



OWNER'S MANUAL

model 740 backhoe



THIS MANUAL INCLUDES:

W100 - BASIC BACKHOE

W107 - CLOSED-CENTER KIT

W109 - BUCKET, 18"

W110 - BUCKET, 24"

W111 - BUCKET, 30"

W112 - BUCKET, 36"

W113 - BUCKET, 42"

SERIAL NO. 1170 AND LATER



This Safety Alert Symbol identifies important safety messages in this manual.



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SAFETY PRECAUTIONS

! *The safety of the operator was a prime consideration in the design of this backhoe. Proper shielding, convenient controls, simple adjustments, and other safety features have been built into this backhoe.*

Accidents can be avoided if the following safety rules are observed:

Preparation:

KNOW your controls. Read this operator's manual and the manual provided with your tractor. Learn how to stop the tractor,

the engine, and the backhoe quickly in an emergency.

BE SURE the area is clear of underground obstructions.

POSITION a barricade around the work area.

PROVIDE adequate front end weight to counter-balance the backhoe at all times.

KEEP ALL bystanders a safe distance away.

DO NOT operate the backhoe unless it is rigidly attached to the tractor. The following decal is located on the side of the operator's console:

! **WARNING DO NOT OPERATE THIS BACKHOE UNLESS IT IS RIGIDLY ATTACHED TO THE TRACTOR.**

IF IT IS THREE-POINT HITCH MOUNTED, THE HITCH MUST BE RESTRAINED FROM MOVEMENT BY THE APPROPRIATE FACTORY PROVIDED WEIGHT TRANSFER DEVICE OR MOUNTING KIT OR LOCKED AGAINST MOVEMENT BY OTHER RELIABLE MEANS. FAILURE TO COMPLY CAN CAUSE DANGEROUS SITUATIONS TO ARISE THAT MAY LEAD TO INJURY AND DAMAGE.

WORK SAFELY – FOLLOW THESE RULES

1. READ OPERATOR'S MANUAL
2. OPERATE ONLY FROM OPERATOR'S SEAT
3. BE SURE ALL PERSONS STAND CLEAR BEFORE OPERATING
4. NEVER ALLOW CONTROLS TO BE MOVED WHEN UNIT IS BEING WORKED ON
5. NEVER ALLOW ANYONE TO WORK UNDER A RAISED BUCKET
6. NEVER LIFT A PERSON WITH THE BACKHOE
7. ALWAYS LOWER THE BUCKET TO THE GROUND WHEN NOT DIGGING
8. IF INJURED BY ESCAPING HYDRAULIC FLUID, SEE A DOCTOR AT ONCE. AVOID OPEN SORE CONTACT WITH FLUID AS SERIOUS INFECTION OR REACTION CAN RESULT
9. BE SURE TRACTOR HAS ADEQUATE FRONT END WEIGHT
10. ALWAYS SWING BUCKET UPHILL TO DUMP WHEN ON A HILLSIDE. KEEP LOADED BUCKET LOW
11. SET TRACTOR BRAKES AND BLOCK WHEELS WHEN OPERATING ON HILLS AND BANKS TO AVOID DANGEROUS RUN-AWAY
12. CHECK ALL OVERHEAD CLEARANCES WHEN TRANSPORTING OR DIGGING, NEVER TOUCH OVERHEAD WIRES
13. DO NOT DIG IN AREAS OF UNDERGROUND UTILITIES OR OTHER HAZARDS
14. KEEP ALL GUARDS IN PLACE

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Operation:

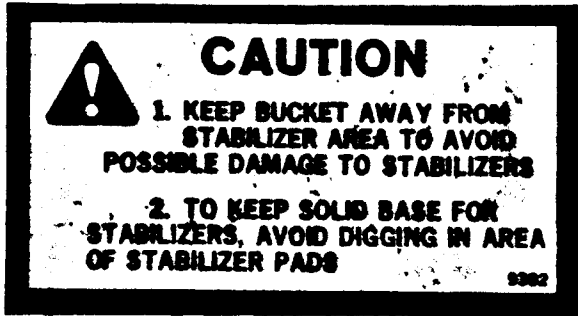
CHECK to be sure there is adequate clearance between backhoe operator and tractor cab or roll bar. See Note #1 on decal 9380, Page 2, and the minimum clearance dimensions (K) and (L), Page 15 in the Specifications Section.

OPERATE the backhoe from the operator's seat only.

ALLOW only one person to operate the backhoe at any time.

NEVER dig with the backhoe unless the stabilizers are properly set.

DO NOT dig under stabilizers or tractor-backhoe. Soft ground or sandy soil can cause cave-ins. The decal shown at the top of Page 2 is located on the operator's console.



WATCH for overhead wires. DO NOT touch wires with any part of the backhoe.

NEVER allow a person to work under a raised bucket.

NEVER lift a person with the backhoe.

DO NOT use the backhoe bucket as a battering ram.

ALWAYS lower the bucket to the ground before leaving the backhoe seat.

NEVER leave the tractor unattended with the engine running.

Transportation:

DO NOT drive the tractor near the edge of a ditch or excavation.

THE RATE of travel and the orientation of the backhoe on hillsides and curves should always be such that there is no danger of tipping.

ALWAYS use accessory lights and devices, when transporting on a road or highway, to warn operators of other vehicles.

BE SURE that the SMV emblem is visible to the rear.

Adjustments and Inspection:

CHECK pins that attach backhoe to tractor and all pivot pins for tightness several times daily. The following decal is located on the side of the operator's console:

WARNING

1. CHECK CLEARANCE BETWEEN OPERATOR AND CAB OR ROLL BAR IF TRACTOR IS SO EQUIPPED. BROKEN CONNECTION LINKAGE OR NON-USE OF A THREE-POINT HITCH RESTRAINT SYSTEM WILL PERMIT HOE TO LIFT OPERATOR ALONG PATH OF ARROW "B" AND INJURE HIM.
2. CHECK CONDITION OF HOE TO TRACTOR CONNECTING LINKAGE FREQUENTLY. BROKEN PARTS CAN DROP HOE AND THROW OPERATOR IN DIRECTION OF ARROW "A".
3. WATCH SWING-BY CLEARANCE "C" WHEN OPERATING HOE.

EXAMINE POINTS 1 THROUGH 7 REGULARLY FOR CRACKED, BROKEN, BENDING, LOOSENED, SLIPPING PARTS OR ANY OTHER TELL-TALE EVIDENCE OF CHANGE. BROKEN PINS AT 1, 2, 3, OR 4 CAN DROP HOE. WATCH U-BOLTS 5 FOR SIGNS OF SLIPPING. WATCH BOLTS 6 AND 7 FOR LOOSENING AND LOSS.

9380

Safety Precautions - continued

DO NOT oil, grease, or adjust the backhoe while it is in motion.

DO NOT change any backhoe relief valve settings. They are factory set for best backhoe performance and safety.

ESCAPING FLUID under pressure can have sufficient force to penetrate the skin and cause serious injury. Be sure to relieve all pressure before disconnecting lines. Be sure all connections are tight and that lines, pipes, and hoses are not damaged before applying pressure to the system.

FLUID ESCAPING from a very small hole can be almost invisible. Use a piece of cardboard or wood - not your hands - to search for suspected leaks.

SEE A DOCTOR AT ONCE if injured by escaping fluid. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

PROTECT YOUR EYES - WEAR SAFETY GLASSES.

GUARD AGAINST INJURY when driving connecting pins or performing any repair in which particles can chip from work piece or striking tool.

DO NOT REMOVE ANY GUARDS on backhoe or tractor. The following decal is located on the side of the operator's console:



BASIC ASSEMBLY INSTRUCTIONS

General:

For shipping purposes the backhoe has been partially disassembled and strapped to a skid. Because of the size and weight of the various backhoe members, an overhead hoist or crane should be used to aid in assembly. This hoist or crane should be attached to the backhoe at all times during assembly to keep it upright and eliminate the possibility of injury. It should not be removed until the backhoe is firmly attached to the tractor.

⚠ CAUTION - Be sure hoist used is suitable, has sufficient capacity, and is in the proper position. DO NOT allow anyone under a backhoe member that is supported by the hoist.

Assembly Procedure:

IMPORTANT - Tighten all hardware to the torque requirements specified in the Torque Chart, Page 8, of this manual.

1. After hoist is in position over the main frame and boom, remove all strapping and bolts holding backhoe to skid. Remove stabilizer legs and pads, dipperstick, weight transfer arms, box of parts, and any other miscellaneous items that have been fastened to the skid.

2. Assemble weight transfer arms to main frame using long pin as shown in Fig 1.

3. Back the tractor up to the backhoe and connect lower tractor hitch arms to main frame at A, Fig 1.

4. Assemble lower mount pad and bolts to arms so that they will be nearly centered on the tractor axle.

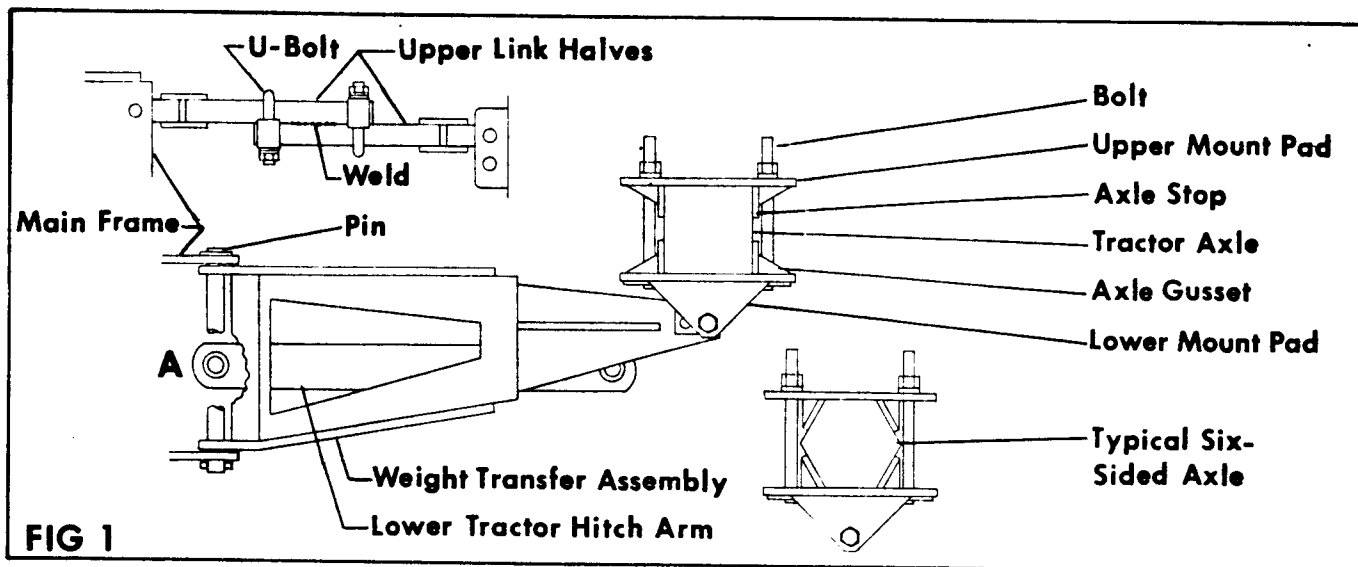
5. Connect backhoe valve to tractor hydraulic system. See instructions, Page 34, for hook-up to open-center systems or W107 instructions, Page 35, for hook-up to closed-center systems.

IMPORTANT - Read warning on operator's control panel. If inlet and return hoses are hooked up in reverse the backhoe valve will be seriously damaged.

6. Attach control levers to the operator's control panel, see Fig 3 and 22.

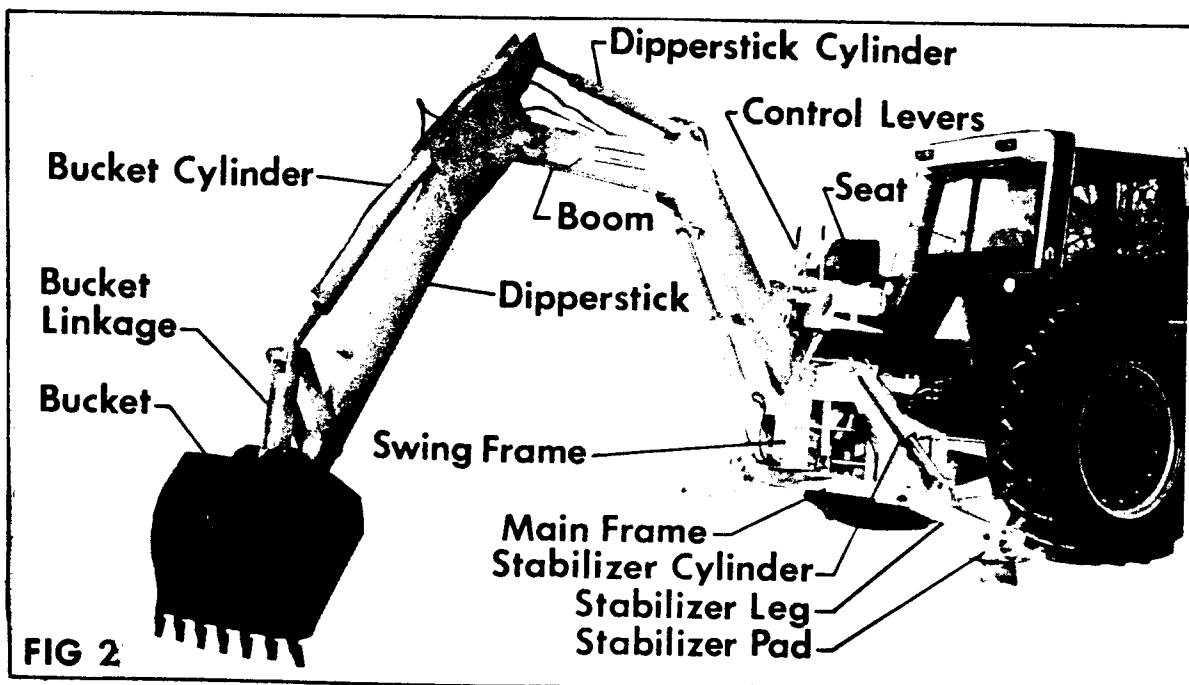
7. Assemble stabilizer legs and pads to the backhoe, see Fig 2 and 23.

8. Raise the tractor hitch until the mount pads are firmly against the underside of the tractor axle. Keep the backhoe level by operating the boom and stabilizers. Remove wood braces before lowering the boom.



9. Bolt upper mount pad in position.
10. Tack weld axle stops and gussets in place, see Fig 1. Remove upper and lower mount pads, weld stops and gussets solidly in place.
11. Paint mount pads and reassemble the backhoe to the tractor.
12. Assemble two upper link halves together using U-bolts and attach in position as shown in Fig 1. With backhoe main frame in a vertical position weld links together, minimum of five inches weld on each side, as shown. Without this weld U-bolts will not hold backhoe in an upright position.

13. Assemble dipperstick to boom and attach crowd cylinder to dipperstick, see Fig 2 and 21.
14. Attach bucket to dipperstick, see Fig 2 and 21.
15. Note that the backhoe seat may be moved to any of three positions on it's adapter plate. This feature is to allow the most convenient distance between the operator and the control levers, see Fig 2 and 20.
16. Check the installation very carefully to be sure all members are correctly installed and securely fastened. Proceed to the General Operation Section to familiarize yourself with the proper operation of the control levers.



