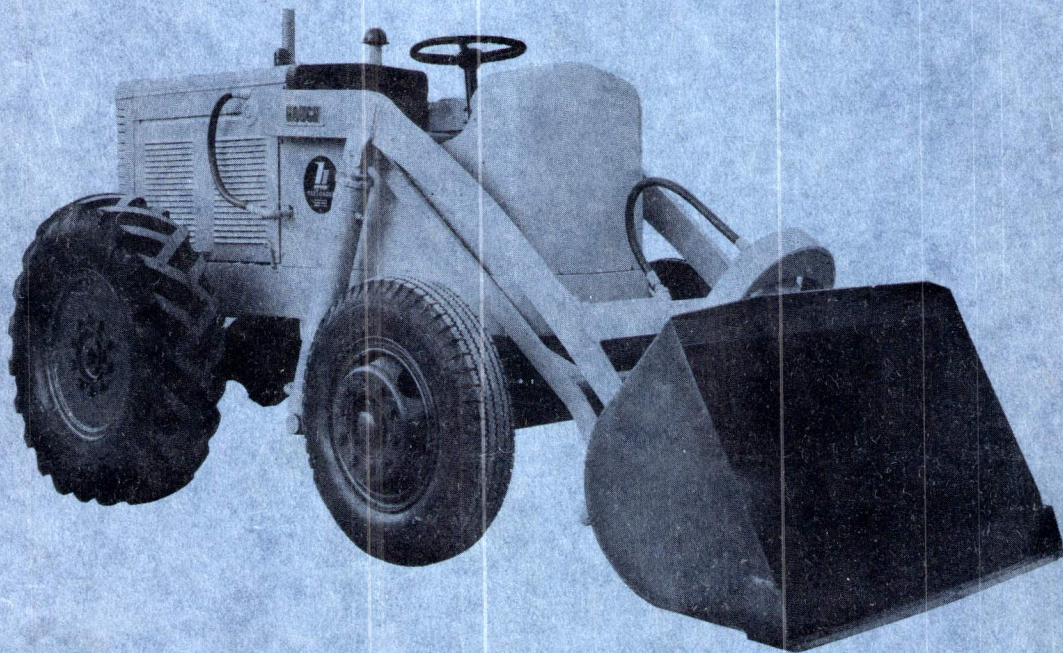


**OPERATING MANUAL
AND
PARTS LIST
FOR
MODEL HF & HFH PAYLOADER[®]**

**BEGINNING WITH SERIAL NUMBER 80001 THRU 81220
FORM HF-2A**



PATENT No. 2,412,323

**MANUFACTURED BY
THE FRANK G. HOUGH CO.**

LIBERTYVILLE, ILLINOIS

LITHO. IN U. S. A.

FEBRUARY 1949

TO THE OWNER

It has been our aim to build the most reliable and serviceable shovel on the market.

Hough Shovels have, since 1920, built a reputation for dependable and economical service in the material handling field. This Payloader includes all these features which have made possible long, dependable service, together with the latest engineering knowledge and design.

The purpose of this manual is to explain maintenance requirements and routine adjustments which are necessary for the most efficient operation of your Payloader. Also included in this manual is a parts catalog for your ready reference in repair parts orders. To protect your Payloader investment, study this manual before starting or operating your Payloader.

If you should need information not given in this manual, or require the services of a trained mechanic, we urge you to use the extensive facilities offered by The Frank G. Hough Co. Payloader dealers. Dealers are kept informed on the best methods of servicing and are equipped to provide prompt, high class service on the field or in an up-to-date service shop.

Dealers carry ample stocks of The Frank G. Hough Co. essential Payloader parts.

Listed below you will find the name of The Frank G. Hough Co. dealer with whom your parts orders should be placed and who should be called upon for any required information concerning proper operating and maintenance procedure.

OUR PAYLOADER DEALER IS:

When ordering parts, always give The Frank G. Hough Co. Payloader dealer both the name and part number of the part required, and also the SERIAL NUMBER OF THE PAYLOADER.

SO THAT YOU MAY HAVE IT BEFORE YOU, WRITE THE PAYLOADER, POWER UNIT, TRANSMISSION, HYDRAULIC PUMP AND HYDRAULIC VALVE SERIAL NUMBERS HERE:

PAYLOADER SERIAL NO: _____
(Stamped on plate on frame)

POWER UNIT SERIAL NO: _____
(Stamped on engine block)

REAR AXLE SERIAL NO: _____
(Stamped on differential housing)

HYDRAULIC PUMP SERIAL NO: _____
(Stamped on pump body)

HYDRAULIC VALVE SERIAL NO: _____
(Stamped on valve body)

POWER TAKE-OFF SERIAL NO: _____
(Stamped on inspection plate)

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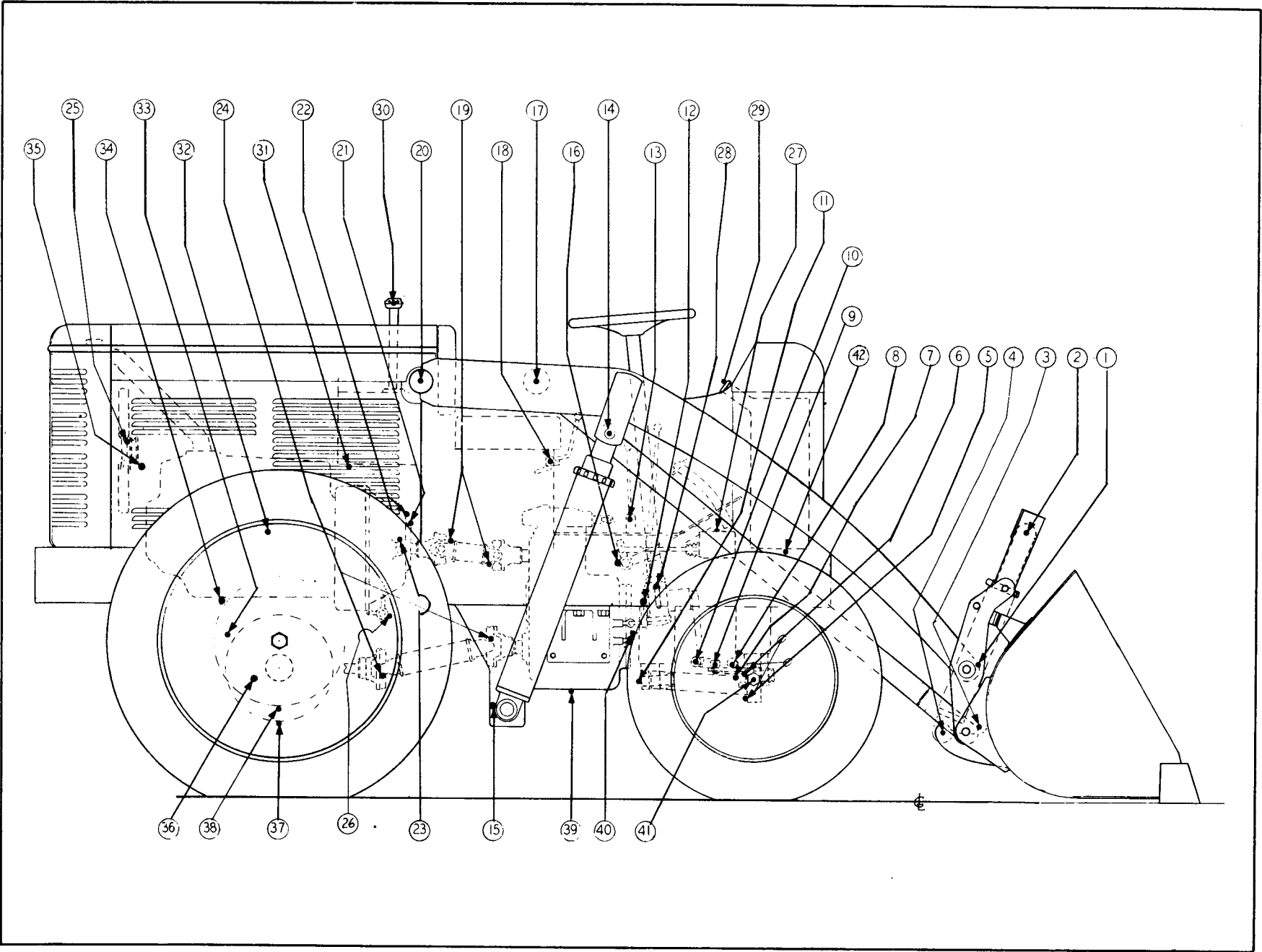


Fig. 1
LUBRICATION CHART

LUBRICATION POINTS

(SEE FIGURE 1)

UNIT	CAPACITY (APPROX)	LOWEST EXPECTED AIR TEMPERATURES		
		ABOVE 32° F.	32° to 0° F.	BELOW 0° F.
Hydraulic System	11-1/2 Gal.	SAE 10 or Equal	SAE 10 or Equal	SAE 10 or Equal
Master Brake Cylinder	.....	Lockheed Hyd.	.....	.....
Transmission	12 Pounds	SAE 140	SAE 90	SAE 90
Steering Gear	.....	GMC 4567-M	.....	.....
Rear Axle Case	5 Pounds	SAE 140	SAE 90	SAE 90
Rear Reduction Gear Case	21 Pounds	SAE 140	SAE 90	SAE 90
Engine Crankcase	6 Qts.	See Eng. Manual	See Eng. Manual	See Eng. Manual
Air Cleaner Cup	.....	SAE 20	.....	7 Qts. SAE 10

LUBRICATE the following points every 10 hours with general purpose lubricant or as specified.

- | | |
|--|---|
| <ul style="list-style-type: none"> 1. Bucket Boom Pivot 2 Points 2. Bucket Hoist Pivot (Upper) 1 " 3. Bucket Guide Pivot 2 " 4. Bucket Hoist Pivot (Lower) 6 " 5. Wheel Spindle, L.H. 2 " 6. Wheel Spindle, R.H. 2 " 7. Bolster Pin 1 " 8. Tie Rod 2 " 9. Drag Link 1 " 10. Pitman Arm - Drag Link 1 " 11. Radius Rod Pin 1 " 12. Range Lever Pivot 1 " 13. Directional Lever Pivot 1 " | <ul style="list-style-type: none"> 14. Boom Hoist Pivot (Upper) 2 Points 15. Boom Hoist Pivot (Lower) 2 " 16. Foot Pedal Pivots 2 " 17. Guide Pivot-Frame 2 " 18. Valve Lever Pivots 1 " 19. Upper Drive Shaft 2 " 20. Boom Pivot-Frame 2 " 21. Clutch Shaft 1 " 22. Clutch Cross Shaft 2 " *23. Throw Out Bearing 1 " 24. Lower Drive Shaft 2 " 25. Engine Fan Pulley - Oil 1 " 26. Hand Brake Bell Crank 1 " |
|--|---|

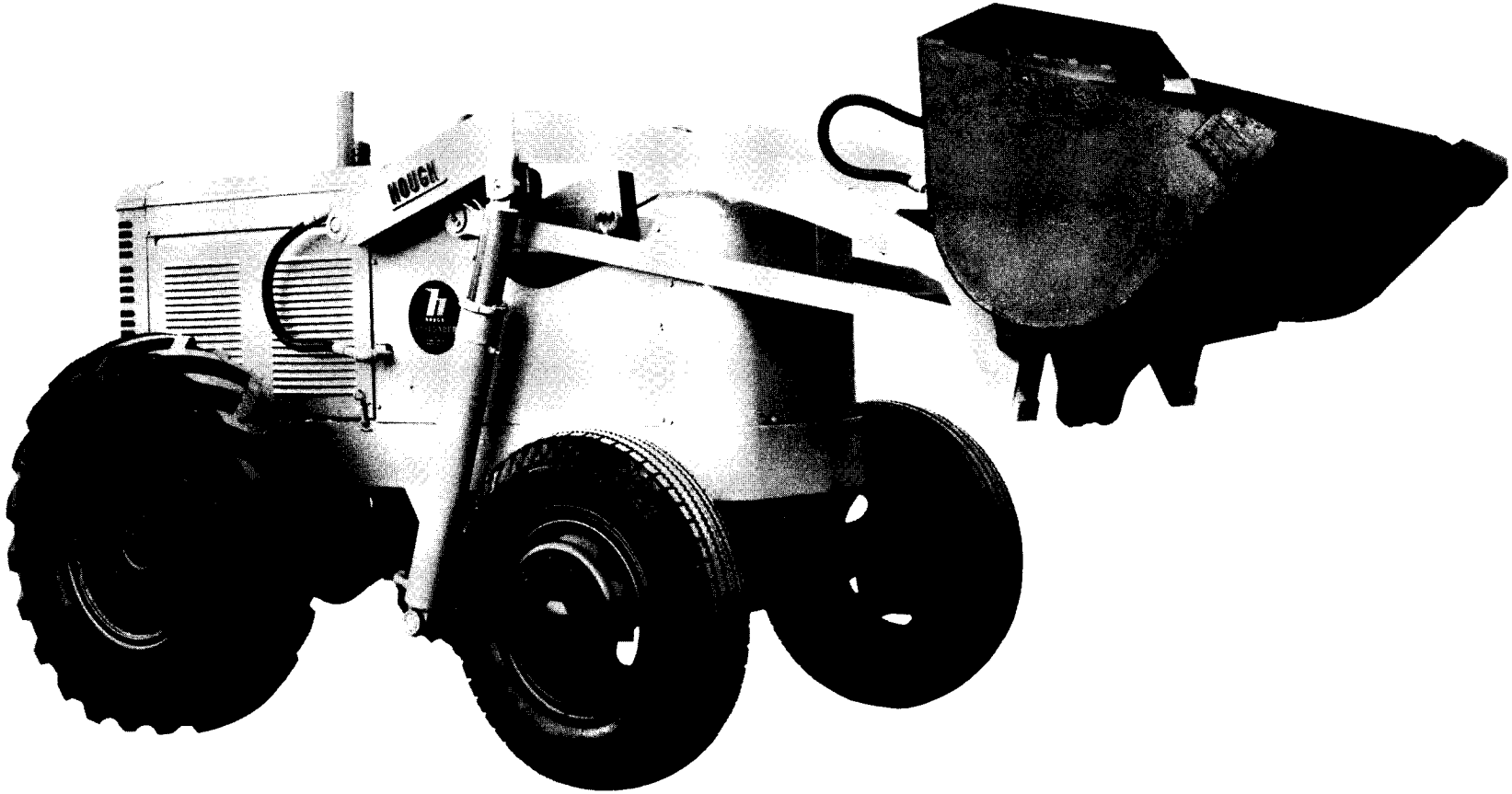
Air Cleaner Cup - Service daily.

* Pilot Bearing - Clutch.

NOTE: Use a good grade of high temperature lubricant when greasing the clutch pilot & throwout bearings. Never use ordinary lubricant in these bearings. Do not over lubricate.

CHECK the following for leaks and/or oil content levels every 60 hours of operation.
(SEE BOX ABOVE)

- 27. Master Brake Cylinder - Refill with Hydraulic brake fluid.
- 28. Filler Pipe - Steering Gear - use GMC #4673 M - summer & winter.
- 29. Filler Pipe - Fuel Tank.
- 30. Filler, Cleanout & Breather - Reservoir - Cap. 11-1/2 gals. - SAE 10 motor oil.
- 31. Drain - Reservoir.
- 32. Dip Stick - Crank Case - Cap. 6 qts. - See Engine Manual for proper oil.
- 33. Filler and Oil Level Plug - Reduction Gear - Cap. 21 lbs. - SAE 140 summer::SAE 90 winter.
- 34. Drain Plug - Crank Case.
- 35. Filler Pipe - Crank Case.
- 36. Filler & Oil Level - Rear Axle - Cap. 5 lbs. - SAE 140 summer::SAE 90 winter.
- 37. Drain Plug - Rear Axle.
- 38. Drain Plug - Reduction Gear.
- 39. Drain Plug - Transmission.
- 40. Filler & Oil Plug - Transmission - Cap. 12 lbs. SAE 140 summer::SAE 90 winter.
- 41. Repack Front Wheels every 400 Hours.
- 42. Gasoline Shut-Off Cock.



SPECIFICATIONS AND SERVICE DATA

ENGINE:

Hercules QXD-3
 No. of Cylinders 6
 Bore 3-7/16"
 Stroke 4-1/8"
 Displacement, cu. in. 230
 Engine Speed - Governed 1800 R.P.M.

TRANSMISSION: 4 speed forward and reverse transmission.

SPEEDS:	FORWARD	REVERSE
1st	2 M.P.H.	3 M.P.H.
2nd	4 M.P.H.	6 M.P.H.
3rd	8 M.P.H.	12 M.P.H.
4th	16 M.P.H.	24 M.P.H.

CLUTCH: 14" spring loaded, foot operated, single disc.

TIRES:

Front 8:25x20
 Rear 13:00x24

TIRE PRESSURES:

Front 75 lbs. (air)
 Rear 25 lbs. air and 3/4 full
 of calcium chloride solution

DIMENSIONS:

	HF	HFH
Total Weight - Empty Bucket	9550 lbs.	11,700 lbs.
Overall Weight - At Rear Tires	76-1/4"	76-1/4"
Overall Length - Bucket in Carry Position	15 ft.	19 ft.
Clearance Height under Bucket Hinge	10 ft.	12 ft.
Dumping Clearance	7"-11"	10"-6"
Reach	22"	28"
Ground Clearance	11-1/4"	11-1/4"
Turning Radius - Tip of Bucket in Carry Position	16"-6" Approx.	18"-8" Approx.
Digging Depth	4"	5"
Angle of Bucket in Carry Position	36°	36°
Angle of Bucket in Dump Position (fully raised)	45°	45°
Height over Muffler - Bucket Down	6"-8-1/4"	6"-8-1/4"
Wheelbase	68-1/4"	68-1/2"
Struck Bucket Capacity - Standard Bucket	3/4 cu. yd.	.9 cu. yd.
Heaped Bucket Capacity - Standard Bucket	1 cu. yd.	1-1/4 cu. yd.

CAPACITIES:

	HF	HFH
Cooling System	20 qts.	30 qts.
Fuel Tank	16-1/2 gal.	16-1/2 gal.
Transmission Grease	12 lbs.	12 lbs.
Differential Grease	5 lbs.	5 lbs.
Engine Crank Case with Filter	6 qts.	6 qts.
Hydraulic System	11-1/2 gal.	12 gal.
Axle Reduction Gear Case (both wheels)	21 lbs.	21 lbs.

**IT IS THE POLICY OF THE FRANK G. HOUGH CO. TO IMPROVE ITS PRODUCTS WHEN-
 EVER POSSIBLE AND PRACTICAL TO DO SO. WE RESERVE THE RIGHT TO MAKE
 CHANGES OR ADD IMPROVEMENTS AT ANY TIME WITHOUT INCURRING ANY OBLIGA-
 TION TO MAKE SUCH CHANGES ON MODELS PREVIOUSLY SOLD.**

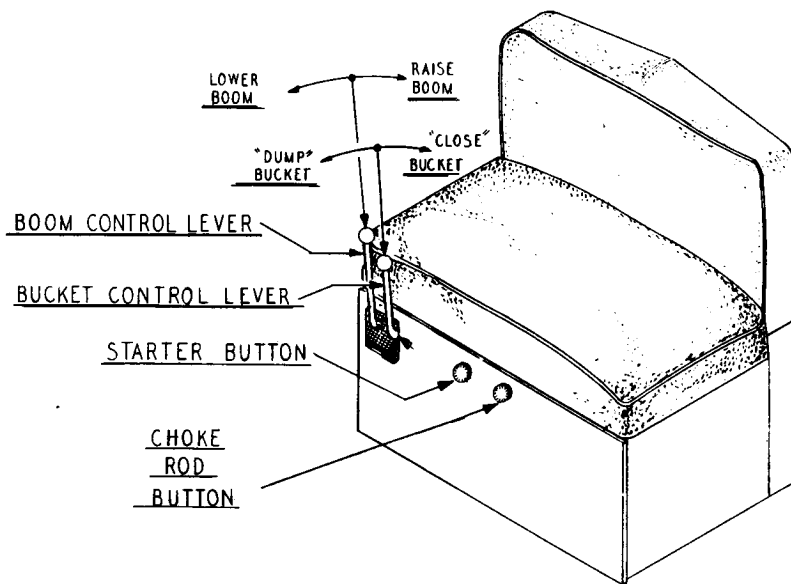
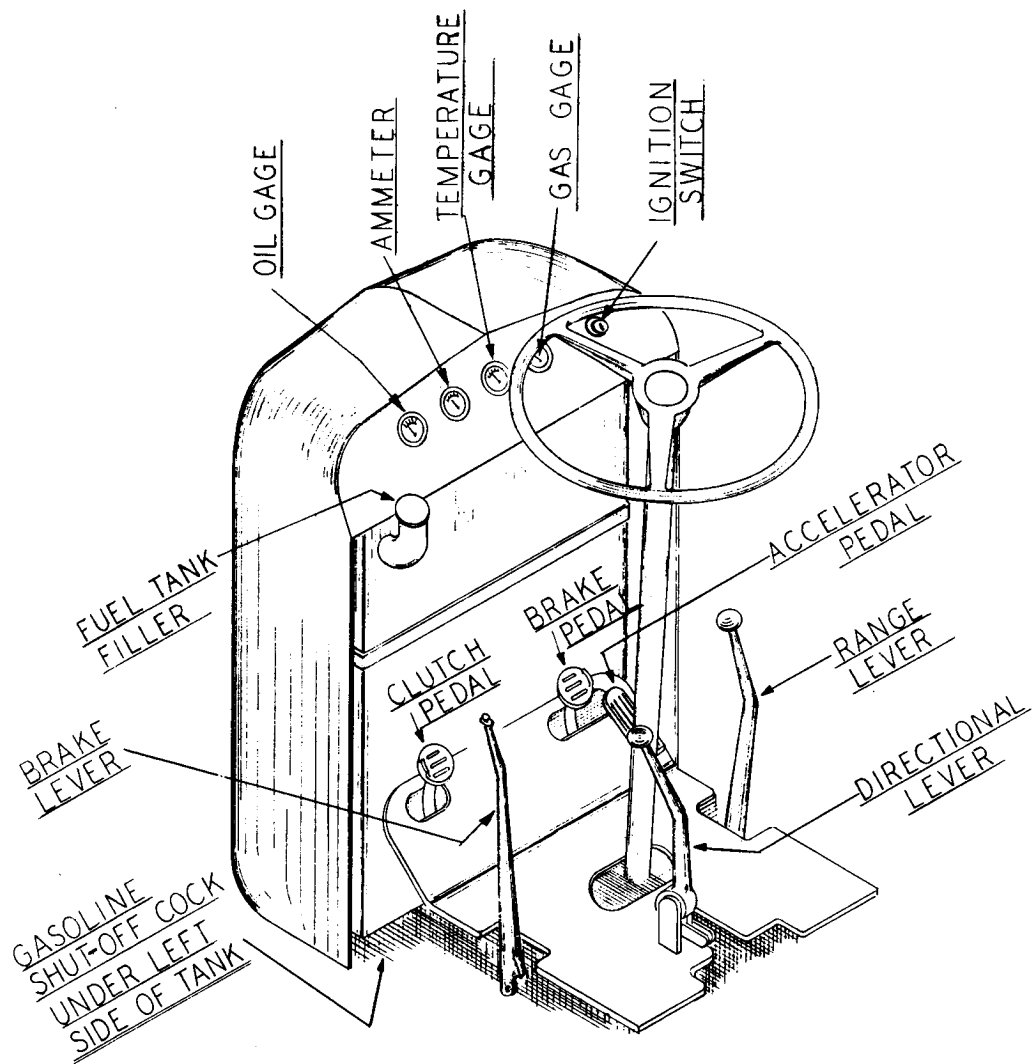


Fig. 2

PREPARATION OF THE PAYLOADER FOR OPERATION

Before operating this PAYLOADER, even to unload, check the entire unit to make sure nothing has become loose or damaged in transit or storage.

Battery cables have been disconnected at the factory, the cooling system drained and the gasoline shut off cock closed before shipment.

DO NOT ATTEMPT TO START THE ENGINE BEFORE THE FOLLOWING POINTS HAVE BEEN CHECKED OR DAMAGE MAY RESULT.

REFER to the Lubrication Chart, Fig. 1, to locate the following points.

1. Check the oil level in the Hydraulic System Reservoir to make sure it is up to the petcock. The Engine MUST NOT be started without oil in the Hydraulic System. Use SAE #10 Motor Oil or equal to refill.
2. Check the Oil Level in the engine crankcase by removing the oil dip stick from the side of the engine.
3. Check the Oil Level in the transmission to be sure it is to the height of the oil level plug on the front of the transmission.
4. Check the Oil Level in the Differential and both Axle Reduction Gear Cases. Differential Oil Level plug is located in the rear of the Housing. Rear Axle Reduction Gear Case Level plugs are located on the inside surfaces.
5. Check oil in the Air Cleaner Cup.
6. Check the Master Brake Cylinder to make sure it is filled with brake fluid. If not fill with "Lockheed" Hydraulic Brake Fluid.
7. Be sure all hoses and connections are tight to prevent hydraulic oil from leaking out and to keep air or water from entering the system. Water entering the system will cause pump corrosion at high velocities. Air in the system will cause the oil to foam and the hoist to operate in a slow, jerky manner.
8. Check the Tire Pressures. Be sure they are up to pressures recommended in the Specifications & Service Data Lists.
9. Fill the cooling system with clean soft water, free from alkaline; never at anytime run the engine without the full quantity of water in the radiator.
10. Be sure to open the fuel line shut off cock located under the right side of the fuel tank. The Fuel Tank is mounted under the front Cowl. Fill the tank using a gasoline with minimum octane rating of 70-72.
11. Be sure all drain plugs, drain cocks, filler openings and fuel line connections are tight and do not leak.
12. Connect battery cables and check the dash instruments to be sure they function properly. Check the battery to be sure the plates are covered with water. If not, add distilled water or clean rain water.
13. With the PAYLOADER properly serviced and checked, the engine may be started.

OPERATING THE PAYLOADER

(SEE FIGURE 2)

A study of the following pages will acquaint the operator with the various controls of the PAYLOADER and their proper use. The operation of the HF PAYLOADER is comparatively simple and with a little practice the operator will be able to work the machine efficiently.

This PAYLOADER is equipped with a four speed forward and four speed reverse Transmission. The speeds and direction is selected by shifting a Range Lever and a Directional Lever.

RANGE LEVER is located on the right side of the floorboard and has five positions as shown on the chart, Fig. 3. This lever is in neutral when in a vertical position. Shift this lever to the left of the neutral and backward for the lowest speed range. Shift it to the right and forward of neutral for the highest speed. One of the low speed ranges is used for working conditions where more power is needed. One of the high speed ranges is used primarily for transporting loads to various various locations.

DIRECTIONAL LEVER is located between the steering column and the seat. The PAYLOADER will travel forward when this lever is pushed forward or away from the operator. Pull the lever backward or toward the operator to move the PAYLOADER backward or in reverse. See Fig. 3.

Always depress the clutch when shifting these levers to any of their positions.

VALVE CONTROL LEVER - For PAYLOADERS of serial numbers 80001 thru 80661: This valve control lever is on the right side of the seat support and controls the action of the booms and bucket. By means of this lever the operator controls the hydraulic valves which regulate the flow of oil to the hoists.

The bucket is "Raised" by moving the valve control lever backward or toward the operators seat. The bucket will raise in proportion to the engine speed.

The "Hold" position is the neutral or centralized position of the valve lever. The bucket may be stopped and held at any height in its arc of travel by placing the valve lever in the hold position.

The bucket may be "Dumped" by merely pressing the lever toward the left or against the operator. This can be done from any of the valve lever positions. Releasing the hand pressure against the lever will automatically allow it to cause the bucket to "Close" or "Retract".

To "Lower" the bucket push the valve lever forward or away from the operators seat. The bucket will drop independently of the engine speed.

VALVE CONTROL LEVERS - For PAYLOADERS beginning with Serial Number 80662: Instead of a single valve lever, these machines have dual valve control levers, located on the right hand side of the seat. See Fig. 2.

The longer, outer lever controls the "Raising" and "Lowering" of the bucket and the inner lever controls the "Dumping" action of the bucket.

The longer outer lever has three positions which can be felt by the operator as the poppets fall in place when the lever is moved. Placing this lever in the centralized or neutral position will stop the movement of the boom and "hold" the bucket at any height in its arc of travel.

