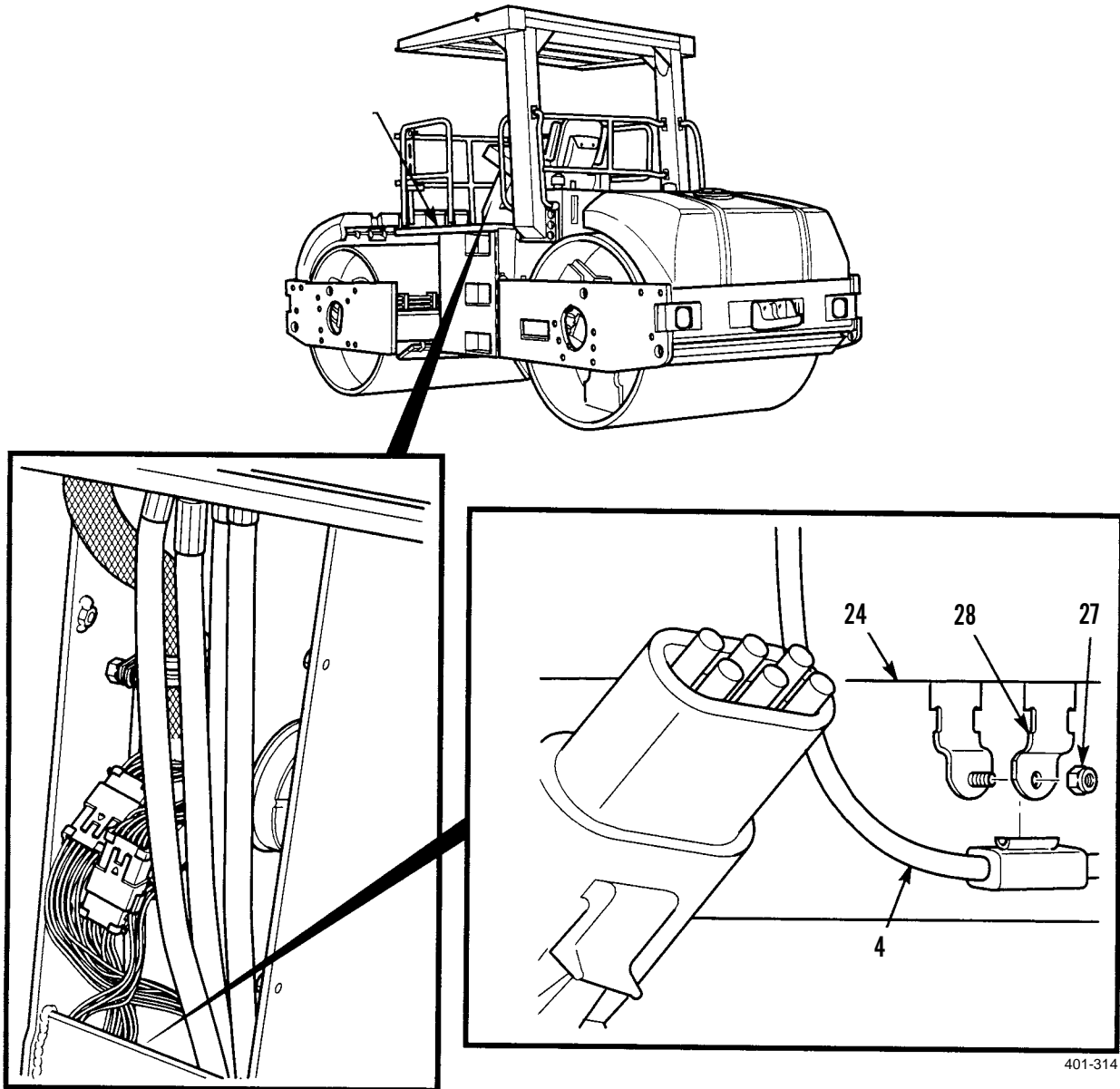
CAUTION

Do not tighten locking nut more than 10 lb-ft (14 Nm) or damage will occur to throttle cable handle.

5. Tighten locking nut (32) and lockwasher (33) on throttle cable handle (30).
6. Tighten friction lock (31) on throttle cable handle (30) with throttle cable handle pushed down as far as possible.

INSTALLATION - CONTINUED

7. Guide throttle cable (4) through operator platform (16).
8. Install throttle cable (4) and clamp (28) on operator station (24) and tighten locknut (27).

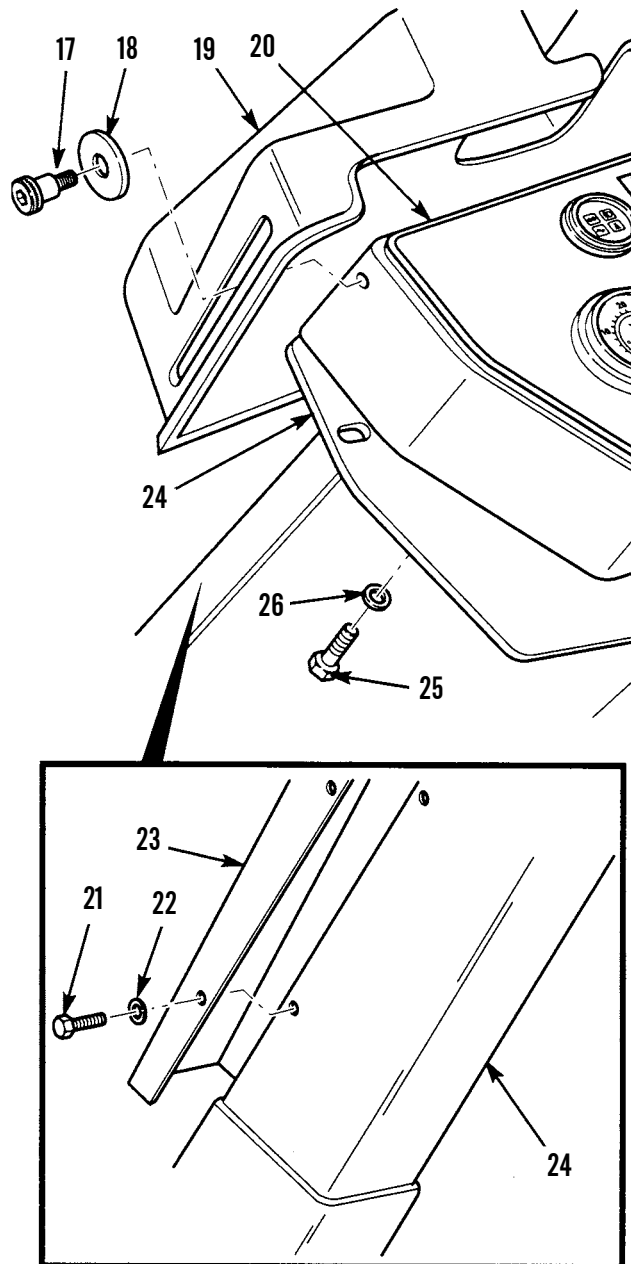


401-314

THROTTLE CABLE REPLACEMENT (CB534B) - CONTINUED

INSTALLATION - CONTINUED

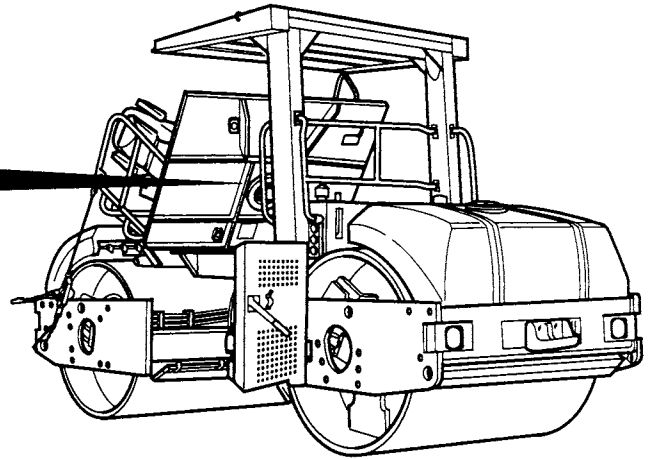
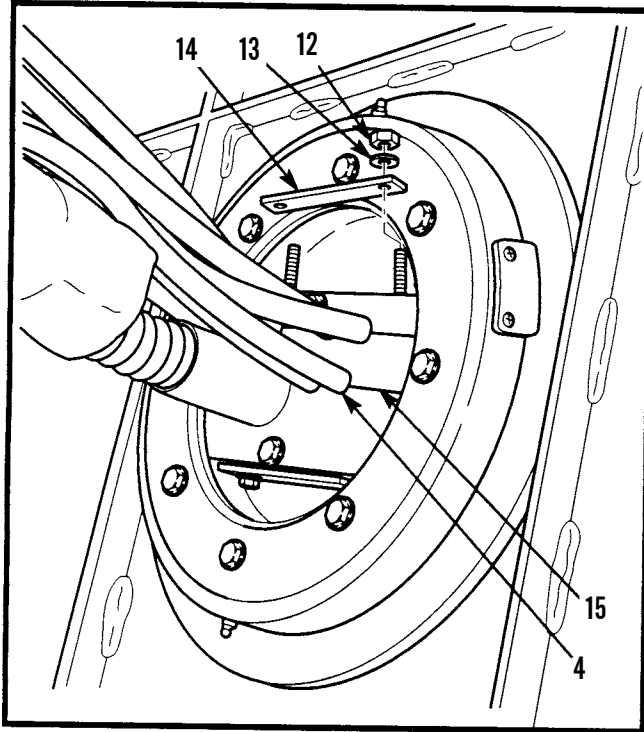
9. Install instrument box assembly (20) on operator station (24) with three washers (26) and screws (25).
10. Install cover (23) on operator station (24) with four washers (22) and screws (21).
11. Install vandal guard (19) on box assembly (20) with two washers (18) and shoulder screws (17).
12. Raise operator platform assembly (WP 0128 00).



401-315

INSTALLATION - CONTINUED

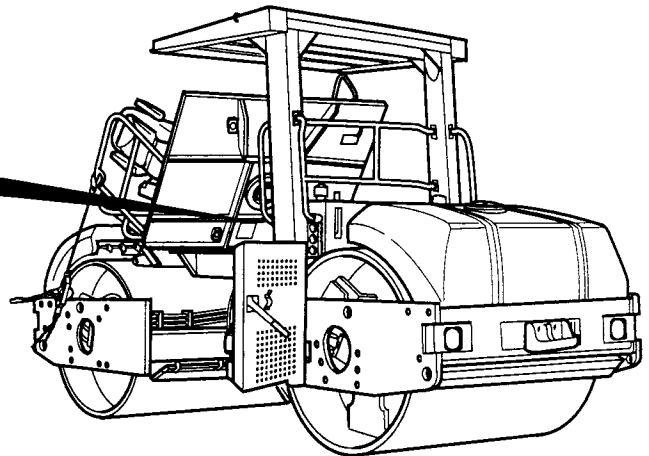
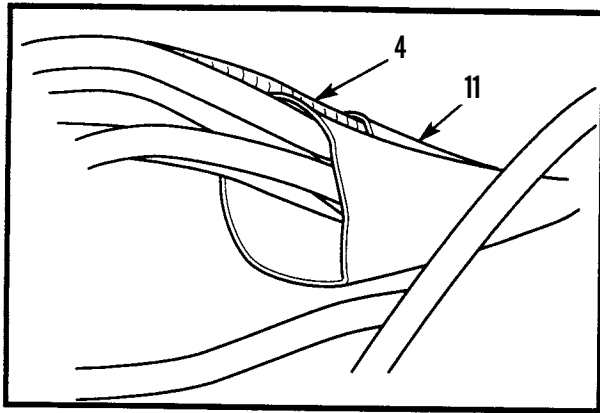
13. Position throttle cable (4) in clamp (15).
14. Install plate (14) on clamp (15) with two washers (13) and nuts (12).



401-309

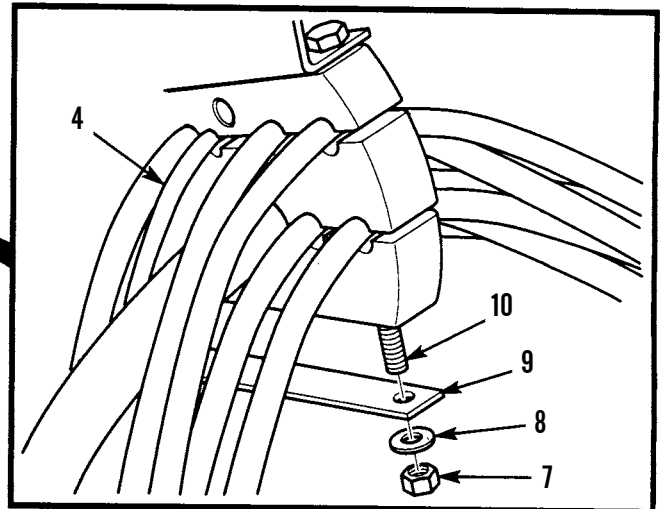
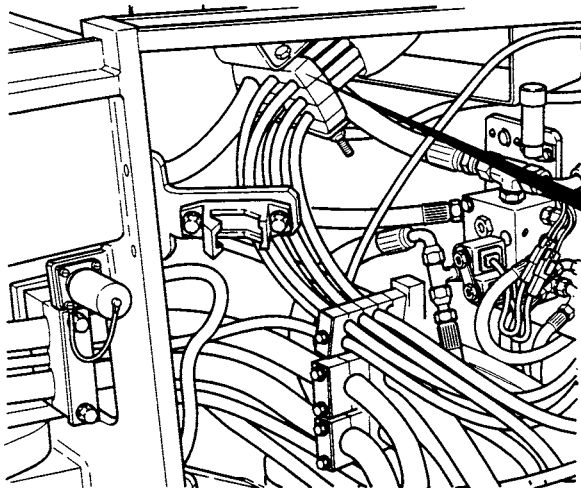
INSTALLATION - CONTINUED

15. Guide throttle cable (4) through sock (11).



401-308

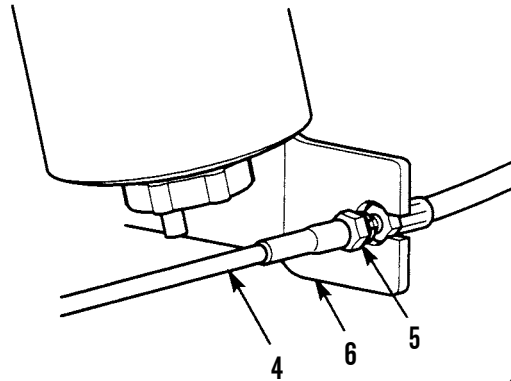
16. Position throttle cable (4) in clamp (10).
17. Install plate (9) on clamp (10) with two washers (8) and nuts (7).



401-307

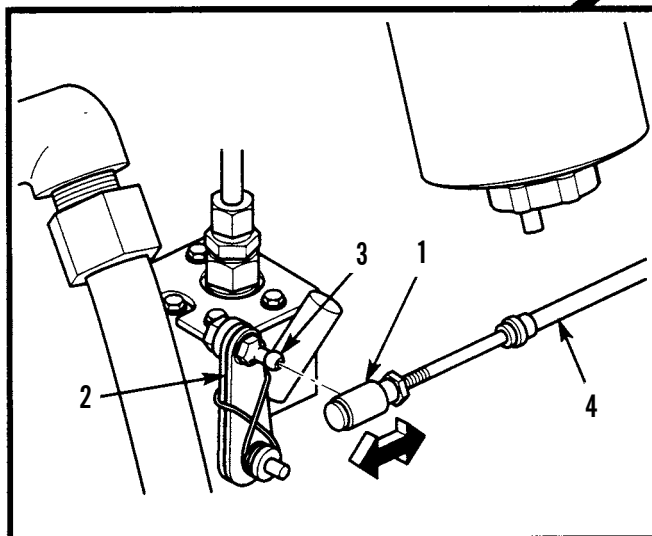
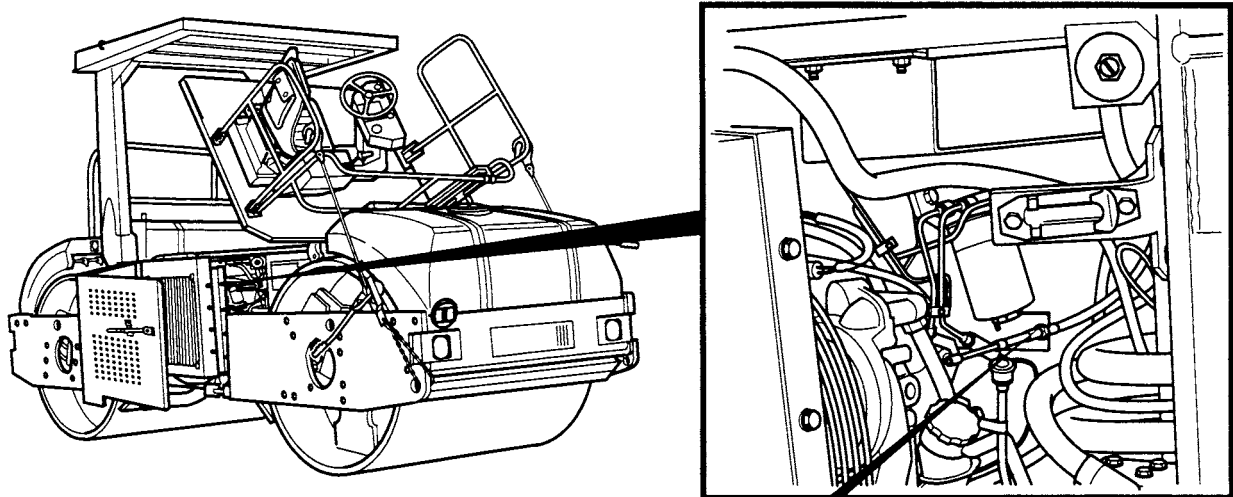
INSTALLATION - CONTINUED

18. Install throttle cable (4) on bracket (6) and tighten nut (5).



401-306

19. Connect ball joint assembly (3) on throttle cable (4) and slide spring-loaded sheath (1) onto governor lever (2).
20. Lower operator platform assembly (WP 0128 00).



401-305

ADJUSTMENT

The objective is to adjust the linkage so the measured high idle of the engine is the same as measured high idle without the linkage. Proper use of the over-travel spring on the governor will cause this to happen.

1. Start engine (TM 5-3895-379-10) and allow to operate at low idle for five minutes to warm up.
2. Turn engine off (TM 5-3895-379-10).

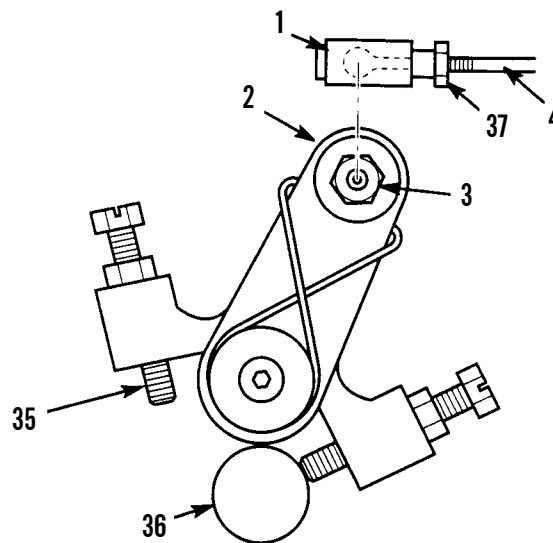
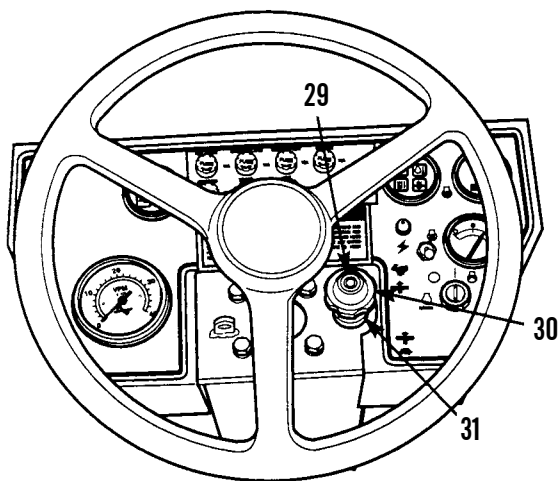
CAUTION

Governor lever can be pushed past the contact point between the high idle adjustment screw and the idle screw adjustment stop. Ensure that the throttle linkage adjustment is made such that high idle position is between the first contact point of the high idle screw and the idle screw stop and the maximum lever rotation angle. Too little angle will result in decreased engine power.

NOTE

Adjust throttle cable linkage by turning the lock to the left to lengthen cable and clockwise to shorten cable.

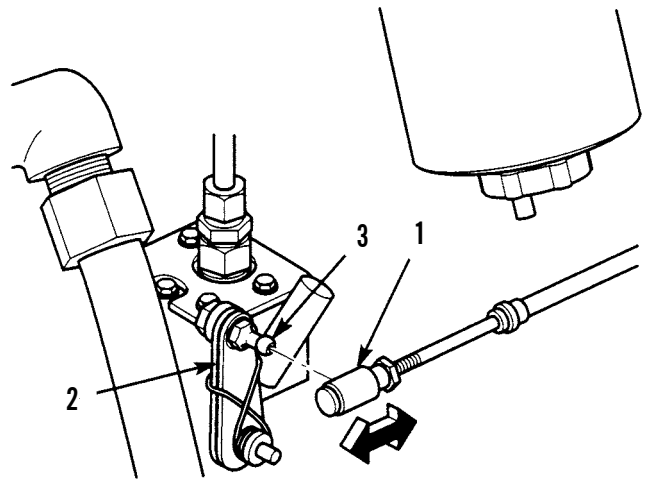
3. Slide spring-loaded sheath (1) away from governor lever (2) and disconnect ball joint assembly (3) on throttle cable (4) from governor lever.
4. Lock throttle cable handle (30) at full throttle by pushing down on button (29), pulling throttle handle up as far as possible, and turning friction lock (31) clockwise until handle is held in position.
5. Push governor lever (2) until it is half-way between where the high idle adjustment screw (35) makes contact with idle screw adjustment stop (36) and the maximum point at which the lever will rotate. This is half-way through the over-travel adjustment of the spring.
6. Loosen locking nut (37) at throttle cable ball joint assembly (3) and adjust linkage until ball on governor lever (2) is aligned with cavity in spring-loaded sheath (1).



401-316

ADJUSTMENT - CONTINUED

7. Slide spring-loaded sheath (1) back and connect ball joint assembly (3) on governor lever. Release lock and allow lock to return to locked position.



401-318

8. Loosen friction lock (31) by turning friction lock to left and push button (29) and throttle cable handle (30) fully down. Release button.

NOTE

Start engine and ensure that governor lever is still in the over-travel position when the throttle control is moved to the high idle position. Stop engine.

9. Close right-side door assembly (TM 5-3895-379-10).
10. Operate roller and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

LOW IDLE SPEED ADJUSTMENT

0046 00

THIS WORK PACKAGE COVERS

Adjustment

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 STE/ICE-R (Item 32, WP 0220 00)

References

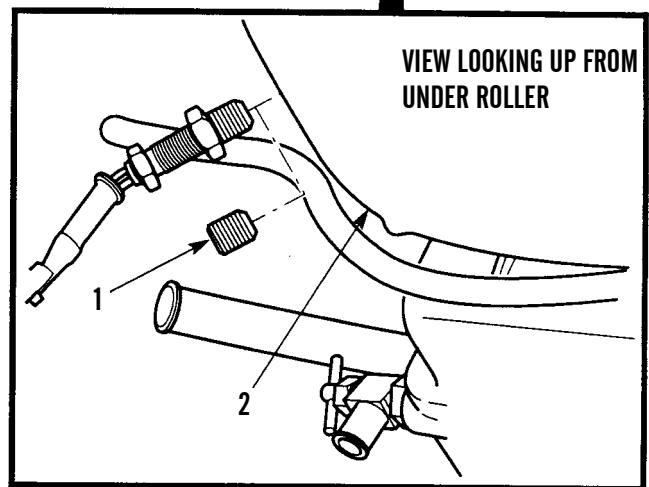
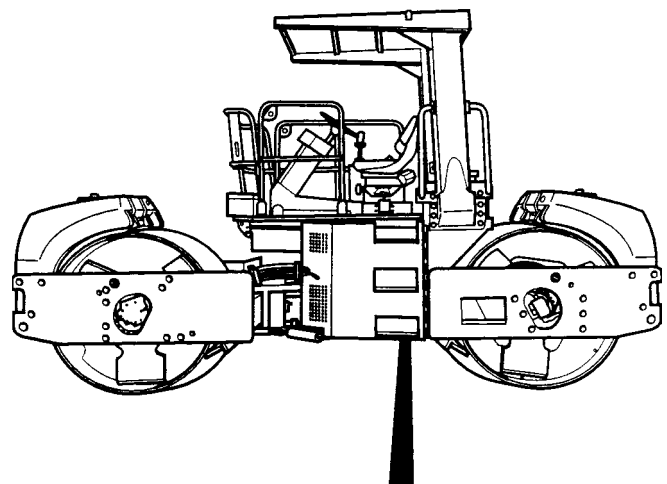
TM 5-3895-379-23P, Figure 35
 TM 9-4910-571-12&P

Equipment Condition

Engine off (TM 5-3895-379-10)
 Drums chocked (TM 5-3895-379-10)
 Right- and left-side door assemblies opened (TM 5-3895-379-10)

ADJUSTMENT

1. Remove plug (1) from flywheel housing (2).
2. Attach STE/ICE-R to flywheel housing (2) per TM 9-4910-571-12&P, Test No. 10.
3. Start and run engine until it reaches normal operating temperature (TM 5-3895-379-10).

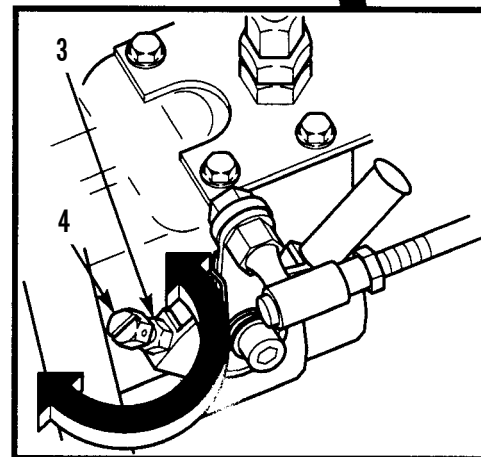
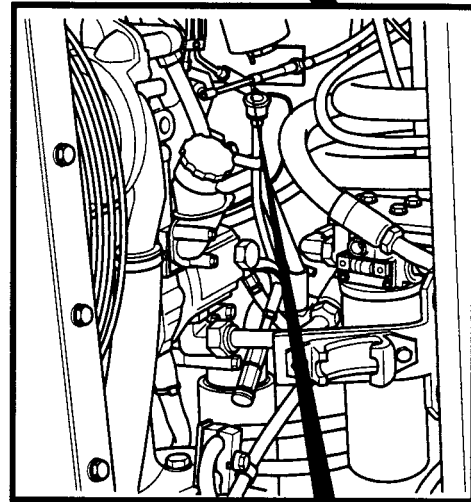
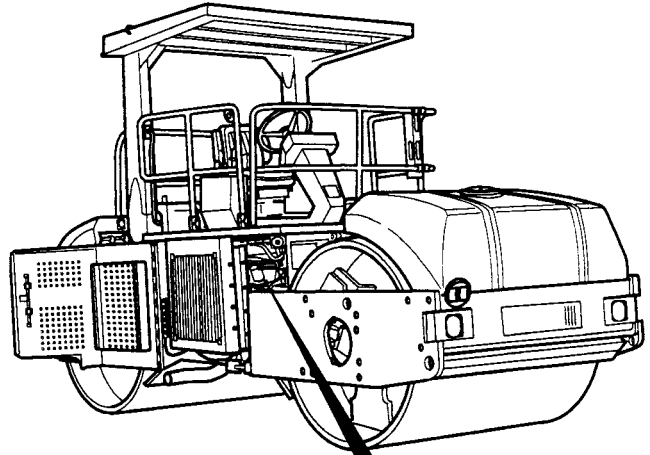


401-319

ADJUSTMENT - CONTINUED

NOTE

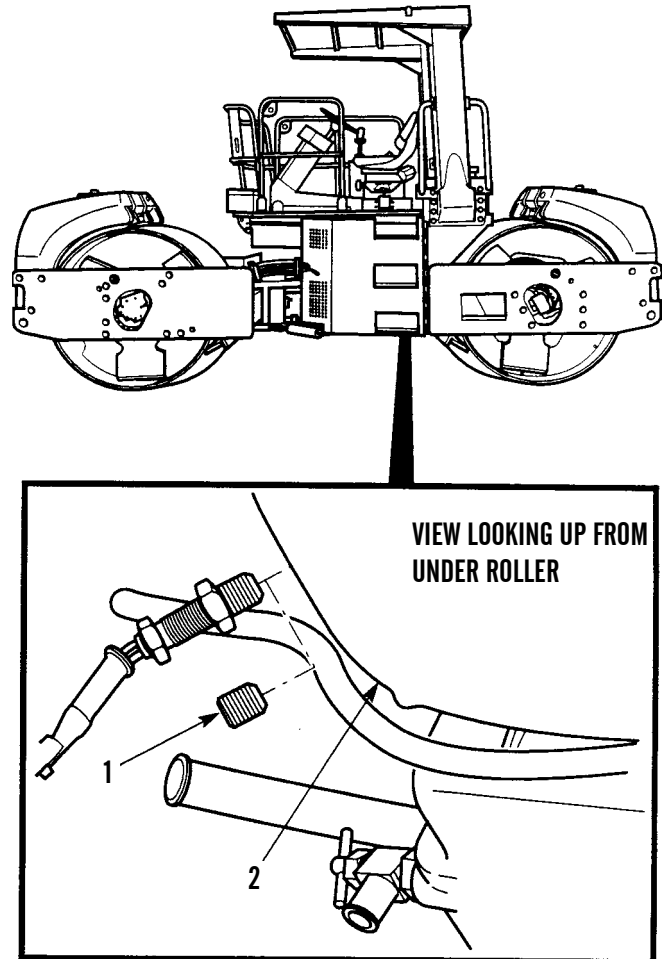
- Engine low idle speed is 1075 to 1125 rpm.
 - Turning adjustment screw clockwise increases engine speed. Turning adjustment screw to the left decreases engine speed.
 - Throttle control must be set at the lowest speed position (pushed down) before adjusting engine low idle speed.
4. Loosen locknut (3) and turn screw (4) to adjust idle speed. Use STE/ICE-R, Test No. 10 to monitor idle speed (TM 9-4910-571-12&P).
 5. When idle speed of 1075 to 1125 rpm is obtained, hold screw (4) in place and tighten locknut (3).



401-320

ADJUSTMENT - CONTINUED

6. Remove STE/ICE-R and install plug (1) in flywheel housing (2).



401-319

7. Close right- and left-side door assemblies (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THROTTLE CONTROL REPLACEMENT (CB534C)

0047 00

THIS WORK PACKAGE COVERS

Removal, Installation, Adjustment

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Locknut (4)

References

TM 5-3895-379-23P, Figure 35

Equipment Condition

Engine off (TM 5-3895-379-10)

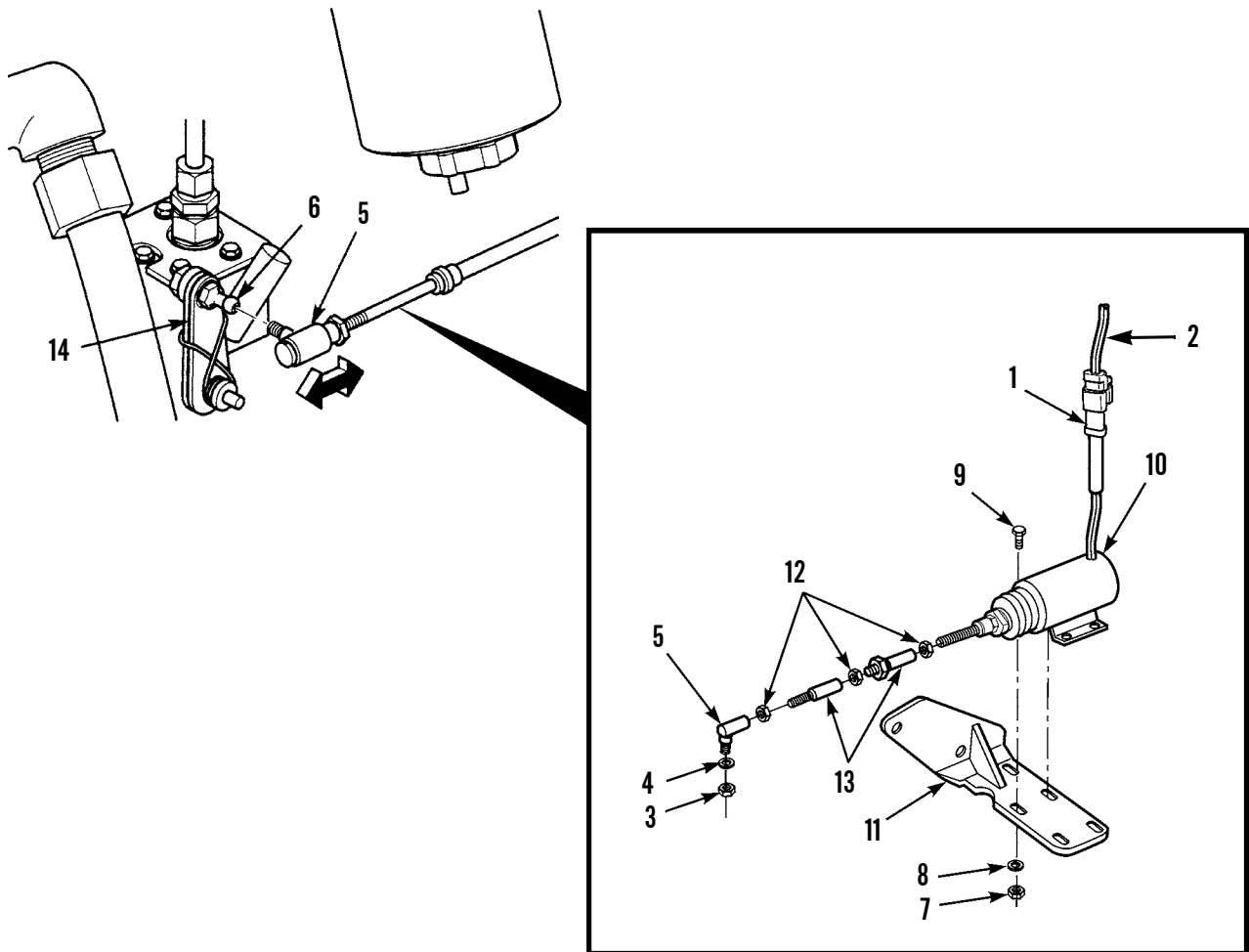
Battery disconnect switch in OFF position (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Disconnect electrical connector (1) from engine wiring harness (2).
2. Remove nut (3) and washer (4) from ball joint (5).
3. Remove ball joint (5) from governor control shaft (6).
4. Remove four nuts (7), washers (8), bolts (9) and engine speed control solenoid (10) from bracket (11).



401-2085

INSTALLATION

1. Install four bolts (9), washers (8), nuts (7), and engine speed control solenoid (10) to bracket (11).
2. Install the ball joint (5) onto the governor control shaft (6).
3. Install washer (4) and nut (3) on ball joint (5).
4. Connect electrical connector (1) to engine wiring harness (2).

ADJUSTMENT**CAUTION**

Make sure rod linkage is attached before connecting the engine speed control solenoid to prevent damage to the engine speed control solenoid.

1. Align the engine speed control solenoid (10) with governor control shaft (6).
2. Move the engine speed switch to HIGH position (TM 5-3895-379-10).
3. Battery disconnect switch in OFF position (TM 5-3895-379-10).
4. Move the key switch to ON position to energize engine speed control solenoid (10). Do not start engine.
5. Loosen locknuts (12) on rod linkage (13).
6. Adjust rod linkage (13) until lever (14) on governor control shaft (6) contacts stop for HIGH idle.
7. Tighten locknuts (12) on rod linkage (13).
8. Cycle the engine speed switch to ensure lever (14) contacts HIGH idle stop.
9. Manually move plunger of engine speed control solenoid (10) and check for binding of linkage. Adjust linkage as needed.
10. Close right-side door assembly (TM 5-3895-379-10).
11. Lower operator platform assembly (WP 0128 00).
12. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

MUFFLER AND TAILPIPE REPLACEMENT

0048 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket

References

TM 5-3895-379-23P, Figure 36

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right- and left-side door assemblies opened (TM 5-3895-379-10)

**WARNING**

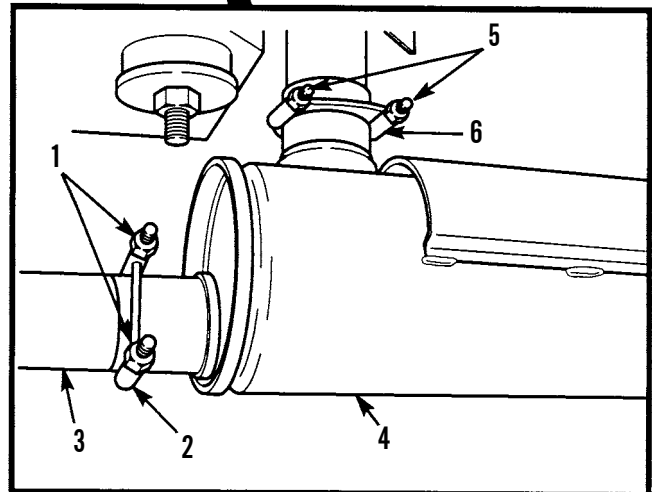
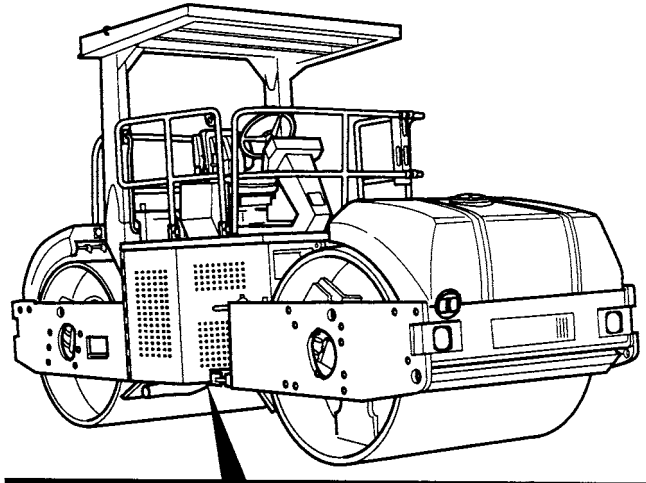
Use caution and allow muffler and tailpipe to cool before removal. Failure to follow this warning may cause injury.

MUFFLER AND TAILPIPE REPLACEMENT - CONTINUED

0048 00

REMOVAL

1. Loosen two nuts (1) and remove clamp (2) and exhaust tube (3) from muffler (4).
2. Loosen two nuts (5) and allow clamp (6) to slide down onto muffler (4).



401-391

REMOVAL - CONTINUED



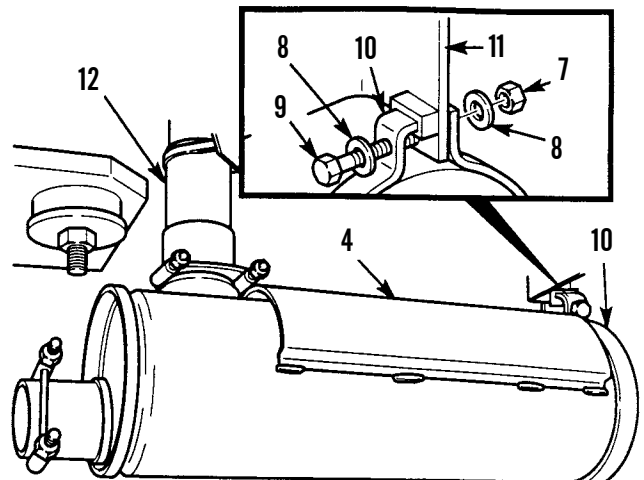
WARNING

Use caution when handling heavy parts. Provide adequate support during procedure. Failure to follow this warning may cause injury.

NOTE

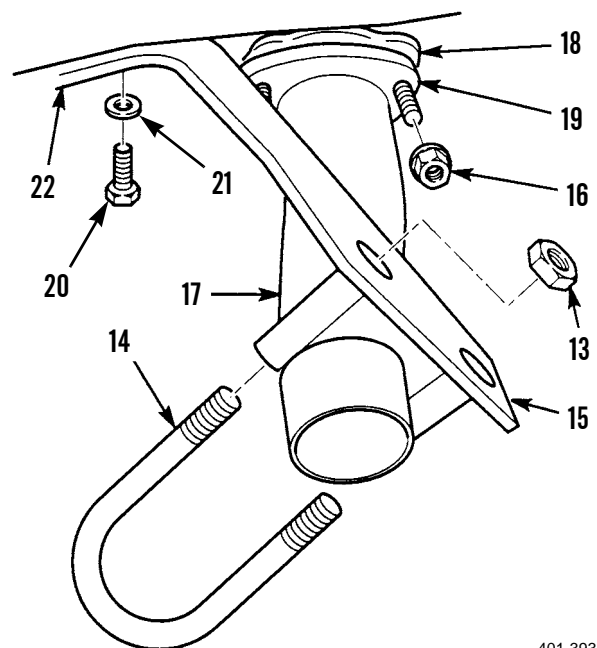
Muffler weighs 19 lb (8.6 kg).

3. Remove nut (7), washer (8), screw (9), washer (8) and clamp (10) from plate assembly (11) and muffler (4).
4. Remove muffler (4) from tube assembly (12).



401-392

5. Remove two nuts (13) and clamp (14) from bracket (15).
6. Remove three nuts (16), tube assembly (17) and gasket (18) from turbocharger assembly (19). Discard gasket.
7. Remove two screws (20), washers (21) and bracket (15) from engine (22).



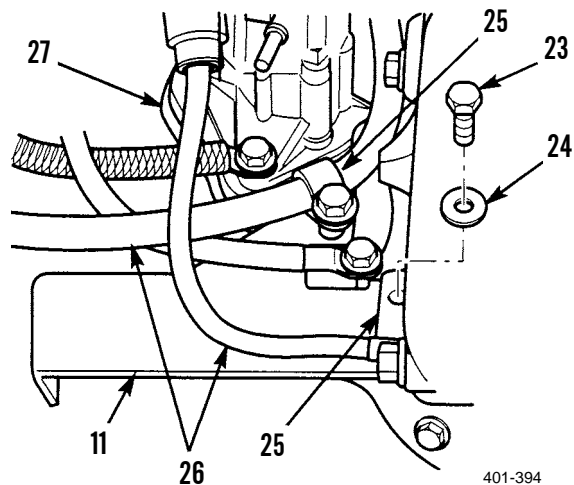
401-393

MUFFLER AND TAILPIPE REPLACEMENT - CONTINUED

0048 00

REMOVAL - CONTINUED

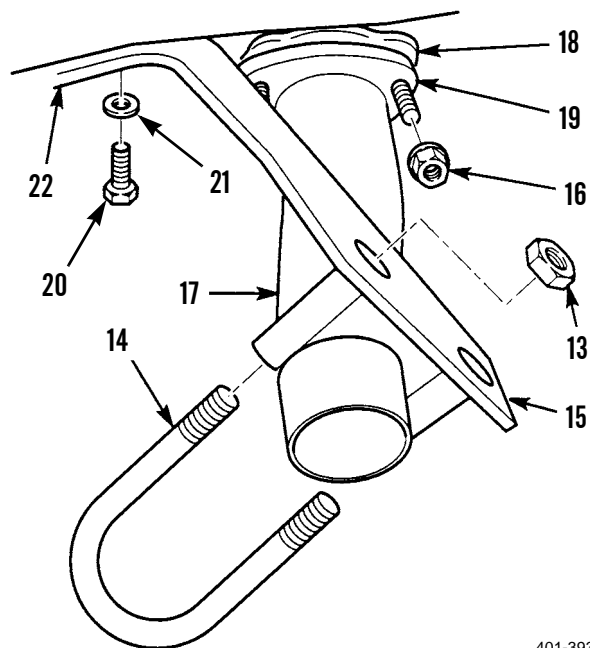
- Remove two screws (23), washers (24), clamps (25), cables (26) and plate assembly (11) from flywheel housing (27).



401-394

INSTALLATION

- Install plate assembly (11), two clamps (25) and cables (26) on flywheel housing (27) with two washers (24) and screws (23). Tighten screws to 60-90 lb-ft (81-122 Nm).
- Install bracket (15) on engine (22) with two washers (21) and screws (20). Tighten screws to 60-90 lb-ft (81-122 Nm).
- Install new gasket (18) and tube assembly (17) on turbocharger assembly (19) with three nuts (16). Tighten nuts to 33-47 lb-ft (44-64 Nm).
- Install clamp (14) on tube assembly (19) and in bracket (15) with two nuts (13). Tighten nuts (13) to 17-27 lb-ft (44-64 Nm).



401-393

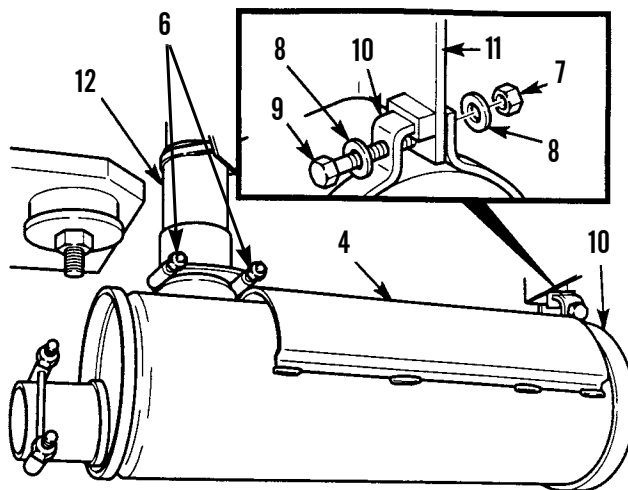
INSTALLATION - CONTINUED



WARNING

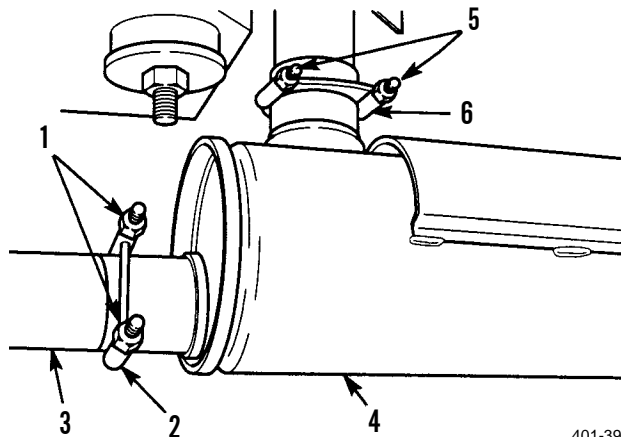
Use caution when handling heavy parts. Provide adequate support during procedure. Failure to follow this warning may cause injury.

5. Position clamp (6) on top port of muffler (4) and install muffler in tube assembly (12). Hold muffler in place.
6. Position clamp (10) over end of muffler (4).
7. Install clamp (10) on plate assembly (11) with washer (8), screw (9), washer (8) and nut (7). Tighten nut to 33-47 lb-ft (44-64 Nm).



401-392

8. Position clamp (6) on overlap of top port of muffler (4) and tube assembly (12) and tighten nuts (5) to 17-27 lb-ft (23-37 Nm).
9. Position clamp (2) on side port of muffler (4) and install exhaust tube (3) in muffler.
10. Position clamp (2) on overlap of side port of muffler (4) and exhaust tube (3) and tighten nuts (1) to 17-27 lb-ft (23-37 Nm).



401-395

11. Close right- and left-side door assemblies (TM 5-3895-379-10).
12. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

COOLANT SYSTEM PRESSURE TEST

0049 00

THIS WORK PACKAGE COVERS

Pressure Test

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 37

Equipment Condition

Engine off and cool (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

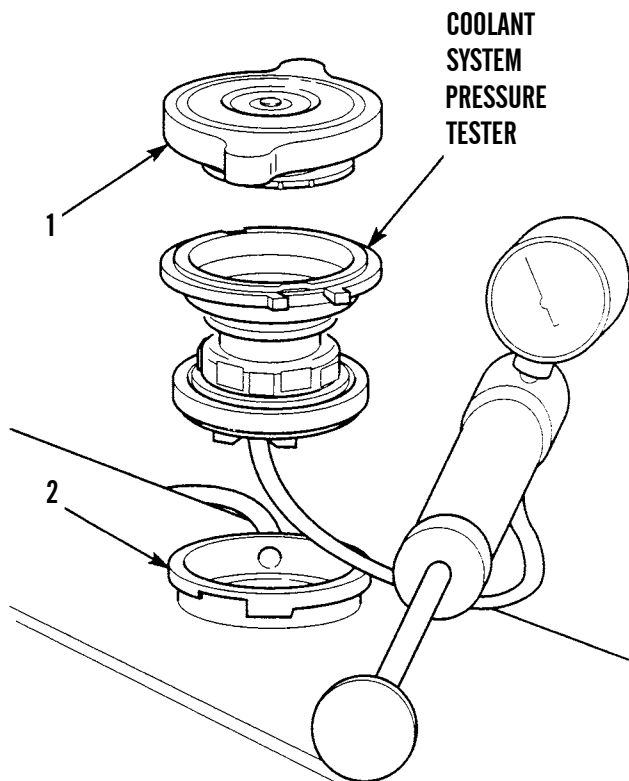
Coolant at proper level (WP 0052 00)

**WARNING**

- DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant may cause burns.
- DO NOT remove cooling system radiator cap when engine is hot. Allow engine to cool down. Loosen cap to first stop and let any pressure out of cooling system, then remove cap. Failure to follow this warning may cause burns.
- Wear effective eye, glove, and skin protection when handling coolants. Failure to do so may cause injury.

PRESSURE TEST

1. Push down on radiator cap (1) and slowly turn 1/2 turn counterclockwise to relieve pressure from radiator (2).
2. Turn radiator cap (1) additional 1/2 turn left and remove radiator cap from radiator (2).
3. Install radiator cap (1) on coolant system pressure tester and pressurize radiator cap.



401-400

NOTE

Pressure valve on radiator cap must start to open between 7-10 psi (48-69 kPa). If pressure valve does not open, replace cap.

4. Remove radiator cap (1) from coolant system pressure tester.
5. Install coolant system pressure tester on radiator (2) and pressurize coolant system to 7-10 psi (48-69 kPa). If pressure does not hold for two minutes, check for coolant leaks and replace or repair as necessary.
6. Slowly remove coolant system pressure tester from radiator (2).
7. Install radiator cap (1) on radiator (2).
8. Close right-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

RADIATOR ASSEMBLY REPLACEMENT

0050 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Antifreeze (Item 4, WP 0219 00)
 Lifting device, 90 lb (41 kg) minimum capacity

References

TM 5-3895-379-23P, Figure 37

Personnel Required

Two

Equipment Condition

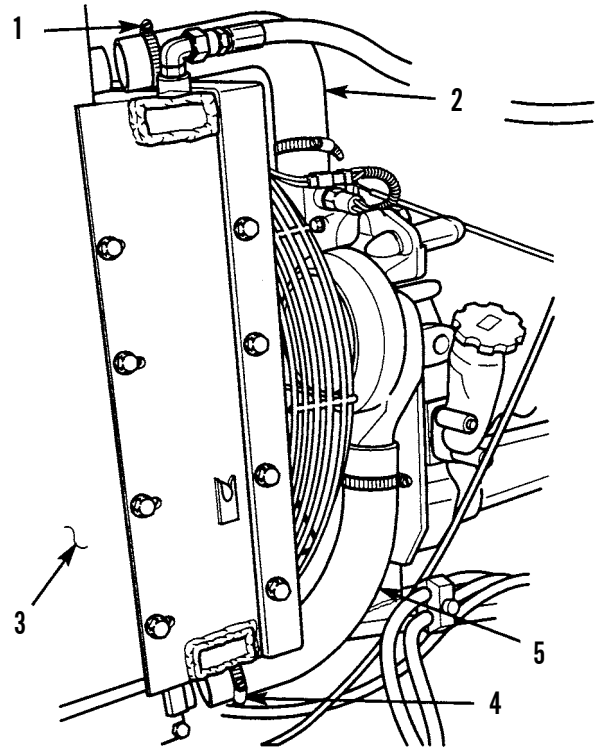
Right-side door assembly opened (TM 5-3895-379-10)
 Operator platform assembly raised (WP 0128 00)
 Coolant system drained (WP 0052 00)

NOTE

Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

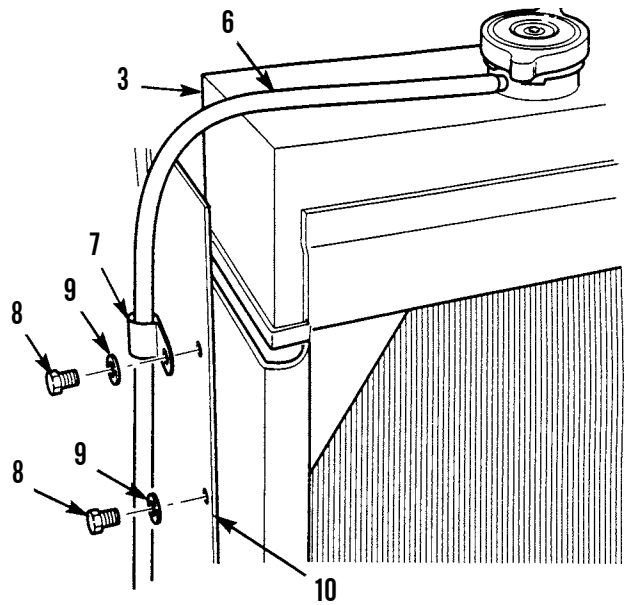
REMOVAL

1. Loosen clamp (1) and remove top radiator hose (2) from radiator (3).
2. Loosen clamp (4) and remove bottom radiator hose (5) from radiator (3).



401-403

3. Remove overflow hose (6) from radiator (3).
4. Mark location and direction of two clips (7).



401-404

REMOVAL - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning could cause injury or death.

NOTE

Weight of radiator is 90 lb (41 kg).

5. Attach lifting device to radiator (3).
6. With assistance, remove eight bolts (8), washers (9), two clips (7), overflow hose (6) and radiator (3) from oil cooler (10). Remove lifting device.
7. Remove drain cock (11) from radiator (3).
8. Loosen clamp (12) and remove cap (13) from radiator (3).

INSTALLATION

1. Install cap (13) and clamp (12) on radiator (3). Tighten clamp until secure.
2. Install drain cock (11) on radiator (3).

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning could cause injury or death.

NOTE

Weight of radiator is 90 lb (41 kg).

3. Attach lifting device to radiator (3).
4. With assistance, install radiator (3) on oil cooler (10) with six washers (9) and bolts (8) leaving two holes open for clips (7). Remove lifting device.
5. Position two clips (7) on overflow hose (6).
6. Install two clips (7) and overflow hose (6) on oil cooler (10) with two washers (9) and bolts (8).
7. Install overflow hose (6) on radiator (3).

NOTE

Bottom four bolts on backside cannot be measurably tightened due to location. Torque wrench will not fit between oil cooler and frame.

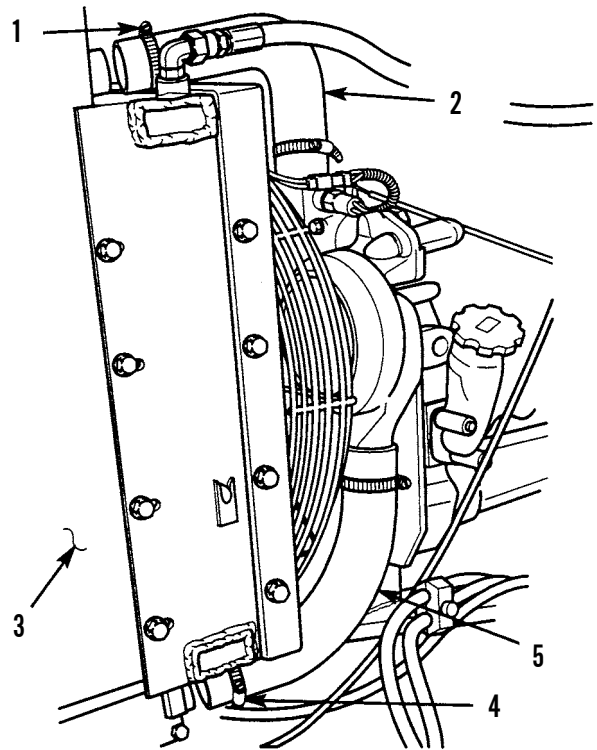
8. Tighten eight bolts (8) to 33-47 lb-ft (45-64 Nm). Ensure two clips (7) do not turn and restrict overflow hose (10).

RADIATOR ASSEMBLY REPLACEMENT - CONTINUED

0050 00

INSTALLATION - CONTINUED

9. Slide clamp (4) over bottom radiator hose (5).
10. Position bottom radiator hose (5) on radiator (3) and tighten clamp (4).
11. Slide clamp (1) over top radiator hose (2).
12. Position top radiator hose (2) on radiator (3) and tighten clamp (1).



401-403

13. Fill coolant system (WP 0052 00).
14. Lower operator platform assembly (WP 0128 00).
15. Start engine (TM 5-3895-379-10). Allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
16. Turn engine off (TM 5-3895-379-10).
17. Close right-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

RADIATOR HOSES REPLACEMENT

0051 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

References - Continued

TM 5-3895-379-23P, Figure 37

Equipment Condition

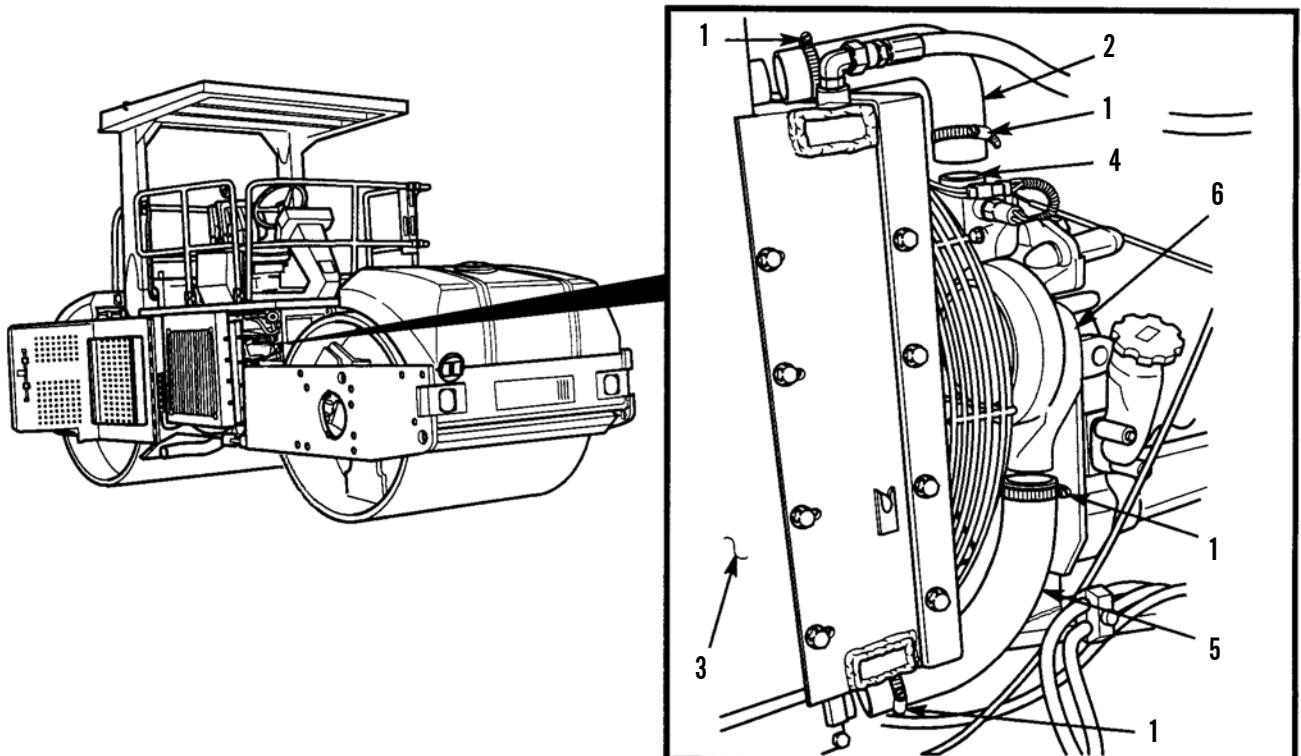
Engine off and cool (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Cooling system drained (WP 0052 00)

REMOVAL

1. Loosen two clamps (1).
2. Remove hose (2) from radiator (3) and thermostat housing (4).
3. Remove two clamps (1) from hose (2).
4. Loosen two clamps (1).
5. Remove hose (5) from radiator (3) and water pump (6).
6. Remove two clamps (1) from hose (5).



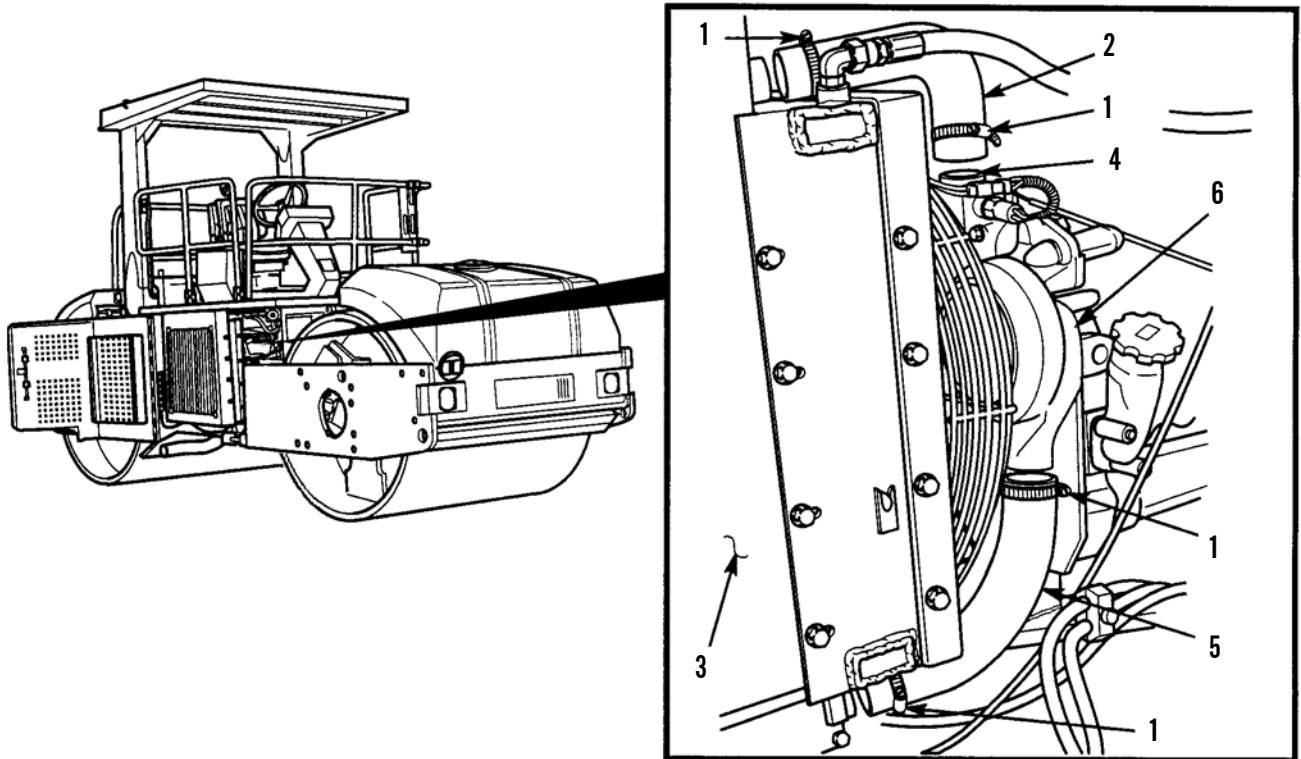
401-412

RADIATOR HOSES REPLACEMENT - CONTINUED

0051 00

INSTALLATION

1. Position two clamps (1) on hose (5).
2. Position hose (5) on radiator (3) and water pump (6) and tighten two clamps (1).
3. Position two clamps (1) on hose (2).
4. Position hose (2) on radiator (3) and thermostat housing (4) and tighten two clamps (1).



401-412

5. Fill cooling system (WP 0052 00).
6. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
7. Turn engine off (TM 5-3895-379-10).
8. Start engine and check for leaks (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

COOLANT SYSTEM SERVICE**0052 00**

THIS WORK PACKAGE COVERSCheck, Drain, Fill

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Antifreeze (Item 4, WP 0219 00)
Rag, wiping (Item 31, WP 0219 00)
Sodium carbonate (Item 34, WP 0219 00)

References

TB 750-651
TM 5-3895-379-23P, Figure 37

Equipment Condition

Engine off (TM 5-3895-379-10)
Drums chocked (TM 5-3895-379-10)
Right-side door assembly open (TM 5-3895-379-10)

**WARNING**

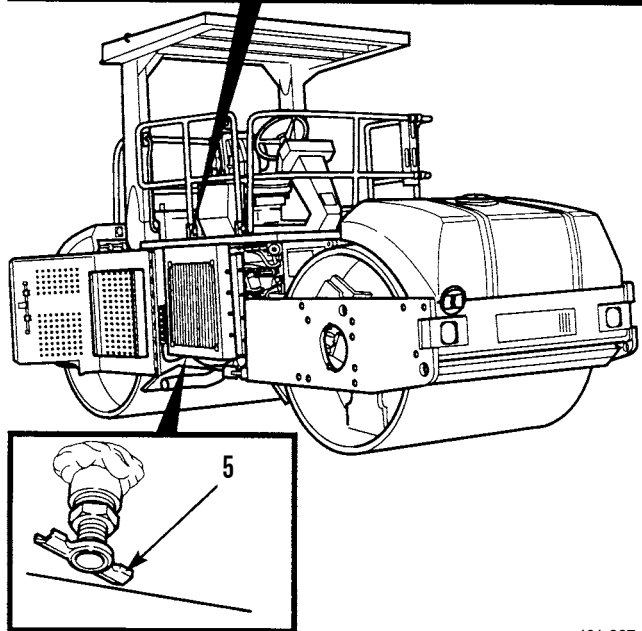
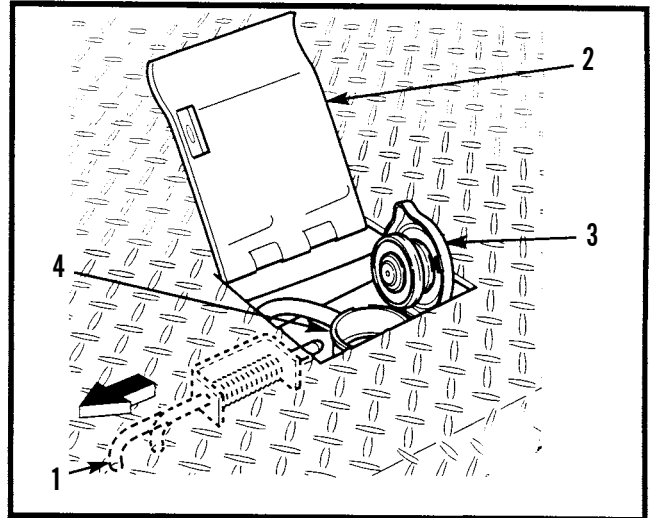
- DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant may cause burns.
- DO NOT remove cooling system radiator cap when engine is hot. Allow engine to cool down. Loosen cap to first stop and let any pressure out of cooling system, then remove cap. Failure to follow this warning may cause burns.
- Wear effective eye, glove, and skin protection when handling coolants. Failure to do so may cause injury.

COOLANT SYSTEM SERVICE - CONTINUED

0052 00

CHECK

1. Pull lever (1) and open access door (2). Release lever.
2. Remove radiator cap (3) from radiator (4).
3. Using antifreeze tester, check coolant protection level (TB 750-651).
4. If protection level is not within needs of environmental conditions, add or change coolant.
5. Install radiator cap (3) on radiator (4).
6. Pull lever (1) and close access door (2). Release lever.



401-397

DRAIN**NOTE**

Place a container with a 6 gal. (22.7 l) capacity under radiator to catch draining coolant.

1. Pull lever (1) and open access door (2). Release lever.
2. Remove radiator cap (3) from radiator (4).
3. Open drain cock (5) on radiator (4) and drain coolant. Dispose of drained fluid in accordance with local regulations.
4. Close drain cock (5).

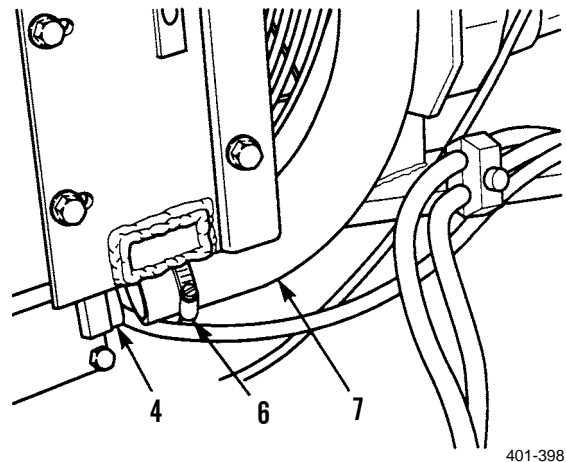
DRAIN - CONTINUED

5. Fill radiator (4) with 5.8 gal. (22 l) clean water and 0.75 lb (0.4 kg) sodium carbonate.
6. Install radiator cap (3) on radiator (4). Pull lever (1) and close access door (2). Release lever.
7. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Turn engine off (TM 5-3895-379-10) and allow radiator to cool.
8. Open drain cock (5) on radiator (4) and drain fluid. Dispose of drained fluid in accordance with local regulations.
9. Close drain cock (5).

NOTE

Place a container with a 6 gal. (22.7 l) capacity under radiator to catch draining fluid.

10. Loosen clamp (6) and remove hose (7) from radiator (4). Drain remaining water. Dispose of drained fluid in accordance with local regulations.
11. Install hose (7) on radiator (4) and tighten clamp (6).

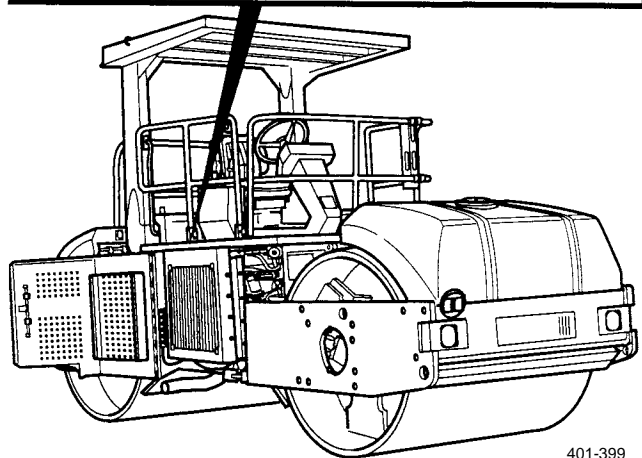
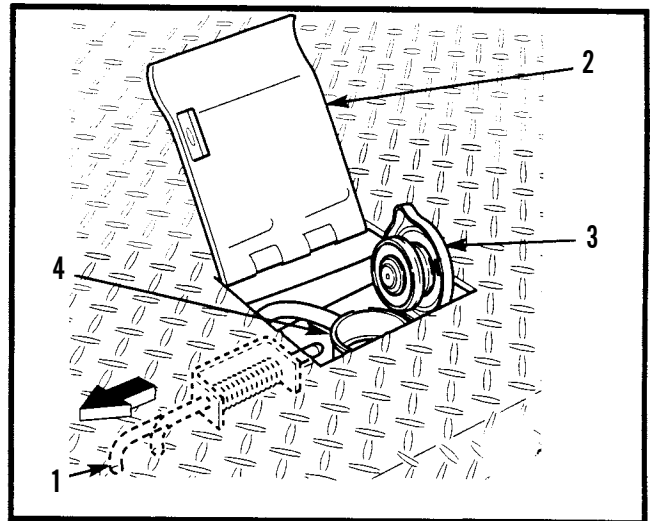


12. Repeat steps 5 through 9, using clean water only to flush coolant system. Do not add sodium carbonate.
13. If water drained still appears dirty, repeat steps 5 through 9 until water appears clean.

FILL**CAUTION**

Do not fill coolant system with water only. Use a 50/50 mixture of ethylene glycol (antifreeze) and water. Failure to do so will result in damage to engine.

1. Pull lever (1) and open access door (2). Release lever.
2. Remove radiator cap (3) from radiator (4) and fill radiator with a 50/50 mixture of water and antifreeze. The radiator is full when coolant level is 3 inches below top of fill hose.
3. Check radiator cap (3) for missing or damaged gasket. Replace cap if gasket is damaged or missing.
4. Install radiator cap (3) on radiator (4), pull lever (1) and close access door (2). Release lever.



5. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
6. Turn engine off (TM 5-3895-379-10).
7. Close right-side door assembly (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Testing, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Digital resistor, thermal (thermometer) (Item 7, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)

Materials/Parts - Continued

Packing, preformed

References

TM 5-3895-379-23P, Figure 39

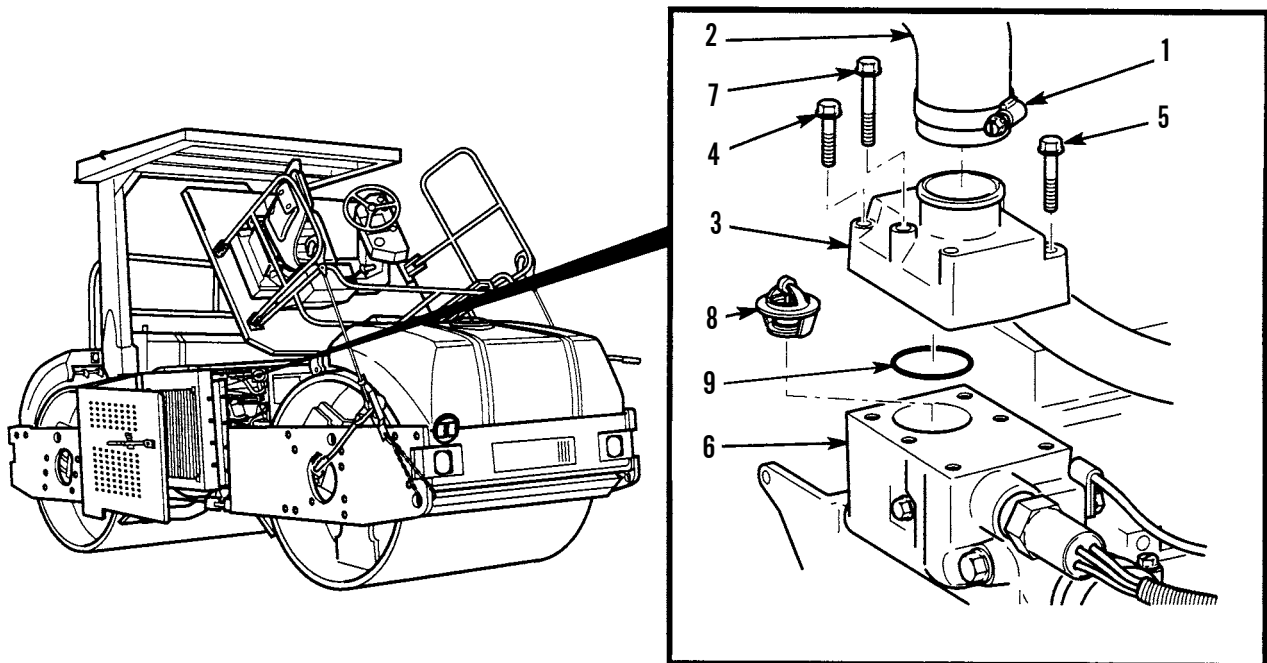
Equipment Condition

Operator platform assembly raised (WP 0128 00)

Cooling system drained (WP 0052 00)

REMOVAL

1. Loosen clamp (1) and remove radiator hose (2) from connector (3).
2. Remove bolts (4 and 5) from thermostat housing (6).
3. Remove four screws (7) and connector (3) from thermostat housing (6).
4. Remove thermostat (8) and preformed packing (9) from thermostat housing (6). Discard preformed packing.



401-406

TESTING

1. Hang thermostat in pan of water so that thermostat is completely under water. Do not allow thermostat to make contact with pan.
2. Place thermal digital resistor (thermometer) in water.
3. Heat water with propane torch and stir to allow for consistent temperature.

NOTE

Opening temperature should be 170-185°F (77-85°C). Full open temperature should be 198-208°F (92-98°C).

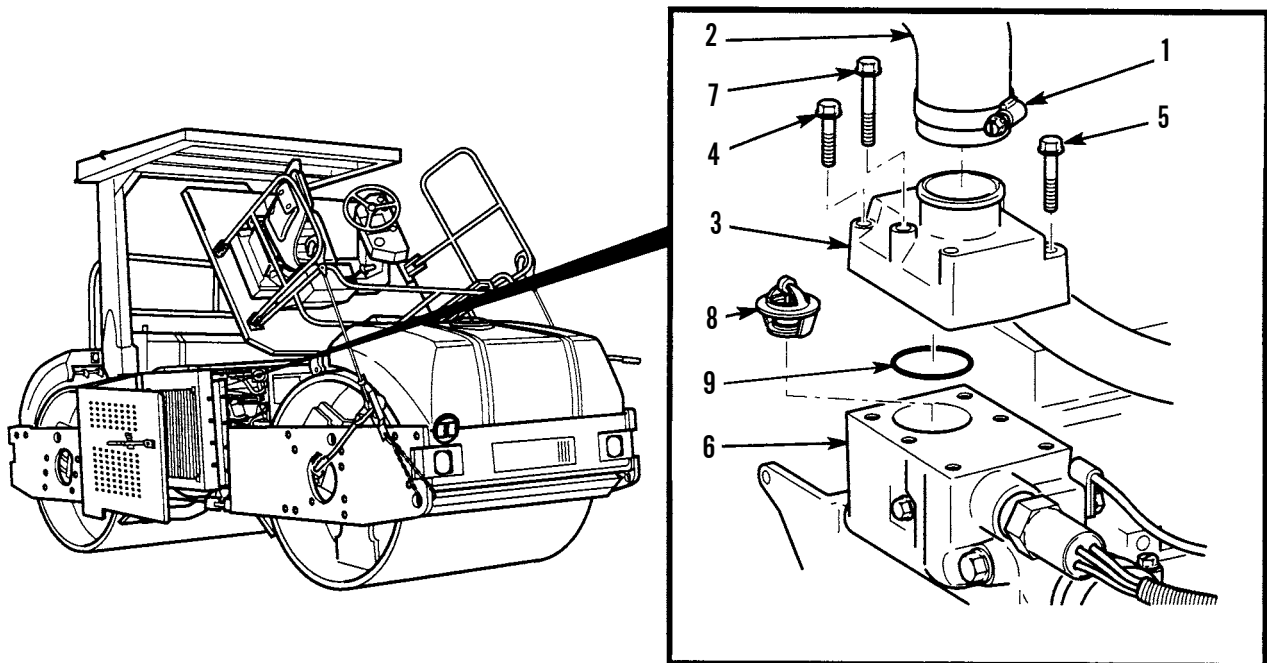
4. Observe temperature at which thermostat opens. Replace thermostat if temperatures are not as specified.

INSTALLATION

NOTE

Thermostat is replaced as a kit with preformed packing.

1. Position thermostat (8) and new preformed packing (9) in thermostat housing (6).
2. Install connector (3) on thermostat housing (6) with four screws (7) and bolts (5 and 4). Tighten screws to 25-41 lb-ft (34-56 Nm).
3. Install radiator hose (2) on connector (3) and tighten clamp (1).



401-406

INSTALLATION - CONTINUED

4. Fill cooling system (WP 0052 00).
5. Lower operator platform assembly (WP 0128 00).
6. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
7. Turn engine off (TM-3895-379-10).

END OF WORK PACKAGE

THERMOSTAT MAINTENANCE (CB534C)

0054 00

THIS WORK PACKAGE COVERSRemoval, Testing, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Digital resistor, thermal (thermometer) (Item 7, WP 0220 00)

Materials/Parts

Cloth, cleaning (Item 10, WP 0219 00)

Compound, sealing (Item 12, WP 0219 00)

Materials/Parts - Continued

O-ring

Ring

Seal

References

TM 5-3895-379-23P, Figure 39

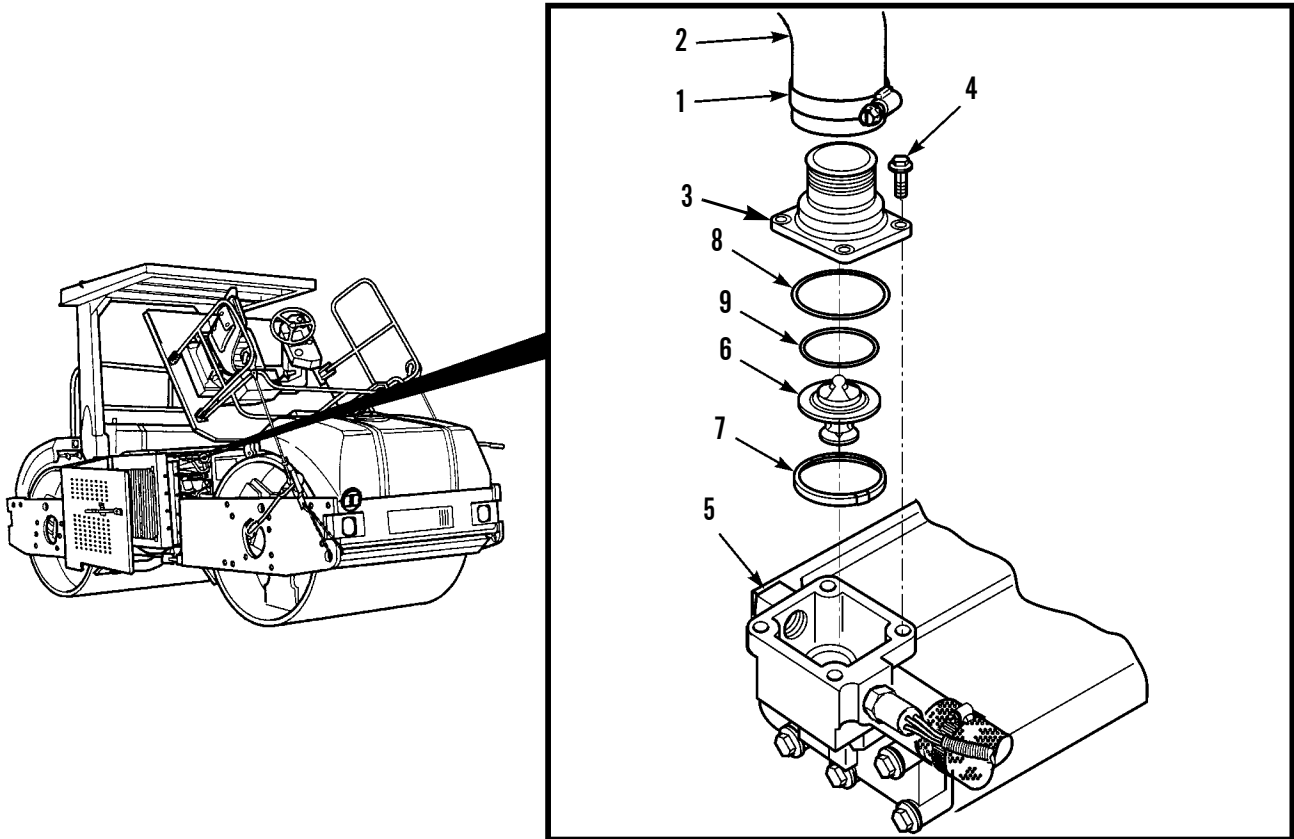
Equipment Condition

Operator platform assembly raised (WP 0128 00)

Cooling system drained (WP 0052 00)

REMOVAL

1. Loosen clamp (1) and remove radiator hose (2) from connector (3).
2. Remove four screws (4) and connector (3) from thermostat housing (5).
3. Remove thermostat (6), ring (7), seal (8) and O-ring (9) from thermostat housing (5). Discard ring, seal and O-ring.



401-2013

TESTING

1. Hang thermostat in pan of water so that thermostat is completely under water. Do not allow thermostat to make contact with pan.
2. Place digital thermal resistor (thermometer) in water.
3. Heat water with propane torch and stir to allow for consistent temperature.

NOTE

Opening temperature should be 170-185°F (77-85°C). Full open temperature should be 198-208°F (92-98°C).

4. Observe temperature at which thermostat opens. Replace thermostat if operation is not as specified.

INSTALLATION

1. Install thermostat (6) new ring (7), new seal (8) and new O-ring (9) in thermostat housing (5).
2. Install connector (3) on thermostat housing (5) with four screws (4). Tighten screws to 25-41 lb-ft (33-56 Nm).
3. Position radiator hose (2) on connector (3) and tighten clamp (1).
4. Fill cooling system (WP 0052 00).
5. Lower operator platform assembly (WP 0128 00).
6. Start engine and allow engine to idle until coolant reaches normal operating temperature (TM 5-3895-379-10). Run engine five minutes. Check for leaks.

END OF WORK PACKAGE

THERMOSTAT HOUSING REPLACEMENT (CB534B)

0055 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket

Preformed packing

References

TM 5-3895-379-23P, Figure 39

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Cooling system drained (WP 0052 00)

NOTE

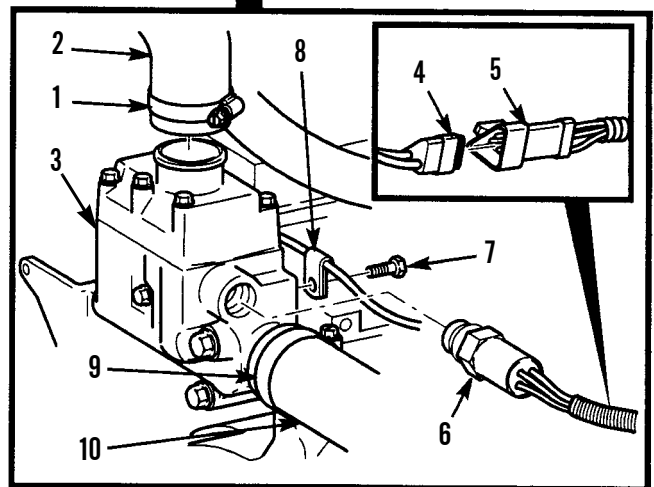
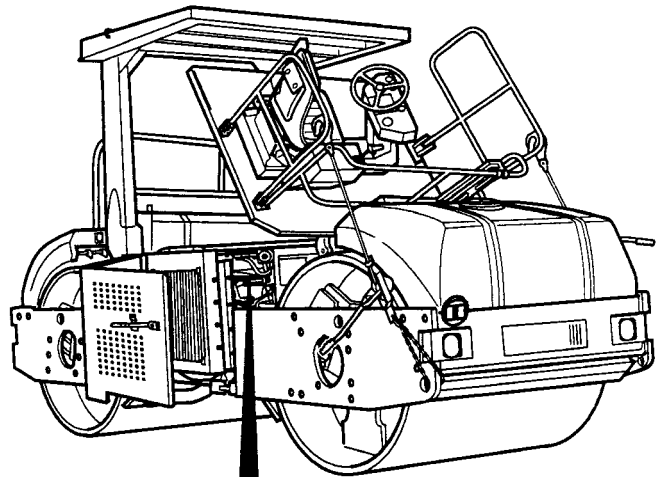
Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

THERMOSTAT HOUSING REPLACEMENT (CB534B) - CONTINUED

0055 00

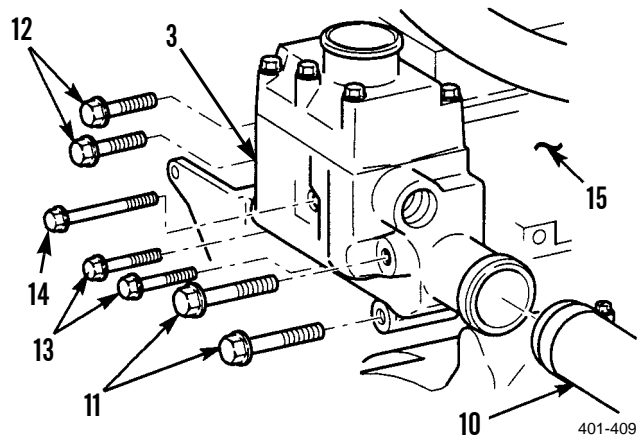
REMOVAL

1. Loosen clamps (1) and remove top radiator hose (2) from thermostat housing assembly (3).
2. Disconnect connector (4) from temperature sensor connector (5).
3. Remove temperature sensor (6) from thermostat housing assembly (3).
4. Remove screw (7) and clip (8) from thermostat housing assembly (3).
5. Loosen clamp (9) around hose (10).



401-408

6. Remove two bolts (11) from thermostat housing assembly (3).
7. Remove two screws (12) from thermostat housing assembly (3).
8. Remove two bolts (13) from thermostat housing assembly (3).
9. Remove bolt (14) from thermostat housing assembly (3).
10. Pull thermostat housing assembly (3) away from engine (15).
11. Slide hose (10) off thermostat housing assembly.

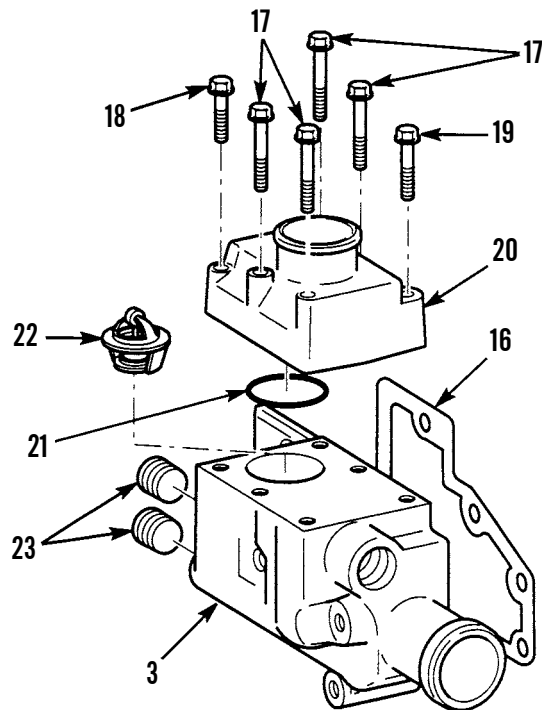


401-409

REMOVAL - CONTINUED**NOTE**

Ensure that all gasket material is removed from thermostat housing assembly and engine block.

12. Remove gasket (16) from thermostat housing assembly (3). Discard gasket.
13. Remove four screws (17) from thermostat housing assembly (3).
14. Remove bolt (18) from thermostat housing assembly (3).
15. Remove bolt (19) from thermostat housing assembly (3).
16. Remove connector (20), preformed packing (21) and thermostat (22) from thermostat housing assembly (3). Discard preformed packing.
17. Remove two pipe plugs (23) from thermostat housing assembly (3).



401-410

INSTALLATION

1. Install two pipe plugs (23) in thermostat housing assembly (3).
2. Install thermostat (22), new preformed packing (21) and connector (20) in thermostat housing assembly (3).
3. Install bolts (18) and (19) in thermostat housing assembly (3). Tighten bolt to 15-25 lb-ft (20-34 Nm). Install bolt (18) in thermostat housing assembly (3). Tighten bolt to 15-25 lb-ft (20-34 Nm).
4. Install four screws (17) in thermostat housing assembly (3). Tighten screws to 15-25 lb-ft (20-34 Nm).
5. Position new gasket (16) on thermostat housing assembly (3).
6. Position hose (10) onto thermostat housing assembly (3).
7. Install two bolts (13) and bolt (14) in thermostat housing assembly (3). Tighten bolt to 15-25 lb-ft (20-34 Nm). Install two screws (12) in thermostat housing assembly (3). Tighten screws to 33-47 lb-ft (45-64 Nm).
8. Install two bolts (11) in thermostat housing assembly (3). Tighten bolts to 33-47 lb-ft (45-64 Nm).
9. Install clamp (9) on hose (10) and thermostat housing assembly (3). Tighten clamp until secure.
10. Install clip (8) and screw (7) in thermostat housing assembly (3). Tighten screw to 15-25 lb-ft (20-34 Nm).
11. Install temperature sensor (6) in thermostat housing assembly (3).
12. Connect temperature sensor connector (5) to connector (4).
13. Install top radiator hose (2) and clamp (1) on thermostat housing assembly (3). Tighten clamp securely.

INSTALLATION - CONTINUED

14. Fill coolant system (WP 0052 00).
15. Lower operator platform assembly (WP 0128 00).
16. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

THERMOSTAT HOUSING REPLACEMENT (CB534C)

0056 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket

O-ring

References

WP 0052 00, Coolant System Service

TM 5-3895-379-23P, Figure 39

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Thermostat removed (WP 0054 00)

NOTE

Inspect hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

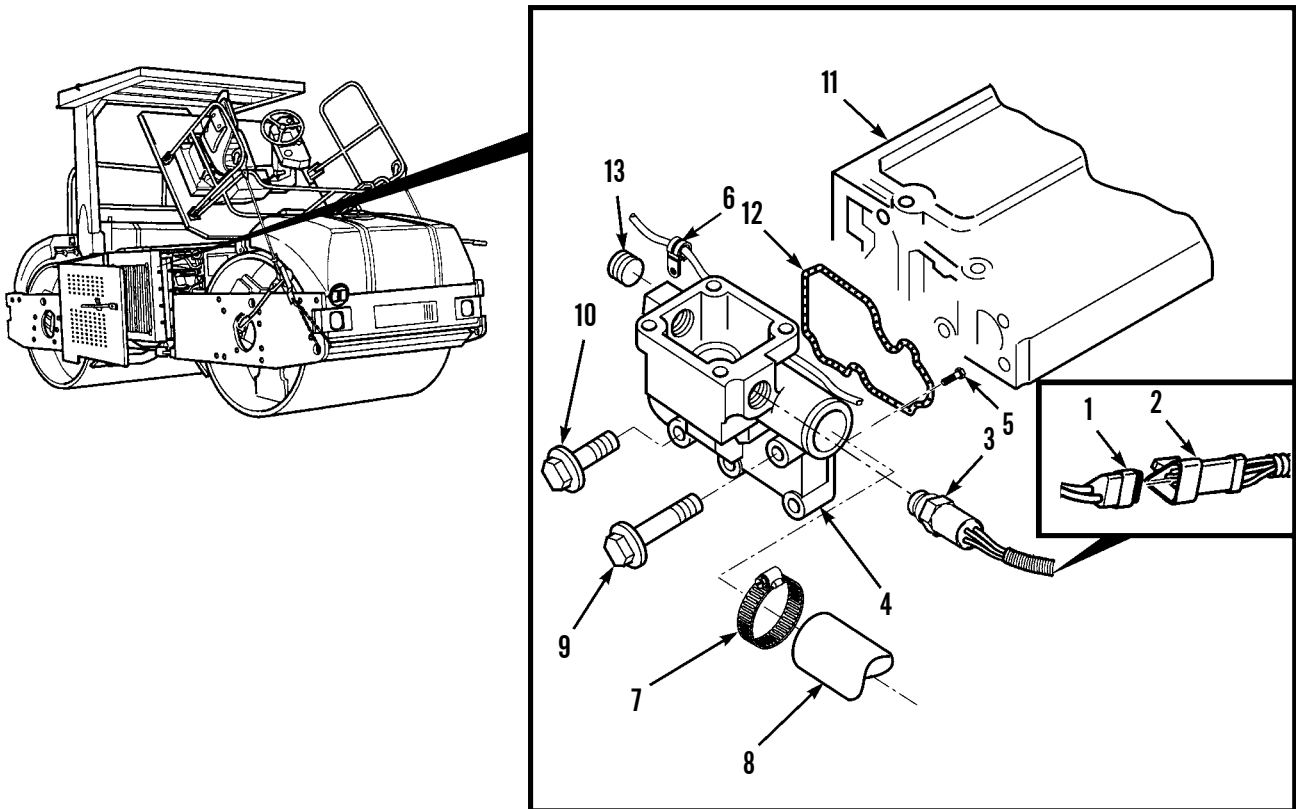
REMOVAL

1. Disconnect connector (1) from temperature sensor connector (2).
2. Remove temperature sensor (3) from thermostat housing assembly (4).
3. Remove screw (5) and clip (6) from thermostat housing assembly (4).
4. Loosen clamp (7) around hose (8).
5. Remove two bolts (9) from thermostat housing assembly (4).
6. Remove three bolts (10) from thermostat housing assembly (4).
7. Pull thermostat housing assembly (4) away from engine (11).
8. Slide hose (8) off thermostat housing assembly.

CAUTION

Ensure that all gasket material is removed from thermostat housing assembly and engine.

9. Remove gasket (12) from thermostat housing assembly (4). Discard gasket.
10. Remove pipe plug (13) from thermostat housing assembly (4).



401-2012

INSTALLATION

1. Install pipe plug (12) in thermostat housing assembly (4).
2. Position new gasket (12) on thermostat housing assembly (4).
3. Position hose (8) onto thermostat housing assembly (4).
4. Install three bolts (10) and two bolts (9) in thermostat housing assembly (4). Tighten bolts to 33-47 lb-ft (45-64 Nm).
5. Install clamp (7) on hose (8) and thermostat housing assembly (4). Tighten clamp until secure.
6. Install clip (6) on thermostat housing assembly (4) with screw (5).
7. Install temperature sensor (3) in thermostat housing assembly (4).
8. Connect temperature sensor connector (2) to connector (1).
9. Fill cooling system (WP 0052 00).
10. Lower operator platform assembly (WP 0128 00).
11. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
12. Turn engine off (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER PUMP REPLACEMENT

0057 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Gasket (CB534C Roller)

Packing, preformed (2) (CB534B Roller)

References

TM 5-3895-379-23P, Figure 40

Equipment Condition

Engine off and cool (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

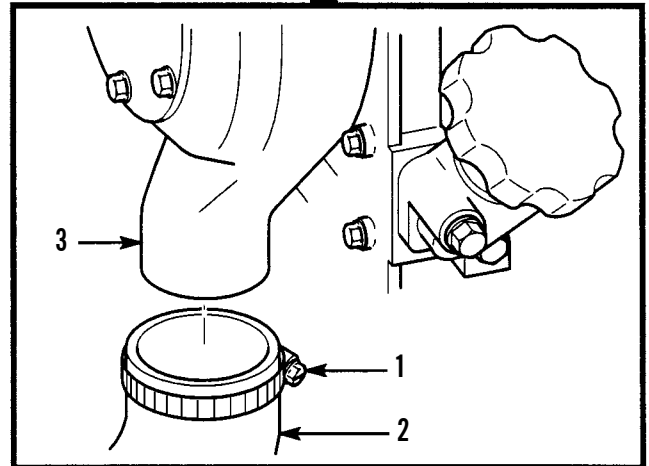
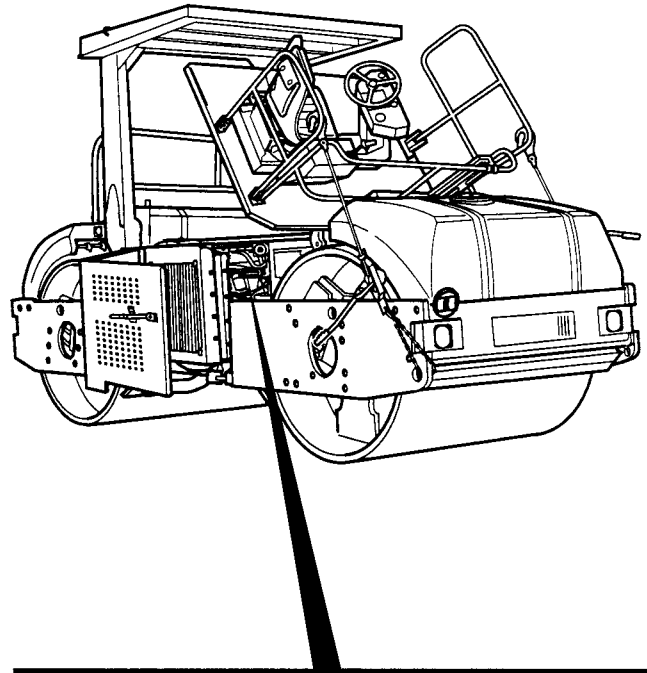
Cooling system drained (WP 0052 00)

NOTE

- Water pump is replaced the same way for CB534B and CB534C Rollers except where noted. CB534B Roller is shown.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

REMOVAL

1. Loosen clamp (1) and remove hose (2) from water pump (3).



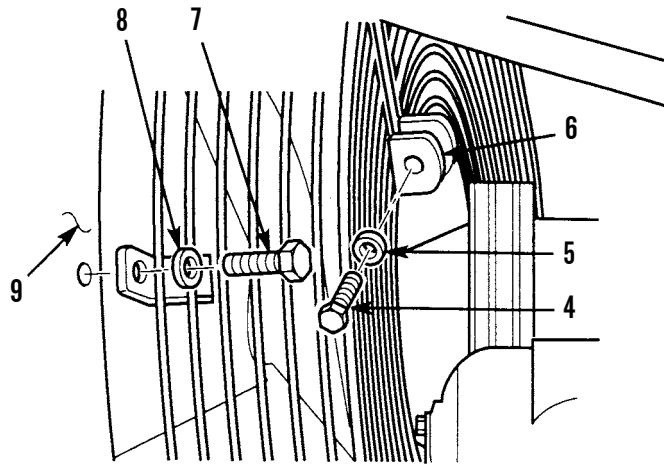
401-413

WATER PUMP REPLACEMENT - CONTINUED

0057 00

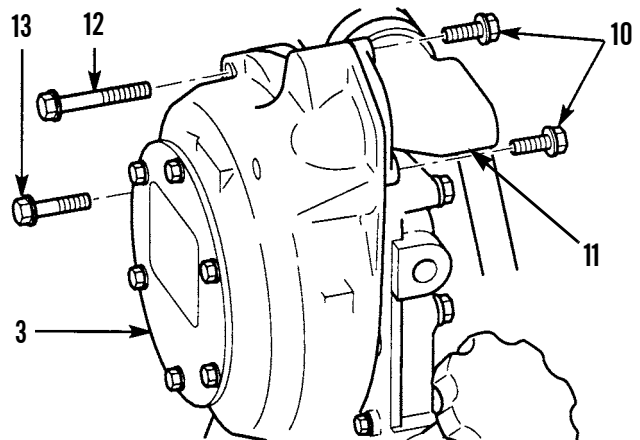
REMOVAL - CONTINUED

2. Remove two bolts (4) and washers (5) from front fan guard assembly (6).
3. Remove two bolts (7), washers (8) and front fan guard assembly (6) from fan shroud (9).



401-414

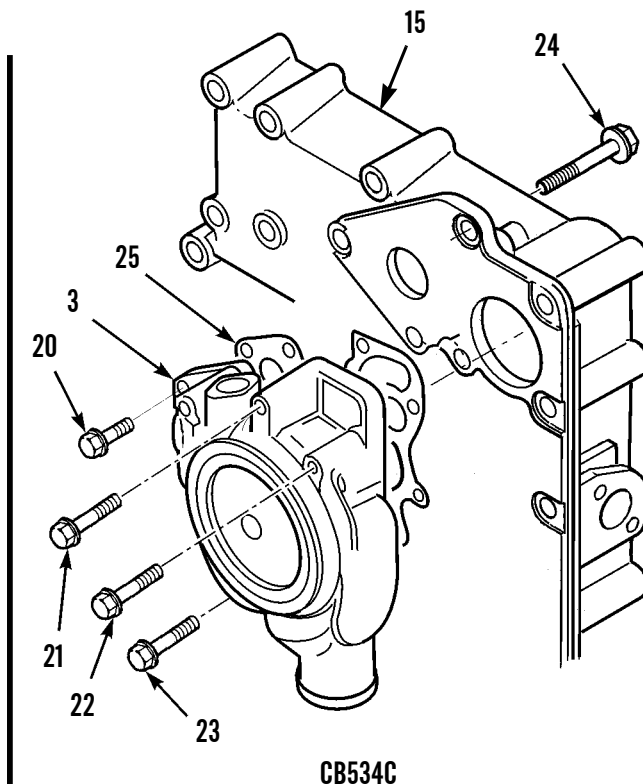
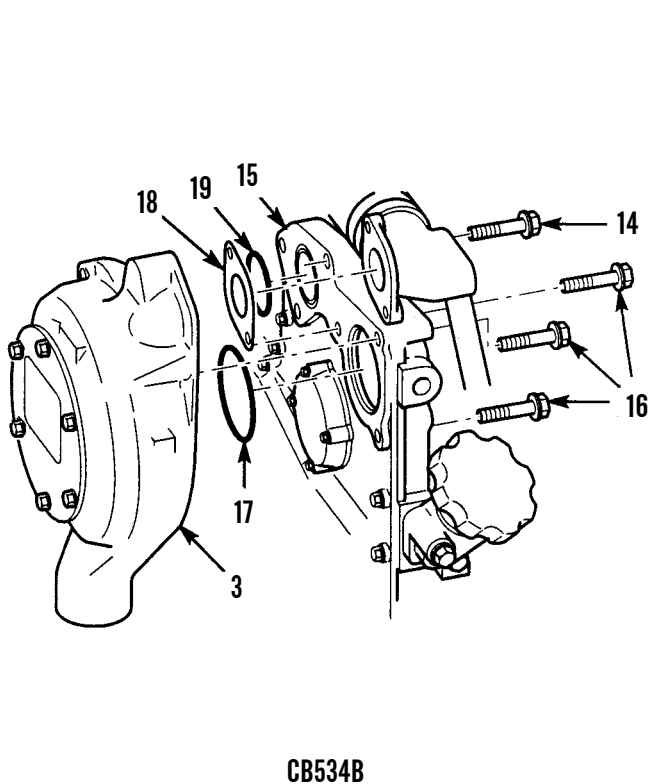
4. For CB534B Roller, remove two bolts (10) from connector (11).
5. For CB534B Roller, remove bolts (12) and (13) from water pump (3).



401-415

REMOVAL - CONTINUED

6. For CB534B Roller, remove bolt (14) from engine (15).
7. For CB534B Roller, remove three bolts (16), water pump (3), preformed packing (17), gasket (18) and preformed packing (19) from engine (15). Discard preformed packings and gasket.
8. For CB534C Roller, remove bolts (20), (21), (22), (23), and (24), water pump (3) and gasket (25) from engine (15). Discard gasket.



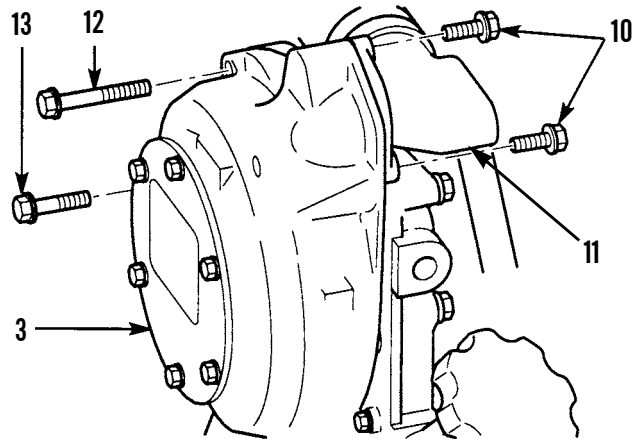
401-2014

INSTALLATION

1. For CB534C Roller, install new gasket (25) and water pump (3), to engine (15) with bolts (20), (21), (22), (23), and (24).
2. For CB534B Roller, install new preformed packing (19), new gasket (18), new preformed packing (17) and water pump (3) on engine (15) with three bolts (16). Tighten bolts to 15-25 lb-ft (20-34 Nm).
3. For CB534B Roller, install bolt (14) in engine (15). Tighten bolt to 15-25 lb-ft (20-34 Nm).

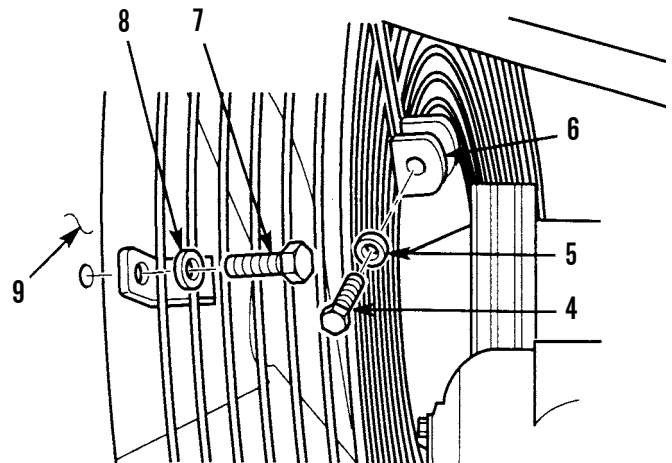
INSTALLATION - CONTINUED

4. For CB534B Roller, install bolts (13) and (12) in water pump (3). Tighten bolts to 15-25 lb-ft (20-34 Nm).
5. For CB534B Roller, install two bolts (10) in connector (11). Tighten bolts to 15-25 lb-ft (20-34 Nm).



401-415

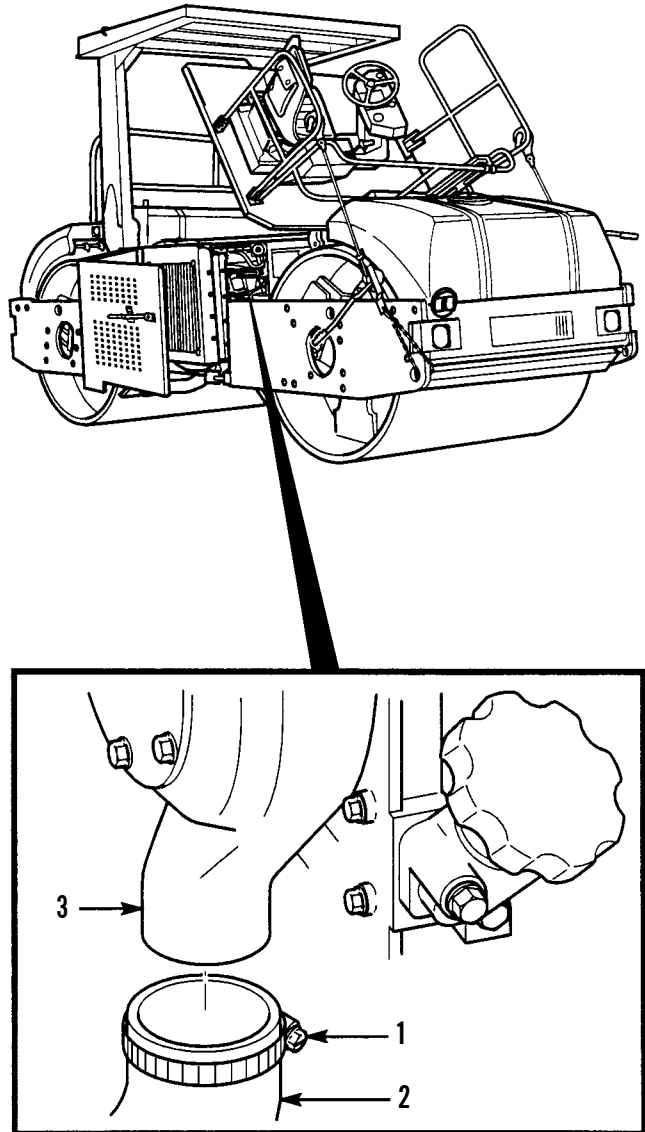
6. Install front fan guard assembly (6) on fan shroud (9) with two washers (8) and bolts (7). Tighten bolts to 15-25 lb-ft (20-34 Nm).
7. Install two washers (5) and bolts (4) in front fan guard assembly (6). Tighten bolts to 15-25 lb-ft (20-34 Nm).



401-414

INSTALLATION - CONTINUED

8. Install hose (2) on water pump (3) and tighten clamp (1).



401-413

9. Fill cooling system (WP 0052 00).
10. Lower operator platform assembly (WP 0128 00).
11. Start engine (TM 5-3895-379-10) and allow engine to idle until coolant reaches normal operating temperature. Run engine five minutes. Check for leaks.
12. Turn engine off (TM 5-3895-379-10).

END OF WORK PACKAGE

FAN DRIVE HOUSING ASSEMBLY REPLACEMENT

0058 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 41

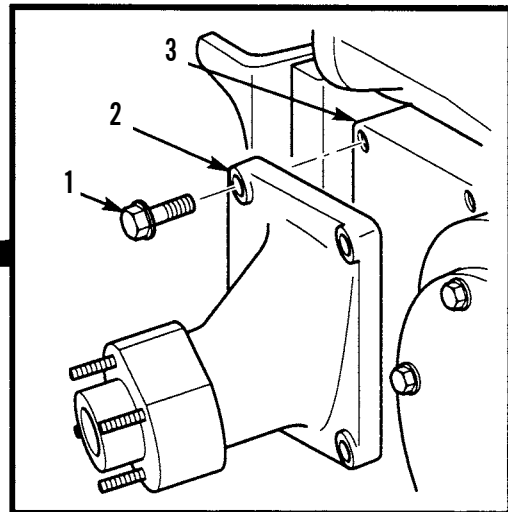
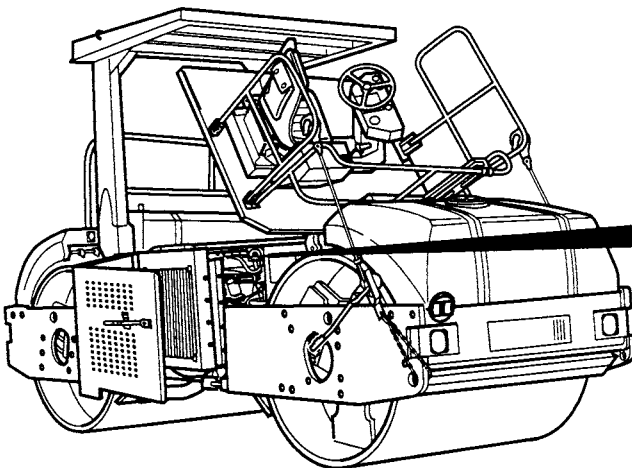
Equipment Condition

Operator platform assembly raised (WP 0128 00)

Fan pulley removed (WP 0059 00)

REMOVAL

Remove four screws (1) and fan drive housing assembly (2) from engine assembly (3).



401-422

INSTALLATION

1. Install fan drive housing assembly (2) on engine assembly (3) with four screws (1). Tighten screws to 33-47 lb-ft (45-64 Nm).
2. Install fan pulley (WP 0059 00).
3. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

- WP 0060 00, Fan V-Belts Maintenance
- TM 5-3895-379-23P, Figure 41

Equipment Condition

- Operator platform assembly raised (WP 0128 00)



WARNING

Use caution when working under operator platform assembly. Falling platform may cause injury or death.

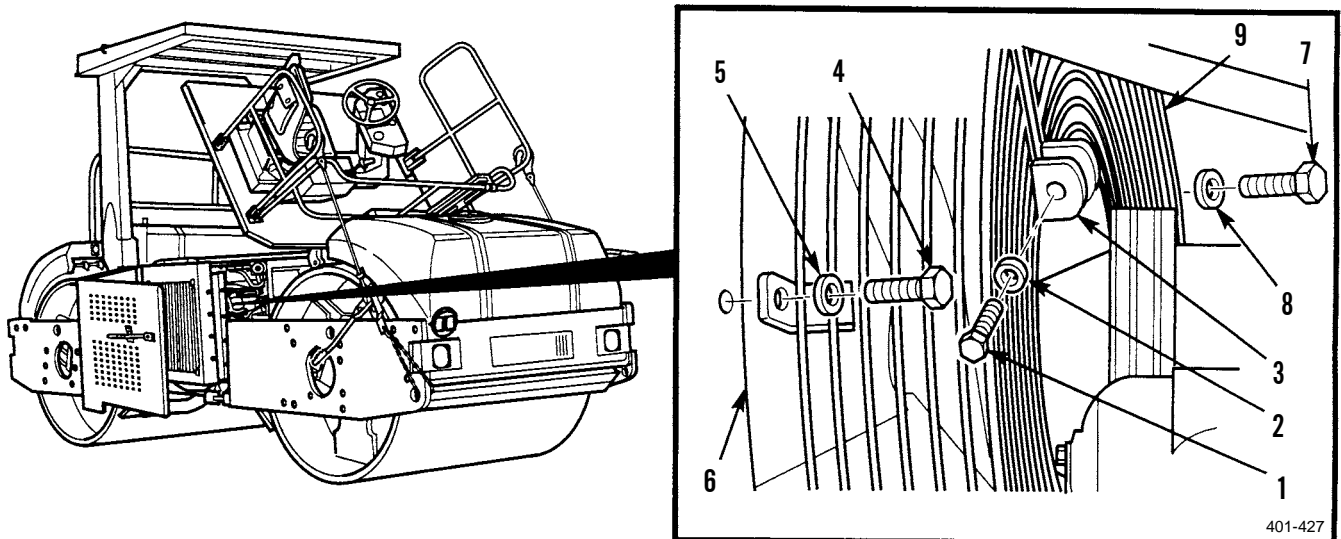
REMOVAL

1. Remove two bolts (1) and washers (2) from front fan guard assembly (3).
2. Remove two bolts (4), washers (5) and front fan guard assembly (3) from fan shroud (6).

NOTE

Remove both fan guard assemblies only when replacing fan shroud.

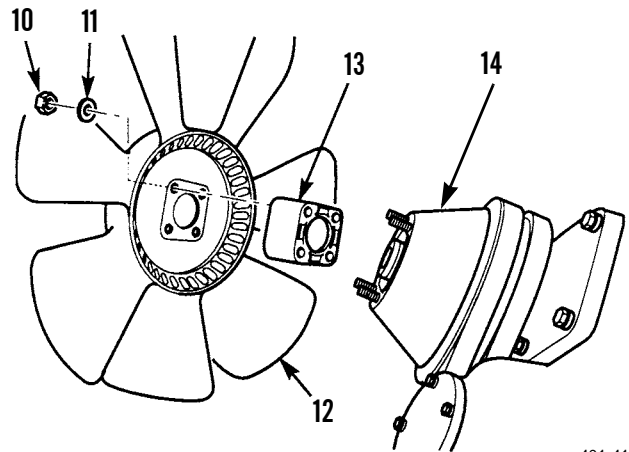
3. Remove two bolts (7), washers (8) and rear fan guard assembly (9) from fan shroud (6).



401-427

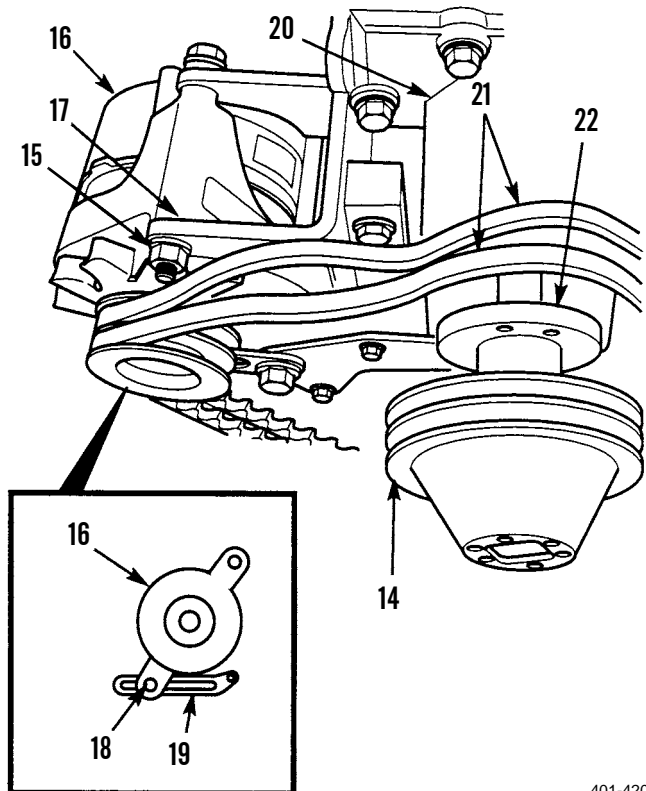
REMOVAL - CONTINUED

4. Remove four nuts (10), washers (11), fan (12) and spacer (13) from fan pulley (22).



401-419

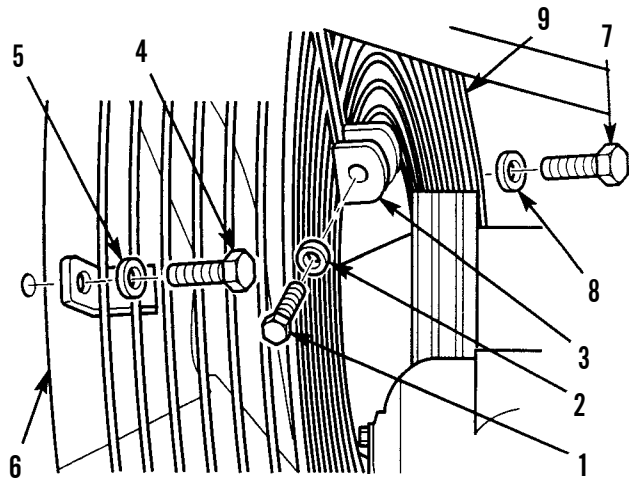
5. Loosen nut (15) holding alternator (16) to alternator bracket (17).
6. Loosen screw (18) holding alternator (16) to alternator strap (19).
7. Slide alternator (16) towards engine (20) and remove two V-belts (21) from fan pulley (22).
8. Remove fan pulley (14) from fan drive housing assembly (22).



401-420

INSTALLATION

1. Position fan pulley (14) on fan drive housing assembly (22).
2. Install spacer (13) and fan (12) to fan pulley (14) with four washers (11) and nuts (10). Tighten nuts to 15-25 lb-ft (20-34 Nm).
3. Install fan V-belts (WP 0060 00).
4. Install rear fan guard assembly (9) on fan shroud (6) with two washers (8) and bolts (7). Tighten bolts to 33-47 lb-ft (45-64 Nm).
5. Install front fan guard assembly (3) on fan shroud (6) with two washers (5) and bolts (4). Tighten bolts to 33-47 lb-ft (45-64 Nm).
6. Install two washers (2) and bolts (1) in front fan guard assembly (3). Tighten bolts to 15-25 lb-ft (20-34 Nm).



401-427

7. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation, Adjustment

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Gauge, belt tension (Item 10, WP 0220 00)

Equipment Condition

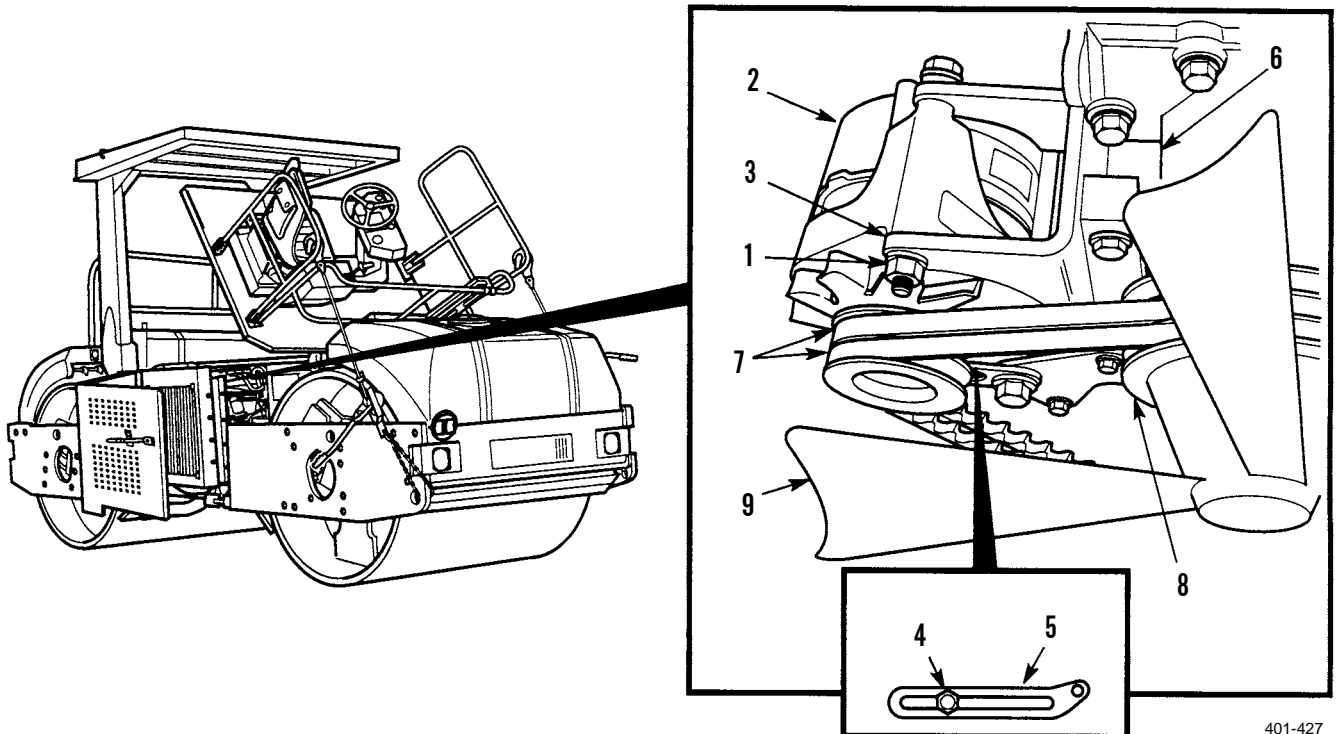
- Operator platform assembly raised (WP 0128 00)
- Fan guard removed (WP 0059 00)

References

TM 5-3895-379-23P, Figure 41

REMOVAL

1. Loosen nut (1) holding alternator (2) to alternator bracket (3).
2. Loosen screw (4) holding alternator (2) to alternator strap (5).
3. Slide alternator (2) toward engine (6) and remove two V-belts (7) from three pulleys (8).
4. Move two V-belts (7) around fan (9) and remove two V-belts.



401-427

CLEANING AND INSPECTION

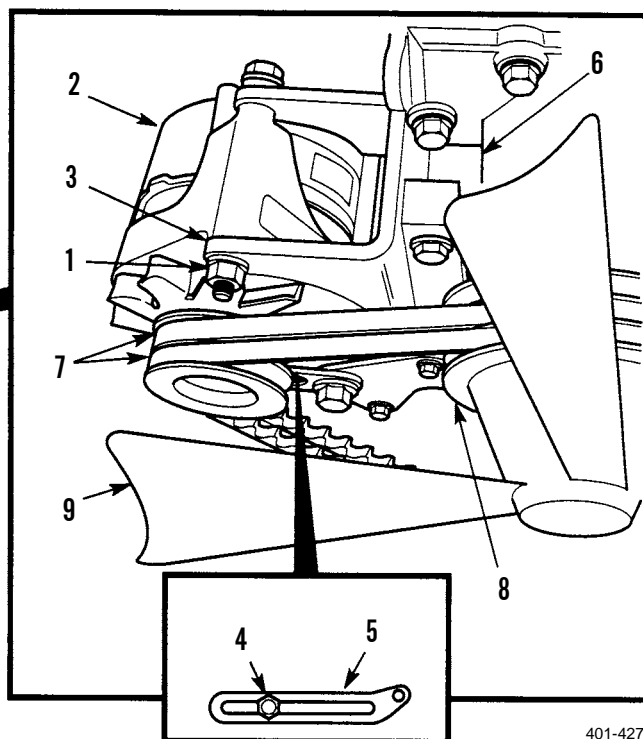
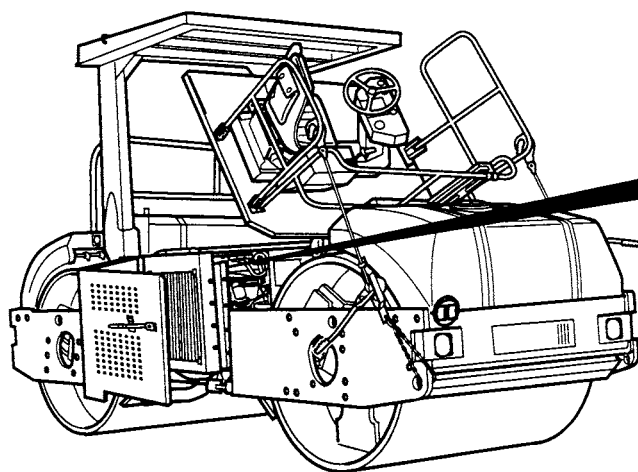
Check V-belts (7) for any cracks that go to belt fiber, cracks 1/8 in. in depth or 50% of belt thickness, grease build-up, peeling, glazing, or frays more than 2 in. long.

INSTALLATION

NOTE

Always replace V-belts as a set, even if only one is found to be damaged.

1. Position two V-belts (7) around fan (9) and three pulleys (8).
2. Perform *Adjustment*.
3. Install fan guard (WP 0059 00).

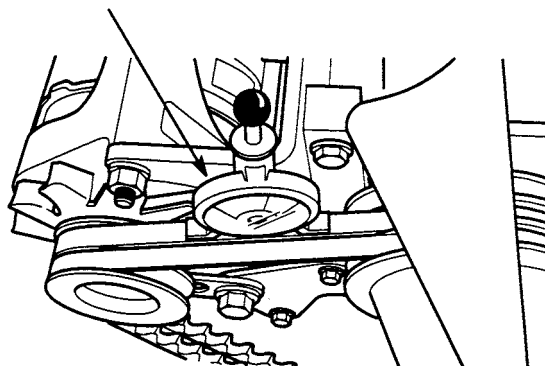


401-427

ADJUSTMENT

1. Attach belt tension gauge to V-belts (7).
2. Slide alternator (2) away from or toward engine (6) to adjust belt tension.
3. Maintain 80 lb (355 N) of belt tension while tightening screw (4) and nut (1).
4. Check belt tension.
5. Lower operator platform assembly (WP 0128 00).

BELT TENSION GAUGE



401-429

END OF WORK PACKAGE

ALTERNATOR REPLACEMENT

0061 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figures 42, 43 and 44

Personnel Required

Two

Equipment Condition

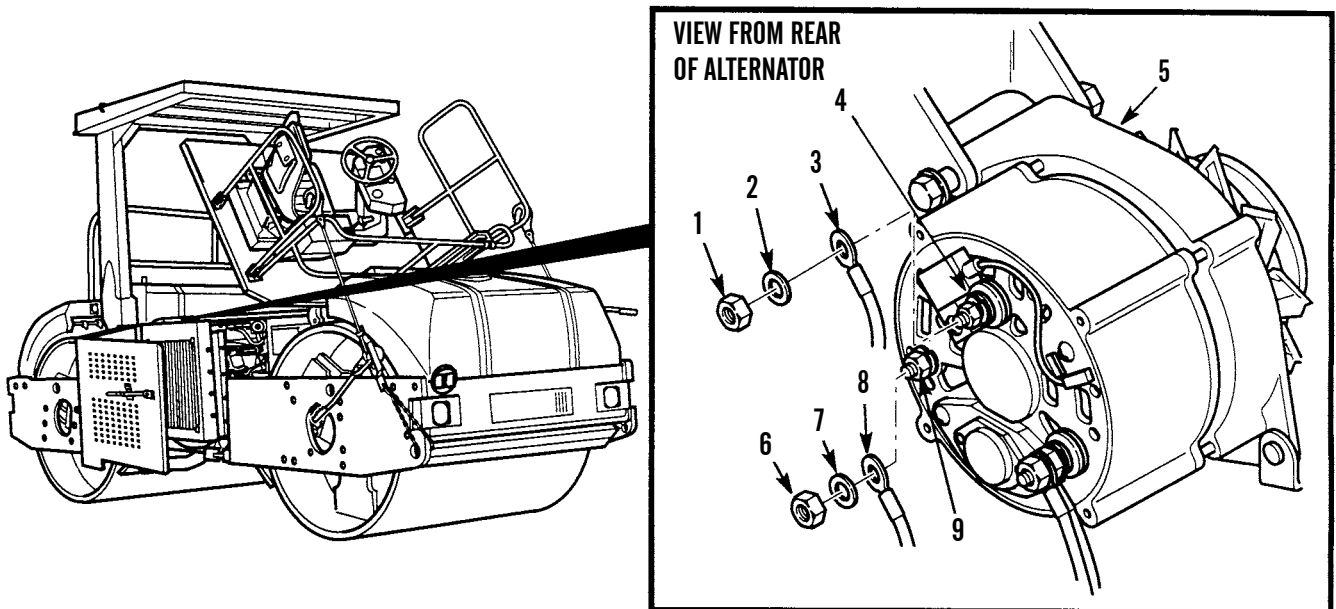
Operator platform assembly raised (WP 0128 00)

Fan V-belts removed (WP 0060 00)

Battery cables disconnected (WP 0105 00)

REMOVAL

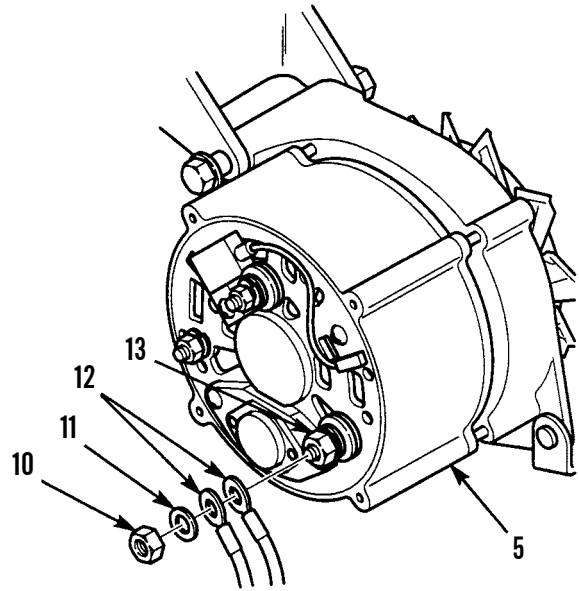
1. Remove nut (1), washer (2) and wire (3) from D+ terminal (4) of alternator (5).
2. Remove nut (6), washer (7) and wire (8) from B- terminal (9) of alternator (5).



401-423

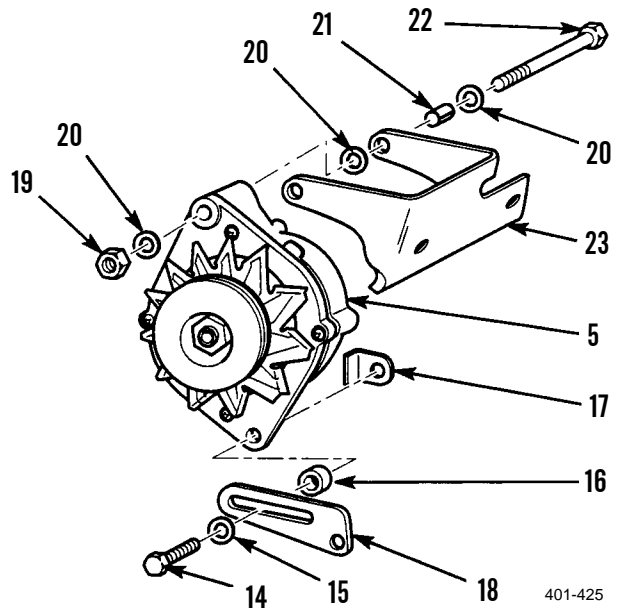
REMOVAL - CONTINUED

3. Remove nut (10), lockwasher (11) and two wires (12) from B+ terminal (13) of alternator (5). Discard lockwasher.



401-424

4. Remove screw (14), washer (15), spacer (16) and welded nut (17) from alternator (5) and alternator strap (18).
5. With assistance, remove nut (19), washer (20), alternator (5), washer (20), spacer (21), washer (20) and screw (22) from alternator bracket (23).

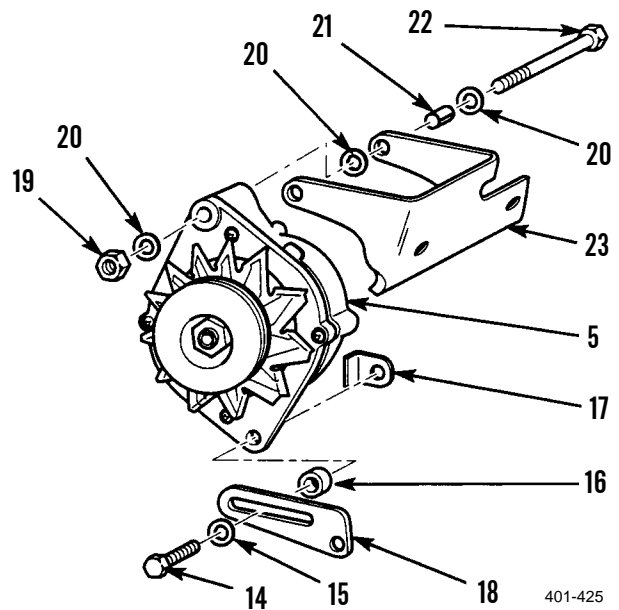


401-425

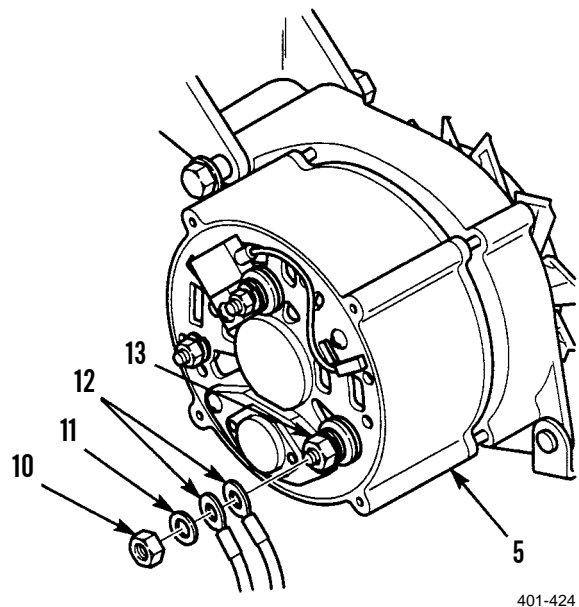
INSTALLATION**NOTE**

- Ensure alternator pulley is aligned with crankshaft pulley to within $\frac{3}{32}$ in. (2.4 mm).
- If alternator pulley is removed, install alternator pulley on alternator and tighten alternator nut to 48-55 lb-ft (65-75 Nm).

1. With assistance, install alternator (5) on alternator bracket (23) with screw (22), washer (20), spacer (21), washer (20) and nut (19). Do not tighten nut.
2. Install alternator (5) on alternator strap (18) and welded nut (17) with spacer (16), washer (15) and screw (14). Do not tighten screw.

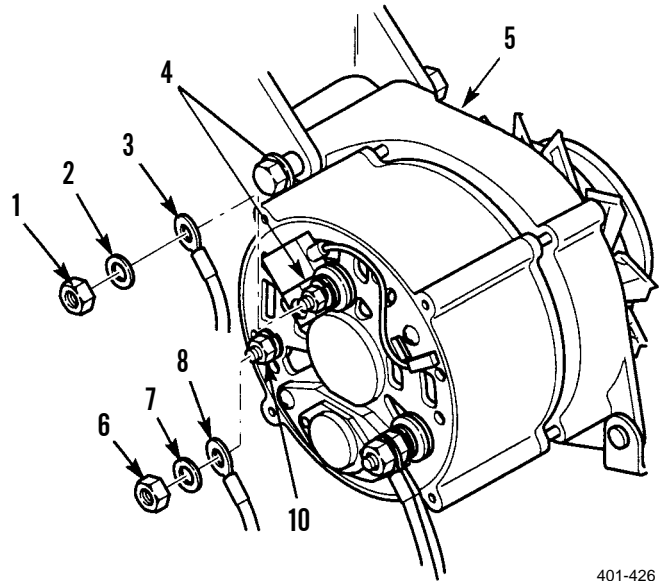


3. Install two wires (12), new lockwasher (11) and nut (10) on terminal B+ (13) of alternator (5).



ALTERNATOR REPLACEMENT - CONTINUED**0061 00****INSTALLATION**

4. Install wire (8), washer (7) and nut (6) on B- terminal (10) of alternator (5).
5. Install wire (3), washer (2) and nut (1) to D+ terminal (4) of alternator (5).



401-426

6. Install V-belts (WP 0060 00).
7. Connect battery cables (WP 0105 00).
8. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

ALTERNATOR TEST

0062 00

THIS WORK PACKAGE COVERS

Test

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

WP 0061 00, Alternator Replacement
TM 5-3895-379-23P, Figure 44

Equipment Condition

Engine off (TM 5-3895-379-10)
Drums chocked (TM 5-3895-379-10)
Right-side door assembly opened (TM 5-3895-379-10)

TEST

1. Place positive (+) lead of multimeter on alternator BAT terminal. Place negative (-) lead on ground terminal or frame of alternator. Place ammeter around positive output wire of alternator.
2. Turn off all electrical accessories. Turn off fuel to engine. Crank engine for 30 seconds. Wait for two minutes to cool starting motor. If electrical system appears to operate correctly, crank engine again for 30 seconds.

NOTE

Cranking engine for 30 seconds partially discharges batteries to perform charging test. If battery has a low charge, do not perform this step. Jump start engine or charge battery before engine is started.

3. Start engine and run at full throttle (TM 5-3895-379-10).
4. Check output current of the alternator. Initial charging current should be equal to minimum full load current or greater than minimum full load current. Minimum full load current at 5000 rpm = 47 amps and at 1500 rpm = 13.5 amps.
 - a. After approximately ten minutes of operating engine at full throttle, output voltage of alternator should be 28.0 +/-1 volt for a 24-volt system.
 - b. After ten minutes of engine operation, charging current should decrease to approximately 10 amps. Actual length of time for charging current to decrease to 10 amps depends on battery charge, ambient temperature and rpm of engine.
5. Replace alternator (WP 0061 00) if voltage is below specification, decreases after matching specification or is consistently above specification after ten minutes of operation.
6. Close right-side door assembly (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ALTERNATOR BRACKET REPLACEMENT

0063 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Locknut

References

TM 5-3895-379-23P, Figure 42

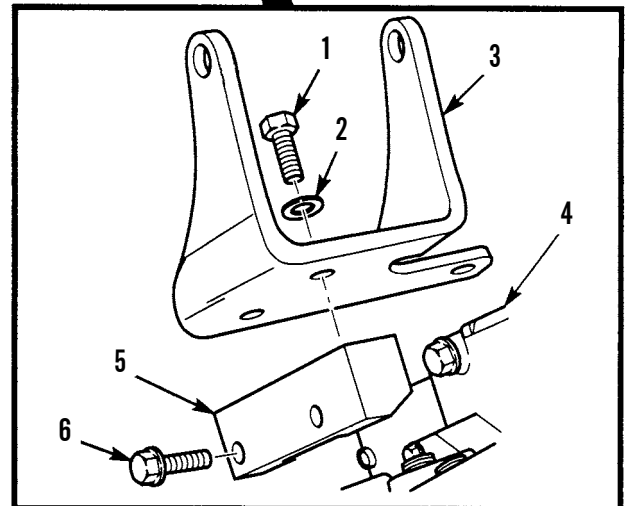
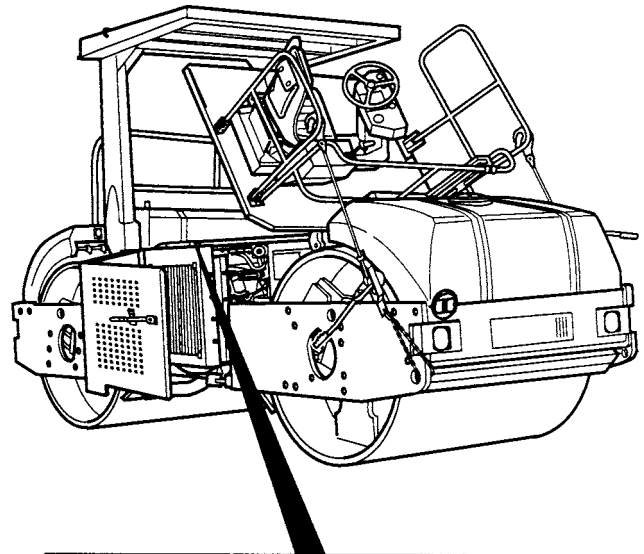
Equipment Condition

Operator platform assembly raised (WP 0128 00)

Alternator removed (WP 0061 00)

REMOVAL

1. Remove three screws (1), washers (2) and alternator bracket (3) from engine (4) and bracket (5).
2. Remove two screws (6) and bracket (5) from engine (4).



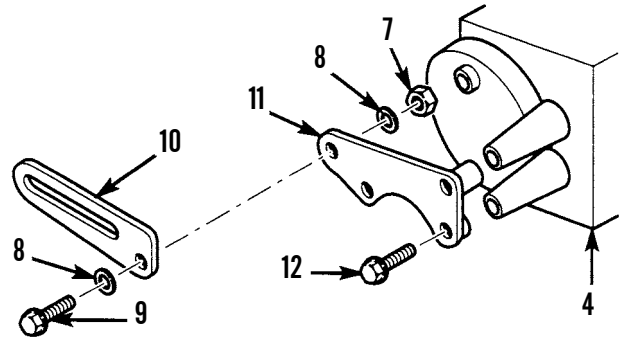
401-430

ALTERNATOR BRACKET REPLACEMENT - CONTINUED

0063 00

REMOVAL - CONTINUED

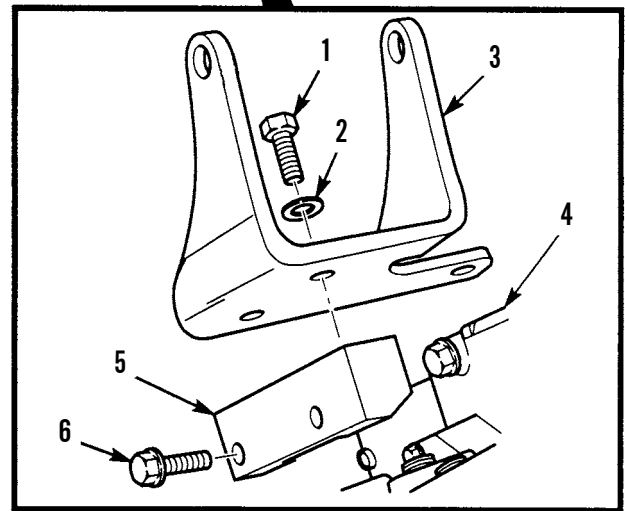
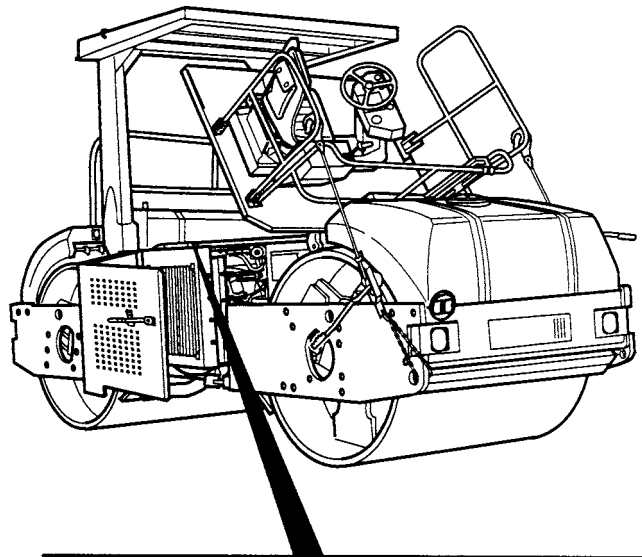
3. Remove locknut (7), washer (8), screw (9), washer (8) and alternator strap (10) from bracket (11). Discard locknut.
4. Remove three screws (12) and bracket (11) from engine (4).



401-431

INSTALLATION

1. Install bracket (11) on engine (4) with three screws (12).
2. Install alternator strap (10) on bracket (11) with washer (8), screw (9), washer (8) and new locknut (7).
3. Install bracket (5) on engine (4) with two screws (6).
4. Install alternator bracket (3) on engine (4) and bracket (5) with three washers (2) and screws (1).



401-430

5. Install alternator (WP 0061 00).
6. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

ALTERNATOR CIRCUIT BREAKER REPLACEMENT

0064 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (4)

References

TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

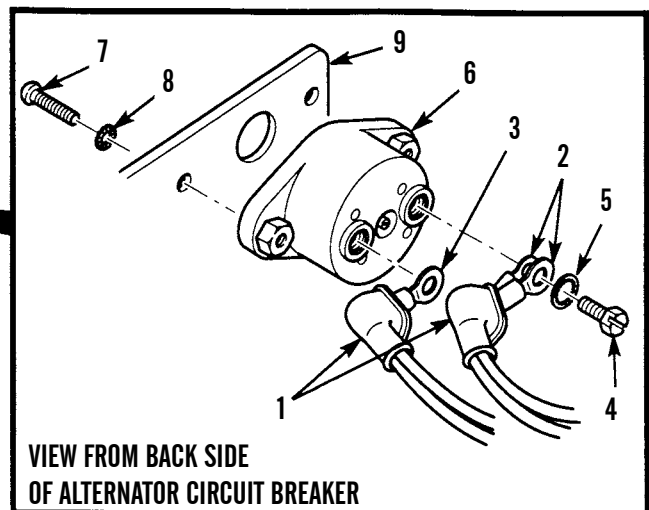
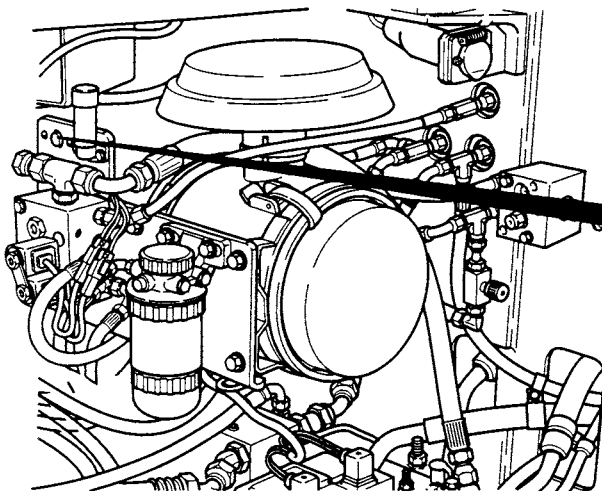
Left-side door assembly opened (TM 5-3895-379-10)

REMOVAL

NOTE

Tag and mark all wires prior to removal.

1. Position cable boots (1) to expose two terminals (2) and terminal (3).
2. Remove two screws (4), lockwashers (5), terminals (2) and terminal (3) from circuit breaker assembly (6). Discard lockwashers.
3. Remove two screws (7), lockwashers (8) and circuit breaker assembly (6) from air cleaner support assembly (9). Discard lockwashers.



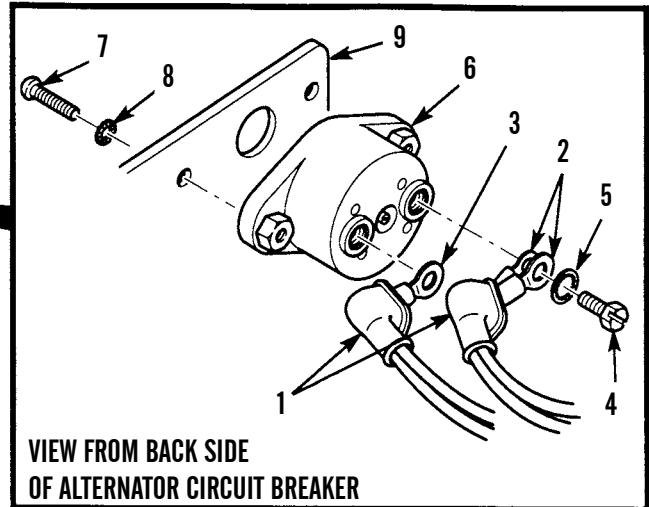
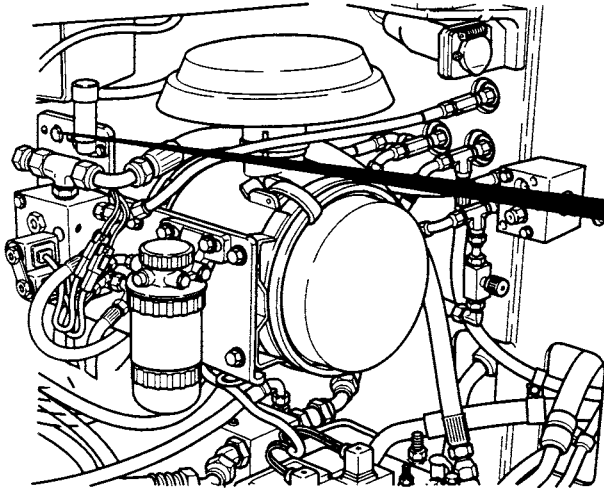
401-434

ALTERNATOR CIRCUIT BREAKER REPLACEMENT - CONTINUED

0064 00

INSTALLATION

1. Install circuit breaker (6) on air cleaner support assembly (9) with two new lockwashers (8) and screws (7).
2. Install two terminals (2) and terminal (3) on circuit breaker assembly (6) with two new lockwashers (5) and screws (4). Tighten screws to 2-4 lb-ft (3-5 Nm).
3. Position cable boots (1) to cover two terminals (2) and terminal (3).



401-434

4. Close left-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

STARTER REPLACEMENT

0065 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 45

Equipment Condition

Operator platform assembly raised (WP 0128 00)

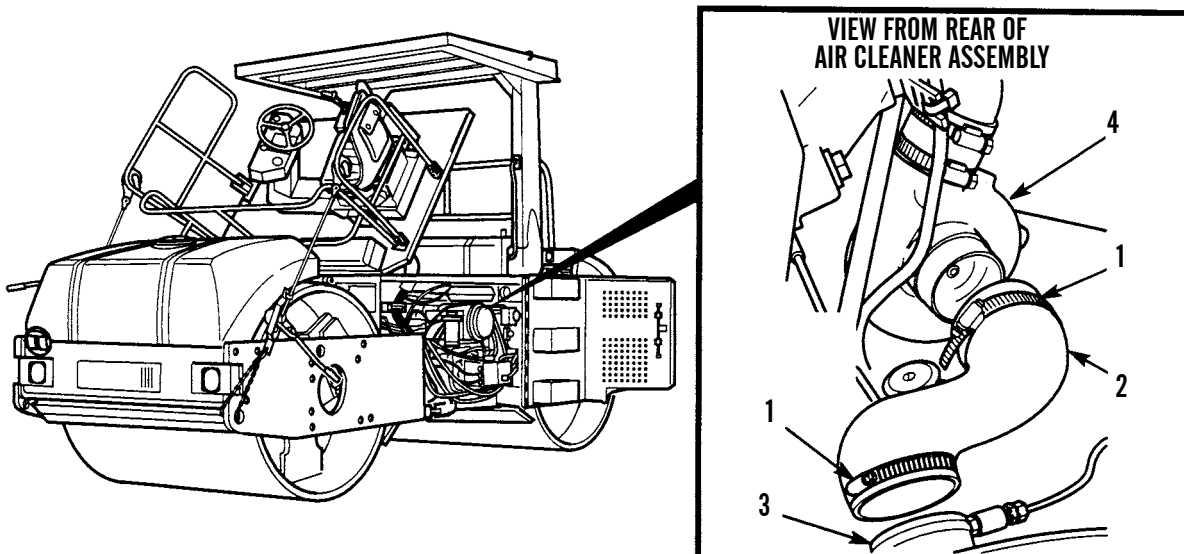
Muffler removed (WP 0048 00)

Battery cables disconnected (WP 0105 00)

REMOVAL**NOTE**

- Tag and mark all wires prior to removal.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.

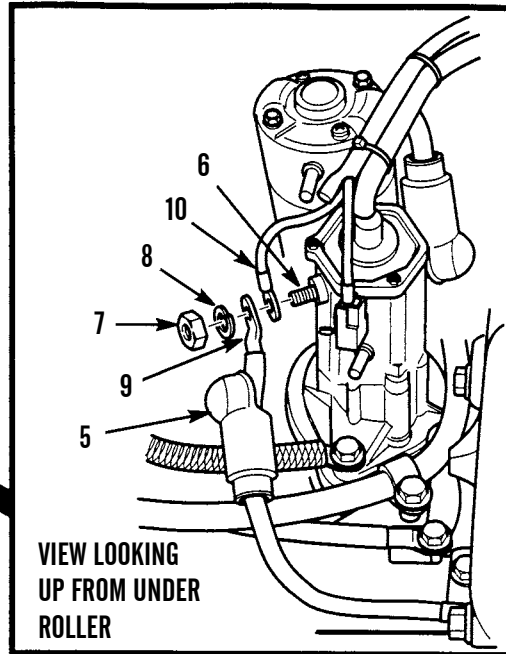
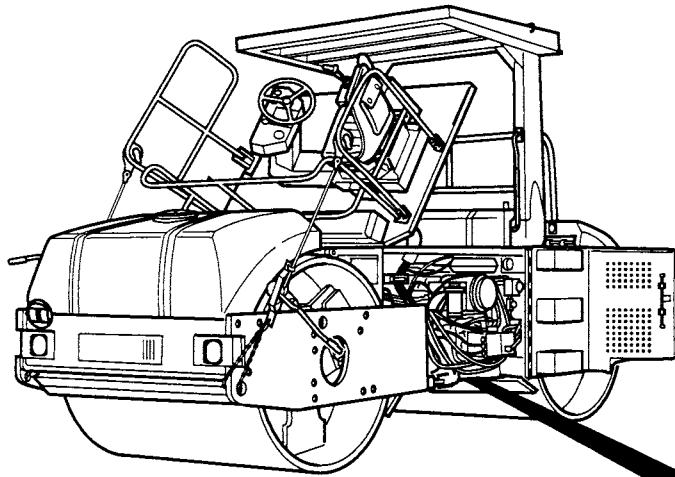
1. Loosen two clamps (1) and remove hose (2) from air cleaner assembly (3) and turbocharger (4).



401-435

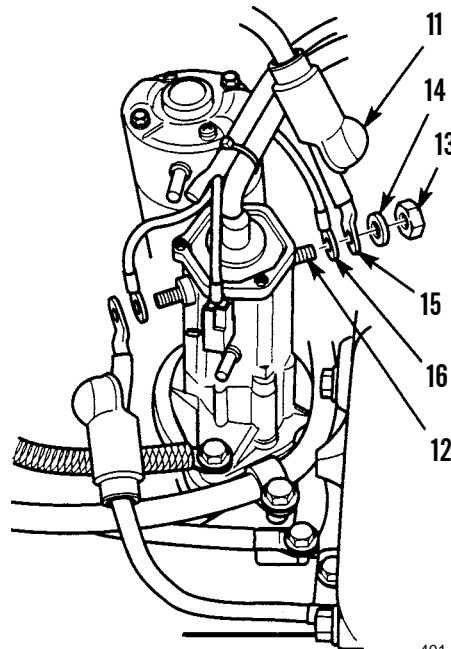
REMOVAL - CONTINUED

2. Pull back rubber cover (5) from terminal (6).
3. Remove nut (7), lockwasher (8) and two cables (9) and (10) from terminal (6). Discard lockwasher.



401-436

4. Pull back rubber cover (11) from terminal (12).
5. Remove nut (13), washer (14), cable (15) and wire (16) from terminal (12).



401-437

REMOVAL - CONTINUED

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

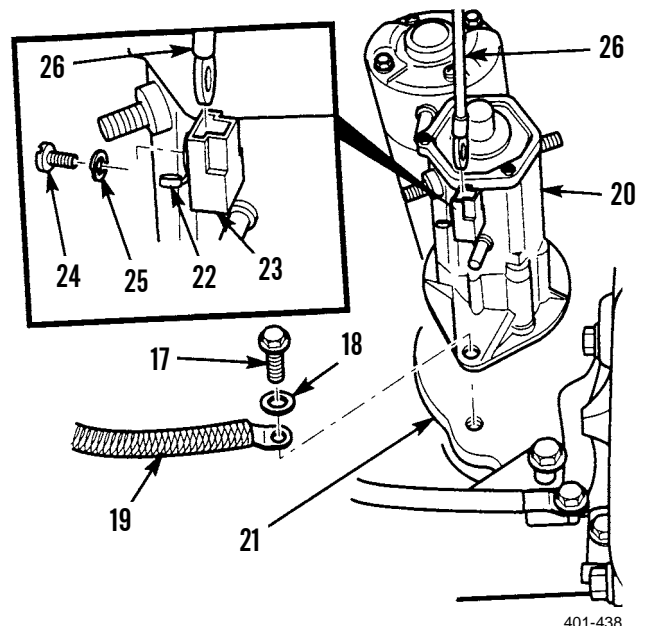
CAUTION

Support weight of starter while wire is still attached to starter. Do not allow wire to be stretched or broken by weight of starter. Allowing wire to stretch or break will cause damage to equipment.

NOTE

Starter weighs 19 lb (8.6 kg).

6. Remove three screws (17), washers (18), cable (19) and starter (20) from flywheel housing (21).
7. Open cover (22) on terminal (23).
8. Remove screw (24), lockwasher (25) and cable (26) from terminal (23). Discard lockwasher.



INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

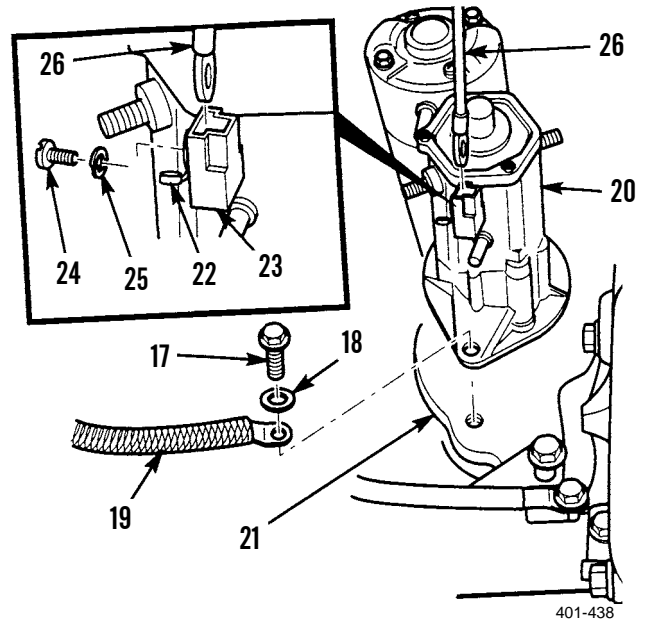
CAUTION

Support weight of starter while wire is still attached to starter. Do not allow wire to be stretched or broken by weight of starter. Allowing wire to stretch or break will cause damage to equipment.

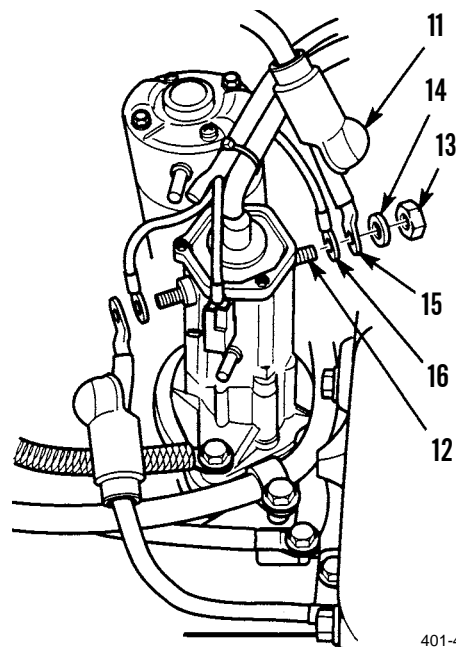
NOTE

Starter weighs 19 lb (8.6 kg).

1. Install cable (26) on terminal (23) with new lock-washer (25) and screw (24).
2. Close cover (22) on terminal (23).
3. Install starter (20) and cable (19) on flywheel housing (21) with three washers (18) and screws (17). Tighten screws to 33-47 lb-ft (45-64 Nm).
4. Install wire (16) and cable (15) on terminal (12) with washer (14) and nut (13). Tighten nut securely.
5. Install rubber cover (11) on terminal (12).



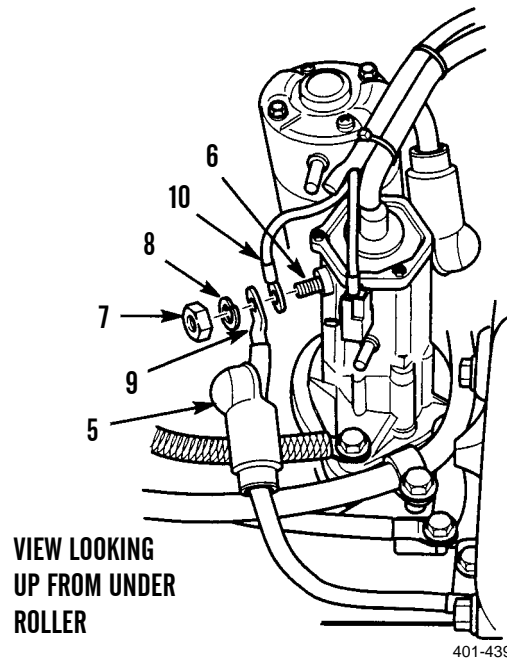
401-438



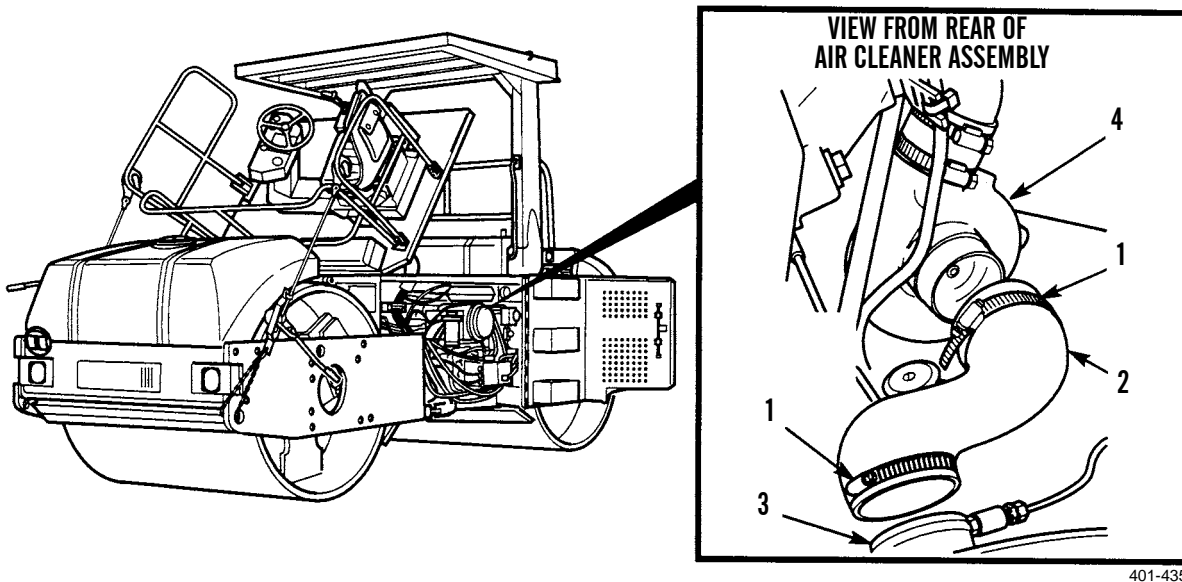
401-437

INSTALLATION - CONTINUED

6. Install two cables (9 and 10) on terminals (6) with new lockwasher (8) and nut (7). Tighten nut securely.
7. Install rubber cover (5) on terminal (6).



8. Install hose (2) and two clamps (1) on air cleaner assembly (3) and turbocharger (4). Tighten clamps securely.



9. Connect battery cables (WP 0105 00)
10. Install muffler (WP 0048 00).
11. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

STARTER RELAY SWITCH ASSEMBLY REPLACEMENT**0066 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 45

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

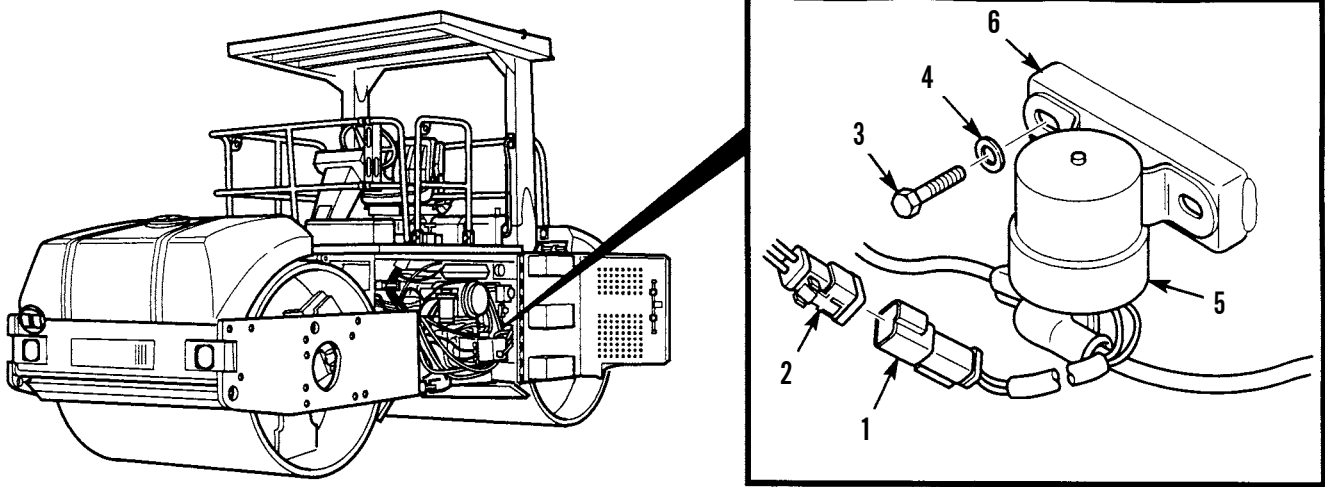
Battery disconnected switch in OFF position (TM 5-3895-379-10)

Right- and left-side door assemblies open (TM 5-3895-379-10)

REMOVAL**NOTE**

- Tag and mark all wires prior to removal.
- Remove cable ties as required.

1. Disconnect starter relay switch assembly connector (1) from connector (2).
2. Remove two screws (3), washers (4) and starter relay switch assembly (5) from frame assembly (6).



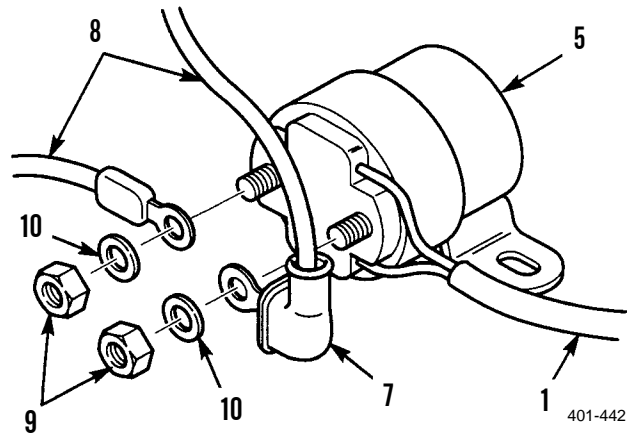
401-441

STARTER REPLACEMENT - CONTINUED

0066 00

REMOVAL - CONTINUED

- Position boot (7) so that end of cable (8) can be seen and remove two nuts (9), washers (10) and two cables from starter relay switch assembly (5).

**INSTALLATION****NOTE**

Install cable ties as needed.

- Install two cables (8) on starter relay switch assembly (5) with two washers (10) and nuts (9).
- Reposition boot (7) on end of cover cable (8).
- Install starter relay switch assembly (5) on frame assembly (6) with two washers (4) and screws (3).
- Connect starter relay switch assembly connector (1) to connector (2).
- Close right- and left-side door assemblies (TM 5-3895-379-10).
- Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

MAIN RELAY REPLACEMENT

0067 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Locknut (2)

References

TM 5-3895-379-23P, Figure 50

Equipment Condition

Engine off (TM 5-3895-379-10)

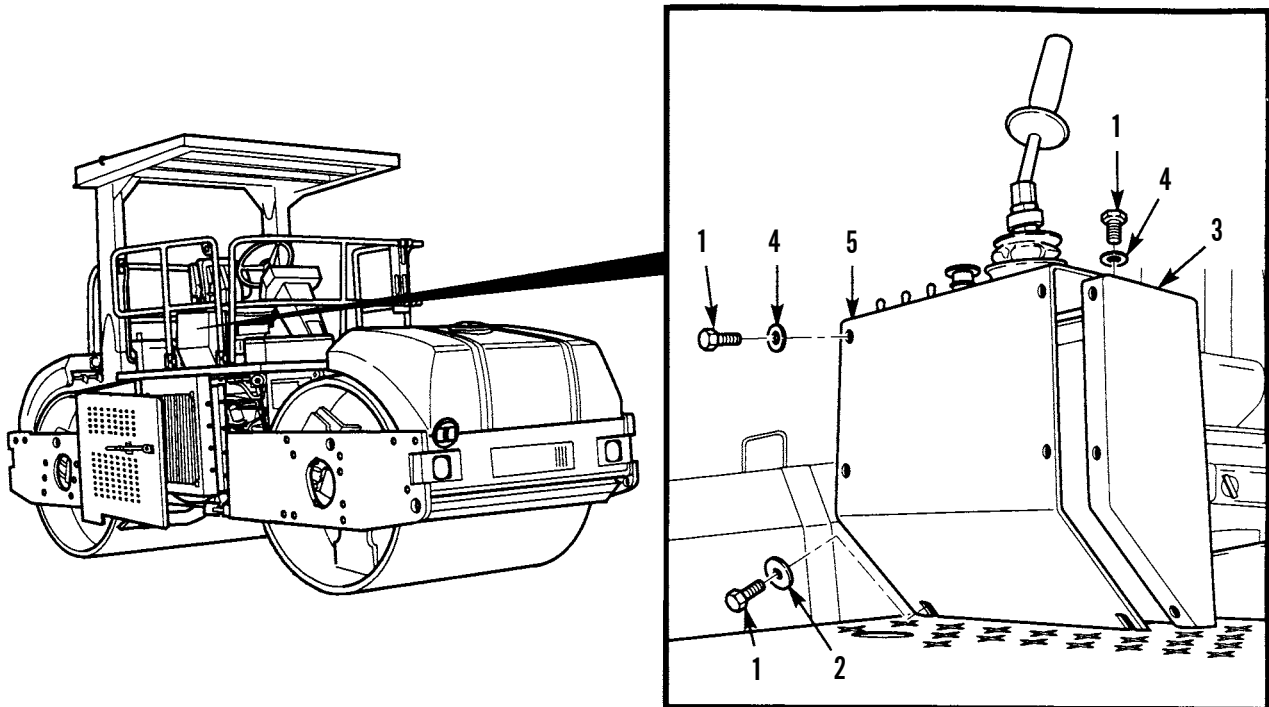
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

MAIN RELAY REPLACEMENT - CONTINUED

0067 00

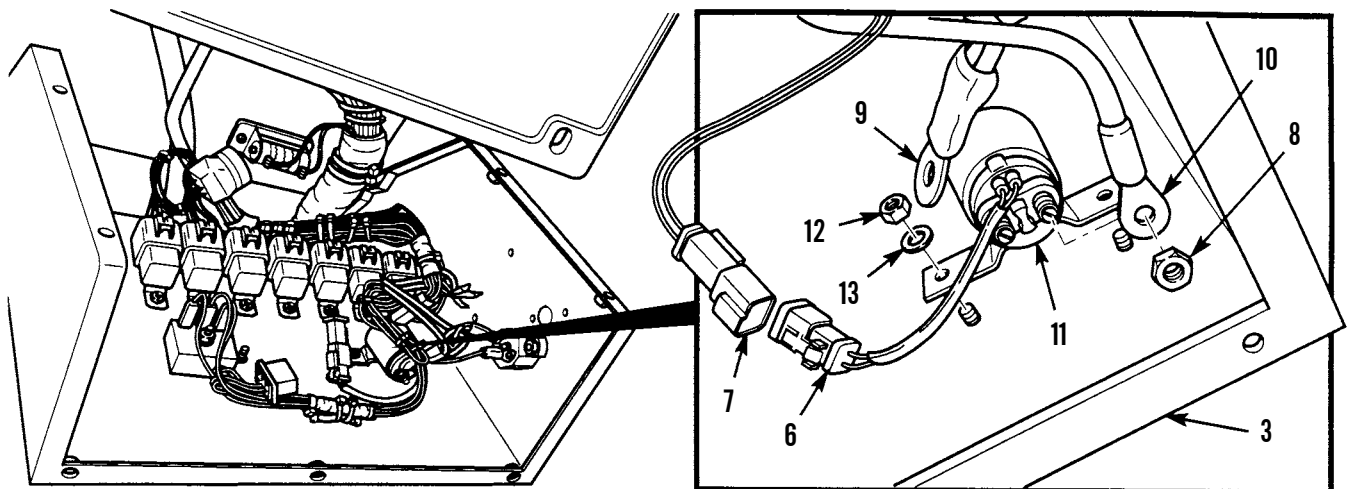
REMOVAL - CONTINUED

4. Disconnect main relay connector (6) from connector (7).

NOTE

Tag and mark all wires prior to removal.

5. Remove two nuts (8) and two wires (9) and (10) from main relay (11).
6. Remove two locknuts (12), washers (13) and main relay (11) from operator station (3). Discard locknuts.



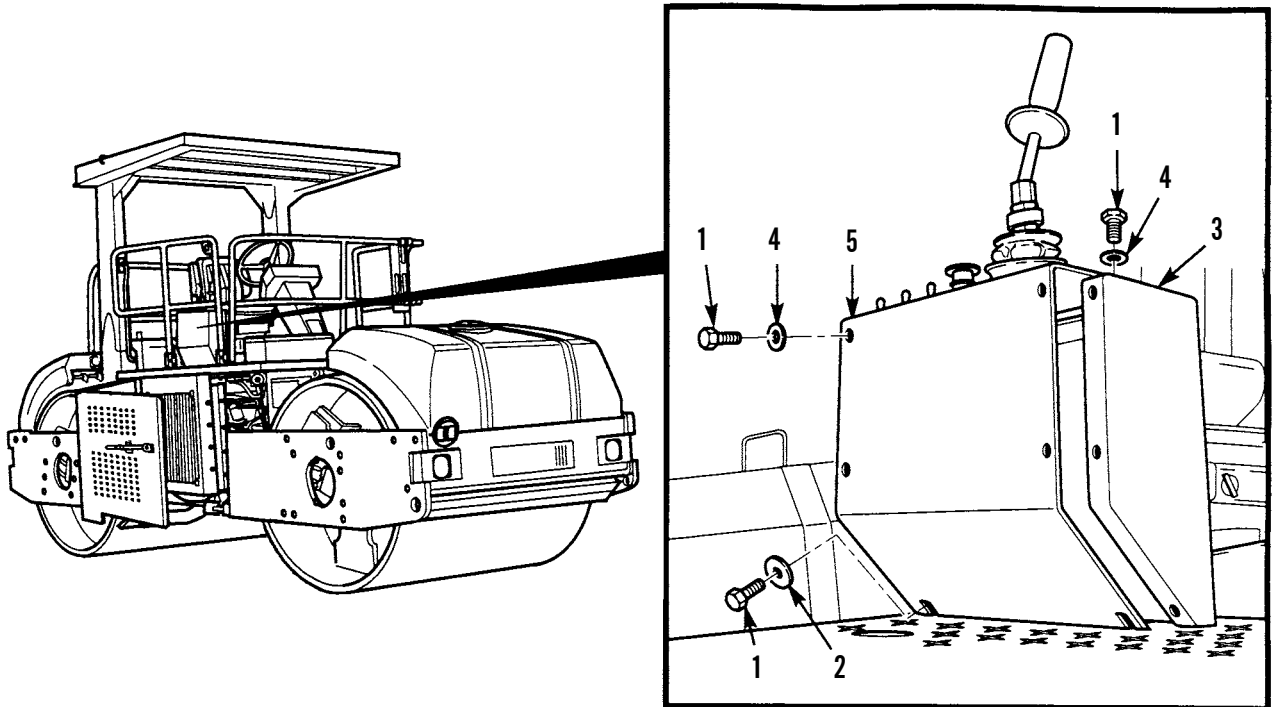
401-445

INSTALLATION

1. Install main relay (11) on operator station (3) with two washers (13) and new locknuts (12). Tighten locknuts.
2. Install two wires (9) and (10) on main relay (11) with two nuts (8).
3. Connect main relay connector (6) with connector (7).

INSTALLATION - CONTINUED

4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Locknut

References

TM 5-3895-379-23P, Figures 49 and 50

Equipment Condition

Engine off (TM 5-3895-379-10)

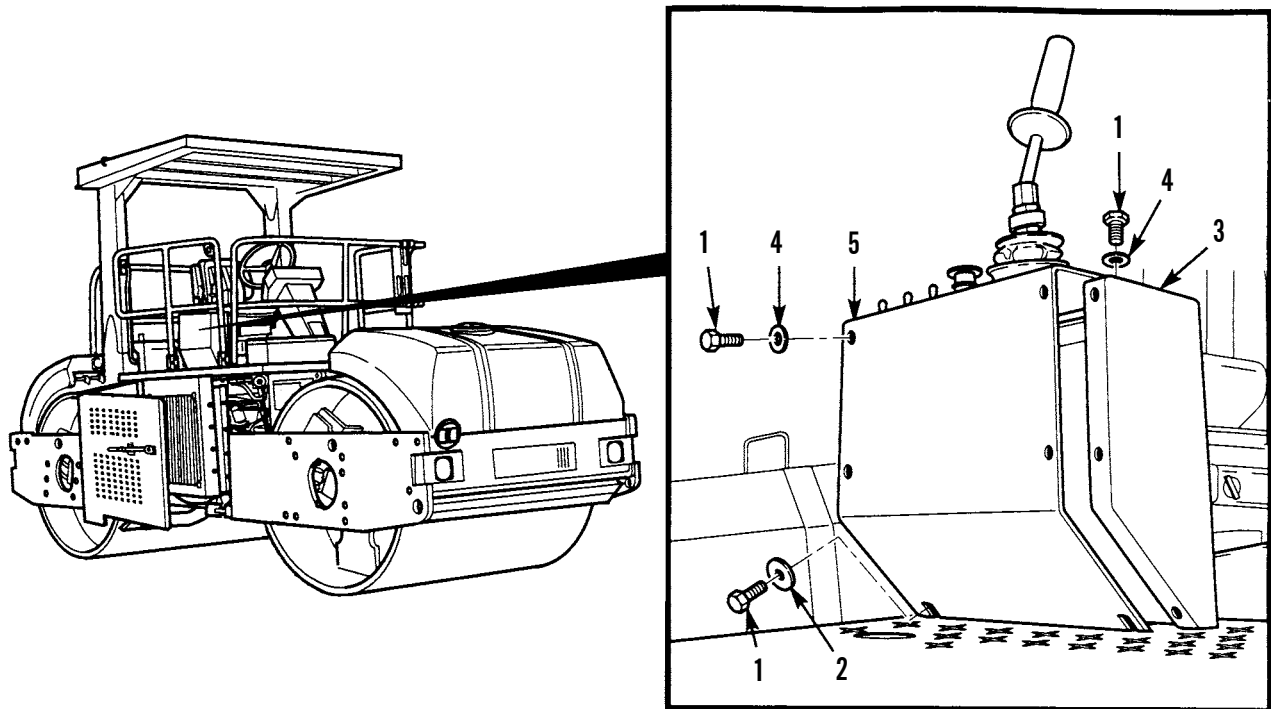
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10).

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

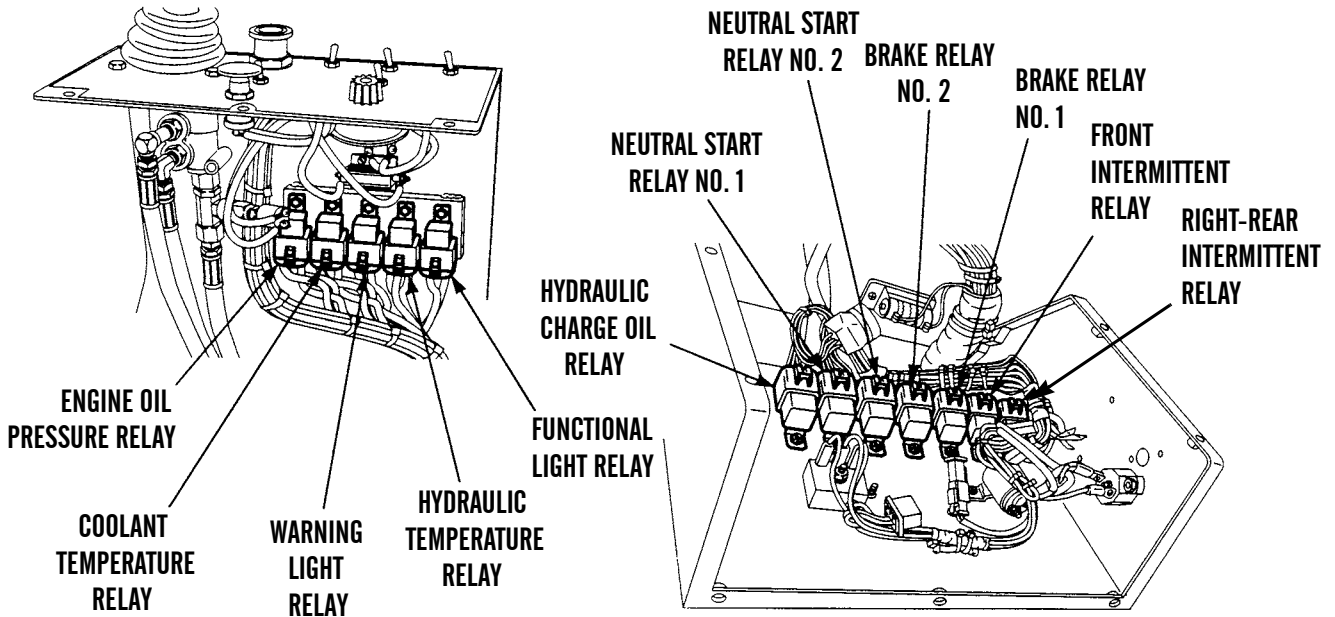
NOTE

The following tables are provided for reference. The relays may be positively identified by their attached wires.

Table 1. Wire and Relay Connections (CB534B)

Relay	Position 1	Position 2	Position 3	Position 4	Position 5
Functional Light	123-WH	200-BK	C930-BR	C938-BR	C938-BR
Hydraulic Temperature	428-OR	123-WH	200-BK	-	226-BK
Warning Light	C931-OR	200-BK	-	200-BK	C930-BR
Coolant Temperature	406-PU	123-WH	200-BK	-	211-BK
Engine Oil Pressure	405-GY	123-WH	200-BK	-	200-BK
Hydraulic Charge	461-OR	123-WH	200-BK	-	276-BK
RR Intermittent	C936-GY	C937-WH	-	C923-OR	C936-GY
Front Intermittent	C935-PU	C937-WH	-	C922-BK	C935-GY
Neutral Start #1	306-GR	200-BK	-	307-OR	300-YL
Neutral Start #2	155-PK	330-YL	C720-PU	-	200-BK
Brake #1	765-BR	419-YL	777-PU	-	200-BK
Brake #2	C720-PU	419-YL	-	419-YL	200-BK

Legend:
 BK = Black GR = Green OR = Orange PU = Purple YL = Yellow
 BR = Brown GY = Gray PK = Pink WH = White



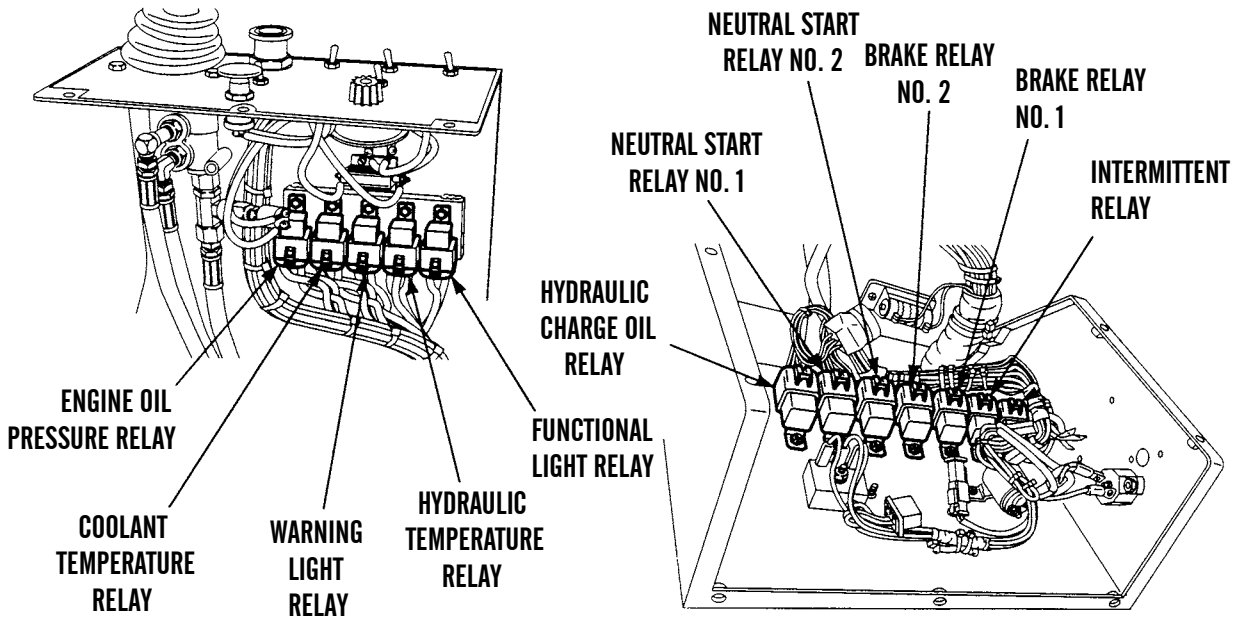
401-451

REMOVAL - CONTINUED

Table 2. Wire and Relay Connections (CB534C)

Relay	Position 1	Position 2	Position 3	Position 4	Position 5
Functional Light	123-WH	200-BK	C930-BR	C938-BR	C938-BR
Hydraulic Temperature	428-OR	123-WH	200-BK	-	226-BK
Warning Light	C931-OR	200-BK	-	200-BK	C930-BR
Coolant Temperature	406-PU	123-WH	200-BK	-	211-BK
Engine Oil Pressure	405-GY	123-WH	200-BK	-	220-BK
Hydraulic Charge	465-OR	123-WH	200-BK	-	276-BK
Intermittent	C935-PU	C937-WH	-	C936-GY	C935-PU
Neutral Start #1	306-GR	200-BK	-	307-OR	300-YL
Neutral Start #2	155-PK	330-YL	C720-PU	-	200-BK
Brake #1	765-BR	419-YL	777-PU	-	200-BK
Brake #2	C720-PU	419-YL	-	419-YL	200-BK

Legend:
 BK = Black GR = Green OR = Orange PU = Purple YL = Yellow
 BR = Brown GY = Gray PK = Pink WH = White



401-451

RELAY REPLACEMENT - CONTINUED

0068 00

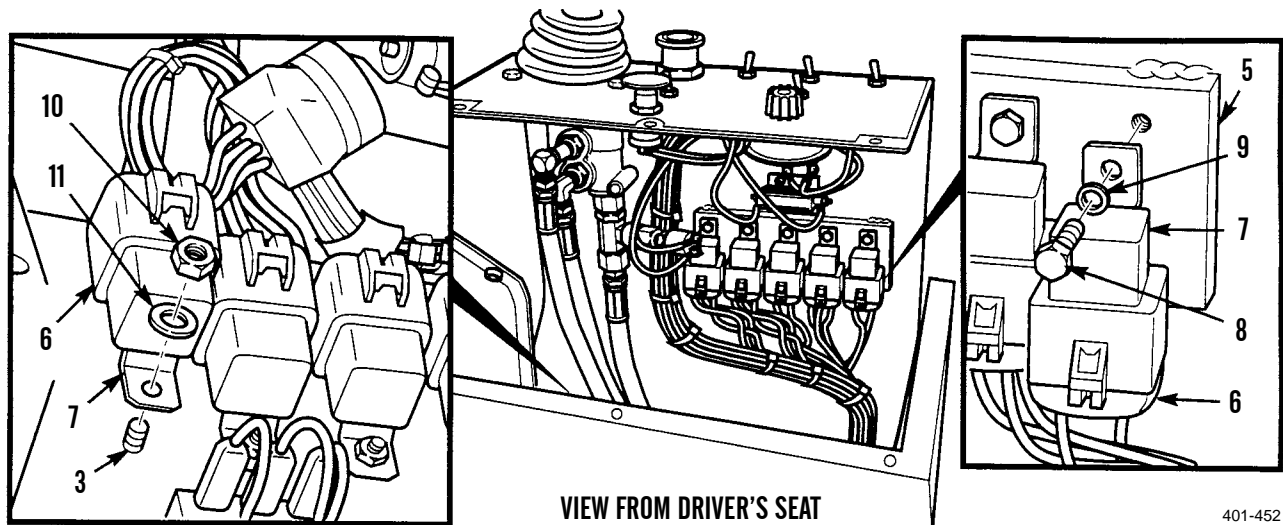
REMOVAL - CONTINUED

4. Remove connector (6) from relay (7).

NOTE

There are two methods of removing the relays. Perform step 5 or step 6 as the relay requires.

5. Remove screw (8), washer (9) and relay (7) from panel assembly (5).
6. Remove locknut (10), washer (11) and relay (7) from operator station (3). Discard locknut.

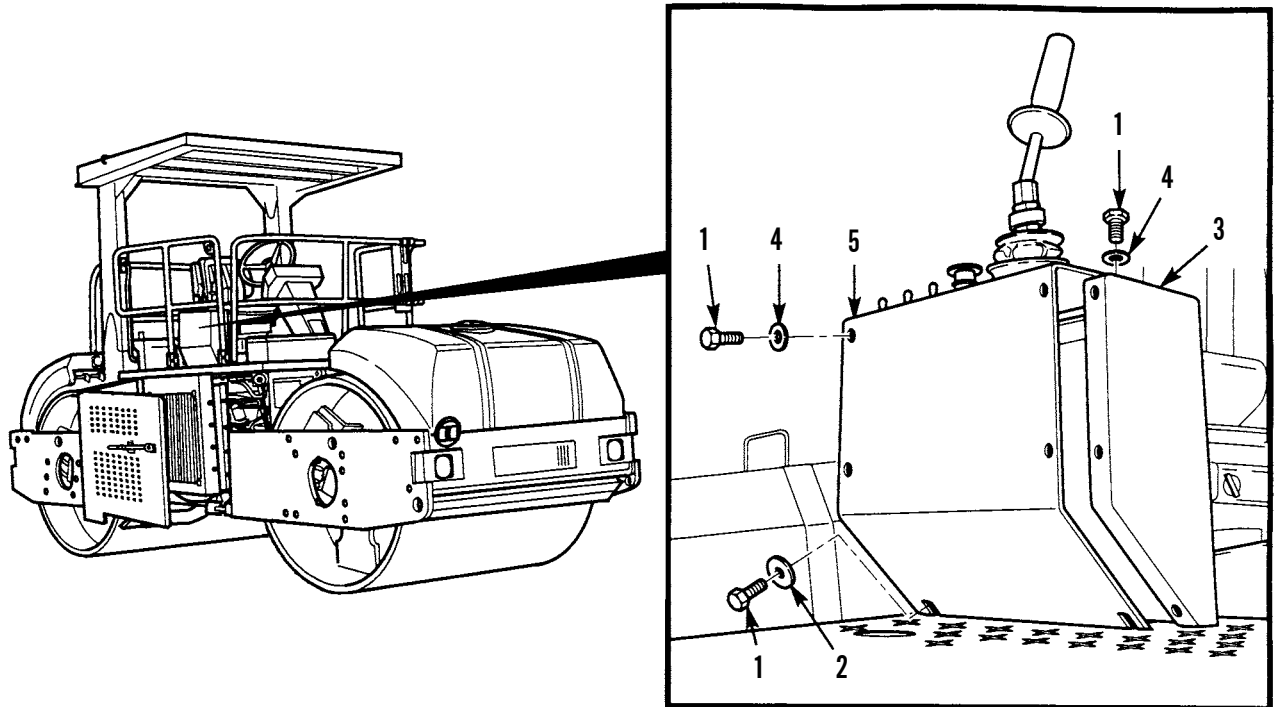
**INSTALLATION****NOTE**

There are two methods of installing relays. Perform step 1 or step 2 as relay requires.

1. Install relay (7) on operator station (3) with washer (11) and new locknut (10).
2. Install relay (7) on panel assembly (5) with washer (9) and screw (8).
3. Install connector (6) on relay (7).

INSTALLATION - CONTINUED

4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

PARKING BRAKE SWITCH REPLACEMENT

0069 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Material/Parts

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

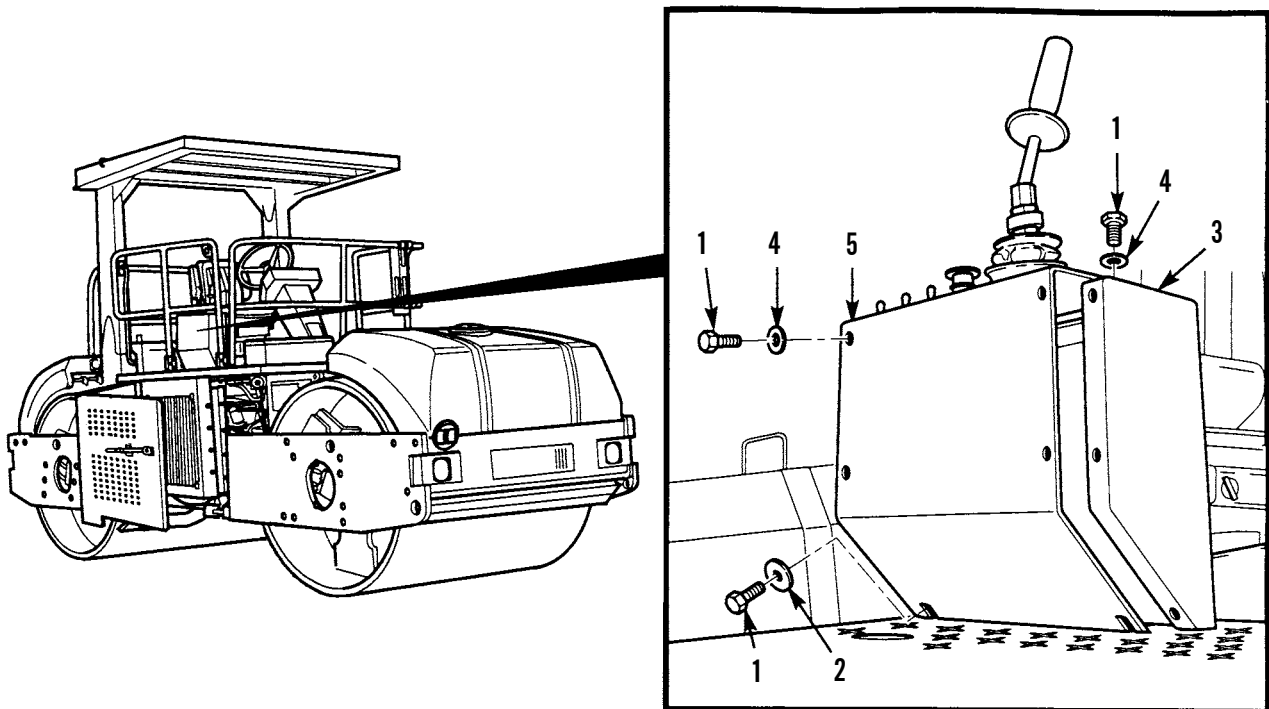
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

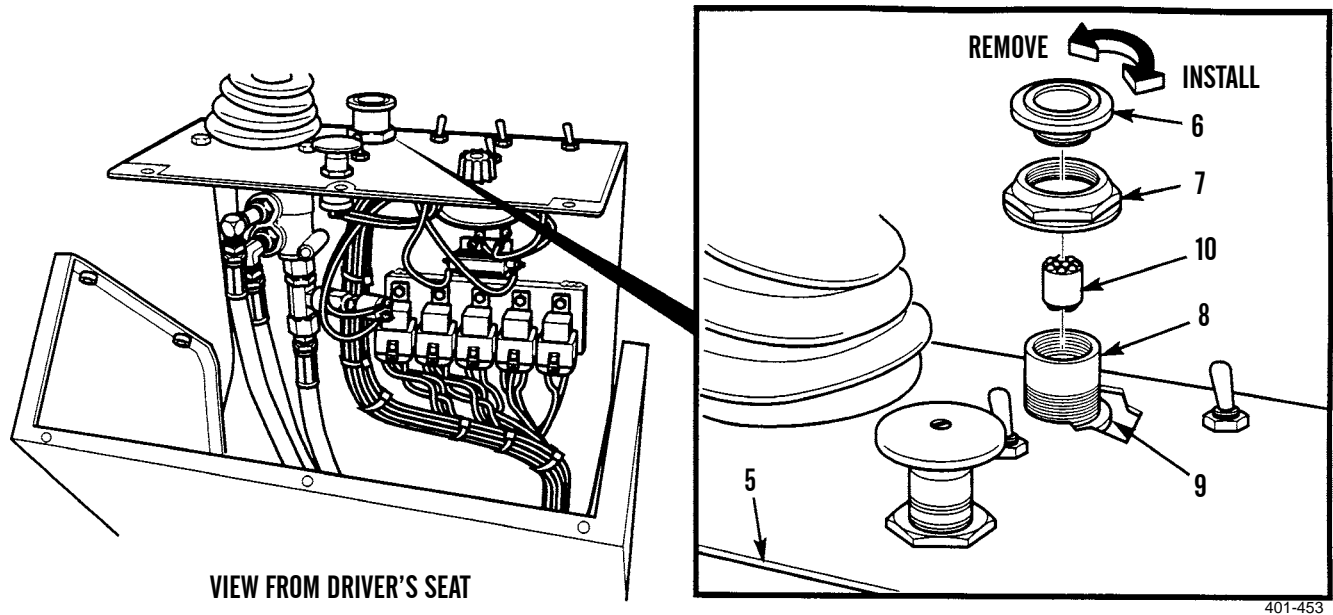
1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

4. Remove cap (6) by turning cap counterclockwise.
5. Remove nut (7), parking brake switch (8) and seal (9) from panel assembly (5).
6. Push lamp (10) down and counterclockwise and remove lamp from parking brake switch (8).

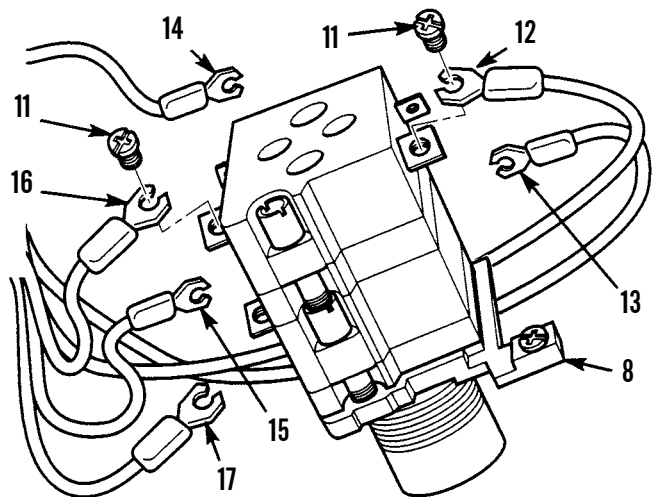


401-453

NOTE

Tag and mark all wires prior to removal.

7. Loosen two screw assemblies (11) and remove two wires (12) and (13) from parking brake switch (8).
8. Loosen four screw assemblies (11) and remove four wires (14), (15), (16) and (17) from parking brake switch (8).



401-454

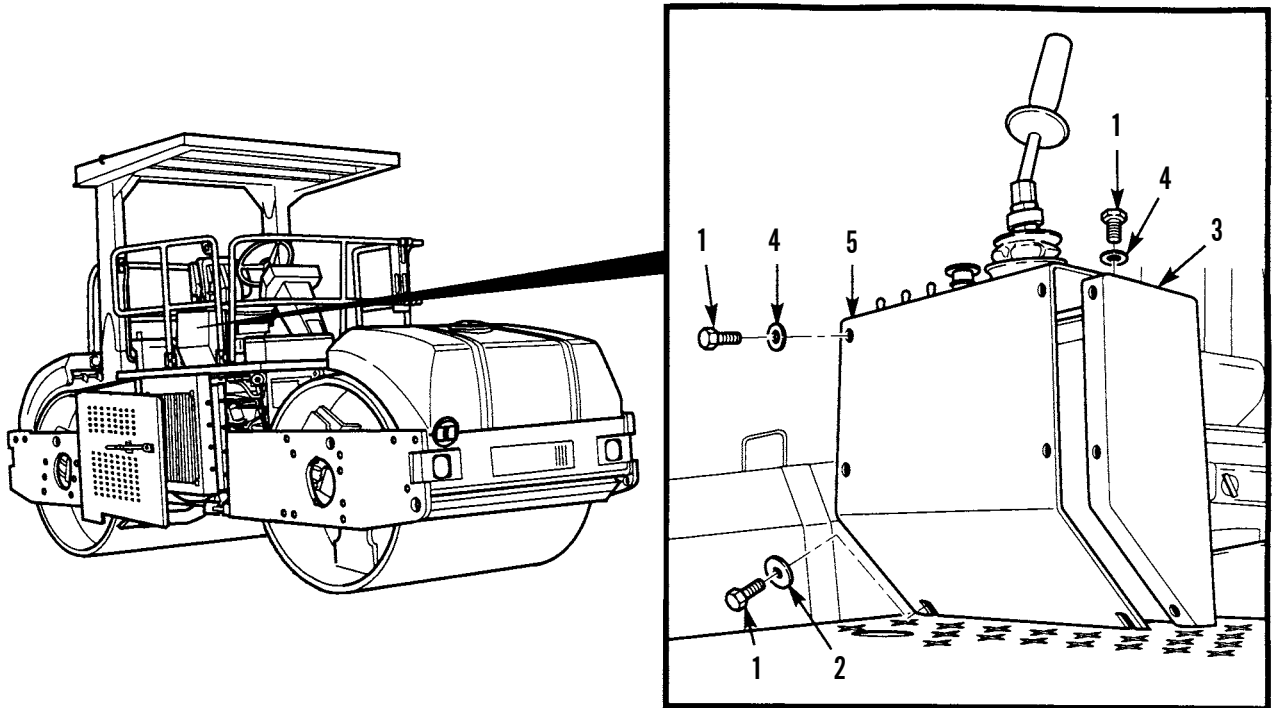
INSTALLATION

1. Install four wires (14), (15), (16) and (17) in parking brake switch (8) and tighten four screw assemblies (11).
2. Install two wires (12) and (13) in parking brake switch (8) and tighten two screw assemblies (11).

NOTE

Tab of switch must fit in notch in panel assembly to properly align switch.

3. Install parking brake switch (8) and seal (9) in panel assembly (5) with nut (7). Tighten nut.
4. Push lamp (10) down, turn clockwise and install lamp in parking brake switch (8).
5. Install cap (6) on parking brake switch (8) by turning clockwise.
6. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

7. Close right-side door assembly (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER SPRAY SWITCH REPLACEMENT

0070 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

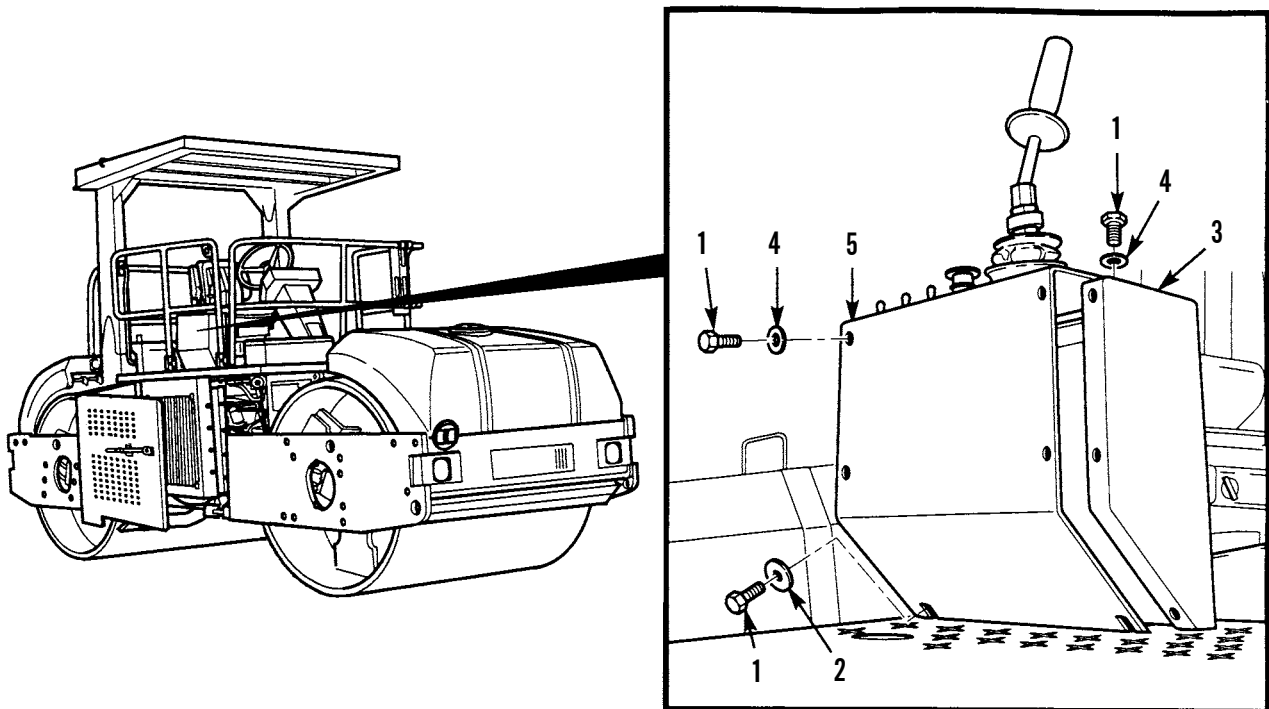
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

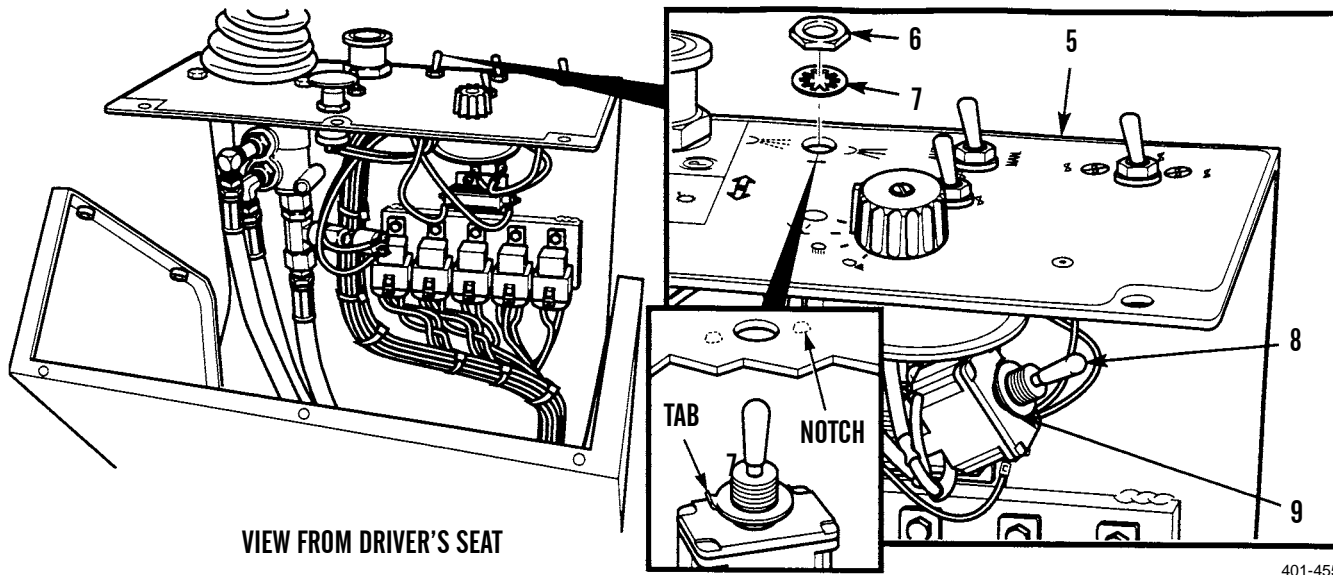
1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

- Remove nut (6), ring (7), water spray switch (8) and lockwasher (9) from panel assembly (5). Discard lockwasher.



401-455

NOTE

Tag and mark all wires prior to removal.

- Remove three screws (10) and wires (11), (12) and (13) from water spray switch (8).
- Remove three screws (10) and wires (14), (15) and (16) from water spray switch (8).

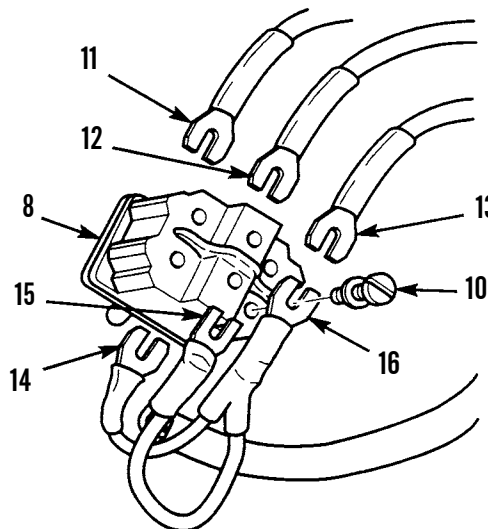
INSTALLATION

- Install three wires (14), (15) and (16) on water spray switch (8) with three screws (10).
- Install three wires (11), (12) and (13) on water spray switch (8) with three screws (10).

NOTE

Tab of ring must fit in notch in panel assembly to properly align switch in panel assembly.

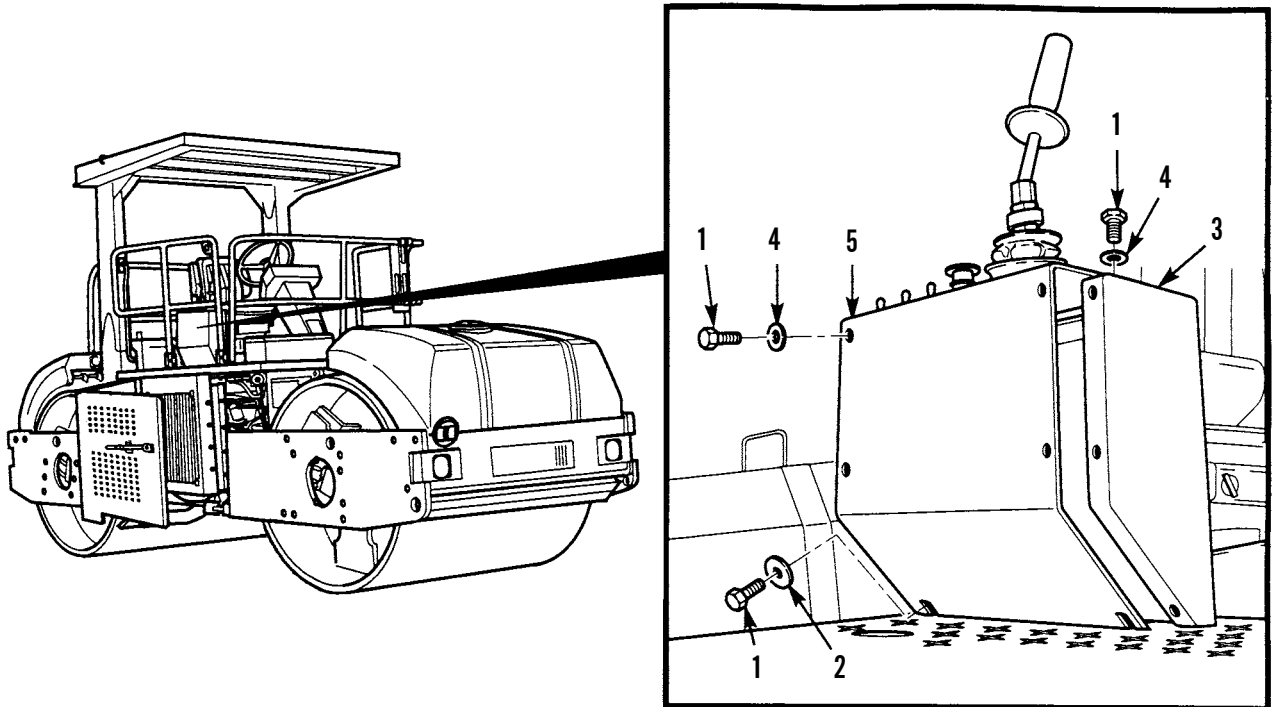
- Install water spray switch (8) on panel assembly (5) with new lockwasher (9), ring (7) and nut (6).



401-456

INSTALLATION - CONTINUED

4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

DRUM SELECT SWITCH REPLACEMENT

0071 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

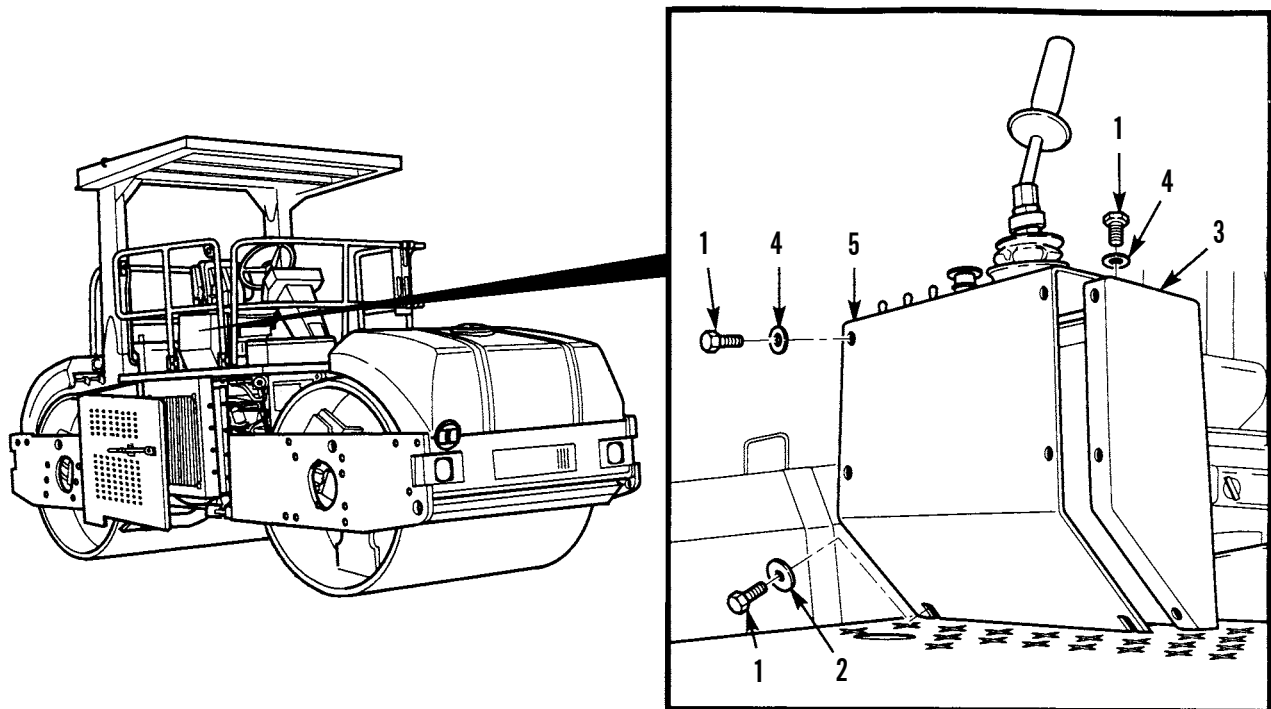
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



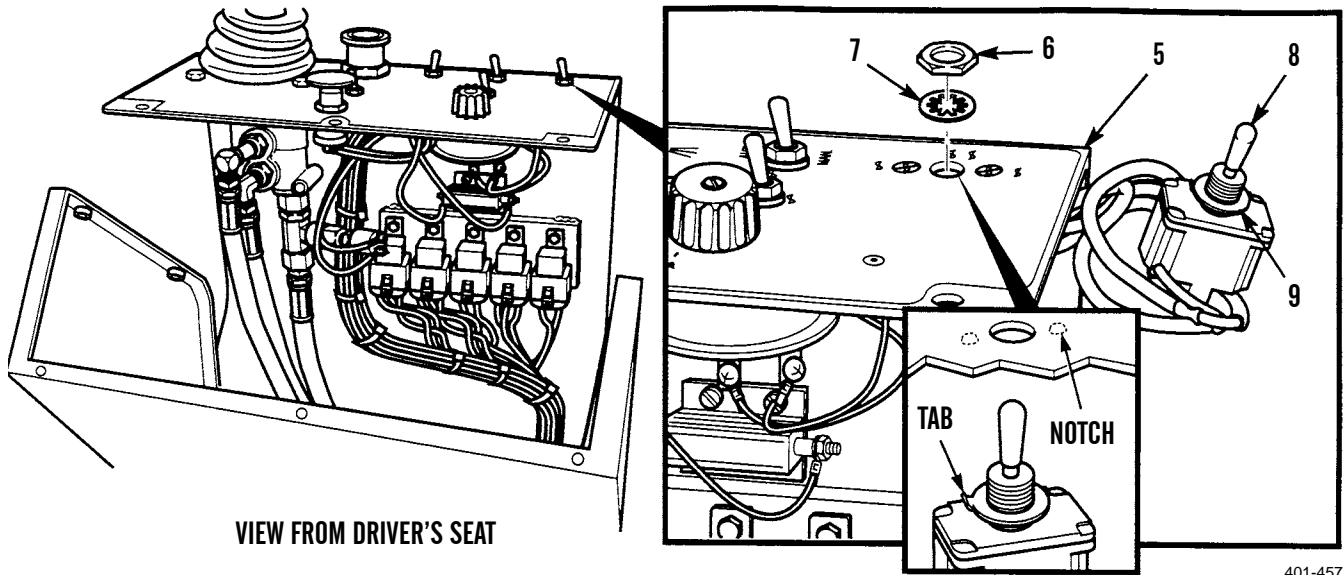
401-446

DRUM SELECT SWITCH REPLACEMENT - CONTINUED

0071 00

REMOVAL - CONTINUED

- Remove nut (6), lockwasher (7), drum select switch (8) and ring (9) from panel assembly (5). Discard lockwasher.

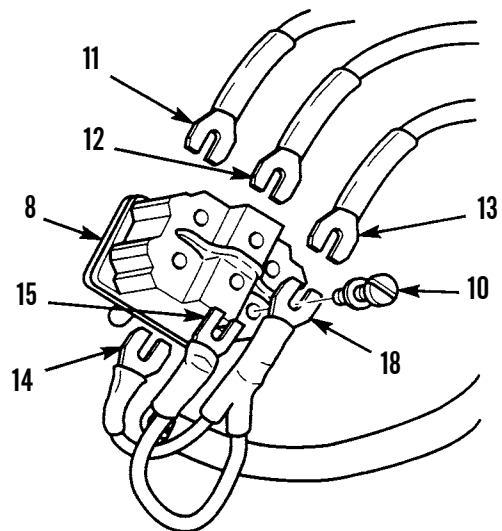


401-457

NOTE

Tag and mark all wires prior to removal.

- Remove three screws (10) and wires (11), (12) and (13) from drum select switch (8).
- Remove three screws (10) and wires (14), (15) and (16) from drum select switch (8). Discard screw assemblies.



401-456

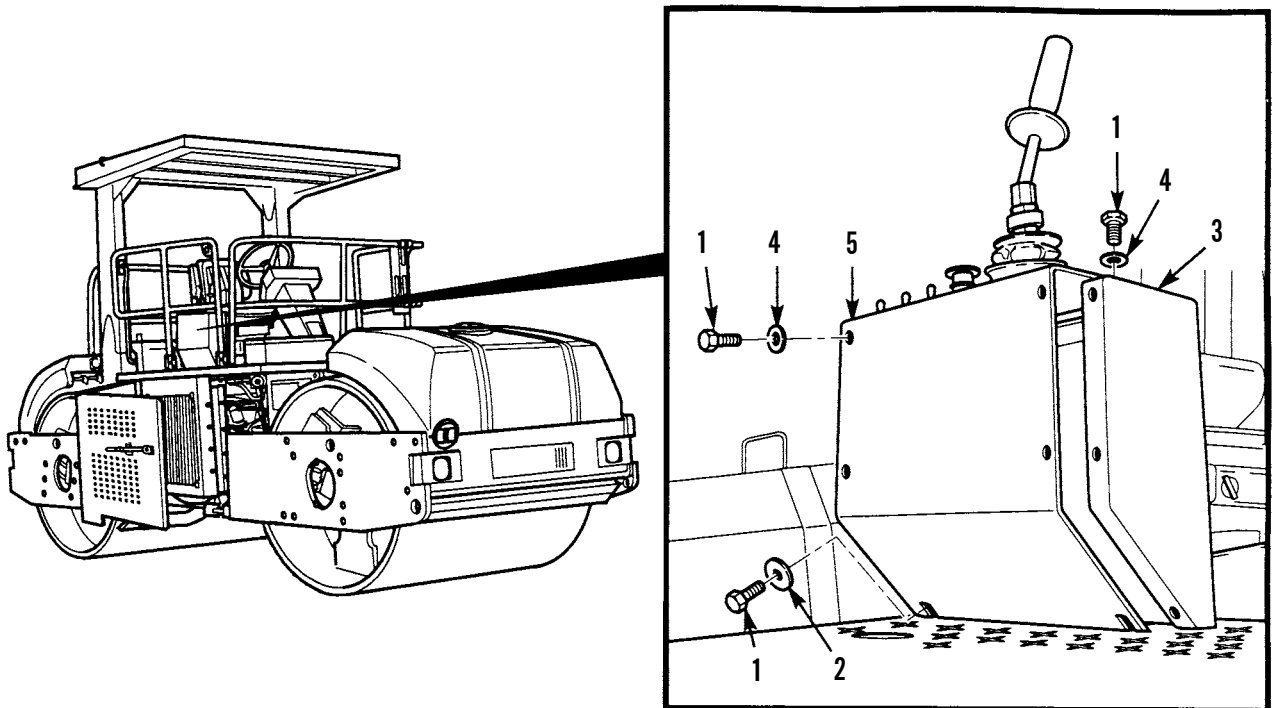
INSTALLATION

1. Install three wires (14), (15) and (16) on drum select switch (8) with three screws (10).
2. Install three wires (11), (12) and (13) on drum select switch (8) with three screws (10).

NOTE

Tab of ring fits in notch of panel assembly to properly align drum select switch in panel assembly.

3. Install drum select switch (8) on panel assembly (5) with ring (9), new lockwasher (7) and nut (6).
4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATION CONTROL SWITCH REPLACEMENT

0072 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

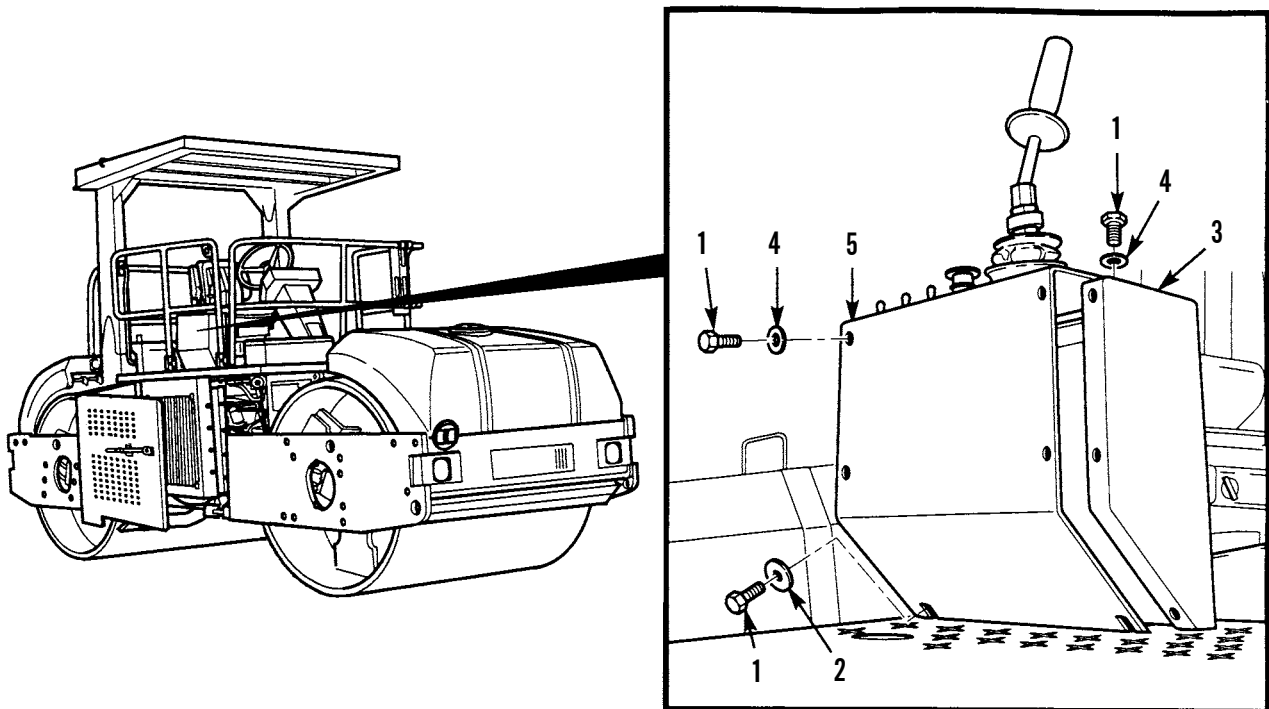
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

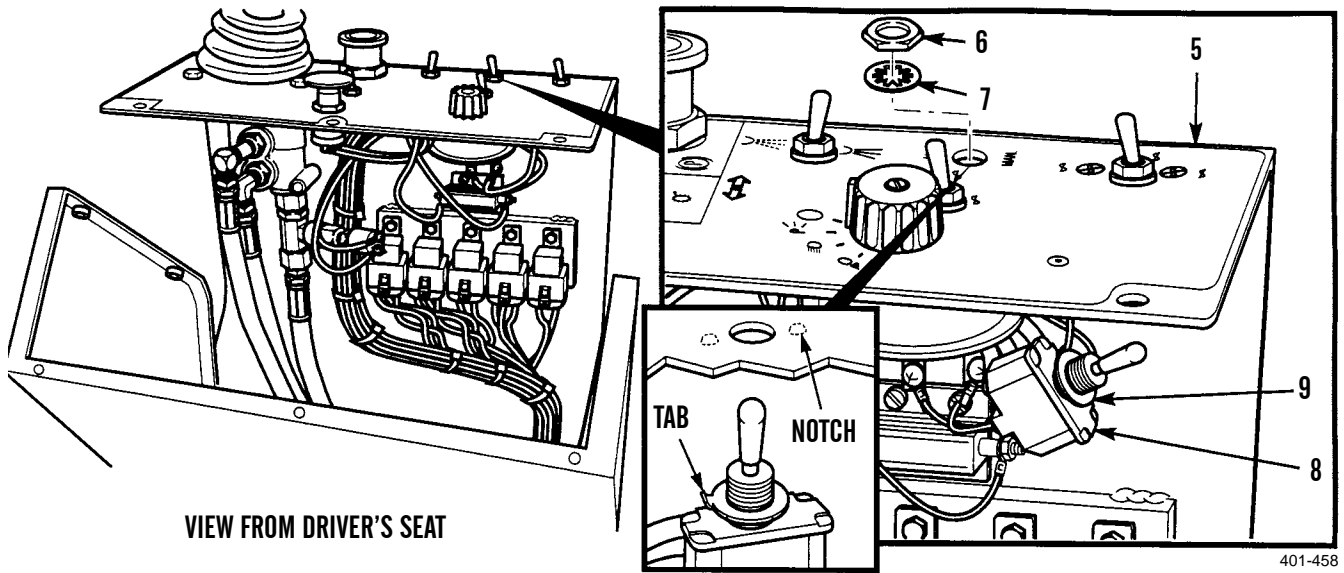
1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

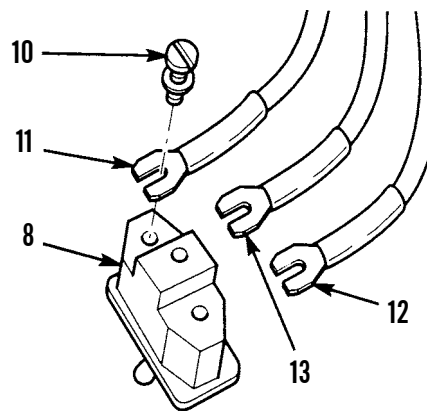
- Remove nut (6), lockwasher (7), vibration control switch (8) and ring (9) from panel assembly (5). Discard lockwasher.



NOTE

Tag and mark all wires prior to removal.

- Remove three screws (10) and wires (11), (12) and (13) from vibration control switch (8).



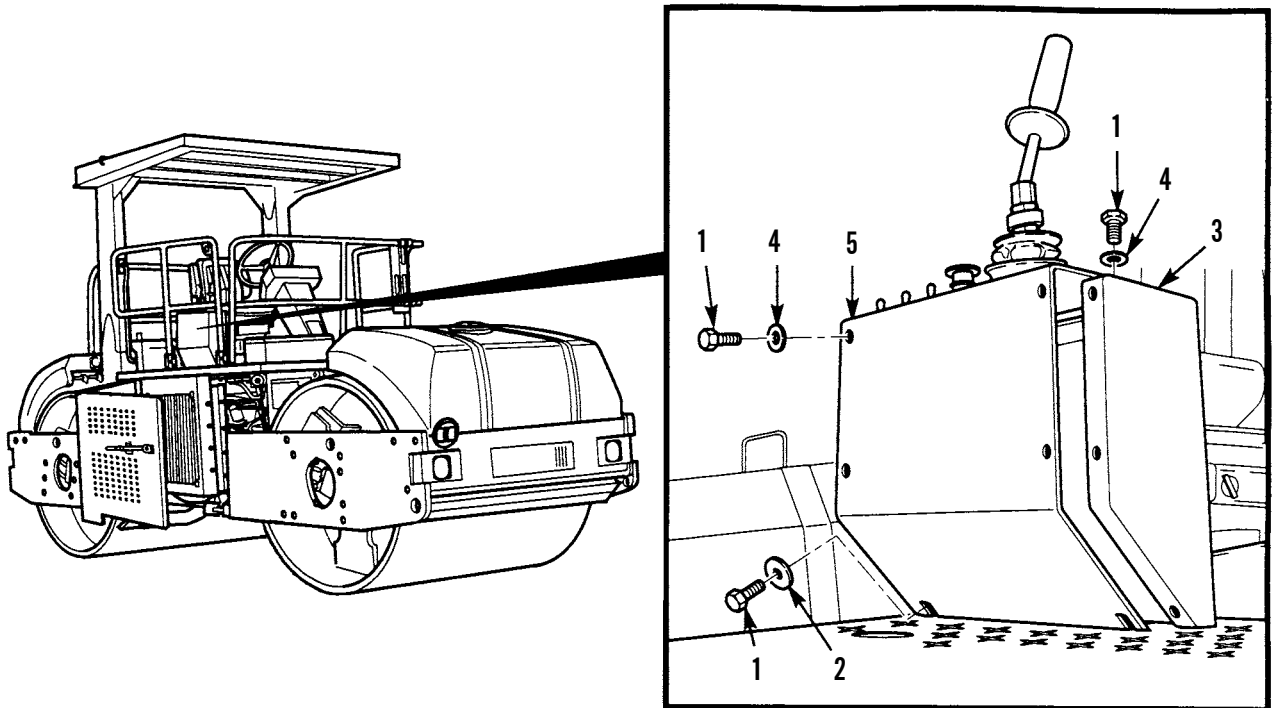
INSTALLATION

1. Install three wires (11), (12) and (13) on vibration control switch (8) with three screws (10).

NOTE

Tab of ring fits in notch of panel assembly to properly align vibration control switch in panel assembly.

2. Install vibration control switch (8) on panel assembly (5) with ring (9), lockwasher (7) and nut (6).
3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 36, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

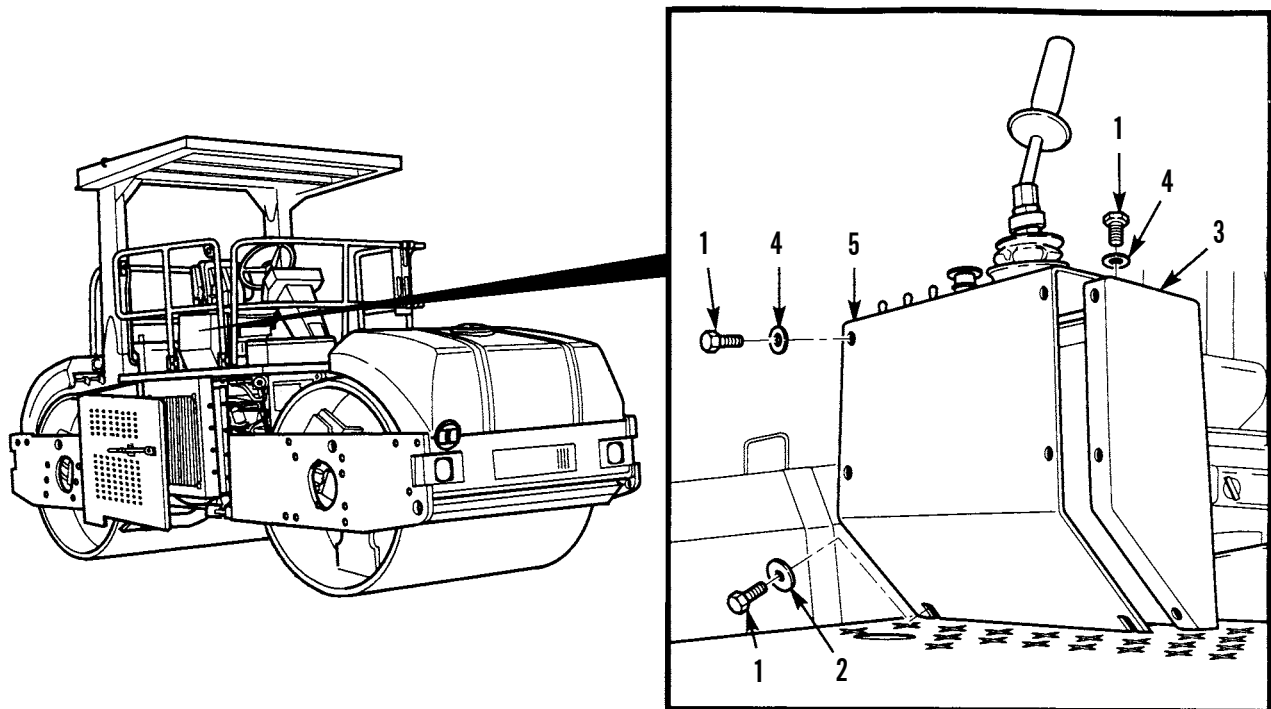
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

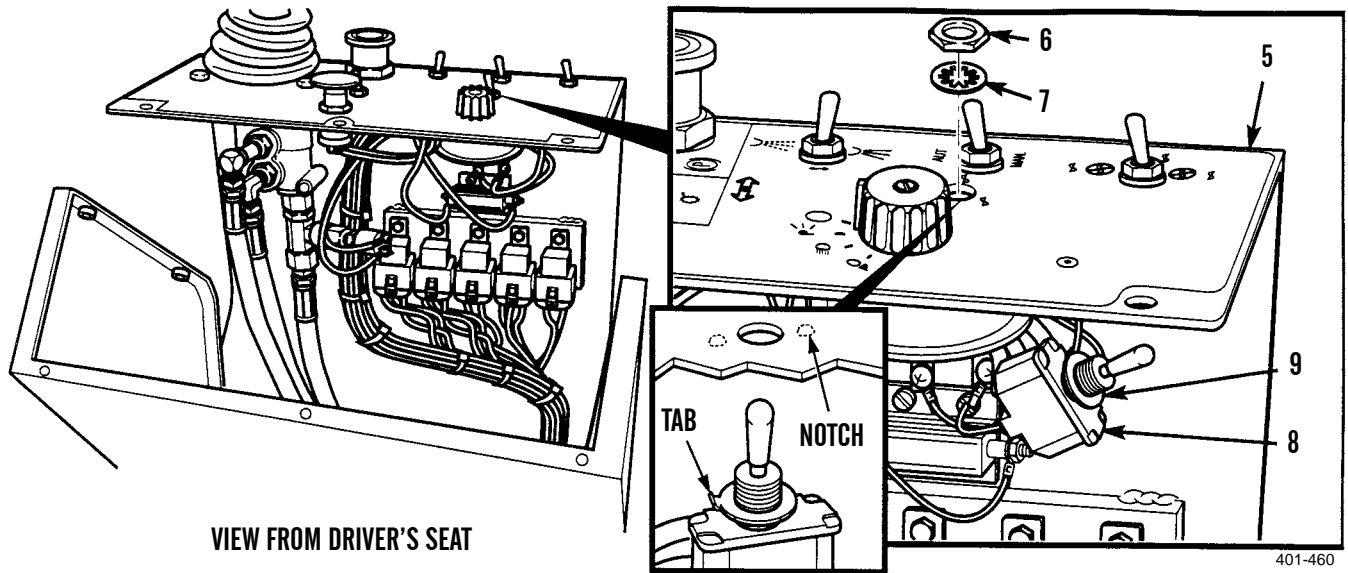
1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

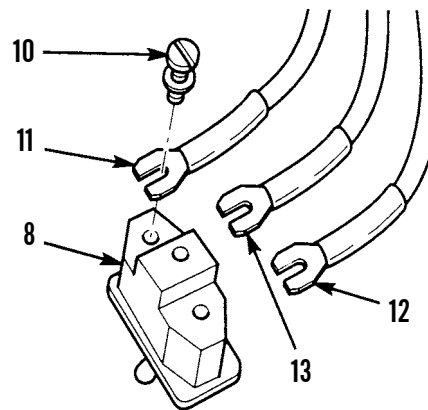
- Remove nut (6), lockwasher (7), amplitude select switch (8) and ring (9) from panel assembly (5). Discard lockwasher.



NOTE

Tag and mark all wires prior to removal.

- Remove three screws (10) and wires (11), (12) and (13) from amplitude select switch (8).



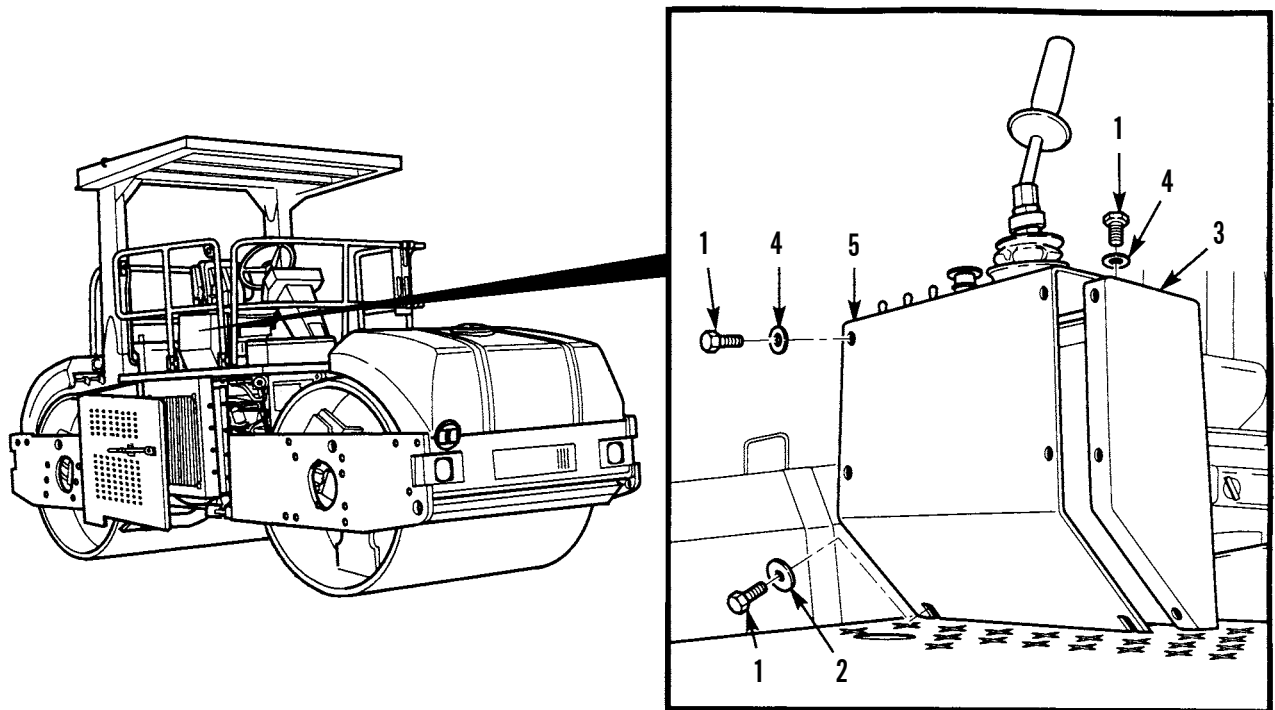
INSTALLATION

1. Install three wires (11), (12) and (13) on amplitude select switch (8) with three screws (10).

NOTE

Tab of ring fits in notch of panel assembly to properly align amplitude select switch in panel assembly.

2. Install amplitude select switch (8) on panel assembly (5) with ring (9), new lockwasher (4) and nut (6).
3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

PROPEL SPEED RANGE SWITCH REPLACEMENT

0074 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Lockwasher (3)

References

TM 5-3895-379-23P, Figure 4

Equipment Condition

Engine off (TM 5-3895-379-10)

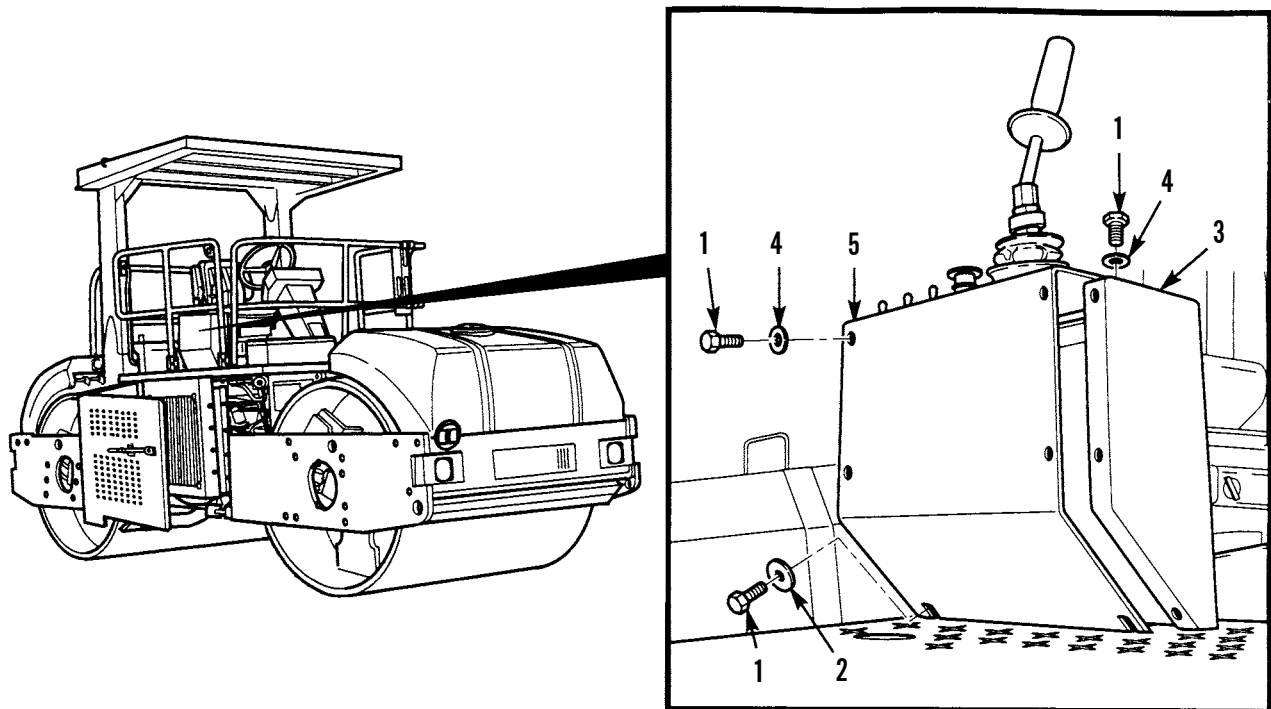
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

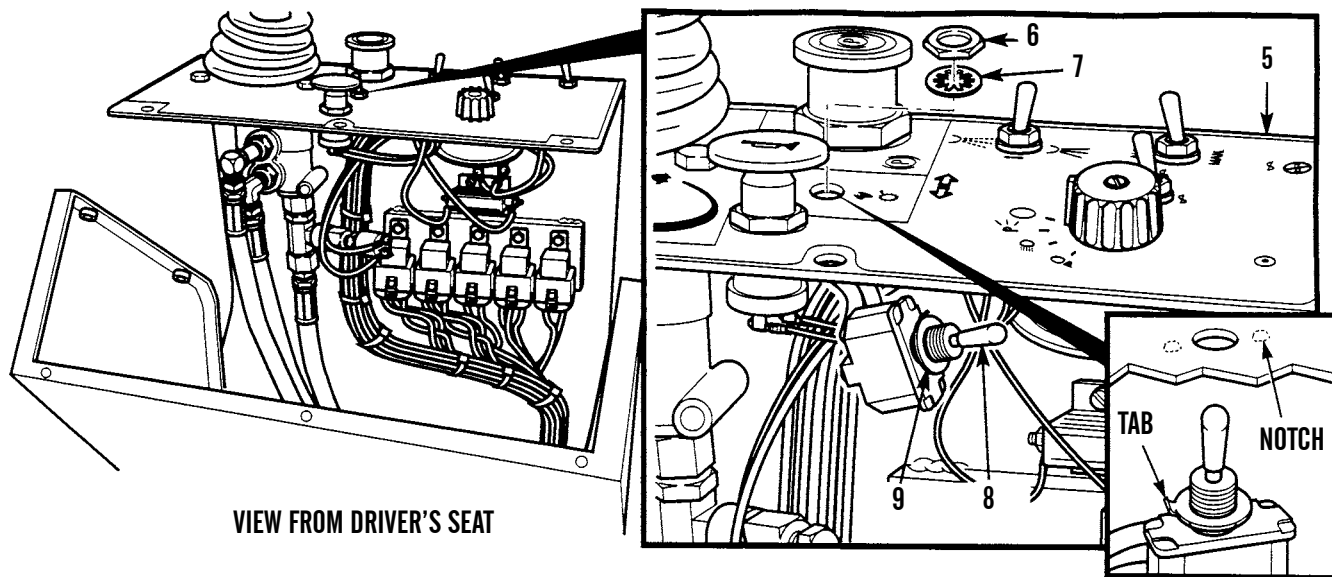
1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

REMOVAL - CONTINUED

4. Remove nut (6), lockwasher (7), propel speed range switch (8) and ring (9) from panel assembly (5). Discard lockwasher.