GENERAL OPERATION

⚠ CAUTION - To avoid possible injury, observe the following safety rules BEFORE OPERATING the backhoe.

1. BE SURE area is clear of underground obstructions.
2. POSITION a barricade around work area.
3. PROVIDE adequate front end weight to counter-balance backhoe at all times.
4. KEEP bystanders a safe distance away.

Directions:

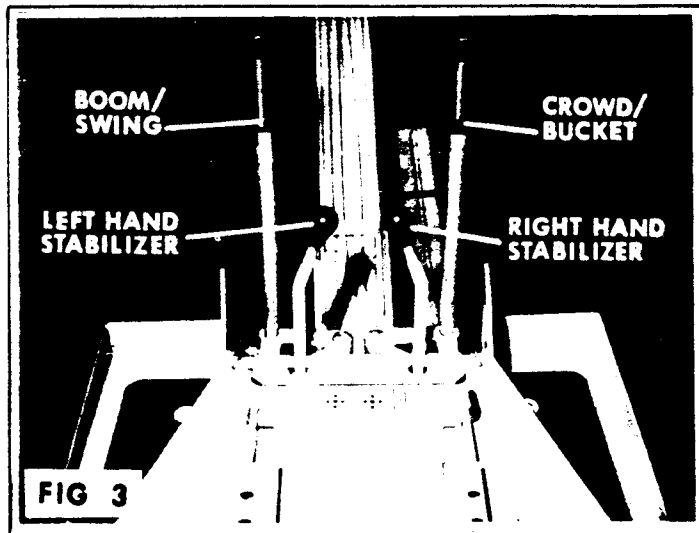
The terms right, left, front, and back shall be determined from the position of the operator when seated in the operating position on the backhoe.

Engine Speed:

The speed at which the backhoe operates is partially dependent on engine RPM. Use a moderate engine speed to start and increase it as your experience permits.

Controls:

The Model 740 Backhoe has two major control levers plus the stabilizer control levers. These controls are located on the control panel directly ahead of the operator, Fig 3. Following is a list of the controls, with the function of each, reading from left to right:



1. Boom/Swing:

Push lever forward, the boom moves down, away from the operator. Pull lever back, the boom moves up, toward the operator.

Move lever to left and backhoe swings to the left. Move lever to right, the backhoe swings to the right.

By moving the lever to one of the intermediate positions, the boom can be swung left or right at the same time it is being raised or lowered, performing the two operations simultaneously.

SWING LEFT AND LOWER the boom by moving the control lever forward and to the left.

SWING LEFT AND RAISE the boom by moving the control lever back and to the left.

SWING RIGHT AND LOWER the boom by moving the control lever forward and to the right.

SWING RIGHT AND RAISE the boom by moving the control lever back and to the right.

2. Left Hand Stabilizer:

Push lever forward, the LH stabilizer lowers. Pull lever back, the LH stabilizer raises.

3. Right Hand Stabilizer:

Push lever forward, the RH stabilizer lowers. Pull lever back, the RH stabilizer raises.

4. Crowd/Bucket:

Push lever forward, the dipperstick moves out, away from the operator. Pull lever back, the dipperstick moves in, toward the operator.

Move lever to left, the bucket curls in. Move lever to right, the bucket extends out.

By moving the lever to one of the intermediate positions, the dipperstick can be extended or retracted at the same time the bucket is being loaded or dumped.

EXTEND AND LOAD the bucket by moving the lever forward and to the left.

RETRACT AND LOAD the bucket by moving the lever back and to the left.

EXTEND AND DUMP the bucket by moving the lever forward and to the right.

RETRACT AND DUMP the bucket by moving the lever back and to the right.

The two operations of the boom lever, combined with the two operations performed by the bucket and dipperstick control lever provide four simultaneous operations from the two levers, keeping cycle time at a minimum.

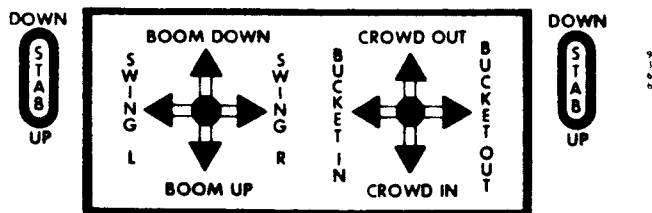
In general, the direction of movement of a control lever corresponds to the movement of the operating member.

Operating The Backhoe:

⚠ CAUTION - To avoid possible injury, observe the following safety rules WHEN OPERATING the backhoe.

1. OPERATE the backhoe from the operator's seat only.
2. LOWER the stabilizers until the rear of the tractor is totally supported by them.
3. DO NOT dig near the stabilizers.
4. DO NOT touch overhead wires with any part of the backhoe.
5. DO NOT attempt to raise the tractor off the ground or move the tractor forward or backward using the backhoe dipperstick or bucket.
6. DO NOT lose stability by swinging the bucket downhill when positioned on a slope.

It is not difficult to become an efficient operator. A control lever operating decal is located in front of the control levers. Study this decal; it will assist you in becoming familiar with the controls.



Smooth, light handling of the controls will result in the most efficient backhoe operation.

Operate the backhoe control levers to become familiar with their speed and movements. The engine speed and the size of the hydraulic system will determine the speed of cylinder operation.

Swing the boom several times to practice controlling the speed of swing. Do not operate the swing more than 45 degrees each way for the first few times, then gradually increase the arc.

IMPORTANT - To avoid damage to the backhoe, do not slam swing unit into the rubber bumper pads.

Best results are obtained by digging near the center of the swing arc so material can be dumped on either side.

As the operator becomes more familiar with the operation of the backhoe, it will be common practice to operate two controls at one time. For example; with the bucket extended and the dipperstick extended, the lift control and crowd control can be operated together to bring the bucket toward the operator with down pressure on it. As the dipperstick approaches the operator, the crowd and bucket controls can be operated to close the bucket and trap the material. At the end of the stroke, the lift and crowd controls are operated to move the load up and away from the operator to save time in clearing the excavation.

This dual operation of controls will speed and simplify the digging operation. Normally the two or more movements will not be equal or even simultaneous but as pressure within the cylinders change, and the resistance on an operating member of the hoe lessens, it will begin to move. It is balancing the force of one member against the other.

NOTE - Actuating the bucket is the key to powerful digging. Operating the crowd and bucket controls simultaneously will insure a full bucket and prevent waste motion and time.

Transporting The Backhoe:

⚠ CAUTION - To avoid possible injury, observe the following safety rules WHEN TRANSPORTING the backhoe.

1. TRAVEL SLOWLY over rough terrain, on hillsides, and around curves to prevent tipping.
2. DO NOT drive the tractor near the edge of a ditch or excavation.
3. USE accessory lights and SMV emblem when traveling on highways.

Before mounting tractor, position the backhoe for transport by raising boom, crowding dipperstick in, curling bucket in, and raising the stabilizers.

When transporting for long distances, periodically examine the backhoe and raise it back up to full transport height. It is normal for the hoe to slowly settle while being transported.

SERVICE



CAUTION - To avoid possible injury, observe the following safety rules WHEN SERVICING the backhoe.

1. DO NOT oil, grease, or adjust the backhoe while it is in motion.
2. DO NOT change any backhoe relief valve settings. They are factory set for best backhoe performance and safety.
3. ESCAPING FLUID under pressure can have sufficient force to penetrate the skin and cause serious injury. Be sure to relieve all pressure before disconnecting lines. Be sure all connections are tight and that lines, pipes, and hoses are not damaged before applying pressure to the system.
4. FLUID ESCAPING from a very small hole can be almost invisible. Use a piece of cardboard or wood - NOT YOUR HANDS - to search for suspected leaks.
5. SEE A DOCTOR AT ONCE if injured by escaping fluid. Serious infection or reaction can develop if proper medical treatment is not administered immediately.
6. PROTECT YOUR EYES - WEAR SAFETY GLASSES. Guard against injury when driving connecting pins or performing any repair in which particles can chip from work piece or striking tool.

Beginning Of Season:

Remove all protective covering.

Check hydraulic hoses for deterioration and replace if necessary.

Lubricate all grease fittings and oil handle linkage.

Check hydraulic system for loss of fluid and fill to proper level if necessary.

Tighten loose bolts, nuts, and setscrews.

Inspect bucket teeth and sharpen or replace them if necessary.

Operate the backhoe slowly for a short time before placing unit under full load.

Bleeding Backhoe - Hydraulic System:

If the hydraulic hoses have been disconnected from the backhoe or tractor, all trapped air must be removed after the hoses are connected. Start tractor engine

and operate backhoe through all movements fully several times to purge system of air.

Hydraulic System Hoses:

Oil leaks in the pressure side of the system can be located by carefully inspecting the external area of the hoses and fittings.

Check the return side of the system for leaks by examining the oil in the reservoir. If air is being drawn into the system, the oil will contain air bubbles and appear to foam.

When tightening connections always use two wrenches.

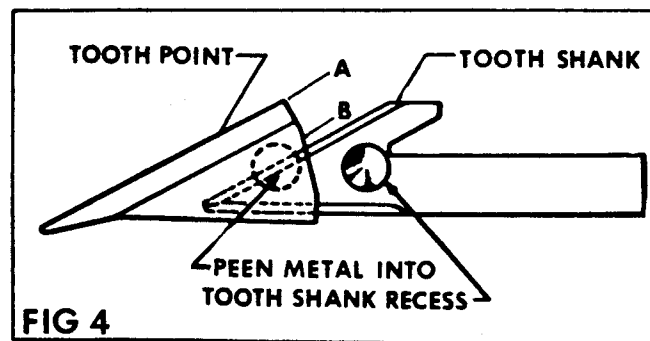
IMPORTANT - Do not over-tighten fittings. Make them just tight enough to eliminate leaks.

NEVER use teflon tape on pipe thread fittings. Always use a paste type sealant.

Hoses on any backhoe are very severely worked and will fail in time. Examine them regularly and replace any that show signs of failure. Pay careful attention to the routing of the hoses so they can move fully and freely, without kinking, and will not be pinched or cut by any part of the backhoe.

Tractor Hydraulic System:

The hydraulic fluid filter and strainer in the tractor hydraulic system should be serviced according to the tractor instruction manual.



Bucket Tooth Points:

The bucket tooth points are self-sharpening and require little attention. Tooth points on bucket shanks can be replaced when they become very worn or broken.

Remove tooth point from welded tooth shank by hammering at (A), on the tooth

Service - continued

point, or by driving a chisel at (B) between the tooth point box section and the tooth point. Install the new point and anchor it to the shank by peening at the location shown in Fig 4.

If a tooth shank breaks off or becomes damaged and can not hold a tooth point, a new shank should be welded to the bucket in its place.

Lubrication:

Economical, efficient operation of any machine depends on regular lubrication of all moving parts with a quality lubricant.

All parts with grease fittings should be lubricated with a quality chassis lube type grease. Replace any missing grease fittings immediately. Clean all fittings thoroughly before using grease gun.

Lubricate all grease fittings at least twice daily, once at the beginning of operation and again approximately half-way through the work day.

IMPORTANT - Avoid excessive greasing. After greasing wipe excess grease from fittings. Dirt will collect on exposed grease and increase wear on parts.

See Fig 5 for grease fittings location and number of fittings at each location.

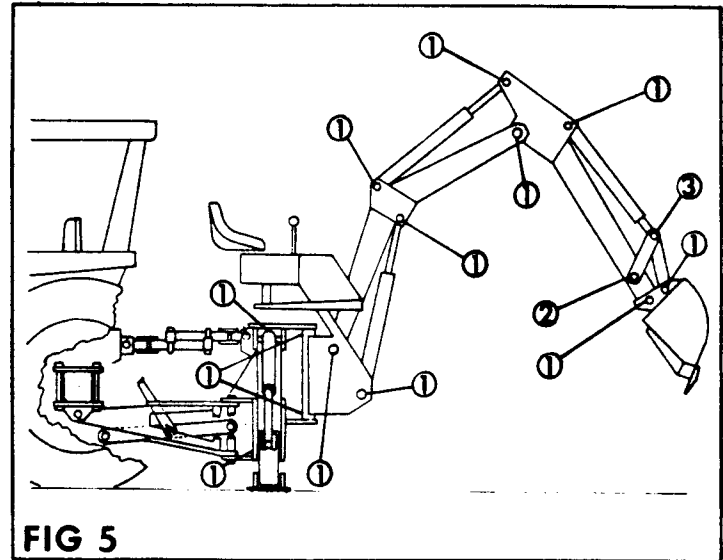


FIG 5

The following locations should be oiled with SAE 30 oil:

- A. Control valve handle linkage.
- B. Stabilizer pivot pins.

Tightening Nuts and Bolts:

Periodically check to be sure all bolts and nuts are tight. Refer to Torque Chart.

Check all pivot pins for cotter pins, washers, and retainers - If any are missing, replace them.

TORQUE VALUES			
Common bolts and nuts.		Tightening Torque \pm 20%	
SIZE	GRADE 2	GRADE 5	GRADE 8
1/4-20 NC	70 in lb	115 in lb	165 in lb
1/4-28 NF	85 in lb	140 in lb	200 in lb
5/16-18 NC	150 in lb	250 in lb	350 in lb
5/16-24 NF	165 in lb	270 in lb	30 ft lb
3/8-16 NC	260 in lb	35 ft lb	50 ft lb
3/8-24 NF	300 in lb	40 ft lb	60 ft lb
7/16-14 NC	35 ft lb	55 ft lb	80 ft lb
7/16-20 NF	45 ft lb	75 ft lb	105 ft lb
1/2-13 NC	50 ft lb	80 ft lb	115 ft lb
1/2-20 NF	70 ft lb	105 ft lb	165 ft lb
9/16-12 NC	75 ft lb	125 ft lb	175 ft lb
9/16-18 NF	100 ft lb	165 ft lb	230 ft lb
5/8-11 NC	110 ft lb	180 ft lb	260 ft lb
5/8-18 NF	140 ft lb	230 ft lb	330 ft lb
3/4-10 NC	150 ft lb	245 ft lb	350 ft lb
3/4-16 NF	200 ft lb	325 ft lb	470 ft lb

NOTE - See tractor instruction manual or your tractor dealer for tightening of metric bolts.

HYDRAULIC TROUBLE SHOOTING

The trouble shooting material presented in this section is offered as a guide to diagnosing probable causes and remedies for general operational problems. Match your problem with the typical problem examples given, and note the numbers given in the possible cause column. These numbers correspond with the possible cause and correction paragraphs that follow.

NOTE - When using the following chart if it is decided that overhaul of components or pressure adjustments are necessary, to correct malfunctioning, it is recommended that your dealer make these repairs. He is equipped to do this work.

