DAVEY Model 365 RPV

Permavane Rotary Compressor

OPERATION AND MAINTENANCE MANUAL

WITH

PARTS LIST

DAVEY COMPRESSOR CO.
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MPL-155

PRINTER IN U.S.A.

MODEL 1M365 PERMAVANE ROTARY

COMPRESSOR SPECIFICATIONS

UNIT DATA

Mounting	Trailer, 4-Wheel, leaf type springs
Tire Size	7.50 x 15, 8 ply
Tire Pressure	45 lbs.
Towing Speed	20 mph
Wheel Bearings	Tapered Roller
Towing Hitch	Lunette Eye
Fuel Tank Capacity	74 gallons
Radiator Capacity	12 gallons

Dimensions:

Length (overall)	165 1/2 in.
Length (Towbar folded)	115 1/2 in.
Width	72 in.
Height (overall)	96 in.

Shipping weight ..... 5,000 lbs.

COMPRESSOR

Number of Rotors	1
Rotor Slots	8
Vanes per Slot	2
Type of Vane	Light Metal *Permavane
Vane Thickness	1/4 inch, nominal
Capacity Control	Full modulation with air pressure control
Operation Pressure	100 psi
Rated Capacity	365 cfm
Full Load Speed	1800 rpm
Lubrication	Full flood, force feed
Oil Capacity	63 qts.
Oil Filter	Replaceable Cartridge
Air Cleaner	Dry type

OIL SEPARATOR

Type ..... Vertical labyrinth type

Element ..... Replaceable cartridge

ENGINE

Type	Diesel, 6-cylinder, 4 cycle
Make	John Deere
Model	6414D
Bore	4.19 in.
Stroke	5 in.
Piston Displacement	414 cu. in.
Horsepower (at 2000 rpm)	115 (intermittently)
Torque (Max.)	330 ft. lb. at 1200 rpm
Lubrication	Forced feed

*Patent No. 2905376

NOTE

Engine manuals may be obtained directly from the engine manufacturer.

FOREWORD

This manual is designed to provide you, the operator, with sufficient knowledge of the operation, use and maintenance of the Davey portable rotary compressor to realize the full capability of this machine.

It is recommended that all sections of this manual be read carefully, and if any doubt exists about the function of any part of the compressor, that you contact our nearest dealer or representative for clarification.

It is not intended to cover the operation, use and maintenance of the engine in this manual, except in such instances where special equipment has been added to the engine.The engine or equipment supplier's manual should be referred to for detailed instructions; see Part II.

NOTE

Part I of this manual is restricted to the operation, maintenance, and repair of the air compressor. Manuals covering the engine, engine accessories, and engine parts list will be found in Part II which follows the air compressor manual.

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PART I - AIR COMPRESSOR

LIST OF CHARTS AND ILLUSTRATIONS

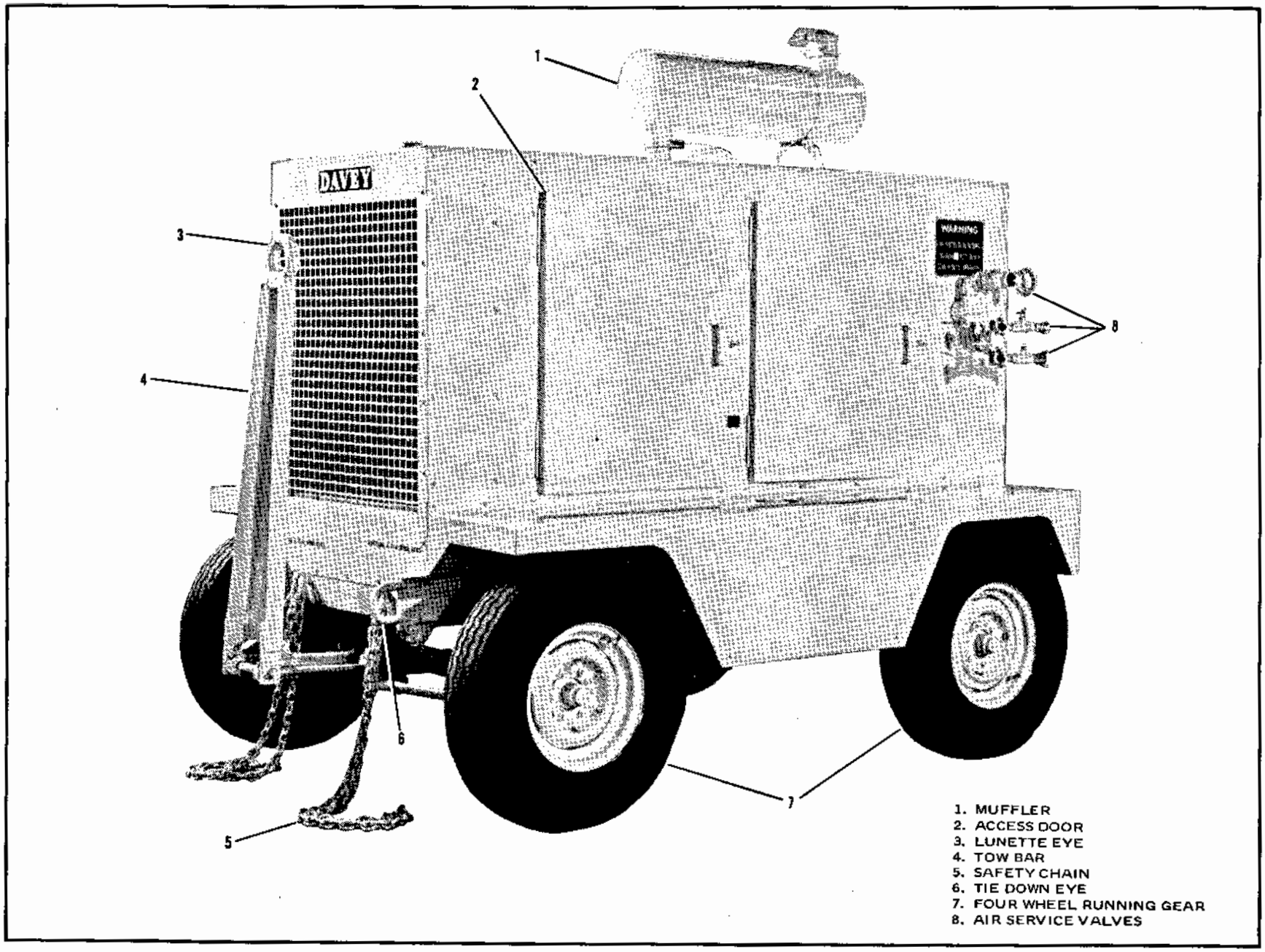
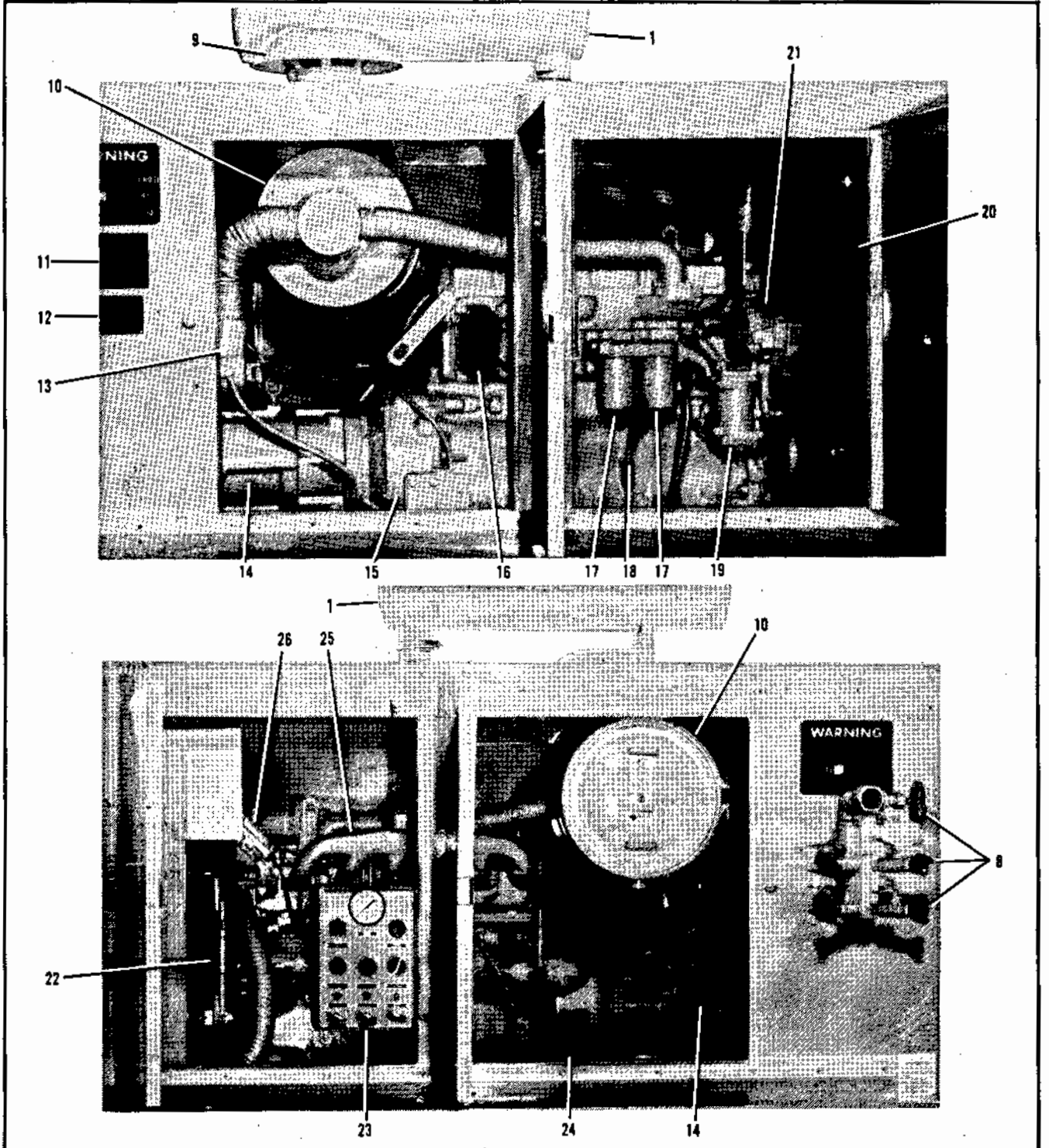


Figure A. Compressor Components (Sheet 1 of 2)



9. AIR CLEANER RAIN CAP
10. AIR CLEANER
11. SHIPPING NOTE
12. IDENTIFICATION PLATE
13. AIR INTAKE CONTROL VALVE
14. COMPRESSOR
15. DIESEL ENGINE
16. FUEL FILTER
17. ENGINE OIL FILTERS
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22. FAN BELTS
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Figure A. Compressor Components (Sheet 2 of 2)

SAFETY PRECAUTIONS

The following precautions should be observed to prevent injury to operating personnel or damage to the equipment.

1. If the engine fails to start within 20 seconds, release the starter button and allow the starter to cool for 1 to 2 minutes before attempting another start.

2. Do not leave operating equipment unattended for prolonged periods. Operator should listen closely to unit at least daily to detect any bearing rumble or other abnormal noises. Observance of this precaution can prevent serious damage to the unit.

3. If the unit was shut down automatically, do not attempt to restart until the cause of such failure has been determined.

4. Many oils will jell at extremely cold temperatures. It is essential that oils are fluid at the temperature being experienced. Check your oil supplier for pour point data if in doubt. A quick check is to momentarily remove the drain plug of the engine.

5. If repairs or adjustments must be made while the unit is operating, use extreme care to avoid severe burns or serious injuries.

6. Do not attempt any disassembly or repair of the unit until all air pressure has been relieved. Blowdown valve will relieve pressure in about 10 seconds after shutdown.

7. During cleaning procedures, be sure to observe solvent manufacturer's instructions and precautions.

SECTION 1

INTRODUCTION AND DESCRIPTION

1-1. DESCRIPTION.

The Davey Permavane Portable Compressor consists of a rotary type air compressor directly coupled to and driven by a heavy duty industrial type engine. The compressor-prime mover unit assembly is mounted on a rugged, channel section, welded steel frame. The standard running gear has four steel wheels spring mounted with pneumatic tires. A functionally designed housing provides weather protection.

Compressor operating components include an oil cooler, air cleaner, combination air receiver-oil separator, oil filter, indicating instruments and regulating devices. Engine accessories include a cooling radiator, fuel supply tank and muffler. A speed control linkage mechanism is provided to regulate engine speed and compressor intake in relation to air demand.

1-2. MAJOR COMPONENTS.

1-3. ROTARY COMPRESSOR ASSEMBLY. The compressor is an oil flooded, sliding vane, rotary type. It is rigidly supported from an adapter which is bolted to the flywheel housing of the engine. A pilot flange insures and maintains proper alignment.

The rotor is mounted on a shaft which is supported at each end by ball bearings. The rotor is enclosed in a sealed eccentric-bored stator and is located so that it is constantly concentric with a cutaway portion of the stator. The vanes are inserted radially in longitudinal slots in the rotor. Multi-staged cooling oil injection provides cooling, sealing and lubrication during the air compression cycle.

a. AIR CYCLE. (See figure 1-1.) Free air is drawn into the stator through the air cleaner and intake control. The air enters through large ports in the end cover at a point where the vanes are well out of the rotor slots, thus filling the space

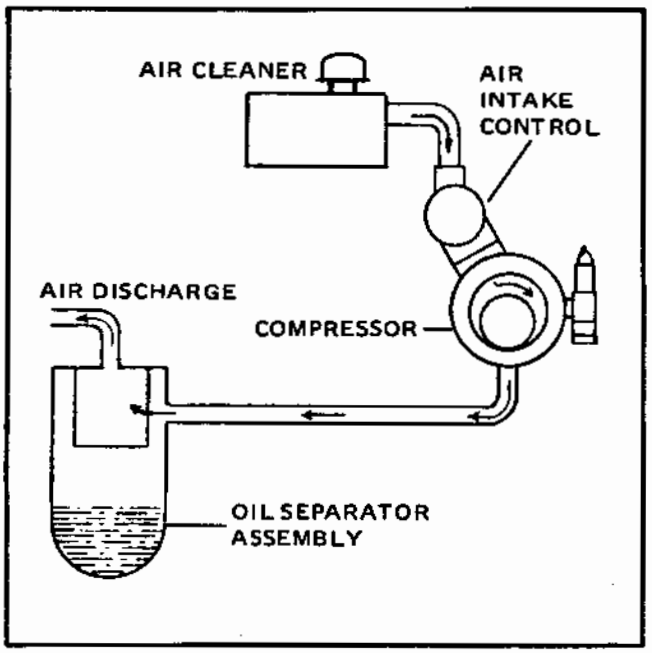


Figure 1-1. Air Cycle Schematic Diagram

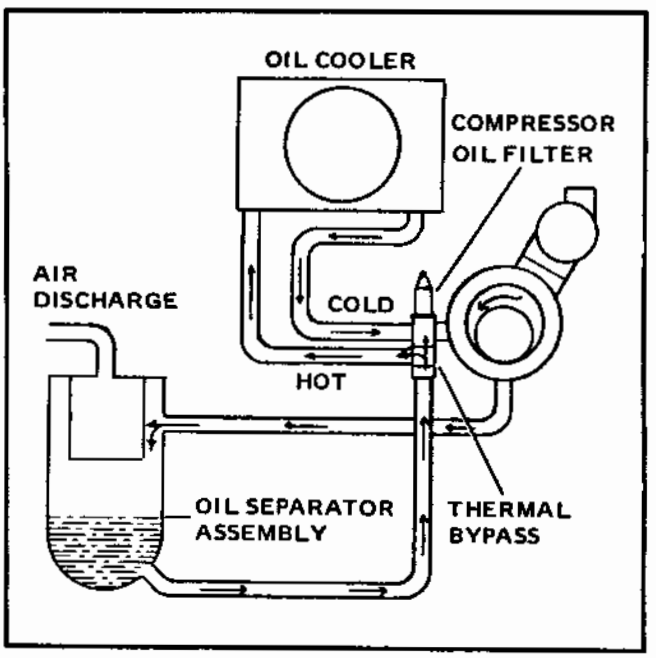


Figure 1-2. Oil Cycle Schematic Diagram

segments between the vanes with air. In rotation, the vanes are moved radially inward in their slots by the bore wall. The volume between the vanes decreases, thus compressing the trapped air. At the rated point of compression, the discharge ports are reached and the compressed air passes into the discharge chamber. Oil is injected during the above cycle to cool the air, seal all leakage and lubricate all rubbing parts. The discharge chamber is positioned at the bottom of the stator to favor natural oil drainage.

The air is delivered into the receiver-oil separator where three stages of oil separation remove virtually all oil particles from the air before final discharge.

b. OIL CYCLE. (See figure 1-2.) After oil is separated from the compressed air, it accumulates in the receiver-oil separator. The discharge air pressure forces it into the thermal bypass valve which senses the temperature of the oil. When the oil is cool, it bypasses the cooler and is passed directly into the oil filter; when the oil warms up, it is directed to the oil cooler for heat dissipation and then into the oil filter. The oil is then passed into the compressor where it is injected under pressure into the rotor bore compartment and to the bearing and end faces.

Since the injected oil was cooled before being mixed with the air, the heat of compression is removed. This provides a low final discharge temperature.

The location and the combining of the engine radiator core and oil cooler core serves to cool the compressor oil and engine water with the engine fan.

1-4. THERMAL BYPASS VALVE. The thermal bypass valve attached to the underside of the oil filter serves two purposes.

a. Rapid warming of the compressor oil at initial startup is provided by the normally open thermal bypass valve. This valve bypasses the oil from the receiver-oil separator around the cooler directly through the filter into the compressor. When the oil temperature reaches approximately 150 degrees Fahrenheit, the bypass valve starts to close and part or all of the oil is circulated through the oil cooler before entering the filter and compressor.

Unless the compressor is operating in extremely hot ambient temperatures, the thermal bypass valve will mix the hot oil from the receiver-separator and the cool oil from the cooler to maintain a constant oil temperature.

b. The thermal bypass valve thus maintains a relatively constant minimum operating temperature. This helps control temperature and also minimizes the formation of moisture condensate in the system, as well as providing slightly more energy to the air compressed.

1-5. ENGINE ASSEMBLY. The prime mover is a 6 cylinder, 4 cycle, diesel engine. Refer to Part II for detailed engine data.

1-6. ELECTRICAL SYSTEM. This unit is equipped with a 12 volt electrical system with current being supplied by an alternator. Refer to Part II of this manual for alternator details and figure 2-3 for wiring diagram of the units electrical system.

1-7. SPEED CONTROL. Speed control is accomplished by adjustable linkage between the compressor intake control and the engine fuel injection pump. See Part II of this manual for engine data. This mechanism is used to select the proper engine speed and compressor intake opening to suit air demand within the capacity of the compressor. Refer to figure 5-1, sheet 4 of 4, for air tubing diagram.

1-8. INSTRUMENT PANEL. A master control and indicator panel contains engine controls and indicating instruments for the compressor and engine assemblies.

1-9. BLOWDOWN VALVE ASSEMBLY. The blowdown valve assembly is installed on the oil separator assembly (figure 5-1, sheet 4 of 4). This valve automatically relieves air pressure from the system after shutdown.

1-10. MINIMUM PRESSURE VALVE ASSEMBLY. This valve maintains approximately 70 pounds per square inch of air pressure in the system. This pressure aids in preventing a carryout of oil with the discharge air; also, it maintains sufficient pressure in the system to provide oil circulation.

1-11. INTAKE CONTROL ASSEMBLY. The intake control assembly is regulated by the discharge air pressure demand. It also closes off the intake when the unit is shut down. This prevents oil and air mixture from the compressor being vented to the atmosphere.

1-12. THERMOSWITCH ASSEMBLY. This is an automatic control that is located in the rotary compressor discharge. If the discharge of the rotary compressor assembly should exceed 220 degrees Fahrenheit, this switch will cause the unit to shut down. No action is required by the operator to open the thermoswitch. However, no restart should be attempted until the reason for the high temperature of the oil in the rotary compressor assembly is determined. Do not attempt a restart until the oil has cooled.

1-13. OIL FILTER. Two oil filters are provided, one each for compressor and engine. Each filters the lubricating oil before it enters the unit. The compressor oil filter is incorporated after the thermal bypass valve described in paragraph 1-4.

SECTION 2

OPERATING INSTRUCTIONS

2-1. PREPARATION FOR USE.

This equipment should be located so that it is nearly level on the operating site. The angle of out-of-level operation should not exceed 15 degrees either lengthwise or sidewise. Check engine and compressor oil levels carefully before operating out-of-level. They should be full, but not overfilled. The following procedures should be observed before starting the unit.

a. INSPECTION OF NEW EQUIPMENT.

(1) Check all of the equipment against the packing list. Examine identification plates for positive identification of the equipment. Record the unit and compressor serial numbers page 5-1 for future reference. Include unit model, unit serial number, and compressor model number when ordering spare parts.

(2) Inspect for and tighten any loose nuts or bolts.

(3) Inspect the controls, instruments, and gauges for damage or loose mountings.

(4) If supplied, inspect the air service hoses for kinks and loose connections.

(5) Inspect the electrical wiring for cuts, fraying and loose connections.

(6) Inspect all tubing and piping for loose connections or damage.

(7) Check all accessories for damage and loose mountings.

b. SERVICING NEW EQUIPMENT.

(1) Lubricate the air compressor as indicated by the lubrication chart, figure 2-1. Fill the fuel tank with the recommended grade of fuel and fill the radiator with coolant. (See Engine Manual in Part II.)

(2) Perform the operator's daily before-operation services described in Section 3 of this manual.

(3) Perform the preventive maintenance services as specified in Section 3 of this manual.

2-2. LUBRICATION.

Refer to figure 2-1, "Lubrication Chart", for the manufacturer's recommended lubricants and servicing intervals.

a. ENGINE. Refer to Engine Manual in Part II for initial lubrication procedure.

b. COMPRESSOR. Oil capacity of the compressor is 63 quarts.

(1) Check oil level in the receiver-oil separator by removing the filler plug and visually check level. If oil is low, fill to overflow with oil specified in figure 2-1. Recheck oil level after operating fifteen minutes (with unit stopped).

(2) To drain oil, run unit to heat oil to approximately 150° F. Remove filler plug. Open receiver-separator drain valve. Remove compressor oil filter drain plug (figure 5-8, 1). Disconnect hose assemblies (figure 5-1, 45, 90) to drain trapped oil from oil cooler and thermal bypass valve.

NOTE

BE SURE TO CLOSE DRAIN VALVE BEFORE REFILLING.

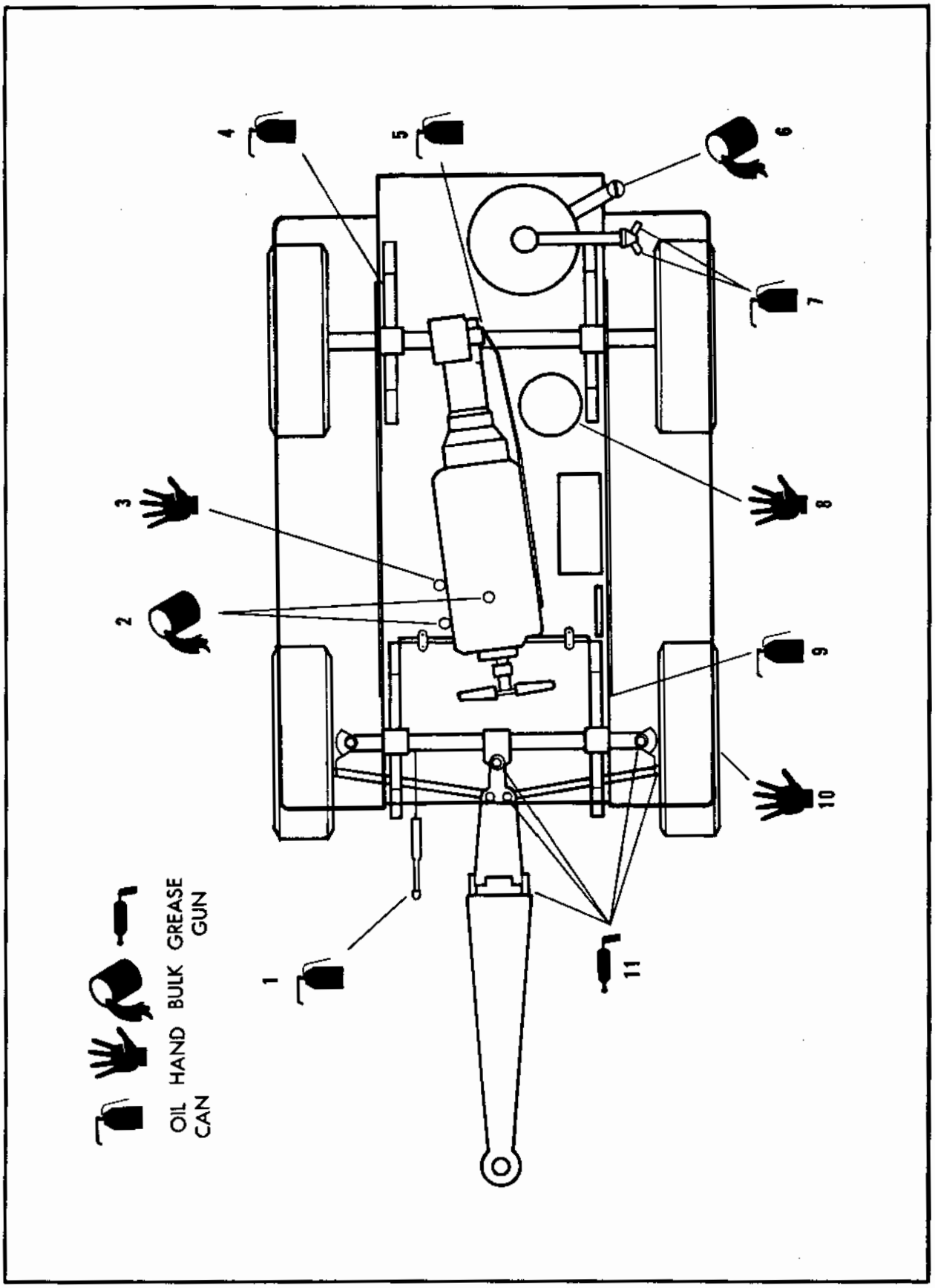


Figure 2-1. Lubrication Chart (Sheet 1 of 2)

REF NO.	ITEM	INSTRUCTION	OPERATING PERIOD	LUBRICANT
1	Hand brake lever and linkage	Oil can (sparringly)	500 hrs	*OE/HEO 30-Oil MIL-L-2104
2	Engine dipstick	Check oil level	10 hrs	
2	Engine crankcase	Drain and change oil (refer to Engine Manual, Part II)	100 hrs	*OE/HDO 30-Oil MIL-L-2104
3	Engine oil filter	Change element (refer to Engine Manual Part II)	200 hrs	
4	Springs (4 places)	Oil can or brush (sparingly)	1000 hrs	OE/HDO 30-Oil MIL-L-2104
5	Control linkage	Oil can (sparingly)	100 hrs	OE/HDO 30-Oil MIL-L-2104
6	Oil Separator	Check oil level	10 hrs	
6	Separator element	Replace	4000 hrs	
6	Separator tank	Drain and change oil	500 hrs	*EO/HDO 30-Oil MIL-L-2104
7	Service Valves (5 places)	Oil can (sparingly)	100 hrs	DE/HDO 30-Oil MIL-L-2104
8	Compressor oil filter	Change element	100 hrs	
9	Door hinges	Oil can (sparingly)	500 hrs	OE/HDO 30-Oil MIL-L-2104
10	Wheel Bearings	Remove wheels, clean hubs, spindles, and repack	1000 hrs	GAA-Grease MIL-G-10924
11	Tie rod pins and steering knuckles (8 places)	Grease gun	200 hrs	GAA-Grease MIL-G-10924
11	Steering tongue hinge and pivot (4 places)	Grease gun	200 hrs	GAA-Grease MIL-G-10924

*OE/HDO 30 used in temperatures + 130 to + 32°F (54° to 0°C)
OE/HDO 10 used in temperatures +32 to - 10°F (0° to -23°C)
OES MIL-L-10295 for temperatures -10° to -25°F (-23° to - 32°C)

Figure 2-1. Lubrication Chart (Sheet 2 of 2)

c. AIR CLEANER. The air cleaner is of the dry, replaceable element type. It is important to service the air cleaner regularly. Excessive wear and poor performance will result if the air cleaner is clogged or allows contamination to enter the engine or compressor. Dirt entering the compressor will eventually settle on the separator element and will produce a high pressure drop across the separator. Refer to maintenance instructions in Section 3 for service procedures and intervals for cleaning the air cleaner.

2-3. OPERATING CONTROLS AND INDICATING INSTRUMENTS. (Refer to figure 2-2).

a. RECEIVER AIR PRESSURE GAUGE. Indicates unit air pressure in PSI.

b. ENGINE WATER TEMPERATURE GAUGE. Indicates the water temperature in the engine assembly in degrees Fahrenheit.

c. FUEL GAUGE. Indicates the diesel fuel level in the fuel tanks.

d. IGNITION SWITCH. Energizes and de-energizes a normally closed fuel solenoid valve on fuel injection pump.

e. QUICK START. In cold weather, below +40°F, control is used to inject cold weather starting aid fuel into engine air intake.

CAUTION

Do not inject quick start fuel into engine without engine START switch being depressed simultaneously, or severe damage to engine may result.

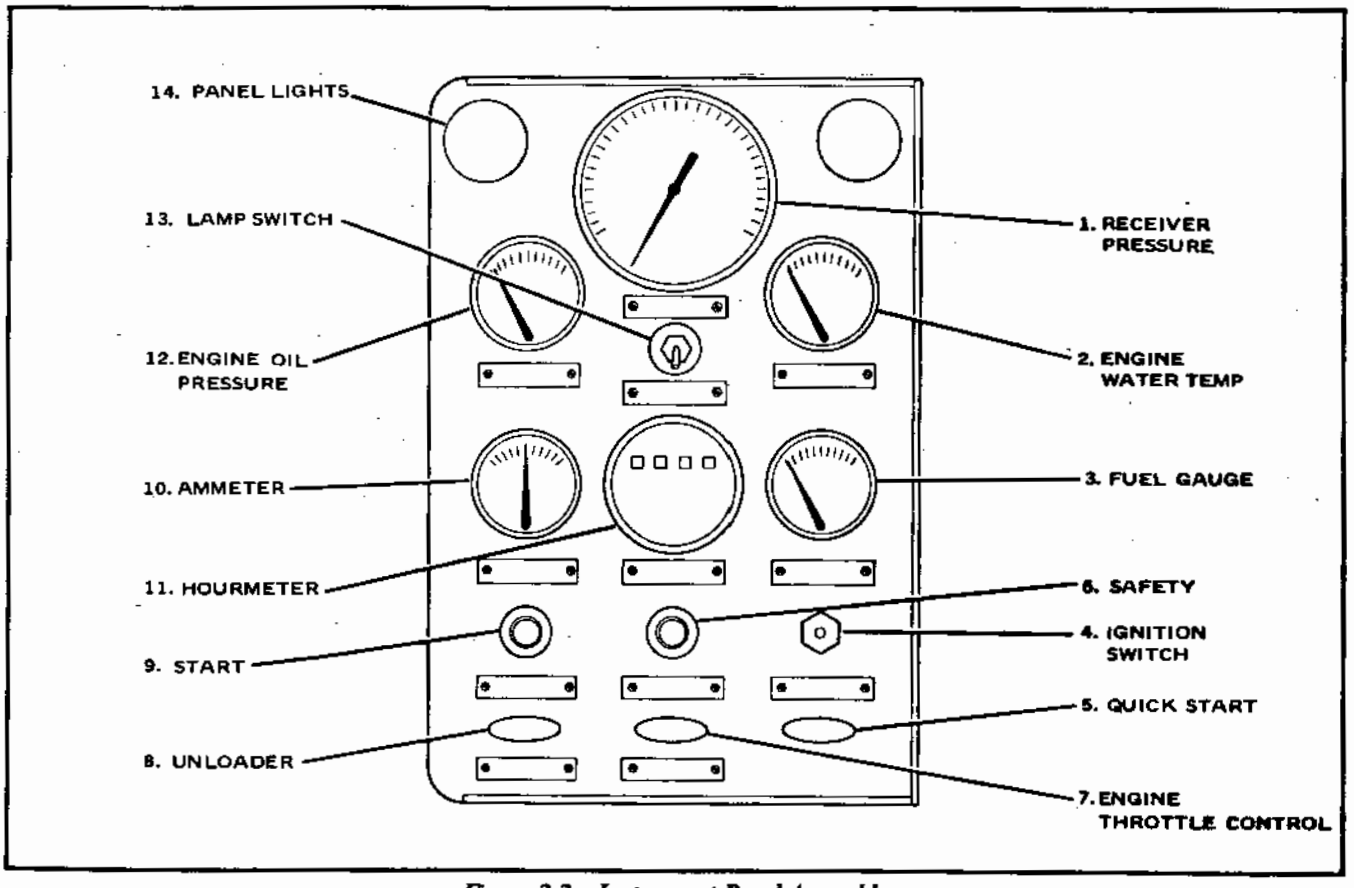


Figure 2-2. Instrument Panel Assembly

f. SAFETY. This pushbutton switch is used to bypass the low oil pressure safety switch when performing starting proceedures. After engine has started and engine operating oil pressure is obtained, switch is released.

NOTE

No attempt should be made to restart the unit after an oil pressure shut down has been caused by the safety switch until the cause of the low oil pressure has been determined.

g. ENGINE THROTTLE CONTROL. Pulling full out and locking control sets engine throttle at idle speed. Unlock and pushing control full in sets engine throttle at operating speed.

h. UNLOADER. Pulling out this control shuts off the air intake of the compressor. This allows a no-load engine condition and compressor warmup in cool weather. Lock control in desired position by turning handle clockwise.

i. START. Depressing this pushbutton switch energizes the engine starting circuit initiating cranking.

j. AMMETER. This gauge indicates the charge or discharge rate of the battery. Refer to figure 2-3 for wiring diagram.

k. HOURMETER. This indicator provides operator with units total sum of operating time. Inspection and servicing periods may be determined and scheduled from the reading of the meter.

l. ENGINE OIL PRESSURE. Gauge indicates the oil pressure in the engine oil gallery. A pressure sensing switch connected in the circuit will automatically shut down engine when oil pressure drops below 15 psi. The opening of this circuit causes the fuel pump solenoid valve to de-energize, which closes a valve cutting off diesel fuel flow to pump.

m. LAMP SWITCH. An on-off switch that controls the panel lights.

n. PANEL LIGHTS. Lamps that illuminate the control panel.

2-4. STARTING PROCEDURE.

a. Open all service and instrument panel doors.

b. Perform inspection procedures per figure 3-1 prior to operating unit. (Also, refer to Engine Manual, Part II.)

c. Open one of the outlet service valves.

d. Unlock, pull out and lock UNLOADER control (8, figure 2-2).

e. Unlock, pull out and lock ENGINE THROTTLE CONTROL (7, figure 2-2).

f. In cool weather, below 40°F (4.4°C), unscrew cap of cold weather starting aid and place ether cylinder in holder. Hand tighten cylinder. Make certain actuating lever is free to operate. Charge shot valve by pulling QUICK START control (5) out for 3 seconds. Do not press QUICK START control in until after START (9) and SAFETY (6) switchs are depressed and cranking has begun. While cranking engine press QUICK START control (5) in.

CAUTION

If engine fails to start within 20 seconds, release START switch and allow starter motor to cool for 1 to 2 minutes prior to attempting another start. Prolonged periods of cranking may overheat and damage starter motor.

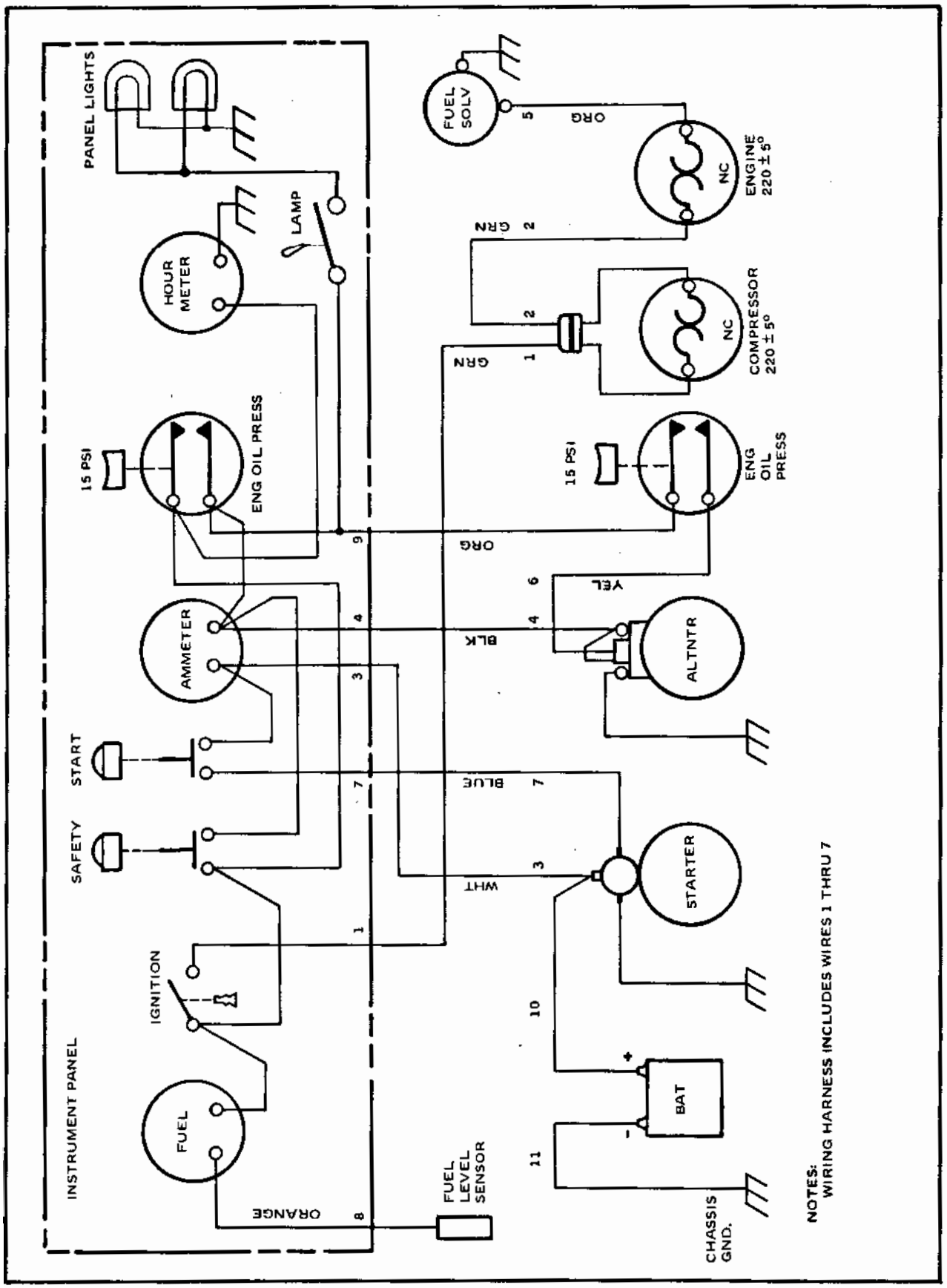


Figure 2-3. Wiring Diagram

CAUTION

If engine oil pressure fails to register within three to five seconds after engine starts release SAFETY switch and rectify cause of no engine oil pressure. Without sufficient oil pressure to lubricate engine will cause serious damage to engine.

g. Pull IGNITION SWITCH (4, figure 2-2) out.

h. Press and hold SAFETY switch (6, figure 2-2).

i. Press and hold START switch (9, figure 2-2). Release START switch when engine is running. (Actuate cold weather starting aid handle as necessary).

j. Continue holding SAFETY switch until ENGINE OIL PRESSURE gauge (12, figure 2-2) indicates above 15 psi and release.

k. Allow engine to run at idle until ENGINE WATER TEMP. gauge (2, figure 2-2) indicates approximately 140°F.

CAUTION

In hot weather and/or in the case of a malfunctioning unit, when ENGINE WATER TEMP. gauge exceeds 220°F (± 5°) (104°C) engine should automatically shut down. If not, discontinue operation and cool engine or serious damage to engine may result. (Refer to Engine Manual Part II.)

l. Push ENGINE THROTTLE CONTROL in and lock.

m. Push UNLOADER control in and lock.

n. Close all air service outlet valves.

o. Check the following gauges for normal operating indications:

RECEIVER PRESSURE (1, figure 2-2)..... 90 to 100 psig

ENGINE WATER TEMP. ..... 160° to 185° F

ENGINE OIL PRESSURE..... 40 to 60 psig

NOTE

Compressor is now ready for normal operation. Unit will now automatically supply air pressure, upon demand, up to 365 cfm at approximately 100 psig.

CAUTION

This unit is protected by safety devices to automatically shut down operation in the event of low engine oil pressure (less than 15 psig), high engine coolant temperature (above 220°F ± 5°) and high compressor air temperature (above 220°F ± 5°). Do not attempt to restart in the event of automatic shutdown until cause has been rectified or serious damage to unit may result.

CAUTION

Do not allow unit to operate unattended for prolonged periods. Periodically observing gauges for normal operating indications and listening for abnormal noises may prevent serious damage to the unit.

p. Connect pneumatic equipment to air service outlets as required and open related outlet valve.

2-5. SHUTDOWN PROCEDURE.

a. Close all air outlet service valves.

b. Unlock, pull out and lock UNLOADER control (8, figure 2-2).

c. Allow unit to run unloaded for five minutes.

CAUTION

If compressor is shut down in loaded mode, do not attempt to re-start for five minutes or compressor damage may result.

d. Press IGNITION SWITCH (4, figure 2-2) in.

e. Perform the after operation procedures in table 3-1.

f. Close all housing access doors.

2-6. OPERATION IN EXTREME COLD (Below 40° Fahrenheit.)

a. Lubricate the air compressor in accordance with the lubrication table, figure 2-1. Lubricate the engine per instructions in the Engine Manual, Part II.

CAUTION

Many oils will jell at extremely cold temperatures. It is essential that oil(s) used are fluid at the temperature being experienced. Check your oil supplier for pour point data if in doubt. A quick check is to momentarily remove the drain plug of the engine.

b. Clean off all ice and snow.

c. For temperatures below 40°F. use the cold weather starting equipment supplies with the unit. For procedures, refer to paragraph 2-4.

d. Keep the unit doors closed during operation in extreme cold temperatures. Open the door on the instrument panel side of the machine from time to time to check machine operation.

2-7. OPERATION IN EXTREME HEAT.

a. Locate the air compressor in a well ventilated area and keep all doors open.

b. Keep the radiator assembly clean and full of coolant.

c. Lubricate the air compressor in accordance with lubrication table.

2-8. OPERATION IN DUSTY OR SANDY AREAS.

a. Locate the air compressor in a sheltered area, if possible.

b. Keep the engine unit as clean as possible.

c. Lubricate the unit in accordance with the lubrication table. Lubricate more often than under normal conditions.

d. Service the air cleaner and oil filters every five hours of operation.

e. Wet down the surrounding area to help keep down dust.

2-9. OPERATION IN SALT WATER AND HIGH HUMIDITY AREAS.

a. Wipe all exposed area frequently.

b. Cover the air compressor when not in operation.

c. Keep all electrical components (leads, starter, alternator, battery, etc.) clean and dry.

d. Service the air cleaner and oil filters frequently.

2-10. OPERATION AT HIGH ALTITUDE.

This unit will operate satisfactorily at high altitudes. A slight loss of efficiency may be noticed at altitudes greater than 5000 feet. This is a normal condition that cannot be prevented.

2-11. OPERATING PRECAUTIONS.

a. Do not remove, lubricate or adjust any parts while the unit is operating.

b. Do not play with compressed air. Pressurized air can cause serious injuries to personnel.

c. Watch all instruments for any indication that the unit is malfunctioning.

d. Provide sufficient ventilation. Exhaust gases contain carbon monoxide which is a colorless, odorless and deadly gas.

e. Do not attempt any disassembly or repair of the unit air end with air pressure in system. Allow minimum of three minutes after shutdown for pressure to bleed off. In an emergency, pull out on lever of safety valve on separator assembly to relieve pressure in separator assembly and compressor.

f. Do no fill fuel tank with engine running.

g. Do not touch the muffler or engine with bare hands while the equipment is running. Shut down the unit and allow it to cool off before making repairs.

h. Keep compressor and engine oil and air filters clean to protect the unit against rapid wear and low output.

i. Do not attempt to start the engine until the unit has been checked for lubricating oil, water and fuel supply. (Also see Engine Manual.)

WARNING

If repairs or adjustments must be made while the unit is operating, use extreme care to avoid severe burns or serious injuries.

SECTION 3

MAINTENANCE INSTRUCTIONS

3-1. PREVENTIVE MAINTENANCE.

To ensure that the equipment is ready for operation at all times, it must be inspected systematically by the operator before operation, during operation, and after operation (see figure 3-1); biweekly, quarterly and every 1000 hours of operation (see figure 3-2). The biweekly interval will be equivalent to a maximum of 100 hours of use. The quarterly interval will be equivalent to 3 months or a maximum of 500 hours of use, whichever occurs first. In this manner, defects will be discovered and corrected before they result in serious damage or failure.

The necessary preventive maintenance services will be performed before operation. Defects discovered during operation of the unit will be noted for correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed during operation which would damage the equipment if operation were continued. After-operation services will be performed at intervals based on the normal operation of the equipment. Reduce interval to compensate for abnormal conditions.

3-2. ENGINE MAINTENANCE. Refer to Engine Manual in Part II for all engine maintenance procedures.

3-3. CORRECTIVE MAINTENANCE. Major maintenance will normally not be required, provided that normal maintenance is observed. It is essential that oil be changed regularly and that oil filters and air cleaner are inspected and serviced regularly. Cleanliness of these components is extremely important.

WARNING

Do not attempt any disassembly or repair of the unit until all air pressure has been relieved. Blowdown valve will relieve pressure in about 10 seconds after shutdown.

3-4. DISASSEMBLY OF AIR COMPRESSOR UNIT. (Fig. 5-1). Disassembly of the air compressor unit or any of the major components is accomplished by following the order of the key index numbers assigned to figures in section five of this manual. Many of the components can be removed and replaced without disturbing the rest of the assembly. Disassemble to the extent required to accomplish repair.

3-5. CLEANING.

a. Wash all metal parts with solvent, Federal Specification P-D-680, or a commercial equivalent prior to inspection.

b. Strip off all gaskets and clean surface where sealing compound was used.

c. If varnish exists, carefully scrape off or soak components in commercial solvents available for this purpose.

CAUTION

Be sure to observe manufacturer's instructions and precautions.

d. Clean all foreign matter from internal surfaces, rotor slots, and all passages.

e. Wash air cleaner (Fig. 5-2) thoroughly and air dry. Wash bowl, wipe dry.

BEFORE	DURING	AFTER	PROCEDURE
OPERATION			
X		X	VISUAL INSPECTION – Make a general inspection of the entire unit for obvious deficiencies, such as oil leaks, loose or missing bolts, nuts, screws, loose connections, broken wires, and any damage that may have occurred since the equipment was last operated. Inspect for a bent or cracked housing or frame. Correct any deficiencies.
X			TAMPERING – Inspect the air compressor for evidence of tampering or damage. Do not operate the unit until defects are corrected.
	X		LEAKS – Inspect all air lines and fittings for air leaks. Correct all deficiencies.
X			LUBRICATION – Lubricate the air compressor in accordance with the lubrication table, figure 2-1.
X			AIR CLEANER – The dry filter of the air cleaner shall be removed and cleaned every eight hours of operation. The element may be washed in a solution of lukewarm water and detergent. Dry with compressed air. In conditions of extreme dust, dirt, or blowing sand, the element should be cleaned every four hours of operation.
X		X	COOLING SYSTEM – Inspect the condition of the fins on the radiator assembly. See that they are clean and free from dust and dirt. Backwash with water or blow air through radiator and cooler fins to remove dust.
X	X	X	INSTRUMENTS – Inspect the instruments for broken glass, improper operation, and insecure mounting. Replace any defective instruments. When the compressor is operating, the gauges should give satisfactory readings.
X	X	X	AIR HOSES – Inspect the air hoses for breaks, wear or leaks. Replace defective air hose.
		X	CLEAN EQUIPMENT – See that the equipment is clean and free of grease, oil and dirt on all surfaces. Clean with nonflammable cleaning solvent and wipe dry.
		X	PROTECTION – Protect the unit by placing and covering it in a sheltered place to protect it from tampering and weather.
X		X	BATTERY – Check level of electrolyte in the batteries. Use distilled water to maintain proper level.

Figure 3-1. Operator's Preventive Maintenance Chart

100 HOURS (2 Weeks)	500 HOURS (3 Months)	1000 HOURS (6 Months)	PROCEDURE
X			AIR CLEANER – Inspect the air cleaner for loose connections and mountings.
X			Tighten any loose connections or mounting hardware. Replace a clogged or defective air cleaner.
X			TIRES – Check air pressure; maintain at 45 psi.
X			REGULATORS, CHECK VALVES, SAFETY VALVES, GAUGES. Inspect the condition of all gauges, valves and safety valves. Start the air compressor and see that all gauges read correctly and that the glass is not cracked. Inspect the condition of all safety valves to see they are working properly.
X			Tighten any loose mounting screws and connections. Replace any defective or damaged gauges, check valves, and safety valves.
X			Check settings of safety valves and pressure gauges.
X			FAN AND SHROUDS – Inspect the engine fan assembly for insecure mounting and improper operation. Check fan and alternator belts for proper tension.
	X		LUBRICATION – Drain oil in rotary compressor and engine and refill with clean oil of type and grade specified on lubrication chart.
X			Remove compressor oil filter. Clean or replace.
	X		APPEARANCE – Inspect the general appearance of the air compressor, paying particular attention to dirt, illegible markings of identification, and poor condition of the paint surfaces.
	X		HOOD, SIDE PANELS – Inspect the doors, side panels, and cover panels for loose or missing nuts and screws and damaged hinges, latches, and panels.
	X		CONTROLS, WIRING – Inspect all controls and instruments on the control panel for damaged or improper operation. Inspect all controls and instruments for loose mountings and connections and damaged wiring. Clean the accumulated dust and dirt from the control panel. Tighten any loose connections and replace damaged controls, instruments, or wiring.
X			Perform periodic service on engine, refer to Engine Manual Section II.
	X		Check battery voltage and recharge if voltage is low. If condition persists, check ignition system per Engine Manual.
		X	WHEEL BEARINGS – Remove, clean out old grease and repack per lubrication chart, figure 2-1.

Figure 3-2. Periodic Inspection Chart

f. Check oil filter element (Fig. 5-8). Clean body assembly thoroughly.

NOTE

Do not attempt to wash oil separator fiber glass element (Fig. 5-5). Replace if clogged.

g. Blow out any dust or dirt accumulation from between radiator-cooler tubes.

3-6. AIR COMPRESSOR INSPECTION (Fig. 3-3). Periodic inspection of the compressor assembly rotor blades (4) every 4000 hours of operation will ensure that unit maintains a high degree of efficient performance without the need for a major overhaul.

a. Remove housing panel (19, Fig. 5-1) to gain access to non-drive end of compressor.

b. Remove end cover (3, Fig. 3-3) with intake control and bearing cover attached.

c. Remove blades (4, Fig. 3-3) and inspect for evidence of excessive wear. See figure 3-4. Blades are excessively worn when 25 percent of covering is removed exposing shiney metal. Blades worn on one side only may be turned around and reinstalled. Replace blades when 1/16-inch in height is lost due to wear. Replace blades when scored, chipped or both sides are worn.

d. Visually inspect stator bore for evidence of excessive wear, scores or chips. If bore indicates excessive wear remove and replace compressor or overhaul as required.

NOTE

Do not disassemble rotor and drive end cover assembly (89, 90, 91, 92, 93, figure 5-7) and inner race of bearing (58) unless it is determined the need to remove or replace a part other than rotor blades. To disassemble, rotor and drive end cover assembly, refer to paragraph 3-7.