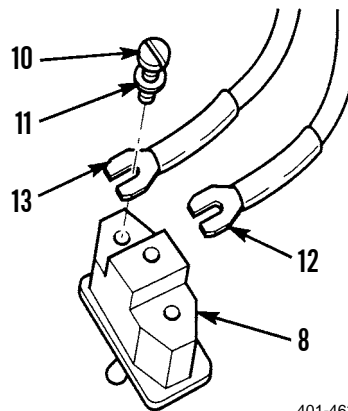


401-461

NOTE

Tag and mark all wires prior to removal.

5. Remove two screws (10), lockwashers (11) and wires (12) and (13) from propel speed range switch (8). Discard lockwashers.



401-462

INSTALLATION

1. Install two wires (12) and (13) on propel speed range switch (8) with new lockwashers (11) and screws (10).

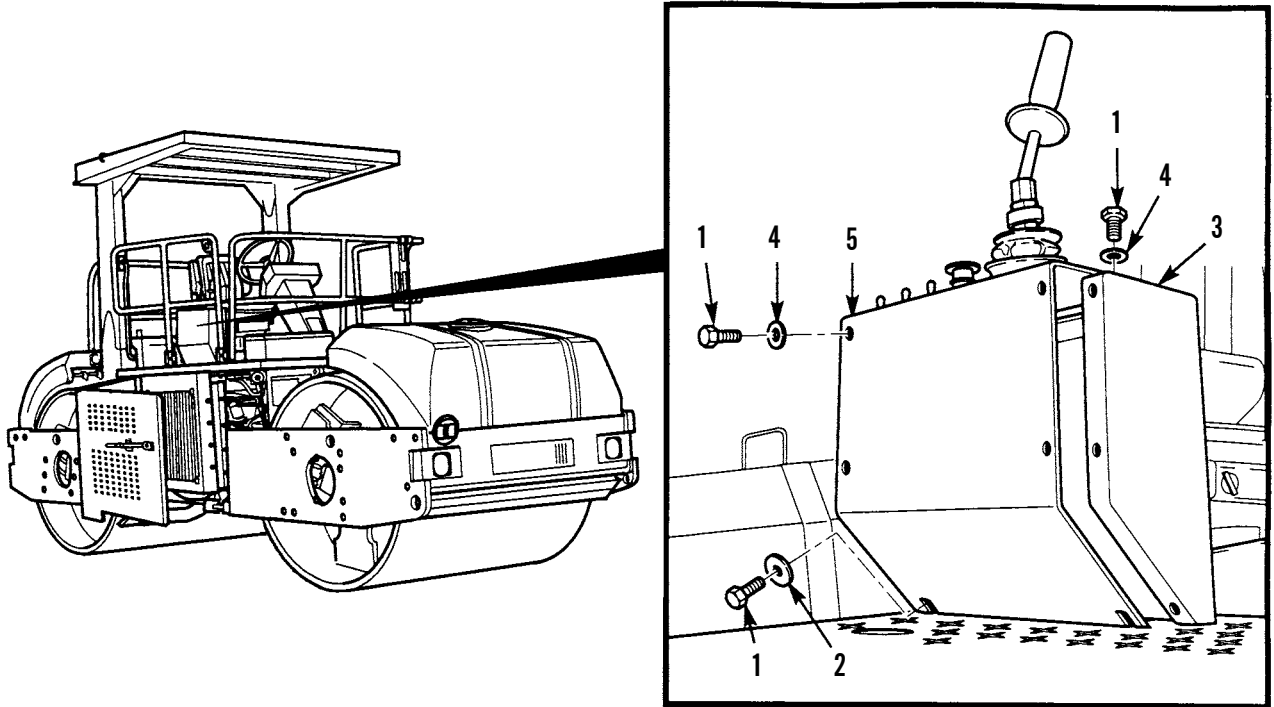
NOTE

Tab of ring fits in notch of panel assembly to properly align propel speed range switch in panel assembly.

2. Install propel speed range switch (8) on panel assembly (5) with ring (9), new lockwasher (7) and nut (6).

INSTALLATION - CONTINUED

3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WORK LIGHT CONTROL SWITCH REPLACEMENT

0075 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 51

Equipment Condition

Engine off (TM 5-3895-379-10)

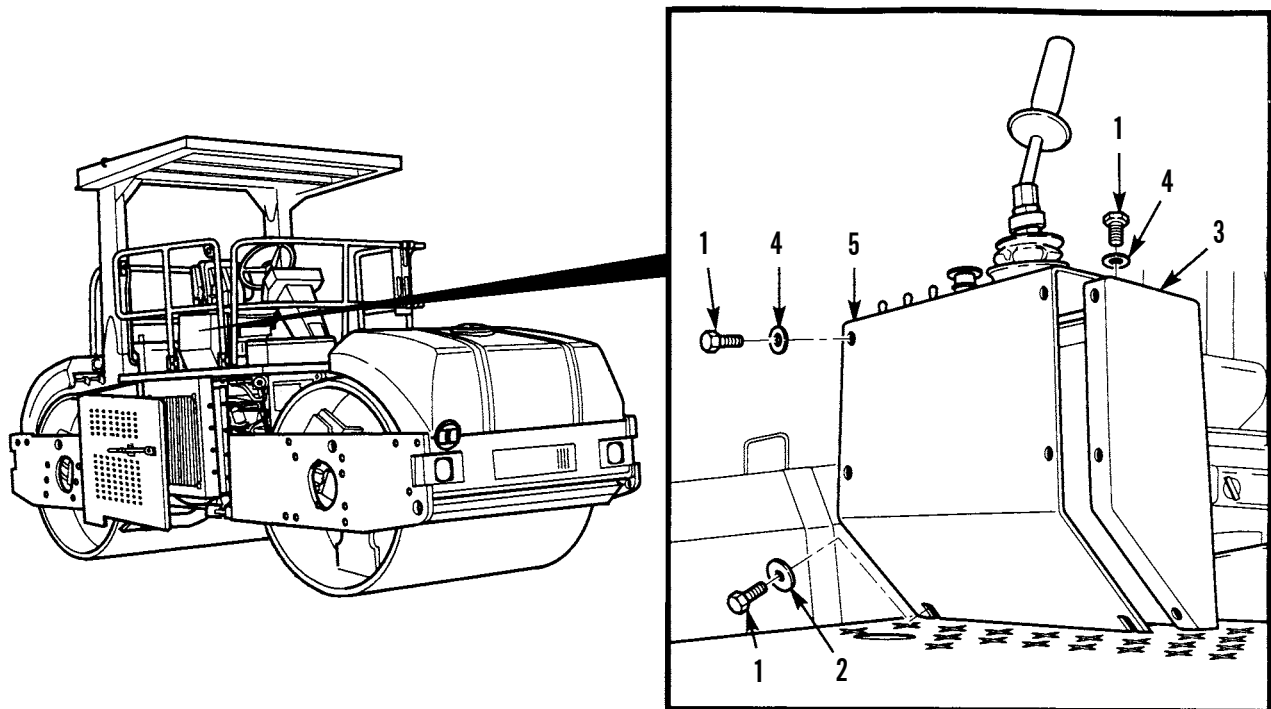
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).

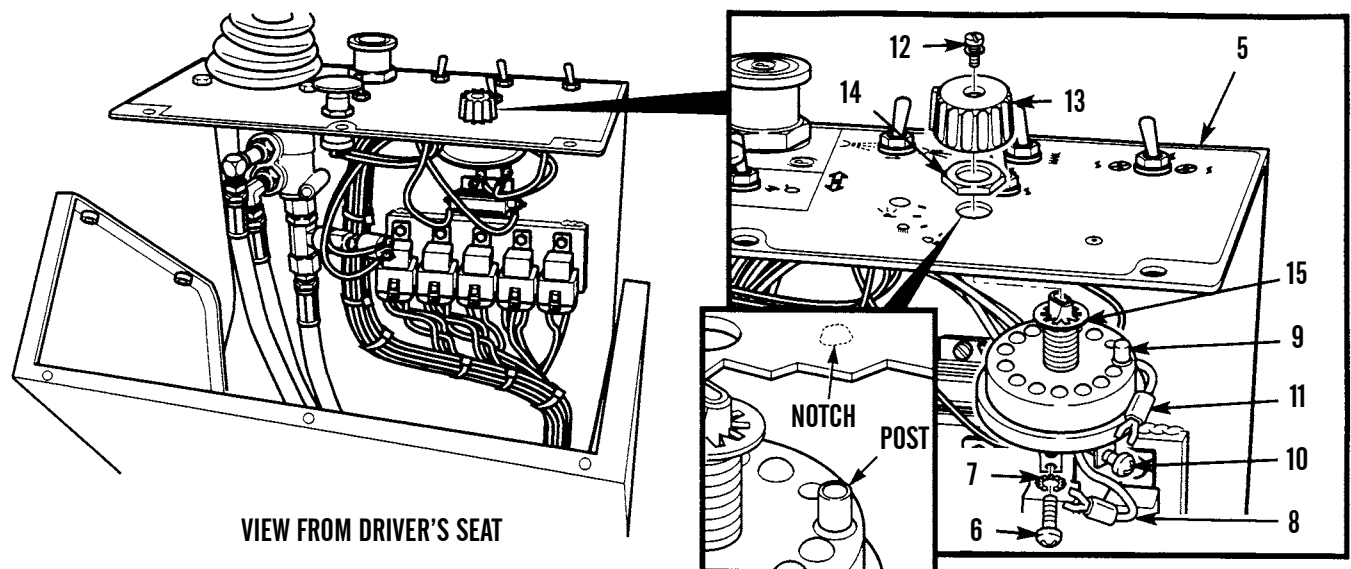


401-446

REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

4. Remove screw (6), lockwasher (7) and wire (8) from light switch (9). Discard lockwasher.
5. Loosen three screws (10) and remove three wires (11) from light switch (9).
6. Remove screw (12) and knob (13) from light switch (9).
7. Remove nut (13), light switch (9) and lockwasher (14) from panel assembly (5). Discard lockwasher.



401-463

INSTALLATION**NOTE**

Post on light switch is positioned in notch of panel assembly to properly align light switch on panel assembly.

1. Install light switch (9) on panel assembly (5) with new lockwasher (15) and nut (14). Tighten nut.

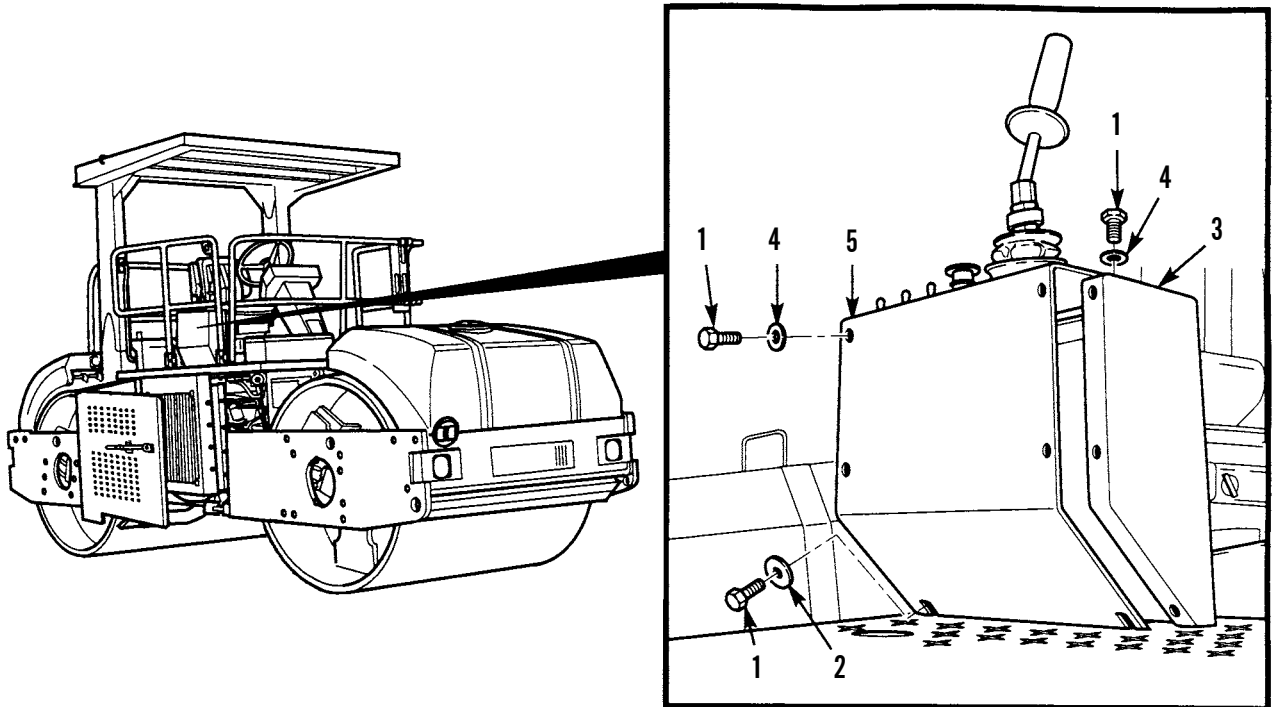
NOTE

Knob indicator is positioned on switch to point at lights selection icons. To find correct position, turn switch to full-right position and position indicator to point toward icon furthest to the right.

2. Install knob (13) on light switch (9) with screw (12). Tighten screw.
3. Install three wires (11) on light switch (9) and tighten three screws (10).
4. Install wire (8) on light switch (9) with screw (6) and new lockwasher (7).

INSTALLATION - CONTINUED

5. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

6. Close right-side door assembly (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

INTERMITTENT WATER SPRAY TIMER REPLACEMENT

0076 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut

References

TM 5-3895-379-23P, Figure 50

Equipment Condition

Engine off (TM 5-3895-379-10)

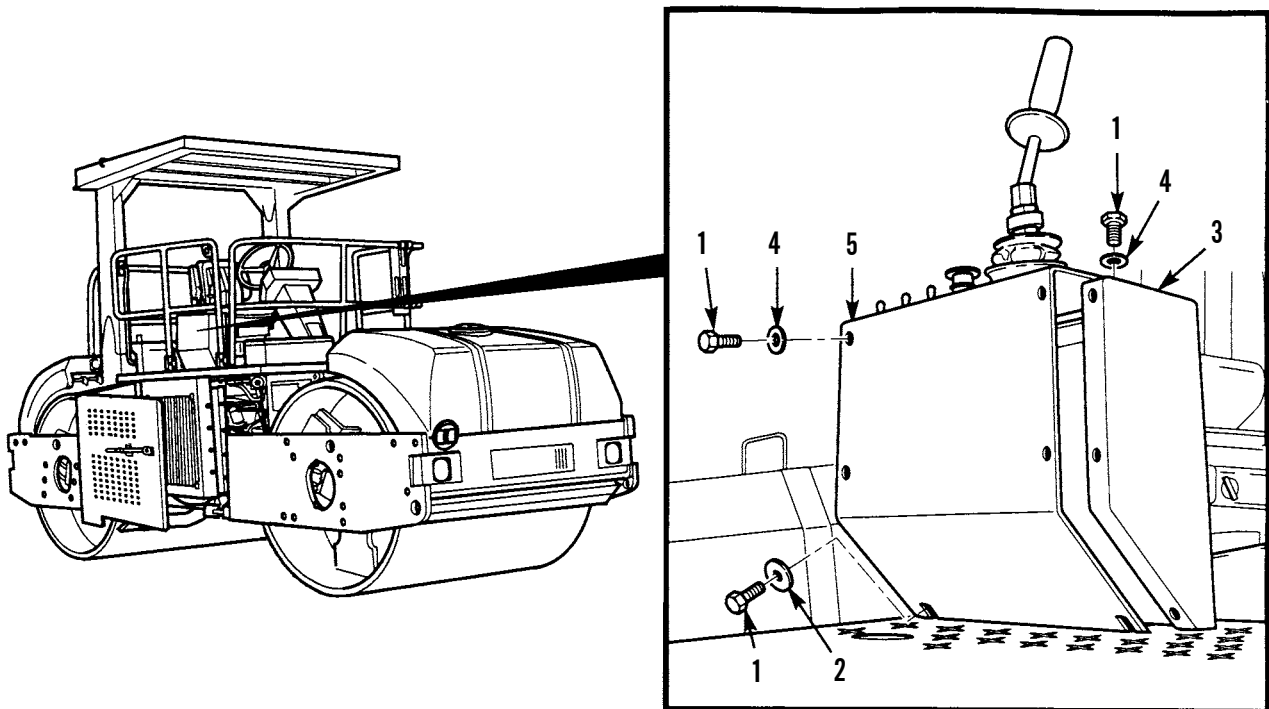
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).

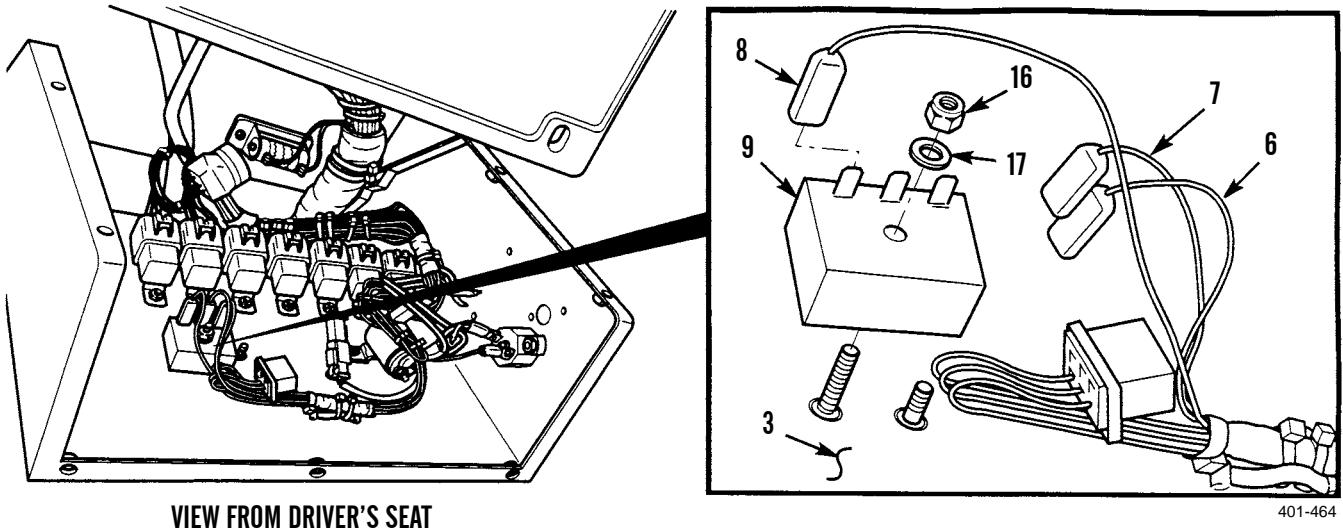


401-446

REMOVAL**NOTE**

Tag and mark all wires prior to removal.

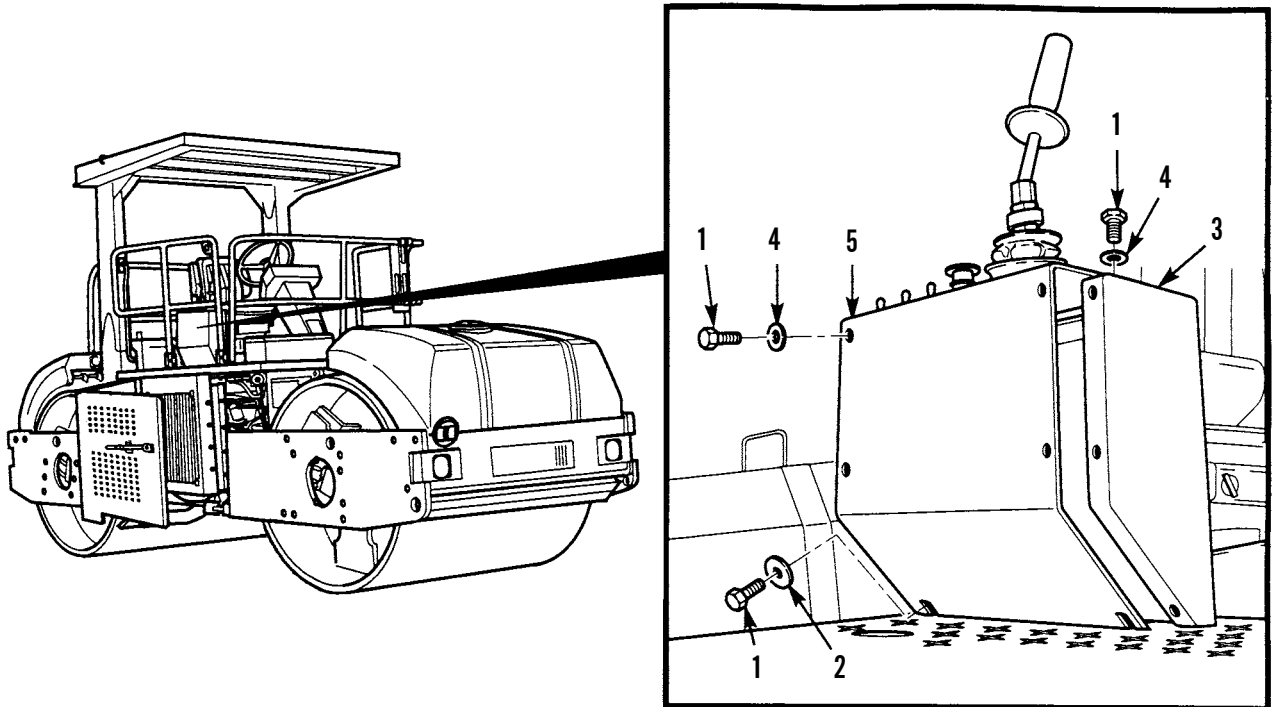
4. Remove three wires (6), (7) and (8) from timer (9).
5. Remove locknut (10), washer (11) and timer (9) from operator station (3). Discard locknut.

**INSTALLATION**

1. Install timer (9) on operator station (3) with washer (11) and new locknut (10). Tighten locknut.
2. Install three wires (6), (7) and (8) on timer (9).

INSTALLATION

3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUSE AND FUSE HOLDER REPLACEMENT

0077 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Solder (Item 35, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Seal (2)

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

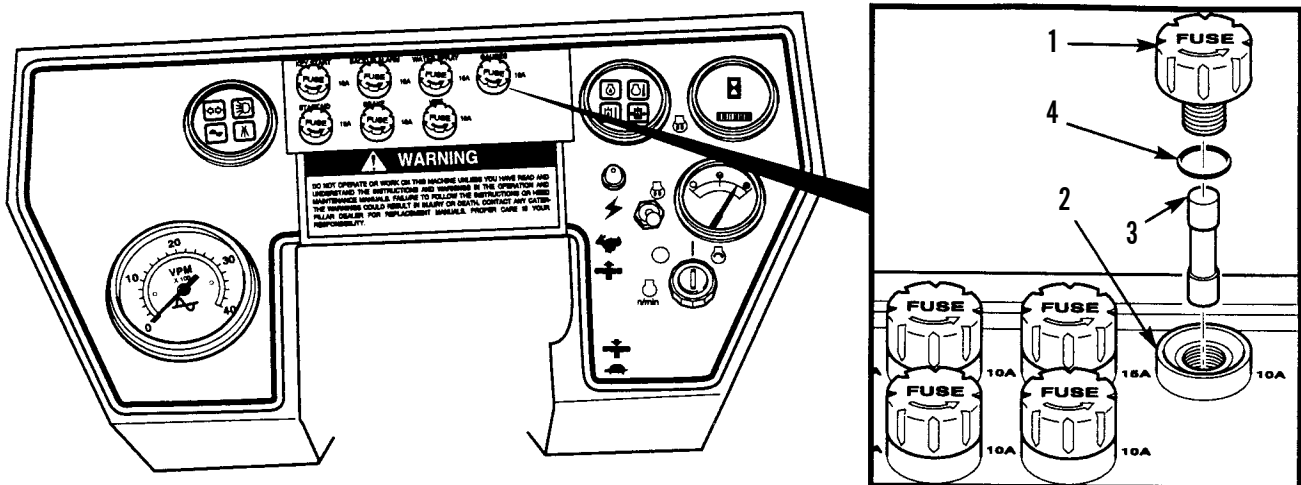
Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

NOTE

All fuse and fuse holders are replaced the same way. One fuse and fuse holder is shown.

1. Remove fuse holder assembly cap (1) from fuse holder assembly (2).
2. Remove fuse (3) and seal (4) from fuse holder assembly (1). Discard seal.

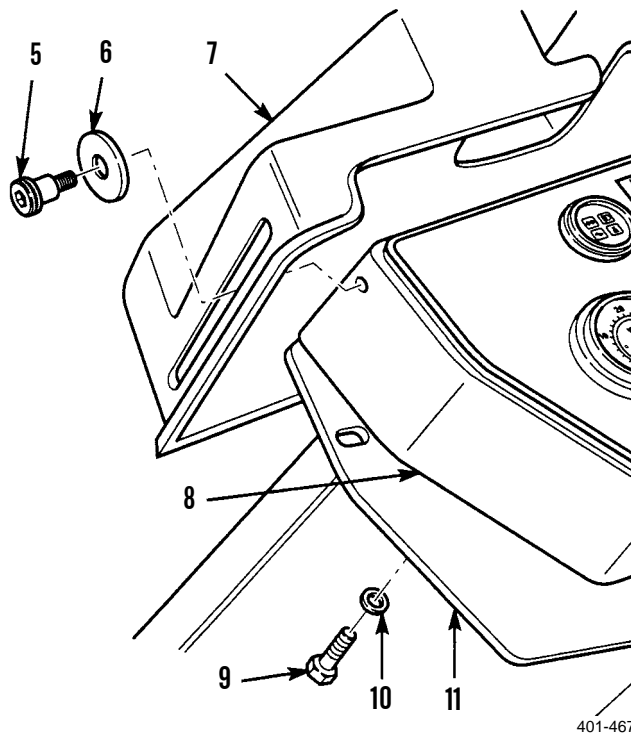


STEERING WHEEL SHOWN REMOVED FOR CLARITY

401-466

REMOVAL - CONTINUED

3. Remove two shoulder screws (5), washers (6) and vandal guard (7) from instrument box assembly (8).
4. Remove three screws (9) and washers (10) from operator station (11).
5. Lift and tilt back instrument box assembly (8) to gain access to back of instrument box assembly.

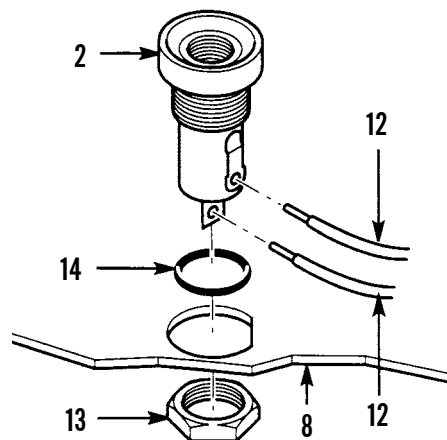


401-467

NOTE

Tag and mark all wires prior to removal.

6. Cut two wires (12) and remove from fuse holder assembly (2).
7. Remove nut (13) from fuse holder assembly (2).
8. Remove fuse holder assembly (2) and seal (14) from instrument box assembly (8). Discard seal.



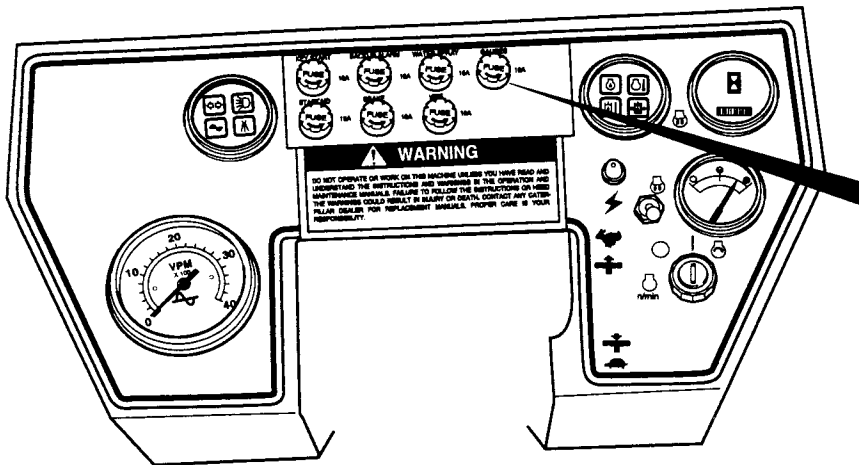
401-468

INSTALLATION

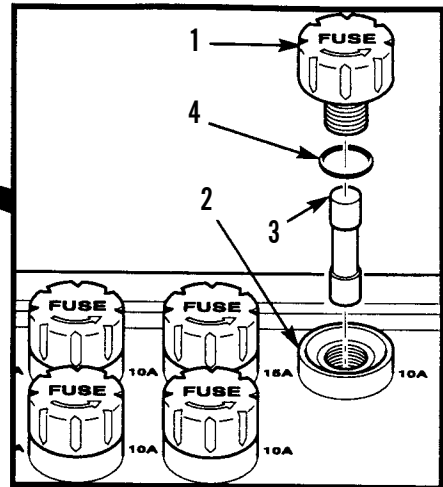
1. Install new seal (14) on fuse holder assembly (2).
2. Install fuse holder assembly (2) on instrument box assembly (8) with nut (13).

INSTALLATION - CONTINUED

3. Solder two wires (12) on fuse holder assembly (2).
4. Install instrument box assembly (8) on operator station (11) with three washers (10) and screws (9).
5. Install vandal guard (7) on instrument box assembly (8) with two washers (6) and shoulder screws (5).
6. Install new seal (4) and fuse (3) in fuse holder assembly cap (1).
7. Install fuse holder assembly cap (1) on fuse holder assembly (2).



STEERING WHEEL SHOWN REMOVED FOR CLARITY



401-466

8. Close right-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

STARTING AID SWITCH REPLACEMENT

0078 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (3)

References

TM 5-3895-379-23P, Figure 49

Equipment Condition

Engine off (TM 5-3895-379-10)

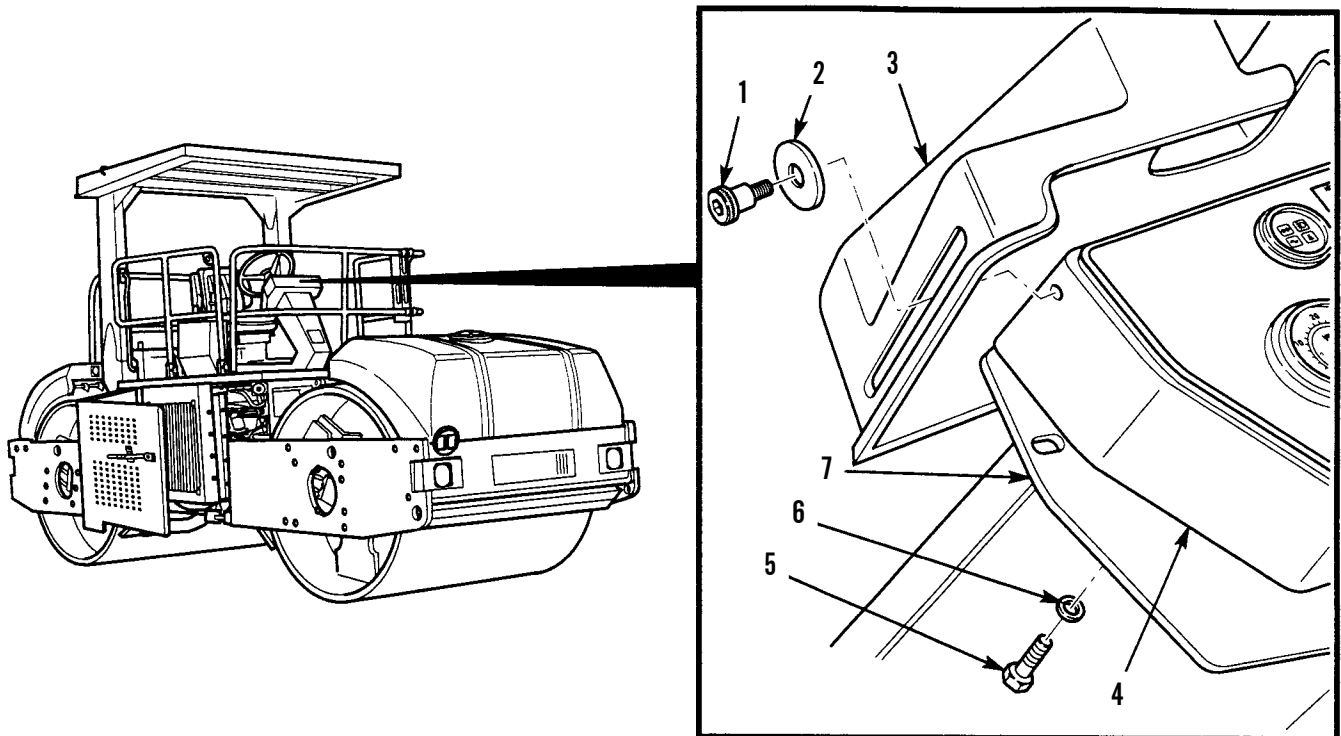
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



401-601

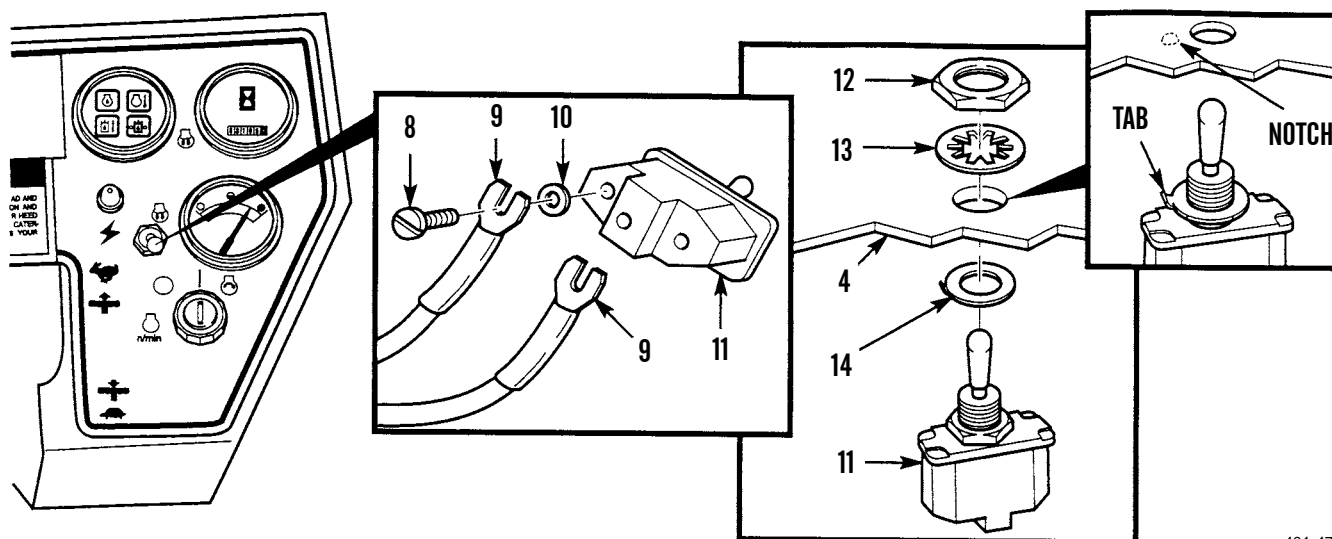
STARTING AID SWITCH REPLACEMENT - CONTINUED

0078 00

REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

4. Remove two screws (8), wires (9) and lockwashers (10) from starting aid switch (11). Discard lockwasher.
5. Remove nut (12) and lockwasher (13) from starting aid switch (11). Discard lockwasher.
6. Remove starting aid switch (11) and ring (14) from instrument box assembly (4).
7. Remove locking ring (14) from starting aid switch (11).



401-470

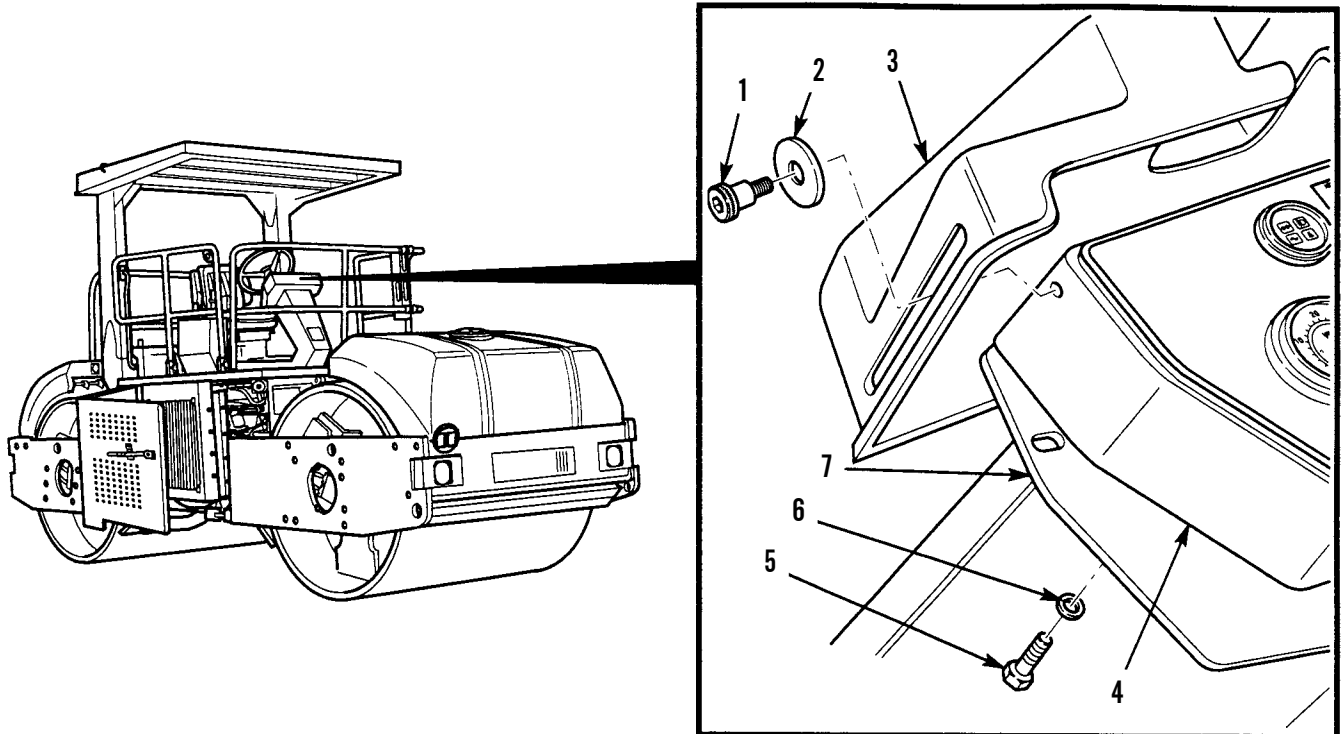
INSTALLATION**NOTE**

Tab or ring fits in notch of instrument box assembly to properly align starting aid switch.

1. Position ring (14) on starting aid switch (11).
2. Position ring (14) and starting aid switch (11) on instrument box assembly (4).
3. Install new lockwasher (13) and nut (12) on starting aid switch (11).
4. Install two new lockwashers (10) and wires (9) on starting aid switch (11) with screws (8).

INSTALLATION - CONTINUED

5. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
6. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

7. Close right-side door assembly (TM 5-3895-379-10).
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE START SWITCH REPLACEMENT

0079 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (3)

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

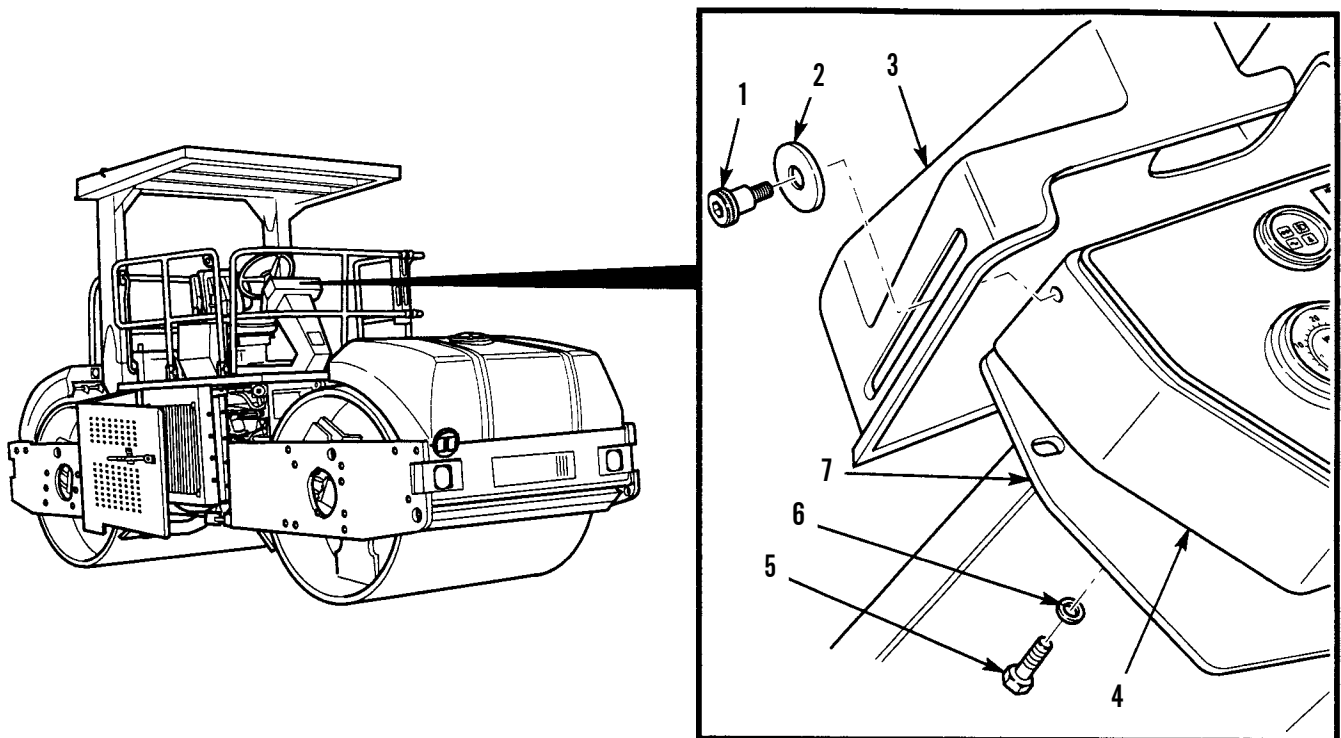
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



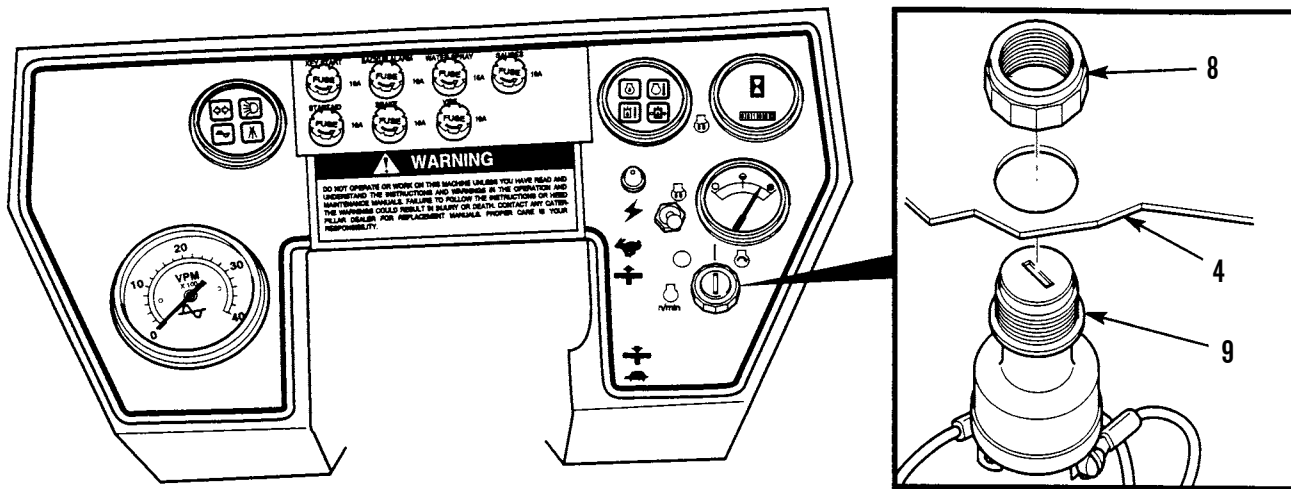
401-601

ENGINE START SWITCH REPLACEMENT - CONTINUED

0079 00

REMOVAL - CONTINUED

4. Remove nut (8) from lock assembly (9).
5. Remove lock assembly (9) from instrument box assembly (4).



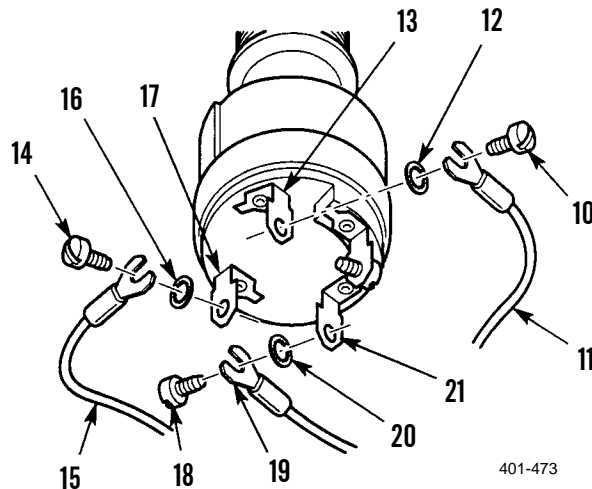
STEERING WHEEL SHOWN REMOVED FOR CLARITY

401-472

NOTE

Tag and mark all wires prior to removal.

6. Remove screw (10), wire (11) and lockwasher (12) from START terminal (13). Discard lockwasher.
7. Remove screw (14), wire (15) and lockwasher (16) from BATTERY terminal (17). Discard lockwasher.
8. Remove screw (18), wire (19) and lockwasher (20) from RELAY terminal (21). Discard lockwasher.



401-473

INSTALLATION

1. Install new lockwasher (20) and wire (19) on RELAY terminal (21) with screw (18).
2. Install new lockwasher (16) and wire (15) on BATTERY terminal (17) with screw (14).
3. Install new lockwasher (12) and wire (11) on START terminal (13) with screw (10).

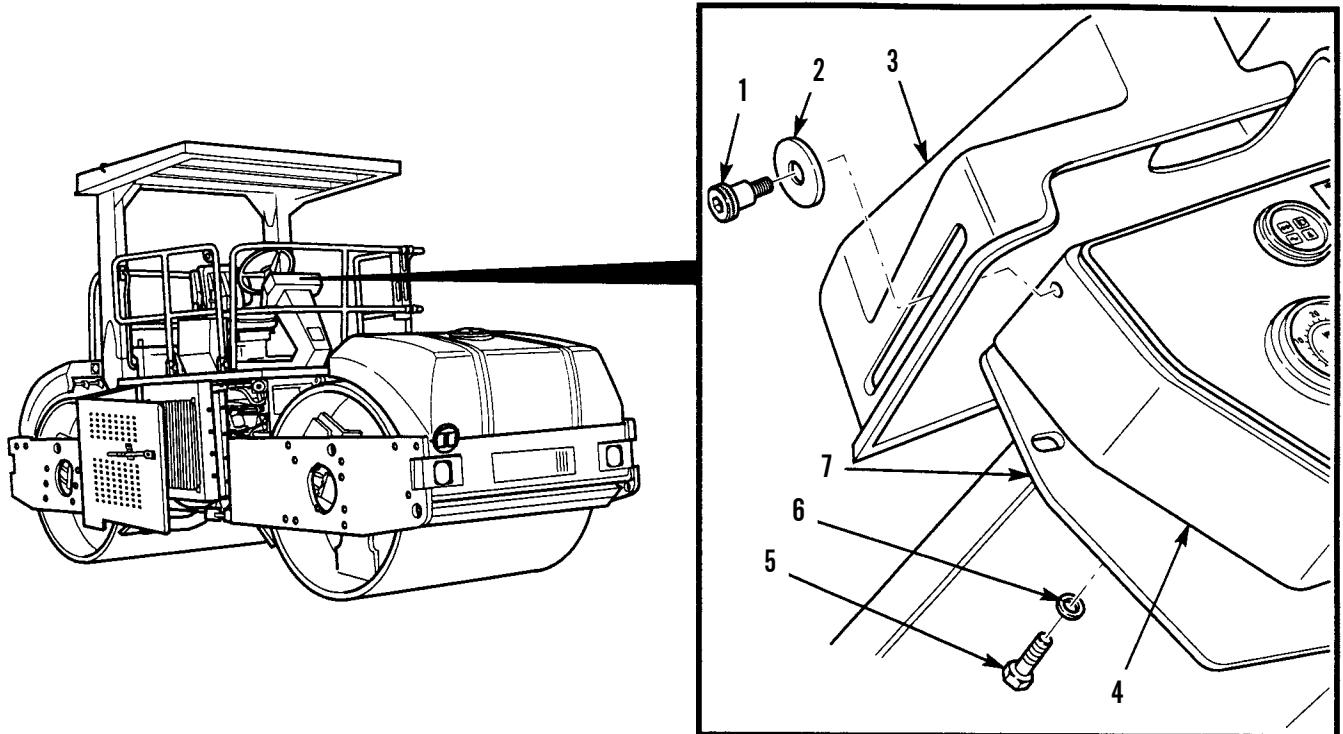
NOTE

Tab of starter switch fits in notch of instrument box assembly to properly align starter switch in instrument box assembly.

4. Position lock assembly (9) in instrument box assembly (4).
5. Install nut (8) on lock assembly (9).

INSTALLATION - CONTINUED

6. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
7. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

8. Close right-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATION PUSH SWITCH REPLACEMENT

0080 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Gasket (2)

Packing, preformed

References

TM 5-3895-379-23P, Figure 78

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

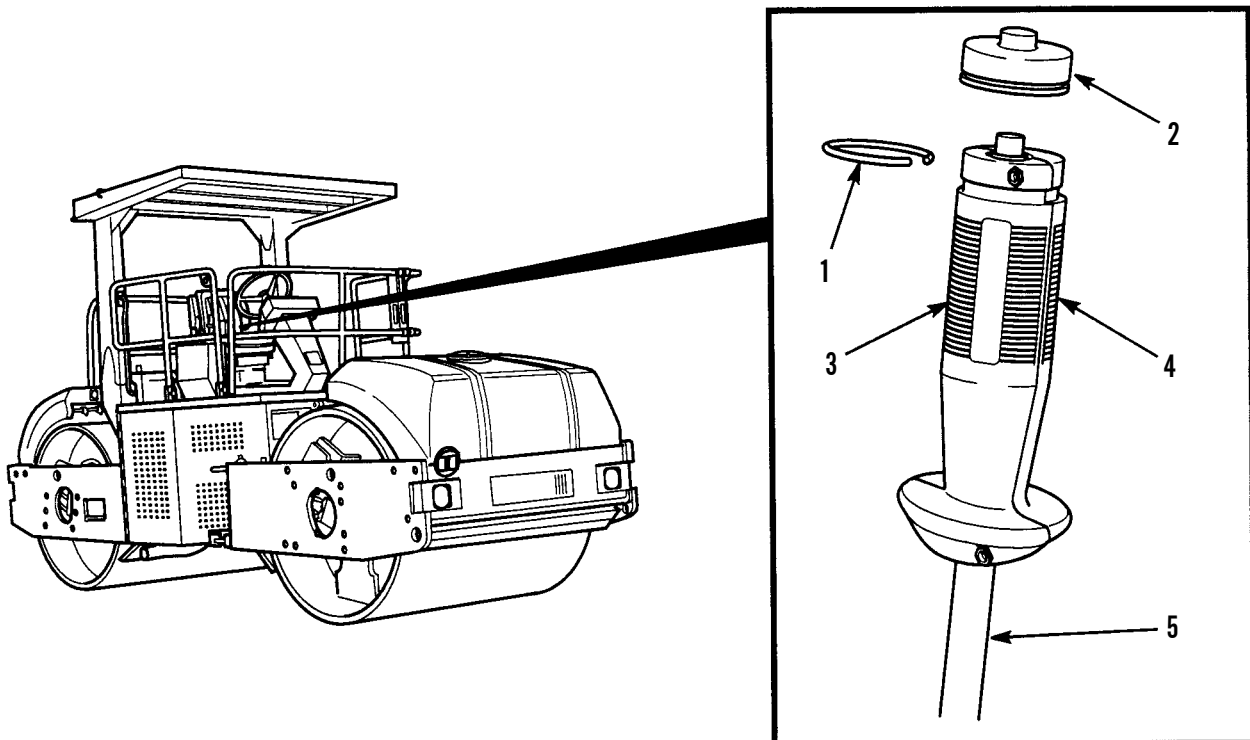
REMOVAL

1. Remove retainer ring (1) and cap (2) from grip housing (3) and (4).

CAUTION

Do not turn handle more than one full turn. Handle cannot be removed by unscrewing and should not be forced or turned more than needed to allow access to screws and nuts.

2. Loosen grip housings (3) and (4) on handle pipe (5) by turning grip housings counterclockwise not more than one full turn.

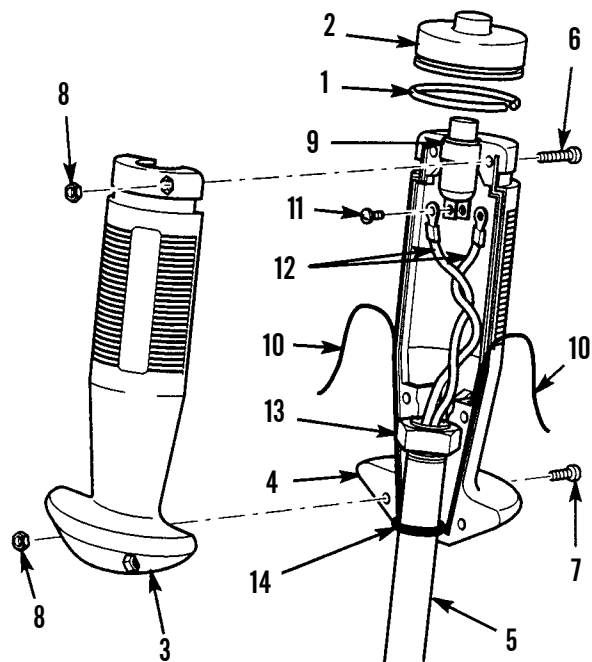


401-474

REMOVAL - CONTINUED**NOTE**

- Nuts are small and easily lost. Take extra care to not lose nuts.
- Nuts may stay with grip housing.

3. Remove two screws (6), four screws (7) and six nuts (8) from grip housings (3 and 4).
4. Remove two grip housing (3 and 4) from handle pipe (5) and vibration push switch (9).
5. Remove two gaskets (10) from grip housing (4). Discard gaskets.
6. Remove two screws (11) and wires (12) from vibration push switch (9).
7. Remove nut (13) and preformed packing (14) from handle pipe (5). Discard preformed packing.



401-475

INSTALLATION

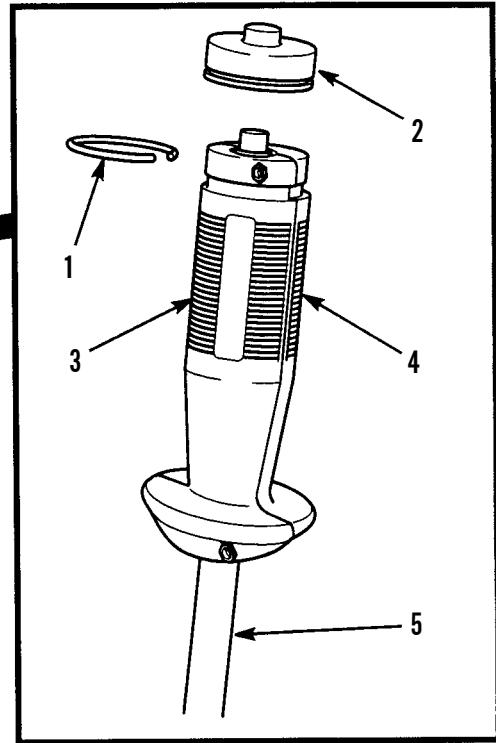
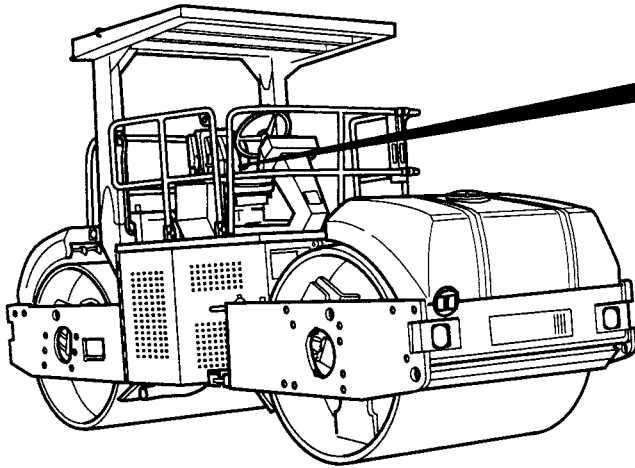
1. Install new preformed packing (14) and nut (13) on handle pipe (5). Turn nut onto handle pipe until top of nut is flush with top of handle pipe.
2. Install two wires (12) on vibration push switch (9) with two screws (11).
3. Install two new gaskets (10) in grip housing (4).

NOTE

- Grip housings will not fit together if any threads of handle pipe are showing on top side of nut while nut is installed.
 - Mate flat sides of nut with cavity on grip housing.
4. Install grip housing (4) on handle pipe (5), nut (13) and new preformed packing (14).
 5. Install vibration push switch (9) in grip housing (4).
 6. Install grip housing (3) on grip housing (4) with two screws (6), four screws (7) and six nuts (8).
 7. Tighten grip housings (3) and (4) on handle pipe (5) by turning grip housings to right until snug. Do not over-tighten.

INSTALLATION - CONTINUED

8. Install cap (2) and retaining ring (1) on grip housings (3) and (4).



401-474

9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL LEVEL GAUGE REPLACEMENT

0081 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Solder (Item 35, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (5)

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

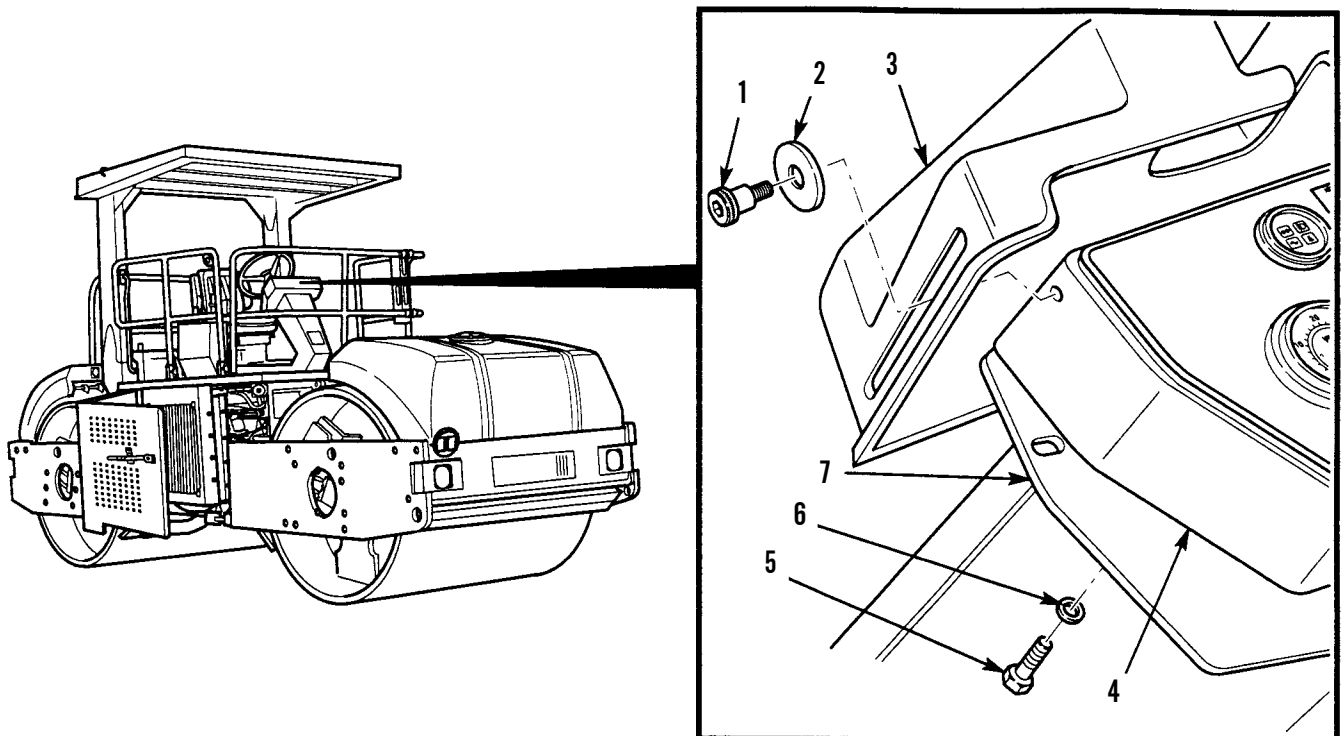
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

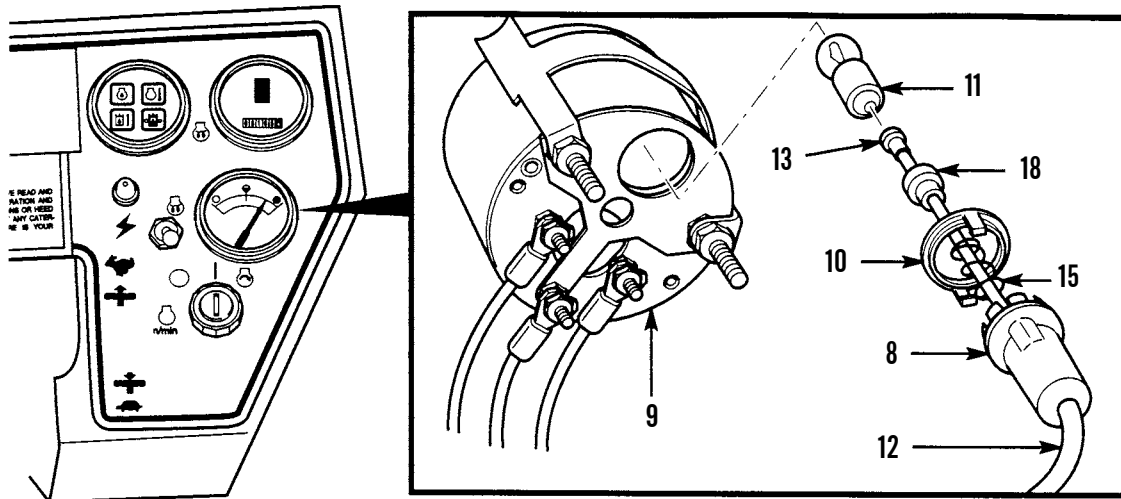
1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



401-601

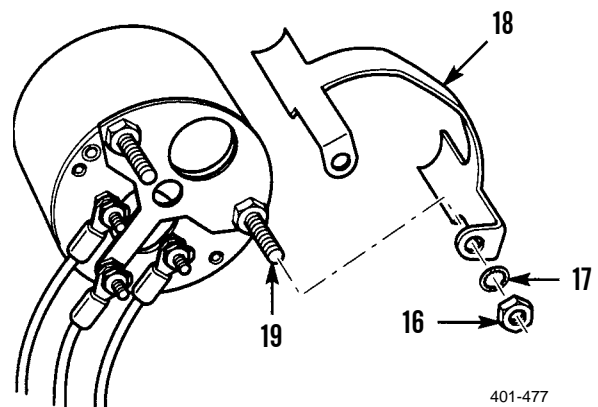
REMOVAL - CONTINUED

4. Pull light fixture (8) and remove light fixture from fuel level gauge (9).
5. Remove retainer clip (10) from light fixture (8).
6. Push and twist light bulb (11) counterclockwise and remove light bulb from light fixture (8).
7. If damaged, cut wire (12) below contact (13) and remove contact, cap (14), spring (15) and light fixture (8) from wire.



401-476

8. Remove two nuts (16), lockwashers (17) and fuel level gauge bracket (18) from fuel level gauge studs (19). Discard lockwashers.



401-477

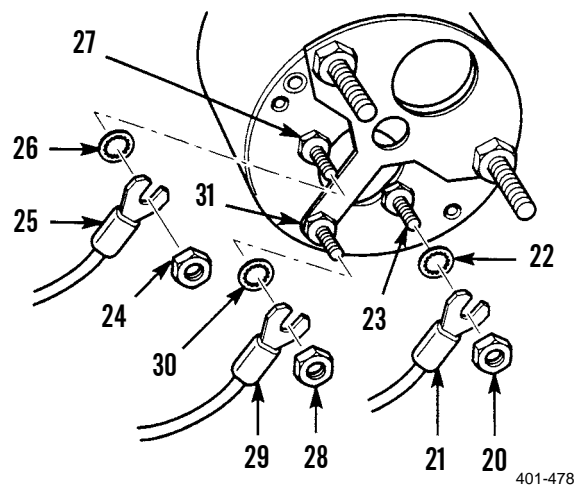
FUEL LEVEL GAUGE REPLACEMENT - CONTINUED

0081 00

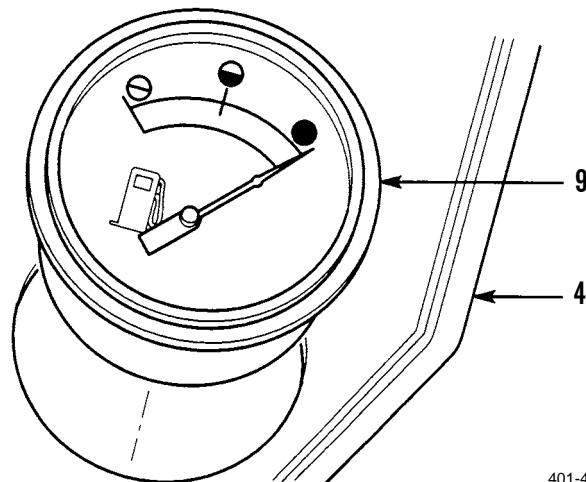
REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

9. Remove nut (20), wire (21) and lockwasher (22) from fuel level gauge terminal S (23). Discard lockwasher.
10. Remove nut (24), wire (25) and lockwasher (26) from fuel level gauge terminal T (27). Discard lockwasher.
11. Remove nut (28), wire (29) and lockwasher (30) from fuel level gauge terminal G (31). Discard lockwasher.



12. Remove fuel level gauge (9) from instrument box assembly (4).

**INSTALLATION**

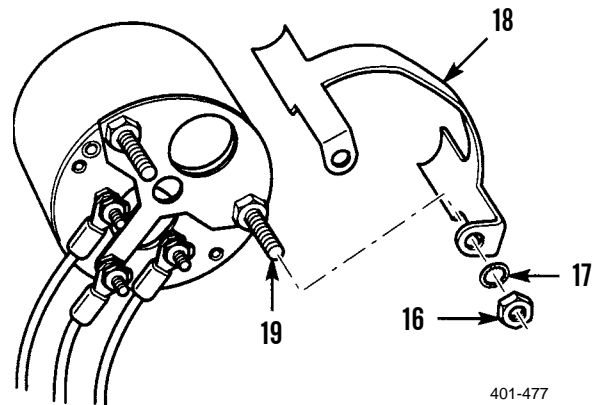
1. Position fuel level gauge (9) in instrument box assembly (4).
2. Install new lockwasher (30) and wire (29) on fuel level gauge terminal G (31) with nut (28).
3. Install new lockwasher (26) and wire (25) on fuel level gauge terminal I (27) with nut (24).
4. Install new lockwasher (22) and wire (21) on fuel level gauge terminal S (23) with nut (20).

INSTALLATION - CONTINUED

NOTE

Before installing fuel level gauge bracket on fuel level gauge, ensure that fuel level gauge is positioned so needle will point up when instrument box assembly is installed.

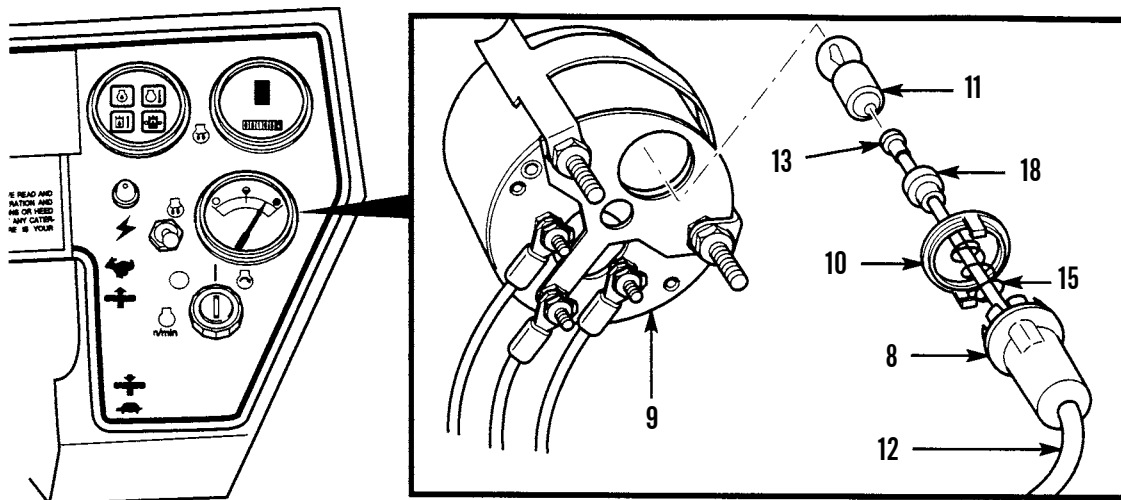
5. Install fuel level gauge bracket (18) on fuel level gauge studs (19) with two new lockwashers (17) and nuts (16).



NOTE

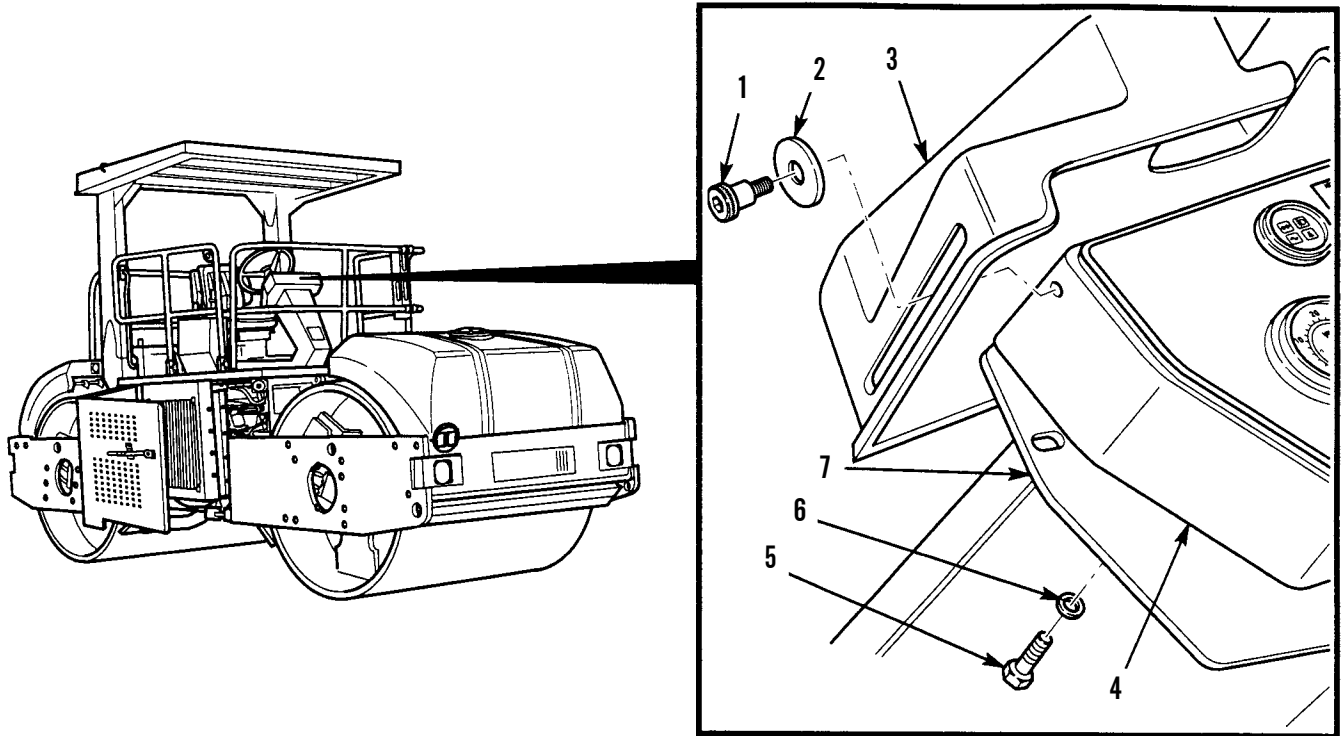
Perform steps 6 and 7 only if wire was cut.

6. Install light fixture (8), spring (15) and cap (14) on wire (12).
7. Solder contact (13) on wire (12).
8. Push and twist light bulb (11) clockwise and install light bulb in light fixture (8).
9. Install retainer clip (10) on light fixture (8).
10. Push light fixture (8) and install light fixture in fuel level gauge (9).



INSTALLATION - CONTINUED

11. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
12. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

13. Close right-side door assembly (TM 5-3895-379-10).
14. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

SERVICE METER REPLACEMENT

0082 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

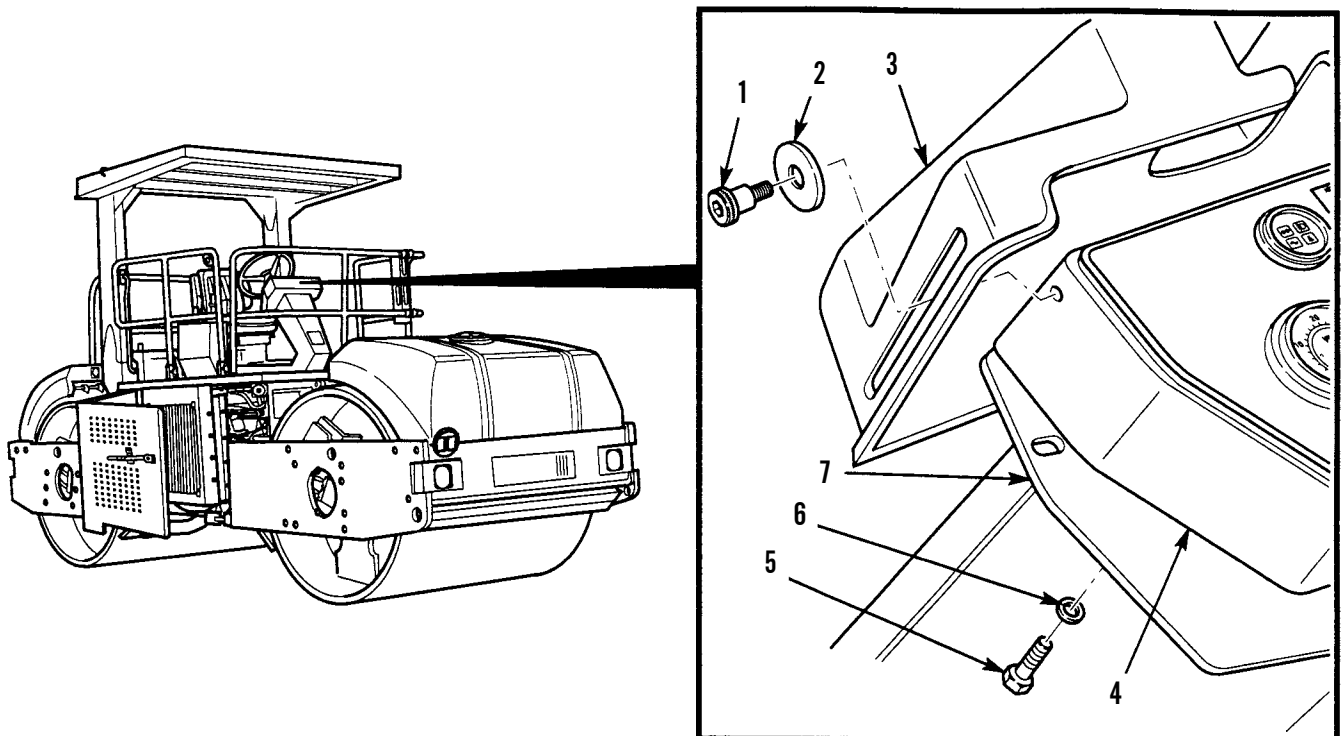
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

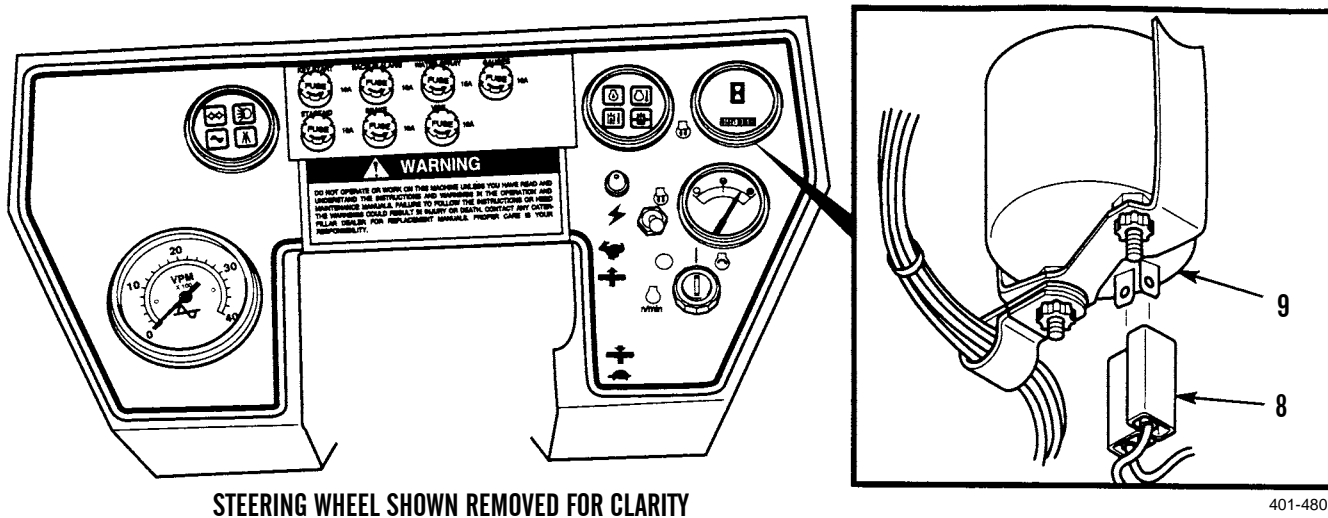
1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



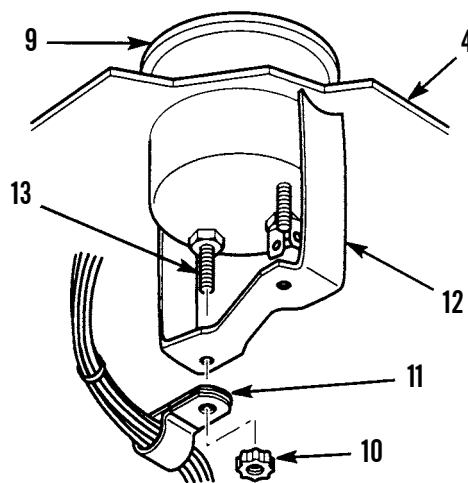
401-601

REMOVAL - CONTINUED

4. Disconnect plug connector (8) from service meter (9).



5. Remove two thumb nuts (10), clip (11) and service meter bracket (12) from service meter studs (13).
6. Lift service meter (9) from instrument box assembly (4).



INSTALLATION

1. Position service meter (9) in instrument box assembly (4).

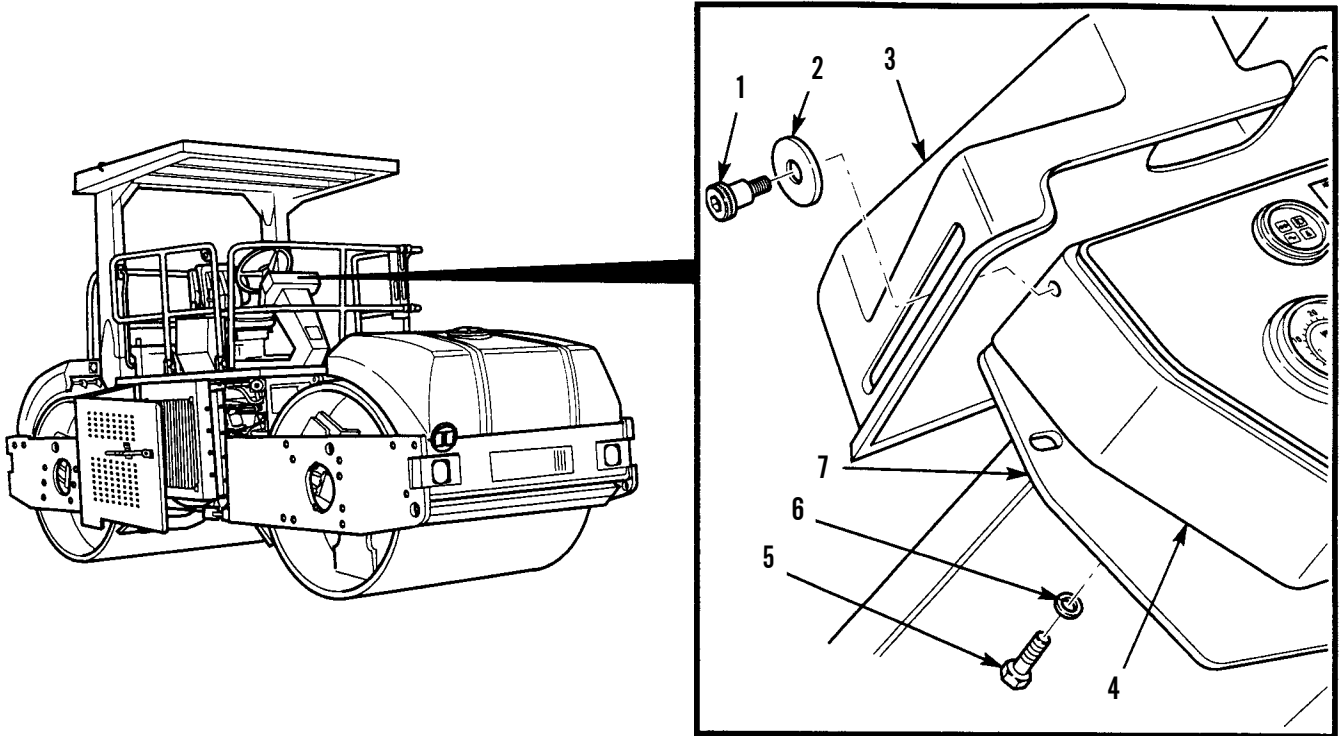
NOTE

Make sure service meter is positioned so numbers are right-side up when box assembly is installed.

2. Install service meter bracket (12) and clip (11) on service meter studs (13) with two thumb nuts (10).
3. Connect plug connector (8) to service meter (9).
4. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).

INSTALLATION - CONTINUED

5. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



6. Close right-side door assembly (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

**VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM)
METER REPLACEMENT**

0083 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Solder (Item 35, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (11)

References

TM 5-3895-379-23P, Figures 48 and 139

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

NOTE

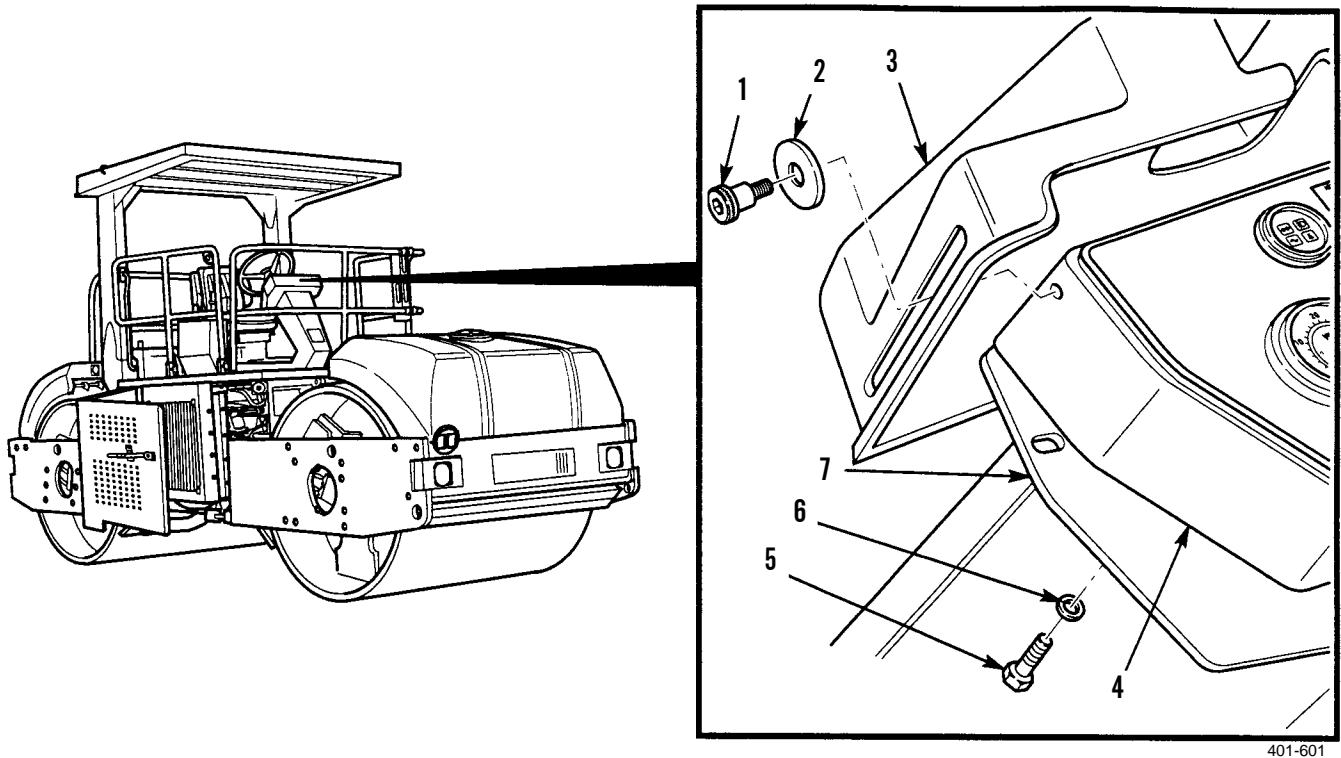
- Vibrations Per Minute (VPM) tachometer for the CB534B and CB534C Rollers are replaced in the same way.
- CB534C Roller is equipped with a Feet Per Minute (FPM) meter.

**VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM)
METER REPLACEMENT - CONTINUED**

0083 00

REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



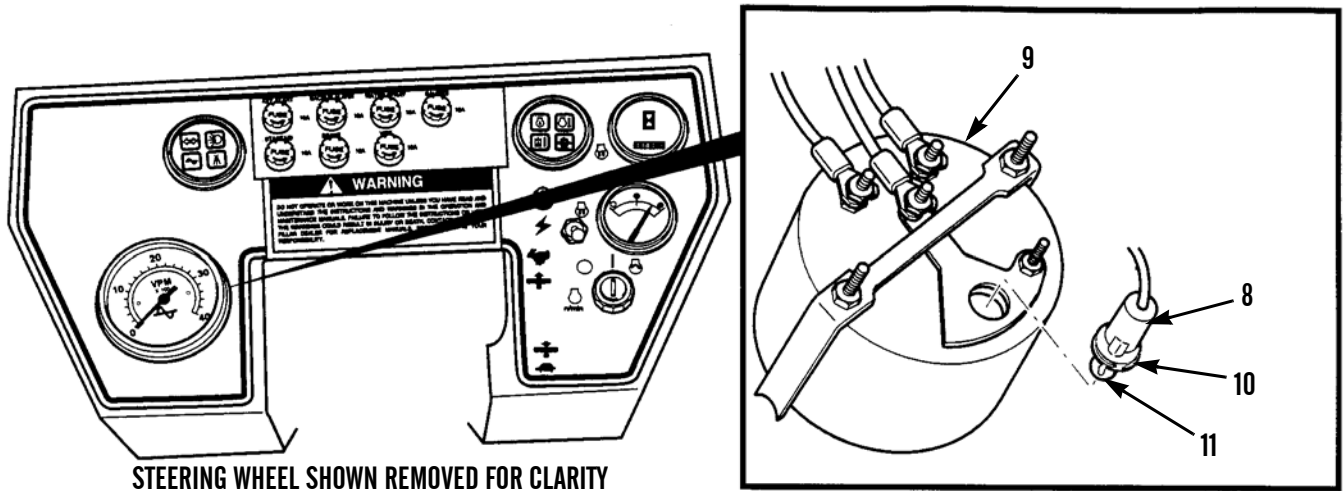
401-601

VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM) METER REPLACEMENT - CONTINUED

0083 00

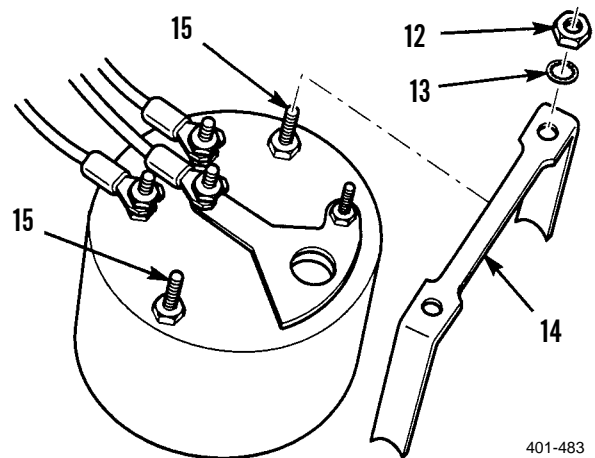
REMOVAL - CONTINUED

4. Remove light fixture (8) from VPM tachometer (9).
5. Remove retainer clip (10) from light fixture (8).
6. Push and twist light bulb (11) counterclockwise and remove light bulb from light fixture (8).
7. If damaged, cut wire (15) and install new light fixture (8) using general wiring repair (WP 0108 00).



401-2222

8. Remove two nuts (12), lockwashers (13) and VPM tachometer bracket (14) from VPM tachometer studs (15). Discard lockwashers.



401-483

VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM) METER REPLACEMENT - CONTINUED

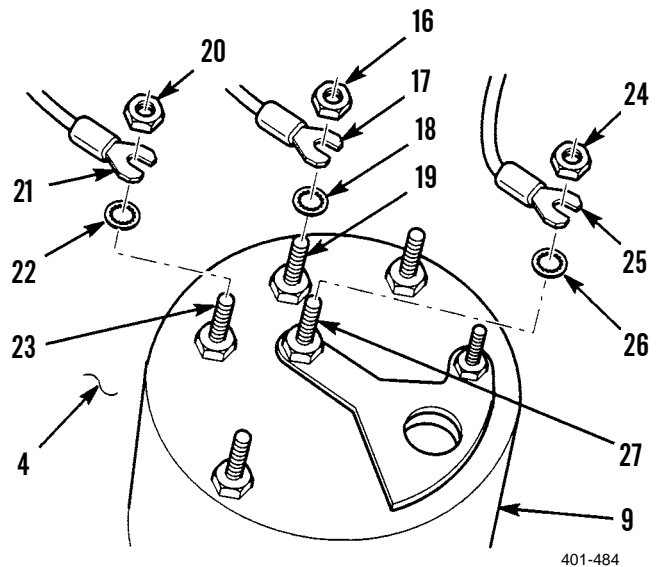
0083 00

REMOVAL - CONTINUED

NOTE

Tag and mark all wires prior to removal.

9. Remove nut (16), wire (17) and lockwasher (18) from VPM tachometer terminal S (19). Discard lockwasher.
10. Remove nut (20), wire (21) and lockwasher (22) from VPM tachometer terminal I (23). Discard lockwasher.
11. Remove nut (24), wire (25) and lockwasher (26) from VPM tachometer terminal G (27). Discard lockwasher.
12. Remove VPM tachometer (9) from instrument box assembly (4).

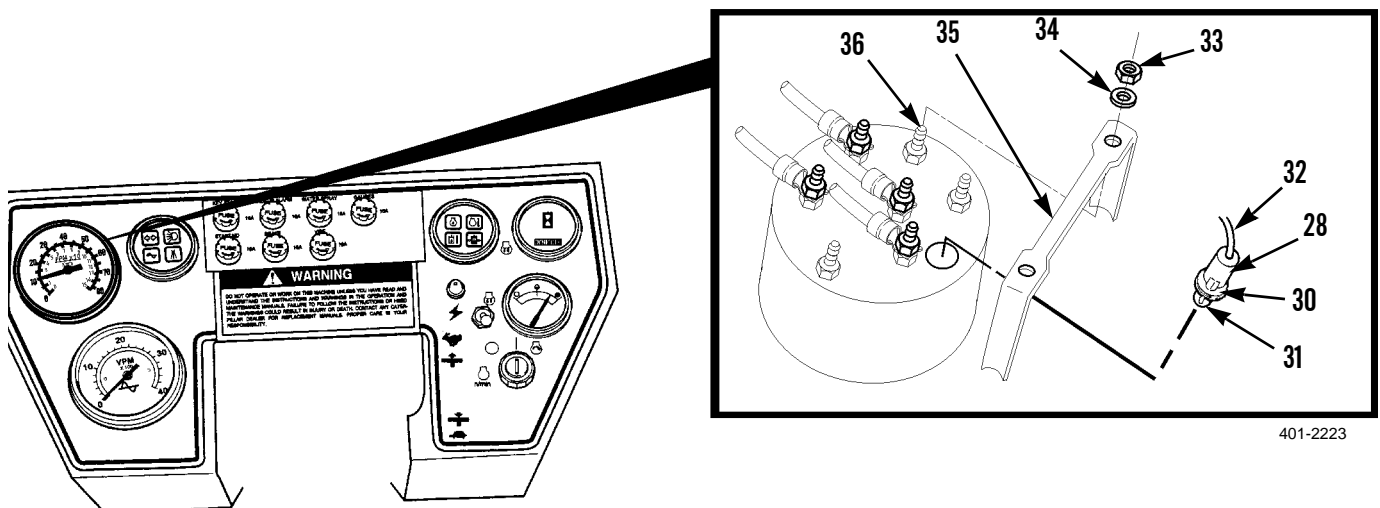


401-484

NOTE

Perform steps 13 through 22 for the CB534C Roller.

13. Pull light fixture (28) and remove light fixture from FPM meter (29).
14. Remove retainer clip (30) from light fixture (28).
15. Push and twist light bulb (31) counterclockwise and remove light.
16. If damaged, cut wire (32) and install new light fixture (28) using general wiring repair (WP 0108 00).
17. Remove two nuts (33), lockwashers (34) and FPM meter bracket (35) from FPM meter studs (36). Discard lockwashers.



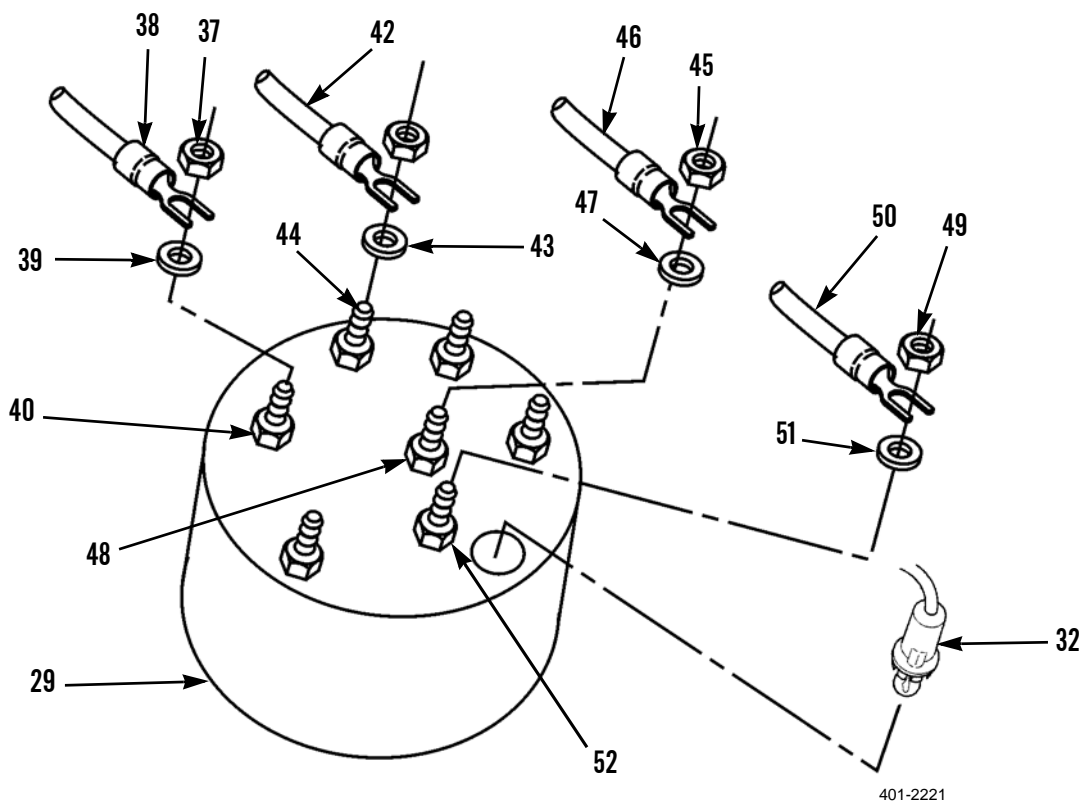
401-2223

VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM) METER REPLACEMENT - CONTINUED

0083 00

REMOVAL - CONTINUED

18. Remove nut (37), wire (38) and lockwasher (39) from FPM meter terminal (40). Discard lockwasher.
19. Remove nut (41), wire (42) and lockwasher (43) from FPM meter terminal (44). Discard lockwasher.
20. Remove nut (45), wire (46) and lockwasher (47) from FPM meter terminal (48). Discard lockwasher.
21. Remove nut (49), wire (50) and lockwasher (51) from FPM meter terminal (52). Discard lockwasher.
22. Remove FPM meter (29) from instrument box assembly (4).



INSTALLATION

NOTE

Perform steps 1 through 9 for the CB534C Roller.

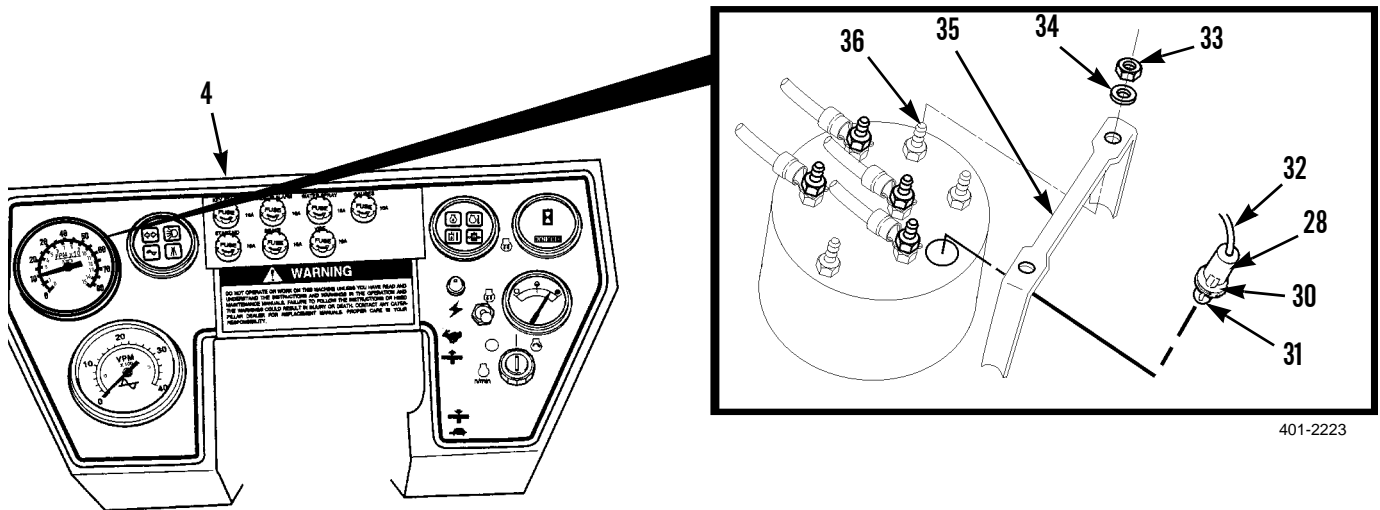
1. Install FPM meter (29) to instrument box assembly (4).
2. Install nut (49), wire (50) and lockwasher (51) to FPM meter terminal (52).
3. Install nut (45), wire (46) and lockwasher (47) to FPM meter terminal (48).
4. Install nut (41), wire (42) and lockwasher (43) to FPM meter terminal (44).
5. Install nut (37), wire (38) and lockwasher (39) to FPM meter terminal (40).

VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM) METER REPLACEMENT - CONTINUED

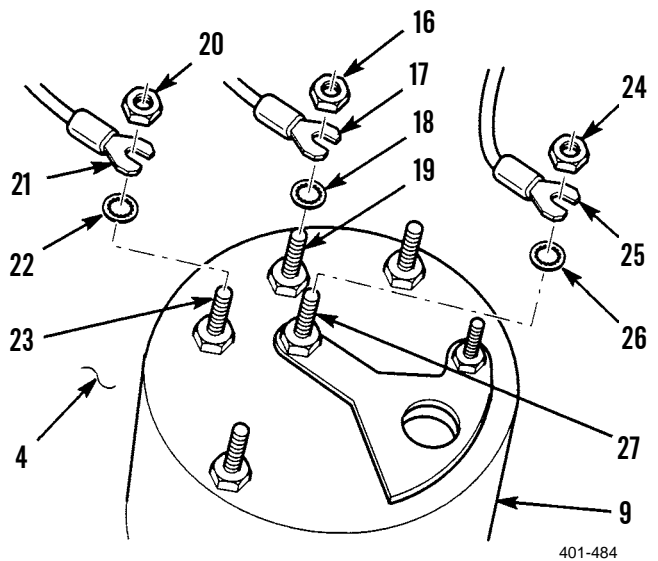
0083 00

INSTALLATION - CONTINUED

6. Install two nuts (32), new lockwashers (33) and FPM meter bracket (34) to FPM meter studs (35).
7. Install light bulb (35) to light fixture (32). Push and twist bulb clockwise.
8. Install retainer clip (34) to light fixture (32).
9. Install light fixtures (32) to FPM meter (33).



10. Position VPM tachometer (9) in instrument box assembly (4).
11. Install new lockwasher (26) and wire (25) on VPM tachometer terminal G (27) with nut (24).
12. Install new lockwasher (22) and wire (21) on VPM tachometer terminal I (23) with nut (20).
13. Install new lockwasher (18) and wire (17) on VPM tachometer terminal S (19) with nut (16).



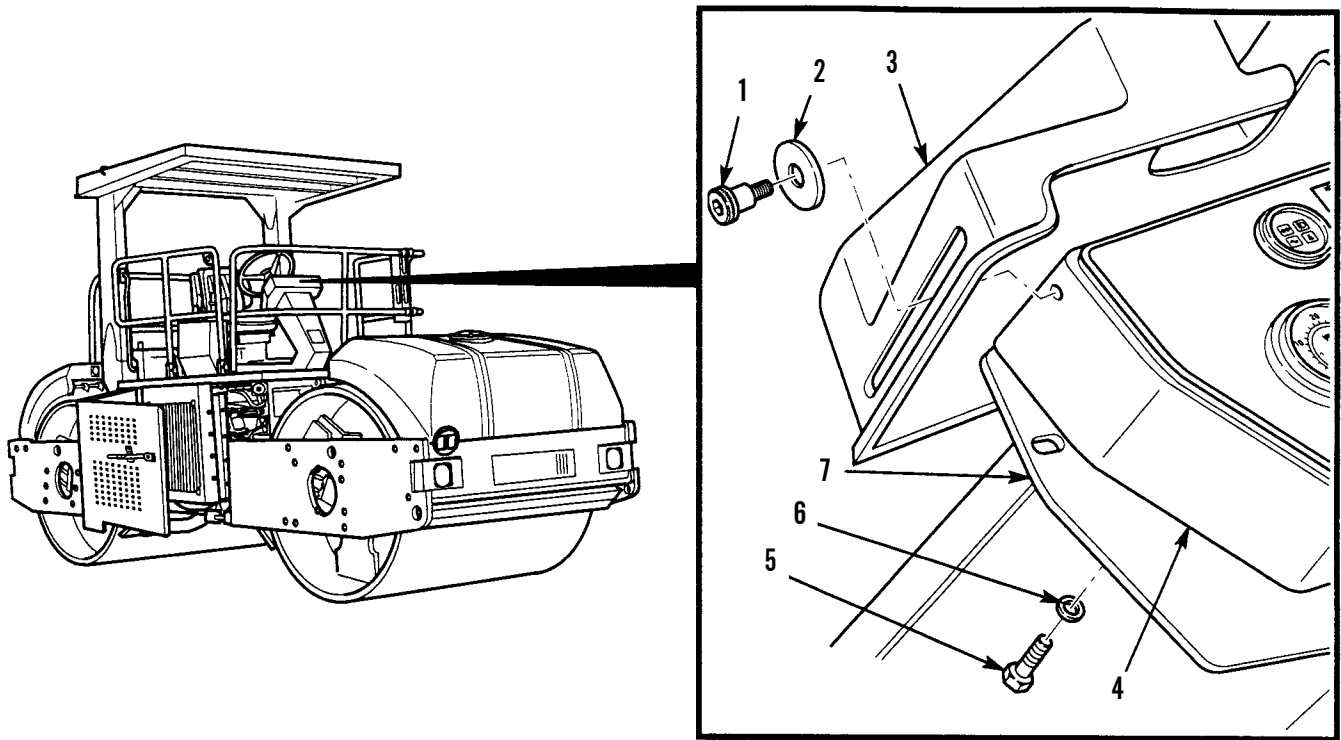
**VIBRATIONS PER MINUTE (VPM) TACHOMETER AND FEET PER MINUTE (FPM)
METER REPLACEMENT - CONTINUED**

0083 00

INSTALLATION - CONTINUED
NOTE

Before installing VPM tachometer bracket on VPM tachometer, ensure VPM tachometer is positioned so numbers are right-side up when instrument box assembly is installed.

14. Install VPM tachometer bracket (14) on VPM tachometer studs (15) with two new lockwashers (13) and nuts (12).
15. Push and twist light bulb (11) clockwise and install light bulb in light fixture (8).
16. Install retainer clip (10) on light fixture (8).
17. Push light fixture (8) and install light fixture in VPM tachometer (9).
18. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
19. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

20. Close right-side door assembly (TM 5-3895-379-10).
21. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HOURMETER PRESSURE SWITCH REPLACEMENT

0084 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

Strap, tiedown (Item 36, WP 0219 00)

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

NOTE

Use container to catch any oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

HOURLMETER PRESSURE SWITCH REPLACEMENT - CONTINUED

0084 00

REMOVAL**NOTE**

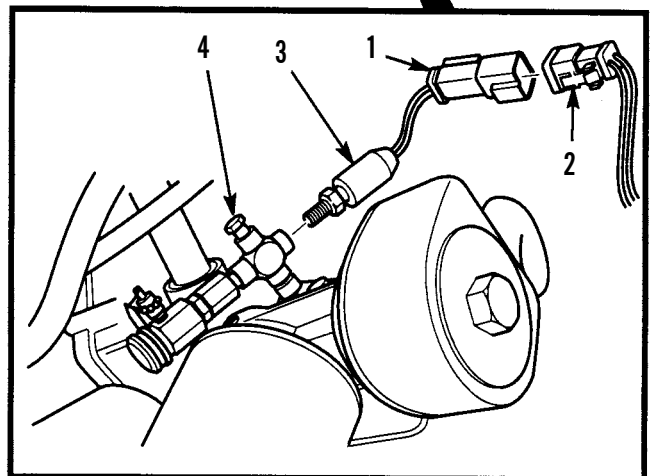
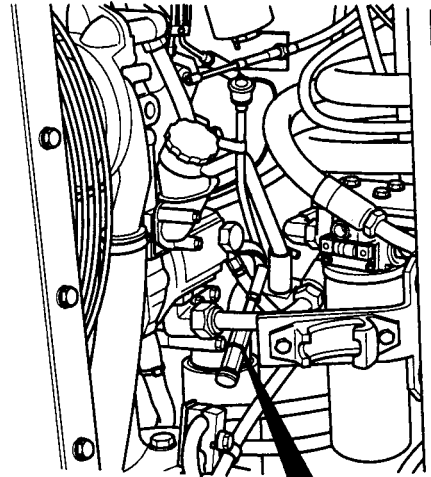
Cut cable ties as needed.

1. Disconnect hourmeter pressure switch connector (1) from connector (2).
2. Remove hourmeter pressure switch (3) from tee (4). Cap tee.

INSTALLATION**NOTE**

Install cable ties as needed.

1. Install hourmeter pressure switch (3) on tee (4) and tighten to 15-18 lb-ft (20-25 Nm).
2. Connect hourmeter pressure switch connector (1) to connector (2).



401-508

3. Start engine and check for leaks (TM 5-3895-379-10).
4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL PRESSURE SWITCH REPLACEMENT

0085 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Strap, tiedown (Item 36, WP 0219 00)

References

TM 5-3895-379-23P, Figure 50

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)



WARNING

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL**NOTE**

Use container to catch any oil that may drain from system. Dispose oil IAW local policy and ordinances. Ensure all spills are cleaned up.

NOTE

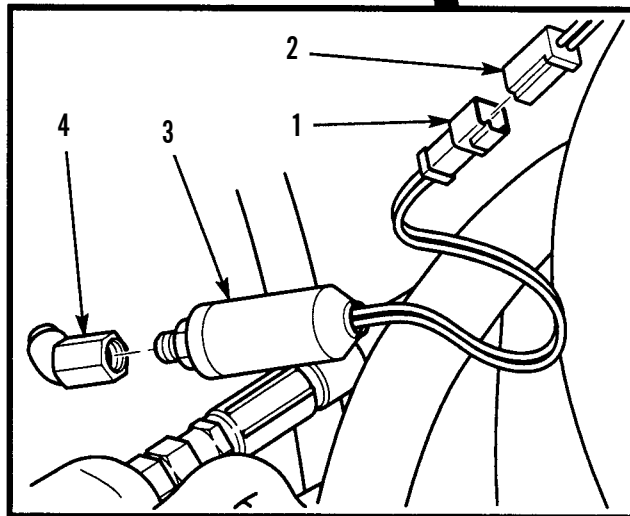
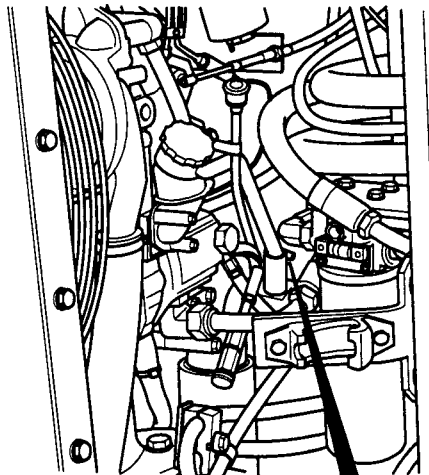
Cut cable ties as needed.

1. Disconnect oil pressure switch connector (1) from connector (2).
2. Remove oil pressure switch (3) from elbow (4). Cap elbow.

INSTALLATION**NOTE**

Install cable ties as needed.

1. Install engine oil pressure switch (3) on elbow (4) and tighten to 15-18 lb-ft (20-25 Nm).
2. Connect connector (2) to oil pressure switch connector (1).



401-509

3. Start engine and check for leaks (TM 5-3895-379-10).
4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)

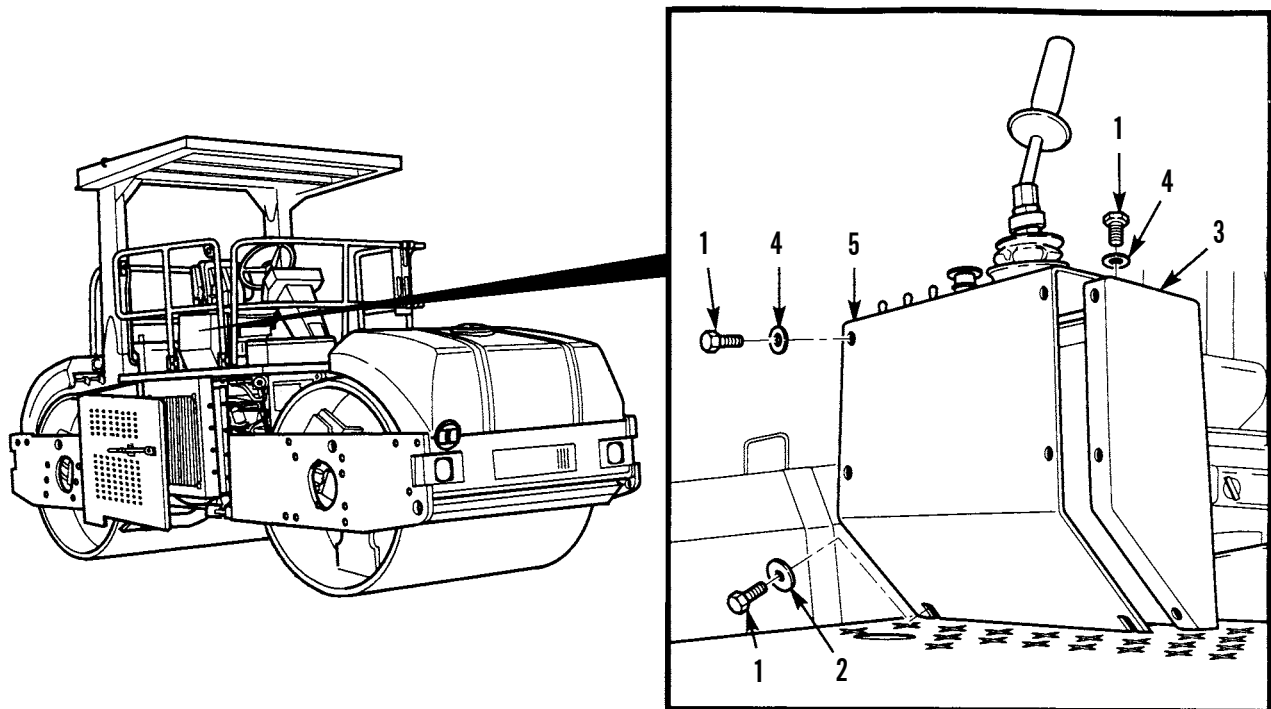
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).

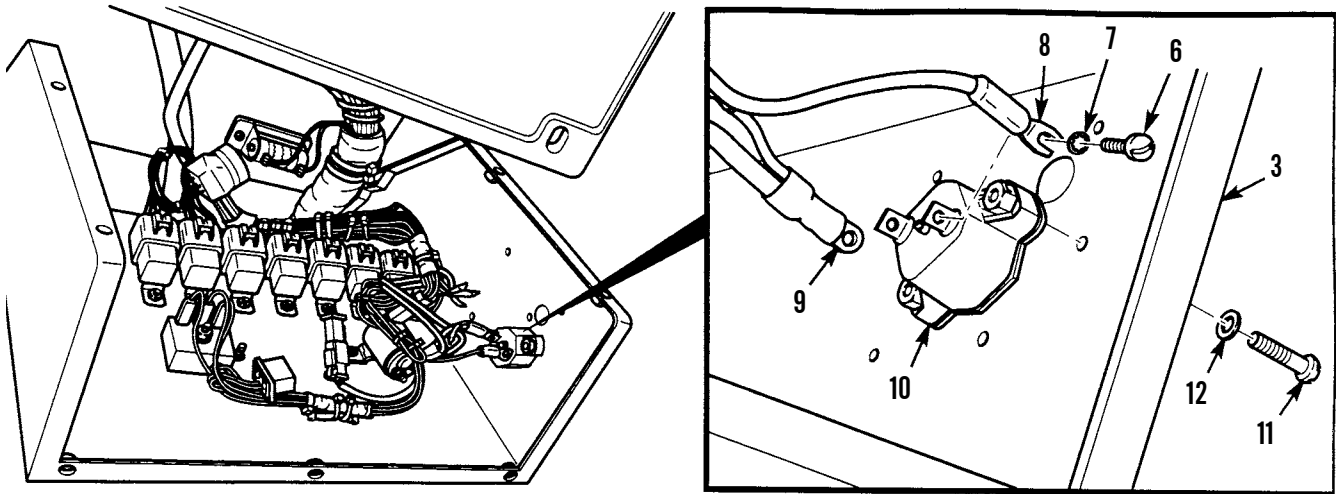


401-446

REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

4. Remove two screws (6), lockwashers (7) and wires (8) and (9) from lights circuit breaker (10). Discard lockwashers.
5. Remove two screws (11), washers (12) and lights circuit breaker (10) from operator station (3).



401-447

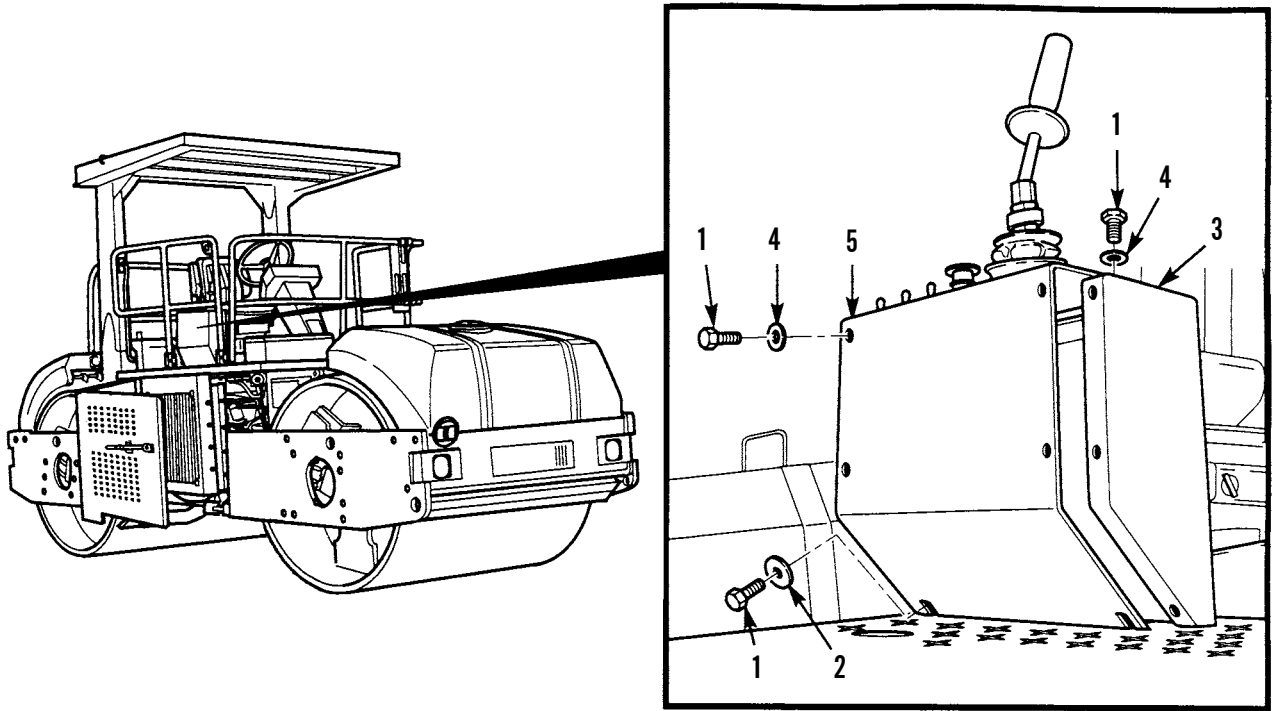
INSTALLATION**NOTE**

Before installing lights circuit breaker, ensure that lights circuit breaker is positioned so 20 is readable.

1. Install lights circuit breaker (10) in operator station (3) with two washers (12) and screws (11).
2. Install two wires (8) and (9) on lights circuit breaker (10) with two new lockwashers (7) and screws (6).

INSTALLATION - CONTINUED

3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

STARTING AID RESISTOR REPLACEMENT

0087 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut (2)

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 50

Equipment Condition

Engine off (TM 5-3895-379-10)

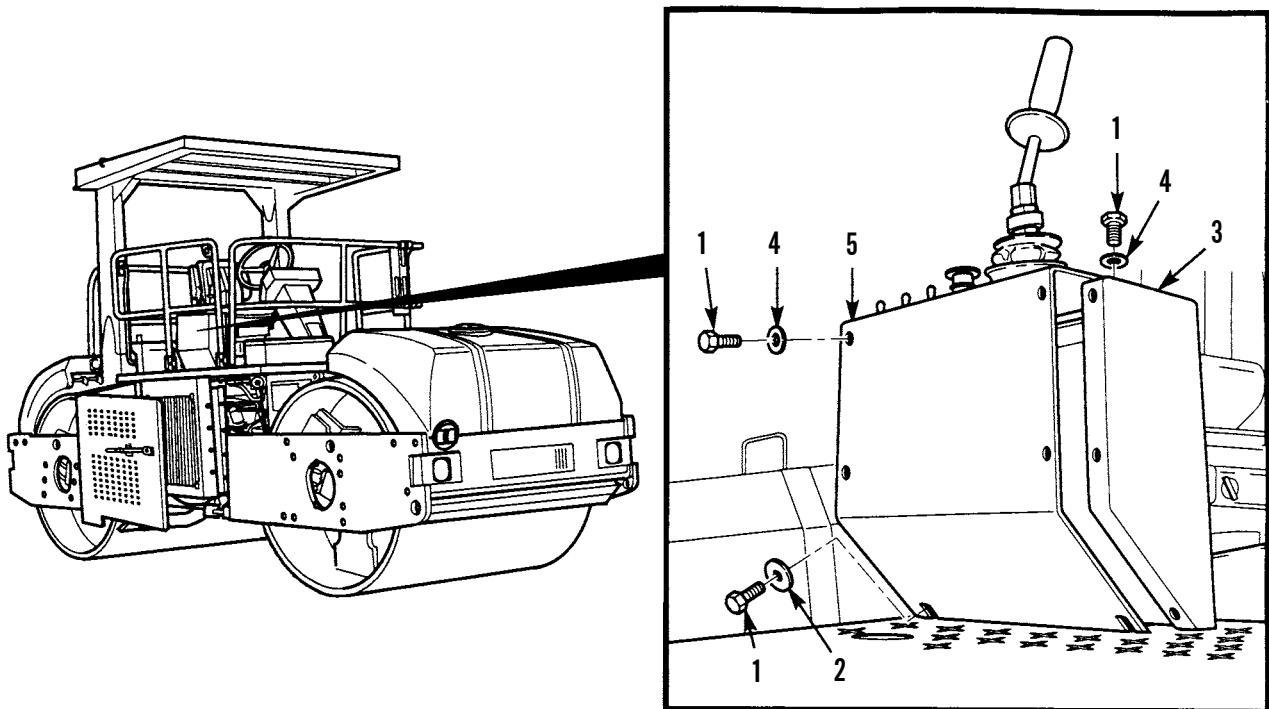
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

STARTING AID RESISTOR REPLACEMENT - CONTINUED

0087 00

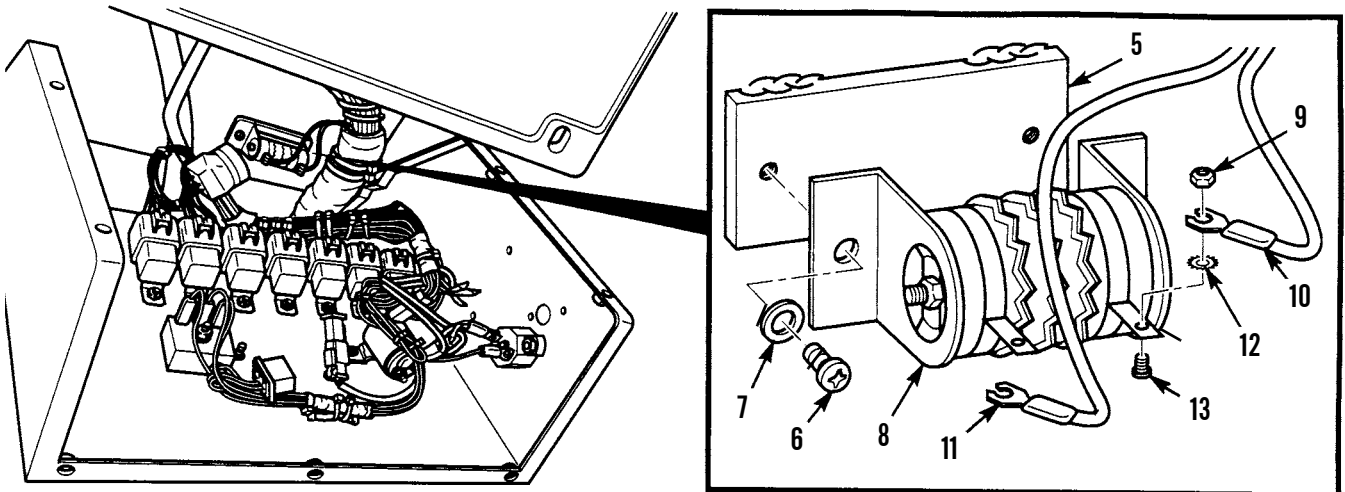
REMOVAL - CONTINUED

4. Remove two screws (6), washers (7) and starting aid resistor (8) from panel assembly (5).

NOTE

Tag and mark all wires prior to removal.

5. Remove two locknuts (9), wires (10) and (11), lockwashers (12) and screws (13) from starting aid resistor (8). Discard locknuts and lockwashers.



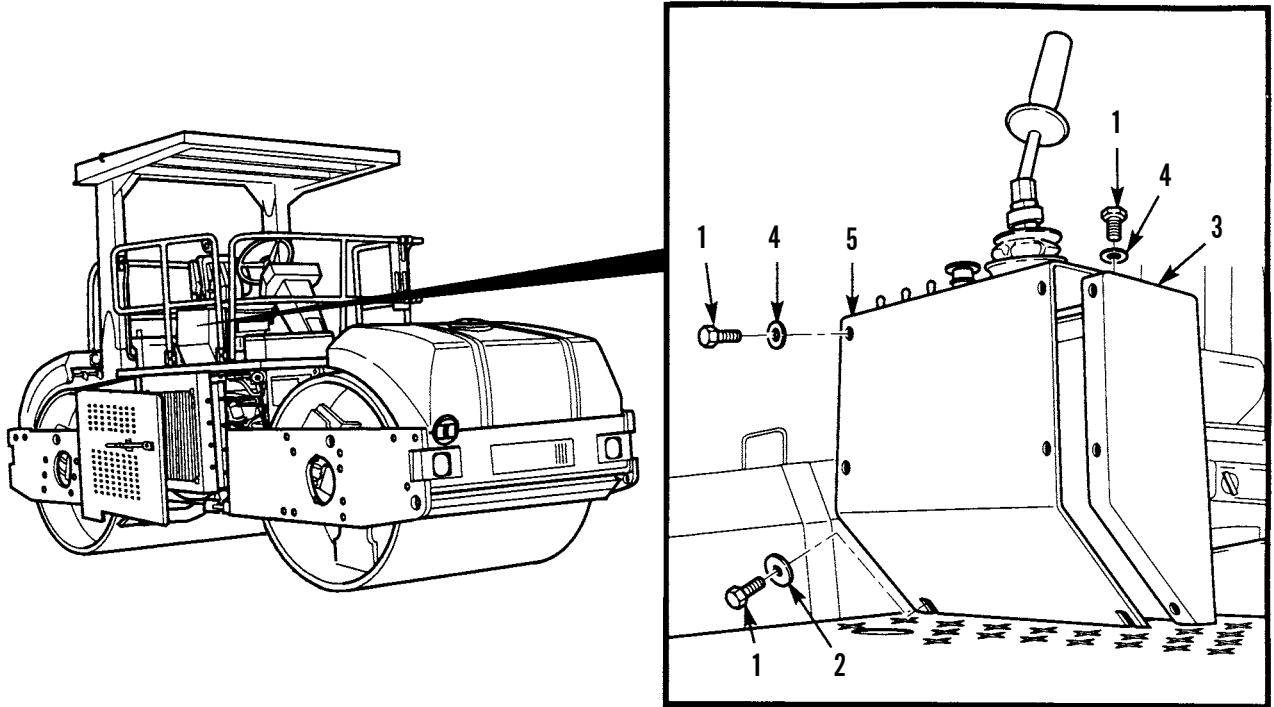
401-449

INSTALLATION

1. Install two new lockwashers (12) and wires (10) and (11) on starting aid resistor (8) with two screws (13) and new locknuts (9).
2. Install starting aid resistor (8) on panel assembly (5) with two screws (6) and washers (7).

INSTALLATION - CONTINUED

3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL SOLENOID RESISTOR REPLACEMENT

0088 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (6)

References

TM 5-3895-379-23P, Figure 50

Equipment Condition

Engine off (TM 5-3895-379-10)

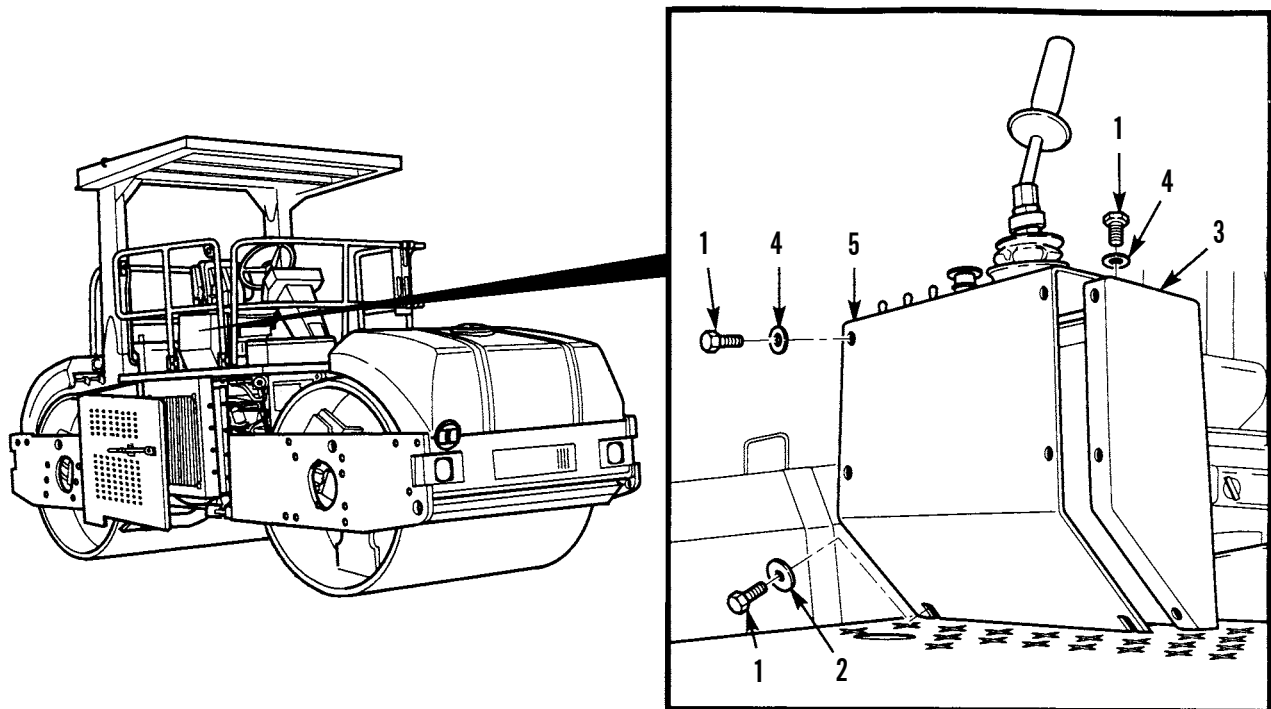
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).



401-446

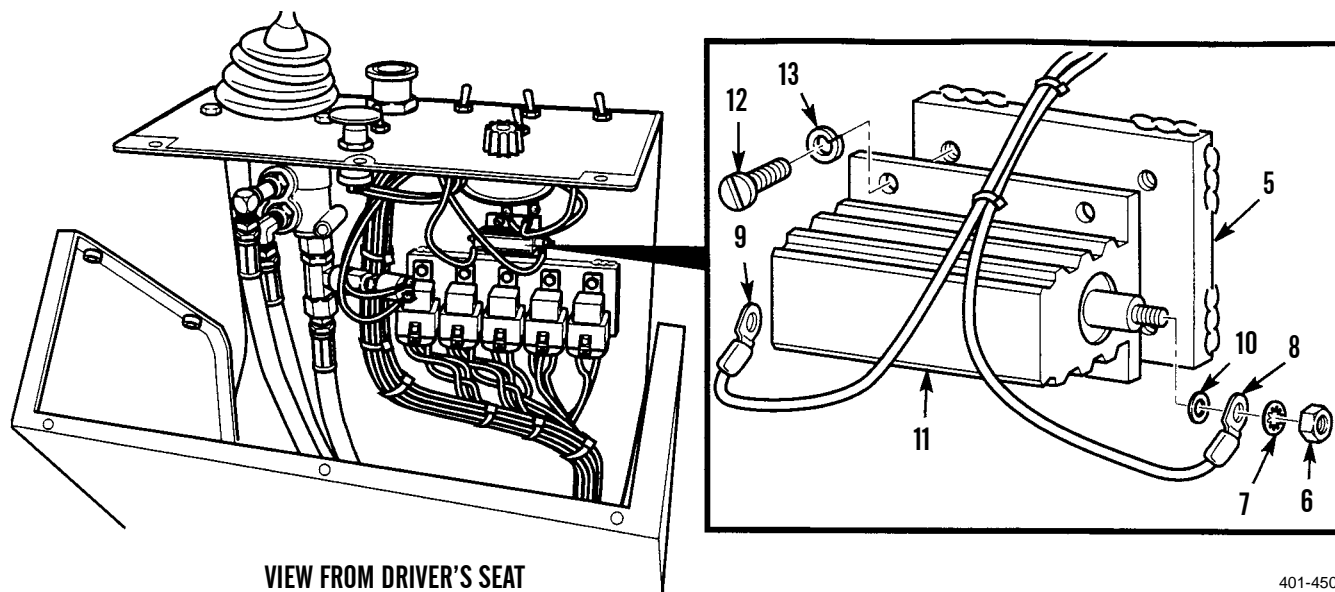
FUEL SOLENOID RESISTOR REPLACEMENT - CONTINUED

0088 00

REMOVAL**NOTE**

Tag and mark all wires prior to removal.

4. Remove two nuts (6), lockwashers (7), wires (8) and (9) and washers (10) from fuel solenoid resistor (11). Discard lockwashers.
5. Remove four screws (12), lockwashers (13) and fuel solenoid resistor (11) from panel assembly (5). Discard lockwashers.



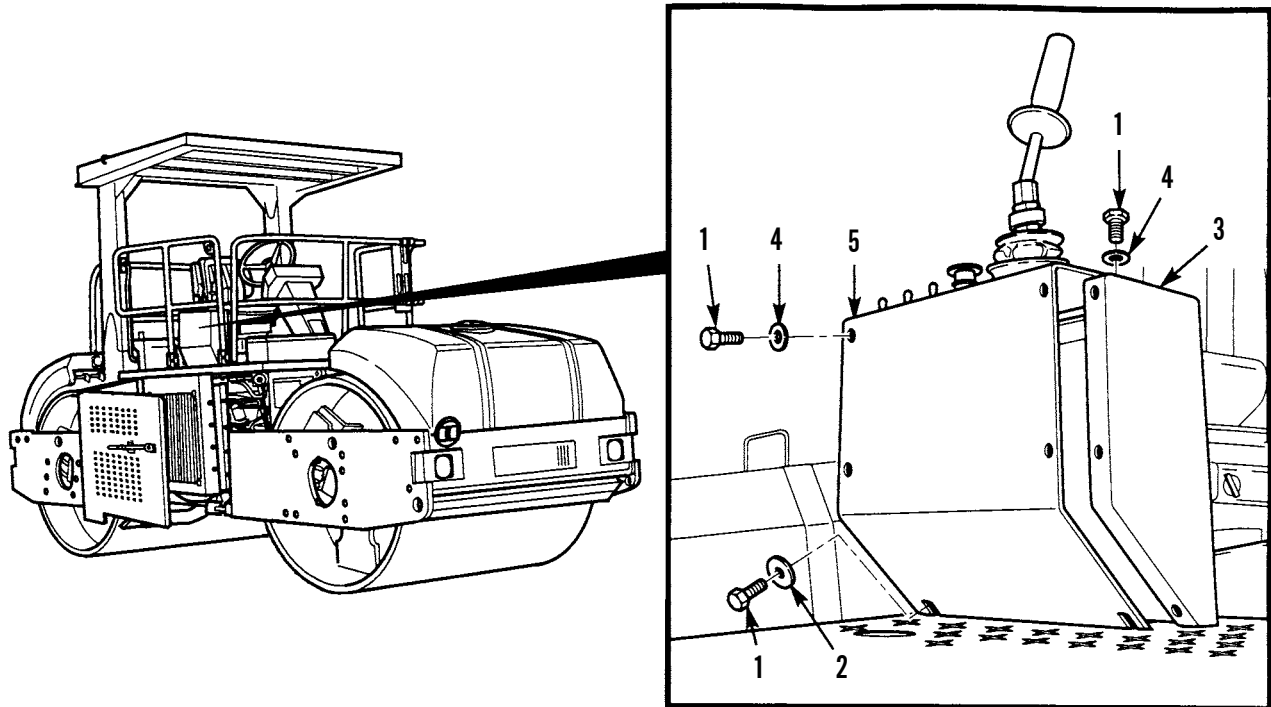
401-450

INSTALLATION

1. Install fuel solenoid resistor (11) on panel assembly (5) with four new lockwashers (13) and screws (12).
2. Install two washers (10) and wires (8) and (9) on fuel solenoid resistor (11) with two new lockwashers (7) and nuts (6).

INSTALLATION - CONTINUED

3. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ALTERNATOR LIGHT REPLACEMENT

0089 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 48

Equipment Condition

Engine off (TM 5-3895-379-10)

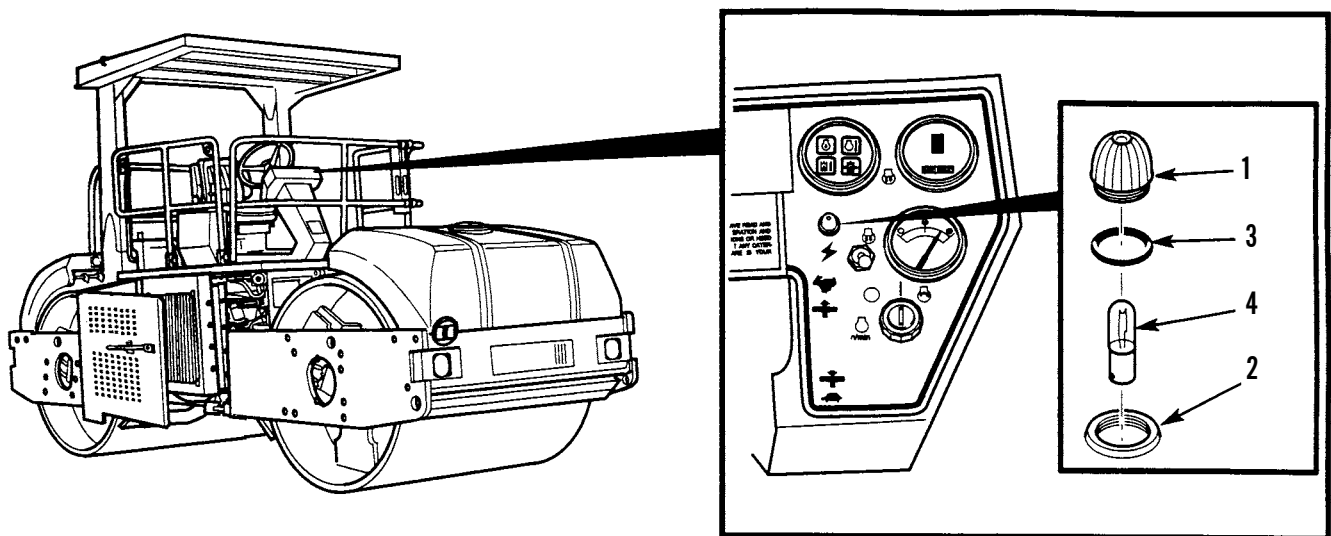
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

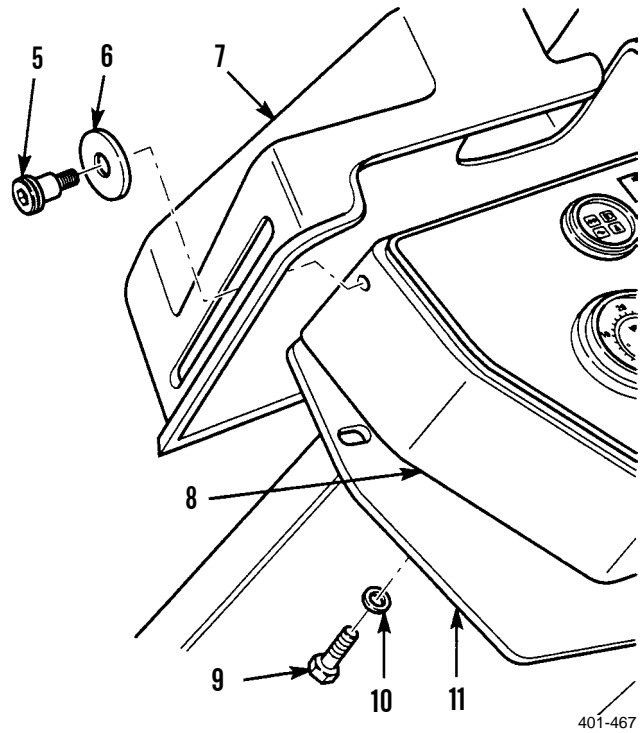
1. Turn lens (1) counterclockwise and remove lens from lamp assembly (2).
2. Remove seal (3) from lens (1).
3. Push lamp (4) in and turn counterclockwise and remove lamp from lamp assembly (2).



401-488

REMOVAL - CONTINUED

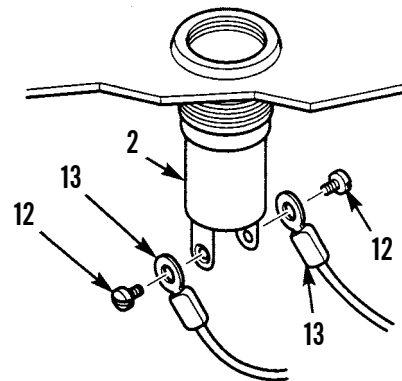
4. Remove two shoulder screws (5), washers (6) and vandal guard (7) from instrument box assembly (8).
5. Remove three screws (9) and washers (10) from operator station (11).
6. Lift and tilt back instrument box assembly (8) to gain access to back of instrument box assembly.



NOTE

Tag and mark all wires prior to removal.

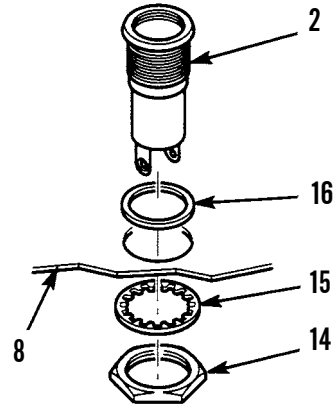
7. Remove two screws (12) and wires (13) from lamp assembly (2).



401-486

REMOVAL - CONTINUED

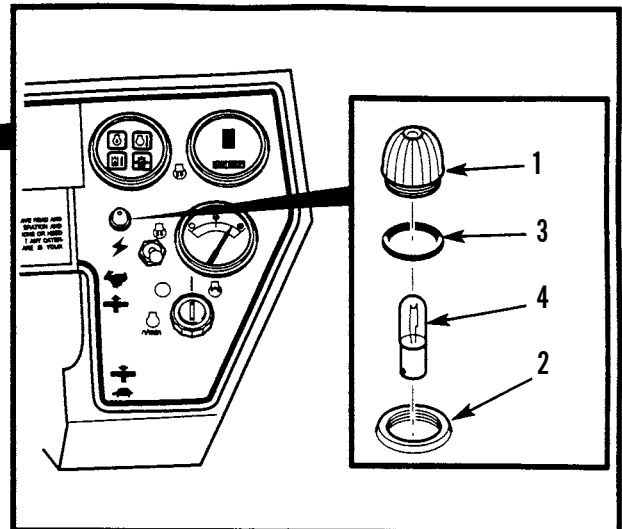
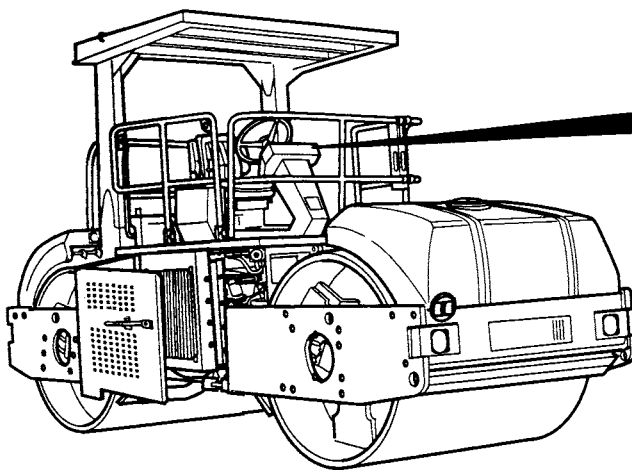
8. Remove nut (14) and lockwasher (15) from lamp assembly (2). Discard lockwasher.
9. Remove lamp assembly (2) from instrument box assembly (8).
10. Remove seal (16) from lamp assembly (2).



401-487

INSTALLATION

1. Install seal (16) on lamp assembly (2).
2. Install lamp assembly (2) in instrument box assembly (8).
3. Install new lockwasher (15) and nut (14) on lamp assembly (2).
4. Install two wires (13) on lamp assembly (2) with screws (12).
5. Install instrument box assembly (8) on operator station (11) with three washers (10) and screws (9).
6. Install vandal guard (7) on instrument box assembly (8) with two washers (6) and shoulder screws (5).
7. Push lamp (4) and turn clockwise and install lamp in lamp assembly (2).
8. Install seal (3) on lens (1).
9. Turn lens (1) clockwise and install lens on lamp assembly (2).



401-488

10. Close right-side door assembly (TM 5-3895-379-10).
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

Equipment Condition

Engine off (TM 5-3895-379-10)

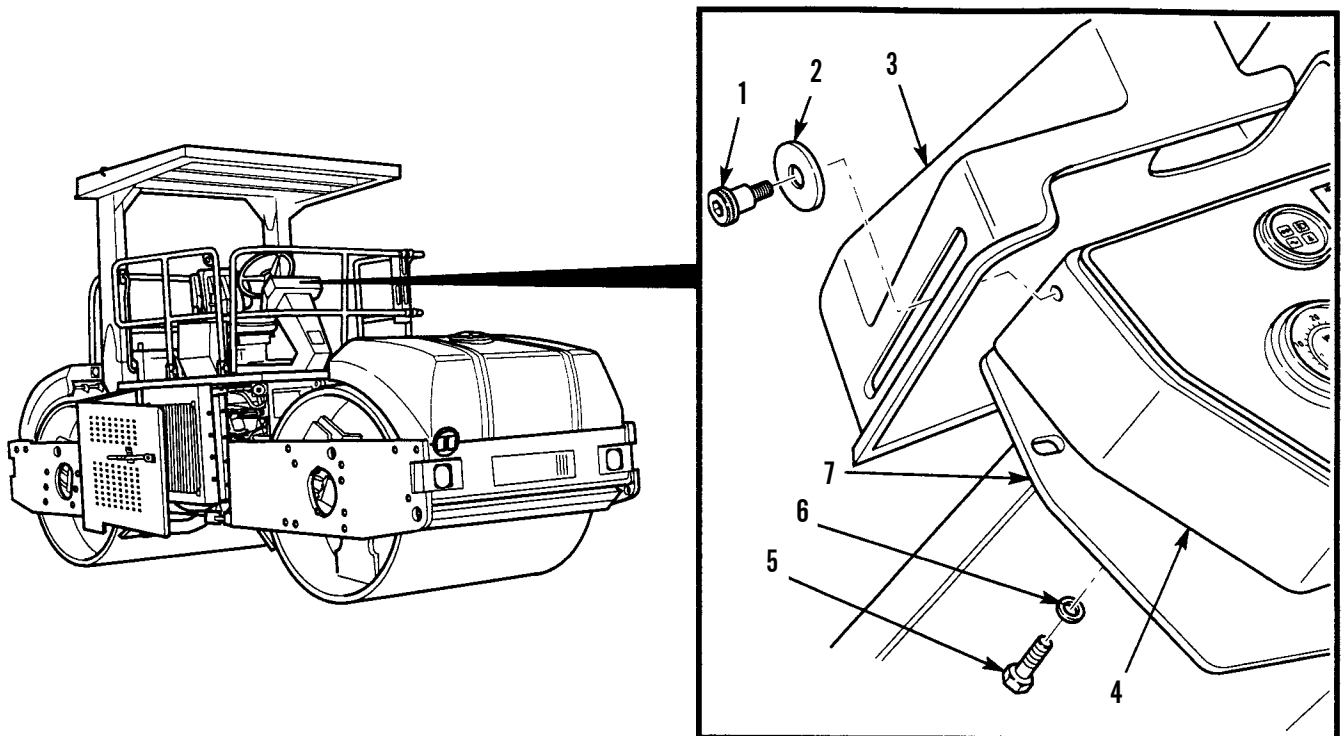
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



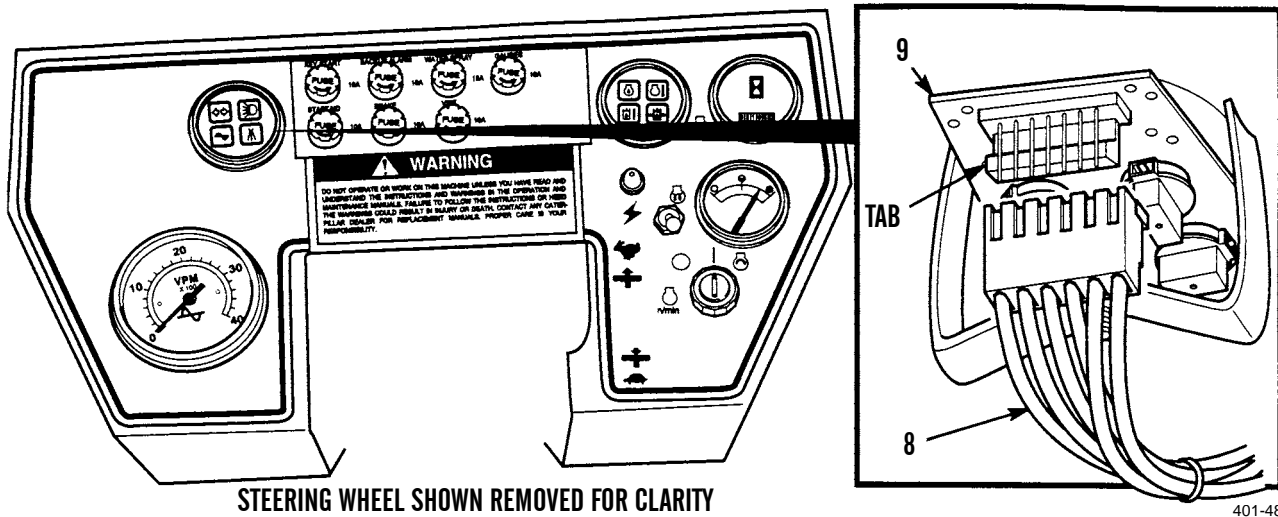
401-601

REMOVAL - CONTINUED

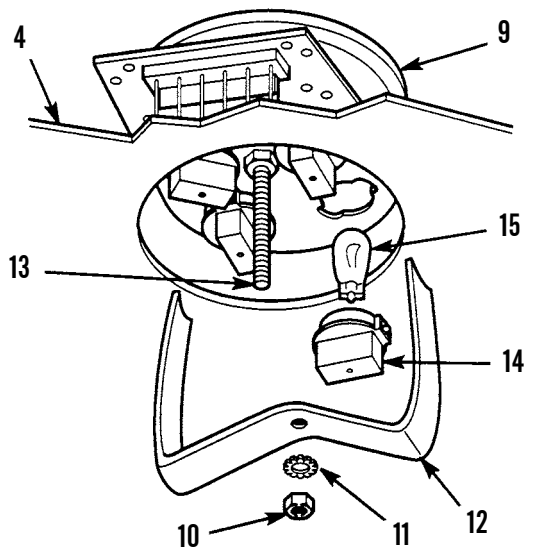
NOTE

Tag and mark all wires prior to removal.

4. Lift tab and disconnect connector (8) from functional indicator light assembly (9).



5. Remove nut (10), lockwasher (11) and bracket (12) from stud (13). Discard lockwasher.
6. Remove functional indicator light assembly (9) from instrument box assembly (4).
7. Turn four lamp assemblies (14) counterclockwise and remove from functional indicator light assembly (9).
8. Remove four lamps (15) from lamp assemblies (14).



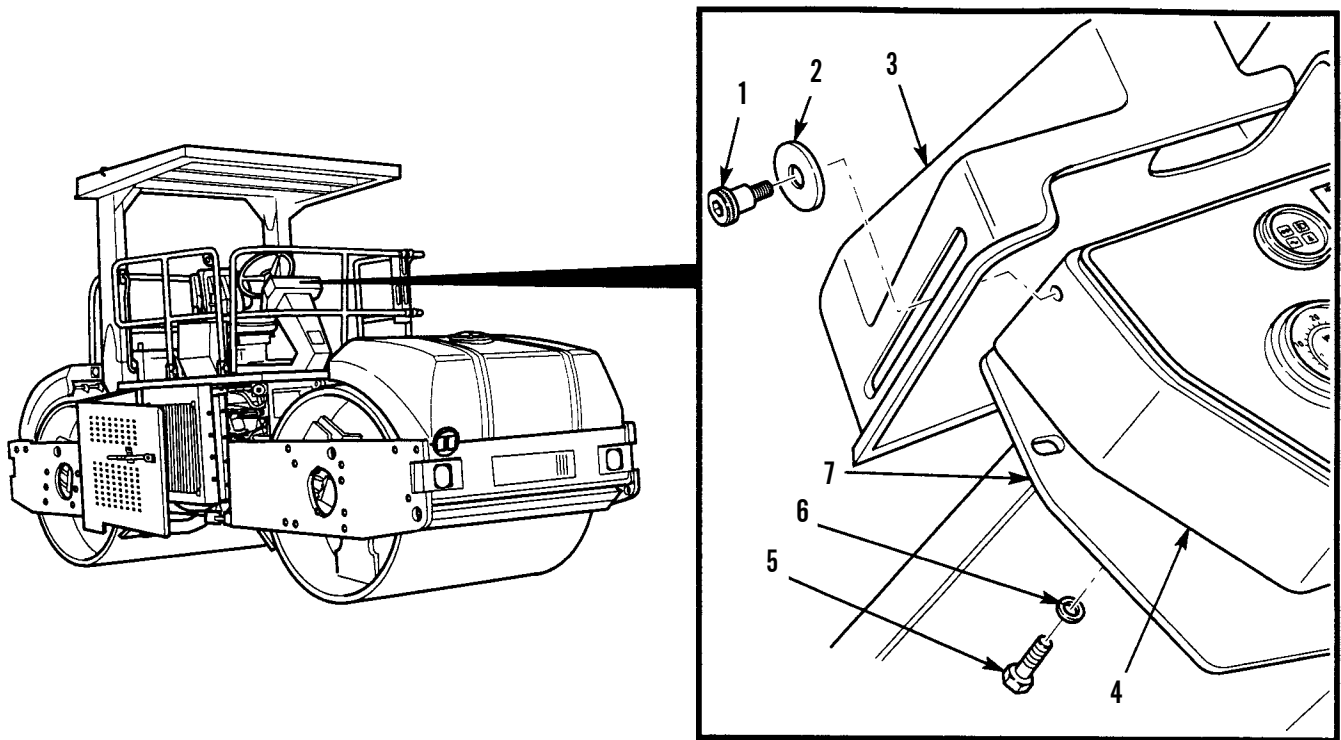
INSTALLATION

1. Install four lamps (15) in lamp assemblies (14).
2. Install four lamp assemblies (14) in functional indicator light assembly (9).
3. Position functional indicator light assembly (9) on instrument box assembly (4).

INSTALLATION - CONTINUED**NOTE**

Before installing functional indicator light assembly bracket on functional indicator light assembly, ensure functional indicator light assembly is positioned so icons are right-side up when instrument box assembly is installed.

4. Install functional indicator light assembly bracket (12) on stud (13) with new lockwasher (11) and nut (10).
5. Connect connector (8) to functional indicator light assembly (9).
6. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
7. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

8. Close right-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation, Adjustment

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 5-3895-379-23P, Figure 51

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-389-379-10)

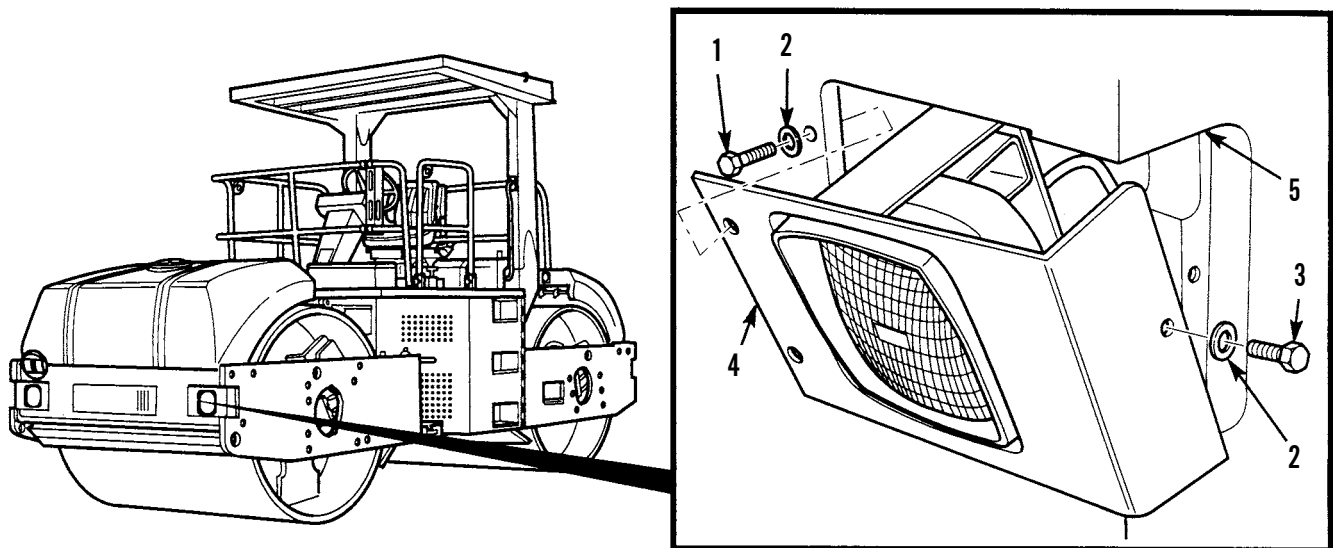
Battery disconnect switch in OFF position (TM 5-3895-379-10)

REMOVAL

NOTE

Cut cable ties as necessary to allow movement of cables.

1. Remove two screws (1), washers (2), screw (3), washer (2) and support (4) from support (5).



401-495

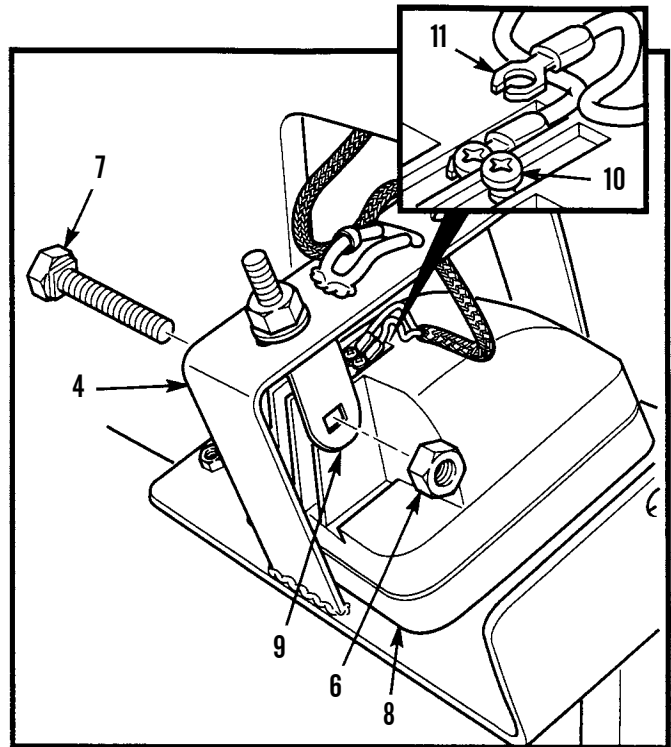
REMOVAL - CONTINUED

2. Remove nut (6), screw (7) and work light assembly (8) from bracket (9).

NOTE

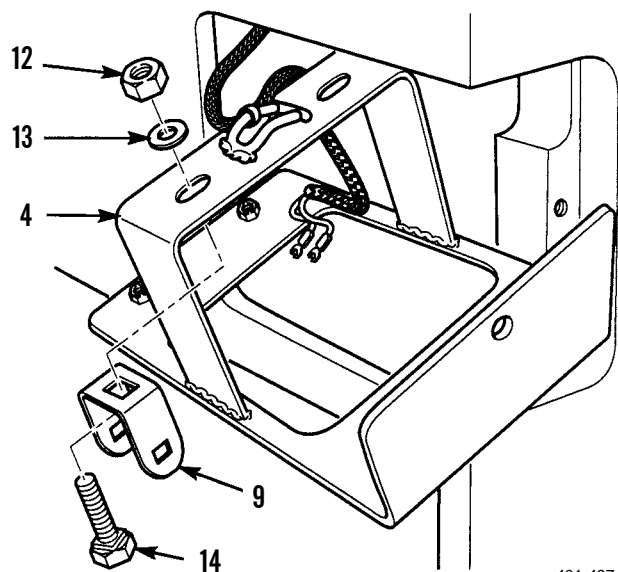
Tag and mark all wires prior to removal.

3. Loosen two screws (10) and remove wires (11) from work light assembly (8).
4. Remove work light assembly (8) from support (4).



401-496

5. Remove nut (12), washer (13), screw (14) and bracket (9) from support (4).



401-497

INSTALLATION

1. Install bracket (9) on support (4) with screw (14), washer (13) and nut (12).
2. Position work light assembly (8) in support (4).
3. Position two wires (11) on work light assembly (8) and tighten screws (10).
4. Install work light assembly (8) in bracket (9) with screw (7) and nut (6).

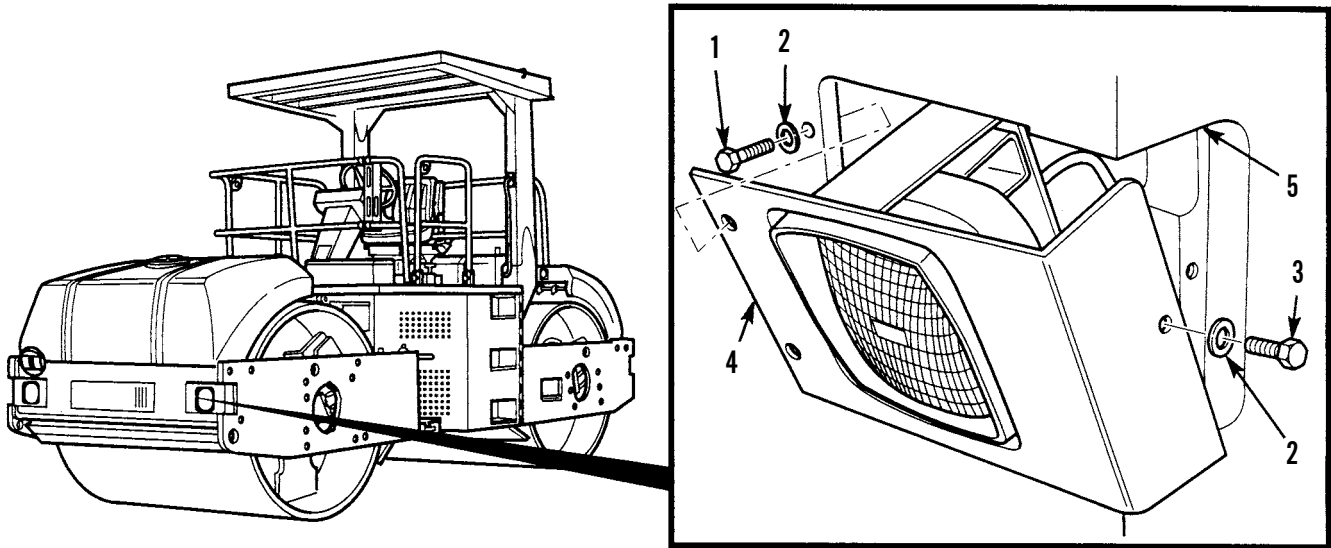
NOTE

Use cable ties as necessary to attach cables to vehicle.

5. Install support (4) in support (5) with two washers (2), screws (1), washer (2) and screw (3). Tighten screws.

ADJUSTMENT

1. Remove two screws (1), washers (2), screws (3), washer (2) and support (4) from support (5).
2. To raise or lower beam, loosen nut (6) and reposition work light assembly (8) in bracket (9). Tighten nut.
3. Install support (4) in support (5) with two washers (2), screws (1), washer (2) and screws (3). Tighten screws.



401-495

4. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WORK LIGHT BULB REPLACEMENT

0092 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

References

TM 3895-379-23P, Figure 51

Equipment Condition

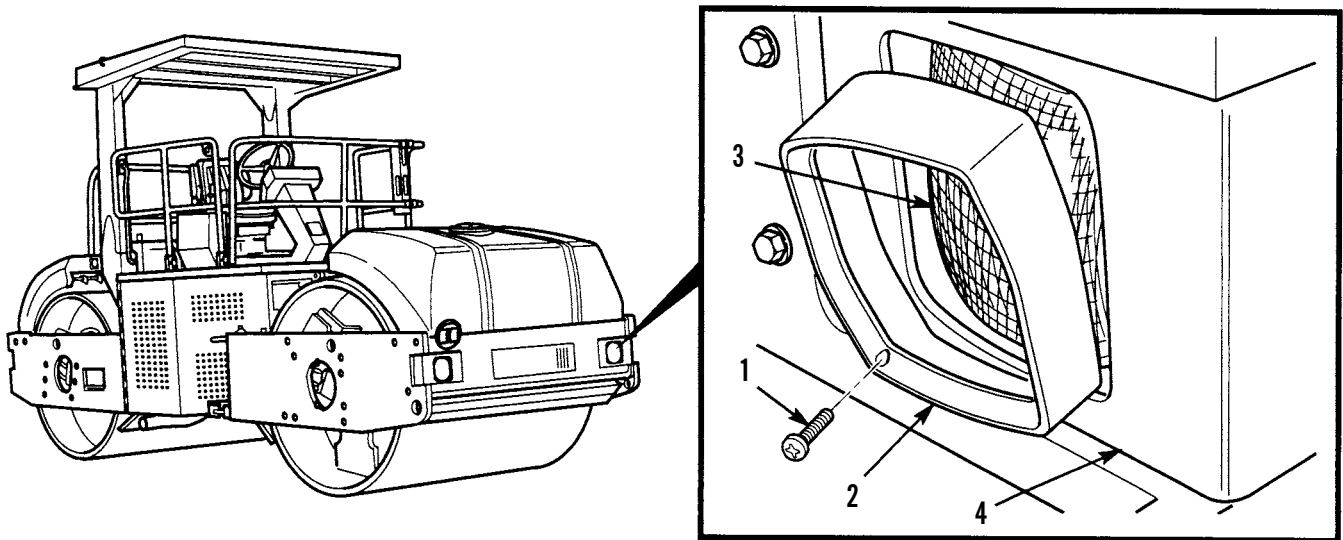
Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

REMOVAL

1. Remove four screws (1), bezel (2) and lens assembly (3) from work light body assembly (4).



401-500

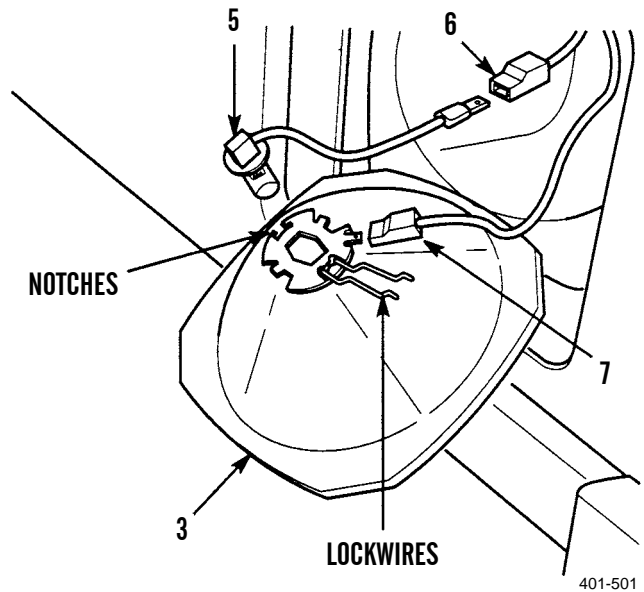
REMOVAL - CONTINUED

2. Pinch lockwires together and remove from notches in lens assembly (3).
3. Remove bulb (5) from lens assembly (3).

NOTE

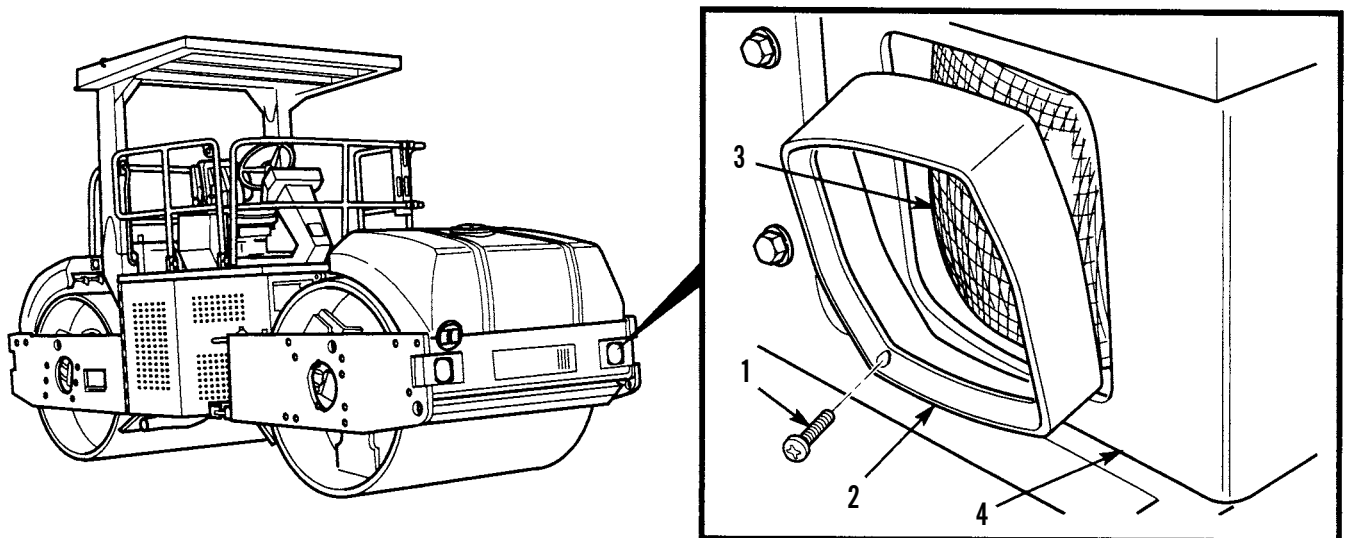
Tag and mark all wires prior to removal.

4. Disconnect bulb (5) from connector (6).
5. If damaged, disconnect lens assembly (3) from connector (7).



INSTALLATION

1. If removed, connect lens assembly (3) to connector (7).
2. Connect bulb (5) to connector (6).
3. Install bulb (5) in lens assembly (3).
4. Position lockwires over bulb (5), pinch together and position in notches in lens assembly.
5. Install lens assembly (3) and bezel (2) in work light body assembly (4) with four screws (1). Tighten screws.



6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WARNING LIGHTS ASSEMBLY REPLACEMENT

0093 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher

References

TM 3895-379-23P, Figure 53

Equipment Condition

Engine off (TM 5-3895-379-10)

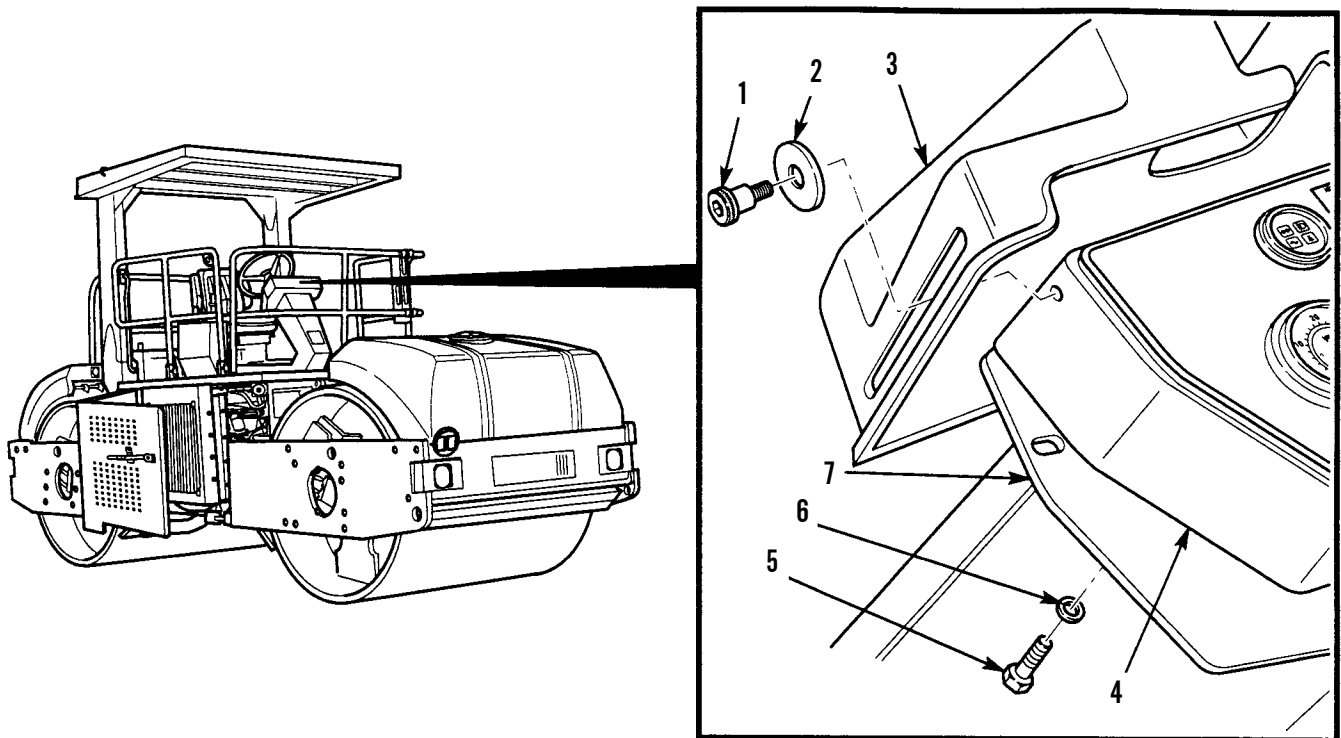
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



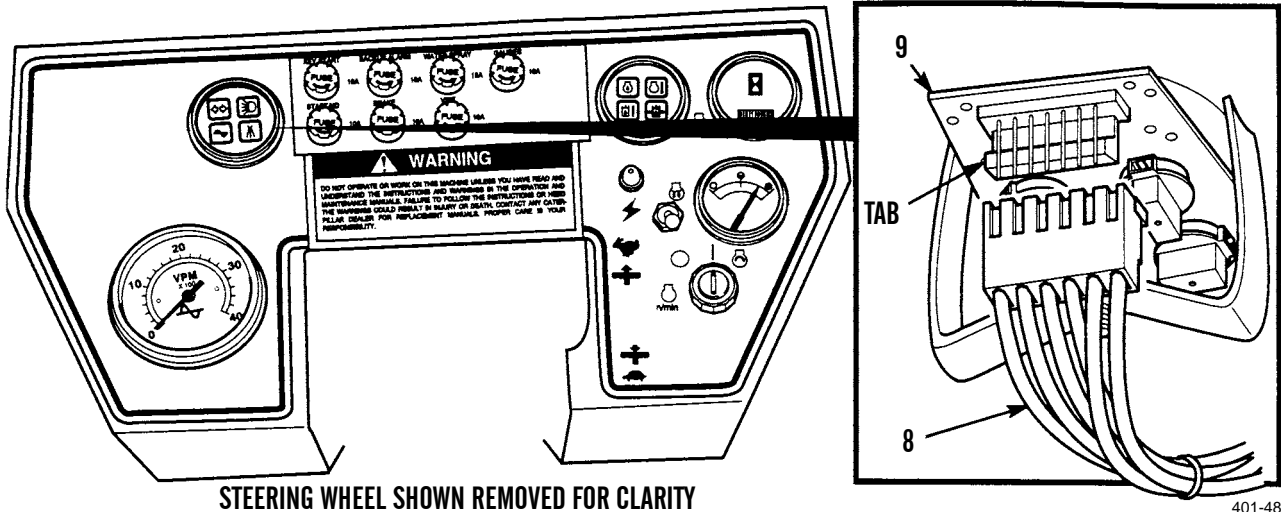
401-601

REMOVAL - CONTINUED

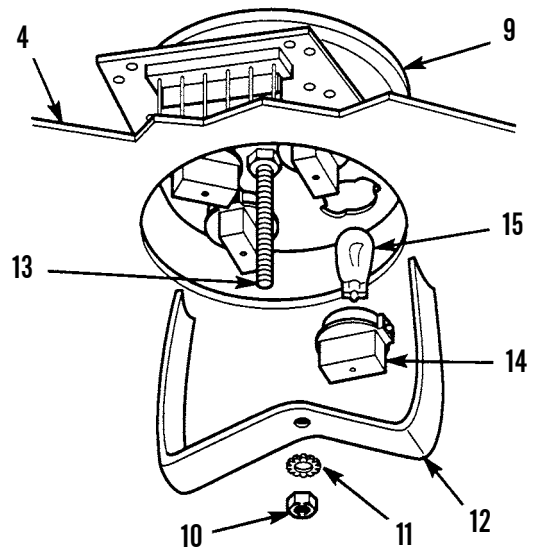
NOTE

Tag and mark all wires prior to removal.

- Lift tab and disconnect connector (8) from warning lights assembly (9).



- Remove nut (10), lockwasher (11) and warning lights assembly bracket (12) from stud (13). Discard lockwasher.
- Remove warning lights assembly (9) from instrument box assembly (4).
- Turn four lamp assemblies (14) counterclockwise and remove from warning lights assembly (9).
- Remove four lamps (15) from lamp assemblies (14).



INSTALLATION

- Install four lamps (15) lamp assemblies (14).
- Install four lamp assemblies (14) in warning lights assembly (9).
- Position warning lights assemblies (9) on instrument box assembly (4).

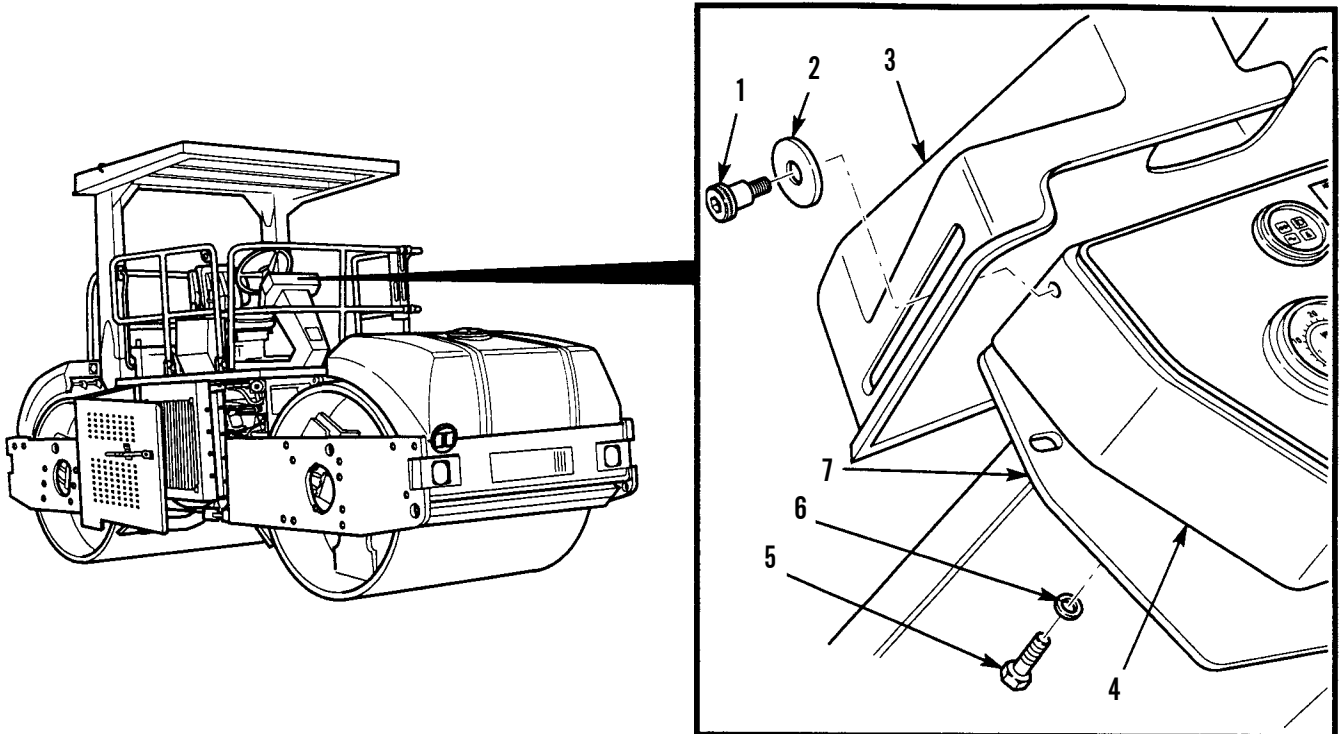
NOTE

Before installing warning lights assembly bracket on warning lights assembly, ensure warning lights assembly is positioned so icons are right-side up when instrument box assembly is installed.

- Install warning lights assembly bracket (12) on stud (13) with new lockwasher (11) and nut (10).
- Connect connector (8) to warning lights assembly (9).

INSTALLATION - CONTINUED

6. Install instrument box assembly (4) on operator station (7) with three washers (6) and screws (5).
7. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

8. Close right-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

BACKUP ALARM SENDING UNIT REPLACEMENT

0094 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

References

TM 3895-379-23P, Figures 52 and 53

Equipment Condition

Engine off (TM 5-3895-379-10)

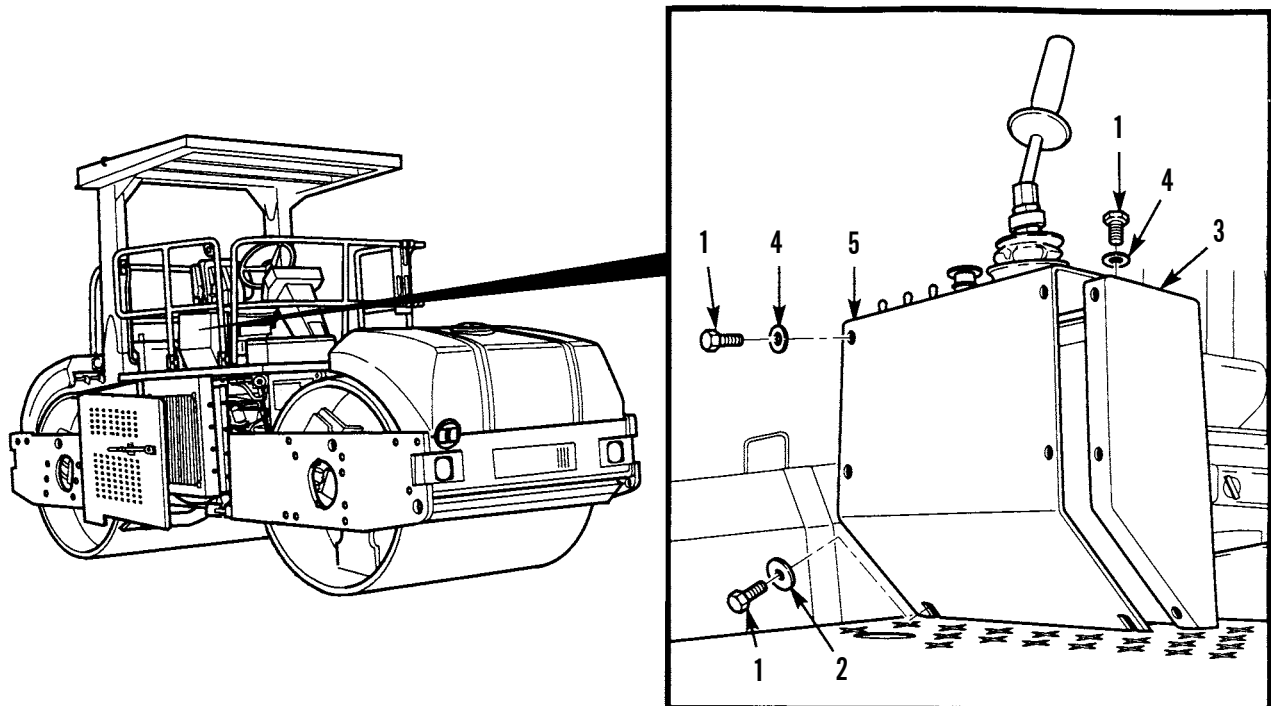
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).

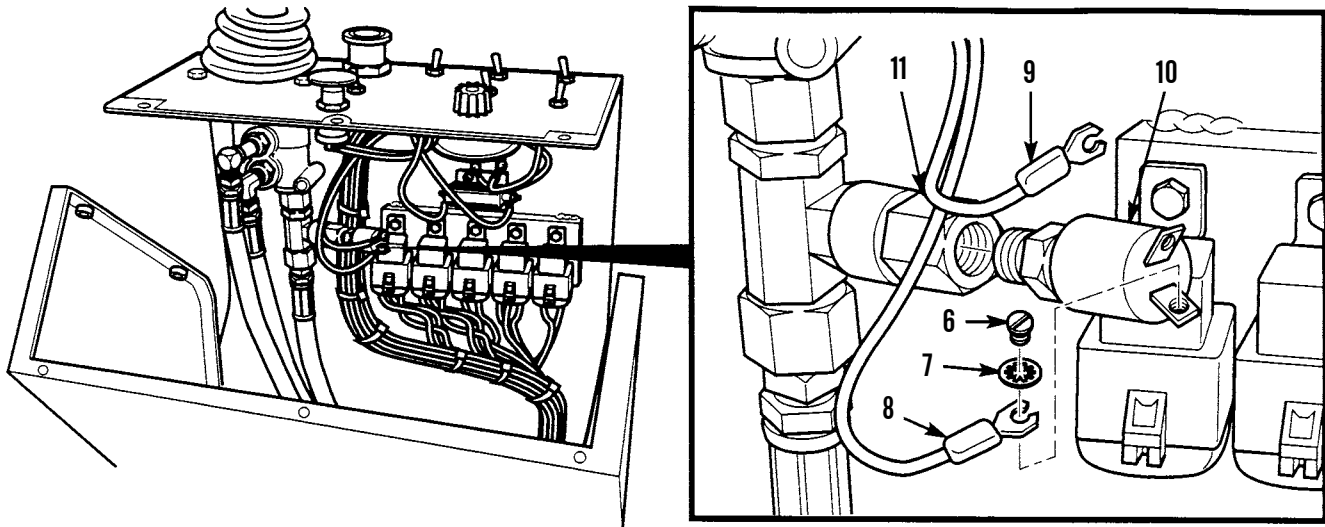


401-446

REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

4. Remove two screws (6), lockwashers (7) and wires (8) and (9) from backup alarm sending unit (10). Discard lockwashers.
5. Remove backup alarm sending unit (10) from adapter (11).



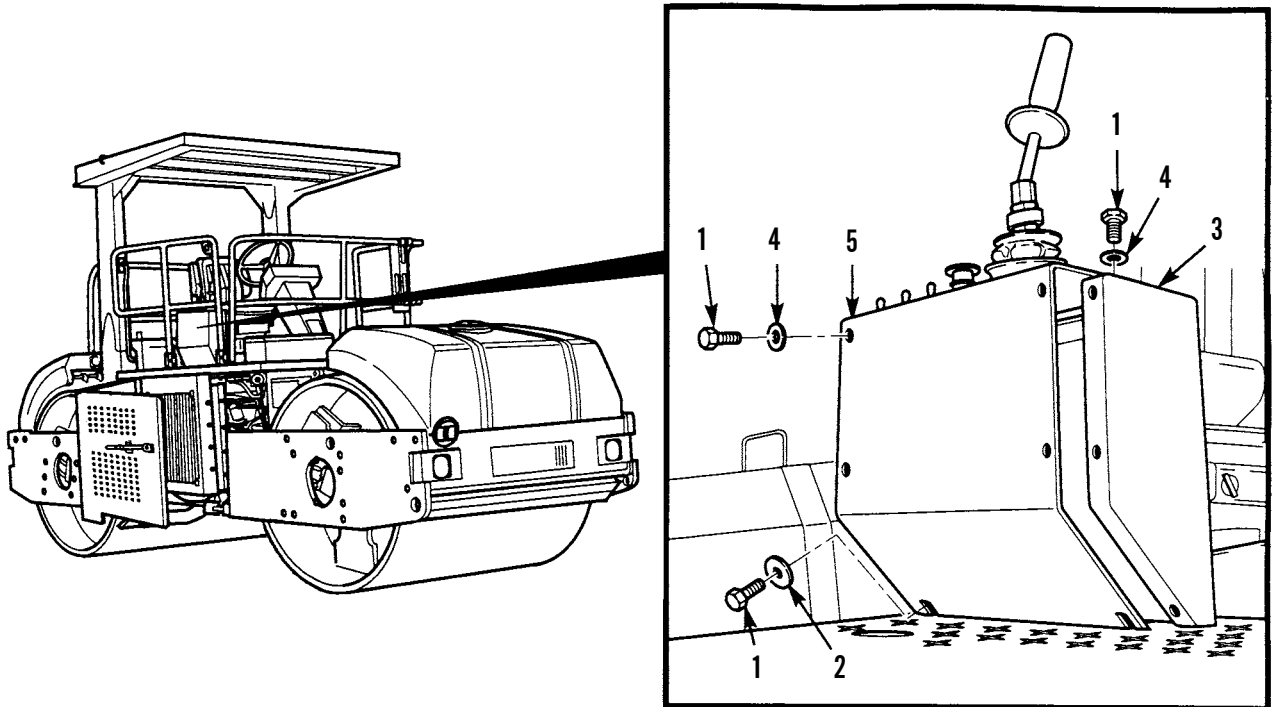
401-504

INSTALLATION

1. Apply sealing compound to threads of backup alarm sending unit (10).
2. Install backup alarm sending unit (10) in adapter (11).
3. Install two wires (8) and (9) on backup alarm sending unit (10) with two screws (6) and new lockwashers (7).

INSTALLATION - CONTINUED

4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



401-446

5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER TEMPERATURE SENDING UNIT REPLACEMENT

0095 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)
Rag, wiping (Item 31, WP 0219 00)
Tag, marker (Item 37, WP 0219 00)

References

WP 0052 00, Coolant System Service
TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)
Drums chocked (TM 5-3895-379-10)
Battery disconnect switch in OFF position (TM 5-3895-379-10)

**WARNING**

- DO NOT service cooling system unless engine has been allowed to cool down. This is a pressurized cooling system and escaping steam or hot coolant will cause burns.
- Wear effective eye, glove and skin protection when handling coolants. Failure to do so may cause injury.

REMOVAL

1. Disconnect connector (1) from water temperature sending unit connector (2).

NOTE

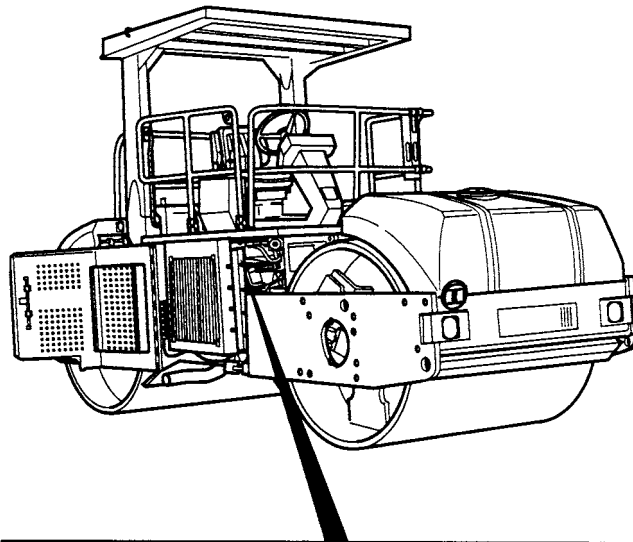
Use container to catch any coolant that may drain from water temperature sending unit. Dispose of coolant IAW local policy and ordinances. Ensure all spills are cleaned up.

2. Place container with 1 gal. (3.8 l) minimum capacity under water temperature sending unit (3) to catch draining coolant.

NOTE

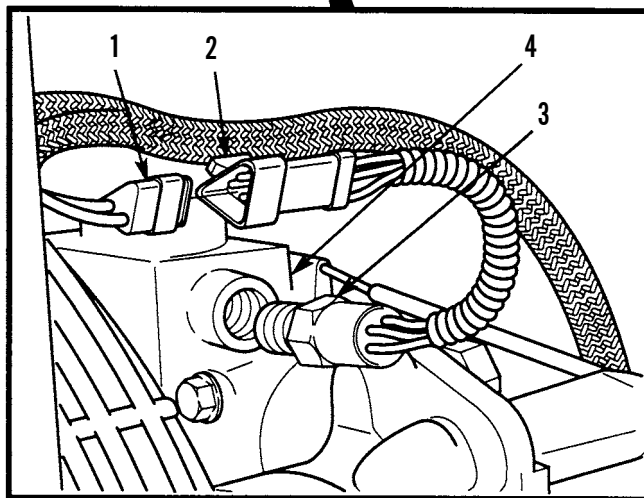
Remove cable ties as required.

3. Remove water temperature sending unit (3) from water intake manifold (4).



INSTALLATION

1. Coat threads of water temperature sending unit (3) with sealing compound.
2. Install water temperature sending unit (3) in water intake manifold (4). Tighten water temperature sending unit 32-44 lb-ft (44-60 Nm).
3. Connect connector (1) to water temperature sending unit connector (2).



401-505

4. Fill cooling system to proper level (WP 0052 00).
5. Close right-side door assembly (TM 5-3895-379-10).
6. Start engine and check for coolant leaks (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL LEVEL SENDING UNIT REPLACEMENT

0096 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

Gasket

Lockwasher (7)

References

TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

**WARNING**

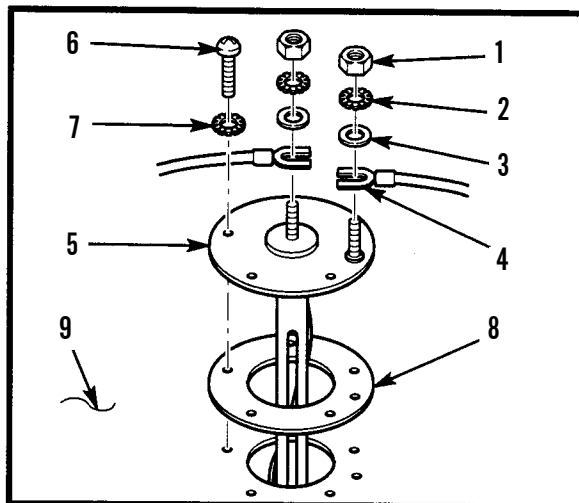
DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury or death or equipment damage.

REMOVAL

NOTE

- Use a container to catch any fuel that may drain from system. Dispose of fuel IAW local policy and ordinances. Ensure all spills are cleaned up.
- Tag and mark all wires prior to removal.

1. Remove two nuts (1), lockwashers (2), washers (3) and wires (4) from fuel level sending unit (5). Discard lockwashers.
2. Remove five screws (6), lockwashers (7), fuel level sending unit (5) and gasket (8) from fuel tank (9). Discard gasket and lockwashers.

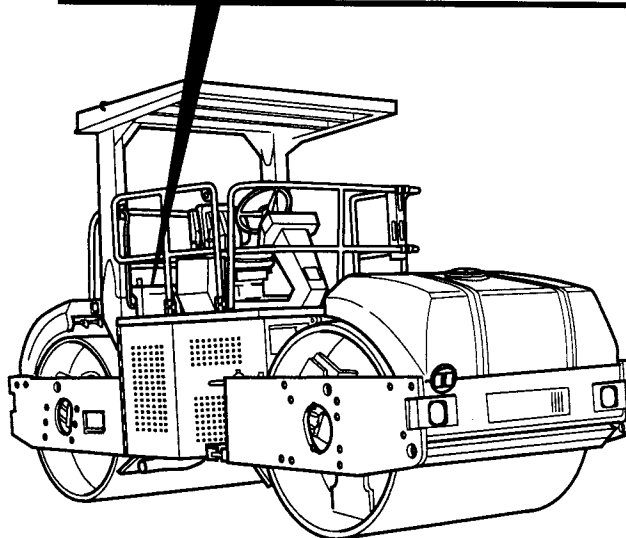


INSTALLATION

NOTE

Fuel level sending unit must be installed so that outside electrical stud is on left-side of roller.

1. Install new gasket (8) and fuel level sending unit (5) on fuel tank (9) with five new lockwashers (7) and screws (6).
2. Install two wires (4) on fuel level sending unit (5) with two washers (3), new lockwashers (2) and nuts (1).



401-507

3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATION SENSOR MAINTENANCE

0097 00

THIS WORK PACKAGE COVERS

Removal, Installation, Adjustment

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Hydraulic tank drained (WP 0037 00)

REMOVAL

NOTE

- Right- and left-front vibration sensors are maintained the same way. Right-front sensor is shown.
- Vibration sensors are located on left-side of rear drum and right-side of front drum.

1. Disconnect connector (1) from vibratory sensor connector (2).



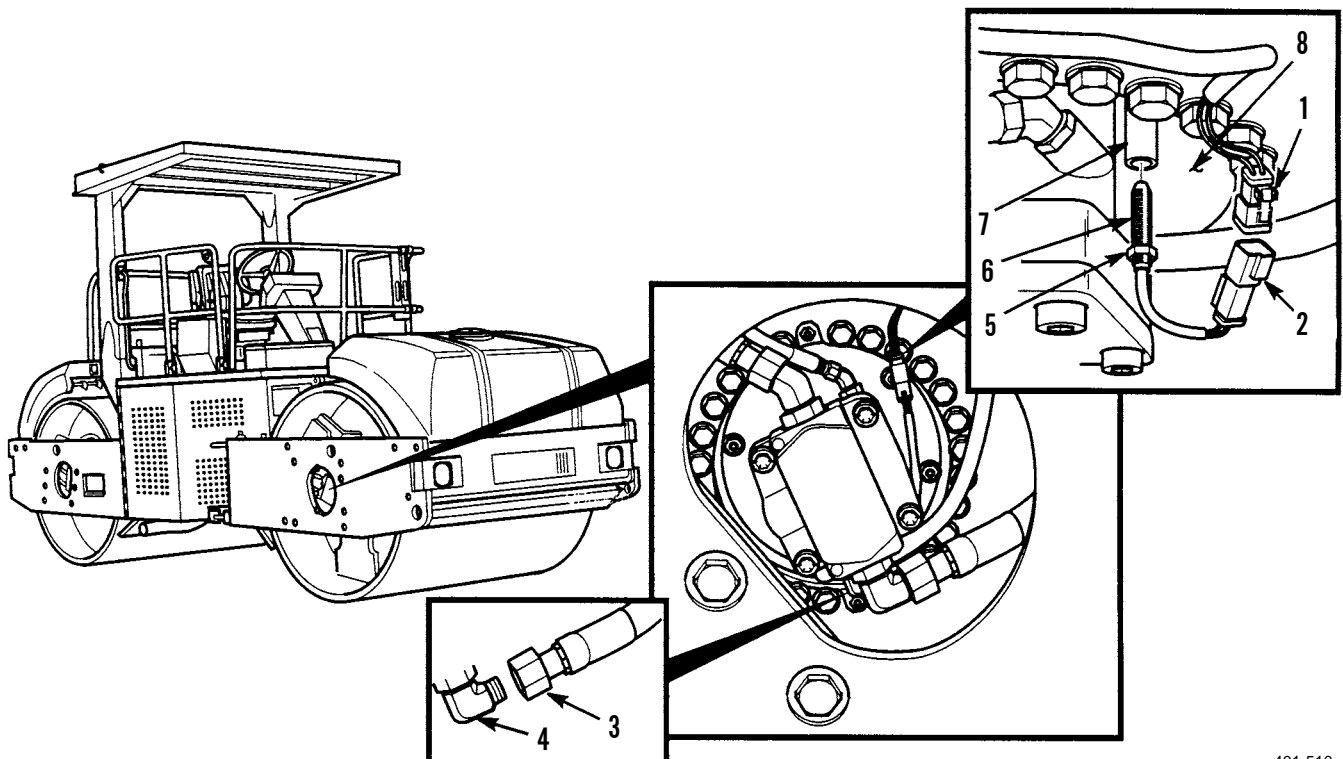
WARNING

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use container to catch any hydraulic oil that may drain from hose assembly. Dispose of oil IAW local policy and ordinances.

2. Place container with 2 qt (1.9 l) minimum capacity under hose assembly (3).
3. Disconnect hose assembly (3) from elbow (4) and allow hydraulic fluid to drain into container.
4. Loosen nut (5) and remove vibration sensor (6) and spacer (7) from plate (8).

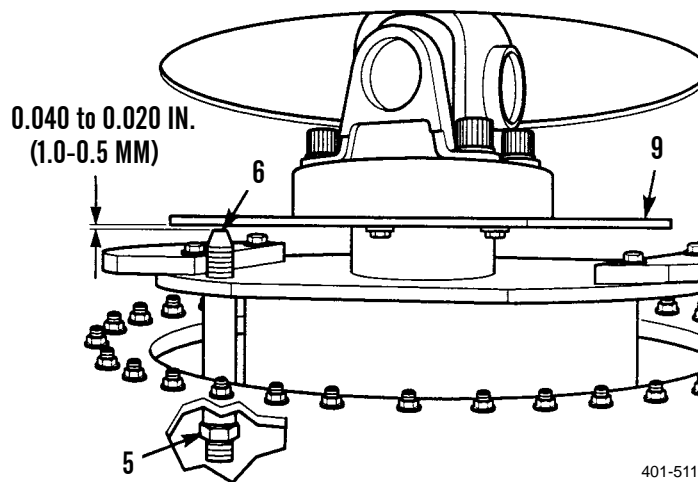


INSTALLATION

1. Install spacer (7) and vibration sensor (6) in plate (8). Do not tighten nut (5).
2. Install vibration motor hydraulic line (3) on elbow (4).
3. Connect connector (1) to vibratory sensor connector (2).
4. Adjust sensor. Refer to *Adjustment* in this work package.

ADJUSTMENT

1. Adjust gap between vibration sensor (6) and disc (9) to 0.040-0.020 in. (1.0-0.5 mm).
2. Tighten nut (5) to 32-42 lb-ft (43-57 Nm).



3. Start engine and check for leaks (TM 5-3895-379-10).
4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC OIL TEMPERATURE SENSOR REPLACEMENT

0098 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 52

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Hydraulic tank drained (WP 0037 00)

Left-side door assembly opened (TM 5-3895-379-10)

REMOVAL

NOTE

Tag and mark all wires prior to removal.

1. Loosen two screws (1) on hydraulic oil temperature sensor (2) and remove two wires (3).

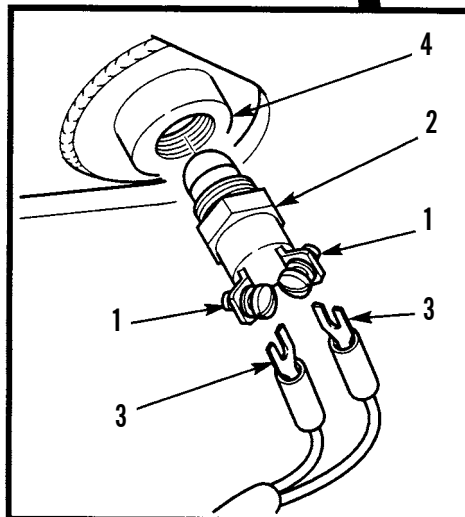
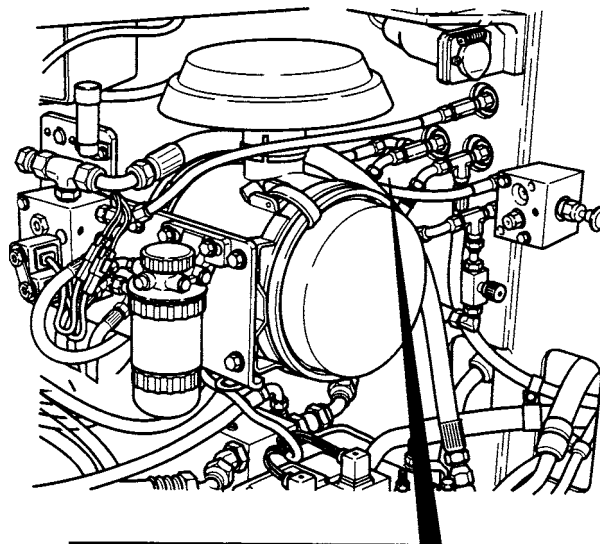
NOTE

Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

2. Remove hydraulic oil temperature sensor (2) from hydraulic oil tank fitting (4).

INSTALLATION

1. Apply sealing compound to threads of hydraulic oil temperature sensor (2) and install in hydraulic oil tank fitting (4). Tighten sensor to 26-33 lb-ft (35-45 Nm).
2. Position two wires (3) on hydraulic oil temperature sensor (2) and tighten two screws (1).



401-512

3. Fill hydraulic tank (WP 0037 00).
4. Close right-side door assembly (TM 5-3895-379-10).
5. Start engine and check for leaks (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WARNING HORN ASSEMBLY REPLACEMENT

0099 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 53

Equipment Condition

Engine off (TM 5-3895-379-10)

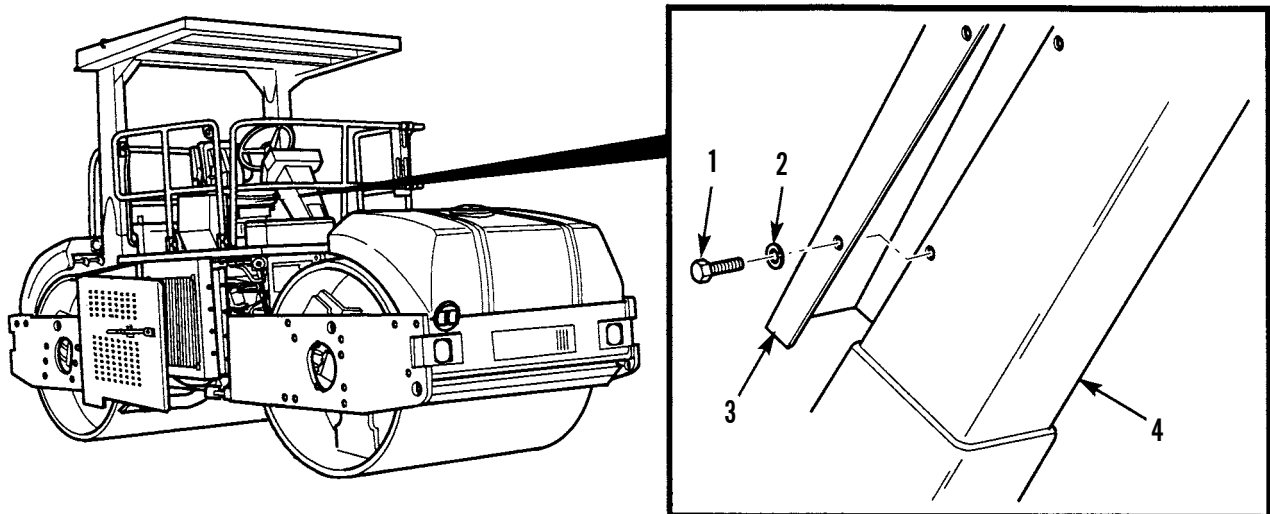
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-397-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove four shoulder screws (1), washers (2) and cover (3) from operator station (4).



401-494

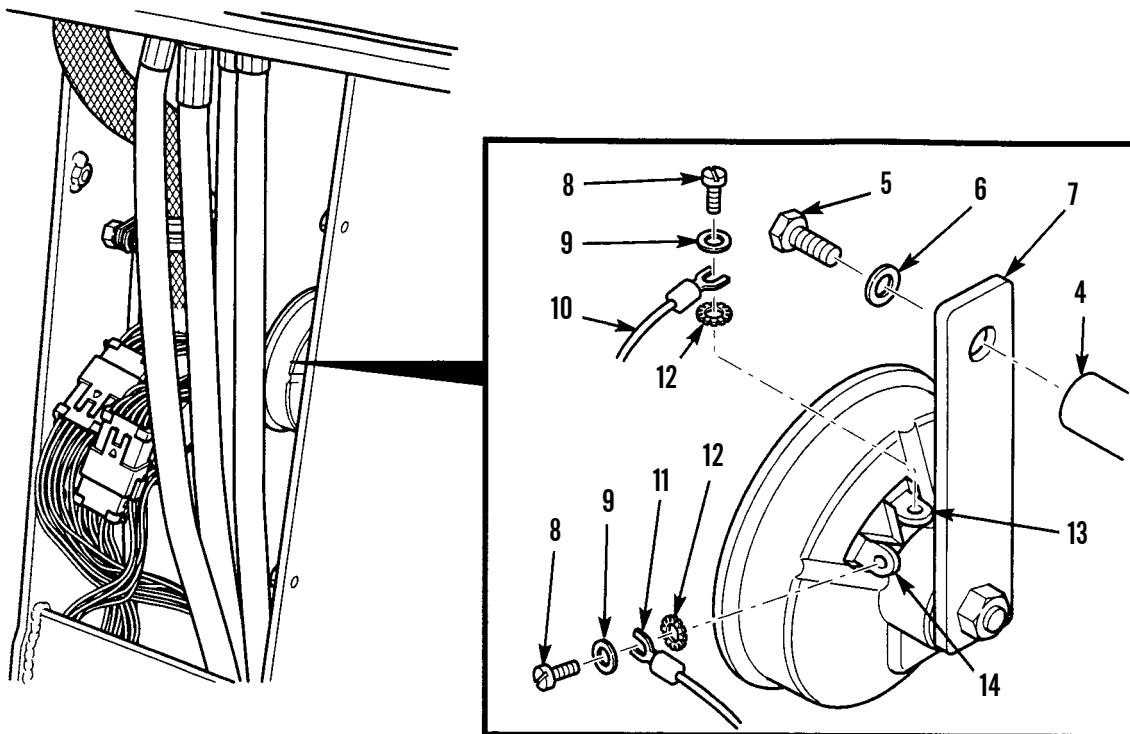
REMOVAL - CONTINUED

2. Remove screw (5), washer (6) and horn assembly (7) from operator station (4).

NOTE

Tag and mark all wires prior to removal.

3. Remove two screws (8), washers (9), wires (10) and (11) and lockwashers (12) from horn assembly terminals (13) and (14). Discard lockwashers.



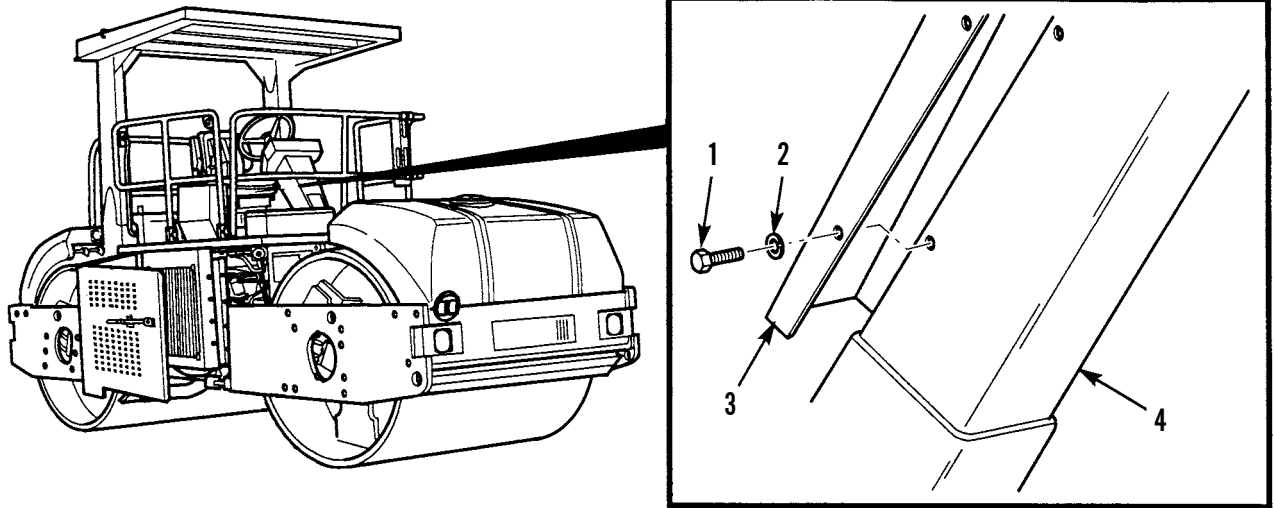
401-493

INSTALLATION

1. Install two new lockwashers (12) and wires (10) and (11) on horn assembly terminals (13) and (14) with two new lockwashers (19) and screws (8).
2. Install horn assembly (7) on operator station (4) with washer (6) and screw (5).

INSTALLATION - CONTINUED

3. Install cover (3) on operator station (4) with four washers (2) and screws (1).



401-494

4. Close right-side door assembly (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

BACKUP ALARM REPLACEMENT

0100 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 53

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Decontamination kit removed



WARNING

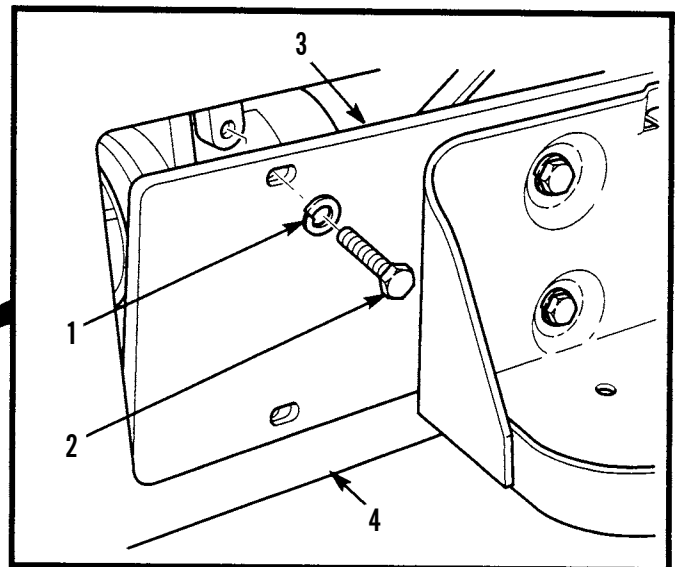
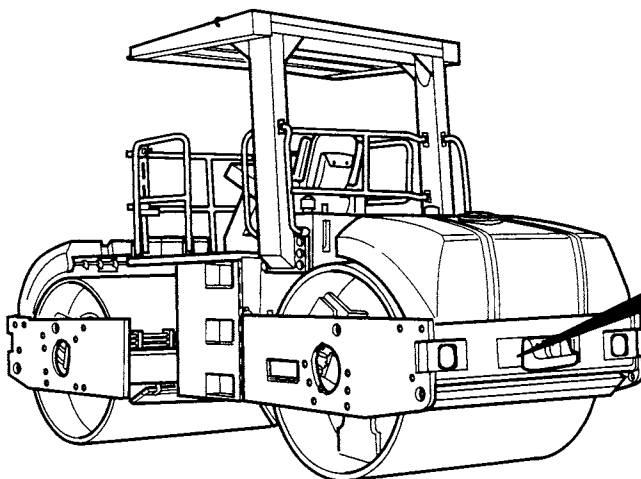
Use caution when handling heavy parts. Failure to follow this warning may cause injury.

REMOVAL

NOTE

Plate assembly with decontamination kit bracket attached weighs 22 lb (10 kg).

1. Remove four screws (1), washers (2) and cover (3) from rear bumper assembly (4).



401-513

BACKUP ALARM REPLACEMENT - CONTINUED

0100 00

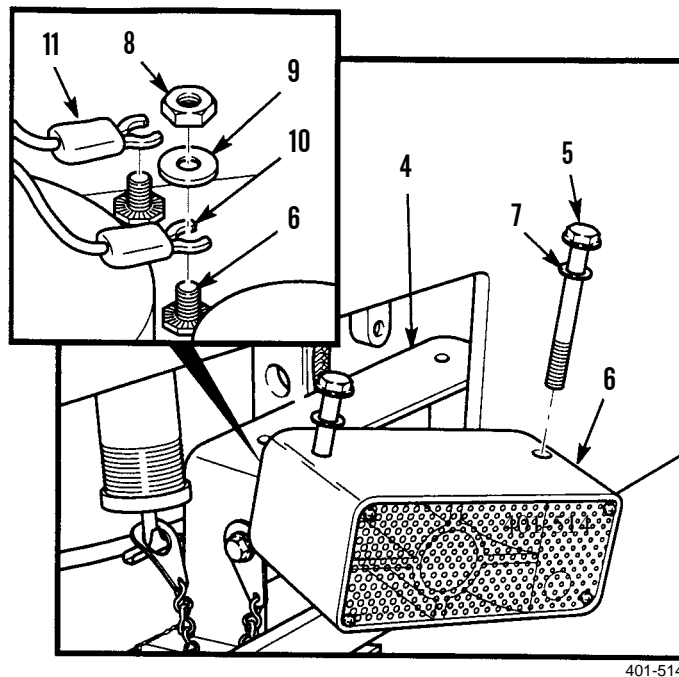
REMOVAL - CONTINUED

2. Completely loosen two screws (5).
3. Remove backup alarm (6), two screws (5) and washers (7) from rear bumper assembly (4).

NOTE

Tag and mark all wires prior to removal.

4. Remove two nuts (8), washers (9) and wires (10) and (11) from backup alarm (6).



401-514

INSTALLATION**NOTE**

Plate assembly with decontamination kit bracket attached weighs 22 lb (10 kg).

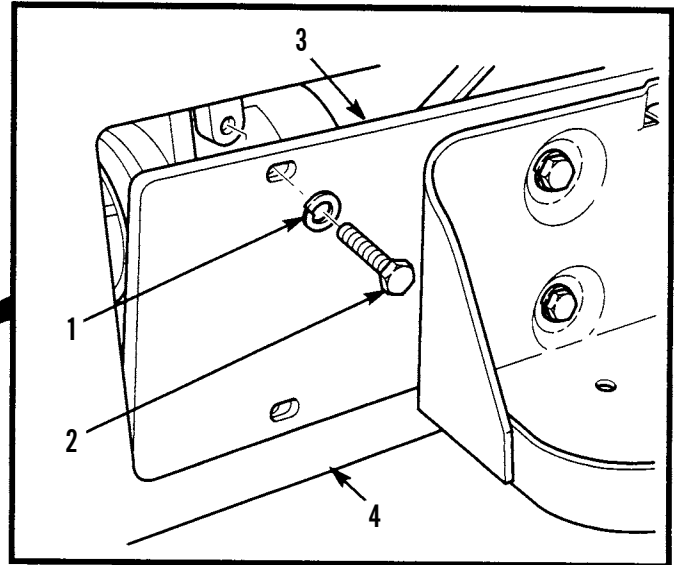
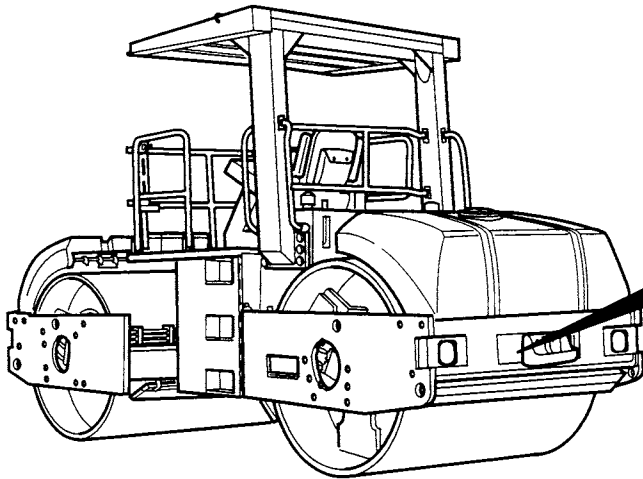
1. Install wires (10) and (11) on backup alarm (6) with two washers (9) and nuts (8).
2. Install two washers (7) and screws (5) on backup alarm (6).
3. Position backup alarm (6) on bumper assembly (4) and tighten two screws (5) securely.

BACKUP ALARM REPLACEMENT - CONTINUED

0100 00

INSTALLATION - CONTINUED

4. Install cover (3) on rear bumper assembly (4) with four washers (2) and screws (1). Tighten screws to 15-25 lb-ft (20-34 Nm).



401-513

5. Install decontamination kit.
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HORN SWITCH REPLACEMENT

0101 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (4)

References

TM 3895-379-23P, Figure 53

Equipment Condition

Engine off (TM 5-3895-379-10)

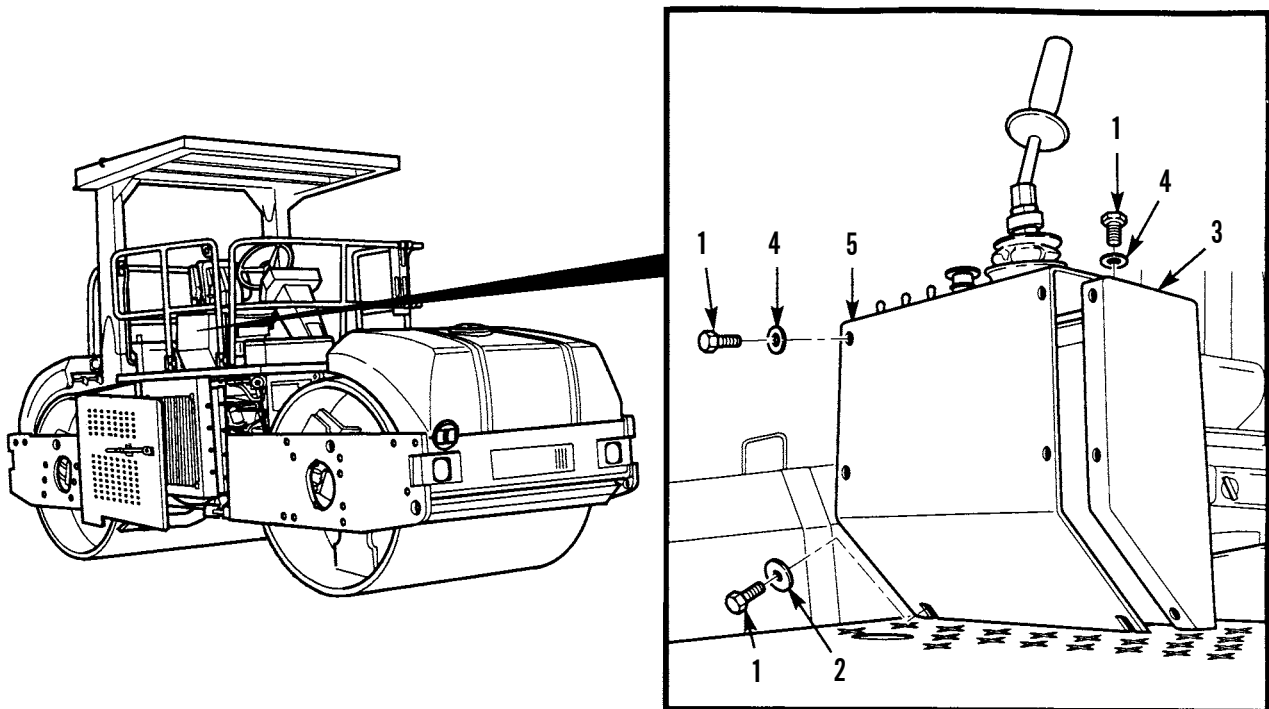
Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

1. Remove two screws (1) and washers (2) from operator station (3).
2. Remove seven screws (1) and washers (4) from operator station (3).
3. Lift panel assembly (5) and pull away from operator station (3).

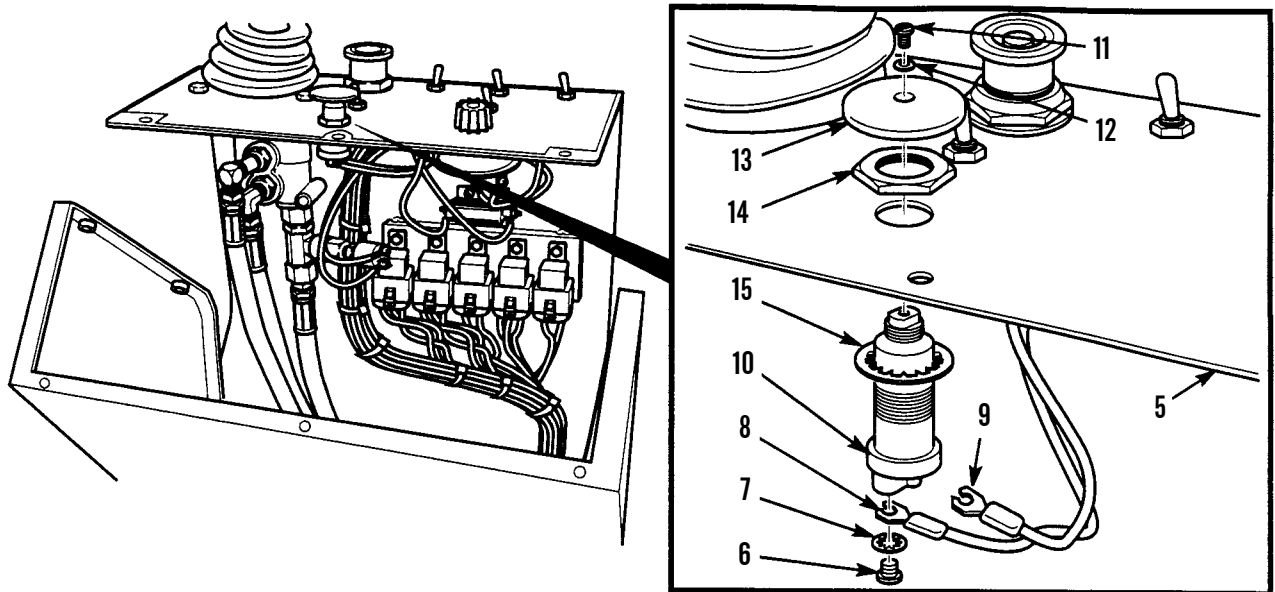


401-446

REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

4. Remove two screws (6), lockwashers (7) and wires (8) and (9) from horn switch (10). Discard lockwashers.
5. Remove screw (11), lockwasher (12) and knob (13) from horn switch (10). Discard lockwasher.
6. Remove nut (14), lockwasher (15) and horn switch (10) from panel assembly (5). Discard lockwasher.



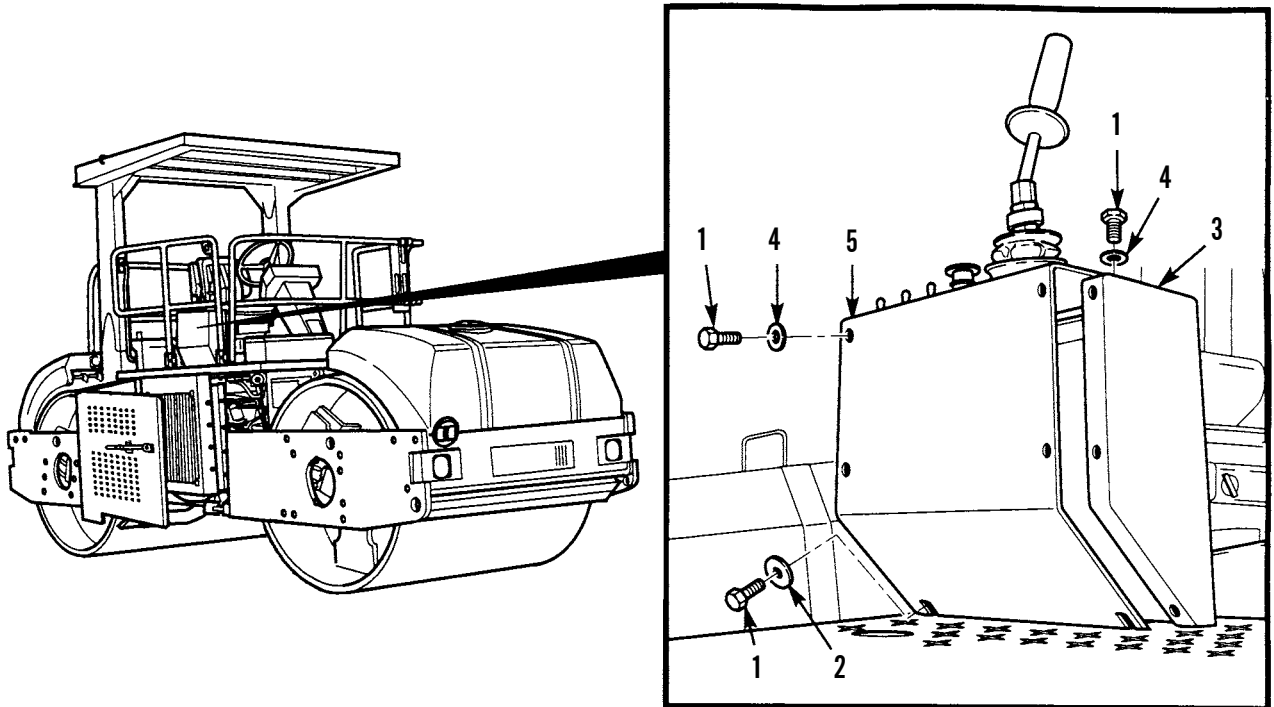
401-516

INSTALLATION

1. Install horn switch (10) on panel assembly (5) with new lockwasher (15) and nut (14).
2. Install knob (13) on horn switch (10) with new lockwasher (12) and screw (11).
3. Install two wires (8) and (9) on horn switch (10) with two new lockwashers (7) and screws (6).

INSTALLATION - CONTINUED

4. Install panel assembly (5) on operator station (3) with two washers (2), seven washers (4) and nine screws (1).



5. Close right-side door assembly (TM 5-3895-379-10).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HORN ASSEMBLY REPLACEMENT

0102 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut

Lockwasher (2)

References

TM 5-3895-379-23P, Figure 53

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

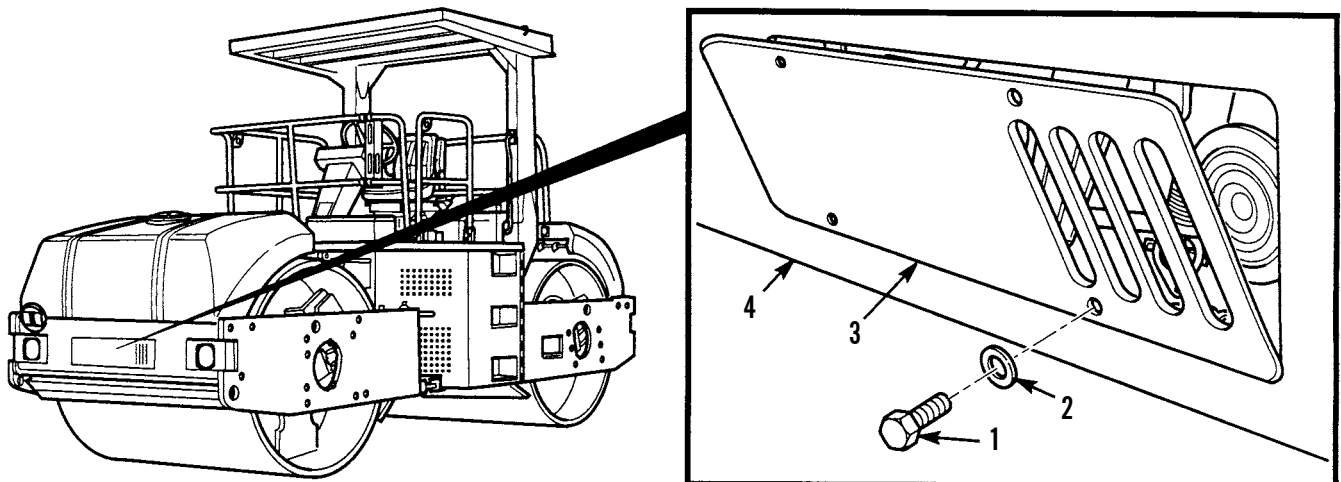
REMOVAL**WARNING**

Use caution when removing cover from bumper assembly. Failure to follow this warning may cause injury.

NOTE

Cover weighs 12 lb (5.44 kg).

1. Remove four screws (1), washers (2) and cover (3) from bumper assembly (4).



401-517

HORN ASSEMBLY REPLACEMENT - CONTINUED

0102 00

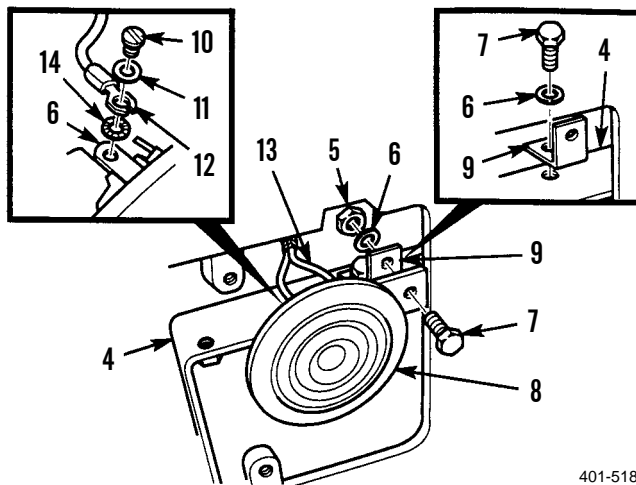
REMOVAL - CONTINUED

- Remove locknut (5), washer (6), screw (7) and horn assembly (8) from clip (9). Discard locknut.

NOTE

Tag and mark all wires prior to removal.

- Remove two screws (10), washers (11), wires (12 and 13) and lockwashers (14) from horn assembly (8). Discard lockwashers.
- Remove screw (7), washer (6) and clip (9) from bumper assembly (4).



401-518

INSTALLATION

- Install clip (9) on bumper assembly (4) with washer (6) and screw (7). Tighten screw to 15-25 lb-ft (20-34 Nm).
- Install two wires (12) and (13) on horn assembly (8) with two new lockwashers (14), washers (11) and screws (10).
- Install horn assembly (8) on clip (9) with screw (7), washer (6) and new locknut (5). Tighten locknut to 15-25 lb-ft (20-34 Nm).

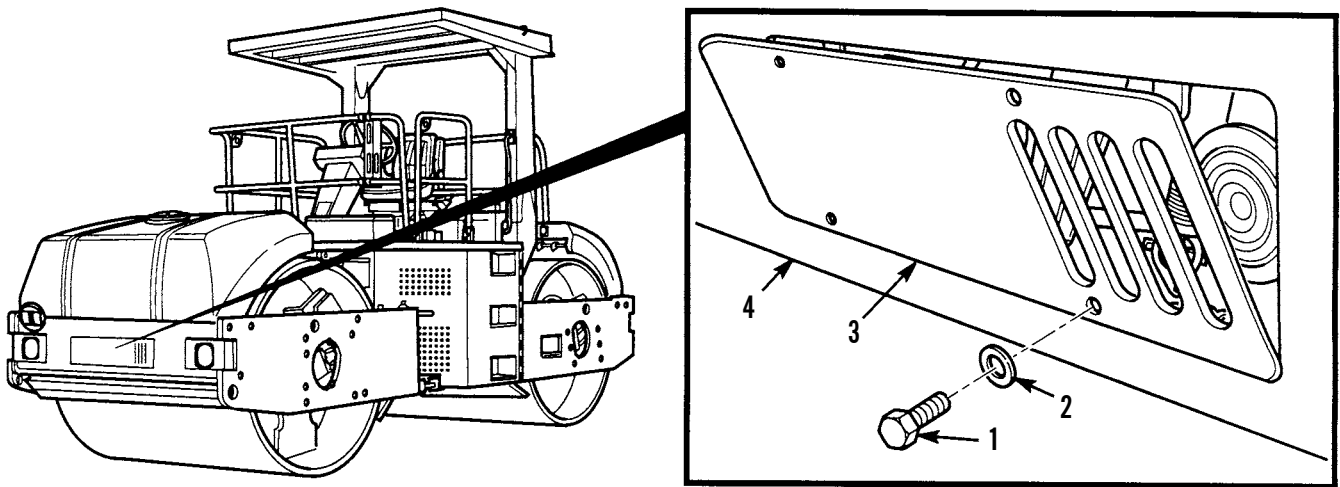
INSTALLATION - CONTINUED**WARNING**

Use caution when installing cover onto bumper assembly. Failure to follow this warning may cause injury.

NOTE

Cover weighs 12 lb (5.44 kg).

4. Install cover (3) on bumper assembly (4) with four washers (2) and screws (1). Tighten screws to 15-25 lb-ft (20-34 Nm).



401-517

5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

BATTERY MAINTENANCE**0103 00****THIS WORK PACKAGE COVERS**

Inspection, Service/Test, Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Petrolatum (Item 30, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figures 54 and 55

TM 9-6140-200-14

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

**WARNING**

- To avoid injury, eye protection and acid-resistant gloves must be worn when working around batteries. Do not smoke, use open flame, make sparks or create other ignition sources around batteries. If a battery is giving off gases, it can explode and cause injury. Remove all jewelry such as rings, ID tags, watches, and bracelets. If jewelry or a tool contacts a battery terminal, a direct short will result in instant heating, damage to equipment, and injury.
- Sulfuric acid contained in batteries can cause burns. If battery corrosion or electrolyte makes contact with skin, eyes or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may cause injury or death.

CAUTION

- Always disconnect the negative (-) battery cable before servicing battery or positive (+) battery cable. Failure to do so can result in damage to electrical system.
- Do not allow battery cable ends to contact each other or roller. Failure to follow this caution may cause damage to battery or electrical system.

INSPECTION**NOTE**

Clean top of batteries with a clean rag prior to inspection.

1. Raise terminal covers (1) and (2) and inspect battery terminals (3) and (4) on both batteries (5) and (6), for corrosion and looseness.
2. Raise terminal covers (7) and (8) and inspect battery terminals (9) and (10) for corrosion and looseness.
 - a. If terminals (3), (4), (9), or (10) are loose, replace battery (5) or (6), refer to *Removal* in this work package.
 - b. If terminals (3), (4), (9), or (10) are corroded, clean terminals and coat with petrolatum.
3. Install terminal covers (2).
4. Inspect batteries (5) and (6) for cracks or signs of leakage. If damaged, replace batteries, refer to *Removal* in this work package.
5. Inspect battery brackets (11) for looseness. If brackets are loose, tighten nuts (12).
6. Lower operator platform assembly (WP 0128 00).

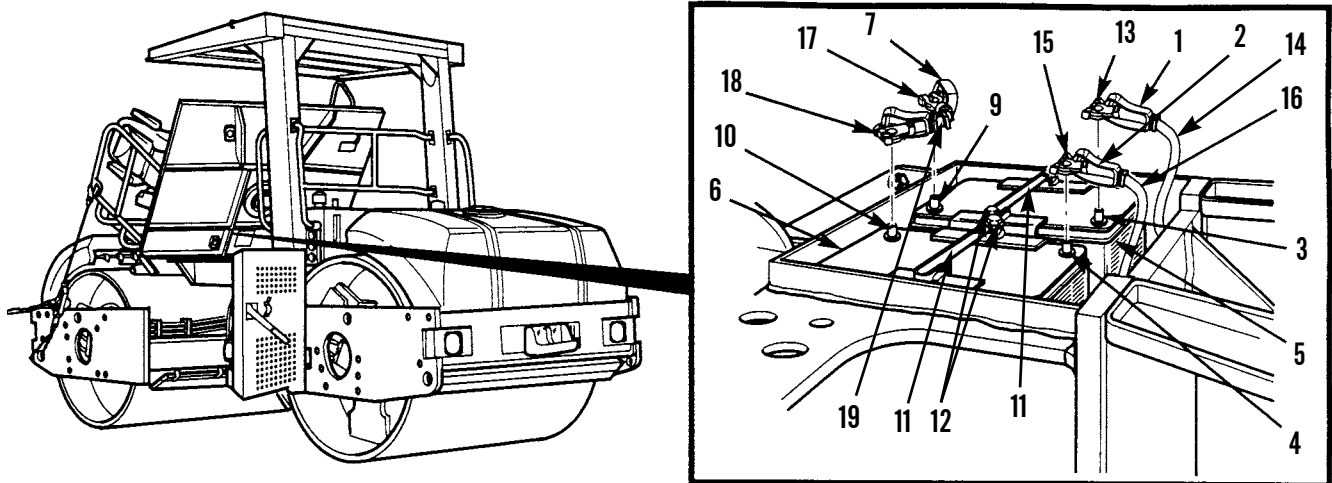
SERVICE/TEST

Service batteries IAW TM 9-6140-200-14.

REMOVAL**NOTE**

Tag and mark all wires prior to removal.

1. Loosen nut (13) and remove cable (14) from negative (-) terminal (3) on battery (5).
2. Loosen nut (15) and remove cable (16) from positive (+) terminal (4) on battery (6).
3. Loosen nuts (17) and (18) and remove cable (19) from negative (-) terminal (10) on battery (6) and positive (+) terminal (9) on battery (5).



401-525

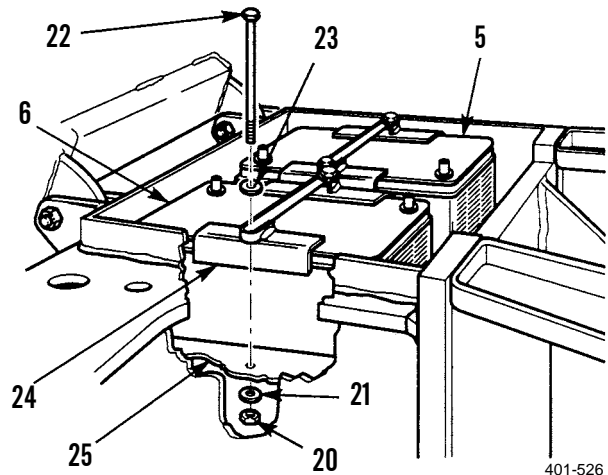
REMOVAL

- Remove four locknuts (20), washers (21), screws (22), washers (23) and two holder assemblies (24) from frame assembly (25). Discard locknuts.

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

- With assistance, remove two batteries (5) and (6) from frame assembly (25).



401-526

INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

CAUTION

Install battery and/or positive (+) battery cable completely before connecting the negative (-) battery cable. Failure to do so can result in damage to electrical system.

- With assistance, position two batteries (5) and (6) in frame assembly (25).

CAUTION

Do not overtighten screw and nut. Damage to battery may result.

- Position two holder assemblies (24) on batteries (5) and (6).
- Install holder assemblies (24) on frame assembly (25) with two washers (23), screws (22), washers (21) and new locknuts (20).
- Install cable (19) on positive (+) terminal (9) of battery (5) and negative (-) terminal (10) of battery (6) with nuts (17) and (18).
- Install cable (16) on positive (+) terminal (4) of battery (6) with nut (15). Tighten nut securely.
- Install cable (14) on negative (-) terminal (3) of battery (5) with nut (13). Tighten nut securely.
- Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

BATTERY DISCONNECT SWITCH REPLACEMENT

0104 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Lockwasher (4)

References

TM 3895-379-23P, Figure 67

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

CAUTION

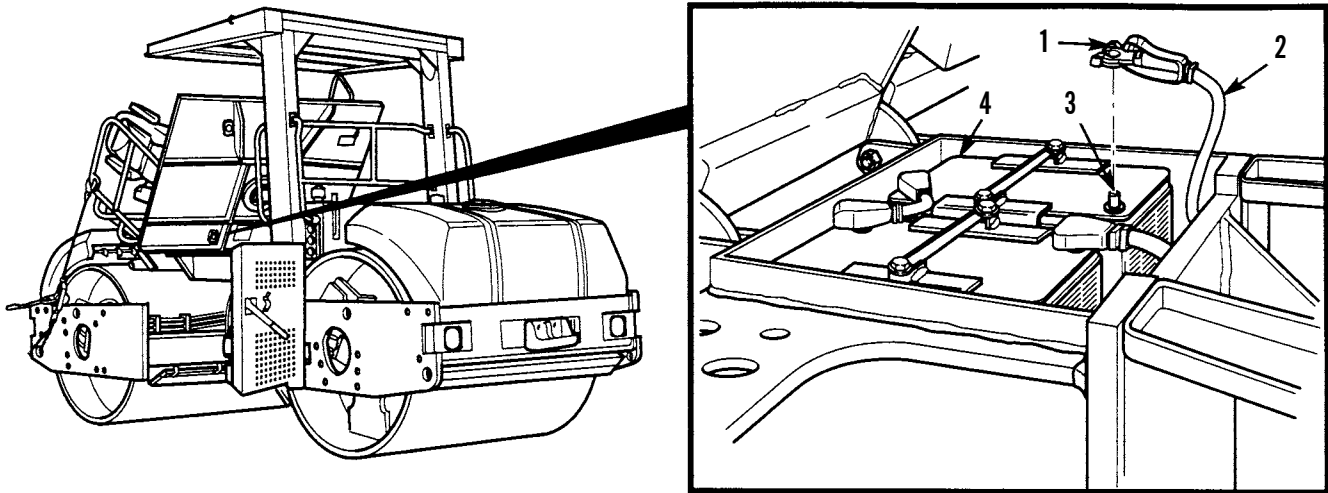
- Always disconnect the negative (-) battery cable before servicing the battery or positive (+) battery cable. Failure to do so can result in damage to electrical system.
- Do not allow battery cable ends to contact each other or roller. Failure to follow this caution may cause damage to battery or electrical system.