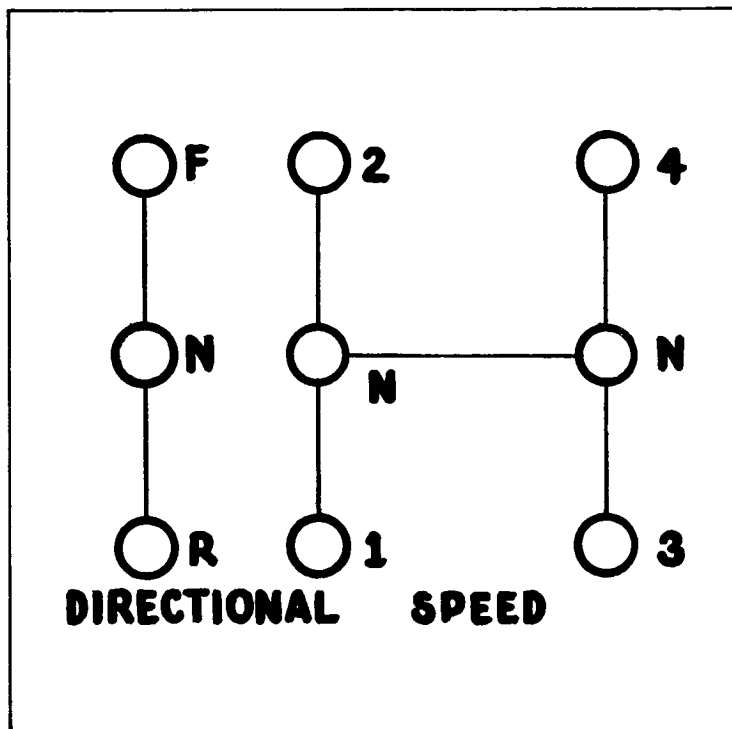


Fig. 3
GEARSHIFT DIAGRAM

Pull this lever backward, toward the operator and the booms and bucket will "raise" in direct proportion to the engine speed.

Push this lever forward, ahead of neutral to "lower" the boom and bucket.

CAUTION: NEVER REACH BETWEEN THE BOOM AND GUIDE BARS TO OPERATE THESE LEVERS. THE BUCKET MAY BE LOWERED EVEN THOUGH THE ENGINE HAS BEEN SHUT OFF.

The shorter inner valve control lever is used to "dump" the bucket. Push this lever forward, away from the operator to "dump" the bucket. Merely release pressure on this lever and it will automatically return to neutral, "stopping" the bucket at any point of its dumping arc. Pull the lever backward to "close" or "retract" the bucket. Merely release the lever to return it to neutral and the bucket will be "held" in the "retracted" position.

PARKING BRAKE HAND LEVER - For PAYLOADERS beginning with serial number 80712: The parking brake hand lever is located on the left side of the floorboard. Pull the lever backward to apply braking pressure on the drive shaft brake drums. Press the top button and push downward to release braking pressure on the drive shaft. This lever is used when parking the PAYLOADER on slopes. Do not fail to release this lever before putting the machine in motion.

FOOT PEDALS: The Clutch pedal is located on the left side of the floorboard. When pushed down the transmission is disengaged from the engine. Always keep the clutch pedal depressed when shifting either the range lever or the directional lever. Do not engage the clutch suddenly, thus allowing the PAYLOADER to jerk with the load.

CAUTION: DO NOT DRIVE THE PAYLOADER WITH THE FOOT RESTING ON THE CLUTCH PEDAL. THIS WILL CAUSE UNDUE WEAR ON THE CLUTCH FACING AND THROW-OUT BEARING.

The Brake pedal is located on the right side at the floorboard and is used to bring the PAYLOADER to a stop. Depress the brake firmly when braking. It is good practice to keep the clutch engaged until the PAYLOADER has been slowed down and nearly brought to a halt by depressing the brake. Then disengage the clutch and stop the motion of the machine completely. This allows the engine compression to assist the brakes and saves wear on the brake linings.

The ACCELERATOR pedal is mounted on the floorboard to the right of the brake pedal. Applying pressure on this pedal increases the flow of fuel to the cylinders by opening the carburetor intake. This increases the engine speed thereby accelerating the motion of the PAYLOADER. Apply a slight increasing pressure on the accelerator pedal while releasing pressure on the clutch pedal to allow the machine to start evenly, without jerking.

The raising speed of the booms and bucket is also governed by the accelerator.

DASH INSTRUMENTS: IGNITION SWITCH is on the left side of the dash panel on PAYLOADERS of serial numbers 80,000 thru 80,461 and is the push-pull type. For PAYLOADER beginning with serial number 80,462 the Ignition switch is mounted on the right side of the dash between the fuel gage and the temperature gage and is a key type. This switch completes the electric circuit to the coil, and to the dash instruments, when in the "on" position.

FUEL GAGE, with its companion tank gage, registers the gasoline level in the fuel tank. It is standard equipment on HF PAYLOADERS beginning with serial number 80662.

AMMETER indicates whether the battery is being charged or discharged. The ammeter needle should be in the "Charge" range during operation. If in "Discharge" range continuously, the cause should be investigated to avoid completely discharging the battery.

TEMPERATURE GAUGE registers the temperature of the liquid in the cooling system. Temperature may indicate as high as 190° F. when operating in confined quarters.

OIL PRESSURE GAUGE indicates the pounds pressure of the oil circulating through the engine. If this gauge fails to register, stop the engine immediately and determine the cause.

CHOKE ROD is the left hand button on the seat support and is used to enrich the fuel mixture when starting the engine. Pull out the rod to choke.

STARTER BUTTON is to the right of the choke and when pressed in it completes the electrical circuit between the battery and the starting motor. Release the pressure on this button as soon as the engine starts.

STARTING THE ENGINE:

CAUTION: NEVER ATTEMPT TO START THE ENGINE WITHOUT OIL IN THE HYDRAULIC SYSTEM.

With the PAYLOADER properly inspected and checked as explained in the preceding pages, the engine may be started. The hydraulic hoists may be operated as soon as the engine is started since the power to operate the hydraulic pump is taken directly from the engine.

Be sure the range lever and directional lever are in neutral and the valve control levers in "hold" position before starting the engine.

1. To start the ignition switch must be in the "on" position.
2. Press the starter button. Pull out the choke slightly to start if necessary.
3. Immediately on starting, check the oil gauge on the dash to be sure it is registering.
4. Pull the valve control lever backward to raise the bucket a foot or two above the ground.
5. Depress the clutch and shift the range lever and the directional lever into one of the positions desired.
6. Release the pressure on the clutch while increasing pressure on the accelerator and drive to the desired location to begin working the PAYLOADER.

STOPPING THE ENGINE: To stop the engine merely turn off the ignition switch. Be sure all levers are in neutral position before leaving the seat. **NOTE:** The bucket can be lowered even though the engine has been stopped.

LOADING THE BUCKET: When loading the bucket the normal operation is to drive the PAYLOADER forward with the bucket down. A low gear is the best average loading speed. As the bucket fills, it should be raised gradually. This movement, combined with the forward motion of the machine will cause an action similar to a "Dipper" stick shovel.

The loading operation should be done on a level or slightly uphill grade if possible. Backing uphill with a load may be difficult due to the increased weight on the front wheels.

When grading or stripping, it will be observed that the bucket has a tendency to "Dig in". This is due to the bucket being set at a steep pitch in order to get good penetration in hard soil. To offset this, the operator must manipulate the valve control lever to keep a smooth grade.

TRANSPORTING LOADS: For transporting loads under average conditions it is recommended that the cutting edge of the bucket be held about four (4) feet off the ground for better stability. Do not transport loads with the bucket fully raised.

DUMPING THE BUCKET: When dumping the bucket the booms should be raised high enough to prevent the bucket from slamming against the side of the hopper on truck receiving the load.

For PAYLOADERS of serial numbers 80.001 thru 80661, dump the bucket by merely pressing the single valve control lever toward the left, against the operator, and the bucket will swing downward, dumping the load. When the load has been dumped, back away from the hopper or truck, release the hand pressure on the valve lever and it will automatically return to neutral and at the same time close or retract the bucket.

For PAYLOADERS beginning with serial number 80662 dump the bucket by pushing forward on the shorter, inner valve lever. Release the pressure on the lever and it will automatically return to neutral holding the bucket in "dumped" position. Pull backward on this lever to "close" or "retract" the bucket. Release pressure to automatically allow the lever to return to neutral, holding the bucket on the "closed" position.

ROUTINE SERVICE

The operators job does not consist of merely working the PAYLOADER. The mechanical and operating condition as well as the general appearance and maintenance of the machine is also a part of his responsibility. It is to the operators advantage to become familiar with the functions of each working part and a study of the information and suggestions as set forth in this manual will help him to do so.

The operating life of the PAYLOADER may be considerably extended if the machine is properly serviced at regular intervals. Often major repairs or shut downs are avoided if the machine is inspected regularly and

minor trouble corrected at this time.

The following outline gives points that should be Lubricated and Checked at each inspection period. Refer to the Lubrication Chart, Fig. 1.

DAILY SERVICE

LUBRICATE AND CHECK:

- | | |
|--------------------------|----------------------|
| Front Axle Bolster Pivot | Battery Water |
| Hoist Pivots | Air Cleaner |
| Spindles | Cooling System |
| Boom Pivots | Battery Connections |
| Spindle Arms | Engine Crankcase Oil |
| Guide Pivots | Hydraulic Oil |
| Front Wheels | Valve Lever Pivots |
| Gear Shift Lever Pivots | Drive Shafts |
| Drag Link | Foot Pedal Bearings |
| Clutch Bearings | |

WEEKLY SERVICE

CHECK:

- | | |
|------------------------------------|---------------------------|
| Master Brake Cylinder Fluid | Clean Crankcase Breather |
| Brake & Clutch Pedal Play | Clean Reservoir Breather |
| Flush Cooling System | Clean Rear Axle Breathers |
| Water Pump | Check Wheel Nuts |
| Check Transmission & Rear Axle Oil | Change Crankcase Oil |

MONTHLY HOUR SERVICE

- | | |
|----------------------------|---|
| Clean Hydraulic System | Change Transmission, Differential & Reduction Gear Case Oil |
| Check Steering Gear Grease | Tighten all Nuts, Capscrews, and Fittings |
| Repack Front Wheels | |

COLD WEATHER OPERATION:

When operating the PAYLOADER in temperatures of 32° F. (0° C.) or Lower, there is danger of the water freezing in the cooling system. To prevent this, use one of the Anti-Freeze Solutions shown on the chart.

ANTI-FREEZE SOLUTIONS

Percent by Volume	Distilled Glycerine			Ethylene Glycol		
	Freezing Point		Specific Gravity	Freezing Point		Specific Gravity
	0° C.	32° F.		0° C.	32° F.	
0%	0	32	1.000	0	32	1.000
10%	-2	29	1.029	-3	26	1.016
20%	-6	21	1.057	-9	16	1.031
30%	-11	12	1.085	-16	2	1.045
40%	-18	0	1.112	-24	-11	1.058
50%	-26	-15	1.140	-35	-31	1.070

IMPORTANT: Do not use alcohol as an anti-freeze as it will boil away at average temperatures. Do not use a calcium chloride solution or any alkaline solution as they are injurious to metal.

TO DRAIN SYSTEM:

1. Open the petcock in the underside of the water pump, on carburetor side of engine, and remove the radiator filler cap. This is a pressure type cap and must be removed to permit draining of the cooling system.
2. See that the drain is not plugged and water is completely drained out.

IMPORTANT: Before filling radiator in freezing weather, cover entire radiator, start engine and put in the water immediately. This prevents the water from freezing during the warm up period.

MAINTENANCE SECTION

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation. The complete observance of one simple rule would prevent serious injuries each year. That rule is --

"NEVER ATTEMPT TO CLEAN, OIL OR ADJUST A MACHINE WHILE IT IS IN MOTION."

-- National Safety Council --

NEVER WORK UNDER THE BOOMS OR BUCKET UNLESS THEY ARE BLOCKED AND THE ENGINE IS SHUT OFF.

The operating life of the PAYLOADER may be considerably extended and fewer shutdowns will be experienced if the unit is properly serviced at regular intervals. Often major repairs or shutdowns can be avoided by regular inspections and trouble corrected while it is of a minor nature. Study the Parts List Drawings to become acquainted with the working parts and their relation to each other.

BRAKES: "BLEEDING"

The foot brakes are hydraulically operated, internal expanding, 2 shoe type in both rear wheels.

The hydraulic brake system must be "bled" whenever air gets in the system through a leak or when a line has been disconnected. Air trapped in the system gives a "spongy" feel to the brake pedal and, being compressible, does not allow pressure applied to the brake pedal to be transmitted solidly through the lines to the brakes. The system must be free of air at all times.

To bleed the brakes proceed as follows:

1. The longest fluid line from the master cylinder should be bled first. Proper sequence is bleeding the left wheel and then the right.
2. Carefully clean off all dirt from around the master cylinder filler plug, remove the plug and fill the master cylinder with brake fluid.
3. Remove the dust cap from the left brake breather valve, first cleaning off the bleeder connection. Insert a hose into the valve and submerge other end of the hose into a jar containing a small amount of brake fluid.
4. Loosen the breather valve about 1/8 turn and pump the brake pedal several times being careful not to pump all the brake fluid out of the master cylinder. Do not allow the end of the hose to emerge from the fluid in the jar while the valve is open or air will be sucked back into the brake lines.
5. Refill the master cylinder with brake fluid and continue to pump the pedal until air bubbles are no longer seen escaping from the fluid in the jar.
6. Tighten valve, replace dust cap and repeat the operation on the right wheel.
7. Refill master cylinder with both wheels have been bled and replace the plug.

BRAKES: ADJUSTING

When the brakes become worn as indicated by the foot pedal going down almost to the floorboard, it is necessary to make the following adjustments. Proceed as follows:

1. Jack up the rear axle and remove the wheel.
2. Remove the 5/16 bolt to loosen the inspection cover on the brake drum.
3. Use a .010 feeler gauge thru the slot in the brake drum until .010 clearance is obtained on the top and bottom of the front shoe. It is necessary to turn the anchor screw to adjust the shoe. Loosen the anchor screw lock nut to turn.

-
4. Turn the brake drum slot to opposite shoe and adjust top and bottom until .010 clearance is obtained. Note there are two anchor screws, one for each shoe.
 5. Lock the anchor screw when adjustment is satisfactory and try the feeler gauge in top and bottom of each shoe again to make sure the adjustment was not upset when locking the anchor screws. Replace the wheel.
 6. Repeat above on the other wheel.

PEDAL ADJUSTMENT - BRAKES:

Free pedal play must be apparent at the top of the stroke of the brake pedal, so that approximately 1/8" clearance is maintained between the master cylinder plunger and the end of its actuating rod.

Lack of free pedal play results in the master cylinder plunger being depressed, causing undue wear on the brake lining. Free pedal play is the amount of movement of the pedal before the actuating rod contacts the cylinder plunger.

It is good practice to overhaul the master brake cylinder and wheel cylinders whenever the brakes are relined.

CLUTCH ADJUSTING:

The clutch is a spring loaded, foot operated type. No adjustments for wear are provided in the clutch itself. The clutch pedal must have 1" to 1-1/2" of free pedal play which is the amount of movement of the clutch pedal before the clutch release bearing contacts the clutch release levers.

It is imperative that the pedal be readjusted at frequent intervals to obtain this clearance.

To readjust the clutch pedal remove the clevis pin and turn the clevis on the clutch control rod until the necessary free movement of the pedal is obtained. It may be necessary to adjust the clevis several times to reach the proper amount of free play.

Be sure to tighten the lock nut against the clevis to maintain adjustments.

The importance of proper use of the clutch pedal during Loader operation will save considerable wear on the clutch release bearing and the clutch disc. "Riding" the clutch causes rapid wear on the clutch release bearing and the tendency to "feather" the clutch results in premature wear on the clutch disc. The clutch pedal should never be depressed except during the time required to shift gears.

CLUTCH REMOVING:

1. To remove the clutch, first place the valve control lever in the "hold" position. Then disconnect the hoses to the hydraulic valve. These valves are located under the hydraulic reservoir. Placing the valve lever in the "hold" position will prevent draining the reservoir of oil when the hose is disconnected.
2. Remove the four capscrews holding the halves of the upper universal joint and remove the lock to break the joint. This allows the hubs of the joint to slide upon the shafts.
3. Disconnect the clutch control rod at the clutch arm.
4. Remove the choke rod support and the wiring loom clip from the clutch housing cover.
5. Take out the twelve 3/8" capscrews to remove the clutch housing cover.
6. Insert three (3) 3/8" - 16 N.C. capscrews x 1-1/2" long, with 3/8" std. flatwasher into the clutch cover and screw in finger tight, then turn them in one complete turn to compress the clutch pressure plate.
7. Remove the capscrews holding clutch pressure plate to the engine flywheel and lift complete pressure plate out of the flywheel housing along with the clutch drive plates.

DRIVE SHAFTS:

The drive shafts are Mechanics Double Center Universal Joints. It is imperative that the joints are kept well lubricated at all times. There are no adjustments to be made on these joints.

To break the joints remove the four capscrews holding the halves together and remove the locks.

ENGINE:

All adjustments for the engine will be found by consulting the engine manual inserted in the pocket on the rear inside cover of this manual.

HYDRAULIC SYSTEM:

The hydraulic hoist system consists of an oil reservoir, a gear type pump, a control valve, two boom hoist cylinders, one bucket control hoist and the connecting hoses and fittings.

The pump draws oil from the oil reservoir thru the suction line and forces it, under pressure into the control valve which regulates the flow of oil to the rams. The valve is manually controlled by the operator by means of control levers.

In "raise" position the oil is directed into the hoists. In "hold" position the oil passes through the valve to the reservoir and oil in the hoists is retained therein. In "lower" position the valve permits the hoist to telescope, so that oil from the hoists flows back to the reservoir along with oil coming from the pump. The valves have a pressure relief built into them to protect the pump from severe overloads.

CARE OF THE HYDRAULIC SYSTEM:

Inspect the entire hydraulic system connections for leaks every eight hours of operation. All connection points must be tight and leakproof to prevent air or water from being sucked into the system and to prevent oil from leaking out.

Excessive air being sucked into the system thru a faulty connection or hose will cause the oil to foam, retard oil circulation, and the hoists will operate in a slow, jerky manner. The pump will be noisy and howl. A faulty connection may allow air to be sucked into the system although oil may not leak out.

Small amounts of water will evaporate when the oil is warm, if the clean-out cover is left off and rain falls in the reservoir for a length of time, drain the reservoir. Water will cause damage to the pump and cylinder if not removed.

For persistent leaks, clean the joint and apply aviation Permatex or use a litharge and glycerin mixture on the threads.

Check the oil level in the reservoir every eight hours of operation. A low oil level will starve the pump and cause cavitation. The pump will be noisy and the hoist will operate in a slow jerky manner.

If excessive oil is being lost check the hoist packings for wear, or look for a loose hose or pipe connection.

Low oil pressure will interfere with the action of the hoists and can be caused by air in the system, leaky hoses or connections, low oil level in the reservoir, dirt particles in the valve, worn out pump or clogged hydraulic lines.

DRAINING THE HYDRAULIC SYSTEM:

NOTE: DRAIN IMMEDIATELY AFTER THE PAYLOADER HAS BEEN OPERATED FOR A TIME AND WHILE THE OIL IS STILL WARM. WARM OIL WILL CARRY MORE DIRT AND SLUDGE WITH IT.

1. Remove cleanout cover from top of the reservoir.
2. Place a container large enough to hold 15 gallons under the plug on the rear corner of the reservoir. Use a funnel and hose to direct the draining oil into the container.
3. Remove the plug to drain the reservoir and break all hose connections at the reservoir to drain the hoses. Clean the drain plug.
4. When the oil has drained, reach into the reservoir and clean all dirt and sludge which has collected on the bottom.
5. Clean off all parts of the system paying special attention to all connection points. Connect all hoses, replace drain plugs and refill with the best grade of SAE 10 lubrication oil or equal, to petcock level. Be sure to check the oil level after the PAYLOADER has been running a few minutes.

PURGING OR BLEEDING THE HYDRAULIC SYSTEM:

THE HYDRAULIC SYSTEM MUST BE BLED OR PURGED AFTER ANY WORK HAS BEEN DONE ON IT.

1. Loosen the bleeder screws, located on the upper side of each boom hoist cylinder. A bleeder screw is not provided on the bucket control cylinder as it is unnecessary.
2. Raise and lower the bucket until air bubbles do not appear in the oil escaping from around the bleeder screws. Close the bleeder screw when lowering the bucket. Open it when raising bucket.
3. As soon as the air bubbles cease, leave the bucket in the "raised" position and tighten "bleeder" screws securely. Clean the hoists of escaped oil and refill the reservoir to petcock level.

HYDRAULIC VALVE:

SEE PARTS LIST DRAWINGS TO BECOME ACQUAINTED WITH THE WORKING PARTS OF VALVES.

HF PAYLOADERS of serial numbers 80001 thru 80262 have two valves, one to regulate the flow of oil to the boom hoist and the other regulates the flow of oil to the bucket control hoist.

The boom hoist valve is a Hydreco three position spool valve and is so constructed that no adjustments are necessary. It is advisable, however, to wash and clean the valve thoroughly every four hundred hours of operation.

The bucket control valve is spring loaded which automatically returns to "close" position when the bucket control lever is released. No adjustments are necessary; however, wash and clean the valve thoroughly every four hundred hours of operation.

HF PAYLOADERS beginning with serial number 80263 have a single valve with two plungers which regulates the flow of oil to both the boom hoists and the bucket control hoist cylinder. No adjustments are necessary, however, wash and clean the valve thoroughly every four hundred hours of operation.

The manufacturer does not recommend replacement of the valve body or the plungers as they have been individually fitted at the factory but springs, seals etc. may be replaced when necessary.

HYDRAULIC BOOM HOIST:

These Hydraulic Hoists are so constructed that the packing is self sealing and does not require adjusting other than to tighten the packing slightly if oil tends to escape excessively.

If excessive oil escapes past the packing and viper seals and the packing must be replaced.

1. To replace the packing disconnect the hoist at the boom and remove the packing nut.
2. Using an ice pick or similar tool, remove the worn packing and clean out the packing recess thoroughly.
3. Insert new packing by first placing one of the flat leather rings in the bottom of the recess. Tamp it firmly in place with a blunt instrument; then add alternate leather and rubber "V" rings. Add flat leather rings on top.

NOTE: If packing has been coated with wax it must be removed by light scraping and then powdered with graphite. If any of the rings are damaged by scraping or when being placed in the recess, discard it for another. A damaged ring will not seat properly and will permit oil to escape. The rings may be soaked in hot oil to soften them.

4. Work all packing lips down smoothly. Then replace packing cap.
5. Packing nut clearance should be from 1/16" to 1/8" when the packing has been assembled properly and the packing nut pulled down snugly.
6. A light film of oil should adhere to the plunger rods as they are drawn from the cylinder at all times, when the nut has been properly tightened.

HYDRAULIC BUCKET HOIST:

This Hoist is similar to the boom hoist. To replace the packing follow the procedure outlined for the

boom hoist, except the bucket shield must be removed from the plunger.

HYDRAULIC PUMP:

This is a Pesco "pressure loaded", gear type pump and assembled for counter-clockwise rotation viewing the drive end. The pump requires no maintenance except to replace such seals or springs as are listed in the pump group parts section of this book. The manufacturer does not recommend replacement of gears or bearings in the field.

If the pump does not develop sufficient pressure to operate the hoists satisfactorily and the cause cannot be determined, see The Frank G. Hough Co. dealer for details or repair and replacement of the pump.

Before removing the pump cover from the body to replace seals, put match marks opposite each other on both parts so they can be reassembled for correct rotation.

To remove the drive shaft seal, remove the Woodruff Key and coupling gear from the shaft, loosen the four screws from the thrust plate and slide the thrust plate and gasket off the drive shaft. The drive shaft seal is pressed into the thrust plate and should be replaced at each overhaul. The drive shaft seal is procurable only as an assembly and can be removed by pressing the stationary seal parts out of the thrust plate and lifting the movable seal parts off the pump shaft.

Remove the nuts which secure the cover to the body, first placing match marks on each part, to remove the cover for replacement of the body gasket, rubber seal rings or spring plate.

To inspect the bore valve ball seat and ball remove the hex head retainer, gasket, spring and ball from the valve bore of the body. The ball valve seat is a press fit in the valve bore and should not be replaced unless damaged. To remove the seat thread a suitable pipe tap into the seat and heat the body to 200° F. The seat can then be pulled out by using the tap as a puller.

If the ball seat is only slightly scratched place the ball in the seat and tap the ball with a soft hammer or mallet. Wash pump parts in clean, unleaded gasoline and dry by blowing with compressed air.

STEERING ADJUSTMENTS:

LUBRICATION OF STEERING GEAR:

The steering gear is filled at the factory with a special steering gear lubricant developed for both summer and winter operation. Seasonal change of lubricant and draining of gear case is not necessary.

Gear should be kept filled to level of filler plug with correct lubricant. Add GMC #4567-M Lubricant to keep full.

STEERING GEAR ADJUSTMENT:

Correct steering gear adjustment is very important. There are only two adjustments to be made but the following procedure must be adhered to, step by step. See Figs. 3 and 4.

1. Disconnect drag link from pitman arm, taking care to note relative position of drag link to pitman arm, before disturbing them.
2. Disconnect upper steering column brace to make sure there is no bind in the column due to anchorage.
3. Loosen lock nut "A", Fig. 3, than turn lash adjuster "B", Fig. 4, a few turns counterclockwise. This relieves the load upon the screw bearings imposed by the rack and sector teeth. Turn steering wheel GENTLY in one direction until stopped by gear, then back one turn. Do not turn steering wheel hard against stops when gear is disconnected. damage to ball guides may result.
4. Measure the pull at the rim of the wheel which is required to keep the wheel in motion. This pull can be measured by attaching a spring scale to the rim of the wheel with a piece of cord, then pulling on the spring scale to turn the wheel. The line of the scale should be kept tangent to the rim of the wheel. The proper value of the pull at the wheel rim under these conditions is 1-1/2 to 2 lbs. If the actual value does not lie between these limits specified, adjustment of the screw bearings is necessary.
5. To adjust screw bearings, loosen lock nut "C" Fig. 4 and turn screw bearings adjuster "D" Fig. 4 clockwise until there is no perceptible end play in screw. Check pull at wheel rim as above, readjusting, if necessary, to obtain proper pull. Set up lock nut "C", and recheck pull, as it must lie within the specified limits

AFTER the lock nut is set up. If gear feels "lumpy" after adjustment of screw bearings, there is probably damage in the bearings due to severe impact or to improper adjustment, and the gear must be torn down for replacement of damaged parts.

6. After proper adjustment of screw bearings is obtained, and all mounting bolts securely tightened, adjust lash adjuster "B". First turn steering wheel GENTLY from one stop all the way to the other, carefully counting the total number of turns. Then turn wheel back exactly half way to center position. Mark wheel at top or bottom center with piece of tape. Turn lash adjuster "B" clockwise to take out all lash in gear teeth, and tighten lock nut "A". Check pull at wheel rim as before, taking the highest reading of the spring scale as the wheel is turned through center position. Proper value of pull is 2-1/2 to 3 lbs. Readjust, if necessary, to obtain proper pull. Set up lock nut "A" as it must lie within the limits specified AFTER the locknut is set up.

7. Reassemble steering connecting rod to pitman arm. (See Pitman Arm - Steering).

TOE-IN ADJUSTMENT:

The steering arrangement is of a single tie rod type and the front wheels should be adjusted to 0" to 1/4" or approximately 1/8" toe-in for each front wheel.

To adjust toe-in loosen the two nuts clamping the tie rod ends to the tie rod. Turn the tie rod until wheels are adjusted. Be sure to retighten the nuts, two on each tie rod end.

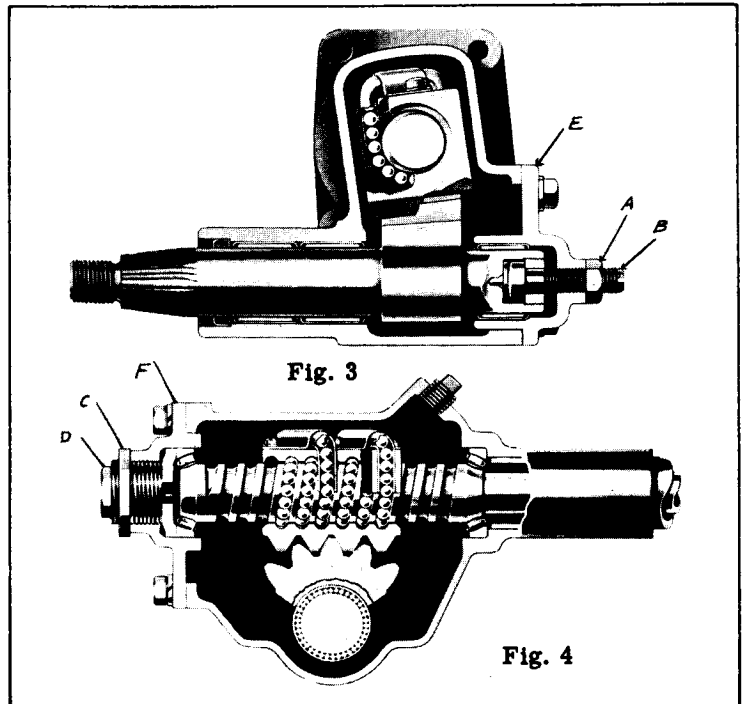
TURNING RADIUS ADJUSTMENT (Refer to Figs. 13 and 14 for identification):

If, for any reason, the steering gear pitman arm must be removed, put match marks on both the arm and the serrated shaft, so the arm can be relocated in its original position.