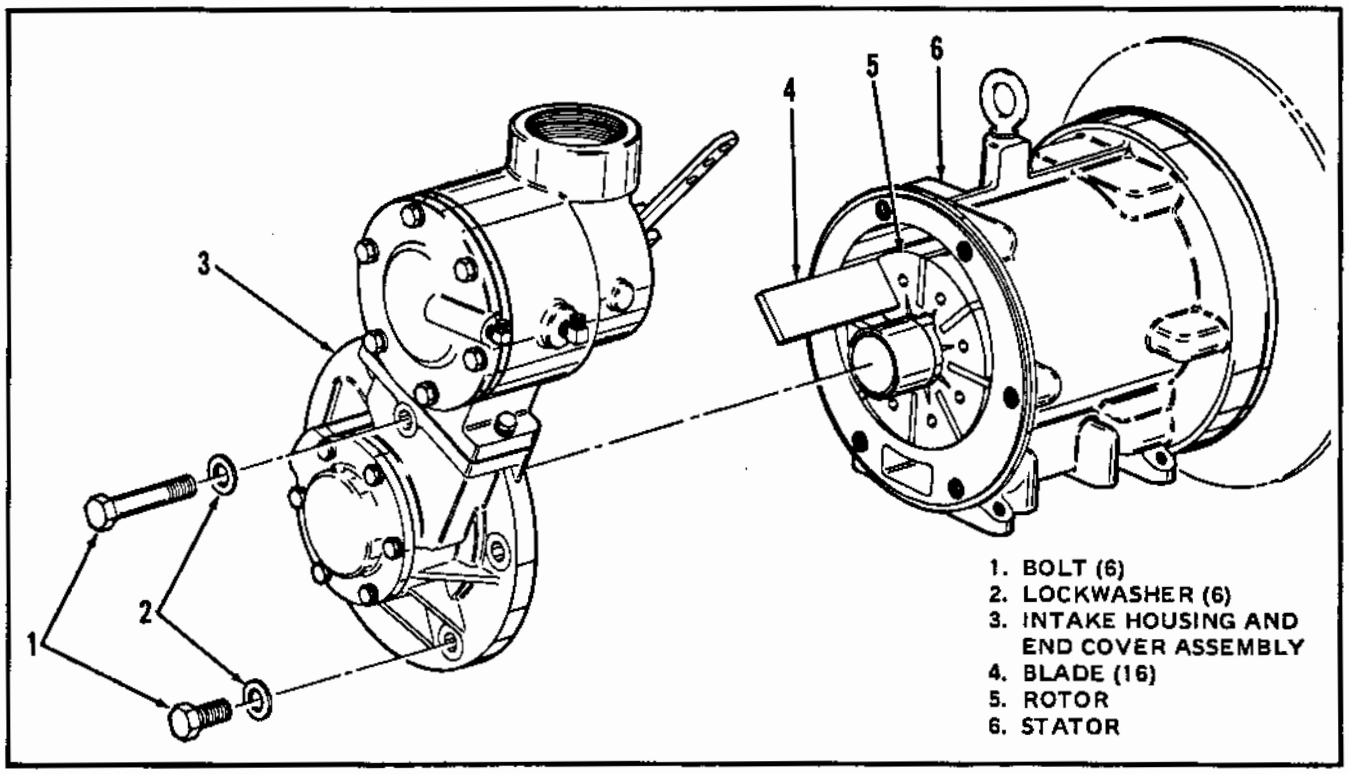


Figure 3-3. Compressor Inspection

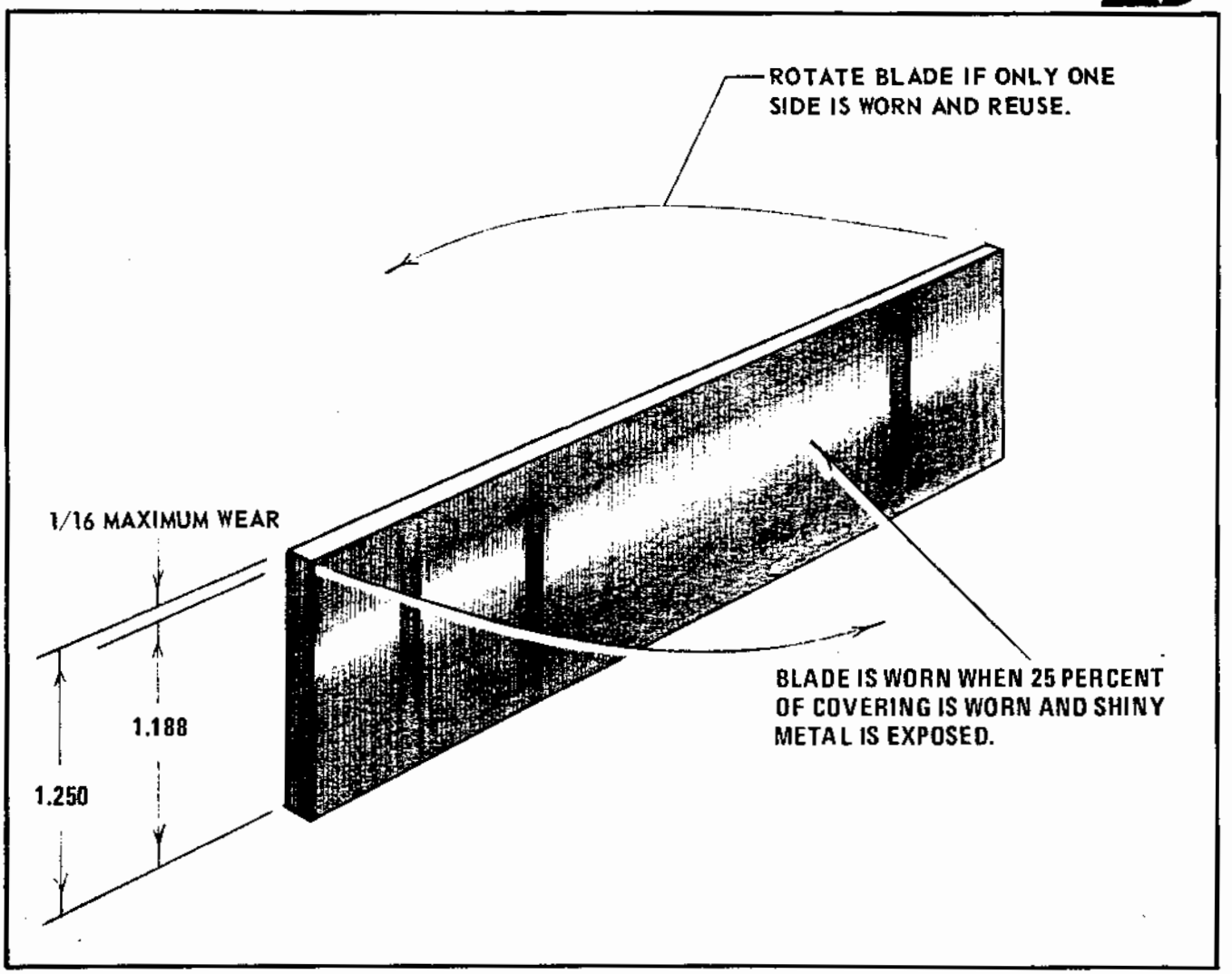


Figure 3-4. Rotor Blade Inspection

e. Remove and replace "O" ring (67, figure 5-7). Reassemble compressor the reverse order of disassembly. Coat blades with clean lubricating oil and they must slide freely in slots.

f. Check compressor for normal operation and after operation is resumed visually inspect end cover for proper seal.

3-7. AIR COMPRESSOR DISASSEMBLY (Fig. 5-7). Disconnect all tubing or hose assemblies, the intake control cable, cable clip and throttle linkage.

NOTE

For blade and rotor inspection, it is only necessary to remove non-drive end cover (3, figure 3-3) with intake control and bearing cover attached. Refer to paragraph 3-6.

NOTE

Do not disassemble rotor and drive end cover assembly (89, 90, 91, 92, 93) and inner race of bearing (58) unless it is determined that a part must be replaced.

NOTE

Do not remove intake control body (50) from nondrive end cover for rotor or stator replacement or overhaul. When compressor is removed for replacement or for any reason is determined that intake control body (50) must be removed, component parts (11 thru 23) must be removed to gain access to retaining bolt (51) inside of intake control body.

a. Disassemble rotor and drive end cover assembly, refer to figure 3-5.

b. Remove nondrive end bearing inner race using suitable gear puller. If inner race fails to move, apply even heat from torch to inner race. Apply gear puller and remove race.

NOTE

Replace and discard entire bearing of any race that is heated.

c. Remove minor nicks or scratches from machined surfaces of rotor (5, Fig. 3-3) and stator (6, Fig. 3-3) with a fine honing stone or emery cloth. If excessive scoring or chipping is evident replace damaged parts.

3-8. AIR COMPRESSOR REASSEMBLY. The reverse of disassemble, refer to figure 3-5 and 5-7).

a. Coat o-rings, blades and internal machined parts with clean lubricating oil.

WARNING

Perform the following step with caution and using the proper protection or severe burns could be obtained.

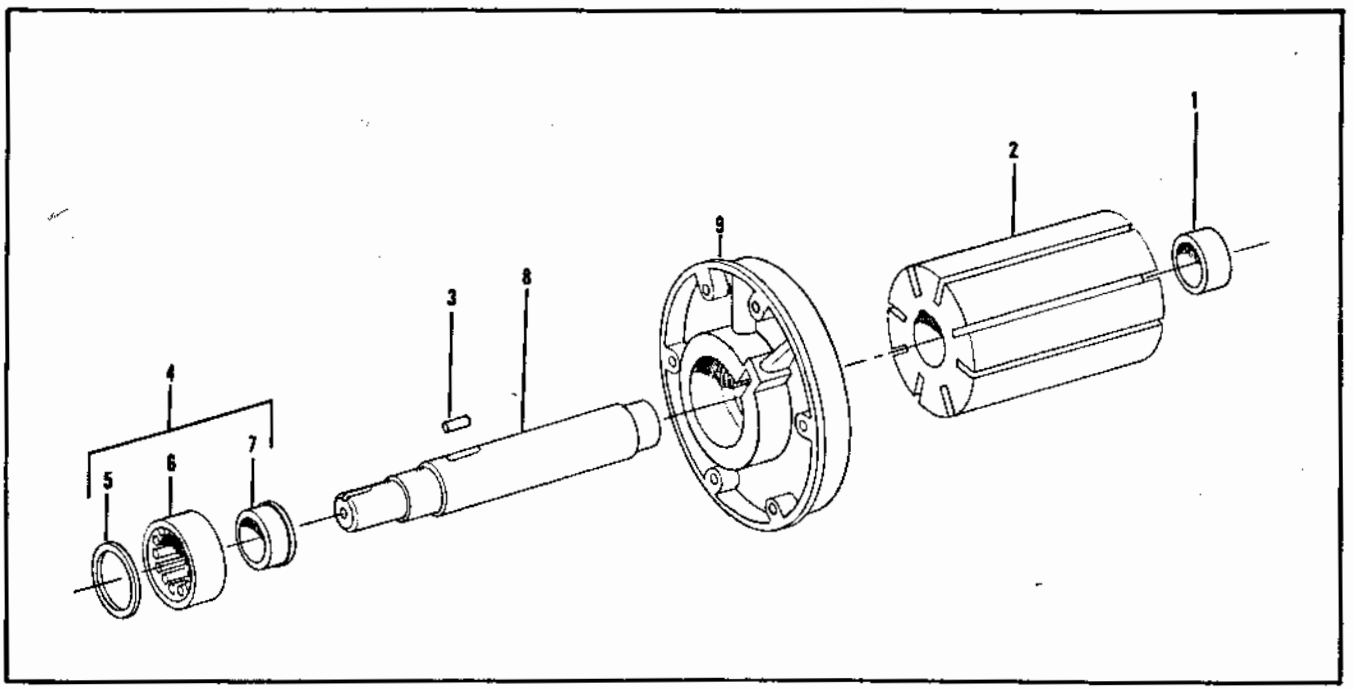


Figure 3-5. Rotor Assembly

b. Heat bearing inner races (1, 7, Figure 3-5) evenly in cooking oil to a maximum of 350°F.

c. Install inner race (7) on shaft to shoulder.

d. Assemble outer race (6) and spacer (5) on bearing inner race.

e. Press bearing and shaft into cover (9).

f. Place key (3) into shaft and slide rotor on to shaft, make sure relief slots on rotor are leading in the direction of rotation (Fig. 3-6).

g. Install heated inner race (1) on to shaft to shoulder.

h. Complete assembly, referring to Figures 5-7 and 3-5. Use grease to hold o-rings in place during assembly.

CAUTION

Improper installation of gripsprings will result in slippage between the shaft and coupling, causing excessive wear.

i. Install gripsprings, refer to Figure 3-7, as follows:

(1) Install smaller gripspring (3) on shaft (2) with beveled edge out.

(2) Position larger gripspring (4) over gripspring (3) so that the beveled edges meet.

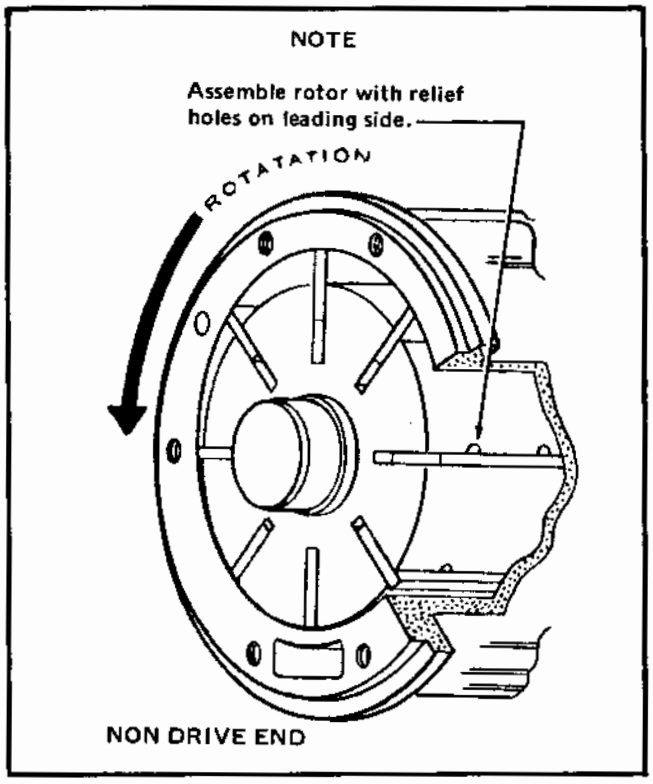


Figure 3-6. Compressor Rotor Installation

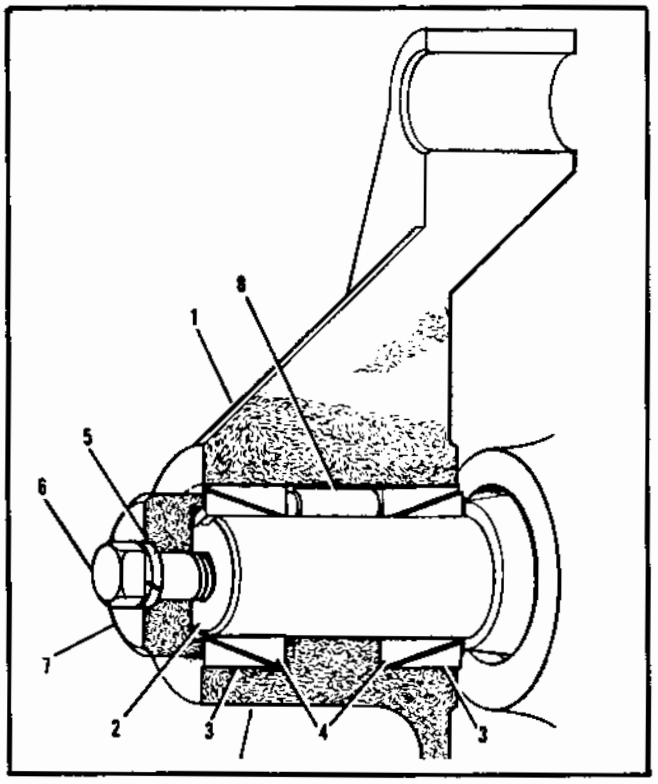


Figure 3-7. Gripspring Installation

(3) Install key (8) on shaft. Slide coupling (1) on shaft and over key and gripsprings until it seats.

(4) Position second larger gripspring (4) in coupling with beveled edge facing outward.

(5) Install second smaller gripspring (3) on shaft. Be sure beveled edges of gripsprings (3 and 4) match.

(6) Position gripspring retainer (7) and secure with washer (5) and bolt (6).

j. Service unit per paragraphs 2-1 and 2-2 before restarting compressor.

k. Start compressor and check for normal operation. Refer to operating procedure.

l. Check visually all fillings, joints, etc., for leakage. Use a soapy water solution to check for air leaks.

m. Unit is now ready for normal operation.

3-9. SPEED CONTROL LINKAGE ADJUSTMENT. After replacement of engine, compressor assembly, fuel injection pump linkage, or air intake control, readjustment of engine RPM may be required as follows:

a. Using a strob light tachometer, mark damper on crankshaft of engine, set strob for 1050 rpm or connect manual tachometer to tachometer drive pinion adaptor on engine flywheel housing.

NOTE

In the following step make adjustment in unload mode.

b. Start engine and adjust linkage and idle control adjusting screw for 1050 rpm. Refer to Start Procedure paragraph 2-4.

c. Push ENGINE THROTTLE CONTROL in and lock.

d. Push UNLOADER control in and lock.

e. Close all air service outlet valves.

f. Adjust linkage and high idle adjusting screw for 100 PSI on RECEIVER PRESSURE gauge.

g. Open a air service outlet valve. RECEIVER PRESSURE gauge will indicate a reduction in pressure, at approximately 70 psi engine rpm should automatically increase. Close service outlet valves. RECEIVER PRESSURE gauge must return to 115 psi ± 5. Compressor must then switch into the unload mode.

h. Unit is now ready for normal operation.

SECTION 4

TROUBLESHOOTING

4-21. TROUBLESHOOTING. The following chart gives common troubles, their probable causes and suggested remedies. For engine troubles, refer to Part II.

TROUBLE	PROBABLE CAUSE	REMEDY
COMPRESSOR OVERHEATS	Dirty oil cooler	Clean the cooling fins.
	Low oil level	Fill with oil as specified in the lubrication chart.
	Sticking thermal bypass valve	Dismantle and clean.
	Oxidized oil	Dismantle compressor and seaprator. Clean using Oakite Composition No.111, Oakite Products, Inc. Reassemble. Replace oil separator element. Fill with oil, specified on lubrication chart.
	Blade damaged or stuck in slots	Clean or replace blades. If varnish deposits are excessive, clean compressor as specified above.
NOISY COMPRESSOR OPERATION	Lack of lubricant	Fill to oil levels specified in the lubrication chart. If it is determined that damage has occurred due to lack of lubrication, follow procedure below.
	Loose, worn or damaged internal or external parts	Tighten all accessible external attaching parts and components. If it is determined that internal parts are the cause of the trouble, remove compressor unit for overhaul.
COMPRESSOR NOT COMPRESSING TO FULL CAPACITY OR PRESSURE	Leak in piping	Shut down pressure; check piping for leaks with soap and water solution. Repair or replace defective piping or fittings. If unloader is leaking, remove for overhaul.
	Air service valve open or leaking	Close the service valve or replace as necessary.
	Safety valve leaking	Replace safety valve.

NOTE

If the equipment fails to compress to full capacity or pressure, check all piping connections and components for leaks.

WARNING

Do not attempt any adjustment or repair to the unit until all air pressure has been relieved.

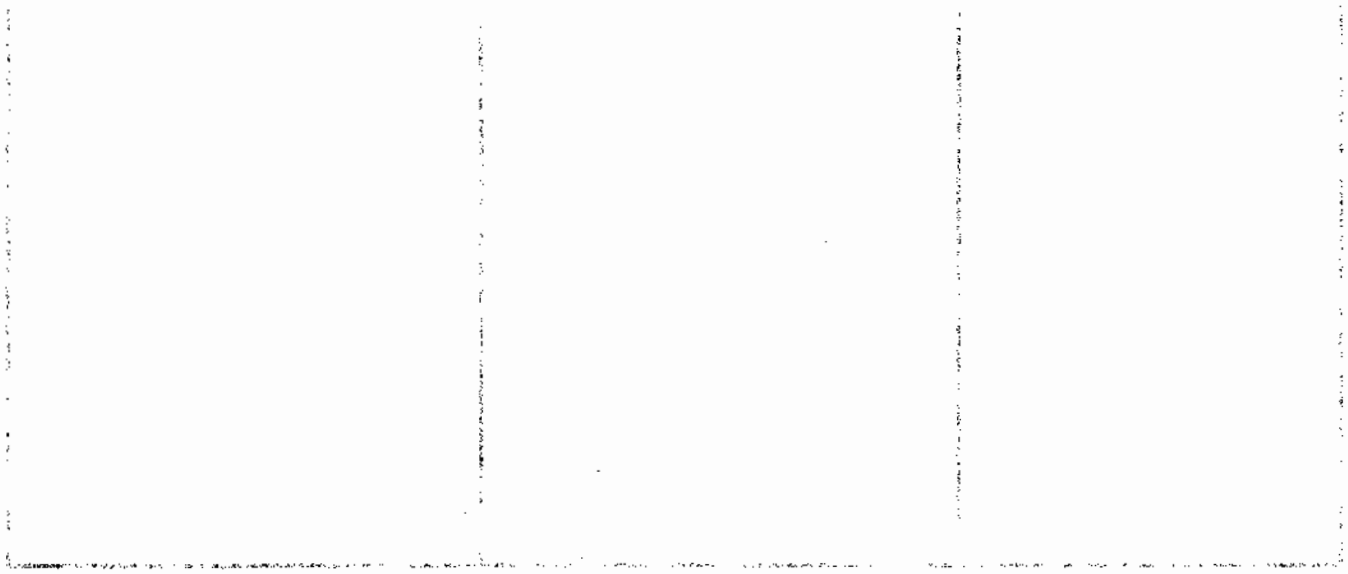
Figure 4-1. Troubleshooting Chart

TROUBLE	PROBABLE CAUSE	REMEDY
COMPRESSOR FAILS TO LOAD OR UNLOAD	Faulty unloader	Remove defective unit for overhaul.
	Plugged orifice	Clean.
	Dirt on control valve seat.	Clean valve seat.
	Ruptured diaphragm in control assembly	Replace diaphragm.
	Unloading pressure too high or too low	Readjust.
	Defective hose assemblies between compressor and minimum pressure valve housing.	Repair hose assemblies or replace.
	Moisture in control lines	Disconnect control lines, clean and replace.
	Damaged intake valve	Inspect for damaged seat or back-up washer.
ENGINE STALLS WHILE IDLING	Engine or compressor is not warm enough	Run at part load until equipment is warmed up.
	Idle speed set too low	Readjust.
	Backlash in linkage	Readjust linkage.
COMPRESSOR OVERHEATING	Dirty oil filter	Remove, clean with non-flammable solvent and install.
	Clogged oil cooler fins	Clean oil cooler fins of debris and dirt accumulated on fins.
COMPRESSOR OUTPUT LOW	Faulty air filter element	Remove, clean or replace.
	Intake valve malfunction	Remove intake control. Remove intake valve assembly. Clean or replace worn parts.
	Dirty fuel and/or filters	Remove, clean, or replace fuel filter. Drain water or foreign particles from fuel tank.
	Low power unit RPM	Refer to Engine Manual.
	Damaged blades	Drain oil. Remove non-drive end cover. Remove blades, inspect for burrs. Replace damaged blades.
ENGINE RETURNS TO IDLE, COMPRESSOR FAILS TO UNLOAD	Faulty intake control	Check for sticking intake valve, punctured diaphragm in intake control assembly, damaged or plugged lines to intake control.

Figure 4-1. Troubleshooting Chart (cont)

TROUBLE	PROBABLE CAUSE	REMEDY
EXCESSIVE OIL IN DISCHARGE LINE	Dirty oil return valves, or saturated oil separator element	Disassemble, clean, and assemble oil return valves. Should this remedy fail to correct the problem, install new oil separator element.
ENGINE STALLS OR SHUTS DOWN DURING OPERATION	Oil safety switch cutting out due to low engine oil pressure	Refer to Engine Manual in Part II.
	Engine overspeed switch shutting down the unit	Engine running at speed exceeding 2250 ± 50 rpm. Refer to Engine Manual in Part II.
	High compressor air temperature	Check compressor oil supply and cooling system. Check operation of thermal bypass valve.
	High engine coolant temperature.	Check coolant level in radiator and fill as necessary. Check radiator hoses and radiator for leaks and repair as necessary.

Figure 4-1. Troubleshooting Chart (cont)



OIL RECOMMENDATIONS FOR

DAVEY HYDROVANE AND PERMAVANE ROTARY COMPRESSORS

All Hydrovane and Permavane rotary compressors require the use of an oil that meets any of the following specifications, except in unusual conditions as noted on page 4.

MIL-L-2104B
Old A.P.I. Classification MS.DG.DM.
New A.P.I. Classification CC.

In ambient temperatures above 40°F., use an SAE 30 grade.

When ambient temperature at start-up is below 40°F., use a 10W 30 multigrade.

The oils listed in Table I are listed only as a convenience and are not intended to be the only oils acceptable.

No factory approval is required for oils not listed, provided they meet the above requirements.

Table I

OIL SUPPLIER	RECOMMENDED OIL
American Oil Co.	AMERICAN S-1 Motor Oil PERMALUBE Motor Oil
Atlantic Refining Co.	Atlantic Aviation Motor Oil Atlantic Ultramo Motor Oil S1
Chevron Oil Co.	Super RPM DELO Special Oil RPM DELO Multi-Service Oil RPM Special Motor Oil RPM Supreme Motor Oil
Cities Service Oil Co.	CITGO C-200 Series CITGO C-300 Series CITGO Premium Motor Oil
Continental Oil Co.	Conoco Super Motor Oil Conoco Tracon S-1 Oil
Getty Oil Co.	Veedol 10-30 Veedol Commercial HD S-1 Veedol HD+ Veedol HD B
Gulf Oil Corp.	Gulflube Motor Oil HD Gulflube Motor Oil X HD
Humble Oil & Refining Co.	Encofleet HDX Encolube HDX Essofleet HDX
Marathon Oil Co.	V.E.P. Heavy Duty Motor Oil All Season V.E.P. 10W-30 Motor Oil

Table I (Cont)

OIL SUPPLIER	RECOMMENDED OIL
Mobil Oil Corp.	A. MIL-L-2104A, Supplement 1 Mobil Delvac 1100 Series Mobiloil Special Mobiloil Series B. MIL-L-2104B Mobil Delvac 1200 Series Mobil Delvac 1200 (10W-30) Mobil Delvac 1100B Series Mobil Delvac Special (10W-30)
Phillips Petroleum Co.	Phillips 66 HDS Motor Oil Phillips 66 Heavy Duty Motor Oil Sixty-Six Motor Oil Sixty-Six Special Motor Oil Trop-Artic Motor Oil
Pure Oil Co.	Purol Heavy Duty Motor Oil Sultana-X Oil
Shell Oil Co.	Shell Rotella Shell X100
Sinclair Oil Corp.	HyVis HD Super Sinclair Extra Duty Motor Oil Sinclair Dino Dinolene Motor Oil Sinclair Super Tenol Sinclair Tenol
Standard Oil Co. Div. of American Oil Co.	AMERICAN S-1 Motor Oil PERMALUBE Motor Oil
Standard Oil Co. (Kentucky)	Super RPM DELO Special Oil RPM DELO Multi-Service Oil RPM Special Motor Oil RPM Supreme Motor Oil
Standard Oil Co. (Ohio)	Nitron Motor Oil
Standard Oil Co. of California, Western Operations, Inc.	Super RPM DELO Special Oil RPM DELO Multi-Service Oil RPM Special Motor Oil RPM Supreme Motor Oil
Sun Oil Co.	Sunfleet S-1 Sunoco Dynalube Sunoco Ocnus HD 2200 BF Sunoco Ocnus HD, Supple. 1 Sunvis HD 600
Texaco, Inc.	Havoline Motor Oil Texaco URSA Oil Extra Duty Texaco URSATEX

CAUTION

It is not recommended that oil of different manufacturers be mixed, as the additives in one manufacturer's oil may not be compatible with another manufacturer's. Compressors shipped from factory are filled with Shell Rotella and this should be drained and discarded if another product is to be used.

The following air-cooled compressors and all later design series numbers are fitted with thermal bypass valves. The design series is indicated by the first numerical digits of the compressor model number, i.e., the number 11 is the design series of compressor model 11DAY1M. All Permavane air-cooled compressors are fitted with a thermal bypass.

Table II

Portable Compressors	85 RPV	All
	125 PVC	All
	125 RP	11DAY1M
	160 PVC	All
	160 RPV	All
	200 PVC	All
	250 RP	3AYR1M
	250 RPV	All
	400 RPV	All
	600 RPV	All
Auto-Air Compressors	85 PRA	All
	125 RA	12DAY1MS
	160 RA	8DCR1MS
Industrial Compressors	15 BA - BAP	All
	20 BA - BAP	All
	20 DA	10DAY1MS
	25 BA - BAP	All
	25 DA	7DCR1MS
	30 BA - BAP	All
	30 DA	1DPM1MS
	30 DA	6ADR1MS
	40 BA - BAP	All
	40 DA	3AER1MS
	40 DA	1AYR1MS
	50 BA - BAP	All
	50 DA	1VY01MS
	50 DA	8AR1MS
	75 PDA	All
	100 PDA	All
	150 PDA	All
	150 PDAH	All

Some earlier compressors have been fitted with thermal bypasses and if it is not known whether a particular machine has a thermal bypass valve, then the Service Department of Davey Compressor Company should be contacted.

LUBRICATION IN UNUSUAL OPERATING CONDITIONS.

When the intake of the compressor is in a location of high temperature and high humidity, the dew point of the compressed air will still be higher than the air temperature in the compressor. This means that some water will settle out and form an emulsion with the detergent oil. If this condition is found, then an oil of the type recommended in Table III should be used.

AIR-COOLED COMPRESSORS WITHOUT THERMAL BYPASS VALVES.

These compressors should use an oil of the type known as turbine lubricating oil. Table III below gives recommended oils of this type.

Table III

American Oil Co.	AMERICAN Industrial Oil No. 51
Chevron Oil Co.	Chevron OC Turbine Oil - 19
Cities Service Oil Co.	CITGO Pacemaker 60
Continental Oil Co.	Conoco Dectol 51 R & O
Getty Oil Co.	Veedol Aturbrio
Gulf Oil Corp.	Gulf Harmony 61
Humble Oil & Refining Co.	NUTO 63 TERESSO 56 TERESSTIC 56
Mobil Oil Corp.	Mobil D.T.E. Oil Heavy
Phillips Petroleum Co.	Magnus Oil - Grade 465
Pure Oil Co.	Puropale RX Heavy
Shell Oil Co.	Telhus 41
Sinclair Oil Corp.	Duro Oil 600
Standard Oil Co. (Kentucky)	Chevron OC Turbine Oil - 19
Standard Oil Co. (Ohio)	FACTOVIS 65
Standard Oil Co. of Calif., Western Operations, Inc.	Chevron OC Turbine Oil - 19
Sun Oil Co.	Sunvis 951
Texaco, Inc.	Texaco Rando Oil E Texaco Regal Oil P.E. (R & O)

ACCESSORIES:

Oil Bath Air Cleaner (If Supplied)
Use same type and grade as compressor.

Speed Control
Use same type and grade as compressor.

SUPPLEMENT

PRIME MANUFACTURE & VENDOR PART NO. CROSS REFERENCED TO ACTUAL MANUFACTURE PART NO.

PRIME MFG. OR VENDOR PART NO.	FMC	ACTUAL MFG. PART NO.	FMC	DESCRIPTION	FIG. & INDEX NO.
DAVEY PARTS LIST					
		2502D022	78252	CAP, Fuel tank, 3 O.D. filler neck.	5-1, 64
46246	16004	OK1039-201	61112	STARTING KIT, Cold weather	5-1, 56
51123	16004	MH-845	92850	HOSE, Radiator, upper, 2¼" ID x 20" lg	5-1, 38
80246	16004	VF-109	24161	HOSE, Radiator, lwr, 2½"x2¼"x18 lg	5-1, 37
80247	16004	VF-112	24161	HOSE, Radiator, lwr, 2½"x2½"x 16 lg	5-1, 37
		MS35840-1	96906	CAP, Radiator, 2¾" OD filler neck, 7 lb. pressure	5-1, 55
24669	16004	D4-A9Y	19728	BATTERY, 12 Volt	5-1, 24
62085	16004	2550-108	09393	GAUGE, Engine oil pressure, 0 to 100 PSI	5-5, 15
48271	16004	4015-98	09527	AMETER, Dial increments 60-0-60	5-5, 20
60135	16004	HM12-2	31211	HOURMETER, 12 volt	5-5, 19
6067	22938	L44649	60038	CONE, Bearing, outer	5-10, 27 5-11, 38
6158	22938	L44610	60038	CUP, Bearing, outer	5-10, 28 5-11, 39
6063	22938	L68149	60038	CONE, Bearing, inner	5-10, 31 5-11, 42
6157	22938	L68111	60038	CUP, Bearing, inner	5-10, 30 5-11, 41
JOHN DEERE ENGINE PARTS LIST					
AT 58321	75160	1102936	16764	ALTERNATOR	P95-10
AR 66395	75160	DM4627MD2684	84760	FUEL INJECTION PUMP	P33

Federal Manufacture Code to Name

09393	Rochester Gauges Inc. of Texas P.O. Box 20180 Dallas, Texas 75220
09527	Faria, Thomas G., Co. Faria Road Uncasville, Conn. 06382
16004	Davey Compressor Co. 11060 Kenwood Rd. Cincinnati, Ohio 45242
16764	Delco-Remey Div. of General Motors Corp. 2401 Columbus Ave. Anderson, Ind. 46011
19728	Prestolite Co., The Division of Eltra Corp. Champlain and Chestnut Street P.O. Box 931 Toledo, Ohio 43601
24161	Gates Rubber Co. 999 South Boradway Denver, Colo. 80217
28265	White Engines Inc. 101 11th St. S.E. Canton, Ohio 44707
31211	Motorola Inc. Automotive Products Div. 9401 West Grand Blvd. Franklin Park, Ill. 60131
60038	Timken Roller Bearing Co. 1835 Dueber Ave. S.W. Canton, Ohio 44706
61112	Turner Co. Div. of Olin 821 Park Ave. Sycamore, Ill. 60178
78252	Stolper Ind. Inc. W 156 N 9073 Pilgrim Minomonee Falls, Wis. 53051
81155	Eaton Corp. Stamping Div. 17877 St. Clair Ave. Cleveland, Ohio 44110
84760	Stanadyne/Hartford Div. P.O. Box 1440 Hartford, Ct. 06102
92850	Anchor Ind. Inc. 1725 London Rd. Cleveland, Ohio 44112
95026	United Mfg. Co. 5250 Dobeckman Rd. Cleveland, Ohio 44102
96906	Military Standards Promulgated by Standardization Div. Directorate of Logistic Services DSA
99252	Chevron Oil Co. Eastern Division 1200 State St. Perth Amboy, N.J. 08861

SECTION 5

PARTS LISTS

5-1. INTRODUCTION.

This section contains illustrated parts lists for the Davey PERMAVANE Series Portable Compressor. Index numbers are in order of disassembly except that attaching hardware follow the part which they secure. In some instances, hardware, fittings and some accessories are not indexed if it is not deemed necessary. They are identified either by Davey part number or commercial designation and are listed in most suitable sequence of disassembly.

5-2. INSTRUCTIONS FOR ORDERING PARTS.

a. ALL PARTS ARE SHIPPED F.O.B. Cincinnati, Ohio, USA, EXCEPT parcel post packages and United Parcel Service (UPS) which are prepaid and billed to customer on invoice.

b. WHEN ordering by telegram or telephone, be sure to send us confirming order.

c. WHEN in doubt as to any item, send in sketch, or the old part (prepaid) and specify on order "as per sketch" or "as per sample."

NOTE

Do not send part (sample), or any returned goods, without prior authorization.

d. IF you return old part as sample be sure to advise us that you are doing so, and put a tag on part with your name and address for identification. Also advise disposition of old part.

e. ALWAYS give the SERIAL NUMBER and MODEL NUMBER of compressor. This is shown on the serial number plate attached to the unit.

NOTE

When determining source of part to be ordered, all Federal Supply Codes for Manufacturer's (FSCM) are listed for each assembly and are the same for the components that make up that assembly unless otherwise indicated. If FSCM's are not indicated for an assembly the source is Davey Compressor Co.

Retain for your own record.

THIS MANUAL IS FOR MY DAVEY UNIT MODEL NO. .....

UNIT SERIAL NO. .....

ENGINE SERIAL NO. .....

The above information, which will be found on the serial number plate attached to the side panel of unit housing assembly, should be filled in. For prompt shipment of repair parts, this information should be supplied when ordering parts.

DAVEY COMPRESSOR COMPANY

11060 Kenwood Rd.

Cincinnati, Ohio 45242

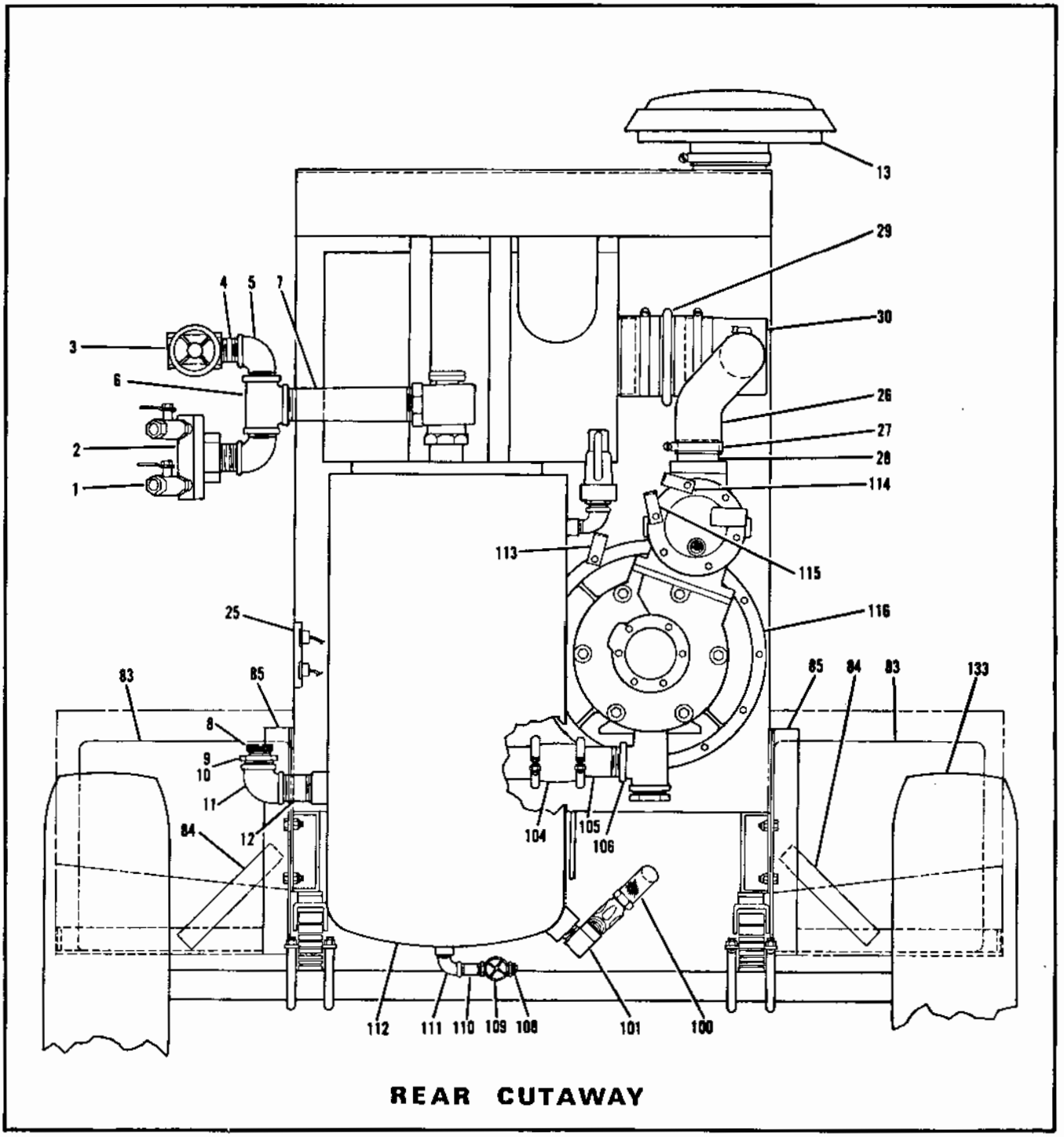


Figure 5-1. Air Compressor Unit Assembly (Sheet 1 of 4)

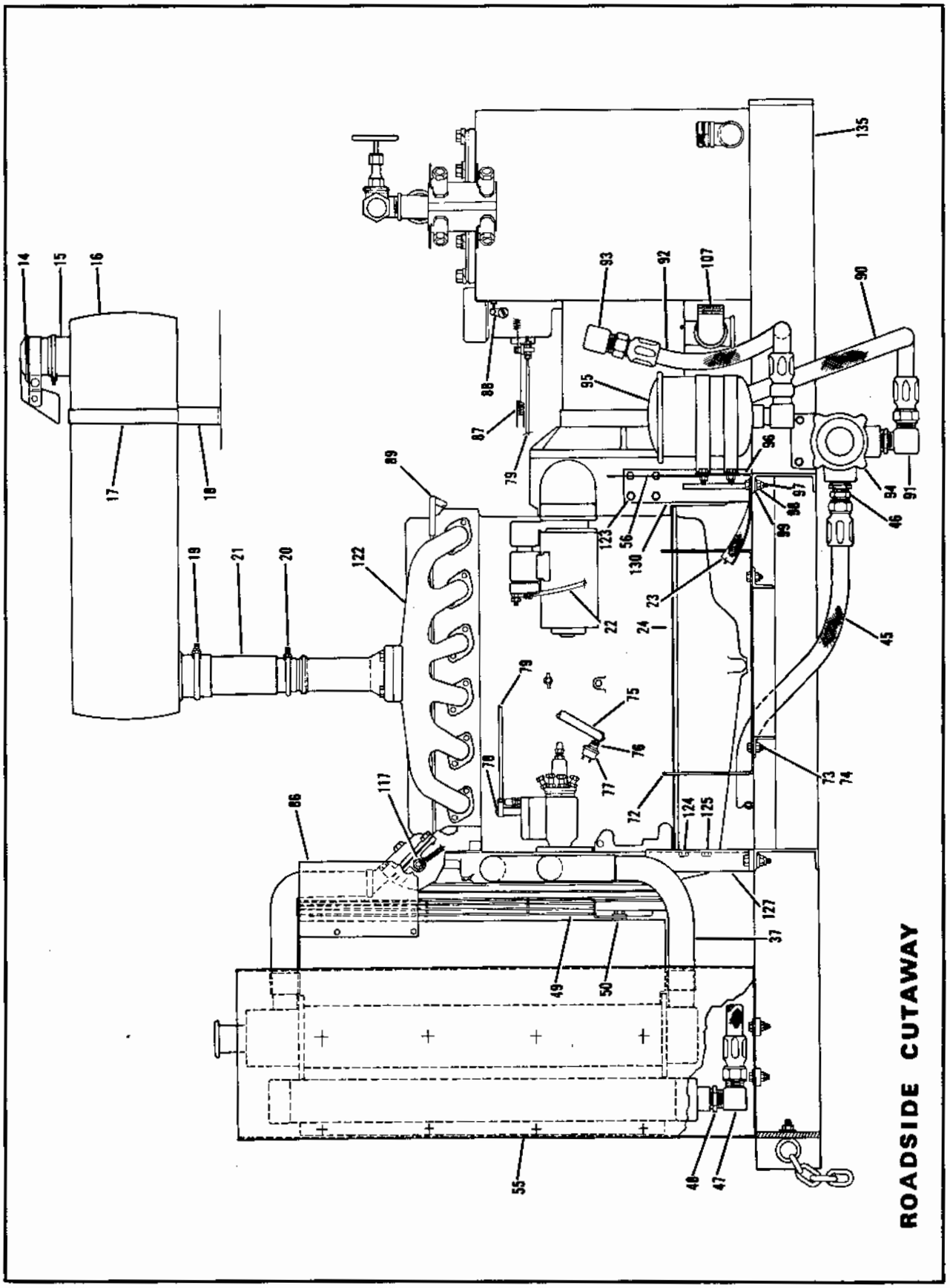


Figure 5-1. Air Compressor Unit Assembly (Sheet 2 of 4)

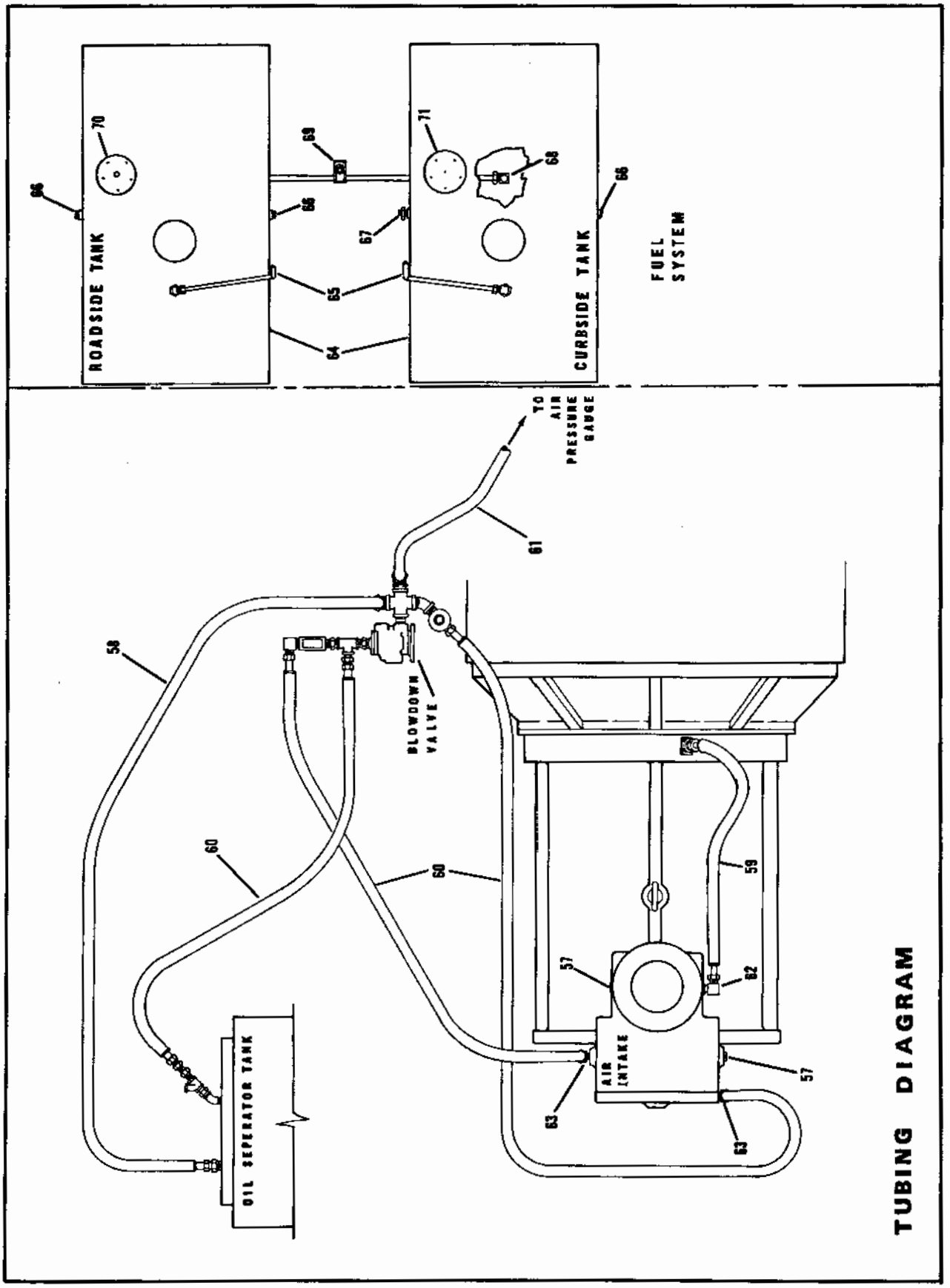


Figure 5-1. Air Compressor Unit Assembly (Sheet 4 of 4)

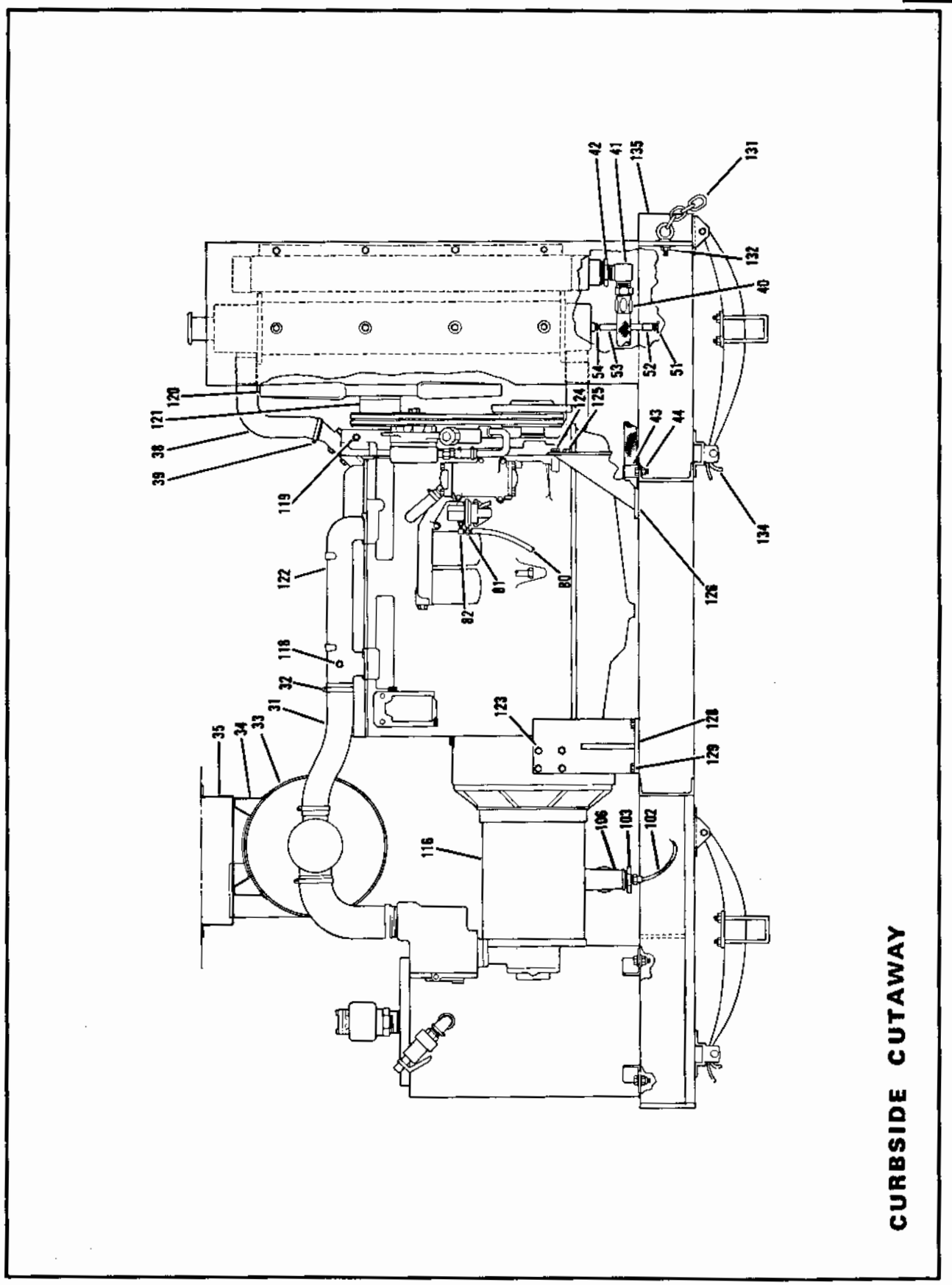


Figure 5-1. Air Compressor Unit Assembly (Sheet 3 of 4)

