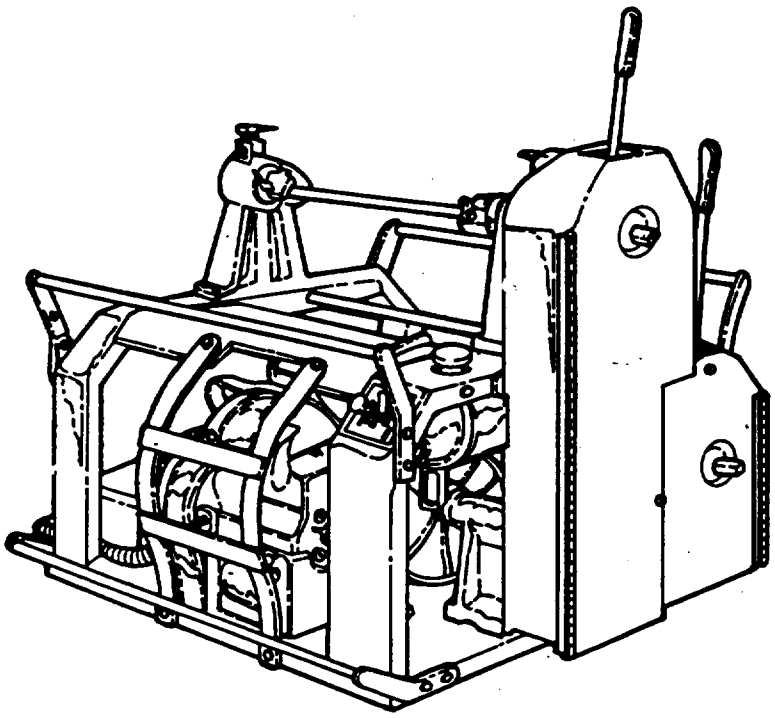
TM 11-3895-209-14

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL



CHAPTER

REELING MACHINES, CABLE, ENGINE-DRIVEN RL-207/G AND RL-207A/G

(NSN 3895-00-892-4583)

HEADQUARTERS, DEPARTMENT OF THE ARMY

15 JUNE 1986

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRI-CHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with the skin should be avoided. When necessaary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch (psi) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when TRICHLORO-TRIFLUOROETHANE has been used. Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel.

To avoid injury to personnel or damage to equipment, only personnel directly engaged in the loading or unloading of the assemblage should be permitted near the truck, lifting equipment, or assemblage. To eliminate confusion, all instructions should come from the loading crew supervisor.

Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. Do not use near a flame.

The RL-207(*)/G constitutes a noise hazard while in operation, Hearing protection is required when either mahine is operated for more than one hour per day. Failure to use hearing protection may result in temporary or permanent hearing loss.

Do not lay, place or throw field wire on or near power lines or transformers. Dangerous high voltages exist at these structures and severe shock or death may result from contact between field wire and power lines. Follow the five emergency steps for electric shock. Be careful when using the RL-207(*)/G during storms. Lightning may pose a shock hazard.

Reeling Machine RL-207(*)/G weighs 490 pounds, Be careful when moving. Mechanical lift required.

Do not let the engine on the RL-207(*)/G run for more than 5 minutes when the truck is not moving. Poisonous carbon monoxide fumes are given off, which can cause death. Turn off engine when not in use.

The RL-207(*)/G uses gasoline and oil in its engine. Do not smoke when adding or draining fuel.

Never attempt repairs while the engine is running. Death or serious injury can result from entanglement in the rotating machinery of this equipment.

CAUTION

When tightening bolts, be careful not to use too much force, or stripping of threads may result.

TECHNICAL MANUAL

No. 11-3895-209-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 June 1986

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

REELING MACHINES, CABLE, ENGINE-DRIVEN RL-207/G AND RL-207A/G

(NSN 3895-00-892-4583)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. A reply will be furnished direct to you.

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● This manual supersedes TM 11-3895-209-12, dated 28 May 1962, and TM 11-3895-209-35, dated 13 June 1962, including all changes.

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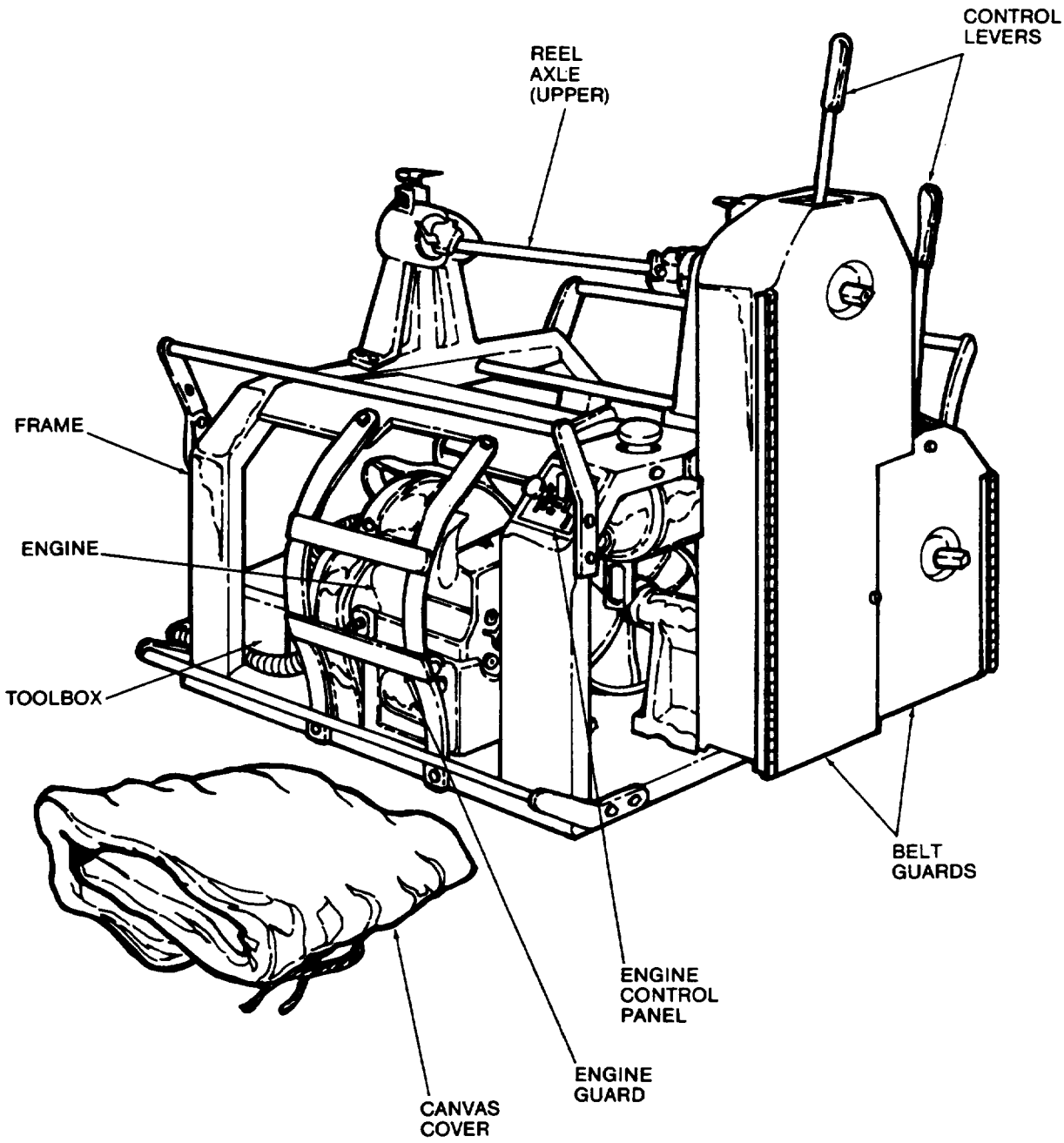

CONTROL LEVERS
REEL AXLE (UPPER)
FRAME
ENGINE
TOOLBOX
BELT GUARDS
ENGINE CONTROL PANEL
ENGINE GUARD
CANVAS COVER

CHAPTER 1
INTRODUCTION

NOTE

Reeling Machine, Cable, Engine-Driven RL-207A/G is similar to Reeling Machine, Cable, Engine-Driven RL-207/G. Information in this manual applies to both machines unless otherwise specified.

Section I. GENERAL INFORMATION

1-1. SCOPE

- This manual covers the operator's, organizational, direct, and general support maintenance of the Reeling Maching, Cable, Engine Driven RL-207/G and RL-207A/G, except the gasoline engine, which is covered in TM 5-2805-257-14 (Engine, Gasoline, Military Standard Models 2A016(*)).

Official nomenclature followed by (*) is used to indicate all models of the equipment item covered in this manual. Thus, Reeling Machine, Cable, Engine-Driven RL-207(*)/G represents Reeling Machine, Cable, Engine-Driven RL-207/G and Reeling Machine, Cable, Engine-Driven RL-207A/G.

1-2. MAINTENANCE FORMS AND RECORDS

- **CONSOLIDATEINDEX OF ARMY PUBLICATION S AND BLANK FORMS**

  Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

- **MAINTENANCE FORMS, RECORDS, AND REPORTS**

  Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update.

  Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73B/AFR 400-54/MCO 4430.3H.

  Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/ MCO P4610.19D/DLAR 4500.15.

1-3. HAND RECEIPT MANUAL

This manual has a companion with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 11-3895-209-14-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COIE, BII, and AAL) you must account for. As an aid to property accountability, additional -H R manuals may be requisitioned from the US Army Adjutant General Publications Center, Baltimore, MD, in accordance with procedures in Chapter 3, AR 310-2, and DA Pam 310.10.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Reeling Maching RL-207/G and RL-207A/G need 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. Put it on SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

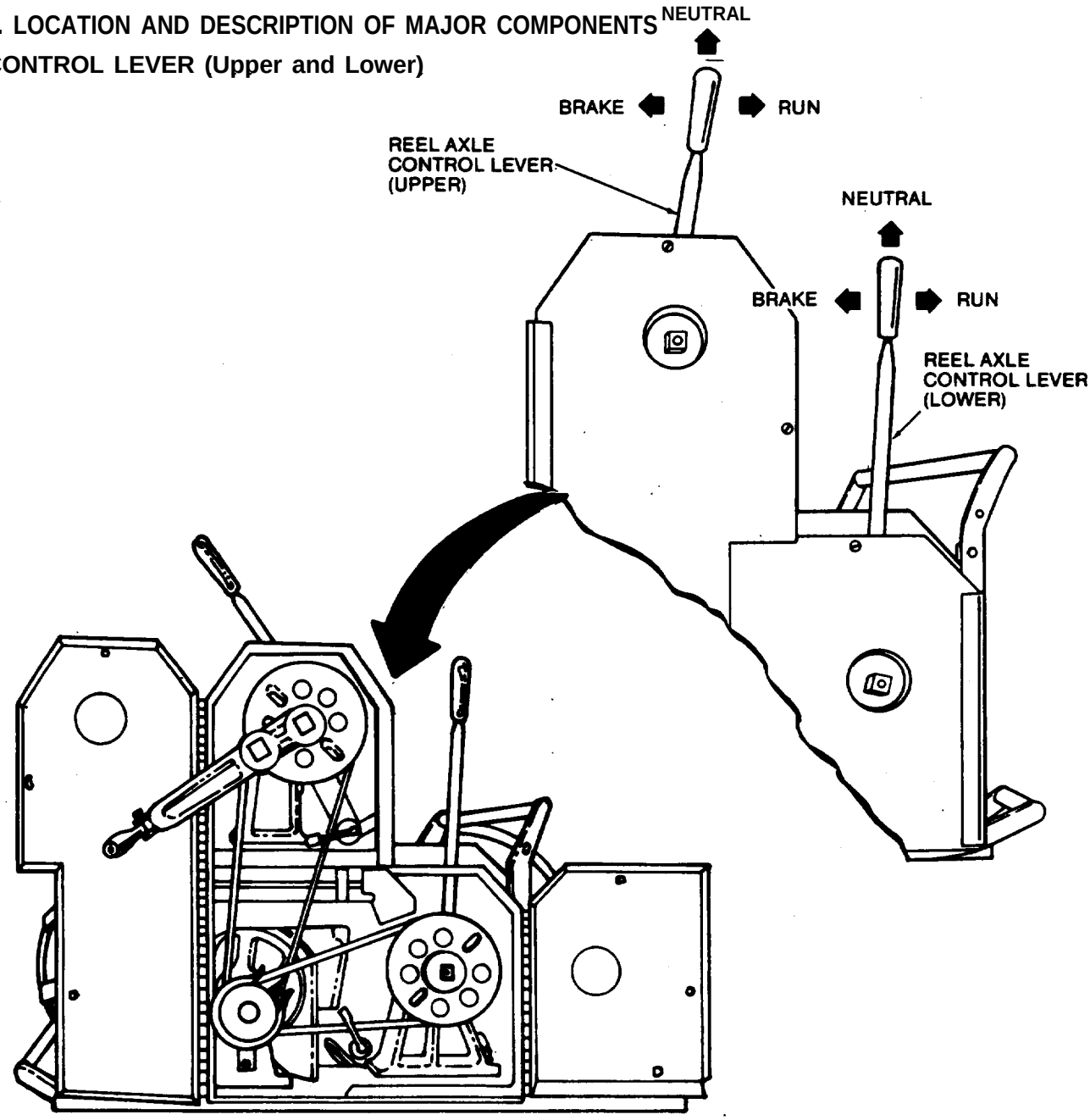
Section II. EQUIPMENT DESCRIPTION

1-5. PURPOSE, CAPABILITIES AND FEATURES

- The RL-207(*)/G is an engine-driven reel unit used with the 1¼ ton, 4X4 Cargo Truck M880/M-1008 or any larger vehicle to pay out or recover field wire or spiral-four cable.
- As many as four separate field wires may be recovered at the same time: two field wire lines from Wire Reels RL-159/U, or two spiral-four cables from Reels DR-15-B or DR-5. The RL-207(*)/G is driven by a two-cylinder, gasoline engine (Military Standard Models 2A016(*)).

1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

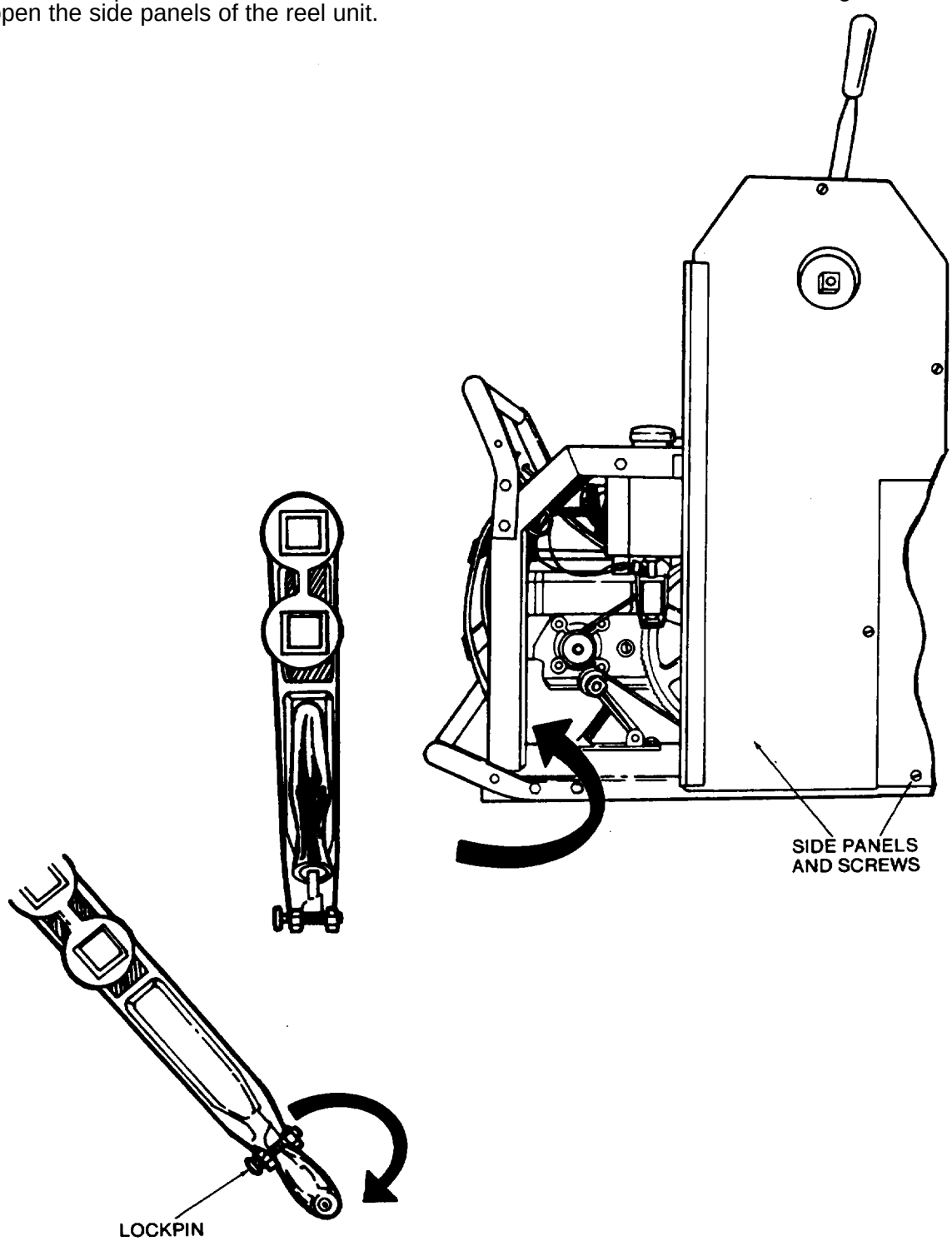
• CONTROL LEVER (Upper and Lower)



1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

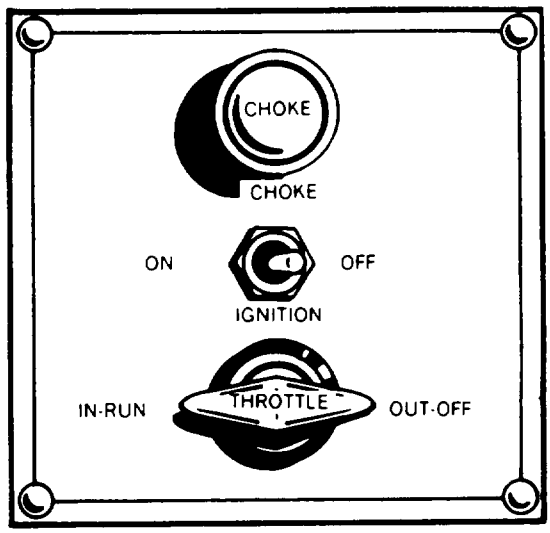
• **HANDCRANK**

Used for manual operation of the reel unit. To remove the handcrank from its mounting inside the frame, open the side panels of the reel unit.



1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

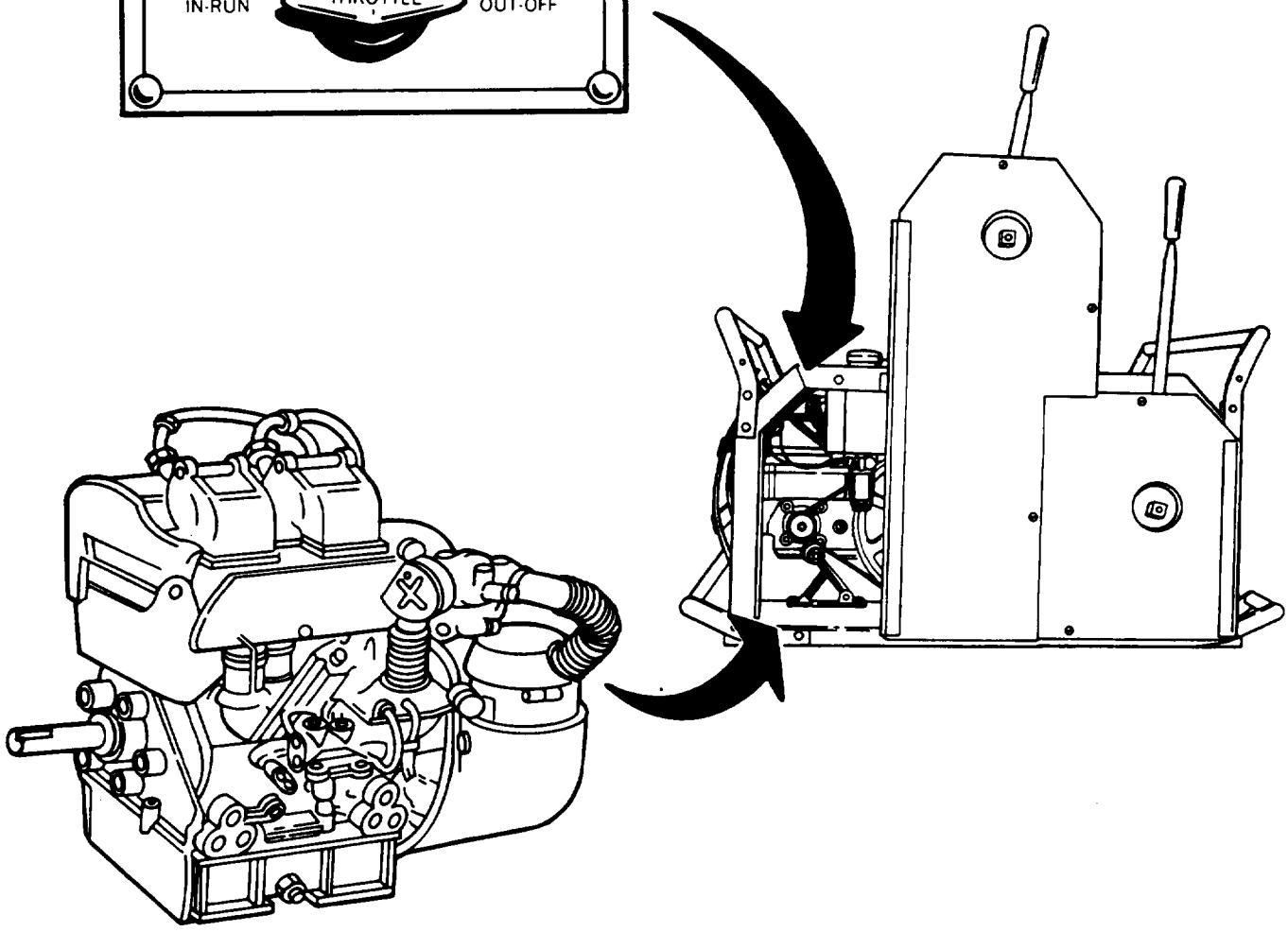
• GASOLINE ENGINE AND CONTROLS



CHOKE - Closes and opens engine choke valve to enrich fuel-air mixture.

IGNITION -Turns engine on and off.

THROTTLE- Allows engine speed to increase or decrease under the control of the governor.



Model 2AO16(*), 3-horsepower

1-7. DIFFERENCES BETWEEN MODELS

The basic difference between the RL-207/G and RL-207A/G is the gasoline engine. RL-207/G uses 2A016-2 while RL-207A/G uses the 2A016-3. Refer to TM 5-5805-206-24P for a complete item difference listing.

1-8. PERFORMANCE DATA

Operation	Power driven or manual.
Power available at either reel axle	2 horsepower at 143 rpm ±3.
Speeds:	
Wire payout	25mph(max)1.
Cable payout	10 mph.
Wire or cable recovery	0 to 5 mph.
Capacity:	
	1½ gallons.
Reels:	
DR-5	Two (one per axle).
DR-15-B	Two(one per axle).
RL-159/U	Four (two per axle).
Weight	Approx 490 lb without reels.

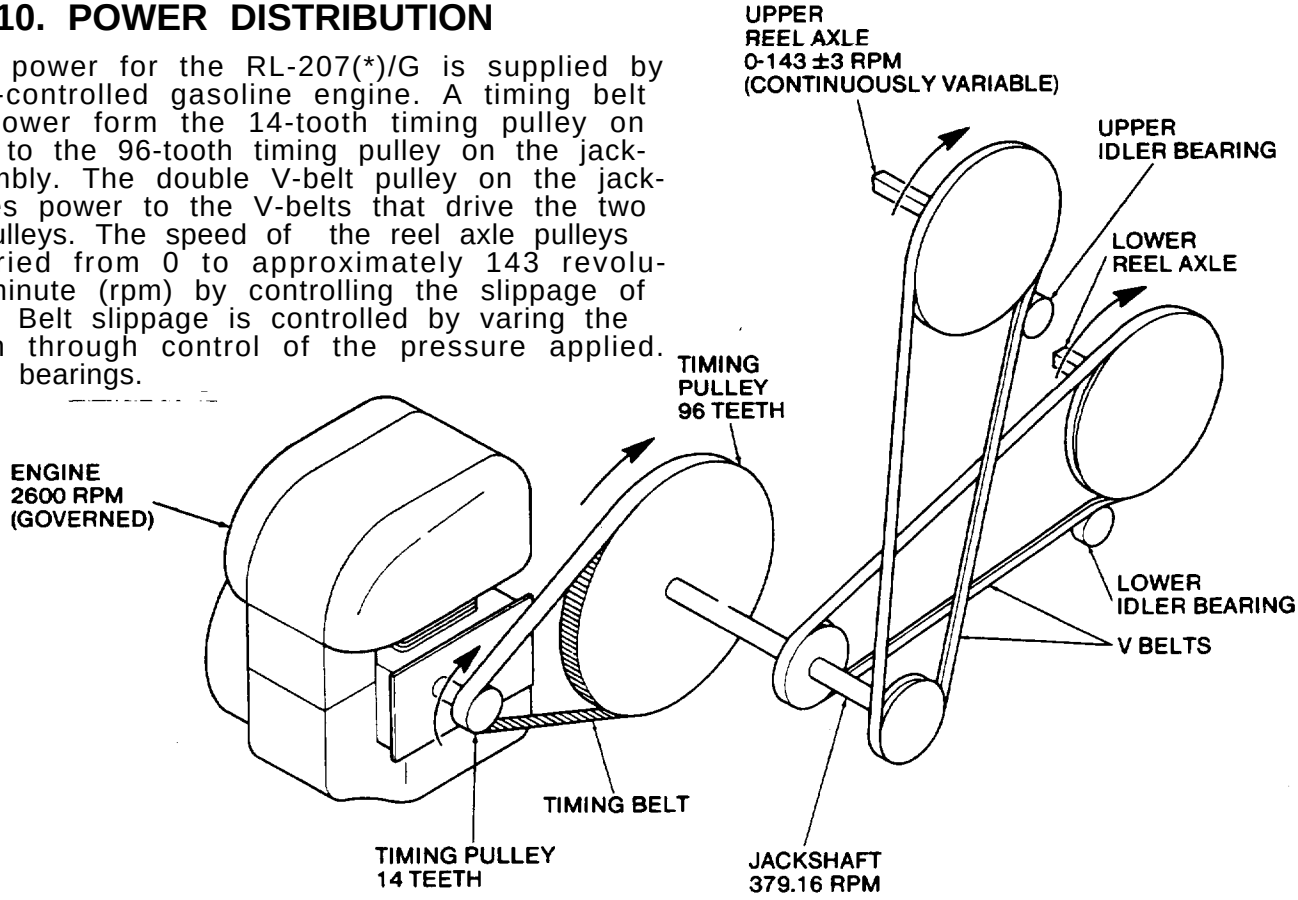
Section III. PRINCIPLES OF OPERATION

1-9. MECHANICAL ANALYSIS

The RL-207(*)/G includes two reel axles and their associated clutch and brake mechanisms. The clutch and brake mechanisms provide variable-speed drive and braking action for the reel axles. Power for the reel axles is provided by the gasoline engine and is transmitted by a timing belt through a jackshaft assembly to the clutch and brake assemblies. A handcrank may be used for manual operation of either of the reel axles.

1-10. POWER DISTRIBUTION

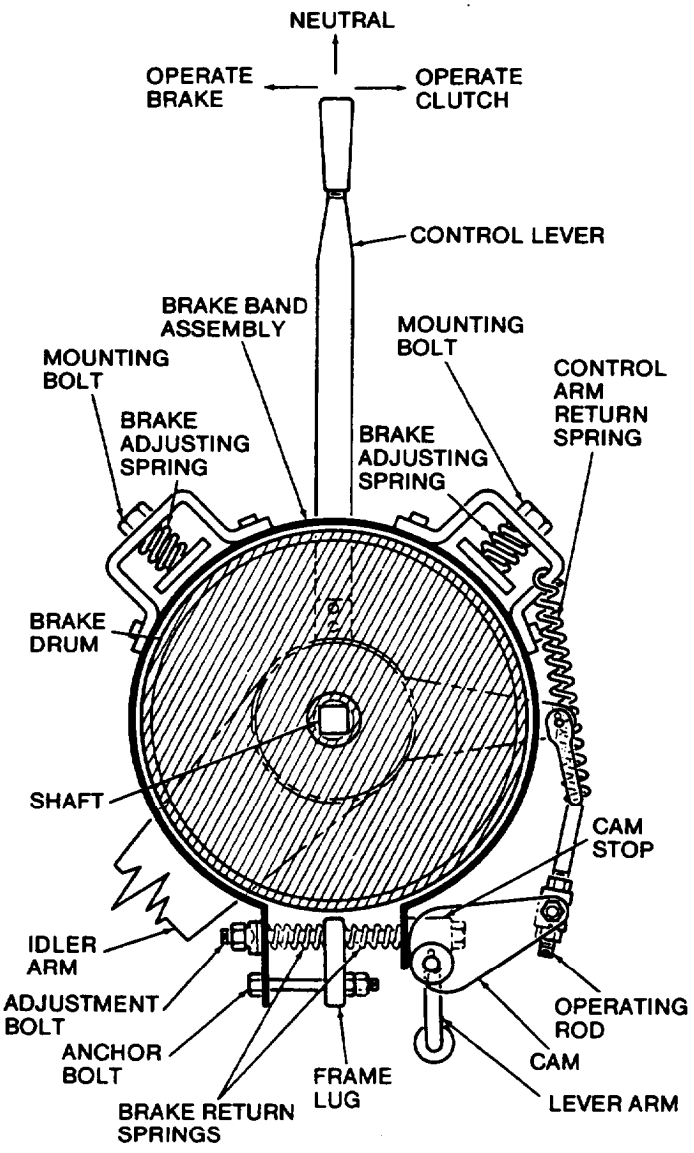
Mechanical power for the RL-207(*)/G is supplied by a governor-controlled gasoline engine. A timing belt transmits power form the 14-tooth timing pulley on the engine to the 96-tooth timing pulley on the jackshaft assembly. The double V-belt pulley on the jackshaft applies power to the V-belts that drive the two reel axle pulleys. The speed of the reel axle pulleys can be varied from 0 to approximately 143 revolutions per minute (rpm) by controlling the slippage of the V-belts. Belt slippage is controlled by varing the belt tension through control of the pressure applied. by the idler bearings.