REMOVAL

NOTE

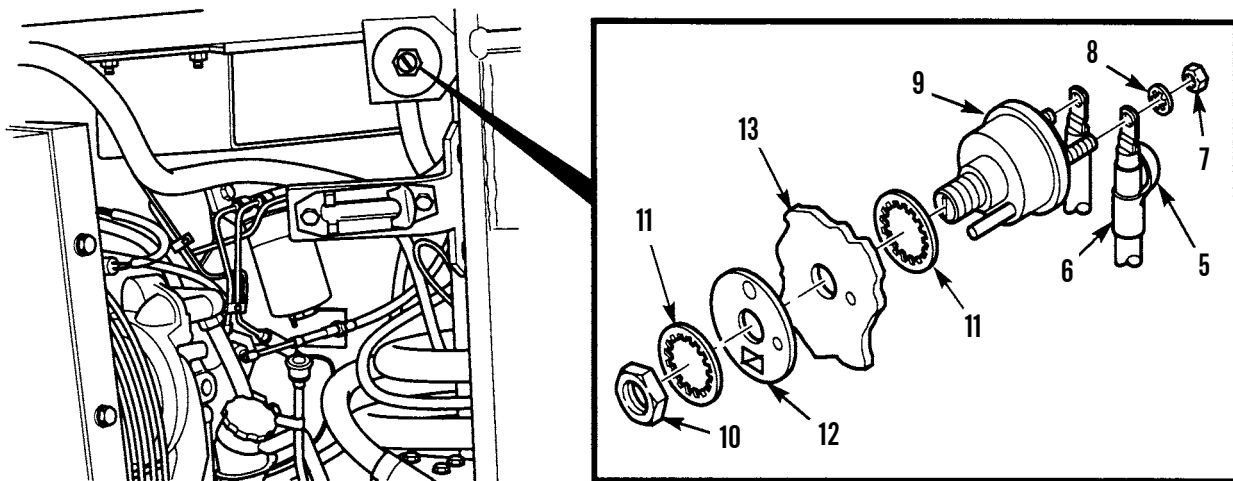
Tag and mark all wires prior to removal.

1. Loosen nut (1) and remove cable (2) from negative (-) terminal (3) on battery (4).



401-521

2. Slide boot (5) off of cable (6).
3. Remove two nuts (7), lockwashers (8) and cables (6) from battery disconnect switch (9). Discard lockwashers.
4. Remove nut (10), lockwasher (11), battery disconnect switch (9), plate (12) and lockwasher (11) from frame assembly (13). Discard lockwashers.



401-522

INSTALLATION**NOTE**

Use alignment pin on battery disconnect switch to ensure proper placement of switch and plate.

1. Install battery disconnect switch (9), new lockwasher (11) and plate (12) on frame assembly (13) with new lockwasher (11) and nut (10).
2. Install two cables (6) on battery disconnect switch (9) with two new lockwashers (8) and nuts (7).
3. Position boot (5) over cable (6).
4. Install cable (2) on negative (-) terminal (3) of battery (4) with nut (1).
5. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

BATTERY CABLE REPLACEMENT

0105 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 55

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

Right side door assembly opened (TM 5-3895-379-10)

**WARNING**

- To avoid injury, eye protection and acid-resistant gloves must be worn when working around batteries. Do not smoke, use open flame, make sparks or create other ignition sources around batteries. If a battery is giving off gases, it can explode and cause injury. Remove all jewelry such as rings, ID tags, watches, and bracelets. If jewelry or a tool contacts a battery terminal, a direct short will result in instant heating, damage to equipment, and injury.
- Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may cause injury or death.

CAUTION

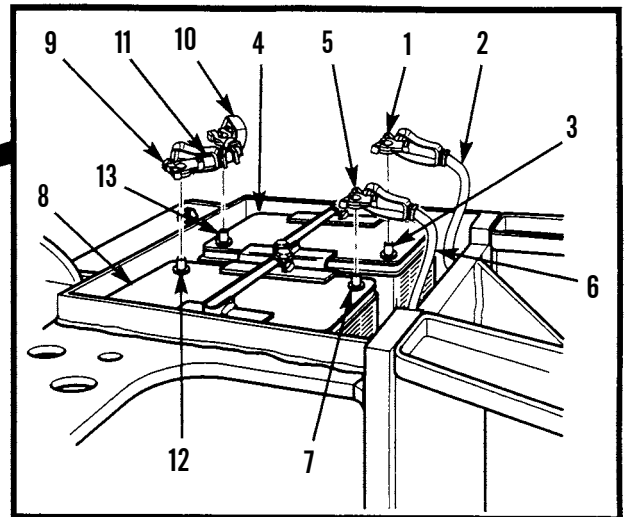
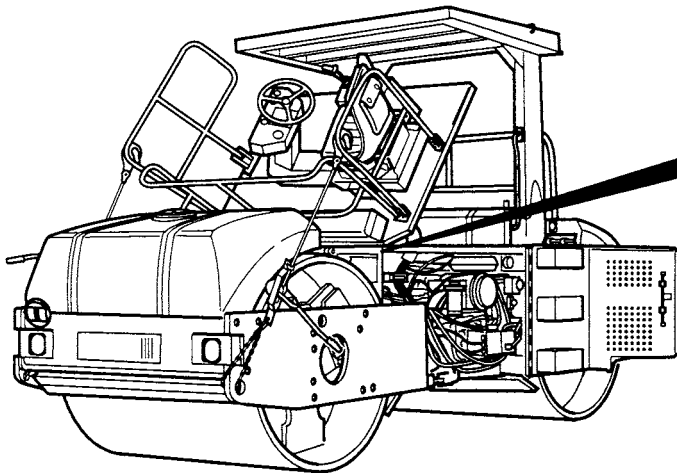
- Always disconnect negative (-) battery cable before servicing battery or positive (+) battery cable. Failure to do so can result in damage to electrical system.
- Do not allow battery cable ends to contact each other or roller. Failure to follow this caution may cause damage to battery or electrical system.

REMOVAL

NOTE

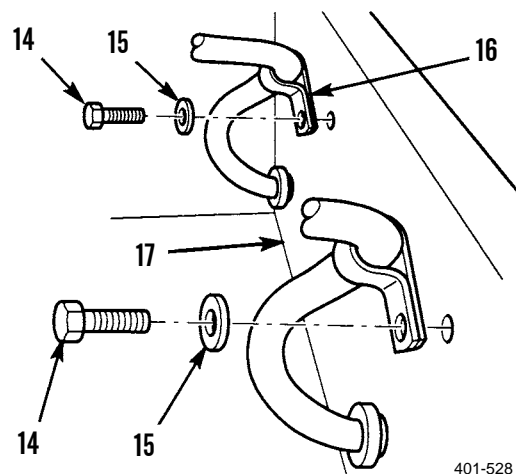
Tag and mark all cables prior to removal.

1. Loosen nut (1) and remove cable (2) from negative (-) terminal (3) on battery (4).
2. Loosen nut (5) and remove cable (6) from positive (+) terminal (7) on battery (8).
3. Loosen nuts (9) and (10) and remove cable (11) from negative (-) terminal (12) on battery (8) and positive (+) terminal (13) on battery (4).



401-831

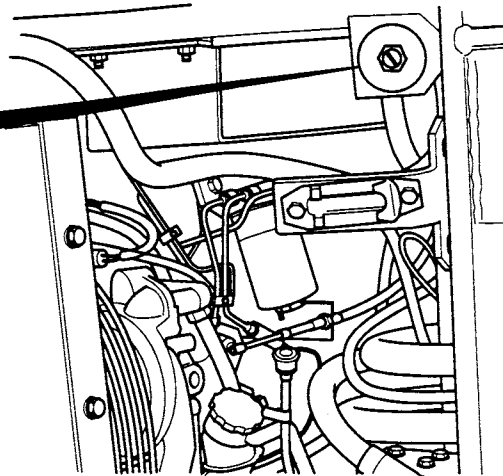
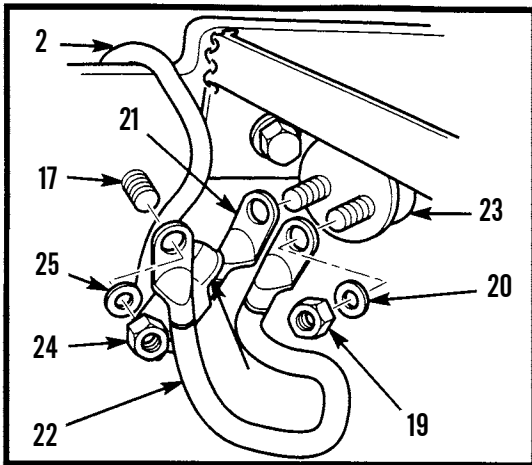
4. Remove two screws (14), washers (15) and clips (16) from frame assembly (17).



401-528

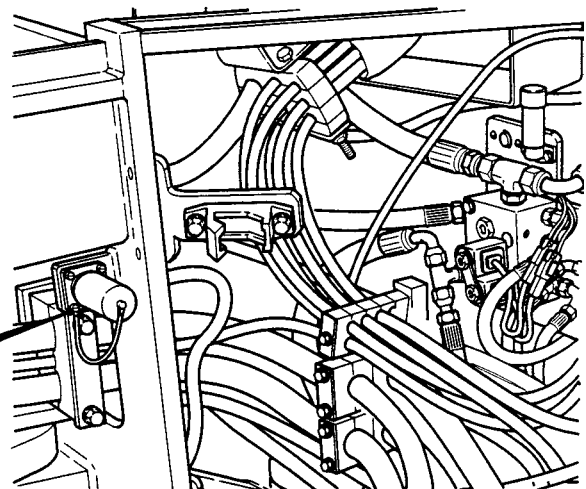
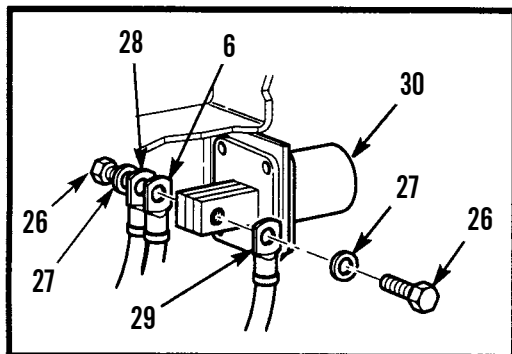
BATTERY CABLE REPLACEMENT - CONTINUED**0105 00****REMOVAL - CONTINUED**

5. Slide boot (18) away from battery cable connector.
6. Remove two nuts (19), washers (20) and cables (21) and (22) from switch (23).
7. Remove cable (2) by pulling from battery side of frame assembly (17) through grommet.
8. Remove nut (24), washer (25) and cable (22) from frame assembly (17).



401-529

9. Remove two screws (26), washers (27) and cables (6), (28) and (29) from NATO connector (30).



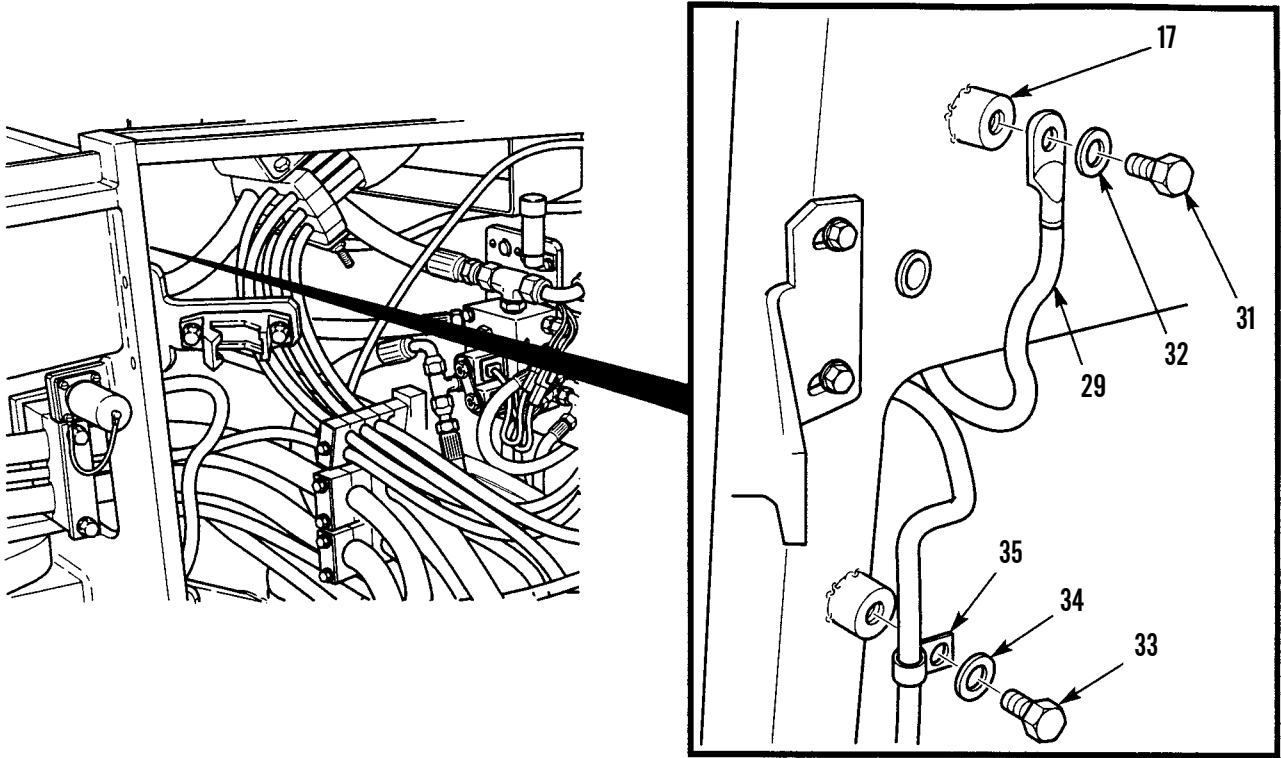
401-530

BATTERY CABLE REPLACEMENT - CONTINUED

0105 00

REMOVAL - CONTINUED

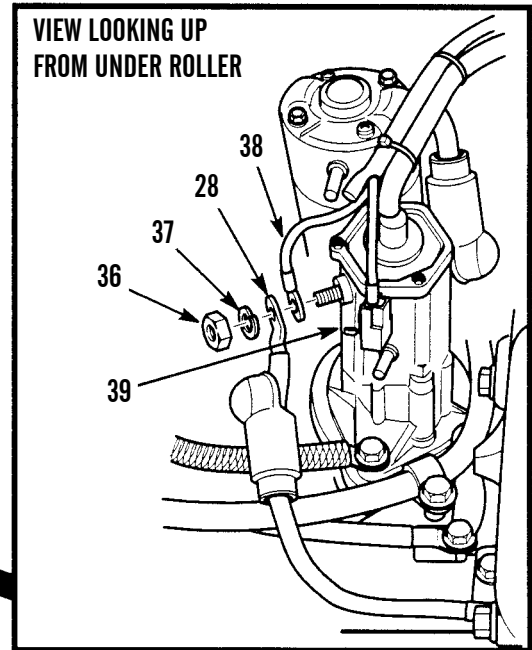
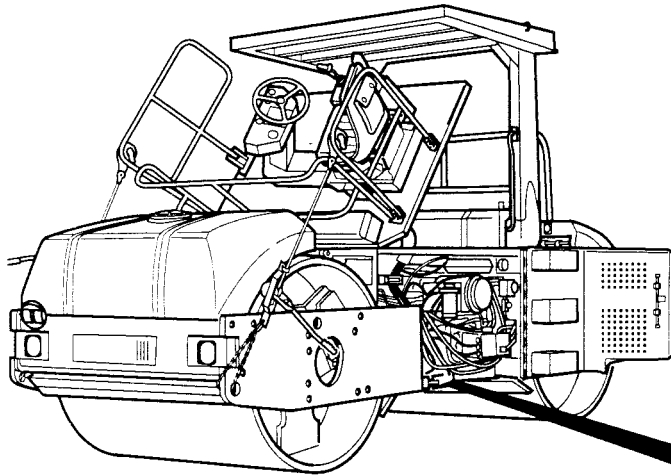
10. Remove screw (31), washer (32) and cable (29) from frame assembly (17).
11. Remove four screws (33), washers (34) and clips (35) from frame assembly (17).
12. Slide four clips (35) off battery cable (29).



401-531

REMOVAL - CONTINUED

13. Remove nut (36), washer (37), wire (38) and cable (28) from starter (39).



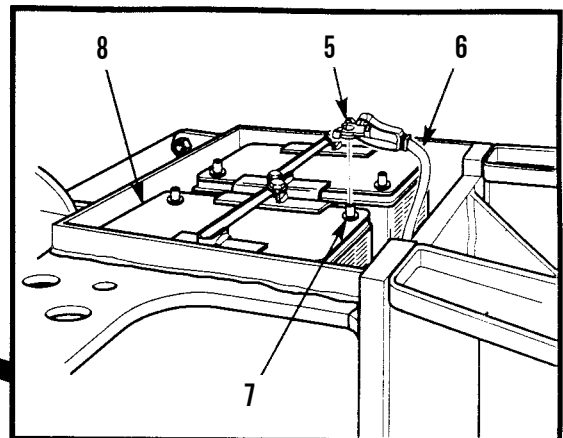
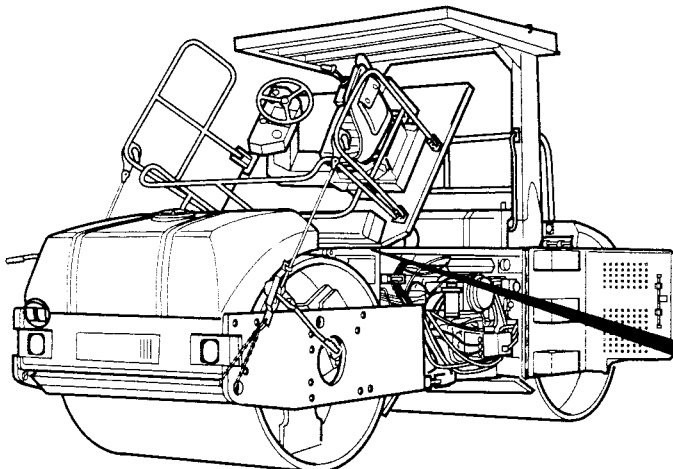
401-532

INSTALLATION

CAUTION

Install positive (+) battery cable completely before connecting negative (-) battery cable.

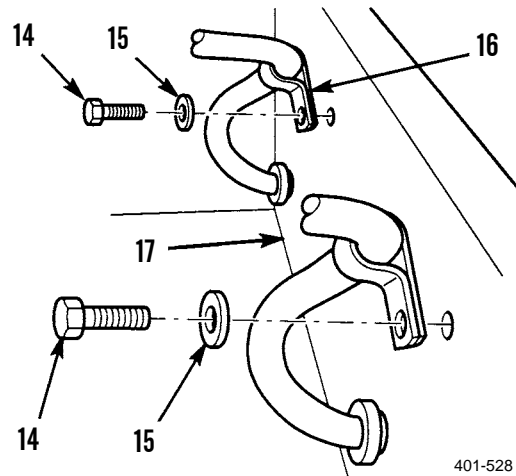
1. Install cable (6) on positive (+) terminal (7) of battery (8) with nut (5). Feed cable through grommet.



401-533

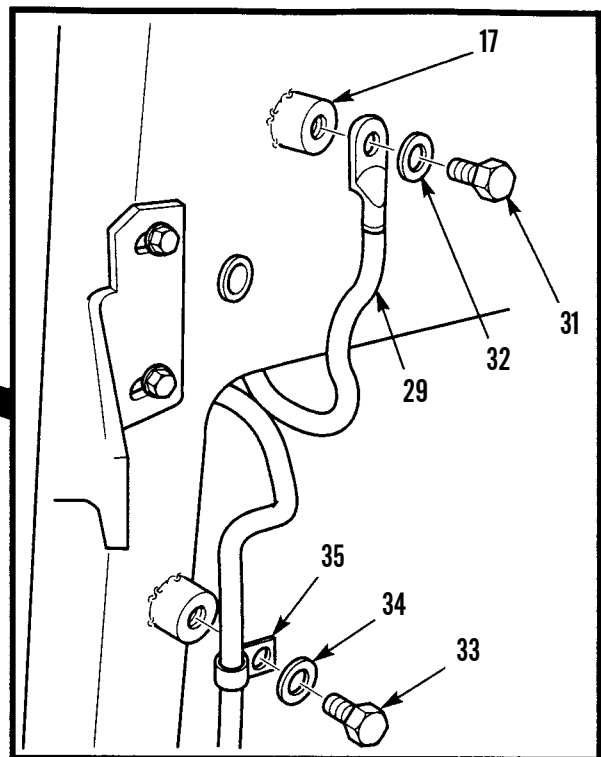
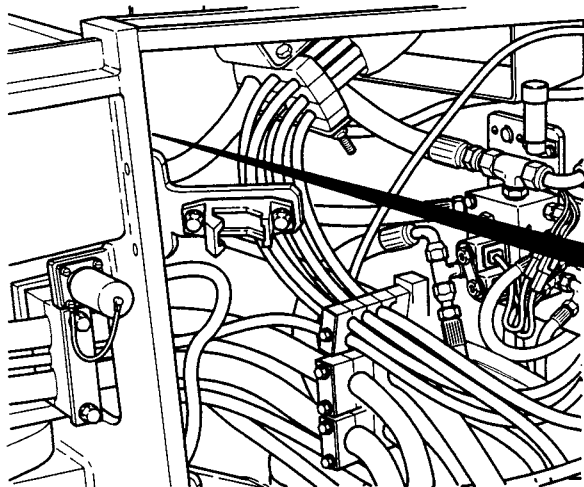
INSTALLATION - CONTINUED

2. Install one clip (16) on frame assembly (17) with washer (15) and screw (14).



401-528

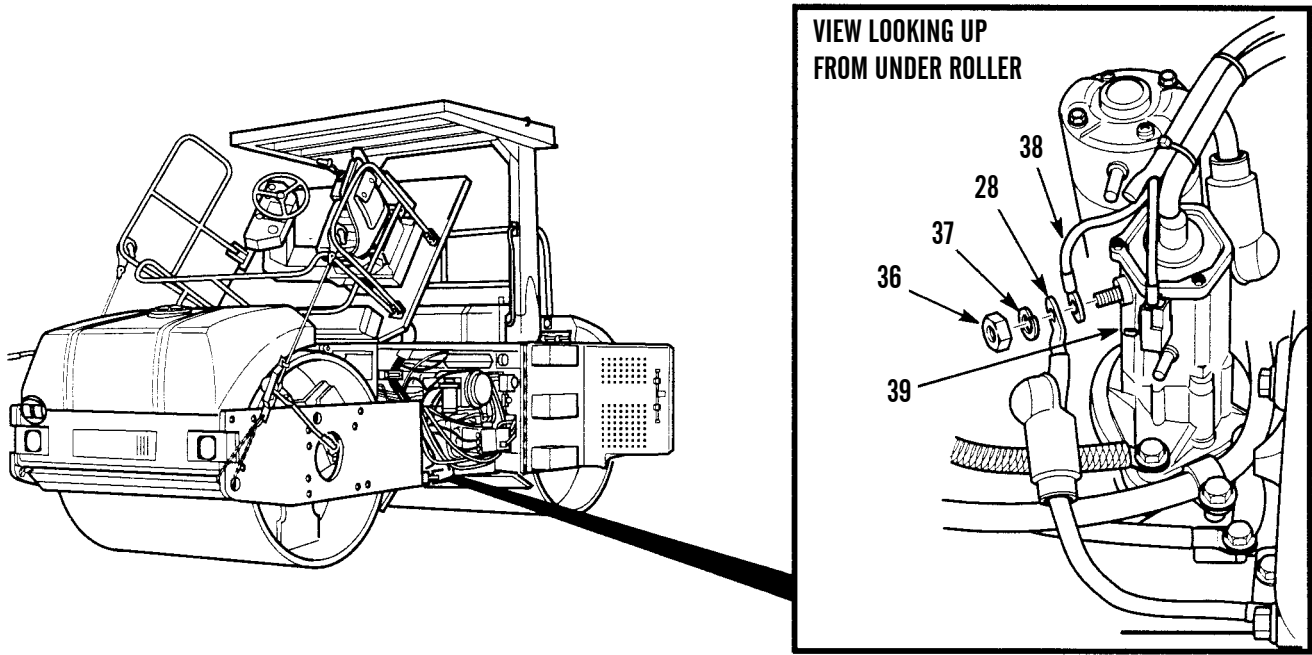
3. Position four clips (35) on battery cable (29).
4. Install four clips (35) on frame assembly (17) with washers (34) and screws (33).
5. Install cable (29) on frame assembly (17) with washer (32) and screw (31).



401-531

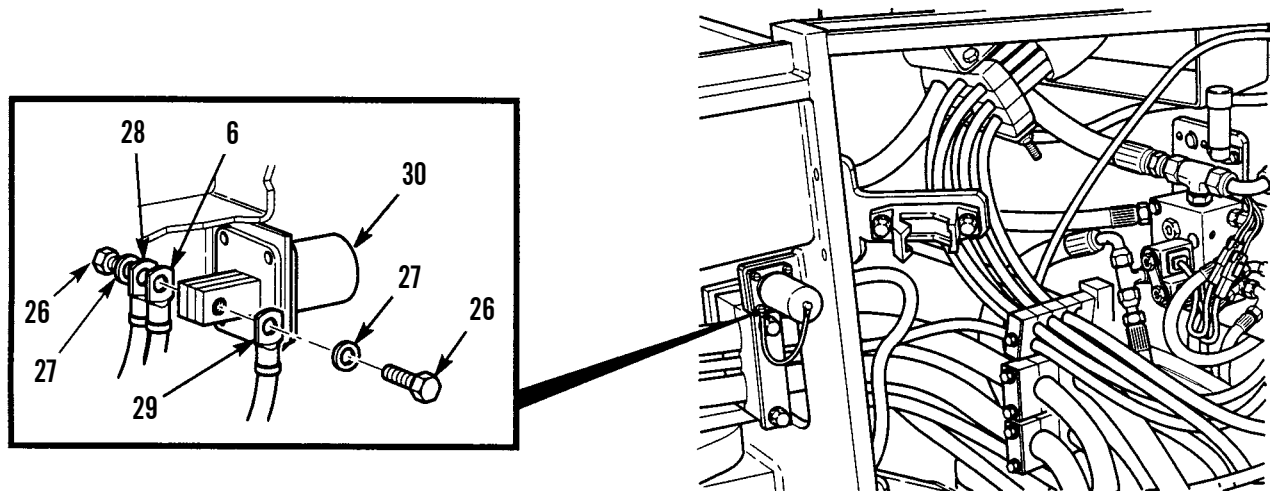
INSTALLATION - CONTINUED

6. Install cable (28) and wire (38) on starter (39) with washer (37) and nut (36).



401-532

7. Install cables (6), (28) and (29) on NATO connector (30) with two washers (27) and screws (26).



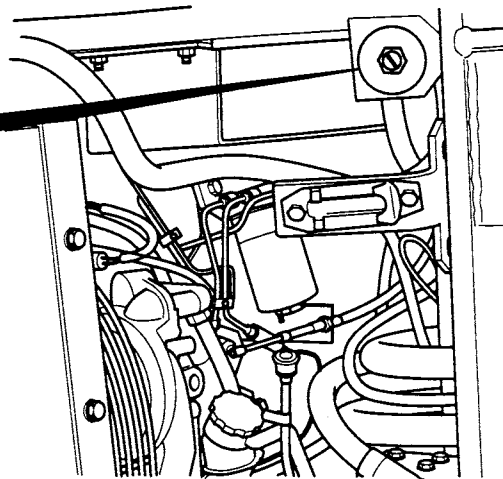
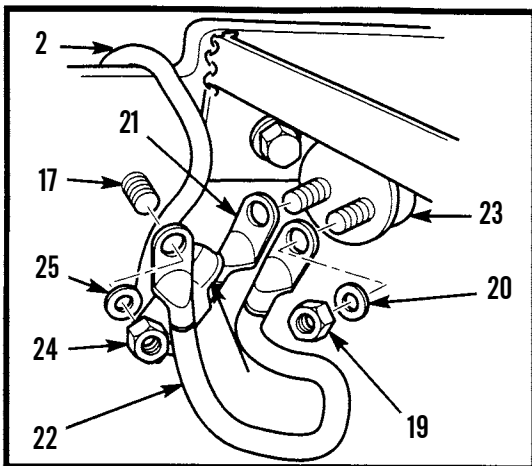
401-530

INSTALLATION - CONTINUED

NOTE

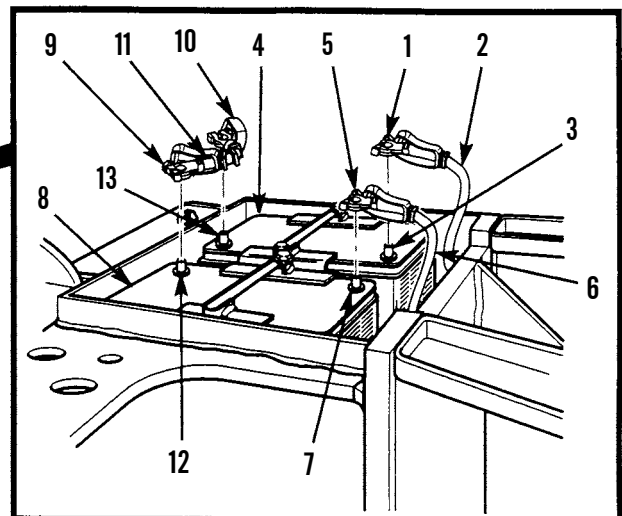
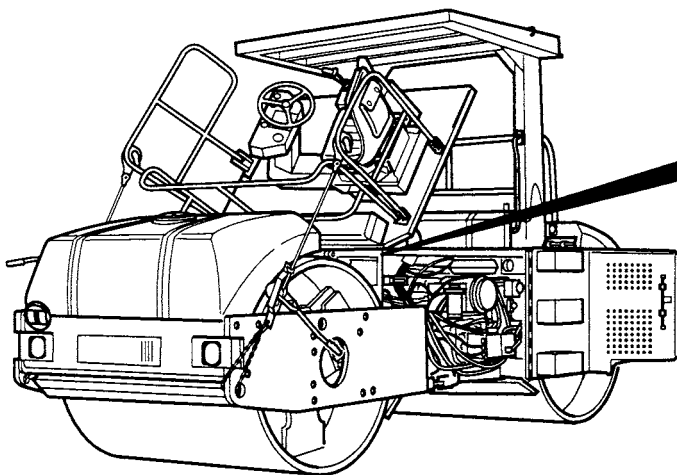
Cable must be fed through grommet from battery side of frame assembly prior to closing right-side door assembly.

8. Install cable (22) on frame assembly (17) with washer (25) and nut (24).
9. Install cables (21 and 22) on switch (23) with two washers (20) and nuts (19).
10. Position boot (18) over battery cable connector.



401-529

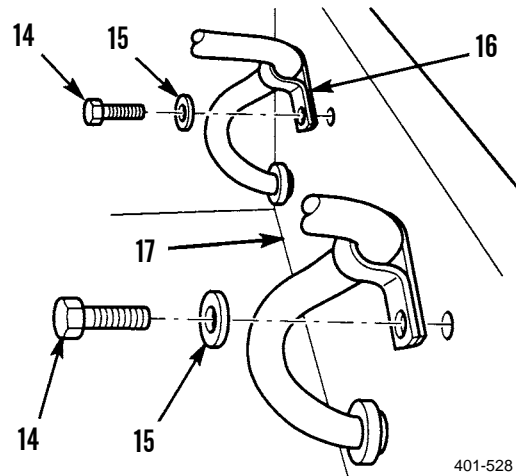
11. Install cable (11) on positive (+) terminal (13) of battery (4) with nut (10).
12. Install cable (11) on negative (-) terminal (12) of battery (8) with nut (9).
13. Install cable (2) on negative (-) terminal (3) of battery (4) with nut (1).



401-831

INSTALLATION - CONTINUED

14. Install other clip (16) on frame assembly (17) with washer (15) and screw (14).



15. Lower operator platform assembly (WP 0128 00).
16. Close right-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

NATO CONNECTOR REPLACEMENT

0106 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

TM 5-3895-379-23P, Figure 54

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut (4)

Lockwasher

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

**WARNING**

- To avoid injury, eye protection and acid-resistant gloves must be worn when working around batteries. Do not smoke, use open flame, make sparks or create other ignition sources around batteries. If a battery is giving off gases, it can explode and cause injury. Remove all jewelry such as rings, ID tags, watches, and bracelets. If jewelry or a tool contacts a battery terminal, a direct short will result in instant heating, damage to equipment, and injury.
- Sulfuric acid contained in batteries can cause burns. If battery corrosion or electrolyte makes contact with skin, eyes or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may cause injury.

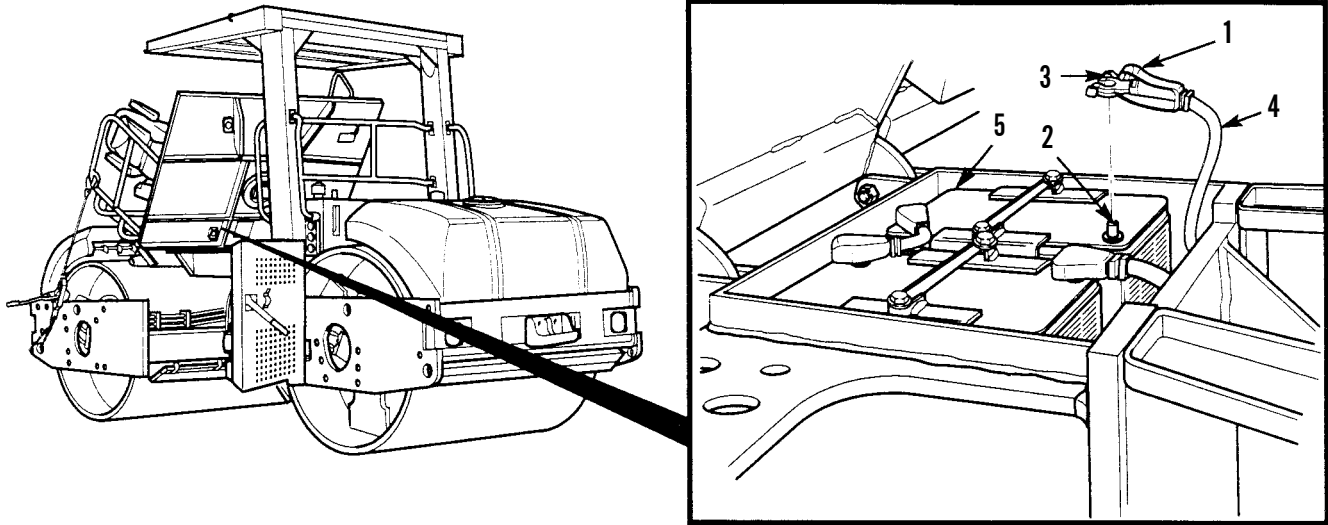
CAUTION

- Always disconnect negative (-) battery cable before servicing battery or positive (+) battery cable. Failure to do so can result in damage to electrical system.
- Do not allow battery cable ends to contact each other or roller. Failure to follow this caution may cause damage to battery or electrical system.

REMOVAL**NOTE**

Tag and mark all cables prior to removal.

1. Slide battery cable cover (1) back and away from negative (-) terminal (2).
2. Loosen nut (3) and remove cable (4) from negative (-) terminal (2) on battery (5).

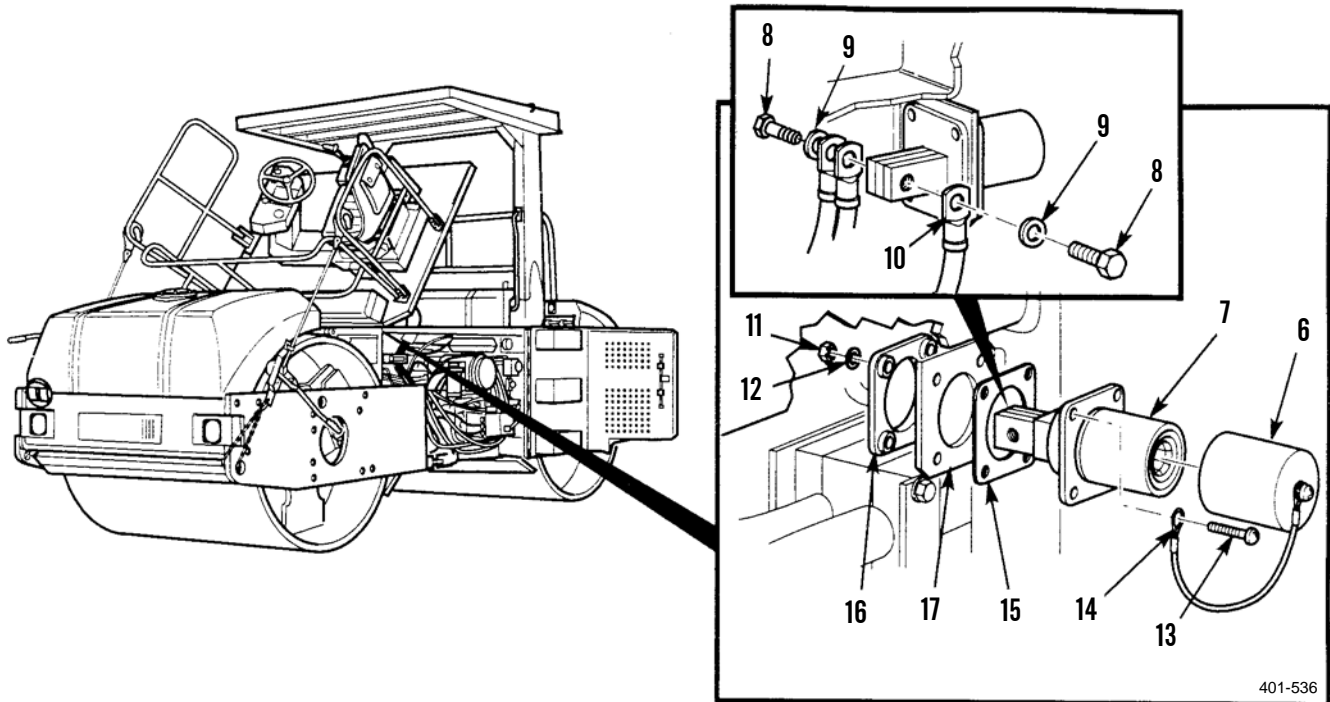


401-535

3. Remove cap (6) from NATO connector (7).
4. Remove two screws (8), washers (9) and three cables (10) from NATO connector (7).
5. Remove four locknuts (11), washers (12), screws (13) and rope clamp (14) from NATO connector (7). Discard locknuts.
6. Remove NATO connector (7), gasket (15) and insulator (16) from frame assembly (17). Discard gasket.

INSTALLATION

1. Position new gasket (15), NATO connector (7) and insulator (16) on frame assembly (17).
2. Install rope clamp (14), four screws (13), washers (12) and new locknuts (11) to NATO connector (7).
3. Install three cables (10) on NATO connector (7) with two washers (9) and screws (8).
4. Install cap (6) on connector (7).



5. Install cable (4) on negative (-) terminal (2) of battery (5) with nut (3).
6. Position battery cable cover (1) over negative (-) terminal (2) of battery (5).
7. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

GROUND CABLE REPLACEMENT

0107 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Tag, marker (Item 37, WP 0219 00)

References

- TM 5-3895-379-23P, Figure 55

Equipment Condition

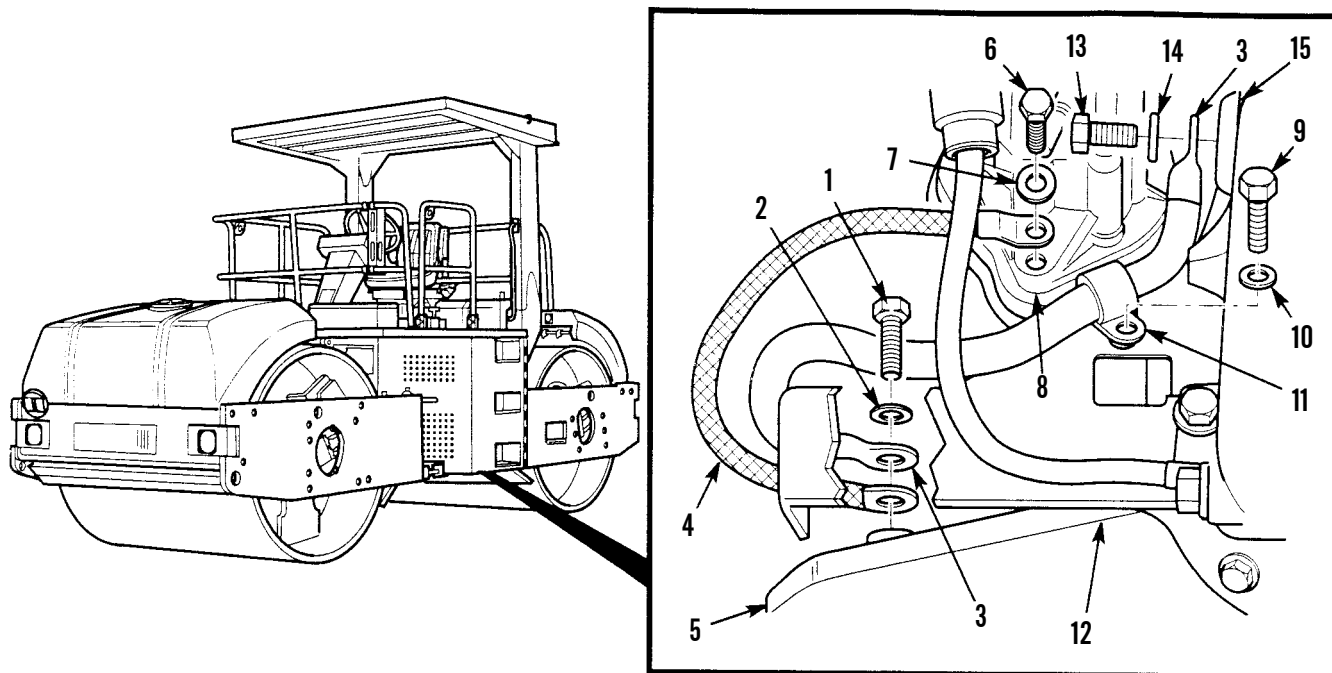
- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Battery disconnect switch in OFF position (TM 5-3895-379-10)
- Right-side door assembly opened (TM 5-3895-379-10)

REMOVAL

NOTE

Tag and mark all cables prior to removal.

1. Remove screw (1), washer (2), ground cable (3) and ground strap (4) from frame assembly (5).
2. Remove screw (6), washer (7) and ground strap (4) from flywheel housing (8).
3. Remove screw (9), washer (10) and clamp (11) from bracket (12).
4. Remove clamp (11) from ground cable (3).
5. Remove screw (13), washer (14) and cable (3) from engine block (15).



401-538

GROUND CABLE REPLACEMENT - CONTINUED

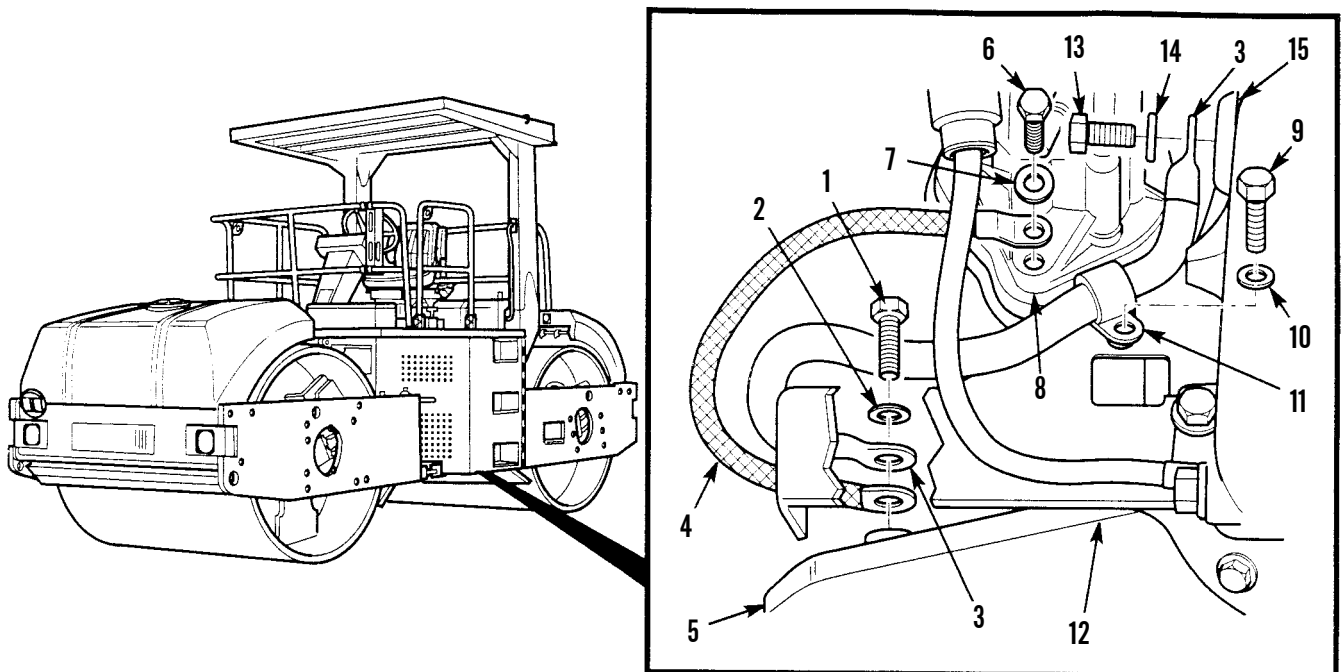
0107 00

CLEANING AND INSPECTION

1. Check cable ends for corrosion. Clean as necessary.
2. Check for torn or frayed wires on ground strap (4) and ground cable (3).
3. Check for continuity by attaching positive and negative lead of multimeter to opposite ends of cable. Reading of infinite ohms means there is good continuity. Discard cable if reading shows less than infinite ohms.
4. Check contact points of frame assembly (5) and flywheel housing (8) for corrosion. Clean as necessary.
5. Replace all damaged parts.

INSTALLATION

1. Install ground cable (3) on engine block (15) with screw (13) and washer (14). Tighten screw to 28-42 lb-ft (38-57 Nm).
2. Install clamp (11) on ground cable (3).
3. Install clamp (11) on bracket (12) with washer (10) and screw (9). Tighten screw to 60-90 lb-ft (81-122 Nm).
4. Install ground strap (4) on flywheel housing (8) with washer (7) and screw (6). Tighten screw to 60-90 lb-ft (81-122 Nm).
5. Install ground cable (3) and ground strap (4) on frame assembly (5) with washer (2) and screw (1). Tighten screw to 28-42 lb-ft (38-57 Nm).



401-538

6. Close right-side door assembly (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

- | | |
|-------------------------------------|-------------------------------|
| Solderless Terminal Replacement | Group I Terminal Disassembly |
| Wire Splicing Using Butt Connectors | Group I Terminal Assembly |
| Wire Splicing Using Solder Method | Group II Terminal Disassembly |
| Male Cable Connector Replacement | Group II Terminal Assembly |
| Female Cable Connector Replacement | |

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Solder (Item 35, WP 0219 00)

References

- TM 5-3895-379-23P, Figure 218

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Battery disconnect switch in OFF position (TM 5-3895-379-10)

SOLDERLESS TERMINAL REPLACEMENT

CAUTION

Terminals come in different styles and sizes. To prevent equipment damage, be sure to use only exact replacements. Do not attempt to modify terminal to fit.

1. Remove old terminal (1) and trim end of wire (2) as required.

NOTE

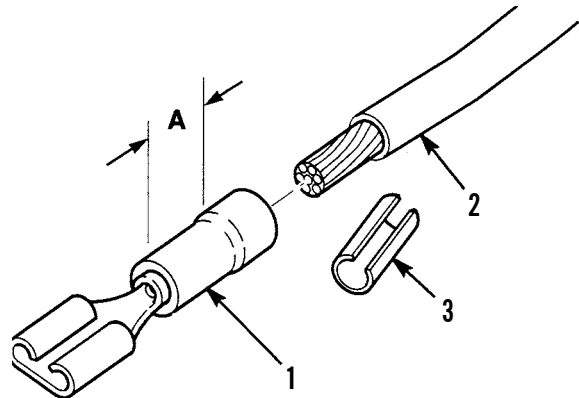
If trimming causes wire to become too short, refer to *Wire Splicing Using Butt Connectors* or *Wire Splicing Using Solder Method* in this work package.

2. Remove insulation (3) from wire (2) and equal to dimension A.

NOTE

Be sure all strands of wire are inside terminal when installing terminal to wire.

3. Install terminal (1) over bare end of wire (2).
4. Crimp terminal (1) firmly in place.

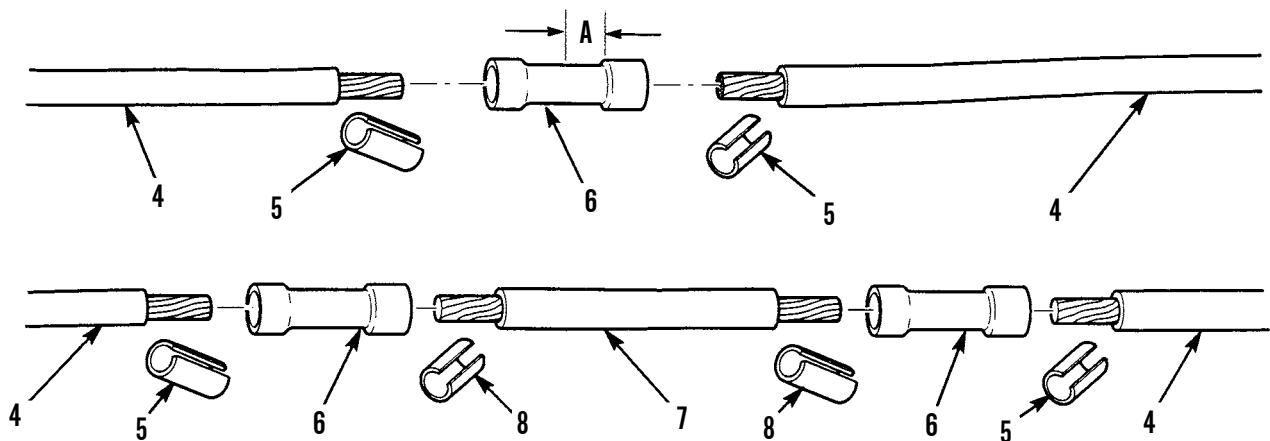


401-539

WIRE SPLICING USING BUTT CONNECTORS**NOTE**

- Whenever possible, use solder method of wire splicing. Refer to *Wire Splicing Using Solder Method* in this work package.
- If repairing a broken wire, perform steps 1 through 4 only. If a section of wire is being replaced, performed steps 5 through 11.

1. Remove damaged wire (4) section.
2. Remove insulation (5) from both ends of wire (4) equal to dimension A.
3. Install butt connector (6) over bare ends of wire (4) and crimp securely over both ends.
4. Inspect splice and be sure no bare wire is visible.
5. Install two butt connectors (6) securely in place over wire (4).
6. Crimp one end of both butt connectors (6) securely in place over wire (4).
7. Measure distance between two open ends of butt connectors (6).
8. Cut section of new wire (7) 1 in. (2.54 cm) longer than distance measured in step 7.
9. Remove insulation (8) from both ends of new wire (7) equal to dimension A.
10. Install bare ends of new wire (7) into butt connectors (6) and crimp securely into place.
11. Inspect splice and be sure that no bare wire (4) is visible.



401-540

WIRE SPLICING USING SOLDER METHOD**WARNING**

- Never use an open flame to apply heat to heat shrink tubing. Failure to follow this warning may cause injury.
- Allow heat shrink tubing to cool before handling. Failure to follow this warning may cause injury.
- Allow solder to cool before handling wire. Failure to follow this warning may cause injury.

NOTE

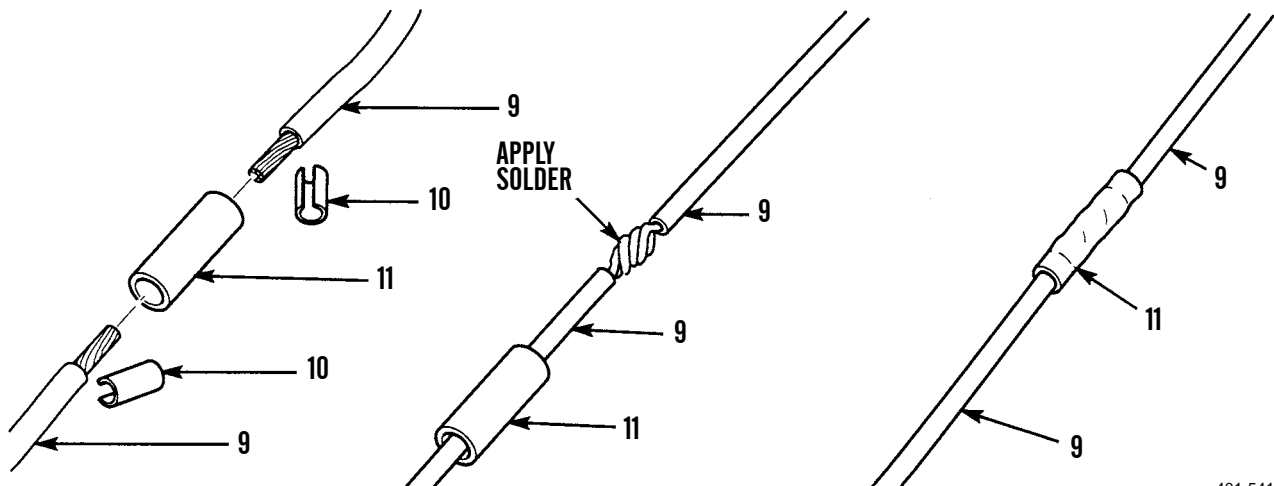
- This method produces a stronger and more permanent repair. Use this method whenever possible.
- If repairing a broken wire perform steps 1 through 6 only. If a section of wire is being replaced, perform steps 7 through 13.

1. Remove broken section of wire (9).
2. Remove 0.75 in. (1.9 cm) of insulation (10) from both ends of wire (9).
3. Slide 3 in. (7.62 cm) piece of proper size heat shrink tubing (11) over one end of wire (9).
4. Twist the two ends of wire (9) together and solder. Be sure solder flows evenly onto both ends of wire.

**WARNING**

Allow solder to cool before handling wire. Failure to follow this warning may cause injury.

5. Slide heat shrink tubing (11) over solder joint.



401-541

WIRE SPLICING USING SOLDER METHOD - CONTINUED**NOTE**

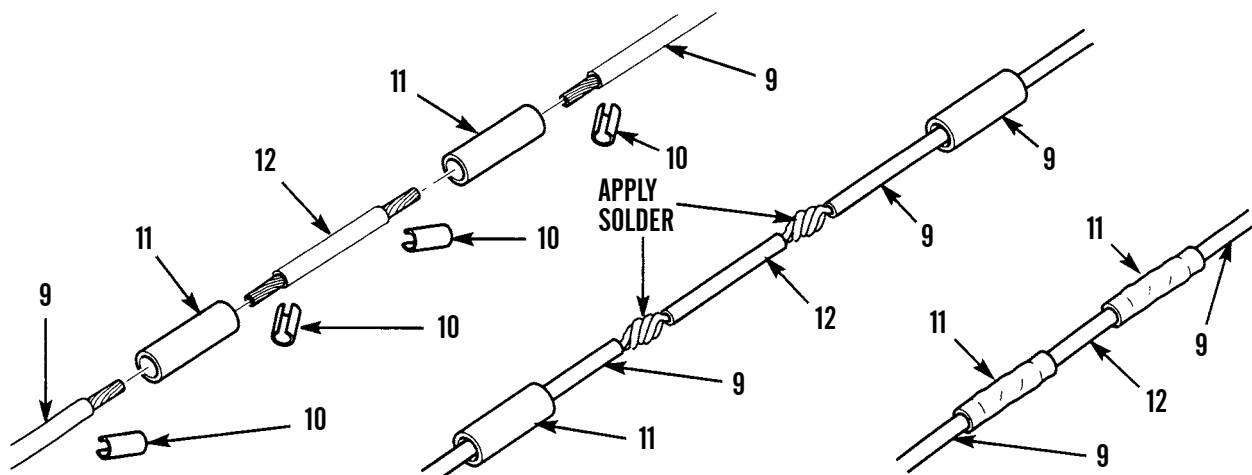
Be sure solder joint is centered in heat shrink tubing.

6. Apply heat and allow heat shrink tubing (11) to shrink until tight on solder joint and insulation of wire (9).
7. If replacing a section of wire, measure distance between ends of wire.
8. Cut a section of new wire (12) 2 in. (5.08 cm) longer than the distance measured in step 7.
9. Remove 3/4 in. (1.9 cm) of insulation (10) from both ends of new wire (12).
10. Slide two 3 in. (7.62 cm) pieces of heat shrink tubing (11) over ends of wire (9).
11. Twist bare ends of wires (9) and new wire (12) together and solder. Ensure solder flows evenly onto wires of each joint.
12. Slide heat shrink tubing (11) over solder joint.

NOTE

Be sure solder joint is centered in heat shrink tubing.

13. Apply heat and allow heat shrink tubing (11) to shrink until tight on solder joint and insulation of wire (9).



401-542

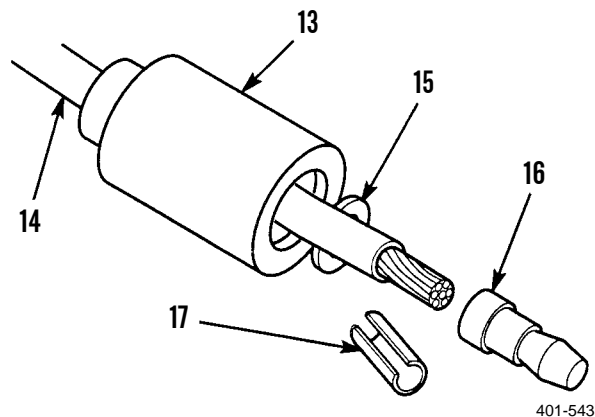
MALE CABLE CONNECTOR REPLACEMENT

1. Slide outer shell (13) back from wire (14).
2. Remove C-washer (15) from wire (14).
3. Remove contact (16) from wire (14).
4. Trim end of wire (14) as needed to make an undamaged end.

MALE CABLE CONNECTOR REPLACEMENT - CONTINUED**NOTE**

If trimming causes wire to become too short, refer to *Wire Splicing Using Butt Connectors* or *Wire Splicing Using Solder Method* in this work package.

5. Remove 3/8 in. (1.0 cm) of insulation (17) from end of wire (14).
6. Install contact (16) over bare end of wire (14).
7. Crimp contact (16) securely in place.
8. Install C-washer (15) to wire (14).
9. Slide outer shell (13) over C-washer (15) and contact (16).
10. Be sure no bare wire (14) is visible outside of outer shell (13).



401-543

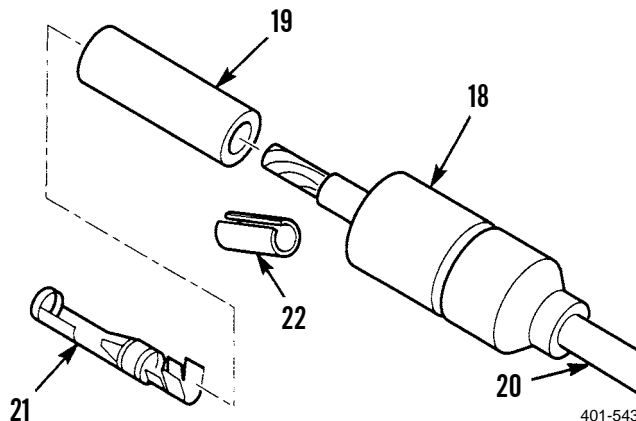
FEMALE CABLE CONNECTOR REPLACEMENT

1. Slide outer shell (18) and sleeve (19) back on wire (20).
2. Remove contact (21) from wire (20).
3. Trim end of wire (20) as needed to make an undamaged end.

NOTE

If trimming causes wire to become too short, refer to *Wire Splicing Using Butt Connectors* or *Wire Splicing Using Solder Method* in this work package.

4. Remove 1/4 in. (6.4 mm) of insulation (22) from end of wire (20).
5. Install sleeve (19) over end of wire (20).
6. Install contact (21) securely into place.
7. Crimp contact (21) securely into place.
8. Slide outer shell (18) over sleeve (19) and contact (21).
9. Be sure no bare wire (20) shows outside of outer shell (18).



401-543

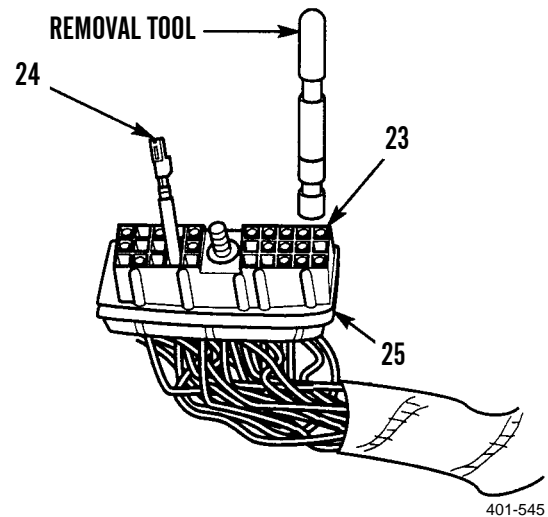
GROUP I TERMINAL DISASSEMBLY**WARNING**

Use caution when using removal tool. Tip of tool is very sharp. Failure to follow this warning may cause injury.

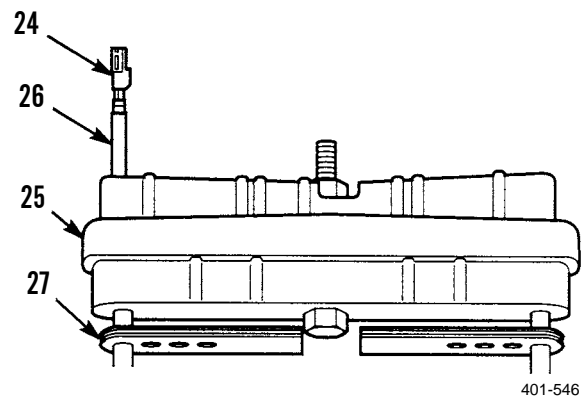
NOTE

- Locking tab on the terminal mates with molded tab in plastic connector to retain cable assembly.
- All Group I connectors are repaired the same way. Number of wires in connection may vary.

1. Insert tip of removal tool between locking tab (23) of terminal (24) and wall of connector (25).
2. Release locking tab (23) from connector (25).
3. Push terminal (24) through front of connector (25).

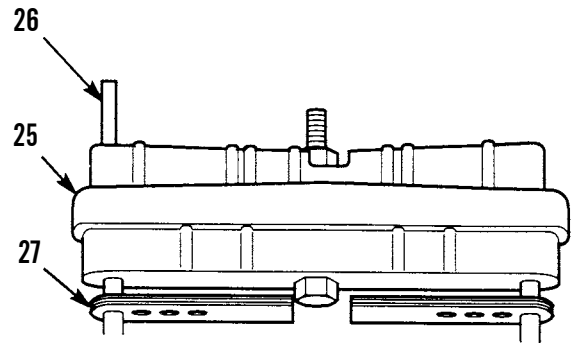
**NOTE**

- Perform step only if old terminal is still attached to wire.
 - Make cut directly behind damaged terminal.
4. Cut and remove terminal (24) from wire (26). Discard terminal.
 5. Remove wire (26) and seal (27) from connector (25).



GROUP I TERMINAL ASSEMBLY

1. Push wire (26) through seal (27) and cavity of connector (25).



401-547

CAUTION

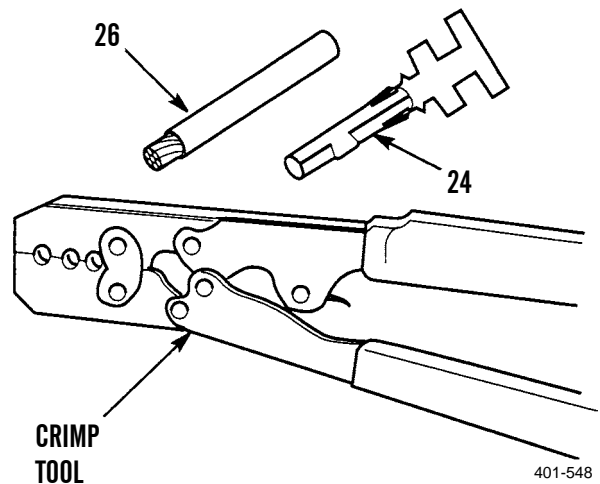
Strip wire after placing it through seal and connector body to prevent damage to individual strands.

2. Strip end of wire (26) using crimp tool leaving 1/4 in. (0.64 cm) of bare wire.

NOTE

When installing terminal be sure terminal wings point to the upper jaw of crimping tool.

3. Push terminal holder open and insert terminal (24) until attaching portion of terminal rests on anvil.



**CRIMP
TOOL**

401-548

GROUP I TERMINAL ASSEMBLY - CONTINUED**NOTE**

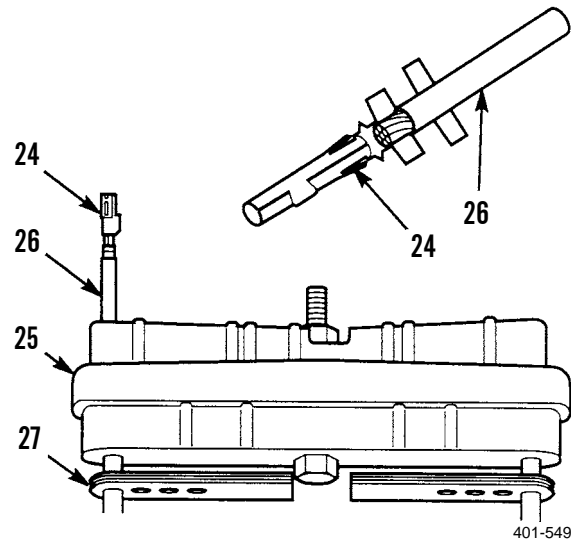
Wire should be positioned so larger wings of terminal will crimp around insulation and smaller wings will crimp around exposed bare wire.

4. Position wire (26) on terminal (24).
5. Press handle(s) of crimp tool together until ratchet releases and crimp is complete.

NOTE

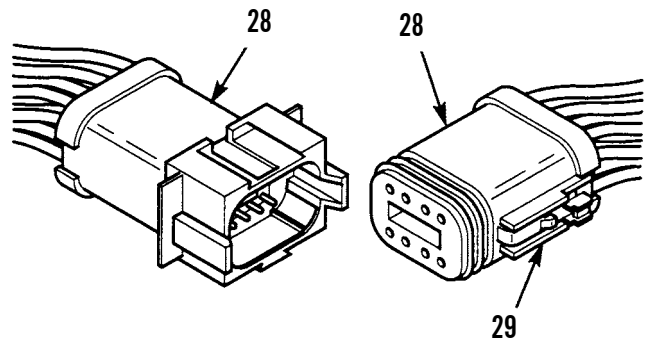
Locking tab should be positioned toward notch in connector cavity when properly installed.

6. Pull wire (26) and terminal (24) back through connector (25) until seated.
7. Seat seal (27) into connector (25).

**GROUP II TERMINAL DISASSEMBLY****NOTE**

- Connector is removed by gently prying up on clip and pulling on connector or pushing in on clip on connector.
- All Group II connectors are repaired the same way. Number of wires in connector may vary. The general shape of Group II connectors may vary.
- Both halves of connectors are repaired the same way.

1. Disconnect connector (28).
2. Unlatch and open two secondary locks (29) on connector (28).



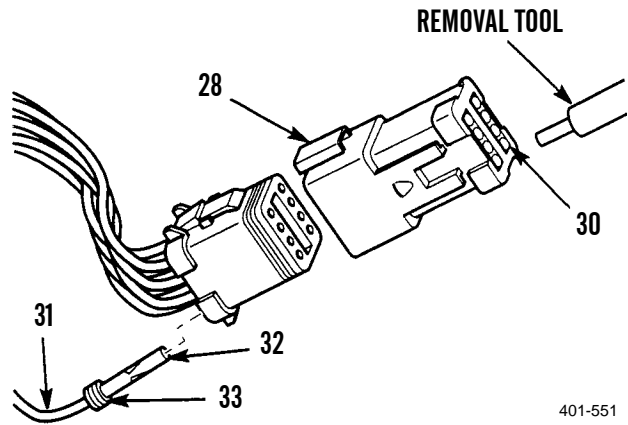
GROUP II TERMINAL DISASSEMBLY - CONTINUED



WARNING

Tip of removal tool is very sharp. Use caution when using tool. Failure to comply may cause injury to personnel.

3. Insert removal tool into cavity (30) on connector (28) until seated.
4. Pull wire (31) back through connector (28) and remove tool.



401-551

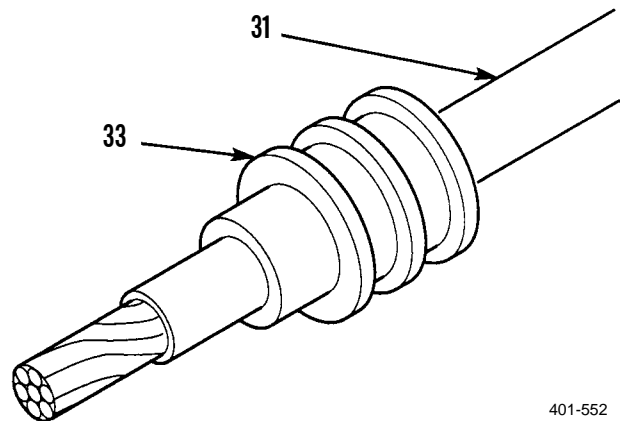
NOTE

- Perform step 5 only if old terminal is still attached to wire.
 - Make cut directly behind damaged terminal.
5. Cut terminal (32) and wire seal (33) from wire (31). Discard terminal and seal.
 6. Insert 1 in. (2.5 cm) of wire (31) through new wire seal (33).

CAUTION

Strip wire after placing it through seal to prevent damage to individual wire strands.

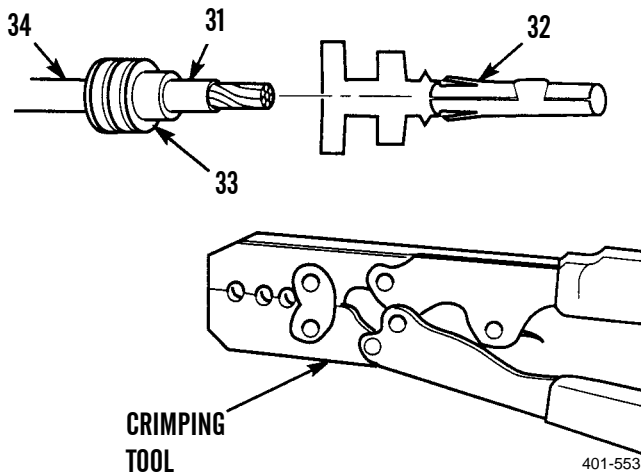
7. Strip end of wire (31) leaving 1/4 in. (0.64 cm) of bare wire.



401-552

GROUP II TERMINAL ASSEMBLY

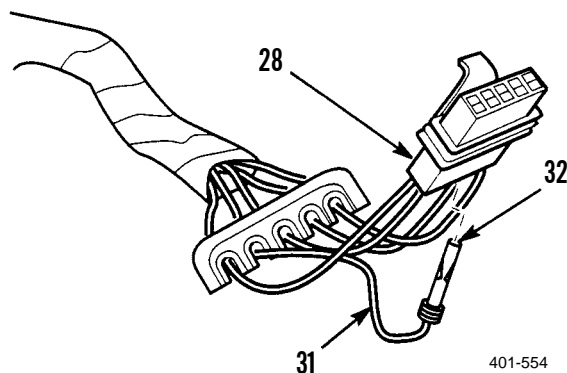
1. Insert new terminal (32) in locating hole of crimp tool using proper hole according to gauge of wire (31).
2. Slide seal (33) down to end of insulation (34).



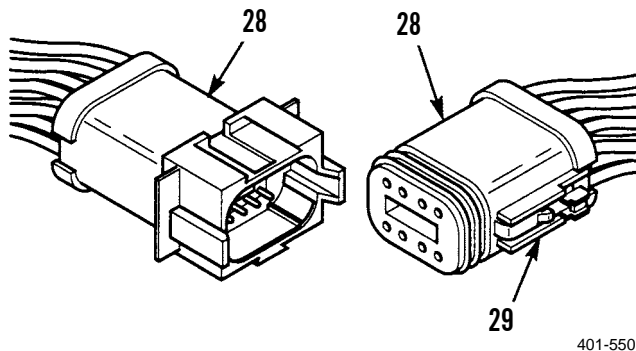
NOTE

Wire and seal should be positioned so larger wings of terminal will crimp around seal and smaller wings will crimp around exposed bare wire.

3. Position wire (31) on terminal (32).
4. Press handles of crimp tool together until ratchet releases and crimp is complete.
5. Push new terminal (32) and wire (31) through connector (28) until seated.



6. Close two secondary locks (29) on connector (28).
7. Connect connector (28).
8. Remove chocks (TM 5-3895-379-10).



END OF WORK PACKAGE

ENGINE WIRING HARNESS REPLACEMENT

0109 00**THIS WORK PACKAGE COVERS**Inspection and Testing, Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (9)

References

WP 0108 00, General Wiring Repair

WP 0213 00, Electrical General Maintenance Instructions

TM 5-3895-379-23P, Figures 58 and 59

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Battery cables disconnected (WP 0105 00)

INSPECTION AND TESTING

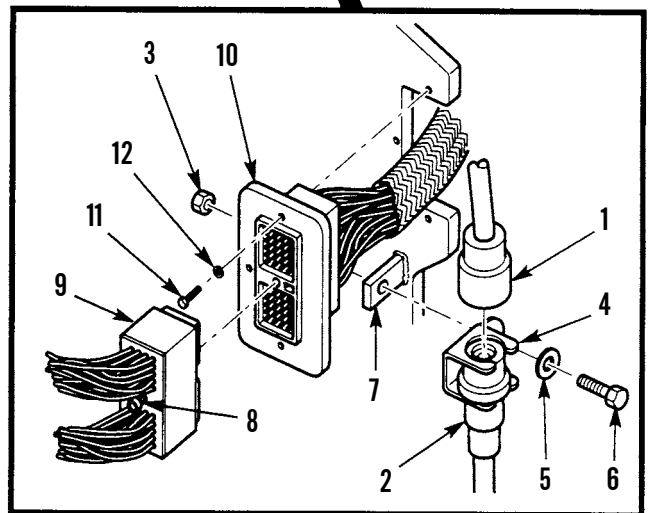
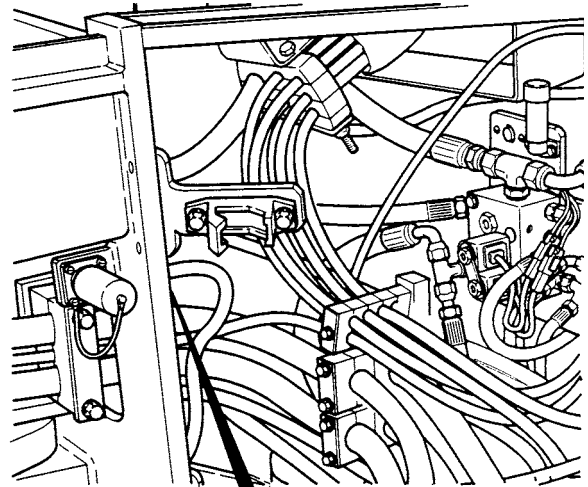
Wiring and electrical inspection and repair is presented in General Wiring Repair (WP 0108 00). Electrical testing is presented in Electrical General Maintenance Instructions (WP 0213 00).

REMOVAL

NOTE

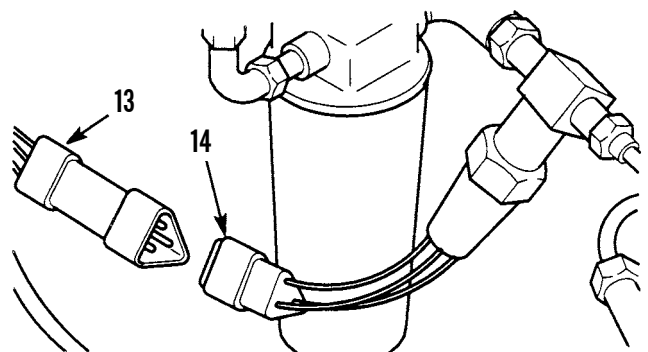
- Tag and mark all wires prior to removal.
- Cut cable ties as needed for removal.

1. Disconnect engine wiring harness connector (1) from connector (2).
2. If damaged, remove nut (3), bracket (4), washer (5) and screw (6) from frame assembly (7).
3. Loosen screw (8) in connector (9) and disconnect connector (9) from engine wiring harness connector (10).
4. Remove three screws (11), lockwashers (12) and engine wiring harness connector (10) from frame assembly (7). Discard lockwashers.



401-555

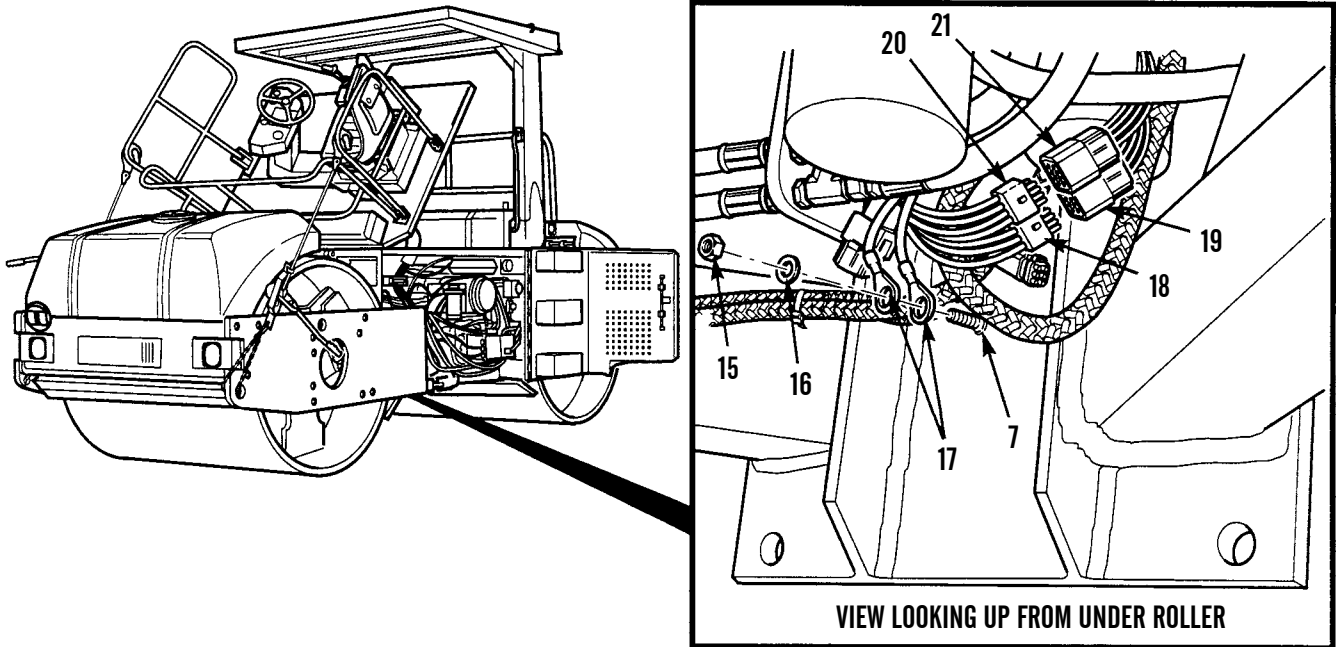
5. Disconnect engine wiring harness connector (13) from low charge pressure switch connector (14).



401-556

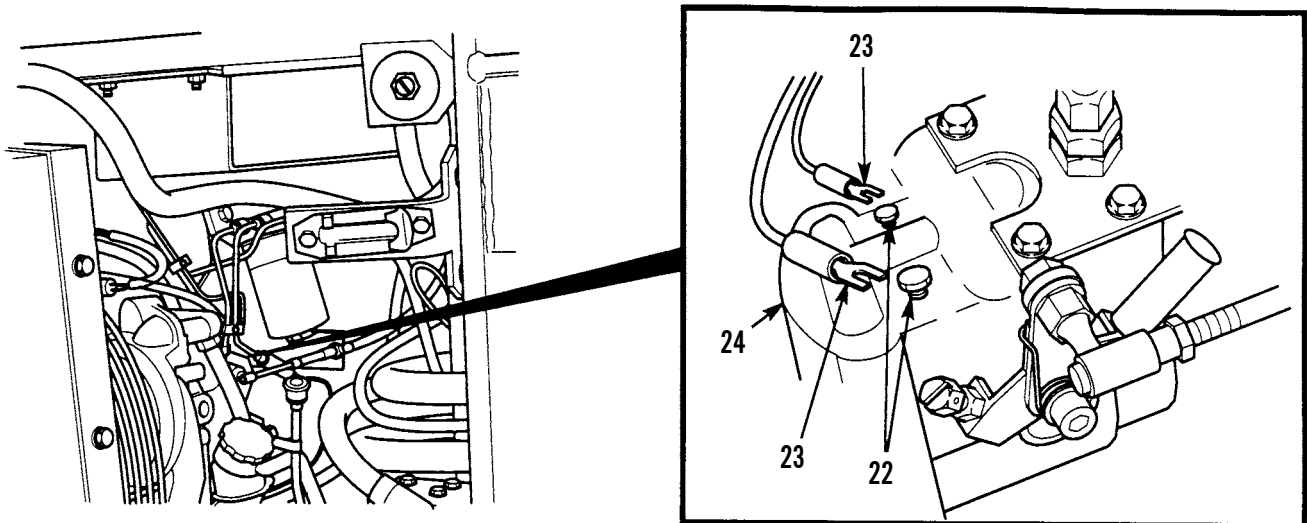
REMOVAL - CONTINUED

6. Remove nut (15), washer (16) and two wires (17) from frame assembly (7).
7. Disconnect engine wiring harness connector (18) from rear wiring harness connector (19).
8. Disconnect engine wiring harness connector (20) from front wiring harness connector (21).



401-557

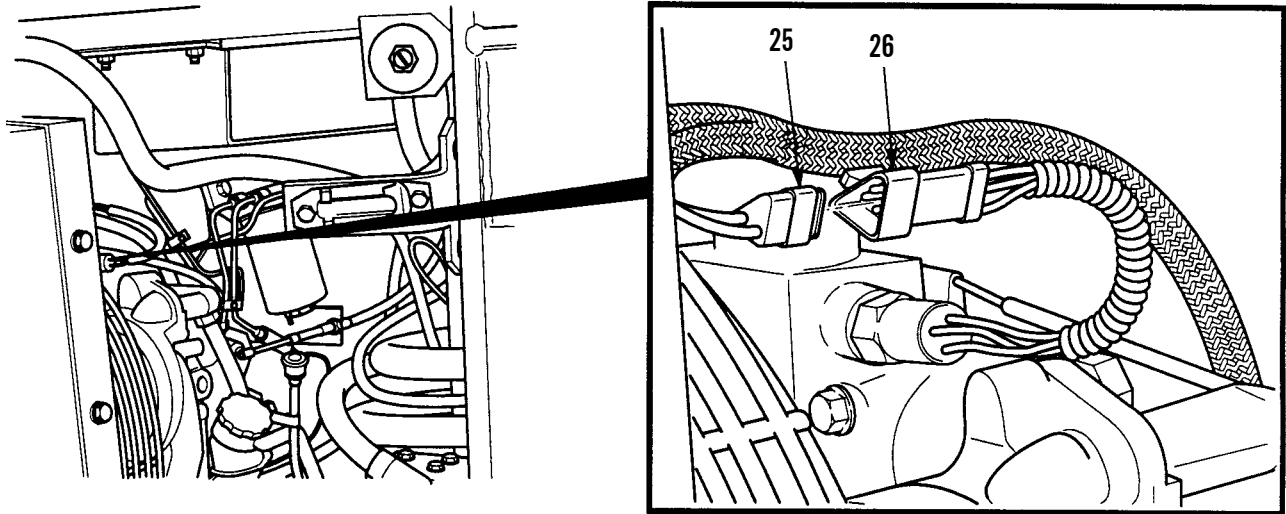
9. Loosen two nuts (22) and remove two wires (23) from fuel solenoid (24).



401-558

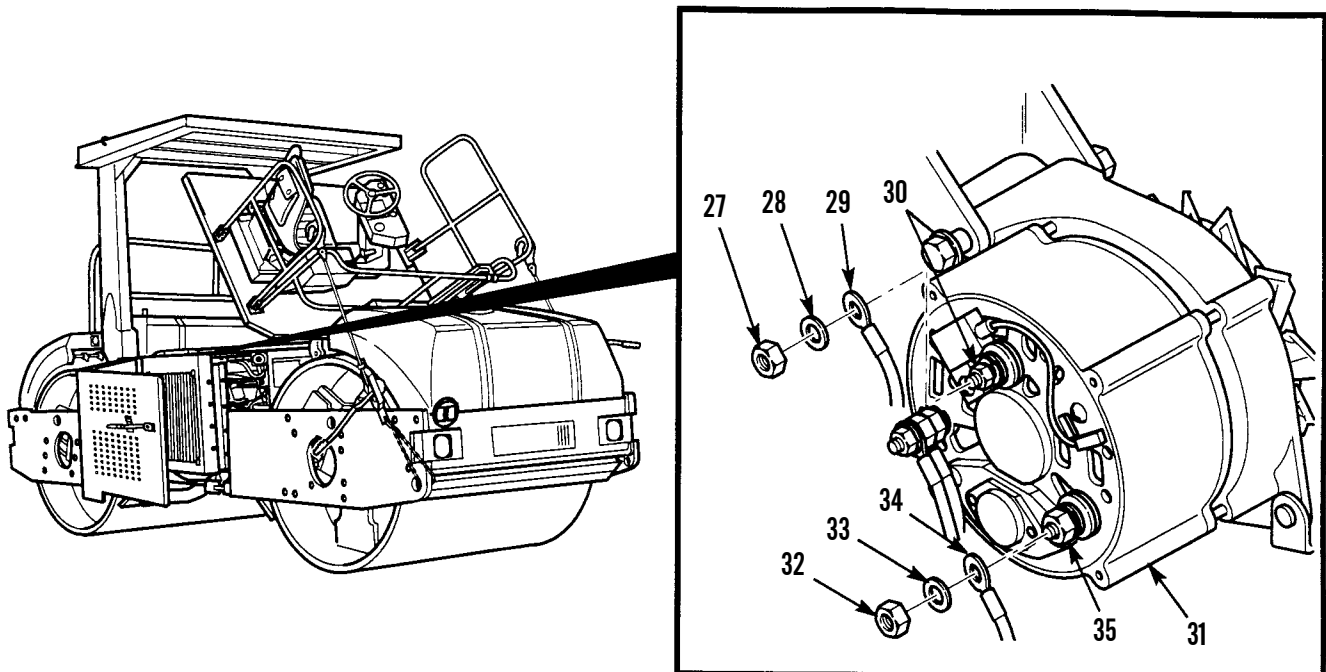
REMOVAL - CONTINUED

10. Disconnect engine wiring harness connector (25) from water temperature sensor connector (26).



401-559

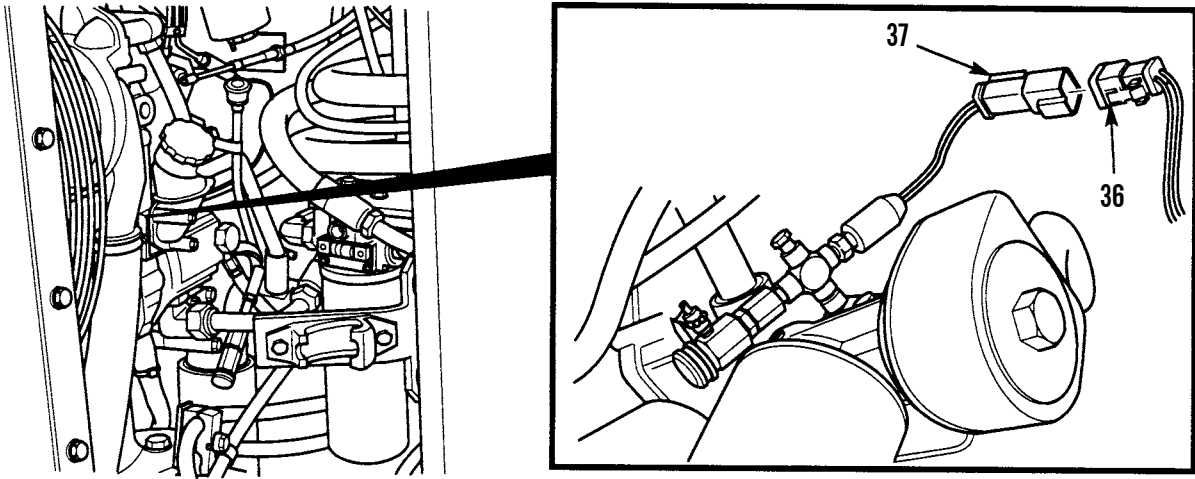
11. Remove nut (27), washer (28) and wire (29) from D+ terminal (30) of alternator (31).
12. Remove nut (32), washer (33) and wire (34) from B+ terminal (35) of alternator (31).



401-560

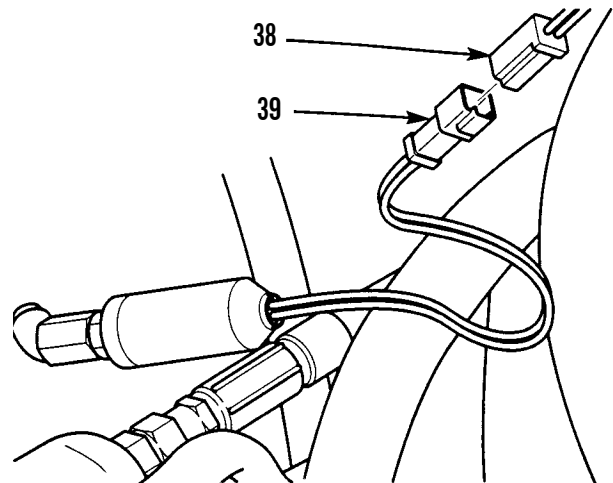
REMOVAL - CONTINUED

13. Disconnect engine wiring harness connector (36) from hourmeter connector (37).



401-561

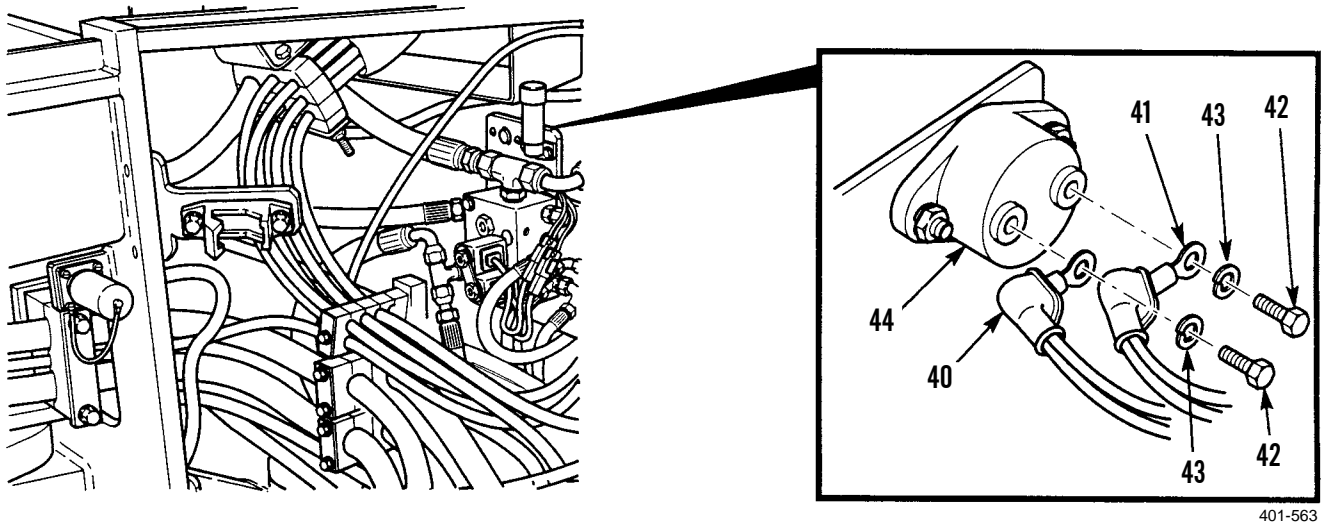
14. Disconnect engine wiring harness connector (38) from engine oil pressure switch connector (39).



401-562

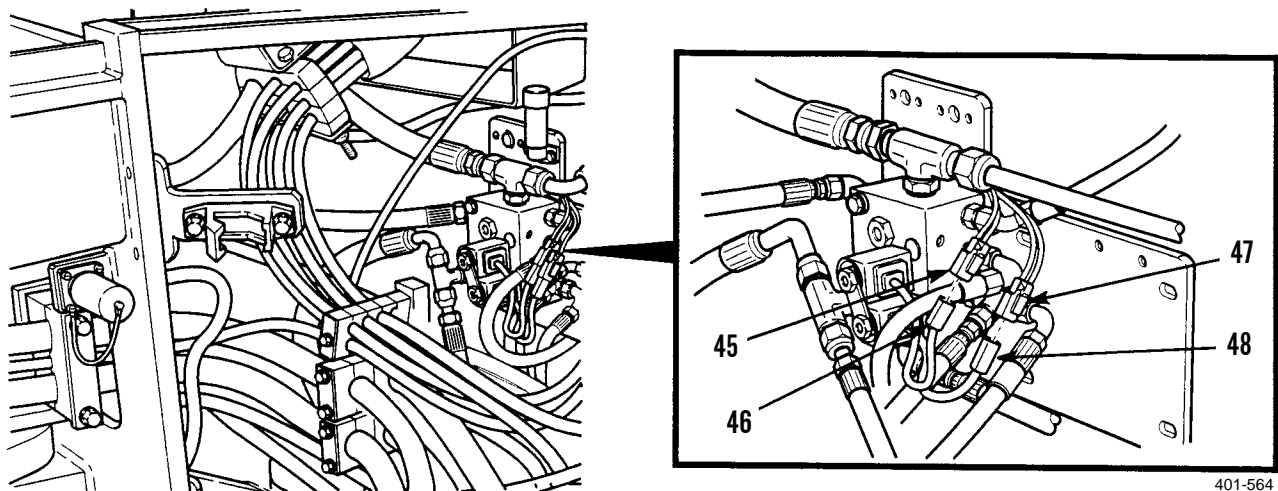
REMOVAL - CONTINUED

15. Position two cable boots (40) to expose ends of cables (41) and remove two screws (42), lockwashers (43) and two cables from alternator reset (44). Discard lockwashers.



401-563

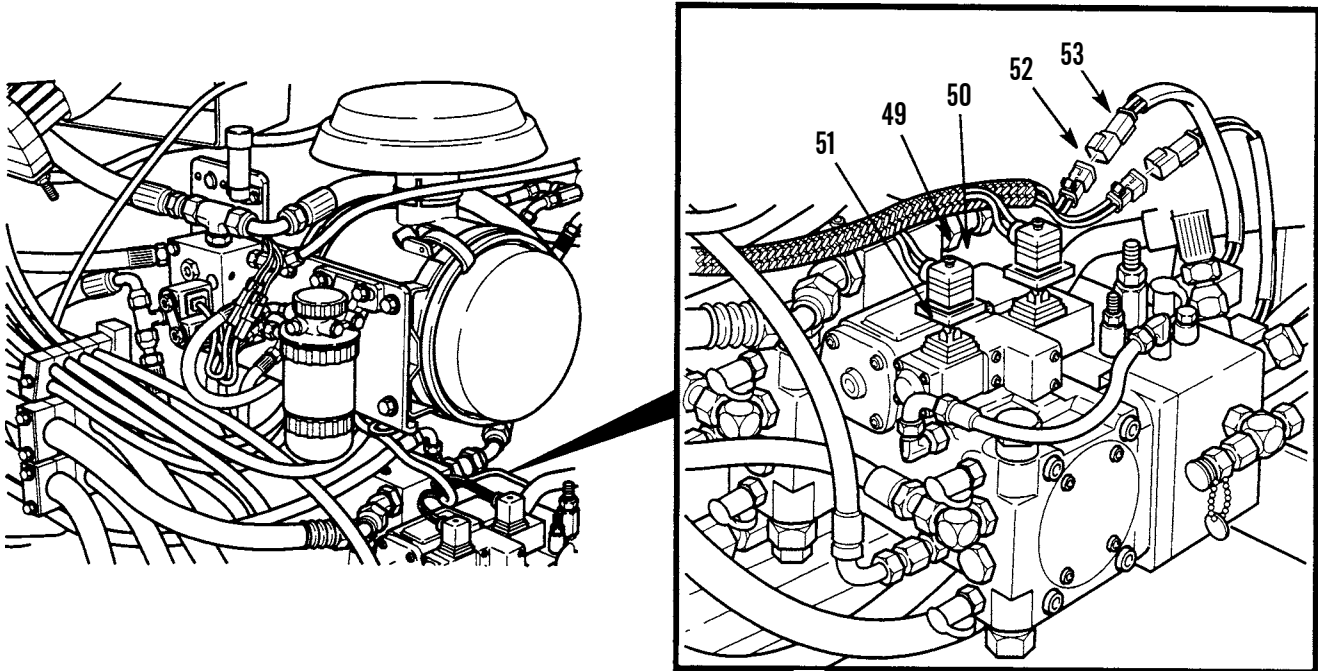
16. Disconnect engine wiring harness connector (45) from two-speed valve connector (46).
17. Disconnect engine wiring harness connector (47) from brake valve connector (48).



401-564

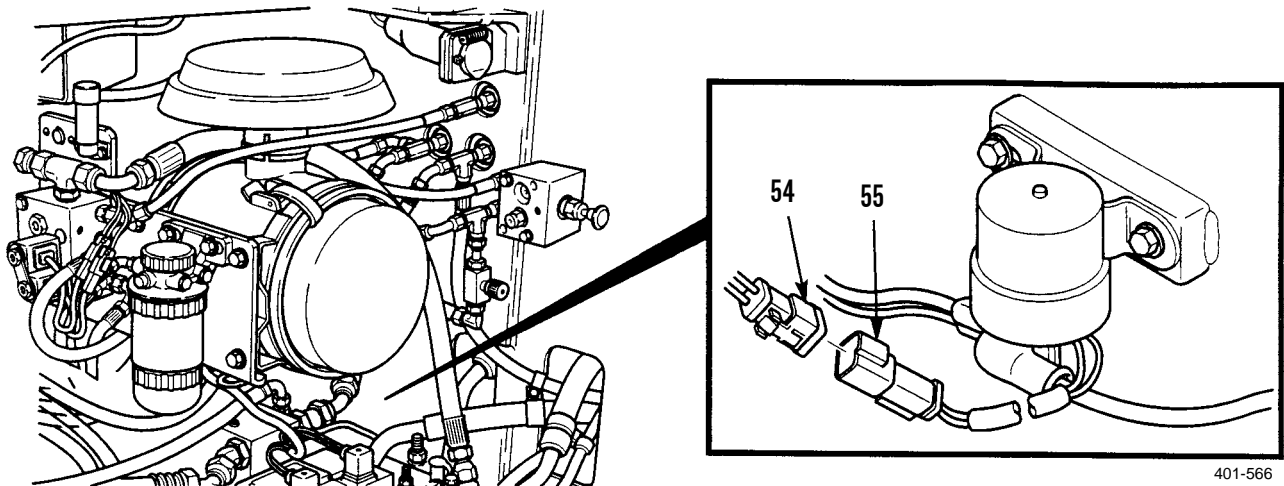
REMOVAL - CONTINUED

18. Loosen two screws (49) and disconnect two engine wiring harness connectors (50) from two vibratory pump connectors (51).
19. Disconnect two engine wiring harness connectors (52) from two vibratory control valve connectors (53).



401-565

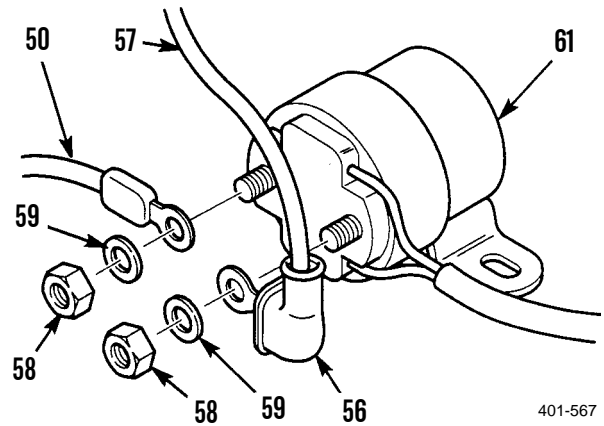
20. Disconnect engine wiring harness connector (54) from starter relay connector (55).



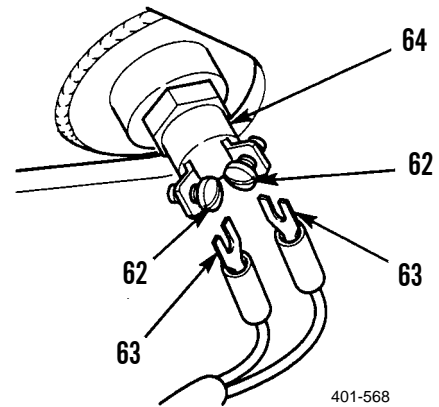
401-566

REMOVAL - CONTINUED

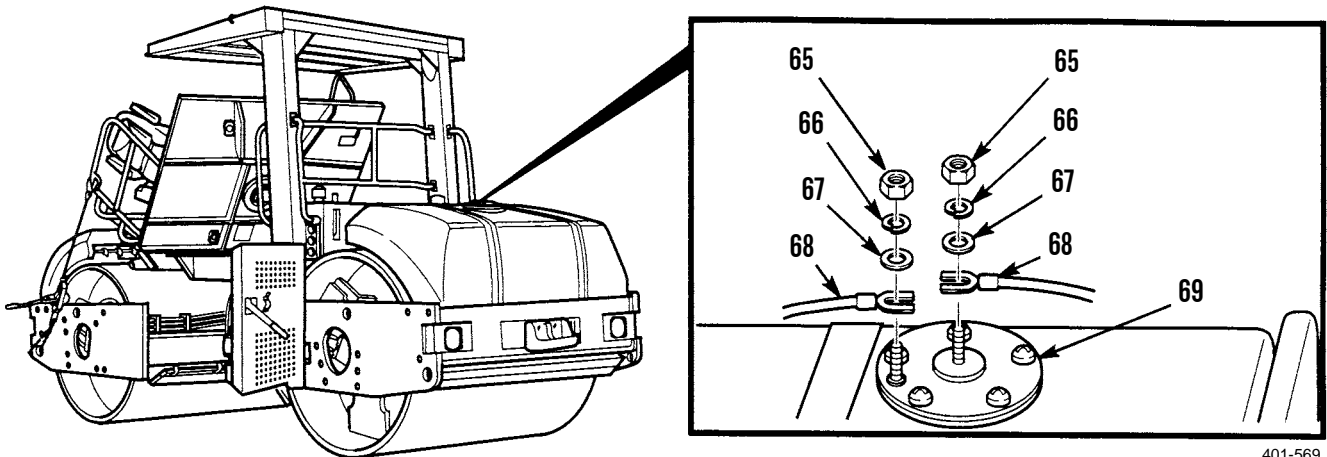
21. Position boot (56) so that end of cable (57) can be seen and remove two nuts (58), washers (59) and two cables (57) and (60) from starter relay switch assembly (61).



22. Loosen two screws (62) and remove two wires (63) from hydraulic temperature sensor (64).

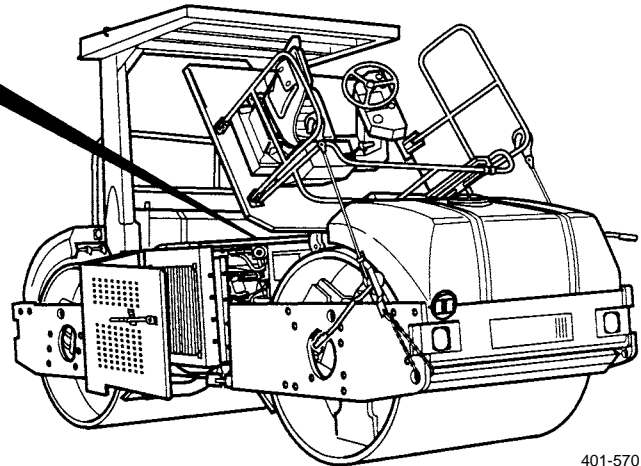
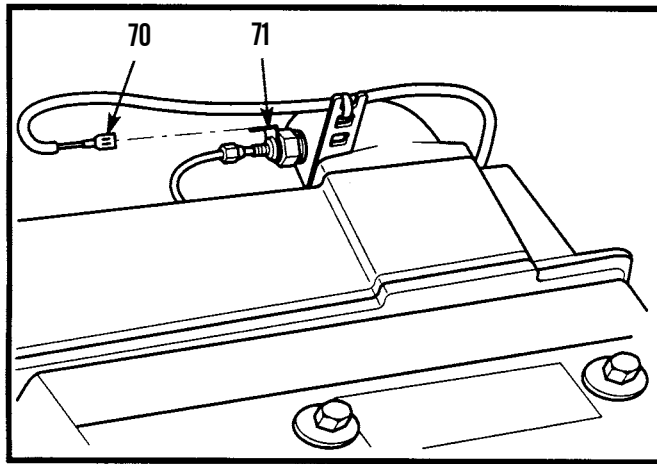


23. Remove two nuts (65), lockwashers (66), washers (67) and wires (68) from fuel level sending unit (69). Discard lockwashers.



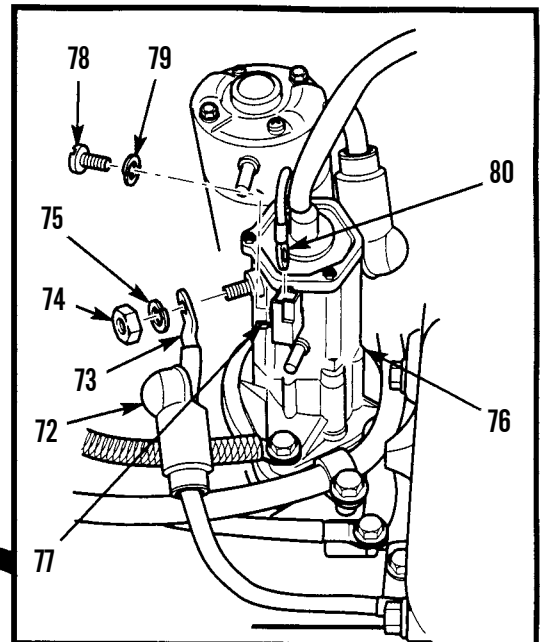
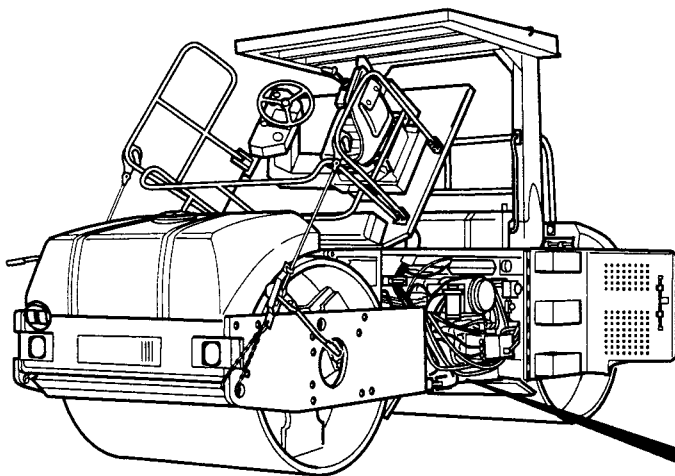
REMOVAL - CONTINUED

24. Disconnect engine wiring harness clip (70) from starting aid (71).



401-570

25. Position boot (72) to expose cable (73) end and remove nut (74), lockwasher (75) and cable (73) from starter (76). Discard lockwasher.
26. Open cover (77) on starter (76) and remove screw (78), lockwasher (79) and cable (80) from starter (76). Discard lockwasher.
27. Note position of engine wiring harness. Carefully remove wiring harness from roller.



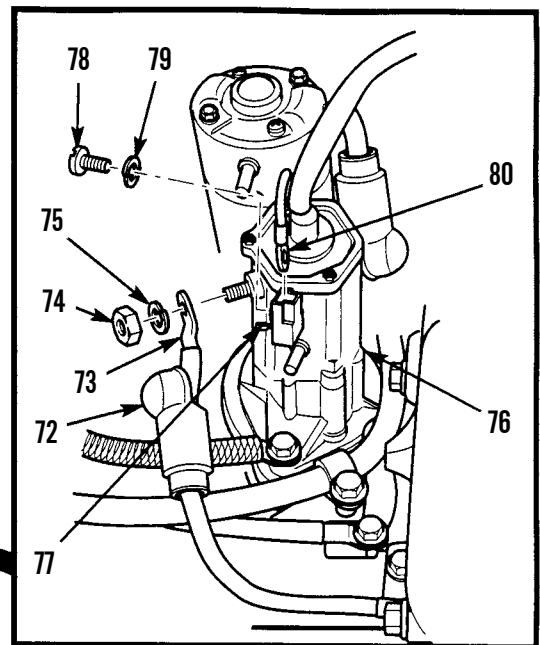
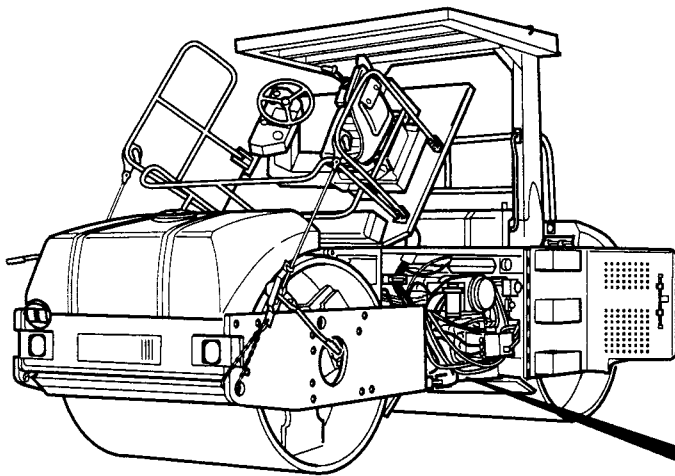
401-571

INSTALLATION

NOTE

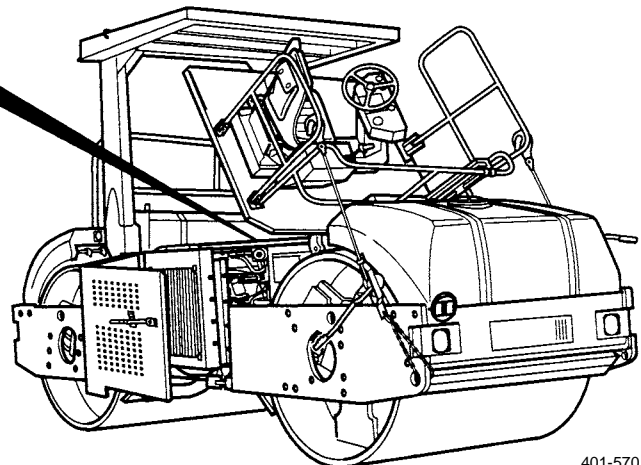
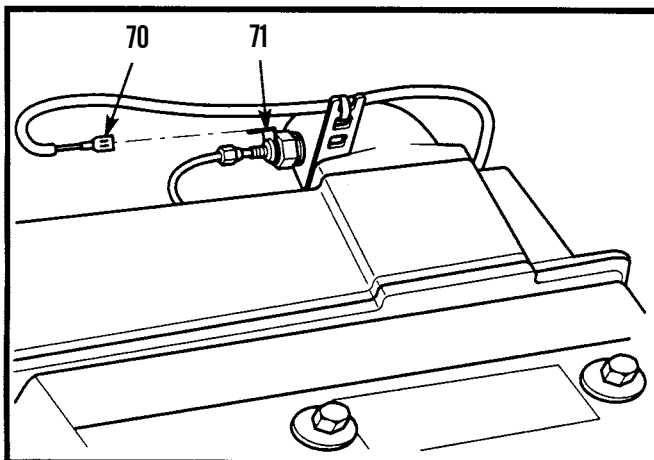
Install cable ties as required.

1. Position loose wiring harness in general installation position.
2. Install cable (80) on starter (76) with new lockwasher (79) and screw (78). Close cover (77).
3. Install cable (73) on starter (76) with new lockwasher (75) and nut (74). Position boot (72) to cover cable end.



401-571

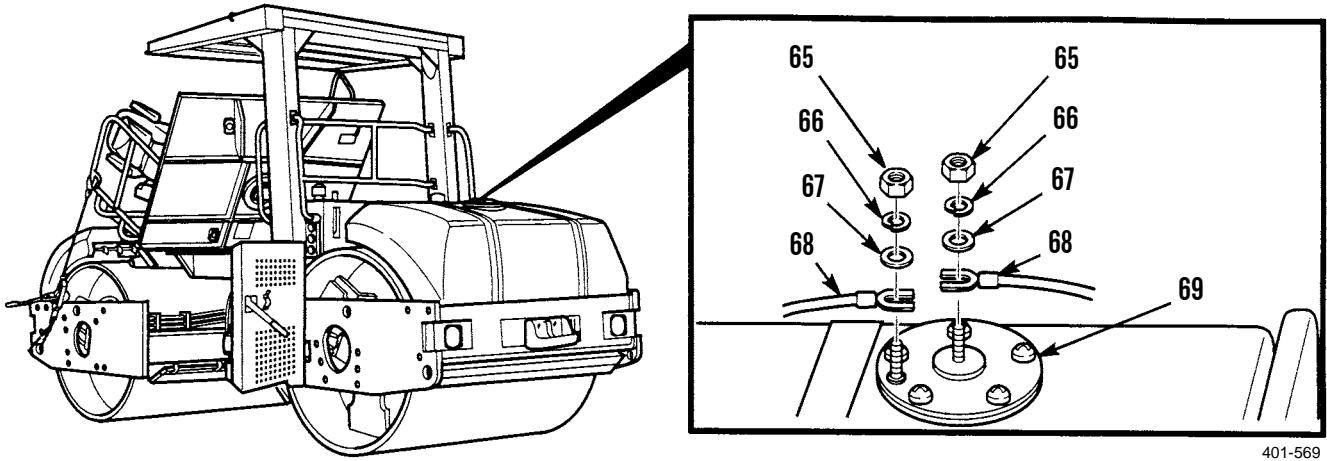
4. Connect engine wiring harness clip (70) to starting aid (71).



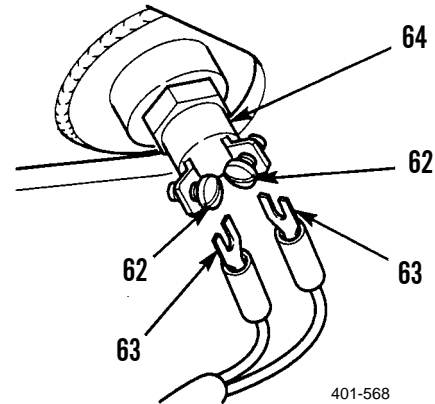
401-570

INSTALLATION - CONTINUED

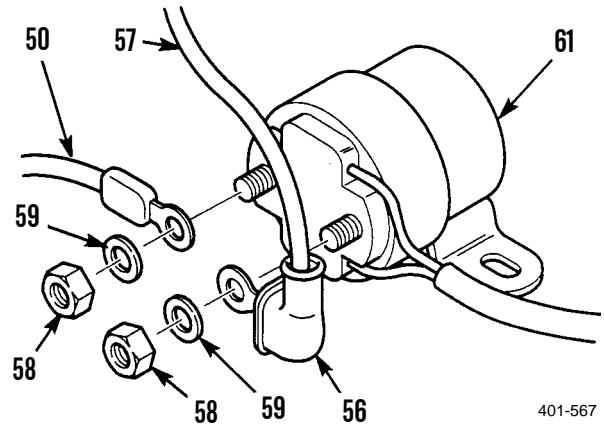
5. Install two wires (68) on fuel level sending unit (69) with two washers (67), new lockwashers (66) and nuts (65).



6. Position two wires (63) on hydraulic temperature sensor (64) and tighten two screws (62).

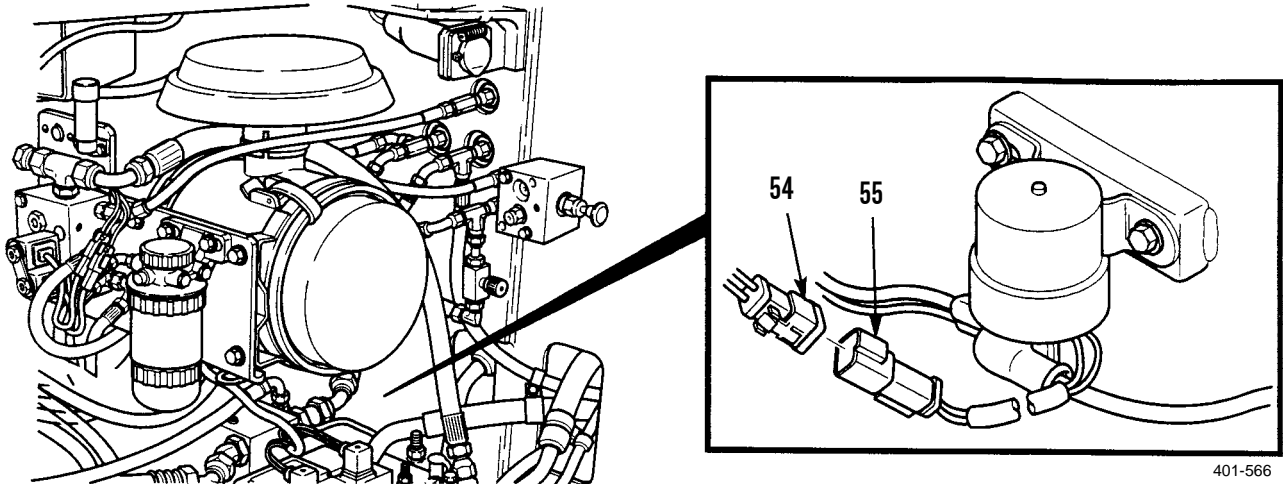


7. Install two cables (57) and (60) on starter relay switch assembly (61) with two washers (59) and nuts (58). Position boot (56) to cover cable (57).

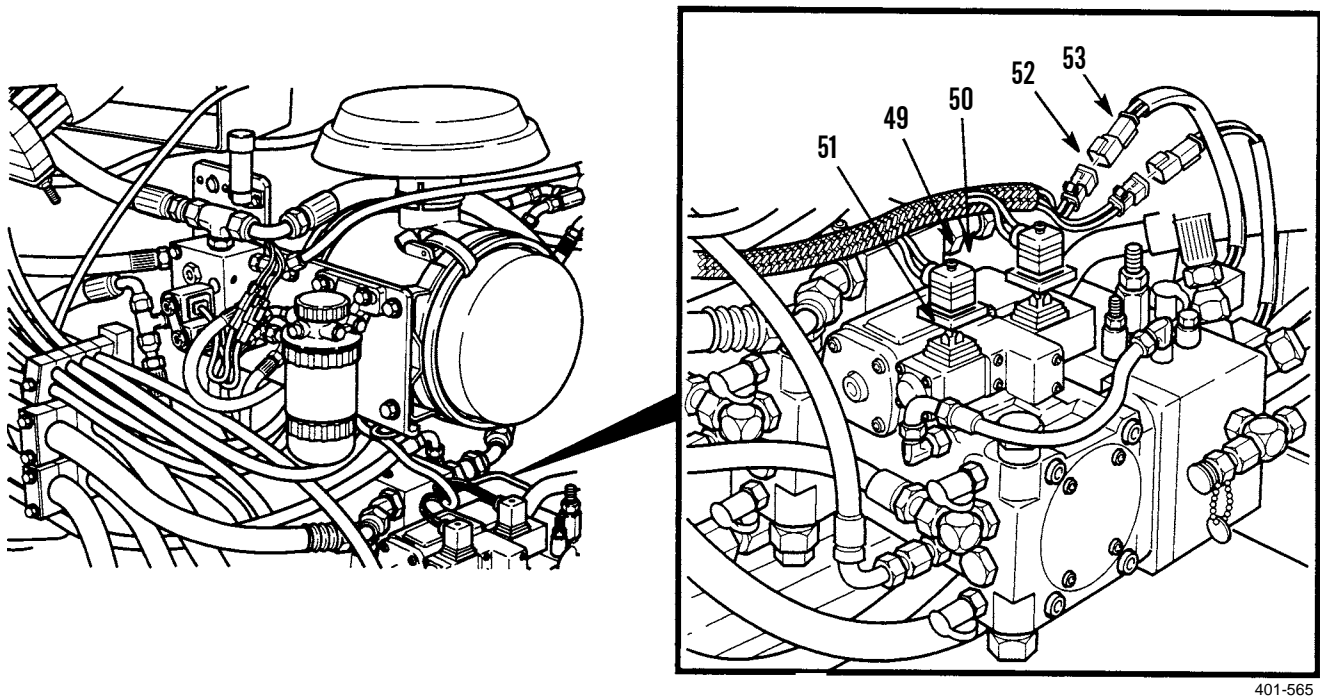


INSTALLATION - CONTINUED

8. Connect engine wiring harness connector (54) to starter relay connector (55).

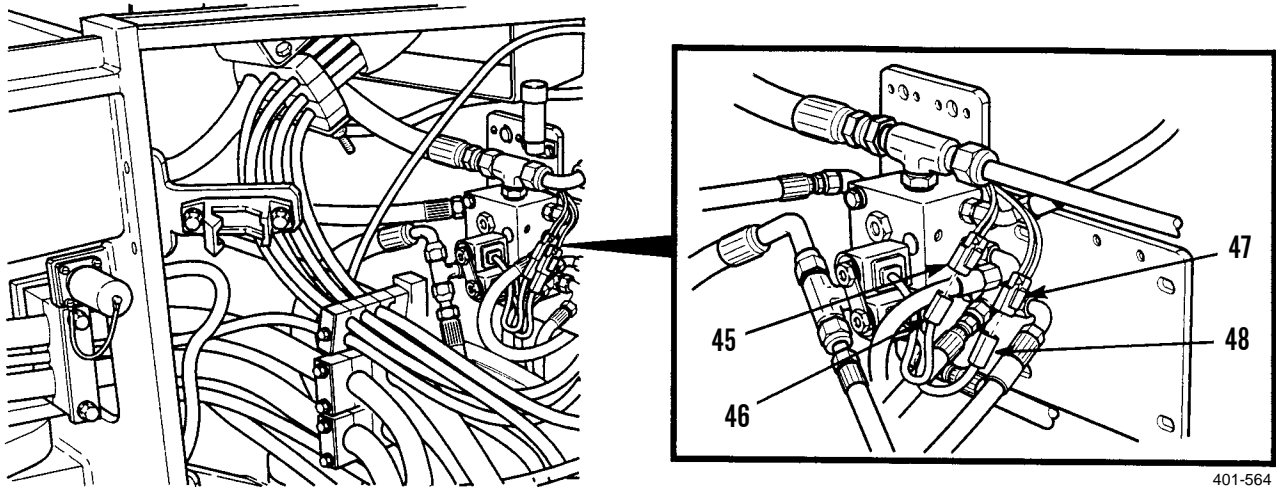


9. Connect two engine wiring harness connectors (52) to vibratory control valve connectors (53).
10. Position two engine wiring harness connectors (50) on vibratory pump connectors (51) and tighten screws (49).

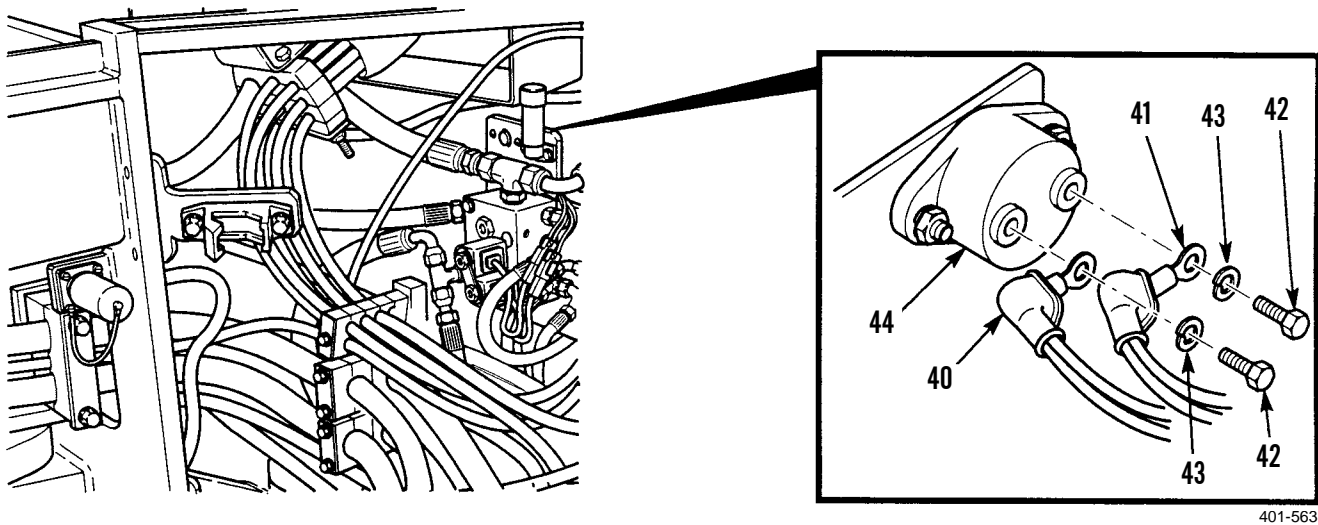


INSTALLATION - CONTINUED

11. Connect engine wiring harness connector (47) to brake valve connector (48).
12. Connect engine wiring harness connector (45) to two-speed valve connector (46).

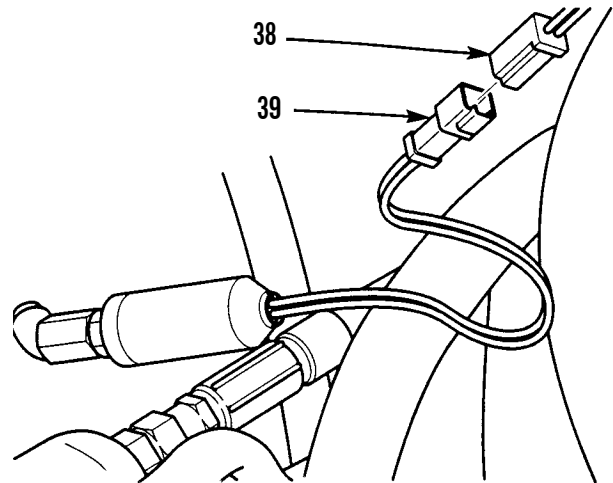


13. Install two cables (41) on alternator reset (44) with two new lockwashers (43) and screws (42). Position two boots (40) to cover cable ends.



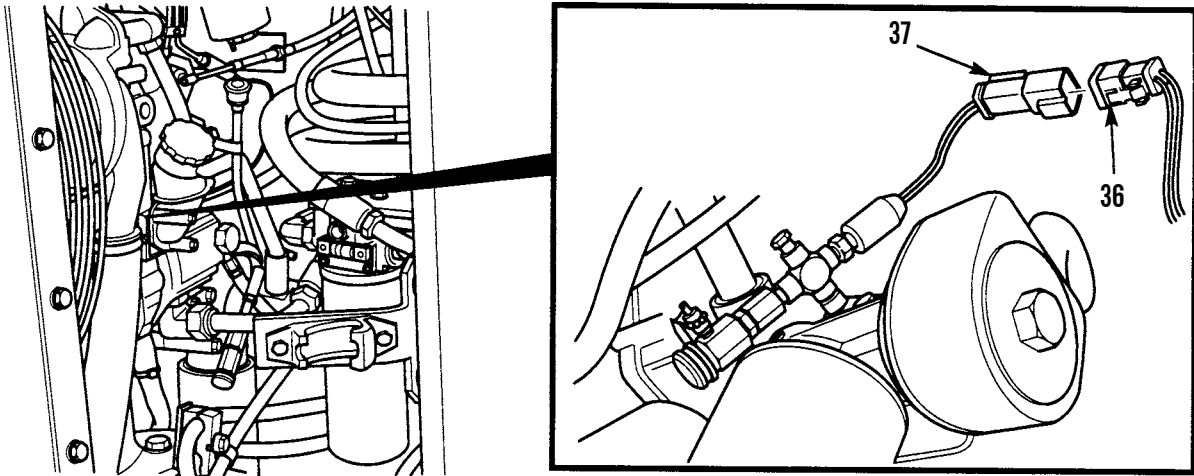
INSTALLATION - CONTINUED

14. Connect engine wiring harness connector (38) to engine oil pressure switch connector (39).



401-562

15. Connect engine wiring harness connector (36) to hourmeter connector (37).



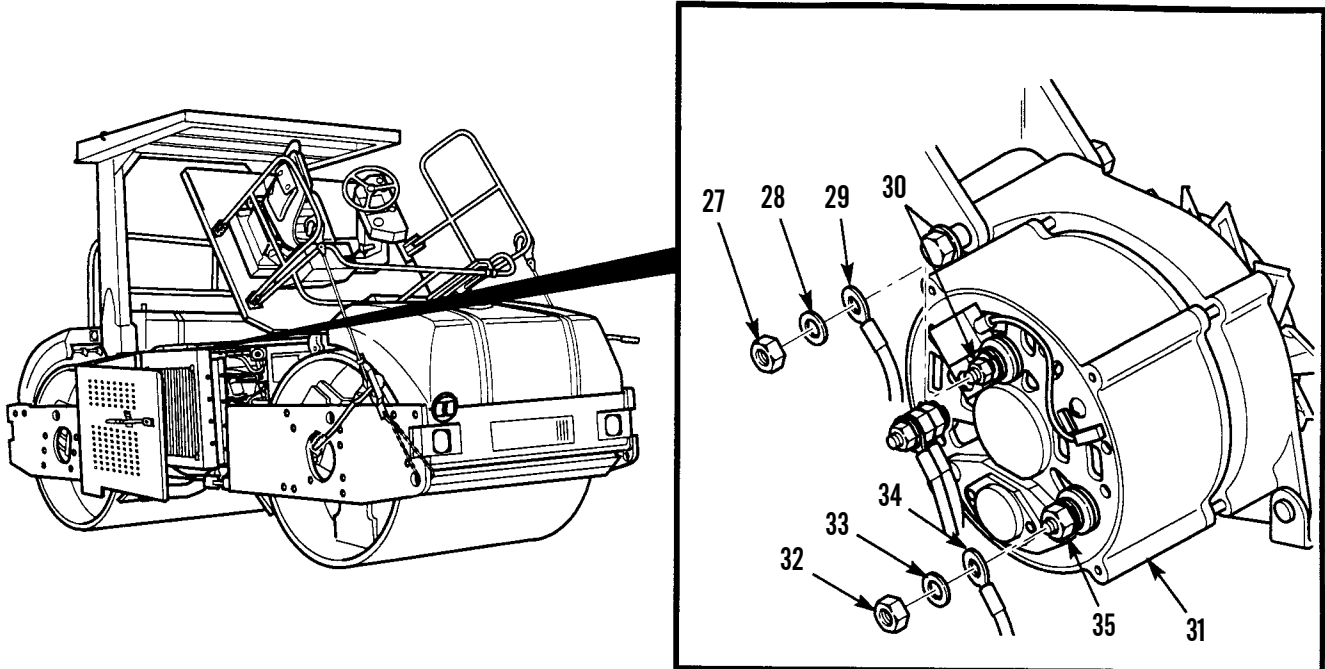
401-561

ENGINE WIRING HARNESS REPLACEMENT - CONTINUED

0109 00

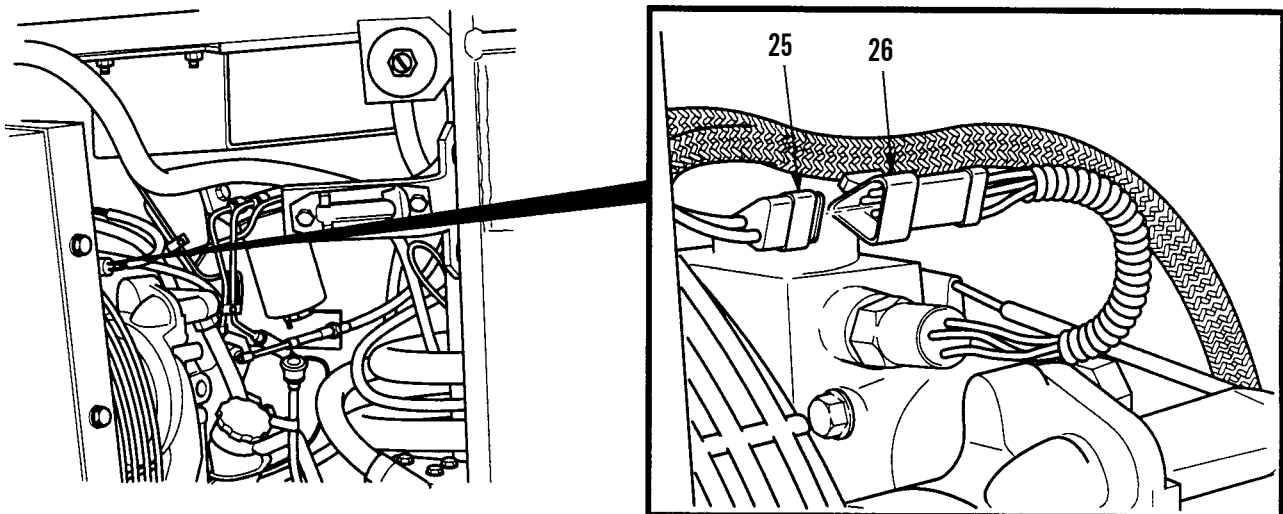
INSTALLATION - CONTINUED

16. Install wire (34) on B+ terminal (35) of alternator (31) with washer (33) and nut (32). Tighten nut to 5-6 lb-ft (7-8 Nm).
17. Install wire (29) on D+ terminal (30) of alternator (31) with washer (28) and nut (27). Tighten nut to 1-1.4 lb-ft (1.35-1.9 Nm).



401-560

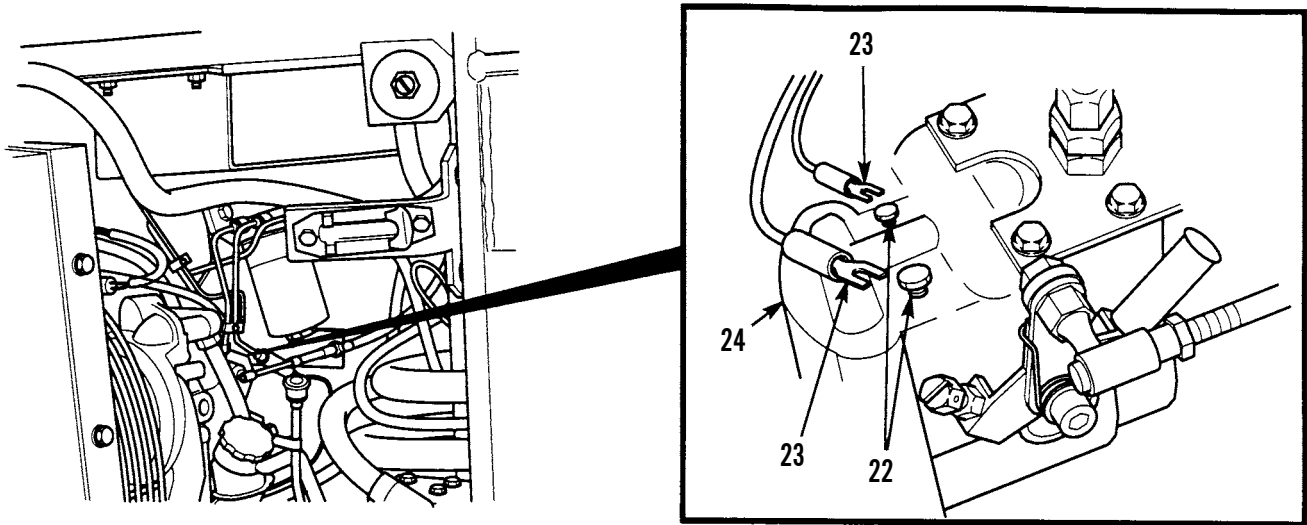
18. Connect engine wiring harness connector (25) to water temperature sensor connector (26).



401-559

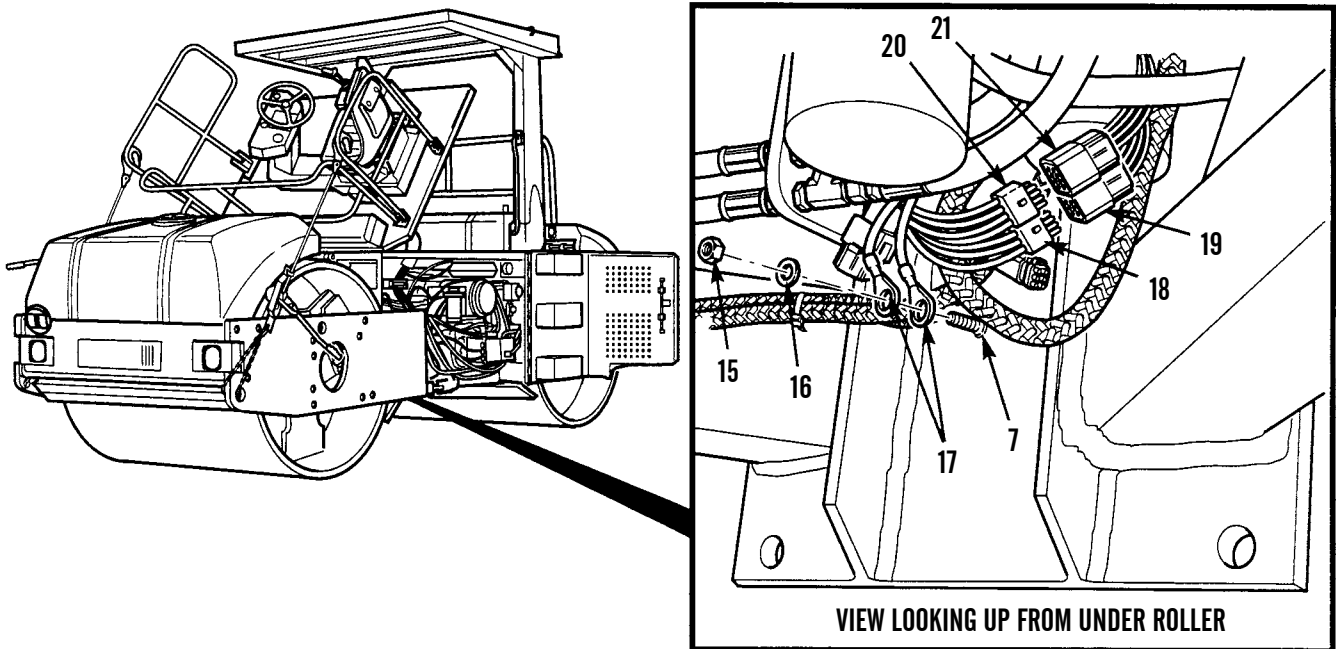
INSTALLATION - CONTINUED

19. Position two wires (23) on fuel solenoid (24) and tighten two nuts (22).



401-558

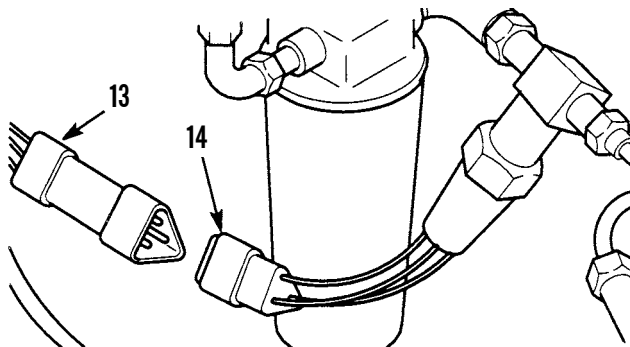
20. Connect engine wiring harness connector (20) to front wiring harness connector (21).
21. Connect engine wiring harness connector (18) to rear wiring harness connector (19).
22. Install two wires (17) to frame assembly (7) with washer (16) and nut (15).



401-557

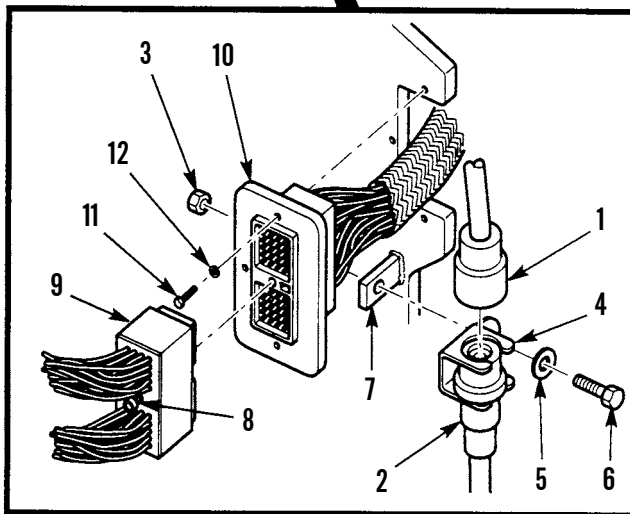
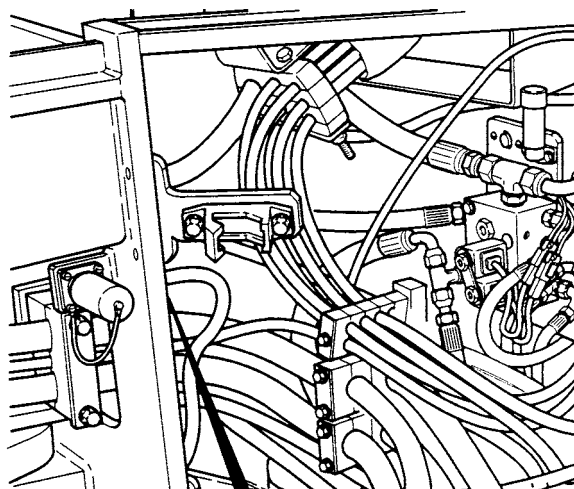
INSTALLATION - CONTINUED

- 23. Connect engine wiring harness connector (13) to low charge pressure switch connector (14).



401-556

- 24. Install engine wiring harness connector (10) to frame assembly (7) with three new lockwashers (12) and screws (11).
- 25. Connect engine wiring harness connector (10) to connector (9) and tighten screw (8).
- 26. If removed, install bracket (4) to frame assembly (7) with screw (6), washer (5) and nut (3).
- 27. Connect engine wiring harness connector (1) to connector (2).
- 28. Connect battery cables (WP 0105 00).
- 29. Lower operator platform assembly (WP 0128 00).



401-555

END OF WORK PACKAGE

FRONT CHASSIS WIRING HARNESS REPLACEMENT

0110 00**THIS WORK PACKAGE COVERS**

Inspection and Testing, Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

References

WP 0108 00, General Wiring Repair

WP 0213 00, Electrical General Maintenance
Instructions

TM 5-3895-379-23P, Figure 59

Equipment Condition

Front water tank removed (WP 0154 00)

Battery cables disconnected (WP 0105 00)

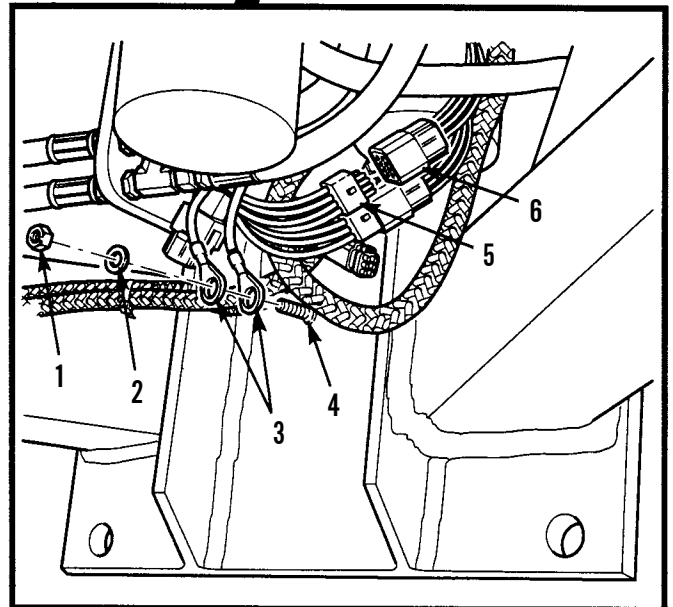
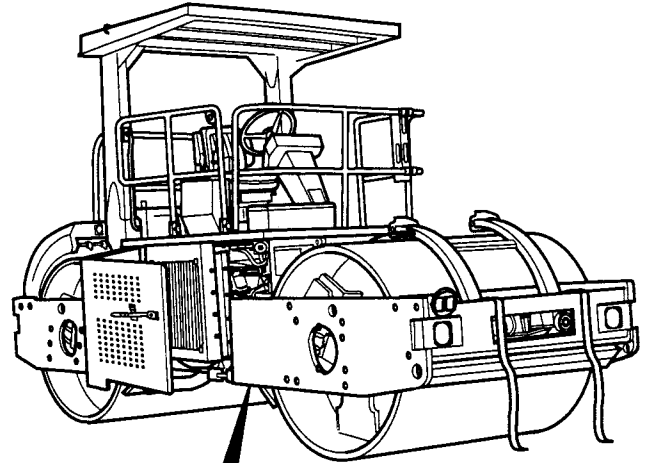
Right-side door assembly opened (TM-5-3895-379-
10)

INSPECTION AND TESTING

Wiring and electrical inspection and repair is presented in General Wiring Repair (WP 0108 00). Electrical testing is presented in Electrical General Maintenance Instructions (WP 0213 00).

REMOVAL**NOTE**

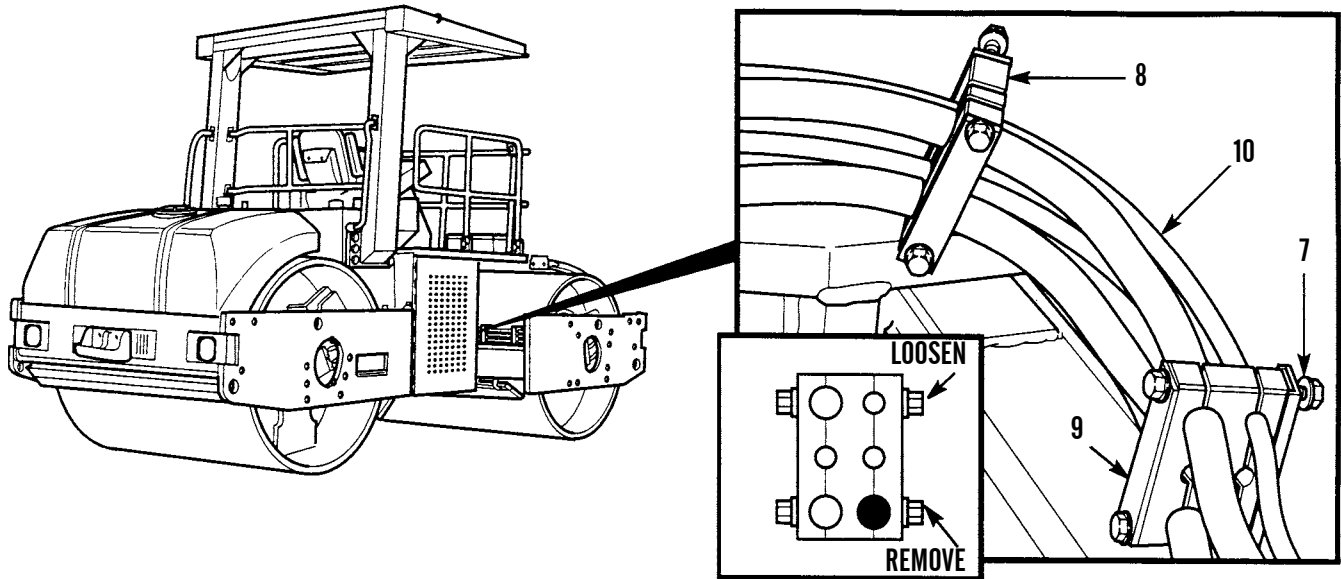
- Remove cable ties as required.
 - Tag and mark all wires prior to removal.
 - Tag and mark general position of wiring harness in chassis as components are removed. Harness will need to be repositioned at start of installation.
1. Remove nut (1), washer (2) and two wires (3) from frame assembly (4).
 2. Disconnect front wire harness connector (5) from connector (6).



401-565

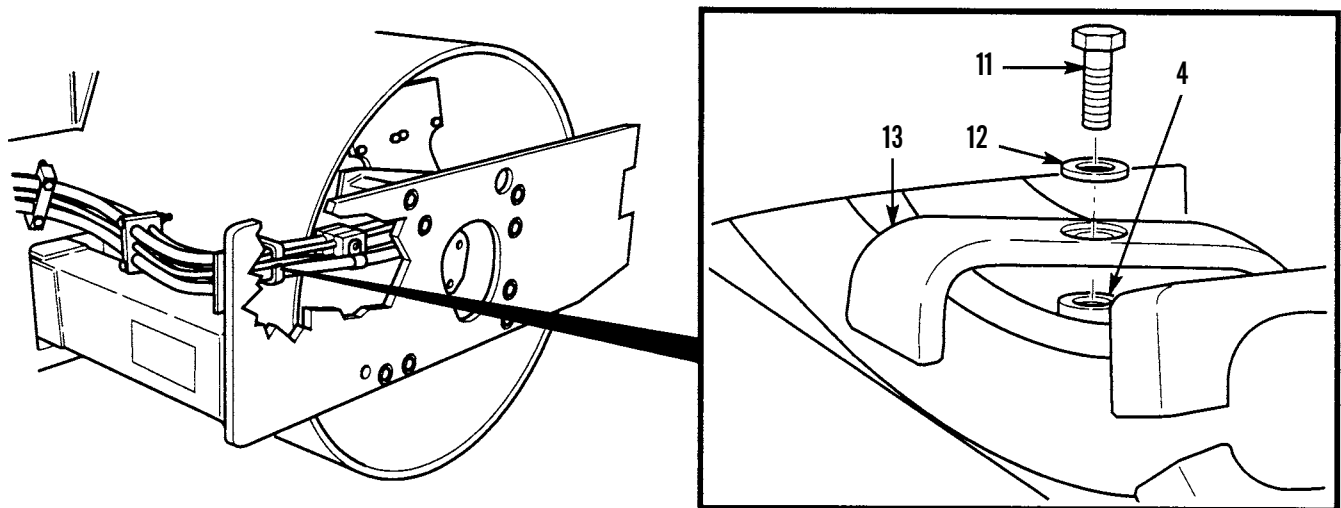
REMOVAL - CONTINUED

3. Loosen eight nuts (7) on four brackets (8).
4. Remove bottom nuts (7) and screws (9) and pull front wiring harness (10) through brackets (8).



401-577

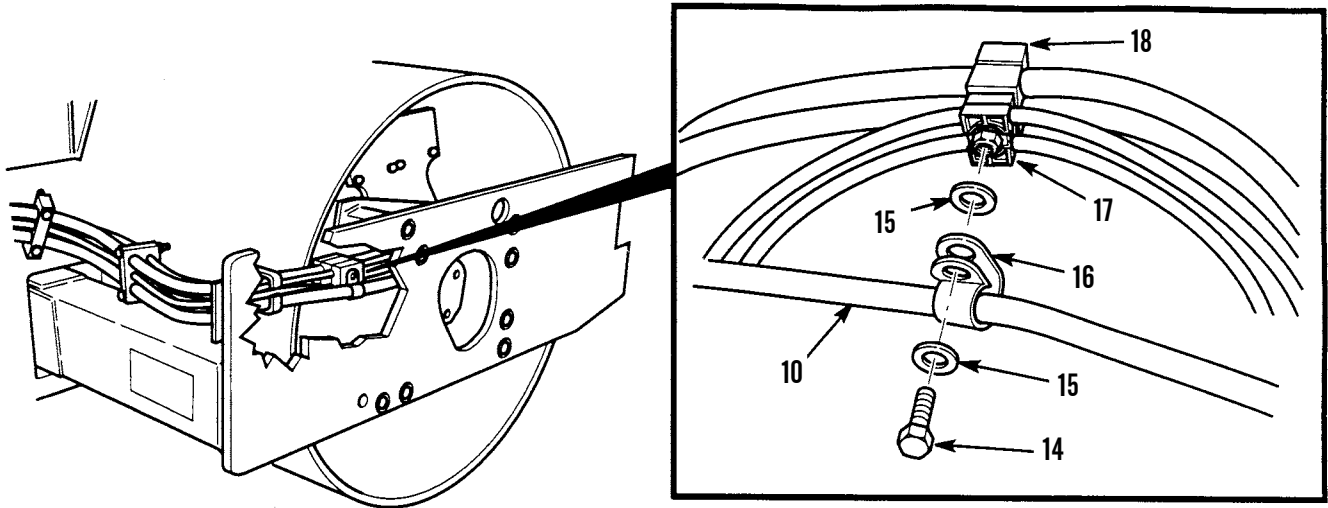
5. Remove screw (11), washer (12) and bracket (13) from frame assembly (4).



401-578

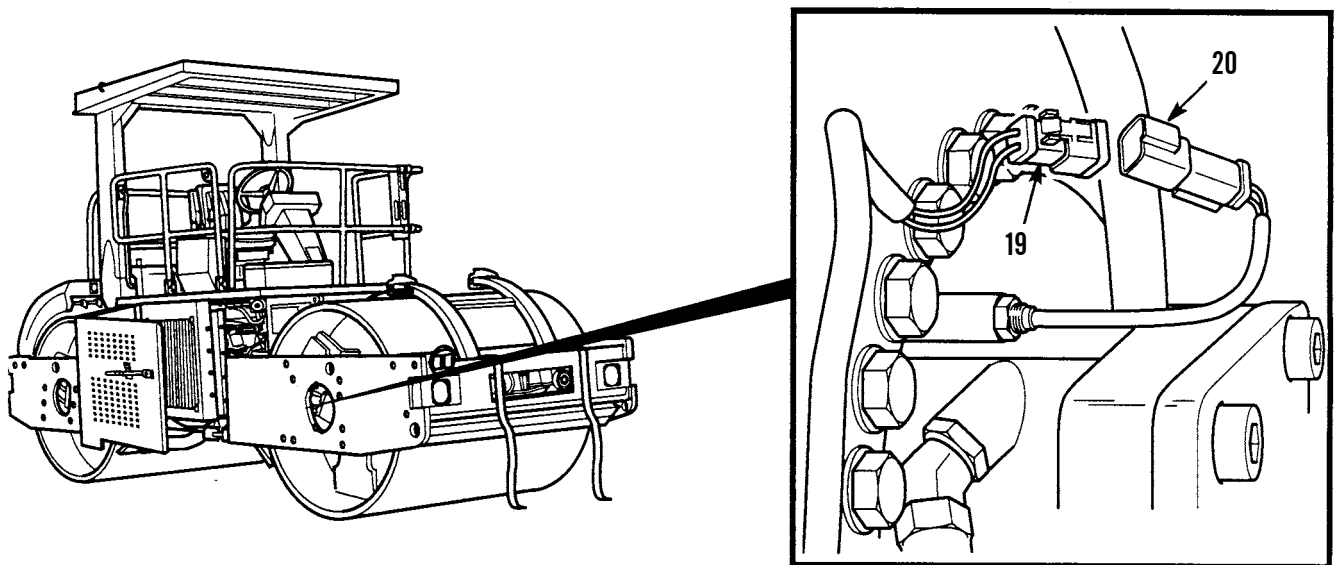
REMOVAL - CONTINUED

6. Remove screw (14), washer (15), clip (16) and washer (15) from welded nut (17) on clip assembly (18).
7. Remove clip (18) from front wiring harness (10).



401-579

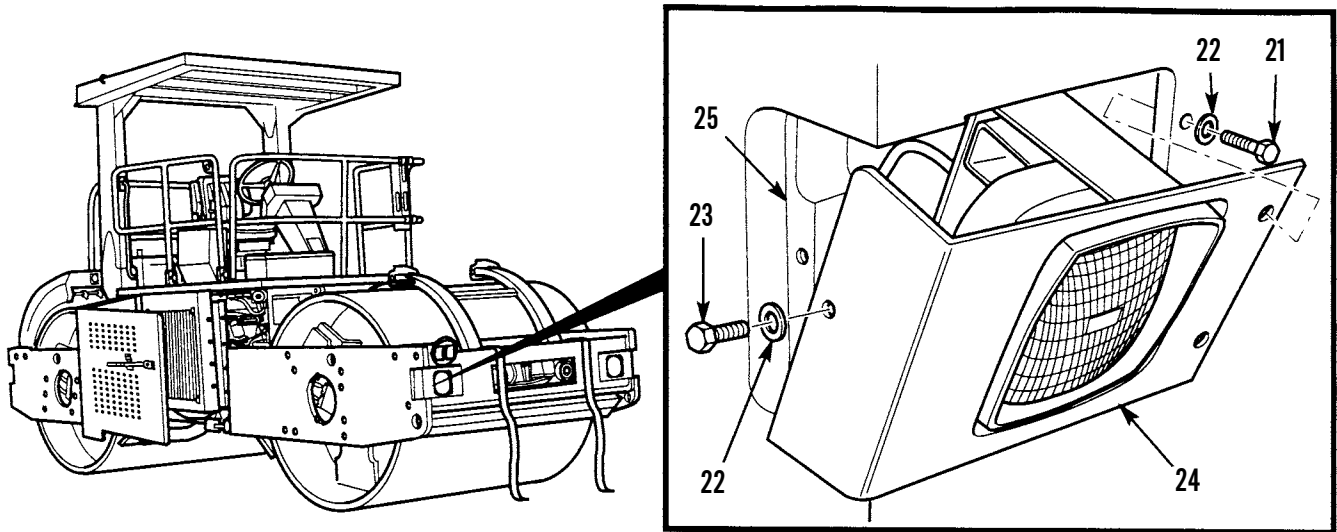
8. Disconnect front wiring harness connector (19) from front vibratory sensor connector (20).



401-580

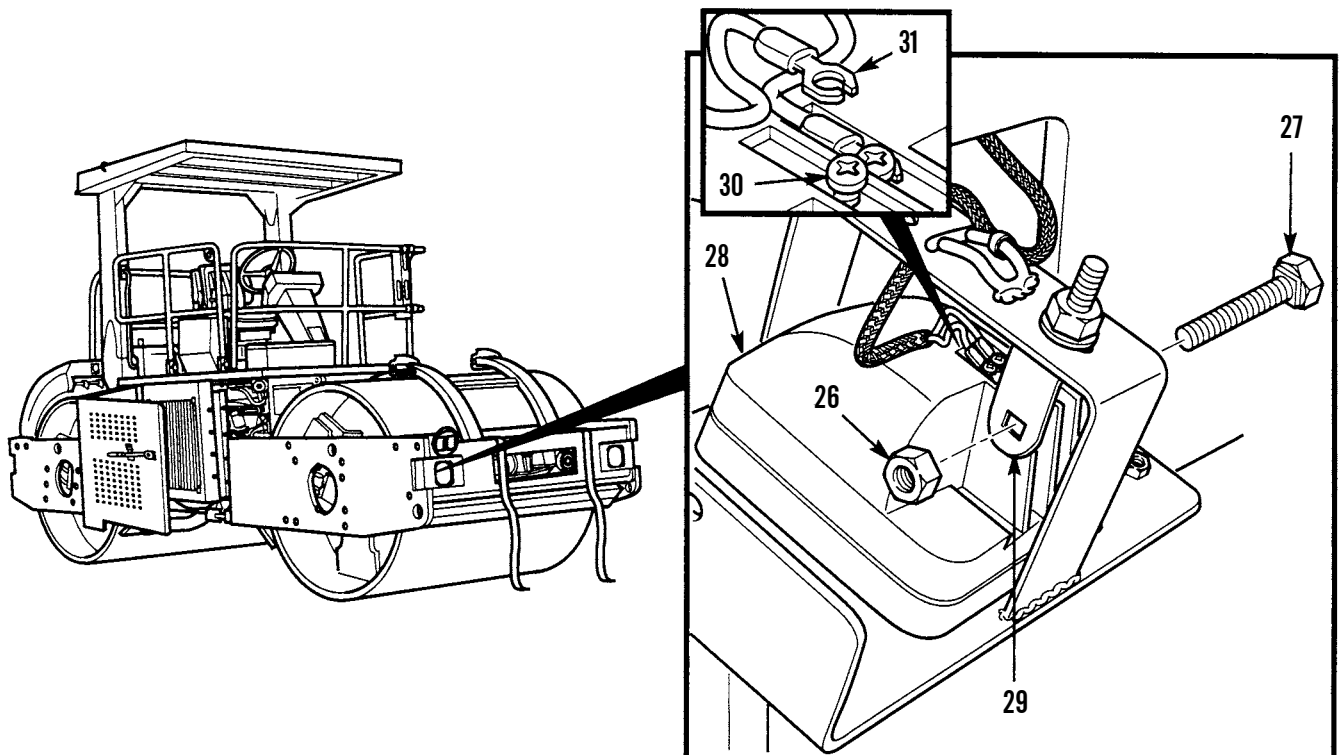
REMOVAL - CONTINUED

9. Remove two screws (21), washers (22), screw (23), washer (22) and support (24) from support (25).



401-581

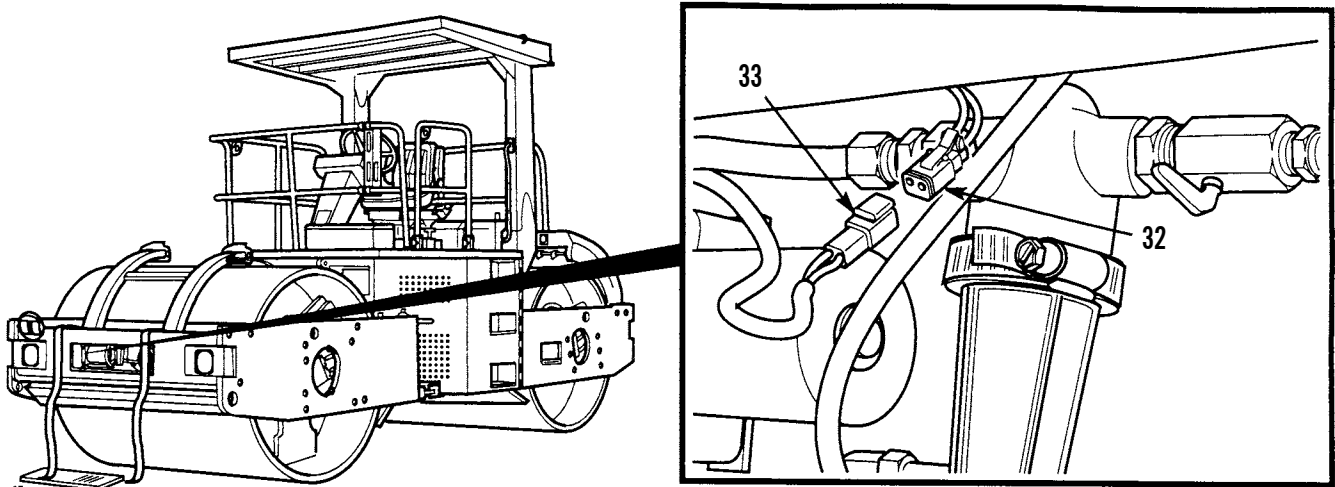
10. Remove nut (26), screw (27) and right-front work light assembly (28) from bracket (29).
11. Loosen two screws (30) and remove two wires (31) from right-front work light assembly (28).



401-582

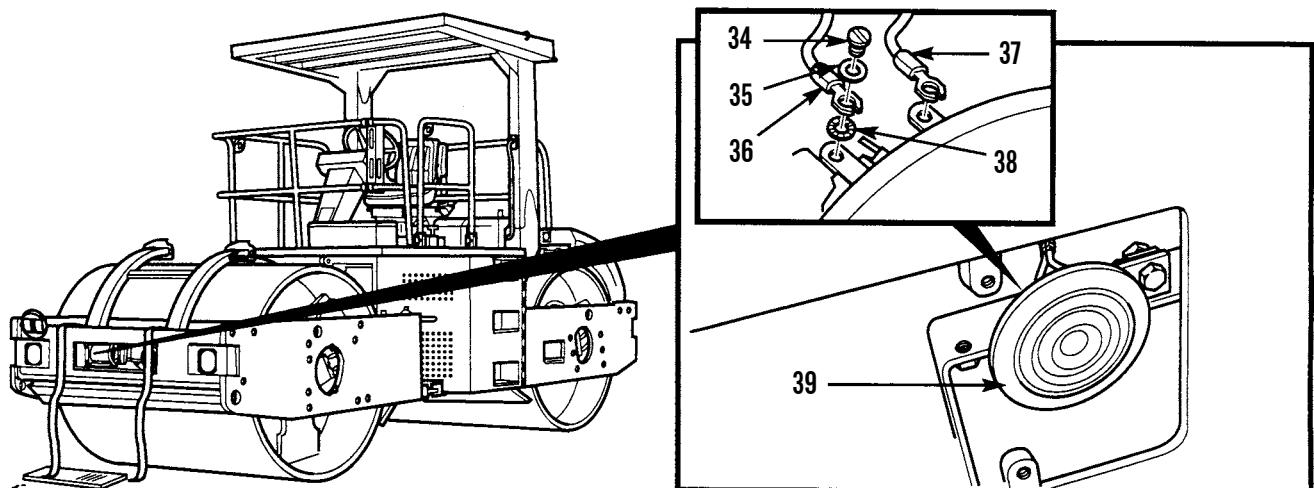
REMOVAL - CONTINUED

12. Disconnect front wiring harness connector (32) from water spray pump connector (33).



401-583

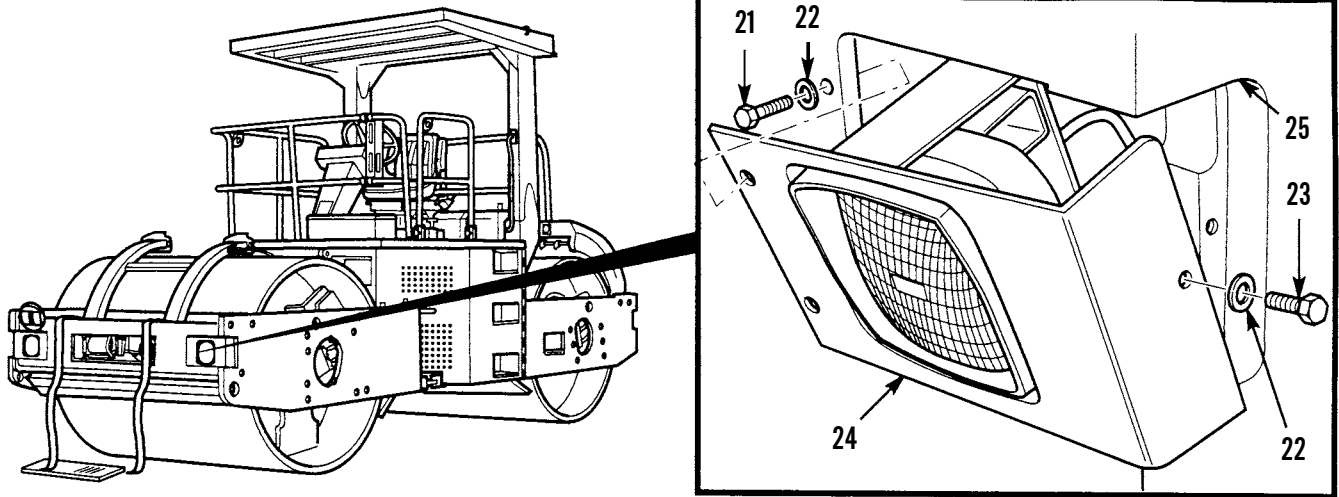
13. Loosen two screws (34), washers (35), wires (36) and (37) and lockwashers (38) from horn assembly (39). Discard lockwashers.



401-584

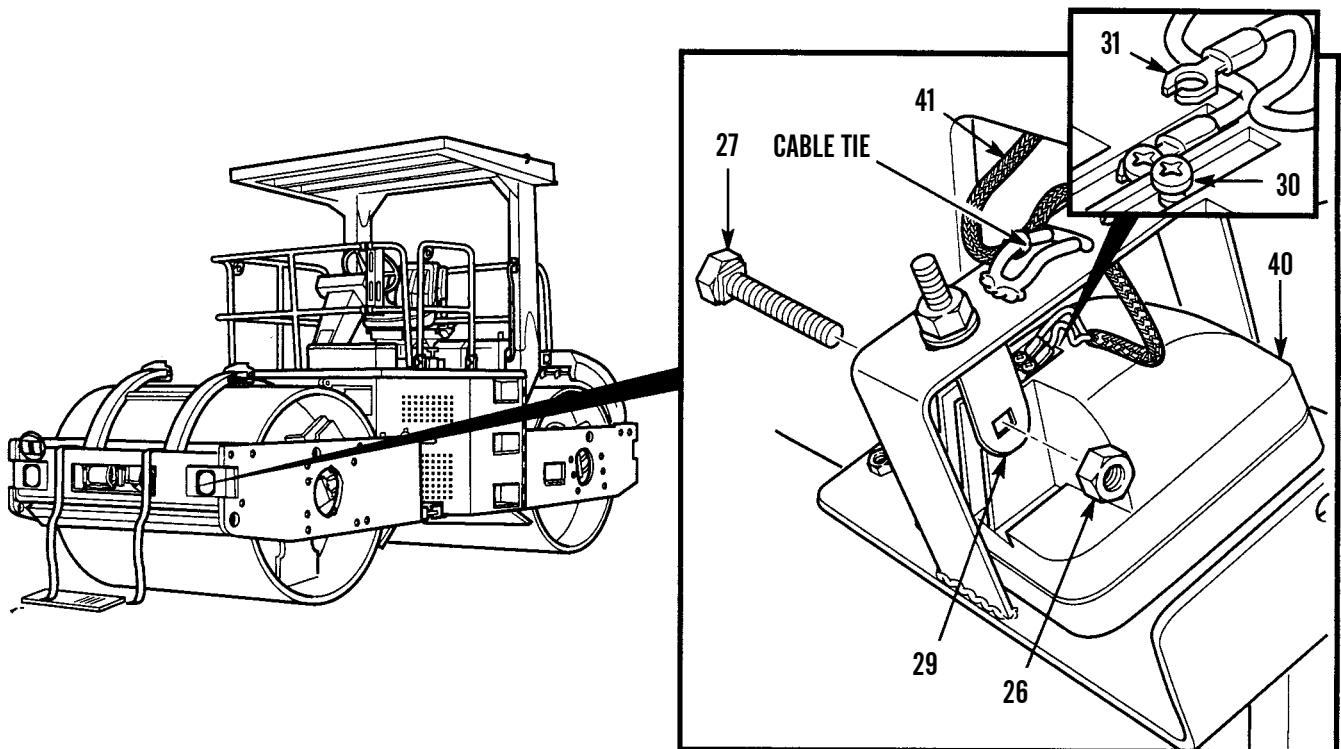
REMOVAL - CONTINUED

14. Remove two screws (21), washers (22), screw (23), washer (22) and support (24) from support (25).



401-585

15. Remove nut (26), screw (27) and left-front work light assembly (40) from bracket (29).
 16. Loosen two screws (30) and remove two wires (31) from left-front work light assembly (40).
 17. Remove front chassis wiring harness (41) from front support assembly, frame assembly and yoke assembly.



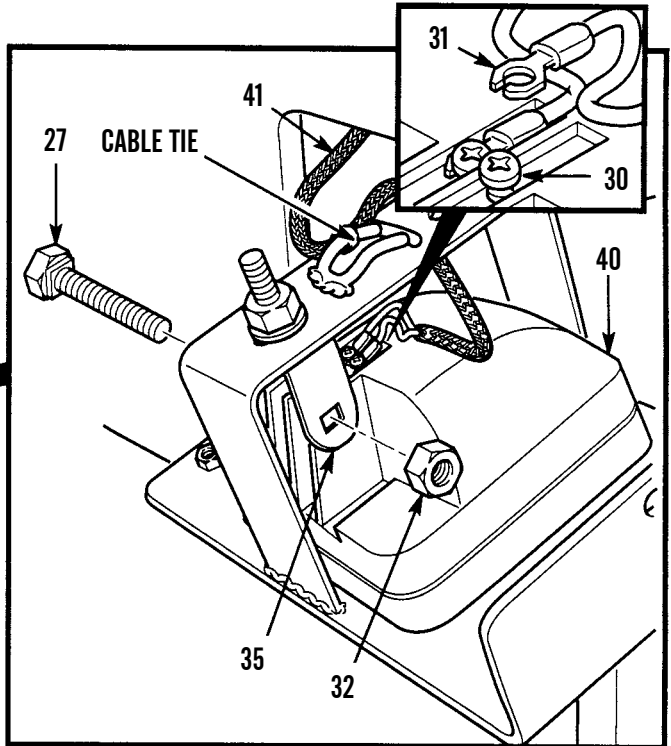
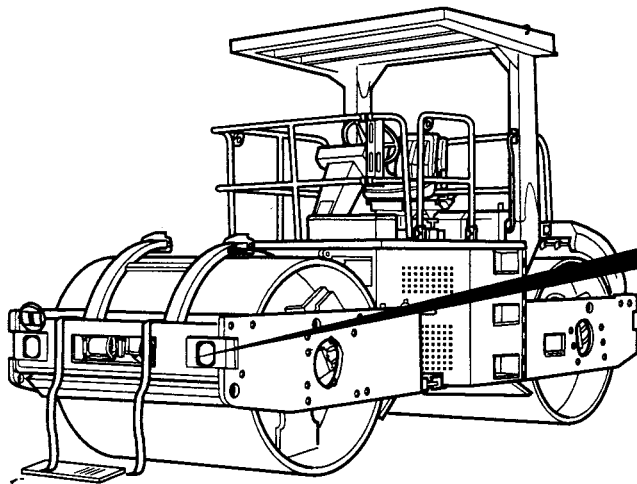
401-586

INSTALLATION

NOTE

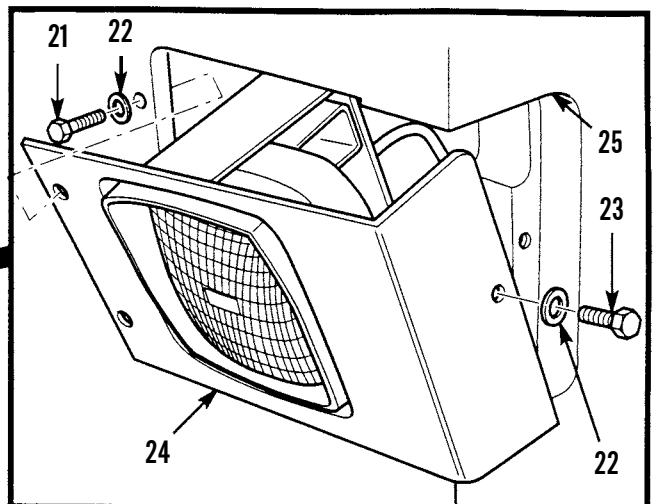
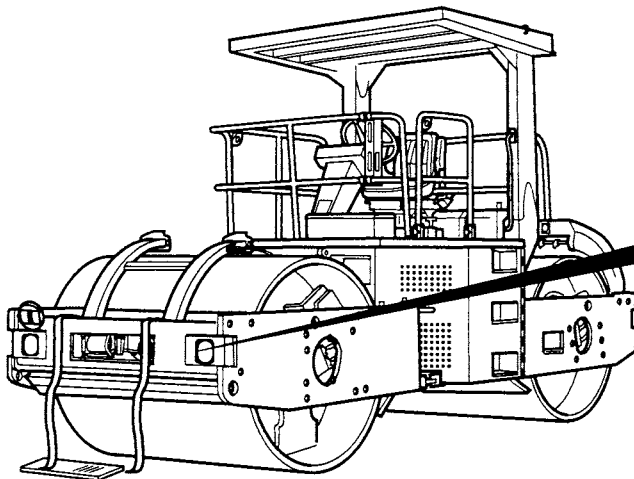
Install cable ties as required.

1. Position front chassis wiring harness (41) in frame assembly, yoke assembly, and front support assembly.
2. Install two wires (31) on left-front work light assembly (40) and tighten two screws (30).
3. Install left-front work light assembly (40) on bracket (29) with screw (27) and nut (26).



401-586

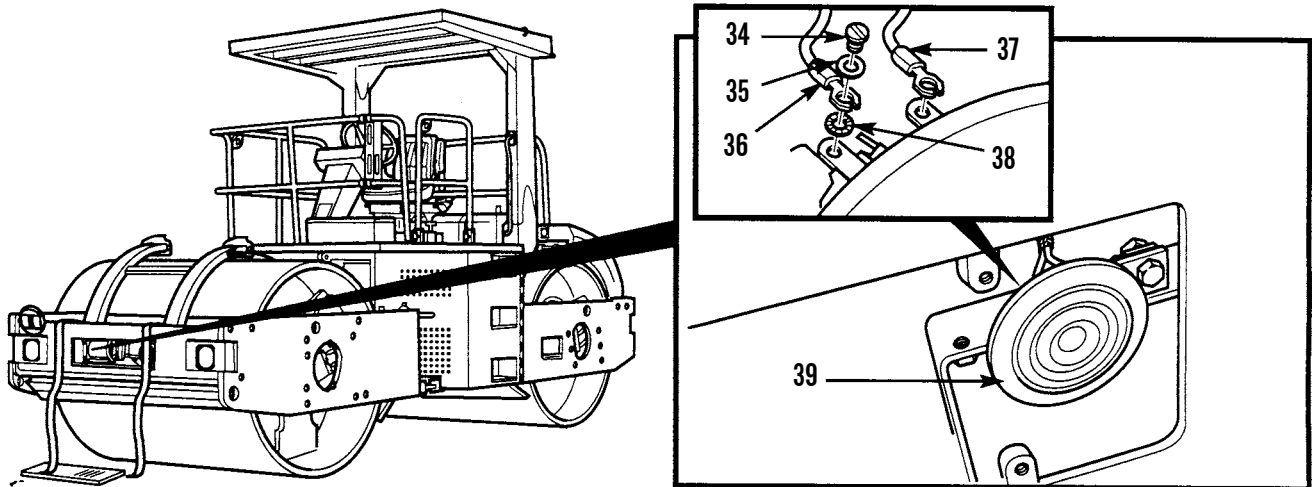
4. Install support (24), washer (22), screw (23), two washers (22) and screws (21) on support (25).



401-585

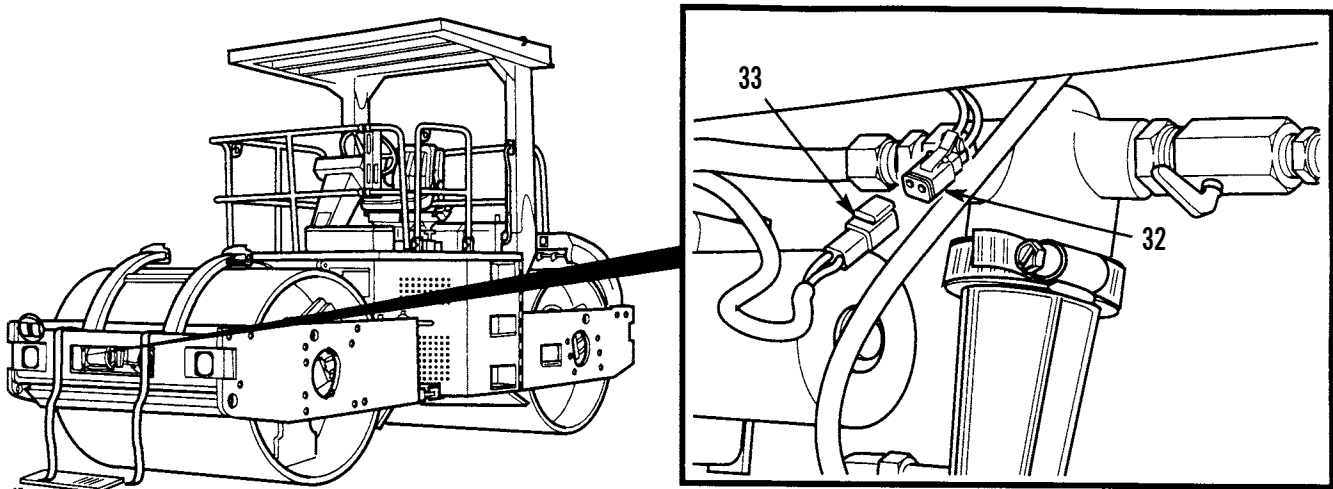
INSTALLATION - CONTINUED

5. Install two new lockwashers (38), wires (36) and (37), washers (35) and screws (34) on horn assembly (39).



401-584

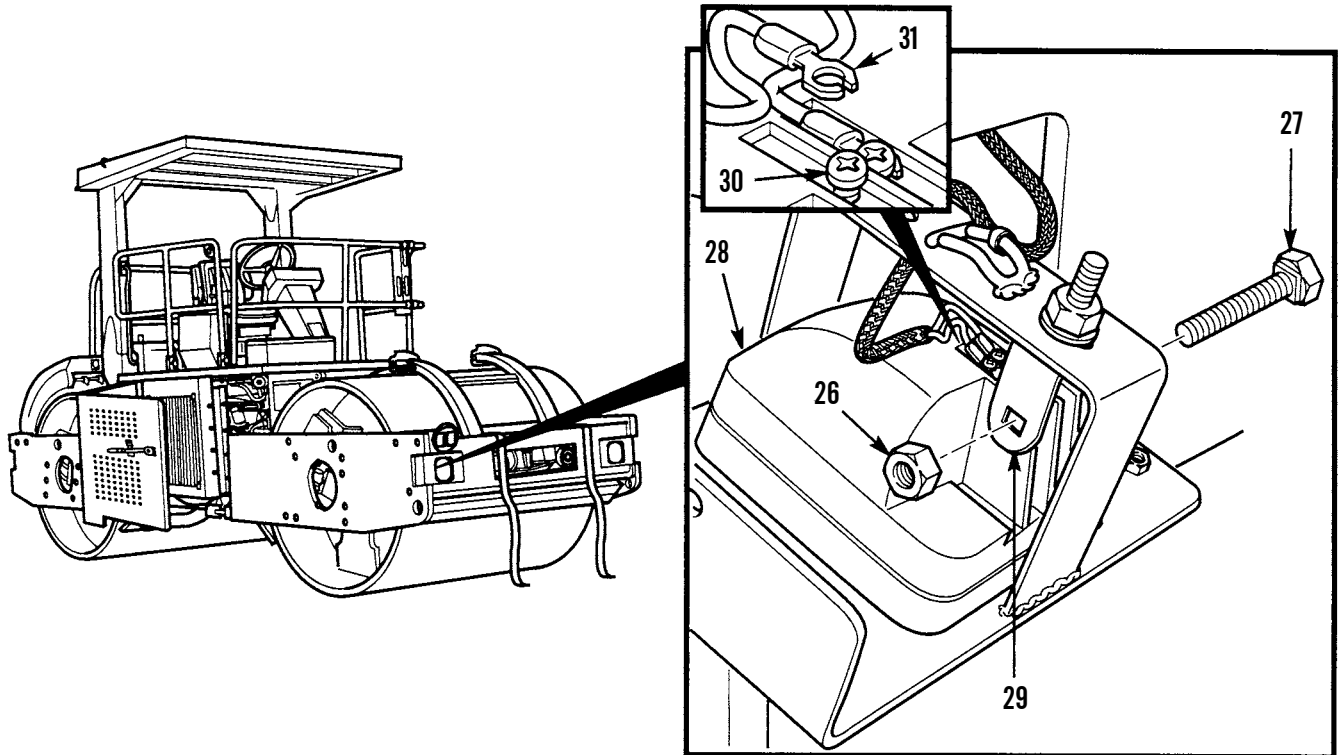
6. Connect water spray pump connector (33) to front wiring harness connector (32).



401-583

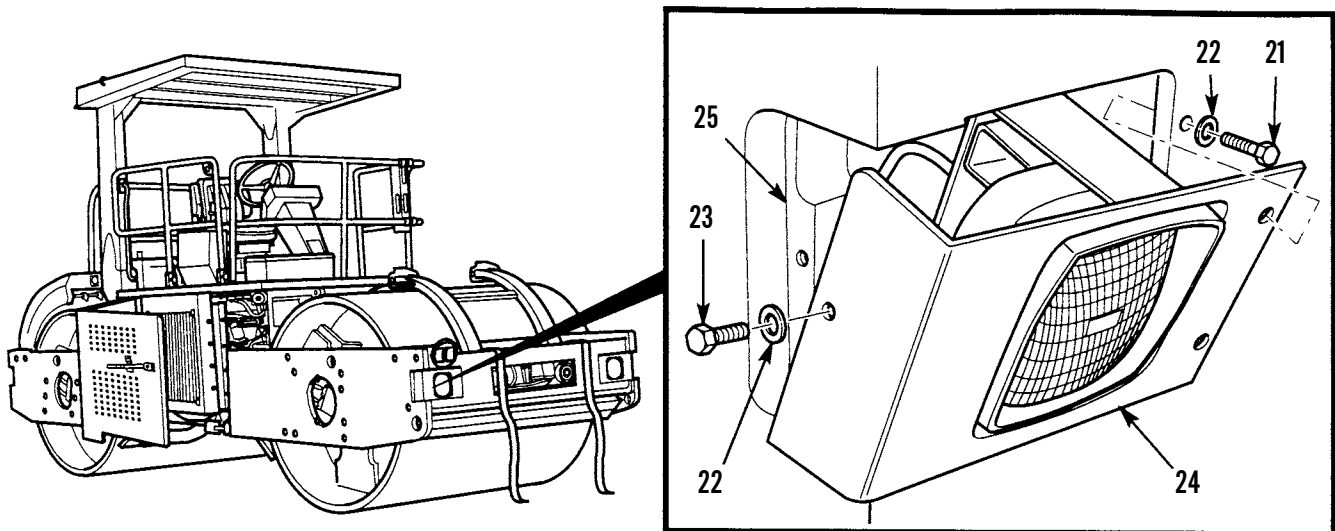
INSTALLATION - CONTINUED

7. Install two wires (31) on right-front work light assembly (28) and tighten two screws (30).
8. Install right-front work light assembly (28) on bracket (29) with screw (27) and nut (26).



401-582

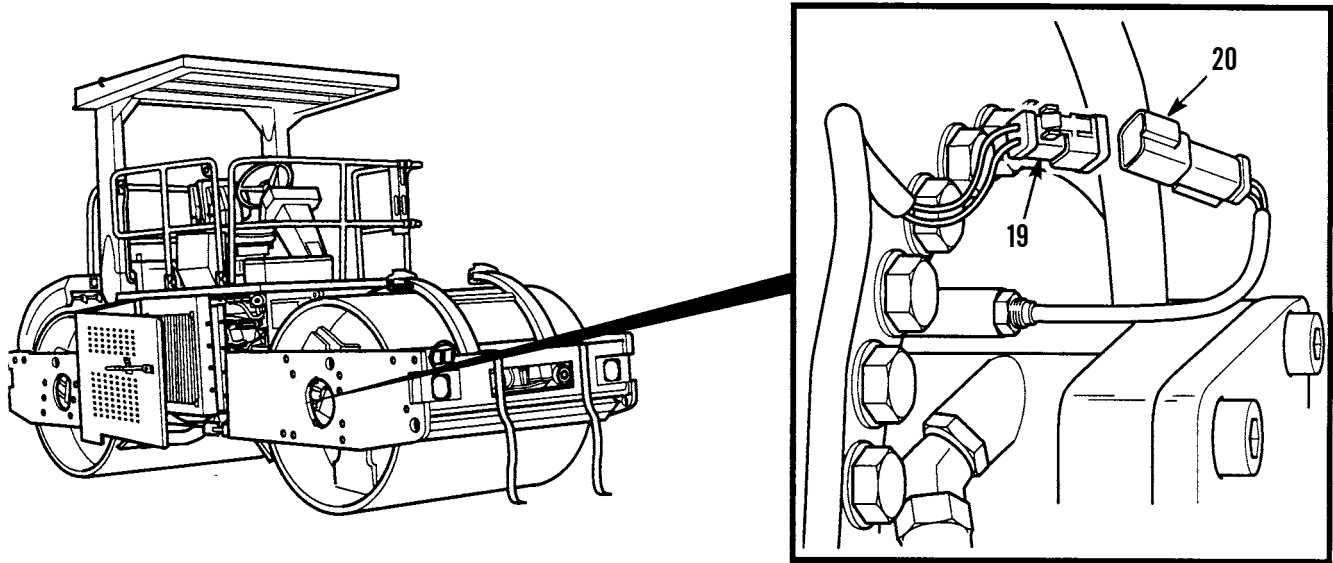
9. Install support (24), washer (22), screw (23), two washers (22) and screws (21) on support (25).



401-581

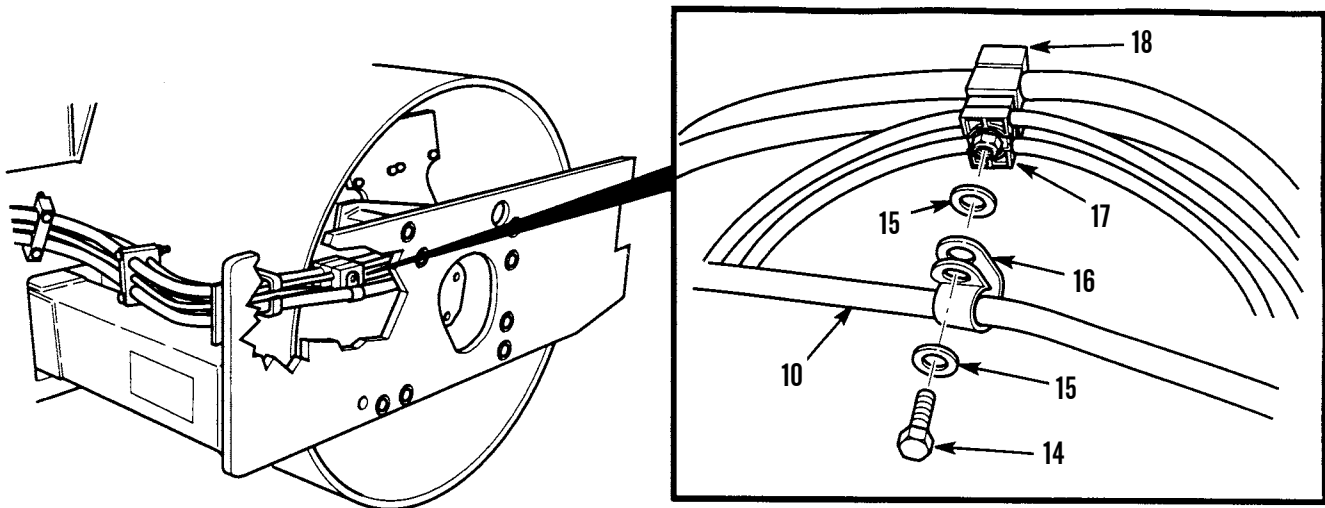
INSTALLATION - CONTINUED

10. Connect front vibratory sensor connector (20) to front wiring harness connector (19).



401-580

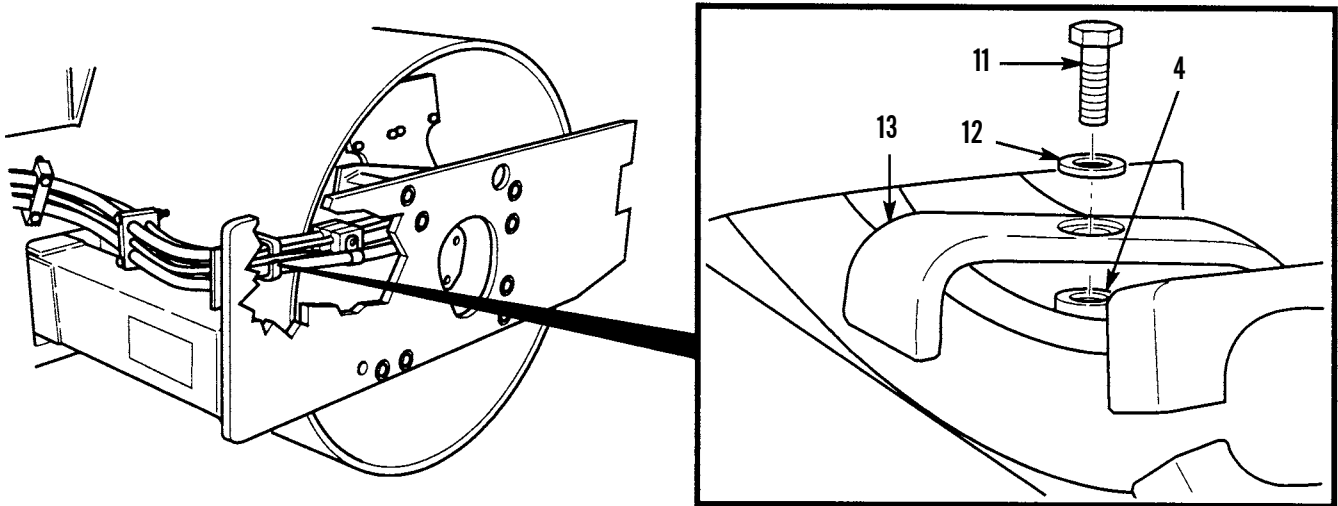
11. Install clip (18) on front wiring harness (10).
12. Install washer (15), clip (16), washer (15) and screw (14) to welded nut (17) on clip assembly (18).



401-579

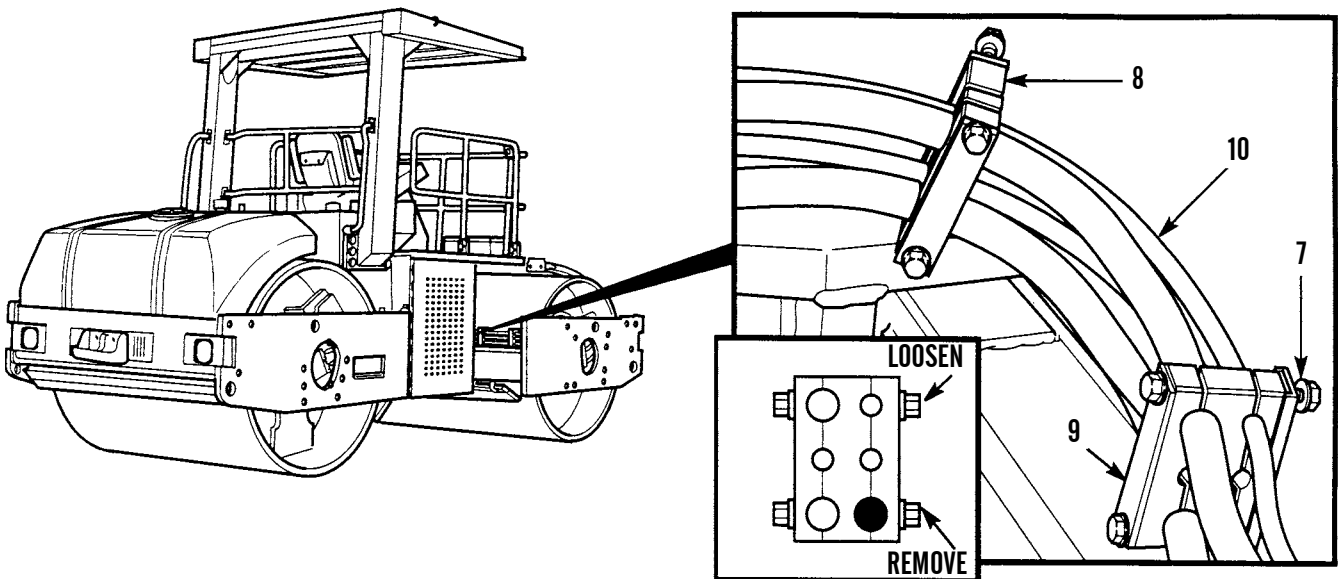
INSTALLATION - CONTINUED

13. Install bracket (13) to frame assembly (4) with washer (12) and screw (11).



401-578

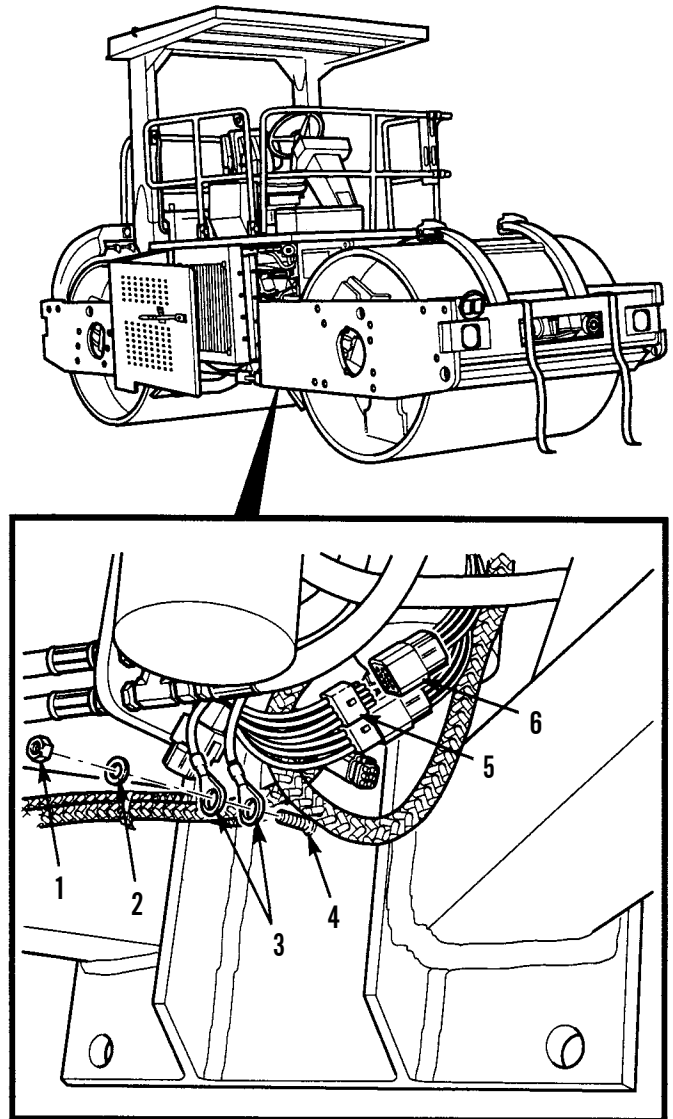
14. Feed front wiring harness (10) through four brackets (8) and install bottom nuts (7) and screw (9).
 15. Tighten remaining nuts (7) on brackets (8).



401-577

INSTALLATION - CONTINUED

16. Connect front wiring harness connector (5) to connector (6).
17. Install two wires (3) on frame assembly (4) with washer (2) and nut (1).



401-565

18. Close right-side door assembly (TM 5-3895-379-10).
19. Install front water tank (WP 0154 00).
20. Connect battery cables (WP 0105 00).

END OF WORK PACKAGE

REAR CHASSIS WIRING HARNESS REPLACEMENT

0111 00

THIS WORK PACKAGE COVERS

Inspection and Testing, Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

WP 0108 00, General Wiring Repair

WP 0213 00, Electrical General Maintenance Instructions

TM 5-3895-379-23P, Figure 60

Equipment Condition

Right and left-side door assemblies opened (TM 5-3895-379-10)

Rear water tank removed (WP 0154 00)

Battery cables disconnected (WP 0105 00)

INSPECTION AND TESTING

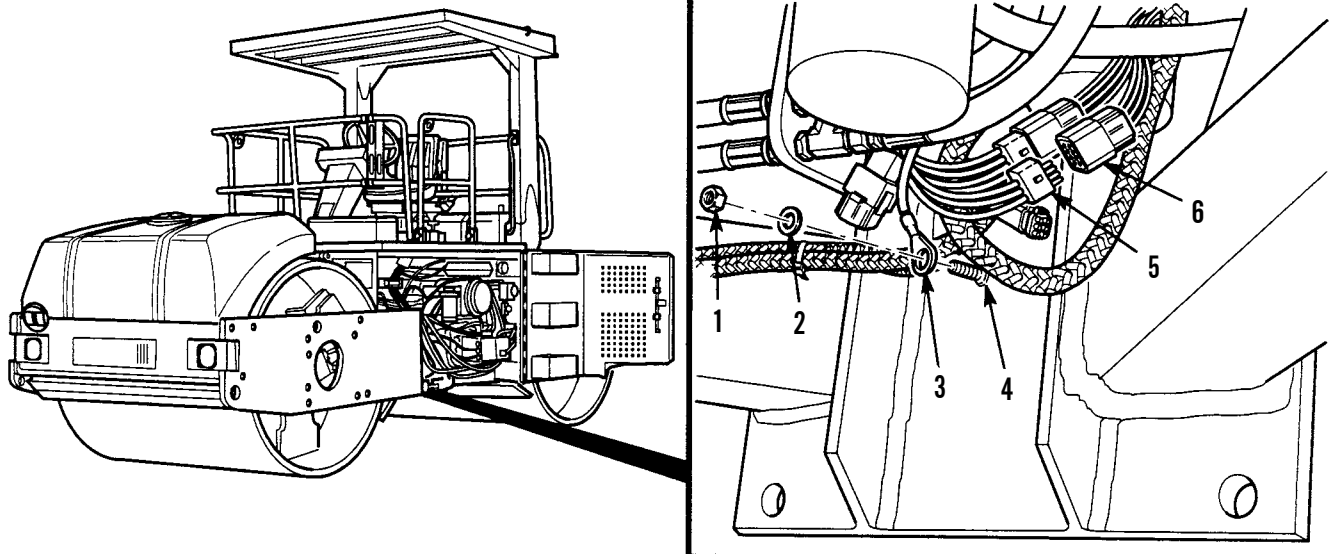
Wiring and electrical inspection and repair is presented in General Wiring Repair (WP 0108 00). Electrical testing is presented in Electrical General Maintenance Instructions (WP 0213 00).

REMOVAL

NOTE

- Remove cable ties as required.
- Tag and mark all wires prior to removal.
- Tag and mark general position of wiring harness in chassis as components are removed. Harness will need to be repositioned at start of installation.

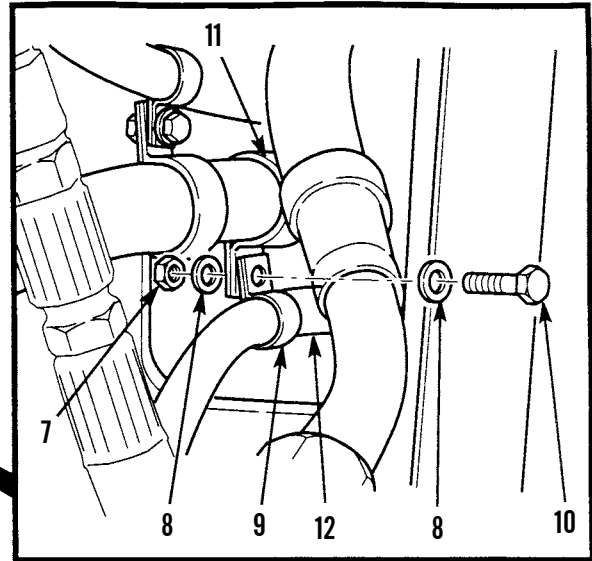
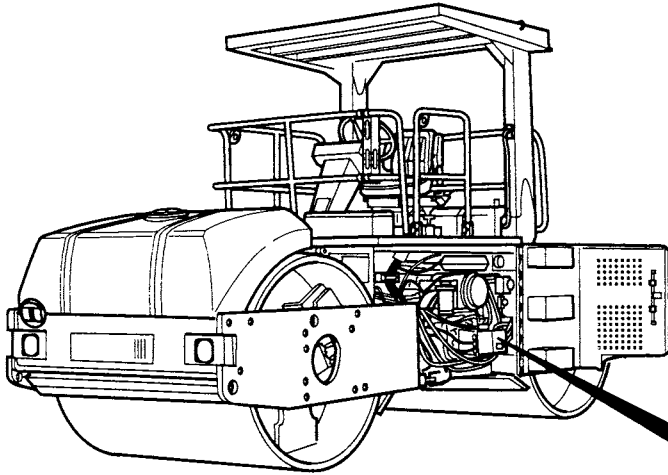
1. Remove nut (1), washer (2) and two wires (3) from frame assembly (4).
2. Disconnect rear wire harness connector (5) from connector (6).



401-589

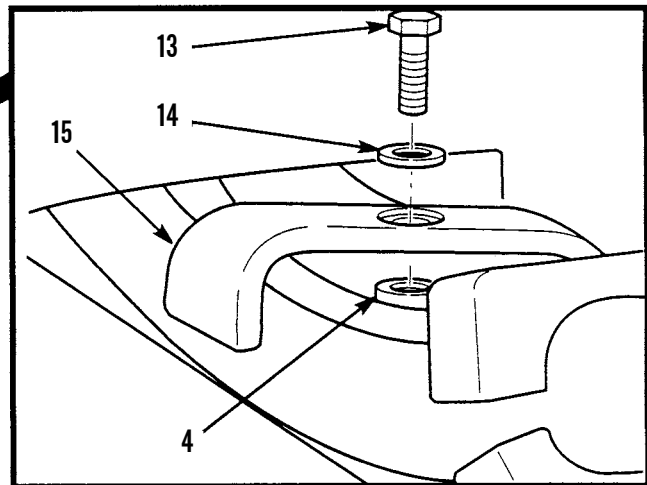
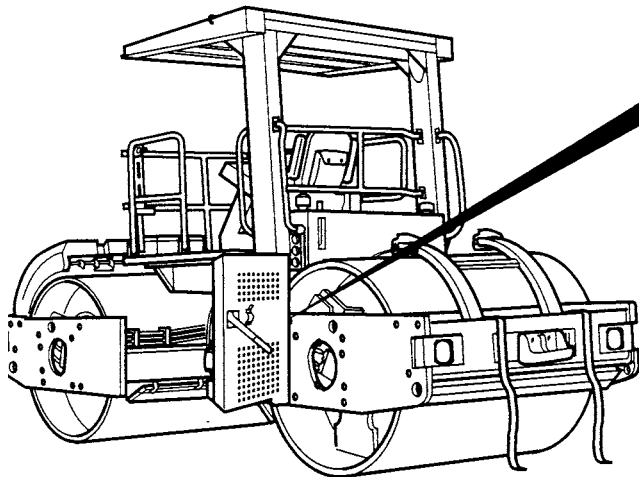
REMOVAL - CONTINUED

3. Remove nut (7), washer (8), clip (9), washer (8) and screw (10) from clip assembly (11).
4. Remove clip (9) from rear wiring harness (12).



401-590

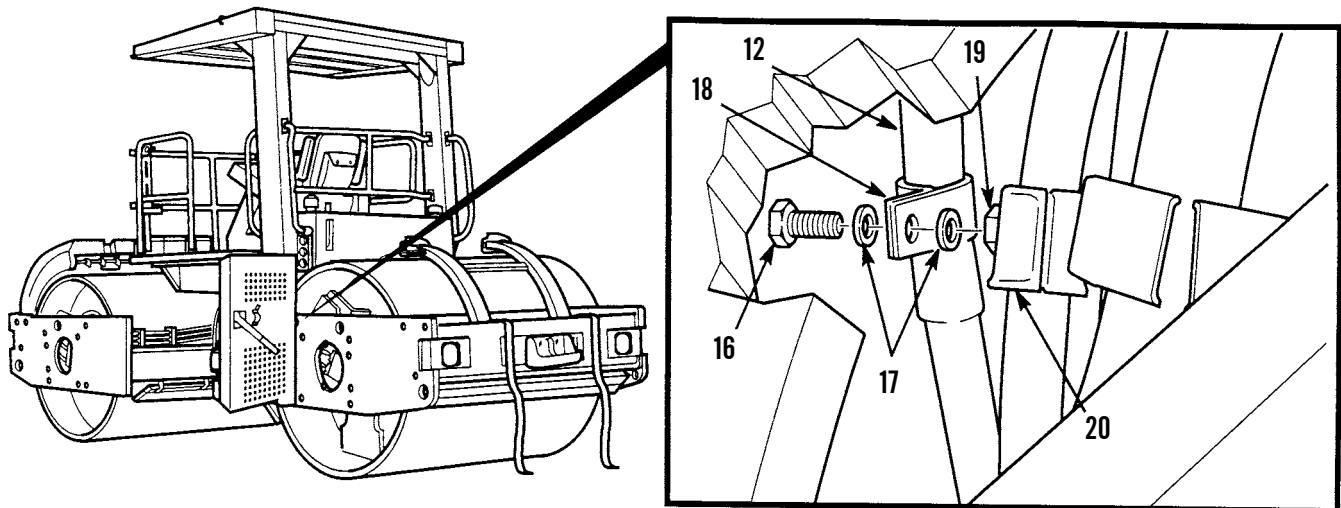
5. Remove screw (13), washer (14) and bracket (15) from frame assembly (4).



401-591

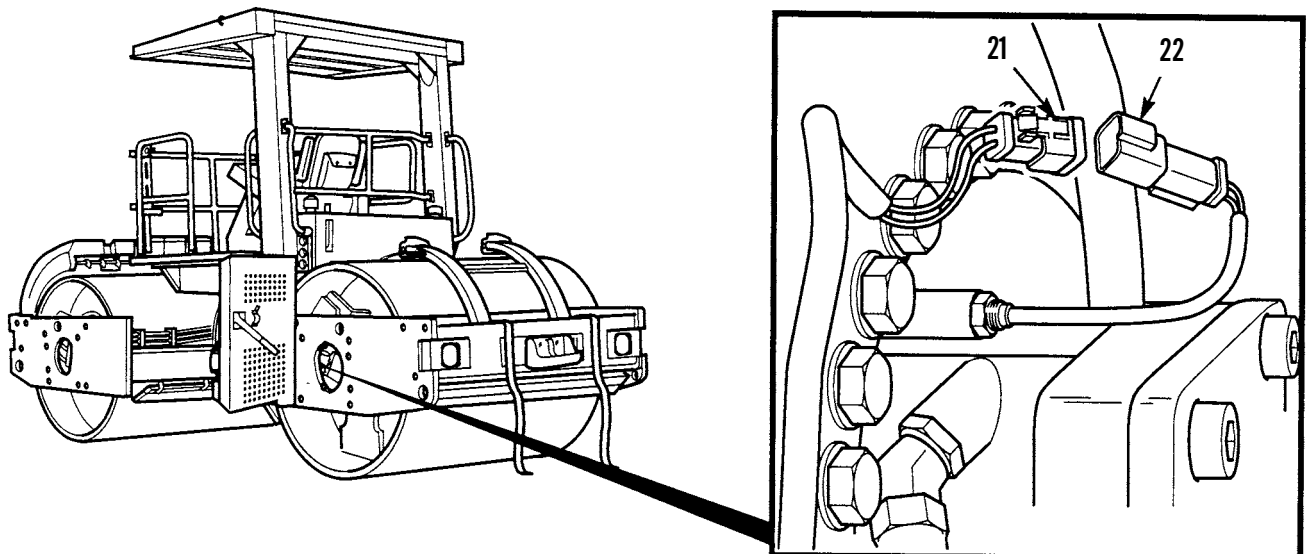
REMOVAL - CONTINUED

6. Remove screw (16), washer (17), clip (18) and washer (17) from welded nut (19) on clip assembly (20).
7. Remove clip (18) from rear wiring harness (12).



401-592

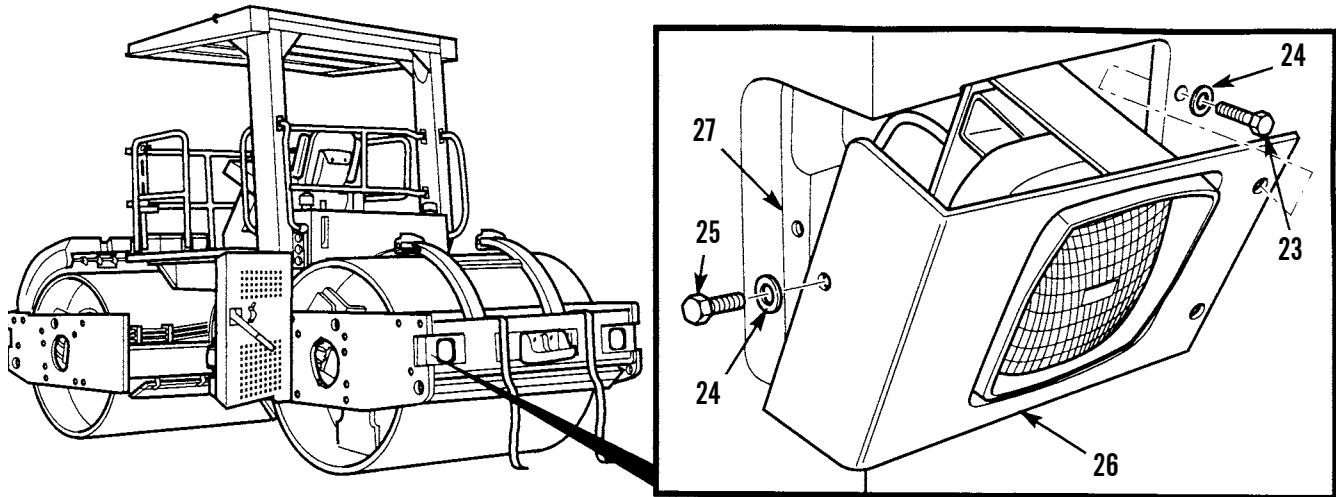
8. Disconnect rear wiring harness connector (21) from rear vibratory sensor connector (22).



401-593

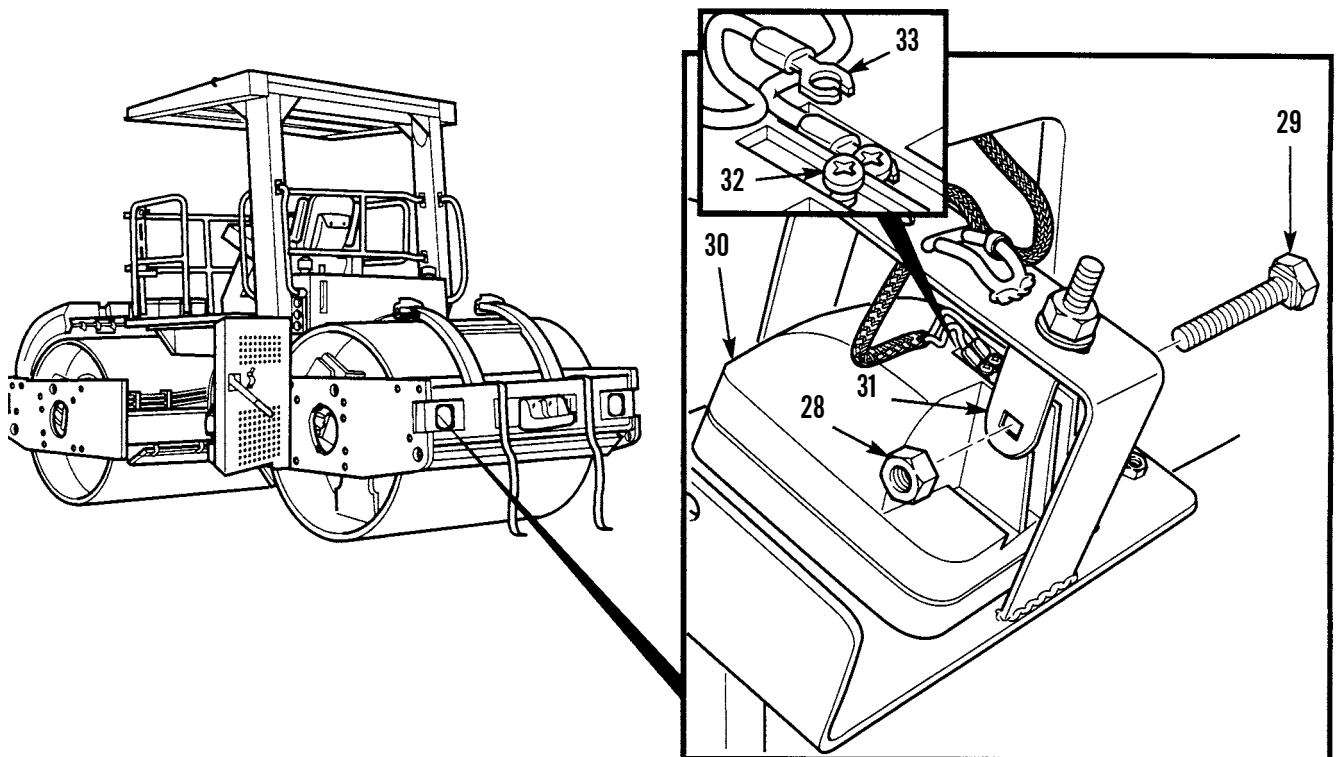
REMOVAL - CONTINUED

9. Remove two screws (23), washers (24), screw (25), washer (24) and support (26) from support (27).



401-594

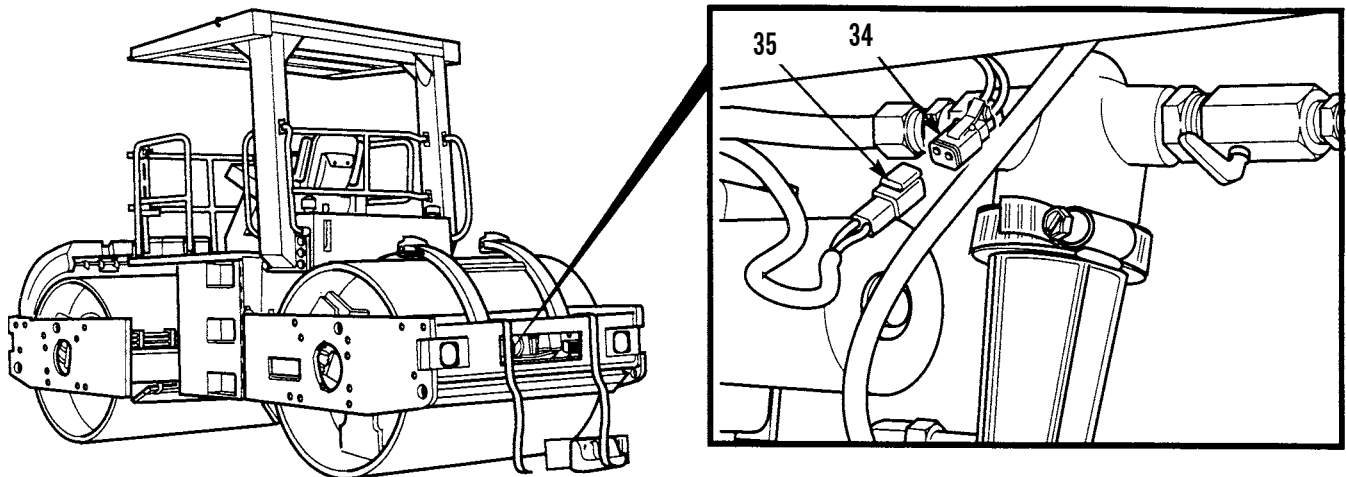
10. Remove nut (28), screw (29) and left-rear work light assembly (30) from bracket (31).
11. Loosen two screws (32) and remove two wires (33) from left-rear work light assembly (30).



401-595

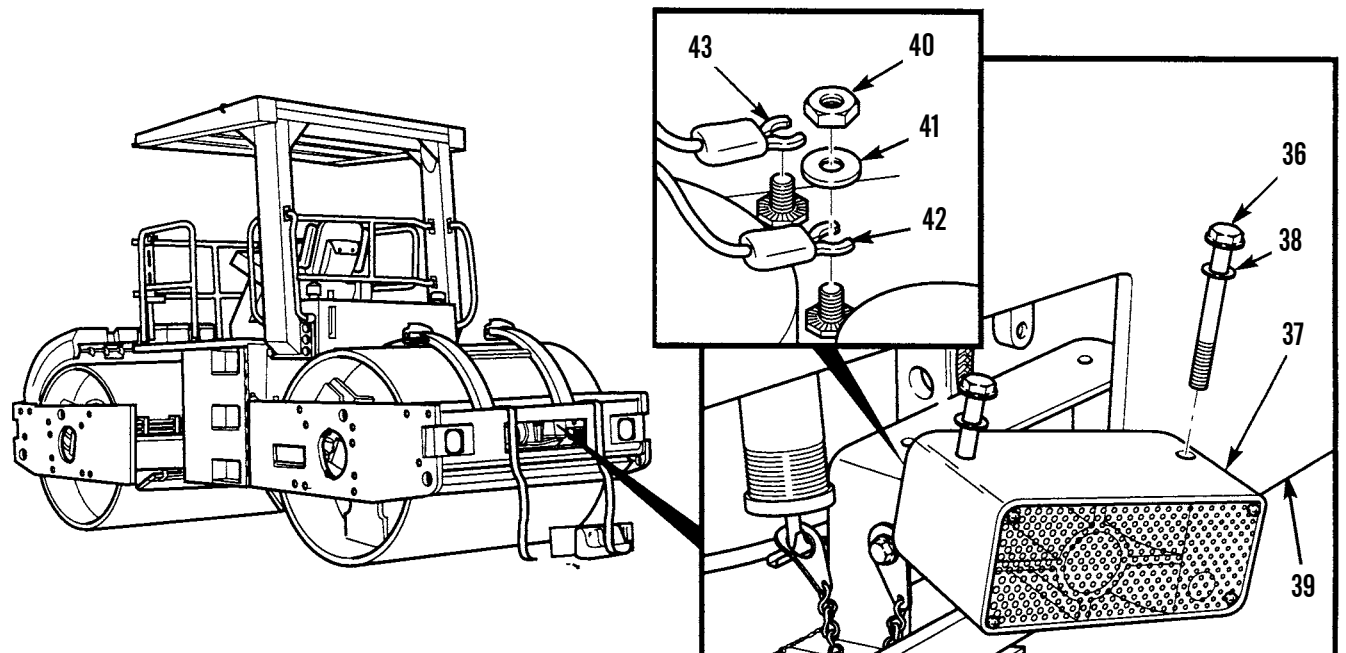
REMOVAL - CONTINUED

12. Disconnect rear wiring harness connector (34) from water spray pump connector (35).



401-596

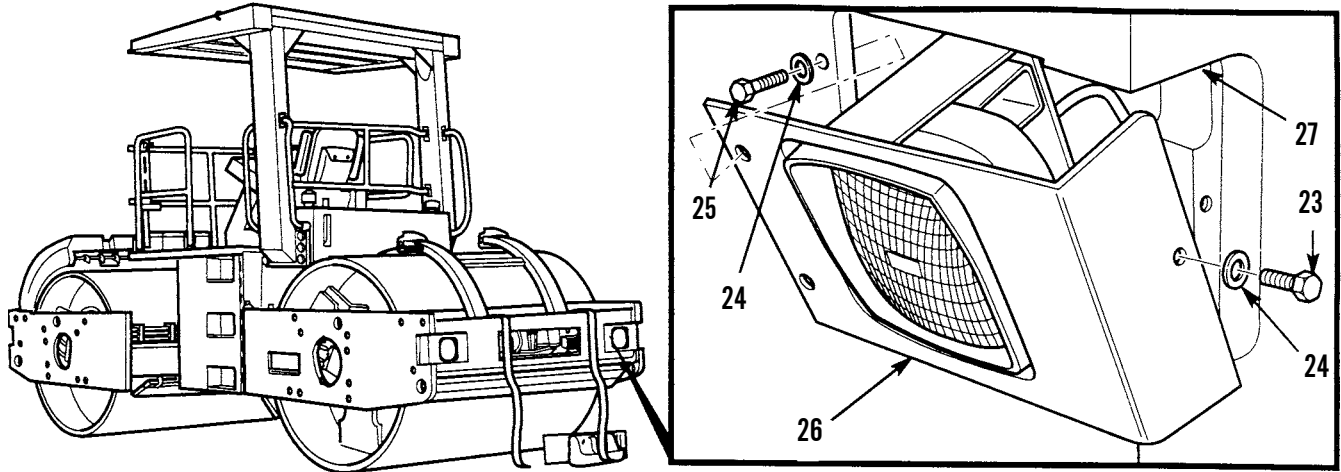
13. Loosen two screws (36).
14. Remove backup alarm (37), two screws (36) and washers (38) from rear bumper assembly (39).
15. Remove two nuts (40), washer (41) and wires (42) and (43) from backup alarm (37).



401-597

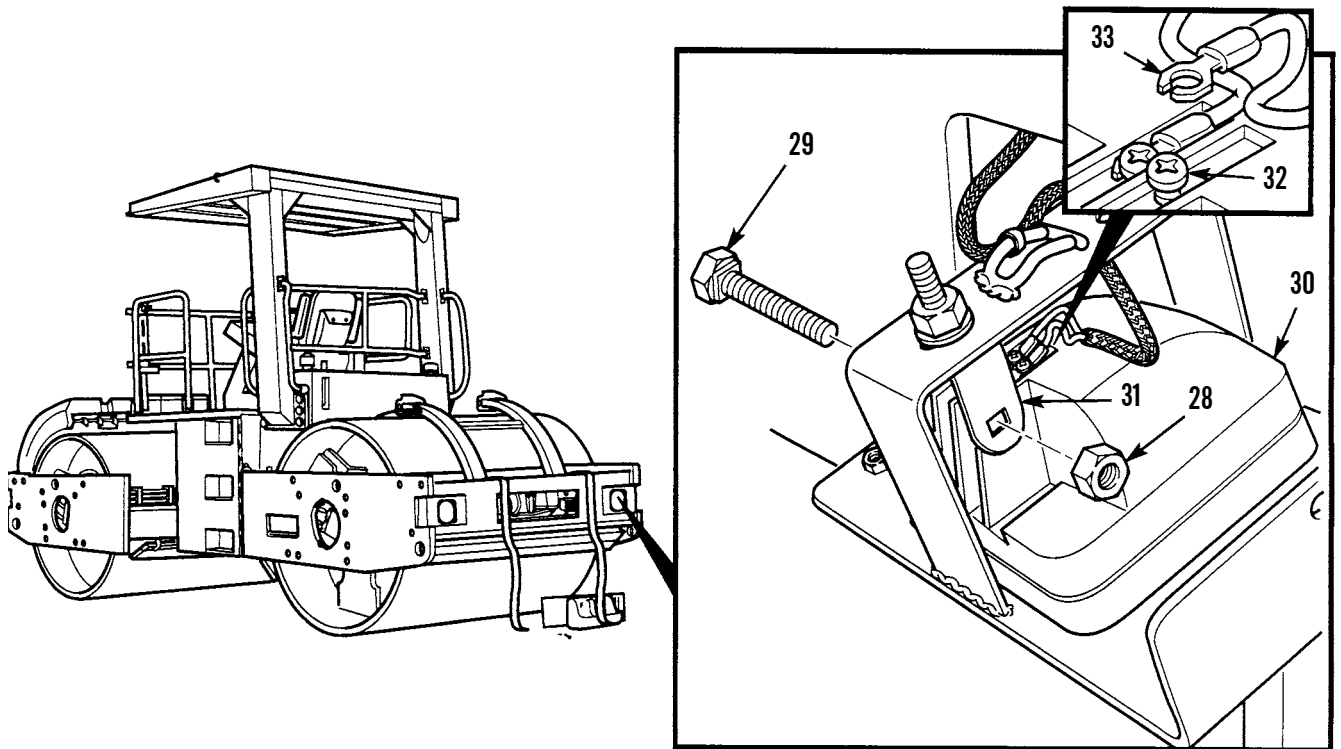
REMOVAL - CONTINUED

16. Remove two screws (23), washers (24), screw (25), washer (24) and support (26) from support (27).



401-598

17. Remove nut (28), screw (29) and right-rear work light assembly (30) from bracket (31).
 18. Loosen two screws (32) and remove two wires (33) from right-rear work light assembly (30).
 19. Remove wiring harness from roller.



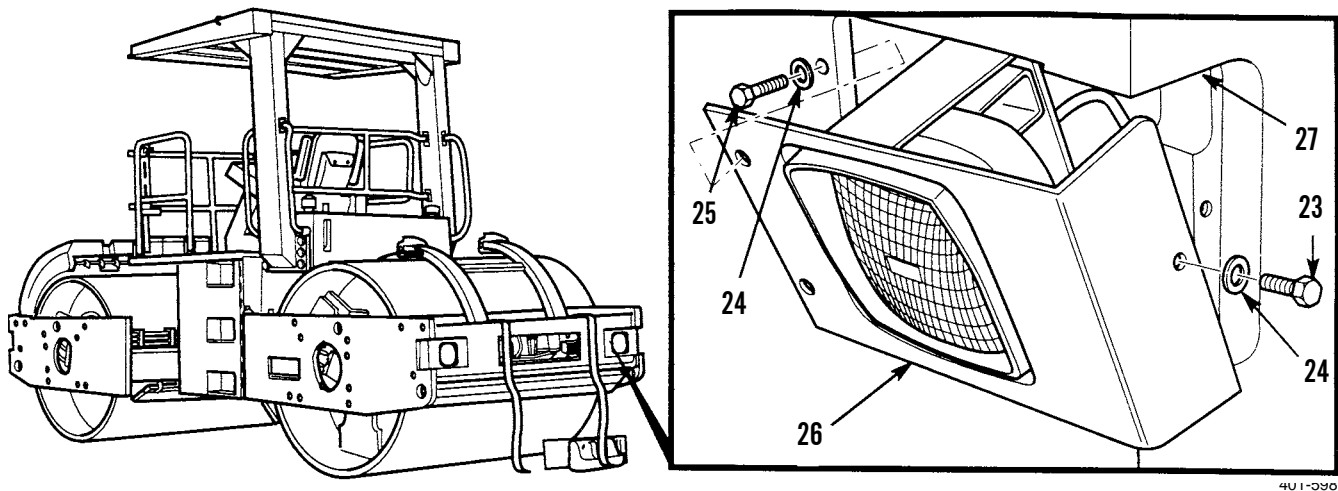
401-599

INSTALLATION

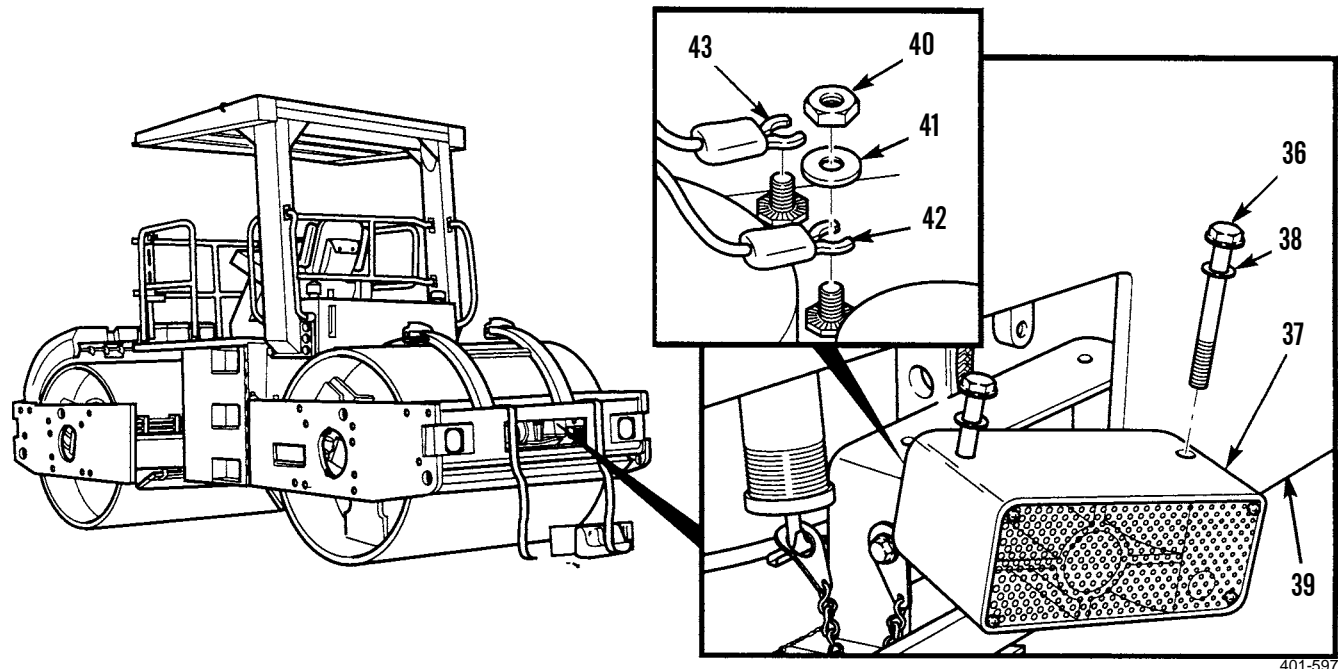
NOTE

Install cable ties as required.

1. Position wiring harness in frame assembly and yoke assembly.
2. Install two wires (33) on right-rear work light assembly (30) and tighten two screws (32).
3. Install right-rear work light assembly (30), screw (29) and nut (28) on bracket (31).
4. Install support (26), washer (24), screw (25), two washers (24) and screws (23) on support (27).

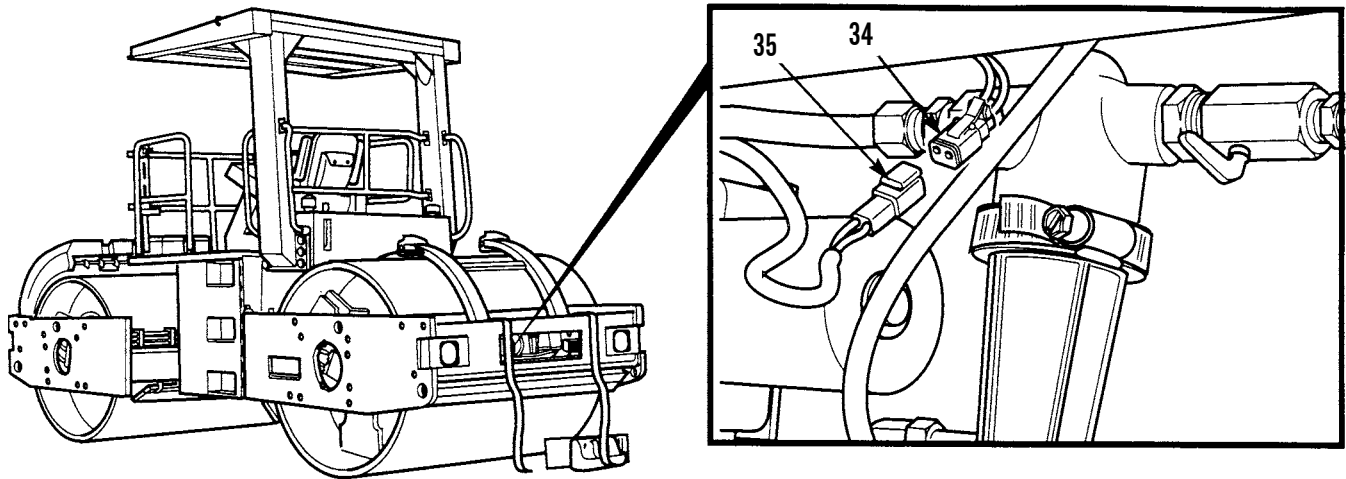


5. Install two wires (42) and (43), washers (41) and nuts (40) on backup alarm (37).
6. Insert two washers (38) and screws (36) on backup alarm (37) and position on rear bumper assembly (39).
7. Tighten two screws (36).

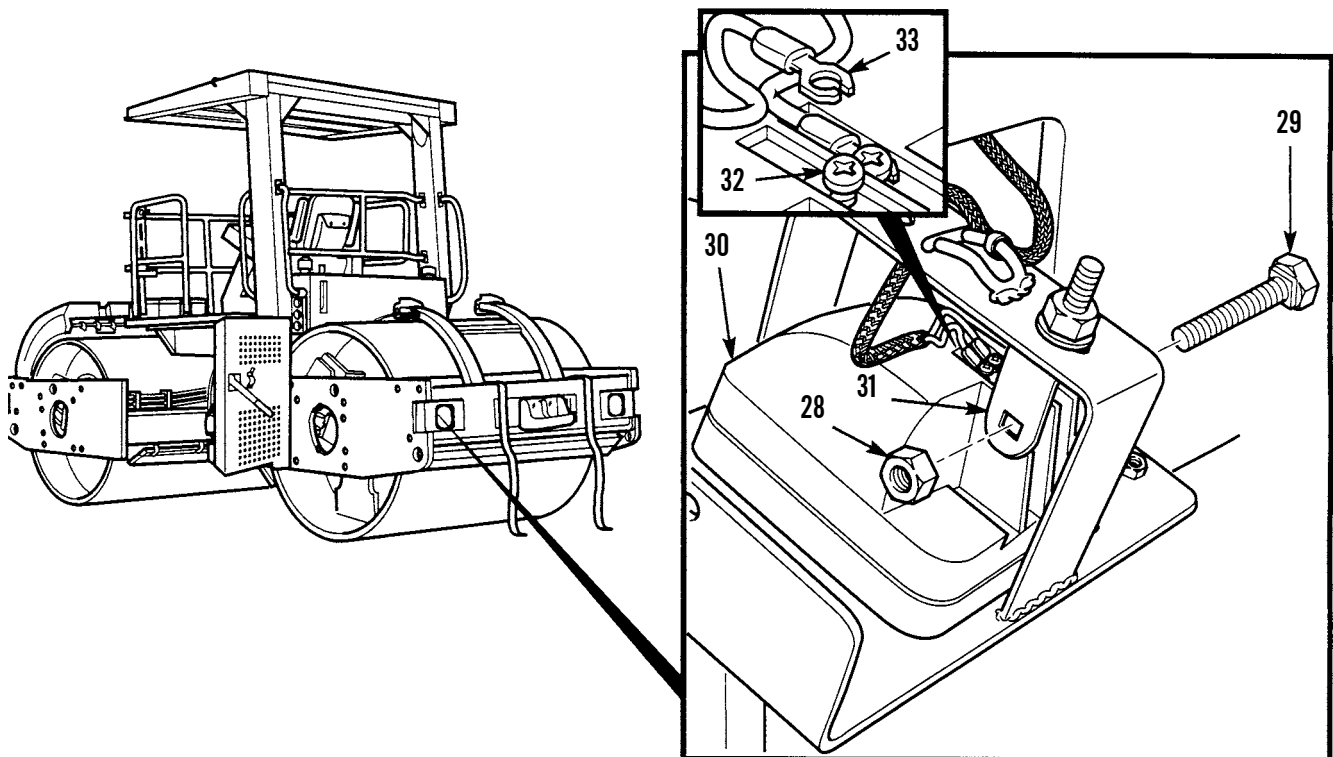


INSTALLATION - CONTINUED

8. Connect water spray pump connector (35) to rear wiring harness connector (34).

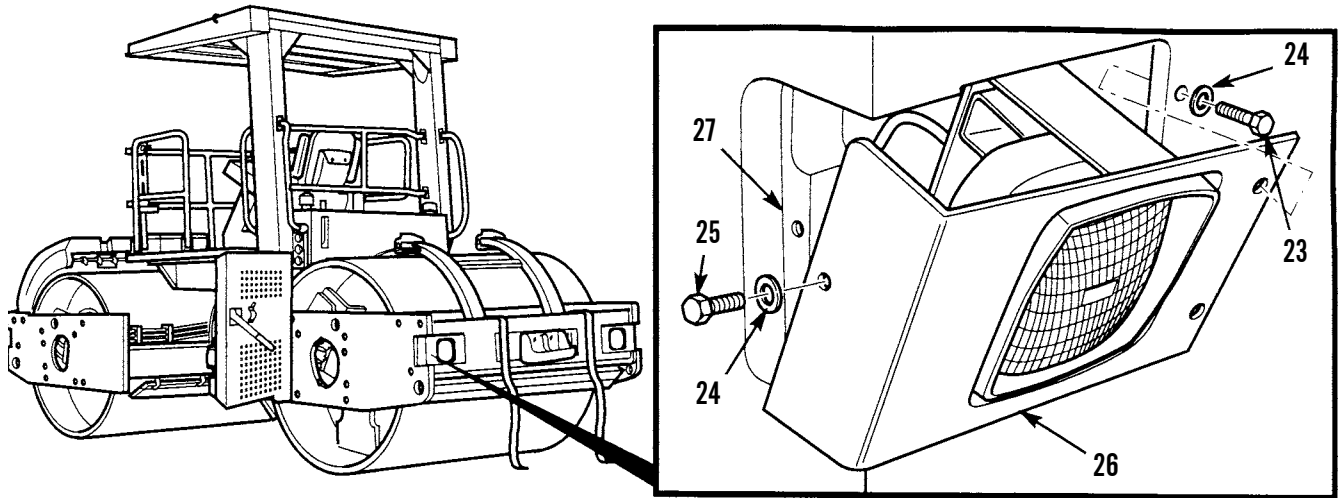


9. Install two wires (33) on left-rear work light assembly (30) and tighten two screws (32).
10. Install left-rear work light assembly (30) on bracket (31) with screw (29) and nut (28).



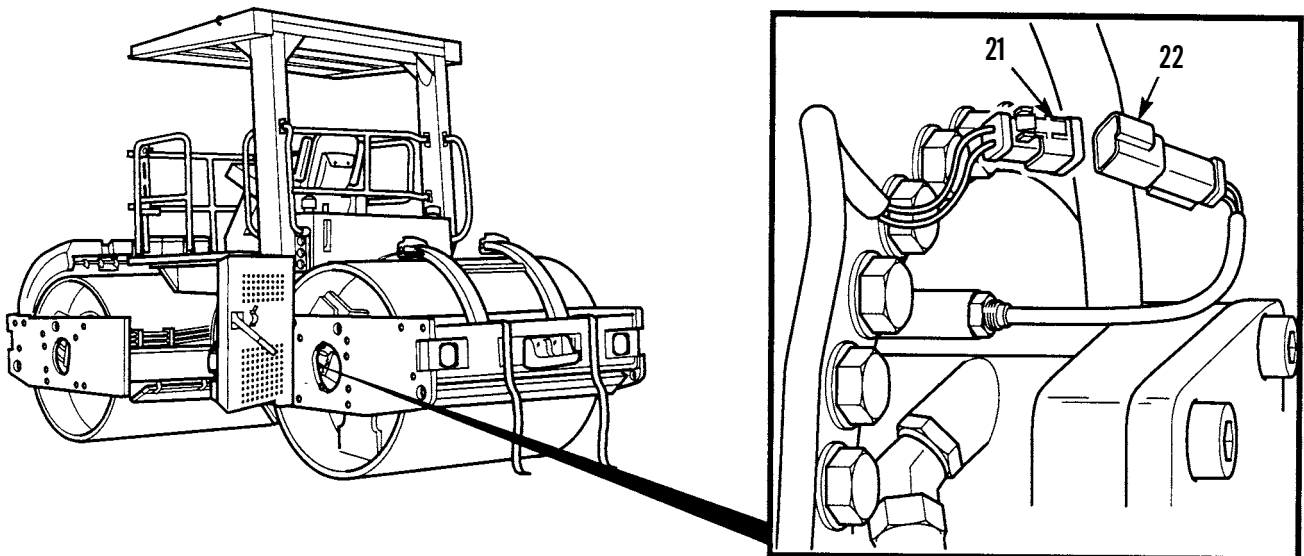
INSTALLATION - CONTINUED

11. Install support (26), washer (24), screw (25), two washers (24) and screws (23) on support (27).



401-594

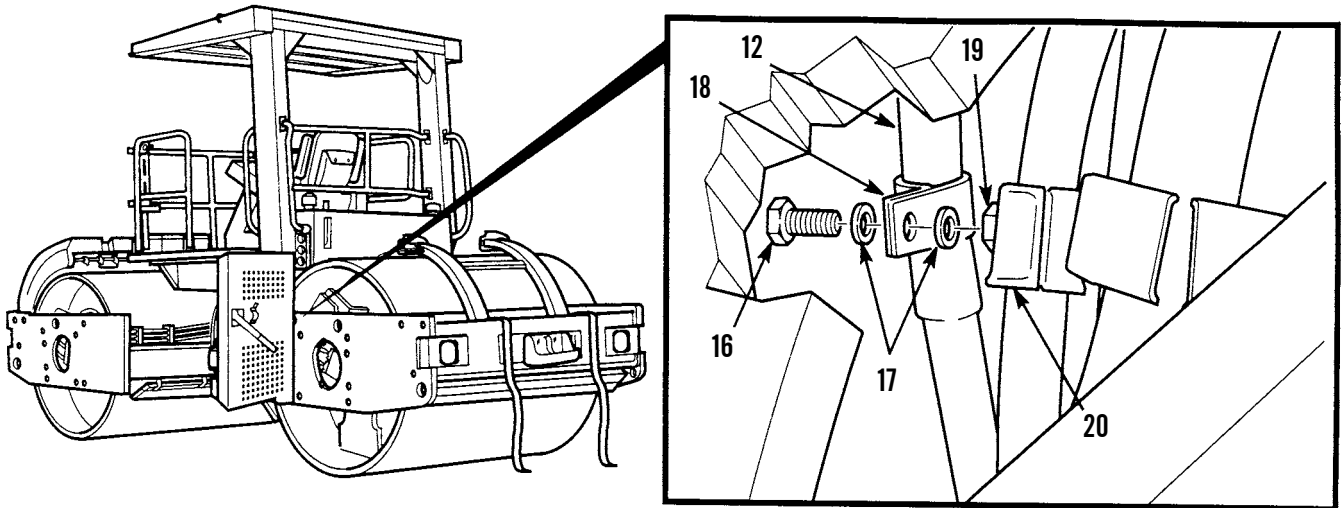
12. Connect rear vibratory sensor connector (22) to rear wiring harness connector (21).



401-593

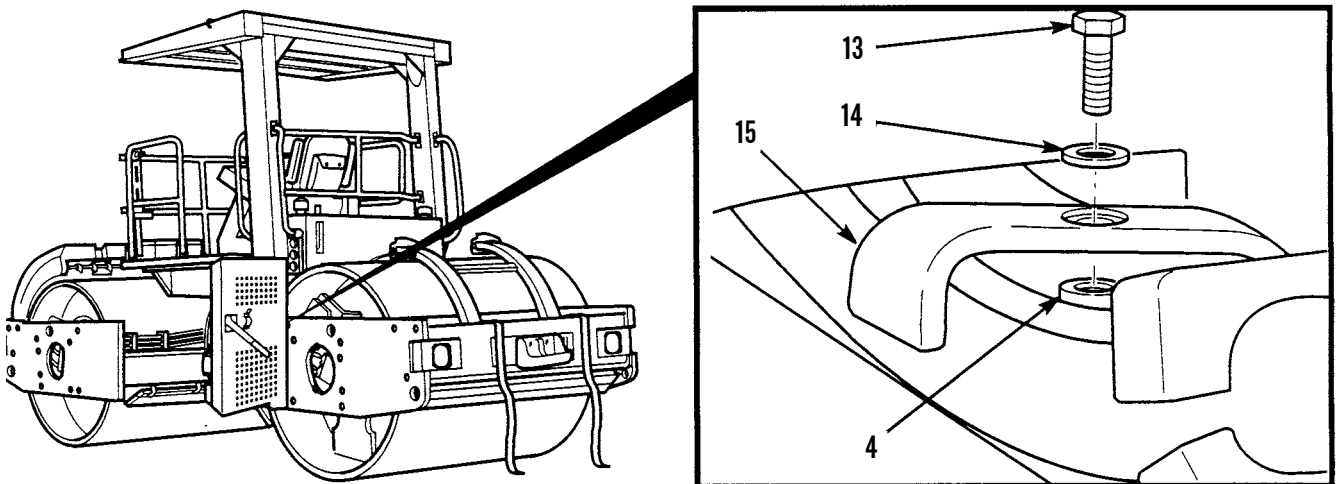
INSTALLATION - CONTINUED

13. Install clip (18) on rear wiring harness (12).
14. Install washer (17), clip (18), washer (17) and screw (16) on welded nut (19) on clip assembly (20).



401-592

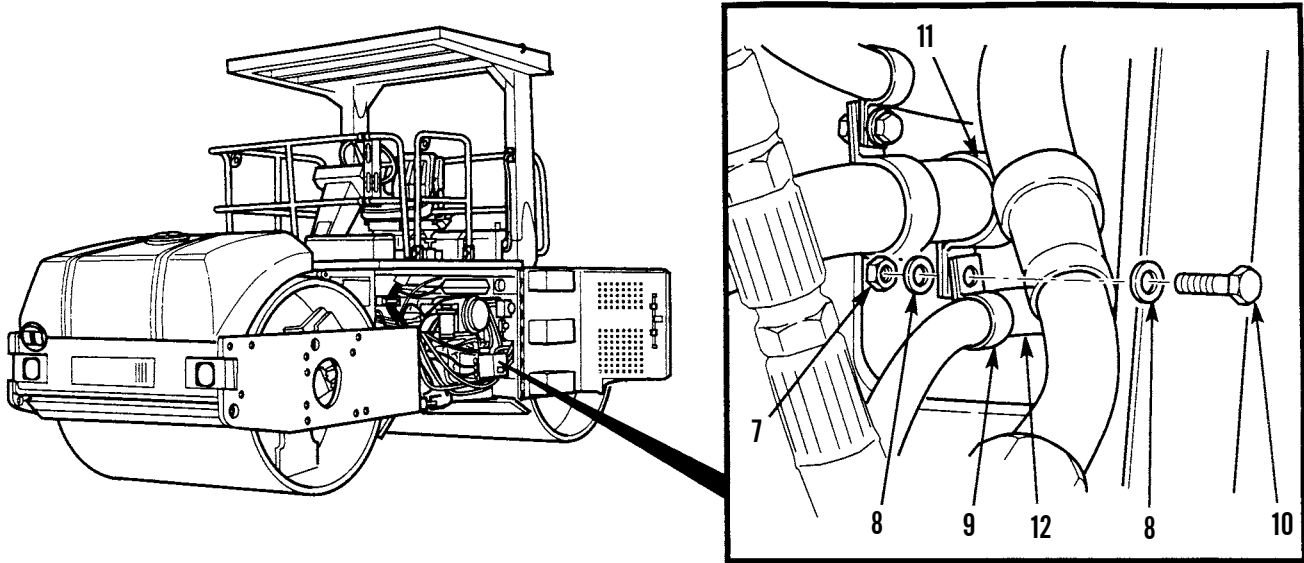
15. Install bracket (15) to frame assembly (4) with washer (14) and screw (13).