Care must be exercised in locating a new pitman arm. Under no circumstances should the pitman arm be so located on the serrated pitman shaft so that the turning of the front wheels is stopped by resistance within the steering gear, before being halted by the axle stop blocks.

Suggested pointers in locating a new pitman arm on the pitman shaft are as follows:

1. Check and adjust front wheels for correct toe-in (See TOE-IN ADJUSTMENT).
2. Connect the drag link to the right steering arm ball; connect pitman arm ball to the drag link ball joint.
3. Place a jack under the front axle radius rod pivot and jack up the front end of the PAYLOADER high enough to allow the front axle to oscillate up and down fully. And at the same time permit the wheels to turn thru their full turning angle.
4. Turn the steering wheel GENTLY to the right (as in making a right turn) until stopped by resistance within the steering gear. Then back off the steering wheel by not less than a 1/4" turn.
5. Tilt right wheel upward and hold the axle against the frame axle oscillating stop. Swing the front wheels as in making a full right turn. The spindle steering arm now rests against the axle stop block. Hold the wheels and steering gear wheel in positions described above. Slip the pitman arm on the end of the serrated pitman shaft protruding from the steering gear, but do not tighten. If necessary the steering wheel should be backed off slightly more than the 1/4 turn to match serrations in the arm and on the shaft. Never match serrations with less than the 1/4 turn safeguard.



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6. Now tilt the axle so the left wheel is up and hold the axle against the left frame axle stop. Turn the steering wheel GENTLY until the front wheels are in a full left turn position. Note carefully to see that the left spindle steering arm is stopped by the axle stop block before stopped by resistance within the gear. Slip the pitman arm off the serrated pitman shaft to be sure there is approximately 1/4 turn left in the steering wheel after the turn of the wheels is stopped by the axle blocks.

The pitman arm may then be fastened securely to the serrated pitman shaft protruding from the steering gear.

7. Never allow the resistance within the gear to be used to stop the turn of the front wheels for either a full left or right turn.

It may be possible that thru use and wear on the assembly, the spindle arm stops are no longer adequate. In this event, additional stock must be added to the ends of the axle stop blocks so they stop the turn of the front wheels before resistance within the gear stops the turn of the wheels. Add sufficient stock to the ends of the axle stop blocks to protect the steering gear by not less than a full 1/4 turn of the steering wheel. This must be done to protect the steering gear bearings and ball nut within the gear.

TIRE PRESSURES:

Front tires are 8.25 x 20 tractor type and should contain seventy-five (75) pounds air pressure.

Rear tires are 13.00 x 24 traction type and should be three-fourths (3/4) full of calcium chloride solution with 25 pounds air pressure.

Secure a "bleeder" adapter from an authorized tire dealer to allow air in the tire to escape when being replaced by liquid. Jack up the PAYLOADER and turn the tire so the valve stem is on top. Turn out the valve core, screw an adapter and attach the water hose to the adapter. Place the container holding the calcium chloride solution somewhat higher than the tire (about 5 or 6 feet). Put the solution in the tire tube by using a hand pump or by using compressed air and a pressure tank filled with liquid. Fill the tube until the liquid level is slightly below the valve stem level. Remove the hose and adapter, replace the valve core and inflate the tire with air until the tire gage registers 25 pounds.

To make the proper calcium chloride solution be sure to put 33-3/4 gallons of water in the container first. Then add 117-3/4 pounds of calcium chloride. Stir the solution until thoroughly mixed and allow to cool before using.

NOTE: Calcium chloride solution has an acid reaction and should never be used in the cooling system.

TRANSMISSION AND REAR AXLE

This is Four Speed Forward and Reverse Reduction Transmission. For major repairs to the Transmission or Rear Axle use the extensive facilities offered by The Frank G. Hough Co. dealers.

The REAR Drive Axle is a Timken-Model TA-534-H.

Refer to the Parts List drawings to become acquainted with the arrangement of the rear axle and the transmission assemblies.

Breathers must be cleaned and kept open to protect grease seals and gaskets.

Be sure all three sections of the final drive are filled with grease.

Greases should not be mixed, use the same brand when adding grease.

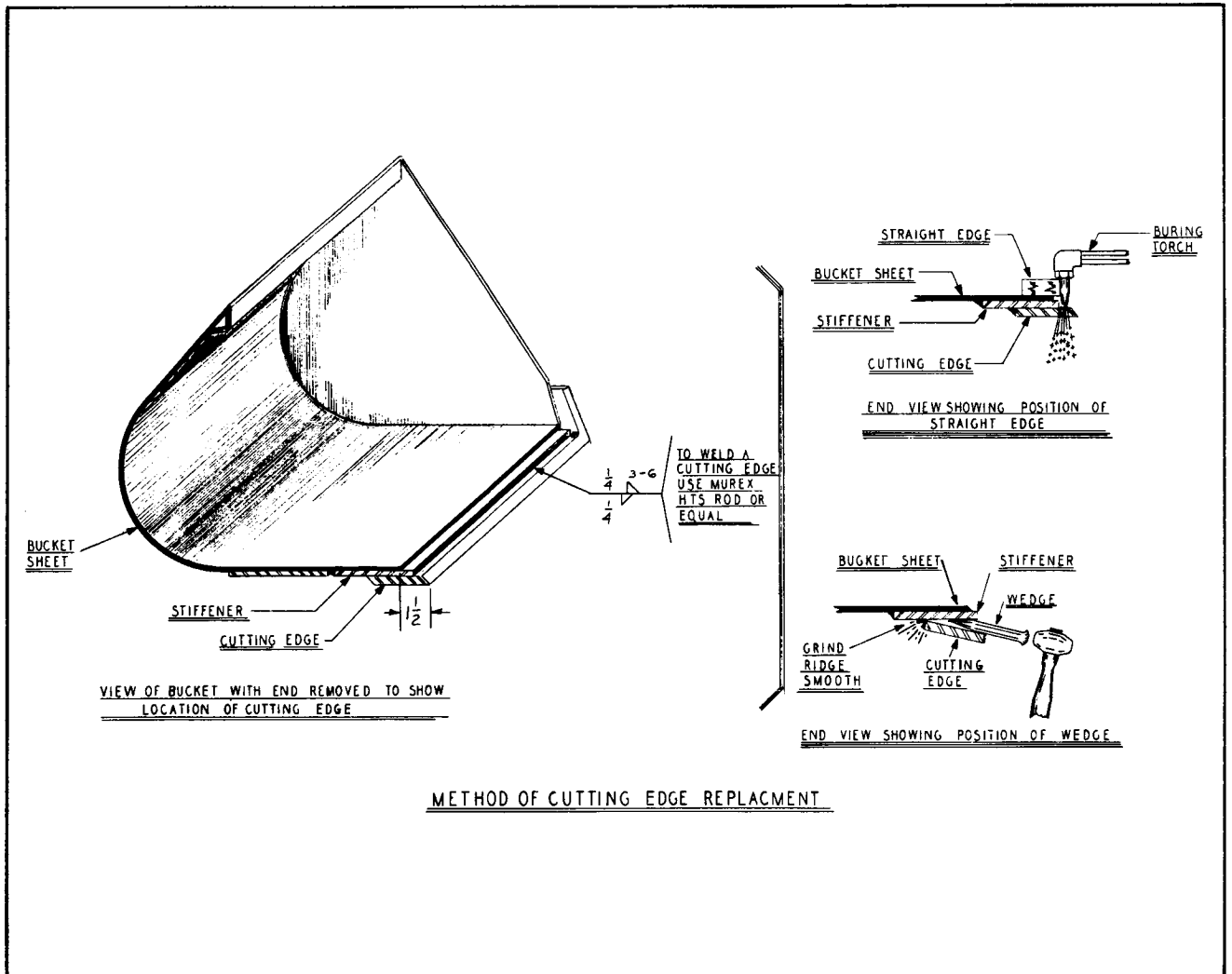
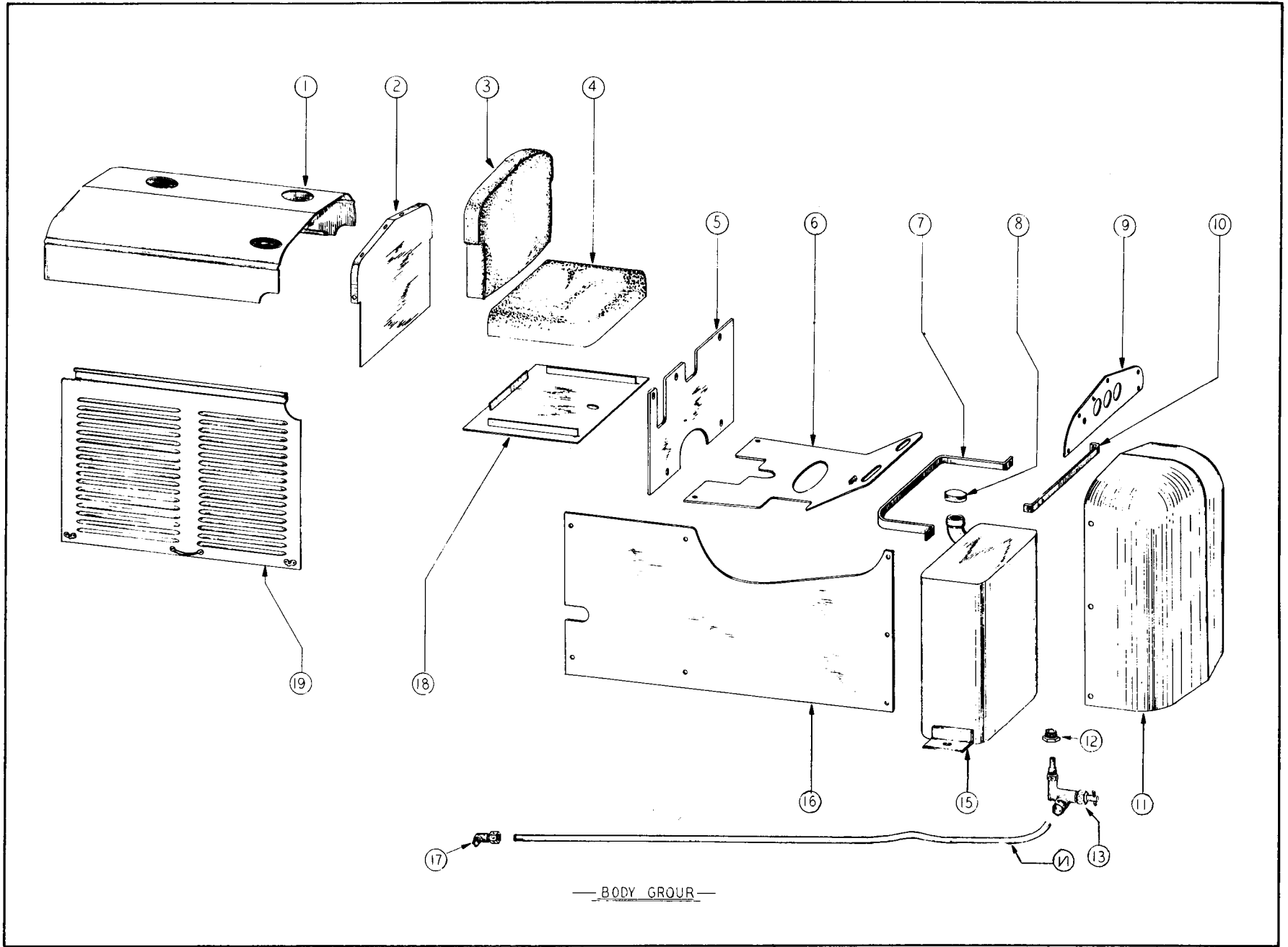


Fig. 5
METHOD OF CUTTING EDGE REPLACEMENT

TO REPLACE THE CUTTING EDGE FOLLOW THE PROCEDURE OUTLINED BELOW

1. Lay a straight edge in the bucket to line up with the edge of the stiffener and clamp in place. If there is no stiffener on the bottom of the bucket, line the straight edge with the edge of the bucket sheet.
2. Guide the burning torch along the straight edge to cut through the cutting edge and the weld along the front edge.
3. Follow a similar method for the upright ends of the cutting edge. Burn through the width of the cutting edge at the bends. Burn off the top weld of the ends with a gouging tip.
4. Drive a cold chisel or wedge between the stiffening and the cutting edge to break the back weld. Force the chisel between the bucket sides and the side portion of the cutting edge to remove the remaining ends.
5. Clamp the new cutting edge in place 1-1/2 inches beyond the edge of the bucket sheet as shown in Fig. 5. Bucket sheet and sides must be straight before welding on the cutting edge.
6. Back step a continuous 1/4 fillet weld on the front joining the cutting edge to the stiffener and to the bucket sides. If bucket has no stiffener weld the edge to the bucket sheet. Join the back edge to the stiffener or bucket sheet with 1/4 fillet welds 3 inches long on 6 inch centers. Use "Murex" 7/32 HTS rod or equal at no more than 200 amperes.

Fig. 6



BODY GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103230	Hood	1		
2	103225	Firewall - Seat Back Support	1		
3	103223	Seat Back Cushion	1		
4	103221	Seat Cushion	1		
5	103884	Front Plate - Seat	1		
6	103855	Floorboard	1		
7	103793	Strap - Gas Tank	1		
8	HA-1279	Cap - Gas Tank	1		
9	103660	Instrument Panel	1	80001	80761
9	107541	Instrument Panel - (For Gas Gage)	1	80762	up
10	103792	Support - Gas Tank.	1		
11	103395	Front Shroud.	1		
12		Reducer Bushing - 3/8" x 1/4" - Gas Tank	1		
13	HA-963	Needle Valve - Gas Shutoff.	1		
14	104389	Tubing - Fuel Line	1		
15	103112	Gas Tank	1		
16	103673	Side Shroud.	2		
17	HA-928	Elbow - Fuel Pump.	1		
18	103657	Seat Cushion Support.	1		
19	103231	Side Panel - R. H.	1		
19	103232	Side Panel - L. H.	1		
	HL-3635	Hood Clamp (Stolper #S10).	4		
	HL-3550	CLIP - Fuel Line	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

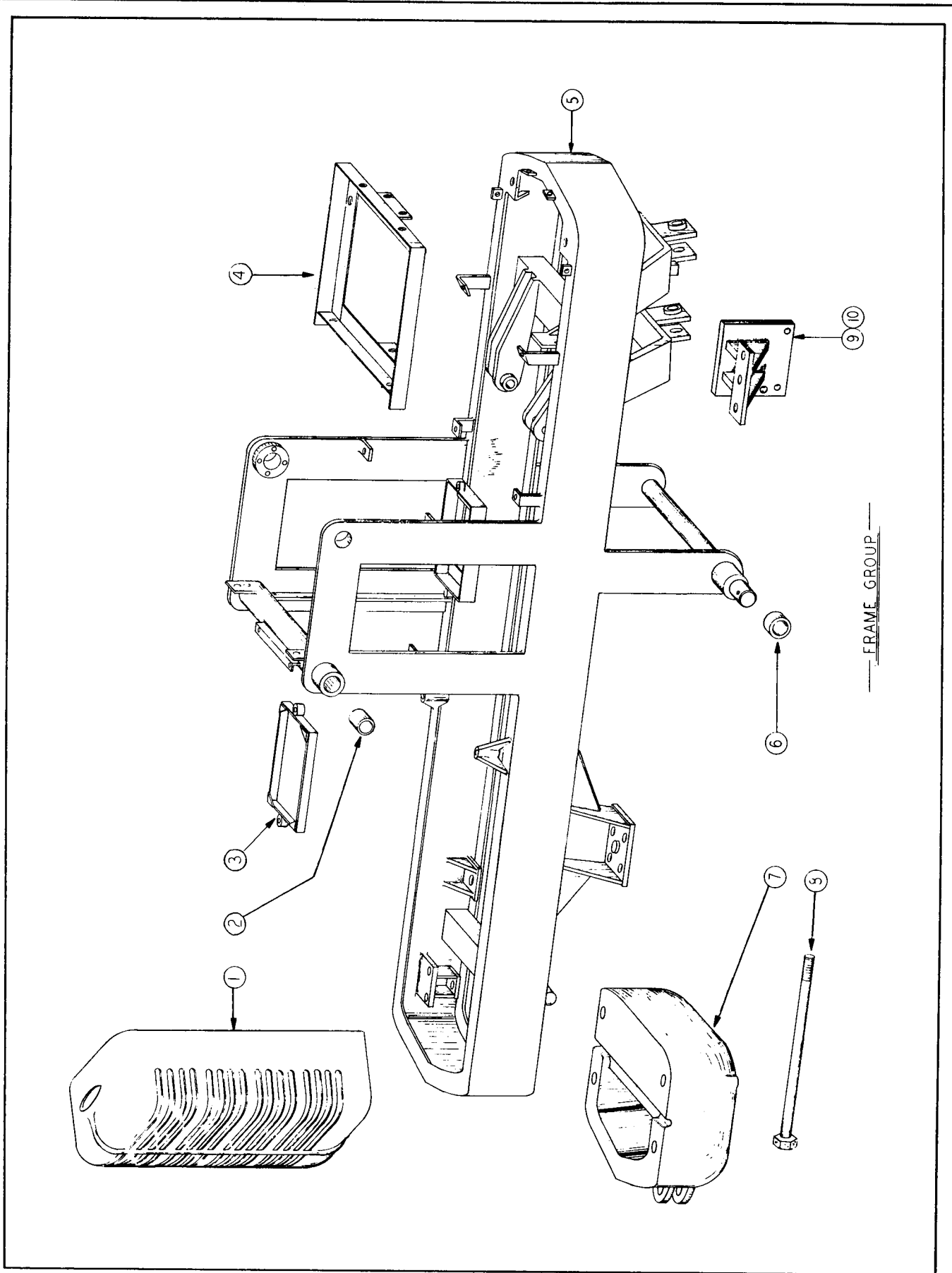


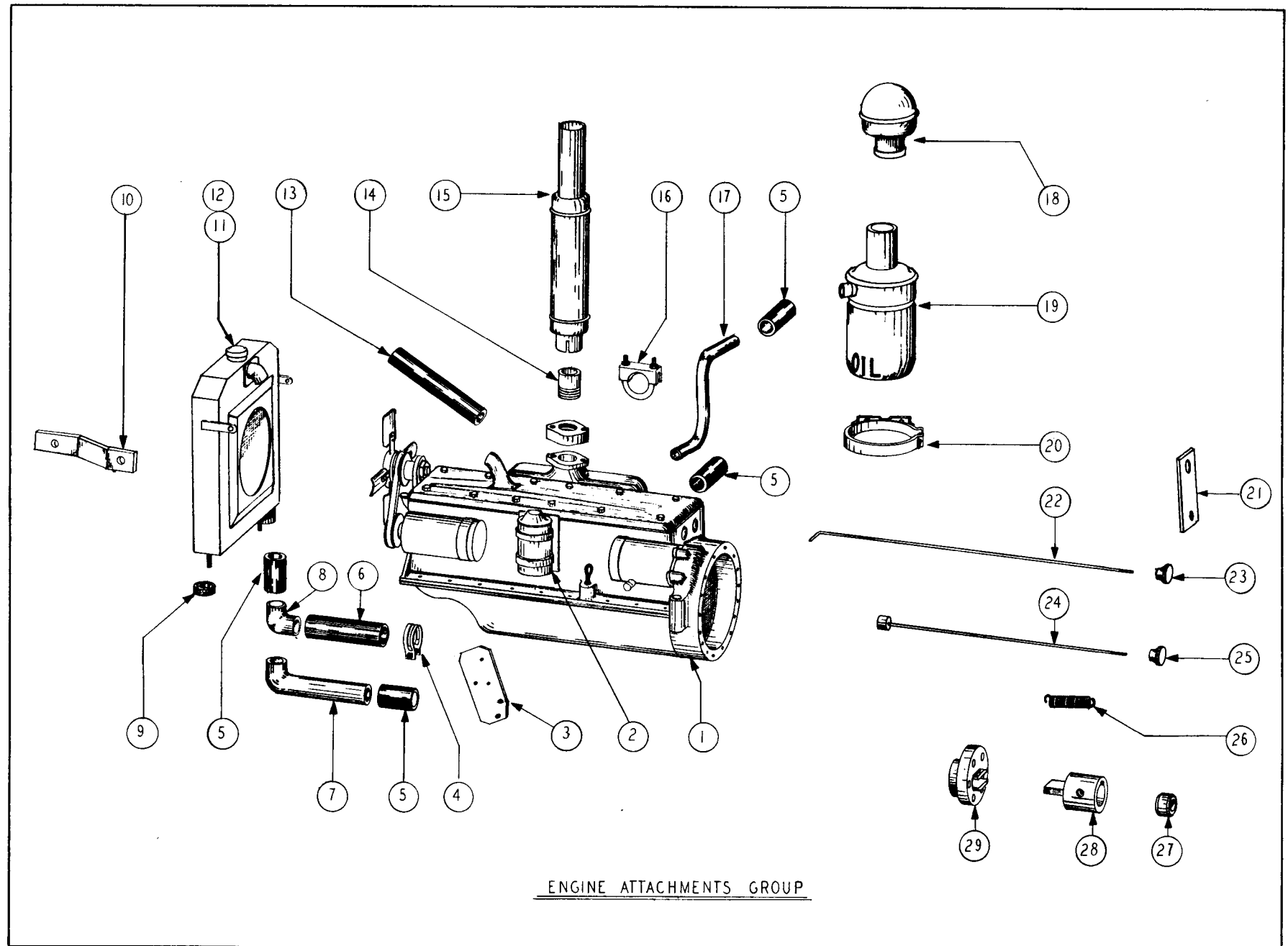
Fig. 7

FRAME GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103158	Radiator Grill Casting.	1		
2	101022	Bushing	2		
3	104538	Battery Cover (XQ17 Battery).	1	80101	up
3	103636	Battery Cover (X117 Battery).	1	80001	up
4	103368	Seat Support	1		
5	103165	Main Frame - (Standard Model HF only).	1		
5	105142	Main Frame - (Model HFH High Lift only)	1		
6	101033	Collar - Boom Hoist Cylinder.	2		
7	103823	Counterweight - (Standard Model HF only)	1		
7	105126	Counterweight - (Model HFH High Lift only)	1		
8	103824	Bolt - Standard Counterweight.	4		
8	105128	Bolt - HFH High Lift Counterweight.	4		
9	104498	Transmission Support - R. H.	1		
10	103281	Transmission Support - L. H.	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 8

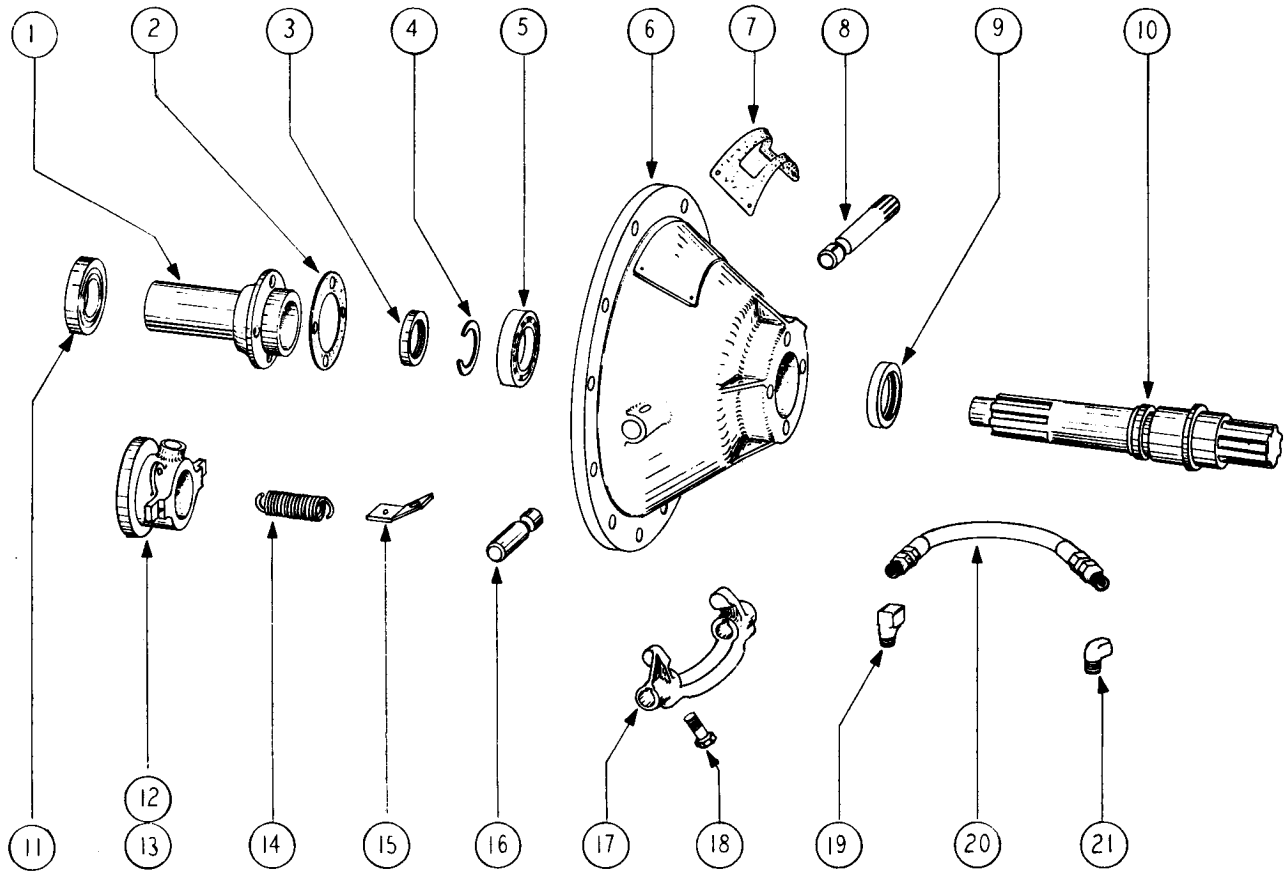


ENGINE ATTACHMENTS GROUP

ENGINE GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103646	Engine - See Hercules QXD-3 Parts List	1		
2	105687	Cartridge - Oil Filter Refill (C-30)	1		
3	104070	Support - Voltage Regulator	1		
4	HA-352	Hose Clamp - 2-3/8" I.D.	10		
5	104412	Hose - 3" lg. - Radiator or Air Cleaner	4		
6	104414	Hose - 11-1/2" lg. - Radiator	1	80001	80861
7	107292	Elbow	1	80862	up
8	103288	Elbow (obsolete - order 107292)	1	80001	80861
9	108474	Rubber Washer - under Radiator	2		
10	104206	Strap - Radiator to Grill	2		
11	108514	Radiator	1		
12	HA-1274	Radiator Cap	1		
13	104413	Hose - 16" lg. - Radiator	1		
14	103851	Pipe - Exhaust Flange	1		
15	103656	Muffler	1		
16	103949	Clamp - Muffler	1		
17	103764	Tube - Air Cleaner	1		
18	103759	Cap - Air Cleaner	1		
19	103655	Air Cleaner	1		
20	103760	Bracket - Air Cleaner	1		
21	103763	Clip - Choke Rod	1		
22	103762	Choke Rod	1		
23	HL-3562	Knob - Choke Rod	1		
24	103765	Starter Rod	1		
25	103940	Knob - Starter Rod	1		
26	105563	Spring - Choke Return	1		
27	107127	Sleeve - Pump Coupling	1		
28	103084	Coupling - P.T.O. to Pump	1		
29	103082	P.T.O. Coupling - to Engine	1		
	HA-1006	Drain Cock - Radiator (not shown)	1		
		Nipple - 1/8" close - Oil Pressure Switch	1		
		Tee - 1/8" std. - Oil Pressure Switch	1		
	104079	Rubber Pad - Pump Support to Frame	1		
	104944	Bolt - Heat Treated - Pump Support to Engine	3		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