'The payout speed will be determined by the speed at which the vehicle can be safely operated.

1-11. BRAKE MECHANISM

The axle drive shaft is normally free to rotate, because the brake band is held clear of the **brakedrum** by the brake return and brake adjusting springs. When the control lever is operated to the rear (operate brake position), the idler arm pivots around the shaft and causes the cams around the lever arm to rotate. As the cams rotate, force is applied to the one end of the brake band and through the cam stop and the adjustment bolt to the other end of the brake band. This action pulls the ends of the brake band together, compressing the brake return springs and causing the brake band to close around the **brakedrum.** Friction between the brake band and the **brakedrum** produces the braking action. When the control lever is released (neutral), the brake return springs expand, forcing the ends of the brake band apart and releasing the friction between the band and the drum. In the released condition, the brake band is held clear of the drum by the brake return and the brake adjusting springs. Centering of the band about the drum is accomplished by adjustment of the anchor bolt and the two mounting bolts. The adjustment bolt at the bottom of the brake band provides adjustment to compensate for wear of the brake band.

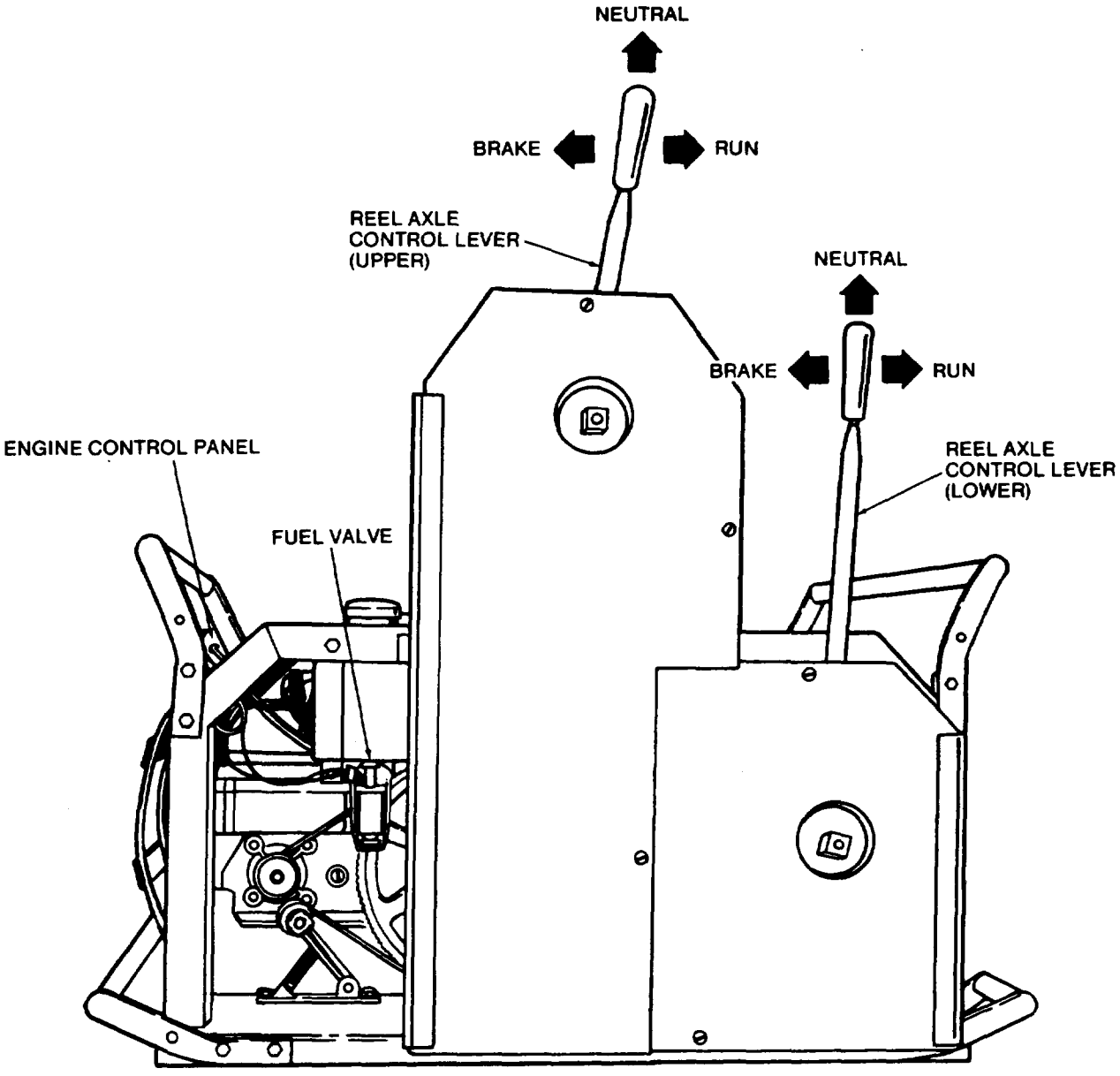


CHAPTER 2
OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. GENERAL

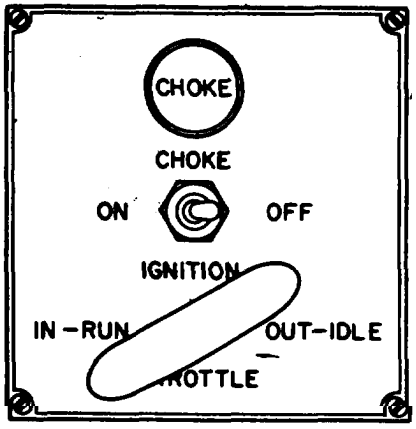
The operator's controls information presented in this section consists of Engine Controls and Reel Axle Controls.



2-2. ENGINE CONTROLS

WARNING

The RL-207(*)/G constitutes a noise hazard while in operation. Hearing protection is required when either machine is operated for more than 1 hour per day. Failure to use hearing protection may result in temporary or permanent hearing loss.



IGNITION - Turns engine on and off.

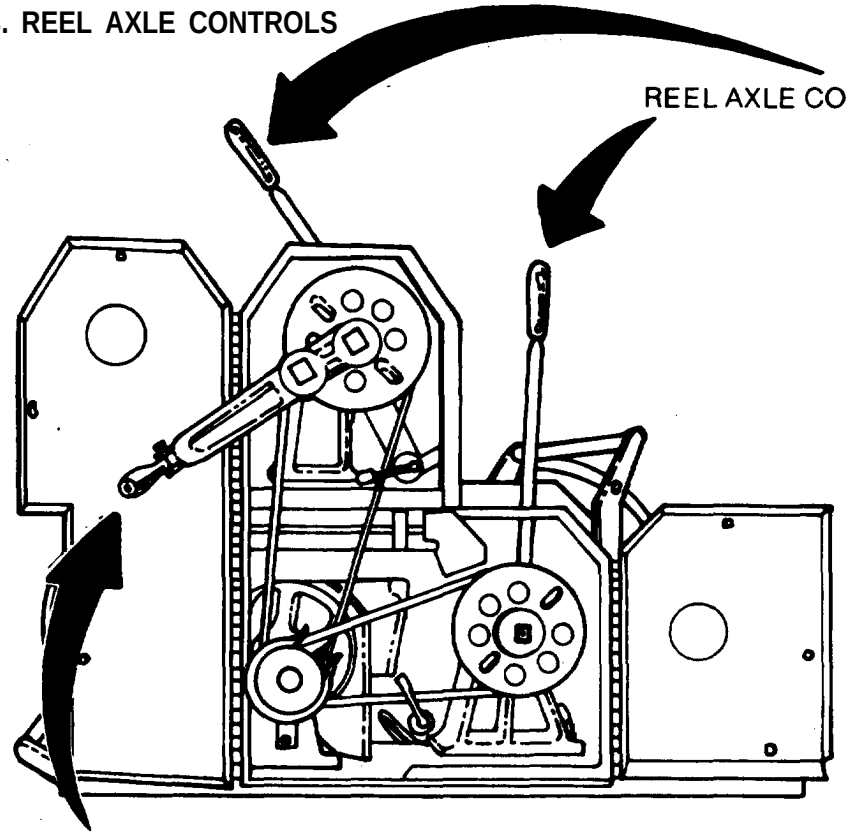
CHOKE- Pulled out closes engine choke valve to enrich the fuel-air mixture.

Pushed in: opens engine choke valve to provide normal fuel-air mixture.

THROTTLE - Pushed in: allows engine speed to be increased under control of the governor. The handle may be locked in any position by turning it to the right.

Pulled out: moves engine governor control to idle speed position.

2-3. REEL AXLE CONTROLS



REEL AXLE CONTROL LEVER (Upper and Lower) –

Neutral position: releases brake and removes drive power from the axle.

Run position: applies power to the axle. Speed is controlled by pressure applied to the lever.

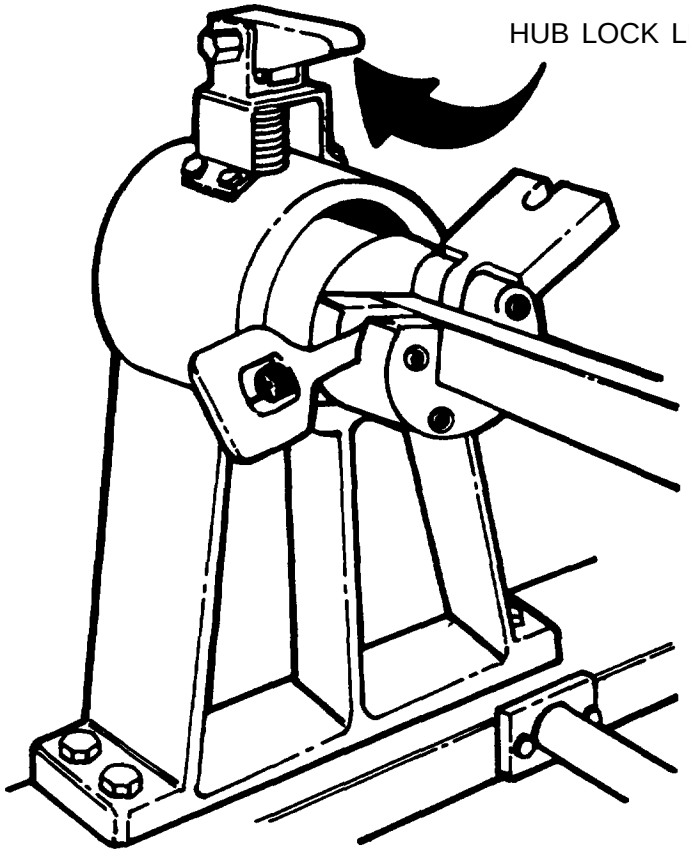
Brake position: applies the brake and stops the reel axle.

HANCRANK - Maybe used on the shaft of either the upper or the lower reel axle to permit manual operation.

2-3. REEL AXLE CONTROLS- Continued

CAUTION

Do not apply power to the reel axles when the hub locks are engaged. Damage to the hub locks will result.



HUB LOCK LEVER- Vertical position: locks the axle to prevent rotation.

Horizontal position: allows the axle to turn freely.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-4. GENERAL

Scheduled PMCS are things that you must do at specified times to make sure that your equipment is operationally ready. As scheduled PMCS is done, associated routine PMCS should also be done, Scheduled PMCS, and when to do them, are listed in table 2-1.

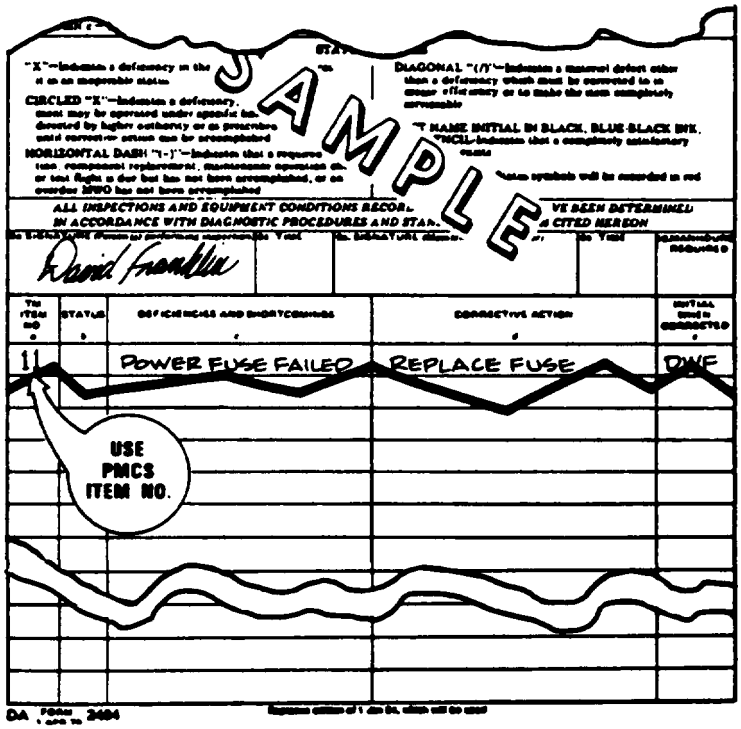
- Before you operate, always keep in mind and observe the **WARNINGS** and **CAUTIONS** contained in this technical manual and plates installed on the equipment that are associated with the functions you are about to perform. Perform your before (B) PMCS from table 2-1.
- While you operate, always keep in mind and observe the **WARNINGS** and **CAUTIONS** contained in this technical manual and plates installed on the equipment that are associated with operation functions. Perform your during (D) PMCS from table 2-1.
- After you operate, be sure to perform your after (A) PMCS from table 2-1.

2-4. GENERAL - Continued

Use DA Form 2404 to report deficiencies and shortcomings found, while doing PMCS.

NOTE

Use the PMCS Item No. of table 2-1 for the TM ITEM NO. of column a on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).



Some operator PMCS are routine while others are scheduled.

Routine PMCS are things that you should do any time you see that they need to be done. Some routine PMCS are:

A Clean and dust the equipment.

B Check cable for proper connections and for tightness. If a connection cannot be tightened, report the defect to C-E ORG MAINT.

NOTE

Defects observed when doing the remaining routine checks should be reported to C-E ORG MAINT for corrective action.

C Check cables for fraying, cuts, cracks, dry rot and loose or missing hold-down clamps.

D Check equipment surfaces for corrosion, rust, and fungus.

E Check controls of all components to ensure that they are not loose, broken or missing and that the controls turn or set properly.

2-5. CLEANING

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHAN E. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHAN E dissolves natural oils, prolonged contact with the skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

- Inspect the exterior of the equipment. The exterior surfaces should be clean, and free of dust, dirt, grease, and fungus.
- Remove dust and loose dirt with a clean soft cloth.
- Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened (not wet) with cleaning compound.

Table 2-1. Operator Preventive Maintenance Checks and Services

Item No.	Interval B	D	A	W	M	Item to be Inspected	Procedures Check and have repaired or adjusted as necessary
1		•				Engine	**A** While engine is running, be alert for fuel, oil, exhaust leaks, unusual operation or condition, excessive vibration. Listen for unusual noise. **B** Turn ignition switch to OFF position. Inspect gas tank, fuel line, carburetor, and fuel sediment bowl, for dirt and other foreign matter. Service engine as required by TM 5-2805-257-14.
2	•		•			Fuel and oil	Replenish fuel and oil as required.
3				•		Wiring	Inspect wiring for chafed, cracked, or damaged insulation. Replace connectors that are broken, stripped, or worn excessively.

Table 2-1. Operator Preventive Maintenance Checks and Services- Continued

Item No.	Interval B	D	A	W	M	Item to be Inspected	Procedures Check and have repaired or adjusted as necessary
4				•		Belts	Inspect the timing, and the upper and lower V-belts for condition, tension, and alinement Clean off oil and grease. Be sure that the belt pulleys are properly aligned and that the jackshaft assembly is securely mounted. Check the clutch and brake assemblies and the bearing house assemblies for evidence of wear, damage, or excessive looseness. Moisten a cloth with cleaning compound and clean the belts; then wipe the belts with a dry cloth.
5				•		Lubrication	Lubricate the equipment (less engine) as prescribed in paragraph 3-1. Lubricate the engine as directed in TM 5-2805-257-14.

Section III. OPERATION UNDER USUAL CONDITIONS

NOTE

The following instructions are based on the assumption that the operator is familiar with basic field wire and field cable practices.

2-6. INSTALLATION OF WIRE REELS

• REMOVING REEL AXLE

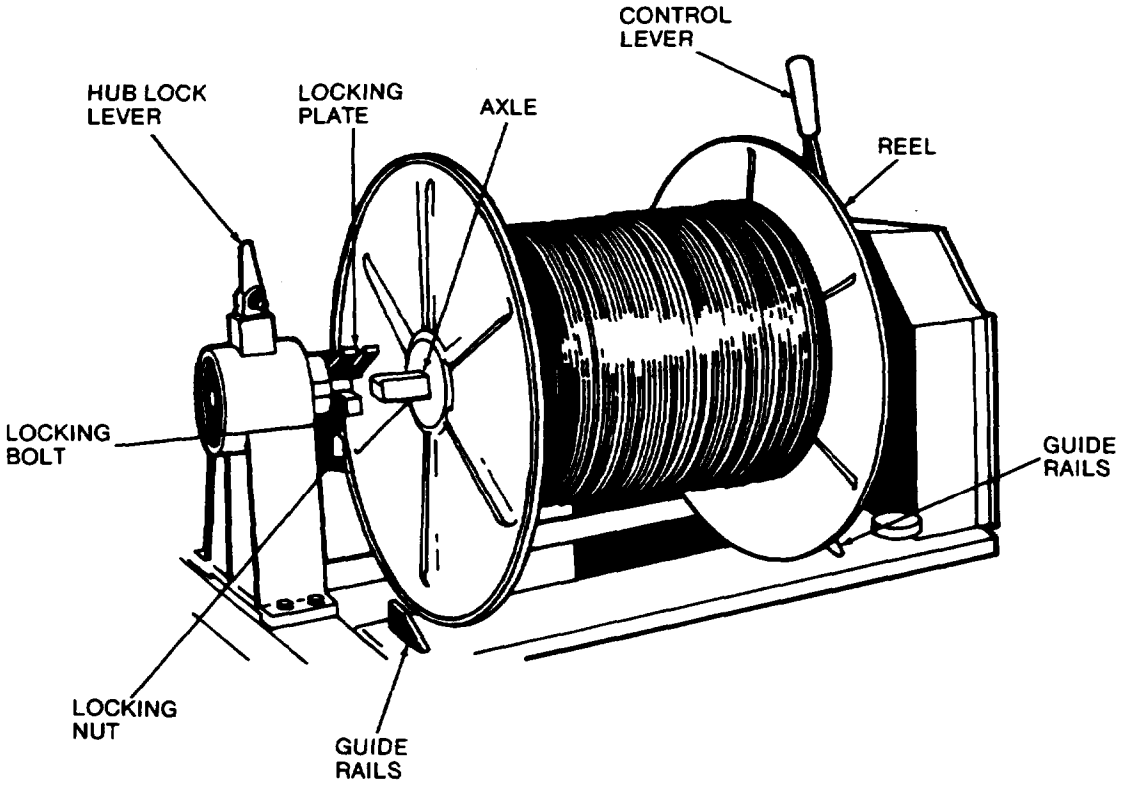
A Lift upward on the hub lock lever that is nearest the control lever while turning the reel axle slowly by hand until the hub lock lever reaches the vertical position; the hub is locked.

B Lift the opposite hub lock lever to the vertical position.

C Loosen the locking nuts and swing the locking bolts outward. Swing the locking plate to the open position.

D Lift out the reel axle.

2-6. INSTALLATION OF WIRE REELS-Continued



• INSTALLATION OF REELS

A Insert the axle through the center of the reel. The axle should be approximately centered in the reel.

NOTE

Install all reels so that the wire will unwind from the lower side of the reel.

B Lift and slide the assembled reel into position for insertion into the hubs. Guide rails are provided to position the reel.

C Slide the axle and reel into the hubs; turn the axle to aline the axle ends with the square slots in the hubs.

D Close the locking plates and swing the locking bolts into the slots. Tighten the locking nuts securely. Move the hub lock levers to the horizontal position to release the hub.

2-7. PAYING OUT FIELD WIRE

WARNING

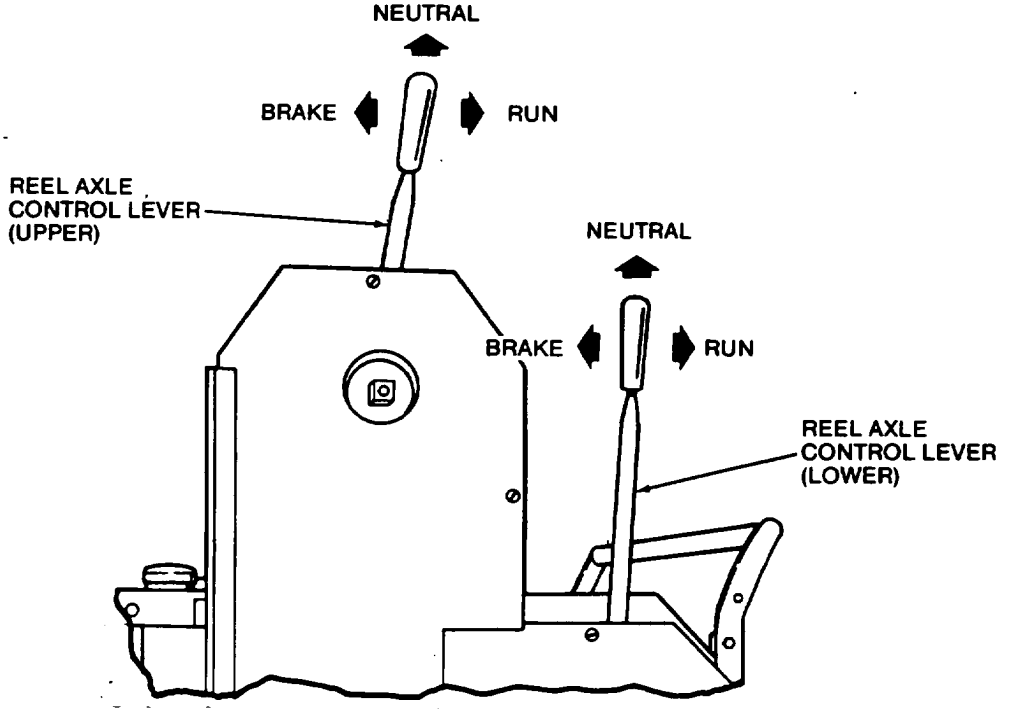
Do not lay, place or throw field wire on or near power lines or transformers. Dangerous high voltages exist at these structures and severe shock or death may result from contact between field wire and power lines. Follow the five emergency steps in the front of this manual. Be careful when using the RL-207(*)/G during storms. Lightning may pose a shock hazard.

Follow operating instructions carefully. When operating the equipment, always stand beside the equipment; never stand in line with the wire reels when they are turning. Check to be sure that all hub lock levers are in the horizontal position and that the reels are installed so that they unwind from the bottom of the reel.

- Untie the end of the wire from the reels.
- Pull enough wire off each reel to terminate the wire and anchor it to a pole or to a stake.

Overspinning of the reels may cause the wire the backlash and entangle the operator. Be extremely careful when paying out the wire or cable.

- Move the vehicle at a speed of 15 miles per hour (mph) or less along the desired route. Use authorized hand and arm signals or whistle signals to direct the driver.
- Control the reel speed and wire tension by operating the reel axle control lever to the brake (rear) position. Maintain only enough tension to permit the reel to turn freely. Too much tension will cause the wire to break.



2-8. USING ENGINE TO RECOVER FIELD WIRE OR CABLE

The RL-207(*)/G will accommodate two RL-159/U's, one DR-5 or one DR-15 per axle. The upper or lower axle may be used individually or both axles may be used simultaneously. To recover wire or cable proceed as described below.

- Install the required number of empty reels on the axles. Secure the end of the wire or cable to be recovered to each reel.

WARNING

Oil and gasoline are used in the RL-207(*)/G. Do not smoke when adding or draining fuel.

Check to be sure that the fuel tank is full and that the proper amount of oil is in the engine crankcase.

- Start the engine as follows:

WARNING

The RL-207(*)/G constitutes a noise hazard while in operation. Hearing protection is required when either machine is operated for more than 1 hour per day. Failure to use hearing protection may result in temporary or permanemt hearing loss.

A Turn the fuel valve fully counterclockwise (on).

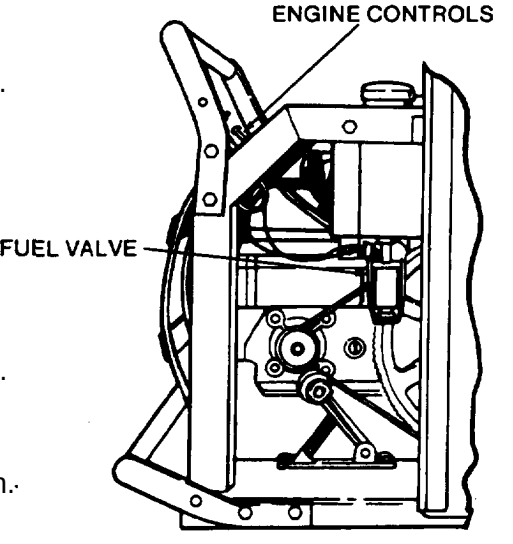
B If the engine is cold, pull the CHOKE control fully out. If the engine is hot, leave the CHOKE control in.

c Turn the THROITLE control counterclockwise and pull it about halfway out. Lock the THROITLE control by turning it clockwise.

D Operate the IGNITION switch to ON.

E Wind the starter cord around the engine pulley and pull sharply on the starter cord until the engine starts.

F Allow the engine to warm up for at least 1 minute. Adjust the CHOKE control, as required, during the warm-up period to maintain smooth engine operation.

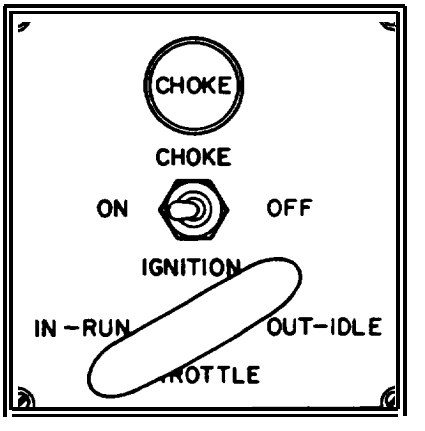


. To recover field wire or cable:

A Turn the THROITLE control counterclockwise and push it inward until the motor is running at the desired speed. Turn the THROITLE control clockwise to secure it in the desired position.

B Operate the control lever associated with the reel being used to the run (forward) position to cause the reels to turn. Control the axle speed (reel speed) by varying the pressure on the control levers.

C Guide the wire or cable onto the reel to be sure that it is wound in in smooth level layers acoss the reel. Maintain enough tension on the wire or cable to ensure that it is wound tightly on the reel.



2-8. USING ENGINE TO RECOVER FIELD WIRE OR CABLE - Continued

D To stop the reel axle, operate the control lever to the brake position,

E When the reel is full or when the end of the field wire is reached, secure the end of the field wire to one of the holes at the edge of reel.

F Remove the full reel from the axle.

- To stop the engine:

A Turn the THROTTLE control counterclockwise and pull it out to the idle position; turn it clockwise to lock it in position.

B Operate the IGNITION switch to OFF.