401-591

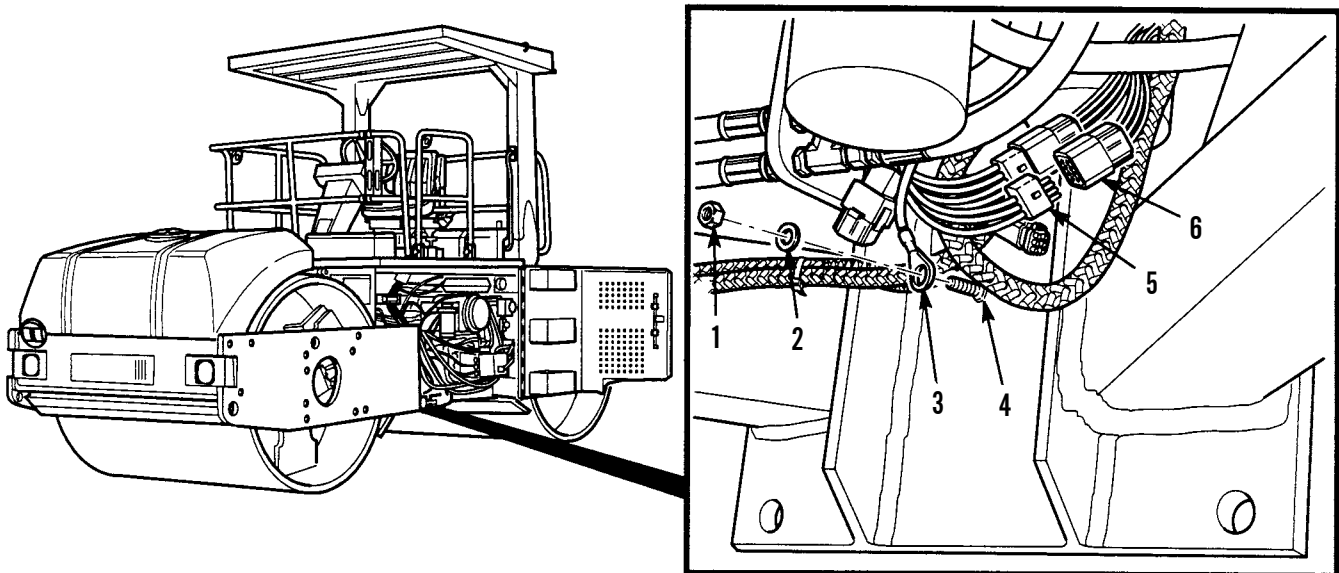
INSTALLATION - CONTINUED

16. Install clip (9) on rear wiring harness (12).
17. Install screw (10), washer (8), clip (9), washer (8) and nut (7) on clip assembly (11).



401-590

18. Connect rear wiring harness connector (5) to connector (6).
19. Install two wires (3) on frame assembly (4) with washer (2) and nut (1).



401-589

20. Close left- and right-side door assemblies (TM 5-3895-379-10).
21. Install rear water tank (WP 0154 00).
22. Connect battery cables (WP 0105 00).

END OF WORK PACKAGE

INSTRUMENT WIRING HARNESS REPLACEMENT

0112 00

THIS WORK PACKAGE COVERS

Inspection and Testing, Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Solder (Item 35, WP 0219 00)

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Lockwasher (2)

Locknut

References

WP 0108 00, General Wiring Repair

WP 0213 00, Electrical General Maintenance Instructions

TM 5-3895-379-23P, Figures 48, 62 and 102

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right-side door assembly opened (TM 5-3895-379-10)

Battery cables disconnected (WP 0105 00)

INSPECTION AND TESTING

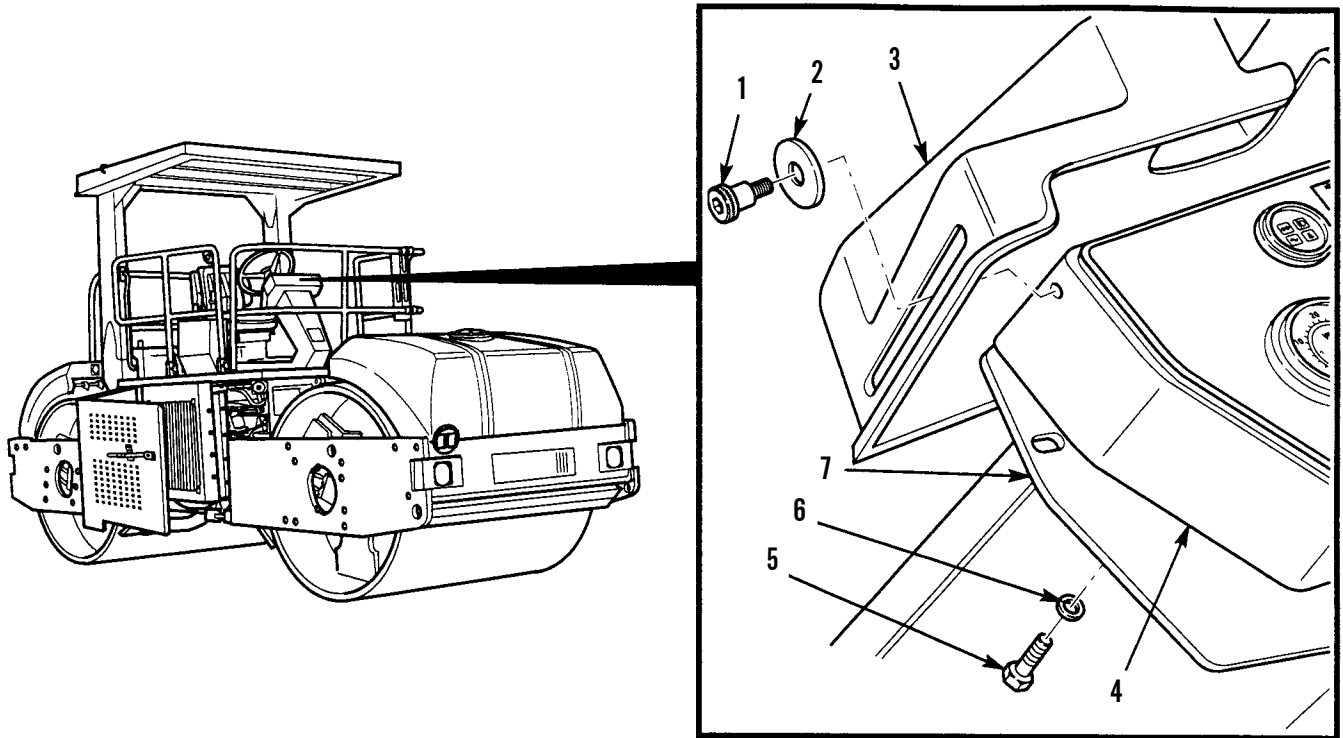
Wiring and electrical inspection and repair is presented in General Wiring Repair (WP 0108 00). Electrical testing is presented in Electrical General Maintenance Instructions (WP 0213 00).

NOTE

- The instrument wiring harness for the CB534B and CB534C Rollers are replaced the same way. CB534B Roller is shown.
- The CB534C Roller is equipped with additional wiring.

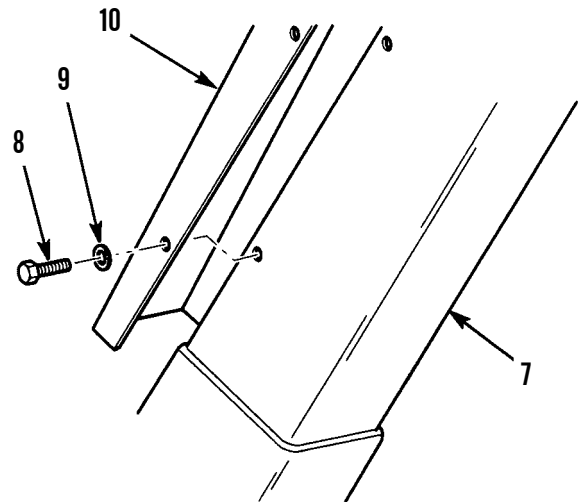
REMOVAL

1. Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).
2. Remove three screws (5) and washers (6) from operator station (7).
3. Lift and tilt back instrument box assembly (4) to gain access to back of instrument box assembly.



401-601

4. Remove four screws (8), washers (9), and cover (10) from operator station (7).



401-602

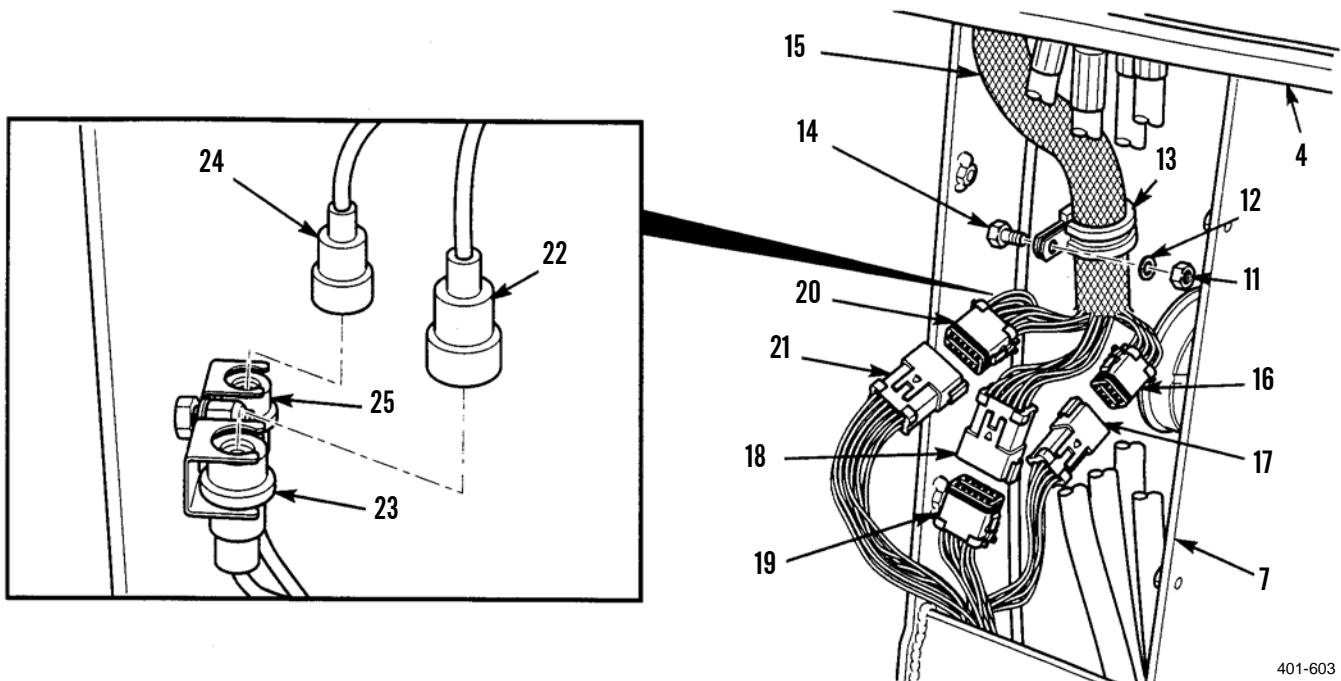
REMOVAL - CONTINUED

5. Remove locknut (11), washer (12) and clamp (13) from operator station stud (14). Discard locknut.

NOTE

- Tag and mark all wires prior to removal.
- Remove cable ties as required for removal of wiring harness assembly.

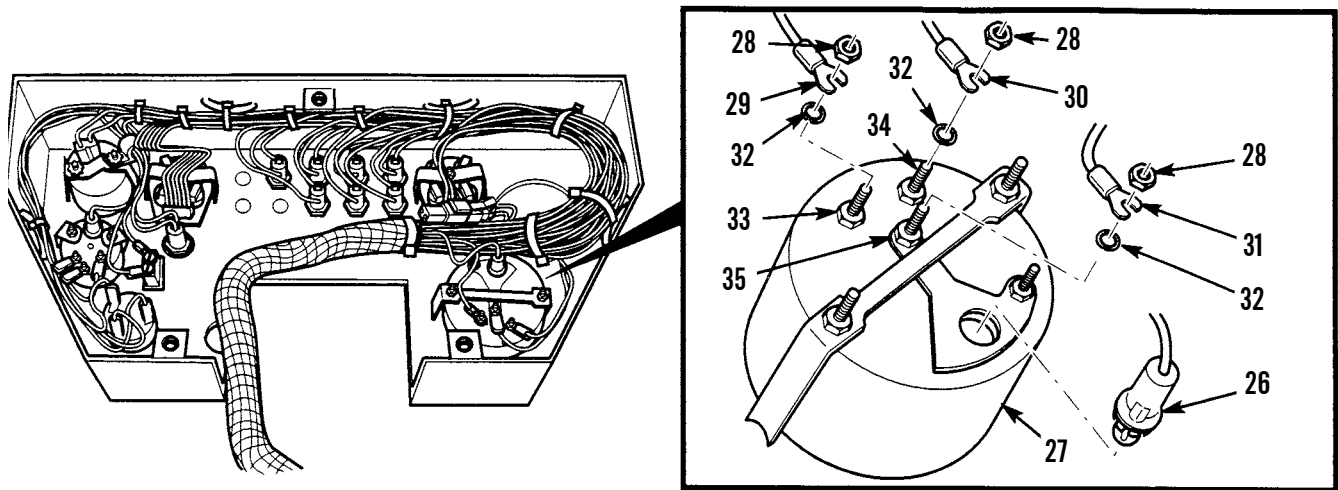
6. Remove clamp (13) from instrument wiring harness assembly (15).
7. Disconnect connector (16) from connector (17).
8. Disconnect connector (18) from connector (19).
9. Disconnect connector (20) from connector (21).
10. Disconnect connector (22) from connector (23).
11. Disconnect connector (24) from connector (25).
12. Carefully lift instrument box assembly (4) and instrument wiring harness assembly (15) from operator station (7) and place on work bench.



401-603

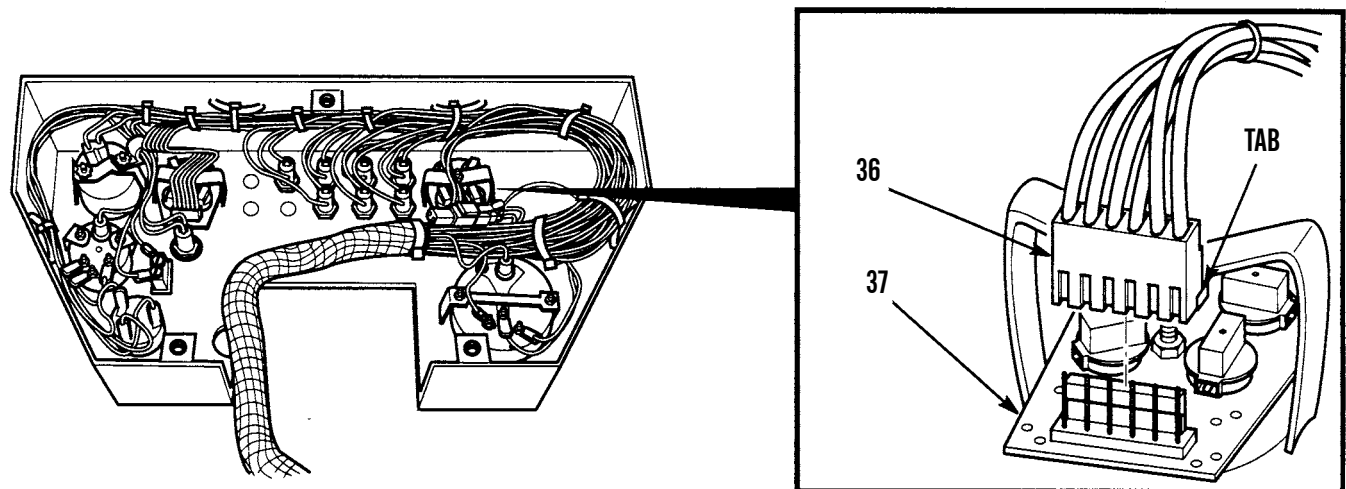
REMOVAL - CONTINUED

13. Remove lamp assembly (26) from Vibrations Per Minute (VPM) tachometer (27).
14. Remove three nuts (28), wires (29), (30) and (31) and lockwashers (32) from VPM tachometer terminals (33), (34) and (35). Discard lockwashers.



401-604

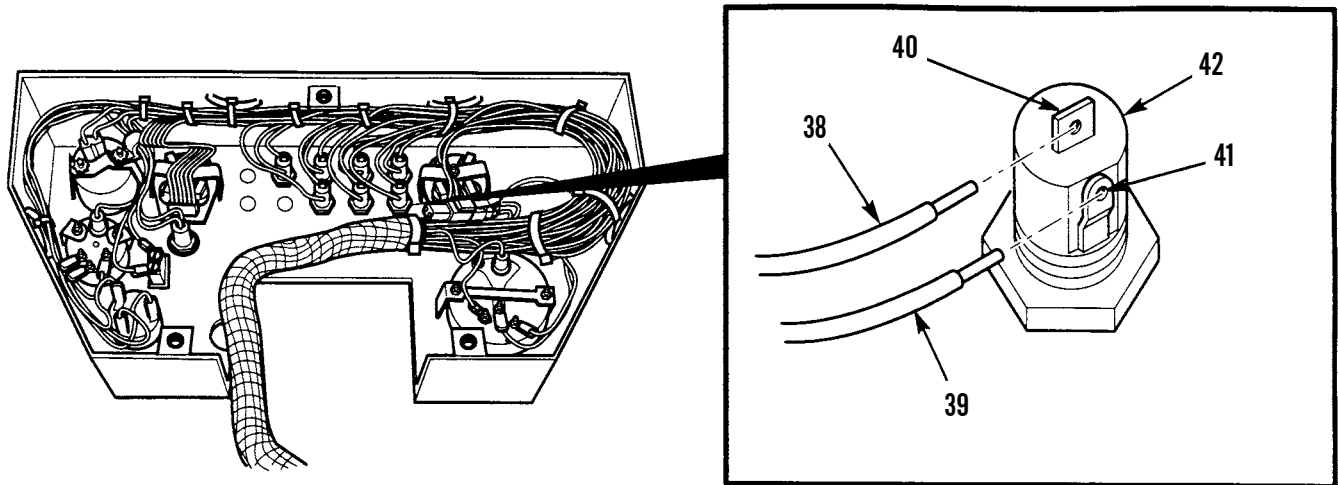
15. Lift tab and remove instrument wiring harness connector (36) from functional light assembly (37).



401-605

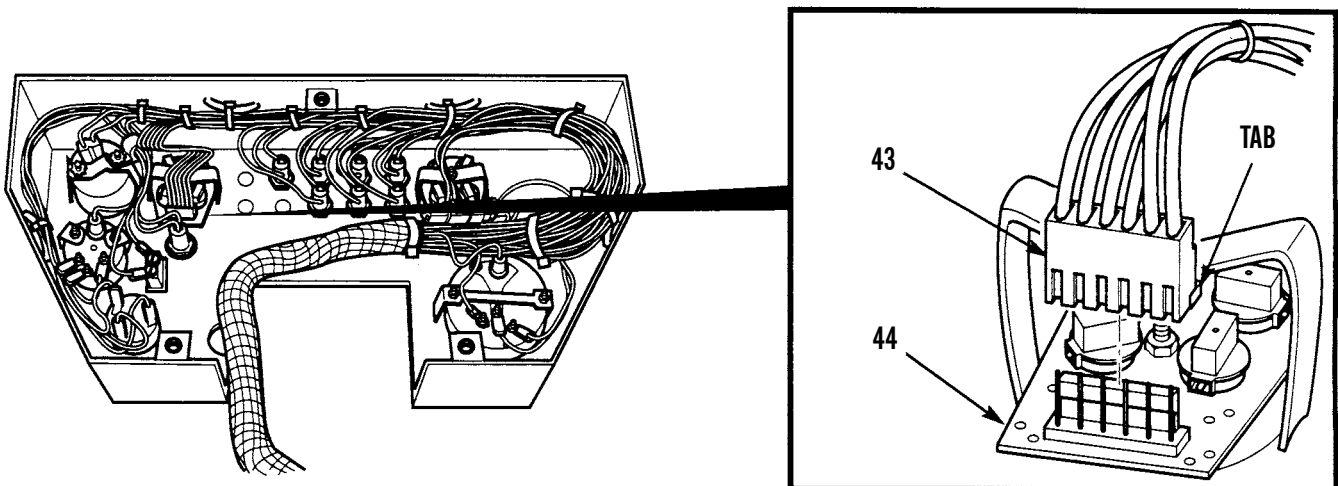
REMOVAL - CONTINUED

16. Cut and remove wires (38) and (39) from two terminals (40) and (41) of seven fuse holders (42).



401-606

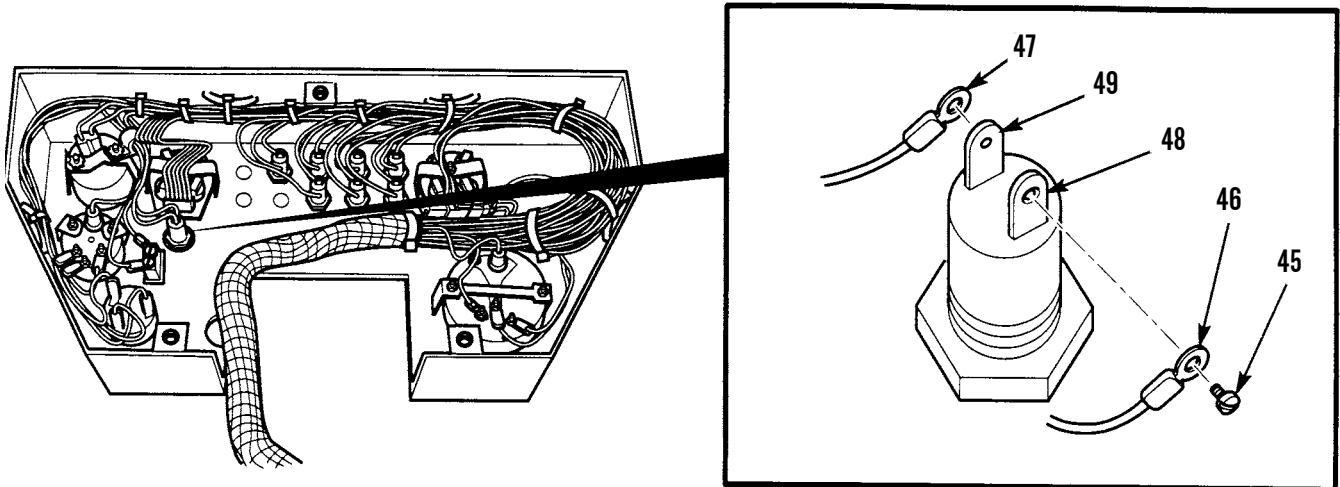
17. Lift tab and remove instrument wiring harness connector (43) from warning light assembly (44).



401-607

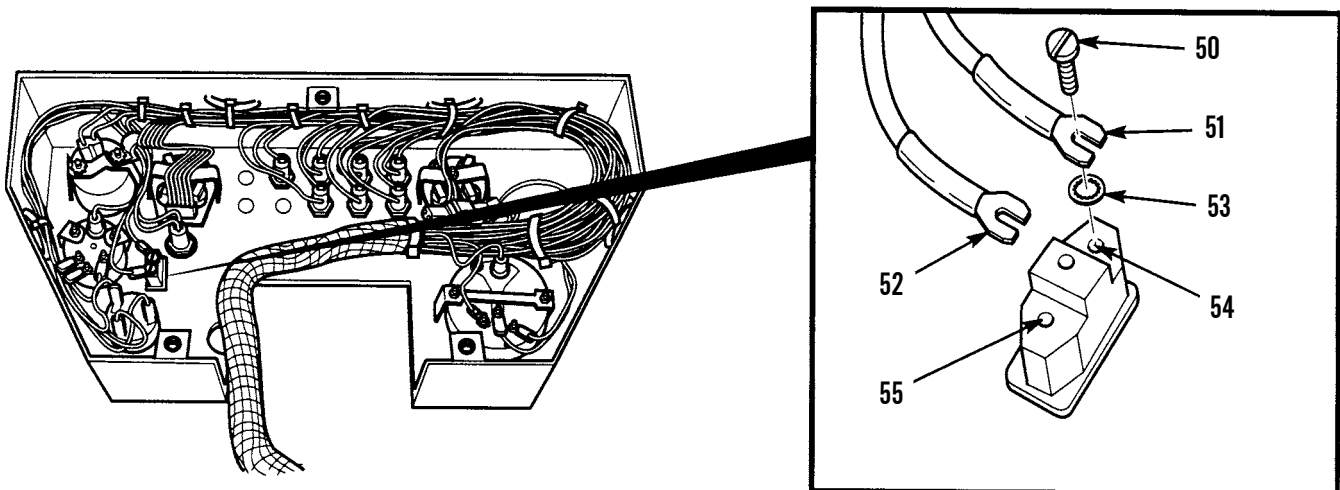
REMOVAL - CONTINUED

18. Remove two screws (45) and wires (46) and (47) from alternator light assembly terminals (48) and (49).



401-608

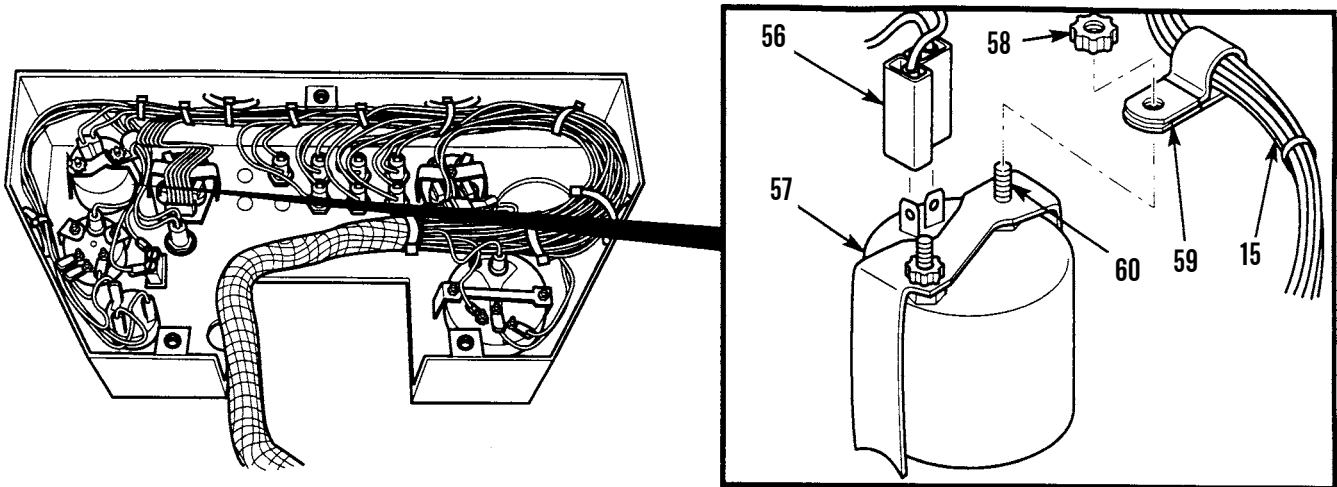
19. Remove two screws (50), wires (51) and (52) and lockwashers (53) from starting aid switch terminals (54) and (55). Discard lockwashers.



401-609

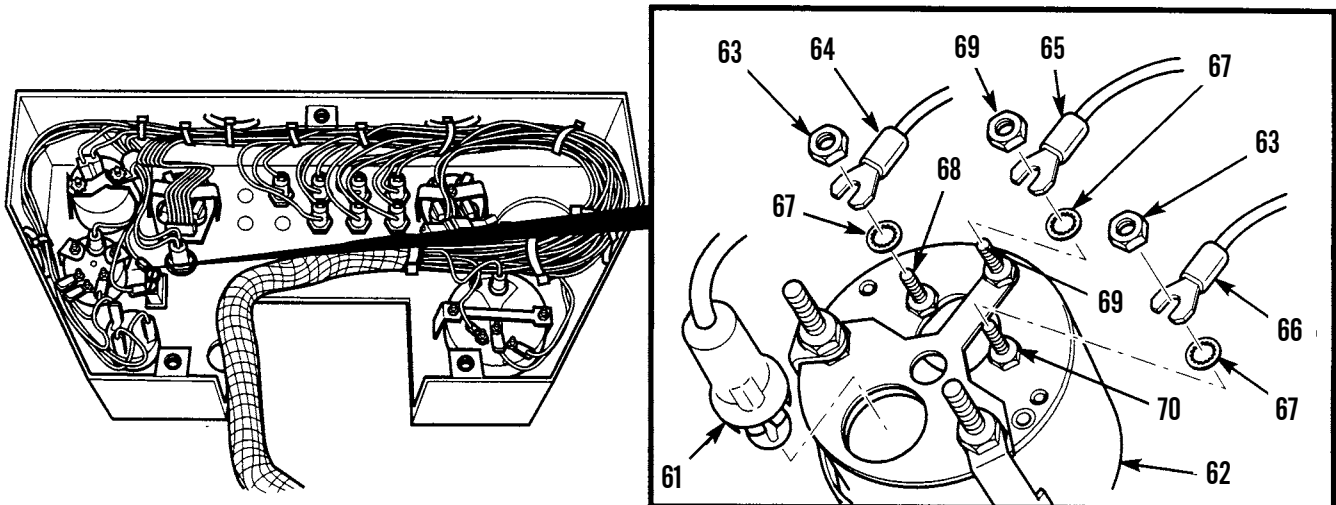
REMOVAL - CONTINUED

20. Remove instrument wiring harness connector (56) from hourmeter (57).
21. Remove thumb nut (58) and clamp (59) from hourmeter stud (60).
22. Remove clamp (59) from instrument wiring harness assembly (15).



401-610

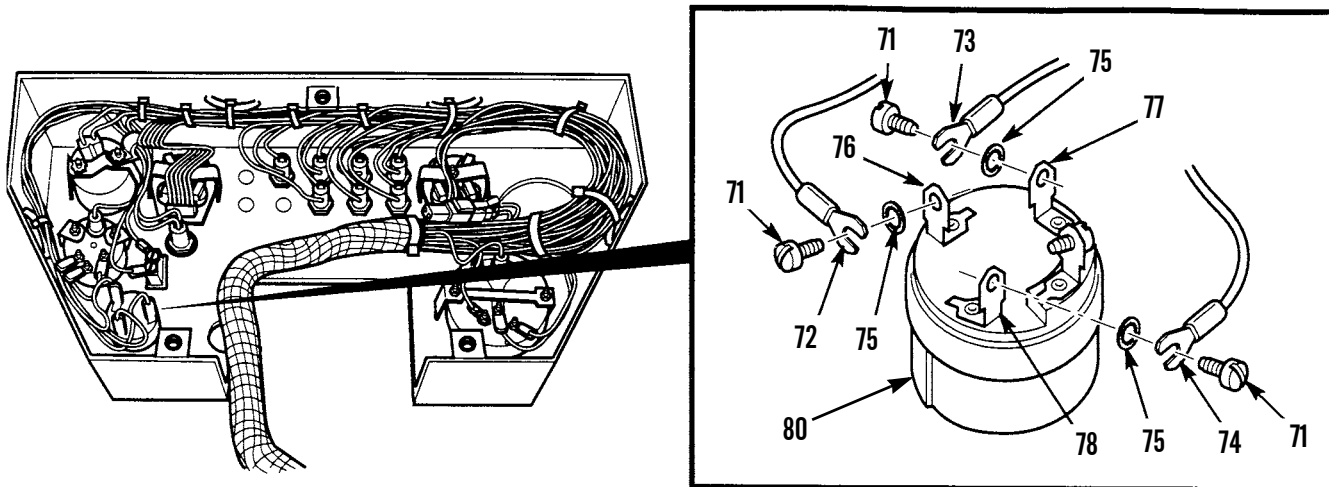
23. Remove lamp assembly (61) from fuel level indicator (62).
24. Remove three nuts (63), wires (64), (65) and (66) and lockwashers (67) from fuel level indicator terminals (68), (69) and (70). Discard lockwashers.



401-611

REMOVAL - CONTINUED

25. Remove three screws (71), wires (72), (73) and (74) and lockwashers (75) from starter switch assembly terminals (76), (77) and (78). Discard lockwashers.

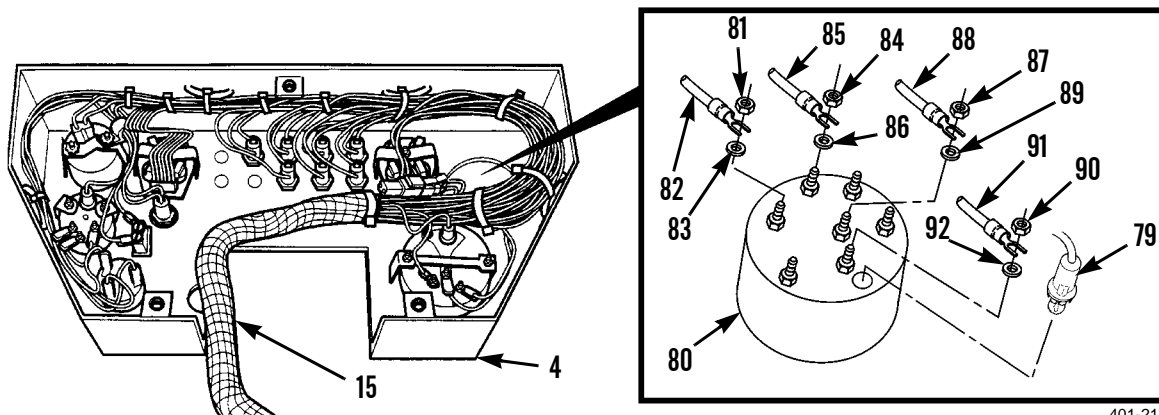


401-612

NOTE

Perform steps 26 through 30 for the CB534C Roller.

26. Remove lamp assembly (79) from Feet Per Minute (FPM) meter (80).
27. Remove nut (81), instrument wiring harness connector (82) and washer (83) from FPM meter (80).
28. Remove nut (84), instrument wiring harness connector (85) and washer (86) from FPM meter (80).
29. Remove nut (87), instrument wiring harness connector (88) and washer (89) from FPM meter (80).
30. Remove nut (90), instrument wiring harness connector (91) and washer (92) from FPM meter (80).
31. Remove instrument wiring harness assembly (15) from instrument box assembly (4).



401-2174

INSTALLATION

NOTE

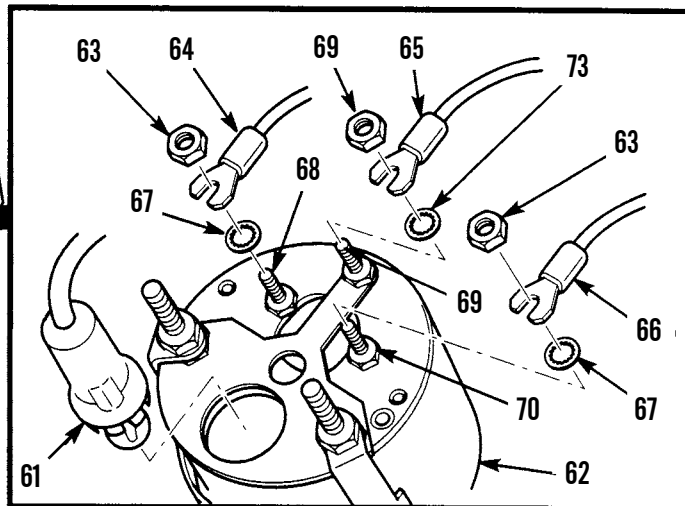
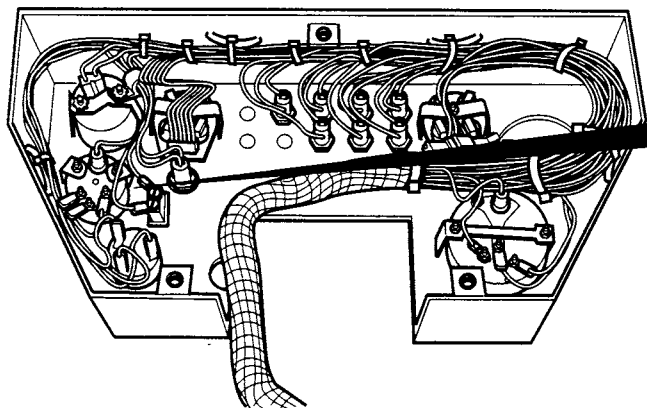
Install cable ties as required for installation of wiring harness assembly.

1. Place instrument box assembly (4) on clean surface.
2. Position instrument wiring harness assembly (15) in instrument box assembly (4).

NOTE

Perform steps 3 through 7 for CB534C Roller.

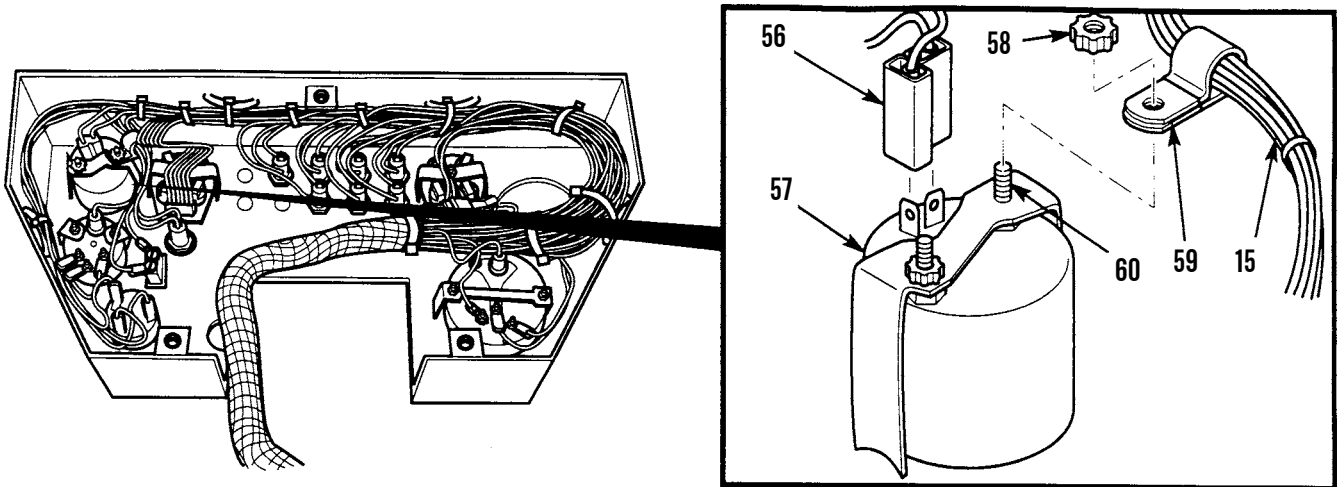
3. Install washer (82), instrument wiring harness connector (91) and nut (90) to FPM meter (80).
4. Install washer (89), instrument wiring harness connector (88) and nut (87) to FPM meter (80).
5. Install washer (86), instrument wiring harness connector (85) and nut (84) to FPM meter (80).
6. Install washer (83), instrument wiring harness connector (82) and nut (81) to FPM meter (80).
7. Install lamp assembly (79) to FPM meter (80).
8. Install three new lockwashers (75), wires (72), (73) and (74) and screws (71) on starter switch assembly terminals (76), (77) and (78).
9. Install three new lockwashers (67), wires (64), (65) and (66) and nuts (63) on fuel level indicator terminals (68), (69) and (70).
10. Install lamp assembly (61) on fuel level indicator (62).



401-611

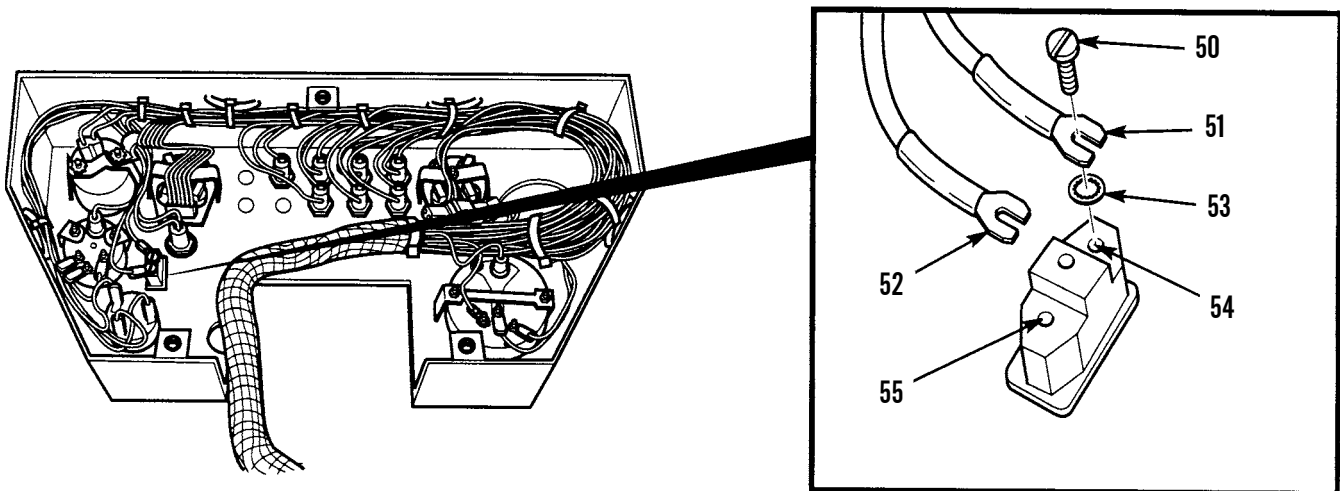
INSTALLATION - CONTINUED

11. Position clamp (59) on instrument wiring harness assembly (15).
12. Install clamp (59) on hourmeter stud (60) with thumb nut (58).
13. Connect instrument wiring harness connector (56) to hourmeter (57).



401-610

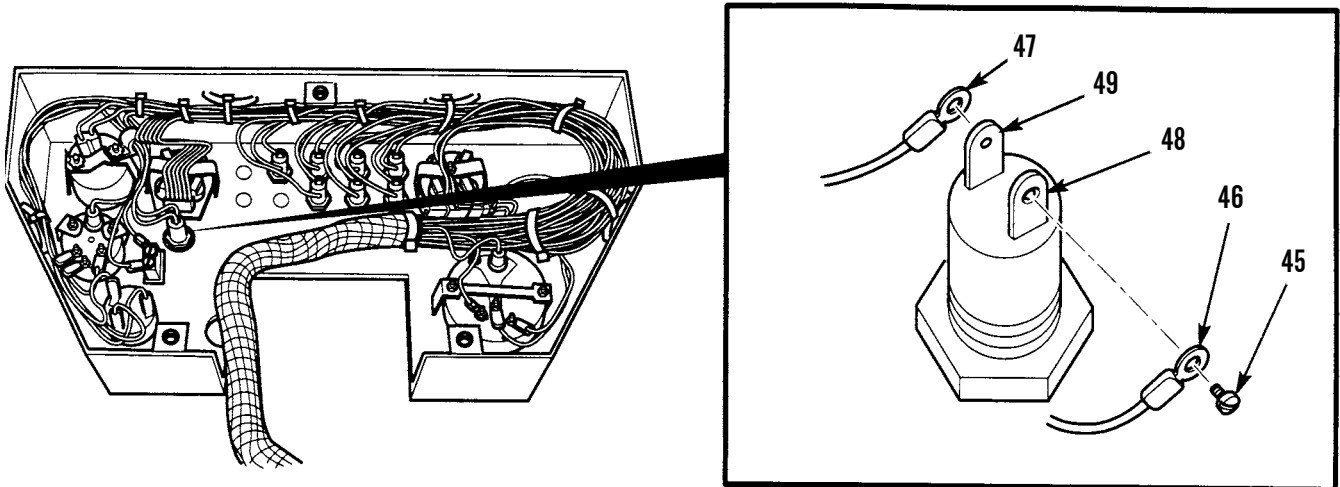
14. Install two new lockwashers (53), wires (51) and (52) and screws (50) on starting aid switch terminals (54) and (55).



401-609

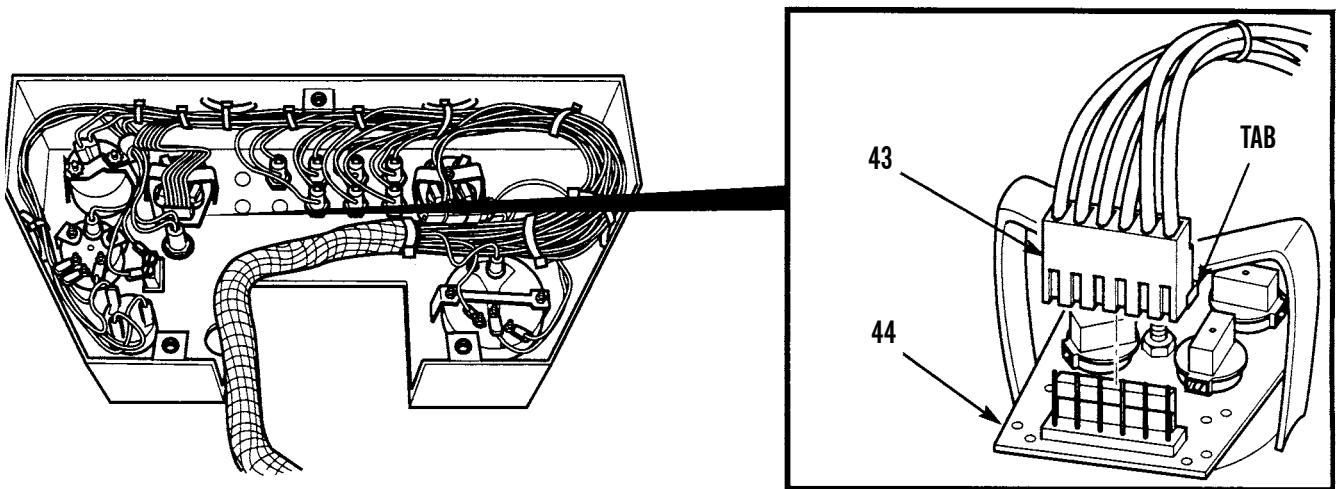
INSTALLATION - CONTINUED

15. Install two wires (46) and (47) on alternator light assembly terminals (48) and (49) with screws (45).



401-608

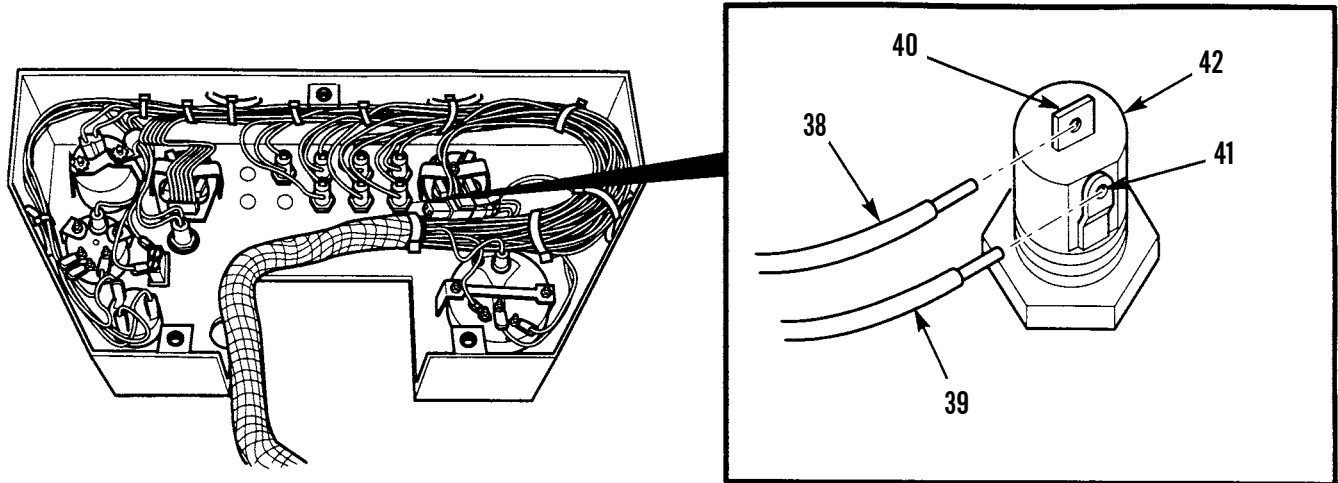
16. Connect instrument wiring harness connector (43) to warning light assembly (44).



401-607

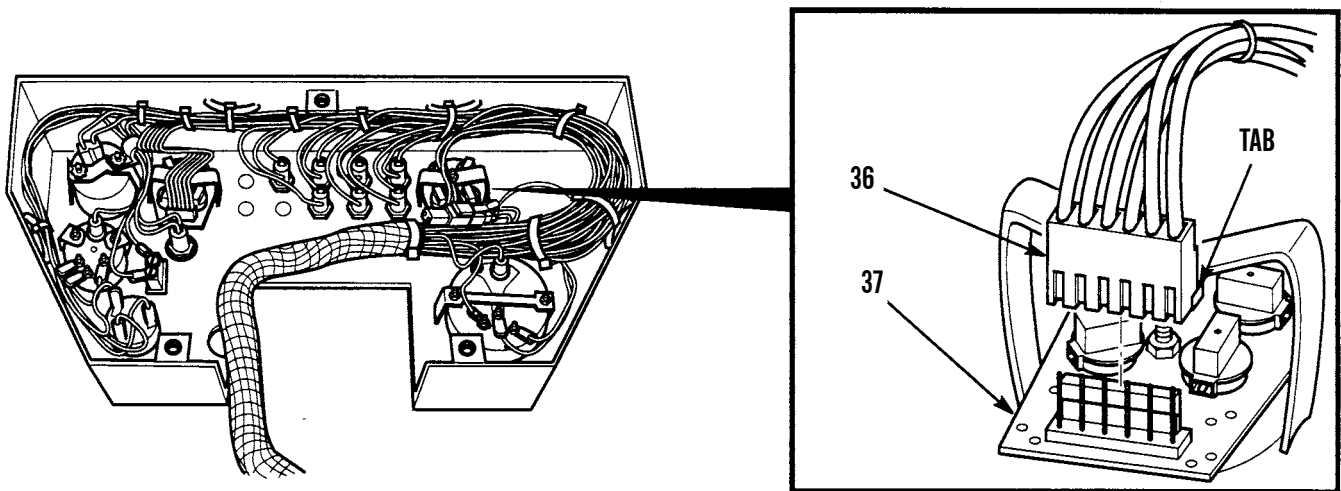
INSTALLATION - CONTINUED

17. Using a soldering iron, install two wires (38) and (39) on two terminals (40) and (41) of seven fuse holders (42).



401-606

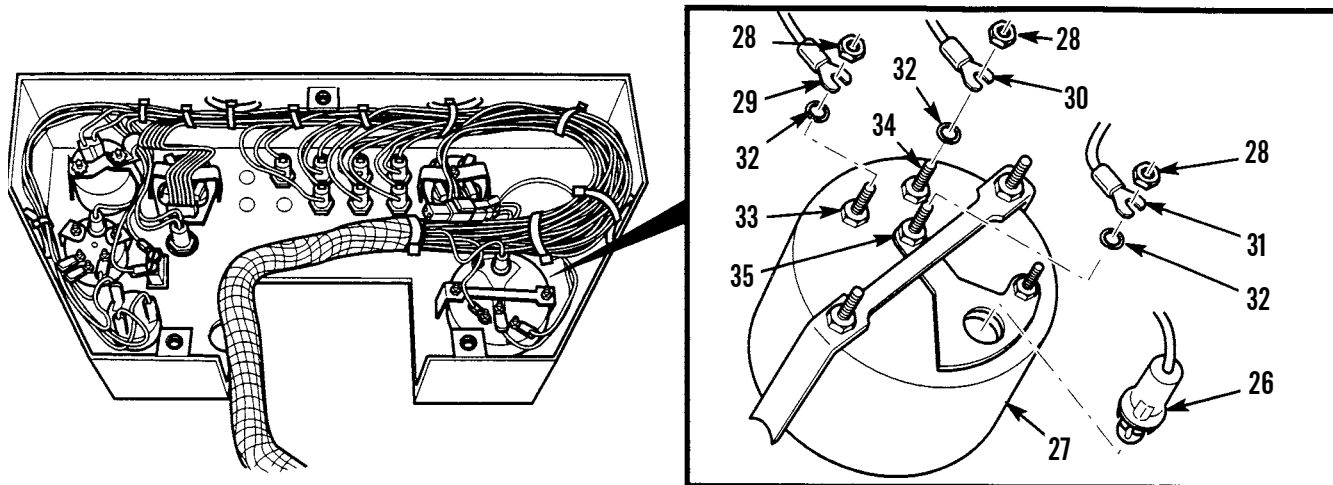
18. Connect instrument wiring harness connector (36) on functional light assembly (37).



401-605

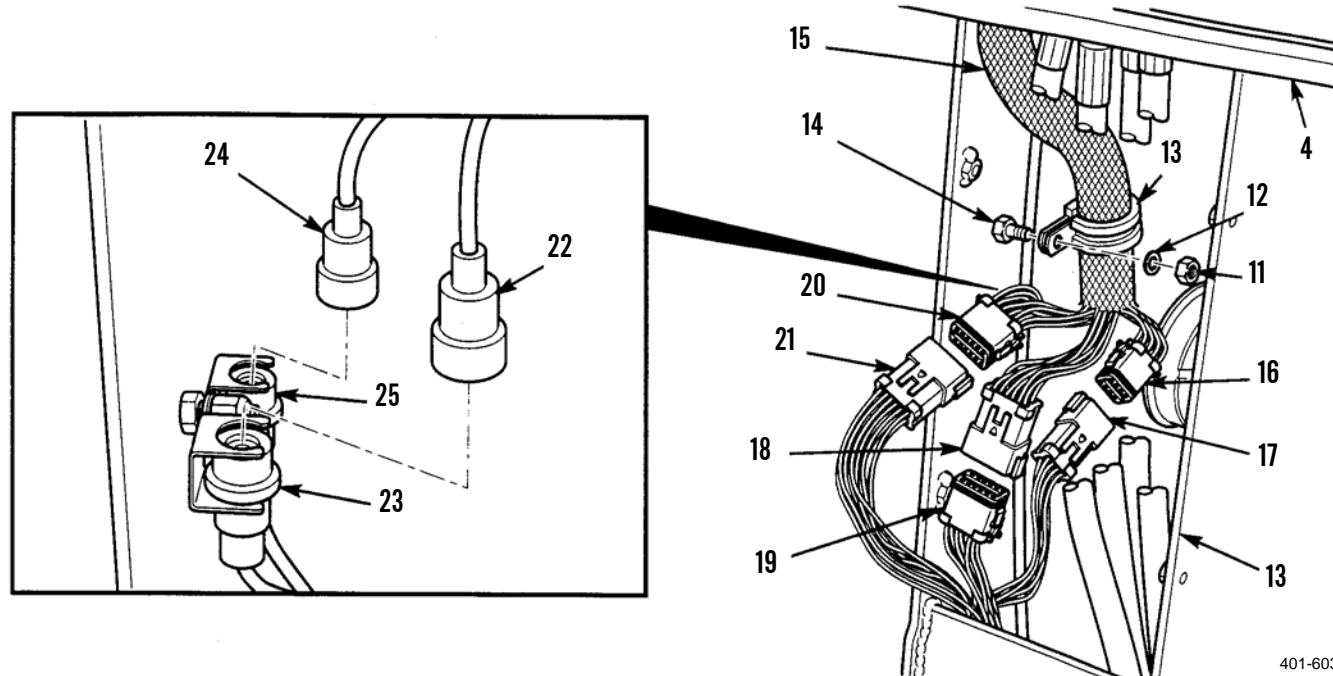
INSTALLATION - CONTINUED

19. Install three new lockwashers (32), wires (29), (30) and (31) and nuts (28) on VPM tachometer terminals (33), (34) and (35).
20. Install lamp assembly (26) in VPM tachometer (27).



401-604

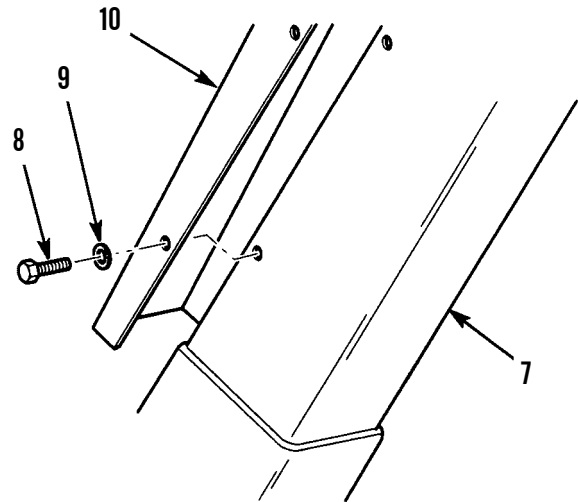
21. Carefully position instrument box assembly (4) and instrument wiring harness assembly (15) on operator station (7).
22. Connect connector (24) to connector (25).
23. Connect connector (22) to connector (23).
24. Connect connector (20) to connector (21).
25. Connect connector (18) to connector (19).
26. Connect connector (16) to connector (17).
27. Position clamp (13) on instrument wiring harness assembly (15).
28. Install clamp (13) on operator station stud (14) with washer (12) and new locknut (11).



401-603

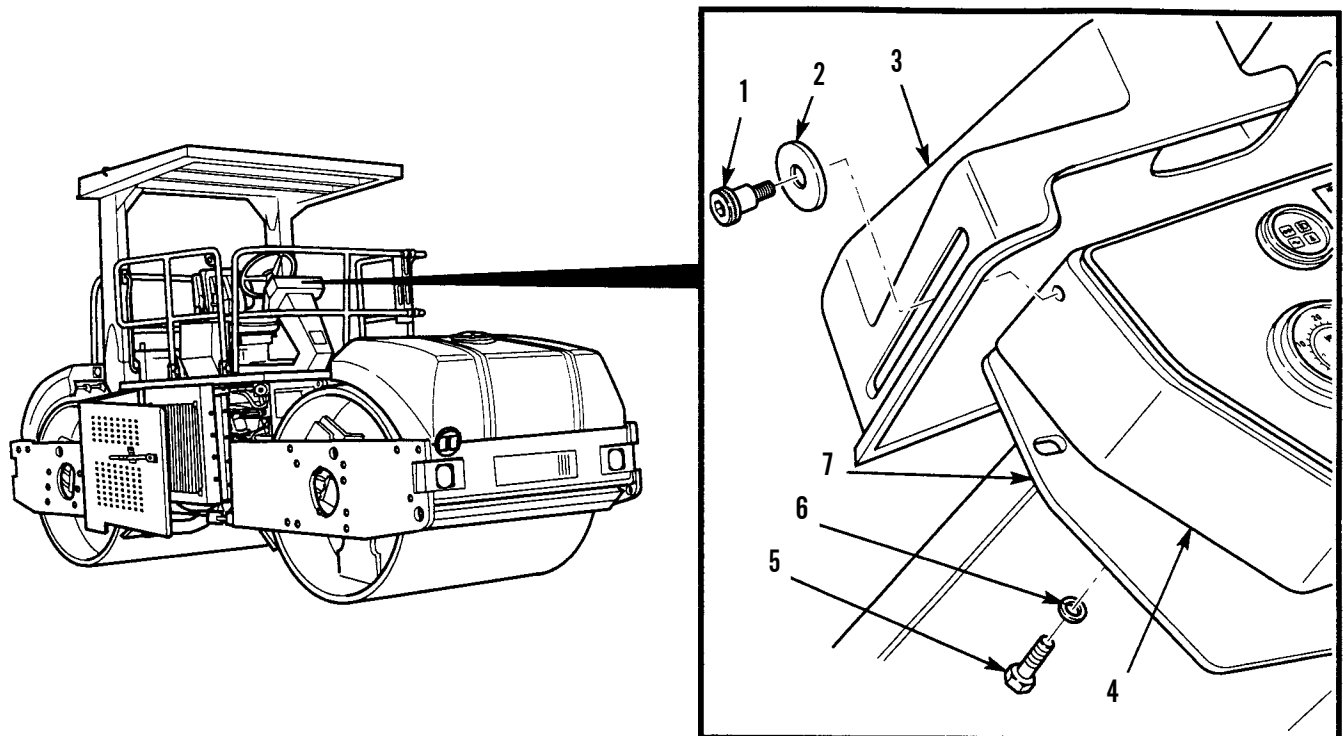
INSTALLATION - CONTINUED

29. Install cover (10) on operator station (7) with four washers (9) and screws (8).



401-602

30. Install box assembly (4) on cover (7) with three washers (6) and screws (5).
31. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).



401-601

32. Close right-side door assembly (TM 5-3895-379-10).
33. Connect battery cables (WP 0105 00).

END OF WORK PACKAGE

PROPEL CONTROL LEVER ASSEMBLY MAINTENANCE

0113 00

THIS WORK PACKAGE COVERSRemoval, Disassembly, Assembly, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Gasket (2)

Materials/Parts - Continued

Locknut (2)

References

TM 5-3895-379-23P, Figure 78

Equipment Condition

Drums chocked (TM 5-3895-379-10)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

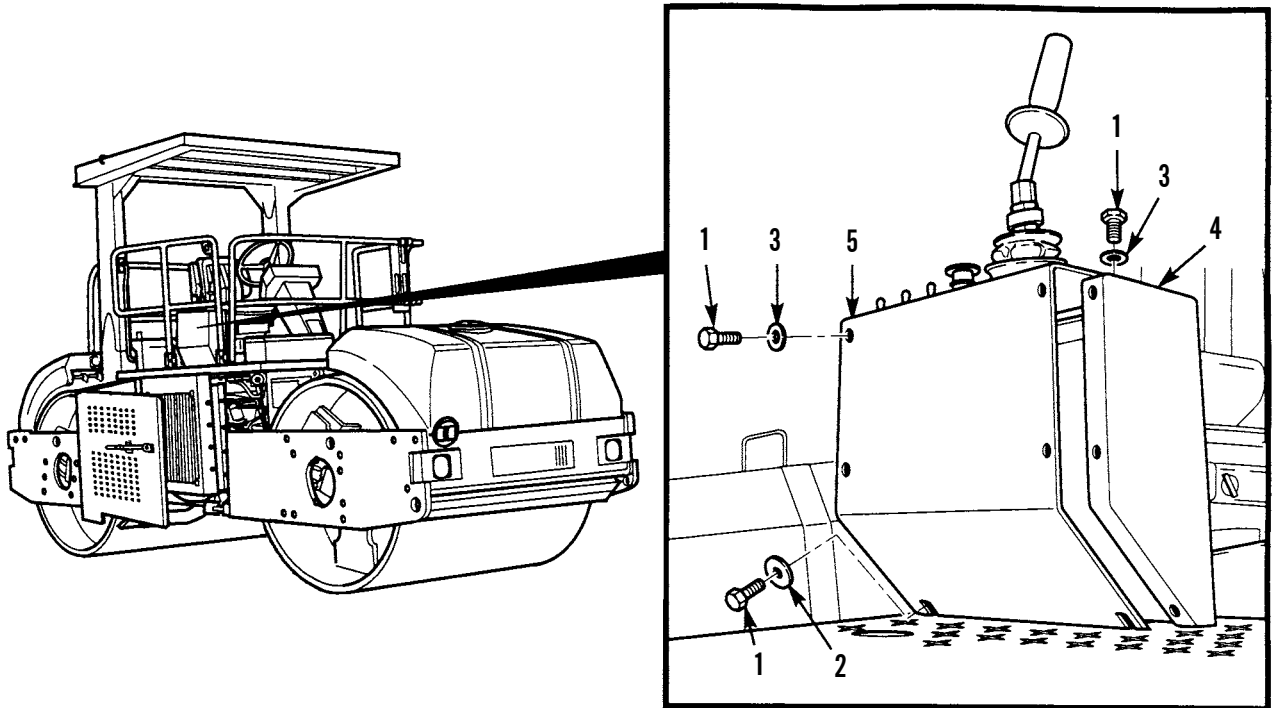
Right-side door assembly opened (TM 5-3895-379-10)

**WARNING**

- At operating temperature oil is hot. Allow oil to cool before disconnecting any hydraulics. Failure to do so could result in injury.
- Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL

1. Remove nine bolts (1), two washers (2) and seven washers (3) from operator station (4).
2. Lift plate assembly (5) and pull away from operator station (4).



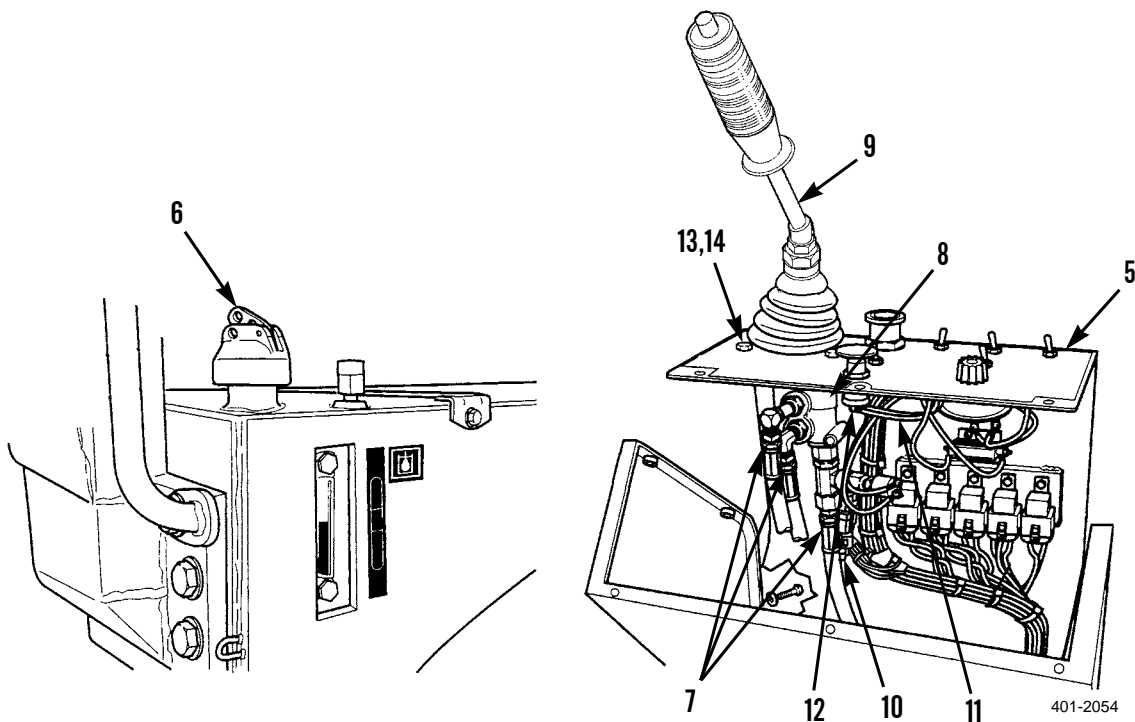
401-446

REMOVAL - CONTINUED

3. Loosen hydraulic oil tank fill cap (6) to release hydraulic pressure.

NOTE

- Tag and mark all lines and wires to ensure correct installation.
 - Cap and plug all lines and fittings to prevent any contaminants from entering the system.
 - Use container to catch any oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
4. Remove four hose assemblies (7) from propel control valve (8).
 5. Disconnect electrical connector (10).
 6. Remove two wires (11) from backup alarm switch (12).
 7. Remove four bolts (13) and nuts (14) from plate assembly (5).
 8. Remove propel control valve (8) and lever assembly (9) as a unit from plate assembly (5).



DISASSEMBLY

1. Remove retainer ring (15) and boot (16) from handle (17).

CAUTION

Do not turn handle more than one full turn. Handle cannot be removed by unscrewing and should not be forced or turned more than needed to allow access to screws and nuts. Forcing the handle to turn further will damage the handle.

2. Loosen handle (17) on handle pipe (18) by turning handle (17) counterclockwise not more than 1 full turn.

NOTE

Use care to not lose nuts during removal. Nuts are small and may stay with handle.

3. Remove two screws (19), four screws (20) and six nuts (21) from two handles (17).
4. Remove two handles (17) from handle pipe (18).
5. Remove two gaskets (22) from handles (17). Discard gaskets.
6. Remove nut (23) and preformed packing (24) from handle pipe (18). Discard preformed packing.

NOTE

Note that cams are different lengths.

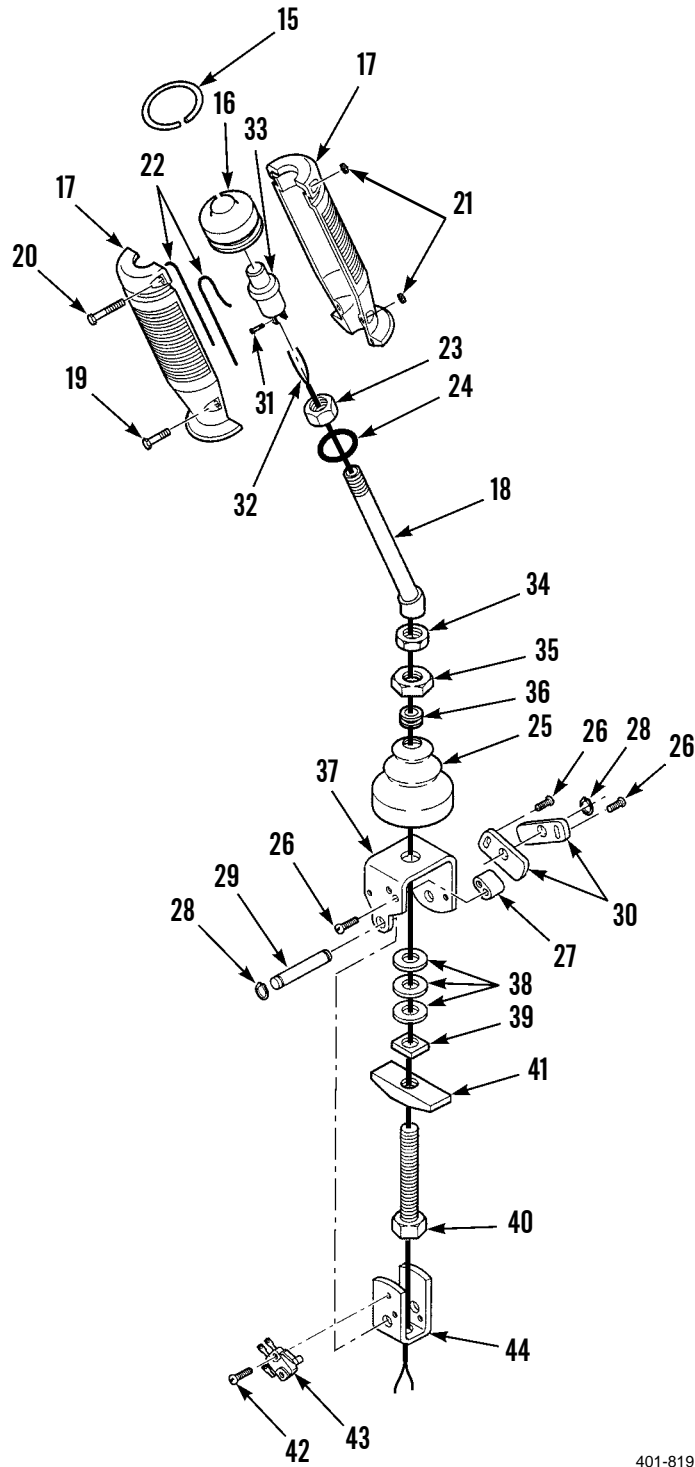
7. Raise boot (25) and remove two screws (26) and cam (27).
8. Remove two retaining rings (28), pivot pin (29) and two cams (30).
9. Remove two screws (31) and wires (32) from vibration push switch (33).
10. Loosen nut (34) and remove handle pipe (18).
11. Remove nut (34), adjuster (35), boot (25) and boot sleeve (36).

NOTE

- Note position of washers to aid in installation.
- Count number of turns necessary to remove pivot plate from pivot bolt.

12. Remove outer bracket (37), three washers (38), two wires (32) and bronze wear shoe (39) from pivot bolt (40).
13. Remove pivot plate (41) from pivot bolt (40).
14. Remove three screws (42) and switch (43) from pivot bracket (44).

DISASSEMBLY



401-819

ASSEMBLY

1. Install switch (43) and three screws (42) on pivot bracket (44).
2. Install pivot bolt (40) on pivot plate (41) using same number of turns noted during removal.

NOTE

Install washers as noted in removal.

3. Install outer bracket (37), three washers (38), two wires (32) and bronze wear shoe (39) to pivot bolt (40).
4. Install adjuster (35), boot (25) and boot sleeve (36).
5. Install, but do not tighten nut (34). Install handle pipe (18) and tighten nut (34).
6. Install two screws (31) and wires (32) on vibration push switch (33).
7. Install two retaining rings (28), pivot pin (29) and two cams (30).
8. Lower boot (25) and install two screws (26) and cam (27).
9. Install nut (23) and new preformed packing (24) to handle pipe (18).
10. Install two new gaskets (22) to handles (17).
11. Install two handles (17) to handle pipe (18).

NOTE

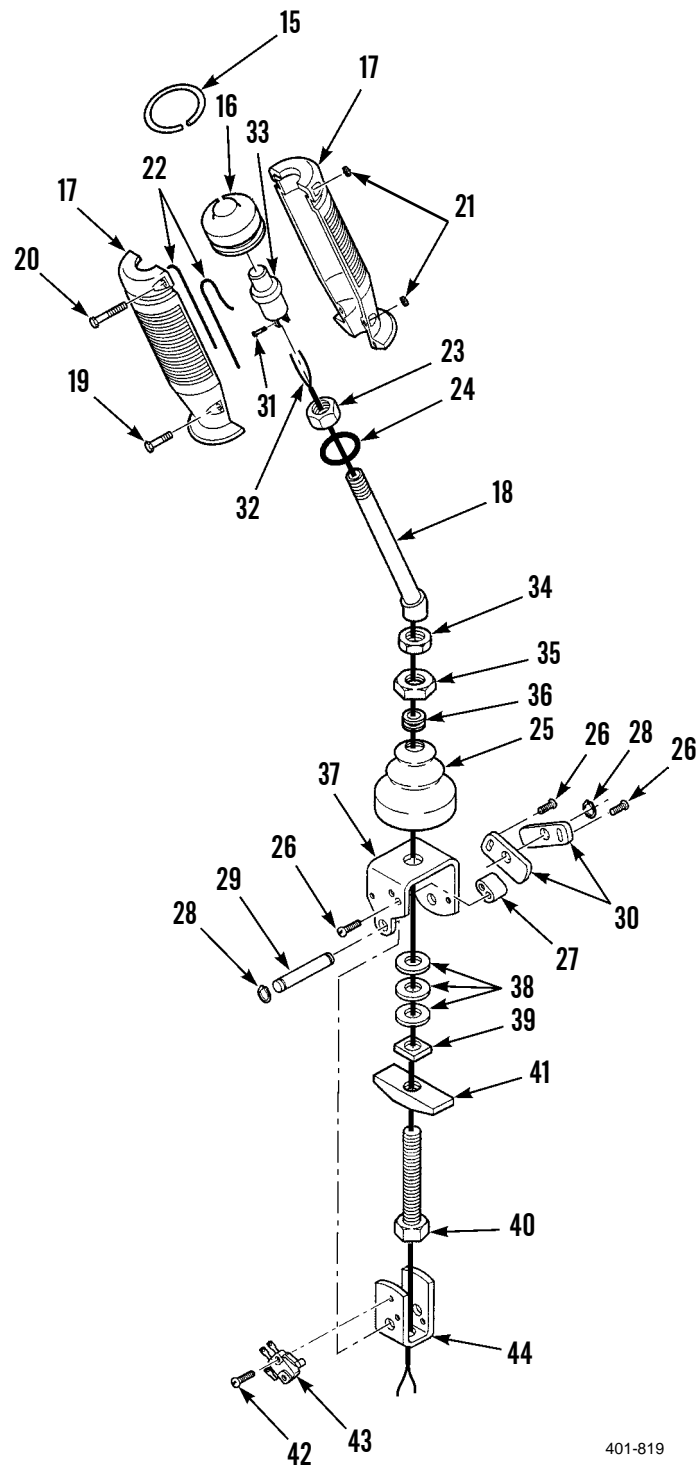
- Grip housings will not fit together if any threads of handle pipe are showing on top side of nut while nut is installed.
 - Mate flat sides of nut with cavity on grip housing.
 - Use care not to lose nuts during installation. Nuts are small and easily lost.
12. Install two screws (19), four screws (20) and six nuts (21) to two handles (17).

CAUTION

Do not turn handle more than one full turn. Handle should not be forced or turned more than needed to tighten. Forcing the handle to turn further will damage the handle.

13. Tighten handle (17) on handle pipe (18) by turning grip housings clockwise not more than one full turn.
14. Install retainer ring (15) and boot (16) to handle (17).

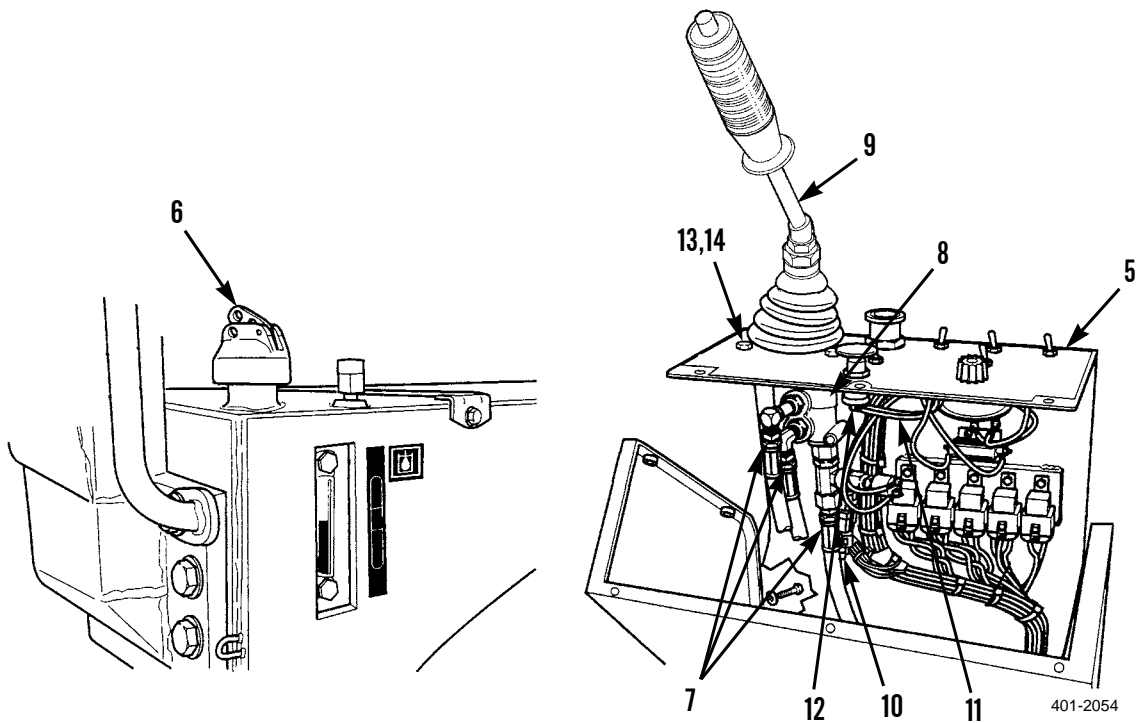
ASSEMBLY - CONTINUED



401-819

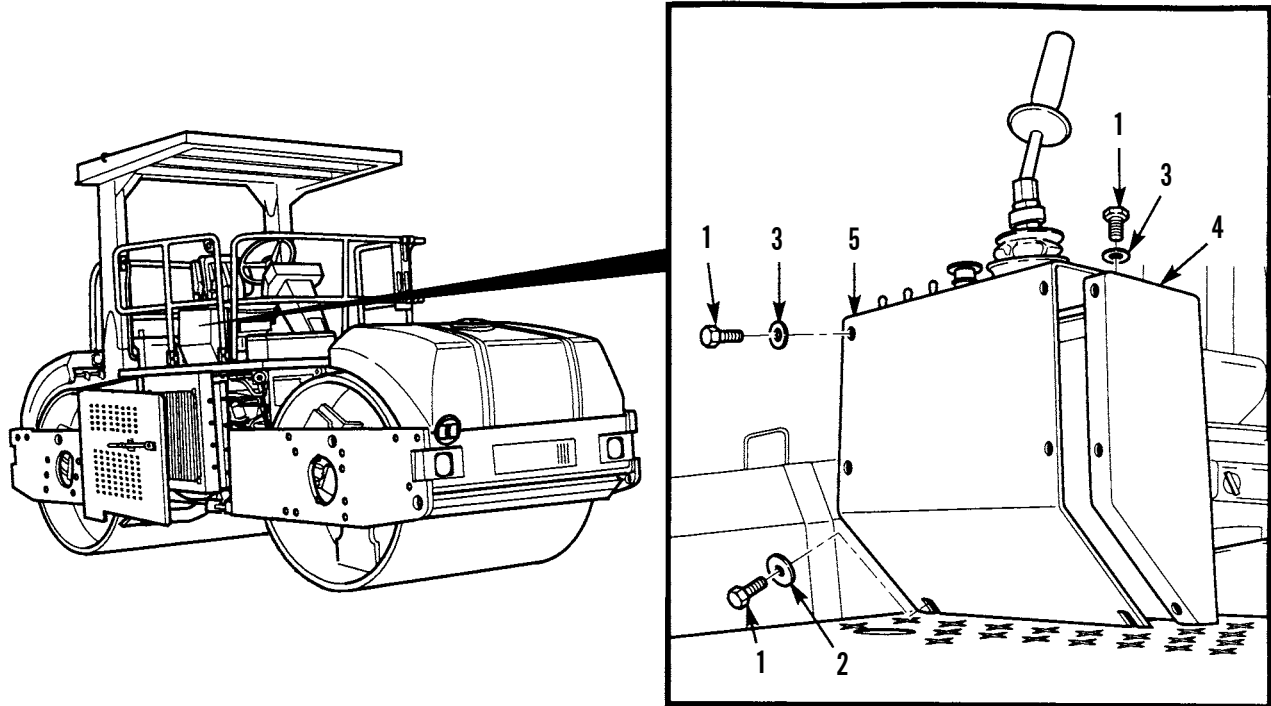
INSTALLATION

1. Install propel control valve and lever assembly (8) and (9), as a unit, to plate assembly (5).
2. Install four bolts (13) and nuts (14) to plate assembly (5).
3. Install two wires (11) to back-up alarm switch (12).
4. Connect electrical connector (10).
5. Install four hose assemblies (7) to propel control valve (8) and lever assembly (9).



INSTALLATION - CONTINUED

6. Check fill level of hydraulic tank (WP 0009 00).
7. Tighten hydraulic oil tank fill cap (6).
8. Install plate assembly (5) to operator station (4).
9. Install nine bolts (1) and two washers (2) and seven washers (3) to operator station (4).



401-446

10. Close right-side door assembly (TM 5-3895-379-10).
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Reference

TM 5-3895-379-23P, Figure 78

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

ADJUSTMENT**NOTE**

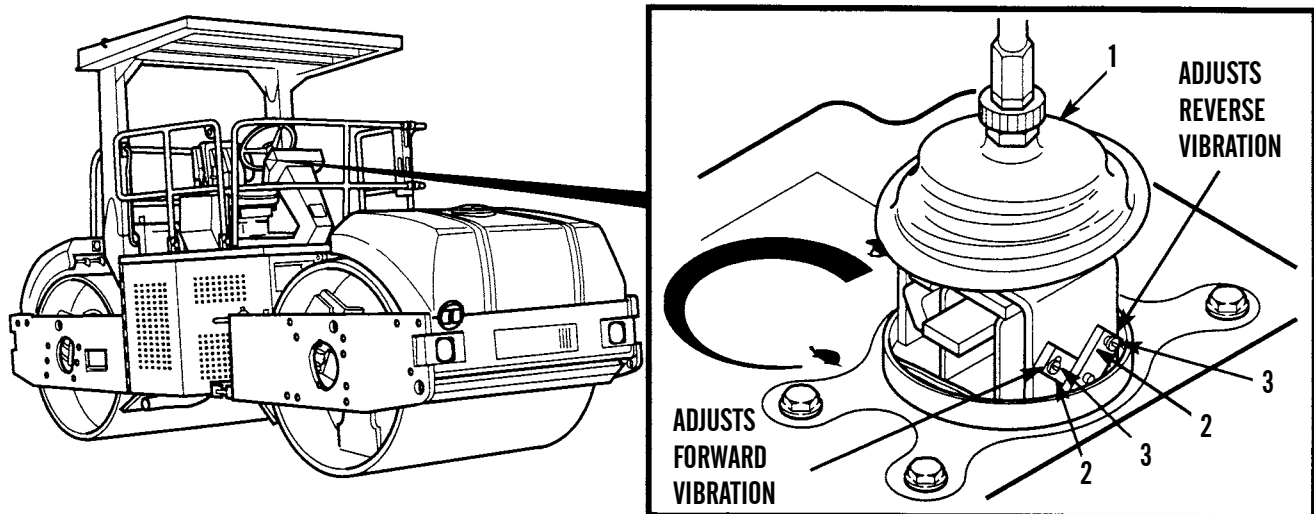
- The vibratory system can be activated at various speeds ranging from 10% to 100% of the propel control lever stroke. This activation will occur when the vibratory control switch is in the AUTO position and the vibratory on/off switch is ON position.
- Separate adjustments can be made for both forward and reverse activation of vibratory system.

1. Lift boot (1) to expose cams (2).
2. Start engine (TM 5-3895-379-10).

NOTE

Cam toward front of roller controls vibratory system when roller is traveling in reverse direction. Cam toward rear of roller controls vibratory system when roller is traveling in forward direction.

3. Loosen cam adjustment screws (3) and adjust cams (2) until the vibratory system is activated at desired travel speed (usually 40 to 70% of full speed).
4. Tighten cam adjustment screws (3).
5. Turn engine off (TM 5-3895-379-10).



401-613

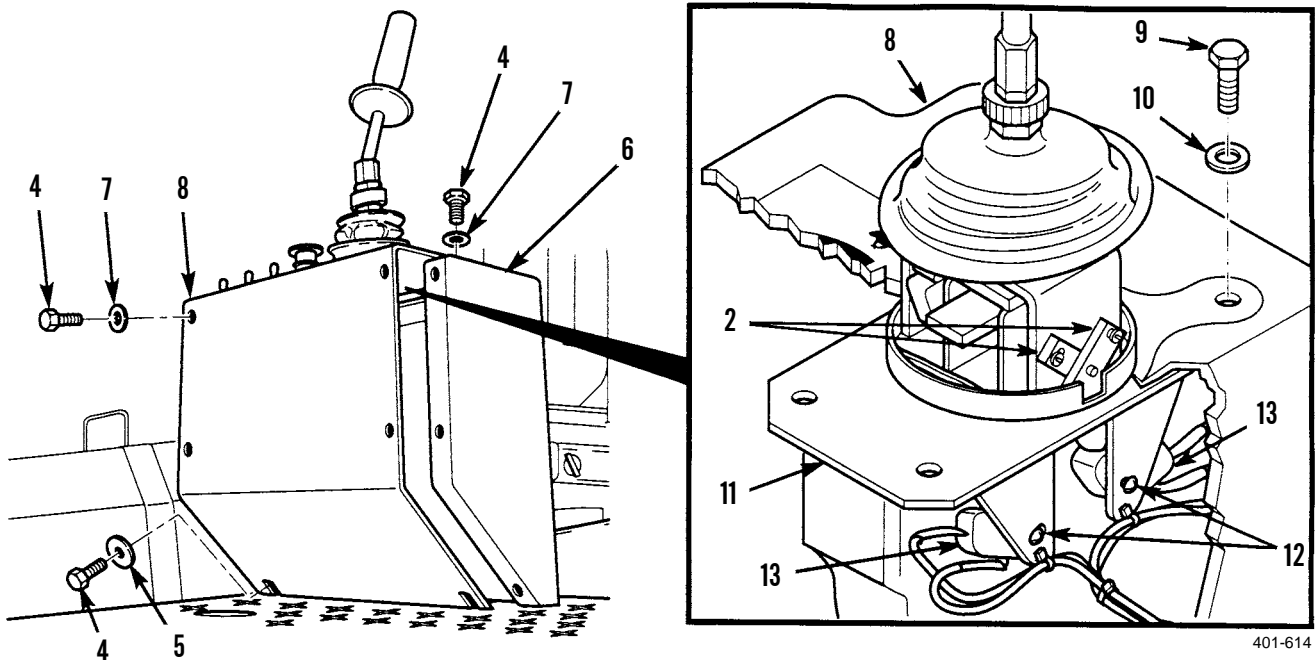
**PROPEL CONTROL LEVER VIBRATORY SYSTEM ENGAGEMENT
STOPS ADJUSTMENT - CONTINUED**

0114 00

ADJUSTMENT - CONTINUED**NOTE**

If cams cannot be adjusted to automatically start vibration, engagement switches may need adjustment. If you have adjusted cams and vibration startup is OK, skip steps 6 through 13.

6. Remove two screws (4) and washers (5) from operator station (6).
7. Remove seven screws (4) and washers (7) from operator station (6).
8. Lift panel assembly (8) and pull away from operator station (6).
9. Remove four screws (9), washers (10) and propulsion control valve assembly (11) from panel assembly (8).
10. Loosen two screws (12) and move two engagement switches (13) up until cams (2) engage switches (12). Tighten screws.
11. Install propulsion control valve assembly (11) on panel assembly (8) with four washers (10) and screws (9).
12. Install panel assembly (8) on operator station (6) with two washers (5), seven washers (7) and nine screws (4).
13. Repeat steps 2 through 5.
14. Return boot (1) to original position.
15. Remove chocks (TM 5-3895-379-10).



401-614

END OF WORK PACKAGE

PROPEL CONTROL LEVER TENSION ADJUSTMENT

0115 00

THIS WORK PACKAGE COVERS

Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Grease, molybdenum disulfide (Item 20, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 78

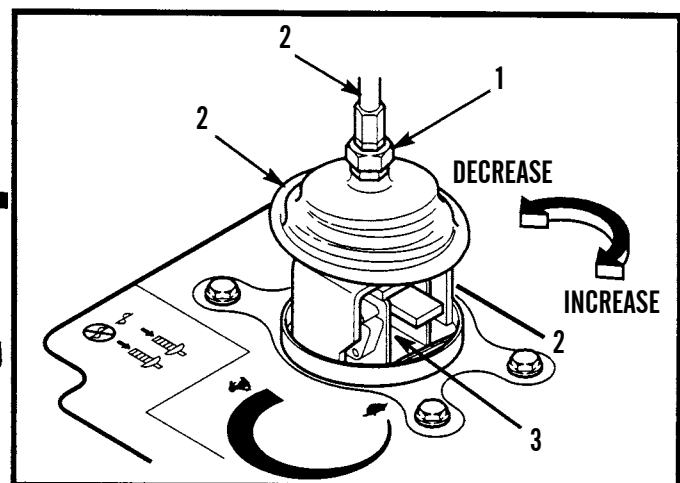
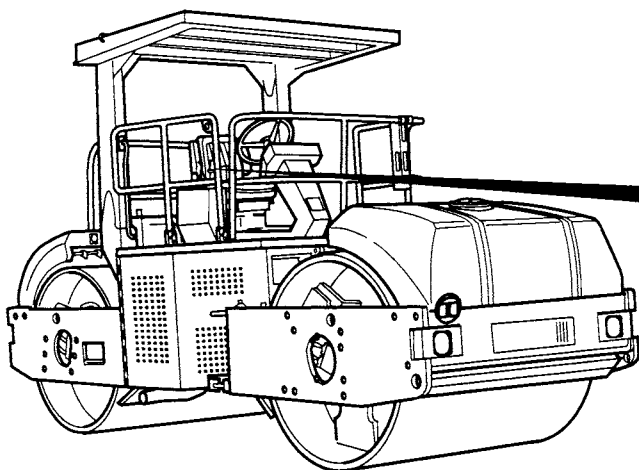
Equipment Condition

Engine off (TM 5-3895-379-10)

ADJUSTMENT**NOTE**

There should be enough friction on propel control lever to hold lever in position while vibratory system is operating.

1. Turn adjuster (1) to obtain desired propel control lever tension. Turning adjuster counterclockwise decreases tension, turning adjuster clockwise increases tension.
2. Lift boot (2) to expose pivot bracket (3).
3. Wipe pivot bracket (3) with rags and apply grease to increase smoothness of propel control lever (4).
4. Return boot (2) to original position.



401-619

PROPEL CONTROL LEVER TENSION ADJUSTMENT - CONTINUED

0115 00

ADJUSTMENT - CONTINUED

5. Start engine, move roller and operate vibratory system (TM 5-3895-379-10).
6. If there is not enough friction on propel control lever to hold lever in position while vibratory system is operating, turn off vibratory system, stop roller, turn engine off (TM 5-3895-379-10) and repeat step 1 until adequate friction is obtained.

END OF WORK PACKAGE

FRONT AND REAR PROPEL GEARBOX SERVICE

0116 00

THIS WORK PACKAGE COVERS

Drain, Cleaning and Inspection, Fill

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no.1 (Item 28, WP 0220 00)

Materials/Parts

Oil, lubricating (Item 23, WP 0219 00)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
TM 5-3895-379-23P, Figures 79 and 80

Equipment Condition

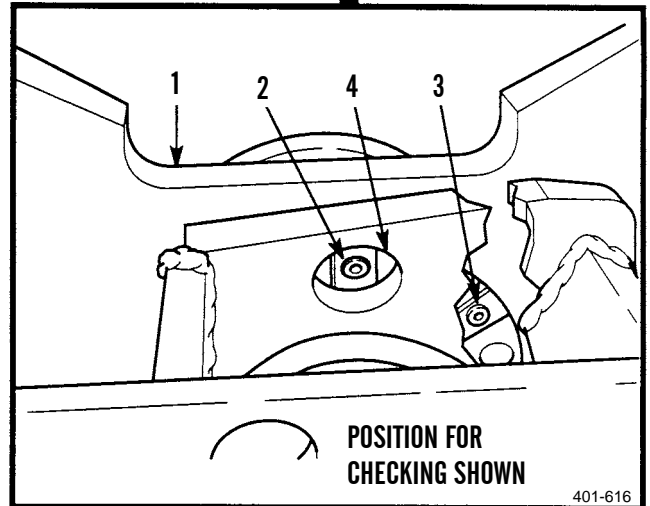
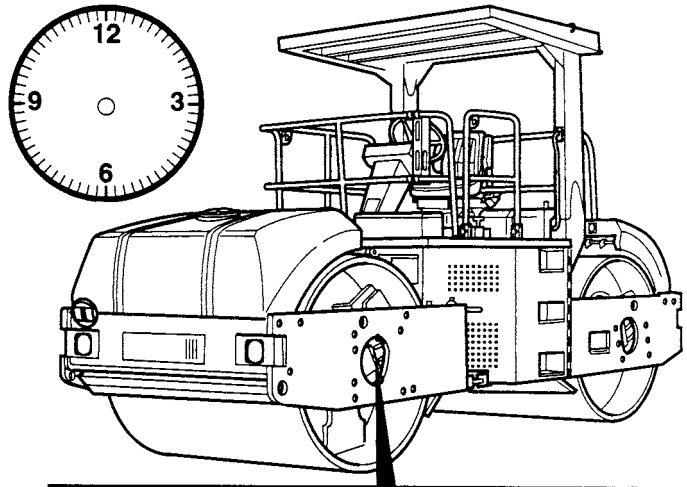
Engine on (TM 5-3895-379-10)
Roller parked on level ground
Drums chocked (TM 5-3895-379-10)

NOTE

Front and rear propel gearboxes are serviced the same way. Front propel gearbox is shown.

DRAIN

1. Move roller (1) until level check plug (2) is located at 12 o'clock position and fill plug (3) is located at 3 o'clock position.
2. Turn engine off (TM 5-3895-379-10).
3. Loosen oil level check plug (2) at 12 o'clock position through access hole.
4. Start engine (TM 5-3895-379-10).
5. Move roller (1) until oil level check plug (2) is at 6 o'clock position.
6. Turn engine off (TM 5-3895-379-10).



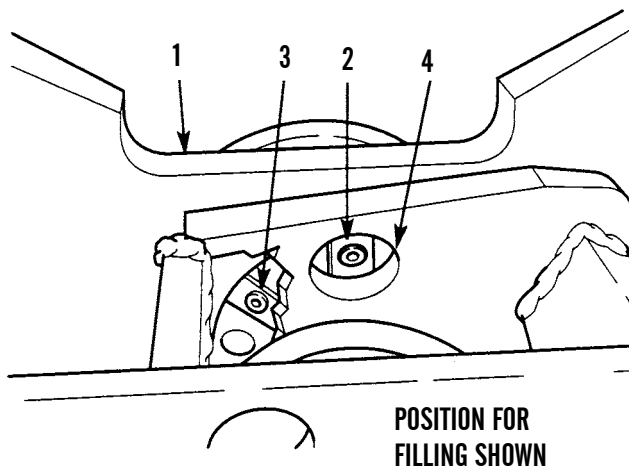
DRAIN - CONTINUED**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure that all spills are cleaned.

7. Place container with 1 gal (3.8 l) minimum capacity under gearbox to catch draining oil.
8. Remove oil level check plug (2) and fill plug (3) from gearbox (4).
9. Allow oil to drain completely from gearbox (4).
10. Clean and inspect oil level check plug (2) and fill plug (3).



401-617

CLEANING AND INSPECTION

1. Clean plug with rag.
2. Clean area around plug openings with rag.
3. Inspect threads for crossed or peeled condition.
4. Replace damaged plug.

FILL

1. Start engine (TM 5-3895-379-10).
2. Move roller (1) until the opening for oil level check plug (2) and fill plug (3) are located at 9 and 12 o'clock positions.
3. Turn engine off (TM 5-3895-379-10).
4. Remove fill plug (3) at 12 o'clock position from the gearbox (4) through access hole.

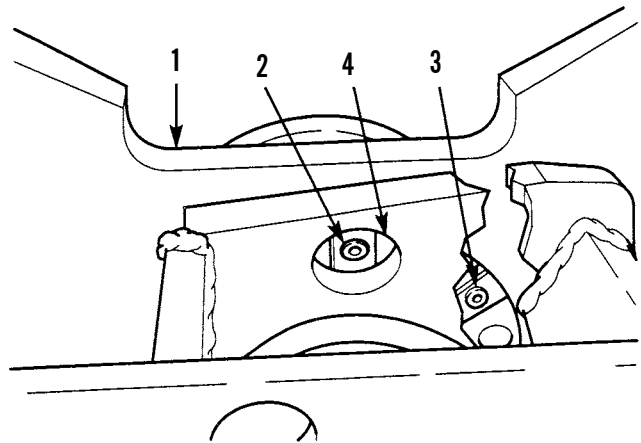
**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

CAUTION

Do not overfill gearbox or damage to equipment may result.

5. Add oil (WP 0008 00 and WP 0009 00) until oil level is at bottom of opening for the oil level check plug opening.
6. Install fill plug (3) through access hole in gearbox (4).
7. Start engine (TM 5-3895-379-10).
8. Move roller (1) until opening for the oil level check plug (2) is at 12 o'clock position and fill plug (3) is at 3 o'clock position.
9. Turn engine off (TM 5-3895-379-10).
10. Install oil level check plug (2) through access hole in gearbox (4).
11. Remove chocks (TM 5-3895-379-10).



401-618

END OF WORK PACKAGE

MANUAL BRAKE RELEASE PUMP MAINTENANCE

0117 00

THIS WORK PACKAGE COVERS

Removal, Disassembly, Cleaning and Inspection, Assembly, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Cleaning compound, solvent (Item 9, WP 0219 00)

Oil, lubricating (Item 25, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Materials/Parts - Continued

Tag, marker (Item 37, WP 0219 00)

O-ring (11)

References

TM 5-3895-379-23P, Figure 82

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Left-side door assembly open (TM 5-3895-379-10)



WARNING

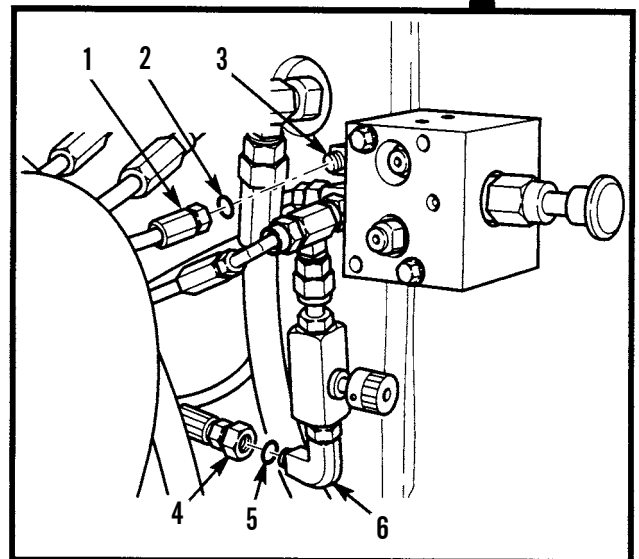
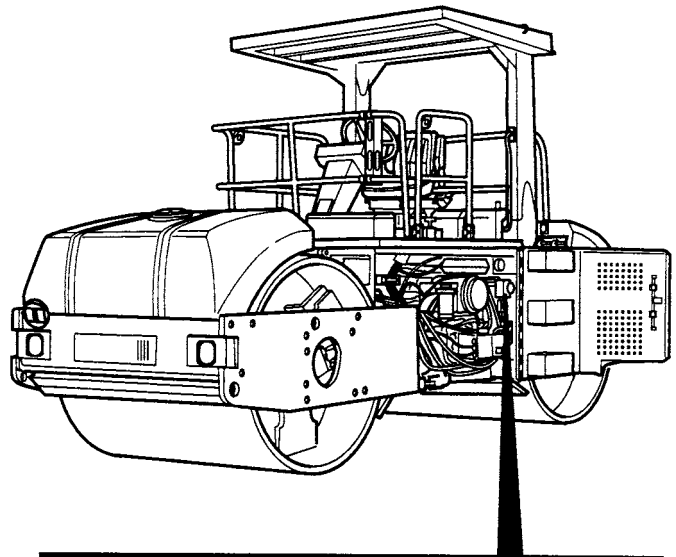
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL**CAUTION**

Cap all hoses and fittings to prevent contamination that can cause damage to equipment.

NOTE

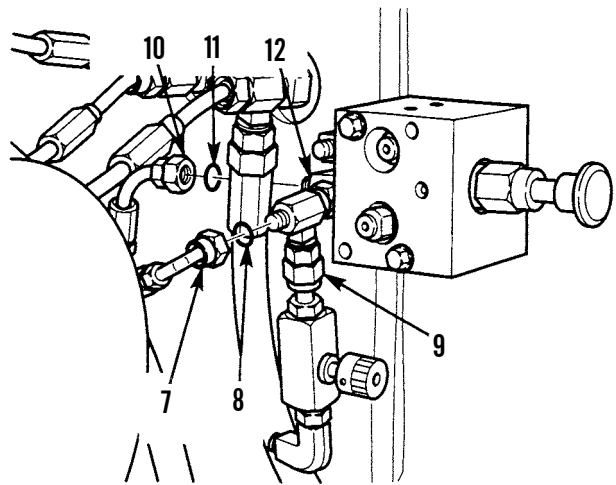
- Tag and mark all hoses prior to removal.
 - Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.
 - Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
1. Remove hose (1) and O-ring (2) from elbow (3). Discard O-ring.
 2. Remove hose (4) and O-ring (5) from elbow (6). Discard O-ring.



401-619

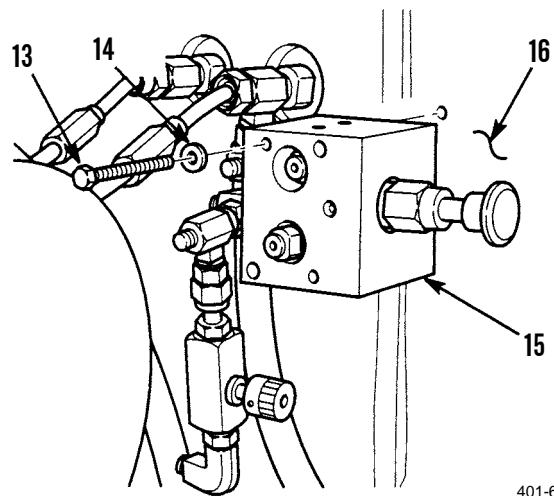
REMOVAL - CONTINUED

3. Remove hose (7) and O-ring (8) from tee (9). Discard O-ring.
4. Remove hose (10) and O-ring (11) from tee (12). Discard O-ring.



401-620

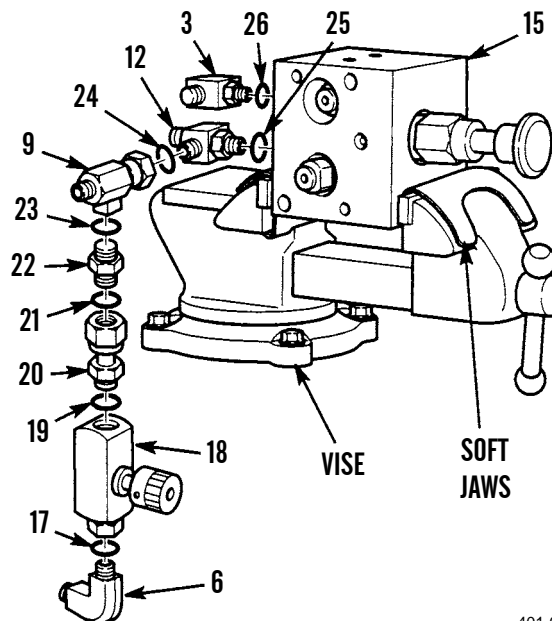
5. Remove two bolts (13), washers (14) and manual brake release pump (15) from frame assembly (16).



401-621

REMOVAL - CONTINUED

6. Place manual brake release pump (15) in a soft-jawed vise.
7. Remove elbow (6) and O-ring (17) from needle valve (18). Discard O-ring.
8. Remove globe valve (18) and O-ring (19) from adapter (20). Discard O-ring.
9. Remove adapter (20) and O-ring (21) from connector (22). Discard O-ring.
10. Remove connector (22) and O-ring (23) from tee (9). Discard O-ring.
11. Remove tee (9) and O-ring (24) from tee (12). Discard O-ring.
12. Remove tee (12) and O-ring (25) from manual brake release pump (15). Discard O-ring.
13. Remove elbow (3) and O-ring (26) from manual brake release pump (15). Discard O-ring.
14. Remove manual brake release pump (15) from soft-jawed vise.



401-622

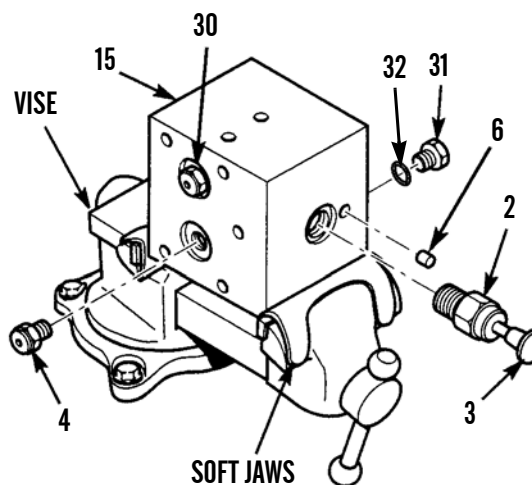
DISASSEMBLY

1. Place manual brake release pump (15) in soft-jawed vise.

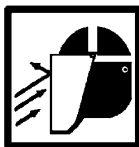
NOTE

Hand pump is not serviceable on the CB534C Roller.

2. On CB534B Roller, loosen nut (27) and remove hand pump (28) from manual brake release pump (15). On CB534C Roller, remove knob (29).
3. Remove two check valves (30) from manual brake release pump (15).
4. On CB534C Roller remove plug (31) and O-ring (32) from manual brake release pump (15).
5. On CB534B Roller, remove expansion plug (33) from manual brake release pump (15).
6. Remove manual brake release pump (15) from soft-jawed vise.



401-624

CLEANING AND INSPECTION**WARNING**

- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- Particles blown by compressed air are hazardous. **DO NOT** exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. **DO NOT** direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

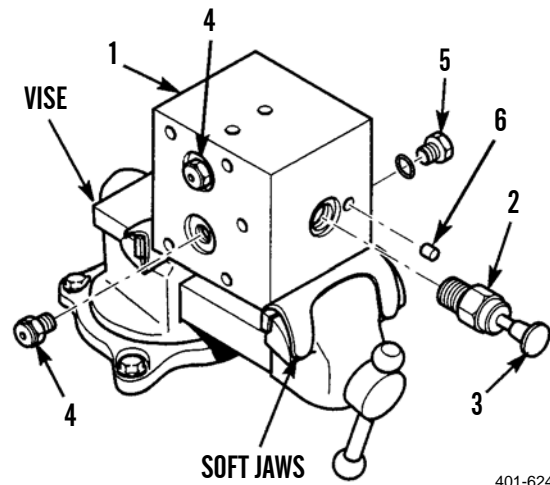
1. Clean all metal parts with cleaning compound, solvent.
2. Thoroughly clean O-ring grooves in valve body.
3. Use compressed air to dry valve body.
4. Check bores for scratches or damage.
5. Check valve body for cracks or damage.
6. Check all threads for peeled or crossed condition.
7. Inspect hand pump (CB534B) for cracks, nicks or stripped threads.
8. Replace all damaged parts.

ASSEMBLY

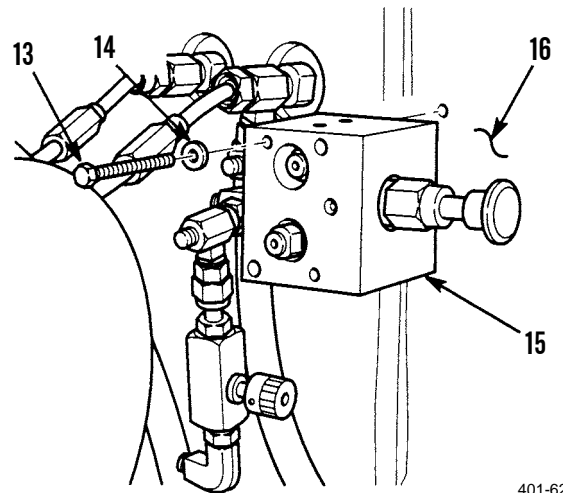
1. Place manual brake release pump (15) in soft-jawed vise.
2. On CB534B Roller, install expansion plug (33) in manual brake release pump (15).
3. Install new O-ring (32) (CB534C) and plug (31) in manual handle release pump (15).
4. Install two check valves (30) in manual brake release pump (15).
5. On CB534B Roller, lubricate area of hand pump (29) that will be located inside the manual brake release pump (15) with clean lubricating oil.
6. On CB534B Roller, install hand pump (29) in manual brake release pump (15) and tighten nut (27).

INSTALLATION

1. Place manual brake release pump (15) in a soft-jawed vise.
2. Install new O-ring (26) and elbow (3) on manual brake release pump (15).
3. Install new O-ring (25) and tee (12) on manual brake release pump (15).
4. Install new O-ring (24) and tee (9) on tee (12).
5. Install new O-ring (23) and connector (22) on tee (9).
6. Install new O-ring (21) and adapter (20) on connector (22).
7. Install new O-ring (19) and globe valve (18) on adapter (20).
8. Install new O-ring (17) and elbow (6) on needle valve (18).
9. Remove manual brake release pump (15) from soft-jawed vise.
10. Install manual brake release pump (15) on frame assembly (16) with two washers (14) and bolts (13).



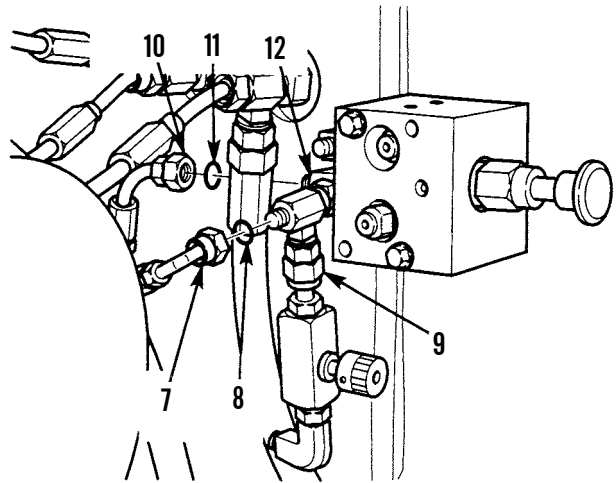
401-624



401-621

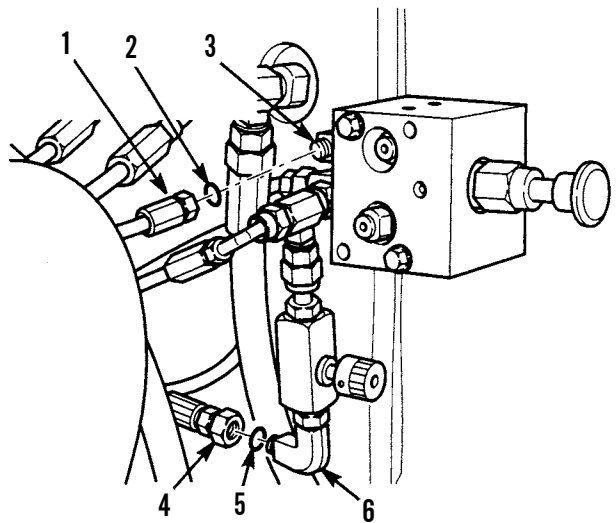
INSTALLATION - CONTINUED

11. Install new O-ring (11) and hose (10) on tee (12).
12. Install new O-ring (8) and hose (7) on tee (9).



401-620

13. Install new O-ring (5) and hose (4) on elbow (6).
14. Install new O-ring (2) and hose (1) on elbow (3).



401-623

15. Close left-side door assembly (TM 5-3985-379-10).
16. Start engine, operate roller and check for leaks (TM 5-3895-379-10).
17. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

BRAKE CONTROL VALVE REPLACEMENT

0118 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

O-ring (7)

Packing, preformed (10)

References

TM 5-3895-379-23P, Figures 84 and 85

TM 5-3895-379-10

Equipment ConditionAir cleaner assembly removed (WP 0032 00)

**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

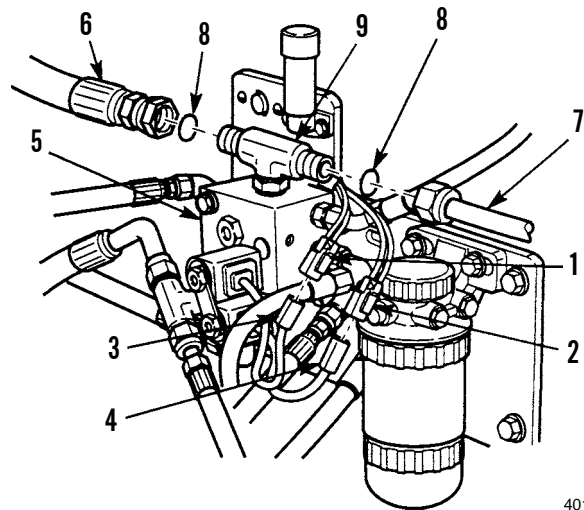
- Tag and mark all hoses and wires prior to removal.
- Plug holes and cap fittings to prevent spilling oil.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.
- Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

BRAKE CONTROL VALVE REPLACEMENT - CONTINUED

0118 00

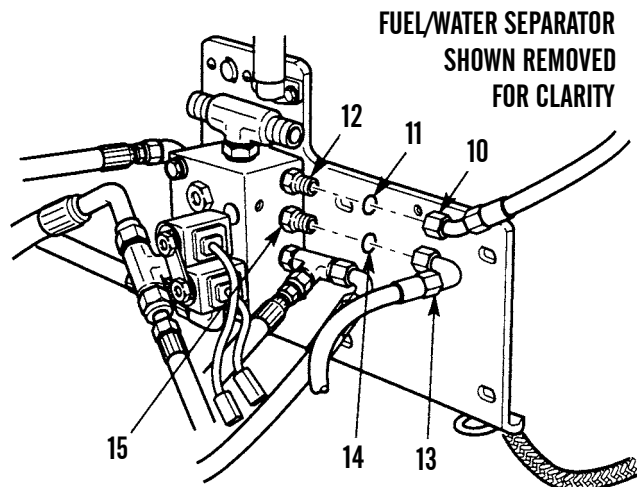
REMOVAL

1. Disconnect harness connectors (1) and (2) from solenoid connectors (3) and (4).
2. Place container with 1 gal. (3.8 l) minimum capacity under brake control valve (5).
3. Remove hoses (6) and (7) and preformed packings (8) from tee (9). Discard preformed packings.



401-626

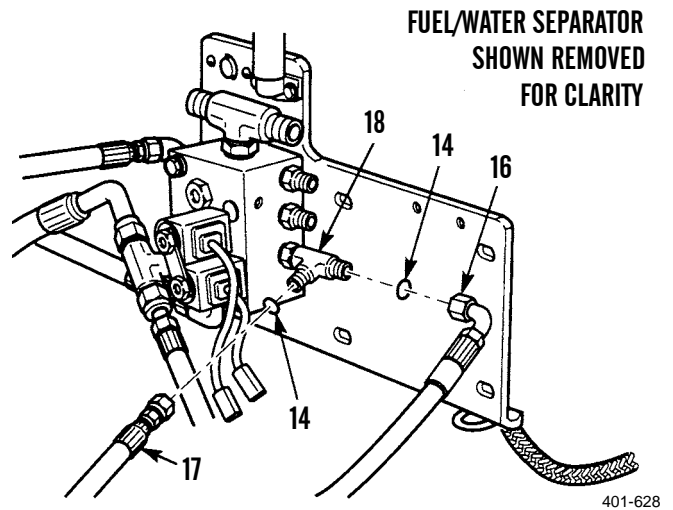
4. Remove hose (10) and preformed packing (11) from straight adapter (12). Discard preformed packing.
5. Remove hose (13) and O-ring (14) from straight adapter (15). Discard O-ring.



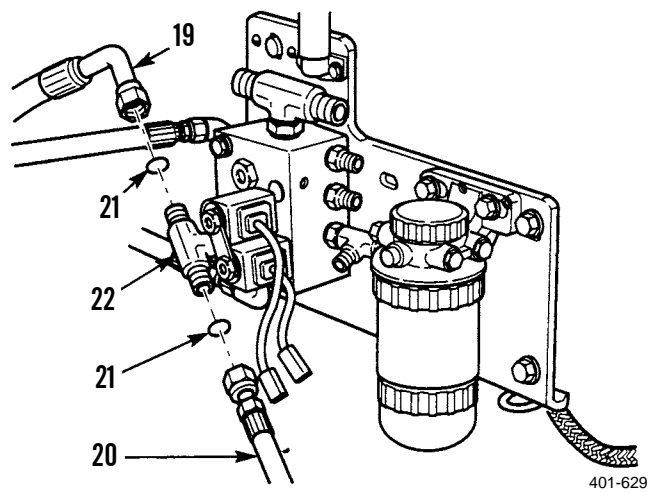
401-627

REMOVAL - CONTINUED

6. Remove hoses (16) and (17) and O-rings (14) from seal tee (18). Discard O-rings.



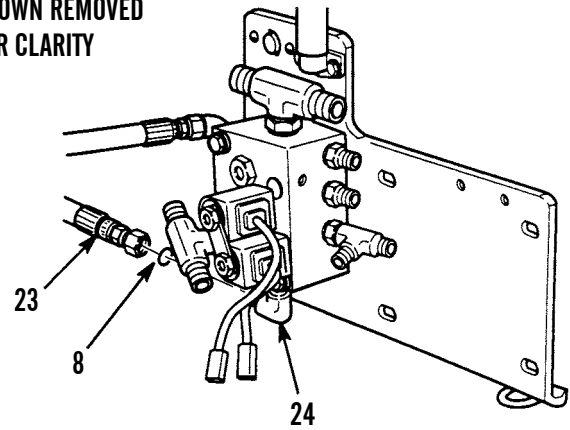
7. Remove hoses (19) and (20) and preformed packings (21) from swivel tee (22). Discard preformed packings.



REMOVAL - CONTINUED

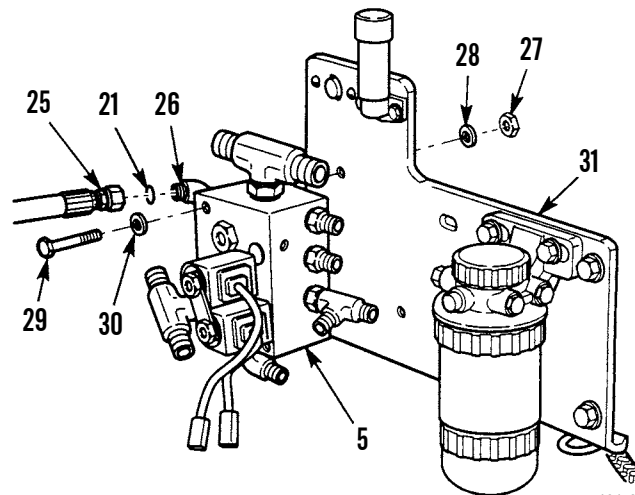
8. Remove hose (23) and preformed packing (8) from elbow (24). Discard preformed packing.

**FUEL/WATER SEPARATOR
SHOWN REMOVED
FOR CLARITY**



401-630

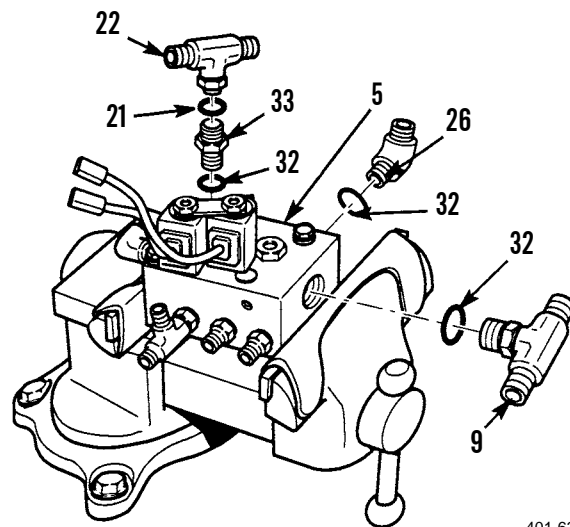
9. Remove hose (25) and preformed packing (21) from elbow (26). Discard preformed packing.
10. Remove two nuts (27), washers (28), screws (29), washers (30) and brake control valve (5) from support bracket (31).



401-631

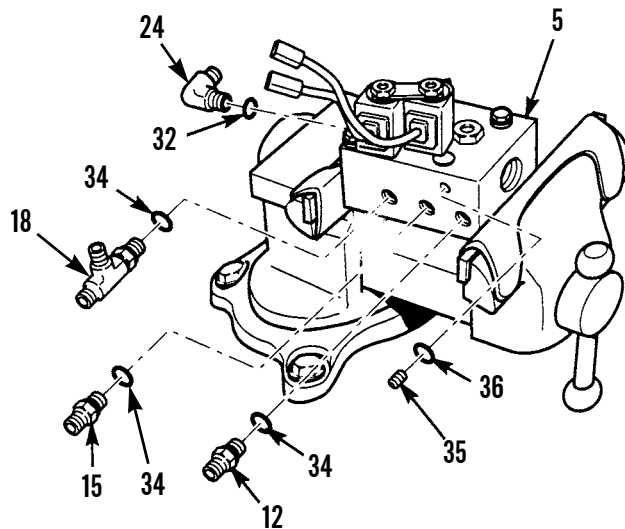
REMOVAL - CONTINUED

11. Place brake control valve (5) in soft-jawed vise.
12. Remove tee (9) and preformed packing (32) from brake control valve (5). Discard preformed packing.
13. Remove elbow (26) and preformed packing (32) from brake control valve (5). Discard preformed packing.
14. Remove swivel tee (22) and preformed packing (21) from seal connector (33). Discard preformed packing.
15. Remove seal connector (33) and preformed packing (32) from brake control valve (5). Discard preformed packing.



401-632

16. Remove elbow (24) and preformed packing (32) from brake control valve (5). Discard preformed packing.
17. Remove seal tee (18) and O-ring (34) from brake control valve (5). Discard O-ring.
18. Remove straight adapter (16) and O-ring (34) from brake control valve (5). Discard O-ring.
19. Remove straight adapter (12) and O-ring (34) from brake control valve (5). Discard O-ring.
20. Remove plug (35) and O-ring (36) from brake control valve (5). Discard O-ring.



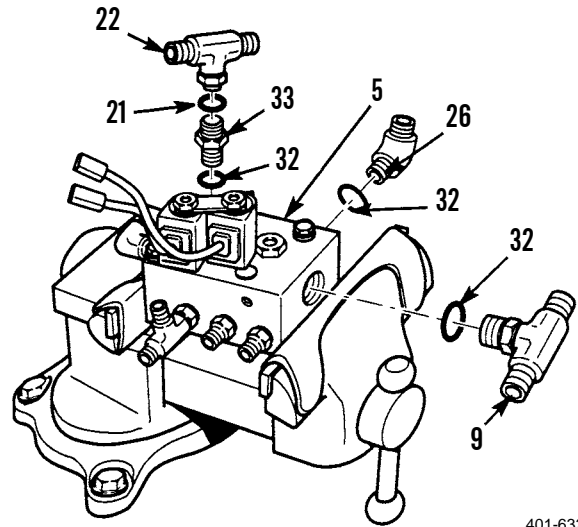
401-633

INSTALLATION

1. Place brake control valve (5) in a soft-jawed vise.
2. Install new O-ring (36) and plug (35) in brake control valve (5).
3. Install new O-ring (34) and straight adapter (12) in brake control valve (5).
4. Install new O-ring (34) and straight adapter (16) in brake control valve (5).
5. Install new O-ring (34) and seal tee (18) in brake control valve (5).
6. Install new preformed packing (32) and elbow (24) in brake control valve (5).

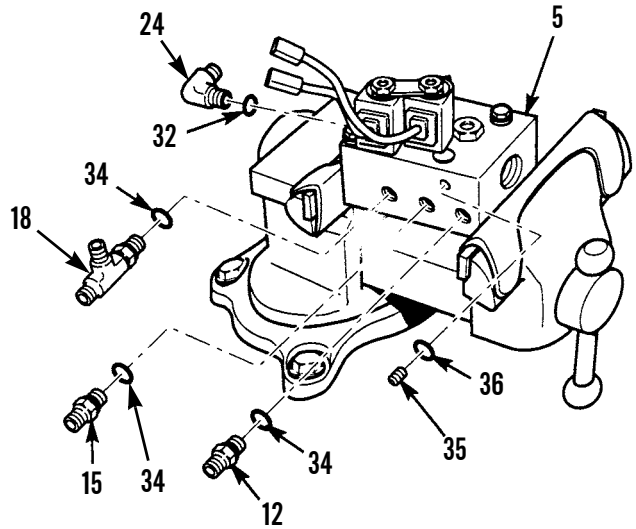
INSTALLATION - CONTINUED

7. Install new preformed packing (32) and seal connector (33) in brake control valve (5).
8. Install new preformed packing (21) and swivel tee (22) on seal connector (33).
9. Install new preformed packing (32) and elbow (26) in brake control valve (5).
10. Install new preformed packing (32) and tee (9) in brake control valve (5).
11. Remove brake control valve (5) from soft-jawed vise.



401-632

12. Install brake control valve (5) on mounting bracket (31) with two washers (30), screws (29), washers (28) and nuts (27). Tighten nuts to 33-47 lb-ft (45-65 Nm).
13. Install new preformed packing (21) and hose (25) on elbow (26).

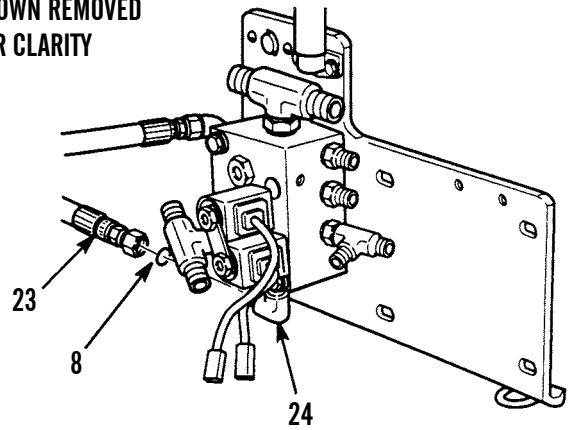


401-633

INSTALLATION - CONTINUED

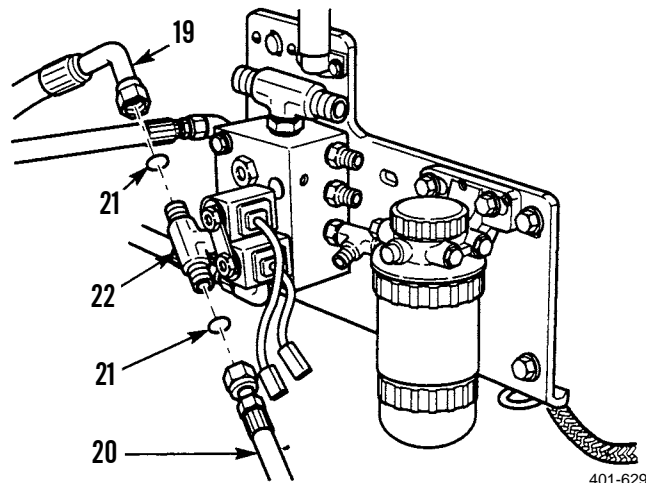
14. Install new preformed packing (8) and hose (23) on elbow (24).

**FUEL/WATER SEPARATOR
SHOWN REMOVED
FOR CLARITY**



401-630

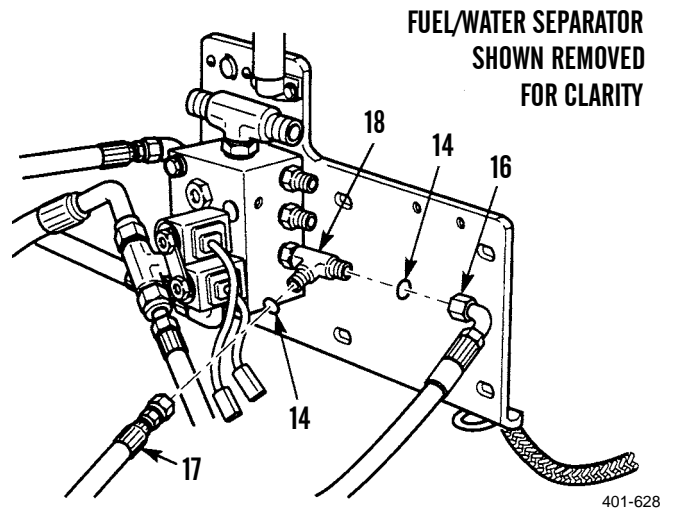
15. Install two new preformed packings (21) and hoses (19) and (20) on swivel tee (22).



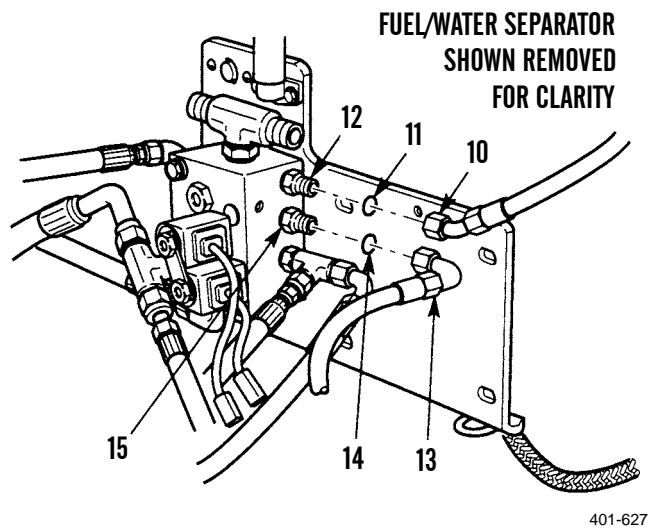
401-629

INSTALLATION - CONTINUED

16. Install two O-rings (14) and hoses (16) and (17) on seal tee (18).

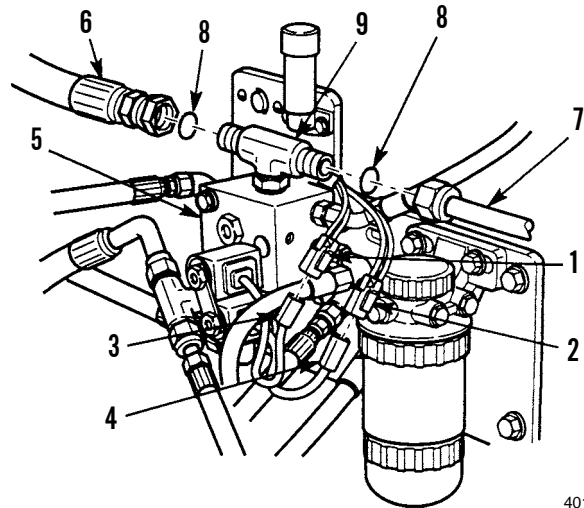


17. Install new O-ring (14) and hose (13) on straight adapter (15).
18. Install new preformed packing (11) and hose (10) on straight adapter (12).



INSTALLATION - CONTINUED

19. Install two new preformed packings (8) and hoses (6) and (7) on tee (9).
20. Connect harness connectors (1) and (2) on solenoid connectors (3 and 4).



401-626

21. Install air cleaner assembly (WP 0032 00).
22. Start engine, operate roller and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

BRAKE HOSES, LINES AND FITTINGS REPLACEMENT

0119 00

THIS WORK PACKAGE COVERS

Inspection	Manual Brake Release Pump to Rear Propel Gearbox Line Replacement
Manual Brake Release Pump to Hydraulic Line Replacement	Brake Valve to Steering Pump Line Replacement
Manual Brake Release Pump to Brake Valve Line Replacement	Vibratory Valve to Brake Valve Line Replacement
Manual Brake Release Pump to Front Propel Gearbox Line Replacement	Brake Valve to Rear Propel Gearbox Line Replacement

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Cap set, protective (Item 8, WP 0219 00)
- Rag, wiping (Item 31, WP 0219 00)
- Tag, marker (Item 37, WP 0219 00)
- Locknut (2)
- Lockwasher

Materials/Parts - Continued

- O-ring (15)
- Packing, preformed (4)

References

TM 5-3895-379-23P, Figure 83

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Operator platform assembly raised (WP 0128 00)



WARNING

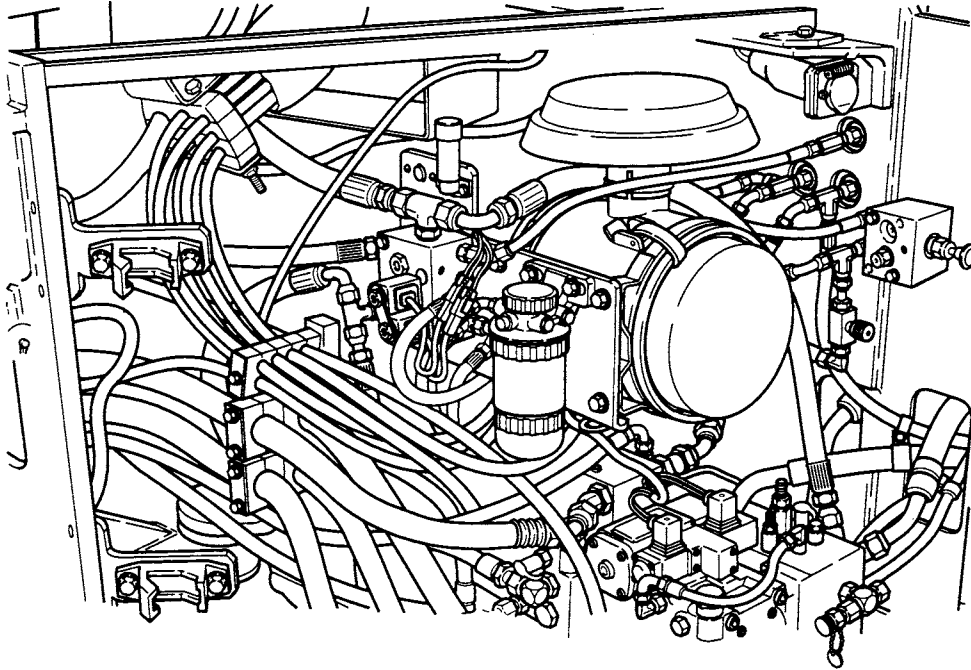
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

- Tag and mark all hoses and wires prior to removal.
- Plug holes and cap fittings to prevent spilling oil.
- Use line wrenches to perform these tasks.

INSPECTION

Inspect all hoses, fittings and elbows for cracks, bends, nicks, dents, stripped threads and cuts. Replace all damaged parts.



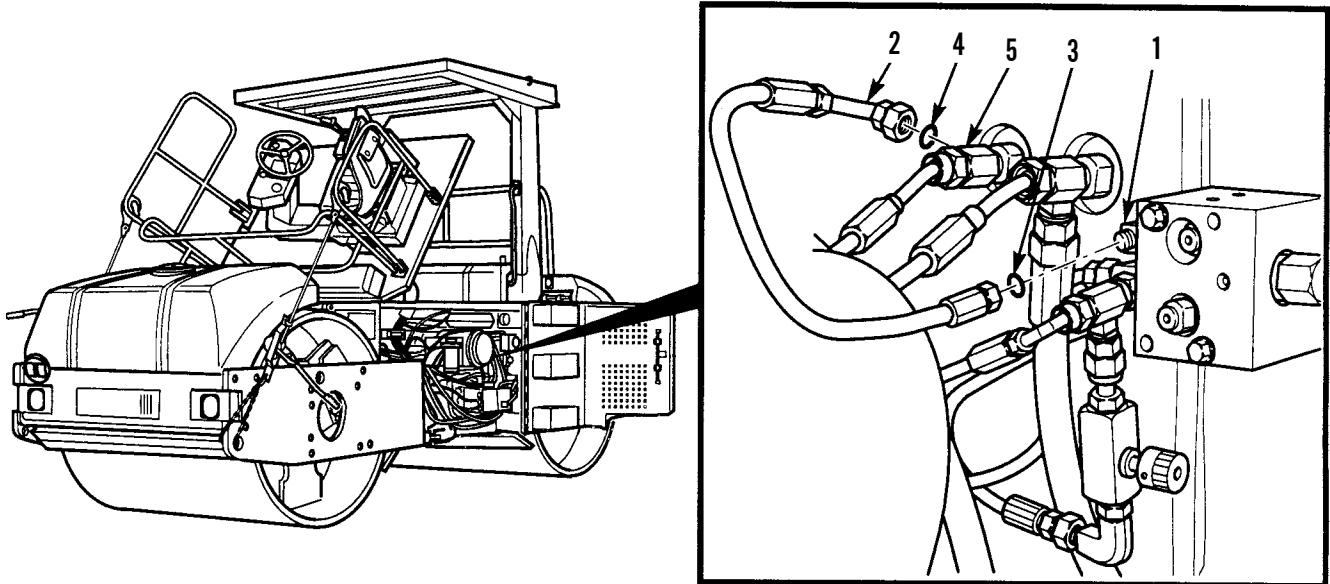
401-634

MANUAL BRAKE RELEASE PUMP TO HYDRAULIC LINE REPLACEMENT

NOTE

Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

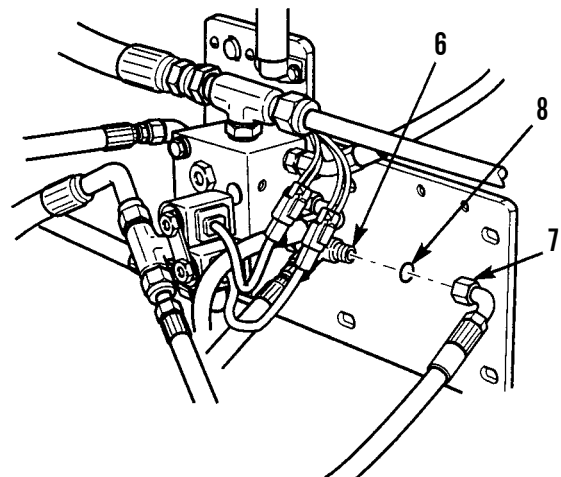
1. Place container under manual brake release pump elbow (1).
2. Remove hose (2) and O-ring (3) from manual brake release pump elbow (1) and allow oil to drain into container. Discard O-ring.
3. Remove hose (2) and preformed packing (4) from tee (5). Discard preformed packing.
4. Install new preformed packing (4) and hose (2) on tee (5).
5. Install new O-ring (3) and hose (2) on manual brake release pump elbow (1).



401-635

MANUAL BRAKE RELEASE PUMP TO BRAKE VALVE LINE REPLACEMENT

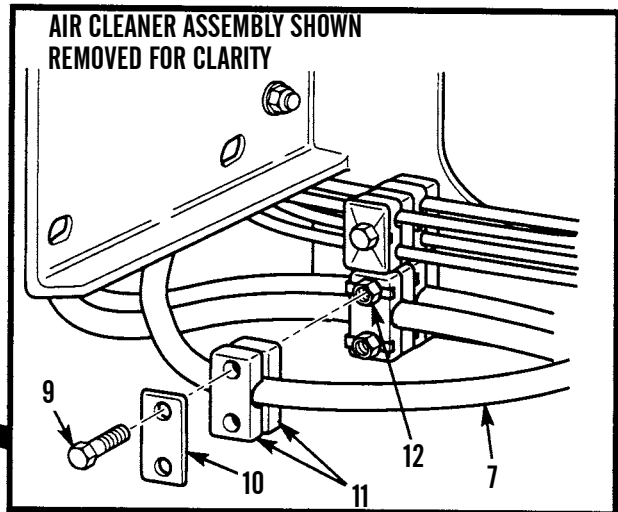
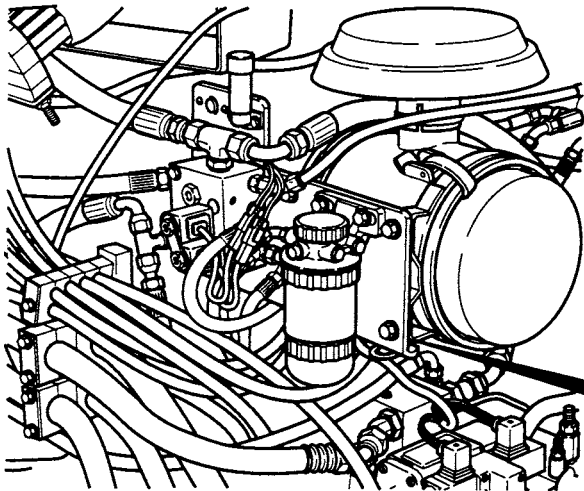
1. Place container with 1 gal. (3.8 l) minimum capacity under brake valve tee (6).
2. Remove hose (7) and O-ring (8) from brake valve tee (6) and allow oil to drain into container. Discard O-ring.



401-636

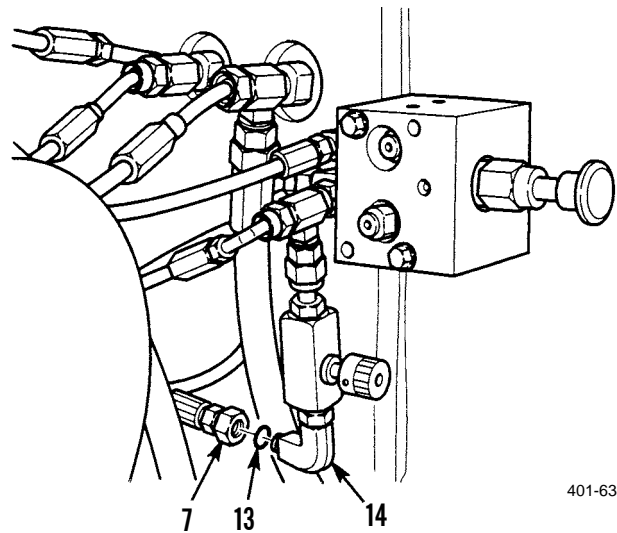
MANUAL BRAKE RELEASE PUMP TO BRAKE VALVE LINE REPLACEMENT - CONTINUED

3. Remove two screws (9), plate (10), clamp (11) and hose (7) from two screws (12).



401-637

4. Remove hose (7) and O-ring (13) from manual brake release pump elbow (14). Discard O-ring.
5. Install new O-ring (13) and hose (7) on manual brake release pump elbow (14).

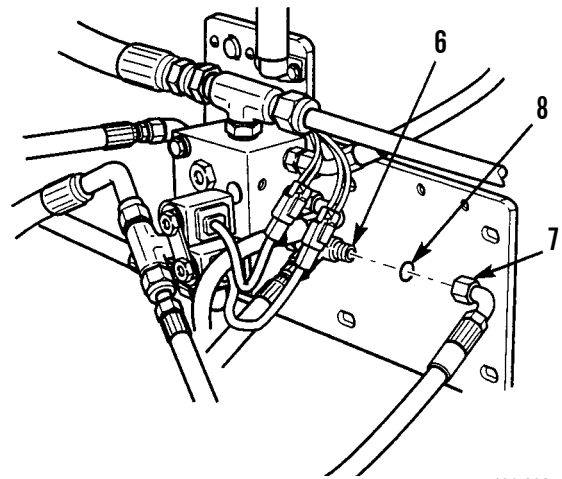


401-638

6. Place hose (7) in clamp (11) and install clamp and plate (10) on two screws (12) with two screws (9).

MANUAL BRAKE RELEASE PUMP TO BRAKE VALVE LINE REPLACEMENT - CONTINUED

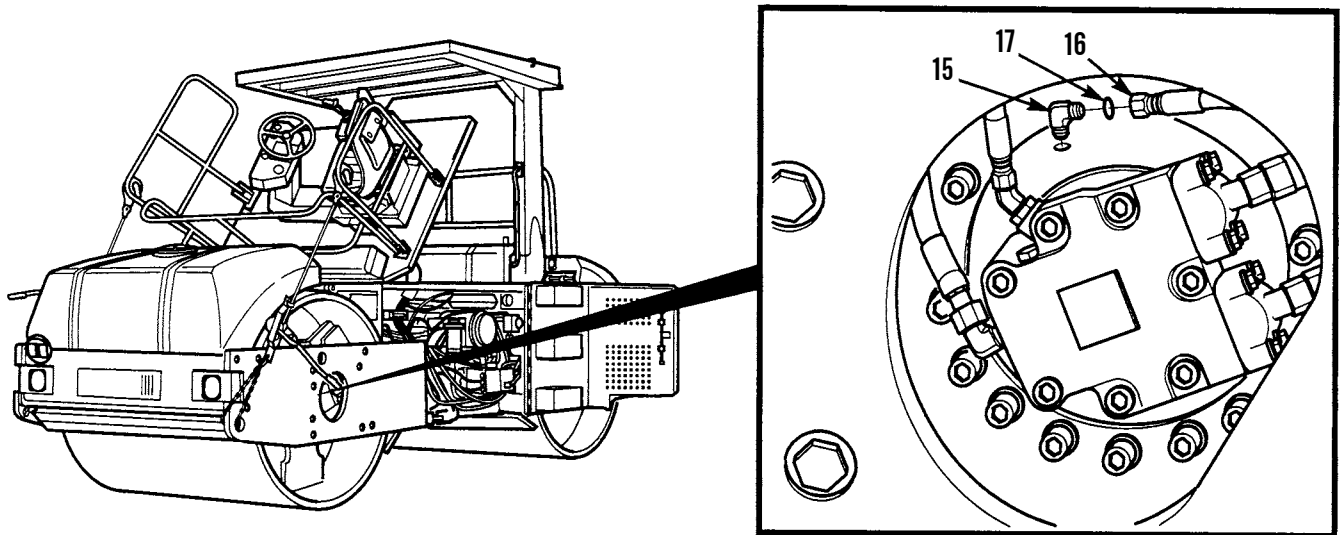
7. Install new O-ring (8) and hose (7) on brake valve tee (6).



401-636

MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT

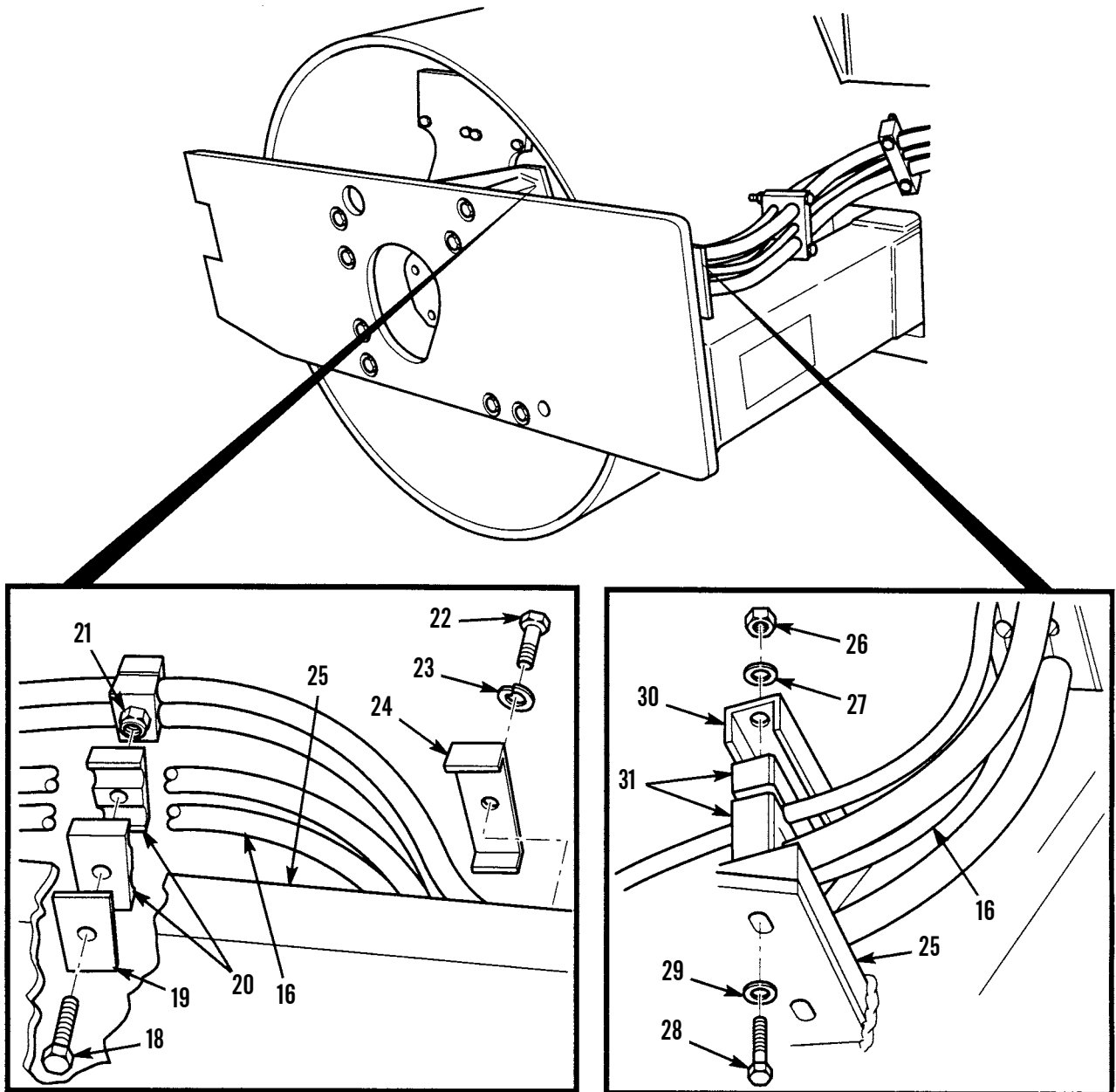
1. Place container with 1 gal. (3.8 l) minimum capacity under front propel gearbox fitting (15).
2. Remove hose (16) and O-ring (17) from front propel gearbox fitting (15) and allow oil to drain into container. Discard O-ring.



401-627

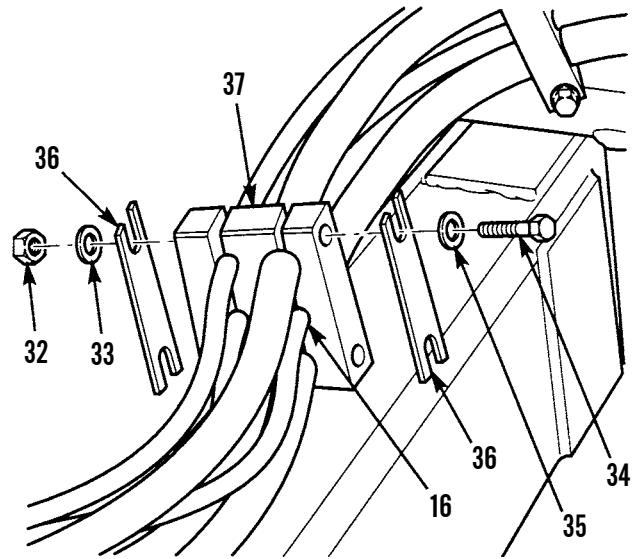
MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

3. Remove screw (18), plate (19), clamp (20) and hose (16) from screw (21).
4. Remove screw (22), lockwasher (23), clamp (24) and hose (16) from yoke (25). Discard lockwasher.
5. Remove two nuts (26), washers (27), screws (28), washers (29), plate (30) and clamp (31) from yoke (25).
6. Separate clamp (31) and remove hose (16).



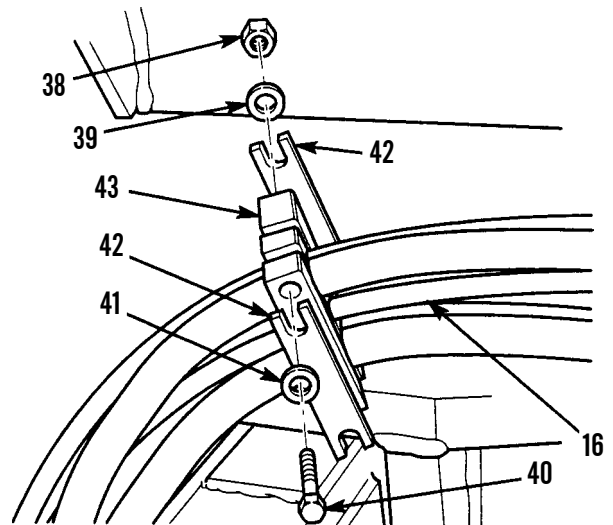
MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

7. Remove two nuts (32), washers (33), screws (34), washers (35) and plates (36) from clamp (37).
8. Separate clamp (37) and remove hose (16).



401-641

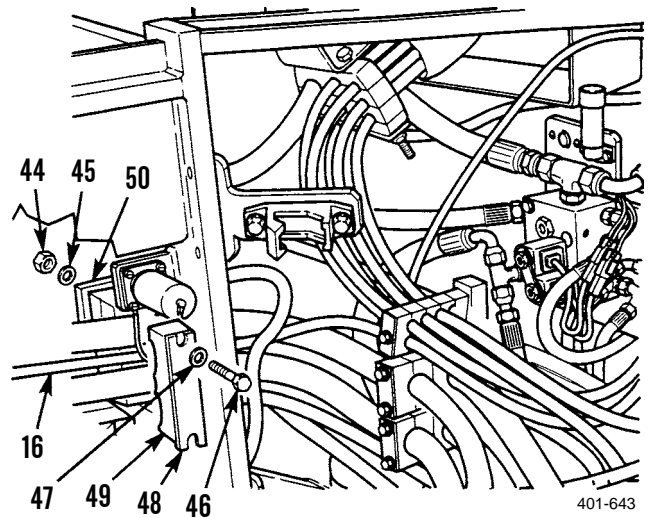
9. Remove two nuts (38), washers (39), screws (40), washers (41) and plates (42) from clamp (43).
10. Separate clamp (43) and remove hose (16).



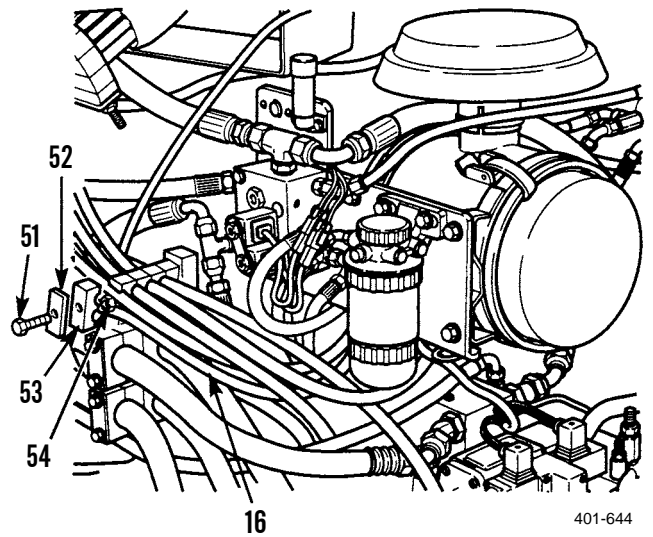
401-642

MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

11. Remove two nuts (44), washers (45), screws (46), washers (47), plate (48) and clamp (49) from frame (50).
12. Separate clamp (49) and remove hose (16).

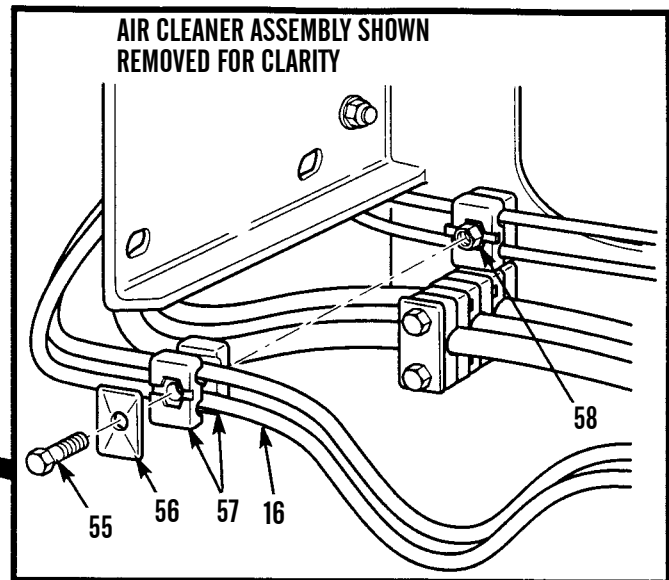
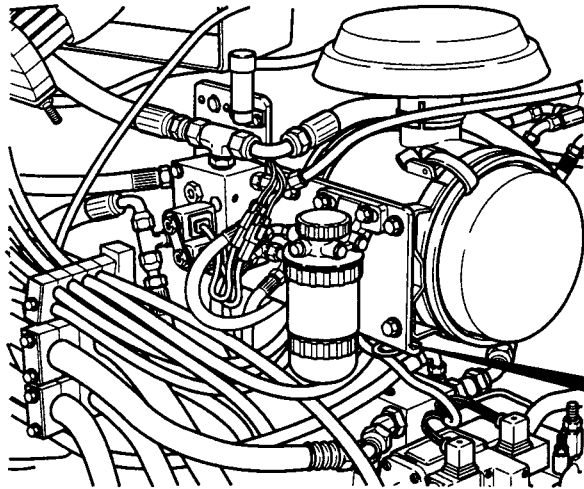


13. Remove screw (51), plate (52), clamp (53) and hose (16) from screw (54).



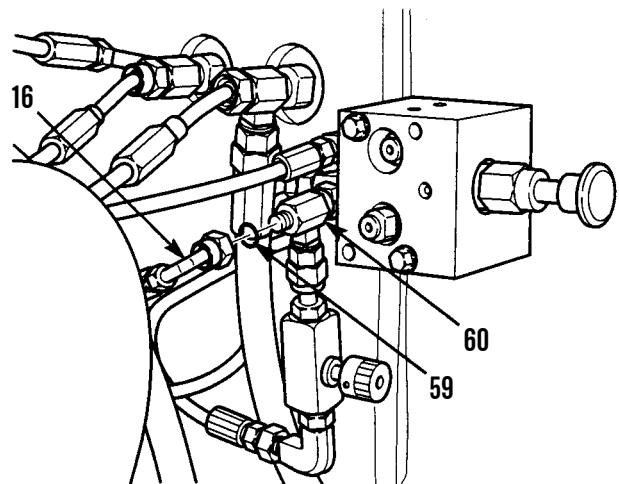
MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

14. Remove screw (55), plate (56), clamp (57) and hose (16) from screw (58).



401-645

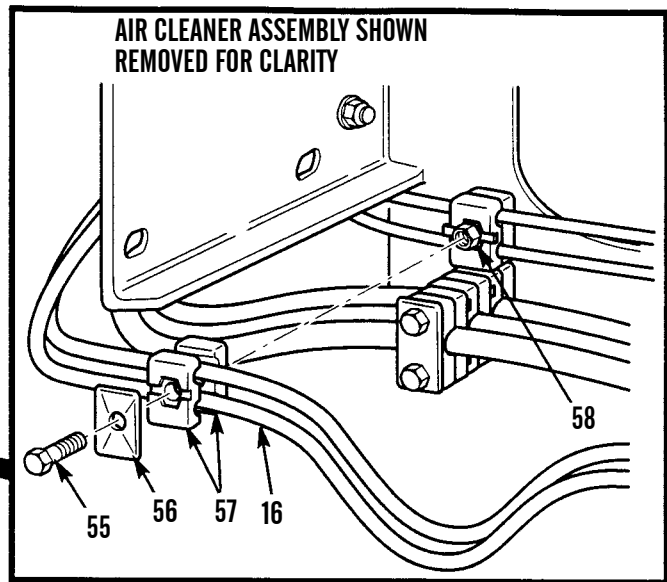
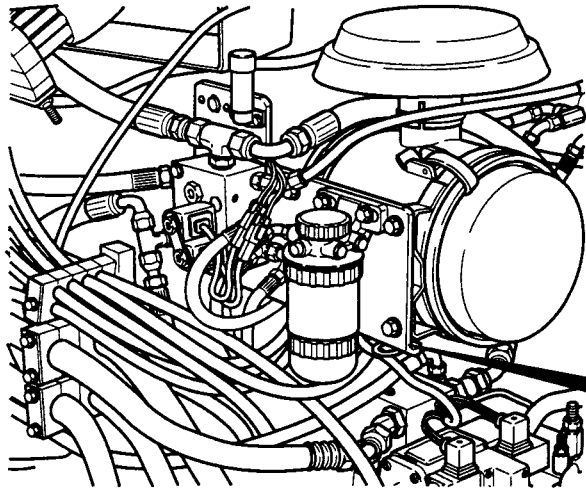
15. Remove hose (16) and O-ring (59) from manual brake release pump tee (60). Discard O-ring.
 16. Install new O-ring (59) and hose (16) on manual brake release pump tee (60).



401-646

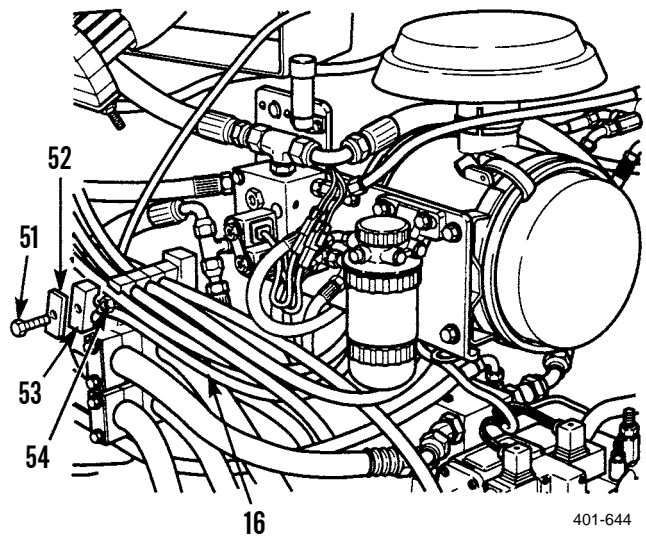
MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

17. Place hose (16) in clamp (57) and install clamp and plate (56) on screw (58) with screw (55).



401-645

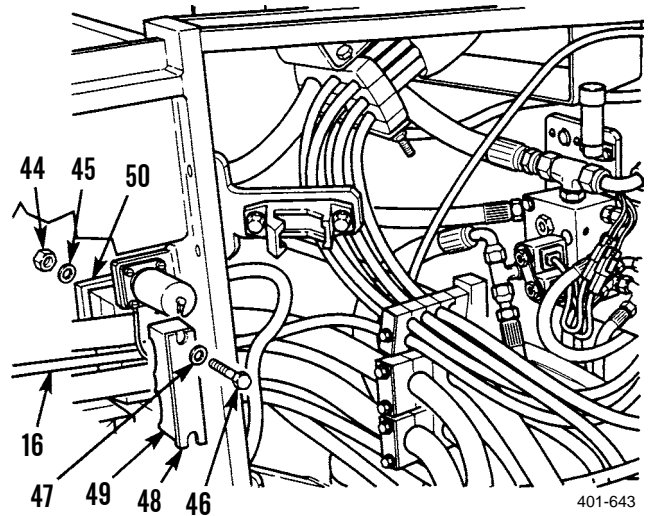
18. Place hose (16) in clamp (53) and install clamp and plate (52) on screw (54) with screw (51).



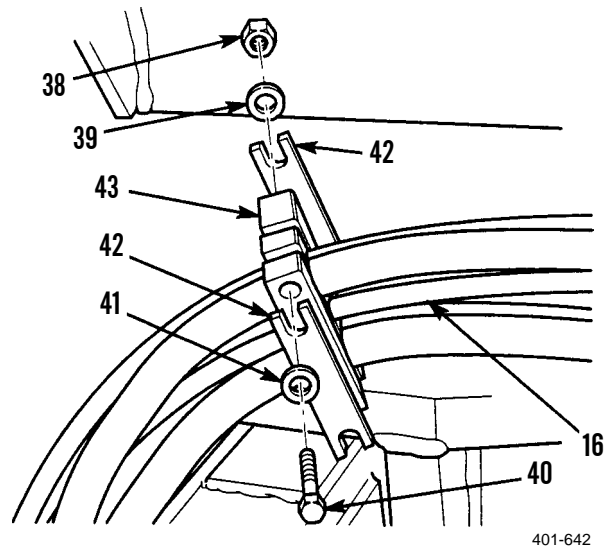
401-644

MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

19. Place hose (16) in clamp (49).
20. Install clamp (49) and plate (48) on frame (50) with two washers (47), screws (46), washers (45) and nuts (44).

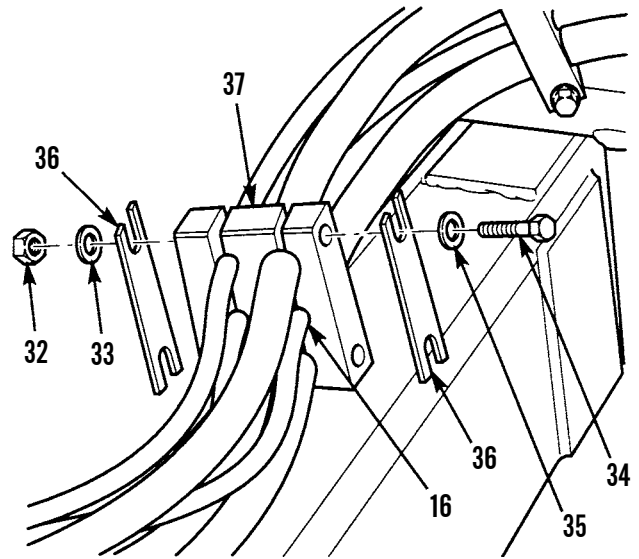


21. Place hose (16) in clamp (43).
22. Install two plates (42), washers (41), screws (40), washers (39) and nuts (38) on clamp (43).



MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

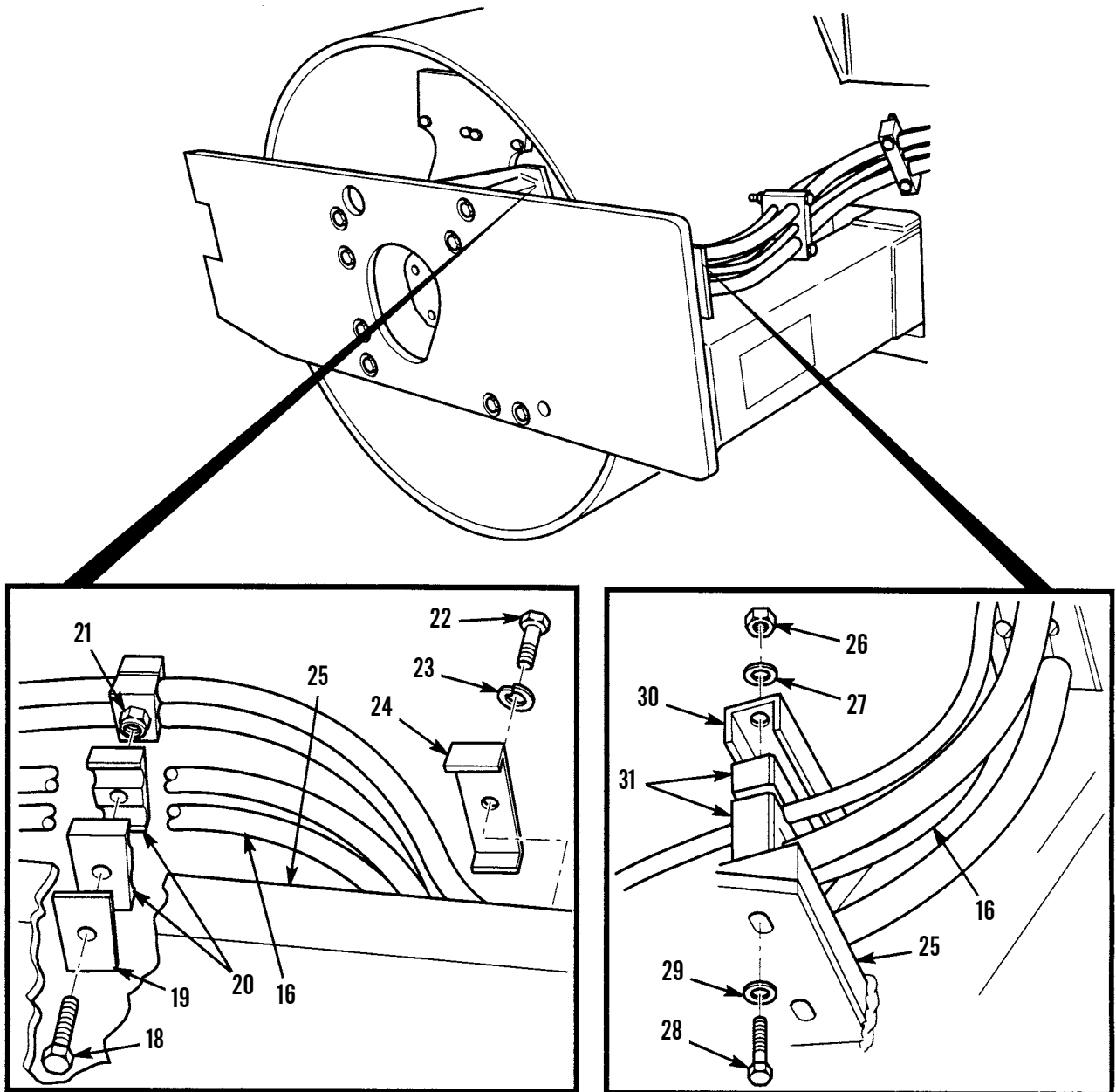
23. Place hose (16) in clamp (37).
24. Install two plates (36), washers (35), screws (34), washers (33) and nuts (32) on clamp (37).



401-641

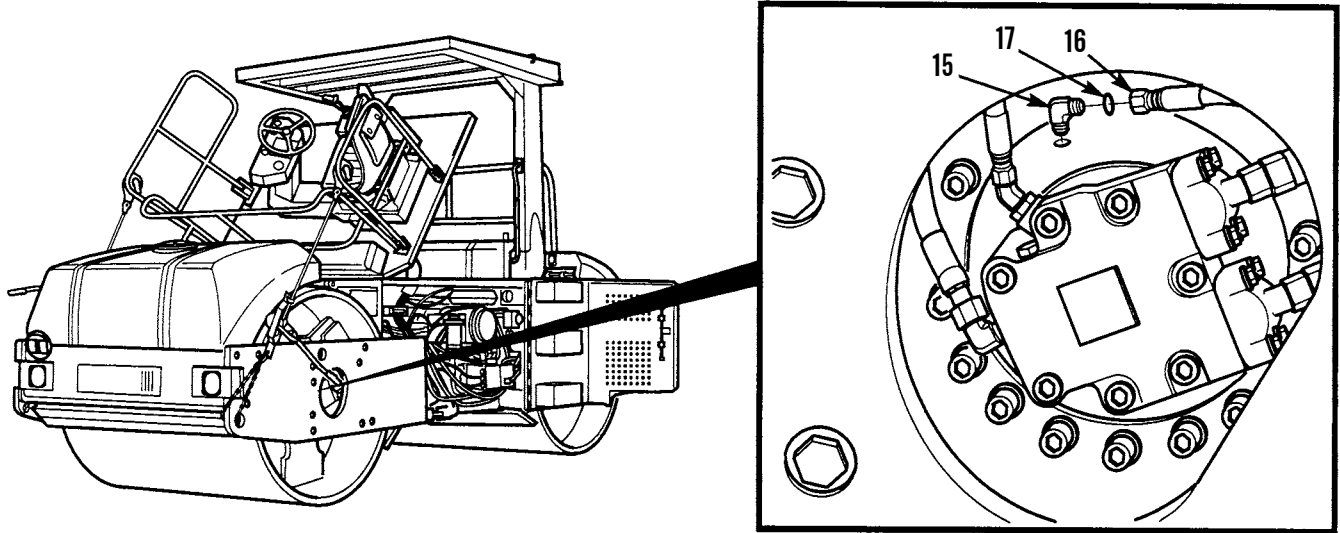
MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

25. Place hose (16) in clamp (31).
26. Install clamp (31) on yoke (25) with plate (30), two washers (29), screws (28), washers (27) and nuts (26).
27. Place hose (16) in clamp (24) and install clamp on yoke (25) with new lockwasher (23) and screw (22). Tighten screw securely.
28. Place hose (16) in clamp (20) and install clamp and plate (19) on screw (21) with screw (18).



MANUAL BRAKE RELEASE PUMP TO FRONT PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

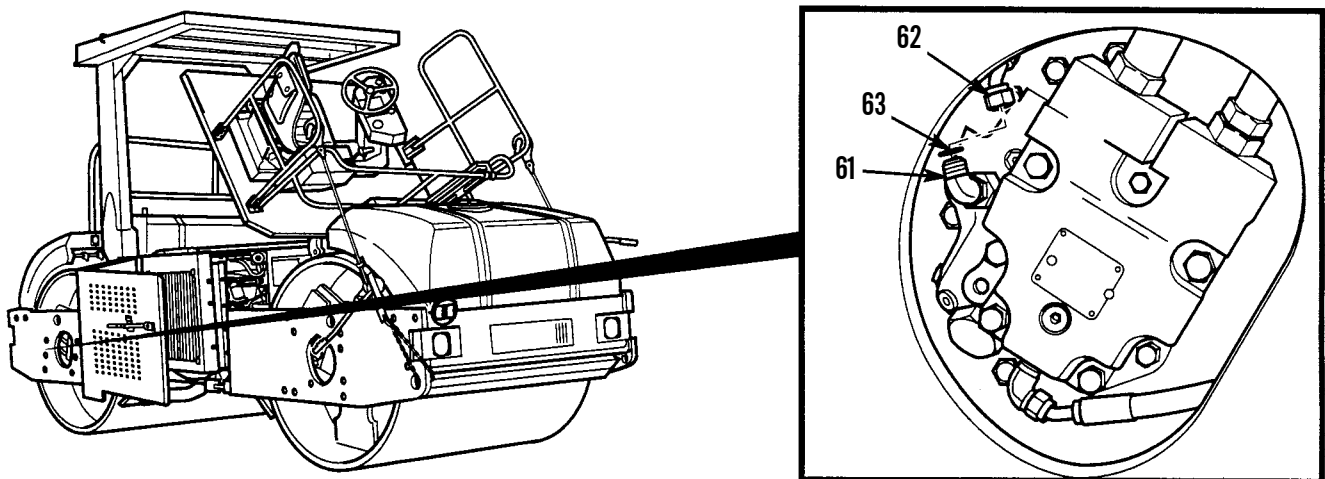
29. Install new O-ring (17) and hose (16) on front propel gearbox fitting (15).



401-627

MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT

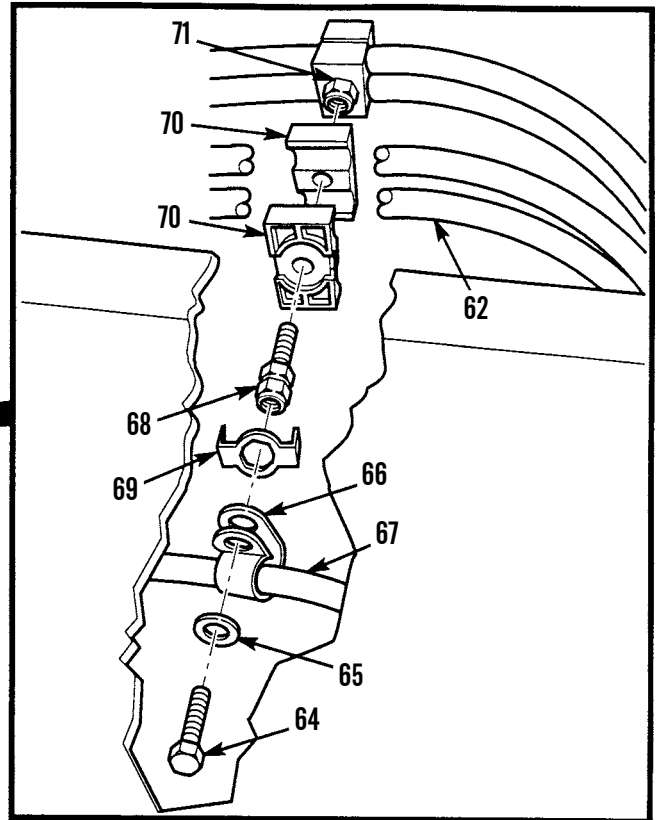
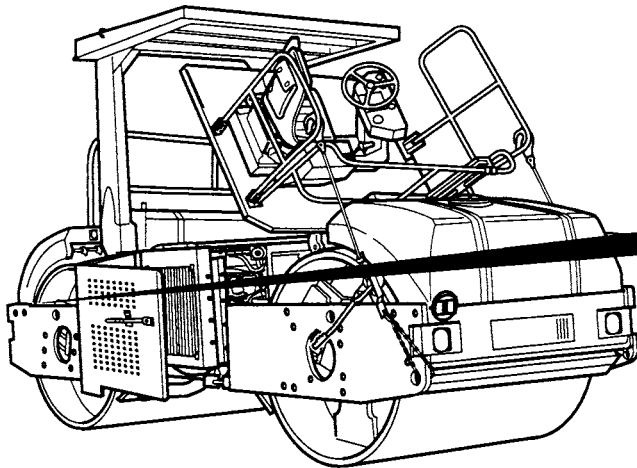
1. Place container with 1 gal. (3.8 l) minimum capacity under rear propel gearbox fitting (61).
2. Remove hose (62) and O-ring (63) from rear propel gearbox fitting (61) and allow oil to drain into container. Discard O-ring.



401-647

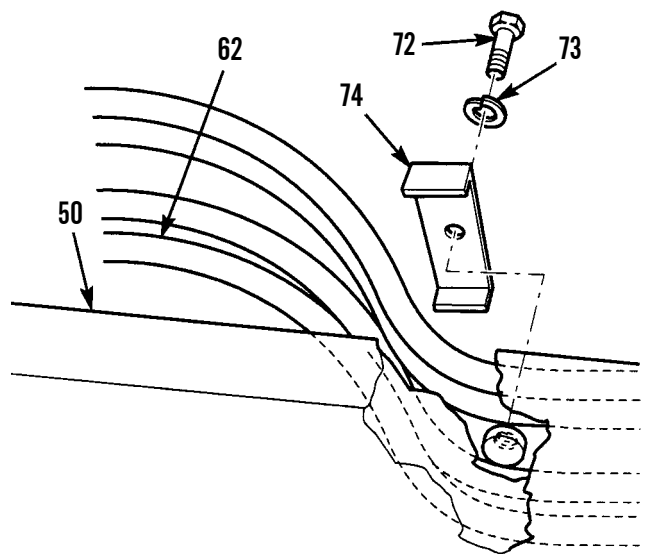
MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

3. Remove screw (64), washer (65), clamp (66) and hose (67) from screw (68).
4. Remove plate (69), screw (68), clamp (70) and hose (62) from screw (71).



401-648

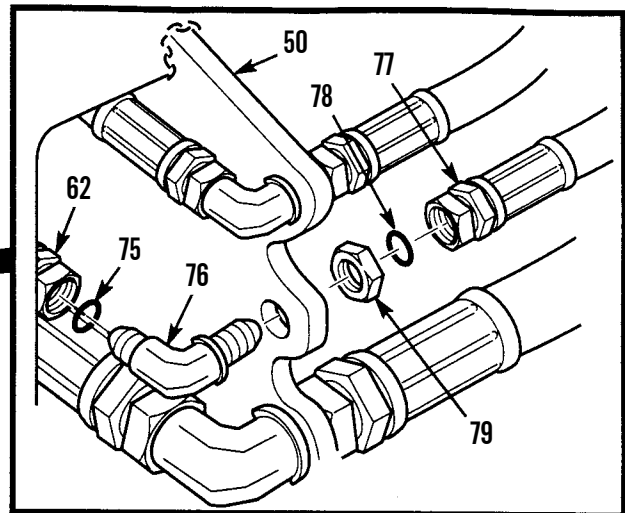
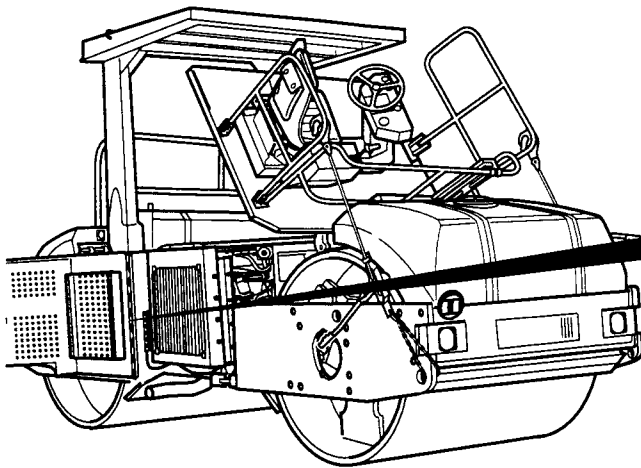
5. Remove screw (72), washer (73), clamp (74) and hose (62) from frame (50).



401-649

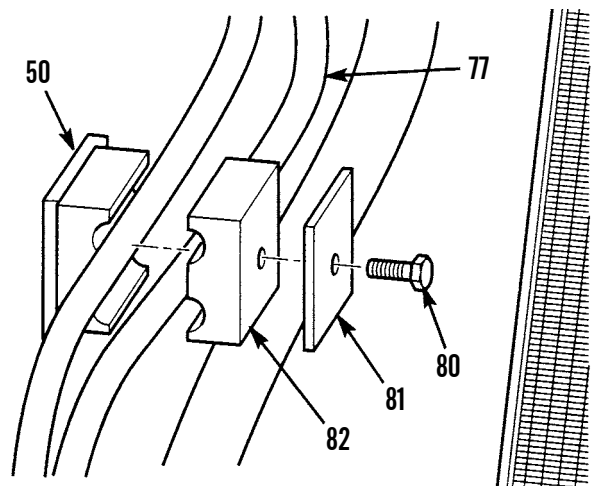
MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

6. Remove hose (62) and O-ring (75) from elbow (76). Discard O-ring.
7. Remove hose (77) and O-ring (78) from elbow (76). Discard O-ring.
8. Remove locknut (79) and elbow (76) from frame (50). Discard locknut.



401-650

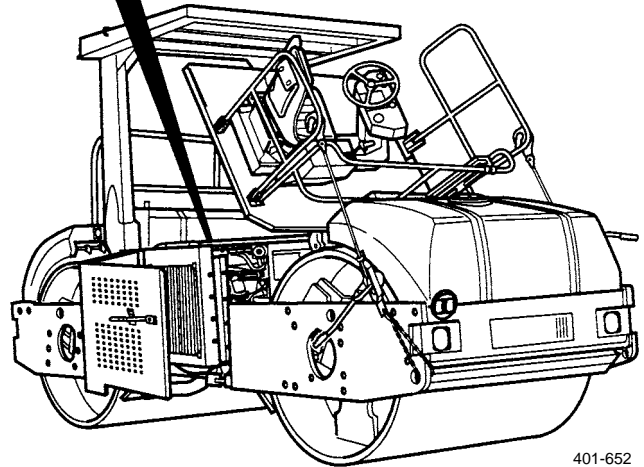
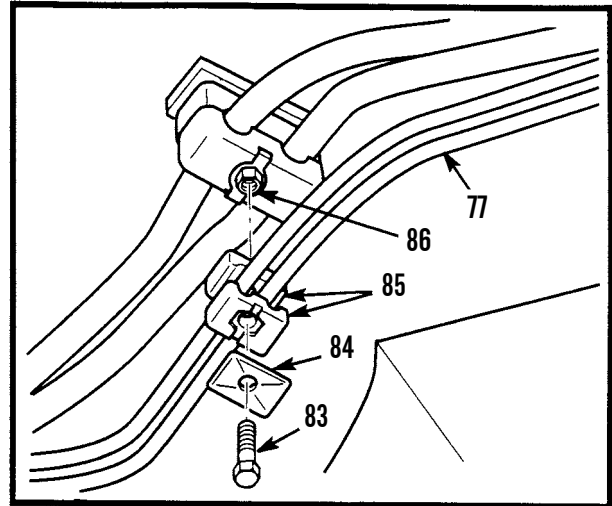
9. Remove screw (80), plate (81), clamp (82) and hose (77) from frame (50).



401-651

MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

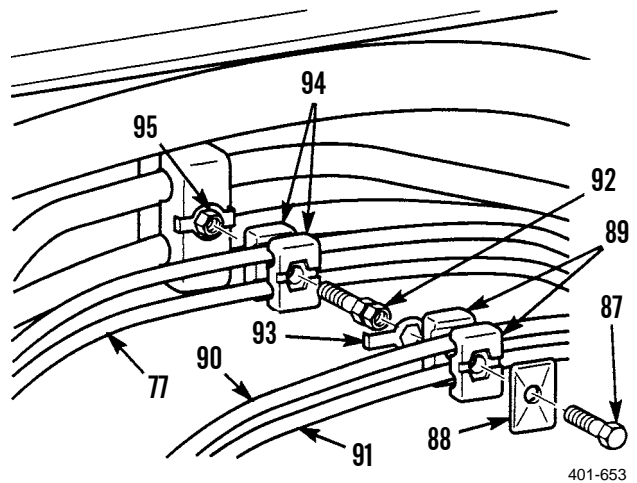
10. Remove screw (83), plate (84), clamp (85) and hose (77) from screw (86).



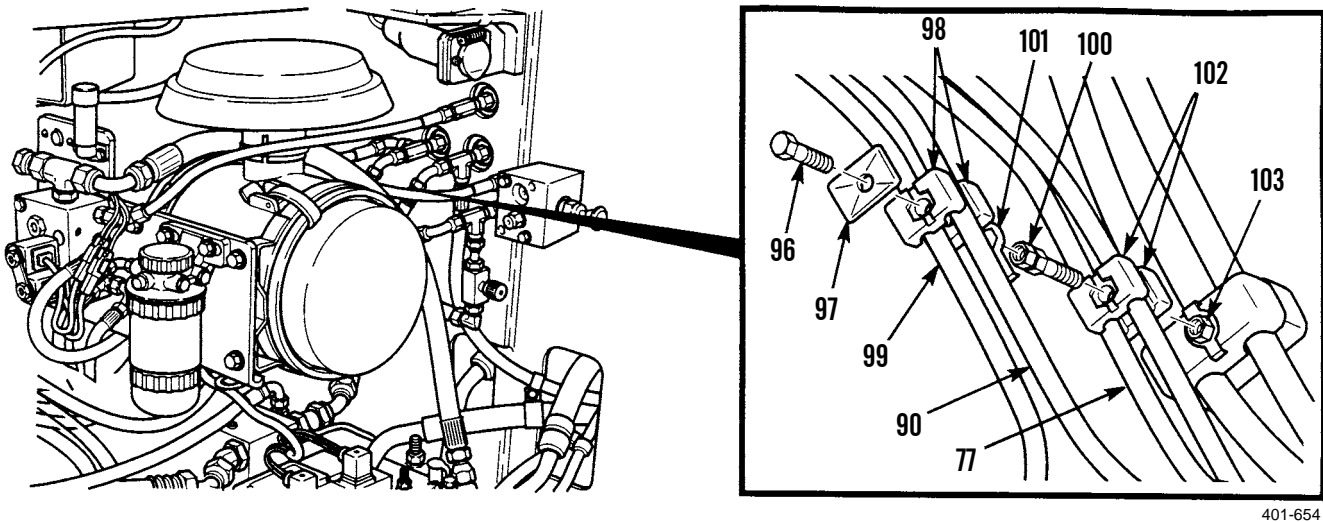
401-652

MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

11. Remove screw (87), plate (88), clamp (89) and two hoses (90) and (91) from screw (92).
12. Remove plate (93), screw (92), clamp (94) and hose (77) from screw (95).

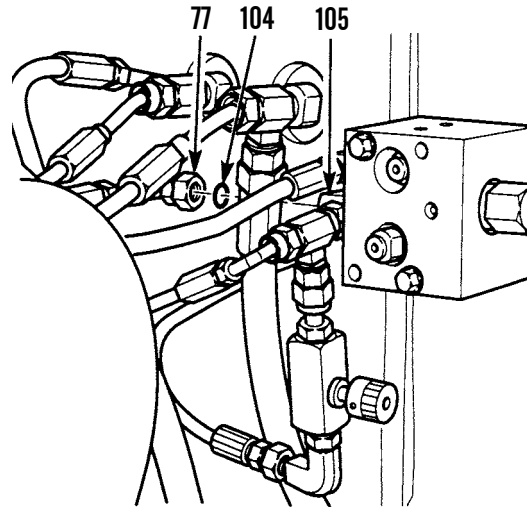


13. Remove screw (96), plate (97) and two hoses (90) and (99) from screw (100).
14. Remove plate (101), screw (100), clamp (102) and hose (77) from screw (103).



MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

15. Remove hose (77) and O-ring (104) from manual brake release pump tee (105). Discard O-ring.

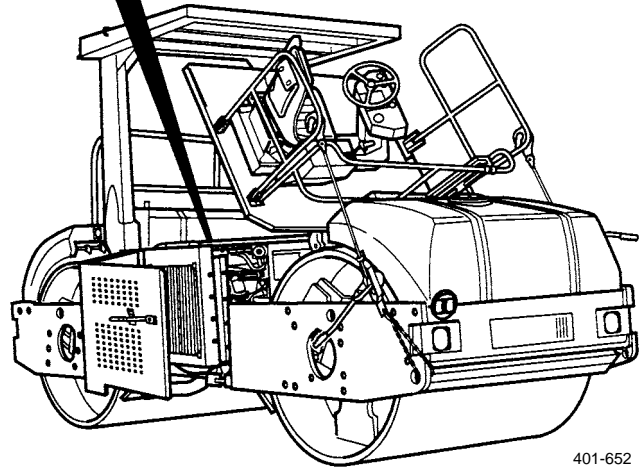
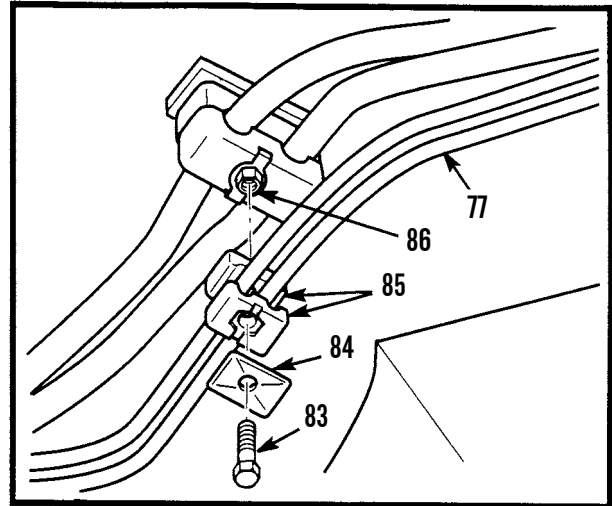


401-643

16. Install new O-ring (104) and hose (77) on manual brake release pump tee (105).
17. Place hose (77) in clamp (102) and install clamp and plate (101) on screw (103) with screw (100).
18. Place hoses (90) and (99) in clamp (98) and install clamp and plate (97) on screw (100) with screw (96).
19. Place hose (77) in clamp (94) and install clamp and plate (93) on screw (95) with screw (92).
20. Place two hoses (90) and (91) in clamp (89) and install clamp and plate (88) on screw (92) with screw (87).

MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

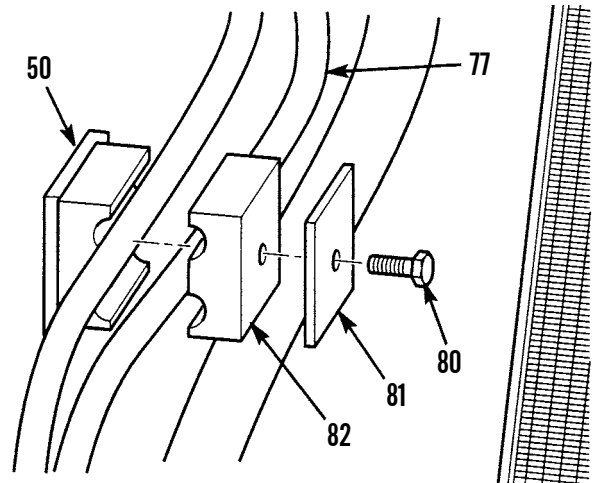
21. Place hose (77) in clamp (85) and install clamp and plate (84) on screw (86) with screws (83).



401-652

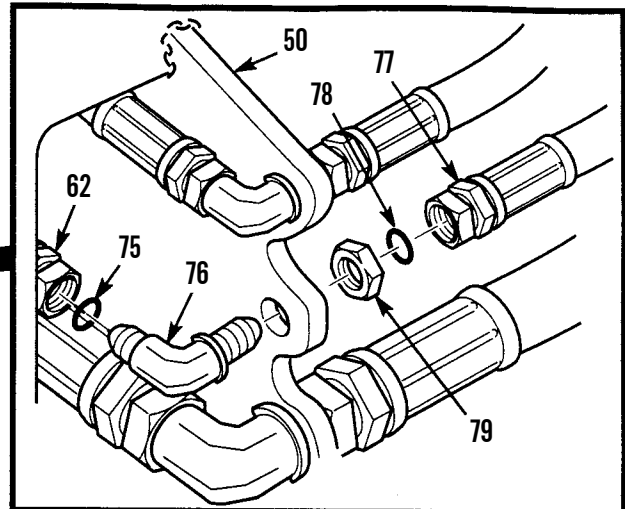
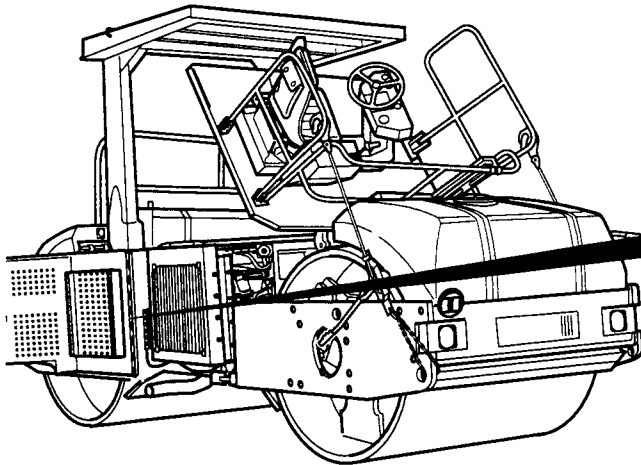
MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

22. Place hose (77) in clamp (82) and install clamp and plate (81) on frame (50) with screw (80). Tighten screw securely.



401-651

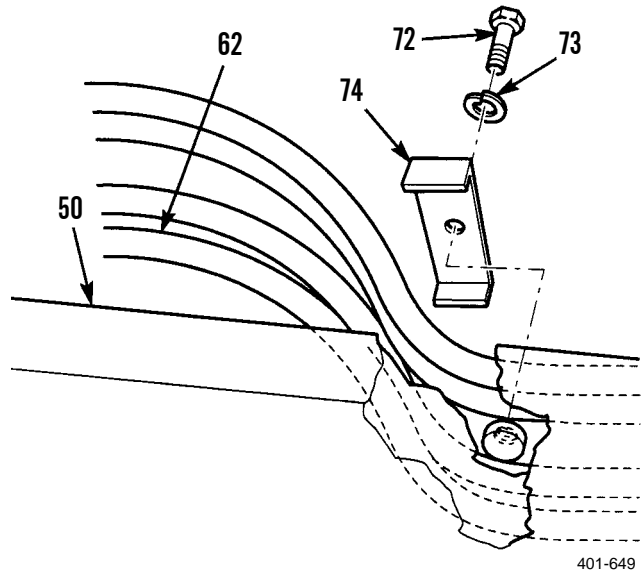
23. Install elbow (76) on frame (50) with new locknut (79).
24. Install new O-ring (78) and hose (77) on elbow (76).
25. Install new O-ring (75) and hose (62) on elbow (76).



401-650

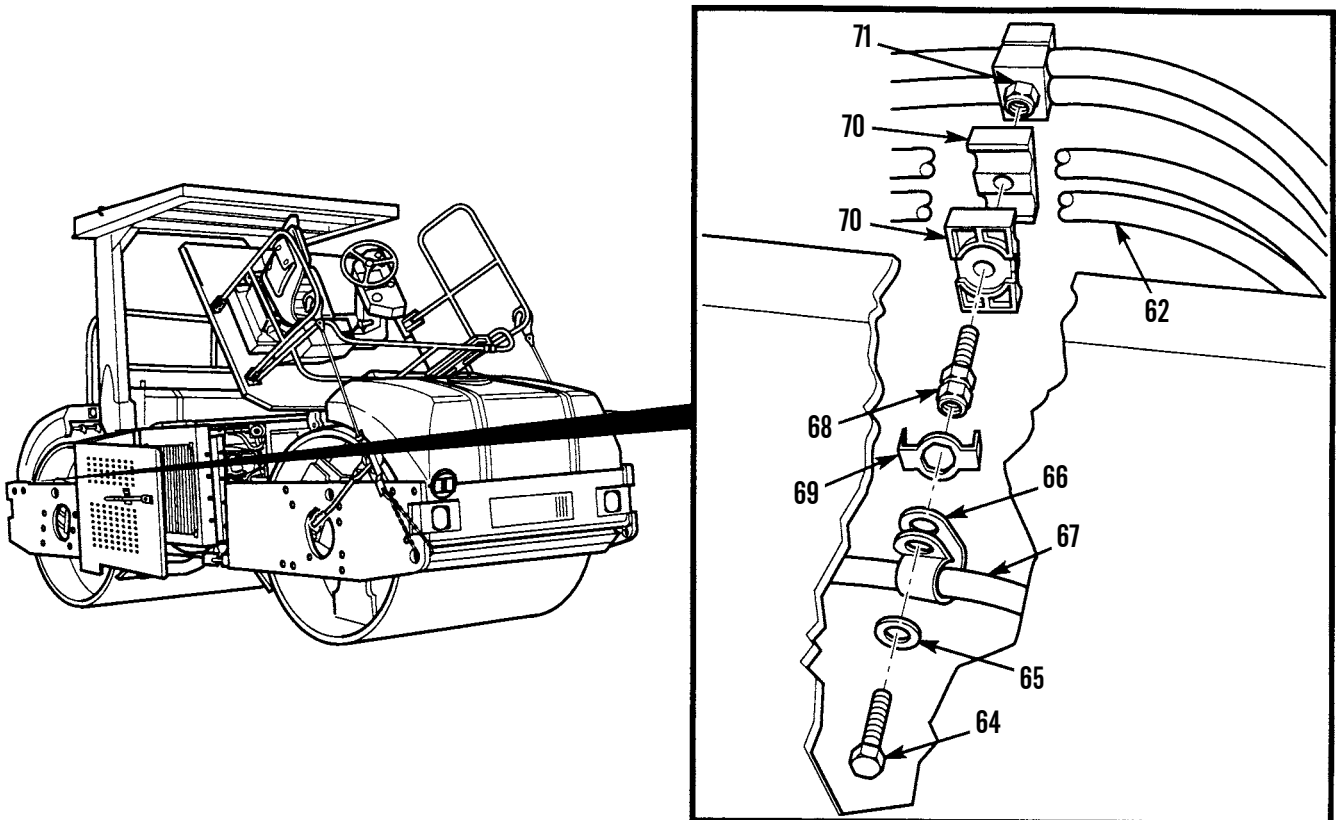
MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

26. Place hose (62) in clamp (74) and install clamp on frame (50) with washer (73) and screw (72). Tighten screw securely.



401-649

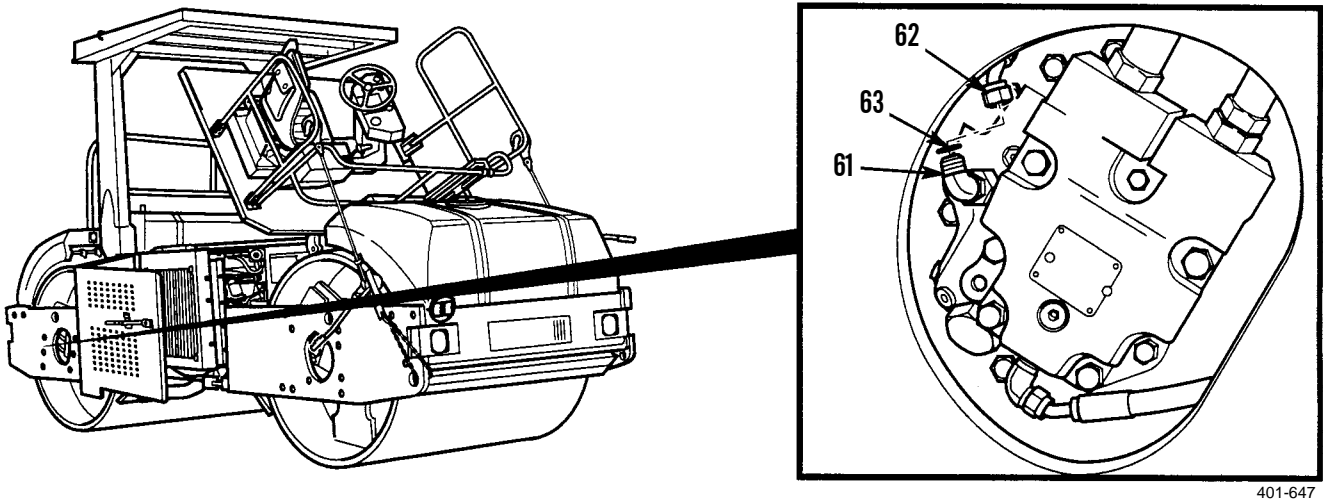
27. Place hose (62) in clamp (70) and install clamp on screw (71) with screw (68) and plate (69).
 28. Install hose (67) and clamp (66) on screw (68) with washer (65) and screw (64).



401-648

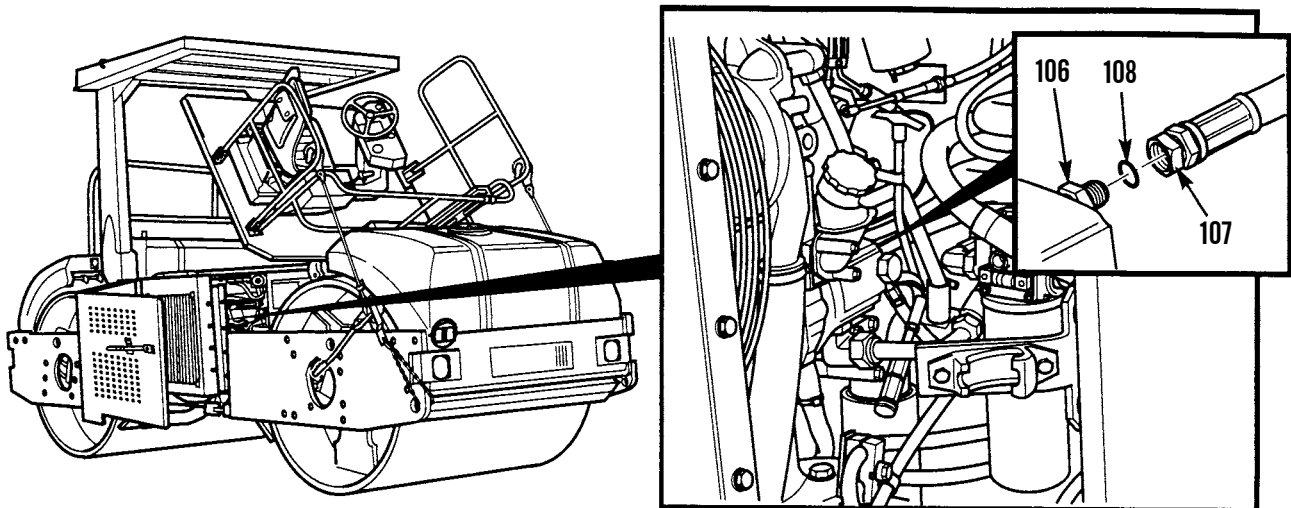
MANUAL BRAKE RELEASE PUMP TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

29. Install new O-ring (63) and hose (62) on rear propel gearbox fitting (61).



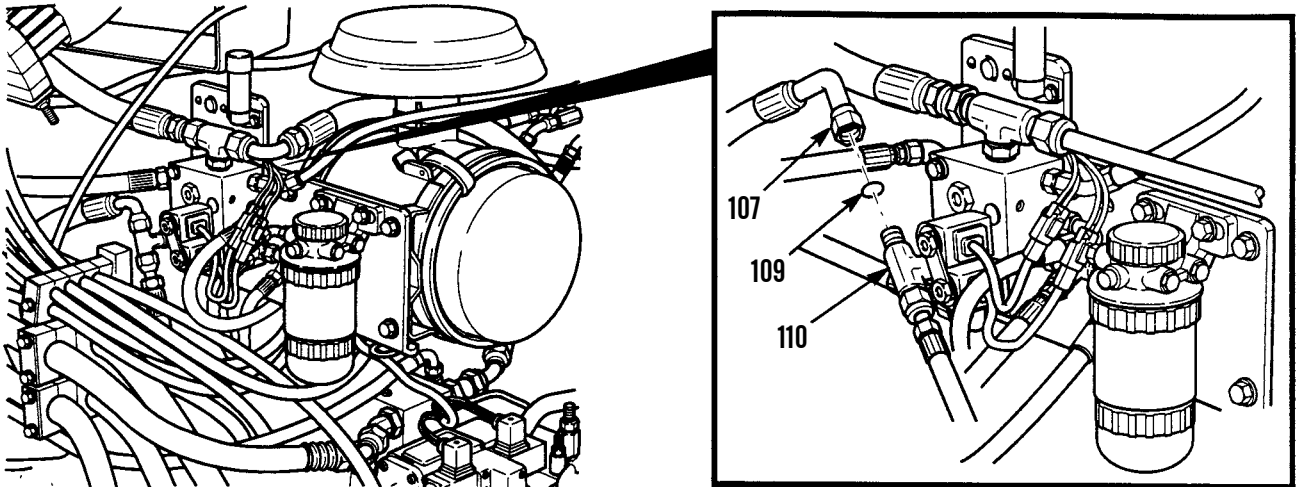
BRAKE VALVE TO STEERING PUMP LINE REPLACEMENT

1. Place container with 1 gal. (3.8 l) minimum capacity under steering pump fitting (106).
2. Remove hose (107) and O-ring (108) from steering pump fitting (106) and allow oil to drain into container. Discard O-ring.



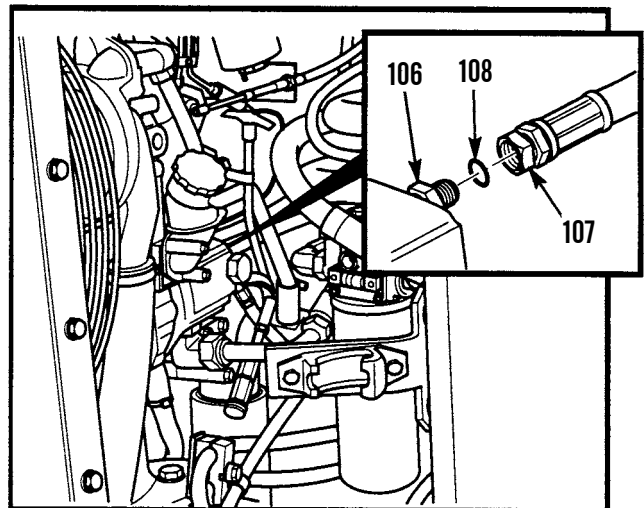
BRAKE VALVE TO STEERING PUMP LINE REPLACEMENT - CONTINUED

3. Remove hose (107) and preformed packing (109) from brake valve fitting (110). Discard preformed packing.



401-645

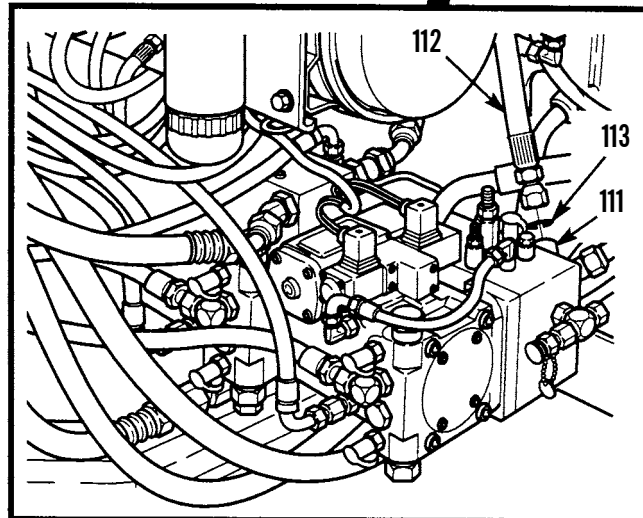
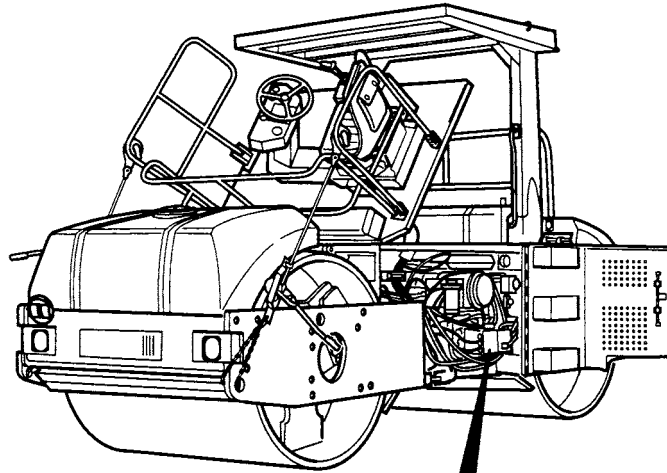
4. Install new preformed packing (109) and hose (107) on brake valve fitting (110).
5. Install new O-ring (108) and hose (107) on steering pump fitting (106).



401-658

VIBRATORY VALVE TO BRAKE VALVE LINE REPLACEMENT

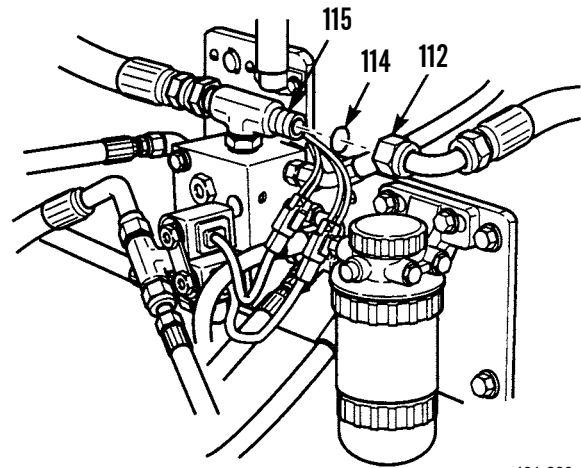
1. Place container with 1 gal. (3.8 l) minimum capacity under vibratory valve fitting (111).
2. Remove hose (112) and preformed packing (113) from vibratory valve fitting (111) and allow oil to drain into container. Discard preformed packing.



401-659

VIBRATORY VALVE TO BRAKE VALVE LINE REPLACEMENT - CONTINUED

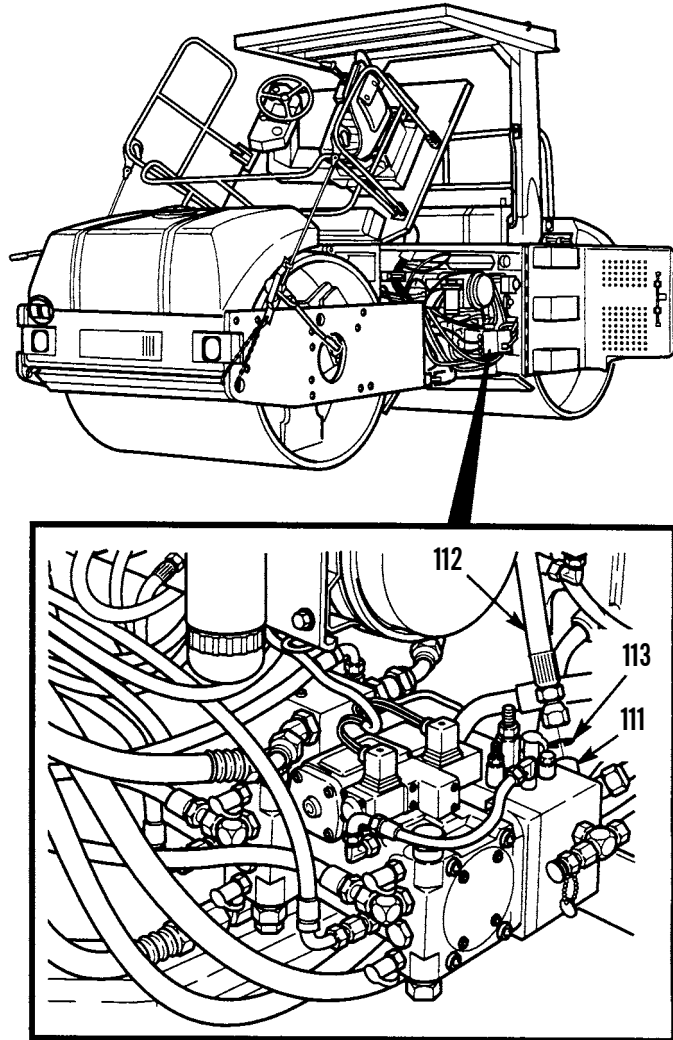
3. Remove hose (112) and preformed packing (114) from brake valve fitting (115). Discard preformed packing.
4. Install new preformed packing (114) and hose (112) on brake valve fitting (115).



401-660

VIBRATORY VALVE TO BRAKE VALVE LINE REPLACEMENT - CONTINUED

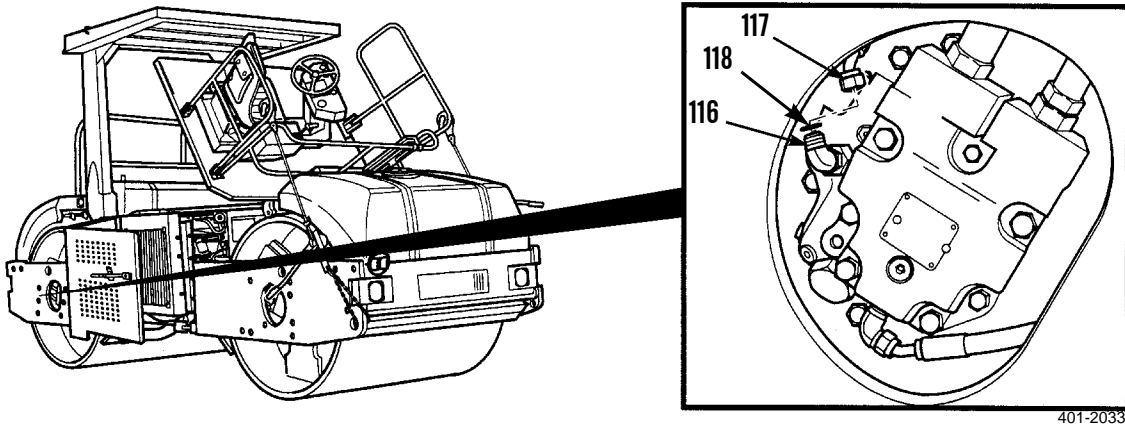
5. Install new preformed packing (113) and hose (112) on vibratory valve fitting (111).



401-659

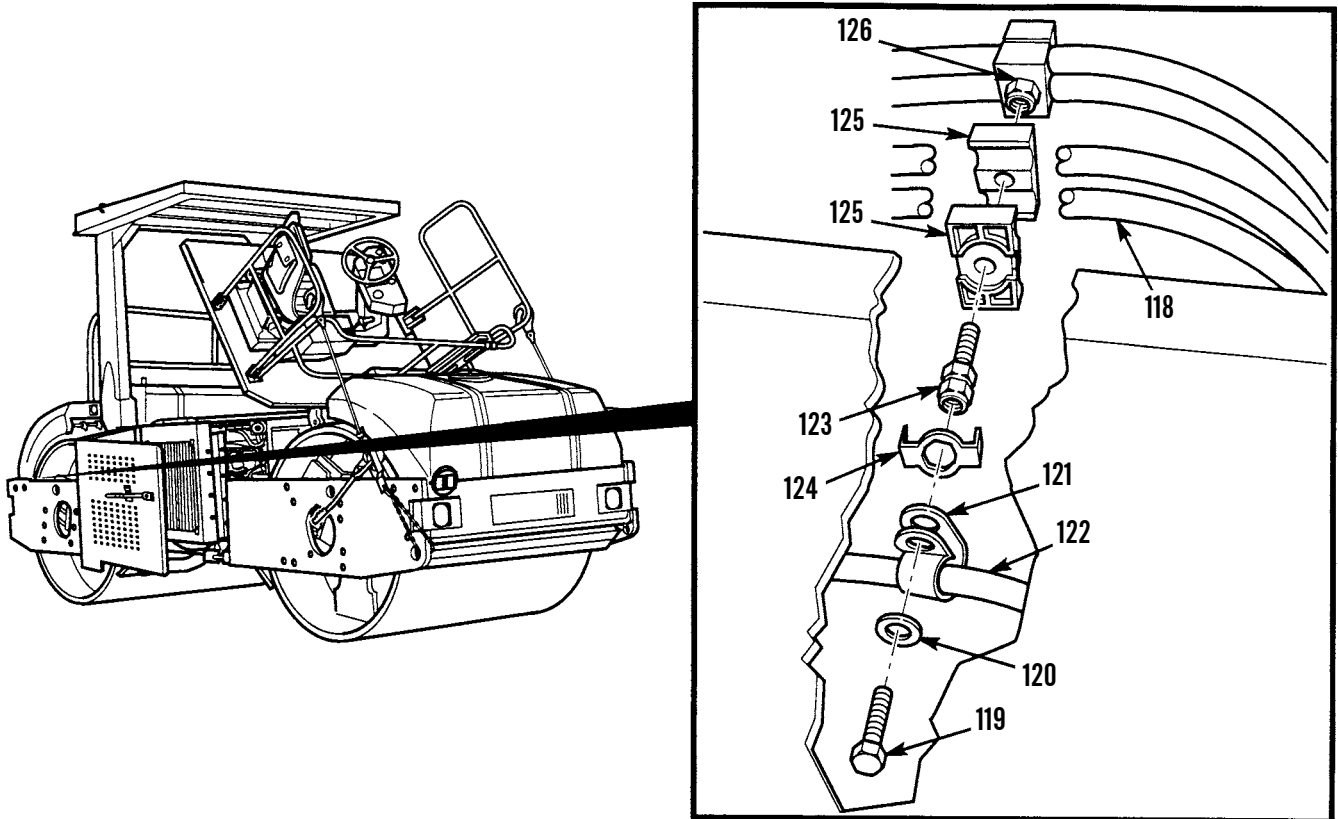
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT

1. Place container with 1 gal. (3.8 l) minimum capacity under rear propel gearbox fitting (116).
2. Remove hose (117) and O-ring (118) from rear propel gearbox fitting (116) and allow oil to drain into container. Discard O-ring.



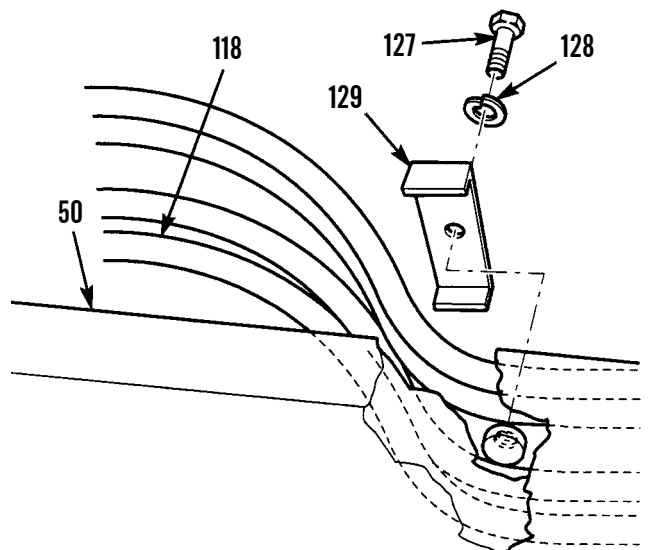
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

3. Remove screw (119), washer (120), clamp (121) and hose (122) from screw (123).
4. Remove plate (124), screw (123), clamp (125) and hose (118) from screw (126).



401-648

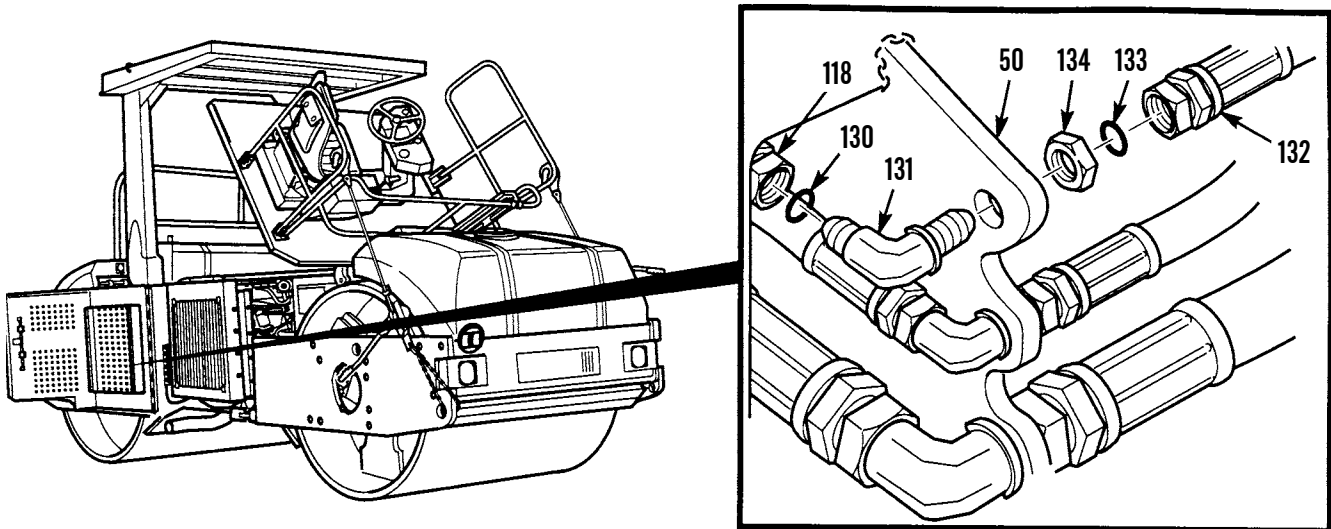
5. Remove screw (127), washer (128), clamp (129) and hose (118) from frame (50).



401-649

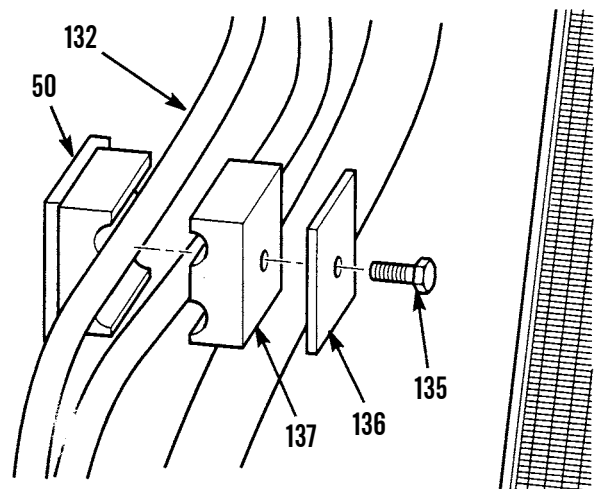
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

6. Remove hose (118) and O-ring (130) from elbow (131). Discard O-ring.
7. Remove hose (132) and O-ring (133) from elbow (131). Discard O-ring.
8. Remove locknut (134) and elbow (131) from frame (50). Discard locknut.



401-662

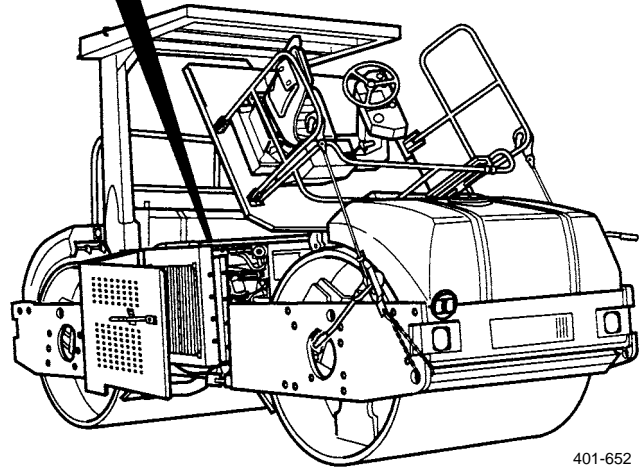
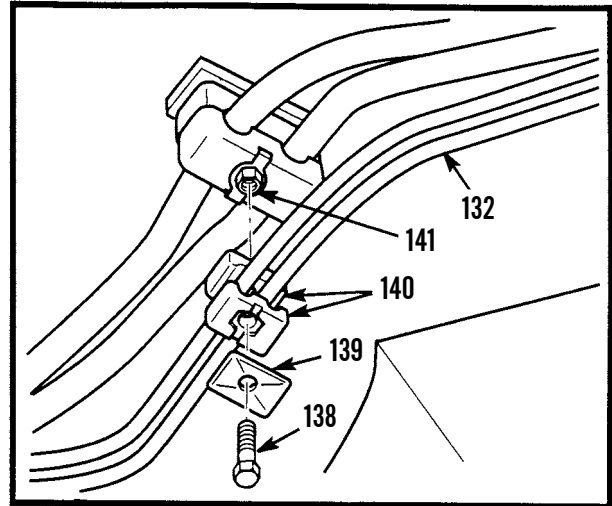
9. Remove screw (135), plate (136), clamp (137) and hose (132) from frame (50).



401-663

BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

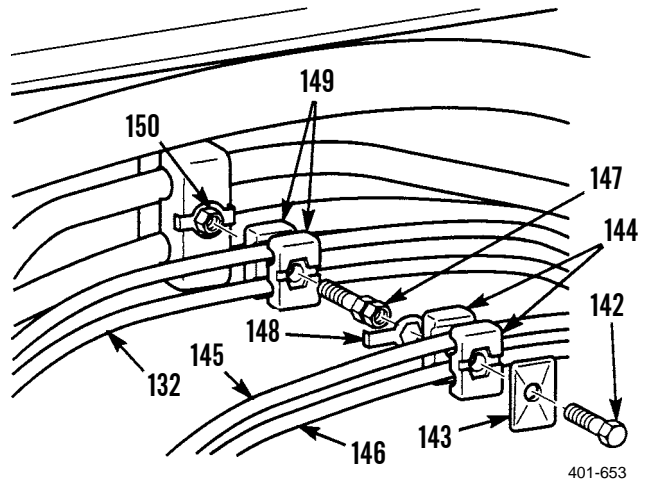
10. Remove screw (138), plate (139), clamp (140) and hose (132) from screw (141).



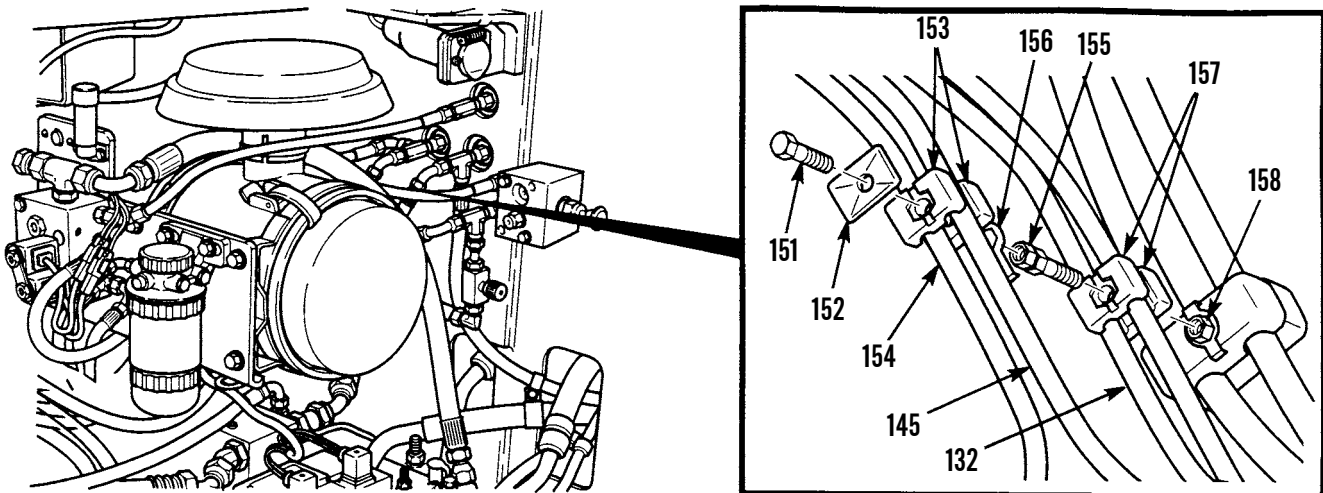
401-652

BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

11. Remove screw (142), plate (143), clamp (144) and two hoses (145) and (146) from screw (147).
12. Remove plate (148), screw (147), clamp (149) and hose (132) from screw (150).

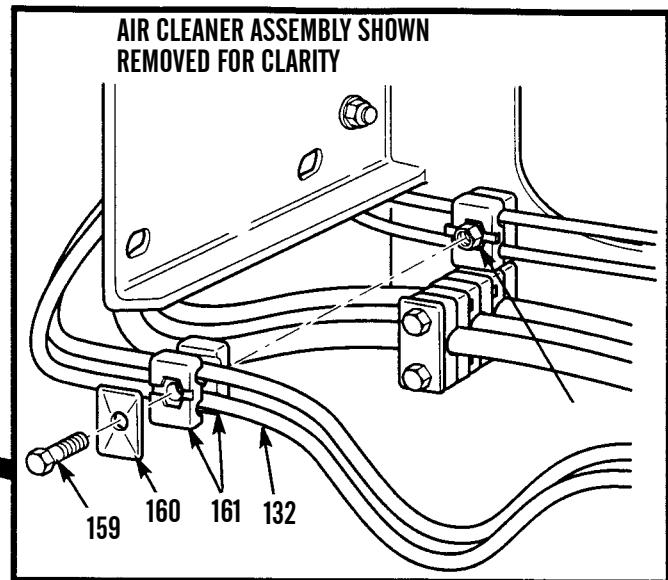
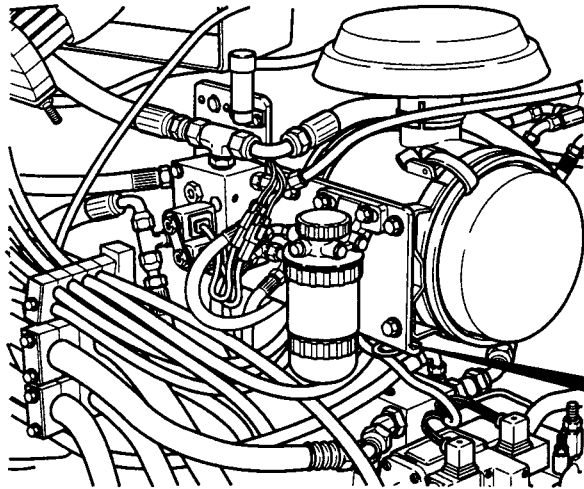


13. Remove screw (151), plate (152), clamp (153) and two hoses (145) and (154) from screw (155).
14. Remove plate (156), screw (155), clamp (157) and hose (132) from screw (158).



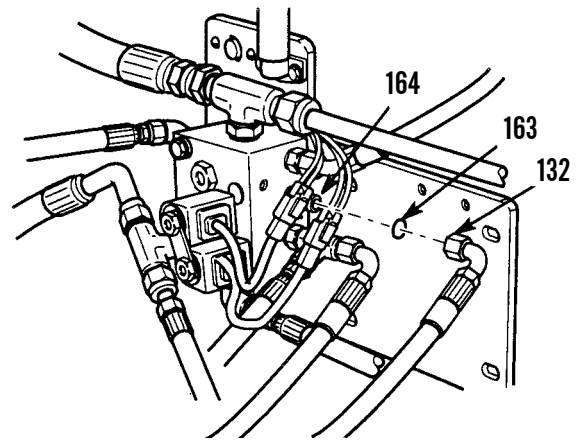
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

15. Remove screw (159), plate (160), clamp (161) and hose (132) from screw (162).



401-645

16. Remove hose (132) and O-ring (163) from brake valve fitting (164). Discard O-ring.

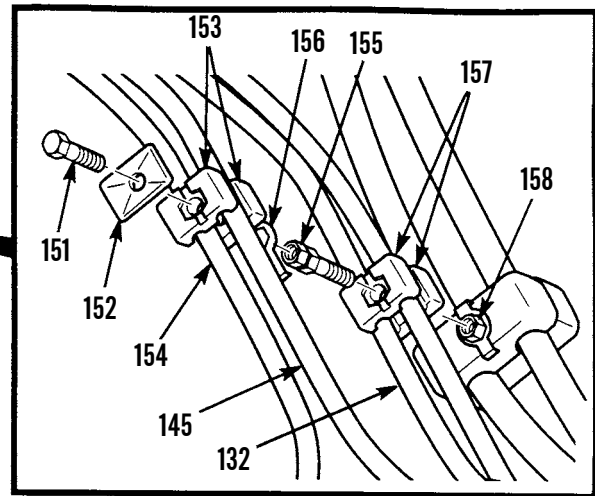
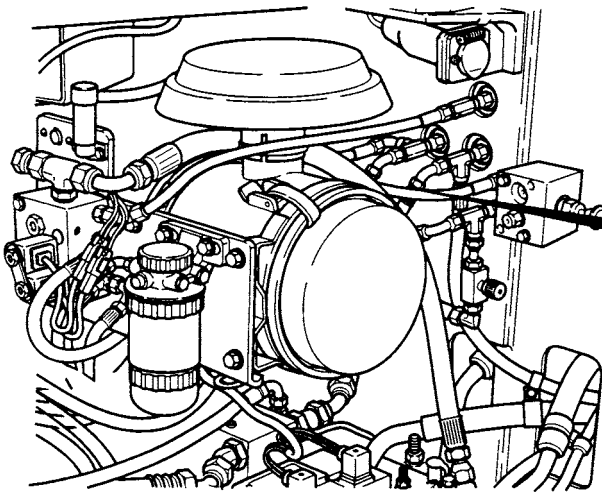


401-664

17. Install new O-ring (163) and hose (132) on brake valve fitting (164).
 18. Place hose (132) in clamp (161) and install clamp and plate (160) on screw (162) with screw (159).

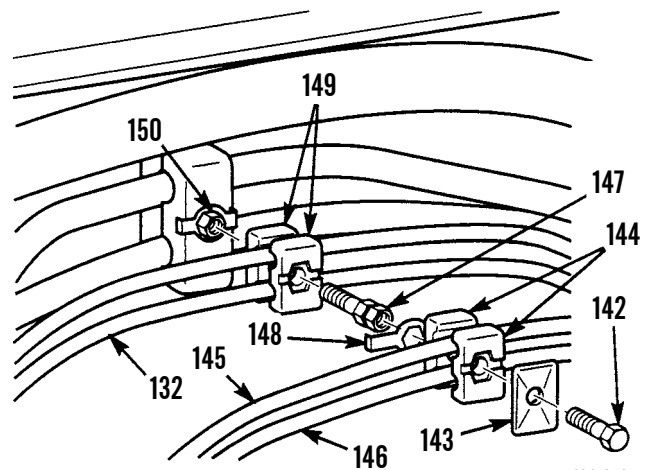
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

19. Place hose (132) in clamp (157) and install clamp on screw (158) with screw (155) and plate (156).
20. Place two hoses (145) and (154) in clamp (153) and install clamp and plate (152) on screw (155) with screw (151).



401-654

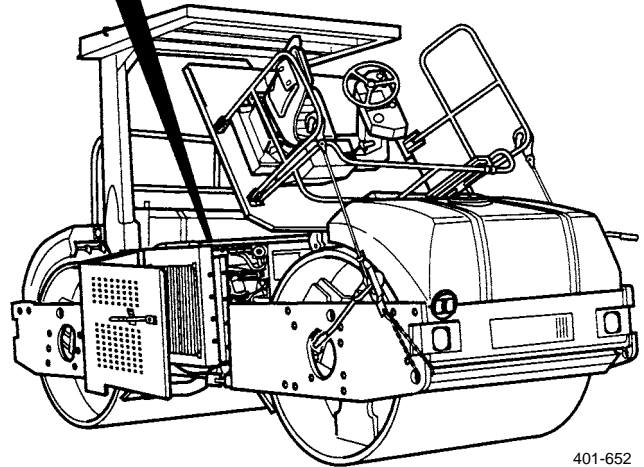
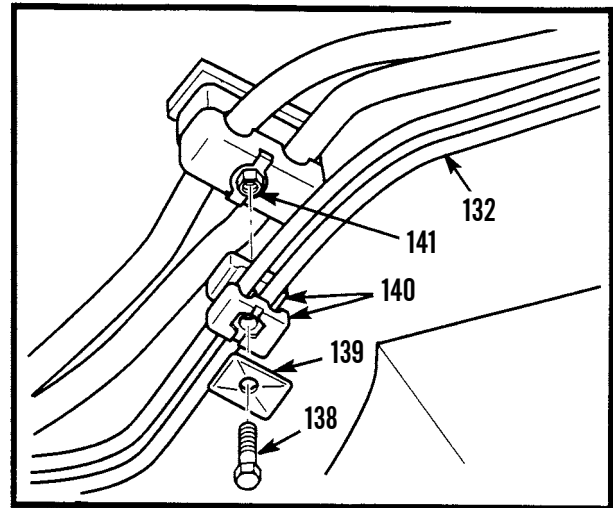
21. Place hose (132) in clamp (149) and install clamp on screw (150) with screw (147) and plate (148).
22. Place two hoses (145) and (146) in clamp (144) and install clamp and plate (143) on screw (147) with screw (142).



401-653

BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

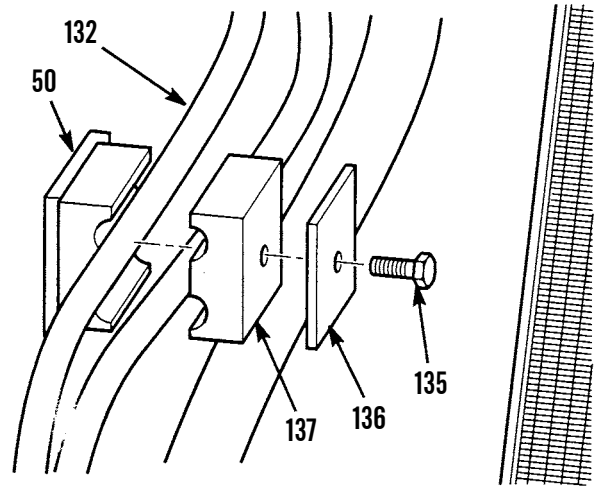
23. Place hose (132) in clamp (140) and install clamp and plate (139) on screw (141) with screw (138).



401-652

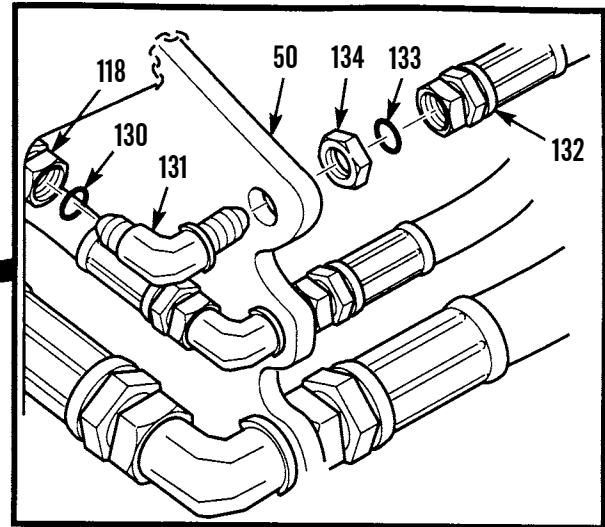
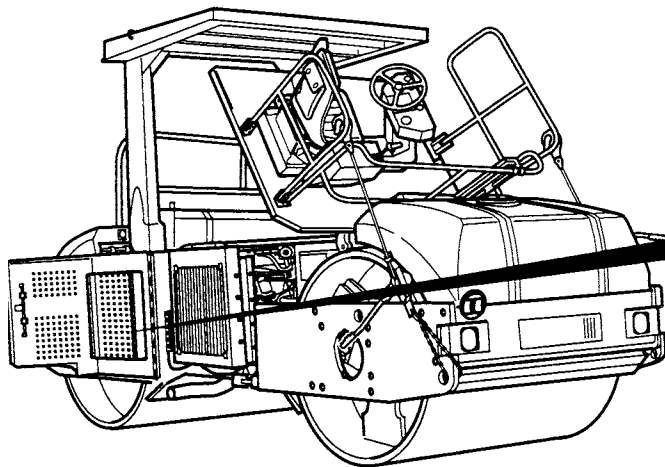
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

24. Place hose (132) in clamp (137) and install clamp and plate (136) on frame (50) with screw (135). Tighten securely.



401-663

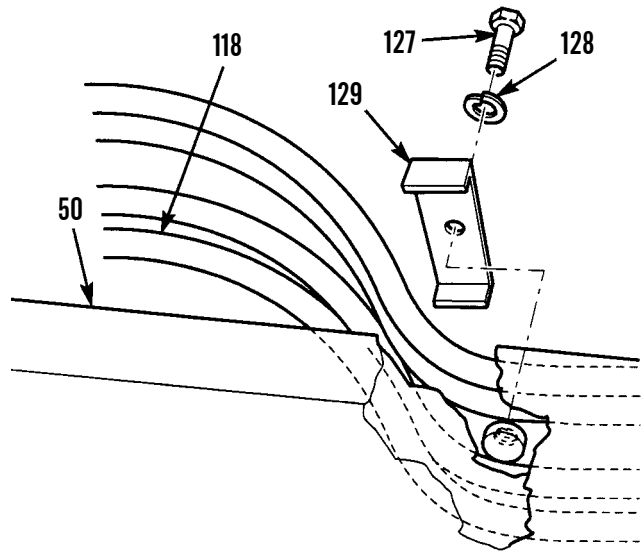
25. Install elbow (131) on frame (50) with new locknut (134).
26. Install new O-ring (133) and hose (132) on elbow (131).
27. Install new O-ring (130) and hose (118) on elbow (131).



401-662

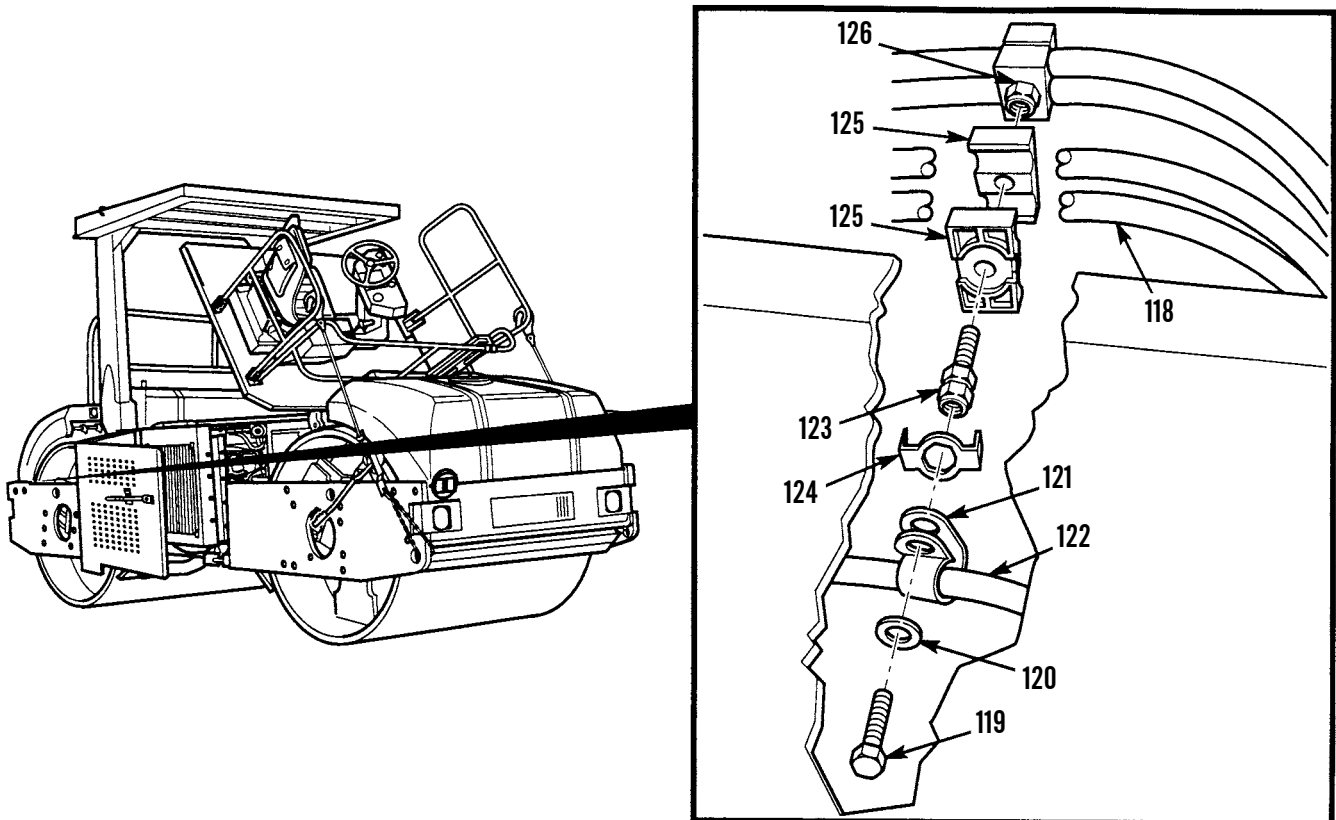
BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

28. Place hose (118) in clamp (129) and install clamp on frame (50) with washer (128) and screw (127). Tighten securely.



401-649

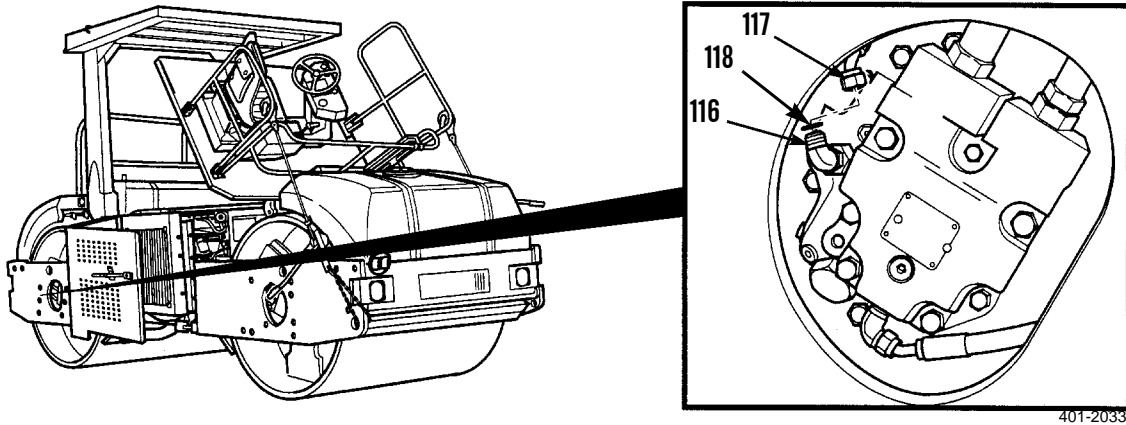
29. Place hose (118) in clamp (125) and install clamp on screw (126) with screw (123) and plate (124).
30. Place hose (122) in clamp (121) and install clamp on screw (123) with screw (119) and washer (120).