POWER TAKE-OFF GROUP

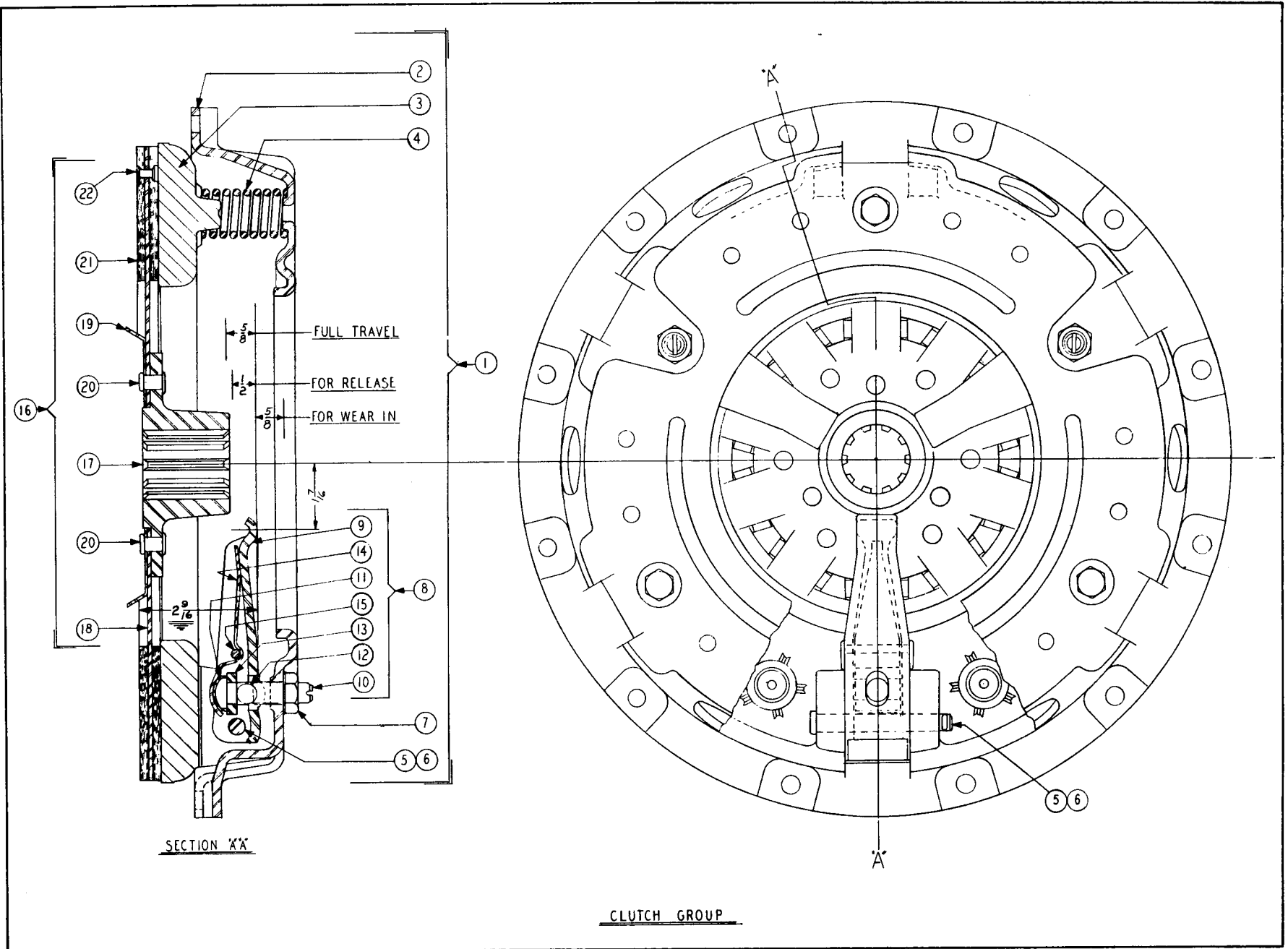
Fig. 9

POWER TAKE-OFF GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
	103951	Power Take-Off, Complete (includes Items 1, 2, 3, 4, 5, 6, 7, 9, 10, 19, 20 and 21) RT-461	1		
1	104431	Bearing Cover Sleeve RT-461-2	1		
2	104442	Gasket - Bearing Cover AT-3040-71	1		
3	104432	Grease Seal. 237116	1		
4	104433	Snap Ring #9 std.	1		
5	104706	Bearing #209	1		
6	104435	Bell Housing RT-461-1	1		
7	HA-1173	Gasket - Name Plate RT-1120	1		
8	103652	Shaft - Clutch Pedal 1978	1		
9	104705	Key - Pedal Shaft - #11 Woodruff (not shown)	1		
10	104437	Grease Seal. 275124	1		
11	104437	Input Shaft. RT-461-3	1		
12	103819	Pilot Bearing. ND-7605	1		
13	103270	Sleeve - Throwout Bearing.	1		
14	103818	Throwout Bearing. A-959-3	1		
15	103943	Spring - Sleeve	1		
16	HA-932	Spring Retainer	1		
17	103761	Shaft - Yoke	1		
18	103651	Yoke - Clutch Throwout.	1		
19	103959	Bolt - Yoke	1		
20	104438	Elbow - Grease Hose to Housing	1		
21	104439	Grease Hose	1		
	104440	Elbow - Grease Hose to Sleeve	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 10



CLUTCH GROUP - 14" TT

ITEM NO.	PART NO.	PART NAME	Qty.	Description
1	103650	Clutch Complete (includes Items 1 thru 22).	1	CLA-1570-AC
2	104518	Cover Assembly (includes Items 2 thru 15).	1	UCLA-8-5245
3	102079	Back Plate	1	CL-5245
4	102080	Pressure Plate	1	CL-5246-1
5	102081	Pressure Spring.	12	CL-505-2
6	102082	Lever Pin	3	CL-4559
7		Cotter Pin - 3/32" x 3/4" lg.	3	CL-3991
8		Jam Nut - 1/2" - 20 thd. Hex.	3	CL-3992
9	104519	Lever Assembly (includes Items 9 thru 15).	3	UCL-2-5078
10	107962	Lever.	3	CL-5078
11	107963	Adjusting Screw.	3	CL-6499
12	107964	Adjusting Screw Cap.	3	CL-6500
13	107965	Pivot Roller	6	CL-5080
14	107966	Lever Block	3	CL-5081
15	107967	Lever Spring.	3	CL-5079
16	107968	Spring Pin.	3	CL-5083
17	104522	Driven Member Assembly (includes Items 17 thru 22). .	1	UCL-2-3357
18		Splined Center	1	CL-3357
19		Clutch Plate	1	CL-3014
20	104523	Oil Deflector	1	CL-2961-1
21	104524	Rivet	12	CL-3816
22	104525	Facing	2	CL-4222
		Tubular Rivet	36	CL-1525-1

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

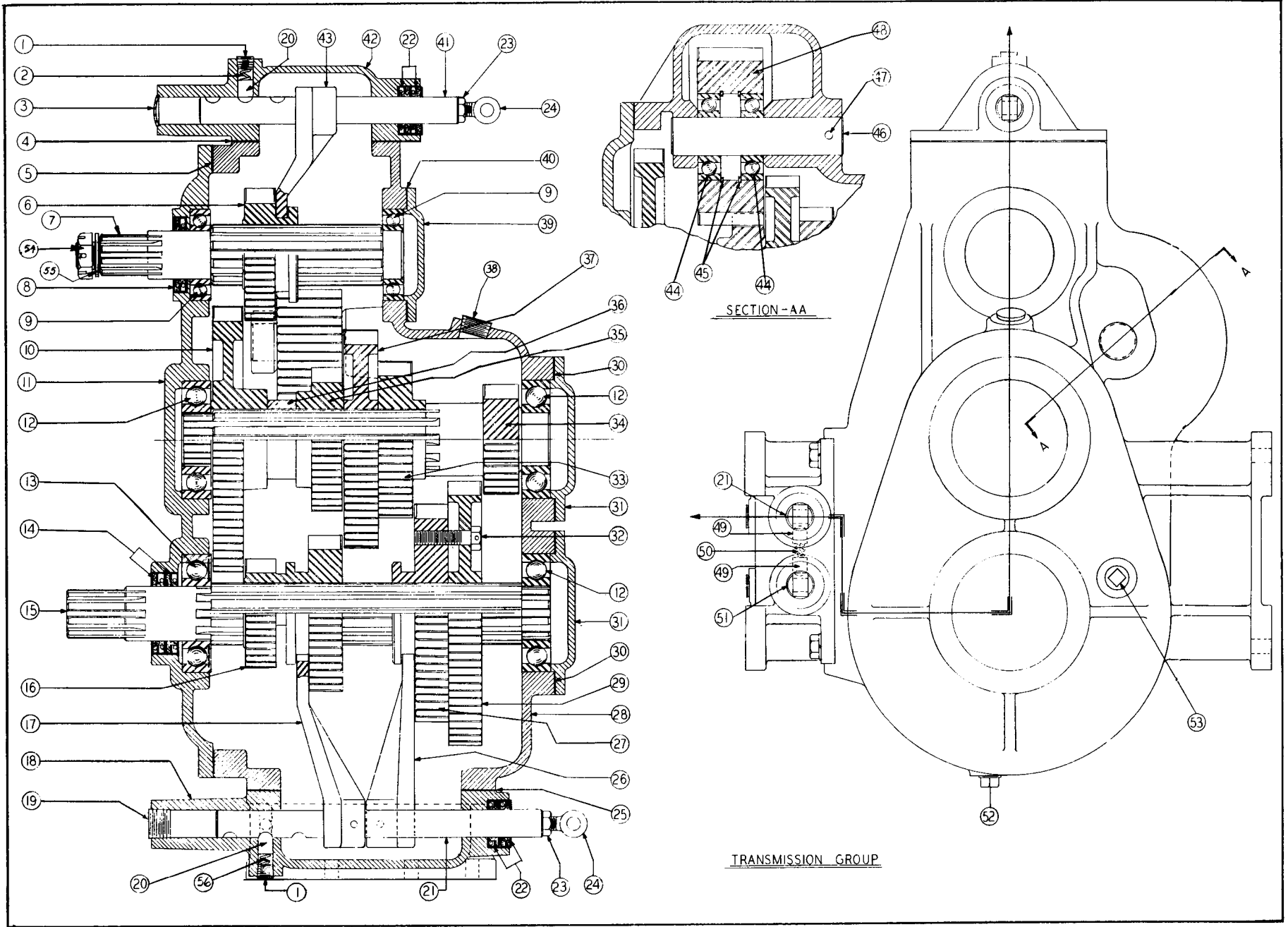


Fig. 11

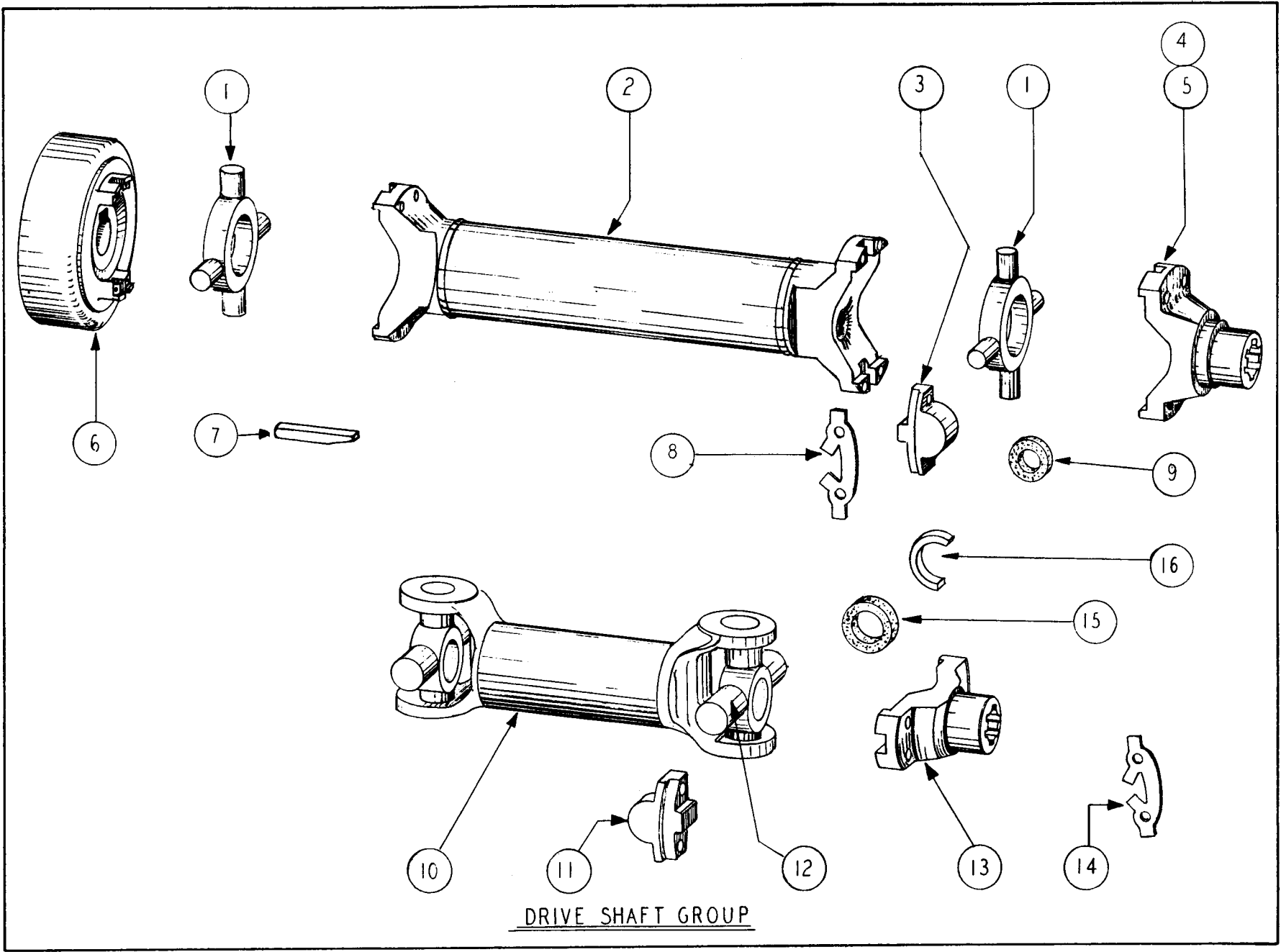
SECTION-AA

TRANSMISSION GROUP

TRANSMISSION GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	Description
1	103950	Transmission Complete.	1	RT-460-D
2	105530	3/8" Pipe Plug - Countersunk.	1	
3		Spring - Shifter Poppet	1	RT-460-32
4		Welsh Plug - 1-1/8" dia.	1	
5	104701	Gasket - Shifter Housing	1	RT-460-29
6	104702	Gasket - Cover	1	RT-460-28
7	104703	Input Pinion - 16 Teeth	1	RT-460-15A
8	104704	Input Shaft.	1	RT-460-10
9	104705	Oil Seal - 1-3/4" x 2-3/4" x 1/2".	1	275124
10	104706	Ball Bearing	2	#209
11	104707	Intermediate Gear - 37 Teeth.	1	RT-460-16A
12	104708	Cover.	1	RT-460-2
13	104709	Ball Bearing	3	#310
14	104710	Ball Bearing - Single Shield.	1	#310
15	104711	Oil Seal - 1-15/16" x 3" x 1/2"	2	299130
16	104712	Output Shaft.	1	RT-460-12
17	104713	Sliding Gear - 3rd & high.	1	RT-460-21A
18	104714	Shifter Fork - 3rd & high.	1	RT-460-6
19	104715	Shifter Housing - 4 speed.	1	RT-460-3
20	104716	Pipe Plug - 1" Countersink.	2	
21	104717	Plunger	3	RT-6655
22	104718	Shifter Shaft- High and 2nd	1	RT-460-26
23		Oil Seal - 1" x 1-3/4" x 7/16"	6	1751
24	HA-1171	Nut - 1/2" - 20 Jam	3	
25	104720	Rod end	3	P.T.D.619
26	104721	Gasket - Shifter Housing	1	RT-460-30
27	104722	Shifter Fork - 2nd & low	1	RT-460-7
28	104723	Sliding Gear - 2nd	1	RT-460-22A
29	104724	Main Housing.	1	RT-460-1
30	104725	Sliding Gear - low	1	RT-460-23A
31	104726	Gasket	2	G-212
32		Cover.	2	BC-212A
33	104727	Capscrew - Drilled Head - 1/2" - 20 thd. x 1-3/4" lg.	3	
34	104728	Driving Gear - 3rd - 21 Teeth	1	RT-460-18A
35	104729	Intermediate Shaft	1	RT-460-11A
36	107643	Gear - Driven Reverse - 19 Teeth (use with #104741 on Trans. Serial No's 1 to 638)	1	RT-460-19B
37	104730	Gear - Driven Reverse - 22 Teeth (use with #107644 on Trans. Serial No's 639 and up).	1	RT-460-34
38	104731	Spacer	1	RT-460-24
39	104732	Driving Gear - 2nd - 30 Teeth	1	RT-460-17A
40	104733	Pipe Plug	1	
41	104734	Cover.	1	BC-209A
42	104735	Gasket	1	G-209
43	104736	Shifter Shaft - Forward and Reverse	1	RT-460-25
44	104737	Shifter Housing - Forward and Reverse	1	RT-460-4
45	104738	Shifter Fork - Forward and Reverse	1	RT-460-5
46	104739	Ball Bearing	2	#307
47	104740	Snap Ring - From 307 or 209 Bearing	2	
48	104741	Reverse Idler Shaft.	1	RT-460-13
49	107644	Groove Pin - 1/4" Dia. x 1-3/4" lg.	4	
50	104742	Idler Gear - Reverse - 24 Teeth (Use with 104729 on Trans. Serial No's 1 thru 638).	1	RT-460-20B
51	104743	Idler Gear - Reverse - (Use with 107643 on Trans. Serial No's 639 and up).	1	RT-460-35
52	104744	Plunger - Gear Shift Lock	2	RT-460-31
53		Spring	1	RT-6696
54	104078	Shifter Shaft - 2nd & low	1	RT-460-27
55	104077	Magnetic Pipe Plug - 1/2"	1	
56	104700	Pipe Plug - 1/2".	1	
	107925	Dowel Pin - 3/8" Dia. x 1-1/4" lg.	1	
		Pipe Plug - 1/4".	1	
		Washer - 3/8" Brass.	38	
		Nut - 1" - 20 thd.	1	
		Washer.	1	
		Spring	2	RT-6102
		Bevel Washer - Transmission to Frame.	6	

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



DRIVE SHAFT GROUP

Fig. 12

DRIVE SHAFT GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
	103641	Drive Shaft Complete - Lower - (includes Items 1 thru 6, 8 and 9) #6C-4588	1		
1	104748	Spider 112-6003	2		
2	104749	Tube Yoke Assembly. 42-4588	1		
3	104750	Bearing Assembly Complete. 113-6001	8		
4	104751	Fitting Yoke - Keyed. 5585J	1	80001	80861
5	104752	Fitting Yoke - Splined. 4714J	1		
6	107461	Yoke and Drum Assembly (for Parking Brake).	1	80862	up
7	104835	Key - Yoke to Axle.	1		
8	104753	Lock Plate 3550J	4		
	104754	Capscrews (not shown) 3544J	12		
9	105114	Corkwasher. 3543J	8		
		Pipe Plug (not shown) 27x1	2		
	103640	Drive Shaft Complete - Upper - (includes Items 10 thru 16). 4CR-4587	1		
10	104755	Tube Yoke Assembly. 42-4587	1		
11	104756	Bearing Assembly Complete. 113-4001	1		
12	105112	Spider 112-4005	2		
13	104757	Fitting Yoke (splined). 5646J	2		
14	104758	Lock Plate 3549J	4		
	104759	Capscrew (not shown) 3786J	8		
15	105106	Corkwasher. 3565J	8		
16	105111	Snap Ring 5728J	4		
		Pipe Plug (not shown) 27x1	2		

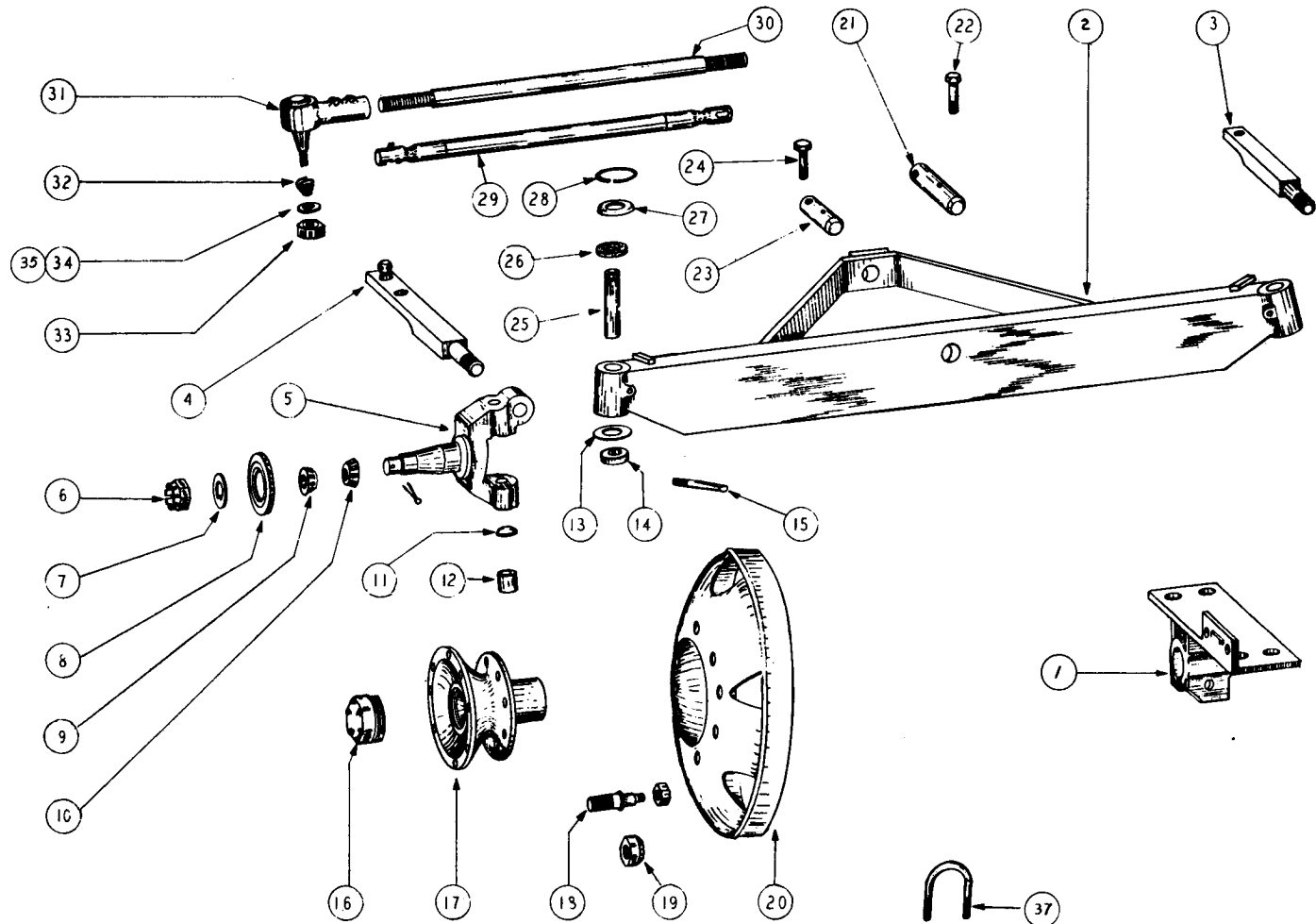
Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

STEERING GEAR GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
	103627	Steering Gear Complete.	1		
	104761	Steering Gear LESS Horn Button Assembly, Horn Button Screws, Pitman Arm and Steering Wheel	1		
1	HL-1812	Pitman Arm Assembly	1		
2	HL-1821	Upper Bearing Assembly	1		
3	HS-902	Cover Assembly - Housing Side	1		
4	104762	Housing Assembly	1		
5	HS-904	Bushing - Pitman Shaft (included in Item 4).	2		
6	HS-905	Cup - Worn Thrust (included in Item 4)	1		
7	104763	Shaft Assembly (includes Items 8 thru 13, 40 and 41)	1		
8	104764	Horn Cable and Contact Assembly	1		
9		Shaft Assembly. } Not shipped separately order Item #7.			
10		Ball nut }			
11	HS-910	Guide - Ball Return	4		
12	HS-911	Ball	106		
13	HS-912	Clamp - Ball Return Guide.	1		
14	HS-913	Adjuster - Worm Bearing	1		
15	HS-914	Adjuster - Lash	1		
16	HS-915	Bearing - Worm Thrust.	1		
17	HS-916	Cover - Housing End.	1		
18	HS-917	Connector Assembly	1		
19	HS-918	Gasket - End Cover	1		
20	HS-919	Gasket - Side Cover	1		
21	HS-920	Gear and Pitman Shaft.	1		
22	HS-921	Key - Steering Wheel	1		
23	HS-922	Nut - Worm Bearing Adjuster Lock	1		
24	HS-923	Nut - Steering Wheel.	1		
25	HS-924	Nut - Pitman Arm	1		
26	HS-925	Seal - Pitman Shaft Grease	1		
27	HS-926	Seat - Upper Bearing Spring.	1		
28	HA-1440	Shim - Lash Adjustor	1		
29	HA-1441	Shim - Lash Adjustor	1		
30	HA-1445	Shim - Lash Adjustor	1		
31	HA-1446	Shim - Lash Adjustor	1		
32	HS-928	Spring - Upper Bearing	1		
33	HS-929	Washer - Pitman Arm Lock.	1		
34	HS-930	Bolt - Side Cover	3		
35	HS-931	Bolt - End Cover	4		
36	HS-932	Nut - Lash Adjustor	1		
37	HL-1810	Steering Wheel (order HL-1826 Horn Button Screws also. See Item 38).	1	80001	80178
37	105226	Steering Wheel (use 105678 Rain Proof Horn Button Assembly)	1	80179	up
38	HS-934	Horn Button Assembly (For HL-1810 Wheel).	1	80001	80178
38	105678	Horn Button Assembly (Rainproof - for 105226 Wheel)	1	80179	up
39	HS-935	Screw - Horn Connector	2		
	HL-1826	Screw - Horn Button (to fit HL-1810 Wheel)	2		
40	HL-1827	Terminal Assembly - Horn (see Item 7).	1		
41		Bolt and Washer Assembly - Ball Clamp (see Item 7).	3		
42	105674	Spring - for 105678 Horn Button	1	80179	up
43	105673	Contact - for 105678 Horn Button	1	80179	up
44	105677	Screw - for 105678 Horn Button	1	80179	up
45	105672	Insulator - for 105678 Horn Button	1	80179	up
46	105676	Plate - for 105678 Horn Button.	1	80179	up
47	105671	Cap - for 105678 Horn Button.	1	80179	up
48	105675	Retainer - for 105678 Horn Button.	1	80179	up

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

FIG. 14



FRONT
STEERING AXLE GROUP

FRONT AXLE GROUP

ITEM NO.	PART NO.	Qty.	PART NAME
1	103276	1	Steering Gear Support.
2	102389	1	Front Axle.
3	102419	1	Steering Arm - L. H.
4	102417	1	Steering Arm - R. H.
		2	Key #18 Woodruff - Steering Arms (not shown).
		2	Nut - 1-1/4" - 12 thd. - Steering Arms (not shown).
		2	Lockwasher - 1-1/4" Std. Steering Arms (not shown).
5	102406	2	Spindle with Bushings.
6		2	Nut - 1-1/4" - 12 Thd. Castle - Spindle.
7	HL-1836	2	Washer - Spindle.
8	102411	2	Collar with Dirt Seal.
9	102409	2	Bearing Cone - Outer.
10	102410	2	Bearing Cone - Inner.
11	102407	2	Welsh Plug - Spindle.
12	102368	4	Bushing - Spindle.
13	102660	2	Spacer - Spindle Thrust Bearing.
14	102408	2	Thrust Bearing - Spindle.
15	102416	2	Keeper - King Pin to Axle (Tapered).
		2	Keeper Nut - 1/2" - 20 Thd. and Lockwasher.
16	102876	2	Hub Cap.
17	102427	1	Hub, Cup and Stud Assembly - R. H.
17	102428	1	Hub, Cup and Stud Assembly - L. H.
18	102906	10	Stud and Nut - R. H. - Hub.
18	102907	10	Stud and Nut - L. H. - Hub.
19	102430	10	Cap Nut - R. H. - Stud.
19	102431	10	Cap Nut - L. H. - Stud.
20	102426	2	Wheel - 20 x 6.00 - "LM" Rim.
	102908	2	Wheel Locking Ring - "L" or "M" Ring.
21	103120	1	Bolster Pin.
22	103122	1	Bolster Pin Lock.
23	102405	1	Pivot Pin - Axle Radius Rod to Frame.
24		1	Pivot Pin Lock - 5/16" Capscrew x 2-1/4" Lg. W/N and L.W.
25	102414	2	King Pin.
26	HL-1843	2	Dirt Seal - King Pin.
27	HL-3859	2	Retainer - Dirt Seal.
28	102415	2	Lock Ring - Retainer.
29	102420	1	Drag Link (see Next Four Items).
	HS-830	2	Spring - Drag Link Ball Joint.
	HS-831	2	Ball Seat - Drag Link Ball Joint.
	HS-832	2	Plug - Drag Link Ball Joint.
	HS-836	4	Bearing - Drag Link Ball Joint.
30	102423	1	Tie Rod.
31	102586	1	Tie Rod End - R. H. thd. (see Items 32-35).
31	102587	1	Tie Rod End - L. H. thd. (see Items 32-35).
32	102902	2	Spring - Tie Rod End.
33	102903	2	Nut - Tie Rod End.
34	102904	2	Felt Seal - Tie Rod End.
35	102905	2	Seal Retainer - Tie Rod End.
36	102605	2	Flat Washer - End to Steering Arm (not shown).
37	104510	1	"U" Bolt - Steering Gear Support.
		2	Tire (not sold by Frank G. Hough Co.) 8.25 x 20 - 10 ply.
		2	Tube (not sold by Frank G. Hough Co.) 8.25 x 20 Tube with TR-177A Valve and Flap.