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-1	69000	UNIT ASSEMBLY, Compressor, air model 1M365	1	
-1	240046	. COUPLING, Hose	4	
	62565	. VALVE, Service	4	
	192470	. NIPPLE, Close	4	
-2	60825	. MANIFOLD, Discharge	1	
-3	43132	. VALVE, Globe	1	
-4	192276	. NIPPLE, Close	2	
-5	67749	. ELBOW, 90° street, reducing	2	
-6	218608	. TEE, Reducing	1	
-7	453867	. NIPPLE	1	
-8	26359	. PLUG, Oil fill	1	
-9	63062	. BUSHING, Adapter	1	
-10	24982	. O-RING	1	
-11	179454	. ELBOW, 90°	1	
-12	219831	. NIPPLE	1	
-13	69074	. CAP, Rain	1	
-14	64125	. CAP, Rain	1	
-15	69089	. EXTENSION, Exhaust	1	
	67393	. CLAMP, Muffler (AP)	1	
-16	69042	. MUFFLER	1	
-17	48007	. BAND, Mounting	1	
	122145	. BOLT, Hex hd (AP)	2	
	120394	. WASHER, Flat (AP)	2	
	443335	. LOCKNUT (AP)	2	
-18	69078	. SUPPORT, Muffler	1	
	274825	. BOLT, Spinlock (AP)	2	
	61728	. RIVNUT (AP)	2	
-19	67393	. CLAMP, Muffler	1	
-20	69074	. CLAMP, Muffler	1	
-21	69079	. PIPE, Exhaust	1	
-22	48330	. CABLE, Battery, positive	1	
-23	11028	. CABLE, Battery, negative	1	
-24	24669	. BATTERY, 12 volt	1	
	24668	. HOLDDOWN, Battery	1	
	65436	. BOLT, Battery	2	
-25	69053	. INSTRUMENT PANEL ASSEMBLY (See figure 5-4)	1	
	273771	. BOLT, Spinlock (AP)	3	
	9416918	. NUT, Spinlock (AP)	3	
	27854	. CABLE, Control	2	
	66995	. WIRE ASSEMBLY (See figure 5-4)	1	
-26	50605	. HOSE, Air	1	
-27	61055	. CLAMP, Hose (AP)	2	
-28	67701	. NIPPLE	1	
-29	69061	. HOSE, Hump	1	
	69087	. CLAMP, Hose (AP)	2	
-30	51114	. MANIFOLD, Air cleaner	1	
-31	50729	. HOSE, Intake, air	1	
-32	61563	. CLAMP, Hose	2	
-33	62812	. AIR CLEANER ASSEMBLY (See figure 5-2)	1	
-34	62814	. BANDS, Mounting, air cleaner	2	
	122145	. BOLT, Hx hd (AP)	4	
	120394	. WASHER, Lock (AP)	4	
-35	69060	. SUPPORT, Air cleaner	1	
	273771	. BOLT, Spinlock (AP)	12	
	9416918	. NUT, Spinlock (AP)	12	
-36	No Number	. HOUSING GROUP (See figure 5-3)	1	
-37	80246	. HOSE, Radiator, lower (24161 PN VF-109)	1	
	80247	. HOSE, Radiator, lower (24161 PN VF-112)	1	
	69090	. PIPE, 2½ x 2½ ID	1	
	46330	. CLAMP, Hose	4	
-38	51123	. HOSE, Radiator, upper	1	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY.	USABLE ON CODE
5-1-39	46330	. CLAMP, Hose	2	
-40	69057	. HOSE ASSEMBLY	1	
-41	66981	. ELBOW, J.I.C., 90°	1	
-42	192654	. BUSHING, Reducing	1	
-43	66989	. CLIP, Tubing	1	
-44	120918	. BOLT, Hx hd (AP)	1	
	60744	. WASHER, Channel	1	
	443335	. NUT, Lock (AP)	1	
-45	69059	. HOSE ASSEMBLY	1	
	66989	. CLIP, Tubing	1	
-46	66982	. CONNECTOR, J.I.C., Straight	1	
-47	66981	. ELBOW, J.I.C., 90%	1	
-48	192654	. BUSHING, Reducing	1	
-49	69046	. GUARD, Fan	1	
-50	62864	. WASHER, Rubber (AP)	10	
	9419376	. BOLT, Spinlock (AP)	5	
	63002	. WASHER, Special (AP)	5	
-51	14026	. DRAINCOCK	1	
-52	144068	. COUPLING	1	
-53	188372	. NIPPLE	1	
-54	116332	. BUSHING, Reducing	1	
-55	69023	. RADIATOR AND COOLER ASSEMBLY	1	
	120918	. BOLT, Hx hd (AP)	8	
	120394	. WASHER, Flat (AP)	8	
	60744	. WASHER, Channel (AP)	8	
	443335	. NUT, Lock (AP)	8	
	69025	. . COOLER, Oil	1	
	69018	. . RADIATOR	1	
	69026	. . PANEL, Road side	1	
	69027	. . PANEL, Curb side	1	
	120233	. . BOLT, Hx hd (AP)	16	
	443335	. . NUT, Lock (AP)	8	
	120382	. . WASHER, Lock (AP)	8	
	120394	. . WASHER, Flat (AP)	24	
	273771	. . BOLT, Spinlock (AP)	10	
	69017	. . SHROUD, Fan	1	
	69047	. . FILLER, Guard	1	
	69065	. . RIVET, Pop	4	
	65595	. . STRIP, Rubber	4	
-56	46246	. QUICK START System (61112 PN QK1039-201)	1	
	69091	. BRACKET, Quick Start	1	
	122145	. BOLT, Hx hd (AP)	2	
	443335	. NUT, Lock (AP)	2	
	120394	. WASHER, Flat (AP)	2	
-57	144011	. PLUG, Socket hd	2	
-58	61074	. HOSE ASSEMBLY	1	
-59	61076	. HOSE ASSEMBLY	1	
-60	46163	. HOSE ASSEMBLY	3	
-61	62083	. HOSE ASSEMBLY	1	
-62	28890	. ELBOW, Tube 90°	2	
-63	41899	. ELBOW, Tube 90°	2	
-64	69013	. TANK, Fuel	REF	
-65	69081	. TUBE, Vent, fuel	2	
	11030	. CLIP, Tube	4	
	28887	. NUT, Tube	2	
	28882	. SLEEVE, Tube	2	
	29784	. ELBOW, Tube 90°	2	
	144035	. BUSHING, Reducing	2	
-66	144011	. PLUG, Socket hd	3	
-67	43024	. CONNECTOR, Tube	1	
-68	27691	. ELBOW, Tube 90°	2	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-1-69	66990	. BRACKET, Fuel line	1	
	69086	. HOSE, Fuel	1	
	11033	. CLIP, Tube	1	
	273771	. BOLT, Spinlock (AP)	1	
	274825	. BOLT, Spinlock (AP)	2	
	9416918	. NUT, Spinlock (AP)	3	
-70	27843	. SENDING UNIT, Fuel	1	
	120687	. SCREW, Fil hd (AP)	5	
	120217	. WASHER, Lock (AP)	5	
	44427	. GASKET	1	
-71	44741	. COVER, Flange, gauge	1	
	120687	. SCREW, Fil hd (AP)	5	
	120217	. WASHER, Lock (AP)	5	
	44427	. GASKET	1	
-72	24667	. TRAY, Battery	1	
-73	122145	. BOLT, Hx hd	4	
-74	443335	. NUT, Lock	4	
-75	38030	. HOSE ASSEMBLY	1	
-76	41935	. CONNECTOR, Hose	1	
	144082	. TEE	1	
	192042	. NIPPLE	1	
-77	66987	. SWITCH, Pressure, oil, 15 PSI	1	
-78	09665	. JOINT, Ball	1	
	443332	. NUT, Lock	1	
-79	69072	. ROD, Control, speed	1	
	120367	. NUT, Hx hd	1	
	11030	. CLIP, Tube	1	
	18952	. BLOCK, Stop	1	
	27365	SPRING	1	
	443332	. NUT, Lock	1	
	120367	. NUT, Hx	4	
-80	60884	. LINE, Fuel	1	
-81	40948	. ADAPTER, Tube	1	
-82	41899	. ELBOW, Tube 90°	1	
-83	69013	. TANK, Fuel	2	
	69048	. STRAP, Tank, fuel	1	
	14048	. WEBBING	1	
	443335	. NUT, Lock (AP)	4	
-84	69038	. SUPPORT, Tank, fuel	2	
	120426	. BOLT, Hx hd (AP)	4	
	443339	. NUT, Lock (AP)	4	
-85	69037	. SUPPORT, Tank, fuel	2	
	120426	. VOLT, Hx hd (AP)	8	
	443339	. NUT, Lock (AP)	8	
-86	46151	. PLATE, Mounting	1	
	274825	. BOLT, Spinlock (AP)	2	
	61728	. RIVNUT (AP)	2	
-87	27854	. CABLE, Control	1	
	20588	. STOP, Wire	1	
	62059	. STOP, Block	1	
	443332	. NUT, Lock (AP)	1	
-88	27854	. CABLE, Control	1	
	30024	. LEVER, Valve Plate	1	
	67981	. STOP, Wire	1	
-89	69085	. RETURN, Fuel	1	
-90	69057	. HOSE ASSEMBLY	1	
-91	66981	. ELBOW, JIC 90°	2	
-92	69058	. HOSE ASSEMBLY	1	
-93	66981	. ELBOW, JIC 90°	2	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-1-94	69028	. THERMAL BY-PASS ASSY (See figure 5-9)	1	
	122433	. BOLT, Hx hd (AP)	2	
	443339	. NUT, Lock (AP)	2	
-95	69039	. OIL FILTER ASSY (See figure 5-8)	1	
	122145	. BOLT, Hx hd (AP)	2	
	443335	. NUT, Lock (AP)	2	
	120394	. WASHER, Flat (AP)	2	
	120426	. BOLT, Hx hd (AP)	4	
	120384	. WASHER, Lock (AP)	4	
-96	69070	. BRACKET, Filter, oil	1	
-97	120918	. BOLT, Hx hd (AP)	2	
-98	443335	. NUT, Lock (AP)	2	
-99	60744	. WASHER, Channel (AP)	2	
-100	69059	. HOSE ASSEMBLY	1	
-101	66981	. ELBOW, 90°	2	
-102	48414	. THERMOSTAT	1	
-103	218859	. BUSHING, Reducing	1	
-104	69044	. JOINT, Discharge	1	
-105	66994	. NIPPLE	2	
-106	69066	. TEE, Street	1	
-107	187154	. ELBOW, Street 90°	1	
-108	143935	. PLUG	1	
-109	14034	. VALVE, Globe	1	
-110	192077	. NIPPLE	1	
-111	127961	. ELBOW, Street 90°	1	
-112	69019	. OIL SEPARATOR ASSY (See figure 5-5)	1	
	120426	. BOLT, Hx hd (AP)	1	
	120396	. WASHER, Flat (AP)	1	
	443330	. NUT, Lock (AP)	1	
-113	66992	. BRACKET	1	
	60886	. CLIP, Tube	1	
	122168	. BOLT, Hx hd (AP)	1	
	273771	. BOLT, Spinlock (AP)	1	
	9416918	. NUT, Spinlock (AP)	1	
-114	66993	. BRACKET	1	
	60886	. CLIP, Tube	1	
	122168	. BOLT, Hx hd (AP)	1	
	273771	. BOLT, Spinlock (AP)	1	
	9416918	. NUT, Spinlock (AP)	1	
-115	66992	. BRACKET	1	
	122168	. BOLT, Hx hd (AP)	1	
-116	69001	. COMPRESSOR ASSEMBLY, Air (see figure 5-7)	1	
	120918	. BOLT, Hx hd (AP)	11	
	120394	. WASHER, Lock (AP)	12	
-117	144039	. BUSHING, Reducing	1	
-118	127956	. BUSHING, Reducing	1	
-119	48641	. SWITCH, Temperature, high, water	1	
-120	69014	. FAN	1	
	122181	. BOLT, Hx hd (AP)	4	
	120382	. WASHER, Lock (AP)	4	
-121	69080	. SPACER, Fan	1	
-122	69006	. ENGINE ASSY, Model 6414D (see Part II)	1	
-123	120426	. BOLT, Hx hd (AP)	8	
	120384	. WASHER, Lock (AP)	8	
-124	428217	. BOLT, Hx hd (AP)	2	
	121574	. WASHER, Lock (AP)	2	
-125	122617	. BOLT, Hx hd (AP)	2	
	443342	. NUT, Lock (AP)	2	
-126	69034	. SUPPORT, Engine, front, right	1	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
	122459	. BOLT, Hx hd (AP)	2	
	443339	. NUT, Lock (AP)	2	
	60734	. WASHER, Channel (AP)	2	
5-1-127	69033	. SUPPORT, Engine, front, left	1	
	122459	. BOLT, Hx hd (AP)	2	
	443339	. NUT, Lock (AP)	2	
	120396	. WASHER, Flat (AP)	2	
	60734	. WASHER, Channel (AP)	2	
-128	69035	. SUPPORT, Engine, rear, right	1	
-129	122459	. BOLT, Hx hd (AP)	2	
	443339	. NUT, Lock (AP)	2	
	60734	. WASHER, Channel (AP)	2	
-130	69036	. SUPPORT, Engine, rear, left	1	
	122459	. BOLT, Hx hd (AP)	2	
	443339	. NUT, Lock (AP)	2	
	120396	. WASHER, Flat (AP)	2	
	60734	. WASHER, Channel (AP)	2	
-131	61144	. CHAIN, Safety	2	
-132	120378	. NUT, Hx (AP)	2	
	120384	. WASHER, Lock (AP)	2	
-133	68742	. WHEEL, 15 x 6 Drop center	4	
	63993	. TIRE AND TUBE 7.50 - 15, 8 ply No. 79T tube	4	
-134	69024	. AXLE ASSEMBLY (See figures 5-10 thru 5-12)	1	
-135	69016	. FRAME ASSEMBLY, Trailer	1	

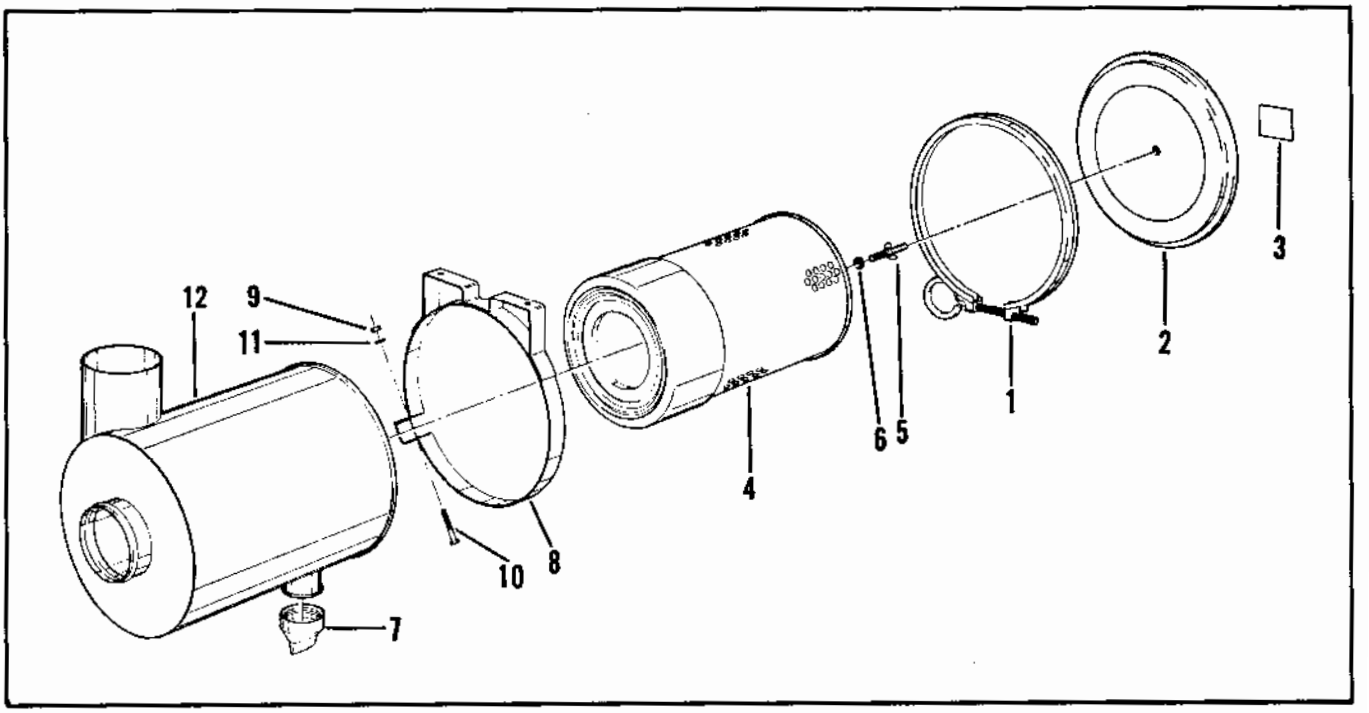


Figure 5-2. Air Cleaner Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-2	CD1623500	CLEANER ASSEMBLY, Air (00736) (16004 PN 62812) ..... (see index 33, figure 5-1 for NHA)	REF	
-1	CD1626001-311	. CLAMP ASSEMBLY, Cover (00736)	1	
-2	CD1623-101	. COVER (00736)	1	
-3	A19868-2	. DECAL (00736)	1	
-4	CD1626001-826	. ELEMENT, Filter (00736) (16004 PN 62813)	1	
-5	CD0511-212	. BOLT, Wing (AP) (00736)	1	
-6	A19892-56	. WASHER, Seal (AP) (00736)	1	
-7	CD0511500-170	. VALVE, Unloader (00736)	1	
-8	CD1626001-240	. BRACKET ASSEMBLY, Mounting (00736) (16004 PN 62814)	2	
-9	120377	. . NUT, Hex, 3/8-16NC (24617)	1	
-10	122188	. . SCREW, Cap, hex hd, 3/8-16NC x 2-1/4 in. lg (24617)	1	
-11	120382	. . WASHER, Lock, split, 3/8 in. (24617)	1	
-12	CD1623500-156	. BODY, Filter (00736)	1	

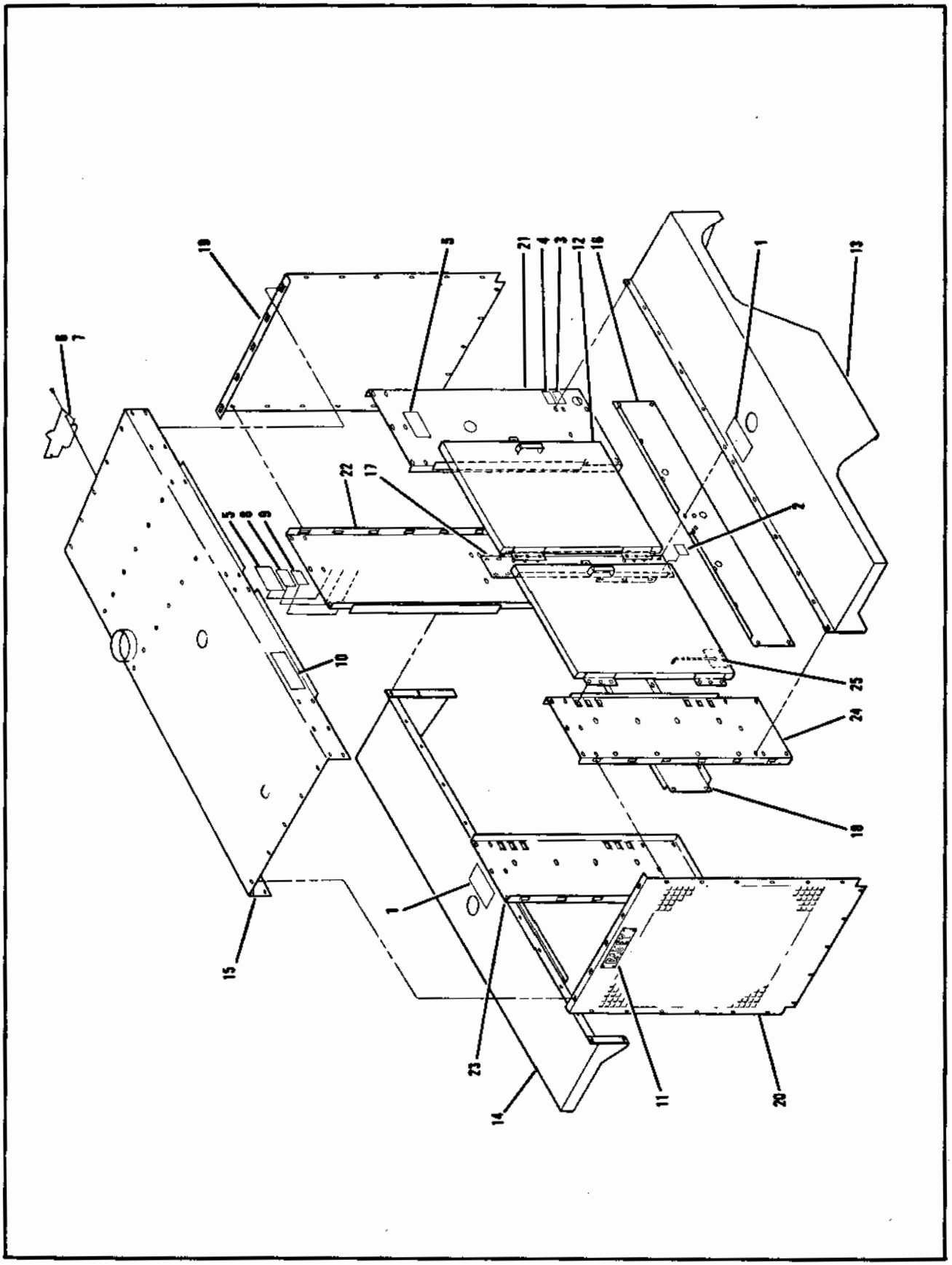


Figure 5-3. Housing Group

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-3	No Number	HOUSING GROUP (See figure 5-1 for NHA)	REF	
-1	66142	. DECAL	2	
-2	60837	. DECAL	1	
-3	63303	. DECAL	11	
-4	61872	. DECAL	1	
-5	66796	. DECAL	2	
-6	48717	. PLATE, Identification	1	
-7	69071	. DECAL	1	
-8	69094	. DECAL	1	
-9	68600	. DECAL	1	
-10	69095	. DECAL	2	
-11	14621	. PLATE, Name	1	
-12	69063	. DOOR	4	
	273771	. BOLT, Spinlock (AP)	24	
	80075	. NUT, Caged (AP)	24	
-13	69049	. FENDER, curb side	1	
	273771	. BOLT, Spinlock (AP)	4	
	274825	. BOLT, Spinlock (AP)	14	
	9416918	. NUT, Spinlock (AP)	18	
-14	69050	. FENDER, Road side	1	
	273771	. BOLT, Spinlock (AP)	4	
	274825	. BOLT, Spinlock (AP)	14	
	9416918	. NUT, Spinlock (AP)	18	
-15	69064	. ROOF	1	
	273771	. BOLT, Spinlock (AP)	37	
	274825	. BOLT, Spinlock (AP)	5	
	9416918	. NUT, Spinlock (AP)	37	
-16	69029	. PANEL, Lower, curb side	1	
	273771	. BOLT, Spinlock (AP)	2	
	9416918	. NUT, Spinlock (AP)	2	
	122145	. SCREW, Cap (AP)	5	
	120394	. WASHER, Flat (AP)	5	
	60744	. WASHER, Channel (AP)	5	
	443335	. NUT, Lock (AP)	5	
-17	69054	. MULLION	2	
-18	69030	. PANEL, Lower, road side	1	
	273771	. BOLT, Spin	2	
	9416918	. NUT, Spinlock (AP)	2	
	122145	. SCREW, Cap (AP)	5	
	120394	. WASHER, Flat (AP)	5	
	60744	. WASHER, Channel (AP)	5	
	443335	. NUT, Lock (AP)	5	
-19	69062	. PANEL, Cover, rear	1	
	273771	. BOLT, Spinlock (AP)	12	
	9416918	. NUT, Spinlock (AP)	12	
-20	69061	. GRILLE	1	
	273771	. BOLT, Spinlock (AP)	12	
	80075	. NUT, Caged (AP)	12	
-21	69031	. PANEL, Rear, curb side	1	
	122145	. SCREW, Cap (AP)	3	
	120394	. WASHER, Flat (AP)	3	
	60744	. WASHER, Channel (AP)	3	
	443335	. NUT, Lock (AP)	3	
-22	69032	. PANEL, Rear, road side	1	
	122145	. SCREW, Cap (AP)	3	
	120394	. WASHER, Flat (AP)	3	
	60744	. WASHER, Channel (AP)	3	
	443335	. NUT, Lock (AP)	3	
-23	69027	. PANEL, Rad. cooler curb side (see index 55, figure 5-1 for NHA)	REF	
-24	69026	. PANEL, Rad.cooler, road side (see index 55, figure 5-1 for NHA)	REF	
-25	69068	. RETAINER, Door	1	

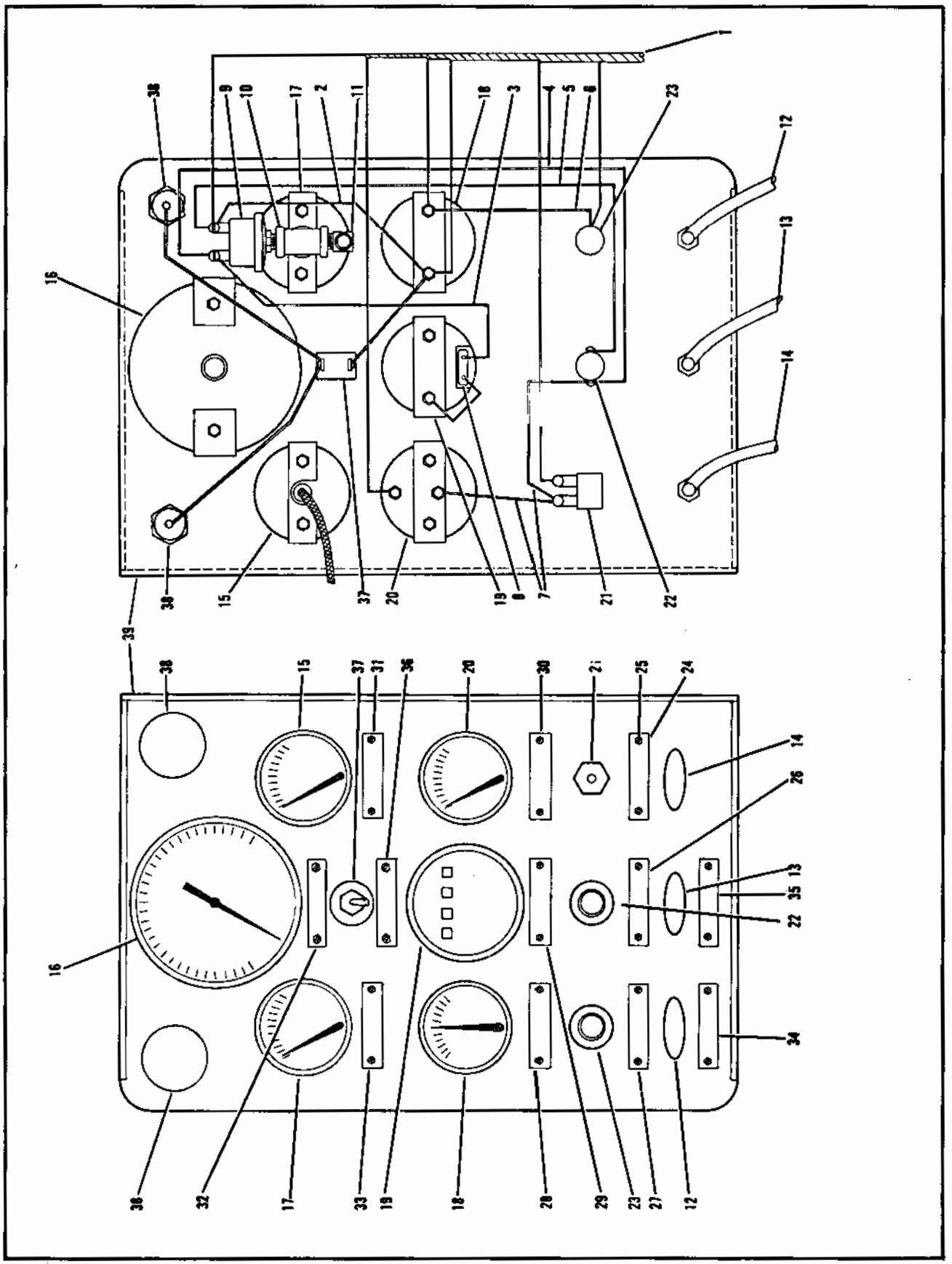


Figure 5-4. Instrument Panel Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-4	69053	INSTRUMENT PANEL ASSEMBLY (See index 25, figure 5-1 for NHA)....	REF	
-1	66995	WIRE ASSEMBLY (See index 25, figure 5-1 for NHA)	REF	
-2	49294	. WIRE ASSEMBLY (14 Ga or).....	1	
-3	24855	. TERMINAL, Ring (No. 10)	1	
-4	49622	. WIRE ASSEMBLY (14 Ga brn)	1	
-5	66986	. WIRE ASSEMBLY (14 Ga or)	1	
-6	49583	. WIRE ASSEMBLY (14 Ga wht)	1	
-7	66985	. WIRE ASSEMBLY (14 Ga brn)	2	
-8	24855	. TERMINAL, Ring (No. 10)	1	
-9	66987	. SWITCH, Pressure (74400 PN M4008)	1	
-10	144082	. TEE	1	
-11	41899	. ELBOW	1	
-12	24062	. STARTING AID KIT, Cold weather (see index 56, figure 5-1 for NHA)	REF	
-13	27854	. CABLE, Control (see index 25, figure 5-1 for NHA)	REF	
-14	27854	. CABLE, Control (see index 25, figure 5-1 for NHA)	REF	
-15	62085	. GAUGE, Pressure, oil (09393 PN 2550-108)	1	
-16	14950	. GAUGE, Pressure, air (61349 PN P844U)	1	
	144068	. COUPLING	1	
-17	24157	. GAUGE, Temp, water (96452 PN 2055-42)	1	
-18	42341	. GAUGE, Fuel (57733 PN D-378-P)	1	
-19	61035	. HOURMETER (31211 PN HM24-2)	1	
-20	48271	. AMMETER (09527 PN 4015-98)	1	
-21	46551	. SWITCH, Ignition (13445 PN 5011)	1	
-22	14073	. SWITCH, Pushbutton (87930 PN 5570-9)	1	
-23	14073	. SWITCH, Pushbutton (87930 PN 5570-9)	1	
-24	66169	. NAMEPLATE	1	
-25	9426053	. SCREW, Self tapping (AP)	22	
-26	61624	. NAMEPLATE	1	
-27	61618	. NAMEPLATE	1	
-28	66161	. NAMEPLATE	1	
-29	66162	. NAMEPLATE	1	
-30	60493	. NAMEPLATE	1	
-31	60491	. NAMEPLATE	1	
-32	60487	. NAMEPLATE	1	
-33	66160	. NAMEPLATE.....	1	
-34	63702	. NAMEPLATE	1	
-35	66175	. NAMEPLATE	1	
-36	41998	. NAMEPLATE	1	
-37	27670	. SWITCH, Toggle.....	1	
	67922	. WASHER, Flat	2	
-38	80223	. LIGHT, Panel	2	
	49058	. WIRE, Assy	1	
-39	69052	. PANEL, Instrument	1	

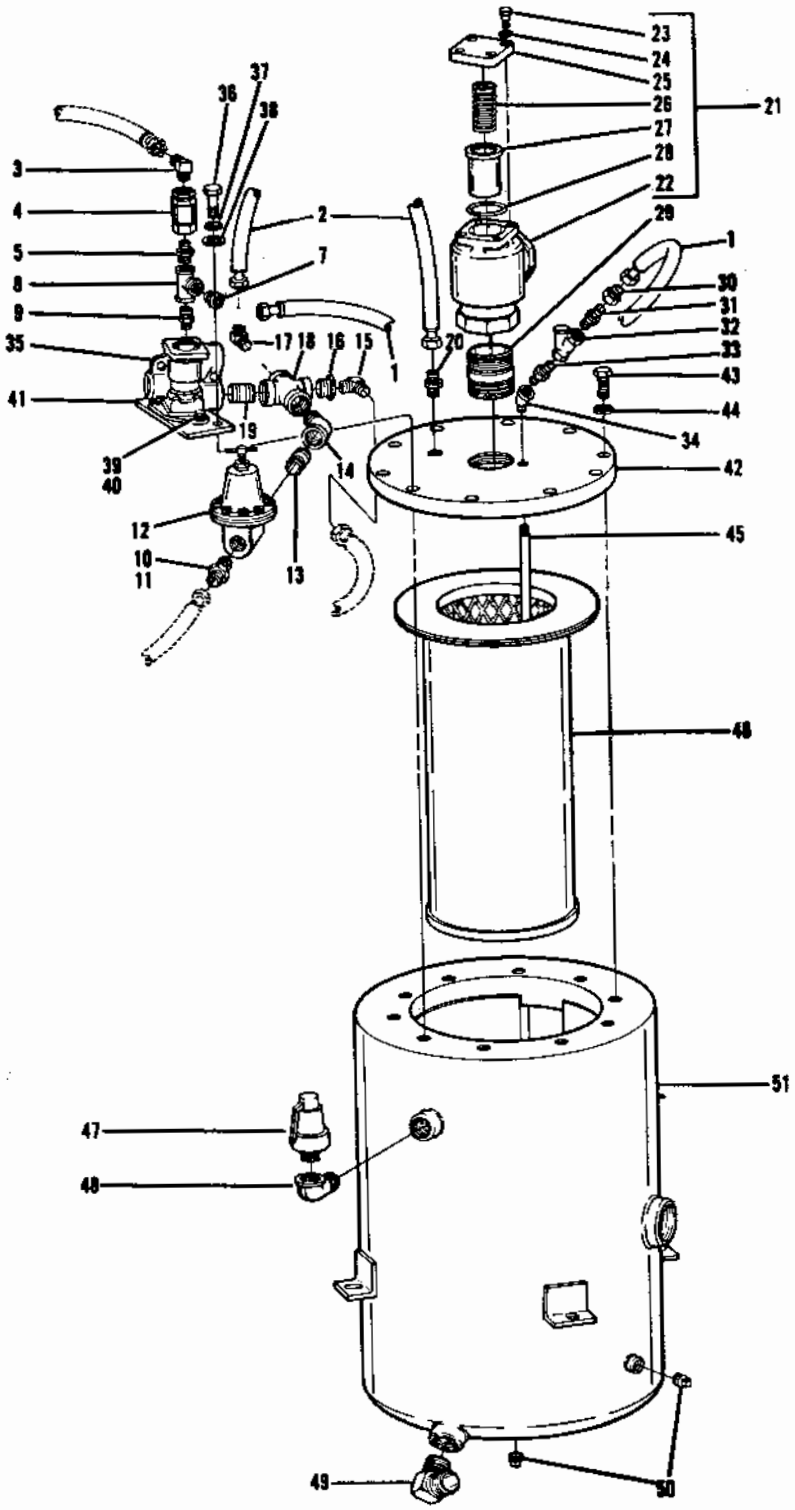


Figure 5-5. Oil Separator Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-5	69019	SEPARATOR ASSEMBLY, Oil (see index 112, figure 5-1 for NHA)	REF	
-1	46163	. HOSE (See index 60, figure 5-1 for NHA)	REF	
-2	61074	. HOSE (See index 58, figure 5-1 for NHA)	REF	
-3	44209	. ELBOW, Tube	1	
-4	62234	. SIGHT, Flow	1	
-5	65610	. NIPPLE, Hex	1	
-6	Deleted			
-7	43024	. CONNECTOR, Tube	1	
-8	144083	. TEE	1	
-9	66454	. NIPPLE, Hex	1	
-10	43024	. CONNECTOR, Tube	1	
-11	144038	. BUSHING, Reducing	1	
-12	64407	. REGULATOR ASSEMBLY, Air pressure (see figure 5-6)	1	
-13	192074	. NIPPLE	1	
-14	144120	. ELBOW, 45°	1	
-15	44209	. ELBOW, Tube	1	
-16	144038	. BUSHING, Reducing	1	
-17	27691	. ELBOW, Tube	1	
-18	144153	. CROSS	1	
-19	219643	. NIPPLE	1	
-20	29387	. CONNECTOR, Tube	1	
-21	69007	. VALVE ASSEMBLY, Minimum pressure	1	
-22	69011	. . BODY	1	
-23	120741	. . BOLT, Hex hd (AP)	1	
-24	120214	. . WASHER, Lock (AP)	1	
-25	69010	. . COVER	1	
-26	69009	. . SPRING	1	
-27	69008	. . PISTON	1	
-28	69012	. . O-RING	1	
-29	219837	. NIPPLE	1	
-30	28888	. CONNECTOR, Tube	1	
-31	49777	. ORIFICE	1	
-32	47690	. STRAINER	1	
-33	65610	. NIPPLE, Hex	1	
-34	144118	. ELBOW, 45°	1	
-35	68550	. VALVE, Blowdown (24522 PN 501-A-2-12-21)	1	
-36	73485	. BOLT, Hex hd (AP)	2	
-37	121574	. WASHER, Lock (AP)	2	
-38	131016	. WASHER, Flat (AP)	2	
-39	123473	. BOLT, Hex hd (AP)	2	
-40	120214	. WASHER, Lock (AP)	2	
-41	69076	. BRACKET	1	
-42	69021	. COVER, Tank (not procurable separately)	1	
-43	67164	. BOLT, Hex hd (AP)	8	
-44	121574	. WASHER, Lock (AP)	8	
-45	69075	. PIPE, Drain	1	
-46	69020	. ELEMENT	1	
-47	14778	. VALVE, Safety	1	
-48	127792	. ELBOW, Street	1	
-49	66981	. ELBOW, Male (see index 101, figure 5-1 for NHA)	REF	
-50	143951	. PLUG, Pipe	1	
-51	69022	. TANK, Separator (must procure cover also)	1	

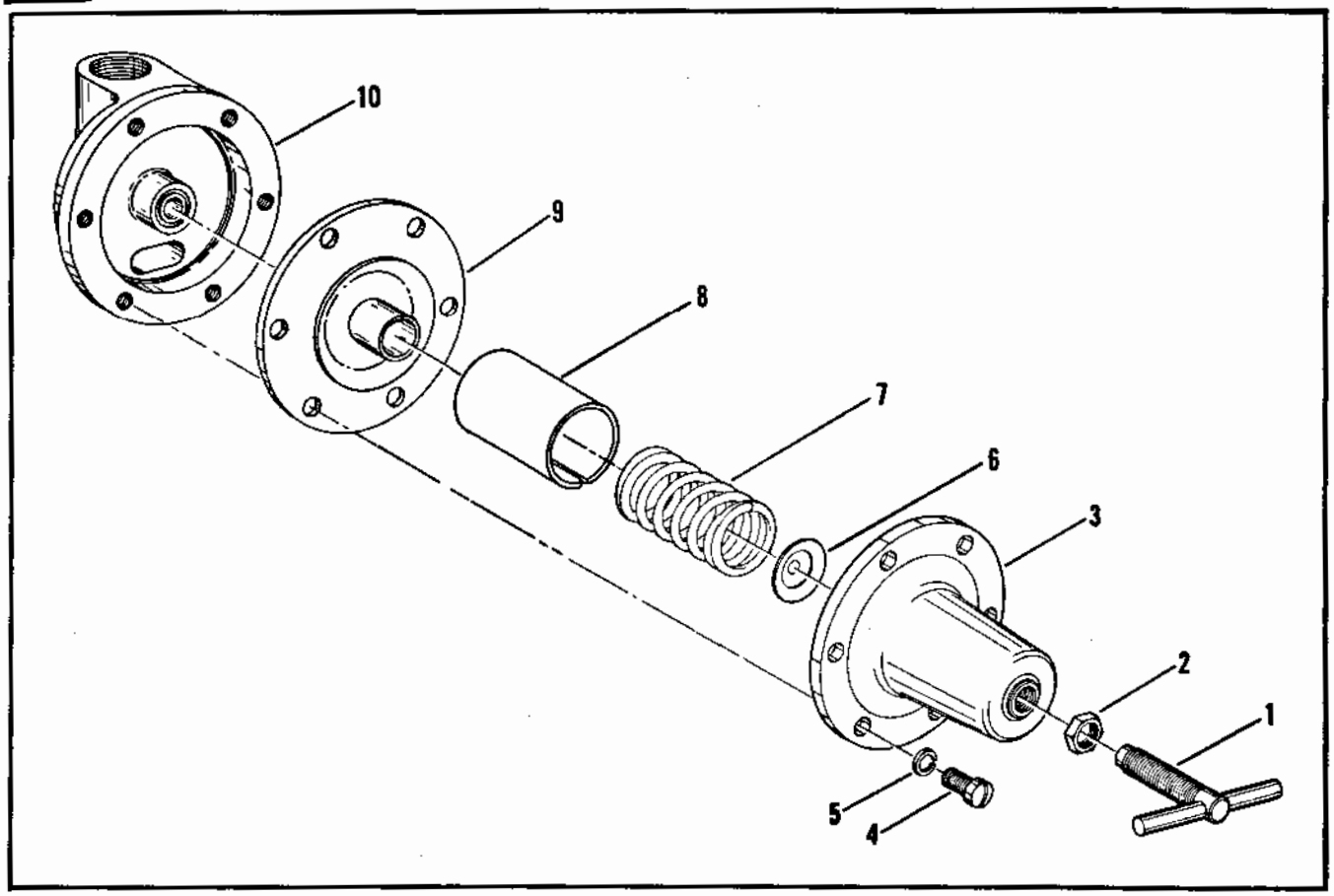


Figure 5-6. Air Pressure Regulator Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-6	64407	REGULATOR ASSEMBLY, Air pressure (see index 11, figure 5-5 for NHA)	REF	
-1	62507	. SCREW, Adjusting	1	
-2	120369	. NUT, Hex	1	
-3	62503	. SPRING, Housing	1	
-4	132259	. SCREW, Mch fil hd (AP)	6	
-5	120380	. WASHER, Lock, split (AP)	6	
-6	62502	. SEAT, Adjusting screw	1	
-7	62501	. SPRING, Regulator	1	
-8	60049	. TUBE, Snubber, spring	1	
-9	64406	. DIAPHRAGM ASSEMBLY	1	
-10	64405	. BODY, Regulator	1	

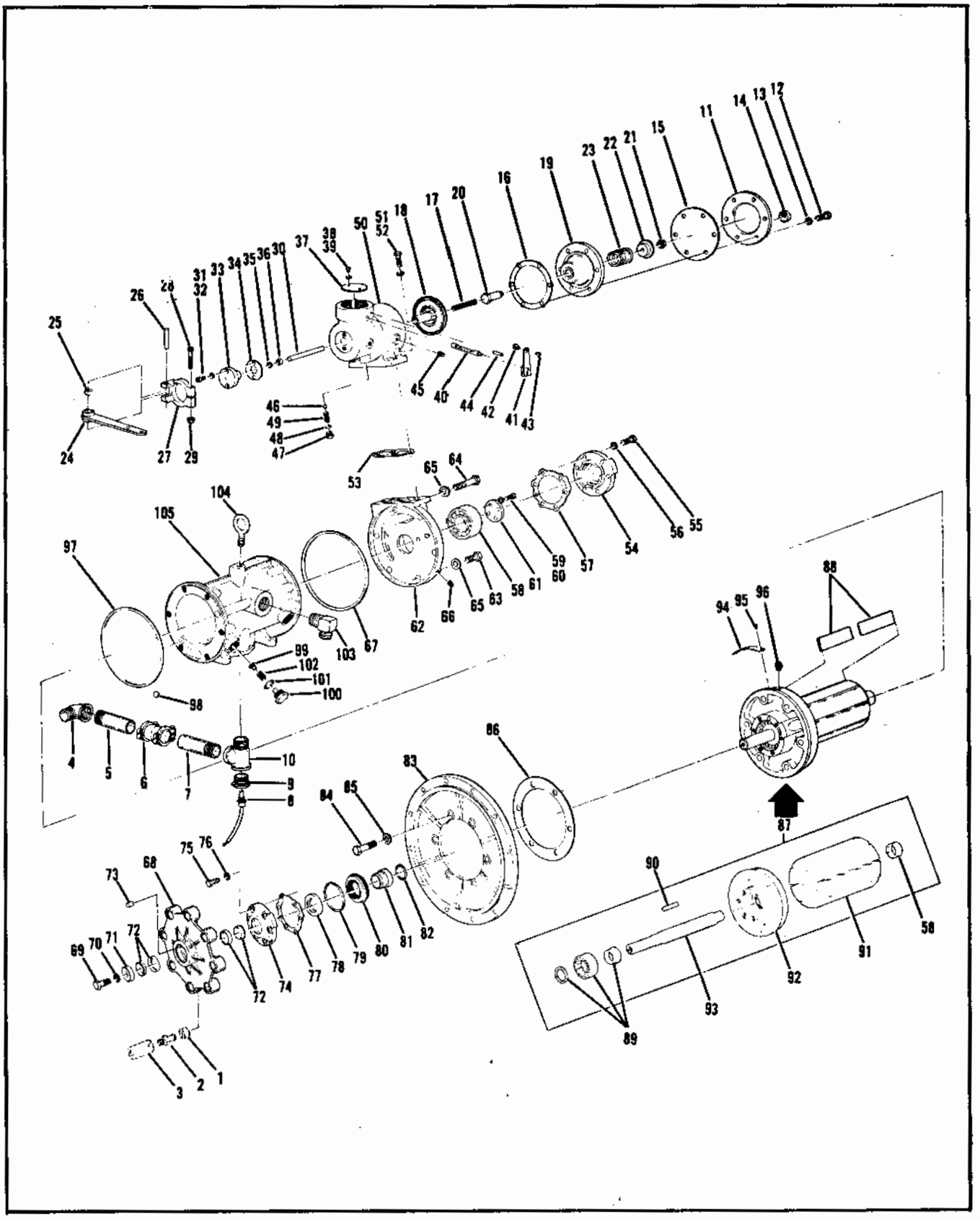


Figure 5-7. Air Compressor Assembly and Drive Group

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-7	No Number	COMPRESSOR ASSEMBLY, Air and drive group (see index 116, figure 5-1 for NHA)	REF	
-1	25673	. BUSHING, Drive	8	
-2	44056	. PIN, Coupling	8	
-3	47737	. STRAP, Locking	8	
-4	187154	. ELBOW, Street (see index 107, figure 5-1 for NHA)	REF	
-5	66994	. NIPPLE, (See index 105, figure 5-1 for NHA)	REF	
-6	69044	. JOINT, Discharge (see index 104, figure 5-1 for NHA)	REF	
-7	66994	. NIPPLE (See index 105, figure 5-1 for NHA)	REF	
-8	48414	. THERMOSTAT (See index 102, figure 5-1 for NHA)	REF	
-9	218859	. BUSHING, Reducing (see index 103, figure 5-1 for NHA)	REF	
-10	69066	. TEE, Street (see index 106, figure 5-1 for NHA)	REF	
	69001	. COMPRESSOR ASSEMBLY (See index 116, figure 5-1 for NHA)	REF	
-11	80261	. . COVER	1	
-12	120918	. . BOLT, Hx hd (AP)	6	
-13	120382	. . WASHER, Lock	6	
-14	40868	. . DISC, Breather	1	
-15	44753	. . DIAPHRAGM	1	
-16	44430	. . GASKET	1	
-17	44919	. . SPRING	1	
-18	44758	. . VALVE	1	
-19	62144	. . CYLINDER	1	
-20	44756	. . STEM	1	
-21	67910	. . LOCKNUT	1	
-22	44755	. . PISTON	1	
-23	44756	. . STEM	1	
-24	62286	. . ARM ASSEMBLY, Control, speed	1	
-25	40875	. . . BUSHING	2	
-26	40596	. . PIN	1	
-27	61759	. . GUIDE, Control, speed	1	
-28	138208	. . BOLT, Scr hd (AP)	1	
-29	443331	. . NUT, Lock	1	
-30	62047	. . PUSH ROD	1	
-31	26816	. . BOLT, Soc hd (AP)	2	
-32	28149	. . WASHER, Lock (AP)	2	
-33	61759	. . GUIDE	1	
-34	61761	. . GASKET	1	
-35	24498	. . O-RING	1	
-36	26981	. . BUSHING	1	
-37	45073	. . PLATE, Valve	1	
-38	121832	. . SCREW, Rd hd (AP)	2	
-39	40045	. . WASHER, Lock (AP)	2	
-40	45074	. . SHAFT, Valve	1	
-41	30024	. . LEVER, Valve plate (see index 88, figure 5-1 for NHA)	REF	
-42	20588	. . WIRE STOP (See index 88, figure 5-1 for NHA)	REF	
-43	132915	. . SCREW, Rd hd (AP)	1	
-44	30788	. . PIN	1	
-45	143933	. . PLUG, Pipe	1	
-46	24527	. . BALL	1	
-47	45121	. . PLUG	1	
-48	24498	. . O-RING	1	
-49	46888	. . SPRING	1	
-50	62336	. . HOUSING, Intake	1	
-51	122145	. . BOLT, Hx hd (AP)	2	
-52	120382	. . WASHER, Lock (AP)	2	
-53	44446	. . GASKET	1	
-54	46884	. . COVER	1	
-55	122027	. . BOLT, Hx hd (AP)	6	
-56	120214	. . WASHER, Lock (AP)	6	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-7-57	47325	. . GASKET	1	
-58	46869	. . BEARING	1	
-59	122017	. . BOLT, Hx hd (AP)	4	
-60	120214	. . WASHER, Lock (AP)	4	
-61	63196	. . RETAINER, Bearing	1	
-62	46875	. . COVER	1	
-63	28217	. . BOLT, Hx hd (AP)	5	
-64	428712	. . BOLT, Hx hd (AP)	1	
-65	26393	. . WASHER, Seal (AP)	6	
-66	153932	. . PLUG, Pipe	1	
-67	44428	. . O-RING	1	
-68	48185	. . COUPLING	1	
-69	48479	. . BOLT (AP)	1	
-70	131046	. . WASHER, Lock (AP)	1	
-71	46882	. . RETAINER	1	
-72	46890	. . GRIPSPRING	2	
-73	46889	. . KEY	1	
-74	46872	. . COVER, Seal, oil	1	
	143932	. . . PLUG, Pipe	1	
-75	122027	. . BOLT, Hx hd (AP)	6	
-76	120214	. . WASHER, Lock (AP)	6	
-77	47325	. . GASKET	1	
-78	46879	. . SEAL	1	
-79	46886	. . O-RING	1	
-80	47716	. . SLEEVE, Sealing	1	
-81	46878	. . SLEEVE	1	
-82	24978	. . O-RING	1	
-83	69005	. . ADAPTER	1	
-84	428703	. . BOLT, Hx hd (AP)	6	
-85	26393	. . WASHER, Seal	6	
-86	44443	. . GASKET	1	
-87	No Number	. . ROTOR, End cover and shaft assembly (not procurable separately).	REF	
-88	48768	. . . BLADE, Rotor	16	
-89	46868	. . . BEARING	1	
-90	24986	. . . KEY	1	
-91	69003	. . . ROTOR	1	
-92	46887	. . . COVER	1	
-93	69004	. . . SHAFT	1	
-94	44972	. . . NAMEPLATE	1	
-95	9426053	. . . SCREW, Self tapping	2	
-96	41000	. . . ELBOW	1	
-97	44428	. . O-RING	1	
-98	9314	. . BALL	1	
-99	43393	. . VALVE	1	
-100	43392	. . PLUG	2	
-101	24964	. . O-RING	2	
-102	43394	. . SPRING	2	
-103	66981	. . ELBOW (See index 93, figure 5-1 for NHA)	REF	
-104	24636	. . EYEBOLT	1	
-105	69002	. . STATOR	1	

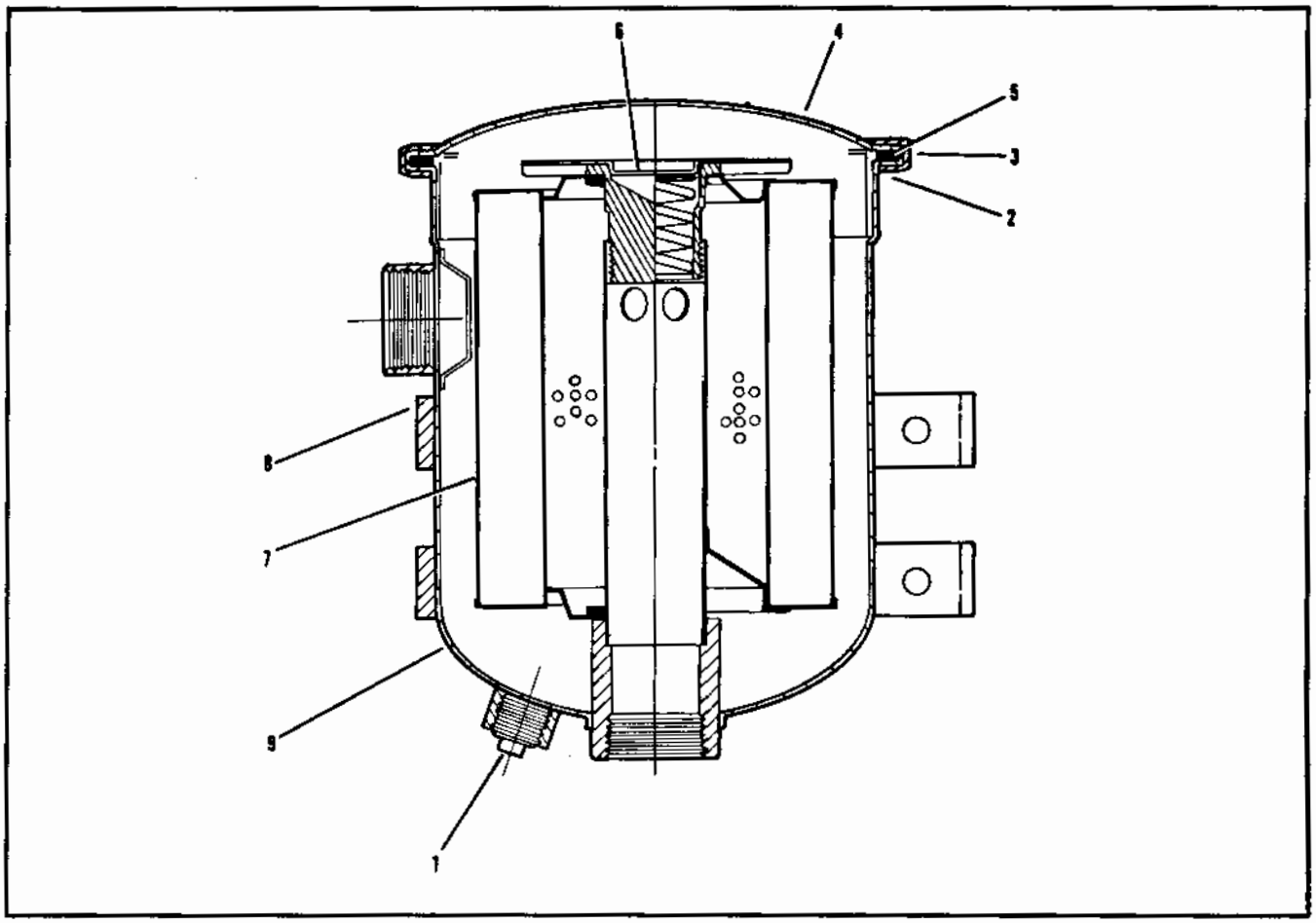


Figure 5-8. Compressor Oil Filter Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-8	69039	OIL FILTER ASSEMBLY, Compressor ..... (see index 95, figure 5- 1 for NHA)	REF	
-1	7886	. PLUG, Drain (81321)	1	
-2	6654655	. RING, Clamping (81321)	2	
-3	6653481	. SCREW, Cap (AP) (81321)	2	
-4	No Number	. COVER, Housing (not procurable separately) (81321)	1	
-5	69041	. GASKET, Cover (81321 PN 6653463)	1	
-6	6670117	. RETAINER, Element (81321)	1	
-7	69040	. ELEMENT, Filter (81321 PN P32-42-63104-3)	1	
-8	22202	. BRACKET, Mounting (81321)	2	
-9	No Number	. BASE, Filter (81321) (not procurable separately)	1	