401-648

BRAKE VALVE TO REAR PROPEL GEARBOX LINE REPLACEMENT - CONTINUED

31. Install new O-ring (118) and hose (117) on rear propel gearbox fitting (116).



401-2033

32. Lower operator platform assembly (WP 0128 00).
33. Service hydraulic oil level (TM 5-3895-379-10).
34. Start engine, operate roller and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

STEERING WHEEL AND COLUMN REPLACEMENT

0120 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Oil, lubricating (Item 21, WP 0219 00)

References

TM 5-3895-379-23P, Figures 87 and 102

Equipment Condition

Vandal guard removed (WP 0130 00)

Engine off (TM 5-3895-379-10)

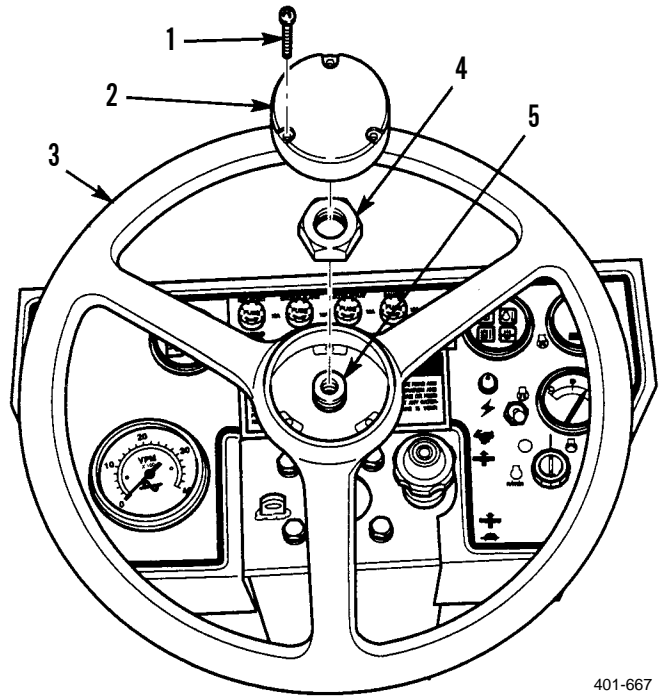
Drums chocked (TM 5-3895-379-10)

NOTE

Steering wheel is replaced the same way for CB534B and CB534C Rollers. CB534B Roller is shown.

REMOVAL

1. Remove three screws (1) and identification plate (2) from steering wheel (3).
2. Remove nut (4) from steering column (5).
3. Remove steering wheel (3) from steering column (5) with steering wheel puller.
4. Remove four bolts (6), washers (7) and cover (8) from station (9).
5. Remove three bolts (10) and washers (11) that fasten console (12) to steering column (5), and move console out of the way.
6. While holding steering control unit (13), remove four bolts (14) and washers (15) that fasten steering control unit and steering column (5) to console (12).
7. Remove steering control unit (13) from steering column (5).
8. Remove steering column (5) from console (12).

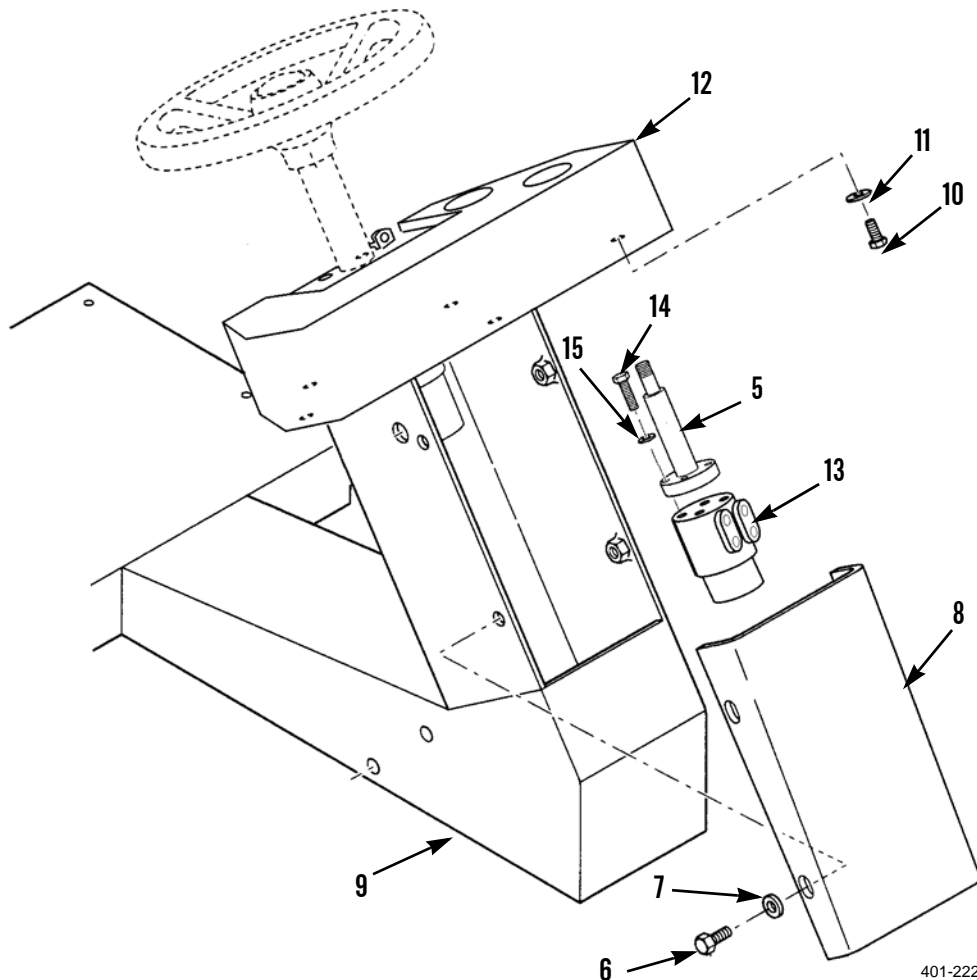


401-667

INSTALLATION**NOTE**

Do not oil threads of column.

1. Install steering column (5) to console (12).
2. Install steering control unit (13) to steering column (5).
3. While holding steering control unit (13), install four washers (15) and bolts (14) to steering control unit (13), steering column (5) and console (12). Tighten bolts to 19 lb-ft (26 Nm).
4. Install three washers (11) and bolts (10) that fasten console (12) to steering column (5).
5. Install four washers (7), bolts (6) and cover (8) to station (9).
6. Apply a few drops of oil to spline of steering column (5).
7. Align steering wheel (3) with one spoke facing downward.
8. Install steering wheel (3) on steering column (5) with nut (4). Tighten nut to 30-40 lb-ft (41-54 Nm).
9. Install identification plate (2) on steering wheel (3) with three screws (1). Tighten screws securely.
10. Install vandal guard (WP 0130 00).
11. Remove chocks (TM 5-3895-379-10).



END OF WORK PACKAGE

401-2226

HYDRAULIC STEERING CYLINDERS REPLACEMENT

0121 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cap, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 93

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Left- and right-door assemblies opened (TM 5-3895-379-10)

**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

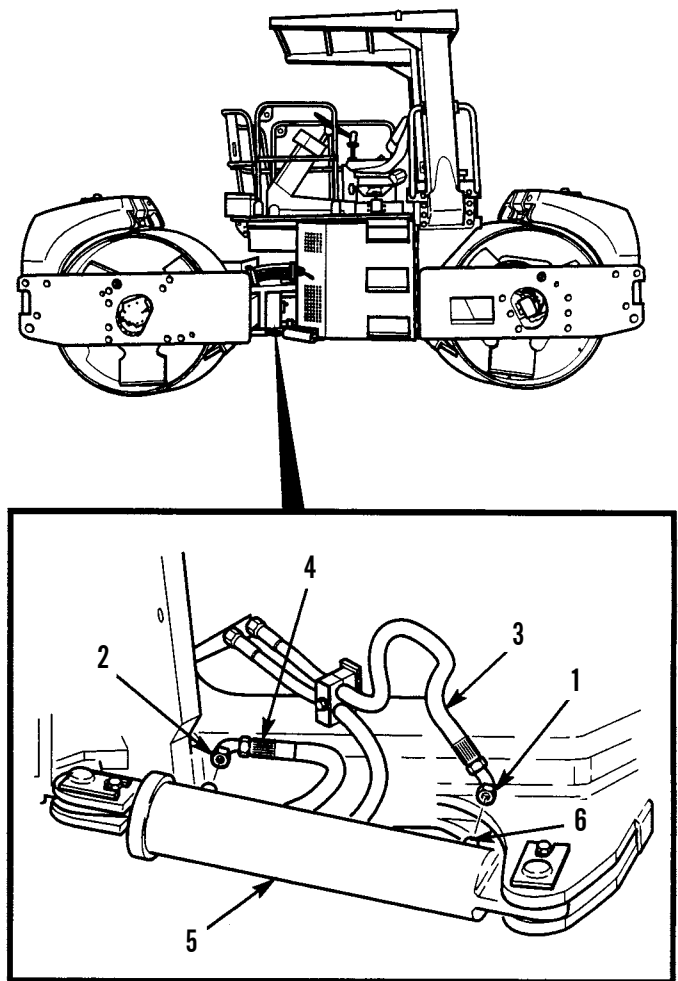
REMOVAL**NOTE**

Right and left hydraulic steering cylinders are replaced the same way. Left hydraulic steering cylinder is shown.

Use container to catch any oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped threads and cuts. If damaged, notify Direct Support.

1. Place container with 1 gal. (3.8 l) minimum capacity under hydraulic fittings (1) and (2).
2. Loosen fittings (1) and (2) and remove hydraulic lines (3) and (4) from hydraulic steering cylinder (5).
3. Cap hydraulic steering cylinder fittings (6) and lines (3) and (4).



401-667

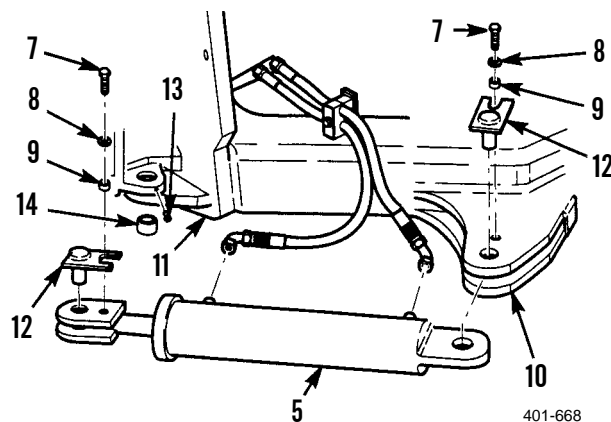
REMOVAL - CONTINUED

- Remove two screws (7), washers (8) and spacers (9) from frame assembly (10) and yoke assembly (11).

NOTE

The number of spacers used may vary from one roller to the next.

- Remove two pin assemblies (12) and hydraulic steering cylinder (5) from frame assembly (10) and yoke assembly (11).
- Remove lubrication fitting (13) from frame assembly (10).
- Remove alignment bearing (14) from yoke assembly (11).



401-668

INSTALLATION

- Install alignment bearing (14) in yoke assembly (11).
- Install lubrication fitting (13) on frame assembly (10).
- Position hydraulic steering cylinder (5) on frame assembly (10) and yoke assembly (11).
- Install two pin assemblies (12) in frame assembly (10) and yoke assembly (11).
- Install spacers (9), washers (8) and screws (7) in frame assembly (10) and yoke assembly (11) to lock two pin assemblies (12) in place. Tighten screws to 33-47 lb-ft (45-64 Nm).
- Remove caps and install hydraulic lines (3) and (4) on hydraulic steering cylinder fittings (6).
- Tighten fittings (1) and (2).
- Close right- and left-side door assemblies (TM 5-3895-379-10).
- Start engine, operate steering (TM 5-3895-379-10) and check for leaks.
- Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FRONT AND REAR SUPPORTS (BUMPERS) REPLACEMENT

0122 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)
- Link, bracket (Item 20, WP 0220 00)
- Lifting device, minimum capacity 625 lb (286 kg)

Materials/Parts

- Strap, tiedown (Item 36, WP 0219 00)

References

- TM 5-3895-379-23P, Figure 96

Personnel Required

- Two

Equipment Condition

- Engine off (TM 5-3895-379-10)

Equipment Condition - Continued

- Drums chocked (TM 5-3895-379-10)
 - Vehicle classification sign kit removed (WP 0139 00)
 - Front (or rear) water tank assembly removed (WP 0154 00)
 - Warning horn assembly removed (WP 0099 00)
 - Front (or rear) water spray strainer assembly removed (WP 0153 00)
 - Front (or rear) water spray pump removed (WP 0155 00)
 - Front (or rear) work light assemblies removed (WP 0091 00)
 - Front (or rear) water lines removed (WP 0159 00)
 - Front (or rear) scraper bar removed (WP 0160 00)
-

NOTE

Front and rear supports (bumpers) are replaced the same way. Rear bumper is shown.

REMOVAL**NOTE**

Remove cable ties as necessary.

1. Pull wiring harness (1) through hole in backside of bumper assembly (2) and position in a safe area.

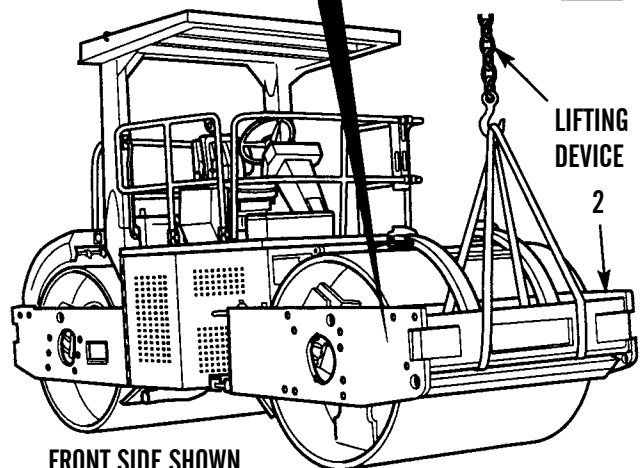
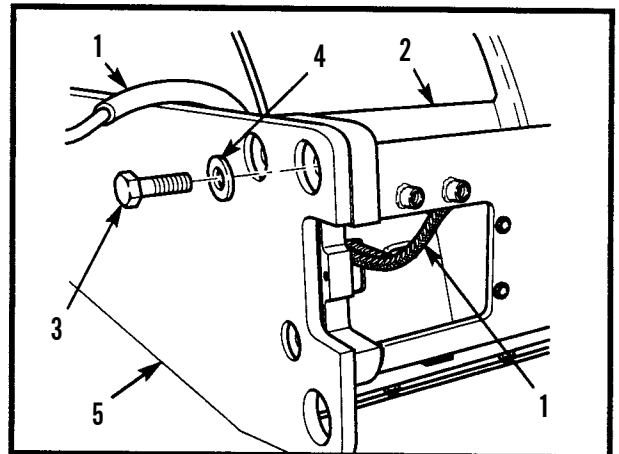
**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Bumper assembly weighs 625 lb (283 kg).

1. Attach a lifting device to bumper assembly (2).
2. Remove six screws (3) and washers (4) from bumper assembly (2).
3. Operate lifting device while assistant guides bumper assembly (2) away from yoke assembly (5).



FRONT SIDE SHOWN
REAR SIDE SIMILAR

401-670

INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Bumper weighs 625 lb (283 kg).

1. Attach a lifting device to bumper assembly (2).
2. Operate lifting device while assistant guides the bumper assembly (2) into position on yoke assembly (5).
3. Install six screws (3) and washers (4) in yoke assembly (5) and bumper assembly (2). Tighten screws to 295-385 lb-ft (400-522 Nm).

NOTE

Replace cable ties as required.

4. Pull wiring harness (1) through hole in backside of bumper assembly (2) and position for component installation.
5. Install front and/or rear scraper bar (WP 0160 00).
6. Install water lines (WP 0159 00).
7. Install work light assemblies (WP 0091 00).
8. Install water spray pump (WP 0155 00).
9. Install water spray strainer assembly (WP 0153 00).
10. Install warning horn assembly (WP 0099 00).
11. Install water tank assembly (WP 0154 00).
12. Install vehicle classification sign kit (WP 0139 00).
13. Start engine (TM 5-3895-379-10).
14. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Disassembly, Assembly, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)
- Lifting device, minimum capacity 100 lb (45 kg)

Personnel Required

Two

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)

References

TM 5-3895-379-23P, Figure 100

NOTE

Right- and left-side door assemblies are replaced the same way except where noted. Right-side door assembly is shown.

REMOVAL

1. Open right-side door assembly (1) (TM 5-3895-379-10).



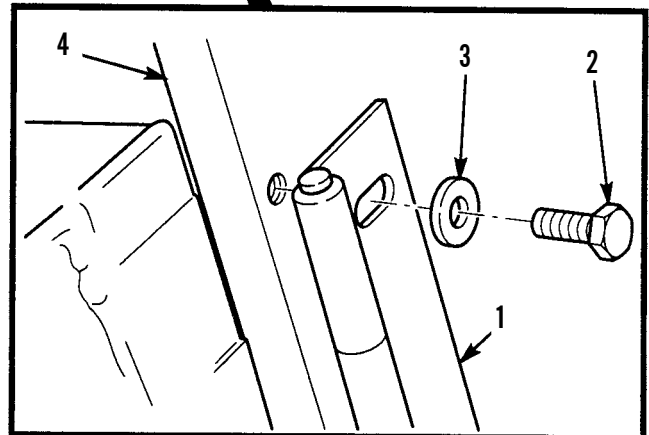
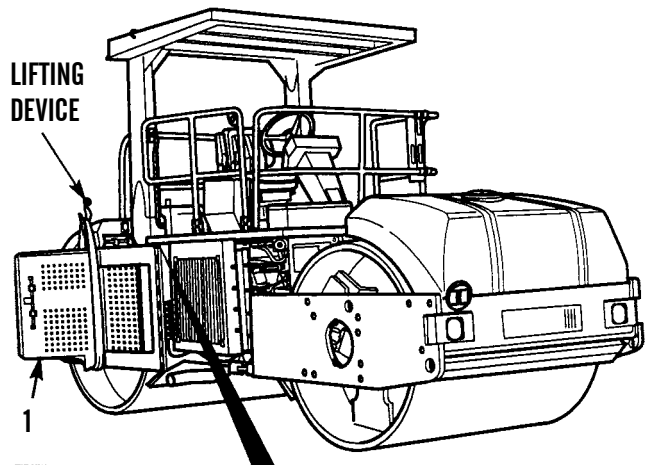
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Door assemblies weigh 100 lb (45 kg) each.

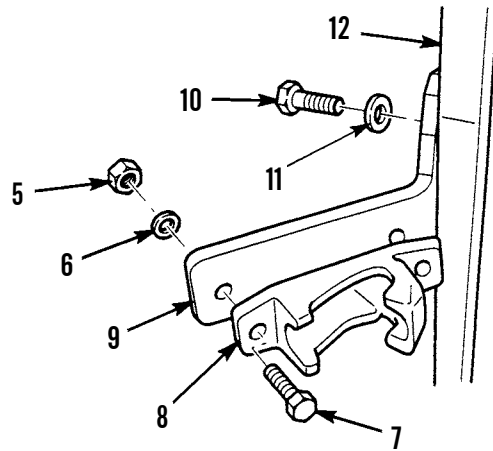
2. Attach lifting device to door assembly (1).
3. Starting at bottom bolt and moving up, remove five bolts (2), washers (3) and door assembly (1) from frame assembly (4).



401-681

REMOVAL - CONTINUED

4. If damaged, remove four locknuts (5), washers (6), bolts (7) and two catches (8) from support (9). Discard locknuts.
5. If damaged, remove four screws (10), washers (11) and two supports (9) from yoke assembly (12).

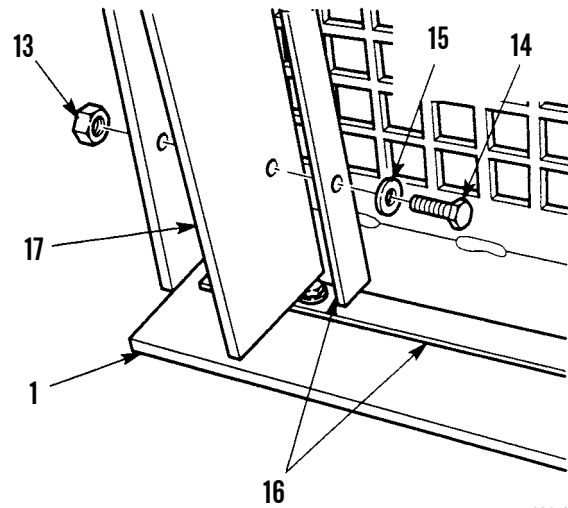


401-682

NOTE

Step 6 applies to right-side door assembly only.

6. If damaged, remove twelve locknuts (13), bolts (14), washers (15), four plates (16) and air seals (17) from door assembly (1). Discard locknuts.



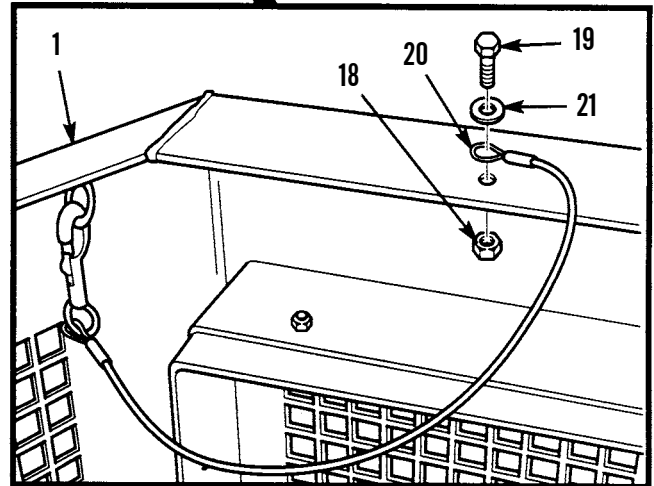
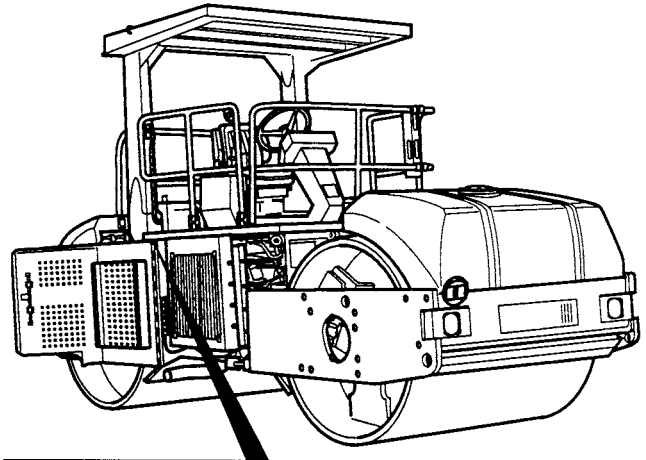
401-683

DISASSEMBLY

NOTE

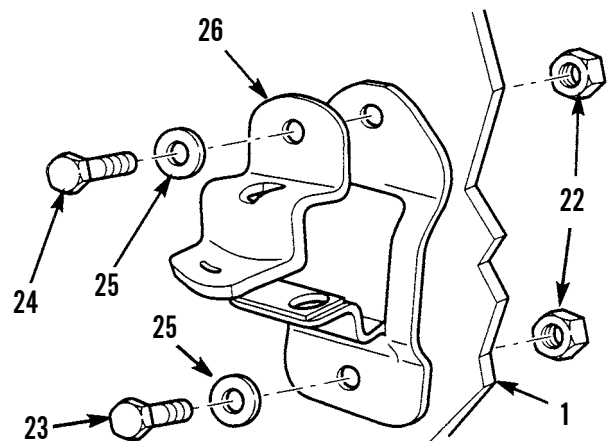
- Right- and left-side door assemblies are repaired the same way. Right-side door assembly is shown.
- Door assembly can be repaired with door installed on roller or with door assembly removed from roller. If door requires complete repair, door assembly must be removed from roller.

1. If repairing door assembly (1) while installed on roller, open door assembly (TM 5-3895-379-10).
2. If damaged, remove locknut (18), bolt (19), lanyard (20) and washer (21) from door assembly (1). Discard locknut.



401-686

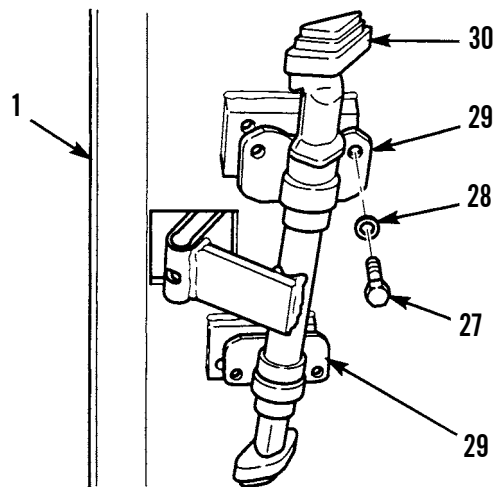
3. If damaged, remove two locknuts (22), bolt (23), screw (24), washers (25) and lock (26) from door assembly (1). Discard locknuts.



401-687

DISASSEMBLY - CONTINUED

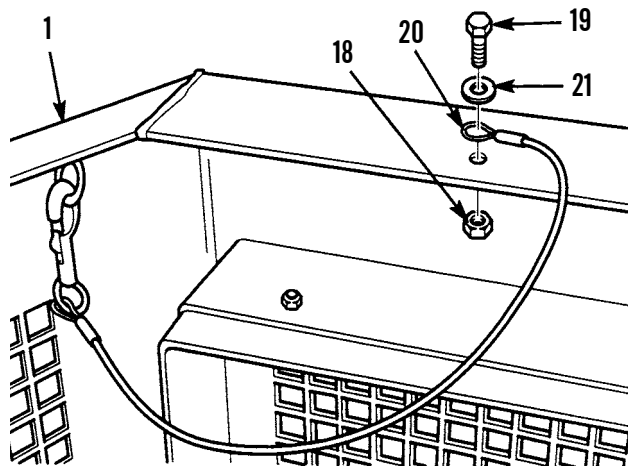
4. If damaged, remove four bolts (27), washers (28), two guides (29) and latch assembly (30) from door assembly (1).



401-673

ASSEMBLY

1. If removed, install latch assembly (30) and two guides (29) on door assembly (1) with four bolts (27) and washers (28). Tighten bolts to 15-25 lb-ft (20-34 Nm).
2. If removed, install lock (26) on door assembly (1) with screw (24), bolt (23), two washers (25) and new locknuts (22). Tighten locknuts to 15-25 lb-ft (20-34 Nm).
3. If removed, install lanyard (20) on door assembly (1) with washer (21), bolt (19) and new locknut (18). Tighten nut to 7-11 lb-ft (9-15 Nm).
4. If door assembly (1) was repaired while installed on components roller, close door assembly.
5. If door assembly (1) was removed for repair, install door assembly. Refer to *Installation* in this work package.

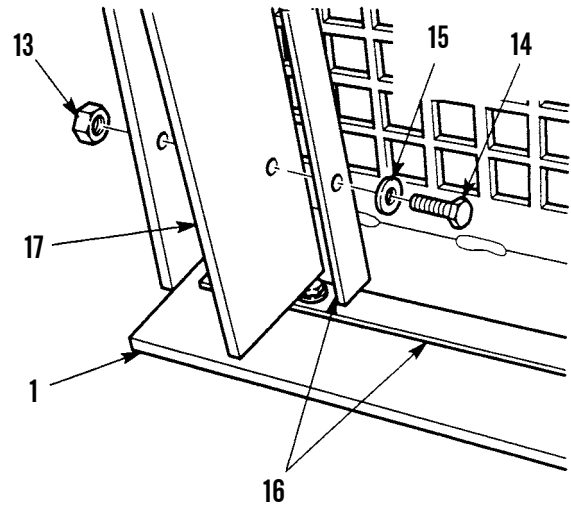


401-689

INSTALLATION**NOTE**

Step 1 applies to right-side door assembly only.

1. If removed, install four air seals (17) and plates (16) on door assembly (1) with twelve bolts (14), washers (15) and new locknuts (13). Tighten locknuts to 7-11 lb-ft (9-15 Nm).
2. If removed, install two supports (9) on yoke assembly (12) with four washers (11) and screws (10). Tighten screws to 33-47 lb-ft (45-64 Nm).
3. If removed, install two catches (8) on support (9) with four bolts (7), washers (6) and new locknuts (5). Tighten locknuts to 33-47 lb-ft (45-64 Nm).



401-683

INSTALLATION - CONTINUED



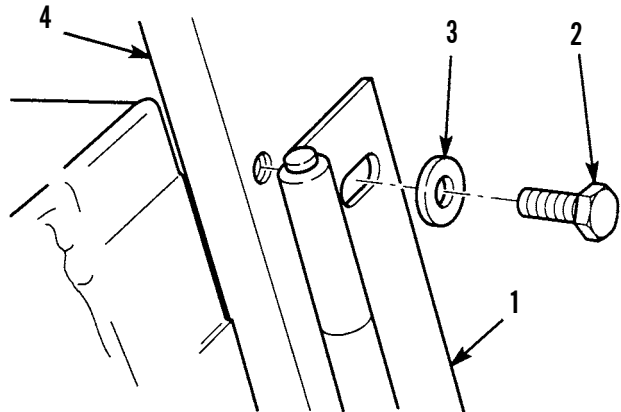
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

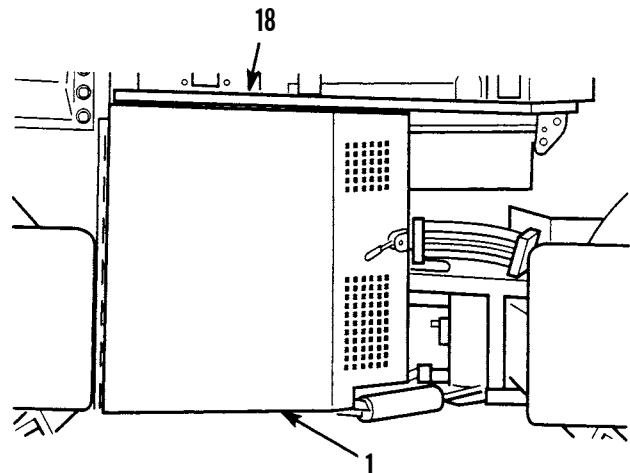
Door assemblies weigh 100 lb (45 kg) each.

4. Attach lifting device to door assembly (1).
5. Install door assembly (1) on frame assembly (4) with five washers (3) and bolts (2). Turn bolts until snug, but do not tighten bolts.



401-684

6. Align door assembly (1) so that top of door is parallel with operator platform (18) when closed. While assistant holds door assembly in place, tighten bolts to 33-47 lb-ft (45-64 Nm).
7. Close door assembly (1) (TM 5-3895-379-10).



401-685

8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

LEFT- AND RIGHT-SIDE HANDRAIL ASSEMBLIES REPLACEMENT

0124 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (8)

References

TM 5-3895-379-23P, Figure 103

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Right- and left-side door assemblies opened (TM 5-3895-379-10)

NOTE

Right and left handrail assemblies are replaced the same way. Right handrail assembly is shown.

REMOVAL



WARNING

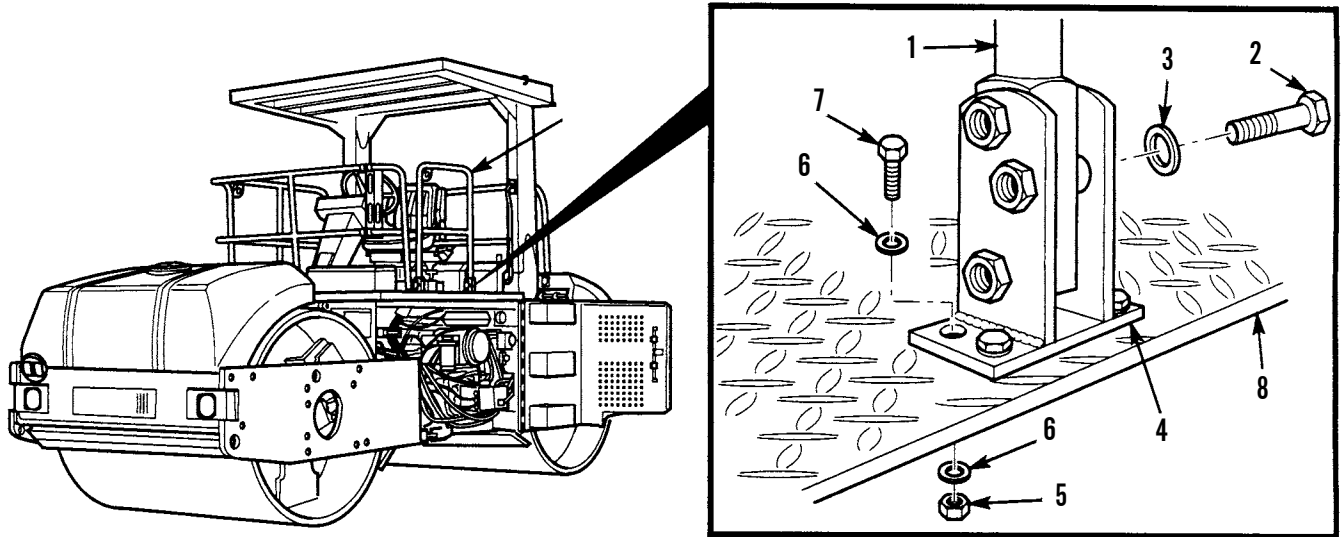
Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

CAUTION

Failure to hold handrail assembly in place during removal will allow handrail assembly to fall and become damaged.

NOTE

- Note position of handrail assembly before removal.
 - Left handrail weighs 25 lb (11 kg). Right handrail weighs 17 lb (8 kg).
1. While assistant holds handrail assembly (1), remove four bolts (2), washers (3) and handrail assembly from two plate assemblies (4).
 2. Remove eight locknuts (5), washers (6), screws (7), washers (6) and two plate assemblies (4) from platform assembly (8). Discard locknuts.



401-690

INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

CAUTION

Failure to hold handrail assembly in place during removal will allow handrail assembly to fall and become damaged.

NOTE

Left handrail weighs 25 lb (11 kg). Right handrail weighs 17 lb (8 kg).

1. With assistance, install handrail assembly (1) in two plate assemblies (4) with four washers (3) and bolts (2).
2. Install two plate assemblies (4) on platform assembly (8) with eight washers (6), screws (7), washers (6) and new locknuts (5). Tighten locknuts to 60 lb-ft (81 Nm).
3. Close right- and left-side door assemblies (TM 5-3895-379-10).
4. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

FRONT HANDRAIL ASSEMBLY REPLACEMENT

0125 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (12)

References

TM 5-3895-379-23P, Figure 103

Personnel Required

Two

Equipment Condition

Rifle mounting bracket removed (WP 0138 00)

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

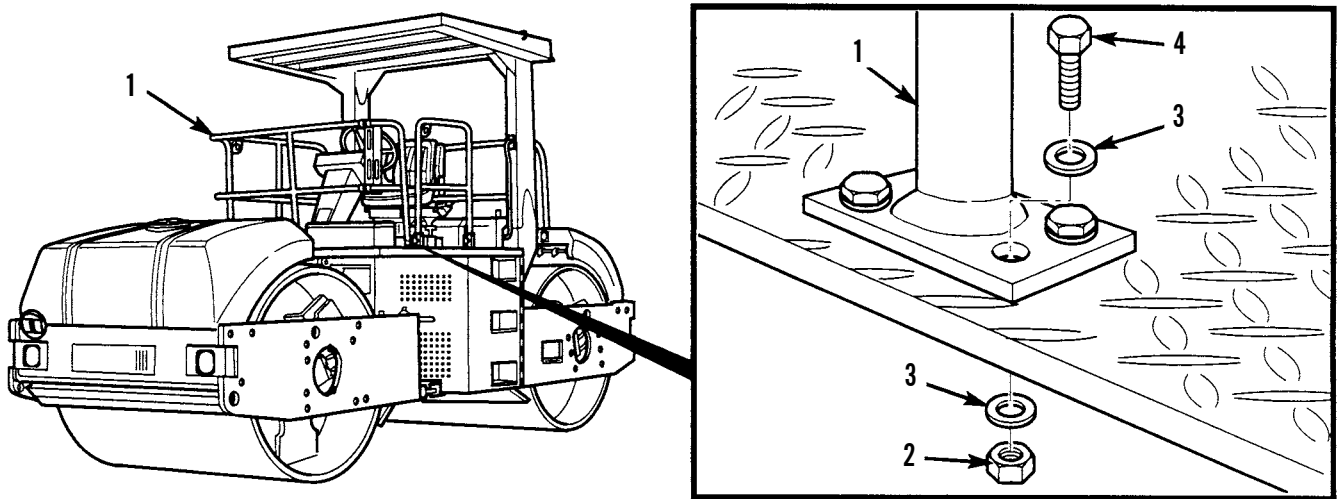
REMOVAL**CAUTION**

Failure to hold handrail assembly in place during removal will allow handrail assembly to fall and become damaged.

NOTE

Front handrail assembly weighs 35 lb (16 kg).

1. While assistant holds front handrail assembly (1), remove eight locknuts (2), washers (3), screws (4), washers (3) from left- and right-side of front handrail assembly. Discard locknuts.



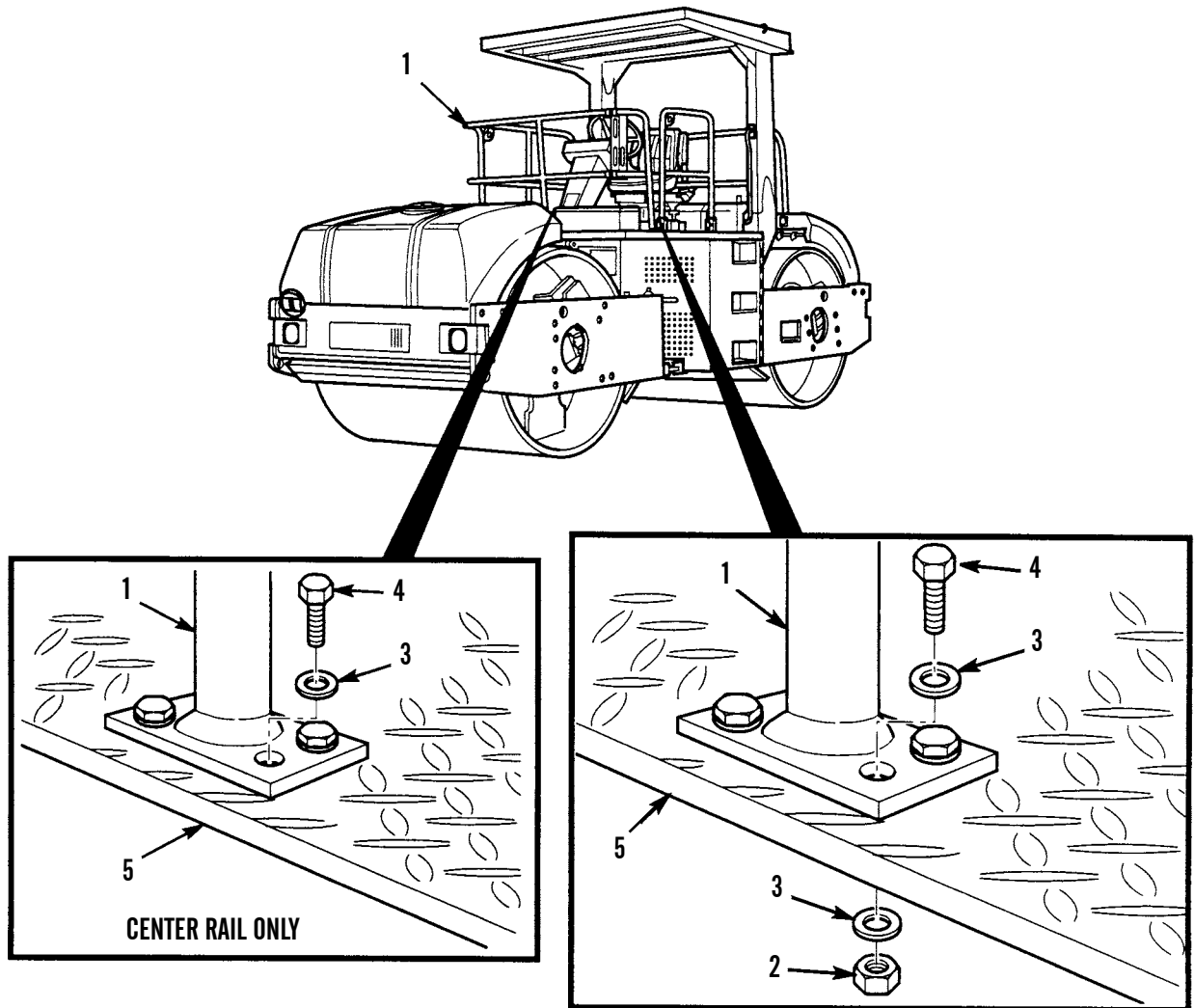
401-691

2. Remove four screws (4), washers (3) and front handrail assembly (1) from platform assembly (5). Discard locknuts.

INSTALLATION

1. With assistance, install front handrail assembly (1) on platform assembly (5) with 12 washers (3), screws (4), eight washers (3) and new locknuts (2). Tighten locknuts to 60 lb-ft (81 Nm).

INSTALLATION - CONTINUED



401-692

2. Install rifle mounting bracket (WP 0138 00).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)
- Lifting device, minimum capacity 880 lb (399 kg)

Personnel Required

Two

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)

References

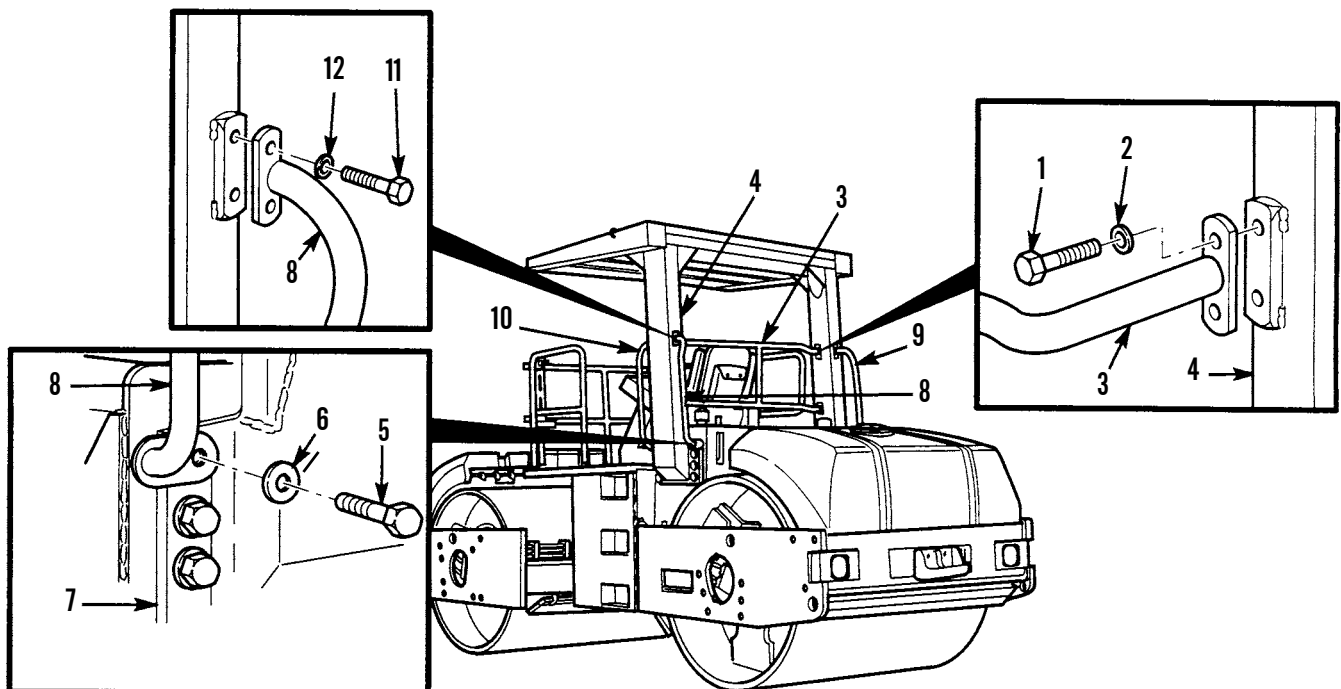
TM 5-3895-379-23P, Figure 98

REMOVAL

NOTE

The CB534B Roller has eight bolts. The CB534C Roller has four bolts.

1. With the aid of an assistant, remove bolts (1), washers (2) and rear handrail assembly (3) from ROPS assembly (4).
2. Remove three bolts (5) and washers (6) from frame assembly (7) and three handrail assemblies (8), (9) and (10).
3. With the aid of an assistant, remove six bolts (11), washers (12) and three side handrail assemblies (8), (9) and (10) from ROPS assembly (4).



REMOVAL - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

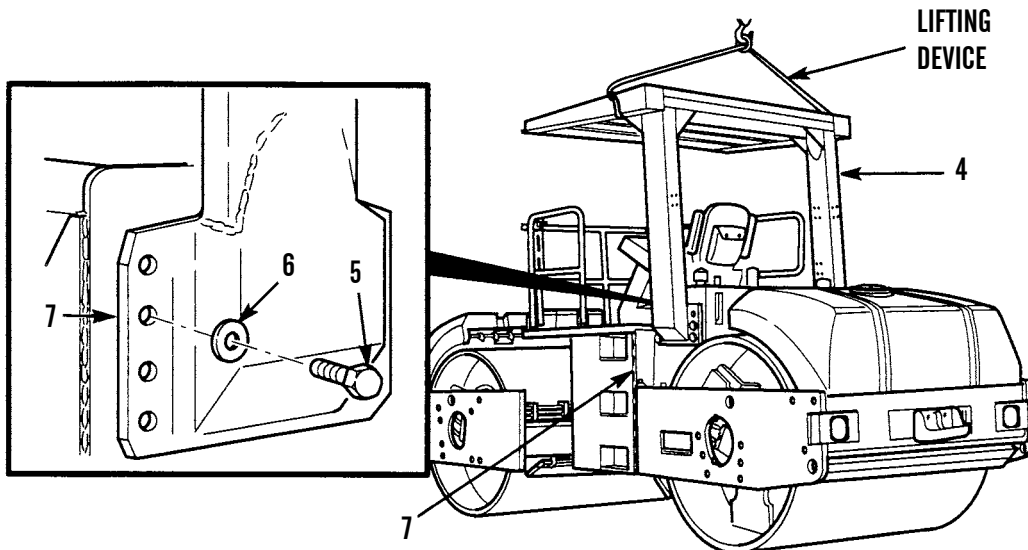
NOTE

ROPS assembly weighs 880 lb (399 kg).

4. Attach lifting device to ROPS assembly (4).

NOTE

- There are eleven remaining bolts attaching ROPS assembly to frame assembly. Leave one bolt in each side for stability.
5. Remove nine bolts (5) and washers (6) from ROPS assembly (4) and frame assembly (7).
 6. Raise lifting device until tight.
 7. Remove remaining two bolts (5).
 8. While assistant operates lifting device, guide ROPS assembly (4) from frame assembly (7).



401-694

INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

ROPS assembly weighs 880 lb (399 kg).

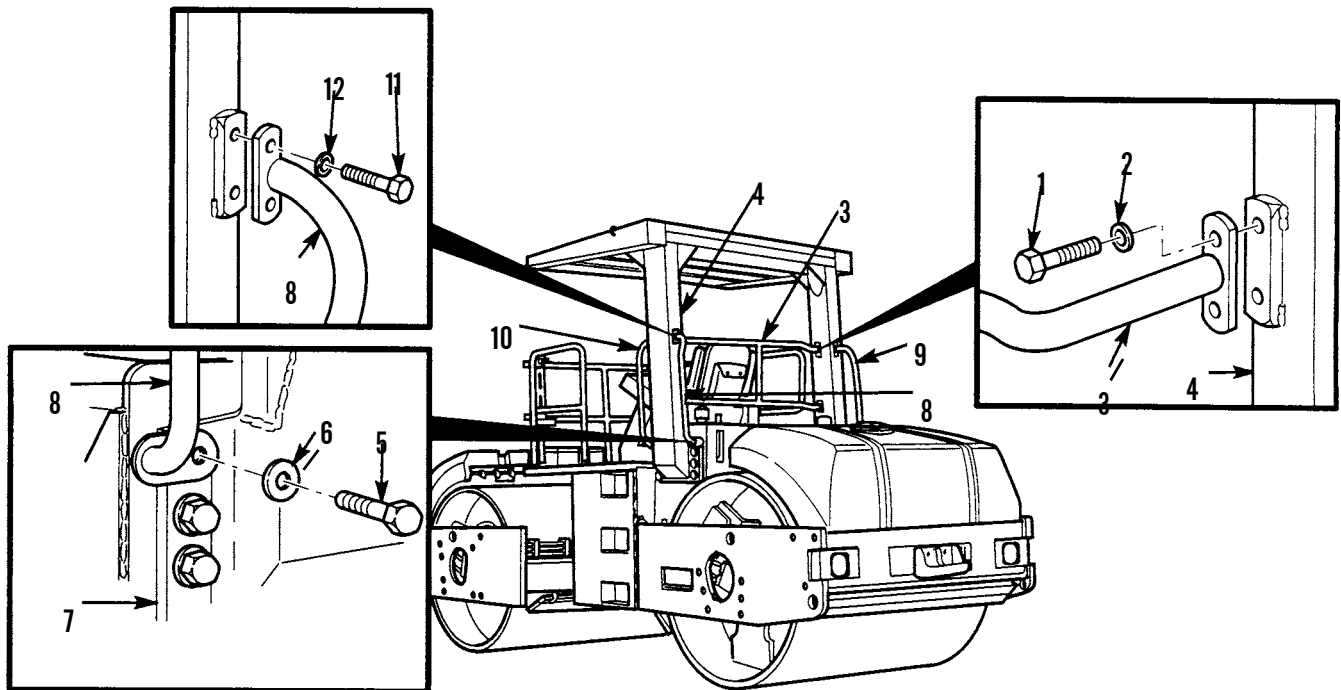
1. Attach lifting device to ROPS assembly (4).
2. Position ROPS assembly (4) on frame assembly (7).

NOTE

- Leave one bolt out of top rear hole on right-side for handrail assembly mounting and one bolt out of top rear hole and top front hole on left-side for handrail assembly mounting.
 - Lifting device may be used to shift ROPS assembly for alignment.
 - Apply oil to threads of bolts before installing. Failure to apply oil can result in improper torque.
3. Install eleven bolts (5) and washers (6) in ROPS assembly (4) and frame assembly (7). Tighten bolts to 518-666 lb-ft (702-903 Nm).
 4. Remove lifting device from ROPS assembly (4).

INSTALLATION - CONTINUED

5. Install three handrail assemblies (8), (9) and (10) on ROPS assembly (4) with six washers (12) and bolts (11). Turn bolts until snug, but do not tighten bolts.
6. Install three handrail assemblies (8), (9) and (10) on ROPS assembly (4) and frame assembly (7) with three washers (6) and bolts (5). Tighten bolts to 518-666 lb-ft (702-903 Nm).
7. Tighten six bolts (11) to 65 lb-ft (88 Nm).
8. Install rear handrail assembly (3) on ROPS assembly (4) with four washers (2) and bolts (1). Tighten bolts to 45 lb-ft (61 Nm).



401-693

9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

ROTATE LOCK REPLACEMENT

0127 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 104

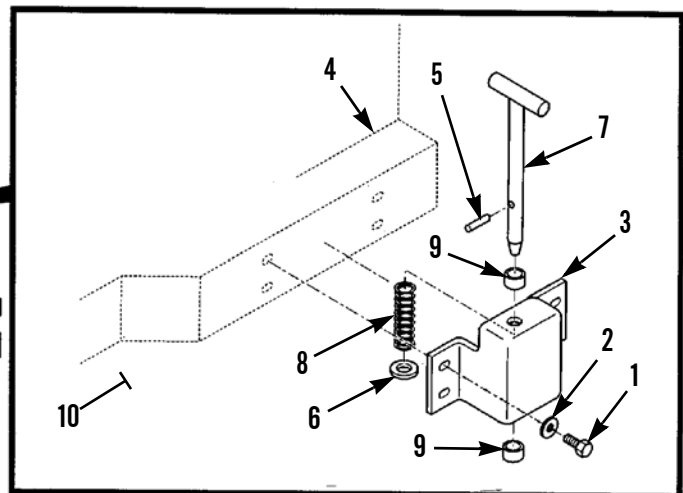
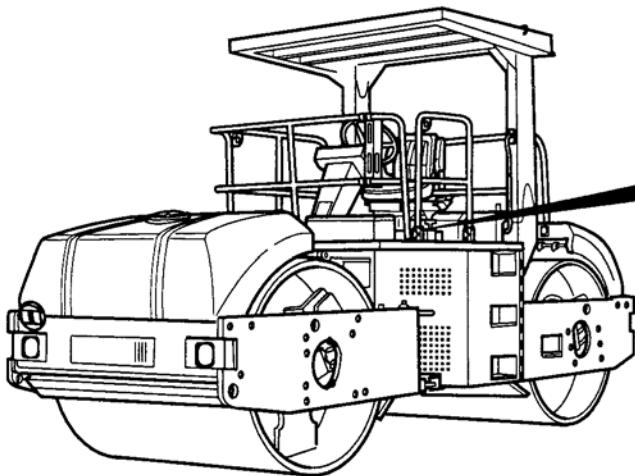
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

1. Remove four screws (1), washers (2) and rotate lock assembly (3) from operator station (4).
2. Remove spring pin (5), washer (6), pin (7) and spring (8) from rotate lock assembly plate (3).
3. Remove two bearings (9) from rotate lock assembly plate (3).



401-723

INSTALLATION

1. Install two bearings (9) on rotate lock assembly plate (3).
2. Install spring (8), washer (6) and pin (7) in rotate lock assembly plate (3).
3. Compress washer (6) and spring (8) and install spring pin (5) in pin (7).
4. Install rotate lock assembly (3) on operator station (4) with four washers (2) and screws (1). Do not tighten screws.
5. Align pin (7) with hole in operator platform (10) and tighten screws to 33-47 lb-ft (45-64 Nm).
6. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Raise Platform, Lower Platform

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)
- Wire rope hoists (Item 14, WP 0220)

Materials/Parts

- Chain (2)
- Locknut (2)

References

TM 5-3895-379-23P, Figure 101

Personnel Required

Two

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Right- and left-side door assemblies opened (TM 5-3895-379-10)
- Handrails in stowed position (TM 5-3895-379-10)

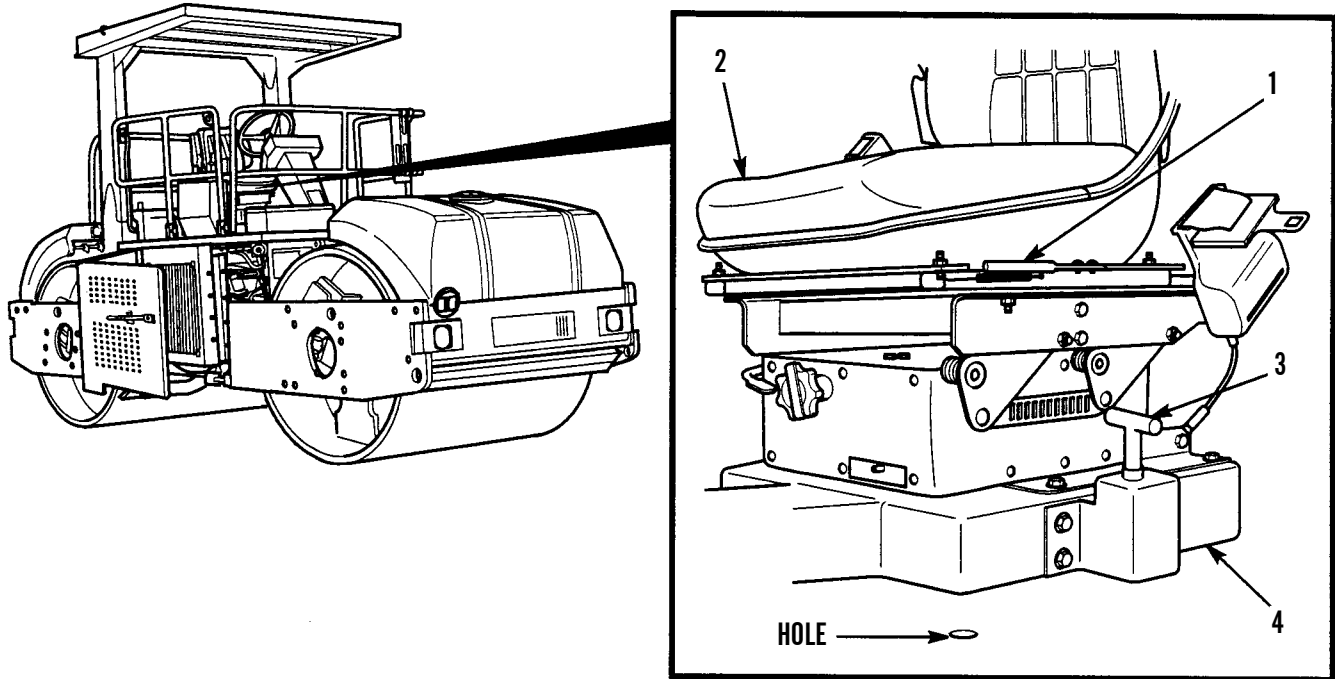


WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

RAISE PLATFORM

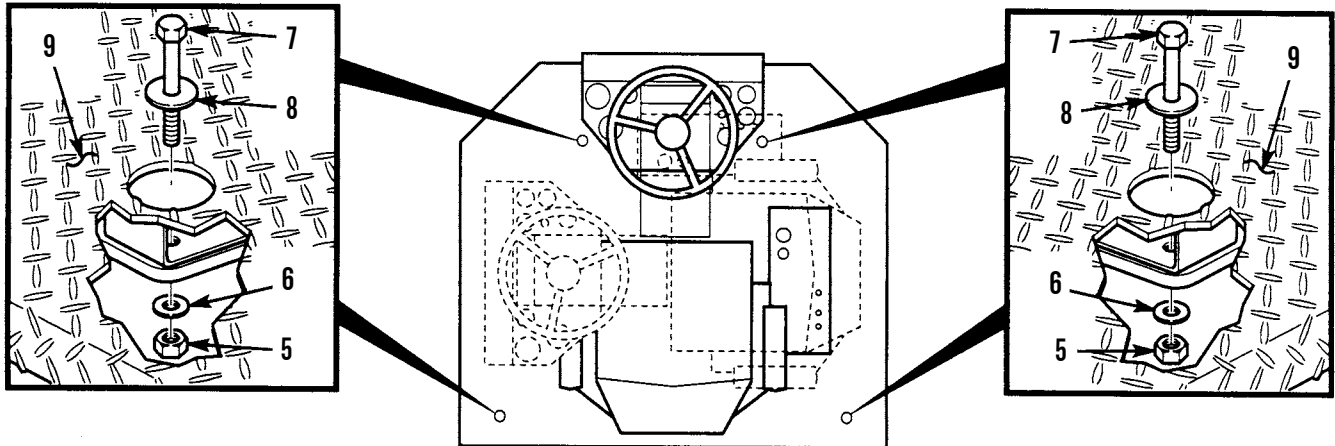
1. Move fore/aft lever (1) right and adjust seat (2) to full forward position. Release fore/aft lever.
2. Pull pin assembly (3) up and rotate operator station (4) completely clockwise or counterclockwise. Release pin assembly ensuring that pin is securely seated in hole in operator platform.



401-724

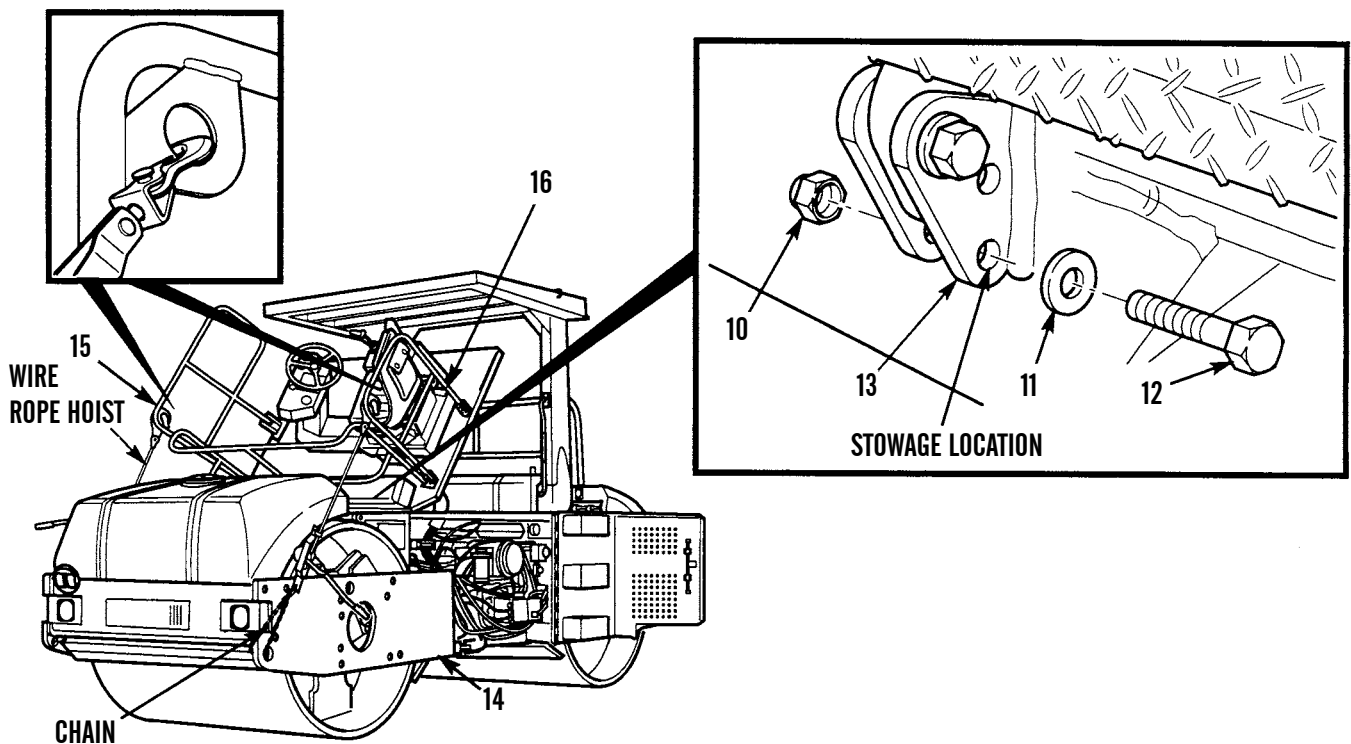
RAISE PLATFORM - CONTINUED

- Remove four nuts (5), washers (6), screws (7) and washers (8) from operator platform assembly (9).



401-725

- Remove two locknuts (10), washers (11) and screws (12) from stowage locations in frame assembly (13). Discard locknuts.
- Attach short section of chain securely in each cutout in front of sides of yoke assembly (14).
- Attach a wire rope hoist to each chain and to eyelets in handrail assemblies (15) and (16).



401-726

RAISE PLATFORM - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

CAUTION

Operate wire rope hoists evenly to decrease chance of equipment failure.

7. With assistance, use wire rope hoists to lift operator platform assembly (9) until operator platform mount clears bolt path in frame assembly.
8. Install two screws (12), washers (11) and new locknuts (10) in platform locking hole frame assembly (13) and operator platform assembly (9). Tighten locknuts to 48-55 lb-ft (65-75 Nm).

LOWER PLATFORM

1. Remove two locknuts (10), washers (11) and screws (12) from frame assembly (13) and operator platform assembly (9). Discard locknuts.



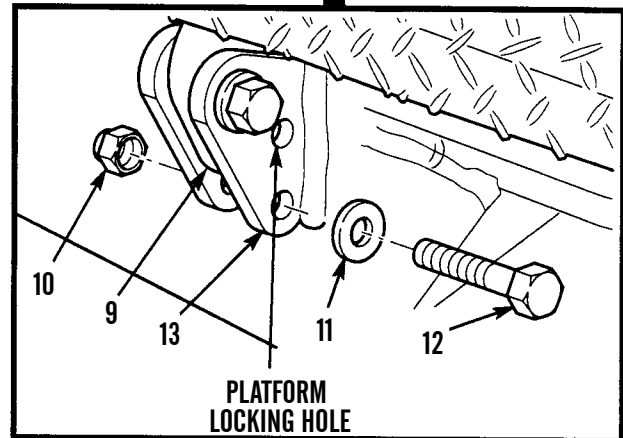
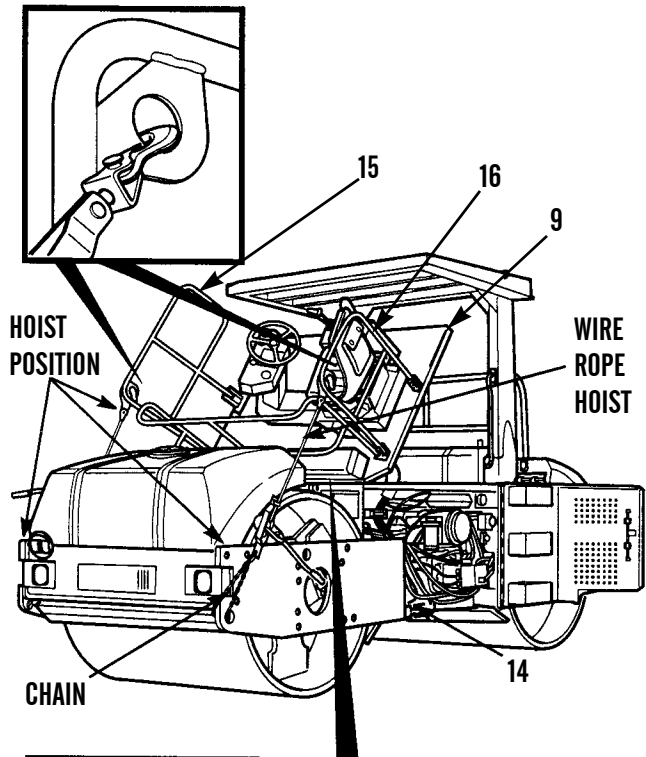
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

CAUTION

Operate wire rope hoists evenly to decrease chance of equipment failure.

2. With assistance, use wire rope hoists to lower operator platform assembly (9) until platform rests on frame assembly (13).
3. Remove wire rope hoists from each chain and eyelets in handrail assemblies (15) and (16).
4. Remove short section of chain from cutout in each front side of yoke assembly (14).
5. Install two screws (12), washers (11) and locknuts (10) in storage locations in frame assembly (13). Tighten locknuts to 48-55 lb-ft (65-75 Nm).
6. Install four washers (8), screws (7), washers (6) and nuts (5) in operator platform assembly (9). Tighten nuts to 60-90 lb-ft (81-122 Nm).
7. Pull pin assembly (3) up and rotate operator station (4) completely clockwise or counterclockwise forward position. Release pin assembly ensuring that pin is securely seated in hole in operator platform.
8. Close right- and left-side door assemblies (TM 5-3895-379-10).
9. Place handrail assemblies in operation position (TM 5-3895-379-10).
10. Remove chocks (TM 5-3895-379-10).



401-727

END OF WORK PACKAGE

OPERATOR PLATFORM MOUNT REPLACEMENT**0129 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 101

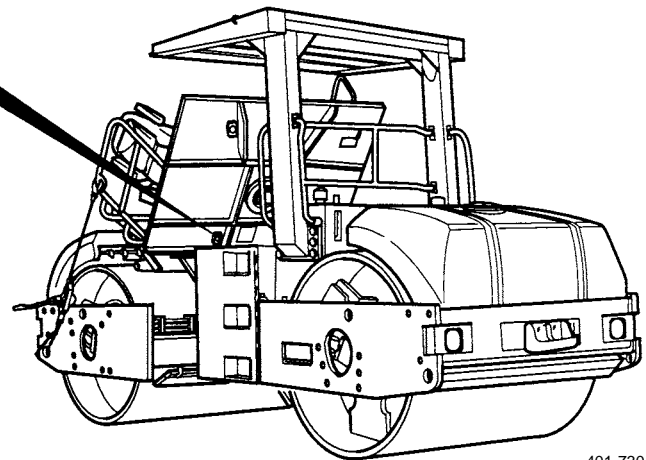
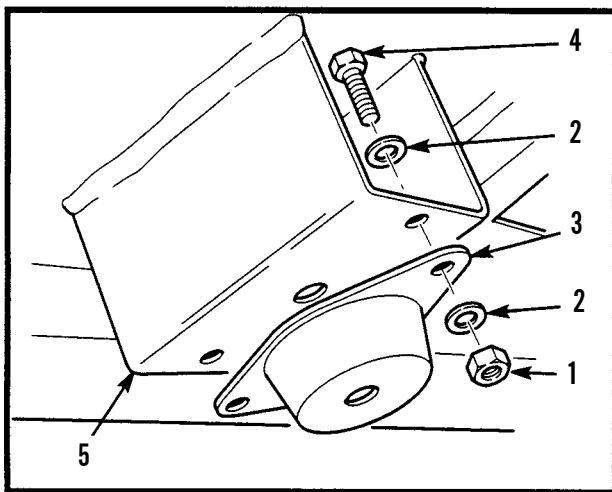
Equipment Condition

Operator platform assembly raised (WP 0128 00)

REMOVAL**NOTE**

Operator platform mounts are replaced the same way. One mount is shown.

Remove two nuts (1), washers (2), mount (3), two screws (4) and washers (2) from operator platform (5).



401-730

INSTALLATION

1. Install mount (3) on operator platform (5) with two washers (2), screws (4), washers (2) and nuts (1). Tighten nuts to 30-35 lb-ft (41-47 Nm).
2. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

VANDAL GUARD REPLACEMENT

0130 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

TM 5-3895-379-23P, Figure 103

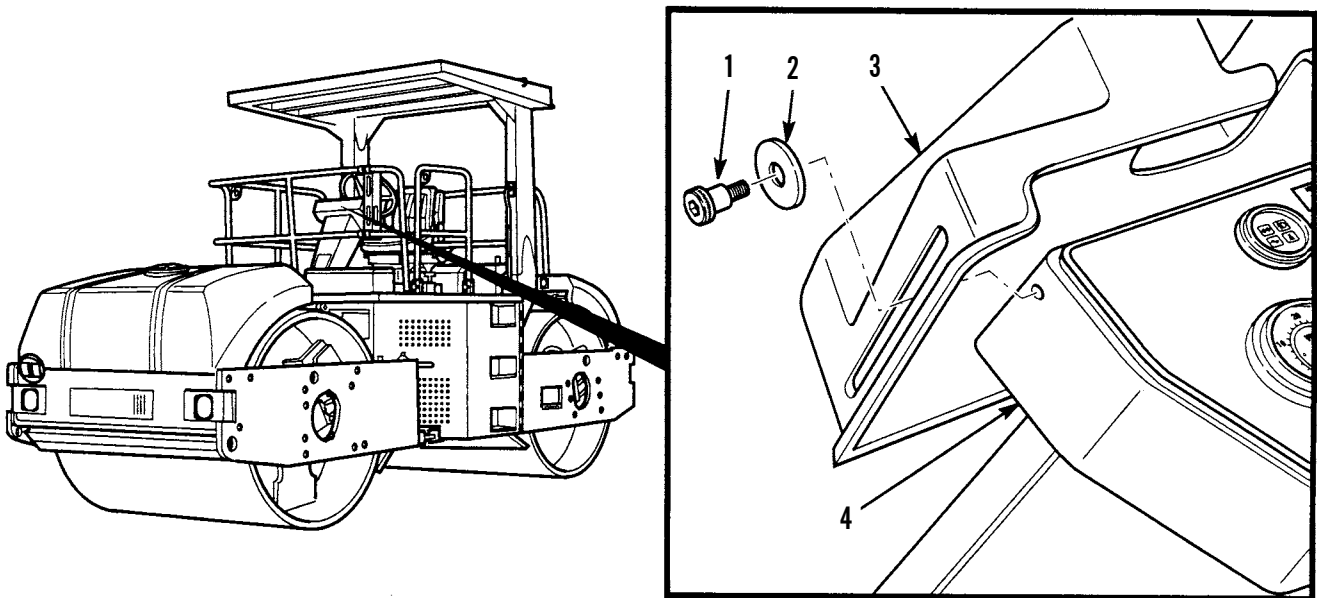
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

Remove two shoulder screws (1), washers (2) and vandal guard (3) from instrument box assembly (4).



401-731

INSTALLATION

1. Install vandal guard (3) on instrument box assembly (4) with two washers (2) and shoulder screws (1).
2. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

DECONTAMINATION KIT BRACKET REPLACEMENT

0131 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 3895-379-23P, Figure 96

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Decontamination kit removed

REMOVAL

1. Remove strap (1) from bracket (2).



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

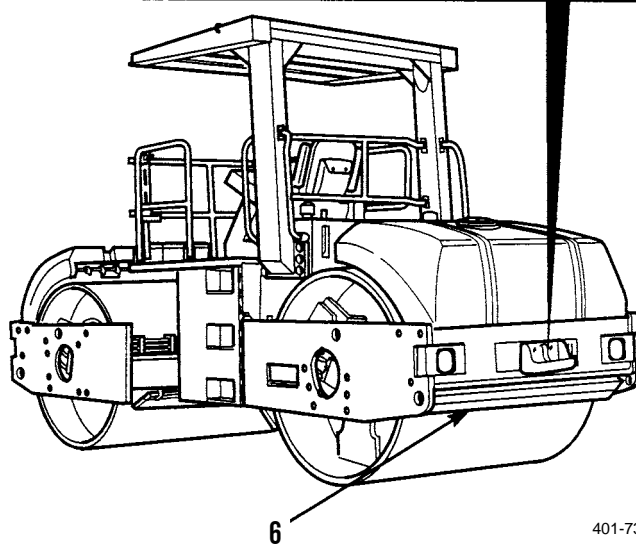
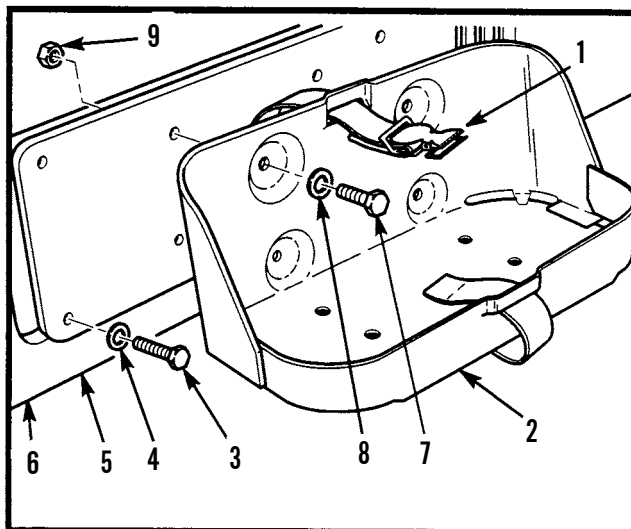
NOTE

Plate with decontamination kit bracket attached weighs 22 lb (10 kg).

2. Remove four screws (3), washers (4) and plate (5) from bumper assembly (6).
3. Remove four screws (7), washers (8), nuts (9) and bracket (2) from plate (5).

INSTALLATION

1. Install bracket (2), four washers (8), screws (7) and nuts (9) on plate (5). Tighten nuts to 15-25 lb-ft (20-34 Nm).
2. Install plate (5) on bumper assembly (6) with four screws (3) and washers (4). Tighten screws to 15-25 lb-ft (20-34 Nm).
3. Install strap (1) in bracket (2).
4. Install decontamination kit.
5. Remove chocks (TM 5-3895-379-10).



401-734

END OF WORK PACKAGE

SEAT ASSEMBLY REPLACEMENT

0132 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (4)

References

TM 5-3895-379-23P, Figure 106

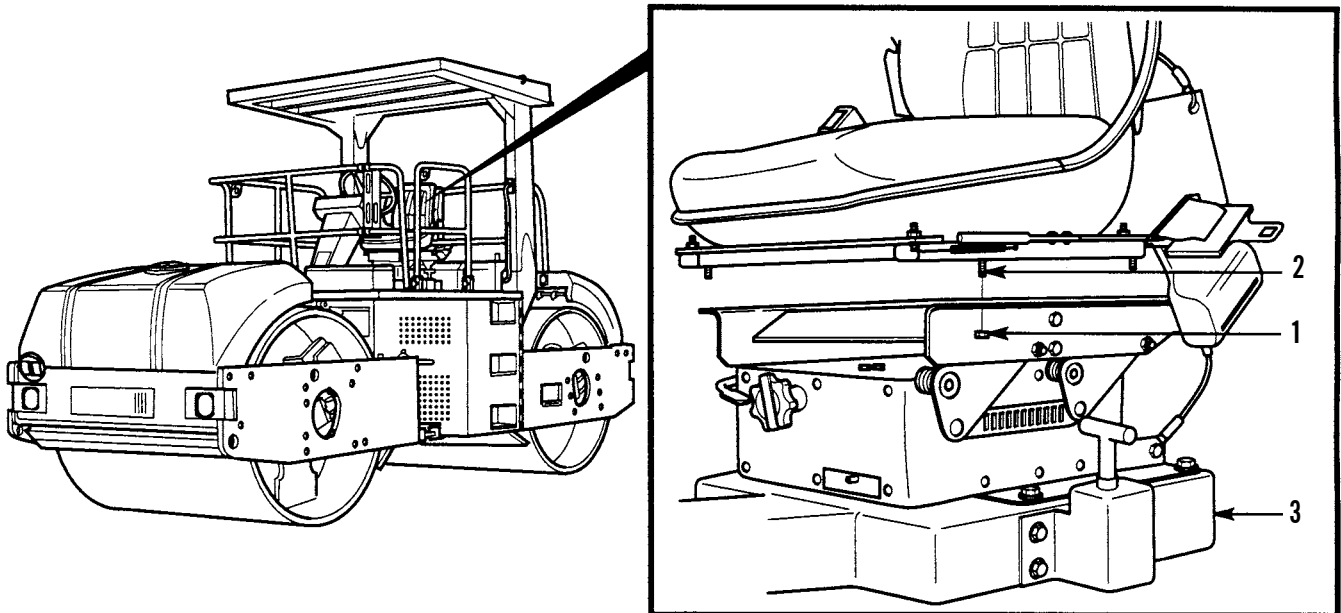
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

Remove four locknuts (1) and seat assembly (2) from seat suspension assembly (3). Discard locknuts.



401-695

INSTALLATION

1. Install seat assembly (2) on seat suspension assembly (3) with four new locknuts (1). Tighten locknuts to 15-25 lb-ft (20-34 Nm).
2. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

SEAT ASSEMBLY REPAIR**0133 00****THIS WORK PACKAGE COVERS**

Disassembly, Assembly

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (4)

Materials/Parts - Continued

Rivet

References

TM 5-3895-379-23P, Figures 106 and 107

Equipment Condition

Drums chocked (TM 5-3895-379-10)

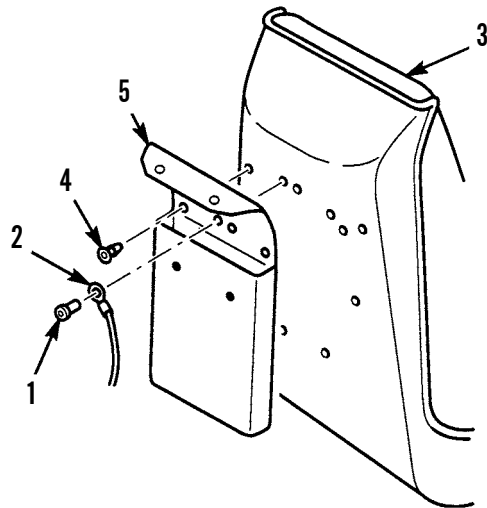
Seat assembly removed (optional) (WP 0132 00)

NOTE

- Seat assembly repair can be performed while seat assembly is either installed or removed from roller.
- This work package covers complete repair of seat assembly. Individual components can be replaced and/or repaired individually as needed.

DISASSEMBLY

1. Drill out rivet (1) and remove lanyard (2) from seat shell (3). Discard rivet.
2. Remove six fasteners (4) and literature holder (5) from seat shell (3).



401-696

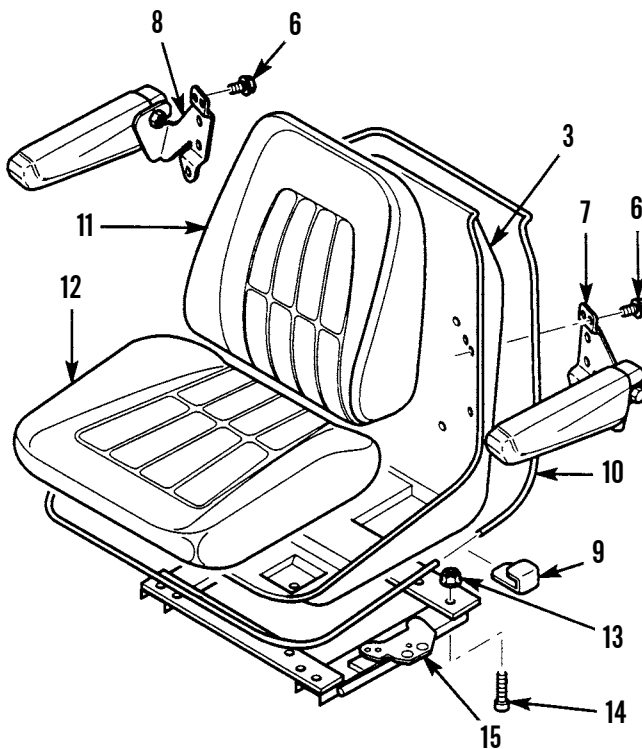
DISASSEMBLY - CONTINUED

3. Remove three screws (6) and left arm assembly (7) from seat shell (3).
4. Remove three screws (6) and right arm assembly (8) from seat shell (3).
5. Remove clip (9) and trim (10) from seat shell (3).
6. Remove backrest cushion (11) and seat cushion (12) from seat shell (3).

NOTE

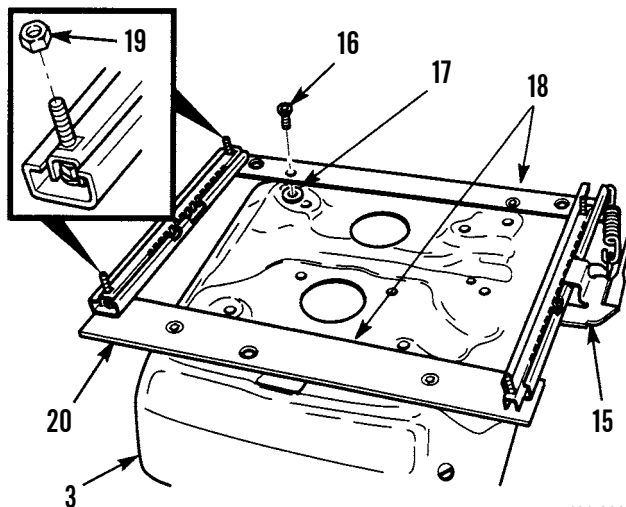
Seat assembly must be moved to full forward or full rear position to remove screws and nuts holding seat supports to the adjuster assembly.

7. Remove four nuts (13), screws (14) and seat shell (3) from seat adjuster (15).



401-697

8. Remove four capscrews (16), washers (17) and two seat assembly bars (18) from bottom of seat shell (3).
9. Remove four locknuts (19) and seat adjuster (15) from seat suspension (20). Discard locknuts.



401-698

ASSEMBLY

1. Install seat adjuster (15) on seat suspension (20) with four new locknuts (19).
2. Install two seat assembly bars (18) on seat shell (3) with four washers (17) and capscrews (16).

NOTE

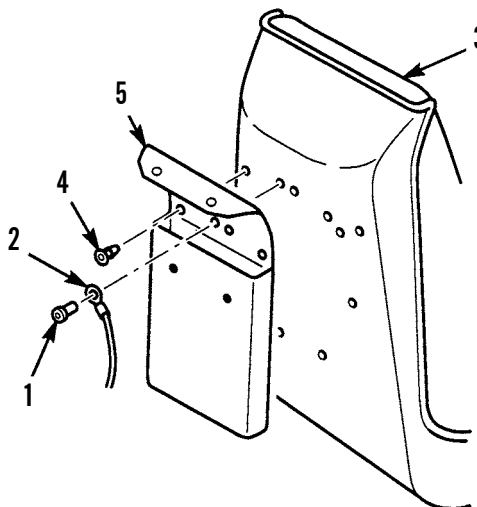
Seat assembly must be moved to full forward or full rear position to install screws and nuts holding seat supports to adjuster assembly.

3. Install seat shell (3) on seat adjuster (15) with four screws (14) and nuts (13).
4. Position seat cushion (12) and backrest cushion (11) in seat shell (3).

NOTE

Seat cushion material must be wrapped around seat shell for proper installation.

5. Secure seat cushion (12) and backrest cushion (11) in seat shell (3) using trim (10) and clip (9).
6. Install right arm assembly (8) on seat shell (3) with three screws (16).
7. Install left arm assembly (7) on seat shell (3) with three screws (16).
8. Install literature holder (5) on seat shell (3) with six fasteners (4).
9. Install lanyard (2) on seat shell new rivet (1).



401-696

10. If removed, install seat assembly (WP 0132 00).
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

SEAT SUSPENSION REPLACEMENT

0134 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 106

Personnel Required

Two

Equipment Condition

Seat assembly removed (WP 0132 00)

Seat belt removed (WP 0136 00)

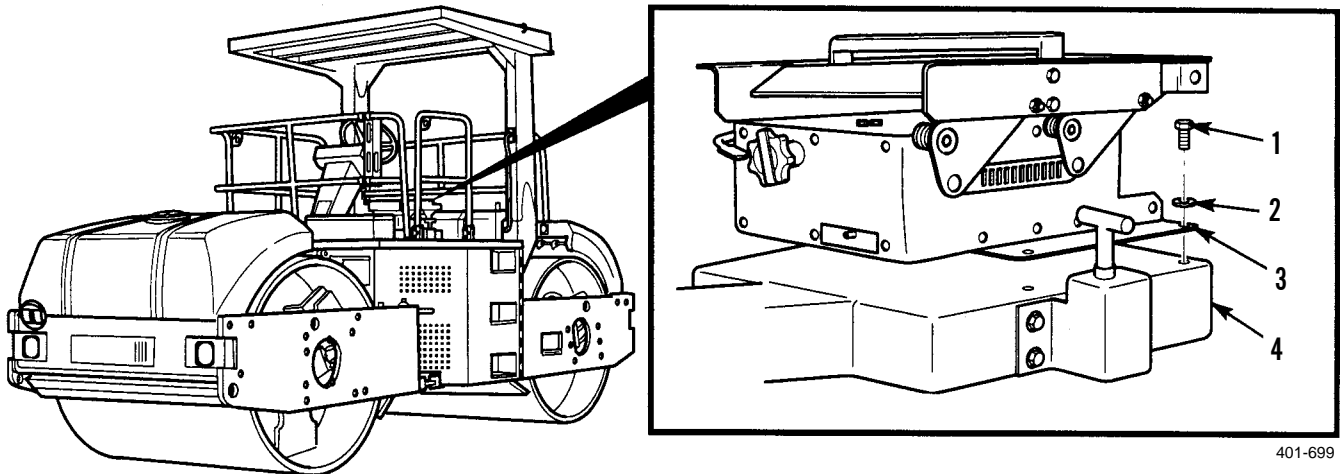
REMOVAL**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury or death.

NOTE

Seat suspension weighs 62 lb (28 kg).

With assistance, remove four bolts (1), washers (2) and seat suspension assembly (3) from operator platform assembly (4).



401-699

INSTALLATION

1. With assistance, install seat suspension assembly (3) on operator platform assembly (4) with four washers (2) and bolts (1). Tighten bolts to 45-65 lb-ft (61-88 Nm).
2. Install seat assembly (WP 0132 00).
3. Install seat belts (WP 0136 00).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Disassembly, Assembly

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)
- Screwdriver attachment, socket head (Item 26, WP 0220 00)

Materials/Parts

- Compound, sealing (Item 12, WP 0219 00)
- Grease, GAA (Item 19, WP 0219 00)

Materials/Parts - Continued

- Locknut (19)

References

- TM 5-3895-379-23P, Figure 106

Personnel Required

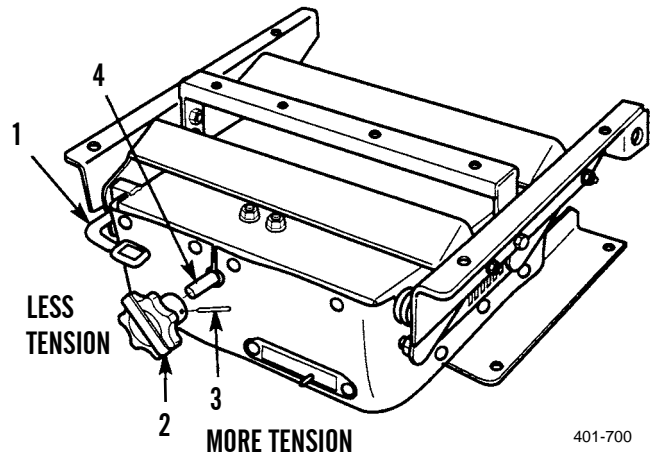
- Two

Equipment Condition

- Seat suspension removed (WP 0134 00)

DISASSEMBLY

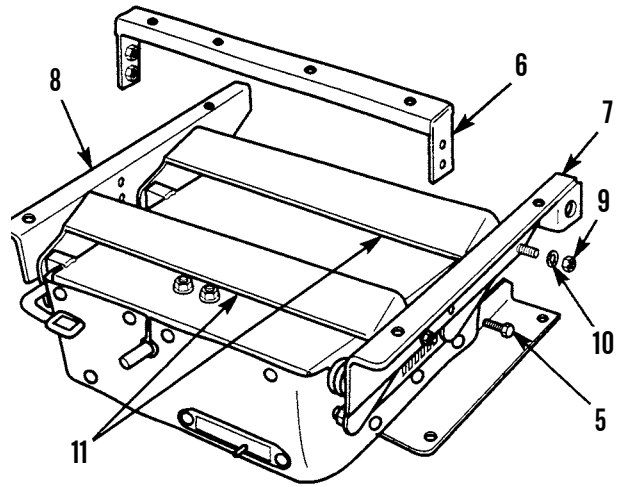
1. Lift up on height adjustment lever (1) to release spring tension.
2. Turn knob (2) counterclockwise to release spring tension.
3. Remove spring pin (3) and knob (2) from bevel gear (4).



401-700

DISASSEMBLY - CONTINUED

4. Remove four bolts (5) and channel (6) from left angle assembly (7) and right angle assembly (8).
5. Remove four locknuts (9), washers (10), left angle assembly (7) and right angle assembly (8) from two links (11). Discard locknuts.



401-701

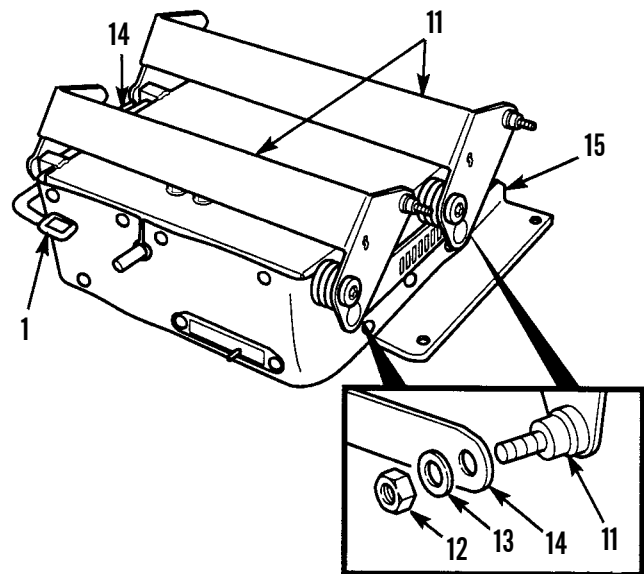
6. Remove two locknuts (12), washers (13) and link (14) on left-side of seat suspension assembly (15) from two links (11). Discard locknuts.
7. Remove two locknuts (12) and washers (13) on right-side of seat suspension assembly (15) from two links (11). Discard locknuts.



WARNING

Height adjustment lever is under spring tension. Wear eye protection and use caution when removing height adjustment lever. Failure to follow this warning may cause injury.

8. While assistant lifts up on height adjustment lever (1), remove link (14) on right-side of seat suspension assembly (15) from two links (11).



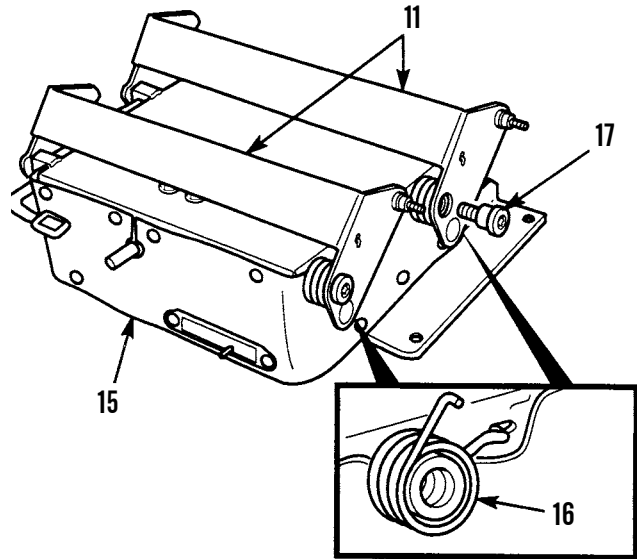
401-702

SEAT SUSPENSION REPAIR - CONTINUED

0135 00

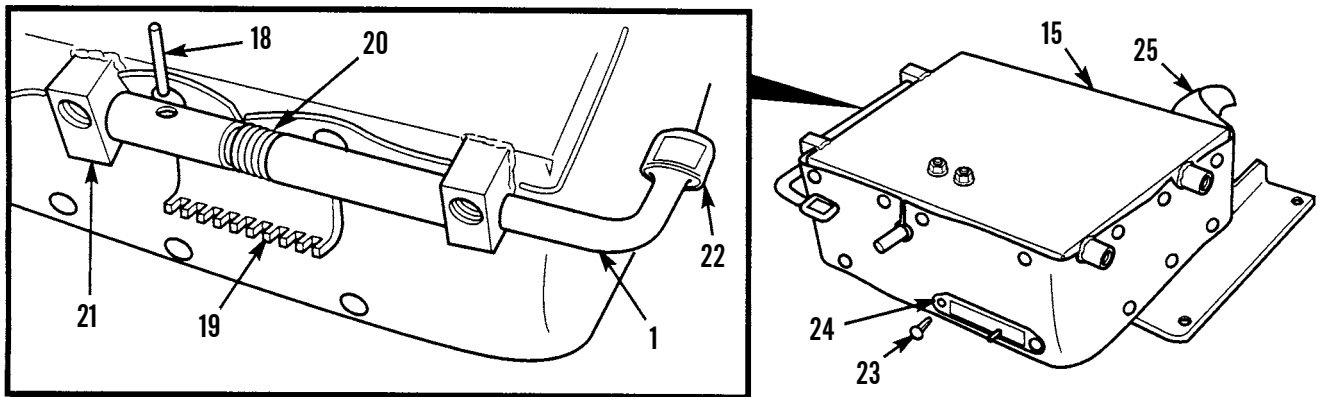
DISASSEMBLY - CONTINUED

9. Pry ends of two torsion springs (16) on right-side of seat suspension assembly (15) from two links (11).
10. Using a socket wrench screwdriver attachment, remove four bolts (17), two links (11) and two torsion springs (16).



401-703

11. Drive spring pin (18) from latch assembly (19).
12. Remove height adjustment lever (1), latch assembly (19) and spring (20) from upper housing assembly (21).
13. Remove cap (22) from height adjustment lever (1).
14. Remove twenty-four fasteners (23), plate (24) and boot (25) from seat suspension assembly (15).

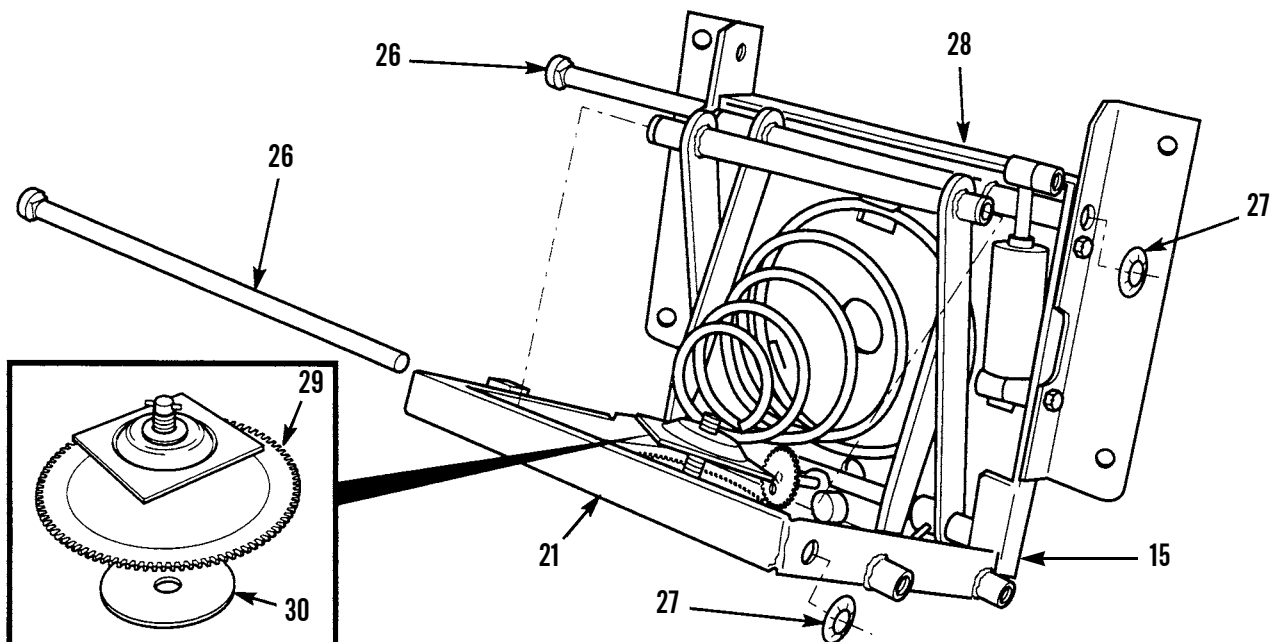


401-704

DISASSEMBLY - CONTINUED**WARNING**

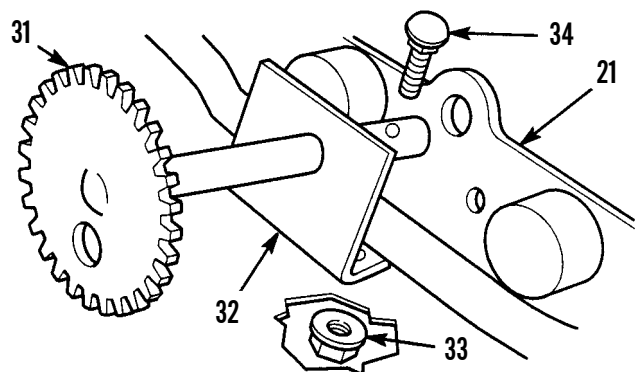
Upper housing assembly is under spring tension. Wear eye protection and use caution when removing upper housing assembly. Failure to follow this warning may cause injury.

15. While assistant compresses seat suspension assembly (15), remove drive shaft (26) from retainer (27) and upper housing assembly (21). Discard retainer.
16. Drive shaft (26) from retainer (27) and lower housing assembly (28). Discard retainer.
17. Remove gear assembly (29) and flatwasher (30) from upper housing assembly (21).



401-705

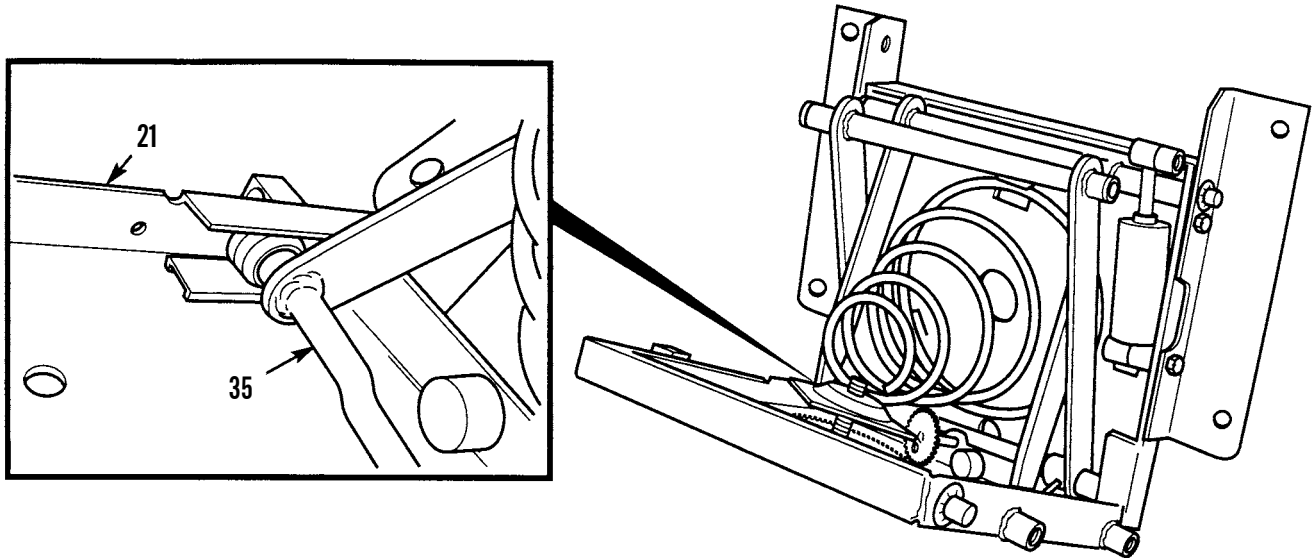
18. Remove bevel gear (31) from angle bracket (32) and upper housing assembly (21).
19. Remove two locknuts (33), square neck bolts (34) and angle bracket (32) from upper housing assembly (21). Discard locknuts.



401-706

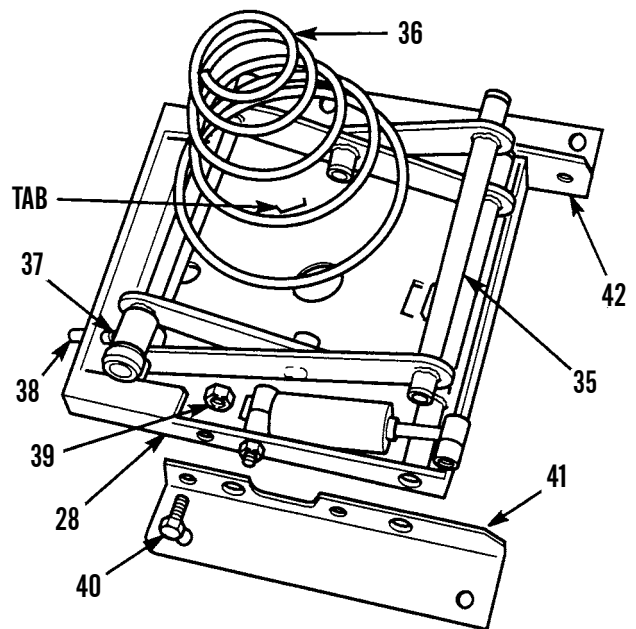
DISASSEMBLY - CONTINUED

20. Remove upper housing assembly (21) from arm (35).



401-707

21. Remove spring (36) from lower housing assembly (28) by turning spring to right until spring clears tabs.
22. Remove arm (35) from lower housing assembly (28) while sliding indicator (37) from spring pin (38).
23. Remove four locknuts (39), bolts (40), left-hand angle (41) and right-hand angle (42) from lower housing assembly (28). Discard locknuts.



401-708

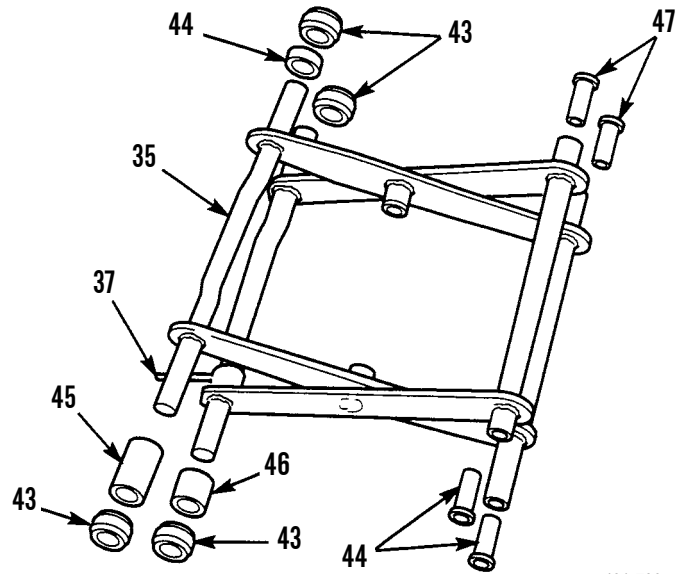
DISASSEMBLY - CONTINUED

24. Remove four roller guides (43) from arm (35).

NOTE

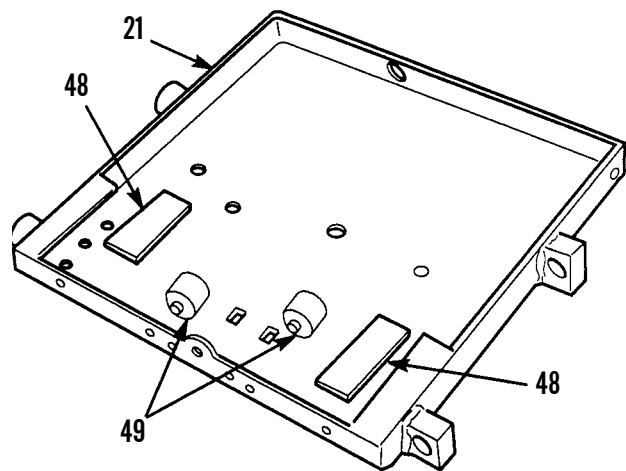
Note position of spacers prior to removal.

25. Remove spacer (44), spacer (45) and spacer (46) from arm (35).
 26. Remove four sleeve bearings (47) from arm (35).
 27. Remove indicator (37) from arm (35).



401-709

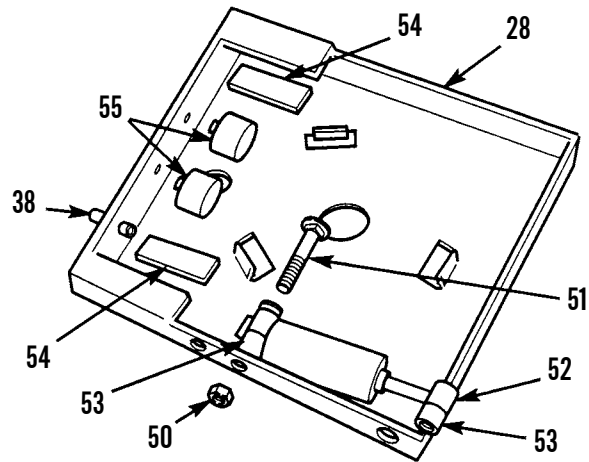
28. Remove two roller pads (48) from upper housing assembly (21).
 29. Remove two bumper assemblies (49) from upper housing assembly (21).



401-710

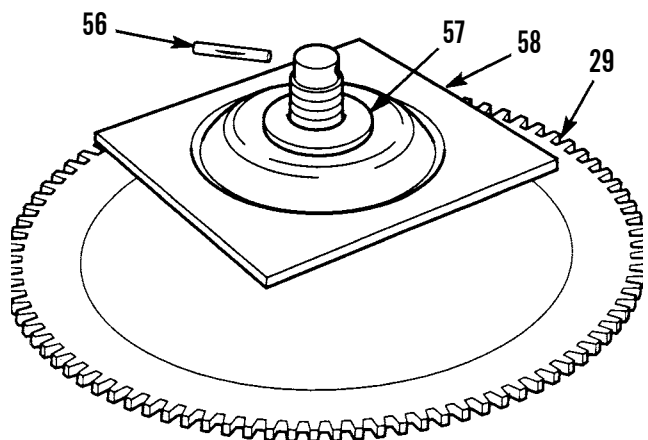
DISASSEMBLY - CONTINUED

30. Remove locknut (50), bolt (51) and shock absorber (52) from lower housing assembly (28). Discard locknut.
31. Remove two sleeve bearings (53) from shock absorber (52).
32. Remove two roller pads (54) from lower housing assembly (28).
33. Remove two bumper assemblies (55) from lower housing assembly (28).
34. Remove spring pin (38) from lower housing assembly (28).



401-711

35. Remove groove pin (56), spacer (57) and plate assembly (58) from gear assembly (29).



401-712

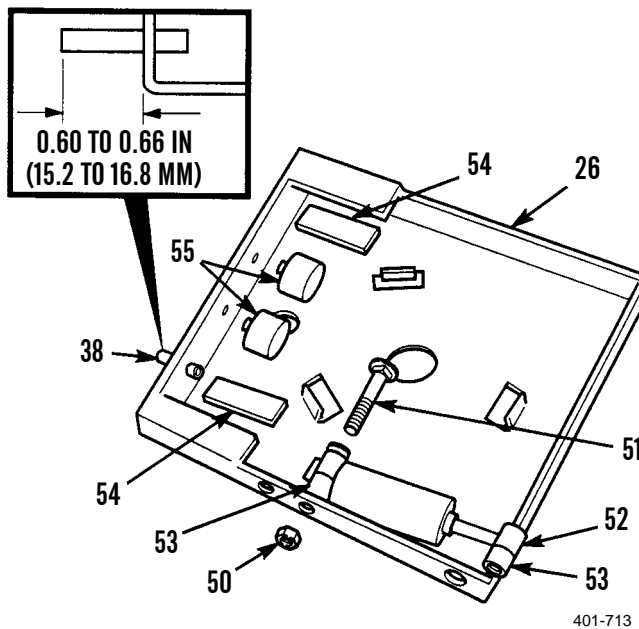
ASSEMBLY**NOTE**

Plate assembly should be positioned at least halfway down threads of gear assembly.

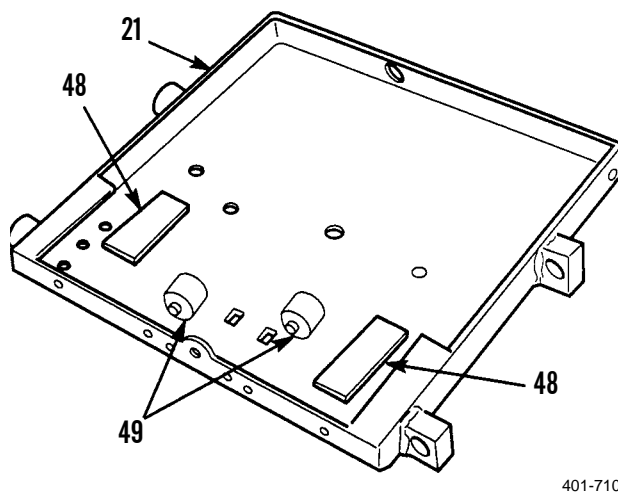
1. Install plate assembly (58), and spacer (57) on gear assembly (29) with groove pin (56).

ASSEMBLY - CONTINUED

2. Install spring pin (38) in lower housing assembly (28) allowing pin to protrude from front of lower housing assembly.
3. Install two bumper assemblies (55) in lower housing assembly (28).
4. Install two roller pads (54) in lower housing assembly (28).
5. Install two sleeve bearings (53) in shock absorber (52).
6. Install shock absorber (52) on lower housing assembly (28) with bolt (51) and new locknut (50). Tighten locknut to 7-16 lb-ft (19-22 Nm).

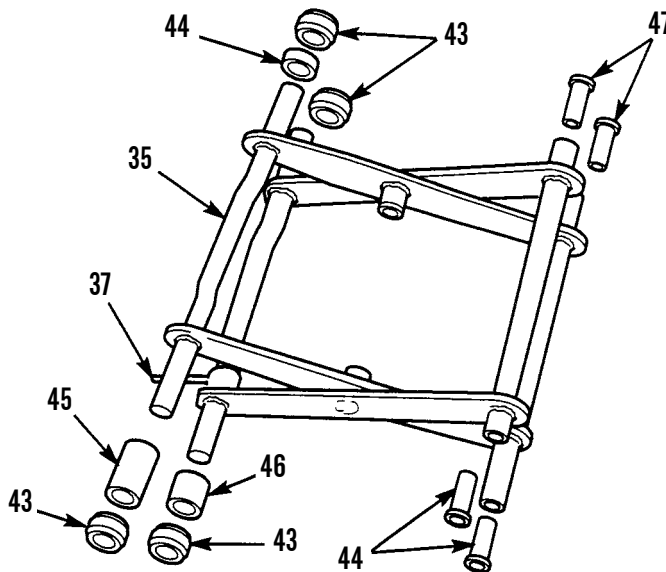


7. Install two bumper assemblies (49) in upper housing assembly (21).
8. Install two roller pads (48) in upper housing assembly (21).



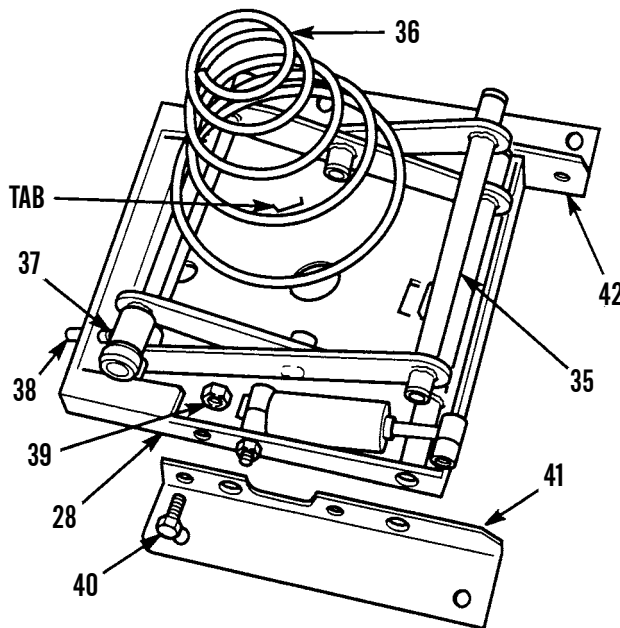
ASSEMBLY - CONTINUED

9. Install indicator (37) on arm (35).
10. Install four sleeve bearings (47) on arm (35).
11. Install spacers (46), (45) and (44) on arm (35).
12. Install four roller guides (43) on arm (35).



401-709

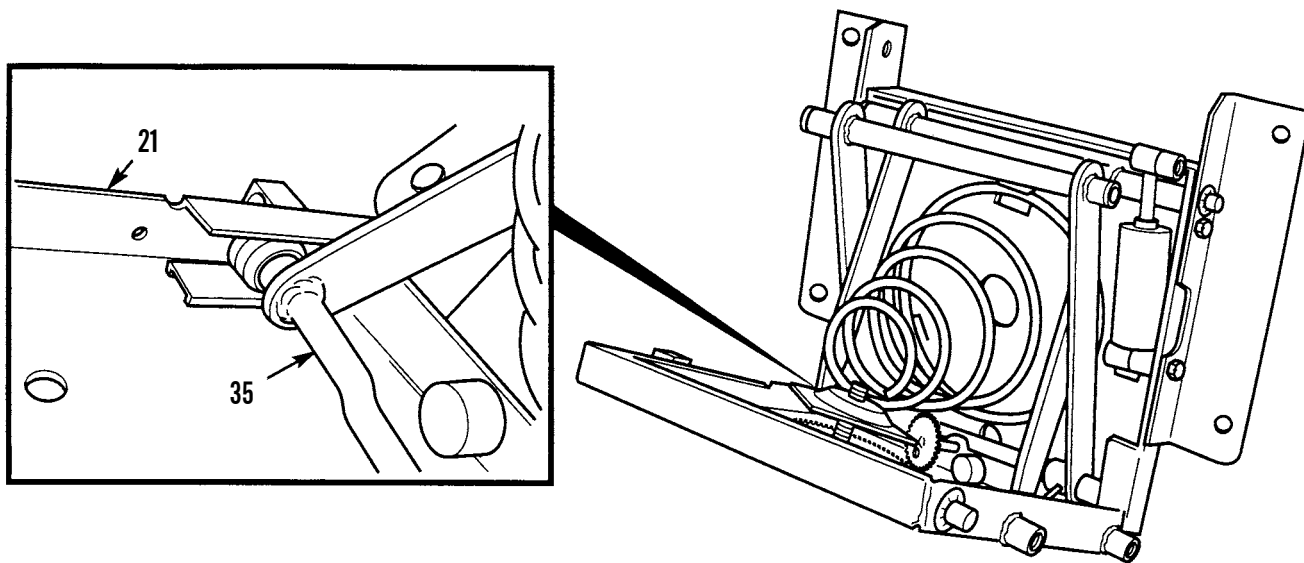
13. Slide indicator (37) into spring pin (38) while installing arm (35) in lower housing assembly (28).
14. Apply sealing compound to threads of four bolts (40).
15. Install left-hand angle (41) and right-hand angle (42) on lower housing assembly (28) with four bolts (40) and new locknuts (39). Tighten nuts to 7-16 lb-ft (9-22 Nm).
16. Install shaft (26) in lower housing assembly (28) and arm (35) with new retainer (27).
17. Install spring (36) in lower housing assembly (28) by compressing and turning spring clockwise until spring is securely seated in three tabs.



401-708

ASSEMBLY - CONTINUED

18. Install upper housing assembly (21) on arm (35) by sliding arm and roller guides (43) in channel of upper housing assembly.

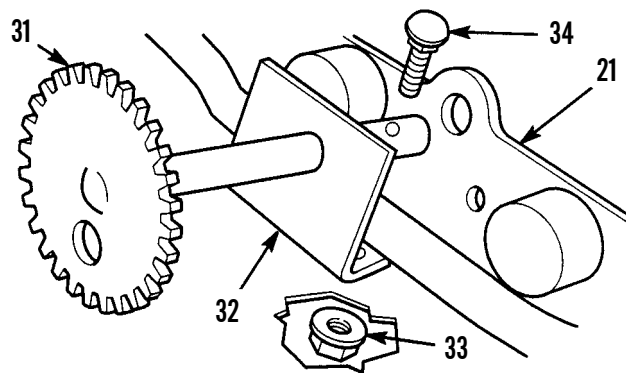


401-707

NOTE

Ensure that arm is under shaft of bevel gear when bevel gear is installed.

19. Install angle bracket (32) on upper housing assembly (21) with two square neck bolts (34) and new locknuts (33). Do not tighten locknuts.
20. Install bevel gear (31) in angle bracket (32) and upper housing assembly (21).
21. Apply grease to teeth of bevel gear (31).



401-706

ASSEMBLY - CONTINUED

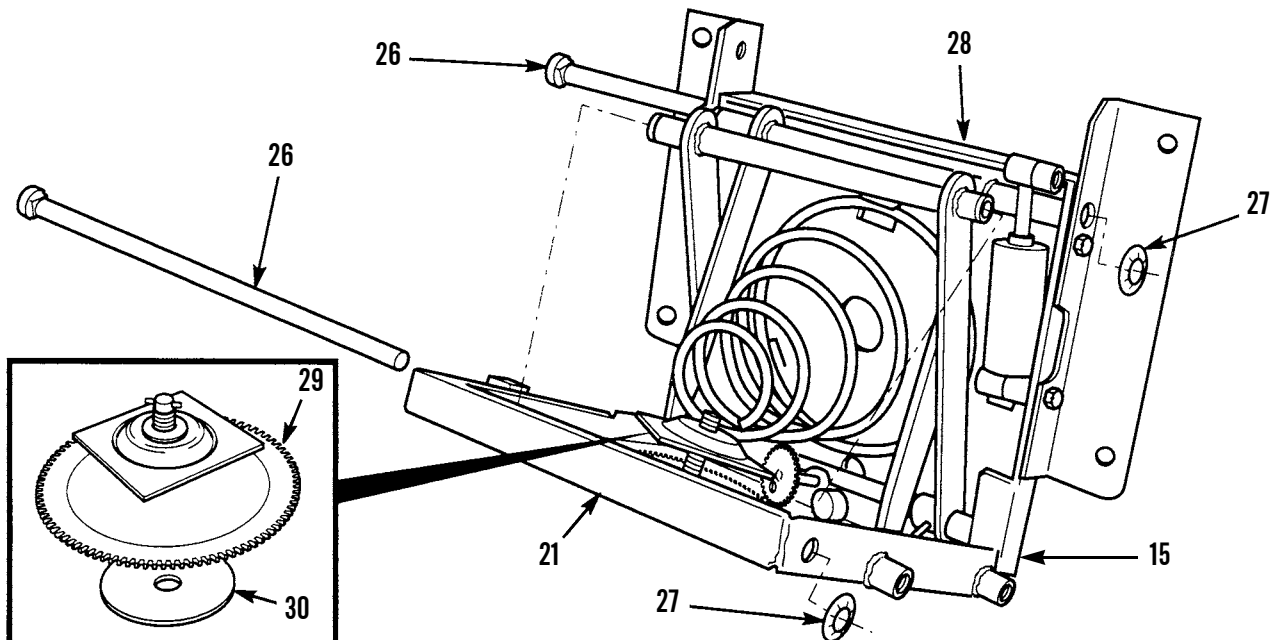
22. Install flatwasher (30) and gear assembly (29) on upper housing assembly (21).

**WARNING**

Upper housing assembly is under spring tension. Wear eye protection and use caution when removing upper housing assembly. Failure to follow this warning may cause injury.

NOTE

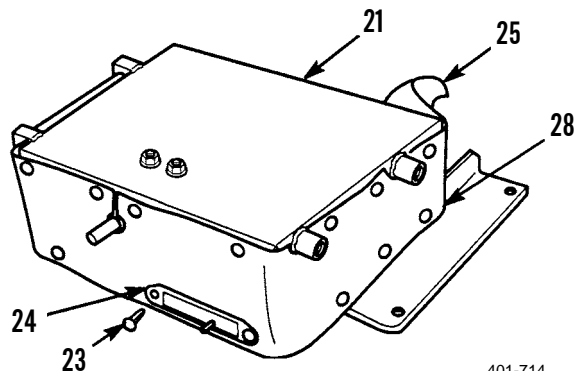
- Rod of shock absorber must be fully extended to align hole for installation of rods.
 - Ensure that square shoulder of drive shaft is fully seated in square hole of upper housing assembly before installing push-on nut.
23. While assistant compresses seat suspension assembly (15), install drive shaft (26) in upper housing assembly (21), arm (35) and shock absorber (52) with new retainer (27).



401-705

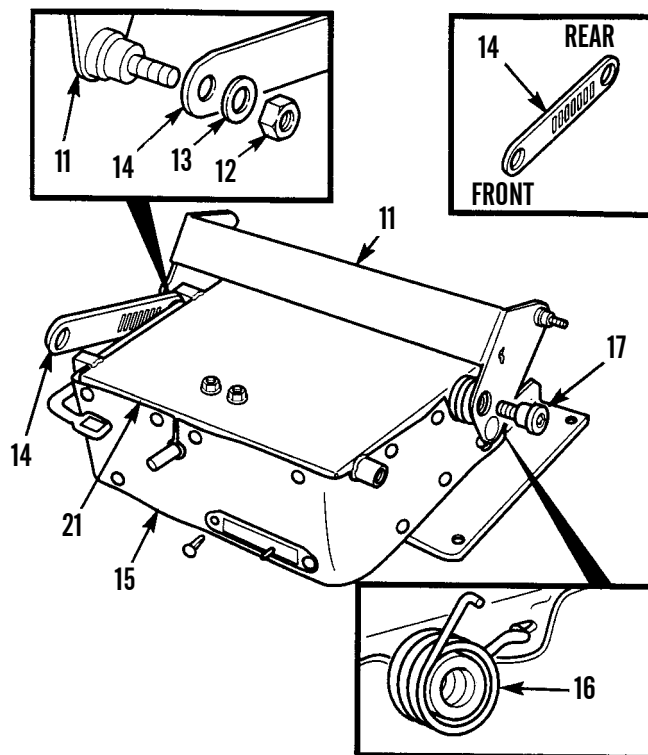
ASSEMBLY - CONTINUED

24. Install boot (25) and plate (24) on upper housing assembly (21) and lower housing assembly (28) with twenty-four fasteners (23).



401-714

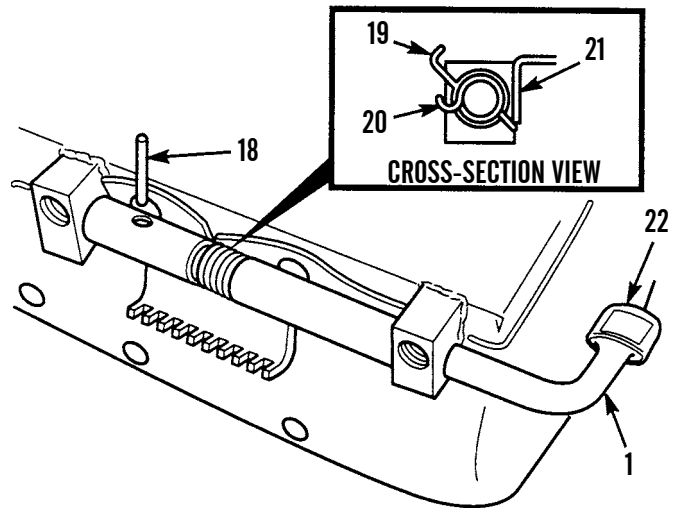
25. Position torsion spring (16) and one link (11) on rear mounting bracket of upper housing assembly (21).
26. Install ends of torsion spring (16) in right-side of upper housing assembly (21) and link (11).
27. Apply sealing compound to threads of bolts (17).
28. Install torsion spring (16) and link (11) on upper housing assembly (21) with two bolts (17), using socket wrench screwdriver attachment.
29. Position link (14) on link (11) on right-side of seat suspension assembly (15) ensuring that hole is fully seated on shoulder of stud.
30. Apply sealing compound to threads of locknut (12).
31. Install link (14) on link (11) with washer (13) and new locknut (12).



401-715

ASSEMBLY - CONTINUED

- 32. Install cap (22) on height adjustment lever (1).
- 33. Install spring (20), latch assembly (19) and height adjustment lever (1) in upper housing assembly (21).
- 34. Install spring pin (18) in latch assembly (19) and height adjustment lever (1).



401-716

- 35. Position link (14) on link (11) on right-side of seat suspension assembly (15) ensuring that hole is fully seated on shoulder of stud.
- 36. Apply sealing compound to threads of locknut (12).
- 37. Install link (14) on link (11) with washer (13) and new locknut (12).
- 38. Position link (14) on fingers of latch assembly (19).
- 39. Position torsion spring (16) and link (11) on upper housing assembly (21).
- 40. Install ends of torsion spring (16) in left-side of upper housing assembly (21) and link (11).

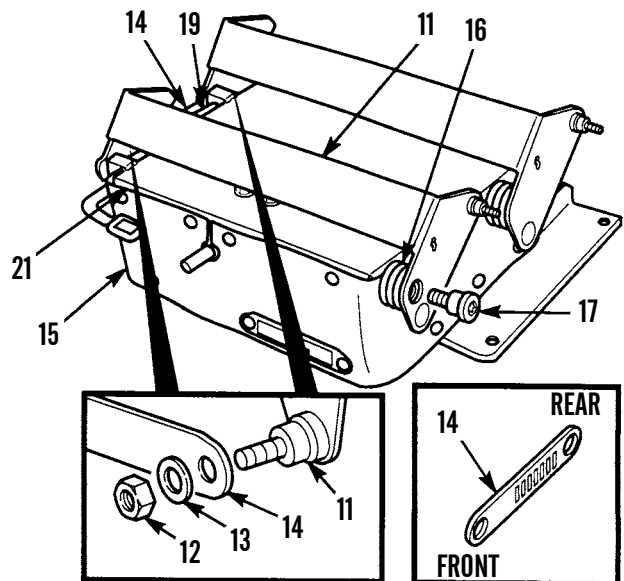


WARNING



Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent or retaining compound gets on skin or clothing, wash immediately with soap and water.

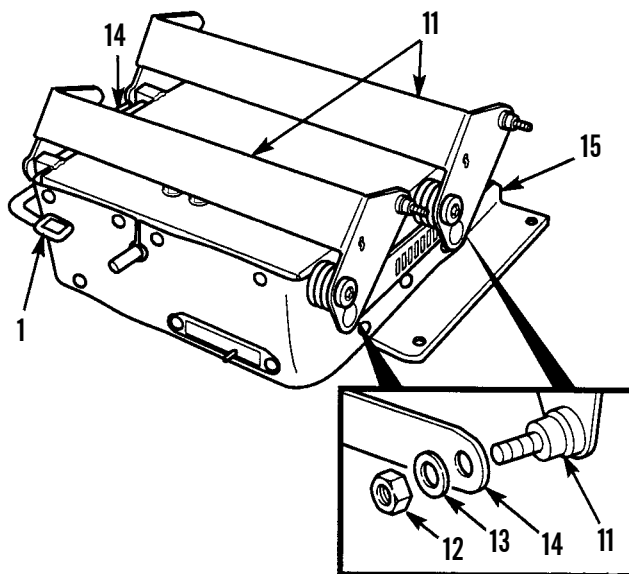
- 41. Apply sealing compound to threads of bolts (17).
- 42. Install torsion spring (16) and link (11) on upper housing assembly (21) with two bolts (17), using socket wrench screwdriver attachment.



401-717

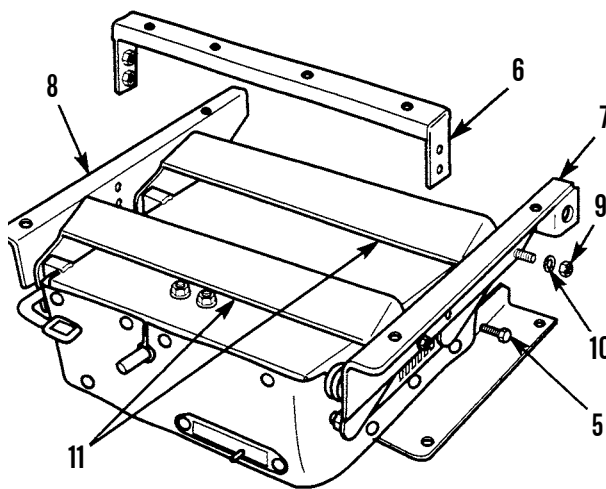
ASSEMBLY - CONTINUED

- 43. Position link (14) on links (11) on left-side of seat suspension assembly (15) ensuring that holes are fully seated on should of stud.
- 44. Apply sealing compound to threads of locknuts (12).
- 45. Install link (14) on links (11) with two washers (13) and new locknuts (12). Tighten locknuts to 7-16 lb-ft (9-22 Nm).



401-702

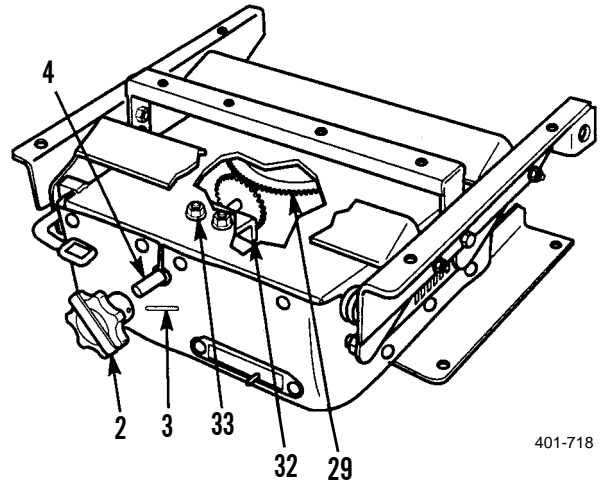
- 46. Install left angle assembly (7) and right angle assembly (8) on two links (11) with four washers (10) and new locknuts (9). Tighten nuts to 7-16 lb-ft (9-22 Nm).
- 47. Install channel (6) from left angle assembly (7) and right angle assembly (8) with four bolts (5). Tighten bolts to 7-16 lb-ft (9-22 Nm).



401-701

ASSEMBLY - CONTINUED

48. Install knob (2) on bevel gear (4) with spring pin (3).
49. Adjust angle bracket (32) so that bevel gear (4) fits snugly against gear assembly (29) and knob (2) feels firm.
50. Tighten locknuts (33).



401-718

51. Install seat suspension assembly (WP 0134 00).

END OF WORK PACKAGE

SEAT BELT AND LANYARD REPLACEMENT

0136 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Brush, nylon (Item 7, WP 0219 00)
- Compound, sealing (Item 12, WP 0219 00)

Materials/Parts -Continued

- Fastener
- Locknut (2)

References

TM 5-3895-379-23P, Figure 105

Equipment Condition

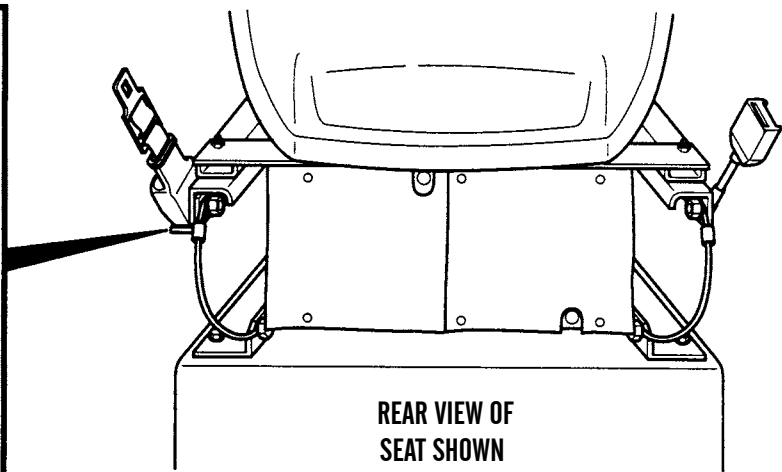
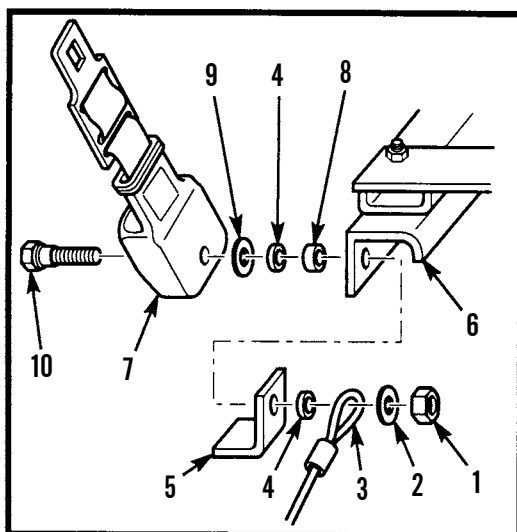
- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)

NOTE

- Left and right seat belts must be replaced as a set.
- Seat belt fastener components must be replaced as a set each time seat belt is removed. Seat belt fastener contains all components required to attach seat belts to roller.

REMOVAL

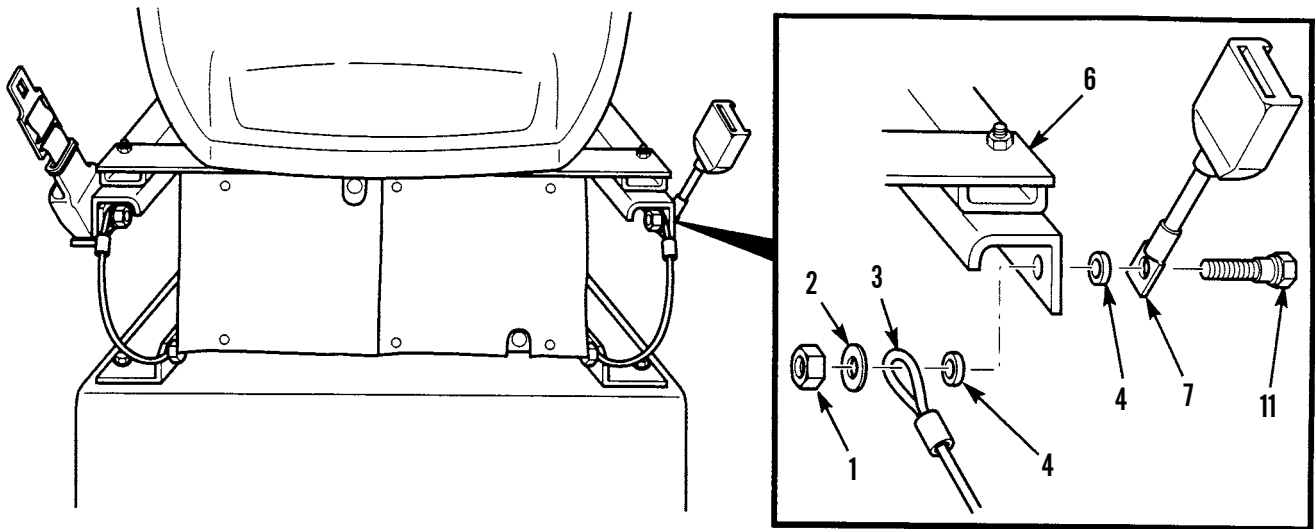
1. Remove locknut (1), washer (2), lanyard (3), spacer (4) and L-bracket (5) from seat assembly (6). Discard L-bracket, spacer, washer and locknut.
2. Remove left seat belt (7), spacer (8), spacer (4), washer (9) and screw (10) from seat assembly (6). Discard screw, washer, and spacers.



401-719

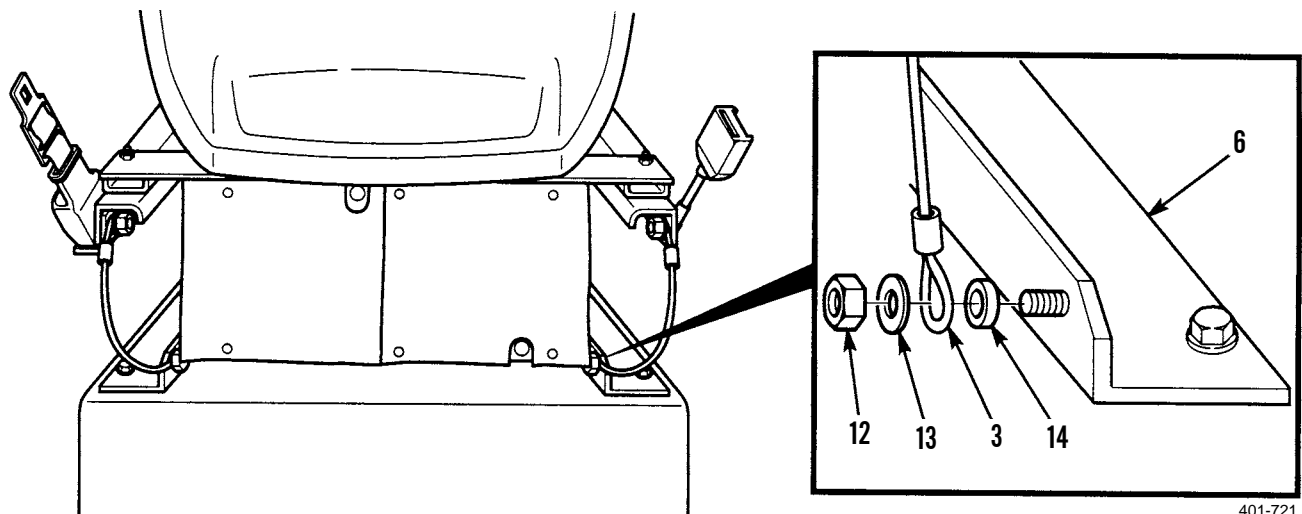
REMOVAL - CONTINUED

3. Remove locknut (1), washer (2), lanyard (3) and spacer (4) from seat assembly (6). Discard spacer, washer and locknut.
4. Remove right seat belt (7), spacer (4) and screw (11) from seat assembly (6). Discard screw and spacer.



401-720

5. If damaged, remove two locknuts (12), washers (13), lanyards (3) and spacers (14) from seat assembly (6). Discard locknuts.



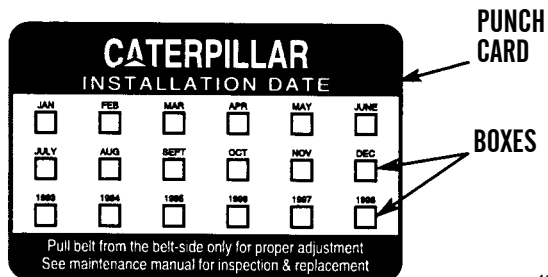
401-721

CLEANING AND INSPECTION

1. Clean seat belts with nylon brush.
2. Check seat belts for loose threads and tears.
3. Check buckle for proper operation.
4. Check expiration date located on left seat belt. If date indicated on seat belts has passed, discard seat belt.

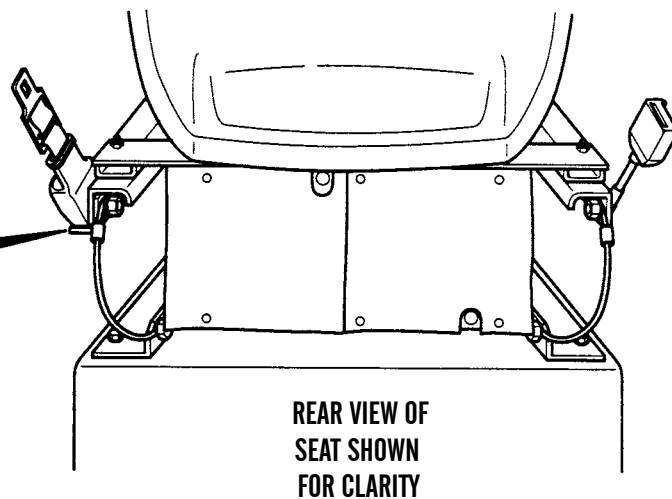
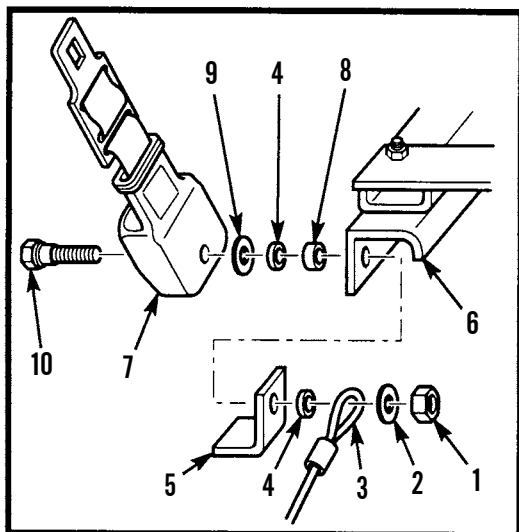
INSTALLATION

1. If installing new seat belts, punch out month and year boxes in which you are installing seat belts on punch card.



401-722

2. If removed, install two spacers (14), and lanyards (3), on seat assembly (6) with two washers (13) and new locknuts (12).
3. Install spacer (4) and right seat belt (7) on seat assembly (6) with screw (11).
4. Install spacer (4) and lanyard (3) on seat assembly (6) with washer (2), and new locknut (1). Tighten locknut to 55 lb-ft (75 Nm).
5. Install spacers (8) and (4), washer (9) and left seat belt (7) with screw (10).
6. Install L-bracket (5), spacer (4), and lanyard (3), on seat assembly (6) with washer (2) and new locknut (1) on seat assembly (6). Tighten locknut to 26-40 lb-ft (35-54 Nm).



401-719

7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

TOOLBOX REPLACEMENT

0137 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figure 108

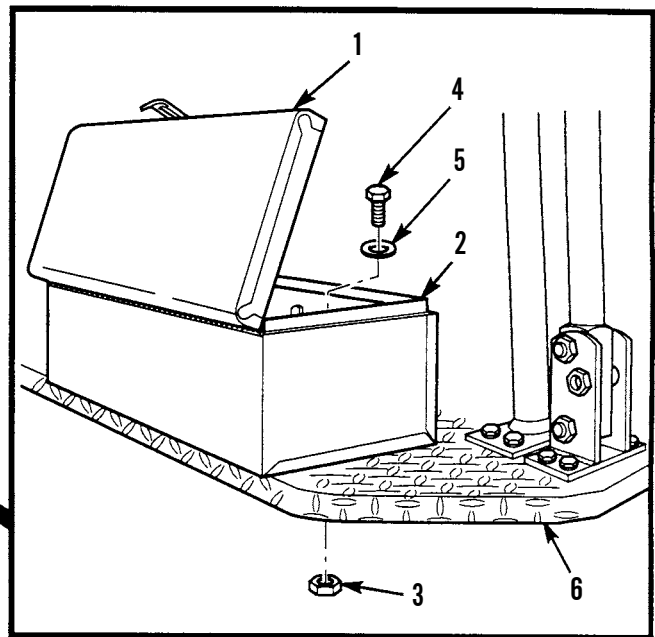
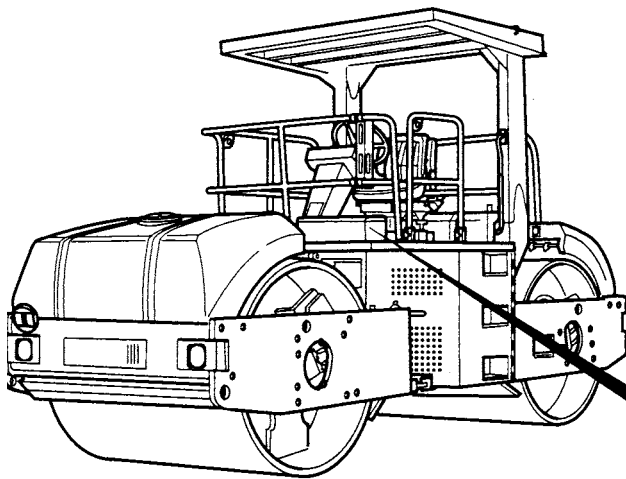
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

1. Open lid (1) of toolbox (2).
2. Remove two nuts (3), screws (4), washers (5) and toolbox (2) from operator platform (6).



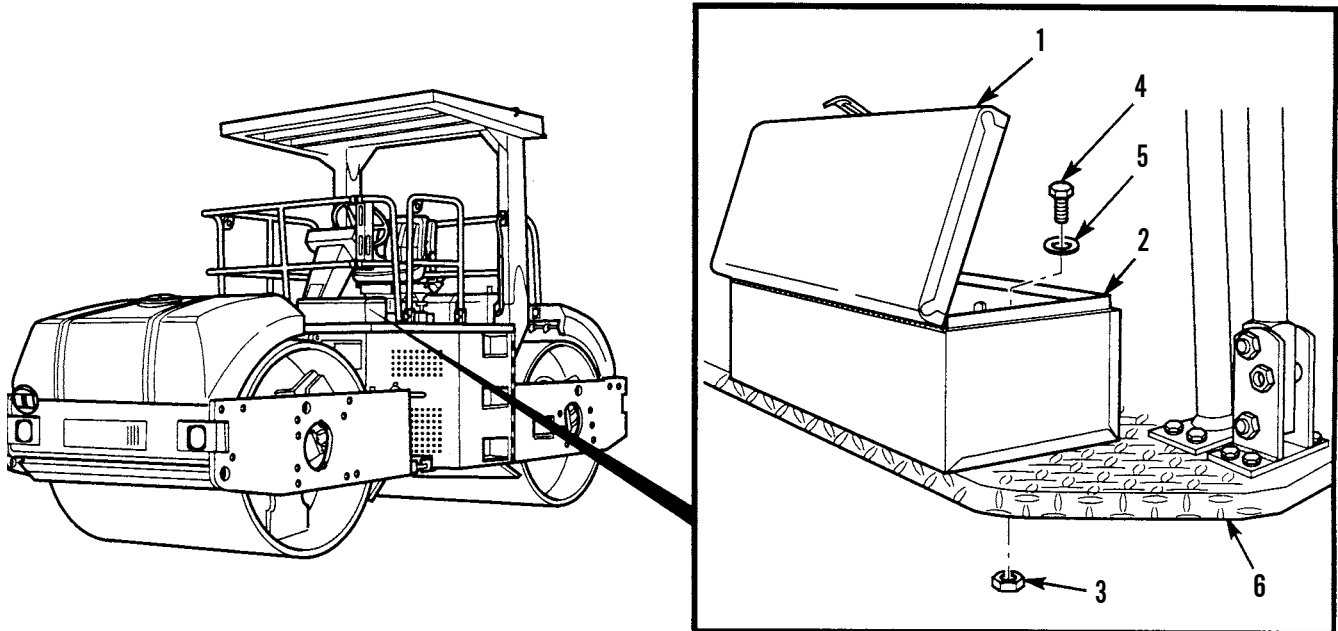
401-2048

TOOLBOX REPLACEMENT

0137 00

INSTALLATION

1. Install toolbox (2) on operator platform (6) with two screws (4), washers (5) and nuts (3). Tighten nuts to 35 lb-ft (47 Nm).
2. Close lid (1) of toolbox (2).



401-2048

3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

RIFLE MOUNTING BRACKET REPLACEMENT

0138 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Locknut (4)

References

TM 5-3895-379-23P, Figure 109

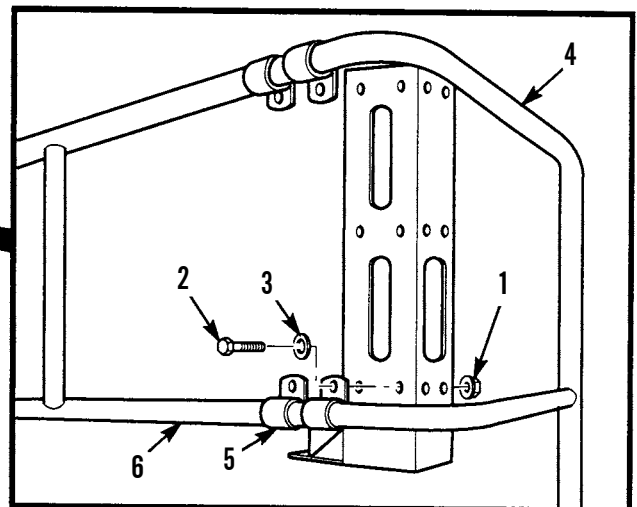
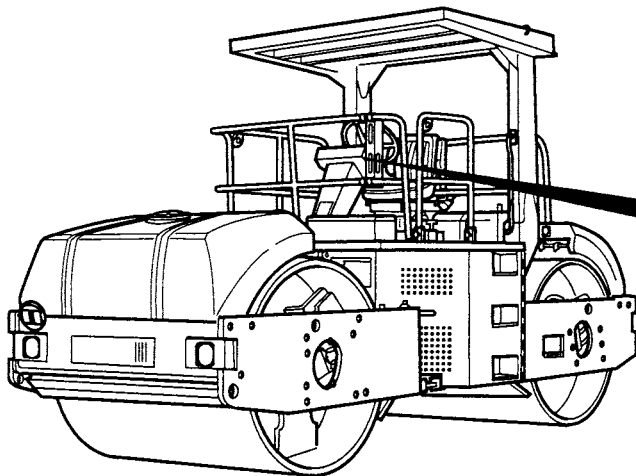
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

1. Remove four locknuts (1), screws (2), washers (3) and rifle mount bracket (4) from four clamps (5). Discard locknuts.
2. Remove four clamps (5) from hand rail assembly (6).



401-733

INSTALLATION

1. Position four clamps (5) on hand rail assembly (6).
2. Install rifle mount bracket (4) on four clamps (5) with four screws (2), washers (3) and new locknuts (1). Tighten locknuts to 14-22 lb-ft (19-30 Nm).
3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VEHICLE CLASSIFICATION SIGN KIT REPLACEMENT

0139 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

References

TM 5-3895-379-23P, Figures 110 and 111

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

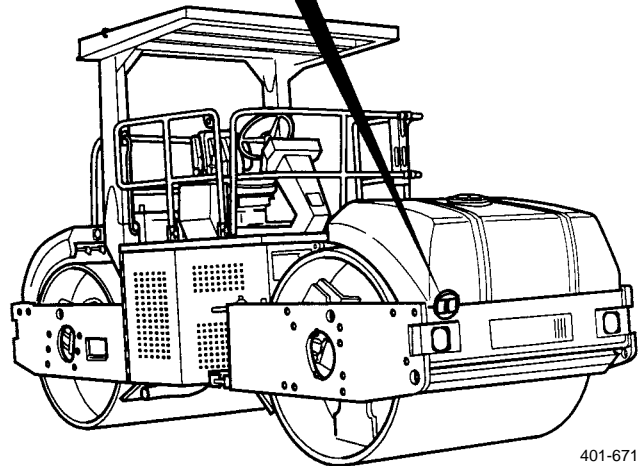
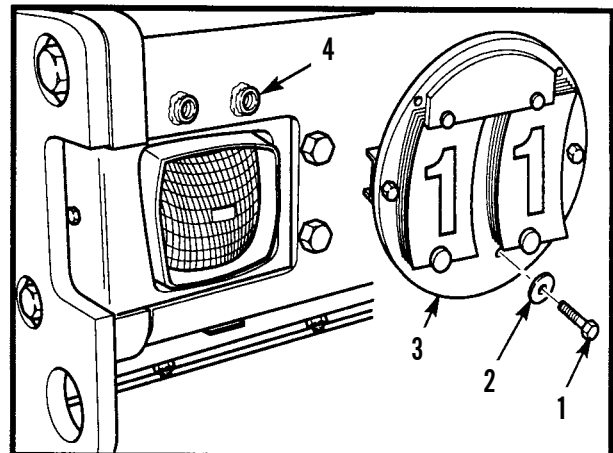
REMOVAL

Remove two screws (1), washers (2) and vehicle classification sign kit (3) from front support (4).

INSTALLATION**NOTE**

Military Load Classification for the roller is 11.

1. Install vehicle classification sign kit (3) on front support (4) with two washers (2) and screws (1). Tighten screws to 19 lb-ft (26 Nm).
2. Remove chocks (TM 5-3895-379-10).



401-671

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Data Plate: Replacement, Decal Replacement

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Cleaning compound, solvent (Item 9, WP 0219 00)
- Cloth, cleaning (Item 10, WP 0219 00)

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Battery disconnect switch in OFF position (TM 5-3895-379-10)
- Right-side door assembly open (TM 5-3895-379-10)

DATA PLATE REPLACEMENT



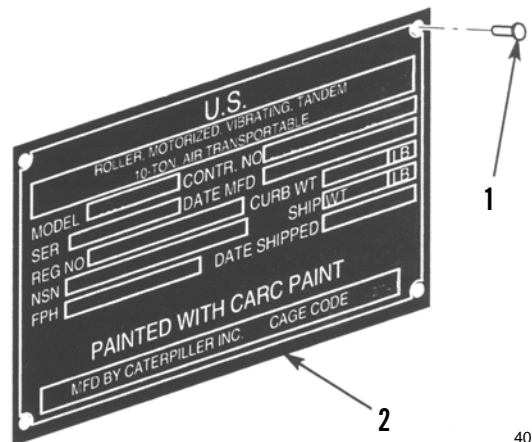
WARNING

Wear eye protection when drilling out rivets. Failure to do so could result in injury.

CAUTION

Avoid using a twist drill with an excessively large diameter when drilling out rivets. Failure to follow this caution could result in enlarged holes in roller, too large for rivet size needed.

1. Drill out four rivets (1) from data plate (2). Discard rivets.
2. Remove data plate (2) from roller.
3. Position data plate (2) to existing holes in roller.
4. Install data plate (2) with four new rivets (1).



401-679

DECAL REPLACEMENT

1. Remove decal (3) from surface of roller.



401-680

**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

2. If necessary, use cleaning compound, solvent to remove all traces of decal and adhesive.
3. Determine correct location for new decal (3) (TM 5-3895-379-10).
4. Ensure mounting surface on roller is clean and dry.

NOTE

Careful placement of decal is important. If wrinkles form in decal, instructions may not be legible.

5. Remove backing paper from decal (3) and press decal into position. Ensure all corners of decal are firmly affixed.
6. Close right-side door assembly (TM 5-3895-379-10).
7. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC OIL SAMPLING VALVE REPLACEMENT

0141 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

O-ring (2)

Materials/Parts - Continued

Packing, preformed

Equipment Condition

Drums chocked (TM 5-3895-379-10)

Hydraulic tank drained (WP 0037 00)

Left-side door assembly open (TM 5-3895-379-10)



WARNING

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

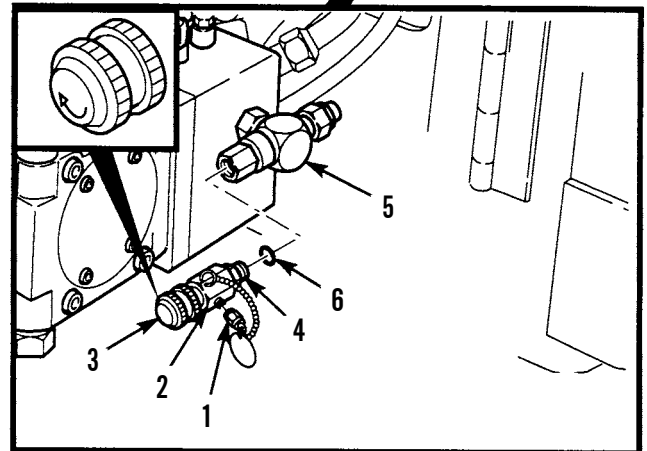
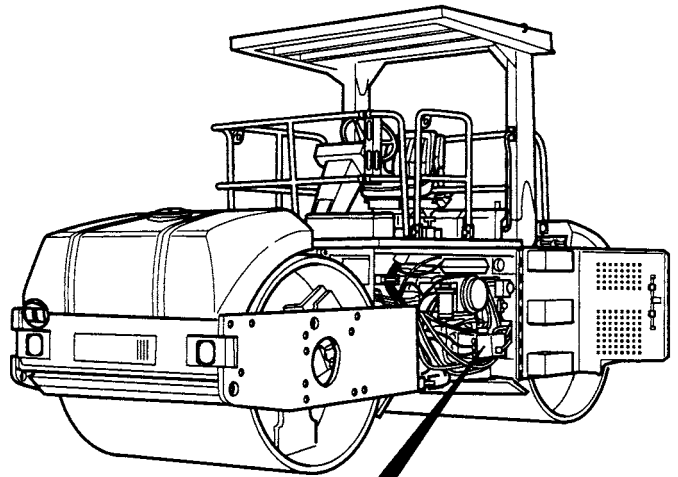
REMOVAL

1. Remove hydraulic oil sampling valve drain cap (1) from hydraulic oil sampling valve (2).

NOTE

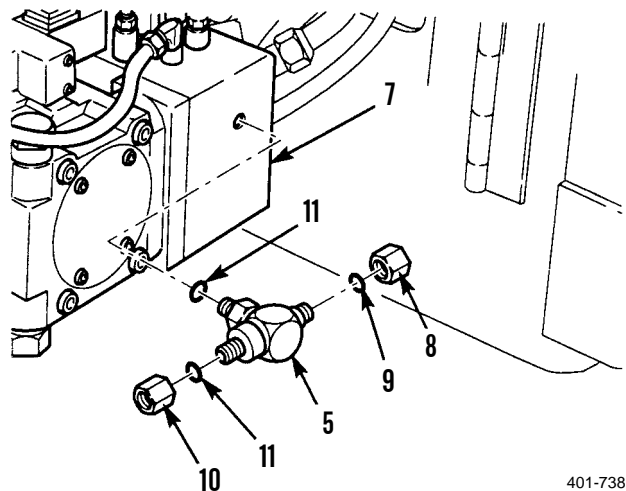
Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

2. Place container with 1 qt (0.9 l) minimum capacity under hydraulic oil sampling valve (2).
3. Turn and hold knurled knob (3) in direction of arrow and allow remainder of hydraulic oil to drain.
4. Loosen locking nut (4) on hydraulic oil sampling valve (2) and remove hydraulic oil sampling valve from tee (5).
5. Remove O-ring (6) from hydraulic oil sampling valve (2). Discard O-ring.



401-737

6. If damaged, remove tee (5) from hydraulic oil pump (7).
7. Remove cap (8), preformed packing (9), boss reducer (10) and two O-rings (11) from tee (5).



401-738

INSTALLATION

1. Install new O-ring (11) in tee (5).
2. Apply sealing compound to threads of tee (5) and install new preformed packing (9) and cap (8) on tee.
3. Apply sealing compound to threads of tee (5) and install new O-ring (11) and boss reducer (10) on tee (5).
4. If removed, apply sealing compound to threads of tee (5) and install tee in hydraulic oil pump (7).
5. Install new O-ring (6) on hydraulic oil sampling valve (2).

NOTE

When installing hydraulic oil sampling valve, position drain down for ease in sample collection.

6. Apply sealing compound to threads of hydraulic oil sampling valve (2) and position on tee (5). Tighten locking nut (4).
7. Install hydraulic oil sampling valve drain cap (1) on hydraulic oil sampling valve (2).
8. Close left-side door assembly (TM 5-3895-379-10).
9. Fill hydraulic tank (WP 0037 00).
10. Start engine (TM 5-3895-379-10) and check for leaks.
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Sampling

INITIAL SETUP**Materials/Parts**

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 122

Equipment Condition

Engine running (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Left-side door assembly opened (TM 5-3895-379-10)

**WARNING**

- Prolonged contact with lubricating oil, MIL-L-2105, may cause skin rash. Skin and clothing that come in contact with lubricating oil should be thoroughly washed immediately. Saturated clothing should be removed immediately. Areas in which lubricating oil is used should be well ventilated to keep fumes to a minimum.
- Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.
- There is no clearance for personnel between frame and yoke when roller turns. Injury or death from crushing could occur.
- Steering frame must be locked before lifting, transporting, or servicing roller in articulation area with engine running. Failure to follow this warning may cause injury or death.
- Unlock steering frame before operation. Failure to follow this warning may cause injury or death.
- When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing or hands can get caught and cause injury.

CAUTION

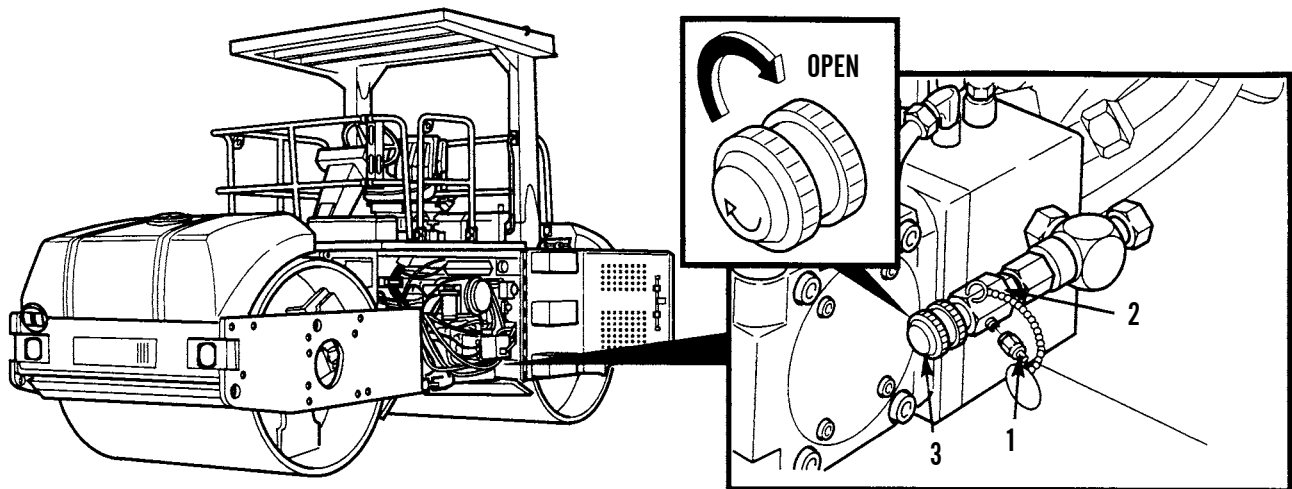
Sample hydraulic oil with oil warm, not HOT, to allow for draining of waste particles that are suspended in oil. As oil cools, suspended particles settle on the bottom of the hydraulic reservoir and cannot be removed by draining oil. Failure to follow this recommendation procedure can result in disproportionate sample collection.

NOTE

- Refer to DA Pam 738-750 for sampling requirements.
- Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

HYDRAULIC OIL SAMPLING - CONTINUED**0143 00****SAMPLING**

1. Run engine until hydraulic oil is warm, not hot.
2. Remove hydraulic oil sampling valve drain cap (1) from hydraulic oil sampling valve (2).
3. Place container with 1 qt (0.9 l) minimum capacity under hydraulic oil sampling valve (2).
4. Turn and hold knurled knob (3) in direction of arrow until hydraulic oil sample is collected. Release knob when sample has been collected.
5. Install hydraulic oil sampling valve drain cap (1) on hydraulic oil sampling valve (2).



401-754

6. Turn engine off.
7. Submit hydraulic oil sample to your Army Oil Analysis Program (AOAP) laboratory for analysis.
8. Close left-side door assembly (TM 5-3895-379-10).
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC OIL FILTER REPLACEMENT

0143 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Oil, lubricating (Item 25, WP 0219 00)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

References - Continued

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 129

Equipment Condition

Hydraulic oil drained (WP 0037 00)

Right-side door assembly opened (TM 5-3895-379-10)



WARNING

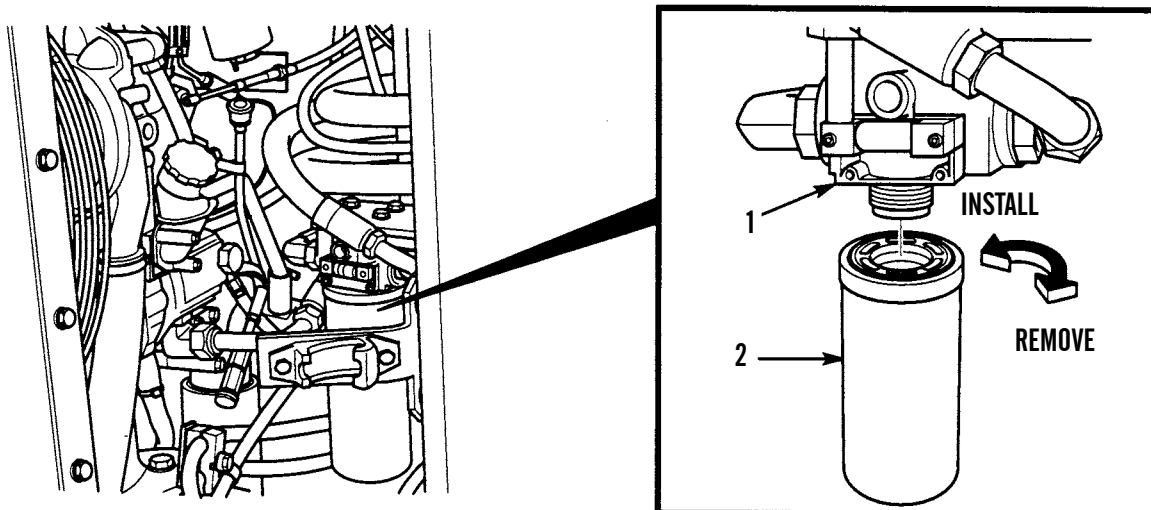
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

Use container with 2 qt. (1.9 l) minimum capacity to catch any hydraulic oil that may drain from system.

REMOVAL

1. Remove hydraulic oil filter (2) from hydraulic oil filter assembly (1) and allow remaining hydraulic oil to drain. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.



401-742

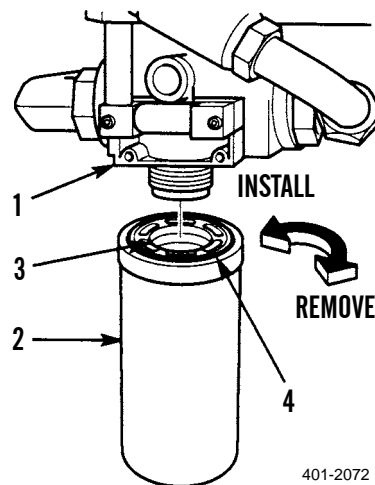
CLEANING AND INSPECTION

1. Clean filter assembly (1) base and ensure that all old gasket material is removed.

NOTE

Excessive amounts of debris in filter can be an indication of internal wear and possible hydraulic system component failure. If large amounts of debris are found, notify Direct Support Maintenance.

2. Inspect element (3) for metal or other debris. Report any excessive debris found in element to supervisor.

**INSTALLATION****CAUTION**

Do not overtighten filter on filter base. Failure to follow this caution may cause damage to filter.

1. Apply a light coat of lubricating oil on filter gasket (4).
2. Install filter (2) on filter base (1). Tighten filter 3/4 of a turn after filter makes contact with filter base.
3. Close right-side door assembly (TM 5-3895-379-10).
4. Fill hydraulic oil system (WP 0008 00 and WP 0009 00).
5. Start engine (TM 5-3895-379-10) and check for leaks.

END OF WORK PACKAGE

HYDRAULIC FILTER ASSEMBLY REPLACEMENT

0144 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)
Oil, hydraulic (Item 26, WP 0219 00)
O-ring (3)
Packing, preformed

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
TM 5-3895-379-23P, Figure 129

Equipment Condition

Engine off (TM 5-3895-379-10)
Drums chocked (TM 5-3895-379-10)
Hydraulic oil drained (WP 0037 00)
Right-side door assembly opened (TM 5-3895-379-10)

**WARNING**

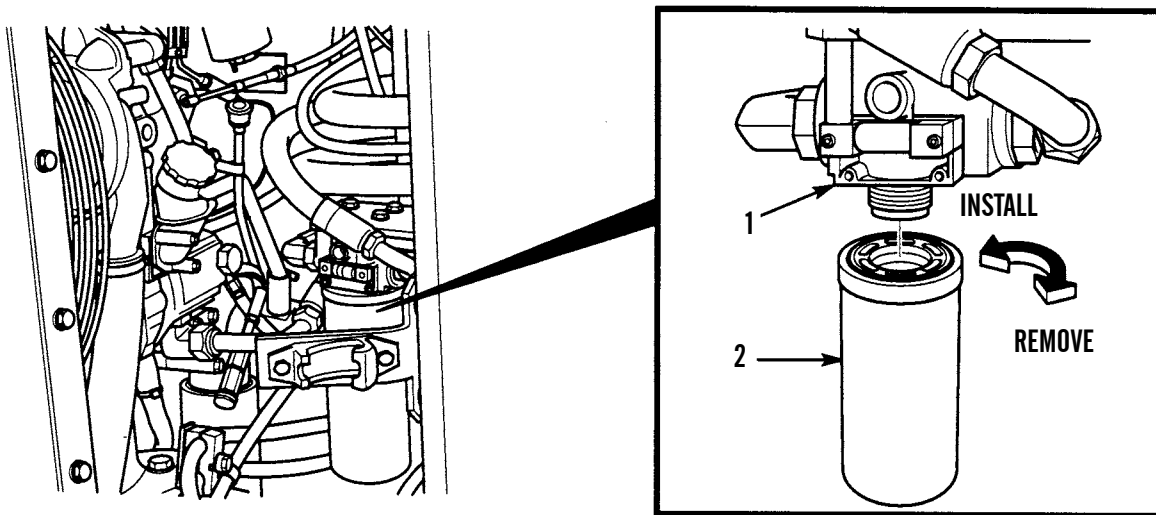
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL

NOTE

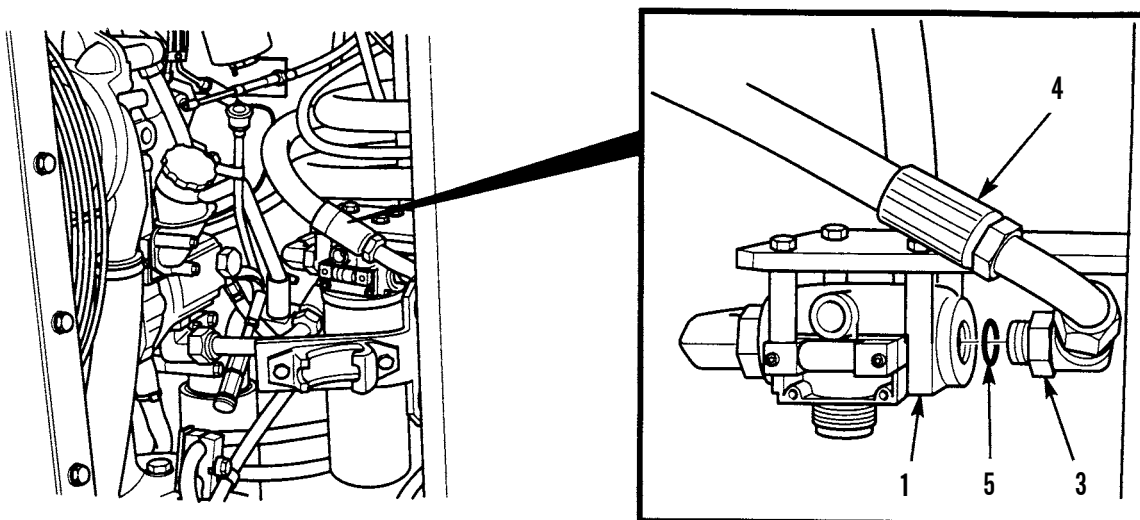
Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

1. Place container with 2 qt (1.9 l) minimum capacity under hydraulic oil filter assembly (1).
2. Remove hydraulic oil filter (2) from hydraulic oil filter assembly (1) and allow remaining hydraulic oil to drain.



401-742

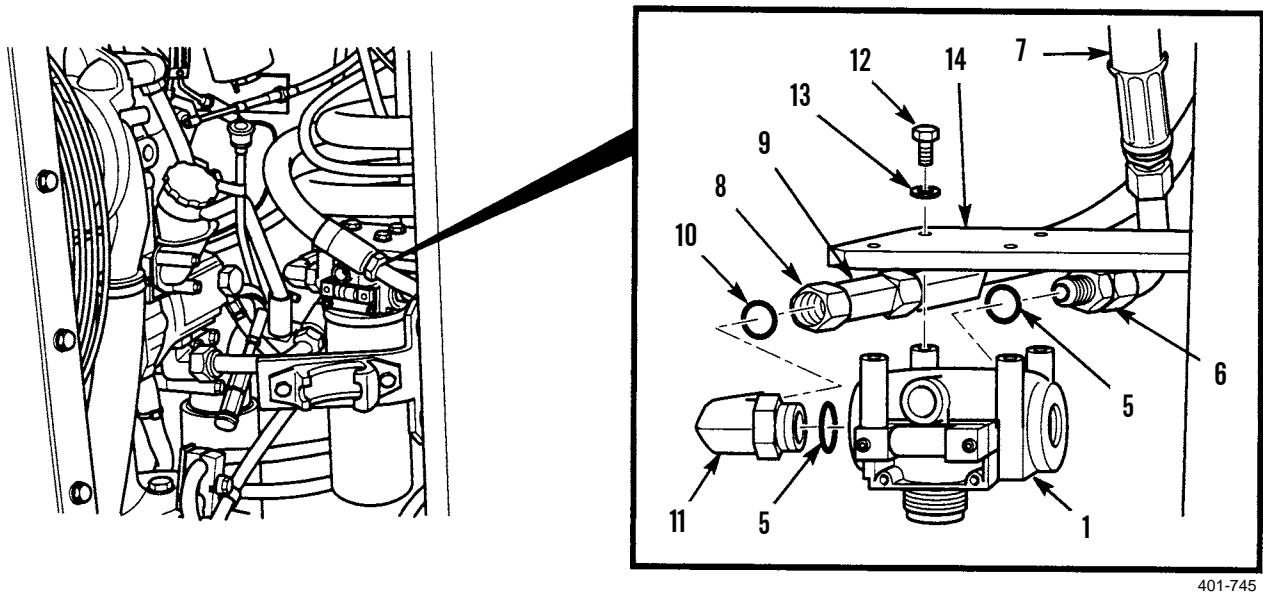
3. Loosen nut (3) and remove hose assembly (4) and O-ring (5) from hydraulic oil filter assembly (1). Discard O-ring.



401-745

REMOVAL - CONTINUED

4. Loosen nut (6) and remove hose assembly (7) and O-ring (5) from hydraulic oil filter assembly (1). Discard O-ring.
5. Loosen nut (8) and remove hose assembly (9) and preformed packing (10) from elbow (11). Discard preformed packing.
6. Remove elbow (11) and O-ring (5) from hydraulic oil filter assembly (1). Discard O-ring.
7. Remove four screws (12), washers (13) and hydraulic oil filter assembly (1) from frame assembly (14).



401-745

INSTALLATION

1. Install hydraulic oil filter assembly (1) on frame assembly (14) with four washers (13) and screws (12).
2. Apply sealing compound to threads of elbow (11) and install new O-ring (5) and elbow on hydraulic oil filter assembly (1).
3. Apply sealing compound to threads of hose assembly (9) and install new preformed packing (10) and hose assembly on elbow (11). Tighten nut (8).
4. Apply sealing compound to threads of hose assembly (7) and install new O-ring (5) and hose assembly on hydraulic oil filter assembly (1). Tighten nut (6).
5. Apply sealing compound to threads of hose assembly (4) and install new O-ring (5) and hose assembly on hydraulic oil filter assembly (1). Tighten nut (3).
6. Apply a light coating of hydraulic oil on the filter gasket (15).

CAUTION

Do not overtighten filter on hydraulic oil filter assembly. Failure to follow this caution may cause damage to filter.

7. Install hydraulic oil filter (2) on hydraulic oil filter assembly (1). Tighten filter 3/4 of a turn after filter makes contact with filter base.

INSTALLATION - CONTINUED

8. Close right-side door assembly (TM 5-3895-379-10).
9. Fill hydraulic oil system (WP 0008 00 and WP 0009 00).
10. Start engine (TM 5-3895-379-10) and check for leaks.
11. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC OIL COOLER AND FAN SHROUD REPLACEMENT

0145 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

Locknut (3)

O-ring

Packing, preformed (3)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 127

Personnel Required

Two

Equipment Condition

Operator platform assembly raised (WP 0128 00)

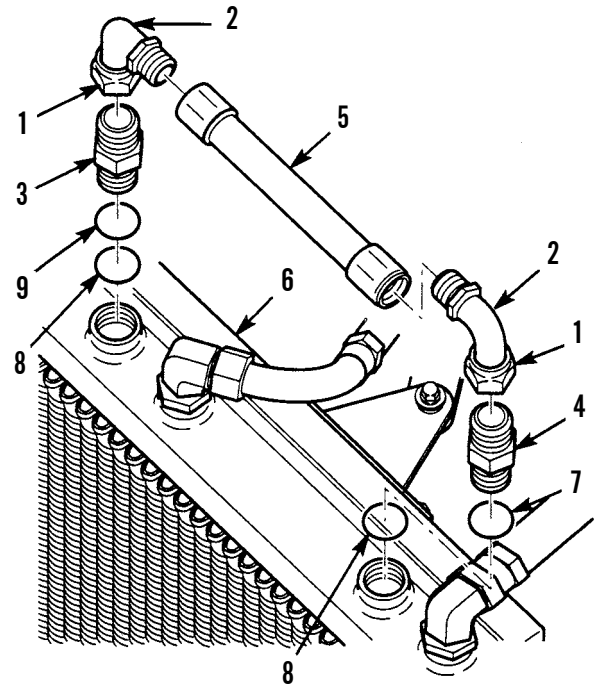
Hydraulic oil tank drained (WP 0037 00)

Fan guard removed (WP 0059 00)

Radiator removed (WP 0050 00)

REMOVAL

1. Loosen nut (1) and remove elbow (2) from connector (3).
2. Loosen nut (1) and remove elbow (2) from connector (4).
3. If damaged, remove hose assembly (5) from two elbows (2).
4. Remove connector (4), preformed packing (7) and O-ring (8) from hydraulic oil cooler (6). Discard preformed packing and O-ring.
5. Remove connector (3), preformed packing (9) and O-ring (8) from hydraulic oil cooler (6). Discard preformed packing and O-ring.

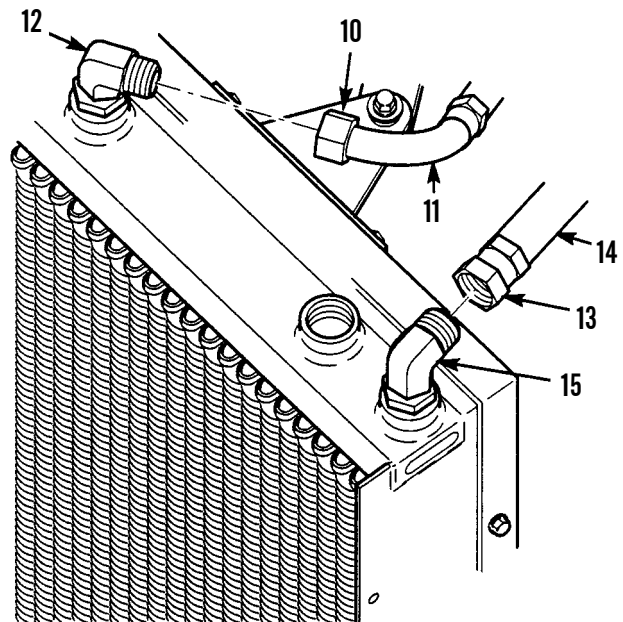


401-753

NOTE

Tag and mark all hoses prior to removal.

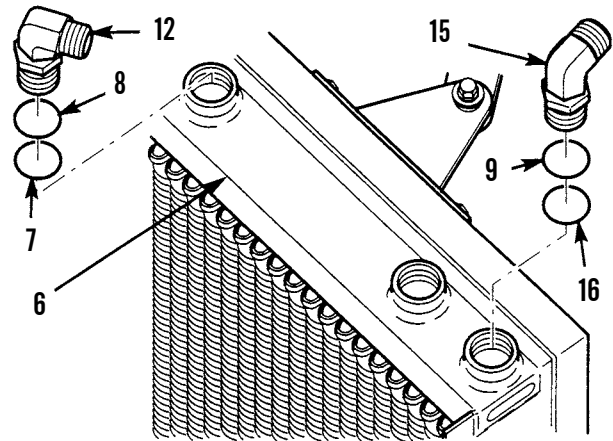
6. Loosen nut (10) and remove hose (11) from elbow (12).
7. Loosen nut (13) and remove hose (14) from elbow (15).



401-748

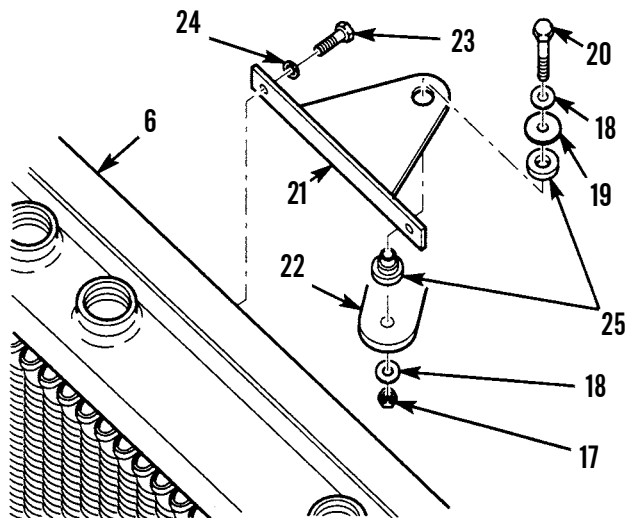
REMOVAL - CONTINUED

8. Remove elbow (12) and preformed packings (7) and (8) from hydraulic oil cooler (6). Discard preformed packings.
9. Remove elbow (15) and preformed packings (9) and (16) from hydraulic oil cooler (6). Discard preformed packings.



401-749

10. Remove locknut (17), washer (18), washer (19), washer (18) and screw (20) from bracket (21) and engine lifting bracket (22). Discard locknut.
11. Remove two screws (23), washers (24) and bracket (21) from hydraulic oil cooler (6).
12. If damaged, remove mounting (25) from bracket (21).



401-750

REMOVAL - CONTINUED



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

CAUTION

Hydraulic oil cooler is filled with hydraulic oil. Care should be taken not to spill oil during removal.

NOTE

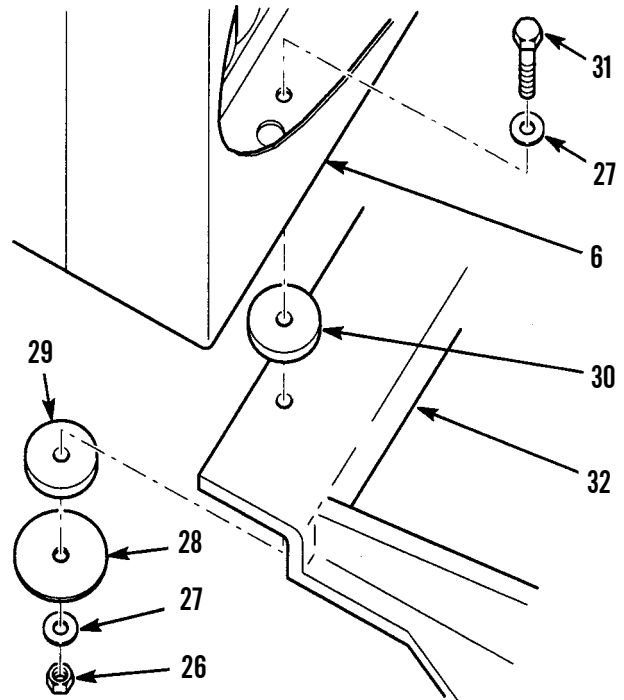
Hydraulic oil cooler weighs 90 lb (41 kg).

13. With assistance, remove two locknuts (26), washers (27), washers (28), rubber mountings (29), rubber mountings (30), hydraulic oil cooler (6), two washers (27) and screws (31) from frame assembly (32). Discard locknuts.

NOTE

Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

14. Turn hydraulic oil cooler over and drain fluid into five gal (19 l) container.



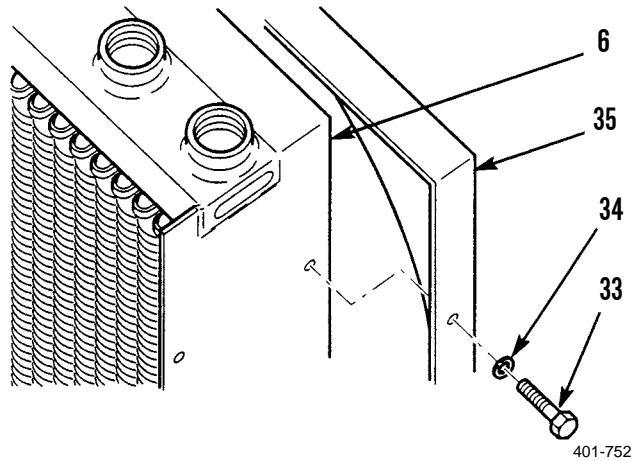
401-751

REMOVAL - CONTINUED

15. Remove eight screws (33), washers (34) and fan shroud (35) from hydraulic oil cooler (6).

INSTALLATION

1. Install fan shroud (35) on hydraulic oil cooler (6) with eight washers (34) and screws (33).

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury or death.

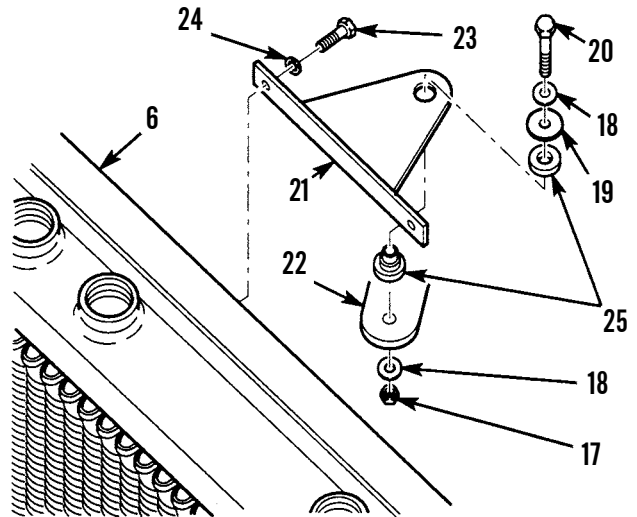
NOTE

Hydraulic oil cooler weighs 90 lb (41 kg).

2. With assistance, install hydraulic oil cooler (6) on frame assembly (32) with two screws (31), washers (27), rubber mountings (30), rubber mountings (29), washers (28), washers (27) and new locknuts (26).

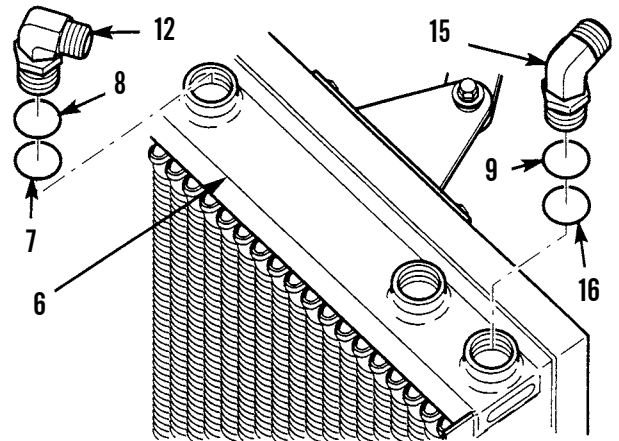
INSTALLATION - CONTINUED

3. If removed, install mounting (25) on bracket (21).
4. Install bracket (21) on hydraulic oil cooler (6) with two washers (24) and screws (23).
5. Install screw (20), washer (18), washer (19), washer (18) and new locknut (17) on bracket (21) and engine lifting bracket (22).



401-750

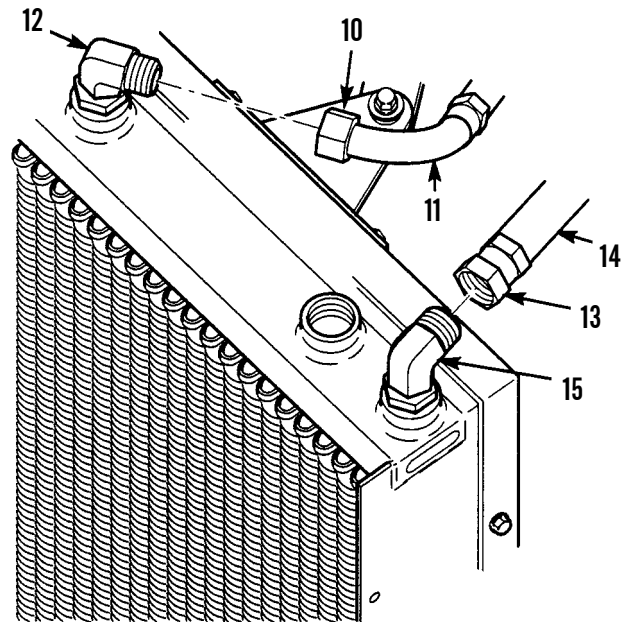
6. Install two preformed packings (9) and (16) and elbow (15) on hydraulic oil cooler (6).
7. Install two preformed packings (7) and (8) and elbow (12) on hydraulic oil cooler (6).



401-749

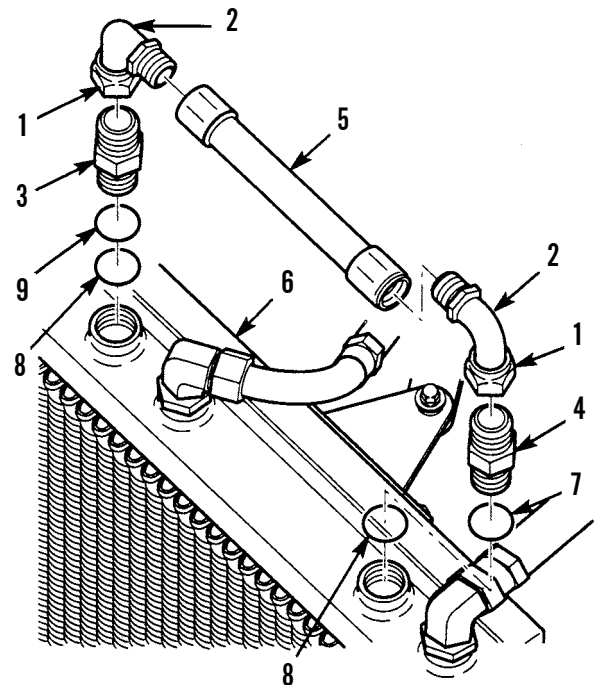
INSTALLATION - CONTINUED

8. Install hose (14) on elbow (15) and tighten nut (13).
9. Install hose (11) on elbow (12) and tighten nut (10).



401-748

10. Install new preformed packing (9), new O-ring (8) and connector (3) on hydraulic oil cooler (6).
11. Install new preformed packing (7), new O-ring (8) and connector (4) on hydraulic oil cooler (6).
12. Install hose assembly (5) on two elbows (2).
13. Install elbow (2) on connector (4) and tighten nut (1).
14. Install elbow (2) on connector (3) and tighten nut (1).



401-753

INSTALLATION - CONTINUED

15. Install fan guard (WP 0059 00).
16. Install radiator (WP 0050 00).
17. Lower operator platform (WP 0128 00).
18. Fill hydraulic oil tank (WP 0008 00 and WP 0009 00).
19. Start engine (TM 5-3895-379-10) and check for leaks.

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Disassembly, Cleaning and Inspection, Installation, Assembly

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Cloth, cleaning (Item 10, WP 0219 00)

Compound, cleaning (Item 9, WP 0219 00)

Materials/Parts - Continued

Gasket (2)

Pin

References

TM 5-3895-379-23P, Figure 31

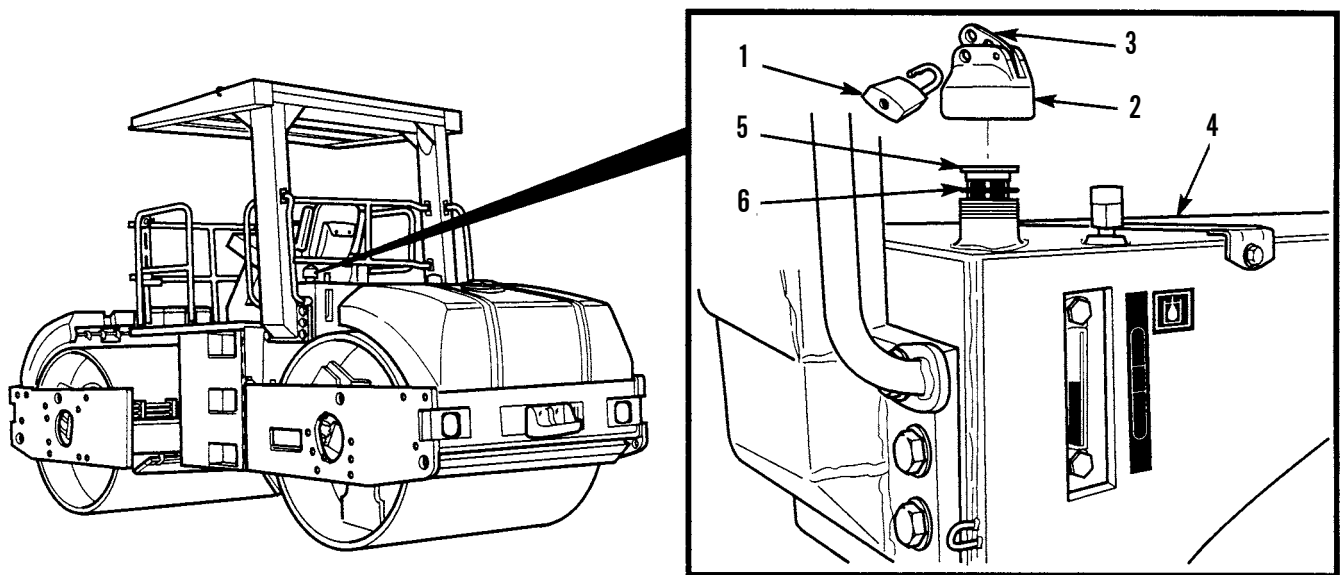
Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

REMOVAL

1. Remove lock (1) from cap assembly (2).
2. Lift lever (3) and turn cap assembly (2) counterclockwise until cap can be removed from hydraulic tank (4).
3. Remove strainer (5) from hydraulic tank (4).
4. Remove gasket (6) from strainer (5). Discard gasket.



DISASSEMBLY

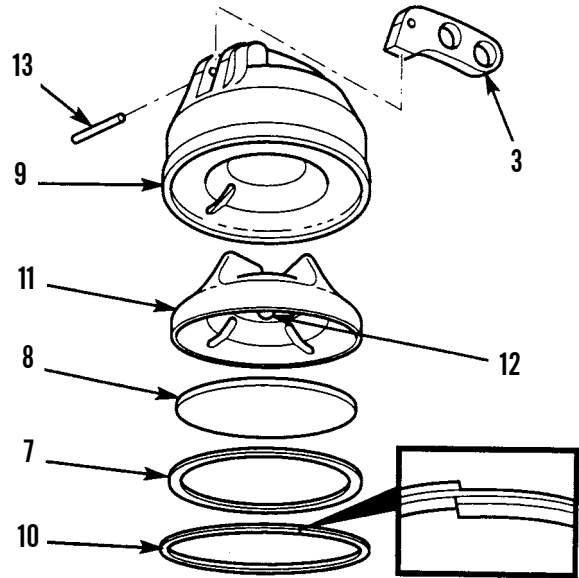
1. Remove gasket (7) and pressure plate (8) from cover (9). Discard gasket.



WARNING

Retaining ring is under spring tension. Wear eye protection and use caution when removing, to avoid injury.

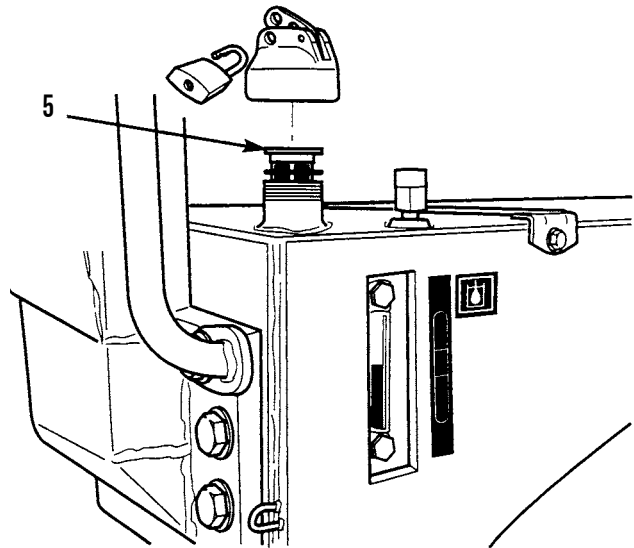
2. Remove retaining ring (10), cap (11) and ball (12) from cover (9).
3. If damaged, drill pin (13) out and remove lever (3) from cover (9).



401-740

CLEANING AND INSPECTION

1. Remove debris from strainer (5).



401-741

CLEANING AND INSPECTION - CONTINUED**WARNING**

Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, it may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.

2. Clean all metal parts with cleaning compound, solvent.
3. Use cleaning cloth or compressed air to dry all metal parts.
4. Check cap (11) and cover (9) for nicks, cracks, dents and stripped threads. Replace all damaged parts.

INSTALLATION

1. Install lever (3) on cover (9) with pin (13).

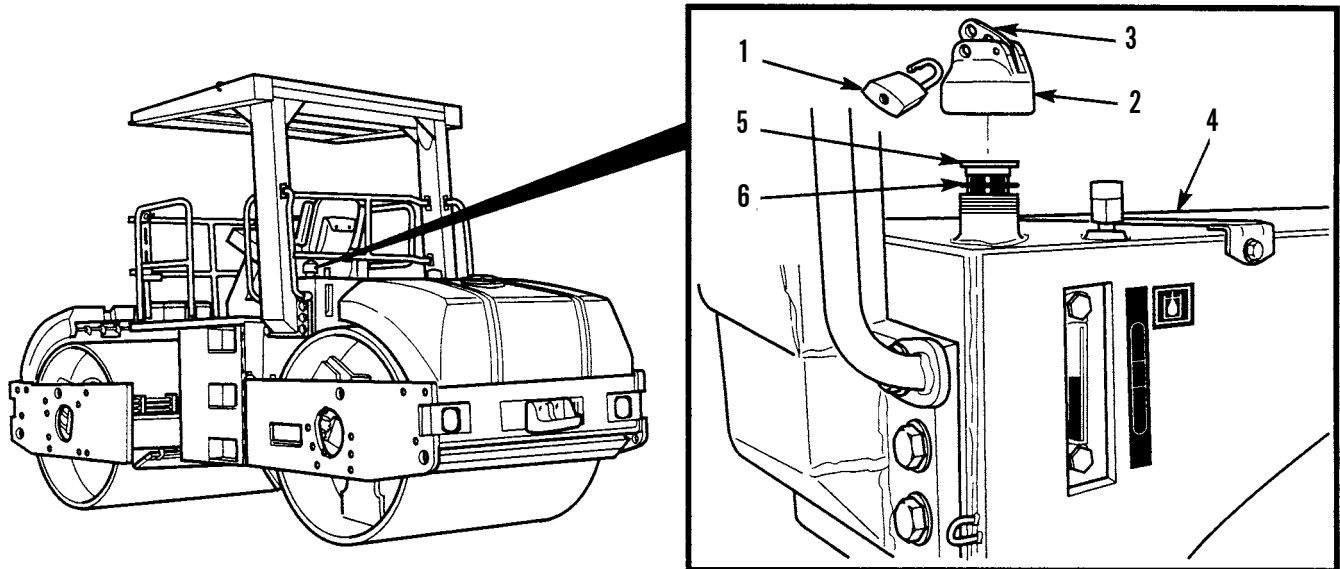
**WARNING**

Retaining ring is under spring tension to avoid injury, wear eye protection and use caution when installing.

2. Install ball (12), cap (11) and retaining ring (10) in cover (9).
3. Install pressure plate (8) and new gasket (7) in cover (9).

ASSEMBLY

1. Install new gasket (6) on strainer (5).
2. Install strainer (5) in hydraulic tank (4).
3. Lift lever (3) and turn cap assembly (2) clockwise until cap assembly is secure on hydraulic tank (4).
4. Install lock (1) on cap assembly (2).



401-739

5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATORY BEARING RESERVOIR SERVICE

0147 00

THIS WORK PACKAGE COVERS

Drain, Cleaning and Inspection, Fill

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Oil, synthetic (Item 29, WP 0219 00)

Materials/Parts - Continued

- Rag, wiping (Item 31, WP 0219 00)

References

- WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
- WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
- TM 5-3895-379-23P, Figure 131

Equipment Condition

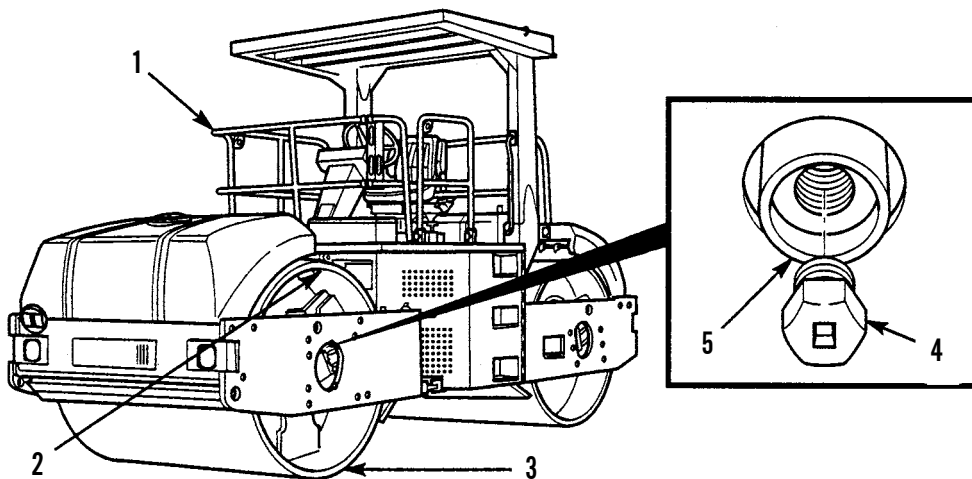
- Engine on (TM 5-3895-379-10)

NOTE

Front and rear vibratory bearing reservoir is serviced the same way. Front vibratory bearing reservoir is shown.

DRAIN

1. Move roller (1) until bar (2) is at top of drum (3).
2. Turn engine off (TM 5-3895-379-10).
3. Chock drums (TM 5-3895-379-10).

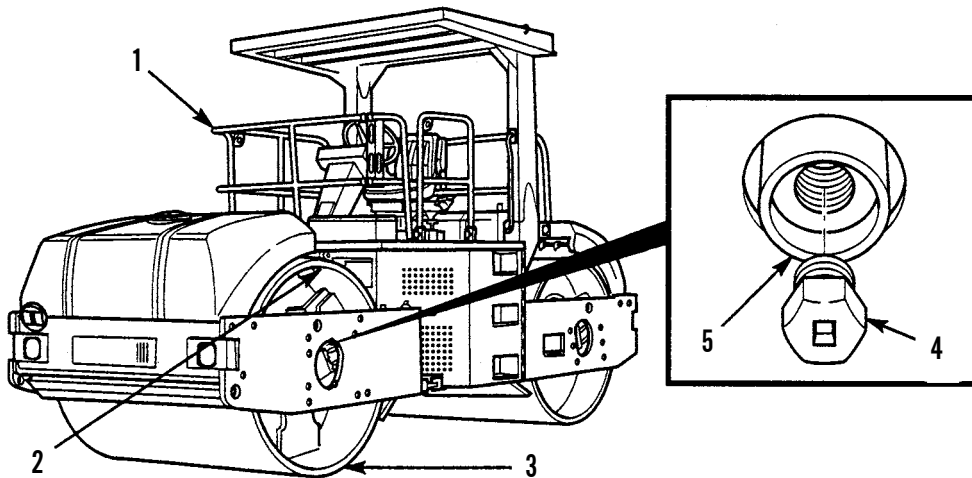


401-735

DRAIN - CONTINUED**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

4. Place container with 3 gal. (11.3 l) minimum capacity under plug (4).
5. Remove plug (4) from vibratory reservoir (5).
6. Allow oil to drain completely from vibratory reservoir (5).



401-735

CLEANING AND INSPECTION

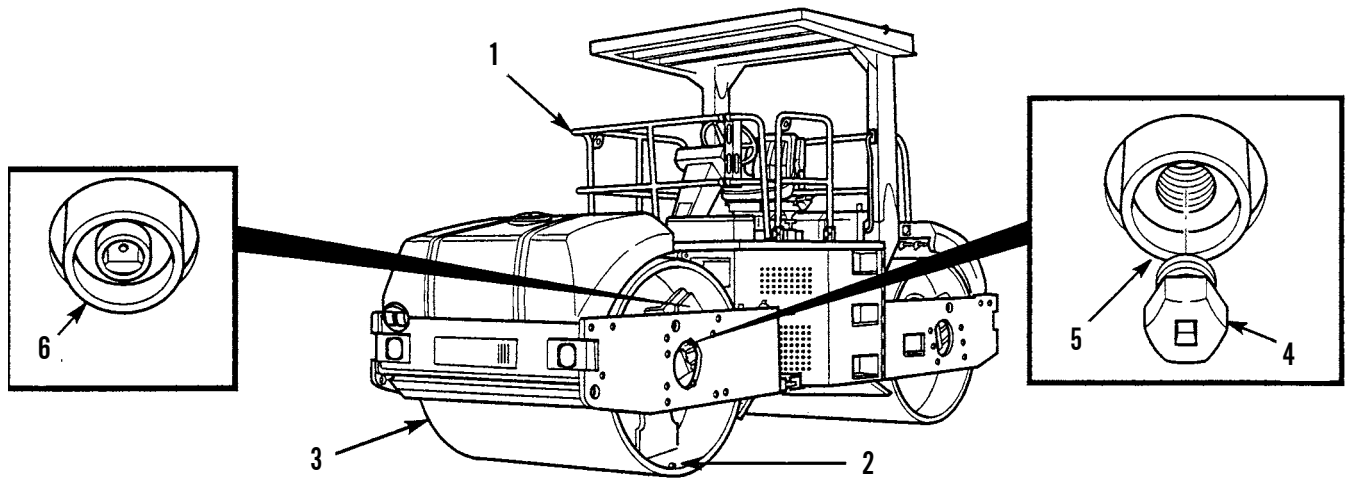
1. Clean plug.
2. Clean area around plug openings.
3. Inspect threads for crossed or peeled condition.
4. Replace damaged plug.

FILL

1. Install plug (4) in vibratory reservoir (5).
2. Remove chocks from drums (TM 5-3895-379-10).
3. Start engine (TM 5-3895-379-10).
4. Move roller (1) until bar (2) is at bottom of drum (3).
5. Turn off engine (TM 5-3895-379-10).
6. Chock drums (TM 5-3895-379-10).
7. Place container with of 3.1 gal. (12 l) minimum capacity under fill hole.
8. Remove plug (4) from vibratory reservoir (5).
9. Add oil (WP 0008 00 and WP 0009 00).

FILL - CONTINUED

10. Install plug (4) in vibratory reservoir (5).
11. Check oil level gage (6) on roller drum (3). Oil level is correct when oil fills half of oil level gage viewing window.



401-736

12. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER SPRAY CHECK VALVE REPLACEMENT

0148 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Brush, cleaning (Item 6, WP 0219 00)
 Cloth, cleaning (Item 10, WP 0219 00)
 Compound, sealing (Item 12, WP 0219 00)
 Detergent (Item 14, WP 0219 00)
 Locknut (2)

Materials/Parts - Continued

Wood block, approximately 6 in. (152 mm) tall, 6 in. (152 mm) and 12 in. (305 mm) long

References

TM 5-3895-379-23P, Figure 134

Equipment Condition

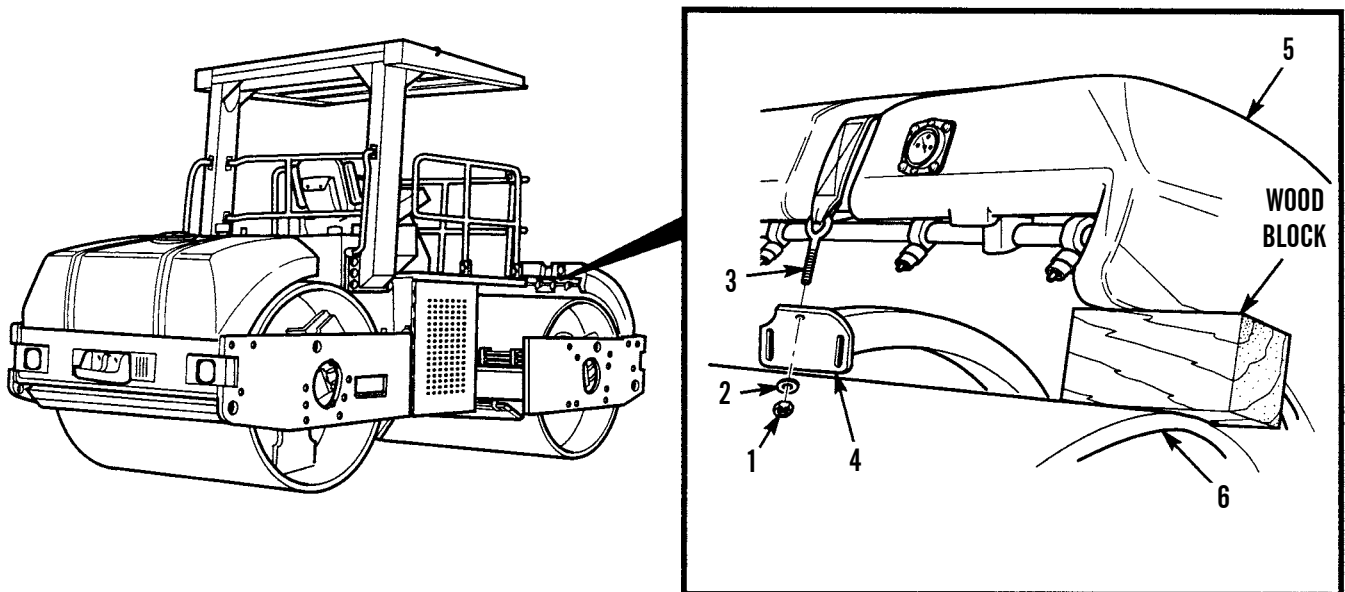
Engine off (TM 5-3895-379-10)
 Drums chocked (TM 5-3895-379-10)
 Water spray system drained (or low) (TM 5-3895-379-10)

NOTE

Front and rear front water spray check valves are replaced the same way. Front water spray check valve is shown.

REMOVAL

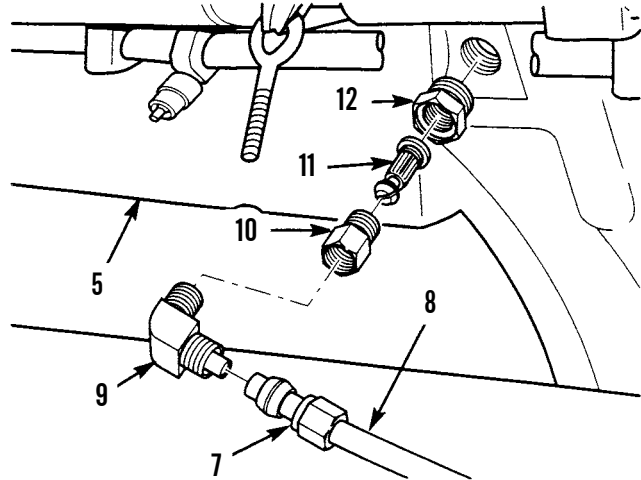
1. Remove two locknuts (1), washers (2) and straps (3) from bumper assembly (4). Discard locknuts.
2. Lift water tank (5) and place wood block between tank and drum (6).



401-755

REMOVAL - CONTINUED

3. Loosen fitting (7) and remove tube (8) from elbow (9).
4. Remove elbow (9) from check valve body (10).
5. Remove check valve body (10) and valve (11) from check valve adapter (12).
6. Remove check valve adapter (12) from water tank (5).



401-756

CLEANING AND INSPECTION

1. Clean check valve, check valve body and check valve adapter in non-sudsing detergent and water. Remove difficult deposits with a cleaning brush.

**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

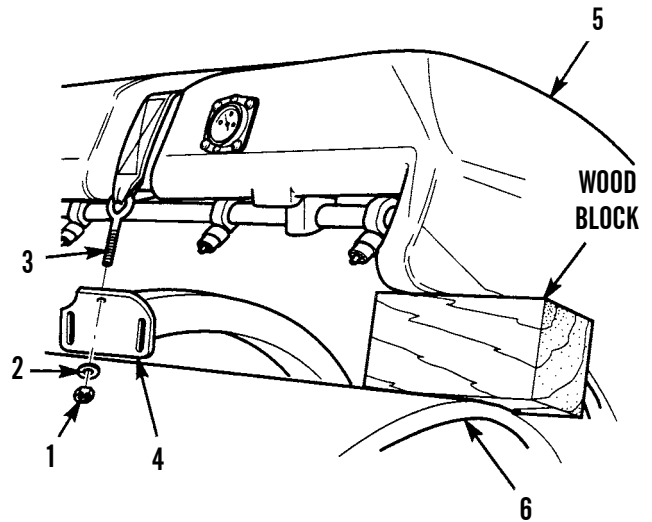
2. Use cleaning cloth or compressed air to dry metal parts.
3. Check check valve for corrosion or excessive wear.
4. Check check valve body and check valve body adapter for nicks, cracks, crossed threads or corrosion.
5. Replace damaged parts.

INSTALLATION

1. Apply sealing compound to threads of check valve adapter (12) and install check valve adapter in water spray tank (5).
2. Install valve (11) and check valve body (10) in check valve adapter (12).
3. Apply sealing compound to threads of elbow (9) and install elbow in check valve body (10).
4. Install tube (8) on elbow (9) and tighten fitting (7).

INSTALLATION - CONTINUED

5. Lift water tank (5) and remove wood block from between tank and drum (6).
6. Lower water tank (5) on bumper assembly (4).
7. Install two straps (3) on bumper assembly (4) with two washers (2) and new locknuts (1). Tighten locknuts until strap tension is snug.



401-757

8. Fill water spray system (TM 5-3895-379-10).
9. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
10. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER SPRAY STRAINER ASSEMBLY MAINTENANCE

0149 00

THIS WORK PACKAGE COVERS

Disassembly, Cleaning and Inspection, Assembly

INITIAL SETUP**Tool and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop Equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Brush, cleaning (Item 6, WP 0219 00)

Cloth, cleaning (Item 10, WP 0219 00)

Detergent (Item 14, WP 0219 00)

References

TM 5-3895-379-23P, Figure 138

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

NOTE

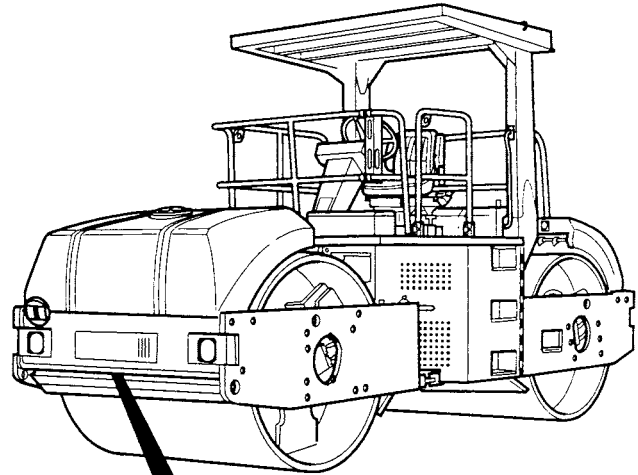
- Water spray strainer assembly for CB534B and CB534C Rollers are serviced the same way except where noted. The CB534B Roller is shown.
- Front and rear water spray strainer assemblies are serviced the same way. The front water spray strainer assembly is shown.

DISASSEMBLY

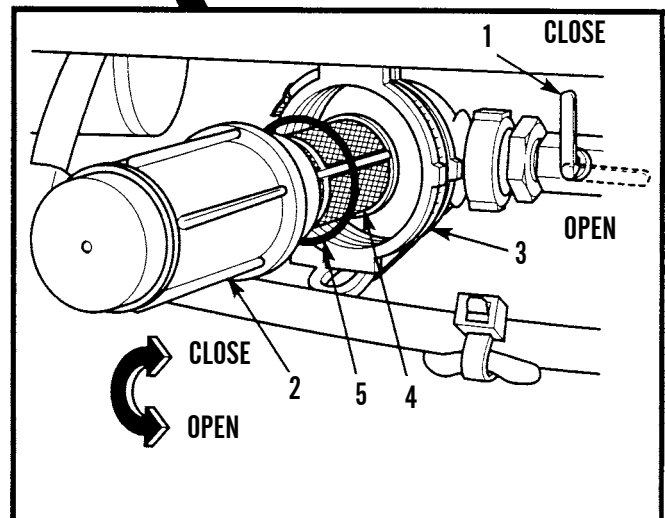
NOTE

CB534C Roller does not have valve handle.

1. Turn valve handle (1) to closed position.
2. Remove strainer assembly bowl (2) from strainer assembly (3).
3. Remove screen (4) and seal (5) from strainer assembly bowl (2). Discard seal if damaged.



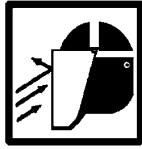
VIEW LOOKING UP



401-758

CLEANING AND INSPECTION

1. Clean strainer assembly bowl and screen with non-sudsing detergent and water. Remove difficult deposits with a cleaning brush.

**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

2. Use cleaning cloth or compressed air to dry metal parts.
3. Check bowl for cracking, corrosion or excessive wear.
4. Check screen for clogging, corrosion, excessive wear and obvious signs of damage.
5. Check all parts for stripped or damaged threads.
6. Replace all damaged parts.

ASSEMBLY

1. Install screen (4) and seal (5) on strainer assembly bowl (2).
2. Install strainer assembly bowl (2) in strainer assembly (3).
3. Turn valve handle (1) to the open position. (CB534B Roller).
4. Start engine, operate water spray system and check for leaks (TM 5-3895-379-10).
5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation, Disassembly, Assembly

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Brush, cleaning (Item 6, WP 0219 00)
- Cloth, cleaning (Item 10, WP 0219 00)
- Compound, sealing (Item 13, WP 0219 00)

Materials/Parts - Continued

- Detergent (Item 14, WP 0219 00)

References

- TM 5-3895-379-23P, Figure 138

Equipment Condition

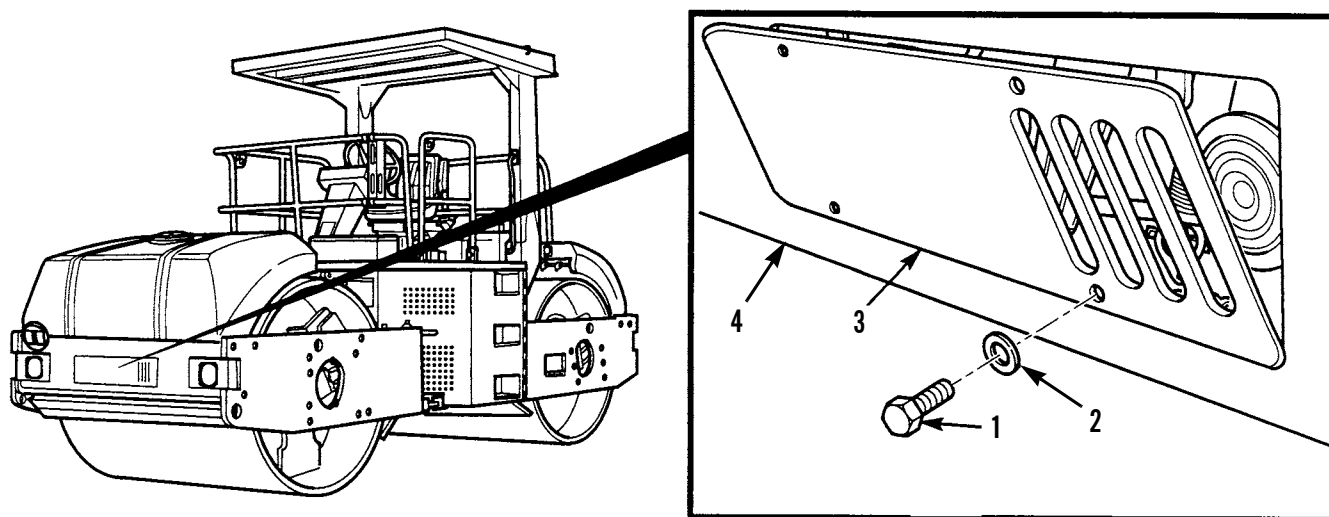
- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Water spray system drained (TM 5-3895-379-10)

NOTE

- Water spray strainer assembly for CB534B and CB534C Rollers are serviced the same way except where noted. The CB534B Roller is shown.
- Front and rear water spray strainer assemblies are serviced the same way.

REMOVAL

1. Remove four bolts (1), washers (2) and cover (3) from bumper assembly (4).



401-743

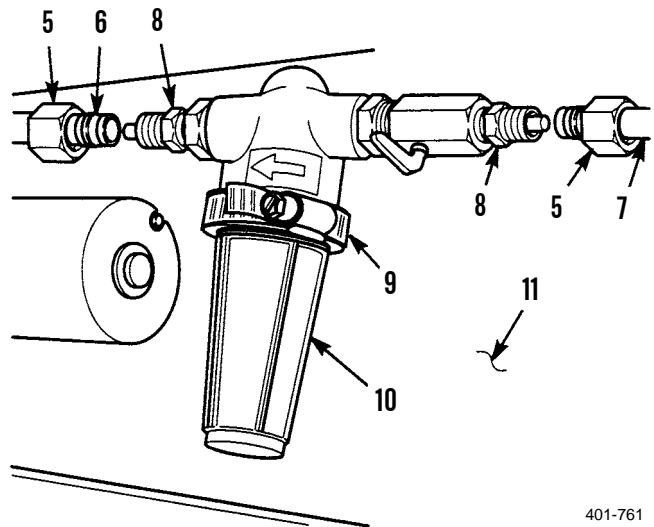
REMOVAL - CONTINUED

2. Loosen two fittings (5) and remove two tubes (6) and (7) from adapters (8).
3. Loosen hose clamp (9) and remove strainer assembly (10) from bumper assembly (11).

NOTE

On CB534C Roller, two bolts fasten the strainer base to the bumper instead of clamp.

4. If damaged, remove hose clamp (9) from bumper assembly (11).



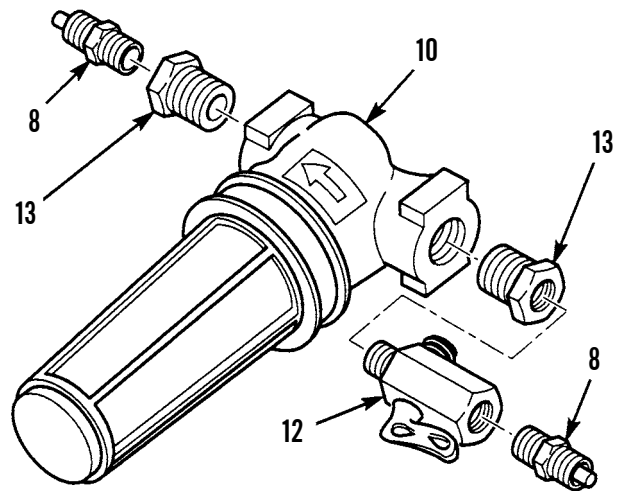
401-761

DISASSEMBLY

NOTE

CB534C Roller does not have valve or adapters.

Remove two adapters (8), valve (12) and two bushings (13) from strainer assembly (10).



401-762

CLEANING/INSPECTION

1. Clean fittings, bushings, valve and strainer assembly with detergent and water. Remove difficult deposits with cleaning brush.

**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

2. Use a cleaning cloth or compressed air to dry metal parts.
3. Check fittings, bushings and valve for clogging, corrosion or excessive wear.
4. Check strainer assembly for clogging, corrosion, excessive wear and obvious signs of damage.
5. Check all parts for stripped or damaged threads.
6. Replace all damaged parts.

ASSEMBLY**NOTE**

CB534C Roller does not have valve or adapters.

Apply sealing compound to threads of two bushings (13) and install two bushings (13), valve (12) (CB534B Roller) and two adapters (8) in strainer assembly (10).

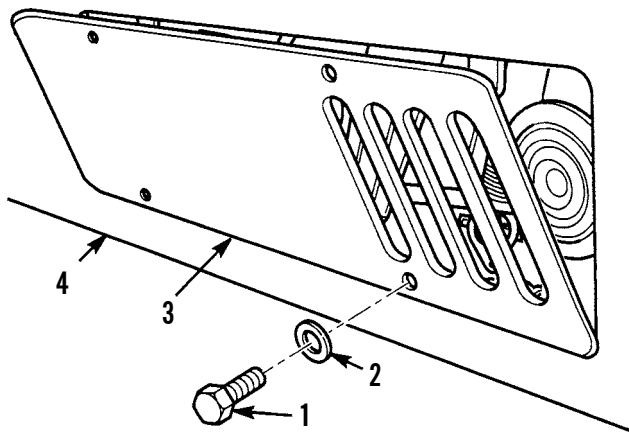
INSTALLATION

1. If removed, install hose clamp (9) on bumper assembly (11).
2. Install strainer assembly (10) in hose clamp (9). Tighten clamp.

CAUTION

Directional arrows on strainer assembly must point left when strainer assembly is installed. Arrows indicate direction of water flow through strainer assembly. Failure to position strainer assembly arrow pointing left will result in poor equipment performance and possible equipment damage.

3. Position two tubes (6) and (7) on adapters (8) and tighten two fittings (5).
4. Install cover (3) on bumper assembly (4) with four washers (2) and bolts (1). Tighten screws to 15-25 lb-ft (20-34 Nm).
5. Fill water spray system (TM 5-3895-379-10).
6. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
7. Remove chocks (TM 5-3895-379-10).



401-763

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Brush, cleaning (Item 6, WP 0219 00)

Cloth, cleaning (Item 10, WP 0219 00)

Compound, sealing (Item 12, WP 0219 00)

Materials/Parts - Continued

Detergent (Item 14, WP 0219 00)

O-ring (2)

References

TM 5-3895-379-23P, Figure 138

Equipment Condition

Engine off (TM 5-3895-379-10)

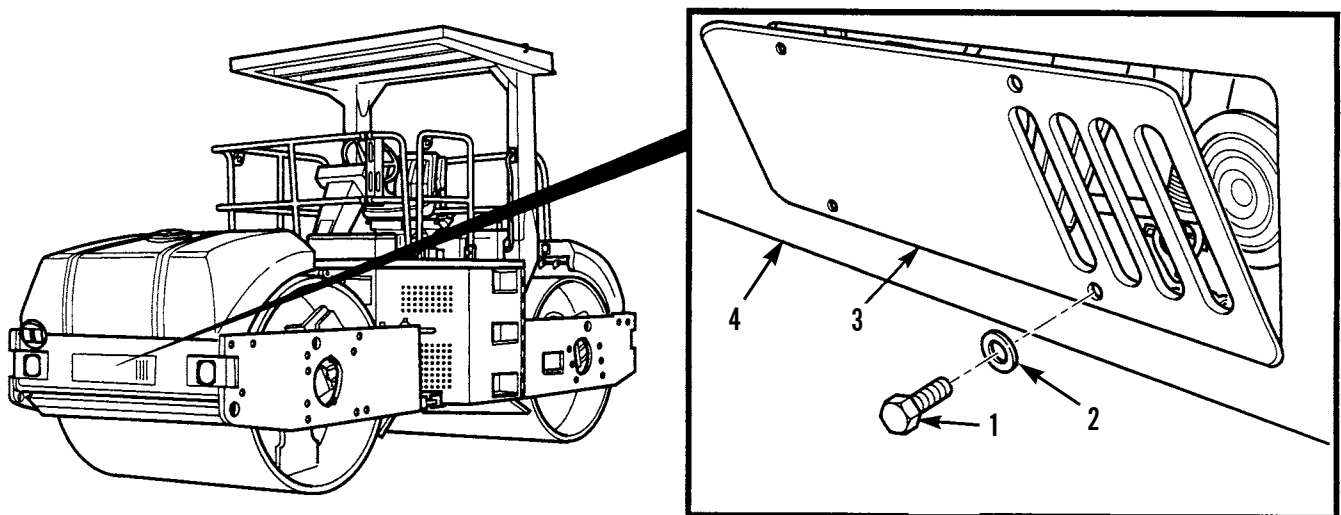
Water spray system drained (TM 5-3895-379-10)

NOTE

Front and rear water tank screen assemblies are maintained the same way. Front water tank screen assembly is shown.

REMOVAL

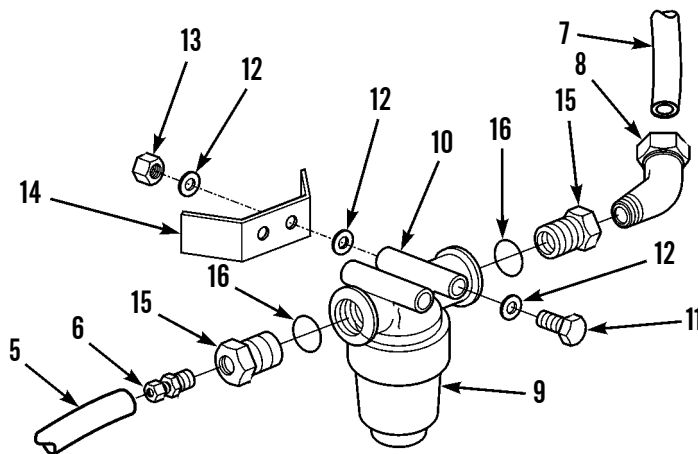
1. Remove four bolts (1), washers (2) and cover (3) from bumper assembly (4).



401-743

REMOVAL - CONTINUED

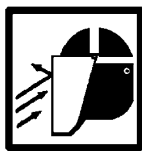
2. Remove tube (5) from connector (6) and tube (7) from elbow (8).
3. Remove fluid filter assembly (9) from water filter (10).
4. Remove two bolts (11), six washers (12), two nuts (13) and water filter (10) from frame (14).
5. Remove connector (6), elbow (8), two bushings (15) and two O-rings (16) from fluid filter (10). Discard O-rings.



401-743

CLEANING AND INSPECTION

1. Clean connector, elbow, bushings and strainer assembly with detergent and water. Remove difficult deposits with cleaning brush.

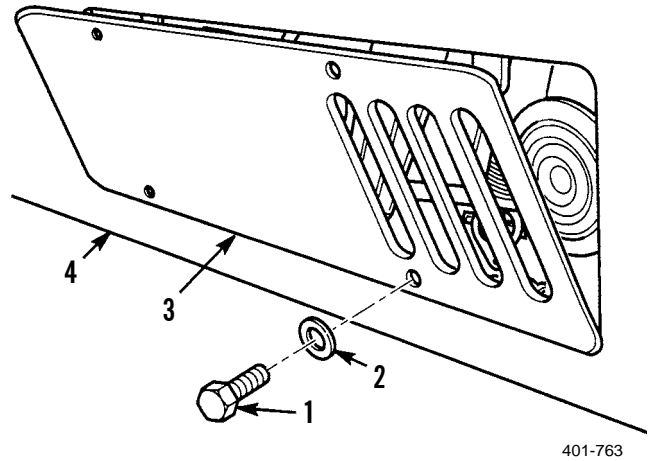
**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

2. Use a cleaning cloth or compressed air to dry metal parts.
3. Check connector, elbow and bushings for clogging, corrosion or excessive wear.
4. Check fluid filter assembly for clogging, corrosion, excessive wear and obvious signs of damage.
5. Check all parts for stripped or damaged threads.
6. Replace all damaged parts.

INSTALLATION

1. Install two new O-rings (16) and bushings (15) in fluid filter assembly (9).
2. Install fluid filter assembly (9) in water filter (10).
3. Install fluid filter (10) on frame (14) with two bolts (11), six washers (12) and two nuts (13).
4. Install tube (5) on connector (6) and tube (7) to elbow (8).
5. Apply sealing compound to elbow (8) and connector (6) and install in bushings (15).
6. Install cover (3), four washers (2) and bolts (1) to bumper assembly (4).



7. Fill water spray system (TM 5-3895-379-10).
8. Start engine. Operate water spray system (TM 5-3895-379-10) and check for leaks.

END OF WORK PACKAGE

WATER SPRAY PIPE ASSEMBLY MAINTENANCE**0152 00****THIS WORK PACKAGE COVERS**

Removal, Disassembly, Cleaning and Inspection, Assembly, Installation, Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Brush, cleaning (Item 6, WP 0219 00)
 Cloth, cleaning (Item 10, WP 0219 00)
 Compound, sealing (Item 12, WP 0219 00)
 Detergent (Item 14, WP 0219 00)
 Locknut (2)

Materials/Parts - Continued

Wood block, approximately 6 in. (152 mm) tall, 6 in. (152 mm) wide, and 12 in. (305 mm) long

References

TM 5-3895-379-23P, Figure 136

Equipment Condition

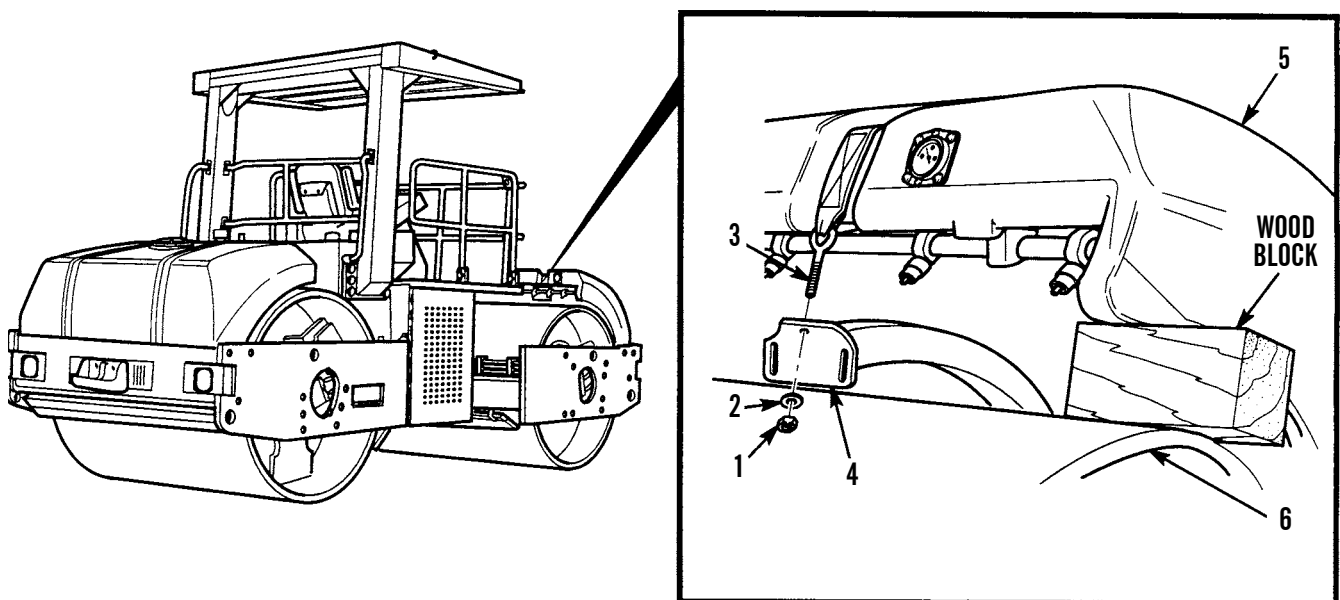
Engine off (TM 5-3895-379-10)
 Drums chocked (TM 5-3895-379-10)
 Water spray system drained (TM 5-3895-379-10)

NOTE

Front and rear water spray pipe assembly are maintained the same way. Front water spray pipe assembly is shown.

REMOVAL

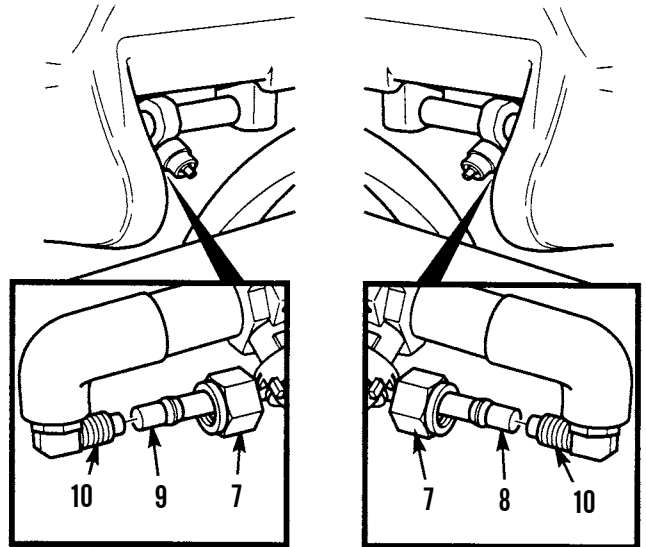
1. Remove two locknuts (1), washers (2) and straps (3) from bumper assembly (4). Discard locknuts.
2. Lift water spray tank (5) and place wood block between tank and drum (6).



401-764

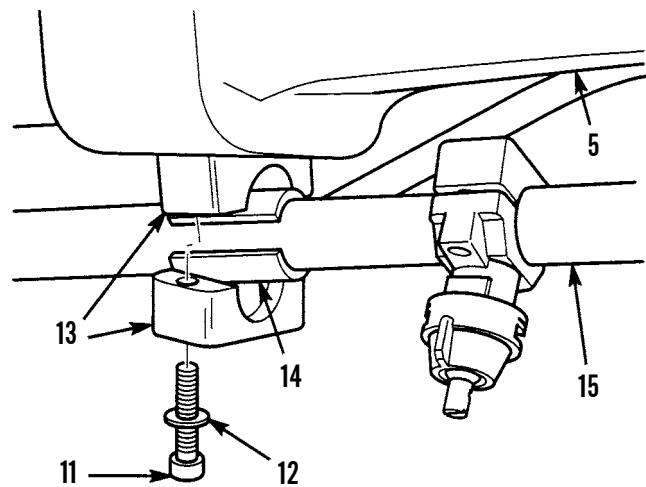
REMOVAL - CONTINUED

3. Loosen two fittings (7) and remove two tubes (8) and (9) from two elbows (10).



401-765

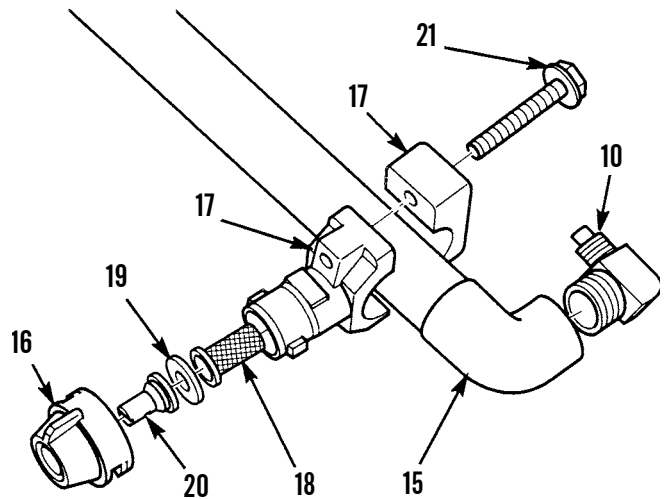
4. Remove eight screws (11), washers (12), clamp halves (13), four inserts (14) and water spray pipe assemblies (15) from water spray tank (5).



401-766

DISASSEMBLY

1. Remove cap (16) from clamp (17) by turning counterclockwise.
2. Remove screen (18), seal (19) and nozzle (20) from cap (16).
3. Remove two screws (21) and clamp (17) from water spray pipe assembly (15).
4. Repeat steps 1 through 3 for remaining clamps as required.
5. Remove two elbows (10) from water spray pipe assembly (15).



401-767

CLEANING AND INSPECTION

1. Clean screen, seal, nozzle and clamp with detergent and water. Remove difficult deposits with a stiff bristle brush.

**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

2. Use a cleaning cloth or compressed air to dry metal parts.
3. Check cap and clamp for cracks and wear on locking parts.
4. Check screen for crushing, corrosion or tears.
5. Check seal for cracks, tears or other signs of deterioration.
6. Check nozzle for clogging, corrosion or excessive wear.
7. Replace all damaged parts.

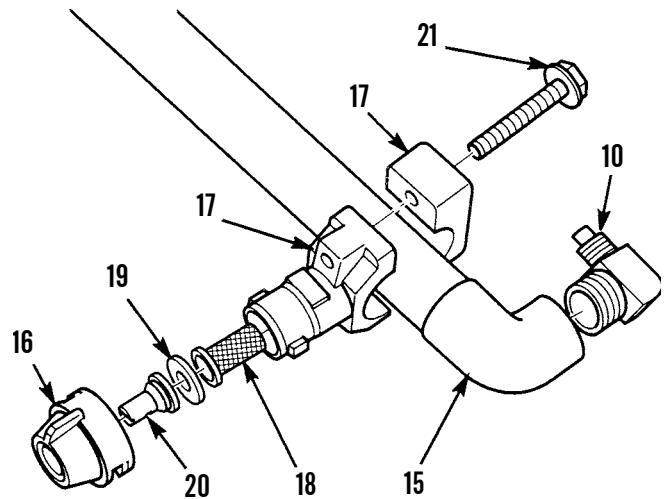
ASSEMBLY

1. Apply sealing compound to threads and install two elbows (10) in water spray pipe assembly (15).
2. Install clamp (17) in water spray pipe assembly (15) with two screws (21).
3. Install nozzle (18), seal (19) and screen (20) in cap (16).

CAUTION

Failure to ensure that cap is securely snapped into locked position will result in possible loss of nozzle components when water spray system is operated.

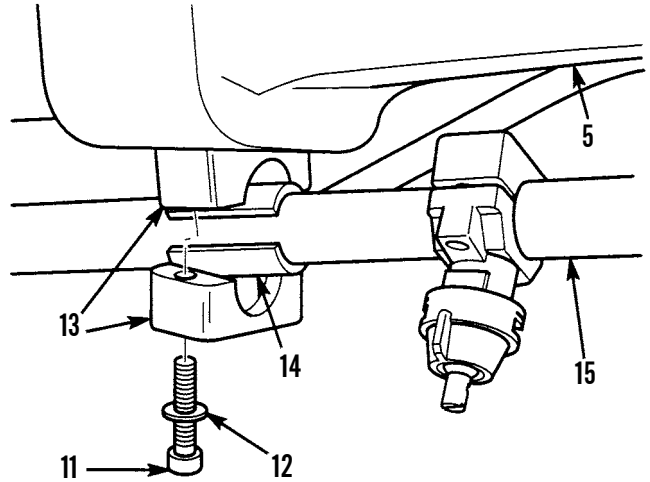
4. Install cap (16) on clamp (17) and turn clamp clockwise until clamp snaps into locked position.
5. Repeat steps 2 through 4 for remaining clamps as required.



401-767

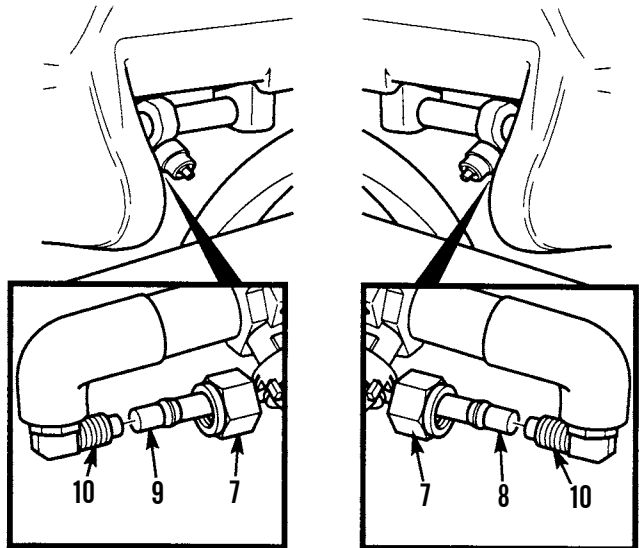
INSTALLATION

1. Install water spray pipe assemblies (15), four inserts (14) and eight clamp halves (13) on water spray tank (5) with eight washers (12) and screws (11). Snug, but do not tighten, screws.



401-766

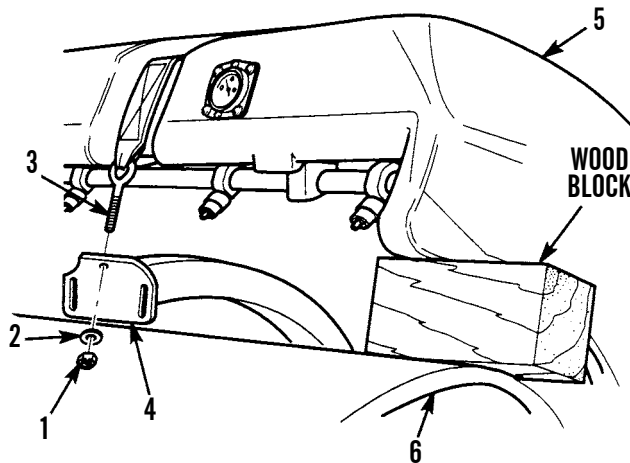
2. Position two tubes (8) and (9) on elbows (10) and tighten fittings (7).



401-765

INSTALLATION - CONTINUED

3. Lift water spray tank (5) and remove wood block.
4. Lower water spray tank (5) on bumper assembly (4).
5. Install two straps (3) in bumper assembly (4) with two washers (2) and new locknuts (1). Tighten locknuts until strap tension is snug.
6. Fill water spray system and check for leaks (TM 5-3895-379-10).



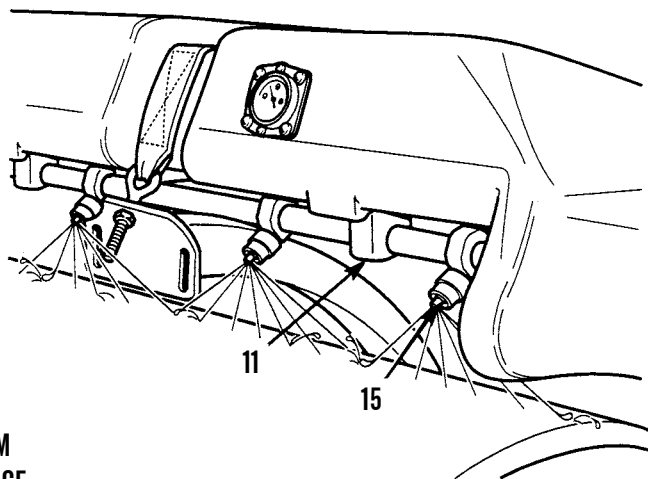
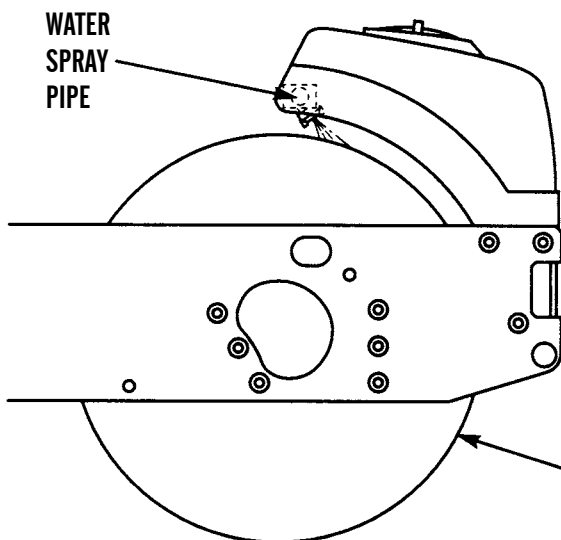
401-

ADJUSTMENT

NOTE

Water spray pipes are correctly adjusted when water spray covers 100% of width of drum surface. There are two methods of adjustment.