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

DIFFERENTIAL CARRIER
REAR AXLE

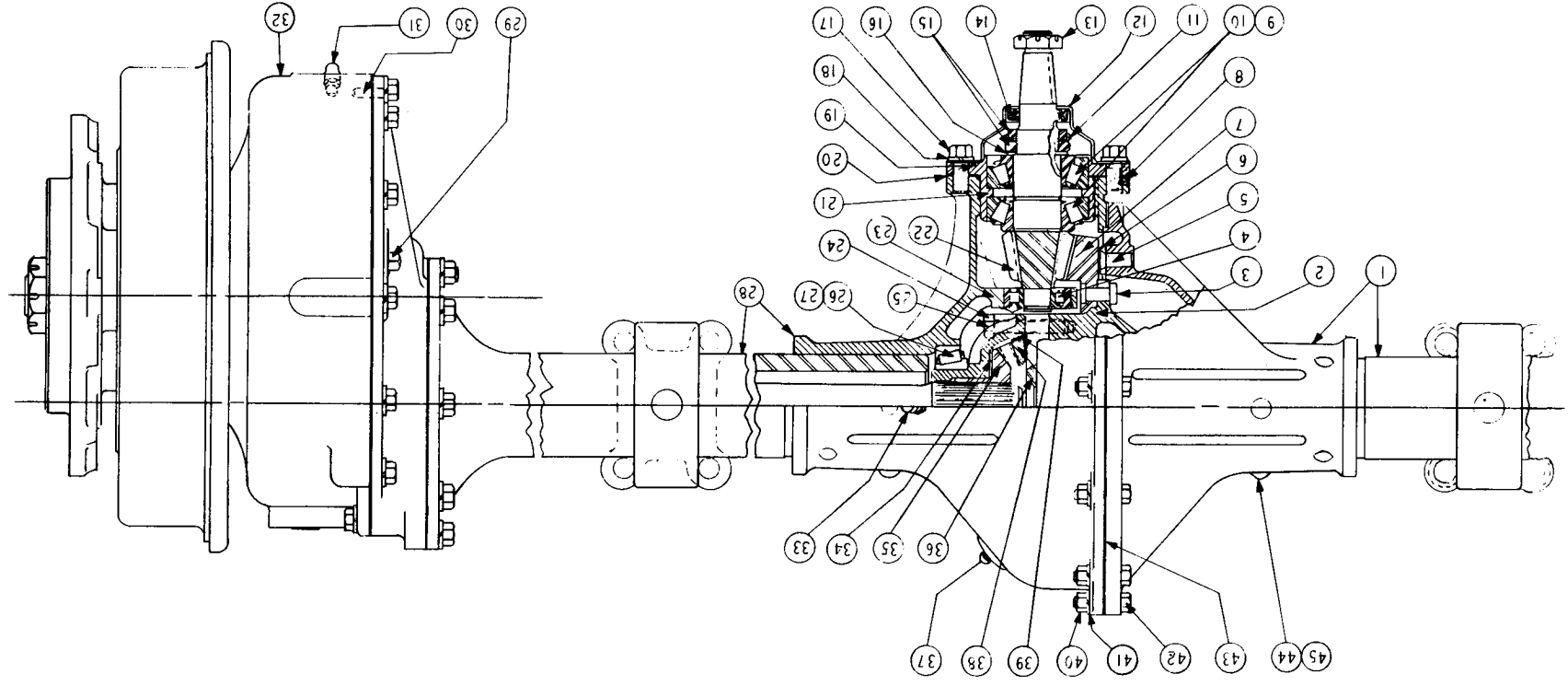


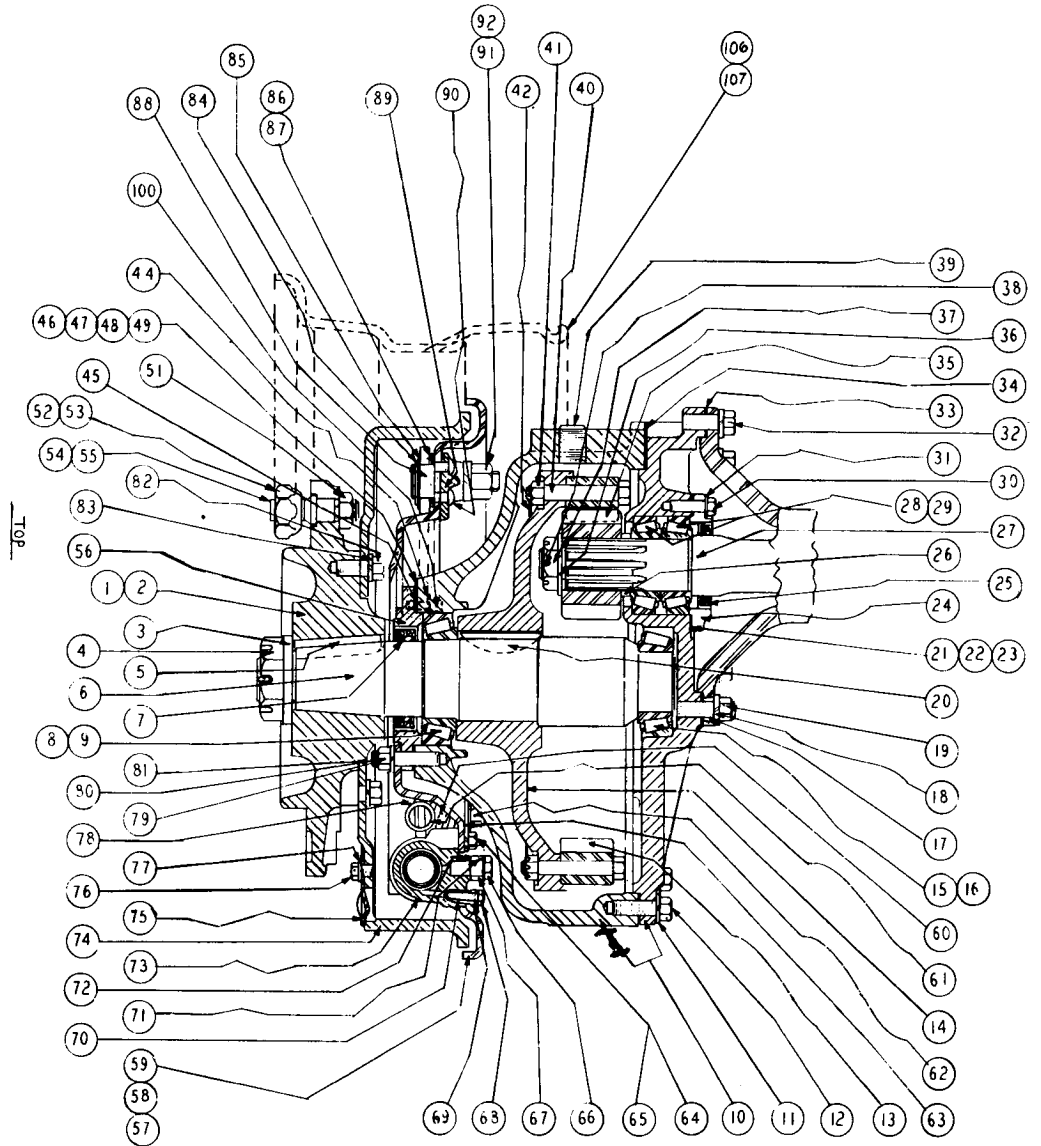
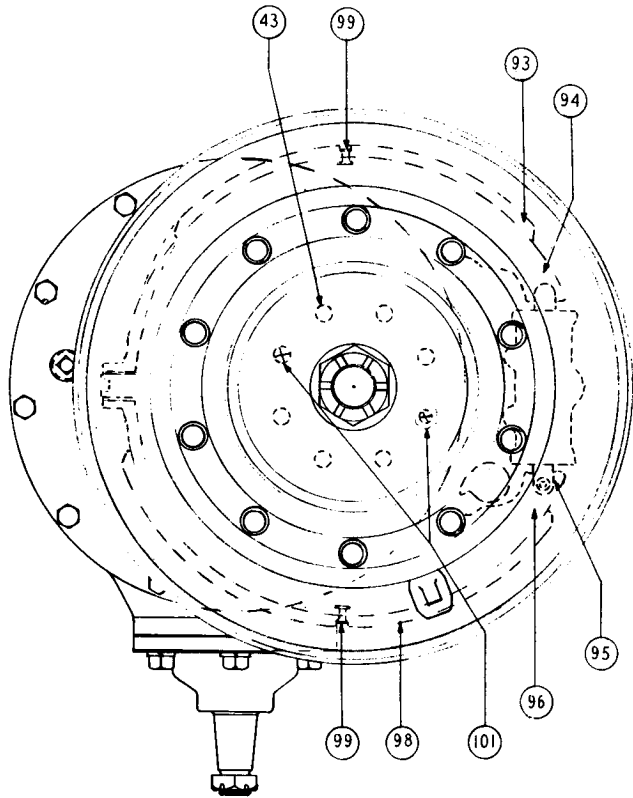
Fig. 15

DIFFERENTIAL CARRIER GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
	103642	Rear Axle Drive Complete			
1	104551	Housing Tube and Spring Seat Assembly, L. H.	1		
2	104552	Differential Case - Tongue Half	1		
3	104553	Rivet - Differential Case and Bevel Gear	12		
4	104554	Bearing - Pinion Gear	1		
5	104555	Pin - Bevel Gear Thrust Block	1		
6	104556	Thrust Block - Bevel Gear	1		
7	104557	Gear - Bevel Drive (36T)	1		
8	104558	Dowel - Bevel Pinion Cage	1		
9	104559	Cone - Bevel Pinion	2		
10	104560	Cup - Bevel Pinion	2		
11	104561	Lock - Bevel Pinion Bearing Nut	1		
12	104562	Cover - Pinion Bearing Cage	1		
13	104078	Nut - Drive Pinion Shaft	1		
14	104564	Oil Seal - Bevel Pinion Shaft	1		
15	104565	Nut - Bevel Pinion Bearing	2		
16	104566	Washer - Bevel Pinion Bearing	1		
17	104567	Capscrew - Pinion Cage	6		
18	104568	Lockwasher - Pinion Cage	6		
19	104569	Cork - Pinion Oil Seal Retainer	1		
20	104570	Shim - Bevel Pinion Cage	1		
21	104571	Cage - Pinion Bearing	1		
22	104572	Pinion - Bevel Drive (7T)	1		
23	104573	Lock - Bevel Pinion Rear Bearing	1		
24	104574	Capscrew - Differential Case	8		
25	104575	Lockwire - Differential Case Capscrew	1		
26	104576	Cone - Differential Bearing	2		
27	104577	Cup - Differential Bearing	2		
28	104578	Housing Tube and Seat Assembly - R. H.	1		
29	104579	Plug - Final Drive Drain and Filler	1		
30	104580	Dowel Pin - Gear Case	6		
31	104581	Breather - Final Drive Case	1		
32	104582	Case - See Final Drive Group	2		
33	104581	Breather - Differential Carrier - Alemite	1		
34	104583	Thrust Washer - Differential Gear	2		
35	104584	Side Gear -Differential	2		
36	104585	Spider - Differential	1		
37	104579	Plug - Differential Drain and Filler	1		
38	104586	Pinion - Differential	4		
39	104587	Thrust Washer - Differential Pinion	4		
40	104588	Nut - Carrier Flange Bolt	11		
41	104589	Lockwasher - Carrier Flange Bolt	11		
42	104590	Bolt - Carrier Flange	11		
43	104591	Gasket - Carrier Flange	1		
44	104592	Rivet - Housing Tube	16		
45	104593	Rivet - Housing Tube			
	104594	Cover - Differential Carrier			
	104595	Carrier - Differential			
	104596	Differential Case - Flange Half			

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

FIG. 16



FINAL DRIVE AND BRAKE GROUP

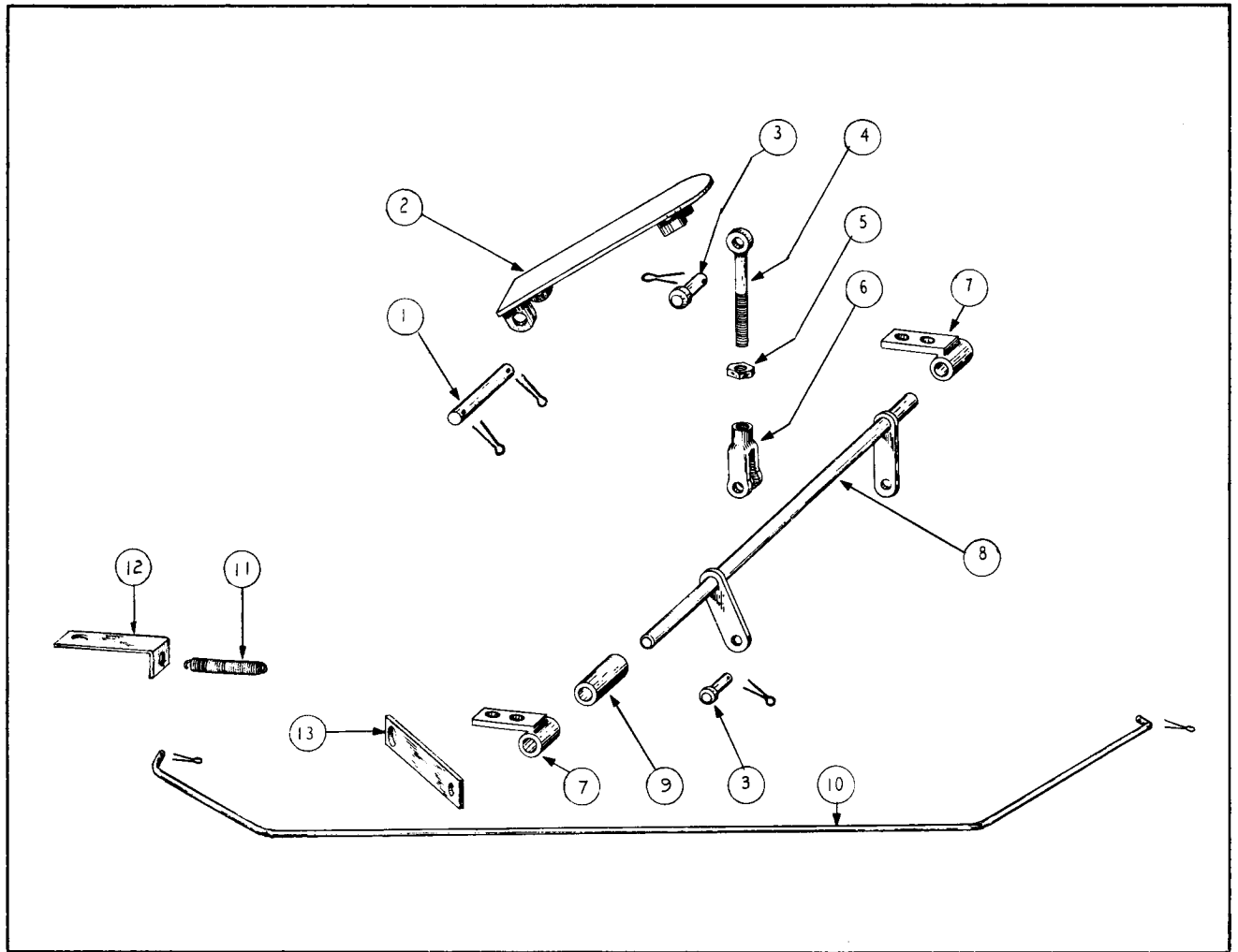
FINAL DRIVE AND BRAKE GROUP
(Rear Axle Drive 103642)

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	104597	Hub - Final Drive - R. H. (also Serial No. 80369)	1	80001	80366
1	107211	Hub - Final Drive - R. H. (except Serial No. 80369)	1	80367	up
2	104598	Hub - Final Drive - L. H. (also Serial No. 80369)	1	80001	80366
2	107212	Hub - Final Drive - L. H. (except Serial No. 80369)	1	80367	up
3	104599	Washer - Final Drive Shaft	2		
4	104600	Nut - Final Drive Shaft (also Serial No. 80369)	2	80001	80366
4	107214	Nut - Final Drive Shaft (except Serial No. 80369)	2	80367	up
5	104601	Key - Final Drive Hub.	2		
6	104602	Shaft - Final Drive (also Serial No. 80369)	2	80001	80366
6	107213	Shaft - Final Drive (except Serial No. 80369)	2	80367	up
7	104603	Oil Seal - Final Drive Shaft	2		
8	104604	Cone - Outer Bearing - Final Drive Shaft	2		
9	104605	Cup - Outer Bearing - Final Drive Shaft	2		
10	104582	Final Drive Gear Case and Cover Assembly	2		
11	104607	Lockwasher - Gear Case and Cover.			
12	104608	Capscrew - Gear Case and Cover			
13	104609	Gear - Drive Spur (44T)	2		
14	104610	Hub - Final Drive (also Serial No. 80369)	2	80001	80366
14	107215	Hub - Final Drive Gear (except Serial No. 80369)	2	80367	up
15	104611	Cone - Inner Bearing - Final Drive Shaft	2		
16	102149	Cup - Inner Bearing - Final Drive Shaft	2		
17	104613	Dowel - Drive Case to Housing	2		
18	104568	Lockwasher - Final Drive Case			
19	104614	Nut - Final Drive Case to Housing.	2		
20	104615	Key - Final Drive Gear Hub (also Serial No. 80369)	2	80001	80366
21	104616	Shim - Axle Drive	2		
22	104617	Shim - Shaft Bearing (.010)	4		
23	104618	Gasket - Axle Shaft Bearing Cover	2		
24	104619	Cover - Axle Drive Shaft Bearing	2		
25	104620	Oil Seal - Axle Drive Shaft.	2		
26	104621	Spacer - Axle Drive Shaft	2		
27	104622	Shaft - Axle Drive	2		
28	104623	Cone - Axle Drive Shaft Bearing.	4		
29	104624	Cup - Axle Drive Shaft Bearing.	4		
30	104625	Capscrew - Axle Drive Shaft Cover	10		
31	104626	Lockwasher - Axle Drive Shaft Cover	12		
32	104627	Capscrew - Final Drive Case to Axle Housing.	14		
33	104628	Gasket - Final Drive Case to Housing	2		
34	104629	Gasket - Final Drive Case and Cover.	2		
35	104630	Pinion - Final Drive Spur (13T)	2		
36	104631	Washer - Axle Drive Shaft	2		
37	104078	Nut - Axle Drive Shaft.	2		
38	104633	Cotter - Axle Drive Shaft Nut.	2		
39	104634	Plug - Final Drive Case Drain and Filler	2		
40	104635	Bolt - Final Drive Gear to Hub.	20		
41	104636	Nut - Final Drive Gear Bolt.	20		
42	104637	Lockwire - Final Drive Gear Bolt.	2		
43	104638	Bolt.	6		
44	104639	Guide Pin Washer - Thick } As required.	8		
45	104640	Guide Pin Washer - Thin }	8		
46	104641	Shim - Final Drive Shaft Bearing Cover	2		
47	104642	Shim - Final Drive Shaft Bearing Cover	2		
48	104643	Shim - Final Drive Shaft Bearing Cover	2		
49	104644	Gasket - Final Drive Shaft Cover	2		
50	104645	"C" Washer	4		
51	104646	Nut - Wheel Stud to Hub.	20		
52	104647	Nut - Wheel Stud - R. H.	10		
53	104648	Nut - Wheel Stud - L. H.	10		
54	104649	Stud - Wheel - R. H.	10		
55	104650	Stud - Wheel - L. H.	10		
56	104651	Cap - Final Drive Shaft Bearing	2		

Continued on next page

FINAL DRIVE AND BRAKE GROUP - Continued

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
57	104652	Brake Assembly - R. H.	1		
58	104653	Brake Assembly - L. H.	1		
59	104654	Brake Dust Shield Assembly - R. H. and L. H.	2		
60	104655	Spring - Brake Shield Assembly	2		
61	104656	Return Spring - Brake Assembly - R. H. and L. H.	2		
62	104657	Adjusting Cam Bolt Assembly.	2		
63	104658	Washer - Brake Shoe Adjusting Cam	1		
64	104659	Capscrew	2		
65	104626	Lockwasher.	2		
66	104660	Bolt - Inlet Connection - Wagner F. C. 673.	1		
67	104661	Inlet Connection - Wheel Cylinder - Wagner F. C. 3353.	1		
68	104662	Capscrew - Bleeder	1		
69	104663	Lockwasher - Bleeder.	1		
70	104664	Bleeder Screw - Brake Cylinder - Wagner F. D. 372	1		
71	HA-884	Gasket - Inlet Connection - Wagner F. C. 602	1		
72	HA-883	Gasket - Inlet Connection - Wagner F. C. 603	1		
73	104667	Wheel Cylinder Assembly (includes Items 66 thru 72 and 102 and up)	2		
74	104668	Drum - Axle Brake.	2		
75	104669	Cover - Brake Inspection	2		
76	104670	Capscrew - Brake Inspection Cover.	2		
77	104626	Lockwasher - Inspection Cover.	2		
78	104672	Guide Pin - Long	2		
79	104638	Stud - Final Drive Shaft Cover	6		
80	104607	Lockwasher - Stud	4		
81	104674	Nut - Drive Shaft Cover Stud	12		
82	104675	Capscrew - Brake Drum to Hub	18		
83	104607	Lockwasher - Brake Drum.	18		
84	104677	"C" Washer - Anchor Pin.	2		
85	104678	Washer - Anchor	2		
86	104679	Retainer - Anchor	2		
87	104680	Felt - Anchor	2		
88	104681	Anchor Pin	2		
89		Shoe Anchor Bracket (not sold separately)	1		
90	104683	Rivet - 5/16 x 13/16 Rd. hd. - Brake Shield	4		
91	104684	Lockwasher - Anchor Pin	2		
92	104685	Nut - Anchor Pin	2		
93	104686	Lining - Forward Brake Shoe.	2		
94	104687	Forward Brake Shoe Assembly (includes Items 93 and 99).	2		
95	104688	Brake Cylinder Link Assembly.	2		
96	104689	Reverse Brake Shoe Assembly (includes Items 98 and 99).	2		
97	104690	Adjusting Cam.	2		
98	104691	Lining - Reverse Brake Shoe	2		
99	104692	Rivets - Brake Shoe	30		
100	104693	Guide Pin - Short - Dust Shield.	2		
101	104694	Bolt.	2		
102	104695	Piston - Wheel Cylinder - Wagner F. C. 723 }	2		
103	104696	Cup - Wheel Cylinder - Wagner F. C. 725 }	2		
104	104697	Spring - Wheel Cylinder - Wagner F. C. 724 } Not shown	2		
105	104698	Boot - Wheel Cylinder - Wagner F. C. 726 }	2		
106	103197	Wheel.	2		
107		Lock Ring and Side Ring for 8.00 "T" Type RIT-H Rim	2		
NOTE: Tires and Tubes are not furnished on Replacement orders by The Frank G. Hough Co. - buy locally.					
		Tires - 13:00 x 24 - 8-ply Ground Grip Road Builder (See Note)	2		
		Tubes - 13:00 x 24 (See Note)	2		

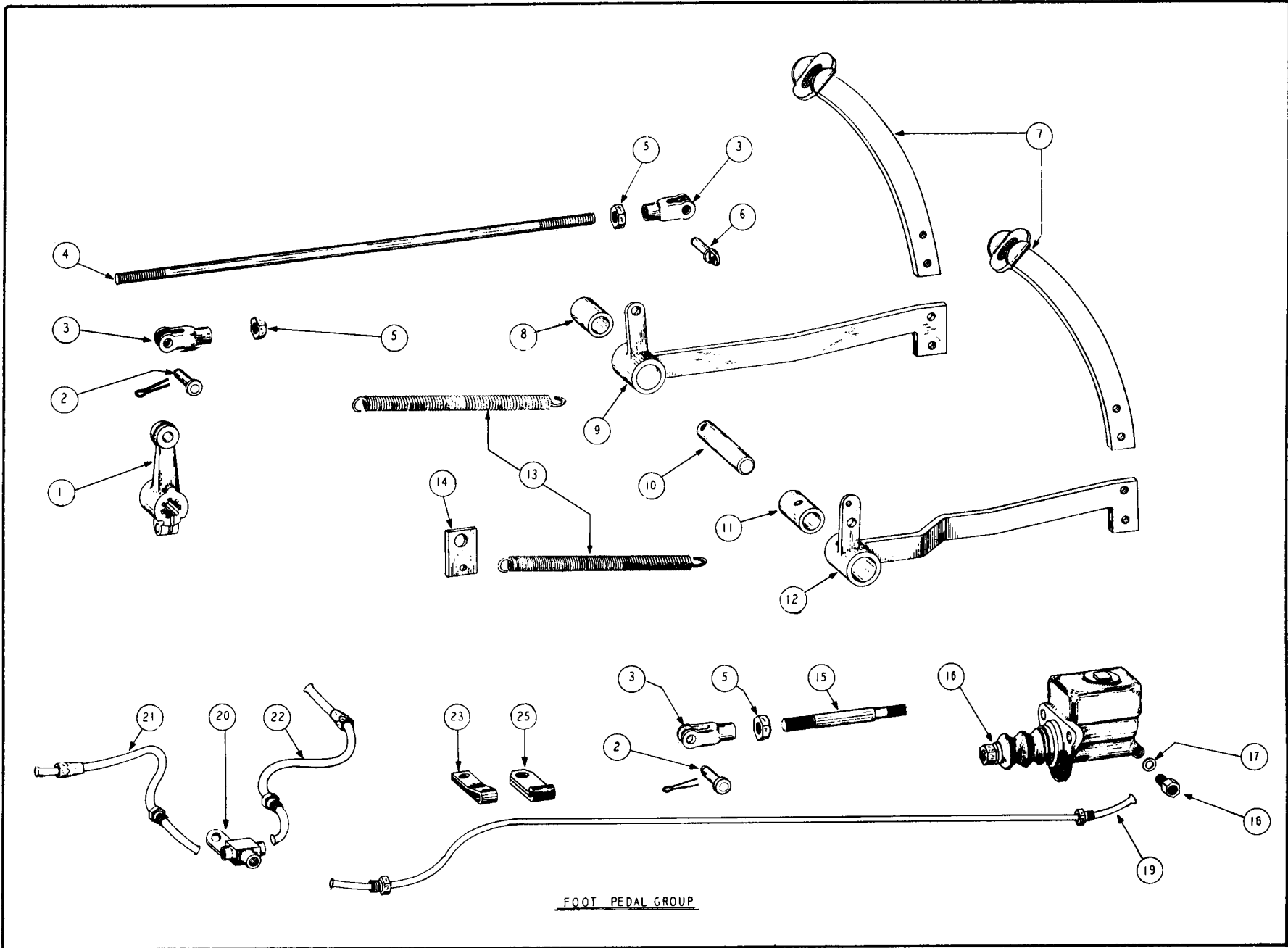


**Fig. 17
FOOT ACCELERATOR GROUP**

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	HL-1234	Pin - Accelerator Pedal Pivot	1		
		Cotter Pin - 3/32" Dia. x 1" lg.	2		
2	HL-1235	Foot Pedal	1		
3	HL-1264	Pin Assembly - 5/16" Clevis	2		
4	104473	Rod End	1		
5		Jam Nut - 5/16"	1		
6	HL-1263	Clevis - 5/16"	1		
7	HA-800	Pivot Bearing	2		
8	103848	Cross Rod.	1		
9	103850	Spacer	1		
10	103879	Accelerator Rod.	1		
		Cotter Pin - 1/16" x 3/4" lg.	2		
11	106475	Spring - Accelerator Return.	1		
12	104225	Clip - Return Spring.	1		
13	104923	Clip - Accelerator Rod Support.	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 18