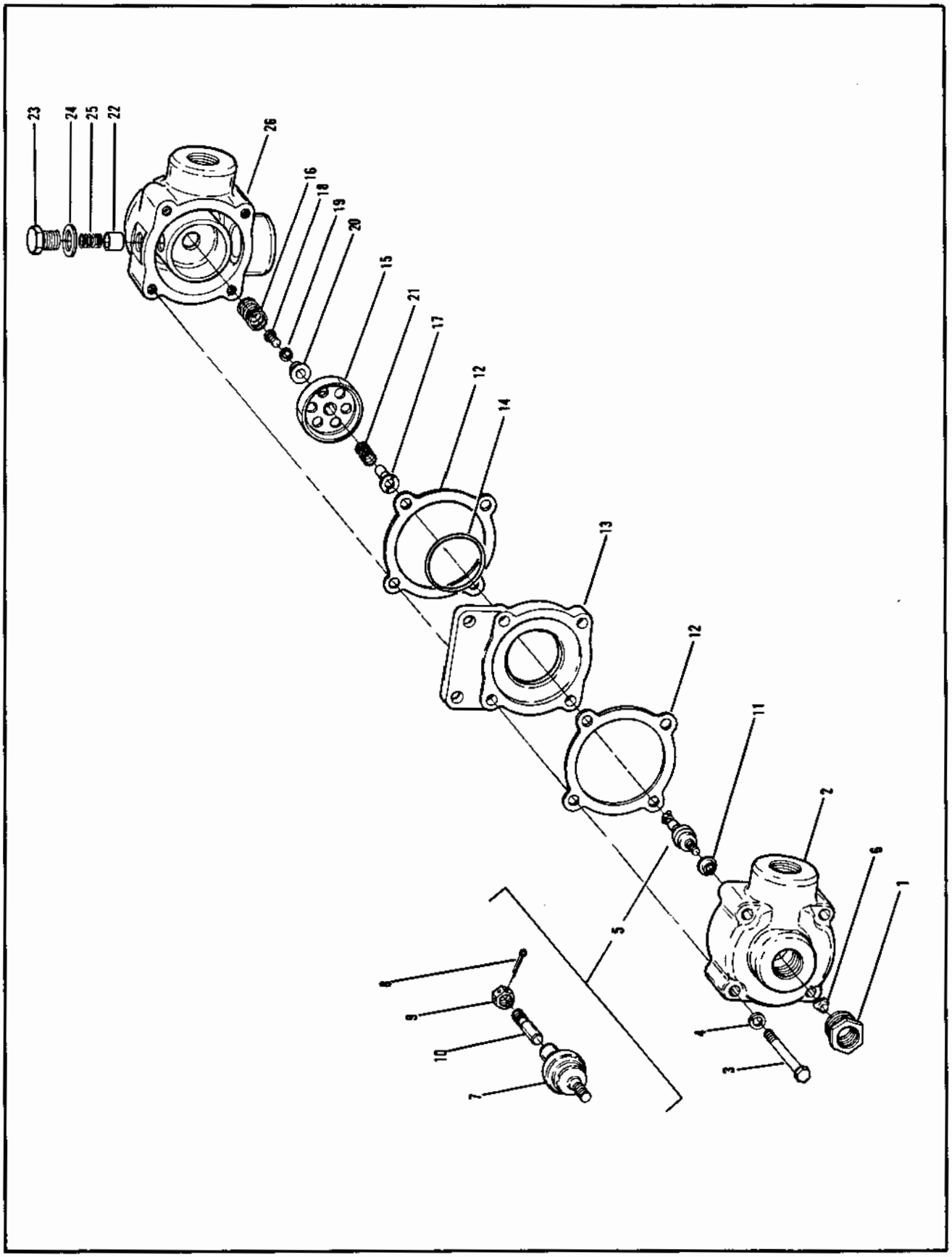


Figure 5-9. Thermal By-Pass Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-9	69028	THERMAL BY-PASS ASSEMBLY (See index 94, figure 5-1 NHA)	REF	
-1	192654	. BUSHING, Reducing	4	
-2	48792	. COVER, Inlet	1	
-3	111300	. BOLT, Hex head (AP)	4	
-4	28145	. WASHER, Lock (AP)	4	
-5	40434	. ELEMENT ASSEMBLY, Power	1	
-6	49275	. NUT (AP) (79136 PN 5300-1/4-28)	1	
-7	40664	. . ELEMENT, Power	1	
-8	137141	. . PIN, Cotter	1	
-9	40666	. . NUT, Hex	1	
-10	40665	. . PLUNGER	1	
-11	61211	. BUSHING	1	
-12	47895	. GASKET	2	
-13	48794	. BODY	1	
-14	40696	. O-RING	1	
-15	48796	. SHUTTLE	1	
-16	40679	. SPRING, Compression	1	
-17	46175	. PLUNGER, Valve, by-pass	1	
-18	121900	. BOLT, Hex hd (AP)	1	
-19	28149	. WASHER, Lock (AP)	1	
-20	46174	. GUIDE, Spring	1	
-21	62444	. SPRING	1	
-22	62443	. SEAT, Valve	1	
-23	62442	. BODY, Valve	1	
-24	26826	. WASHER	1	
-25	62444	. SPRING	1	
-26	62445	. COVER, Outlet	1	

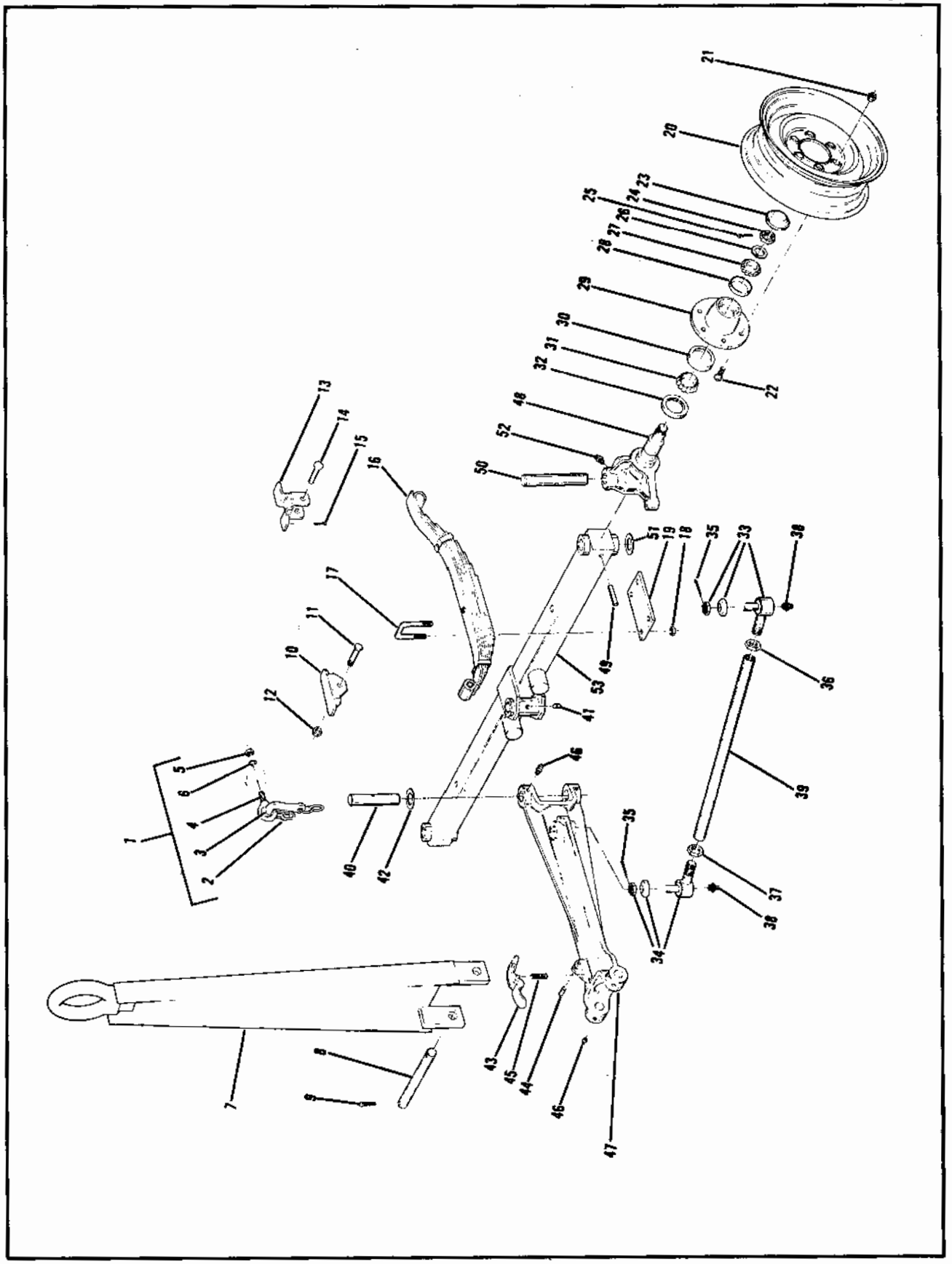


Figure 5-10. Drawbar and Front Axle Group

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-10	No Number	DRAWBAR AND FRONT AXLE GROUP (See figure 5-1 for NHA)	REF	
-1	61144	. CHAIN ASSEMBLY, Safety (22938)	2	
-2	49496	. . CHAIN, Link	2	
-3	49499	. . HOOK, Safety	2	
-4	24636	. . BOLT, Eye	2	
-5	120378	. NUT, Hex (AP)	2	
-6	120384	. WASHER, Lock, split (AP)	2	
-7	6-3504	. DRAWBAR ASSEMBLY (22938)	1	
-8	5406-2	. . PIN, Hinge (AP)	1	
-9	4800-6	. . PIN, Cotter (AP)	1	
	337-21910	. AXLE ASSEMBLY, Front (22938)	1	
	1-4250	. . BRACKET ASSY, Spring, front	2	
-10	4250	. . . BRACKET, Front	2	
-11	4901-19	. . . BOLT, Hx hd (AP)	2	
-12	4601-33	. . . NUT, Hex (AP)	2	
	1-4251	. . BRACKET ASSY, Spring, rear	2	
-13	4251	. . . BRACKET, Rear	2	
-14	5403-1	. . . RIVET (AP)	2	
-15	4800-3	. . . PIN, Cotter (AP)	2	
-16	1-4010-3	. . SPRING	2	
-17	5100-9	. . U-BOLT (AP)	2	
-18	4601-7	. . NUT, Hx, self locking (AP)	8	
-19	5600-2	. . PLATE, Tie, spring	2	
-20	68742	. WHEEL, 15 x 6 (16004) (see index 133, figure 5-1 for NHA)	REF	
	13-3615	. . HUB ASSEMBLY, Front	1	
-21	4603-1	. . . NUT, Stud, wheel (AP)	12	
-22	6251-11	. . . STUD, Wheel (AP)	12	
-23	6323	. . . CAP, Grease	2	
-24	4600-1	. . NUT, Spindle	2	
-25	4800-5	. . PIN, Cotter, spindle	2	
-26	4702-1	. . WASHER, Spindle	2	
-27	6067	. . . CONE, Bearing, outer (60038 PN L44649)	2	
-28	6158	. . . CUP, Bearing, outer (60038 PN L44610)	2	
-29	3615	. . . HUB, Front	2	
-30	6157	. . . CUP, Bearing, Inner (60038 PN L68111)	2	
-31	6063	. . . CONE, Bearing, Inner	2	
-32	6317	. . . SEAL, Grease	2	
	3905-262	. . TIE ROD ASSEMBLY (22938)	2	
-33	3954	. . . BALL JOINT, Left hand, with nut	2	
-34	3953	. . . BALL JOINT, Right hand, with nut	2	
-35	4800-1	. . . PIN, Cotter	4	
-36	4605-1	. . . NUT, Jam, LH	2	
-37	4605-2	. . . NUT, Jam, RH	2	
-38	5801	. . . FITTING, Lube	4	
-39	3902-222	. . . TUBE, Tie rod	2	
	1-3852	. . ARM ASSEMBLY, Center (22938)	1	
-40	5408	. . PIN, Center (AP)	1	
-41	5000-8	. . PIN, Roll (AP)	1	
-42	4701-9	. . WASHER, Flat	1	
-43	5835	. . . PEDAL, Latch	1	
-44	5000-1	. . . PIN, Roll (AP)	1	
-45	4006	. . . SPRING, Latch	1	
-46	5800	. . FITTING, Lube	4	
-47	3852	. . . ARM, Center	1	
-48	7-3807	. . SPINDLE-KNUCKLE ASSEMBLY, LH	1	
	8-3807	. . SPINDLE-KNUCKLE ASSEMBLY, RH	1	
-49	5000-8	. . PIN, Roll	2	
-50	5408	. . PIN, King	2	
-51	4701-9	. . WASHER, Flat	2	
-52	5800	. . FITTING, Lube	2	
-53	337-219X-1	. . BEAM ASSEMBLY, Axle	1	

SUPPLEMENT

Subject: Figure 5-10 - Drawbar and Front Axle Group 13-3615 - HUB ASSEMBLY, Front

Index No.	21	P/N	4603-1	NUT, Stud, wheel
Index No.	22	P/N	6251-11	STUD, Wheel
Index No.	29	P/N	3615	HUB, Front

ALTERNATE COMPONENTS

12-3615 HUB ASSEMBLY, Front

Index No. 21 and 22 replaced by P/N 4912 - CAPSCREW, Wheel

Index No. 29 P/N 3615 HUB, Front - specify with thread for capscrews

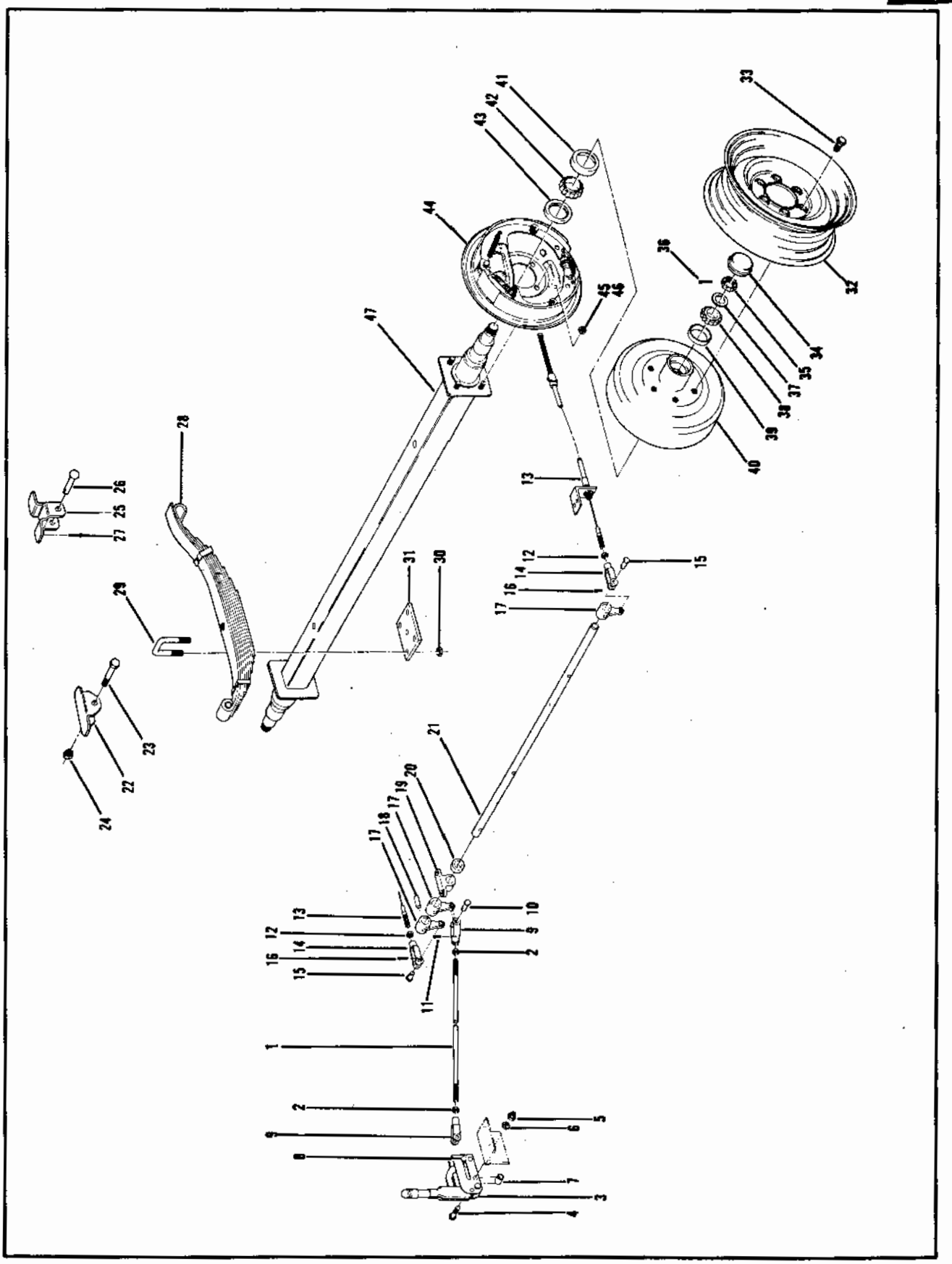


Figure 5-11. Handbrake Lever, Cross Shaft, and Rear Axle Group

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-11	No Number	HANDBRAKE LEVER, CROSS SHAFT, AND REAR AXLE GROUP ..... (See figure 5-1 for NHA)	REF	
	337-5901	. HANDBRAKE LEVER AND CROSS SHAFT ASSEMBLY (22938)	1	
-1	8300-524	. . ROD, Brake, Actuating	1	
-2	4601-5	. . NUT, Hex, yoke	2	
-3	1-5919	. . LEVER ASSY, Handbrake	1	
-4	122194	. . SCREW, Cap, hx hd (AP)	2	
-5	120377	. . NUT, Hex (AP)	2	
-6	120382	. . WASHER, Lock	2	
-7	5204	. . SPACER	2	
-8	5206	. . PIN, Yoke	1	
-9	5205	. . YOKE, Cable	2	
-10	5206	. . PIN, Yoke	1	
-11	4800-2	. . PIN, Cotter	2	
-12	4601-5	. . NUT, Yoke	2	
-13	3-8319	. . CABLE ASSY, Brake	2	
-14	5205	. . YOKE, Cable	2	
-15	5206	. . PIN, Yoke	2	
-16	4800-2	. . PIN, Collar	2	
-17	5909	. . LEVER, Shaft	3	
-18	5000-2	. . PIN, Roll	3	
-19	5908	. . BEARING, Cross shaft	2	
-20	6319-2	. . COLLAR, Setscrew	2	
-21	5910-337	. . SHAFT, Cross	1	
	337-21410	. AXLE ASSY, Rear (22938)	1	
-22	4250	. . BRACKET, Spring, front	2	
-23	4901-19	. . SCREW, Cap, hx hd (AP)	2	
-24	4601-33	. . NUT, Hex, self locking (AP)	2	
-25	4251	. . BRACKET, Spring, rear	2	
-26	5403-1	. . RIVET (AP)	2	
-27	4800-3	. . PIN, Cotter (AP)	2	
-28	1-4010-3	. . SPRING	2	
-29	5100-9	. . U-BOLT, Spring (AP)	4	
-30	4601-7	. . NUT, U-bolt (AP)	8	
-31	5600-2	. . PLATE, Tie, spring	2	
-32	68742	. WHEEL 15 x 6 (See index 133, Figure 5-1 for NHA)	REF	
-33	4912	. SCREW, Cap, wheel (AP) (specify when ordering)	12	
	3615-6	. HUB AND DRUM ASSY (Specify type when ordering)	2	
-34	6323	. . CAP, Grease	2	
-35	4600-1	. NUT, Hx, slotted (AP)	2	
-36	4800-5	. PIN, Cotter (AP)	2	
-37	4702-1	. WASHER, Spindle (AP)	2	
-38	6067	. . CONE, Bearing, outer (60038 PN L44649)	2	
-39	6158	. . CUP, Bearing, outer (60038 PN L44610)	2	
-40	3615	. . HUB AND DRUM, Brake	2	
-41	6157	. . CUP, Bearing, Inner (60038 PN L68111)	2	
-42	6063	. . CONE, Bearing, inner (60038 PN L68149)	2	
-43	6317	. . SEAL, Grease	2	
-44	8235-5	. BRAKE ASSY, LH (See figure 5-12 for details)	1	
	8235-6	. BRAKE ASSY, RH (See figure 5-12 for details)	1	
-45	4601-19	. . NUT, Hx (AP)	16	
-46	4700-6	. . WASHER, Lock (AP)	16	
-47	337-21410-2	. BEAM ASSY, Axle	1	

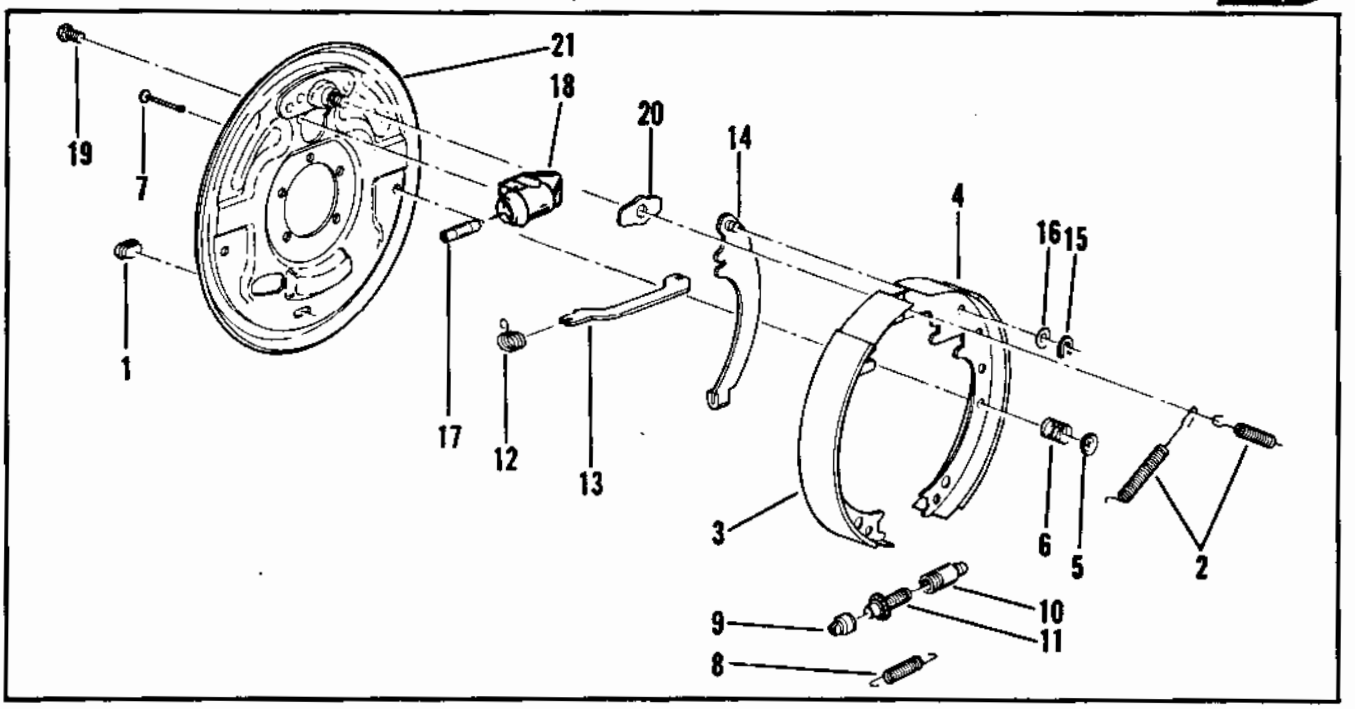


Figure 5-12. Brake Assembly

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5-12	*3201913LH	BRAKE ASSEMBLY, LH (see index 44, figure 5-11 for NHA)	REF	
	3201914RH	BRAKE ASSEMBLY, RH (see index 44, figure 5-11 for NHA)	REF	
-1	301055	. COVER, Brake adjusting hole	1	
-2	34852	. SPRING, Anchor to shoe, 50 lb, grey	2	
-3	†3202019	. SHOE AND LINING ASSY, Brake, primary	1	
-4	†3202023	. SHOE AND LINING ASSY, Brake, secondary	1	
-5	23969	. CUP, Shoe holddown spring	4	
-6	24784	. SPRING, Shoe holddown, 18 lb, light blue	2	
-7	49341	. PIN, Shoe holddown	2	
-8	23815	. SPRING, Adjusting screw, 30 lb, black	1	
	3202026	. ADJUSTING SCREW ASSEMBLY	1	
-9	304230	. . SOCKET, Adjusting screw	1	
	304214	. . SCREW ASSEMBLY	1	
-10	304229	. . . NUT, Adjusting screw	1	
-11	27099	. . . SCREW, Adjusting	1	
-12	39244	. SPRING, Strut to shoe, 8.5 lb, black	1	
-13	49005	. STRUT, Parking brake lever	1	
-14	321035	. LEVER ASSEMBLY, Parking brake, left hand (shown)	1	
	321036	. LEVER ASSEMBLY, Parking brake, right hand (opposite)	1	
-15	41029	. RETAINER, Lever pin	1	
-16	41647	. WASHER, Spring	1	
-17	47865	. LINK, Connecting, wheel cylinder	1	
-18	617855	. CYLINDER ASSEMBLY, Wheel, left hand (shown)	1	
	617856	. CYLINDER ASSEMBLY, Wheel, right hand (opposite)	1	
-19	47862	. SCREW, Cap, and washer	2	
-20	32594	. PLATE, Shoe guide	1	
-21	3202038	. BACKING PLATE ASSEMBLY, left hand (shown)	1	
	3202039	. BACKING PLATE ASSEMBLY, right hand (opposite)	1	

* All part numbers are those of The Bendix Corp., Brake and Steering Div. (14892)

†† Replacement part no. 3202027 for Lined Shoes Package

PART II - ENGINE - ACCESSORIES

ENGINE SERVICE MANUAL

ENGINE PARTS MANUAL

OIL RECOMMENDATIONS

PART II - ENGINE - ACCESSORIES

ENGINE SERVICE MANUAL

ENGINE PARTS MANUAL

ENGINE OVERHAUL MANUAL

OM

Operator's Manual

John Deere Series 300 OEM Engines

OM-R66377
Issue E7

JOHN DEERE

Engines for the Original Equipment Market

To the Purchaser

⚠ This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to possibility of personal injury and carefully read message that follows.

To keep your engine running efficiently, read instructions in this operator's manual.

Read Contents to learn where each section is located. Use Alphabetical Index for fast reference.

Throughout this manual, "right-hand" and "left-hand" sides are determined by facing drive end (rear) of engine.

Record your engine serial number and accessory codes in spaces shown on page 1. Your dealer needs this information when you order parts.

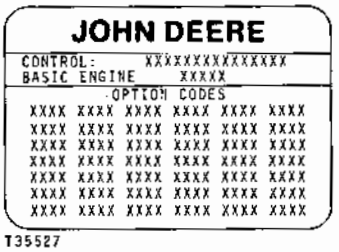
The warranty on this engine appears on your copy of engine registration.

Your operator's manual contains SI Metric equivalents which follow immediately after U.S. customary units of measure.

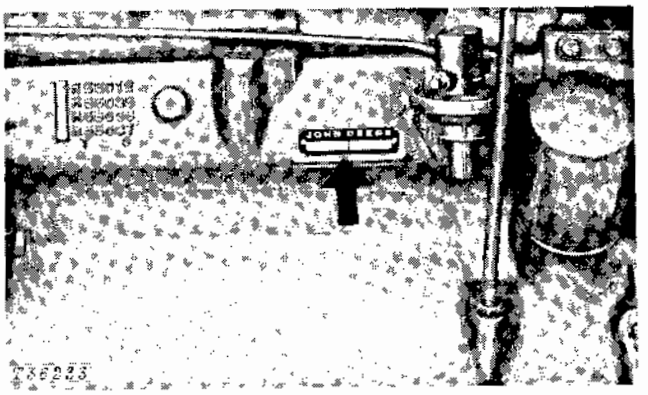
Contents

ACCESSORY CODE PLATE AND ENGINE SERIAL NUMBER PLATE

An accessory code plate and engine serial number plate are attached to your John Deere engine.



Accessory Code Plate



Engine Type_____ Engine Serial No._____
(6329 Engine)

The basic engine number identifies the engine model.

Enter engine model number and serial number above.

Option codes give functional groups (first two digits) and specific options (last two digits).
For example: 11____Rocker Arm 1102 - Rocker Arm Cover, No Filler

Functional Group Codes	Description
11____	Rocker Arm
12____	Oil Filler Cover and Inlet
13____	Crankshaft Pulley
14____	Flywheel Housing
15____	Flywheel
16____	Injection System
17____	Air Intake
18____	Air Cleaner
19____	Oil Pan
20____	Water Pump
21____	Thermostat Cover
22____	Thermostat
23____	Fan Pulley
24____	Fan Belts
25____	Fan
26____	Engine Heater
27____	Radiator
28____	Exhaust System
29____	Vent System
30____	Starting System
31____	Electrical System
32____	Instrumentation
33____	Tachometer
34____	Hour Meter
53____	Sheet Metal
58____	Clutch and PTO

Enter last two digits in spaces above from option code numbers on your engine code plate.

Accessories not sold by John Deere will be listed 00 (last two digits) on code plate. For example:

3000 - No Starting Motor

When you need engine parts or service, give your John Deere dealer engine model number, engine serial number and option code number.

Safety Rules

Reports on accidents show that careless use of the engine causes a high percentage of accidents. You can avoid many accidents by observing safety rules on this page. Study these rules carefully and enforce them on the job.

Never leave engine unattended while it is running.

Turn radiator cap slowly to relieve pressure before removing. Add coolant only when engine is idling or stopped.

Mount a fire extinguisher close to the engine. Maintain extinguisher properly and be familiar with its use.

Always disconnect battery ground strap before making adjustments on engine or electrical equipment.

Do not operate engine in a closed garage or shed unless properly ventilated.

Remove trash from engine and surrounding area daily.

Before using booster batteries read the instructions on page 6. If a battery needs recharging, avoid sparks by turning off the charger before connecting or disconnecting the charger.

Escaping fluid under pressure can penetrate skin.

Use a piece of cardboard or wood, not hands, to search for leaks.

If injured by escaping fluid, see a doctor at once.

Clothing worn by the operator should be relatively tight and belted.

Do not leave engine running while making adjustments or repairs unless specifically recommended.

Do not oil or grease engine while it is running.

Provide a first aid kit.

Use caution in handling fuel. Never refuel a hot or running engine. Do not smoke while filling fuel tank or servicing fuel system.

Keep hands, feet and clothing away from power-driven parts.

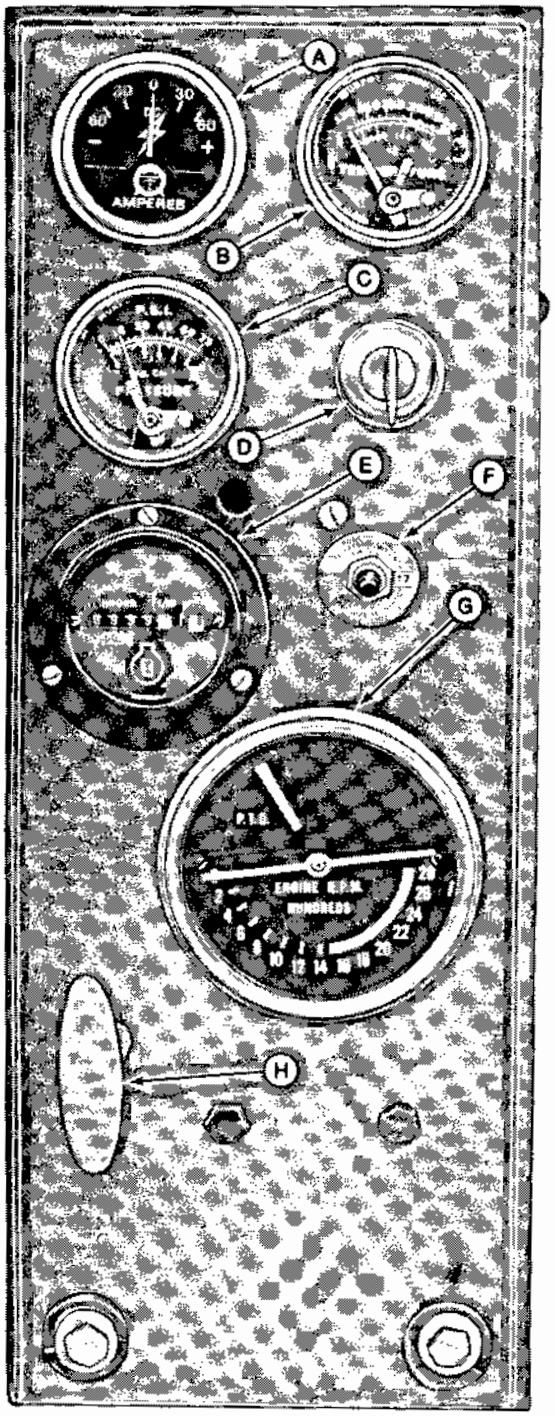
Check for loose electrical connections or faulty wiring.

Engine should be operated only by qualified persons.

Walk completely around engine making sure everything is clear before starting to work.

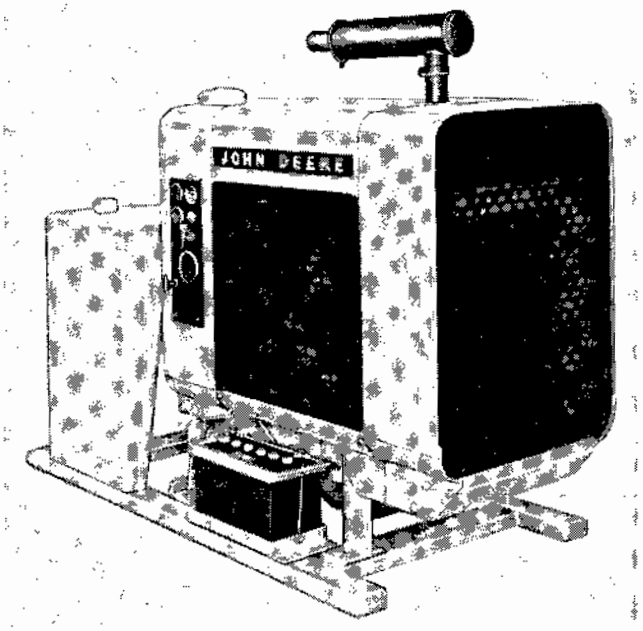
Do not operate an engine with an unsafe condition. If one is noticed, tag the engine so other operators will also know it.

Instruments



T51253

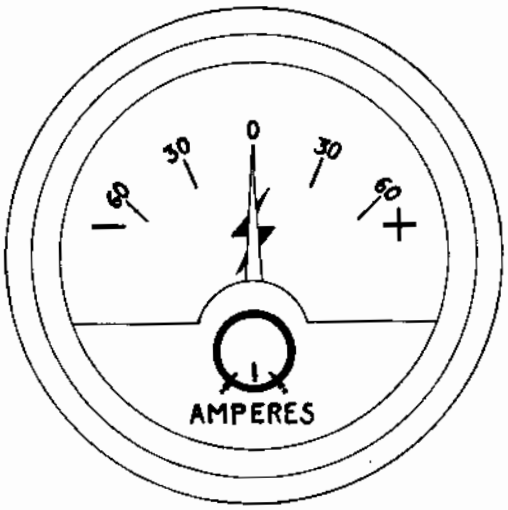
Instrument Panel
4219 Engine



T51254Y

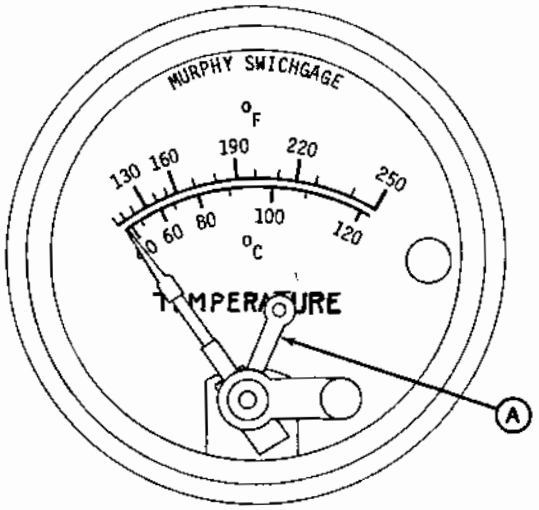
4219 Engine (Enclosed)

A—Ammeter
B—Engine Coolant Temperature Gauge
C—Engine Oil Pressure Gauge
D—Starter Switch
E—Hour Meter
F—Safety Switch
G—Tachometer
H—Throttle



T51255

Ammeter
4219 Engine

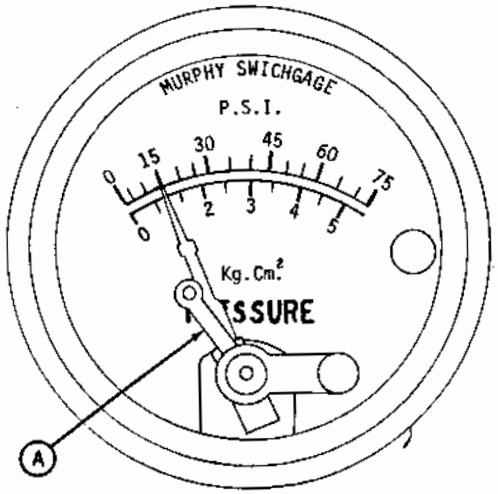


T51256

A — Contact

Coolant Temperature Gauge
4219 Engine

Contact is set at 220° F (104° C), factory recommended setting.

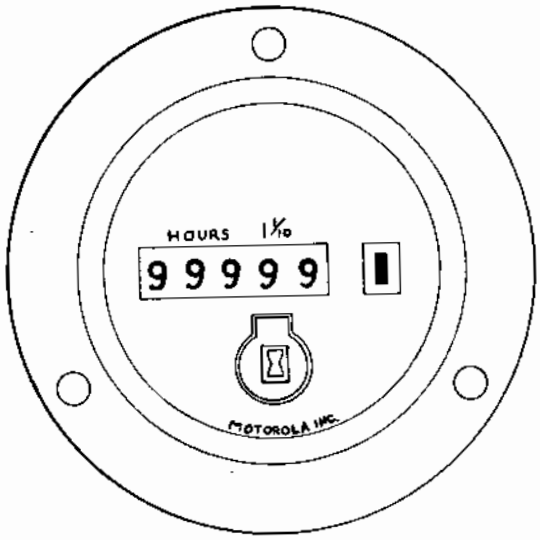


T51257

A — Contact

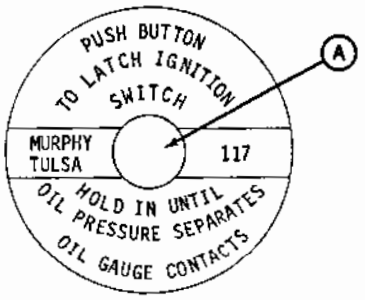
Oil Pressure Gauge
4219 Engine

Contact is set at 15 psi (1 bar), factory recommended setting.



T51258

Hour Meter
4219 Engine



T51259

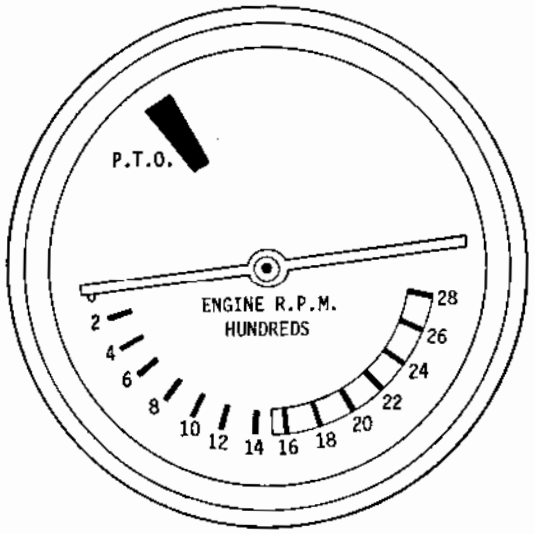
A—Button

Safety Switch
4219 Engine

Depress safety switch button as starter-switch key is turned on each time engine is started.

Safety switch will shut off engine if oil pressure lowers to 15 psi (1 bar) or coolant temperature rises to 220° F (104° C).

Determine cause before restarting engine.



T51260

Tachometer
4219 Engine

Operation

PRE-STARTING INSPECTION

Perform following checks before starting engine for first time each day:

A. Check engine crankcase oil level.

B. Check fuel filter for sediment.

C. Check radiator coolant level.

D. Inspect air cleaner; service if necessary.

E. Inspect turbocharger mountings and connections for lubricant or duct leakage.

STARTING THE ENGINE

CAUTION: Never start the engine unless it is safe to do so.

CAUTION: Before starting engine be sure there is plenty of ventilation. Never operate engine in closed shed or garage unless properly ventilated.

1. Before starting engine check fuel supply.

2. Turn key switch to on position. Depress starter safety switch, if equipped.

3. Depress starter button. Do not crank engine more than 20 seconds at a time. Wait 2 minutes between cranking periods.

If starter button is released before engine starts, wait until starter stops turning before depressing starter button again.

4. As soon as engine starts, release starter button and adjust engine speed to one-third throttle.

Cold Weather Starting

During cold weather, use starting aids as necessary.

Booster Batteries

Connect an additional 12-volt battery in parallel with 12-volt battery or batteries on engine for easier starting in cold weather.

Connect one jumper cable between booster battery positive (+) terminal and battery positive (+) terminal. Connect other jumper cable between booster battery negative (−) terminal and battery negative (−) terminal.

CAUTION: Gas given off by batteries is explosive: Avoid sparks near batteries.

ENGINE WARM-UP

Warm engine for 5 minutes by operating engine at half throttle.

Do not race or idle engine during warm-up.

Operate engine under lighter load and lower speeds than normal for first 30 minutes.

TURBOCHARGER ENGINES

Do not exceed 1000 rpm until engine oil pressure gauge reaches 20 psi (1.4 bar).

IMPORTANT: If engine stops under load, remove load and restart immediately.

ENGINE IDLING

Avoid unnecessary engine idling.

STOPPING THE ENGINE

Gasoline Engine

1. Run at half speed, no load for two minutes.
2. Set throttle at low idle.
3. Turn ignition key "OFF".

Diesel Engine

1. Run at half speed, no load for two minutes.
2. Set throttle at low idle.
3. Pull engine stop knob.
4. Turn ignition key "OFF".
5. Push engine stop completely in after engine stops.

NOTE: If engine stops under load, remove load and restart immediately.

Turbocharged Engine

IMPORTANT: Follow all steps above, then run engine at low idle for at least one minute before shut-off.

NOTE: Safety switch may stop engine. See page 5.

BREAK-IN PERIOD

FIRST 100 hours of operation is the break-in period. During this period, warm up engine thoroughly. See "Engine Warm-Up", page 6.

See page 9 for proper servicing and maintenance of engine during break-in period.

ENGINE SPEEDS

Normal engine working range for Series 300 OEM engines is 1500 to 2500 rpm. Low idle is 800 rpm.

Generator Set

1. Engine runs at 1800 rpm only: no high or low idle.
2. Run standby units at no load for half hour every two weeks.
3. Break unit in under load and operate periodically under load.
4. Cool down under no load for 3 to 5 minutes.

Fuels and Lubricants

FUELS

Use only clean, high quality fuel.

Fuel Specifications

Use Grade No. 1-D or No. 2-D fuel, as defined by ASTM Designation D975 for diesel fuels.

Use Grade No. 2-D fuel at ambient temperatures above freezing. Use Grade No. 1-D fuel at ambient temperatures below freezing and for all temperatures at altitudes above 5000 feet (1 500 m).

Use fuel having less than 1.0 percent sulfur, preferably less than 0.5 percent.

Sediment and water should not exceed 0.10 percent.

The cetane number should be 40 minimum. The interval between fuel system service may be increased by adding John Deere Diesel Fuel Conditioner to fuel.

Storing Fuels

Keep dirt, scale, water, and other foreign matter out of the fuel. Avoid storing fuel for a long period of time.

Filling the Fuel Tank

Fill the tank at the end of each day's operation.

LUBRICANTS

Use only lubricants specified in this section; apply them according to instructions in lubrication and periodic service section.

Storing Lubricants

Use only clean, high quality lubricants stored in clean containers in a protected area.

Engine Lubricating Oils

X3377

We recommend John Deere TORQ-GARD SUPREME engine oil for use in the engine crankcase.

NEVER PUT ADDITIVES IN THE CRANKCASE.

Oils other than TORQ-GARD SUPREME must conform to one of following specifications:

SINGLE VISCOSITY OILS

API Service CD/SD
MIL-L-2104C
Series 3

MULTI-VISCOSITY OILS

API Service CC/SD
MIL-L-46152

Depending on average temperature use oil as follows.

Air Temperature	John Deere TORQ-GARD Oil	Other Oils: Single Viscosity oil	Other Oils: Multi-Viscosity Oil
Above 32°F (0°C)	SAE 30	SAE 30	Not recommended
−10°F to 32°F (−23°C to 0°C)	SAE 10W-20	SAE 10W	SAE 10W-30
Below −10°F (−23°C)*	SAE 5W-20	SAE 5W	SAE 5W-20

**Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.*

Lubrication and Periodic Service

The OEM 300 Series engine requires regular, periodic service. Read this section carefully to aid in maintaining efficient engine performance.

Use engine hour meter to determine when periodic service is required.

When operating under unusual conditions, such as excessive heat, cold, dust, mud, or water, check and service engine more frequently.

BREAK-IN PERIOD

Before your new engine was shipped from factory, all bearings and friction surfaces were correctly fitted.

Crankcase was filled with John Deere TORQ-GARD SUPREME 10W-20. Use only this oil for break-in during first 100 hours.

Check crankcase oil level frequently during break-in.

Oil level should be between the two marks on the dipstick. Do not operate engine with oil level below the bottom mark.

At end of 100-hour break-in period, drain crankcase oil, change oil filter and refill crankcase with proper viscosity oil. Thereafter change crankcase oil every 100 hours and crankcase oil filter every 200 hours.

See pages 15, 16 and 17 for oil and oil filter change procedure.

PERIODIC SERVICE CHART

DAILY OR EVERY 10 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
1	Radiator	Check coolant level. Remove trash from screen.	Midway between core and filler neck.	.....
2	Fuel filter	Drain any water or dirt deposits.	.....	.....
3	Engine crankcase	Check oil level with dipstick fully inserted.	Between marks on dipstick.	Use recommended viscosity and type of oil.
4	Pre-cleaner	Clean out if necessary.	.....	.....
5	Air cleaner	Clean element when indicator shows red with engine shut off or excessive smoke or loss of power is noted. Empty dust cup.	....	....

EVERY 100 HOURS

6	Alternator-fan belt	Check tension.	3/4-inch (17 mm) belt flex with 20 pound (89 N) force.	.....
7	Batteries	Check level of electrolyte in each cell. Check for terminal corrosion.	Fill each cell to bottom of filler neck above plates.	Distilled water.
8	Engine crankcase	Drain and refill.	See chart on page 16.	Use oil of recommended viscosity and type.

EVERY 200 HOURS

9	Engine crankcase filter*	Change element.	.....	.....

**Change every 200 hours or yearly whichever occurs first.*

EVERY 500 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
10	Fuel filter*	Replace.	.....	Use a John Deere filter.
11	Engine crankcase vent tube	Remove and clean.	.....	Diesel fuel.
12	Air intake hoses	Check connections for leaks.	.....	.....

EVERY 1000 HOURS

13	Starter (Delco-Remy only)	Lubricate wicks. Check brushes for excessive wear.	Saturate wicks.	SAE 10W-20 engine oil.
14	Engine valves	See your John Deere dealer.	.....	.....
15	Engine speeds	Check speeds.	See your John Deere dealer.	.....

EVERY SPRING AND FALL

16	Cooling system	Drain, flush and refill. Remove any trash on screen.	.....	.....
17	Engine crankcase	Drain and refill. Replace filter.	See chart on page 16.	Use oil of recommended viscosity and type.

ANNUALLY

18	Air cleaner	Replace both elements.	.....	.....

**Change every 500 hours or yearly, whichever occurs first.*

DETAILED PERIODIC SERVICE

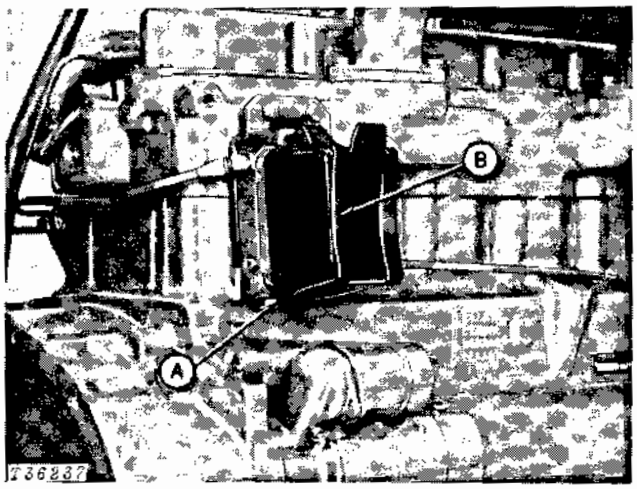
DAILY OR EVERY 10 HOURS

1. Radiator

⚠ CAUTION: Do not remove radiator filler cap until coolant temperature is below boiling point. Then loosen cap slowly to the stop to relieve excess pressure before removing cap completely.

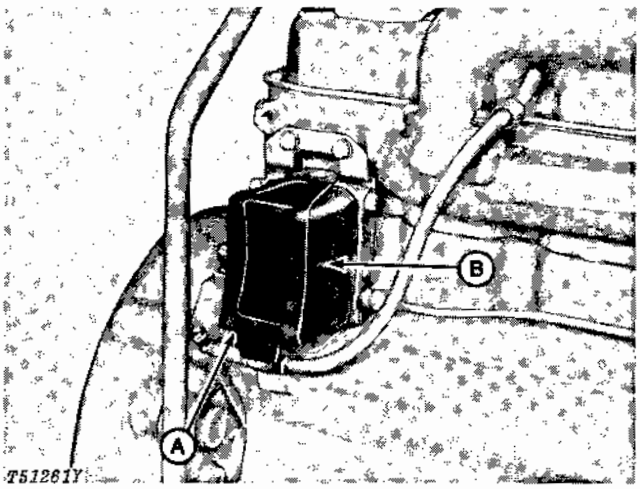
Check coolant level daily before starting engine. Coolant should be midway between radiator core and filler neck. Add permanent type antifreeze if cold weather is expected.