PROBLEM	POSSIBLE CAUSE
A. Machine fails to operate when started initially.....	1, 2, 5, 7, 16, 24
B. Machine loses power after operating satisfactorily initially.....	1, 8, 10, 14, 16, 24
C. Loss of power in lift or crowd cylinder, but other cylinders function properly.....	23, 25, 30
D. Loss of power in any one cylinder including lift and crowd.....	8, 9, 10, 11, 12, 13, 23, 25, 26
E. Loss of power or loss of cushioning action in swing cylinders, but other cylinders function properly.....	8, 9, 10, 11, 12, 13, 23, 24, 26, 27
F. Maximum swing action can not be obtained.....	12, 15
G. Slow operation of machine (lack of power) all cylinders.....	1, 4, 6, 14, 16, 24
H. Spongy or jerking action of cylinders and/or noisy operation.....	1, 3, 4, 5
I. Lift, crowd, or bucket cylinders drop under load when control spools are shifted from neutral.....	28, 30
J. Load drops or settles.....	8, 10, 13, 26, 28
K. Leaky cylinders.....	10, 11, 12, 13
L. Leaky valve.....	8, 16, 17, 29
M. Sticky valve spool.....	17, 20, 21, 22
N. Unable to push valve spool in.....	17, 18, 20, 21, 22
O. Spring centered spools do not return to neutral.....	17, 18, 19, 20, 21, 22

Hydraulic Trouble Shooting - continued

POSSIBLE CAUSE:	AND CORRECTION -
1. Low oil level in reservoir.....	fill reservoir to proper level.
2. No oil supply to machine.....	oil is not being diverted from the prime mover hydraulic system. Be sure that the proper controls are actuated on the prime mover.
3. Air in system.....	bleed all circuits of air by operating machine at maximum oil flow and through full movements.
4. Oil viscosity too heavy, or oil is not at operating temperature.....	use recommended hydraulic fluid. Run machine until oil reaches operating temperature.
5. Pump not running.....	check pump drive to be sure it is engaged.
6. Insufficient pumping.....	advance engine throttle.
7. Improper hose connection.....	<i>IMPORTANT - Be sure inlet and return hoses are hooked up correctly. Improper hook-up will result in hydraulic fluid being diverted away from the return port of the backhoe valve via the surge relief valve.</i>
8. Loose oil line connections, leaks in lines, or broken lines.....	tighten all hose connections and replace any damaged O-rings at leaking O-ring fittings. Check and replace any damaged hoses and lines.
9. Restrictions in oil lines.....	check and replace any damaged hoses and lines. Check for pinched hoses.
10. Oil is bypassing cylinder piston, scored piston, worn piston packing, or defective piston assembly.....	replace or rebuild the cylinder; replace damaged parts.
11. Scored piston rods and worn rod guides in cylinder.....	replace or rebuild the cylinder; replace damaged parts.
12. Bent piston rod in cylinder.....	replace or rebuild the cylinder; replace damaged parts.
13. Worn or damaged rod seals on cylinder; external leaks.....	repack cylinder. Rebuild cylinder, replacing damaged parts as necessary.
14. Diverter valve on prime mover leaking externally or bypassing oil internally through valve to reservoir.....	diverter valve may need rebuilding or replacing.
15. Something jamming the swing linkage.....	remove interference.
16. Excessive back pressure.....	relieve condition. May be restriction from outlet to reservoir.

Hydraulic Trouble Shooting - continued

POSSIBLE CAUSE:	AND CORRECTION -
17. Paint on valve spool, sticking valve..... spool, or scored valve spool.	clean valve spool. Binding is usually caused from an over tightened plug, mounting bolt, fitting in valve body, or tie rod bolt. If a plug or fitting in valve body is leaking do not over tighten in an effort to stop leak. This will distort body casting and cause spools to bind. Instead, the plug or fitting should be removed from valve body and be reconnected, using a new O-ring. Do not apply excessive pressure on mounting bolts. The rods should be torqued to 20 ft-lb. Never force spool, if binding occurs, see item 31 at the end.
18. Oil leakage past spool seal into..... spool cap.	remove cap, if it contains oil, replace spool seal O-rings. Check O-ring retainer to see if it is flat. If it has been "belled" check for restriction from outlet to reservoir of valve which would cause excessive back pressure, see item 31 at the end and Fig 6.
19. Broken return springs.....	replace springs, see item 31 at the end and Fig 6.
20. Bent spool.....	return for factory repair, or replace with new spool section. See item 31 at the end and Fig 15, 16, and 17.
21. Foreign particles.....	clean system and valve.
22. Misalignment of control handle..... linkage.	check linkage for binding condition.
23. Spool not moved to full stroke.....	check travel, should be 5/16 inch either way or a total of 5/8 inch. See item 31 at the end.
24. Relief valve setting in backhoe con- trol valve too low or defective.	relief pressure will have to be checked and corrections made. Backhoe system pressure is 2025 PSI. Relief valve may need cleaning and overhauling, or entire cartridge must be replaced. See item 31 at the end and Fig 18.
25. Overload relief valve in the control..... valve stuck open or malfunctioning.	clean relief carefully but do not disturb its pressure setting as it can not be field calibrated, or replace cartridge. See item 31 at the end and Fig 15 and 16.
26. Worn control valve.....	replace the control valve.

Hydraulic Trouble Shooting - continued

POSSIBLE CAUSE:

AND CORRECTION -

27. A cross over relief in swing circuit.....clean reliefs carefully but do not disturb their pressure setting as they can not be field calibrated, or replace the entire cross over relief assembly. See item 31 at the end and Fig 19.
is leaking or malfunctioning. Raise the machine on one side by fully extending the left or right stabilizer cylinder. Raise the bucket clear of the ground with the boom and dipperstick in transport position. If the boom swings toward the low side of the machine, oil is bypassing the cross over relief valve.
28. Check poppet in the control valve.....clean check poppet(s) carefully, being sure that it moves freely with good spring action and seats properly or replace. See item 31 at the end and Fig 15, 16, and 17.
not holding.
29. Damaged or worn spool seals.....replace spool end seals, see item 31 at the end and Fig 15, 16, and 17.
30. Check ball in anti-cavitation check.....clean anti-cavitation valve carefully, being sure that checks move freely and seat properly, or replace cartridge. See item 31 next, and Fig 15 and 16.
valve is stuck or not seating properly.
31. Problems involving the control valve proper.....

This valve is a precision device and is not intended for any extensive field adjustment or repair. Field replacement parts are limited to Seal Kits, Cartridges, Valve Sections, and Tie Rods. Anything beyond the replacement of these parts, the opening of check cavities and certain relief valve cavities to examine for trapped dirt, or the resetting of the main relief valve with the use of a good pressure gauge, should be referred back to the factory for an exchange. The malfunctioning valve must then be returned to its manufacturer for service.

Dirt and shreds of packing material are the usual causes of valve malfunction. Be sure that the reservoir oil supply is kept clean and only factory supplied packings are used in cylinder repair. Everything must be clean and free of dirt during the oil line removal and replacement and during any cylinder work.

Pages 13 and 14, Valve Repair - Disassembly, explain the procedure to follow for valve repair. Pages 21 through 28 illustrate various portions of the valve and list the part numbers.

PAY CLOSE ATTENTION TO ALL CAUTION AND WARNING NOTES SO THE VALVE WILL NOT HAVE TO BE RETURNED TO THE FACTORY AND THEN TO THE MANUFACTURER FOR RECONDITIONING.

Careful use of this information, after the warranty period, by qualified individuals with valve service training and experience, can correct minor problems which may develop.

THE INCLUSION OF THIS INFORMATION AND ITS USE DOES NOT IMPLY THAT THE WARRANTY WILL REMAIN EFFECTIVE ON THE VALVE IF IT IS TAMPED WITH DURING THE WARRANTY PERIOD.

VALVE REPAIR - DISASSEMBLY

Replace Center Section Assemblies:

NOTE - For the purpose of these instructions, we will consider the section containing the MAIN RELIEF VALVE as the LEFT side of the valve.

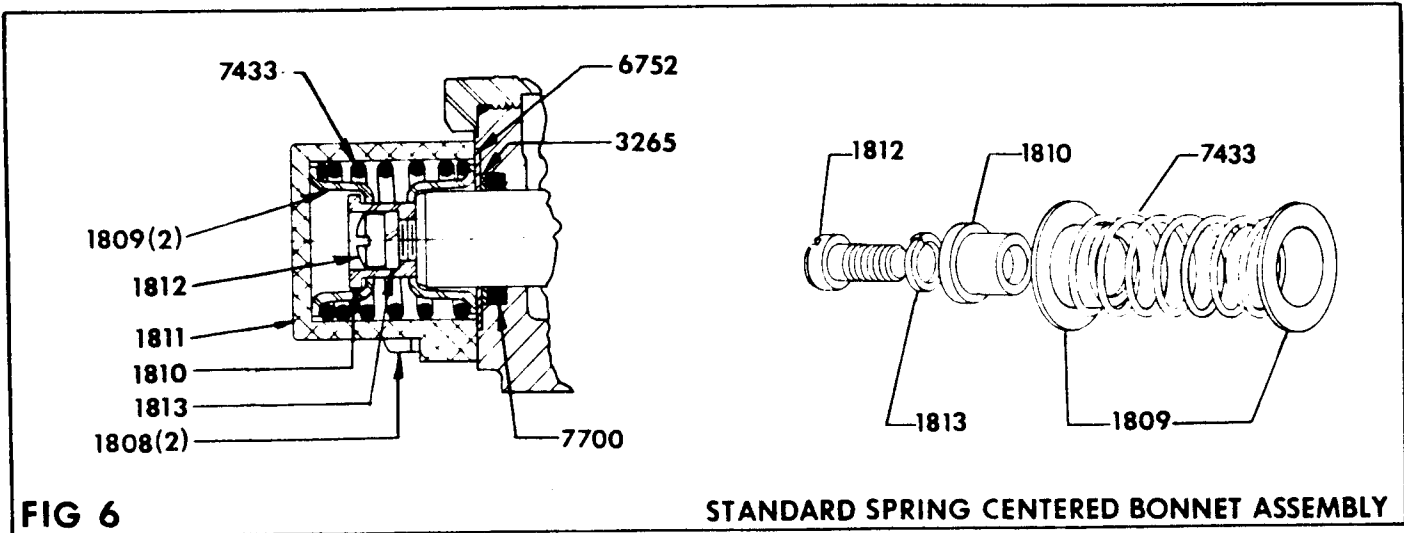
1. Remove control valve from the backhoe.
2. Thoroughly clean the exterior of the valve before beginning disassembly procedures.
3. Since the valve will be assembled in the same order, each section should be marked numerically so that they can be reassembled in the same sequence.
4. Mount the valve vertically in a vise to facilitate disassembly and assembly.
5. Remove the three tie rod nuts from the right end section, using a thin-wall socket.
6. Valve sections can now be removed by sliding the sections along the tie rods.
7. Thoroughly clean the O-ring counter-bores and the ground surfaces of each section. Place O-ring seals; 10318 (exhaust) and 10317 (pressure) in proper counter-bores. For better sealing it is recommended that all O-rings, used in the counter-bores, are replaced with new parts.
8. Replace the sections on tie rods with the O-ring counter-bores facing the right end of the valve. Be careful replacing the sections so that the section O-rings are not moved from the counter-bores.
9. When all sections are assembled on the tie rods, tighten the tie rod nuts equally to 20 ft-lb torque, *NO MORE - NO LESS*, or spools may bind and stick.

Replacing Spool Seals:

NOTE - For the purpose of these instructions, we will consider the control handle side of the valve as the FRONT, and the opposite side the BACK.

1. Remove control valve from the backhoe.
2. Thoroughly clean the exterior of the valve before beginning disassembly procedures.
3. At the BACK of the valve remove all bonnet assembly parts which are connected to the spool, keep parts in the order of disassembly. See Fig 6 for the parts involved in the make-up of the bonnet assembly.

IMPORTANT - DO NOT remove the spool from the valve. The seals can be replaced externally. Prevent spool from turning or moving by inserting a screw driver through clevis slot, or by running a rod through the pin hole and using the rod as a handle. DO NOT hold the spool with a wrench. This will destroy the finish.
4. At the BACK of the valve, remove seal retainer, back-up washer, and spool O-ring seal.
5. Thoroughly clean counter-bore.
6. Lightly oil new O-ring seal. Slide O-ring seal over valve spool and insert in seal counter-bore. Replace back-up washer and seal retainer.
7. At the BACK of the valve replace bonnet assembly parts, reversing the order in which they were disassembled in step 3. Use 12 ft-lb torque to tighten assembly screw.



8. At the FRONT of the valve remove all parts connected to the spool (handle, linkage, etc.).

9. At the FRONT of the valve remove seal plate retainer, seal retainer, back-up washer, and spool O-ring seal.

10. Thoroughly clean counter-bore.

11. Lightly oil new O-ring seal. Slide O-ring seal over valve spool and insert in seal counter-bore. Replace back-up washer, seal retainer, and seal plate retainer.

12. Reattach all parts connected to spool (handle, linkage, etc.).

HEAVY DUTY SPOOL SEAL KIT

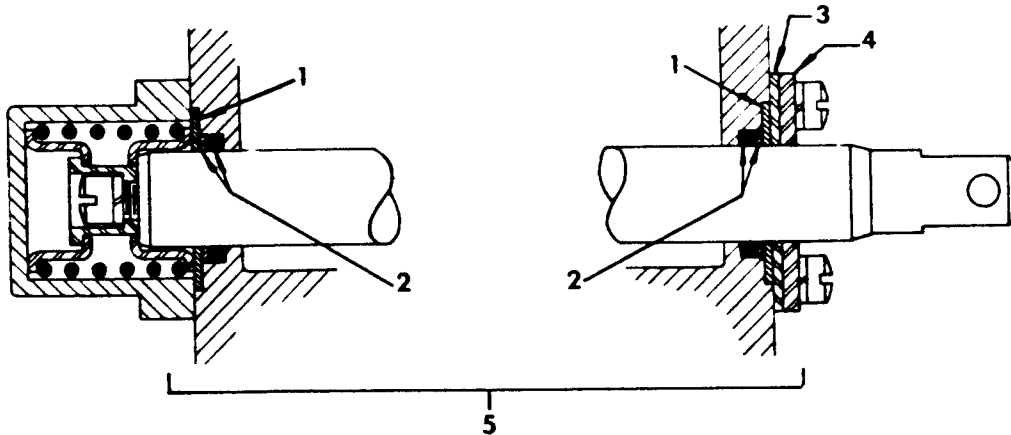


FIG 7

Index Part No.	ARPS Part No.	Description	Quantity Per Section
1	*	Heavy Duty Seal Retainer.....	2
2	10316	O-Ring Seal and Back-Up Kit.....	1
3	*	Regular Duty Retainer Plate.....	1
4	*	Heavy Duty Retainer Plate.....	1
5	852170	Heavy Duty Spool Seal Kit.....	1

* Not available as a separate repair part, order complete kit.