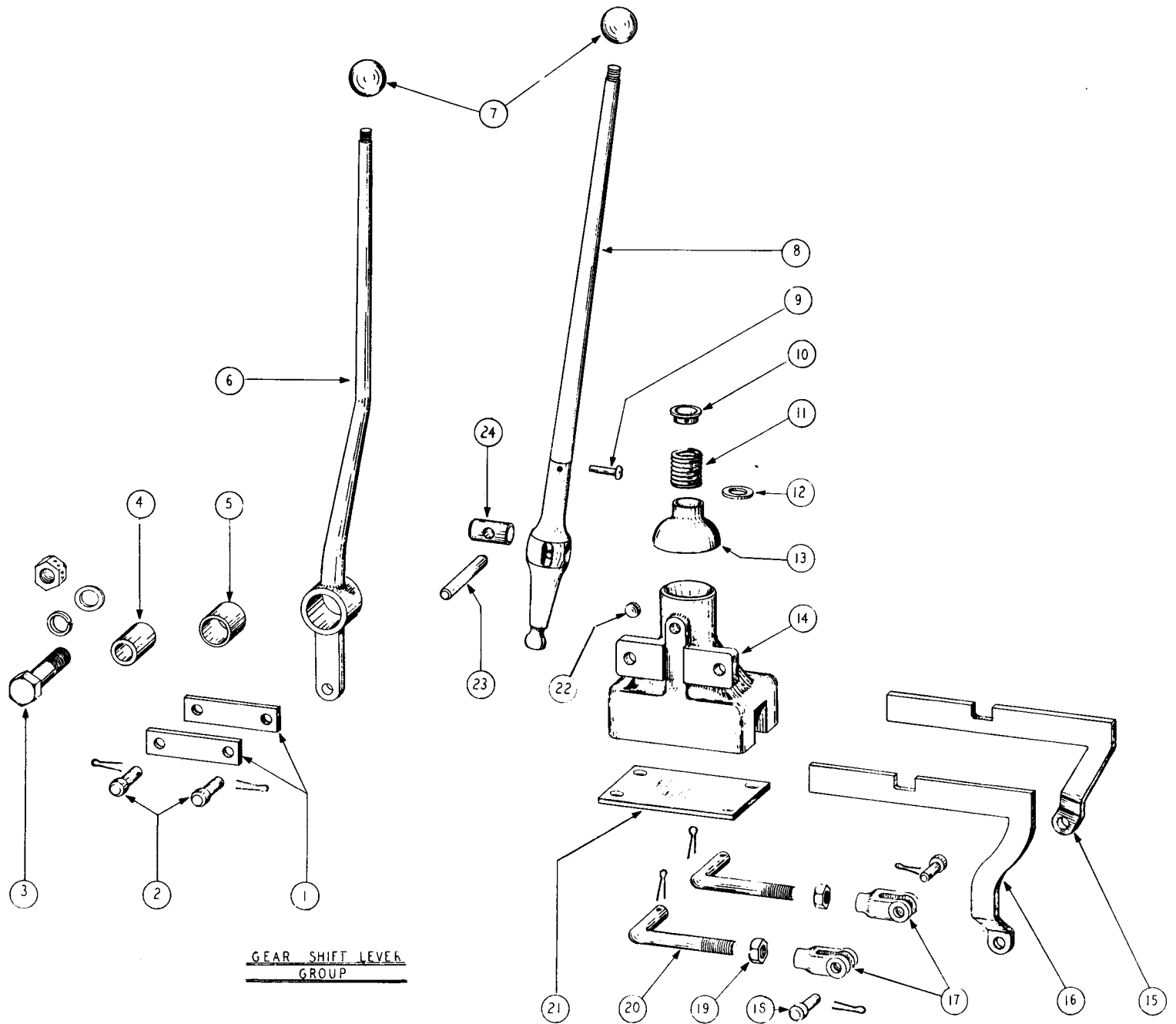


FOOT PEDAL GROUP

ITEM NO.	PART NO.	Qty.	PART NAME
1	103828	1	Lever - Clutch Shaft.
2	GH-212	2	Pin - 1/2" - Clevis.
3	GH-211	3	Clevis - 1/2".
4	103530	1	Operating Rod - Clutch.
5		3	Jam Nut - (Clevis) 1/2" - 20 NF Hex.
6	103905	1	Spring Retainer Pin.
7	103902	2	Foot Pedal Bar.
8	103847	1	Bushing - Clutch Pedal.
9	103384	1	Clutch Pedal.
10	103904	2	Pivot Pin - Clutch and Brake Pedal.
11	103903	1	Bushing - Brake Pedal.
12	103515	1	Brake Pedal.
13	104541	2	Return Spring - Brake and Clutch.
14	103882	1	Spring Clip - Brake.
15	102935	1	Rod - Master Brake Cylinder.
16	102884	1	Master Brake Cylinder.
17	HL-3753	2	Gasket - Master Cylinder.
18	HL-3553	1	Adapter - Master Cylinder.
19	104387	1	Tube - Brake Fluid Line to Master Cylinder.
20	HL-3543	1	Tee - Brake Fluid Line.
21	104383	1	Tube - R. H. - Wheel to Tee.
22	104385	1	Tube - L. H. - Wheel to Tee.
23	HL-3550	5	Clamp - Tube Lines.
	HL-3552	1	Plug - Master Cylinder (not shown).
25	105907	2	Clip - Brake Line.

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 19

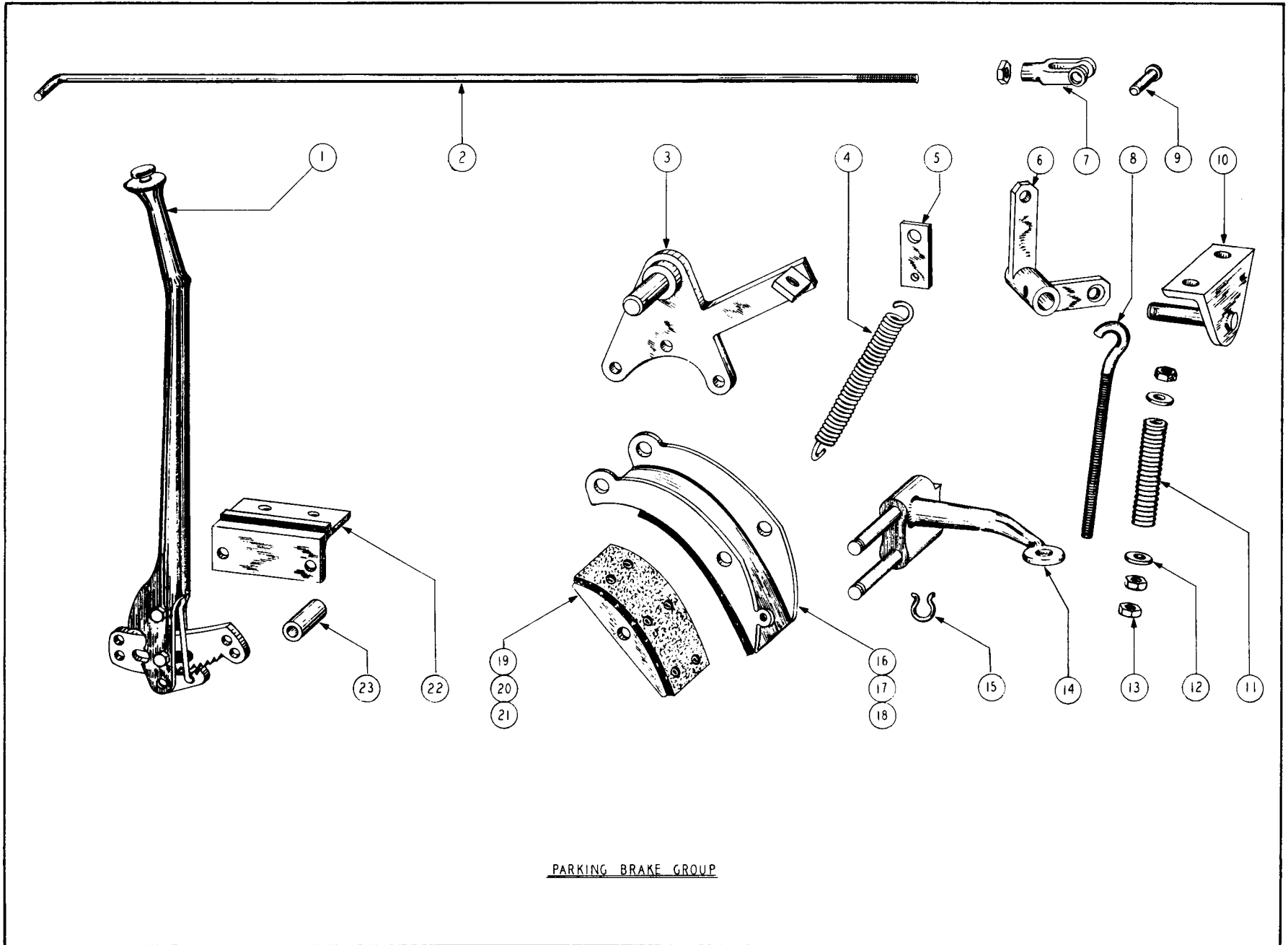


GEAR SHIFT LEVER GROUP

ITEM NO.	PART NO.	Qty.	PART NAME
1	103863	2	Link - Lever to Transmission.
2	GH-212	2	Pin - 1/2" - Link.
3		1	Bolt - Lever Pivot - 5/8" - NF x 3" lg. w/NUT, L.W. and F. W.
4	101572	1	Sleeve - Lever Pivot.
5	102092	1	Bushing - Lever.
6	103862	1	Lever - Directional
7	HL-3343	2	Ball - Levers.
8	103918	1	Lever - Speed Range.
9		1	Pin - Spring Stop to Lever (or 3/16 x 1-1/2" cotter.).
10	103924	1	Spring Stop - Upper.
11	103923	1	Spring.
12	103926	1	Spring Stop - Lower.
13	103925	1	Housing Shield - With Bushing.
14	103912	1	Housing.
15	103932	1	Shifter Rail - 3rd and 4th.
16	103929	1	Shifter Rail - 1st and 2nd.
17	GH-211	2	Clevis - 1/2".
18	GH-212	2	Pin - 1/2" - Clevis.
19		2	Jam Nut - Clevis - 1/2" - 20 NF thd.
20	104542	2	Link - Shifter Rails.
21	103927	1	Plate - Housing.
22	103928	2	Seal Plug.
23	103921	1	Swivel Shaft - Small.
24	103922	1	Swivel Shaft - Large.

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 20



PARKING BRAKE GROUP

PARKING BRAKE GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	HL-3393	Hand Brake Lever	1		
2	107104	Brake Rod.	1		
3	107847	Support - Brake Shoe	1		
4	HS-402	Spring - Brake Shoe	1		
5	103882	Spring Clip - to Clutch Housing.	1		
6	107098	Bell Crank	1		
7	HL-3485	Clevis - Brake Rod.	1		
8	107112	Adjusting Rod	1		
9	HL-3486	Pin Assembly - Clevis	1		
10	107095	Support - Bell Crank.	1		
11	107842	Spring - Adjusting Rod	1		
12	107841	Washer - Adjusting Rod.	3		
13	107840	Nut - Adjusting Rod	3		
14	107102	Lever Assembly.	1		
15	107886	Snap Ring - Lever Pin.	2		
16	107111	Brake Shoe Assembly - Outside	1		
17	107916	Lining - Outside Shoe	1		
18	107917	Brake - Outside Shoe	6		
19	107843	Brake Shoe Assembly - Inside	1		
20	107918	Lining - Inside Shoe	1		
21	107919	Rivet - Inside Shoe	6		
22	107116	Support - Hand Brake	1		
23	107106	Spacer - Hand Brake to Support.	2		
	102605	Washer - Bell Crank (not shown).	1		
		Grease Fitting - Bell Crank (Alemite 1/8 x 85°)	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

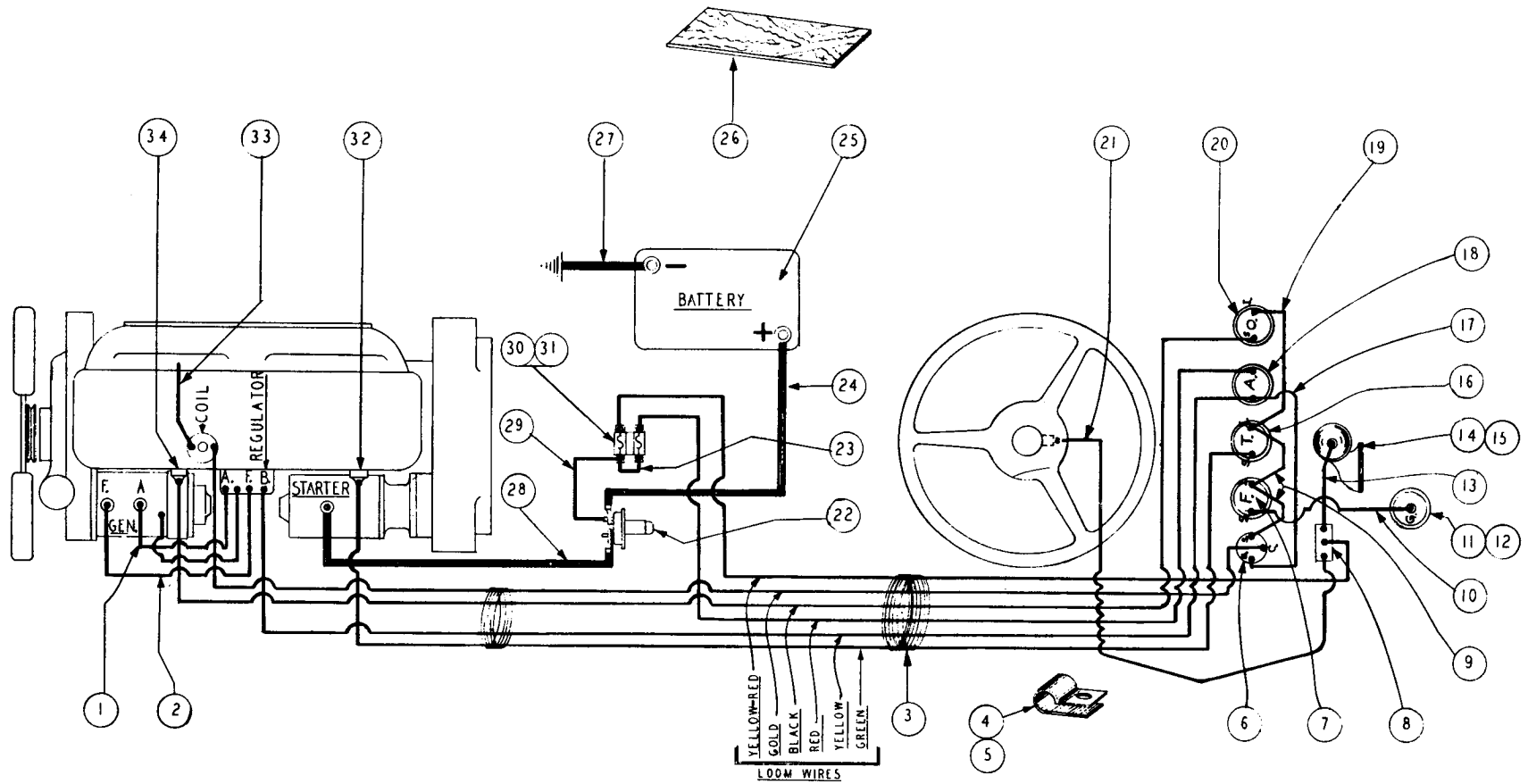
WIRING DIAGRAM

This Group Applies To Payloaders of Serial Numbers 80001 thru 80461

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	105873	Ignition Switch with Keys	1		
1	HA-651	Ignition Switch (obsolete - order 105873)	1		
2	HA-1343	Oil Gage - Dash	1		
3	HA-3151	Ammeter	1		
4	104460	Temperature Gage - Dash	1		
5	HA-1344	Oil Gage - Engine.	1		
6	104459	Temperature Gage - Engine.	1		
7	HS-407	Horn	1		
8	HS-617	Horn Bracket.	1		
9	HS-451	Horn Relay	1		
10		Battery - X173 Exide - 6 volt } Buy locally	1	80001 80101	80100 up
10		Battery - XQ17 Exide - 6 volt }	1		
11		Starter Switch (see Eng. Manual).	1		
12	101452	Fuse Block - 3 AG Ntg.	1		
13	101986	Fuse - 20 Amp.	2		
14	HS-233	Cable - Battery Ground.	1		
15	103813	Cable - Battery to Starter Switch	1		
16	103814	Cable - Starter Switch to Starter.	1		
17	HA-1359	Wire - Fuse Block to Switch.	1		
18	101985	Wire - Fuse to Fuse	1		
19	103812	Wire - Horn Relay to Steering Post.	1		
20	101982	Wire - Horn Relay to Horn.	1		
21	101980	Wire - Ignition Switch to Ammeter	1		
22	101981	Wire - Ignition Switch to Oil Gage	1		
23	101980	Wire - Oil Gage to Temperature Gage	1		
24	103816	Wire - Generator to Volt Regulator (Arm.)	1		
25	103815	Wire - Generator to Volt Regulator (Field).	1		
26	103817	Wire - Coil to Distributor	1		
27	103809	Wiring Loom.	1		
28	HA-1351	Clamp - Wiring Loom (9/16" Dia.)	1		
29	103648	Insulating Strip - Battery.	1		
30	102818	Clamp - Wiring Loom (5/8" Dia.)	1		
	104465	Clamp - Dash Temperature Gage (not shown)	1		
	104466	Nut - #10-Dash Temperature Gage (not shown)	2		
	104467	Nut - #8-Dash Temperature Gage (not shown)	2		
	104468	Lockwasher - #10-Temperature Gage (not shown)	1		
	104469	Lockwasher - #8-Temperature Gage (not shown)	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 22



WIRING DIAGRAM
 FOR HF PAYLOADERS OF SERIAL
 NUMBERS 80462 & UP

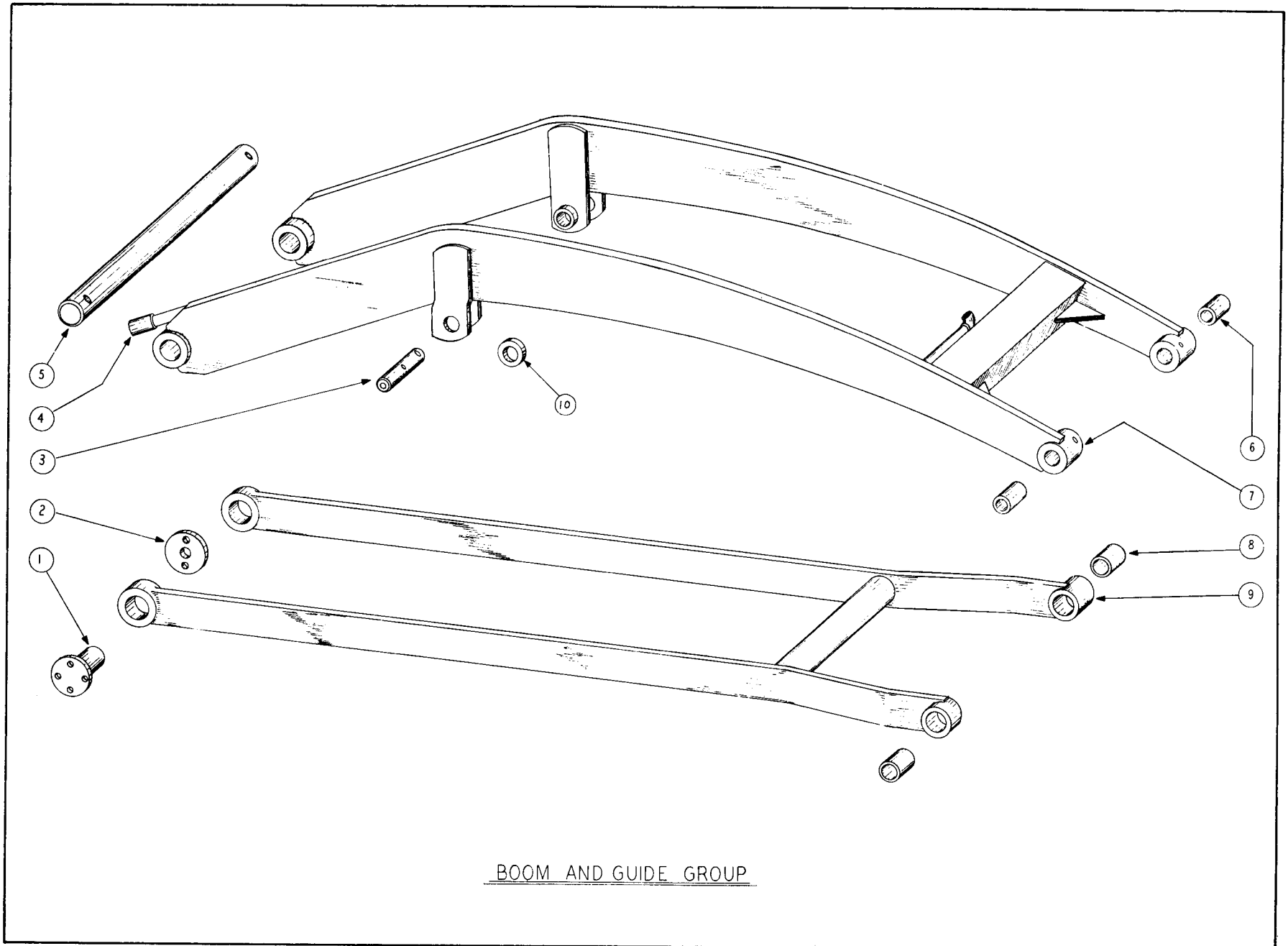
WIRING DIAGRAM

This Group applies to Payloader of Serial Numbers 80462 & up

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103816	Wire - Generator Arm to Regulator	1		
2	103815	Wire - Generator Field to Regulator	1		
3	103809	Wire Loom	1		
4	HA-1351	Clamp - Wiring Loom	2		
5	102818	Clamp - Wiring Loom	1		
6	105873	Ignition Switch with Keys - Dash	1		
7	107628	Fuel Gage - Dash	1	80762	up
8	HS-451	Horn Relay	1		
9	101981	Wire - Switch to Gage - Gage to Gage	2		
10	103812	Wire - Fuel Gage to Fuel Tank Unit	1		
11	107627	Tank Gage - Fuel	1	80762	up
12	107755	Gasket - Tank Gage	1	80762	up
13	101982	Wire - Horn Relay to Horn	1		
14	HS-407	Horn	1		
15	HS-617	Horn Bracket	1		
16	104460	Temperature Gage - Dash	1		
17	101980	Wire - Switch to Ammeter	1		
18	HL-3151	Ammeter	1		
19	101980	Wire - Temperature Gage to Oil Gage	1		
20	HA-1343	Oil Gage - Dash	1		
21	103812	Wire - Steering Post to Horn Relay	1		
22		Starter Switch (See Engine Manual)	1		
23	101985	Wire - Fuse to Fuse	1		
24	103813	Cable - Battery to Switch	1		
25		Battery (Exide XQ17 - 6 volt - buy locally)	1		
26	103648	Insulator Strip - Battery	1		
27	HS-233	Cable - Ground Strap	1		
28	103814	Cable - Switch to Starter	1		
29	HA-1359	Wire - Starter Switch to Fuse	1		
30	101452	Fuse Block	1		
31	101986	Fuse	2		
32	104459	Temperature Gage - Engine	1		
33	103817	Wire - Coil to Distributor	1		
34	HA-1344	Oil Gage - Engine	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 23

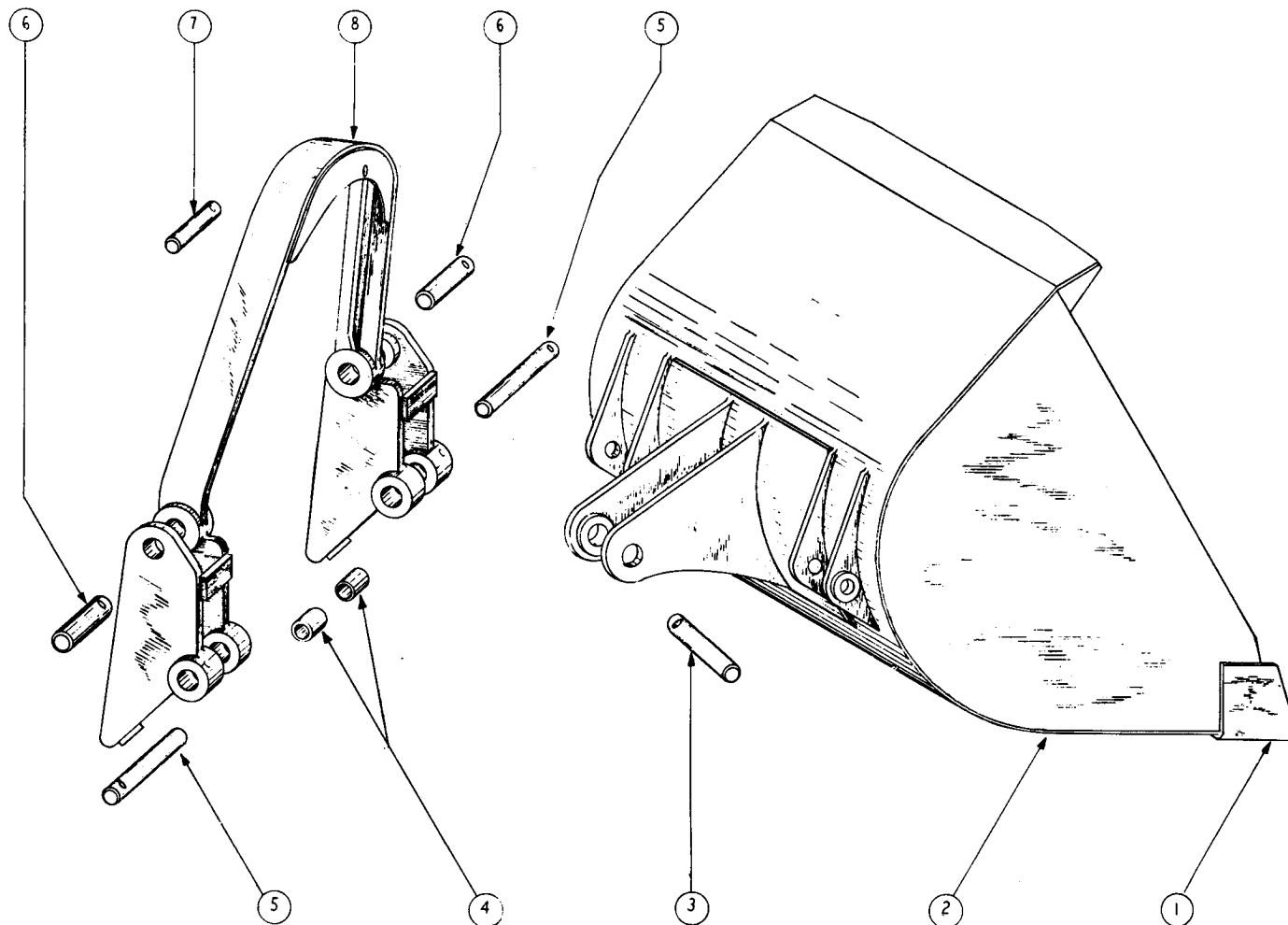


BOOM AND GUIDE GROUP

BOOM AND GUIDE GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	102361	Pin - Guide Pivot	2		
2	101465	Retainer - Guide Pin	2		
3	101397	Pin - Hoist Pivot	2		
4	105558	Pipe - Boom Oil Line (Standard HF only)	1		
4	105740	Pipe - Boom Oil Line (HFH High Lift only)	1		
5	103155	Pivot Shaft - Boom	1		
6	101160	Bushing - Boom and Guide	4		
7	103151	Boom Complete (Standard HF only)	1		
7	104796	Boom Complete (Model HFH High Lift only)	1		
8	101739	Bushing - Guide	2		
9	103237	Guide Bar (Standard Model HF only)	1		
9	104797	Guide Bar (Model HFH High Lift only)	1		
10	102358	Spacer - Hoists to Boom	2		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