2. Fuel Filter



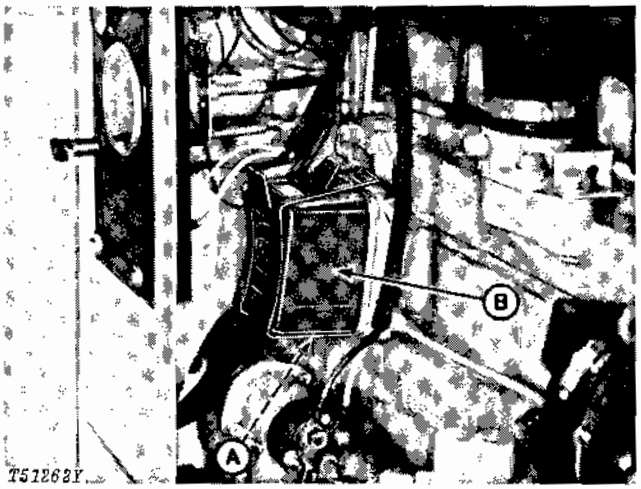
A—Fuel Filter Drain Plug **B—Fuel Filter**

6329 Engine



A—Fuel Filter Drain Plug **B—Fuel Filter**

6359 Engine



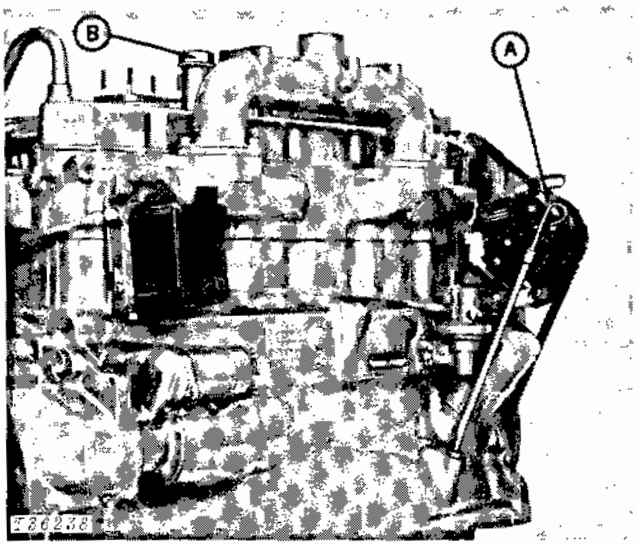
A—Fuel Filter Drain Plug **B—Fuel Filter**

4219 Engine

Visually inspect fuel filters. Drain water and sediment by loosening filter drain plug. Bleed fuel filter. See page 21.

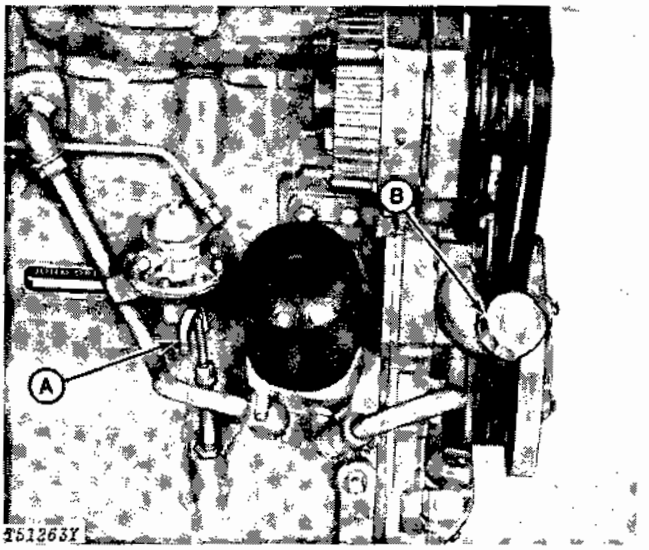
NOTE: Replace fuel filter when necessary.

3. Engine Crankcase



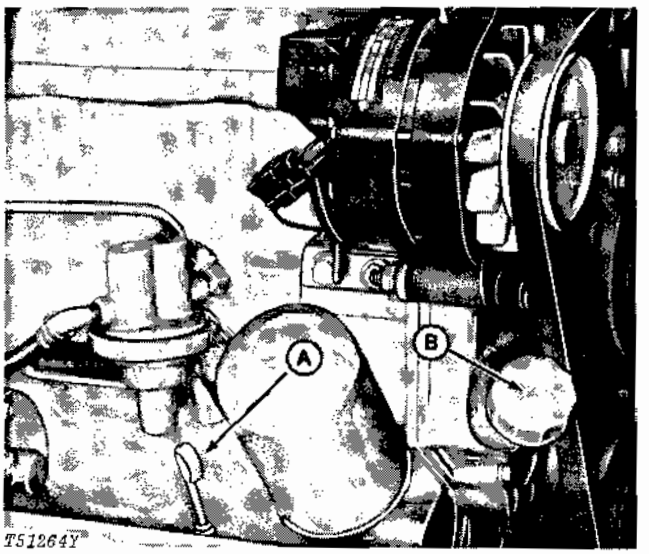
A—Crankcase Dipstick **B—Crankcase Filler**

6329 Engine



A—Crankcase Dipstick **B—Crankcase Filler**

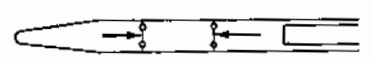
6359 Engine



A—Crankcase Dipstick **B—Crankcase Filler**

4219 Engine

Check crankcase oil level with engine off. If oil is at or below bottom mark on dipstick, add oil specified on page 8 to bring oil level between marks on dipstick. Do not operate engine with oil level below bottom mark.

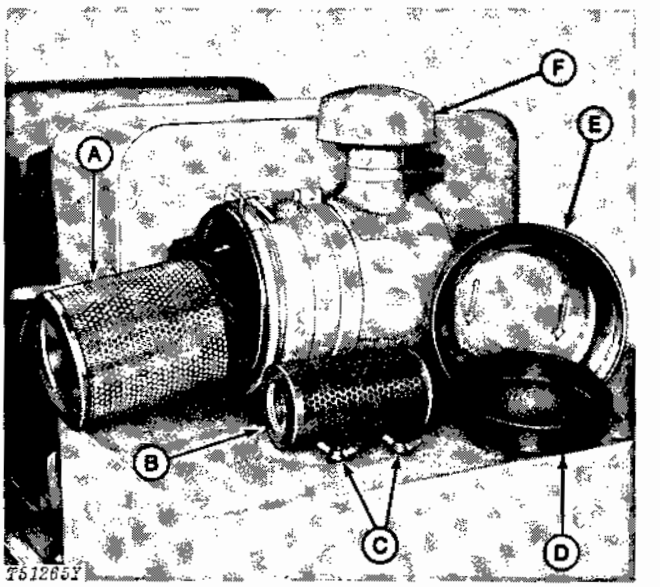


NOTE: There is a 2-quart (1.9 1) difference between bottom and top marks on dipstick.

4. Pre-Cleaner (if equipped)

Check level of accumulated material in bowl. Empty bowl as necessary.

5. Air Cleaner



A—Primary Element
B—Safety Element
C—Wing Nuts
D—Rubber Skirt Baffle
E—Cup
F—Pre-cleaner

Air Cleaner
4219 Engine

CAUTION: Stop engine before servicing air cleaner.

Empty dust cup, if equipped, before beginning work.

Clean primary air cleaner filter element whenever indicator red signal locks in full view. A portion of red signal may be visible at times during operation (this is normal). Excessive smoke or loss of power may indicate a restriction.

NOTE: Do not remove safety element unless emergency field servicing or replacement is necessary.

When element must be serviced in field, tap it on palm of your hand as a temporary service. Replace safety element IMMEDIATELY upon returning to the shop.

Carry a spare element in a sealed plastic bag.

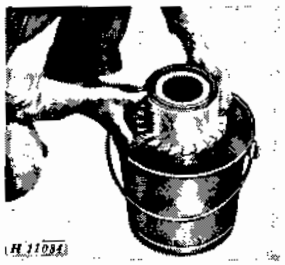
Dusty Element

Remove element. Tap element on palm of your hand to remove dust. DO NOT TAP ON A HARD SURFACE.

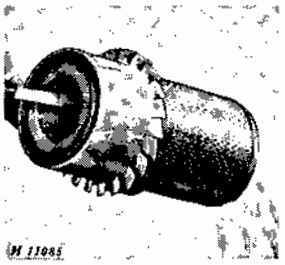
If tapping element does not remove dust, use compressed air under 30 psi (2.1 bar) to clean element. Direct clean dry air up and down the pleats, blowing from inside to outside. DO NOT RUPTURE ELEMENT.

Oily or Sooty Element

Soak and wash element in solution of lukewarm water (no hotter than your hand can stand) and R36757 Filter Element Cleaner or an equivalent non-sudsing detergent. Rinse element thoroughly with clean water from hose having maximum water pressure of 40 psi (2.8 bar). Shake excess water from element and allow it to air dry (usually requires 24 to 72 hours). Do not oven dry or use drying agents. Temperatures above 180° F (82°C) will shorten filter element service life. Protect element from freezing until dry.



Washing Element



Rinsing Element

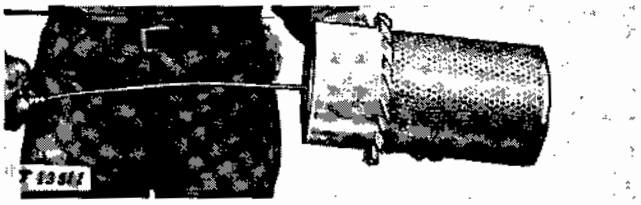
IMPORTANT: Never wash element in fuel oil, oil, gasoline, or solvent. Never use compressed air to dry element.

Cleaning Element with Compressed Air

Use John Deere AR62377 Dry Element Cleaning Gun with compressed air and insert cleaning gun. Hold air nozzle near inside of perforated sheet metal retainer and squeeze handle. Air is forced through element from inside to outside. Move gun up and down pleats.

Inspect element for damage by placing a light bulb inside. Discard any element that shows slightest rupture.

Inspect filter element gasket for damage. Replace element if gasket is missing or damaged.



Cleaning Element Using Compressed Air

IMPORTANT: Replace primary element: (1) if damaged; (2) after one year of service; (3) when element is not responding to cleaning (indicated by excessive smoke or loss of power).

Thoroughly clean inside of air cleaner body with clean damp cloth. Place element in cleaner body with gasket fins in first and secure with wing nut and gasket washer. Be sure gasket is in place between element and wing nut. Clean and install baffle and dust cup, if equipped, and tighten clamp finger tight. Reset indicator by pressing reset button at end of indicator.

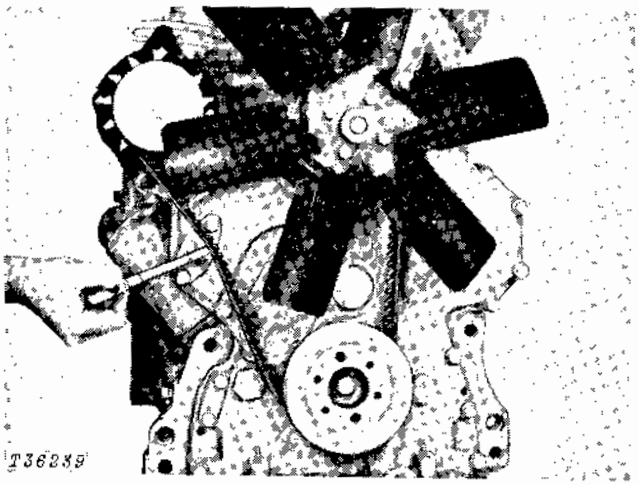
If indicator again turns red, safety element should be replaced.

IMPORTANT: Replace safety element: (1) annually or every 1000 hours; (2) whenever primary element is ruptured.

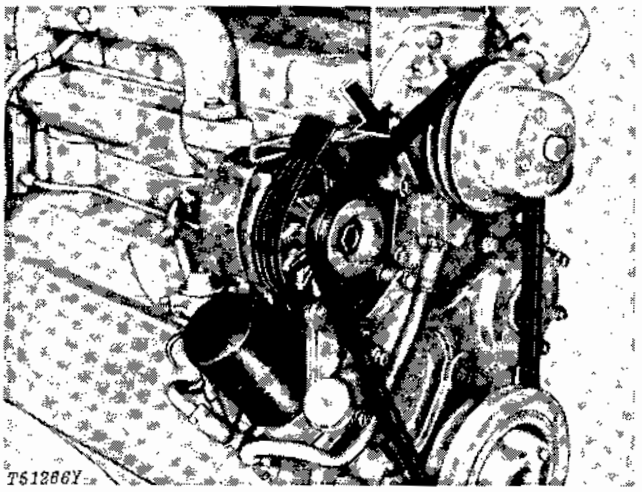
EVERY 100 HOURS

6. Alternator-Fan Belt Tension

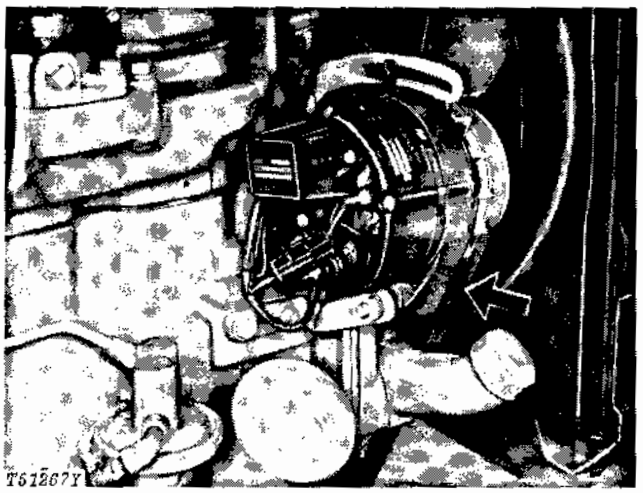
Check the tension on the alternator belt. Adjust to proper tension.



4219 Engine



6359 Engine



4219 Engine (Enclosed)

IMPORTANT: Do not pry on the matched rear alternator housing.

If belt gauge is used, tighten new single fan belt to 135-lb. (601 N) and new belts to 110-lb. (490 N) tension. After 3 minutes of machine operation tension should be 80-lb. (356 N) minimum. If manual method is used, loosen alternator bracket and adjusting cap screws and apply outward force to FRONT alternator frame until a 20-lb. (89 N) force on belt midway between pulleys will deflect belt 3/4-inch (19 mm).

NOTE: Tighten used fan belts to 90-lb. (401 N) tension.

Inspect belts periodically for wear or damage. If necessary to replace a belt, always replace BOTH belts.

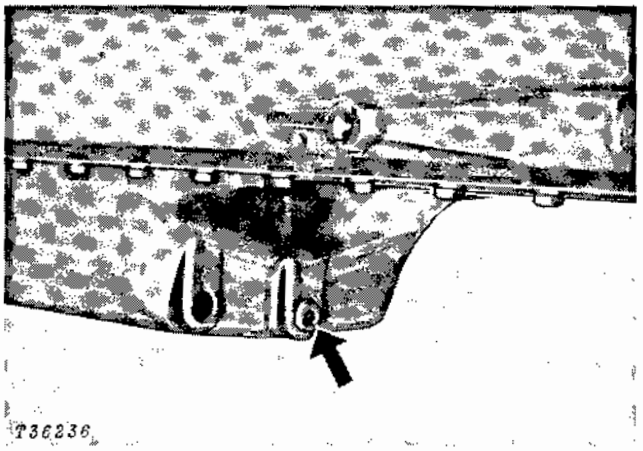
7. Batteries

Check battery electrolyte level. If distilled water is not available, use clean soft water. Avoid use of hard water. Remove foreign material from top of battery and coat terminals with petroleum jelly.

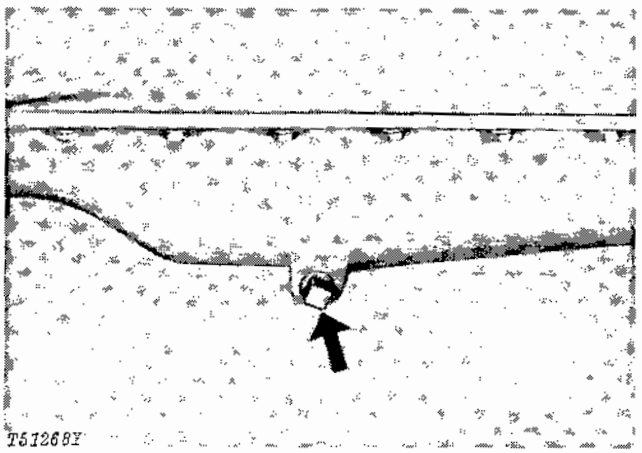
IMPORTANT: Never add water to battery in freezing weather unless engine is to be run 2 or 3 hours.

8. Engine Crankcase

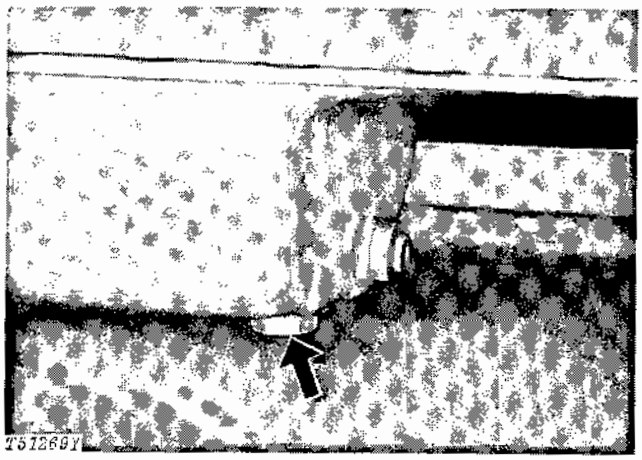
Replace engine oil every 100 hours of operation. Drain crankcase when oil is hot.



Crankcase Drain Plug
6329 Engine



Crankcase Drain Plug
6359 Engine



Crankcase Drain Plug
4219 Engine

Remove crankcase drain plug. Allow oil to drain. Replace plug after all oil has drained.

IMPORTANT: During intermittent cold weather operation, change oil at least every 100 hours or every six weeks, whichever occurs first. Also change oil at any seasonal change in temperature when a new viscosity of oil is required.

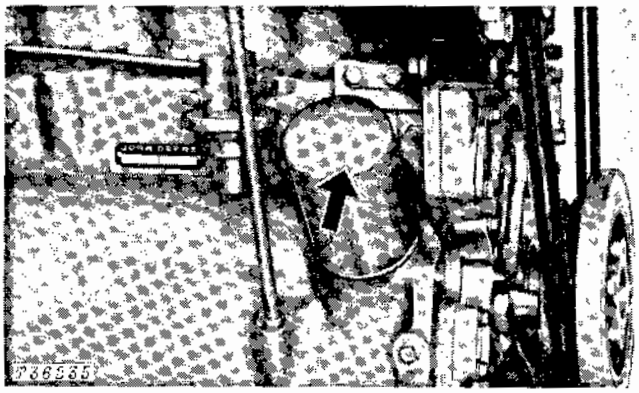
Fill crankcase with oil specified on page 8.

CRANKCASE CAPACITY

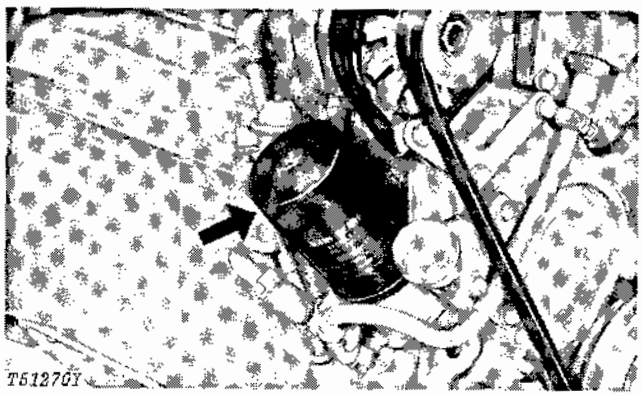
Engine Model	With Filter Change	Without Filter Change
3164D	6 qts. (5.7 l)	5 qts. (4.8 l)
4219D	6 qts. (5.7 l)	5 qts. (4.8 l)
4239DF	9 qts. (8.5 l)	8 qts. (7.6 l)
4239TF	15 qts. (14 l)	14 qts. (13.2 l)
4276D	9 qts. (8.5 l)	8 qts. (7.6 l)
4276T	14 qts. (13.2 l)	13 qts. (12.4 l)
6329D	12 qts. (11.4 l)	11 qts. (10.4 l)
6359DF	18 qts. (17.1 l)	17 qts. (16.1 l)
6359TF	18 qts. (17.1 l)	17 qts. (16.1 l)
6414D	18 qts. (17.1 l)	17 qts. (16.1 l)
6414T	18 qts. (17.1 l)	17 qts. (16.1 l)

EVERY 200 HOURS

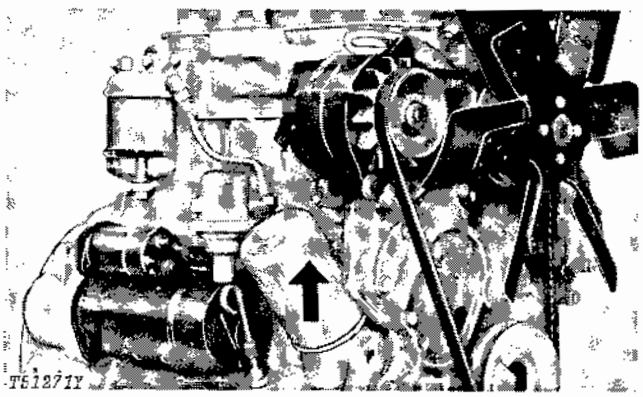
9. Changing Engine Crankcase Filter Element



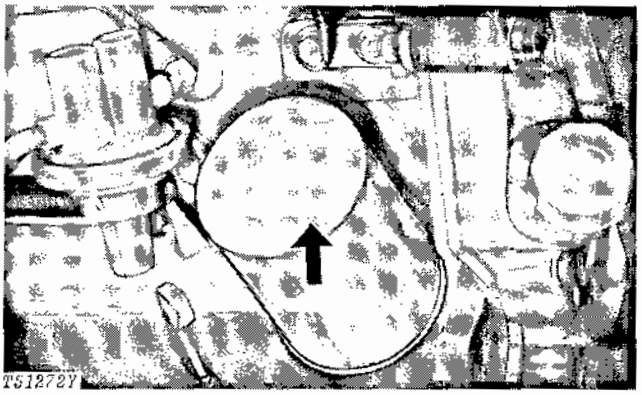
Oil Filter
6329 Engine



Oil Filter
6359 Engine



Oil Filter
3164 Engine



Oil Filter
4219 Engine

NOTE: Filter contains 1 quart (0.9 l) of oil.

NOTE: Change yearly if this occurs prior to 200 hours.

Spin off crankcase filter element and discard. Thoroughly clean filter mounting surface and install new element, making sure new sealing ring is inserted in bottom of element. Apply a thin film of oil to sealing ring. Spin element down by hand until sealing ring just touches mounting pad and then turn down an additional 1-1/2 turns. Do not overtighten.

With oil in crankcase, start engine and check for leaks around filter element. Retighten only as much as necessary to eliminate leaks, but do not overtighten.

IMPORTANT: Filter has a special bypass valve. Replace only with a John Deere filter.

Check crankcase oil level after changing filter and running engine.

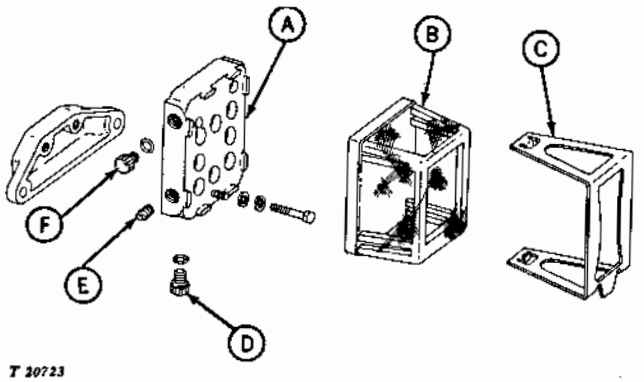
EVERY 500 HOURS

10. Fuel Filter

Replace fuel filter.

NOTE: Change yearly if this occurs before 500 hours.

Replacing Filter Element



A—Body
B—Element
C—Spring
D—Fuel Drain Screw
E—Fuel Inlet Plug
F—Bleed Screw

Fuel Filter

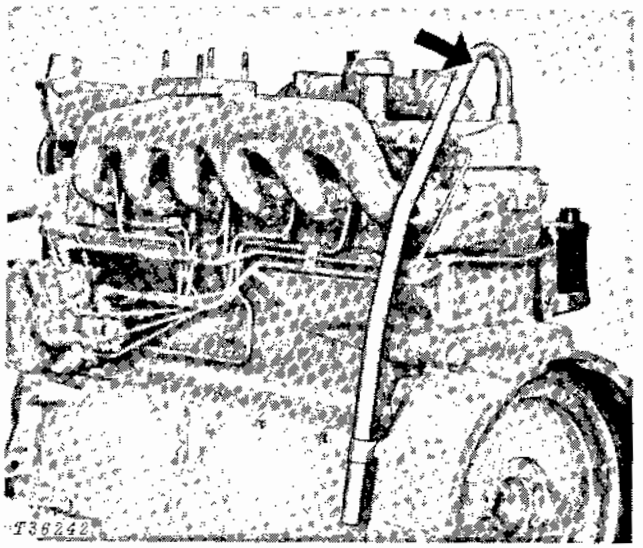
To release filter element retaining spring, press inward on outside finger tab and squeeze tabs together to disengage top hook of spring. Quickly pull filter element off and push new filter element over spring pin. Hook bottom of filter element retaining spring first and top hook last.

IMPORTANT: Dirt lodged in spring pin groove or at end of spring pin by cleaning efforts may be washed into injection system and damage injection pump or nozzles.

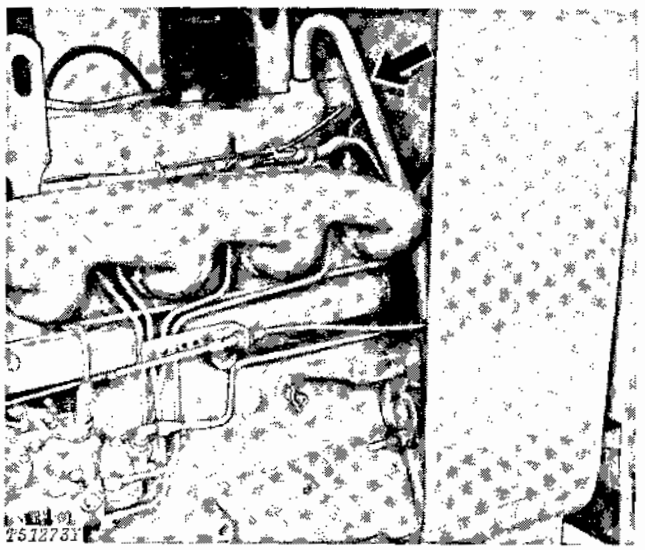
11. Engine Crankcase Vent Tube

Remove and clean vent tube in solvent or diesel fuel. When installing tube, be sure O-ring is secure in groove in engine rocker arm cover bore.

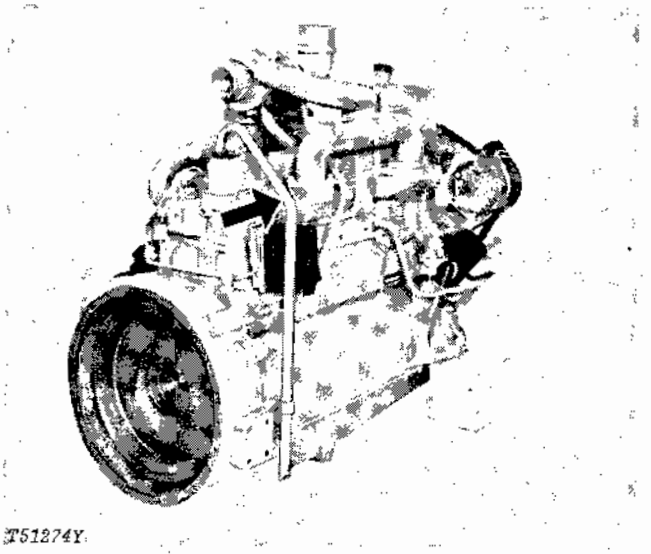
NOTE: Service vent tube more often if engine is operating in unusually dusty conditions.



Engine Crankcase Vent Tube
6329 Engine



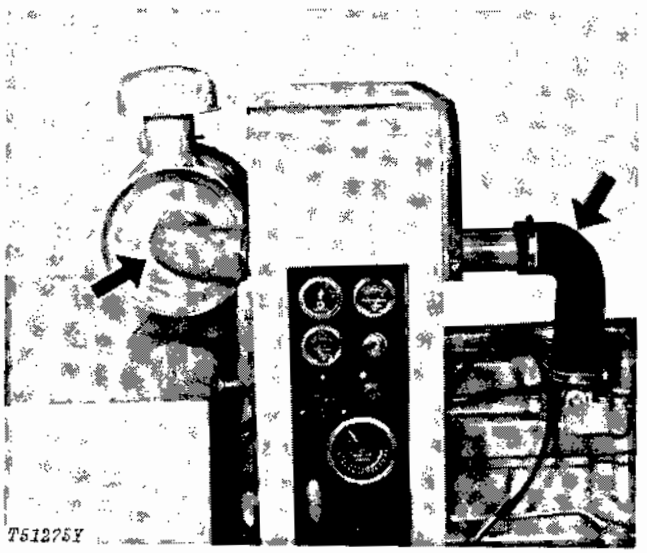
Engine Crankcase Vent Tube
4219 Engine



Engine Crankcase Vent Tube
6359 Engine

12. Check Air Intake Hoses

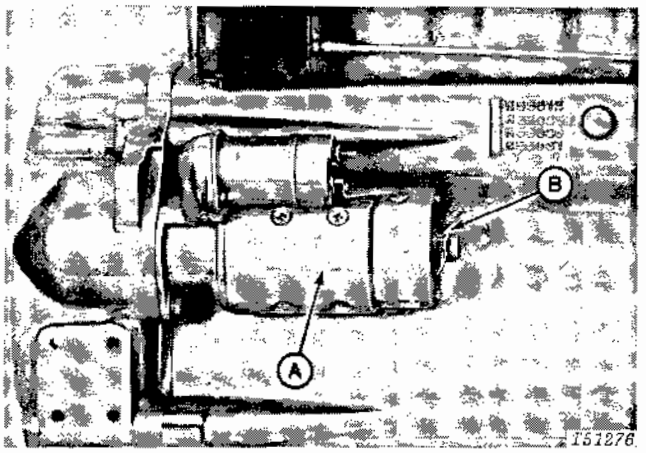
Check clamps on hoses which connect air cleaner and engine. Tighten hose clamps where necessary to prevent dirt from entering engine. Inspect hoses for cracks or rotting.



Air Intake Hoses
4219 Engine

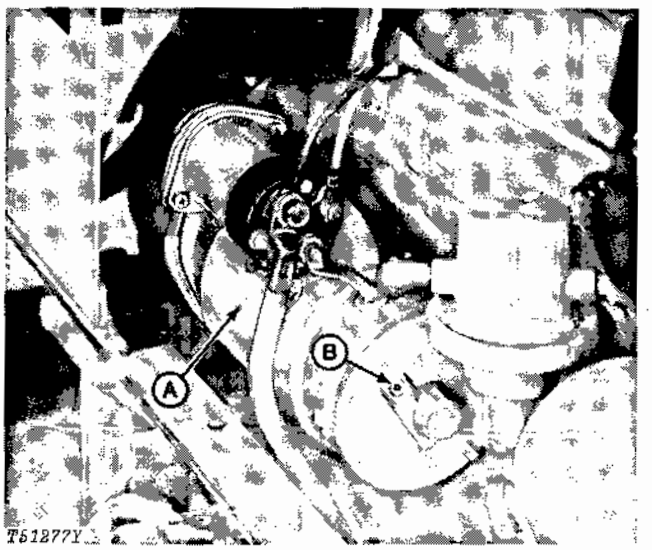
EVERY 1000 HOURS

13. Lubricating Starter (Delco-Remy Only)



A—Starter Motor **B—Pipe Plug**

6329 Engine



A—Starter Motor **B—Pipe Plug**

4219 Engine

Remove starter. Remove pipe plugs at each end of starter and saturate wicks with SAE 10W-20 John Deere TORQ-GARD SUPREME engine oil or an equivalent. Install starter.

14. Engine Valve Tappet Adjustment

See your John Deere dealer for service.

15. Engine Speeds

Warm up engine and use tachometer to check engine speeds.

Normal engine working range for Series 300 OEM engines is 1500 to 2500 rpm. Low idle is 800 rpm.

See your John Deere dealer for service.

EVERY SPRING AND FALL

16. Servicing Cooling System

Drain, flush, and fill cooling system with proper coolant. Also remove any trash around radiator. See page 23 for seasonal recommendations.

17. Servicing Engine Crankcase

Drain and refill engine crankcase with John Deere TORQ-GARD SUPREME engine oil or an equivalent. See page 8. Replace crankcase filter element.

NOTE: Perform this service only if 200-hour periodic service has not been performed during previous three-week period.

ANNUALLY

18. Servicing Air Cleaner

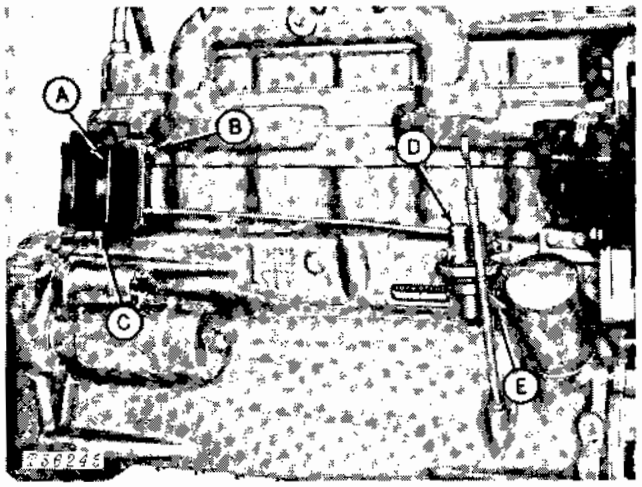
Replace primary and safety air cleaner elements. Before replacing elements, be sure to clean out air cleaner and dust unloading valve. See page 13.

Service

Instructions in this section will help you keep your engine performing efficiently and economically. For additional service, see your John Deere dealer.

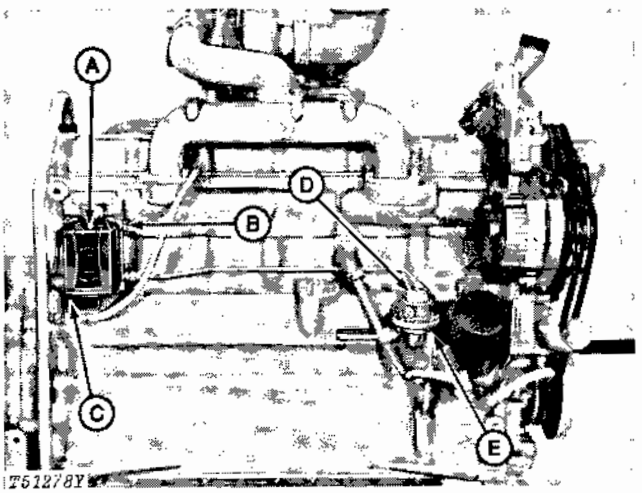
FUEL SYSTEM

Fuel system includes fuel tank and sump (if equipped), fuel transfer pump, fuel filter, injection pump, fuel injection nozzles, and lines which connect these parts.



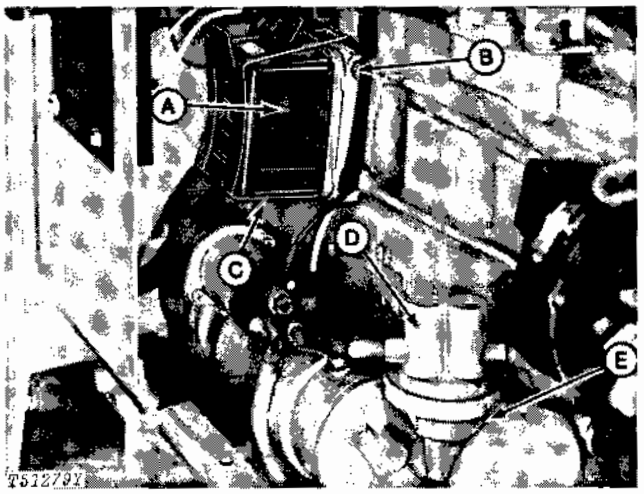
A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components
6329 Engine



A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components
6359 Engine



A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components
4219 Engine

Improper fuel storage may cause frequent contamination of fuel system. Water or sediment found daily in fuel filter indicates contamination of fuel system. Check storage tank.

Do not run engine while steam cleaning or washing near injection pump.

NOTE: Do not modify injection pump, injection pump timing, or fuel injection nozzles. See your John Deere Warranty on this engine.

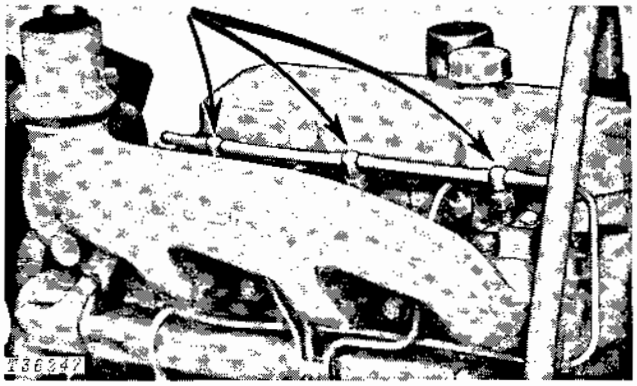
BLEEDING FUEL SYSTEM

When fuel filter or fuel pump sediment bowl is removed or engine runs out of fuel, bleed air from fuel filter. Loosen filter bleed screw. Pump primer lever on fuel transfer pump until air bubble in filter is gone and fuel flows from the bleed screw. Tighten the bleed screw and leave primer lever in down position.

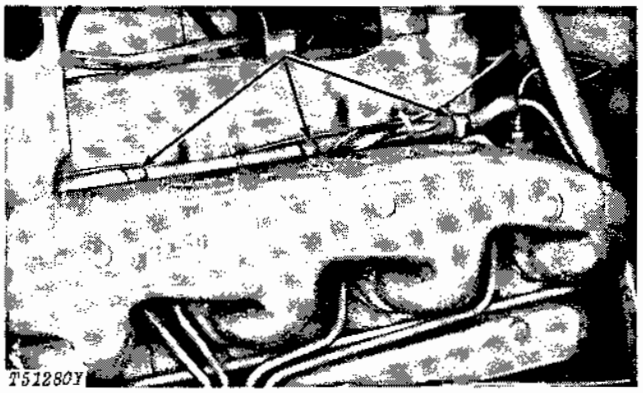
NOTE: If primer does not pump fuel and no resistance is felt at upper portion of lever stroke, turn engine very slightly with starter.

⚠ CAUTION: Escaping fluid under pressure can penetrate skin. Use a piece of cardboard or wood, not your hands, to search for leaks. If injured by escaping fluid, see a doctor at once.

FUEL INJECTION NOZZLES



Fuel Injection Nozzle
3164 Engine



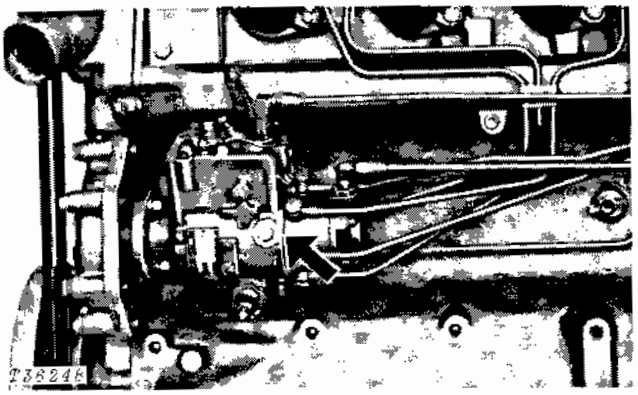
Fuel Injection Nozzle
4219 Engine

Fuel Injection Nozzles
6359 Engine

Occasionally fuel injection nozzles may require removal for inspection or service. If faulty or dirty nozzles are indicated by abnormal engine operation, see your John Deere dealer.

IMPORTANT: Do not attempt to remove and disassemble injection nozzles: special tools are required.

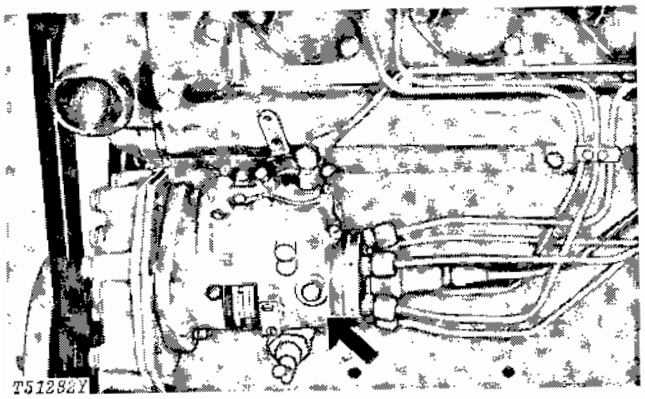
FUEL INJECTION PUMP



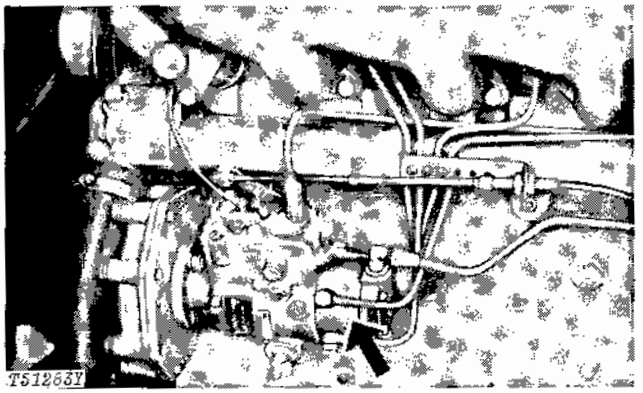
Fuel Injection Pump
6329 Engine

Service fuel injection pump only if abnormal engine operation indicates pump malfunctions. See your John Deere dealer for fuel injection pump service.

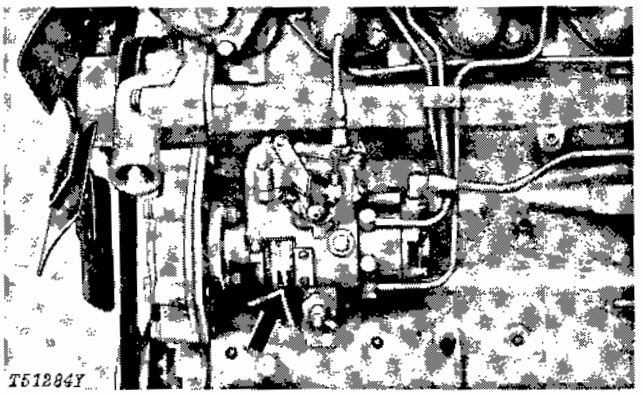
IMPORTANT: Never steam clean or spray water on a warm injection pump.



Fuel Injection Pump
6359 Engine



Fuel Injection Pump
4219 Engine



Fuel Injection Pump
3164 Engine

COOLING SYSTEM

A pressure radiator cap and a thermostat work to maintain proper engine operating temperature.

Pressure valve in radiator cap releases when pressure is between 6-1/4 and 7-1/2 psi (0.4 to 0.5 bar).

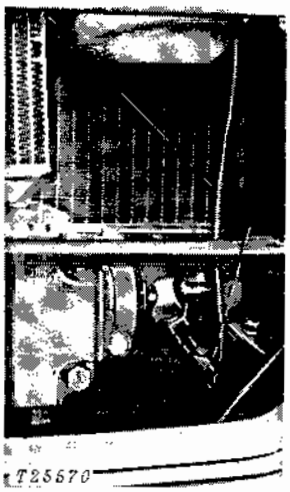
Keep cooling system air tight.

⚠ CAUTION: Do not remove radiator filler cap until coolant temperature is below boiling point. Loosen cap to the stop to relieve pressure before removing cap completely.

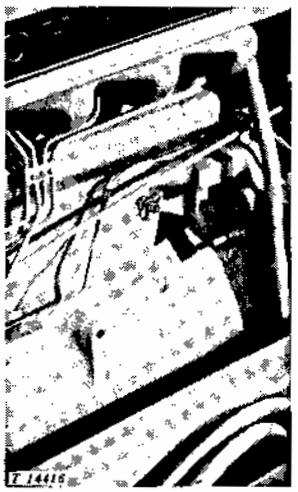
CLEANING COOLING SYSTEM

Drain, flush, and refill cooling system once a year.

To drain system completely, open radiator drain cock, cylinder block drain cock and engine oil cooler drain plug.

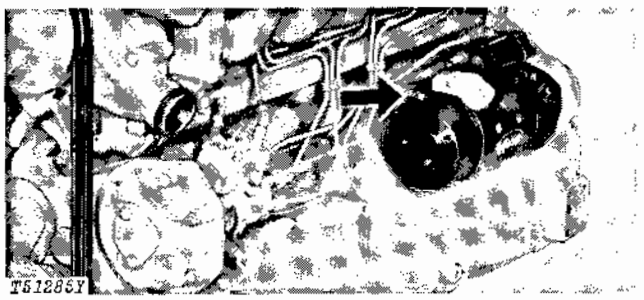


Radiator Drain Cock



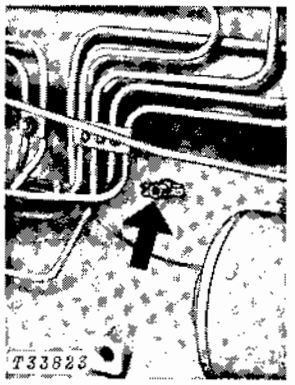
Cylinder Block Drain Cock

4219 Engine



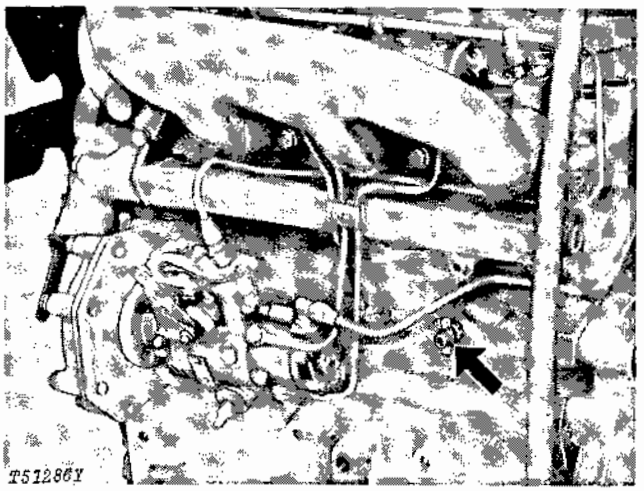
Cylinder Block Drain Cock
6359 Engine

Radiator Drain Cock

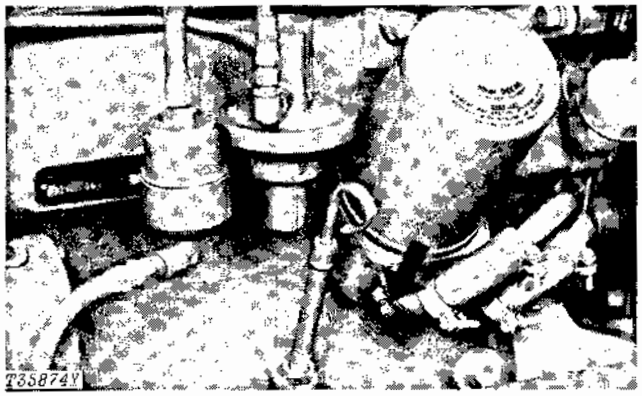


Cylinder Block Drain Cock

6414 Engine

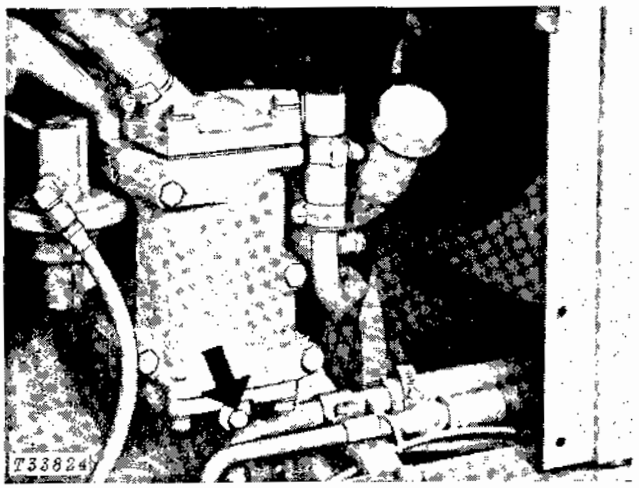


Cylinder Block Drain Cock
3164 Engine

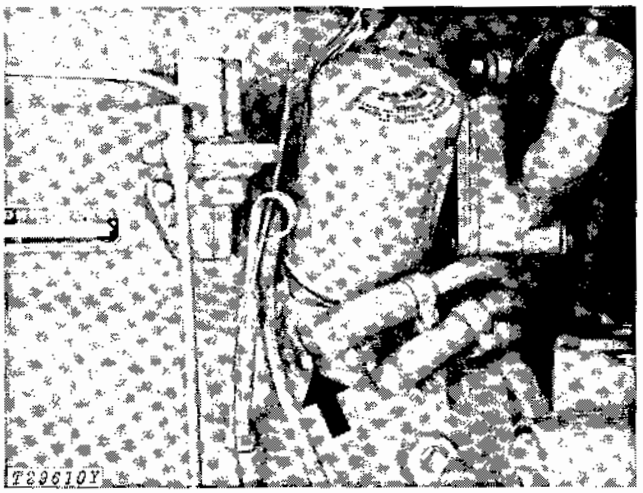


Engine Oil Cooler Drain Plug
4219 Engine

Engine Oil Cooler Drain Plug
6359 Engine



Engine Oil Cooler Drain Plug
6414 Engine



Engine Oil Cooler Drain Plug
6329 Engine

Servicing Cooling System

⚠ CAUTION: Do not remove radiator filler cap until the coolant temperature is below boiling point. Then loosen cap slowly to the stop to relieve any excess pressure before removing cap completely.

Open radiator cylinder block, and oil cooler drain cocks (if equipped) to drain cooling system. Flush cooling system, using John Deere Heavy Duty Cooling System Cleaner with Detergent, John Deere Cooling System Quick Flush, or an equivalent radiator cleaning compound.

When cold weather is expected, fill with 50% anti-freeze (ethylene glycol type) and 50% water. When temperatures remain above freezing fill cooling system with water, adding John Deere Summer Engine Coolant Conditioner or equivalent to prevent rust and corrosion and provide lubrication to water pump.

John Deere Cooling System Sealer or equivalent may also be added to radiator to seal leaks in cooling system.

Clean radiator fins as necessary with John Deere Heavy Duty Cooling System cleaner with detergent or an equivalent.

ELECTRICAL SYSTEM

BATTERIES

Use adequate size battery and cables.

IMPORTANT: When servicing electrical system, disconnect battery ground strap.

Cleaning Batteries

Keep batteries clean; wipe with damp cloth. Be sure vent plugs are tight.

To remove corrosion around terminals, remove battery cables and wash terminals with ammonia solution or a solution consisting of 1/4 pound (0.1 l) of baking soda added to 1 quart (0.9 l) of water.

After cleaning, flush outside of battery, battery compartment, and surrounding areas with clear water.

Checking Specific Gravity

Check specific gravity of electrolyte in each battery cell.

Hold the hydrometer vertically. Correct reading by adding four gravity points (0.004) for every ten degrees electrolyte temperature is above 80°F (27°C) or subtracting four gravity points for every ten degrees below 80°F (27°C). A fully charged battery will have a corrected specific gravity of 1.260. Charge battery if reading is below 1.215.

NOTE: In tropical areas, use a 1.225 full charge reading. In cold regions, use a 1.280 full charge reading.

Checking Electrolyte Level

Check electrolyte level at least every 100 hours of operation.

Fill battery cells to bottom of filler neck. Use distilled water or soft water.

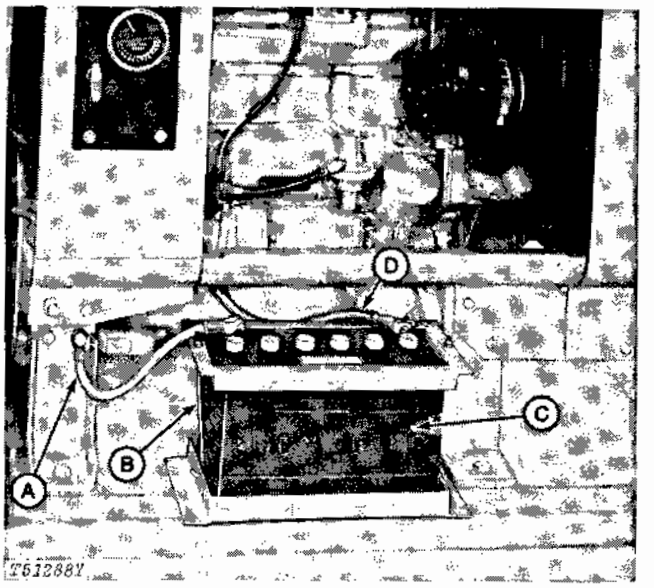
NOTE: Do not add water in freezing weather unless engine is to be run two or three hours.

Cold Weather Battery Service

During cold weather, keep electrolyte at proper level, and keep batteries fully charged.

Storing Batteries

If engine is to be stored for more than 30 days, remove batteries. Store battery in cool place. Keep fully charged.



