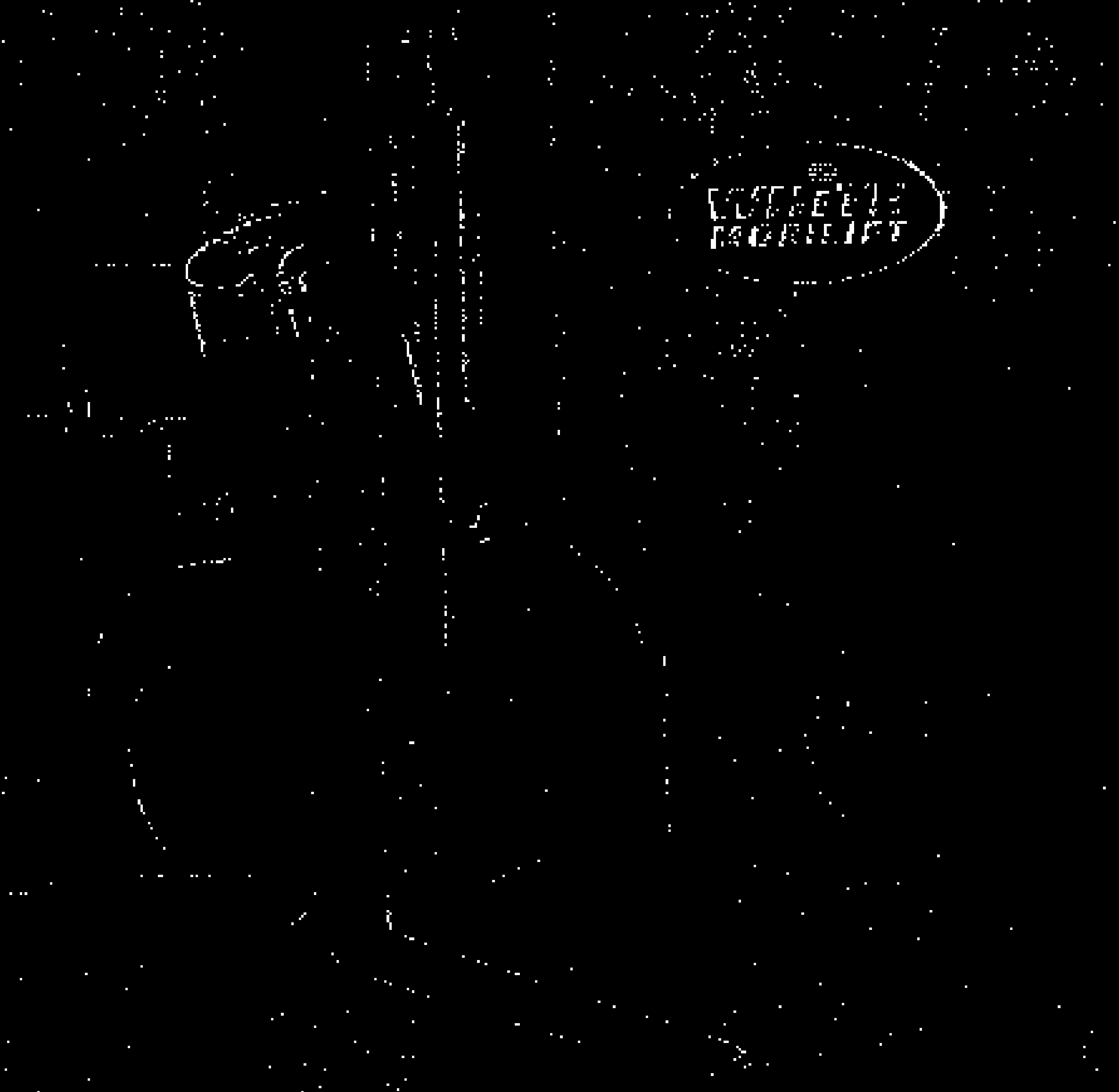
PARTS, OPERATION AND MAINTENANCE MANUAL



MY 30 AND MY 30 FORK LIFT TRUCKS

The Industrial Division

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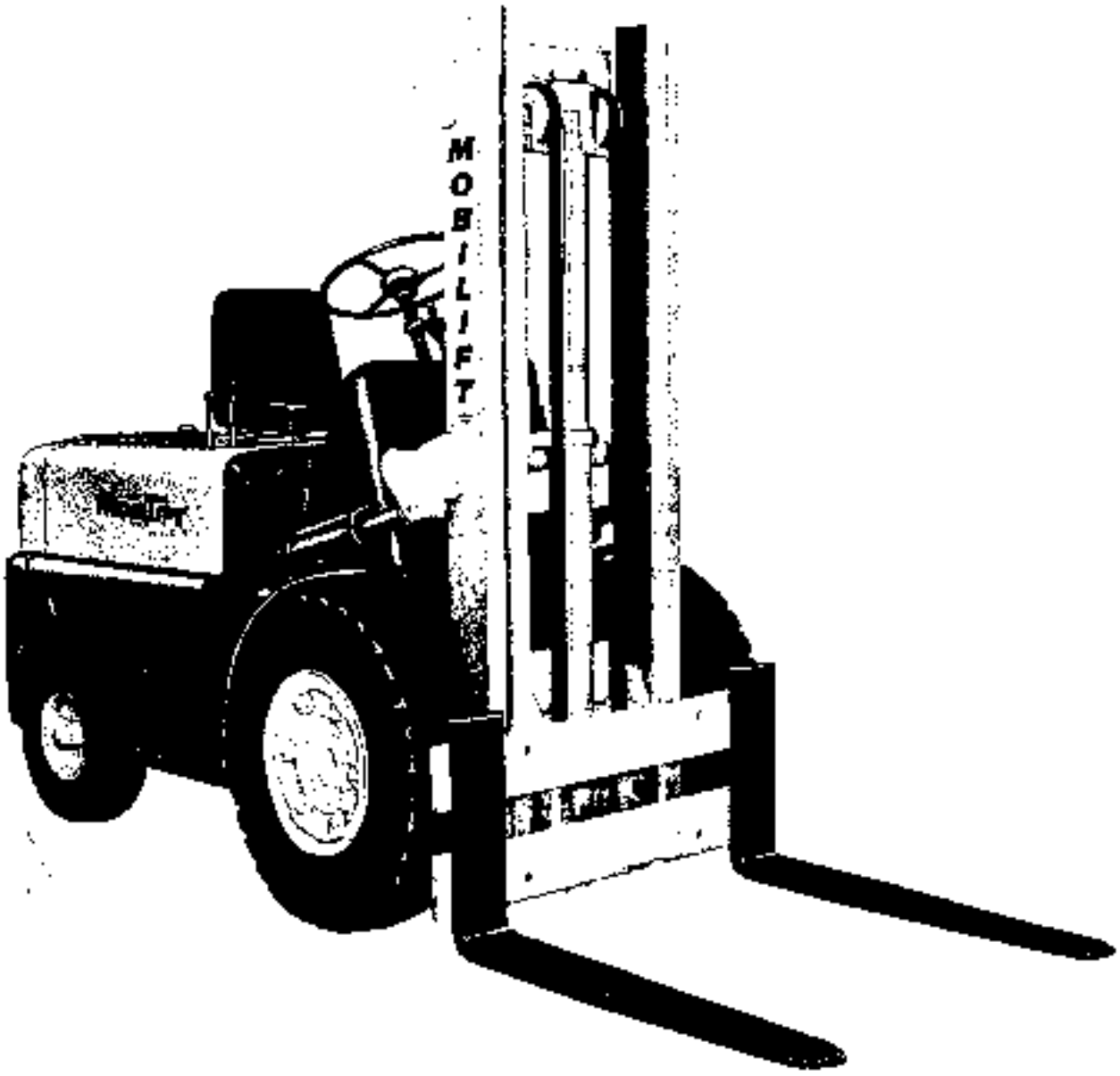


Fig. 1-1.

CHAPTER 1

INTRODUCTION

Section I. General Description

1-1. SCOPE

1-2. This manual provides instructions on the operation maintenance and overhaul of the MY Series Lift Trucks. Most of the instructions apply to both the MY 40 and the MY 60. Where there are differences, it will be noted either in the text or the paragraph heading.

1-3. It is strongly recommended that all personnel concerned with the various phases of this manual have a thorough knowledge and understanding of the equipment and the instructions pertaining thereof, before performing any procedure with the equipment.

1-4. GENERAL DESCRIPTION

1-5. Due to its design and intended purpose, the equipment will be referred to as "lift truck" throughout this manual. Reference to either the right or left sides of the lift truck are made in respect to the normal direction of travel, which is forward.

1-6. The trucks can be equipped with either a gasoline or LP gas engine. The MY 40 has a capacity of 4000 pounds, the MY 60 a capacity of 6000 pounds, both at a 24 inch load center.

1-7. The lift truck is a completely self-contained vehicle: its power train consisting of a four-cylinder gasoline engine, a hydraulic torque converter, and a multiple disc clutch and power shaft type transmission. All these assemblies are integrally mounted together, forming one compact unit, which in turn drives the front axle differential and the front drive wheels. A gear-type pump, driven from the engine camshaft, supplies pressure to the hydraulic system. Electrical components of the lift truck utilize the current supplied from one 12-volt battery.

Section II. Detailed Description

1-8. DETAILED DESCRIPTION

1-9. ENGINE. The engine (figure 1-2) is a four-cylinder, four-cycle gasoline or LP-Gas operated, valve-in-head type. Its normal speed with no load is 1750 rpm. One complete stroke is required for intake, compression, power, and exhaust, thereby providing one power stroke per cylinder for each two revolutions of the crankshaft.

1-10. TORQUE CONVERTER. The torque converter (2, figure 1-2) is a compact, complete, sealed unit consisting of an impeller, turbine, and single-stage stator. The charging pump is coupled to the engine flywheel through the impeller hub. The oil from the pump charges the converter, and the torque is multiplied by the stator. The turbine is splined to the input shaft in the transmission.

1-11. TRANSMISSION. The transmission (figure 1-2) is a power shaft gear box equipped with two pairs of hydraulically actuated multiple disc clutches. One set of clutches is mounted on the input shaft and controls the forward and reverse movement of the lift truck. The other set is mounted on the output shaft, and determines either high or low range. The control valve receives pressure from an engine-driven hydraulic pump mounted on the transmission cover. The valve is controlled by the hand levers mounted on the steering column. An "inching" valve, incorporated into the control valve supplies only partial pressure to the clutches, when it is activated by the inching pedal. This feature provides very slow ground speeds at full engine speed.

1-12. INCHING SYSTEM. The inching system is controlled by the combination inching - braking pedal. (figure 1-7). The pedal actuates a valve which supplies a restricted pressure to the clutch. The clutch is thus allowed to slip, thereby delivering only partial power to the drive wheels, with a resultant slow ground speed.

1-13. DIFFERENTIAL AND DRIVE AXLE. See figure 1-2. Coupled to, and driven by the transmission pinion shaft (output), is the conventional type automotive differential. The assembly is provided with an internal gear reduction at the axle end, which forms an offset in the axle and allows a lower center of gravity for the lift truck. A common lubricant is used for the transmission, differential, and axles.

1-14. STEER AXLE. The rear [illegible] the lift truck is supported by a heavy-duty axle casting which embodies the conventional wheel spindles, steering arms, tie rods, and drag link which in turn is connected to the hydraulic steering booster.

1-15. HYDRAULIC SYSTEM. The hydraulic tank is an integral part of the main frame, on the right hand side. A gear type pump draws fluid from the tank, to a control valve, and to the hydraulic steering booster. Fluid under pressure is available on demand at each of these components when the engine is running. Return lines complete the circuit when the cylinders or booster are not in use. Extra valves are available for operating attachments. The system is controlled by hand levers located conveniently to the right of the operator.

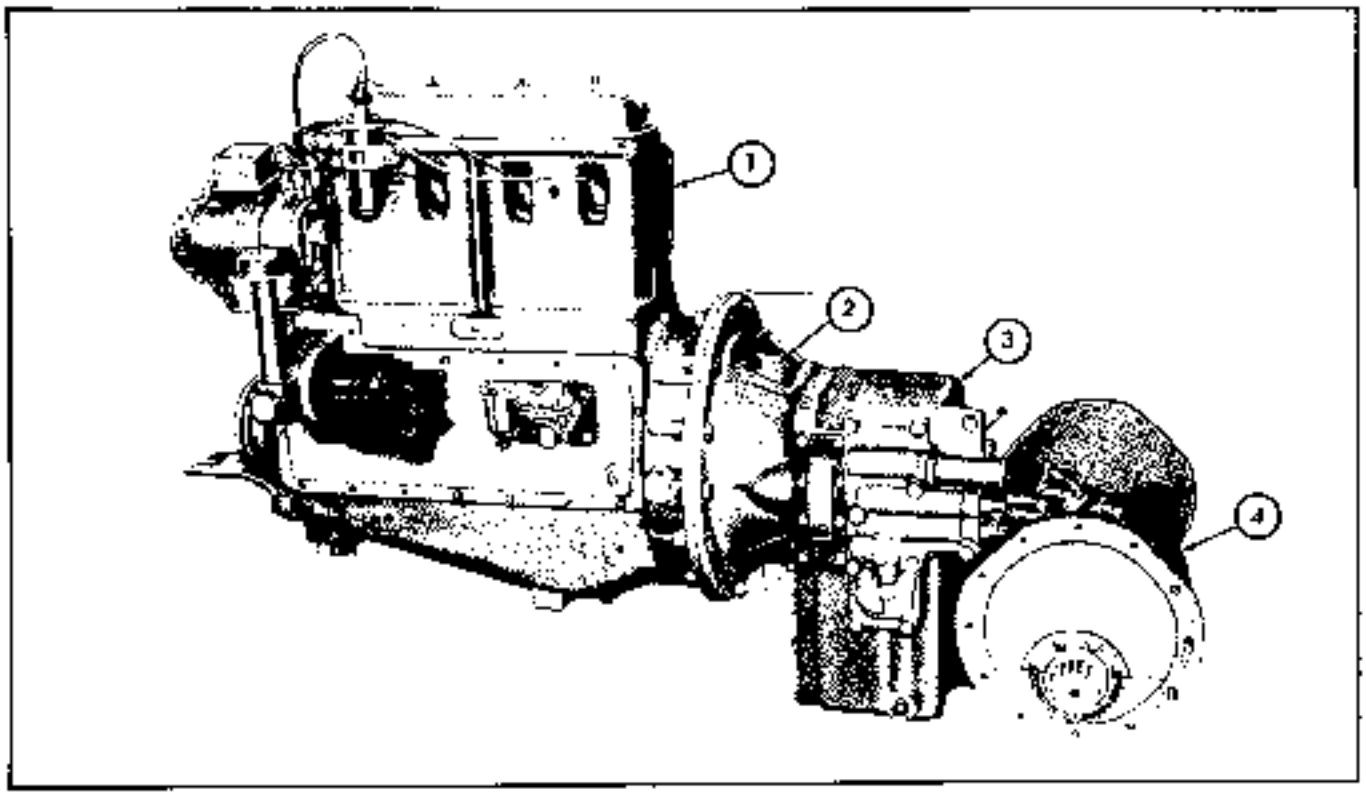


Fig. 1-2. Power Train

1. Engine
2. Torque converter
3. Transmission
4. Differential

1-16. HYDRAULIC STEERING SYSTEM. Steering of the lift truck is accomplished by an 18-inch diameter steering wheel, which is mounted on an automotive-type steering column. A hydraulic steering booster is incorporated into the drag link. As the steering wheel is turned, a valve in the booster opens, and hydraulic pressure from the hydraulic system assists in turning the rear wheels.

1-17. ELECTRICAL SYSTEM. The electrical system consists of a 12-volt battery, generator, voltage regulator, starter, coil, and distributor. The battery is the basic source of electrical current; the generator maintains the battery in a charged condition; and the voltage regulator governs the amount of voltage output into the electrical system. Head and tail lights are available as optional equipment.

1-18. LIFT AND TILT ASSEMBLY. The lift and tilt assembly consists of an upright, forks, a lift cylinder, and two tilt cylinders. The lift and tilt mechanism is controlled by hand levers located at the right of the operator's seat. The truck is capable of lifting its rated load from ground level up to a specified height, depending on the mast assembly on the truck. The upright can be tilted from 6° forward of vertical to 12° aft of vertical (other degrees of tilt optional). A restrictor valve in the system provides that the load will not drop at a rate of more than 80 feet per minute in case of hydraulic failure or damage to the lines.

1-19. SERVICE AND PARKING BRAKES.

a. The heavy duty type service brake uses two identical brake shoes which are anchored against individual anchor pins mounted in a spider fastened to the axle. Individual shoe return springs, each hooked between an anchor pin and the underside of its shoe table, hold the shoes anchored. A brake backing plate, mounted behind the spider, supports the brake wheel cylinder and provides three shoe support pads for each shoe against which the shoes rest. Shoes are loosely held on the backing plate by hold-down pins and spring clips, two being used on the secondary shoe, one on the primary shoe. Opposite the anchor, brake shoes are linked by a floating star wheel adjuster and a single retracting spring hooked between the shoe ribs so that it engages and locks the star wheel. The star wheel is reached through a slot in the backing plate and is used to expand the shoes as required to adjust lining clearance. The star wheel link causes the shoes to function as a single compound unit. In operation, one shoe, depending upon drum rotation, leaves its anchor. (The "primary" shoe is dragged from its anchor by forward drum rotation while the "secondary" shoe remains anchored. In reverse drum rotation, the "secondary" shoe is the one leaving the anchor.)

b. The same brake shoes are utilized in a cable operated parking brake. A toggle lever, pinned to the rib of the secondary shoe, engages a connecting link, pinned to the primary shoe rib. The parking brake cable is connected

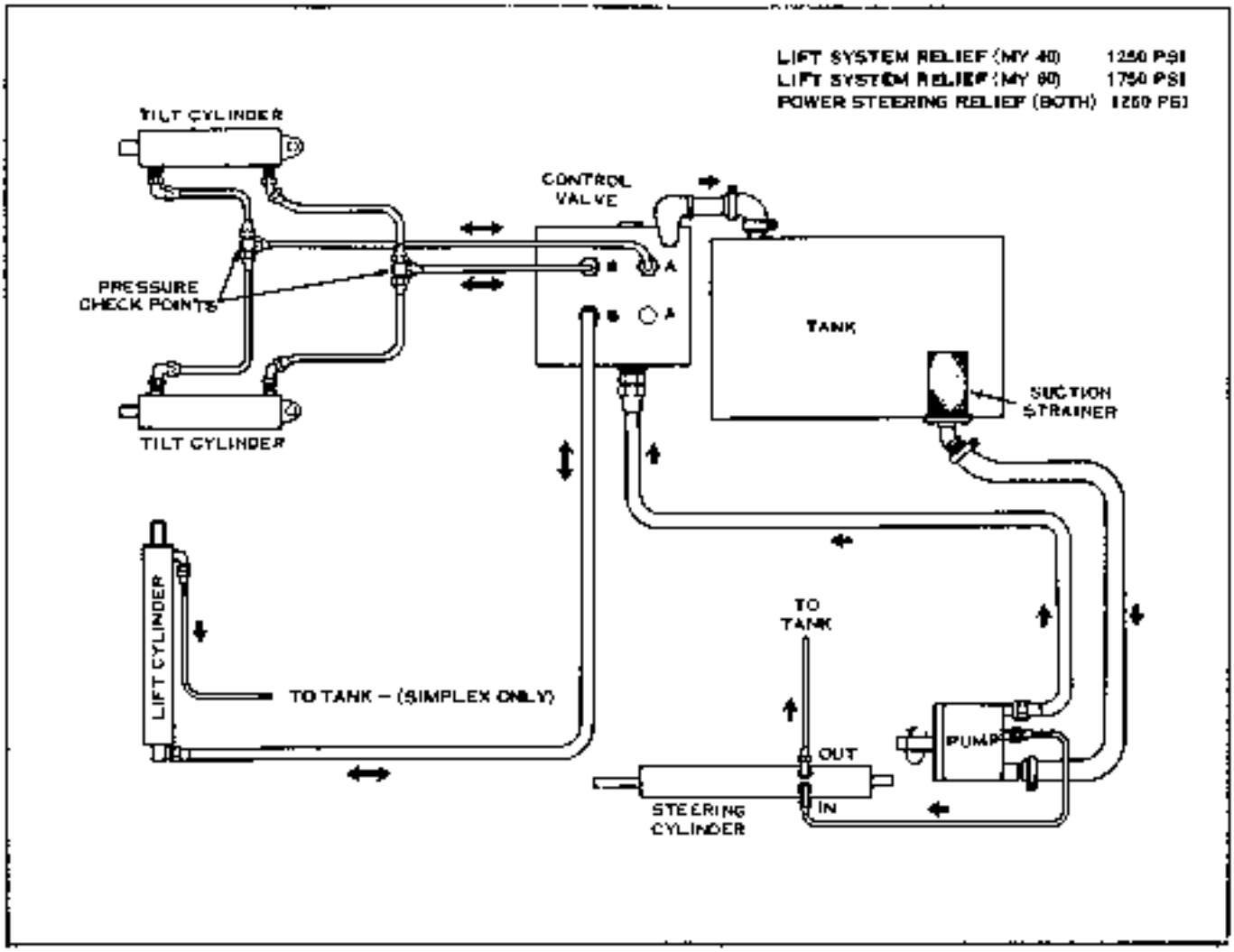


Fig. 1-3. Hydraulic Flow Diagram

at the opposite end of the toggle lever. When the cable is pulled taut, movement of the toggle lever on its fulcrum pin causes the connecting link to expand the shoes into the brake drum.

1-20. FUEL SYSTEM (GASOLINE). A 10-gallon gasoline fuel tank is an integral part of the frame on the left hand side. It contains a "protected" safety filler cap. The fuel suction line originates at the inside bottom of the tank and emerges at the upper right hand corner of the tank, thereby preventing loss of fuel should a fuel line be broken. A plug is provided at the tank bottom for fuel drainage and cleaning. A fuel shut-off valve is installed in the flexible hose leading from the tank to the fuel pump.

1-21. FUEL SYSTEM (LP-GAS). The LP-Gas system consists of a replaceable tank (33-1/2 pound capacity), a filter, a converter, and the carburetor. The fuel is confined to the tank as a liquid under pressure. When the valve is opened, the liquid passes to the converter where it is changed into a gas, and then is metered to the carburetor.

1-22. COOLING SYSTEM. Cooling of the engine is accomplished by an 18-inch, six-bladed pusher type fan (3, figure 1-19) and a water circulating pressure system radiator. The bottom portion of the radiator is designed with coils to cool the torque converter fluid.

1-23. EXHAUST SYSTEM. Engine exhaust vapors are vented out of the exhaust manifold on the upper left side of the engine, down through a muffler and out of a tail pipe at the rear of the lift truck.

1-24. SERVICING ACCESSIBILITY. See figure 1-4. Raising the appropriate hood section and propping it open with the support rod provides easy access for servicing the battery, air cleaner, generator, starter, distributor, spark plugs, fan belt, engine and transmission oil supplies, filters, and dipsticks. The radiator and fuel tank are serviced externally. The hydraulic tank fill tube is located under the right hand hood section.

1-25. WHEELS AND TIRES. The brake drums for the drive wheels are included in the wheel centers. Tire pressures are given in paragraph 2-9.

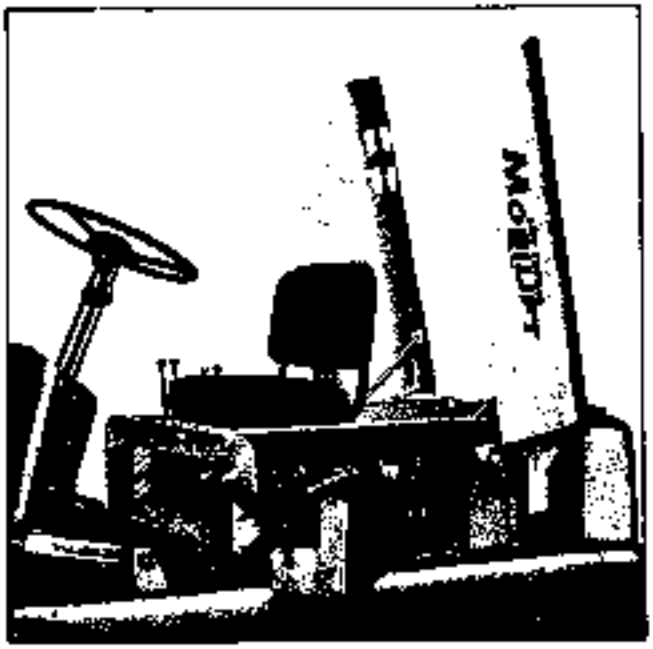


Fig. 1-4. Servicing Accessibility

1-26. SEAT. See figure 1-5. The seat is adjustable forward and backward. The release handle is located on the right side of the seat frame.

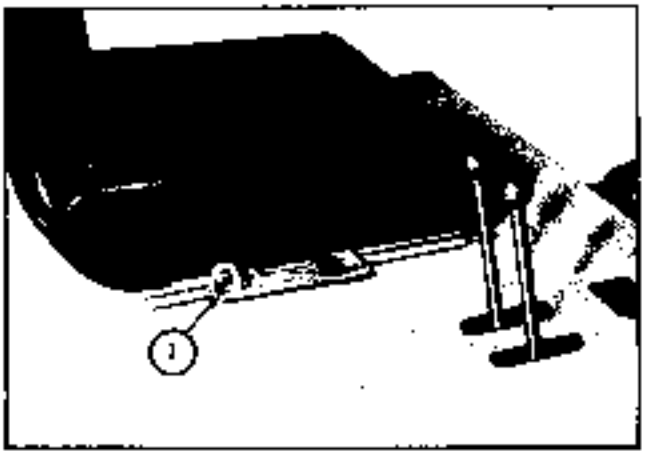


Fig. 1-5. Seat

1. Release handle

ENGINE SPECIFICATIONS

Make	MOLINE
Bore and stroke	3-3/4 x 5 in.
Number of cylinders	4
Displacement	220 cu. in.
Ft./lb. torque @ 1800 rpm	170
Ft./lb. torque peak @ 1200 rpm	189
CRANKSHAFT	
Material	drop forged steel, heat treated
Bearings	3 precision
Front and intermediate	2-3/4 in. dia. x 1-5/8 in.
Rear	3 in. dia. x 2-9/16 in.
CYLINDERS AND HEADS	
Cast	in pairs
Material	special alloy cast iron
CONNECTING RODS	
Style	Drop-forged steel, heat-treated section
Bearings	2-5/8 in. x 1-1/4 in.
PISTONS	Aluminum Alloy
Rings	4
Compression	two 3/32 in. wide
Oil	two 5/32 in. wide
PINS	full floating
Bearing (in rod)	1 in. x 1-3/8 in.
CAMSHAFT	
Number of bearings	3
Drive	Helical gears
VALVES AND VALVE MECHANISM	in head
Tappets	barrel ported
Intake valves	alloy steel, 1-1/4 in. dia.
Exhaust valves	alloy steel, 1-11/64 in. dia. port.
Exhaust valve seat inserts	stellite
IGNITION	
Gas and LP gas	1 12-volt battery
Spark Plugs	18 mm
Generator capacity	20 amps
Regulator capacity	20 amps
LUBRICATION	Pressure points to rod, main and camshaft bearings, timing gears, valve mechanism
Pump	gear
Location	submerged in sump
Capacity	6 gpm at 30 psi
Filter	full flow with replaceable spin-on element
Crankcase capacity	7 qts.
Oil level gauge	bayonet
Pressure gauge	on instrument panel
COOLING SYSTEM	
Pump	centrifugal V-belt drive
Capacity	40 gpm at 1800 rpm
Fan	18 in. dia--6 blade
Radiator capacity	6-1/2 gals.
Core	flat tube and fin type

DIMENSIONS AND SPECIFICATIONS

	MY 40	MY 60
Capacity @ 24 in. load center	4000 lbs.	6000 lbs.
Inch pound rating	176,000	264,000
Free lift	12-1/2 in. Simplex 64 in. Duplex	18-3/4 in. Simplex 80 in. Duplex
Weight--service	8340 lbs.	9850 lbs.
Tilt 6° forward	optional 8° forward optional 0° forward	optional 8° forward optional 0° forward
Tilt 12° back	optional 10° back	optional 10° back
Length less forks	96 in.	112 in.
Width--single drive tires	45 in.	53 in.
dual drive tires	60-1/2 in.	69 in.
Wheelbase	56 in.	72 in.
Underclearance--mast	5 in.	5 in.
center	8-1/2 in.	7-3/9 in.
Turning Radius outside	85 in.	98 in.
Turning Radius inside	11 in.	19 in.
Turns in intersecting aisles	72 in.	89 in.
Engine bhp (Sea level calculated) @ 1800 rpm	58	58
Speeds (MPH)	High Range Low Range	High Range Low Range
Forward	0 - 11.5 0 - 6.8	0 - 12 0 - 7.5
Reverse	0 - 11.5 0 - 6.8	0 - 12 0 - 7.5
Speed of lift--loaded	60 fpm	58 fpm
Fuel capacity	16 gals.	18 gals.
Protectoseal gas cap	standard	standard
LP gas (optional)	33-1/2 lbs.	33-1/2 lbs.
Tires--Steer	6:00 x 9 x 10 ply	7:50 x 15 x 10 ply
Single drive (Standard)	7:50 x 15 x 12 ply	8:25 x 15 x 12 ply
Dual drive (Optional)	7:50 x 15 x 10 ply	7:50 x 15 x 10 ply
NOTAT (Optional)	laminated rubber	laminated rubber
Tread--steer	96 in.	42-5/16 in.
single drive	36-1/2 in.	43-1/2 in.
Standard fork length	42 in.	42 in.
Center of drive axle to face of forks	19-1/2 in.	20-1/2 in.
Carriage--standard (ITA)	44 in.	48 in.
Carriage--extra wide (optional)	60 in.	72 in.

CHAPTER 2

OPERATING INSTRUCTIONS

Section 1. Initial Preparation For Use

2-1. SERVICE UPON DELIVERY.

a. UNLOADING. Since the lift truck may be shipped from the factory in a number of ways, no attempt will be made to cover all methods of unloading procedures. The trucks were shipped from the factory in accordance with standard shipping procedures, and should be unloaded from their carriers in a safe, logical manner.

2-2. REMOVAL OF PROTECTIVE MATERIALS AND DISASSEMBLED COMPONENTS. Remove any protective tape or padding from the lighting components of the lift truck. Remove any components that have been packaged separately and attached to or shipped with the lift truck; refer to the Table of Contents and note the page number on which that component is listed. Install the component accordingly.

2-3. VISUAL INSPECTION FOR SHIPPING DAMAGE. Although every attempt has been made at the factory to protect the equipment against damage during shipment, it is possible for some damage to be incurred. It is necessary, therefore, that a careful, visual inspection be made of the lift truck upon delivery and before placing it in operation. It is further recommended that a written record be maintained which outlines the nature of the damage, and the urgency required in its correction.

2-4. SERVICE PRIOR TO USE. The following procedures are to be accomplished before operation of the lift truck:

2-5. BATTERY.

a. The battery is shipped without electrolyte. Raise the left hand section of the hood, remove the battery from the lift truck, and discard any vent plug seals. Fill all cells to the proper level with electrolyte. Allow the battery to stand for about 20 minutes after filling.

WARNING

Electrolyte can burn or damage the eyes, skin, or clothing. Wear safety glasses to prevent damage to the eyes due to splashed electrolyte. If electrolyte is spilled on the skin or clothing, flush off immediately with a solution of baking soda and water, or some other neutralizing agent, then flush off with clean water.

b. Code date the battery according to the month and year. Stamp the code on the intercell connector nearest the negative terminal of the battery. The first number of the code indicates the month (1-January, 2-February, etc.), and the second number indicates the year (1-1961, 2-1962, etc.).

c. Give the battery a booster charge after it has been filled and dated. Fast charge for at least 10 minutes at the rate of 30 to 40 amps; or slow charge for at least 30 minutes at 10 amps. See paragraphs 2-7, 3-8, and 3-9 for battery service procedures and data.

d. If any electrolyte spilled on the battery, flush it off with clean water. Dry the battery before installing.

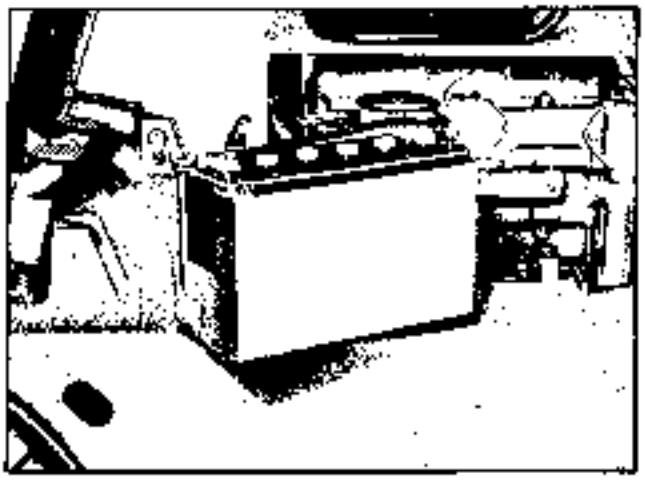


Fig. 1-6. Battery

e. The battery has a negative ground. Install it with the negative terminal toward the front of the truck. Install the clamp and cables.

2-6. ELECTRICAL SYSTEM. Inspect wiring and connections. Actuate light switch and inspect the lights for proper response. Place ignition switch "ON" and test for electrical current to that component. With switch "ON" test horn.

2-7. FUEL SYSTEM (GASOLINE). Open the fill cover of the fuel tank located on the left side of the lift truck; fill as necessary with a good grade of regular gasoline. Close the tank cover, and padlock if desired. Wipe the tank free of dirt or fuel after leakage, and inspect fuel line and engine-mounted accessories for signs of fuel leakage at their connections. Open shut-off valve located on fuel tank-to-fuel pump line.

2-8. FUEL SYSTEM (LP-GAS). Open the valve on the fuel supply tank. Check all connections in the fuel line for evidence of leaks. A leak will result in a formation of frost at the point of the leak.

2-9. WHEELS AND TIRES. Inflate front tires to 85 pounds and rear tires to 80 pounds pressure. Inspect tires very closely for nails, glass, or any other foreign particles that may impair tire life.

2-10. HYDRAULIC SYSTEM. Remove the breather cap from the hydraulic tank located on the right side of the lift truck. Fill as necessary in accordance with the lubrication instructions given in figure 1-10. The capacity of the system with a duplex cylinder is 12 gallons, with a simplex cylinder, 11 gallons. With the mast fully raised and oil in the lines and cylinder, the oil should be up to the "Full" mark on the dipstick.

2-11. LUBRICATION. The lift trucks are completely serviced prior to delivery with lubricants specified for the ambient factory temperatures, and should require no further lubrication at point of delivery unless temperatures differ greatly from those at the factory. If such is the case, service the lift truck according to the lubrication chart, figure 1-10.

2-12. LIFT TRUCK BODY. Inspect all sheet metal and fabricated parts for distortion or damage. Tighten all screws and nuts, particularly those of the steering wheel column, instrument panel components, and brake and accelerator pedals.

2-13. COOLING SYSTEM. Remove the engine radiator cap and inspect the coolant level. If weather is above freezing temperatures, add clean water until it covers the radiator core as seen through the fill can opening. For operation in sub-freezing temperatures, provide the 16.5 quart capacity cooling system with a good grade permanent anti-freeze solution. Inspect for coolant leakage at all connections.

Section II. Operating Instructions

2-14. STARTING THE LIFT TRUCK.

a. If the lift truck is equipped with an LP-Gas engine, open the valve on the tank slowly. If the valve is opened too fast, an excess flow valve will snap shut and stop the flow of fuel. If this happens, close the valve and wait for a "click". This will indicate that the pressure has equalized on both sides of the excess flow valve. Then open the tank valve slowly.

b. Position the forward-reverse shift lever (1, figure 1-8) in neutral. A neutral starting switch prevents the engine from starting unless this lever is in neutral.

c. Turn the ignition switch (11, figure 1-8) to "ON".

d. Depress the starter button (10, figure 1-8) and release it as soon as the engine starts. Do not depress button longer that eight seconds. If the engine fails to start on first try, allow the engine and starting motor drive to come to a complete stop before making a second attempt. This will prevent damage to the starting motor housing, the drive, and the flywheel ring gear. On a gasoline engine, it may be necessary to use the choke (5, figure 1-7). When the engine starts, allow it to gradually warm up to its normal operating temperature (approximately 190° F.). Do not race the engine during this warm-up period.

e. Normal procedure would be to shift into either high or low gear from neutral with the lower lever, and then shift into either forward or reverse direction with the upper lever. However, no damage will result if the direction is selected first and then the gear range desired. Both levers must be shifted into an operating position before the lift truck will move.

f. Apply foot pressure on the accelerator pedal and steer the lift truck in the direction selected.

g. Refer to Table I to correct any malfunction of the lift truck or its components under operating conditions.

CAUTION

If, after starting the engine, there is very little or no pressure indicated on the engine oil pressure gage, or if there is a sudden drop in pressure while operating the lift truck, stop the engine immediately and determine the cause. Correction usually consists of replenishing the crankcase oil supply. Located on the instrument panel is a red warning light (3, figure 1-8). This light will glow only when the transmission lubricant temperature is excessive, and indicates that the transmission oil supply is dangerously low and must be immediately replenished before further lift truck operation.

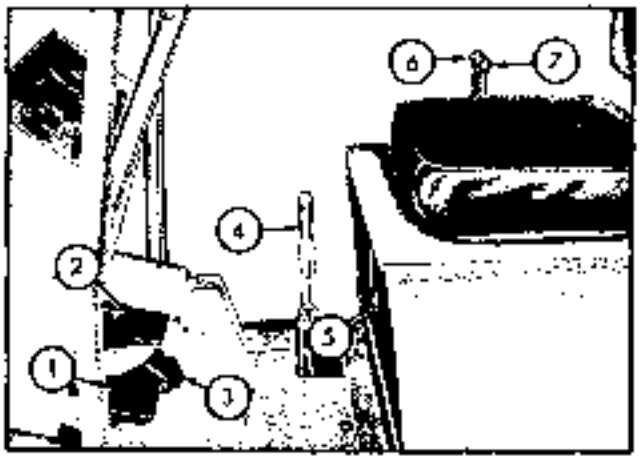


Fig. 1-7. Controls

1. Inching pedal
2. Brake pedal
3. Accelerator pedal
4. Parking brake
5. Choke button (gasoline only)
6. Tilt lever
7. Lift lever

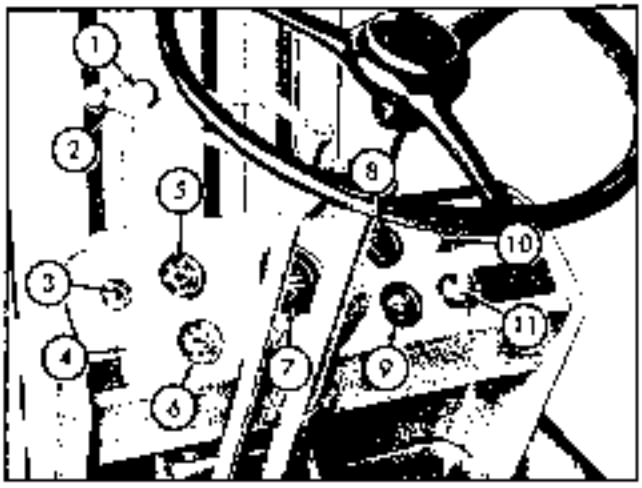


Fig. 1-8. Instrument Panel

1. Forward - reverse lever
2. Hight - low range lever
3. Transmission warning light
4. Light switch location
5. Temperature gage
6. Oil pressure gage
7. Hourmeter
8. Fuel gage
9. Ammeter
10. Starter button
11. Ignition switch

2-15. LOADING PROCEDURE.

a. Drive the lift truck into position as near the load's center of weight as possible. Place one of the transmission shift levers in neutral; position the forks slightly below the level of the load, drive the truck forward until the forks are directly beneath the load. If the depth of the load permits, drive forward until the load is against the back rest.

b. Apply the service brakes while lifting the load.

c. Move the lift control handle (closest to operator) to the rear to raise the load. If the nature of the load permits, move the lift control handle to the rear, to tilt the load rearward against the back rest for maximum stability.

d. For maximum safety and stability, carry the load just high enough to clear obstacles or uneven terrain.

2-16. UNLOADING PROCEDURE.

a. Drive loaded lift truck to unloading area and position for unloading. Apply the service brakes, and move one of the transmission control levers to neutral.

b. Move lift control lever until load is lowered to the ground or is at the desired height for stacking. If load was tilted rearward against back rest while transporting, move tilt control lever forward until mast is vertical.

c. Release brakes, place transmission control lever in operative position, and move lift truck slowly forward until load is in desired position. Apply brakes and shift transmission into neutral.

d. Lower forks until they are relieved of load's weight. Back up lift truck until forks are clear of load. Lower forks to safe transport position.

2-17. INCHING CONTROL. The inching valve is controlled by the left hand pedal on the combination braking-inching pedal assembly (figure 1-7). Depress the pedal slightly with the left foot; use just the portion of pedal travel before the brakes can be felt to take hold. Depress the accelerator pedal with the right foot. Extremely slow ground speeds can be attained for operating in confined or dangerous areas, while the speed of the lift remains normal.

2-18. STOPPING THE LIFT TRUCK.

a. Drive the lift truck to an area suitable for parking and place the transmission control levers in neutral. Apply the parking brake.

b. Tilt the mast slightly forward and lower the forks to the bottom of the mast.

WARNING

Unless conditions prevent, always unload forks and lower them to bottom of mast before leaving lift truck, to avoid danger to personnel.

c. If the headlight was used, push in the light switch to turn off the light.

d. Turn the ignition switch to the "OFF" position.

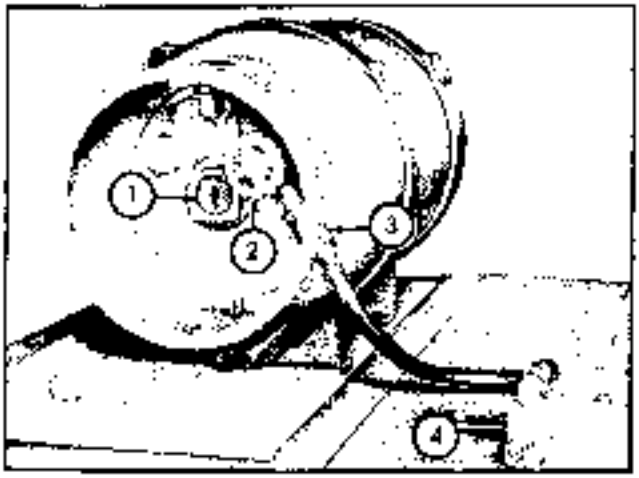


Fig. 1-9. LP-Gas Tank

1. Gage
2. Fuel valve
3. Quick coupler
4. Relief valve

2-19. CHANGING LP-GAS TANKS. To change LP tanks, close the fuel valve. Disconnect the quick coupler, and release the clamps. Lift the tank out of the bracket. Install the new tank, secure it with the clamps, and connect the quick coupler.

IMPORTANT: THE LP TANK MUST BE FILLED IN ACCORDANCE WITH ICC AND LOCAL REGULATIONS.

2-20. SAFETY PRECAUTIONS.

2-21. The following safety precautions must always be observed:

a. Driver should be thoroughly familiar with the lift truck, its capabilities and its limitations, before attempting its operation. Never attempt operation of a lift truck known to be faulty.

b. Provide adequate ventilation in operational area: avoid prolonged operation in enclosed areas.

c. Constantly check for personnel and obstacles in path of both lift truck and load; keep lifting forks in driver's view whenever possible.

d. Transport load at lowest practical level, for maximum stability and visibility. Avoid sudden stops, sharp turns in either direction, and excessive speed.

e. Never leave the lift truck unattended with engine running or load elevated. Lower forks to bottom of mast and apply parking brake before leaving lift truck.

f. Strap or otherwise secure load to carriage when descending grades steeper than 10 degrees from horizontal in a forward direction. Do not attempt operation of loaded lift truck on ascents or descents greater than 20 degrees.

g. Do not attempt to lift or transport loads that exceed the rated capacity of the truck.

h. Always secure forks in position with lock levers.

i. Close the tank valve on an LP-Gas unit when leaving the truck unattended.

Section III.

PRINCIPLES OF OPERATION

2-22. Instruments and Controls (See figures 1-7 and 1-8).

2-23. OIL PRESSURE GAGE. The oil pressure gage (6, figure 1-8) does not indicate the amount of oil in the crankcase; it indicates the pressure of the oil in the engine lubricating system. The gage electrically senses the oil pressure and reflects it on the gage dial. With the engine at normal operating temperature and speed, the oil pressure should be between 25 and 35 pounds.

2-24. ENGINE TEMPERATURE GAGE. This gage (5, figure 1-8) indicates the temperature of the cooling fluid. Engine operation under normal conditions should register approximately 180 degrees on the gage. Temperatures excessively higher or lower than 180 degrees indicate a dirty or restricted radiator, or loss of coolant. Do not operate the lift truck until these conditions are corrected.

2-25. IGNITION SWITCH. The ignition switch (11, figure 1-8) is a means of opening and closing the ignition circuit, the engine is inoperative unless the switch is turned "ON".

2-26. STARTER SWITCH. Depressing the starter switch (10, figure 1-8) with ignition switch "ON", energizes the starting motor which in turn drives the engine flywheel ring gear until combustion takes place in the engine.

2-27. AMMETER. The ammeter (9, figure 1-8) indicates the activity of the electrical system. If the needle indicates a continuous discharge when the engine is operating above an idle speed, the trouble would probably be a loose or broken fan belt, a short in some wire or component of the electrical system, or a faulty generator or regulator. The gage needle should move slightly to the positive side of the "O" mark on the ammeter when the engine is running at full governed speed and the battery is fully charged.

2-28. HOURMETER. The hourmeter (7, figure 1-8) reflects the actual hours of engine operation. Its main purpose is to be the determining factor as to when the lift truck components require overhaul procedures.

2-29. WARNING LIGHT. The red warning light (3, figure 1-8) senses the transmission oil temperature and glows only when the temperature is in excess of proper operating limits. This condition is usually remedied by bringing the transmission oil level to full.

2-30. FUEL GAGE

a. Gasoline. The fuel gage (8, figure 1-8) electrically senses and indicates the amount of fuel in the lift truck fuel tank.

b. LP-Gas. The gage (1, figure 1-8) indicates the amount of LP-Gas in the tank.

2-31. CHOKE CONTROL, (Gasoline only). The choke control button (3, figure 1-7) is cable connected to the choke disc in the carburetor assembly. Pulling forward on the choke button closes the choke disc, thereby enriching the air and gasoline mixture and providing quicker

starting of a cold engine. Push the choke button in as the engine warms up to operating temperature; if all carburetor settings are correct, the resulting fuel mixture will be correct for proper engine operation.

2-32. LIGHTING SYSTEM (OPTIONAL). Pulling outwardly on the light button (4, figure 1-6) closes the circuit to the lights, thereby energizing them from the current supplied by the battery. Returning button inwardly toward the panel opens the circuit, and renders the lights inoperative.

2-33. POWER TRAIN (ENGINE AND TRANSMISSION). With the ignition switch in the "ON" position, actuation of the various components is achieved in the following sequence: Depressing the starter button energizes the starting motor which is pinion meshed with the engine flywheel ring gear teeth. As the ring gear is rotated by the starting motor, the crankshaft is forced to rotate. It is at this point that fuel vapors enter the piston chambers and are ignited by the electrical impulse delivered by the spark plugs. The synchronized firing order of the spark plugs produces a continuous source of driving energy for the crankshaft. The transmission is inter-connected to the engine by a torque converter and plate arrangement, and a series of multiple disc clutches in the transmission allows the operator a selection of two speeds in either forward or reverse direction, and also a neutral position when no travel is desired. The transmission is in turn geared to the differential of the drive axle by means of a bevel pinion and ring gear. Shifting of the levers results in rotating the axle shafts in a clockwise or counterclockwise movement, depending upon which gears are engaged within the transmission housing.

2-34. HYDRAULIC SYSTEM. The hydraulic pump provides a constant flow of hydraulic fluid under pressure when the engine is running. The control levers direct the flow to the lift or tilt cylinders or to the hydraulically actuated attachments. Fluid is also supplied directly from the pump to the hydraulic steering booster. Return passages in the system provide a complete circuit for the fluid when the cylinders are not being utilized.

CHAPTER 3

FIELD MAINTENANCE

Section I. Lubrication

3-1. LUBRICATION INFORMATION.

a. The lubrication chart (figure 3-1) illustrates lubrication points of the lift truck and prescribes approved lubricants, recommended intervals, and application procedures.

b. In order that the lubricants can accomplish the protection for which they were intended, they must be kept free from dust, dirt, water, or other forms of contaminants.

c. Wipe each lubrication fitting clean with a cloth before applying lubricants.

d. Apply only the grade of lubricant specified for operation under the temperature ranges indicated.

e. It is recommended automotive practice to operate the lift truck immediately after a complete lubrication change in order to distribute the lubricant most effectively.

f. Special or detailed instructions for servicing the lift truck components are outlined in the lubrication chart under "NOTES".

Section II. Preventive Maintenance Services

3-2. PERIODIC IN-SERVICE MAINTENANCE.

3-3. GENERAL. The instructions contained in this section are intended to aid the operator in maintaining the lift truck in an efficient, trouble-free condition. It is the purpose of this section to acquaint the operator with the possibilities of equipment malfunction, the indications of malfunction, and the corrective measures to be taken. Thorough understanding of the instructions by the operator is required to prevent minor malfunctions from going unnoticed until a part or a system is damaged beyond repair, resulting in removing the lift truck from service for extended periods.

3-4. SPECIAL MAINTENANCE TOOLS. No special tools are required by operating personnel to maintain the lift truck in serviceable condition. Standard tools, commonly used by automotive mechanics, should be made available to the operator.

3-5. MAINTENANCE CHARTS. In addition to, and summarizing the procedures of this section, Table I is presented in chart form to provide the operator with a ready reference as to typical troubles, the probable cause, and remedy procedures required.

3-6. ELECTRICAL SYSTEM.

NOTE

Disconnect battery ground cable before working on electrical components.

3-7. BATTERY. Battery "life" depends entirely upon proper care and thorough periodic inspections. The most important service in maintaining the battery, is to inspect the electrolyte (liquid) level daily. Add distilled water until the tops of the plates are covered approximately 1/8 inch. If distilled water is not available, use clean rain water or regular drinking water that is low in mineral content. Since the water and the electrolyte in the battery will not mix until charged by the generator current, make a practice of operating the engine for a minimum of one hour after filling if the danger of freezing exists.

WARNING

If the battery electrolyte is accidently spilled or comes in contact with skin or clothing, immediately apply baking soda or a similar neutralizing agent.

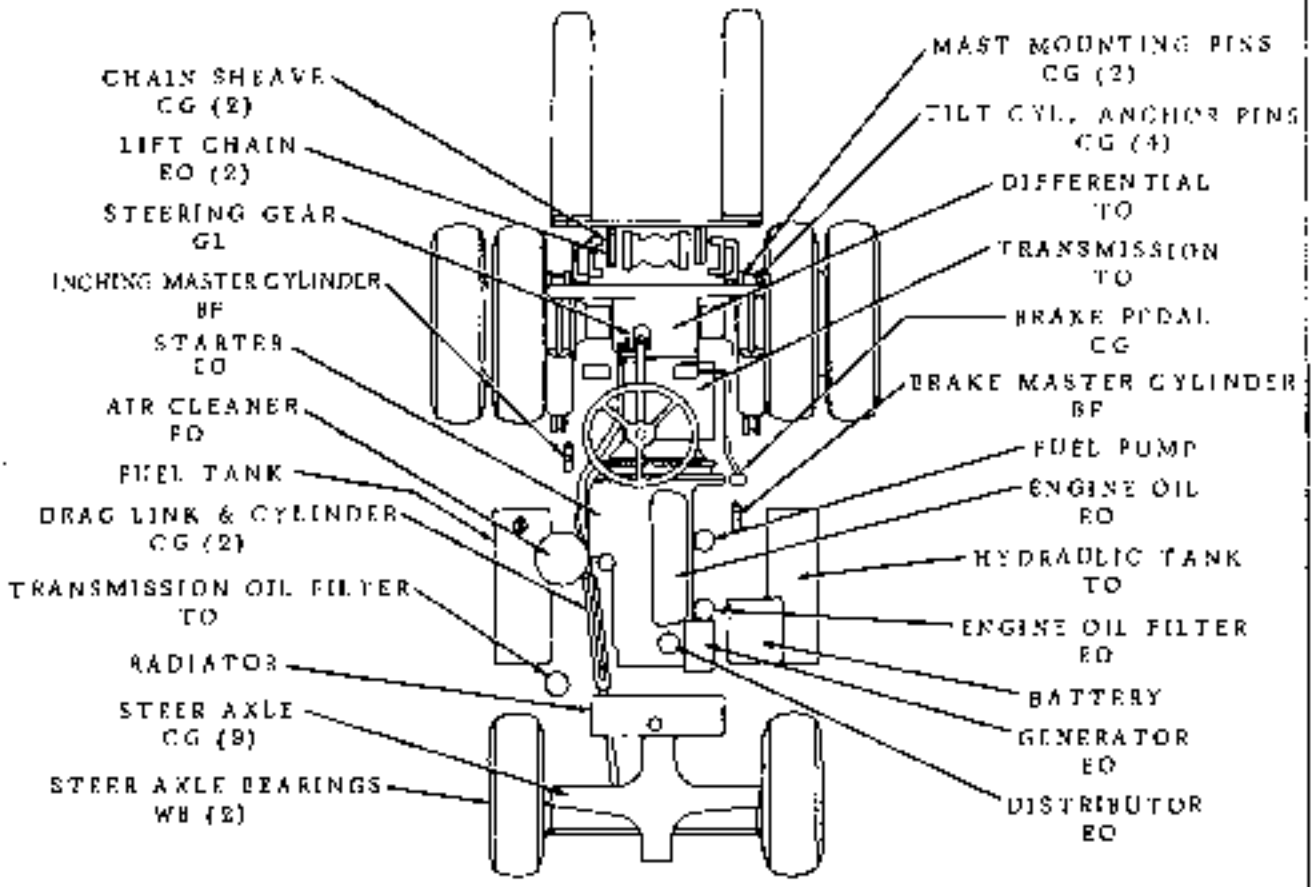
3-8. Use an accurate hydrometer to check the electrolyte specific gravity. When fully charged, the reading should be 1.240 to 1.260 at a liquid temperature of 80° F. Wide variations from this reading between the cells indicates a faulty battery, and requires replacement with a new battery.

WARNING

Since the batteries release highly flammable hydrogen gas when being charged, keep all forms of sparks or flame away from lift truck.

3-9. Wash batteries clean with solution 1/2 pound baking soda mixed with 1 quart of water, apply with a brush, and flush with clear water. Prevent solution from entering vent holes; make sure holes are open after cleaning. Apply a light film of petroleum jelly to the battery terminals and cable clamps to retard corroding.

3-10. GENERATOR. In addition to maintaining the generator (1, figure 1-17) in a clean condition at all times, a more detailed inspection of the brushes and commutator is required every 500 hours of operation. With the generator mounted on the engine, remove the commuta-



CODE	TYPE	CODE	TYPE
CG	Chassis Grease	BF	Brake Fluid
EO	Engine Oil	WB	Wheel Bearing Grease
GL	Gear Lube	TO	Transmission Oil (ATF)

APPLICATION SCHEDULE

LUBE POINT	CODE	HOURS	LUBE POINT	CODE	HOURS
Chain Sheave (2)	CG	40	Tilt Cyl. Anchor Pins (4)	CG	40
Lift Chain (2)	EO	40	*Differential	TO	500
*Steering Gear	GL	40	*Transmission	TO	500
Inching Master Cylinder	BF	40	Brake Pedal	CG	40
*Starter	EO	300	*Brake Master Cyl.	BF	40
*Air Cleaner	EO	40	*Fuel Pump	None	500
Drag Link & Cylinder (2)	CG	40	*Engine Oil	EO	8
*Trans. Oil Filter	TO	500	Hydraulic Tank	TO	2000
*Radiator	None	8	*Engine Oil Filter	EO	400
Steer Axle (8)	CG	40	Battery	None	8
Steer Axle Bearings (2)	WB	1000	*Generator	EO	60
Mast Mounting Pins (2)	CG	40	*Distributor	EO	300

* - See "LUBRICATION NOTES"

Fig. 1-10. Lubrication Chart (Sheet 1 of 2)

LUBRICATION NOTES

Hours listed in "APPLICATION SCHEDULE" refer to actual hours of machine operation. Bracketed ( ) numbers indicate similar lubrication points requiring lubrication. An asterisk *, indicates detailed lubrication instructions as follows:

*AIR CLEANER. Service air cleaner every 60 operating hours or oftener as required. Remove and empty oil cup. Scrape out sediment and wash cup thoroughly. Refill cup to level mark with same grade oil as used in engine.

*STEERING GEAR. Check oil level every 40 operating hours. Keep reservoir filled with SAE 90 gear lube. Use a high grade straight mineral oil.

*BRAKE AND INCHING MASTER CYLINDERS. Check fluid level every 40 hours. Keep filled to within 1/4" from top. Keep vent hole in filler cap open at all times.

*GENERATOR. Every 60 operating hours, add 8 to 10 drops SAE 10W engine oil to the respective oil cups.

*STARTER. Place 8 to 10 drops SAE 10W oil in oil cup every 300 operating hours.

*ENGINE OIL. The crankcase capacity is 6 U.S. quarts; the filter holds an additional quart. Check twice daily, drain and refill every 200 operating hours and change filter every 400 operating hours under normal service.

*DISTRIBUTOR. Each 300 operating hours place 3 or 4 drops SAE 10W oil on wick under rotor. Remove plug at side of housing and fill with SAE 20 oil each 300 operating hours. Apply a trace of high quality ball bearing lubricant to the breaker cam every 900 operating hours.

*HYDRAULIC OIL TANK. Check daily and maintain level at "Full" mark on dipstick, with mast fully raised. Use ATF Type A Suffix A AQATF 696A (Texaco) oil. Drain, clean, and refill every 2000 hours.

*RADIATOR. Check daily. Refill as required. Add permanent type anti-freeze when air temperature is 32° F. or lower.

*FUEL PUMP. Clean bowl and screen.

*TRANSMISSION. ATF Type A Suffix A AQATF 696A (Texaco) oil. Change oil and filter every 500 operating hours. Drain transmission, change filter, and clean suction strainer in transmission case after first 40 hours. Check oil level daily.

*DIFFERENTIAL. The lubricant used in the differential is common to the transmission; therefore, checking and changing are the same.

TORQUE CONVERTER. The lubricant used in the converter is common to the transmission and differential. Drain at the time of the transmission oil change. Rotate converter until drain plug is visible in hole in bottom of housing. Converter will recharge itself with engine running. Recheck transmission oil level after charging converter.

BREATHERS. Check and clean the breathers for the crankcase, hydraulic system, and the differential each 60 operating hours. Clean the breather caps in solvent, dip in clean engine oil, then shake out the excess oil.

Fig. 1-10. Lubrication Chart (Sheet 2 of 2)

for cover and inspect the brushes for wear. Do not grasp the brush leads and pull the brushes out of the holders against the spring tension. Do not snap the brush arm down against the brushes. Clean a dirty commutator using a strip of number 00 sandpaper or a brush seating stone, held against the commutator with a piece of flat hardwood while the engine is idling. Blow out all dust and grit with compressed air. Do not use emery cloth to clean the commutator. Replace worn brushes with new brushes, being sure to tighten brush leads and screws, field leads, and all connections. Brush holder springs have sufficient tension if they hold the brushes tight against the commutator; replace springs if they do not. Prevent brushes from sticking by keeping the holders clean.

3-11. GENERATOR AND FAN BELT. Frequently inspect the fan and generator drive belt for proper tension; a loose or slipping belt will cause engine overheating and reduce generator charging rate and the rpm of the driven pulley. Check belt tension (figure 1-11) by pressing on the belt mid-way between the fan and crankshaft pulleys with a force of approximately 10 pounds. Proper belt deflection should be 3/4 to 1 inch. Adjust belt tension by loosening generator mounting bolts and the adjusting bar cap screw, pull outwardly on the generator until correct tension is applied, and then tighten nuts and cap screw. Replace a worn or grease-soaked belt as it will not be capable of driving the fan or generator at their proper speeds.

3-12. STARTING MOTOR. Service the starting motor, brushes and commutator in accordance with the instructions outlined for the generator assembly (paragraph 3-10 above). If the starting motor pinion fails to engage the engine fly-wheel ring gear, it indicates a sticking drive pinion and requires removal from the engine. Remove the negative lead wire from the battery, disconnect all

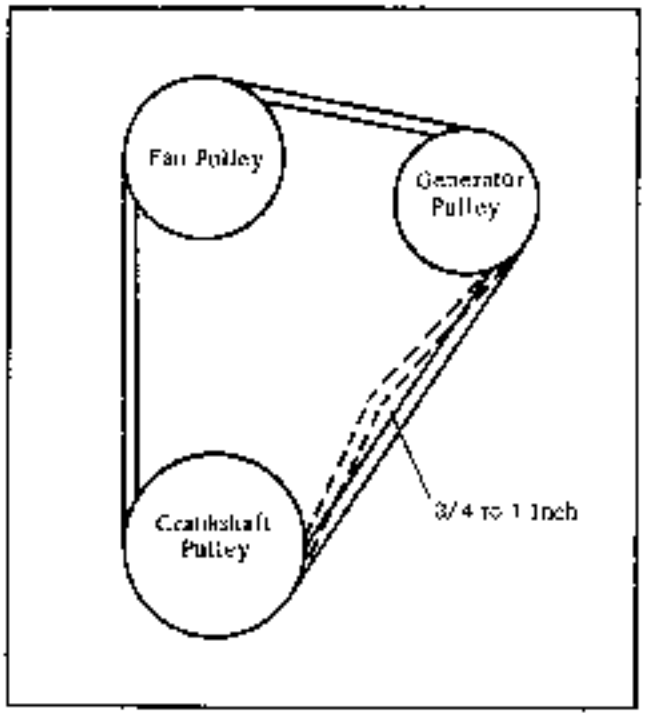


Fig. 1-11. Belt Tension

wires from the motor, remove the large lock bolt that secures the starting motor to the engine, and withdraw the motor from the engine flywheel housing. Wash the pinion and shaft of the motor with clean kerosene, dry completely, and re-install on engine being sure that the lock bolt engages the upper hole in the starting motor housing. Clean the lead wire terminals and make proper connections of the motor leads and the negative lead of the battery. If starting motor still fails to operate, install a new assembly in its place. Tag the faulty motor for overhaul.

3-13. SPARK PLUGS. Whenever engine performance is unsatisfactory, fuel consumption is excessively high, or idling is rough, it is an indication that the most logical component to check first is the spark plugs. Using a 7/8 inch deep socket wrench, loosen the plugs two full turns, blow all dirt away from the ports, and then remove the plugs. Clean the plugs with a sand blast cleaner if available, clean plug threads with a wire bristle brush, and restore damaged threads in the head ports with a suitable size tap. Clean the sparking surfaces to a bright smoothness with a fine point file. Reset the plug gap to 0.023 to 0.028 inch for gasoline engines. 0.014 to 0.016 inch for LP-Gas engines. Set gap by bending the ground or outside electrode, and test with a wire type feeler gage. Using new copper gaskets, install the new or cleaned plugs, and tighten them to 24 foot-pounds torque. If no torque wrench is available, install finger tight, and then tighten an additional 3/4 turn with the deep socket wrench.

3-14. DISTRIBUTOR. Remove the distributor (2, figure 1-17) cap; wipe it clean with a cloth, and inspect it closely for cracks (usually very thin). Inspect the cap and rotor for chips, cracks, or carbonized paths which allow high-tension leaks to ground. Inspect and discard a cap seal if it is glazed or coated with oil. Check the centrifugal advance mechanism for binding movement by turning the distributor shaft in its direction of rotation, and then release it. The advance springs should return the shaft to its original position without sticking. Clean the distributor points with a fine cut contact file; do not attempt to remove all roughness, but merely remove scale and dirt from the contacting surfaces. Do not use emery cloth or sandpaper as their abrasive particles will imbed in the surfaces and cause the points to burn. Adjust the point gap to 0.016 inch by turning the engine over until the cam follower block for the breaker lever is on the high point of the cam lobe. Loosen the lock screw, turn the eccentric screw to obtain the above stated gap, and then tighten the lock screw. Apply a light film of ball bearing lubricant to the breaker cam; place two drops of light engine oil on the felt in the distributor shaft. Discard all parts that are worn, burned, pitted, or are in an otherwise unserviceable condition. No further distributor servicing is required for field maintenance, however, if timing lights are available ignition timing can be checked at this time by following the procedure outlined in paragraph 3-32. Secure distributor cap in its original location on the distributor, and install cap spark plug wires.

3-15. OIL PUMP. With the engine running at full governed speed and normal operating temperature, the dash panel-mounted oil pressure gage should register between 25 to 35 pounds. Erratic action, flickering, or a sudden lowering of the pressure is not always an indication of oil pump malfunction; check the crankcase oil level, test for a faulty gage by disconnecting the oil gage tube at the engine connection and turn the engine over with the starting motor. If a steady stream of oil comes out of the fitting in the crankcase, the gage is faulty and not the pump. If no oil comes out of the fitting, or the stream is broken and weak, it indicates a plugged oil intake passage or a plugged float screen. Clean the oil passage. Remove the cover from the lower right side of the engine. After draining the crankcase oil, remove the cotter pin (1, figure 1-12) that secures the float to the connector tube, and withdraw the float and screen assembly. Thoroughly clean the screen using clean kerosene, dry completely, inspect for damage, and re-install it in its original position. Unscrew the oil filter located at the rear right side of the engine and discard it. Install new filter. An oil pressure regulator (figure 1-13) is installed on the left side of the oil pump housing. To adjust the oil pressure on the pressure gage, loosen the lock nut of the regulator and rotate the setscrew clockwise to increase pressure, and counterclockwise to decrease oil pressure. When the gage indicates low oil pressure and no further adjustment of the regulator setscrew is possible, it indicates that the oil pump gears have too much end clearance or are worn beyond serviceable limits, or that the regulator spring has collapsed or is broken. Drain the crankcase oil, remove the attaching parts that secure the pump to the crankcase, and with-

draw the pump assembly. Inspect the gears and spring; remove and replace as necessary. Do not remove the oil pump drive shaft as that would also require removal of the entire distributor assembly which in turn involves re-timing of the engine. This should only be done in the shop. Install and check for drive gear end clearance as outlined in the oil pump overhaul procedures of Chapter 4.