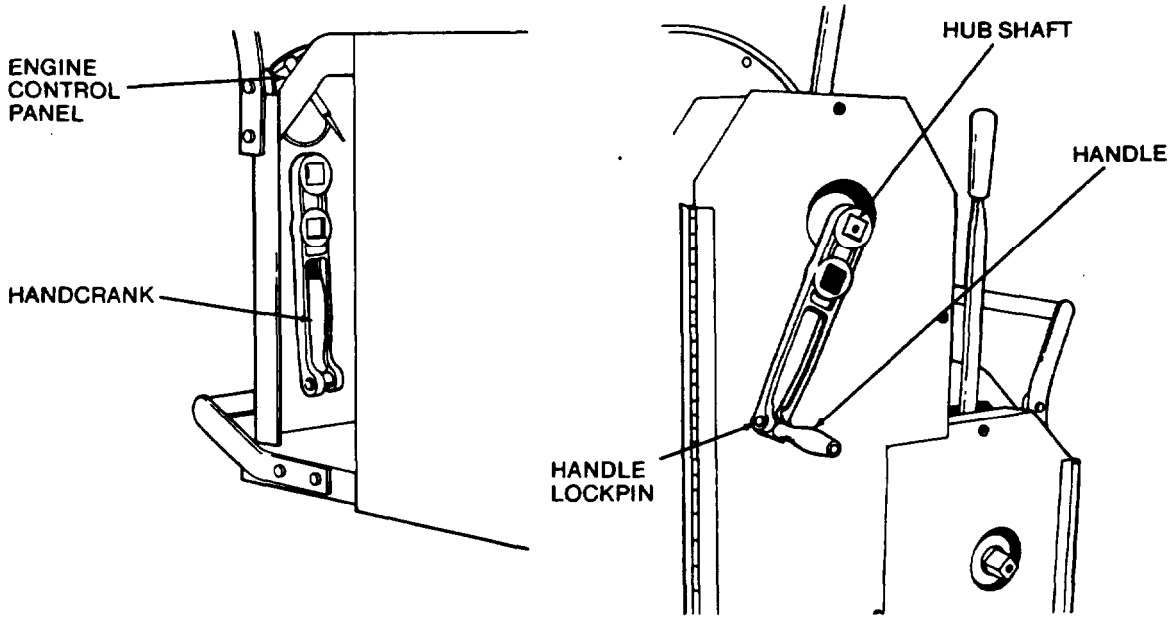
C Turn the fuel valve fully clockwise (off).

2-9. RECOVERING FIELD WIRE OR CABLE MANUALLY

NOTE

Only one axle may be used during manual recovery.

- Install the wire reel on the axle.
- Secure the end of the field wire or cable to the reel.
- Remove the handcrank from its mounting inside the frame, below the engine control panel.
- Fit the handcrank over the square end of the hub shaft and push the handcrank in until the spring-loaded catch is engaged. Either axle may be used; however, the upper axle will permit the operator to stand while turning the handcrank.
- Press in on the handle lockpin and swing the handle outward to the operating position.
- Recover the field wire or cable by turning the handcrank.



CHAPTER 3
OPERATOR'S MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. TOOLS AND MATERIAIS REQUIRED

- The tools and materials required for operator's maintenance of Reeling Machine, Cable, Engine Driver RL-207(*)/G are issued with the equipment.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating, Since TRI - CHLOROTRIFLUOROETHAN E dissolves natural oils, prolonged contact with the skin shouldbe avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

- TRICHLOROTRIFLUOROETHANE (NSN 6850 -00-1 05-3084) is required to clean the equipment.
- Lubricating oil, internal combustion engine (OE-30), is required to lubricate the reeling machine.

3-2. LUBRICATION

Ž ENGINE

Refer to TM 5-2805-257-14 for lubrication information for the engine.

• REELING MECHANISM

The bearings in the jackshaft assembly, the axle hub assemblies, and the clutch and brake assemblies are sealed and do not require lubrication. Use the oil can supplied with the equipment to apply one or two drops of oil (OE-30) at each of the indicated points. Under normal conditions of operation, lubricate the equipment weekly.

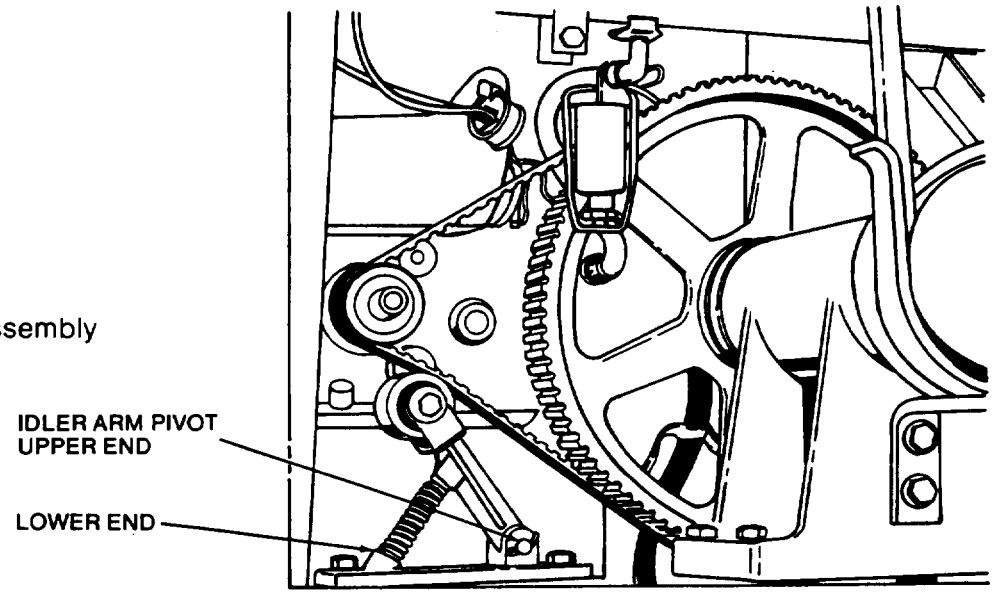
3-2. LUBRICATION - Continued

NOTE

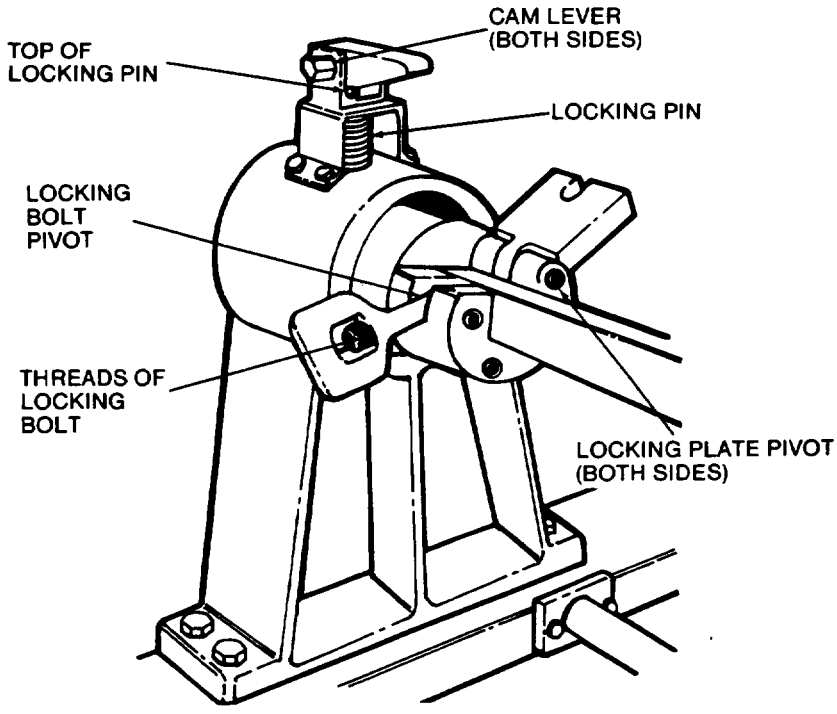
The lubrication schedule is based on operation for 8 hours per day, 5 days per week. When operating time exceeds this amount or when extremely dusty or very humid conditions exist, adjust the lubrication schedule accordingly.

- **POINTS OF LUBRICATION**

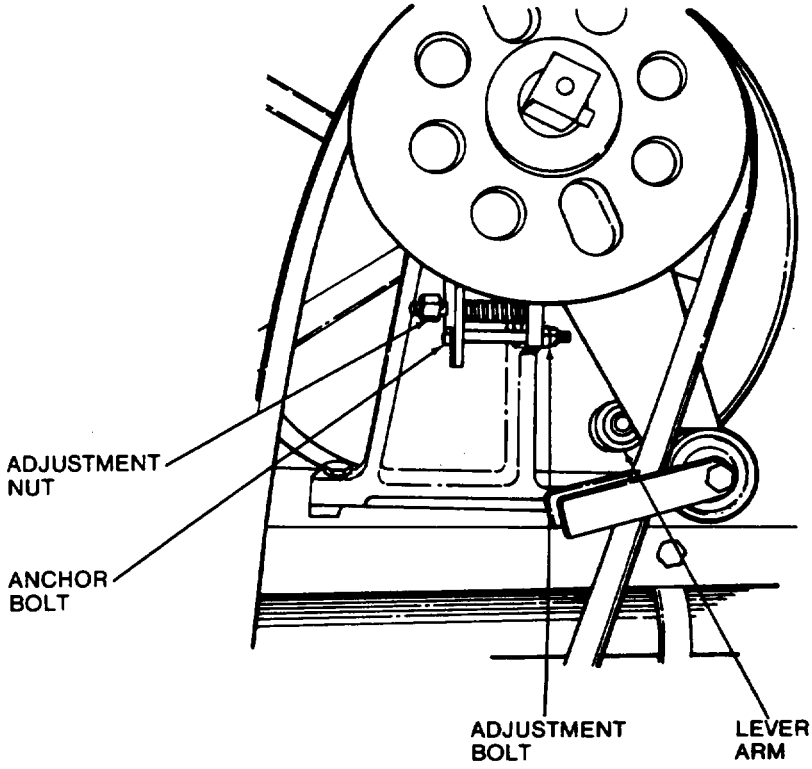
A Timing Belt Idler Assembly



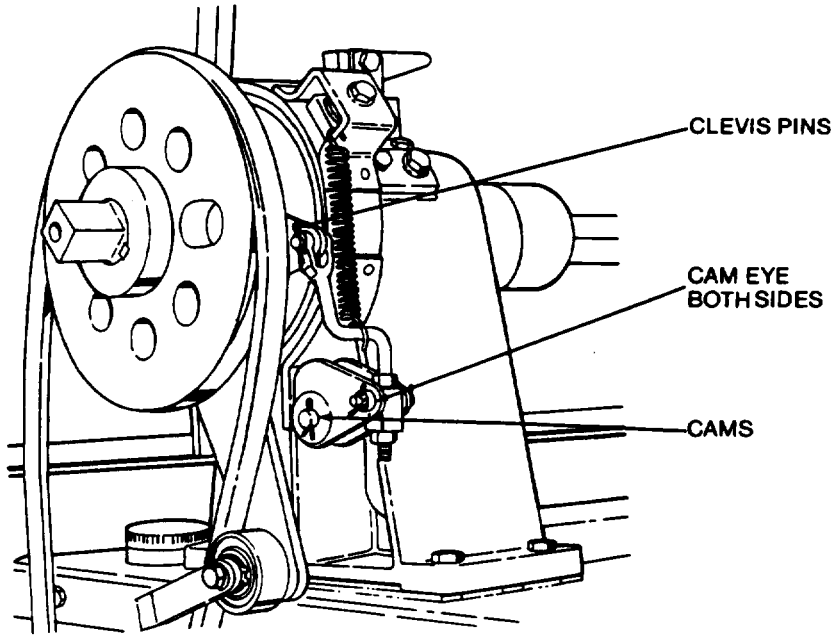
B Bearing House Assembly



3-2. LUBRICATION - Continued



C Clutch and Brake Assembly



Section II. TROUBLESHOOTING

3-3. VISUAL INSPECTION

When the equipment fails to perform properly, turn off the IGNITION switch and check all the items listed below.

CAUTION

Do not check any item when the engine is running.

- Wrong settings of switches and controls
- Worn or broken belts
- Loose or broken parts
- Reel axles not properly installed
- Oil or grease on belts or brake bands
- Dirt or other foreign matter in the mechanism

If the above checks do not reveal the equipment fault, use the equipment performance checklist to locate the source of trouble.

3-4. USE OF TROUBLESHOOTING TABLE

Table 3-1 contains troubleshooting information useful to operators in diagnosing and correcting malfunctions or unsatisfactory operation of the reeling machine.

- The Troubleshooting Table lists the common malfunction symptoms that operators are most likely to encounter. Operation of the reeling machine's test and inspection steps will be followed to determine the cause, and the corrective action that should be taken for each possible cause listed.
- The operator should first find the malfunction symptom which most closely describes the immediate situation, and then perform the test and inspection, and corrective action steps in the order in which listed.
- This manual cannot list all possible malfunction symptoms that may be encountered, nor can it list all possible test and inspection, and corrective action steps that may be taken. If a malfunction occurs for which no symptom is listed, or if the listed corrective actions do not resolve the trouble, supervision should be notified.
- Troubles or corrective actions beyond the scope of operator capabilities must be reported to organizational maintenance.

NOTE

The items listed in the Corrective measures column in the chart below are for the use of the operator only. If the symptoms indicate that the difficulty is beyond the level of operator's maintenance, report the trouble to the organizational maintenance personnel.

Table 3-1. Operator Troubleshooting

	Item No.	Item	Action or condition	Normal indications	Corrective measures
PREPARATORY	1	IGNITION switch	Set to ON.		
	2	CHOKE and THROTTLE controls	At initial start condition.	Controls operate smoothly.	Check control rod and its connection to engine.
	3	Engine	Start engine.	Engine starts without difficulty.	Check fuel line and filter. Refer to TM 5-2805-257-14.
EQUIPMENT PERFORMANCE	4	THROTTLE control	After warm-up period, set to IN-RUN position (fully inward).	Engine speed increases until governed speed is reached.	Check throttle control rod.
	5	Engine	Running normal operating speed.	Runs smoothly without excessive vibration or smoking.	Refer to TM 5-2805-257-14.
	6	Upper reel control lever	Move slowly to the run (forward) position.	Reel axle speed increases smoothly from zero to maximum.	Check upper axle drive belt and idler guides.
	7	Upper reel control lever	Move to the brake (rear) position.	Reel axle stops turning.	Check brake return springs, brake band assembly and anchor bolt.
	8	Upper reel control lever	Release to neutral position.	Reel axle remains stopped.	Check clutch idler adjustment.
	9	Lower reel control lever	Repeat the procedures given for items 7 through 9 to check operation of the lower reel axle.	Same as for items 7 through 9.	Same as for items 7 through 9.
STOP	10	IGNITION switch	Set to OFF.	Motor stops.	

Section III. REMOVAL AND REPLACEMENT OF PARTS

3-5. GENERAL

Operator's maintenance is limited to cleaning, lubrication, tightening or replacement of bolts and screws, and replacement of specific maintenance parts. When disassembling the various parts and assemblies, use the correct tool for each specific operation. Do not disassemble the RL-207(*)/G beyond the point necessary to inspect, lubricate, or replace the necessary parts. Do not attempt repairs beyond the scope of those authorized by the operator.

3-6. REMOVAL AND REPLACEMENT OF TIMING BELT

- **REMOVAL**

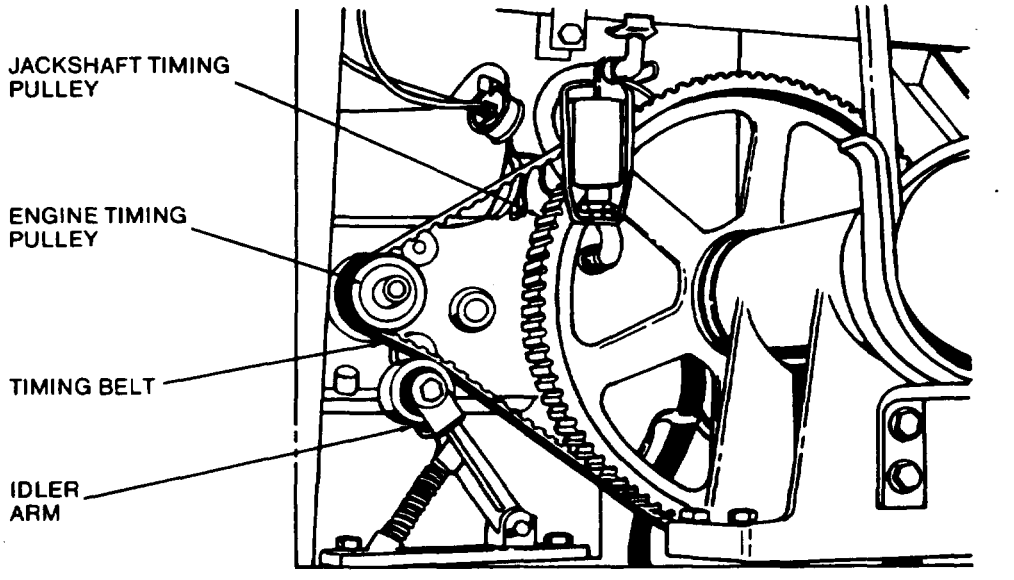
A Release the three fasteners and open the large door of the guard assembly.

B Hold the idler arm away from the timing belt to release the tension. If necessary, tie the idler arm in this position until the new belt is installed.

C Slide the timing belt off the jackshaft timing pulley (toward the engine).

D Remove the timing belt from the engine timing pulley.

E Do not release the idler arm.



- **REPLACEMENT**

CAUTION

- Be sure that the teeth of the belt mate properly with the teeth of the timing pulleys.
- Be sure that the belt has the correct amount of tension (belt depressed approximately 3/8 inch by the idler tension).

A Replace the timing belt to the engine timing pulley.

B Slide the timing belt toward the jackshaft timing pulley,

C Release idler arm to increase timing belt tension.

3-7. REMOVAL AND REPLACEMENT OF UPPER AND LOWER DRIVE BELTS

- **REMOVAL**

A Release the fasteners and open doors.

B Remove the two bolts, lock washers, and flat washers that secure the belt spacer to the jackshaft assembly, and remove the belt spacer.

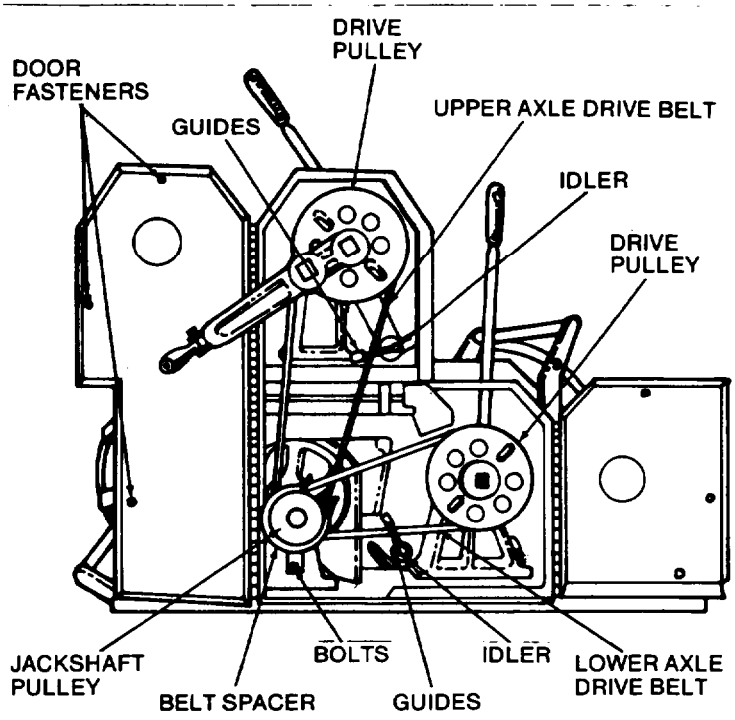
C Disengage the upper axle drive belt from the jackshaft pulley. If necessary, operate the control lever to the brake position to release all tension from the idler.

3-7. REMOVAL AND REPLACEMEHT OF UPPER AND LOWER DRIVE BELTS- Continued

D Disengage the upper axle drive belt from the drive pulley and idler guides.

E Disengage the lower axle drive belt from the jackshaft pulley. If necessary, operate the control lever to the brake position to release all tension from the idler arm.

F Disengage the lower axle drive belt from the drive pulley and idler.



REPLACEMENT

A Engage the lower axle drive belt to the drive pulley and idler.

B Engage the lower axle drive belt to the jackshaft pulley.

C Engage the upper axle drive belt to the drive pulley and idler guides.

D Engage the upper axle drive belt to the jackshaft pulley.

E Replace the two bolts, lock washers, and flat washers that secure the belt spafcer to the jackshaft assembly, and replace the belt spacer.

NOTE

Check to be sure the control levers tighten the belts when operated to the run position.

CHAPTER 4
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. GENERAL

Repair parts are listed and illustrated in TM 11-3895-209-24P. No special tools are required for maintenance of the equipment. Test, maintenance and diagnostic equipment (TM DE), and support equipment include standard electrical test equipment found in any organizational maintenance electric shop.

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHAN E. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with the skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Tool set, general mechanics (NSN 5180-00-177-7033, Multimeter AN/RM-105 and the following materiaa are require for organization maintenance of RL-207/G:

- TRICHLOROTRIFLUOROETHANE (NSN 6850-00-105-3084)
- Cleaning cloth
- Lubricating oil, internal combustion engine (OE-30)

Section II. SERVICE UPON RECEIPT OF EQUIPMENT

4-2. UNPACKING

- **PACKAGING DATA**

When packed for shipment, the RL-207(*)/G is packed in a wooden box. The dimensions of this box are 50 by 50 by 41 inches and the volume is 59.3 cubic feet. The weight of the packed equipment is approximately 790 pounds.

- **REMOVING CONTENTS, EXPORT PACKAGING**

WARNING

Reeling Machine RL-207(*)/G weighs 490 pounds. Be careful when moving. Mechanical lift required.

CAUTION

Be careful when unpacking equipment. Do not thrust tools into the interior of the shipping container; this procedure may result in damage to the equipment.

4-2. UNPACKING- Continued

A Cut and fold back the steel straps. Be careful of the sharp edges on the steel straps.

B Remove the nails from the top and sides of the box with a nail puller. Remove the top and sides.

C Carefully cut the moisture-vaporproof barrier down the four corners and pull the flaps clear of the equipment.

D Carefully cut the tape on the corrugated wrapper and pull the flaps of the wrapper clear of the equipment.

E Remove the canvas cover.

F Remove the four nuts, washers, and bolts that secure the RL-207(*)/G to the skid base.

G Lift the RL-207(*)/G from the skid base. Use a forklift truck or hoist.

• ASSEMBLY OF UNPACKED EQUIPMENT

The RL-207(*)/G is shipped with the upper control lever removed. The control lever is wrapped in cushioning material and secured to the upper reel axle with tape. Follow the procedure given below to install the control lever:

A Cut the tape, and remove the control lever from the upper reel axle. Unwrap the cushioning material and remove the control lever.

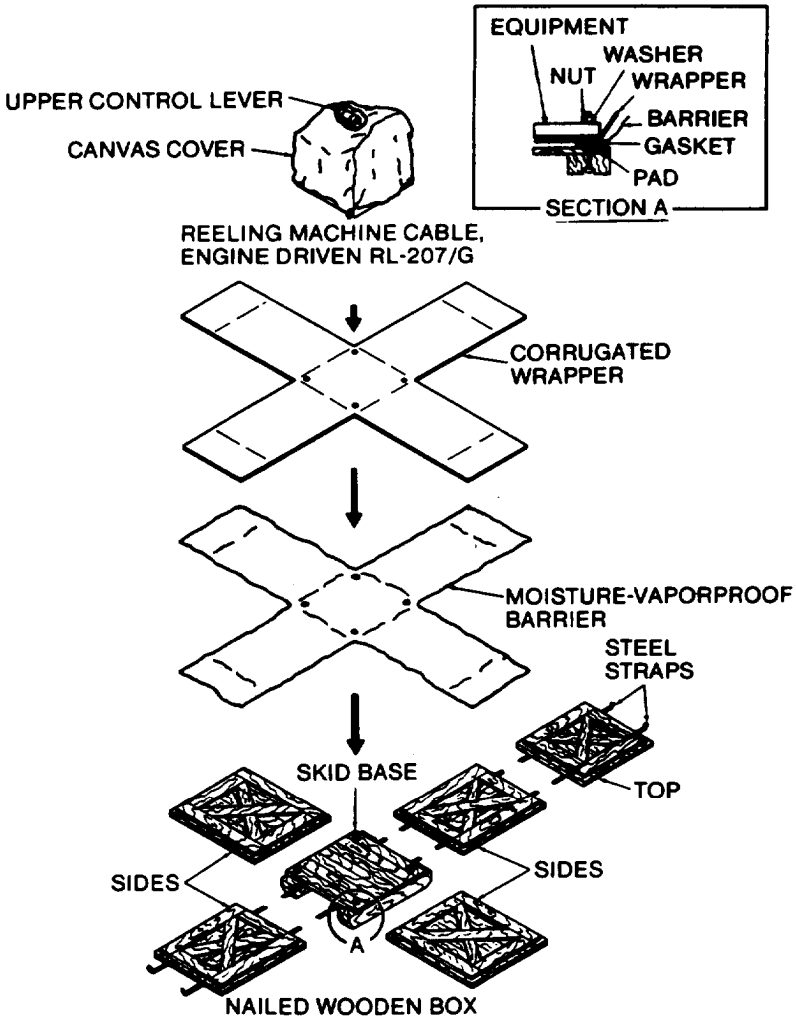
B Release the fasteners and open the door on the rear belt guard.

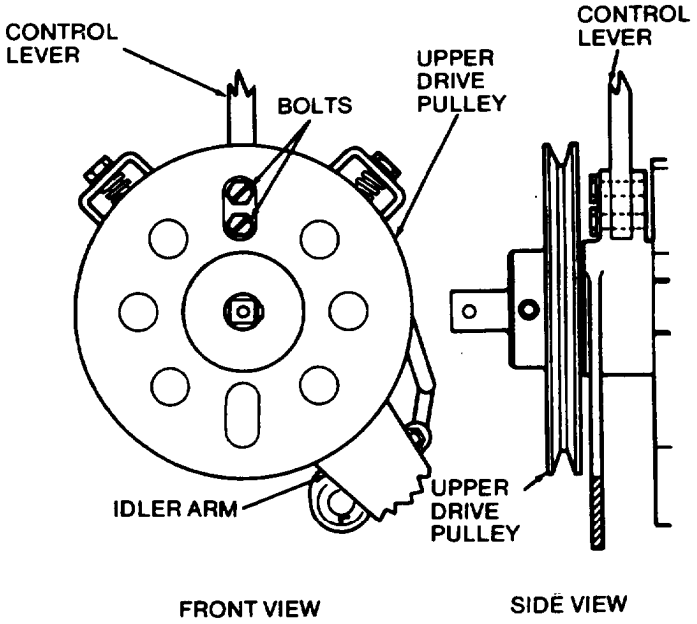
C Turn the upper drive pulley until one of the oblong holes in the pulley is alined with the two bolts in the idler arm.

D Remove the two bolts and lock washers.

E Insert the control lever through the hole in the top of the belt guard and into the slot in the idler arm. Aline the boltholes in the control lever with the holes in the idler arm.

F Replace the two bolts, and lock washers and tighten them securely.





4-3. CHECKING UNPACKED EQUIPMENT

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364.

See that the equipment is complete as listed on the packing slip. If the packing slip is not available, check the equipment against the basic issue items list (appx B). Report all discrepancies in accordance with DA Pam 738-750.

If the equipment has been used or reconditioned, see whether it has been changed by modification work order (MWO). If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and approoriate notations concerning the modification have been entered in the equipment rnanual.

NOTE

Current MWO'S applicable to the equipment are listed in DA Pam 310-1.

4-4. INSTALLATION ON VEHICLE

- **TYPE OF VEHICLE**

The RL-207(*)/G maybe mounted in the body of the 1¼ ton, 4X4 Cargo Truck M880/M-1008 or 2½ ton, 6X6 Cargo Truck M35A2. A floor-space of at least 6 feet by 5 feet is required for operation.

- **MATERIALS AND TOOLS REQUIRED**

The following materials and tools are required to install the RL-207(*)/G in a vehicle:

A Electric drill, 3/4-inch

B Twist drill, 3/4-inch

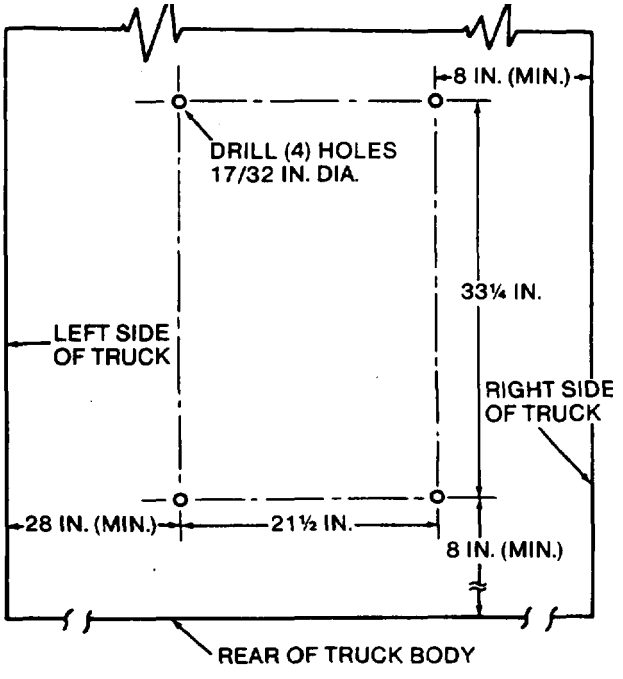
C Hexagonal head bolt, 1/2-20 x 2 1/2 inches (four required)

D Hexagonal nut, 1 -2/20 (four required)

E Flat washer, 1/2-inch (four required)

F Split lock washer (four required)

Minimum Clearances Required



- **INSTALLATION**

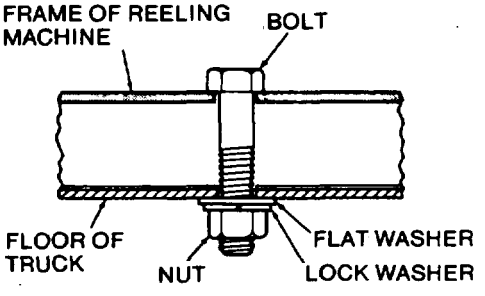
A Locate and mark the position of each of the four mounting holes in the bed of the truck body.