A—Negative Ground Cable
B—Battery Hold-Down
C—Battery
D—Positive Cable To Starter

Battery
4219 Engine

ALTERNATOR AND REGULATOR

Precautions for Alternator and Regulator

When batteries are connected, observe precautions listed here.

(1) Disconnect negative ground strap when working on or near alternator or regulator.

(2) NEVER ATTEMPT TO POLARIZE ALTERNATOR OR REGULATOR.

(3) If alternator or regulator wiring is disconnected, be sure it is properly connected before batteries are connected.

(4) Do not ground alternator outlet terminal.

(5) Do not ground alternator field terminal or field circuit between alternator and regulator.

(6) NEVER disconnect or connect any alternator or regulator wires with batteries connected or with alternator operating.

(7) Always connect batteries or a booster battery in correct polarity.

(8) Never disconnect batteries when engine is running.

STARTER

IMPORTANT: Never hold starter button in start position for more than 20 seconds at a time. Wait two minutes between cranking periods. Be sure starter has stopped completely after a false start before cranking engine again.

Checking Causes of Sluggish Starter Operation

If starter fails or operates sluggishly, check for the following:

1 - Battery too small or weak.

2 - Dirty, loose or corroded cables or wires.

3 - Tight engine.

4 - Incorrect engine oil.

5 - Low temperature.

BOOSTER BATTERIES

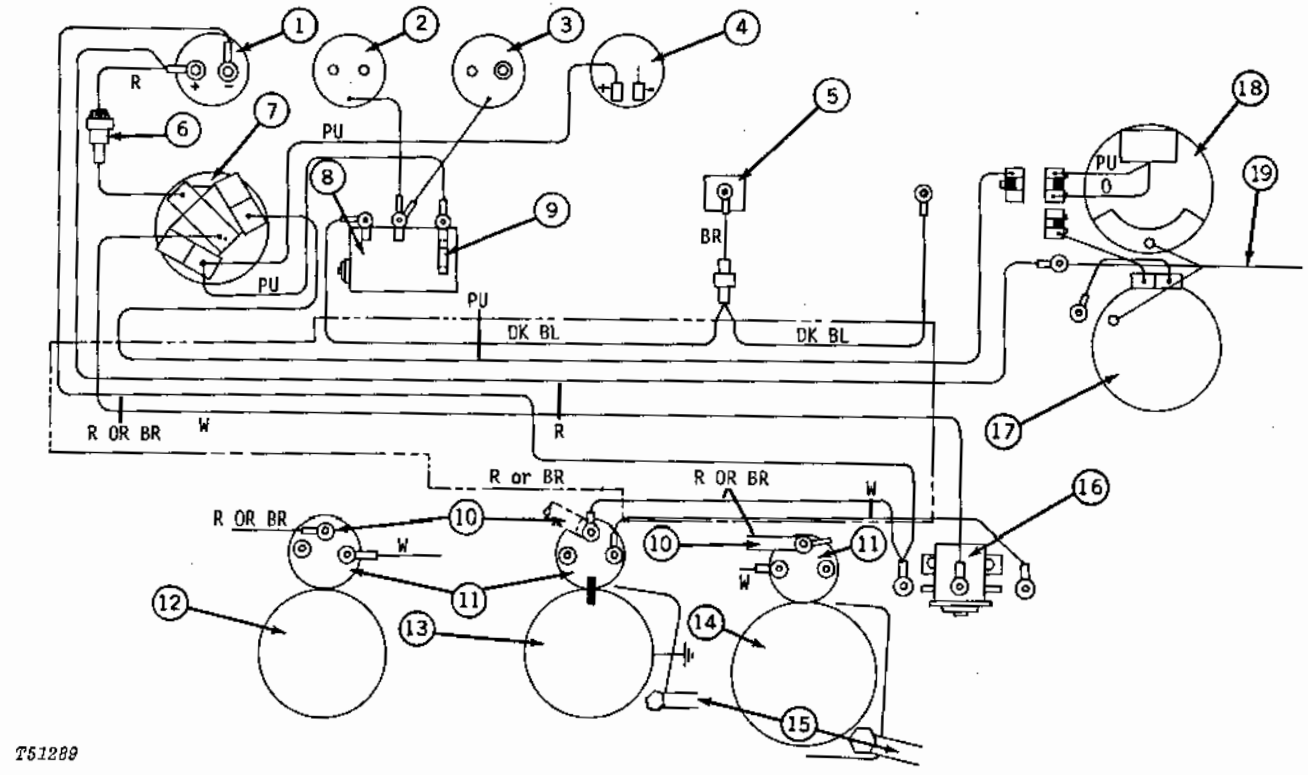
A battery charger may be used as a booster to start engine.

IMPORTANT: A battery charger should not be used as a booster if a battery has a very low charge (1.150 specific gravity reading or lower).

Charge battery until specific gravity reading is 1.150 or above before using a battery charger as a booster.

⚠ CAUTION: Gas from electrolyte is explosive. Keep batteries away from sparks or fires.

NOTE: If any electrical system wires are disconnected, connect them as shown on wiring diagram, page 27.



1—Ammeter
2—Oil Pressure Gauge
3—Water Temperature Gauge
4—Hour Meter
5—Fuel Injection Pump
6—Fuse Holder (25 amp fuse)
7—Key Switch
8—Safety Switch
9—Fuse, 14 amp
10—Positive Battery Cable
11—Solenoid
12—Starting Motor (Delco Remy, R.H. side)
13—Starting Motor (Delco Remy, L.H. side)
14—Starting Motor (John Deere)
15—Negative Battery Cable
16—Starting Circuit Relay
17—Alternator (Delco Remy)
18—Motorola
19—Output to Battery

R—Red
O—Orange
BL—Blue
BR—Brown
W—White
PU—Purple
DK—Dark

Electrical System Schematic: Series 300 OEM Engines

Storage

To store your engine, or take it out of storage, follow instructions below.

STORING ENGINE

Use AR41785 engine storage kit or its equivalent when storing engine.

Change crankcase oil before storing engine. Drain the engine crankcase with the engine warm. Replace filter element and fill crankcase with correct oil.

Drain, flush and fill cooling system. Use clean soft water and John Deere Summer Coolant Conditioner (T19566). Use antifreeze during cold weather. Run engine at normal operating temperature at slow idle to circulate coolant.

Service air cleaner. See page 13.

Drain fuel tank and add 1 ounce (29.5 cc) of inhibitor to fuel tank for each 4 gallons (15 l) of tank capacity.

Add 1 ounce (29.5 cc) of inhibitor to engine crankcase for each quart of crankcase oil.

Disconnect air intake pipe from manifold. Place 3 ounces (88.5 cc) of inhibitor in manifold. Reconnect air intake pipe. Turn engine over slowly for 2 revolutions.

Seal following openings with plastic bags and tape from kit: air cleaner inlet, exhaust opening, crankcase breather pipe, fuel tank vent and radiator overflow hose. Follow check list on tag.

Loosen fan belt.

Remove, clean, and store battery as instructed on page 25.

Coat exposed metal surfaces with a grease or corrosion preventive.

Clean exterior of engine and touch up scratched or chipped painted surfaces.

Store engine in a dry protected place or; if outside, cover it with suitable protective material.

REMOVING ENGINE FROM STORAGE

Use following procedure to remove your engine from storage:

Remove all protective coverings from engine. Unseal all openings in engine and electrical system. Follow check list on tag.

Remove batteries from storage. Install them and connect cables. Adjust alternator belt tension (page 14).

Fill diesel fuel tank with fresh fuel.

Check engine crankcase oil level. Check cooling system level.

Perform recommended 500 hour service.

To start engine, hold fuel shut-off out, crank engine with starter until engine oil pressure gauge shows oil pressure. Do not operate starter more than 20 seconds at a time. After gauge shows pressure, push fuel shut off completely in and start engine.

Operate engine for a few minutes at slow idle. Check proper condition before operating under a load.

Trouble Shooting

If you cannot correct engine trouble by using the following symptoms and solutions, see your John Deere dealer.

Engine Hard to Start or Will Not Start

Improper starting procedure.
No fuel.
Low battery output.
Check electrolyte level and specific gravity of battery. Page 25.
Excessive resistance in starting circuit.
Clean and tighten all connections on batteries and starter.
Crankcase oil too heavy.
Use oil of proper viscosity. Page 8.
Improper type of fuel.
Consult fuel supplier and use proper type of fuel for operating condition. Page 8.
Water, dirt, or air in fuel system.
Drain, flush, fill and bleed system. Page 21.
Clogged fuel filter.
Replace filter element. Page 17.
Dirty or faulty injection nozzles.
Have your John Deere dealer check injection nozzles.
Fuel pump primer lever left on upward end of stroke.

Engine Runs Irregularly or Stalls Frequently

Low coolant temperature.
If water temperature gauge is not in normal range, see "Below Normal Engine Temperature". Page 29.
Clogged fuel filter.
Replace filter element. Page 17.
Water, dirt, or air in fuel system.
Drain, flush, fill and bleed system. Page 21.
Dirty or faulty injection nozzles.
Have your John Deere dealer check injection nozzles.
Inspect clamps and hose. Replace if necessary.
Use only approved parts.
Improper type of fuel.
Use proper type of fuel for operating conditions. Page 8.

Engine Knocks

Insufficient oil.
Call your John Deere dealer.
Injection pump out of time.
See your John Deere dealer.
Low coolant temperature.
See "Below Normal Engine Temperature". Page 29.
Engine overheating.
See "Engine Overheats". Page 30.

High Fuel Consumption

Improper type of fuel. Page 8.
Clogged or dirty air cleaner.
Service air cleaner. Page 13.
Engine overloaded.
Reduce load.
Improper valve clearance.
See your John Deere dealer.
Injection nozzles dirty.
See your John Deere dealer.
Injection pump out of time.
See your John Deere dealer.
Engine not at proper temperature.
Check thermostats.

Below Normal Engine Temperature

Defective thermostat.
Remove and check thermostat.

Lack of Engine Power

Engine overloaded.
  Reduce load.
Intake air restriction.
  Service air cleaner. Page 13.
Clogged fuel filter.
  Replace filter element. Page 17.
Improper type of fuel. Page 8.
Overheated engine.
  See "Engine Overheats". Page 30.
Below normal engine temperature.
  Remove and check thermostat.
Improper valve clearance.
  See your John Deere dealer.
Dirty or faulty injection nozzles.
  See your John Deere dealer.
Injection pump out of time.
  See your John Deere dealer.
Inspect clamps and hose. Replace as necessary.
Use only approved parts.

Engine Overheats

Engine overloaded.
  Reduce load.
Low coolant level.
  Fill radiator to proper level.
  Check radiator and hoses for loose connections and leaks.
Loose or defective fan belts.
  Adjust belt tension. Page 14.
Dirty cooling system radiator core.
  Remove all foreign matter from exterior of radiator core.
Cooling system needs flushing.
Defective thermostat.
  Remove and check thermostat.
Defective temperature gauge.
  Check water temperature with thermometer and replace gauge if necessary.

Low Oil Pressure

Low oil level. Page 12.
Improper type of oil.
  Drain and fill crankcase with correct oil. Pages 8, 16.
Partially plugged oil filter.
  Replace filter.

High Oil Consumption

Crankcase oil too light.
  Use proper viscosity oil. Page 8.
Oil leaks.
  Check for leaks in lines around gaskets and drain plug.
Engine overheats.
  See "Engine Overheats." Page 30.

Engine Emits Black or Gray Exhaust Smoke

Clogged or dirty air cleaner.
  Service air cleaner. Page 13.
Defective muffler.
Improper fuel. Page 8.
Engine overloaded.
  Reduce load.
Injection nozzles dirty.
  See your John Deere dealer.
Engine out of time.
  See your John Deere dealer.

Engine Emits White Smoke

Improper fuel. Page 8.
Cold engine.
  Warm up engine to normal operating temperature.
Defective thermostat.
  Remove and check thermostat.
Engine out of time.
  See your John Deere dealer.

ELECTRICAL SYSTEM

Battery Will Not Charge

Loose or corroded connections.
- Clean and tighten battery connections.

Sulfated or worn-out batteries.
- Check specific gravity of each battery. Page 25.
- Check electrolyte level of each battery. Page 25.

Loose or defective alternator belt.
- Adjust belt tension. Page 14.
- Replace belt. Page 14.

Starter Inoperative

Loose or corroded connections.
- Clean and tighten loose connections.

Low battery output.
- Check specific gravity of each battery. Page 25.
- Check electrolyte level of each battery. Page 25.

Defective electrical system ground wire.
- Repair or replace.

Starter Cranks Slowly

Low battery output.
- Batteries too small.
- Battery cable too small.
- Check specific gravity of each battery. Page 25.
- Check electrolyte level of each battery. Page 25.

Crankcase oil too heavy. Page 8.

Loose or corroded connections.
- Clean and tighten loose connections.

Entire Electrical System Does Not Function

Faulty battery connection.
- Clean and tighten connections.

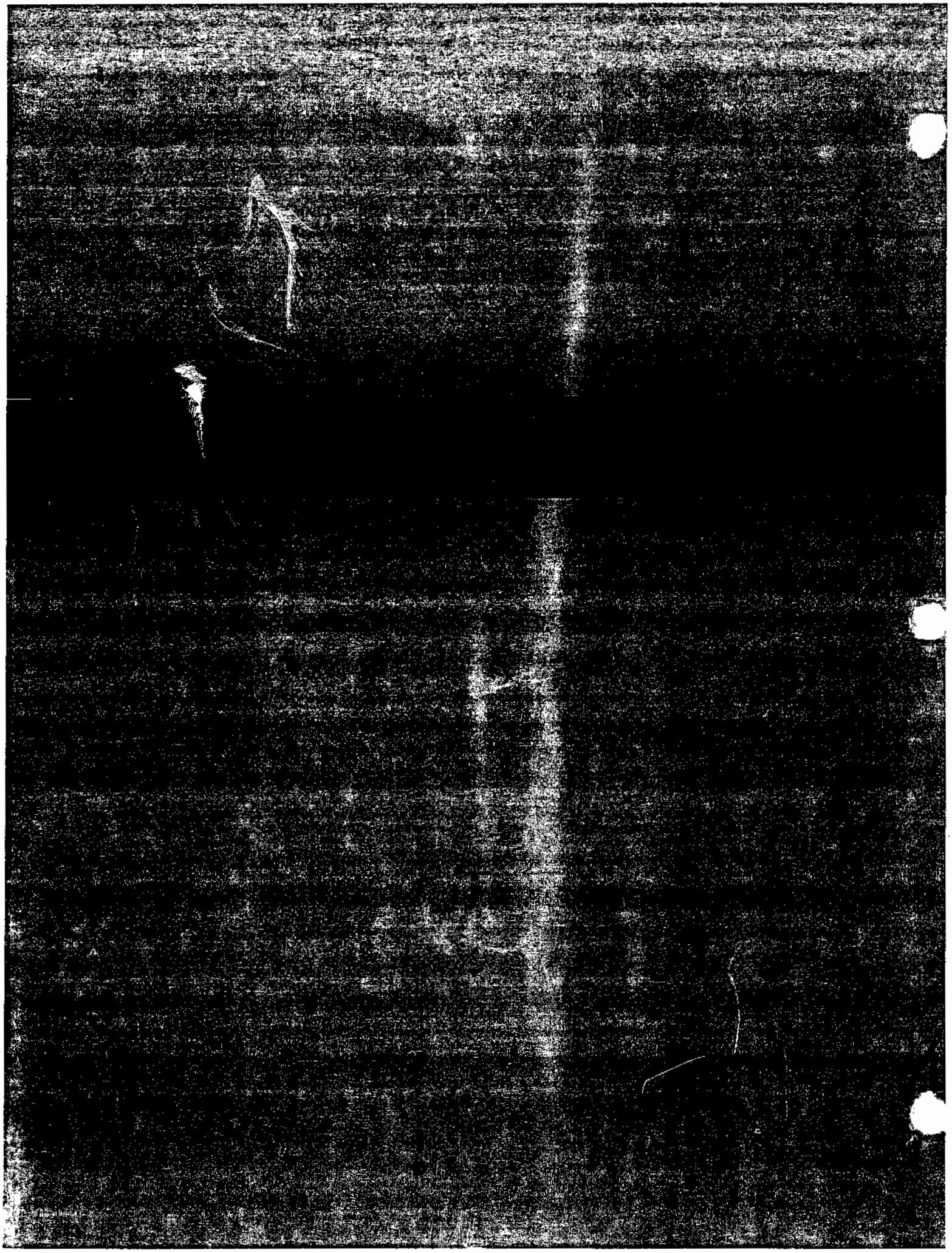
Sulfated or worn-out batteries.
- Check specific gravity and electrolyte level of each battery. Page 25.

Specifications

SPECIFICATION	UNIT OF MEASURE	SERIES 300										
		3164D	4219D	4239DF	4239T	4276D	4276T	6329D	6359DF	6359T	6414D	6414T
Number of cylinders		3	4	4	4	4	4	6	6	6	6	6
Fuel		Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Bore	in	4.02	4.02	4.19	4.19	4.19	4.19	4.02	4.19	4.19	4.19	4.19
	(mm)	(102)	(102)	(106.5)	(106.5)	(106)	(106)	(102)	(106.5)	(106.5)	(106)	(106)
Stroke	in	4.33	4.33	4.33	4.33	5.00	5.00	4.33	4.33	4.33	5.00	5.00
	(mm)	(110)	(110)	(110)	(110)	(127)	(127)	(110)	(110)	(110)	(127)	(127)
Displacement	cu. in.	164	219	239	239	276	276	329	359	359	414	414
	cm^3	(2690)	(3590)	(3917)	(3917)	(4520)	(4520)	(5390)	(5885)	(5885)	(6780)	(6780)
Compression ratio		16.8:1	16.8:1	16.8:1	16.2:1	16.3:1	16.3:1	16.8:1	16.8:1	16.2:1	16.3:1	16.3:1
Rated speed	RPM	2500	2500	2500	2500	1800	2200	2500	2500	2500	2200	2200
HP (intermittent)												
@ RS without fan		52	70	75	89	82	95	104	113	134	120	142
HP (continuous)												
@ RS without fan		44	60	59	75	58	*74	88	90	113	*91	*113
Normal working range	RPM	1500-2500	1500-2500	1500-2500	1500-2500	1500-2500	1500-2200	1500-2500	1500-2500	1500-2500	1500-2200	1500-2200
Low idle		800	800	800	800	800	800	800	800	800	800	800
Torque @ RPM	lb/ft	122 (165)	175 (237)	188 (255)	236 (320)	214 (290)	250 (339)	250 (335)	280 (380)	346 (470)	330 (447)	390 (529)
(max.) without fan	(Nm)	@ 1500	@ 1400	@ 1400	@ 1600	@ 1300	@ 1500	@ 1500	@ 1200	@ 1400	@ 1200	@ 1500
Basic Weight	lb	695	845	845	975	950	975	1145	1145	1250	1220	1250
	(kg)	(315)	(383)	(383)	(442)	(431)	(442)	(519)	(519)	(567)	(553)	(567)
Flywheel housing			2	2	2	2	2	2	2	2		
and flywheel		2	3	3	3	3	3	3	3	3	2	2
(SAE No.)		4	4	4	4	4	4	4			3	3
Nozzles	mm	9.5	9.5			9.5	9.5	9.5			9.5	9.5
Fuel filter	in^2	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490
area	cm^2	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)
Dimensions:												
Width	in	19.88	19.72	19.72	19.72	19.72	19.72	19.62	19.62	19.62	19.62	19.62
	(mm)	(505)	(500.9)	(500.9)	(500.9)	(500.9)	(500.9)	(498.5)	(498.5)	(498.5)	(498.5)	(498.5)
Height	in	32.01	32.03	31.9	37.16	33.31	37.16	31.78	36.58	42.15	36.58	42.15
	(mm)	(813)	(812.6)	(810.3)	(943.9)	(846.1)	(943.9)	(807.2)	(929.1)	(1070.6)	(929.1)	(1070.6)
Length	in	27.64	32.68	32.72	33.58	32.72	34.74	45.81	43.63	43.63	43.63	43.63
	(mm)	(702.1)	(830)	(830)	(852.9)	(831.1)	(882.4)	(1163.6)	(1108.2)	(1108.2)	(1108.2)	(1108.2)
Crankcase capacity with filter change	qts.	6	6	9	15	9	14	12	18	18	18	18
	(l)	(5.7)	(5.7)	(8.5)	(14)	(8.5)	(13.2)	(11.4)	(17.1)	(17.1)	(17.1)	(17.1)
without filter change	qts.	5	5	8	14	8	13	11	17	17	17	17
	(l)	(4.8)	(4.8)	(7.6)	(13.2)	(7.6)	(12.4)	(10.4)	(16.1)	(16.1)	(16.1)	(16.1)

*Based on 1800 rpm.

INDEX



PC

Parts Catalog

John Deere 6414D and 6414T OEM Engine and Accessories

PC-1471

Engines for the Original Equipment Market

Litho in U.S.A. (T) Revised

R59272

DAVEY Model 365 RPV

Permavane Rotary Compressor

Part No. 69000

Engine - JOHN DEERE Dubuque, Iowa 52001

DAVEY PART NO. - 69006 - John Deere Part No. - AR 70540

John Deere - Model 6414 DF

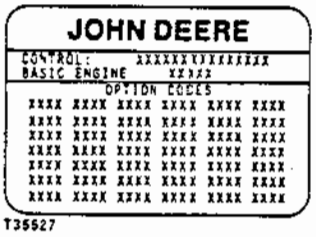
CONTROL - 10686

Basic Engine - 1201 F

ACCESSORY CODE PLATE INTERPRETATION

Option Codes	
1102	Rocker Arm Cover
1202	Oil Filler Inlet
1302	Crankshaft Pulley Damper, Dual Groove
1403	Flywheel Housing S.A.E. No. 3
1502	Flywheel
1602	Injection Pump, Regular Governor
1706	Air Intake, Rear
1905	Oil Pan
2001	Water Pump
2102	Thermostat Cover, Vertical
2204	Thermostat, 180°
2401	Fan Belt
2805	Exhaust System, Manifold, Vertical Ext.
2902	Vent System Flexible
3002	Starting Motor
3105	Alternator, 12V 61 Amp

ACCESSORY CODE PLATE
(Without Turbocharger)



To assist your John Deere dealer in giving you prompt and efficient service, a code plate is attached to your John Deere engine. This code plate will identify parts that are unique to the original equipment manufacturer's application. The basic engine code identifies the engine model. The Option Code establishes the Functional Groups. The first two digits identify the Functional Group and the last two digits identify the specific option and can be cross-referenced to the John Deere part required.

Basic Engine Code: 1201F

Functional Group Codes	Description
1102	Rocker Arm Cover, No Filler
1103	Rocker Arm Cover, Rear Filler
1200	Oil Filler Cover
1201	Oil Filler Inlet, Medium Length
1202	Oil Filler Inlet, Long Length
1203	Oil Filler Inlet, Short Length
1302	Crankshaft Pulley, Dual Groove
1403	Flywheel Housing, SAE No. 3
1405	Flywheel Housing, SAE No. 2, Starter Flange, SAE No. 1
*1500	No Flywheel
1502	Flywheel, Spring Loaded Clutch
1503	Flywheel, Damper-Type
1505	Flywheel, Overcenter Clutch, 11.5-Inch (29.21 cm)
1602	Injection System, Regular Governor
1603	Injection System, 3% - 5% Governor
1705	Air Intake, Center
1706	Air Intake, Rear
1708	Air Intake with Air Cleaner Mounting Pad
*1800	No Air Cleaner
1905	Oil Pan, Side or Bottom Drain
2001	Water Pump, Standard Position
2102	Thermostat Cover, Vertical
2204	Thermostat, 180°
*2400	No Fan Belts
2401	Fan Belt, Dual
*2500	No Fan
2501	Fan Blade, Blower
2502	Fan Blade, Suction
*2700	No Radiator
2803	Exhaust System, Front Vertical
2805	Exhaust System, Center Vertical, with Extension
2811	Exhaust System, Center Vertical, without Extension
2901	Vent Tube, Right Hand
2902	Vent System, Flexible
*3000	No Starting Motor
3002	Starting Motor, SAE No. 2, SAE No. 3
*3100	No Alternator
3102	Electrical System, 55 Ampere (55A)
3103	Electrical System 72 Ampere (72A)
3104	Electrical System 22 Ampere (22A)
*3200	No Instrument Panel
*3300	No Tachometer
*3400	No Hourmeter
3800	No Manuals
3801	Manuals, Operator and Parts
*5300	No Enclosure
*5800	No PTO and Clutch
*6100	No Muffler
6101	Muffler, with cover

**NOTE: Accessories not sold by John Deere will be indicated on the code plate with the designation "OO." The original equipment manufacturer will be responsible for warranty service on this category of accessory.*

EXPLANATION OF FUNCTIONAL CODES

Your engine is equipped with optional equipment. Each option is cataloged under a functional code number which is listed at the top of the page between the page heading and the exploded view. Parts used with all codes are listed as parts common (see example, key 1). Parts that are used only with a specific code (see example, code 2901; keys 2, 3, 4 and 5) have been listed separately under the heading "Additional Parts For Code 2901." Parts that are used only with code 2902 (see example; keys 6, 7 and 8) have been listed separately under the heading "Additional Parts For Code 2902."

EXAMPLE

Key	*Part No.*	*Serial No.*	*Description*
Parts Common to Code 2901, 2902 and 2903			
1	R 495 R	(-)	O-ring
Additional Parts Used with Code 2901			
2	T 28207	(-)	Tube, vent
3	19H 1813	(-)	Screw, cap, 5/16" x 5/8"
4	24H 1685	(-)	Washer, 11/32" x 3/4" x .075"
5	R 40791	(-)	Clamp
Additional Parts Used with Code 2902			
6	AT 25192	(-)	Elbow, 90°
7	AR 21837	(-)	Clamp
8	H 36031	(-)	Hose, 3/4" x 36" (19.1 mm x 914.0 mm)
Additional Parts Used with Code 2903			
3	19H 1813	(-)	Screw, cap, 5/16" x 5/8"
4	24H 1685	(-)	Washer, 11/32" x 3/4" x .075"
5	R 40791	(-)	Clamp
9	T 20074	(-)	Tube, vent

FUNCTIONAL GROUP PAGE REFERENCE

Functional Code Group No.	Description	Page No.
11	Rocker Arm Cover	13
12	Engine Oil Filler Inlet Cover	17,18
13	Crankshaft Pulley	7
14	Flywheel Housing	12
15	Engine Flywheel	11
16	Fuel Injection System	31,32,33,34,35,36,37,38,39,40,41, 42,43,44,45,46,47,48,49,50,51,52, 53,54,55,56,57,58,59,60,61
17	Air Inlet	21
19	Engine Oil Pan	10
20	Water Pump Assembly	27
21	Thermostat Housing and Cover	26
22	Engine Thermostat	26
24	Fan Belt	28
25	Fan Blade Assembly	28
28	Exhaust Manifold	23
30	Starting Motor	64,65,66,67,68,69
31	Alternator	62,63
61	Muffler	23B,23C

TO THE CUSTOMER

The part numbers in this catalog were correct at the time your engine was manufactured. It is our policy to constantly improve our engines and, therefore, part numbers may change. When ordering parts, verify part numbers through your dealer's catalog which is up to date with all new part numbers.

AN EXPLANATION OF CHANGE INDICATOR LINE

New and revised information is identified by vertical lines marked in the left-hand margin of revised pages. These lines indicate changes affecting the ordering of parts.

AN EXPLANATION OF SERIAL NUMBER INFORMATION

One serial number range is used on the 6414D Engine. An individual serial number is assigned to each engine.

Serial number information is listed parenthetically to show on which engines each part can be used. These listings are explained by the following examples.

(-)	The part can be used on all engines.
(000000-)	The part can be used on all engines beginning with the serial listed.
(-000000)	The part can be used on all engines up to and including serial number listed.
(000000-000000)	The part can be used on all engines between and including the serial numbers listed.

Where XXXXXX's are listed in place of a serial number it indicates a serial number change was made but the exact serial number had not been established when the catalog went to press.

BOLT AND CAP SCREW STRENGTH IDENTIFICATION

Bolts and cap screws required to have high-strength qualities equivalent to SAE Grade 8 are identified throughout this catalog by the description HS SAE 8. Unless identified by this description, all standard bolts and cap screws are SAE Grade 5 or lower.

SI UNITS OF MEASURE

This parts catalog contains SI metric equivalents which follow in parentheses immediately after the U.S. customary unit of measure.

AN EXPLANATION OF WHOLE GOODS LISTINGS

Throughout this parts catalog, whole goods items are listed in bold face letters. Make separate orders for these whole goods items. Do not include them on replacement part orders.

ALPHABETICAL INDEX

ALPHABETICAL INDEX - CONTINUED

ALPHABETICAL INDEX - CONTINUED

PAGE LIST

The following list contains all page numbers with latest date lines for this parts catalog. If a page does not have the date line indicated, the page is obsolete.

Page	Date Line
I,II	(1-JUL-77)
III,IV	(1-JUL-77)
V,VI	(1-JUL-77)
VII,VIII	(1-JUL-77)
1,1A	(1-JUL-77)
1B,2	(1-JUL-77)
3,4	(1-JUL-77)
5,6	(1-JUL-77)
7,8	(1-JUL-77)
9,10	(1-JUL-77)
11,12	(1-JUL-77)
13,14	(1-JUL-77)
15,16	(1-JUL-77)
17,18	(1-JUL-77)
19,20	(1-JUL-77)
21,22	(1-JUL-77)
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23B,23C	(1-JUL-77)
23D,24	(1-JUL-77)
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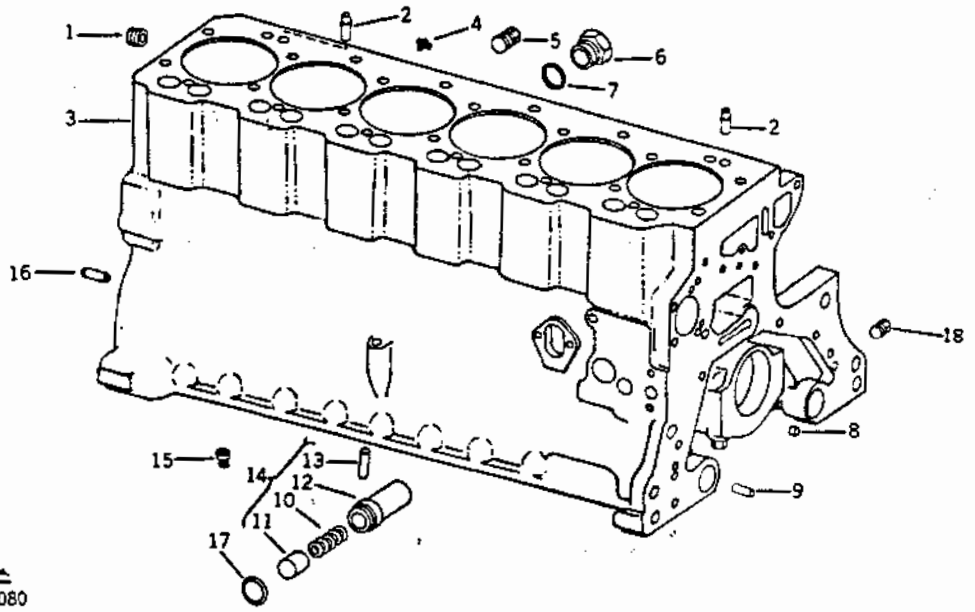
27,28	(1-JUL-77)
29,30	(1-JUL-77)
31,32	(1-JUL-77)
33,34	(1-JUL-77)
35,36	(1-JUL-77)
37,38	(1-JUL-77)
39,40	(1-JUL-77)
41,42	(1-JUL-77)
43,44	(1-JUL-77)
45,46	(1-JUL-77)
47,48	(1-JUL-77)
49,50	(1-JUL-77)
51,52	(1-JUL-77)
53,54	(1-JUL-77)
55,56	(1-JUL-77)
57,58	(1-JUL-77)
59,60	(1-JUL-77)
61,62	(1-JUL-77)
63,63A	(1-JUL-77)
63B,63C	(1-JUL-77)
63D,64	(1-JUL-77)
64A,64B	(1-JUL-77)
65,66	(1-JUL-77)
67,68	(1-JUL-77)
69,70	(1-JUL-77)
71,71A	(1-JUL-77)
71B,72	(1-JUL-77)
73,74	(1-JUL-77)
75,76	(1-JUL-77)
77,78	(1-JUL-77)
79,80	(1-JUL-77)

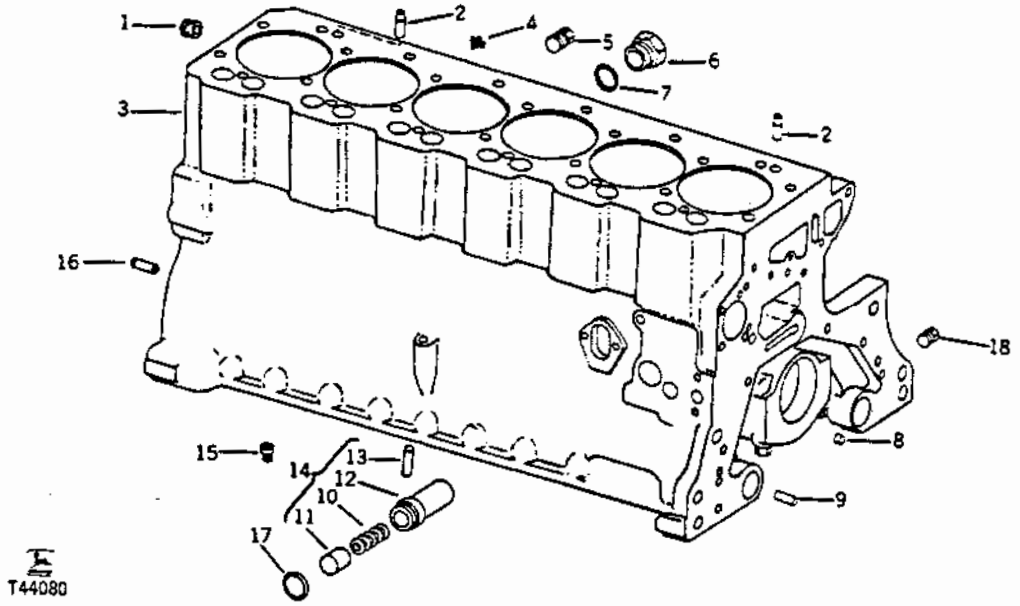
CYLINDER BLOCK
(WITH TURBOCHARGER)



T44080

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	15H 585	(-)	PLUG, PIPE, SQ. HD., 3/4" (WITHOUT CAB HEATER)
2	R 26241	(-)	PIN, DOWEL (2 USED)
I 3	AR 69286	(- 355345)	BLOCK, CYLINDER WITH MAIN BEARING CAPS, NIPPLE, SLEEVE, DOWEL PINS, PIPE PLUGS, STUDS, PISTON COOLING ORIFICES, CAP SCREWS, AND WASHERS (MARKED R54590) (SUB. ONE AR73806 AND SIX T20182, SEE PAGE 5)
I	AR 73806	(-)	BLOCK, CYLINDER WITH MAIN BEARING CAPS, NIPPLE, SLEEVE, DOWEL PINS, PIPE PLUGS, STUDS, PISTON COOLING ORIFICES, CAP SCREWS, AND WASHERS (MARKED R60833)
4	AT 13740	(-)	COCK, DRAIN (WITHOUT ENGINE COOLANT HEATER)
5	15H 624	(-)	PLUG, PIPE, HEX. CTSK., 1/2" (WITHOUT TURBOCHARGER)
6	R 39741	(-)	PLUG, SPECIAL (WITHOUT ENGINE COOLANT HEATER)
7	U 13639	(-)	O-RING
8	T 18891	(-)	PLUG (2 USED)
9	R 26650	(-)	PIN, DOWEL (2 USED)
10	R 46625	(-)	SPRING
11	... .	(-)	VALVE (SUB. AR63351)
12	... .	(-)	HOUSING (SUB. AR63351)
13	34H 184	(-)	PIN, SPRING, 1/8" X 1-1/8"
14	AR 63351	(-)	VALVE, OIL PRESSURE CONTROL
15	R 54802	(-)	ORIFICE, PISTON COOLING (6 USED)
16	A 120 R	(-)	PIN, DOWEL (2 USED)
17	A 4730 R	(-)	O-RING
I 18	15H 558	(381044 -)	PLUG, PIPE, HEX. CTSK., 1/8" (7 USED)
I ..	AR 69775	(- 355345)	BLOCK ASSEMBLY, SHORT, COMPLETE, WITH CYLINDER BLOCK ASSEMBLY, CRANKSHAFT, CAMSHAFT, PISTONS, CONNECTING RODS, BEARINGS, CYLINDER LINERS, TAPPETS, FRONT PLATE, IDLER GEARS, PIPE PLUGS, WASHERS, SCREWS AND OVERHAUL GASKET SET (SUB. ONE AR73804 AND SIX T20182, SEE PAGE 5)
I ..	AR 73804	(-)	BLOCK ASSEMBLY, SHORT, COMPLETE, WITH CYLINDER BLOCK ASSEMBLY, CRANKSHAFT, CAMSHAFT, PISTONS, CONNECTING RODS, BEARINGS, CYLINDER LINERS, TAPPETS, FRONT PLATE, IDLER GEARS, PIPE PLUGS, WASHERS, SCREWS AND OVERHAUL GASKET SET

CYLINDER BLOCK
(WITHOUT TURBOCHARGER)

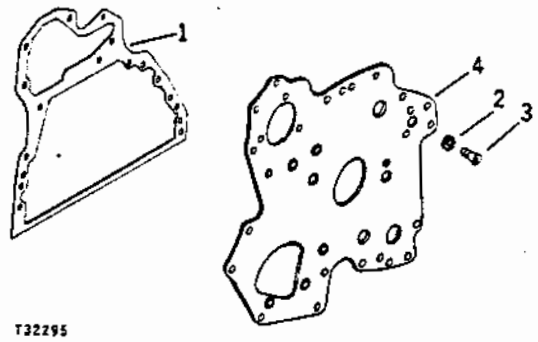


T44080

KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	15H 585		(-)	PLUG, PIPE, SQ. HD., 3/4" (WITHOUT CAB HEATER)
2	R 26241		(-)	PIN, DOWEL (2 USED)
3	AR 69286		(- 355345)	BLOCK, CYLINDER WITH MAIN BEARING CAPS, NIPPLE, SLEEVE, DOWEL PINS, PIPE PLUGS, STUDS, PISTON COOLING ORIFICES, CAP SCREWS, AND WASHERS (MARKED R54590) (SUB. ONE AR73806 AND SIX T20182, SEE PAGE 5)
	AR 73806		(-)	BLOCK, CYLINDER WITH MAIN BEARING CAPS, NIPPLE, SLEEVE, DOWEL PINS, PIPE PLUGS, STUDS, PISTON COOLING ORIFICES, CAP SCREWS, AND WASHERS (MARKED R60833)
4	AT 13740		(-)	COCK, DRAIN (WITHOUT ENGINE COOLANT HEATER)
5	15H 624		(-)	PLUG, PIPE, HEX. CTSK., 1/2" (WITHOUT TURBOCHARGER)
6	R 39741		(-)	PLUG, SPECIAL (WITHOUT ENGINE COOLANT HEATER)
7	U 13639		(-)	O-RING
8	T 18891		(-)	PLUG (2 USED)
9	R 26650		(-)	PIN, DOWEL (2 USED)
10	R 46625		(-)	SPRING
11	... .		(-)	VALVE (SUB. AR63351)
12	... .		(-)	HOUSING (SUB. AR63351)
13	34H 184		(-)	PIN, SPRING, 1/8" X 1-1/8"
14	AR 63351		(-)	VALVE, OIL PRESSURE CONTROL
15	R 54802		(-)	ORIFICE, PISTON COOLING (6 USED)
16	A 120	R	(-)	PIN, DOWEL (2 USED)
17	A 4730	R	(-)	O-RING
18	15H 558		(381044 -)	PLUG, PIPE, HEX. CTSK., 1/8" (7 USED)
..	AR 69283		(- 355345)	BLOCK ASSEMBLY, SHORT, COMPLETE, WITH CYLINDER BLOCK ASSEMBLY, CRANKSHAFT, CAMSHAFT, PISTONS, CONNECTING RODS, BEARINGS, CYLINDER LINERS, TAPPETS, FRONT PLATE, IDLER GEARS, PIPE PLUGS, WASHERS, SCREWS, AND OVERHAUL GASKET SET (SUB. ONE AR73803 AND SIX T20182, SEE PAGE 5)
..	AR 73803		(-)	BLOCK ASSEMBLY, SHORT, COMPLETE, WITH CYLINDER BLOCK ASSEMBLY, CRANKSHAFT, CAMSHAFT, PISTONS, CONNECTING RODS, BEARINGS, CYLINDER LINERS, TAPPETS, FRONT PLATE, IDLER GEARS, PIPE PLUGS, WASHERS, SCREWS, AND OVERHAUL GASKET SET

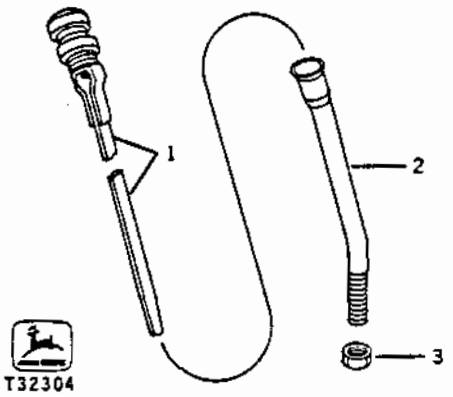
MEMORANDA

ENGINE FRONT PLATE



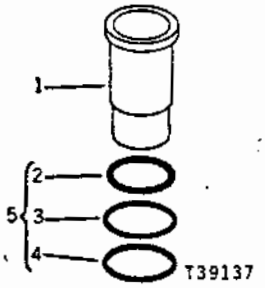
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	T 24965	(-)	GASKET
2	12H 324	(-)	WASHER, LOCK, EXTERNAL-TOOTH, 3/8" (5 USED)
3	T 20166	(-)	SCREW, CAP, SPECIAL (5 USED)
4	R 56057	(-)	PLATE, FRONT

ENGINE OIL DIPSTICK



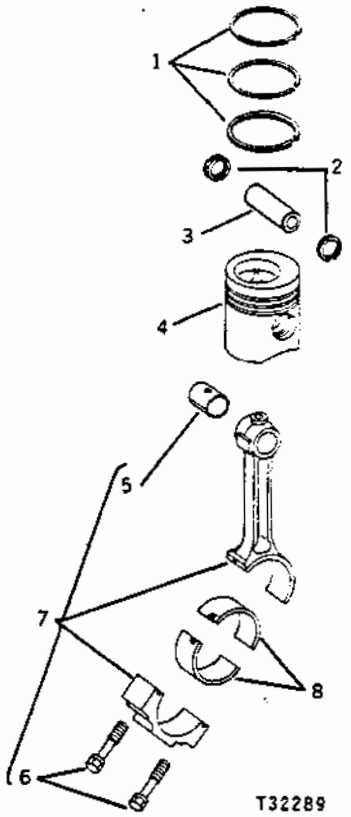
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AR 63348	(-)	DIPSTICK
2	AR 72889	(-)	TUBE, DIPSTICK
3	14H 826	(-)	NUT, JAM, 1/2"

CYLINDER LINERS



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 54505	(-)	LINER, CYLINDER (6 USED)
2	... .	(-)	PACKING (6 USED) (SUB. AR68318)
3	... .	(-)	O-RING, CYLINDER LINER (6 USED) (SUB. AR68318)
4	... .	(-)	O-RING, CYLINDER LINER (6 USED) (SUB. AR68318)
5	AR 68318	(-)	KIT, CYLINDER LINER PACKING
..	AR 54749	(-)	LUBRICANT, CYLINDER LINER PACKING (USED FOR CYLINDER LINER PACKING INSTALLATION)

PISTONS AND CONNECTING RODS



KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	DD 11831	*#	(-)	RINGS, PISTON (SET OF THREE RINGS) (6 SETS USED)
2	R 54114		(-)	RING, RETAINER (12 USED)
3	R 56188		(-)	PIN, PISTON (6 USED)
4	AR 66401	*	(-)	PISTON, STANDARD (6 USED) (WITH TURBOCHARGER)
	AR 68188	#	(-)	PISTON, STANDARD (6 USED) (WITHOUT TURBOCHARGER)
5	R 57451		(-)	BUSHING, CONNECTING ROD (6 USED)
6	R 56445		(-)	SCREW, CONNECTING ROD (12 USED)
7	AR 66400		(-)	ROD, CONNECTING, WITH SCREWS AND BUSHINGS (6 USED)
8	AR 69098		(-)	BEARING, CONNECTING ROD, STANDARD (2 HALVES) (6 USED)
	AR 68413		(-)	BEARING, CONNECTING ROD, .002" (0.05 MM) UNDERSIZE (2 HALVES) (6 USED)
	AR 68414		(-)	BEARING, CONNECTING ROD, .010" (0.25 MM) UNDERSIZE (2 HALVES) (6 USED)
	AR 68415		(-)	BEARING, CONNECTING ROD, .020" (0.51 MM) UNDERSIZE (2 HALVES) (6 USED)
	AR 68416		(-)	BEARING, CONNECTING ROD, .030" (0.76 MM) UNDERSIZE (2 HALVES) (6 USED)

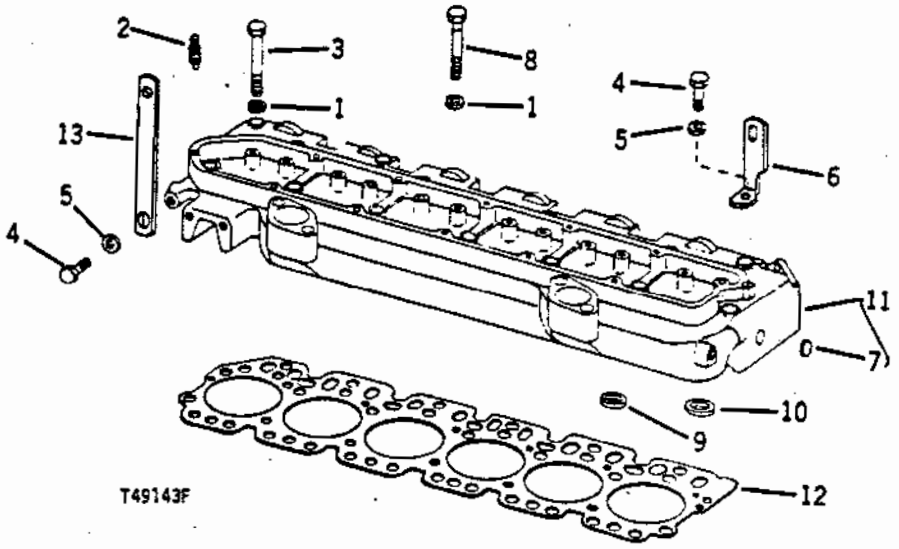
* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND ONE R54505 CYLINDER LINER AND ONE AR68318 O-RING KIT (SEE PAGE 3):

..	AR 71597	(	-)	KIT, CYLINDER LINER (CONTAINS CYLINDER LINER WITH O-RINGS AND PISTON WITH PISTON RINGS) (6 USED) (WITH TURBOCHARGER)

KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY A NUMBER SIGN ON THIS PAGE AND ONE R54505 CYLINDER LINER AND ONE AR68318 O-RING KIT (SEE PAGE 3):

..	AR 71598	(	-)	KIT, CYLINDER LINER (CONTAINS CYLINDER LINER WITH O-RINGS AND PISTON WITH PISTON RINGS) (6 USED) (WITHOUT TURBOCHARGER)

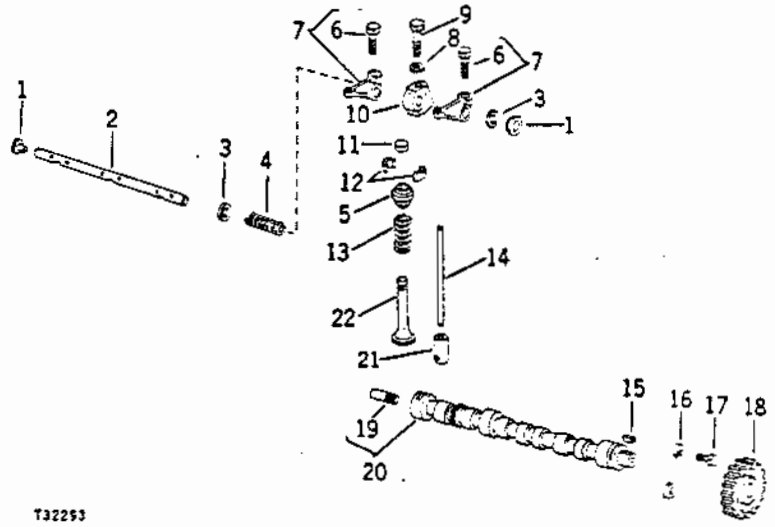
CYLINDER HEAD



KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	T 20168		(-)	WASHER, SPECIAL (26 USED)
2	AT 37368		(-)	UNIT, TEMPERATURE SENDING
3	R 53223		(-)	SCREW, CAP, SPECIAL (20 USED)
4	19H 1792		(-)	SCREW, CAP, 1/2" X 1" (2 USED)
5	12H 301		(-)	WASHER, LOCK, 1/2" (2 USED)
6	T 26508		(-)	STRAP, LIFT
7	A 3910 R		(-)	PLUG (2 USED)
I 8	T 20182		(-)	SCREW, CAP, SPECIAL (6 USED)
9	R 51734		(-)	INSERT, VALVE SEAT, EXHAUST (6 USED)
10	R 57079		(-)	INSERT, VALVE SEAT, INTAKE (6 USED)
I 11	AR 73979		(-)	HEAD, CYLINDER, WITH PLUGS AND VALVE INSERTS (MARKED R61035) (SUB. FOR AR62450, MARKED R54550)
I 12	R 59449		(- 406734)	GASKET, CYLINDER HEAD
I	R 59449	*	(406735 -)	GASKET, CYLINDER HEAD (MARKED WITH A RED DOT) (USE WITH CYLINDER BLOCKS STAMPED "S")
I	R 64153	*	(406735 -)	GASKET, CYLINDER HEAD (MARKED WITH A YELLOW DOT AND HAS A "V" NOTCH) (USE WITH CYLINDER BLOCKS STAMPED "T")
13	T 26509		(-)	STRAP, LIFT

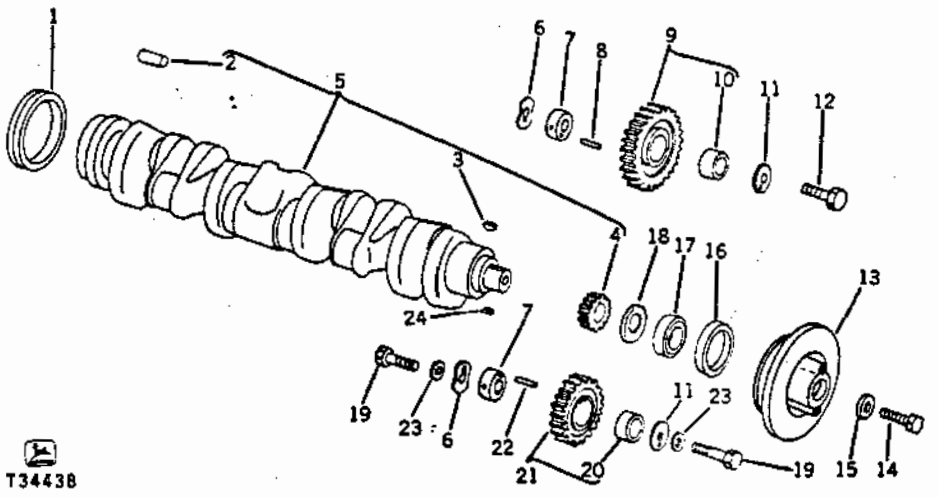
I * NOTE: "S" OR "T" IS STAMPED ON RIGHT HAND SIDE OF ENGINE AT FRONT LOCATING PAD.