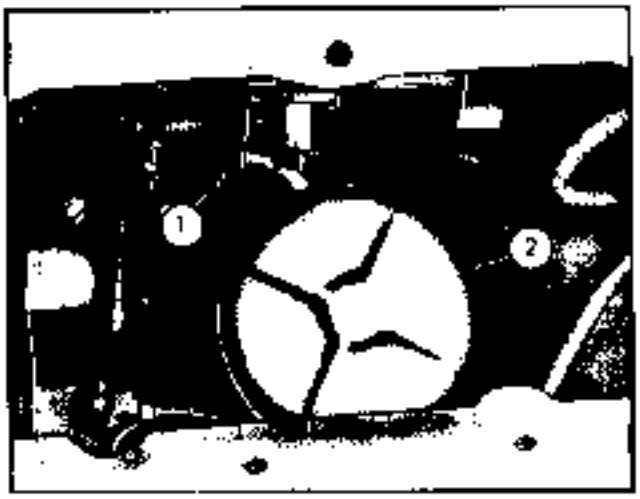


Fig. 1-12. Oil Float and Screen

1. Cotter pin
2. Float

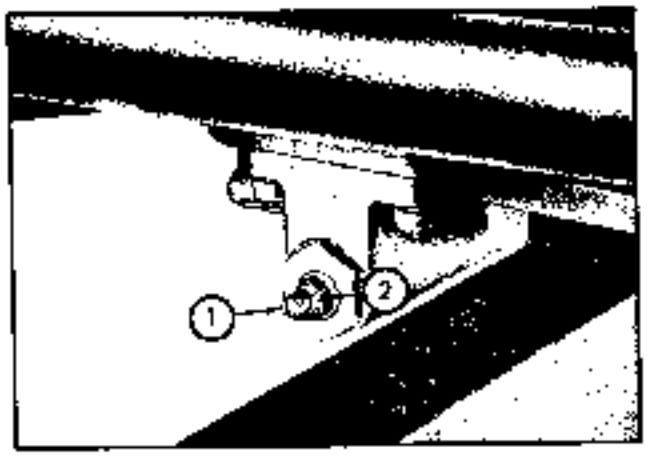


Fig. 1-13. Oil Pressure Regulator

1. Adjusting screw
2. Lock nut

8-16. GOVERNOR. Inspect the governor and carburetor linkage (figure 1-14) for signs of rough edges, paint, or binding. Adjust linkage for proper governed speeds of 1750 rpm as follows: Start engine and allow it to reach normal operating temperature. Stop engine and disconnect the spring and plunger assembly from the fork shaft, disconnect the carburetor control rod, then push the rod back until the lever for the throttle disc shaft is all the way back against its stop on the carburetor. Push the lever for the governor fork shaft all the way back also, and then adjust the shaft pin on the carburetor control rod until the pin is 1/16-inch past the upper hole in the governor arm. Insert the pin in the fork shaft and secure it with washers and a cotter pin. Lock pin in position with the lock nut. Move the hand throttle control to the idle position and connect the adjusting rod spring to the lower hole on the governor fork shaft, making certain that the adjusting rod plunger is in proper alignment with the lever for the fork shaft. If the plunger is not in alignment, reposition the adjusting rod guide so that the plunger is centered on the lever. Thread the plunger in or out until it contacts the edge of the fork shaft, insuring a positive idle position, and then secure with the lock nut. To check the governed speed, move the throttle linkage to the wide open position, and adjust the jam nuts in the direction necessary to obtain the desired governed speed. Tighten the nuts against each other after obtaining setting.

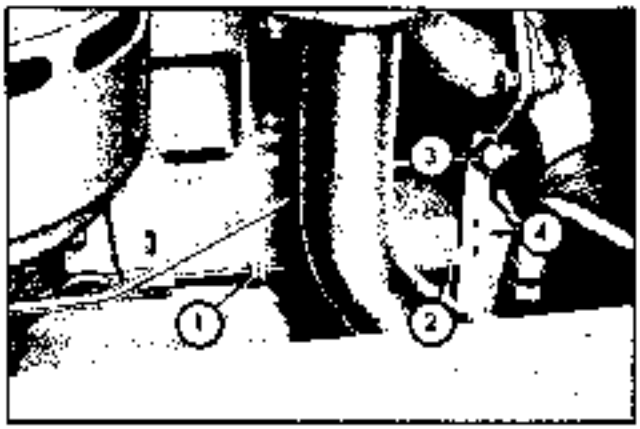


Fig. 1-14. Governor Linkage

1. Jam nuts
2. Plunger
3. Pivot pin
4. Governor arm

8-17. GASOLINE CARBURETOR. (See figure 1-15). Inspect the linkages for signs of rough edges, paint, or binding. Check all connections for evidence of leaking. If the engine fails to start or does not operate properly, make the following carburetor adjustments.

a. Screw in the idle adjusting needle (3, figure 1-15) until it just seats, then open the needle 2 full turns.

b. Make certain the idle speed stop screw (2, figure 1-15) is holding the throttle disc slightly open.

c. Start the engine and allow it to warm up at an idle speed of approximately 500 rpm.

d. After the engine has warmed up to normal operating temperature (approximately 180 degrees), release the accelerator pedal and allow the engine to idle.

e. Adjust the idle speed stop screw to obtain an engine idle speed of 450 to 500 rpm.

f. Turn out the idle adjusting needle until the engine speed drops from an over-lean gas mixture. Then, turn the needle in until the engine runs smoothly and steadily.

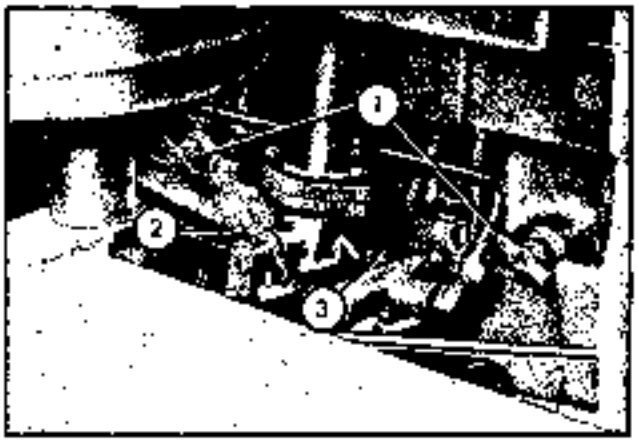


Fig. 1-15. Carburetor

1. Block drains
2. Idle speed stop screw
3. Idle adjusting needle

3-18. LP-GAS SYSTEM.

a. Power adjustment. Set the pointer (not the slot) on the power adjustment screw between 2 and 3. Warm the engine up to normal operating temperature. Turn adjusting screw clockwise to enrich mixture, counterclockwise for leaner mixture.

b. Idle adjustment. Set the idle speed stop screw to obtain an idle speed of 450 to 500 rpm. Set the idle screw for the smoothest idle (approximately three full turns out).

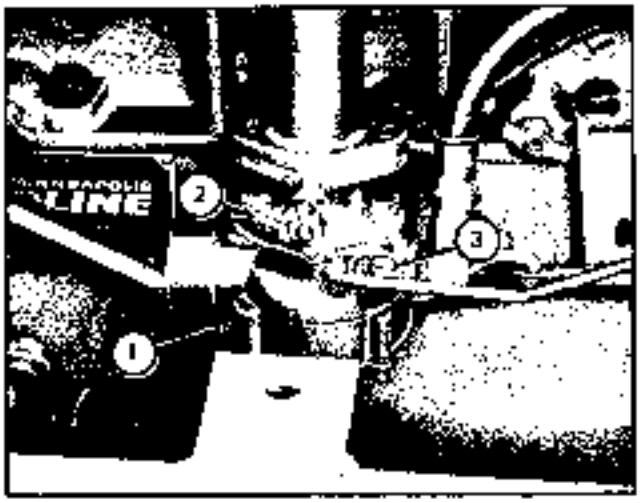


Fig. 1-16. LP-Gas Carburetor

1. Power adjustment
2. Idle speed stop screw
3. Idle adjusting screw

c. FILTER. The filter element needs very little service. Generally speaking, it should be cleaned or changed only if a loss of power is noted which can be traced to no other cause. The element is located in the relief valve assembly. See figure 1-9.

d. LP tank. It is recommended that the tank be removed when the truck is out of service, such as over-night. Store the tank in a safety rack.

3-19. COOLING SYSTEM.

3-20. The cooling system plays an important role in the life and efficiency of an internal combustion engine. Overheating not only causes the engine to knock and lose power, but also results in damage to bearings and other moving parts of the engine.

3-21. Overcooling, although less sudden in effect than overheating, may be equally dangerous to the engine. Low engine temperatures cause the formation of sludge which interferes with proper lubrication. It also creates harmful acids which attack engine parts.

WARNING

Be careful when removing radiator cap when engine is hot. Turn cap slowly until it reaches vent position then allow steam pressure to escape before removing.

3-22. A pressure-type cooling system raises the boiling point of the coolant and permits the engine to operate at higher temperatures without coolant loss. A pressure-type system will not function properly unless it is absolutely airtight, consequently, the system must be kept in good condition. Air in the system will also force coolant out of the overflow pipe, reduce the rate of heat transfer, and accelerate rusting within the system.

3-23. The cooling system has 3 drains--the radiator drain, located at the lower side of the bottom tank; and a drain for each engine block (1, figure 3-15). Whenever the system is drained, it should be done at the end of a day's run when any foreign material is in suspension and will be removed with the coolant. To insure complete draining, open all drains and remove the radiator cap.

3-24. The type of coolant used in the radiator (1, figure 3-14) depends on climatic conditions. If there is no danger of freezing, use a solution of clean, soft water and rust inhibitor; however, if the truck will be exposed to freezing temperatures, use a permanent type anti-freeze.

3-25. Avoid the use of water having a high mineral content or containing other impurities. Water containing minerals or other foreign material will form deposits throughout the cooling system. These deposits, in addition to restricting the proper flow of coolant, act as an insulator to prevent the effective

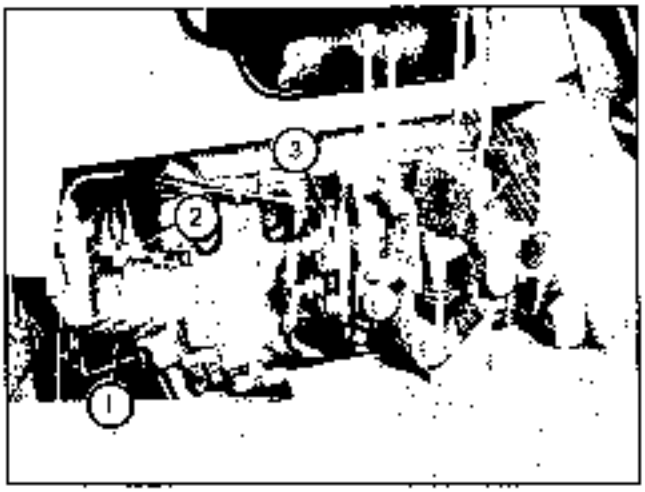


Fig. 1-17. Right Side View

1. Generator
2. Distributor
3. Auxiliary control valve

transfer of heat. Clean rain water and a rust inhibitor is a good coolant solution.

3-26. If the danger of freezing exists, fill the cooling system with a permanent type anti-freeze solution. Follow the recommendation of the anti-freeze manufacturer to obtain a solution that will give the desired protection for the lowest anticipated temperatures. After filling the radiator, run the engine until it reaches normal operating temperature and the thermostat opens. This will establish circulation through the radiator and engine blocks to insure proper mixing of the anti-freeze and water. If the solution is not thoroughly mixed, slush ice may form. Slush ice will stop circulation, causing overheating and subsequent loss of coolant. Another reason for running the engine is to release any air trapped in the engine water jacket by the closed thermostat. When the thermostat opens, the trapped air is released and the water passages fill with coolant. Eliminating trapped air lowers the coolant level of the radiator, and more water must be added to fill it to the proper level.

3-27. As mentioned previously, rust inhibitors should always be used in a radiator to protect it against corrosion. Most high-quality anti-freeze solutions are compounded with a rust inhibitor or corrosion deterrent. Do not add a rust inhibitor to these solutions as the chemical reaction may damage the system. Maintain full strength corrosion protection in the coolant system at all times. Corrosion inhibitors tend to lose their effectiveness with use, and we recommend draining the system and renewing the inhibitor every 6 months. In a system that was clean originally, the appearance of rust in the radiator, or in the solution, is an indication that the inhibitor is weakened or exhausted completely. Whenever the cooling system shows signs of rust, the coolant should be drained, the system flushed, and the radiator refilled with fresh coolant containing an inhibitor.

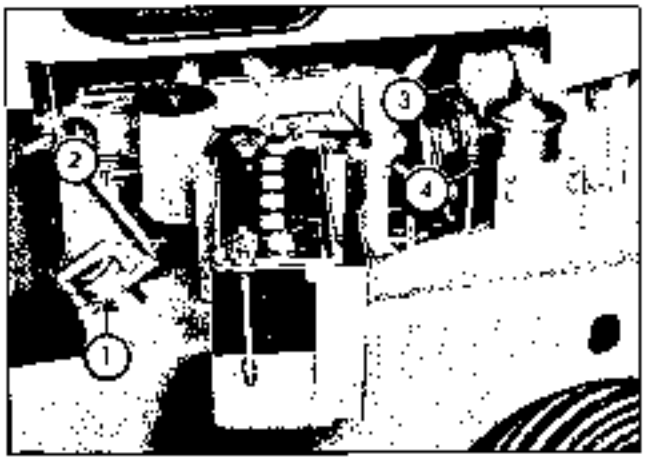


Fig. 1-18. Left Side View

1. Fuel tank filler cap
2. Air cleaner
3. Fan
4. Torque converter filter

3-28. After the anti-freeze solution is drained in the spring, it is recommended that the cooling system be flushed thoroughly, cleaned if necessary, and a suitable rust inhibitor added to a summer filling of fresh water. In areas where anti-freeze is not required, add rust inhibitor to a fresh filling of water both spring and fall.

NOTE

Flush the system thoroughly before and after the use of anti-freeze solutions.

3-29. Efficient operation of the cooling system requires an occasional cleaning - particularly at seasonal changes when anti-freeze solution is added or drained. The proper method of cleaning depends on the condition of the system. The exterior of the radiator should also

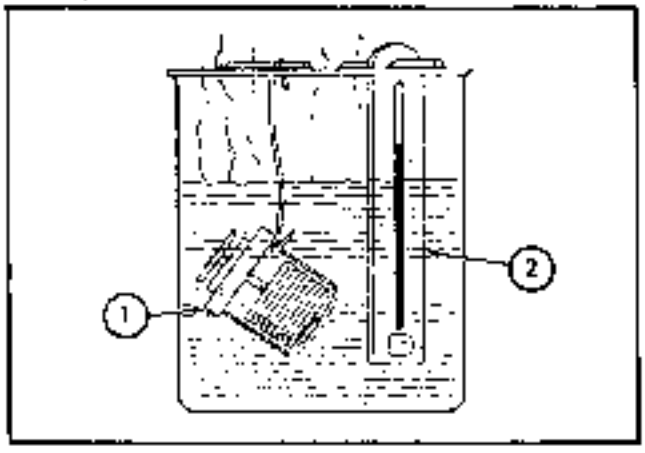


Fig. 1-19. Checking Thermostat

1. Thermostat
2. Thermometer

be cleaned regularly. Dirt, insects, or other foreign material will clog the radiator fins and reduce cooling efficiency. Clean the fins with forced air or water. Straighten any bent fins noticed during the cleaning operation, but be careful not to injure the tubes or break the bond between fins and tubes.

3-30. To check the thermostat, first clean it, and then suspend it in a container of clean water along with a thermometer. Heat the water and check the opening and closing temperatures. If the valve fails to open at 10° or more above the rated opening temperature (180°), or fails to close at 10° to 15° below this temperature, the thermostat should be replaced.

3-31. TIRES. Tires are an integral and expensive part of the lift truck. It is important that they be kept in the best possible condition as follows:

a. Tires should always be kept inflated to the recommended pressure.

b. The lift truck should never be driven at high speed over rocky or rough ground.

c. When the lift truck is not in use, it should be kept out of the sun as much as possible. Sunlight causes surface checking of the tires.

d. The lift truck should not be parked on oily or greasy floors. Oil and grease deteriorate rubber and shorten tire life.

e. Tire damage should be repaired immediately. Small breaks or cuts allow dirt and moisture to enter and cause fabric rot.

f. If the lift truck is to be out of service for any length of time, it should be blocked up to take the weight off the tires. If this is not possible, check the tires regularly and keep them inflated to the recommended pressure.

Fig. 1-29. Engine Timing

1. Timing mark
2. Timing pointer

3-32. ENGINE TIMING. (See figure 1-29). To check the timing, connect a 12-volt timing light to the spark plug for the number 1 cylinder (the one closest to the radiator end of the engine). Set the accelerator to obtain an engine speed of 1750 rpm. Allow the engine to warm up to normal operating temperature. Direct the timing light at the timing pointer (2, figure 1-29) and the crankshaft sheave. As the light flashes, the timing mark (1, figure 1-29) on the sheave should line up with the pointer. If the mark does not line up with the pointer, loosen the distributor lock nuts, and rotate the distributor body to correct the timing. Tighten the lock nuts.

3-33. STORING THE LIFT TRUCK.

3-34. If the lift truck is to be stored for an extended period of time, the following steps should be taken to prevent unnecessary deterioration and to insure top performance when the lift truck is returned to service.

a. Drain the crankcase, filter, and transmission. Flush the units with kerosene or diesel fuel, install new filters, and refill the units with the specified grade of fresh oil.

b. Thoroughly lubricate the lift truck, and service the air cleaner and breathers according to the instructions given in this manual. Drive the lift truck for a short distance to distribute the fresh lubricants.

c. Drain and flush the cooling system. Leave the radiator and block drains open to prevent the collection of condensation.

d. Drain the gasoline tank, filter, and carburetor. Make certain the system is completely drained as any fuel remaining in the system will oxidize and form gummy deposits. Leave the shut-off valve and the carburetor drain open. Clean the fuel filter. If the truck has an LP-Gas system, close the fuel valve, remove the tank, and store it in a safety rack.

e. Remove the valve covers and flush the valves, rocker arms, and push rods with heavy oil (SAE 30) to prevent rust.

f. Remove the spark plugs and pour a liberal amount of engine oil into each cylinder. Turn the engine over several times to distribute a protective oil film on the pistons and cylinder walls.

g. Remove the battery and store it in a cool, dry place where it will not freeze. Keep the battery fully charged, and maintain the proper electrolyte level. A run-down battery will deteriorate rapidly when stored. If the terminals and the top of the battery appear corroded, clean them with a stiff brush and a solution of baking soda and water. Make certain the vent holes in the filler caps are open.

h. Drain and flush the hydraulic system. Remove the strainer (4), figure 2-30) from the hydraulic tank and clean. Replace the screen and fill the tank to the specified level in accordance with the lubrication chart.

(figure 1-10). Operate the hydraulic controls for several minutes to distribute the new fluid throughout the system. Contract the cylinders during storage.

i. Thoroughly clean the lift truck. Check for worn or damaged parts, and make any necessary repairs, replacements or adjustments. Touch up any areas where the paint has worn or rubbed off.

j. Block up the lift truck to take the weight off the tires. If the weight is left on the tires, they may take a "set" and become permanently damaged.

k. Store the lift truck in a dry building, however, if it cannot be stored inside, cover it with a tarpaulin.

3-35. TROUBLE SHOOTING.

3-36. Trouble shooting involves taking the proper steps to locate the source of a trouble, and then correcting the trouble. Do not confuse trouble shooting with an engine tune up. In an engine tune up, all parts of the system where the trouble is occurring are checked. For example, in an ignition tune up, the battery, which is the source of electrical energy, is tested first; then the battery cable connections are inspected, etc. This checking and testing is continued in successive steps until each portion of the system that can have an influence on other portions is thoroughly tested and any abnormalities corrected.

3-37. In trouble shooting, the serviceman wishes to isolate the part responsible for the trouble by quickly eliminating all other parts. For example, suppose the engine misses (misfires) under a heavy load. In about 95 per cent of the engines with this trouble, it will be found that the ignition system is at fault. Of course, faulty valve action or an inadequate fuel supply can also cause an engine to miss. However, if the engine had a faulty valve action, the missing would usually be evident at all times instead of occurring only when the engine is under heavy load. An inadequate fuel supply can also be dismissed if the engine does not show a lack of power under a steady pull with an average load.

3-38. The first step in trouble shooting the ignition system is to check the spark output from the ends of the spark plug wires. Check each wire by holding it 1/16-inch away from the engine block while cranking the engine with the ignition switch turned on. If each wire shows a good spark, it indicates that the ignition system from the ends of the spark plug wires back to the battery is satisfactory. Thus, nothing would be gained by checking the distributor, battery, battery cables, ignition switch, etc. By this one test, it has been established that the ignition system is delivering a satisfactory spark to each spark plug. Since the rest of the ignition system has been eliminated, it is logical to assume that faulty spark plugs are responsible for the trouble.

3-39. Trouble shooting can be applied to any part of the lift truck that is not functioning properly and follows the same pattern:

a. First confirm the suspected condition before proceeding with any tests.

b. Next determine and recognize the possible causes.

c. Finally isolate the cause (or causes) by performing a series of quick tests to eliminate the others.

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
ENGINE IS HARD TO START OR FAILS TO START	No fuel in carburetor.	Make sure fuel shut-off valve is open. Check fuel lines and filter.
	Water in fuel.	Open carburetor drain to check for water. Drain system and refill with fresh fuel if there is evidence of water.
	Water in cylinders.	Check head gasket.
	Weak spark.	Check ignition system.
	No spark.	Check wiring and connections.
	Incorrect ignition timing.	Check ignition timing.
	Incorrect valve adjustment.	Check valve clearances.
	Restricted air intake.	Clean and service air cleaner.
	Restricted exhaust.	Clean soot and foreign material from exhaust passages.
	Poor compression.	Check valves, rings, etc.

TABLE I (CONT)

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
ENGINE STARTS, BUT FAILS TO KEEP RUNNING	Insufficient fuel supply.	Check fuel supply at carburetor. Make sure fuel shut-off valve is open. Check fuel lines and filter.
	Faulty wiring or connections.	Check wiring and tighten connections.
	Clogged air channels in fuel cap.	Check by removing cap. If this corrects situation, clean old cap or install new one.
ENGINE RUNS UNEVENLY AND BACKFIRES	Lean fuel mixture.	Adjust carburetor.
	Shorted ignition wires or distributor.	Check wiring and distributor.
	Sticking distributor advance mechanism.	Check distributor advance and clean if sticking.
	Incorrect ignition timing.	Check ignition timing.
	Incorrect valve adjustment.	Check valve clearances.
	Blown cylinder head gasket.	Replace gasket.
	Poor compression.	Check valves, rings, etc.
ENGINE BACKFIRES, BUT WILL NOT START	Moisture on ignition parts.	Wipe all dirt and moisture from coil, spark plugs, spark plug leads, and from interior of distributor cap.
	High-tension wires shorted.	Check wiring.
	Spark plug leads connected to wrong plug positions or distributor cap terminals.	Check spark plug lead connections.
	Sticking distributor advance mechanism.	Check distributor advance and clean if sticking.
	Incorrect ignition timing.	Check ignition timing.
ENGINE MISFIRES AT HIGH SPEED	Spark plug gap too wide.	Check plug gap.
	Weak spring on distributor breaker point.	Alter spring tension or install new points.
	Poor ground connection on condenser.	Tighten condenser ground screw.
	Coil breaks down when hot.	Check coil at operating temperature.
	Sticking valves.	Check valves.
	Incorrect valve spring tension.	Check spring tension.
ENGINE MISFIRES UNDER LOAD	Faulty ignition.	Check ignition system.
	Faulty spark plugs.	Check plugs, clean and gap.
	Faulty carburetor.	Clean carburetor and check float level.

TABLE I (CONT)

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
ENGINE MISFIRES UNDER LOAD (CONT)	Engine overheating or pre-ignition.	Check cooling system, ignition timing, and spark plugs. Remove carbon deposits in combustion chambers.
	Incorrect valve adjustment or faulty valves.	Check valves.
	Poor compression.	Check valves, rings, etc.
	Faulty valve action.	Check valves.
	Faulty spark plugs.	Clean and gap, or replace plugs.
	Low coil output.	Test for satisfactory spark at end of each spark plug lead.
	Incorrect ignition timing.	Check ignition timing.
	Sticking distributor advance mechanism.	Check distributor advance and clean if sticking.
HIGH FUEL CONSUMPTION	Leak in fuel system.	Check fuel lines and connections.
	Incorrect carburetor adjustments.	Clean and adjust carburetor. Check for proper float level.
	Restricted air intake.	Check for high oil level in air cleaner cup. Clean and service air cleaner.
	Improper oil viscosity.	Drain crankcase and fill with oil of recommended viscosity.
	Dragging brakes.	Adjust free pedal travel.
	Faulty spark plugs.	Clean and gap, or replace plugs.
	Sticking distributor advance mechanism.	Check distributor advance and clean if sticking.
	Incorrect ignition timing.	Check ignition timing.
	Engine not operating at correct temperature	Check cooling system.
	Incorrect valve adjustment or sticking valves.	Check valve action.
	Worn valves, guides, rings, cylinders, etc.	Overhaul engine.
	Engine lugging.	Shift to low range.
	Excessive engine speed.	Adjust governor.
ENGINE LACKS POWER	Carburetor throttle disc does not open fully.	Check throttle linkage and throttle shaft.

TABLE 1 (CONT)

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
ENGINE LACKS POWER (CONT)	Restricted exhaust.	Clean soot and foreign material from exhaust passages.
	Dragging brakes.	Adjust brakes.
	Improper oil viscosity.	Drain crankcase and fill with oil of recommended viscosity.
	Faulty governor action.	Check linkage. Adjust governor to obtain recommended rpm.
	Incorrect carburetor adjustments.	Clean and adjust carburetor. Check for proper float level.
	Poor-quality fuel.	Drain fuel system and refill with fresh fuel.
	Restricted air intake.	Check for high oil level in air cleaner cup. Clean and service air cleaner.
ENGINE OVERHEATS	Low coolant level.	Add coolant and check for leaks.
	Clogged cooling system.	Clean and flush system.
	Clogged radiator fins.	Clean with forced air or water.
	Faulty thermostat.	Replace thermostat.
	Faulty water pump.	Repair or replace pump.
	Slipping fan belt.	Tighten or replace belt.
	Fuel mixture too lean.	Clean and adjust carburetor. Tighten all connections.
	Sticking distributor advance mechanism.	Check distributor advance and clean if sticking.
	Incorrect ignition timing.	Check ignition timing.
	Pre-ignition.	Check ignition timing and spark plugs. Remove carbon deposits in combustion chambers.
HIGH OIL CONSUMPTION	Improper oil viscosity.	Drain crankcase and fill with oil of recommended viscosity.
	Oil pressure too high.	Adjust oil pressure regulator screw to obtain recommended pressure.
	Oil leaks.	Check seals, gaskets, connections, etc.
	Clogged crankcase breather.	Clean breather element.
	Engine overheating.	Check timing and cooling system.
	Worn or scored pistons, pins, rings, bearings, valve guides, etc.	Overhaul engine.

TABLE 1 (CONT)

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
HIGH OR LOW OIL PRESSURE	Plugged or leaking oil lines.	Clean, tighten, or replace lines.
	Dirty intake screen on oil pump.	Clean screen.
	Worn oil pump.	Repair or replace pump.
	Worn bearings.	Replace bearings.
	Improper oil viscosity or crankcase dilution.	Drain crankcase and fill with oil of recommended viscosity.
	Incorrect setting of oil pressure regulator screw.	Adjust regulator screw to obtain recommended pressure.
	Faulty oil pressure gage.	Check accuracy of gage by disconnecting oil line just above filter housing and connecting test gage.
SLIPPAGE IN DRIVE SYSTEM	Faulty clutch.	Repair or replace clutch.
	Faulty pump.	Replace faulty component.
	Low oil level.	Fill to correct level.
	Defective torque converter.	Replace converter.
LIFT TRUCK OPERATES IN ONE DIRECTION BUT NOT IN THE OTHER	Defective clutch.	Repair or replace clutch.
DRIVE SYSTEM NOISY	Low oil level.	Fill to proper level.
	Worn or broken gear or shaft.	Replace faulty component.
SYSTEM WILL NOT LIFT, LIFTS TOO SLOWLY, OR STICKS WHEN LOWERING	Leaks in system.	Tighten loose connections. Replace damaged component.
	Defective control valve.	Replace valve.
	Defective hydraulic pump.	Repair or replace pump.
	Defective lift cylinder.	Repair or replace cylinder.
	Dirty plunger assembly.	Clean exposed surface of plunger.
	Low hydraulic pressure.	See "LOW HYDRAULIC PRESSURE" below.
LOW HYDRAULIC PRESSURE	Defective pump.	Repair or replace pump.
	Leaks in system.	Tighten loose connections. Replace faulty components.
	Defective valve.	Replace valve.

TABLE I (CONT)

TROUBLES, CAUSE, AND REMEDY

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
EXCESSIVE HYDRAULIC PRESSURE	Defective valve.	Replace valve.
SYSTEM LIFTS, BUT WILL NOT LOWER LOAD	Defective valve.	Replace valve.
EXCESSIVE NOISE OR HAMMERING.	Defective pump.	Repair or replace pump.
	Air in system.	Purge system.
SERVICE BRAKES NOT EFFECTIVE	Worn brake lining.	Adjust brakes or replace linings.
	Insufficient brake fluid.	Add fluid as specified in lubrication chart.
	Broken or loose line.	Tighten connection or replace defective line.
	Faulty brake cylinder.	Repair or replace cylinder.
SPONGY BRAKE ACTION	Air in system.	Bleed system.
BRAKES DO NOT RELEASE	Incorrect brake adjustment.	Adjust brakes.
BRAKES GRAB	Dirt in brake drum.	Clean and adjust brakes.
	Defective lining.	Replace linings.
	Scored brake drum.	Turn down or replace drum.
	Brake fluid on lining.	Replace linings.

CHAPTER 4

OVERHAUL (SHOP MAINTENANCE)

Section I. General

4-1. GENERAL.

4-2. This chapter consists of instructions relating to the removal, disassembly, repair, and reassembly of the components involved in the lift truck.

4-3. No special tools are required to overhaul the equipment. Tools and testing devices required are those commonly employed at a shop having overhaul facilities. Assuming that only skilled automotive mechanics will perform the procedures described in this manual, obvious and elementary instructions have been purposely omitted.

4-4. An attempt has been made, wherever possible, to treat the assemblies in their logical order of accessibility sequence. For complete disassembly, refer to the Table of Contents, locate the assembly desired and note its page number. Repeat for each assembly.

4-5. Unless otherwise indicated, all bolts should be torqued to the following values:

1/4 inch .....8 to 10 foot pounds
5/16 inch ....15 to 18 foot pounds
3/8 inch .....30 to 35 foot pounds
7/16 inch ....50 to 55 foot pounds
1/2 inch .....75 to 85 foot pounds
9/16 inch ....115 to 125 foot pounds
5/8 inch .....150 to 170 foot pounds
3/4 inch .....270 to 300 foot pounds

Section II. Removal, Disassembly, Repair, and Reassembly

4-6. EQUIPMENT OVERHAUL.

4-7. BATTERY, CLAMP, AND CABLES.

4-8. REMOVAL. (See figure 2-16). Removal and disassembly is accomplished at the same time as follows:

a. Prop left side of hood open with support rod.

b. Lift battery and box and swing assembly out. Remove cables and hold down assembly. Remove battery from box.

c. Remove pivot pin (24, figure 2-16) and remove box.

4-9 DISASSEMBLY. Disassembly is completed with removal of parts.

4-10. REPAIR.

a. Clean battery and other parts with stiff brush and baking soda and water solution. When foaming stops, flush battery with clean water. Use care not to get solution into vent holes.

b. Inspect battery and test. Inspect battery cables, and other parts. Replace battery if damaged or test indicates poor condition. Replace all parts severely damaged or corroded beyond repair. Replace badly deteriorated cables.

4-11. REASSEMBLY. (see figure 2-16.) Reassembly is accomplished in the reverse order of disassembly.

4-12. GASOLINE FUEL TANK, LINES, AND FITTINGS. (see figure 2-21.) The tank is an integral part of the lift truck frame and cannot be removed.

4-13. DISASSEMBLY. (see figure 2-11). Disassembly is completed by removing the shut-off valve (1), filler assembly (4), fuel gage sending unit (14), and drain plug.

4-14. REPAIR.

a. Clean parts and flush tank with solvent.

b. Inspect parts and tank.

c. Discard defective or damaged parts and replace with new parts.

4-15. REASSEMBLY. Reassemble in reverse order of disassembly.

4-16. SEAT.

4-17. REMOVAL. (See figure 2-29.) Remove seat from frame. Remove frame from hood.

4-18. DISASSEMBLY. Unscrew sheet metal screws holding back rest to frame.

4-19. REPAIR.

a. Discard seat frame, worn cushion and back rest.

4-20. REASSEMBLY. (see figure 2-29.) Reassemble in the reverse order of disassembly.

4-22. HORN BUTTON.

4-22. REMOVAL. (see figure 2-26.) Removal and disassembly are accomplished at the same time as follows:

a. Disconnect battery ground wire. Disconnect horn button wire at horn relay.

b. Press and turn horn cover (36) to release button (37), contact cup (38), horn button spring (39), and contact cap (40).

c. Remove screws holding base plate (44) and pull wire, plate, and parts out of steering column.

4-23. DISASSEMBLY. Disassembly has been accomplished with completion of removal steps.

4-24. REPAIR.

a. Clean and inspect parts. Check wire and insulating ferrule. Replace if damaged or defective. Check horn button spring compression. Spring must prevent button from making contact unless pressed.

4-25. REASSEMBLY. (see figure 2-26.) Reassemble in reverse order of disassembly.

4-26. STEERING GEAR AND DRAG LINK.

4-27. REMOVAL (see figure 2-26 or 2-26A.)

a. Disconnect the accelerator pedal and linkage and remove the front section of the floor plate.

b. Drive out the roll pin through the hand lever arm (38, figure 2-20) at the lower end of the control lever shaft. Loosen the hand lever clamp (37, figure 2-20) at the lower end of the shaft tube.

c. Remove the horn button assembly (paragraph 4-22) and remove the steering wheel.

d. Loosen the clamps (39, figure 2-20). Remove the hand lever control shaft and tube.

e. Remove the steering arm (24, figure 2-26) from the shaft (27).

f. Remove the steering gear (1) attaching bolts and the steering post clamp. Remove the entire steering gear assembly.

g. Remove the rear end of the drag link (26) from the hydraulic steering booster.

4-28. DISASSEMBLY. (see figure 2-26 or 2-26A).

a. Remove side cover (20). Press cross shaft (11) out of housing. Remove bushings (3) and oil seal (2).

b. Loosen clamp (14) and remove bolts holding upper cover (10) to housing. Remove cam and tube assembly (5). Use care not to lose any steel balls (7), when retaining ring (8) is removed.

c. Remove all parts enclosed in jacket tube (10).

d. Unscrew socket plug (31) enough to remove front end of drag link from steering arm. To further disassemble drag link, unscrew plug completely. Pull remaining parts from socket on drag link.

4-29. REPAIR.

a. Discard oil seals which show signs of leakage.

b. Discard bearings which show excessive wear.

c. Discard bent steering tube or steering linkage, or other damaged components.

4-30. REASSEMBLY. (See figure 2-26 or 2-26A.) Reassemble in reverse order of disassembly.

a. Replace all gaskets and oil seals.

b. Clean all parts in solvent.

c. Use just enough shims (16) to obtain a slight drag when steering shaft is turned, before cross shaft is installed.

d. Install cross shaft at center of its travel, and install steering arm centered between stops. See figure 1-21.

e. To adjust cross shaft end play, turn adjusting screw (21) in right, then back off 1/4 turn.

f. Adjust stop bolts (1, figure 1-21) to stop steering arm in each direction, before stops on steering axle make contact.

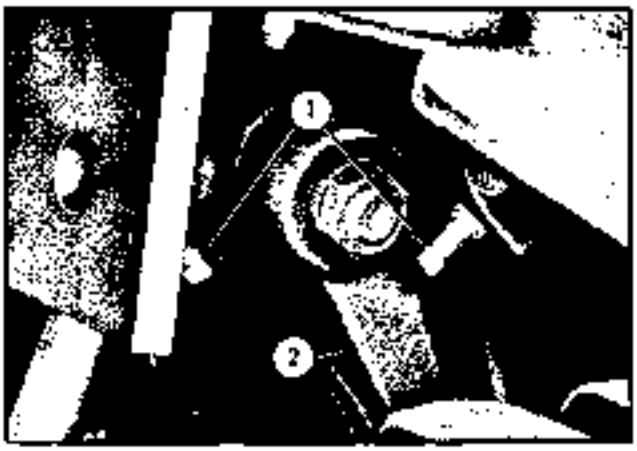


Fig. 1-21. Steering Arm and Stops

1. Stop bolts
2. Steering arm

4-31. HEAD AND REAR LAMPS. (OPTIONAL)

4-32. REMOVAL (see figure 2-16.)

a. Disconnect battery ground wire.

b. Disconnect lead wires to lamps and remove lamps.

4-33. DISASSEMBLY. (see figure 2-16.)

a. Remove front head lamp molding screw and molding (13). Pull sealed beam unit out of lamp head.

b. Remove lens retainer (20) and remove lens (18).

4-34. REPAIR. Inspect and replace all defective parts.

4-35. REASSEMBLY. (see figure 2-16.) Reassemble in reverse order of disassembly.

4-36. INSTRUMENT PANEL, SWITCHES, AND GAGES.

4-37. REMOVAL. (see figure 2-17.)

a. Remove the clamp holding the steering post to the instrument panel.

b. Disconnect battery ground wire.

c. Remove bolts holding instrument panel (1) to front shroud. Lift out panel.

d. Disconnect wires from instruments.

4-38. DISASSEMBLY. (see figure 2-17.) Disassembly is complete upon removing switches and gages from the instrument panel.

4-39. REPAIR. Repair is limited to checking condition and performance of switches, gages, and components. Inspect wiring for broken connections, corrosion, and damaged insulation. Discard all defective parts and replace with new parts.

4-40. REASSEMBLY. (see figure 2-17.)

a. Install gages and switches on instrument panel.

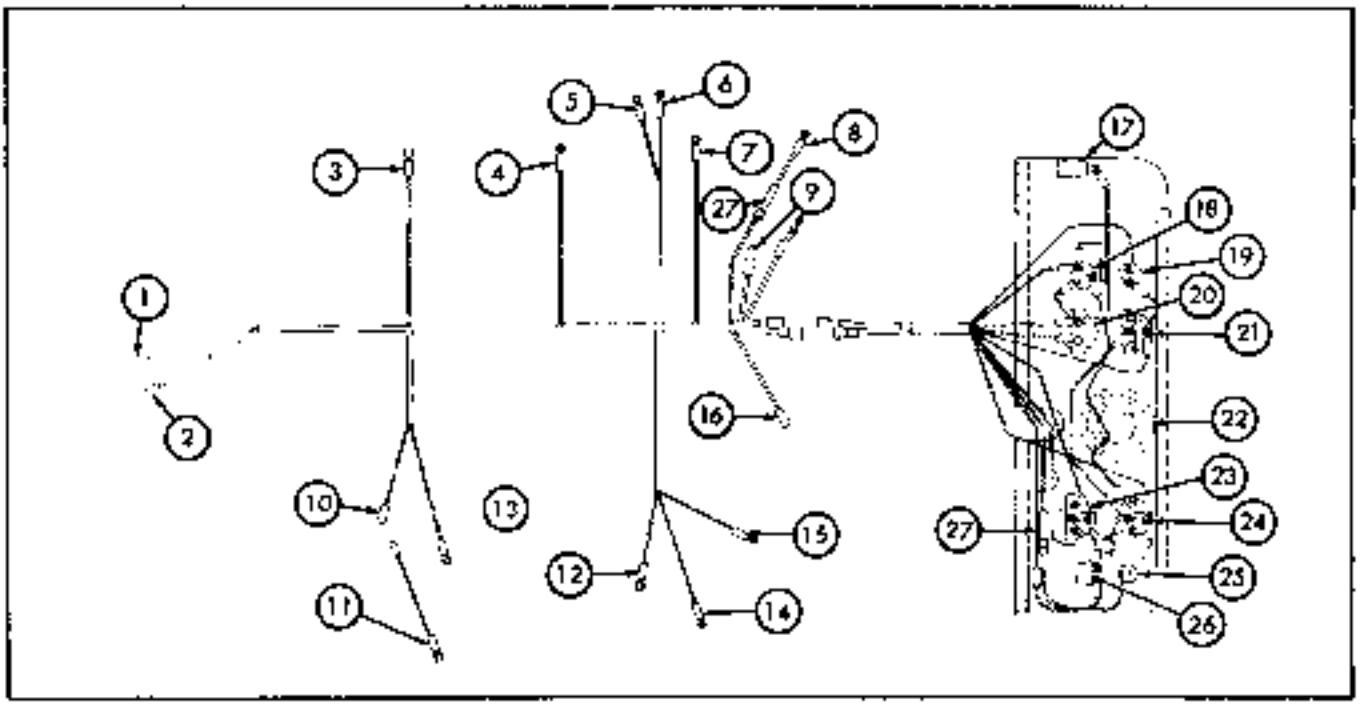


Fig. 1-22. Sheet 1 of 2

1. To stop light wire - orange
2. To tail light wire - black
3. To "B" terminal on regulator - orange and black
4. To water temperature indicator - yellow
5. To negative terminal on stop light switch - orange
6. To positive terminal on stop light switch - orange
7. To warning light indicator - natural white
8. To horn relay - red
9. To neutral starting switch
10. To coil wire - purple
11. To coil - purple
12. To battery terminal on starter - red
13. To oil pressure indicator - black
14. To fuel gage indicator - dark green
15. To starter solenoid - brown
16. To head light wire - black
17. Capacitor
18. Ignition switch
19. Starter switch
20. Ammeter
21. Fuel gage
22. Hour meter
23. Oil pressure gage
24. Temperature gage
25. Warning light
26. Light switch
27. Fuse

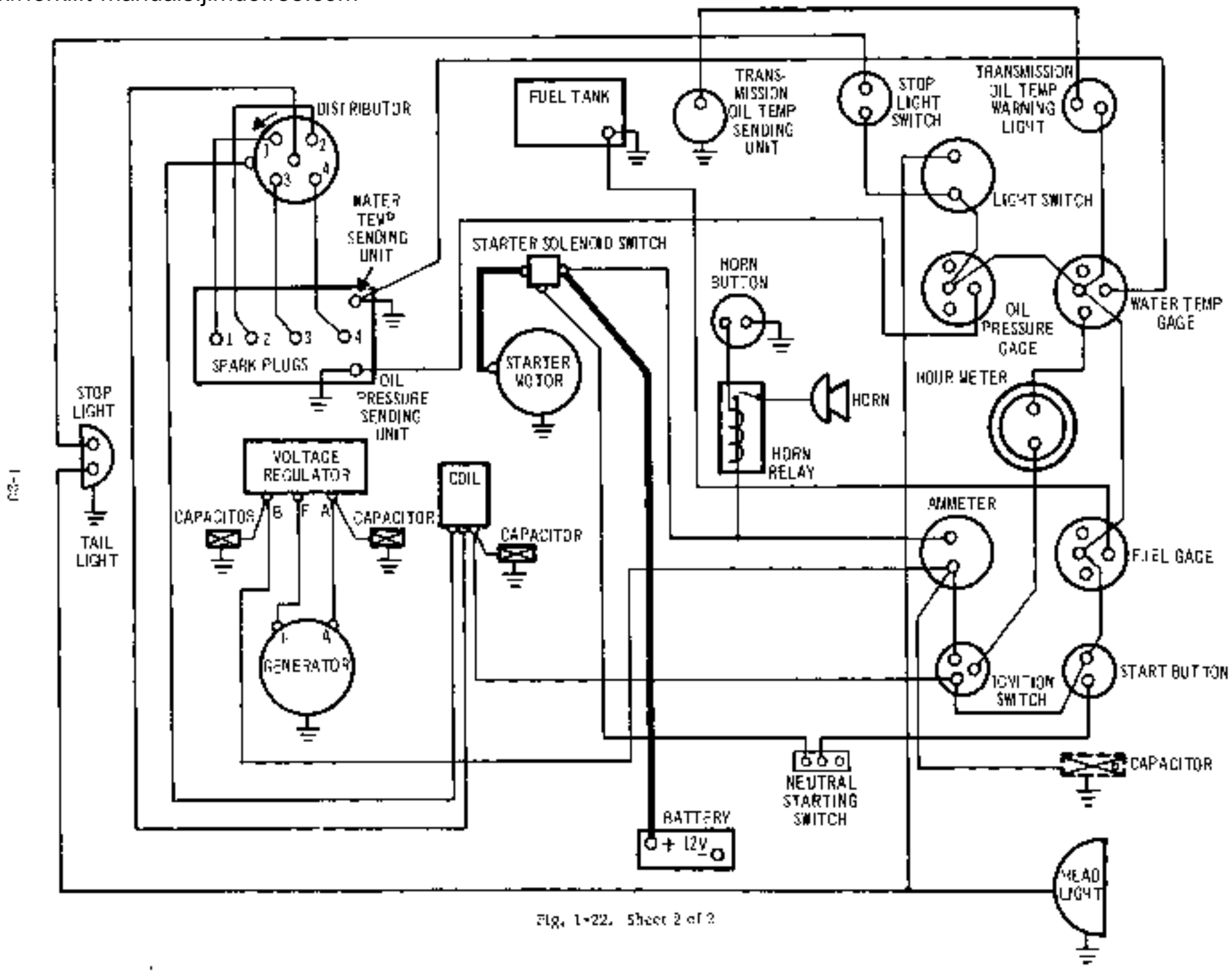


Fig. 1-22. Sheet 2 of 2

4-41. RADIATOR, HOSES AND THERMOSTAT.

4-42. REMOVAL. (see figure 2-14.)

a. Remove radiator cap and open radiator drain valve and block drains (2, figure 1-16).

b. Remove cooling fan (15, figure 2-12.)

c. Disconnect clamps and remove upper and lower hoses. Thermostat (1E) is located in upper hose.

d. Remove 4 radiator mounting bolts.

4-43. DISASSEMBLY. (see figure 2-14.)

a. Remove radiator drain valve.

4-44. REPAIR.

a. Inspect radiator, thermostat, and hoses. Test thermostat as outlined in Chapter 9. Discard defective radiator and hoses. Repair minor ruptures in radiator if accessible. Discard radiator if damage is excessive.

4-45. REASSEMBLY. (see figure 2-14.)

a. Install drain valve and attach radiator to mounting.

b. Attach hoses and thermostat, using proper clamps as in figure 2-14. Tighten clamps securely.

c. Close radiator drain valve. Refill radiator as described in Chapter 3. Check connections for leaks.

4-46. MUFFLER.

4-47. REMOVAL. (see figure 2-5). Removal and disassembly is complete upon disconnecting all clamps.

4-48. REPAIR.

a. Inspect and discard all parts that show excessive rust and deterioration. Replace with new parts.

4-49. REASSEMBLY. (see figure 2-5). Reassemble in reverse order of disassembly.

a. Lubricate threads on bolts, clamps, and connecting surface of muffler and pipe.

b. Align muffler and pipe so they cannot contact other parts of the truck. Tighten nuts and bolts securely.

4-50. THROTTLE CONTROLS.

4-51. REMOVAL. (see figure 2-9.) Disassembly of throttle control linkage is accomplished as follows:

a. Disconnect spring (6).

b. Remove cotter pins and linkage.

c. Remove front section of floor plate (5, figure 2-28).

d. Remove cross shaft (2) and pedal (1).

4-52. DISASSEMBLY. Disassembly is accomplished when throttle controls are removed.

4-53. REPAIR.

a. Clean parts in solvent and inspect.

b. Replace parts with excessive wear.

4-54. REASSEMBLY. (see figure 2-5.) Reassemble in reverse order of disassembly.

a. Lubricate control rod ends and cross shaft where it moves in support and foot pedal hinge. Install front section of floor plate.

b. Use new cotter pins.

4-55. WATER PUMP AND FAN ASSEMBLY.

4-56. REMOVAL. (see figure 2-12.)

a. Drain cooling system. Loosen fan belt and remove fan and water pump assembly. Remove tube from engine block.

4-57. DISASSEMBLY. (see figure 2-12.)

a. Remove fan (15) from hub (8).

b. Press fan hub off shaft, remove pulley (7).

c. Remove lock spring (4) and press on fan hub end to remove shaft and bearing assembly from the housing.

d. Remove impeller (6), seal (5), and slinger ring (3) from shaft.

4-58. REPAIR.

a. Clean parts and inspect. Discard excessively worn parts and replace with corresponding new part. Replace "O" ring seals on tube.

4-59. REASSEMBLY. (see figure 2-12.)

a. Press seal into housing, using suitable tool, or piece of pipe, that contacts only the seal flange, NOT the carbon ring.

b. Slip on slinger on shaft and insert shaft in housing from fan hub end. Align grooves in bearing and housing and install the lock wire.

c. Press impeller on shaft with .005 inch clearance between impeller and housing.

d. Press pulley and fan hub on shaft until end of shaft extends out of hub 21/32 inch.

c. Insert tube with new "O" ring into engine block and install water pump assembly.

d. Refill cooling system as described in Chapter 3.

4-10. GENERATOR. (See figure 3-16.)

4-11. REMOVAL.

a. Disconnect battery ground wire and generator to voltage regulator wires.

b. Remove drive belt tension adjustment arm screw at top of generator and screw bolt.

c. Remove generator from mounting bracket.

4-12. DISASSEMBLY.

a. Remove generator brush cover band nut and screw. Remove cover band.

b. Remove the two thru bolts and lockwashers.

c. Tap off commutator end frame assembly. Tap off the drive end frame assembly and slide armature out of field frame. Remove nut, washer and pull off drive pulley. Remove drive end frame and components. Remove the three screws and lockwashers holding the ball bearing and retainer parts.

d. Remove the screws securing the brush leads and remove screws holding the ground and insulated brush parts.

e. Remove the arm terminal stud nut, washers and stud. Remove the terminal to brush stud nut, washers and stud.

f. Remove the two screws holding the pole shoes, insulation and field coils.

4-13. REPAIR.

a. Clean the field coils with a cloth dampened with an approved cleaning solvent. Do not soak in solvent. Dry the assembly with clean, dry, compressed air, taking care not to damage insulation or leads.

b. Blow all loose dirt from the armature assembly with clean, dry, compressed air. Wipe off with a cloth dampened with an approved cleaning solvent; dry thoroughly. Sand the commutator with a No. 00 fine paper. Clean out dirt from the commutator bars, but do not damage or scratch the bars or the mica.

c. Clean the brush arms with a cloth dampened with an approved cleaning solvent; dry thoroughly.

d. Clean the cover band, the commutator end cover, the thru bolts, the drive end cover, and the bearing retainer plate, and all nuts, bolts, screws, and lockwashers with an approved cleaning solvent.

e. Clean and inspect the ball bearings.

f. Inspect the field coils for worn or frayed insulation, broken leads, loose or corroded terminals, or other damage. Replace if damaged.

g. Using a test probe set consisting of a lamp in series with two test points and connected to a 110-volt lighting circuit, check the field coils and pole pieces in the field frame assembly with two pole screws.

h. Position the field coils, insulation and pole pieces in the field frame, secure with the two pole screws.

i. Check for grounds by touching one test probe to the field lead and the other probe to the frame. If the lamp lights, the field coils are grounded. Replace a grounded field assembly.

j. Touch the probes to the two leads of each coil. If the lamp fails to light, the coil is open. Replace the field assembly if any coil is open.

k. Inspect the armature assembly to make sure all windings are properly seated into the coil slots and are properly soldered to the commutator risers. Replace the armature if windings are loose or unsoldered at the commutator.

l. Inspect the armature core for wear. Replace the armature assembly if worn or scored.

m. Inspect the commutator for wear, roughness, and out-of-round; place the armature in V-blocks and check the concentricity of the commutator with a dial indicator. If the commutator is rough, or worn, or if concentricity is greater than 0.001 inch, turn down.

n. Inspect the bearing seats on the armature shaft. Replace the armature assembly if such wear is evident.

o. Check the armature for grounds, open circuits, and shorts as follows: Check for grounds by touching one end of the probes of the test set to the shaft or core and the other probe to each of the commutator risers in turn. Do not touch probes to brush or bearing surfaces. If the lamp lights, the armature is grounded and must be replaced.

p. Check for an open armature circuit by touching the probes to the risers on a pair of adjacent commutator bars. If the lamp does not light the circuit is open. Repeat this test on each pair of adjacent commutator bars. Replace an open armature.

q. Test for a shorted armature by placing the armature on a growler and holding a thin strip of steel above the core. Turn the armature slowly. If the armature is shorted, the armature will set up a magnetic field, causing the steel strip to vibrate. If the armature is shorted, inspect the commutator bars and risers for copper chips or solder that may be shorting between bars. If the short cannot be located and corrected, re-

size the armature.

c. Inspect the commutator end lead and drive end lead for cracks, distortion, or other damage; replace if damaged.

d. Inspect the brushes for wear, oil saturation, chips or other damage; replace if damaged or worn to less than 3/8 inch.

e. Inspect the cover band for fit on the generator frame, cracks, and other damage; replace the band if it cannot be straightened out to provide a snug fit, or if it is otherwise damaged.

f. Inspect all parts for wear, cracks, breaks, distortion or other damage; replace damaged parts.

4-64. REASSEMBLY.

a. Install the arm terminal stud, washers and nut in proper sequence with field coil lead attached.

b. Insta l the terminal to brush stud, washers and nut in proper sequence with field coil lead attached.

c. Install ground and insulator brush packages.

d. Place the assembled commutator frame end on the assembled armature. Reassemble the felt washer, washer retainer, ball bearing, spacer washer, gasket and bearing retainer plate to drive end frame and secure with screws and lockwashers.

e. Assemble the commutator end frame, armature, field frame and drive end frame. Secure with thru bolts and washers.

f. Insert brushes and attach brush leads. Check brush seating.

g. Install cover band and secure with nut and screw.

h. Slip spacer collar over shaft and insert Woodruff key. Install drive pulley and secure with lockwasher and nut.

i. Install generator on engine and attach drive belt.

j. Connect battery ground wire.

k. Polarize generator by momentarily connecting jumper wire from "B" terminal of regulator to "A" terminal of generator.

4-65. STARTING MOTOR.

4-66. REMOVAL. (See figure 4-16). Removal is accomplished by disconnecting battery ground wire and wires to magnetic switch. Remove lock nut and set screw from flywheel housing. Starter motor pulls out.

4-67. DISASSEMBLY. (See figure 4-16.) Disassembly is similar to paragraph 4-62, "GENERATOR".

a. Remove magnetic switch, brush cover band and thru bolts with washers.

b. Remove brush lead screws and brushes. Tap commutator end cover and remove. Tap drive housing and remove. Slide armature out of field housing from drive end.

c. Remove screws and lockwashers on brush ground leads. Remove brush attaching screws, holders, springs and brushes. Remove brush jumper lead screw, lockwasher and lead. Remove terminal stud nut, washers and terminal stud.

d. Remove pole shoe screws, field coils and pole shoes.

e. Remove motor drive dowel pin and motor drive.

4-68. REPAIR.

a. Cleaning and inspection of starting motor parts is the same as cleaning and inspection of "GENERATOR". Refer to paragraph 4-63a through paragraph 4-63e.

b. Inspect the brushes for wear, oil soaked condition, or other damage. If the brushes are damaged or worn to less than 5/16 inch, discard them and replace with new ones.

c. Test the insulated brush holder hinge pins on commutator end frame assembly for grounds by touching one probe of a test set to each of the hinge pins. Touch the other test probe to ground on the commutator end frame assembly. Replace the commutator end frame assembly if any of the pins are grounded.

d. Reassemble brush holders and springs to commutator and springs to commutator end frame. Place the armature in a padded vise and install the commutator end space washer and the commutator end frame assembly on the armature shaft. Install a grounded brush or a spare brush in the brush holder. Replace the commutator end frame assembly if the brush does not slide freely in the holder, or if the brush edge are not in perfect alignment with the commutator segments.

e. Check the brush spring tension. If the brush spring tension is not within the proper limits, replace the brush spring.

f. Test for side play of the commutator end frame assembly on the armature shaft. Replace the commutator end frame assembly if side play can be felt.

g. Inspect the motor drive for broken springs, stripped screws, broken lockwashers, broken pinion teeth, or other damage. Discard motor drive and replace if needed.

h. Check center bearing plate bushing fit on armature shaft. Replace bushing with new one if too loose.

i. Check motor drive fit on armature shaft. Replace motor drive if too loose.

4-69. REASSEMBLY. (See figure 2-16.)

a. Apply a light coat of oil to the armature shaft bearing surfaces. Remove all excess oil, making sure oil does not reach commutator, brushes, field and frame assembly, or armature.

b. Install the spacer washer on the end of the shaft, slide the commutator end frame and pin assembly on the shaft, replace the center bearing plate.

c. Insert the assembled motor drive end spacer washer into the drive housing.

d. Position the assembled drive housing over the assembled armature and frame assembly, secure to the commutator end frame and pin assembly with the two thru bolts and lockwashers.

e. Check the end play in the end of the drive housing by mounting a dial indicator on the cranking motor with the plunger against the end of the armature shaft. Move the armature to its two extreme positions and read the total indicator reading. End play must be between 0.005 inch and 0.062 inch. If end play is excessive, install additional spacer washers.

f. Seat the brushes to the commutator by wrapping a strip of No. 00 sandpaper around the commutator and turning the armature slowly in the direction of rotation (clockwise as viewed from the drive end). Allow one brush at a time to contact the sandpaper until the surface assumes the curvature of the commutator. A few rotations will be sufficient to seat each brush. Blow all dust and sand from the cranking motor with clean, dry, compressed air.

g. Install the cover band and clamp securely with the cover band screw and nut. Attach magnetic switch.

h. Align upper hole in starting motor drive housing with lock bolt hole. Install lock nut and bolt engaging top hole in starting motor drive housing. Draw bolt up snug and tighten lock nut.

i. Connect wires to magnetic switch.

4-70. DISTRIBUTOR.

4-71. REMOVAL. (See figure 2-15.)

a. Disconnect battery ground wire. Disconnect high tension lead wire and low tension lead. Disconnect spark plug wires.

b. Remove distributor cap. Note position of rotor and mark distributor housing with spot of blacking so cap can be re-installed with rotor in same position on reassembly. Remove distributor hold down clamp screws, washers and clamps. Withdraw distributor from crankcase.

4-72. DISASSEMBLY. (See figure 2-15.)

a. Lift rotor from shaft and remove housing cover. Remove screws holding condenser and breaker points, remove nuts, washers, bushing and terminal stud. Remove screws, lockwashers, securing spring clips and breaker plate.

b. Drive out coupling to shaft pin and pull coupling from shaft. Remove space and shim washers. Pull distributor shaft assembly and weight plate from housing.

c. Remove nuts and lockwashers securing weight hold down plate. Remove weight springs and hold down plate. Remove cam and weights.

4-73. REPAIR.

a. Clean parts in solvent and dry carefully.

b. Inspect all parts for excessive wear, corrosion or deterioration. Replace defective parts with new ones, particularly the points, condenser, rotor or distributor cap.

4-74. REASSEMBLY. (See figure 2-15.) Reassemble distributor in the reverse order of disassembly.

a. Assemble cam and weights to distributor shaft and weight plate.

b. Slide space washer under weight plate and insert shaft in distributor housing. Align breaker plate with distributor housing. Install breaker plate, spring clips, spring support, and locator in breaker housing. Secure with screws and lockwashers.

c. Install terminal stud, inside bushing, outside washer and nut. Attach condenser and breaker points. Attach breaker spring to terminal stud and secure with nut.

d. Slide coupling spacer washer and shim on to bottom end of distributor shaft. Align coupling with hole in shaft and press coupling on to shaft. Insert pin. Check end play in shaft. There should be .005 clearance between coupling and end of housing. Use other shims if needed.

e. Install housing cover and rotor.

f. Assemble distributor to crankcase, aligning coupling with starting gear so rotor returns to approximate spot marked on housing. Attach clamps, distributor cap and all wires in proper order.

g. Adjust point gap to .018 inch, with breaker lever on high point of cam lobe. Retime ignition according to paragraph 3-32, in Chapter 3.

4-75. VOLTAGE REGULATOR. (See figure 2-15.)

4-76. REMOVAL. Disconnect wires and remove regulator from mounting bracket.

4-77. DISASSEMBLY.

a. Remove cover and gasket.

b. It is advisable to make the repairs and adjustments listed in paragraph 4-78, before completely disassembling the regulator, and then remove only the faulty components.

4-78. REPAIR.

a. Mechanical checks and adjustments (air gaps, point opening) must be made with battery disconnected and regulator preferably off the lift truck.

CAUTION

The cutout relay voltage points must never be closed by hand with the battery connected to the regulator. This would cause a high current to flow through the coil and would seriously damage them.

b. Electrical settings must be checked and adjusted with the regulator mounted in the operating position and at operating temperature. Run the engine for at least 15 minutes, with no electrical load other than ignition, to reach operating temperature.

c. The engine must be operated at governed speed, and generator voltage must be kept high enough to insure sufficient current output, for testing and adjusting.

d. After any tests or adjustments, the generator must be polarized after the leads are connected, but before the engine is started, as follows: Momentarily connect a jumper between the "GEN" and "BAT" terminals of the regulator. This allows a momentary surge of current through the generator, thus correctly polarizing it. Failure to do this may result in severe damage due to vibration, sticking, and burning of the relay contact points.

e. Use a spoon or riffler file to clean the contact points. Never use emery cloth or sandpaper to clean the points. File very lightly to avoid excessive loss of metal. Replace badly worn or damaged components.

f. Adjust air gap of voltage regulator and current regulator to .075 inch. Press down on armature and adjust air gap by means of the knurled nuts.

g. Adjust air gap of cutout relay to .020 inch. Press down on armature until points just close, then raise or lower armature as required by loosening two screws in back of relay. Tighten screws after adjustment. Adjust relay point opening to .020 inch by bending upper armature stop.

h. Voltage regulator setting - connect 1/4 ohm fixed resistor (not less than 25 watts) at "BAT" terminal of regulator in series with battery. Connect voltmeter from "BAT" terminal to ground. Operate engine at governed speed and operating temperature. Adjust voltage regulator closing voltage to 13.8 to 14.8 volts, by means of adjusting screw.

i. Current regulator setting - connect ammeter from "BAT" terminal in series with battery. Place load across battery about equal to current regulator setting (load may be a carbon pile or bank of lights). Operate engine at governed speed and normal operating temperature. Adjust current regulator setting between 18.5 and 21.5 amperes, with adjusting screw.

j. Cutout relay setting - connect voltmeter between "GEN" terminal and ground. Operate engine at governed speed and normal operating temperature. Adjust closing voltage to 11.8 to 12.3 volts, with adjusting screw.

4-79. REASSEMBLY. Reassemble in reverse order of disassembly.

4-80. WHEELS.

4-81. REMOVAL. (see figure 2-20.)

a. Jack up lift truck. Remove wheel center bolts (9) and remove drive wheel and tire assembly.

b. Remove wheel and tire assembly from steer axle hub (1).

4-82. DISASSEMBLY. (see figure 2-20.)

WARNING

DEFLATE TIRES BEFORE DISASSEMBLY OF FRONT OR REAR WHEELS.

a. Separate inner half (5) and outer half (6) of rear wheels.

b. Remove retainer ring (13A). This ring is used with single drive wheels only. Remove nuts from studs (12). Remove clamps (11).

c. Remove spacer. This spacer is used only on trucks with dual drive wheels.

4-83. REPAIR.

a. Discard damaged components.

4-84. REASSEMBLY. (see figure 2-20.) Reassemble in reverse order of disassembly.

a. Inflate rear tires to 90 pounds. Inflate front tires to 85 pounds.

4-85. STEERING AXLE (MV-30).

4-86. REMOVAL. (See figure 2-21.)

a. Jack up rear of lift truck. Disconnect rear section of drag link from steering knuckle (11).

b. Remove bolts from front and rear pivot bearings (8). Roll axle assembly out from under lift truck.

4-87. DISASSEMBLY. (See figure 2-21.)

a. Remove wheels and tires as explained in paragraph 4-81.

b. Remove bearings (3) and bushings (9) from shaft (10). Remove lock screw and remove shaft from axle (1).

c. Remove tie rod assembly (16, 17, 18, and 19).

d. Remove expansion plugs. Remove lock screw from spindles (3 and 4), and remove pins (5). Remove thrust bearings (6) and needle bearings (2).

e. Remove the slotted nut and lock pin (13) from pin (12). Remove bearing cups (15) and cones (14).

4-88. REPAIR. (See figure 2-21.) Replace any worn or damaged parts, especially bushings, bearings, and seals.

4-89. REASSEMBLY. (See figure 2-21.) Reassemble in reverse order of disassembly.

a. Apply Loc-Tite sealant, type "A", or equal to pin (12) before installing bearings.

b. Adjust pre-load on bearing (14) to 25 to 40 inch pounds, by means of slotted nut. Secure nut with cotter key through the nearest slot.

c. If the entire steering axle has been disassembled, the steering system must be reset. Place the rear wheels and steering housing in neutral (straight-ahead steering condition).

d. Close the hydraulic steering booster completely and then extend the rod 5 inches.

e. Adjust the rear section of drag link and the tie rods to fit without moving the steering housing from the straight-ahead position.

f. Adjust stop bolts (1, figure 1-21) to allow 71 degree angle of inside wheel with frame (inside wheel in relation to direction of turn). Adjust stops against arm for both directions. Secure stop bolts with the jam nuts.

g. Adjust stop bolts (1A, figure 2-21) on axle to 1/16 inch clearance from arm on spindle when steering arm (2, figure 1-21) is against stop bolt. Adjust stops for both directions. Secure stop bolts with jam nuts. The axle stops must not contact the spindle arm before the steering arm contacts its stops. The axle stops are designed to prevent damage to the system if the wheels deflect when they hit an obstruction.

h. Make any minor adjustments on tie rods or rear section of drag link as necessary.

4-90. STEERING AXLE (MY 80)

4-91 REMOVAL. (See figure 2-21A).

a. Jack up rear of lift truck.

b. Remove rear end of drag link from center steering arm (18).

c. Remove bolts from axle support shafts (41). Roll entire axle assembly away from lift truck.

4-92. DISASSEMBLY. (See figure 2-21A)

a. Remove wheels and tires as explained in paragraph 4-81.

b. Remove hub cap (39). Remove cotter key and spindle bearing nut (39). Pull hub assembly (37) from steering knuckle (7, 8).

c. Remove seal (20), cones (34 and 36), and cups (32 and 33) from hub.

d. Remove nuts (26) and remove tie rod assembly. Loosen tie rod clamp (29) and remove tie rod ends (23 and 24) from sleeve (27).

e. Remove draw key (12), drive out pin (14) and plugs (11). Remove bearings (3 and 9).

f. Remove grease cap (10) and nut (10). Pull steering arm assembly (15) off shaft (2). Remove cones (18), cups (30), seal (31), and cups (35).

4-93. REPAIR. (See figure 2-21A).

a. Replace any worn or damaged parts, especially bushings and bearings.

b. Replace seals (21 and 36).

c. Replace tie rod end covers (29) if they are damaged or deteriorated.