SPECIFICATIONS

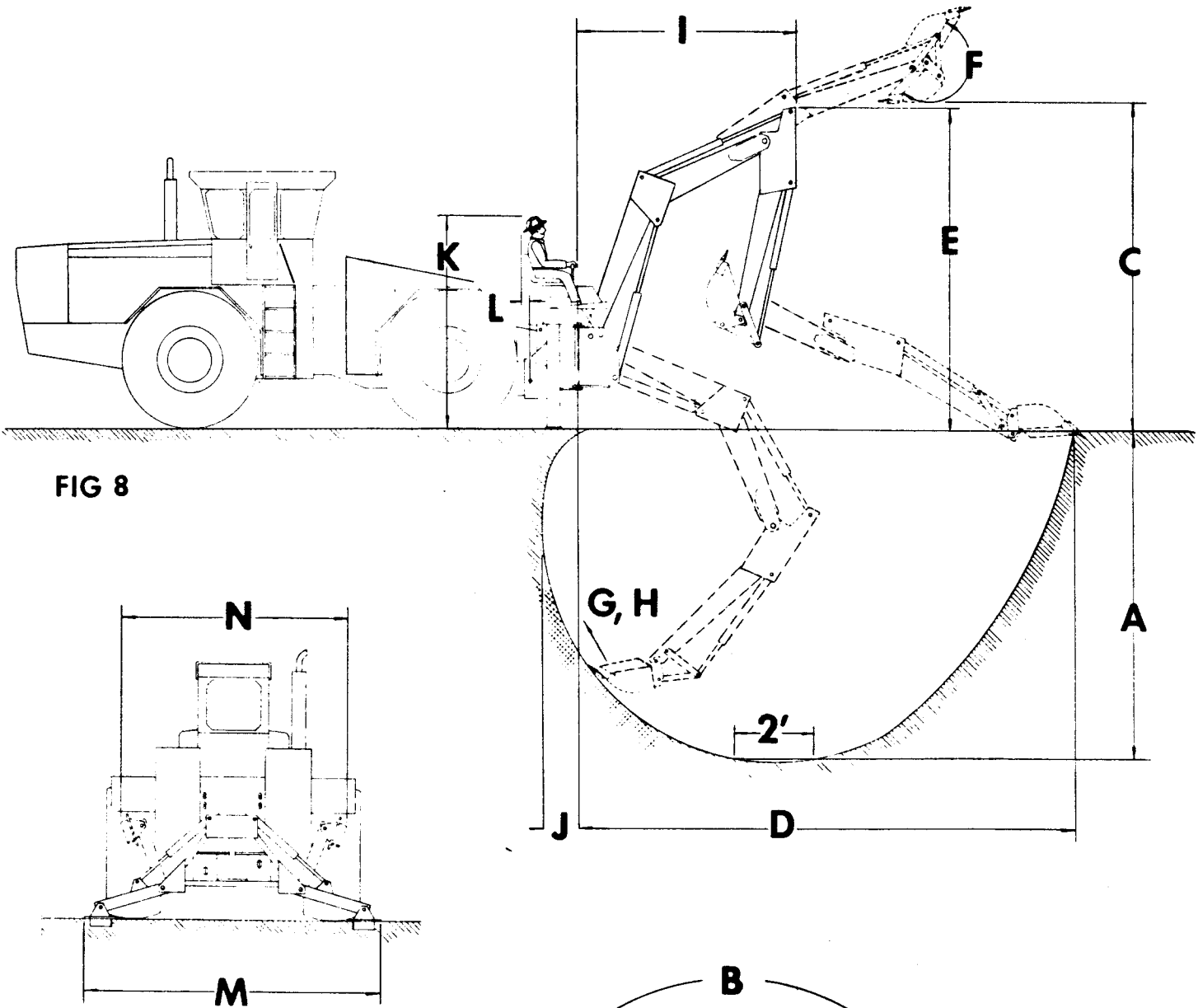


FIG 8

FIG 9

FIG 10

SPECIFICATIONS

General Data:

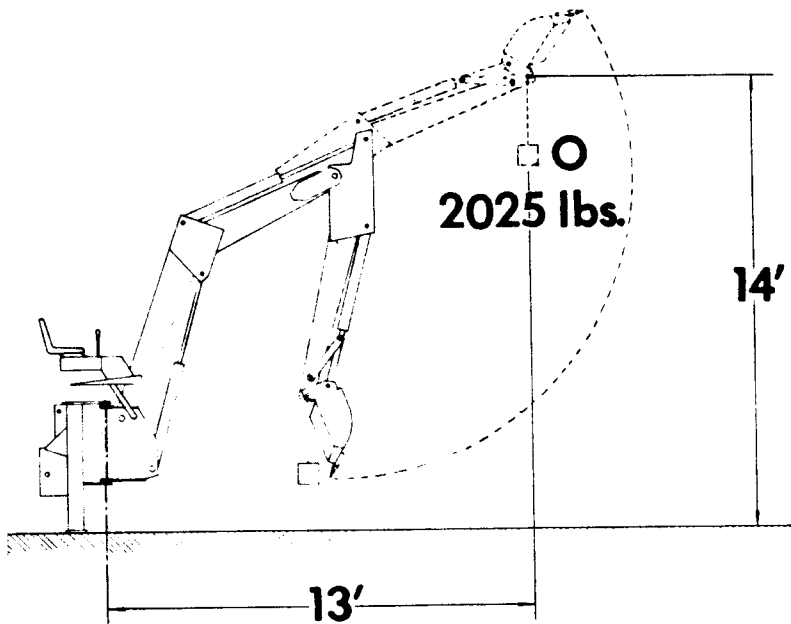


FIG 11 (A)

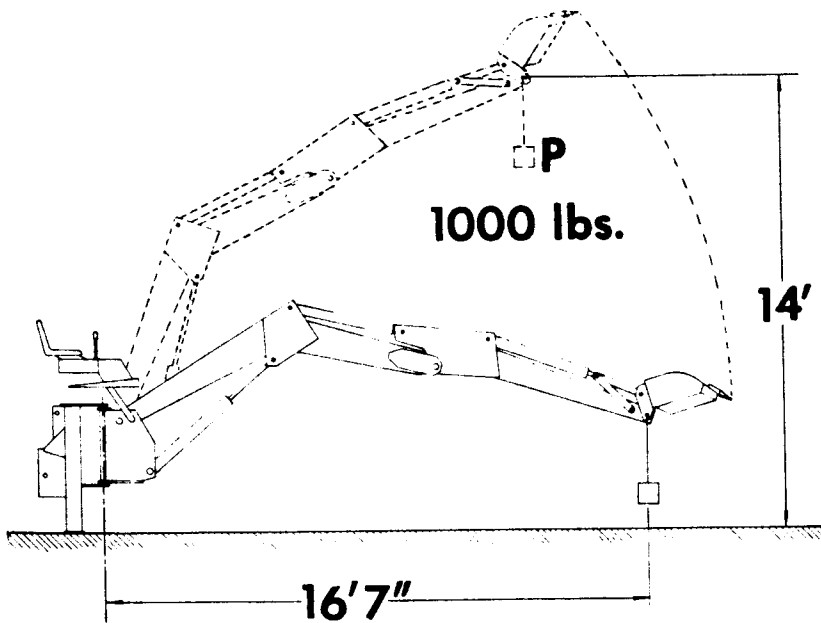


FIG 11 (B)

- A. Digging Depth.....12' 7"*
(two foot flat bottom)
 - B. Swing Arc.....180°*
 - C. Loading Height.....12' 2"*
 - D. Reach from Center Line
of Swing Pivot.....19' 0"*
 - E. Transport Height.....12' 0"*
(maximum)
 - F. Bucket Rotation.....197°*
 - G. Bucket Roll Force (at 2025 PSI)
.....in excess of 6500 lbs.*
 - H. Bucket Pry-Out Force
.....in excess of 13,000 lbs.** ..
 - I. Transport Overhang.....8' 0"
(from center line of
swing pivot)
 - J. Undercut.....1' 8"
(from center line of
swing pivot)
 - K. Minimum overhead clear-
ance for operator.....9' 3"***
(with boom/swing frame
pivot 42" from ground)
 - L. Minimum swing-by clear-
ance for operator.....0' 9"***
(with lower link pin
21" from ground)
 - M. Hydraulic Stabilizer
spread, down.....11' 0"
 - N. Hydraulic Stabilizer
clearance, raised.....7' 8"*
 - O. Dipperstick Lift
Ability.....2025 lbs.*
(boom up, lifting with dipper
cylinder only, weight attached
as shown, at 2025 PSI)
 - P. Boom Lift Ability.....1000 lbs.*
(dipper arm and boom extended,
lifting with boom cylinder only,
weight attached as shown,
at 2025 PSI)
- Shipping Weight.....3400 lbs.

* Meets specifications definitions
of IEMC.

** Depending on fulcrum established
by bucket attitude.

*** Dimensions to maintain adequate
clearance between operator and
ROPS/Cab.

SPECIFICATIONS

Bucket Data:

BUCKET	WIDTH	SAE STRUCK CAPACITY	HEAPED CAPACITY	SHIPPING WEIGHT
W109	18 in.	2.3 cu. ft.	2.9 cu. ft.	135 lbs.
W110	24 in.	3.2 cu. ft.	4.2 cu. ft.	165 lbs.
W111	30 in.	4.1 cu. ft.	5.5 cu. ft.	190 lbs.
W112	36 in.	5.0 cu. ft.	6.8 cu. ft.	215 lbs.
W113	42 in.	5.8 cu. ft.	8.0 cu. ft.	240 lbs.

Cylinder Data:

CYLINDER	PISTON		RETRACTED	EXTENDED	ROD DIA.	PIVOT PIN		TYPE OF ACTION
	DIA.	STROKE	LENGTH	LENGTH		DIA.	DIA.	
070 - BOOM	3-1/2	31-1/2	42-1/2	74	1-3/4	2	Base 1-3/4 Rod	DA
*071 - DIPPER	3	31-1/2	42-1/2	74	1-3/4	1-3/4		DA
*071 - BUCKET	3	31-1/2	42-1/2	74	1-3/4	1-3/4		DA
072 - STABILIZER	3	17-15/16	26-3/4	44-11/16	1-3/4	1-1/4	Base 1-1/8 Rod	DA
069 - SWING	4**	15-1/2	DNA***	DNA***	1-1/2	DNA***		SA

* Identical cylinders used for both functions.

** Effective area is 4 inch dia less 1-1/2 inch dia for rod, or 10.700 square inch.

*** Spherical socket mounted cylinder.

Hydraulic Data:

Gallons Per Minute.....Average requirements for backhoe would be approximately 12 - 15 GPM.

System Pressure, Backhoe.....2025 PSI (backhoe relief valve setting for open-center systems).

2525 PSI (backhoe relief valve setting for closed-center systems - refer to W107 Closed-Center Kit).

Fluid, Tractor System.....Refer to tractor hydraulic oil specifications.

REMOVAL FROM TRACTOR - STORAGE

The backhoe is self-assisting during the installation and removal procedures. For removal and storage follow these steps:

1. Put the stabilizers down and lift the the hoe slightly.
2. Stretch out the boom, dipperstick, and bucket, as shown in Fig 12. Lower the bucket to the ground so that it rests there solidly.
3. Place suitable blocking under the backhoe main frame and swing frame to support it adequately at points shown in Fig 13.
4. Detach the backhoe from the tractor mechanically only, not hydraulically at this point, and move the tractor a few inches away from the backhoe.

NOTE - To facilitate this procedure, the backhoe can still be hydraulically moved, raised or lowered, to release the connection points of the carrying forces.

5. Slowly lower the backhoe onto the blocking at points shown in Fig 13. The stabilizers should remain outstretched

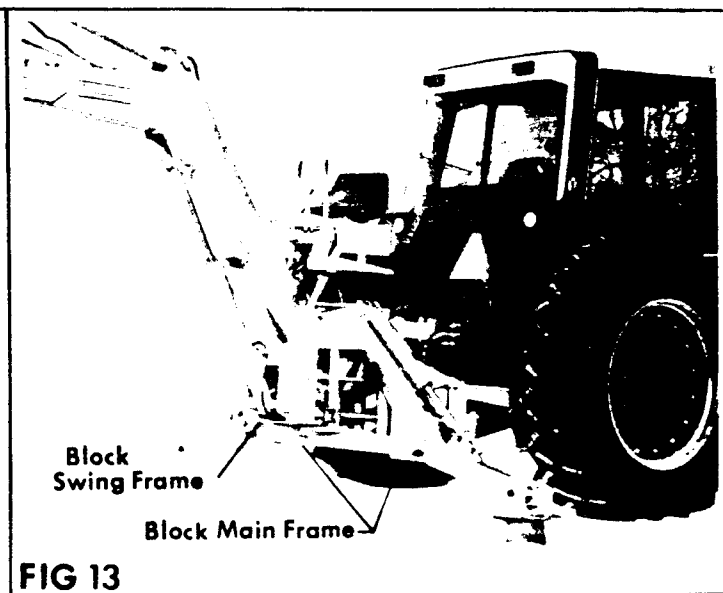
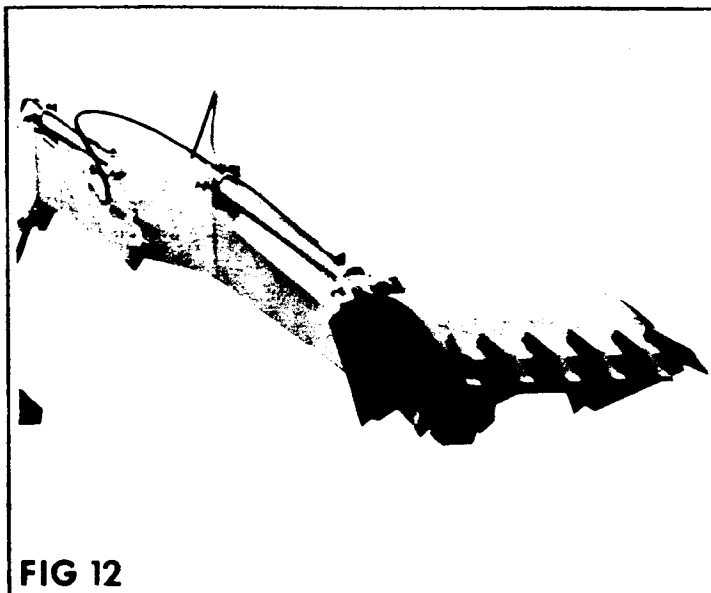
and firmly in contact with the ground for added stability.