CAUTION

Check to be sure the underside of the truck body is clear before drilling any of the holes.

B Drill the four 17/34-inch holes through the bed of the truck body.

C Set the RL-207(*)/G over the holes. Use a forklift truck or hoist to lift the RL-207(*)/G.



4-4. INSTALLATION ON VEHICLE-Continued

D Check the alirgement of the holes in the chassis of the RL-207(*)/G and the holes drilled in the bed of the truck body. Use a driftpin to aline the holes.

E Secure the RL-207(*)/G in position with a 1/2-20 by 2 1/2-inch bolt at each of the four holes.

Section III. LUBRICATION

4-5. GENERAL

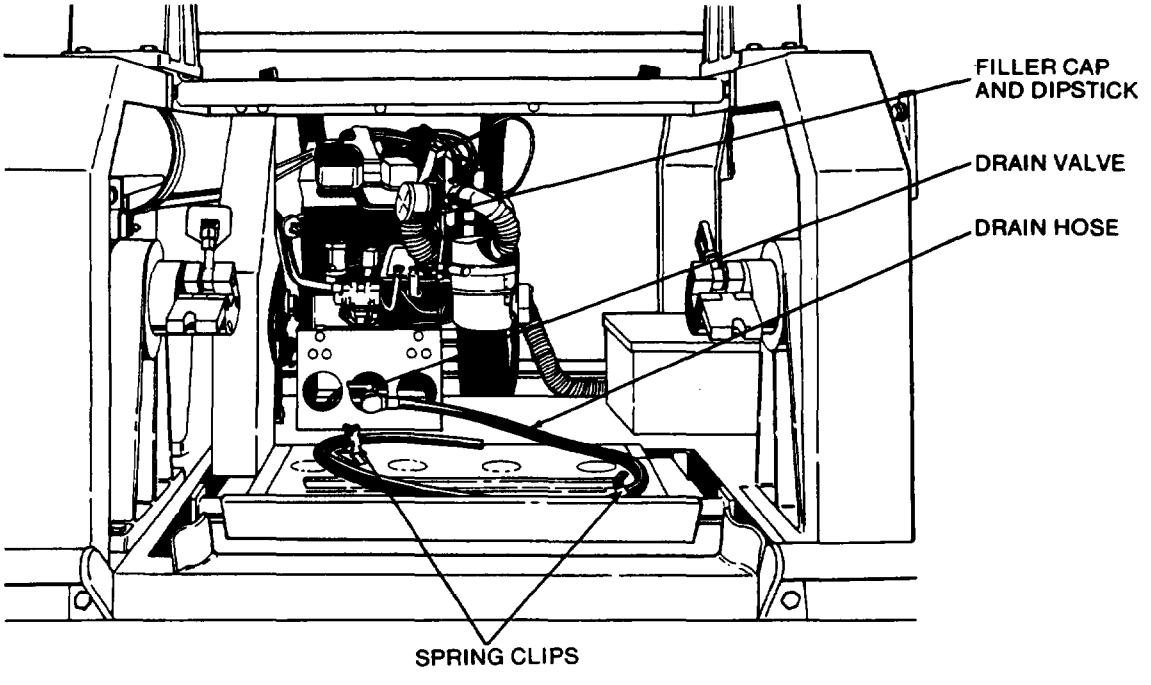
Lubrication schedules and lubrication instructions are given in chapters 3 and 4.

Lubrication information for the engine is given in TM 5-2805-257-14. Follow the procedure given below to drain the engine crankcase:

- Remove the lower reel axle.
- Release the fasteners on the engine guard door, and open the door.

NOTE

Start the engine and allow it to run long enough to warm up thoroughly before dr the engine crankcase.



- Remove the drain hose from the two spring clips, and place the end of the hose clear of the equipment and vehicle. Use a container to catch the used oil when the valve is opened.
- Turn the handle of the drain valve outward (perpendicular to the engine) to permit the oil to drain out through the hose,
- When the crankcase is thoroughly drained, close the valve.
- Refill the crankcase with the OE-30 lubricant.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-6. GENERAL

Systematic, periodic, preventive maintenance checks (PMCS) are essential to ensure that the reeling machine is ready for operation in any mode at all times. The purpose of a preventive maintenance program is to discover and correct defects and deficiencies before they can cause serious damage or complete failure of the equipment. Any effective preventive maintenance program must begin with the training of operators to report all unusual conditions noted during daily checks or actual operation to organizational maintenance. All defects and deficiencies discovered during maintenance inspections must be recorded, together with corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

4-7. INSPECTION AND SERVICE

A schedule for organizational preventive maintenance inspection and service should be established immediately after installation of the reeling machine. A quarterly interval, equal to three calendar months or 250 hours of operation, whichever occurs first, is recommended for usual operating conditions. When operating under unusual conditions, such as a very dusty or sandy environment, it may be necessary to reduce the interval to monthly or even less if conditions are extreme.

Table 4-1 lists the organizational preventive maintenance checks and services that should be performed at quarterly (or otherwise established) intervals. The PMCS items in the table have been arranged and numbered in a logical sequence to provide for greater personnel efficiency and least amount of required maintenance downtime.

Table 4-1. Organizational Preventive Maintenance Checks and Services (PMCS)

Item No.	Item To Be Inspected/Serviced	Procedures
	Monthly Preventive Maintenance Checks and Services Chart	
1	Air cleaner	Disassemble and clean the air cleaner. Service oil bath type in accordance with the applicable DA lubrication order.
2	Fuel sediment bowl	Clean fuel sediment bowl, fuel filter element, and fuel line. Inspect glass, fuel line, and gasket for cracks or damage.
3	Engine controls	Test ignition switch, choke, and throttle controls for electrical or mechanical serviceability.
4	Hub locking device	Test hub lock lever for lock or release of reel axle.
5	Brake and clutch	Test brake and clutch operation for smooth, positive action. Adjust brake and clutch idler arms as required.
	Quarterly Preventive Maintenance Checks and Services Chart	
1	Publications	See that all publications are complete, serviceable, and current.
2	Modifications	Check to determine if applicable MWO's have been published. All Urgent MWO's must be applied immediately. All Normal MWO's must be scheduled.
3	Spare parts	Check all spare parts (operator and organizational) for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.

Table 4-1. Organizational Prevemtove Maintenance Checks and Serices (PMCS)-Continued

Item No.	Item To Be Inspected/Serviced	Procedures
4	Installation	See that the equipment is properly installed.
5	Preservation	Check all surfaces for evidence of fungus. Remove rust and corrosion and spot-paint bare spots.
6	Mounting	See that all bolts, nuts, and washers are correctly positioned and properly tightened. Check for cracked, bent, or broken brackets.

Section V. TROUBLESHOOTING

4-8. VISUAL INSPECTION

Before operating the RL-207(*)/G inspect it. Inspection will save repair time and may also avoid further damage to the equipment. Inspect the following items for defects:

- Engine control panel
- Engine controls
- Fuel line connections and sediment bowl
- IGNITION switch wiring
- Hub locking devices
- Timing belt and drive belts

4-9. USE OF TROUBLESHOOTING TABLE

Table 4-2 contains troubleshooting information useful to organizational maintenance technicians in diagnosing and correcting malfunctions or unsatisfactory operation of the reeling machine.

- The troubleshooting table lists the common malfunction symptoms and unsatisfactory performance characteristics technicians are most likely to encounter; test and inspection steps to be followed to determine the cause; and the corrective action(s) that should be performed for each possible cause listed.
- The technician should first find the malfunction Symptom or unsatisfactory performance characteristic in the table which most closely describes the immediate situation; then perform the test and inspections, and corrective action steps in the order in which they are listed.
- This manual cannot list all possible situations which may be encountered, nor can it list all test and inspection, and corrective action steps which may be taken. If a condition is encountered which cannot be resolved within the capabilities and experience of organizational maintenance personnel, assistance should be requested from direct support maintenance.

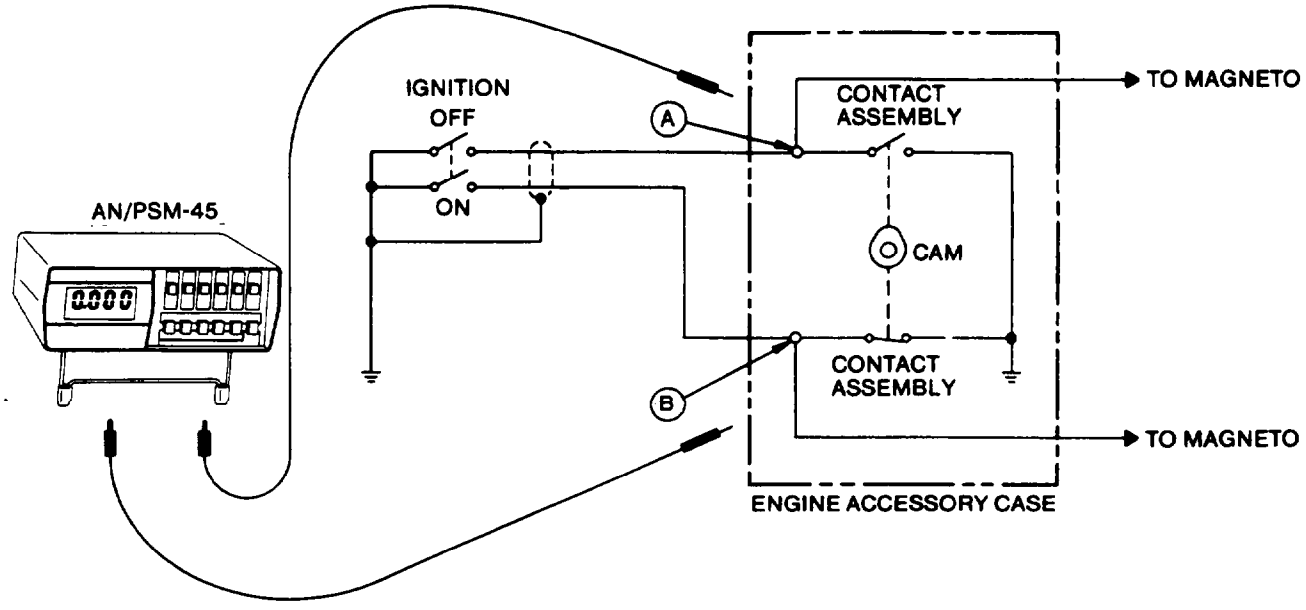
Table 4-2. Troubleshooting

Condition	Probable Trouble	Correction
Engine will not start.	Engine defective.	Refer to TM 5-2805-257-14.
Engine runs erratically.	Engine controls not correctly adjusted.	Check engine adjustments.
	Fuel filter clogged with dirt.	Clean or replace filter element.
	Engine defective.	Refer to TM 5-2805-257-14.
Engine starts with difficulty or engine speed cannot be controlled.	CHOKE or THROTTLE control rod disconnected or broken.	Check control rod connections.
	Engine controls not correctly adjusted.	Check engine control adjustments.
	Engine defective.	Refer to TM 5-2805-257-14.
Hub locking device will not lock axle.	Locking pin bent or broken.	Replace locking pin.
Hub locking device will not release.	Locking pin bent.	Replace locking pin.
	Locking spring broken.	Replace spring.
Reel axle runs continuously.	Idler out of adjustment.	Adjust idler.
Reel axle speed erratic or unable to develop full speed.	Idler out of adjustment.	Adjust idler.
	Timing belt dirty or defective.	Clean or replace timing belt.
Brake will not stop reel axle.	Brake band out of adjustment.	Adjust brake.
Reel axle will not turn freely.	Brake band out of adjustment.	Adjust brake.

Section VI. MAINTENANCE PRODECURES

4-10. TESTING IGNITION SWITCH CIRCUIT

Test the IGNITION switch circuit with the AN/PSM-45 between points A and B. When the IGNITION switch is in the OFF position, the AN/PSM-45 should indicate an open circuit (infinity); when the IGNITION switch is in the ON position, the AN/PSM-45 should indicate a short circuit (less than 1 ohm).

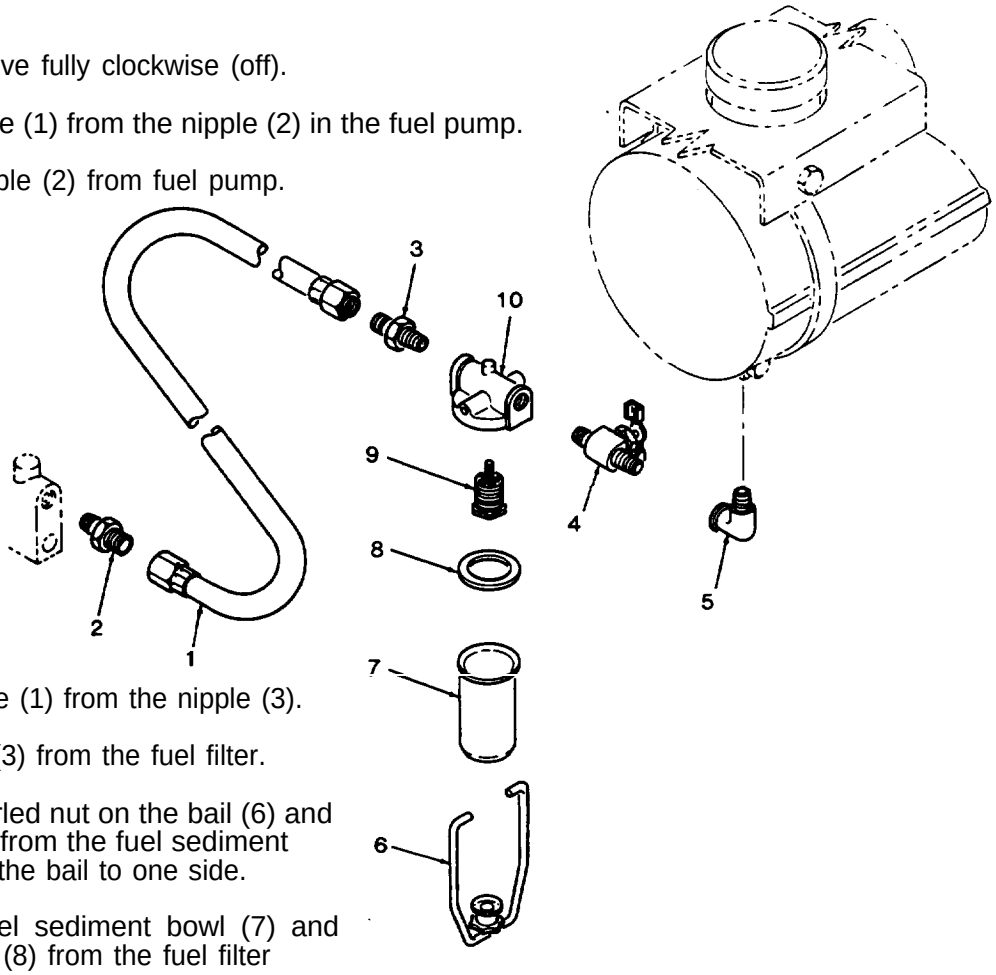


4-11. REMOVAL AND REPLACEMENT OF FUEL FILTER AND FUEL LINE

WARNING

To prevent fire and a possible explosion, be sure that the engine is cool before disconnecting or removing any fuel line components.

• REMOVAL



A Turn the fuel valve fully clockwise (off).

B Unscrew fuel line (1) from the nipple (2) in the fuel pump.

C Remove the nipple (2) from fuel pump.

D Unscrew fuel line (1) from the nipple (3).

E Remove nipple (3) from the fuel filter.

F Loosen the knurled nut on the bail (6) and release the bail from the fuel sediment bowl (7). Swing the bail to one side.

G Remove the fuel sediment bowl (7) and fuel filter gasket (8) from the fuel filter body (10).

H Remove the bail (6) from fuel filter body (10).

I Unscrew the fuel filter element (9) from the fuel filter body.

J Unscrew the fuel filter body from fuel valve (4).

K Open fuel valve (4), and drain the fuel into a container. When all gasoline is drained from the tank, unscrew the fuel valve (4) from the elbow (5).

L Unscrew the elbow (5) from the fuel tank.

4-11. REMOVAL AND REPLACEMENT OF FUEL FILTER AND FUEL LINE- Continued

- **REPLACEMENT**

A Screw the elbow (5) into the fuel tank.

B Screw the fuel valve (4) into the elbow (5).

c Screw the fuel filter body onto the fuel valve (4).

D Screw the fuel filter element (9) into the fuel filter body.

E Replace fuel sediment bowl (7), fuel filter gasket (8), bail (6), and fuel filter body (10).

F Screw nipple (3) into fuel filter body (10) and screw fuel line (1) onto nipple.

G Screw nipple (2) into fuel pump. Screw fuel line (1) onto nipple.

H Turn the fuel valve fully counterclockwise (on).

4-12. REMOVAL AND REPLACEMENT OF CHOKE CONTROL

- **REMOVAL**

A Remove screw (1), nut (2), lock washer (3), and control cable clamp (4).

B Remove screw (7), nut (8), lock washer (9), and choke and throttle clamp (10).

C Remove nut (1 5), lock washer (1 6), screw (1 4), and choke cable clamp (7).

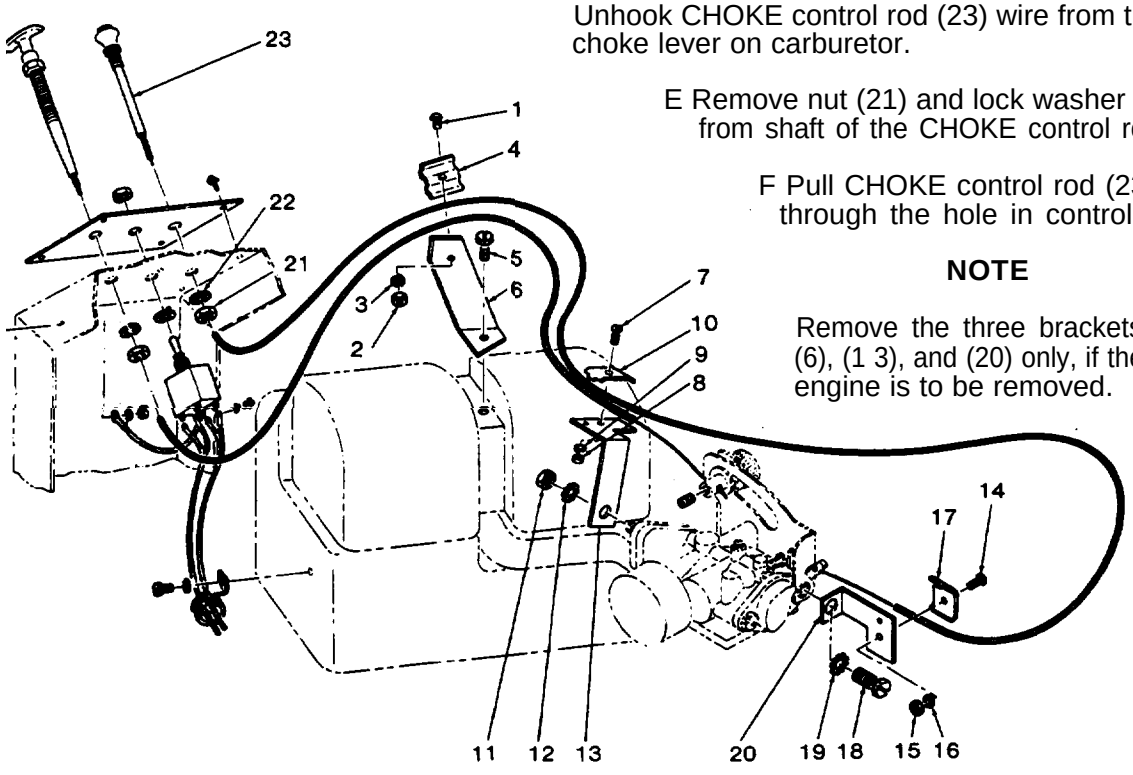
Unhook CHOKE control rod (23) wire from the choke lever on carburetor.

E Remove nut (21) and lock washer (22) from shaft of the CHOKE control rod (23).

F Pull CHOKE control rod (23) out through the hole in control panel.

NOTE

Remove the three brackets (6), (1 3), and (20) only, if the engine is to be removed.



4-2. REMOVAL AND REPLACEMENT OF CHOKE CONTROL - Continued

G Remove bolt (18), lock washer (19), and choke control bracket (20).

H Remove nut (11), lock washer (12), and choke and throttle bracket (13).

I Remove bolt (5), and choke and throttle bracket (6) from the engine cowling.

• REPLACEMENT

A Replace bolt (5), and choke and throttle bracket (6).

B Replace nut (11), lock washer (12), and choke and throttle bracket (13).

C Replace bolt (18), lock washer (19), and choke control bracket (20).

NOTE

Installation of the three brackets ((6),(13), and (20)) on the engine is required only if the brackets have been removed for repair or replacement of the engine.

D Pull CHOKE control rod (23) through the hole in control panel.

E Replace nut (21) and lock washer (22) on shaft of the CHOKE control rod (23).

F Hook CHOKE control rod (23) wire from the choke lever on carburetor.

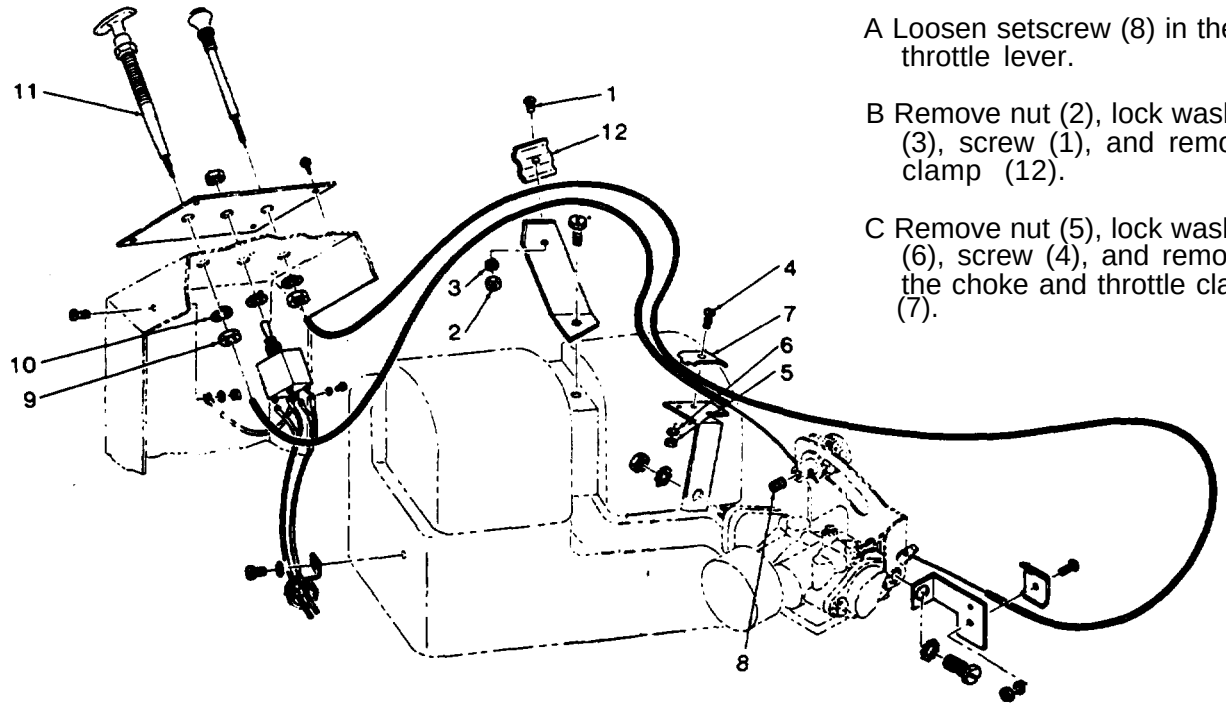
G Replace nut (15), lock washer (16), screw (14), and choke cable clamp (17).

H Replace screw (7), nut (8), lock washer (9), and choke and throttle clamp (10).

I Replace screw (1), nut (2), lock washer (3), and control cable clamp (4).

4-13. REMOVAL AND REPLACEMTN OF THROLTTLE CONTROL

• REMOVAL



A Loosen setscrew (8) in the throttle lever.

B Remove nut (2), lock washer (3), screw (1), and remove clamp (12).

C Remove nut (5), lock washer (6), screw (4), and remove the choke and throttle clamp (7).

4-13. REMOVAL AND REPLACEMENT OF THROTTLE CONTROL - Continued

D Pull the end of control wire out of the hole in throttle lever.

E Remove nut (9) and lock washer (10) from shaft of THROTTLE control rod (11).

F Pull the THROTTLE control rod (11) out through the hole in the control panel.

• REPLACEMENT

A Replace THROITLE control rod through hole in control panel.

B Replace nut (9) and lock washer (10) on shaft of THROTTLE control rod (11).

C Replace the end of control wire in hole of throttle lever.

D Replace nut (5), lock washer (6), screw (4), and choke and throttle clamp (7).

E Replace nut (2), lock washer (3), screw (1), and clamp (12).

NOTE

To adjust the THROTTLE control, push the THROTTLE control rod (11) to its innermost position. Position the throttle lever on the engine outward against the stop and then tighten setscrew (8).

4-14. REMOVAL AND REPLACEMENT IGNITION SWITCH

• REMOVAL

A Open guard door and remove cover from the engine accessory case (TM 5-2805-257-1 4).

B Remove cover from engine accessory case (TM 5-2805-257-14).

C Disconnect the two IGNITION switch wires from the magneto terminals and pull the wires out through the grommet

4-14. REMOVAL AND REPLACEMENT OF IGNITION SWITCH - Continued

D Remove bolt (4) and lock washer (5) that secure the wiring clamp (6) to the engine. Remove clamp and replace the screw and lock washer in the engine cowling.

E Remove nut (2), lock washer (3), and screw (1) that connect the ground wire to the frame.

F Remove nut (9) and pull the IGNITION switch (11) with key washer (10) clear of the equipment.

G Remove the four screws (7) and lock washer (8) and disconnect the wires from IGNITION switch (11).

- **REPLACEMENT**

A Connect the wires to IGNITION switch (11) and replace the four screws (7) and lock washer (8).

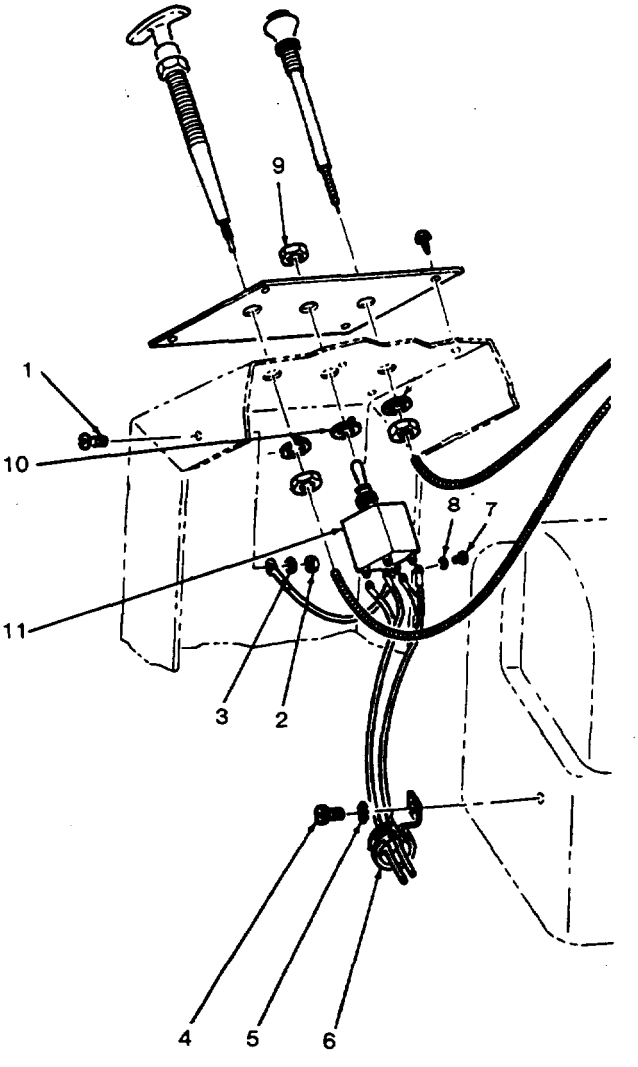
B Replace IGNITION switch (11) with key washer (10) and nut (9).

c Replace ground wire to the frame with nut (2), lock washer (3) and screw (1).

D Replace bolt (4) and lock washer (5) that secures the wiring clamp (6) to the engine.

E Pull the two IGNITION switch wires through the grommet and connect to the magneto terminals.

F Replace cover to engine accessory case and close guard door.



4-15. DISASSEMBLY AND REASSEMBLY OF HUBLOCKIH6 DEVICE

• DISASSEMBLY

Follow the procedure given below to disassemble any one of the four hub locking devices:

A Remove nut (2) from head bolt (1).

B Remove head bolt (1), and lift out cam (4) and bearing (3). Remove bearing from cam.

C Remove the four bolts (5) and lock washers (6) that secure the bracket (7) to the bearing housing.

D Lift locking pin (8) out of the housing and remove the locking pin spring (9), spring seat (10), and locking pin seal (1 1).