4-94. REASSEMBLY. (See figure 2-21A). Reassemble in reverse order of disassembly.

a. Draw up wheel bearings (34 and 35) with slotted nut (37) to approximately 50 foot-pounds torque. Back off the nut 1/4 turn, then secure with cotter key.

b. Adjust bearings (18) with nut (16) in the same manner as in 4-94a above.

c. Tighten bolts (3) as follows: Dry threads - 95 foot-pounds, oiled threads - 75 foot-pounds.

d. If the entire steering axle has been disassembled, the steering system must be reset. Place the rear wheels and steering arm (15) in neutral (straight-ahead steering condition).

e. Close the hydraulic steering booster completely and then extend the rod five inches.

f. Adjust the rear section of the drag link and the tie rods to fit in position without moving the steering arm or wheels from the straight-ahead position.

g. Adjust stop bolts (1, figure 1-21) to allow a 36 degree angle of inside wheel to frame (inside wheel in relation to direction of turn). Adjust stop bolts against arm for both directions. Secure stop bolts with jam nuts.

h. Adjust stop bolts (18) on axle to within 1/16 inch from pad on steering knuckle (7) when steering arm (2, figure 4-1) is against stop bolt. Adjust axle stop bolts for both directions, and secure with jam nuts. The axle stops must not contact the steering knuckle pad before the front steering arm contacts its stops. The axle stop bolts are placed to prevent damage to the steering system if the wheels deflect sharply when they hit an obstruction.

4-95. BRAKES, INCHING MECHANISM, AND MASTER CYLINDERS. (See figures 2-23 and 2-24.)

4-96. REMOVAL AND DISASSEMBLY. (See figure 2-23.)

a. Release parking brake, easing cable tension.

b. Remove wheel and drum (paragraph 4-91).

c. Unhook shoe return springs (9) from anchor pins (5). Spring pliers aid removal.

d. Loosen the shoes by depressing each spring clip (8) in turn, and rotating its guide pin (7) one-quarter turn.

e. Spread shoes (6) from cylinder push rods (25) and anchor pins (5), and lift out the shoes. Slip the parking brake cable end from the slot in the end of the lever and pin assembly (19).

f. Unhook star wheel retracting spring (10) to separate shoe and parts. Remove the lever and pin assembly (19) and the link and pin assembly (17) from the shoes by removing the clips (18) holding them to the shoes. Pull the anchor pins (5) from the brake spider (2).

g. Separate the brake line from the wheel cylinder (20) and remove the cylinder from the backing plate (1). Remove the rubber end boots (24) and push out internal parts.

h. See figure 2-24. Disconnect tubes (44 and 46) from master cylinders. Pull pins (18). Remove stop light wire from switch (56). Remove master cylinders and linkage.

i. Remove rod and boot assembly. Remove lock wire, stop plate, and piston assembly. Remove swivel connector (51) and push remaining parts out piston end of cylinder.

j. Remove the pedals, linkage, and other components as required.

4-97. REPAIR.

a. Discard tubing showing signs of leakage.

b. Discard worn brake linings, broken cables, and broken or weak springs.

c. Discard worn or blemished wheel cylinder or master cylinder parts.

d. Discard worn bushings or bearings or other faulty components of the linkage.

4-98. REASSEMBLY. (See figure 2-23.) Reassemble in reverse order of disassembly.

a. Using lubriplate or other brake lubricant, thinly coat the shoe pads on the backing plate, the anchor pins, and the star wheel threads. Also grease the parking brake cable and conduit, and lever and link fulcrum points.

b. Install anchor pins in the brake spider with the slots in the pins faced to engage the brake shoes.

c. Collapse the star wheel link, threading the screw into the nut. Back off 1/2 turn and make sure it turns freely.

d. Replace the shoes, first attaching the lever and pin (19), and link and pin (17) assemblies to the shoes. Install the guide clips, pins, and return springs in the most convenient manner to align shoes to anchors, push rod slots, star wheel slots, and to hook the parking brake cable into the slot of the lever (19).

e. Reassemble wheel cylinders in reverse order of disassembly. Dip internal parts in clean brake fluid to facilitate assembly. Install brake drums and wheels. Assemble master cylinders in reverse order of disassembly, with vent holes in boot at bottom. Fill master cylinders with approved brake fluid.

f. Bleed brakes and inching system as required. Brake bleed screws are located on the back of the backing plates. To bleed the inching system, depress the pedal and loosen plug (48, figure 2-24). Replenish the fluid in the master cylinders as necessary.

g. Jack up side of lift truck. Remove dust cover from star wheel access slot. Insert brake tool to engage star wheel teeth. To tighten brakes, use the slot edge as a fulcrum, and moving the tool handle toward the center of the brake, rotate the star wheel. Tighten until the brakes are locked solidly against the drum.

h. Back off the star wheel until the drum turns freely (8 to 10 notches). Replace dust cover.

i. Adjust clevis (24, figure 2-24) to obtain 3/4 inch free travel on the brake pedal.

j. See figure 2-24. Adjust clevis (17) until sleeve (28) is 1/32 inch from washer (30A), which is held against shoulder on rod (29) by spring (30). This 1/32 inch free

play is very important. It allows for expansion of the hydraulic fluid in the lines, thus permitting the plunger in the inching cylinder to return to a fully unloaded position when the inching pedal is released.

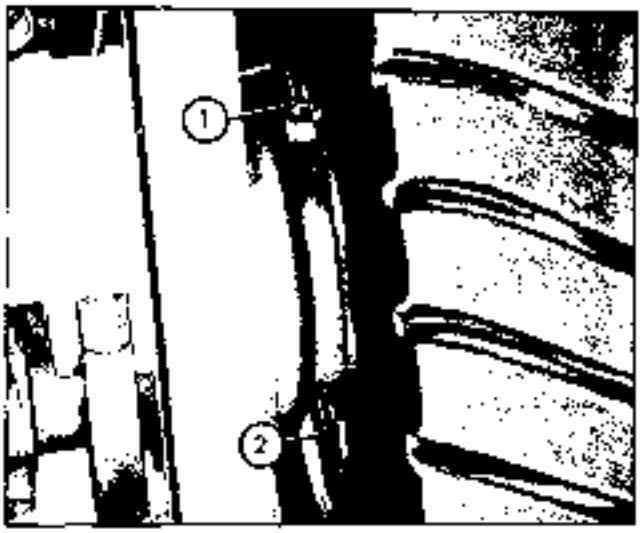


Fig. 3-23. Brake Adjustment Location

1. Bleeder
2. Access slot

4-99. DRIVE AXLE AND DIFFERENTIAL.

4-100. REMOVAL.

a. Block up front end of lift truck. Support transmission case.

b. Remove drive wheels and brake assemblies.

c. Remove mounting bolts which hold differential to transmission.

d. Remove bolts from support clamp (7, figure 3-28.)

4-101. DISASSEMBLY. (see figure 2-22.)

a. Remove the bolts holding the wheel shaft housings (8).

b. Remove lock nut (12), and washer (13), from wheel shaft (10).

c. Remove gear (11), and wheel shaft (10).

d. Remove cones (14 and 16), cups (15 and 17), oil seal (18), and sleeve (19).

e. Remove bearing retainer (7). Using puller, pull axle (4) out of assembly.

f. Remove drive axle housing (1).

g. Cages (22 and 22A) and the ring gear (27) are assembled and line reamed. For this reason it is necessary that they be marked before disassembly, so they can be reassembled in their original positions. Remove the nuts from cage bolts (23). Disassemble ring gear (27) and cages (22 and 22A), bevel gears (28), and pinion (30) and shaft (32) assemblies. Remove from differential case.

h. Remove pinions and bushings (31) from shaft.

4-102. REPAIR. (see figure 2-22.)

a. Discard gears that show excessive wear or have broken teeth. The ring gear and pinion (27) must be replaced as a matched set only.

b. Discard oil seals and gaskets showing signs of leakage. Discard worn or damaged bearings and bushings.

4-103. REASSEMBLY. (see figure 2-22.) Reassemble in reverse order of disassembly.

a. Clean all parts in an approved solvent.

b. Replace all gaskets and "O" rings.

c. Torque bolts (23) to 75-85 foot pounds.

d. Add sufficient shims (2) to obtain 15 to 25 inch pounds preload on bearings (24).

e. When differential is attached to transmission, move shims (2) from one side to the other, as necessary, to obtain .006 to .012 inch backlash between ring gear and transmission pinion shaft (27).

f. Add shims (7A) to obtain 10 to 15 inch pounds preload on bearings (5A).

g. Adjust lock nut (12) to obtain 30 to 40 inch pounds pre-load on bearings (14 and 16).

4-104. CONTROL LEVERS, CONTROL VALVE, AND OIL FILTER.

4-105. REMOVAL. (see figure 2-20).

a. Remove control levers and shafts as explained in paragraph 4-87.

b. Remove links (48).

c. Disconnect valve body (3) and porting block (1) from transmission case.

e. Remove priority valve (items 12 thru 16, figure 2-19) and relief valve (items 3 thru 6, figure 2-19), and components.

f. Remove oil filter assembly (49).

4-106. DISASSEMBLY. (See figure 2-20).

a. Remove cover bolt (57) from oil filter cover (54)

and remove cartridge (52) and parts from oil filter body (50).

b. Remove valve body (3) from porting block (1). Items (6) and (8) can now be removed.

c. Remove locking cylinder (23) from valve body (3).

d. Remove snap ring (32). Remove internal parts from locking cylinder.

e. Remove snap ring (12) and remove locking spool (18) and components.

f. Remove snap ring (12) and remove pressure regulator spool (13) and components.

g. Remove snap ring (12) and remove both control lever spools (5) and components.

h. Remove snap ring (12), blow through elbow (87) to remove plug (11). Remove relief valve (15) and components.

i. Remove remaining components.

4-107. REPAIR.

a. Discard "O" rings, oil seals, and gaskets which show signs of leakage.

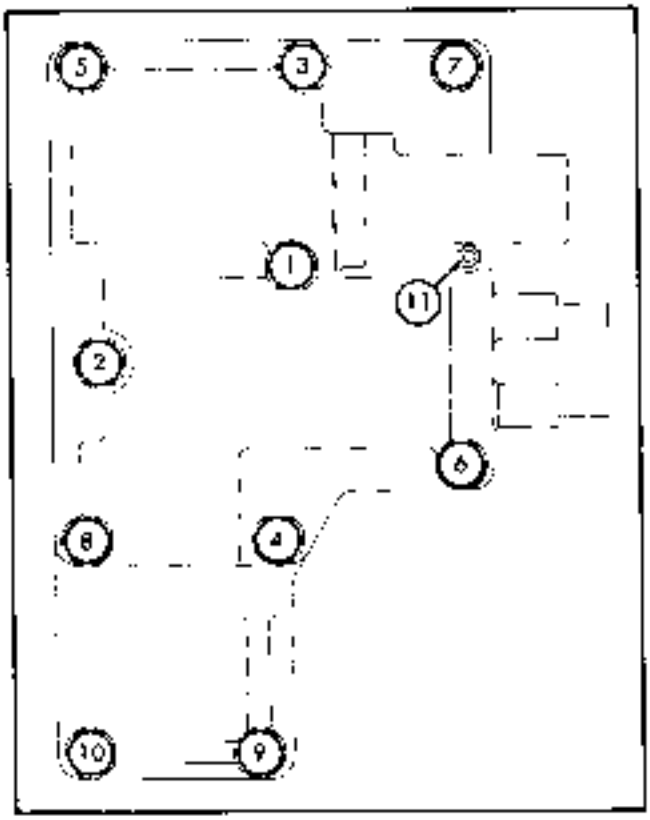


Fig. 1-24. Torque Sequence

b. Discard damaged hose and tubing.

c. Discard broken or weak springs.

d. Discard marred or blemished valve spools. If the polished surfaces inside the valve body are marred, discard the entire assembly.

e. Clean all parts thoroughly in solvent.

4-108. REASSEMBLY. (See figure 3-20). Reassemble in the reverse order of disassembly.

a. Screw elbow (87) with "O" ring (68) into valve body before attaching body to porting block.

b. Install control spools (5) in body. Then slip oil seals (9) over spool; do not push spools through seals. Place lip end of inner seal in; lip end of outer seal out.

c. Torque mounting bolts (1, through 10, figure 3-24) to 30 foot pounds in the order shown. Then torque the bolts to 60 foot pounds in same order.

d. Torque socket head bolt (11, figure 1-24) to 15 foot pounds.

e. Replace oil filter cartridge (52).

f. Adjust rods (2, figure 1-23) for desired lever position.

g. Place control levers in high range and reverse positions respectively. Adjust stop bolts (1, figure 1-25) to prevent spools being forced past detent position.

Fig. 1-25. Converter Linkage

1. Stop bolts
2. Rods

4-109. TRANSMISSION CASE, CONVERTER, AND PUMP.

4-110. REMOVAL. (See figure 2-13).

a. Remove differential assembly as described in 4-95 above.

b. Remove control valve, priority valve, and relief valve from side of transmission case (paragraph 4-100).

c. Remove bolts holding converter drive plate to engine flywheel. Turn engine over to remove each bolt in turn, through opening and notch. See figure 1-26.

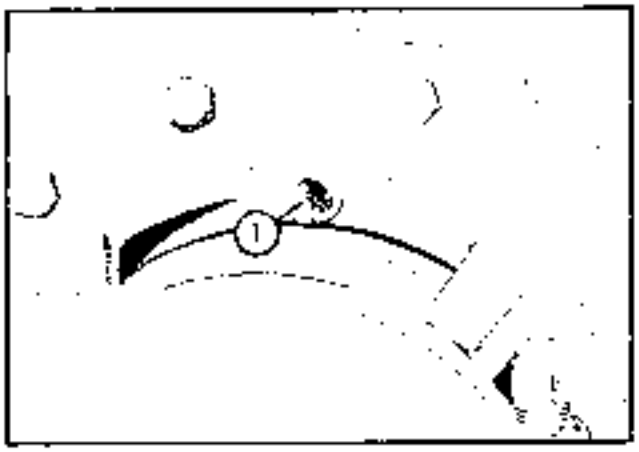


Fig. 1-26. Converter Mounting Bolt

1. Bolt lined up with notch

4-111. DISASSEMBLY. (See figure 2-18).

a. Remove dipstick (10) and dipstick sleeve (11).

b. Remove drive plate (35), converter (36), and bell housing (32).

c. Remove pump (34) front cover (17).

d. Remove filter mounting flange (26), gasket (27), and filter (28 and 29).

e. Unscrew attaching parts and remove manifold (22) from cover (17).

f. Remove reverse idler gears cover (30) from side of case.

g. Remove nuts (37, figure 2-18), and washer (36, figure 2-18) from pinion shaft (2, figure 2-19) and remove cover (17). Support the shaft to prevent damage while the cover is being removed.

4-112. REPAIR. (See figure 2-18).

a. Discard all gaskets and "O" rings.

b. Discard gears with broken teeth and those that show excessive wear.

c. Discard defective converter and pump.

d. Clean filter screen (29).

4-113. REASSEMBLY. (See figure 2-18). Reassemble in the reverse order of disassembly.

a. Install all new gaskets and seals.

b. Align gears and spline shafts per paragraph 4-113.

c. Install between engine and differential. Adjust backlash per paragraph 4-103 c.

4-114. TRANSMISSION AND REVERSE IDLER SHAFT.

4-115. REMOVAL. (See figure 2-19). Removal is accomplished with the disassembly procedures of the transmission case, converter, and pump (paragraph 4-110).

4-116. DISASSEMBLY. (See figure 2-19).

a. Remove cullentor ring ball bearing (24) and "O" ring. Remove retainer ring (25D) and piston retainer from input shaft (1). Remove piston rings, input shaft ball bearings, carrier to bearing thrust washers, input shaft carrier assemblies, plate housing thrust washers, and quad washers. Remove spring retainer snap rings, spring retainers, piston springs, and oil seal rings. Remove backup rings, retaining rings, friction plates, backing plates, input shaft housing pistons and balls, and piston rings.

b. Remove components from output piston shaft (2) in same order as on input shaft, remove reverse gear (39) and idler shaft (44) with bearings and components.

4-117. REPAIR.

a. Clean all parts in solvent and inspect for damage and excessive wear. Interchange all defective parts with new replacement parts.

4-118. REASSEMBLY. (See figure 2-19). Reassembly is accomplished in reverse order of disassembly. The housings (4) are stamped with an "I", for input (upper), and an "O", for output (lower). Be sure to reinstall the pistons and other components in the housings from which they were removed. Wipe each part with a clean, oil-soaked cloth.

a. Reassemble pistons and components on shafts and into housings in proper sequence. Install pistons (6 and 7) in each housing with oil relief holes 180° apart for proper balance. A spot of grease will hold balls (5) in place during reassembly of piston to housings.

b. Reassemble carrier assemblies and components to shafts. IT IS VERY IMPORTANT THAT THE OIL HOLES IN THE INNER HUB OF THE HOUSING ARE ALIGNED WITH THE SERIES OF FOUR SMALL IN LINE OIL HOLES IN THE SHAFTS. MARK THESE PARTS AS NECESSARY TO ASSURE PROPER ASSEMBLY AND SUBSEQUENTLY PROPER OPERATION. Coat quad rings (3A) with Lubriplate to protect them during assembly. Stake retainer (25C) to groove in shaft. Seat all lock and retaining

rings properly. Use new oil seals and "O" rings. Fit parts properly: avoid scratching or burring finishes.

c. Do not use Permatex on any gaskets.

d. Adjust taper roller bearings on pinion shaft to 10-15 inch pounds max rolling torque pre-load.

e. Torque bolts as follows: 5/16 inch, 20 foot pounds; 3/8 inch, 40 foot pounds, 7/2 inch, 60 foot pounds, and all 5/8 inch bolts to 150 to 160 foot pounds.

f. Torque converter must turn freely with transmission bolted to crankcase, but before bolting the drive plate to the flywheel.

g. End play of clutch pack on the input and output shafts is to be 0.012 to 0.024 inch between bearings.

h. End play on the idler shaft is to be 0.006 inch minimum.

i. After assembly is complete, check converter charging pressure by installing a gage in opening of plug (2, figure 1-27).

j. Check HIGH and LOW shifting charging pressure at points of plugs (1, figure 1-27). Gage should read 95 to 105 PSI.

k. Check FORWARD and REVERSE shifting charging pressure at plugs (4, figure 1-27). Pressure should be 95 to 105 PSI.

l. Check pump charging pressure at plug hole (3, figure 1-27) on top of transmission. Reading is to be 130 to 140 PSI.

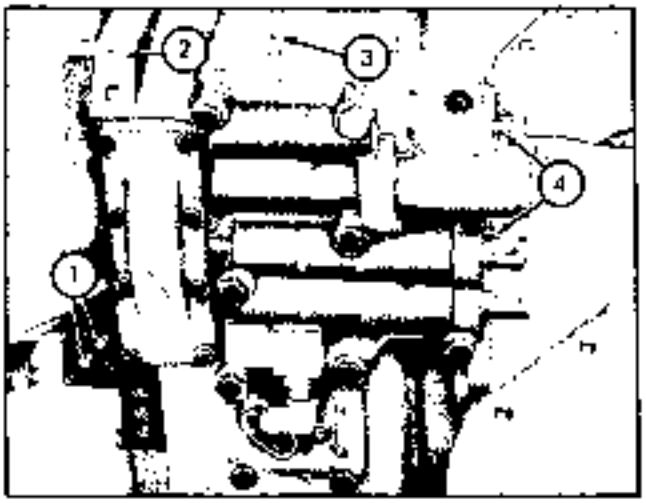


Fig. 1-27. Pressure Testing Ports

1. HIGH and LOW check ports
2. Converter charging check port
3. Pump charging check port
4. FORWARD and REVERSE check ports

m. Pressures given above cannot be regulated. If gage readings do not fall in specified range, remove and clean valve and related parts, and reinstall. If readings still are not correct, install new components.

4-119. FUEL PUMP AND FUEL FILTER.

4-120. REMOVAL. (See figure 2-6).

a. Disconnect fuel lines from pump and fuel filter.

b. Remove the 2 capscrews that secure the pump to the engine side cover.

4-121. DISASSEMBLY. (See figure 2-6).

a. Loosen the bail nut (16), swing the bail to one side, and withdraw the bowl (18).

b. With retainers (8) removed, tap out arm pin (7). Pull clip (22), press out pin (21), and withdraw link (20).

c. Remove cover and lift out remaining components with the body.

4-122. REPAIR. Repair of the fuel pump is limited to discarding damaged, bent, or ruptured (diaphragm) parts. Wash all parts in solvent and blow dry with compressed air. Check the spring for quick return action, when compressed and released.

4-123. REASSEMBLY. (See figure 2-6). Reassemble the fuel pump and filter in essentially the same order as disassembly, except that care must be taken not to damage or distort the diaphragm by not aligning the cover holes properly. Using a new gasket (23), secure the assembly to the engine, and connect the fuel lines.

4-124. CARBURETOR, (GASOLINE).

4-125. REMOVAL. (See figure 2-7).

a. Loosen screw (39), remove clip (38), and pull the choke control cable out of the swivel (38).

b. Remove the air intake hose and the fuel line. Remove the two capscrews that secure the carburetor to the manifold casting.

4-126. DISASSEMBLY. (See figure 2-7).

a. Disassembly of the carburetor is complete upon removal of all attaching parts of each component. The following steps outline the various troubles and which components cause them.

b. Some factors other than faulty operation of the carburetor that could contribute to improper operation of the engine are as follows: faulty ignition system, incorrect timing, air cleaner abnormally restricted, or air leaks. Check for and correct any of these conditions that may exist.

c. If the engine is not idling properly, check the gas-

ket between the manifold and cylinder head and also the gasket between the carburetor and manifold. Air leaks at these points will cause erratic idling.

c. The principal parts subject to wear in the carburetor are the throttle shaft (2), the float valve and seat (15).

d. Wear of the throttle shaft results in more air entering the carburetor than is necessary. This condition results in too lean a gas mixture when the engine is idling. To compensate for the increased air supply, it is usually necessary to enrich the idle gas mixture, this in turn, affects fuel economy. In addition, this excess air is unfiltered and could cause serious damage to the engine.

f. Excessive wear of the float valve and seat will result in too high a fuel level in the carburetor bowl. This high fuel level causes excessive fuel consumption, crankcase dilution, and difficulty in maintaining satisfactory adjustment of the carburetor.

g. If the fuel level is too low, the engine will not respond quickly, and it will be very difficult to maintain a satisfactory carburetor adjustment. A sticking float valve or float arm could cause a low fuel level.

4-127. REPAIR. (See figure 2-7).

a. Inspect all parts taken from the carburetor. Replace any damaged or excessively worn parts. Discard all gaskets, the choke-shaft packing, and the throttle-shaft seal.

b. Using a cleaning solution, thoroughly clean the throttle body (1), the carburetor bowl (10), and all parts being used again.

4-128. REASSEMBLY. (See figure 2-7).

a. Assemble the carburetor in the numerical sequence as shown, with the following exception:

b. The float (12) controls the fuel level in the carburetor bowl. Turn the throttle body (1) upside down, and measure the distance between the float and the milled surface of the throttle body. This distance should be 5/16 inch. If necessary, bend the float arm in either direction to obtain the correct dimension.

c. Secure carburetor to exhaust manifold and make hose, tube, and cable connections.

4-129. LP-GAS EQUIPMENT.

4-130. REMOVAL. (See figure 2-10).

a. Close fuel valve on tank.

b. Disconnect all hoses, wires, and linkage and remove the carburetor and vaporizer from the engine.

4-131. DISASSEMBLY AND REPAIR (CARBURETOR).

a. Remove main cover and diaphragm, clean thoroughly with solvent, blow dry with air hose, inspect for damage or wear. Clean inside carburetor, using small brush for orifice. Check for air leaks around outer edge of diaphragm, carburetor to manifold gasket, and vacuum pick-up openings in flange.

b. To replace diaphragm only, cut off diaphragm to remove from assembly. Carefully stretch new diaphragm over one back-up plate; the diaphragm should float freely between the two plates.

4-132. DISASSEMBLY AND REPAIR (VAPORIZER).

a. Remove cover assembly. Check "power rich" operation by sucking on vacuum line connecting port. Turn and remove main vaporizer diaphragm assembly. Check seal in diaphragm stem. Clean or replace liquid seal pad. Clean chamber thoroughly. Remove lever assembly, check seat (there is a spare seat on the lever arm), check for bent lever or wear at the connecting slot. When replacing vaporizer seat, it is recommended to replace complete lever arm assembly.

4-133. REASSEMBLY.

a. Reassemble in reverse order of disassembly.

b. When installing diaphragm assembly in carburetor, be sure to allow sufficient slack in diaphragm so the fuel and air valve can move freely. Use guide pins if possible.

c. In vaporizer, to reconnect diaphragm assembly to lever with liquid seal pad and cover installed, insert screw driver to hold seat in closed position, place diaphragm tab at 90°, rotate to position, check for connection.

4-134. OIL PUMP.

4-135. REMOVAL (See figure 2-13). To remove the oil pump, first drain the crankcase oil. Remove the four stud nuts and the cap screw which secure the oil pump body (1) to the crankcase, and then remove the oil pump.

4-136. DISASSEMBLY. (See figure 2-13).

a. Remove the gear (14) on the drive shaft, and the Woodruff keys.

b. Before removing the drive shaft for the oil pump, it will be necessary to remove the distributor. The drive shaft for the oil pump affects the engine timing. Turn the engine over until the No. 1 piston is at the top dead center of its compression stroke and the rotor is pointing toward the post for the No. 1 cylinder.

c. Mark the position of the distributor rotor and the distributor body. Notice that the slot in the distributor drive coupling is off-center.

d. To remove the drive shaft for the oil pump, loosen the lock nut, and back out the setscrew. Remove the oil pump drive shaft.

e. Check the condition of the bushings (17) for the oil pump drive shaft. Use a screw-type extractor to remove these bushings if they are damaged. Press the lower bushing in the crankcase until it is flush with the bottom of the crankcase. The upper bushing should be flush with the top of the bushing hole. These bushings are line-bored. The correct inside diameter of these bushings after they are line-bored is 0.625 to 0.626 inch.

f. To replace the grooved bushing (18), drive out the coupling roll pin, and slip both parts off the shaft.

g. Remove the check valve and the pressure regulator screw (8).

4-137. REPAIR. (See figure 2-18).

a. Check the condition of the drive shaft (13), the coupling for the drive shaft, the grooved bushing, and the pinion (14). Replace any excessively worn or damaged parts.

b. If any of the springs are broken or have taken a "set", install new ones.

c. Check the condition of the oil pump gears. Replace them if they are chipped, cracked, or worn excessively.

4-138. REASSEMBLY. (See figure 2-18).

a. Insert the oil pump drive shaft assembly in the crankcase. Make certain the slot in the coupling and the largest section of the coupling on the distributor are in alignment. After installing the oil pump drive shaft, turn the setscrew all the way in and secure the lock nut.

b. Install the Woodruff keys on the oil pump drive shaft, and reinstall the oil pump drive gear on the shaft.

c. Assemble the remaining components observing the following steps.

d. There must be 0.002 to 0.004-inch clearance between the end of the oil pump drive gear and the oil pump housing. To obtain this clearance, add or remove gaskets (20), between the bottom of the crankcase and the top of the oil pump housing. Insert a piece of Plastigage in the pump housing directly beneath the oil pump drive gear. Re-install the pump, and securely tighten the cap screw and four stud nuts. Remove the pump, and check the flattened Plastigage strip, using the scale printed on the Plastigage envelope. Add or remove gaskets as necessary to obtain the 0.002 to 0.004-inch clearance.

NOTE: When using Plastigage, make certain that all the oil is off the pump body and gears. This is necessary as Plastigage will dissolve in oil.

e. When reassembling, be sure to align the coupling on the distributor and on the oil pump drive shaft. If the engine was not turned over while the drive shaft was removed, the parts can be installed in their original position and the engine timing will be correct. However, be sure to check the timing, after reassembling, using a neon timing light.

4-139. ENGINE

4-140. REMOVAL. Many of the overhaul procedures described below can be accomplished without removing the engine from the vehicle. For any major overhaul, however, such as replacing the camshaft or crankshaft, the engine must be removed. Remove the overhead guard. Remove the engine hood sections. Disconnect all wiring, tubing, hoses, linkages, etc., that are connected from the engine to the frame or other components. Remove the radiator as described in paragraph 4-42. Remove the battery and box. Remove the bolts from the engine mount (6, figure 2-28) and the bolts from the torque converter drive plate (see figure 1-26) and converter housing. When all parts are free, move the engine directly to the rear and raise the engine completely up and out. Lower the engine onto a simtaicle support, using wood blocks to avoid damage to the assembly.

4-141. DISASSEMBLY AND REPAIR.

a. Remove the cylinder head cover (18, figure 2-2), and the adapter (16). Remove the side cover (37, figure 2-1) as an assembly.

b. Disconnect the rocker arm oil line and the rocker arm assembly.

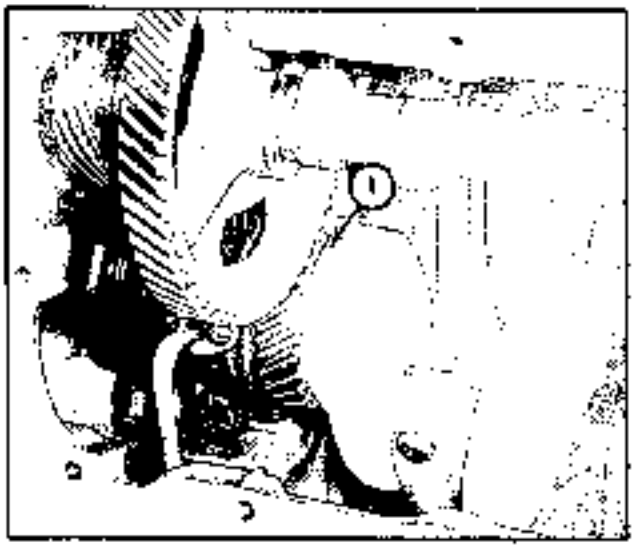


Fig. 1-28. Gear Timing Marks

1. Timing marks

c. Remove all cylinder head stud nuts. Withdraw push rods (28, figure 2-3), and remove the heads.

d. To replace the camshaft, first turn the engine over until the timing mark on the crankshaft throw lines up with the mark on the camshaft gear. See figure 1-28.

e. Remove the cap screws from the camshaft bearing caps (figure 1-29). Remove the screws holding the oil lines to the crankshaft bearing caps. The center and the front bearing caps are not interchangeable. Before removing the center and the front bearing caps, be sure they are marked with a center punch. Remove the bearing caps, and keep them in their original order. Remove the camshaft. Keep the tappets in their original order.

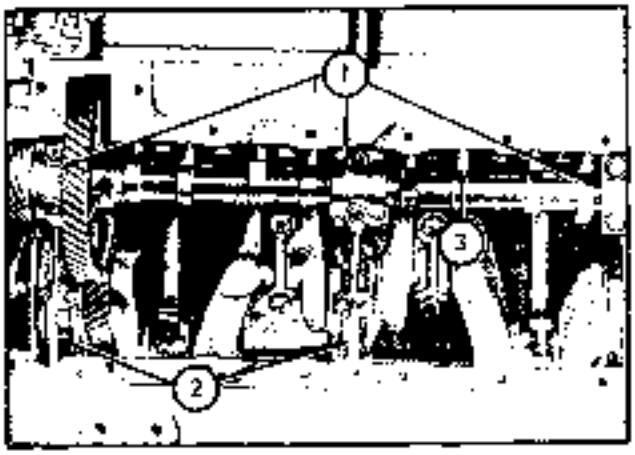


Fig. 1-29. Bearing Caps

1. Camshaft bearing caps
2. Oil lines
3. Tappet

f. To service the pistons, rings, piston pins, or connecting rods, it is not necessary to remove the engine from its mounting base.

g. Remove the heads and side cover as explained previously. Disconnect the rods. If the cylinder has a ridge around the top, remove the ridge with a reamer BEFORE attempting to push out the piston. Failure to remove this ridge before removing the piston will invariably result in damage to the piston ring lands. Exercise extreme care when using the ridge reamer. It is possible to cut so deeply into the cylinder wall or to ream out the metal so far down in the cylinder that it will ruin the cylinder, or it will be necessary to rebore the cylinders.

h. After removing the ridge, bring each piston to the top of its stroke and wipe the reamer cuttings from the top of the piston. Be very careful not to allow cuttings to drop into the valve lifter opening or into the crankcase. After removing the pistons from the cylinder, place them in a rack to keep them in order and to prevent damaging the rod or piston.

i. Soak the pistons in a suitable liquid cleaning solution. After thoroughly soaking the pistons, clean all the carbon from the top of the piston with a suitable scraper. Clean the carbon from the ring grooves with a ring groove cleaner or a broken section of a ring. If using a broken ring, file one end of it to a sharp, square edge. Clean metal should be evident over the entire area of the ring groove. Use care to avoid removing metal from the bottom of the ring groove. Carefully clean the oil return holes in the oil ring groove, using a drill of the proper size held in a tap wrench. Never use a steel buffing brush to clean the ring lands or skirt of a piston. After thoroughly cleaning the pistons, carefully examine each piston. Be sure there are no cracks in the head or skirt of any of the pistons, and check the rings lands to be sure they are not bent or broken. Replace the piston if any of these defects are found.

j. Check the ring grooves for wear, using new rings. The top rings should have a clearance of 0.002 to 0.004 inch between the ring and ring groove on the piston. An additional 0.001 inch allowable for worn pistons. The second ring should have a clearance of 0.0015 to 0.0035 inch with an additional 0.0015-inch clearance allowable for worn pistons. The third and fourth rings (single groove) should have a clearance of 0.0005 to 0.0025 inch.

k. Check the cylinder bore with an inside micrometer to determine if the bore is out-of-round, tapered, scored, or worn excessively. The factory limit for a standard cylinder bore is 3.7522 to 3.7516 inches. Rebore or replace the cylinder blocks if the wear, taper, or out-of-round exceeds 0.008 inch.

l. Pistons are available in 0.020-inch and 0.040-inch oversizes to correspond with the cylinder bore. The bore dimension limits for 0.020-inch oversize pistons are 3.7722 to 3.7716 inches. The bore dimension limits for 0.040-inch oversize pistons are 3.7922 to 3.7918 inches.

m. De-glaze the cylinder walls when servicing the rings and pistons. This will enable the rings to mate or seat more quickly and will control the oil better. However, be sure to thoroughly clean the cylinders after de-glazing them. Any abrasive material left in the engine after reassembling will cause rapid wearing of the rings, cylinder walls, and the bearing surfaces of all parts lubricated by the crankcase oil. Use a good, 280-grit, spring-loaded surface hone when de-glazing the cylinder walls. We recommend the following procedures to obtain a satisfactory de-glazing job. First remove any hard carbon deposits that might be present within the cylinders, then wipe the cylinder out with a clean cloth. With the piston and rod assemblies out of the engine, carefully pack a clean, dry rag or a paper dampened with water at the bottom of the cylinders. This prevents abrasives and dirt from getting into the crankshaft or into the crankcase. Dip a clean cotton spring mop in clean No. 10 motor oil, and swab the cylinder walls. Run the surface hone in each cylinder making 10 to 12 complete strokes. Move the hone up and down in each cylinder rapidly enough to ob-

tain a pattern with the cross-hatching intersecting at about 60°. Clean the loose abrasives from the hone with a clean cloth before using the hone in the next cylinder. Repeat the de-glazing procedure in each cylinder. After honing, wipe as much as possible of the abrasive deposits from the cylinder walls. Swab each cylinder with clean No. 10 oil. Carefully wipe each cylinder with a clean cloth. One swabbing-wiping operation is not sufficient. Continue the swabbing-wiping operation until a clean, white cotton cloth remains absolutely unsoiled when rubbing it on the cylinder wall.

NOTE

Do not use gasoline or kerosene to clean the cylinders after de-glazing them. Solvents of this nature will not remove the grit from the walls.

n. The recommended clearance between the cylinder walls and the skirt of pistons is 0.003 inch. To check this clearance, place a long 0.003-inch feeler strip 1/2-inch wide between the side of the piston and the cylinder wall, in line with the pin. The piston should enter the bore with this feeler in place, but should not do so when using a 0.004-inch feeler strip.

o. Carefully check the rods to make certain they are straight. A bent rod is likely to make the piston operate so the ring faces are not parallel to the surface of the cylinder wall; a bent rod will also cause premature bearing failure. Accurate alignment of connecting rods is necessary for correct ring and bearing operation. To check the rod for twist or parallelism, place it in a fixture. Using an aligning tool, make any adjustments necessary. Install a new rod if the old rod cannot be properly aligned.

p. Always check the end gap of each ring in the cylinder. Insert the ring in the bore, and push the ring down with the top of the piston. This squares the ring in relation to the cylinder bore. Push the rings down to the bottom section of the cylinder just below the normal travel distance of the rings. When checking the end gap of new rings in a new cylinder, the rings should have an end gap of 0.010 to 0.020 inch. The end gap of the rings may vary somewhat from these clearances, depending upon the amount of cylinder wear.

q. While disassembling, be sure to mark any parts being used again. During the original time the engine was run, each engine part works into its mating part and becomes especially suited for its own particular position in the engine. In addition to normal engine wear, other factors contribute to bearing failure. Therefore, during disassembly of an engine and before reassembling it, try to determine, analyze, and correct the original cause of bearing failure. It is just as important to correct the cause of bearing failure as it is to replace the worn bearings. Some other factors which could cause bearing failure in addition to normal wear are as follows: dirt, misalignment (including rods and caps), incorrect assembly, lubrication failure, out-of-round bearing surfaces, fatigue, corrosion, and incorrect methods of engine operation (including overloading). Check for, and correct any of these causes which could have contributed to bearing failure before reassembling the engine.

r. It is extremely important to check the crankshaft for scored rod-bearing journals or main-bearing journals. If the journals show evidence of scoring, it will be necessary to replace the crankshaft. Using a micrometer, measure each rod-bearing journal and each main-bearing journal at various places around the journal to be sure it is not tapered or out-of-round. If the taper or out-of-round of any journal exceeds 0.003 inch, replace the crankshaft.

NOTE

When re-using a crankshaft which has slightly tapered or out-of-round journals (less than 0.003 inch), be sure to fit the bearing to the maximum diameter of the journal. If the bearing is fitted to the minimum diameter of a slightly out-of-round or tapered journal, interference between the bearing and journal will result in rapid bearing failure.

s. Remove the flywheel (19, figure 2-4). Remove the rear oil-seal retainer, and the pilot-bearing retainer. Remove the bolts which secure the rear main-bearing housing to the crankcase. Remove the front main-bearing cap and the center main-bearing cap. Notice that the center main-bearing cap and the front main-bearing cap have different identification marks and are not interchangeable. Using a bearing removal plug, roll the inner inserts out of the crankcase (lip end of insert first). Turn the crankshaft so the number 2 and the number 3 rod journals are to the outside. If the rod and piston assemblies are in the engine, push them up out of the way. Using a lead hammer, or a wood block and a hammer, drive the crankshaft toward the rear of the engine until the rear bearing housing is out of the crankcase. Use extreme care to prevent damaging any of the rods or crankshaft journals while removing the crankshaft.

t. Remove one of the long dowel pins from the end of the crankshaft. Remove the top half of the rear main bearing, and remove the insert from the lower section. Position the rear-bearing housing in relation to the dowel pin. Notice that the open section of the bearing housing is opposite the remaining long dowel pin. Move the open section of the housing out and over the end of the crankshaft.

u. Remove the crankshaft (1, figure 2-4) from the crankcase through the side cover opening in the crankcase. Remove and clean the oil strainer. Clean out all the oil passageways and the oil tubes in the crankcase.

4-142. REASSEMBLY.

a. When reassembling, do not install the rear main-bearing inserts until the crankshaft is in the crankcase and rear main-bearing housing is on the shaft. Install

new gaskets between the bearing housing and crankcase. Figure 1-30 shows the correct position of the bearing inserts in the cap and housing. Be sure to install the bearing cap so the locking lugs on the inserts are on the same side.

h. After cleaning the surface of the shaft and bearings, apply a liberal amount of S.A.E. 90 oil to the surface of both inserts. Install the bearing cap. Torque the bearing cap bolts evenly and gradually to 60 to 65 foot pounds.

i. Check the crankshaft end clearance. There must be 0.002 to 0.052-inch end play between the crankshaft thrust shoulder and the flange on the rear main-bearing insert. Make certain the fitting in the rear main-bearing housing is in line with the oil tube. Drive the crankshaft and rear main-bearing housing all the way forward into the crankcase. Using a bearing removal plug, turn the crankshaft and roll the center main-bearing insert and the front main-bearing insert in place in the crankcase. The smooth or plain end of the insert should enter the bearing seat first.

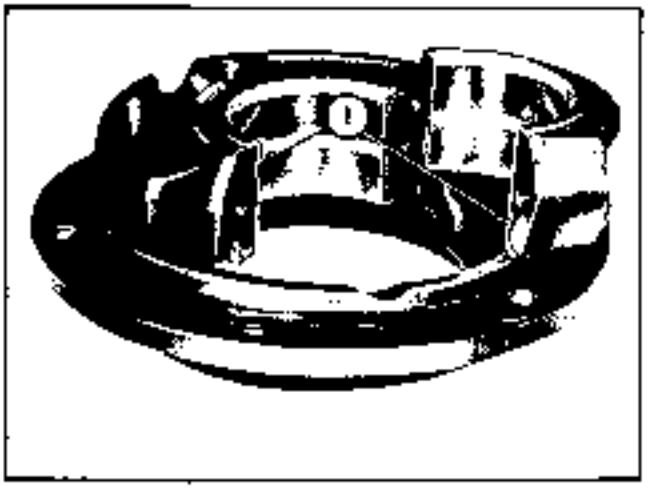


Fig. 1-30. Bearing Locking Lugs

1. Locking lugs

j. Before installing the center main or the front main-bearing cap, tighten the bolts in the rear bearing housing in the correct sequence and to the proper torque. Tighten these bolts a little at a time and in a crisscross manner until reaching the full torque value. Correct torque of these bolts is 55 to 60 foot-pounds. The proper torquing (figure 1-31) of this housing is very important as it will affect the alignment of the crankshaft. An incorrectly aligned crankshaft will cause premature bearing failure. Install a new dowel pin in the crankshaft.

k. Install new gaskets and seals when reassembling the engine. Install a new rear oil seal in the retainer. Use a new gasket between the retainer and the rear main-bearing housing when reinstalling the bearing caps. Torque the front and center main bearing cap bolts evenly and gradually to 90 to 100 foot pounds.

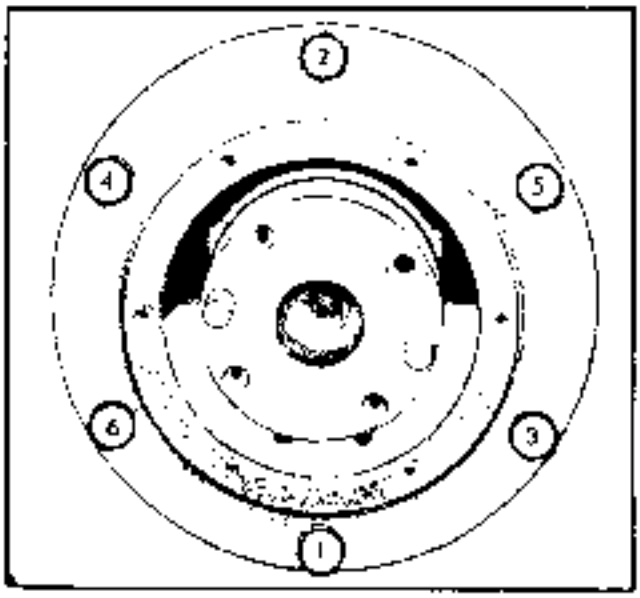


Fig. 1-31. Torquing Sequence

l. Before installing the front oil seal for the crankshaft, check the condition of the seal. Install a new seal in the cover if the old seal appears damaged or worn excessively. Use a new gasket between the cover and crankcase. Reinstall the oil seal cover, the key, the crankshaft pulley, the washer and cap screw, and the fan belt.

m. Before reinstalling the flywheel (29, figure 3-4), make certain the pilot-bearing retainer is in place on the end of the crankshaft. Turn the crankshaft so the number 1 cylinder and number 4 cylinder crankshaft journals are straight up. The DC-1 mark (figure 1-32) should be in line with the opening in the side of the crankcase.

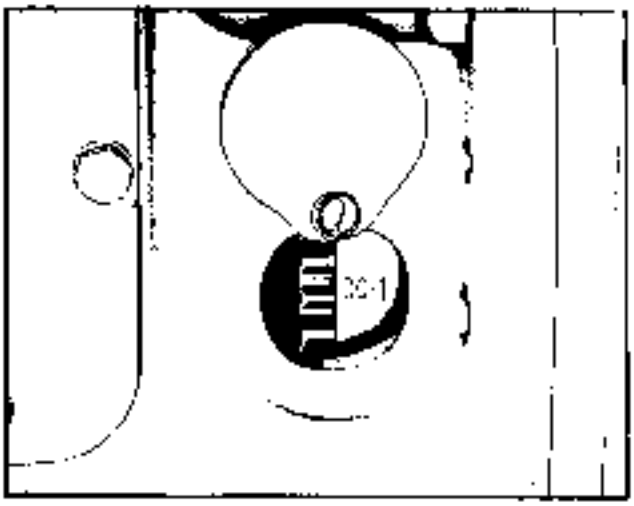


Fig. 1-32. Flywheel Timing Mark

n. Reinstall the tappets, camshaft, and remainder of the valve train assembly (figure 2-3). Make certain to align the timing mark on the camshaft gear with the timing mark on the crankshaft throw.

i. Check the amount of crankshaft end play. With a small pry bar, move the shaft toward the rear of the engine. Using a feeler gage, check the amount of clearance between the thrust surface of the crankshaft and the thrust surface of the bearing. The correct crankshaft end clearance is 0.002 to 0.008 inch.

j. Before installing the oil pump drive shaft, make certain that the TDC-1 mark on the flywheel is centered in the timing opening (figure 2-32), and that the number one piston is at the top dead center of its compression stroke.

k. Make certain the surfaces of the crankcase and blocks are absolutely clean before reinstalling the block. Use new gaskets when reinstalling the blocks. Tighten the block mounting bolts to 75 to 80 foot-pounds. After reassembling, be sure to correctly torque the heads and adjust the valves as explained below.

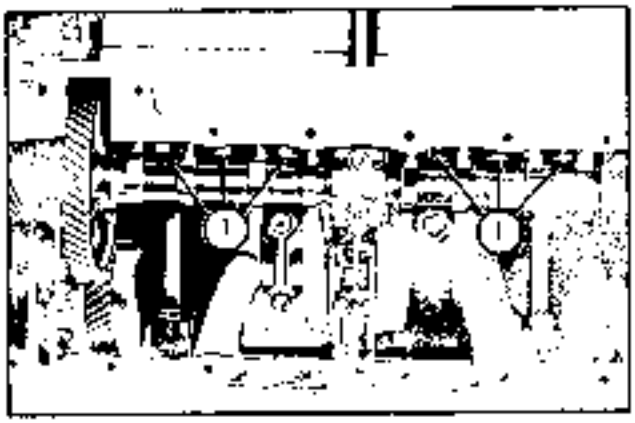


Fig. 1-33. Block Mounting Bolts

1. Mounting bolts

l. Always use new gaskets when reinstalling the heads. The copper-sheet side of the gasket should be toward the top of the engine. When tightening the head nuts, tighten the nuts at 25 foot-pounds intervals and in the sequence shown in figure 1-34. Tightening the nuts in this manner smooths out the gasket and squares the head on the block. The correct torque of the head nuts is 70 to 75 foot-pounds.

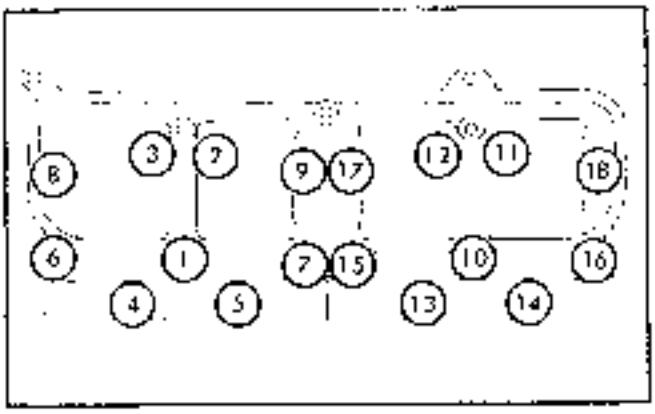


Fig. 1-34. Head Torque Sequence

m. Adjust valves as follows: Cold--intake .010 inch; exhaust .018 inch. At operating temperature--intake .008 inch, exhaust .010 inch.

4-143. HYDRAULIC PUMP (MY 40).

4-144. REMOVAL. (See figure 2-30).

a. Drain the hydraulic tank. Remove the suction strainer (43).

b. Remove the hoses from the pump (1) and remove the pump from the engine side cover.

4-145. DISASSEMBLY. (See figure 2-30).

a. Remove helical gear (30). Remove socket head screws, and remove bearing adapter (9).

b. Remove drive shaft (5). Remove snap rings (6) and bearing (7).

c. Remove flow divider assembly (24). Remove plug (27), piston (25), and spring (26).

d. Remove plug (32), spring (30), and valve (31).

e. Remove cover (3) and remaining components.

4-146. REPAIR. (See figure 2-30).

a. Replace all oil seals.

b. Check condition of all bearings and replace faulty components.

c. Check condition of gears (6, and 15) and drive shaft. Replace faulty components.

d. Replace body and pump wear plates (18 and 19).

4-147. REASSEMBLY. (See figure 2-30). Reassemble in reverse order of disassembly.

a. Torque cover-to-body bolts to 190-210 inch pounds.

b. Torque flow divider assembly socket head bolts to 190-210 inch-pounds.

c. Torque mounting bolts to 15 to 20 foot pounds.

d. If necessary, add or remove shims (21) to obtain relief pressure of 1250 PSI. Install gage in power steering pressure line, and turn steer wheels against wall or other solid object to activate relief valve.

4-148. HYDRAULIC PUMP (MY 60).

4-149. REMOVAL. (See figure 2-30A).

a. Drain the hydraulic tank. Remove the suction strainer (35).

b. Disconnect the hoses and tubing from the pump

(1). Loosen the set screw in the coupling (29), remove the pump mounting bolts, and remove the pump (1) from the support (30).

4-135. DISASSEMBLY. (See figure 2-50A.)

a. Remove the four socket head screws from the flow divider assembly (12) and remove the flow divider from the cover (6).

b. Mark the gear plate (13) and cover (6) so they can be reassembled in the same relative position. Remove the six cover-to-body bolts and separate the cover, gear plate, and body (2), and their components. Note the position of the idler gear (8). The gear is symmetrical, but any amount of wear requires that it be reassembled in the same position for proper mating with the drive shaft gear (5).

c. Remove the retainer (3), oil seal (4), and "O" ring (9).

d. If there is evidence of bearing damage, remove the bearings (4) from the body and cover.

e. Remove plug (21) and "O" ring (22), and withdraw piston (19) and spring (20).

f. Remove plug (25), and withdraw shims (25), spring (24), and valve (23).

4-136. REPAIR.

a. Replace wear plate (12 and 14).

b. Replace oil seal (7) all "O" rings (9, 17, 22 and 27) and seals (14 and 15).

c. Examine all remaining parts carefully for wear or damage. Discard any faulty components.

4-137. REASSEMBLY. (See figure 2-50A.)

a. Reassemble in reverse order of disassembly. Keep all parts exceptionally clean during reassembly. Dip seals and "O" rings in clean hydraulic oil before installing.

b. The wear plates (12 and 14) are not identical. They must be installed as shown in figure 2-50, with the plate with the slots toward the pump body (2) side of the gear plate (13).

c. The idler gear (8) must be installed in its original position. See 4-136b above.

d. Torque the cover-to-body and flow divider attaching bolts to 90 to 110 inch pounds.

e. Add or remove shims (25) to obtain relief pressure of 1850 PSI. Install gage in power steering pressure line and turn gear wheels against wall or other solid object to activate relief valve.

4-138. HYDRAULIC CONTROL VALVE.

4-139. REMOVAL. Remove all tubing and hoses from the control valve. Remove the control valve from the mounting.

4-140. DISASSEMBLY. (See figure 2-51).

a. Remove ball check plug (11), "O" ring (10), and check valve plunger (13).

b. Remove cap (20), gasket (21), shims and washers (19 and 19A), spring and guide (18 and 17). Remove ball (16). Remove valve seat (14), "O" ring (15), and plunger (13).

c. Remove rubber bonnet (10), snap ring (8), and disc (8).

d. Remove bolt (6), lock washer (7), and stop collar (5). Remove detent spring (3), and step washer (4).

e. Disconnect handles from spools by removing the cotter pin and handle pin.

f. Push spool into housing from front of valve (control handle end) until rear seal (2) is exposed, then remove rear seal. Pull spool out of housing from front end, being very careful that neither spool nor bore is damaged in any way. Remove rear seal (2).

4-141. REPAIR.

a. Thoroughly clean the seal grooves.

b. Install new seals, "O" rings, and gasket (21).

c. Examine all parts carefully and replace any damaged or faulty components. If a spool or the valve is damaged the entire assembly must be replaced.

4-142. REASSEMBLY. (See figure 2-51). Reassemble in reverse order of disassembly.

a. Wash all parts thoroughly in an approved solvent.

b. The spools must be installed in the ports from which they were removed (the spool with 2 grooves must be installed in the port nearest the inner side of the valve). Install the spool from the front of the valve, until the spool end reaches the rear seal groove.

c. Dip new seal in hydraulic fluid and place seal in rear groove, with the "U" cup of the seal toward the valve body. Straighten the seal by running a smooth rod around the exposed surface of the seal until it fits perfectly.

d. Push the spool further into the housing, with a rotating movement, to ease the spool through the rear seal. Push the spool just far enough in to expose the front seal groove. Dip new seal in hydraulic fluid and install front seal with the "U" cup toward the valve body and straighten seal as explained previously.

e. Gently push spool forward with a rotating motion, to move the spool through the front seals. Position spool with 1/4-inch of polished surface of the spool exposed at front of valve.

f. Install new rubber bonnets.

g. Install check valve assembly with new "O" ring (12). Tighten plug (11) to 30 foot pounds.

h. Install relief valve assembly, with new "O" ring (25). Tighten valve seat (14) securely. Install ball (18), guide (17), spring (16). Use sufficient washers (19) or shims (19A), or both, to obtain relief pressure of 1050 PSI for the MY 40; 1700 PSI for the MY 60. Each washer (19) affects the pressure approximately 500 PSI; each shim (19A) affects the pressure approximately 60 PSI. Test the pressure at orifice plug opening (1, figure 1-35).

i. Install new gasket (21). Tighten cap (20) to 45 foot pounds.

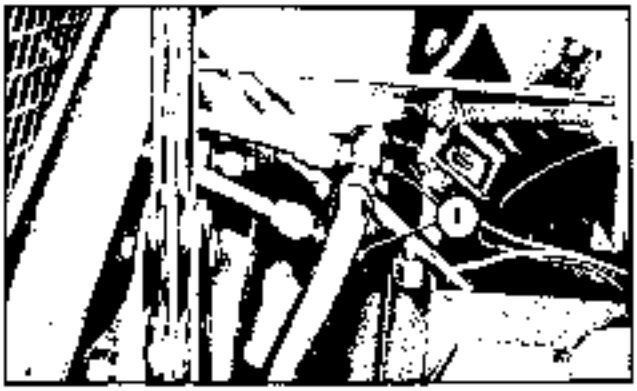


Fig. 1-35. Hydraulic Pressure Lines

1. Testing ports

4-158. HYDRAULIC STEERING BOOSTER.

4-159. REMOVAL. Disconnect the hoses. Disconnect the drag link from the hydraulic steering booster. Remove the booster and the rear section of the drag link.

4-160. DISASSEMBLY. (See figure 2-27).

a. Remove the rear section of drag link from the booster.

b. Drain the oil from the booster by moving the piston rod in and out from one extreme of travel to the other.

c. Remove slotted nut (18), cushion retainer (17), and cushions (15) and bearing. Remove end plate (13).

d. Remove retainer ring (11). Pull back sharply on piston rod to blow out seals and rings (8, 9, 10, 12, and 14).

e. Remove retainer ring (14) and bearing (5). Remove plug (7) and "O" ring (6). Remove the piston and rod assembly (1).

f. With slotted nut (33) removed from ball stud (31), remove dust seal cover (42) and dust seal (41).

g. Straighten out the 2 staked places and remove end cap (46). Remove lock pin (33) and unscrew adjusting plug (37). From orifice plug, remove washer (36) and spring (35). Remove outer ball seat (34) and ball stud (31).

h. Unscrew lubricator fitting (44). Pull out ball socket housing (40) and remove 2 steel balls (32).

i. The valve sub-assembly - parts 21 through 30 inclusive, and shell (39) - can now be removed. Use care to avoid damage to the threads inside the end of the cylinder housing when pulling out this assembly. The 4 small "O" rings (20) may or may not remain in their counterbores. If not, they should be found on the face of the cylinder head.

j. To simplify disassembly of flexure rod (29), socket shell (39), and valve body and spool subassembly, reassemble ball stud (31) against inner ball seat (34). Install outer ball seat (34), and screw in adjusting plug (37) as tight as possible. This will tend to keep flexure rod (29) from turning when unscrewing elastic stop nut (30).

k. After elastic nut has been removed, washer (24), centering washers (22 and 22A), "O" ring (23), spring (21), socket shell (39), and flexure rod (29) can be disassembled. The spool may now be removed from the valve body; however, note the position of the valve spool as it is assembled in the valve body (19). To remove spool, push toward ball stud end of unit.

l. Remove by-pass valve assembly (26, 27, and 28). The plug (28) is a fairly tight fit, but can be removed.

4-161. REPAIR. (See figure 2-27).

a. Replace all o l seals and "O" rings.

b. Wash all parts in an approved solvent.

c. Examine all parts carefully for scratches or nicks. If any of the polished surfaces are marred, discard the faulty component.

4-162. REASSEMBLY. (See figure 2-27).

a. Place "O" ring (28) at spool and insert spool in valve body from ball stud end.

b. Drop ball (27) into hole, place spring (28) over plug stem (28), and press in hole until flush with face of valve body.

c. Place flexure rod (29) in socket shell (39), insert inner ball seat (34), ball stud (31), outer ball seat (34), and adjusting plug (37). Tighten securely. Place this assembly in vise, holding at threaded end of socket shell.

DO NOT DAMAGE THE SHELL BY CLAMPING IT TOO TIGHTLY IN THE VISE.

d. Slide valve body and spool assembly over flexure rod (end of valve body with 4 holes counterbored for small "O" rings must be up).

e. Assemble washer (22), spring (21), washer (22A), "O" ring (23), another washer (22A), and retainer washer (24). Press carefully into valve body until elastic nut (12) can be started on flexure rod. Using box wrench, push down on top of washer (24), at same time rotating valve body (13) back and forth until "O" ring (23) and inner washer (22A) enter valve body completely.

f. Tighten elastic nut (12) to 10-12 foot-pounds.

g. Remove ball stud, seats, and adjusting plug from socket shell.

h. Assemble 4 "O" rings (20) to valve body. Slide valve body into cylinder housing. Roll pin assembly in valve body must fit in center hole in face of cylinder head.

i. Assemble socket housing (40) over shell (39), aligning slotted opening in housing with rectangular opening in cylinder housing. Align socket shell with openings. Install inner ball seat (34).

j. Place small amount of heavy grease in small holes in socket shell, and install steel balls (29).

k. Install ball stud (31) in shell through opening in cylinder housing. Be sure balls remain in place. Install outer ball seat (34).

l. Place washer (36) and spring (35) in opening of adjusting plug (37). Screw plug into socket shell. Tighten plug finger tight, then back off to nearest hole for lock. Stud should be firm, but move freely.

m. Insert lock pin (38) and snap in place, screw in end cap (43) until tight. Crimp cylinder housing in 5 places as provided in end cap.

n. Assemble the remaining components in the reverse order of disassembly. Assemble "O" ring (42) over piston rod end, being careful not to cut "O" ring. Cushion retainers (17) must be installed with cup toward cushions (16), with locator between cushions.

4-163. TILT CYLINDERS.

4-164. REMOVAL.

a. Place forks on floor and tilt mast forward. Secure mast with hoist. Remove hydraulic hoses. Remove pins (38, figure 2-37) on Simplex upright. On Duplex, drive roll pin into cylinder pin (31, figure 2-35). Do not drive roll pin in so far as to embed it in pin bore.

4-165. DISASSEMBLY. (See figure 2-33).

a. Drain cylinder by moving rod back and forth.

b. Unscrew threaded washer (16).

c. Pull piston rod (8) and remaining parts out of shell (2).

d. Remove nut (9). Pull remaining components off rod.

4-166. REPAIR. (See figure 2-33).

a. Replace all "O" ring seals and packing assembly (9 and 13).

b. Replace nylon rider (6). Replace back-up ring (15).

c. Replace wiper ring (19).

4-167. REASSEMBLY. (See figure 2-33).

a. Reassemble in reverse order of disassembly. Lubricate all "O" rings with clean hydraulic fluid to facilitate installation. Install all parts from piston end of rod.

b. If a new cylinder is installed, retract the tilt cylinders. Loosen bolt in rod end (1, figure 1-36), place a punch through the hole (2, figure 1-36) in the rod, and align the new cylinder with the other to square up the mast.

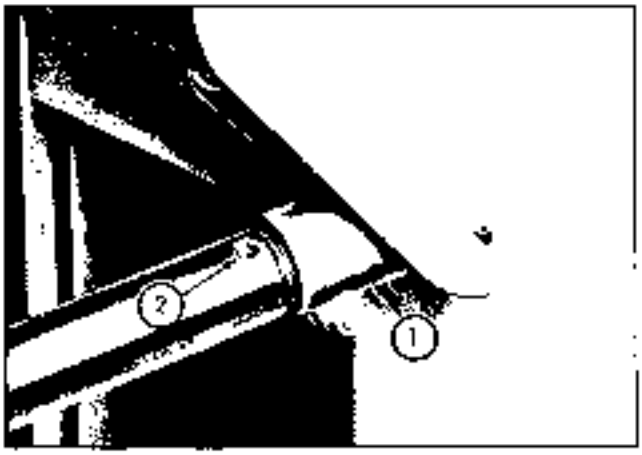


Fig. 1-36. Tilt Cylinder Adjustments

1. Rod end
2. Insert punch here

4-168. LIFT CYLINDER (DUPLEX). See figure 2-35.

4-169. REMOVAL.

a. Place forks on ground. Disconnect lift chains and hydraulic hose.

b. Remove snap ring and cylinder support (27 and 28, figure 2-36). Lift the cylinder up and out.

4-170. DISASSEMBLY. (See figure 2-33).

c. Remove retainer (7), "O" ring (8), wiper ring (9), and garter spring (10). Pull out intermediate tube (4) and components.

b. Remove retainer (11), "O" ring (12), and wiper ring (13). Remove sheave support as described in paragraph 4-180.

c. Remove snap rings (17 and 20), washers (18 and 19), and packing (1b and 19). Remove pin (21) and piston (14).

d. Remove threaded washer (29) and wiper ring (31). Remove retainer (22), "O" ring (23), and ring (24), and intermediate tube (4). Remove snap ring (34) and bushing (33).

e. Remove items 25 through 28, inclusive, from piston retainer (22).

f. Remove straight fitting and "O" ring at base of cylinder, and remove spacer (27), spring (35), and washer (36).

4-171. REPAIR.

a. Replace all "O" rings, packings, wiper rings, and back-up rings.

b. Wash all parts in an approved solvent. Examine for wear, scratches, or blemishes. Discard faulty components.

4-172. REASSEMBLY. (See figure 2-36). Assemble in reverse order of disassembly.

a. Dip "O" rings and packing in hydraulic fluid to facilitate assembly to prevent damaging these parts.

b. Install "O" rings, packing, back-up rings to piston (14) and retainer (22) sub-assemblies.

c. Install lift cylinder on mast assembly, with locating pin on bottom of cylinder in small hole in bottom plate of outer rail assembly. Connect hose to fitting. Install chains and adjust as explained in paragraph 4-182.

d. Check fluid level in tank and replenish as necessary, according to lubrication instructions (figure 1-10). Start the engine and operate at an idle speed. Pull back on lift control lever to fill the cylinder. Operate cylinder several times, raising and lowering mast. With engine running at idle speed, loosen bleed screw (6) on top of cylinder, and pull back on lift control lever. Tighten screw when fluid with no bubbles runs out of bleed hole.

4-173. LIFT CYLINDER (SIMPLEX). See figure 2-34.

4-174. REMOVAL. (See figure 2-37).

a. Lower forks to floor. Disconnect tubing from upper end of cylinder.

b. Disconnect tube from lower end of cylinder. Remove spring, washer, and spacer (15, 16 and 17, figure 2-34).

c. Remove nuts from anchor stud (20) to disconnect chain. Remove cap screws holding cylinder flange to cross brace on outer rail assembly (1).

d. Remove nuts from piston rod guides (27). Lift the cylinder up and out of the guide hole in the base of the outer rail assembly.

4-175. DISASSEMBLY. (See figure 2-34).

a. Remove plunger retainer (13). Remove "O" ring (19), wiper ring (20), and garter spring (21). Pull plunger assembly (3) out of shell (2).

b. Remove roll pin (5), and remove spacer (6), and piston retainer (4). Remove snap ring (14) and remove piston (7) from retainer (4).

c. Remove "O" ring (12) and back-up ring (13). Remove packing assembly (8). Packing assembly (8) consists of V-rings (9); packing set (10) and adapter (11).

d. Items 15, 16, and 17 have been removed previously in step 4-174b.

4-176. REPAIR.

a. Replace entire packing assembly (8). Replace both "O" rings (12 and 19). Replace wiper ring (18).

b. Examine all parts carefully for scratches, wear or other damage.

4-177. REASSEMBLY. (See figure 2-34). Reassemble in reverse order of disassembly.

a. Dip new "O" rings and packing in clean hydraulic fluid to facilitate assembly and to prevent damage to these parts.

b. Assemble piston (7), packing (8), "O" ring (12), back-up ring (13), to retainer (4), and secure with snap ring (14).

c. Install lift cylinder on mast assembly, with lower end of cylinder in guide hole in base of outer rail assembly. Attach flange and piston head assembly (28, figure 2-37) to rails. Connect upper and lower tubes with spring, washer, and spacer (15, 16, and 17) in place as shown. Install chains and adjust as explained in paragraph 4-182.

d. Check hydraulic fluid level in tank and replenish as necessary, according to lubrication instructions (figure 1-10). Start the engine and operate at an idle speed. Pull back on the lift control lever to fill the cylinder. Operate the cylinder several times, raising and lowering the mast assembly.

e. Bleed the system as follows: Jack up the forks enough to gain access to the lower tube; crack the flared nut on

this tube to allow the air in the cylinder to escape. Start the engine and move the lift control lever slowly to the rear. When pure fluid (with no bubbles) is being forced out around the nut, tighten the nut.