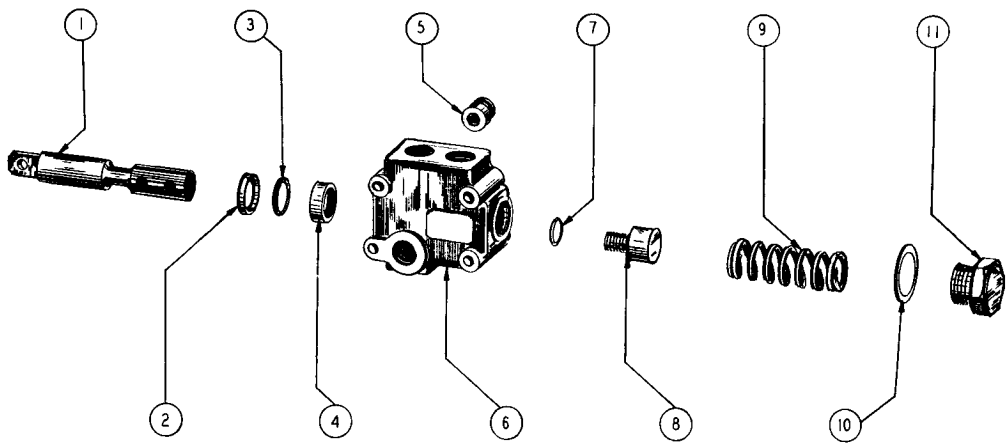
BUCKET AND CARRIER GROUP

Fig. 24

BUCKET AND CARRIER GROUP

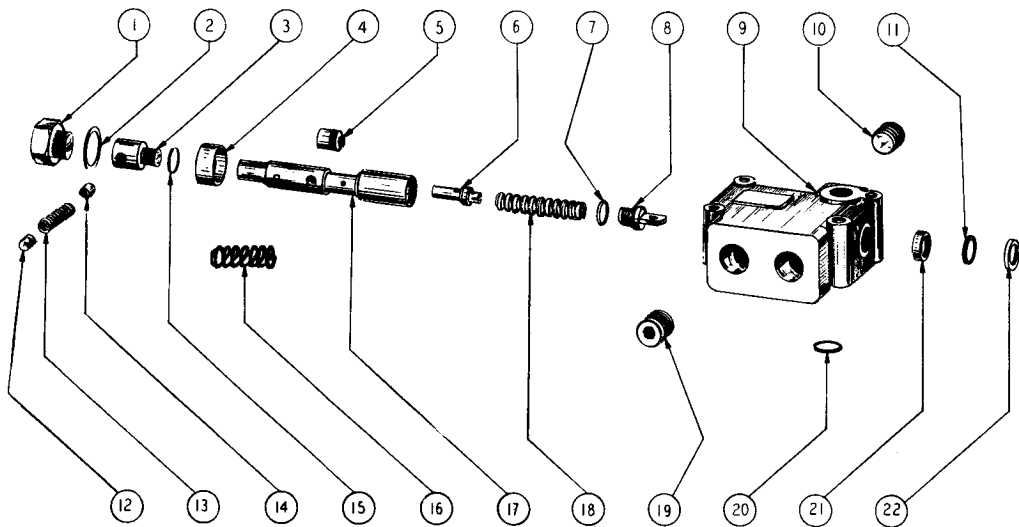
ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103789	Cutting Edge - 60" Bucket (see Extra Equipment)	1		
2	104031	Bucket - 60" (see Extra Equipment Group for other size Buckets)			
3	103613	Pin - Bucket Hoist Cylinder to Bucket	1		
4	103752	Bushing	4		
5	101391	Hinge Pin - Carrier to Bucket	2		
6	103658	Pin - Boom to Carrier	2		
7	103713	Pin - Hoist Cylinder to Carrier	2		
8	103702	Carrier Complete (Standard HF only)	1		
8	107971	Carrier Complete (HFH High Lift only)	1		
	108157	Bolt - 3/8" N.F. x 3 lg. heat treated.- Hinge Pin Lock. .	2		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



BUCKET VALVE

Fig. 25



BOOM VALVE

Fig. 26

BUCKET VALVE GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	Description
	103755	Valve Complete	1	C-12-V6-S
1	104531	Plunger Assembly	1	512X111
2	HA-1218	Seal	1	X54-24
3		Seal Ring . . . . .	.....	512X9
4	107041	Seal Assembly . . . . .	.....	X54-21
5	HA-1220	Pipe Plug	2	X24A-6
6		Housing (not sold separately)	1	B525X114
7	HA-1227	Seal Ring - Plunger	1	Z27-4
8	104533	Cap - Plunger		514X200
9	104534	Spring	1	Z10-225
10	HA-1216	Gasket	1	Z1-26
11	HA-1215	Cap	1	514X106

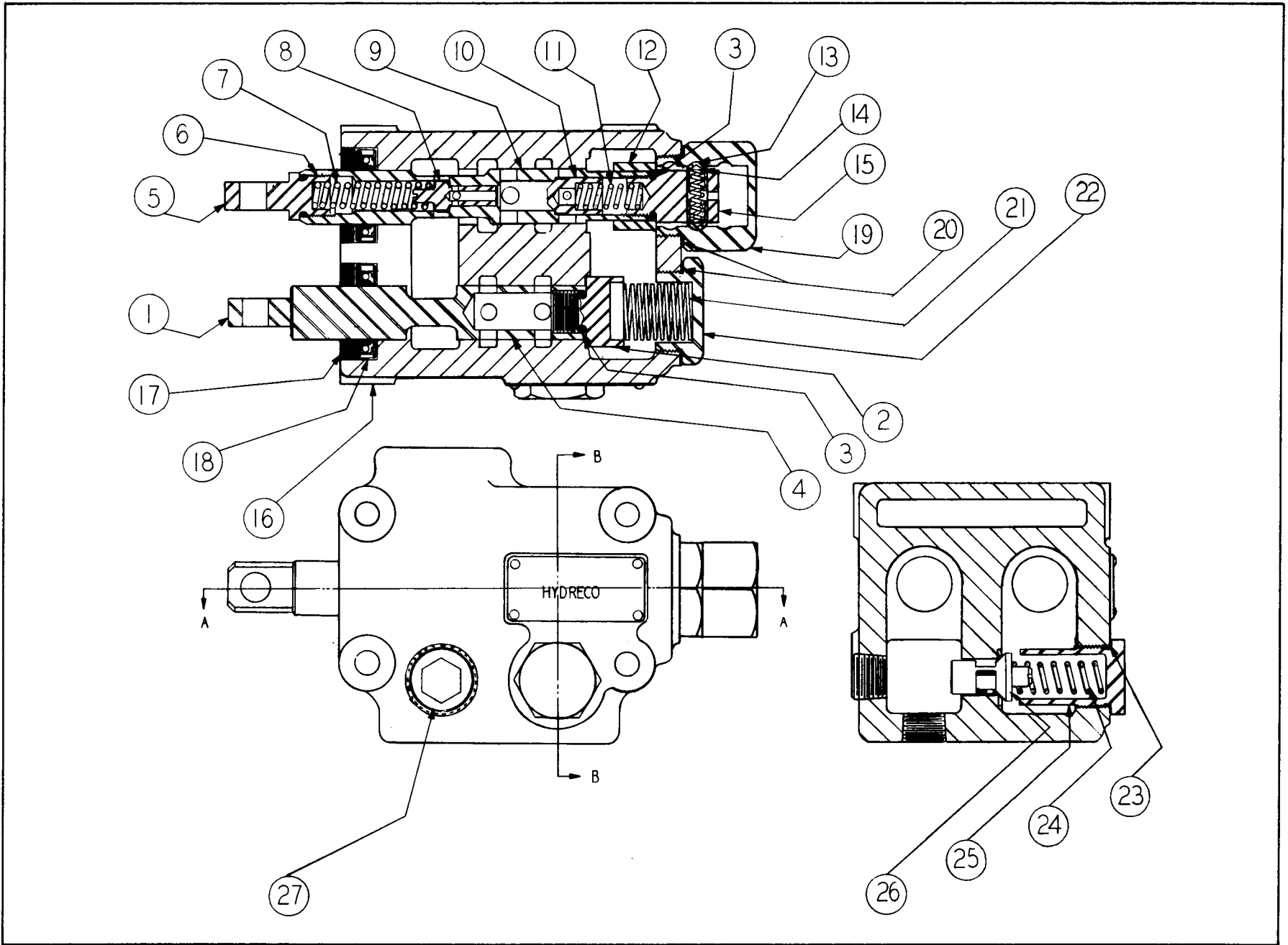
NOTE: These Valves used on Payloaders Serial Numbers 80001 thru 80262 - see following pages for other valves.

BOOM VALVE GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	Description
	103974	Valve Complete	1	C-11-V6-S
1	103034	Cap	1	514X157
2	HA-1216	Gasket	1	Z1-26
3	103035	Detent Valve Cap - Plunger	1	514X158
4	103037	Plunger Spacer - Plunger . . . . .	.....	830X92
5	HA-1228	Check Valve Plunger - Plunger	1	513X14A
6	103039	Relief Valve Plunger - Plunger . . . . .	.....	415X31A
7	HA-1227	Seal Ring - Plunger	1	Z27-4
8	103040	Plunger Eye - Plunger	1	516X34
9		Housing (not sold separately)	1	B525X169
10	HA-1220	Pipe Plug	1	X24A-6
11		Felt Seal	1	
12	102064	Detent Plunger Poppet	1	747X6
13	103036	Detent Spring - Plunger	1	Z10-208
14	102064	Detent Plunger Poppet - Plunger	1	747X6
15	HA-1227	Seal Ring	1	Z27-4
16	102460	Check Valve Spring - Plunger . . . . .	.....	Z10-140
17	103038	Plunger - Operating	1	512X95
18	HA-1226	Relief Valve Spring - Plunger . . . . .	.....	Z10-187
19	HA-1220	Pipe Plug	1	X24A-6
20	104331	Seal Ring	1	Z27-53
21	107041	Seal	1	X54-21
22	HA-1218	Seal Assembly	1	X54-24
		NOTE: These Valves used on Serial Number 80001 thru 80262 - see following pages for other valves.		
		NOTE: Plunger cores are individually honed to fit Plungers. Field Replacement of Plungers and housing not recommended by manufacturer.		

Always be sure to give the Payloader Serial Number with the Part Number, and Name of Items needed when ordering Repair Parts.

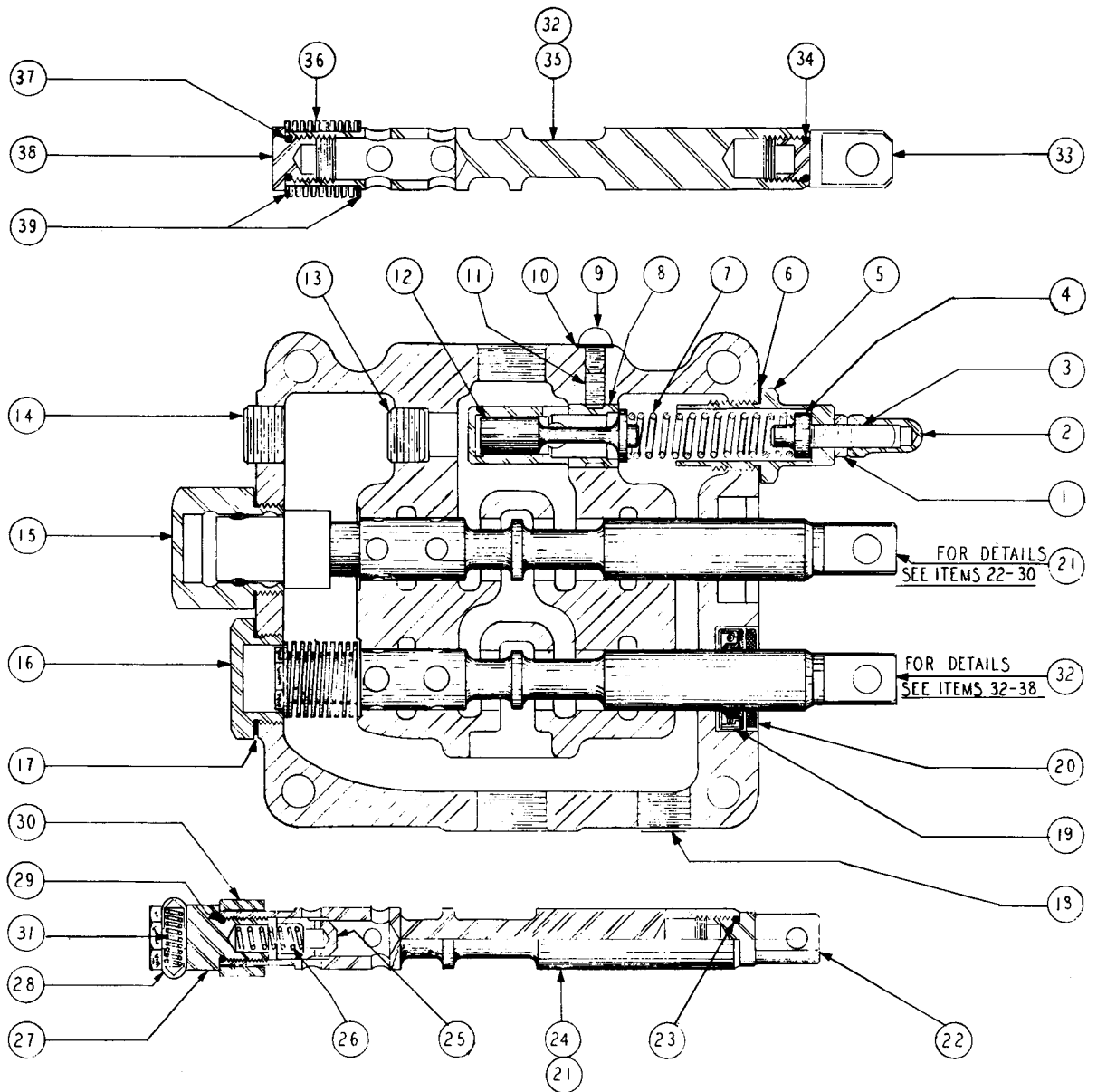
Fig. 27



VALVE GROUP

This Group Applies To Payloaders of Serial Numbers 80263 thru 80661

ITEM NO.	PART NO.	PART NAME	Qty.	Description
	104810	Valve Assembly Complete (Serial Numbers 80263 thru 80661)	1	C13-V6-2S
1	107037	Plunger Assembly (includes Items 2-4)	1	512X111K
2	104533	Cap	1	514X200
3	107033	Seal Ring	3	A466X3
4	104531	Plunger	1	512X111
5	107031	Plunger Assembly (includes Items 3 and 6-15).	1	512X88K7
6	107032	Plunger Eye	1	516X48
7	107036	Relief Valve Spring.	1	A572X9
8	103039	Relief Valve Plunger.	1	415X31A
9	103038	Operating Plunger	1	512X95
10	HA-1228	Check Valve Plunger.	1	513X14A
11	107035	Check Valve Spring.	1	A501X60
12	103037	Plunger Spacer	1	830X92
13	107034	Detent Poppet	1	A501X7
14	102064	Detent Spring.	2	747X6
15	103035	Detent Valve Cap	1	514X158
16		Housing - (not supplied separately)	1	
17	107042	Seal Assembly	2	A494X2
18	107041	Seal	2	A362X29
19	103034	Cap	1	514X157
20	106803	Gasket	2	A401X46
21	107043	Spring	1	A502X44
22	HA-1215	Cap	1	514X106
23	106725	Gasket	1	A402X12
24	106846	Spring	1	A501X82
25	107040	Cap	1	514X216
26	107039	Check Plunger	1	415X40
27	107083	Pipe Plug	1	A300X6
<p>NOTE: Plungers have been individually fitted into the housings at the factory. The manufacturer does not recommend replacing plungers or housings in the field.</p>				



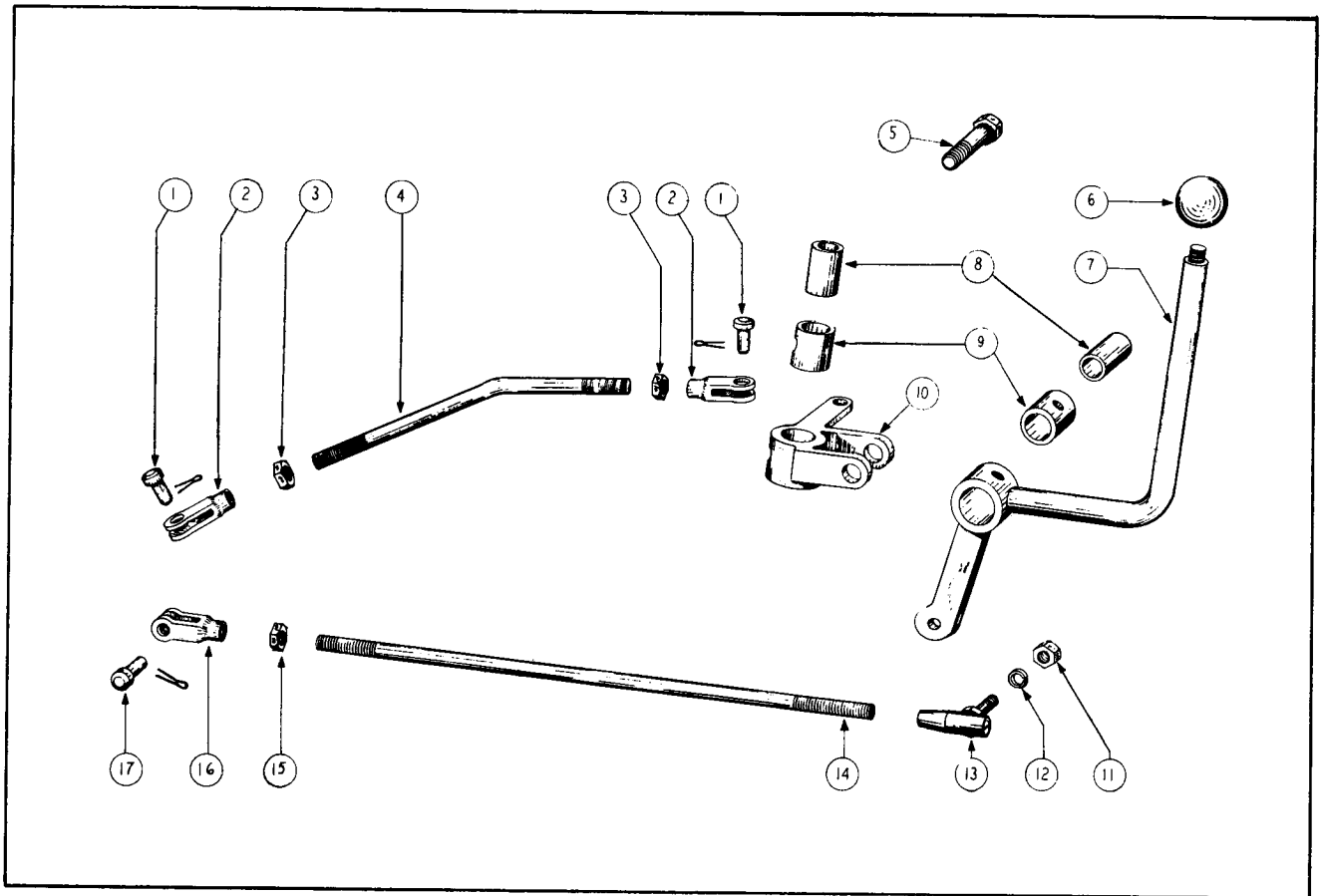
= VALVE GROUP =
 THIS GROUP APPLIES TO HF PAYLOADERS OF SERIAL NOS. 80662 & UP.

Fig. 28

VALVE GROUP

This Group applies to HF Payloaders of Serial Numbers 80662 and up

ITEM NO.	PART NO.	PART NAME	Qty.	Description
	106926	Valve Complete	1	V4SS4-C
1	106716	Jam Nut	1	A249X3
2	106726	Acorn Nut	1	A427X5
3	106807	Adjusting Screw	1	A232X11
4	107906	Spring Guide	1	416X47
5	107908	Adjusting Cap	1	514X230
6	107910	Gasket	1	A401X36
7	107911	Spring	1	A501X190
8	107904	Relief Valve Seat	1	414X45
9	106838	Machine Screw	1	A152X1
10	106837	Gasket	1	A401X4
11	106836	Set Screw	1	A181X3
12	107905	Relief Valve Plunger	1	415X47
13	106822	Pipe Plug	1	A300X4
14	106719	Pipe Plug	3	A300X5
15	103034	Detent Cap	1	514X157
16	HA-1215	Cap	1	514X106
17	106803	Gasket	2	A401X46
18	106822	Pipe Plug	2	A300X4
19	107041	Seal	1	A362X29
20	107042	Seal Assembly	2	A494X2
21	107902	Plunger Assembly (includes Items 22 thru 31)	1	512X93K3
22	107032	Plunger Eye	1	516X48
23	107033	Seal Ring	1	A466X3
24	107915	Plunger	1	512X93
25	HA-1228	Check Plunger	1	513X14A
26	107035	Spring	1	A501X60
27	103035	Detent Valve Cap	1	514X158
28	102064	Plunger Poppet	1	747X6
29	107033	Seal Ring	1	A466X3
30	103037	Plunger Spacer	1	830X92
31	107034	Poppet Spring	1	A501X7
32	107903	Plunger Assembly (includes Items 33 thru 39)	1	512X126K
33	107032	Plunger Eye	1	516X48
34	107033	Seal Ring	1	A466X3
35	107912	Plunger	1	512X126
36	107914	Spring	1	A502X29
37	107033	Seal Ring	1	A466X3
38	HA-1223	Cap	1	514X104
39	107913	Washer	2	A408X35
<p>NOTE: Plungers have been individually fitted into the housings at the factory. The manufacturer does not recommend replacing plungers or housings in the field.</p>				



**Fig. 29
VALVE CONTROL GROUP**

This Group Applies to HF Payloader of Serial Numbers 80000 thru 80661

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers			
				FROM	THRU		
1	GH-212	Pin - 1/2" Clevis	2	80000	80661		
2	GH-211	Clevis - 1/2"	2				
3		Jam Nut - 1/2" - 20 N.F. thd.	3				
4	103877	Rod - Swivel to Hoist Valve	1				
5		Bolt - 5/8" - 18 N.F. thd. x 3" lg. - Swivel and Lever . .	2				
6	HL-3343	Ball - Hand Lever	1				
7	103874	Hand Lever	1				
8	101572	Pivot Sleeve - Swivel and Lever	2				
9	102092	Bushing - Swivel and Lever	2				
10	103875	Swivel	1				
11		Nut - Ball Joint - 1/2" - 20 thd.	1				
12		Lockwasher - 1/2"	1				
13	X-134	Ball Joint	1				
14	103878	Rod - Lever to Boom Valve	1			80001	80262 up
14	104936	Rod - Lever to Boom Valve	1			80263	
15		Jam Nut	1				
16	HL-3485	Clevis - 3/8" - to Boom Valve	1				
17	HL-3486	Pin and Cotter Assembly - 3/8"	1				

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

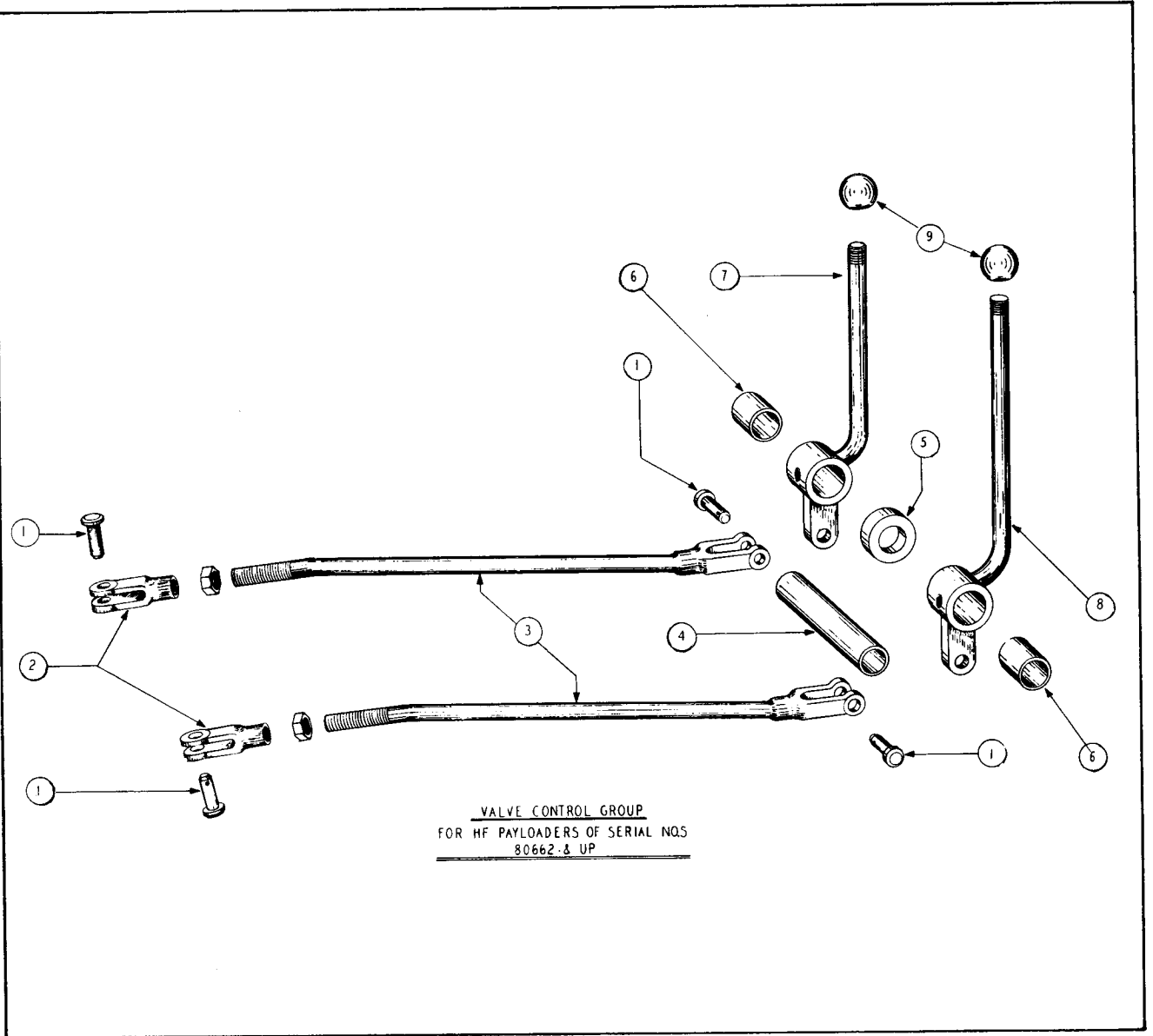


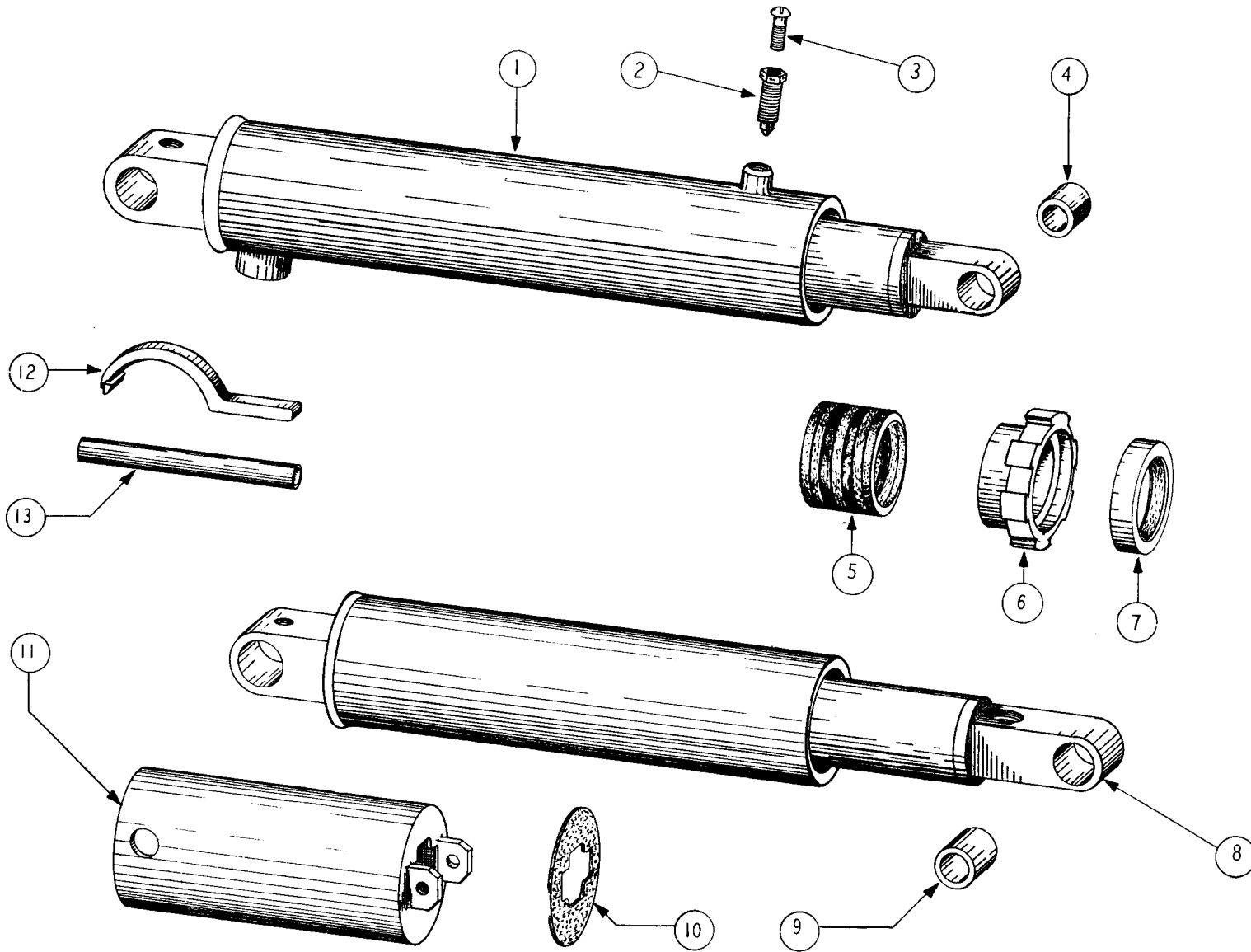
Fig. 30
VALVE CONTROL GROUP

This Group Applies to HF Payloaders of Serial Numbers 80662 and up

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	GH-212	Pin Assembly - 1/2"	4		
2	GH-211	Clevis - 1/2"	2		
3	107243	Rod - Lever to Valve	2		
4	105607	Sleeve - Lever Pivot.	1		
5	107187	Collar - Lever Spacer.	1		
6	102092	Bushing - Lever Hub.	2		
7	107252	Valve Lever - Bucket Control.	1		
8	107250	Valve Lever - Boom Control	1		
9	HL-3343	Ball - Lever Handle	2		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 31



HYDRAULIC HOIST CYLINDER GROUP

HOIST CYLINDER GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	101972	Boom Hoist Cylinder Complete (includes next 6 Items) .	2		
2	102384	Bleeder Screw (#FC2933)	2		
3		Screw - #10-32 Rd. Hd. Machine Screw x 3/8" lg.	2		
4	101155	Bushing - Plunger Pivot	2		
5	101975	Ram Packing Set	3		
6	101967	Packing Nut.	3		
7	102001	Wiper Seal	3		
8	103772	Bucket Control Hoist Complete (includes Items 5, 6, 7 and 9)	1		
9	103779	Bushing - Plunger Pivot	1		
10	104823	Gasket - Shield to Hoist.	1		
11	104815	Shield - Bucket Hoist	1		
12	102270	Spanner Wrench - for 101967 Packing Nut.	1		
13	102838	Handle - Spanner Wrench.	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair parts.