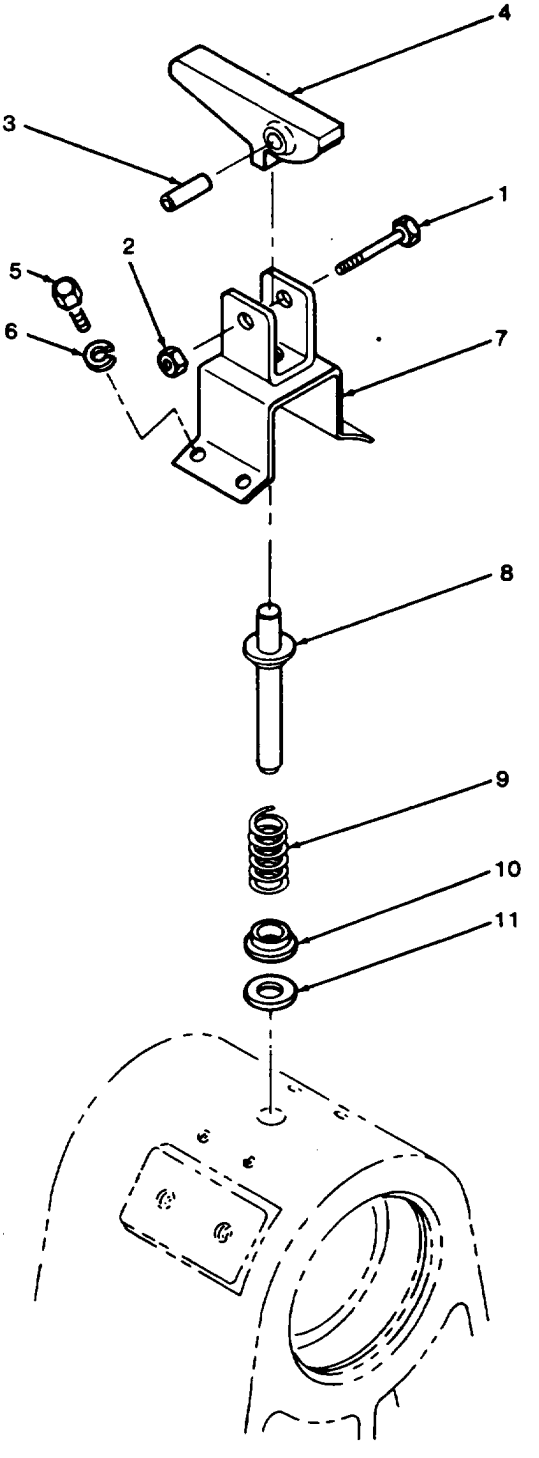
• REASSEMBLY

A Assemble locking pin (8), locking pin spring (9), spring seat (1 0), and locking pin seal (1 1).

B Replace the four bolts (5) and lock washers (6) that secure the bracket (7) to the bearing housing.

Replace bearing (3) in cam (4).

Replace head bolt (1) and nut (2).



4-16. ADJUSTMENTS

Engine adjustments are covered in TM 5-5805-257-14. The only reeling mechanisms that require adjustment are the brake bands and the idler arms.

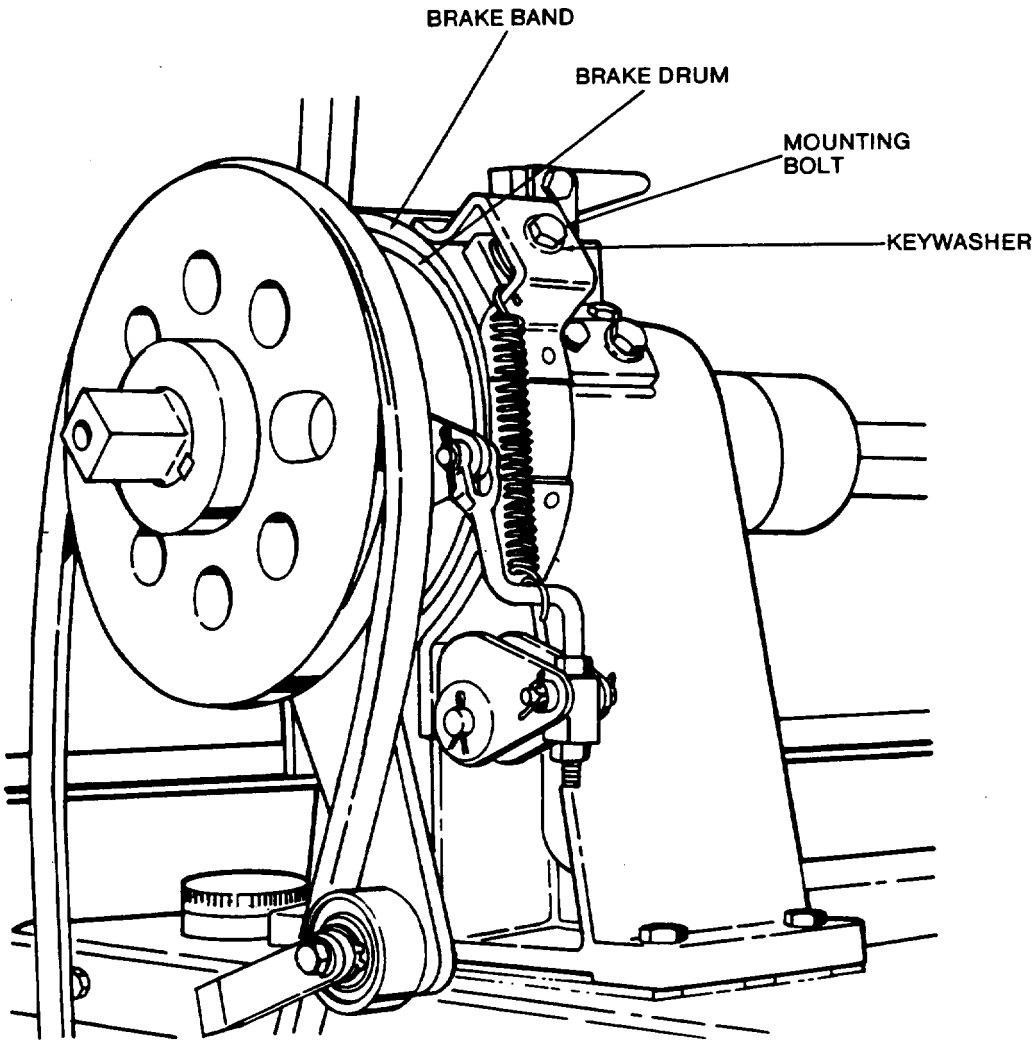
• ADJUSTMENT OF BRAKE BANDS

For correct operation, the brake bands must be adjusted to obtain free movement of the shaft when the brake is released and firm, positive braking when the brake is engaged. To adjust the brake band of either the upper or the lower clutch and brake assembly, proceed as follows:

A Release the fasteners and open both guard doors.

B Bend the locking tab down on the key washers on the two mounting bolts near the top of the brake band.

C Adjust each of the mounting bolts to obtain minimum clearance (approximately 1/64 inch) between the brake band and the drum.



4-16. ADJUSTMENTS - Continued

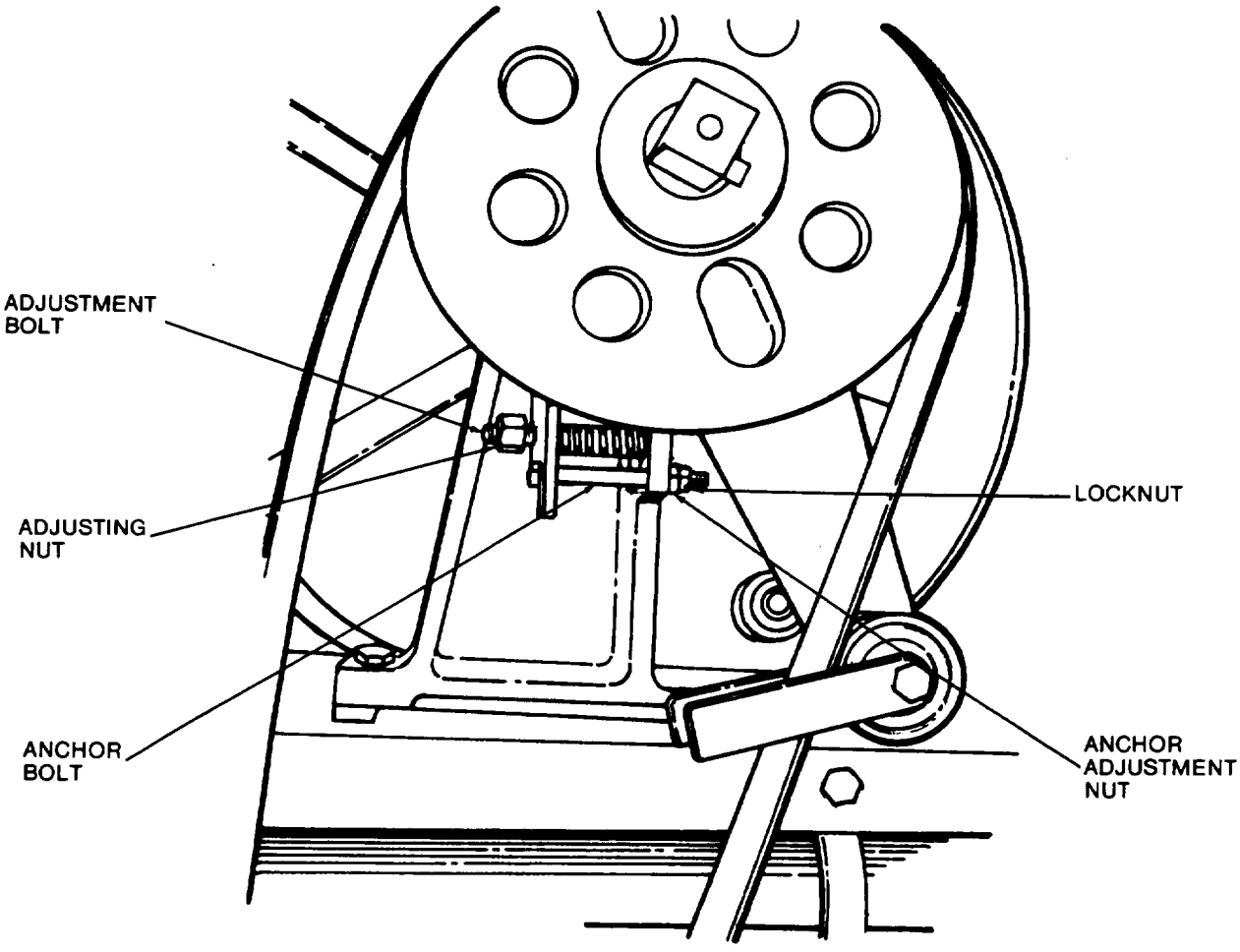
D Bend up the tab on the key washer to lock the bolt in position.

E Loosen the locknut on the anchor bolt and adjust the anchor bolt to obtain minimum clearance (approximately 1/64 inch) between the drum and the end of the band anchored by the bolt.

F Tighten the adjusting nut on the adjustment bolt to obtain minimum clearance (approximately 1/64 inch) between the drum and the end of the band to which the cams are attached.

NOTE

When completing adjustment of the nut on the adjusting bolt, be sure that the nut is turned so that the notch in the bolt fits over the ridge on the end of the band.



4-16. ADJUSTMENTS - Continued

• / ADJUSTMENT OF IDLER ARMS

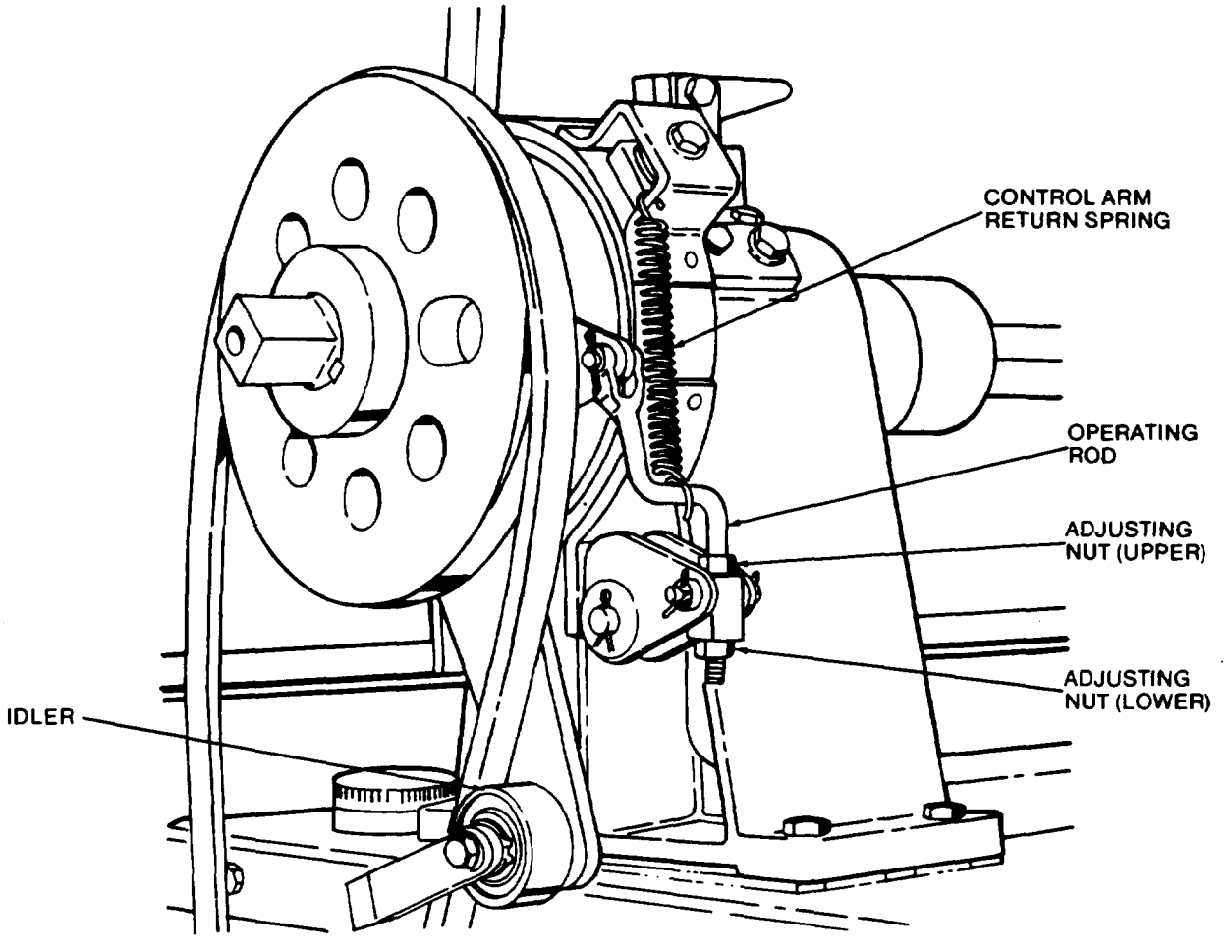
The idler arms must be adjusted to a position that releases all tension on the belts when the levers are in the neutral position and applies full tension on the belts when the control levers are moved to the run position. To adjust the clutch idler arms, proceed as follows:

A Loosen the two adjusting nuts on the operating rod.

B Adjust the nuts along the operating rod until the belt is free from tension and the shaft can be easily turned by hand.

C Push the control lever to the run position and be sure that full tension is applied to the belts. Check to be sure that the shaft can be easily turned by hand when the control lever is in the neutral position.

D When satisfactory adjustment is obtained, tighten the adjusting nuts firmly against the pivot block.



Section VII. PREPARATION FOR STORAGE OR SHIPMENT

4-17. PREPARATION FOR STORAGE

Administrative storage of equipment (see TM 740-90-1) is short term storage - 1 to 45 days. It covers storage of equipment which can be readied for mission performance within 24 hours. Before placing an item in administrative storage, the next scheduled preventive maintenance checks and services should be performed, all known deficiencies corrected, and all current modification work orders applied. The administrative storage site should provide required protection from the elements and allow access for visual inspection when applicable.

4-18. DISASSEMBLY OF EQUIPMENT

To disassemble the RL-207(*)/G and prepare it for packing, proceed as follows:

- Remove all reels from the axles.
- Dain the fuel tank and the engine crankcase.
- Remove the upper control lever as follows:

  A Release the three fasteners on the rear door of the belt guard, and open the door.

  B Turn the upper drive pulley until one of the oblong holes in the pulley is alined with the two hexagonal head bolts in the idler arm.

  C Remove the two bolts and lock washers.

  D Lift out the control lever.

  E Replace the bolts and lock washers. Tighten the bolts securely to prevent loss.

4-19. REPACKIN6 FOR SHIPMENT OR LIMITED STORAGE

The exact procedure for repackaging of the equipment depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures given below whenever possible. The information concerning the original packaging will also be helpful.

- **MATERIAL REQUIREMENTS**

  The following materials are required for packaging the equipment. For stock numbers of materials, consult SB 38-100.

Material	Quantity
Waterproof paper	100 sq. ft
Waterproof tape	30 ft
Corrugated cardboard	100 sq. ft
Adhesive tape	30 ft
Filler material	10 lb

4-19. REPACKING FOR SHIPMENT OR LIMITED STORAGE - Continued

- **PACKAGING**

Package the RL-207(*)/G as follows:

A Bolt the equipment to the base of a nailed wooden box.

B Use filler material to fill all empty space in the toolbox.

C Cushion the control levers, handles, and other protruding points with pads of filler material or cardboard.

D Wrap the upper control lever in cardboard, and tape it to the upper reel axle.

E Cover the equipment with the canvas cover.

F Cover the entire equipment with cardboard secured with gummed tape.

G Seal the packed equipment in a covering of waterproof paper. Seal the wrapping with waterproof tape.

H Assembly a nailed wooden box around the equipment.

Section VIII. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

4-20. AUTHORITY FOR DEMOLITION

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined below will be used to prevent further use of the equipment.

4-21. METHODS OF DESTRUCTION

Use any or all of the following methods to destroy the equipment:

- **SMASH**

Smash te controls, pulleys, shafts, bearings, castings, brake drums, hub locks, axle locks, fuel filter, spark plugs, and carburetor; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

- **CUT**

Cut the drive belts, the ignition switch wiring, and the fuel line; use axes, cutting pliers, or machetes.

- **BURN**

Burn all belts, covers, and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

- **BEND**

Bend covers, toolbox, engine air shroud, and reel axles.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

- **EXPLODE**

If explosives are necessary, use firearms, grenades, or TNT.

- **DISPOSE**

Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

CHAPTER 5
DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section I. TROUBLESHOOTING

5-1. GENERAL INSTRUCTIONS

The troubleshooting information presented in this chapter consists of a series of operational and mechanical checks designed to lead the repairman to the specific part or adjustment that is causing the trouble in the equipment. The checks used are an extension of the maintenance procedures performed by the organizational maintenance personnel. All maintenance procedures may be performed at direct support and general support maintenance.

5-2. TOOLS REQUIRED

Tool **Equipment** TE-111 contains the tools required for field maintenance.

5-3. OPERATIONAL TEST

NOTE

Follow the operating instructions carefully. When operating the equipment, always stand beside the equipment; never stand in line with the wire reels when they are turning.

In addition to the items in the equipment performance checklist operate each of the reel axles at various speeds for at least five minutes. Check for any evidence of noise, vibration, or overheating in the bearings of the clutch and brake assemblies, the bearing housing assemblies, and the jackshaft assembly.

5-4. TROUBLESHOOTING CHART

The chart below is provided as an aid in isolating troubles in the RL-207(*)/G. Trouble maybe isolated to a specific part by determining the condition of the equipment, examining the probable causes of that condition, and then applying the appropriate corrective action.

NOTE

Troubles described for cluch and brake assemblies or axle hub assemblies apply to either the upper or lower axle.

Table 5-1. Troubleshooting

Condition	Probable Trouble	Correction
Timing belt idler ball bearing noisy or overheating.	Ball bearing defective.	Replace ball bearing.
Timing belt slipping.	Idler arm spring defective.	Replace idler arm spring.

5-4. TROUBLESHOOTING CHART - Continued

Table 5-1. Troubleshooting - Continued

Condition	Probable Cause	Correction
Excessive noise or vibration in jackshaft assembly.		
	Loose pulleys or bearing collars.	Tighten socket-head setscrews in pulleys and bearing collars.
	Ball bearings defective.	Replace ball bearings.
Reel axle speed erratic, or reel axle will not develop full speed.		
	Ball bearings defective.	Replace ball bearings.
Brake will not stop reel axle.		
	Brake band worn.	Replace brake band.
Brake grabs.		
	Brake band oily.	Clean or replace brake band.
	Brake return spring broken.	Replace brake return spring.
	Brake drum scored.	
Noise, vibration, or overheating in clutch axle hub or brake assembly.		
	Ball bearings defective.	Replace ball bearings.
Control lever does not return to neutral position.		
	Return spring broken or weak.	Replace return spring.

Section II. REPAIRS AND ADJUSTMENTS

5-5. GENERAL PARTS REPLACEMENT TECHNQUES

WARNING

Never attempt repairs while the engine is running. Death or serious injury can result from entanglement in the rotating machinery of this equipment.

The following general repair techniques are provided as a guide in the repair of the RL-207(*)/G.

- Stop the engine before beginning any repairs.
- When installing square-keyed pulleys on a shaft, install the pulley and **aline** the keyway in the pulley with the groove in the shaft. Insert the key and tap it lightly until it is fully inserted in the pulley. Tighten the setscrews securely.
- When all repairs are completed, lubricate the equipment,

5-6. REMOVAL AND REPLACEMENT OF BELT GUARD ASSEMBLY

- **REMOVAL**

A Remove the 13 mounting bolts and lock washers that attach the belt guard assembly to the frame.

B Tilt the guard assembly outward at the bottom, lift it upward until it is clear of the two control levers, and remove it from the equipment.

- **REPLACEMENT**

A Lift the guard assembly above the control levers with the lower end of the guard tilted outward. Lower the guard assembly over the control levers so that the levers pass through the two slots in the top of the guard.

B Aline the bolt holes in the flange of the guard assembly with the threaded holes in the frame and install and tighten the 13 mounting bolts and lock washers.

5-7. REMOVAL AND REPLACEMENT OF FUEL TANK

- **REMOVAL**

A Remove the belt guard assembly.

B Remove the fuel filter and lines and drain the fuel tank **(refer to para 4-11).**

5-7. REMOVAL AND REPLACEMENT OF FUEL TANK- Continued

C Remove the gas tank cap (23).

D Remove the nuts (2 and 9), lock washers (3 and 10), and bolts (1 and 8).

E Remove nut (20), lock washer (21), bolt (1 9), and strap (22).

F Support the tank while removing the nut (6), lock washer (5), bolt (4), and strap (7).

G Lower the end of the fuel tank (24) until the neck of the tank is clear of the frame, and slip the tank out of the front straps and free of the frame.

H Remove the nuts (16 and 12), lock washers (17 and 13), straps (18 and 14), and bolts (15 and 11).

- **REPLACEMENT**

A Insert the bolts (15 and 11) through the hole in the frame, and install the straps (18 and 14), lock washers (17 and 13), and nuts (16 and 12).

B Slip the end of the fuel tank (24) into the straps. Lift the fuel tank into position so that the neck is centered in the large hole in the frame.

C Support the fuel tank (24) in position while installing the bolt (4), strap (7), lock washer (5), and nut (6).

D Install the bolt (1 9), strap (22), lock washer (21), and nut (20).

E Install and tighten the bolts (8 and 1), lock washers (10 and 3), and nuts (9 and 2).

F Install the gas tank cap.

G Replace the fuel filter and fuel lines.

H Replace the belt guard assembly.

5-8. REMOVAL AND REPLACEMENT OF EXHAUST PIPE

WARNING

Make sure that the exhaust pipe and engine are cool before beginning this procedure. Serious burns may result from contact with a hot exhaust pipe.

- **REMOVAL**

A Remove the two bolts (1), nuts (2), and split (3) that attach the exhaust pipe (9) to the engine.

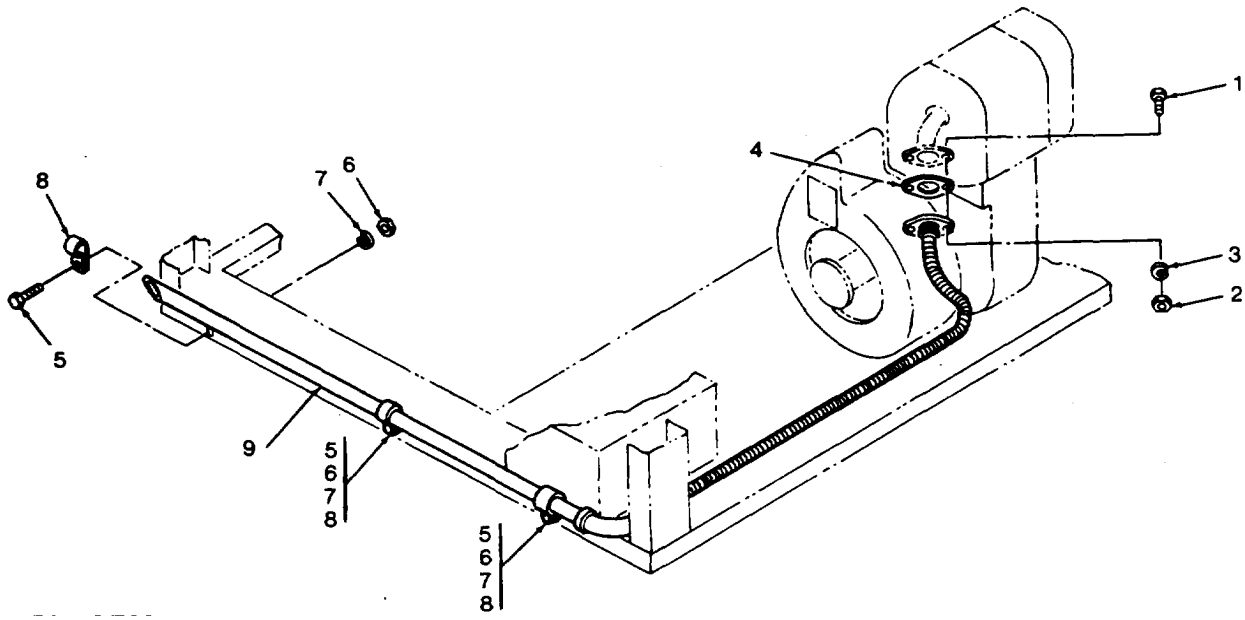
B Pull the exhaust pipe (9) free of the engine manifold flange, and remove the exhaust pipe gasket (4).

C Remove the three bolts (5), nuts (6), and lock washers (7), that attach the exhaust pipe clamps (8) to the frame.

D Lift the exhaust pipe (9) clear of the toolbox, and remove it from the equipment.

E Slip the three exhaust pipe clamps (8) off the exhaust pipe (9).

5-8. REMOVAL AND REPLACEMENT OF EXHAUST PIPE-Continued



• REPLACEMENT

A Slide the three exhaust pipe clamps (8) onto the exhaust pipe (9). Position the exhaust pipe clamps so that the open end of each clamp is down, with the flat face turned inward.

B Place the exhaust pipe (9) in position on the frame of the equipment. Route the flexible section of the pipe along the base of the frame between the toolbox and the corner post of the frame and upward along the engine guard.

C Place the exhaust pipe gasket (4) between the flange of the exhaust pipe (9) and the flange of the engine manifold. Install and tighten the two bolts (1), nuts (2), and lock washers (3).

D Position the solid section of the exhaust pipe so that the pipe passes midway between the toolbox and the frame. Position the three exhaust pipe clamps (8) so that they are in line with the mounting holes in the frame.

E Install and tighten the three bolts (5), nuts (6), and lock washers (7).

5-9. DISASSEMBLY AND REASSEMBLY OF TIMING BELT IDLER ASSEMBLY

• DISASSEMBLY

A Remove the timing belt.

B Remove the two bolts(17) and (21), nuts (20) and (23), lock washers (19) and (22), and the mounting bolt spacer (18) that attach the idler assembly to the frame.

C Remove the cotter pin (11), washer (12), clevis pin (14), and washer (13) that attach the idler arm (15) to the idler base (24).

5-9. DISASSEMBLY AND REASSEMBLY OF TIMING BELT IDLER ASSEMBLY- Continued

D Remove the idler arm spring (16).

E Remove the two nuts (1) and (4) and lock washers (2) and (5) from the idler (7).

F Remove the idler shaft (7) from the idler arm (15) and remove the two inner collars (3) and (6), outer collar (10), and ball bearing (9) from the idler shaft.

G Remove the retaining ring (8), and slide the ball bearing out of the outer collar (10).

Ž REASSEMBLY

A Insert the ball bearing (9) into the outer collar (10), and install the retaining ring (8).

B Slide the idler shaft (7) into one side of the idler arm (1 5), and install the inner collar (3), ball bearing (9), outer collar (10), and inner collar (6), while pushing the idler shaft through the arm.

C Install and tighten the two lock washers (2) and (5) and the nuts (1) and (4) on the idler shaft.

D Place the idler arm spring (16) on the spring seat on the idler base (24). Position the arm against the spring and aline it with the holes in the base.

E Install the washer (13) on the clevis pin (14), and insert the clevis pin through the idler base (24) and the idler arm (15).

F Install the washer (12) and cotter pin (11).

G Place the idler assembly on the frame of the RL-207(*)/G and aline the holes in the base with the holes in the frame.

H Install and tighten the bolt (21), lock washer (22), and nut (23).

I Install and tighten the mounting bolt spacer (18), bolt (17), lock washer (19), and nut (20).