4-178. MAST AND RELATED PARTS. The simplex and duplex mast assemblies are similar. Refer to figure 2-36 or 2-37 for proper mast.

4-179. REMOVAL.

a. Remove forks by disengaging levers, and sliding forks to notch in lower carriage bar for removal.

b. Secure mast assembly with hoist. Disconnect hydraulic lines. Remove pins holding tilt cylinders to mast. Remove clamp block (7, figure 2-28). Remove mast assembly from truck.

4-180. DISASSEMBLY. (See figure 2-36 or 2-37).

a. Remove pin (20, figure 2-36 or 21, figure 2-37) and roll carriage assembly (13) out bottom of mast assembly. Remove lift cylinder as explained previously.

b. Slide inner rail assembly (2) out of outer rail assembly (1) until 2 sets of rollers (6) are exposed. Rotate inner rail assembly upward until center rollers are above outer rail. Support inner rail assembly in raised position to allow removal of four shoes (3) from upper end of outer rail assembly. Slide out inner rail assembly. Remove load back rest from carriage.

c. Remove roller assemblies from carriage and inner rail. Remove snap ring (5) and remove roller from pin (10). Remove snap ring (9) and remove bearing (7) from roller (6). Remove thrust roller pin (15) and roller (14).

d. On duplex mast (figure 2-36), remove snap ring (27) and remove chain sheave (25) from sheave support (26). Remove snap rings (30) and remove bearing (28) from sheave (25).

e. On simplex mast (figure 2-37), remove set screw and remove piston head (23) from cylinder. Drive roll pin into pin (22), just far enough to allow removal of pin. Do not drive roll pin in so far as to imbed it in the casting. Remove sheave (24) and bushing (25).

4-181. REPAIR. Examine all parts carefully for wear or damage, and discard faulty components. Examine the bushings in the lift truck frame.

4-182. REASSEMBLY. Reassemble in reverse order of disassembly.

a. Stake screws (11) in two places when rollers are reinstalled. Stake thrust roller pins (15) from front side of carriage, at both ends of slot in pin.

b. Use shims (5) under mast shoes (3) as required to obtain minimum clearance between inner and outer rails.

c. To adjust lift chains, first move forks to the extreme ends of fork bar and lower forks until lift cylinder is completely collapsed. Adjusting is to be done with no load on forks. Set the upright in a vertical position.

d. Turn the chain anchor rods into chain anchors as far as threads will allow (at 1, figure 1-37).

e. Fork-to-floor clearance (at 2, figure 1-37) will range from 0 to 3/4 inch, depending on tire deflection and machine tolerances.

f. Attach tension scale as shown (3, figure 1-37), apply force, and measure the deflection in the chain. Attach scale at same height to opposite chain, apply same force and measure deflection in chain.

g. Adjust spherical nuts (4, figure 1-37) until deflection is equal on both chains with equal tension. Keep spherical nut and jam nut as close to end of anchor stud as possible and still obtain above adjustments. This will allow lowest possible position of forks. Tighten jam nuts.

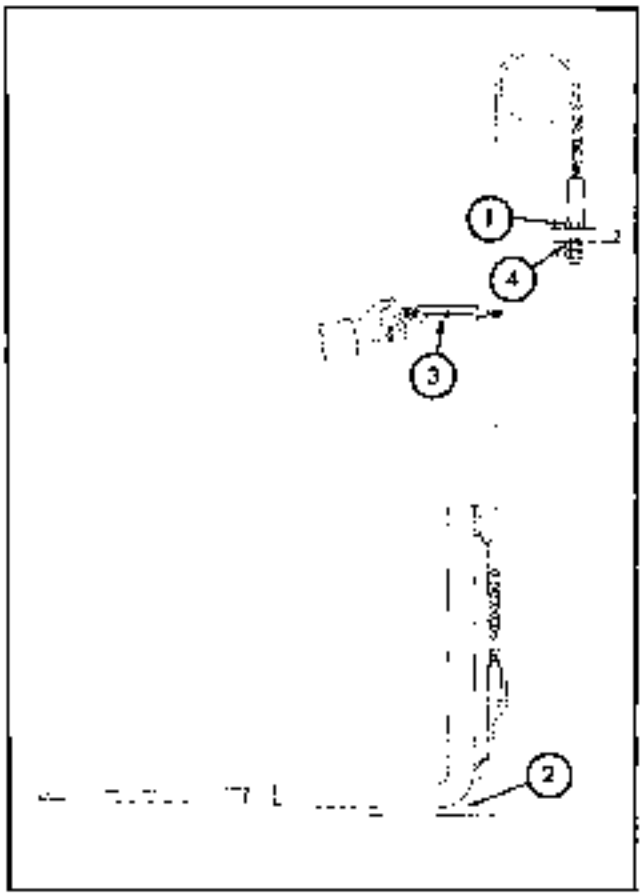


Fig. 1-37. Adjusting Chains

1. Turn stud into anchor
2. Fork-to-floor clearance
3. Tension scale
4. Spherical nuts

FOREWORD

This catalog contains a complete list of parts for the MY 40 and MY 50 Lift Trucks. To assist in determining the part numbers and descriptions, the parts in this catalog are grouped according to their location on the Lift Truck. Reference numbers only are shown in each illustration. These numbers correspond to those in the reference number column in the list of parts which precedes each "exploded view."

TYPICAL PARTS ARE SHOWN, AND MAY NOT ALWAYS BE IDENTICAL WITH CURRENT PARTS. REFER TO THE TEXT.

To further assist in locating repair parts, the part numbers are arranged in numerical sequence and indexed on pages 57 - 96.

Component parts of assemblies are listed following the assembly itself and are identified as being part of the assembly by this notation following the description:

Consists of the following.....parts:

or

Includes the following.....parts:

Part numbers only make up an assembly. Hardware items are not to be included.

Parts such as standard bolts, nuts, screws, washers, etc., are indented and listed under the respective individual parts with which they are used.

"Right or Left" is determined by facing the mast from the Mobilift seat.

When in need of repair parts always order the parts from your Mobilift dealer or from the branch house nearest you. All parts orders should plainly specify your name, post office address and whether shipment is to go by parcel post, express or freight.

Before returning repair parts it is necessary to secure written permission from the company authorizing the return of such parts. In the returning of repair parts be sure the package is tagged with your name and address. Prepay transportation charges.

Claims of shortage or breakage should be made to the transportation company on receipt of goods.

It is the policy of Minneapolis-Moline, Inc. to improve its products whenever it is possible and practical to do so. We reserve the right to make changes or add improvements in the design or construction of parts at any time without incurring the obligation to install such changes on products previously delivered.

GROUP INDEX

GROUP INDEX (CONT'D)

Ref. No	Part No	DESCRIPTION	No. Req.
		CRANKCASE	
1	11B6503	Crankcase - assembly	1
		Includes the following 10 parts:	
2		GM172600 - Plug, expansion, 2-1/2"	1
		GM444740 - Plug, pipe, square head, 3/8"	2
		GM444746 - Plug, pipe, square head, 1/2"	1
		GM241539 - Bushing, reducer, 1/4" to 1/8"	1
3	10A6378	Plug - slotted, 7/8"	1
4	10A6387	Cap - bearing, camshaft, front and center	2
5	10A6381	Cap - bearing, camshaft, rear	1
		GM170846 - Bolt, hex. head, 3/8"-16 x 1-3/4"	6
6	10A6380	Bushing - oil pump shaft	2
7	10A6376	Pin - dowel, oil pump	2
8	*10A6035	Bushing - governor shaft, 3/4" long	2
9	10A6023	Seal - oil, governor shaft, 12/16" O.D.	1
10	10A13202	Tube - oil, front and center crankshaft bearing	2
		GM113953 - Screw, rd. head, 1/4"-20 x 1/2"	4
11	10A5378	Tube - oil, rear crankshaft bearing	1
12	10A6388	Connector - rear oil tube (in crankcase)	1
13		GM114610 - Connector, 5/16" tube	1
14	11A6390	Bearing - crankshaft, front and center, standard	2
		GM3405055 - Bolt, self locking, 1/2"-13 x 2-1/2"	4
15	10A6099	Washer - self locking bolt, 17/32" I.D.	4
16	11P6421	Housing - with rear crankshaft bearing	1
		GM170856 - Bolt, hex. head, 1/2"-13 x 2-1/2"	6
17	11A6970	Bearing - crankshaft, rear standard	1
18	10A5285	Washer - bearing cap bolt	2
19		50A824 - Bolt, self locking, 9/16"-14 x 2-1/4"	5
20	10A6417	Gasket - rear bearing housing	2
21	11A6416	Retainer - with oil seal, rear	1
		GM113906 - Screw, rd. head, 1/4"-20 x 1/2"	6
22	10A6958	Seal - oil, rear retainer	1
23	10A6418	Gasket - oil seal retainer	1
24	10A2015	Strainer - oil (float-n-screen)	1
25	10A7484	Connector - float-n-screen	1
26	11A16004	Dip stick	1
27	10A10909	Cover - side	1
		GM170893 - Bolt, hex. head, 3/8"-16 x 3/4"	15
28	10A3835	Stud - side cover, 3/8"-16 x 1-1/16"	9
29	10A3860	Stud - side cover, 3/8" x 1-1/8"	4
30	10A3072	Stud - side cover, 3/8" x 1-3/8"	1
31	10A10490	Gasket - side cover, 1/32" thick	1
32	10A10491	Shim - side cover, .010 thick	1
33	10A9304	Cover - timing hole	1
		GM113955 - Screw, rd. head, 1/4"-20 x 1/2"	1
34	10A10033	Cover - front end of crankcase	1
		GM170912 - Bolt, hex., 5/16"-18 x 1/2"	2
35	10A10815	Stud - timing pointer, 5/16" x 2-3/4"	1
36	10A12261	Seal - oil, for cover	1
37	10A6020	Gasket - oil seal cover	1
	10R676	Gasket Set - engine overhaul	1
38	RE1748	Adapter - fuel pump	1
39	10A9181	Gasket - adapter to side cover	1
40	11A10927	Pipe - extension, dipstick	1
		GM116381 - Nut, lock, 1/8"-27 N.P.T.	1
41	10A4538	"O" Ring - extension, 3/8" I.D., 1/2" O.D.	1
42	10A3697	Cover - fuel pump adapter	1
43	10A6843	Gasket - cover to adapter	1

Ref. No.	Part No.	DESCRIPTION	No. Pcs
		CRANKCASE (Cont'd)	
40	10A16060	Strap - pipe extension	1
42	10A16078	Support - pipe assembly	1
42	10A10461	Breather	1
43	36A2992	Tube - breather	1
44	10A16961	Adapter - breather tube	1
45	10A16890	Bolt - adapter attaching	1
46		GM19342P - Gasket, bolt and adapter	1
	10A16827	*Cover - side	1
	10A9836	*Gasket - side cover	1
	10A6581	*Cover - small, for large side cover	1
	10A9851	*Gasket - small cover	1
	10A10842	*Support - breather, and fuel pump	1
	10A16840	*Gasket - breather support	1
		*NOTE: Used on MY 60 Lift Trucks.	

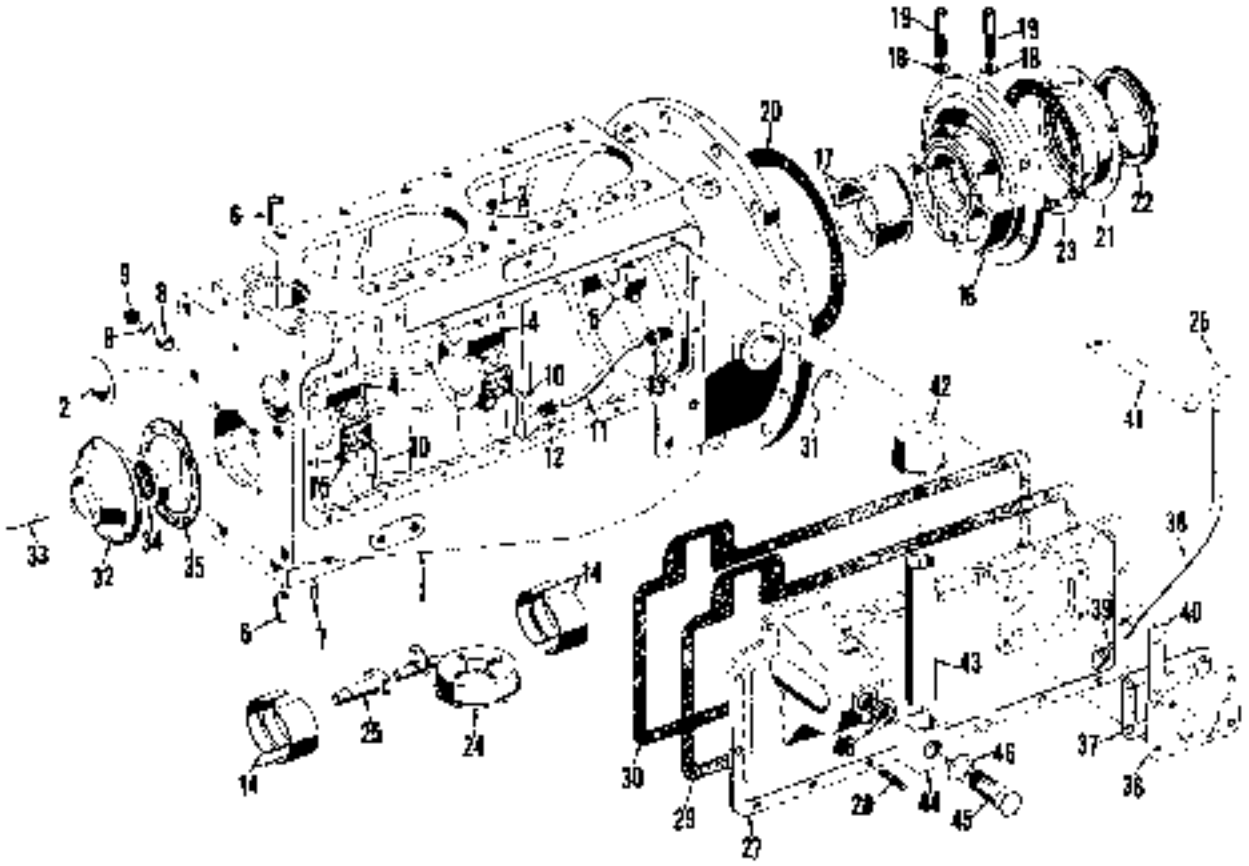


Fig. 2-1

Ref. No.	Part No.	DESCRIPTION	No. Per
		CYLINDER BLOCK, CYLINDER HEAD, AND BREATHER	
1	10A12662	Block - cylinder, with expansion plugs	2
		Includes the following part:	
		GM444794 - Plug, pipe, slotted, 3/4"	2
		GM108647 - Valve, drain, 1/4"	2
		GM179588 - Bolt, hex., 1/2"-13 x 1-7/8"	6
		GM179806 - Bolt, hex., 1/2"-13 x 3-3/4"	6
		GM190276 - Bolt, hex., 1/2"-13 x 4-1/4"	4
2	10A6433	Plug - expansion, 1-1/4"	4
3	10A5967	Plug - rear cylinder block and head	2
4	10A10607	Tube - between cylinder blocks and heads	2
5	10A3956	Seal - "O" ring, rear plug and center tube	6
6	10A7282	Gasket - cylinder block to crankcase	2
7	106826	Head - cylinder, with valves not assembled	2
7	10A5551A	Head - cylinder, with guides and inserts	2
		GM111666 - Plug, pipe, socket head, 1/2"	1
11	10A6433	Plug - expansion, 1-1/4"	4
12	10A13667	Gasket - cylinder head to cylinder block	2
	10A10758	Stud - cylinder block and head, 1/2" x 6-3/4"	1
13	10A5930	Stud - cylinder block and head, 1/2" x 6-7/16"	6
14	10A5936	Stud - cylinder block and head, 1/2" x 6-7/16"	5
15	10A5937	Stud - cylinder block and head, 1/2" x 6-13/16"	6
		GM100035 - Nut, hex., 1/2"-20	18
16	10A10645	Adapter - cylinder head to cover	1
		GM178845 - Bolt, hex., 3/8"-16 x 1-3/4"	2
17	10A8009	Gasket - adapter to cylinder head	1
18	10A10536	Cover - cylinder head	1
		GM114501 - Nut, hex., jam, 3/8"-16	4
19	10A6426	Washer - copper, cylinder head cover	4
20	10AE005	Gasket - cylinder head cover	1
21	10A5946	Stud - cylinder head cover, 3/8" x 5"	4
22	10A8020	Spacer - cylinder head cover, 7/16" x 1"	4
	10A10804	Eye - lifting, on cylinder head studs	1

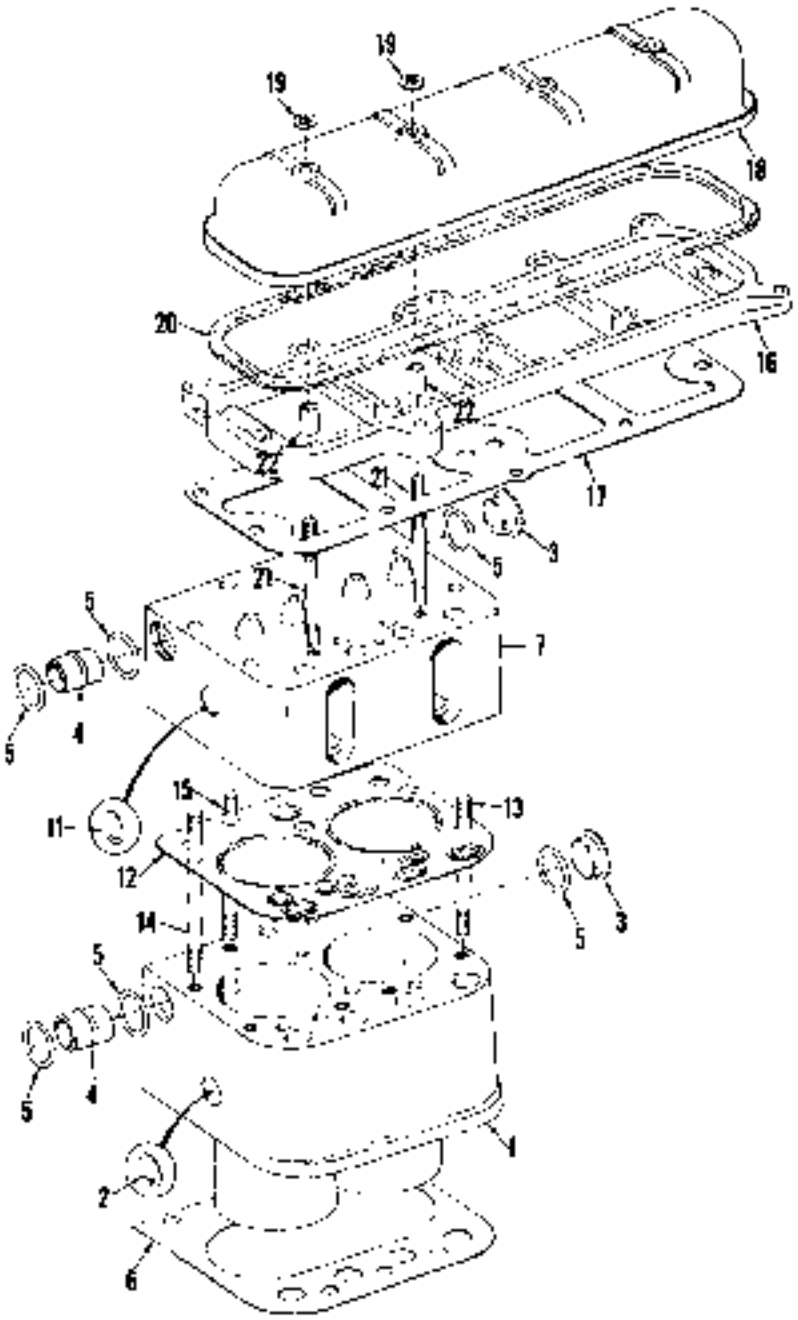


Fig. 2-5

Ref. No.	Part No.	DESCRIPTION	No. Per
		CAMSHAFT, ROCKER ARMS, VALVES, PUSH RODS AND TAPPETS	
1	10A14043	Camshaft	1
2	10A16945	Gear - timing, 60 tooth	1
3	10A6402	Gear - oil pump drive, 18 teeth	1
		GM103906 - Key, Woodruff, No. 9	2
4	10A6362	Washer - gear retainer	1
5		GM179839 - Bolt, hex., 3/8"-16 x 1"	1
6	10A6363	Arm - rocker, front intake and rear exhaust	4
7	10A6361	Arm - rocker, front exhaust and rear intake	4
8	10A19679	Screw - adjusting rocker arms	8
		GM1114494 - Nut, hex. jam, 3/8"-24	8
9	1955973	Shaft - rocker arms, with rubber plugs	1
		Includes the following parts:	
		GM103885 - Pin, cotter, 1/8" x 1"	2
10	10A7207	Plug - rubber, 1/2" dia.	2
12	10A7200	Spring - rocker arms, 1-9/16" long	2
13	10A7205	Spring - rocker arms, 2-9/16" long	1
14	10A5916	Bracket - rocker arms	4
15	10A5946	Stud - rocker arm bracket, 3/8" x 5"	4
		GM102605 - Nut, hex., 3/8"-16	4
		GM114903 - Nut, hex., jam, 3/8"-16	4
16	10A7202	Tube - oil rocker arm	1
17	10A6310	Pipe - supply, oil tube	1
18	10A6318	Nut - oil supply pipe	1
		50A2041 - Washer - plain, 1/2"	1
19	10A6316	Seal - oil supply pipe	1
	10A10040	Cup - seal retainer	1
20	10A6429	Valve - intake	4
21	10A6507	Valve - exhaust	4
22	10A6432	Spring - valve	8
23	10A6403	Seat - valve spring	4
24	10A2040	Rotocap - exhaust valve	4
25	10A6440	Lock - valve spring seat	16
26	10A6944	Insert - exhaust valve	4
27	10A5953	Guide - valve	8
28	10A6476	Push Rod	4
29	10A7066	Tappet (valve lifter)	8
	103372	Gasket Set - valve grinding overhaul	1

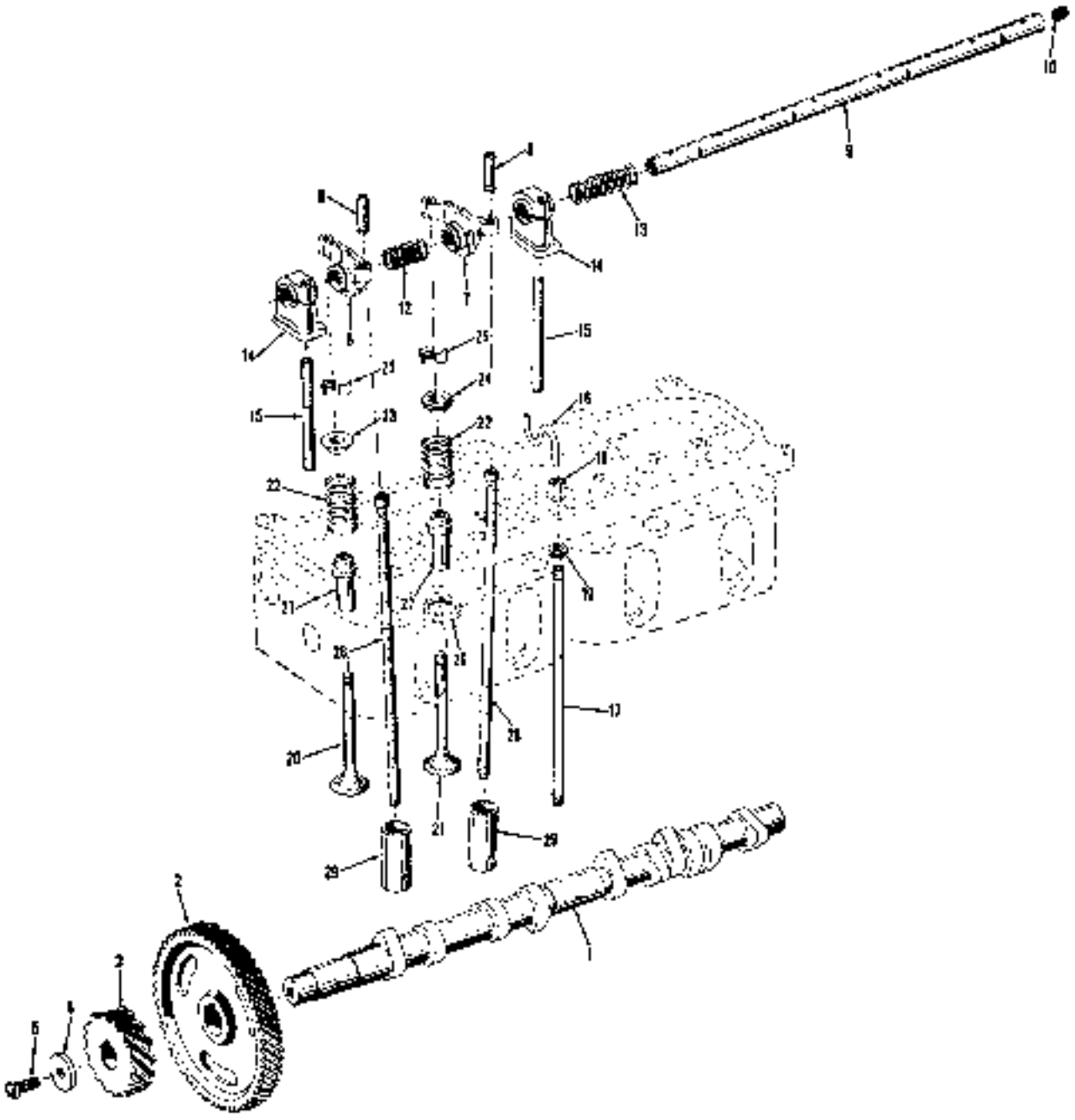


Fig. 9-2

Ref. No.	Part No.	DESCRIPTION	No. Per.
		CRANKSHAFT, CONNECTING RODS, PISTONS, RINGS AND FLYWHEEL	
1	10B6032	Crankshaft - with gear and dowel pins	1
2	10A6918	Pin - dowel	2
3	10A16353	Gear - timing, 30 teeth	1
4		GM106751 - Key, Woodruff, No. 9	1
5	11A6870	Bearing - rear, standard	1
5	11A6871	Bearing - rear, .0025 undersize	1
5	11A6872	Bearing - rear, .005 undersize	1
5	11A6873	Bearing - rear, .020 undersize	1
5	11A6874	Bearing - rear, .040 undersize	1
6	11A6980	Bearing - front and center, standard	2
6	11A6981	Bearing - front and center, .0025 undersize	2
6	11A6982	Bearing - front and center, .005 undersize	2
6	11A6983	Bearing - front and center, .020 undersize	2
6	11A6984	Bearing - front and center, .040 undersize	2
7	10A16654	Pulley - fan drive	1
8		GM271560 - Bolt, hex., 5/8"-11 x 1-3/4"	1
9		GM106287 - Washer, plain, 11/16"	1
10	10A6423	Key - fan drive pulley, 1/4" x 1/4" x 1-1/2"	1
11	11A4860	Piston - with pin and retainer, standard	4
11	11A17476	Piston - with pin and retainer, .020 O.S.	4
11	11A17470	Piston - with pin and retainer, .040 O.S.	4
12	10A4861	Pin - piston, standard	4
12	10A17477	Pin - piston, .005 oversize	4
13	10A4959	Retainer - piston pin	8
14	103993	Rings - set for 2 pistons, standard	2
14	106899	Rings - set for 2 pistons, .020 oversize	2
14	106094	Rings - set for 2 pistons, .040 oversize	2
15	11B16862	Rod - connecting, with bearing and bushing	4
16	10A15726	Bolt - self locking, connecting rod	8
17	10A4865	Bushing - piston pin, 1" I.D., 1-7/16" long	4
18	109420	Bearing - connecting rod, standard	4
18	109424	Bearing - connecting rod, .0025 undersize	4
18	109491	Bearing - connecting rod, .005 undersize	4
18	109423	Bearing - connecting rod, .020 undersize	4
18	109423	Bearing - connecting rod, .040 undersize	4
19	11A15555	Flywheel - with ring gear	1
20	10A7557	Gear - starting ring	1
21		GM9409049 - Bolt, locking, 7/16"-20 x 1-1/2"	4
22	10A6285	Washer - flywheel bolt	4

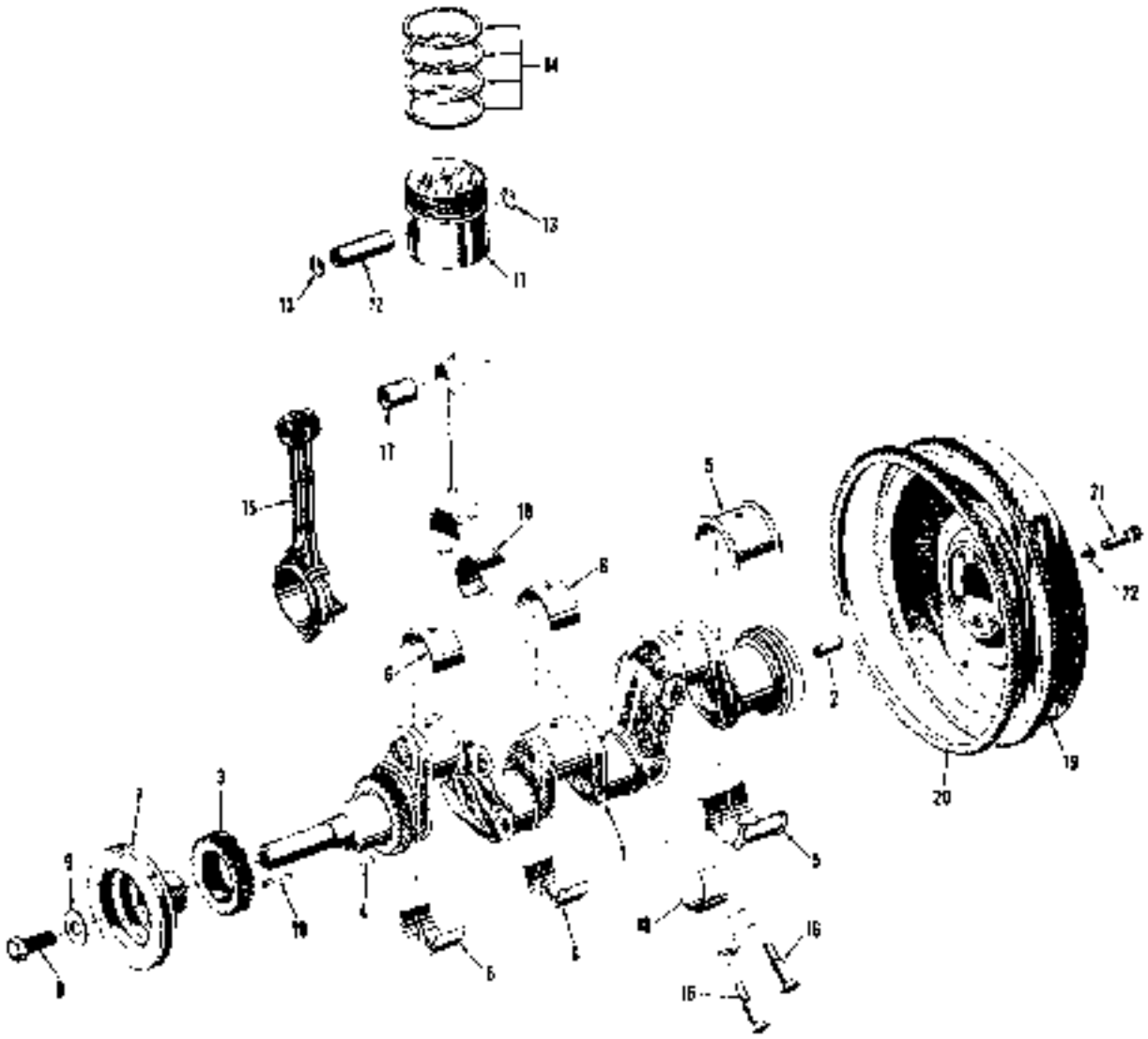


Fig. 2-1

Ref. No.	Part No.	DESCRIPTION	No. Req.
		GAS MANIFOLD, AIR CLEANER AND MUFFLER	
1	18A7680	Manifold - exhaust	1
2	18A9227	Clamp - manifold	4
3	18A1447	Stud - manifold clamp	2
		30A1008 - Nut, hex., sems-prof, 7/16"-14	4
4	18A3929	Gasket - exhaust manifold	2
5	36A3394	Connector - exhaust manifold to muffler	1
6	36A3938	Gasket - exhaust connector stud cover	2
7	18A7981	Cover - exhaust manifold	1
8	18A7720	Manifold - intake	1
9	18A8047	Stud - intake to exhaust manifold	4
		GM102835 - Nut, hex., 3/8"-16	4
10	18A7613	Gasket - intake manifold to carburetor	1
11	18A16904	Air Cleaner	1
		Consists of the following 3 parts	
12	18P1872	Base - assembly	1
13	18P1873	Filter	1
14	18P1874	Cover	1
15		GM120240 - Nut, wing, 10-32 N.F.	1
16	36A1434	Support - air cleaner	1
17	36A1435	Hose - cleaner to carburetor	1
		GM103482 - Clamp, hose, 2-1/4"	2
18	36A2400	Muffler - My 40	1
	36A2898	Muffler - My 60	1
19	36A743	Pipe - exhaust - My 40	1
	36A2307	Pipe - exhaust, My 60	1
		GM178839 - Bolt, hex., 3/8"-16 x 1"	2
		30A1000 - Nut, hex., sems-prof, 3/8"-16	2
20		30A765 - Clamp, pipe to muffler	1
21		GM191506 - Gasket, exhaust pipe	2
22	36A3301	Clamp - assembly, muffler, on frame, My 40	1
		GM180124 - Bolt, hex., 3/8"-16 x 1-1/4"	4
	36A3298	Clamp - muffler, on frame, My 60	2
23	36A2330	Clamp - half, for muffler	2

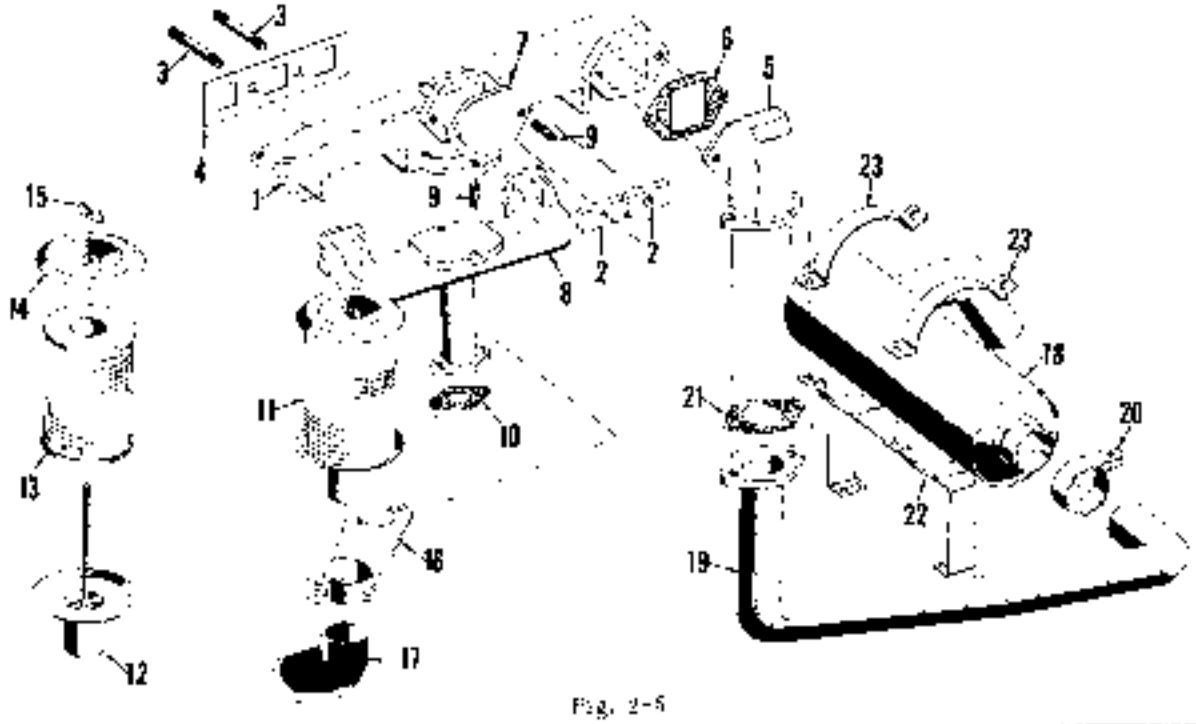


Fig. 2-5

Ref. No.	Part No.	DESCRIPTION	No. Req.
		FUEL PUMP	
1	10A10332	Pump - fuel, assembly	1
		(replaces the following 19 parts)	
		GM103866 - Plug, pipe, 1/8"	1
2	10P1875	Diaphragm and pull rod	1
5	10P1865	Spring - diaphragm	1
6	10P1870	Arm - rocker	1
7	10P1866	Pin - rocker arm	1
8	10P1867	Retainer - rocker arm pin	2
9	10P1868	Spring - rocker arm	1
10	10P1876	Cap - rocker arm spring	2
11	10P1860	Cover - bottom	1
		GM100650 - Screw - fill. hd. No. 10-32 x 3/8"	3
12	10P1881	Gasket - bottom cover	1
13	10P1877	Bowl - fuel, metal	1
14	15P23	Gasket - fuel, bowl	1
15	15P24	Screen	1
16	10P347	Ball - assembly, fuel bowl	1
17	10P1889	Valve and cage	2
18	10P1892	Gasket - valve and cage	2
19	10P1885	Retainer - valve and cage	1
20	10P1883	Link	2
21	10P1884	Pin - link	2
22	10P1879	Clip - link pin	4
23	10A 6849	Gasket - fuel pump to adapter	1
		GM109917 - Bolt, fuel pump to adapter, 5/16"-18 x 7/8"	2
		GM103820 - Washer, lock, 5/16"	2
	11A16912	Tube - fuel pump to carburetor	1
		GM140281 - Nut, 5/16" flared tube	1
		GM142427 - Nut, 5/16" tube, inverted flare	1
		30A5481 - Elbow, street, 1/8", 90°	1
		GM107422 - Elbow, 5/16" flared tube, 90°	1

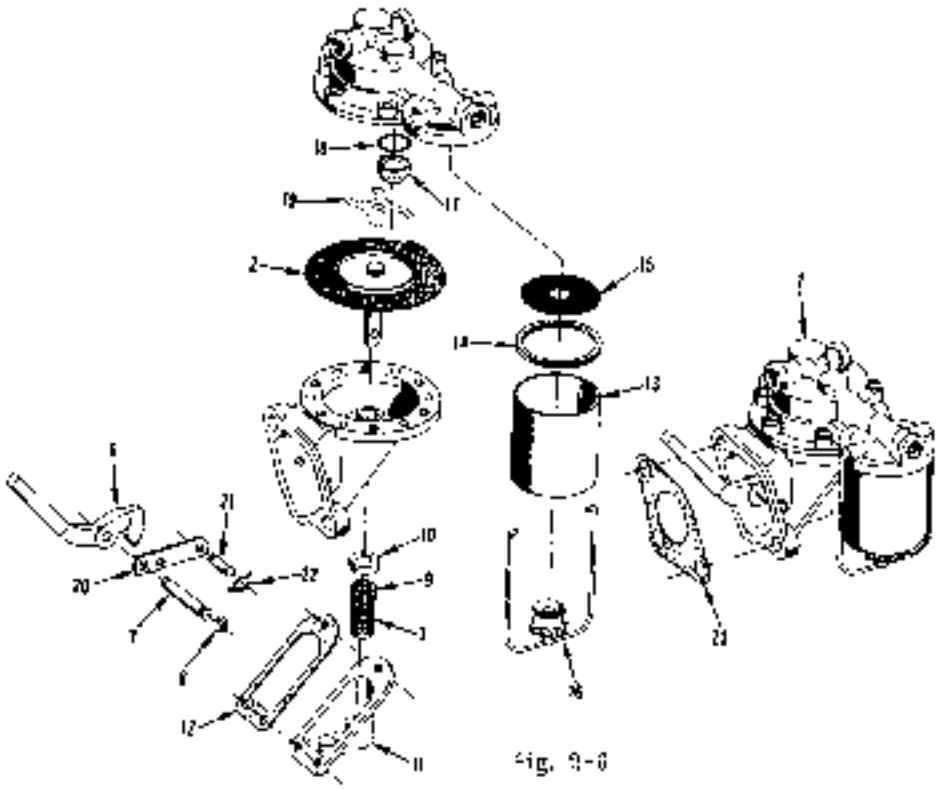


Fig. 9-6

Ref. No	Part No	DESCRIPTION	No Per.
		CARBURETOR	
	10A16902	Carburetor - (Schebler Model TSX 329)	1
		GM215365 - Bolt, hex., 5/16"-18 x 1"	2
1	10P1892	Body - throttle, upper half	1
		Includes the following 8 parts:	
2	10P1803	*Shaft - throttle, assembly	1
3		GM100714 - Screw, fillister head, No. 8-32 x 3/4"	1
4	10P750	Spring - throttle lever screw	1
	10P1788	Spring - throttle lever stop	1
5	10P746	Disc - throttle	1
6		*GM192256 - Screw, pan hd., No. 6-32 x 1/4"	2
7	10P785	*Packing - throttle shaft	1
8	10P750	Retainer - throttle shaft packing	1
9	10P771	*Cup - throttle shaft	1
10	10P744	Bowl - fuel, lower half	1
11		GM100675 - Screw, fillister head, No. 12-24 x 3/4"	4
		GM114581 - Valve, drain	1
12	10P719	+Gasket - fuel bowl to body	1
13	10P1801	Float	1
14	10P759	*Shaft - float lever	1
	10P776	Bracket - float lever	1
16	10P775	*Valve - seat and gasket (matched)	1
16	10P747	+Gasket - seat	1
17	10P786	Venturi	1
18	10P760	*Needle - idle adjusting	1
19	10P751	*Spring - idle adjusting needle	1
20	10P769	*Jet - idle	1
21	10P767	Nozzle - main	1
22	10P748	+Gasket - nozzle	1
23	10P762	Adjustment - main, assembly	1
		Includes the following 3 parts:	
24	10P781	Needle - main adjustment	1
25	10P772	Retainer - main adjustment needle packing	1
26	10P784	Packing - retainer	1
27	10P6	+Gasket - main adjustment assembly	1
	10P1891	Plug - power jet retainer	1
28	10P769	*Jet - power	1
29	10P1799	Shaft - choke, with lever	1
30	10P753	*Packing - choke shaft	1
31	10P794	Disc - choke	1
32		*GM192256 - Screw, pan hd., No. 6-32 x 1/4"	2
33	10P792	*Cup - choke shaft	1
	10P1800	Bracket - choke assembly	1
34	10P1797	Bracket - choke	1
35		GM191353 - Screw, fillister head, No. 8-32 x 3/8"	1
36	10P758	Clip - choke bracket	1
37		GM191958 - Screw, fillister head, No. 8-32 x 5/16"	1
38	10P755	Swivel - choke	1
39		GM113625 - Screw, fillister head, No. 8-32 x 5/16"	1
40	10P774	Pin - choke swivel	1
41	10P782	*Spring - choke return	1
	10P1830	*Repair Kit - carburetor	1
		*NOTE: Repair Kit includes the above items identified with an asterisk (*)	
	10P1829	+Gasket Set - carburetor	1
		+NOTE: Gasket Kit includes the above items identified with a cross (+).	

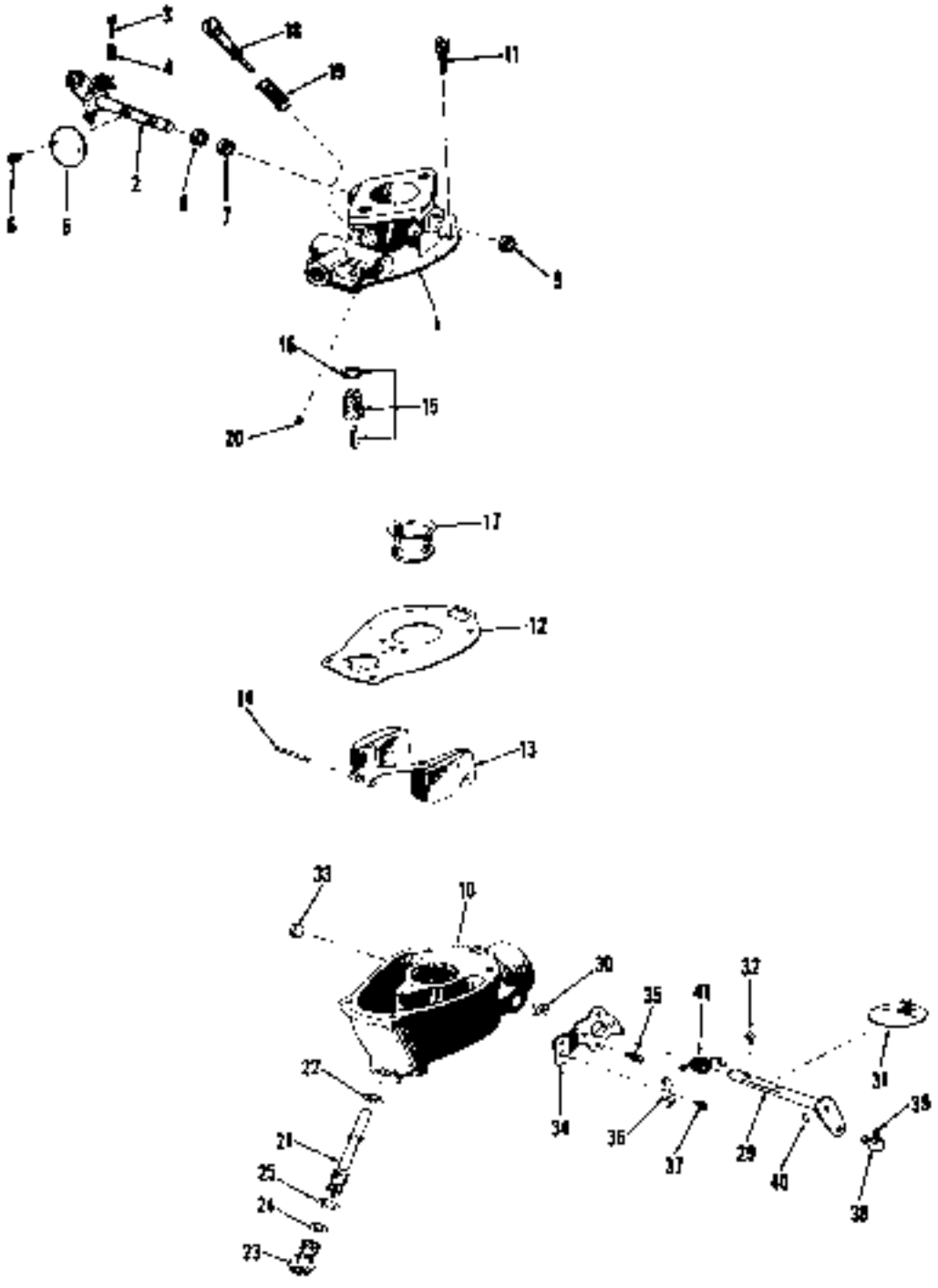


Fig. 11-7

Ref. No.	Part No.	DESCRIPTION	No. Prs.
		GOVERNOR	
1	10A14877	Governor - assembly	1
		Includes the following 9 parts:	
2	10P1633	Carrier - assembly	1
3	10P1636	Riser and Sleeve - assembly	1
4	10P1637	Race - bearing	1
5	10P1641	Ring - retainer, bearing race	1
6	10P1642	Retainer - with steel balls	1
7	10P1638	Roller - weight, assembly	2
10	10A6818	Fork - governor control	1
11	10A10444	Screw - set, governor fork, 5/16"-18 x 1/2"	1
12	10A10445	Shaft - with lever, governor fork	1
13	10A9025	Bushing, lever shaft, 1/2" I.D.	2
14	10A6065	Seal - oil, lever shaft, 1/2" I.D.	1
15	10A12196	Pin - lever shaft	1
		GM108373 - Pin - cotter, 3/32" x 3/4"	1
16		GM108340 - Washer - plain, 5/16"	2
17	10A13485	Rod - control, lever shaft pin to carburetor	1
		GM108372 - Pin - cotter, 3/32" x 1/2"	1
18	10A14878	Spring - with plunger assembly	1
19	10A10443	Rod - adjusting, spring to throttle rod, 1/4" x 6-7/8"	1
		GM114492 - Nut - adjusting rod, 1/4"-28	4
20	10A10697	Guide - adjusting rod	1

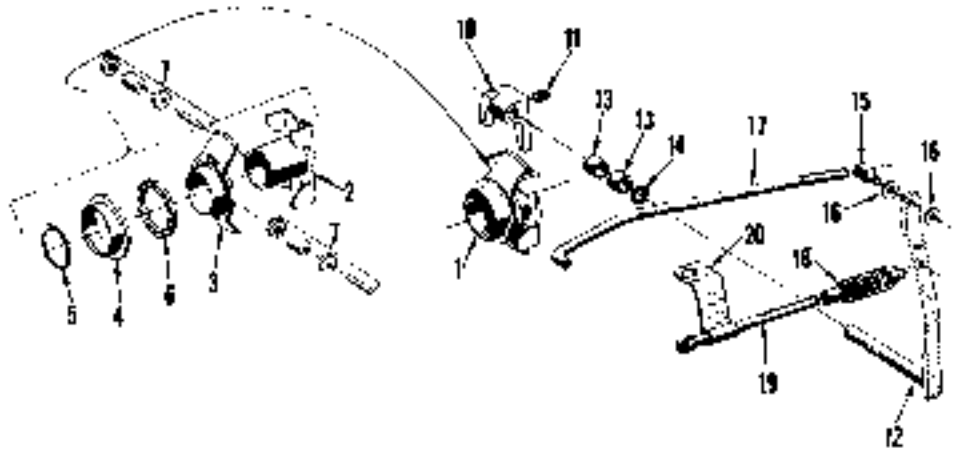
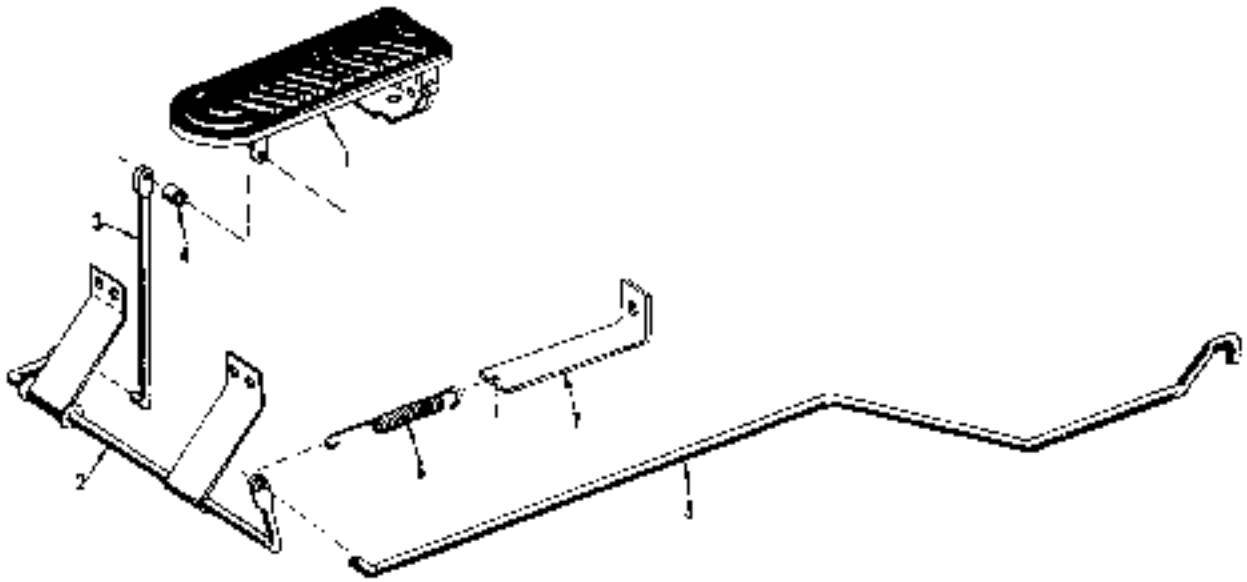


Fig. 9-8

Ref No	Part No	DESCRIPTION	No. Per
		THROTTLE CONTROLS	
1	10A10601	Pedal - foot accelerator	1
		GM180077 - Bolt, hex., 5/16"-18 x 3/4"	-
		GM126376 - Nut, hex., 5/16"-18	1
2	30A523	Shaft - cross, with supports	1
		GM180390 - Bolt, hex., 1/2"-20 x 3/4"	4
		GM120378 - Nut, lock., 1/4"-20	4
		GM120093 - Washer, plain, 11/32"	2
		GM121522 - Pin, cotter, 1/16" x 3/4"	2
3	38A..82	Link - pedal to cross shaft, 5-1/2" long	1
		GM180409 - Pin, cotter, 3/16" x 1-1/2"	1
4	10A10949	Spacer - pedal link, 1/4" O.D. x 9/16"	1
5	38A1276	Rod - cross shaft to gov. rod, 1/4" x 31-3/8", MT 40	1
	38A1996	Rod - cross shaft to gov. rod., 5/16" x 30-7/8", MV 60	1
6	10A307	Spring - throttle rod	1
7	38A1575	Clip - spring anchor, L shape, 5" long	1



Ref. No	Part No.	DESCRIPTION	No. Pcs
		LP GAS EQUIPMENT	
1	35P516	Tank - fuel, with fittings	1
2	35P516	Strap - mounting, fuel tank, right hand	1
3	35P608	Strap - mounting, fuel tank, left hand	1
4	35P518	Plate - support, mounting straps, MY 40	1
	35P541	Plate - support, Mounting straps, MY 60	1
5	35P506	Vaporizer	1
6	35P509	Elbow - vaporizer to hose	2
7	35P510	Connector - vaporizer to hose	1
8	35P511	Plate - support vaporizer	1
		GM179799 - Bolt, 1/4"-20 x 1"	2
		GM109084 - Nut, hex., 1/4"-20	2
9	35P507	Solenoid	1
10		GM144915 - Connector, solenoid to hose	1
11	35P513	Carburetor	1
12		GM144956 - Elbow, carburetor to hose	1
13	35P512	Hose - vacuum, 5/32" I.D. x 20"	1
14	35P514	Filter	1
15		GM144955 - Elbow, filter to hose	2
16	35P515	Valve - relief, filter	1
17	35P520	Hose - filter to tank coupling	1
18	35P519	Coupling - hose to tank, female	1
19	35P517	Coupling - hose to tank, male	1
20	35P522	Hose - filter to solenoid	1
21	35P521	Hose - vaporizer to carburetor	1
22	35P553	Hose - vaporizer to water pump	1
23	35P569	Elbow - hose, to water pump	1
24	35P557	Bracket - water pump hose, 1" x 3"	1
25	35P524	Hose - vaporizer to cylinder block	1
26	35P529	Elbow - hose, to cylinder block	1

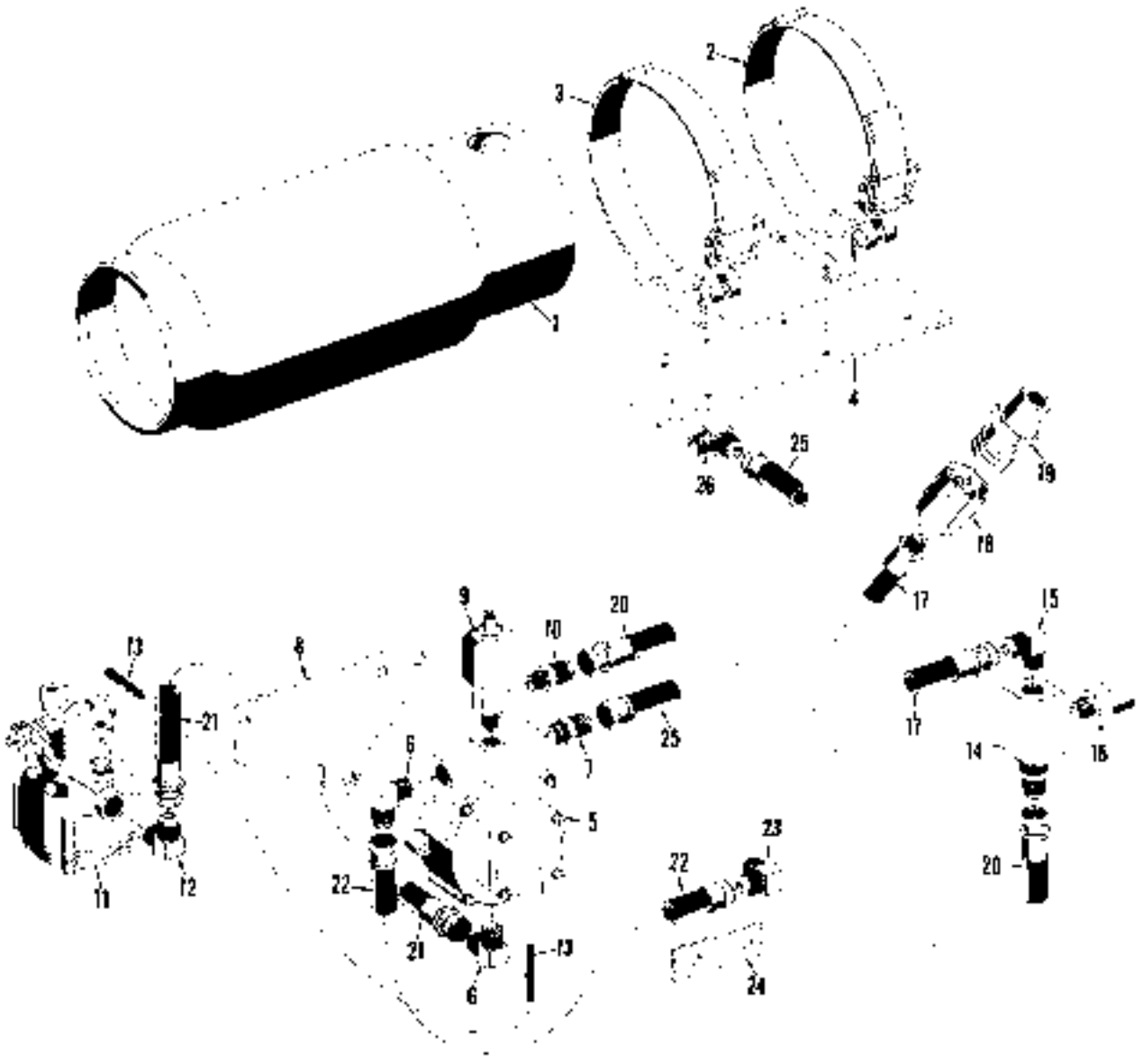


Fig. 2-10

Ref. No	Part No	DESCRIPTION	No. Pcs.
		FUEL TANK, LINES AND FITTINGS	
	--------	Fuel Tank - see main frame on page	
		GM110881 - Plug, pipe, sq. hd., 3/4"	1
1		60A133 - Valve, shut-off, 1/8"-27	1
2	36A1426	Hose - tank to pump, 37-1/2" long	1
3		60A248 - Elbow, street, 1/8", 90°	1
4	36A178	Fillet - assembly	1
		Includes the following 8 parts:	
5	36P55	Cap - filler	1
6	35P468	Pin - cap, 5/32" x 23/32"	1
7	35P56	Arm - cap	1
8	35P467	Pin - arm, 3/16" x 1-3/8"	1
9	35P57	Spring - arm	1
10	35P58	Catch - arm	1
11	35P169	Pin - catch, 3/16" x 1-5/32"	1
12	36P58	Flange - cap	1
13	35P60	Screen - assembly	1
14	36A1059	Unit - sending, fuel gauge, MY 40	1
	36A1060	Unit - sending, fuel gauge, MY 60	1
		GM113002 - Screw, round head, No. 10-32 x 7/16"	6
15	10A8815	Gasket - sending unit	1
16		*GM178426 - Cap, fuel tank, in frame, 2" dia.	1
		*NOTE: Used on lift trucks equipped for using LP gas.	