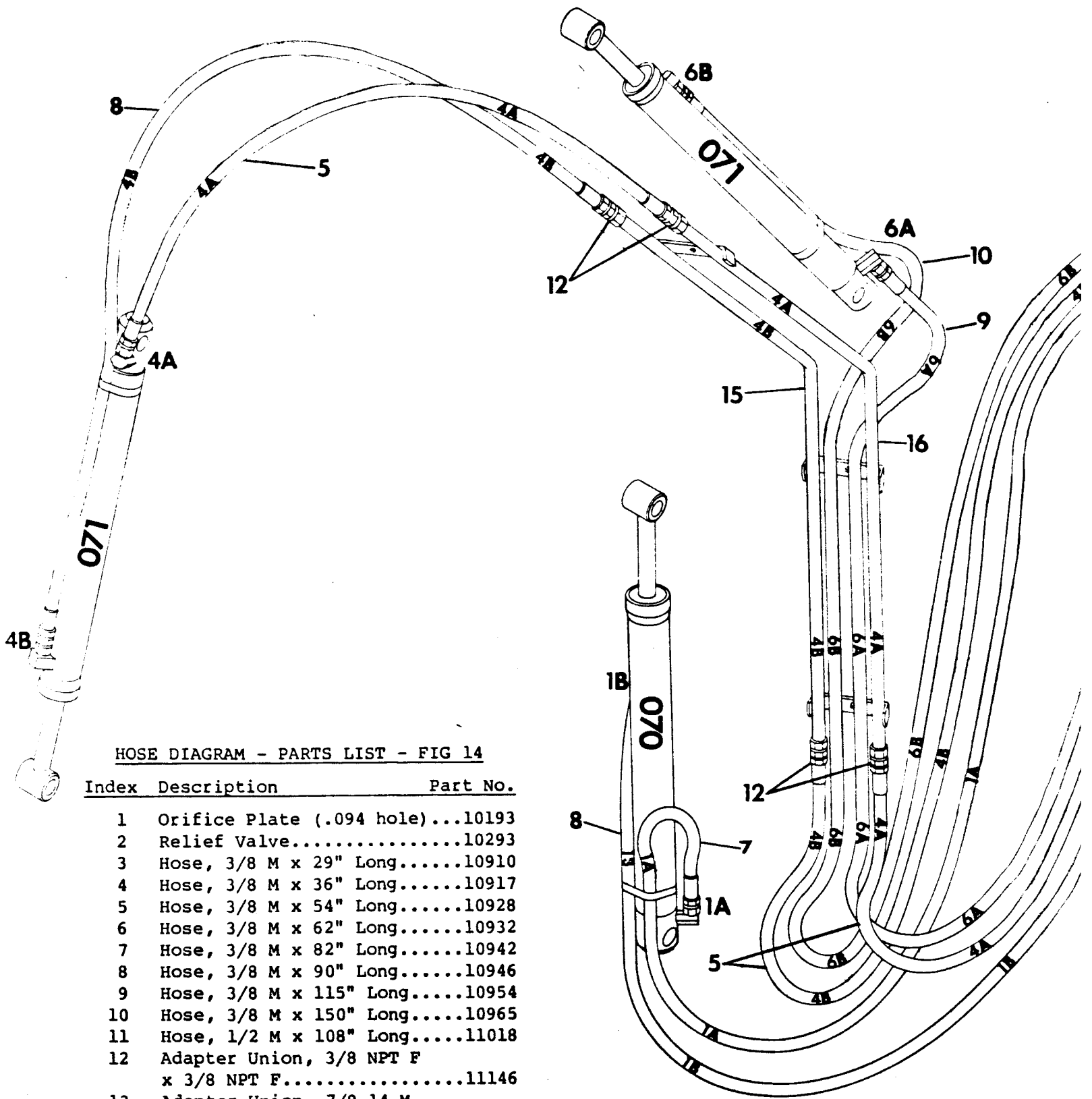
6. The hydraulic system can now be de-actuated. Disconnect the pressure and return lines from the tractor hydraulic source.

IMPORTANT - Be sure to mark the lines to prevent mix-up when the hoe is again attached to the tractor.

Be sure to cap the ends of the lines to keep them clean while in storage.

7. Slowly drive the tractor forward and away from the backhoe. Be sure that all parts clear each other during separation.
8. Refer to the Basic Assembly Instructions for help with removal and re-attaching.
9. For long term storage, coat exposed lift, swing, and stabilizer cylinder rods with grease.
10. Lubricate all grease fittings and oil complete handle linkage.

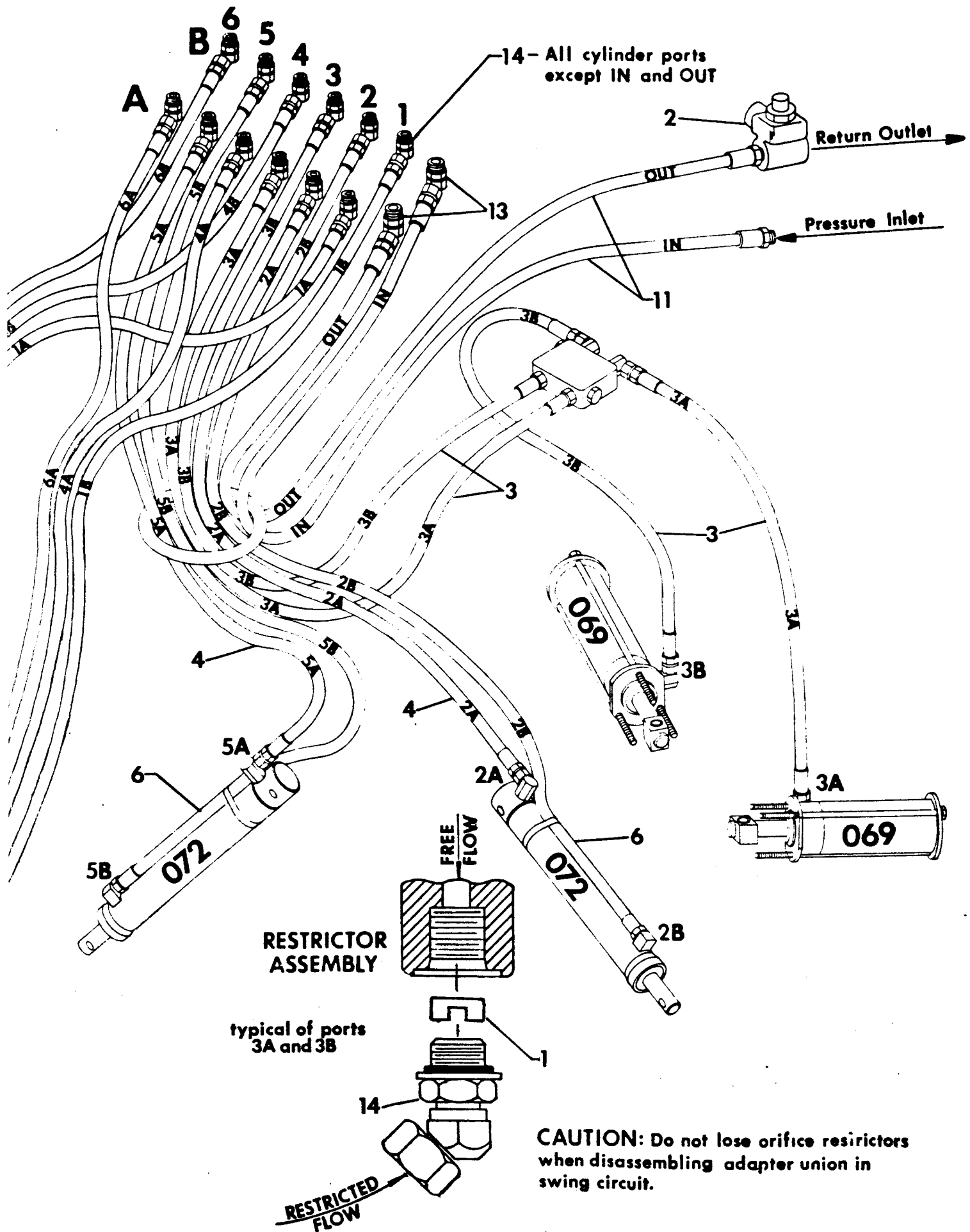




HOSE DIAGRAM - PARTS LIST - FIG 14

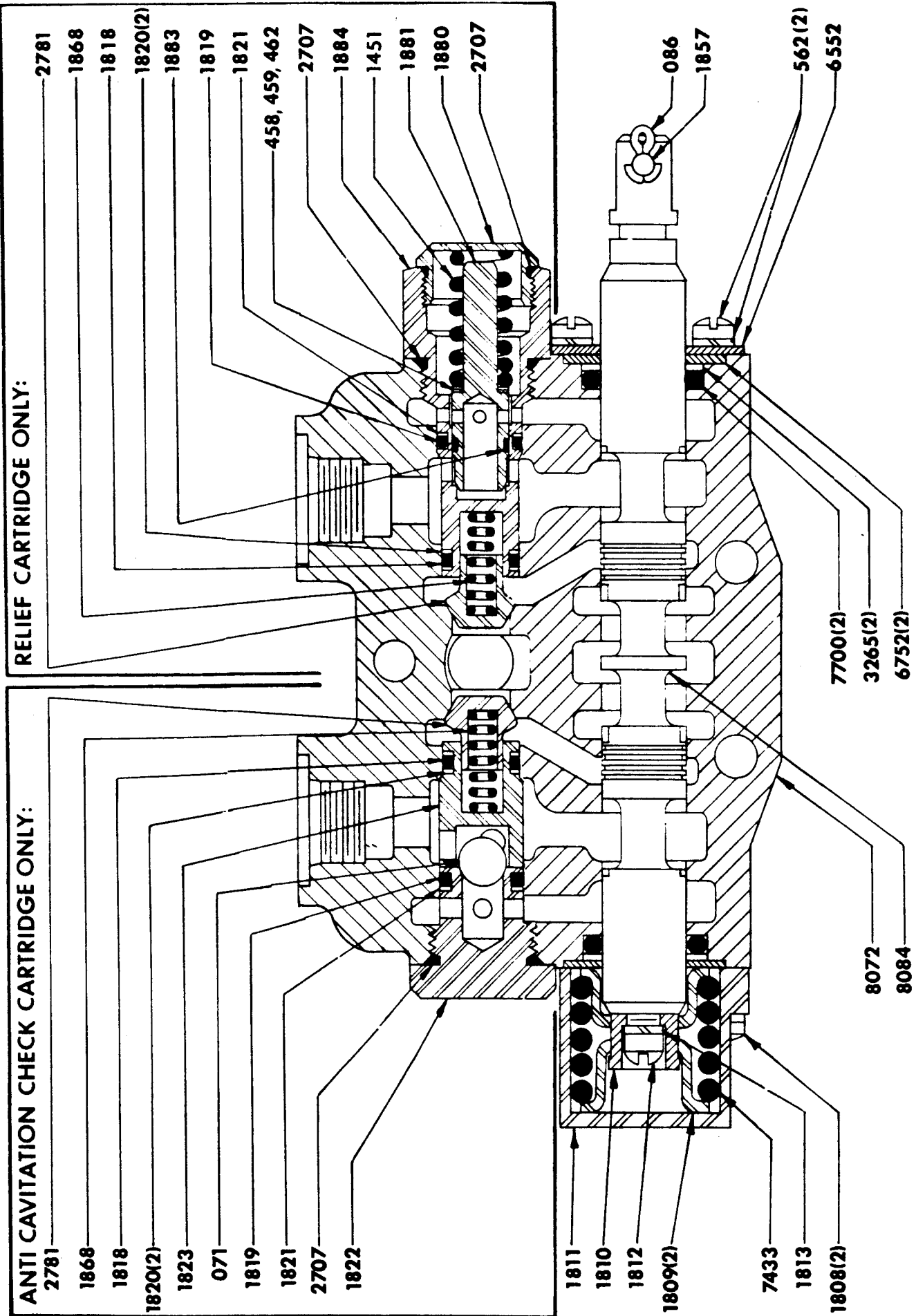
Index	Description	Part No.
1	Orifice Plate (.094 hole)...	10193
2	Relief Valve.....	10293
3	Hose, 3/8 M x 29" Long.....	10910
4	Hose, 3/8 M x 36" Long.....	10917
5	Hose, 3/8 M x 54" Long.....	10928
6	Hose, 3/8 M x 62" Long.....	10932
7	Hose, 3/8 M x 82" Long.....	10942
8	Hose, 3/8 M x 90" Long.....	10946
9	Hose, 3/8 M x 115" Long.....	10954
10	Hose, 3/8 M x 150" Long.....	10965
11	Hose, 1/2 M x 108" Long.....	11018
12	Adapter Union, 3/8 NPT F x 3/8 NPT F.....	11146
13	Adapter Union, 7/8-14 M x 1/2 NPT F x 45°.....	11147
14	Adapter Union, 3/4-16 M x 3/8 NPT F x 45°.....	11149
15	RH Pipe Line.....	853227
16	LH Pipe Line.....	853228

FIG 14



CONTROL VALVE SECTION

TYPICAL SECTION FOR LIFT CIRCUIT



ANTI CAVITATION CHECK CARTRIDGE ONLY:

RELIEF CARTRIDGE ONLY:

- 2781
- 1868
- 1818
- 1820(2)
- 1883
- 1819
- 1821
- 458, 459, 462
- 2707
- 1884
- 1451
- 1881
- 1880
- 2707

- 2781
- 1868
- 1818
- 1820(2)
- 1823
- 071
- 1819
- 1821
- 2707
- 1822

- 1811
- 1810
- 1812
- 1809(2)
- 7433
- 1813
- 1808(2)

- 086
- 1857
- 562(2)
- 6552
- 7700(2)
- 3265(2)
- 6752(2)
- 8072
- 8084

FIG 15

CONTROL VALVE SECTION - LIFT CIRCUIT

PARTS LIST - FIG 15

Gresen Part No.	ARPS Part No.	Description	Quantity Per Section
071	*	7/16" Steel Ball.....	1
086	*	Handle Pin Cotter.....	1
458	*	Shim, .040" Thick)	
459	*	Shim, .020" Thick).....	as required
462	*	Shim, .010" Thick)	
562	*	Machine Screw and Lockwasher.....	2
1451	*	Spring (1751-2200 PSI Crack).....	1
1808	*	Bonnet Screw.....	2
1809	*	Stop Collar.....	2
1810	*	Spool Collar.....	1
1811	*	Bonnet.....	1
1812	*	Spool Assembly Screw.....	1
1813	*	Spool Assembly Screw Lockwasher.....	1
1818	**	O-Ring Seal (Inner).....	2
1819	**	O-Ring Seal (Outer).....	2
1820	**	Back-Up Washer (Inner).....	4
1821	**	Back-Up Washer (Outer).....	2
1822	*	Anti-Cavitation Check Body.....	1
1823	*	Check Ball Retainer.....	1
1857	*	Handle Pin.....	1
1868	*	Check Spring.....	2
1880	*	Relief Cap.....	1
1881	**	Relief Poppet.....	1
1883	**	Piston Ring.....	1
1884	*	Relief Body.....	1
2707	**	O-Ring Seal.....	3
2781	*	Steel Check.....	2
3265	**	Back-Up Washer.....	2
6552	*	Seal Plate Retainer.....	1
6752	*	Seal Retainer.....	2
7433	*	Centering Spring.....	1
7700	**	Spool O-Ring Seal.....	2
8072	*	Center Section Housing.....	1
8084	*	Four-Way Spool.....	1
	10186	Control Valve Section - Lift Circuit, consisting of above listed parts.....	1
K-19002	10177	Poppet Seal Kit; consisting of: 1881 (1) and 1883 (1) ..	1
K-6027	10315	Section Seal Kit - Lift Circuit; consisting of: 1818 (2), 1819 (2), 1820 (4), 1821 (2), 2707 (2), 6814 (2), 6815 (2), and 7700 (2).....	1
K-6035	10316	Spool Seal Kit; consisting of: 3265 (2) and 7700 (2).	1
	10299	Relief Cartridge (1800 PSI), as shown.....	1
K-6005A	10313	Relief Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), and 2707 (2).....	1
K-6021	10304	Anti-Cavitation Check Cartridge, as shown.....	1
K-6005A	10313	Anti-Cavitation Check Seal Kit, same as Relief Cartridge Seal Kit listed above.....	1

* Not available as a separate repair part, order complete section or cartridge.