CAMSHAFT AND ROCKER ARMS



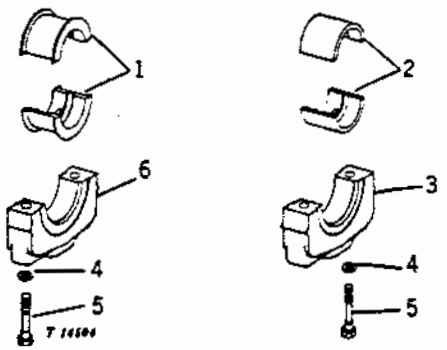
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 54565	(-)	PLUG (2 USED)
2	R 54986	(-)	SHAFT, ROCKER ARM
3	T 20316	(-)	WASHER, BOWED (2 USED)
4	T 20314	(-)	SPRING (5 USED)
5	AR 41006	(-)	ROTATOR, VALVE (12 USED)
6	T 32213	(-)	SUB. AT31250
7	AT 31250	(-)	ARM, ROCKER, WITH ADJUSTING SCREW (12 USED)
8	R 42729	(-)	WASHER, SPECIAL (6 USED) (SUB. FOR T23594)
9	19H 1733	(-)	SCREW, CAP, 3/8" X 2-1/2" (6 USED)
10	T 20315	(-)	SUPPORT (6 USED)
11	T 20129	(-)	COVER, VALVE STEM (12 USED)
12	T 20077	(-)	LOCK, RETAINER (24 USED)
13	R 26125	(-)	SPRING, VALVE (12 USED)
14	R 54799	(-)	ROD, PUSH (12 USED)
15	T 28041	(-)	KEY
16	T 20072	(-)	PLATE, THRUST
17	19H 1731	(-)	SCREW, CAP, 3/8" X 1" (2 USED)
18	T 20070	(-)	GEAR, CAMSHAFT (48 TEETH)
19	T 22535	(-)	GEAR, TACHOMETER DRIVE (12 TEETH)
20	AT 25185	(-)	CAMSHAFT, WITH TACHOMETER DRIVE SHAFT GEAR (MARKED T20464 OR T20468)
21	T 20073	(-)	TAPPET (12 USED)
22	R 52252	(-)	VALVE, EXHAUST, STANDARD STEM (6 USED)
	R 57333	(-)	VALVE, EXHAUST, .003" (0.08 MM) OVERSIZE STEM (6 USED)
	R 57335	(-)	VALVE, EXHAUST, .015" (0.38 MM) OVERSIZE STEM (6 USED)
	R 57337	(-)	VALVE, EXHAUST, .030" (0.76 MM) OVERSIZE STEM (6 USED)
	R 51735	(-)	VALVE, INTAKE, STANDARD STEM (6 USED)
	R 57426	(-)	VALVE, INTAKE, .003" (0.08 MM) OVERSIZE STEM (6 USED)
	R 57427	(-)	VALVE, INTAKE, .015" (0.38 MM) OVERSIZE STEM (6 USED)
	R 57428	(-)	VALVE, INTAKE, .030" (0.76 MM) OVERSIZE STEM (6 USED)

CRANKSHAFT AND IDLER GEARS
CODE 1302 CRANKSHAFT PULLEY, DUAL GROOVE



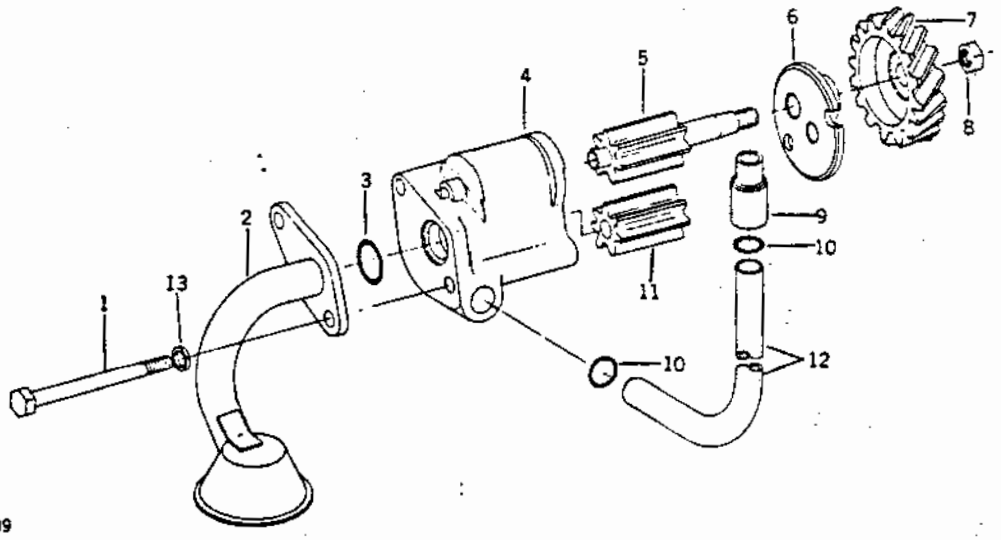
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AT 22965	-	SEAL, OIL, REAR, WITH WEAR RING
2	T 26565	-	PIN, DOWEL
3	26H 72	-	KEY, WOODRUFF, 1/8" X 5/8"
4	T 20094	-	GEAR (24 TEETH)
5	AR 63024	-	CRANKSHAFT, WITH GEAR, KEY AND DOWEL PIN (MARKED R54619)
6	T 26324	-	WASHER, INNER THRUST (2 USED)
7	T 26323	-	SHAFT, IDLER GEAR (2 USED)
8	34H 283	-	PIN, SPRING, 3/16" X 1-1/8"
9	AT 18009	-	GEAR, CRANKSHAFT UPPER IDLER, WITH BUSHING (55 TEETH) (MARKED T20029)
10	T 20034	-	BUSHING
11	T 26326	-	WASHER, OUTER THRUST (2 USED)
12	T 26327	-	BOLT, SPECIAL
13	AT 25202	-	DAMPER
14	19H 1721	-	SCREW, CAP, 1/2" X 1-1/2"
15	T 20217	-	WASHER, SPECIAL
16	T 23270	-	SLEEVE, WEAR
17	AR 67942	-	SEAL, OIL, FRONT
18	T 20046	-	SLINGER
19	T 26325	-	BOLT, SPECIAL (2 USED)
20	T 26321	-	BUSHING
I 21	AT 24252	-	GEAR, CRANKSHAFT LOWER IDLER, WITH BUSHING (45 TEETH) (MARKED T26322)
22	34H 286	-	PIN, SPRING, 3/16" X 1-1/2"
23	R 42364	-	WASHER, SPECIAL (2 USED)
24	26H 27	-	KEY, WOODRUFF, 5/16" X 1-1/8"

MAIN BEARING CAPS AND BEARINGS



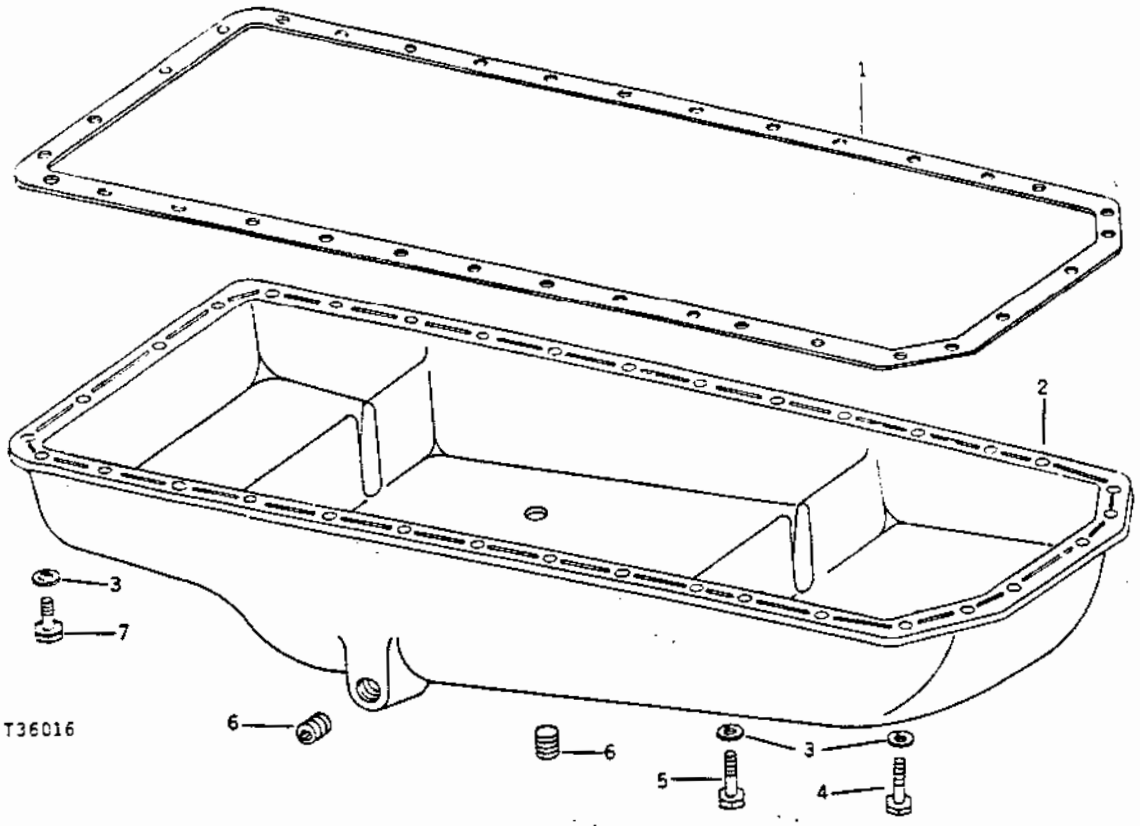
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AT 21139	(-)	BEARING, MAIN, STANDARD, REAR (2 HALVES)
	AT 21130	(-)	BEARING, MAIN, .002" (0.05 MM) UNDERSIZE, REAR (2 HALVES)
	AT 21132	(-)	BEARING, MAIN, .010" (0.25 MM) UNDERSIZE, REAR (2 HALVES)
	AT 21134	(-)	BEARING, MAIN, .020" (0.51 MM) UNDERSIZE, REAR (2 HALVES)
	AT 21136	(-)	BEARING, MAIN, .030" (0.76 MM) UNDERSIZE, REAR (2 HALVES)
2	AT 21140	(-)	BEARING, MAIN, STANDARD, PLAIN (2 HALVES) (6 USED)
	AT 21108	(-)	BEARING, MAIN, .002" (0.05 MM) UNDERSIZE, PLAIN (2 HALVES) (6 USED)
	AT 21110	(-)	BEARING, MAIN, .010" (0.25 MM) UNDERSIZE, PLAIN (2 HALVES) (6 USED)
	AT 21112	(-)	BEARING, MAIN, .020" (0.51 MM) UNDERSIZE, PLAIN (2 HALVES) (6 USED)
	AT 21114	(-)	BEARING, MAIN, .030" (0.76 MM) UNDERSIZE, PLAIN (2 HALVES) (6 USED)
3	AT 21226	(-)	CAP, MAIN BEARING, FRONT AND CENTER, WITH SHIMS AND SET GAUGE (6 USED)
4	T 20168	(-)	WASHER, SPECIAL (14 USED)
5	T 23474	(-)	SCREW, CAP, SPECIAL (14 USED)
6	AT 21227	(-)	CAP, MAIN BEARING, REAR, WITH SHIMS AND SET GAUGE

ENGINE OIL PUMP



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 59409	(-)	SCREW, CAP, SPECIAL (2 USED) (SUB. FOR 19H2228, THIS APPLICATION)
2	AR 66402	(-)	INTAKE, OIL PUMP
3	A 4730 R	(-)	O-RING
4	AR 63037	(-)	HOUSING, OIL PUMP WITH SHAFT (MARKED R54629)
5	AR 63038	(-)	SHAFT, OIL PUMP DRIVE WITH GEAR (7 TEETH)
6	R 54632	(-)	COVER
7	T 20298	(-)	GEAR (33 TEETH)
8	14H 826	(-)	NUT, 1/2"
9	R 54815	(-)	CONNECTOR, OIL PUMP TUBE
10	R 27564	(-)	O-RING (2 USED)
11	R 54631	(-)	GEAR (7 TEETH)
12	R 54814	(-)	TUBE, OIL PUMP OUTLET
13	12H 304	(-)	WASHER, LOCK, 3/8" (2 USED)

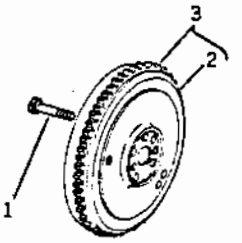
ENGINE OIL PAN
CODE 1905 CAST ALUMINUM OIL PAN, SIDE OR BOTTOM DRAIN



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	T 20205	(-)	GASKET
2	R 56406	(-)	PAN, OIL
3	12H 304	(-)	WASHER, LOCK, 3/J" (36 USED)
4	19H 246	(-)	SCREW, CAP, 3/8" X 1-3/4" (4 USED)
5	19H 2552	(-)	SCREW, CAP, 3/8" X 1-1/8" (32 USED)
6	15H 624	(-)	PLUG, PIPE, HEX. CTSK., 1/2" (2 USED)
7	19H 1800	(-)	SCREW, CAP, 3/8" X 1-1/2" (6 USED)

ENGINE FLYWHEEL

CODE 1502 FLYWHEEL,



T36058

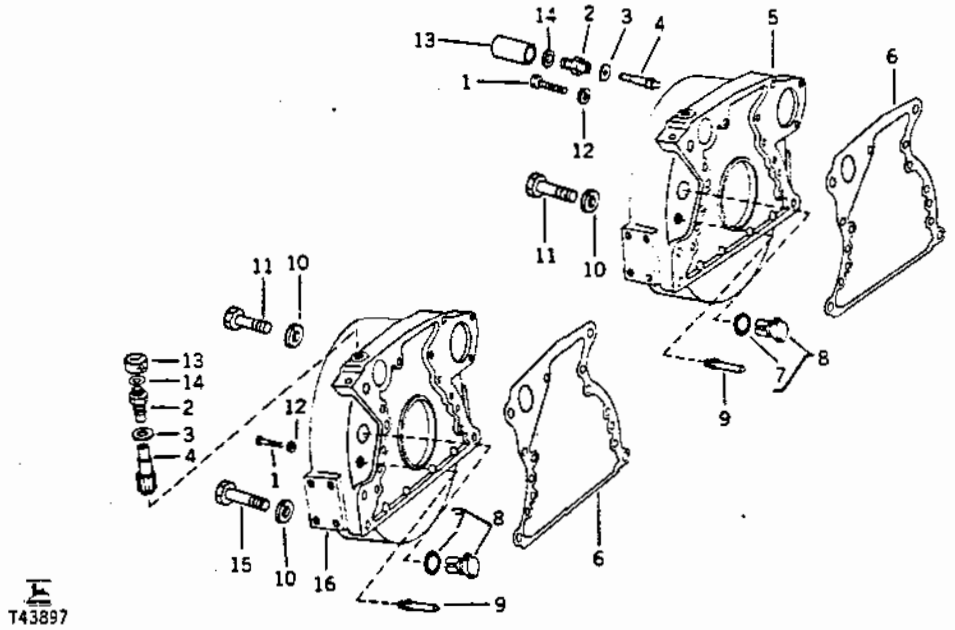
PARTS COMMON TO CODE 1502

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 58253	(-)	SCREW, CAP, SPECIAL (4 USED)
2	R 28811	(-)	GEAR, FLYWHEEL RING (129 TEETH)

ADDITIONAL PARTS USED WITH CODE 1502

KEY	PART NO.	SERIAL NO.	DESCRIPTION
3	AT 25473	(-)	FLYWHEEL, WITH RING GEAR

ENGINE FLYWHEEL HOUSING
CODE 1403 FLYWHEEL HOUSING, SAE NO. 3

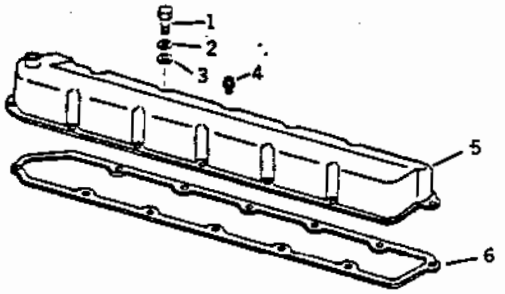


KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	19H 1800	(-)	SCREW, CAP, 3/8" X 1-1/2" (8 USED)
2	T 22537	(-)	ADAPTER
3	H 1058 R	(-)	WASHER, SPECIAL
4	T 22536	(-)	PINION, TACHOMETER DRIVE
6	R 49516	(-)	GASKET
7	R 27149	(-)	O-RING
8	AR 61533	(-)	PLUG, WITH O-RING
9	T 20090	(-)	SCREW, SPECIAL
10	12H 294	(-)	WASHER, LOCK, 5/8" (4 USED)
11	19H 1387	(-)	SCREW, CAP, 5/8" X 2-1/4" (4 USED)
12	12H 304	(-)	WASHER, LOCK, 3/8" (8 USED)

ADDITIONAL PARTS USED WITH CODE 1403

KEY	PART NO.	SERIAL NO.	DESCRIPTION
5	R 58190	(-)	HOUSING, FLYWHEEL
14	B 3362 R	(-)	CAP
15	B 3285 R	(-)	GASKET

CODE 1102 ROCKER ARM COVER, NO OIL FILLER



T39120

PARTS COMMON TO CODE 1102

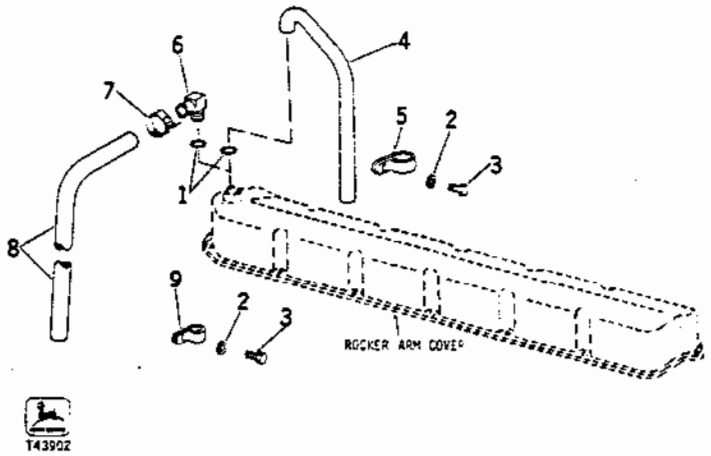
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	19H 2036	(-)	SCREW, CAP, 1/4" X 7/8" (2 USED)
	19H 1898	(-)	SCREW, CAP, 1/4" X 1/2"
2	12H 302	(-)	WASHER, LOCK, 1/4" (3 USED)
3	L 186 T	(-)	WASHER, SPECIAL (3 USED)
4	AR 45530	(-)	SCREW, CAP, WITH WASHER (10 USED)
6	T 20467	(-)	GASKET

ADDITIONAL PARTS USED WITH CODE 1102

KEY	PART NO.	SERIAL NO.	DESCRIPTION
5	AT 21679	(-)	COVER, ROCKER ARM

ENGINE VENTILATING SYSTEM

CODE 2902 VENTILATOR SYSTEM, FLEXIBLE



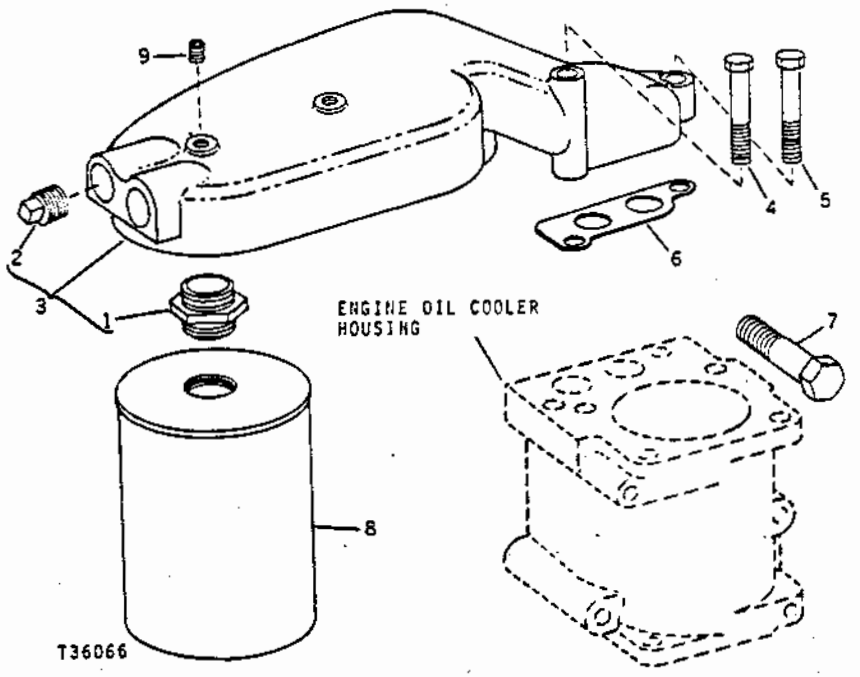
PARTS COMMON TO CODE 2902

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 495 R	(-)	O-RING
2	24H 1303	(-)	WASHER, 13/32" X 11/16" X .060"
3	19H 2038	(-)	SCREW, CAP, 3/8" X 1/2"

ADDITIONAL PARTS USED WITH CODE 2902

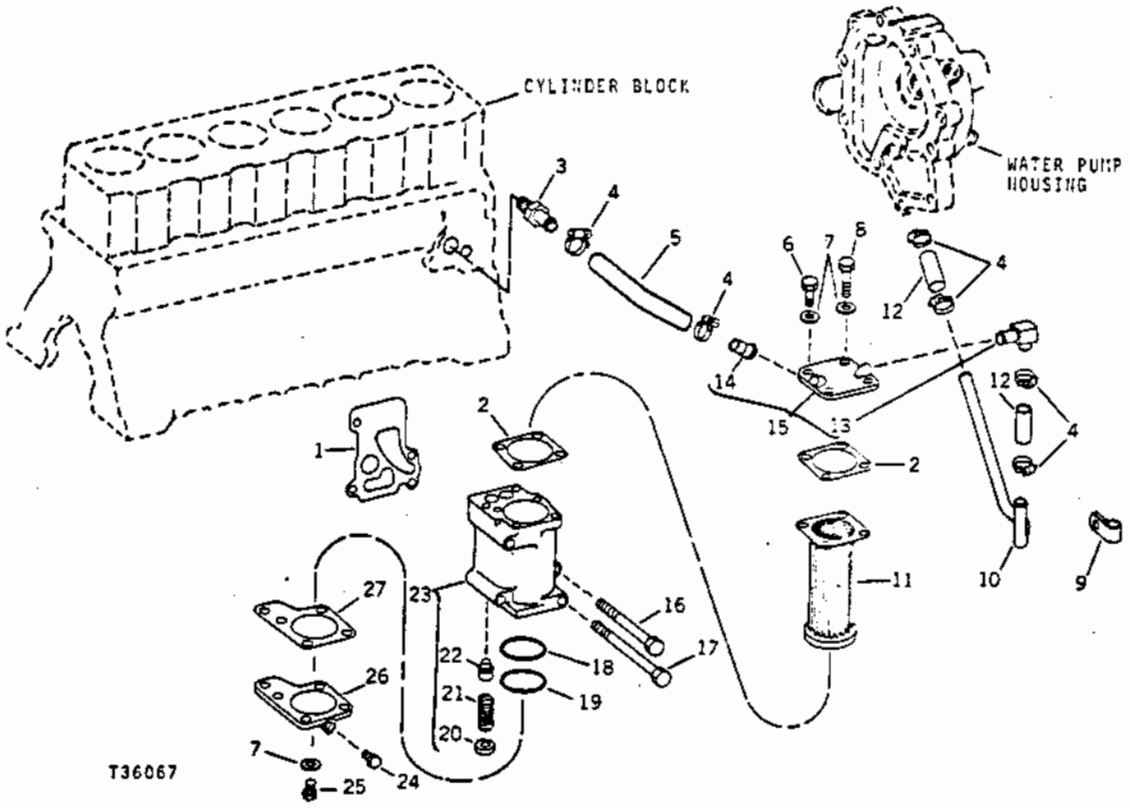
KEY	PART NO.	SERIAL NO.	DESCRIPTION
6	AT 25192	(-)	ELBOW, 90°
7	AR 21839	(-)	CLAMP, HOSE
8	H 36031	(-)	HOSE, 3/4" X 36" (1.91 CM X 91.44 CM)
9	A 4773 R	(-)	CLAMP

ENGINE OIL FILTERS



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 54823	(-)	NIPPLE (2 USED)
2	15H 585	(-)	PLUG, PIPE, HEX. CTSK., 3/4"
3	AR 66403	(-)	ADAPTER, OIL FILTER WITH NIPPLES AND PIPE PLUG (MARKED R56189)
4	19H 1944	(-)	SCREW, CAP, 3/8" X 2-3/4"
5	19H 1800	(-)	SCREW, CAP, 3/8" X 1-1/2"
6	R 54824	(-)	GASKET
7	19H 2023	(-)	SCREW, CAP, 3/8" X 3-1/4" (2 USED)
8	T 19044	(-)	FILTER, OIL (2 USED)
9	15H 558	(-)	PLUG, PIPE, HEX. CTSK., 1/8" (2 USED)

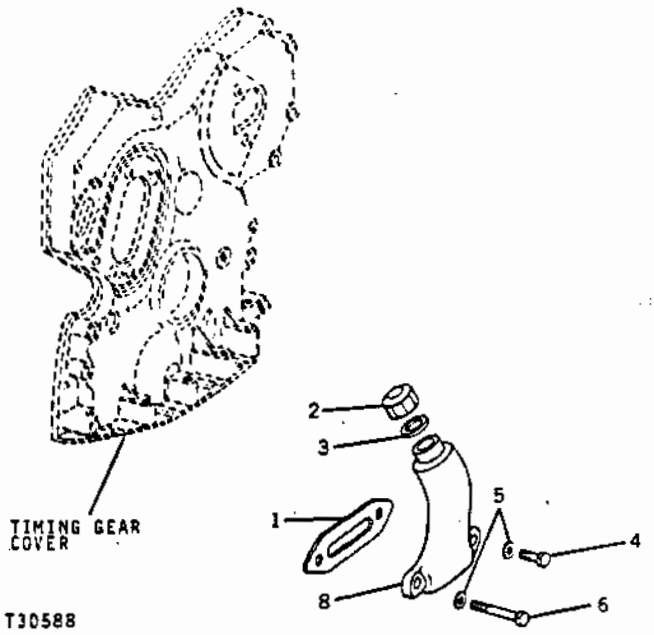
ENGINE OIL COOLER



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 54821	-	GASKET
2	R 56194	-	GASKET (2 USED)
3	R 39503	-	CONNECTOR, SPECIAL (TO CYLINDER BLOCK)
4	AR 21839	-	CLAMP, HOSE (6 USED)
5	R 54826	-	HOSE, 3/4" X 4" (19.05 MM X 101.6 MM)
6	19H 2545	-	SCREW, CAP, 3/8" X 1-3/8" (3 USED)
7	12H 304	-	WASHER, LOCK, 3/8" (9 USED)
8	19H 1801	-	SCREW, CAP, 3/8" X 2"
9	T 28949	-	CLAMP
10	R 57893	-	TUBE (OIL COOLER COVER TO WATER PUMP)
11	AR 66405	-	COOLER, OIL
12	R 26905	-	HOSE, 3/4" X 2-1/2" (19.05 MM X 63.5 MM) (2 USED)
13	AR 26732	-	ELBOW, SPECIAL
14	R 34985	-	TUBE
15	AR 66406	-	COVER, OIL COOLER, UPPER, WITH TUBE AND ELBOW (MARKED R56195)
16	19H 2104	-	SCREW, CAP, 3/8" X 5" (2 USED)
17	19H 2562	-	SCREW, CAP, 3/8" X 5-3/4" (2 USED)
18	R 56192	-	O-RING
19	R 56193	-	O-RING
20	R 54817	-	BUSHING
21	R 43548	-	SPRING
22	R 57740	-	VALVE, BYPASS
23	AR 66404	-	HOUSING, OIL COOLER, WITH BYPASS VALVE (MARKED R56191)
24	R 42852	-	PLUG, SPECIAL
25	19H 2552	-	SCREW, CAP, 3/8" X 1-1/8" (5 USED)
26	R 56197	-	COVER, OIL COOLER, LOWER
27	R 56198	-	GASKET

ENGINE OIL FILLER

CODE 1202 OIL FILLER INLET, LONG LENGTH



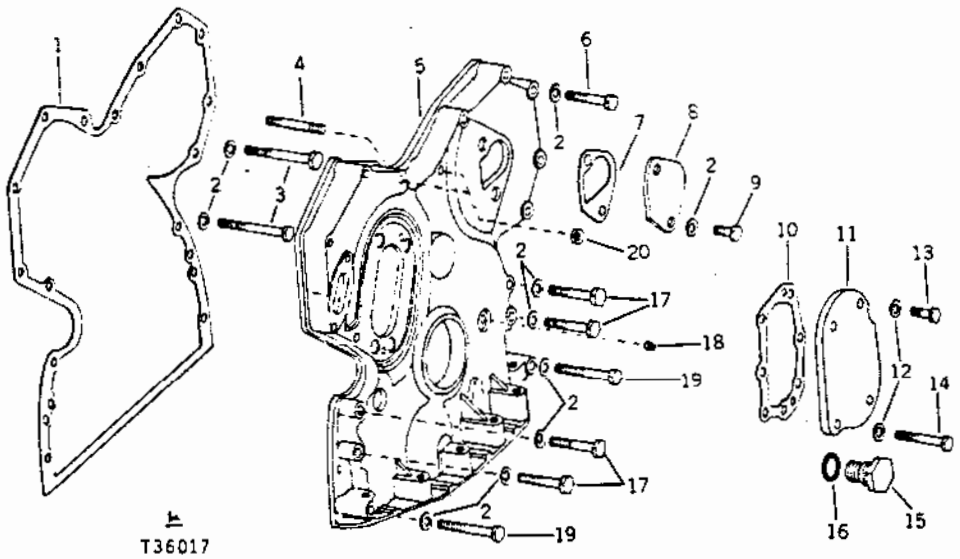
PARTS COMMON TO CODE 1202 AND

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	T 20336	(-)	GASKET
2	T 20294	(-)	CAP, OIL FILLER
3	T 20328	(-)	GASKET, OIL FILLER CAP
4	19H 2665	(-)	SCREW, CAP, 3/8" X 1-5/8"
5	24H 1304	(-)	WASHER, 13/32" X 23/64" X .120" (2 USED)
6	19H 2128	(-)	SCREW, CAP, 3/8" X 3"

ADDITIONAL PARTS USED WITH CODE 1202

KEY	PART NO.	SERIAL NO.	DESCRIPTION
8	T 24192	(-)	INLET, OIL FILLER

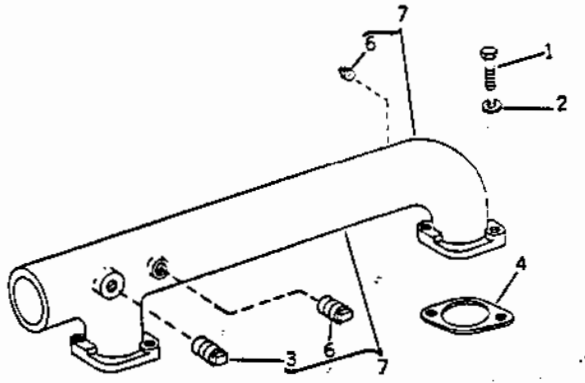
TIMING GEAR COVER



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	T 20155	(-)	GASKET
2	24H 1304	(-)	WASHER, 13/32" X 23/32" X .120" (16 USED)
3	19H 1765	(-)	SCREW, CAP, 3/8" X 1-3/4" (2 USED)
4	T 33279	(-)	STUD (2 USED)
5	AR 58196	(-)	COVER, TIMING GEAR, WITH INSERTS (MARKED R52880) (ALSO ORDER ONE T20272 GASKET, ONE T20273 COVER, THREE 19H2284 CAP SCREWS, ONE 19H1726 CAP SCREW, FOUR 24H1304 WASHERS, AND ONE 15H275 PIPE PLUG)
6	19H 1801	(-)	SCREW, CAP, 3/8" X 2" (5 USED)
7	T 20364	(-)	GASKET
8	T 20362	(-)	COVER, INJECTION PUMP GEAR
9	19H 2284	(-)	SCREW, CAP, 3/8" X 7/8" (2 USED)
10	T 20273	(-)	GASKET
11	T 20272	(-)	COVER, TIMING GEAR OPENING
12	24H 1304	(-)	WASHER, 13/32" X 23/32" X .120" (4 USED)
13	19H 2284	(-)	SCREW, CAP, 3/8" X 7/8" (3 USED)
14	19H 1726	(-)	SCREW, CAP, 3/8" X 2-1/4"
15	T 27657	(-)	PLUG, RELIEF VALVE
16	A 4827 R	(-)	WASHER, SPECIAL
17	19H 1801	(-)	SCREW, CAP, 3/8" X 2" (2 USED)
18	15H 275	(-)	PLUG, PIPE, HEX, CTSK., 1/4"
19	19H 1733	(-)	SCREW, CAP, 3/8" X 2-1/2" (2 USED)
20	14H 812	(-)	NUT, 3/8" (2 USED)

AIR INTAKE
(WITHOUT TURBOCHARGER)

CODE 1706 AIR INTAKE, REAR



T43894

PARTS COMMON TO CODE 1706

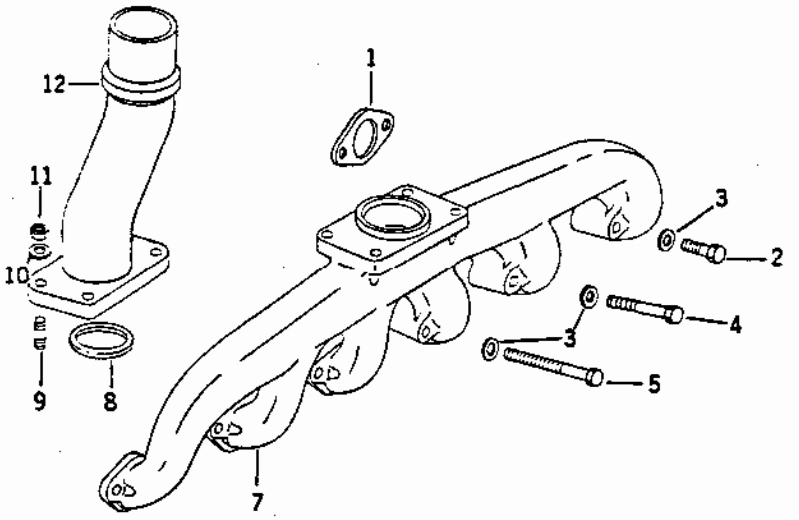
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	19H 1732	(-)	SCREW, CAP, 3/8" X 1-1/4" (4 USED)
2	12H 304	(-)	WASHER, LOCK, 3/8" (4 USED)
3	15H 255	(-)	PLUG, PIPE, SQ. HD., 3/8"
4	T 20159	(-)	GASKET (2 USED)

ADDITIONAL PARTS USED WITH CODE 1706

KEY	PART NO.	SERIAL NO.	DESCRIPTION
6	15H 638	(-)	PLUG, PIPE, SQ. HD., 1/8" (2 USED)
7	AR 52217	(-)	INLET, AIR, WITH PIPE PLUGS (MARKED R48782)

EXHAUST MANIFOLD
(WITHOUT TURBOCHARGER)

CODE 2805 MANIFOLD, CENTER VERTICAL, WITH EXTENSION



T34699

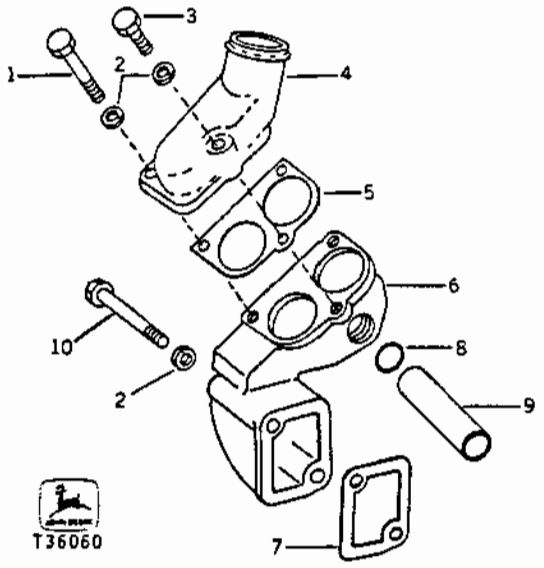
PARTS COMMON TO CODE 2805

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	T 20006	(-)	GASKET (6 USED)
2	19H 988	(-)	SCREW, CAP, 3/8" X 1-1/4"
3	24H 1303	(-)	WASHER, 13/32" X 11/16" X .060" (12 USED)
4	19H 268	(-)	SCREW, CAP, 3/8" X 2-1/2" (5 USED)
5	19H 1912	(-)	SCREW, CAP, 3/8" X 3-1/2" (6 USED)

ADDITIONAL PARTS USED WITH CODE 2805

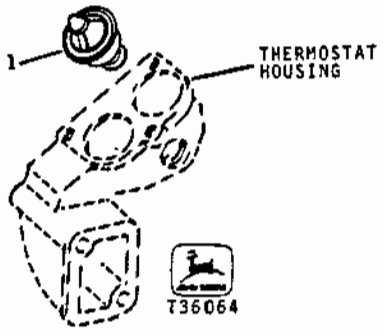
KEY	PART NO.	SERIAL NO.	DESCRIPTION
7	T 29809	(-)	MANIFOLD, EXHAUST
8	T 29811	(-)	GASKET
9	T 25701	(-)	STUD (4 USED)
10	24H 1304	(-)	WASHER, 13/32" X 23/32" X .120" (4 USED)
11	14H 812	(-)	NUT, 3/8" (4 USED)
12	T 29812	(-)	ELBOW, EXHAUST

THERMOSTAT HOUSING AND COVER
CODE 2102 THERMOSTAT COVER, VERTICAL



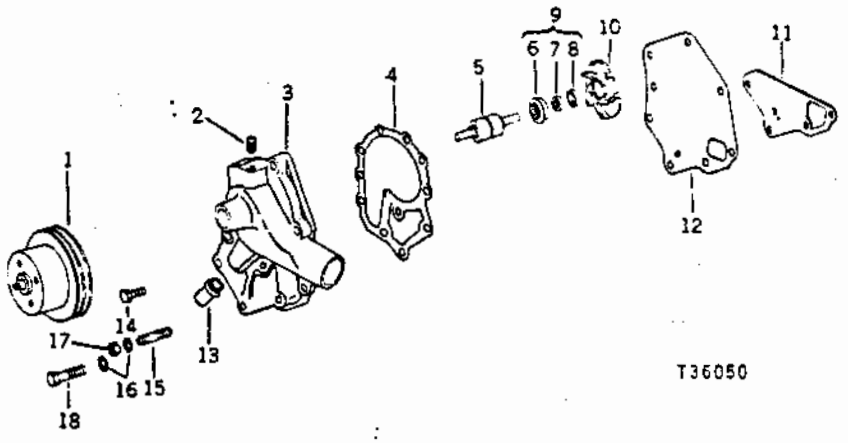
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	19H 1801	(-)	SCREW, CAP, 3/8" X 2" (2 USED)
2	12H 304	(-)	WASHER, LOCK, 3/8" (3 USED)
3	19H 1731	(-)	SCREW, CAP, 3/8" X 1"
4	R 54639	(-)	COVER, THERMOSTAT
5	R 54638	(-)	GASKET
6	R 54637	(-)	HOUSING, THERMOSTAT
7	R 54641	(-)	GASKET
8	R 47144	(-)	O-RING
9	R 55967	(-)	TUBE, BYPASS
10	19H 1912	(-)	SCREW, CAP, 3/8" X 3-1/2" (2 USED)

ENGINE THERMOSTAT
CODE 2204 THERMOSTAT, (180° (83°C))



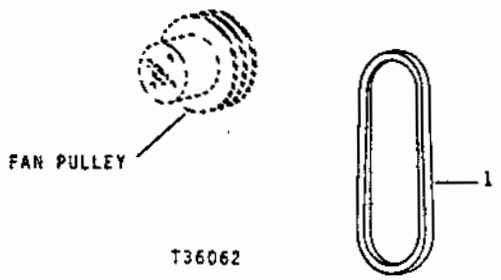
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AR 48675	(-)	THERMOSTAT, (180° (83°C)) (2 USED)

WATER PUMP ASSEMBLY
CODE 2001 WATER PUMP, STANDARD POSITION



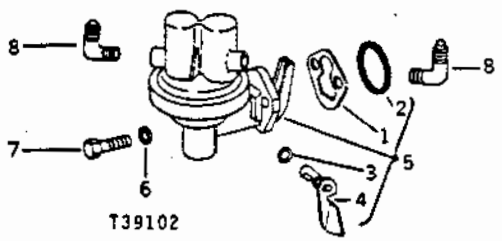
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 56810	-	PULLEY, FAN
2	15H 584	-	PLUG, PIPE, SQ. HD., 1/2"
3	R 56813	-	HOUSING, WATER PUMP
4	R 56809	-	GASKET
5	JD 8643	-	BEARING
6	T 27261	-	SEAL
7	... .	-	INSERT, IMPELLER (SUB. AR41691)
8	... .	-	INSERT, IMPELLER (SUB. AR41691)
9	AR 41691	-	INSERT AND CUP
10	R 56812	-	IMPELLER
11	T 20243	-	GASKET
12	R 56811	-	COVER, PUMP
13	R 34985	-	TUBE
14	19H 1800	-	SCREW, CAP, 3/8" X 1-1/2" (5 USED)
15	T 25701	-	STUD
16	12H 304	-	WASHER, LOCK, 3/8" (9 USED)
17	14H 812	-	NUT, 3/8"
18	19H 1801	-	SCREW, CAP, 3/8" X 2" (3 USED)
	19H 1726	-	SCREW, CAP, 3/8" X 2-1/4"
..	AR 68389	-	PUMP ASSEMBLY, WATER, COMPLETE

FAN BELT
CODE 2401 FAN BELT, DUAL



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AT 24833	(-)	BELT, FAN, MATCHED SET

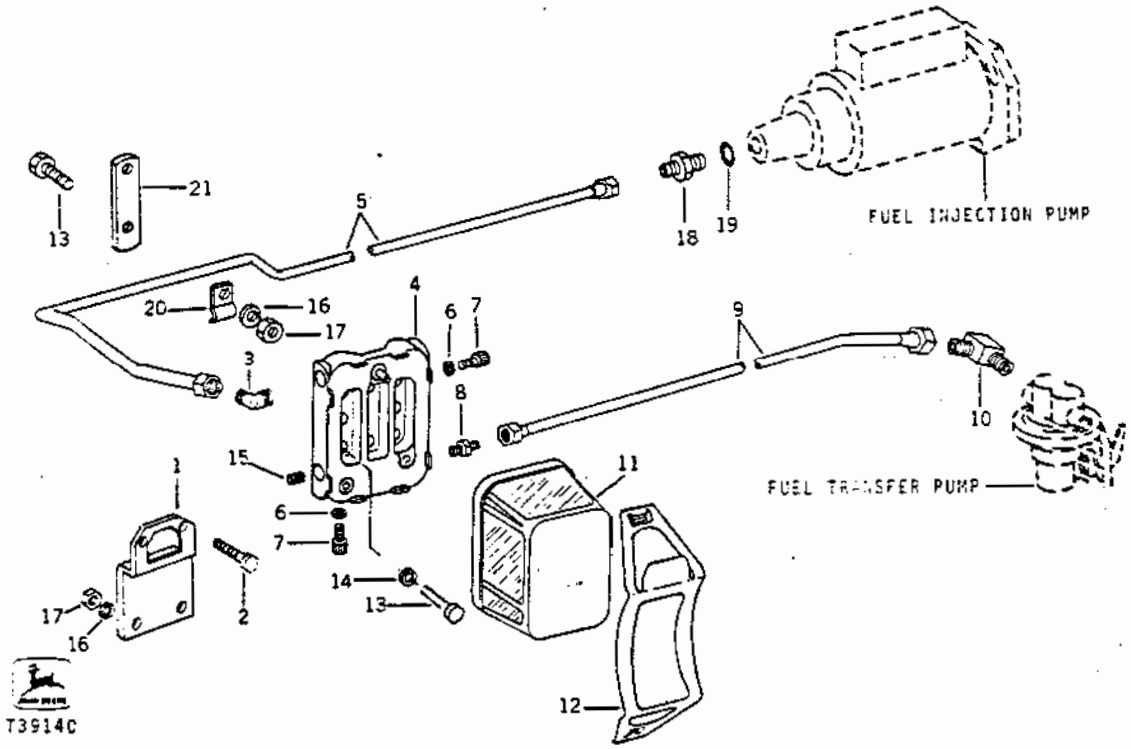
AIRTEX FUEL TRANSFER PUMP ASSEMBLY



T39102

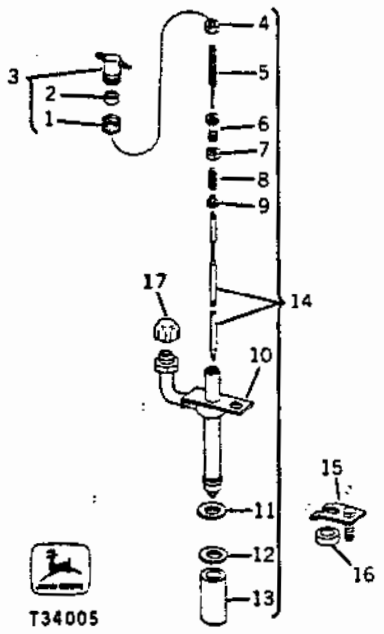
KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 27285	(-)	GASKET
2	R 48399	(-)	PACKING
3	A 4365 R	(-)	O-RING
4	AR 52556	(-)	LEVER, PRIMING
5	AR 52159	(-)	PUMP, FUEL, COMPLETE
6	R 20498	(-)	WASHER, SPECIAL (2 USED)
7	19H 1849	(-)	SCREW, CAP, 5/16" X 1-1/4" (2 USED)
8	T 30738	(-)	ELBOW, 90°, (2 USED)

FUEL FILTER AND FUEL LINES



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 53214	-	BRACKET
2	19H 1134	-	SCREW, CAP, 3/8" X 3/4" (2 USED)
3	T 24945	-	ELBOW, 45°
4	AR 50040	-	BODY, FUEL FILTER
5	AR 66280	-	LINE, FUEL FILTER TO INJECTION PUMP
6	R 34447	-	PACKING (2 USED)
7	R 48071	-	SCREW, BLEED (2 USED)
8	R 27346	-	CONNECTOR
9	AR 66396	-	LINE, FUEL FILTER TO FUEL TRANSFER PUMP
10	T 30738	-	ELBOW, 90°
11	AR 50041	-	ELEMENT, FUEL FILTER
12	R 57258	-	SPRING, RETAINING
13	19H 2284	-	SCREW, CAP, 3/8" X 7/8" (3 USED)
14	24H 1289	-	WASHER, 21/64" X 5/8" X .048" (2 USED)
15	15H 558	-	PLUG, PIPE, HEX., CTSK., 1/8"
16	12H 304	-	WASHER, LOCK, 3/8" (3 USED)
17	14H 812	-	NUT, 3/8" (3 USED)
18	R 27272	-	CONNECTOR
19	R 26286	-	O-RING
20	A 4881 R	-	CLIP
21	R 56588	-	BRACKET

FUEL INJECTION NOZZLE ASSEMBLY
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



KEY		PART NO.	SERIAL NO.	DESCRIPTION
1	T	29540	-	NUT, NOZZLE LEAK-OFF
2	T	29539	-	GROMMET
3	AT	27622	-	CAP ASSEMBLY, LEAK-OFF
4	R	47733	-	NUT, LOCK, LIFT SCREW
5	R	47732	-	SCREW, LIFT ADJUSTING
6	R	47734	-	SCREW, PRESSURE ADJUSTING
7	R	46675	-	NUT, SPECIAL
8	R	47731	-	SPRING
9	R	39885	-	SEAT, SPRING
10	T	26870	-	CLAMP, NOZZLE LOCATING
11	R	34764	-	WASHER, NOZZLE UPPER
12	R	48000	-	WASHER, NOZZLE LOWER
13	T	24472	-	CAP, NOZZLE TIP
14	AR	68364	-	NOZZLE ASSEMBLY (ROOSA-MASTER NO. 20291).
15	R	34760	-	CLAMP, WITH SCREW AND WASHER
16	R	34761	-	SPACER
17	T	31174	-	CAP, PROTECTIVE (USE FOR SERVICING FUEL INJECTION NOZZLE)

FUEL INJECTION PUMP GOVERNOR GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR

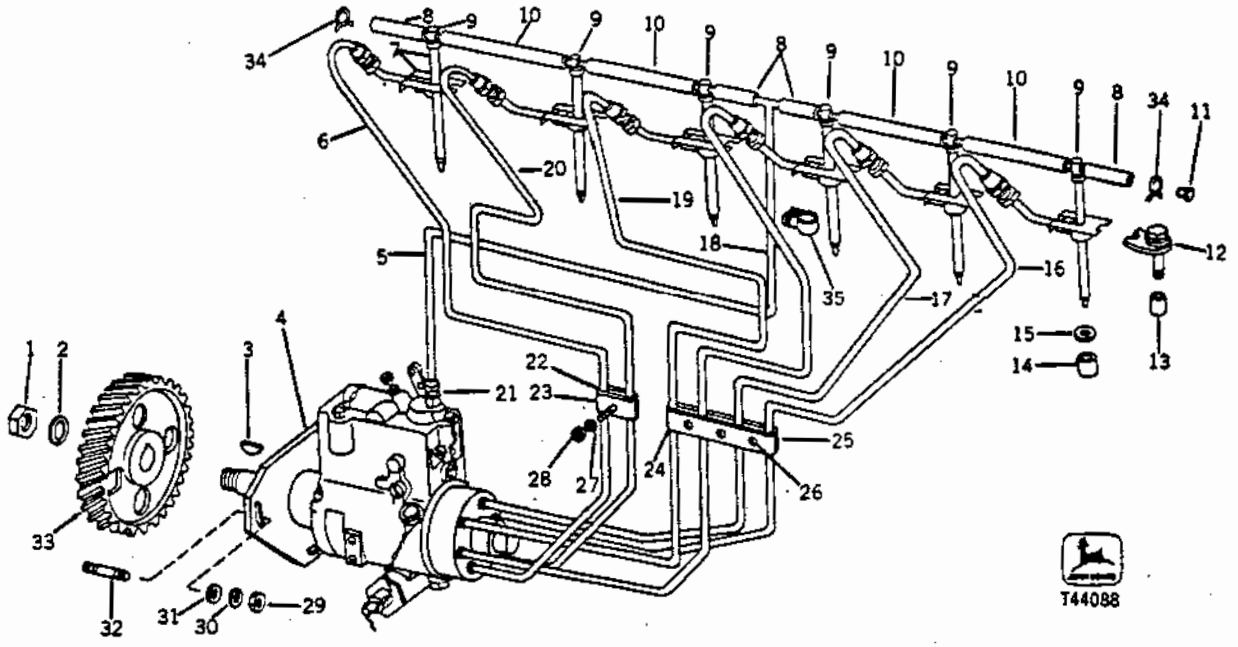
KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	T	11932	(-)	NUT, PIVOT, PIVOT SHAFT RETAINING (2 USED)
2	T	11906	(-)	PACKING (2 USED)
3	T	11925	(-)	SHAFT, GOVERNOR ARM PIVOT
4	R	54245	(-)	ARM, GOVERNOR
5	R	41203	(-)	SPRING, GOVERNOR CONTROL (SUB. FOR T11951, THIS APPLICATION)
6	T	17952	(-)	SPACER, GOVERNOR SPRING
7	T	11924	(-)	RETAINER, SPRING
8	T	11913	(-)	SPRING, IDLER
9	T	11914	(-)	GUIDE, SPRING
10	AR	30736	(-)	ARM, METERING VALVE
11	T	11943	(-)	WASHER, GUIDE STUD
12	T	11923	(-)	STUD, GUIDE
13	R	30732	(-)	WASHER, SPECIAL
14	T	11907	(-)	SPRING, METERING VALVE
15	R	54238	(-)	VALVE, METERING

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 49, 51, 52, 53, AND 54:

..	AR	63029	(-)	KIT, GASKET OVERHAUL

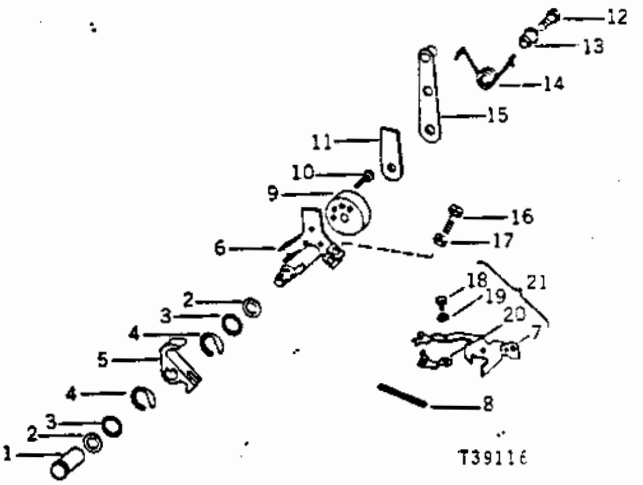
NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION SYSTEM
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 56422	(-)	NUT, JAM, SPECIAL
2	R 56423	(-)	WASHER, SPECIAL
3	R 56424	(-)	KEY
4	AR 66395	(-)	PUMP, FUEL INJECTION WITH REGULAR GOVERNOR, COMPLETE (ROOSA-MASTER NO. DM4627MD2684) (FOR PARTS SEE PAGES 48, 49, 50, 51, 52, 53, AND 54)
5	AR 65872	(-)	LINE, LEAK-OFF
6	AR 66274	(-)	LINE, FUEL INJECTION, NO. 1
7	AR 68364	(-)	NOZZLE ASSEMBLY (6 USED) (ROOSA-MASTER NO. 20291) (FOR PARTS SEE PAGE 31)
8	... .	(-)	HOSE, LEAK-OFF (4 USED) (MAKE FROM AT32064 5' (1 524 MM) HOSE)
9	AT 27622	(-)	CAP, LEAK-OFF (6 USED)
10	... .	(-)	HOSE (4 USED) (MAKE FROM AT32064 5' (1 524 MM) HOSE)
11	16H 475	(-)	RIVET, 7/32" X 1/2"
12	R 34760	(-)	CLAMP, WITH SCREW AND WASHER (6 USED)
13	R 34761	(-)	SPACER (6 USED)
14	R 48000	(-)	WASHER, NOZZLE, LOWER (6 USED)
15	R 34764	(-)	WASHER, NOZZLE, UPPER (6 USED)
16	AR 66279	(-)	LINE, FUEL INJECTION, NO. 6
17	AR 66278	(-)	LINE, FUEL INJECTION, NO. 5
18	AR 66277	(-)	LINE, FUEL INJECTION, NO. 4
19	AR 66276	(-)	LINE, FUEL INJECTION, NO. 3
20	AR 66275	(-)	LINE, FUEL INJECTION, NO. 2
21	R 35352	(-)	CONNECTOR
22	AR 53461	(-)	CLAMP, WITH STUD
23	R 49629	(-)	CLAMP
24	T 23463	(-)	CLAMP, HALF THREADED
25	T 23462	(-)	CLAMP, HALF
26	12H 246	(-)	WASHER, LOCK, NO. 10 (3 USED)
	21H 1317	(-)	SCREW, MACHINE, NO. 10 X 5/8" (3 USED)
27	12H 302	(-)	WASHER, LOCK, 1/4"
28	14H 786	(-)	NUT, 1/4"
29	14H 785	(-)	NUT, 5/16" (3 USED)
30	12H 303	(-)	WASHER, LOCK, 5/16" (3 USED)
31	24H 1136	(-)	WASHER, 11/32" X 11/16" X .060" (3 USED)
32	R 56055	(-)	STUD (2 USED)
33	R 56056	(-)	GEAR, DRIVE (48 TEETH)
34	T 13254	(-)	CLAMP (2 USED)
35	T 29527	(-)	CLAMP

FUEL INJECTION PUMP LINKAGE GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



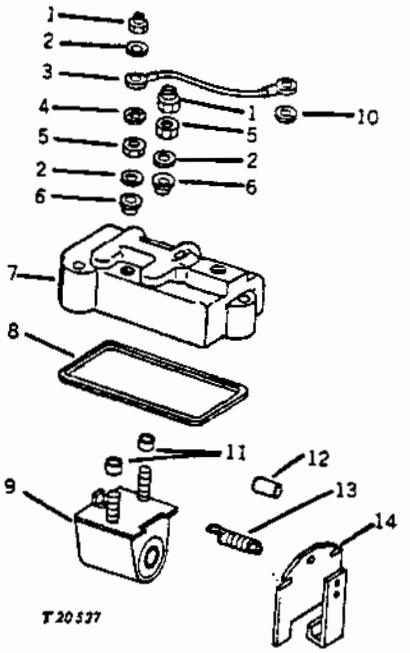
KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	R 48515		(-)	SHAFT, SHUT-OFF
2	T 15720	*	(-)	WASHER, FELT (2 USED)
3	T 11915	*	(-)	PACKING (2 USED)
4	T 11929		(-)	CLIP, SHAFT RETAINER (2 USED)
5	T 11927		(-)	LEVER, THROTTLE SHAFT
6	AR 51717		(-)	SHAFT, THROTTLE
7	R 48516		(-)	HOOK
8	T 11911		(-)	SPRING, GOVERNOR LINKAGE
9	T 19861		(-)	SPACER, ARM THROTTLE LEVER ADJUSTING
10	T 11917		(-)	SCREW, SPECIAL
11	T 19860		(-)	ARM, THROTTLE ADJUSTING
12	T 19859		(-)	SCREW, SOCKET HEAD
13	T 17950		(-)	RETAINER, THROTTLE LEVER SPRING
14	T 17949		(-)	SPRING, THROTTLE LEVER
15	T 19858		(-)	LEVER, THROTTLE
16	T 11920		(-)	SCREW, HIGH IDLE ADJUSTING
17	T 19862		(-)	NUT, SPECIAL
18	R 30718		(-)	SCREW, SPECIAL
19	R 30719		(-)	WASHER, SPECIAL LOCK
20	AR 28602		(-)	LINK, GOVERNOR HOOK ADJUSTING
21	AR 51719		(-)	HOOK ASSEMBLY, GOVERNOR LINKAGE

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 48, 51, 52, 53, AND 54:

..	AR 63029	(-)	KIT, GASKET OVERHAUL

NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION PUMP ELECTRIC SHUT-OFF GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



KEY		PART NO.		SERIAL NO.	DESCRIPTION
1	T	19977	*†	(-)	NUT, LOCK (2 USED)
2	R	47049	*†	(-)	WASHER, TERMINAL CONTACT (3 USED)
3	AR	49542		(-)	WIRE ASSEMBLY
4	R	47077		(-)	WASHER, SPECIAL
5	T	11938	†	(-)	NUT, SPECIAL (2 USED)
6	T	11936	*†	(-)	WASHER, INSULATING (2 USED)
7	R	37139	†	(-)	COVER, GOVERNOR HOUSING
8	T	11918	†	(-)	PACKING
9	AR	48219	*†	(-)	SOLENOID ASSEMBLY
10	12H	295		(-)	WASHER, LOCK, NO. 10
11	T	11937	*†	(-)	TUBE, COVER INSULATING
12	R	48795	†	(-)	TUBE, SHUT-DOWN ARM SPRING
13	T	11935	*†	(-)	SPRING, SHUT-OFF ARM
14	AT	11524	*†	(-)	ARM, SHUT-OFF

* ASSEMBLY LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK:

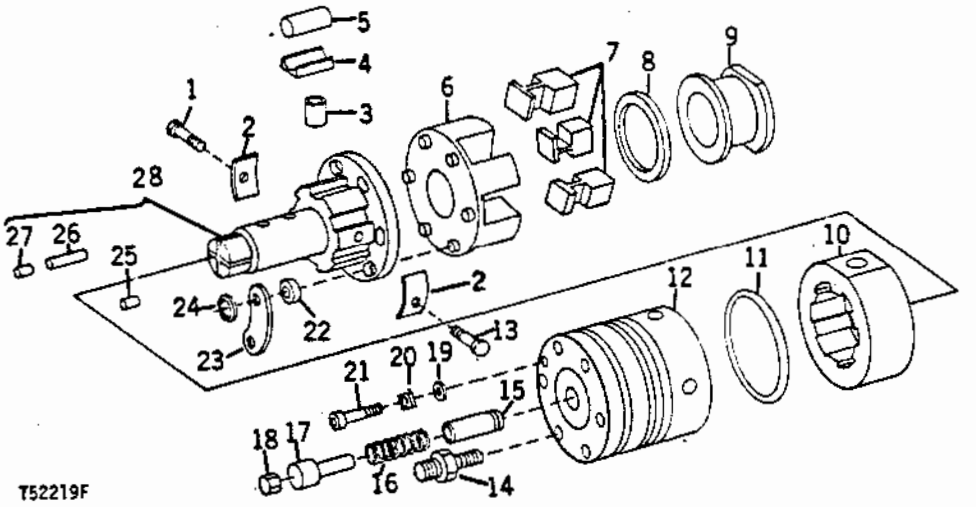
..	AR	51796		(-)	ARM, COIL, SHUT DOWN AND SOLENOID FRAME ASSEMBLY

† ASSEMBLY LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY A DAGGER SIGN:

..	AR	49543		(-)	COVER, GOVERNOR HOUSING, WITH ELECTRIC SHUT-OFF

NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION PUMP HYDRAULIC HEAD AND ROTOR GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



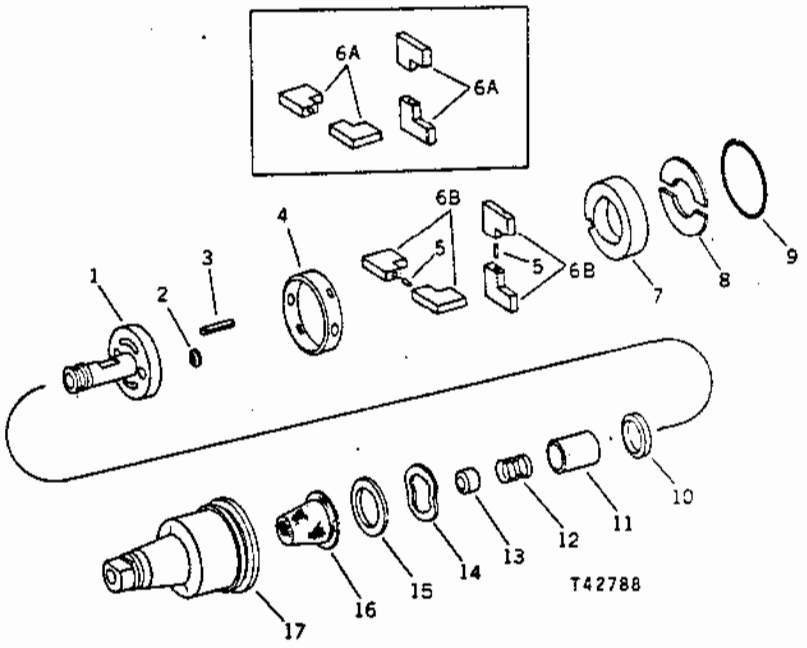
KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	R 48509		(-)	SCREW, SPECIAL, LEAF SPRING ADJUSTING
I	R 48506		(-)	SCREW, SPECIAL, LEAF SPRING ADJUSTING (POLISHED HEAD)
2	R 48505		(-)	SPRING, LEAF (2 USED)
3	R 57800		(-)	PLUNGER, ROTOR (A) (2 USED) (15/32" (12 MM) LONG)
	R 57801		(-)	PLUNGER, ROTOR (B) (2 USED) (15/32" (12 MM) LONG)
	R 57802		(-)	PLUNGER, ROTOR (C) (2 USED) (15/32" (12 MM) LONG)
	R 57803		(-)	PLUNGER, ROTOR (D) (2 USED) (15/32" (12 MM) LONG)
	R 57804		(-)	PLUNGER, ROTOR (A) (2 USED) (5/16" (8 MM) LONG)
	R 57805		(-)	PLUNGER, ROTOR (B) (2 USED) (5/16" (8 MM) LONG)
	R 57806		(-)	PLUNGER, ROTOR (C) (2 USED) (5/16" (8 MM) LONG)
	R 57807		(-)	PLUNGER, ROTOR (D) (2 USED) (5/16" (8 MM) LONG)
4	R 57808		(-)	SHOE, CAM ROLLER (4 USED)
5	T 11886		(-)	ROLLER, CAM (4 USED)
6	AR 61993		(-)	RETAINER, GOVERNOR WEIGHT ASSEMB-0
7	R 54239		(-)	WEIGHT, GOVERNOR (6 USED)
8	R 54240		(-)	WASHER, GOVERNOR SLEEVE THRUST
9	R 54241		(-)	SLEEVE, GOVERNOR THRUST
10	R 48531		(-)	CAM, RING
11	T 11891	*	(-)	PACKING
12	... .		(-)	HEAD ASSEMBLY (SUB. AR69429)
I 13	R 48506		(-)	SCREW, SPECIAL, LEAF SPRING ADJUSTING (POLISHED HEAD)
I	R 48509		(-)	SCREW, SPECIAL, LEAF SPRING ADJUSTING
14	R 57137		(-)	CONNECTOR, FUEL LINE (6 USED)
15	R 57798		(-)	VALVE, DELIVERY, STANDARD
	R 58077		(-)	VALVE, DELIVERY, OVERSIZE
16	R 57799		(-)	SPRING, DELIVERY VALVE
17	R 57810		(-)	STOP, DELIVERY VALVE
18	R 57809		(-)	SCREW, DELIVERY VALVE
19	R 54628		(-)	WASHER, SPECIAL, LOCKING PLATE
20	R 54259		(-)	PLATE, LOCKING
21	R 54261		(-)	SCREW, LOCKING PLATE
22	R 54249	*	(-)	CUSHION, GOVERNOR WEIGHT RETAINING (6 USED)
23	R 54252		(-)	RETAINER, CUSHION (3 USED)
24	R 54242	*	(-)	RING, RETAINING (6 USED)
25	T 11926		(-)	SCREW, SET, SPECIAL (2 USED)
26	R 54626		(-)	WIRE, VENT
27	R 30725		(-)	SCREW
28	AR 69429		(-)	HEAD, ROTOR, HYDRAULIC

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 49, 50, 52, 53 AND 54:

.. AR 63029 (-) KIT, GASKET OVERHAUL

NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION PUMP TRANSFER GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



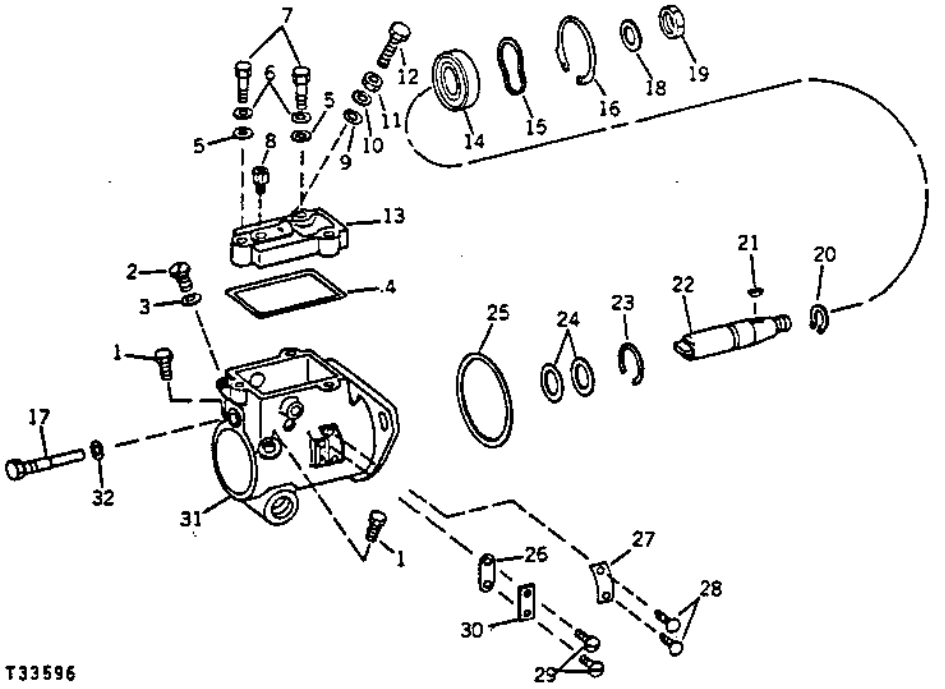
KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	AR 61995		(-)	REGULATOR, TRANSFER PUMP
2	R 54231	*	(-)	SEAL, REGULATING PISTON
3	R 54226		(-)	PIN, SPRING
4	R 54257		(-)	RING, LINER LOCATING
5	R 34630		(-)	SPRING, TRANSFER PUMP BLADE (2 USED)
6A	R 45045		(-)	SUB. ONE AR73828 AND ONE AR73829
6B	AR 73828		(-)	KIT, TRANSFER PUMP BLADE, WITH SPRINGS (STANDARD SIZE) (4 USED)
	AR 73829		(-)	KIT, TRANSFER PUMP BLADE, WITH SPRINGS (OVERSIZE) (4 USED)
7	R 54244		(-)	LINER, TRANSFER PUMP
8	R 54248		(-)	RETAINER, ROTOR (2 USED)
9	T 26236	*	(-)	O-RING
10	R 54222	*	(-)	SEAL, INLET FILTER SCREEN
11	R 54253		(-)	PISTON, REGULATING
12	R 54237		(-)	SPRING, REGULATING
13	R 34623		(-)	PLUG, END PLATE ADJUSTING
14	R 54234		(-)	WASHER, TRANSFER PUMP SPRING
15	R 54246		(-)	WASHER, FILTER SCREEN RETAINING
16	R 54223		(-)	SCREEN, INLET FILTER
17	R 57599		(-)	CAP, TRANSFER PUMP END

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 48, 49, 51, 53, AND 54:

.. AR 63029 (-) KIT, GASKET OVERHAUL

NOTE: FOR INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION PUMP HOUSING AND DRIVE GROUP
(ROOSA-MASTER NO. DM4627MD2684) (WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



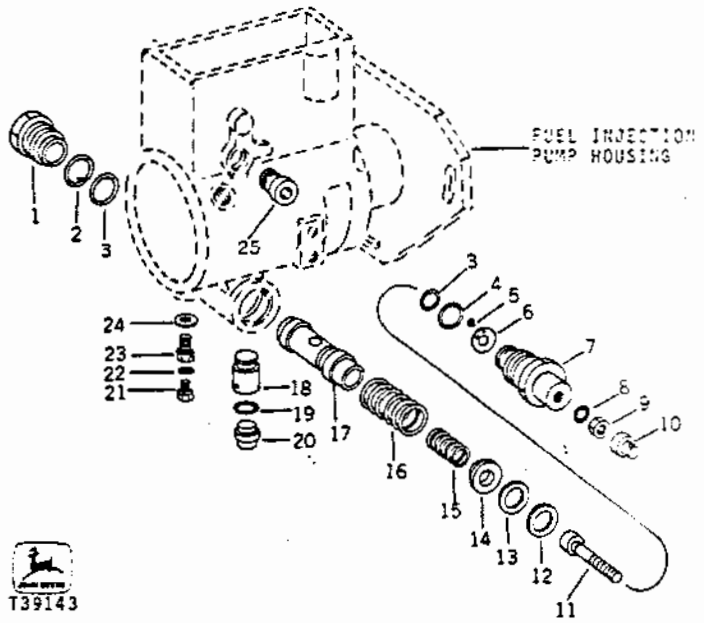
KEY		PART NO.		SERIAL NO.	DESCRIPTION
1	R	30714	(	-)	SCREW, SPECIAL, CAP (2 USED)
2	T	11930	(	-)	SCREW, SPECIAL, TORQUE HOLE
3	T	11878	(	-)	WASHER, SPECIAL
4	T	11918	* (	-)	PACKING, GOVERNOR HOUSING COVER
5	T	15715	(	-)	WASHER, SPECIAL (3 USED)
6	12H	295	(	-)	WASHER, LOCK, INTERNAL-TOOTH, NO. 10 (3 USED)
7	T	15721	(	-)	SCREW, SPECIAL (3 USED)
8	R	36535	(	-)	CONNECTOR, WITH CHECK VALVE
9	T	17951	(	-)	PACKING
10	T	17947	(	-)	WASHER, SPECIAL
11	T	11921	(	-)	NUT, SPECIAL
12	T	17953	(	-)	SCREW, SPECIAL, LOW IDLE ADJUSTMENT
13	R	37139	(	-)	COVER, GOVERNOR HOUSING
14	AR	69427	(	-)	BEARING, BALL
15	R	54235	(	-)	WASHER, DRIVE SHAFT SPRING
16	R	54230	(	-)	RING, RETAINER
17	T	11923	(	-)	STUD, GUIDE
18	R	56423	(	-)	WASHER, SPECIAL
19	R	56422	(	-)	NUT, JAM SPECIAL
20	R	57796	(	-)	RING, RETAINING
21	R	56424	(	-)	KEY
22	R	57797	(	-)	SHAFT, DRIVE
23	R	54225	(	-)	RING, SEAL RETAINING
24	AR	72052	* (	-)	SEAL, DRIVE SHAFT (2 USED)
25	R	54229	(	-)	SEAL, PUMP FLANGE
26	T	11883	(	-)	GASKET, TIMING WINDOW COVER
27	T	11875	(	-)	PLATE, NAME
28	T	11876	(	-)	SCREW, DRIVE (2 USED)
29	R	54260	(	-)	SCREW, TIMING WINDOW COVER (2 USED)
30	T	11882	(	-)	COVER, TIMING WINDOW
31	AR	69428	(	-)	HOUSING, PUMP
32	T	11943	(	-)	WASHER, GUIDE STUD

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 48, 49, 51, 52, AND 54:

.. AR 63029 (-) KIT, GASKET OVERHAUL

NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

FUEL INJECTION PUMP ADVANCE GROUP
(ROOSA-MASTER NO. DM4627MD2684)
(WITHOUT TURBOCHARGER)
CODE 1602 FUEL INJECTION SYSTEM, REGULAR GOVERNOR



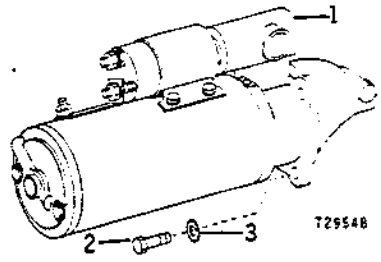
KEY		PART NO.		SERIAL NO.	DESCRIPTION
1	R	40709		(-)	PLUG, PISTON HOLE
2	R	56396	*	(-)	SEAL, PISTON HOLE PLUG
3	T	15710	*	(-)	SEAL, PISTON HOLE PLUG
4	T	17135	*	(-)	SEAL, PISTON HOLE PLUG
5	R	54224		(-)	SCREW, REED VALVE (2 USED)
6	R	56484		(-)	VALVE, REED
7	R	57812		(-)	PLUG, PISTON CONTROL
8	T	11915	*	(-)	O-RING, ADJUSTING SCREW
9	T	17122		(-)	NUT, SPECIAL
10	T	17117		(-)	SCREW, SPECIAL ADJUSTING
11	T	17123		(-)	SCREW, SPECIAL ADJUSTING
12	R	49211		(-)	RING, PISTON
13	R	34635	*	(-)	RING, PISTON
14	T	17125		(-)	GUIDE, ADVANCE ADJUSTMENT
15	R	57814		(-)	SPRING, INNER ADVANCE (COLORED GREEN)
16	R	57813		(-)	SPRING, OUTER ADVANCE (COLORED BLUE AND WHITE)
17	R	57811		(-)	PISTON, ADVANCE
18	R	40703		(-)	PIN, ADVANCE
19	T	15712	*	(-)	SEAL, ADVANCE
20	R	40707		(-)	PLUG, ADVANCE
21	R	54254		(-)	SCREW, SPECIAL
22	T	17951	*	(-)	SEAL
23	R	54251		(-)	SCREW, SPECIAL
24	T	11899	*	(-)	SEAL, HEAD LOCATING SCREW
25	R	54627		(-)	SCREW, SPECIAL, THROTTLE STOP

* KIT LISTED BELOW CONTAINS ALL PARTS FOLLOWED BY AN ASTERISK ON THIS PAGE AND PAGES 48, 49, 51, 52, AND 55:

.. AR 63029 (-) KIT, GASKET OVERHAUL

NOTE: FOR FUEL INJECTION PUMP COMPLETE, SEE PAGE 33.

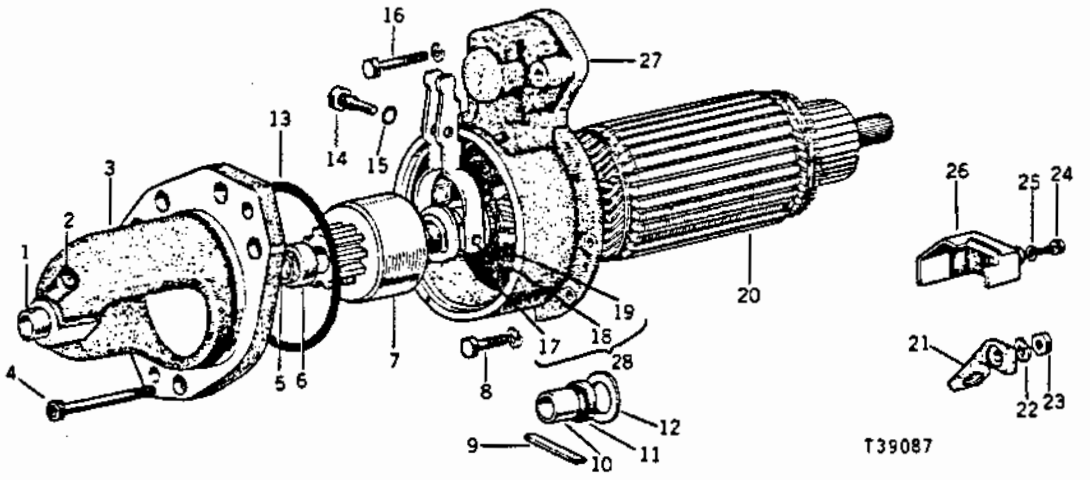
STARTING MOTOR ATTACHING PARTS
CODE 3002 STARTING, FOR USE WITH SAE NO. 2 AND NO. 3 FLYWHEEL HOUSINGS



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1			
	AR 55639	(-)	MOTOR, STARTING, COMPLETE (JOHN DEERE) (FOR PARTS SEE PAGES 67, 68 AND 69)
2	19H 1732	(-)	SCREW, CAP, 3/8" X 1-1/4" (3 USED)
3	12H 304	(-)	WASHER, LOCK, 3/8" (3 USED)

STARTER DRIVE HOUSING, CENTER HOUSING, AND ARMATURE (12-VOLT) (JOHN DEERE)

CODE 3002 STARTING MOTOR, FOR USE WITH SAE NO. 2 AND NO. 3 FLYWHEEL HOUSINGS

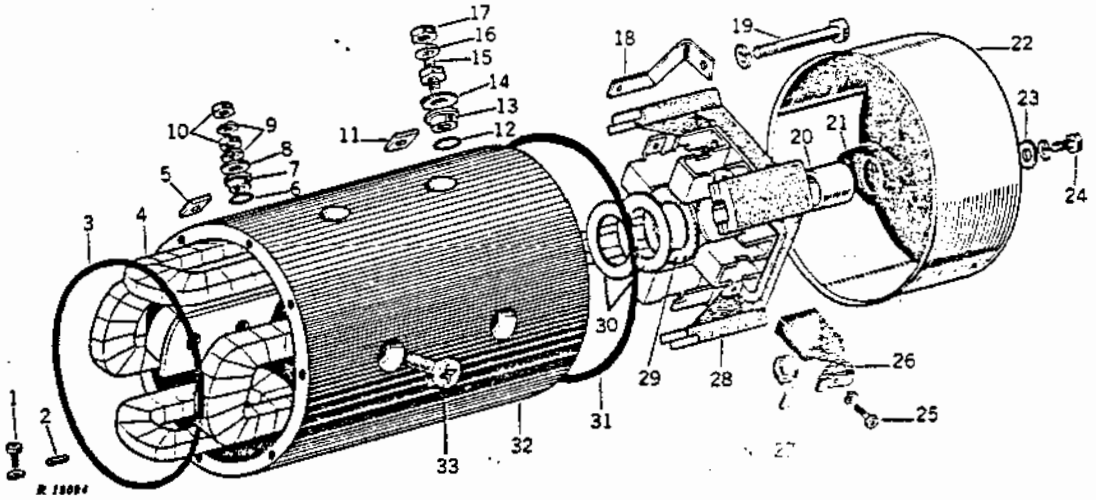


KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 50891	(-)	BUSHING
2	R 50892	(-)	PLUG
3	AR 54990	(-)	HOUSING, DRIVE, WITH BUSHING AND PLUG
4	R 50900	(-)	SCREW, SPECIAL (6 USED)
5	R 50902	(-)	RING, SNAP
6	R 50903	(-)	STOP, PINION
7	AR 54992	(-)	MOTOR, DRIVE
8	R 51661	(-)	SCREW, SPECIAL (2 USED)
	12H 317	(-)	WASHER, LOCK, 9/16" (2 USED)
9	R 51666	(-)	WICK, FELT OIL
10	R 51665	(-)	BUSHING, CENTER HOUSING
11	AR 55947	(-)	SEAL, OIL
12	R 50906	(-)	WASHER, THRUST
13	R 50901	(-)	O-RING
14	R 50897	(-)	SHAFT, SHIFT LEVER
15	R 52367	(-)	O-RING
16	R 50893	(-)	SCREW, SPECIAL (2 USED)
	12H 302	(-)	WASHER, LOCK, 1/4" (2 USED)
17	R 51667	(-)	PAD, WEAR (2 USED)
18	R 50904	(-)	LEVER, SHIFT
19	R 50905	(-)	WASHER, BRAKE
20	AR 66778	(-)	ARMATURE
21	R 50910	(-)	CONNECTOR, FIELD COIL
22	R 50899	(-)	WASHER, LOCK (3 USED)
23	14H 732	(-)	NUT, 3/8" (3 USED)
24	AR 55946	(-)	SCREW, SPECIAL
25	R 51662	(-)	WASHER, SPECIAL
26	R 50908	(-)	COVER
27	AR 68430	(-)	HOUSING, CENTER BEARING
28	AR 67827	(-)	LEVER ASSEMBLY, DRIVE
..	AR 55639	(-)	STARTER, COMPLETE

SEE PAGES 68 AND 69 FOR ADDITIONAL STARTER SERVICE PARTS:

STARTER MAIN FRAME, COIL, AND COMMUTATOR END FRAME (12-VOLT) (JOHN DEERE)

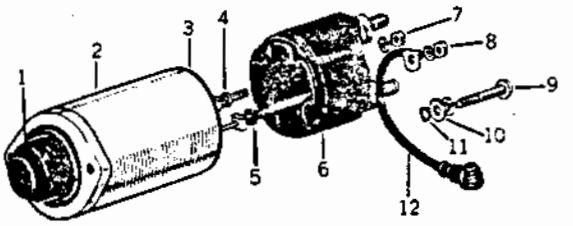
CODE 3002 STARTING MOTOR, FOR USE WITH SAE NO. 2 AND NO. 3 FLYWHEEL HOUSINGS



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 51663	(-)	SCREW, SPECIAL
	12H 246	(-)	WASHER, LOCK, NO. 10
2	R 51664	(-)	PIN, DOWEL
3	R 50913	(-)	O-RING
4	AR 54996	(-)	COIL ASSEMBLY, FIELD
5	R 50916	(-)	WASHER, SQUARE
6	R 50915	(-)	O-RING
7	R 50914	(-)	BUSHING, INSULATOR
8	24H 1283	(-)	WASHER, 7/32" X 1/2" X .048"
9	12H 246	(-)	WASHER, LOCK, NO. 10 (2 USED)
10	R 50907	(-)	NUT, SPECIAL (2 USED)
11	R 50920	(-)	BUSHING, INSULATOR
12	R 50919	(-)	O-RING
13	R 50918	(-)	BUSHING, INSULATOR
14	R 50917	(-)	WASHER, SPECIAL
15	R 52386	(-)	BOLT, FIELD TERMINAL
16	R 50899	(-)	WASHER, LOCK
17	R 50909	(-)	NUT, SPECIAL
18	R 51660	(-)	STRAP, BRUSH GROUND
19	R 51659	(-)	SCREW, SPECIAL (2 USED)
	12H 317	(-)	WASHER, LOCK, 9/16" (2 USED)
20	R 50891	(-)	BUSHING
21	R 50930	(-)	PACKING
22	R 50912	(-)	COVER, END
23	24H 1283	(-)	WASHER, 7/32" X 1/2" X .048" (2 USED)
24	R 50931	(-)	SCREW, COVER (2 USED)
	12H 246	(-)	WASHER, LOCK, NO. 10 (2 USED)
25	R 50929	(-)	SCREW, SPECIAL (4 USED)
	12H 246	(-)	WASHER, LOCK, NO. 10 (4 USED)
26	R 50927	(-)	BRUSH (4 USED)
27	R 50928	(-)	SPRING, BRUSH (4 USED)
28	AR 54997	(-)	FRAME, COMMUTATOR END
29	R 50925	(-)	WASHER, THRUST
30	R 50923	(-)	SHIM, .007" (0.18 MM) (USE AS REQUIRED)
	R 50924	(-)	SHIM, .019" (0.48 MM) (USE AS REQUIRED)
31	R 50922	(-)	O-RING
32	... .	(-)	FRAME, MAIN (SUB. AR55639)
33	R 50921	(-)	SCREW, FIELD POLE SHOE (8 USED)
	AR 55639	(-)	STARTER, COMPLETE

SEE PAGES 67 AND 69 FOR ADDITIONAL STARTER PARTS:

SOLENOID SWITCH
(JOHN DEERE 12-VOLT)
CODE 3002 STARTING MOTOR, FOR USE WITH SAE NO. 2, AND NO. 3 FLYWHEEL HOUSINGS



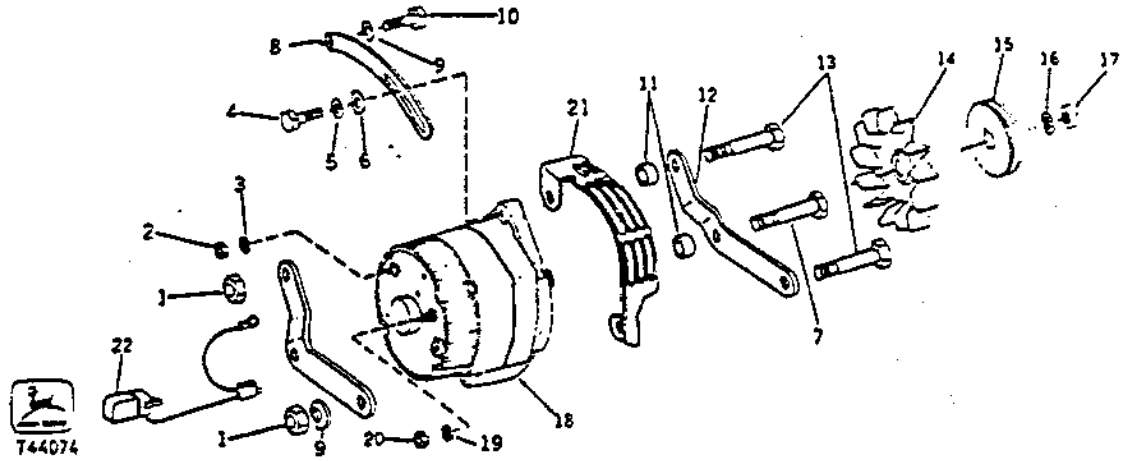
T34115

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	R 52385	(-)	COVER
2	AR 54991	(-)	SWITCH, SOLENOID
3	R 51668	(-)	GASKET
4	R 56793	(-)	PACKING
5	R 56792	(-)	PACKING
6	AR 71256	(-)	COVER, SOLENOID
7	R 51671	(-)	NUT, SPECIAL
	12H 303	(-)	WASHER, LOCK, 5/16"
8	14H 631	(-)	NUT, NO. 10 (2 USED)
	12H 246	(-)	WASHER, LOCK, NO. 10 (2 USED)
9	R 51669	(-)	SCREW, SPECIAL (2 USED)
	12H 302	(-)	WASHER, LOCK, 1/4" (2 USED)
10	24H 1305	(-)	WASHER, 13/32" X 13/16" X .060" (2 USED)
11	R 50894	(-)	O-RING
12	AR 55949	(-)	LEAD, SHUNT WIRING
..	AR 55639	(-)	STARTER, COMPLETE

SEE PAGES 67 AND 68 FOR ADDITIONAL STARTER SERVICE PARTS.

ALTERNATOR AND ATTACHING PARTS
CODE 3105 ALTERNATOR,61 AMPERE

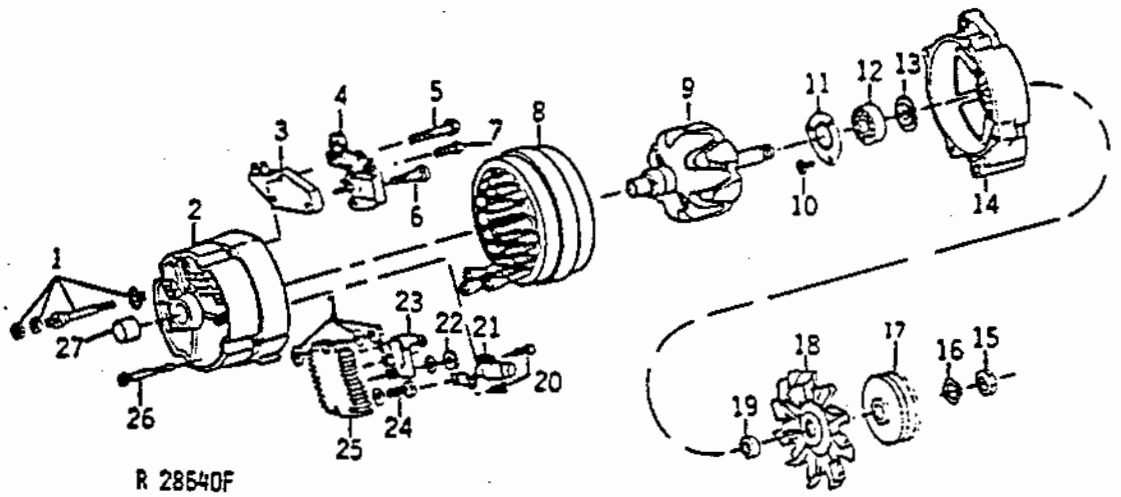
T44074



KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	14H 812	(-)	NUT, 3/8" (2 USED)
2	14H 786	(-)	NUT, 1/4"
3	12H 297	(-)	WASHER, LOCK, INTERNAL-TOOTH, 1/4"
4	19H 1905	(-)	SCREW, CAP, 5/16" X 1"
5	12H 303	(-)	WASHER, LOCK, 5/16"
6	24H 1136	(-)	WASHER, 11/32" X 11/16" X .060"
7	19H 2128	(-)	SCREW, CAP, 3/8" X 3"
8	T 20204	(-)	STRAP, ALTERNATOR ADJUSTING
9	12H 304	(-)	WASHER, LOCK, 3/8" (2 USED)
10	19H 1726	(-)	SCREW, CAP, 3/8" X 2-1/4"
11	28H 2547	(-)	SPACER, PIPE, 3/8" X 1" (2 USED)
12	R 59962	(-)	BRACKET
13	19H 1912	(-)	SCREW, CAP, 3/8" X 3-1/2"
14	R 50659	(-)	FAN, ALTERNATOR
15	T 42171	(-)	PULLEY
16	T 10745	(-)	WASHER, SPECIAL
17	R 11049	(-)	NUT, SPECIAL
18	AT 58321	(-)	ALTERNATOR WITH REGULATOR, LESS PULLEY AND FAN (61-AMP) (DELCO-REMY NO. 1102936)
19	12H 295	(-)	WASHER, LOCK, NO. 10 (2 USED)
20	14H 778	(-)	NUT, NO. 10 (2 USED)
21	R 56012	(-)	SHIELD, ALTERNATOR
22	AR 55283	(-)	ADAPTER, WIRING HARNESS TO ALTERNATOR

R28640F

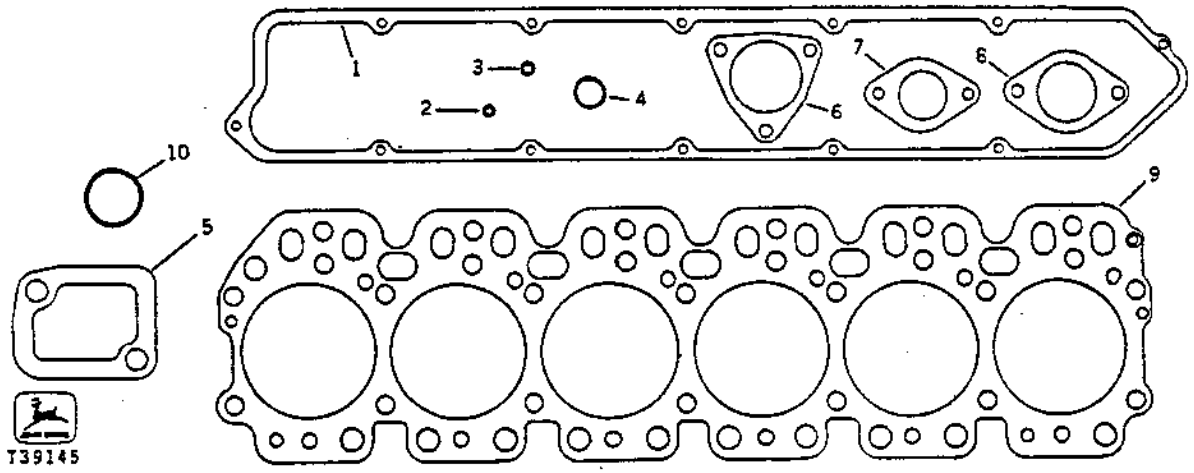
ALTERNATOR (12-VOLT) (DELCO-REMY)



R 28640F

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AR 55834	-	TERMINAL, OUTPUT ASSEMBLY
2	R 66301	-	HOUSING, REAR
3	AR 55827	-	REGULATOR
4	AR 85941	-	BRUSH ASSEMBLY
5	21H 1376	-	SCREW, MACH. NO 8 X 1-1/4"
6	R 66302	-	SCREW, BRUSH HOLDER, GROUND
7	R 51530	-	SCREW, BRUSH HOLDER, INSULATED (2 USED)
8	AR 55837	-	STATOR
9	AR 78093	-	ROTOR
10	21H 1301	-	SCREW, MACH., PAN HD., NO. 10 X 1/2" (3 USED)
11	AR 55836	-	RETAINER, BEARING
12	JD 9449	-	BEARING, FRONT (SUB. FOR AT23188)
13	R 51534	-	WASHER, SLINGER
14	R 51528	-	HOUSING, FRONT
15	R 11049	-	NUT
16	T 10745	-	WASHER, SPRING
17	T 42171	-	PULLEY
18	R 50659	-	FAN
19	R 51533	-	COLLAR, BEARING OUTER
20	37H 2	-	SCREW, TAPPING, PAN HD., NO. 8 X 5/8" (2 USED)
21	AR 55835	-	CAPACITOR
22	14H 605	-	NUT, NO. 8 (3 USED)
	12H 290	-	WASHER, LOCK, INTERNAL-TOOTH, NO. 8 (3 USED)
23	AR 55831	-	DIODE, TRIO NEGATIVE
24	21H 1319	-	SCREW, MACH., PAN HD., NO. 8 X 7/8"
	12H 290	-	WASHER, LOCK, INT. TOOTH, NO. 8
25	AR 55832	-	RECTIFIER, BRIDGE POSITIVE
26	R 51535	-	BOLT, THRU (4 USED)
27	AR 77851	-	BEARING, ROLLER, WITH SEAL
**	AT 58321	-	ALTERNATOR WITH REGULATOR, LESS FAN AND PULLEY (61 AMP)

ENGINE TUNE GASKET SET



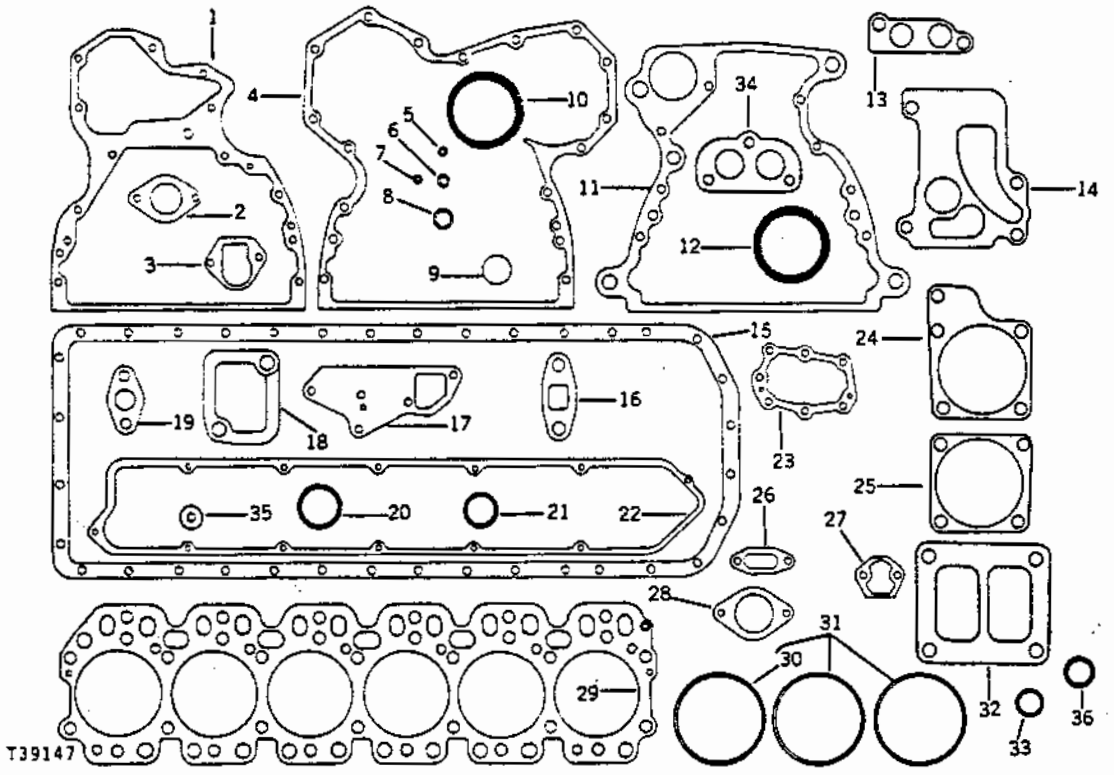
KEY	PART NO.		SERIAL NO.	DESCRIPTION
1	T 20467		(-)	GASKET, ROCKER ARM COVER
2	R 46000		(-)	WASHER, NOZZLE LOWER (6 USED)
3	R 34764		(-)	WASHER, NOZZLE UPPER (6 USED)
4	R 495 R		(-)	O-RING, VENT TUBE
5	R 54641		(-)	GASKET, THERMOSTAT HOUSING
6	R 54638		(-)	GASKET, THERMOSTAT COVER
7	T 20006		(-)	GASKET, EXHAUST MANIFOLD (6 USED)
8	T 20159		(-)	GASKET, AIR INLET (2 USED)
9	R 59449		(- 406734)	GASKET, CYLINDER HEAD
	R 59449	*	(406735 -)	GASKET, CYLINDER HEAD
	R 64153	*	(406735 -)	GASKET, CYLINDER HEAD
10	R 56905		(-)	O-RING
..	AR 71994		(- 406734)	GASKET SET, ENGINE TUNE-UP (INCLUDES ALL GASKETS SHOWN ABOVE)
..	AR 79925	*	(406735 -)	GASKET SET, ENGINE TUNE-UP (INCLUDES ALL GASKETS SHOWN ABOVE EXCEPT CYLINDER HEAD GASKET) (ALSO ORDER ONE R59449 HEAD GASKET OR ONE R64153 HEAD GASKET)

* NOTE: R59449 GASKET IS MARKED WITH A RED DOT AND IS USED WITH CYLINDER BLOCKS STAMPED WITH AN "S". R64153 GASKET IS MARKED WITH A YELLOW DOT AND HAS A "V" NOTCH AND IS USED WITH CYLINDER BLOCKS STAMPED WITH A "T". "S" OR "T" IS STAMPED ON RIGHT HAND SIDE OF ENGINE AT FRONT LOCATING PAD.

TORQ-GARD SUPREME ENGINE OIL
PARTS LISTED BELOW ARE NOT ILLUSTRATED

KEY	PART NO.		SERIAL NO.	DESCRIPTION
..	AR 63980		(-)	OIL, EIGHT-OUNCE CAN (237 ML) (SAE 5W/20)
..	AR 63979		(-)	OIL, EIGHT-OUNCE CAN (237 ML) (SAE 30)
..	AR 63228		(-)	OIL, QUART CAN (946 ML) (SAE 5W/20)
..	AR 63223		(-)	OIL, QUART CAN (946 ML) (SAE 10W/20)
..	AR 63218		(-)	OIL, QUART CAN (946 ML) (SAE 30)
..	AR 63229		(-)	OIL, FIVE GALLON CAN (18.9 L) (SAE 5W/20)
..	AR 63224		(-)	OIL, FIVE GALLON CAN (18.9 L) (SAE 10W/20)
..	AR 63219		(-)	OIL, FIVE GALLON CAN (18.9 L) (SAE 30)
..	AR 63230		(-)	OIL, FIFTY-FIVE GALLON DRUM (208.2 L) (SAE 5W/20)
..	AR 63227		(-)	OIL, FIFTY-FIVE GALLON DRUM (208.2 L) (SAE 10W/20)
..	AR 63222		(-)	OIL, FIFTY-FIVE GALLON DRUM (208.2 L) (SAE 30)

ENGINE OVERHAUL GASKET SET



KEY		PART NO.	SERIAL NO.	DESCRIPTION
1	T	24965	-	GASKET, CYLINDER BLOCK PLATE
2	T	20006	-	GASKET, EXHAUST MANIFOLD (6 USED)
3	T	20364	-	GASKET, INJECTION PUMP COVER
4	T	20155	-	GASKET, TIMING GEAR COVER
5	R	34764	-	WASHER, NOZZLE UPPER (6 USED)
6	R	26286	-	O-RING, CONNECTOR TO INJECTION PUMP
7	R	48000	-	WASHER, NOZZLE LOWER (6 USED)
8	R	495 R	-	O-RING, VENT TUBE
9	T	20328	-	GASKET, OIL FILLER CAP
10	R	56193	-	O-RING, OIL COOLER HOUSING, OUTER
11	R	49516	-	GASKET, FLYWHEEL HOUSING
12	R	56192	-	O-RING, OIL COOLER HOUSING, INNER
13	R	54824	-	GASKET, OIL COOLER
14	R	54821	-	GASKET, OIL COOLER TO CYLINDER BLOCK
15	T	20205	-	GASKET, OIL PAN
16	R	43416	-	GASKET, TURBOCHARGER DRAIN LINE
17	T	20243	-	GASKET, WATER PUMP
18	R	54641	-	GASKET, WATER OUTLET HOUSING
19	R	43413	-	GASKET, TURBOCHARGER TO OIL INLET ADAPTER
20	U	13639	-	O-RING, COOLANT HEATER PLUG
21	R	27564	-	O-RING, OIL PUMP CONNECTOR
	R	27564	-	O-RING, OIL PUMP OUTLET TUBE
22	T	20467	-	GASKET, ROCKER ARM COVER
23	T	20273	-	GASKET, TIMING GEAR COVER OPENING
24	R	56198	-	GASKET, OIL COOLER LOWER COVER
25	R	56194	-	GASKET, OIL COOLER (2 USED)

THIS PARTS LISTING IS CONTINUED

ENGINE OVERHAUL GASKET SET-CONTINUED

KEY		PART NO.		SERIAL NO.		DESCRIPTION
26	T	20336		(-	)	GASKET, OIL FILLER INLET
27	R	27285		(-	)	GASKET, FUEL PUMP
28	T	20159		(-	)	GASKET, AIR INLET (2 USED)
29	R	59449		(- 406734	)	GASKET, CYLINDER HEAD
	R	59449	*	(406735 -	)	GASKET, CYLINDER HEAD
	R	64153	*	(406735 -	)	GASKET, CYLINDER HEAD
30	R	48767		(-	)	PACKING, CYLINDER LINER (6 USED)
31	AR	68318		(-	)	KIT, CYLINDER LINER PACKING
32	R	55509		(-	)	GASKET, TURBOCHARGER
33	A	4730 R		(-	)	O-RING, OIL PUMP INTAKE
34	R	54638		(-	)	GASKET, THERMOSTAT COVER
35	B	3285 R		(-	)	PACKING, TACHOMETER DRIVE SHAFT CAP
36	R	56905		(-	)	O-RING
..	AR	72002		(- 406734	)	GASKET SET, ENGINE OVERHAUL (INCLUDES ALL GASKETS SHOWN ON THIS PAGE)
..	AR	79926	*	(406735 -	)	GASKET SET, ENGINE OVERHAUL (INCLUDES ALL GASKETS SHOWN ON THIS PAGE EXCEPT CYLINDER HEAD GASKET) (ALSO ORDER ONE R59449 HEAD GASKET OR ONE R64153 HEAD GASKET)

* NOTE: R59449 GASKET IS MARKED WITH A RED DOT AND IS USED WITH CYLINDER BLOCKS STAMPED WITH AN "S".
R64153 GASKET IS MARKED WITH A YELLOW DOT AND HAS A "V" NOTCH AND IS USED WITH CYLINDER BLOCKS STAMPED WITH A "T". "S" OR "T" IS STAMPED ON RIGHT HAND SIDE OF ENGINE AT FRONT LOCATING PAD.

MEMORANDA

ENGINE VALVE STEM LUBRICANT

KEY	PART NO.	SERIAL NO.	DESCRIPTION
1	AR 44402	(-)	LUBRICANT, ENGINE VALVE STEM (1 QT. CAN) (.946 L)

STORAGE KIT (NOT ILLUSTRATED)

KEY	PART NO.	SERIAL NO.	DESCRIPTION
..	AR 41785	(-)	KIT, STORAGE, INHIBITOR (NOT ILLUSTRATED)

STOP LEAK AND COOLANT CONDITIONER (NOT ILLUSTRATED)

KEY	PART NO.	SERIAL NO.	DESCRIPTION
..	T 19566	(-)	CONDITIONER, SUMMER COOLANT, 42 OZ. (1.19 KG) (NOT ILLUSTRATED)
..	T 11847	(-)	PELLET, STOP LEAK (NOT ILLUSTRATED)

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