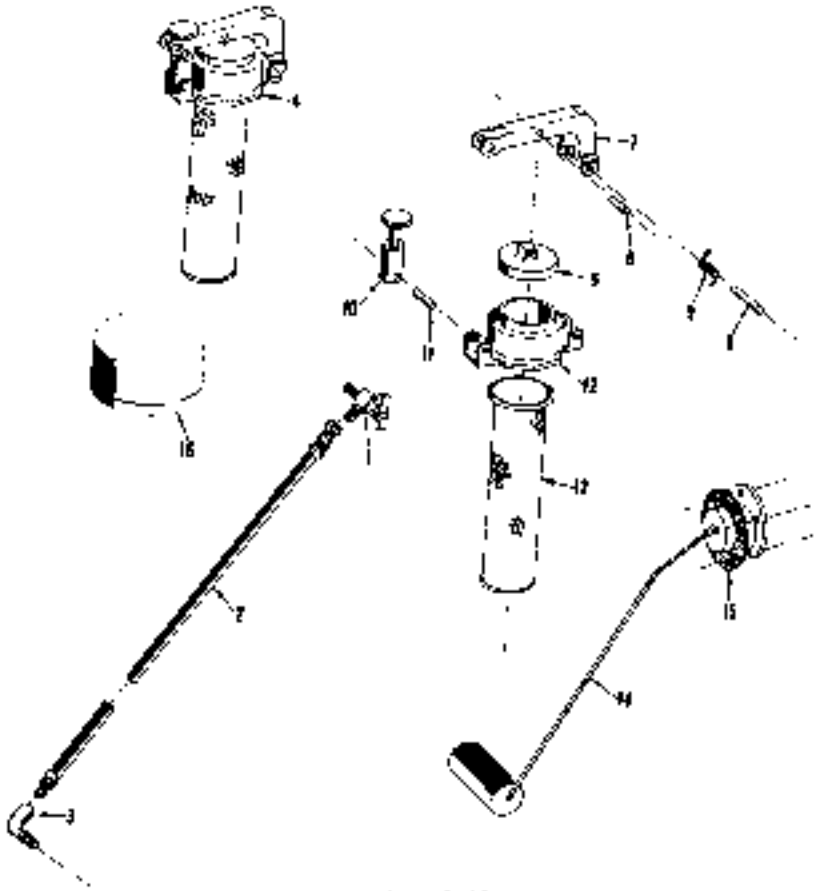


Fig. 2-11

Ref. No.	Part No.	DESCRIPTION	No. Per
		WATER PUMP AND FAN	
-	10A8986	Pump - water, assembly	1
		Includes the following 6 parts:	
		GM140182 - Plug, pipe, socket head, 3/8"	1
2	10A5016	Shaft - with bearings	1
3	10A7203	Ring - oil slinger, 5/8" I.D.	1
4	10A7183	Lock - spring, shaft to housing	1
5	10A3046	Seal - water pump	1
6	10A8006	Impeller	1
7	10A7203	Pulley - fan and water pump	1
8	10A7891	Hub - fan	1
9	10A7996	Cover - water pump, also support	1
		GM179828 - Bolt, hex., 3/8"-16 x 1"	3
		GM179824 - Bolt, hex., 5/16"-18 x 3/4"	3
		GM179825 - Bolt, hex., 5/16"-18 x 1-1/8"	1
		GM179821 - Bolt, hex., 5/16"-18 x 1-3/8"	1
		GM102634 - Nut, hex., 5/16"-18	9
10	10A7201	Gasket - cover to pump housing	1
11	10A16423	Belt - water pump and fan	1
12	10A7890	Tube - water pump to cylinder block	1
13	10A5936	Seal - "O" ring, water pump tube, 1-3/8" I.D.	2
14	10A12908	Brace - water pump support	1
		GM179820 - Bolt, hex., 5/16"-18 x 1-1/4"	3
		GM105694 - Nut, hex., 5/16"-18	3
		GM103243 - Washer - plain, 11/32" I.D.	1
15	10A16123	Blade - fan	1
		GM179820 - Bolt, hex., 5/16"-18 x 1-1/4"	4

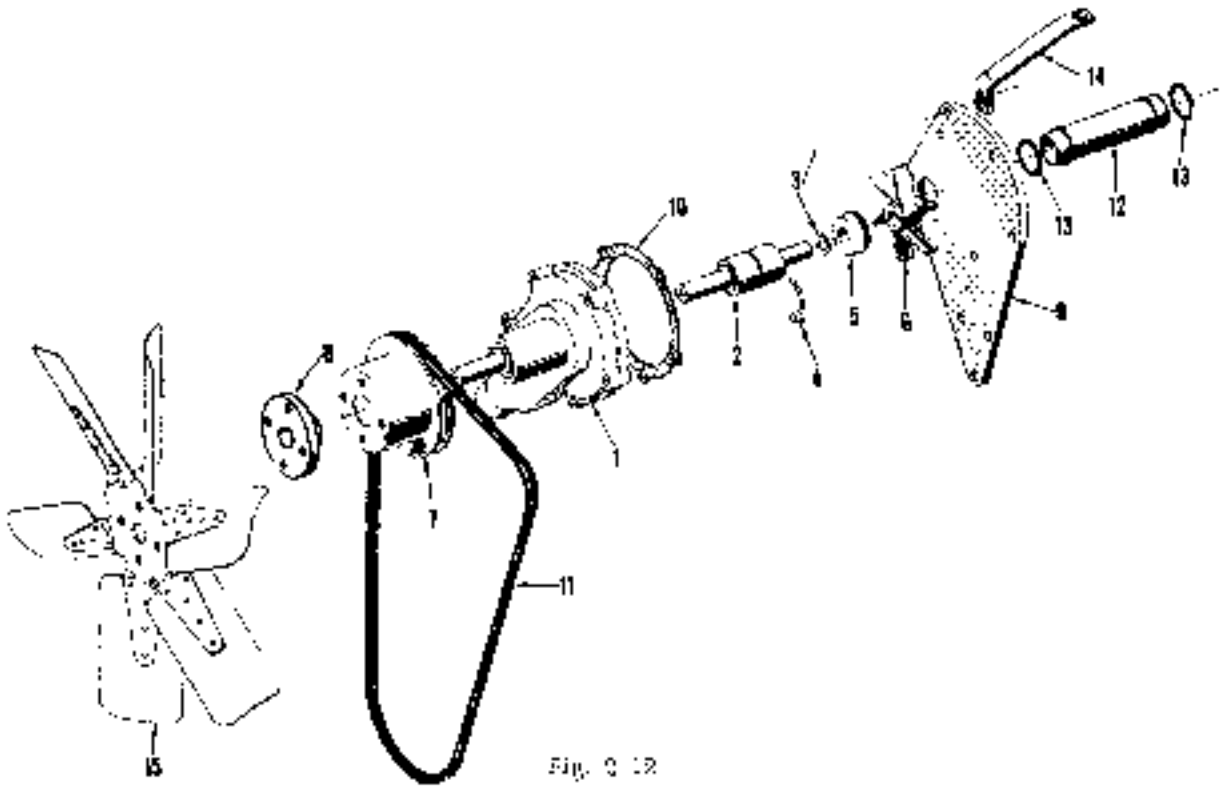


Fig. 9-12

Ref. No	Part No.	DESCRIPTION	No Pcs
		OIL PUMP	
1	10B11830	Body - oil pump, assembly	1
		50A2473 - Elbow, oil pump body, 1/4", 90°	1
2	10A6386	Plug - underside of oil pump body	1
3	10A8406	Shaft - idler gear	1
4	10A7802	Valve - check	1
5	10A525	Spring - check valve	1
6	10A1178	Retainer - check valve spring	1
7	10A6382	Cover - check valve	1
8		GM102396 - Screw-set, check valve cover, 5/16"-18 x 2"	1
9		50A1041 - Nut, set screw, 5/16"-18	1
10		GM120429 - Gasket, copper, 2"	1
11	10A6366	Gasket - lead, set screw	1
12	10A3397	Washer - copper, set screw	1
13	10A8375	Gear - idler	1
14	10A6400	Gear - drive	1
		GM103905 - Key, drive gear, Woodruff No. 5	2
15	10AE415	Shaft - drive oil pump, 5/8" x 15-3/4"	1
16	10A6414	Pinion - drive shaft	1
		50A2832 - Pin, roll, 3/16" x 1"	1
17	10A6380	Bushing - drive shaft	2
18	10AE413	Bushing - grooved, above pinion	1
		GM102730 - Screw, set, 3/8"-16 x 1-1/2"	1
		GM102635 - Nut, hex., 3/8"-16	1
19	10A6412	Coupling - drive shaft to distributor	1
		50A2843 - Pin, roll, 3/16" x 1-1/4"	1
20	10A6387	Gasket - body to crankcase	1
21	10A6431	Stud - body to crankcase, 3/8"-16 x 1-9/16"	4
		GM102635 - Nut, hex., 3/8"-16	4
22	10A6373	Pin - dowel, body to crankcase	2
		GM170939 - Bolt, 3/8"-16 x 1"	1
		OIL FILTER	
27	10A14373	Filter - oil, spin-on	1
28	10A15E97	Base - oil filter	1
29	10A16909	Support - filter base	1
		GM.79683 - Bolt, hex., 1/2"-13 x 1-1/4"	3
		GM170941 - Bolt, hex. head, 3/8"-16 x 1-1/4"	2
		GM102685 - Nut, hex., 3/8"-16	4
30	10A17879	Hose - with couplings	2

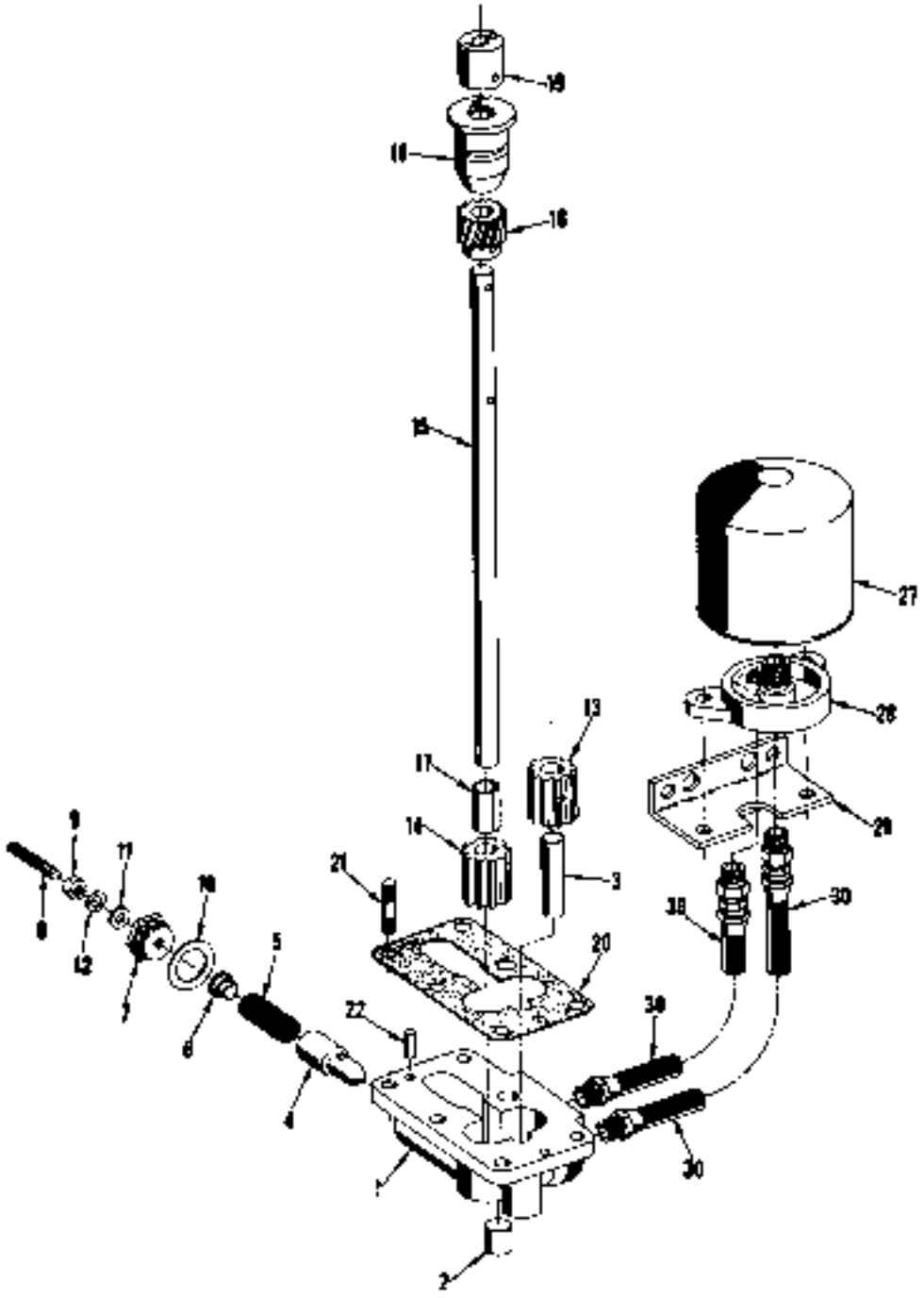


Fig. 2-13

Ref. No.	Part No.	DESCRIPTION	No. Req.
		RADIATOR	
1	35A2931	Radiator, with pressure cap, MY 40	1
	35A810	Radiator, with pressure cap, MY 60	1
2	30P29	Cap - pressure, Purfox No. G-13074	1
3		GM103647 - Valve, drain, 1/4"	1
4		GM100126 - Bolt, hex., 3/8"-16 x 1-1/2"	4
5		GM103004 - Nut, lock, 3/8"-16	4
6		GM100394 - Washer, plain, 3/8"	8
7	10A10077	Washer - fabricoil, 7/16" I.D., 2" O.D.	4
		HOSES - THERMOSTAT	
8	10A10397	Hose - inlet	1
9		GM103478 - Clamp, hose, 1-3/4"	1
9		GM103479 - Clamp, hose, 1-7/8"	1
10		GM100481 - Clamp, hose, 2-1/8"	1
11	10A10639	Hose - outlet, MY 40	1
	35A1947	Hose - outlet, MY 60	1
12		GM103483 - Clamp, hose, 2"	2
13	10A10688	Tube - metal, cyl.head to hose, MY 40	1
	35A2742	Tube - metal, cyl.head to hose, MY 60	1
14	10A2906	Seal - "O" ring, metal tube, 1-3/8" I.D.	1
15	10A10329	Clamp - tube retainer, on cyl. head bolt	1
16	10A10480	Thermostat - 180°, Dole Valve Co. No. 7W11-180	1

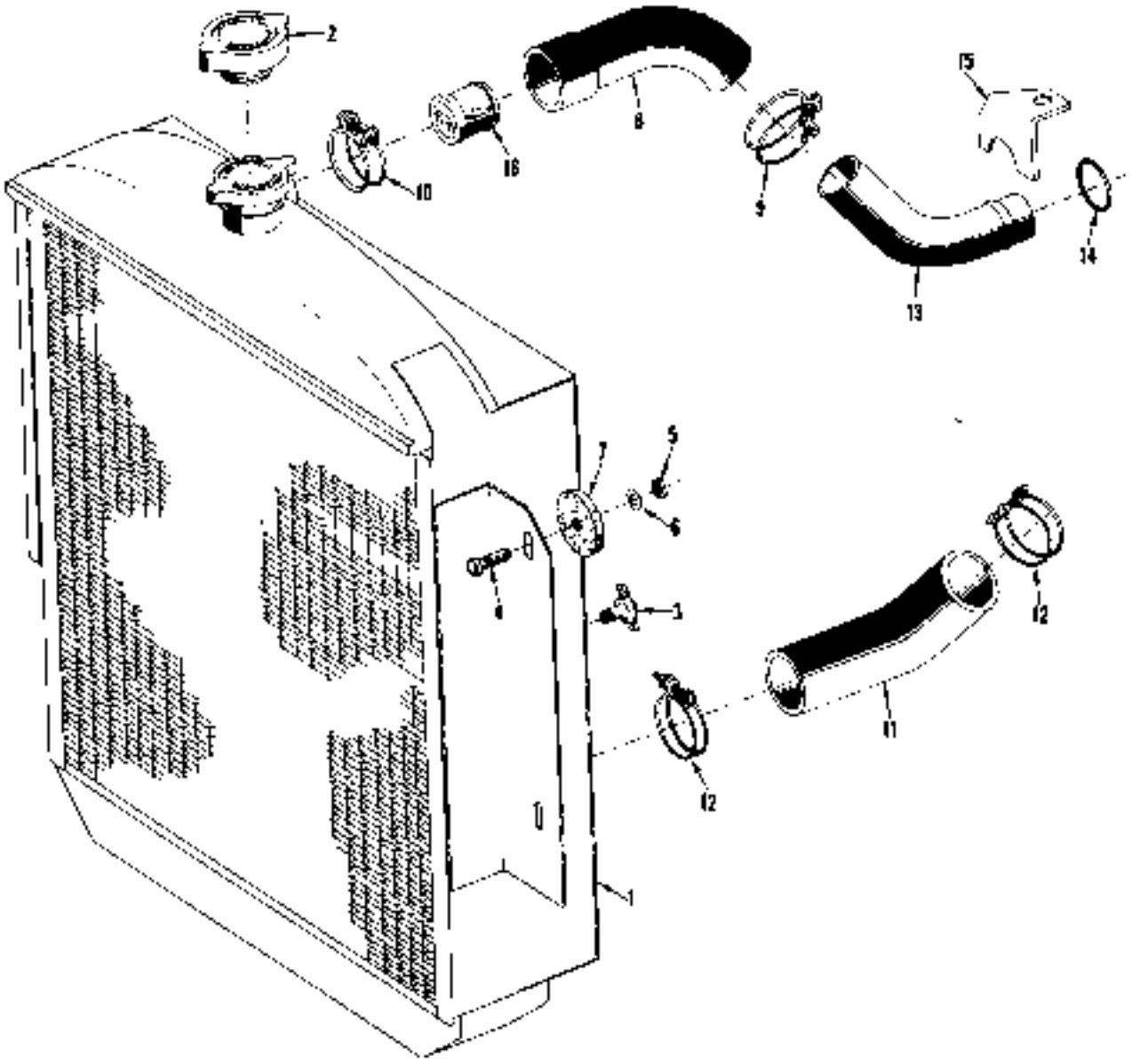


Fig. 2-14

Ref. No	Part No.	DESCRIPTION	No. Pcs.
		DISTRIBUTOR, IGNITION COIL, CABLES AND SPARK PLUGS	
1	10A16616	* Distributor - with coupling (Delco-Remy No. 1112606)	1
2	10P635	Coupling - distributor shaft	1
3	10P636	Pin - coupling to shaft	1
		* Note: Order replacement parts for Distributor direct from Delco-Remy Division or United Motor System.	
4	10A6405	Support - distributor	1
		GM179841 - Bolt, hex., 3/8"-16 x 1-1/4"	2
5	10A6427	Gasket - support to crankcase	1
6	10A6398	Gasket - bracket to distributor	1
7	10A6395	Clamp - distributor hold-down	2
		GM179840 - Bolt, hex., 3/8"-16 x 1-1/8"	2
8	13A7412	Coupling - oil pump shaft to distributor coupling	1
10		50A2643 - Pin, roll, 3/16" x 1-1/4"	1
11	12A16815	Coil - ignition, Delco-Remy No. 1116068	1
12		GM431509 - Nipple, rubber, 3/4" I.D.	1
		GM179816 - Bolt, hex., 5/16"-18 x 3/4"	2
		GM103340 - Washer, plain, 11/32"	2
		GM102814 - Nut, hex., 5/16"-18	2
13	35A2105	Support - ignition coil	1
		GM179816 - Bolt, hex., 5/16"-18 x 3/4"	1
14	10A12342	Cable - high tension, coil to distributor, 19" long	1
		GM431508 - Nipple, rubber, 9/16" I.D.	1
15	10A6505	Cable - low tension, 14" long	1
16	11R3	Cables - ignition set, with nipples	-
17		GM431508 - Nipple, rubber, 9/16" I.D.	5
18	1093196	Clip - with grommet, 5/8"	1
19		GM120013 - Grommet, No. 9	1
	102385	Spark Plug - No. 9 (comm. or D-16	4

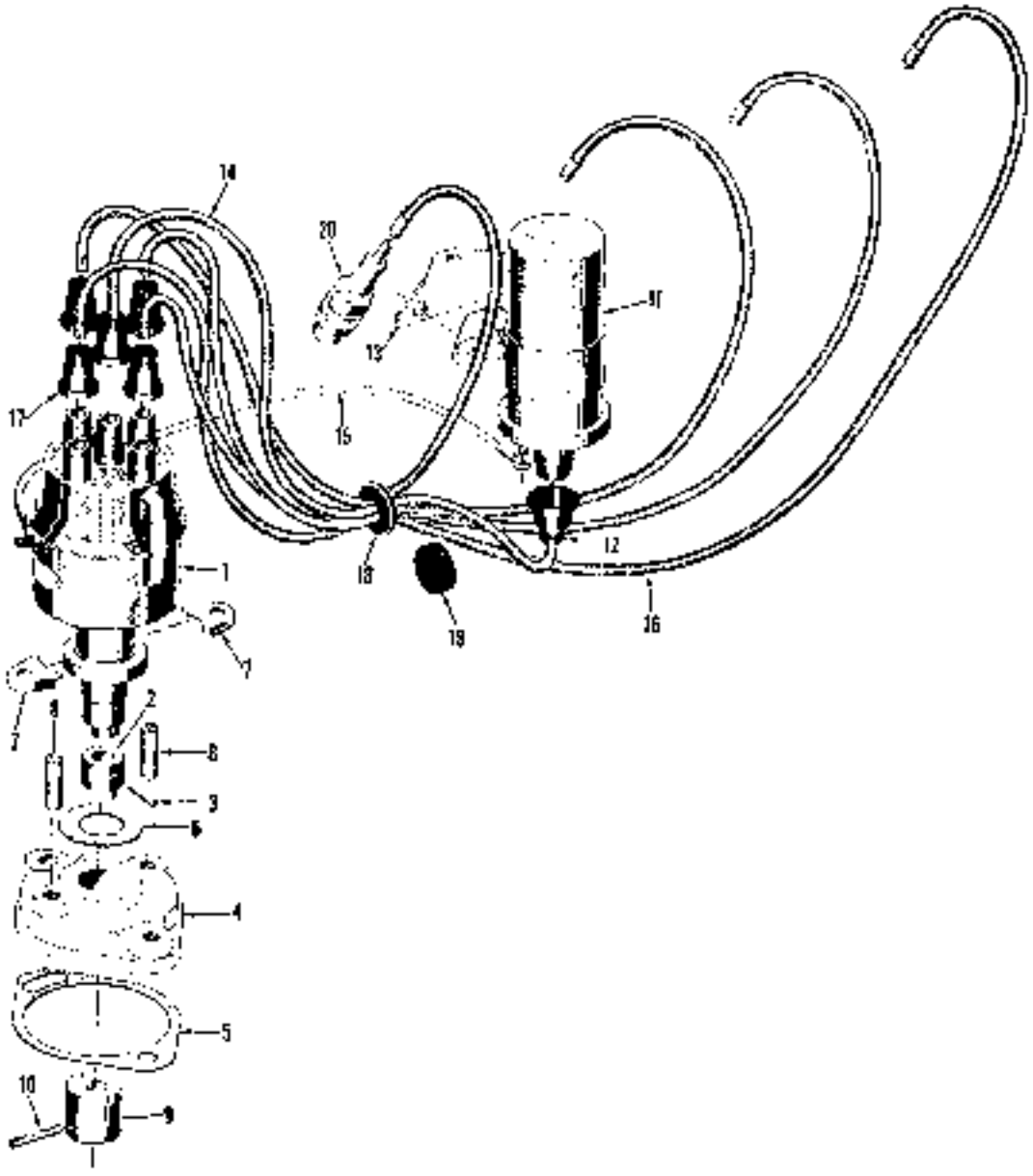


Fig. 2-18

Ref. No	Part No	DESCRIPTION	No. Per
		GENERATOR, VOLTAGE REGULATOR, STARTING MOTOR, HORN AND LAMPS	
1	10A15922	*Generator (Delco-Remy No. 1100306)	1
2	10A16297	Pulley - generator, with fan	1
3	10A16538	Support - generator	1
		GM176839 - Bolt, hex., 3/8"-16 x 1"	2
		GM176818 - Bolt, hex., 5/16"-18 x 1"	2
		GM102834 - Nut, hex., 5/16"-18	2
4	10A5745	Bar - generator adjusting	1
		GM176816 - Bolt, hex., 5/16"-18 x 3/4"	1
		GM102340 - Washer, plain, 11/32"	1
5	10A17540	*Regulator - voltage, (Delco-Remy No. 1118902B)	1
	36A2139	Harness - wiring, generator, to regulator	1
6	10A0758	*Motor - starting (Delco-Remy No. 1108167)	1
7	10A6959	Screw - lock starting motor	1
		GM114507 - Nut, hex, jam, 5/8"-11	1
		*NOTE: Order replacement parts for Generator, Regulator and Starting Motor direct from Delco-Remy Division or United Motor System.	
8	10A10699	Horn - Delco-Remy No. 9000309	1
		GM154750 - Nut, grip, 1/4"-28	2
9	10A10730	Bracket - horn	1
10	36A405	Horn Relay	1
	10A9346	Wire - horn relay to horn, 12" long	1
	36A509	Wire - horn button wire to horn relay, 4" long	1
11	10A16521	Lamp - head, with sealed unit	1
12	10P2553	Unit - sealed	1
13	10P2552	Molding - sealed unit	1
14	38AE31	Support - head lamp	1
		GM290038 - Nut, hex, jam, 1/2"-13	1
15	38AE32	Plate - retainer, head lamp support	1
		GM180123 - Bolt, hex., 3/8" 16 x 1-1/8"	2
16	36A741	Disc - torsion, lamp support, 1" dia.	1
	15A15007	Clip - head lamp wire	1
	36A3004	Wire - with fuse, 60" long	1
	36A3008	Wire - extension, 84" long	1
17	36A3001	Lamp - stop or tail light	1
18	35P565	Lens	1
19	35P564	Gasket	1
20	35P566	Retainer - lens	1
21	35P562	Connector	1
	36A1749	Bracket - tail lamp	1
		GM291652 - Bolt, hex., 3/8"-16 x 3"	1
		GM290377 - Nut, hex., 3/8"-16	1
	36A3007	Wire - tail lamp, 81" long	1
	36A387	Switch - stop light, on Master Cylinder	1
	36A3006	Wire - switch, 42" long	1
	36A3009	Wire - stop light to switch, 72" long	1
	10A7581	Clip - tail lamp wire	1
22	36A3337	Box - battery	1
		GM102635 - Nut, hex., 3/8"-16	2
23	36A3983	Clamp - battery hold down	1
		GM102615 - Nut, hex., 3/8"-16	2
24	36A2251	Pin - pivot, battery box, 3/8" x 8-1/4"	1
25	36A3002	Cable - battery to starting motor, 30" long	1
26	36A3001	Cable - ground, engine to frame, 9" long	1
27	36A3000	Cable - ground, battery to frame, 7" long	1

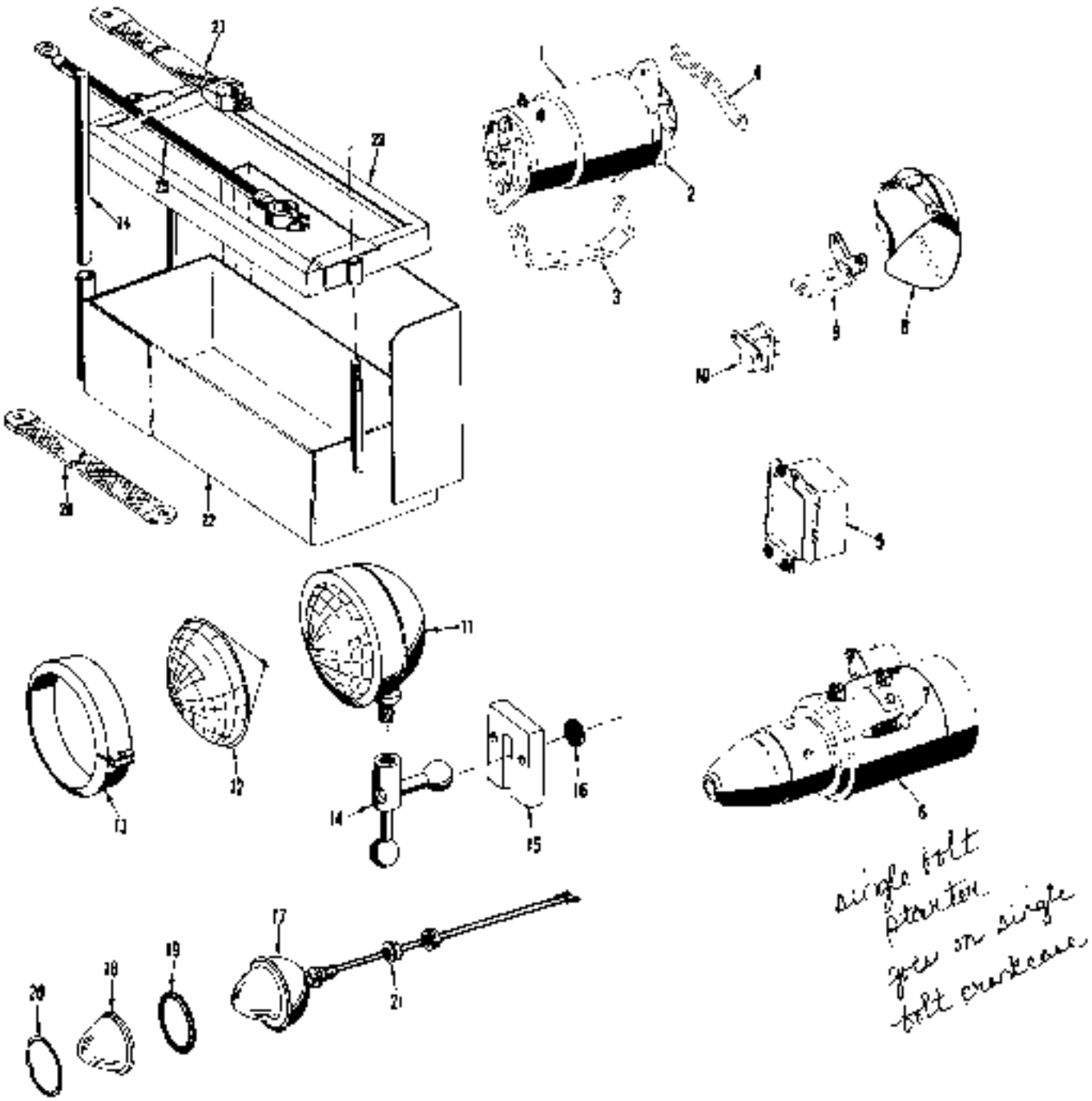


Fig. 2-16

Ref. No.	Part No.	DESCRIPTION	No. Req.
		INSTRUMENT PANEL	
1	35A2039	Panel - instrument	1
		GM166243 - Screw, round head, 1/4"-20 x 5/8"	12
		GM120375 - Nut, hex., 1/4"-20	12
2	35A214	Gauge - ammeter	1
	35A1068	Wire - ammeter to ignition switch, 8" long	1
3	35A411	Gauge - engine temperature	1
	35A1066	Wire - temperature gauge to oil gauge, 8" long	1
4	35A998	Unit - temperature sending	1
5	35A412	Gauge - oil pressure	1
6	35A688	Unit - sending, oil pressure	1
6A	30A1762	Support - oil pressure, sending unit	1
		GM287394 - Coupling, pipe, 1/8"	1
		GM9402660 - Connector, 1/8" N.P.T. to 7/16"-20	1
	35A1750	Tube - extension, sending unit support	1
7	35A212	Gauge - fuel	1
	35A1067	Wire - fuel gauge to temperature gauge	1
8	35A405	Switch - light	1
	35A1065	Wire - oil gauge to light switch, 3" long	1
	35A3004	Wire - with fuse, light switch, 96" long	1
9	10A1077	Switch - ignition	1
10	10PT1	Key - ignition switch, set of 2	1
	35A1068	Wire - ignition switch to starting switch, 8" long	1
11	35A406	Switch - starting motor	1
	35A2881	Hour Meter, MY 60	1
12	35A2880	Hour Meter, MY 40	1
13	10A3436	Dampener - vibration, hour meter	1
		GM109737 - Screw, round head, No. 6-32 x 3/8"	2
14	35A210	Light-warning	1
15	35A67	Plate - warning light	1
16	35A909	Unit - transmission, warning light	1
	35A1761	Choke rod - with tube and knob, 28" long	1
		GM124925 - Nut, hex, jam, 5/8"-24	1
17	10A0296	Switch - pressure	1
18		GM106404 - Nipple, pipe, close, 1/8"	1
19		GM286416 - Tee, pipe, 1/8"	1
	35A2084	Harness - wiring, upper	1
	35A2090	Harness - wiring, lower	1
	35A1102	Wire - lower wiring harness to coil	1
20	35A30	Plate - brake warning	1
		GM107937 - Screw, drive, No. 6 x 3/8"	2
21	35A1757	Switch - neutral, starting	1
		GM132664 - Screw, round head, No. 4-40 x 1"	2
22	35A2486	Bracket - mounting neutral switch	1
23	35A1754	Cover - switch bracket	1
		GM132000 - Screw, round head, No. 10-32 x 3/8"	1
24	35P525	*Switch - oil pressure	1
25	35P531	*Tee - mounting, oil pressure switch	1
	*35P528	*Wire - oil pressure switch, 22" long	1
	35P526	*Wire - oil pressure switch, 31" long	1
26	*10P530	*Plug - stay, panel opening	1
		*NOTE: Used on lift trucks equipped for using LP gas.	

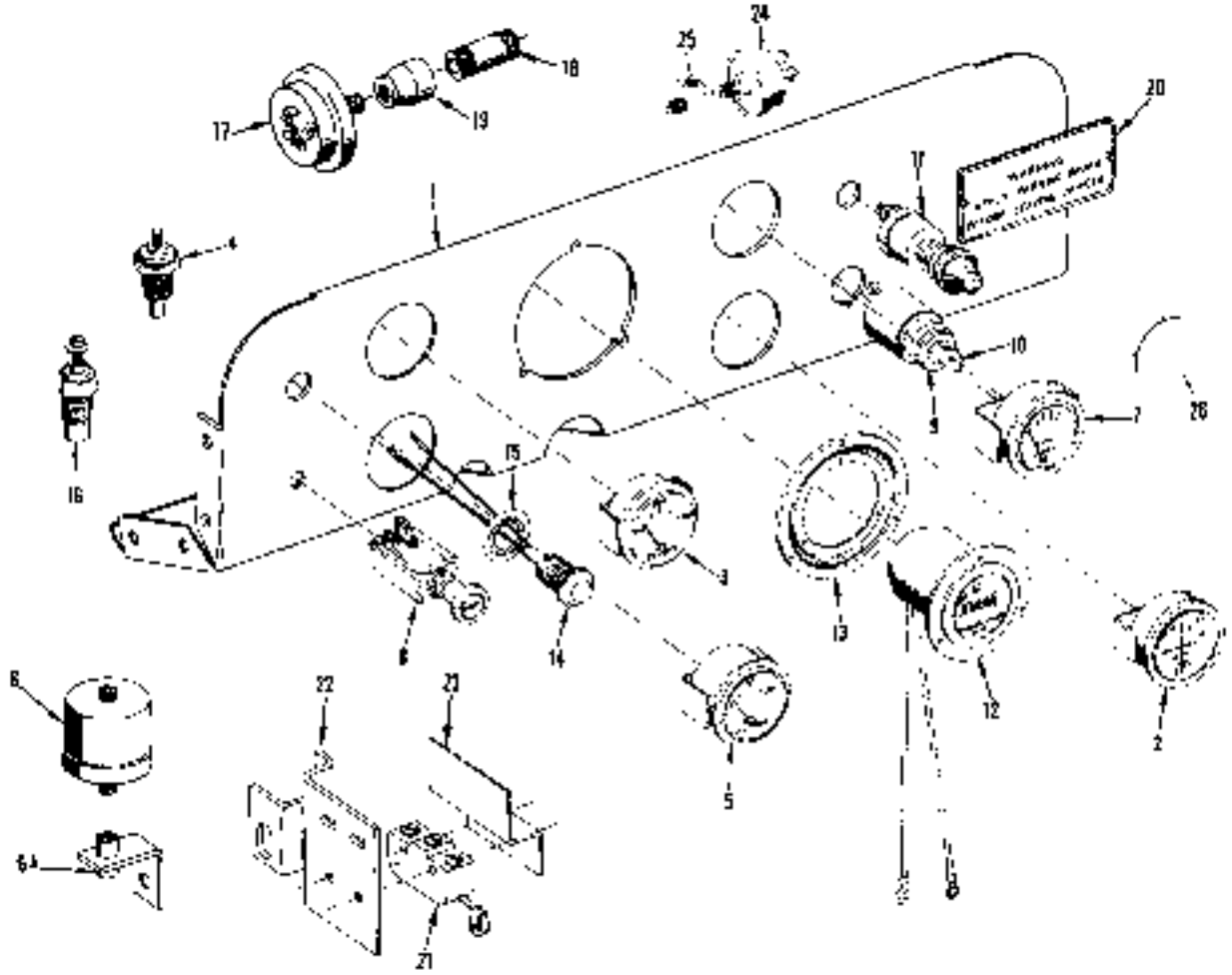


Fig. 2-11

Ref. No	Part No	DESCRIPTION	No Per
		TRANSMISSION CASE, CONVERTER AND PUMP	
1	35A9	Case - transmission	1
		GM103865 - Plug, pipe, 1/8"-27	3
		GM145643 - Ball, steel, 3/8"	2
		GM180202 - Bolt, hex., 9/16"-12 x 1-1/4"	10
		GM180219 - Bolt, hex., 9/16"-12 x 2"	1
		GM124382 - Nut, hex., 9/16"-12 cad.	1
2	10A2297	Plug - drain, magnetic, 1/2"-14	1
3	35A1250	Valve - relief, 3/4" O.D., 1-1/8" long	1
4	35A1249	Piston - relief valve	1
5	35A1248	Spring - relief valve, 1" long, 10 coils	1
6	10A6329	Seal - "O" ring, relief valve, 3/4" O.D.	1
7	36A324	Tube - relief valve, 5/16" x 4-55/64", with clip	1
8	35A873	Support - angle, tube clip	1
		GM160016 - Bolt, hex., 1/4"-20 x 1/2" cad.	3
		GM120073 - Nut, hex., 1/4"-20	3
10	35A1487	Dipstick	1
10A	35A1446	Clamp - dipstick	1
11	36A989	Sleeve - dipstick, pressed in case	1
11A	35A2168	Bracket - filler tube	1
11B		GM140585 - Clip - filler tube	1
		GM190116 - Bolt, hex., 3/8"-16 x 1/2" cad.	1
		GM120077 - Nut, hex., 3/8"-16 cad.	1
12	35A389	Housing - priority valve, 1-1/8" x 2-3/4"	1
13	35A302	Spool - priority valve, 3/4" O.D. x 15/16" long	1
14	35A300	Spring - priority valve, 2-3/8" long	1
15	35A391	Guide - valve spring, 3/4" O.D. x 15/16" long	1
16	10A9908	Seal - "O" ring, priority valve housing	2
	35A709	Washer - priority valve spring, 1/4" I.D., 1" O.D.	1
17	36A4	Cover - transmission case	1
		GM145637 - Ball, steel, 1/2"	1
		GM145641 - Ball, steel, 5/16"	1
18	35A3263	Plug - pipe, 1/2"	2
19		GM111780 - Plug, pipe, 3/8"-18	1
		GM180120 - Bolt, hex., 5/8"-11 x 1-7/8" cad.	18
		GM120092 - Washer, lock, 5/8" cad.	13
20	10A11540	Pin - dowel, cover to case, 3/8" x 3/4"	2
21	35A310	Gasket - transmission case cover	1
22	36A102	Manifold - on transmission case cover, with orifice and steel ball	1
23		GM103865 - Plug, pipe, 1/8"	2
24		GM147485 - Ball, steel, 1/4"	1
		GM190123 - Bolt, hex., 3/8"-16 x 1-1/8"	3
25	35A321	Gasket - manifold to trans. case cover, 4-5/8" dia.	1
26	36A106	Flange - filter mounting	1
		GM180079 - Bolt, hex., 5/16"-18 x 1"	8
27	35A317	Gasket - filter flange	1
28	36A313	Shell - filter, 1-1/8" I.D., 3-17/16" long	1
	35A2419	Cover - filter shell	1
		50A440 - Bolt, hex., 3/8"-16 x 5-1/4"	1
29	35A318	Screen - filter shell, 1-3/32" O.D., 3-9/16" long	1
30	35A851	Cover - reverse idler gears	1
		GM180078 - Bolt, cover, 5/16"-18 x 3/8"	5
31	35A852	Gasket - reverse gear cover	1

Ref. No	Part No	DESCRIPTION	No. Per
		TRANSMISSION CASE, CONVERTER AND PUMP (Continued)	
32	36A109	Bell housing	1
		GM180125 - Bolt, hex., 3/8"-16 x 1-1/8", cad.	4
		GM180132 - Bolt, hex., 3/8"-16 x 1-1/4", cad.	5
		GM120362 - Washer, lock, 3/8", cad.	9
		GM271722 - Bolt, hex., 5/8"-11 x 2", cad.	13
		GM121514 - Washer, lock, 5/8", cad.	13
		GM124559 - Nut, hex., 5/8"-11	1½
33	ICA11543	Pin - dowel, bell housing, 3/8" x 3/4"	2
34	36A093	Pin - dowel, bell housing, 1/2" x 1"	2
35	35A311	Pump - converter, Long Mfg. Div. No. 17-F-60	1
		GM180090 - Bolt, hex., 3/16"-18 x 1-1/8", cad.	8
	ICA3997	Washer - copper, converter bolt, 11/32" I.D., 3/8" O.D.	8
36	35A312	Gasket - pump to cover	1
38	36A314	Converter - Long Mfg. Div. No. F-40-C-20%	1
		GM3409810 - Bolt, hex., 3/16"-18 x 5/8"	6
		GM103320 - Washer, lock, 5/16"	6
39	31A328	Kit - drive plate, converter to flywheel	1

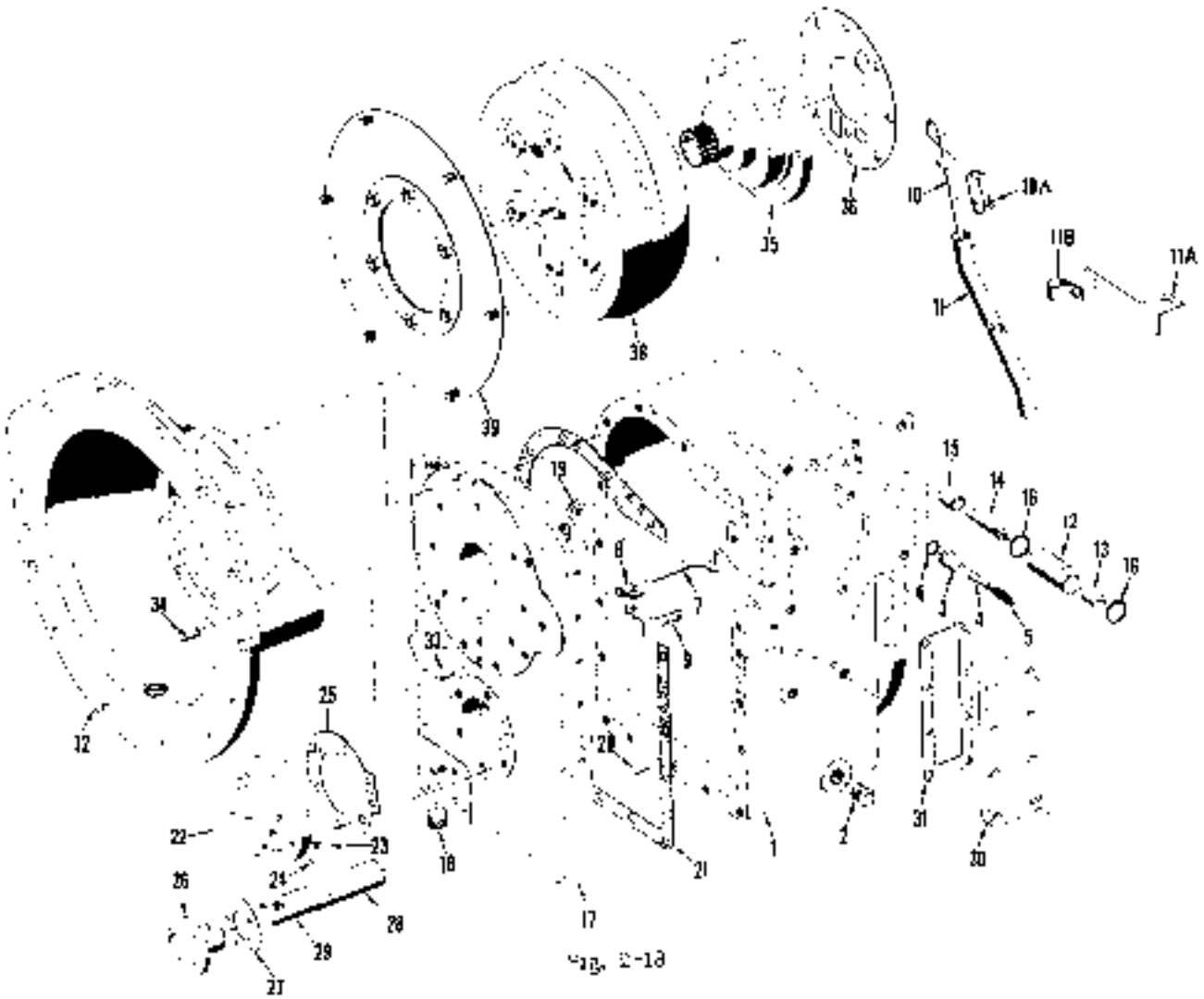


Fig. 2-18

Ref. No.	Part No.	DESCRIPTION	No. Per
		TRANSMISSION	
1	95A928	Shaft - input, 15-5/8" long	1
		GM145641 - Ball, steel, 5/16"	2
2	55E243	Shaft - output, with pinion and ring gear (matched)	1
3	35A341	Ring - oil seal, input and output shafts, 1-1/4" O.D.	6
3A		50A766 - Ring - quad, shaft to housing	6
		GM145641 - Ball, steel, 5/16"	2
4	35A2132	Housing - driving plates	2
5	35A355	Ring - oil seal, 2-3/8" O.D.	4
6	50A330	Piston - input shaft housing, 7-5/8" O.D., 59 teeth	2
7	50A336	Piston - output shaft housing, 7-3/8" O.D., 58 teeth	2
8		GM145837 - Ball, steel, 3/16" dia.	2
		50A2262 - Pin, roll, 3/64" x 5/8"	2
9	10A15E39	Ring - input and output pistons, 7" dia.	4
10	95A337	Washer - thrust, plate housing, 1-17/32" I.D., 2-3/8" O.D.	4
11	95A321	Spring - piston, 2-1/32" long	4
12	95A322	Retainer - spring, 2-21/32" O.D.	4
13	35A343	Ring - snap, spring retainer, 2-1/8"	4
14	95A333	Plate - friction, 7" O.D., 36 internal teeth	10
15	95A334	Plate - backing, 7-5/8" O.D., 58 external teeth	12
16	95A335	Ring - backup, 3/8" wide, 36 external teeth	4
17	95A336	Ring - retainer, backup ring, 7-1/2" O.D.	4
18	95A338	Carrier - assembly with bushing, input shaft, 36 and 43 teeth	1
19	35A339	Bushing - carrier, 1-1/2" I.D., 1-1/2" long	1
20	95A343	Carrier - assembly with bushing, input shaft, 30 teeth	1
21	35A339	Bushing - carrier, 1-1/2" I.D., 1-1/2" long	1
22	35A319	Washer - thrust, carrier to bearings	2
23-24	35A342	Bearing - ball, input shaft	2
25	50A981	Ring - collector, ball bearing	1
25A		50A787 - "O" ring, collector ring	1
25B	95A993	Ring - piston	1
25C	50A980	Retainer - piston ring	1
25D		50A708 - Ring, retainer	1
26	95A980	Carrier - assembly with bushing, output shaft, 25 teeth	1
27	35A979	Bushing - carrier assembly	1
28	35A358	Spacer - carrier to bearing, 1-15/16" I.D., 2-5/16" wide	1
29	50A364	Carrier - assembly with bushing, output shaft, 44 teeth	1
30	35A339	Bushing - carrier assembly, 1-1/2" I.D., 1-1/2" long	1
31	50A360	Spacer - carrier to bearing, 1-33/64", 2-3/8" O.D.	1
32	50A357	Cone - bearing	1
33	50A327	Cup - bearing	1
34	95A326	Cone - bearing	1
35	50A328	Cup - bearing	1
36	50A359	Washer - thrust, spacer to carrier	1
37	35A386	Nut - lock, bearing, 18 N.S.	2
38	35A967	Washer - lock nut	1
39	50A852	Gear - reverse, with bearing, 41 teeth	1
40	35A332	Bearing - needle	2
41	35A350	Shaft - reverse, 1" x 3"	1
42		GM229098 - Screw, set half dog point, 3/8" - 16 x 3/4"	1
43	35A351	Washer - thrust, reverse gear, 1-1/32" I.D., 1-3/4" O.D.	2
44	95A347	Shaft - idler, with gears, 50 and 35 teeth	1
45	35A340	Bearing - roller, 1-1/2" I.D.	2
46	95A349	Washer - thrust, reverse gear, 1-1/32" I.D., 2-1/4" O.D.	1
47	35A348	Bearing - roller, 1-27/32" I.D.	1
48	35A345	Washer - thrust, 1-15/16" I.D., 2-7/8" O.D.	1

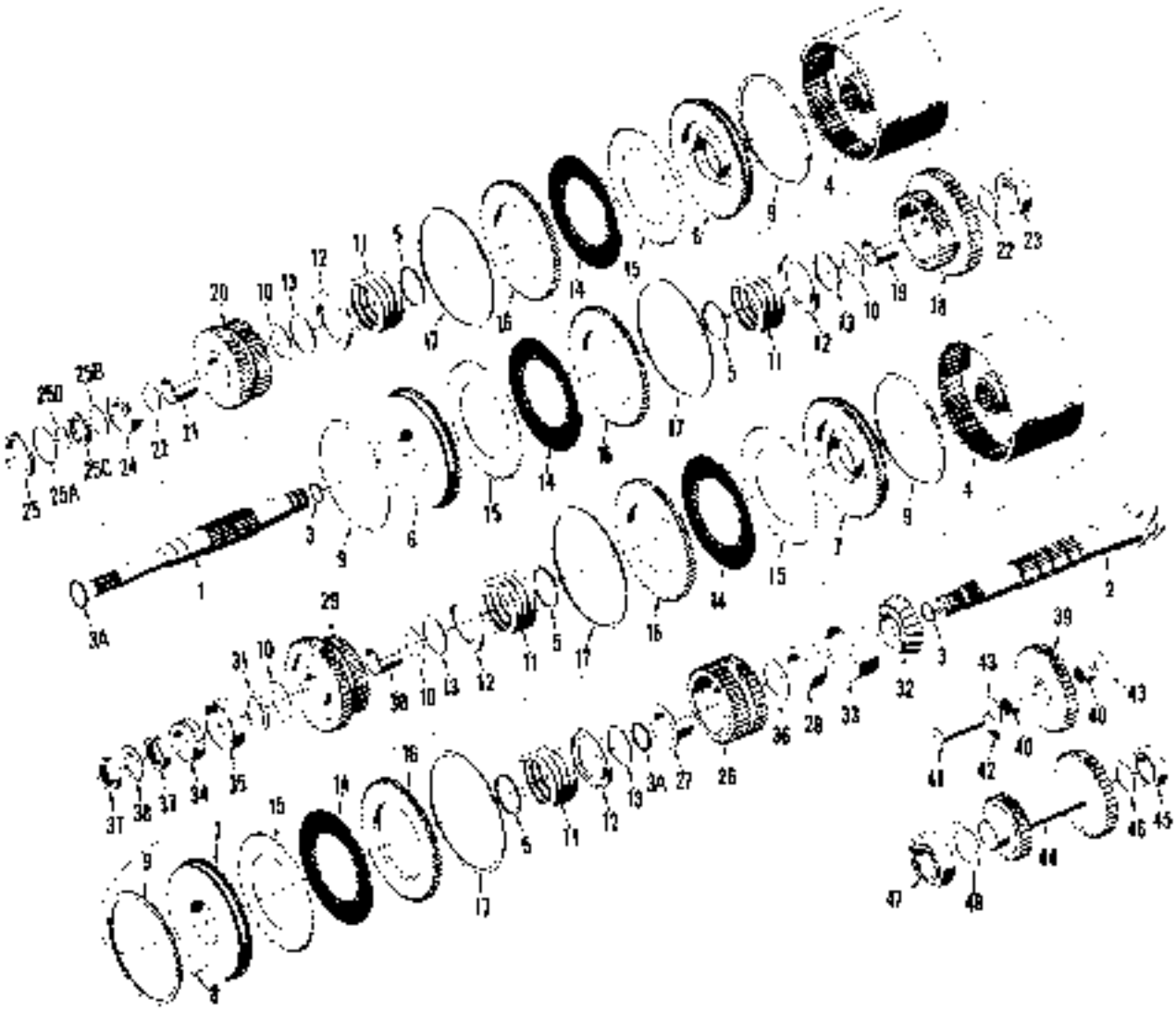


Fig. 2-19

Ref. No.	Part No.	DESCRIPTION	No. Pcs.
		CONTROL VALVE AND OIL FILTER	
1	35A9	Block - porting	1
2	30A279	Gasket - porting block to trans. case cover	1
3	35A7	Body - valve, w/ locking feature	1
4	35A379	Gasket - valve body to porting block	1
		GM180180 - Bolt, hex., 1/2"-13 x 1-7/8"	4
		GM180188 - Bolt, hex., 1/2"-13 x 2-3/4"	6
		GM182046 - Screw, fillister head, No. 10-24 x 5/8"	4
		GM120217 - Washer, lock, No. 10	8
5	35A372	Spool - lever control, 3/4" x 2-3/32"	2
6		GM145641 - Ball, steel, lever spool, 5/16"	2
8	35A379	Spring - steel ball, 23/32" long, 10 coils	2
9	10A16329	Seal - oil, lever spool, 3/4" I.D., 1/4" wide	4
10	10A6329	Seal - "O" ring, valve body	7
11	10A15752	Plug - valve body seal, 3/4" O.D., 3/8" wide	6
12	10A6330	Ring - snap, plug retainer	6
13	35A373	Spool - pressure regulator, 3/4" O.D., 2" long	1
14	35A374	Spring - pressure spool, 1-3/4" long, 12 coils	1
15	35A377	Valve - relief, 3/4" O.D., 1-1/8" long	1
16		GM145643 - Ball, steel, relief valve, 3/8"	1
17	35A376	Spring - relief valve, 1" long, 9 coils	1
18	35A692	Spool - inching, 1-5/8" long	1
19	35A689	Spring - centering inching spool, 3/4" long, 14 coils	1
20	35A691	Spring - inching spool, 1-3/8" long, 11-1/4" coils	1
20A	35A1771	Spacer - inching spool spring	1
21	35A693	Piston - inching, 2-5/8" long	1
22	35A692	Spacer - inching piston	1
23	35A10	Cylinder - inching	1
		GM122056 - Screw, fill, head, No. 10-24 x 7/8"	3
24	35A694	Gasket - inching cylinder to valve body, 1-3/4" x 2-1/4"	1
25	10A4538	Seal - "O" Ring, cylinder to valve body	2
26	35A695	Packing - Vee Block, cylinder, Chicago No. 1068V48	1
27	30A688	Washer - backup, cylinder packing, 3/4" I.D.	1
28		50A3602 - Washer, inching piston	1
29	35A690	Spring - cylinder, 2-1/2" long, 11 coils	1
30	35A697	Plug - cylinder spring	1
31	35A1770	Spring - end of plug	1
32		50A196 - Ring, snap, plug, Tru-Arc, No. 5000-100	1
		GM138802 - Screw, socket head, 1/4"-20 x 1"	1
33	30A671	Lever - hand, with sleeve and bushing, high and low range, inner	1
34	35A288	Bushing - 1/2" I.D., 1" long, Chrysler Corp. No. AA 650-2	
35	10A5955	Collar - tube, 1-1/64" I.D., 1-5/8" O.D.	1
		50A1858 - Screw, set, 3/8"-16 x 1/2"	1
36	30A655	Lever - hand, with shaft, forward and reverse, outer	1
37	30A674	Arm - hand lever tube	1
		GM106745 - Key, woodruff, No. 3	1
		GM180128 - Bolt, hex., 3/8"-16 x 1-3/4" nad.	1
38	35A571	Arm - hand lever shaft	1
		50A2023 - Pin, roll, 3/16" x 1"	1
		50A2082 - Washer, plain, 17/32"	2
39	35A573	Clamp - hand lever	1
		GM180133 - Bolt, hex., 3/8"-16 x 2" nad.	2
40	35A587	Bushing - hand lever clamp, 1" I.D., 1-1/4" O.D.	2
	30A1844	Bearing - assembly arm to clamp	1
		GM180376 - Bolt, hex., 5/16"-18 x 7/8"	3
	35A1945	Support - bearing assembly	1
		GM180128 - Bolt, hex., 5/16"-18 x 7/8"	2
		GM120304 - Washer, plain, 13/32"	2
41	35A563	Bell Crank - connecting links	2
42	30A678	Support - bell crank	2
		GM151870 - Screw, set, sc. hd., 3/8"-16 x 1-1/2" nad.	2

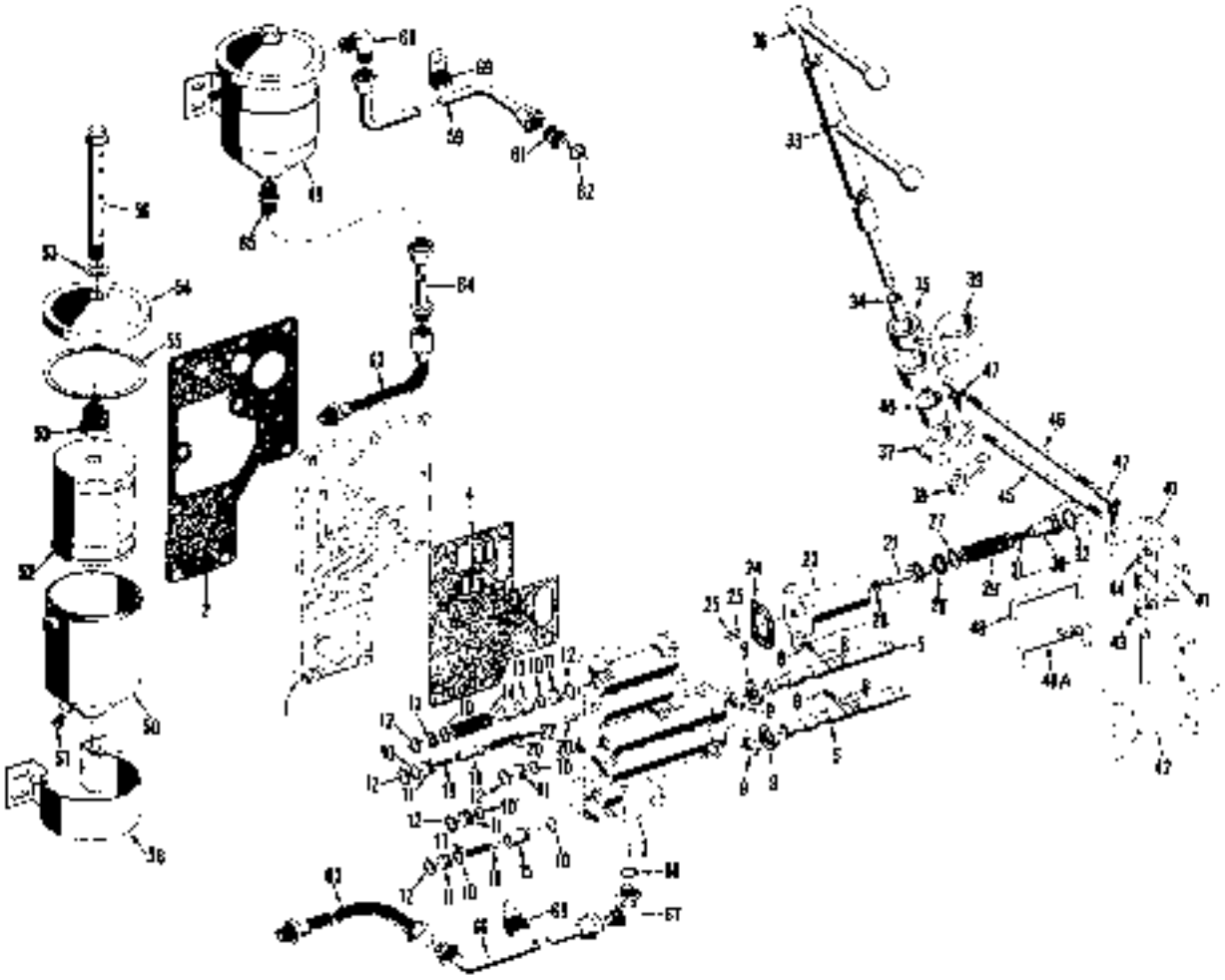


Fig. 2-30

Ref. No	Part No.	DESCRIPTION	No. Per.
		CONTROL VALVE AND OIL FILTER (Cont'd)	
		50A2032 - Washer, plain, 17/32"	1
		GM103385 - Pin, cotter, 1/8" x 1"	1
43	36A582	Spacer - bell crank, 15/32" thick, inner	1
44	15A14814	Spacer - bell crank, 3/8" thick, between cranks	1
46	35A585	Rod - hand lever to bell crank	2
47		GM442720 - Joint, ball, hand lever rods, 5/16" rad.	4
		GM120968 - Nut, hex., 5/16"-24	4
		GM124820 - Nut, hex. jam, 5/16"-24	4
48	35A586	Link - valve to bell crank, 3/8" x 4-1/4"	1
48A	36A2495	Link - valve to bell crank, with clip for neutral starting switch	1
		GM103373 - Pin, cotter, 3/32" x 3/4"	2
49	35A6	Filter - oil, Fram No. 2468	1
50	35P31	Body - Fram No. 8715	1
51		GM444914 - Plug, drain, 1/8"-27 N.P.T.	1
52	35P32	Cartridge - Fram No. 118106	1
53	35P35	Spring - assembly, Fram No. 118040	1
54	35P34	Cover - Fram No. 103226	1
55	35P33	Gasket - cover, No. 102087	1
56	35P36	Bolt - cover, with valve, Fram No. 2563	1
57	35P37	Gasket - bolt, Fram No. 101979	1
58	35P38	Strap - mounting, Fram No. 10768	1
		GM189421 - Screw, round head, 1/4"-20 x 3-1/4"	1
		GM120372 - Nut, square, 1/4"-20	1
		GM131208 - Washer, lock, 1/4"	1
59	35A1282	Tube - filter to transmission case, 1/2" O.D.	1
		36A600 - Clip, tube to frame	1
60		GM9402866 - Elbow, filter inlet	1
61		GM9410977 - Elbow, transmission outlet	1
62	10A12012	Seal - "O" ring, connector, 2.709" I.D.	1
63	35A562	Hose - cooler, inlet and outlet, 12-1/2" long	2
64	35A1283	Tube - filter to cooler inlet	1
65		GM9402700 - Connector, filter outlet	1
66	35A1284	Tube - valve to cooler hose, 1/2" O.D.	1
67		GM9410977 - Elbow, valve inlet	1
68	10A12012	Seal - "O" ring, valve elbow, 21/32" I.D.	1
69	R1886D	Clip - support cooler tube	6
		GM180088 - Bolt, hex., 5/16"-18 x 3/4" cad.	2
		GM120376 - Nut, hex., 5/16"-18	2

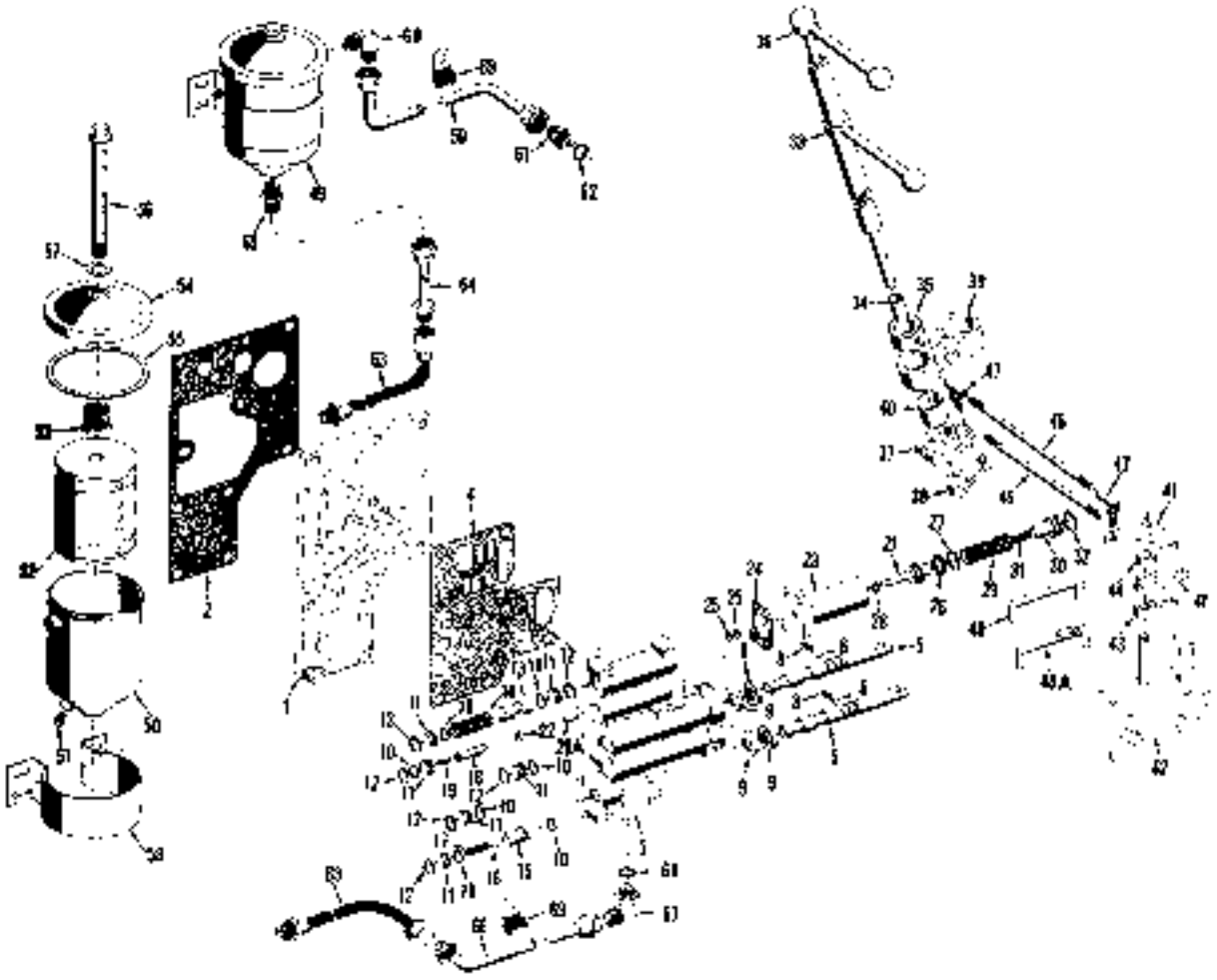


Fig. 2-20

Ref. No	Part No	DESCRIPTION	No. Pcs
		MY 40 STEERING AXLE	
1	35A1795	Axle - steer	1
		GM135509 - Screw, set, 1/2"-13 x 1-1/4", cone point	2
1A		GM110094 - Screw, set, 1/2"-13 x 1-1/2", oval point	2
		GM120239 - Nut, hex, jam, 1/2"-13	5
		GM172678 - Plug, expansion, 1-3/4"	4
2	35A1847	Bearing - needle, in axle, Torrington No. 3532820 OH	4
3	35A1796	Spindle - wheel hub, right hand	1
4	35A1797	Spindle - wheel hub, left hand	1
5	35A1799	Pin - spindle to axle, 1-3/4" x 6-13/16"	2
6	20A6448	Bearing - thrust, for spindle pin, Timken No. T126	2
7	35A1803	Seal - dust, on spindle, National Seal No. 66406	2
8	3EA549	Bearing - axle pivot	2
9	35A561	Bushing - bearing box	2
		GM180180 - Bolt, hex., 1/2"-13 x 1-7/8"	8
		GM120378 - Nut, hex., 1/2"-13	8
10	35A1801	Shaft - axle to pivot bearing, 1 1/4" dia. x 13-1/2" long	1
11	30A1483	Housing - steering, tie rods	1
12	35A1800	Pin - pivot, steer housing to axle	1
		50A2143 - Washer, plain, 25/32" x 1-3/4"	1
		GM427640 - Nut, hex, slotted, 3/4"-16	1
		GM103409 - Pin, cotter, 3/16" x 1-1/2"	1
13	35A1802	Pin - lock, pivot pin to axle, 3/8" x 2"	1
14	20H4700	Cone - bearing, steering housing, Timken No. LM67900L	2
15	15A10709	Cup - bearing, steering housing, Timken No. LM67910	2
16	35A565	Socket - tie rod, long, Thompson Products No. L-14-SV-642-A-11	2
17	35A564	Socket - tie rod, short, Thompson Products No. L-14-SV-640 A-11	2
		GM103385 - Pin, cotter, 1/8" x 1"	5
18	35AB86	Sleeve - adjusting, tie rod ends, 9/8" O.D., x 5-3/8" long	2
19	35A887	Clamp - adjusting sleeve	4

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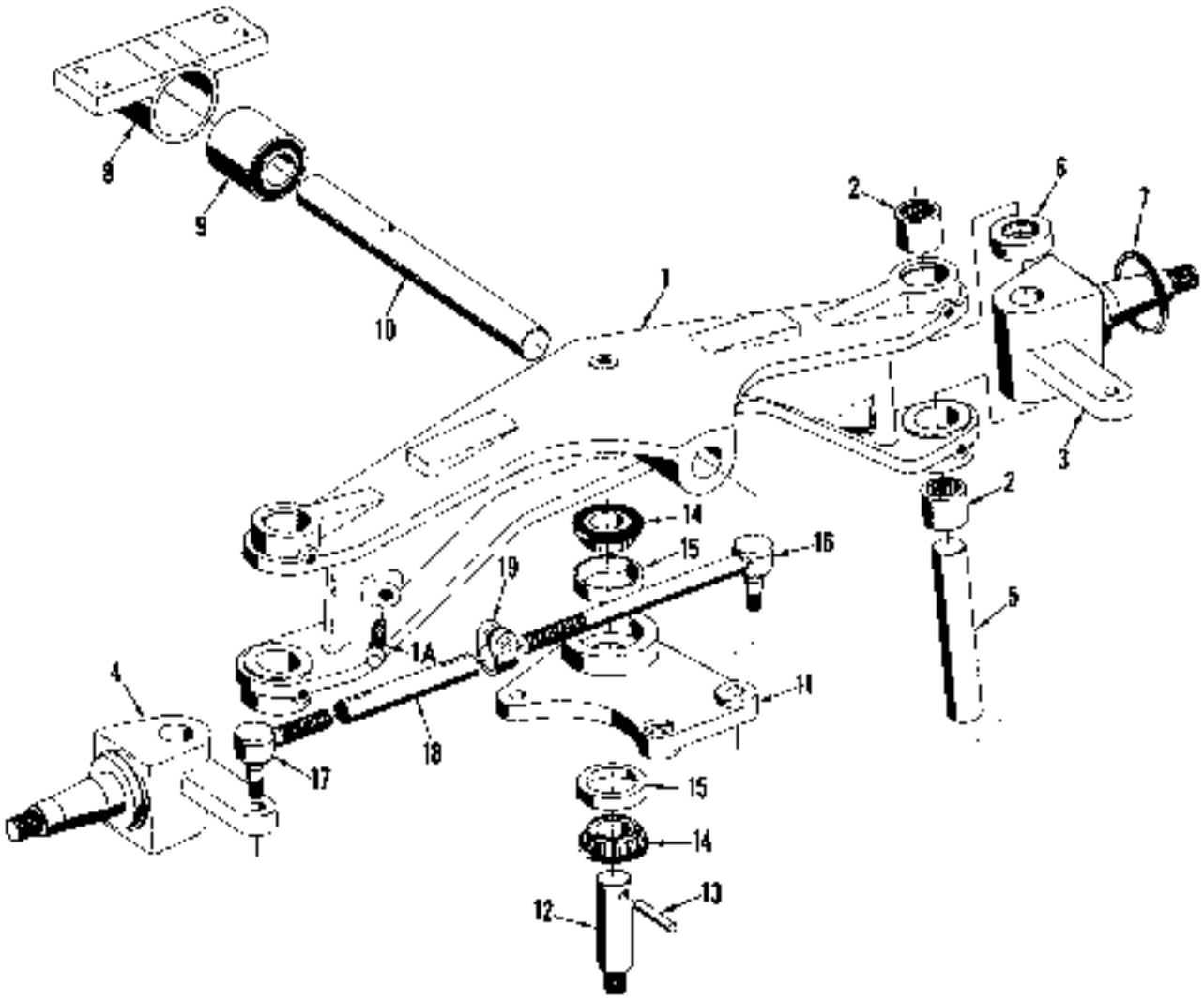