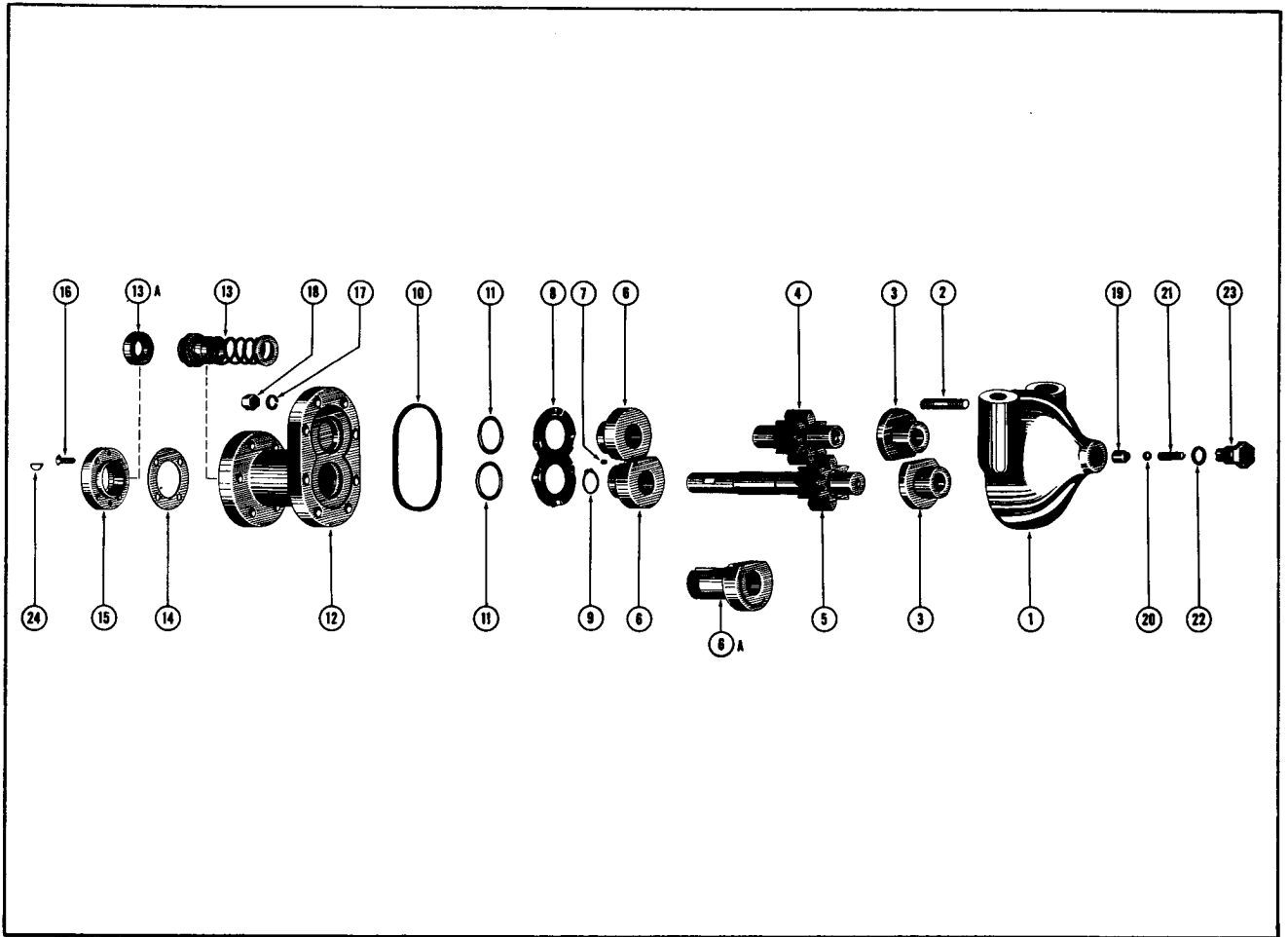
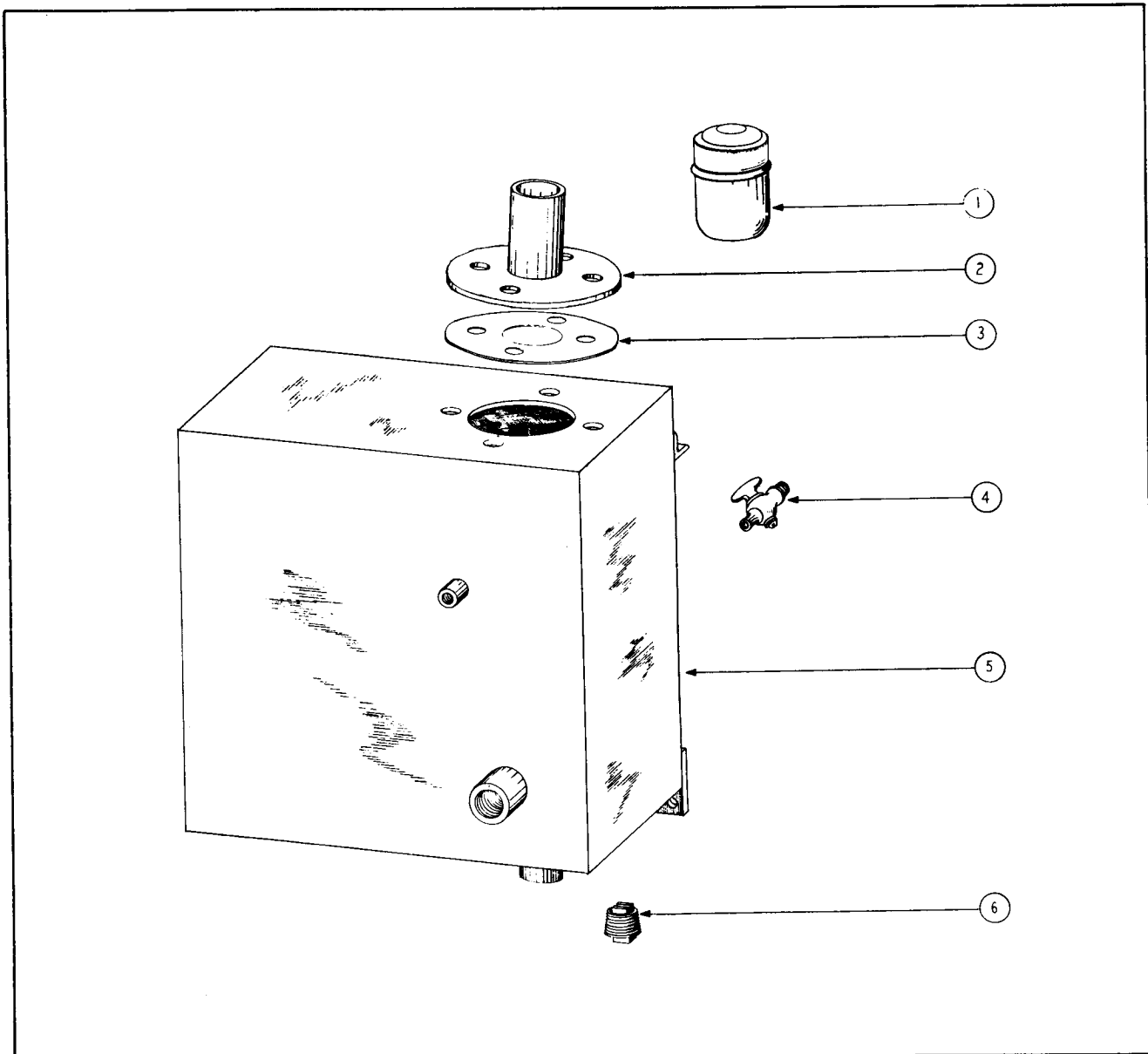


Fig. 32
PUMP GROUP

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
	103687	Pump Complete	051006-020-01	1	
7	107081	Pin - Cover Bearing	466-12E	1	
10	107080	Seal Ring	99-163	1	
11	107082	Seal Ring	99-111	2	
13	107109	Shaft Seal	05-119	1	
14	107930	Gasket	05-120	1	
15	107931	Thrust Plate	05-121	1	
19	107072	Seat	05-93	1	
20	107071	Ball	203-20	1	
21	107070	Spring	99-122	1	
22	107068	Gasket	99-91	1	
23	107069	Retainer	05-94	1	
<p>NOTE: Only Items suitable for field replacement are listed in this group. For other repairs the pump must be returned to the manufacturer See THE FRANK G. HOUGH CO. dealer for details on the repair and replacement of the pump.</p>					

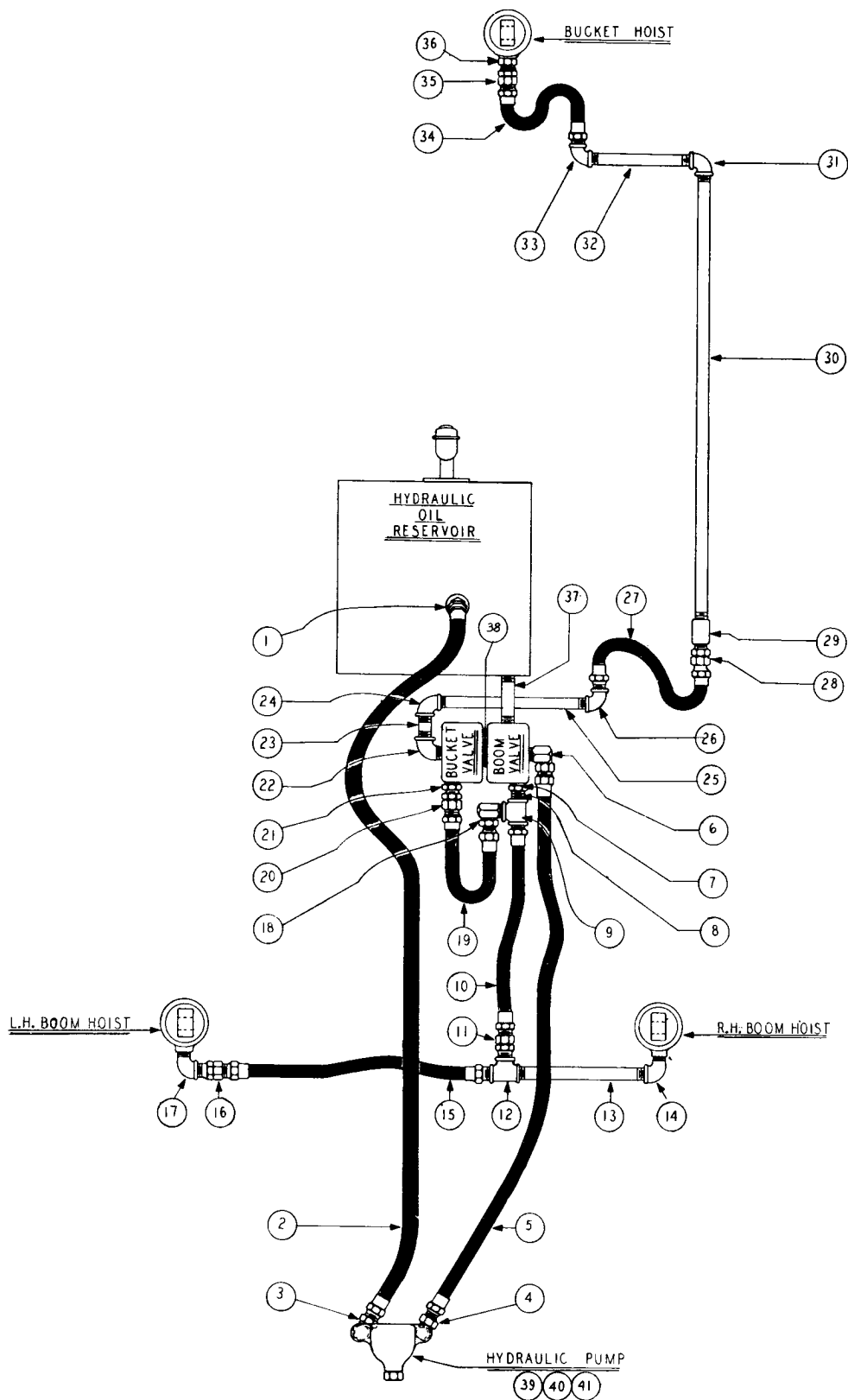
Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



**Fig. 33
OIL RESERVOIR GROUP**

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
1	103000	Breather Cap - Filler Pipe	1		
2	102998	Hand Hole Cover with Filler Pipe	1		
3	101133	Gasket - Cover	1		
4	HH-1005A4	Pet Cock - Oil Level.	1		
5	103542	Reservoir	1	80001	80262
5	104938	Reservoir	1	80263	80661
5	110463	Reservoir	1	80662	up
6	103941	Drain Plug - Magnetic.	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.



FOR HF PAYLOADERS OF SERIAL NUMBERS 80001 THRU 80661

HYDRAULIC HOSES AND CONNECTIONS

Fig. 34

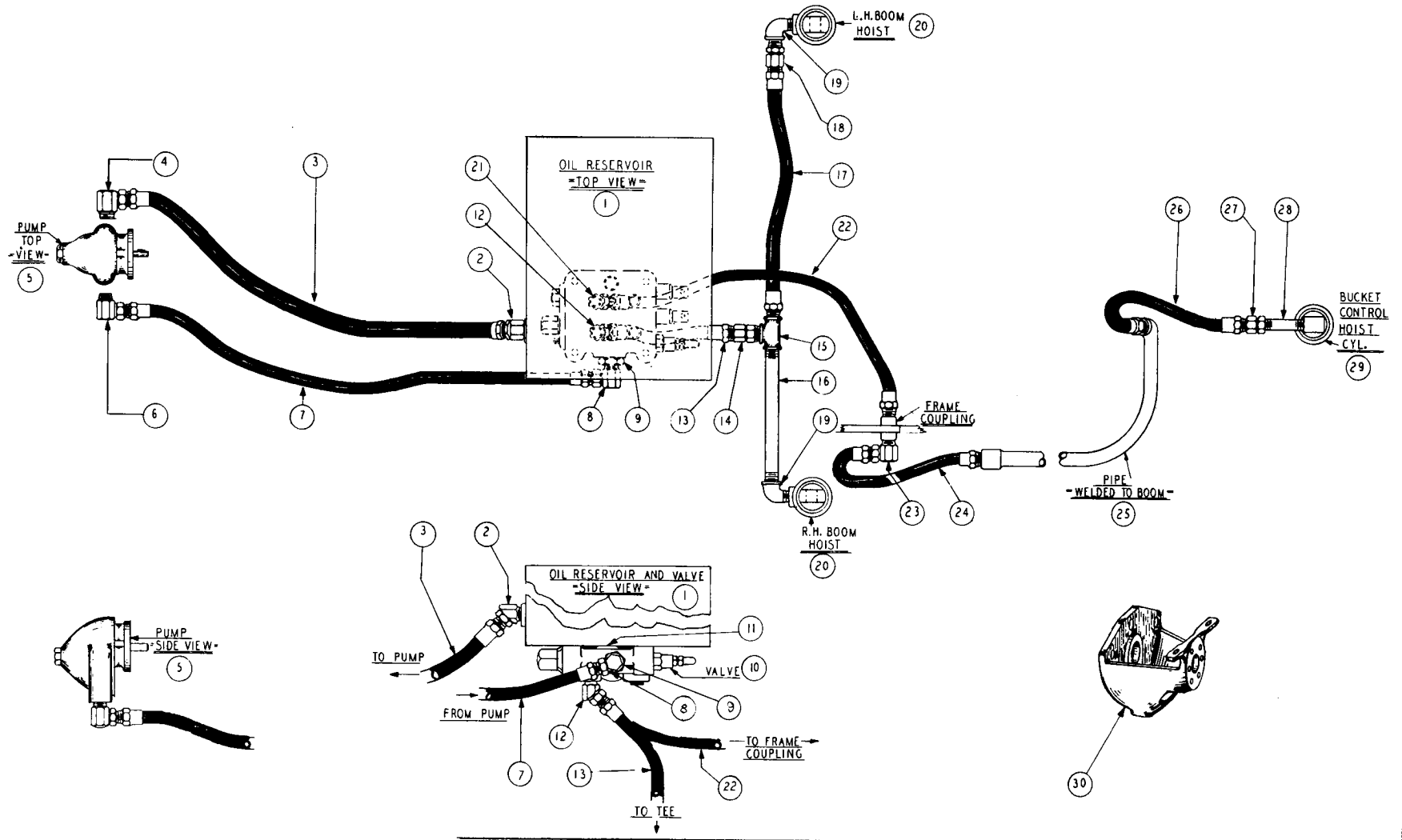
HYDRAULIC HOSES AND CONNECTIONS

This Group Applies to HF Payloaders of Serial Numbers 80001 thru 80661

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU
SUCTION LINE - RESERVOIR TO PUMP					
1	102909	Adapter Union - 1" x 45°	1		
2	104348	Hose - 1" Suction	1		
3	102910	Adapter Union - 1" x 90° (Pump)	1		
HIGH PRESSURE LINE - PUMP TO BOOM VALVE					
4	103732	Adapter Union - 3/4" x 90° (Pump)	1		
5	104347	Hose - 3/4" Hl. Press.	1		
6	103732	Adapter Union - 3/4" x 90°	1		
	103974	Valve - Boom Control (see Valve Group)	1	80001	80263
	103755	Valve - Bucket Control (see Valve Group)	1	80001	80262
	104810	Valve - Compound (see Valve Group)	1	80263	80661
LINE - VALVE TO BOOM HOIST					
7		Reducer Bushing - 1" to 3/4"	1		
8		Nipple - 3/4" Ex. Hy. Close	1	80001	80262
9	103433	Tee - 3/4" Ex. Hy.	1	80001	80262
10	103377	Hose - 3/4" Hl. Press.	1	80001	80262
10	104349	Hose - 3/4" H. Press.	1	80263	80661
11	HA-790	Adapter Union - 3/4" straight	1		
12	103433	Tee - 3/4" Ex. Hy.	1		
13		Nipple - 3/4" Ex. Hy. x 8-1/2" lg. } Tee to R. H. Boom	1		
14	103418	Street Ell - 3/4" Ex. Hy. x 90°	1		
15	HA-989	Hose - 3/4" Hl. Press.	1		
16	HA-790	Adapter Union - 3/4" straight	1		
17	103418	Street Ell - 3/4" Ex. Hy. x 90°	1		
LINE - VALVE TO VALVE - FOR SERIAL NUMBERS 80001 THRU 80262 ONLY					
18	103732	Adapter Union - 3/4" x 90°	1	80001	80262
19	104350	Hose - 3/4" Hl. Press.	1	80001	80262
20	HA-790	Adapter Union - 3/4" straight	1	80001	80262
	103769	Ball - Valve Bushing (not shown)	1	80001	80262
21	103934	Valve Bushing (Bucket Valve)	1	80001	80262
LINE - VALVE TO BUCKET HOIST					
22	103418	Street Ell - 3/4" Ex. Hy. x 90°	1		
23		Nipple - 3/4" Ex. Hy. x 4-1/2" lg.	1		
24	103403	Elbow - 3/4" Ex. Hy. x 90°	1		
25		Pipe - 3/4" Ex. Hy. x 12 lg.	1		
26	103403	Elbow - 3/4" Ex. Hy. x 90°	1		
27	103383	Hose - 3/4" Hl. Press.	1		
28	HA-790	Adapter Union - 3/4" straight	1		
29	103462	Coupling - 1" Ex. Hy.	1		
30	105558	Pipe Assembly - Weld on Boom (this Assembly replaces the threaded Pipes, Elbows and Coupling Assembly)	1		
31		Elbow - 1" Ex. Hy.	1		
32		Pipe - 1" Ex. Hy.	1		
33		Elbow - 1" Ex. Hy.	1		
34	103383	Hose - 3/4" Hl. Press.	1		
35	HA-790	Adapter Union - 3/4" straight	1		
36		Reducer - 3/4" to 1"	1		
AUXILIARY PARTS					
37		Nipple - 3/4" short - Valve to Reservoir	1		
38	104331	Gasket - Between Valves - (Z27-53)	1	80001	80262
39	103687	Pump (see Pump Group)	1		
40	103079	Pump Support (Pump to Engine - not shown)	1		
41	104227	Bolt - 5/8" - 18" N.F. thd. - Pump Support to Frame	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

Fig. 85



HYDRAULIC DIAGRAM
FOR
HF PAYLOADERS OF SERIAL NOS.
80662 & UP

HYDRAULIC HOSES AND CONNECTIONS

This Group Applies to HF Payloaders of Serial Numbers 80662 and up

ITEM NO.	PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
				FROM	THRU

SUCTION LINE - RESERVOIR TO PUMP

1	107247	Reservoir	1	80662	up
2	102909	Adapter Union - 1" x 45°	1		
3	104348	Hose - 1" Suction	1		
4	102910	Adapter Union - 1" x 90°	1		
5	103687	Pump((051006 -020-01)	1		

HIGH PRESSURE LINE - PUMP TO VALVE

6	103732	Adapter Union - 3/4 x 90° (Pump)	1	80662	up
7	104347	Hose - 3/4" Hl. Press	1		
8	103732	Adapter Union - 3/4" x 90°	1		
9		Reducer Bushing - 1" to 3/4"	1		
10	106926	Valve (#V4SS4C).	1		
11	106828	"O" Ring - Valve to Reservoir - (#A395x27).	1		

LINE - VALVE TO BOOM HOISTS

12	103380	Adapter Union - 3/4" x 45° (Valve)	1		
13	105154	Hose - 3/4" Hl. Press	1		
14	HA-790	Adapter Union - 3/4" straight	1		
15	103433	Tee - 3/4"	1		
16	106435	Nipple - 3/4" Ex. Hy. x 8" lg. (to R. H. Hoist)	1		
17	HA-989	Hose - 3/4" Hl. Press (to L. H. Hoist)	1		
18	HA-790	Adapter Union - 3/4" straight (to L. H. Hoist)	1		
19	103418	Street Ell - 3/4" Ex. Hy. x 90°	2		
20	101972	Boom Hoists	2		

LINE - VALVE TO BUCKET HOISTS

21	103380	Adapter Union - 3/4" x 45° (Valve)	1		
22	105596	Hose - 3/4" Hl. Press. (to Frame Coupling)	1		
23	103732	Adapter Union - 3/4" x 90° (from Frame Coupling).	1		
24	103383	Hose - 3/4" Hl. Press. (to Boom Pipe)	1		
25	105558	Pipe - Welded Along Boom.	1		
26	103383	Hose - 3/4" Hl. Press. (from Boom Pipe)	1		
27	105101	Adapter Union - 3/4" straight Female	1		
28		Nipple - 3/4" Ex. Hy. x 3" lg.	1		
29	103772	Bucket Hoist	1		
30	103079	Pump Support (Pump to Engine)	1		
	104227	Bolt - 5/8" N. F. thd. - Heat Treated (Support to Frame)	1		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

SPECIAL EQUIPMENT

PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
			FROM	THRU
105462	42" Bucket - Complete.	1		
101693	Cutting Edge - 42" Bucket	1		
103747	48" Bucket - Complete.	1		
104087	Cutting Edge - 48" Bucket	1		
103962	60" Bucket - Complete.	1		
103789	Cutting Edge - 60" Bucket	1		
104003	72" Bucket - Complete.	1		
105268	Cutting Edge - 72" Bucket	1		
106928	84" Bucket - Complete.	1		
104528	Cutting Edge - 84" Bucket	1		
107491	Fork Lift - Complete (consists of next 2 Items)	1		
107753	Fork Tine	2		
107595	Fork Frame	1		
103961	Crank Hook - Complete	1	80001	80311
106491	Crank Hook - Complete	1	80312	up
HL-1800	Hook only for Crane	1		
105173	Flame and Spark Arrestor (consists of next 6 Items)			
104873	Flame Arrestor	1		
HA-1057	Baffle.	1		
104866	Support - Flame Arrestor	1		
104863	Muffler.	1		
104831	Fireproof Fuel Tank.	1		
HS-1002	Protectoseal Cap	1		
104920	Backfiller Assembly - 84" Complete	1		
101994	Cutting Edge - Ends - 84" or 72" Backfiller.	2		
102158	Cutting Edge - Center - 84" Backfiller	1		
101950	Cutting Edge - Center - 72" Backfiller	1		
103969	Shoe Support	2		
GH-165	Shoe Assembly.	2		
GH-5830A1	Spacer Collars - Shoe Assembly	10		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

LIGHTING SYSTEM - SPECIAL

PART NO.	PART NAME	Qty.	1st Used on Payloaders of Serial Numbers	
			FROM	THRU
107749	Light Switch	1		
107744	Tractor Lamp - Complete	2		
107745	Tail Lamp.	1		
107746	Backing Lamp	1		
107747	Clamp	1		
107748	Spacer	1		
107538	Wiring Loom	1		
101983	Wire - Switch to Ammeter	1		
106338	Swivel Washer	2		
107532	Support - Tail Lite	1		
107535	Support - Backing Lite	1		
107545	Rubber Bushing	1		
HL-3550	Clip Wire	2		
107544	Rubber Grommets	2		

Always be sure to give the Payloader Serial Number with the Part Number and Name of Items needed when ordering Repair Parts.

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		HS-924	34	102407	36	103223	20
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		HS-926	34	102409	36	103230	20
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