5-10. DISASSEMBLY AND REASSEMBLY OF BEARING HOUSING ASSEMBLY

• DISASSEMBLY

A Remove the axle shaft,

B To remove the bearing housing assembly from the frame, remove the four bolts (19), nuts (21), lock washers (20), and lift the assembly off the frame.

C Remove the socket-head capscrew (5), and then remove the lock bolt assembly (6), (7), and (8). Remove the ball bearing (3) and latch spring (4), from the lower unit.

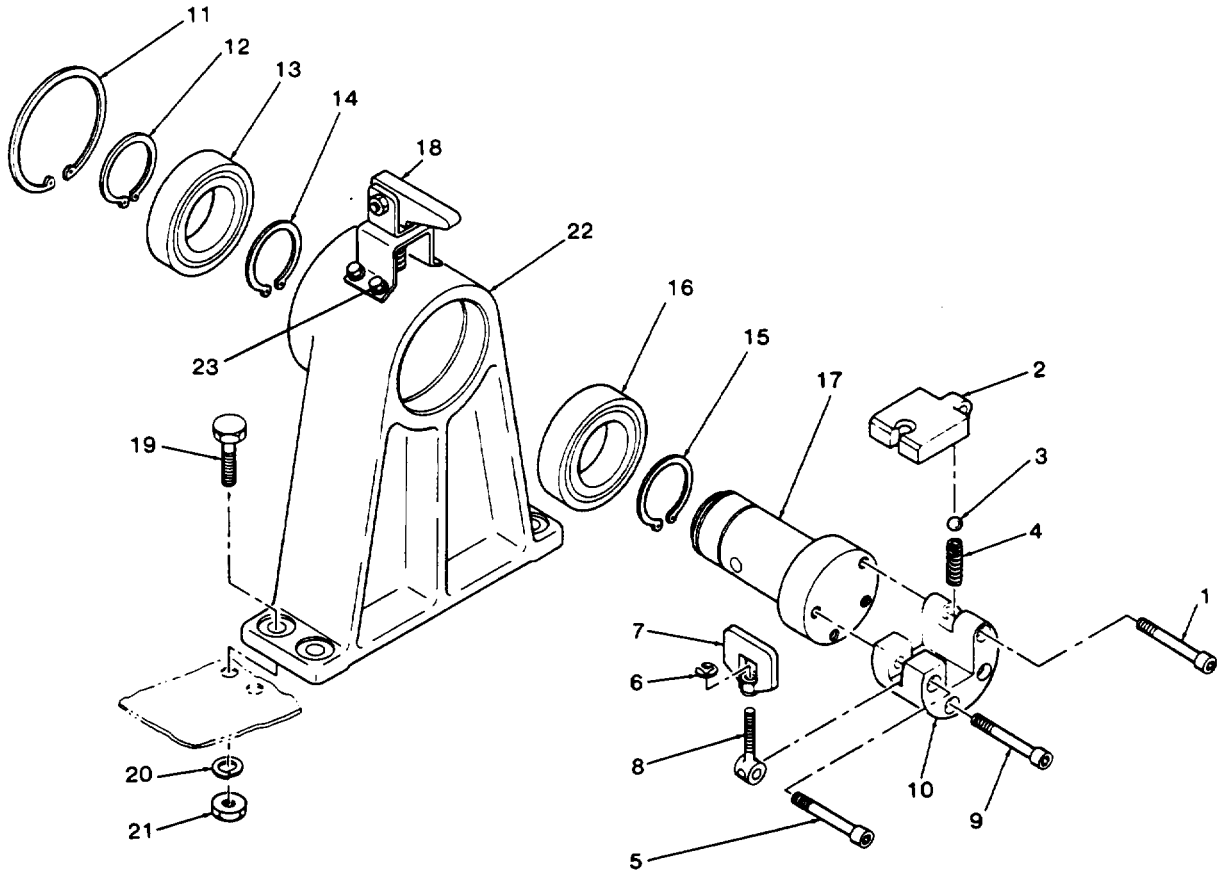
NOTE

In the upper unit, the latch spring and ball bearing are installed under the locking plate. In the lower unit, the latch spring and ball bearing are installed under the lock bolt assembly.

D Disassemble the lock bolt assembly; remove the E-ring (6) and the locknut (7) from the lock bolt (8).

E Remove the socket-head capscrew (1), and locking plate (2). Remove the ball bearing (3) and the latch spring (4) from the upper unit.

B-10. DISASSEMBLY AND REASSEMBLY OF BEARING HOUSING ASSEMBLY - Continued



F Remove the two socket-head capscrews (9) and the collar (10).

G Remove the housing retaining ring (11) and the shaft retaining ring (12).

H Grasp the larger end of the reel support shaft (17), and pull it out of the housing. The shaft retaining ring (14), ball bearing (16), and shaft retaining ring (15) will remain attached to the reel support shaft.

I Remove the shaft retaining ring (14) from the reel support shaft, and slide the ball bearing (16) from the shaft.

J Remove the shaft retaining ring (15) from the reel support shaft.

K Remove the ball bearing (13) from the bearing housing (22).

L Remove the bolts (23) and hub locking device assembly (18) from the bearing housing.

5-10. DISASSEMBLY AND REASSEMBLY OF BEARING HOUSING ASSEMBLY- Continued

- **REASSEMBLY**

A Install the hub locking device assembly (18) with bolts (23) on the bearing housing (22).

B Install the shaft retaining ring (15) in the groove nearest the larger end of the reel support shaft (17).

C Install the ball bearing (16) on the reel support shaft (17).

D Install the shaft retaining ring (14) in the second groove in the reel support shaft.

E Insert the ball bearing (13) into the longer end of the bearing housing (22), and install the housing retaining ring (11).

F Insert the reel support shaft and its ball bearing into the shorter end of the bearing housing until the end of the reel support shaft extends through the other ball bearing.

G Install the shaft retaining ring (12) in the groove at the end of the reel support shaft.

H **Aline** the holes in the collar (10) with the threaded holes in the end of the reel support shaft), and install and tighten the two socket-head capscrews (9).

I Assemble the lock bolt assembly; screw the locknut (7) onto the lock bolt (8) and install the E-ring (6).

J Insert the latch spring (4) and the ball bearing (3) into the correct hole in the collar (1 O) in both the upper and lower unit.

K Insert the lock bolt assembly into the slot in the collar, and aline the bolt holes. Install and tighten the socket-head capscrew (1).

L Insert the locking plate (2) into the slot in the collar, and **aline** the bolt holes. Install and tighten the socket-head capscrew (1).

M Place the bearing housing assembly (22) on the frame of the RL-207(*)/G and **aline** the bolt holes in the bearing housing with the mounting holes in the frame. Install and tighten the four bolts (19), lock washers (20), and nuts (21).

5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY

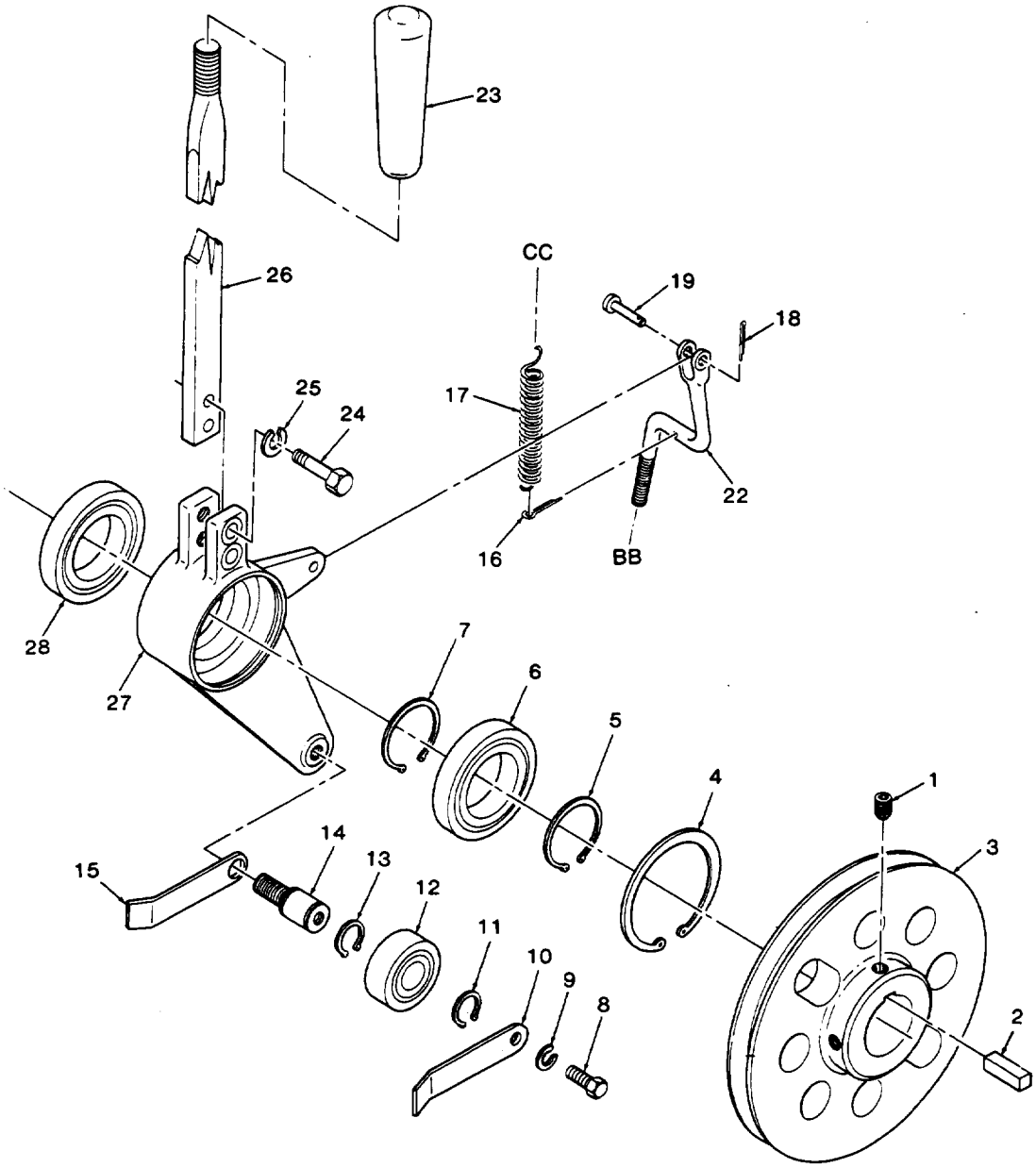
- **DISASSEMBLY**

A Remove the belt guard assembly.

B Remove the two V-belts and the reel axle.

C Loosen the two socket-heat setscrews (1) and pull the reel drive pulley (3) off the reel drive shaft.

D Remove the key (2) from the reel drive shaft.



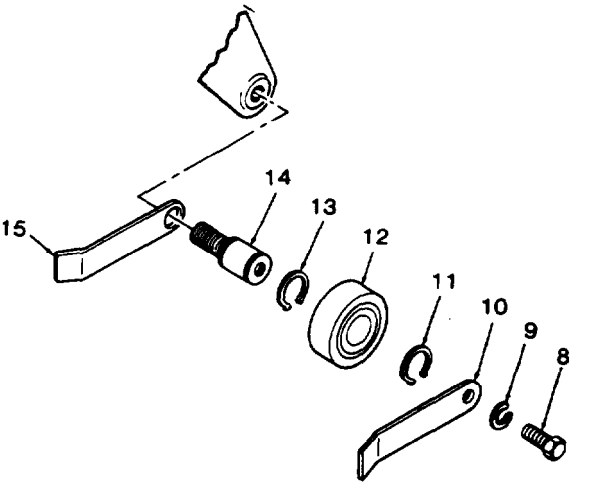
5-11. DISASSEMBLY AND REASSEMBLY OF CLUTHCH AND BRAKE ASSEMBLY - Continued

E Remove the bolt (8), lock washer (9), and outer drive belt guide (10).

F Remove the retaining ring (11), and slip the idler bearing (12) off the idler shaft (14).

G Remove the retaining ring (1 3).

H Unscrew and remove the idler shaft (14) and the inner drive belt guide (15).

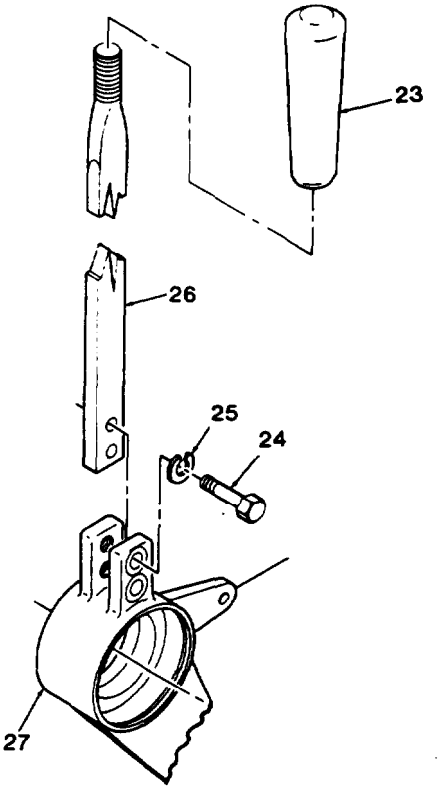


I Unscrew the control lever handle (23) from the control arm (26).

NOTE

If control lever handle is cemented to the control arm, do not attempt to remove the handle unless absolutely necessary.

J Remove the bolts (24), lock washers (25), and then remove the control arm (26).



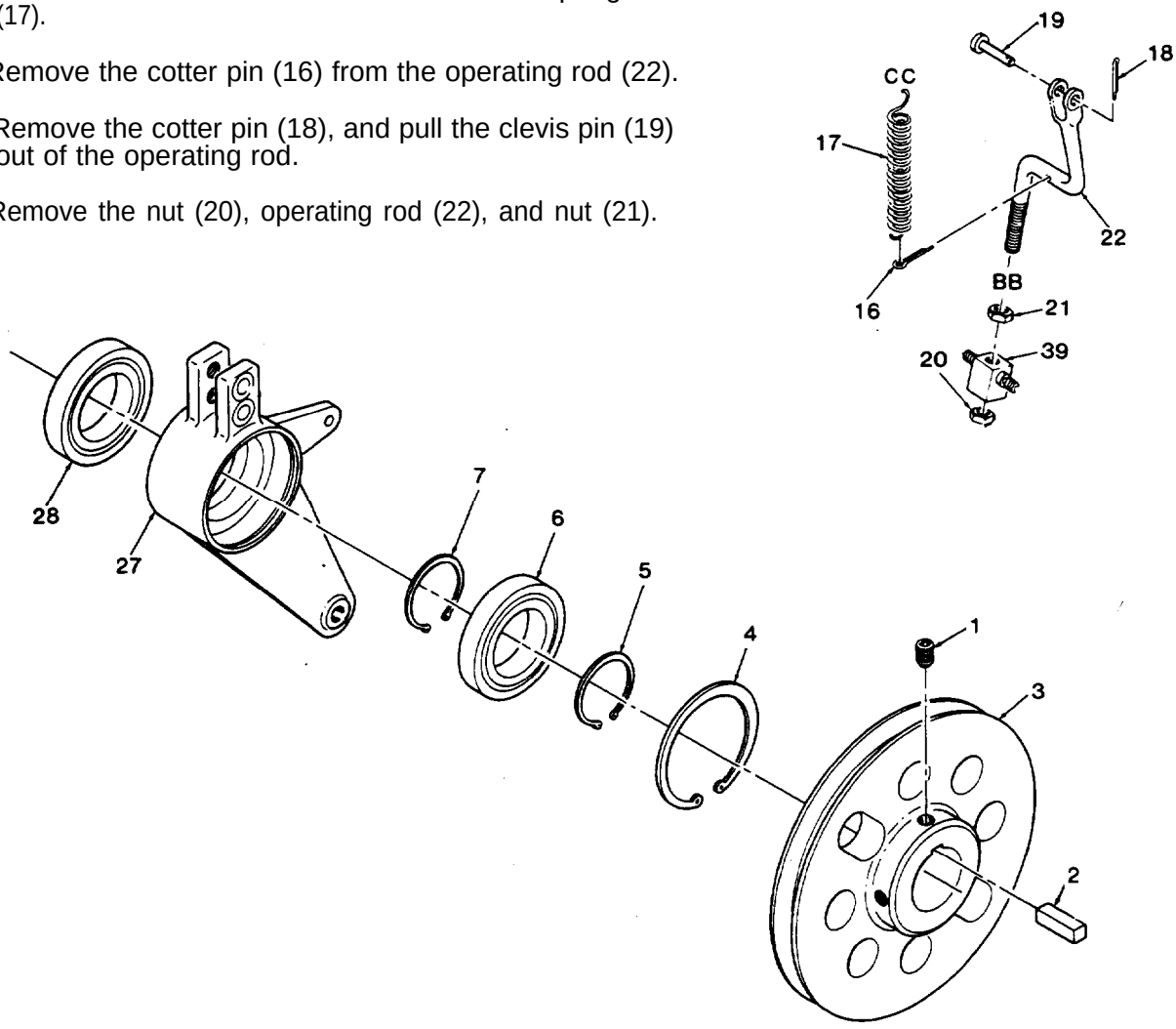
B-11. DISABBEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

K Unhook and remove the control arm return spring (17).

L Remove the cotter pin (16) from the operating rod (22).

M Remove the cotter pin (18), and pull the clevis pin (19) out of the operating rod.

N Remove the nut (20), operating rod (22), and nut (21).



O Remove the retaining ring (5), and slip the idler arm (27) and idler arm ball bearing (6) off the shaft.

P Remove the retaining ring (4), and pull the idler arm ball bearing (6) out of the idler arm (27).

Q Remove the retaining ring (7), and pull the idler arm ball bearing (28) off the reel drive shaft.

5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

R Remove the the cotter pin (32) and washer (33).

S Remove the cotter pin (34), castellated nut (35), and then remove the brake cam (36).

T Remove the cotter pin (37), castellated nut (38), and then remove the brake cam eye (39).

U Unscrew the brake adjusting nut (40), and remove the bolt (41).

V Remove the two brake return springs (42) and (43).

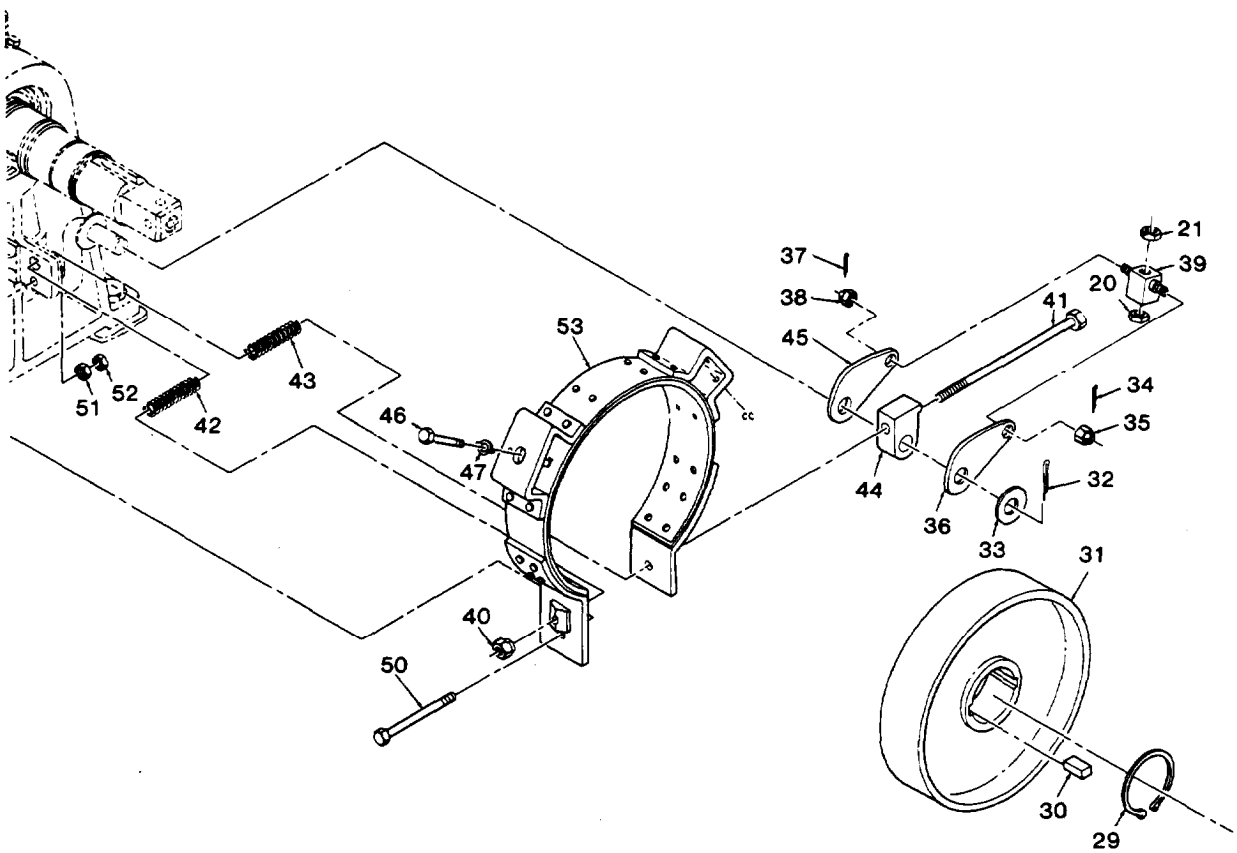
W Remove the cam stop (44) and brake cam (45).

X Remove the two nuts (51) and (52) and bolt (5).

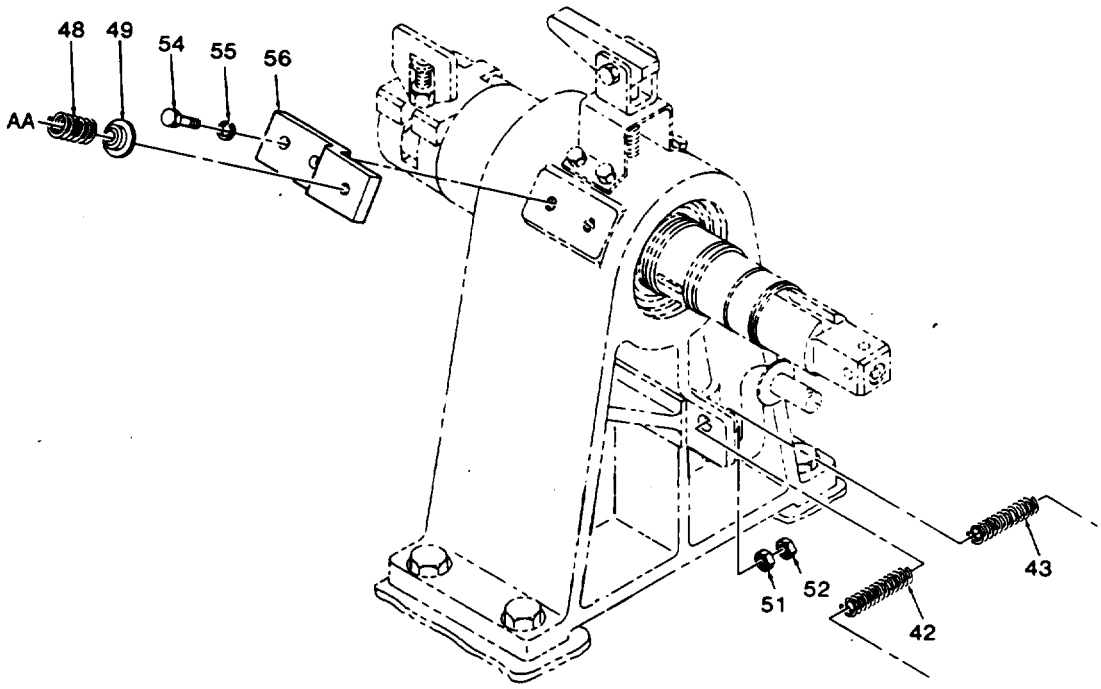
Y Remove the two bolts (46) and key washers (47),

Z Remove the two brake adjusting springs (48) and spring seats (49).

AA Remove the brake band (53).



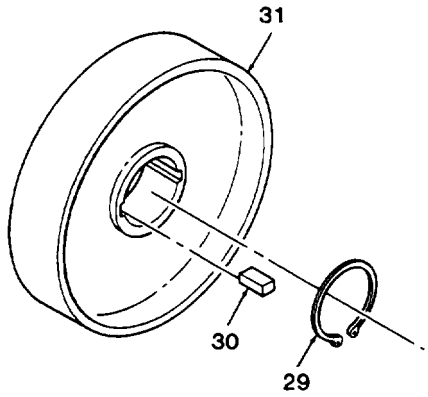
5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued



AB Remove the four bolts (54), lock washers (55), and brake brackets (56).

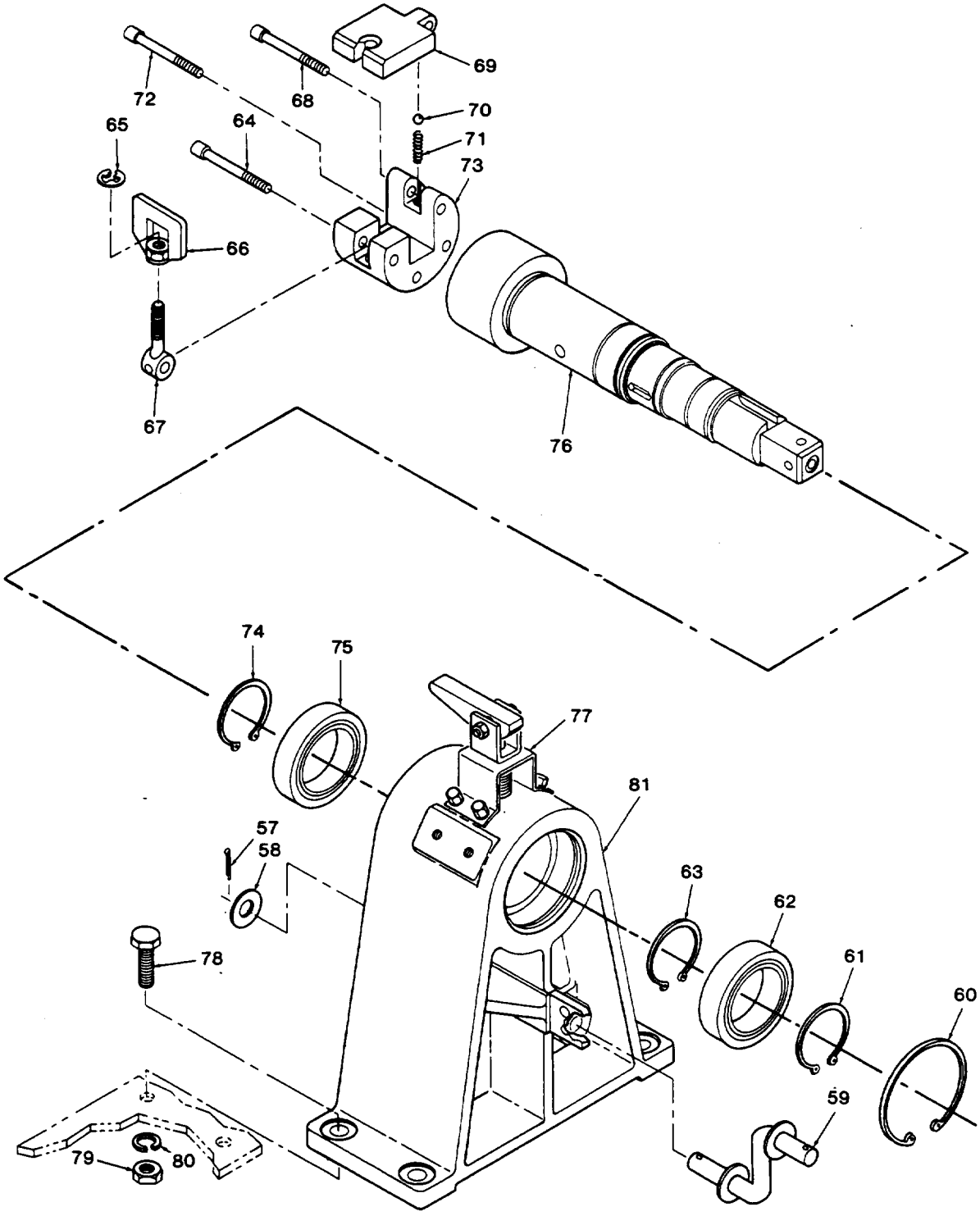
AC Remove the retaining ring (29), and pull the brakedrum (31) off the shaft.

AD Remove the two brakedrum keys (30) from the shaft.



5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

AE Remove the cotter pin (57), washer (58), and then remove the lever arm (59).



5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

AF Remove the socket-head bolt (64), and then remove the lock bolt assembly (65), (66), and (67). Remove the ball bearing (70) and latch spring (71), from the lower unit.

AG Disassemble the lock bolt assembly by removing the E-ring (65) and locknut (66) from the lock bolt (67).

AH Remove the socket-head bolt (68) and the locking plate (69). Remove the ball bearing (70) and the latch spring (71) from the upper unit.

AI Remove the two socket-head bolts and collar (73).

AJ Remove the hub locking device assembly (77).

AK Remove the retaining ring (61), and pull the reel drive shaft (76), with the retaining ring (63), ball bearing (75), and retaining ring (74) attached, out of the drive bearing housing (81).

AL Remove the retaining ring (63) and slide the ball bearing (75) off the reel drive shaft (76).

AM Remove the retaining ring (74) from the reel drive shaft (76).