Fig. 2-21

Ref No	Part No	DESCRIPTION	No Per
		MY 60 STEERING AXLE	
	35A2995	Axle - steering, assembly	1
		Includes the following 34 parts	
1	35P114	Axle - center	1
2	35P116	Shaft - steering arm	1
3	35P113	Bearing - steering knuckle pin	4
4	35P115	Cap - bearing mounting	2
5		GM1271366 - Bolt, bearing cap, 5/8"-11 x 3"	8
7	35P152	Knuckle - steering, right hand	1
8	35P117	Knuckle - steering, left hand	1
9	10A6443	Bearing - thrust, steering knuckle	2
10	35P133	Shim - steering knuckle	as req'd
11		GM1728276 - Plug, expansion, 1-5/8"	4
12	35P17	Key - draw, knuckle pin	2
		GM1083926 - Nut, draw key, 3/8"-24	2
13		GM1137634 - Screw, stop, steering knuckle, 7/16"-14 x 2-3/4"	2
		GM1271120 - Nut, stop screw, 7/16"-14	2
14	35P119	Pin - steering knuckle	2
15	35P122	Arm - steering, center	1
15A	35P542	Stud - ball, center steering arm	1
		GM1102640 - Nut, slotted, 5/8"-18	1
16	VT924	Nut - steering arm and shaft	1
17	35P 68	Washer - steering arm nut	1
18	VT697	Cap - grease, steering arm	1
19	35P121	Cone - bearing, center steering arm	4
20	10A699	Cup - bearing, center steering arm	4
21	35P120	Seal - felt, steering arm bearing	1
22	35P119	Cup - felt seal	1
	35P118	Tie rod - assembly	2
23	35P24	End - tie rod, left hand	2
24	35P25	End - tie rod, right hand	2
25	35P29	Cover - tie rod end, rubber	4
26		GM1102419 - Nut, lock, slotted, 5/8"-18	4
27	35P109	Sleeve - tie rod	2
28	35P28	Clamp - tie rod	4
29		GM1161400 - Bolt, tie rod clamp, 7/16"-20 x 1-1/2"	4
		GM1271566 - Nut, clamp bolt, 7/16"-20	4
30		GM1111206 - Fitting, grease, straight	2
30		GM1173102 - Fitting, grease, 45°	2
31	35P126	Hub - wheel, with bearing cups	2
32	35P125	Cup - bearing, outer	2
33	35P127	Cup - bearing, inner	2
34	35P124	Cone - bearing, wheel hub, inner	2
35	35P128	Cone - bearing, wheel hub, outer	2
36	35P126	Seal - oil, wheel hub	2
37	VT924	Nut - spindle bearings	2
38	35P108	Washer - bearing retainer	2
		GM1103398 - Cotter, spindle nut, 1/8" x 1-5/8"	2
39	35P123	Cap - hub	2
		GM1299837 - Bolt, hub cap, 3/8"-16 x 3/4"	8
40	5-A704	Bushing - bearing cage	2
41	36A765	Shaft - wire bracket, axle support	2
		GM1271723 - Bolt, support bracket, 5/8"-11 x 2"	8
		GM1124583 - Nut, support bolt, 5/8"-11	8

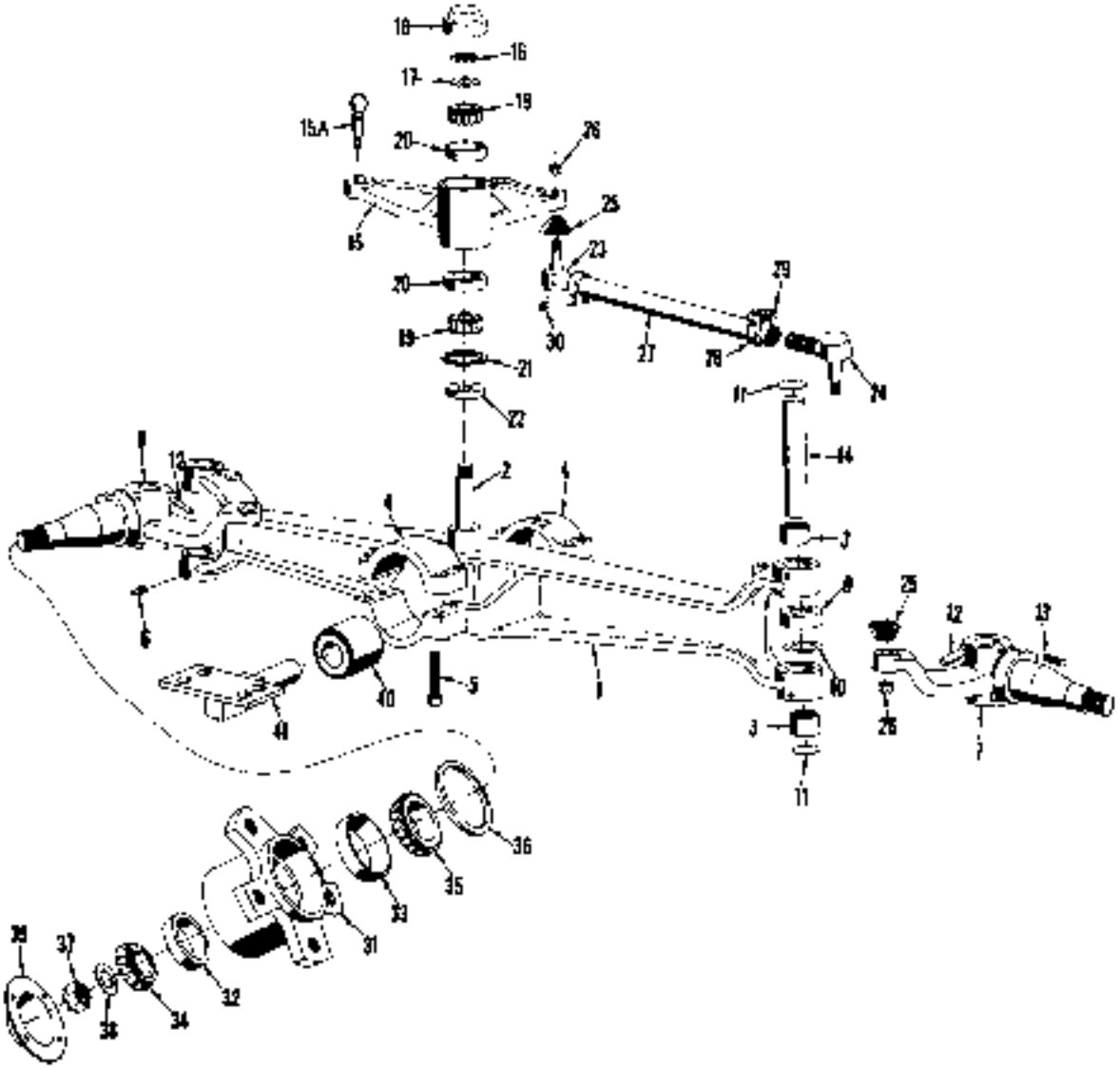

Fig. 2-21A

Ref. No.	Part No.	DESCRIPTION	No. Req.
		DRIVE AXLE AND DIFFERENTIAL	
1	35A2152	Housing - drive axle, MY 40	2
	35A2607	Housing - drive axle, MY 60	2
	36A2700	Stud - housing to diff. case, 5/8"-11 x 2-3/8"	16
		58A162 - Nut, Nylock, 5/8"-11, MY 60	
		GM124689 - Nut, hex., 5/8"-11 cad.	14 or 16
1A	35A2167	Breather - in drive axle housing, MY 40	2
	35A2513	Breather - in drive axle housing, MY 60	2
2	35A231	Shim - axle housing to diff. case, .030 thick	4
2	35A421	Shim - axle housing to diff. case, .005 thick	4
2	35A809	Shim - axle housing to diff. case, .002 thick	4
3	35A233	Seal - "O" ring, axle housing, 6-1/4" O.D.	2
4	35A1751	Axle - drive, with 13 tooth gear, 2" x 72"	2
5	35A2158	Cup - roller bearing, drive axle	1
5A	35A2159	Cone - roller bearing, drive axle	1
6	10A10471	Ring - retainer, roller bearing	2
7	35A2154	Retainer - roller bearing	2
		GM180078 - Bolt, hex., 5/16"-18 x 1/2", cad.	8
7A	35A2155	Shim - roller bearing retainer, .060 thick	Var.
7A	35A2156	Shim - roller bearing retainer, .030 thick	Var.
7A	35A2157	Shim - roller bearing retainer, .020 thick	Var.
8	35A1252	Housing - wheel shaft, MY 40	2
		GM18:669 - Bolt, hex., 7/16"-20 x 1-3/8" cad.	24
		GM27130E - Nut, hex., 7/16"-20, cad.	22
	35A423	Housing - wheel shaft, MY 60	2
		58A1370 - Bolt, wrench head, 1/2"-20 x 1-3/4", MY 60	16
		GM13:702 - Bolt, hex., 1/2"-20 x 1-3/4", MY 60	6
		GM22086T - Nut, hex., 1/2"-20, MY 60	22
		30A1371 - Bolt, wrench head, 5/8"-18 x 1-1/2", MY 60	
9	35A242	Gasket - wheel shaft housing, 12" dia., MY 40	2
	35A2909	Gasket - wheel shaft housing, MY 60	2
10	35A235	Shaft - wheel, with bolting flange and oil shield, MY 40	2
	35A980	Shaft - wheel, with bolting flange and oil shield, MY 60	2
11	35A1750	Gear - wheel shaft, 24 teeth	2
12		60A381 - Nut, lock, wheel shaft gear, 1-1/4"-12	2
13	35A1850	Washer - wheel shaft nut	2
14	35A425	Cone - bearing, wheel shaft, inner	2
15	10A11469	Cup - bearing, wheel shaft, inner	2
16	35A239	Cone - bearing, wheel shaft, outer	2
17	35A238	Cup - bearing, wheel shaft, outer	2
18	35A237	Seal - oil, wheel shaft	2
19	35A236	Sleeve - oil seal	2
20	35A206	Case - differential	1
		GM105869 - Plug, pipe, 1/8"-27	1
	35A683	Pin - dowel, differential case, 1/2" x 1"	2
21	35A227	Gasket - differential case	1
22	35A244	Cage - differential, left hand	1
22A	35A1848	Cage - differential, right hand	1
23	10A731	Bolt - differential cage, 1/2" x 5-3/4"	8
		GM110284 - Nut, hex., slotted, 1/2"-20	6
24	10A6712	Cone - bearing, cage	2
25	10A1687	Cup - bearing, cage	2
26	35A1407	Ring - retainer, roller bearing, 7-3/4" O.D.	2
27	35A242	Gear - ring, 40 teeth (matched with pinion)	1
28	10A756	Gear - bevel, 28 teeth	2
29	10A405	Washer - thrust, 4-1/4" O.D.	2
30	11AA359	Pinion - bevel, with bushing, 14 teeth	4
31	10A5e60	Bushing - bevel pinion	4
32	10A1594	Shaft - bevel pinions	2
	35A2112	Plug - magnetic, 1/2"-14 N.P.T., drain	1

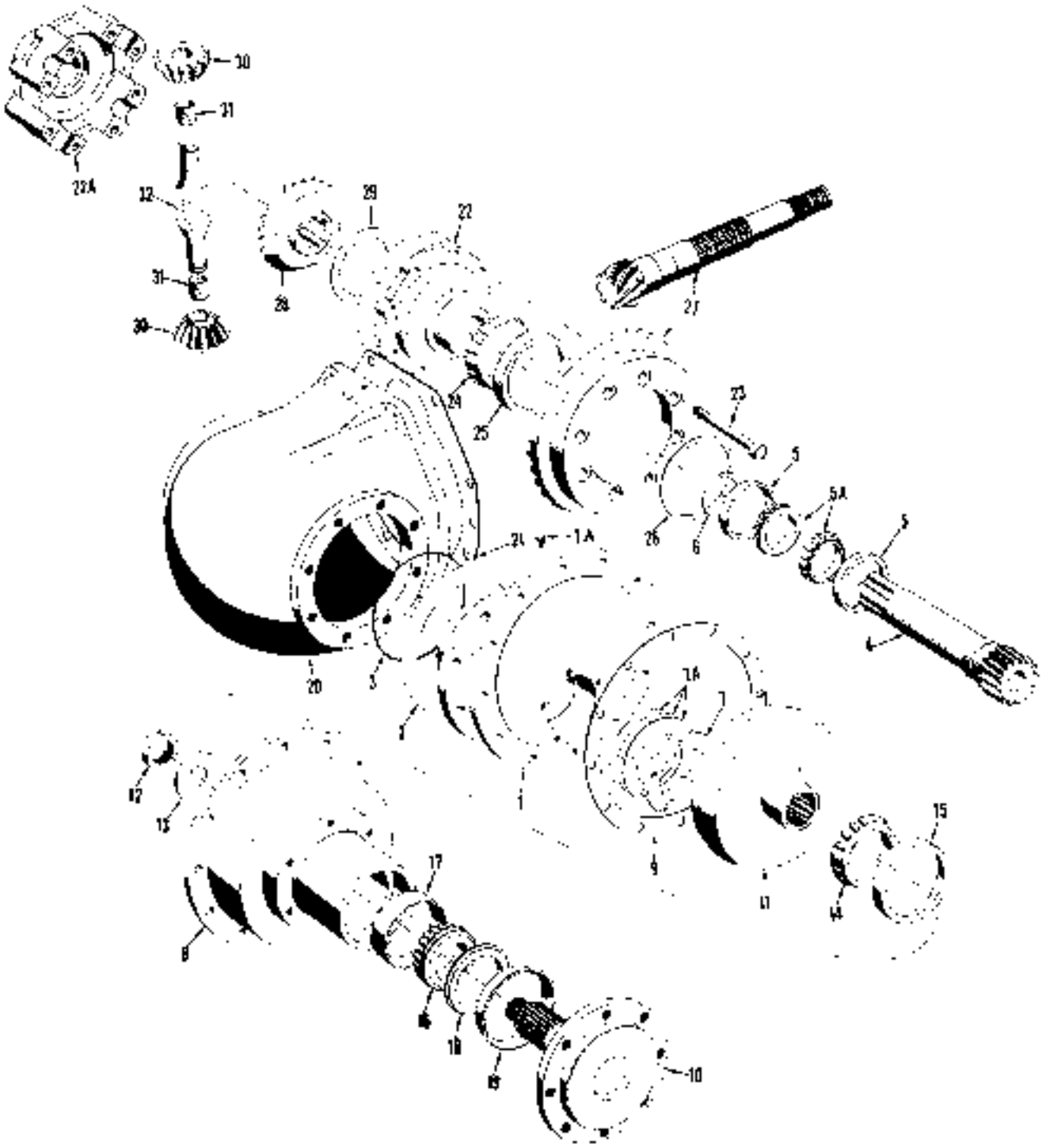

Fig. 2-32

Ref. No	Part No	DESCRIPTION	No. Pcs.
		BRAKES	
	35A1241	Brake - assembly, right hand	1
	35A1242	Brake - assembly, left hand	1
		50A594 - Screw, cap, 9/16"-12 x 1-3/8"	14
		GM178434 - Screw, hex, sheet metal, 1/4"-14 x 1/2"	4
1	35P317	Plate - backing, L.H. brake	1
1	35P318	Plate - backing, R.H. brake	1
2	35P319	Spider	2
3		GM178614 - Bolt, hex., 5/16"-18 x 5/8"	4
5	35P320	Pin - anchor	4
6	35P321	Shoe - brake, with lining	4
7	35P322	Pin - shoe, guide	4
8	35P323	Clip - shoe guide spring	4
9	35P324	Spring - shoe return	4
10	35P325	Spring - adjusting wheel	2
11	35P326	Guide - star wheel adjusting	2
12	35P327	Screw - adjusting	2
13	35P328	Nut - adjusting	2
14	35P329	Cylinder - wheel, assembly	2
15		GM179617 - Bolt, hex., 3/16"-18 x 7/8"	4
16		GM193320 - Washer, lock, 3/16"	4
	35P330	Plug - adjusting	2
17	35P331	Lever and Pin - assembly, L.H. parking brake	1
17	35P332	Lever and Pin - assembly, R.H. parking brake	1
18	35P333	Clip - "C" spring	2
19	35P334	Link and Pin - assembly, L.H. parking brake	1
19	35P335	Link and Pin - assembly, R.H. parking brake	1
	35P336	Clamp - L.H. emergency cable	1
	35P337	Clamp - R.H. emergency cable	1
20	35P339	Body - wheel cylinder	2
21	35P340	Spring - with retainer	2
22	35P341	*Cup - piston	4
23	35P342	Piston	4
24	35P343	*Boot	4
25	35P344	Push Rod	4
	35P345	Screw - bleeder	2
	35P338	*Kit - repair, includes items with an asterisk (*)	--

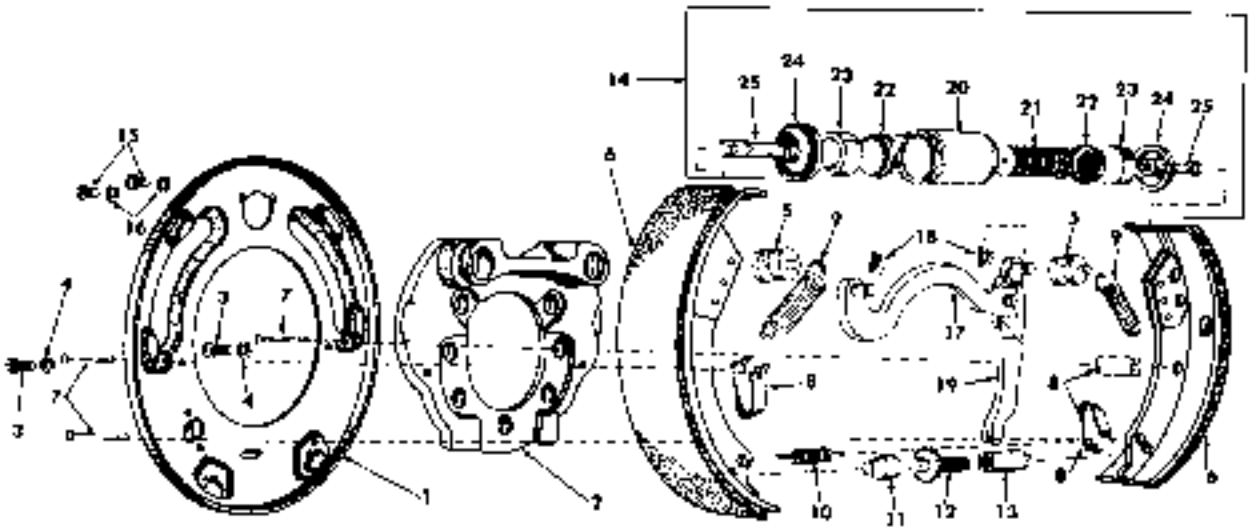

Fig. 2-23

Ref. No	Part No	DESCRIPTION	No. Pcs
		BRAKE AND INCHING PEDALS WITH LINKAGE	
1	36A2250	Pedal - brake	1
2	36A2256	Pedal - inching	1
3	35A2220	Bushing - in hub of brake and inching pedal	4
4	36A1811	Shaft - pedal to bracket	1
		50A2836 - Pin, roll, 1/8" x 5/8"	1
5	35A1810	Bracket - on shroud, for pedals	1
		GM160122 - Bolt, hex., 3/8"-16 x 1"	3
		GM120377 - Nut, hex., 3/8"-16	3
6	36A200	Pad - foot and inching pedals	2
		GM120369 - Nut, hex., 3/8"-24	2
7	36A2237	Arm - brake, MY 40	1
	36A1813	Arm - brake, MY 60	1
8	8465	Bearing - needle, in arm	2
9	35A201	Shaft - pivot, brake arm to frame	1
		50A2827 - Pin, roll, 1/4" x 1-1/2"	1
		GM273552 - Fitting, grease, 1/8"-27 x 90°	1
10	36A2252	Bushing - in brake, brake arm and inching pedals, 1/2" long	3
11	36A1812	Link - brake pedal to brake arm	1
12		GM274563 - Pin, connector, 7/16"	2
		GM121225 - Pin, cotter, 3/32" x 3/4"	2
		50A2024 - Washer, plain, 15/32"	1
13	36A2251	Bushing - in ends of brake link	2
14	36A2249	Shaft - pivot, on frame, for bell crank, MY 40	1
	36A2249	Shaft - pivot, on frame, for bell crank, MY 60	1
		GM160122 - Bolt, hex., 3/8"-16 x 1"	2
		GM120377 - Nut, hex., 3/8"-16	1
15		50A386 - Ring, snap	2
16	36A2242	Crank - bell, on pivot shaft	1
17	36A2256	Clevis - 7/16"-20, for bell crank	1
18		GM274563 - Pin, connector, 7/16"	2
		GM109436 - Pin, cotter, 3/16" x 3/4"	1
		GM120123 - Nut, hex., jam, 7/16"-20	1
		GM120330 - Washer, plain, 15/32"	2
19	36A2120	Bushing - in bell crank	2
20	36A2252	Bushing - in bell crank	1
21	36A200	Spring - brake arm return	1
22	35A209	Bolt - eye, brake arm spring	1
		GM124829 - Nut, hex., 3/8"-16	2
24	35A2985	Clevis - with rod, MY 40	1
	35A2248	Rod - brake arm to master cylinder, 7/16"-20 x 10, MY 60	1
		GM144240 - Clevis, 7/16"-20, MY 60	1
25	35A2250	Link - inching pedal to bell crank	1
26		GM274563 - Pin, clevis, 7/16"	2
		GM121225 - Pin, cotter, 3/32" x 3/4"	2
		50A2024 - Washer, plain, 15/32"	2
27	36A2251	Bushing - in inching link, 3/8" long	2
28	10A2382	Sleeve - on bell crank clevis, MY 40	1
	35A2246	Sleeve - on bell crank clevis, MY 60	1
29	35A2245	Rod - between sleeve and inching cylinder, 4-5/16" long	1
30	35A2247	Spring - over rod	1
30A		GM120394 - Washer, plain, 13/32"	1
		GM124829 - Nut, hex., 3/8"-16	1
31	35A2384	Spring - inching pedal return	1
32	35A209	Bolt - eye, for inching pedal return spring	1
		GM124829 - Nut, hex. jam, 3/8"-16	1
		GM120369 - Nut, hex., 3/8"-16	1

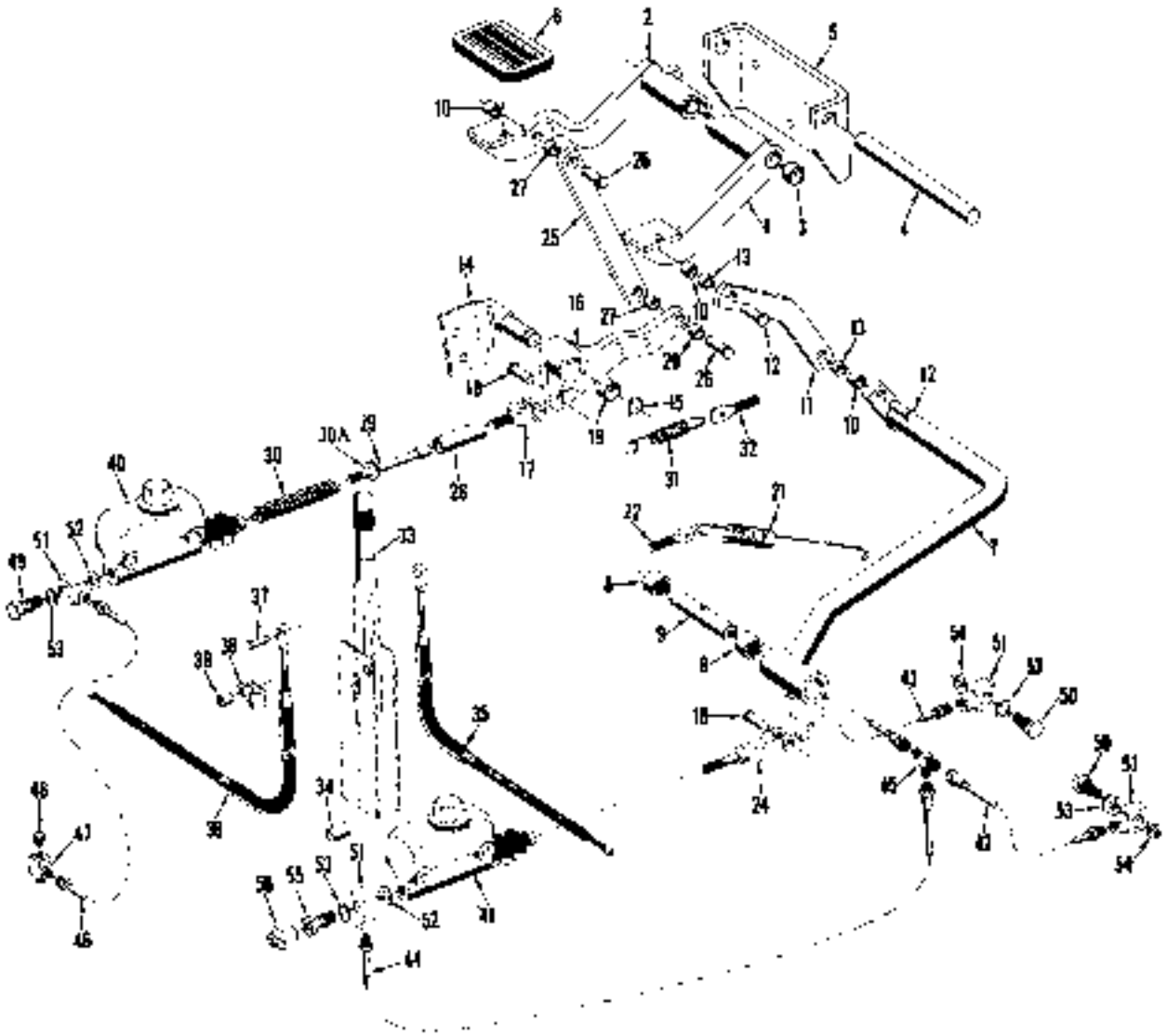

Fig. 2-24

Ref. No.	Part No.	DESCRIPTION	No. Per
		PARKING BRAKE	
33	35A185	Lever - hand, parking brake	1
		GM180887 - Bolt, hex., 5/16"-18 x 2	3
		GM120376 - Nut, hex., 5/16"-18	3
34	35A1020	Spacer - hand lever, 5/8" O.D. x 15/16" long	2
35	35A1271	Cable - hand lever to right hand brake, MY 40	1
36	35A1272	Cable - hand lever to left hand brake, MY 40	1
	35A1780	Cable - hand lever to right hand brake, MY 60	1
	35A1779	Cable - hand lever to left hand brake, MY 60	1
	30A3978	Clip - left hand brake cable, MY 60	1
37	35A188	Pin - cable to hand lever, 7/16" x 13/16"	2
		GM121222 - Pin, cotter, 3/32" x 3/4"	2
38	35A190	Clamp - cable	2
39	35A191	Spacer - cable clamp	2
		MASTER CYLINDER AND OIL LINES	
40	35A1834	Cylinder - master, left hand, MY 40	1
	35A1834	Cylinder - master, right or left hand, MY 60	2
	35P376	Kit - repair, left hand master cylinder, 35A1834	1
41	35A389	Cylinder - master, right hand MY 40	1
		GM103877 - Plug, pipe, square head, 1/8"	
	35P387	Kit - repair, right hand master cylinder, 35P388, MY 40	1
		GM180138 - Bolt, hex., 3/8"-16 x 3"	4
		GM120377 - Nut, hex., 3/8"-16	2
42	35A3860	Tube - with nuts, right hand brake line, MY 40	1
	35A3266	Tube - with nuts, right hand brake line, MY 60	1
43	35A1861	Tube - with nuts, left hand brake line, MY 40	1
	35A3267	Tube - with nuts, left hand brake line, MY 60	1
44	35A1962	Tube - master cylinder to tee, MY 40	1
	35A3265	Tube - with nuts, master cylinder to tee, MY 60	1
45		GM9409853 - Tee, 3-way, 7/16"-20	1
46	35A1855	Tube - inching cylinder to inching valve, MY 40	1
	35A2481	Tube - inching cylinder to inching valve, MY 60	1
47		50A599 - Tee, inching	1
48		GM444688 - Plug, hex. socket, 1/8"-27	
49		50A595 - Bolt, inching cylinder	1
50		50A940 - Bolt, brake cylinder	2
51		50A835 - Swivel, connector	3
52		50A936 - Gasket, bolt	2
53		50A937 - Gasket	3
54		50A941 - Gasket	2
55		50A934 - Bolt, Master cylinder	1
56	35A387	Switch - stop light	1
	35A2468	Clip - inching to bell housing	1

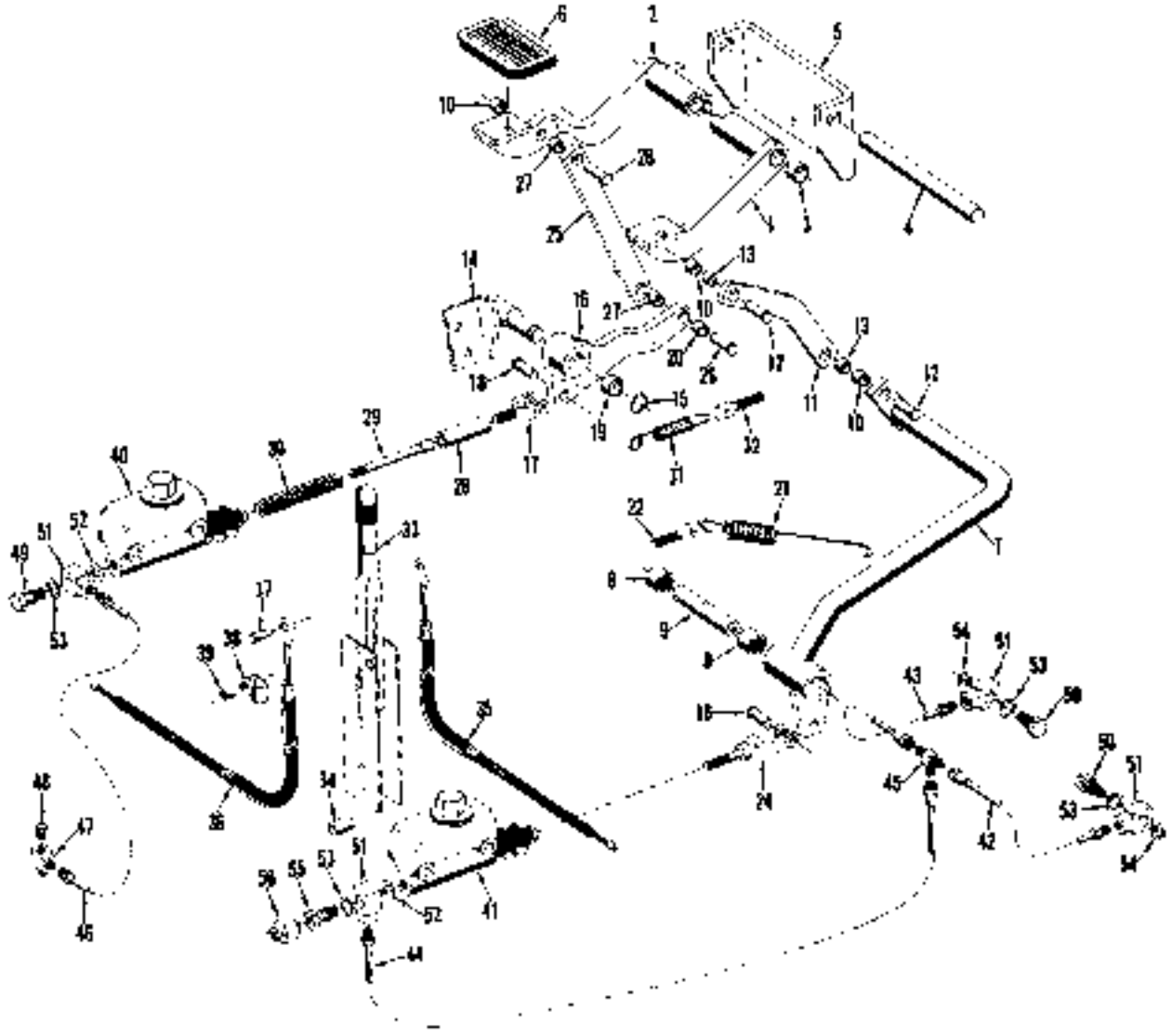

Fig. 2-24

Ref. No.	Part No.	DESCRIPTION	No. Pcs.
		WHEELS, FRONT AND REAR	
1	35A1799	+Hub - rear wheel	2
2	13A574	+Cone - bearing, rear wheel hub outer	2
3	19A698	+Cup - bearing, rear wheel hub outer	2
3A	15A12648	+Cone - bearing, rear wheel hub inner	2
3A	15A12647	+Cup - bearing, rear wheel hub inner	2
		GM131918 - Washer, plain, 1"	2
		GM451343 - Nut, hex., slotted, 7/8"-14	2
4	35A1803	+Seal - oil, rear wheel hub	2
5	35A565	+Rim - rear wheel, inner half	2
6	35A566	+Rim - rear wheel, outer half	2
		GM181589 - Bolt, hex., 1/2"-20 x 1" cad.	16
		GM180120 - Bolt, hex., 3/8"-16 x 3/4" cad.	18
		GM120377 - Nut, hex., 3/8"-16 cad.	18
7	35A558	+Cap - rear wheel hub	2
		+NOTE: For MY 40 Lift Trucks.	
	35P120	++Hub - rear wheel, with bearing cups	2
	35P125	++Cup - bearing, outer	2
	35P127	++Cup - bearing, inner	2
	35P124	++Cone - bearing, outer	2
	35P128	++Cone - bearing, inner	2
	35P129	++Seal - oil, wheel hub	2
	VT324	++Nut - spindle bearings	2
	35P108	++Washer - bearing retainer	2
	35P123	++Cap - hub	2
		+GM179837 - Bolt, hex., 3/8"-16 x 3/4"	8
	35A557	+-Wheel - inner, rear half	2
	35A558	+-Wheel - outer, rear half	2
		++SCA552 - Bolt, hex., 5/8"-11	10
	35A839	+-Bolt - in outer wheel	10
		++GM121898 - Nut, hex., 5/8"-18	10
		++NOTE: For MY 60 Lift Trucks, use illustration page 43	
8	35A2520	*Center - drive wheel	2
9	35A1465	*Bolt - hub, drive wheel	16
10	35A639	*Rim - drive wheel, MY 40	2
	35A2775	*Rim - drive wheel, MY 60	2
10A	35P972	*Ring - retainer, for rim	2
11	35A1299	*Clamp - rim	12
12	35A1300	*Stud - rim clamp, 5/8"-11 N.C. x 2-1/4"	12
		GM124580 - Nut, rim clamp stud, 5/8"-11	12
		*NOTE: Used on lift trucks with single drive wheel	
	35A413	**Center - drive wheel	2
	35A1465	**Bolt - hub, drive wheel	16
	35A639	**Rim - drive wheel	4
	35P972	**Ring - retainer, for rim	4
	35A852	**Clamp - rim	12
	35A1300	**Stud - rim clamp	12
		GM124589 - Nut, hex., 5/8"-11	12
	35A1012	**Spacer - between rims	2
		**NOTE: Used on lift trucks with dual drive wheels	

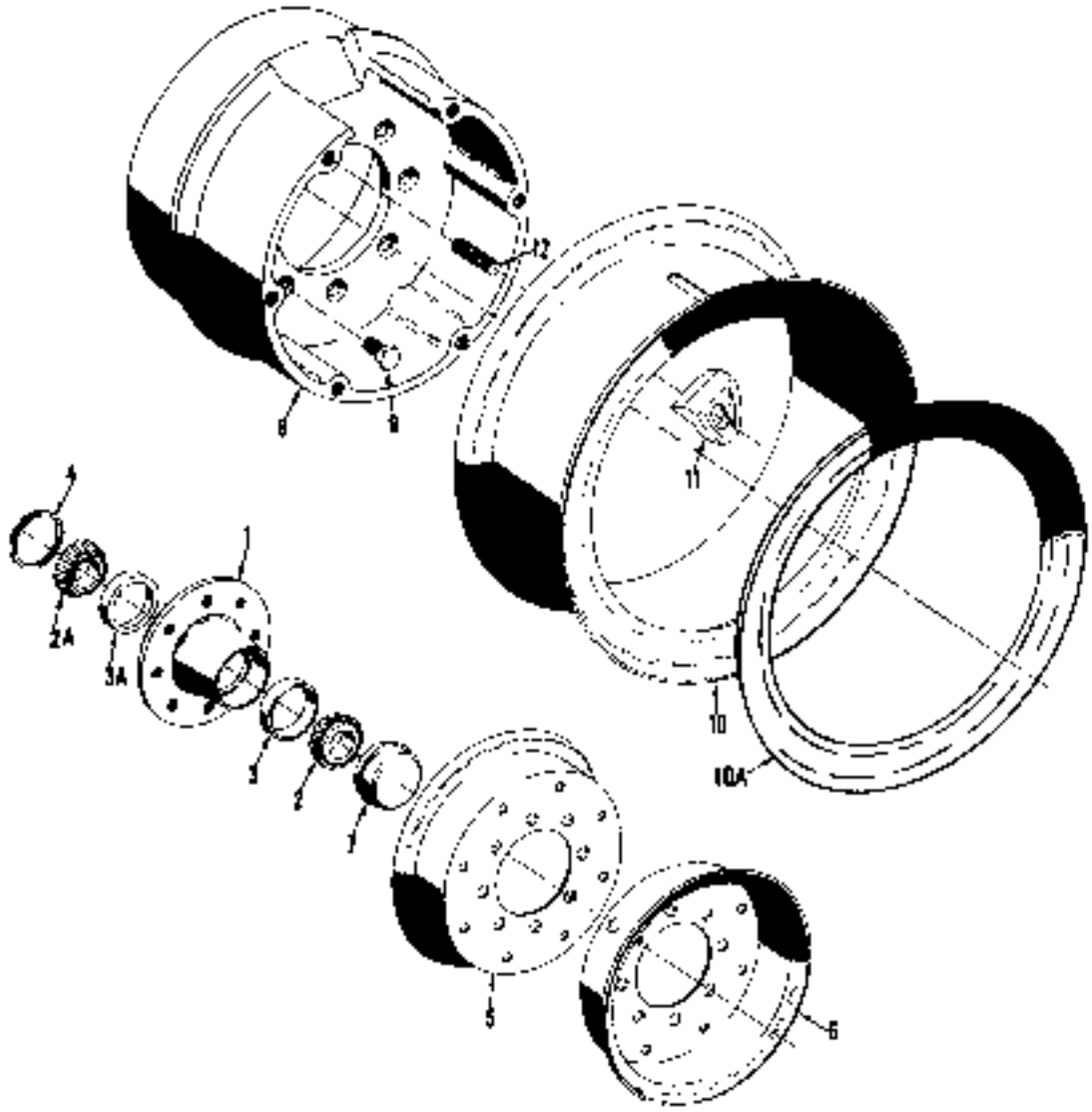

Fig. 2-26

Ref. No.	Part No.	DESCRIPTION	No. Per.
		MY 40 STEERING GEAR	
	35A502	Gear - steering, with arm	1
		Includes the following 21 parts:	
1	35P79	Housing - with oil seal, bushing and end cover	1
2	35P86	Seal - oil, cross shaft	1
3	35P89	Bushing - cross shaft	2
4	35P87	Cover - end, lower section	1
5	35P80	Cam and Tube	1
6	30P559	Cup - ball	2
7		GM145631 - Ball, steel, 5/16" dia.	22
8	30P560	Ring - retainer	2
9	35P61	Nut - steering wheel	1
10	35P64	Tube - jacket, with bearing	1
11	35P973	Bearing - jacket tube	1
12	35P47	Spring - bearing	1
13	35P48	Seat - spring	1
14	35P49	Clamp - assembly, jacket tube	1
		GM261347 - Bolt, hex., 5/16"-18 x 3"	1
		GM103025 - Nut, hex., 5/16"-18	1
		GM215545 - Washer, lock, int. and ext., 5/16"	1
15	35P51	Cover - upper	1
		GM178316 - Bolt, upper cover, 5/16"-18 x 3/4"	3
		GM103040 - Washer, plain, 11/32"	3
16	VT223	Shim - upper cover, .002	Var.
16	VT224	Shim - upper cover, .003	Var.
16	VT225	Shim - upper cover, .010	Var.
17	35P81	Shaft - cross, with nut	1
18		GM214489 - Nut, hex. jam, 3/4"-16	1
19		GM231046 - Washer, lock, 3/4"	1
20	35P52	Cover - side, with adjusting screw	1
21	35P88	Screw - adjusting	1
22		GM214496 - Nut, lock, adjusting screw	1
		GM178818 - Bolt, hex., 5/16"-18 x 1"	4
		GM103040 - Washer, plain, 11/32"	4
23	30P56E	Gasket - side cover	1
24	35A3001	Arm - steering	1
25	35A182	Wheel - steering	1
		GM180479 - Bolt, hex., gear to support, 1/2"-13 x 1-3/4" cad.	2
		GM120378 - Nut, hex., 1/2"-13	2
26	36A589	Drag Link, front, 42-1/2" long	1
		Includes the following 5 parts:	
27	35P241	Bearing - ball socket	2
28	35P240	Seat - spring	1
29	35P238	Spring - socket	1
30	35P239	Bumper - spring	1
31	35P242	Plug - socket	1
32	35A1040	Drag Link, rear, 29-5/16" long	1
33	35P302	Seal - dust, rubber	1
34	35A535	Clamp - rear drag link	1
		GM180163 - Bolt, clamp, 1/2"-13 x 2-1/4" cad.	1
		GM120378 - Nut, hex., 1/2"-13 cad.	1
		GM271286 - Fitting, lubricator, 1/8"-27 straight	3
	35A2514	Washer - drag link to booster, 45/64" I.D., 2-1/8" O.D.	2

Ref. No.	Part No	DESCRIPTION	No. Req
		HORN BUTTON	
	35A2066	Button - horn, with wire	1
		Includes the following 11 parts:	
36	35P446	Cover - horn button	1
37	35P447	Button	1
38	35P448	Cup - contact	1
39	35P449	Spring - horn button	1
40	35P450	Cap - contact	1
41	35P451	Ferrule - insulating	1
42	35P452	Washer - contact	1
43	35P453	Spring - contact	1
44	35P454	Plate - base, assembly	1
45	35P455	Screw - base plate, No. 10 x 5/8"	3
46	35P470	Wire - with connector	1

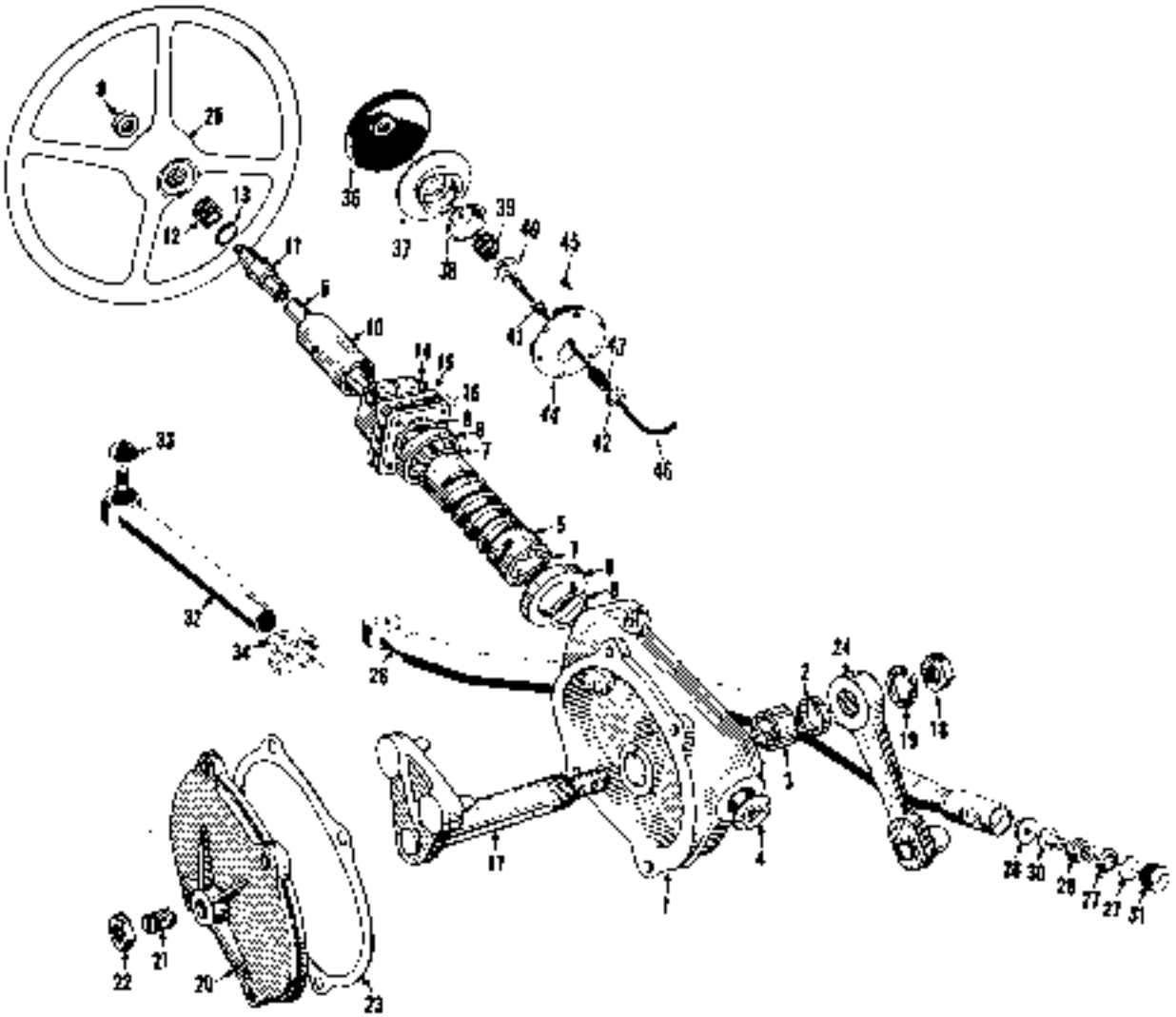

Fig. 3-28

Ref. No.	Part No.	DESCRIPTION	No. Pcs.
		MY 60 STEERING GEAR	
	35A811	Gear - steering, less arm	1
		Includes the following 21 parts:	
1	35P79	Housing - with seal, bushings and cover	1
2	35P86	Seal - oil, cross shaft	1
3	35P83	Bushing - cross shaft	2
4	35P87	Cover - end, lower section	1
5	35P93B	Cam and Tube	1
6	30P559	Cup - ball	2
7		GM145631 - Ball, steel, 5/16" dia.	22
9	30P560	Ring - retainer	2
9	35P51	Nut - steering wheel	1
10	35P84	Tube - jacket, with bearing	1
11	30P562	Bearing - jacket tube	1
12	35P47	Spring - bearing	1
13	35P49	Seat - spring	1
14	35P49	Clamp - assembly, jacket tube	1
		GM181847 - Bolt, hex., 5/16"-18 x 2"	1
		GM103025 - Nut, hex., 5/16"-18	1
		GM115548 - Washer, lock, ext. & int. 5/16"	1
15	35P80	Cover - upper	1
		GM179816 - Bolt, upper cover, 5/16"-18 x 3/4"	3
16	VT223	Shim - upper cover, .002	Var.
18	VT224	Shim - upper cover, .003	Var.
16	VT225	Shim - upper cover, .010	Var.
17	35P81	Shaft - cross, with nut	1
18		GM111449B - Nut, hex, jam, 3/4"-18	1
19		GM131046 - Washer, lock, 3/4"	1
20	35P82	Cover - side, with adjusting screw	1
21	35P88	Screw - adjusting	1
22		GM111449B - Nut, lock, adjusting screw	1
		GM179818 - Bolt, hex., 5/16"-18 x 1"	4
23	30P566	Gasket - side cover	1
24	35A3001	Arm - steering	1
25	35A182	Wheel - steering	1
26	38A812	Drag Link - front	1
		Includes the following 5 parts:	
27	35P241	Bearing - ball socket	2
28	35P240	Seat - spring	1
29	35P238	Spring - socket	1
30	35P239	Bumper - spring	1
31	35P242	Plug - socket	1
32	35A814	Drag Link - rear	1
		Includes the following 6 parts:	
33	35P367	Bearing - ball socket	2
34	35P368	Seat - spring	1
35	35P369	Spring - socket	1
36	35P370	Bumper - spring	1
37	35P371	Plug - socket	1
38	10P1345	Clamp - rear drag link	1
		GM271284 - Fitting, lubrication, 1/8" x 67-1/2" front drag link	1
		GM271285 - Fitting - lubrication, 1/8" x 30", rear drag link	1
	35A2514	Washer - drag link to booster, 40/64" I.D., 2-3/8" O.D.	2

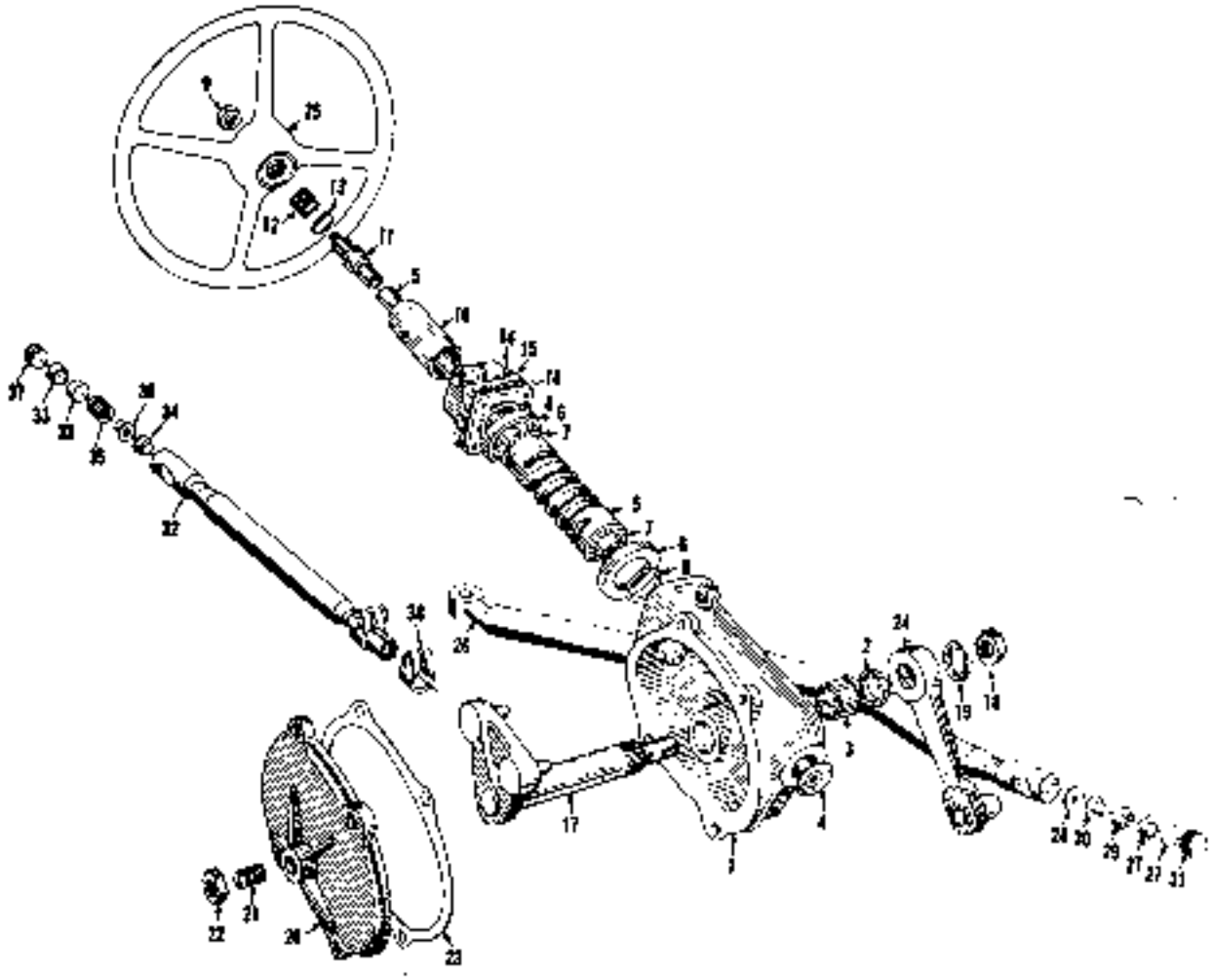

Fig. 2-26A

Ref. No.	Part No.	DESCRIPTION	No. Per
		POWER STEERING BOOSTER	
	35A2136	Cylinder - hydraulic, complete	1
		Includes the following 60 parts:	
1	35P93	Piston - with rod and seal	1
2		GM100326 - Nut, hex., 1/2"-20	1
3	10P472	Ring - piston	2
4	35P350	Seal - piston	1
5	35P351	Gland - piston rod	1
6	10P1053	Seal - "O" ring	1
7	10P1597	Ring - backup	1
8	10P1598	Ring - retainer	1
9	10P1599	Ring - retainer	2
10	10P610	Seal - oil	1
11	10P1600	Ring - retainer	1
12	35P352	Seal - "O" ring	1
13	35P353	Ring - backup	1
14	35P354	Ring - retainer	1
15	35P355	Plate - end	1
		GM170783 - Screw, end plate, 1/4"-20 x 5/8"	3
		GM108319 - Washer, lock, 1/4"	3
16	35P356	Cushion - piston rod	1
17	35P357	Retainer - cushion	1
18		GM102640 - Nut, hex. slotted, 5/8"-18	1
19	35P358	Body - valve, with "O" rings	1
20	10P1738	Seal - "O" ring, valve body	4
		50A2859 - Pin, roll, 1/4" x 3/4"	1
21	35P359	Spring - valve spool	1
22	35P360	Washer - centering, valve spring	1
22A	35P361	Washer - centering, valve spring	2
23	35P362	Seal - "O" ring	1
24	10P1614	Washer - retainer	1
25	10P1609	Seal - "O" ring	1
26	10P1606	Spring - body	1
27		GM145649 - Ball, steel, 1/4"	1
28	10P1607	Plug - with pin	1
	10P1605	Seal - "O" ring, body plug	1
29	10P1612	Flexure - assembly	1
30		50A1043 - Nut, hex., elastic stop, 5/16"-24	1
31	10P1619	Stud - ball	1
32		GM145645 - Ball, steel, 7/16"	2
33		GM102643 - Nut, hex., slotted, 5/8"-18	1
34	10P1621	Seat - ball	2
35	10P1622	Spring - ball seat	1
36	35P100	Washer - ball stud spring	1
37	10P1623	Plug - adjusting	1
38	10P1624	Pin - lock, adjusting plug	1
39	10P1617	Shell - ball stud assembly	1
40	35P109	Housing - ball stud shell	1
41	10P1620	Shield - dust	1
42	10P1615	Retainer - dust shield	1
43	10P1618	Cap - end	1
44	35P200	Fitting - lubrication	1

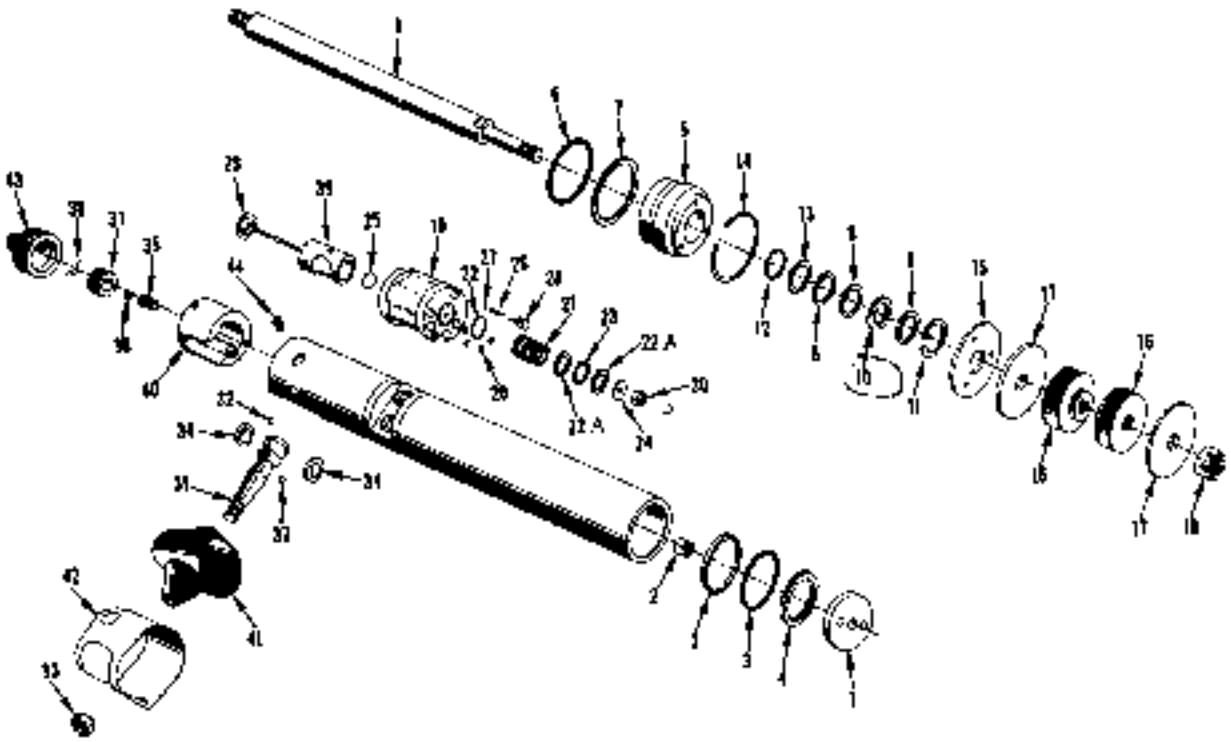

Fig. 8-27

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Ref. No	Part No.	DESCRIPTION	No. Pcs.
		FRAME, OVERHEAD GUARD, FLOOR PLATE AND COUNTERWEIGHT	
1	36A0926	Frame - main, with fuel and hyd. fluid compartments, MY 40 single drive wheels	1
	36A2516	Frame - main, with fuel and hyd. fluid compartment, MY 40 Dual drive wheels	1
	36A4066	Frame - main, with fuel and hyd. fluid compartment, MY 60 single drive wheels	1
	36A4276	Frame - main, with fuel and hyd. fluid compartment, MY 60 Dual drive wheels	1
2		GM444879 - Plug, pipe, 3/4" drain	2
3	36A476	Breather - with dipstick, hydraulic fluid tank	1
4	36A537	Guard - overhead, assembly, MY 40	1
	36A542	Guard - overhead, assembly, MY 60	1
		GM180123 - Bolt, hex., 3/8"-16 x 1-1/2" cad.	8
5	36A162	Pad - fabreaka, frame to engine	2
		50A942 - Bolt, hex., 5/8"-11 x 1-1/2", Nylock	2
6	36A463	Bracket - frame to engine, MY 40	1
	36A802	Bracket - frame to engine, MY 60	1
		GM180181 - Bolt, hex., 1/2"-13 x 3-1/4" cad.	2
		GM436567 - Nut, lock, 1/2"-13	2
7	36A475	Support - differential case to frame, MY 40	2
7	36A801	Support - differential case to frame, MY 60	2
		GM271731 - Bolt, hex., 5/8"-11 x 4"	4
		GM121371 - Washer, lock, 5/8"	4
7A	36A2181	Block - clamp, MY 40	2
7A	36A2181	Block - clamp, MY 60	2
	36A568	Bushing - mast pivot, MY 60	2
		GM196185 - Bolt, hex., 1/2"-13 x 5-1/2"	4
8	36A1832	Plate - floor, front, MY 40	1
	36A1810	Plate - floor, front, MY 60	1
		GM180120 - Bolt, hex., 3/8"-16 x 3/4" cad.	8
9	36A1831	Plate - floor, rear, MY 40	1
	36A820	Plate - floor, rear, MY 60	1
		GM180122 - Bolt, hex., 3/8"-16 x 1" cad.	6
10	36A483	Clip - floor plate, on front bar	2
	36A501	Safety Walk, on rear floor plate, 12" x 24", MY 40	1
	36A502	Safety Walk, on R.H. fender step, 6" x 8", MY 40	1
	36A503	Safety Walk, on L.H. fender step, 6" x 8", MY 40	1
	36A504	Safety Walk, on frame, R.H. 8" x 12", MY 40	1
	36A505	Safety Walk, on frame, L.H. 8" x 12", MY 40	1
	36A820	Safety Walk, on floor plate, MY 60	1
	36A830	Safety Walk, on frame, MY 60	2
11	36A0145	Counterweight, MY 40	1
		GM279148 - Bolt, hex., head, 3/4"-10 x 6", MY 40	1
		GM446257 - Washer, plain, 13/16", MY 40	1
		GM426099 - Nut, hex., 3/4"-16, MY 40	1
	36A2415	Counterweight - MY 60	1
		GM271731 - Bolt, hex., 5/8"-11 x 4", MY 60	1
		36A2602 - Washer, plain, 21/32", MY 60	1
		GM124553 - Nut, hex., 5/8"-11, MY 60	1
12	36A762	Pin - hitch	1
		50A2848 - Pin, roll, 3/16" x 1-3/4"	1

Ref. No	Part No.	DESCRIPTION	No Pcs.
		DECALS AND INSTRUCTION PLATES	
	35A2107	Decal - MOBIL-MATIC, on dash	1
	35A382	Decal - MOBILIFT, on uprights	2
	35A384	Decal - MOBILIFT, on side panel	2
	35A626	Plate - instruction, transmission control	1
	35A627	Plate - instruction, hfr control	1
		GM427580 - Rivet, button head, 3/32" x 1/4"	4
	35A56	Plate - brake warning	1
		GM107837 - Screw, drive, No. 6 x 3/8"	2

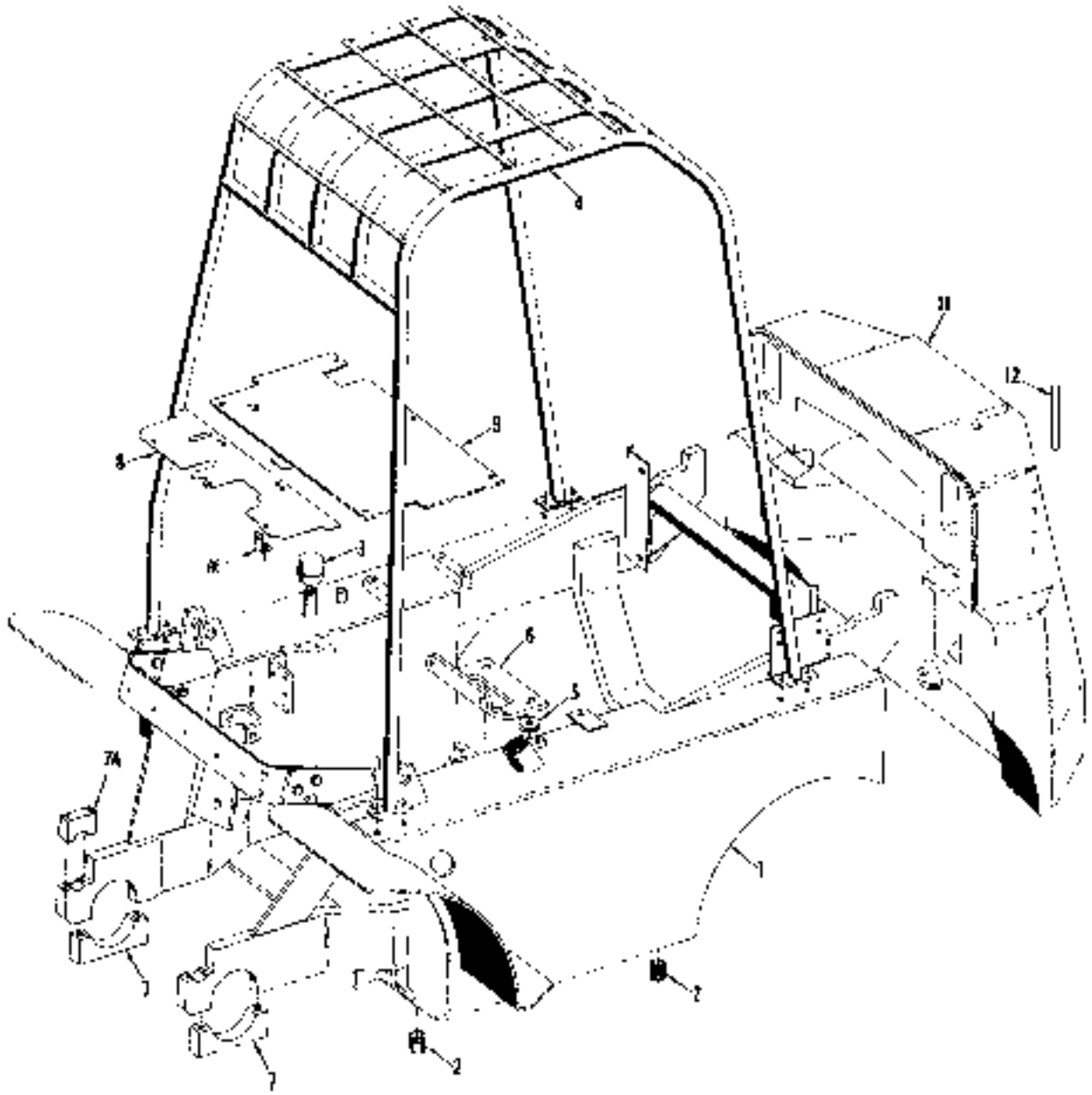

Fig. 2-28

Ref. No.	Part No	DESCRIPTION	No Per
		HOOD AND SEAT	
1	36A0300	Hood - MY 40	1
	36A3372	Hood - front section, MY 60	1
	36A3373	Hood - rear section, MY 60	1
		GM180120 - Bolt, hex., 3/8"-16 x 3/4"	7
		GM120377 - Nut, hex., 3/8"-16	7
2	36A2297	Insulation - center hood section	1
3	10A15467	Grommet - rubber, center hood section	8
4	36A3325	Panel - side, right hand, MY 40	1
	36A3375	Panel - side, right hand, MY 60	1
5	36A3298	Panel - side, left hand, MY 40	1
	36A3374	Panel - side, left hand, MY 60	1
		GM180120 - Bolt, hex., 3/8"-16 x 3/4"	7
		GM120374 - Nut, square, 3/8"-16	7
		GM120394 - Washer, plain, 13/32"	4
6	36A2178	Support - rear, hood, right hand, MY 40	1
7	36A2179	Support - rear, hood, left hand, MY 40	1
	36A826	Frame - angle, rear, MY 60	1
8	36A3369	Panel - drain, MY 40	1
	36A824	Panel - drain, MY 60	1
		GM180118 - Bolt, hex., 3/8"-16 x 5/8"	2
		GM120377 - Nut, hex., 3/8"-16	2
9	36A499	Hinge - hood	2
10	36A499	Pin - hood hinge, 3/8" x 2-1/4"	2
11	36A499	Bracket - hood hinge, MY 40	4
		GM180198 - Bolt, hex., 1/2"-13 x 3-1/2"	4
		GM120378 - Nut, hex., 1/2"-13	4
12	36A1484	Spacer - between hinge brackets, 1-1/8" long, MY 40	4
13	36A0297	Rod - side panel support, 3/8" x 17-3/8" long	2
		GM120394 - Washer, plain, 13/32"	2
		GM100373 - Pin, cotter, 3/32" x 3/4"	2
14	36A2176	Bracket - side panel rod, 1-1/2" x 3-1/2", MY 40	2
15	36A2175	Clip - for panel support rod, left hand side, MY 40	2
16	36A1814	Stipend - front	1
		GM180124 - Bolt, hex., 3/8"-16 x 1-1/4"	4
		GM180128 - Bolt, hex., 3/8"-16 x 1-3/4"	1
17	36A481	Support - steering column	1
		GM180121 - Bolt, hex., 3/8"-16 x 7/8"	2
18	36A482	Clamp - steering column to support	1
		GM180121 - Bolt, hex., 3/8"-16 x 7/8"	2
		GM120377 - Nut, hex., 3/8"-16	2
19	36A2607	Support - hood, front, MY 40	1
	36A2743	Support - hood, front, MY 60	1
	36A1759	Cover - hood support, MY 60	
		GM180122 - Bolt, hex., 3/8"-16 x 1"	9
		GM120377 - Nut, hex., 3/8"-16	9
20	36A480	Brace - angle, 28" long, MY 40	1
	36A2226	Brace - angle, 35-3/8" long, MY 60	1
21	36A1807	Catch - on support, for panels	2
		GM180018 - Bolt, hex., 1/4"-20 x 1/2"	2
		GM120375 - Nut, hex., 1/4"-20	2
	36A1485	Seat - complete with cushions,	1
		Includes the following 9 parts:	
		GM103025 - Nut, hex., 5/16"-24	4
22	36P491	Frame	1
23	36P492	Cushion - back rest	1
24	36P493	Cushion - seat	1
25	36P494	Hinge - back rest	2
26	36P497	Button - end, frame, tall	2
27	36P495	Slide - seat frame, right hand	1
28	36P496	Slide - seat frame, left hand	1