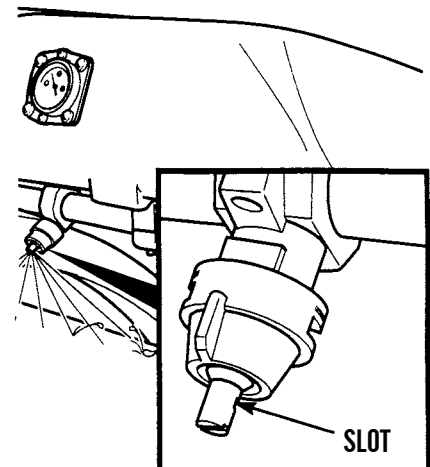
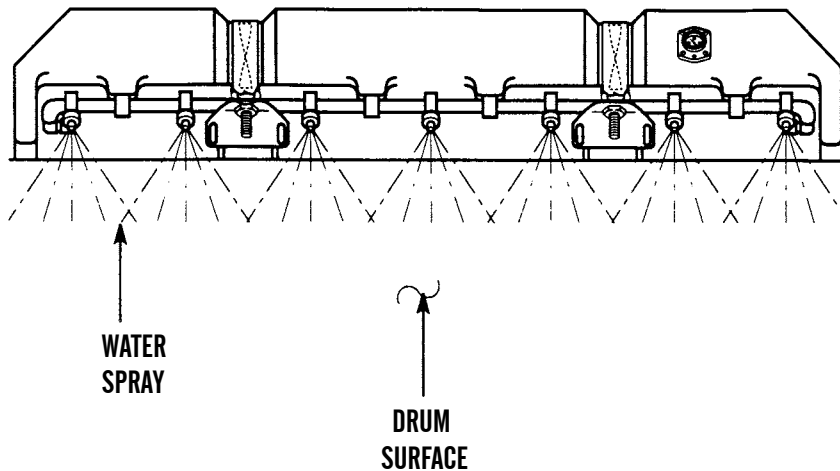
1. Method A (perform every time spray pipe is removed).
 - a. Start engine and operate water spray system (TM 5-3895-379-10).
 - b. While screws (11) are not tightened, turn spray pipe assembly (15) until water spray makes best contact with drum surface.
 - c. Tighten screws (11).
 - d. Turn off water spray system and engine (TM 5-3895-379-10).



401-769

ADJUSTMENT - CONTINUED

2. Method B (perform anytime).
 - a. Start engine and operate water spray system (TM 5-3895-379-10).
 - b. Turn slot in nozzle until water spray fan pattern makes full and equal contact with drum surface.
 - c. Turn off water spray system and engine (TM 5-3895-379-10).



401-770

3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER TANK STRAINER ASSEMBLY REPLACEMENT

0153 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Locknut

References

TM 5-3895-379-23P, Figure 134

Equipment Condition

Engine off (TM 5-3895-379-10)

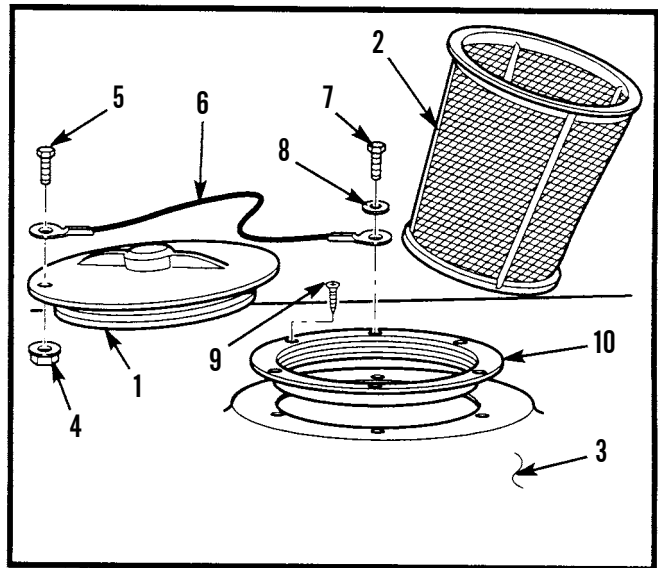
Drums chocked (TM 5-3895-379-10)

NOTE

Front and rear water tank strainer assemblies are replaced the same way. Front water tank strainer assembly is shown.

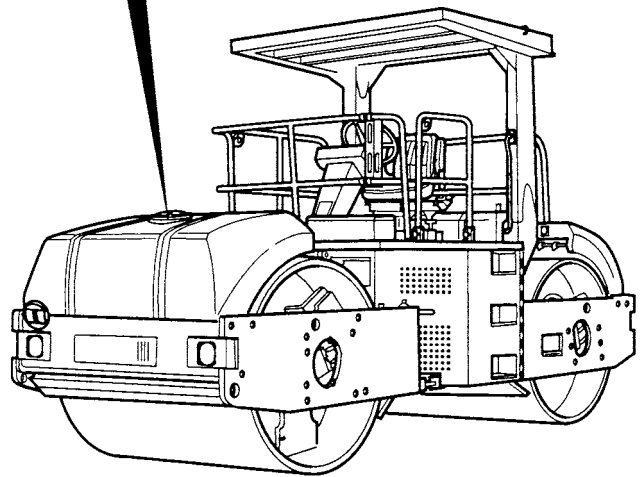
REMOVAL

1. Remove lid (1) and strainer (2) from water tank (3).
2. Remove locknut (4), screw (5) and lanyard (6) from lid (1). Discard locknut.
3. Remove screw (7), washer (8) and lanyard (6) from water tank (3).
4. Remove six screws (9) and rim (10) from water tank (9).



INSTALLATION

1. Install rim (10) on water tank (3) with six screws (9).
2. Install lanyard (6) on water tank (3) with washer (8) and screw (7).
3. Install lanyard (6) on lid (1) with screw (5) and new locknut (4).
4. Install strainer (2) and lid (1) on water tank (3).



401-771

5. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER TANK REPLACEMENT

0154 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Compound, sealing (Item 13, WP 0219 00)

Locknut

References

TM 5-3895-379-23P, Figure 134

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Water tank drained (TM 5-3895-379-10)

Water level gauge removed (WP 0156 00)

Water tank strainer assembly removed (WP 0153 00)

Water spray pipe assembly removed (WP 0152 00)

Water spray check valve removed (WP 0148 00)

REMOVAL



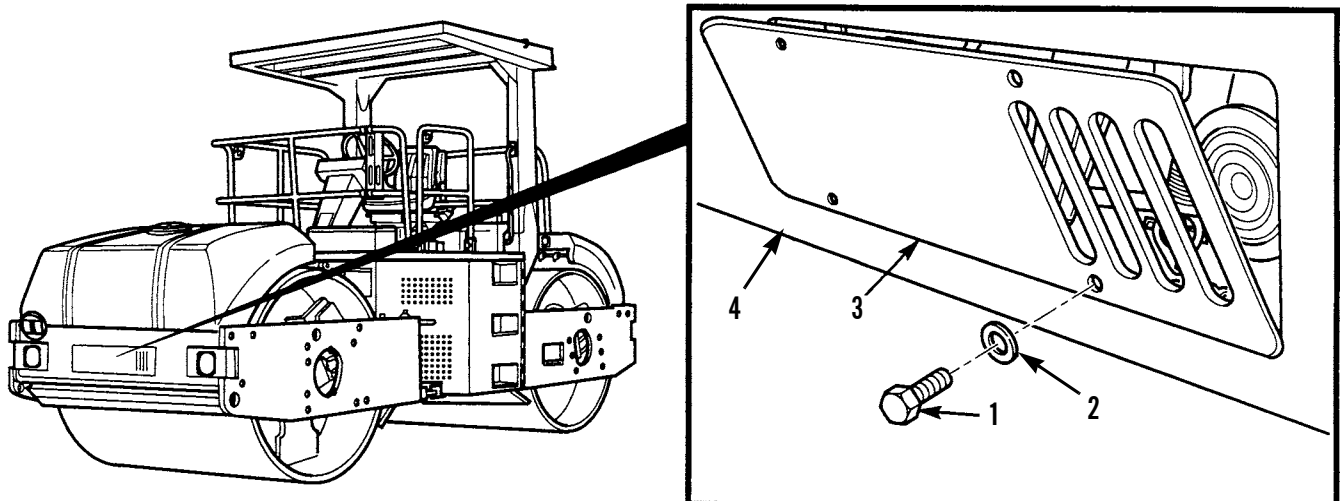
WARNING

Use caution when removing cover from bumper assembly. Failure to follow this warning may cause injury.

NOTE

- Cover weighs 12 lb (5.44 kg).
- Front and rear water tanks are replaced the same way. Front water tank is shown.
- If removing water tank for wiring harness or front or rear support replacement, perform only steps 1 and 2 and steps 5 and 6.

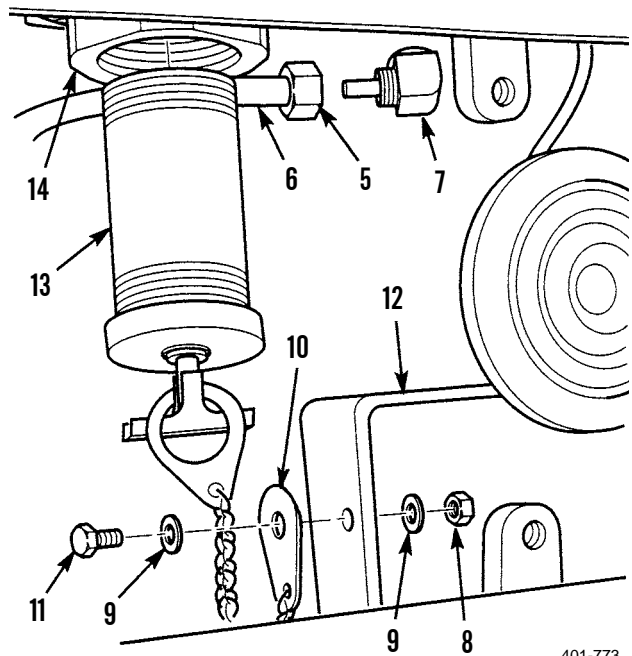
1. Remove four screws (1), washers (2) and cover (3) from bumper assembly (4).



401-743

REMOVAL - CONTINUED

2. Loosen fitting (5) and remove tube (6) from elbow (7).
3. Remove locknut (8), washer (9), cap assembly (10), washer (9) and bolt (11) from bumper bracket (12). Discard locknut.
4. Remove cap assembly (10) and nipple (13) from water tank (14).



401-773

5. Position straps (15) in front of bumper assembly (4).



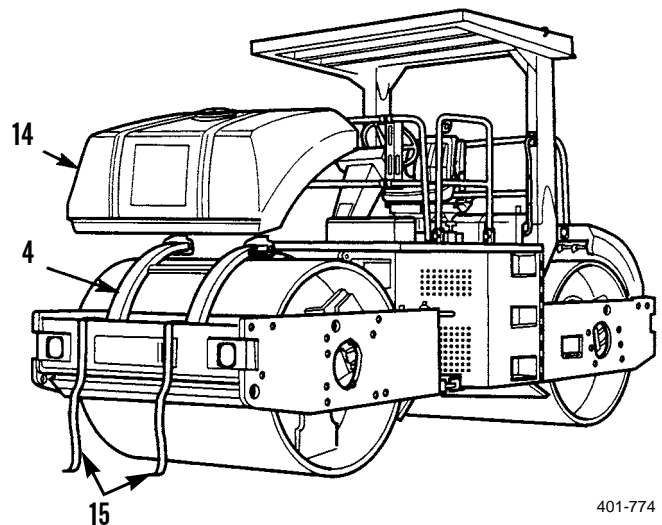
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury or death.

NOTE

Water tank weighs 91 lb (41 kg).

6. With assistance, remove water tank (14) from bumper assembly (4).



401-774

WATER TANK REPLACEMENT - CONTINUED

0154 00

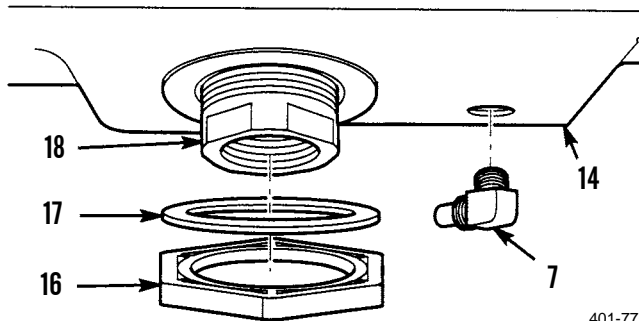
REMOVAL - CONTINUED

7. Remove elbow (7) from water tank (14).

NOTE

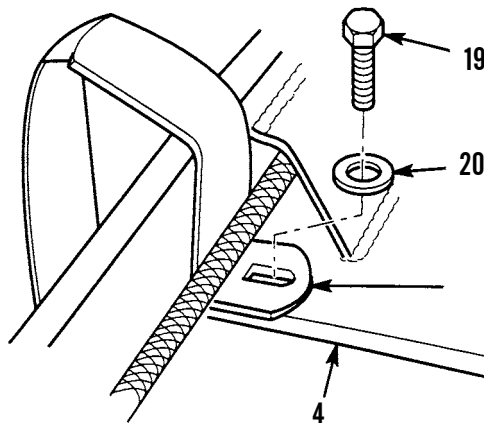
Nut and fitting have left-hand thread.

8. If damaged, remove nut (16), seal (17) and fitting (18) from water tank (14).



401-775

9. If damaged, remove two bolts (19), washers (20) and straps (15) from bumper assembly (4).



401-776

INSTALLATION**NOTE**

If installing water tank for wiring harness or front or rear support replacement, perform only steps 4 and 5 and steps 9 and 10.

1. If removed, install straps (15) on bumper assembly (4) with two washers (20) and bolts (19). Tighten bolts to 22-30 lb-ft (30-41 Nm).

NOTE

Nut and fitting have left-hand thread.

2. Install fitting (18), seal (17) and nut (16) in water tank (14). Tighten nut securely.
3. Install elbow (7) on water tank (14).

INSTALLATION - CONTINUED

4. Position straps (15) in front of bumper assembly (4).



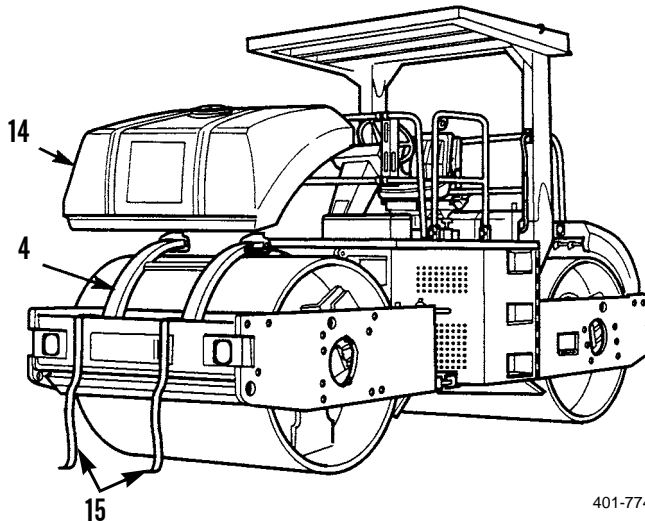
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

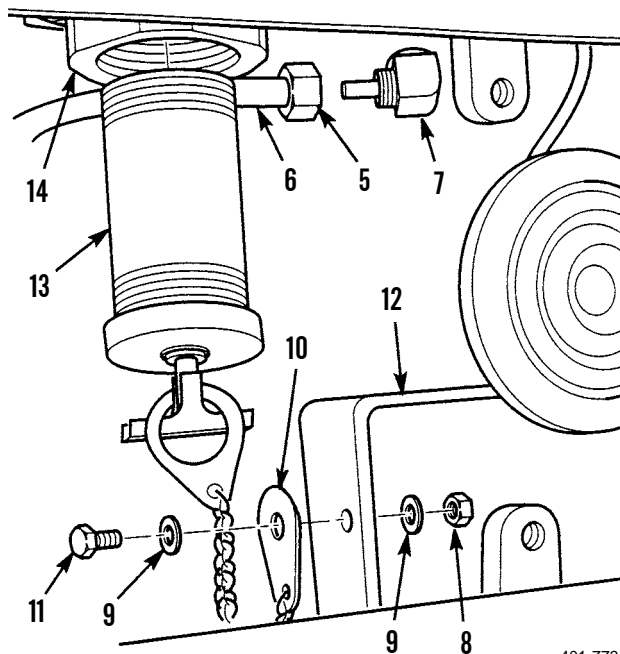
NOTE

Water tank weighs 91 lb (41 kg).

5. With assistance, install water tank (14) on bumper assembly (4).
6. Apply sealing compound to threads of nipple (13) and install nipple (13) in water tank (14).
7. Install cap assembly (10) on bumper bracket (12) with bolt (11), two washers (9) and new locknut (8). Tighten locknut to 7-11 lb-ft (9-15 Nm).
8. Install cap assembly (10) on nipple (13) by turning tee-handle fully right until cap assembly is snug in nipple.
9. Position tube (6) on elbow (7) and tighten fitting (5).



401-774

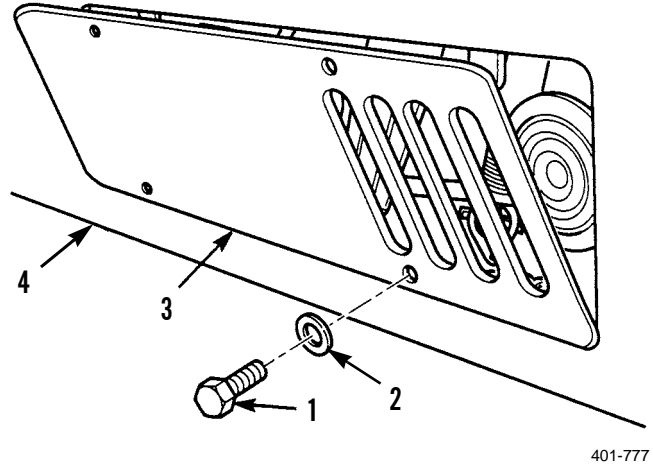


401-773

INSTALLATION - CONTINUED**WARNING**

Use caution when installing cover on bumper assembly. Failure to follow this warning may cause injury.

10. Install cover (3) on bumper assembly (4) with four washers (2) and bolts (1). Tighten bolts to 15-25 lb-ft (20-34 Nm).



401-777

11. Install water level gauge (WP 0156 00).
12. Install water strainer assembly (WP 0153 00).
13. Install water spray check valve (WP 0148 00).
14. Install and adjust water spray pipe (WP 0152 00).
15. Fill water spray system (TM 5-3895-379-10).
16. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
17. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER SPRAY PUMP REPLACEMENT

0155 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Strap, tie down (Item 36, WP 0219 00)

References

TM 5-3895-379-23P, Figure 135

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)

NOTE

- Water spray pump for CB534B and CB534C Rollers are serviced the same way except where noted. The CB534B Roller is shown.
- Front and rear water spray pump are replaced the same way. The rear water spray pump is shown.

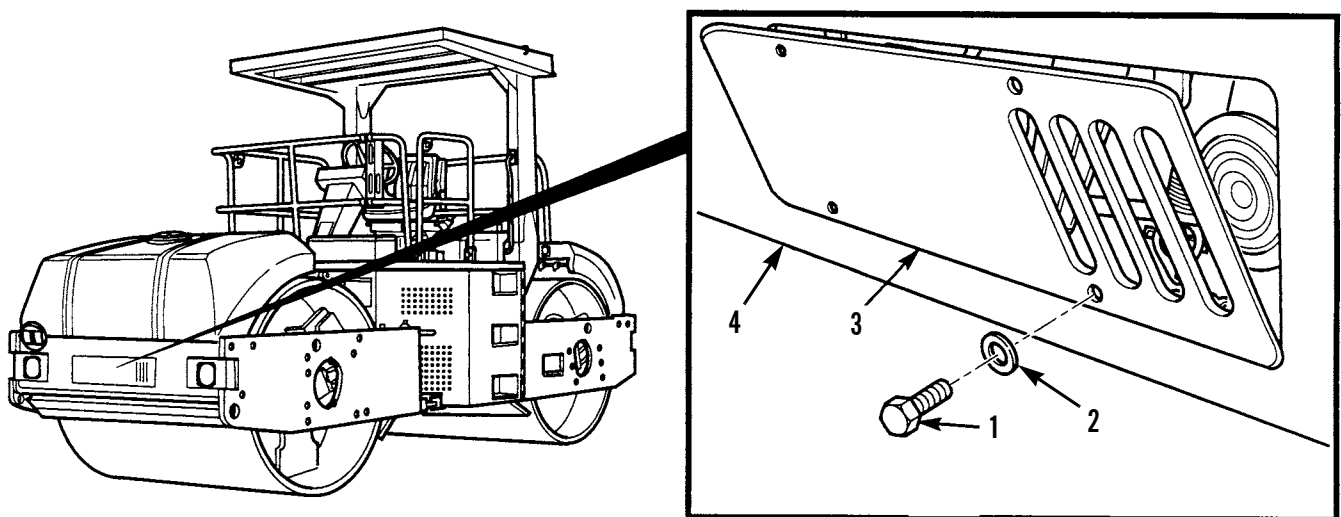
REMOVAL



WARNING

Use caution when removing cover from bumper assembly. Failure to follow this warning may cause injury.

1. Remove four bolts (1), washers (2) and cover (3) from bumper assembly (4).



401-743

REMOVAL - CONTINUED**NOTE**

Remove cable ties as required.

2. Turn valve handle (5) to closed position (CB534B Roller).
3. Disconnect water pump connector (6) from connector (7).

NOTE

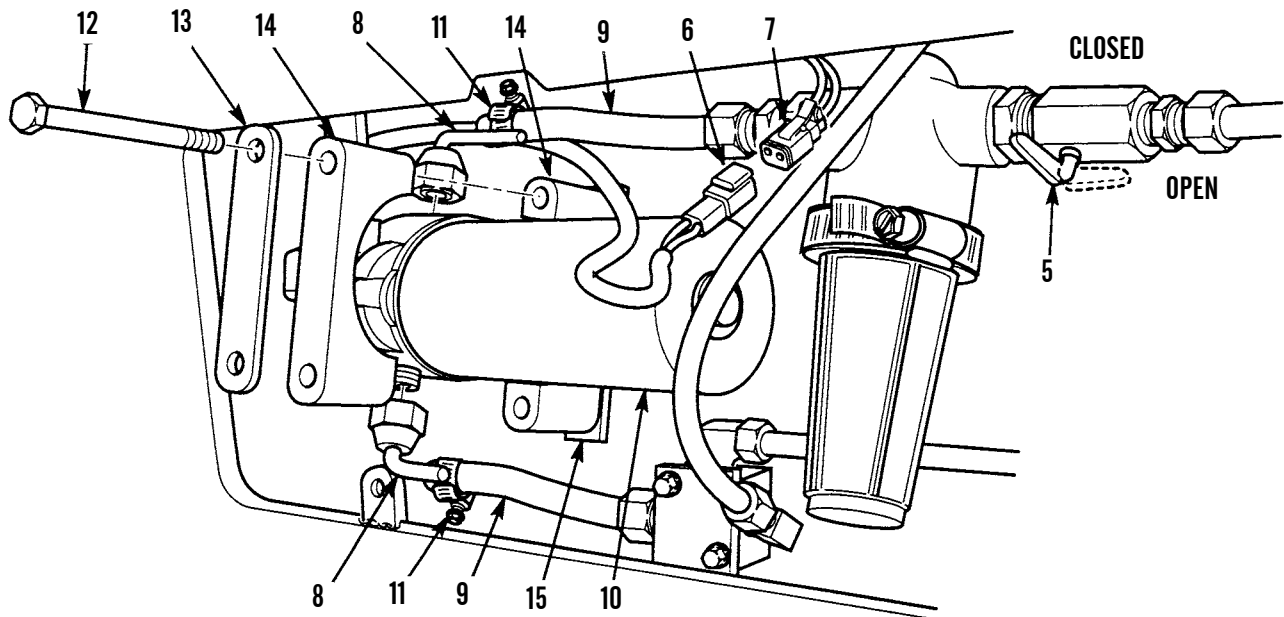
Note position of elbows to aid in installation.

4. Remove two elbows (8) and hose assemblies (9) from water spray pump (10).

CAUTION

Elbows are plastic. Use care when removing hose. Use of excessive force will cause elbows to break.

5. Loosen two clamps (11) and remove two hose assemblies (9) from elbows (8).
6. Remove two screws (12), plate (13), two clamp halves (14) and water spray pump (10) from bumper assembly (15).



401-778

INSTALLATION

1. Install clamp half (14), water spray pump (10), clamp half (14), plate (13) and two screws (12) on bumper assembly (15). Tighten screws securely.
2. Position two hose assemblies (9) on elbows (8) and tighten two clamps (11).
3. Install two elbows (8) and hose assemblies (9) on water spray pump (10).

NOTE

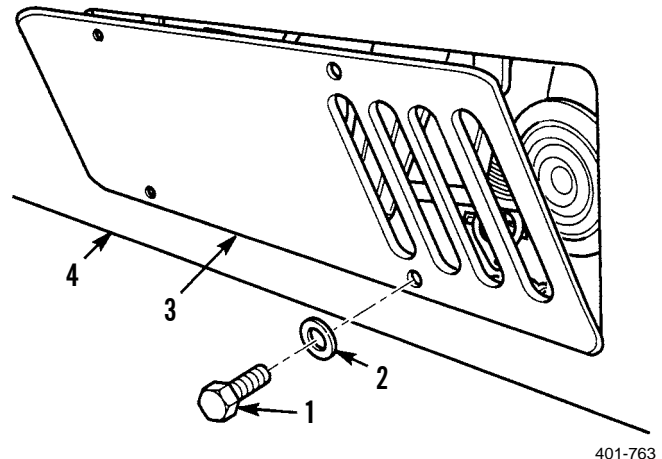
Add cable ties as required.

4. Connect water spray pump connector (6) to connector (7).
5. Turn valve handle (5) to open position and check for leaks.

**WARNING**

Use caution when installing cover on bumper assembly. Failure to follow this warning may cause injury.

6. Install cover (3) on bumper assembly (4) with four washers (2) and bolts (1). Tighten screws to 15-25 lb-ft (20-34 Nm).



401-763

7. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

WATER LEVEL GAUGE REPLACEMENT

0156 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

TM 5-3895-379-23P, Figure 137

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

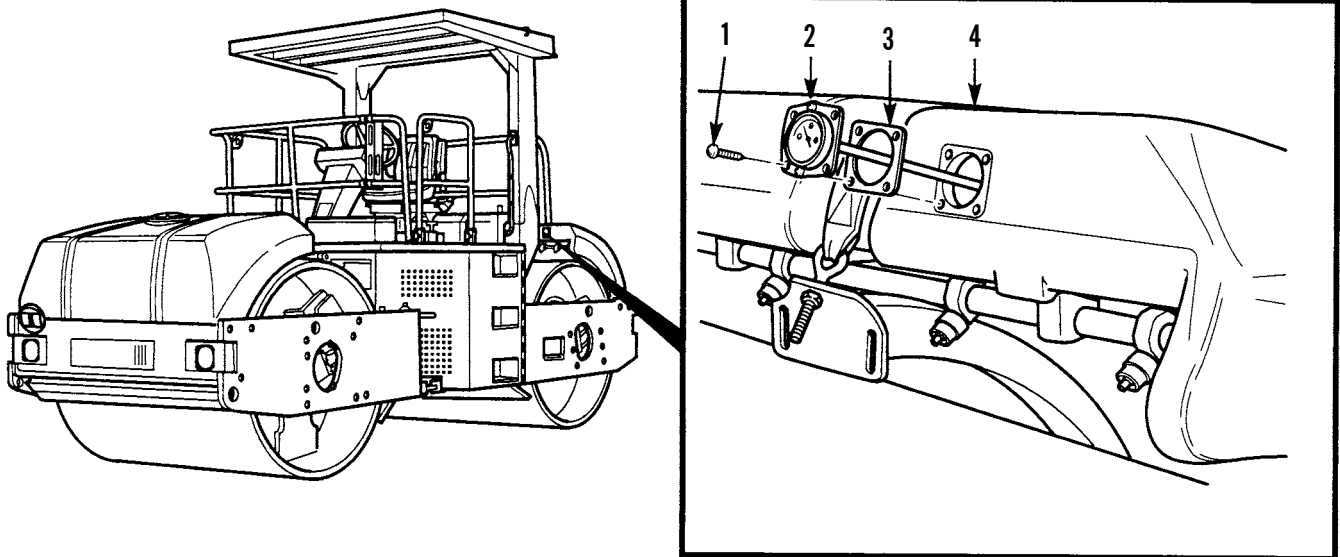
Water tank drained (TM 5-3895-379-10)

NOTE

- Front and rear water level gauges are replaced the same way. Rear water level gauge is shown.
- Note position of gauge face to aid in installation.

REMOVAL

Remove four screws (1), water level gauge (2) and gasket (3) from water tank (4). Discard gasket if damaged.



401-779

INSTALLATION

1. Install gasket (3) and water level gauge (2) on water tank (4) with four screws (1).
2. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

DRAIN COCK AND TEE REPLACEMENT

0157 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Brush, cleaning (Item 6, WP 0219 00)

Cloth, cleaning (Item 10, WP 0219 00)

Compound, sealing (Item 12, WP 0219 00)

Detergent (Item 14, WP 0219 00)

References

TM 5-3895-379-23P, Figure 137

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Water spray system drained (TM 5-3895-379-10)

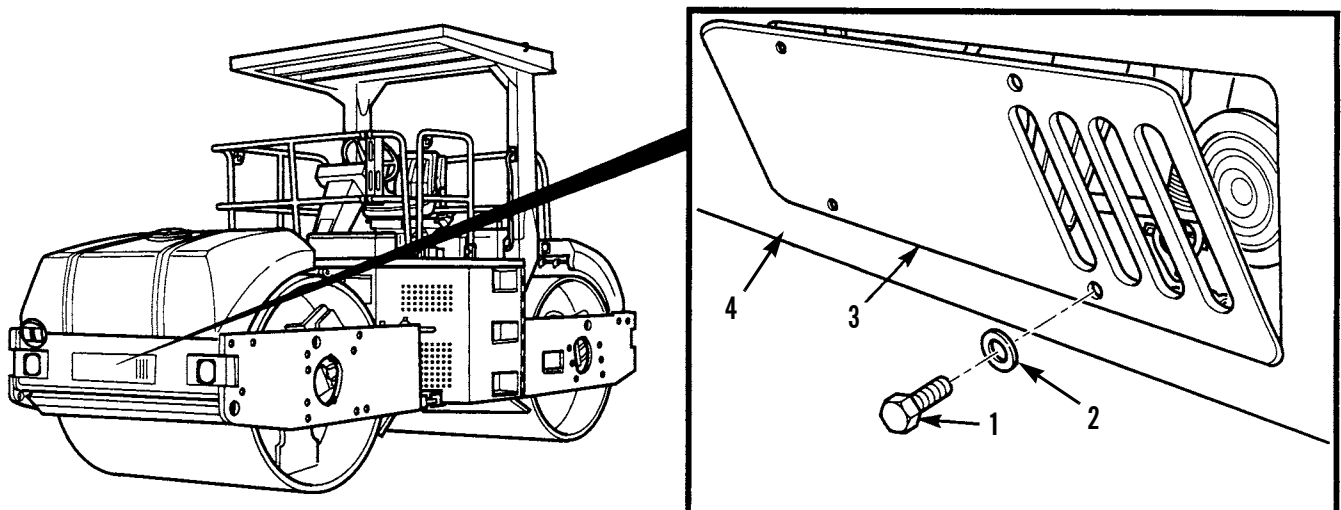
NOTE

Front and rear drain cock and tee are replaced the same way. The front drain cock and tee are shown.

REMOVAL**WARNING**

Use caution when removing cover from bumper assembly. Failure to follow this warning may cause injury.

1. Remove four bolts (1), washers (2) and cover (3) from bumper assembly (4).



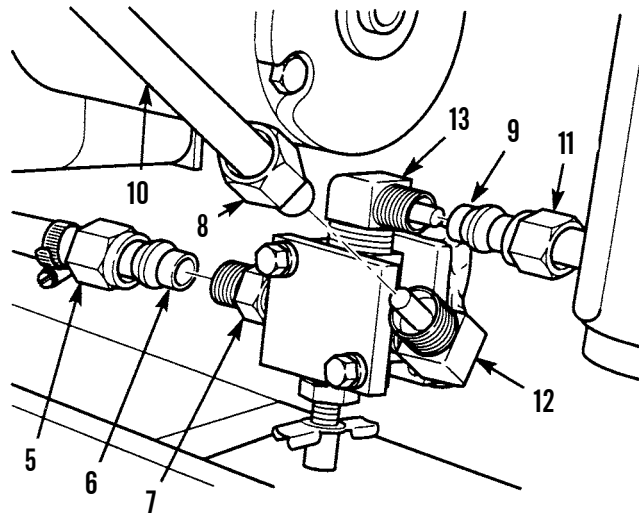
401-743

DRAIN COCK AND TEE REPLACEMENT - CONTINUED

0157 00

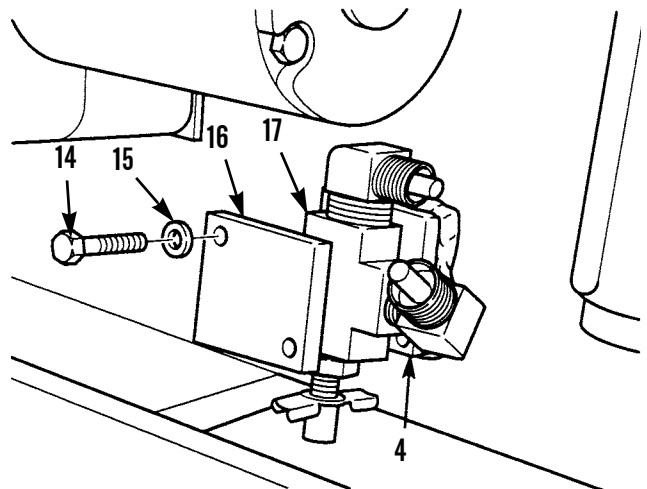
REMOVAL - CONTINUED

2. Loosen nut (5) and remove water line (6) from adapter (7).
3. Loosen two nuts (8) and (9) and remove water lines (10) and (11) from elbows (12) and (13).



401-780

4. Remove two screws (14), washers (15), plate (16) and tee (17) from bumper assembly (4).

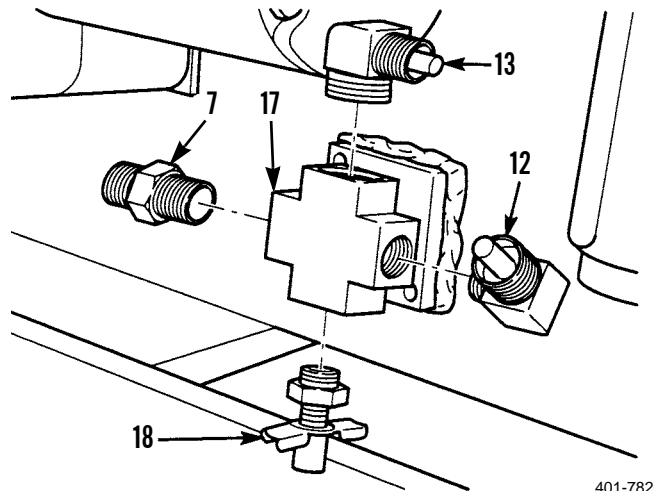


401-781

REMOVAL - CONTINUED**NOTE**

Note location and position of each fitting to aid in installation.

- Remove drain cock (18), adapter (7) and two elbows (12) and (13) from tee (17).



401-782

CLEANING AND INSPECTION

- Clean tee, fittings and drain cock with detergent and water. Remove difficult deposits with cleaning brush.

**WARNING**

Particles blow by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

- Use a cleaning cloth or compressed air to dry metal parts.
- Check tee for clogging, corrosion or excessive wear.
- Check drain cock for clogging, corrosion, excessive wear and obvious signs of damage.
- Check all parts for stripped or damaged threads.
- Replace all damaged parts.

INSTALLATION

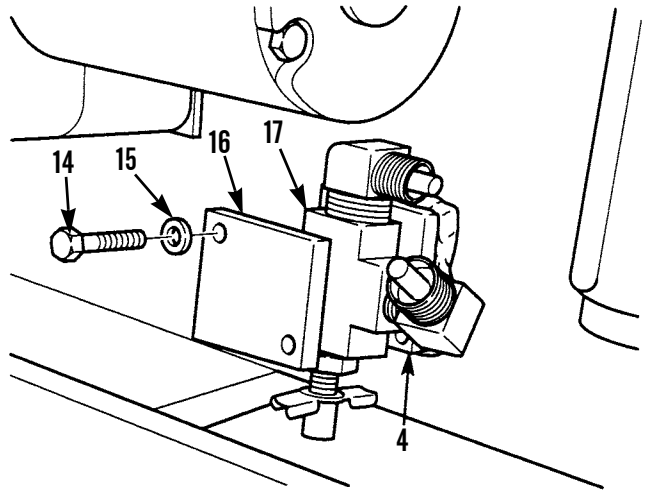
- Apply sealing compound to threads and install drain cock (18), adapter (7) and two elbows (12) and (13) in tee (17).

DRAIN COCK AND TEE REPLACEMENT - CONTINUED

0157 00

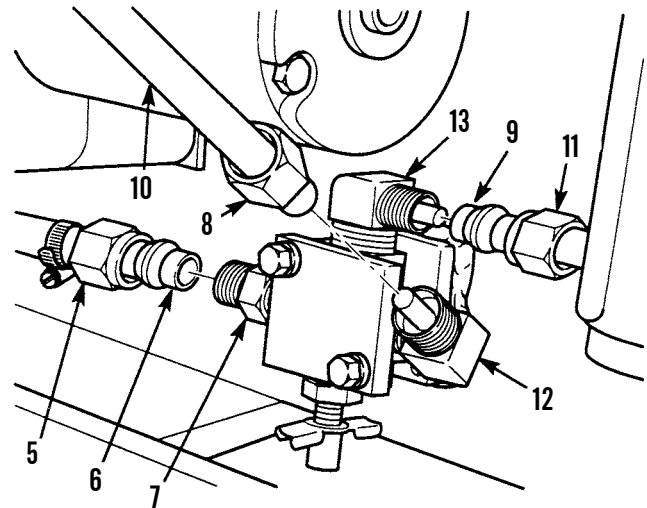
INSTALLATION - CONTINUED

2. Install tee (17) and plate (16) on bumper assembly (4) with two screws (14) and washers (15). Tighten screws to 7-11 lb-ft (9-15 Nm).



401-781

3. Install two water lines (10) and (11) on elbows (12) and (13) with two nuts (8) and (9).
4. Position water line (6) on adapter (7) and tighten nut (5).

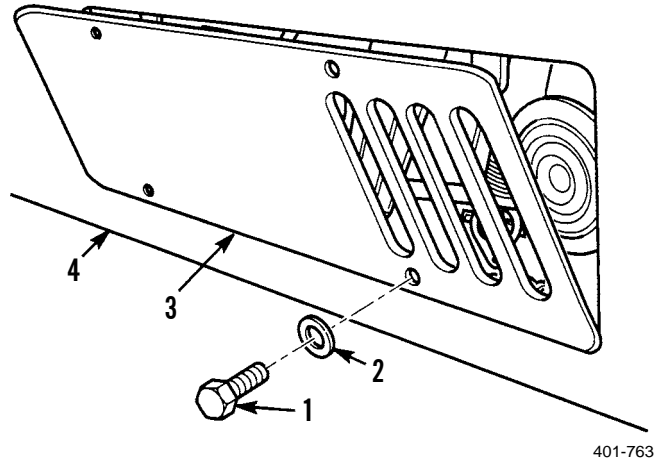


401-780

INSTALLATION - CONTINUED**WARNING**

Use caution when installing cover on bumper assembly. Failure to follow this warning may cause injury.

5. Install cover (3) on bumper assembly (4) with four washers (2) and bolts (1). Tighten bolts to 15-25 lb-ft (20-34 Nm).



6. Fill water spray system (TM 5-3895-379-10).
7. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
8. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

SIDE DRAIN COCK AND VALVE REPLACEMENT

0158 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

- Brush, cleaning (Item 6, WP 0219 00)
- Cloth, cleaning (Item 10, WP 0219 00)
- Compound, sealing (Item 12, WP 0219 00)
- Detergent (Item 14, WP 0219 00)

References

TM 5-3895-379-23P, Figure 137

Equipment Condition

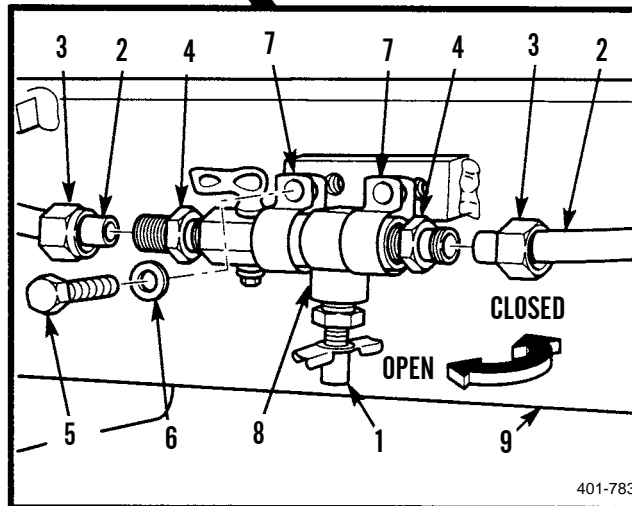
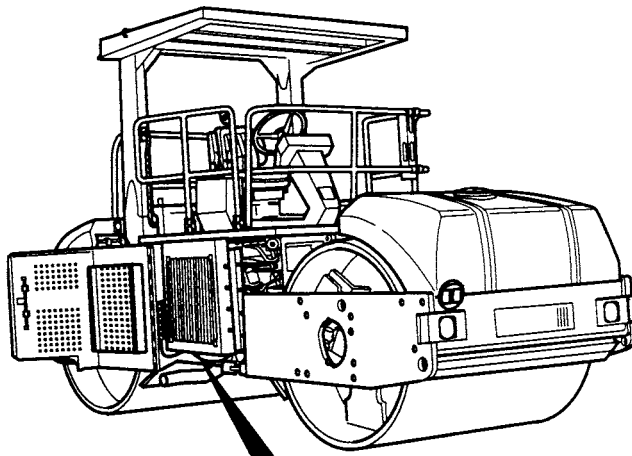
- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Water spray system drained (TM 5-3895-379-10)
- Right-side door assembly opened (TM 5-3895-379-10)

NOTE

The drain cock and valve are replaced the same way for the CB534B and CB534C Rollers. The CB534B Roller is shown.

REMOVAL

1. Open drain cock (1) and drain any water that may still be in system.
2. Close drain cock (1).
3. Loosen two nuts (2) and remove two water lines (3) from adapters (4).
4. Remove two bolts (5), washers (6), clips (7) and tee (8) from frame assembly (9).



401-783

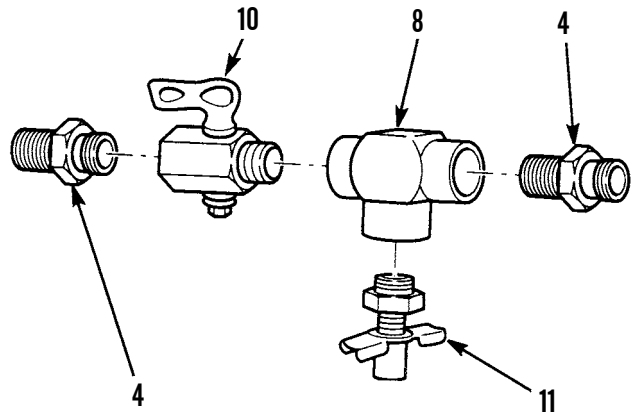
REMOVAL - CONTINUED

5. Remove two adapters (4) and tee (8) from valve (10).
6. Remove drain cock (11) from tee (8).

NOTE

Note position of valve and tee prior to removal.

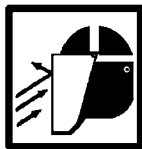
7. Remove valve (10) from tee (8) (CB534B Roller).



401-784

CLEANING AND INSPECTION

1. Clean tee, fittings and drain cock with detergent and water. Remove difficult deposits with a cleaning brush.

**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (20 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

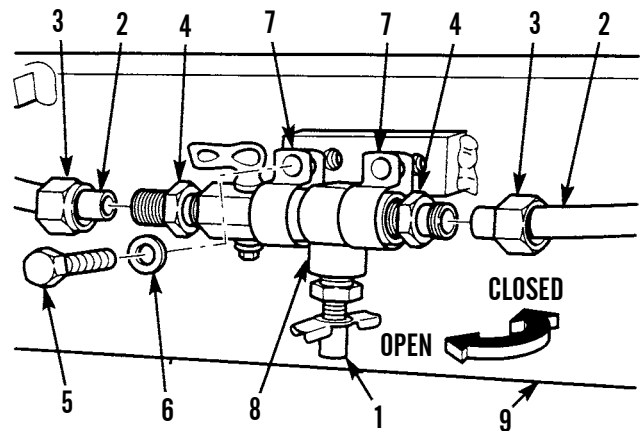
2. Use a cleaning cloth or compressed air to dry metal parts.
3. Check tee for clogging, corrosion or excessive wear.
4. Check drain cock and valve for clogging, corrosion, excessive wear and obvious signs of damage.
5. Check all parts for stripped or damaged threads.
6. Replace all damaged parts.

INSTALLATION

1. Apply sealing compound to threads and install valve (10) and drain cock (11) in tee (8).
2. Install two adapters (4) and tee (8) on valve (10) (CB534B Roller).

INSTALLATION - CONTINUED

3. Install tee (8) and two clips (7) on frame assembly (9) with two washers (6) and bolts (5). Tighten bolts to 33-47 lb-ft (45-64 Nm).
4. Position two water lines (3) on adapters (4) and tighten nuts (2).
5. Ensure that drain cock (1) is closed.



401-785

6. Close right-side door assembly (TM 5-3895-379-10).
7. Fill water spray system (TM 5-3895-379-10).
8. Start engine, operate water spray system (TM 5-3895-379-10) and check for leaks.
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Type 1 Fitting Replacement, Type 2 Clamp Replacement, Water Lines Replacement

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

- Strap, tiedown (Item 36, WP 0219 00)

Materials/Parts - Continued

- Tag, marker (Item 37, WP 0219 00)

Equipment Condition

- Engine off (TM 5-3895-379-10)
- Drums chocked (TM 5-3895-379-10)
- Water spray system drained (TM 5-3895-379-10)

TYPE 1 FITTING REPLACEMENT

NOTE

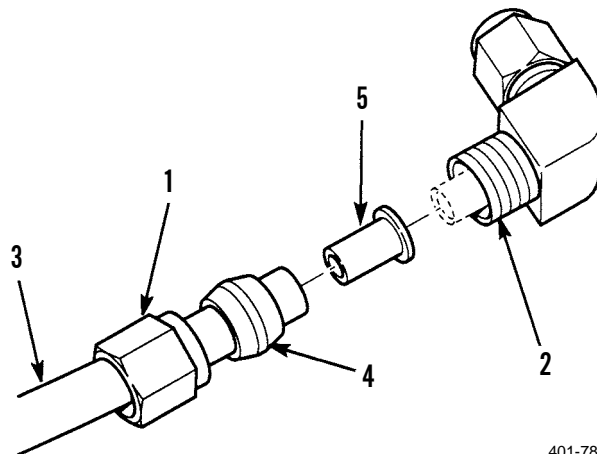
- Type 1 fitting replacement is the same on angle fitting and straight fitting. Angle fitting shown.
- Tag and mark each end of water line before removal.
- Remove clamps and support brackets as required.
- Remove cable ties as required.

1. Remove nut (1) from fitting (2).
2. Pull water line (3) from fitting (2).

NOTE

- Tube may come off with line or stay with fitting.
- Perform step 4 only if tube stayed with fitting.

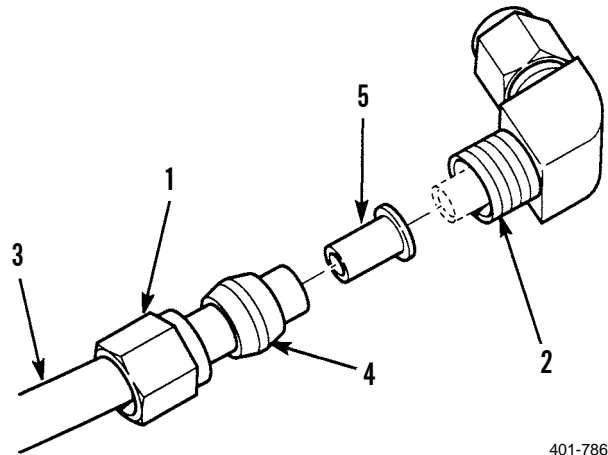
3. Cut water line (3) directly behind bushing (4) and discard water line end, nut (1), bushing (4) and tube (5).
4. Remove tube (5) from fitting (2).



401-786

TYPE 1 FITTING REPLACEMENT- CONTINUED

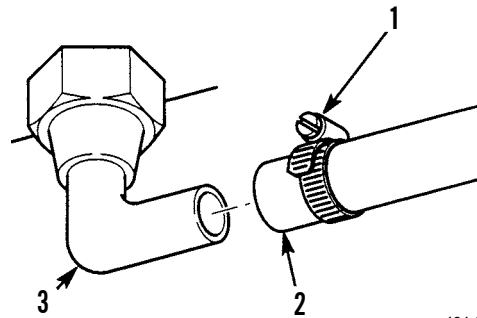
5. Install nut (1) on water line (3).
6. Install bushing (4) on water line (3).
7. Install tube (5) in fitting (2).
8. Install water line (3) on tube (5) and in fitting (2).
9. Tighten nut (1) to fitting (2).



401-786

TYPE 2 CLAMP REPLACEMENT

1. Loosen clamp (1).
2. Remove clamp (1) and water line (2) from fitting (3). Discard clamp if damaged.



401-787

3. Install clamp (1) on water line (2).
4. Position water line (2) on fitting (3) and tighten clamp (1).

WATER LINES REPLACEMENT

NOTE

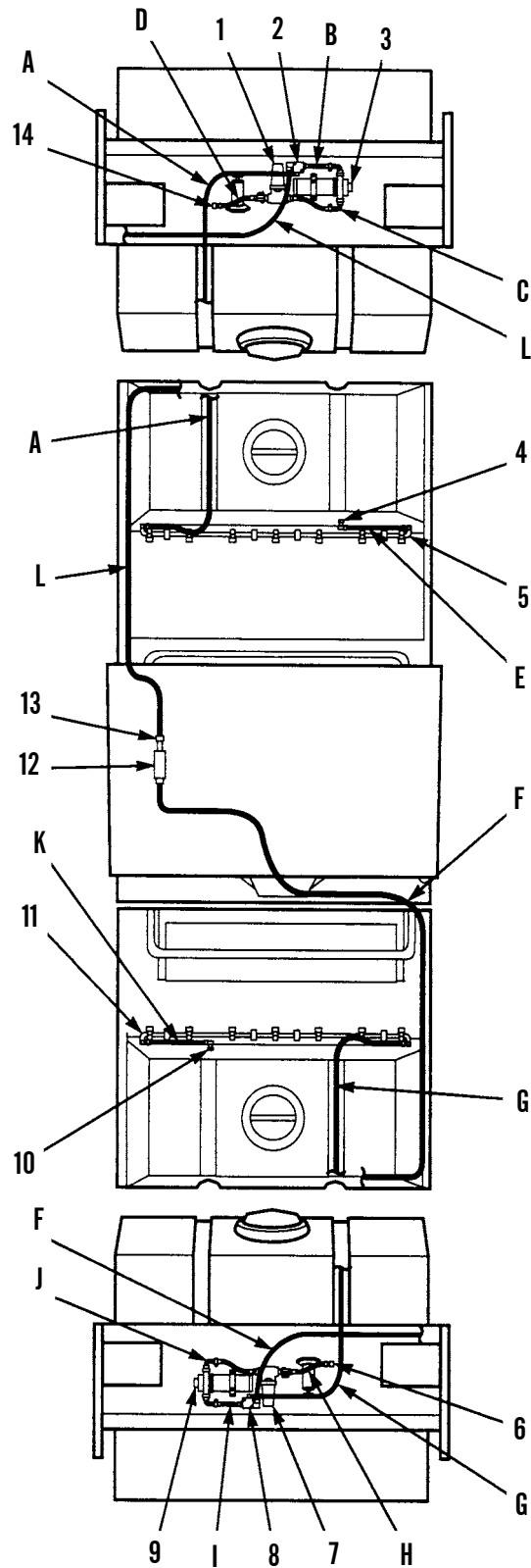
- Use table below to locate ends of all water lines on roller.
- Tag and mark each end of water line before removal.
- Cut cable ties as necessary to remove water lines.

When replacing water lines, remove tubing from roller, remove fittings, cut new tubing 1/4-1/2 in. (6-13 mm) longer than tubing being replaced, then install fittings.

Table 1. Water Lines

Water Line	From	To
A	Rear Tee (2)	Rear Water Spray Pipe (5)
B	Rear Water Spray Pump (3)	Rear Tee (2)
C	Rear Water Spray Filter (1)	Rear Water Spray Pump (3)
D	Rear Water Spray Tank (14)	Rear Water Spray Filter (1)
E	Rear Check Valve (4)	Rear Water Spray Pipe (5)
F	Front Tee (8)	Side Tee and Drain cock (12)
G	Front Tee (8)	Front Water Spray Pipe (11)
H	Front Water Spray Tank (6)	Front Water Spray Filter (7)
I	Front Water Spray Pump (9)	Front Tee (8)
J	Front Water Spray Filter (7)	Front Water Spray Pump (9)
K	Front Check Valve (10)	Front Water Spray Pipe (11)
L	Rear Tee (2)	Side Water Spray Valve (13)

WATER LINES REPLACEMENT - CONTINUED



401-772

WATER SPRAY TUBES AND FITTINGS REPLACEMENT - CONTINUED

0159 00

WATER LINES REPLACEMENT - CONTINUED

5. Fill water tanks (TM 5-3895-379-10) and check for leaks.

END OF WORK PACKAGE

DRUM SCRAPER REPLACEMENT

0160 00

THIS WORK PACKAGE COVERSRemoval, Installation, Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, common no. 1 (Item 28, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

Locknut (7)

References

TM 5-3895-379-23P, Figure 132

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

NOTE

- Front and rear drum scraper are replaced the same way. Front drum scraper is shown.
- Drum scraper replacement is the same for CB534B and CB534C Rollers, except where noted. CB534B Roller is shown.

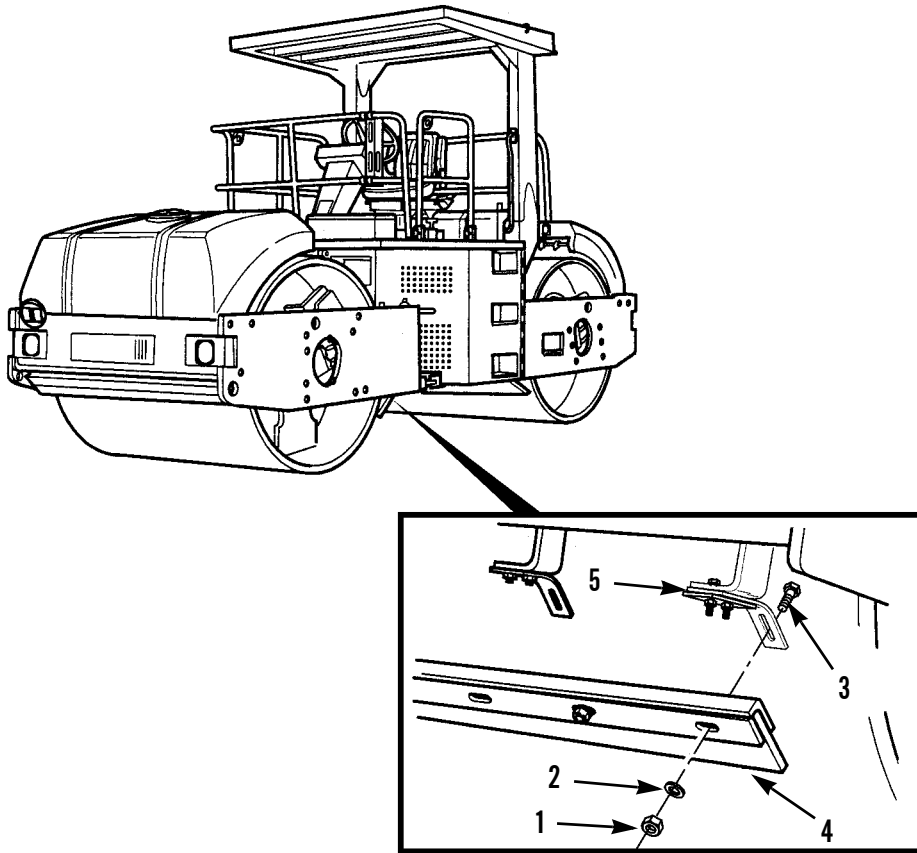
REMOVAL**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

NOTE

Scraper and plates weigh 31 lb (14 kg).

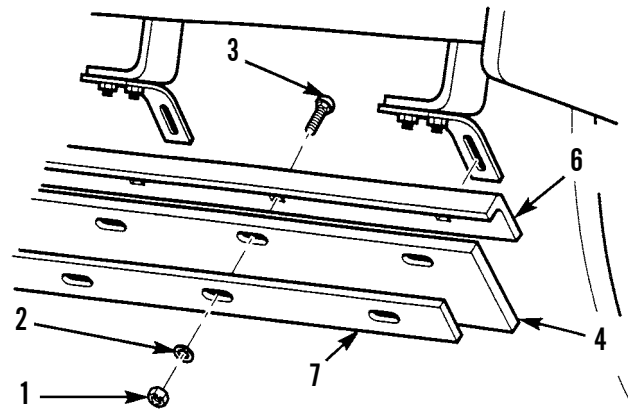
1. With assistance, remove four locknuts (1), washers (2), bolts (3), and scraper (4) from plate (5). Discard locknuts.



401-1576

REMOVAL - CONTINUED

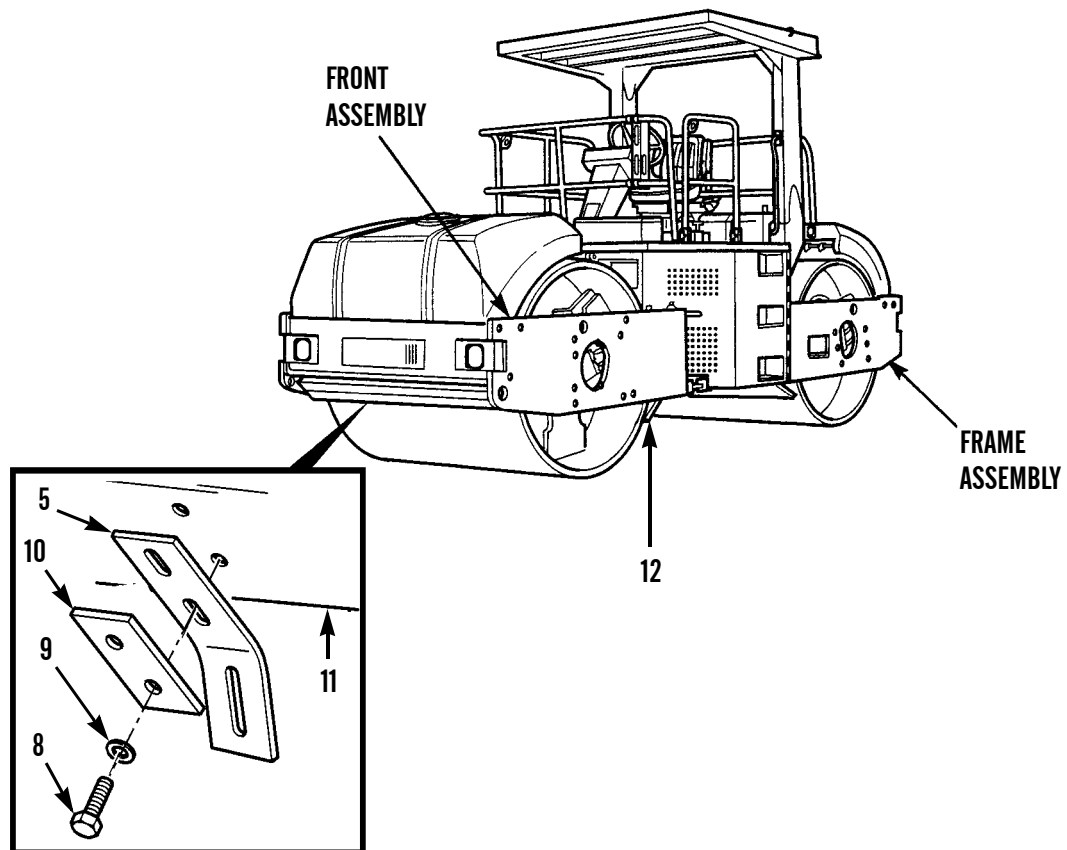
2. Remove three locknuts (1), washers (2), bolts (3), plate (6) and plate (7) from scraper (4). Discard locknuts.



401-673

NOTE

- Perform step 3 if removing plate from bumper assembly or yoke assembly.
 - Plates (10) apply to CB534C Roller.
3. If damaged, remove eight bolts (8), washers (9), four plates (10) and plates (5) from bumper assembly (11) or yoke assembly (12).

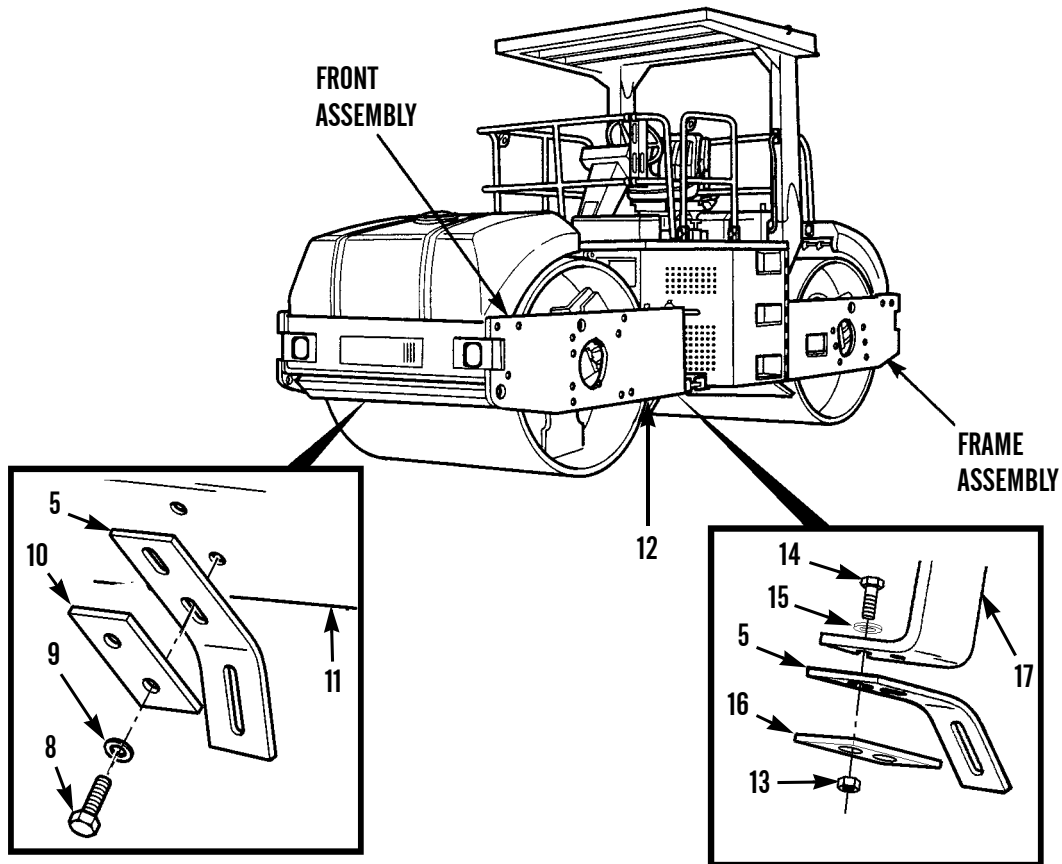


401-1578a

REMOVAL - CONTINUED

NOTE

- Perform step 4 only if removing plate from frame assembly.
 - Plates (16) apply to CB534C Roller.
4. If damaged, remove eight nuts (13), bolts (14), washers (15), four plates (16) and plates (5) from frame assembly (17).

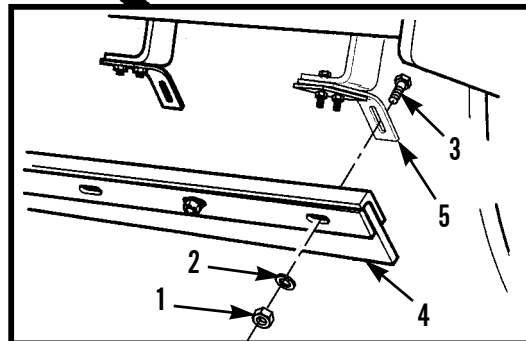
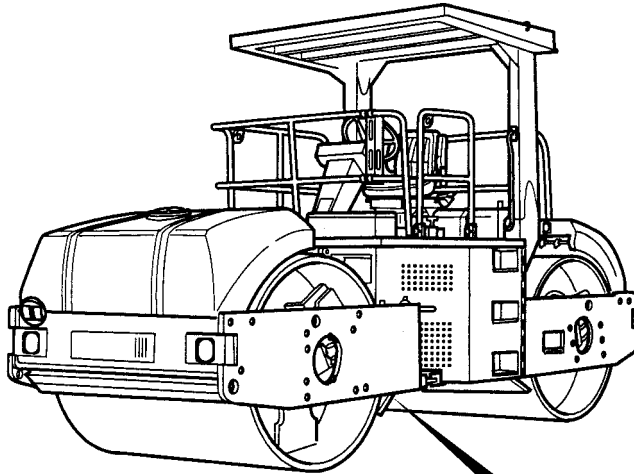


401-1578

INSTALLATION**NOTE**

Plates (10) apply to CB534C Roller.

1. If removed, install four plates (5) and plates (10) on bumper assembly (11) or yoke assembly (12) with eight washers (9) and bolts (8).



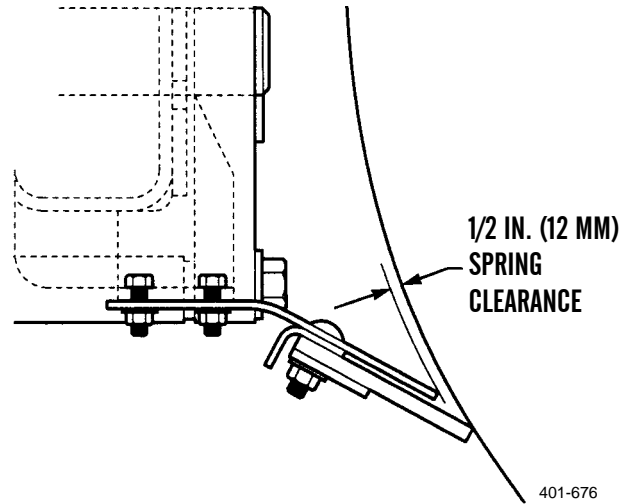
401-1576

INSTALLATION - CONTINUED

CAUTION

Adjust spring and drum clearance to 1/2 in. (12 mm). Failure to do so can cause damage to drum or scraper.

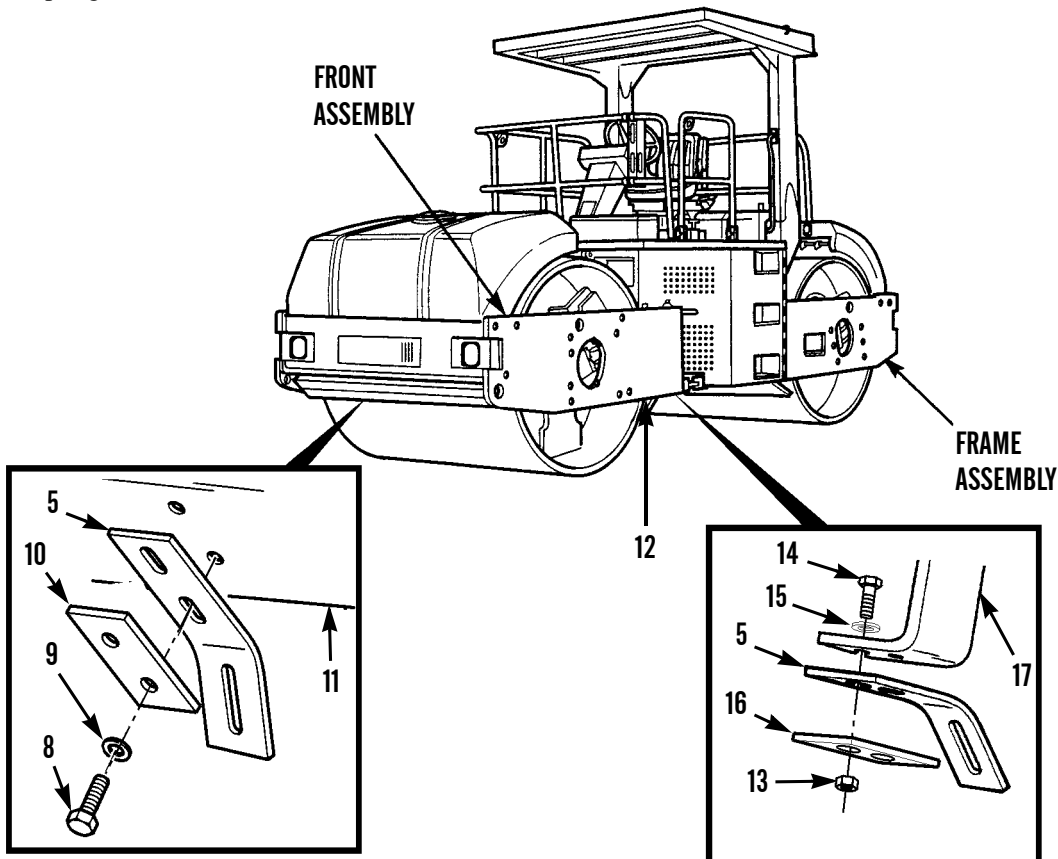
- Adjust spring and drum clearance by positioning spring 1/2 in. (12 mm) from surface of drum and tighten bolts (8).



NOTE

Plates (10) apply to CB534C Roller.

- If removed, install four plates (5) and plates (16) on frame assembly (17) with eight washers (15), bolts (14) and nuts (13).
- Adjust spring and drum clearance to 1/2 in. (12 mm).

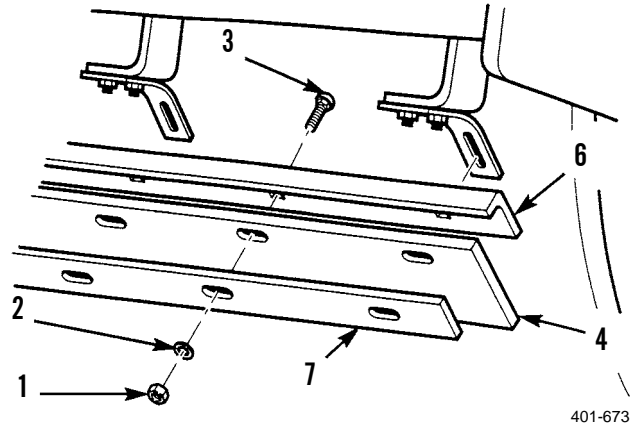


401-1578

INSTALLATION - CONTINUED**NOTE**

Do not tighten nuts until final adjustment of scraper to drum. Refer to *Adjustment* for proper scraper position.

5. Install plate (7) and plate (6) on scraper (4) with three bolts (3), washers (2) and new locknuts (1).



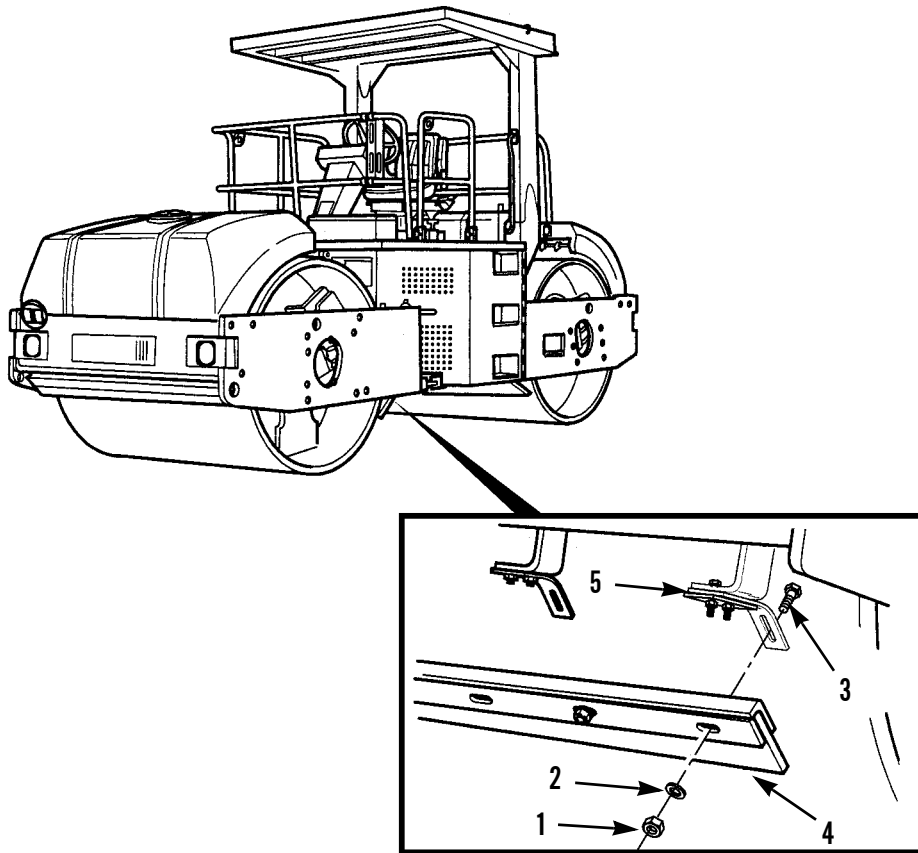
INSTALLATION - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

NOTE

Scraper and plates weigh 31 lb (14 kg).

6. With assistance, install scraper (4) on plates (5) with four bolts (3), washers (2) and new locknuts (1). Do not tighten nuts.

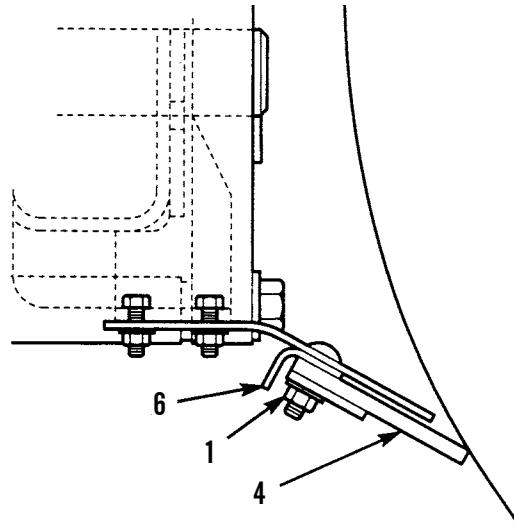


401-1576

ADJUSTMENT**NOTE**

A small amount of preload on the scraper may be necessary to increase effectiveness.

1. Install scraper (4) so that scraper contacts drum surface firmly and evenly from end-to-end without bending.
2. Tighten locknuts (1) to 60 lb-ft (81 Nm) from center of scraper outward while applying pressure on plate (6) to ensure a small amount of preload on the scraper.



401-678

3. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

CHAPTER 4
DIRECT SUPPORT MAINTENANCE

ENGINE, TURBO, DIESEL TESTS

0161 00

THIS WORK PACKAGE COVERS

Cylinder Compression Test

INITIAL SETUP**Tools and Special Tools**

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Simplified test equipment, (STE/ICE-R) (Item 32, WP 0220 00)

Equipment Condition

- Valve lash is set correctly (WP 0173 00)
 - Fuel injector nozzles removed (WP 0175 00 or 0176 00)
 - Fuel shutoff valves in off position (WP 0028 00)
 - Battery fully charged (WP 0103 00)
-

CYLINDER COMPRESSION TEST**NOTE**

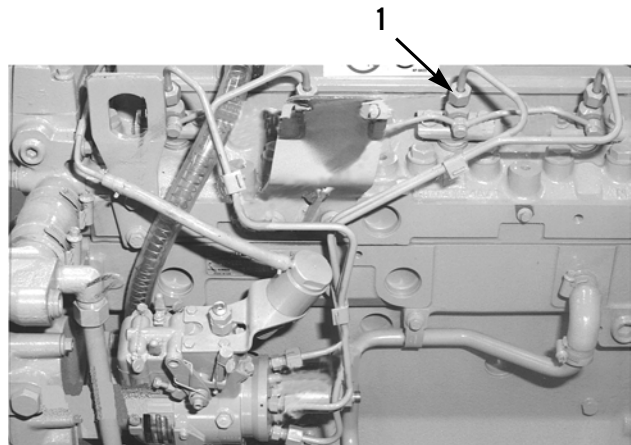
- Cylinder compression test is used to compare each cylinder of engine.
- Document each individual cylinder test result as test is performed on each cylinder.

1. Install compression gage into injector hole (1).

NOTE

When performing compression test, one or more cylinders vary more than 51 psi (350 kPa), cylinder and related components may need repair.

2. Operate starter motor and crank engine until the maximum pressure is indicated on the compression gauge.
3. Repeat steps 1 and 2 for all cylinders.



401-2080

END OF WORK PACKAGE

ENGINE ASSEMBLY REPLACEMENT**0162 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, general purpose (Item 30, WP 0220 00)
 Plate, blocking (Item 3, WP 0220 00)
 Engine stand, 2,000 lb (907 kg) minimum capacity
 Lifting device, 2,000 lb (907 kg) minimum capacity

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)
 Oil, lubricating (Item 26, WP 0219 00)
 Rag, wiping (Item 31, WP 0219 00)
 Tag, marker (Item 37, WP 0219 00)
 Wooden blocks

References

TM 5-3895-379-23P, Figure 1

Personnel Required

Three

Equipment Condition

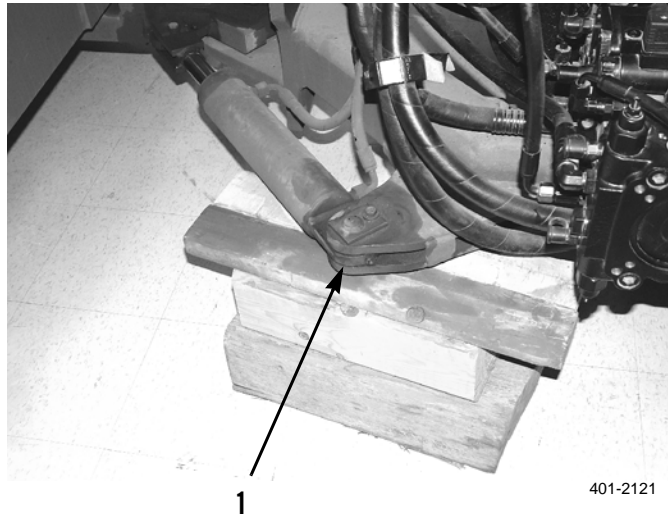
Engine cool
 Operator platform assembly raised (WP 0128 00)
 Fan and fan guard removed (WP 0059 00)
 Air cleaner removed (WP 0032 00)
 Service meter removed (CB534B Roller) (WP 0082 00)
 NATO connector removed (WP 0106 00)
 Fuel shut-off valves in the OFF position (WP 0038 00)
 Hydraulic tank drained (WP 0037 00)
 Radiator drained (WP 0052 00)
 Muffler removed (WP 0048 00)
 Battery disconnect switch removed (WP 0104 00)

**WARNING**

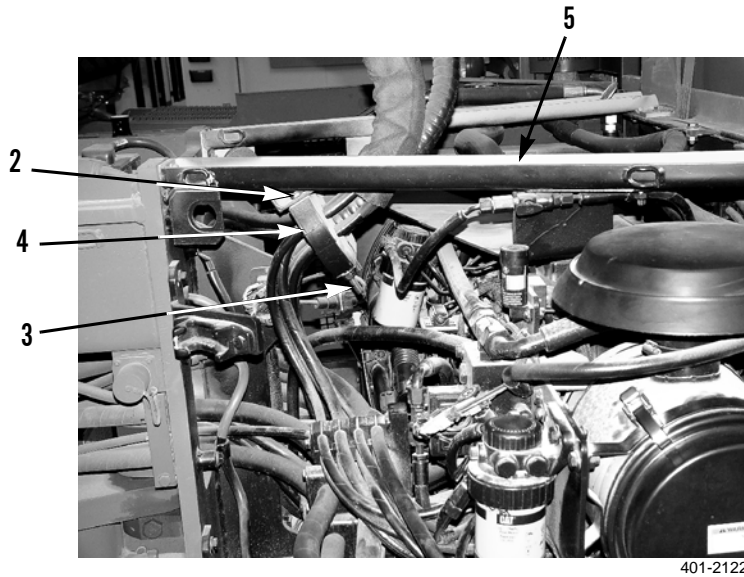
Check coolant level only after engine has been stopped and fill cap and radiator are cool enough to touch with bare hand. Remove fill cap slowly to relieve pressure. Cooling system conditioner contains alkali. Avoid contact with skin and eyes to prevent injury.

REMOVAL

1. Position wooden blocks under each steering cylinder mounting (1).



2. Remove two bolts (2), nuts (3) and clamp (4) from brace assembly (5).



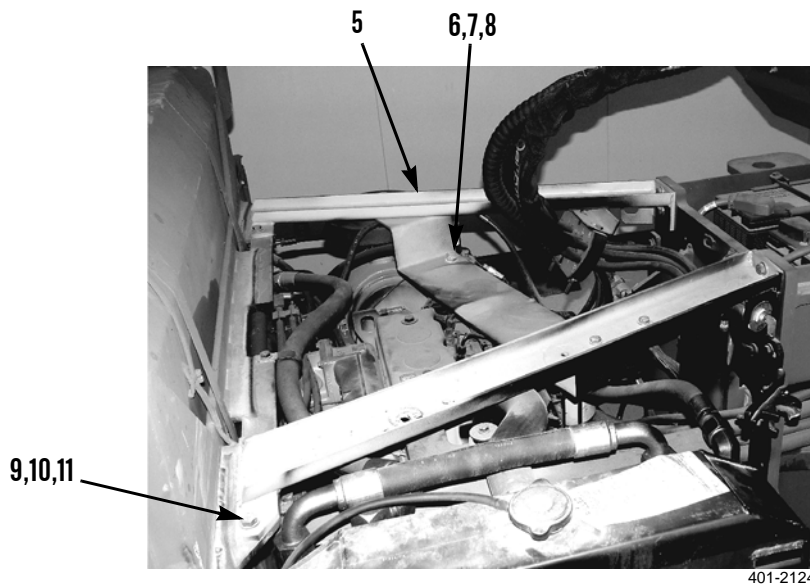
REMOVAL - CONTINUED

- Remove bolt (6) and clamp (7) from fuel hose assembly (8) on brace assembly (5).

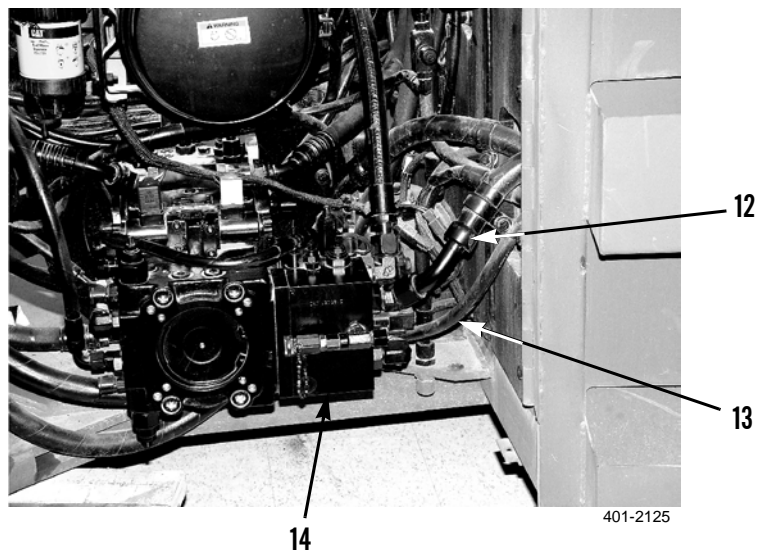
**WARNING**

The weight of the brace assembly is 60 lb (27 kg). Use an assistant to aid in removal to prevent possible injury.

- Remove seven bolts (9), nuts (10), washers (11) and brace assembly (5).

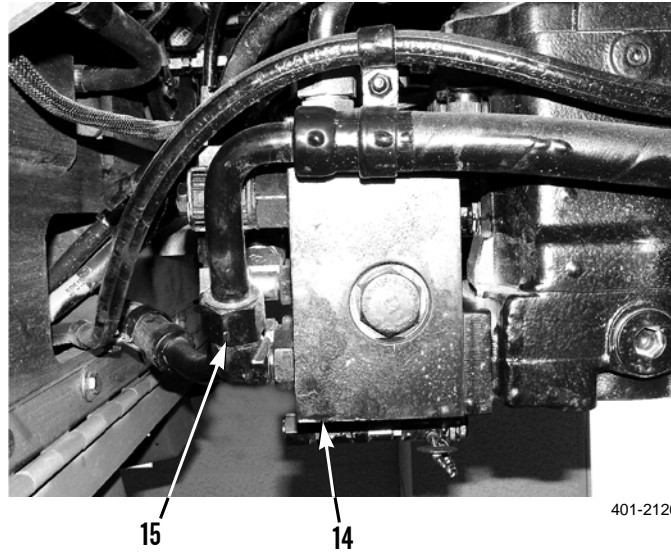


- Disconnect hydraulic hoses (12) and (13) from vibratory control valve (14).

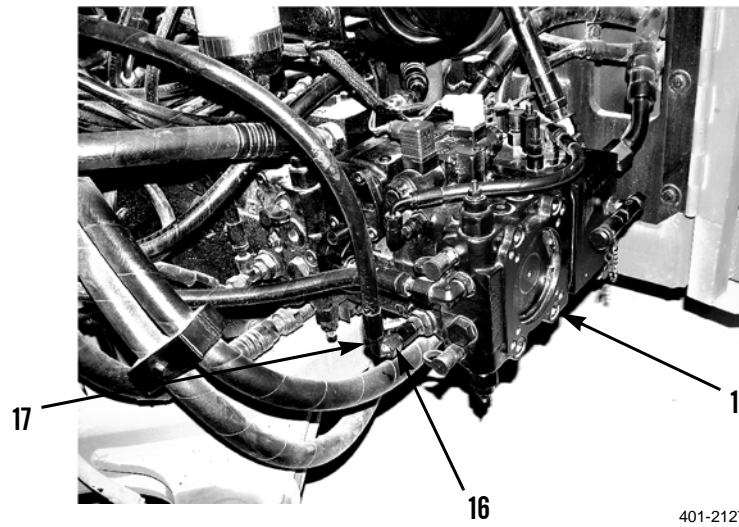


REMOVAL - CONTINUED

6. Disconnect hydraulic hose (15) from vibratory control valve (14).

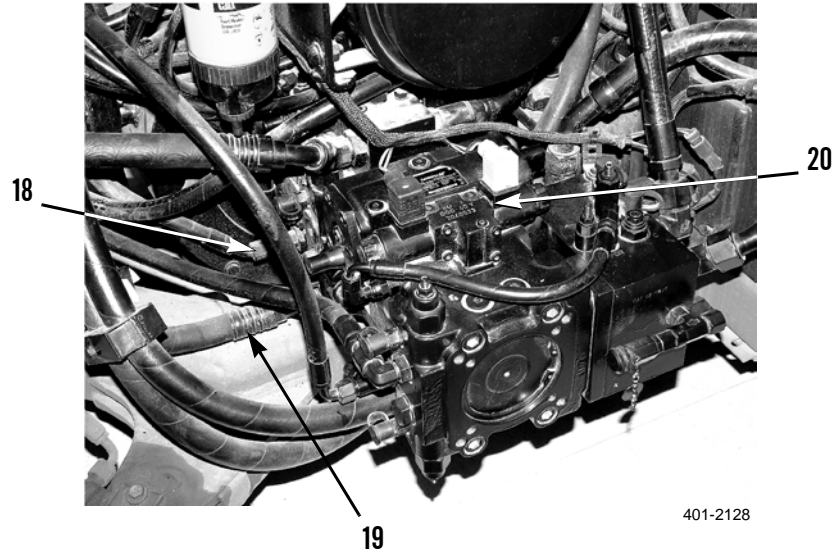


7. Disconnect hydraulic hoses (16) and (17) from vibratory control valve (14).

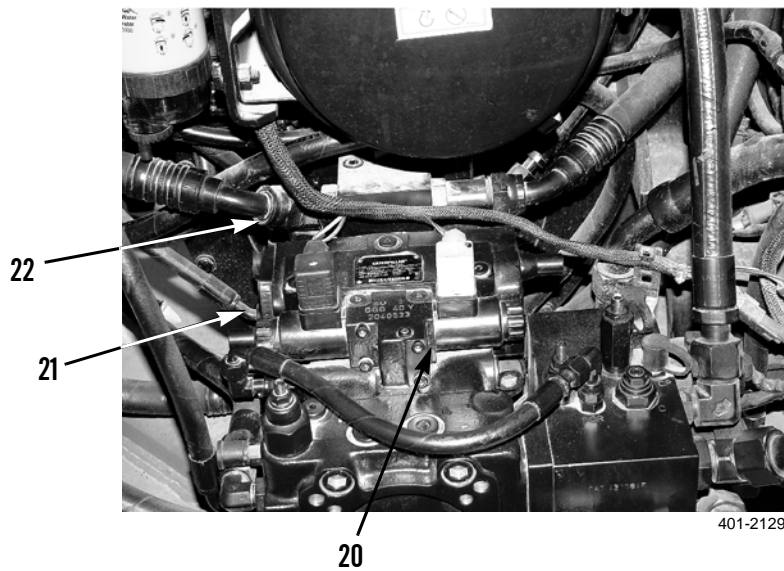


REMOVAL - CONTINUED

8. Disconnect hydraulic hoses (18) and (19) from propel control valve (20).

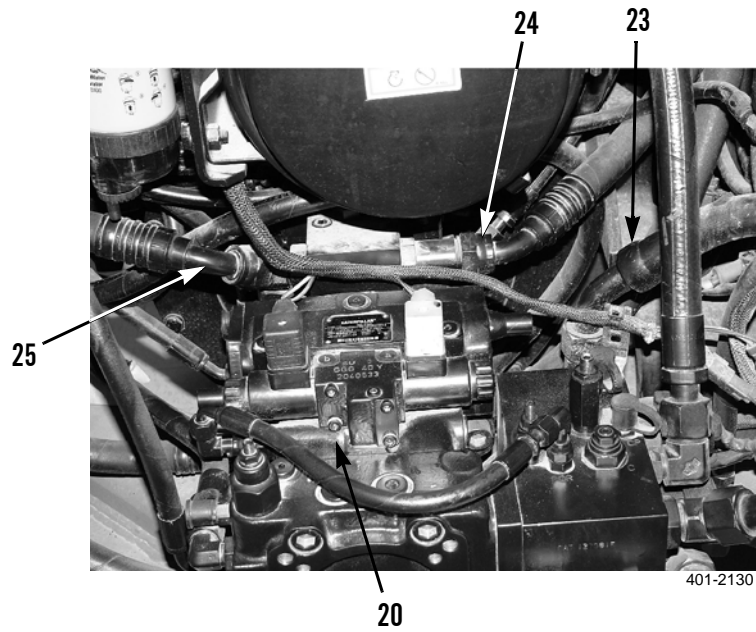


9. Disconnect hydraulic hoses (21) and (22) from propel control valve (20).

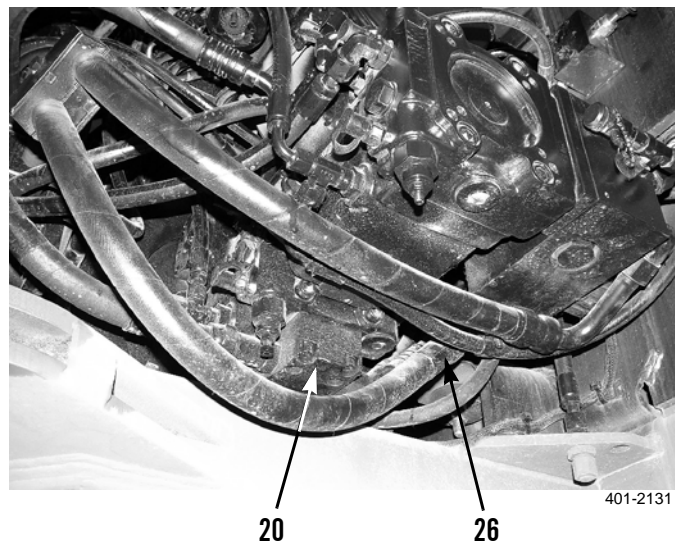


REMOVAL - CONTINUED

10. Disconnect hydraulic hoses (23), (24) and (25) from propel control valve (20).

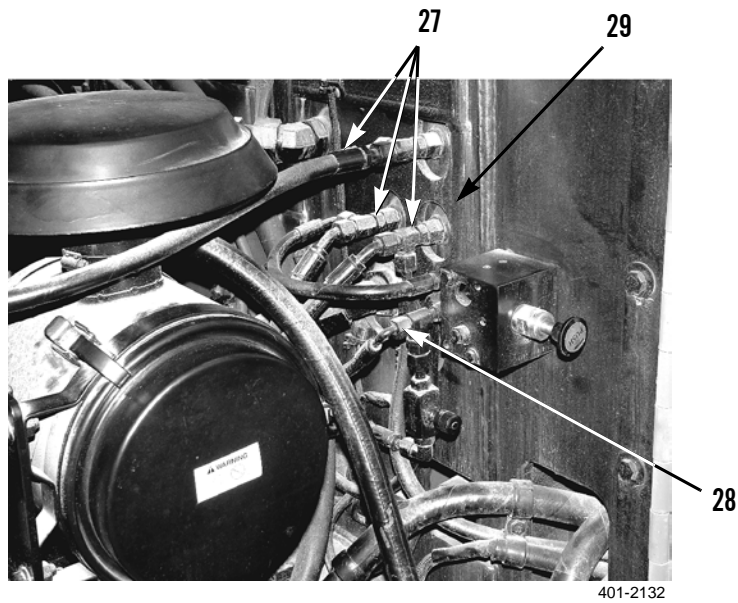


11. Disconnect hydraulic hose (26) from propel control valve (20).

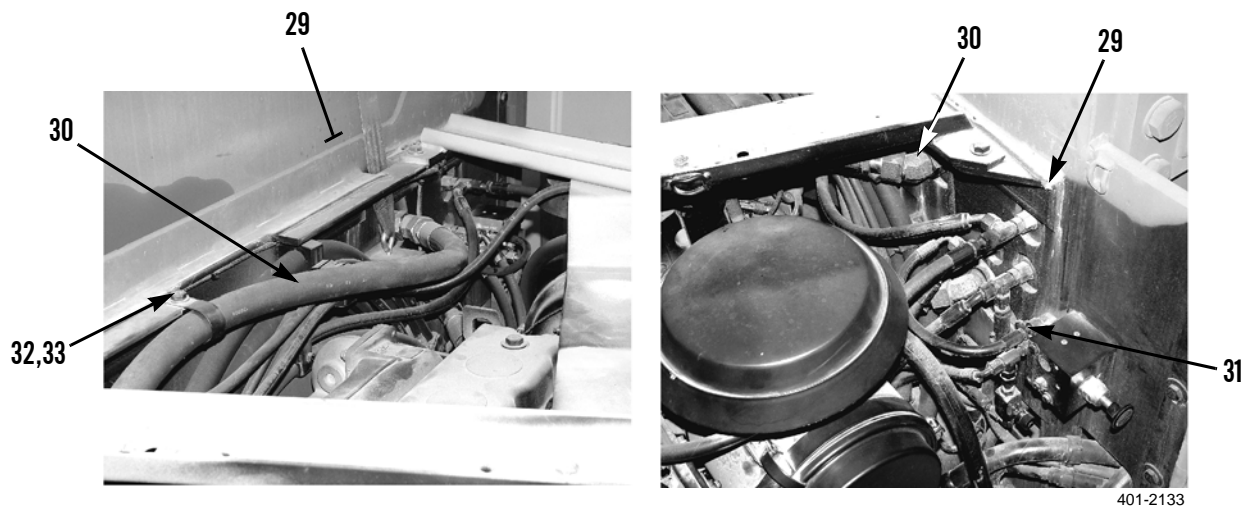


REMOVAL - CONTINUED

12. Disconnect hydraulic hoses (27) and (28) from hydraulic tank (29).

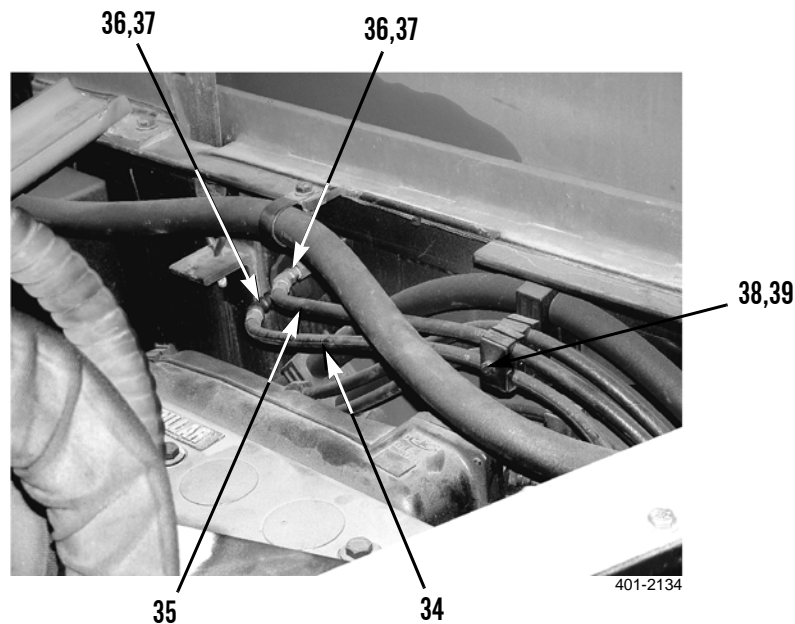


13. Disconnect hydraulic hoses (30) and (31) from hydraulic tank (29).
14. Remove bolt (32) and clip (33) securing hydraulic hose (30) to hydraulic tank (29).



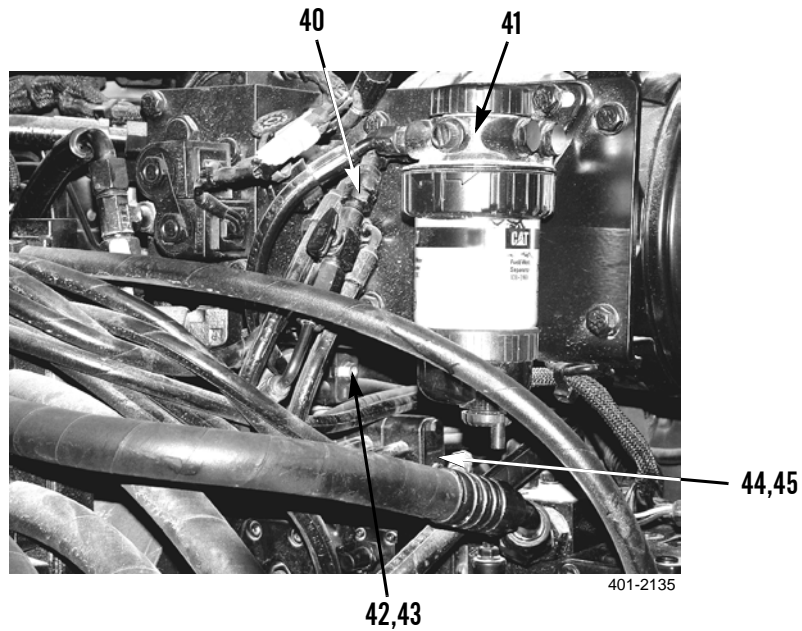
REMOVAL - CONTINUED**WARNING**

- DO NOT smoke or permit any open flame in area of machine while you are servicing fuel system. Be sure hose nozzle is grounded against filler tube during refueling to prevent static electricity. Failure to follow this warning may cause injury to personnel or equipment damage.
 - DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing injury, death or damage to roller.
 - Operating personnel must wear fuel-resistant gloves when handling fuels. If exposed to fuel, promptly wash exposed skin and change fuel-soaked clothing.
15. For the CB534B Roller, disconnect fuel lines (34) and (35) from fuel shut-off valves (36).
 16. For the CB534C Roller, disconnect fuel lines (34) and (35) from fuel tank fittings (37).
 17. Remove bolt (38) and clamp (39) securing fuel lines (34) and (35).



REMOVAL - CONTINUED

18. Disconnect fuel hose (40) from fuel/water separator head (41).
19. Remove bolt (42) and clamp (43) securing two fuel hoses. Move hoses aside.
20. Remove bolt (44) and clamp (45) securing three hoses. Move hoses aside.

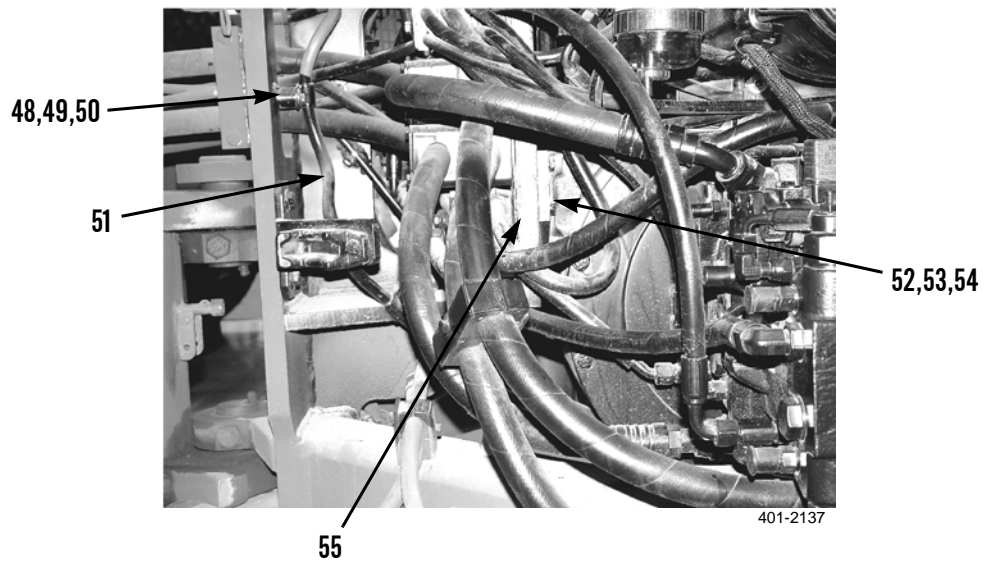


21. Disconnect steering hydraulic hoses (46) and (47).

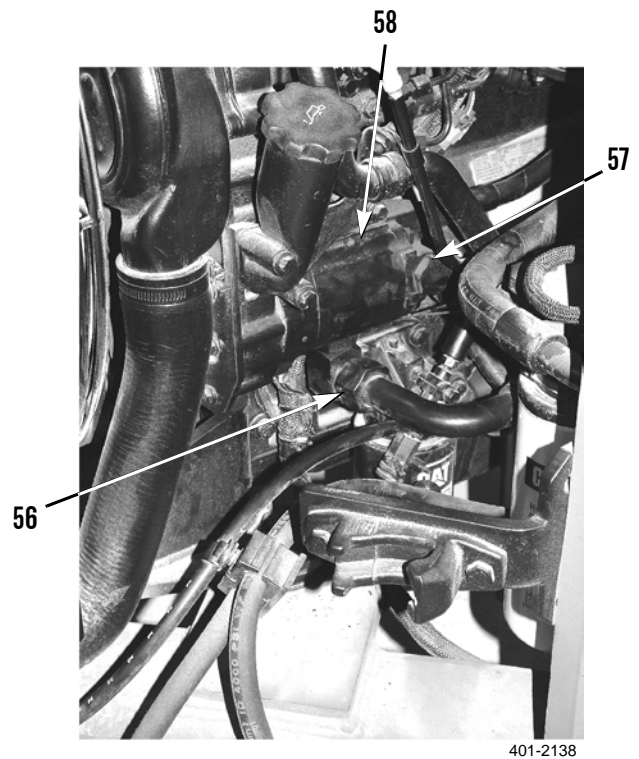


REMOVAL - CONTINUED

22. Remove two bolts (48), washers (49), clamps (50), and battery cable (51) from frame. Move cable aside.
23. Remove two bolts (52), washers (53), and bracket (54) securing hoses to engine mount (55). Move hoses aside.

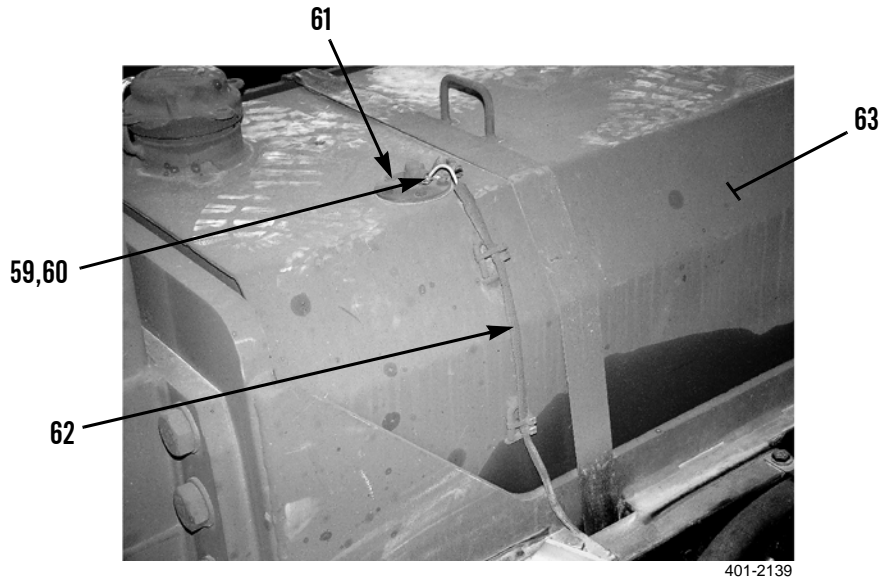


24. Disconnect steering hydraulic hoses (56) and (57) from steering pump (58).

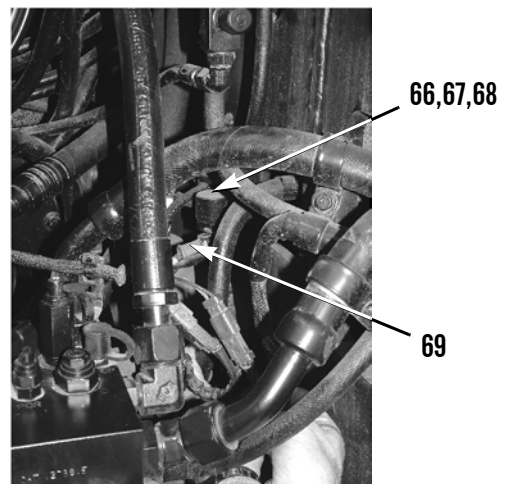
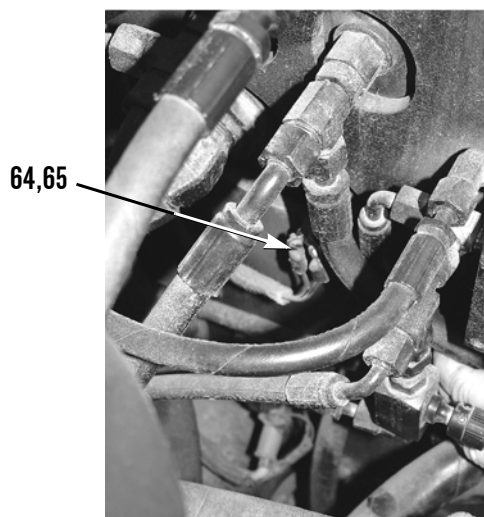


REMOVAL - CONTINUED

25. Disconnect electrical wires (59) and (60) from fuel level sending unit (61).
26. Cut cable ties securing wiring harness (62) to fuel/hydraulic tank (63). Move harness aside.



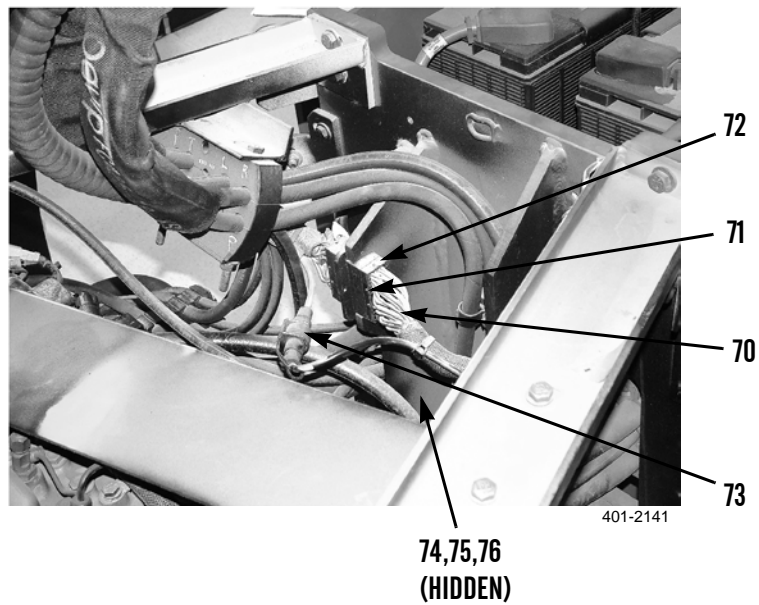
27. Disconnect wiring harness (64) from hydraulic oil temperature switch (65). Move harness aside.
28. Remove two bolts (66), washers (67), and starter relay (68) from frame.
29. Cut cable ties securing starter relay (68) and wiring harness (69). Move harness aside.



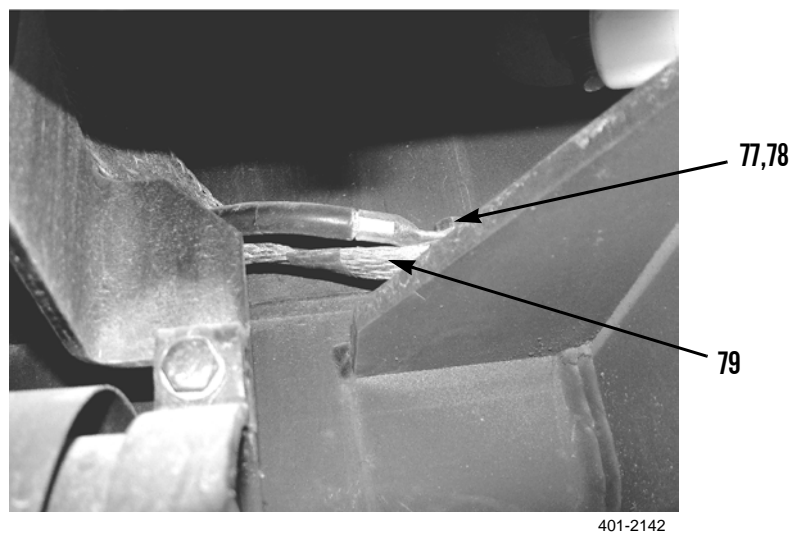
401-2140

REMOVAL - CONTINUED

30. Remove bolt (70) and three screws (71) securing electrical connector (72) to frame.
31. Separate electrical connector (72), by disconnect connector halves.
32. Disconnect electrical connector (73).
33. Remove nut (74) and washer (75) securing ground wire (76) to frame.



34. Remove bolt (77) and washer (78) securing engine ground wire (79) to frame.



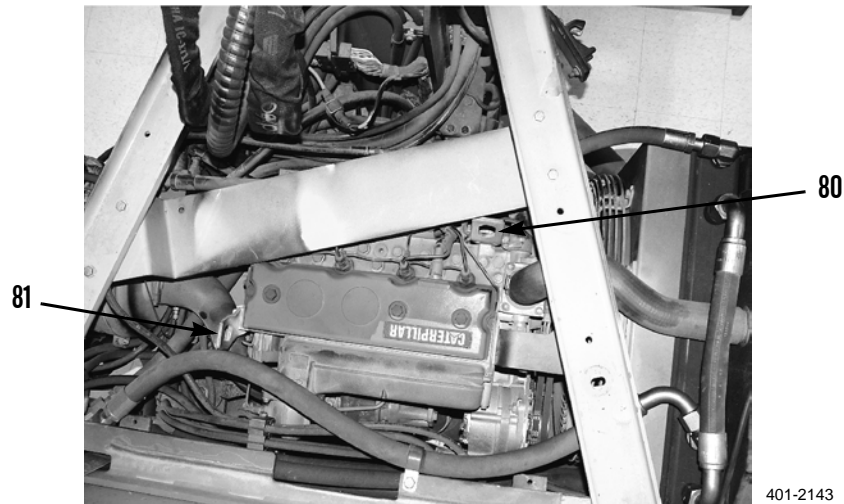
REMOVAL - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supports only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of the engine, radiator and pump unit is 1600 lb (726 kg).

35. Attach lifting sling to overhead lift and the two engine lifting brackets (80) and (81).



401-2143

36. Carefully check that all hydraulic hoses, fuel hoses, and electrical connections and harnesses have been disconnected.
37. Remove the four engine mount bolts (82), nuts (83), and washers (84) holding the engine, radiator, and hydraulic pumps to roller frame.
38. Remove engine, radiator, and hydraulic pumps from the roller frame.



401-2144

82,83,84

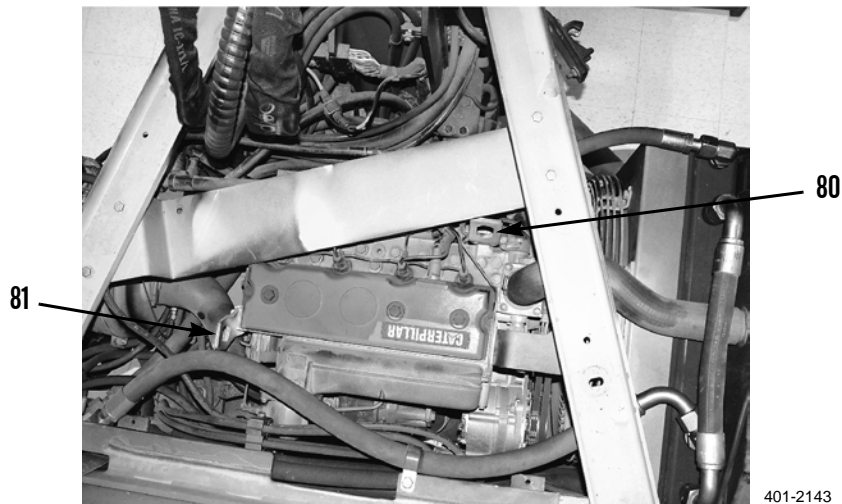
INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supports only by lifted device. Failure to follow this warning may cause injury or death.

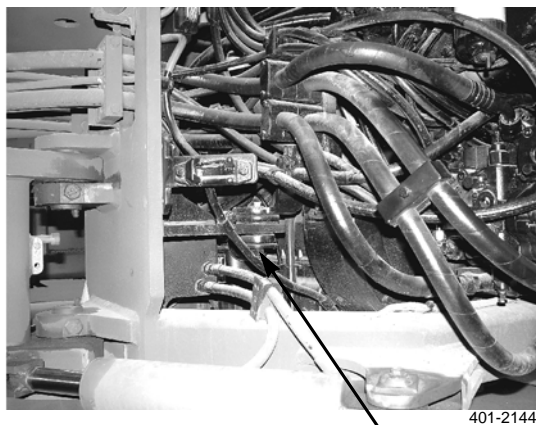
NOTE

Weight of the engine, radiator and pump unit is 1600 lb (726 kg).

1. Attach lifting sling to overhead lift and the two engine lifting brackets (80) and (81).



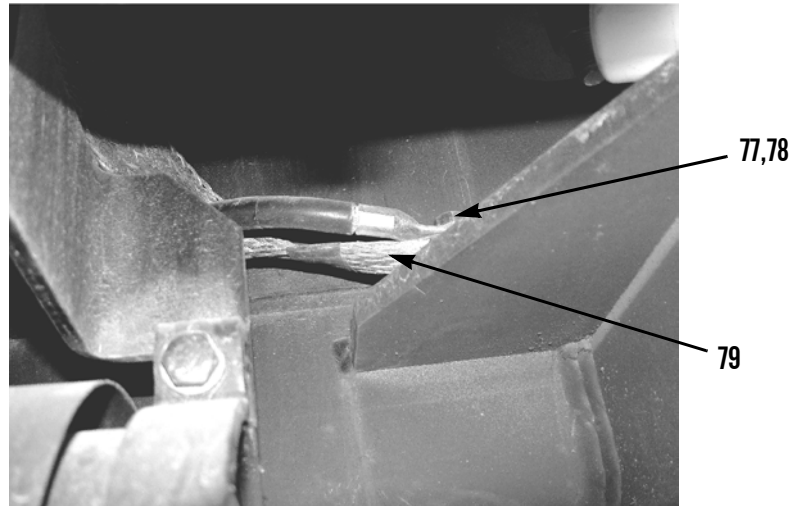
2. Carefully check that all hydraulic hoses, fuel hoses, and electrical connections and harnesses are clear prior to installation.
3. Position engine, radiator, and hydraulic pumps from the roller frame.
4. Install four engine mount bolts (82), washers (84), and nuts (83).



82,83,84

INSTALLATION - CONTINUED

5. Connect engine ground wire (79) to frame with bolt (77) and washer (78).



401-2142

6. Connect ground wire (76) to frame with nut (74) and washer (75).
7. Connect electrical connector (72).
8. Connect electrical connector (73) by joining the connector halves.
9. Install electrical connector (73) with bolt (70) and three screws (71).

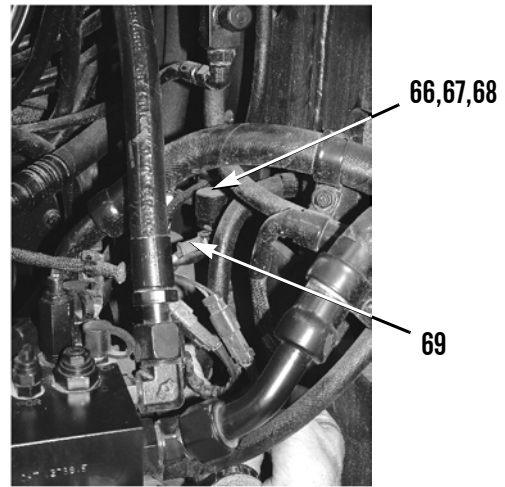
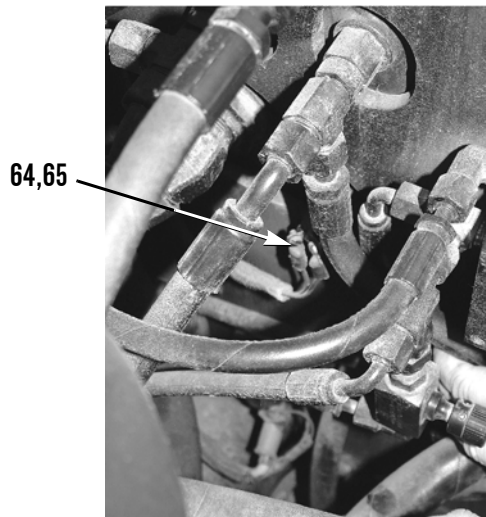


401-2141

74,75,76
(HIDDEN)

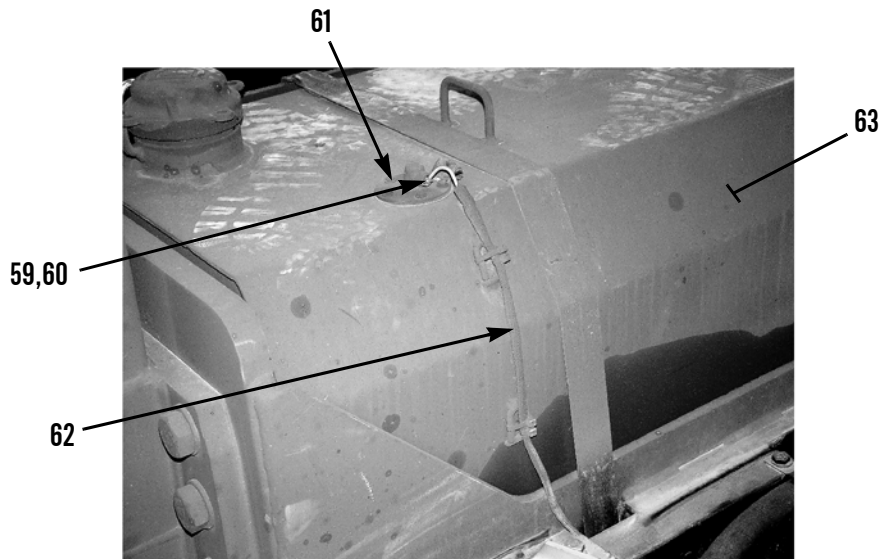
INSTALLATION - CONTINUED

10. Connect wiring harness (64) to hydraulic oil temperature switch (65).
11. Install starter relay (68) to frame with two bolts (66) and washers (67).
12. Using cable ties, secure starter relay harness (69).



401-2140

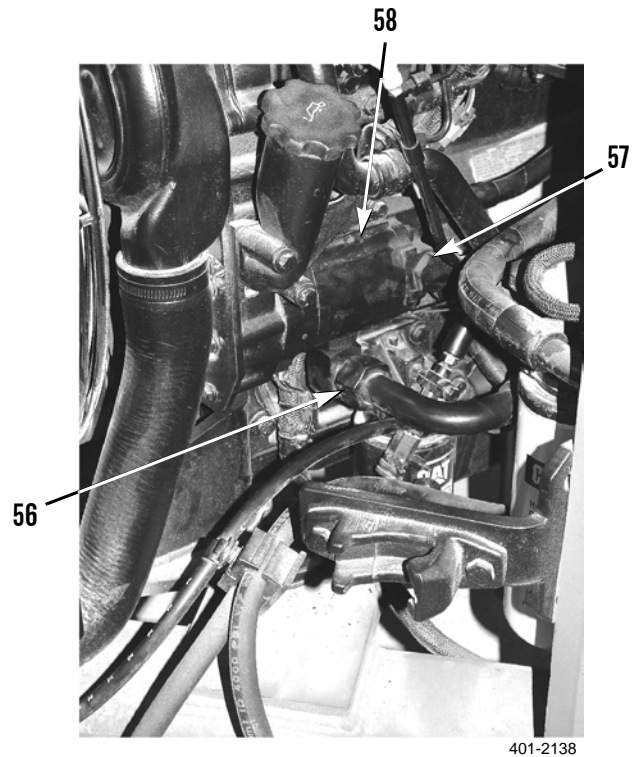
13. Connect electrical wires (59) and (60) to fuel level sending unit (61).
14. Using cable ties, secure wiring harness (62) to fuel/hydraulic tank (63).



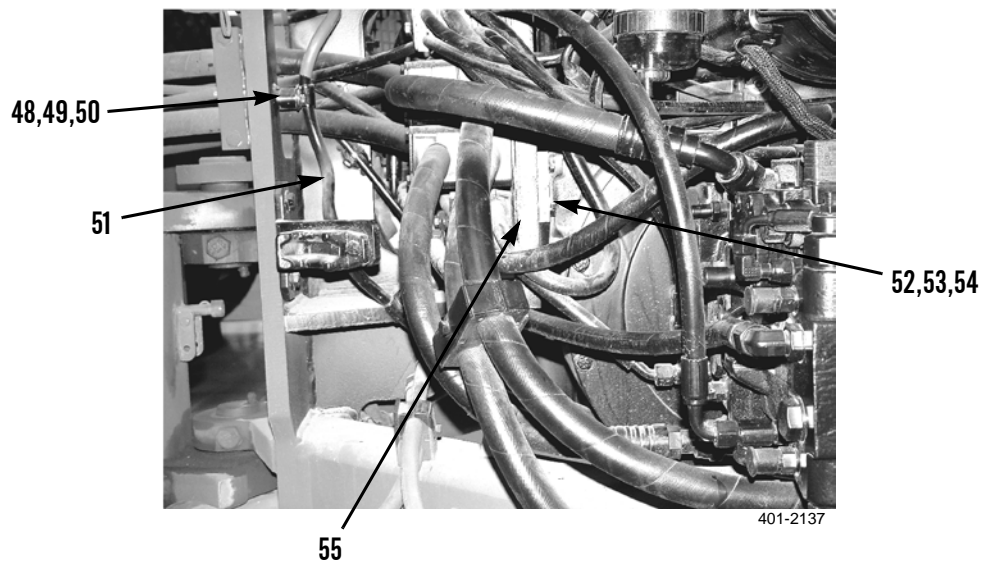
401-2139

INSTALLATION - CONTINUED

15. Connect hydraulic hose (56) and (57) to steering pump (58).



16. Attach bracket (54) and hoses to engine mount (55) with two bolts (52) and washers (53).
17. Attach battery cable (51) to frame with two bolts (48), washers (49), and clamp (50).



INSTALLATION - CONTINUED

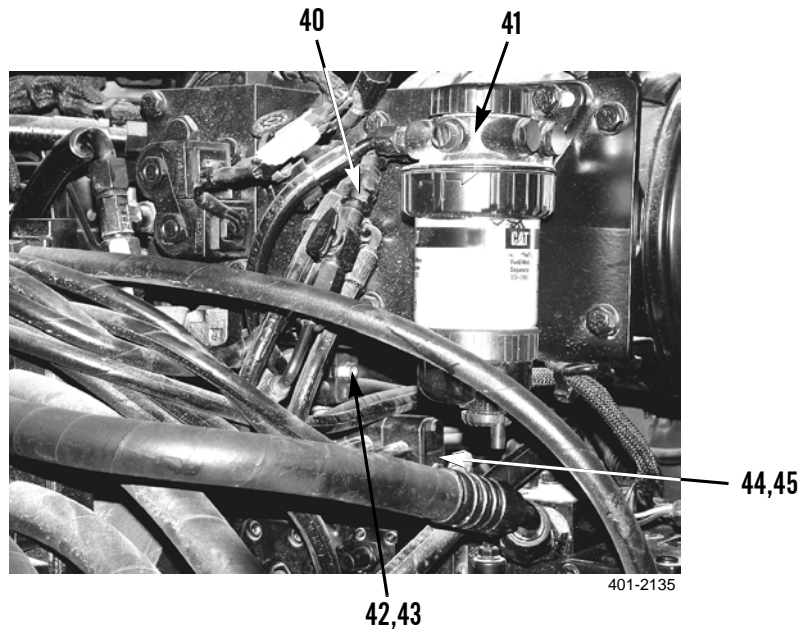
18. Connect steering hydraulic hoses (46) and (47).

**WARNING**

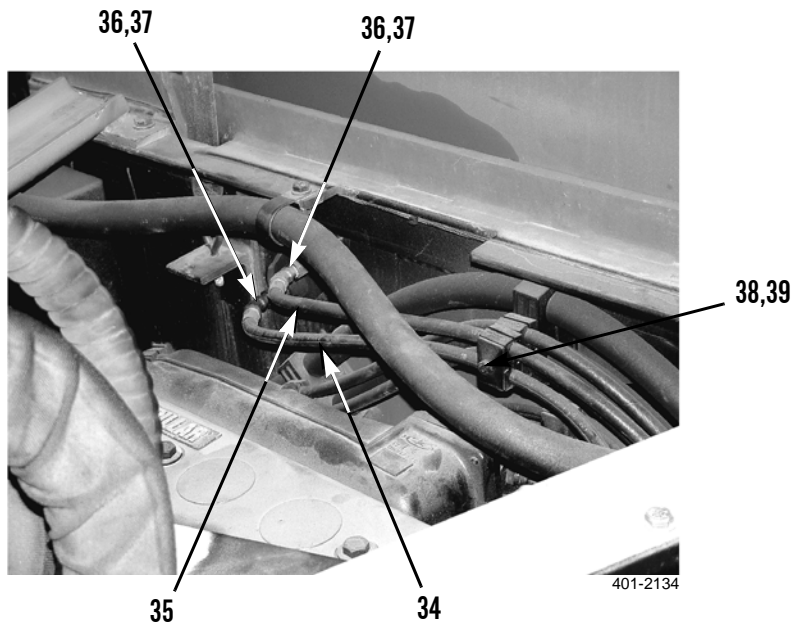
DO NOT perform fuel system checks, inspections or maintenance while smoking or near fire, flames or sparks. Fuel may ignite, causing damage to roller and injury or death.

19. Connect fuel hose (40) to fuel/water separator head (41).
20. Attach two fuel hoses with bolt (42) and clamp (43).
21. Install bolt (44) and clamp (45).

INSTALLATION - CONTINUED

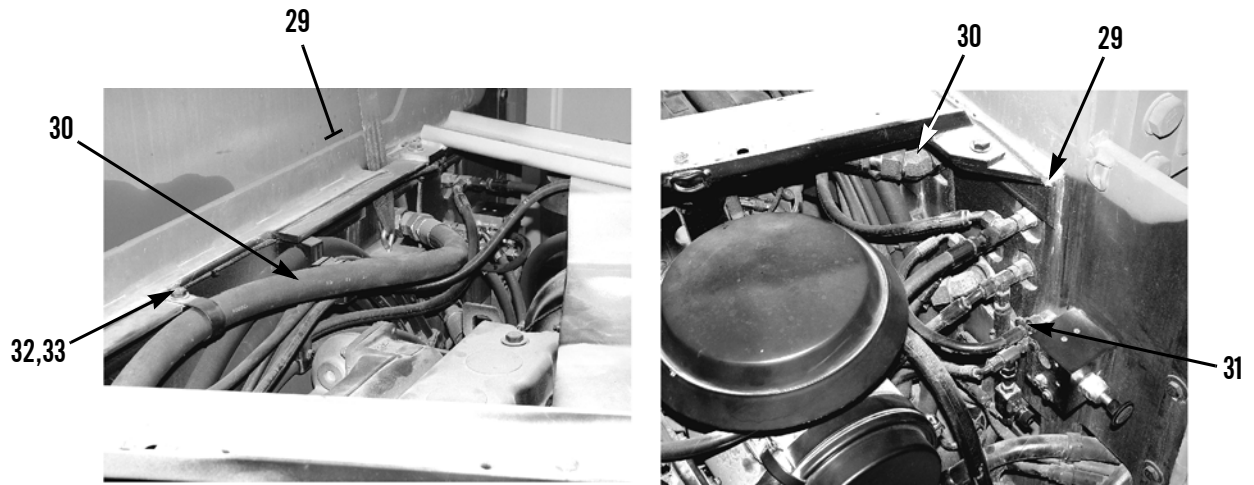


22. Attach fuel lines (34) and (35) with bolt (38) and clamp (39).
23. For the CB534B Roller, connect fuel lines (34) and (35) to fuel shut-off valves (36).
24. For the CB534C Roller, connect fuel lines (34) and (35) to fuel tank fittings (37).



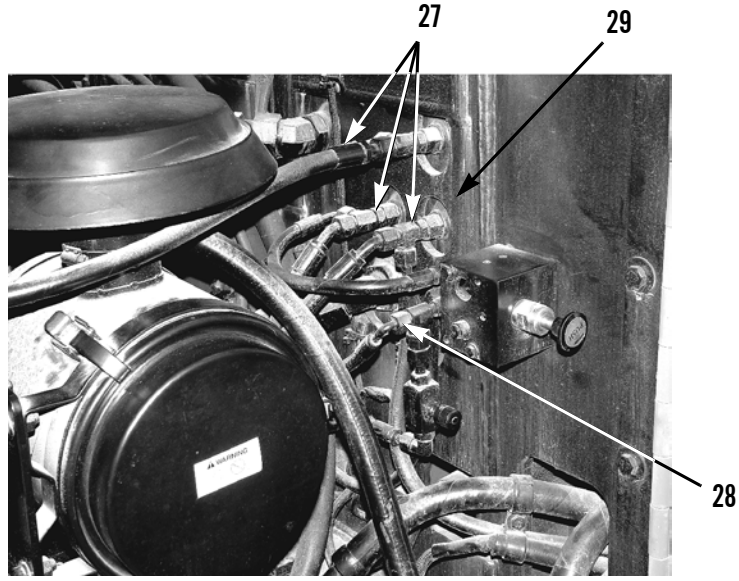
INSTALLATION - CONTINUED

25. Connect hydraulic hoses (30) and (31) to hydraulic tank (29).
26. Attach hydraulic hose (30) to hydraulic tank (29) with bolt (32) and clip (33).



401-2133

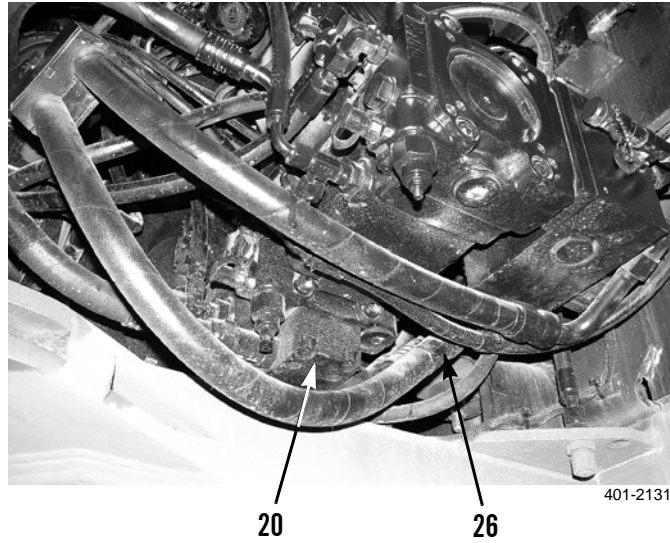
27. Connect hydraulic hoses (27) and (28) to hydraulic tank (29).



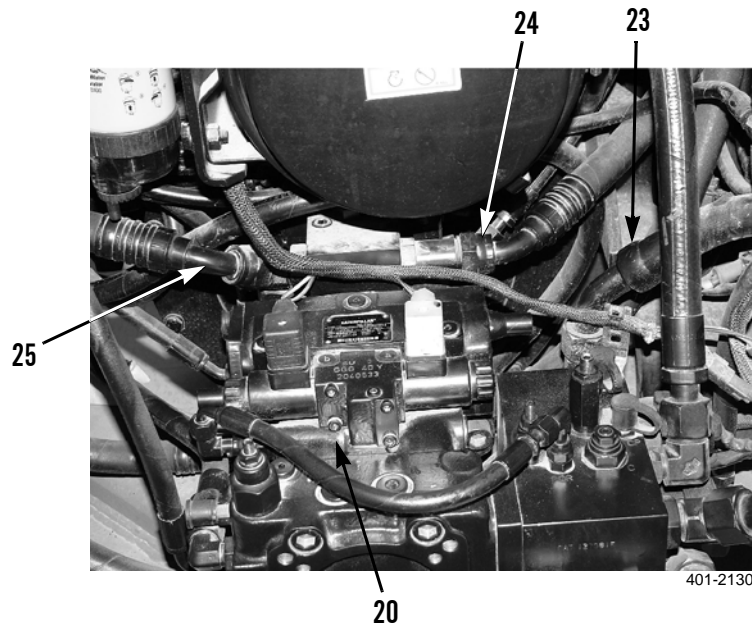
401-2132

INSTALLATION - CONTINUED

28. Connect hydraulic hose (26) to propel control valve (20).

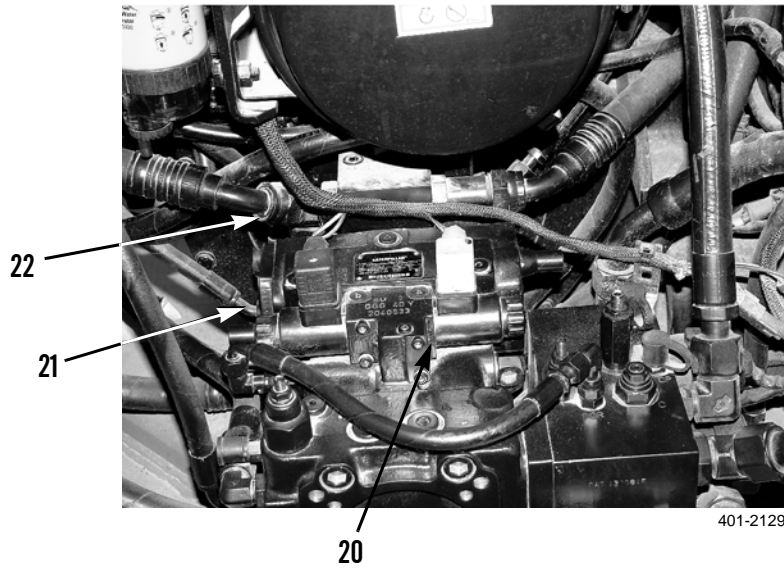


29. Connect hydraulic hoses (23), (24), and (25) to propel control valve (20).

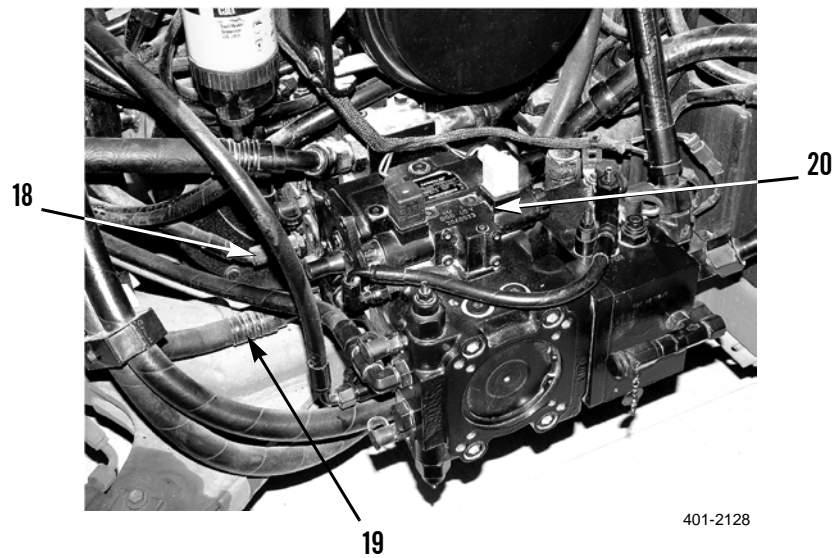


INSTALLATION - CONTINUED

30. Connect hydraulic hoses (21) and (22) to propel control valve (20).

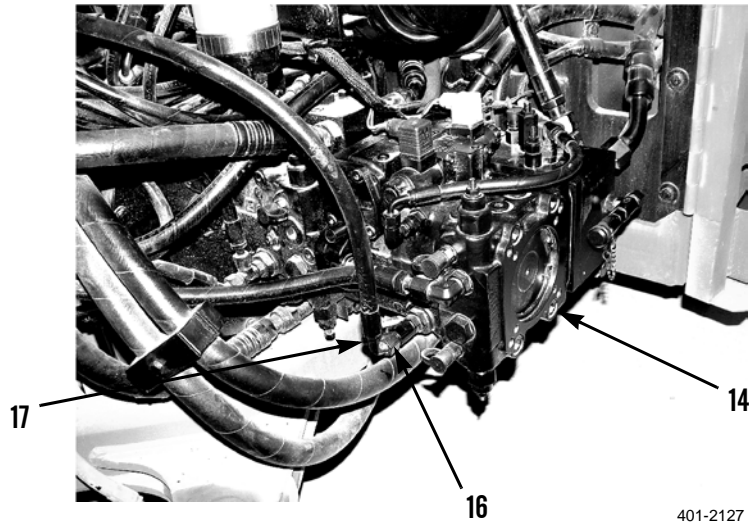


31. Connect hydraulic hoses (18) and (19) to propel control valve (20).

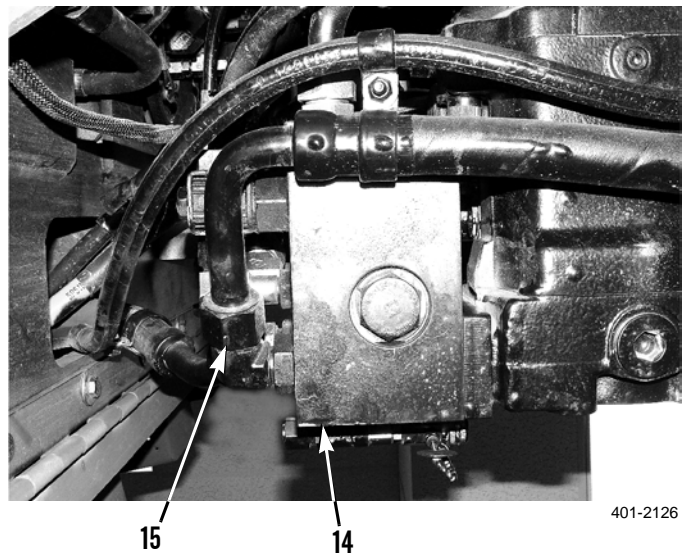


INSTALLATION - CONTINUED

32. Connect hydraulic hoses (16) and (17) to vibratory control valve (14).

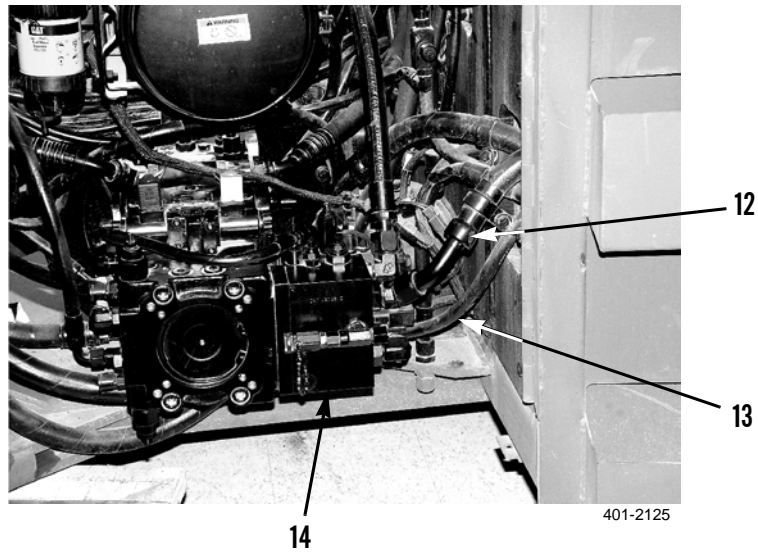


33. Connect hydraulic hose (15) to vibratory control valve (14).



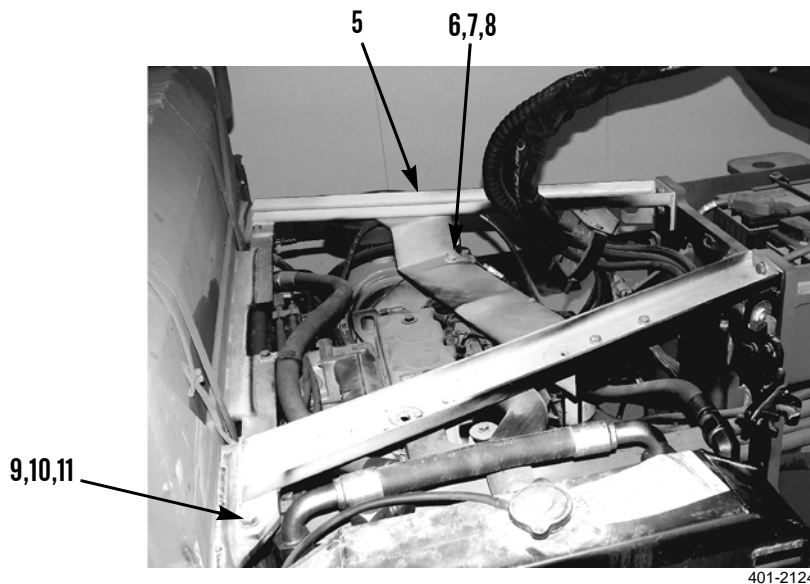
INSTALLATION - CONTINUED

34. Connect hydraulic hoses (12) and (13) to vibratory control valve (14).

**WARNING**

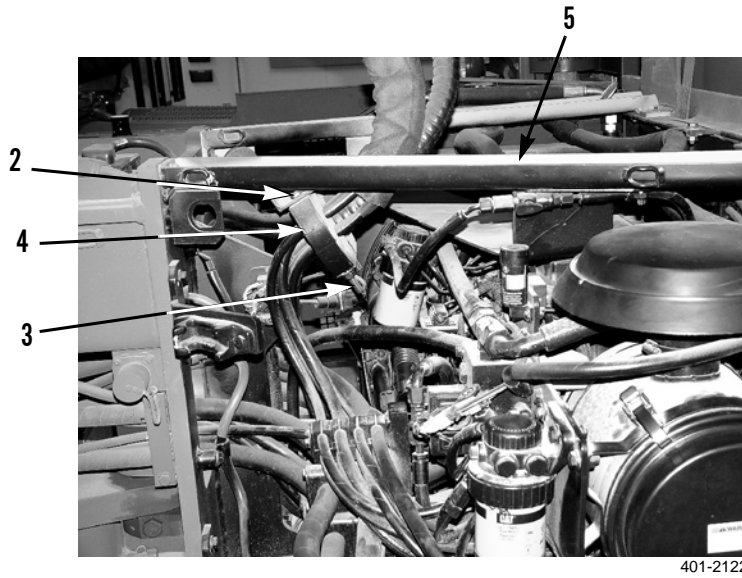
The weight of the brace assembly is 60 lb (27 kg). Use an assistant to aid in removal to prevent possible injury.

35. Install brace assembly (5) with seven bolts (9), washers (11), and nuts (10).
36. Install fuel hose assembly on brace assembly (5) with bolt (6) and clamp (7).

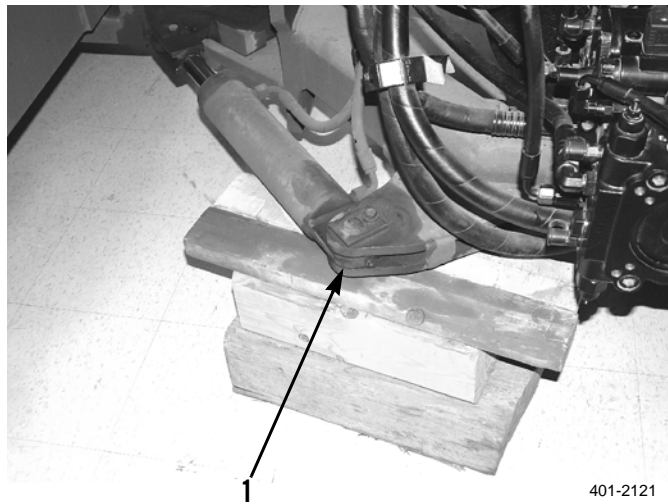


INSTALLATION - CONTINUED

37. Install clamp (4) on brace assembly (5) with two bolts (2) and nuts (3).



38. Remove two wooden blocks from under each steering cylinder mounting (1).



INSTALLATION - CONTINUED

39. Install fan assembly and fan guard (WP 0059 00).
40. Install air cleaner assembly (WP 0032 00).
41. Install NATO connector (WP 0106 00).
42. Install battery disconnect switch (WP 0104 00).
43. Install service meter (CB534B Roller) (WP 0082 00).
44. Install muffler (WP 0048 00).
45. Fill hydraulic tank (WP 0037 00).
46. Fill radiator (WP 0052 00).
47. Turn fuel shut-off valves to the ON position (WP 0038 00).
48. Prime fuel system (WP 0041 00).
49. Lower operator platform assembly (WP 0128 00).
50. Start engine and check for leaks and proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

CYLINDER HEAD REPLACEMENT

0163 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Wheel, degree (Item 6, WP 0220 00)
- Guide bolt (Item 13, WP 0220 00)
- Lifting device, minimum capacity 90 lb. (41 kg)

Materials/Parts

- Oil, lubricating (Item 21, WP 0219 00)
- Rag, wiping (Item 31, WP 0219 00)
- Gasket (1)

References

TM 5-3895-379-23P, Figure 3

Personnel Required

Two

Equipment Condition

- Engine off (TM 5-3895-379-10)
 - Operator platform assembly raised (WP 0128 00)
 - Radiator drained (WP 0052 00)
 - Battery cables disconnected (WP 0105 00)
 - Fuel filter base removed (WP 0040 00)
 - Fuel injector nozzles removed (WP 0175 00 or WP 0176 00)
 - Intake manifold removed (WP 0025 00)
 - Exhaust manifold removed (WP 0026 00 or WP 0027 00)
 - Thermostat housing removed (WP 0055 00 or WP 0056 00)
 - Rocker arm assembly removed (WP 0172 00)
-

REMOVAL

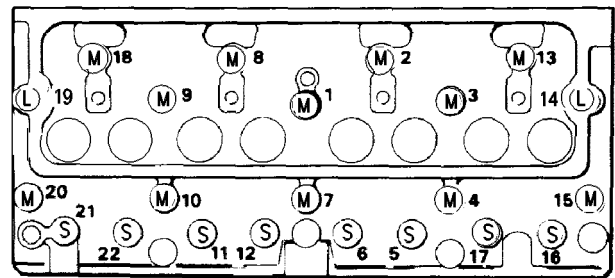
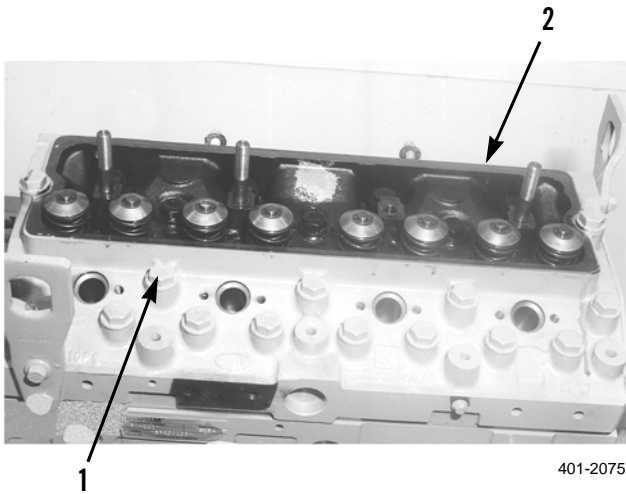


WARNING

- Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury or death.

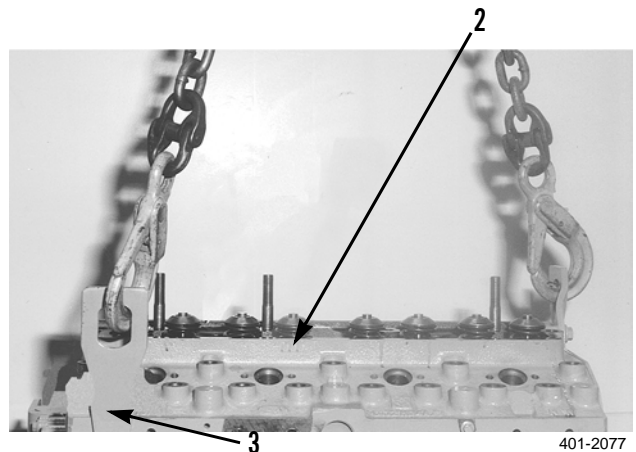
NOTE

- Cylinder head weighs 90 lb (41 kg).
 - Tag and mark the short, medium and long head bolts during removal.
1. Remove, evenly and gradually, 22 head bolts (1) from cylinder head (2) in reverse of sequence.



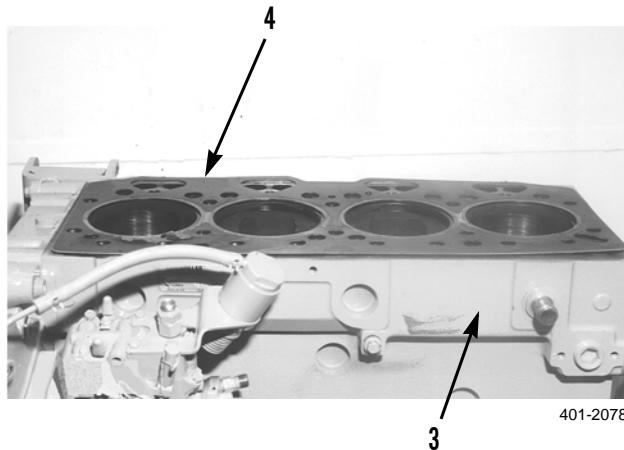
NOTE

- Do not use pry bar to separate cylinder head from cylinder block.
 - Place cylinder head on a surface that will not damage cylinder head face.
2. With assistance, attach lifting device to cylinder head (2). Lift cylinder head straight up and off cylinder block (3).



REMOVAL - CONTINUED

- Remove cylinder head gasket (4) from cylinder block (3). Discard gasket.

**CLEANING AND INSPECTION**

- Clean top of cylinder block (3) and bottom of cylinder head (2).
- Inspect cylinder head (2) for cracks, damage and warpage. Replace cylinder head if damaged.
- Inspect cylinder head bolts for damage, distortion and reduction in threads. Replace head bolts if damaged.

INSTALLATION**NOTE**

- Note location of dowels on each end of cylinder block. Dowels hold cylinder head gasket in place while cylinder head is installed.
- Be sure to locate "FRONT TOP", stamped on gasket, for correct installation.
- Do not use any sealant or gasket compound on cylinder head gasket.

- Install new cylinder head gasket (4) to cylinder block (3).
- Place guide bolts in positions 15 and 20 as numbered in sequence illustration.

NOTE

Weight of cylinder head is 90 lb (41 kg).

- With assistance, use a lifting device and lower cylinder head (2) onto cylinder block (3).

NOTE

Lubricate bolt threads with clean engine oil before assembly.

- Tighten 22 head bolts (1), evenly and gradually, in numbered sequence to 80 lb-ft (108 Nm).
- Again tighten 22 head bolts (1), evenly and gradually, in numbered sequence to 80 lb-ft (108 Nm) to ensure proper torque.

INSTALLATION - CONTINUED

6. Tighten all head bolts and nuts in number sequence as follows:
 - a. Short bolts (S) 150 degrees further (2.5 flats).
 - b. Medium length bolts (M) 180 degrees further (3.0 flats).
 - c. Long bolts (L) 210 degrees further (3.5 flats).
7. Install rocker arm and push rods (WP 0172 00).
8. Install thermostat housing (WP 0055 00 or WP 0056 00).
9. Install exhaust manifold (WP 0026 00 or WP 0027 00).
10. Install intake manifold (WP 0025 00).
11. Install fuel filter base (WP 0040 00).
12. Install fuel injector nozzles (WP 0175 00 or WP 0176 00).
13. Fill radiator (WP 0052 00).
14. Connect battery cables (WP 0105 00).
15. Lower operator platform assembly (WP 0128 00).
16. Start engine and check for leaks and proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

ENGINE OIL PUMP REPLACEMENT

0164 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)
 Gasket (2)
 O-ring (2)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

References - Continued

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
 TM 5-3895-379-23P, Figure 11

Personnel Required

Two

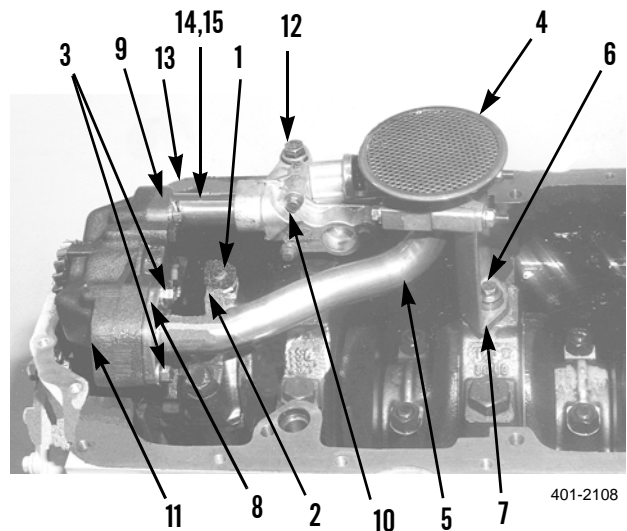
Equipment Condition

Engine off (TM 5-3895-379-10)
 Drums chocked (TM 5-3895-379-10)
 Oil pan removed (WP 0020 00)

REMOVAL**NOTE**

The engine oil pump is mounted to No. 1 main bearing cap. Use a torque wrench extension to reach No. 1 bearing cap.

1. Remove two bolts (1) and No. 1 main bearing cap (2) from engine block (13).
2. Remove two bolts (3) from strainer (4) and suction pipe (5) from engine oil pump (11).
3. Remove bolt (6) from engine oil pump support bracket (7).
4. Remove strainer (4), suction pipe (5) and gasket (8) from roller. Discard gasket.
5. Remove two bolts (9) from engine oil relief valve (10).
6. Remove bolt (12) from engine oil relief valve (10).
7. Remove engine oil relief valve (10) from engine block (13).
8. Disconnect oil tube (14) from engine oil relief valve (10) and remove two O-rings (15) from oil tube (14). Discard O-rings.
9. Remove engine oil pump (11) from engine block (12).



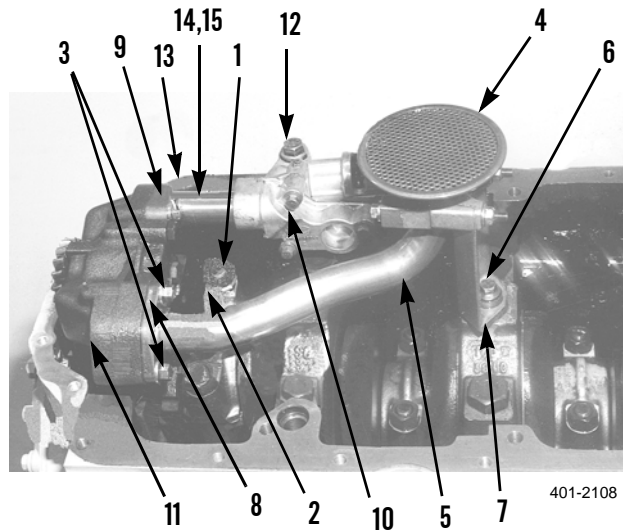
401-2108

INSTALLATION

CAUTION

Use a feeler gauge to check and insure that there is a minimum of 0.003 inch (0.08 mm) backlash between engine oil pump gear and idler gear.

1. Fill engine oil pump (11) with clean engine oil.
2. Install engine oil pump (11) on engine.
3. Install two new O-rings (15) on oil tube (14) and connect oil tube (14) to oil relief valve (10).
4. Install engine oil relief valve (10) on engine.
5. Install bolt (12) on engine oil relief valve (10) and engine block (13).
6. Install two bolts (9) to engine oil relief valve (10) and engine oil pump (11).
7. Install new gasket (8), suction pipe (5) and strainer (4) on roller.
8. Install bolt (6) on oil pump support bracket (7).
9. Install two bolts (3) on strainer (4) and suction pipe (5).
10. Install No. 1 main bearing cap (2) and two bolts (1) on engine block (13). Tighten bolts to 195 lb-ft (264 Nm).
11. Install oil pan (WP 0020 00) on engine block (13).
12. Fill engine with oil (WP 0008 00 and WP 0009 00).
13. Start engine and check for leaks and proper operation (TM 5-3895-379-10).



END OF WORK PACKAGE

CRANKSHAFT FRONT OIL SEAL REPLACEMENT**0165 00****THIS WORK PACKAGE COVERS**

Removal, Cleaning and Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Installer, front seal (Item 16, WP 0220 00)

Materials/Parts

Seal, oil

References

TM 5-3895-379-23P, Figure 10

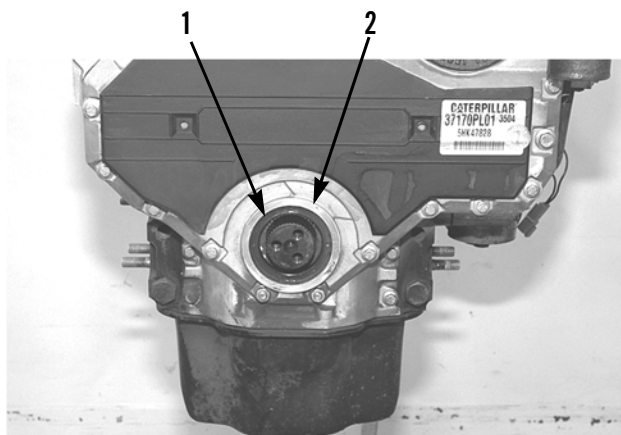
Equipment Condition

Crankshaft pulley removed (WP 0167 00)

REMOVAL**CAUTION**

Make sure main lip is used to remove crankshaft front oil seal. Do not damage edge of oil seal housing.

1. Drill three holes evenly spaced in crankshaft front oil seal (1).
2. Position slide hammer puller in holes and remove crankshaft seal (1) from oil seal housing (2).



401-957

CLEANING AND INSPECTION

Clean oil seal housing and inspect for any damage to oil seal housing and front of engine block.

INSTALLATION**CAUTION**

Make sure spring loaded lip of oil seal is facing towards inside of timing case cover and is square to bore of seal housing.

NOTE

Lubricate oil seal and crankshaft pulley area that contacts new oil seal with clean engine oil.

1. Using front seal installer, install new crankshaft front oil seal (1) in oil seal housing (2).
2. Install crankshaft pulley (WP 0167 00).

END OF WORK PACKAGE

CRANKSHAFT REAR OIL SEAL REPLACEMENT

0166 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, general purpose (Item 30, WP 0220 00)
 Driver group (Item 8, WP 0220 00)
 Installer, rear seal (Item 17, WP 0220 00)
 Installer (Item 18, WP 0220 00)

Materials/Parts

Gasket

References

TM 5-3895-379-23P, Figure 2

Equipment Condition

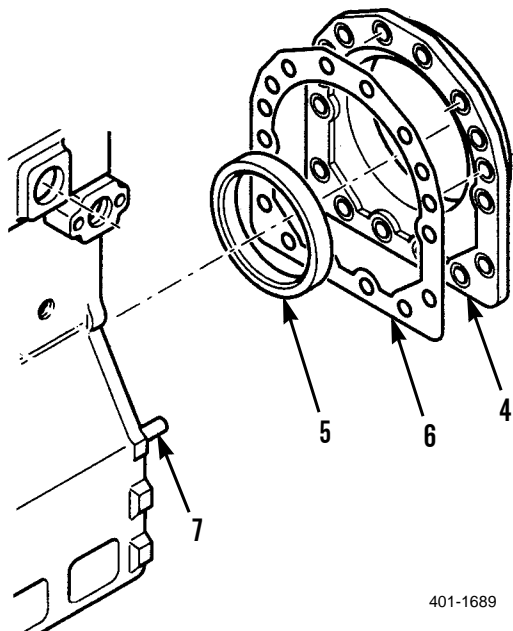
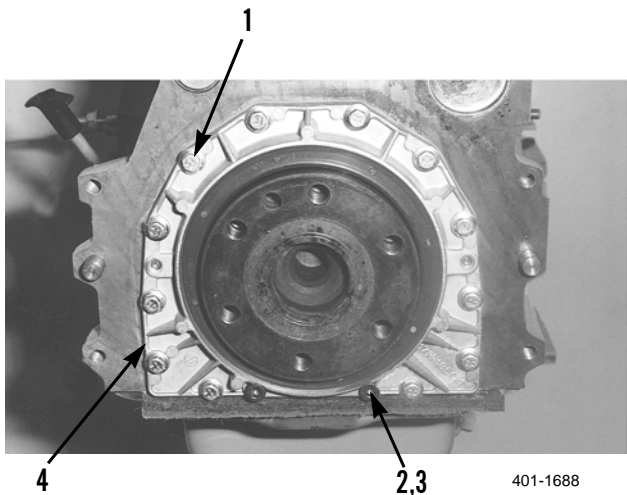
Flywheel removed (WP 0168 00)
 Flywheel housing removed (WP 0169 00)

NOTE

Removal and installation procedures are the same for the CB534B and CB534C Rollers. The CB534C Roller shown has a 14-bolt housing assembly. The CB534B Roller has a 10-bolt housing.

REMOVAL

1. Remove twelve bolts (1), two socket head bolts (2) and washers (3) from housing assembly (4).
2. Remove crankshaft rear oil seal (5), gasket (6) and housing assembly (4) from cylinder block dowels (7). Discard gasket.



CLEANING AND INSPECTION

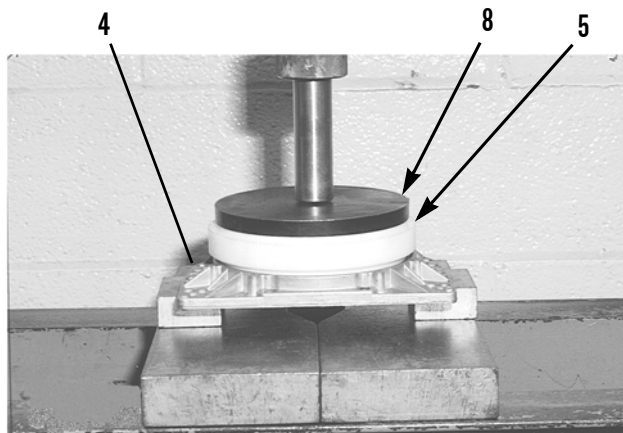
1. Ensure all parts and surfaces of the engine block are clean and free of oil, grease and dirt.
2. Inspect all parts and surfaces for damage and cracks, replace as required.

INSTALLATION

NOTE

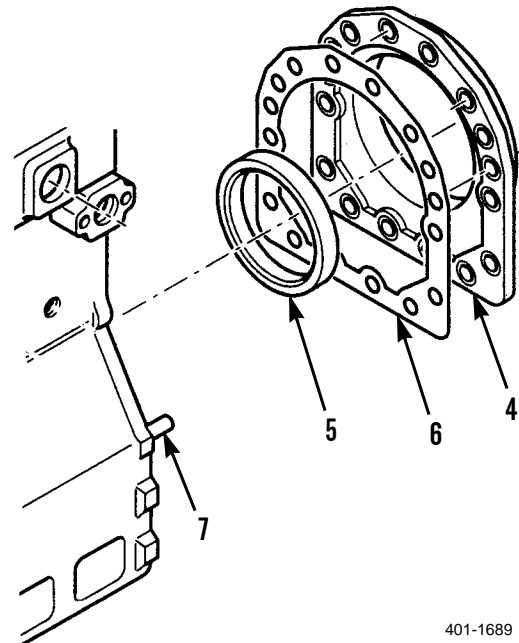
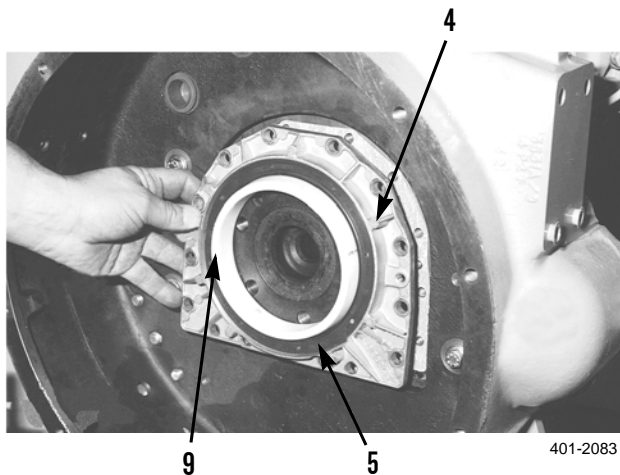
The crankshaft rear seal is lubricated by the manufacturer. Do not lubricate seal or crankshaft flange prior to installation.

1. Using seal installer (8) and suitable press, install crankshaft rear seal (5) into housing assembly (4).



INSTALLATION - CONTINUED

2. Position seal installer (9) onto crankshaft flange.
3. Install new gasket (5) to cylinder block dowels (7).
4. Install housing (4) and new oil seal (5) as an assembly on the two cylinder block dowels (7). Remove seal installer (9).

**NOTE**

If installing M8 bolts, tighten two bolts to 160 lb-in (18 Nm). If installing M6 bolts, tighten two bolts to 116 lb-in (13 Nm).

5. Install twelve bolts (1), two washers (3) and socket head bolts (2) in housing (4). Tighten eight bolts to 16 lb-ft (22 Nm).
6. Install flywheel housing (WP 0169 00).
7. Install flywheel (WP 0168 00).

END OF WORK PACKAGE

CRANKSHAFT PULLEY REPLACEMENT

0167 00

THIS WORK PACKAGE COVERS

Removal, Cleaning and Inspection, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

- Cleaning compound, solvent (Item 9, WP 0219 00)
- Detergent (Item 14, WP 0219 00)

Materials/Parts - Continued

- Oil, lubricating (Item 25, WP 0219 00)
- Rag, wiping (Item 31, WP 0219 00)
- Compound, sealing (Item 32, WP 0219 00)

Equipment Condition

- Radiator removed (WP 0050 00)
- V-belts removed (WP 0060 00)

REMOVAL

NOTE

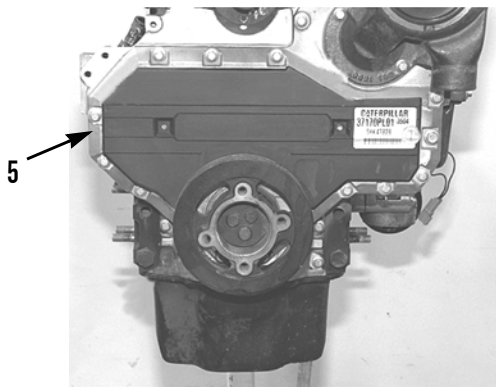
- Some engines have water immersion seal on front cover. Front of seal has a flexible lip. Plastic mandrel supplied with seal must be installed in seal when crankshaft pulley is removed. This ensures lip maintains correct shape.
- It maybe necessary to keep crankshaft from rotating when removing bolts, use appropriate tool.

1. Remove three bolts (1) and counterbalance weight (2) from end of crankshaft (3).

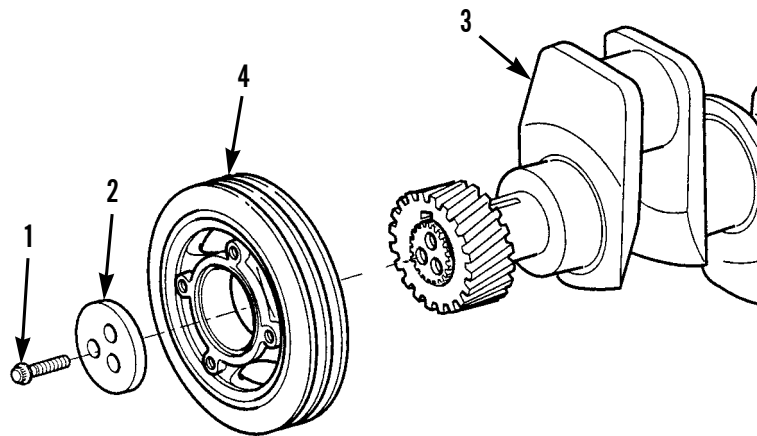
NOTE

It may be necessary to use a puller to remove crankshaft pulley.

2. Remove crankshaft pulley (4) from engine (5).



401-956



401-2066

CLEANING AND INSPECTION**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear eye protection.

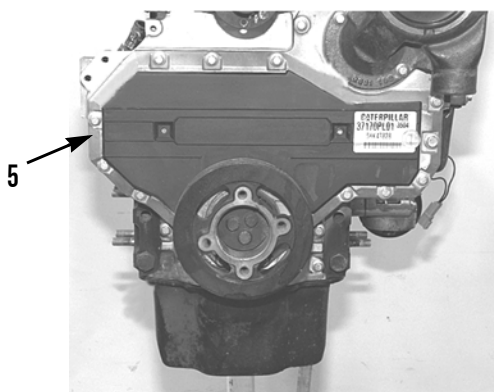
1. Clean removed parts with detergent. Dry parts with compressed air.
2. Inspect counter-balance weight and crankshaft pulley for cracks or other damage. Replace if damaged.
3. Inspect wear of pulley grooves. Replace pulley if worn.
4. Inspect to ensure plastic mandrel and seal lip maintains the correct shape, if supplied.

INSTALLATION

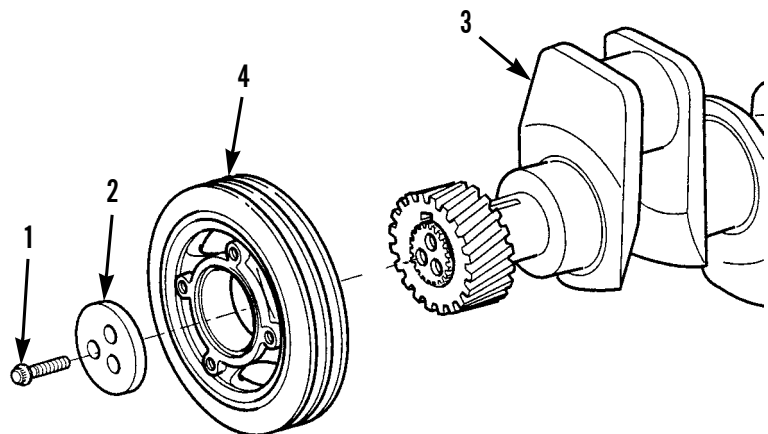
1. Apply a coat of lubricating oil to exposed surface of crankshaft end (3).
2. If supplied, remove plastic mandrel from seal, if required.

NOTE

- Position counterbalance weight to align holes with crankshaft end.
 - Apply sealing compound to threads of bolts.
 - It may be necessary to keep crankshaft from rotating when installing bolts.
3. Position crankshaft pulley (4) on crankshaft end (3).
 4. Install counterbalance weight (2) and three bolts (1). Tighten bolt to 85 lb-ft (115 Nm).



401-956



401-2066

5. Install alternator V-belts (WP 0060 00).
6. Install radiator (WP 0055 00).

END OF WORK PACKAGE

FLYWHEEL ASSEMBLY REPLACEMENT

0168 00

THIS WORK PACKAGE COVERSRemoval, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Link bracket (Item 19, WP 0220 00)

Lifting device, 120 lb (54 kg) minimum capacity

Guide bolts, 1/2 x 4 x 20

References

TM 5-3895-379-23P, Figure 5

Personnel Required

Two

Equipment Condition

Starter assembly removed (WP 0066 00)

Vibratory and propel pumps removed (WP 0187 00)

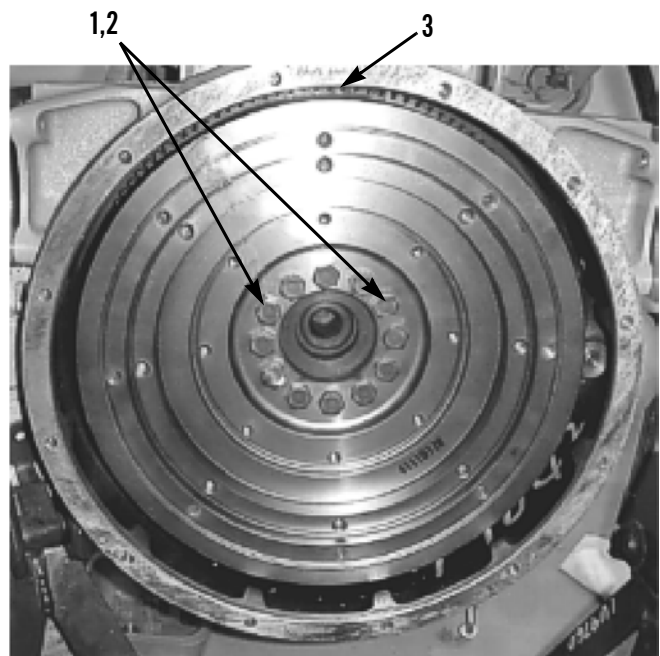
REMOVAL**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of flywheel assembly is 120 lb (54 kg).

1. Remove two bolts (1) and washers (2) from flywheel assembly (3).



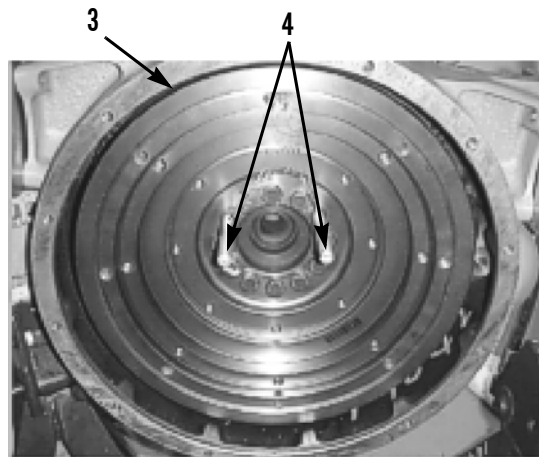
401-2235

FLYWHEEL ASSEMBLY REPLACEMENT - CONTINUED

0168 00

REMOVAL - CONTINUED

2. Install two guide bolts (4) through flywheel assembly (3) to crankshaft (5).
3. Install link bracket (6) to flywheel assembly (3).
4. Attach lifting device to link bracket (6).
5. Remove remaining six bolts (1) and washers (2) from flywheel assembly (3).
6. With assistance, use lifting device to remove flywheel assembly (3) from flywheel housing (7).
7. Remove guide bolts (4) from crankshaft (5).



401-2236

INSTALLATION



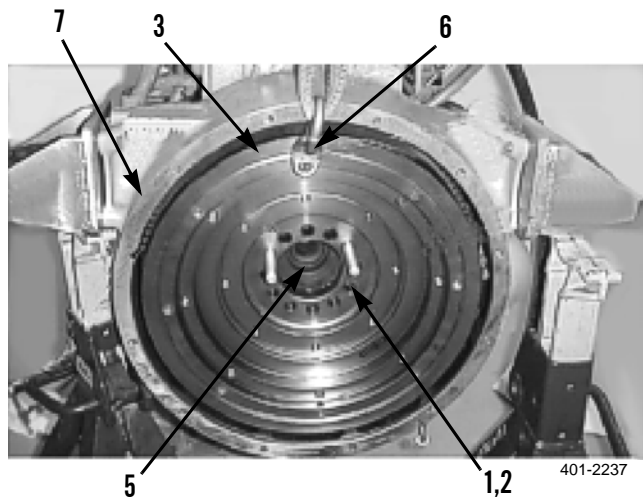
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

- If flywheel ring rear teeth are damaged, replace flywheel assembly.
- Weight of flywheel assembly is 120 lb (54 kg).

1. Install two guide bolts (4) to crankshaft (5). Install link bracket (6) to flywheel assembly (3).
2. Install link bracket (6) to flywheel assembly (3).
3. Attach lifting device to link bracket (6) and flywheel assembly (3).
4. With assistance, lift flywheel assembly (3) into flywheel housing (7).
5. Install six washers (2) and bolts (1) into flywheel assembly (3) and crankshaft (8). Tighten bolts to 77 lb-ft (104 Nm).
6. Remove lifting device and link bracket (6) from flywheel assembly (3).
7. Remove guide bolts (4) from flywheel assembly (3).
8. Install remaining two washers (2) and bolts (1) into flywheel (3) and crankshaft (8). Tighten bolts to 77 lb-ft (104 Nm).
9. Install starter assembly (WP 0066 00).
10. Install vibratory and propel pumps (WP 0187 00).



401-2237

END OF WORK PACKAGE

FLYWHEEL HOUSING REPLACEMENT

0169 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Link brackets (Item 20, WP 0220 00)

Lifting device, 70 lb (32 kg) minimum capacity

Materials/Parts

Seal, felt

References

TM 5-3895-379-23P, Figure 6

Personnel Required

Two

Equipment Condition

Engine assembly removed (WP 0162 00)

Starter removed (WP 0066 00)

Flywheel assembly removed (WP 0168 00)

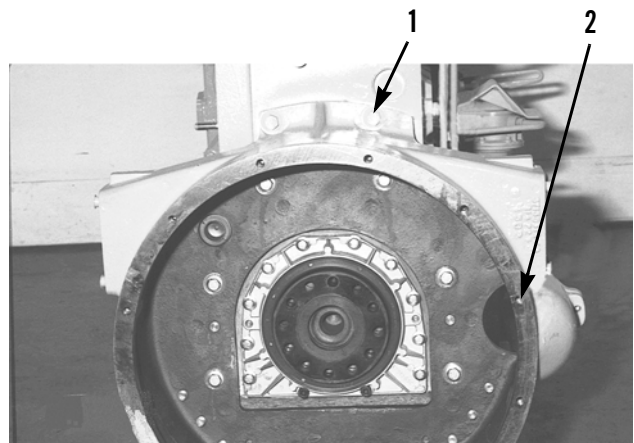
REMOVAL**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of flywheel housing is 70 lb. (32 kg).

1. Set engine on flat level surface and support engine forward of flywheel housing.
2. Remove two mounting bolts (1) on top of flywheel housing (2).



401-962

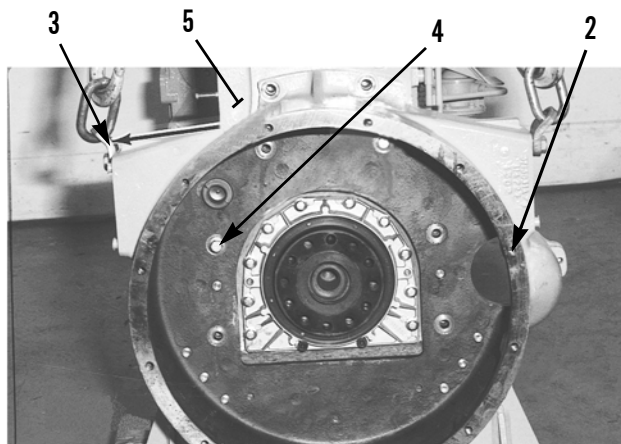
REMOVAL - CONTINUED

3. Attach two link brackets (3) and lifting device to support flywheel housing (2).
4. Remove six mounting bolts (4) that attach flywheel housing (2) to cylinder block.

NOTE

If necessary, use a soft hammer to separate flywheel housing from its doweled location.

5. With assistance, remove flywheel housing (2) away from engine (5).



401-963

INSTALLATION**NOTE**

- Make sure rear face of cylinder block housing is clean and undamaged. Verify dowels are undamaged.
- If equipped with felt seal to rear flange of oil pan, replace felt seal during installation procedure.
- Weight of flywheel housing is 70 lb (32 kg).

1. Attach two link brackets (3) and lifting device and support flywheel housing (2).
2. With assistance, lift and position flywheel housing (2) on dowels attached to cylinder block. Ensure holes are aligned.

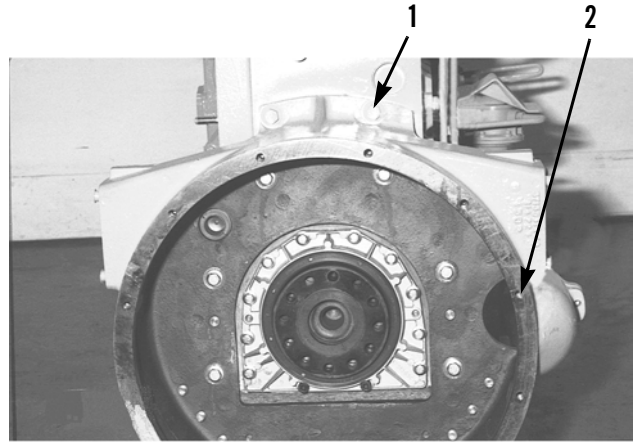
NOTE

- For aluminum flywheel housings, bolt torque is 52 lb-ft (71 Nm).
- For cast iron flywheel housing, bolt torques are as follows:
 - Cast iron flywheel housing with M10 bolt: 33 lb-ft (45 Nm);
 - Cast iron flywheel housing with M12 bolts stamped: 8.8: 55 lb-ft (75 Nm);
 - Cast iron flywheel housing with M12 bolts stamped 10.9: 85 lb-ft (115 Nm).

3. Install six mounting bolts (4) that attach the flywheel housing (2) to cylinder block.

INSTALLATION - CONTINUED

4. Install two mounting bolts (1) on top of flywheel housing (2).



401-962

5. Install flywheel assembly (WP 0168 00).
6. Install starter motor (WP 0066 00).
7. Install engine assembly (WP 0162 00).

END OF WORK PACKAGE

IDLER GEAR AND HUB REPLACEMENT

0170 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Driver group (Item 8, WP 0220 00)

Materials/Parts

Bushing

References

TM 5-3895-379-23P, Figure 10

Equipment Condition

Timing gear case cover removed (WP 0174 00)

REMOVAL**NOTE**

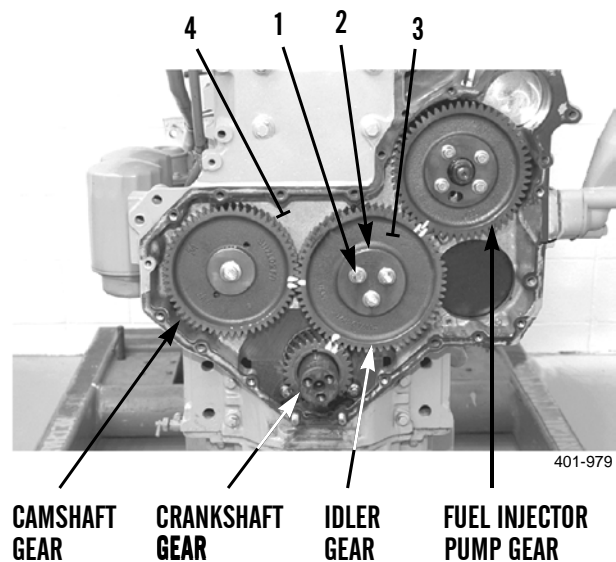
Idler gear marks may not be in mesh with other three gears due to different speed of rotation of idler gear.

1. Align timing marks on crankshaft gear, camshaft gear, fuel injector pump gear, and idler gear.
2. Remove three bolts (1) and retaining plate (2) from idler gear (3).

NOTE

Use puller to remove idler gear.

3. Remove idler gear (3) from front of cylinder block (4).

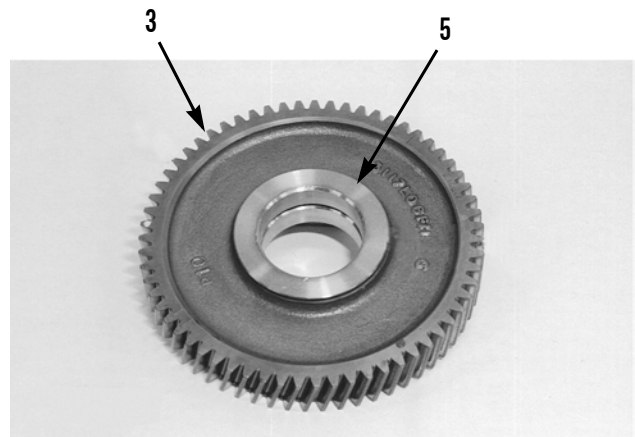
CAMSHAFT
GEARCRANKSHAFT
GEARIDLER
GEARFUEL INJECTOR
PUMP GEAR

REMOVAL - CONTINUED**CAUTION**

Do not turn crankshaft while idler gear is off engine.

NOTE

- Drive gear of fuel injection pump may turn counterclockwise when idler gear is removed. Drive gear of fuel injection pump may have to be turned clockwise to align timing marks before installing idler gear.
 - Remove bushings with puller or roller off front face of one bushing and remove with driver and press.
4. If necessary, remove two-piece bushings (5) from idler gear (3).

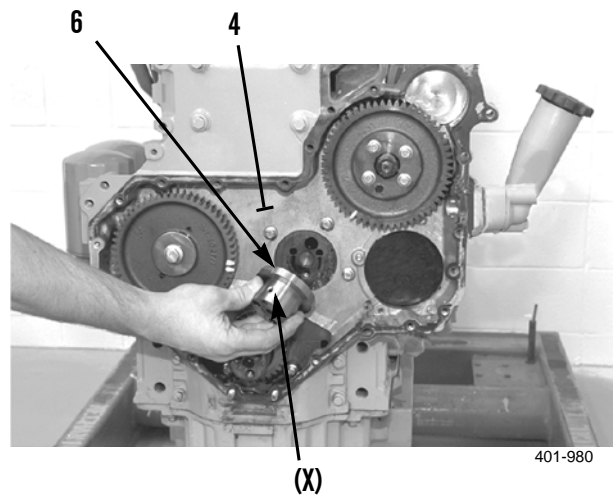


401-981

NOTE

Prior to removal of idler gear hub, ensure oil hole is marked with an (X) at top.

5. Remove idler gear hub (6) from cylinder block (4).



401-980

INSTALLATION

NOTE

When hub is installed, make sure oil hole marked (X) is at top.

1. Install idler gear hub (6) on cylinder block (4).
2. If removed, install two piece bushings (5) on idler gear (3). To install bushings on idler gear:
 - a. Press in new bushings.
 - b. Machine bores to correct tolerance for clearance on hub. Specification for clearance of bushings on hub is 0.0023 - 0.0047 in. (0.058 - 0.119 mm). Specification for inside of flanged bushings (tilted in position) is 1.998 - 2.0007 in. (50.80 - 50.82 mm).
 - c. Machine faces of bushings to get correct end play clearance of gear. Specification for width of gear and split bushing assembly (tilted in position) is 1.186 - 1.187 in. (30.12 - 30.15 mm). Specification for end play of gear is 0.004 - 0.008 in. (0.10 - 0.20 mm).
3. Install idler gear (3) on gear hub (6) front of cylinder block (4).

NOTE

- Drive gear of fuel injection pump may have to be turned clockwise to align timing marks before installing idler gear.
 - Ensure timing marks on crankshaft gear, camshaft gear and idler gear are aligned after installation of idler gear.
4. Install retaining plate (2) and three bolts (1) on idler gear (3). Tighten bolts to a torque of 33 lb-ft (45 Nm).

NOTE

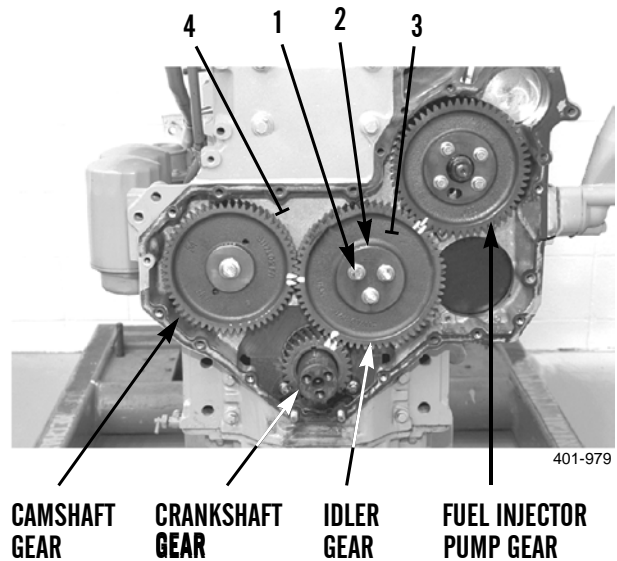
Idler gear end play is between 0.004 to 0.008 in. (0.10 to 0.20 mm).

5. Check idler gear (3) end play. Replace idler gear if out of tolerance.

NOTE

Idler and camshaft gear end play must have a minimum backlash of 0.003 (0.08 mm).

6. Check timing gear between camshaft (7) and idler gear (3). Replace idler gear if out of tolerance.
7. Install timing gear case cover (WP 0174 00).



END OF WORK PACKAGE

ROCKER SHAFT ASSEMBLY REPLACEMENT

0171 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Oil, lubricating (Item 25, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

Seal, oil

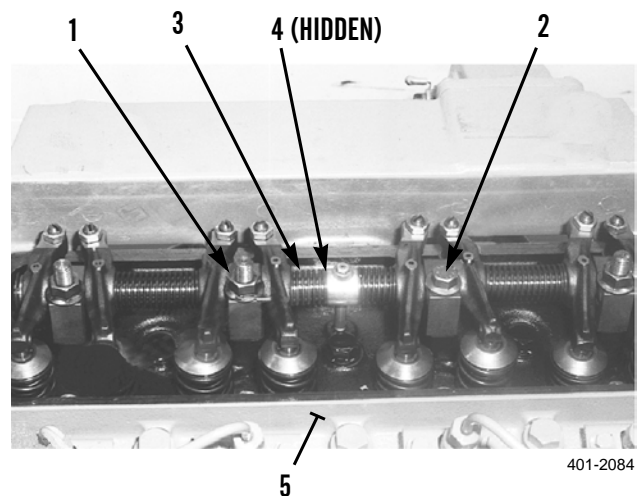
ReferencesWP 0173 00, Valve Lash (Clearance) Adjustment
TM 5-3895-379-23P, Figure 9**Equipment Condition**

Valve mechanism cover removed (WP 0016 00)

REMOVAL**NOTE**

- It is not necessary to remove the oil supply tube in order to remove rocker shaft assembly.
- Begin removal of rocker arm assembly starting at the end brackets and moving toward the center.
- If pushrods are removed, tag and mark for installation.

1. Remove three nuts (1) and bolts (2) from rocker shaft assembly (3).
2. Remove rocker arm assembly (3).
3. If required, remove oil seal (4) from oil supply passage in cylinder head (5). Discard oil seal.



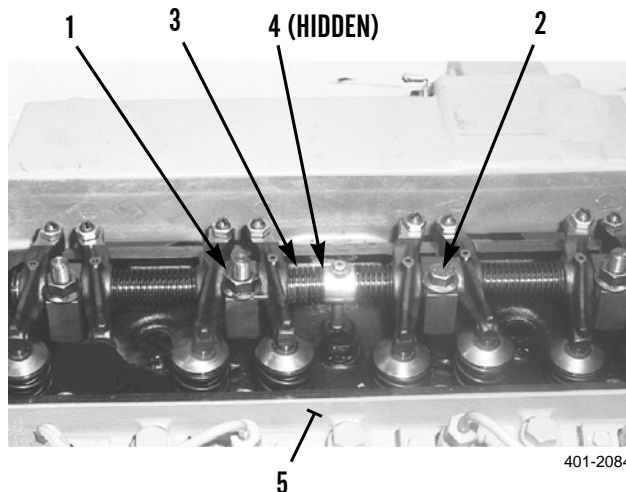
401-2084

INSTALLATION**NOTE**

- Make sure all oil holes in rocker shaft and in rocker levers are not clogged or plugged prior to assembly procedure.
 - When installing, make sure bolt and oil supply connection are correctly positioned on rocker shaft.
 - Lubricate all components with clean engine oil before and after installation.
1. If removed, install new oil seal (4) in oil supply passage in cylinder head (5).

NOTE

- If removed, ensure pushrods are installed in original location and seated correctly on valve lifters.
 - Ensure pushrods are seated properly under individual rocker arms and rocker arm assembly sits evenly on cylinder head.
 - Ensure adjustment screws are properly seated in ends of pushrods. It may be necessary to loosen adjustment screws to help prevent bent valves or pushrods during installation.
2. Position rocker arm assembly (3) on cylinder head (5).

**NOTE**

- Start from the center and tighten nuts and bolts outward.
 - Alternately tighten the nuts and bolts.
 - On aluminum bracket, tighten nuts and bolts to 30 lb-ft (41 Nm.).
 - On cast iron or steel brackets, tighten nuts and bolts to 55 lb-ft (75 Nm.).
3. Install three bolts (2) and nuts (1) on rocker arm assembly (3).
 4. Adjust valve lash (WP 0173 00).
 5. Install valve mechanism cover (WP 0016 00).

END OF WORK PACKAGE

ROCKER ARM ASSEMBLY REPAIR**0172 00****THIS WORK PACKAGE COVERS**

Disassembly, Assembly

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Oil, lubricating (Item 25, WP 0219 00)

Materials/Parts - Continued

Tag, marker (Item 37, WP 0219 00)

Ring, retaining (4)

Washer (4)

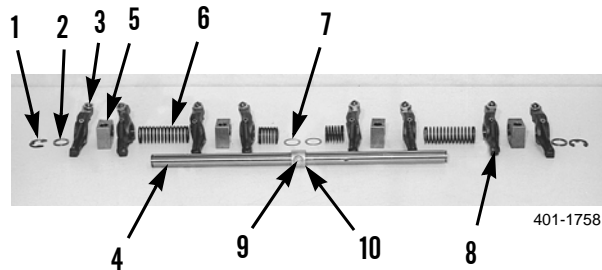
Equipment Condition

Rocker shaft assembly removed (WP 0171 00)

DISASSEMBLY**NOTE**

Tag and mark each component to ensure correct assembly.

1. Remove two retaining rings (1) and washers (2) from each end of rocker arm (3). Discard retaining rings and washers.
2. Slide components off each end of rocker shaft assembly.
3. Remove end rocker arm (3) from rocker shaft (4).
4. Remove remaining rocker arms (3), rocker shaft brackets (5), springs (6) and washers (7) from rocker shaft (4).
5. Remove rocker arm bushing (8) from rocker shaft (4).
6. If necessary, remove bolt (9) and oil supply connection (10) from rocker shaft (4).



ASSEMBLY**NOTE**

- Make sure all oil holes in rocker shaft and in rocker levers are not clogged or plugged before beginning assembly procedure.
 - When assembling, make sure bolt and oil supply connection are correctly positioned on rocker shaft.
 - Lubricate all components with clean engine oil before beginning assembly procedure.
1. If removed, install oil supply connection (10) and bolt (9) on rocker shaft (4).

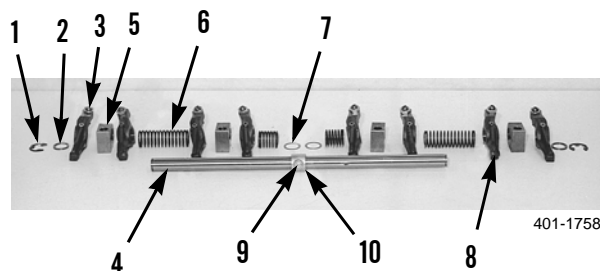
NOTE

Bushings may require reaming to fit. Ream new arm bushing to a clearance of 0.0024 +/- 0.0012 in (0.06 +/- 0.03 mm).

2. Install arm bushing (8) on rocker shaft (4).

NOTE

- Install each of the components in the correct order onto rocker shaft.
 - Ensure bolts and connectors are correctly positioned on rocker shaft.
3. Install remaining washers (7), springs (6), rocker shaft brackets (5) and rocker arms (3) on rocker shaft (4).
 4. Install two new washers (2) and new retaining rings (1) each end of rocker arm (3).



5. Install rocker shaft assembly (WP 0171 00).

END OF WORK PACKAGE

VALVE LASH (CLEARANCE) ADJUSTMENT

0173 00

THIS WORK PACKAGE COVERSAdjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Rag, wiping (Item 31, WP 0219 00)

References

TM 5-3895-379-23P, Figure 9

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Valve mechanism cover removed (WP 0016 00)

ADJUSTMENT

1. Valve lash is measured between top of valve stem and rocker arm lever. With engine hot or cold, correct clearances are 0.008 in (0.20 mm) for inlet valves and 0.018 in (0.45 mm) for exhaust valves.

NOTE

No. 1 cylinder is at front of engine. To set valve lash for respective cylinders, perform the following steps:

2. **No. 1 Cylinder:** Rotate crankshaft in direction of engine rotation until inlet valve of No. 4 cylinder has just opened and No. 4 exhaust valve has not completely closed. Check clearances of inlet and exhaust valve for No. 1 cylinder and adjust as necessary.
3. **No. 3 Cylinder:** Rotate crankshaft in direction of engine rotation until inlet valve of No. 2 cylinder has just opened and No. 2 exhaust valve has not completely closed. Check clearances of inlet and exhaust valve for No. 3 cylinder and adjust as necessary.
4. **No. 4 Cylinder:** Rotate crankshaft in direction of engine rotation until inlet valve of No. 1 cylinder has just opened and No. 1 exhaust valve has not completely closed. Check clearances of inlet and exhaust valve for No. 4 cylinder and adjust as necessary.
5. **No. 2 Cylinder:** Rotate crankshaft in direction of engine rotation until inlet valve of No. 3 cylinder has just opened and No. 3 exhaust valve has not completely closed. Check clearances of inlet and exhaust valve for No. 2 cylinder and adjust as necessary.
6. Install valve mechanism cover (WP 0016).
7. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

TIMING GEAR CASE COVER REPLACEMENT

0174 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Tool, alignment (Item 2, WP 0220 00)
- Cover guide (Item 4, WP 0220 00)

Materials/Parts

- Gasket

References

TM 5-3895-379-23P, Figure 10

Equipment Condition

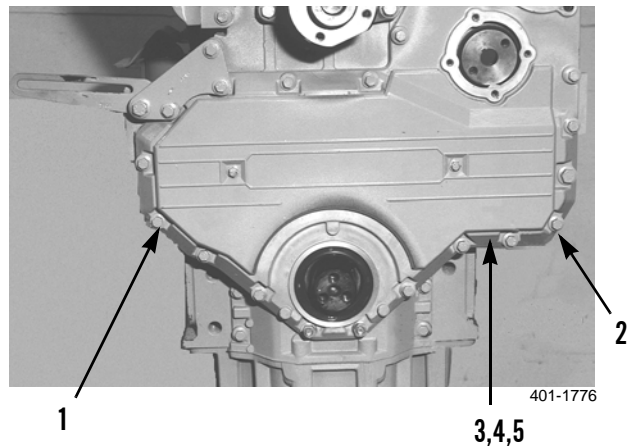
- Operator platform assembly raised (WP 0128 00)
- Fan drive pulley removed (WP 0058 00)
- Crankshaft pulley removed (WP 0167 00)
- Water pump removed (WP 0057 00)
- Alternator removed (WP 0061 00)

REMOVAL

1. Remove seventeen bolts (1) and two nuts (2).
2. Remove timing gear case cover (3) and gasket (4). Discard gasket.

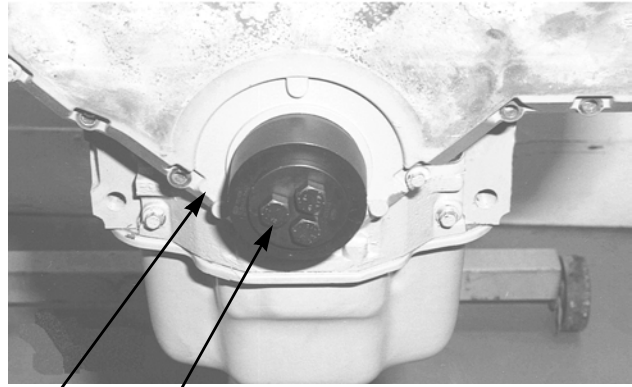
INSTALLATION

1. Clean all faces of mating components.
2. Install new gasket (4) and timing case cover (3) to timing case (5).
3. Install two bolts (1) loosely to hold gasket (4) and timing case cover (3) in position.



INSTALLATION - CONTINUED

4. Use front cover alignment tool and crankshaft pulley bolts (6) to centralize timing case cover (3).



401-1777

3

6

CAUTION

Position of timing gear case cover is critical. If cover is not centered, backlash between fuel pump gear and water pump gear could be affected. This could result in damage to fuel injection pump.

5. Install seventeen cover bolts (1) and two nuts (2). Tighten bolts to 16 lb-ft (22 Nm).
6. Remove front cover alignment tool.
7. Install alternator (WP 0061 00).
8. Install water pump (WP 0057 00).
9. Install crankshaft pulley (WP 0167 00).
10. Install fan drive pulley (WP 0058 00).
11. Lower operator platform assembly (WP 0128 00).

END OF WORK PACKAGE

FUEL INJECTOR AND NOZZLE REPLACEMENT (CB534B)

0175 00

THIS WORK PACKAGE COVERS

Test, Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

- Cap set, protective (Item 8, WP 0219 00)
- Washer

References

- TM 5-3895-379-23P, Figure 17
- TM 5-3895-379-10

Equipment Condition

- Operator platform assembly raised (WP 0128 00)
- Fuel injector lines removed (WP 0029 00)

FUEL INJECTOR NOZZLE TEST

NOTE

Perform the following procedures in order to determine if a fuel injector nozzle is working correctly.

1. Run the engine at low idle (TM 5-3895-379-10).

NOTE

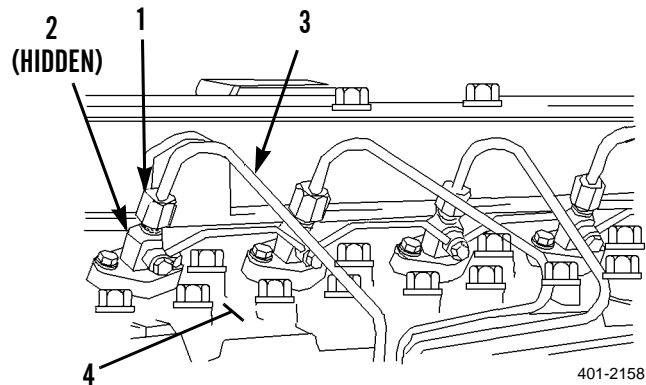
If leakage occurs at the nut for the fuel supply line, make sure that the fuel supply line and the nut for the fuel supply line are correctly aligned with the inlet connection of the fuel injector nozzle.

2. Loosen the nut (1) for the fuel supply line (3) at each fuel injector nozzle (2).

NOTE

Listen for low idle to decrease or become rough at each engine cylinder.

3. The fuel injector nozzle (2) is faulty and should be replaced when the fuel supply line (3) is loosened and the following events occur:
 - The engine rpm does not decrease.
 - The engine does not idle roughly.



CAUTION

Do not over-tighten the nut for the fuel supply line. If the nut is tightened more, the fuel line may become restricted or the threads of the fuel injector nozzle and the nut may be damaged.

4. Tighten each nut (1) to 14.7 lb-ft (20 Nm).

REMOVAL**CAUTION**

Cap and plug all openings to prevent any contaminants from entering the system.

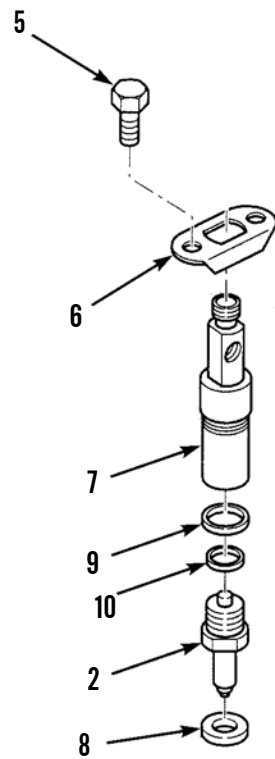
NOTE

All fuel injector nozzles are replaced the same way. One fuel injector nozzle is shown.

1. Remove two capscrews (5) and clamp (6) from cylinder head (4).
2. Remove fuel injector (7) and washer (8) from cylinder head (4).
3. Remove nozzle (2), gasket (9) and spacer (10) from injector (7). Discard gasket.

INSTALLATION

1. Install spacer (10), new gasket (9) and nozzle (2) on fuel injector (7).
2. Install washer (8) and fuel injector (7) to cylinder head (4).
3. Install clamp (6) and two capscrews (5). Tighten capscrews gradually and evenly to 9 ft-lb (12 Nm).



401-2008

4. Install fuel injector lines (WP 0029 00).
5. Lower operator platform (WP 0128 00).
6. Start engine (TM 5-3895-379-10) and check for leaks.

END OF WORK PACKAGE

FUEL INJECTOR AND NOZZLE REPLACEMENT (CB534C)

0176 00**THIS WORK PACKAGE COVERS**Test, Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Antiseize compound (Item 11, WP 0219 00)

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Materials/Parts - Continued

Washer

References

TM 5-3895-379-23P, Figure 97

TM 5-3895-379-10

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Fuel injection lines removed (WP 0030 00)

FUEL INJECTOR NOZZLE TEST**NOTE**

Perform the following procedures in order to determine if a fuel injector nozzle is not working correctly.

1. Run the engine at low idle (TM 5-3895-379-10).

FUEL INJECTION NOZZLE TEST - CONTINUED

NOTE

If leakage occurs at the nut for the fuel supply line, make sure that the fuel supply line and the nut for the fuel supply line are correctly aligned with the inlet connection of the fuel injector nozzle.

2. Loosen the nut (1) for the fuel supply line (3) at each fuel injector nozzle (2).

NOTE

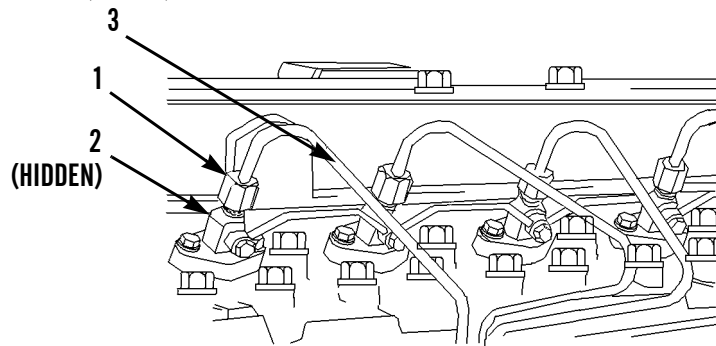
Listen for the low idle to decrease or become rough at each engine cylinder.

3. The fuel injector nozzle (2) is faulty and should be replaced when the fuel supply line (3) is loosened and the following events occur:
 - a. The engine rpm does not decrease.
 - b. The engine does not idle roughly.

CAUTION

Do not over-tighten the nut for the fuel supply line. If nut is tightened more, fuel line may become restricted or threads of fuel injector nozzle and nut may be damaged.

4. Tighten each nut to 14.7 lb-ft (20 Nm).



401-2158

REMOVAL

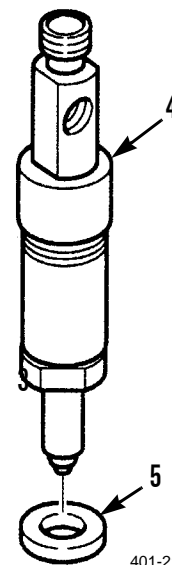
CAUTION

Cap and plug all openings to prevent any contaminants from entering the system.

NOTE

All fuel injector nozzles are replaced the same way. One fuel injector nozzle is shown.

1. Remove fuel injector (4) and washer (5).

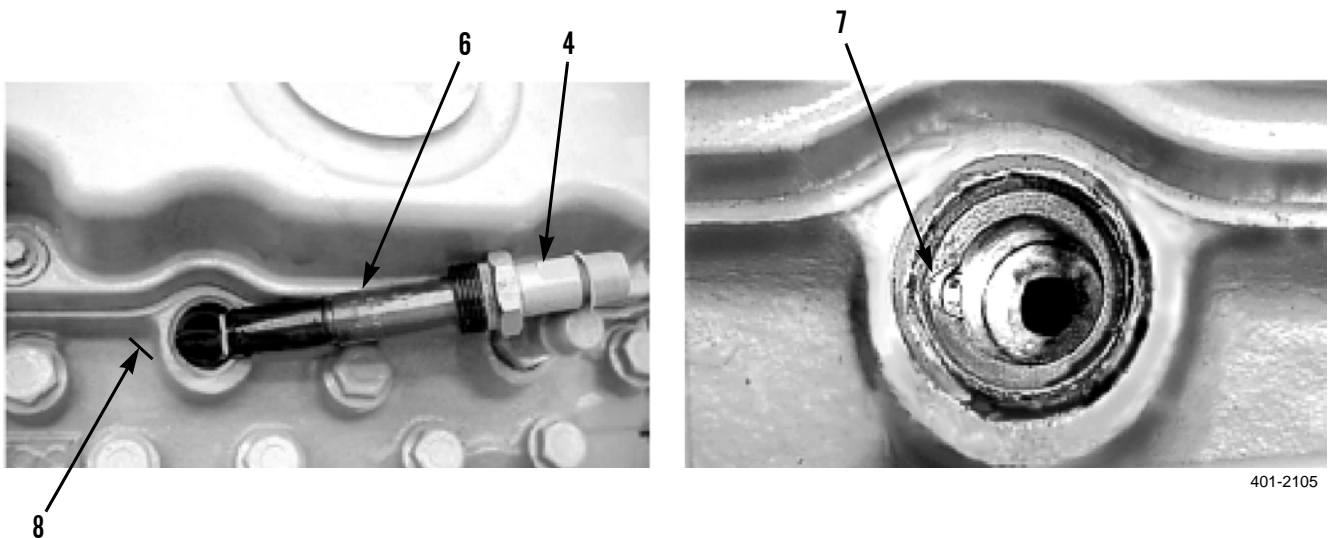


401-2104

INSTALLATION**CAUTION**

Do not rotate injection nozzle after installation. The seal made by the antiseize compound could break. A broken seal may allow leakage past the seat of the fuel injection nozzle, resulting in poor performance.

1. Clean threads on fuel injector (4) and mating surface of cylinder head.
2. Place a 0.08 inch (2.0 mm) bead of antiseize compound to the first two threads of injector (4).
3. Install washer (5) on injector (4).
4. Position injector (4) by making sure detent ball (6) is aligned with detent (7) in cylinder head (8).



5. Gradually and evenly tighten fuel injector (4). Tighten to 22 lb-ft (30 Nm) and remove excess antiseize compound.
6. Install fuel injector lines (WP 0030 00).
7. Lower operator platform (WP 0128 00).
8. Start engine and check for leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL INJECTION PUMP GEAR REPLACEMENT

0177 00**THIS WORK PACKAGE COVERS**

Removal, Installation (Method 1)

Removal, Installation (Method 2)

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Lockwasher (2)

References

WP 0170 00, Idler Gear and Hub Replacement

WP 0174 00, Timing Gear Case Cover Replacement

References - Continued

TM 5-3895-379-23P, Figure 20

Equipment Condition

Operator platform assembly raised (WP 0128 00)

Fan removed (WP 0059 00)

Water pump removed (WP 0057 00)

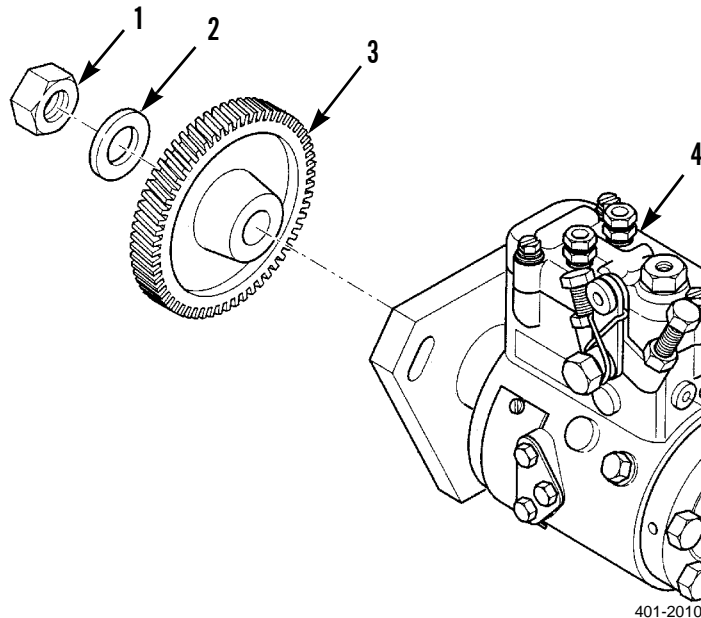
Crankshaft pulley removed (WP 0167 00)

NOTE

- Idler gear marks may not be in mesh with other three gears due to different speed of rotation of idler gear.
- Turn crankshaft until marks on crankshaft gear, camshaft gear and fuel pump gear are in mesh with idler gear.
- Be sure not to lose key installed in fuel injection pump shaft.

METHOD 1 (TIMING GEAR CASE COVER OFF) REMOVAL

1. Remove timing gear case cover (WP 0174 00).
2. Remove nut (1) and spring washer (2) from fuel injection pump gear (3).
3. Remove idler gear (WP 0170 00).
4. With gear puller, remove fuel injection pump gear (3) from fuel injection pump (4). Check fuel injection pump gear (3) for wear or damage. Replace if necessary.

**METHOD 1 (TIMING GEAR CASE COVER OFF) INSTALLATION****NOTE**

If installing a new gear, check backlash after installation.

1. Install fuel injection pump gear (3) to fuel injection pump (4).
2. Install idler gear (WP 0170 00).
3. Install nut (1) and spring washer (2) to fuel injection pump gear (3). Tighten nut to 58 lb-ft (79 Nm).

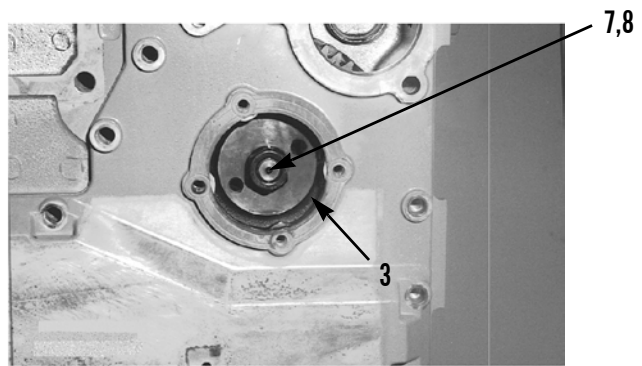
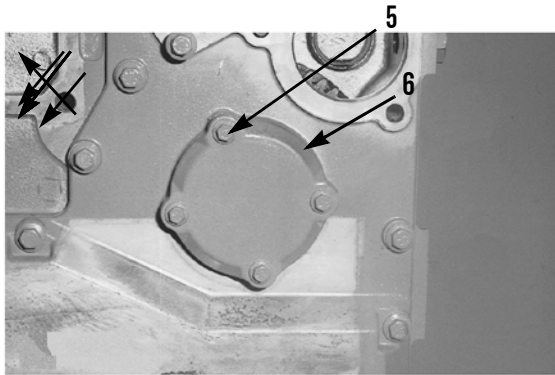
NOTE

- Be sure not to lose key installed in fuel injection pump shaft.
- Turn fuel injection pump gear to align timing marks with idler gear before installation. The fuel injection pump gear is marked with a "4."

4. Install timing gear cover (WP 0174 00).
5. Install crankshaft pulley (WP 0167 00).
6. Install water pump (WP 0057 00).
7. Install fan (WP 0059 00).

METHOD 2 (TIMING GEAR CASE COVER ON) REMOVAL

1. Remove four bolts (5) and cover (6).
2. Remove nut (7) and lockwasher (8).

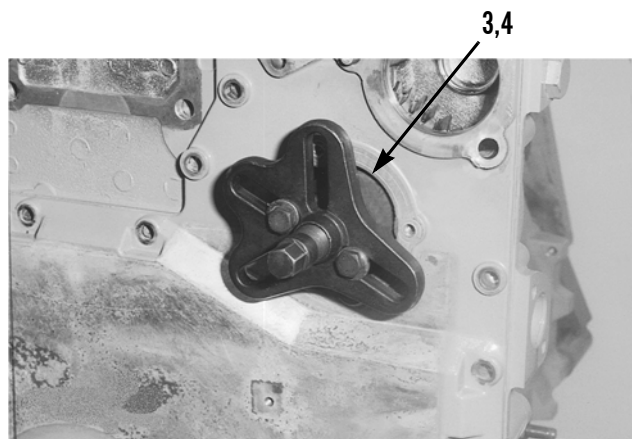


401-2011

3. Rotate crankshaft until keyway is at 1:00 o'clock.
4. Install gear puller and disengage fuel injection pump gear (3) from fuel injection pump (4).

METHOD 2 (TIMING GEAR CASE COVER ON) INSTALLATION

1. Install lockwasher (8) and nut (7). Tighten nut to 58 lb-ft (78 Nm).
2. Install four bolts (5) and cover (6).
3. Rotate crankshaft until keyway is at 1:00 o'clock. Install fuel injection pump gear (3) to fuel injection pump (4).
4. Install crankshaft pulley (WP 0167 00).
5. Install water pump (WP 0057 00).
6. Install fan (WP 0059 00).
7. Lower operator platform (WP 0128 00).



401-2035

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Gasket

O-ring

References

TM 5-3895-379-10

TM 5-3895-379-23P, Figure 20

Equipment Condition

Throttle cable disconnected (CB534B) (WP 0045 00)

Throttle control disconnected (CB534C) (WP 0047 00)

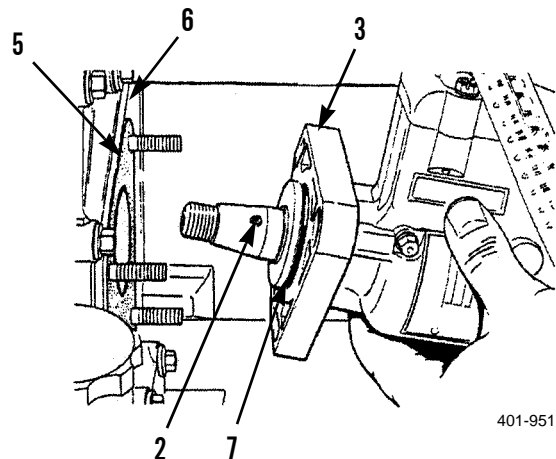
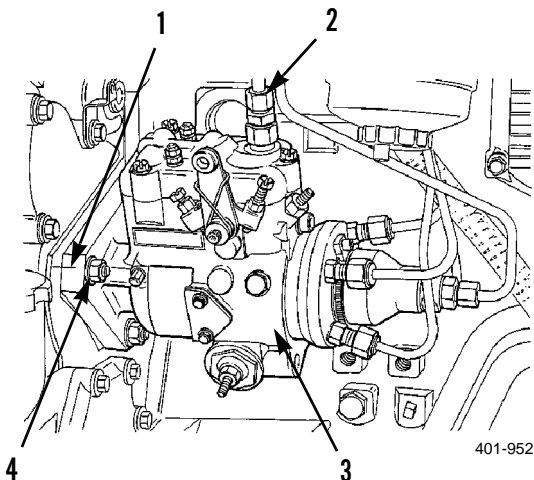
Fuel injection pump gear removed (WP 0177 00)

NOTE

Cap and plug all openings to prevent any contaminants from entering the system.

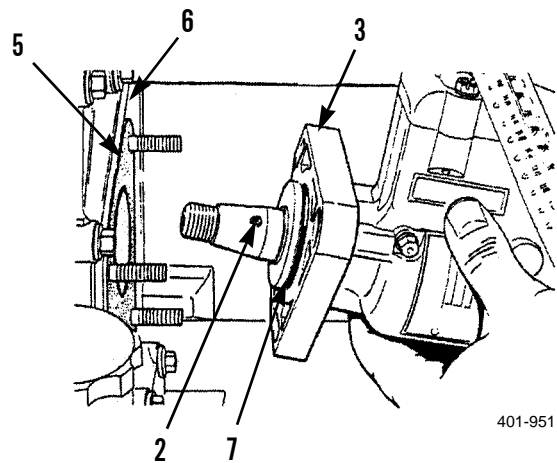
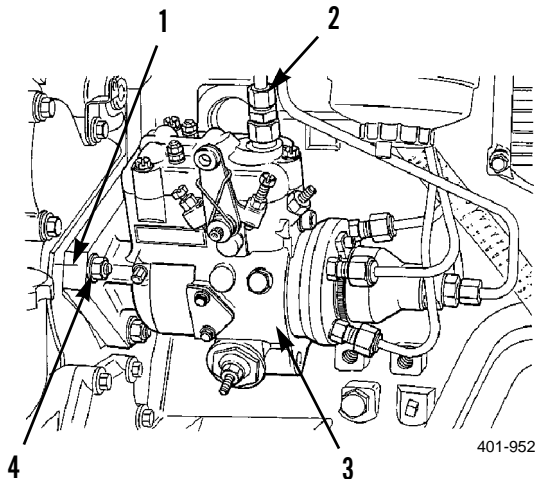
REMOVAL

1. Place position marks (1) on fuel injection pump.
2. Disconnect hose (2) from fuel injection pump (3).
3. Remove three nuts (4) from fuel injection pump (3).
4. Remove fuel injection pump (3) and gasket (5) from timing case (6). Discard gasket.
5. Remove O-ring (7) from fuel injection pump (3). Discard O-ring.



FUEL INJECTION PUMP REPLACEMENT - CONTINUED**0178 00****INSTALLATION**

1. Lightly apply a coat of clean engine oil to new O-ring (7) and install O-ring on fuel injection pump (3).
2. Install new gasket (5) on timing case (6).
3. Align marks (1) to position fuel injection pump (3).
4. Install three nuts (4) and fuel injection pump (3) on timing case (6). Tighten nuts to 16 lb-ft (22 Nm).
5. Connect hose (2) to fuel injection pump (3).



6. Install fuel injection pump gear (WP 0177 00).
7. Connect throttle control cable or throttle control (WP 0045 00 or WP 0047 00).
8. Operate roller and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

FUEL INJECTION PUMP TEST AND ADJUSTMENT (CB534B)

0179 00**THIS WORK PACKAGE COVERS**

On-Engine Speed Droop Governor Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

References

WP 0046 00, Low Idle Speed Adjustment

ON-ENGINE SPEED DROOP GOVERNOR ADJUSTMENT

1. Start engine and apply approximately 50 percent load until engine reaches normal operating temperature.

NOTE

If engine surges during warm-up period, turn speed droop adjusting cap clockwise until surging stops.

2. When engine has reached operating temperature, position throttle to get full load speed and apply 100 percent load. Adjust throttle if necessary to obtain satisfactory 100 percent load performance.
3. Remove load and check for no-load speed. If incorrect, adjust speed droop adjusting cap in small increments (turn clockwise for increased droop or counterclockwise for less droop). If surging exists when load is removed, turn speed droop adjusting cap clockwise to eliminate.

NOTE

When speed droop adjustments are made, throttle position adjustments (WP 0046 00) will also be necessary.

4. Recheck 100 percent load and no-load performance and readjust as necessary.

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Disassembly, Assembly

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

O-ring

References

TM 5-3895-379-10

TM 5-3895-379-23P, Figures 25 and 26

Equipment Condition

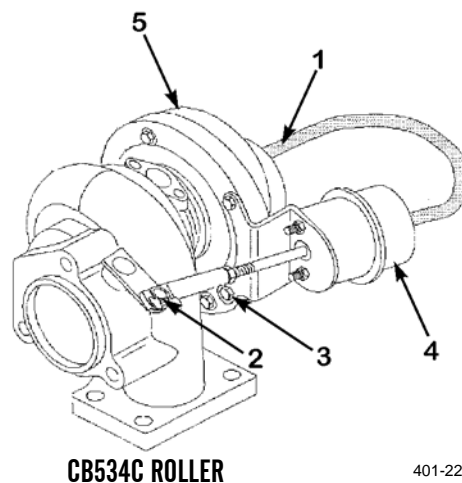
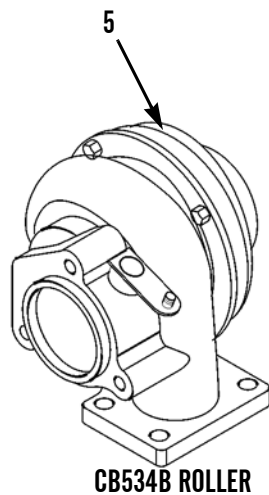
Turbocharger removed (WP 0035 00)

DISASSEMBLY

NOTE

Tag and mark components for orientation before disassembly.

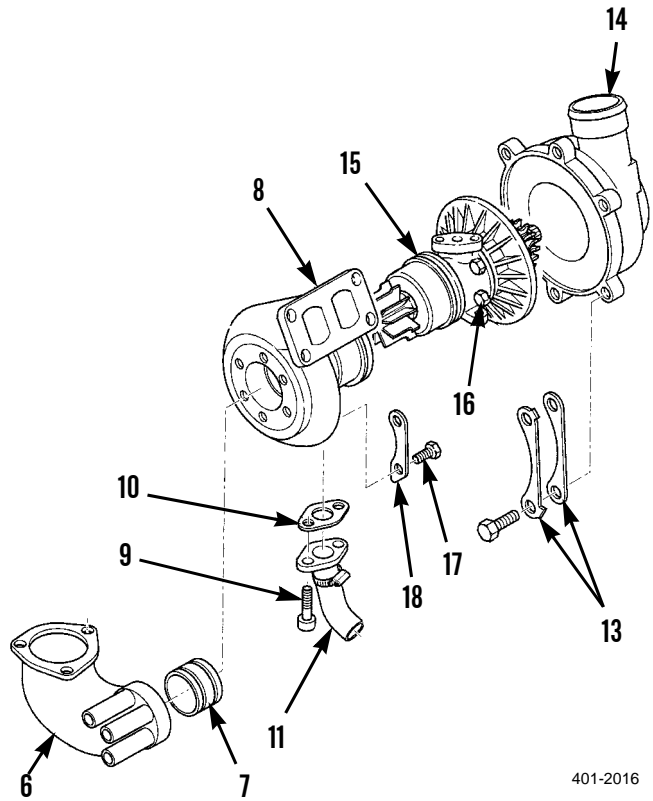
1. For CB534C Roller, disconnect hose (1), remove screw (2), two bolts (3) and actuator assembly (4) from turbocharger group (5).



401-2227

DISASSEMBLY - CONTINUED

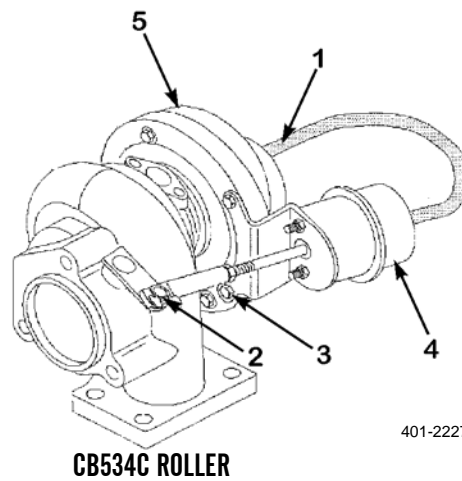
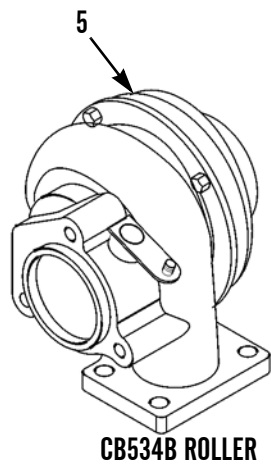
2. Remove exhaust elbow (6) and outlet sleeve (7) from housing (8).
3. Remove two bolts (9), gasket (10) and hose assembly (11). Discard gasket.
4. Remove six bolts (12) and three clamp sets (13).
5. Separate turbocharger group (14) from cartridge group (15).
6. Remove six bolts (16).
7. Remove three screws (17) and clamps (18).
8. Separate cartridge group (15) from housing (8).



401-2016

ASSEMBLY

1. Install cartridge group (15) to housing (8).
2. Install three clamps (18) and screws (17).
3. Apply sealing compound on threads of six bolts (16) and install. Tighten to 164 - 180 lb-in. (18.5 - 20.3 Nm).
4. Install turbocharger group (14) to cartridge group (15).
5. Apply sealing compound on threads of six bolts (12) and install with three clamp sets (13). Tighten to 135-165 lb-in. (15.2-18.6 Nm).
6. Install gasket (10), hose assembly (11) and two bolts (9).
7. Install outlet sleeve (7) and exhaust elbow (6) to housing (8).
8. For CB534C Roller, install screw (2) to actuator assembly (4). Install actuator assembly (4) to turbocharger group (5). Connect hose (1) and install two bolts (3) to turbocharger group (5).



401-2227

9. Install turbocharger (WP 0035 00).
10. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

RADIATOR ASSEMBLY REPAIR

0181 00

Refer to TM 750-254 for information on radiator repair.

END OF WORK PACKAGE

MAIN WIRING HARNESS REPLACEMENT (CB534B)

0182 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

WP 0213 00, Electrical General Maintenance Instructions

TM 5-3895-379-23P, Figure 63

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

NOTE

- Refer to Repair Parts and Special Tools Lists (TM 5-3895-379-23P) for identification.
- Main wiring harness can be repaired without being removed from roller. Refer to WP 0213 00 for repair instructions as needed.

REMOVAL**NOTE**

- Tag and mark all wires prior to removal to aid in installation.
 - Cut tiedown straps as needed for removal. Discard tiedown straps.
 - Note position and routing of main wiring harness as it is disconnected and removed to aid in installation.
1. Disconnect main harness wire terminals from throttle control timer connector (WP 0045 00).
 2. Disconnect main harness connector from main relay connector (WP 0067 00).
 3. Disconnect main harness connector from light circuit breaker connector (WP 0086 00).
 4. Disconnect main harness connector from intermittent spray timer connector (WP 0076 00).
 5. Disconnect main harness connector from rear intermittent relay connector (TM 5-3895-379-23P, figure 63, item G).
 6. Disconnect main harness connector from front intermittent relay connector (TM 5-3895-379-23P, figure 63, item H).

REMOVAL - CONTINUED

7. Disconnect main harness connector from brake #1 relay connector (TM 5-3895-379-23P, figure 63, item J).
8. Disconnect main harness connector from brake #2 relay connector (TM 5-3895-379-23P, figure 63, item K).
9. Disconnect main harness connector from neutral start relay #1 connector (TM 5-3895-379-23P, figure 63, item M).
10. Disconnect main harness connector from neutral start relay #2 connector (TM 5-3895-379-23P, figure 63, item L).
11. Disconnect main harness connector from starting aid resistor connector (WP 0078 00).
12. Disconnect main harness connector from hydraulic charge oil pressure relay connector (TM 5-3895-379-23P, figure 63, item Q).
13. Disconnect main harness connector from propel control lever connector (WP 0113 00).
14. Disconnect main harness connector from horn switch connector (WP 0101 00).
15. Disconnect main harness connector from propel speed range switch connector (WP 0074 00).
16. Disconnect main harness connector from parking brake switch connector (WP 0069 00).
17. Disconnect main harness connector from backup alarm pressure switch connector (WP 0094 00).
18. Disconnect main harness connector from water spray switch connector (WP 0070 00).
19. Disconnect main harness connector from work light control switch connector (WP 0075 00).
20. Disconnect main harness connector from drum offset switch connector (TM 5-3895-379-23P, figure 63, item Z).
21. Disconnect main harness wire terminals from drum select switch connector (TM 5-3895-379-23P, figure 63, item AB).
22. Disconnect main harness wire terminals from amplitude select switch connector (WP 0073 00).
23. Disconnect main harness wire terminals from vibration control switch connector (WP 0072 00).
24. Disconnect main harness wire terminals from fuel solenoid resistor connector (WP 0088 00).
25. Disconnect main harness wire terminals from turn signal switch connector (TM 5-3895-379-23P, figure 63, item AF).
26. Disconnect main harness connector from engine oil pressure relay connector (WP 0085 00).
27. Disconnect main harness connector from water temperature sending unit connector (WP 0095 00).
28. Disconnect main harness connector from warning light relay connector (WP 0093 00).
29. Disconnect main harness connector from hydraulic oil temperature relay connector (WP 0098 00).
30. Disconnect main harness connector from functional indicator light relay connector (WP 0090 00).
31. Disconnect main harness connector from instrument wiring harness connector (WP 0112 00).
32. Disconnect main harness connector from diagnostic warning diode assembly connector (TM 5-3895-379-23P, figure 63, item AP).
33. Disconnect main harness connector from engine wiring harness connector (WP 0109 00).
34. Carefully remove main wiring harness from roller.

INSTALLATION**NOTE**

Install new tiedown straps as necessary.

1. Position loose wiring harness in general installation position.
2. Connect main harness connector to engine wiring harness connector (WP 0109 00).
3. Connect main harness connector to diagnostic warning diode assembly connector (TM 5-3895-379-23P, figure 63, item AP).
4. Connect main harness connector to instrument wiring harness connector (WP 0112 00).
5. Connect main harness connector to functional indicator light relay connector (WP 0090 00).
6. Connect main harness connector to hydraulic oil temperature relay connector (WP 0098 00).
7. Connect main harness connector to warning light relay connector (WP 0093 00).
8. Connect main harness connector to water temperature sending unit relay connector (WP 0095 00).
9. Connect main harness connector to engine oil pressure relay connector (WP 0085 00).
10. Connect main harness wire terminals to turn signal switch connector (TM 5-3895-379-23P, figure 63, item AF).
11. Connect main harness wire terminals to fuel solenoid resistor connector (WP 0088 00).
12. Connect main harness wire terminals to vibration control switch connector (WP 0072 00).
13. Connect main harness wire terminals to amplitude select switch connector (WP 0073 00).
14. Connect main harness wire terminals to drum select switch connector (TM 5-3895-379-23P, figure 63, item AB).
15. Connect main harness connector to drum offset switch connector (TM 5-3895-379-23P, figure 63, item Z).
16. Connect main harness connector to work light switch control connector (WP 0075 00).
17. Connect main harness connector to water spray switch connector (WP 0070 00).
18. Connect main harness connector to parking brake switch connector (WP 0069 00).
19. Connect main harness connector to backup alarm pressure switch connector (WP 0094 00).
20. Connect main harness connector to parking brake switch connector (WP 0069 00).
21. Connect main harness connector to propel speed range switch connector (WP 0074 00).
22. Connect main harness connector to horn switch connector (WP 0101 00).
23. Connect main harness connector to propel control lever connector (WP 0113 00).
24. Connect main harness connector to hydraulic charge oil pressure relay connector (TM 5-3895-379-23P, figure 63, item Q).
25. Connect main harness connector to starting aid resistor connector (WP 0078 00).
26. Connect main harness connector to neutral start relay #2 connector (TM 5-3895-379-23P, figure 63, item L).
27. Connect main harness connector to neutral start relay #1 connector (TM 5-3895-379-23P, figure 63, item M).
28. Connect main harness connector to brake #2 relay connector (TM 5-3895-379-23P, figure 63, item K).
29. Connect main harness connector to brake #1 relay connector (TM 5-3895-379-23P, figure 63, item J).
30. Connect main harness connector to front intermittent relay connector (TM 5-3895-379-23P, figure 63, item H).

INSTALLATION - CONTINUED

31. Connect main harness connector to rear intermittent relay connector (TM 5-3895-379-23P, figure 63, item G).
32. Connect main harness connector to intermittent spray timer connector (WP 0076 00).
33. Connect main harness connector to light circuit breaker connector (WP 0086 00).
34. Connect main harness connector to main relay connector (WP 0067).
35. Connect main harness connector to throttle control timer connector (WP 0045 00).
36. Turn battery disconnect switch to ON position (TM 5-3895-379-10).
37. Lower operator platform assembly (WP 0128 00).
38. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

WP 0213 00, Electrical General Maintenance Instructions

TM 5-3895-379-23P, Figures 62 and 63

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

Battery disconnect switch in OFF position (TM 5-3895-379-10)

NOTE

- Refer to Repair Parts and Special Tools Lists (TM 5-3895-379-23P) for identification.
- Main wiring harness can be repaired without being removed from roller. Refer to WP 0213 00 for repair instructions as needed.

REMOVAL**NOTE**

- Tag and mark all wires prior to removal to aid in installation.
 - Cut tiedown straps as needed for removal. Discard tiedown straps.
 - Note position and routing of main wiring harness as it is disconnected and removed to aid in installation.
1. Disconnect main harness wire terminals from drum offset switch connector (TM 5-3895-379-23P, figure 63, item A).
 2. Disconnect main harness wire terminals from cutter switch connector (TM 5-3895-379-23P, figure 63, item B).
 3. Disconnect main harness wire terminals from drum select switch connector (TM 5-3895-379-23P, figure 63, item C).
 4. Disconnect main harness wire terminals from dual amp switch connector (TM 5-3895-379-23P, figure 63, item D).
 5. Disconnect main harness connector from work light control switch connector (WP 0075 00).
 6. Disconnect main harness wire terminals from water spray switch connector (WP 0070 00).
 7. Disconnect main harness connector from auto man switch connector (TM 5-3895-379-23P, figure 63, item G).

REMOVAL - CONTINUED

8. Disconnect main harness connector from front/rear pump switch connector (TM 5-3895-379-23P, figure 63, item J).
9. Disconnect main harness connector from fuel solenoid resistor connector (WP 0088 00).
10. Disconnect main harness connector from turn signal switch connector (TM 5-3895-379-23P, figure 63, item L).
11. Disconnect main harness connector from engine oil pressure switch connector (WP 0085 00).
12. Disconnect main harness connector from water temperature sending unit relay connector (WP 0095 00).
13. Disconnect main harness connector from warning light relay connector (WP 0093 00).
14. Disconnect main harness connector from hydraulic oil temperature relay connector (WP 0098 00).
15. Disconnect main harness connector from light circuit breaker connector (WP 0086 00).
16. Disconnect main harness connector from instrument wiring harness connector (WP 0112 00).
17. Disconnect main harness connector from functional light relay connector (WP 0112 00).
18. Disconnect main harness connector from recording module connector (TM 5-3895-379-23P, figure 63, item T).
19. Disconnect main harness connector from diagnostic warning diode assembly connector (TM 5-3895-379-23P, figure 63, item U).
20. Disconnect main harness connector from engine wiring harness connector (WP 0109 00).
21. Disconnect main harness connector from backup alarm pressure switch connector (WP 0094 00).
22. Disconnect main harness connector from parking brake switch connector (WP 0069 00).
23. Disconnect main harness connector from propel control lever connector (WP 0113 00).
24. Disconnect main harness connector from hydraulic charge oil pressure relay connector (TM 5-3895-379-23P, figure 63, item Z).
25. Disconnect main harness connector from starting aid resistor connector (WP 0078 00).
26. Disconnect main harness connector from throttle control relay connector (WP 0047 00).
27. Disconnect main harness connector from propel speed range switch connector (WP 0074 00).
28. Disconnect main harness connector from horn switch connector (WP 0101 00).
29. Disconnect main harness connector from neutral start relay #1 connector (TM 5-3895-379-23P, figure 63, item AE).
30. Disconnect main harness connector from neutral start relay #2 connector (TM 5-3895-379-23P, figure 63, item AF).
31. Disconnect main harness connector from brake #1 relay connector (TM 5-3895-379-23P, figure 63, item AH).
32. Disconnect main harness connector from brake #2 relay connector (TM 5-3895-379-23P, figure 63, item AG).
33. Disconnect main harness connector from warning light relay connector (TM 5-3895-379-23P, figure 63, item AJ).
34. Disconnect main harness wire terminals from intermittent water spray timer connector (WP 0076 00).
35. Disconnect main harness wire terminals from flasher connector (TM 5-3895-379-23P, figure 63, item AL).
36. Disconnect main harness wire terminals from main relay connector (WP 0067 00).
37. Disconnect main harness connector from throttle control timer connector (WP 0047 00).
38. Carefully remove main wiring harness from roller.

INSTALLATION**NOTE**

Install new tiedown straps, as necessary.

1. Position loose wiring harness in general installation position.
2. Connect main harness wire terminals to throttle control timer connector (WP 0047 00).
3. Connect main harness connector to main relay connector (WP 0067 00).
4. Connect main harness wire terminals to light circuit breaker connector (WP 0086 00).
5. Connect main harness connector to flasher connector (TM 5-3895-379-23P, figure 63, item AL).
6. Connect main harness wire terminals to intermittent water spray timer connector (WP 0076 00).
7. Connect main harness connector to warning light relay connector (TM 5-3895-379-23P, figure 63, item AJ).
8. Connect main harness connector to brake #2 relay connector (TM 5-3895-379-23P, figure 63, item AG).
9. Connect main harness connector to brake #1 relay connector (TM 5-3895-379-23P, figure 63, item AH).
10. Connect main harness connector to neutral start relay #2 connector (TM 5-3895-379-23P, figure 63, item AF).
11. Connect main harness connector to neutral start relay #1 connector (TM 5-3895-379-23P, figure 63, item AE).
12. Connect main harness connector to throttle control relay connector (WP 0047 00).
13. Connect main harness connector to horn switch connector (WP 0102 00).
14. Connect main harness connector to propel speed range switch connector (WP 0074 00).
15. Connect main harness connector to starting aid resistor connector (WP 0078 00).
16. Connect main harness connector to throttle control relay connector (WP 0047 00).
17. Connect main harness connector to hydraulic charge oil pressure relay connector (TM 5-3895-379-23P, figure 63, item Z).
18. Connect main harness connector to propel control lever connector (WP 0113 00).
19. Connect main harness connector to parking brake switch connector (WP 0069 00).
20. Connect main harness connector to backup alarm pressure switch connector (WP 0094 00).
21. Connect main harness connector to engine wiring harness connector (WP 0109 00).
22. Connect main harness connector to diagnostic warning diode assembly connector (TM 5-3895-379-23P, figure 63, item U).
23. Connect main harness connector to recording module connector (TM 5-3895-379-23P, figure 63, item T).
24. Connect main harness connector to instrument wiring harness connector (WP 0112 00).
25. Connect main harness connector to functional light relay connector (WP 0090 00).
26. Connect main harness connector to hydraulic oil temperature relay connector (WP 0098 00).
27. Connect main harness connector to warning light relay connector (WP 0093 00).
28. Connect main harness connector to water temperature sending unit relay connector (WP 0095 00).
29. Connect main harness connector to engine oil pressure switch connector (WP 0085 00).
30. Connect main harness connector to turn signal switch connector (TM 5-3895-379-23P, figure 63, item L).
31. Connect main harness connector to resistor fuel solenoid resistor connector (WP 0088 00).
32. Connect main harness connector to front/rear pump switch connector (TM 5-3895-379-23P, figure 63, item J).
33. Connect main harness connector to auto man switch connector (TM 5-3895-379-23P, figure 63, item G).

INSTALLATION - CONTINUED

34. Connect main harness wire terminals to water spray switch connector (WP 0070 00).
35. Connect main harness connector to work light control switch connector (WP 0075 00).
36. Connect main harness wire terminals to dual amp switch connector (TM 5-3895-379-23P, figure 63, item D).
37. Connect main harness wire terminals to drum select switch connector (TM 5-3895-379-23P, figure 63, item C).
38. Connect main harness wire terminals to cutter switch connector (TM 5-3895-379-23P, figure 63, item B).
39. Connect main harness wire terminals to drum offset switch connector (TM 5-3895-379-23P, figure 63, item A).
40. Turn battery disconnect switch ON (TM 5-3895-379-10).
41. Lower operator platform assembly (WP 0128 00).
42. Start engine and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

PROPEL AND VIBRATORY VALVE TESTS AND ADJUSTMENTS**0184 00****THIS WORK PACKAGE COVERS**

Charge Pump System Pressure Test, Reverse Main Relief Valve Pressure Test, Forward Main Relief Valve Pressure Test, Hydraulic Servo Neutral (Mechanical Center) Adjustment, Stabilized Control Valve Spool Neutral Adjustment, Damped Control Head Adjustment

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Gauge, PSI (6500) (Item 11, WP 0220 00)

Gauge, PSI (9000) (Item 12, WP 0220 00)

Measuring equipment, hydraulic (Item 28, WP 0220 00)

Tools and Special Tools - Continued

Indicator, Point Jet, Multitach II (Item 23, WP 0220 00)

References

WP 0210 00, Drum Assembly Replacement

TM 5-3895-379-23P, Figures 71, 75 and 76

Equipment Condition

Drums chocked (TM 5-3895-379-10)

Parking brake engaged (TM 5-3895-379-10)

**WARNING**

- Do NOT remove hydraulic tank filler cap or disconnect or remove any hydraulic system line or fitting unless hydraulic system pressure has been relieved. Hydraulic system pressure can be over 2500 psi (17, 237 kPa), even with engine and pump OFF. To relieve pressure, shut down engine, then SLOWLY loosen hydraulic tank filler cap. After maintenance, tighten all connections before applying pressure. Escaping hydraulic fluid under pressure can penetrate the skin, causing injury or death.
- At operating temperature hydraulic oil is hot. Allow hydraulic oil to cool before disconnecting any hydraulics. Failure to do so may cause injury.
- Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

- Perform charge pump system pressure test first, before main (high pressure) relief valve tests.
- The CB534B and CB534C Roller propel pumps are tested the same, except as noted.

CHARGE PUMP SYSTEM PRESSURE TEST

1. Place propel control lever in NEUTRAL (TM 5-3895-379-10).

NOTE

Pressure tap is labelled "CP."

2. Connect pressure gauge to pressure tap (1) to vibratory control valve (2).

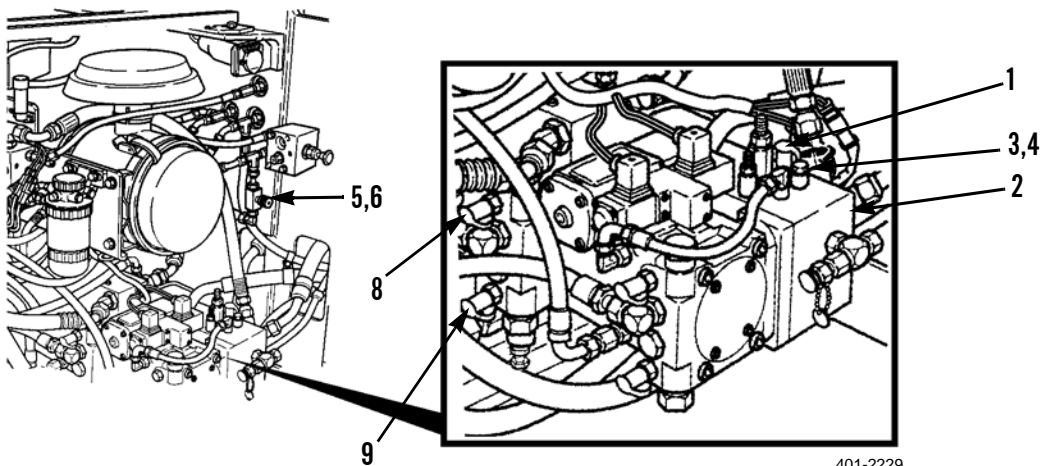
NOTE

The charge relief pressure setting should be 360 + 20 psi (2482 + 138 kPa).

3. Start and run engine at HIGH idle, 2325 + 25 rpm. Record pressure gauge reading.
4. If needed, adjust as follows:
 - a. Loosen locknut (3).
 - b. Turn adjustment screw (4) clockwise to increase pressure, counterclockwise to decrease pressure.
 - c. After adjustment, tighten locknut (3).
 - d. Lower rpm to LOW idle and recheck pressure. Pressure should be greater than 300 psi (2068 kPa).
5. Shut engine off.
6. Remove pressure gauge from tap (1).

REVERSE MAIN RELIEF VALVE PRESSURE TEST

1. Place propel control lever in NEUTRAL (TM 5-3895-379-10).
2. Loosen setscrew (5) and turn needle valve thumbscrew (6) fully clockwise to close valve (7).
3. Connect pressure gauges to two pressure taps (8) and (9).