** Not available as a separate repair part, order seal kit.

CONTROL VALVE SECTION

TYPICAL SECTION FOR CROWD CIRCUIT

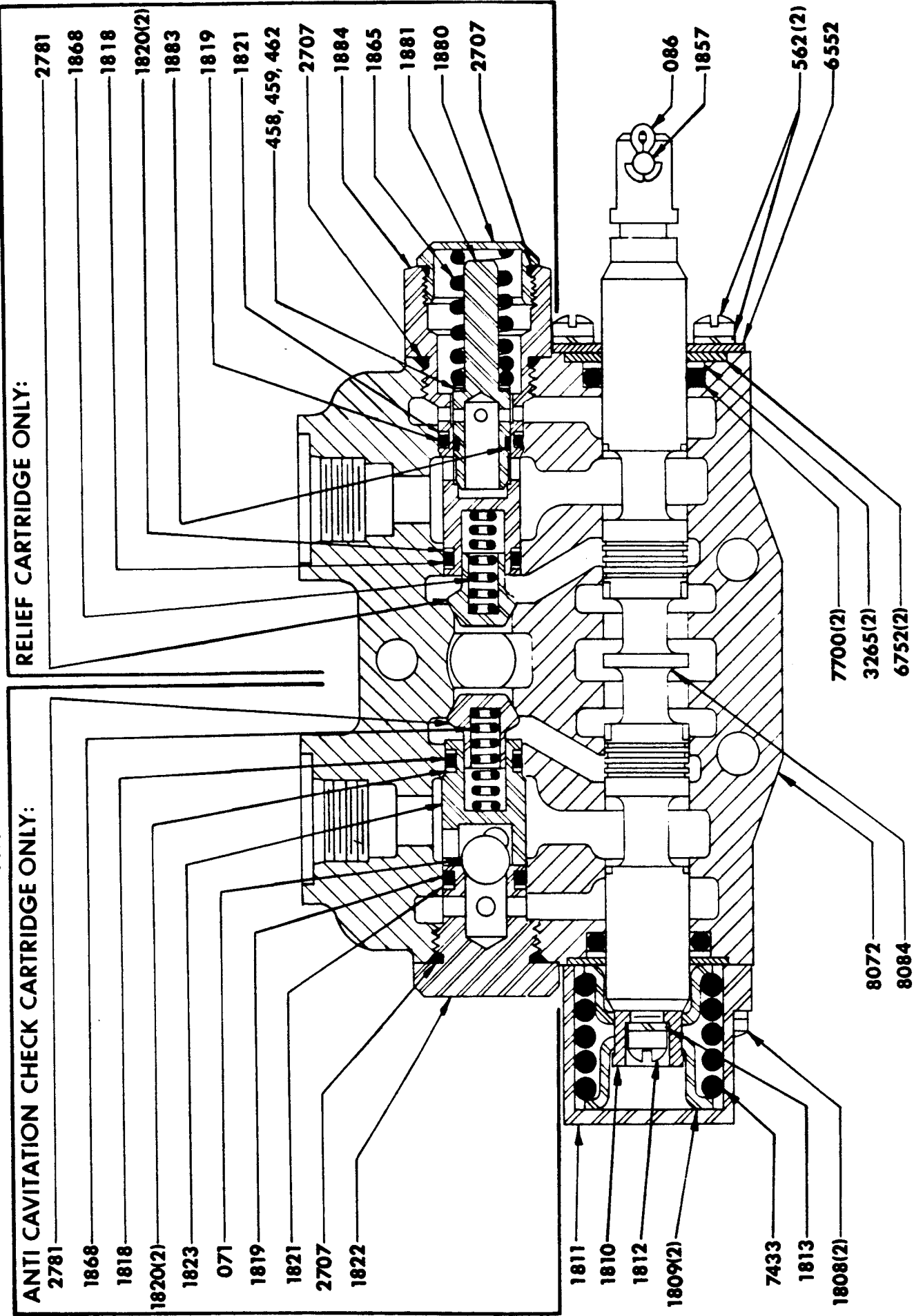


FIG 16

CONTROL VALVE SECTION - CROWD CIRCUIT

PARTS LIST - FIG 16

Gresen Part No.	ARPS Part No.	Description	Quantity Per Section
071	*	7/16" Steel Ball.....	1
086	*	Handle Pin Cotter.....	1
458	*	Shim, .040" Thick)	
459	*	Shim, .020" Thick).....	as required
462	*	Shim, .010" Thick)	
562	*	Machine Screw and Lockwasher.....	2
1808	*	Bonnet Screw.....	2
1809	*	Stop Collar.....	2
1810	*	Spool Collar.....	1
1811	*	Bonnet.....	1
1812	*	Spool Assembly Screw.....	1
1813	*	Spool Assembly Screw Lockwasher.....	1
1818	**	O-Ring Seal (Inner).....	2
1819	**	O-Ring Seal (Outer).....	2
1820	**	Back-Up Washer (Inner).....	4
1821	**	Back-Up Washer (Outer).....	2
1822	*	Anti-Cavitation Check Body.....	1
1823	*	Check Ball Retainer.....	1
1857	*	Handle Pin.....	1
1865	*	Spring (2201-3000 PSI Crack).....	1
1868	*	Check Spring.....	2
1880	*	Relief Cap.....	1
1881	**	Relief Poppet.....	1
1883	**	Piston Ring.....	1
1884	*	Relief Body.....	1
2707	**	O-Ring Seal.....	3
2781	*	Steel Check.....	2
3265	**	Back-Up Washer.....	2
6552	*	Seal Plate Retainer.....	1
6752	*	Seal Retainer.....	2
7433	*	Centering Spring.....	1
7700	**	Spool O-Ring Seal.....	2
8072	*	Center Section Housing.....	1
8084	*	Four-Way Spool.....	1
	10155	Control Valve Section - Crowd Circuit, consisting of above listed parts.....	1
K-19002	10177	Poppet Seal Kit; consisting of: 1881 (1) and 1883 (1)..	1
K-6027	10315	Section Seal Kit - Crowd Circuit; consisting of: 1818 (2), 1819 (2), 1820 (4), 1821 (2), 2707 (2), 6814 (2), 6815 (2), and 7700 (2).....	1
K-6035	10316	Spool Seal Kit; consisting of: 3265 (2) and 7700 (2).	1
	10303	Relief Cartridge (2500 PSI), as shown.....	1
K-6005A	10313	Relief Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), and 2707 (2).....	1
K-6021	10304	Anti-Cavitation Check Cartridge, as shown.....	1
K-6005A	10313	Anti-Cavitation Check Seal Kit, same as Relief Cartridge Seal Kit listed above.....	1

* Not available as a separate repair part, order complete section or cartridge.
 ** Not available as a separate repair part, order seal kit.

CONTROL VALVE SECTION

TYPICAL SECTION FOR ACTUATE (BUCKET), SWING, AND STABILIZER CIRCUITS

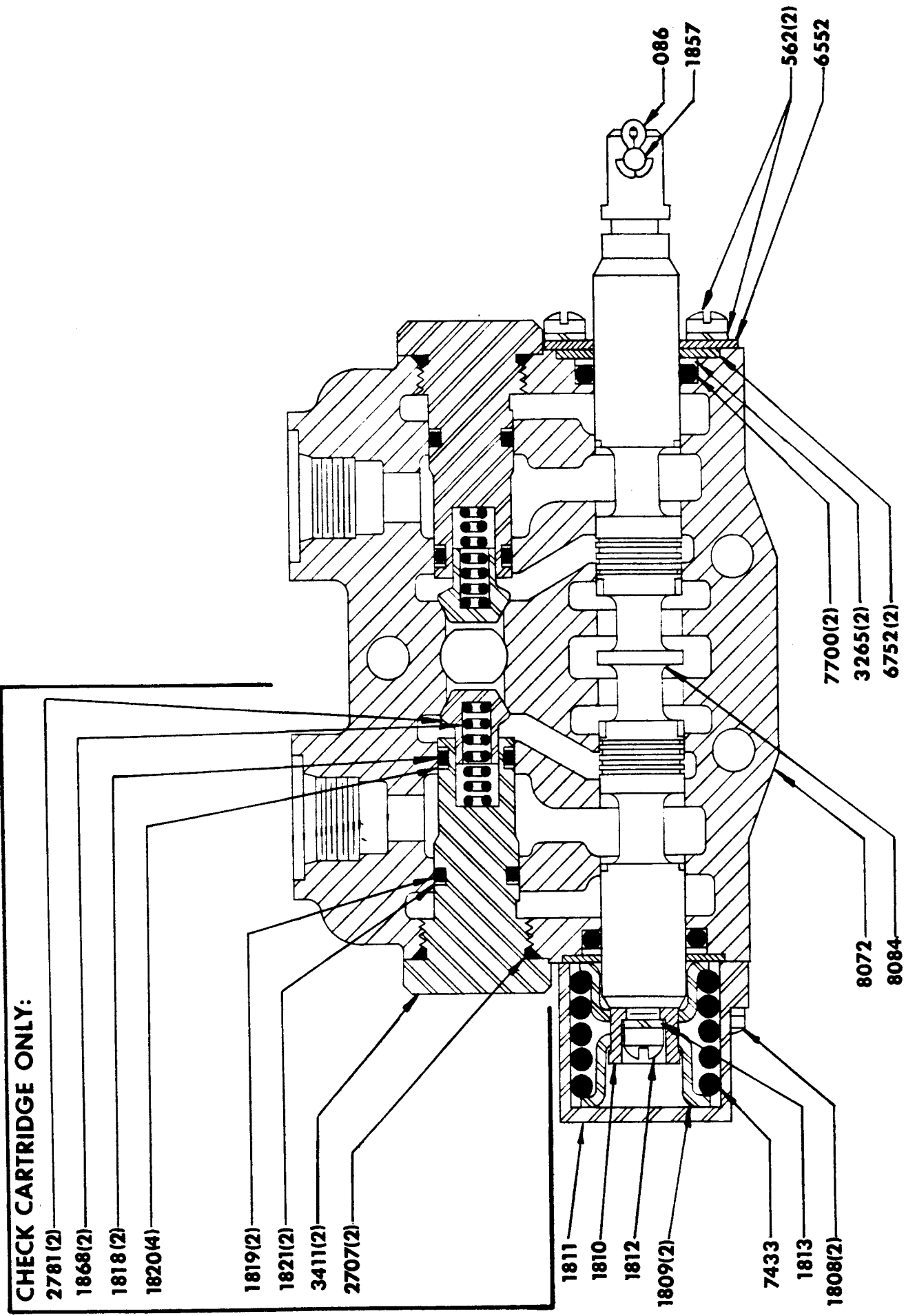


FIG 17

CONTROL VALVE SECTION - ACTUATE (BUCKET), SWING, AND STABILIZER CIRCUITS

PARTS LIST - FIG 17

Gresen Part No.	ARPS Part No.	Description	Quantity Per Section
086	*	Handle Pin Cotter.....	1
562	*	Machine Screw and Lockwasher.....	2
1808	*	Bonnet Screw.....	2
1809	*	Stop Collar.....	2
1810	*	Spool Collar.....	1
1811	*	Bonnet.....	1
1812	*	Spool Assembly Screw.....	1
1813	*	Spool Assembly Screw Lockwasher.....	1
1818	**	Check Plug O-Ring Seal (Inner).....	2
1819	**	Check Plug O-Ring Seal (Outer).....	2
1820	**	Back-Up Washer (Inner).....	4
1821	**	Back-Up Washer (Outer).....	2
1857	*	Handle Pin.....	1
1868	*	Lift Check Spring.....	2
2702	**	Lift Check Plug O-Ring Seal.....	2
2707	*	Lift Check Poppet.....	2
3265	**	Back-Up Washer.....	2
3411	*	Lift Check Plug.....	2
6552	*	Seal Plate Retainer.....	1
6752	*	Seal Retainer.....	2
7433	*	Centering Spring.....	1
7700	**	Spool O-Ring Seal.....	2
8072	*	Center Section Housing.....	1
8084	*	Four-Way Spool.....	1
	10156	Control Valve Section - Actuate (Bucket), Swing, and Stabilizer Circuits, consisting of above listed parts.....	1
		NOTE - Two Orifice Plates (10193) must be added to complete Swing Section.	
K-6027	10315	Section Seal Kit - Actuate (Bucket), Swing, and Stabilizer Circuits; consisting of: 1818 (2), 1819 (2), 1820 (4), 1821 (2), 2707 (2), 6814 (2), 6815 (2), and 7700 (2).....	1
K-6035	10316	Spool Seal Kit; consisting of: 3265 (2) and 7700 (2).....	1
K-6030	10305	Check Cartridge, as shown.....	2
K-6005A	10313	Check Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), and 2707 (2).....	2

* Not available as a separate repair part, order complete section or cartridge.

** Not available as a separate repair part, order seal kit.

MAIN SYSTEM RELIEF VALVE (2025 PSI)

LOCATION: LEFT HAND VALVE COVER

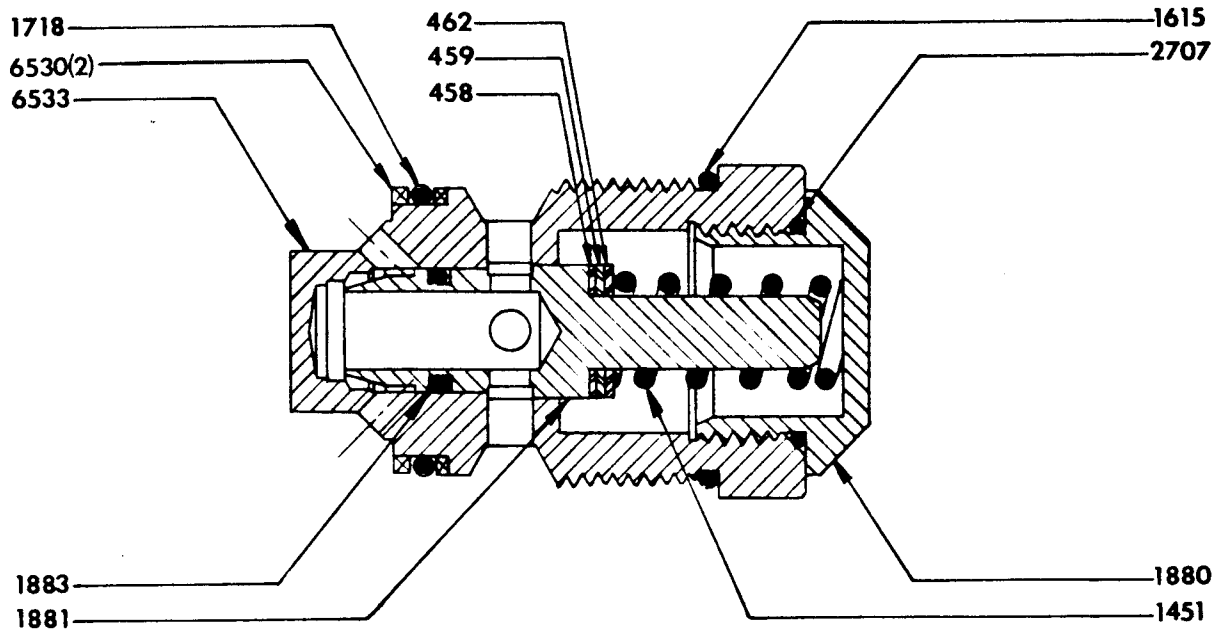


FIG 18

MAIN SYSTEM RELIEF VALVE

PARTS LIST - FIG 18

Gresen

Part No.	Part No.	Description	Required
458	*	Shim, .040" Thick)	
459	*	Shim, .020" Thick).....	as required
462	*	Shim, .010" Thick)	
1451	*	Spring (1751-2200 PSI Crack).....	1
1615	**	O-Ring Seal.....	1
1718	**	O-Ring Seal.....	1
1880	*	Relief Cap.....	1
1881	**	Relief Poppet.....	1
1883	**	Piston Ring.....	1
2707	**	O-Ring Seal.....	1
6530	**	Back-Up Washer.....	2
6533	*	Body.....	1
	10174	Main System Relief Valve, consisting of above listed parts.....	1
	10172	Seal and Service Kit; consisting of: 1615 (1), 1718 (1), 1881 (1), 1883 (1), 2707 (1), and 6530 (2).....	1

* Not available as a separate repair part, order complete Main System Relief Valve.