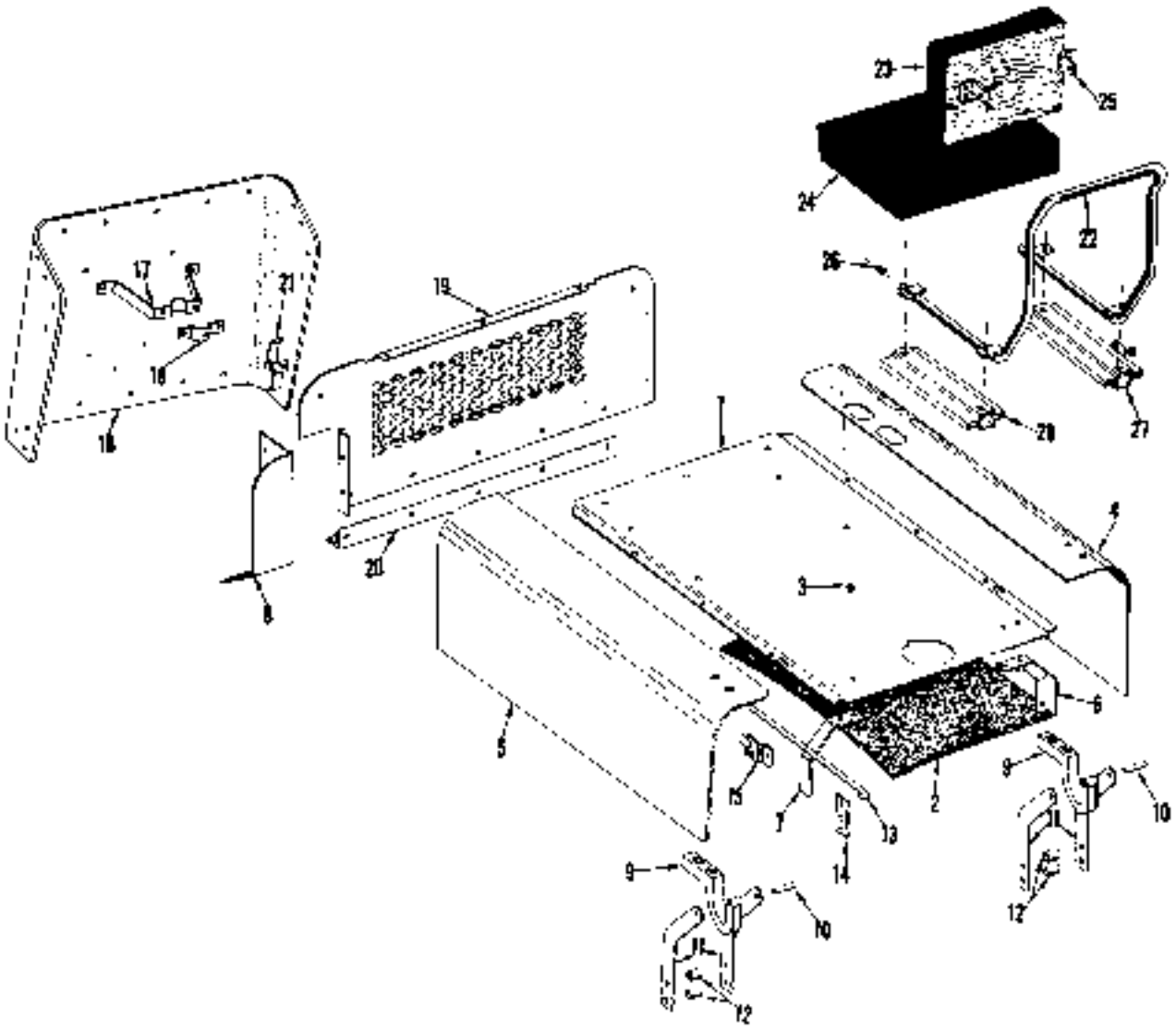

Fig. 2-29

Ref. No	Part No.	DESCRIPTION	No. Pcs.
		MY 40 HYDRAULIC PUMP	
1	36A867	Pump - hydraulic, with flow divider	1
		Includes the following 32 parts.	
2	35P269	Body - pump, with bearings	1
3	35P270	Cover - pump, with bearings	1
4	35P297	Bearing - needle, Torrington No. B1416	4
5	35P271	Shaft - drive	1
6	35P280	Gear - drive shaft	1
7	35P276	Bearing - ball, drive shaft, New Dep. No. 9208	1
8	35P279	Ring - bearing retainer, Truarc No. 5100-118	2
9	35P275	Adapter - bearing	1
		GM147105 - Screw, adapter, hex. socket, No. 8-32 x 1"	2
10	35P277	Seal - "O" ring, adapter, 3-1/4" I.D.	1
11	35P276	Washer - thrust, bearing, 2" I.D., 3-3/16" O.D.	1
12	35P299	Retainer - with oil seal	1
13	10P1772	Seal - oil, Chicago Rawhide No. 501391	1
		Screw - retainer, pan hd. tld, cutting, 10-24 x 3/8"	4
14	35P286	Seal - "O" ring, retainer, 1-3/4" I.D., 1-10/16" O.D.	1
15	35P274	Gear - idler	1
16	35P273	Plate - gear, 1-7/64" thick	1
17	35P272	Pin - dowel, gear plate, 5/16" x 1-3/4"	2
		GM179829 - Bolt, hex. hd., 5/16"-18 x 2-3/4"	6
18	35P285	Plate - wear, pump body	1
19	35P282	Plate - wear, pump cover	1
20	35P283	Seal - wear plate, outer, rubber	2
21	35P284	Seal - wear plate, inner, rubber	2
22	35P291	Ring - backup, wear plate seal, ivory	2
23	35P287	Seal - "O" ring, 5/8" I.D., 3/4" O.D.	2
24	35P295	Flow Divider - assembly	1
25	35P289	Piston	1
26	10P1595	Spring - piston, 32 coils	1
27	10P1590	Plug - piston and spring, 3/4"-16 N.F.	1
28	35P294	Seal - "O" ring, plug, 7/8" O.D.	1
29	35P290	Valve	1
30	35P291	Spring - valve, 9 coils	1
31	35P293	Shim - valve spring	as req.
32	35P302	Plug - valve, 1/2"-20 N.F.	1
33	35P298	Seal - "O" ring, flow divider to pump	2
		GM138226 - Screw, hex socket, 5/16"-18 x 3"	4
34		GM127792 - Elbow, pump inlet, 1"-90°	1
35	10A16952	Gear - helical, on pump shaft	1
36	10A5648	Key - gear	1
37	10A5647	Washer - lock, gear to shaft	1
		GM179840 - Bolt, lockwasher, 5/16"-18 x 3/4"	1
		60A446 - Bolt, pump to housing, 3/8"-16 x 5-1/4"	2
38	10A10224	Washer - pump bolt	2
39	35A705	Gasket - pump to side cover	1
40	35A1085	Hose - suction strainer to pump	1
41		GM105478 - Clamp, hose, 1-3/4"	4
42	86A3524	Nipple - pipe, 1" x 2"	2
43	35A696	Strainer - suction	1
44	36A690	Flange - mounting, on hyd. oil tank	1
		GM160121 - Bolt, hex., 3/8"-16 x 7/8" cad.	6
45		GM127793 - Elbow, pipe, 1", 90°	1
46	35A700	Gasket - flange to tank	1

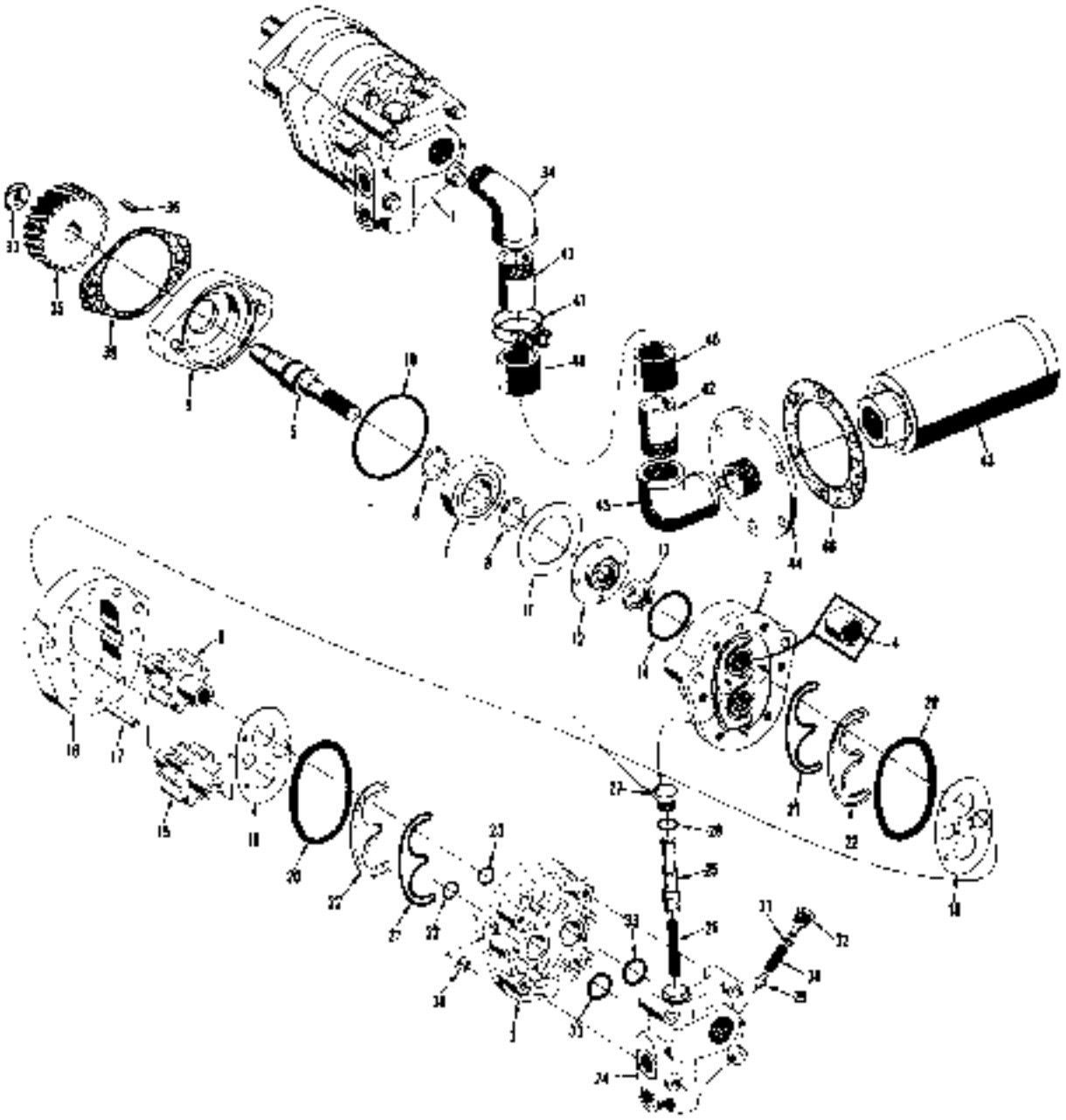

Fig. 2-30

Ref. No	Part No	DESCRIPTION	No. Per
		MY 60 HYDRAULIC PUMP	
1	35A866	Pump - hydraulic, with flow divider	1
		Includes the following 28 parts:	
2	35P299	Body - pump, with bearings	1
3	35P300	Cover - pump, with bearings	1
4	35P297	Bearing - needle, Torrington No. B1416	4
5	35P301	Shaft - drive, with gear	1
6	35P265	Retainer - with oil seal	1
7	10P1772	Seal - oil, Chicago Rawhide No. 601381	1
	GM144901	- Screw, retainer, pan hd. thd. cutting, No. 10-24 x 3/8"	4
8	35P266	Seal - "O" ring, retainer, 1 3/4" I.D., 1-13/16" O.D.	1
9	35P271	Gear - idler	1
10	35P270	Plate - gear, 1-7/64" thick	1
11	35P272	Pin - dowel, gear plate, 3/16" x 1-3/4"	2
	GM179803	- Bolt, hex., head, 5/16"-18 x 2-3/4"	6
12	35P285	Plate - wear, pump body	1
13	35P282	Plate - wear, pump cover	1
14	35P283	Seal - wear plate, outer, rubber	2
15	35P284	Seal - wear plate, inner, rubber	2
16	35P281	Ring - backup, wear plate seal, ivory	2
17	35P287	Seal - "O" ring, 5/8" I.D., 3/4" O.D.	2
18	35P295	Flow Divider, assembly	1
19	35P288	Piston	1
20	10P1502	Spring - piston, 32 coils	1
21	10P1585	Plug - piston and spring, 3/4"-16 N.F.	1
22	35P294	Seal - "O" ring, plug, 7/8" O.D.	1
23	35P290	Valve	1
24	35P291	Spring - valve, 9 coils	1
25	35P296	Shim - valve spring	As req.
26	35P292	Plug - valve, 1/2"-20 N.F.	1
27	35P298	Seal - "O" ring, flow divider to pump	2
	GM156226	- Screw, hex., socket, 5/16"-18 x 2"	4
28		GM127792 - Elbow, pump inlet, 3", 90°	1
29	35A804	Coupling - hyd. pump shaft to fan pulley	1
	GM180877	- Bolt, hex., 5/16"-18 x 3/4" coupling to pulley	3
30	35A800	Support - hyd. pump	1
	GM160285	- Bolt, pump to support, hex. head, 3/8"-16 x 4-1/2"	2
	GM120877	- Nut, hex., 3-5"-16, rad.	2
	GM271646	- Bolt, hex., 5/8"-11 x 1-1/4" csd.	3
31	10A1543	Pin - dowel, support to crankcase	2
32	35A1449	Hose - suction, strainer to pump	1
33		GM105473 - Clamp, hose, 1-7/8"	4
34	35A2524	Nipple - pipe, 1" x 2"	2
35	35A699	Strainer - suction	1
36	35A699	Flange - mounting, on hyd. oil tank	1
	GM180121	- Bolt, hex., 3/8"-16 x 3/3"	6
37		GM144339 - Elbow, pipe, 1" N.P.T., 45°	1
38	35A700	Gasket - flange to tank	1

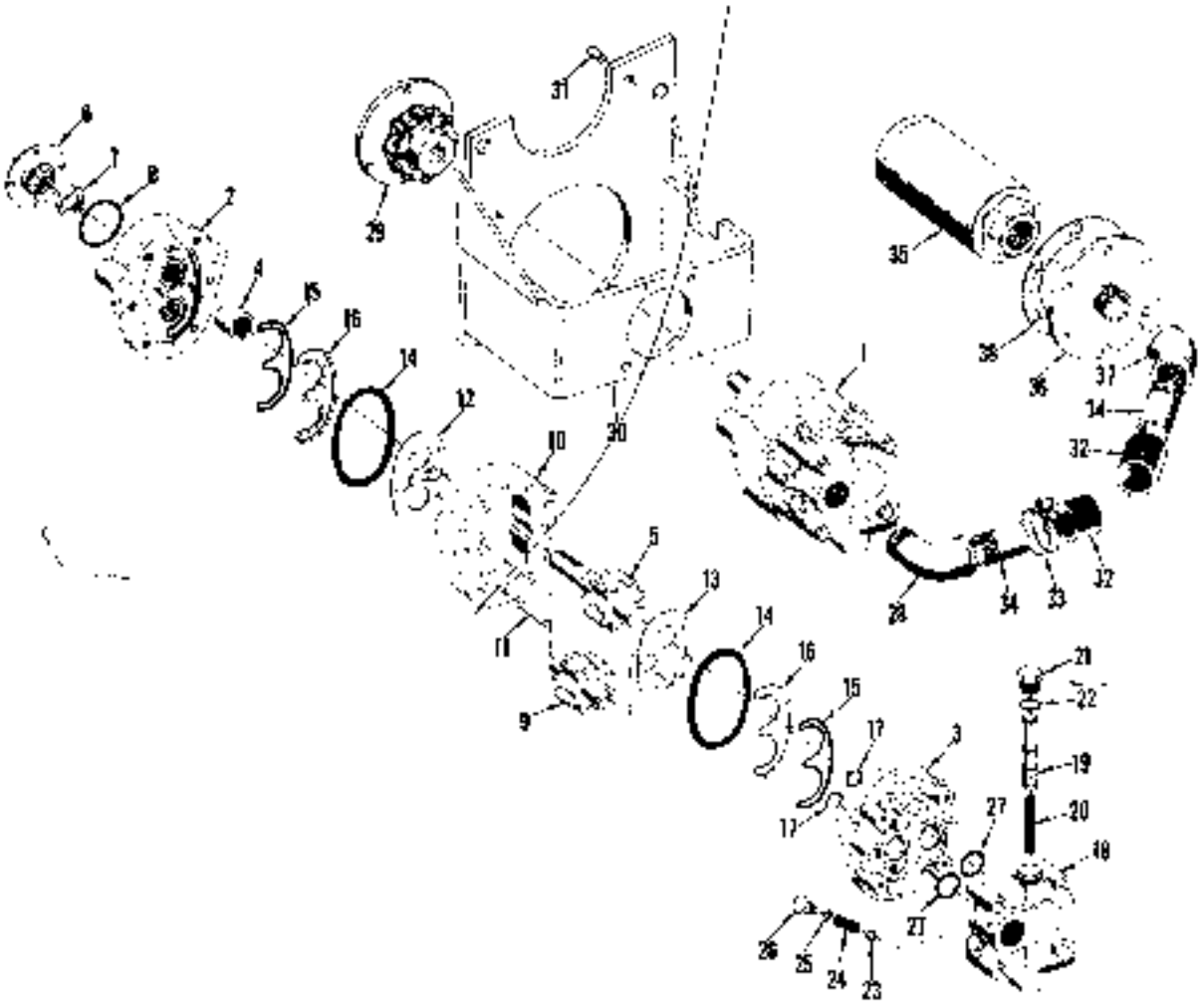

Fig. 2-30A

Ref. No.	Part No.	DESCRIPTION	No. Req.
		CONTROL VALVE	
	35A3033	Valve - control, standard, MY 60	1
1	35A3078	Valve - control, standard, MY 40	1
	35A3032	Valve - control, one spool aux. special	1
1	35A2034	Valve - control, two spool aux. special	1
2	15P660	Seal - spool	2 or 4
3	15P656	Spring - spool centering	1 or 2
4	10P1652	Washer - stop, centering spring	1 or 2
5	15P654	Collar - stop, centering spring	1 or 2
6	15P652	Bolt - stop collar	1 or 2
7	10P1650	Washer - lock, stop collar bolt	1 or 2
8	15P655	Disk - stop collar	1 or 2
9	15P657	Ring - snap, stop disk	1 or 2
10	15P658	Bonnet - rubber, spool opening	1 or 2
11	35P215	Plug - ball check	1
12	10A6329	"O" Ring - ball check plug	1
13	35P218	Plunger - check and relief valve	2
14	35P216	Seat - relief valve	1
15	10A12052	"O" Ring - relief valve seat	1
16	35P221	Spring - relief	1
17	35P222	Guide - relief spring	1
18	35P223	Ball - relief guide	1
19	10A16469	Washer - spacer, relief spring	Var.
19A	10A16480	Shim - relief spring	Var.
20	35P220	Cap - relief spring	1
21	10A16487	Gasket - relief spring cap	1
22	35P217	*Plug - port	1
23	9SP226	*"O" Ring - port plug	1
		*NOTE: Used with standard (35A3078) valve.	

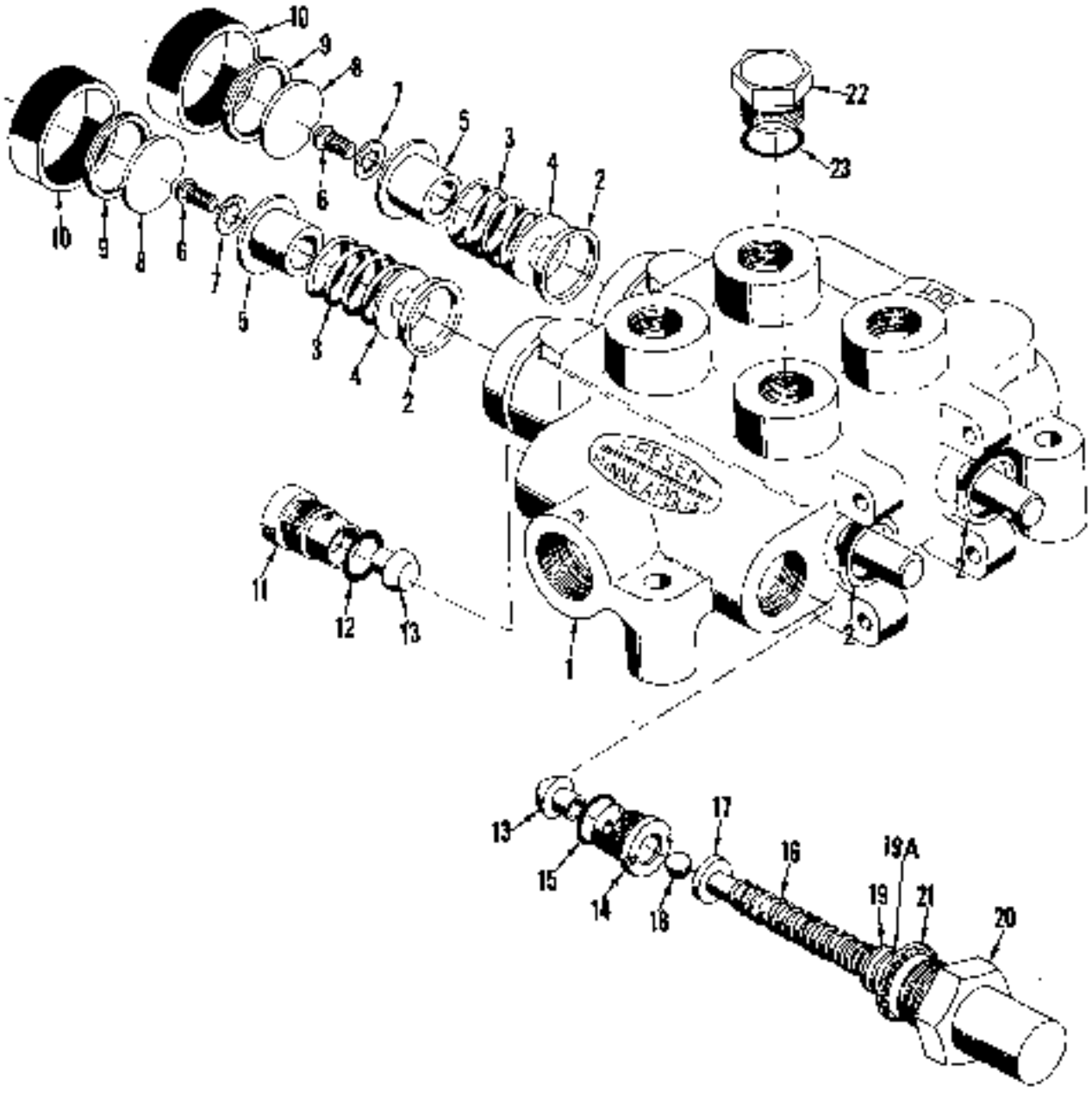

Fig. 2-31

Ref. No.	Part No.	DESCRIPTION	No. Pcs.
		HYDRAULIC CONTROL VALVE	
1	--------	Valve - control, see page 68 for complete listing	1
		GM180134 - Bolt, hex., 3/8"-16 x 2-1/2"	2
		GM120377 - Nut, hex., 3/8"-16	2
2	36A3321	Lever - hand control, inner, standard	1
3	36A3322	Lever - hand control, outer, standard	1
4	36A3328	Lever - hand control, aux. rear, inner	1
5	36A3327	Lever - hand control, aux. rear, outer	1
6	36A1257	Shaft - hand levers, 3/8" x 6-7/16"	1
7	36A1257	Shaft - aux. levers, 3/8" x 6-7/16"	1
		GM103362 - Pin, cotter, 1/16" x 3/4"	2
8	35A646	Link - roller, lever to valve spool	A.R.
9	36A3323	Support - valve, on frame	1
10	36A3329	Support - aux. valve, rear	1
11	10A13908	Spacer - single aux. valve	1
12	35A3119	Elbow - valve, side outlet	1
13		50A346 - Nipple, pipe, 3/4" x 1-3/4"	1
14		50A2480 - Nipple, pipe, 3/4" x 2"	1
15		50A946 - Nipple, pipe, 3/4" x 3-3/4"	1
16	35A3120	Plug - adapter, 7/8"-14 to 1-2/8"-12	1
17		50A1606 - Ring, quad	1
18	35A3117	Gasket - adapter plug	1
19	10A14720	Elbow - rubber, connecting valves	1
20	35A3010	Hose - connecting valves	1
		GM105475 - Clamp, hose, 1-3/8"	2
21	35A3118	Plug - hex. head, 1-3/8"-12	1
22	35A3119	Gasket - hex. head plug, copper	1
23	35A3039	Hose - valve to tank	1
		GM105475 - Clamp, hose, 1-3/8"	2
24		50A2330 - Nipple, pipe, 3/4" x 1-3/8"	1
25		GM144113 - Elbow, street, 3/4" N.P.T., 90°	1
	35A4076	Tube - hyd. pump hose to valve, MY 60	1
26	35A1289	Hose - Hyd. pump to valve, MY 40	1
27		GM9410978 - Elbow, hose, 7/8"-14, 90°	2
28	10A6955	"O" Ring - hose elbow	2
29	35A1291	Hose - valve to lift cylinder	1
30	35A1292	Tube - hose to lift cylinder, MY 40	1
	35A3719	Tube - valve hose to lift cylinder, MY 60	1
31		GM9410978 - Elbow, valve port, 7/8"-14	2
32		GM9410294 - Connector, lift cylinder, 7/8"-14	1
33	10A16255	Seal - "O" ring, elbow and connector	2
34	35A1293	Tube - control valve port "A"	1
35	35A1294	Tube - control valve port "B"	1
36	10A10265	"O" Ring - control valve tube	2
37	35A1297	Tee - with orifice, valve tube	2
		GM444699 - Plug, pipe, 1/8" N.P.T.	2
38	35A1295	Hose - port "A" tube to tilt cylinder	2
39	35A1884	Hose - port "B" tube to tilt cylinder	2
40		GM9410976 - Elbow, tilt cylinder, 90°, 9/16"-18, rod end	2
41		GM9411104 - Elbow, tilt cylinder, 45°, 9/16"-18, piston end	2
42	10A16409	"O" Ring - tilt cylinder elbow	4
43	10A10577	Clip - valve tubes	1
		GM130024 - Bolt, hex., 1/4"-20 x 1-1/4"	1
		GM120375 - Nut, hex., 1/4"-20	1
44	35A1296	Tube - hyd. pump to steering booster, MY 40	1
	35A1482	Tube - hyd. pump to steering booster, MY 60	1
45	35A1298	Tube - steering booster to hyd. oil tank, MY 40	1
	35A3506	Tube - steering booster to hyd. oil tank, MY 60	1

Ref. No.	Part No.	DESCRIPTION	No. Per
		HYDRAULIC CONTROL VALVE (Cont'd)	
46	35A1287	Hose - tube to booster	2
47		GM9410976 - Elbow, 90°, 9/16"-18, MY 40	3
		GM9410280 - Elbow, swivel, 3/8", 90°, MY 60	2
		GM9410202 - Connector, 3/8", 37°, MY 60	3
48	10A16405	Seal - "O" ring, pump and booster elbow	3
49	RTS86D	Clip - tubes	4
		GM180171 - Bolt, hex., 1/2"-13 x 3/4"	2
50		GM9402709 - Connector, tube to hyd. tank, 1/4" NPT, 9/16"-18	1
51	10A16576	Clamp - tube to tank	1
		GM160081 - Bolt, hex., 5/16"-18 x 1-3/4"	1
		GM120476 - Nut, hex., 5/16"-18	1
52	85A1436	Bracket - tube clamp	1
		GM180677 - Bolt, hex., 5/16"-18 x 3/4"	1
		GM150976 - Nut, hex., 5/16"-18	1
		*Hose - drain	1
		*50A1156 - Fitting, hose, 1/4"-18	1
		*GM119911 - Bushing, reducer, 3/8" to 1/4"	1
		*GM146618 - Clamp, hose, 5/8"	1

*NOTE: For use with Simplex Mast only, see chart on page 66.

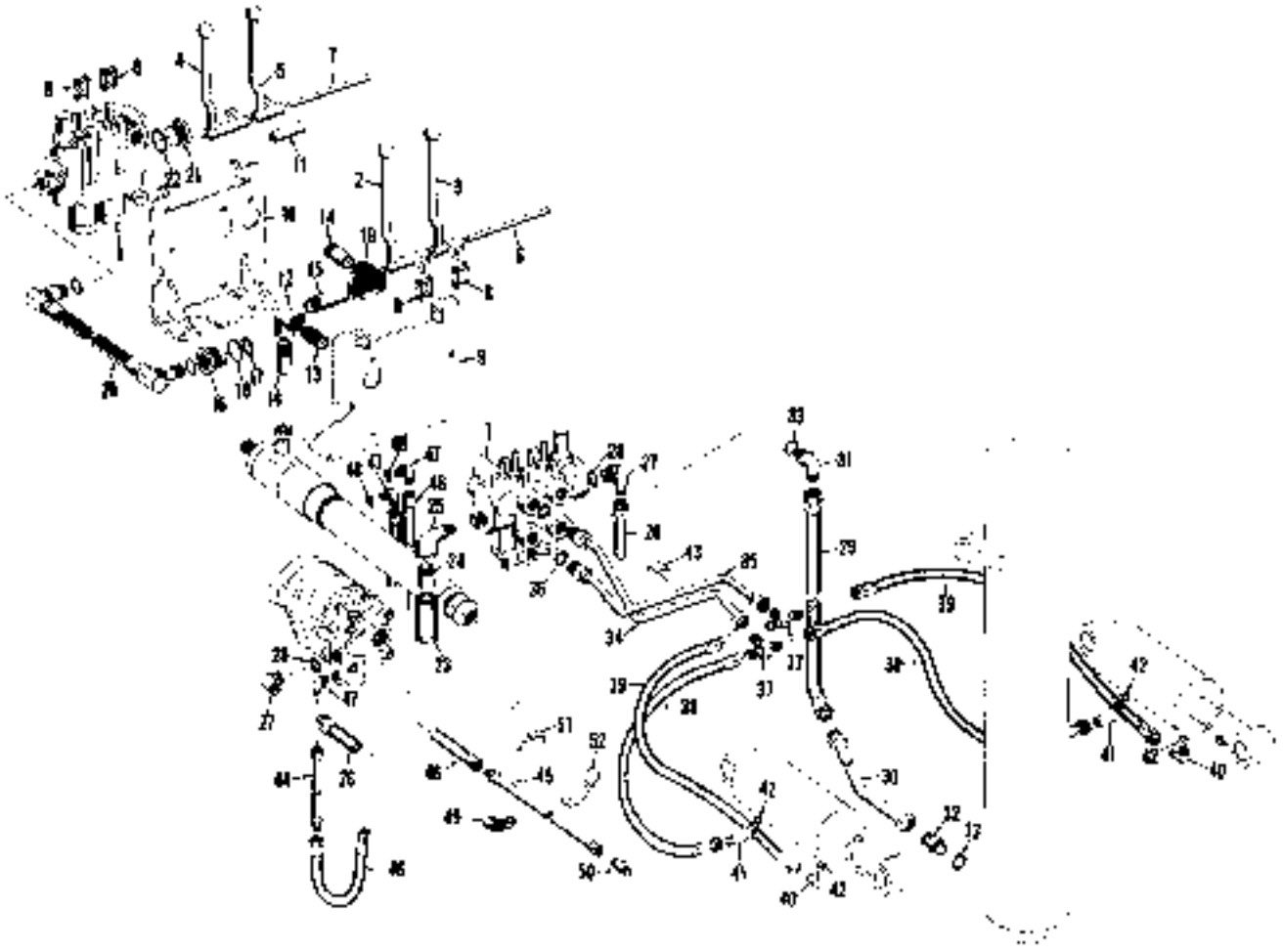

Fig. 2-32

Ref. No.	Part No.	DESCRIPTION	No. Per
		TILT CYLINDER	
1	35A2746	Cylinder - assembly	2
		Includes the following 19 parts:	
2	35P485	Shell - assembly	2
3	35P306	Piston - half	2
4	35P313	Piston - half	2
5	35P330	Seal - "O" ring, piston to rod	2
6	35P307	Rider - nylon, piston	4
7	35P309	Packing - assembly	2
8	35P313	Rod - piston, 18-5/8" long	2
9	35P305	Nut - piston rod	2
10	35P209	Retainer - piston rod seals	2
11	35P314	Bushing - piston rod retainer	2
12	35P315	Seal - "O" ring, retainer to bushing	2
13	35P304	Packing - assembly, retainer bushing	2
14	35P308	Seal - "O" ring, retainer to outer shell	2
15	35P316	Ring - back-up, outer retainer seal	2
16	35P210	Washer - threaded, with nylon pellet	2
17	35P135	Pellet - nylon	2
18	35P209	Ring - wiper, piston rod	2
19	35P211	End - piston rod, with bushing	2
20	35P212	Bushing - piston rod end, also head end	4
		Bolt - hex. head, 3/8"-24 x 1-1/2"	2
		Nut, hex., 3/8"-24	2
21	30A706	Pin - with end plate, cyl. to frame, 1-1/4" x 8"	2
		GM191758 - Fitting, grease, 1/8"-27 straight	2
		GM180077 - Bolt, hex., 5/16"-18 x 3/4"	2
22	35A750	Pin - tilt cylinder, 2-1/4" x 5-1/4"	2
		REEL AND HOSES	
	35A1469	Reel - hose, left hand	1
	35A3944	Reel - hose, right hand	1
		GM180173 - Bolt, hex., 1/2"-13 x 1"	2 or 4
	35A1482	Block - junction	1 or 2
		GM180128 - Bolt, hex., 3/8"-16 x 1-3/4"	1 or 3
	35A3181	Clip - hose, on tie bar	1 or 2
	35A3180	Hose - reel to junction box, 114" long	2 or 4
	35A3183	Hose - reel to junction box, 138" long	2 or 4
	35A3184	Hose - reel to junction box, 156" long	2 or 4
	35A1474	Hose - reel to valve, 80" long	2 or 4
	35A1477	Hose - reel to valve, 110" long	2 or 4
	35A1479	Hose - reel to valve, 124" long	2 or 4

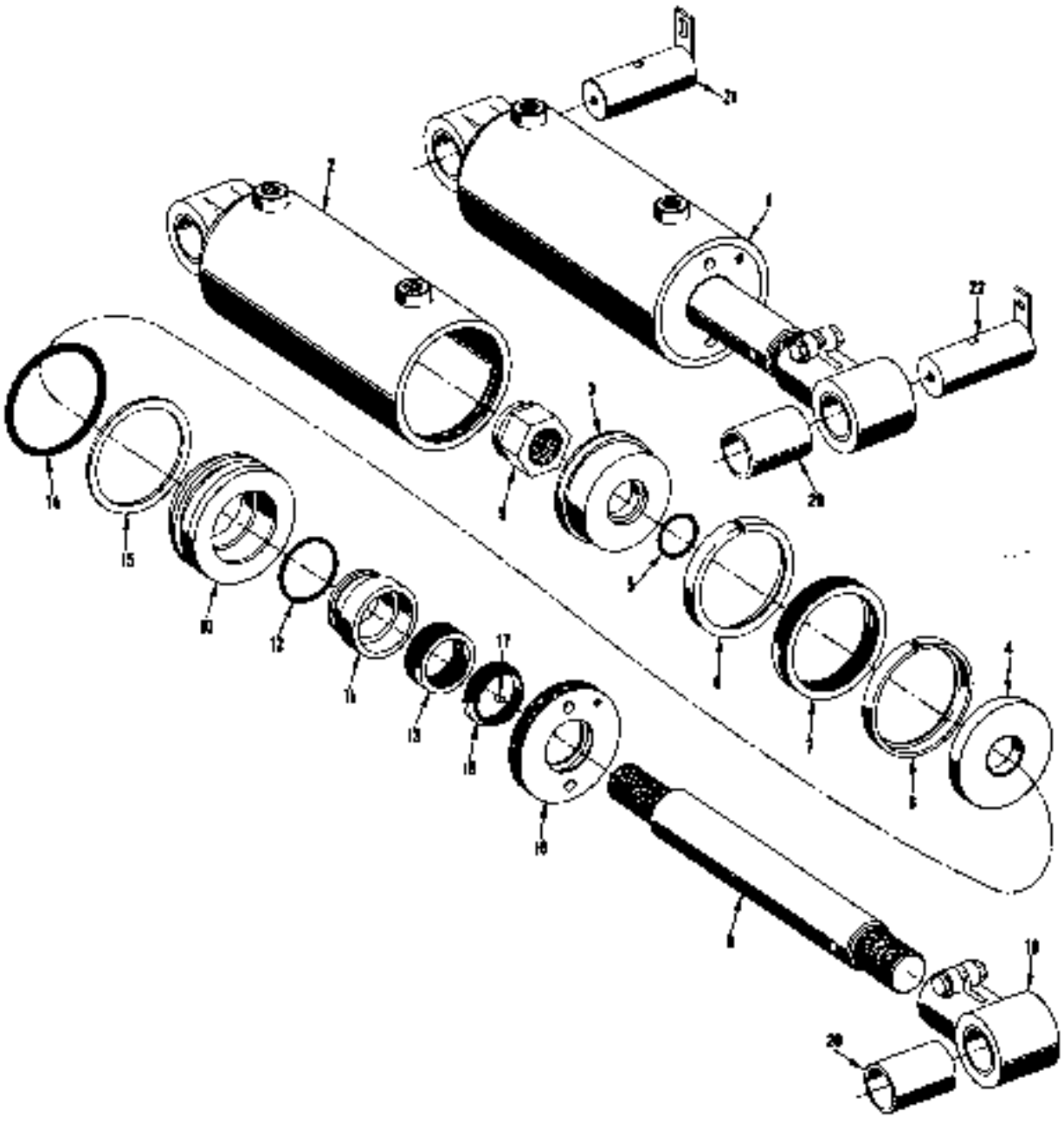

Fig. 2-33

Ref No	Part No	DESCRIPTION	No Req
		SIMPLEX LIFT CYLINDER	
1	[illegible]	Cylinder - assembly, see chart on pages 84-85	1
		Includes the following parts:	
2	----------	*Shell	1
3	-----	*Plunger	1
4	33P486	Retainer - piston	1
5	33P180	Pin - roll, retainer to plunger	2
6	----------	*Spacer - plunger to shell	1
7	33P485	Piston - cylinder	1
8	33F176	Packing - piston retainer, assembly	1
9	33P178	V-rings	2
10	33F177	Packing - set	1
11	33P179	Adaptor - female	1
12	33F174	Seal - "O" ring, retainer to piston	1
13	33F175	Ring - back-up, retainer seal	1
14	33F172	Ring - snap, piston to retainer	1
15	33P147	Spring - cylinder spud	1
16	33P374	Washer - spud spring	1
17	33P375	Spacer - spud spring	1
18	33P172	Retainer - plunger, elbow end	1
19	33P191	Seal - "O" ring retainer to shell	1
20	33P180	Ring - wiper, plunger to retainer	1
21	33P150	Spring - garter, wiper ring	1
	33P497	Pin - dowel, spud end of cylinder	1
		*NOTE: Shell, Plunger and Spacer must be ordered by size, see chart for complete cylinder on page 84-85.	

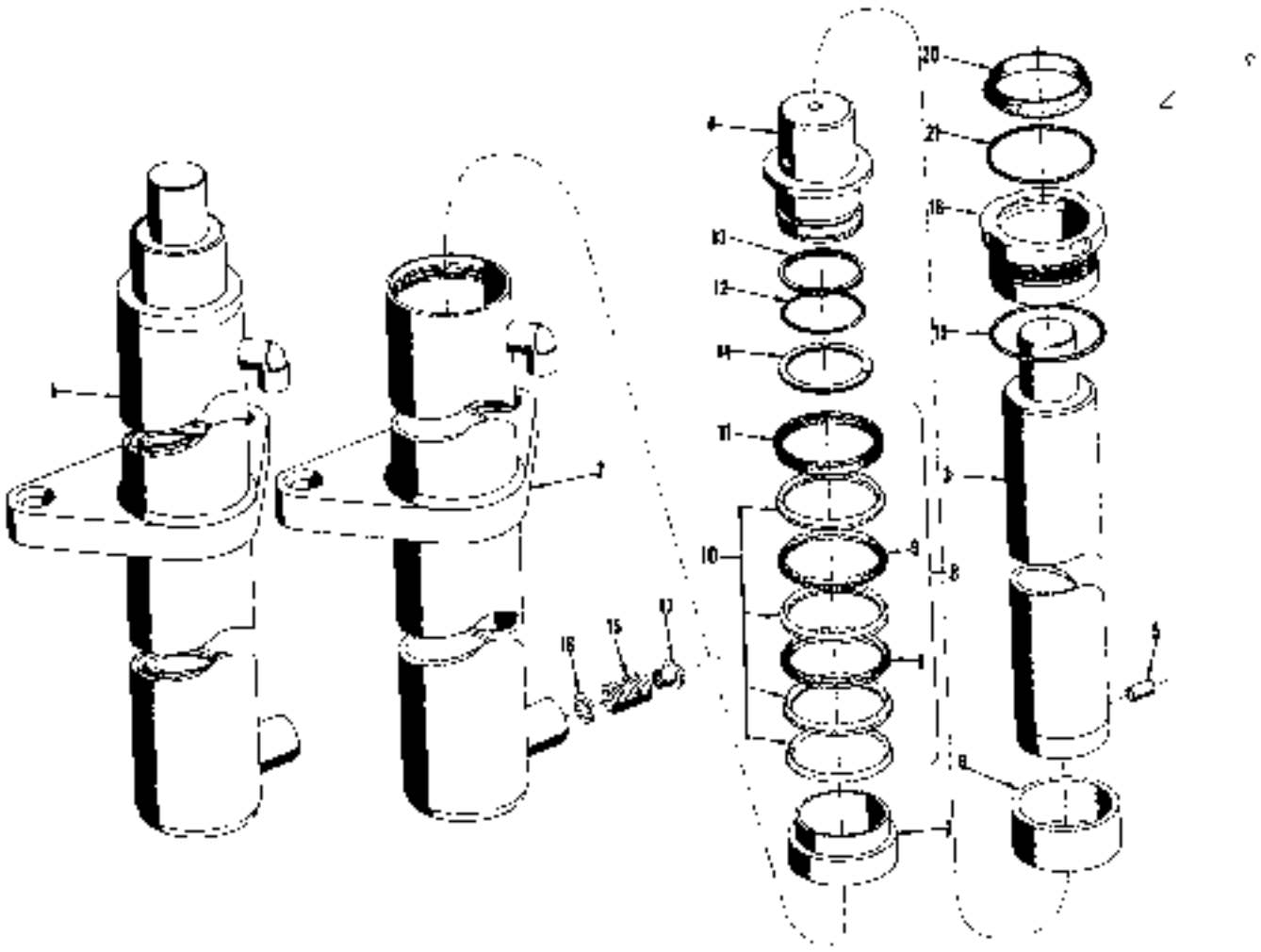

Fig. 0-04

Ref. No	Part No	DESCRIPTION	No Des.
		DUPLEX LIFT CYLINDER	
1	--------	Cylinder - lift, see chart page 84	1
		Includes the following 35 parts:	
2	--------	*Shell	1
3	--------	*Tube - intermediate stage	1
4	--------	*Tube - intermediate stage, inner	1
5	35P163	Screw - inner tube plate, 5/16"-24 x 5/8"	1
6	35P164	Seal - tube plate screw	1
7	35P480	Retainer - outer shell	1
8	35P162	Seal - "O" ring, retainer	1
9	35P481	Ring - wiper, retainer	1
10	35P150	Spring - garter, wiper ring, 4-9/35"	1
11	35P483	Retainer - intermediate tube	1
12	35P482	Ring - felt retainer	1
13	35P484	Ring - wiper, retainer	1
13A	35P478	Spring - garter, wiper ring	1
14	35P478	Piston	1
15	35P475	Packing - piston, outer	1
17	35P157	Ring - snap, piston packing	1
18	35P477	Packing - piston, inner	1
20	35P153	Ring - snap, piston packing	1
21	35P479	Pin - roll, piston	2
22	35P474	Retainer - piston	1
23	35P152	Seal - "O" ring, piston retainer	1
24	35P154	Ring - back-up, "O" ring	1
25	35P470	Bushing - piston retainer	1
26	35P160	Seal - "O" ring, bushing to retainer	1
27	35P161	Ring - back-up, bushing "O" ring	1
28	35P476	Packing - retainer bushing	1
29	35P471	Washer - threaded, piston retainer	1
30		GM135682 - Screw, set, socket, 1/2"-28 x 1"	2
31	35P158	Ring - wiper, plunger to threaded washer	1
32	--------	*Plunger - cylinder	1
33	35P143	Bushing - plunger to inner tube	1
34	35P102	Ring - snap, plunger bushing	1
35	35P147	Spring - plunger, piston end	1
36	35P149	Washer - plunger spring	1
37	35P148	Spacer - plunger spring	1
	35P166	Pin - roll, plunger spring, 5/16" x 3/4"	1

*NOTE: Shell, tubes and plunger must be ordered by size, see chart for complete cylinder on page 84

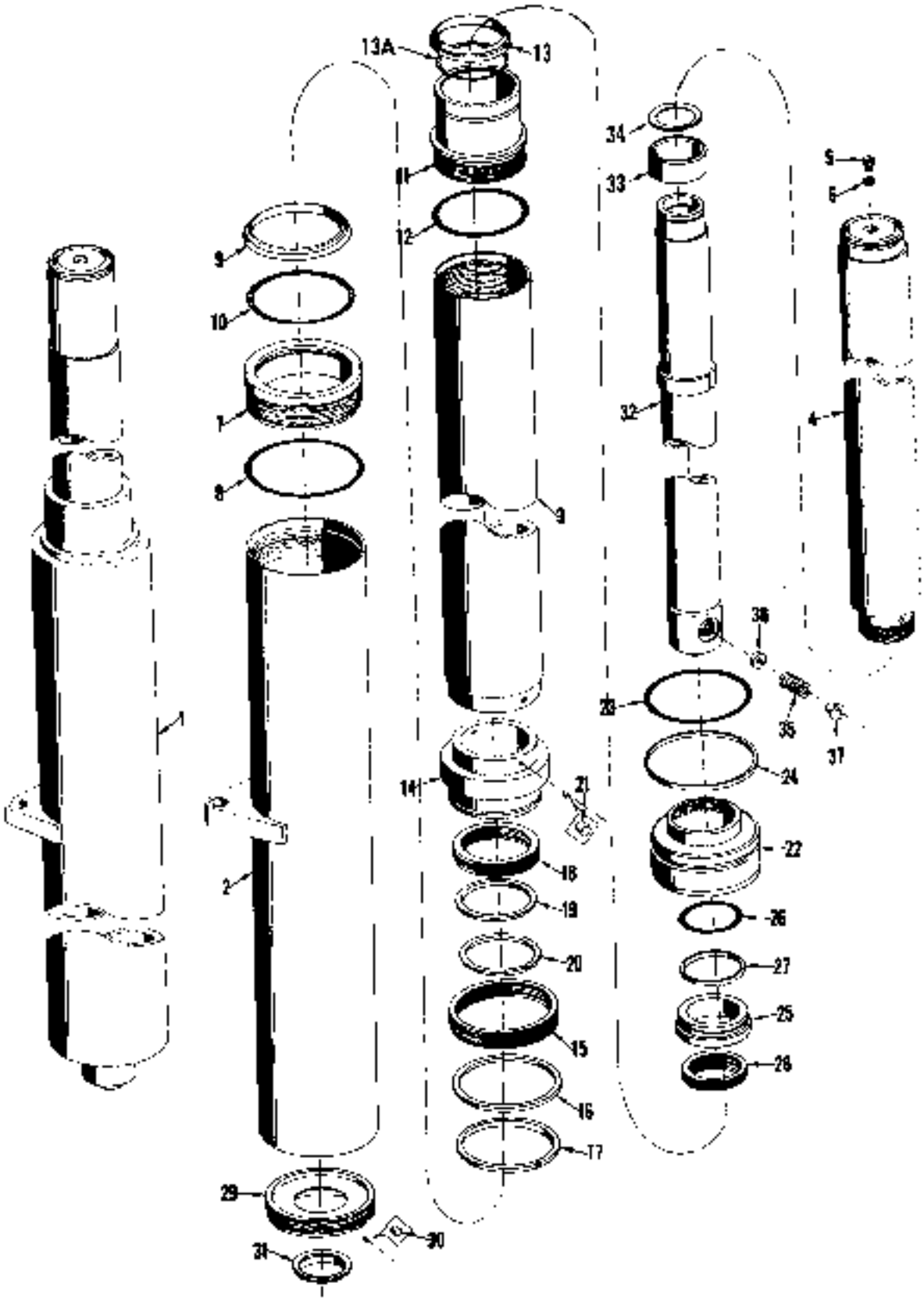

Fig. 2-30

Ref. No.	Part No.	DESCRIPTION	No. Per
		MY 40 DUPLEX UPRIGHT	
1	--------	Rail - outer assembly, see chart on page 84	1
2	--------	Rail - inner assembly, see chart on page 84	1
3	D476	Shoe - mast	6
4		50A648 - Screw, hex. socket, 3/8"-16 x 3/4"	12
5	D467	Shim - mast shoe	12
6	35A708	Roller - mast	10
7	D317	Bearing - mast roller	10
8		50A577 - Ring, snap, 3-5/32" I.D.	10
9		50A575 - Ring, snap, 1-3/8" I.D.	10
10	D297	Pin - with flange, mast roller	10
11		50A647 - Screw, flat head, hex. socket, 1/2"-13 x 7/8"	54
12		GM138200 - Screw, hex. socket, 1/2"-13 x 1"	10
		GM103029 - Washer, lock, 1/2"	16
13	--------	Cartage - see chart on page 84	1
14	35A622	Roller - thrust, Roller Brg. Corp. 71444	4
15	35A623	Pin - thrust roller, 3/4" x 1-29/32"	4
16	--------	Chain - see chart on page	2
17	35A954	Anchor - chain, 3"	2
18	50A597	Pin - chain anchor, 5/16" x 1-1/8"	2
		GM187666 - Pin, cotter, 5/16" x 1-1/4"	2
19	35A625	Anchor - chain	2
20	35A644	Pin - chain anchor, 5/8" x 3"	2
21	35A35	Rod - chain anchor, 3/4" x 12"	2
		50A197 - Nut, spherical, anchor rod	5
		GM819756 - Nut, hex. jam 3/4"-16	4
22	--------	*Cylinder - assembly, lift, see chart on page 84	1
		*NOTE: See page 79 for common component parts.	
23	35A31	Support - cylinder, upper	1
24		50A232 - Bolt, hex. socket, 1/2"-13 x 1-1/2"	3
25	35A3285	Sheave - chain	2
26	35A28	Support - sheave	1
27		50A243 - Ring, snap, cylinder support	1
		GM103584 - Screw, set, hex, socket, 5/16"-18 x 3/4"	1
28	D322	Bearing - ball, sheave support	2
29	D316	Ring - snap	2
30	D313	Ring - snap, spirolox, ball bearing	4
31	35A603	Pin - tilt, cylinder, 1-1/4" x 3 1/8"	2
		50A2626 - Pin, roll, 1/4" x 1-1/8"	2
		GM111296 - Fitting, grease, 1/8"	4
32	30A690	Pin - with plate, outer rail pivot	2
		GM271286 - Fitting, grease, 1/8", 90°	2
		GM103077 - Bolt, hex. hd. 5/16"-18 x 3/4"	2
		GM123514 - Washer, lock, 5/16"	2
33	35A638	Bushing - pivot pin, 2-1/2" I.D., 1-1/4" long	2
34	--------	Fork - assembly, see chart on page 84	2
35	35A658	Pin - fork stop, 5/8" x 2-1/16", Clark Equip. Co. No. 756447	2
36	35A660	Lever - fork stop pin, Clark Equip. Co. No. 756446	2
		50A2802 - Pin, roll, 3/16" x 1"	2
37	35A687	Spring - stop pin, 1-3/32" long	1
		GM150378 - Nut, hex., 1/2"-13	6
38	30A643	Back Rest - load	1
		GM180179 - Bolt, hex., 1/2"-13 x 1-3/4"	6
		GM120351 - Washer, lock, 1/2"	6
	35A215	Clip - light wire holding, on mast	4
39	35A2310	Block - stop, outer rail	1
		GM271046 - Bolt, hex., 5/8"-18 x 1-3/4"	1

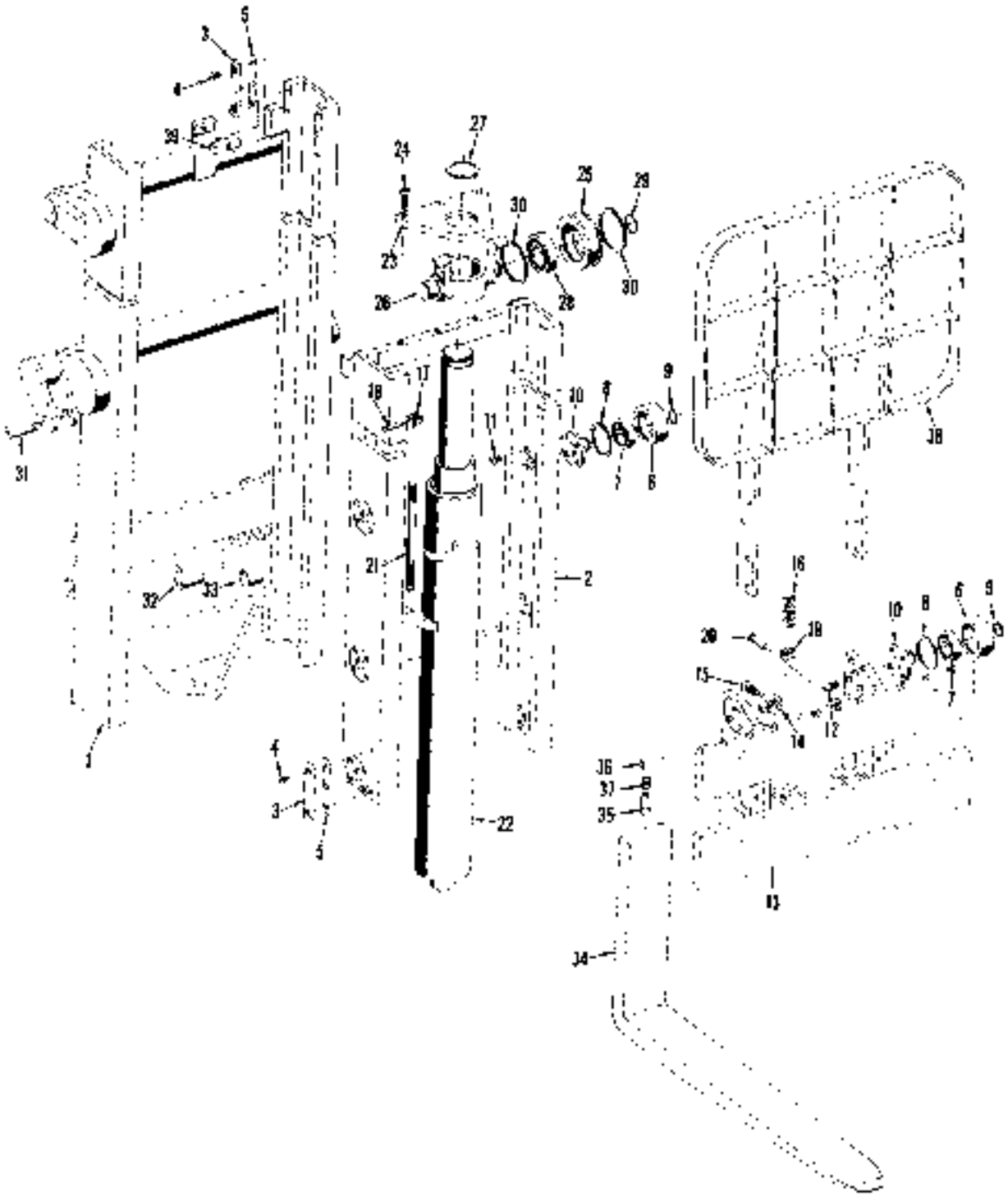

Fig. X-26

Ref. No.	Part No.	DESCRIPTION	No. Prs.
		MY 40 SIMPLEX UPRIGHT	
1	--------	Rail - outer assembly, see chart on page 94	1
2	--------	Rail - inner assembly, see chart on page 94	1
3	D476	Shoe - mast	6
4		S0A643 - Screw, hex., socket, 3/8"-16 x 3/4"	12
5	D467	Shim - mast shoe	12
6	35A708	Roller - mast	10
7	D217	Bearing - mast roller	10
8		S0A677 - Ring, snap, mast bearing, 2-5/32" I.D.	10
9		S0A676 - Ring, snap, mast bearing, 1-3/8" I.D.	10
10	D-297	Pin - with flange, mast rollers	10
11		S0A647 - Screw, flat head, hex. socket, 1/2"-13 x 3/3"	24
12		GM138290 - Screw, hex. socket, 1/2"-13 x 2	16
		GM103869 - Washer, lock, 1/2"	16
13	---------	Chartage - see chart on page 88	2
14	30A622	Roller - thrust, Roller Brg. Corp. #74444	4
15	35A853	Pin - thrust roller, 3/4" x 1-29/32"	4
16	--------	Chain - see chart on page 76	2
17	35A938	Anchor - chain, lower	2
18	35A934	Anchor - chain, upper	2
19	35A837	Pin - chain anchor, 5/16" x 1-1/8"	4
		GM133372 - Pin, cotter, 3/32" x 1/2"	8
20	35A200	Stud - chain anchor, 3/4"-20"	2
21	35A644	Pin - anchor, 5/8" x 2"	2
		30A797 - Nut, spherical	2
22	--------	*Cylinder - assembly, upright, see chart on page 84	2
		*NOTE: See page 74 for common component parts.	
23	35A824	Head - piston	1
		GM102586 - Screw, set, piston head, 5/16"-18 x 1"	2
24	35A95	Sheave - piston head	2
25	35A417	Bushing - sheave	2
26	35A96	Pin - sheave, 1-1/2" x 3-7/8"	2
		S0A2826 - Pin, roll, 1/4" x 1-1/4"	2
		GM271985 - Fitting, grease, 1/8"	2
27	35A820	Guide - piston head, 2" x 3"	2
		GM130149 - Bolt, hex., 7/16"-14 x 1-1/2"	4
		GM27501 - Nut, hex., 7/16"-14	4
28	---- --	Fork - lifting, see chart on page 86	2
29	35A668	Pin - fork stop	2
30	35A669	Lever - stop pin	2
31	35A667	Spring - stop pin	2
		S0A2832 - Pin, roll, stop pin, 3/16" x 1"	2
32	35A750	Pin - assembly, outer rail pivot	2
		GM180077 - Bolt, hex., 5/16"-18 x 3/4"	2
33	35A706	Pin - assembly, tilt cylinder	2
		GM180073 - Bolt, hex., 5/16"-18 x 1/2"	2
		GM103870 - Washer, lock, 5/16"	4
		GM271265 - Fitting, grease, 1/8"	4
34	--------	Back Rest - assembly, see chart on page 80	1
		GM180176 - Bolt, hex. head, 1/2"-13 x 1-3/8"	8
		GM120379 - Nut, hex., 1/2"-13	8
		GM120384 - Washer, lock, 1/2"	8
35	35A1463	Vent - strap	1
		GM133063 - Screw, 1/4"-20 x 1-1/4"	2
		GM120375 - Nut, hex., 1/4"-20	1
		GM120385 - Washer, lock, 1/4"	2
36	35A1464	Spacer	2
37	35A3013	Block - stop, outer rail	1
		GM27154E - Bolt, hex., 5/8"-18 x 1-1/4"	1

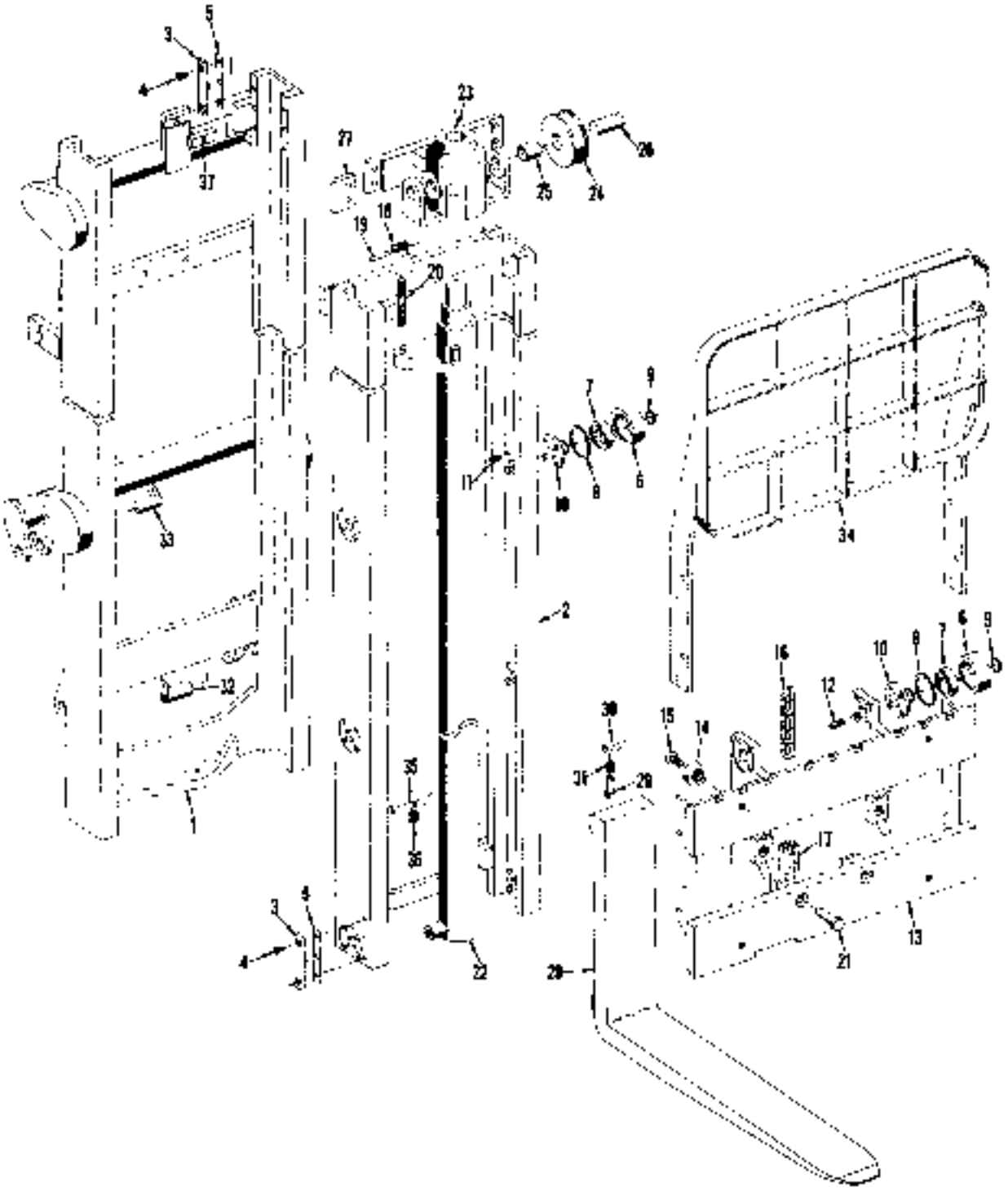

Fig. 2-37

Ref. No	Part No	DESCRIPTION	No. Per
		MY 60 SIMPLEX UPRIGHT	
1	--------	Rail - outer assembly, see chart on page 85	1
2	--------	Rail - inner assembly, see chart on page 85	1
3	D476	Shoe - mast	8
4		50A868 - Screw, hex. socket, 3/8"-16 x 3/4"	12
5	D467	Shim - mast shoe	12
6	35A908	Roller - mast	10
7	D317	Bearing - mast roller	10
8		50A977 - Ring, snap, mast bearing	10
9		50A976 - Ring, snap, mast bearing	10
10	D-287	Pin - with flange, mast rollers	10
11		50A847 - Screw, flat head, hex. socket, 1/2"-13 x 7/8"	24
12		GM139090 - Screw, hex. socket, 1/2"-13 x 1	16
13	36A2015	Carriage - assembly, 36"	1
14	85A622	Roller - thrust, Roller Brg. Corp. #74444	4
15	85A624	Pin - thrust roller, 3/4" x 1-29/32"	4
16	--------	Chain see chart on page 90	2
17	35A726	Anchor - chain, lower	2
18	35A746	Anchor - chain, upper	2
19	35A728	Pin - chain anchors, 1-5/16" x 2"	4
		GM103672 - Pin, cotter, 3/32" x 1/2"	8
20	35A100	Stud - chain anchor, 3/4"-10 x 3-1/4"	2
21	35A708	Pin - anchor, 7/8" x 3-3/16"	2
		50A197 - Nut, spherical	2
22	--------	*Cylinder - assembly, upright , see chart on page 85	1
		"NOTE": See page 74 for common component parts.	
23	35A1877	Head - piston	1
		GM102588 - Screw, set, piston, head, 5/16"-18 x 1"	1
24	35A95	Sheave - piston head	2
25	35A417	Bushing - sheave	2
26	35A96	Pin - sheave, 1-1/2" x 3-1/8"	2
		50A2826 - Pin, roll, 1/4" x 1-1/4"	2
		GM271285 - Fitting, grease, 1/8"	2
27	35A1979	Guide - piston head	2
		GM271648 - Bolt, hex., 5/8"-18 x 1-3/4"	4
		GM138987 - Screw, cap, hex, socket, 5/8"-11 x 2"	2
28		Fork, lifting, assembly, see chart on page 89	2
29	35A668	Pin - fork stop	2
30	35A669	Lever - stop pin	2
31	35A667	Spring - stop pin	2
		50A2832 - Pin, roll, stop pin, 3/16" x 1"	2
32	35A750	Pin - assembly, outer rail pivot	2
		GM180377 - Bolt, hex., 5/16"-18 x 3/4"	2
33	35A1881	Pin - assembly, tilt cylinder	2
		GM179795 - Bolt, hex., 1/4"-20 x 3/4"	2
		GM271285 - Fitting, grease, 1/8"	4
34	--------	Back Rest - assembly, see chart on page 86	1
		GM130176 - Bolt, hex. head, 1/2"-13 x 1-3/4"	8
		GM138478 - Nut, hex., 1/2"-13	8
35	35A1483	Vent - strap	1
		GM139055 - Screw, 1/4"-20 x 1-1/4"	1
		GM120875 - Nut, hex., 1/4"-20	1
36	35A1484	Spacer	1
37	35A3515	Block - stop, outer rail	1
		GM271346 - Bolt, hex., 5/8"-18 x 1-1/4"	1