4. Loosen adjuster locknut (10) on Pressure Override Relief (POR) valve (11).
5. Turn adjuster (12) clockwise one-half turn. Tighten locknut (10).
6. Start and run engine at HIGH idle.

REVERSE MAIN RELIEF VALVE PRESSURE TEST - CONTINUED**NOTE**

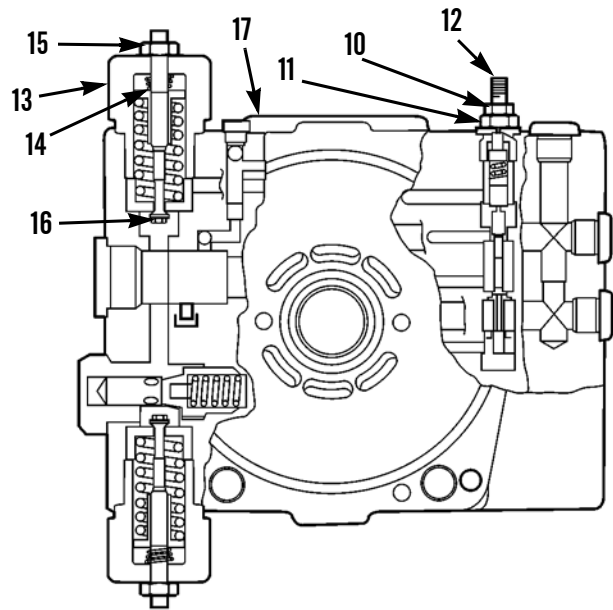
Maximum pressure should be 6525 ± 200 psi ($45,000 \pm 1380$ kPa).

7. Move propel control lever to the full reverse position (TM 5-3895-379-10).
8. If needed, adjust as follows:
 - a. Stop engine (TM 5-3895-379-10) and remove valve cap (13).
 - b. Remove cartridge (14) and reinstall cap (13) to prevent oil from spilling.
 - c. Clamp cartridge (14) in a soft-jawed vice.
 - d. Loosen locking setscrew (15).

NOTE

One full turn equals 638 psi (4400 kPa).

- e. Turn spindle (16) to adjust pressure: clockwise to increase pressure, counterclockwise to decrease pressure.
 - f. Tighten locking setscrew (15).
 - g. Remove cartridge (14) from soft-jawed vice and install on propel pump (17).
 - h. Install cap (13).
9. Start engine (TM 5-3895-379-10) and check pressure at tap (8).
 10. Stop engine (TM 5-3895-379-10).
 11. Readjust POR valve (11) by turning adjuster (12) clockwise one-half turn.
 12. Tighten setscrew (5) on needle valve thumbscrew (6).



401-2024

NOTE

Minimum low pressure is 6327 psi (43623 kPa).

13. If minimum low pressure is not obtainable, there is too much leakage in the internal circuit.

FORWARD MAIN RELIEF VALVE PRESSURE TEST

1. Place propel control lever in NEUTRAL (TM 5-3895-379-10).
2. Loosen setscrew (5) and turn needle valve thumbscrew (6) fully clockwise to close the valve (7).
3. Check pressure at pressure tap (9).
4. Loosen adjuster locknut (10) on Pressure Override Relief (POR) valve (11).
5. Turn adjuster locknut (10) clockwise one-half turn.
6. Tighten adjuster locknut (10).
7. Start and run engine at high idle (TM 5-3895-379-10).

FORWARD MAIN RELIEF VALVE PRESSURE TEST - CONTINUED

NOTE

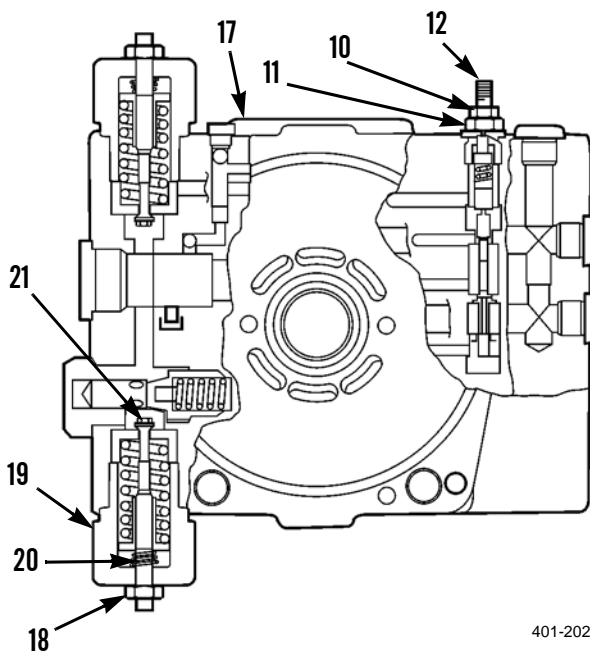
Maximum pressure should be 6525 ± 200 psi ($45,000 \pm 1380$ kPa).

8. Move propel control lever to full forward position (TM 5-3895-379-10).
9. If needed, adjust as follows:
 - a. Stop engine (TM 5-3895-379-10) and remove valve cap (19).
 - b. Remove cartridge (20) and reinstall cap (19) to prevent oil from spilling.
 - c. Clamp cartridge (20) in a soft-jawed vice.
 - d. Loosen locking setscrew (18).

NOTE

One full turn equals 638 psi (4400 kPa).

- e. Turn spindle (21) to adjust pressure: clockwise to increase pressure, counterclockwise to decrease pressure.
- f. Tighten locking setscrew (18).
- g. Remove cartridge (20) from soft-jawed vice and install.
- h. Install cap (19) and tighten to specification.
10. Start engine (TM 5-3895-379-10) and check pressure at tap (9).
11. Stop engine (TM 5-3895-379-10).
12. Readjust POR valve (11) by turning adjuster (12) clockwise one-half turn.
13. Tighten setscrew (5) on needle valve thumbscrew (6).

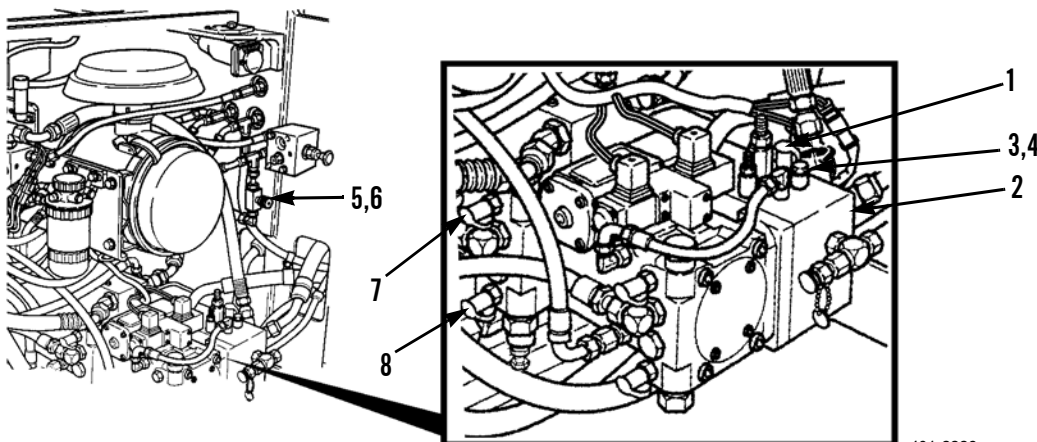


401-2024

NOTE

Minimum low pressure is 6327 psi (43623 psi).

14. If minimum low pressure is not obtainable, there is too much leakage in the internal circuit and pump must be replaced.



401-2229

HYDRAULIC SERVO NEUTRAL (MECHANICAL CENTER) ADJUSTMENT

NOTE

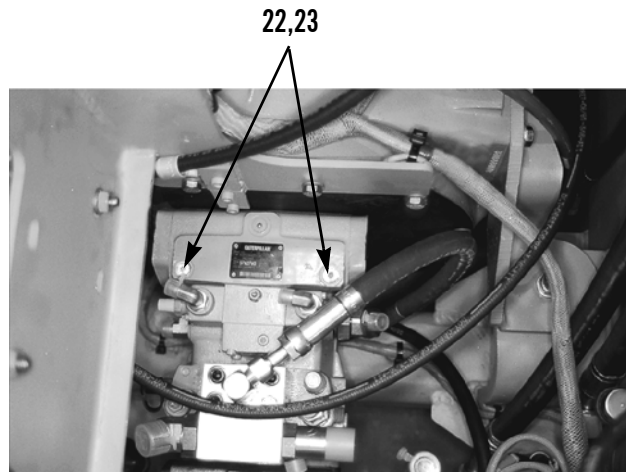
Charge Pump System Pressure Test must be completed before performing *Hydraulic Servo Neutral Mechanical Center Adjustment*.

1. Place propel control lever in NEUTRAL (TM 5-3895-379-10).

NOTE

The following step equalizes oil pressure on each side of servo piston.

2. Remove two plugs (22) from ports (23) and connect jumper hose between two ports (23).
3. Connect two 9000 psi (60,000 kPa) pressure gauges to pressure taps (8) and (9).
4. Move propel control lever to LOW SPEED range (TM 5-3895-379-10).
5. Start and run the engine at 1500 rpm (TM 5-3895-379-10).

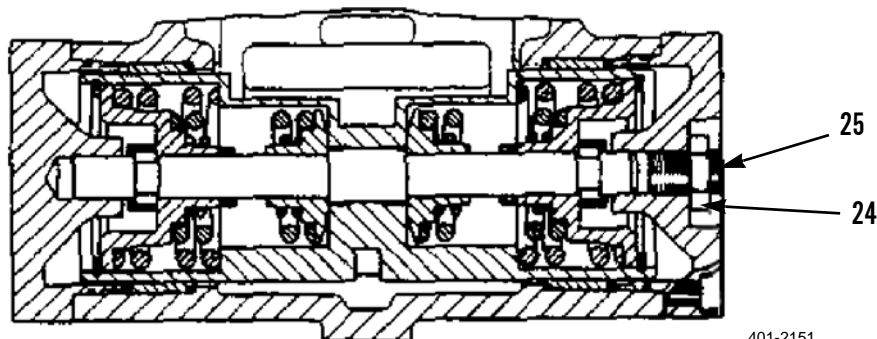


401-2150

NOTE

Pressure gauge readings should be the same.

6. If readings are not the same, adjust neutral position (mechanical center) of the piston (27) as follows:
 - a. Loosen locknut (24) on piston rod adjustment screw (25).
 - b. Turn piston rod adjustment screw (25) clockwise or counterclockwise depending on spool movement requirement.
 - c. Adjust piston rod adjustment screw (25) until pressure readings are same.
7. Stop engine (TM 5-3895-379-10).
8. Remove two 9000 psi (60,000 kPa) gauges and install two 600 psi (4000 kPa) gauges on ports (23).
9. Repeat steps 5 through 7.
10. Tighten locknut (24).
11. Remove pressure gauges from pressure taps (8) and (9).
12. Remove jumper hose from two ports (23).
13. Install plugs (20) on ports (23).



401-2151

STABILIZED CONTROL VALVE SPOOL NEUTRAL ADJUSTMENT**NOTE**

Prior to controlling the hydraulic servo, oil from the charge pump must control the spool of the stabilized control valve.

1. Perform the following test to verify valve spool neutral setting is correct.

NOTE

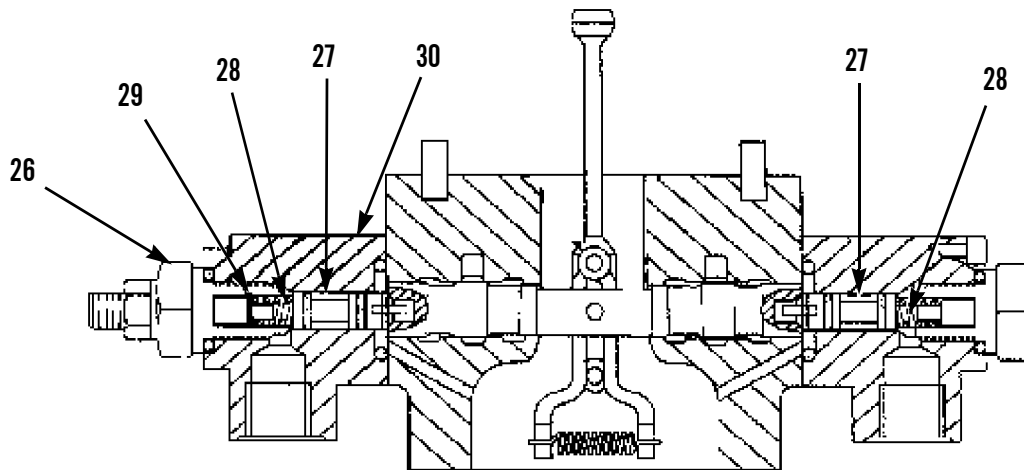
Hydraulic Servo Neutral Adjustment must be completed before performing this *Stabilized Control Valve Spool Neutral Adjustment*. This is done to ensure that neutral (mechanical center) position of servo piston and swash plate is correct.

2. Remove two stabilized control valve end covers (26).

NOTE

Leave springs and shim out for adjustment purposes.

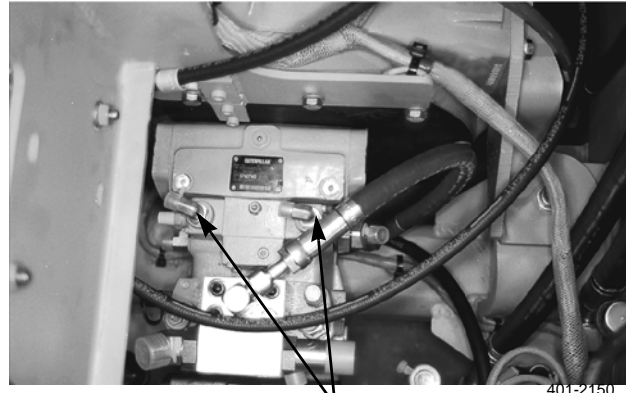
3. Remove two pistons (27) with springs (28) and shim (29) from end covers (26).
4. Install pistons (27) back into stabilized control valve end covers (26).
5. Install two stabilized control valve end covers (26) on the control valve body (30).



401-2152

STABILIZED CONTROL VALVE SPOOL NEUTRAL ADJUSTMENT - CONTINUED

6. Remove two fittings (31) and plug ports (32).
7. Remove plugs (22) and install connectors for pressure gauges at ports (32).
8. Install two 600 psi (4000 kPa) pressure gauges to pressure taps (8) and (9).
9. Set the propel control lever to HIGH SPEED position (TM 5-3895-379-10).



NOTE

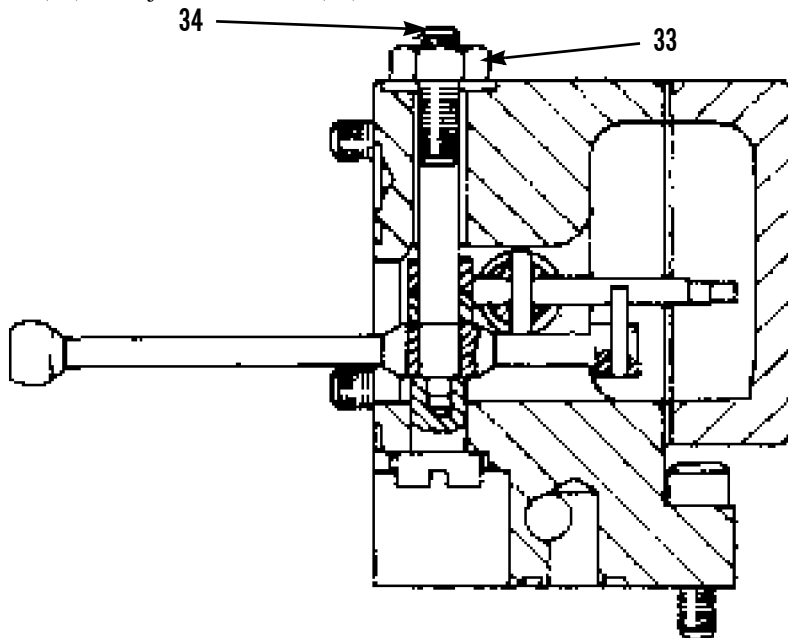
- Both test gauges should show identical readings.
- If the readings are not equal, the valve must be adjusted.

10. Start and run the engine at 1500 rpm (TM 5-3895-379-10).

NOTE

One-half revolution of adjustment screw gives all adjustment possible. Small movement of screw makes a large difference in pressure.

11. To adjust:
 - a. Loosen lock nut (33) and turn adjustment screw (34) clockwise or counterclockwise to get equal pressures at the gauges.
 - b. Tighten lock nut (33) on adjustment screw (34).



12. Remove two stabilized control valve end covers (26).
13. Remove two pistons (27) from two stabilized control valve end covers (26).
14. Install springs (28) and shim (29) back into original locations.
15. Assemble two stabilized control valve end covers (26) and install on control valve body (30).

DAMPED CONTROL HEAD ADJUSTMENT

1. Disconnect and plug the brake line to the front drum at the torque hub (WP 0125 00).

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Raise drum 2-3 in (50-76 mm) off the floor.

2. Raise REAR of roller (WP 0210 00) and support it on stands.

NOTE

Make sure the drum can turn freely.

3. Mark edge of the drum for use in counting drum revolutions.
4. Remove two 600 psi (4000 kPa) pressure gauges.
5. Install two 300 psi (2000 kPa) pressure gauges at ports (32).
6. Loosen locknut (35) approximately one-half turn.
7. While holding locknut (35), turn damped adjustment screw (36) until approximately seven threads are exposed beyond locknut (35). Tighten locknut (35).
8. Start roller and set propel control lever to LOW range (TM 5-3895-379-10).

DAMPED CONTROL HEAD ADJUSTMENT**NOTE**

Time rear drum for 10 revolutions in forward direction.

9. Move propel control lever forward (TM 5-3895-379-10) until pressure is at 175 psi (1200 kPa).

NOTE

Time rear drum for 10 revolutions in reverse direction.

10. Move propel control lever rearward (TM 5-3895-379-10) until pressure is at 175 psi (1200 kPa).

NOTE

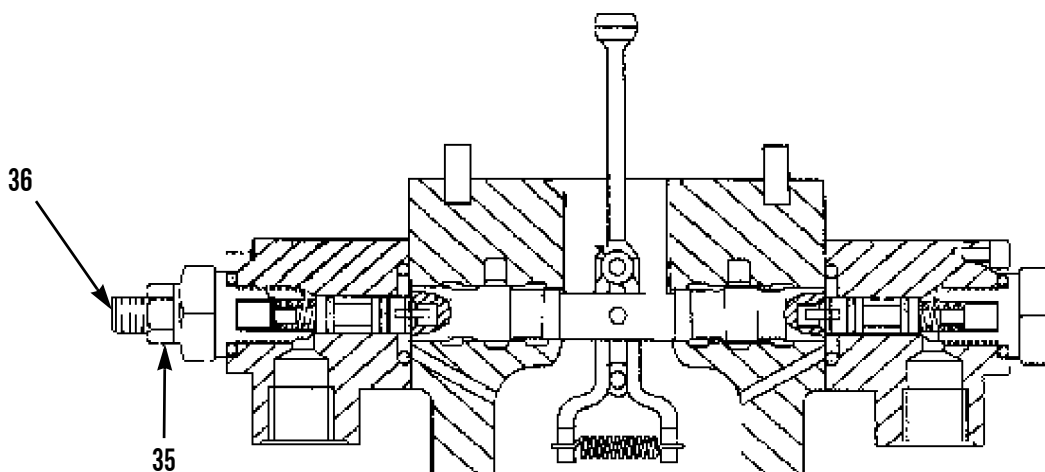
If times vary more than 10 percent, more adjustment is necessary.

11. Compare times recorded in steps 10 and 11.

NOTE

To decrease the reverse drum speed in relation to forward drum speed, screw dampen adjuster clockwise. To increase the reverse drum speed in relation to forward drum speed, turn dampen adjuster (36) counterclockwise.

12. Adjust damped adjustment screw (36) as necessary until the speed variation between forward and reverse is less than ten percent.



401-2152

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Pressure Override Relief Valve Pressure Test

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Pressure gauge (Item 12, WP 0220 00)

Equipment Condition

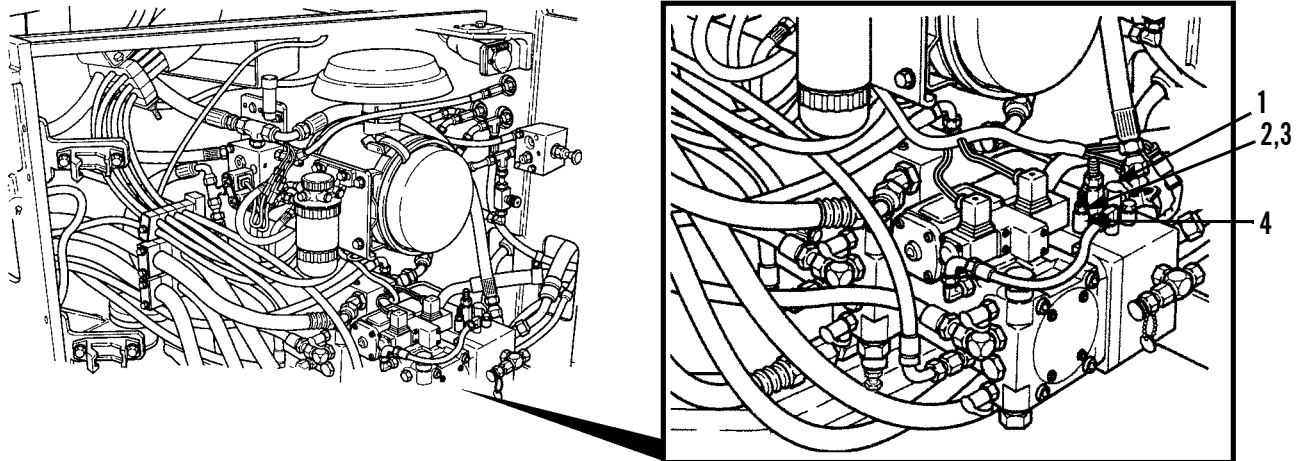
- Drums chocked (TM 5-3895-379-10)
- Engine on (TM 5-3895-379-10)

References

- WP 0119 00, Brake Hoses, Lines and Fittings Replacement
- TM 5-3895-379-23P, Figures 7, 75 and 83

PRESSURE OVERRIDE RELIEF VALVE PRESSURE TEST

1. Disconnect front and rear propel motor brake lines (WP 0119 00).
2. Place propel control lever in NEUTRAL position (TM 5-3895-379-10).
3. Connect pressure gauge to tap (1).
4. Loosen Pressure Override Relief Valve (POR) setscrew (2) and turn needle valve thumbscrew (3) fully clockwise to close POR valve (4).
5. Set speed range switch to HIGH SPEED position (TM 5-3895-379-10).

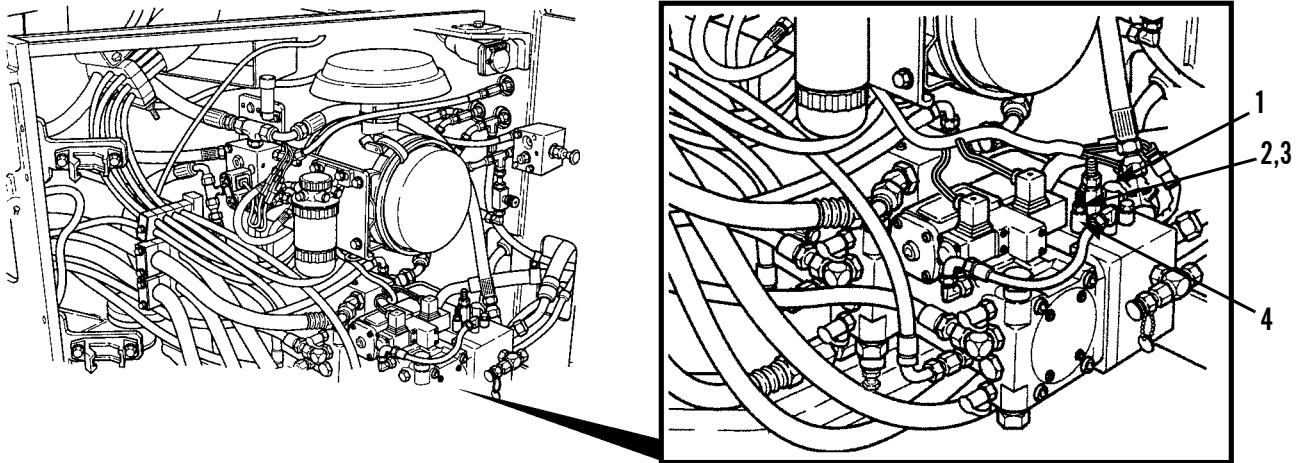


401-2023

PRESSURE OVERRIDE RELIEF VALVE PRESSURE TEST - CONTINUED**NOTE**

The pressure should read 6090 +/- 200 psi (42,000 +/- 1380 kPa).

6. If measurement is not within range noted above, perform the following steps:
 - a. Move propel control lever forward or reverse (TM 5-3895-379-10).
 - b. Record pressure at tap (1).
 - c. Loosen setscrew (2) on POR valve (4).
 - d. Turn needle valve thumbscrew (3) clockwise to increase pressure or counterclockwise to decrease pressure.
 - e. Recheck pressure at tap (1).



401-2023

7. Turn engine OFF (TM 5-3895-379-10).
8. Install propel motor brake lines.
9. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

SEPARATE AND CONNECT VIBRATORY AND PROPEL PUMPS

0186 00**THIS WORK PACKAGE COVERS**

Separation, Connection

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Wooden block (2)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

O-ring (4)

References

TM 5-3895-379-23P, Figures 70 and 71

Equipment Condition

Vibratory and propel pumps removed (WP 0187 00)

**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

CAUTION

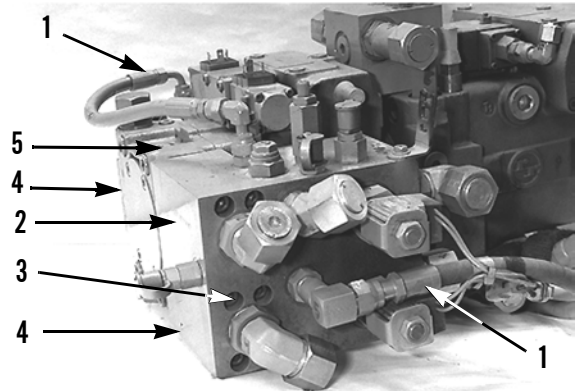
Be sure work area is clean when working with hydraulic components. Contaminants entering the system may damage components.

SEPARATE

NOTE

Place vibratory and propel pump assemblies on wooden blocks for ease of access.

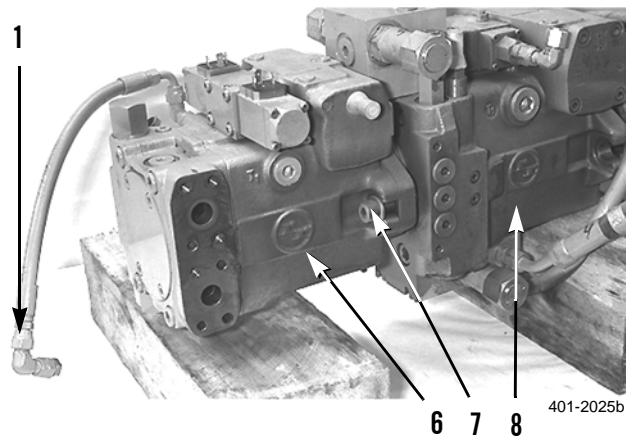
1. Disconnect two hose assemblies (1) from vibratory control valve (2).
2. Remove six bolts (3) from vibratory control valve (2) and vibratory pump (4).
3. Remove vibratory control valve (2) and spacer (5) from vibratory pump (4).
4. Remove four O-rings (6) from spacer (5) and vibratory control valve (2). Discard O-rings.
5. Remove two bolts (7) and separate vibratory pump (3) from propel pump (8).



401-2025a

CONNECT

1. Connect propel pump (8) to vibratory pump (4) with two bolts (7).
2. Install four new O-rings (6) on spacer (5) and vibratory control valve (2).
3. Install vibratory control valve (2) and spacer (5) on vibratory pump (4).
4. Install six bolts (3) on vibratory control valve (2) and vibratory pump (4).
5. Connect two hose assemblies (1) to vibratory control valve (2).
6. Install vibratory and propel pumps (WP 0187 00).



401-2025b

END OF WORK PACKAGE

VIBRATORY AND PROPEL PUMPS REPLACEMENT

0187 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Link bracket (Item 20, WP 0220 00)

Lifting device, minimum capacity 198 lb (90kg)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

O-ring

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figures 70 and 71

Equipment Condition

Hydraulic tank drained (WP 0037 00)

Operator platform assembly raised (WP 0128 00)

Left-side door assembly opened (TM 5-3895-379-10)

REMOVAL

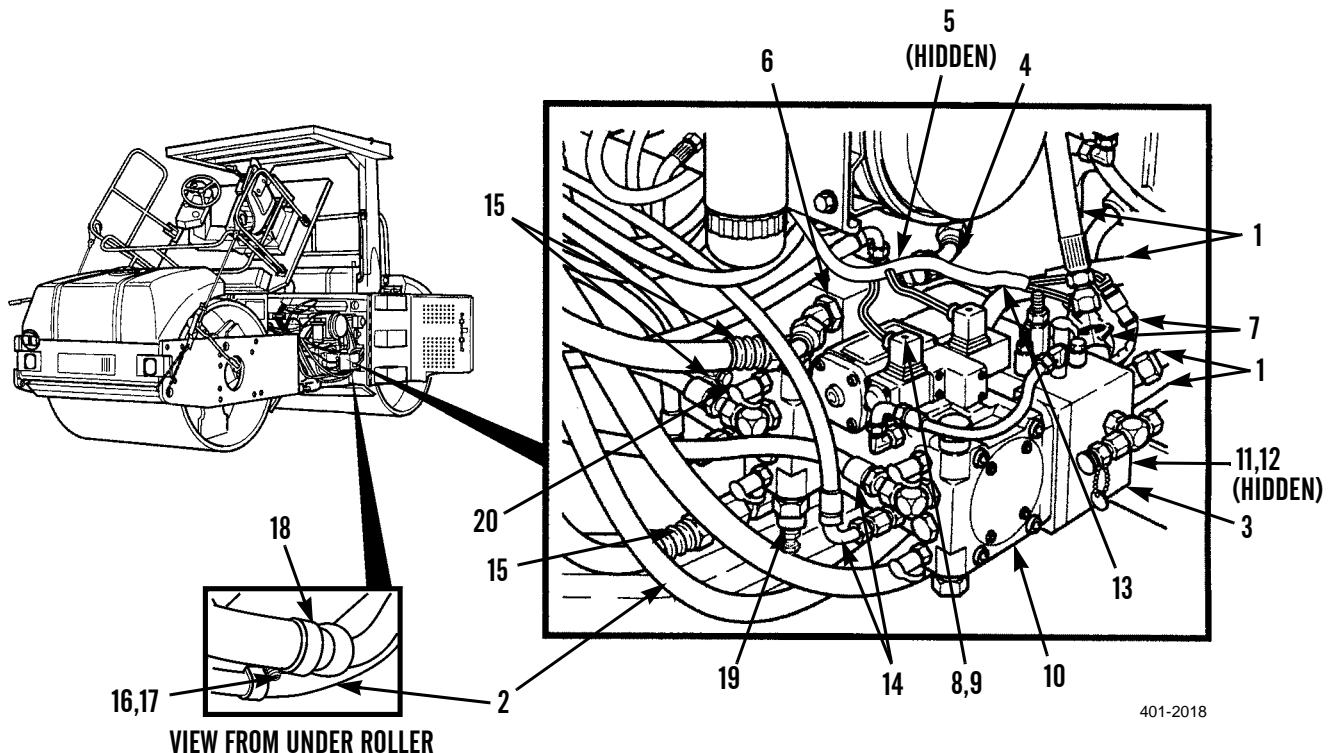
CAUTION

Cap and plug all lines and fittings immediately to prevent any contaminants from entering the system.

NOTE

- Weight of vibratory and propel pumps as a unit is 198 lb (90 kg).
- Tag and mark all hydraulic lines and electrical wires as they are removed or disconnected.

1. Disconnect four hose assemblies (1) and hose assembly (2) from vibratory control valve (3).
2. Disconnect hose assemblies (4) and (5) from propel pump (6).
3. Disconnect two electrical connector wires (7).
4. Remove two screws (8) that fasten electrical connectors (9) to vibratory pump (10).
5. Remove electrical connectors (9) from vibratory pump (10).
6. Remove two screws (11) that fasten two electrical connectors (12) to vibratory control valve (3).
7. Remove electrical connectors (12) from vibratory control valve (3).
8. Remove cable tie and move wiring harness (13) aside from vibratory control valve (3).
9. Disconnect two hose assemblies (14) from vibratory pump (10) and three hose assemblies (15) from propel pump (6).
10. Remove nut (16) and bolt (17) that fasten clip (18) to hose assemblies (2) and (15).
11. Remove valve (19) from propel pump (6).
12. Attach a lifting device to vibratory and propel pumps as a unit.
13. Remove two bolts (20) and remove vibratory and propel pumps as a unit from roller.



401-2018

INSTALLATION**NOTE**

Use lifting device to position vibratory and propel pumps.

1. Install with two bolts (20) to roller.
2. Install valve (19) to propel pump (6).
3. Install nut (16) and bolt (17) that fasten clip (18) to hose assemblies (2) and (15).
4. Connect two hose assemblies (14) to vibratory pump (10).
5. Connect three hose assemblies (15) to propel pump (6).
6. Install cable tie and move wiring harness (13) aside from vibratory control valve (3).
7. Install two electrical connectors (12) and two screws (11) to vibratory control valve (3).
8. Install two electrical connectors (9) and two screws (8) to vibratory pump (10).
9. Connect two electrical connector wires (7).
10. Connect hose assemblies (4) and (5) to propel pump (6).
11. Connect four hose assemblies (1) and hose assembly (2) to vibratory control valve (3).
12. Lower operator platform assembly (WP 0128 00).
13. Fill hydraulic oil tank with oil to correct level (WP 0008 00 and WP 0009 00).
14. Close left-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

PROPEL AND SPEED CONTROL VALVE REPAIR

0188 00

THIS WORK PACKAGE COVERS

Disassembly, Assembly

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Backup ring (2)

Gasket

Materials/Parts - Continued

O-ring (2)

Preformed packing (3)

References

TM 5-3895-379-23, Figure 78

Equipment Condition

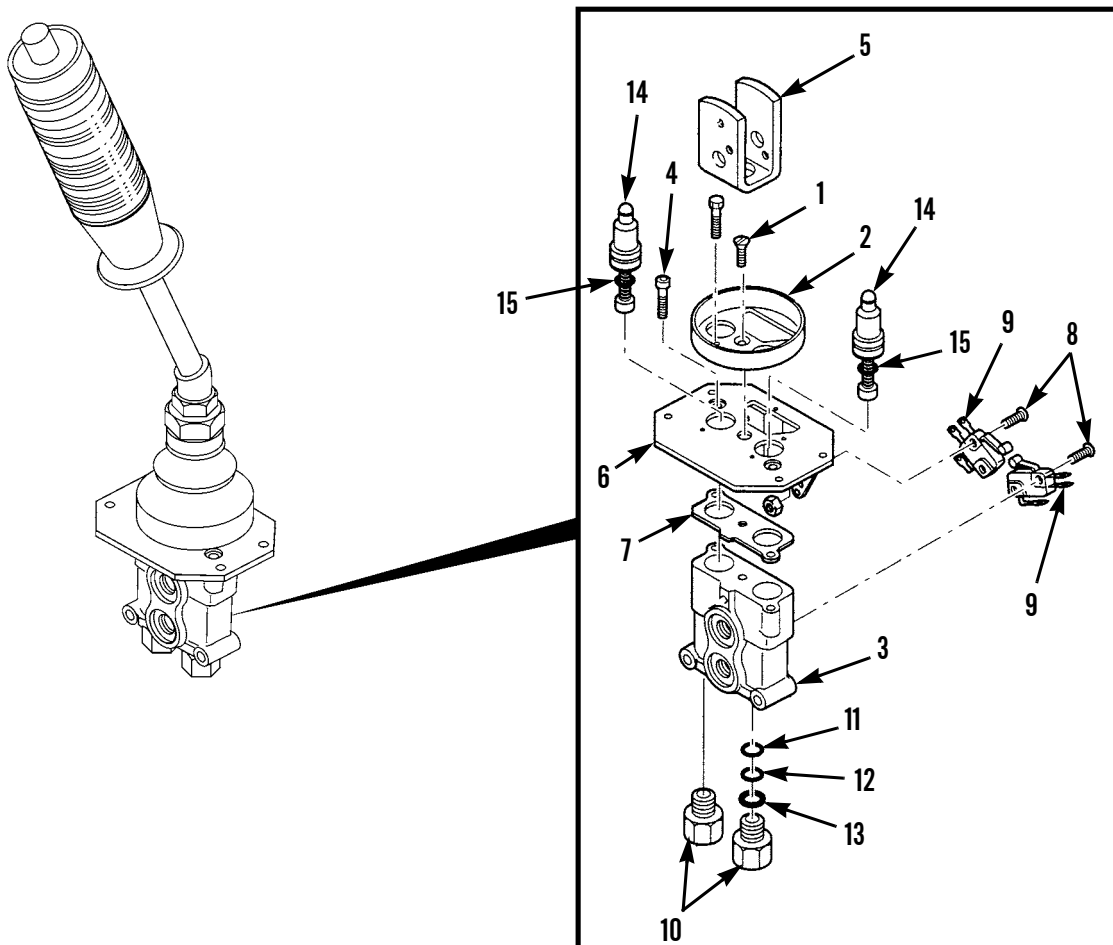
Propel control lever valve removed (WP 0113 00)

DISASSEMBLY

1. Remove three screws (1) and boot clamp (2) from valve body (3).
2. Remove three screws (4), pivot bracket (5), plate (6) and gasket (7) from valve body (3). Discard gasket.
3. Remove two screws (8) and switches (9) from pivot bracket (5).
4. Remove two metering fittings (10), preformed packing (11), O-ring (12) and backup ring (13) from valve body (3). Discard preformed packing, backup ring and O-rings.
5. Remove two plungers (14) and preformed packings (15) from valve body (3). Discard preformed packings.

ASSEMBLY

1. Install two new preformed packings (15) and plungers (14) on valve body (3).
2. Install new backup ring (13), new O-ring (12), new preformed packing (11) and two metering fittings (10) on valve body (3).
3. Install two switches (9) on pivot bracket (5) with screws (8).
4. Install new gasket (7), plate (6) and pivot bracket (5) on valve body (3).
5. Install three screws (1) and boot clamp (2) to valve body (3).
6. Install propel control lever (WP 0113 00).



401-2020

END OF WORK PACKAGE

HYDRAULIC PUMP DRIVE REPLACEMENT

0189 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

References

TM 5-3895-379-23P, Figure 64

Equipment Condition

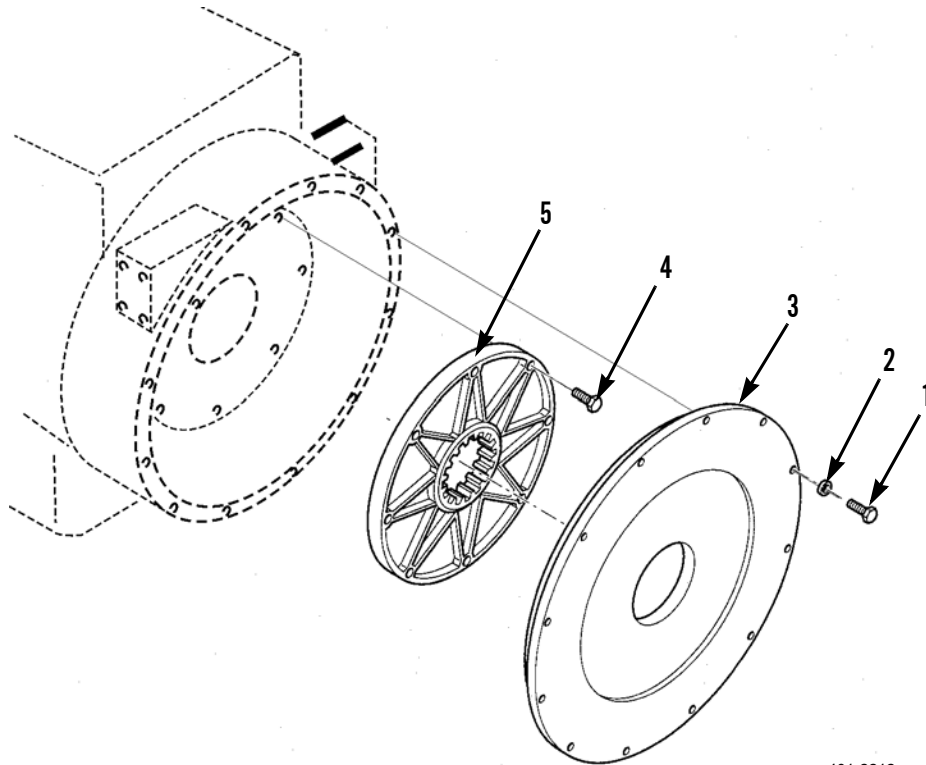
Left-side door assembly opened (TM 5-3895-379-10)

Vibratory and propel pumps removed (WP 0187 00)

Air cleaner elements and assembly removed (WP 0032 00)

REMOVAL

1. Remove twelve capscrews (1), washers (2) and adapter (3) from roller.
2. Remove eight bolts (4) and connector (5) from roller.



401-2212

INSTALLATION

1. Install eight bolts (4) and connector (5) to roller.
2. Install twelve capscrews (1), washers (2) and adapter (3) to roller.
3. Install air cleaner elements and assembly (WP 0032 00).
4. Install vibratory and propel pumps (WP 0187 00).
5. Close left-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

UNIVERSAL JOINT AND SHAFT MAINTENANCE

0190 00

THIS WORK PACKAGE COVERSDisassembly, Assembly

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Lockwasher (24)

Packing, preformed

References

TM 5-3895-379-23P, Figure 81

Personnel Required

Two

Equipment ConditionDrum assembly removed and disassembled (WP 0210 00)

DISASSEMBLY**WARNING**

Wear suitable eye protection during removal of snap rings. Failure to follow this warning may cause injury.

CAUTION

Do not clamp weaker center section of driveshaft. Avoid excessive force when holding driveshaft in a vice. If shaft or yoke is bent, the driveshaft may vibrate when returned to service.

NOTE

- Procedure is same for both driveshafts.
- Scribe marks on yoke and universal joints prior to removal to assure proper assembly and driveshaft balancing.

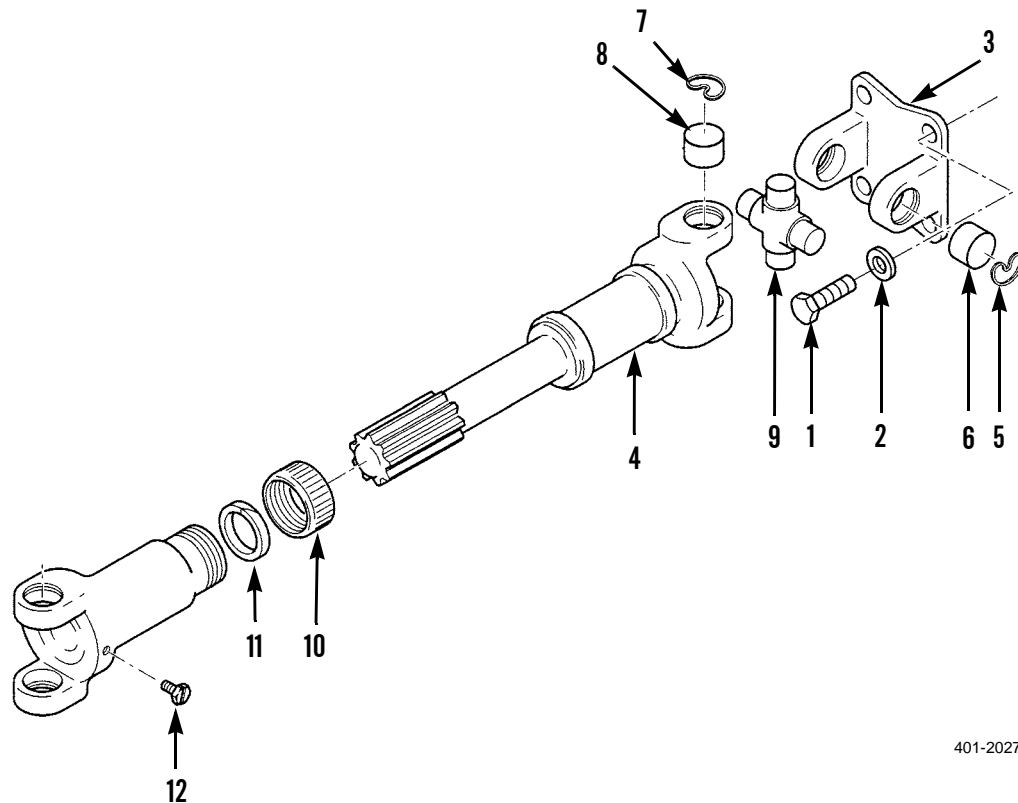
DISASSEMBLY - CONTINUED

1. Remove eight bolts (1) and lockwashers (2) from universal yoke (3).
2. With assistance, remove driveshaft (4) and universal yoke (3) as an assembly from roller.

NOTE

Place driveshaft in vice.

3. Remove four snap rings (5) from bearing (6) and remove universal yoke (3).
4. Remove four snap rings (7), bearings (8) and two universal joints (9) from driveshaft (4).
5. Remove dust cap (10) and preformed packing (11), and separate driveshaft (4). Discard preformed packing.
6. If damaged, remove plug (12).



401-2027

ASSEMBLY

1. If required, install plug (12).
2. Install new packing preformed (11), dusk cap (10) on driveshaft (4). Do not tighten cap at this time.

NOTE

- If necessary, apply a light coat of grease to splines to help assist in assembly.
 - Avoid excess force when assembling driveshaft. If splines are damaged the shaft will not operate correctly when returned to service.
3. Spline driveshaft (4) and tighten dust cap (10).

ASSEMBLY - CONTINUED**WARNING**

- Wear suitable eye protection during removal of snap rings to protect your eyes in case a snap ring flies out of universal joint. Failure to follow this warning may cause injury.
 - Apply a light coat of clean grease inside of bearings prior to assembly.
4. Install two universals joints (9) on driveshaft with four bearings (8) and snap rings (7).
 5. Install two universal yokes (3) at ends of driveshaft with four bearings (6) and snap rings (5).
 6. Position driveshaft on roller and install eight new lockwashers (2) and bolts (1) on universal yokes (3).
 7. Assemble and install drum (WP 0210 00).
 8. Operate roller and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

SEPARATE AND CONNECT PROPEL MOTOR AND TORQUE HUB

0191 00

THIS WORK PACKAGE COVERS

Separate, Connect

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Link bracket (Item 20, WP 0220 00)

Lifting strap and hoist, minimum capacity 270 lb (122 kg)

Materials/Parts

O-ring

References

TM 5-3895-379-23P, Figures 68 and 79

Personnel Required

Two

Equipment Condition

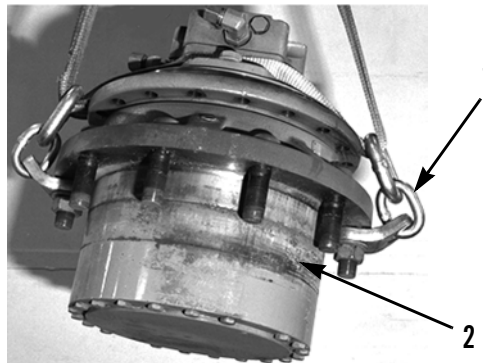
Propel motor and torque hub removed (WP 0193 00)

NOTE

Front and rear propel motors and torque hubs are separated the same way.

SEPARATE

1. Install two link brackets (1) on torque hub (2).



401-974

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of propel motor and torque hub is 270 lb (122 kg).

2. Using a lifting strap and hoist, raise and support propel motor (3) and torque hub (2).

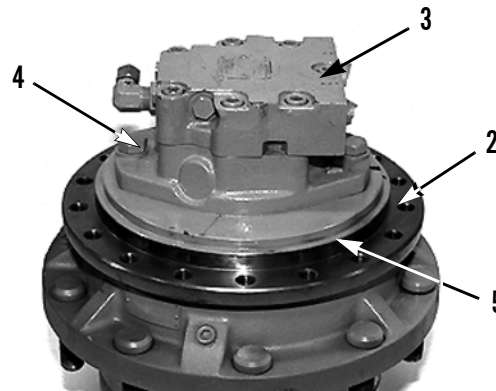
NOTE

Use container to catch any oil that may drain from torque hub. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

NOTE

Weight of propel motor is 55 lb (25 kg).

3. Remove two bolts (4) and, with assistance, remove propel motor (3) and O-ring (5) from torque hub (2). Discard O-ring.



401-975

CONNECT

1. Position new O-ring (5) on torque hub (2).

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

2. With assistance, install propel motor (3) on torque hub (2) with two bolts (4).

NOTE

Weight of propel motor is 55 lb (25 kg).

NOTE

Weight of propel motor and torque hub is 270 lb (122 kg).

3. Using lifting strap and hoist, raise and support propel motor (3) and torque hub (2).
4. Remove two link brackets (1) from torque hub (2).
5. Install propel motor and torque hub (WP 0193 00).

END OF WORK PACKAGE

REAR PROPEL MOTOR REPLACEMENT

0192 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)
Lockwasher (2)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
TM 5-3895-379-23P, Figure 68

Personnel Required

Two

Equipment Condition

Hydraulic system drained (WP 0037 00)

REMOVAL**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

CAUTION

- Wipe area clean around all hydraulic connections to be opened during removal.
- Cap oil lines and plug opening after removing lines. Contamination of hydraulic system could result in premature failure.

NOTE

Use container to catch any residual hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

REAR PROPEL MOTOR REPLACEMENT

0192 00

REMOVAL - CONTINUED

1. Disconnect five hose assemblies (1) from rear propel motor (2).

**WARNING**

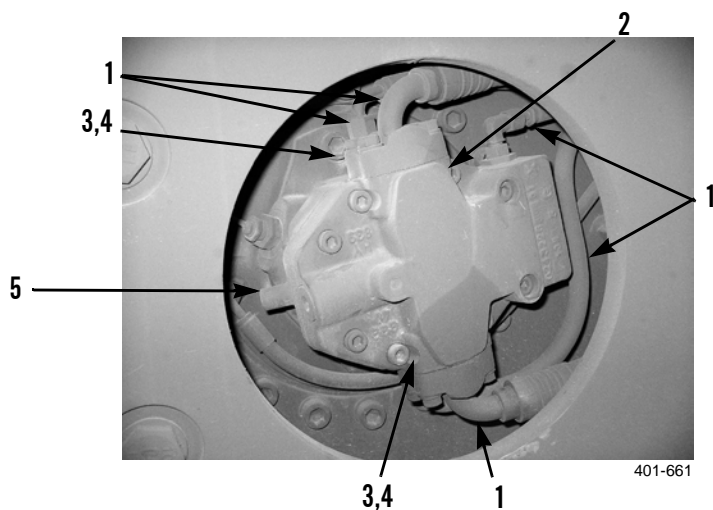
Use caution when lifting heavy parts. Failure to follow this warning may cause injury.

2. Disconnect propel motor sensor (5).

NOTE

Weight of rear propel motor is 40 lb (18 kg).

3. Remove two bolts (3), lockwashers (4) and remove rear propel motor (2). Discard lockwashers.

**INSTALLATION****NOTE**

Weight of rear propel motor is 40 lb (18 kg).

1. Position rear propel motor (2) on roller.
2. Install two new lockwashers (4) and bolts (3).
3. Connect propel motor sensor (5).
4. Connect five hydraulic hose assemblies (1) to rear propel motor (2).
5. Refill hydraulic system (WP 0008 00 and WP 0009 00).
6. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

PROPEL MOTOR AND TORQUE HUB REPLACEMENT

0193 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Lifting device, minimum capacity 500 lb (227 kg)

Materials/Parts

- Lockwasher (24)

References

TM 5-3895-379-23P, Figures 68, 79 and 133

Personnel Required

Two

Equipment Condition

Drum assembly removed (WP 0210 00)

REMOVAL

1. Position drum assembly (1) as shown and use wooden blocks to prevent drum assembly from moving.



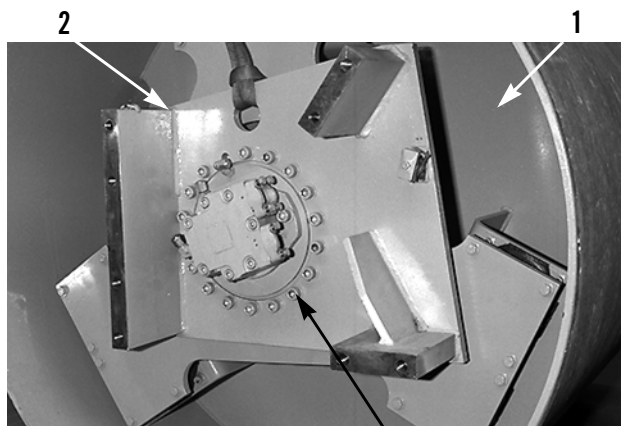
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of support is 170 lb (77 kg).

2. Attach lifting device to support (2).
3. Remove seventeen nuts (3), bolts (4) and support (2) from propel motor and torque hub (5).



3,4

401-971

REMOVAL - CONTINUED



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drive plate, propel motor and torque hub as a unit is 500 lb (227 kg).

4. Attach lifting device to drive plate (6).
5. Remove twenty-four bolts (7), washers (8), drive plate (6) and propel motor and torque hub (5) as a unit, from mounts.
6. Position propel motor and torque hub on wooden blocks.
7. Attach lifting device to drive plate (6).



401-972



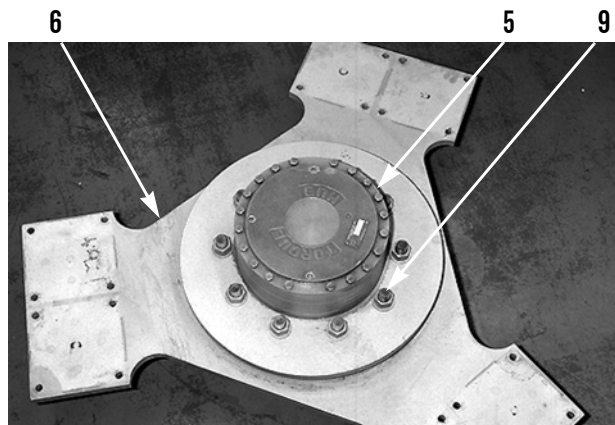
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drive plate is 230 lb (104 kg).

8. Remove ten nuts (9) and drive plate (6) from propel motor and torque hub (5).



401-973

INSTALLATION



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drive plate is 230 lb (104 kg).

1. Attach lifting straps and lifting device to drive plate (6).
2. Position drive plate (6) on propel motor and torque hub (5) and install ten nuts (9).



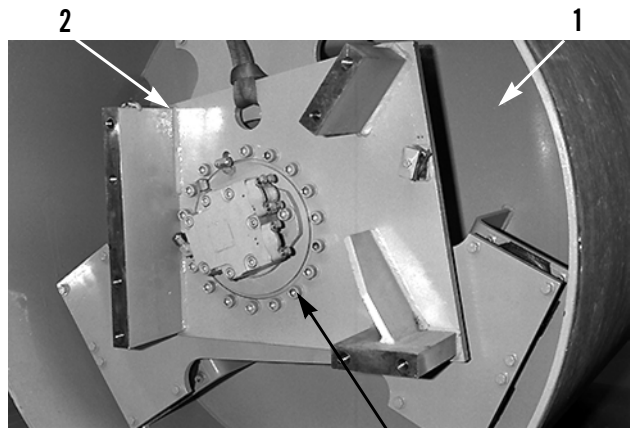
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of support is 170 lb (77g).

3. Attach lifting device to support (2).
4. Position support (2) on motor and torque hub (5) and install seventeen bolts (4) and nuts (3).



401-971

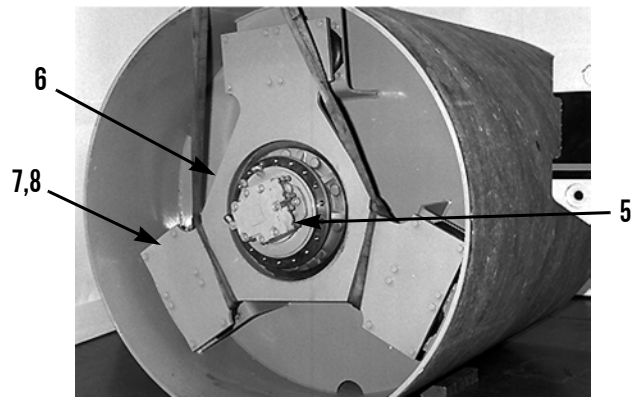
INSTALLATION - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drive plate, propel motor and torque hub as a unit is 500 lb (227 kg).

5. Install drive plate (6) and propel motor and torque hub (5), as a unit, on mounts with twenty-four new lock-washers (8) and bolts (7).



401-972

6. Install drum assembly (WP 0210 00).

END OF WORK PACKAGE

BRAKE CONTROL VALVE REPAIR

0194 00

THIS WORK PACKAGE COVERS

Disassembly, Assembly

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

O-ring (13)

References

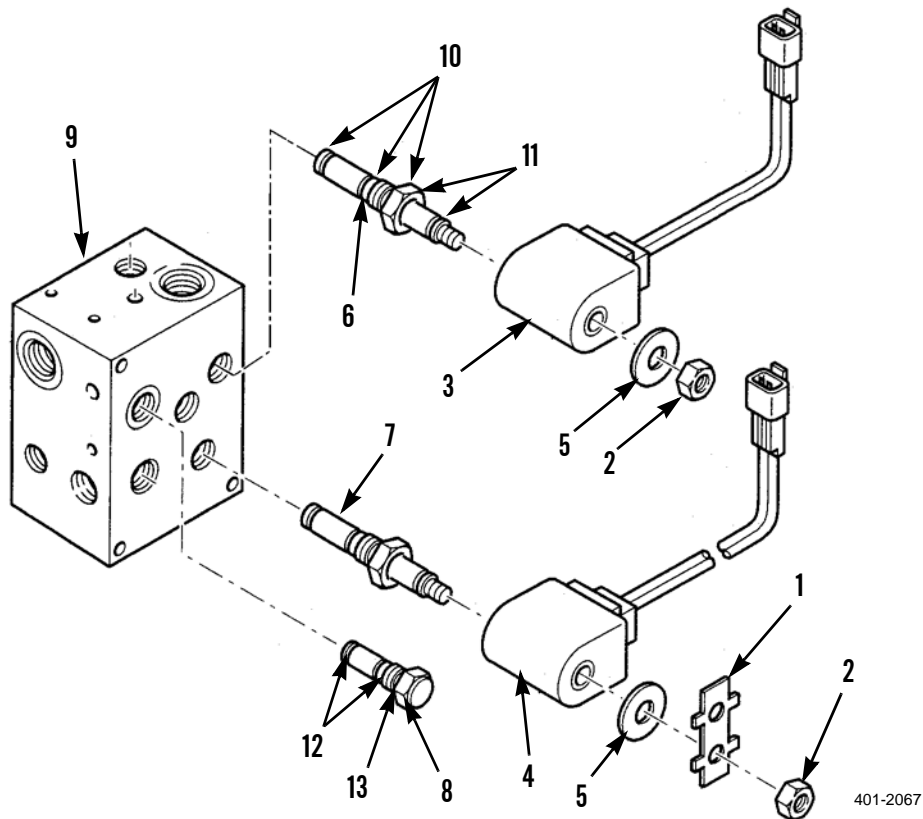
TM 5-3895-379-23P, Figure 85

Equipment Condition

Brake control valve removed (WP 0118 00)

BRAKE CONTROL VALVE REPAIR**0194 00****DISASSEMBLY**

1. Bend tabs down on lock (1).
2. Remove nut (2) from shift coil (3).
3. Remove nut (2) from brake coil (4).
4. Remove lock (1) and two washers (5) from shift coil (3) and brake coil (4).
5. Remove shift coil (3) from shift valve cartridge (6).
6. Remove brake coil (4) from brake valve cartridge (7).
7. Remove shift valve cartridge (6), brake valve cartridge (7) and check valve (8) from manifold (9).
8. Remove three O-rings (10) and two back-up O-rings (11) from shift and brake cartridges (6) and (7). Discard O-rings.
9. Remove two O-rings (12) and back-up O-ring (13) from check valve (8). Discard O-rings.

**ASSEMBLY**

1. Install two new O-rings (12) and new back-up O-rings (13) to check valve (8).
2. Install three new O-rings (10) and two new back-up O-rings (11) to shift valve cartridge (6) and brake valve cartridge (7).
3. Install shift valve cartridge (6), brake valve cartridge (7) and check valve (8) from manifold (9).
4. Install brake coil (4) from brake valve cartridge (7).
5. Install shift coil (3) from shift valve cartridge (6).
6. Install lock (1) and two washers (5) to shift coil (3) and brake coil (4).
7. Install nut (2) from shift coil (3) and nut (2) from brake coil (4). Tighten to 48-70 lb-ft (65-94 Nm).
8. Bend tabs up on lock (1).
9. Install brake control valve (WP 0118 00).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Disassembly, Assembly, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220)

Materials/Parts

- Cap set, protective (Item 8, WP 0219 00)
- Cleaning compound, solvent (Item 9, WP 0219 00)
- Cloth, cleaning (Item 10, WP 0219 00)
- Compound, sealing (Item 12, WP 0219 00)
- Tag, marker (Item 37, WP 0219 00)
- O-ring (4)

Materials/Parts - Continued

- Ring, back-up
- Ring, retaining
- Seal (3)
- Seal, dust
- Seal, quad ring
- Screw, machine 1/8 in -24

References

TM 5-3895-379-23P, Figure 86, 87, 102

Equipment Condition

Steering wheel removed (WP 0120 00)

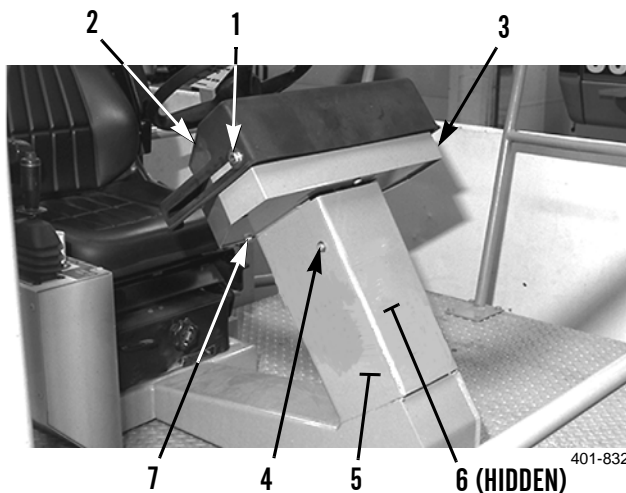
REMOVAL

1. Remove two bolts (1) and cover (2) from console (3).

NOTE

Bolts (4) and (7) are not interchangeable.

2. Remove four bolts (4) and cover (5) from steering column (6).
3. Remove three bolts (7) that fasten console (3) to steering column (6) and move console out of way.



401-832

REMOVAL - CONTINUED**WARNING**

Do NOT remove hydraulic tank filler cap or disconnect or remove any hydraulic system line or fitting unless hydraulic system pressure has been relieved. To relieve pressure, SLOWLY loosen hydraulic tank filler cap. After maintenance, tighten all connections before applying pressure. Escaping hydraulic fluid under pressure can penetrate the skin, causing injury or death.

CAUTION

Wipe area clean around all hydraulic connections to be opened during removal. Cap lines and plug openings after removing hydraulic lines. Contamination of hydraulic system could result in premature failure.

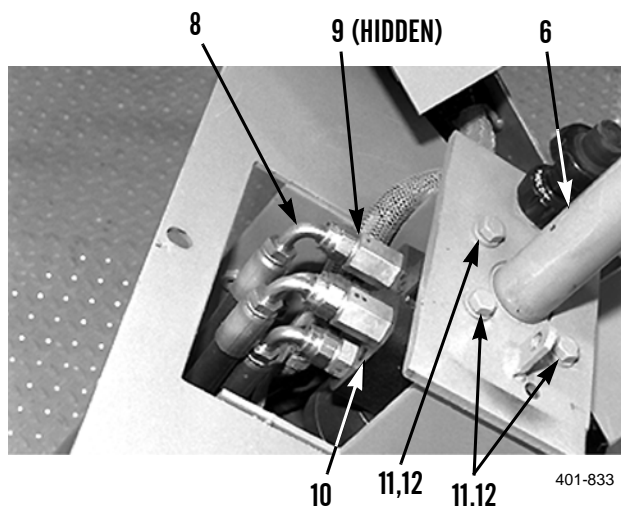
NOTE

- Tag and mark all hoses to aid in installation.
 - Use container to catch any steering fluid that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
4. Disconnect four hoses (8), O-rings (9) from steering control unit (10). Discard O-rings.
 5. While holding steering control unit (10), remove four bolts (11), lockwashers (12) that fasten the steering control unit (10) and steering column (6) to the console (3). Discard lockwashers.

NOTE

It may be necessary to use puller to remove steering control unit from steering column.

6. Remove steering control unit (10) from splines on steering column (6).

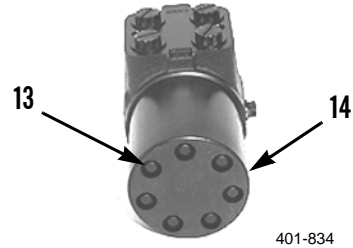


DISASSEMBLY

NOTE

Be sure the outside of the steering control unit (SCU) is thoroughly clean and free of dirt and debris prior to disassembly. Make alignment marks on the valve body to aid in proper assembly.

1. Remove seven capscrews (13).
2. Remove end cap (14).



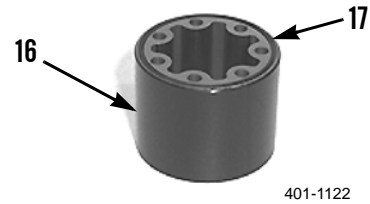
3. Remove seal (15) from end cap (14). Discard seal.



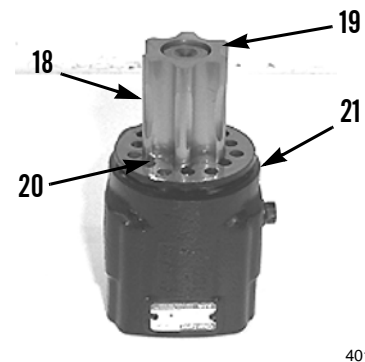
4. Remove geroter housing (16) and lift housing straight up.



5. Remove seal (17) from geroter housing (16). Discard seal.



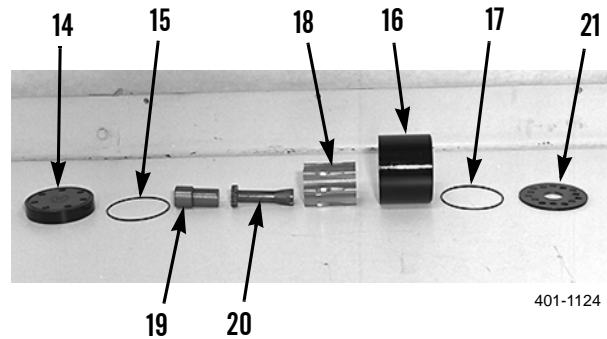
6. Remove geroter (18), spacer (19), drive (20) and spacer plate (21) as a unit.



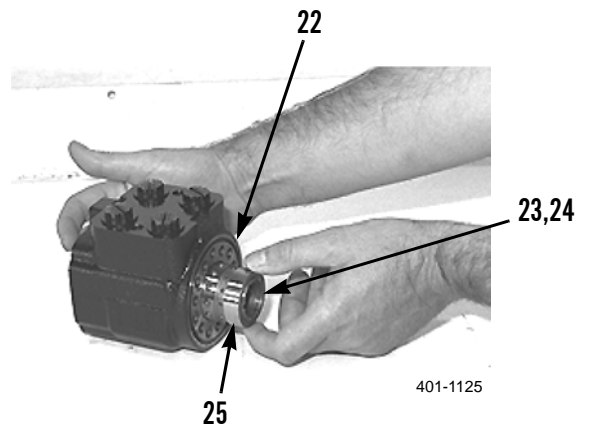
DISASSEMBLY - CONTINUED

NOTE

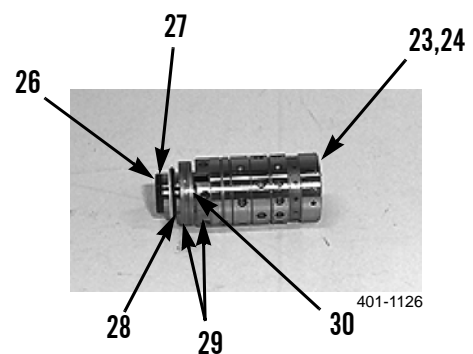
- Components of the geroter assembly shown in photo.
- Geroter housing and geroter are not serviced separately.



7. Remove seal (22). Discard seal.
8. Remove spool (23) and sleeve (24) from control housing (25). Replace spool and sleeve if necessary.



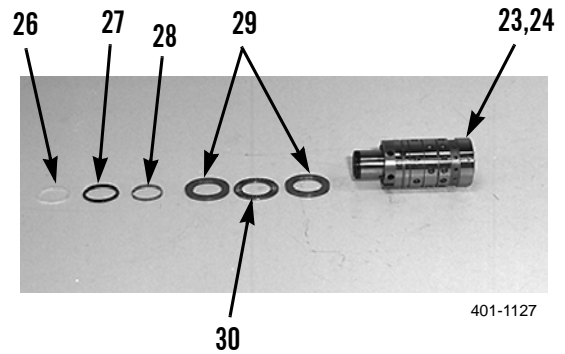
9. Remove backup ring (26), O-ring (27) and O-ring (28) (not shown), two bearing races (29) and needle thrust bearing (30) from spool (23) and sleeve (24). Replace bearing and races as an assembly, if necessary, and discard back-up ring and O-rings.



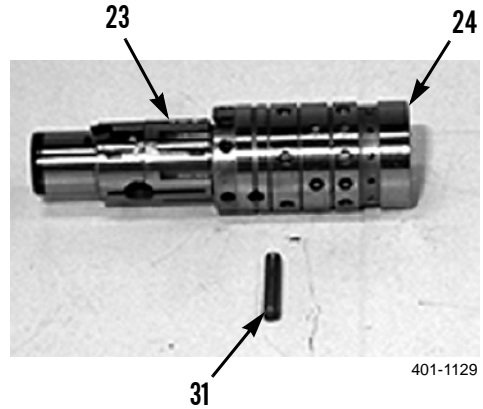
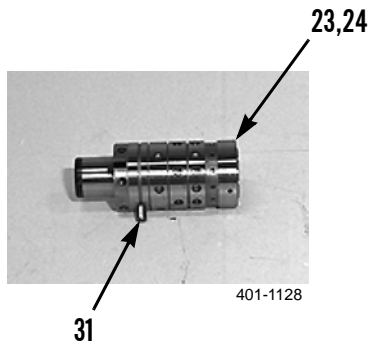
DISASSEMBLY - CONTINUED

NOTE

Components of the geroter assembly shown in photo.



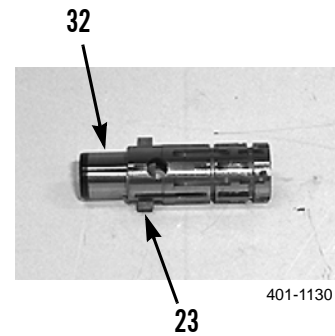
- 10. Remove pin (31) from spool (23) and sleeve (24) (slip fit).
- 11. Separate control spool (23) and sleeve (24).



NOTE

Spring kit has four centering springs.

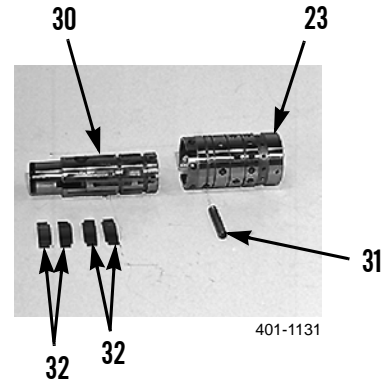
- 12. Remove centering spring kit (32) from control spool (23).



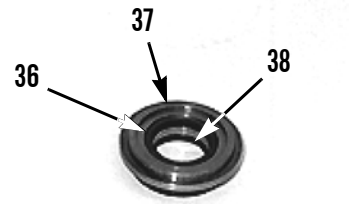
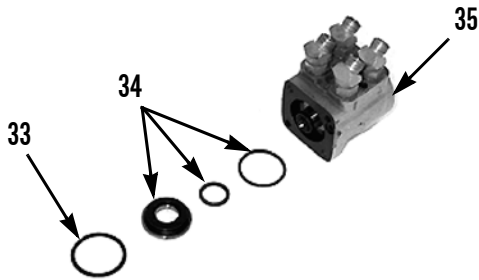
DISASSEMBLY - CONTINUED

NOTE

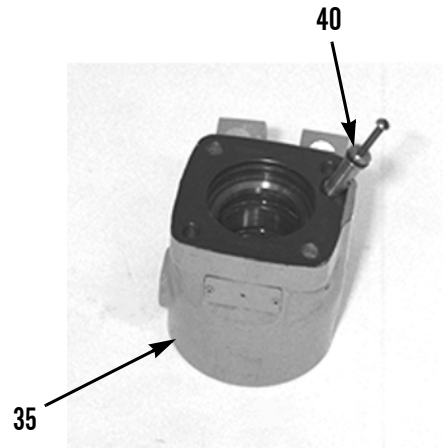
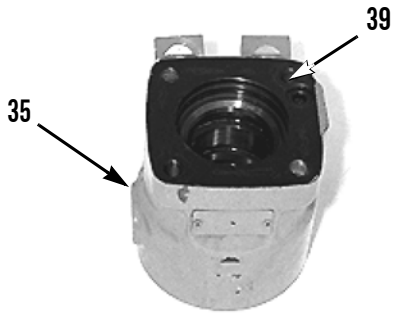
Components of the geroter assembly shown in photo.



13. Remove retaining ring (33) and gland bushing (34) from the control housing (35). Discard retaining ring.
14. Remove dust seal (36) from gland seal (37). Turn seal gland bushing over and remove quad ring seal (38). Discard dust seal and quad ring seal.



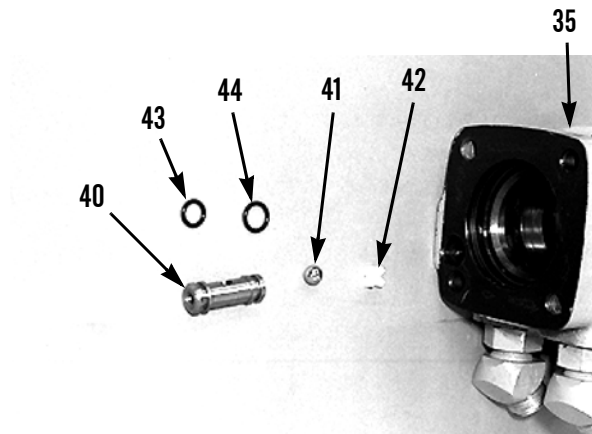
15. Remove set screw (39) from control housing (35).
16. Install 1/8 in. - 24 machine screw into the end of the check ball seat (40). Remove the check ball (40) seat with pliers.



DISASSEMBLY - CONTINUED**NOTE**

O-rings are different sizes. Note their location on the check ball seat prior to removal. Do not mix when re-installed.

17. Remove check ball (41) and check ball retainer (42) from the control housing (35).
18. Remove O-rings (43) and (44) from check ball seat (40). Discard O-rings.

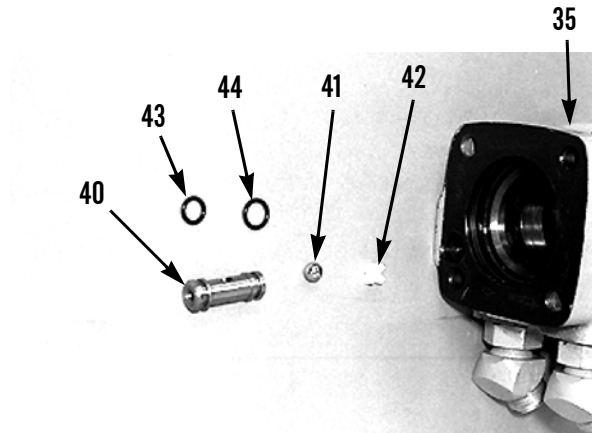


401-2102

ASSEMBLY**NOTE**

- Be sure all parts of the steering control unit (SCU) are clean and free of dirt and debris. Clean all parts with cleaning compound and air dry or use cleaning cloth **ONLY** to clean dry parts. Replace any parts that have scratches or burrs that could result in leakage.
- Put a thin coat of clean lubricating oil on O-rings prior to installation.

1. Install check ball retainer (42) in control housing (35). Be sure the retainer is straight and not tilted in the bore.
2. Install check ball (41).
3. Install two new O-rings (44) and (43) in their original location on the check ball seat (40).



401-2102

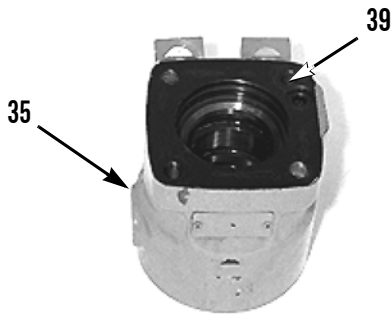
ASSEMBLY - CONTINUED

4. Install the check ball seat (40) in center of control housing (35), using an 1/8 in.-24 machine screw.

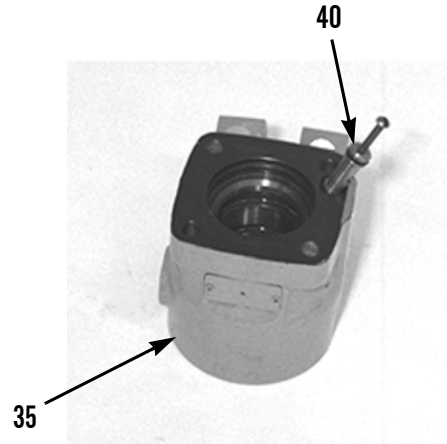
NOTE

After installation, the set screw should be slightly below the outside surface of the center housing.

5. Install setscrew (39) in control housing (35) and tighten to 8 lb-in (11 Nm).

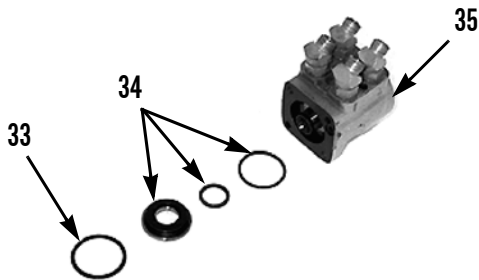


401-1135



401-1136

6. Assemble gland bushing (34). Install new dust seal (36) in seal gland bushing (37) with the flat or smooth side of seal facing bushing and turn seal gland bushing over. Install new quad ring seal (38) in the seal gland bushing. Smooth seal in place with finger.
7. Install gland bushing assembly (34) in control housing (35) and secure with new retaining ring (33).



401-1132



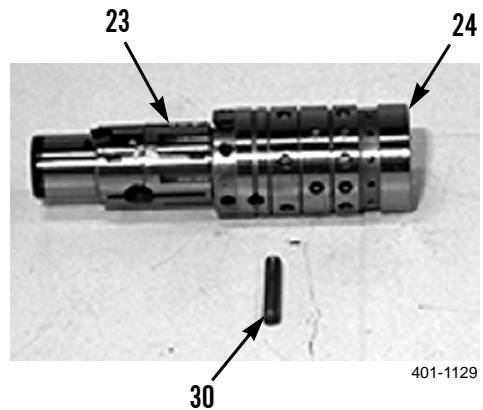
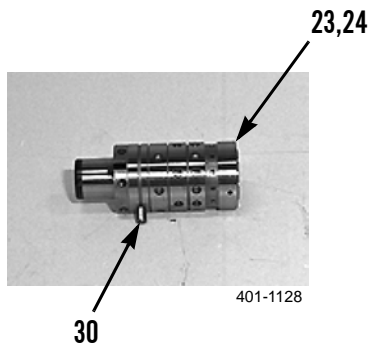
401-1133

ASSEMBLY - CONTINUED

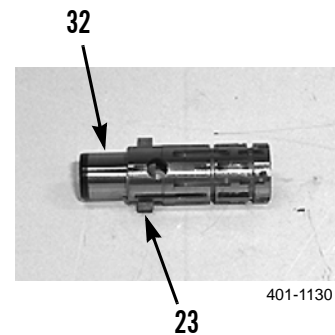
NOTE

Apply a thin coat of clean hydraulic oil on control spool and sleeve prior to installation.

8. Assemble control spool (35) with control sleeve (24). The spool should turn freely in the sleeve. Put the spring slots in each component in alignment. Some spool and sleeve sets may have alignment marks on them. In this case, align the marks.



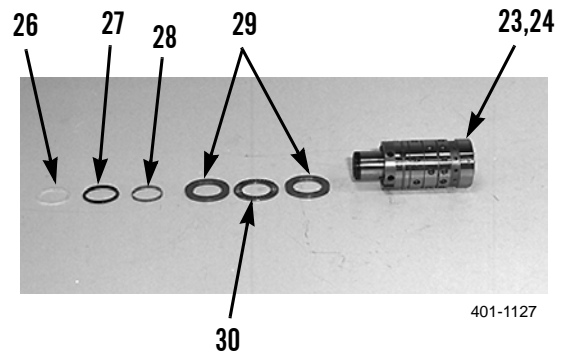
9. Install centering spring kit (32) to control spool (23). Be sure the springs are centered. Install pin (30) that holds the spool (23) and sleeve (24) together and ensure pin is flush on each side of the spool and sleeve after installation.



ASSEMBLY - CONTINUED**NOTE**

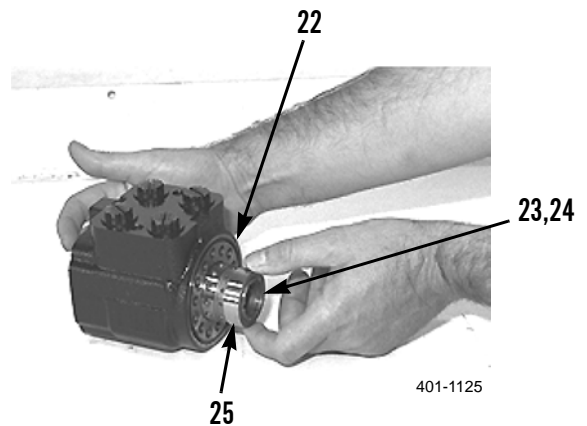
When spool and sleeve is installed in the control housing, be sure it is not tilted out of position. The assembly should be pushed gently into place with a slight rotating action, keeping pin nearly horizontal. The spool and sleeve assembly should be installed until it is flush with the meter end of the housing (side with fourteen holes in the end). Be sure pin does not drop into the discharge groove in the center housing. Be sure the spool and sleeve assembly turns freely in the center housing.

10. Position center of spool (23) and sleeve (24) assembly in a vertical position. Install two bearing races (29) and needle thrust bearing (30).
11. Install two new O-rings (21) and (20) and back-up ring (26) over the spool (23) and sleeve (24) with a twisting motion.



401-1127

12. Position steering control housing (25) in a vertical position with the steering column facing down. Install spool (23) and sleeve (24) as an assembly into control housing.
13. Install new seal (22) in control housing (25).



401-1125

ASSEMBLY - CONTINUED

NOTE

- The steering control unit (SCU) must be timed, this requires the correct relationship between pin, gerotor and housing. One end of pin will point to the largest clearance between the gerotor and gerotor housing. The other end of the pin points to the least clearance.
- Pin cannot be seen after drive is installed, so it will be necessary to make a mark on the gear end of the drive for proper alignment.
- Be sure the bolt holes in the spacer plate align with the tapped holes in the center housing.

14. Install spacer plate (21).

NOTE

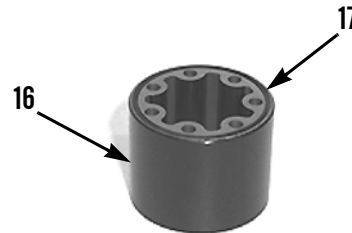
Be sure the slot in drive (20) engages with pin (31).

15. Install drive (20) and spacer (19) in gerotor (18).



401-1123

16. Install new seal (17) in gerotor housing (16).



401-1122

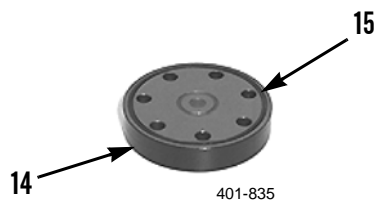
17. Position gerotor housing (16) on steering control unit.



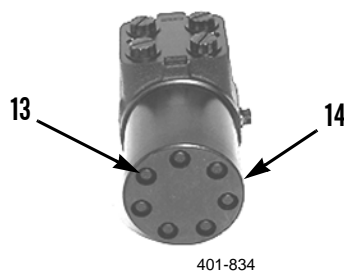
401-1121

ASSEMBLY - CONTINUED

18. Install seal (15) in end cap (14).



19. Install cap (14) with seven screws (13) on steering control unit (SCU). Tighten capscrews in sequence shown to 150 lb-in (17 Nm) – 275 lb-in (31 Nm).



20. Install steering control unit (SCU). Refer to *Installation* in this work package.

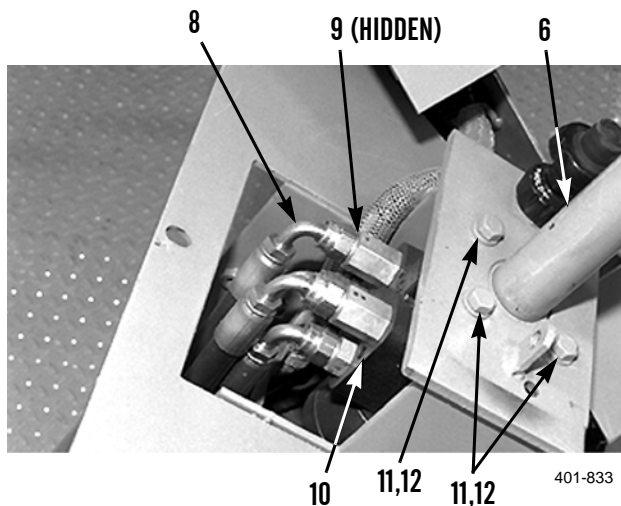
INSTALLATION

1. Spline the steering control unit (SCU) (10) in steering column (6).
2. Install four new lockwashers (12) and bolts (11) to fasten steering control unit (10) and steering column (6) and console (3). Tighten bolts to 10-25 lb-ft (14-34 Nm).

NOTE

- Remove all caps and plugs from hoses prior to installation.
- Remove tags from hoses after hoses are connected correctly.

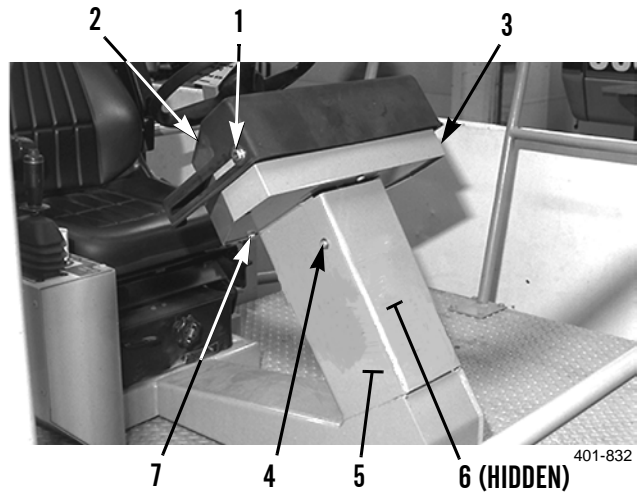
3. Install new O-rings (9) into four hoses (8).
4. Connect four hoses (8) to steering control unit (10).



INSTALLATION - CONTINUED**NOTE**

Bolts (4) and (7) are not interchangeable.

5. Position console (3) on steering column (6) and install three bolts (7).
6. Position cover (5) on steering column (6) and install four bolts (4).
7. Position cover (2) on console (3) and install two bolts (1).



8. Install steering wheel (WP 0120 00).
9. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

- Cleaning compound, solvent (Item 9, WP 0219 00)
- Grease, automotive (Item 19, WP 0219 00)
- Rag, wiping (Item 31, WP 0219 00)

References

- TM 5-3895-379-10
- TM 5-3895-379-23P, Figure 94

Personnel Required

Two

Equipment Condition

- Operator platform assembly raised (WP 0128 00)
- Yoke removed (WP 0198 00)

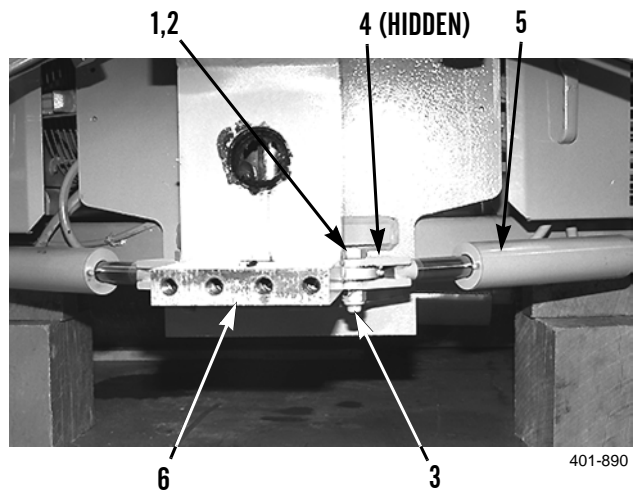


WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

REMOVAL

1. Remove two bolts (1), washers (2), nuts (3) and pins (4) that fasten steering cylinder (5) to steering pivot assembly (6). Repeat step one for other steering cylinder.



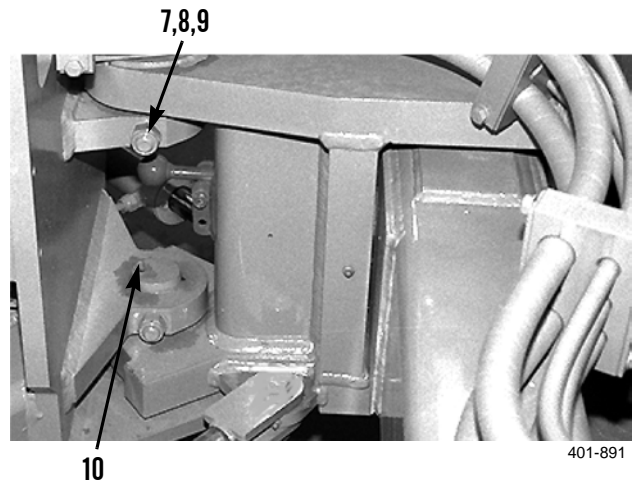
401-890

STEERING PIVOT REPLACEMENT - CONTINUED

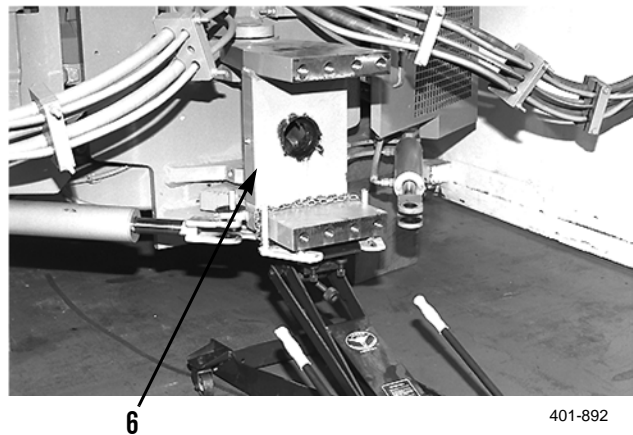
0196 00

REMOVAL - CONTINUED

- Remove two nuts (7), washers (8) and bolts (9) that hold upper and lower pivot pins (10) in place.



- Position floor jack under steering pivot assembly (6) and fasten steering pivot assembly to floor jack.



- Remove grease fittings (11) from pivot pins (10).
- Remove pivot pins (10) from bores in rear frame (12) and steering pivot assembly (13).

**WARNING**

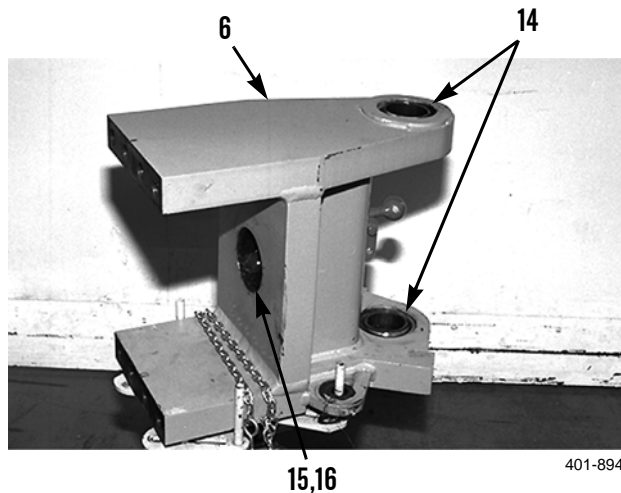
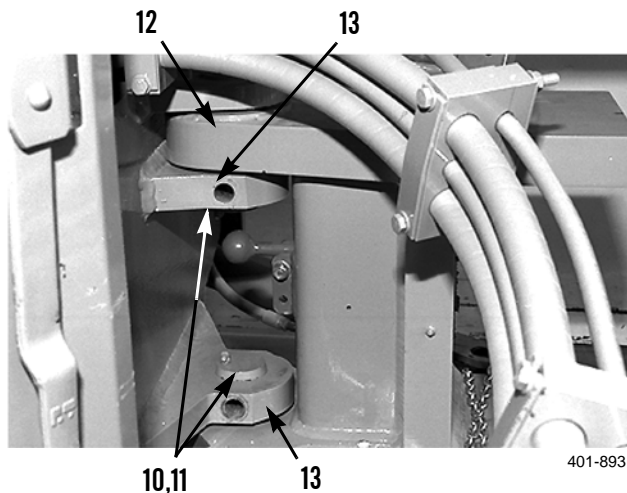
Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

- Note the quantity and location of shims used for upper and lower pivot pins.
 - Weight of steering pivot assembly is 295 lb (134 kg).
 - Inspect shims for damage and wear and replace as necessary.
- Use lifting device and remove steering pivot assembly (6) and shims (13) from rear frame (12).

REMOVAL - CONTINUED

- If necessary, remove two bearings (14), bearing (15) and race (16) from steering pivot assembly (6). Inspect bearings and race for damage and wear and replace as necessary.



INSTALLATION

CAUTION

Ensure steering pivot assembly, rear frame, bearing and race surfaces are clean and dry prior to installation. Contamination of these systems could result in premature failure.

NOTE

Apply a sufficient amount of clean grease to bearings and race prior to installation.

- If removed, install bearing (15) and race (16) as a unit and two bearings (14) into steering pivot assembly (6).



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of steering pivot assembly is 295 lb. (134 kg).

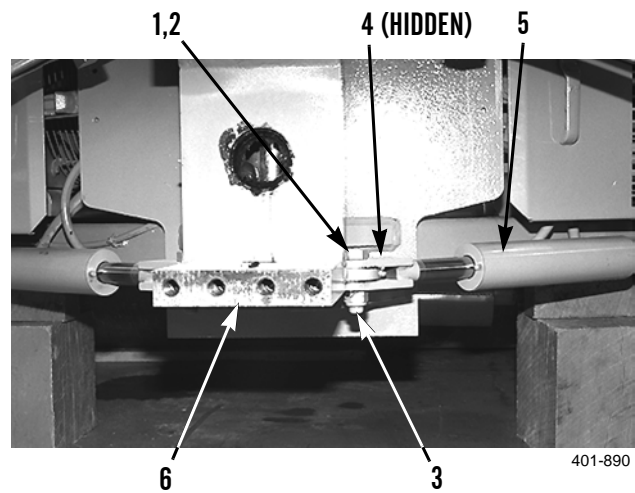
- Use a lifting device and position steering pivot assembly (6) on floor jack.
- Position steering pivot assembly (6) to rear of frame (12).
- Install shims (13) and steering pivot assembly (6) on rear frame (12).
- Install pivot pins (10) in bores in rear frame (12) and steering pivot assembly (6).
- Install two grease fittings (11) in pivot pins (10).
- Install two bolts (9), washers (8) and nuts (7) to secure upper and lower pivot pins (10) in place.

STEERING PIVOT REPLACEMENT - CONTINUED

0196 00

INSTALLATION - CONTINUED

8. Install two washers (2), bolts (1) and nuts (3) that fasten steering cylinder (5) to steering pivot assembly (6).
9. Repeat step 8 for other steering cylinder.



10. Install yoke (WP 0198 00).
11. Lower operator platform assembly (WP 0128 00).
12. Operate roller and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

STEERING HOSES, LINES AND FITTINGS REPLACEMENT**0197 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)
 Rag, wiping (Item 31, WP 0219 00)
 Tag, marker (Item 37, WP 0219 00)
 Gasket
 O-ring (6)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction
 WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)
 WP 0195 00, Steering Control Unit Repair
 TM 5-3895-379-23P, Figures 90, 91 and 102

Equipment Condition

Engine off (TM 5-3895-379-10)
 Battery disconnect switch in OFF position (TM 5-3895-379-10)
 Operator platform assembly raised (WP 0128 00)
 Right- and left-side door assemblies opened (TM 5-3895-379-10)
 Fuel/hydraulic oil tank drained (WP 0037 00)

REMOVAL**WARNING**

Fuel and oil are very slippery. Use container to capture any fluid which may drain from lines. Dispose of IAW local policy and ordinances. Ensure all spills are cleaned up.

CAUTION

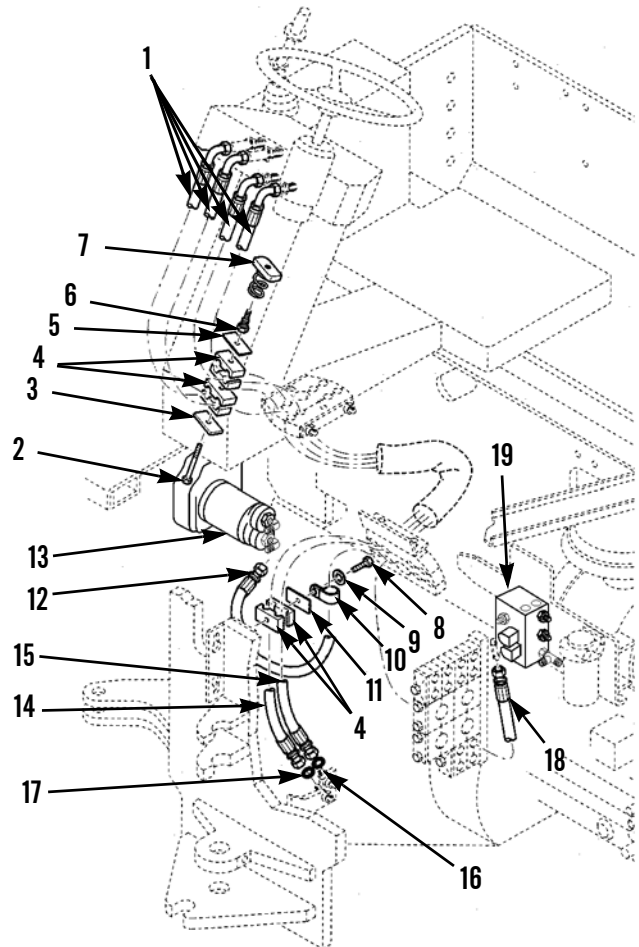
Wipe area clean around all hydraulic connections to be opened during removal. Cap lines and plug openings after removing lines. Contamination of hydraulic system could result in premature failure of the roller.

NOTE

- Tag and mark all hydraulic lines and hoses to ensure correct installation.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripped treads and cuts. Replace all damaged parts.

REMOVAL - CONTINUED

1. Disconnect four hose assemblies (1) from steering control unit (SCU) (WP 0195 00).
2. Remove bolt (2), cover (3), four clamps (4) and plate (5).
3. Remove transfer (6) and spring nut (7).
4. Raise operator platform assembly (WP 0128 00).
5. Remove screw (8), washer (9), loop clamp (10), retainer (11) and clamps (4) from frame.
6. Disconnect hose assembly (12) from steering pump (13).
7. Disconnect hose assemblies (14) and (15) from tee fittings (16). Remove O-rings (17). Discard O-ring.
8. Disconnect hose assembly (18) from manifold (19).



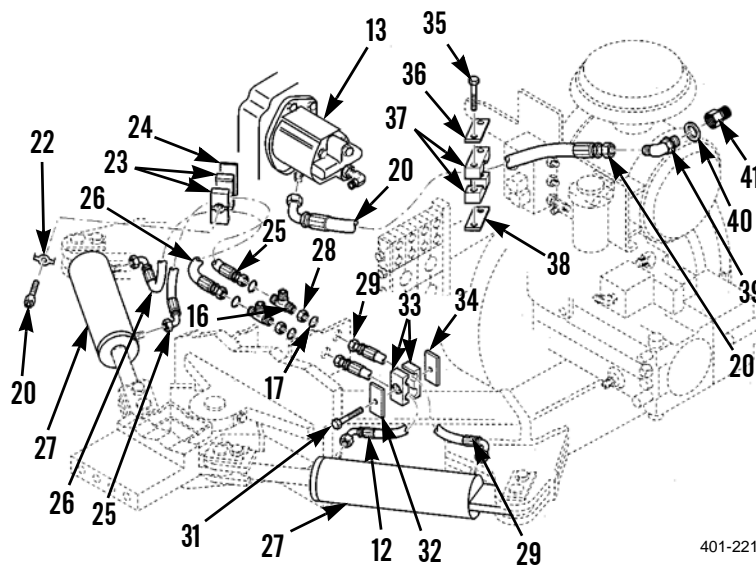
401-2215

STEERING HOSES, LINES AND FITTINGS - CONTINUED

0197 00

REMOVAL - CONTINUED

9. Disconnect hose assembly (20) from steering pump (13).
10. Remove screw (21), retainer (22), two clamps (23) and plate (24) from hose assemblies (25) and (26).
11. Disconnect hose assemblies (25) and (26) from hydraulic cylinder (27).
12. Disconnect hose assemblies (25) and (26) from two tee fittings (16).
13. Remove two nuts (28), tee fittings (16), four O-rings (17) and two hose assemblies (29) and (30) from frame. Discard O-rings.
14. Remove bolt (31), cover (32), two clamps (33) and plate (34) from hose assemblies (29) and (30).
15. Disconnect hose assemblies (29) and (30) from steering cylinder (27).
16. Remove two screws (35), bracket (36), two clamps (37) and plate (38) from hose assembly (20).
17. Disconnect hose assembly (20) and remove elbow (39) and gasket (40) from hydraulic side of fuel/hydraulic tank (41). Discard gasket.



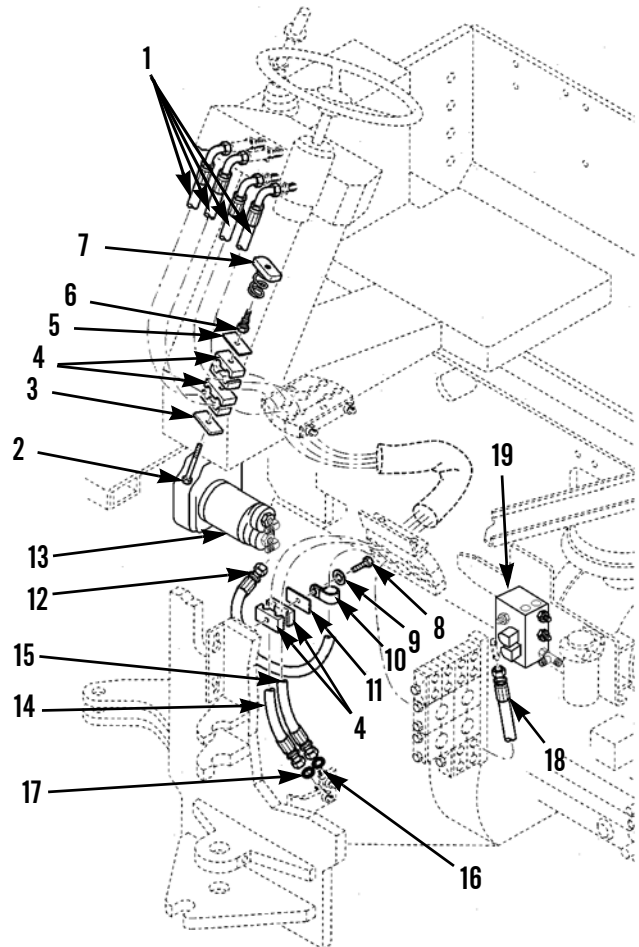
401-2216

INSTALLATION

1. Connect hose assembly (20), install elbow (39) and new gasket (40) to hydraulic side of fuel/hydraulic oil tank (41).
2. Install two screws (35), bracket (36), two clamps (37) and plate (38) to hose assembly (20).
3. Connect hose assemblies (29) and (30) to steering cylinder (27).
4. Install bolt (31), cover (32), two clamps (33) and plate (34) to hose assemblies (29) and (30).
5. Install two nuts (28), tees (16), four new O-rings (17) and hose assemblies (29) and (30) to frame.
6. Connect hose assemblies (25) and (26) to two tees (17).
7. Connect hose assemblies (25) and (26) to hydraulic cylinder (27).
8. Install screw (21), retainer (22), two clamps (23) and plate (24) to hose assemblies (25) and (26).
9. Connect hose assembly (20) to steering pump (13).
10. Connect hose assembly (18) to manifold (19).
11. Install new O-ring (17) to each of two hose assemblies (14) and (15) and connect to tee fittings (16).

INSTALLATION - CONTINUED

12. Connect hose assembly (12) to steering pump (13).
13. Install screw (8), washer (9), loop clamp (10), retainer (11) and fairlead clamps (4) to frame.
14. Lower operator platform assembly (WP 0128 00).
15. Install transfer (6) and spring nut (7).
16. Install bolt (2), cover (3), four clamps (4) and plate (5).
17. Connect four hose assemblies (1) to steering control unit (SCU) (WP 0195 00).



401-2215

18. Close left- and right-side door assemblies (TM 5-3895-379-10).
19. Lower operator platform (WP 0128 00).
20. Fill hydraulic side of fuel/hydraulic oil tank (WP 0008 00 and WP 0009 00).
21. Start engine and check for proper operation and oil leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation, Check Vertical Steer Pivot Clearance, Check Horizontal Steer Pivot Clearance, Oscillation Bearing Clearance

INITIAL SETUP

Tools and Special Tools

- Tool kit, general mechanic's (Item 36, WP 0220 00)
- Shop equipment, general purpose (Item 30, WP 0220 00)
- Guide bolts (Item 13, WP 0220 00)
- Lifting device, minimum capacity 2300 lb (1044 kg)
- Straps, lifting, minimum capacity 85 lb (39 kg)
- Wooden blocks (2)

References

TM 5-3895-379-23P, Figure 31

Personnel Required

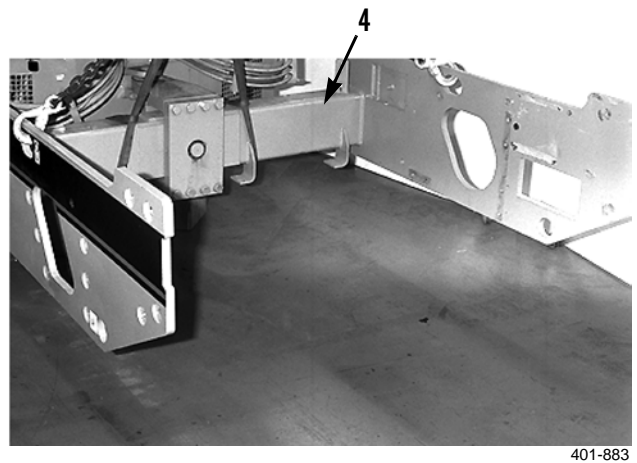
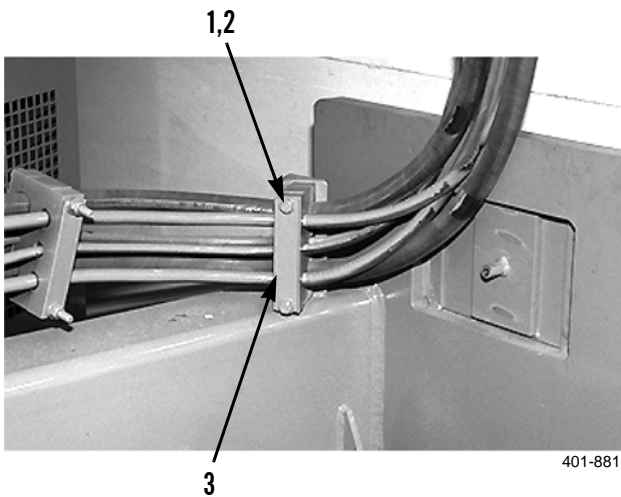
Two

Equipment Condition

- Drum scraper (inner) removed (WP 0160 00)
- Drum assembly removed (WP 0210 00)

REMOVAL

1. Remove two nuts (1), bolts (2) and clamp (3) from both sides of yoke (4). Move hose assemblies out of the way.



REMOVAL - CONTINUED

2. Position wooden blocks under roller as shown.



401-882

**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

3. Attach lifting straps and a lifting device to position yoke (4) as shown.
4. Install guide bolts (10).

NOTE

- Use marks on shims to note location for installation purposes.
- Shims are located between plate and pivot housing.

5. With assistance, position bottom plate (8) on yoke (4).
6. Remove four bolts (5), washers (6) and shims (7) from bottom plate (8). Inspect shims for damage or worn condition, replace as necessary.

NOTE

Use marks on shims to note location for installation purposes.

7. Remove two outside top bolts (9) and install two M24 x 3.0 guide bolts (10). Remove remaining two bolts (9) and shims (7).

NOTE

Weight of plate is 85 lb (39 kg).

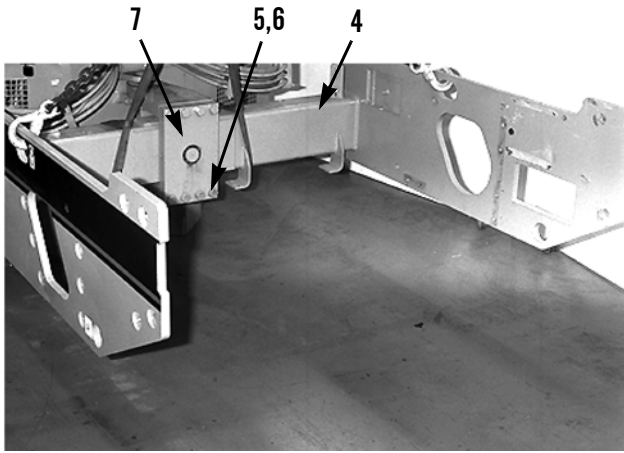
8. With assistance, remove plate (6) from yoke (4) and guide bolts (10).

NOTE

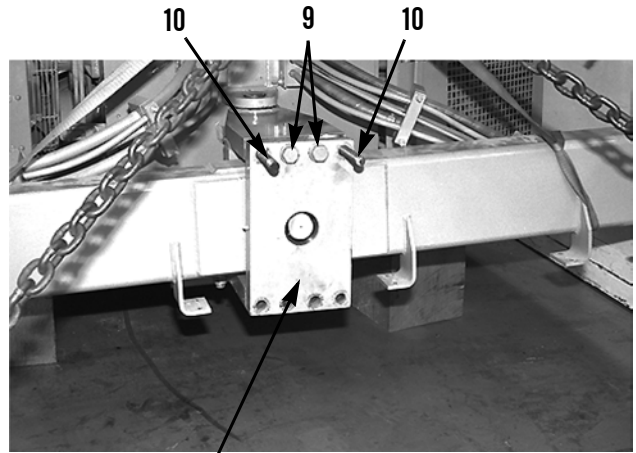
Weight of yoke is 2300 lb (1044 kg).

9. With assistance, use lifting device to remove yoke (4) from roller.

REMOVAL - CONTINUED

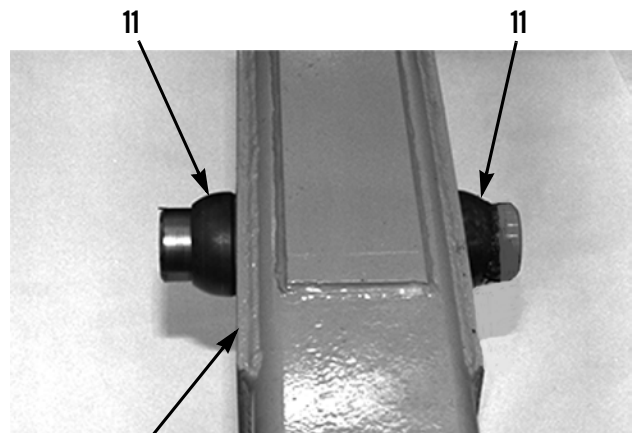


401-883



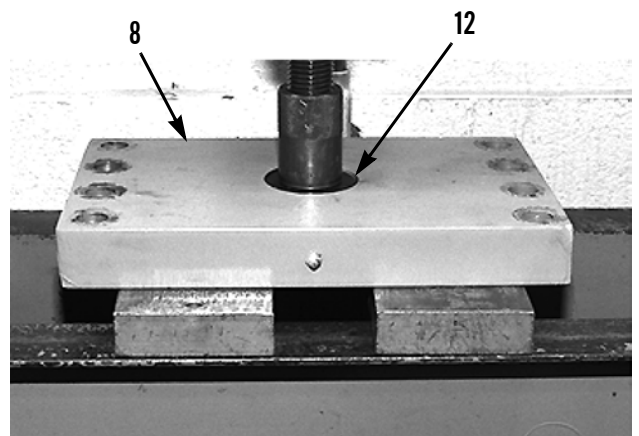
401-884

10. Remove bearings (11) from yoke (4).



401-885

11. If necessary, remove bearing race (12) from bottom plate (8).

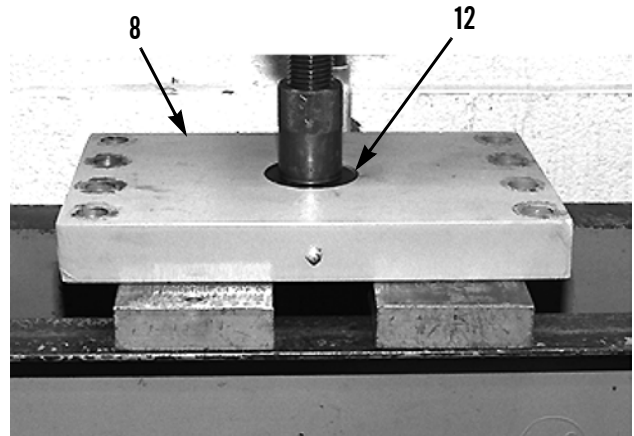


401-886

INSTALLATION**NOTE**

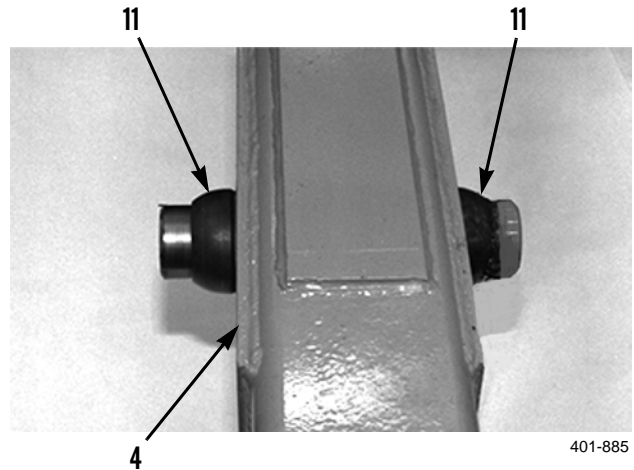
Apply a sufficient amount of clean grease to bearing and race prior to installation.

1. Install bearing race (12) in bottom plate (8) if it was removed.



401-886

2. Install bearings (11) on yoke (4).



401-885

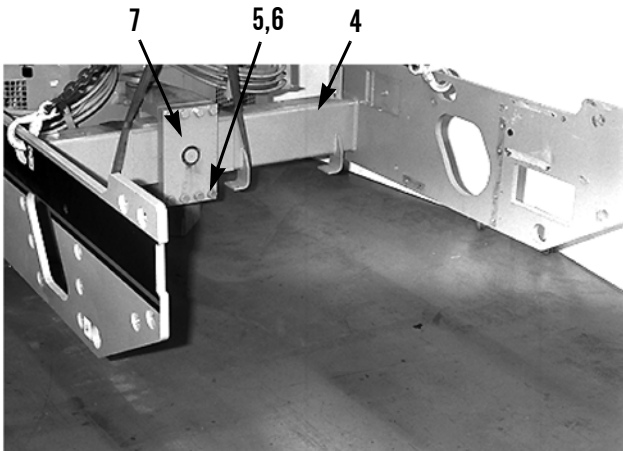
INSTALLATION - CONTINUED**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure any lifting device is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

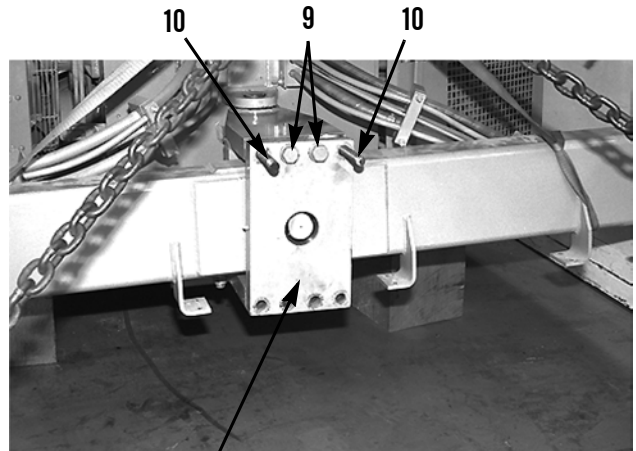
3. Attach lifting straps using a lifting device to position yoke (4) on roller.
4. Install guide bolts (10).

NOTE

- Weight of plate is 85 lb (39 kg).
 - Shims are positioned between plate and yoke.
5. With assistance, position bottom plate (8) on yoke (4).
 6. Install original amount of shims (7) on bottom plate (8) and install two bolts (9). Remove guide bolts and install two top bolts (9).
 7. Install original amount of shims (7) on bottom plate (8) and install washers (6) and bolts (5).



401-883

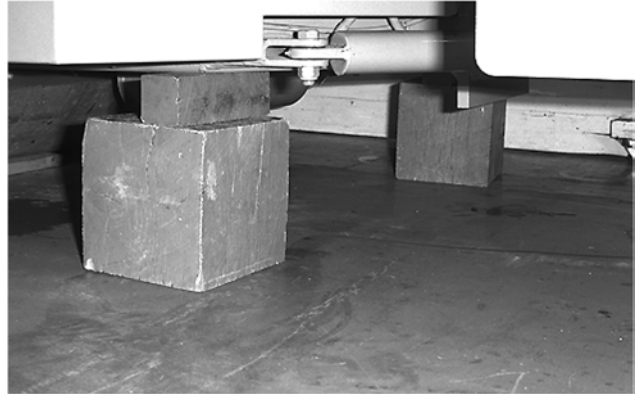


401-884

8

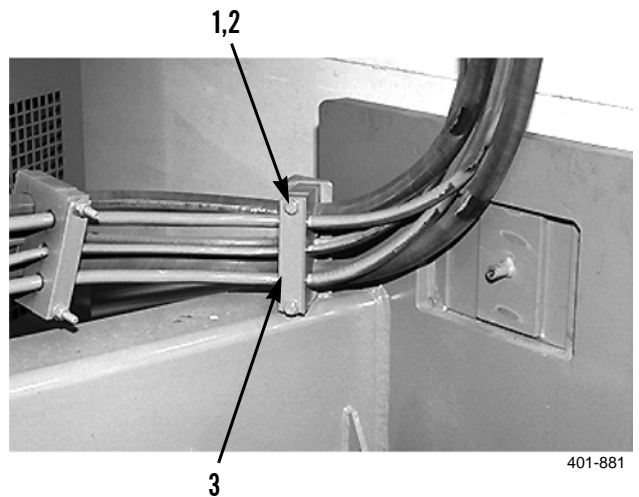
INSTALLATION - CONTINUED

8. Remove wooden blocks from under roller and remove hoist and lifting straps.



401-882

9. Position hose assemblies and install two clamps (3), bolts (2) and nuts (1) on both sides of yoke (4).



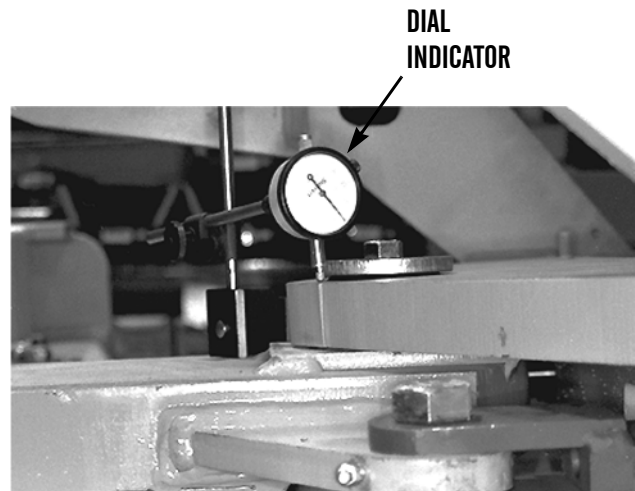
401-881

10. Install drum assembly (WP 0210 00).
11. Install inner drum scraper (WP 0160 00).

CHECK VERTICAL STEER PIVOT CLEARANCE**NOTE**

After installation of the drum assembly, the clearance between vertical bushings and vertical pins must be checked.

1. Position roller on a hard, level surface. Stop engine and apply parking brake (TM 5-3895-379-10).
2. Attach base of dial indicator to top of steering pivot housing as shown. Set dial indicator actuator on top of rear frame.
3. Set dial indicator to zero.
4. Put a hydraulic jack under rear frame at pivot assembly.
5. Raise hydraulic jack to obtain greatest dial indicator reading. Record this dimension.



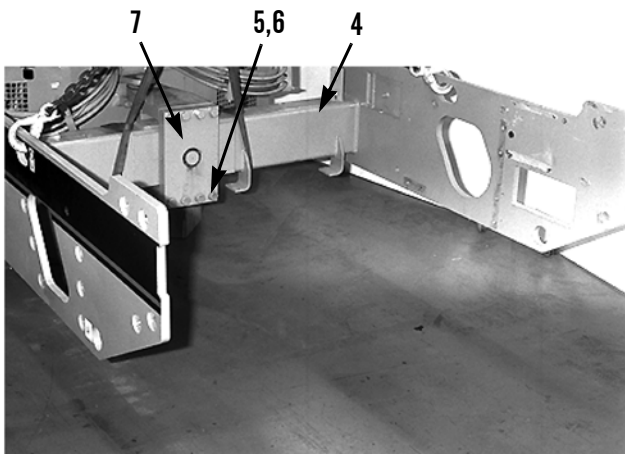
401-887

CHECK VERTICAL STEER PIVOT CLEARANCE - CONTINUED

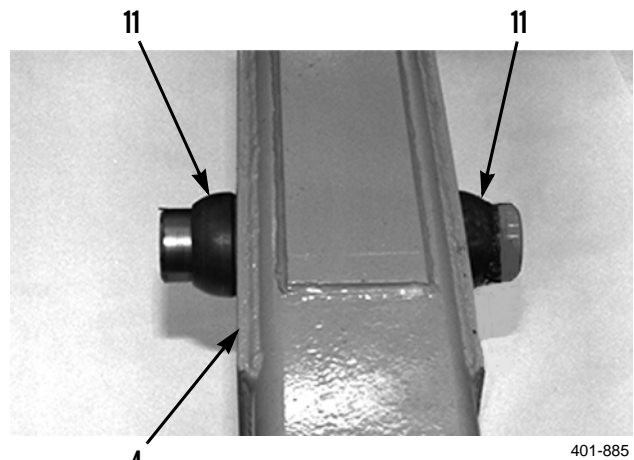
NOTE

When adding or removing shims, only top pivot point is shimmed.

6. With new bearings (11) and shims (7) installed, total movement should be .005 - .045 in (.13 - 1.14 mm). On used roller, total vertical movement should not exceed .075 in (1.91 mm). If movement is too great, clearance can be reduced by adding spacers at vertical pin joints. If movement is not enough, increase clearance by removing spacers at vertical pin joint.



401-883



401-885

7. If proper clearance cannot be obtained with spacers, steer pivot housing should be disassembled. Bushings or any other worn components should be replaced.

CHECK HORIZONTAL STEER PIVOT CLEARANCE

1. Position roller on a hard level surface. Stop engine and apply parking brake (TM 5-3895-379-10).
2. Attach base of dial indicator to top of steering pivot housing. Set dial indicator actuator against front face of rear frame.
3. Set dial indicator to zero.
4. Put a hydraulic jack under rear frame at pivot assembly.
5. Raise hydraulic jack and record reading on dial indicator.



401-888

6. With new bearings, bushings and pins, total recorded movement should be .004 - .030 in (.10 - .76 mm). On used roller, total movement should not exceed .050 in (1.27 mm).
7. If movement is too much, steering pivot housing should be disassembled. Bushings, bearings and any other worn components should be replaced.

OSCILLATION BEARING CLEARANCE**NOTE**

During assembly, it is recommended that this clearance measurement be made prior to installing drum into yoke.

1. Put roller on a hard level surface. Stop engine and apply parking brake (TM 5-3895-379-10).
2. Attach base of dial indicator to steering pivot bearing plate. Set dial indicator actuator against front face of yoke center plate.

WARNING

Ensure pry bar is in good condition and suitable for task. Keep hands clear of heavy parts supported and use caution while working with pry bar to avoid injury.

3. Insert a long, heavy pry bar between yoke assembly and steering pivot housing. Push hard on pry bar to move drum and yoke assembly as far forward as possible.
4. With dial indicator actuator set against front face of yoke, set dial indicator to zero.
5. Insert a long, heavy pry bar between yoke assembly and plate. Push hard on pry bar to move drum and yoke assembly back toward rear frame. Observe dial indicator and record reading.

NOTE

When removing or adding shims behind plate, remove or add equal amounts at top and bottom of plate.

6. Total movement should be .002 - .010 in (.05 - .25 mm) on a new assembly. The maximum reading for used assembly should be .020 in (.51 mm). If movement is too great, clearance can be reduced by removing shims from behind plate. If clearance is not enough, add shims to increase clearance.

NOTE

Inadequate bearing lubrication may result if zero end play or a preload condition is present.

7. If proper clearance cannot be obtained with removal or addition of shims, oscillation assembly should be disassembled. Bushings and any other worn or damaged components should be replaced.



401-889

END OF WORK PACKAGE

BRAKE CONTROL VALVE COIL REPLACEMENT

0199 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Equipment Condition

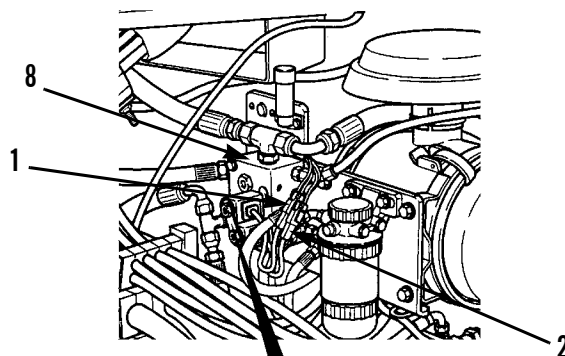
Drums chocked (TM 5-3895-379-10)

References

TM 5-3895-379-23P, Figure 85

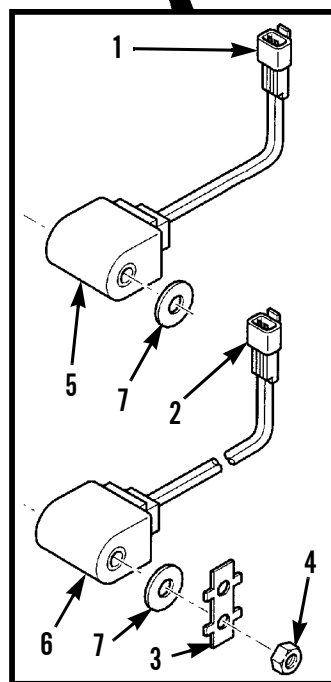
REMOVAL

1. Disconnect electrical connectors (1) and (2).
2. Bend tabs up on lock (3).
3. Remove nut (4) from shift coil (5) and nut (4) from brake coil (6).
4. Remove lock (3) and two washers (7) from coils (5) and (6).
5. Remove shift coil (5) and brake coil (6) from control valve (8).



INSTALLATION

1. Install brake coil (6) and shift coil (5) to control valve (8).
2. Install lock (3) and two washers (7) to coils (5) and (6).
3. Install two nuts (4) to shift coil (4) and brake coil (6). Tighten nuts to 48-70 lb-ft (65-95 Nm).
4. Bend tabs back on lock (3).
5. Connect electrical connectors (1) and (2).
6. Remove chocks (TM 5-3895-379-10).



401-2232

END OF WORK PACKAGE

POWER STEERING PUMP REPLACEMENT

0200 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Tag marker (Item 37, WP 0219 00)

Gasket

Lockwasher

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 88

Equipment Condition

Hydraulic oil drained (TM 5-3895-379-10)

Right-side door opened (TM 5-3895-379-10)

Engine coolant drained (WP 0052 00)

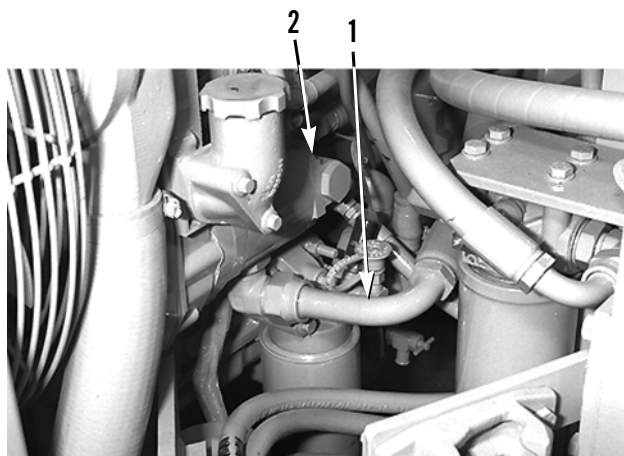
CAUTION

Wipe area clean around all hydraulic connections to be opened during removal. Cap lines and plug openings after removing hydraulic lines. Contamination of hydraulic system could result in premature failure.

NOTE

- Tag and mark all hoses to ensure correct installation.
- Use container to catch any steering fluid that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.

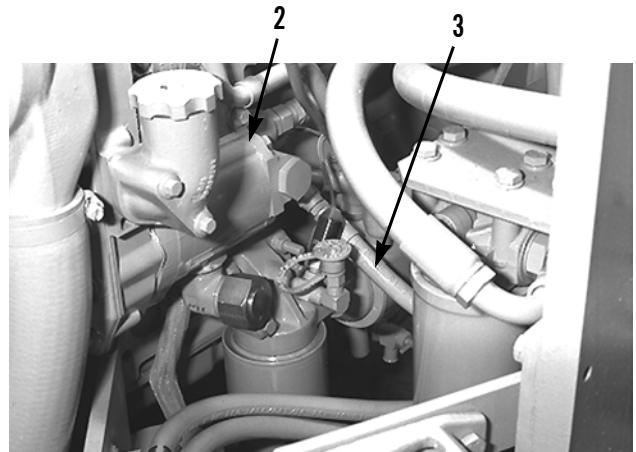
1. Disconnect hose assembly (1) from steering pump (2).



401-2097

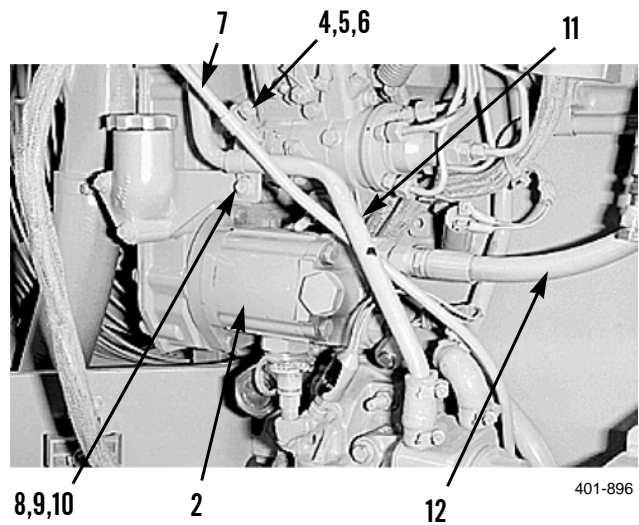
REMOVAL - CONTINUED

2. Disconnect hose assembly (3) from steering pump (2).



401-895

3. Remove bolt (4), washer (5) and remove clamp (6) from gauge rod (dipstick) assembly (7).
4. Loosen nut that fastens gauge rod (dipstick) tube (7) to oil pan. Remove gauge rod tube.
5. Remove bolt (8), washer (9) and remove hose clamp (10) from tube (11).
6. Disconnect tube (11) from engine oil cooler.
7. Disconnect hose assembly (12) from steering pump (2).



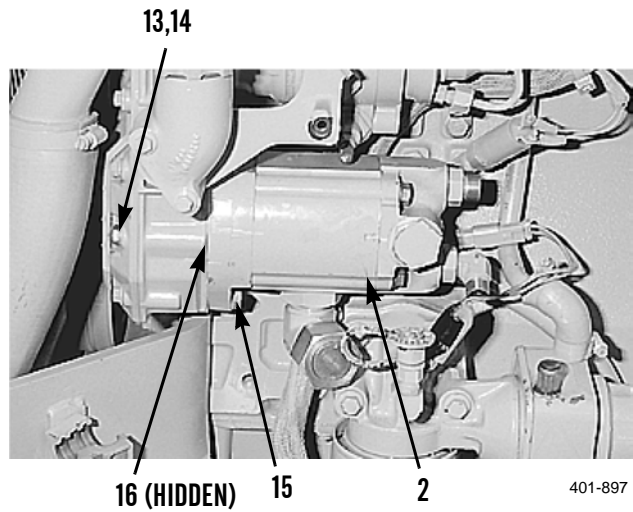
401-896

STEERING PUMP REPLACEMENT - CONTINUED

0200 00

REMOVAL - CONTINUED

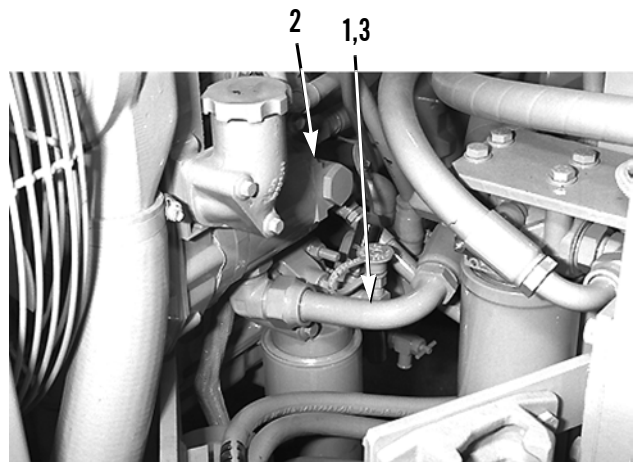
- Remove bolt (13), washer (14), five bolts (15) and remove steering pump (2) and gasket (16) from engine. Discard gasket.



401-897

INSTALLATION

- Position new gasket (16) and steering pump (2) on engine.
- Install five bolts (15), new lockwasher (14) and bolt (13) securing steering pump (2) to engine.
- Connect hose assembly (12) to steering pump (2).
- Position tube (11) to engine oil cooler and install hose clamp (10), washer (9) and bolt (8).
- Position gauge rod (dipstick) tube (7) to oil pan and tighten nut that fastens the gauge rod (dipstick) tube.
- Install clamp (6), washer (5) and bolt (4) to secure gauge rod (dipstick) tube (7) to engine.
- Connect hose (3) and (1) to steering pump (2).



401-2097

- Fill hydraulic oil tank to correct level (WP 0008 00 and WP 0009 00).
- Fill engine cooling system (WP 0052 00).
- Close right-side door assembly (TM 5-3895-379-10).
- Operate roller and check for proper operation (TM 5-3895-379-10).

END OF WORK PACKAGE

STEERING CYLINDER REPAIR**0201 00**

THIS WORK PACKAGE COVERSDisassembly, Assembly

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cleaning compound (Item 9, WP 0219 00)

Oil, lubricating (Item 21, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Lockwasher (2)

Materials/Parts - Continued

O-ring

Ring, back-up

Ring, wear

Seal

References

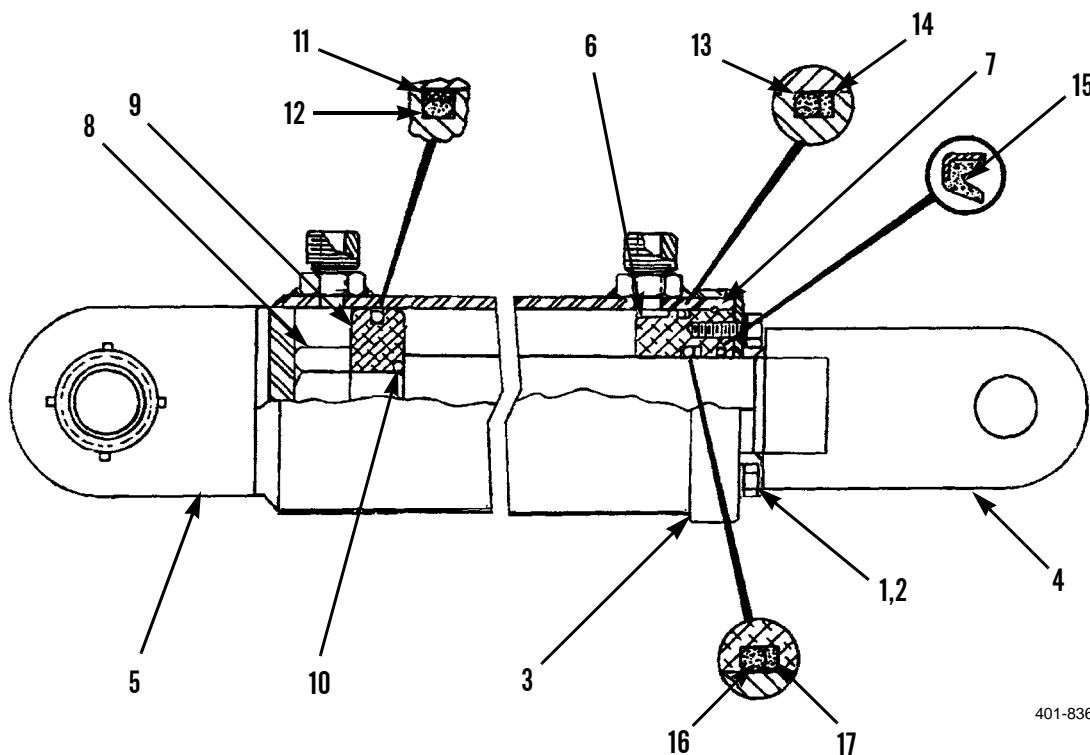
TM 5-3895-379-10

TM 5-3895-379-23P, Figure 93

Equipment ConditionHydraulic steering cylinder removed (WP 0121 00)

DISASSEMBLY

1. Remove two bolts (1), lockwashers (2) and slide cover (3) and rod assembly (4) partially out of cylinder assembly (5). Discard lockwasher.
2. Push head (6) into cylinder assembly (5) and remove lockwire ring (7).
3. Remove head (6) and rod assembly (4) from cylinder assembly (5).
4. Remove nut (8), piston (9) and head (6) from rod assembly (4).
5. Remove O-ring (10) from rod assembly (4). Discard O-ring.
6. Remove wear ring (11) and O-ring (12) from piston (9). Discard wear ring and O-ring.
7. Remove O-ring (13) and back-up ring (14) from outside of head (6). Discard O-ring and back-up ring.
8. Remove lip-type seal (15), O-ring (16) and back-up ring (17) from inside head (6). Discard lip-type seal, O-ring and back-up ring.



401-836

ASSEMBLY**NOTE**

- Inspect all parts and bore of steering cylinder for cracks and damage. Replace if damage is found.
- During assembly of steering cylinder, apply a thin coat of clean oil on O-ring, back-up rings and lip-type seals.

ASSEMBLY - CONTINUED

1. Install new back-up ring (17), new O-ring (16) and new lip-type seal (15) on inside of head (6).
2. Install new back-up ring (14) and new O-ring (13) on outside of head (6).
3. Install new O-ring (12) and new wear ring (11) on piston (9).
4. Install new O-ring (10) on rod assembly (4) with nut (8).
5. Install piston (9) and head (6) on rod assembly (4) with nut (8). Tighten nut to 590 + 20 lb-ft (800 + 27 Nm).
6. Slide head (6) and rod assembly (4) in cylinder assembly (5) and install lockwire ring (7).
7. Install two new lockwashers (2) and bolts (1) and secure cover (3) and rod assembly (4) in cylinder (5).
8. Install hydraulic steering cylinder (WP 0121 00).
9. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

OPERATOR PLATFORM AND OPERATOR STATION REPLACEMENT

0202 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, general purpose (Item 30, WP 0220 00)
Lifting device, 1250 lb (567kg) minimum capacity
Link bracket (Item 20, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)
Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figures 101, 102 and 103

Equipment Condition

Rollover protection structure (ROPS) removed (WP 0126 00)
Operator platform assembly raised (WP 0128 00)
Left- and right-side door assemblies opened (TM 5-3895-379-10)

**WARNING**

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

REMOVAL

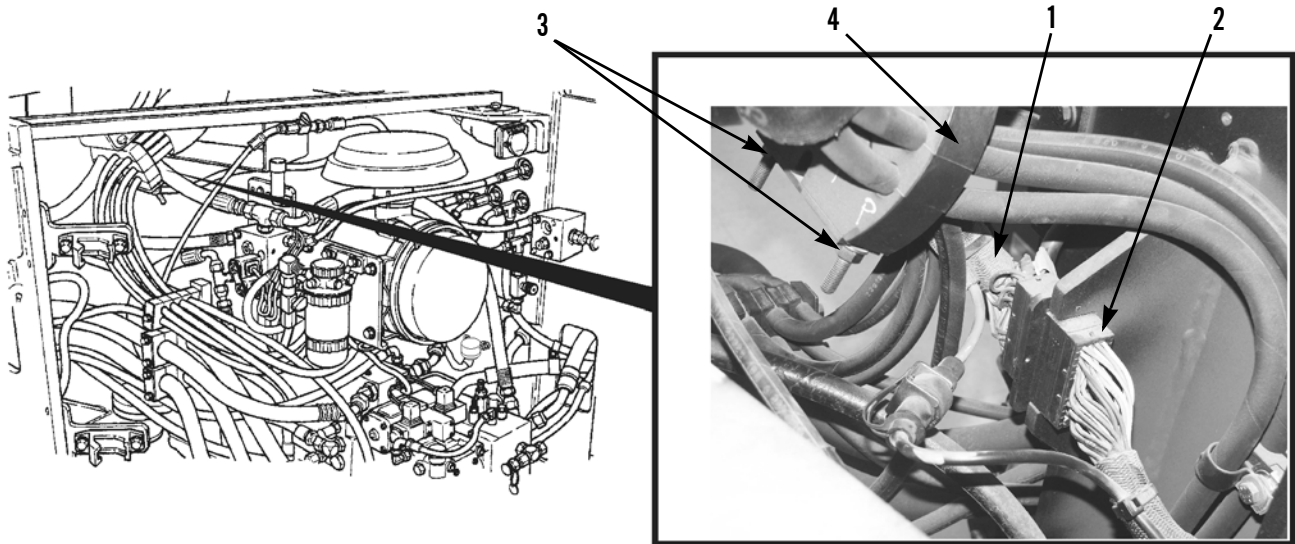
CAUTION

- Cap and plug all lines and fittings immediately to prevent any contaminants from entering the system.
- Tag all hydraulic lines and electrical wires as they are removed or disconnected.

NOTE

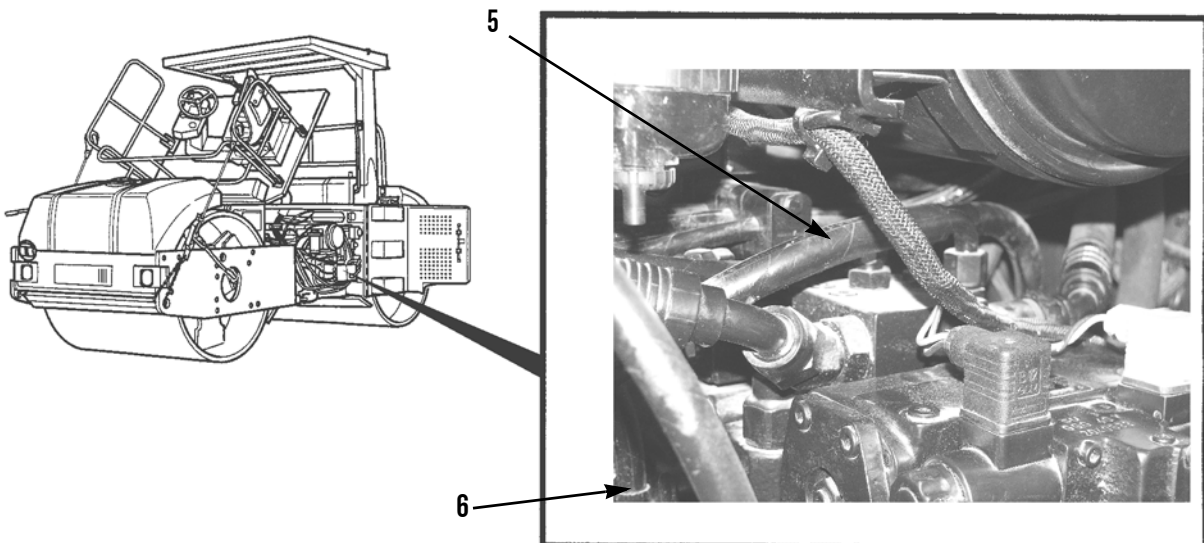
- Tag and mark all hydraulic lines as they are removed for installation purposes. Cap and plug all lines and fittings to prevent any contaminants from entering the system.

1. Release pressure in hydraulic system by slowly loosening the fill cap on the top of the hydraulic oil tank.
2. Disconnect wiring harnesses (1) and (2).
3. Remove two nuts (3) and clamp (4).



401-2199

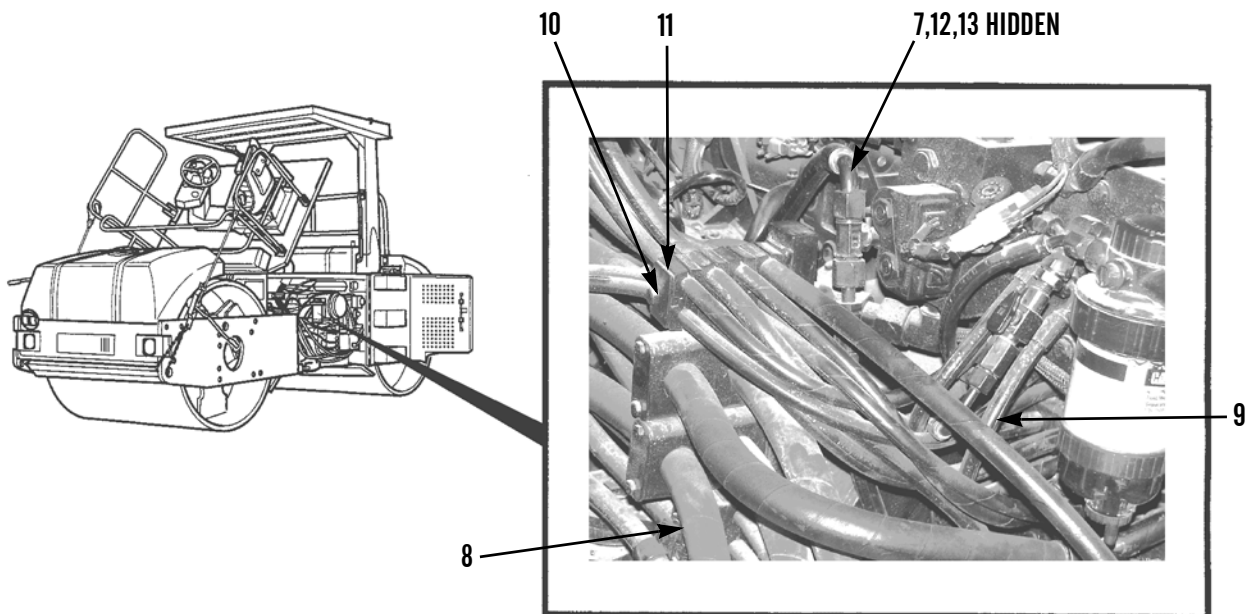
4. Disconnect hose assemblies (5) and (6).



401-2206

REMOVAL - CONTINUED

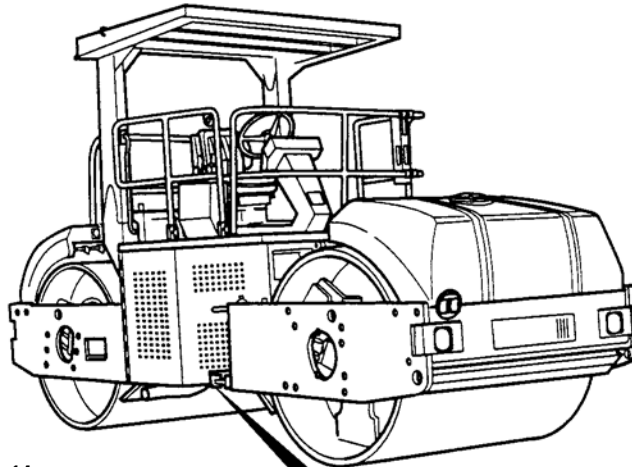
5. Disconnect hose assemblies (7), (8) and (9).
6. Remove bolt (10), hose assemblies (5), (6) and (7) from clamp (11).
7. Remove bolt (12) from clamp (13) on hose assembly (7).



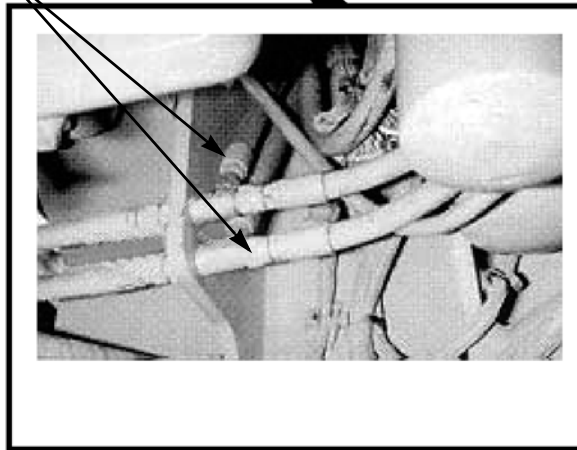
401-2200

REMOVAL - CONTINUED

8. Disconnect hose assemblies (14) underneath roller.



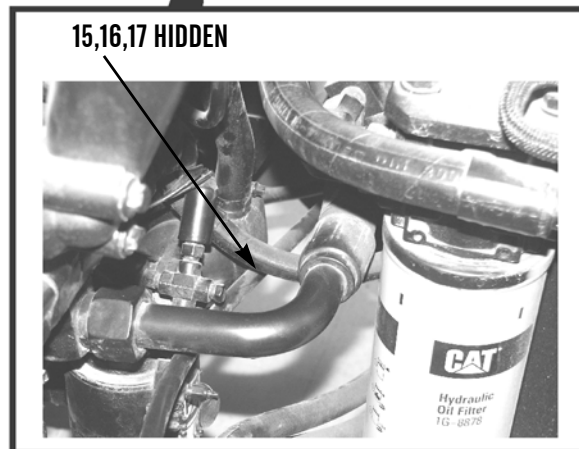
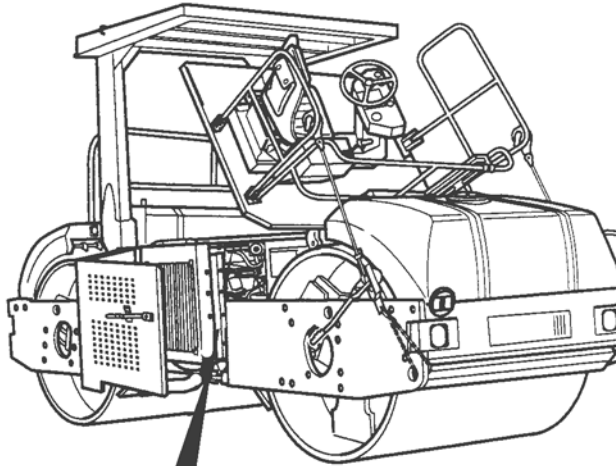
14



401-2201

REMOVAL - CONTINUED

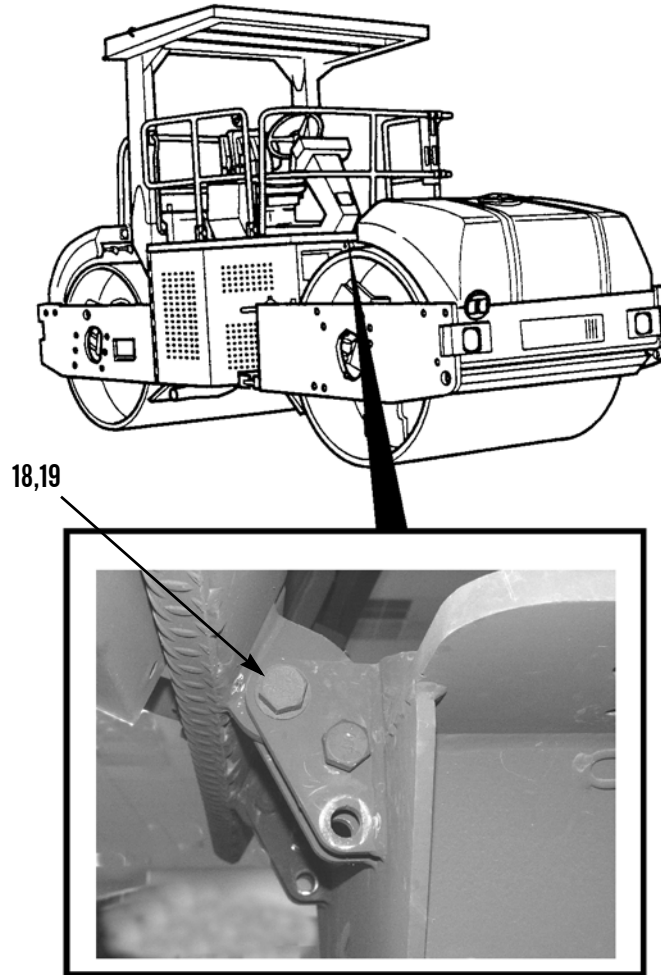
9. Disconnect hose assembly (15).
10. Remove bolt (16) from clamp (17) on hose assemblies (14) and (15) and the frame.



401-2202

REMOVAL - CONTINUED

11. Lower operator platform (WP 0128 00).
12. Remove bolts (18) and locknuts (19).



401-2203

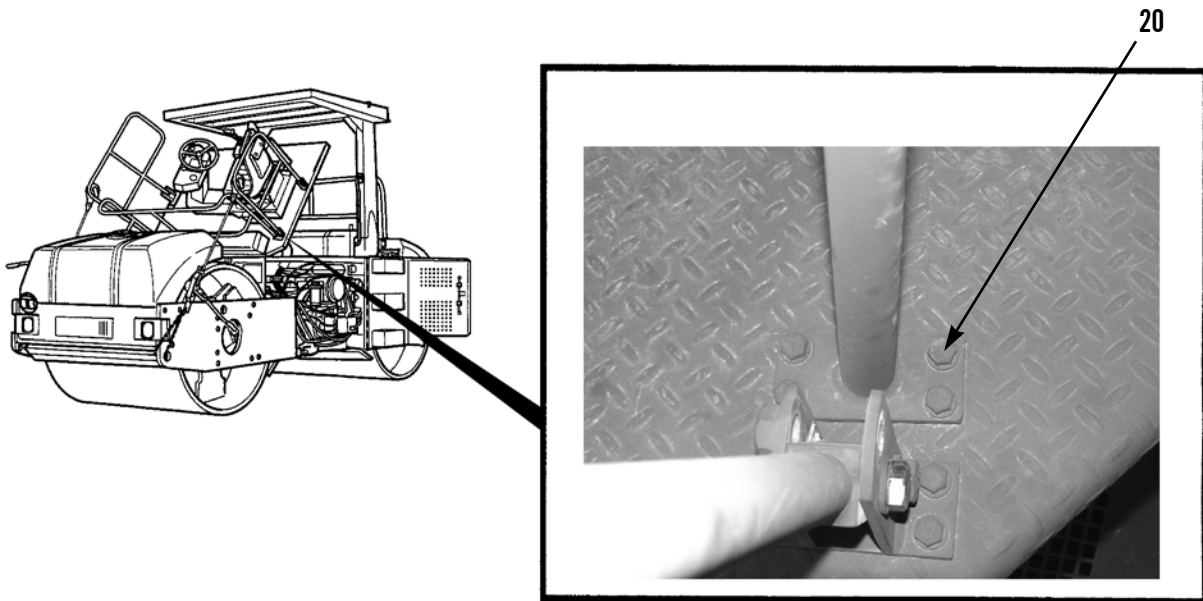
REMOVAL - CONTINUED

13. Remove bolt (20) from each side of the front rail assembly.

NOTE

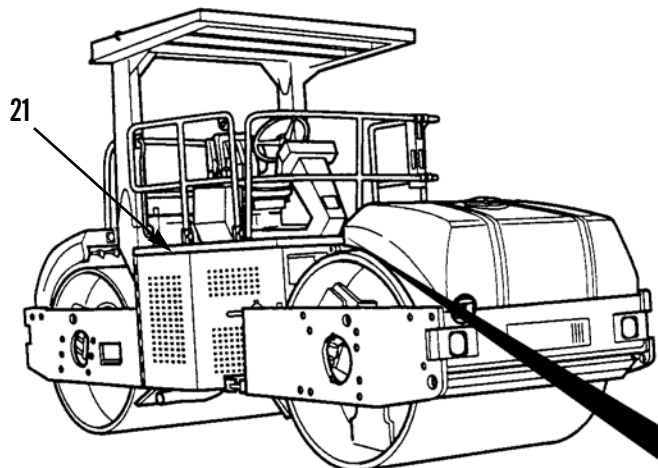
The weight of the operator platform is 1050 lb (476 kg).

14. Install lifting bracket to each corner of the operator platform (21).



401-2204

15. Install lifting device and remove operator platform (21) from roller.
16. Position operator platform (21) securely on wooden blocks.

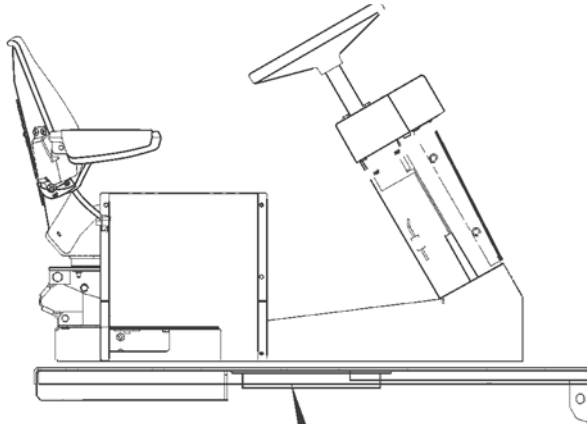


401-100

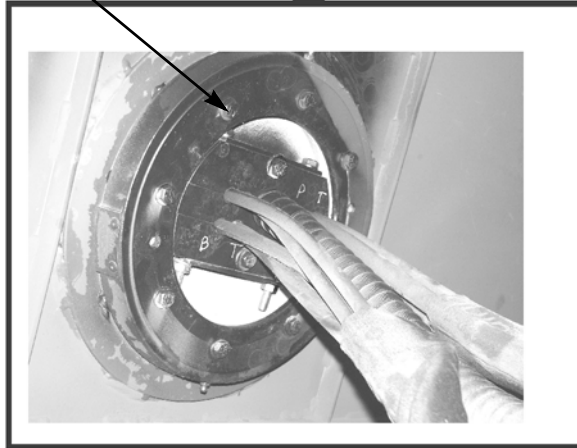
REMOVAL - CONTINUED**NOTE**

The weight of the console and seat assembly is 1250 lb (567 kg).

17. Remove eight bolts (22).



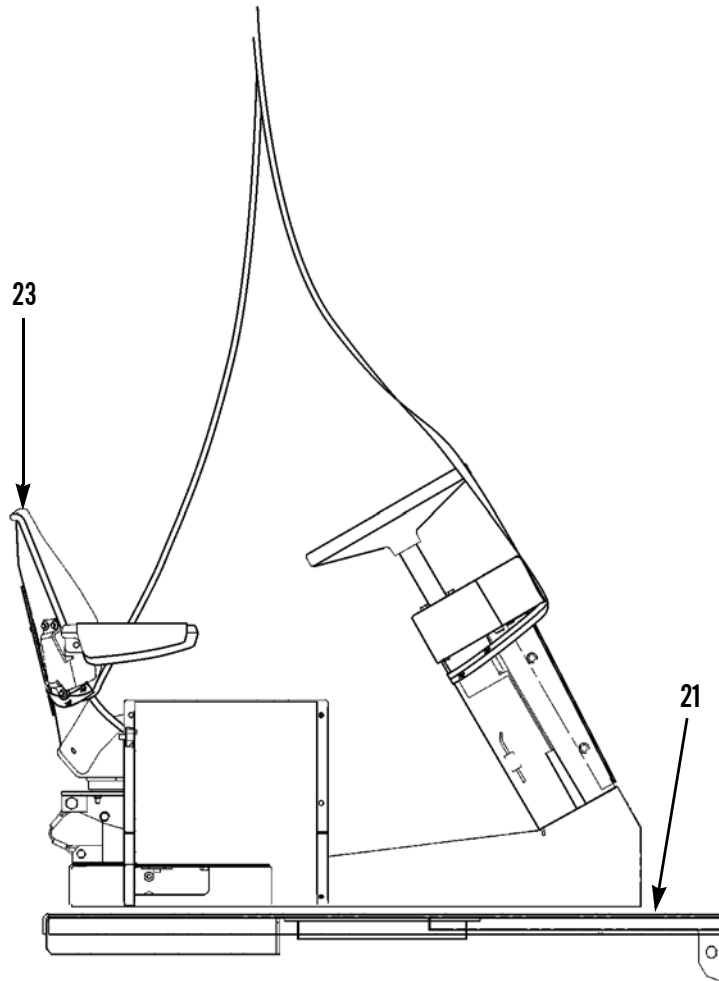
22



401-2205

REMOVAL - CONTINUED

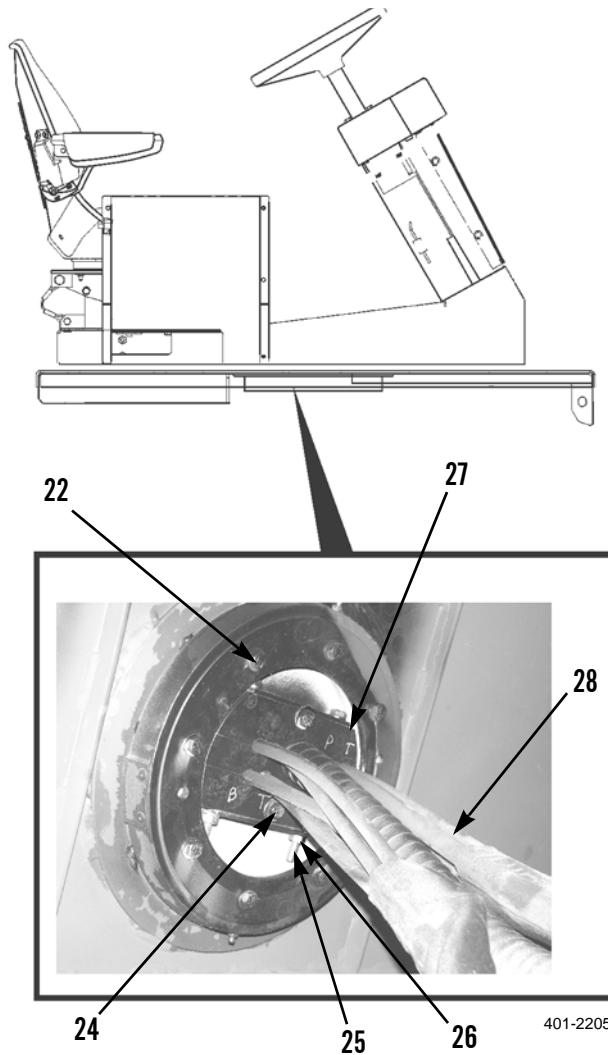
18. Attach a lifting device and remove console and seat assembly (23) from operator platform (21).



401-2207

REMOVAL - CONTINUED

19. Remove two bolts (24).
20. Remove two bolts (25) nuts (26), and clamp (27) from hose assemblies (28).
21. Clean and inspect bearing assembly (29) on operator platform (21). If bearing is warped or damaged, replace operator platform (21).

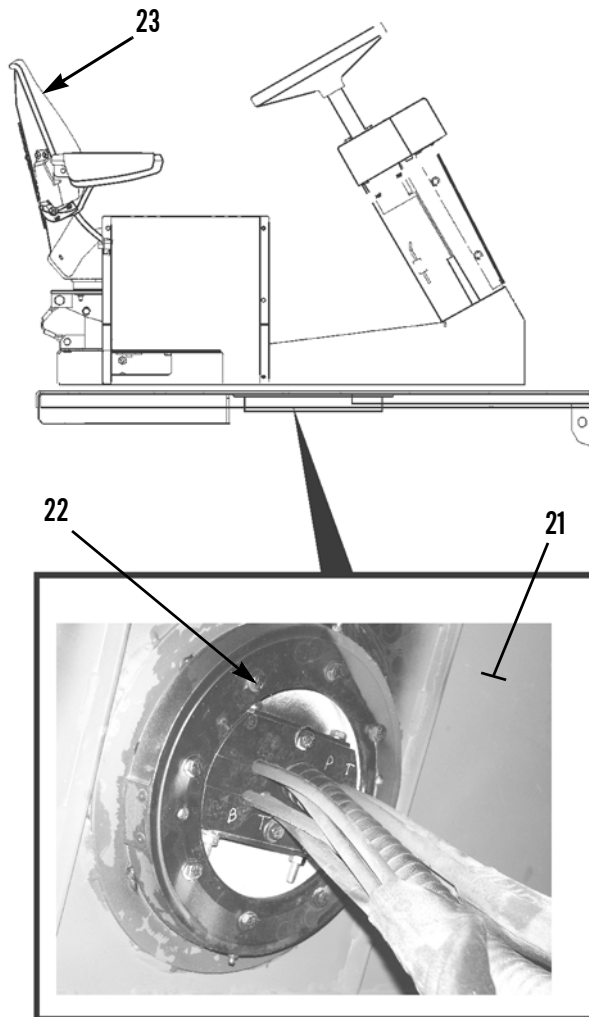
**INSTALLATION**

1. Install two bolts (25), nuts (26) and clamps (27) to hose assemblies (28).
2. Install two bolts (24).

INSTALLATION - CONTINUED**NOTE**

The weight of the console and seat assembly is 1250 lb (567 kg).

3. Install lifting device and install console and seat assembly (23) to operator platform (21).
4. Install eight bolts (22).

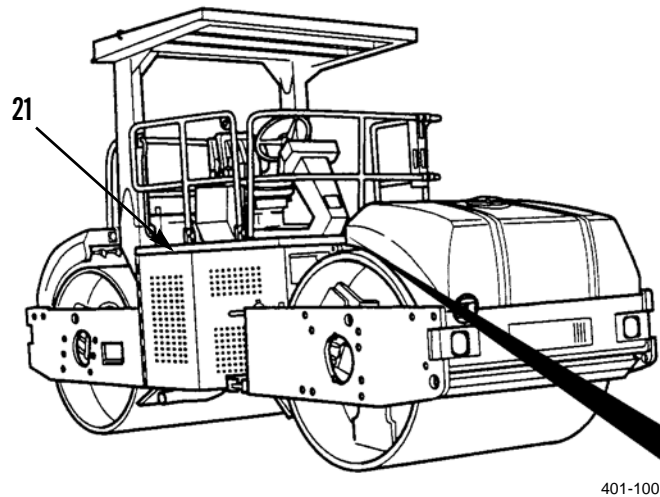


401-2205

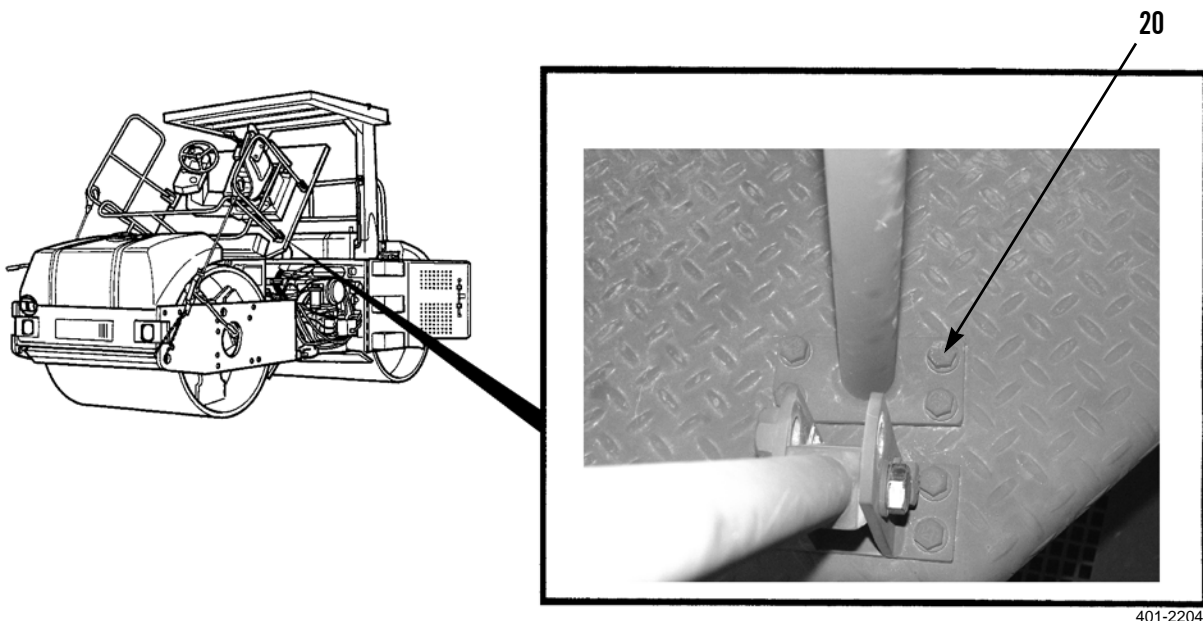
INSTALLATION - CONTINUED**NOTE**

The weight of the operator platform is 1050 lb (476 kg).

5. Attach lifting device and install operator platform (21) to roller.

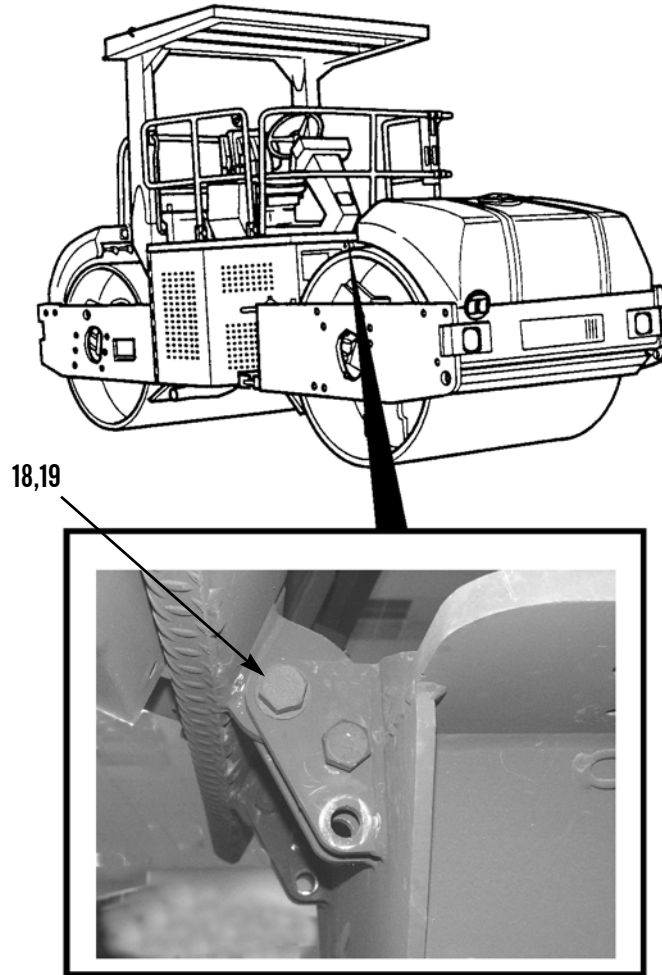


6. Remove lifting bracket from each corner of operator platform (21).
7. Install bolt (20) to each side of the front rail assembly.



INSTALLATION - CONTINUED

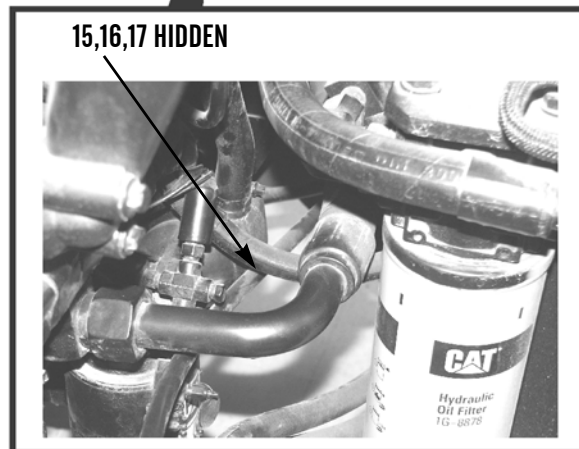
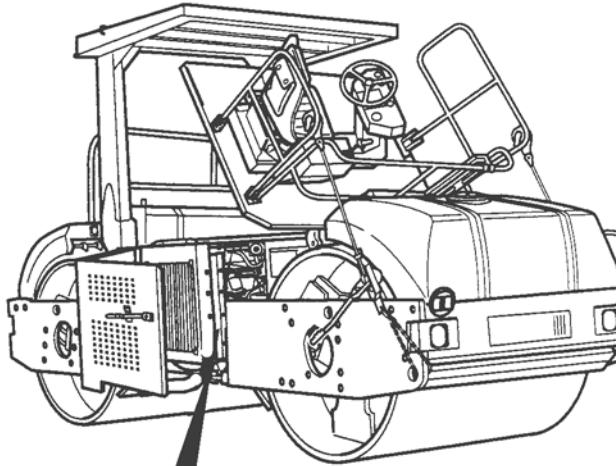
8. Install bolts (18) and lock nuts (19).
9. Raise operator platform (WP 0128 00).



401-2203

INSTALLATION - CONTINUED

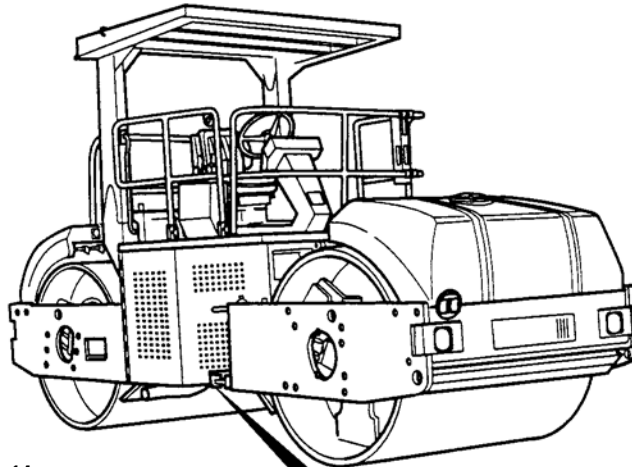
10. Install bolt (16) to clamp (17) on hose assemblies (14) and (15) and the frame.
11. Connect hose assembly (15).



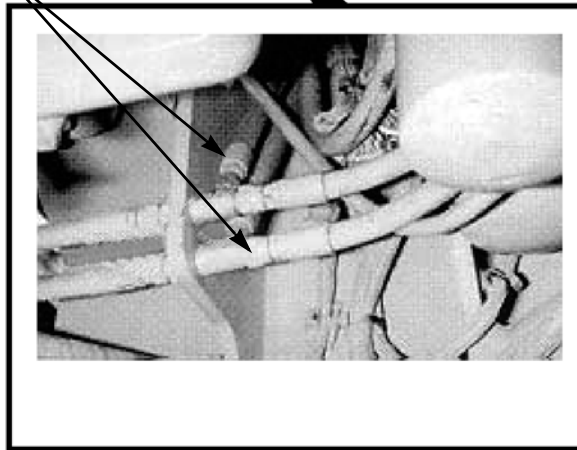
401-2202

INSTALLATION - CONTINUED

12. Connect hose assemblies (14), underneath roller.



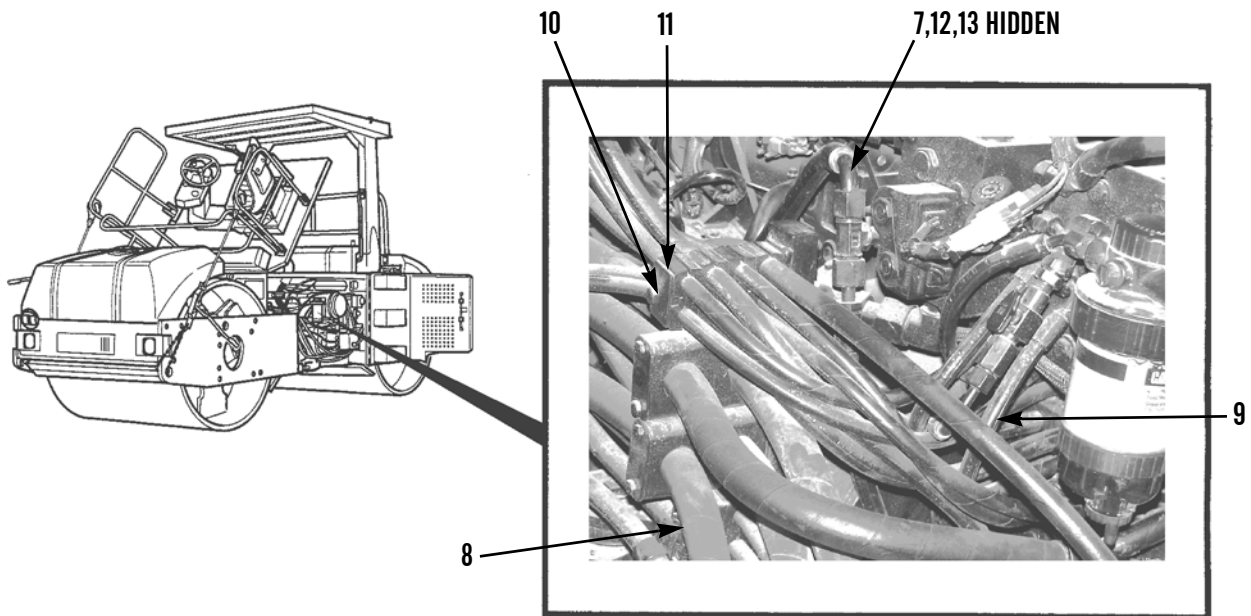
14



401-2201

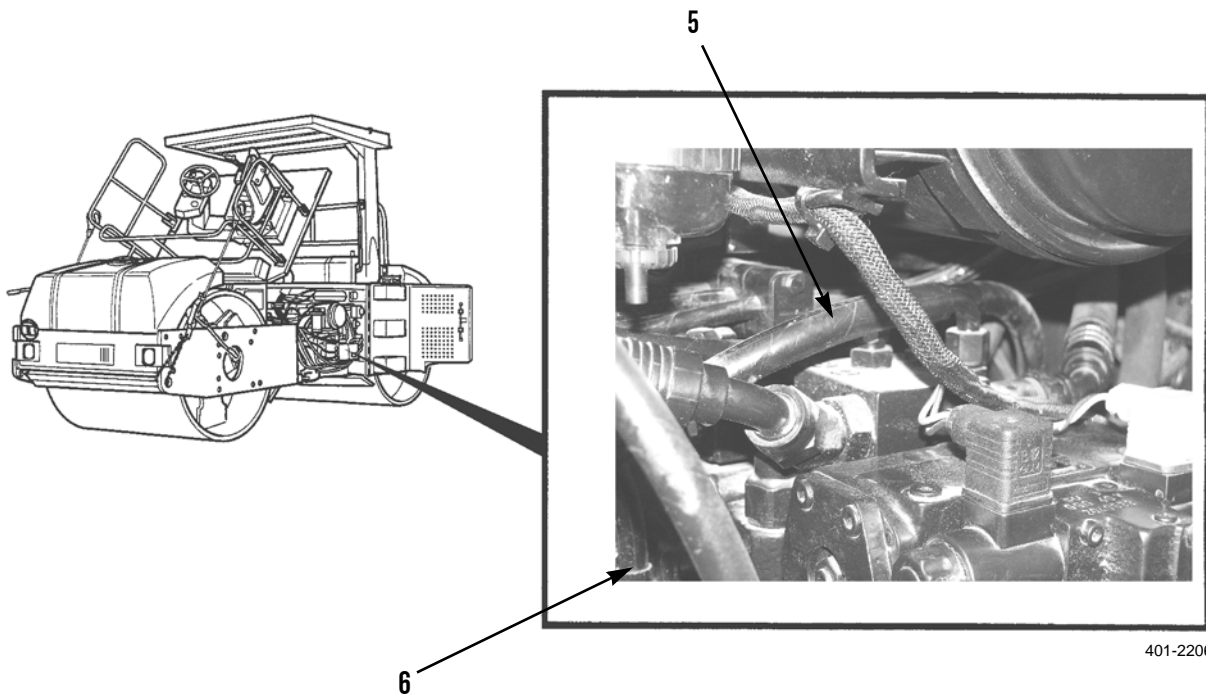
INSTALLATION - CONTINUED

13. Install bolt (12) to clamp (13) on hose assembly (7).
14. Install bolt (10), hose assemblies (5), (6) and (7) to clamp (11).
15. Connect hose assemblies (7), (8) and (9).



401-2200

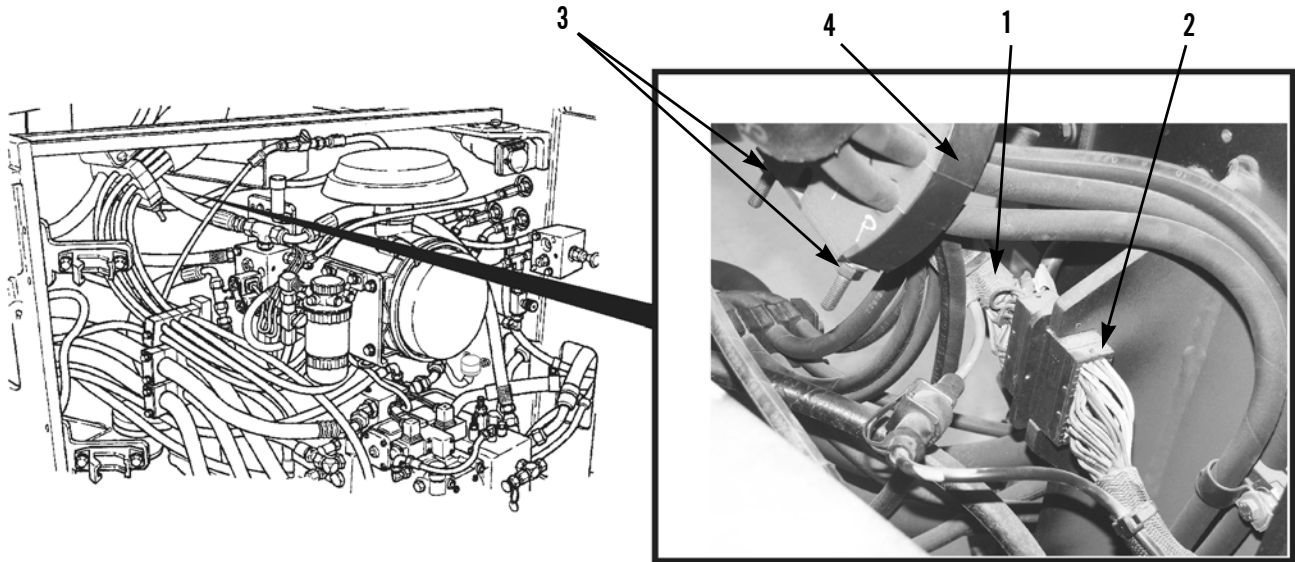
16. Connect hose assemblies (5) and (6).



401-2206

INSTALLATION - CONTINUED

17. Connect wiring harnesses (1) and (2).
18. Install two nuts (3) and clamp (4).



401-2199

19. Lower operator platform assembly (WP 0128 00).
20. Tighten fill cap on top of hydraulic oil tank.
21. Install rollover protection structure (ROPS) (WP 0126 00).
22. Close left- and right-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC VIBRATORY TESTS

0203 00

THIS WORK PACKAGE COVERS

Vibratory Frequency Test, Inter-circuit Relief Valve Test

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Parking brake engaged (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)



WARNING



At operating temperature, hydraulic oil is hot. Escaping hydraulic fluid under pressure can penetrate the skin, causing injury or death.

CAUTION

- Hydraulic oil must be certified to have anti-rust, very high viscosity index and anti-oxidation additive properties for heavy duty use.
- Oil temperature must be at 140° +/- 5°F (60° +/- 21°C).

NOTE

Vibratory frequency test must be conducted on uncompacted dirt or on tires.

HYDRAULIC VIBRATORY TESTS**0203 00****VIBRATORY FREQUENCY TEST**

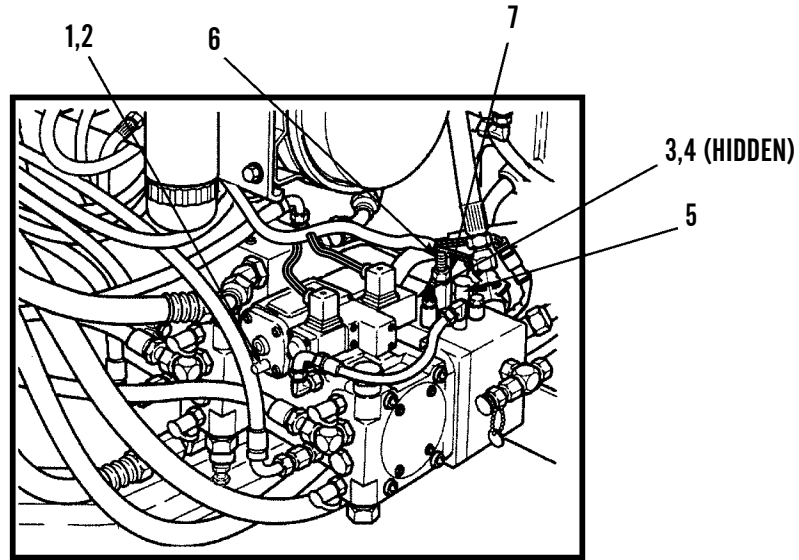
1. Place propel control lever in NEUTRAL (TM 5-3895-379-10).
2. Start and run engine at HIGH idle, 2325 +/- 25 rpm until oil temperature is at least 100°F (38°C) (TM 5-3895-379-10).
3. Apply parking brake and place propel control lever in forward position (TM 5-3895-379-10).
4. Place vibratory mode switch in dual drum position (TM 5-3895-379-10).
5. Press button on top of propel control lever to start vibratory system (TM 5-3895-379-10).
6. Record the reading from the Vibrations Per Minute (VPM) tachometer on steering console.
7. Press button on top of propel control lever to stop vibratory system (TM 5-3895-379-10).
8. Dual amplitude frequency must be 2520 +/- 50 VPM in high.
9. If frequency is not in range, vibratory pump must be adjusted. Adjust as follows:
10. Loosen locknut (1) on the adjustment screw (2).
11. To increase vibrations per minute, turn adjustment screw (2) counterclockwise. To decrease, turn adjustment screw (2) clockwise.
12. Place propel control lever in REVERSE (TM 5-3895-379-10).
13. Place vibratory mode switch in low amplitude (TM 5-3895-379-10).
14. Dual amplitude frequency must be 2570 +/- 50 VPM in low.
15. If frequency is not in range, vibratory pump must be adjusted. Adjust as follows:
16. Loosen locknut (3) on the adjustment screw (4).
17. To increase vibrations per minute, turn adjustment screw (4) counterclockwise. To decrease, turn adjustment screw (4) clockwise.
18. Turn engine off (TM 5-3895-379-10).
19. Remove chocks (TM 5-3895-379-10).

INTER-CIRCUIT RELIEF VALVE TEST**WARNING**

Use caution when using the propel control lever. Roller may move when switching from NEUTRAL to REVERSE.

1. Place propel control lever in NETURAL (TM 5-3895-379-10).
2. Place vibratory mode switch in auto (TM 5-3895-379-10).
3. Connect pressure gauge to tap (5).
4. Start and run engine at HIGH idle (TM 5-3895-379-10).
5. Place vibratory mode switch in dual drum vibration position (TM 5-3895-379-10).
6. Place propel control lever in REVERSE (TM 5-3895-379-10). Pressure reading should be 3350 +/- 100 psi (23100 kPa +/- 689 kPa).
7. If pressure is not in range, inter-circuit relief valve (6) must be adjusted. To increase pressure, turn adjustment screw (7) counterclockwise. To decrease, turn adjustment screw (7) clockwise.
8. Recheck pressure at tap (5).

INTER-CIRCUIT RELIEF VALVE TEST - CONTINUED



401-2081

9. Turn engine off (TM 5-3895-379-10).
10. Remove chocks (TM 5-3895-379-10).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Disassembly, Cleaning and Inspection, Assembly

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)
 Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cleaning compound, solvent (Item 9, WP 0219 00)
 Oil, lubricating (Item 29, WP 0219 00)
 Rag, wiping (Item 31, WP 0224 00)
 Ring, back-up (5)

References

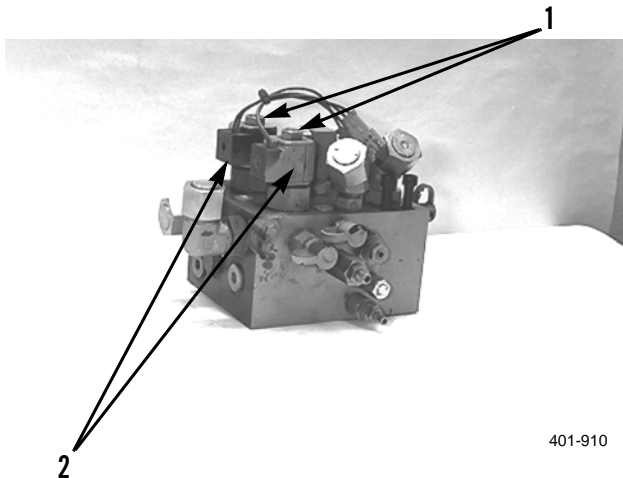
WP 0208 00, Vibratory Control and Solenoid Assembly Replacement
 TM 5-3895-379-10
 TM 5-3895-379-23P, Figure 123

Equipment Condition

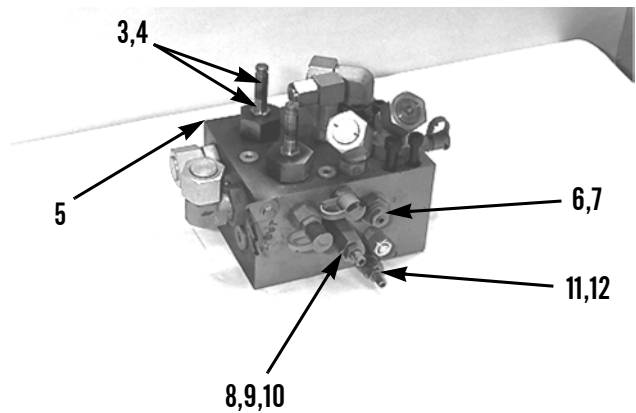
Vibratory cooling/control valve removed (WP 0205 00)

DISASSEMBLY

1. Remove two nuts (1) and coil assemblies (2) from valve solenoids (3).
2. Remove two valve solenoids (3) and O-rings (4) from valve block (5).
3. Remove charge relief valve (6) and O-ring (7) from valve block (5). Discard O-ring.
4. Remove spike relief valve (8), two back-up rings (9) and O-rings (10) from valve block (5). Discard back-up rings and O-rings.
5. Remove Pressure Override Relief (POR) valve (11) and O-ring (12) from valve block (5). Discard O-ring.



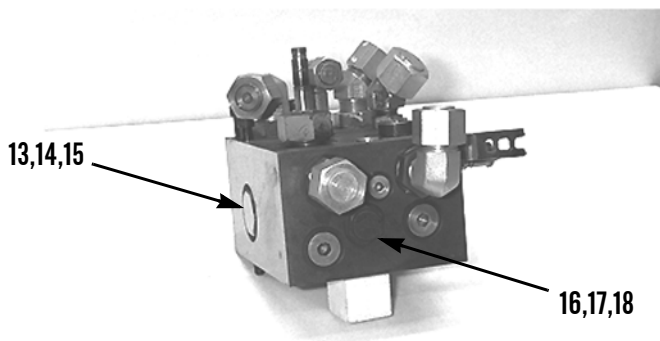
401-910



401-911

DISASSEMBLY - CONTINUED

6. Remove shuttle valve (13), two back-up rings (14) and three O-rings (15) from valve block (5). Discard back-up rings and O-rings.
7. Remove check valve (16), back-up ring (17) and two O-ring (18) from valve block (5). Discard back-up ring and O-rings.



401-912

CLEANING AND INSPECTION

1. Before the vibratory cooling/control valve is assembled, make sure all valve parts are clean, dry and free of all dirt and foreign material.
2. Inspect all parts for damage or wear and replace worn or damaged parts if found.
3. Lubricate all back-up rings and O-rings with clean lubricating oil prior to assembly.

ASSEMBLY

1. Install two new O-rings (18), one new back-up ring (17) and check valve (16) in valve block (5). Tighten relief valve to 15 lb-ft (20 Nm).
2. Install three new O-rings (15), two new back-up rings (14) and shuttle valve (13) to valve block (5). Tighten shuttle valve to 65 lb-ft (88 Nm).
3. Install new O-ring (12) and POR valve (11) into valve block (5). Tighten POR valve to 25 lb-ft (34 Nm).
4. Install two new O-rings (10), back-up rings (9) and spike relief valve (8) into valve block (5). Tighten spike relief valve to 35 lb-ft (47 Nm).
5. Install new O-ring (7) and charge relief valve (6) into valve block (5). Tighten charge relief valve to 45 lb-ft (61 Nm).
6. Install two new O-rings (4) and valve solenoid (3) into valve block (5).
7. Install two coil assemblies (2) and two nuts (1) into valve solenoids (3). Tighten charge relief valve to 60 lb-ft (81 Nm).

ASSEMBLY - CONTINUED

8. Install vibratory cooling control valve (WP 0205 00).
9. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATORY COOLING/CONTROL VALVE REPLACEMENT

0205 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Tools and Special Tools

Tool kit, general mechanic's (Item 36, WP 0220 00)

Materials/Parts

Compound, cleaning (Item 9, WP 0219 00)

Oil, lubricating (Item 25, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

O-ring (4)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-10

TM 5-3895-379-23P, Figure 122 and 123

Personnel Required

Two

Equipment Condition

Hydraulic system drained (WP 0037 00)

REMOVAL



WARNING

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

NOTE

- Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
- Mark and tag two electrical connectors for installation purposes.

1. Disconnect two electrical connectors (1) from vibratory cooling/control valve (2).
2. Remove cable tie (3) that fastens electrical harness to bracket (4).

NOTE

Cap and plug all lines and fittings to prevent any contaminants from entering the system.

3. Disconnect seven hose assemblies (5) from vibratory cooling/control valve (2).
4. Remove six bolts (6) securing vibratory cooling/control valve (2) to vibratory pump (7).



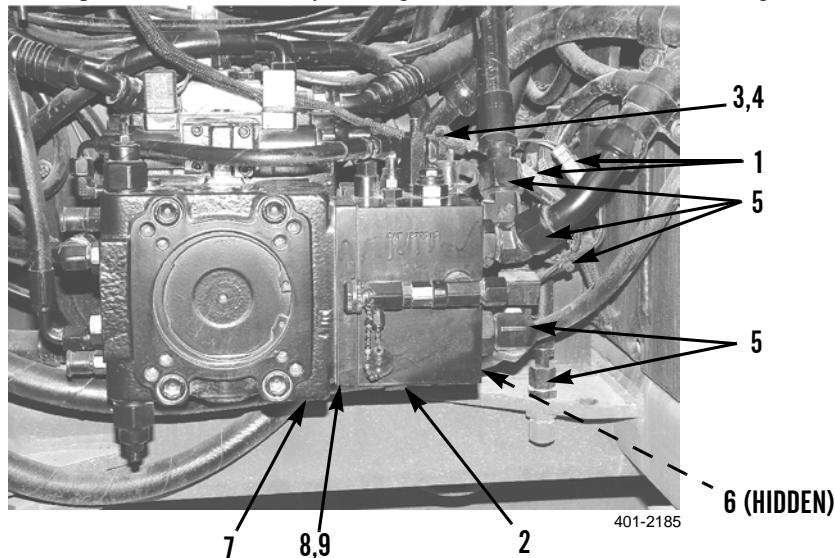
WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury.

NOTE

Weight of vibration cooling/control valve is 62 lb (28 kg.)

5. With assistance, remove vibratory cooling/control valve and spacer (8).
6. Remove four O-rings (9) from spacer (8) and vibratory cooling/control valve (2). Discard O-rings.



INSTALLATION**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Failure to follow this warning may cause injury or death.

NOTE

- The weight of the vibration cooling/control valve is 62 lb (28 kg.).
 - Prior to installation, lubricate O-rings with a light coat of lubricating oil.
1. Install four new O-rings (9) on spacer (8) and vibratory cooling/control valve (2).
 2. With assistance, position vibratory cooling/control valve and spacer (8) to vibratory pump (7) and install six bolts (6).

NOTE

Remove caps and plugs before connecting hose assemblies.

3. Connect seven hose assemblies (5) to vibratory cooling/control valve (2).
4. Position electrical harness to bracket (4) and fasten cable ties (3) to secure electrical harness.
5. Connect two electrical connectors (1) to vibratory cooling/control valve (2).
6. Fill hydraulic oil tank with oil to correct level (WP 0008 00 and WP 0009 00).
7. Operate roller and test for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

VIBRATORY MOTOR REPLACEMENT

0206 00**THIS WORK PACKAGE COVERS**Removal, Inspection, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cap set, protective (Item 8, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Strap, tiedown (Item 36, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Personnel Required

Two

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 121

Equipment Condition

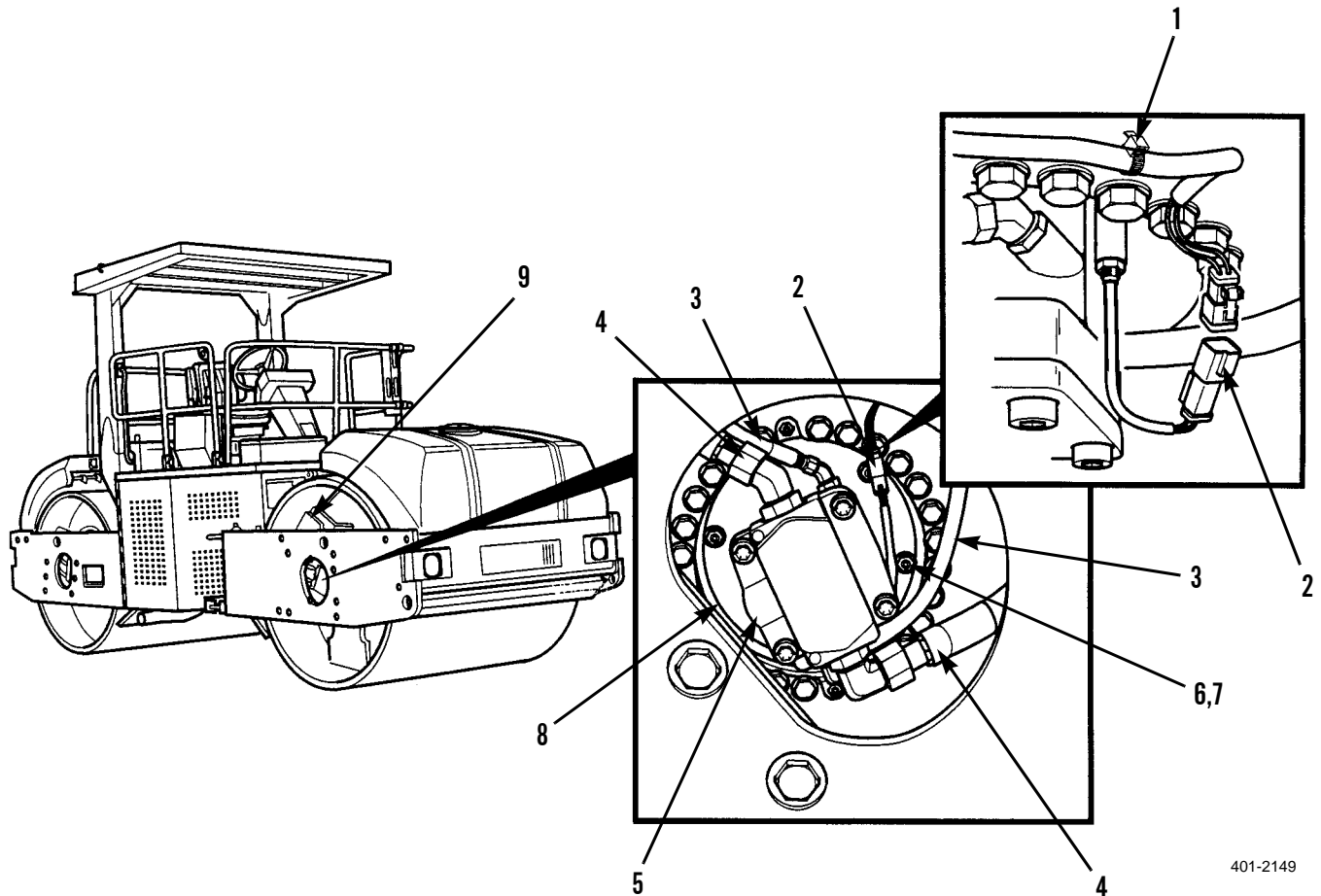
Engine off (TM 5-3895-379-10)

Hydraulic tank drained (WP 0037 00)

Left-side door assembly open (TM 5-3895-379-10)

REMOVAL

1. Remove cable tie (1) and disconnect electrical connector (2).



401-2149

CAUTION

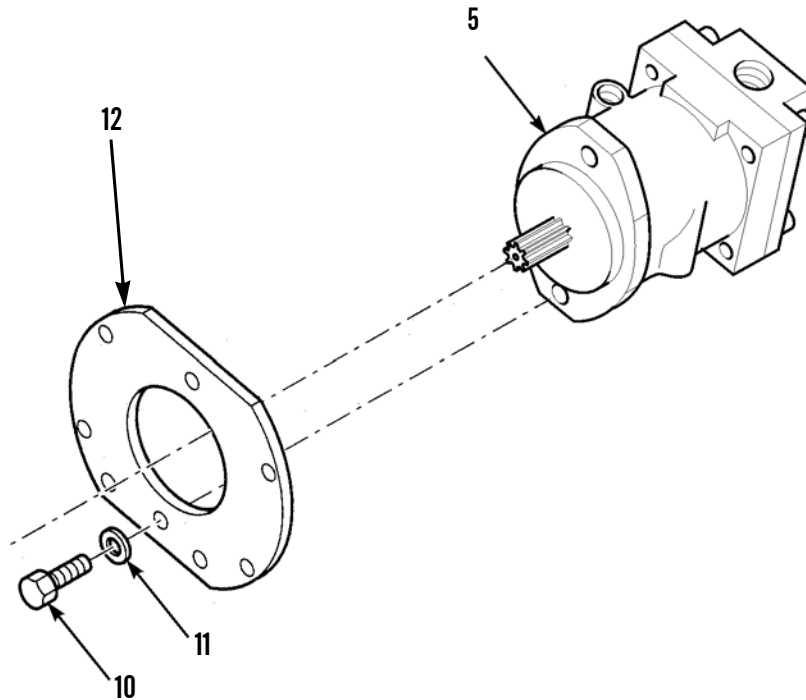
Cap and plug all hoses, fittings and openings immediately after removal. Contaminants entering the system may cause premature failure.

NOTE

- Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
 - Tag and mark all hydraulic lines and hoses to ensure correct installation.
2. Disconnect two hose assemblies (3) and two hose assemblies (4) from vibratory motor (5).
 3. Remove four nuts (6) and washers (7) from plate (8).

REMOVAL - CONTINUED

4. Pull vibratory motor (5) from drum (9).
5. Remove four bolts (10) and washers (11) from plate (12), that fasten vibratory motor (5) to driveshaft.
6. With assistance, remove vibratory motor (5) from roller.



401-2045

INSPECTION

1. Inspect all parts and hoses for damage and wear. Replace worn or damaged parts.
2. Ensure vibration motor and accessories are clean, dry and free of all dirt and foreign material.

INSTALLATION

1. With assistance, position vibratory motor (5) to drum (9) and install to driveshaft.
2. Install four washers (11) and bolts (10) through plate (12) to fasten vibration motor (5).
3. Install four washers (7) and nuts (6) on plate (8).

NOTE

Remove all caps and plugs from hoses and openings prior to assembly.

4. Connect two hose assemblies (3) and two hose assemblies (4) to vibratory motor (5).
5. Connect electrical connector (2) and install new cable tie (1).
6. Fill hydraulic tank (WP 0008 00 and WP 0009 00).
7. Close left-side door assembly (TM 5-3895-379-10).
8. Battery switch to ON position (TM 5-3895-379-10).
9. Operate roller and check for proper operation and leaks (TM 5-3895-379-10).

END OF WORK PACKAGE

HYDRAULIC HOSES, LINES AND FITTINGS REPLACEMENT

0207 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Materials/Parts

Cap, set, protective (Item 8, WP 0219 00)

Oil, lubricating (Item 21, WP 0219 00)

Rag, wiping (Item 31, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

Materials/Parts Continued

O-ring (4)

References

WP 0008 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS) Introduction

WP 0009 00, Field Maintenance Preventive Maintenance Checks and Services (PMCS)

TM 5-3895-379-23P, Figure 125

Equipment Condition

Engine off (TM 5-3895-379-10)

Drums chocked (TM 5-3895-379-10)

Hydraulic system drained (WP 0037 00)

Operator platform assembly raised (WP 0128 00)

**WARNING**

Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

REMOVAL**CAUTION**

Wipe area clean around all hydraulic connections to be opened during removal. Cap oil lines and plug openings after removing lines. Contamination of hydraulic system may cause premature failure.

NOTE

- Use the same procedure as shown for all hydraulic lines, hoses and fittings.
 - Tag and mark all hydraulic lines to ensure correct installation.
 - Use container to catch any hydraulic oil that may drain from system. Dispose of oil IAW local policy and ordinances. Ensure all spills are cleaned up.
1. For lines held in position with clamps, remove nut (1), washer (2), bolt (3) washer (4) and clamp (5) from lines.
 2. For hydraulic lines with elbow fittings, disconnect line (6) from fitting (7). Remove two O-rings (8 and 9) from fitting and discard O-rings. Remove fitting.
 3. For hydraulic lines with elbow bosses, disconnect line (10) from elbow boss fitting (11).
 4. Remove elbow boss fitting (11) from valve check (12).
 5. Remove check valve (12), and two O-rings (13 and 14). Discard O-rings.

INSTALLATION**CAUTION**

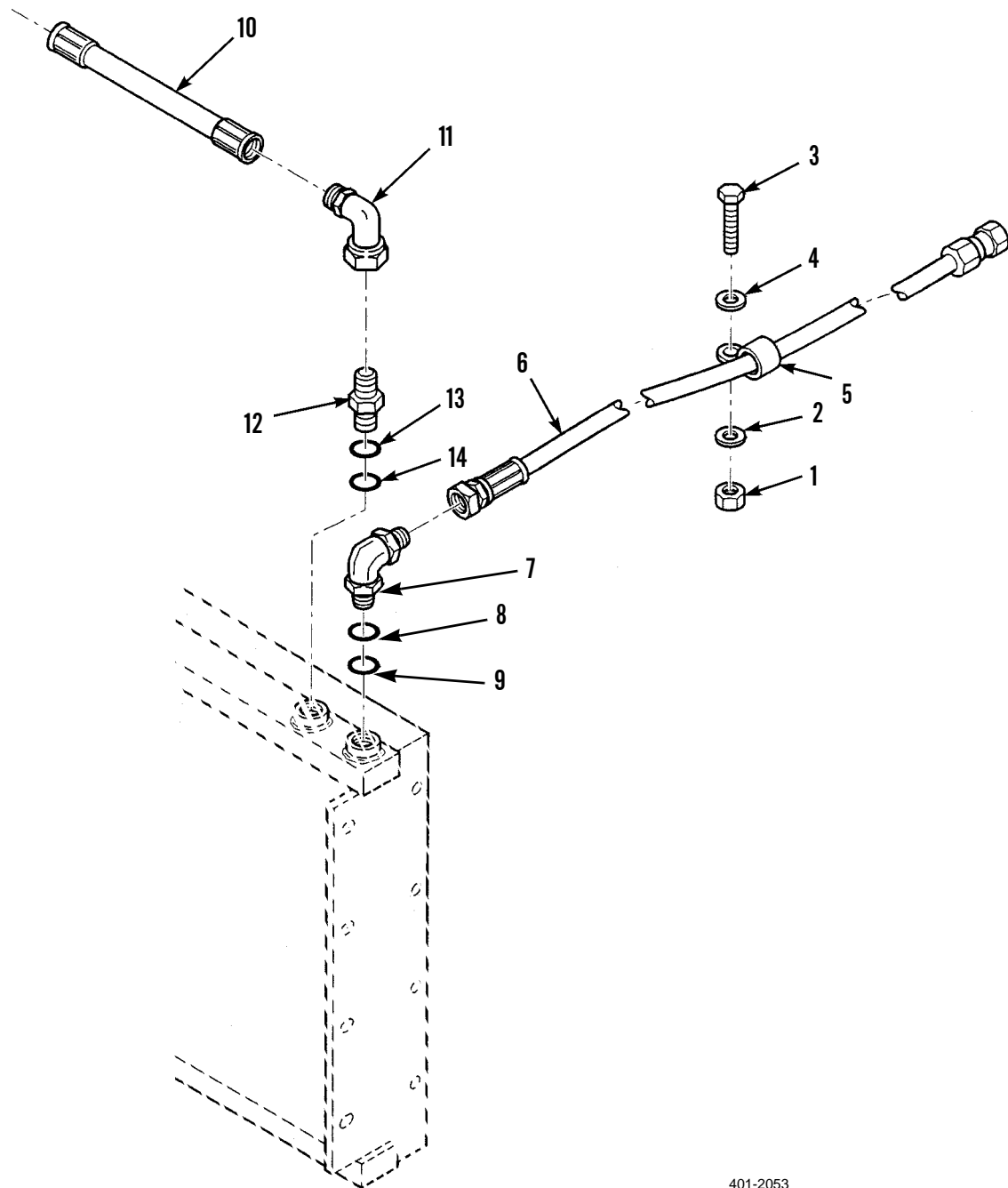
- Wipe all line ends, line fittings and mounting surfaces clean and dry.
- Utilize line wrenches for installation to avoid damage to fittings and connectors.

NOTE

Apply a light film of clean lubricating oil to all new O-rings prior to installation.

1. Install two new O-rings (13) and (14) on check valve (12). Install check valve.
2. Install elbow boss fitting (11) on check valve (12).
3. For hydraulic lines with elbow bosses, connect line (10) to elbow boss fitting (11).
4. For hydraulic lines with elbow fittings, install two new O-rings (8 and 9) on elbow fitting (7). Install elbow fitting.
5. Install end of line (6) on elbow fitting (7).
6. For lines held in position with clamp, install clamp (5), washer (4), bolt (3), washer (2) and nut (1) on line or lines.

INSTALLATION - CONTINUED



401-2053

7. Refill hydraulic tank (WP 0037 00).
8. Start engine and cycle cylinders. Check that oil is visible in sight gauge on hydraulic tank. Add oil if necessary (WP 0009 00).
9. Operate roller and check for proper operation and leaks (TM 5-3895-379-23).

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Equipment Condition

Engine off (TM 5-3895-379-10)

Operator platform assembly raised (WP 0128 00)

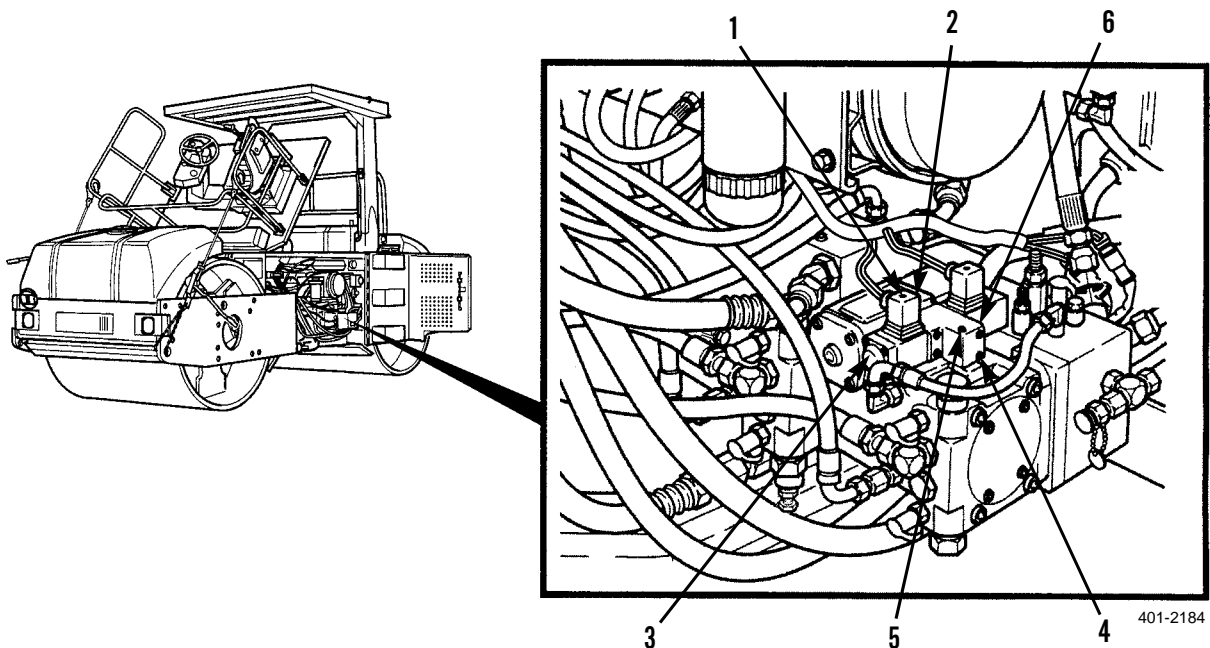
Left-side door assembly open (TM 5-3895-379-10)

References

TM 5-3895-379-23P, Figure 123

REMOVAL

1. Remove two screws (1) that fasten two electrical connectors (2) to two solenoids (3).
2. Remove two electrical connectors (2) from two solenoids (3).
3. Remove four bolts (4) and one bolt (5) from vibratory control valve body (6).
4. Remove vibratory control valve body (6) from roller.
5. Remove two solenoids (3) from vibratory control valve body (6).

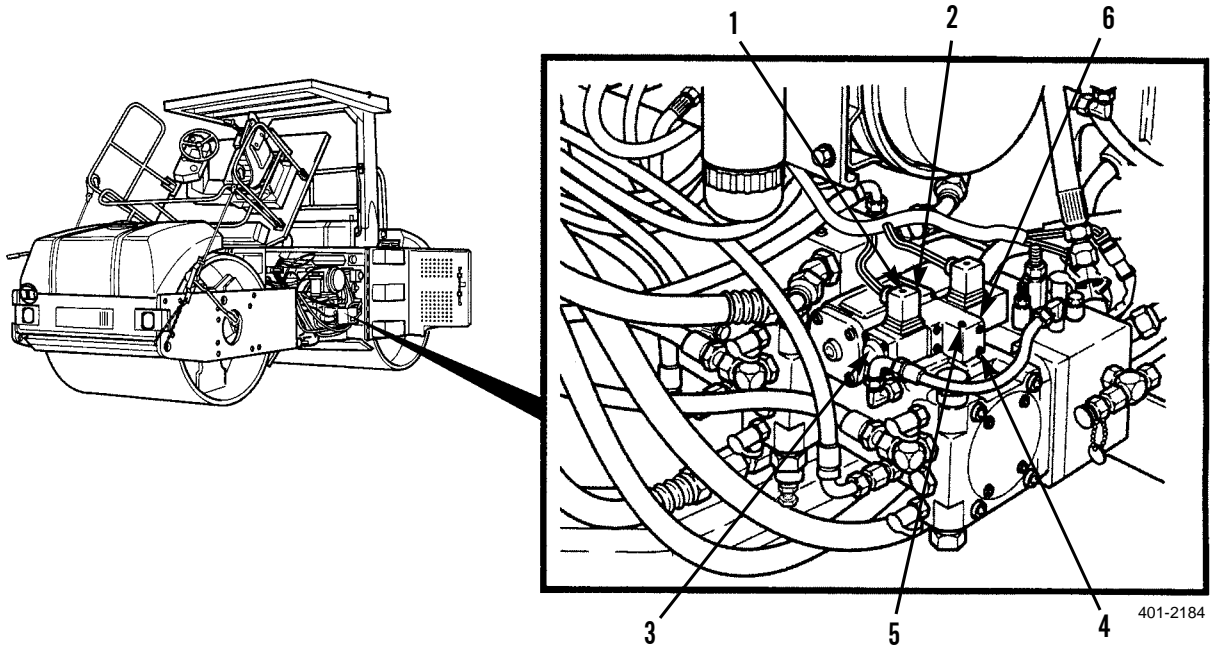


VIBRATORY CONTROL SOLENOID REPLACEMENT - CONTINUED

0208 00

INSTALLATION

1. Install two solenoids (3) to vibratory control valve body (5).
2. Install vibratory control valve body (6) to roller.
3. Install four bolts (4) and one bolt (5) to vibratory control valve body (6).
4. Install two electrical connectors (2) to two solenoids (3).
5. Install two screws (1) that fasten two electrical connectors (2) to two solenoids (3).



6. Lower operator platform assembly (WP 0128 00).
7. Close right-side door assembly (TM 5-3895-379-10).

END OF WORK PACKAGE

DRUM ASSEMBLY REPAIR

0209 00**THIS WORK PACKAGE COVERS**

Drum Disassembly, Eccentric Disassembly, Eccentric Assembly, Drum Assembly

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)
Shop equipment, general purpose (Item 30, WP 0220 00)
Bolt (M12 x 1.75 x 85 mm)
Bolt (M12 x 1.75 x 40 mm)
Bolt (M16 x 2.0 x 85 mm)
Lifting device, minimum capacity 4500 lbs (2041 kg)
Link bracket (3) (Item 20, WP 0220 00)

Materials/Parts

Compound, sealing (Item 12, WP 0219 00)
Tag, marker (Item 37, WP 0219 00)

Materials/Parts - Continued

Locknut (48)
O-ring (3)

References

WP 0147 00, Vibratory Bearing Reservoir Service
TM 5-3895-379-23P, Figures 97, 131, 132 and 133

Personnel Required

Two

Equipment Condition

Drums chocked (TM 5-3895-379-10)
Drum assembly removed (WP 0210 00)
Propel motor removed (WP 0193 00)
Vibratory motor removed (WP 0206 00)

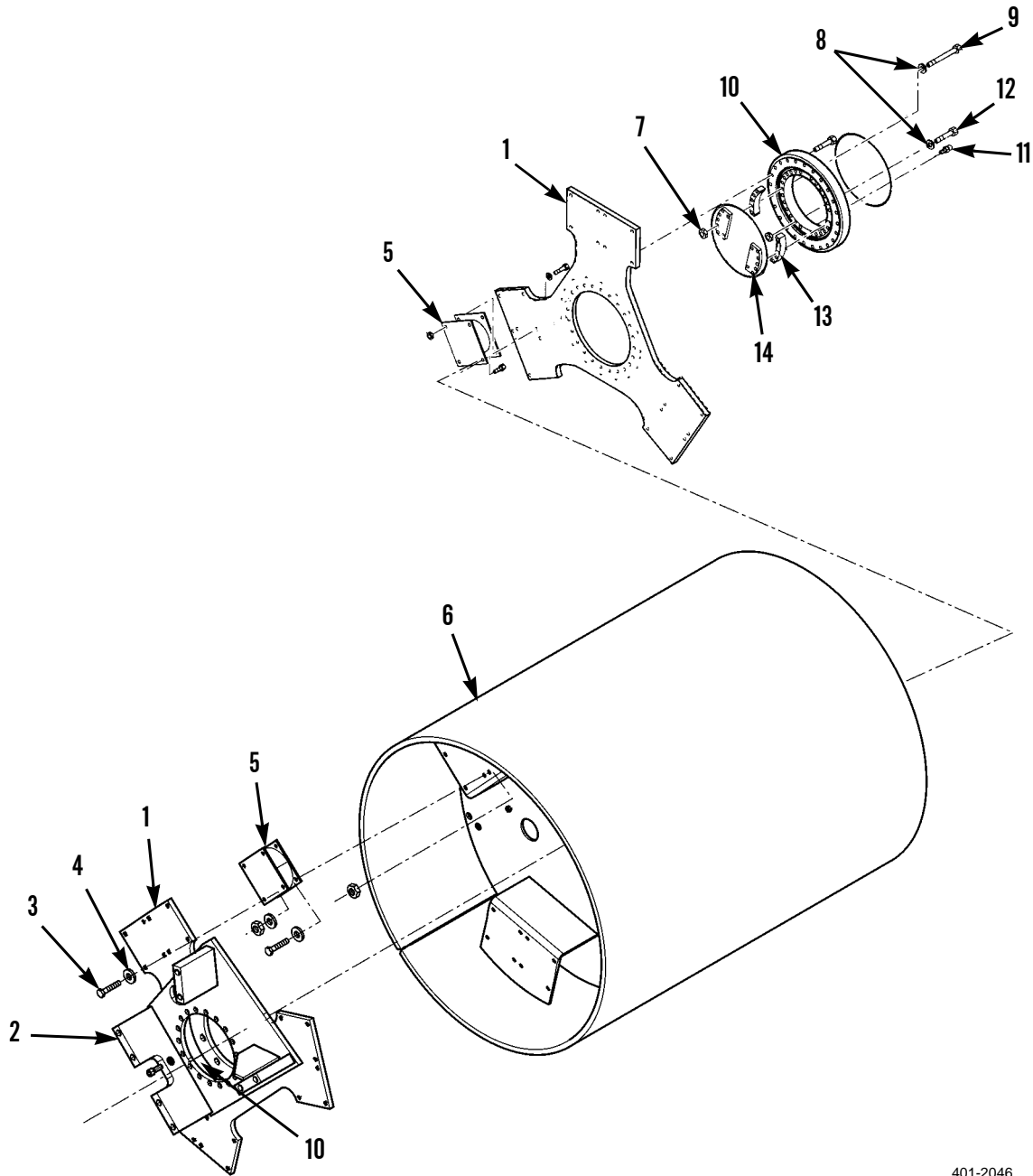
DRUM DISASSEMBLY**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

- The disassembly and assembly procedure is the same for front drum assembly and rear drum assembly.
 - Drain lubricant from vibratory bearing lube reservoir (WP 0147 00).
 - Weight of drum assembly is approximately 4500 lb (2041 kg). Weight of plate and support as a unit is 310 lb (141 kg). Weight of support is 75 lb (34 kg). Weight of eccentric assembly is 460 lb (209 kg). Weight of each housing is approximately 135 lb (61 kg).
1. Attach lifting device straps to plate (1) and support (2). Remove twenty-four bolts (3) and washers (4) that fasten plate (1) to mounts (5) and remove plate (1) and support (2), as a unit, from drum assembly (6).
 2. Position plate (1) and support (2), as a unit, on transmission repair stand.
 3. Remove twenty-five locknuts (7), washers (8) and bolts (9). Discard locknuts.
 4. With assistance, remove supports (2) and (10) from plate (1).
 5. Remove two fittings (11), twenty-four bolts (12), washers (8) and nuts (13) and bearing assembly (14) from plate (1).

DISASSEMBLY - CONTINUED



401-2046

DRUM DISASSEMBLY - CONTINUED

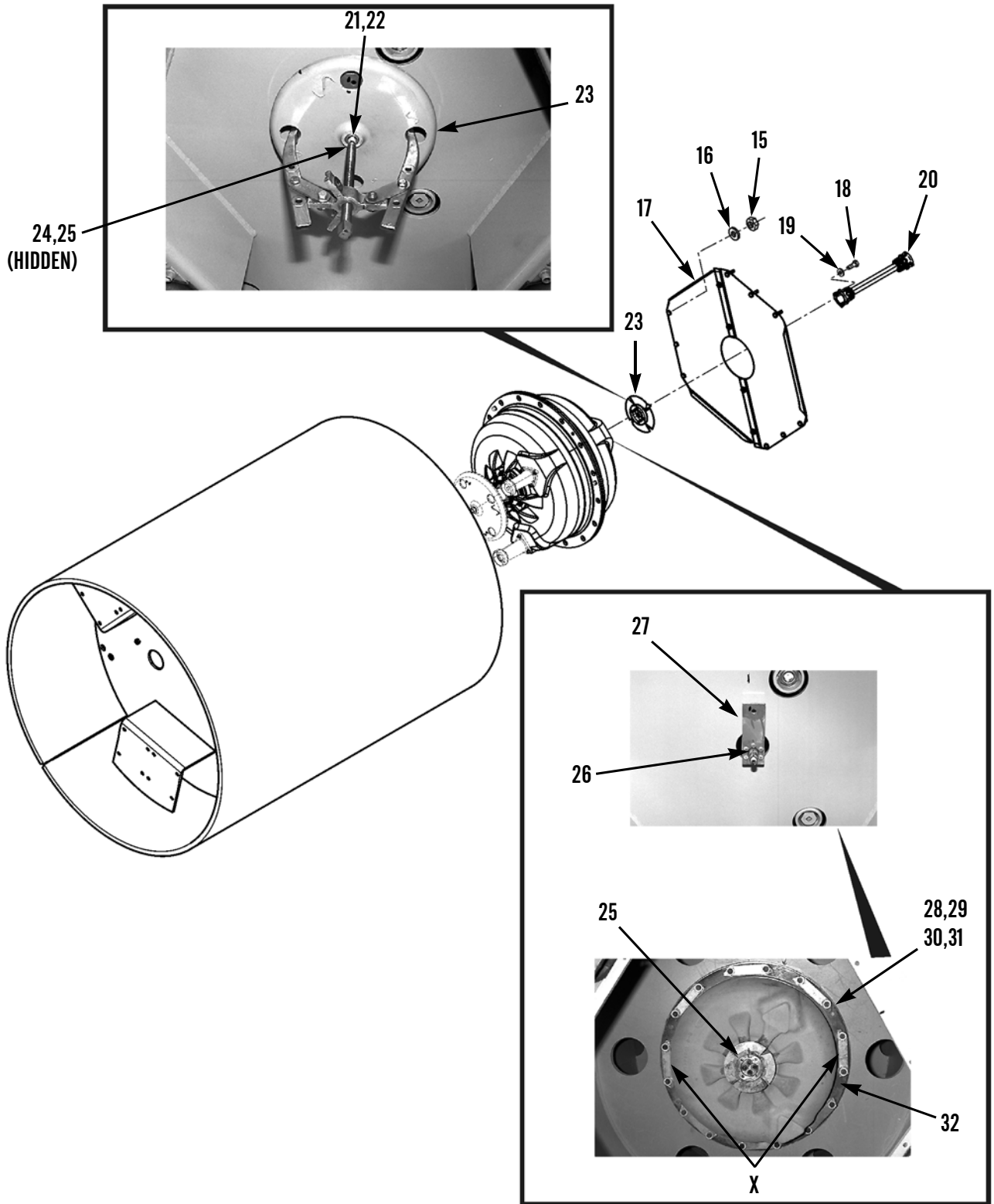
6. Remove nine nuts (15), washers (16) and plate (17) from drum assembly (6).
7. Remove four bolts (18), washers (19) and driveshaft (20).
8. Remove nut (21) and washer (22) from wheel clamp (23).
9. Use puller to remove wheel clamp (23) and key (24) from eccentric assembly (25).
10. Remove six bolts (26) and plate (27) from eccentric assembly (25).

NOTE

DO NOT remove two locknuts at location X at this time. Two nuts must remain to hold eccentric assembly in place.

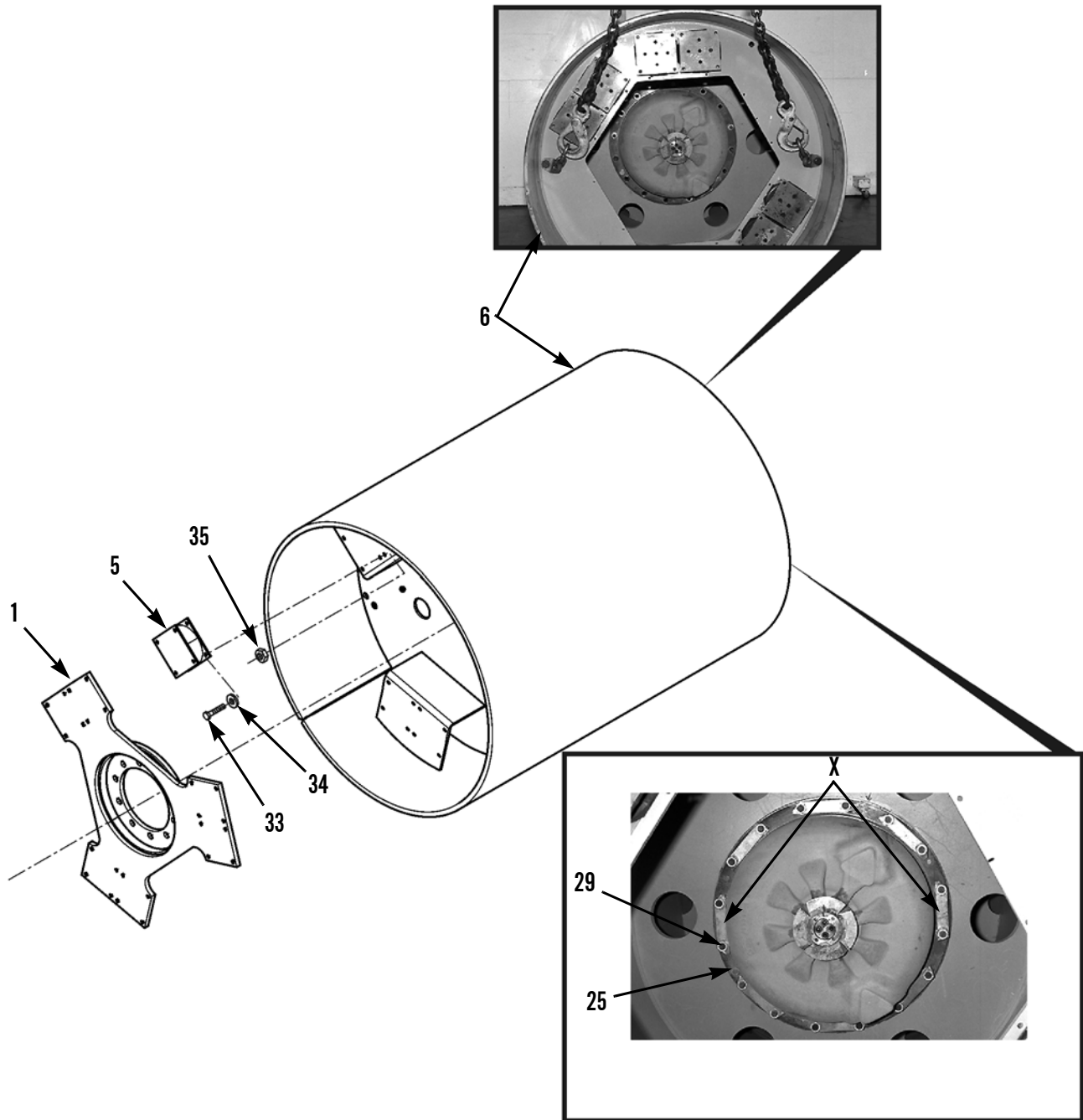
11. Bend tabs (28) down on eight locks (29) and remove fourteen of sixteen locknuts (30) and eight locks (31) from housing (32). Discard locknuts.

DRUM DISASSEMBLY - CONTINUED



DRUM DISASSEMBLY - CONTINUED

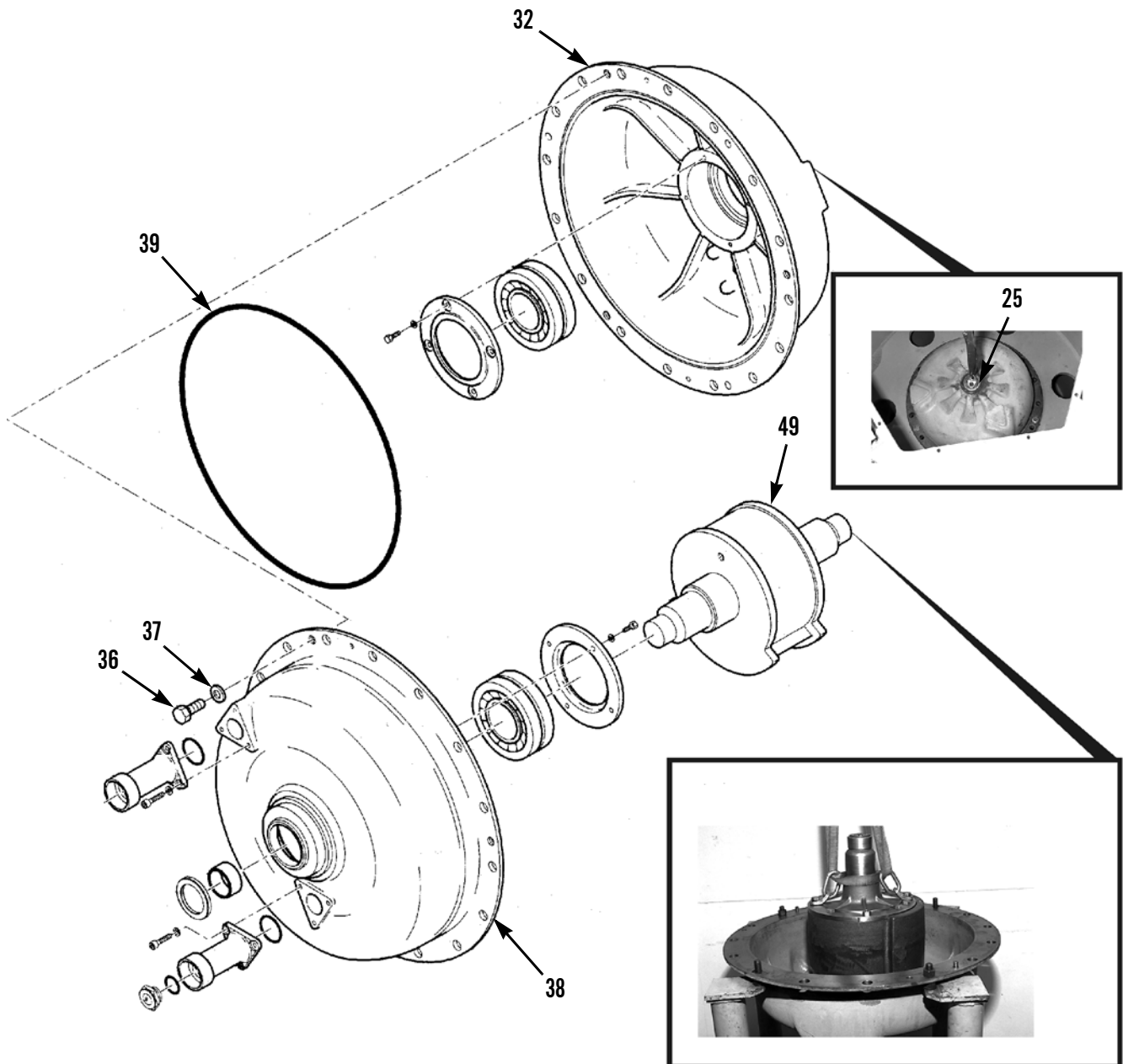
12. Remove twenty-four bolts (33), washers (34) and nuts (35) that fasten six mounts (5) on both ends of drum assembly (6).
13. Install lifting link brackets to drum assembly (6). Attach a lifting device and stand drum assembly (6) on end.
14. Remove remaining two locknuts (29) that hold eccentric assembly (25) to drum assembly (6).



401-2050

ECCENTRIC DISASSEMBLY

1. Install link bracket on eccentric assembly (25). Attach a lifting strap and lifting device to link bracket and remove housing (32), with eccentric assembly (25), from drum assembly (6).
2. Position eccentric assembly (25) on transmission stand. Remove three bolts (36) and washers (37) that hold housings (32) and (38) together.
3. Remove link bracket from eccentric assembly (25). Use three M16 forcing screws to separate housings (32) and (38).
4. Install suitable link brackets on housing (32). Attach a lifting device and remove housing (32) from housing (38).

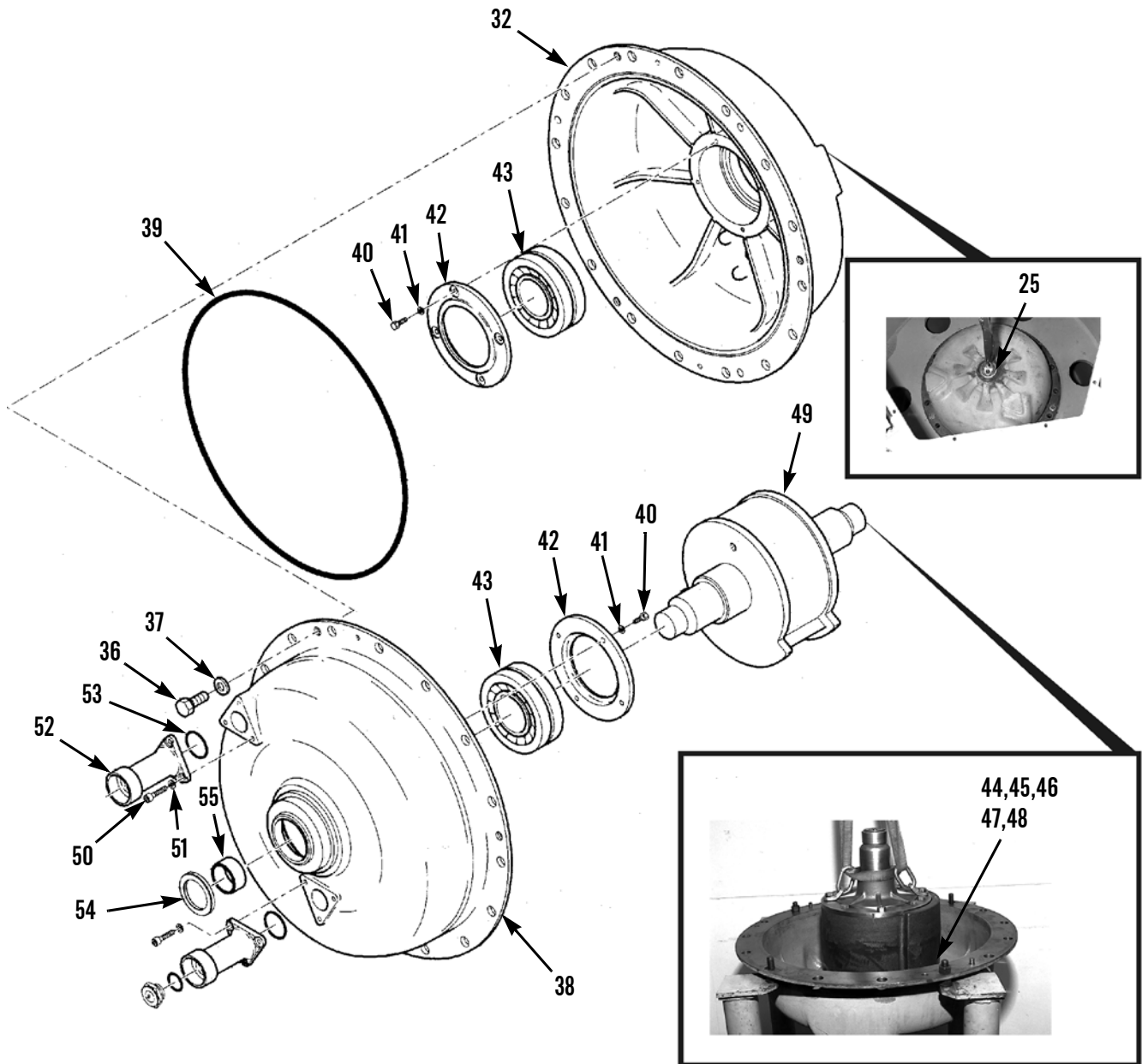


401-2051

ECCENTRIC DISASSEMBLY - CONTINUED

5. Remove O-ring (39) from housing (38). Discard O-ring.
6. Remove four bolts (40), washers (41), cover (42) and tapered bearing (43) from housing (32).
7. Bend tabs on locks (44) downward and remove jam nuts (45), locks (46), and nuts (47) that hold eight bolts (48).
8. Install positioning bolts to weight assembly (49) and use lifting device to position weight assembly (49) on transmission stand.
9. Remove six bolts (50), washers (51) and two pipes (52) from housing (38). Remove two O-rings (53) from two pipes. Discard O-ring.
10. Remove oil seal (54) and sleeve (55) from housing (38).
11. Install lifting brackets on housing (38). Attach a lifting device to lifting brackets and remove housing (38) from transmission stand.
12. Remove four bolts (40), washers (41), cover (42) and tapered bearing (43) from housing (38).

ECCENTRIC DISASSEMBLY - CONTINUED



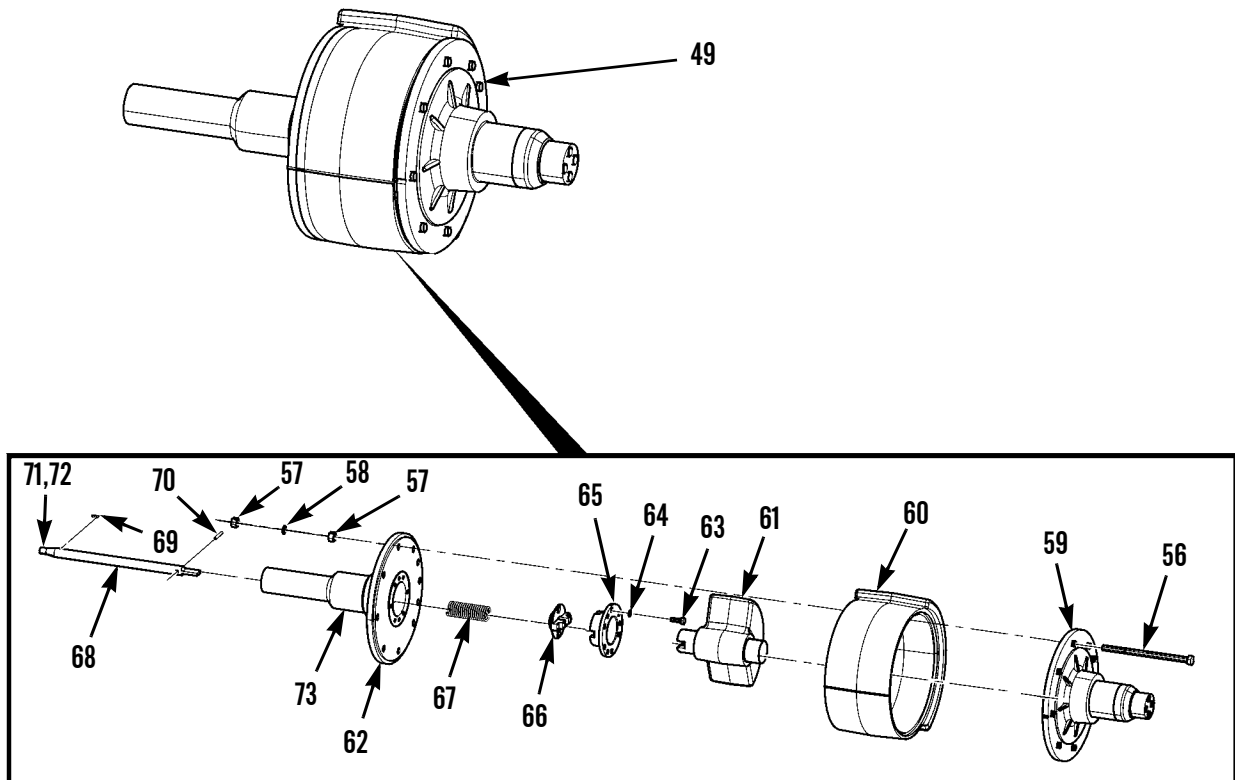
401-2051

ECCENTRIC DISASSEMBLY - CONTINUED

NOTE

Place alignment marks on weight assembly components for assembly.

13. Remove lifting brackets from weight assembly (49) and remove four bolts (56), eight nuts (57), four tabs (58) and shaft (59) from counter weight (60).
14. Remove weight (61) from counter weight (60).
15. Remove counter weight (60) from shaft (62). Remove six bolts (63) and washers (64) that fasten thrust block (65) to shaft (62).
16. Use three forcing screws to remove thrust block (65) from shaft (62).
17. Remove, as a unit, spur (66), spring (67), shaft (68), drive key (69) and pin (70) from shaft (62).
18. Remove spring (67) from shaft (68).
19. Remove oil ring (71), ring (72) and sleeve (73) from shaft (62).
20. Remove pin (70) and drive key (69) from shaft (62).



401-2052

ECCENTRIC ASSEMBLY**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

- The disassembly and assembly procedure is the same for front drum assembly and rear drum assembly.
 - Drain lubricant from vibratory bearing lube reservoir.
 - Weight of drum assembly is approximately 4500 lb (2041 kg). Weight of plate and support as a unit is 310 lb (141 kg). Weight of support is 75 lb (34 kg). Weight of eccentric assembly is 460 lb (209 kg). Weight of each housing is approximately 135 lb (61 kg).
1. Install pin (70) and drive key (69) to shaft (62).
 2. Install oil ring (71), ring (72) and sleeve (73) to shaft (62).
 3. Install spring (67) to shaft (68).
 4. Install, as a unit, spur (66), spring (67), shaft (68), drive key (69) and pin (70) to shaft (62).
 5. Install thrust block (65) to shaft (62).
 6. Install counter weight (60) to shaft (62). Install six bolts (63) and washers (64) that fasten thrust block (65) to shaft (62).

NOTE

Notice alignment marks on weight assembly components for assembly.

7. Install weight (61) to counter weight (60).
8. Install weight assembly (49) and install four bolts (56), eight nuts (57), four tabs (58) and shaft (59) to counter weight (60).

ECCENTRIC ASSEMBLY - CONTINUED

9. Install four bolts (40), washers (41), cover (42) and tapered bearing (43) to housing (38).
10. Install lifting brackets on housing (38). Attach a lifting device to lifting brackets and move housing (38) to transmission stand.
11. Install oil seal (54) and sleeve (55) to housing (38).
12. Install six bolts (50), washers (51) two new O-rings (53) and two pipes (52) to housing (38). Tighten bolts to a torque of 15 + 4 lb-ft (20 + 5 Nm).

NOTE

Apply retaining compound to six bolts.