** Not available as a separate repair part, order Seal and Service Kit.

CROSS-OVER RELIEF VALVE

LOCATED IN SWING CIRCUIT OF HYDRAULIC SYSTEM

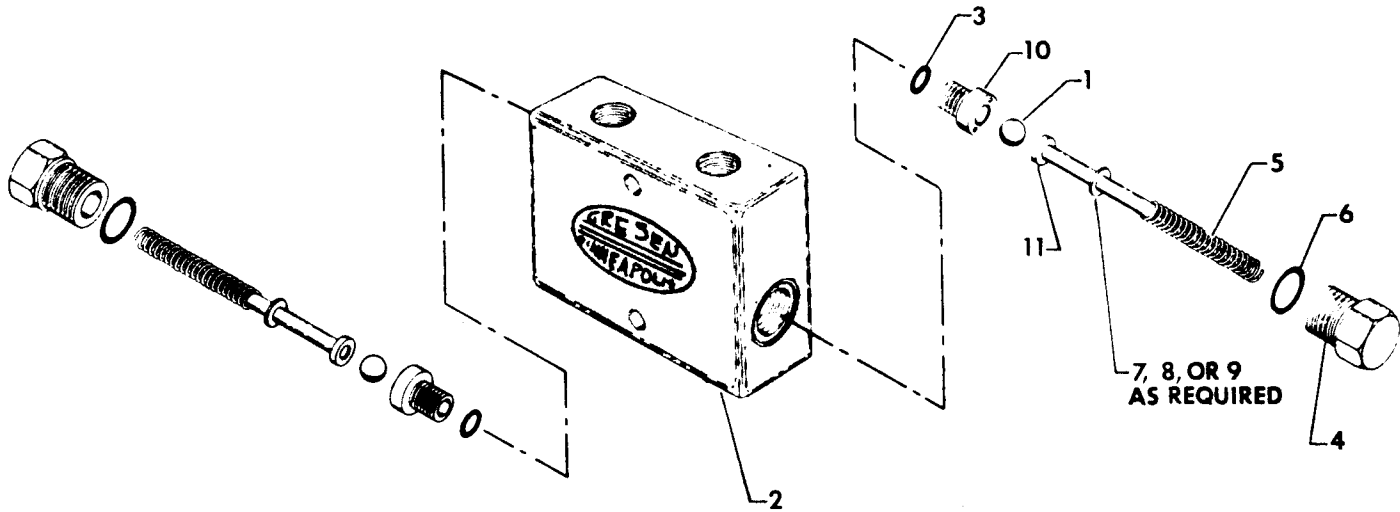


FIG 19

CROSS-OVER RELIEF VALVE
PARTS LIST - FIG 19

Index	Part No.	Description	Required
1	*	Ball.....	2
2	*	Valve Housing.....	1
3	*	Seat O-Ring.....	2
4	*	Spring Cap.....	2
5	*	Spring (2001-3000 PSI Crack).....	2
6	*	Spring Cap O-Ring.....	2
7	*	Shim, .040" Thick)	
8	*	Shim, .020" Thick).....	as required
9	*	Shim, .010" Thick)	
10	*	Seat.....	2
11	*	Ball and Spring Guide.....	2
	10442	Cross-Over Relief Valve Assembly, DXV-38; consisting of above listed parts and set at 2500 C.P.....	1

* Not available as a separate repair part, order complete Cross-Over Relief Valve.

ADDITIONAL REPAIR PARTS (NOT SHOWN)

Gresen Part No.	ARPS Part No.	Description	Required
K-6109	10160	Tie Rod Kit (Six-Spool) contains three Studs and three Stud Nuts.....	1
	10175	Left Hand End Cover with Main Relief Valve.....	1
	10176	Valve Seal Kit; containing all O-Rings and Back-Up Rings for a Six-Spool Valve.....	1
	10180	Six-Spool Valve.....	1
	10308	Right Hand End Cover.....	1
6814	10317	Section Seal (Pressure).....	2
6815	10318	Section Seal (Exhaust).....	2

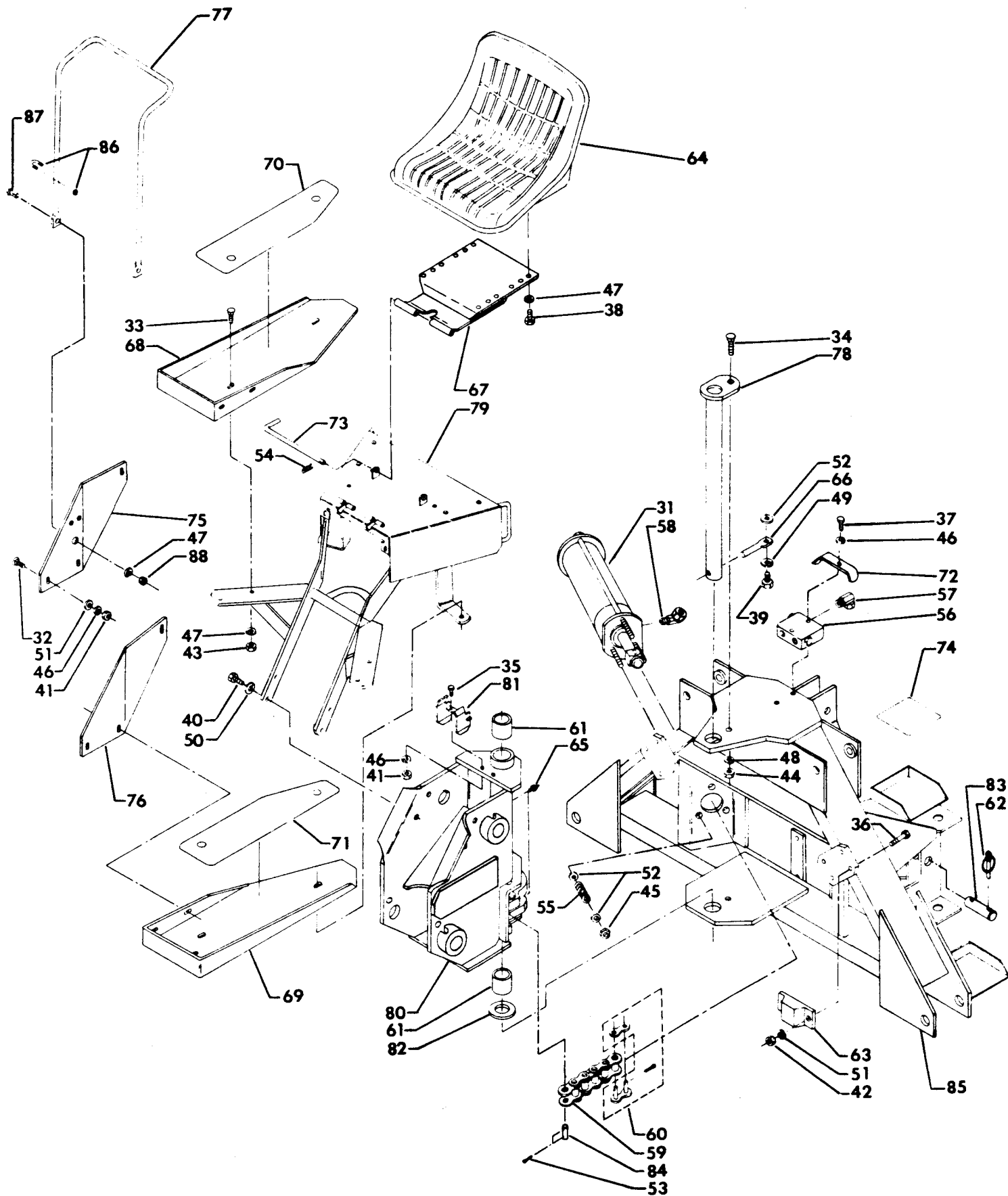


FIG 20

FIG 20 - Parts List

Index	Description	Part No.
31	Swing Cylinder Assembly, 4" Dia x 15-1/2 Stroke.....	069
32	Carriage Bolt, 5/16 NC x 1".....	6577
33	Carriage Bolt, 3/8 NC x 1".....	6608
34	Carriage Bolt, 1/2 NC x 1-3/4.....	6669
35	Bolt, 5/16 NC x 1".....	6794
36	Bolt, 5/16 NC x 1-3/4.....	6805
37	Bolt, 5/16 NC x 3-1/2.....	6816
38	Bolt, 3/8 NC x 3/4.....	6829
39	Bolt, 1/2 NF x 1-1/4.....	7017
40	Bolt, 5/8 NF x 1-1/4.....	7119
41	Nut, 5/16 NC.....	7431
42	Lock Nut, 5/16 NC.....	7433
43	Nut, 3/8 NC.....	7451
44	Nut, 1/2 NC.....	7501
45	Lock Nut, 1/2 NF.....	7515
46	Lockwasher, 5/16.....	8071
47	Lockwasher, 3/8.....	8079
48	Lockwasher, 1/2.....	8101
49	Lockwasher, 1/2, Internal Keyed.....	8103
50	Lockwasher, 5/8.....	8111
51	Flat Washer, 5/16.....	8151
52	Flat Washer, 1/2.....	8173
53	Cotter Pin, 1/4 x 1-1/2.....	8602
54	Wire Form Cotter.....	8618
55	Spring.....	8746
56	Cushion Valve.....	10442
57	Adapter Union, 3/8 NPT M x 3/8 NPT F x 90°.....	11127
58	Adapter Union, 3/8 NPT M x 3/8 NPT F x 45°.....	11135
59	Roller Chain, ASA 200, Five-Link Section.....	11491
60	Connector Link, ASA 200.....	11492
61	Iron Bearing.....	11996
62	Quick Release Pin.....	13494
63	Bumper Stop.....	13681
64	Seat.....	13912
65	Grease Fitting, 1/8 NPT.....	14500
66	Pin Retainer.....	851123
67	Seat Mount Weldment.....	854055
68	RH Foot Pad.....	852176
69	LH Foot Pad.....	852177
70	RH Foot Pad Surfacing.....	12902
71	LH Foot Pad Surfacing.....	12903
72	Hose Strap.....	852182
73	Adapter Pin.....	852183
74	LH Step Pad Surfacing.....	12904
75	RH Foot Guard.....	852203
76	LH Foot Guard.....	852204
77	Handle Loop.....	852517
78	Swing Shaft Weldment.....	853045
79	Seat Adapter Weldment.....	853455

Index	Description	Part No.
80	Swing Frame Weldment.....	853145
81	Hose Retainer Bracket.....	853226
82	Thrust Washer.....	853233
83	Lower Hitch Pin.....	853258
84	Chain Pin.....	853261
85	Main Frame Weldment.....	853000
86	U-Bolt and Nuts.....	14002
87	Bolt, 3/8 NF x 1".....	6851
88	Nut, 3/8 NF, SAE 5.....	7461