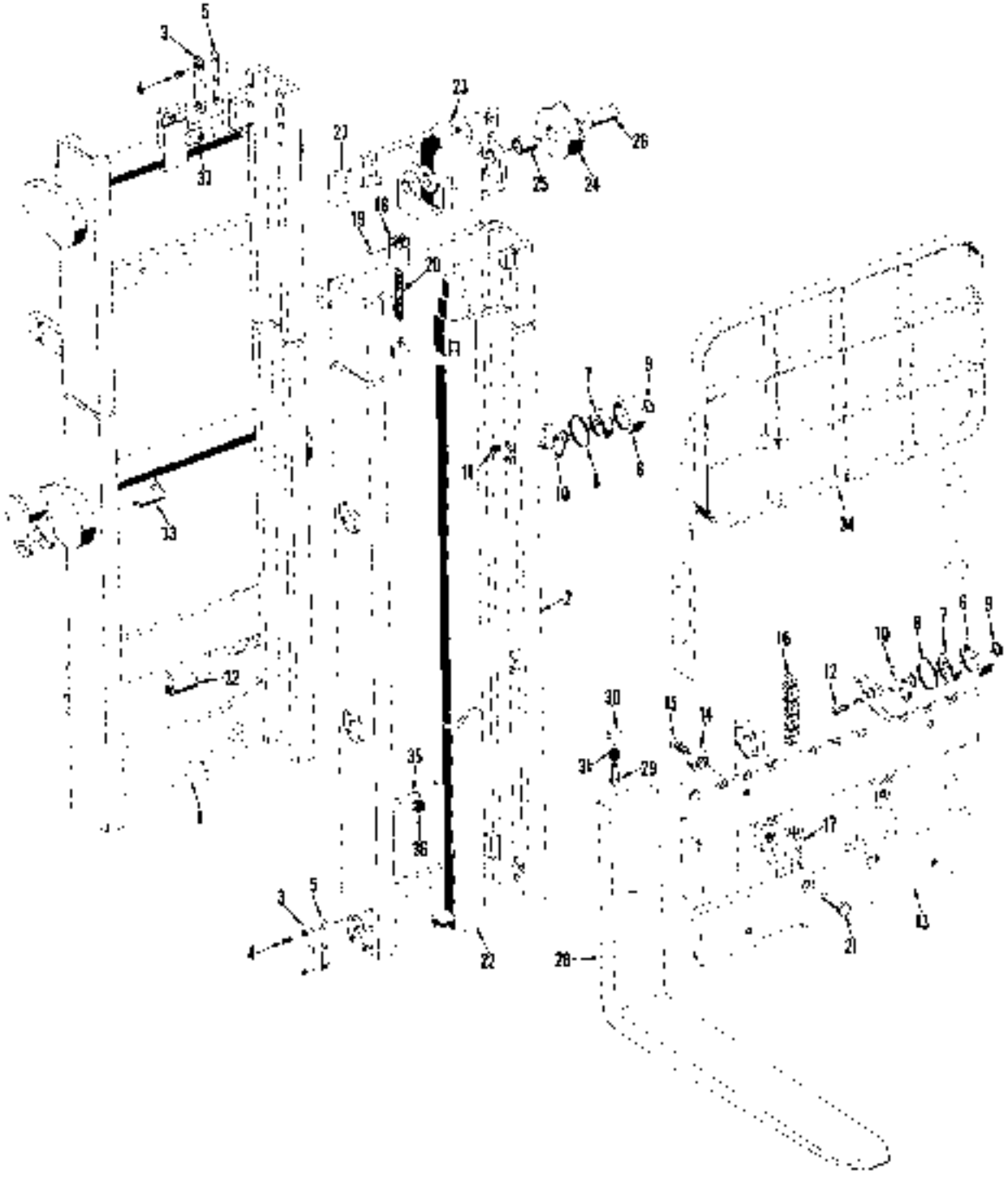

Fig. 8-08

VARIABLE PARTS CHART
FOR MY 40 SIMPLEX AND DUPLEX MASTS

OUTER RAIL		DUPLEX INNER RAIL		SIMPLEX INNER RAIL		DUPLEX LIFT CYLINDER		SIMPLEX LIFT CYLINDER		3/4" PITCH CHAIN		
Part No.	*Length	Part No.	*Length	Part No.	*Length	Part No.	Stroke	Part No.	Stroke	Part No.	Pitches	Length
36A1488	60-1/2	36A2832	80-1/2	36A1546	60-1/2	35A2655	22-1/4	35A1675	44-3/4	35A2638	57	42-9/4
36A1487	62	36A2833	82	36A1547	62	35A2656	23	35A1676	46 1/4	35A2639	59	44-1/4
36A1488	63-1/2	36A2834	83-1/2	36A1548	63-1/2	35A2657	23-3/4	35A1677	47-3/4	35A2640	61	45-3/4
36A1489	65	36A2835	85	36A1549	65	35A2659	24-1/2	35A1678	48-1/4	35A2641	63	47-1/4
36A1490	66-1/2	36A2836	86-1/2	36A1550	66-1/2	35A2658	25-1/4	35A1679	50-3/4	35A2642	65	48-3/4
36A1491	68	36A2837	88	36A1551	68	35A2660	26	35A1680	52-1/4	35A2643	67	50-1/4
36A1492	69-1/2	36A2838	89-1/2	36A1552	69-1/2	35A2661	26-3/4	35A1681	53-3/4	35A2644	69	51-3/4
36A1493	71	36A2839	91	36A1553	71	35A2662	27-1/2	35A1682	55-1/4	35A2645	71	53-1/4
36A1494	72-1/2	36A2840	92-1/2	36A1554	72-1/2	35A2663	28-1/4	35A1683	56-3/4	35A2646	73	54-3/4
36A1495	74	36A2841	94	36A1555	74	35A2664	29	35A1684	58-1/4	35A2647	75	56-1/4
36A1496	75-1/2	36A2842	95-1/2	36A1556	75-1/2	35A2665	29-3/4	35A1685	59 3/4	35A2648	77	57-3/4
36A1497	77	36A2843	97	36A1557	77	35A2666	30-1/2	35A1686	61-1/4	35A2649	79	59-1/4
36A1498	78-1/2	36A2844	98-1/2	36A1558	78-1/2	35A2667	31-1/4	35A1687	62-3/4	35A2650	81	60-3/4
36A1499	80	36A2845	80	36A1559	80	35A2668	32	35A1688	64-1/4	35A2651	83	62-1/4
36A1500	81-1/2	36A2846	81-1/2	36A1560	81-1/2	35A2669	32-3/4	35A1689	65-3/4	35A2652	85	63-3/4
36A1501	83	36A2847	83	36A1561	83	35A2670	33-1/2	35A1690	67-1/4	35A2653	87	65-1/4
36A1502	84-1/2	36A2848	84-1/2	36A1562	84-1/2	35A2671	34-1/4	35A1691	68-3/4	35A2654	89	66-3/4
36A1503	86	36A2849	86	36A1563	86	35A2672	35	35A1692	70-1/4	35A1705	91	68-1/4
36A1504	87-1/2	36A2850	87 1/2	36A1564	87-1/2	35A2673	35-3/4	35A1693	72-3/4	35A1706	93	69-3/4
36A1505	89-1/2	36A2851	90	36A1565	89-1/2	35A2674	36-1/2	35A1694	73-1/4	35A1707	95	71-3/4
36A2813	90	36A2852	91-1/2	36A2566	91	35A2675	37-1/4	35A1695	74-3/4	35A1708	97	72-3/4
36A1506	91	36A2853	93	36A1567	92-1/2	35A2676	38	35A1696	76-1/4	35A1709	99	74-1/4
36A2814	91-1/2	36A2854	94-1/2	36A1568	94	35A2677	38-3/4	35A1697	77-3/4	35A1710	101	75-3/4
36A2307	92-1/2	36A2855	96	36A1569	95-1/2	35A2678	39-1/2	35A1698	79-1/4	35A1711	103	77-1/4
36A2815	93	36A2856	98-1/2	36A1570	97-1/2	35A2679	40-1/4	35A1699	80-3/4	35A1712	105	78-3/4
36A1507	94	36A2857	100	36A1571	98	35A2680	41	35A1700	82-1/4	35A1713	107	80-1/4
36A2816	94-1/2	36A2858	101-1/2	36A1572	100-1/2	35A2681	41-3/4	35A1701	83-3/4	35A1714	109	81-3/4
36A1509	95-1/2	36A2859	103	36A1573	102	35A2682	42-1/2	35A1702	85-1/4	35A1715	111	83-1/4
36A2817	96	36A2860	104-1/2	36A1574	103-1/2	35A2683	43-1/4	35A1703	86-3/4	35A1716	113	84-3/4
36A1510	97 1/2	36A2861	107	36A1575	105-1/2	35A2684	44	35A1704	88-1/4	35A1717	115	86-1/4
36A2318	98-1/2	36A2862	108-1/2			35A2685	44-3/4			35A1718	117	87-3/4
36A1511	99	36A2863	110			35A2686	45-1/2			35A1719	119	89-1/4
36A2819	100	36A2864	111-1/2			35A2687	46-1/4			35A1720	121	90-3/4
36A1512	100-1/2	36A2565	113			35A2688	47			35A1721	123	92-1/4
36A2820	101-1/2	36A2866	115-1/2			35A2689	47-3/4			35A1722	125	93-3/4
36A1513	102	36A2867	117			35A2690	48-1/2			35A1723	127	95-1/4
36A2821	103	36A2868	118-1/2			35A2691	49-1/4			35A1724	129	96-3/4
36A1514	103-1/2	36A2869	120			35A2692	50			35A1725	131	98-1/4
36A2822	104-1/2									35A1726	133	99-3/4
36A1515	105-1/2									35A1727	135	100-1/4
36A2823	107									35A1728	137	102-3/4
36A2824	108-1/2									35A1729	139	104-1/4
36A2825	110									35A1730	141	105-3/4
36A2826	111-1/2									35A1731	143	107-1/4
36A2827	113									35A1732	145	108-3/4
36A2828	115-1/2									35A1733	147	110-1/4
36A2829	117									35A1734	149	111-3/4
36A2830	118-1/2											
36A2831	120											

*NOTE: Figures in length column denotes actual length of rails.
For overall height lowered add 5 inches to lengths shown.

VARIABLE PARTS CHART
FOR MY 60 SIMPLEX MAST

Max. Fork Height"	Overall Height Lowered"	OUTER RAIL		INNER RAIL		LIFT CYLINDER		CHAIN		
		Part No.	Length"	Part No.	Length"	Part No.	Stroke"	Part No.	Pitches	Length"
91	79	36A1892	65	36A1922	86	35A1675	44-3/4	35A2063	93	68-1/4
94	71-1/2	36A1893	66-1/2	36A1923	66-1/2	35A1676	46-1/4	35A2064	95	69-3/4
97	73	36A1894	68	36A1924	68	35A1677	47-3/4	35A2065	95	71-1/4
100	74-1/2	36A1895	69-1/2	36A1925	69-1/2	35A1678	49-1/4	35A2066	97	72-3/4
103	76	36A1896	71	36A1926	71	35A1679	50-3/4	35A2067	99	74-1/4
106	77-1/2	36A1897	72-1/2	36A1927	72-1/2	35A1680	52-1/4	35A2068	101	75-3/4
109	79	36A1898	74	36A1928	74	35A1681	53-3/4	35A2069	103	77-1/4
112	80-1/2	36A1899	75-1/2	36A1929	75-1/2	35A1682	55-1/4	35A2070	105	78-3/4
115	82	36A1900	77	36A1930	77	35A1683	56-3/4	35A2071	107	80-1/4
118	83-1/2	36A1901	78-1/2	36A1931	78-1/2	35A1684	58-1/4	35A2072	109	81-3/4
121	85	36A1902	80	36A1932	80	35A1685	59-3/4	35A2073	111	83-1/4
124	86-1/2	36A1903	81-1/2	36A1933	81-1/2	35A1686	61-1/4	35A2074	113	84-3/4
127	88	36A1904	83	36A1934	83	35A1687	62-3/4	35A2075	115	86-1/4
130	89-1/2	36A1905	84-1/2	36A1935	84-1/2	35A1688	64-1/4	35A2076	117	87-3/4
133	91	36A1906	86	36A1936	86	35A1689	65-3/4	35A2077	119	89-1/4
136	92-1/2	36A1907	87-1/2	36A1937	87-1/2	35A1690	67-1/4	35A2078	121	90-3/4
139	94	36A1908	89	36A1938	89	35A1691	68-3/4	35A2079	123	92-1/4
142	95-1/2	36A1909	90-1/2	36A1939	90-1/2	35A1692	70-1/4	35A2080	125	93-3/4
145	97	36A1910	92	36A1940	92	35A1693	71-3/4	35A2081	127	95-1/4
148	98	36A1911	94	36A1941	94	35A1694	73-1/4	35A2082	129	96-3/4
151	100-1/2	36A1912	95-1/2	36A1942	95-1/2	35A1695	74-3/4	35A2083	131	98-1/4
154	102	36A1913	97	36A1943	97	35A1696	76-1/4	35A2084	133	99-3/4
157	103-1/2	36A1914	98-1/2	36A1944	98-1/2	35A1697	77-3/4	35A2085	135	101-1/4
160	105	36A1915	100	36A1945	100	35A1698	79-1/4	35A2086	137	102-3/4
163	107	36A1916	102	36A1946	102	35A1699	80-3/4	35A2087	139	104-1/4
166	108-1/2	36A1917	103-1/2	36A1947	103-1/2	35A1700	82-1/4	35A2088	141	105-3/4
169	110	36A1918	105	36A1948	105	35A1701	83-3/4	35A2089	143	107-1/4
172	111-1/2	36A1919	106-1/2	36A1949	106-1/2	35A1702	85-1/4	35A2090	145	108-3/4
175	113	36A1910	108	36A1950	108	35A1703	86-3/4	35A2091	147	110-1/4
178	115	36A1911	110	36A1951	110	35A1704	88-1/4	35A2092	149	111-3/4

VARIABLE PARTS CHART (CONT'D)

MY 40 DUPLEX CARRIAGE

Part No.	Width
36A2870	30"
36A2871	32"
36A2872	34"
36A2873	36"
36A2874	38"
36A2875	40"
36A2876	42"
36A2877	44"
36A2878	46"
36A2879	48"
36A2880	50"
36A2881	54"
36A2882	60"

MY 40 SIMPLEX CARRIAGE

Part No.	Width
36A1638	30"
36A1639	32"
36A1635	34"
36A1639	36"
36A1640	38"
36A1641	40"
36A1642	42"
36A1643	44"
36A1644	46"
36A1645	48"
36A1646	50"
36A1647	54"
36A1648	60"

MY 40 STD. FORK

Part No.	Length
35A3367	30"
35A1735	32"
35A1736	34"
35A1737	36"
35A1738	38"
35A1739	40"
35A1740	42"
35A1741	44"
35A1742	46"
35A1743	48"
35A1744	54"
35A1745	60"
35A1746	66"
35A1747	72"

MY 40 CHISEL FORK

Part No.	Length
36A3079	30"
35A3080	32"
35A3081	34"
35A3082	36"
35A3083	38"
35A3084	40"
35A3085	42"
35A3086	44"
35A3087	46"
35A3088	48"
35A3089	54"
35A3090	60"
35A3091	66"
35A3092	72"

SIMPLEX MAST VENT HOSE

Part No.	Length
35A2776	36"
35A2777	37-1/2"
35A2778	39"
35A2779	40-1/2"
35A2780	42"
35A2781	43-1/2"
35A2782	45"
35A2783	46-1/2"
35A2784	48"
35A2785	49-1/2"
35A2786	51"
35A2787	52-1/2"
35A2788	54"
35A2789	55-1/2"
35A2790	57"
35A2791	58-1/2"
35A2792	60"
35A2793	61-1/2"
35A2794	63"
35A2795	65"
35A2796	66-1/2"
35A2797	68"
35A2798	69-1/2"
35A2799	71"
35A2800	73"
35A2801	74-1/2"
35A2802	76"
35A2803	77-1/2"
35A2804	79"
35A2805	81"

LOAD SAFETY RACK

Part No.	Width
36A3026	48"
36A3027	54"
36A3028	60"
36A3029	66"
36A3030	72"

MY 40 FORK EXTENSION

Part No.	Length
36A3053	42"
36A3054	48"
36A3055	54"
36A3056	60"
36A3057	66"
36A3058	72"

MY 60 SIMPLEX CARRIAGE

Part No.	Length
36A2012	30"
36A2013	32"
36A2014	34"
36A2015	36"
36A2016	38"
36A2017	40"
36A2018	42"
36A2019	44"
36A2020	46"
36A2021	48"
36A2022	50"
36A2023	52"
36A2024	54"
36A2025	56"
36A2026	58"
36A2027	60"
36A2028	72"

MY 60 CHISEL FORK

Part No.	Length
35A3093	30"
35A3098	36"
35A3099	42"
35A3102	48"
35A3103	54"
35A3104	60"
35A3106	72"

MY 60 FORK EXTENSION

Part No.	Length
36A3065	42"
36A3066	48"
36A3067	54"
36A3068	60"
36A3069	66"
36A3070	72"

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MINNEAPOLIS-MOLINE
MM
MOBILIFT

SUPPLEMENT "A"

TO MY 40 AND MY 60 LIFT TRUCKS

PARTS, OPERATION AND MAINTENANCE MANUAL S-292

MINNEAPOLIS-MOLINE, INC.
HOPKINS, MINNESOTA

Ref. No	Part No.	DESCRIPTION	No. Req.
		Supplement "A" to Parts, Operation and Maintenance Manual S-292	
		This supplement is to be used in conjunction with repair section of the S-292 manual. Changes and additions are listed in this supplement.	
Page 4		Omit 10A6958 seal, ref. #22	
		Change 11A16004 dipstick to 11A19552	
		Change GM179833 to GM179839 and length to 3/8"-16 x 1"	9
		Add GM179841 Bolt - hex. head, 3/8"-16 x 1-1/4"	5
		Change quantity on 10A9836 from 3 to 1	
		Add 15A15563 Clip - wire, on screw	2
		Add 10A8140 Stud - for adapter	2
		Add GM102634 Nut - hex., 5/16"-18	2
		Add 11A17006 Cover - on large side cover (MY60)	1
		Add 35A708 Gasket - cover	1
Page 5		Change 35A2935 to 10A18387 and size to 1-1/2" O.D. x T-1/4"	
		Add 14R281 Gasket Set - engine overhaul	1
		Add 10R972 Gasket Set - valve grinding	1
Page 8		Change quantity on 10A10758 from 1 to 6	
		Omit 10A5936 stud	
		Change 10A5935 stud to 10A5938, 8 used	
		Change quantity on 10A5937 stud from 6 to 4	
		Change GM103926 nut to GM214442	
		Add 10A6999 Washer - stud	15
Page 6		Change 10A7202 tube to 10A18933	
		Change 10A6016 nut to 10A19162	
		Add 10A18932 Rod - metering, oil pipe	1
Page 10		Change 11A4860 piston (ref. # 11) to 11B4860	
		Change 11A17475 piston (ref. # 11) to 11B17475	
		Change 11A17476 piston (ref. #11) to 11B17476	
		Change 10R902 rings (ref. # 14) to 10R1047, with expanders	
		Change 10R996 rings (ref. # 14) to 10R1048, with expanders	
		Change 10R994 rings (ref. # 14) to 10R1049, with expanders	
Page 12		Change 10A7729 manifold to 10A18613	
		Change 10A9027 stud to 10A9072 correction	
		Change GM102685 nut to 50A1000 (sea2-proof)	
Page 18		Add 35P631 Repair Kit - vaporizer	1
		Change 35P507 solenoid to 35P1084	
		Add 35P1037 Diaphragm - assembly, for carburetor	1
Page 22		Change 10A17879 hose (ref. # 30) quantity from 2 to 1 and length to 14"	
		Add to follow:	
	10A5063	Hose - with coupling, 12-5/8" long	1

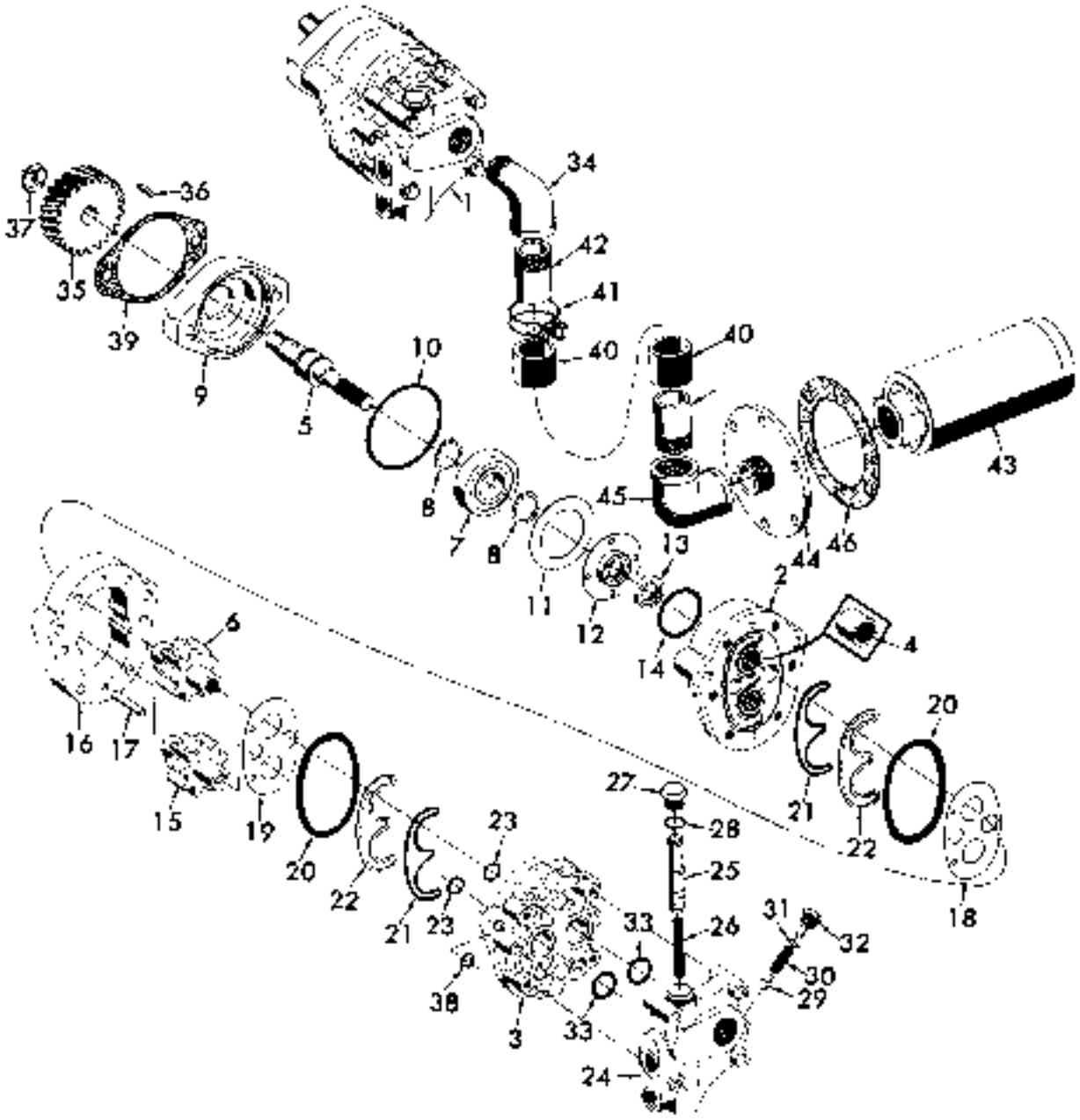
Ref. No.	Part No.	DESCRIPTION	No. Per.
Page 24		Add single asterisk to parts listed under Hoses and Thermostat	
		*NOTE: Used on MY40 Lift Truck to No. 20100250, Inc.	
		*NOTE: Used on MY60 Lift Truck to No. 20200123, Inc.	
		Add the following:	
	35A6078	**Hose - inlet	1
		**GM108490 - Clamp, hose, 2"	2
	10A10689	**Hose - outlet	1
		**GM108490 - Clamp, hose, 2"	2
	10A5736	**Thermostat - 170°	1
	10A6810	**Housing - thermostat	1
		**GM179841 - Bolt, hex., 3/8"-16 x 1-1/4"	3
	10A6829	**Gasket - housing	1
	10A19452	**Support - housing	1
		**GM179816 - Bolt, hex., 5/16"-18 x 3/4"	1
		**GM179826 - Bolt, hex., 5/16"-18 x 2"	1
		**GM103340 - Washer, plain, 11/32" I.D., 11/16" O.D.	1
	10A10758	**Stud - in adapter for support	1
		**NOTE: Used on MY40 Lift Truck No. 20100251 and after.	
		**NOTE: Used on MY60 Lift Truck No. 20200123 and after.	
Page 28		Change 10A16338 support (ref. #3) to 10A17829	
		Change 10A8754 bar (ref. #4) to 10A18084	
		Change 10A8758 starting motor (ref. #6) to 10A19196	
		Add to follow 35A3007 wire:	
	35A3011	Wire - tail lamp extension	1
		Add to description on 35A3307, for MY40	
	35A3729	Box - battery, MY60	1
	10P2338	Battery - dry, 12 volt, Model 5 SN	1
	10P2367	Electrode - 3 - 2 qt. package	-
	10P2368	Electrode - 5 gallon	-
	10P2369	Hose - electrode dispenser for 5 gallon container	-
		Add to description on 35A3383 for MY 40	
	35A2147	Clamp - battery hold down, for MY 60	1
		Change 35A2231 pin (ref. # 24) to 35A6968	
Page 30		Change 35A1762 support (ref. # 6) to 35A5198	
		Change 35A1759 tube to 35A5197	
		Change 35A2691 and 35A2390 hourmeter (ref. # 12) to 35A4277	
	35A4234	Wire - hour meter, positive	1
	35A4233	Wire - hour meter, negative	1
		Add a single asterisk (*) to 35A1757, 35A2496, and 35A1754	
		*NOTE: Used on MY 40 Lift Truck to No. 20100125, Inc.	
		*NOTE: Used on MY 60 Lift Truck to No. 20200098, Inc.	
	35A5253	Switch - neutral starting, in control valve	1
		**NOTE: Used on MY 40 Lift Trucks No. 20100126 and after.	
		**NOTE: Used on MY 60 Lift Trucks No. 20200099 and after.	

Ref No	Part No	DESCRIPTION	No Pcs
Page 32		Change GM103866 plug to 50A954 twice	
		Change 10A2297 plug (ref. # 2) to 35A3256	
		Change 35A1467 dipstick (ref. # 10) 35A2521	
		Change 36A899 sleeve (ref. # 11) to 35A999 and add to follow	
		50A1763 "O" Ring - dipstick sleeve	1
		Change GM130116 bolt to GM130120 and size to 3/4" long	
		Add to follow GM120377	
	35A6956	Washer - filler tube bracket	1
		Change 35A3269 plug to 50A955	
		Change GM130076 bolt to GM130021 following ref. # 30.	
Page 33		Add the following seals for converter pump	
	35P619	Seal - converter pump	1
	10A27	"O" Ring - converter pump, 1/2" I.D., 11/16" O.D.	1
	M536	"O" Ring - converter pump, 5-1/2" I.D., 5-3/4" O.D.	1
Page 34		Add the following housing assemblies prior to line 4	
	35R29	Housing - assembly, input, complete	1
	35R30	Housing - assembly, output, complete	1
		Change description on 35A2133 housing (ref. # 4) to read, Housing - less plates, pistons, rings, springs and seals	
		Add to follow GM223092 screw (ref. # 42)	
	35A7724	Pin - screw, 1/4" x 25/32" long	1
Page 36		Change 35A278 gasket (ref. # 2) to 35A378 (corr.)	
		Change 35A7 body (ref. # 3) to 35A6079 and add the following:	
	10F1595	Plug - housing, 3/4"-16 N.P., on unit less neutral starting switch	1
	35P294	"O" Ring - plug	1
	35A5283	Switch - neutral starting	1
		Add to follow GM132046	
		50A1879 Screw - 12 pt. cap., 1/4"-20 x 1"	1
		Change 35A372 spool (ref. # 5) to 35A5849	
		Change 35A691 spring (ref. # 20) to 35A1770 and coils to 12-1/2	
		Change 35A10 cylinder (ref. # 28) to 35R24 housing assembly	
		Includes 1 - 35A10, 1 - 35A693, 1 - 35A626, 1- 35A5184, 1 - 35A695, 1- 35A688, 2 - 10A4538, 1 - 50A136, 1 - 35A5185, 1 - 35A6828, 1 - 35A669, 1 - 10A136, and 1-50A3602.	
		Change 35A697 plug (ref. # 30) to 35A5184 plug with vent hole, add the following parts that work in 35A5184	
	35A5185	Vent - valve	1
	35A6638	Disc - filter, locking plug, 1/16" x 5/16" O.D.	1
	35A689	Spring - disc, inside of plug, 9/16" O.D., 14-1/2 coils x 3/4" long	1
		Change GM130128 bolt to GM130130 and length to 2"	
		Change 50A2829 pin to 50A2832 (corr.)	
		Change 36A578 support (ref. # 42) to 36A5584	

Ref. No	Part No	DESCRIPTION	No. Pcs.
Page 38		Change quantity on 86A686 link (ref. #48) from 1 to 2 and add note to follow. 2 used when neutral starting switch is mounted in control valve housing. Change 86A2496 link (ref. #48A) to 86A5772 link, used on earlier lift trucks on which neutral starting switch is not mounted in control valve housing. Add a single asterisk (*) to 86A1282, 86A1268 and 86A1284 *NOTE: Used on MY40 lift trucks.	
	86A1442	**Tube - filter to transmission case	1
	86A1441	**Tube - filter to cooler inlet	1
	86A1446	**Tube - filter to transmission case	1
		**NOTE: Used on MY60 lift trucks. Change GM9410977 elbow (ref. #61) to GM9410205 connector. Change quantity on GM9410977 (ref. #67) from 1 to 2.	
Page 40		Change 86A1483 housing (ref. #11) to 86A5066.	
Page 42		Change 86P123 cone (ref. #19) to 10A574 (same as).	
Page 44		Change GM102865 to 50A954 following ref. #20. Change 86A2112 plug to 86A3266.	
Page 46		Change the description on the following parts from right hand to left hand: 86A1241, 86P316, 86P332 and 86P335. Change the description on the following parts from left hand to right hand: 86A1242, 86P317, 86P331 and 86P334. Add to follow 86A1242:	
	86A5665	Screw - cap (special), 9/16"-12 x 1-3/8"	10
		Change quantity on 50A694 screw from 14 to 4.	
Page 48		Change 86A2256 pedal (ref. #1) to 86A5065. Add GM271283 - Fitting - grease, 1/8"-27 x 45°	1
		Change 86A2255 pedal (ref. #2) to 86A5064. Add GM124824 Nut - hex., jam, 5/16"-18	1
		GM102445 - Set Screw - oval point, 5/16"-18 x 1"	1
		GM271283 - Fitting, grease, 1/8"-27 x 45°	1
		Change 86A1811 shaft (ref. #4) to 86A5916. Change 50A2836 Pin - roll, 3/16" x 1-1/2". Change 86A1810 bracket (ref. #5) to 86A5914. Change quantity on GM120377 nut from 1 to 2 and add:	
		50A1083 - Nut, hex. (gripco), 3/8"-16	2
		Change 86A2385 clevis (ref. #24) to 86A6452 and add:	
		GM117683 - Clevis - rod	1
		GM274563 - Pin, clevis	1
		GM121822 - Pin, cotter	1
		GM272123 - Nut, hex. jam, 7/16"-20	1
		Change 10A2362 sleeve (ref. #28) to 86A2382.	
Page 52		Add to follow GM150120 bolt, GM181694 Bolt, hex., 1/2"-20 x 7/8"	16
		Add to follow GM120377 nut, GM120371 Nut, hex., 1/2"-20.	16
		Add to follow ref. #7, 86A556 cap.	
	--------	*Tire and Tube, 6:00 - 6:90 x 9", 10 ply, MY40	2
		Add to follow 86P123 cap:	
	--------	**Tire and Tube, 7:50 x 10, 10 ply, MY60	2
		Change 86A1468 bolt (ref. #9) to 86A6399. Add to follow 86A1300 stud, ref. #12 hardware:	
	--------	*Tire and Tube, 7:50 x 15, 12 ply, MY40	2
	--------	*Tire and Tube, 8:25 x 15, 12 ply, MY60	2
		Change 86A419 center to 86A6145. Change 86A1466 bolt to 86A6399. Change 86A1300 stud to 86A2700. Add to follow 86A1012 spacer:	
	--------	**Tire and Tube, 7:50 x 15, 12 ply, MY40 and MY60	4

Ref No.	Part No	DESCRIPTION	No Req
Page 54		Change description on 85A582 to Gear - steering, less arm and change includes the following 23 parts:	
		Omit GM114486 nut (ref. #22) and use:	
	10P2061	Nut - lock, adjusting screw	1
	10P2060	Washer - lead, lock nut	1
		Change 35A3001 arm (ref. #24) to 35A2998.	
		Add to description on 35A589 (ref. #28) booster stud to steering arm.	
		Change 85A1040 drag link (ref. #32) to 85A6492 and add to description booster rod to axle housing.	
		Change 35P302 seal (ref. #93) to 10F1681 and add:	
		GM102648 - Nut, hex., slotted, 9/16"-18	1
Page 56		Omit GM114496 - Nut, (ref. #22) and add:	
	10P2061	Nut - lock, adjusting screw	1
	10P2060	Washer - lead, lock nut	1
Page 58		Change 35P49 piston (ref. #1) to 85P349 (cont.)	
		Change GM103028 nut (ref. #2) to 50A1010 lock nut.	
Page 60		Change 36A2825 frame (ref. #1) to 36AS292.	
		Change 36A4065 frame to 36A7598.	
		Change 36A4275 frame to 36A3376.	
		Add new mounting pad	
	85A6705	Pad - bonded, engine to frame (MY40)	2
		Change 36A463 bracket (ref. #6) to 36A6782.	
		Change 85A602 bracket to 36A6572.	
		Change GM150191 bolt to GM150192 and:	
		Add to description on 35A470 support (ref. #7) with 2 holes used on support.	
		Add to description on 35A833 support (ref. #7) with 2 holes used on support	
		Add new supports for frames with 4 bolt support mounting	
	35A5215	Support - differential case to frame, MY40	2
	85A5609	Support - differential case to frame, MY60	2
		50A1739 - Bolt, hex., 5/8"-11 x 4"	8
		Change 36A501 safety walk to 35A6058 and size to 12" x 20"	
		Change GM446257 washer to 50A2606, 25/32" I.D., 1-5/8" O.D.	
Page 61		Change 35A382 decal to 35A8089.	
		Change 86A364 decal to 86A4969 and add the following decals:	
	35A5773	Decal - starting caution	1
	35A6381	Decal - strap	2
	35A6454	Decal - spear, R.H.	1
	35A6455	Decal - spear, L.H.	1
Page 62		Change 35A2178 support (ref. #6) to 38A2178.	
		Change 35A2179 support (ref. #7) to 86A2179.	
Page 64		Add note to heading	
		Used on MY40 lift trucks to No. 20300175 inc.	
		Change 85P278 bearing to 80A164 (same as).	
		Change 10F1595 spring (ref. #26) to 10F1592.	
		Add new group for hydraulic pump on MY40.	

Ref. No	Part No	DESCRIPTION	No. Per
		HYDRAULIC PUMP	
		Used on MY40 Lift Truck No. 20100176 and after.	
1	86A3014	Pump - hydraulic, with flow divider	1
		Includes the following 23 parts:	
2	35P269	Body - pump, with bearings	1
3	35P270	Cover - pump, with bearings	1
4	35P297	Bearing - needle, Torrington No. B1416	4
5	10P1360	Shaft - drive	1
6	10P1364	Gear - drive shaft	1
7	30A164	Bearing - ball, drive shaft, New Dep. No. 3206	1
8	35P279	Ring - bearing retainer, Truarc No. 5100-118	2
9	10P1363	Adapter - bearing	1
		GM147105 - Screw, adapter, No. 8-32 x 1	2
10	35P277	"O" Ring - adapter	1
11	35P276	Washer - thrust, ball bearing	1
12	35P283	Retainer - with oil seal	1
13	10P1772	Seal - oil, Chicago Rawhide No. 501391	1
	10P1966	Screw - retainer, thd. cutting, No. 10-24 x 3/8"	4
14	35P286	"O" Ring - retainer, 1-15/16" O.D.	1
15	10P1558	Gear - idler	1
16	10P1862	Plate - gear	1
17	10P1861	Pin - dowel, gear plate	2
		GM175829 - Bolt, hex., cover to body, 5/16"-18 x 2-3/4"	6
18	35P285	Plate - wear, pump body	1
19	35P288	Plate - wear, pump cover	1
20	35P288	Seal - wear plate, outer, rubber	2
21	35P284	Seal - wear plate, inner, rubber	2
22	35P281	Ring - back-up, wear plate seal	2
23	35P287	"O" Ring - 5/8" I.D., 3/4" O.D.	2
24	10P1859	Flow Divider, assembly	1
25	10P1591	Piston	1
26	10P1592	Spring - piston	1
27	10P1595	Plug - piston and spring	1
28	35P294	"O" ring - piston plug	1
29	35P290	Valve	1
30	10P1408	Spring - valve	1
31	35P293	Shim - valve spring	A.R.
32	35P292	Plug - valve spring	1
33	35P296	"O" Ring - flow divider to pump	2
		GM135226 - Screw - flow divider to pump, 5/16"-18 x 2"	4
34		GM127792 - Elbow - pump inlet, 1"-90°	1
35	10A16952	Gear - helical, on pump shaft	1
36	10A5645	Key - gear	1
37	11A5647	Washer - lock, gear to shaft	1
		GM179816 - Bolt, hex., 5/16" x 18 x 3/4"	1
		GM186280 - Bolt, pump to housing, 3/8"-16 x 5"	2
38	10A10294	Washer - pump bolt	2
39	35A705	Gasket - pump to side cover	1
40	35A1285	Hose - suction strainer to pump	1
41		GM105487 - Clamp, hose, 1-3/4"	2
42	35A2524	Nipple - pipe, 1" x 2"	2
43	35A698	Strainer - suction	1
44	3EA689	Flange - mounting, on hydraulic oil tank	1
		GM190121 - Bolt, hex., 3/8"-16 x 7/8", cad.	6
45		GM127793 - Elbow, pipe, 1", 90°	1
46	35A700	Gasket - flange to tank	1

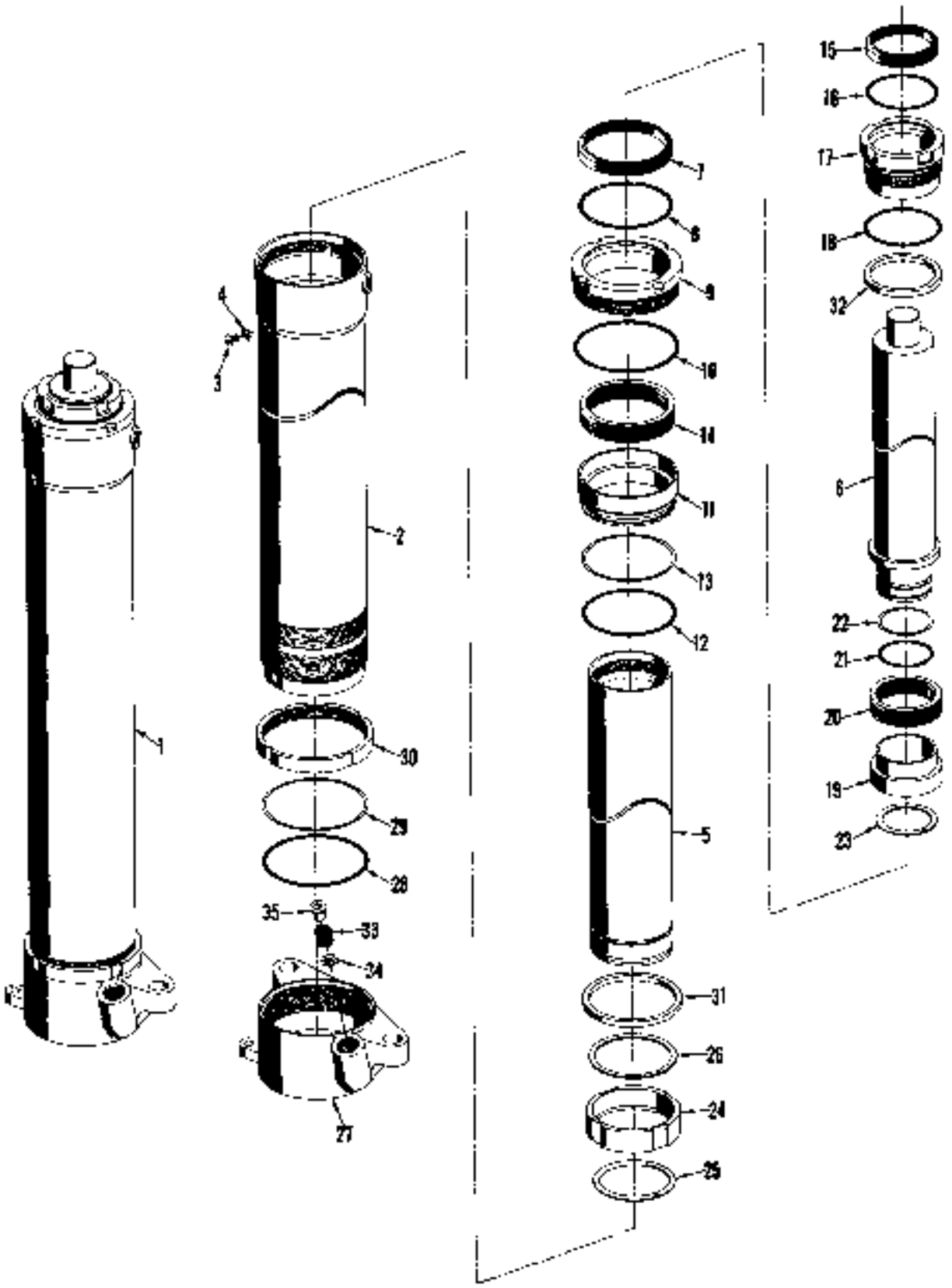


HYDRAULIC PUMP

Ref. No	Part No	DESCRIPTION	No. Pcs
Page 66		Change GM200479 clamp to GM106478 and size to 2-3/4".	
Page 68		Add a single cross (+) to 80A8078 valve.	
		+NOTE: Used on MY40 Lift Trucks to No. 20100275 Inc.	
	35A6739	+Valve - control, MY40	1
		++NOTE: Used on MY40 lift trucks, No. 20100176 and after.	
		Add note to 35P221 spring, (ref. #16) for 35A3078 valve.	
	35P227	Spring - relief, for 35A6739 valve	1
	35A3118	Plug - valve, power beyond	1
	15P747	Gasket - plug, power beyond	1
Page 70		Change 50A948 nipple (ref. #13) to GM128067 and size to 1-1/2".	
		Change 10A14720 elbow (ref. #18) to 10A12470.	
		Change 80A3039 hose (ref. #23) to 80A3665.	
		Change 10A6285 "O" ring (ref. #28) to 10A16285.	
		Add to follow 10A16405 "O" ring, ref. #42:	
		50A603 - Clip, hose, on upright pin	1
	35A6306	Clip - hose, tilt cylinder, left hand	1
Page 71		Add new fitting to replace 50A1256 on late model trucks.	
	35A4337	Fitting - hose, 1/4"-18 x 90°	1
Page 72		Change 35A2746 cylinder (ref. #2) to use the following:	
	35A6686	Cylinder - assembly for MY40 Lift Trucks	1
	35P1280	Rod - piston, for 35A6686 cylinder, 18-7/8" long	1
	35A7710	Cylinder assembly, for MY60 Lift Trucks	1
	35P1063	Rod - piston, for 35A7710 cylinder, 13-5/8" long	1
		Add to description on 35P813 rod, for 35A2746 cylinder.	
		Change 35P305 nut (ref. #9) to 50A1140, 1-1/8"-12.	
		Change 35P816 ring (ref. #16) to 10A7848 (same as)	
		Change 35P211 end (ref. #18) to 35B5228.	
		Change 35P212 bushing (ref. #21) to 10A13163.	
		Change 36A706 pin (ref. #21) to 36A4925 and length to 3-3/8" long.	
	35A5301	Pin - tilt cylinder, 2-1/4" x 9-1/4"	2
		50A2831 - Pin, roll, 1/4" x 2-1/4"	2
	35R32	Repair Kit - tilt cylinders, consists of items 5, 6, 7, 12, 13, 14, 15 and 18.	
Page 74		Change 35P486 retainer (ref. #4) to 35P169.	
		Change 35P485 piston (ref. #7) to 35P168.	
		Add to description of 35P176 (ref. #8) packing set, includes V-rings, packing and adapter.	
		Omit 35P178 V-ring, 35P177 packing, and 35P179 adapter.	
	35R35	Repair Kit - lift cylinder, consists of items 8, 12, 13, 19, 20, and 21.	
Page 76		Add to heading:	
		Group 1	
		Used on MY40 Lift Truck to No. 20100175 Inc.	
	35P136	Washer - piston packing	1
Page 77A		Add new Duplex Lift Cylinder	

Ref. No	Part No	DESCRIPTION	No. Pcs.
Page 77A (Cont'd)		Duplex Lift Cylinder Group II Used on MY 40 Lift Trucks No. 20100176 and after.	
1	35A5237	Cylinder - lift, complete, 35-1/2" long	1
1	35A5245	Cylinder - lift, complete, 40-1/2" long	1
1	35A5250	Cylinder - lift, complete, 44" long Each includes the following 34 parts:	1
2	35P1120	Shell - for 35-1/2" cylinder	1
2	35P1121	Shell - for 40-1/2" cylinder	1
2	35P842	Shell - for 44" cylinder	1
3	35P883	Screw - button head, cylinder shell	1
4	35P832	*Seal - button head screw	1
5	35P1122	Tube - intermediate, for 35-1/2" cylinder	1
5	35P1123	Tube - intermediate, for 40-1/2" cylinder	1
5	35P844	Tube - intermediate, for 44" cylinder	1
6	35P1124	Plunger - for 35-1/2" cylinder	1
6	35P1125	Plunger - for 40-1/2" cylinder	1
6	35P846	Plunger - for 44" cylinder	1
7	35P822	*Ring - wiper, intermediate tube	1
8	35P839	Spring - garter, wiper ring	1
9	35P834	Retainer - wiper ring	1
10	10P1241	*"O" Ring - retainer, 4-1/2" I.D., 4-3/4" O.D.	1
11	35P836	Bushing - intermediate tube	1
12	10A13792	*"O" Ring - intermediate tube bushing, 4-1/8" O.D., 4-3/8" O.D.	1
13	35P835	*Ring - back-up, "O" ring	1
14	35P837	*Packing - tube bushing	1
15	35P840	*Ring - wiper, plunger	1
16	35P829	*Spring - garter, wiper ring	1
17	35P838	Retainer - plunger wiper ring	1
18	10A11847	*"O" Ring - wiper ring retainer, 3-1/4" I.D., 3-1/2" O.D.	1
19	35P820	Piston	1
20	35P824	*Packing - piston	1
21	10A4729	*"O" Ring - piston, inner, 2-1/4" I.D., 2-1/2" O.D.	1
22	35P821	*Ring - back-up, "O" ring	1
23	35P823	Ring - snap, piston retainer	1
24	35P826	Bearing - intermediate tube	1
25	35P825	Ring - bearing retainer	1
26	35P827	Ring - snap, bearing	1
27	35P828	Head - cylinder	1
28	10A13135	*"O" Ring - cylinder head, 4-5/8" I.D., 4-7/8" O.D.	1
29	35P830	*Ring - back-up, head "O" ring	1
30	35P831	Nut - lock, cylinder head	1
31	35A5530	Spacer - intermediate tube, 1/4" x 4-5/32" O.D., for 35-1/2" and 40-1/2" cylinders	1
31	35A5532	Spacer - intermediate tube, 1" x 4-5/32", for 35-1/2" cylinder	1
32	35A5932	Spacer - plunger, 1/4" x 3-5/32", for 35-1/2" and 40-1/2" cylinders	1
32	35A5334	Spacer - plunger, 1" x 3-5/32", for 35-1/2" cylinders	1
33	35P1025	Spring - oil restrictor	1
34	35P140	Washer - perforated, oil restrictor	1
35	35P146	Spacer - oil restrictor	1
	35837	*Repair Kit - lift cylinder	1
		*NOTE: Repair Kit consists of the above items identified by an asterisk (*)	
Page 78		Add to heading on MY 40 Duplex Upright	
		Group III Used on MY40 Lift Trucks to No. 20100175 inc.	
		Change 35A823 pin (ref. # 15) to 35A5459 and size to 1-25/32" Change ref. # 16 description to read, see chart on page 84 Change ref. # 34 description to read, see chart on page 85	

See page 10 for Illustration

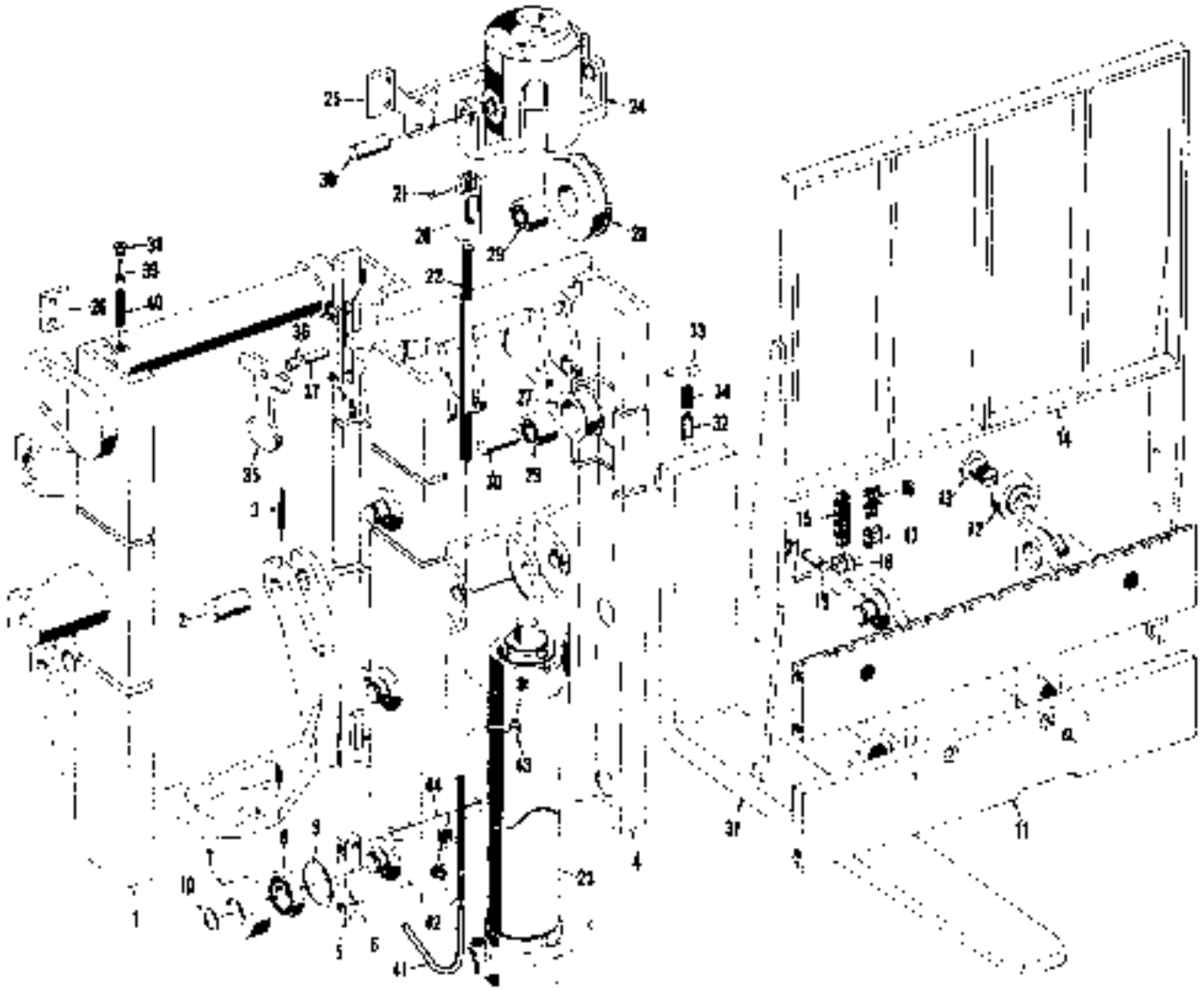


DUPLEX LIFT CYLINDER

Ref. No.	Part No.	DESCRIPTION	No. Per
Page 79A		Add new MY 40 Duplex Upright	
		MY 40 Duplex Upright	
		Group IV	
1	--------	Rail - outer assembly, see page 84 additions	1
2	86A6918	Pin - upright to frame, 1-1/2" x 2-3/4" long	2
3	50A1771	Pin - roll, 1/4" x 3"	2
	GM271287	- Fitting, grease, 1/4"-28	2
	35A688	Bushing - pivot pin, 1-1/2" I.D. x 2-1/4" long	2
4	--------	Rail - inner assembly, see page 84 additions	1
5	35A5535	Shoe - mast	8
	50A2678	- Screw, hex. socket, 3/8"-16 x 5/8"	12
6	35A5536	Shim - mast shoe	A.R.
7	35A706	Roller - mast	10
8	D317	Bearing - mast roller	10
9		50A677 - Ring - snap, mast bearing, 3-5/32" I.D.	10
10		50A678 - Ring - snap, mast bearing, 1-3/8" I.D.	10
11	--------	Carriage - assembly, see page 86 additions	1
12	35A5317	Bearing - thrust, carriage	4
13	85A5756	Pin - thrust bearing	4
14	--------	Rack - load safety, see page 86	1
	GM271772	- Bolt, hex., 3/4"-10 x 2-1/4" cad.	6
	GM131046	- Washer, lock, cad., 3/4"	6
15	--------	Chain - 3 x 4 lacing, see page 84	2
16	3EP600	Chain - 3/4" pitch, 3 x 4 lacing, 10 foot roll	-
17	35A5041	Link - connecting, 7 links with 2 pins	-
18	35A5042	Link - connecting, 3 links with 2 pins	-
19	35A6562	Anchor - chain, lower, 2-1/2" long	2
20	35A5768	Pin - chain anchor, 2-1/8" long	2
	50A2753	- Ring, retainer, anchor pin	2
20	35A6583	Anchor - chain, upper, 4-1/2" long	2
21	85A887	Pin - chain anchor, 5/16" x 1-1/8"	4
	GM109372	- Cotter, 3/32" x 1/2"	4
22	--------	Rod - chain anchor, see page 84 additions	2
	GM219768	- Nut, hex., jam, 3/4"-16	6
	50A197	- Nut, spherical, 3/4"-16	2
23	--------	Cylinder - lift, see page 77A for component parts and listing on page 84 additions	1
	GM180130	- Bolt, hex., 3/8"-16 x 2", cad.	1
	GM124829	- Nut, hex., jam, 3/8"-16, cad.	1
24	35A5266	Head - piston	1
	GM102583	- Screw, set, cup point, 3/8"-16 x 1/2	1
25	35A920	Guide - piston head	2
	GM180179	- Bolt, hex., 1/2"-13 x 1-3/4" cad.	4
	GM120378	- Nut, hex. jam, 1/2"-13, cad.	4
26	35A5320	Block - stop, outer rail	2
	GM271715	- Bolt, hex., 5/8"-11 x 1"	4
27	35A6749	Sheave - chain, 8-1/8" dia.	4
28	35A5750	Sheave - chain, 6-1/4" dia.	2
29	85A5911	Bearing - sheave	6
30	35A5760	Pin - sheave bearing, 1" x 2-3/4"	4
30	85A6362	Pin - sheave bearing, 1" x 3-1/8"	2
	50A2849	- Pin, roll, 5/32" x 3/4"	6
31	--------	Fork - lifting, see page 86	2
32	35A668	Pin - fork stop, 2-1/8" long	2
33	35A669	Lever - stop pin	2
34	35A667	Spring - stop pin	2
	50A2832	- Pin, roll, 3/16" x 1"	2
35	35A3707	Latch - with bushing	1
36	10A12028	Bushing - latch, 5/8" I.D., 5/8" long	1
37	85A4084	Pin - latch, 5/8" x 1-7/8"	1
	50A2543	- Pin, roll, 8/16" x 1-1/4"	1

See page 12 for illustration

Ref. No.	Part No.	DESCRIPTION	No. Per.
		MY 40 DUPLEX UPRIGHT (Cont'd)	
38	35A3688	Cap - latch dog	1
39	35A3697	Plunger - latch dog	1
40	35A3696	Spring - latch dog	1
41	35A7830	Tube - vent, 1/4" and 3/8" O.D.	1
42	--------	Hose - vent tube, see page 24 additions	1
	50A3378	Clamp, hose, 7/16"	2
43	35A7307	Elbow - vent hose, 90°, 1/4"-18	1
44	35A3660	Strap - vent hose	1
	GM133056	Screw, 3/4"-20 x 3-1/2"	1
	GM320375	Nut, hex., 1/4"-20	1
45	35A1464	Spacer - vent hose	1
	50A749	Strap, hose	2
	GM102594	Set screw, cup pt., 3/8"-16 x 5/8"	2



Ref. No	Part No.	DESCRIPTION	No. Per
Page 82		Add a single cross (+) to D287 pin, 56A647 screw and GM138290 screw	
		+NOTE: Used on MY 60 Lift Trucks to No. 20200098 Inc.	
14	35A5327	++Roller - thrust, 1-7/4" I.D., 3-3/4" O.D.	4
15	85A5755	++Pin - thrust roller, 1-3/4" x 2-1/16" long	4
		++GM102594 - Set Screw, hex. socket, 3/8"-16 x 5/8"	2
		++NOTE: Used on MY 60 Lift Trucks No. 20200099 and after.	
	35A5039	Link - connecting, 10 links with 2 pins	-
	35A5040	Link - connecting, 4 links with 2 pins	-
Page 84		Add new duplex outer rails chain anchor rod and vent hose for MY 40 Lift Trucks starting with No. 20100176 and after	

Duplex Outer Rail	Duplex Inner Rail	Duplex Cylinder Assy.	Duplex Chain Anchor Rod	Duplex Vent Hose	Mast
36A6607 - 60-1/2"	36A5666 - 60-1/2"	35A5232 - 33"	35A5780 - 14"	35A7327 - 16"	91"
36A6608 - 62"	36A5667 - 62"	35A5233 - 33"	35A5780 - 14"	35A7327 - 16"	94"
36A6609 - 63-1/2"	36A5668 - 63-1/2"	35A5234 - 33"	35A5780 - 14"	35A7327 - 16"	97"
36A6610 - 65"	36A5669 - 65"	35A5235 - 33"	35A5780 - 14"	35A7327 - 16"	100"
36A6611 - 66-1/2"	36A5670 - 66-1/2"	35A5236 - 35-1/2"	35A5781 - 16-1/2"	35A7328 - 19"	103"
36A6612 - 68"	36A5672 - 68"	35A5237 - 35-1/2"	35A5781 - 16-1/2"	35A7328 - 19"	106"
36A6613 - 69-1/2"	36A5672 - 69-1/2"	35A5238 - 35-1/2"	35A5781 - 16-1/2"	35A7328 - 19"	109"
36A6614 - 71"	36A5673 - 71"	35A5239 - 38"	35A5782 - 18"	35A7329 - 21-1/2"	112"
36A6615 - 72-1/2"	36A5674 - 72-1/2"	35A5240 - 38"	35A5782 - 18"	35A7329 - 21-1/2"	115"
36A6616 - 74"	36A5675 - 74"	35A5241 - 38"	35A5782 - 18"	35A7329 - 21-1/2"	118"
36A6617 - 75-1/2"	36A5676 - 75-1/2"	35A5242 - 38"	35A5782 - 18"	35A7329 - 21-1/2"	121"
36A6618 - 77"	36A5677 - 77"	35A5243 - 40-1/2"	35A5783 - 21"	35A7330 - 24"	124"
36A6619 - 78-1/2"	36A5678 - 78-1/2"	35A5244 - 40-1/2"	35A5783 - 21"	35A7330 - 24"	127"
36A6620 - 80"	36A5679 - 80"	35A5245 - 40-1/2"	35A5783 - 21"	35A7330 - 24"	130"
36A6621 - 82-1/2"	36A5680 - 81-1/2"	35A5246 - 44"	35A5784 - 24"	35A7331 - 26-1/2"	133"
36A6622 - 83"	36A5681 - 83"	35A5247 - 44"	35A5784 - 24"	35A7331 - 26-1/2"	136"
36A6623 - 84-1/2"	36A5682 - 84-1/2"	35A5248 - 44"	35A5784 - 24"	35A7331 - 26-1/2"	139"
36A6624 - 86"	36A5683 - 86"	35A5249 - 44"	35A5784 - 24"	35A7331 - 26-1/2"	142"
36A6625 - 87-1/2"	36A5684 - 87-1/2"	35A5250 - 44"	35A5784 - 24"	35A7331 - 26-1/2"	145"
36A6626 - 89-1/2"	36A5685 - 89-1/2"	35A5251 - 47"	35A5785 - 28"	35A7332 - 30"	148"
36A6627 - 91"	36A5686 - 91"	35A5252 - 47"	35A5785 - 28"	35A7332 - 30"	151"
36A6628 - 92-1/2"	36A5687 - 92-1/2"	35A5253 - 47"	35A5785 - 28"	35A7332 - 30"	154"
36A6629 - 94"	36A5688 - 94"	35A5254 - 47"	35A5785 - 28"	35A7332 - 30"	157"
36A6630 - 95-1/2"	36A5689 - 95-1/2"	35A5255 - 50"	35A5786 - 32-1/2"	35A7333 - 33"	160"
36A6631 - 97-1/2"	36A5690 - 97-1/2"	35A5256 - 50"	35A5786 - 32-1/2"	35A7333 - 33"	163"
36A6632 - 99"	36A5691 - 99"	35A5257 - 50"	35A5786 - 32-1/2"	35A7333 - 33"	166"
36A6633 - 100-1/2"	36A5692 - 100-1/2"	35A5258 - 50"	35A5786 - 32-1/2"	35A7333 - 33"	169"
36A6634 - 102"	36A5693 - 102"	35A5259 - 53"	35A5787 - 33-1/2"	35A7334 - 36"	172"
36A6635 - 103-1/2"	36A5694 - 103-1/2"	35A5260 - 53"	35A5787 - 33-1/2"	35A7334 - 36"	175"
36A6636 - 105-1/2"	36A5695 - 105-1/2"	35A5261 - 53"	35A5787 - 33-1/2"	35A7334 - 36"	178"

Add 36P660 for 10 ft roll of 3/4" pitch 3 x 4

Ref. No.	Part No.	DESCRIPTION	No. Per
Page 85		Add a single asterisk to Inner Rails starting with 36A1922 thru 36A1951 *NOTE: Used on simplex masts on MY 60 Lift Trucks to No. 20200098 Inc. Add new listing for inner rails and add double asterisk (**) 36A7532 - 65 / 36A7545 - 84-1/2 / 36A7558 - 105 36A7533 - 66-1/2 / 36A7546 - 86 / 36A7559 - 106-1/2 36A7534 - 68 / 36A7547 - 87-1/2 / 36A7560 - 108 36A7535 - 69-1/2 / 36A7548 - 89 / 36A7561 - 110 36A7536 - 71 / 36A7549 - 90-1/2 36A7537 - 72-1/2 / 36A7550 - 92 36A7538 - 74 / 36A7551 - 94 36A7539 - 75-1/2 / 36A7552 - 95-1/2 36A7540 - 77 / 36A7553 - 97 36A7541 - 78-1/2 / 36A7554 - 98-1/2 36A7542 - 80 / 36A7555 - 100 36A7543 - 81-1/2 / 36A7556 - 102 36A7544 - 83 / 36A7557 - 103-1/2 **NOTE: Used on simplex masts on MY 60 Lift Trucks No. 20200099 and after. Add 36P601 chain - 10 ft. roll, 3/4" pitch, 4 x 6	
Page 86		Add a single asterisk (*) to MY 40 Duplex Carriage *NOTE: Used on MY 40 Lift Trucks to No. 20100175 Inc. Add new Duplex Carriage **36A6595 - 30" 36A6596 - 32" 36A6597 - 34" 36A6598 - 36" 36A6599 - 38" 36A6600 - 40" 36A6601 - 42" 36A6602 - 44" 36A6603 - 46" 36A6604 - 48" 36A6605 - 60" **NOTE: Used on MY 40 Lift Trucks No. 20100176 and after. Add group for MY 60 Std. Fork 35A2093 - 30" 35A2094 - 32" 35A2095 - 34" 35A2096 - 36" 35A2097 - 38" 35A2098 - 40" 35A2099 - 42" 35A2100 - 44" 35A2101 - 46" 35A2102 - 48" 35A2103 - 54" 35A2104 - 60" 35A2105 - 66" 35A2106 - 72" Printed in U.S.A. Technical Publications 9-18-63	