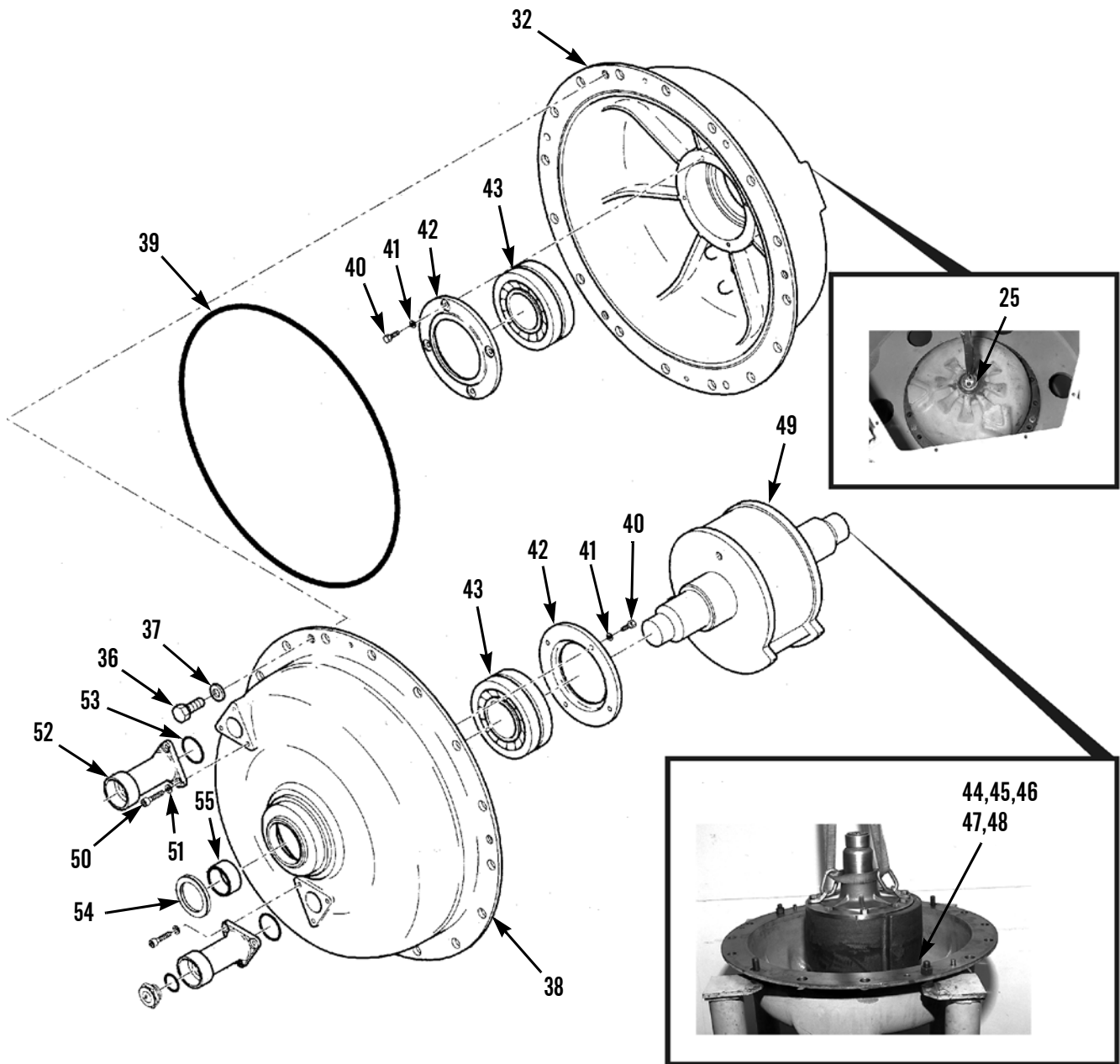
13. Use lifting device to position weight assembly (49) on housing (38).
14. Install jam nuts (46), locks (47), and nuts (48) to eight bolts (49) and bend tabs on locks (45) into position.

NOTE

Apply retaining compound to four bolts.

15. Install four bolts (40), washers (41), cover (42) and tapered bearing (43) to housing (32). Tighten bolts to a torque of 15 + 4 lb-ft (20 + 5 Nm).
16. Install new O-ring (39) to housing (38).
17. Install suitable link brackets on housing (32). Attach a lifting device and install housing (32) to housing (38).
18. Remove link bracket from eccentric assembly (25).
19. Install three bolts (36) and washers (37) to housing (32) and (38). Tighten three bolts to a torque of 15 + 4 lb-ft (20 + 5 Nm).
20. Install link bracket on eccentric assembly (25). Attach a lifting strap and lifting device to link bracket and install housing (32), with eccentric assembly (25), to drum assembly (6).

ECCENTRIC ASSEMBLY - CONTINUED



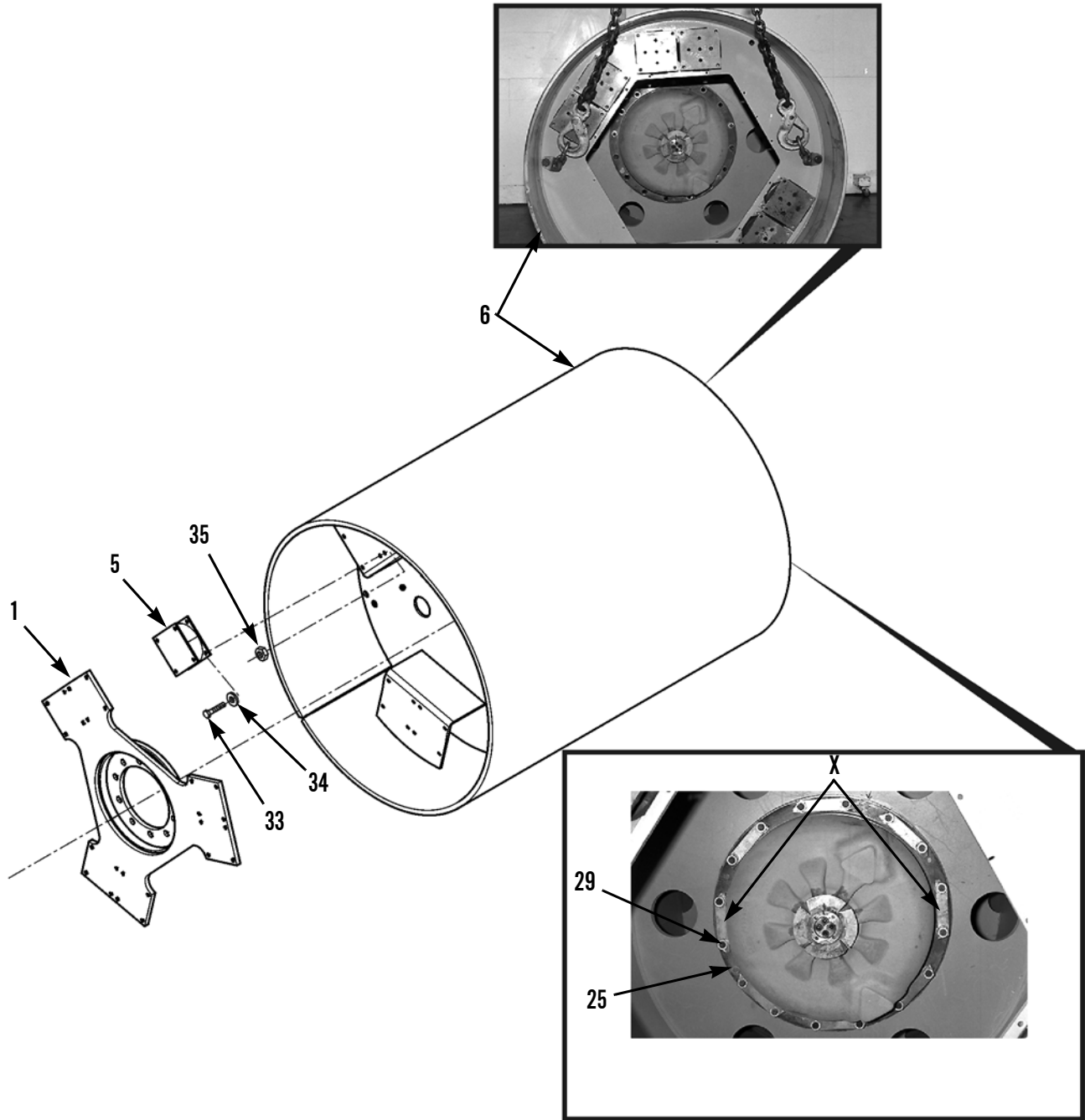
401-2051

DRUM ASSEMBLY**NOTE**

Apply sealing compound to sixteen nuts.

1. Install two new locknuts (29) at 'X' to hold eccentric assembly (25) to drum assembly (6). Tighten nuts to 276 ± 27 lb-ft (374 ± 37 Nm).
2. Install lifting link brackets to drum assembly (6). Attach a lifting device and lay drum assembly (6) on floor. Weight of drum assembly (6) is approximately 4500 lb (2041 kg).
3. Install twenty-four bolts (33), washers (34) and nuts (35) that fasten six mounts (36) on both ends of drum assembly (6).

DRUM ASSEMBLY - CONTINUED



401-2050

DRUM ASSEMBLY - CONTINUED

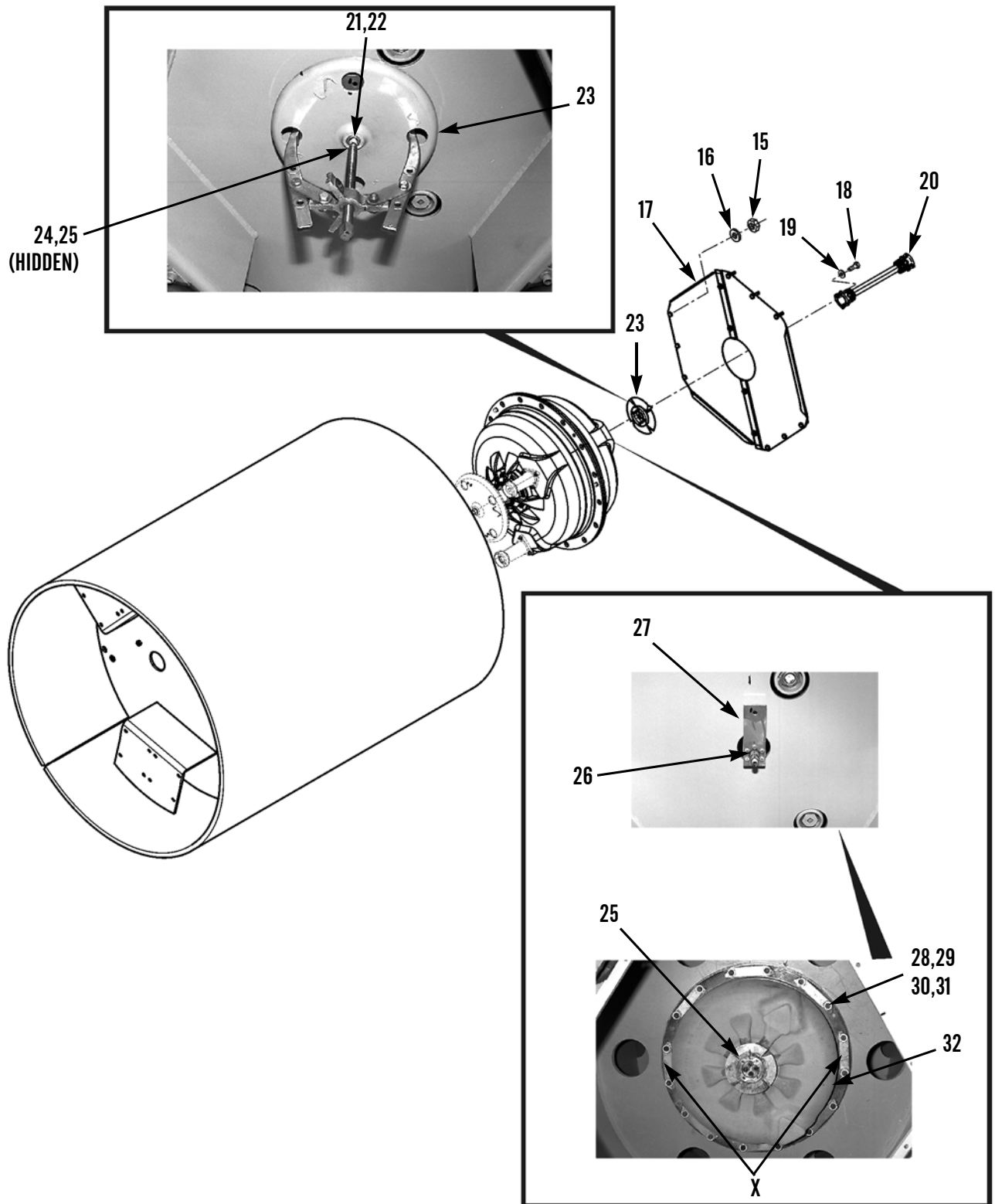
4. Install remaining fourteen of sixteen new locknuts (30) and eight locks (31) to housing (32). Bend tabs (28) into position on eight locks (29). Tighten nuts to 276 ± 27 lb-ft (374 ± 37 Nm).
5. Install six bolts (26) and plate (27) to eccentric assembly (25).
6. Install wheel clamp (23) and key (24) to eccentric assembly (25).
7. Install nut (21) and washer (22) to wheel clamp (23).

NOTE

Apply sealing compound to four bolts and nine nuts.

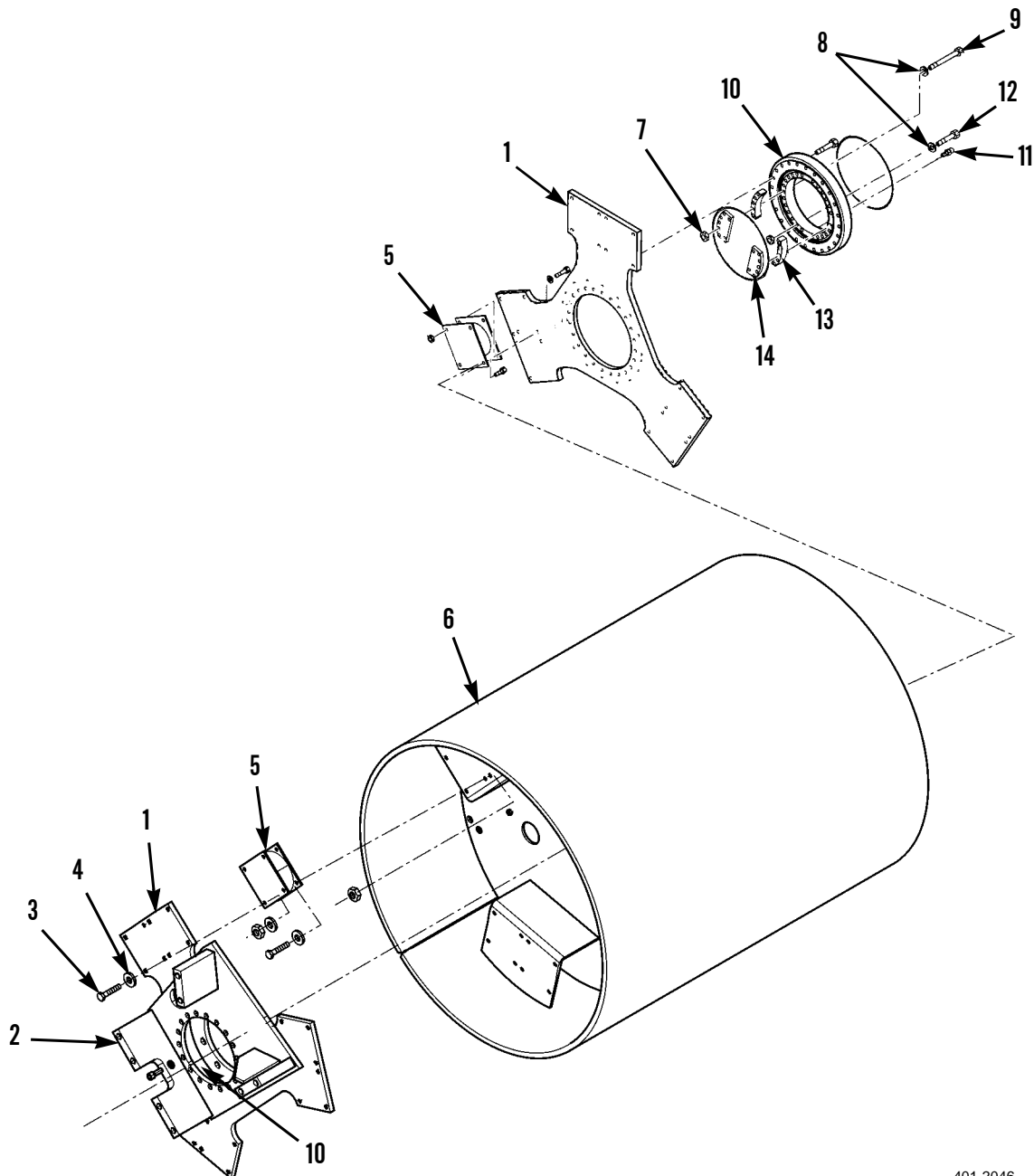
8. Install four bolts (18), washers (19) and drive shaft (20).
9. Install nine nuts (15), washers (16) and plate (17) to drum assembly (6).

DRUM ASSEMBLY - CONTINUED



DRUM ASSEMBLY - CONTINUED

10. Install two fittings (11), twenty-four bolts (12), washers (8), nuts (13) and bearing assembly (14) to plate (1).
11. Use two persons to install supports (2) and (10) to plate (1).
12. Install twenty-five new locknuts (7), washers (8) and bolts (9).
13. Attach lifting device straps to plate (1) and support (2). Remove twenty-four bolts (3) and washers (4) that fasten plate (1) to mounts (5) and remove plate (1) and support (2), as a unit, to drum assembly (6).



401-2046

DRUM ASSEMBLY - CONTINUED

14. Install propel motor (WP 0193 00).
15. Install vibratory motor (WP 0206 00).
16. Install drum assembly (WP 0210 00).

END OF WORK PACKAGE

DRUM ASSEMBLY REPLACEMENT

0210 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Lifting device, minimum capacity 4750 lb
(2155 kg)**Materials/Parts**

Cap set, protective (Item 8, WP 0219 00)

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 133

Personnel Required

Two

Equipment Condition

Engine off (TM 5-3895-379-10)

Chock drum not being replaced (TM 5-3895-379-10)

Hydraulic side of oil tank drained (WP 0037 00)

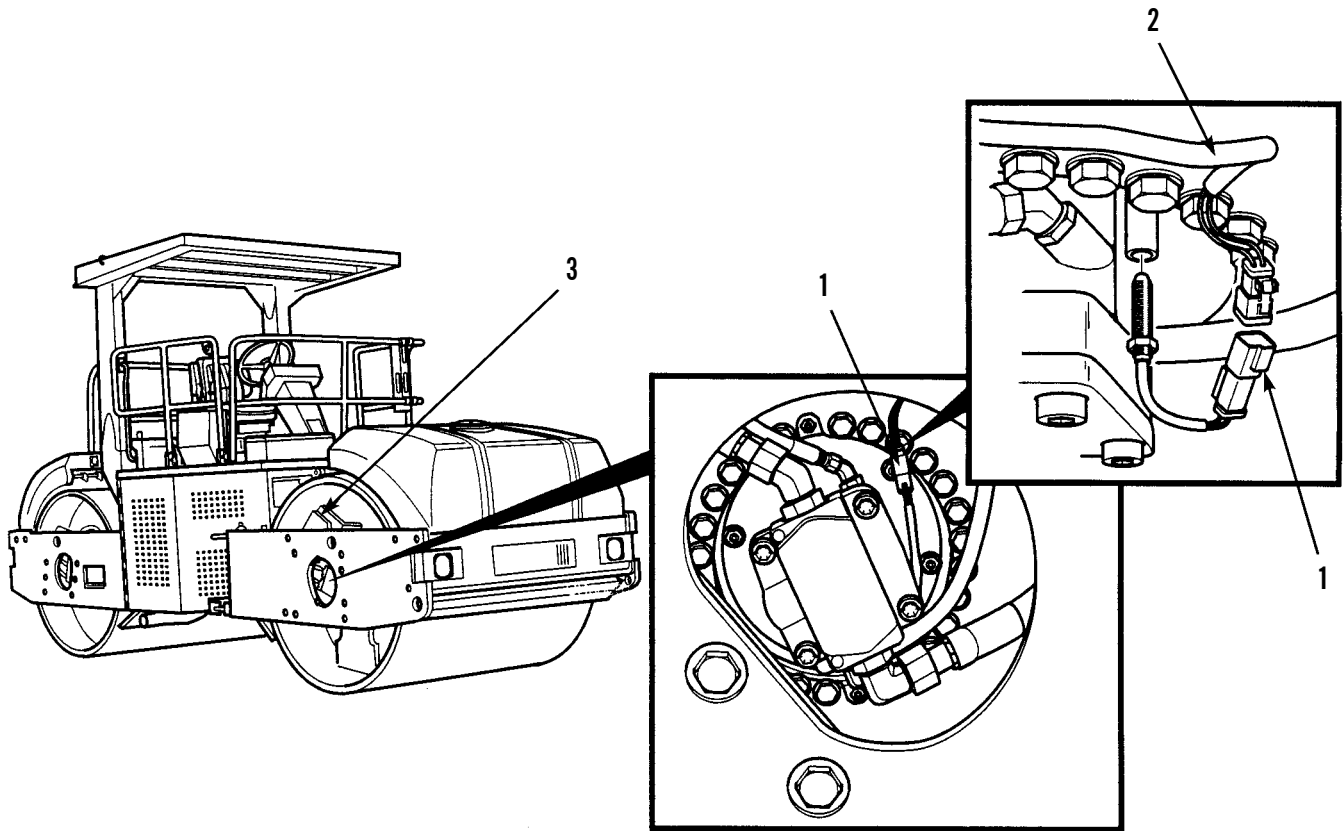
Supports (bumpers) removed (WP 0122 00)

NOTE

- Front and rear drum procedures are the same, except where noted.
- CB534B and CB534C Roller procedures are the same, except where noted.

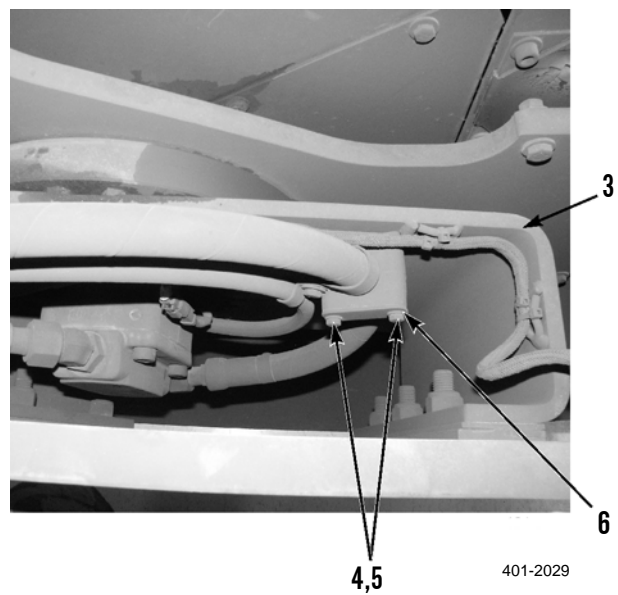
REMOVAL

1. Disconnect electrical connector (1). Remove all cable ties that fasten wiring harness (2) to drum support (3). Move the wiring harness out of the way. Discard ties.



401-2028

2. Remove two bolts (4), washers (5) and clamp (6) from drum support (3).



401-2029

REMOVAL - CONTINUED

3. Remove bolt (7), washer (8) and clamp (9) that fasten hose assemblies (10) to yoke (11).

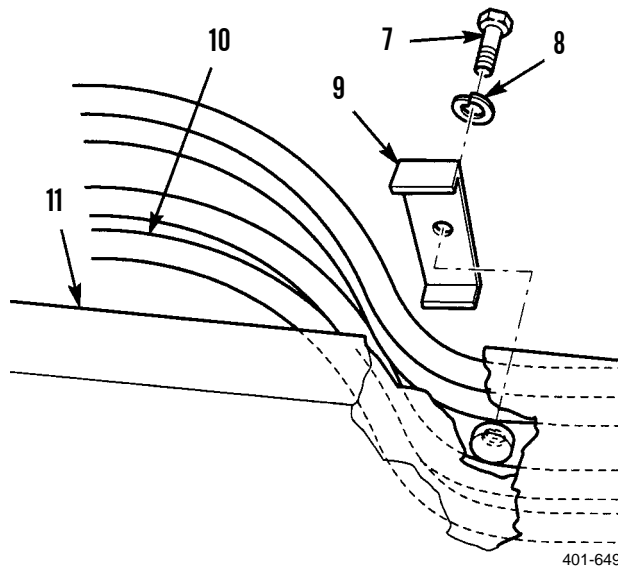


WARNING

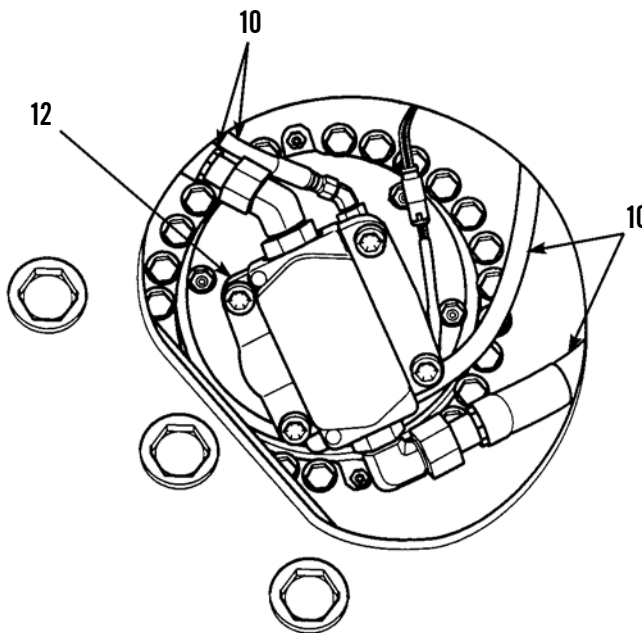
Oil is very slippery. Immediately wipe up any spills. Failure to follow this warning may cause injury.

CAUTION

- Cap and plug all lines and fittings to prevent any contaminants from entering the system.
- Tag and mark all hydraulic lines and electrical wires as they are removed or disconnected.
- Use container to capture any hydraulic oil which may drain from lines. Dispose of hydraulic oil IAW local policy and ordinances.

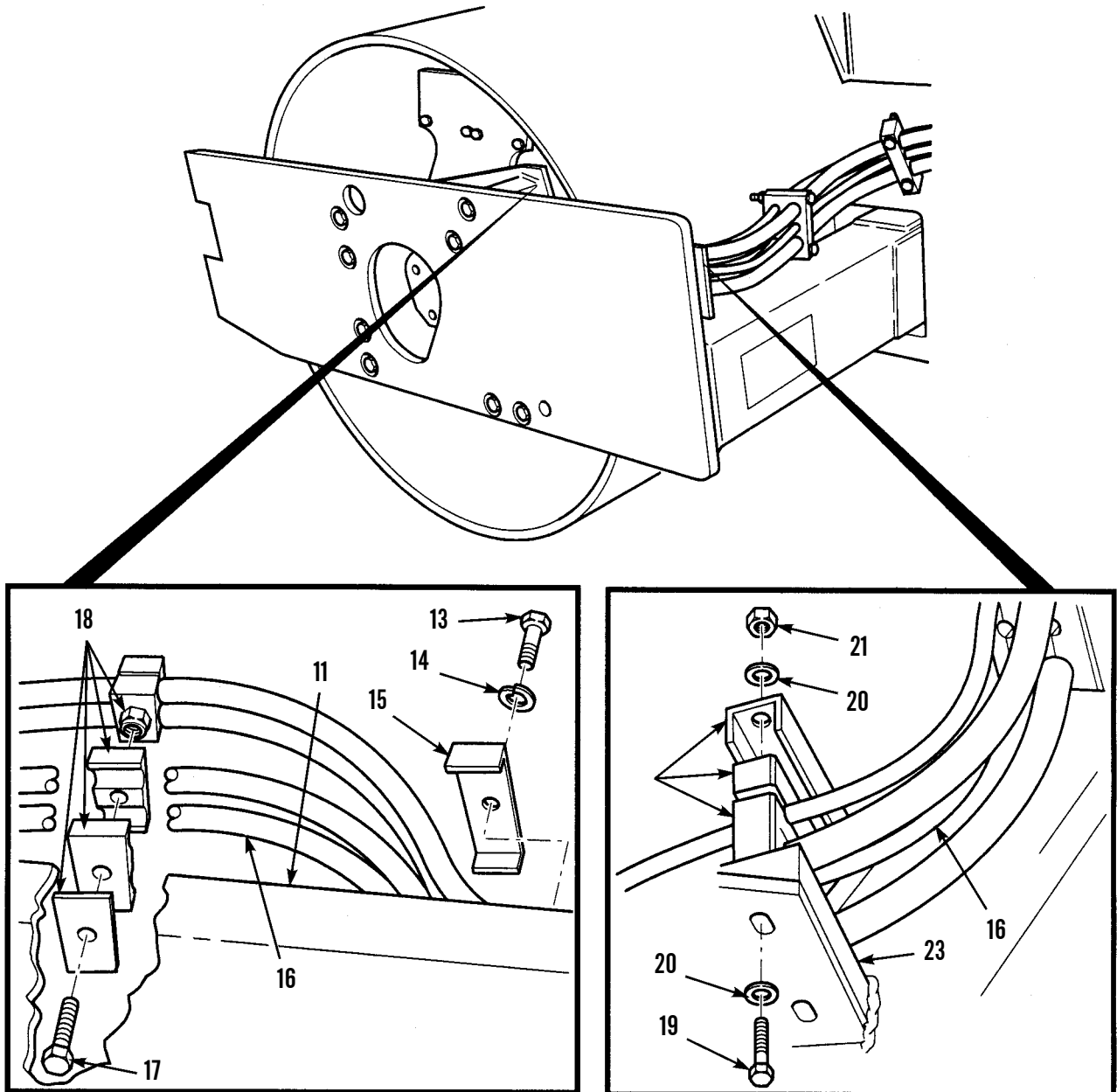


4. Disconnect four hose assemblies (10) from vibratory motor (12). Cap and plug hoses and ports immediately. Move hose assemblies aside.



REMOVAL - CONTINUED

5. Remove bolt (13), washer (14) and clamp (15) that fasten hose assemblies (16) to drum support (3).
6. Remove bolt (17) and clamp (18) that fasten hose assemblies (16) to yoke (11).
7. Remove all ties, bolt (19), two washers (20), nut (21) and clamp (22) from frame (23). Discard ties.



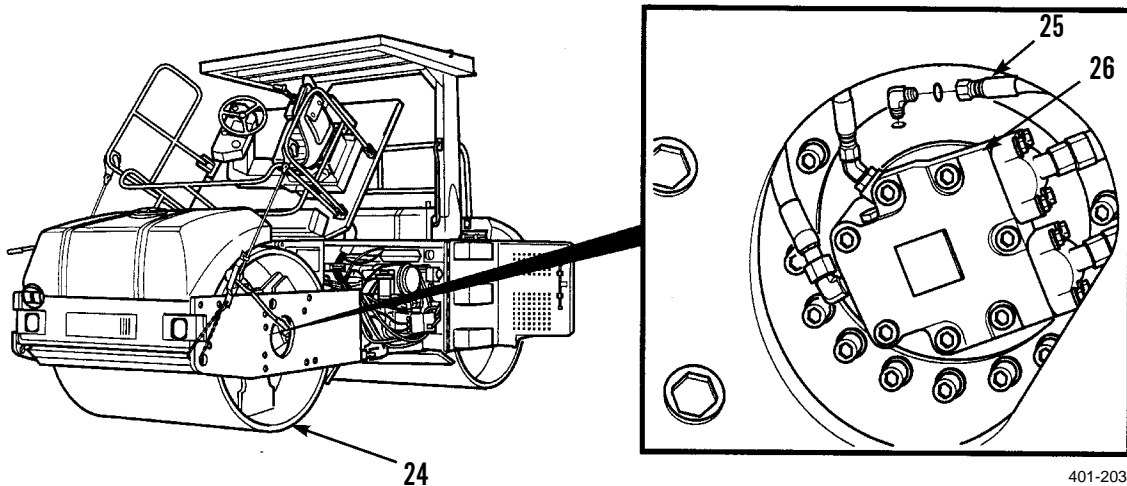
401-2031

REMOVAL - CONTINUED

NOTE

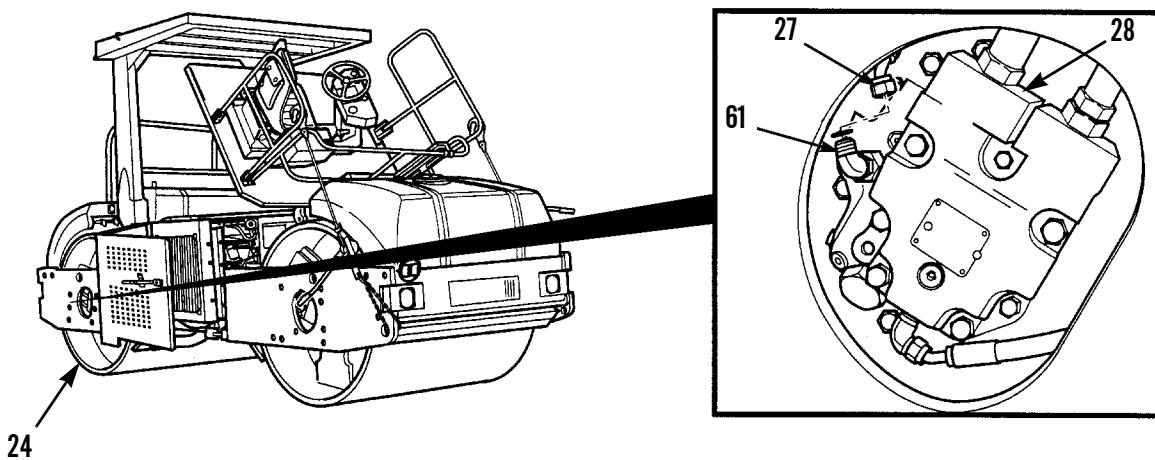
The front drum does not have a harness.

8. For the front drum assembly (24), disconnect five hose assemblies (25) from propel motor (26). Cap and plug hoses and ports immediately. Move hose assemblies aside.



401-2032

9. For the rear drum assembly (24), disconnect six hose assemblies (27) from propel motor (28). Cap and plug hoses and ports immediately. Move hose assemblies aside.
10. Attach a lifting device to drum assembly (24). Position jackstand under both sides of yoke (11).



401-2033

11. On propel side of drum assembly (24), remove eight bolts (29) and washers (30) that fasten drum support (3) to yoke (11).

REMOVAL - CONTINUED**NOTE**

The CB534B Roller model has shims between drum support (3) and yoke (8) on vibratory side of drum assembly. Note the number of shims when removing six bolts.

12. On vibratory side of drum assembly (24), remove six bolts (31) and washers (32) that fasten drum support (3) to yoke (11). For the CB534B Roller, remove shims (33).

**WARNING**

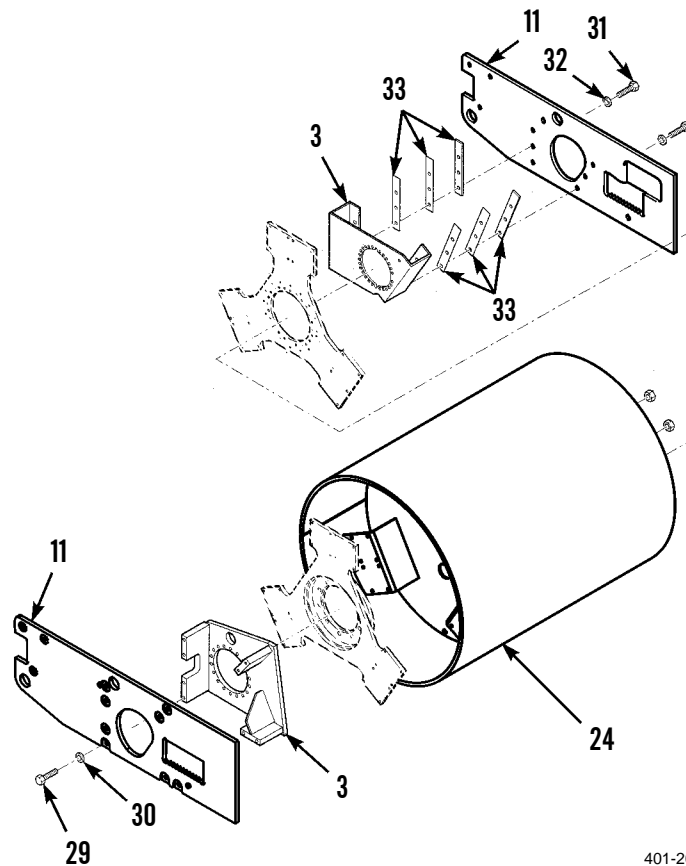
Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drum assembly is 4750 lb (2155 kg).

13. Raise drum assembly (24) until it is just off floor. Move drum assembly away from roller until it is clear of yoke or frame. Place drum assembly on floor and chock drum.

REMOVAL - CONTINUED



401-2034

INSTALLATION



WARNING

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

NOTE

Weight of drum assembly is 4750 lb (2155 kg).

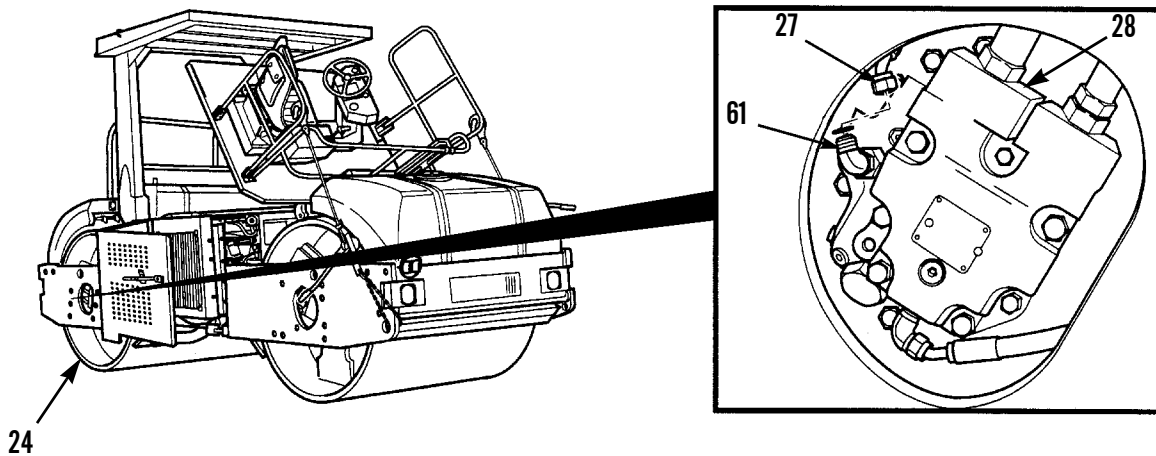
INSTALLATION - CONTINUED

1. Remove chocks (TM 5-3895-379-10). Place drum assembly (24) into lifting device.
2. Raise drum assembly (24) until it is just off floor. Move drum assembly into roller yoke or frame.

NOTE

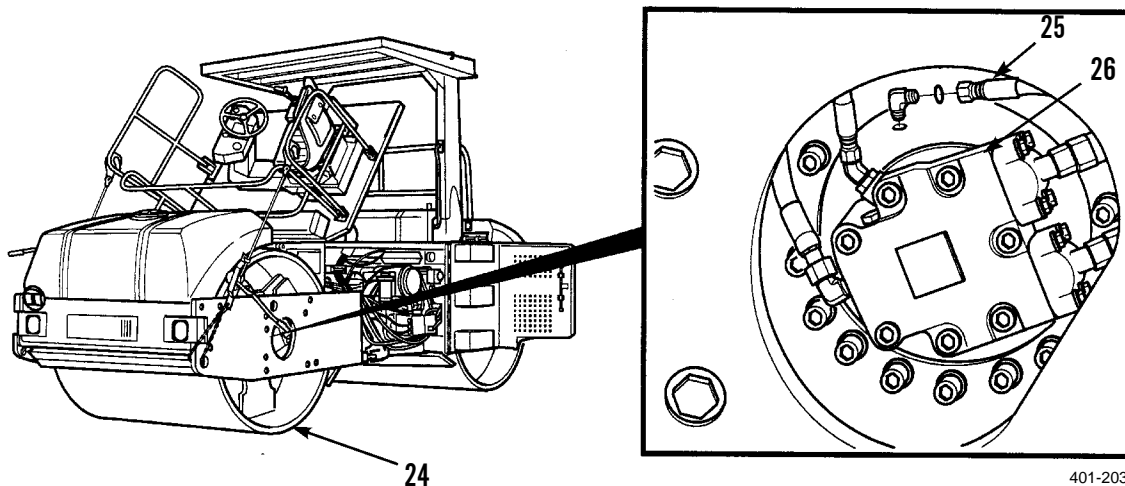
The CB534B Roller model has shims between drum support (3) and yoke (8) on vibratory side of drum assembly. Note the number of shims when replacing six bolts.

3. On vibratory side of drum assembly (24), install six bolts (31) and washers (32) that fasten drum support (3) to yoke (11). For the CB534B Roller, install shims (33).
4. On propel side of drum assembly (24), install eight bolts (29) and washers (30) that fasten drum support (3) to yoke (11).
5. Remove the lifting device from drum assembly (24). Remove jackstands from both sides of yoke (11).
6. For the rear drum assembly (24), connect six hose assemblies (27) to propel motor (28).



401-2033

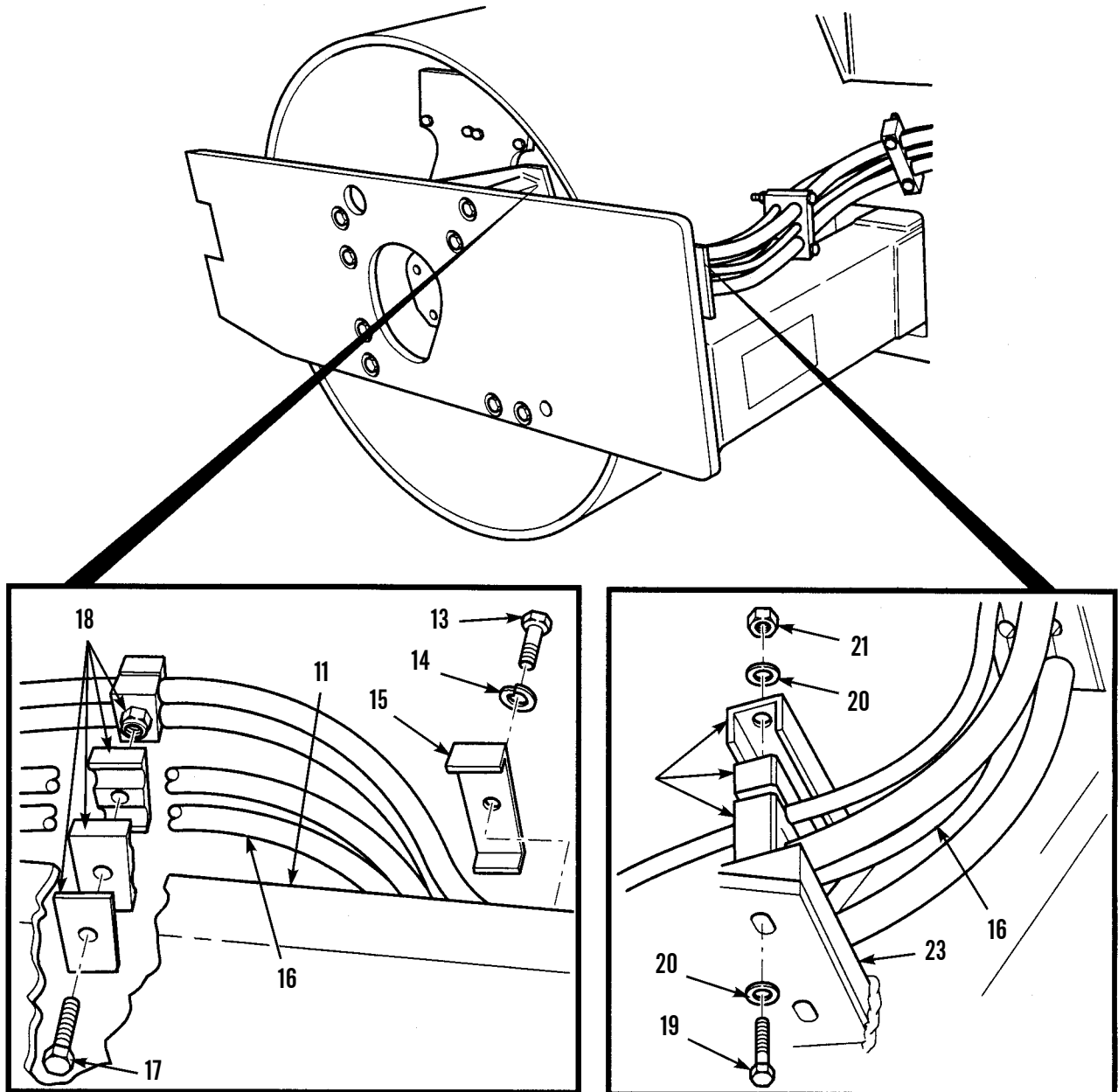
7. For the front drum assembly (24), connect five hose assemblies (25) to propel motor (26).



401-2032

INSTALLATION - CONTINUED

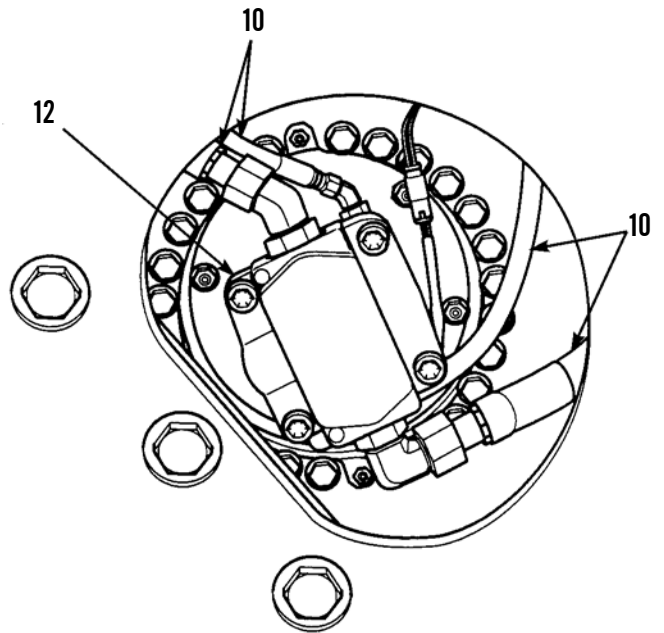
8. Install new ties, bolt (19), two washers (20), nut (21) and clamp (22) to frame (23).
9. Install bolt (17) and clamp (18) that fasten hose assemblies (16) to yoke (11).
10. Install bolt (13), washer (14) and clamp (15) that fasten hose assemblies (16) to drum support (11).



401-2031

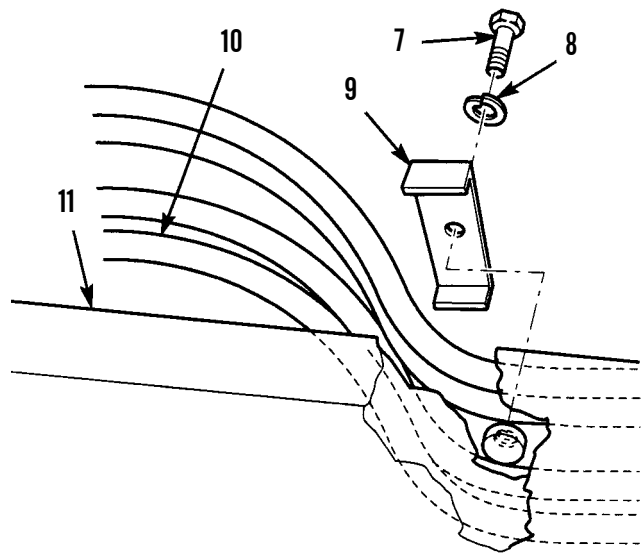
INSTALLATION - CONTINUED

11. Connect four hose assemblies (10) to vibratory motor (11).



401-2030

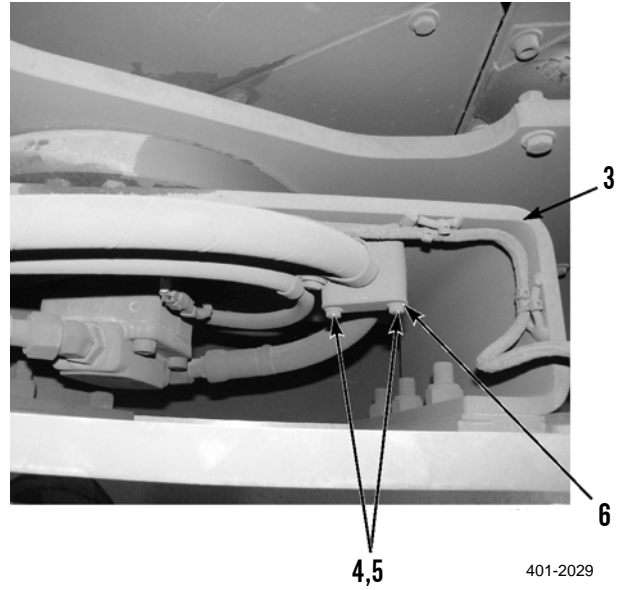
12. Install bolt (7), washer (8) and clamp (9) that fasten hose assemblies (10) to yoke (11).



401-649

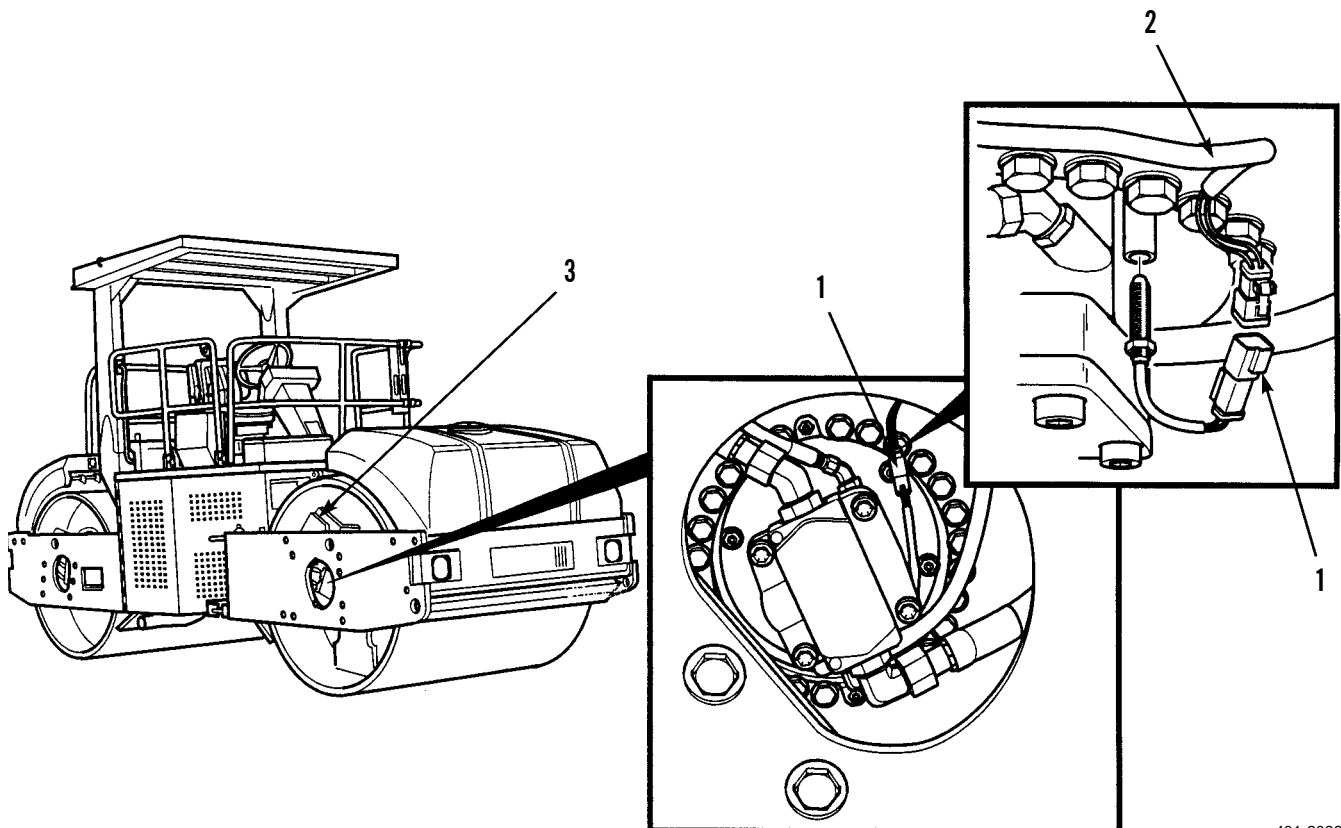
INSTALLATION - CONTINUED

13. Install two bolts (4), washers (5) and clamp (6) to drum support (3).



401-2029

14. Connect electrical connector (1). Install new cable ties that fasten wiring harness (2) to drum support (3).



401-2028

DRUM ASSEMBLY REPLACEMENT - CONTINUED

0210 00

INSTALLATION - CONTINUED

15. Install supports (bumpers) (WP 0122 00).
16. Fill hydraulic side of tank (WP 0037 00).
17. Remove chocks from drum not being replaced (TM 5-3895-379-10).

END OF WORK PACKAGE

RESILIENT DRUM MOUNTS REPLACEMENT

0211 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0220 00)

Link bracket (Item 20, WP 0220 00)

Lifting device, minimum capacity 310 lb (141 kg)

Materials/Parts

Tag, marker (Item 37, WP 0219 00)

References

TM 5-3895-379-23P, Figure 133

Personnel Required

Two

Equipment Condition

Drums chocked (TM 5-3895-379-10)

Supports (bumpers) removed (WP 0122 00)

Propel motor removed (WP 0192 00)

Vibratory motor removed (WP 0206 00)

REMOVAL**WARNING**

Use caution when handling heavy parts. Provide adequate support and use assistance during procedure. Ensure that any lifting device used is in good condition and of suitable load capacity. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause injury or death.

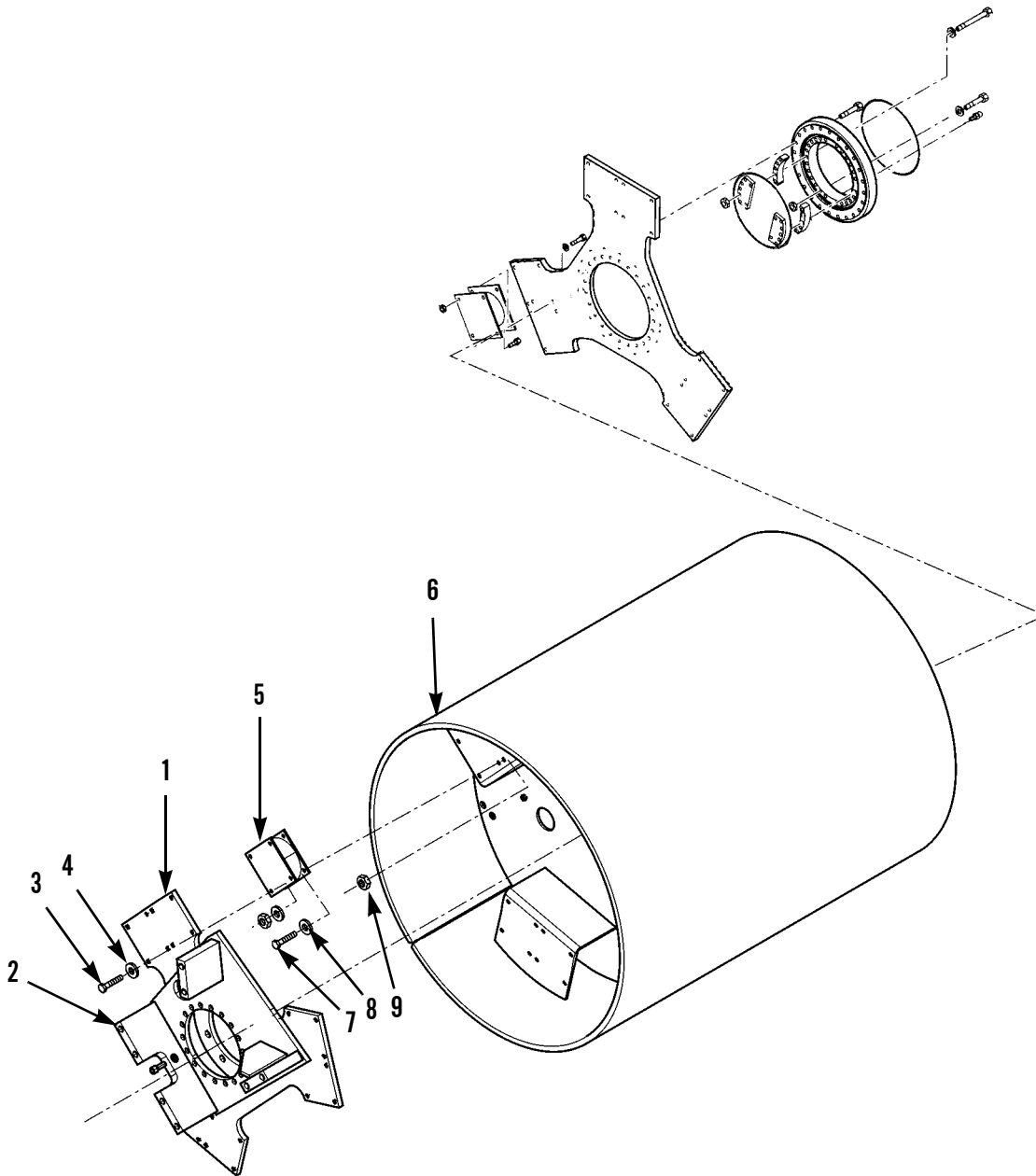
NOTE

Weight of plate and support is 310 lb (141 kg).

1. Attach lifting device straps with link bracket to plate (1) and support (2).
2. Remove twenty-four bolts (3) and washers (4) that fasten plate (1) to mounts (5).
3. With assistance, remove plate (1) and support (2) as a unit from drum assembly (6).
4. Remove twenty-four bolts (7), washers (8) and nuts (9) that fasten six mounts (5) to drum assembly (6).

INSTALLATION

1. Install twenty-four bolts (7), washers (8) and nuts (9) that fasten six mounts (5) to drum assembly (6).
2. Attach lifting device straps with link bracket to plate (1) and support (2). Install twenty-four bolts (3) and washers (4) that fasten plate (1) to mounts (5) and install plate (1) and support (2), as a unit, to drum assembly (6).
3. Install propel motor (WP 0192 00).
4. Install vibratory motor (WP 0206 00).
5. Install supports (bumpers) (WP 0122 00).
6. Remove chocks (TM 5-3895-379-10).



401-2046

END OF WORK PACKAGE

CHAPTER 5
GENERAL MAINTENANCE INSTRUCTIONS

NOTE

Refer to WP 0108 00 for General Wiring Repair instructions.

SCOPE

These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain the CB534B and CB534C Rollers, Motorized, Vibrating Tandem Steel Drums. You should read and understand these practices and methods before starting maintenance tasks on the roller.

WORK SAFETY

1. Before starting a task, think about the risks and hazards to your safety as well as others. Wear protective gear such as safety goggles or lenses, safety shoes, rubber apron or gloves. Protect yourself against injury.
2. Observe all WARNINGS and CAUTIONS.
3. When lifting heavy parts, have someone help you. Make sure that lifting equipment is working properly, that it is suitable for the task assigned, of sufficient load capacity and is secured against slipping.
4. Always use power tools carefully.
5. Before beginning a procedure, ensure that the following conditions have been observed, unless otherwise specified:
 - a. Roller must be parked on level ground with drums chocked.
 - b. Engine must be off.
 - c. Components which are hot at operating temperatures (i.e., cooling, exhaust and hydraulic systems) must cool down before they are removed.
 - d. Components must, however, be at operating temperature to be tested.
 - e. Battery disconnect switch must be in OFF position or batteries disconnected when performing electrical system maintenance.
 - f. Hydraulic system pressure must be relieved before disconnecting any hydraulic system line or fitting.

GENERAL INFORMATION

1. Before beginning a task, find out how much repair, modification or replacement is needed to fix the roller as described in this manual. Sometimes the reason for roller failure can be seen right away and complete teardown is not necessary. Disassemble the roller only as far as necessary to repair or replace damaged or broken parts.
2. All tags and forms attached to the roller must be checked to learn the reason for removal from service. Check all Modification Work Orders (MWOs) and Technical Bulletins (TBs) for equipment changes and updates.
3. In some cases a part may be damaged by removal. If the part appears to be good, and other parts behind it are not defective, leave it on and continue the procedure. Here are a few simple rules:
 - a. Do not remove dowel pins or studs unless loose, bent, broken or otherwise damaged.
 - b. Do not pull bearings or bushings unless damaged. If you must get at parts behind them, pull out bearings or bushings carefully.
 - c. Replace all gaskets, seals, O-rings, preformed packings, cotter pins, spring pins, locknuts, and lockwashers.

CLEANING INSTRUCTIONS**WARNING**

- Cleaning compound, solvent MIL-PRF-680 Type III is an environmentally compliant and low toxic material. However, It may be irritating to the eyes and skin. The use of protective gloves and goggles is suggested. Use in well-ventilated areas. Keep away from open flames and other sources of ignition.
- Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment. Refer to TM 9-247 for correct information.
- Fire extinguishers should be placed nearby when using cleaning compound, solvent.
- Cloths or rags saturated with cleaning compound, solvent must be disposed of IAW authorized facilities' procedures.
- Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.
- Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

1. General.

- a. Cleaning instructions will be the same for the majority of parts and components that make up the rollers.
- b. The importance of cleaning must be thoroughly understood by maintenance personnel. Great care and effort are required in cleaning. Dirt and foreign material are a constant threat to satisfactory maintenance. The following should apply to all cleaning, inspection, repair and assembly operations.
 - (1) Clean all parts before inspection, after repair and before assembly.
 - (2) Hands should be kept free of accumulation of grease, which can collect dust, dirt or grit.
 - (3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

2. External Engine Cleaning.

- a. Protect all electrical equipment that could be damaged by the steam or moisture before steam cleaning.
- b. Cover all openings before steam cleaning.
- c. After cleaning, dry and apply a light coat of oil (Item 25, WP 0219 00) to all parts subject to rust.
- d. Clear out all tapped (threaded) holes with compressed air to remove dirt and cleaning fluid.

3. Cleaning Disassembled Parts.

- a. Place all disassembled parts in wire baskets for cleaning.
- b. Dry and cover all cleaned parts.
- c. Place parts on or in "racks" and hold for inspection or repair.
- d. All parts subject to rusting must be lightly oiled and wrapped.
- e. Keep all related parts and components together. Do not mix parts.

CLEANING INSTRUCTIONS - CONTINUED

4. **Castings.**
 - a. Clean inner and outer surfaces of castings and all areas subject to grease and oil with cleaning compound, solvent (Item 9, WP 0219 00).
 - b. Use a stiff brush to remove sludge and gum deposits.
 - c. Clear out all tapped (threaded) holes with compressed air to remove dirt and cleaning solvent.
5. **Oil Passages.** Particular attention must be given to all oil passages in castings and machined parts. Oil passages must be clean and free of any obstructions.
 - a. Clean passages with wire probes to break up any sludge or gum deposits.
 - b. Wash passages by flushing with cleaning compound, solvent (Item 9, WP 0219 00).
 - c. Dry passages with compressed air.
6. **Oil Seals, Electrical Cables and Flexible Hoses.**

CAUTION

Washing oil seals, electrical cables and flexible hoses with dry cleaning solvents or mineral spirits will cause damage or destroy the material.

- a. Wash electrical cables and flexible hoses with a mild solution of detergent (Item 14, WP 0219 00) and water and wipe dry.
 - b. Oil seals are generally damaged during removal; cleaning will not be necessary since new seals will be used in assembly.
7. **Machined Surfaces.**
 - a. Clean machined surfaces with cleaning compound, solvent (Item 9, WP 0219 00).
 - b. Dry surfaces with compressed air.
 8. **Mated Surfaces.**
 - a. Remove old gasket and/or sealing compound using a wire brush and cleaning compound, solvent (Item 9, WP 0219 00).
 - b. Lightly coat with oil (Item 25, WP 0219 00) and wrap all parts subject to rust before storing.
 9. **Rusted Surfaces.** Clean all rusted surfaces using wire brush and crocus cloth.
 10. **Oil-Bathed Internal Parts.** Wipe oil-bathed internal parts clean with a cleaning cloth.
 11. **Air-Actuated Internal Parts.** Wash air-actuated internal parts clean with a cleaning cloth.
 12. **Externally Exposed Parts.** Wash externally exposed parts with detergent (Item 14, WP 0219 00) and water. Rinse thoroughly and air dry.

INSPECTION INSTRUCTIONS

1. **General.** All components and parts must be carefully checked to determine if they are serviceable for reuse, if they can be repaired or if they must be scrapped.
2. **Drilled and Tapped (Threaded) Holes.**
 - a. Inspect for wear, distortion (stretching), cracks or any other damage in or around holes.
 - b. Inspect threaded areas for wear, distortion or evidence of cross-threading.
 - c. Mark all damaged areas for repair or replacement.

INSPECTION INSTRUCTIONS - CONTINUED

3. **Metal Lines, Flexible Lines (Hoses) and Fittings.**
 - a. Inspect lines for sharp kinks, cracks, bends or dents.
 - b. Inspect flexible lines for fraying, evidence of leakage or loose fittings or connectors.
 - c. Check all fittings and connectors for thread damage. Check for hex heads that are worn or rounded by poorly fitting wrenches.
 - d. Mark all damaged material for repair or replacement.
4. **Castings.**
 - a. Inspect all ferrous and nonferrous castings for cracks using a magnifying glass and strong light.
 - b. Particularly check areas around studs, pipe plugs, threaded inserts and sharp corners. Replace all cracked castings.
 - c. Inspect machined surfaces for nicks, burrs or raised metal. Mark damaged areas for repair or replacement.
 - d. Inspect all pipe plugs, pipe plug openings, screws and screw openings for damaged or stripped threads.
 - e. Check all gasket mating surfaces, flanges on housings and supports for warpage with a straightedge or surface plate. Inspect mating flanges for discoloration that may indicate persistent oil leakage.
5. **Studs, Bolts and Screws.** Replace if threads are damaged, bent, loose or stretched.
6. **Gears.**

NOTE

When gear teeth wear limits are not established, good judgement is required to determine if gear replacement is necessary.

- a. Inspect all gears for cracks using a magnifying glass and strong light. No cracks are permissible.
 - b. Inspect gear teeth for wear, sharp fins, burrs, and galled or pitted surfaces.
 - c. Check keyway slots for wear or damage. If keyways are worn, damaged or elongated, replace gear.
7. **Bushing and Bushing Type Bearings.**
 - a. Check all bushings and bushing type bearings for secure fit, evidence of overheating, wear, burrs, nicks and out-of-round condition. Replace as necessary.
 - b. Check for dirt in lubrication holes or grooves. Holes and grooves must be clean and free from damage.
 8. **Oil Seals.** Oil seals are mandatory replacement items.
 9. **Core Hole Expansion Plugs.** Inspect for leakage. Replace plugs when leakage is present.
 10. **Machine Tooled Parts.** Inspect for cracks, breaks, elongated holes, wear and chips. Replace any damaged parts.
 11. **Machined Surfaces.** Inspect for cracks, evidence of wear, galled or pitted surface, burrs, nicks and scratches.
 12. **Mated Surfaces.** Inspect for remains of old gasket, seal, secure fit, pitting and evidence of leakage.
 13. **Rusted Surfaces.** Inspect for pitting, holes and severe damage.
 14. **Oil-Bathed Internal Parts.** Inspect for cracks, nicks, burrs, evidence of overheating and wear.
 15. **Air-Actuated Internal Parts.** Inspect for cracks, nicks, burrs, evidence of overheating and wear.
 16. **Externally Exposed Parts.** Inspect for breaks, cracks, rust damage and wear.
 17. **Springs.** Inspect for broken, collapsed and twisted coils.

REPAIR INSTRUCTIONS1. **General.**

- a. Any repair procedure peculiar to a specific part or component is covered in the work package relating to that item.

CAUTION

Repaired items must be thoroughly cleaned to remove metal chips and abrasives, to prevent these from entering working parts of the roller.

- b. After repair, clean all parts thoroughly to prevent dirt, metal chips or other foreign material from entering any working parts.

2. **Castings.**

- a. Only minor repairs to machined surfaces, flanges and gasket mating surfaces are permitted. Remove minor nicks, burrs and scratches with:
 - (1) Fine mill file.
 - (2) Crocus cloth dipped in cleaning solvent.
 - (3) Lapping across a surface plate.
- b. Remachining of machined surfaces to repair damage, warpage or uneven surfaces is not permitted. Replace castings.
- c. Repair damaged threaded pipe plug or screw threads with a tap. Repair oversize holes with threaded inserts.

3. **Studs.**

- a. Repair minor thread damage with a thread die.
- b. Replace studs having stripped or damaged threads as outlined below:
 - (1) Remove using a stud remover. Back studs out slowly to avoid heat buildup and seizure that can cause stud to break off.

CAUTION

Refer to TM 9-233 to avoid damage to castings if welding method is used.

- (2) If studs break off too short to use a stud remover, use a stud extractor to remove or use "welding method": weld bar stock or a nut to stud and remove with a wrench.
- (3) Install replacement stud slowly to prevent heat buildup and snapping off.

4. **Gears.**

- a. Remove gears using pullers.
- b. Only minor repairs to gears are permitted. Remove minor nicks, burrs or scratches on gear teeth with:
 - (1) Fine mill file
 - (2) Crocus cloth dipped in cleaning compound, solvent (Item 9, WP 0219 00).

5. **Bushings and Bushing Type Bearings.** When bushings and bushing type bearings seize to a shaft and spin in the bore, associated parts must also be replaced.

6. **Oil Seals.**

- a. Remove oil seals by pressing or prying out, being careful not to damage casting or adapter bore.
- b. Always install new seal in bore using proper seal installation tool.

7. **Painting.** Upon installation, restored parts must be painted IAW TB 43-0209.

LUBRICATION INSTRUCTIONS**NOTE**

Refer to TM 5-3895-379-10 and to WP 0008 00 and WP 0009 00 for detailed, illustrated instructions on proper lubrication. The following are some general practices to remember:

1. Use the correct lubricant.
2. Keep lubricants clean.
3. Clean all fittings prior to lubrication.
4. Lubricate clean disassembled and new parts to prevent rust.

STANDARD TOOL REQUIREMENTS

1. The following are general practices regarding the use of tools:
 - a. Always use the proper tool kit and tools for the procedure being performed.
 - b. Ensure that tools are clean and lubricated to reduce wear and to prevent rust.
 - c. Keep track of tools. Do not be careless with them.
 - d. Return tools to toolbox when finished with repair or maintenance.
 - e. Return toolboxes and tools to tool storage when not in use.
 - f. Inventory tools before and after each use.
2. Some maintenance tasks may require special or fabricated tools. The “Initial Setup” of the procedure will specify any special or fabricated tools needed to perform that procedure. Use these special tools only for the maintenance procedures for which they are designed or called out. If you are unfamiliar with a required tool, see your supervisor.

TAGGING WIRES AND HOSES

1. Use marker tags (Item 37, WP 0219 00) to identify all electrical wires, fuel, oil, coolant, and hydraulic lines, and any other parts which may be hard to identify or replace later. Fasten tags to parts during removal by wrapping wire fasteners around or through parts and twisting ends together. Position tags to be out of the way during cleaning, inspection, and repair. Mark tags with a pencil, pen or marker.
2. Whenever possible, identify electrical wires with the number of the terminal or wire to which it connects. If no markings can be found, tag both wires or wire and terminal, and use the same identifying mark for both. If you cannot tag a wire because it must fit through a small hole or you cannot reach it, write down the description of the wire and the point to which it connects or draw a simple diagram on paper. Be sure to write down enough information so you will be able to properly connect the wires during assembly. If you need to identify a loose wire, look for identifying number near end of the wire, stamped on a permanent metal tag. Compare the number to wire numbers on the appropriate electrical schematic.
3. Identify fuel, oil, coolant, and hydraulic lines when you are taking off more than one line at the same time. Mark tags with points to which lines and hoses must be connected. If it is not obvious which end of a line goes where, tag each end of the line.
4. Identify and tag other parts as required by name and installed location.

LINES AND PORTS

To keep dirt from contaminating fluid systems when removing and installing fuel, oil, coolant, and hydraulic lines, perform the following steps:

- a. Clean fittings and surrounding area before disconnecting lines.
- b. Cover, cap, plug (Item 8, WP 0219 00) or tape lines and ports after disconnecting lines. When these are not available, use plastic bags and rubber bands, clean rags (Item 31, WP 0219 00), duct tape or other similar materials to prevent dirt from entering system.
- c. Ensure that new and used parts are clean before installing.
- d. Replace all clamps and tiedown straps.
- e. Wait to remove cover, cap, plug or tape from lines and ports until just before installing lines.

FLUID DISPOSAL**NOTE**

When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, hydraulic fluid, lubricants, battery acids or batteries, consult your unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact The Army Environmental Hotline at 1-800-872-3845.

Dispose of contaminated drained fluids IAW Standard Operating Procedures (SOP) of your unit.

END OF WORK PACKAGE

THIS WORK PACKAGE COVERS

Multimeter Usage, Relay Inspection and Test

INITIAL SETUP**Tools and Special Tools**

Tool kit, general mechanic's (Item 36, WP 0220 00)

Shop equipment, general purpose (Item 30, WP 0221 00)

MULTIMETER USAGE

1. **General.** A multimeter is used to troubleshoot the electrical system of the roller. The multimeter ohms scale is used to test for continuity, shorts and resistance. The multimeter voltmeter scale is used to test voltage levels at any point in the electrical system.
2. **Continuity Tests.** Continuity tests are performed to check for breaks in a circuit (such as a fuse, switch, light bulb connector or electrical wiring).

NOTE

If readout will not zero properly, replace batteries and repeat zeroing procedure. If readout will not zero after batteries have been replaced, notify your supervisor.

a. Zero Multimeter.

- (1) Set multimeter to ON.
- (2) Select OHMS.
- (3) Select LOWEST VOLTAGE/OHMS scale.
- (4) Touch black and red probes together and check for a zero indication on digital readout.

CAUTION

Before performing a continuity test, always place battery disconnect switch in OFF (TM 5-3895-379-10) position and disconnect circuit to be tested. Failure to follow this caution may damage multimeter.

b. Testing for Continuity.

- (1) Zero multimeter.
- (2) Connect black and red probes to both terminals of circuit being tested.
- (3) Observe readout and interpret results as follows:
 - (a) If readout indicates any numeric value, circuit has continuity.
 - (b) If readout does not indicate any numeric value, or value is over the limits of the meter, circuit is open.

MULTIMETER USAGE - CONTINUED**CAUTION**

Before performing a continuity test, always place battery disconnect switch in OFF position (TM 5-3895-379-10) and disconnect circuit to be tested. Failure to follow this caution may damage multimeter.

- c. **Testing for Shorts.** A short (or short circuit) occurs when two circuits that should not be connected have continuity with each other. A short also occurs when a circuit that should not touch ground has continuity with ground.
 - (1) Zero multimeter.
 - (2) Connect black probe to one pin and red probe to either ground or another pin.
 - (3) Observe readout and interpret results as follows:
 - (a) If readout indicates any numeric value above 0 (zero) but less than the meter's limits, circuits are shorted or circuit is grounded, if testing to ground.
 - (b) If readout does not indicate a numeric value or value does not change when connected to circuit(s) in question, circuits are not shorted.
 - (c) If readout jumps or flickers, circuits are shorted or grounded intermittently.

CAUTION

Before performing a continuity test, always place battery disconnect switch in OFF position (TM 5-3895-379-10) and disconnect circuit to be tested. Failure to follow this caution may damage multimeter.

- d. **Testing for Resistance.** Allowable resistance readings depend on circuit being tested. Refer to the particular section dealing with that circuit or component for allowable readings.
 - (1) Zero multimeter.
 - (2) Select OHMS.
 - (3) Select lowest VOLTAGE/OHMS range. If test specifies ohms range, select required range.
 - (4) Connect black and red probes across circuit to be tested.
 - (5) Observe readout and interpret results as circuit resistance.
3. **Voltage Tests**
 - a. **Measuring DC Voltage.**
 - (1) Set multimeter to ON.
 - (2) Select lowest possible DC VOLTAGE range that is still higher than voltage to be measured.
 - (3) Connect red probe to positive (+) pin and black probe to negative (-) pin.
 - (4) Observe readout and interpret results as DC voltage in circuit being tested.
 - b. **Measuring DC Voltage Drop.**

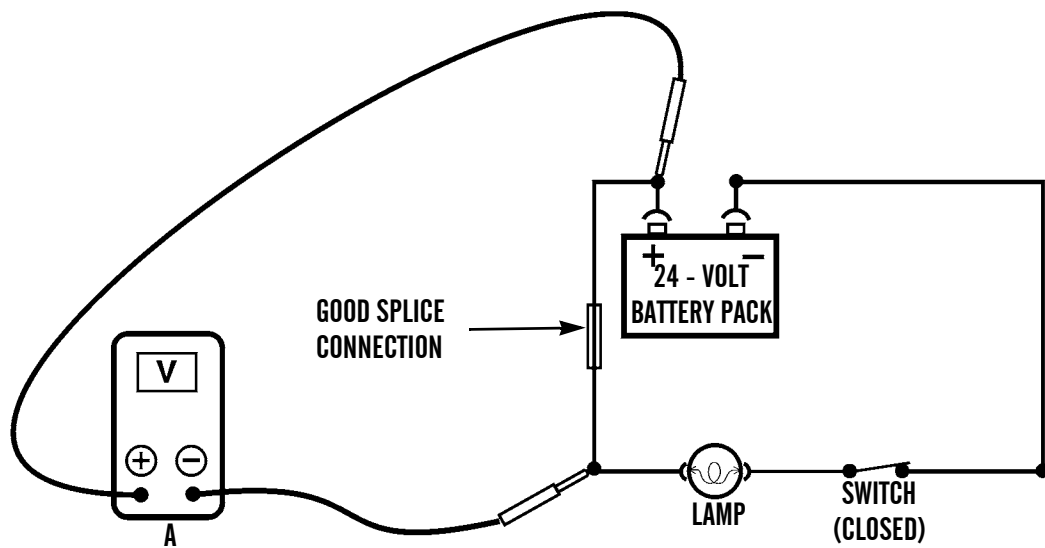
NOTE

Voltage drop is defined as the amount of voltage loss that occurs through all or part of a circuit due to resistance.

- (1) Set multimeter to ON.
- (2) Select lower possible DC VOLTAGE range that is still higher than voltage to be measured.

MULTIMETER USAGE - CONTINUED

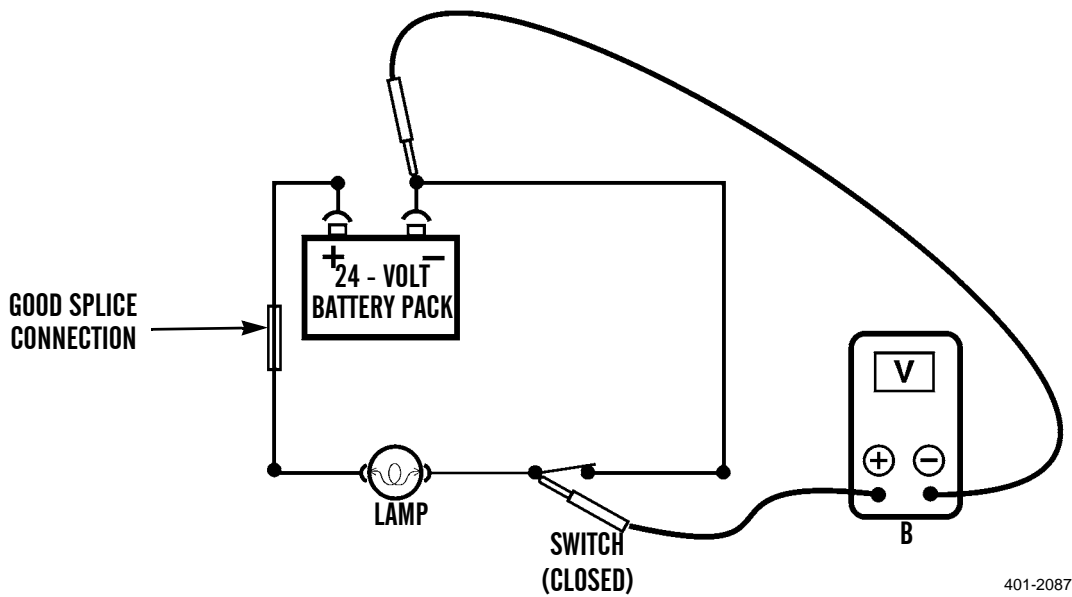
- (3) Connect red probe to test location closest to positive (+) side. Connect probe to test location closest to ground.
 - (4) Observe readout and interpret results as DC voltage in circuit being tested.
- c. **DC Voltage Drop Examples.**
- (1) Good Voltage Drop.
 - (a) Multimeter "A" is used to measure voltage drop across a good splice connection. Voltage reading at multimeter "A" should be low (about 0.1 volt). This means that resistance across this splice is low, resulting in low voltage drop.



401-2086

MULTIMETER USAGE - CONTINUED

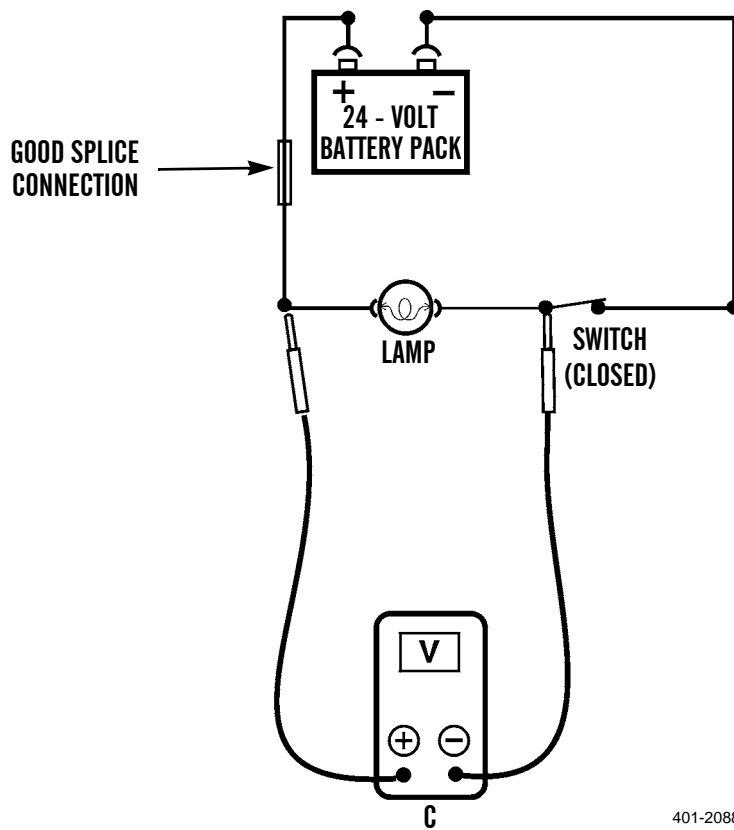
- (b) Multimeter "B" is used to measure voltage drop across a closed switch. Voltage reading at multimeter "B" also should be low (about 0.1 volt). This means that resistance across this switch is low, resulting in low voltage drop.



401-2087

MULTIMETER USAGE - CONTINUED

- (c) Multimeter "C" is used to measure voltage drop across a load, in this case a lamp. If voltages at multi-meters "A" and "B" are 0.1 volt each, voltage reading at multimeter "C" will equal 23.8 volts. This is because the sum of all voltage drops in a circuit is equal to the source voltage.

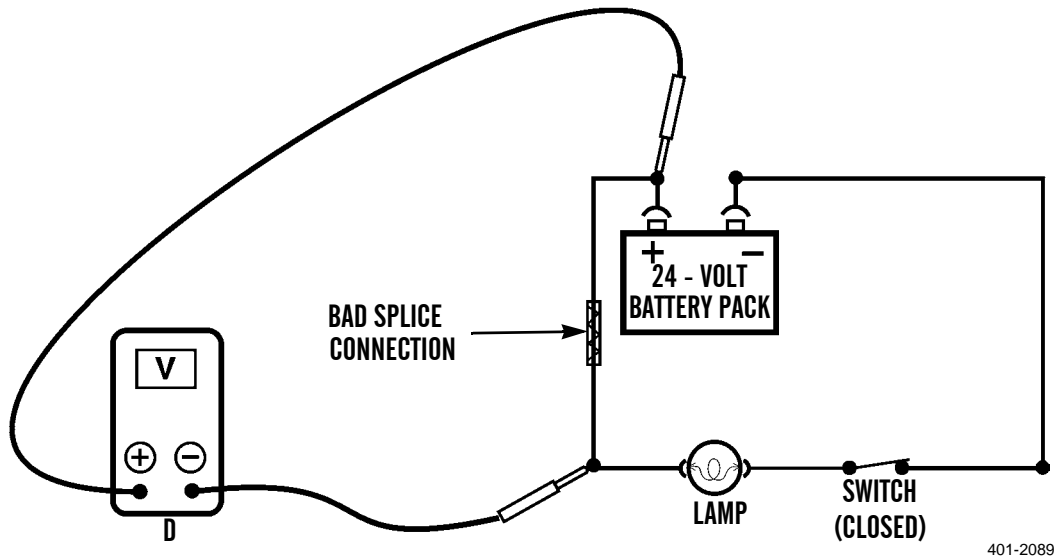


401-2088

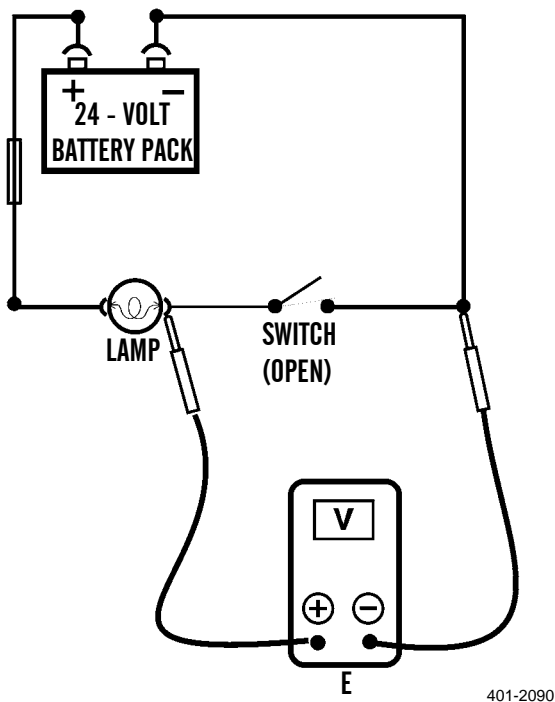
MULTIMETER USAGE - CONTINUED

(2) Bad Voltage Drop.

- (a) Multimeter "D" is used to measure voltage drop across a bad splice connection. The voltage reading at multimeter "D" is high (for example 7 volts). This means the resistance across this splice is high, resulting in high voltage drop. This would cause lamp to be dimly lit when switch is closed.



- (b) Multimeter "E" is used to measure voltage drop across an open circuit, in this case an open switch. This could also be used to demonstrate the reading in a circuit with a broken wire. The voltage reading at multimeter "E" will be approximately 24 volts. This means that an open circuit or an open switch has infinite resistance, causing all voltage to be lost.



RELAY INSPECTION AND TEST

1. **Inspecting Relays.**
 - a. Check for bent or damaged pins.
 - b. Check for burned or damaged relay case.
2. **Testing Relays.**

NOTE

When testing relays, always refer to circuit diagram printed or stamped on relay case.

- a. Using a multimeter, check for continuity across relay coil.
- b. Using a multimeter, check open or closed contacts within relay.

END OF WORK PACKAGE

SECURITY PROCEDURES

For security procedures involved in storage and shipment of the roller, refer to AR 190-13.

STORAGE INSTRUCTIONS1. **Short Term Storage (90 Days or Less).****CAUTION**

If short term storage is to occur during times when air temperature may fall below 0°F (-18°C), long term storage procedures must be used.

- a. Fill fuel tank completely (TM 5-3895-379-10).
- b. Perform *After* operation Preventive Maintenance Checks and Services (PMCS) (WP 0009 00).
- c. Park roller.
 - (1) Park roller on a level surface;
 - (2) block roller to prevent movement; and
 - (3) ensure that roller is parked in a position to allow periodic movement and allow roller to be driven away after storage.
- d. Perform final walk-around inspection to ensure that all panels, access doors, container caps and fasteners are firmly secured.
- e. Every 45 to 60 days roller must be exercised.
 - (1) Perform *Before* operation PMCS (WP 0009 00).
- f. Ensure all fluid levels are correct (WP 0009 00).
- g. Start engine (TM 5-3895-379-10). Allow engine to warm at idle speed for approximately 10 minutes.
- h. Observe warning and indicator lights (TM 5-3895-379-10).
- i. When engine is warm, throttle up roller to operating rpm (TM 5-3895-379-10).
- j. Operate all roller controls (TM 5-3895-379-10). Steering, brakes, propulsion, vibratory, lights, and horn systems must be operated. Stop roller movement often and restart. Operation should last a minimum of 30 minutes.
- k. Park roller (TM 5-3895-379-10). Repeat step (a) through step (d).

STORAGE INSTRUCTIONS2. **Long Term Storage (Greater Than 90 Days).**

- a. Perform a complete operational check. Operate propulsion, vibratory and steering systems and water spray (TM 5-3895-379-10).
- b. If any system is found to be faulty, troubleshoot (WP 0006 00).
- c. Thoroughly clean roller. Remove all grease, dirt, rocks, tar and other foreign debris.
- d. Visually inspect all metal components to locate areas to be repainted. Drum surfaces do not require painting. Repaint as required (TM 43-0139).
- e. With the exception of procedures involving fuel tank and engine crankcase, perform all Operator PMCS (TM 5-3895-379-10) and Field Maintenance PMCS (WP 0009 00).
- f. Prepare engine.
 - (1) Drain fuel tank (WP 0037 00).
 - (2) Spray inside of fuel tank with preservative oil (Item 28, WP 0219 00).
 - (3) Coat threaded surface of fuel tank drain plug with preservative oil (Item 28, WP 0219 00).
 - (4) Remove and clean fuel filler cap.
 - (5) Coat inside of fuel filler cap with preservative oil (Item 28, WP 0219 00).
 - (6) Install fuel tank drain plug and fuel filler cap.

NOTE

A two compartment portable container with a three position valve is required when preserving roller fuel system for long term storage. The container is needed to supply fuel and preservative oil to engine during preservation procedures. One side of container must contain diesel fuel (Item 16, WP 0219 00) and other side must contain preservative oil (Item 28, WP 0219 00).

- (7) Disconnect fuel line from fuel/water separator on the "in from fuel tank" side (WP 0042 00).
- (8) Connect fuel/preservative hose to fuel/water separator.
- (9) Disconnect fuel return hose from fuel filter (WP 0040 00) and place in container for collecting fuel and preservative oil with a 55 gallon (200 liter) capacity.
- (10) Open valve on fuel/preservative container to FUEL position.
- (11) Start engine (TM 5-3895-379-10) and allow to operate at fast idle until engine is warm.
- (12) Set throttle to run engine at 2100 rpm (TM 5-3895-379-10).
- (13) Turn fuel/preservative valve to PRESERVATIVE position.
- (14) Visually inspect fluid flowing from return line. When fluid is undiluted preservative oil, turn engine off (TM 5-3895-379-10).
- (15) Turn fuel/preservative valve to OFF position.
- (16) Disconnect fuel/preservative hose from fuel/water separator.
- (17) Connect fuel supply line to fuel/water separator (WP 0042 00).
- (18) Connect fuel return line to fuel filter (WP 0040 00).
- (19) Discard fuel/preservative mixture collected from fuel return line IAW local regulations.
- (20) Drain oil from crankcase (WP 0015 00).

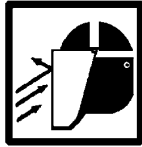
STORAGE INSTRUCTIONS - CONTINUED

- (21) Fill crankcase with preservative oil (Item 28, WP 0219 00).
 - (22) Attach tag to engine oil fill tube stating "THIS CRANKCASE IS FILLED TO CAPACITY WITH PRESERVATIVE OIL. DRAIN AND REFILL CRANKCASE WITH ENGINE OIL BEFORE OPERATION OF ENGINE."
- g. Apply protective sealant (Item 32, WP 0219 00) or equivalent to all exposed electrical wires, cables, and connectors.
- h. Coat steering cylinder chrome rod with preservative oil (Item 28, WP 0219 00) and then cover with barrier material (Item 5, WP 0219 00).
- i. Prepare air intake assembly:
- (1) Disassemble air cleaner assembly (WP 0032 00).
 - (2) Fog inside of air cleaner canister with preservative oil (Item 28, WP 0219 00).

CAUTION

Preservation oil will damage non-metallic air filter parts. Care should be used when applying preservative oil to air filter non-metallic parts.

- (3) Dip removed air cleaner components in preservative oil (Item 28, WP 0219 00).
 - (4) Install air cleaner elements and components (WP 0032 00).
 - (5) Wrap air intake restriction indicator in barrier material (Item 5, WP 0219 00).
 - (6) Loosen hose clamp at turbo air inlet and pull off air inlet hose (WP 0035 00).
 - (7) Spray inside of air inlet hose and turbocharger inlet impeller with preservative oil (Item 28, WP 0219 00).
 - (8) Attach air inlet hose and tighten clamp (WP 0035 00).
- j. Prepare exhaust system:
- (1) Remove muffler (WP 0048 00).
 - (2) Clean and paint any unpainted area on muffler and exhaust pipe (TM 43-0209).
 - (3) Spray inside of exhaust pipe leading from engine with preservative oil (Item 28, WP 0219 00).
 - (4) Install muffler (WP 0048 00).
 - (5) Place barrier material (Item 5, WP 0219 00) over exhaust exit. Secure with tape (Item 38, WP 0219 00).
- k. Prepare water spray system:
- (1) Remove water line at bottom of tanks and drain all water (TM 5-3895-379-10).

STORAGE INSTRUCTIONS - CONTINUED**WARNING**

Particles blown by compressed air are hazardous. DO NOT exceed 15 psi (103 kPa) nozzle pressure when drying parts with compressed air. Use a maximum of 30 psi (207 kPa) when cleaning components. DO NOT direct compressed air against human skin. Failure to follow this warning may cause injury or death. Make sure air stream is directed away from user and other personnel in the area. To prevent injury, user must wear protective goggles or face shield.

- (2) Disconnect water supply lines at water pumps (WP 0155 00) and blow lines out with low pressure air (30 psi or less).
- (3) With lines still disconnected from pumps turn water pumps on for a short time to purge water from pumps.
- (4) Remove water strainers, drain and install (WP 0149 00).
- (5) Connect water supply lines to water pumps (WP 0155 00).
- (6) Connect water line to bottom of tanks (TM 5-3895-379-10).

CAUTION

To prevent damage to alternator ensure that plug-in lead to alternator is disconnected.

- l. Disconnect plug-in lead to alternator (WP 0064 00) and tape (Item 38, WP 0219 00).

CAUTION

Discharged batteries will be damaged if stored in below freezing temperatures.

- m. Remove batteries (WP 0104 00) and tape (Item 38, WP 0219 00) battery cable ends. Store batteries where they can be checked periodically and recharged.
 - n. Cover seat with barrier material (Item 5, WP 0219 00).
 - o. Tag roller as "STORED LONG TERM." List all work done on roller on the tag.
 - p. Check roller every 45 to 60 days for signs of damage or deterioration. Repeat procedures if damage is detected.
3. **Removing Roller from Long Term Storage.**
- a. Remove all coverings and tape.
 - b. Install fully charged batteries or new batteries (WP 0104 00).
 - c. Connect plug-in lead to alternator (WP 0064 00).
 - d. Perform all Operator PMCS (TM 5-3895-379-10) and Field Maintenance PMCS (WP 0009 00).
 - e. On first day of operation, check roller periodically for leaks and proper operation. Troubleshoot as required (WP 0006 00).

SHIPMENT INSTRUCTIONS

1. Completely drain front and rear water tanks (TM 5-3895-379-10).
2. Perform Operator PMCS procedures (TM 5-3895-379-10).
3. Prepare roller to point required by distance and duration of shipment. If duration of shipment will last more than three months, roller should be prepared for storage.

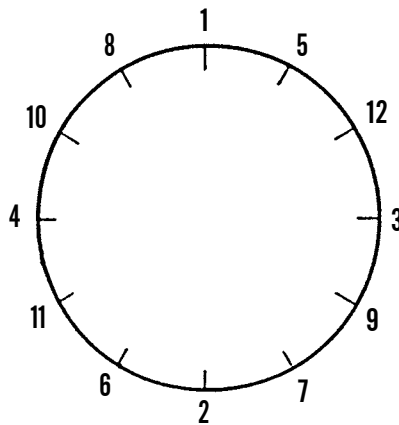
END OF WORK PACKAGE

SCOPE

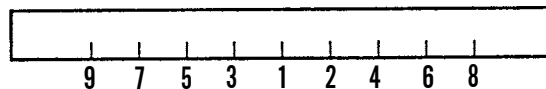
This work package lists standard torque values and provides general information for applying torque. Special torque values and tightening sequences are indicated in the maintenance procedures for applicable components.

GENERAL

1. Always use torque values listed in Tables 1 and 2 when a maintenance procedure does not give a specific torque value.
 - a. Table 1 provides torque limits for SAE standard fasteners.
 - b. Table 2 provides torque limits for metric fasteners.
2. Unless otherwise indicated, standard torque tolerance shall be ± 10 percent.
3. Torque values listed are based on clean, dry threads. Reduce torque by 10 percent when engine oil is used as a lubricant. Reduce torque by 20 percent if new plated capscrews are used.
4. If the maintenance procedures do not specify a tightening order, use the following guides:
 - a. Unless otherwise specified, lubricate threads of fasteners with oil (OE/HDO-10 or OEA-30).
 - b. When tightening fasteners above 30 lb-ft (41 Nm), use the torque pattern but only tighten to 70 percent of final value (multiply final value by 0.7). Repeat pattern until final value is reached.
 - c. Tighten circular patterns using circular torque pattern and tighten straight patterns using straight torque pattern.



CIRCULAR TORQUE PATTERN



STRAIGHT TORQUE PATTERN

CAUTION

If replacement capscrews are of higher grade than originally supplied, use torque specifications for the original. This will prevent equipment damage due to over-torquing.

Table 1. Torque Limits - SAE Standard Fasteners.

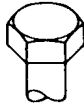


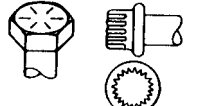
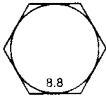
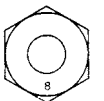
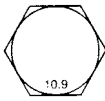
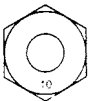
Current Usage	Much Used	Much Used	Used at Times	Used at Times
QUALITY OF MATERIAL	INDETERMINATE	MINIMUM COMMERCIAL	MEDIUM COMMERCIAL	BEST COMMERCIAL
SAE Grade Number	1 or 2	5	6 or 7	8
Cap Screw Head Markings				
Manufacturer's marks may vary				
These are all SAE Grade 5 (3 line)				
CAP SCREW BODY SIZE IN. - THREAD	TORQUE LB-FT (NM)	TORQUE LB-FT (NM)	TORQUE LB-FT (NM)	TORQUE LB-FT (NM)
1/4 20 28	5 (7) 6 (8)	8 (11) 10 (14)	10 (14)	12 (16) 14 (19)
5/16 18 24	11 (15) 13 (18)	17 (23) 19 (26)	19 (26)	24 (33) 27 (37)
3/8 16 24	18 (24) 20 (27)	31 (42) 35 (47)	34 (46)	44 (60) 49 (66)
7/16 14 20	28 (38) 30 (41)	49 (66) 55 (75)	55 (75)	70 (95) 78 (106)
1/2 13 20	39 (53) 41 (56)	75 (102) 85 (115)	85 (115)	105 (142) 120 (163)
9/16 12 18	51 (69) 55 (75)	110 (149) 120 (163)	120 (163)	155 (210) 170 (231)
5/8 11 18	83 (113) 95 (129)	150 (203) 170 (231)	167 (226)	210 (285) 240 (325)
3/4 10 16	105 (142) 115 (156)	270 (366) 295 (400)	280 (380)	375 (508) 420 (569)
7/8 9 14	160 (217) 175 (237)	395 (536) 435 (590)	440 (597)	605 (820) 675 (915)
1 8 14	235 (319) 250 (339)	590 (800) 660 (895)	660 (895)	910 (1234) 990 (1342)

Table 2. Torque Limits - Metric Fasteners.

Torque values for metric thread fasteners with lubricated* or plated threads†				
Thread Diameter-Pitch				
	Class 8.8 Bolt	Class 8 Nut	Class 10.9 Bolt	Class 10 Nut
	Torque: lb-ft (Nm)		Torque: lb-ft (Nm)	
M6	5 (7)		7 (9)	
M8	12 (16)		17 (23)	
M8 x 1	13 (18)		18 (24)	
M10	24 (33)		34 (46)	
M10 x 1.25	27 (37)		38 (52)	
M12	42 (57)		60 (81)	
M12 x 1.5	43 (58)		62 (84)	
M14	66 (89)		95 (129)	
M14 x 1.5	72 (98)		103 (140)	
M16	103 (140)		148 (201)	
M16 x 1.5	110 (149)		157 (213)	
M18	147 (199)		203 (275)	
M18 x 1.5	165 (224)		229 (310)	
M20	208 (282)		288 (390)	
M20 x 1.5	213 (313)		320 (434)	
M22	283 (384)		392 (531)	
M22 x 1.5	315 (427)		431 (584)	
M24	360 (488)		498 (675)	
M24 x 2	392 (531)		542 (735)	
M27	527 (715)		729 (988)	
M27 x 2	569 (771)		788 (1068)	
M30	715 (969)		990 (1342)	
M30 x 2	792 (1074)		1096 (1486)	

* All plated and unplated fasteners should be coated with oil before installation.

† Use these torque values if either the bolt or nut is lubricated or plated (zinc-phosphate conversion-coated, cadmium-plated, or waxed).

END OF WORK PACKAGE

CHAPTER 6
SUPPORTING INFORMATION

REFERENCES

0216 00

SCOPE

This work package lists all forms, field manuals, technical bulletins, technical manuals and other publications referenced in this manual and which apply to maintenance of the CB534B and CB534C Rollers.

PUBLICATION INDEXES

The following indexes should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

- Consolidated Army Publications and Forms Index DA Pam 25-30
- Functional User’s Manual for the Army Maintenance Management System DA Pam 738-750

FORMS

Refer to DA Pam 738-750, *The Army Maintenance Management System (TAMMS)*, for instructions on the use of maintenance forms.

- Equipment Inspection and Maintenance Worksheet DA Form 2404, DA Form 5988-E
- Maintenance Request DA Form 2407
- Material Receiving and Inspection Report DD Form 250
- Organizational Control Record for Equipment DA Form 2401
- Preventive Maintenance Schedule and Record DD Form 314
- Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines DD Form 1397
- Product Quality Deficiency Report SF Form 368
- Recommended Changes to Publications and Blank Forms DA Form 2028

FIELD MANUALS

- Army Motor Transport Units and Operations FM 55-30
- Basic Cold Weather Manual FM 31-70
- Camouflage, Concealment and Decoys FM 20-3
- Chemical and Biological Contamination Avoidance FM 3-3
- Desert Operations FM 90-3
- First Aid FM 4-25.11
- NBC Decontamination FM 3-5
- NBC Handbook FM 3-7
- Northern Operations FM 31-71
- Nuclear Contamination Avoidance FM 3-3-1
- Operations and Maintenance of Ordnance Materiel in Cold Weather FM 9-207
- Vehicle Recovery Operations FM 20-22

TECHNICAL BULLETINS

- CARC Spot Painting TB 43-0242
- Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment
and Materials Handling Equipment TB 43-0209
- Equipment Improvement Report and Maintenance Digest (U.S. Army Tank-Automotive and
Armaments Command) Tank-Automotive Equipment TB 43-001-39 Series
- Maintenance in the Desert TB 43-0239
- Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems TB 750-651

REFERENCES - CONTINUED

0216 00

TECHNICAL MANUALS

Inspection, Care and Maintenance of Antifriction Bearings TM 9-214

Joint Oil Analysis Program Laboratory Manual Vol. I, Introduction, Theory Benefits,
 Customer Sampling Procedures, Programs and Reports (TD 33-1-37-1; NAVAIR 17-15-50.1) TM 38-301-1

Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and
 Related Materiels Including Chemicals TM 9-247

Operator’s Manual for CB534B and CB534C Rollers TM 5-3895-379-10

Operator’s, Unit, Intermediate Direct Support and Intermediate General Support
 Maintenance Manual for Lead-Acid Storage Batteries TM 9-6140-200-14

Painting Instructions for Army Materiel TM 43-0139

Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command) TM 750-244-3

Field Maintenance (Unit and Direct Support Maintenance) RPSTL for CB534B and CB534C Rollers . . . TM 5-3895-379-23P

OTHER PUBLICATIONS

Abbreviations for Use on Drawings, Specifications, Standards, and Technical Documents MIL-STD-12

Army Logistics Readiness and Sustainability AR 700-138

Army Medical Department Expendable/Durable Items CTA 8-100

Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items) CTA 50-970

The Army Physical Security Program AR 190-13

END OF WORK PACKAGE

THE ARMY MAINTENANCE SYSTEM MAC

1. This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.
2. The MAC immediately following this introduction designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown in the MAC (WP 0223 00) in column (4) as:

Field - includes subcolumns:

- C - Operator/Crew
- O - Unit
- D - Direct Support

Sustainment - includes subcolumns:

- H - General Support
- D - Depot

3. The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.
4. The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

1. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).
2. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
3. **Service.** Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
4. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.
6. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
7. **Remove/Install.** To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
8. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.
9. **Repair.** The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

MAINTENANCE FUNCTIONS - CONTINUED**NOTE**

The following definitions are applicable to the “repair” maintenance function:

- Services - Inspect, test, service, adjust, align, calibrate, and/or replace.
 - Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).
 - Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item and to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).
 - Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.
10. **Overhaul.** That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
11. **Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC, TABLE 1

1. **Column (1) - Group Number.** Column (1) lists Group numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).
2. **Column (2) - Component/Assembly.** Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
3. **Column (3) - Maintenance Function.** Column (3) lists the functions to be performed on the item listed in Column (2). (For a detailed explanation of these functions refer to “Maintenance Functions” outlined above).
4. **Column (4) - Maintenance Level.** Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:

- C - Operator/Crew Maintenance
- O - Unit Maintenance
- D - Direct Support Maintenance

Sustainment:

- H - General Support Maintenance
- D - Depot Maintenance

MAINTENANCE FUNCTIONS - CONTINUED**NOTE**

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS CODE column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

5. **Column (5) - Tools and Equipment Reference Code.** Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.
6. **Column (6) - Remarks Code.** When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries (Table 3).

EXPLANATION OF COLUMNS IN THE TOOLS AND TEST EQUIPMENT REQUIREMENTS, TABLE 2

1. **Column (1) - Tool or Test Equipment Reference Code.** The tool and test equipment reference code correlates with a code used in column (5) of the MAC.
2. **Column (2) - Maintenance Level.** The lowest level of maintenance authorized to use the tool or test equipment.
3. **Column (3) - Nomenclature.** Name or identification of the tool or test equipment.
4. **Column (4) - National Stock Number (NSN).** The NSN of the tool or test equipment.
5. **Column (5) - Tool Number.** The manufacturer's part number, model number, or type number.

EXPLANATION OF COLUMNS IN THE REMARKS, TABLE 3

1. **Column (1) - Remarks Code.** The code recorded in column (6) of the MAC.
2. **Column (2) - Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

END OF WORK PACKAGE

Table 1. MAC for the CB534 Roller.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
01 0100	ENGINE Engine Assembly Engine, Turbo Diesel	Inspect	1.0						
		Test		0.5	1.0			28,32,36	P
		Service		1.5				28,36	
		Replace			8.0			28,36	
	Repair			40.0		30,36			
	Engine Lifting Plate	Inspect		0.2					P
		Replace		0.5					
	Engine Mounts	Inspect		0.2					P
		Replace		2.0				28,36	
	0101	Crankcase, Block, Cylinder Head Engine Block Assembly	Replace				20.0		6,12,28,36, 39,41,42, 46,48,52 29,36,53,57
			Repair				5.0		
		Cylinder Head Assembly	Replace			4.0		11,28,36,40	
0102	Crankshaft Crankshaft	Inspect				0.5		5,30,36,48, 61,69	
		Replace				20.0			
	Pulley	Inspect			0.2		25,28,36		
	Replace			0.5					
	Oil Seals	Inspect			0.2				
Replace			3.0		1,2, 17,28,36,45				
0103	Flywheel Assembly Flywheel	Replace			5.0		19,23 28,36		
		Replace			5.0		28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
01	ENGINE - Continued								
0104	Pistons, Connecting Rods								
	Piston Assembly	Inspect Replace				0.5 8.0	30,36,48 55,56		
	Connecting Rods	Inspect Replace				0.5 8.0	30,36,48		
0105	Valves, Camshafts and Timing System								
	Valves, Intake and Exhaust	Adjust Replace			2.0	5.0	28,36 30,36		
	Camshaft	Inspect Replace				0.5 4.0	30,36,41,48, 54		
	Rocker Arm Assembly	Inspect Replace Repair			0.5 1.5 2.5		28,36 30,36		
	Idler Gear	Inspect Replace			1.5 6.0		1,2,4,8 28,36		
0106	Engine Lubrication System								
	Oil Pan	Inspect Replace		0.2 1.5			28,36		
	Oil Pump	Inspect Replace		0.5 2.0			22 28,36		
	Oil Cooler	Inspect Replace		0.2 1.0			28,36		
	Oil Cooler Lines, Fittings and Hoses	Inspect Replace		0.1 1.0			28,36	P	
	Engine Oil Sampling Valve	Inspect Replace	0.1	0.3			28,36	P	
0108	Manifolds								
	Intake Manifold	Inspect Replace		0.5 2.5			28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
03	FUEL SYSTEM								
0301	Carburetor, Fuel Injector Fuel Injector Assembly	Test Replace			0.5 1.0		36,38 30,36		
0302	Fuel Pumps Fuel Injection Pump	Replace Repair			6.0	16.5	30,36 35,36,61	B	
	Fuel Lines, Fittings and Hoses	Inspect Replace		0.2 0.5			28,36		
	Fuel Lift Pump	Inspect Replace		0.5 1.0			28,36		
0304	Air Cleaner Air Filter Element	Inspect Service Replace	0.1 0.4	0.2			36	P	
0305	Supercharger, Blower, Turbocharger or Altitude Compensator Turbocharger	Replace Repair		1.0	2.0		28,36 28,36	C	
	Turbocharger Oil Lines, Hoses and Fittings	Inspect Replace		0.2 1.0			28,36		
0306	Tanks, Lines, Fittings, Headers Fuel/Hydraulic Oil Tank	Service Replace	0.2	4.0			28,36		
	Lines, Fittings and Hoses	Inspect Replace		0.2 0.5			28,36	P	
0309	Fuel Filters Fuel Filter Assembly	Service Replace	0.1	0.5			28,36		
	Fuel/Water Separator	Service Replace	0.1	0.5			28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
03	FUEL SYSTEM - Continued								
0311	Engine Starting Aids Cold Start Heater	Inspect Replace		0.2 1.0			28,36		
0312	Accelerator, Throttle, or Choke Controls Throttle Control	Inspect Adjust Replace		0.2 0.5 1.5			28,36 28,36		
04	EXHAUST SYSTEM								
0401	Muffler and Pipes Muffler and Exhaust System	Inspect Replace	0.1	1.5			28,36	P	
05	COOLING SYSTEM								
0501	Radiator, Evaporative Cooler, or Heat Exchanger Radiator Assembly	Inspect Test Service Replace Repair	0.1	0.5 0.8 1.0	4.0		7,15,24, 28,36 28,36 20,28,29,36, 24,28,36	P	
	Radiator Hoses	Inspect Replace	0.1	0.8			28,36	P	
0502	Cowling, Deflectors, Air Ducts, Shrouds, etc. Fan Shroud	Inspect Replace		0.2 1.0			28,36		
0503	Water Manifold, Headers, Thermostats and Housing Gasket Thermostat	Test Replace		0.5 1.0			28,36 28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
05	COOLING SYSTEM - Continued								
0504	Water Pump								
	Water Pump Assembly	Inspect	0.2						
		Replace	0.5				28,36		
0505	Fan Assembly								
	Fan Assembly and Guard	Inspect	0.2						
		Replace	1.0				28,36		
	Fan Drive Housing Assembly	Inspect	0.2						
		Replace	1.5				28,36		
	V-belts	Inspect	0.1						
		Adjust	0.5				9,10,28,36	P	
		Replace	0.5				9,10,28,36		
06	ELECTRICAL SYSTEM								
0601	Generator, Alternator								
	Alternator	Test	1.1				30,31,36		
		Replace	0.6				28,31,36		
0603	Starting Motor								
	Switch Assembly	Test	0.5				36		
		Replace	0.5				28,36		
							30,36		
							28,36		
	Starter	Test	1.5				28,36		
		Replace	1.0				28,36		
0607	Instrument or Engine Control Panel								
	Relays	Test	0.5				28,36		
		Replace	1.0				28,36		
	Switches	Test	0.5				28,36		
		Replace	1.0				28,36		
	Gauges	Inspect	0.2				28,36		
		Replace	1.0				28,36		
	Hourmeter Sending Unit	Test	0.2				28,36		
		Replace	0.5				28,36		
	Alternator Circuit Breaker	Test	0.2				28,36		
		Replace	0.5				28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
06	ELECTRICAL SYSTEM - Continued								
	Lights Circuit Breaker	Test	0.5				28,36		
		Replace	1.0				28,36		
0609	Lights								
	Work Lights	Inspect	0.1				28	P	
		Replace	0.5				28,36		
0610	Sending Units and Warning Switches								
	Water Temperature Sending Unit	Test		0.2			28,36		
		Replace		0.5			28,36		
	Engine Oil Pressure Sending Unit	Test		0.2			28,36		
		Replace		0.5			28,36		
	Fuel Level Sending Unit	Test		0.2			28,36		
		Replace		0.5			28,36		
0611	Horn, Siren								
	Horn and Backup Alarm	Inspect		0.2			28		
		Replace		0.5			28,36		
0612	Batteries, Storage								
	Batteries	Inspect		0.2			28,36	P	
		Test		1.0			28,36		
		Service		1.0			28,36		
		Replace		1.2			28,36		
	Battery Cables	Inspect		0.2			28,36	P	
		Replace		1.5			28,36		
0613	Hull or Chassis Wiring Harness								
	Engine Harness	Inspect		0.2			36		
		Test		0.5			15,28,36		
		Repair		0.5			28,36		
		Replace		3.0			28,36		
	Front Chassis Harness	Test		0.5			15,28,36		
		Repair		0.5			28,36		
		Replace		2.0			36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
06	ELECTRICAL SYSTEM - Continued								
	Rear Chassis Harness	Test		0.5				15,28,36	
		Repair		0.5				28,36	
		Replace		0.2				36	
	Instrument Harness	Test		0.5				15,28,36	
		Repair		0.5				28,36	
		Replace		4.0				28,36	
	Main Harness	Test		0.5				15,28,36	
		Repair		0.5				28,36	
	Replace			6.0			28,36		
07 0721	TRANSMISSION								
	Coolers, Pumps, Motors								
	Hydraulic Pump (Propel)	Test			4.5			6,7,22 28,36,37	
		Repair				8.5		20,22,28 36,37	
		Replace			4.0			20,28,36	
	Hydraulic Front Motor (Propel)	Test			4.5			7,13,20,22 28,36,37	
		Repair				8.5		20,22,28 36,37	
		Replace			4.0			20,28,36	
	Hydraulic, Rear Motor (Propel)	Test			4.5			7,13,20,22 28,36,37	
		Repair				8.5		20,28,36,37 36	
		Replace			4.0				
	Propel Control Valve, Lever and Fittings	Test			0.5			36,37	
		Repair		1.0				28,37	
		Replace			2.5			28,37	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
08	TRANSFER, FINAL DRIVE, PLANETARY AND DROP GEAR BOX ASSEMBLIES								
0801	Power Transfer, Final Drive, Planetary or Drop Gearbox Assemblies								
	Front and Rear Propel Gearbox Assembly	Inspect Service Replace Repair	0.5 1.0	1.5	20.0	30.0	36 29,36 20,23,30,32, 33,36,49,50, 51,58,59,68	P J	
09	PROPEL SYSTEM								
	Universal Joint and Shafts	Replace Repair			14.0 5.5		28,36 28,36		
12	BRAKES								
1204	Hydraulic Brake System								
	Brake Control Valve	Inspect Replace Repair		0.2 0.5	1.0		28,36 28,36		
	Brake Hoses, Lines and Fittings	Inspect Replace		0.2 4.0			28,36		
	Manual Brake Release Pump	Inspect Replace Repair		0.2 0.5 0.5			28,36 28,36		
14	STEERING								
1410	Hydraulic Pump or Fluid Motor Assembly								
	Power Steering Pump	Test Replace Repair			1.0 2.0 2.0		3,16,22,28 36 28,36 28,36		
1411	Hoses, Lines, Fittings								
	Steering Hoses, Lines and Fittings	Inspect Replace		0.2	0.5		28,36		

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
14	STEERING - Continued								
1412	Hydraulic or Air Cylinders								
	Hydraulic Steering Cylinders	Inspect Replace Repair		0.2 1.0				28,36 22,30,36	
					3.0				
15	FRAME, TOWING ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS								
1501	Frame Assembly								
	Oscillating Hitch	Inspect Repair		0.2			5.0	36 28,36	
	Roller Frame Assembly Including Yoke	Inspect Repair		0.2			5.0	12,28,36	
	Front and Rear Supports (Bumpers)	Inspect Replace		0.2 2.0				20,28,36	
	Rear Frame Assembly	Inspect Replace		0.2			40.0	30,36	
	Front and Rear Drum Drive Mounting	Inspect Replace			0.2 30.0			28,36	
18	BODY, CAB, HOOD AND HULL								
1801	Body, Cab, Hood and Hull Assemblies								
	Door Assemblies	Replace Repair Inspect Adjust		0.5 0.5 .05 .05				28,36 28,36	
	Handrails	Replace		0.5				28,36	
	Roll Over Protective Structure (ROPS)	Inspect Replace	0.1					28,36	
	Operator's Platform	Inspect Replace		0.2				28,36 28,36	
					10.0				

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field		Sustainment				
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
18 1806 1808	BODY, CAB, HOOD AND HULL - Continued								
	Operator's Station	Inspect Replace		0.2		9.0		28,36 28,36	P
	Rotate Lock	Inspect Replace		0.2 0.3				28,36 28,36	P
	Upholstery Seats and Carpets								
	Seat Belt	Inspect Replace	0.1					28,34,36	P
	Seat Assembly	Replace Repair		0.5 1.0				28,34,36 26,28,36	
	Seat Suspension Assembly	Inspect Replace Repair		0.2 0.5 1.5				28,36 26,28,36	
	Stowage Racks, Boxes, Straps, Carrying Cases, Cable Reels, Hose Reels, etc.								
	Tool Box	Inspect Replace	0.2 0.2					28,36	
	Rifle Mount	Inspect Replace	0.2	0.2				28,36	
22 2207 2210	BODY, CHASSIS AND HULL ACCESSORY ITEMS								
	Winterization Equipment								
	Engine Block Heating Element	Test Replace		0.2 0.3				28,36 28,36	
	Data Plates and Instruction Holders								
	Labels (Decals and Identification Plates)	Inspect Replace	0.1	0.5				28,36	P

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	DEPOT		
			C	O	F	H	D		
24	HYDRAULIC AND FLUID SYSTEMS								
2401	Pump and Motor								
	Hydraulic Pump (Vibratory)	Test			0.4			3,16,22,28, 36,37	
		Replace			4.0			28,36	
		Repair				6.0		30,36,59	
	Vibratory Control and Solenoid Assembly	Replace			2.0			28,36	
		Repair			4.0			28,36	
	Hydraulic Motor (Vibratory)	Test			0.4				
		Replace			4.0			28,36	
		Repair				6.0		23,28,36	
	Vibratory Shaft Assembly	Replace				4.0		28,36	
		Repair				4.5		28,36	
2402	Manifold and/or Control Valves								
	Vibratory Control Valve	Test			0.4			7,16,22,36	
		Replace			2.0			28,36	
		Repair			4.0			28,36	
2406	Strainers, Filters, Lines and Fittings, etc.								
	Hydraulic Oil Filter Assembly	Inspect		0.2					
		Service		0.5					
		Replace		0.5				28,36	
	Hoses, and Fittings	Inspect		0.2					
		Replace			1.0			36	
	Hydraulic Oil Cooler	Inspect		0.2					
		Replace		3.5				20,15,28,36	
73	CONCRETE AND ASPHALT EQUIPMENT COMPONENTS								
7302	Drums								
	Eccentric Weight Assembly	Replace			8.0			28,36	
		Repair			15.0			20,28,36 20,27,28 33,36	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 1. MAC for the CB534 Roller - Continued.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks		
			Field		Sustainment						
			Unit		DS	GS	DEPOT				
			C	O	F	H	D				
73 7319	CONCRETE AND ASPHALT EQUIPMENT COMPONENTS - Continued	Drums	Inspect	0.5					20,21,27 28,36 28,36		
		Resilient Mounts	Replace			17.0			28,36		
		Scrapers	Inspect	0.2							P
			Replace			6.0			28,36		
		Water System	Inspect	0.2							P
			Replace		0.8				28,36		
		Spray Pipes	Inspect	0.1							P
			Replace		1.0				28,36		
			Repair		1.0				28,36		
		Tanks	Inspect	0.1							P
			Replace		1.0				28,36		
			Repair		1.5				28,36		
		Front and Rear Water Spray Pump	Test		0.5				28,36		
			Replace		1.0				28,36		
		Front and Rear Water Spray Screen Assembly	Inspect	0.1							P
			Service		0.5				28,36		
		Water Spray and Fittings	Replace		0.5				36		
			Inspect	0.1							P
		Check Valve	Replace		0.5				28,36		
Inspect			0.5				28,36		P		
Front and Rear Water Tank Strainer	Replace		0.5				28,36				
	Service	0.1	0.5				28,36				
	Inspect		0.5				28,36				

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 2. Tools and Test Equipment Requirements for the CB534 Roller.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	F	Adapter	5120-01-437-0474	9U6210
2	F	Alignment Tool		4C-4562
3	F, O	Blocking Plate	8345-01-294-0560	9S7359
4	F	Cover Guide		9U-6199
5	F	Crankshaft Turning Tool		9U-6198
6	F	Degree Wheel		8T3052
7	F, O	Digital Resistor, Thermal (Thermometer)	5905-01-127-5428	4C6500
8	F, O	Driver Group	5120-01-030-1626	1P0510
9	F, O	Fitting Group	5340-01-485-0959	4C4892
10	O	Gauge, Belt Tension	6635-01-093-3710	BT-33-73F
11	O	Gauge, PSI (6500 psi)	6685-01-476-1424	8T-0855
12	O	Gauge, PSI (9000 psi)	6685-01-476-1427	8T-0861
13	O	Hoist, Wire Rope	3950-00-329-3309	144
14	F	Hose	4720-01-474-3134	122-6870
15	O	Indicator, Point Set Multitach II	4940-01-268-2200	9U7400
16	F	Insertor, Seal	5120-01-437-0477	9U6200
17	F	Insertor, Seal	5120-01-286-4205	1U6438
18	F	Installer, Rear Seal	2815-01-435-7172	9U6205
19	F	Lifting Bracket	5340-01-336-2459	FT0120
20	F, H, O	Link Bracket	4940-01-268-2201	1387573
21	F	Load Leveler	3940-01-294-0606	6V6146
22	F	Measuring Equipment, Hydraulic	5210-01-362-8593	4C4890
23	F	Pin, Straight, Threaded	5315-01-435-7176	9U6238
24	O	Pump Group, Cool System	2930-01-124-1739	9S8140
25	F	Puller Kit, Universal	5180-01-124-1903	1U7600
26	O	Screwdriver Attachment, Socket Head	5120-01-367-3539	FTX55
27	F	Seal Driver		1413028

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 2. Tools and Test Equipment Requirements for the CB534 Roller - Continued.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
28	O	Shop Equipment, Automotive Maintenance and Repair: OM Common No. 1, Less Power (SC4910-95-A74)	4910-00-754-06548	W32593
29	O, F	Shop Equipment, Contact Maintenance, Truck Mounted (SC4940-95-B04)	4940-00-294-9518	T10138
30	F, H	Shop Equipment, General Purpose Repair, Semitrailer Mounted (SC4940-95-CL-B02)	4940-00-287-4894	T10549
31	O	Shop Equipment, Organizational Repair, Light, Truck Mounted (SC4940-95-CL-B03)	4940-00-294-9516	T13152
32	O	Simplified Test Equipment for Internal Combustion Engines Reprogrammed (STE/ICE-R) TM9-4910-571-12&P	4910-01-222-6589	A56243
33	F	Spanner Wrench		1P2852
34	F	Tamper Resistant Tool Kit		1711085
35	F	Timing Pin		1503993
36	O, F, H	Tool Kit, General Mechanics: Automotive (SC5180-90-N26)	5180-00-177-7033	W33004
37	F, H	Tool Outfit Hydraulic Systems Test and Repair (HSTRU) (SC4940-95-CL-B07)	4940-01-036-5784	1322IE6850
38	F	Vacuum Pump		1950761
39	H	Cross Block Adapter, Mechanical Puller	5120-01-432-7179	1U9895
40	H	Cylinder Head Stand		8S6691
41	H	Driver Kit, Bearing	4910-01-032-3128	8S2241
42	H	Exhaust Valve Seat Extractor		9U6397
43	H	Handle	2540-01-038-3863	9S3095
44	H	Cylinder Liner Puller	5120-00-024-9718	5F7347
45	H	Inlet Valve Seat Extractor		9U6396
46	H	Leg		9U6281

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0218 00

Table 2. Tools and Test Equipment Requirements for the CB534 Roller - Continued.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
47	H	Liner Projection Tool Group	5120-01-124-1737	8T0455
48	H	Piston Ring Compressor		1U6684
49	H	Pliers		1P1857
50	H	Pliers	5120-01-484-9391	1P1860
51	H	Pliers		5P5197
52	H	Puller Plate		9U6234
53	H	Flow Meter		4C8689
54	H	Ratchet Wrench	5120-01-123-5881	8H0684
55	H	Ridge Reamer	5110-01-352-1337	8S2269
56	H	Ring Expander		1U6683
57	H	Screw		6V2183
58	H	Spanner Socket		1847409
59	H	Spring Compressor		1473497
60	H	Stop Collar		9U6220
61	H	Timing Fixture		9U6188
62	H	Valve Guide Driver		1U9169
63	H	Valve Seat Cutter		1573720
64	H	Valve Seat Driver		9U6183
65	H	Valve Seat Driver		9U6184
66	H	Valve Seat Driver		9U6185
67	H	Valve Spring Compressor		9U6195
68	H	Torque Multiplier	5120-01-296-4235	6V6080
69	H	Torque Wrench Extension		9U6282

Table 3. Remarks for the CB534 Roller.

(1) REFERENCE CODE	(2) REMARKS
A	Limited repair by replacement of external seals and clamp only.
B	SRA or Dealer for repair.
C	Limited repair by replacement of cartridge only.
D	Repair by replacement of components.
E	Replace electrical components at Unit Maintenance and hydraulic components at Direct Support Maintenance.
F	Some lines and fittings are removed by Unit Maintenance while other lines and fittings are removed by Direct Support Maintenance.
G	Component parts, such as terminals and wires may be replaced or repaired by Unit Level Maintenance. The assembly as a whole must be replaced by Direct Support Maintenance.
H	Propel control lever handle must be disassembled by Unit Maintenance to replace on/off switch.
J	Operator adds fluids only. Unit Maintenance drains and fills assembly.
P	Preventive Maintenance Checks and Services (PMCS).

END OF WORK PACKAGE

SCOPE

This work package lists expendable and durable items you will need to maintain the Roller, Motorized, Vibrating Tandem Steel Drums. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, *Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items)*, or CTA 8-100, *Army Medical Department Expendable/Durable Items*.

EXPLANATION OF COLUMNS

1. **Column (1) - Item Number.** This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item [e.g., Use antifreeze (Item 4, WP 0219)].
2. **Column (2) - Level.** This column identifies the lowest level of Field Maintenance that requires the listed item.
 - C - Operator/Crew
 - O - Unit Maintenance
 - F - Direct Support Maintenance
3. **Column (3) - National Stock Number.** This is the NSN assigned to the item which you can use to requisition it.
4. **Column (4) - Description, Commercial and Government Entity Code (CAGEC), and Part Number.** This provides the other information you need to identify the item.
5. **Column (5) - Unit of Measure (U/M).** This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

EXPENDABLE AND DURABLE ITEMS LIST - CONTINUED

0219 00

Table 1. Expendable and Durable Items List .

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
1	O	8040-01-250-3969	ADHESIVE: Loctite (05972) 242	OZ
2	O	8040-01-043-7537	ADHESIVE: Loctite (05972) 49661	
3	O	8040-00-142-9823	ADHESIVE: Silicone Rubber (81349) MIL-A-46106	KIT
4	C		ANTIFREEZE: Permanent, Ethylene Glycol, Inhibited (81349) MILA46153	
		6850-00-181-7929	1 Gallon Bottle	GAL
		6850-00-181-7933	5 Gallon Can	GAL
		6850-00-181-7940	55 Gallon Drum	GAL
5	O		BARRIER MATERIAL: Grade A (81349) MIL-B-121	
		8135-00-292-9719	300 Foot Roll	EA
6	O	7920-00-205-2401	BRUSH: Cleaning	EA
7	C	7920-00-056-5525	BRUSH: Nylon (80020) A408848-2	EA
8	O	5340-00-450-5718	CAP SET, PROTECTIVE: Dust and Moisture Seal (19207) 10935405	EA
9	C		CLEANING COMPOUND: Solvent, Type III (81349) MIL-PRF-680	
		6850-01-474-2318	1 Gallon Can	GAL
		6850-01-474-2320	5 Gallon Can	GAL
		6850-01-474-2321	55 Gallon Drum	GAL
10	C		CLOTH: Cleaning (51200) MIRACLEWIPEL001	
		7920-00-044-9281	10 Pound Bale	LB
11	O	8030-00-251-3980	COMPOUND: ANTISEIZE (05972) 76764	LB
12	O		COMPOUND, SEALING: Lubricating, (05972) 271 MIL-S-46163	
		8030-00-148-9833	10 cc bottle	CC
13	O	8030-01-054-0740	COMPOUND, SEALING: Pipe Thread (61603), Type A	
14	C		DETERGENT: General Purpose, Liquid (83421) 7930-00-282-9699	
		7930-00-282-9699	1 Gallon Can	GAL

Table 1. Expendable and Durable Items List - Continued.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
15	C		FUEL: Diesel, DF-1 Grade, Winter (81346) ASTM D 975	
		9140-00-286-5286	Bulk	GAL
		9140-00-286-5287	5 Gallon Can	GAL
		9140-00-286-5288	55 Gallon Drum	GAL
16	C		FUEL: Diesel, DF-2 Grade (81346) ASTM D 975	
		9140-00-286-5294	Bulk	GAL
		9140-00-286-5295	5 Gallon Can	GAL
		9140-00-286-5296	55 Gallon Drum	GAL
17	O	9130-01-031-5816	Fuel, Turbine: Aviation (81349) MILT 83133 GR JP8	GAL
18	O	8040-01-038-5043	GASKET CEMENT (11083) 5H2471	
19	C		GREASE: Automotive and Artillery, GAA	
		9150-01-197-7688	(81349) M-10924-A 2-1/4 Ounce Tube	OZ
		9150-01-197-7690	(81349) M-10924-C 1-3/4 Pound Can	LB
		9150-01-197-7692	(81349) M-10924-E 35 Pound Can	LB
		9150-01-197-7693	(81349) M-10924-B 14 Ounce Cartridge	OZ
20	O		GREASE: Molybdenum Disulfide (39428) 1062K97	
		9150-01-326-5424	14 Ounce Cartridge	OZ
21	O		OIL: Lubricating, General Purpose (81349) MIL-PRF-32033	
		9150-00-836-8641	(81346) MIL-PRF-32033 1/2 Ounce Can	OZ
		9150-00-261-8146	(81346) MIL-PRF-32033 1 Ounce Can	OZ
		9150-00-273-2389	(81346) MIL-PRF-32033 4 Ounce Can	OZ
		9150-00-458-0075	(81346) MIL-PRF-32033 Aerosol Can	EA
		9150-00-231-6689	(81346) MIL-PRF-32033 1 Quart Can	QT
		9150-00-231-9045	(81346) MIL-PRF-32033 1 Gallon Can	GAL
		9150-00-231-9062	(81346) MIL-PRF-32033 5 Gallon Can	GAL
		9150-00-281-2060	(81346) MIL-PRF-32033 55 Gallon Drum	GAL

Table 1. Expendable and Durable Items List - Continued.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
22	O	9150-01-035-5390 9150-01-035-5391	OIL: Lubricating, GO-75 (81349) MIL-PRF-2105 1 Quart Can 5 Gallon Can	QT GAL
23	O	9150-01-035-5392 9150-00-001-9395 9150-01-035-5394	OIL: Lubricating, GO-80/90 (81349) MIL-PRF-2105 1 Quart Can 5 Gallon Can 55 Gallon Drum	QT GAL GAL
24	C	9150-00-189-6727 9150-00-186-6668 9150-00-191-2772	OIL: Lubricating, OE/HDO-10 (81349) MIL-PRF-2104 1 Quart Can 5 Gallon Can 55 Gallon Drum	QT GAL GAL
25	C	9150-01-152-4117 9150-01-152-4118 9150-01-152-4119	OIL: Lubricating, OE/HDO-15/40 (81349) MIL-PRF-2104 1 Quart Can 5 Gallon Can 55 Gallon Drum	QT GAL GAL
26	C	9150-00-186-6681 9150-00-188-9858	OIL: Lubricating, OE/HDO-30 (81349) MIL-PRF-2104 1 Quart Can 5 Gallon Can	QT GAL
27	C	9150-00-402-4478 9150-00-402-2372 9150-00-491-7197	OIL: Lubricating, OEA-30, Arctic (81349) MIL-L-46167 1 Quart Can (81349) MIL-PRF-46167 5 Gallon Can (81349) MIL-PRF-46167 55 Gallon Drum	QT GAL GAL
28	O	9150-00-889-3523 9150-00-985-7293 9150-00-407-0973	Oil, Preservative (MIL-P-46093) 1 -quart can 5-gallon can 55 -gallon drum	QT GL GL
29	O		OIL: Synthetic (ISO 220) (11083/4C6767) (15958/Syntho Gear EP 220) (19135/SHC 630) 1 quart can	QT
30	O	9150-00-250-0926	PETROLATUM: Technical 82146 (14P1 1.75 Pound Can	LB

Table 1. Expendable and Durable Items List - Continued.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
31	C	7290-00-205-1711	RAG: Wiping (64067) 7920-00-205-1711 50 Pound Bale	LB
32	O	8030-00-063-7276	SEALING COMPOUND (71984) 1890	
33	C	7930-00-634-3935	SOAP: Laundry 200 Pound Container	LB
34	O	6810-00-233-1715	SODIUM CARBONATE: Anhydrous (81346) D458	
35	O		SOLDER: Lead-Tin Alloy, Rosin Core (81348) QQ-S-571	
36	O	3439-00-555-4629	1 Pound Spool	LB
		5975-00-903-2284	STRAP: Tiedown, Electrical Components (96906) MS3367-4-0 4 Inch Length, Black Package of 100	EA
		5975-00-984-6582	(96906) MS3367-1-0 6 Inch Length, Black Package of 100	EA
		5975-00-935-5946	(96906) MS3367-2-1 13.35 Inch Minimum Length, Brown Package of 100	EA
37	O	9905-00-537-8954	TAG: Marker (64067) 9905-00-537-8954 Pack of 50	EA
38	O	7510-00-663-3732	TAPE: Pressure Sensitive (52170) 351	RL
39	O	9320-01-053-8266	TAPE: Teflon (20484) 1/4 IN X .020	RL

END OF WORK PACKAGE

TOOL IDENTIFICATION LIST

0220 00**SCOPE**

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the Roller, Motorized, Vibrating Tandem Steel Drums.

EXPLANATION OF COLUMNS IN THE TOOL IDENTIFICATION LIST

1. **Column (1) - Item Number (No.)**. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g., Tool kit, general mechanic's, Item 36, WP 0220 00).
2. **Column (2) - Item Name**. This column lists the item by noun nomenclature and other descriptive features (e.g., Cutter, tube).
3. **Column (3) - National Stock Number**. This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.
4. **Column (4) - Part Number/CAGEC**. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.
5. **Column (5) - Reference**. This column identifies the authorizing supply catalog or RPSTL for selected tool.

TOOL IDENTIFICATION LIST - CONTINUED

0220 00

TOOL IDENTIFICATION LIST

Table 1. Tools and Test Equipment Requirements.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	F	Adapter	5120-01-437-0474	9U6210
2	F	Alignment Tool		9U-6200
3	F, O	Blocking Plate	8345-01-294-0560	9S7359
4	F	Cover Guide		9U-6199
5	F	Crankshaft Turning Tool		9U-6198
6	F	Degree Wheel		8T3052
7	F, O	Digital Resistor, Thermal (Thermometer)	5905-01-127-5428	4C6500
8	F, O	Driver Group	5120-01-030-1626	1P0510
9	F, O	Fitting Group	5340-01-485-0959	4C4892
10	O	Gauge, Belt Tension	6635-01-093-3710	BT-33-73F
11	O	Gauge, PSI (6500 psi)	6685-01-476-1424	8T-0855
12	O	Gauge, PSI (9000 psi)	6685-01-476-1427	8T-0861
13	O	Hoist, Wire Rope	3950-00-329-3309	144
14	F	Hose	4720-01-474-3134	9X2350
15	O	Indicator, Point Set, Multitach II	4940-01-268-2200	9U7400
16	F	Insertor, Seal	5120-01-437-0477	9U6200
17	F	Insertor, Seal	5120-01-286-4205	1U6438
18	F	Installer, Rear Seal	2815-01-435-7172	9U6205
19	F	Lifting Bracket	5340-01-336-2459	FT0120
20	F, H, O	Link Bracket	4940-01-268-2201	1387573
21	F	Load Leveler	3940-01-294-0606	6V6146
22	F	Measuring Equipment, Hydraulic	5210-01-362-8593	4C4890
23	F	Pin, Straight, Threaded	5315-01-435-7176	9U6238
24	F,H	Pliers	5120-00-595-9555	1P1859
25	O	Pump Group	2930-01-124-1739	9S8140
26	F	Puller Kit, Universal	5180-01-124-1903	1U7600
27	O	Screwdriver Attachment, Socket Head	5120-01-367-3539	1U8011
28	F	Seal Driver		1413028

TOOL IDENTIFICATION LIST - CONTINUED

Table 1. Tools and Test Equipment Requirements - Continued.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
29	O	Shop Equipment, Automotive Maintenance and Repair: OM Common No. 1, Less Power (SC4910-95-A74)	4910-00-754-0654	W32593
30	O, F	Shop Equipment, Contact Maintenance, Truck Mounted (SC4940-95-B04)	4940-00-294-9518	T10138
31	F, H	Shop Equipment, General Purpose Repair, Semitrailer Mounted (SC4940-95-CL-E03)	4940-00-287-4894	T10549
32	O	Shop Equipment, Organizational Repair, Light, Truck Mounted (SC4940-95-CL-B03)	4940-00-294-9516	T13152
33	O	Simplified Test Equipment for Internal Combustion Engines Reprogrammed (STE/ICE-R) TM9-4910-571-12&P	4910-01-222-6589	A56243
34	F	Spanner Wrench		1P2852
35	F	Tamper Resistant Tool Kit		1711085
36	F	Timing Pin		1503993
37	O, F, H	Tool Kit, General Mechanics: Automotive (SC5180-90-N26)	5180-00-177-7033	W33004
38	F, H	Tool Outfit Hydraulic Systems Test and Repair (HSTRU) (SC4940-95-CL-B07)	4940-01-036-5784	1322IE6850
39	F	Vacuum Pump		1950761

END OF WORK PACKAGE

ILLUSTRATED LIST OF MANUFACTURED ITEMS

0221 00

INTRODUCTION

1. This work package includes complete instructions for making items authorized to be manufactured or fabricated by Unit Maintenance.
2. A part number index (Table 1. Manufactured Items Part Number Index) in alphanumeric order is provided for cross-referencing part number of manufactured item to figure where fabrication criteria is covered.
3. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on illustration.

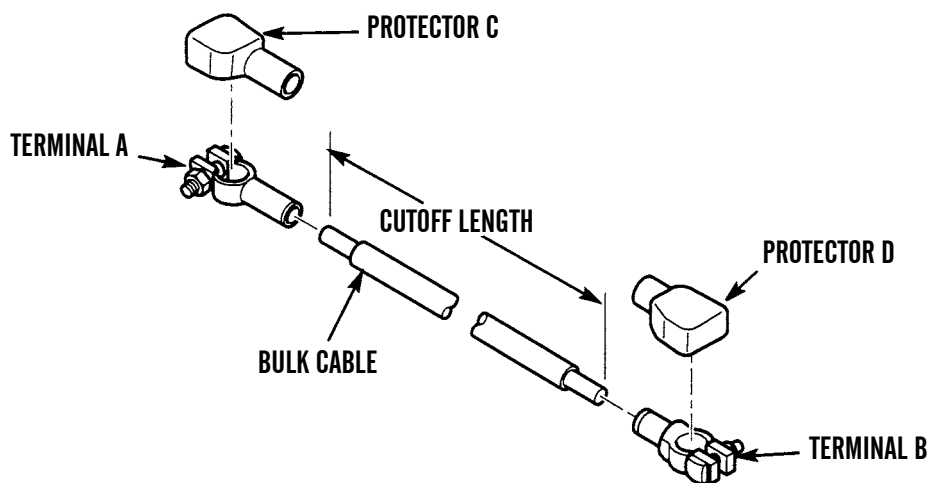
Table 1. Manufactured Items Part Number Index.

Part No.	Nomenclature	Page No.
3P-2181	Battery Cable	2
5P-0753	Water Spray Lines	22
5P-3619	Tubing, Wiring Harness	23
5P-5112	Tubing, Wiring Harness	23
5Y-1423	Battery Cable	2
9V-6943	Battery Cable	2
9X-2092	Seat Trim	22
091-847	Edging (Channel)	23
106-0539	Battery Cable	2
108-0405	Battery Cable	2

BATTERY CABLE FABRICATION

NOTE

This illustration is provided as reference. Actual appearance of components may vary.



401-789

NOTES:

1. Obtain all components required to fabricate desired battery cable. Refer to TM 5-3895-379-23P for component part numbers.
2. Use a fine-toothed hacksaw blade or suitable cutting device, and cut cable to indicated length.
3. Remove about 1 in. (25 mm) of insulation from each end of cable.
4. Slide terminal protectors C and D on cable as indicated.
5. Place battery cable terminals A and B on cable as indicated.
6. Crimp battery cable terminals on cable.

Figure 1. Battery Cables.

Table 2. Battery Cables and Components.

Battery Cable LOCATION	Cutoff Length In. (mm)	Battery Cable Terminal A	Battery Cable Terminal B	Terminal Protector C	Terminal Protector D
Battery Disconnect Switch to Battery	24 (610)	YES	YES	YES	YES
Battery Disconnect Switch to Frame	13 (330)	YES	YES	NO	NO
Battery to Battery	8 (200)	YES	YES	YES	YES
NATO Connector to Starter	67 (1700)	YES	YES	NO	NO
Battery to NATO Connector	23 (580)	YES	YES	YES	YES

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION

1. Wiring harnesses are procured as assemblies. The following information is provided as reference to aid in repair of individual wires and circuits within harnesses.
2. Refer to WP 0108 00 for wiring harness repair procedures.
3. Refer to WP 0222 00 for circuit identification.
4. Refer to TM 5-3895-379-23P for specific part numbers.

Table 3. Engine Wiring Harness page 0221 00-3
 Table 4. Main Wiring Harness page 0221 00-7
 Table 5. Front Wiring Harness page 0221 00-16
 Table 6. Rear Wiring Harness page 0221 00-17
 Table 7. Harness Assembly page 0221 00-18
 Table 8. Instrument Wiring Harness page 0221 00-18

Color Code Abbreviations

Black..... BK	Green..... GN	Red..... RD
Blue..... BU	Pink..... PK	White..... WH
Brown..... BR	Purple..... PU	Yellow..... YL
Gray..... GY	Orange..... OR	

Table 3. Engine Wiring Harness.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Starter	101A	6	56	1422	RD	101B	Alternator Circuit Breaker
Main Harness P9	109A	6	104	2642	OR	109B	Alternator Circuit Breaker
Alternator	109C	6	90	2206	OR		
Starter Relay	109E	6	54	1372	OR	109F	Alternator Circuit Breaker
R5-22	123A	16	8	203	WH	123B	Splice
Hour Meter P18-2	123C	16	58	1473	WH		
Speed Sensor P12-1	123D	16	20	508	WH		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 3. Engine Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Ground	R5-33	200A	16	15	381	BK	200B Splice
Ground Frame		200C	12	9	229	BK	
Hydraulic Charge Relay	P17-A	200K	16	7	178	BK	
Ground	R-16-5	200T	16	16	406	BK	
Splice	200D		16	48	1219	BK	
			16	17	431	BK	200E Fuel Solenoid
			16	29	737	BK	200F P17-2 Water Temperature Sending Unit
			16	20	508	BK	200G Engine Oil Pressure Switch
			16	62	1574	BK	
2-Speed Valve	P20-2	200I	16	33	838	BK	200H Splice
Brake Valve	P19-2	200J	16	35	889	BK	
Vibratory Continuous Valve	P23-2	200L	16	17	432	BK	
Vibratory Pump	A-2	200M	16	11	279	BK	
Vibratory Pump	B-2	200N	16	8	203	BK	
Vibratory Continuous Valve	P22-2	200O	16	19	483	BK	
Splice	200P		16	58	1473	BK	
			16	15	381	BK	200Q Hydraulic Temperature Sending Unit
			16	80	2032	BK	200R Fuel Sending Unit
			16	9	229	BK	200S P21-2 Starter Relay
	R5-9	220A	16	76	1930	BK	220B Engine Oil Pressure Switch
	R5-24	221A	16	91	2311	BK	221B Water Temperature Sending Unit
	R5-23	226A	16	136	3454	BK	226B Hydraulic Temperature Switch

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 3. Engine Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination	
			Inches	mm				
Hydraulic Charge Relay	P17-B	276B	16	22	559	BK	276A	R5-15
Starter		304A	6	53	1346	WH	304B	Starter Relay
	R5-6	306A	16	131	3327	GN	306B	Starter Relay
	R5-7	309A	16	108	2743	GY	309B	Alt (R) Terminal
	R5-13	321A	16	27	686	BR	321B	P12-4 Backup Alarm
	R5-17	322A	16	27	686	GY	322B	P14 Warning Horn-5
	R5-10	326A	16	79	2007	PU	326B	Fuel Shutoff Solenoid
	R5-11	377A	16	141	3581	OR	377B	Starting Aid
	R5-25	400A	16	65	1651	GN	400B	P-1801 Hour Meter
	R5-14	B439A	16	27	686	RD	B439B	P14 Vibratory Sensor-7
	R5-18	B440A	16	27	686	RD	B44CB	P12 Vibratory Sensor-3
	R5-8	447A	16	201	5105	PK	447B	Fuel Sending Unit
	R5-12	449A	16	27	686	RD	449B	P12-2 (Unused)
	R5-40	604A	16	30	762	OR	604B	R16-4 (Unused)
	R5-29	605A	16	30	762	YL	605B	R16-3 (Unused)
	R5-30	606A	16	30	762	GY	606B	R16-5 (Unused)
	R5-21	608A	16	27	686	GN	608B	Splice
Working Lights	P12-5	608C	16	13	330	GN		
	R16-1	608D	16	16	406	GN		
	R5-27	619A	16	8	203	GN	619B	Splice
Working Lights	P14-6	619C	16	20	508	GN		
(Unused)	R16-2	619D	16	23	584	GN		
	R5-26	614A	16	30	762	PU	614B	R16-7 (Unused)
	R5-36	C729A	16	27	686	BU	C729B	P14-4 (Unused)
	R5-35	C730A	16	27	686	BR	C730B	P14-3 (Unused)
	R5-34	751A	16	106	2692	GN	751B	P20-4 2-Speed Valve
	R5-3	777A	16	108	2743	PU	777B	Brake Valve Solenoid
	R5-20	C922A	16	27	686	BR	C922B	P14-8 Water Pump

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 3. Engine Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
R5-19	C923A	16	27	686	OR	C923B	P12-6 Water Pump
R5-2	C924A	16	128	3251	YL	C924B	Vibratory Pump Connector A-1
R5-1	C925A	16	125	3175	GN	C925B	Vibratory Pump Connector B-1
R5-4	C926A	16	136	3454	BU	C926B	P22-1 Vibratory Continuous Valve
R5-5	C927A	16	134	3403	PU	C927B	P23-1 Vibratory Continuous Valve
R5-32	C928A	16	27	686	GY	C928B	P14 Drum Offset Valve-2
R5-31	C929A	16	27	686	WH	C929B	P14 Drum Offset Valve-1
R5-37	A919A	16	87	2210	BU	A919B	Throttle P38-A
R5-38	A920A	16	87	2210	BR	A920B	Throttle P38-B
R5-16	A983A	16	87	2210	BU	A983B	Throttle P38-C

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination		
			Inches	mm					
Throttle Control R3-6	181A	16	73	1854	GY	181E	Splice		
Throttle Control Relay Terminal 1	181B	16	19	483	GY				
Throttle Control Timer Terminal + Hot	181C	16	16	406	GY				
Throttle Control Breaker	181D	16	19	483	GY				
Splice	200C	16	10	254	BK	200A	R2-12 Ground		
		16	12	305	BK	200D	P8-2 (Unused)		
		16	63	1600	BK	200E	Splice		
Splice	200X	16	100	2540	BK				
Splice	200G	16	19	483	BK	200L	Splice		
		16	4	102	BK			200H	P11-2 Main Relay
		16	19	483	BK			200I	Spray Timer Terminal 2
		16	17	432	BK			200J	(Unused)
		16	15	381	BK			200K	Brake Relay 1 Terminal 5
		16	7	178	BK			200Y	(Unused)
		16	11	279	BK			200L	Splice
Brake Connector Relay 2 Terminal 5	200M	16	6	152	BK				
Neutral Start Connector Relay 1 Terminal 2	200O	16	9	229	BK				
Neutral Start Connector Relay 2 Terminal 5	200N	16	8	203	BK				
Warning Light Connector Relay Terminal 2	200P	16	37	940	BK				
Throttle Control Relay Terminal 5	200Z	16	12	305	BK				
Hydraulic Charge Oil Press Relay Terminal 3	200AA	16	11	279	BK				

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination	
			Inches	mm				
Warning Light Connector Relay Terminal 4	200Q	16	20	508	BK	200E	Splice	
Splice	200R	16	15	381	BK			
		16	10	254	BK	200S	Indicator Light Relay Terminal 2	
		16	7	178	BK	200T	Hydraulic Temperature Relay Terminal 3	
		16	7	178	BK	200U	Coolant Temperature Relay Terminal 3	
		16	9	229	BK	200V	Engine Oil Pressure Relay Terminal 3	
		16	19	483	BK	200W	Park Brake Switch	
Splice	200X	16	4	102	BK	200F	P5-33 Ground	
Engine Oil Pressure Switch	P5-9	220A	16	126	3200	BK	220B	Engine Oil Pressure Relay Terminal 5
Engine Coolant Temperature Switch	P5-24	221A	16	125	3175	BK	221B	Coolant Temperature Relay Terminal 5
Hydraulic Temperature Switch	P5-23	226A	16	122	3098	BK	226B	Hydraulic Temperature Relay Terminal 5
Hydraulic Charge Oil Pressure Switch	P5-15	276A	16	125	3175	BK	276B	Hydraulic Charge Oil Pressure Relay Terminal 5
Starter Relay	P5-6	306A	16	124	3150	GN	306B	Neutral Start Relay 1 Terminal 1
Engine Start Switch	P1-1	307A	16	85	2159	OR	307B	Neutral Start Relay 1 Terminal 4
Alternator Light	P1-2	308A	16	59	1499	YL	308B	Splice
Resistor Fuel Solenoid		308C	16	42	1067	YL		
Main Relay	P11-1	308D	16	23	584	YL		
Alternator Light	P1-3	309A	16	87	2210	GY	309B	5-7 Alternator
Backup Alarm	P5-13	321A	16	138	3505	BR	321B	Backup Alarm Pressure Switch
Warning Horn	P5-17	322A	16	139	3530	GY	322B	Horn Switch

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Fuel Shutoff Solenoid P5-10	326A	16	66	1676	PU	326B	Splice
Resistor Fuel Solenoid	326C	16	79	2007	PU		
Engine Start Switch R2-1	326D	16	24	610	PU		
Control Lever P10-8	330C	16	33	838	YL	330R	Splice
Neutral Start Connector Relay 2 Terminal 2	330D	16	19	483	YL		
Neutral Start Connector Relay 1 Terminal 5	330E	16	21	533	YL		
Starting Aid Switch P1-4	376A	16	81	2057	GN	376B	Starting Aid Resistor
Starting Aid P5-11	377A	16	120	3048	OR	377R	Starting Aid Resistor
Fuse Holder-VIB R2-8	103A	16	87	4750	YL	103B	Splice
Control Lever P10-6	103C	16	10	254	YL		
Drum Select Switch Terminal 5	103D	16	17	432	YL		
Engine Start Switch R2-3	105A	16	21	533	BR	105B	P8-1 (Unused)
Splice	109C	6	32	813	OR	109A	R44 Engine Start Switch
		6	66	1676	OR	109D	R9
		6	58	1473	OR	109E	Main Relay
Fuse Holder Water Spray R2-9	110A	16	103	2616	GN	110B	Water Spray Switch Terminal 2
Water Spray Switch Terminal 5	110C	16	6	152	GN		
Fuses P4	112A	6	90	2286	PU	112B	Main Relay
Lights Circuit Breaker	112C	6	6	152	PU		
		16	3	76	PU		
Lights Switch	114A	12	64	1625	GN	114B	Light Circuit Breaker
Fuse Holder Backup Alarm R4-2	121A	16	89	2261	YL	121B	Splice
Backup Alarm Pressure Switch	121C	16	10	254	YL		
Horn Switch	121E	16	13	330	YL		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination		
			Inches	mm					
Power Instruments R2-11	123A	16	29	737	WH	123B	Splice		
Hour Meter Press Switch P5-22	123C	16	58	1473	WH				
Hydraulic Charge Oil Press Relay Terminal 2	123I	16	60	1524	WH				
Splice	123D	16	52	1321	WH	123E	Indicator Light Relay Terminal 1		
		16	10	254	WH				
		16	7	178	WH			123F	Hydraulic Temperature Relay Terminal 2
			7	178	WH			123G	Coolant Temperature Relay Terminal 2
		16	9	229	WH			123H	Engine Oil Pressure Relay Terminal 2
Fuse Holder Brake R2-6	155A	16	29	736	PK	155B	Splice		
Neutral Start Relay 2 Terminal 1	155C	16	56	1422	PK				
Splice	155D	16	61	1549	PK	155E	P10-7 Control Lever		
		16	12	305	PK				
		16	12	305	PK			155F	2-Speed Switch
		16	11	279	PK			155G	Park Brake Switch Terminal 1
		16	10	254	PK			155H	Park Brake Switch Terminal 3
(Unused) R2-10	173A	16	96	2438	YL	173B	(Unused)		
(Unused) R2-7	175A	16	107	2718	PK	175B	(Unused)		
	175C	16	4	107	PK				
(Unused) R2-5	176A	16	21	533	YL	176B	P8-5 (Unused)		
(Unused) P5-37	A919A	16	123	3124	BU	A919B	(Unused)		
(Unused) P5-38	A920A	16	126	3200	BR	A920B	(Unused)		
Low/High Amp P10-11	B920A	16	26	660	GR	B920B	Low/High Amp Switch Terminal 3		
Low/High Amp P10-12	B921A	16	26	660	WH	B921B	Low/High Amp Switch Terminal 1		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Water Pump Front P5-20	C922A	16	104	2641	BR	C922B	Splice
Water Spray Switch Terminal 3	C922C	16	43	1092	BR		
Front Interrupt Connector Relay Terminal 4	C922D	16	14	357	BR		
Water Spray Connector Diode AS	C922E	16	13	330	BR		
Water Pump Rear P5-19	C923A	16	104	2642	OR	C923B	Splice
Water Spray Switch Terminal 6	C923C	16	42	1067	OR		
RR Interrupt Connector Relay Terminal	C923D	16	13	330	OR		
Vibratory Control Valve P5-2	C924A	16	124	3150	YL	C924B	Splice
Control Lever P10-5	C924C	16	10	254	YL		
Auto/Man Switch Terminal 3	C924D	16	15	381	YL		
Vibratory Control Valve P5-1	C925A	16	130	3302	GN	C925B	P10-2 Control Lever
Vibratory Select Valve P5-4	C926A	16	141	3581	BU	C926B	Drum Select Switch Terminal 4
Vibratory Select Valve P5-5	C927A	16	141	3581	PU	C927B	Drum Select Switch Terminal 6
Drum Offset Valve P5-32	C928A	16	144	3657	GY	C928B	Drum Offset Switch Terminal 3
Drum Offset Valve P5-31	C929A	16	144	3657	57WH	C929B	Drum Offset Switch Terminal 1
Indicator Light P1-7	C930A	16	72	1829	BR	C930B	Splice
Indicator Light Connector Relay Terminal 3	C930C	16	11	279	BR		
Warning Light Connector Relay Terminal 5	C930D	16	12	305	BR		
Warning Light R3-3	C931A	16	88	2235	OR	C931B	Warning Light Relay Terminal 1

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Indicator Light P1-8	C932A	16	87	2210	YL	C932B	Splice
Control Lever P10-1	C932C	16	12	305	YL		
Auto/Man Switch Terminal 2	C932D	16	13	330	YL		
Auto/Man P10-10	C933A	16	20	508	GR	C933D	Splice
Low/High Amp Switch Terminal 2	C933B	16	7	178	GR		
Auto/Man Switch Terminal 3	C933C	16	5	127	GR		
Auto/Man Switch Terminal 1	C934A	16	24	610	BU	C934B	P10-4 Control Lever
Water Spray Switch Terminal 1	C935A	16	50	1270	PU	C935B	Splice
Water Spray Connector Diode	C935C	16	8	203	PU		
Front Interrupt Connector Relay Terminal 5	C935D	16	6	152	PU		
Front Interrupt Connector Relay Terminal 1	C935E	16	6	152	PU		
Water Spray Switch Terminal 4	C936A	16	45	1143	GY	C936B	Splice
Spray Timer Terminal 3	C936C	16	27	686	GY		
RR Interrupt Connector Relay Terminal 5	C936D	16	9	229	GY		
RR Interrupt Connector Relay Terminal 1	C936E	16	9	229	GY		
Spray Timer Terminal 1	C937A	16	23	584	WH	C937B	Splice
RR Interrupt Connector Relay Terminal 2	C937C	16	8	203	WH		
Front Interrupt Connector Relay Terminal 2	C937D	16	9	229	WH		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination	
			Inches	mm				
Warning Diode Connector As, Terminal 1	C938A	16	14	356	BR	C938B	Splice	
Warning Horn	C938C	16	26	660	BR			
Splice	C938D	16	68	1727	BR			
		16	4	102	BR	C938E	Indicator Light Relay Terminal 5	
		16	4	102	BR	C938F	Indicator Light Relay Terminal 4	
(Unused)	A953A	16	29	737	PK	A953B	(Unused)	
(Unused)	R3-7	A982A	16	88	2235	BR	A982B	(Unused)
(Unused)	P5-16	A983A	16	123	3124	BU	A983B	(Unused)
Hour Meter	R3-8	400A	16	12	305	GN	400B	Splice
Warning Diode	P6-8	400C	16	11	279	GN		
Hour Meter Pressure Switch	P5-25	400D	16	80	2032	GN		
Warning Light	R3-5	405A	16	12	305	GY	405B	Splice
Warning Diode	P7-4	405C	16	11	279	GY		
Engine Oil Connector Pressure Relay Terminal 1		405D	16	80	2032	GY		
Warning Light	R3-1	406A	16	12	305	PU	406B	Splice
Warning Diode	P7-1	406C	16	11	279	PU		
Coolant Temp Connector Relay Terminal 1		406D	16	78	1981	PU		
Park Brake Switch Terminal 4		419A	16	5	127	YL	419B	Park Brake Switch Terminal +
Splice	419C	16	47	1194	YL			
		16	9	229	YL	419D	Brake Relay 2 Terminal 4	
		16	9	229	YL	419E	Brake Relay 2 Terminal 2	
		16	8	203	YL	419F	Brake Relay Terminal 2	

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Warning Light R3-4	428A	16	15	381	OR	428B	Splice
Warning Diode P6-4	428C	16	14	356	OR		
Hydraulic Connector Temperature Relay Terminal 1	428D	16	72	1829	OR		
Indicator Light P1-6	B438A	16	73	1854	OR	B438B	Splice
Water Spray Connector Diode	B438C	16	5	127	OR		
Water Spray Diode	B438D	16	5	127	OR		
Front Vibratory P5-14 Sensor	B439A	16	144	3658	RD	B439B	Drum Select Switch Terminal 1
Vibratory Tach P1-11	B440A	16	2	51	RD	B440B	Splice
(Unused) P8-6	B440C	16	17	432	RD		
Rear Vibratory P5-18 Sensor	B440E	16	86	2184	RD		
Drum Select Switch Terminal 2	E440F	16	103	2616	RD	B440G	Drum Select Switch Terminal 3
		16	4	102	GN		
Fuel Gauge P1-10	447A	16	87	2210	PK	447B	P5-8 Fuel Sensor
(Unused) P1-12	449A	16	8	203	RD	449B	Splice
(Unused) P8-3	449C	16	12	305	RD		
(Unused) P5-12	449D	16	86	2184	RD		
Hydraulic Charge R3-2 Oil Pressure Switch	465A	16	4	102	OR	465D	Splice
Warning Diode P41-4	465C	16	13	330	OR		
Hydraulic Charge Oil Pressure Relay Terminal 1	465B	16	86	2184	OR		
(Unused)	537A	16	70	1778	GN	537B	(Unused)
Warning Alarm	568A	16	24	610	GN	568B	Splice
Warning Diode P6-5	568C	16	5	127	GN		
Warning Diode P7-5	568D	16	5	127	GN		
Warning Diode	568E	16	5	127	GN		
Warning Diode P41-5	568F	16	6	152	GN		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 4. Main Wiring Harness - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination	
			Inches	mm				
(Unused)	P5-40	604A	16	140	3556	OR	604B	(Unused)
(Unused)	P5-29	605A	16	138	3505	YL	605B	(Unused)
(Unused)	P5-30	606A	16	140	3556	GY	606B	(Unused)
Lights	P5-21	608A	16	22	559	GN	608B	Light Switch
Lights	P5-26	614A	16	66	1676	PU	614B	Splice
Light Switch Terminal "T-D"		614C	16	80	2032	PU		
(Unused)	P1-5	614D	16	22	559	PU		
Lights	P5-27	619A	16	140	3556	GN	619B	Light Switch Terminal "H"
Indicator Light	P1-9	635A	16	94	2380	BR	635B	Flasher
Neutral Start Connector Relay 2, Terminal 3		C720A	16	10	254	BU	C720B	Brake Relay 2, Terminal 1
(Unused)	P5-36	C729A	16	145	3683	BU	C729B	(Unused)
(Unused)	P5-35	C730A	16	145	3683	BR	C730B	(Unused)
2-Speed	P5-34	751A	16	138	3505	GN	751B	2-Speed Switch
Park Brake Switch Terminal 2		B765A	16	54	1372	BR	B765B	Brake Relay 1, Terminal 1
Brake Valve	P5-3	777A	16	119	3023	PU	777B	Brake Relay 1, Terminal 3

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 5. Front Wiring Harness.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination		
			Inches	mm					
Splice	200B	12	7	178	BK	200A	Ground		
		16	7	178	BK	200J	R28-5 Ground		
		12	117	2972	BK	200C	Splice		
Vibratory Sensor P31-1	200D	16	12	305	BK				
Splice	200E	12	81	2057	BK	200F	Warning Horn		
		16	24	610	BK			200G	P15-2 Water Pump
		16	15	381	BK			200H	Light LH Front
		16	51	1295	BK			200I	Light RH Front
		16	51	1295	BK				
Horn Switch R14-5	322A	16	227	5766	GY	322B	Warning Horn		
Vibratory Gauge R14-7	B439A	16	135	3429	RD	B439B	P31-2 Vibratory Sensor		
Spray Relay R14-8	C922A	16	218	5537	BR	C922B	P15-1 Water Pump		
Light Switch R14-6	619A	16	207	5258	GN	619B	Splice		
Light LH Front	619C	16	49	1245	GN				
Light RH Front	619D	16	54	1372	GN				
(Unused) R14-4	C729A	16	7	178	BU	C729B	R28-4 (Unused)		
(Unused) R14-3	C730A	16	7	178	BR	C730B	R28-3 (Unused)		
(Unused) R14-2	C928A	16	7	178	GY	C928B	R28-2 Valve Drum Offset		
(Unused) R14-1	C929A	16	7	178	WH	C929B	R28-1 Valve Drum Offset		

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 6. Rear Wiring Harness.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination			
			Inches	mm						
Fuse	R12-1	123A	16	269	6832	WH	123B	P30-A (Unused)		
Splice	200B	12	7	178	BK	200A	Ground			
		12	93	2362	BK	200C	Splice			
Vibratory Sensor	P29-1	200D	16	29	737			BK	200F	
Splice	200F	12	89	2261	BK	200G	Warning Horn			
		16	24	610	BK			200H		P13-2 Water Pump
		16	15	381	BK			200J		Work Light L-Rear
		16	51	1295	BK			200K		Splice
(Unused)	P-30-C	200E	16	69	1753	BK				
Work Light Right-Rear		200I	16	38	965	BK				
Pressure Switch	P12-4	321A	16	212	5385	BR	321B	Warning Horn		
Vibratory Gauge	R12-3	B440A	18	122	3099	RD	B440B	P29-2 Vibratory Sensor		
Vibratory Relay	R12-2	449A	18	269	6833	RD	449B	P30-B Speed Sensor		
Spray Relay	R12-6	C923A	16	203	5156	OR	C923B	P13-1 Water Pump		
Light Switch	R12-5	608A	16	191	4851	GN	608B	Splice		
Work Light, Right-Rear		608C	16	51	1295	GN				
Work Light, Left-Rear		608D	16	54	1372	GN				

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 7. Harness Assembly.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
VIB-On/Off Switch P40-6	103A	16	10	254	YL	103B	R40-6 Drum Select
Neutral Start Switch P40-7	155A	16	10	254	PK	155B	R40-7 Brake Switch
Neutral Start Switch P40-8	330A	16	10	254	YL	330B	R40-8 Neutral Start Relay
Amplitude Switch R40-11	B920A	16	8	203	GN	B920B	R40-5 Vibratory Control A
Amplitude Switch R40-12	B921A	16	8	203	WH	B921B	R40-2 Vibratory Control B
VIB-On/Off Switch P40-1	C932A	16	10	254	YL	C932B	R40-1 Auto/Man Switch
Auto Vibratory Switches P40-4	C934A	16	10	254	BU	C934B	R40-4 Auto/Man Switch
Auto/Man Switch R40-10	C933A	16	6	152	GN	C933B	Splice
Auto Vibratory Switch P40-2	C933C	16	4	102	GN		
Auto Vibratory Switch P40-5	C933D	16	4	102	GN		

Table 8. Instrument Wiring Harness.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Vibratory Select Connector	103A	16	47	1194	YL	103B	Fuse Holder-VIBE
(Unused) Connector	105A	16	36	914	BR	105B	Splice
Fuse Holder KEY START	105C	16	7	178	BR		
Engine Start Switch Terminal B	105D	16	26	660	BR		
Circuit Bkr R44 Connector Light	109A	6	34	864	OR	109C	Splice
Fuse Holder KEY START	109B	16	10	254	OR		
Fuse Holder BACKUP ALARM	109D	16	12	305	OR		
Water Spray Connector Switch	110A	16	46	1168	GN	110B	Fuse Holder WATER SPRAY

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 8. Harness Assembly - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Main Relay Connector	112A	6	39	991	PU	112B	Splice
Fuse Holder START AID	112C	16	8	203	PU		
Fuse Holder BRAKE	112E	16	10	254	PU		
Fuse Holder WATER SPRAY	112F	16	10	254	PU		
Fuse Holder VIBE	112G	16	12	305	PU		
Fuse Holder GAUGES	112H	16	12	305	PU		
(Unused)	112I	16	13	330	PU		
(Unused)	112J	16	13	330	PU		
(Unused)	112K	16	15	381	PU		
Switch-Warning Connector Horn	121A	16	44	1118	YL	121B	Fuse Holder BACKUP ALARM
Warning Relays Connector	123A	16	33	838	WH	123B	Splice
Vibration Tach Terminal I	123C	16	10	254	WH		
(Unused)	123D	16	12	305	WH		
Splice	123E	16	3	76	WH		
		16	12	305	WH	123F	Fuse Holder GAUGES
		16	10	254	WH		
Warning Light Connector Terminal 4	123H	18	8	203	WH	123G	Splice
Fuel Gauge-Terminal 1	123I	16	15	381	WH		
Brake Switch Connector	155A	16	45	1143	PK	155B	Fuse Holder BRAKE
(Unused) Connector	173A	16	48	1219	YL	173B	(Unused)
(Unused) Connector	175A	16	50	1270	PK	175B	(Unused)
(Unused) Connector	176A	16	49	1245	YL	176B	(Unused)

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 8. Harness Assembly - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Ground Connector	200A	16	17	432	BK	200B	Splice
Indicator Light Connector-Terminal 4	200C	18	24	610	BK		
Splice	200D	16	7	178	BK		
		16	8	203	BK	200E	Vibratory Tach-Terminal G
		16	9	229	BK	200F	(Unused)
		16	21	533	BK	200G	Splice
Hour Meter	200H	16	7	178	BK		
Fuel Gauge-Terminal G	200I	16	15	381	BK		
Neutral Start Relay Connector	307A	16	64	1626	OR	307B	Engine Start Switch Terminal S
Main Relay Connector	308A	16	48	1219	YL	308B	Splice
Alternator Light	308C	16	9	229	YL		
Engine Start Switch-Terminal R	308D	16	16	406	YL		
Alternator Connector	309A	16	56	1422	GY	309B	Alternator Light
Fuel Shutoff Solenoid P2-1	326A	16	62	1574	PU	326B	Engine Start Switch Terminal C
Start Aid Resistor Connector	376A	16	57	1448	GN	376B	Switch Start Aid Terminal 1
Hour Meter Connector Pressure Switch	400	16	50	1270	GN	400B	Hour Meter
Diode Connector	405A	18	51	1295	GY	405B	Warning Light Connector-Terminal 1
Diode Connector	405A	18	51	1295	GY	406B	Warning Light Connector-Terminal 6
Hydraulic Connector Temperature Relay	428A	18	51	1295	OR	428B	Warning Light Connector-Terminal 2
Diode Connector	B438A	18	43	1092	OR	B438B	Indicator Light Connector-Terminal 5
Drum Select Switch Connector	B110A	16	32	813	GN	B440B	Vibratory Tach Terminal S
Fuel Sending Unit Connector	447A	16	63	1600	PK	447B	Fuel Gauge-Terminal S

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS FABRICATION - CONTINUED

Table 8. Harness Assembly - Continued.

Termination	Circuit Ident	GA	Length in		Color	Circuit Ident	Termination
			Inches	mm			
Connector	465A	18	51	1295	OR	465B	Warning Light Connector-Terminal 5
Rear Speed Sensor	Connector 449A	16	32	813	BU	449B	(Unused)
Flasher Terminal 4	Connector 635A	18	43	1092	BR	635B	Indicator Light Connector-Terminal 1
Light Switch	Connector 614A	16	22	559	PU	614B	Splice
(Unused)	614C	16	7	178	PU		
Vibratory Tach	614D	16	11	279	PU		
Fuel Gauge	614E	16	34	864	PU		
Indicator Light Connector Terminal 6	614F	18	21	533	GN		
Indicator Light	Connector C930A	18	43	1092	BR	C930B	Indicator Light Connector Terminal 3
Relay Warning Light	Connector C931A	18	51	1295	OR	C931B	Warning Light Connector Terminal 3
Relay Diode	Connector C932A	18	43	1092	YL	C932B	Indicator Light Connector Terminal 2
Fuse Holder START AID	148A	16	23	584	WH	148B	Switch-Start Aid Terminal 2
P3-6	181A	16	63	1600	GY	181B	Throttle Control Switch
P3-7	A982A	16	63	1600	BR	A982B	Throttle Control Switch

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

SEAT TRIM FABRICATION

The seat trim is fabricated by cutting a 93 11/16 in (238 cm) length of bulk trim stock, part number 9X-2092 (11083) with a fine tooth hacksaw blade. Refer to WP 0133 00.

WATER SPRAY LINE FABRICATION

The water spray lines are fabricated by cutting a length (listed in Table 9) from tubing stock, part number 5P0753 (11083) with a fine tooth hacksaw blade. Refer to WP 0159 00.

Table 9. Water Spray Lines.

From	To	Cut Length Inches (mm)
Water Spray Tank	Water Spray Strainer	8 (200)
Water Spray Strainer	Water Spray Pump	8 (200)
Water Spray Pump	Tee	5 (125)
Tee	Water Spray Bar	67 (1700)
Water Spray Bar	Check Valve (Tank)	14 (350)
Tee (Front)	Tie Line Valve	221 (5620)
Tee (Rear)	Tie Line Valve	147 (3730)

ILLUSTRATED LIST OF MANUFACTURED ITEMS - CONTINUED

0221 00

WIRING HARNESS TUBING FABRICATION

The wiring harness tubing is fabricated by cutting a length from tubing stock (listed in Table 10 and Table 11) with a fine tooth hacksaw blade.

Table 10. Rear Harness Tubing.

Location	Part Number	Cut Length Inches (mm)
By Speed Sensor Connector	5P3619	13 (320)
By Vibratory Sensor Connector	5P5112	11 (270)
By Main Harness Connector	5P5112	22-1/2 (572)

Table 11. Front Harness Tubing.

Location	Part Number	Cut Length Inches (mm)
By Vibratory Sensor Connector	5P5112	13 (330)
By Main Harness Connector	5P5112	67 (1702)

EDGING (CHANNEL) FABRICATION

The edging is fabricated by cutting a length from channel stock (listed in Table 12) with a fine-toothed hacksaw blade.

Table 12. Edging Channel.

Location	Part Number	Cut Length Inches (mm)
On ROPS Gusset	091-8487	12 3/16 (310)
Water Line Protector on Front and Rear Bumper Assemblies	091-8487	6 1/2 (165)

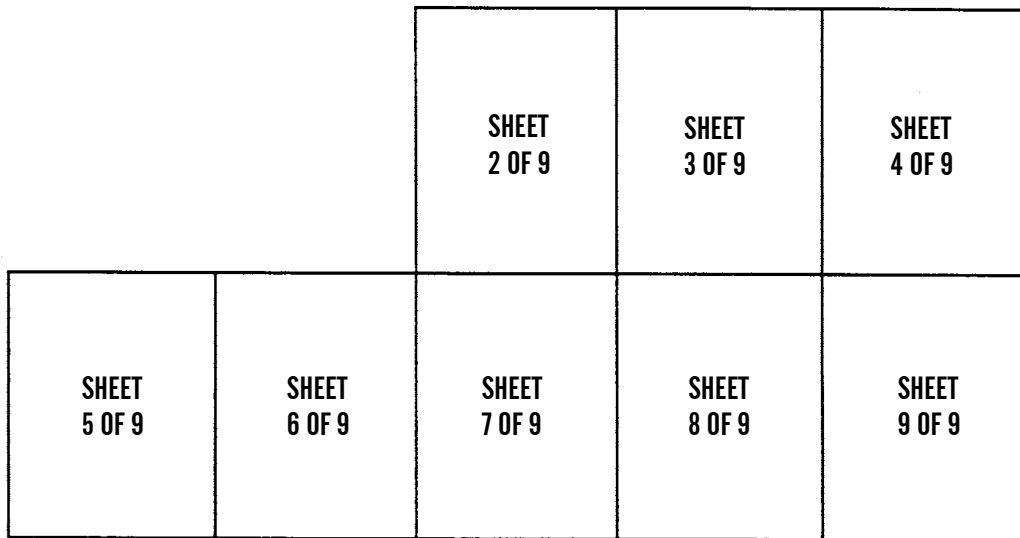
GENERAL

1. For CB534B electrical system schematics, refer to Figure 1 (Sheets 1 to 9), and WP 0004 00.
2. For CB534B hydraulic system schematics, refer to Figure 2 (Sheets 1 and 2).
3. Simplified schematics for use with troubleshooting procedures are located in WP 0004 00.
4. CB534C schematics are provided as foldouts at the end of this manual.

ELECTRICAL SYSTEM

NOTE

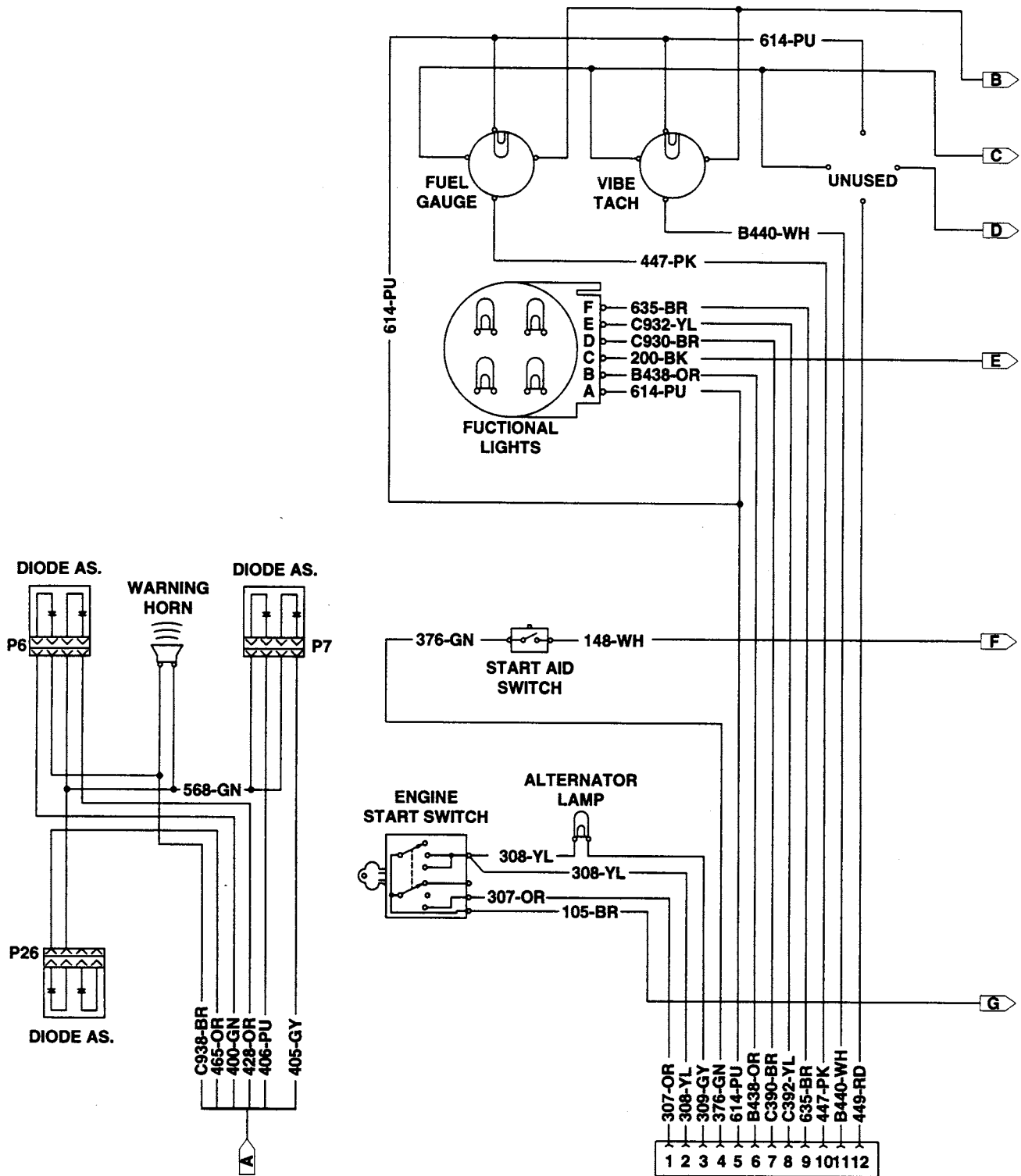
This organizational relationship of electrical schematics is provided for reference.



401-2040

Figure 1. Electrical Schematic (Sheet 1 of 9).

ELECTRICAL SYSTEM - CONTINUED



401-799

Figure 1. Electrical Schematic (Sheet 2 of 9).

ELECTRICAL SYSTEM - CONTINUED

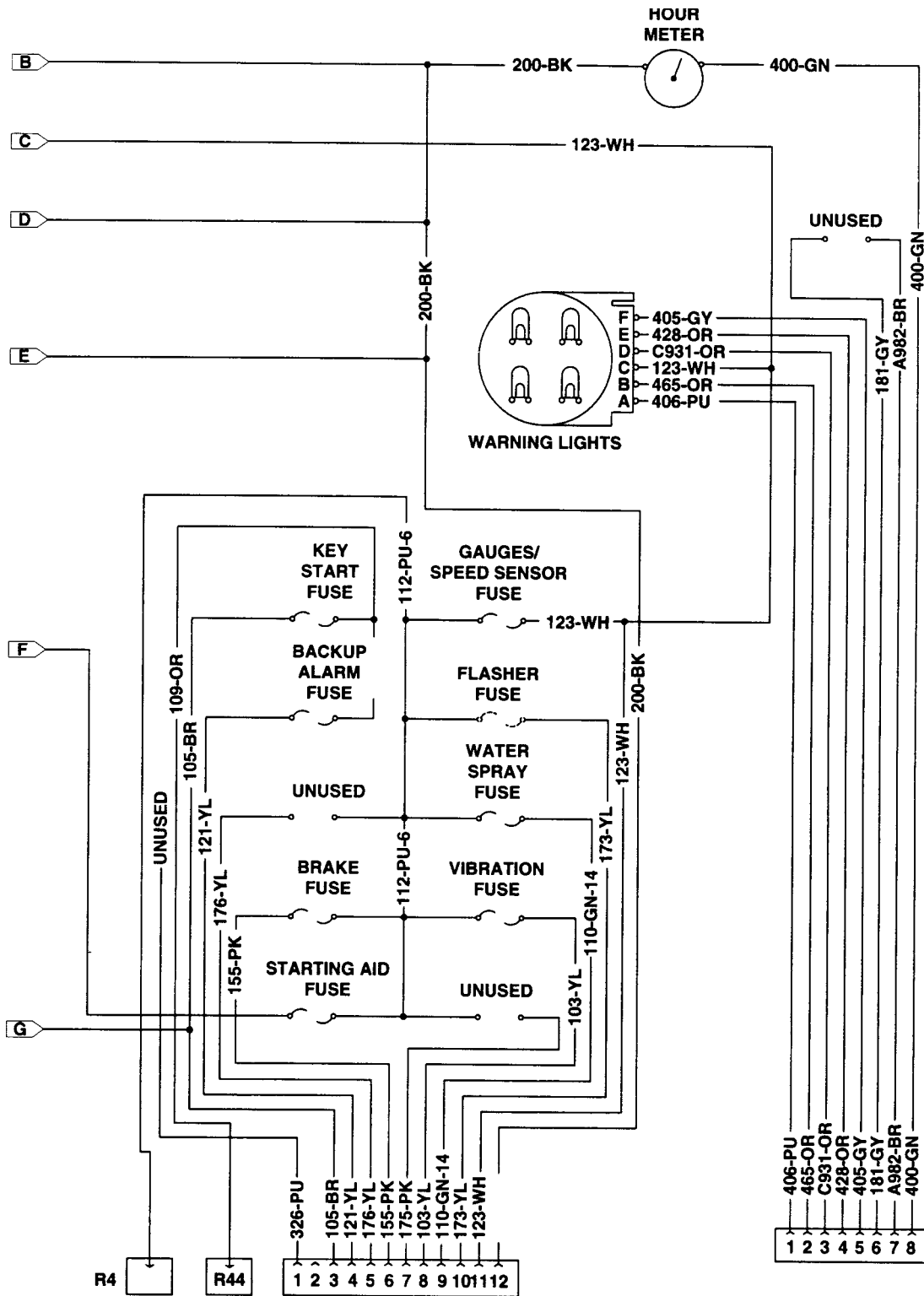


Figure 1. Electrical Schematic (Sheet 3 of 9).

ELECTRICAL SYSTEM - CONTINUED

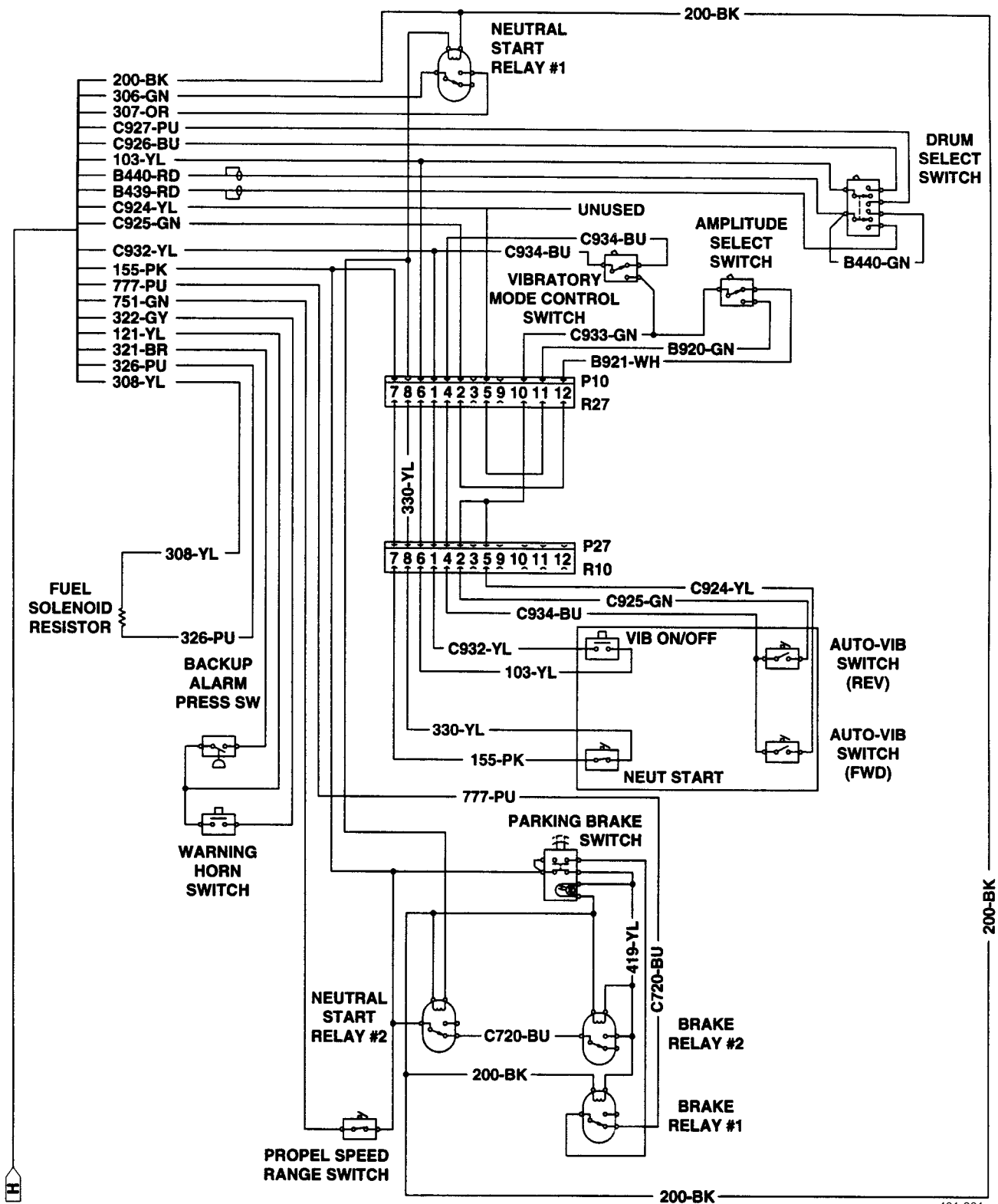


Figure 1. Electrical Schematic (Sheet 4 of 9).

401-801

ELECTRICAL SYSTEM - CONTINUED

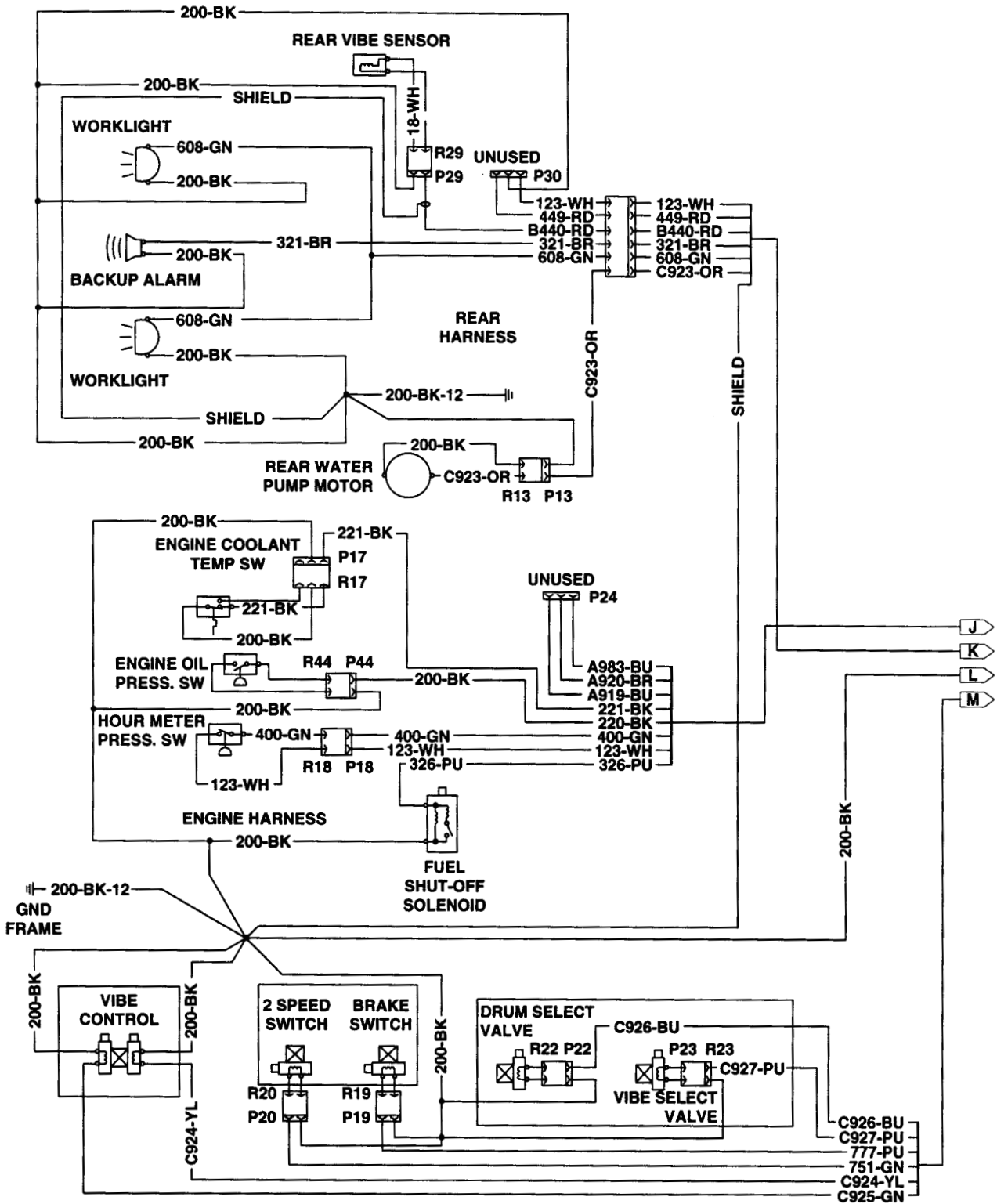


Figure 1. Electrical Schematic (Sheet 5 of 9).

401-802

ELECTRICAL SYSTEM - CONTINUED

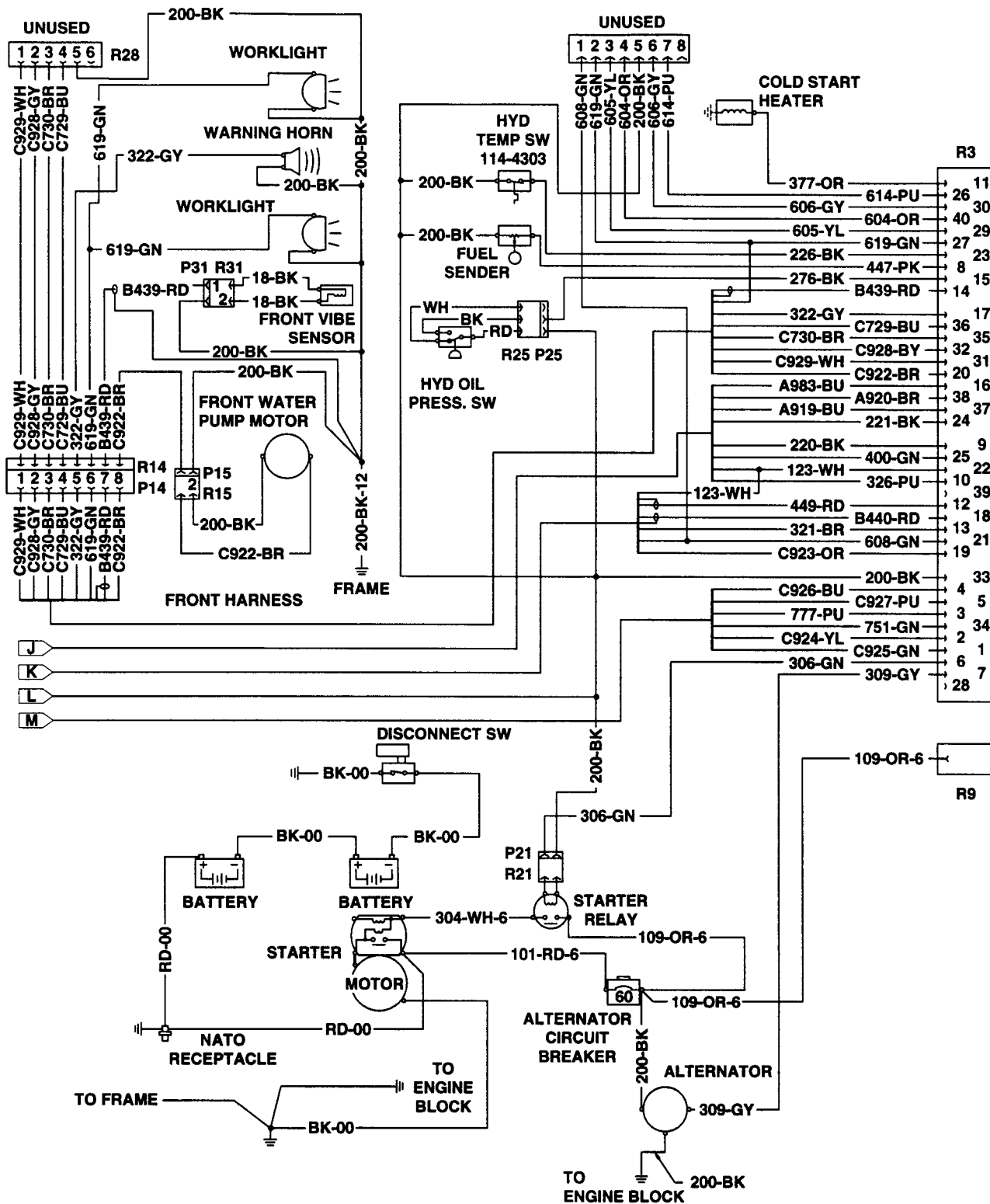


Figure 1. Electrical Schematic (Sheet 6 of 9).

401-803

ELECTRICAL SYSTEM - CONTINUED

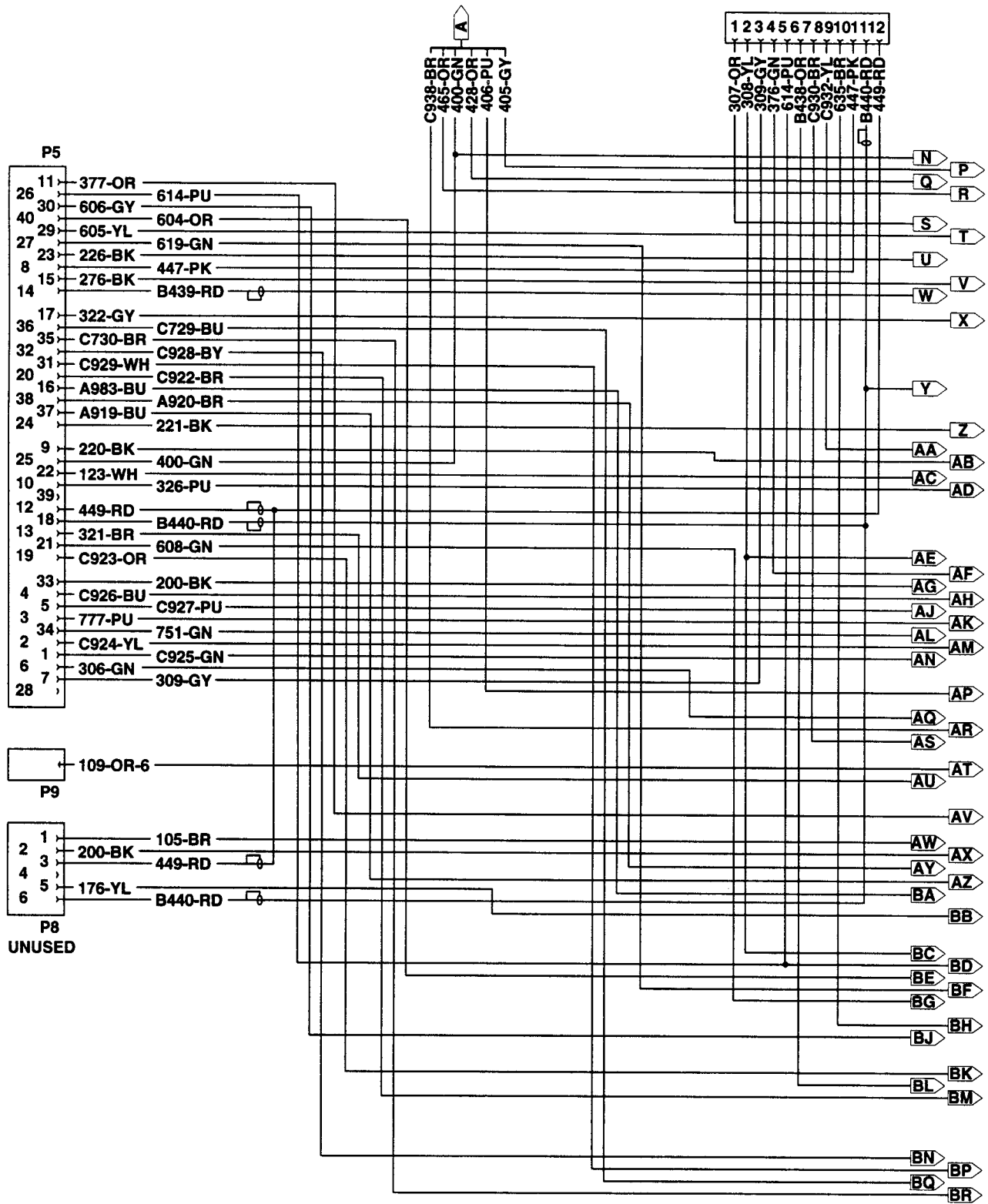


Figure 1. Electrical Schematic (Sheet 7 of 9).

401-804

ELECTRICAL SYSTEM - CONTINUED

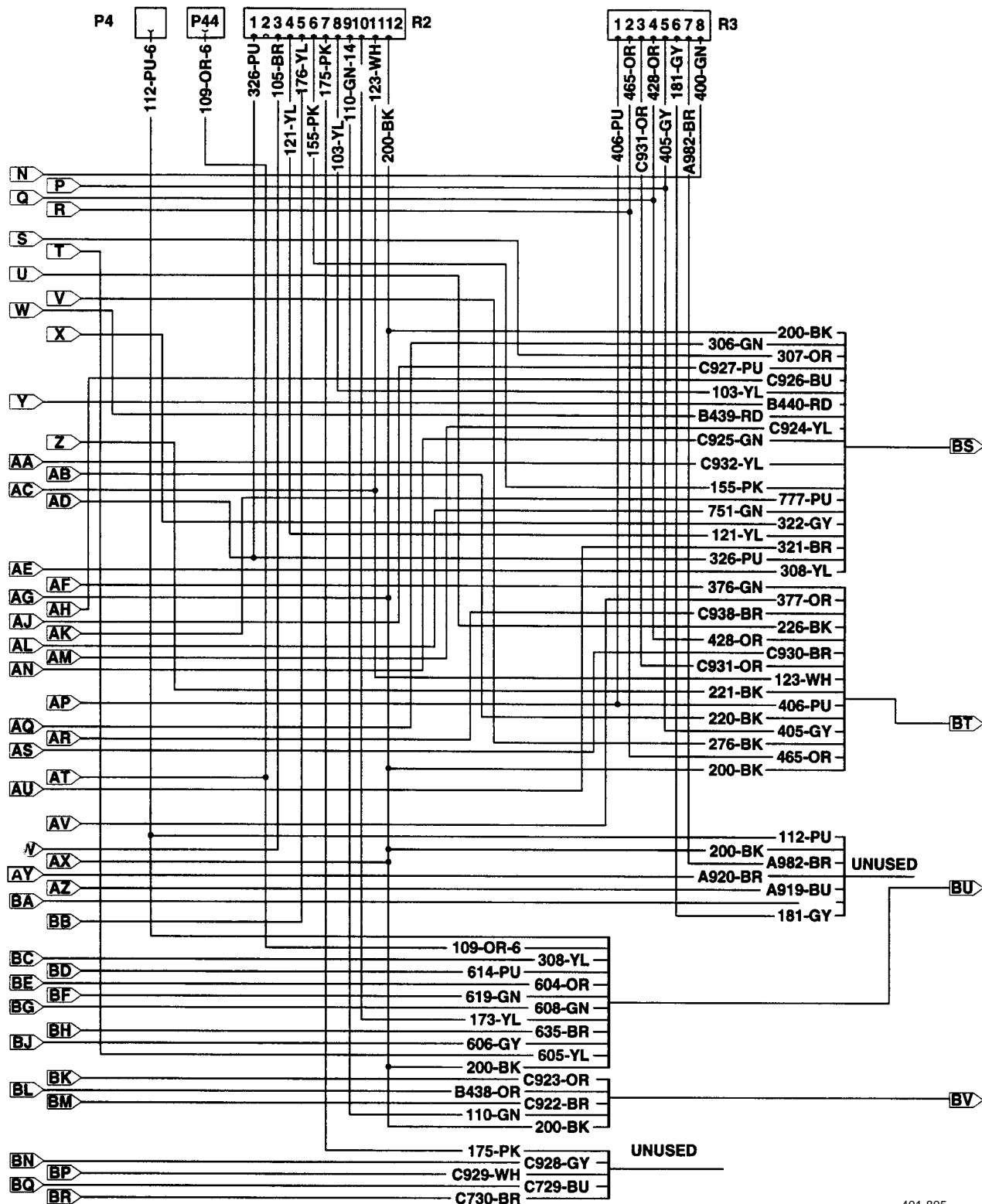


Figure 1. Electrical Schematic (Sheet 8 of 9).

401-805

ELECTRICAL SYSTEM - CONTINUED

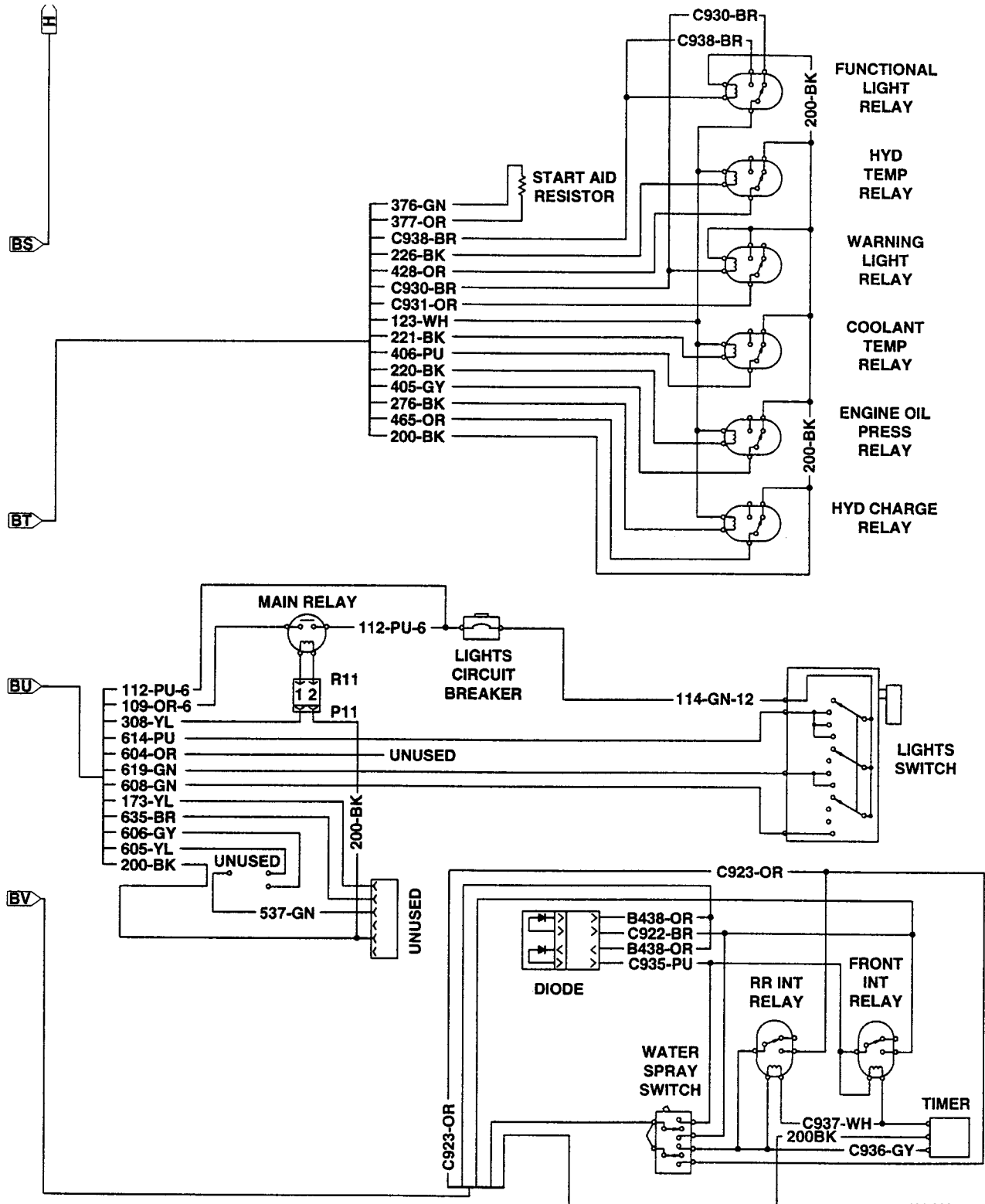
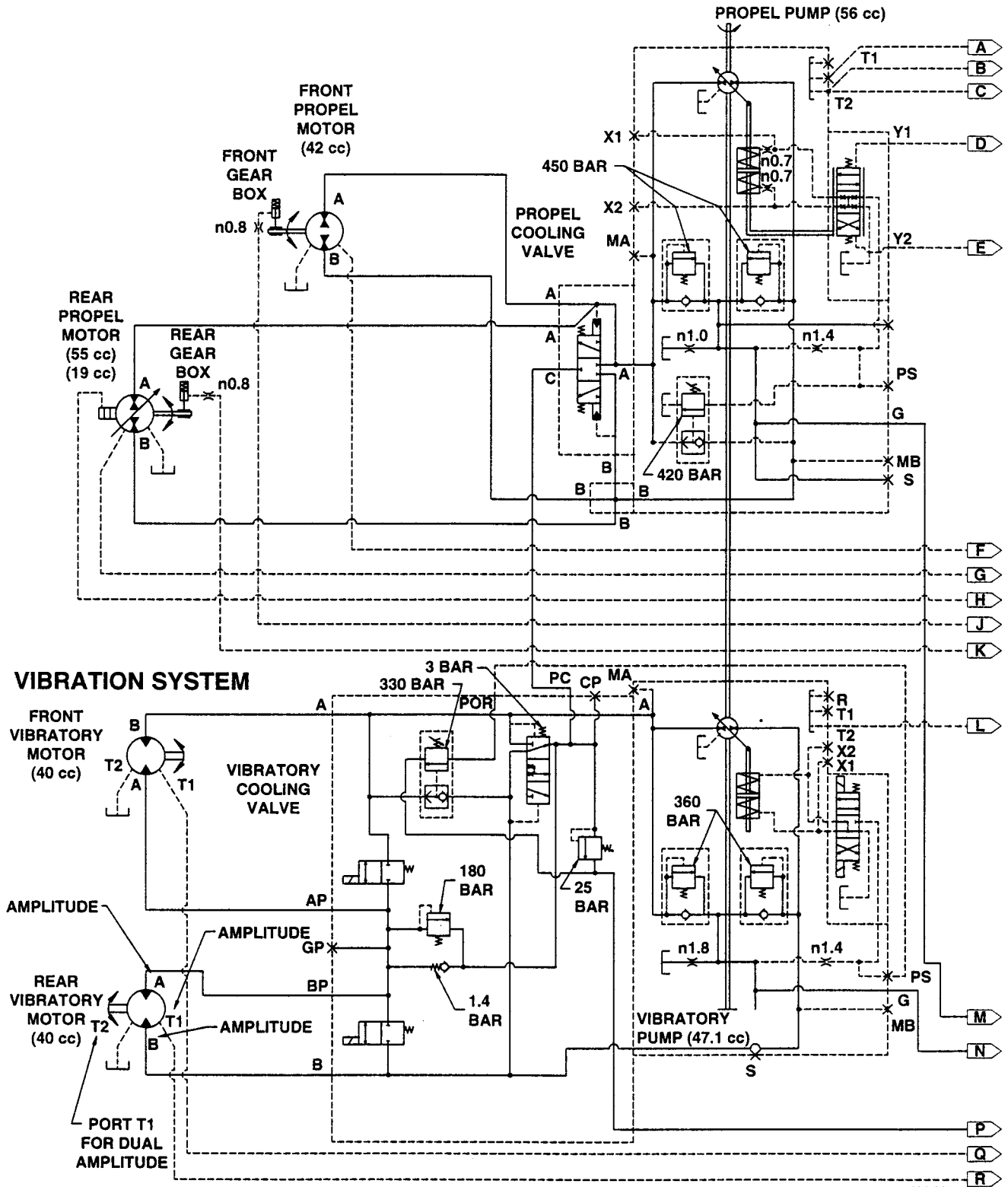


Figure 1. Electrical Schematic (Sheet 9 of 9).

401-806

HYDRAULIC SYSTEM



401-807

Figure 2. Hydraulic Schematic (Sheet 1 of 2).

HYDRAULIC SYSTEM - CONTINUED

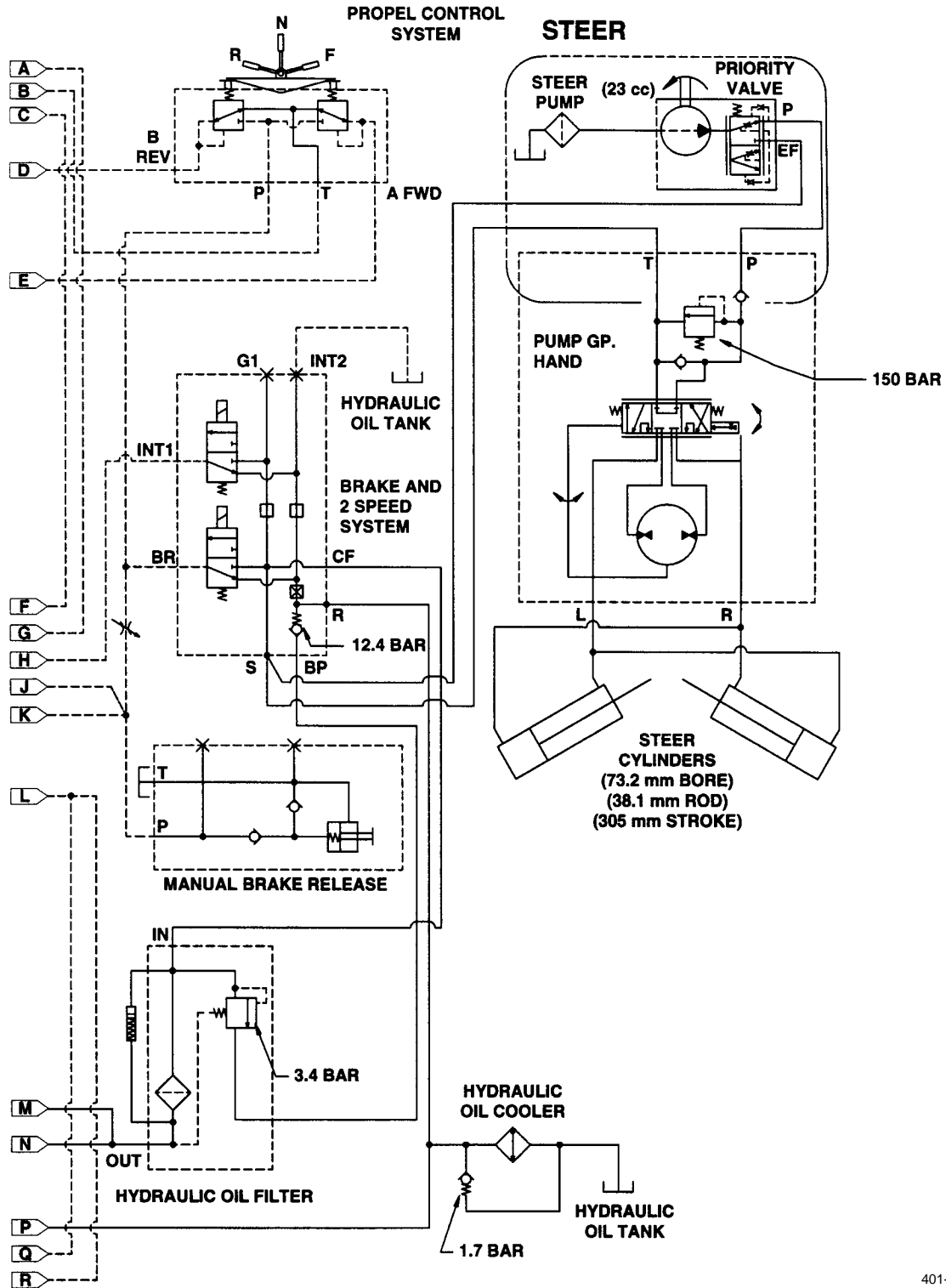


Figure 2. Hydraulic Schematic (Sheet 2 of 2).

401-808

END OF WORK PACKAGE

INDEX

<i>Subject</i>	<i>Work Package/Page</i>
A	
Air Cleaner	
Assembly Replacement	0032 00-1
Cap Replacement	0031 00-1
Elements Replacement	0032 00-1
Service Indicator Replacement	0034 00-1
Support Assembly Replacement	0033 00-1
Alarm Replacement, Backup	0100 00-1
Alternator	
Bracket Replacement	0063 00-1
Circuit Breaker Replacement	0064 00-1
Light Replacement	0089 00-1
Replacement	0061 00-1
Test	0062 00-1
Amplitude Select Switch Replacement	0073 00-1
B	
Backup Alarm	
Replacement	0100 00-1
Sending Unit Replacement	0094 00-1
Battery	
Cable Replacement	0105 00-1
Disconnect Switch Replacement	0104 00-1
Maintenance	0103 00-1
Bracket Replacement, Alternator	0063 00-1
Brake Control Valve	
Coil Replacement	0199 00-1
Repair	0194 00-1
Replacement	0118 00-1
Brake Hoses, Lines and Fittings Replacement	0119 00-1
Breather Tube and Valve Cover Replacement	0016 00-1
C	
Cap Replacement, Air Cleaner	0031 00-1
Circuit Breaker Replacement	
Alternator	0064 00-1
Lights	0086 00-1
Cold Start Heater Replacement	0043 00-1
Coolant System	
Service	0052 00-1
Pressure Test	0049 00-1
Theory of Operation	0003 00-6

INDEX - Continued

Subject *Work Package/Page*

C - Continued

Crankshaft	
Front Oil Seal Replacement	0165 00-1
Pulley Replacement	0167 00-1
Rear Oil Seal Replacement	0166 00-1
Cylinder Head Replacement	0163 00-1

D

Data Plate and Decal Replacement	0140 00-1
Decontamination Kit Bracket Replacement	0131 00-1
Diesel Test	0161 00-1
Door Assembly Maintenance	0123 00-1
Drain Cock	
Valve Replacement, Side and	0158 00-1
Replacement	0157 00-1
Drum Assembly	
Repair	0209 00-1
Replacement	0210 00-1
Drum	
Scraper Replacement	0160 00-1
Select Switch Replacement	0071 00-1
Electrical	
General Maintenance Instructions	0213 00-1
System, Theory of Operation	0003 00-8
Engine	
Assembly Replacement	0162 00-1
Block Heating Element Replacement	0044 00-1
Lifting Plates Replacement	0010 00-1
Mount Replacement	
Front	0011 00-1
Rear	0012 00-1
Oil Cooler Lines and Fittings Replacement	
CB534B	0022 00-1
CB534C	0023 00-1
Oil Cooler Replacement	0017 00-1
Oil Filler Replacement	0015 00-1
Oil Pressure Switch Replacement	0085 00-1
Oil Pump Replacement	0164 00-1
Oil Sampling Valve and Fittings Replacement	0024 00-1
Oil Service	0013 00-1
Start Switch Replacement	0079 00-1
System, Theory of Operation	0003 00-2
Tests	0161 00-1

INDEX - Continued

Subject *Work Package/Page*

E - Continued

Engine - Continued	
Wiring Harness Replacement	0109 00-1
Equipment Description and Data	0002 00-1
Exhaust Manifold Replacement	
CB534B	0026 00-1
CB534C	0027 00-1

F

Fan	
Assembly and Guard Replacement	0059 00-1
Drive Housing Assembly Replacement	0058 00-1
V-Belts Maintenance	0060 00-1
Field Maintenance Preventive Maintenance Checks and Services	
PMCS Introduction	0008 00-1
PMCS	0009 00-1
Flywheel	
Assembly Replacement	0168 00-1
Housing Replacement	0169 00-1
Front	
Chassis Wiring Harness Replacement	0110 00-1
Engine Mount Replacement	0011 00-1
Handrail Assembly Replacement	0125 00-1
Propel Gearbox Service	0116 00-1
Supports (Bumpers) Replacement	0122 00-1
Fuel	
Cap Assembly Maintenance	0039 00-1
Filter Assembly Maintenance	0040 00-1
Fittings Replacement	
CB534B	0029 00-1
CB534C	0030 00-1
Injection	
Pump Gear Replacement	0177 00-1
Pump Replacement	0178 00-1
Pump Test and Adjustment	0179 00-1
Injector and Nozzle Replacement	
CB534B	0175 00-1
CB534C	0176 00-1
Level	
Gauge Replacement	0081 00-1
Sending Unit Replacement	0096 00-1
Lift Pump Replacement	0028 00-1

INDEX - Continued

Subject *Work Package/Page*

F - Continued

Fuel - Continued	
Lines Replacement	
CB534B	0029 00-1
CB534C	0030 00-1
Solenoid Resistor Replacement	0088 00-1
System	
Priming	0041 00-1
Theory of Operation	0003 00-4
Fuel/Hydraulic	
Oil Tank and Drain Lines Replacement	0038 00-1
Oil Tank Drain/Fill	0037 00-1
Fuel/Water Separator Assembly Service	0042 00-1
Functional Indicator Light Assembly Replacement	0090 00-1
Fuse	
Holder Replacement	0077 00-1
Replacement	0077 00-1

G

Gauge Rod (Dipstick) Tube Assembly Replacement	0014 00-1
General Wiring Repair	0108 00-1
Ground Cable Replacement	0107 00-1

H

Handrail Assembly Replacement, Front	0125 00-1
Heating Element Replacement, Engine Block	0044 00-1
Horn	
Assembly Replacement	0102 00-1
Switch Replacement	0101 00-1
Hoses Replacement, Radiator	0051 00-1
Hourmeter Pressure Switch Replacement	0084 00-1
Hydraulic	
Fan Shroud Replacement	0145 00-1
Filter Assembly Replacement	0144 00-1
Fittings, Hoses and Lines Replacement	0207 00-1
Hoses, Lines and Fittings Replacement	0207 00-1
Lines, Fittings and Hoses Replacement	0207 00-1
Oil Cap Assembly Maintenance	0146 00-1
Oil Cooler Replacement	0145 00-1
Oil Filter Replacement	0143 00-1
Oil Sampling	0142 00-1
Oil Sampling Valve Replacement	0141 00-1
Oil Temperature Sensor Replacement	0098 00-1

INDEX - Continued

Subject *Work Package/Page*

H - Continued

Hydraulic - Continued	
Pump Drive Replacement	0189 00-1
Steering Cylinders Replacement	0121 00-1
Steering System, Theory of Operation.	0003 00-2
Vibratory Tests.	0203 00-1

I

Idler Gear and Hub Replacement	0170 00-1
Illustrated List Of Manufactured Items.	0221 00-1
Instrument Wiring Harness Replacement	0112 00-1
Intake Manifold Replacement.	0025 00-1
Intermittent Water Spray Timer Replacement.	0076 00-1

L

Left-Side Handrail Assembly Replacement	0124 00-1
Lifting Plates Replacement, Engine	0010 00-1
Light	
Replacement, Alternator	0089 00-1
Circuit Breaker Replacement.	0086 00-1
Low Idle Speed Adjustment	0046 00-1

M

Main Relay Replacement	0067 00-1
Main Wiring Harness Replacement	
CB534B	0182 00-1
CB534C	0183 00-1
Maintenance Allocation Chart (MAC)	
Introduction	0217 00-1
MAC.	0218 00-1
Manual Brake Release Pump Replacement	0117 00-1
Mounting Bracket Replacement, Rifle	0138 00-1
Muffler and Tailpipe Replacement	0048 00-1

N

NATO Connector Replacement.	0106 00-1
-------------------------------------	-----------

O

Oil	
Filter Head Assembly Replacement	
CB534B	0018 00-1
CB534C	0019 00-1
Pan Replacement	0020 00-1
Strainer And Suction Tube Replacement.	0021 00-1

INDEX - Continued

Subject *Work Package/Page*

O - Continued

Operator Platform	
Operator Station Replacement, and	0202 00-1
Mount Replacement	0129 00-1

P

Parking Brake Switch Replacement	0069 00-1
PMCS	
Field Maintenance Introduction	0008 00-1
Field Maintenance	0009 00-1
Power Steering Pump Replacement	0200 00-1
Preparation for Storage and Shipment	0214 00-1
Pressure Override Relief (POR) Valve Pressure Test (CB534C)	0185 00-1
Pressure Switch Replacement, Engine Oil	0085 00-1
Priming Fuel System	0041 00-1
Propel	
Speed Control Valve Repair, and	0188 00-1
Vibratory Valve Tests and Adjustments, and	0184 00-1
Control Lever Assembly Maintenance	0113 00-1
Control Lever Tension Adjustment	0115 00-1
Control Lever Vibratory System Engagement Stops Adjustment	0114 00-1
Motor and Torque Hub Replacement	0193 00-1
Motor Replacement, Rear	0192 00-1
Speed Range Switch Replacement	0074 00-1
System, Theory of Operation	0003 00-12
Pump Replacement, Engine Oil	0164 00-1

R

Radiator Assembly	
Repair	0181 00-1
Replacement	0050 00-1
Radiator Hoses Replacement	0051 00-1
Raise/Lower Operator Platform Assembly	0128 00-1
Rear	
Chassis Wiring Harness Replacement	0111 00-1
Engine Mount Replacement	0012 00-1
Propel Gearbox Service	0116 00-1
Propel Motor Replacement	0192 00-1
Supports (Bumpers) Replacement	0122 00-1
Relay Replacement	0068 00-1
Resilient Drum Mounts Replacement	0211 00-1
Rifle Mounting Bracket Replacement	0138 00-1

INDEX - Continued

Subject *Work Package/Page*

R - Continued

Right-Side Handrail Assembly Replacement	0124 00-1
Rocker	
Arm Assembly Repair	0172 00-1
Shaft Assembly Replacement	0171 00-1
Rollover Protection Structure (ROPS) Assembly Replacement	0126 00-1
Rotate Lock Replacement	0127 00-1

S

Schematics	0222 00-1
Seat	
Assembly	
Repair	0133 00-1
Replacement	0132 00-1
Belt and Lanyard Replacement	0136 00-1
Suspension	
Repair	0135 00-1
Replacement	0134 00-1
Sending Unit Replacement	
Backup Alarm	0094 00-1
Fuel Level	0096 00-1
Separate and Connect	
Propel Motor and Torque Hub	0191 00-1
Vibratory and Propel Pumps	0186 00-1
Service	
Indicator Replacement, Air Cleaner	0034 00-1
Meter Replacement	0082 00-1
Upon Receipt	0007 00-1
Side Drain Cock and Valve Replacement	0158 00-1
Solenoid Resistor Replacement, Fuel	0088 00-1
Starter	
Relay Switch Assembly Replacement	0066 00-1
Replacement	0065 00-1
Starting Aid	
Resistor Replacement	0087 00-1
Switch Replacement	0078 00-1
Steering	
Control Unit (SCU) Maintenance	0195 00-1
Cylinder Repair	0201 00-1
Hoses, Lines and Fittings Replacement	0197 00-1
Pivot Replacement	0196 00-1
Wheel and Column Replacement	0120 00-1
Symptom Index, Troubleshooting	0005 00-1

INDEX - Continued

<i>Subject</i>	<i>Work Package/Page</i>
T	
Tailpipe and Muffler Replacement	0048 00-1
Tee Replacement	0157 00-1
Theory of Operation	
Cooling System	0003 00-6
Electrical System	0003 00-8
Engine System	0003 00-2
Fuel System	0003 00-4
Hydraulic Steering System	0003 00-14
Propel System	0003 00-12
Vibrator System	0003 00-16
Water Spray System	0003 00-18
Thermostat Housing Replacement	
CB534B	0055 00-1
CB534C	0056 00-1
Thermostat Maintenance	
CB534B	0053 00-1
CB534C	0054 00-1
Throttle	
Cable Replacement (CB534B)	0045 00-1
Control Replacement (CB534C)	0047 00-1
Timing Gear Case Cover Replacement	0174 00-1
Tool Identification List	0220 00-1
Toolbox Replacement	0137 00-1
Torque Limits	0215 00-1
Troubleshooting	
Introduction	0004 00-1
Procedures	0006 00-1
Symptom Index	0005 00-1
Turbo Test	0161 00-1
Turbocharger	
Oil Lines, Hoses and Fittings Replacement	0036 00-1
Repair (CB534B)	0180 00-1
Replacement	0035 00-1
U	
Universal Joint and Shaft Maintenance	0190 00-1
V	
Valve	
Cover and Breather Tube Replacement	0016 00-1
Lash (Clearance) Adjustment	0173 00-1
Vandal Guard Replacement	0130 00-1

INDEX - Continued

Subject *Work Package/Page*

V - Continued

Vehicle Classification Sign Kit Replacement	0139 00-1
Vibration	
Control Switch Replacement	0072 00-1
On/Off Switch Replacement	0080 00-1
Sensor Maintenance	0097 00-1
Per Minute (VPM) Tachometer and Feet Per Minute (FPM) Meter Replacement	0083 00-1
Vibratory	
Propel Pumps	
Replacement, and	0187 00-1
Separate and Connect, and	0186 00-1
Bearing Reservoir Service	0147 00-1
Control Solenoid Replacement	0208 00-1
Cooling/Control Valve	
Repair	0204 00-1
Replacement	0205 00-1
Motor Replacement	0206 00-1
System, Theory of Operation	0003 00-16

W

Warning	
Horn Assembly Replacement	0099 00-1
Lights Assembly Replacement	0093 00-1
Water	
Level Gauge Replacement	0156 00-1
Pump Replacement	0057 00-1
Water Spray	
Check Valve Replacement	0148 00-1
Pipe Assembly Maintenance	0152 00-1
Pump Replacement	0155 00-1
Strainer Assembly Maintenance	0150 00-1
Strainer Assembly Service	0149 00-1
Switch Replacement	0070 00-1
System, Theory of Operation	0003 00-18
Tubes and Fittings Replacement	0159 00-1
Water Tank	
Replacement	0154 00-1
Screen Assembly Maintenance (CB534C)	0151 00-1
Strainer Assembly Replacement	0153 00-1
Water Temperature Sending Unit Replacement	0095 00-1

INDEX - Continued

Subject

Work Package/Page


W - Continued

Wiring Harness Replacement	
CB534B, Main	0182 00-1
CB534C, Main	0183 00-1
Engine	0109 00-1
Front Chassis	0110 00-1
Instrument	0112 00-1
Rear Chassis	0111 00-1
Wiring Repair, General	0108 00-1
Work Light	
Assembly Maintenance	0091 00-1
Bulb Replacement	0092 00-1
Control Switch Replacement	0075 00-1
Yoke Replacement	0198 00-1

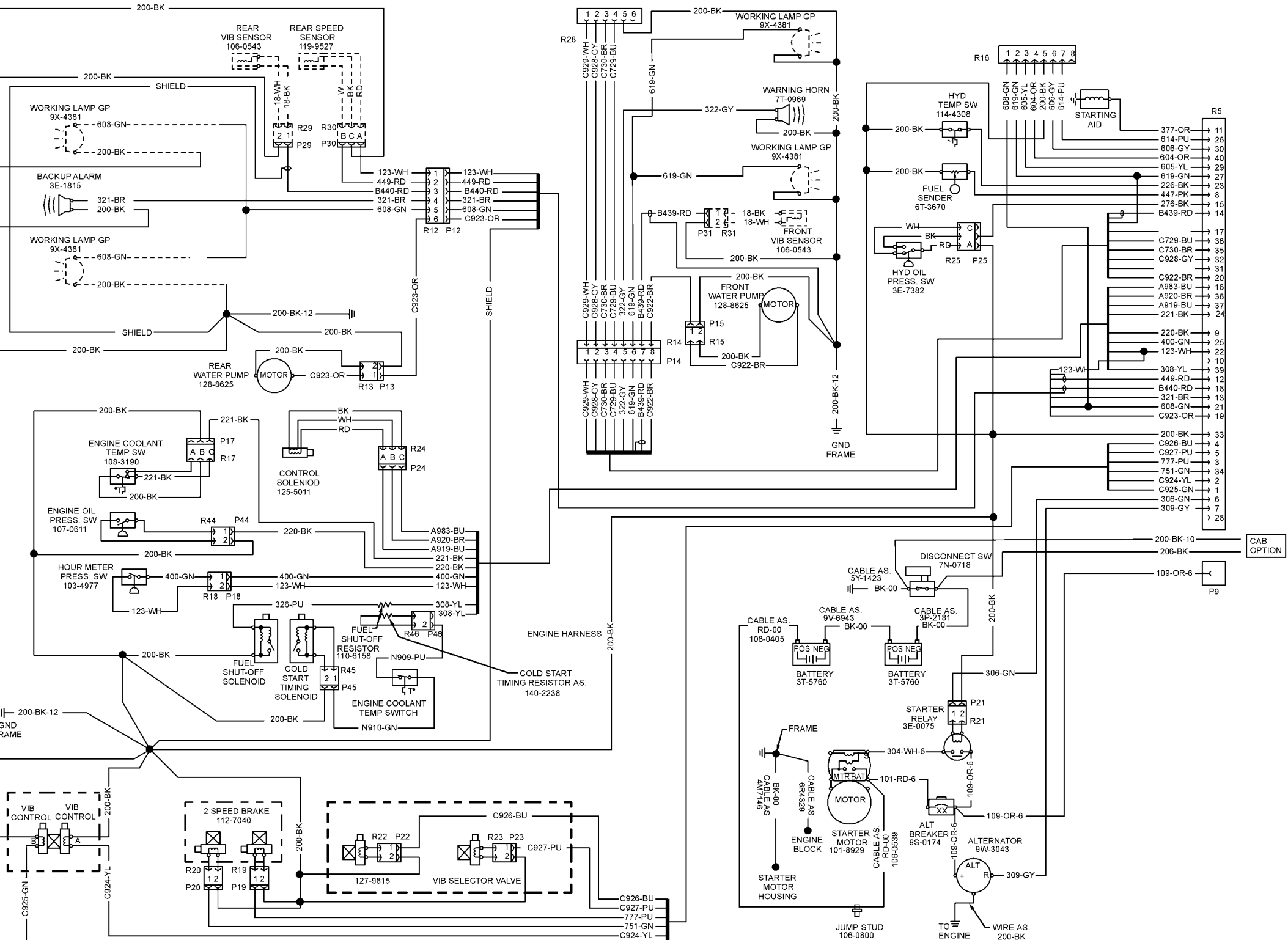
By Order of the Secretary of the Army:

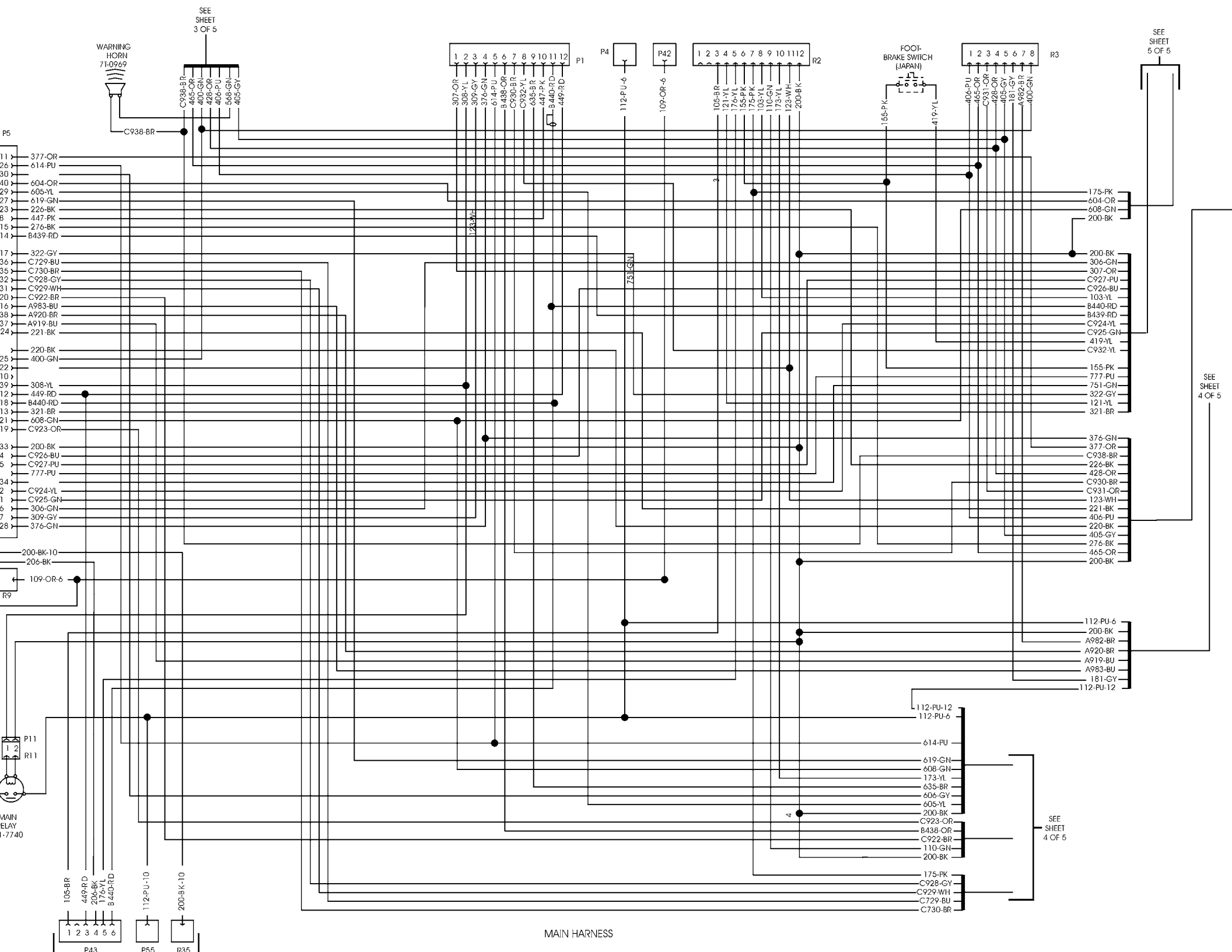
PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

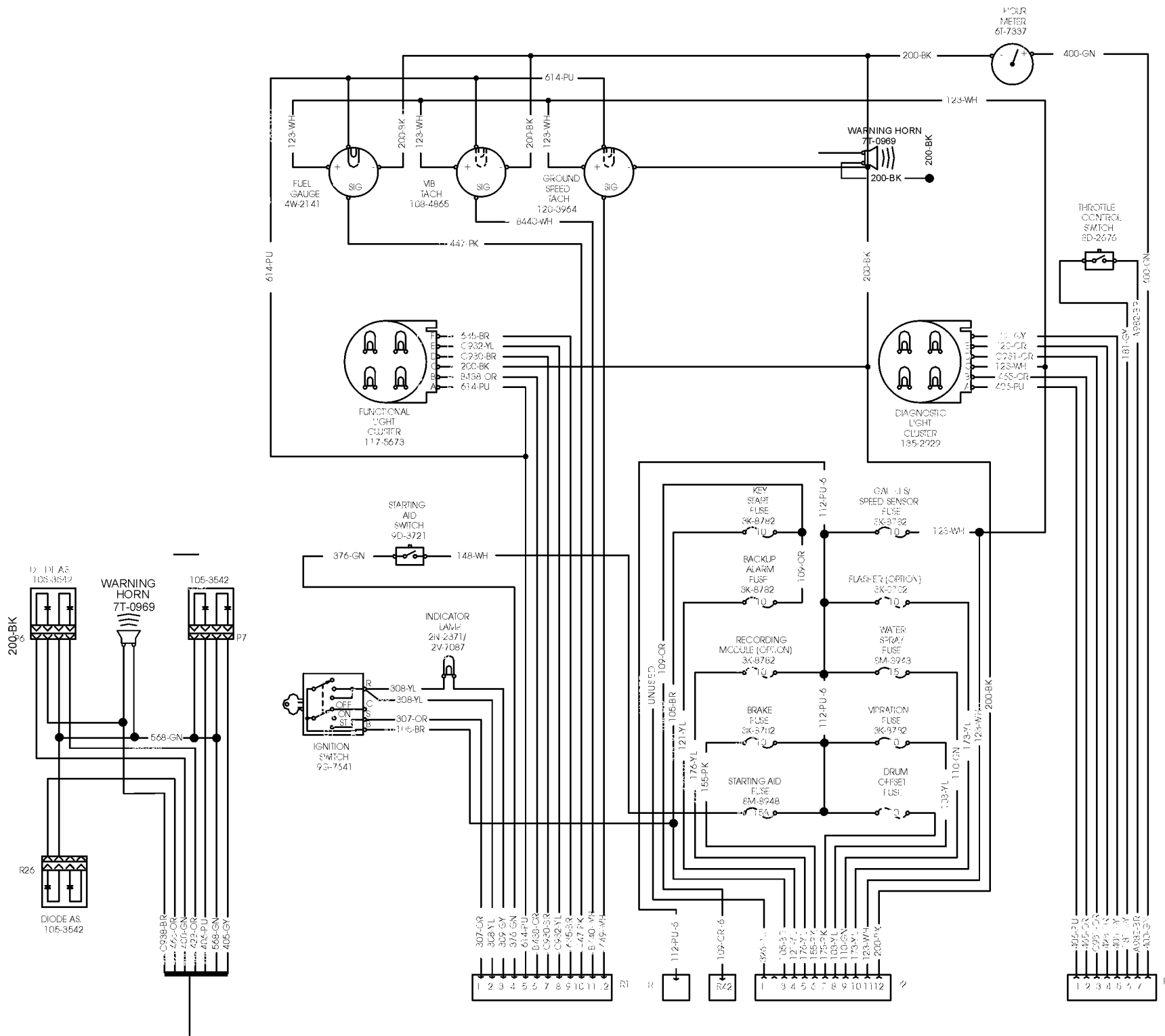
Official:

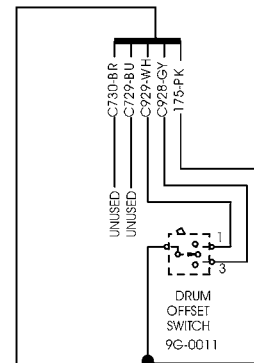
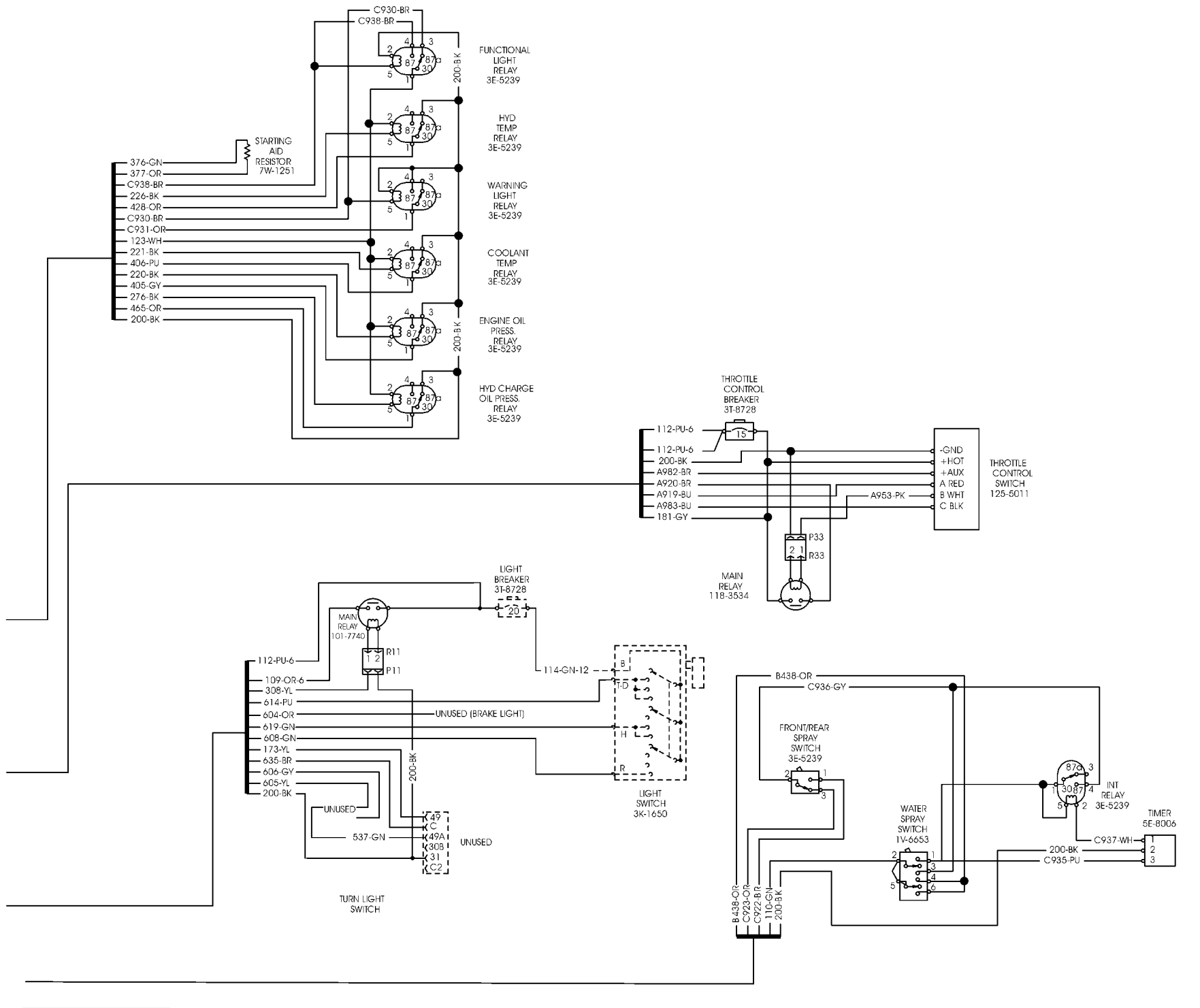

SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0503303

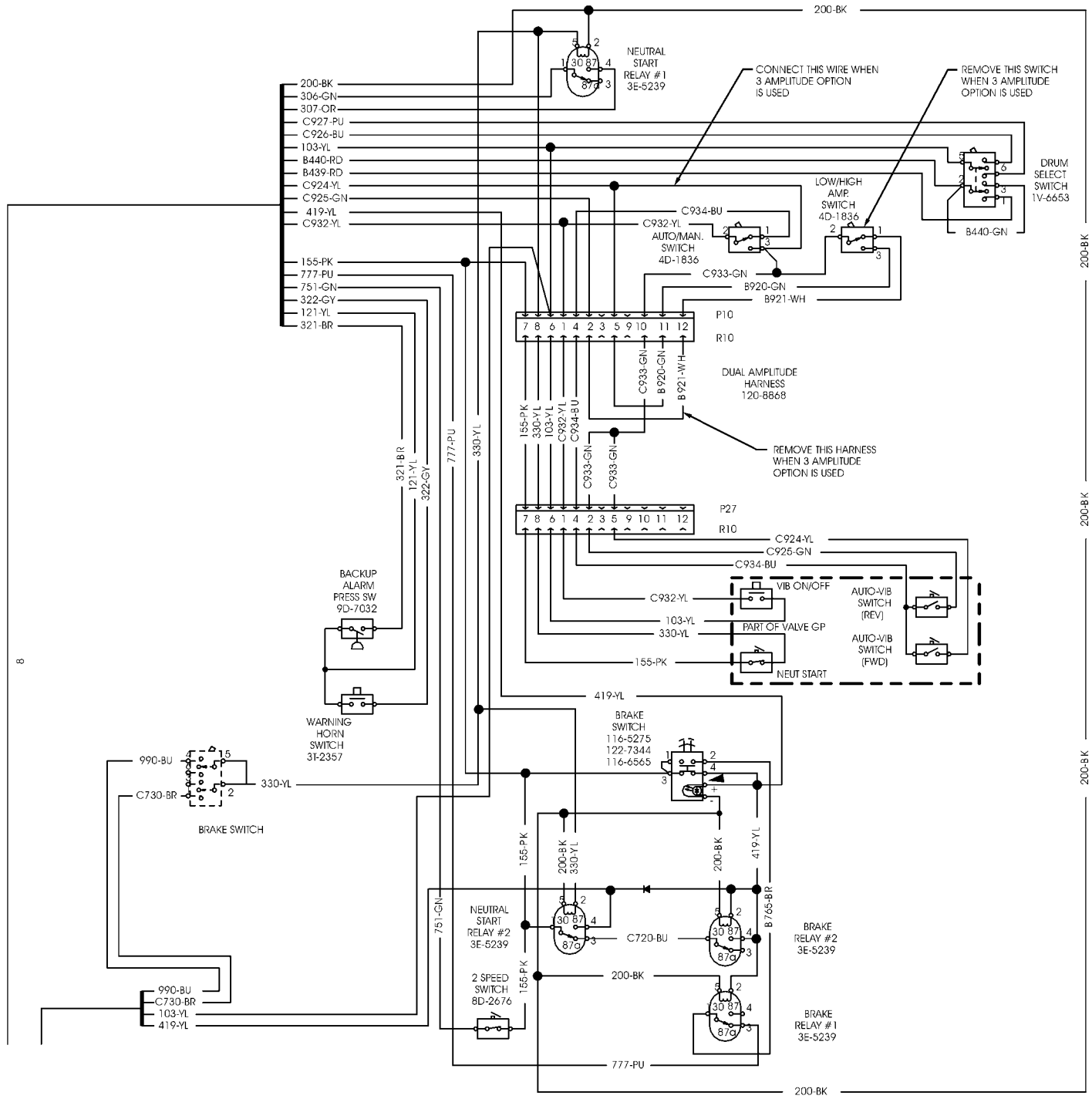
DISTRIBUTION: To be distributed in accordance with the initial distribution requirements for IDN: 256609, requirements for TM 5-3895-379-23.











RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>)						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i>				FROM: <i>(Activity and location) (Include ZIP Code)</i>			DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
PUBLICATION NUMBER				DATE		TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>								
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>)						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i>			FROM: <i>(Activity and location) (Include ZIP Code)</i>				DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
PUBLICATION NUMBER				DATE		TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>								
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>)						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i>				FROM: <i>(Activity and location) (Include ZIP Code)</i>			DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
PUBLICATION NUMBER				DATE		TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>								
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>)						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i>				FROM: <i>(Activity and location) (Include ZIP Code)</i>			DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
PUBLICATION NUMBER				DATE		TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>								
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

THE METRIC SYSTEM AND EQUIVALENTS

<p>Linear Measure</p> <p>1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches 1 Kilometer = 1000 Meters = 0.621 Miles</p> <p>Weights</p> <p>1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces 1 Kilogram = 1000 Grams = 2.2 Pounds 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons</p> <p>Liquid Measure</p> <p>1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces</p>	<p>Square Measure</p> <p>1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles</p> <p>Cubic Measure</p> <p>1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet</p> <p>Temperature</p> <p>$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$ 212° Fahrenheit is equivalent to 100° Celsius 90° Fahrenheit is equivalent to 32.2° Celsius 32° Fahrenheit is equivalent to 0° Celsius $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$</p>
--	--

APPROXIMATE CONVERSION FACTORS

To Change	To	Multiply By
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Sq Inches	Sq Centimeters	6.451
Sq Feet	Sq Meters	0.093
Sq Yards	Sq Meters	0.836
Sq Miles	Sq Kilometers	2.590
Acres	Sq Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

To Change	To	Multiply By
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Sq Inches	0.155
Sq Meters	Sq Feet	10.764
Sq Meters	Sq Yards	1.196
Sq Kilometers	Sq Miles	0.386
Sq Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