AN Remove the retaining ring (60) and shaft ball bearing (62) from the drive bearing housing (81).

AO Remove the four bolts (78), nuts (79), lock washers (80), and then remove the drive bearing housing (81) from the frame.

- **REASSEMBLY**

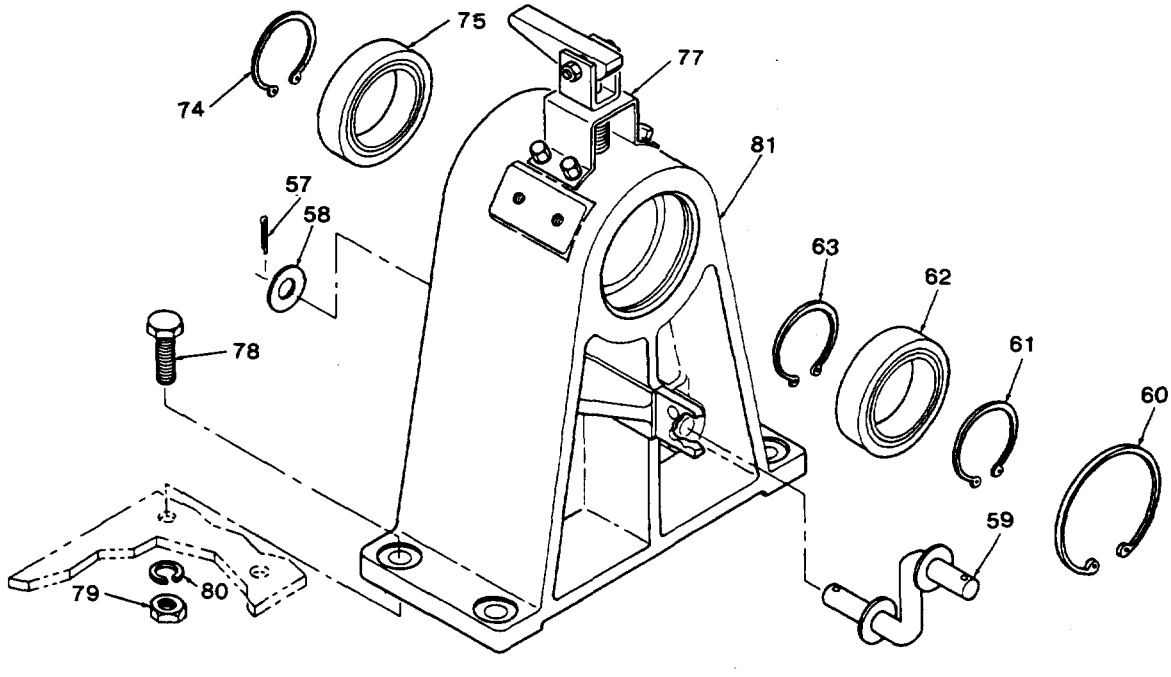
A Position the drive bearing housing (81) over the bolt holes in the frame and install the four bolts (78), lock washers (80), and nuts (79).

B Insert the shaft ball bearing (62) into the drive bearing housing, and install the retaining ring (60).

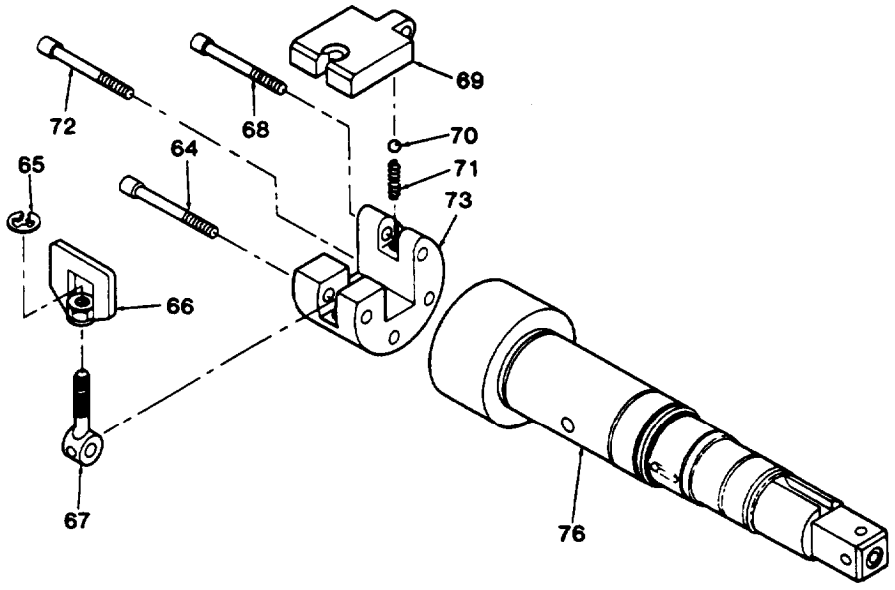
C Install the retaining ring (74), ball bearing (75), and retaining ring (63) on the reel drive shaft (76).

D Insert the reel drive shaft and the attached ball bearing into the drive bearing housing, and install the retaining ring (61).

E Install the hub locking device assembly (77) on the drive bearing housing.



5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued



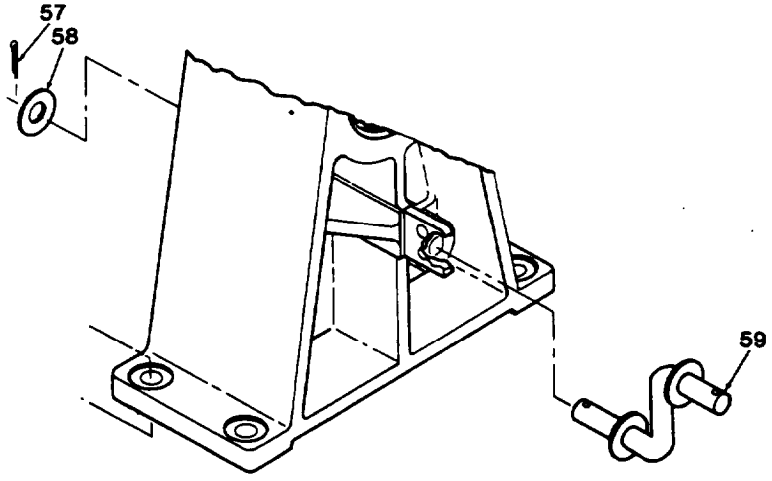
F Attach the collar (73) to the reel drive shaft (76) with the two socket-head bolts (72).

G On the upper unit, insert the latch spring (71) and ball bearing (70) into the locking plate side of the collar. Install the locking plate (69) and socket-head bolt (68).

H Assemble the lock bolt assembly by attaching the locknut (66) and the E-ring (65) to the lock bolt (67).

I On the lower unit, insert the latch spring (71) and ball bearing (70) into the lock bolt side of the collar. Install the lock bolt assembly (65), (66), and (67) and the socket-head bolt (64).

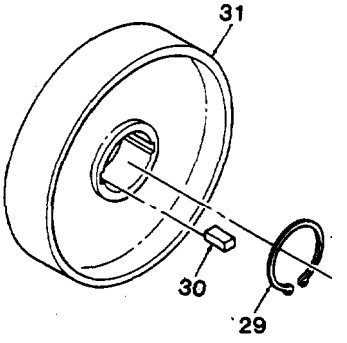
J Insert the lever arm (59) into the housing, and install the washer (58) and cotter pin (57).

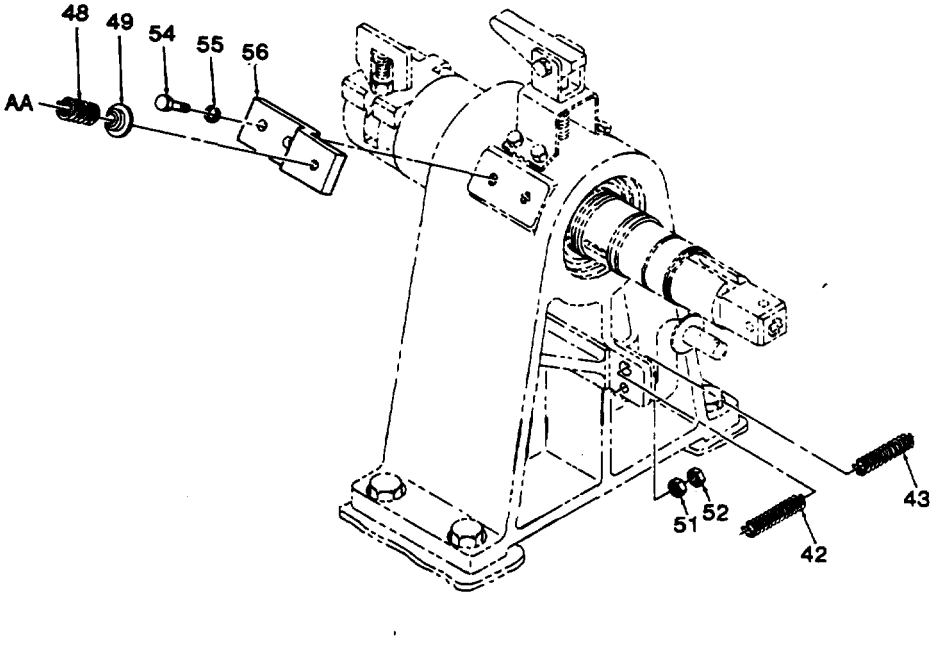


5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

K Install the two **brakedrum** keys (30) in the slots in the reel drive shaft (76).

L Install the **brakedrum** (31) on the reel drive shaft; align the grooves in the drum with the keys in the shaft, and install the retaining ring (29).



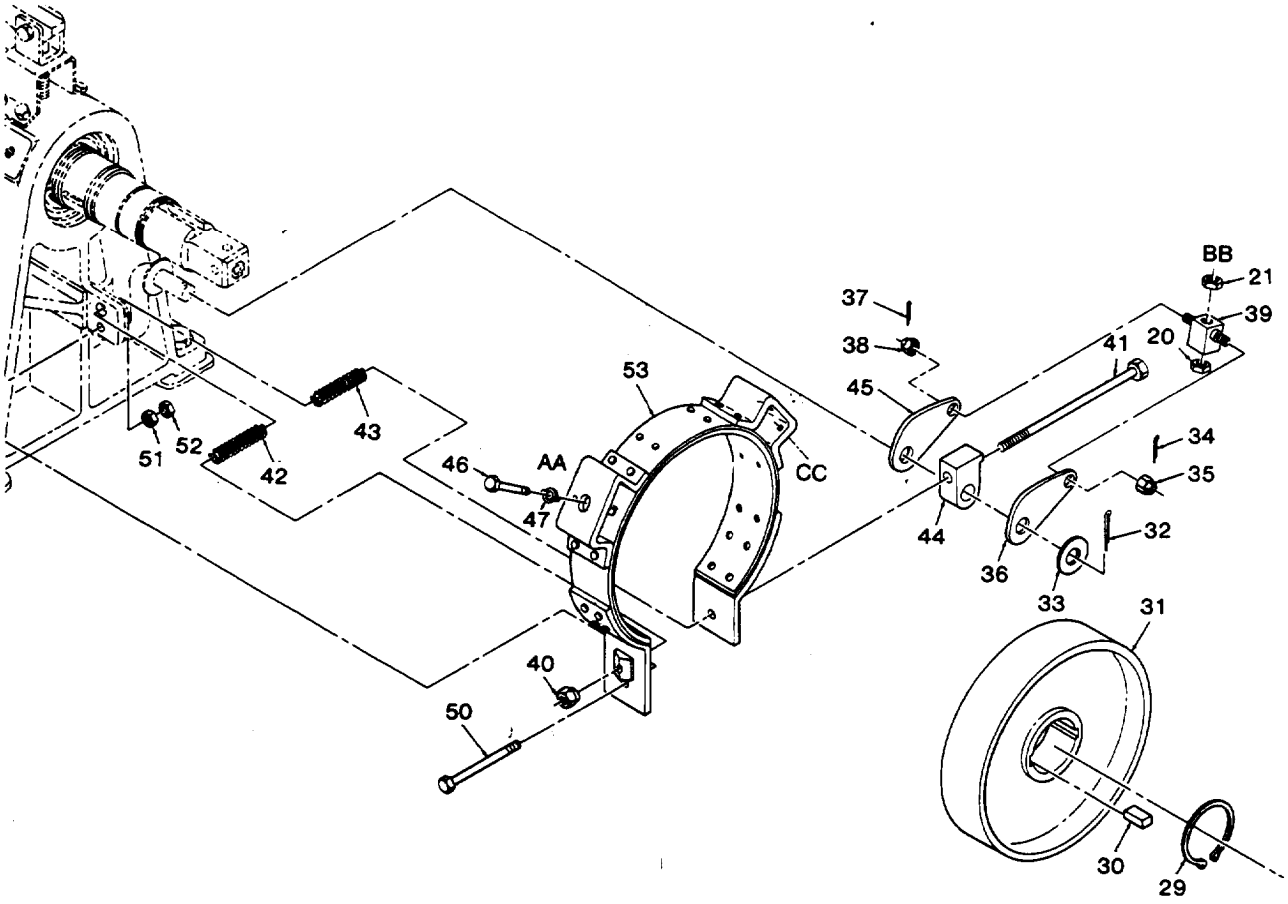


M Attach the two brake brackets (56) to the housing with the four bolts (54) and lock washers (55).

N Position the brake band (53) over the brakedrum and brake brackets so that the V-shaped lug for the adjusting nut is on the side opposite the lever arm.

O Insert the two brake adjusting springs (48) between the outer side of the brackets and the brake band, and install the two key washers (47) and bolts (46). Do not tighten the bolts.

5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued



P Insert the bolt (50) through the brake band and the drive bearing housing, and install the two nuts (51) and (52).

Q Install the brake cam (45) on the lever arm so that the wide side of the brake cam is upward.

R Install the cam stop (44) on the lever arm so that the long end of the stop is up.

S Position the two brake return springs (42) and (43) between the ends of the brake band and the lug on the housing, and insert the bolt (41) through the cam stop, the brake band, the return springs, and the housing.

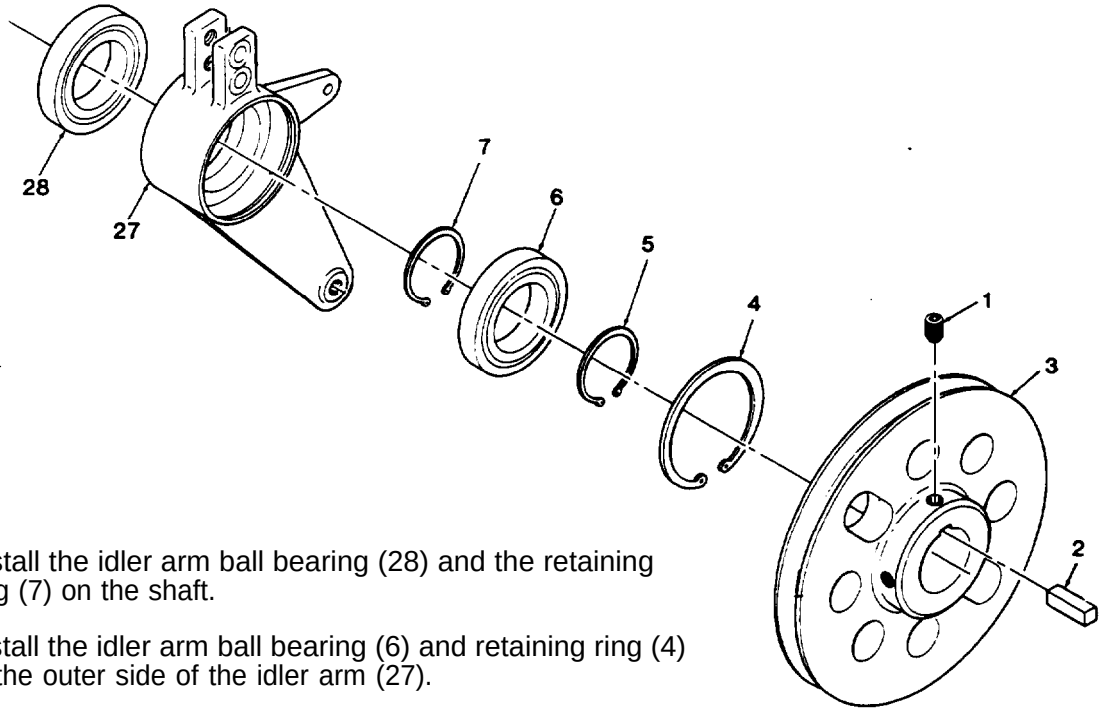
T Install the special brake adjusting nut (40) on the bolt (41).

U Insert one end of the brake cam eye (39) into the hole in the brake cam (45), and install the castellated hexagonal nut (38) and cotter pin (37).

V Slide the brake cam (36) over the end of the lever arm (59) and the cam eye (39), and install the washer (33) and cotter pin (37).

W Install the castellated nut (35) and cotter pin (34) on the brake cam eye.

5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued



X Install the idler arm ball bearing (28) and the retaining ring (7) on the shaft.

Y Install the idler arm ball bearing (6) and retaining ring (4) in the outer side of the idler arm (27).

Z Slide the assembled idler arm over the shaft and onto the idler arm ball bearing (28), and install the retaining ring (5).

AA Screw the nut (21) onto the operating rod (22).

AB Insert the operating rod (22) into the brake cam eye (39), and install the nut (20).

AC Attach the operating rod (22) to the idler arm (27) with the clevis pin (19) and cotter pin (18).

AD Insert the cotter pin (16) into the hole in the operating rod (22), so that the eye of the cotter pin is inward.

AE Connect the control arm return spring (17) between the cotter pin (16) and the hole in the brake band.

5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

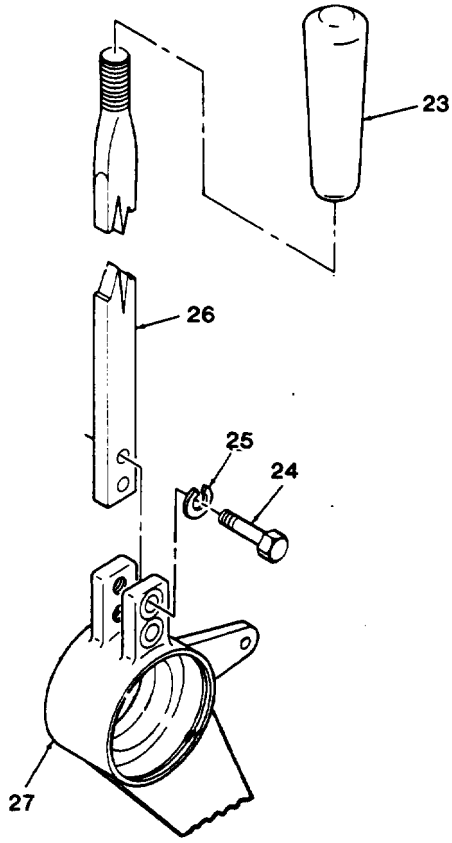
AF Attach the control arm (26) to the idler arm (27) by means of the two bolts (24) and lock washers (25).

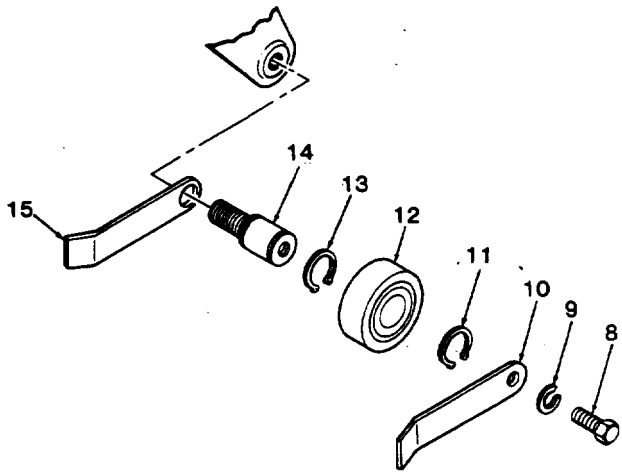
AG Screw the control lever handle (23) onto the control arm (26).

AH Place the inner drive belt guide (15) on the idler shaft (14), and screw the idler shaft into the idler arm (27). When tightened in position, the belt guide should form a right angle with the centerline of the idler arm.

AI Install the retaining ring (13), idler bearing (12), and retaining ring (11) on the idler shaft (14).

AJ Install the outer drive belt guide (10), lock washer (9), and bolt (8) on the idler shaft (14). Aline the outer guide parallel to the inner guide and tighten the bolt.





5-11. DISASSEMBLY AND REASSEMBLY OF CLUTCH AND BRAKE ASSEMBLY - Continued

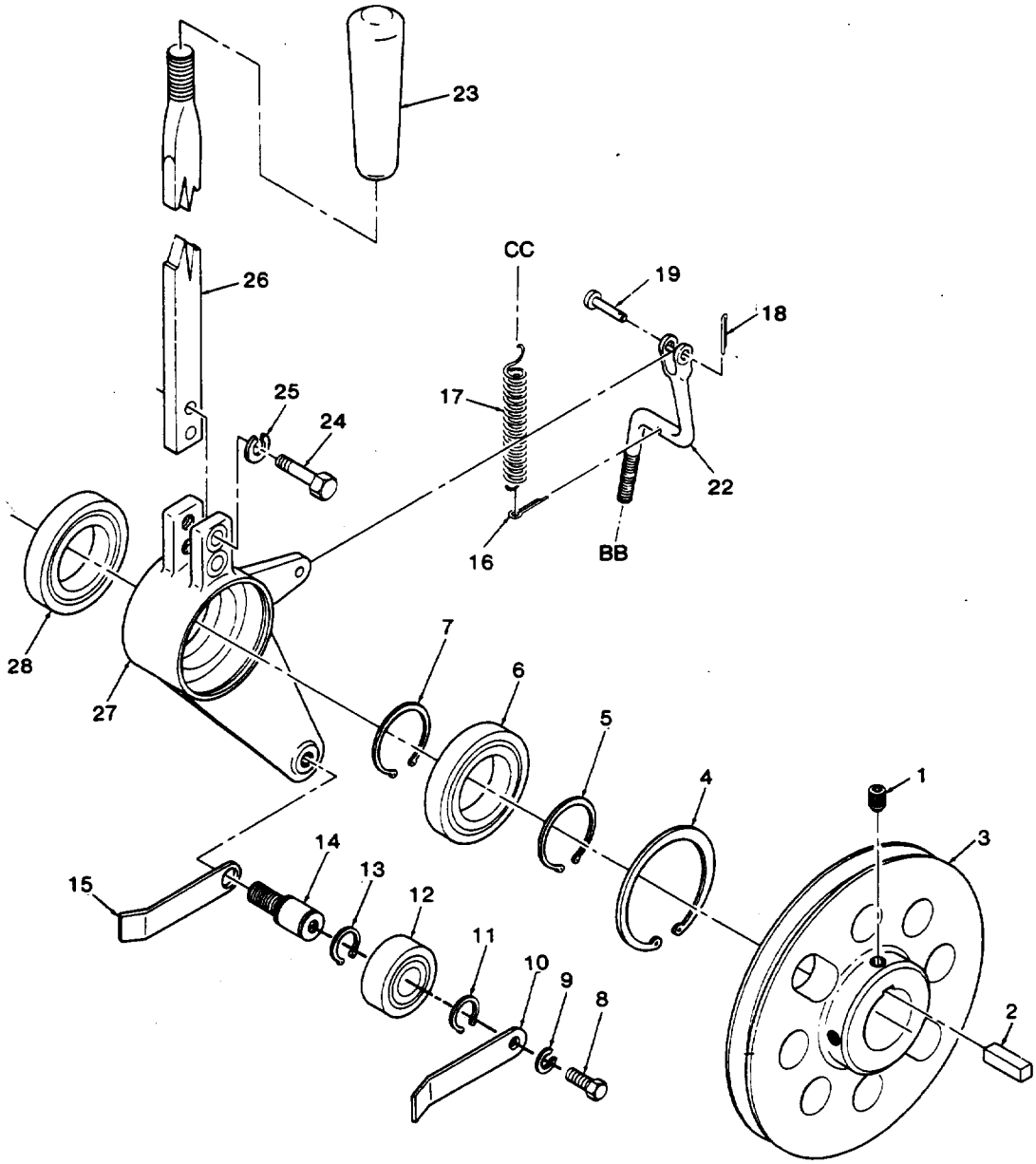
AK Install the key (2) in the groove in the reel drive shaft (76).

AL Install the reel drive pulley (3) on the reel drive shaft, and tighten the two socket-head setscrews 1).

AM Install the V-belts and the belt guard assembly.

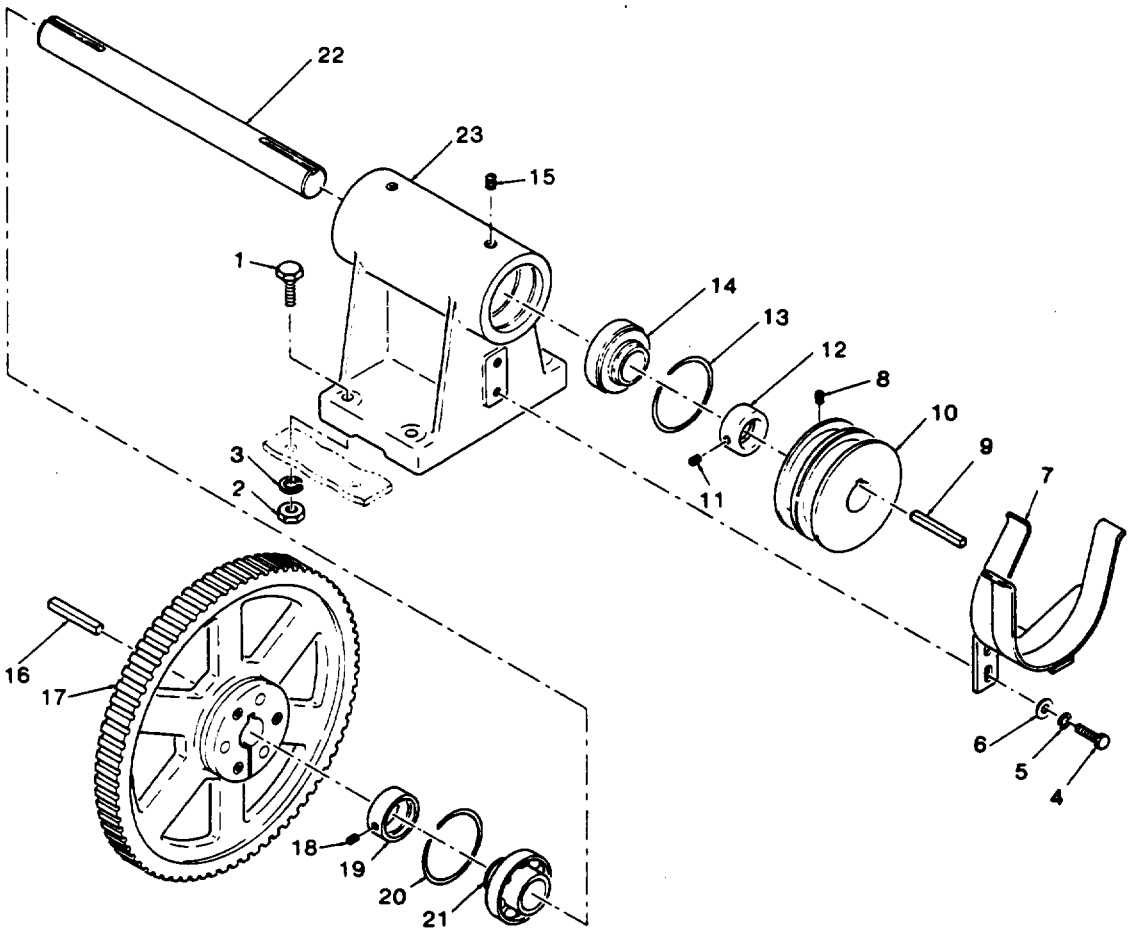
AN Lubricate the equipment.

AO Adjust the brake band and clutch idler.



5-12. DISASSEMBLY AND REASSEMBLY OF JACKSHAFT ASSEMBLY - Continued

• **DISASSEMBLY**



A Remove the belt guard assembly.

B Remove the timing belt.

C Remove the two bolts (4), lock washers (5), and washers (6), and then remove the belt spacer (7).

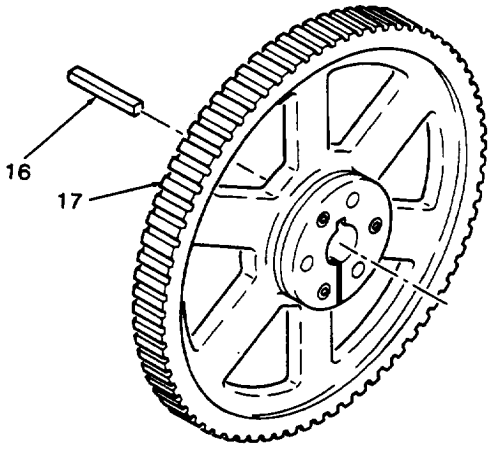
D Slip the two V-belts off the jackshaft pulley.

5-12. DISASSEMBLY AND REASSEMBLY OF JACKSHAFT ASSEMBLY - Continued

E Remove the four bolts (1), nuts (2), lock washers (3), and then remove the jackshaft assembly from the frame.

F Loosen the three socket-head clamp screws in the flange of the timing pulley (17), and pull the timing pulley off the shaft.

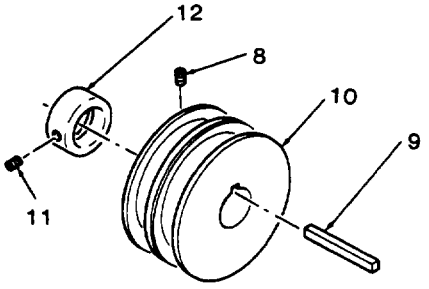
G Remove the key (16) from the shaft.



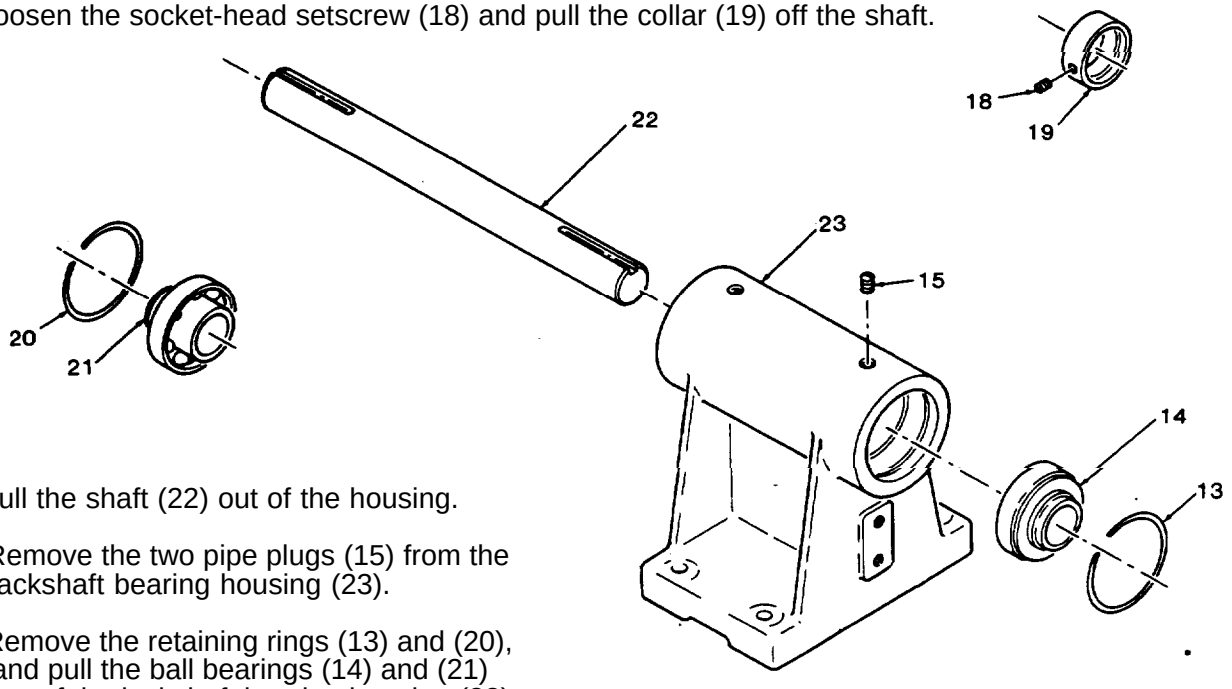
H Loosen the two socket-head setscrews (8) in the jackshaft pulley (10), and remove the pulley from the shaft.

I Remove the key (9) from the shaft.

J Loosen the socket-head setscrew (11) and pull the collar (12) off the shaft.



K Loosen the socket-head setscrew (18) and pull the collar (19) off the shaft.



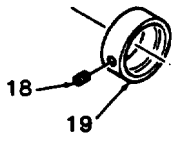
L Pull the shaft (22) out of the housing.

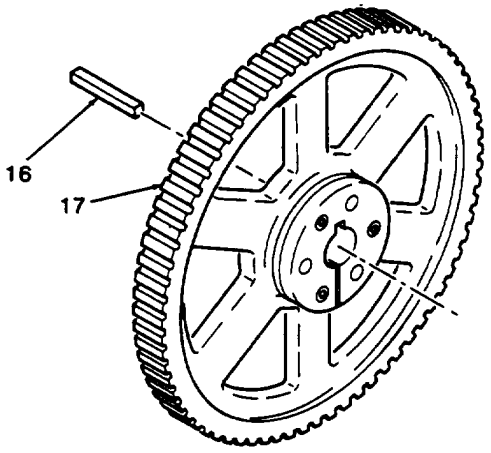
M Remove the two pipe plugs (15) from the jackshaft bearing housing (23).

N Remove the retaining rings (13) and (20), and pull the ball bearings (14) and (21) out of the jackshaft bearing housing (23).

5-12. DISASSEMBLY AND REASSEMBLY OF JACKSHAFT ASSEMBLY - Continued

F Install the two collars (12) and (19) on the shaft. Position the shaft so that it is centered in length through the bearings. Push the collars firmly against the bearings, and tighten the socket-head setscrews (11) and (18) in the collars.





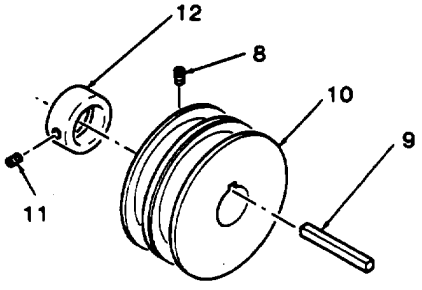
G Install the jackshaft pulley (10) on the shaft with the hub of the pulley toward the housing.

H Aline the slot in the jackshaft pulley (10) with the groove in the shaft, and insert the key (9).

I Position the jackshaft pulley so that the outer edge of the pulley is flush with the end of the shaft, and tighten the two socket-head setscrews (8) in the hub of the pulley.

J Install the timing pulley (17) on the shaft, with the three clamp screws facing toward the housing.

K Aline the slot in the timing pulley with the groove in the shaft, and insert the key (16). **Aline** the outer edge of the pulley flush with the end of the shaft, and tighten the three socket-head clamp screws in the hub of the timing pulley.



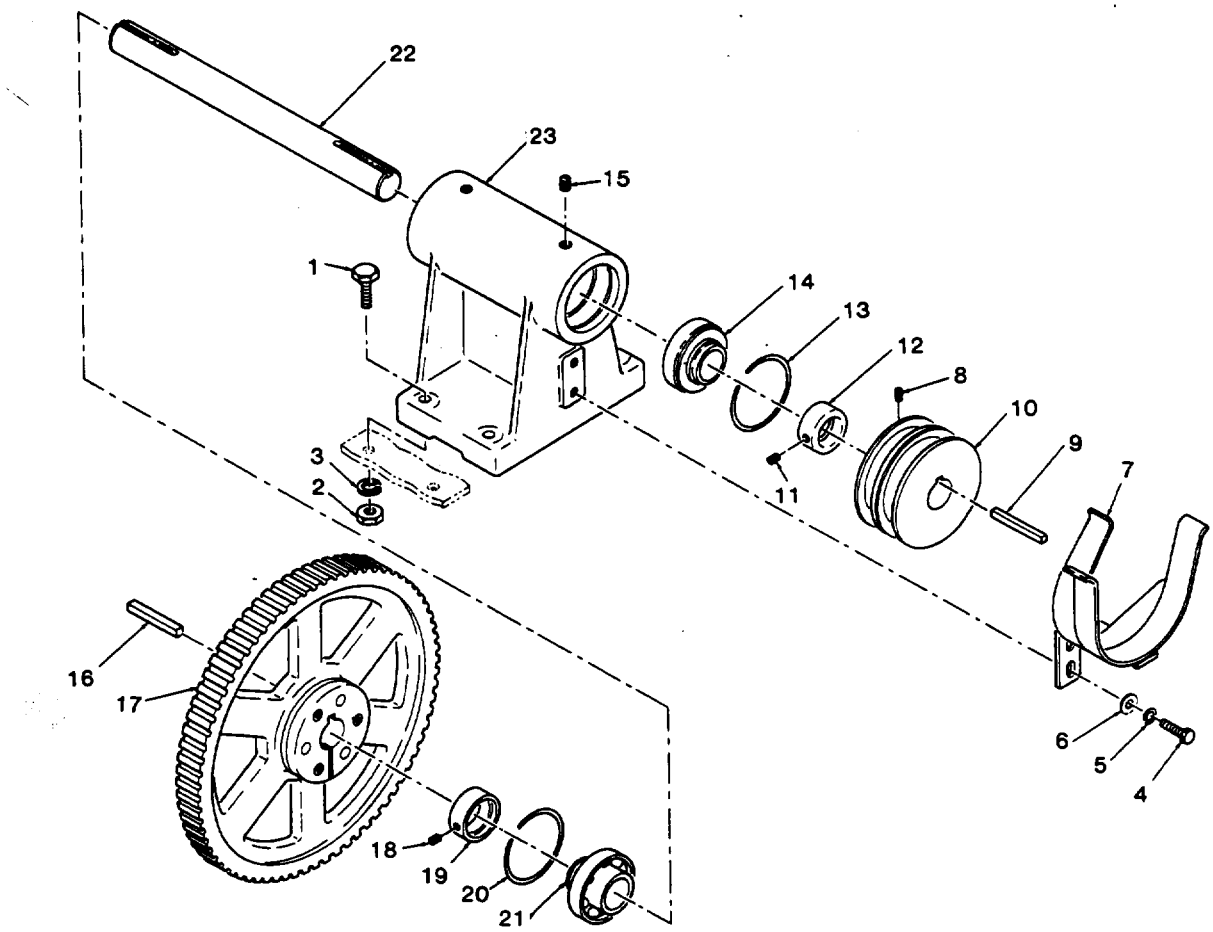
5-12. DISASSEMBLY AND REASSEMBLY OF JACKSHAFT ASSEMBLY - Continued

L Position the jackshaft assembly on the frame of the RL-207(*)/G and install the four bolts (1), lock washers (3), and nuts (2).

M Install the timing belt, and position the two V-belts in the grooves of the jackshaft pulley.

N Install the belt spacer (7), and secure it by means of the two bolts (4), lock washers (5), and washers (6). Be sure that the spacer does not touch the belts.

O Install the belt guard assembly.



5-13. REMOVAL AND REPLACEMENT OF ENGINE

• REMOVAL

A Remove the timing belt; turn off the fuel valve, disconnect the fuel line, and remove the nipple from the fuel pump. Disconnect the choke control, the throttle control, and the ignition wiring from the engine.

B Drain the engine crankcase.

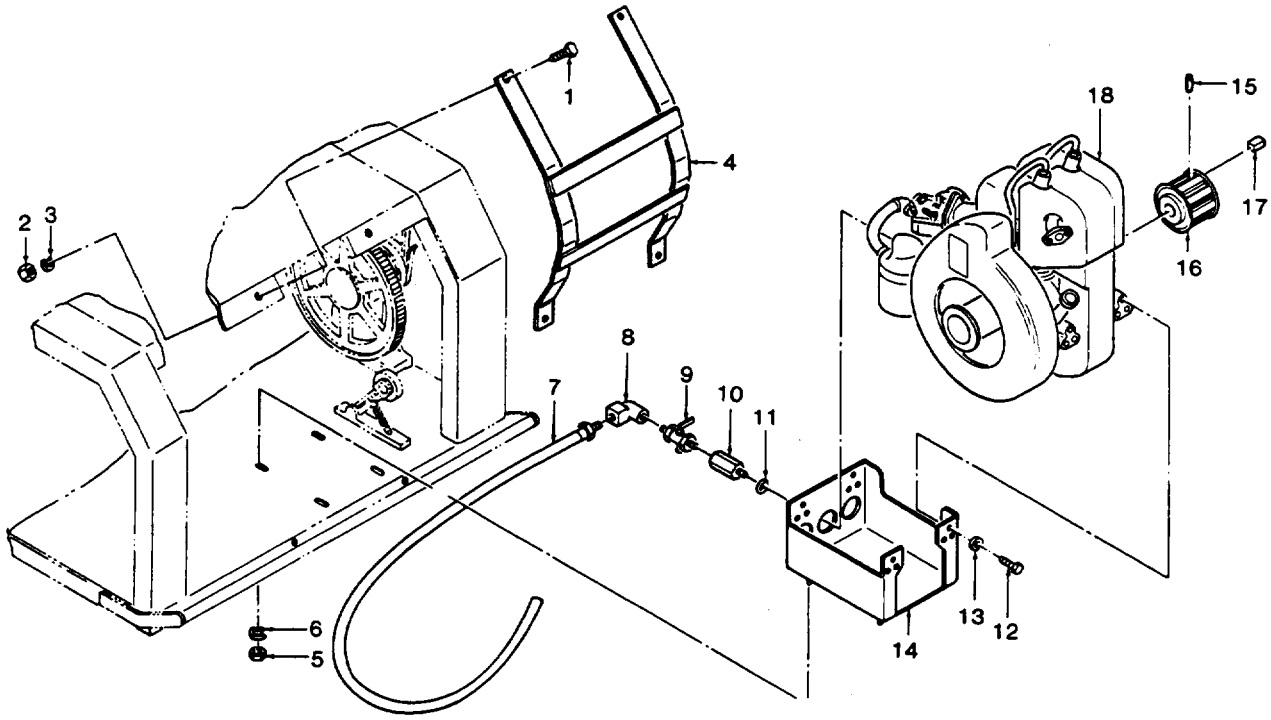
C Remove the four bolts (1), nuts (2), lock washers (3), and then remove the engine guard (4).

D Disconnect the exhaust pipe from the engine.

E Lift the rear edge of the frame clear of the floor, and place it on blocks.

F Remove the four nuts (5) and lock washers (6) that attach the engine support to the frame.

G Lift the engine and its attached support and oil drain lines clear of the frame, and place it on the floor.



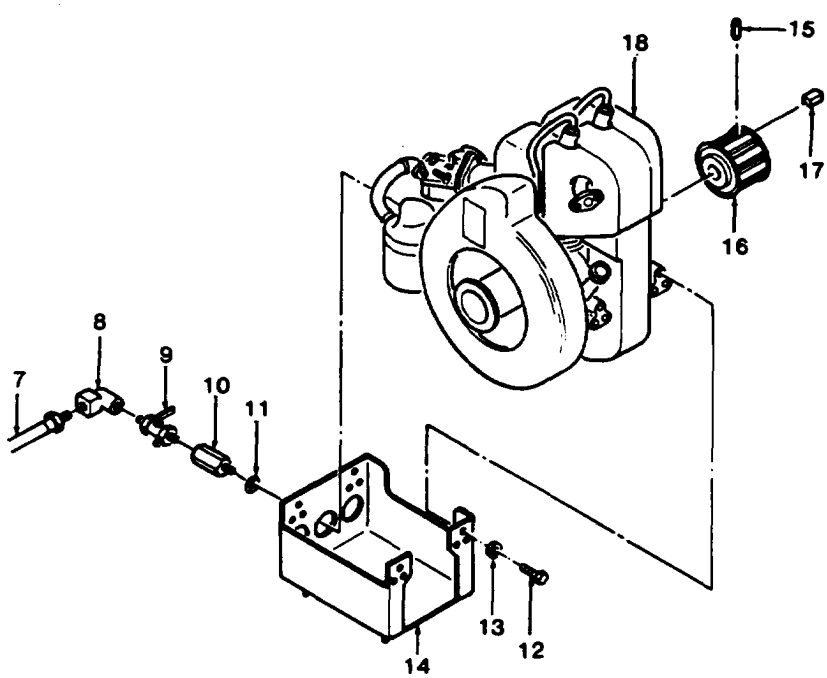
5-13. REMOVAL AND REPLACEMENT OF ENGINE - Continued

H Unscrew the oil drain hose (7) from the street elbow (8).

I Unscrew the street elbow (8) from the oil drain valve (9).

J Remove the oil drain valve (9) from the oil drain extension (10).

K Unscrew the oil drain extension (10) from the engine, and remove the oil drain gasket (11).



L Remove the 12 bolts (12) and lock washers (13) that attach the engine support (14) to the engine (18), and then remove the support.

M Loosen the two socket-head setscrews (15) in the timing pulley (16).

N Remove the timing pulley (16) from the shaft.

O Remove the Woodruff key (17) from the shaft.

5-13. REMOVAL AND REPLACEMENT OF ENGINE - Continued

• REPLACEMENT

A Insert the Woodruff key (17) into the slot in the shaft of the engine (18).

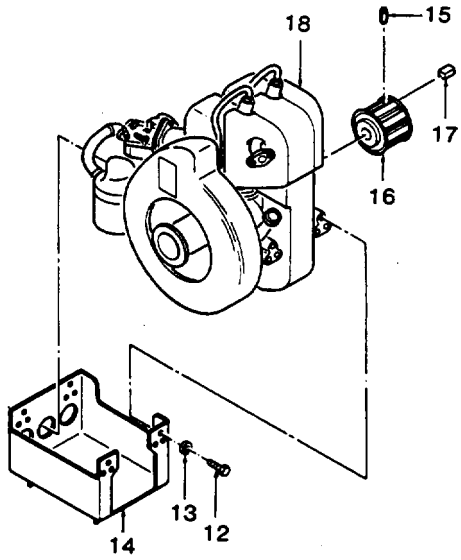
B Aline the keyway in the timing pulley (16) with the key in the shaft, and install the pulley on the shaft.

C Tighten the two socket-head setscrews (15) in the timing pulley.

D Remove the plug and the oil drain gasket from the engine crankcase drain. Retain the gasket for use later in this procedure.

E Lift the engine (18), and lower it into the engine support (14).

F Install and tighten the 12 bolts (12) and lock washers (13) that attach the support to the engine.

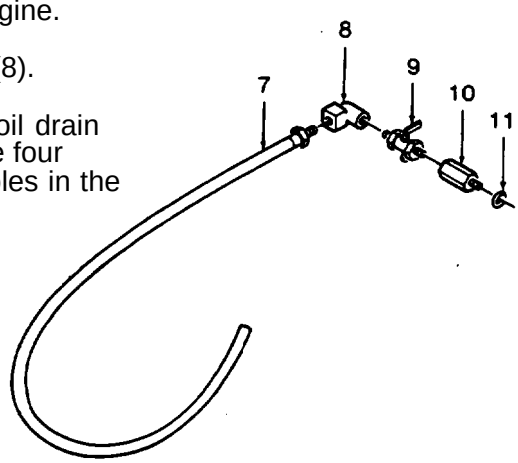


G Place the oil drain gasket (11) over the threaded end of the oil drain extension (10), and install the extension in the engine crankcase drain hole.

H Install the oil drain valve (9) in the oil drain extension (10) and screw the street elbow (8) on the oil drain valve (9). Turn the elbow toward the flywheel end of the engine.

I Screw the oil drain hose (7) into the street elbow (8).

J Install the engine and the attached support and oil drain fittings in the frame of the RL-207(*)/G so that the four studs on the support pass through the slotted holes in the frame.

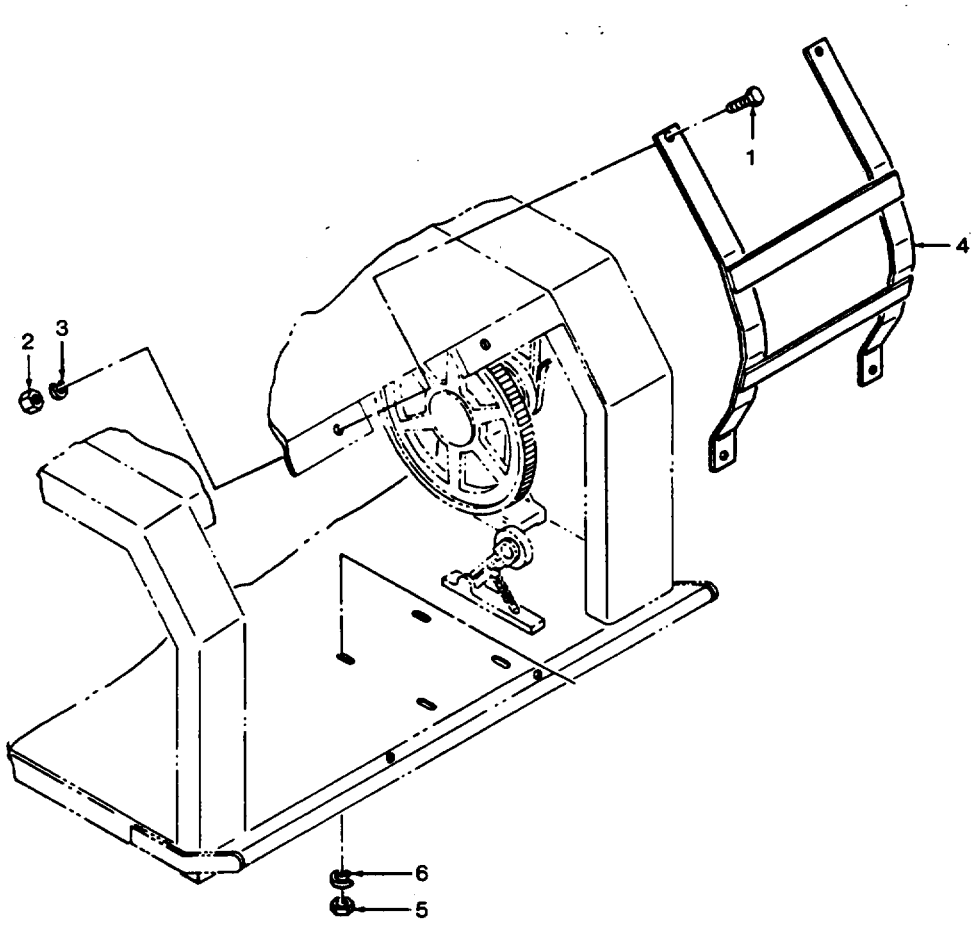


5-13. REMOVAL AND REPLACEMENT OF ENGINE - Continued

K Install but do not tighten the four nuts (5) and lock washers (6) on the studs of the engine support.

L Install the timing belt and adjust the position of the engine to obtain correct alinement of the timing pulleys and correct belt tension. Tighten the four nuts (5) on the engine support studs.

M Connect the exhaust system to the engine; connect the choke control, the throttle control, and the ignition wiring and install the nipple in the fuel pump; connect the fuel line and lubricate the engine as described in TM 5-2805-257-14.



APPENDIX A
REFERENCES

DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
FM 24-20	Field, Wire and Field Cable Techniques.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 740-90-1	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.
TM 750-244-2	Administrative Storage of Equipment.
TM 5-2805-257-14	Operator, Organizational, DS, GS Maintenance Manual: Engine, Gasoline: Military Standard Models (Model 1A08-1) 1½ Hp, NSN 2805-00-601-5181; (Model 1A08-2) 1½ Hp, NSN 2805-00-71 4-8552; (Model 1A08-3) NSN 2805-00-068-7510.
TM 5-5805-206-24P	Organizational, DS, and GS Maintenance Repair Park: Engine, Gasoline, Military Standard Models, (Model 1A08-1) NSN 2805-00-601-5181; (Model 1A08-2) NSN 2805-00-71 4-8552; (Model 2A016-1) NSN 2805-00-601-5127; (Model 2A016-2) NSN 2805-00-714-8553.
TM 11-3895-209-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (including Depot Maintenance Repair Parts and Special Tools) for Reeling Machine, Cable, Engine Driven RL-207/G and RL-207A/G (NSN 3895-00-892-4583).

APPENDIX B
COMPONENTS OF END ITEMS LIST (COEIL)

Section I. INTRODUCTION

B-1. SCOPE

This appendix lists Integral Components of and Basic Issue Items (Bll) for the reeling machine to help you inventory items required for safe and efficient operation.

B-2. GENERAL

This Component of End Items List is divided into the following sections.

A Section II Integral Components of the End Item. These iterns, when assembled, constitute the reeling machine and must accompany it whenever it is transferred or turned in. These illustrations will help you identify these items.

B Section Ill Basic Issue Items. These are minimum essential items required to place the reeling machine in operation, to operate it and to perform emergency repairs. Although shipped separately packed, they must accompany during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement Bll based on Table(s) of Organization and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE) authorization of the end item.

B-3. EXPLANATION OF COLUMNS

(1) Illustration. This column is divided as follows:

(a) Figure Number. Indicates the figure number of the illustration on which the item is shown (if applicable).

(b) Item Number. The number used to identify item called out in illustrations.

(2) National Stock Number (NSN). Indicates the national stock number assigned to the end item which will be used for requisitioning.

(3) Part Number (P/N). Indicates the primary number used by the manufacturer 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.

(4) Description. Indicates the federal item name and, if required, a minimum description to identify the item.

(5) Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

(6) Usable on Code. **(Not applicable).**

(7) Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

(8) Quantity. This column is left blank for use during inventory. Under the received column, list the quantity you actually receive on your major item. The date columns are for use when you inventory the major item at a later date, such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rcvd	Date	Date	Date
		3895-00-892-4583	RL-207/G and RL-207A/G	Reeling Machine, Cable, Engine Driven							

Section III. BASIC ISSUE ITEMS

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rcvd	Date	Date	Date
		3895-00-815-6556	SM-C-158385 (80063)	Cover, Reeling Machine Maintenance Manual TM 11-3895-209-14 Department of Army Technical Manual; Operator's Organizational, Direct Support Maintenance Repair Parts and Special Tools List TM 11-3895-209-24P							

APPENDIX C
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

C-1. GENERAL

A This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

B The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item of component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

C Section III lists the special tools and test equipment required for each maintenance function as referenced from Section 11.

D Section IV contains supplemental instructions or explanatory notes for a particular maintenance function.

C-2. MAINTENANCE FUNCTIONS

A **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.

B **Test.** To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

C **Service.** Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

D **Adjust.** To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

E **Replace.** The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

F **Repair.** The application of maintenance services (inspect, test, service, adjust, aline, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), and item, or system.

G **Overhaul.** That maintenance effort (service/actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul does not normally return an item to like new condition.

C-3. COLUMN ENTRIES

Columns used in the maintenance allocation chart will be limited to those shown. Entries for those columns are explained below.

A **Column 1, Group Number.** Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

B **Column 2, Component/Assembly.** Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

C-3. COLUMN ENTRIES - Continued

C Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in the column 2. (For detailed explanation of these functions, see paragraph C-2.)

D Column 4, Maintenance Level. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figure will be shown for each level. The number of man-hours specified by 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. The symbol designations for the various maintenance levels are as follows:

C—Operator or Crew
O—Organizational Maintenance
F—Direct Support Maintenance
H—General Support Maintenance
D—Depot Maintenance

E Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

F Column 6, Remarks. Column 6 contains a letter code in alphabetical order which shall be keyed to the remarks contained in Section IV.

C-4. COLUMN ENTRIES USED IN TOOL AND TEST EQUIPMENT REQUIREMENTS

A Column 1, Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a maintenance function on the identified end item or component.

B Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

C Column 3, Nomenclature. Name or identification of the tool or test equipment.

D Column 4, National/NATO Stock Number. The National or NATO stock number of the tool or test equipment.

E Column 5, Tool Number. The manufacturer's part number.

C-5. EXPLANATION OF COLUMNS IN SECTION IV

A Reference Code. The code scheme recorded in column 6, Section II.

B Remarks. This column lists information pertinent to the maintenance function being performed as indicated on the MAC, Section II.

SECTION II. MAINTENANCE ALLOCATION CHART
FOR
REELING MACHINE, CABLE, ENGINE-DRIVEN RL-207/G AND RL-207A/G

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	Reeling Machine, Cable, Engine Driven RL-207/G and RL-207A/G	Service	0.5					5 thru 8	A
		Adjust		0.3				2	B
		Inspect	0.2						C
		Test		0.4				1,2	D
		Repair		1.5				2,5,7,8	E
		Overhaul					12.0	1 thru 8	F
01	Clutch and Brake Assembly (Lower and Upper)	Replace			0.5			2,3,5 thru 8	G
		Repair				3.5		2,5,7,8	E
02	Engine Model RL-207/G (2A016-2) Engine Model RL-207A/G (2A016-3A)	Replace			1.0			2,5 thru 8	G
		Repair			2.5			1 thru 3, 5 thru 8	E
03	Idler Assembly and Belt Group	Replace		.75				2,5 thru 8	G
		Repair		0.4				2,5 thru 8	E

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
REELING MACHINE , CABLE, ENGINE DRIVEN RL-207/G AND RL-207A/G

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,D,F	Multimeter AN/PSM-45	6628-01-139-2512	
2	O,D,H,F	Tool Set, General Mechanics	5180-00-177-7033	
3	D.F	Key Set, Socket Head Screw	5120-00-792-6392	
4	D	Tool Equipment, TE-111	5180-00-408-1877	
5	C,O,D,H,F	Pliers, 8 in. lg.	5120-00-224-1567	
6	C,O,D,F	Oiler, Hand	4930-00-266-9182	
7	C,O,D,F,H	Screw Driver, 4 in. bld.	5120-00-222-8852	
8	C,O,D,F,H	Wrench, Adj. TL-476/U	5120-00-240-5328	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	Equipment operation test.
B	Preventive maintenance.
C	Inspect for broken or deformed components.
D	Test engine, tighten loose hardware.
E	Repair by replacement.
F	Overhaul effort is to return unit to serviceable/operational condition.
G	Substitute a serviceable like-type part.

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists additional items you are authorized for the support of the reeling machine.

D-2. GENERAL

This list identifies items that do not have to accompany the reeling machine and that do not have to be turned in with it. These items are authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING

National stock number, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Part Number and FSCM	Description	(3) Usable On Code	(4) U/M	Qty Auth
4240-00-691-5617	RL-207/G or RL-207A/G 89687	Aural Protector, Sound: 258		ea	1 per person

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INDEX - Continued

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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Stateside, N.J. 07703-5007

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT. . PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-3895-209-14	15 June 1986	Engine-Driven RL-207/G and RL-207A/G

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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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