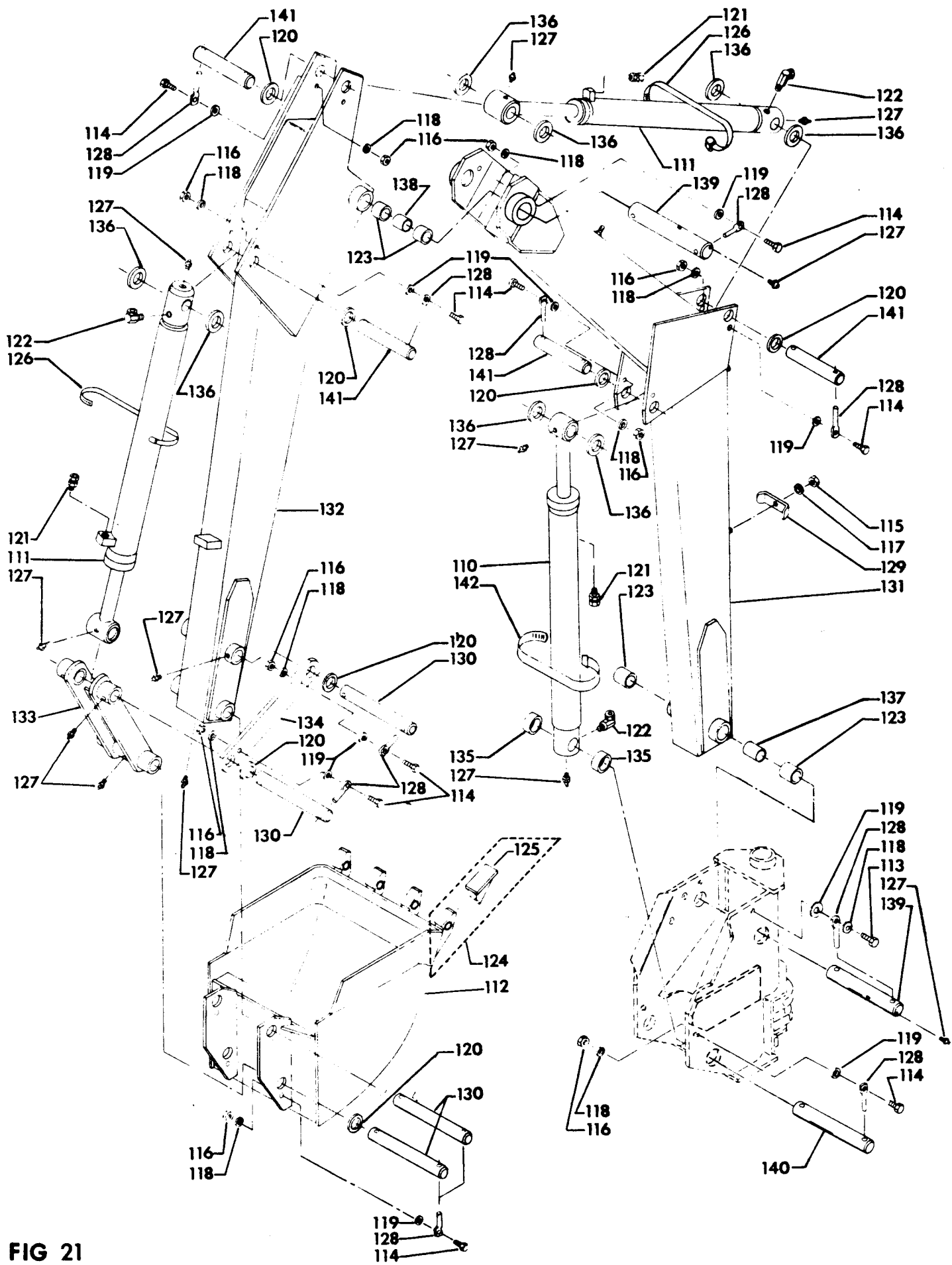


FIG 21

FIG 21 - Parts List

Index	Description	Part No.
110	Boom Cylinder Assembly, 3-1/2 Dia x 31-1/2 Stroke.....	070
111	Bucket and Dipperstick Cylinder Assembly, 3" Dia x 31-1/2 Stroke.....	071
112	Bucket, 18".....	W109
112	Bucket, 24".....	W110
112	Bucket, 30".....	W111
112	Bucket, 36".....	W112
112	Bucket, 42".....	W113
113	Bolt, 1/2 NF x 1".....	7012
114	Bolt, 1/2 NF x 1-1/2.....	7028
115	Nut, 7/16 NF.....	7484
116	Nut, 1/2 NF.....	7511
117	Lockwasher, 7/16.....	8086
118	Lockwasher, 1/2.....	8101
119	Washer, 1/2 Flat.....	8173
120	Mach. Bushing, 2-1/2 OD x 1-3/4 ID.....	8304
121	Adapter Union, 3/8 NPT M x 3/8 NPT F.....	11109
122	Adapter Union, 3/8 NPT M x 3/8 NPT F x 90°.....	11127
123	Iron Bearing, 2-1/2 OD x 2" ID x 2-1/2 Long.....	11996
124	Tooth and Shank Assembly....	13613
125	Tooth only.....	13617
126	Hose Clamp.....	14157
127	Grease Fitting, 1/8 NPT.....	14500
128	Pin Retainer.....	851123
129	Hose Strap.....	852182
130	Pin, 1-3/4 Dia x 10-1/16...	852208
131	Boom Weldment.....	853080
132	Dipperstick Weldment.....	853110
133	Bucket Link Weldment.....	853135
134	Guide Link.....	853221
135	Cylinder Spacer.....	853223
136	Cylinder Spacer.....	853224
137	Long Bearing Spacer.....	853229
138	Short Bearing Spacer.....	853231
139	Dipper and Boom Pivot Pin..	853251
140	Pin, 2" Dia x 11-3/4.....	853252
141	Pin, 1-3/4 Dia x 7-1/4.....	853253
142	Hose Clamp.....	14158

VALVE AND CONTROL LEVERS

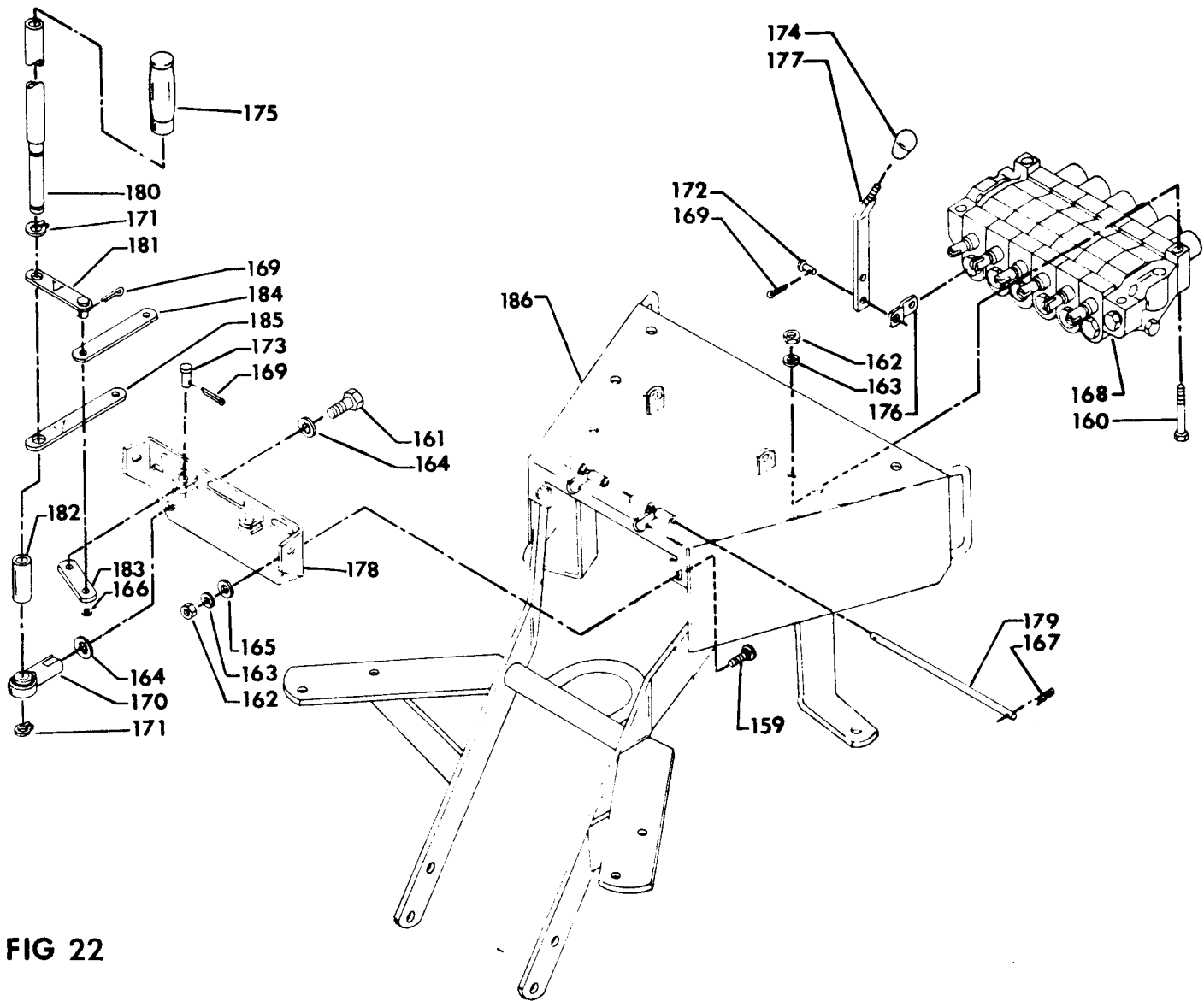


FIG 22

VALVE AND CONTROL LEVERS - PARTS LIST - FIG 22

Index	Description	Part No.	Index	Description	Part No.
159	Carriage Bolt, 5/16 NC x 1" ..	6577	173	Clevis Pin, 3/8 x 1"	13438
160	Bolt, 5/16 NC x 2-3/4	6819	174	Ball Knob	14064
161	Bolt, 5/8 NF x 1-3/4	7136	175	Control Lever Grip	14067
162	Nut, 5/16 NC	7431	176	Link	852181
163	Lockwasher, 5/16	8071	177	Stabilizer Control Lever ...	852258
164	Lockwasher, 5/8 Internal Shakeproof	8114	178	Control Mount Weldment	852510
165	Flat Washer, 5/16	8151	179	Handle Pivot Pin	852516
166	Flat Washer, 3/8 SAE	8158	180	Control Stick Weldment	853065
167	Wire Form Cotter	8618	181	Push Link Weldment	853075
168	Control Valve	10180	182	Spacer Tube	853234
169	Cotter Pin, 1/8 x 7/8	11503	183	Pivot Link	853236
170	Ball Joint	11995	184	Inside Spool Link	853237
171	Retaining Ring	13427	185	Outside Spool Link	853238
172	Clevis Pin, 5/16 x 1"	13437	186	Seat Adapter Weldment	853455

STABILIZER

STABILIZER - PARTS LIST - FIG 23

Index	Description	Part No.
190	Stabilizer Cylinder Assembly, 3" Dia x 17-15/16 Stroke.....	072
191	Bolt, 1/2 NF x 1".....	7012
192	Bolt, 5/8 NF x 1-3/4.....	7136
193	Nut, 5/8 NF.....	7536
194	Lockwasher, 1/2.....	8101
195	Lockwasher, 5/8.....	8111
196	Washer, 1/2.....	8173
197	Washer, 2-1/4 OD x 1-1/2 ID....	8232
198	Cotter Pin, 5/16 x 2-1/2.....	8614
199	Adapter Union, 3/8 NPT M x 3/8 NPT F x 90°.....	11127
200	Hose Clamp.....	14157
201	Grease Fitting.....	14500
202	Pin Retainer.....	851123
203	Pad Angle Weldment.....	853165
204	Stabilizer Weldment.....	853170
205	Stabilizer Pad Weldment....	853185
206	Pin, 1-1/4 Dia x 8-5/8.....	853254
207	Pin, 1-1/8 Dia x 4-3/8.....	853256
208	Pin, 1-1/2 Dia x 9-3/16....	853257

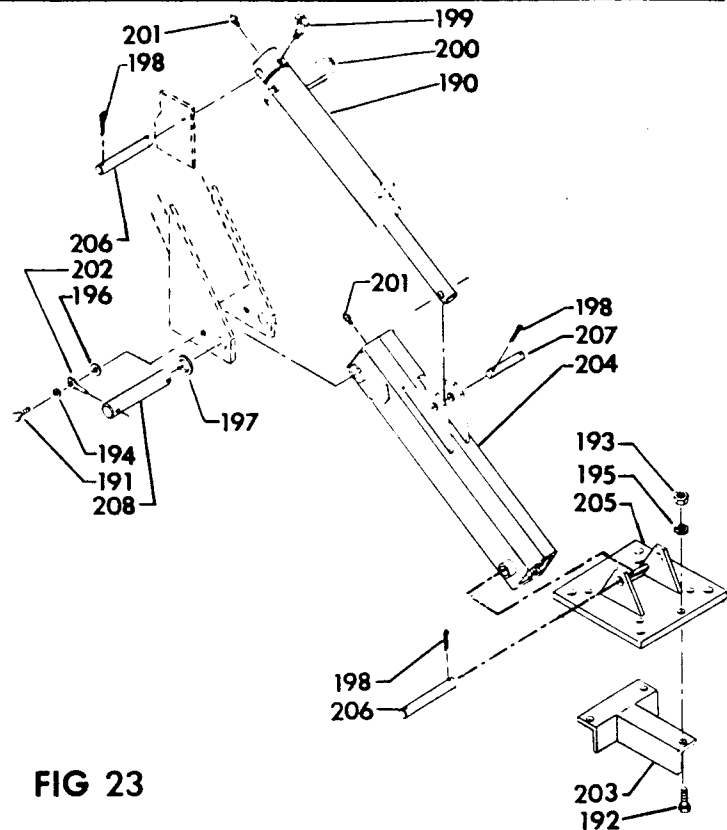


FIG 23

HYDRAULIC HOOK-UP TO TRACTOR SYSTEMS

General Description Of Systems:

There are two basic methods of hooking up the 740 Backhoe to the hydraulic system of a tractor. The correct method for the particular tractor will depend on whether the tractor has an OPEN-CENTER system (constant pumping of oil to control valve and back to reservoir) or a CLOSED-CENTER system (no flow of oil until there is a demand at one hydraulic cylinder). The two hook-up methods are as follows.

1. OPEN-CENTER SYSTEM - Fig 24:

The pressure hose on the backhoe control valve should be connected to the pressure port of the tractor's remote couplers or directly to the tractor valve. The return hose on the backhoe control valve should be connected to the return port of the tractor remote couplers or directly to the tractor valve. Do not remove surge relief valve from return line. This relief is supplied to protect the return side of the backhoe control valve from damage caused by accidental pressurization and high back pressure build-up. If this happens oil will be vented from port marked TANK. A hose may be connected between the TANK port of the surge relief valve and the tractor reservoir to prevent loss of vented oil.

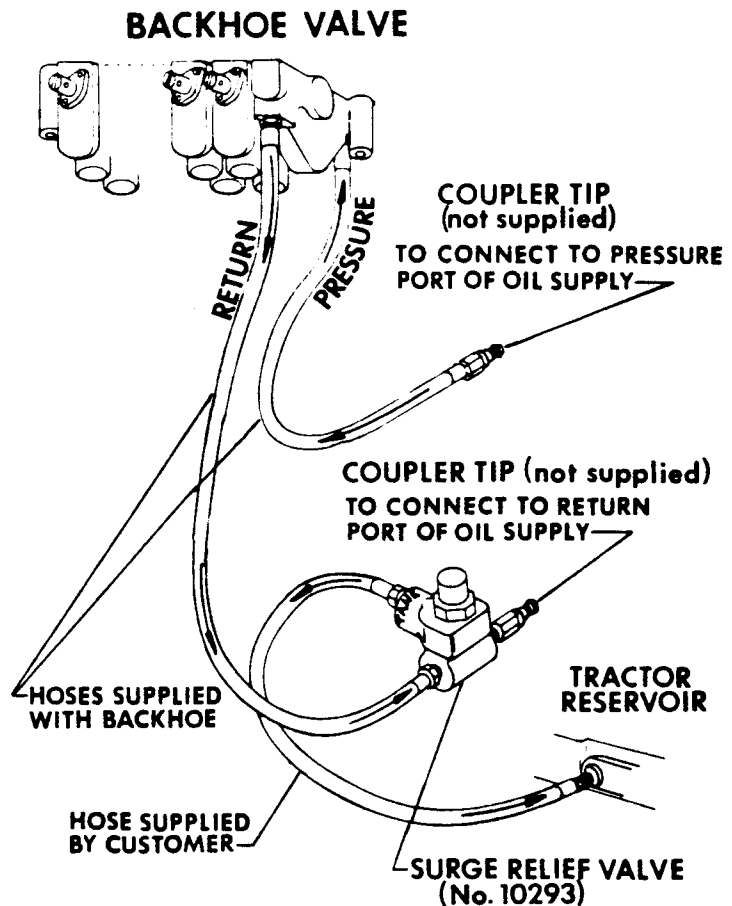


FIG 24

2. CLOSED-CENTER SYSTEM - Fig 25:

In this case, CLOSED-CENTER means that when the operating valves which control the hydraulic mechanisms are in the neutral position, there is no flow of oil through the valves. As long as the engine and pump are running, a constant stand-by oil pressure of approximately 2000 PSI or more is maintained in the system. Pressure oil is available instantaneously to go to work when any one of the operating valves is opened.

Because there must be no flow through the backhoe control valve, when the levers are in neutral position, the backhoe must be converted for closed-center operation.

The W107 Closed-Center Hydraulic Hook-Up Kit is required to connect the 740 Back-

hoe to the closed-center system. The necessary components are:

1. A main relief valve pressure setting in the backhoe control valve that is always higher than the tractor system.
2. A closed-center plug in the backhoe control valve to make it a non-circulating or a demand type system.
3. A low pressure surge relief valve in the return line to keep the tractor back-pressure surges from damaging the backhoe control valve seals or tractor system.

A surplus flow line from the relief valve carries only the excess surge oil directly back to the tractor hydraulic reservoir so that it bypasses all other tractor functions. The backhoe is shipped from the factory with the low pressure surge relief valve in the return line.

PARTS LIST - FIG 25

Index	Description	Part No.
210	Relief Valve Cartridge, 2525 PSI.....	10171
211	Closed-Center Plug.....	10444
	Seal Kit for #10171, Relief Valve.....	10172
	Closed-Center Kit, consisting of: 210 and 211...W107	

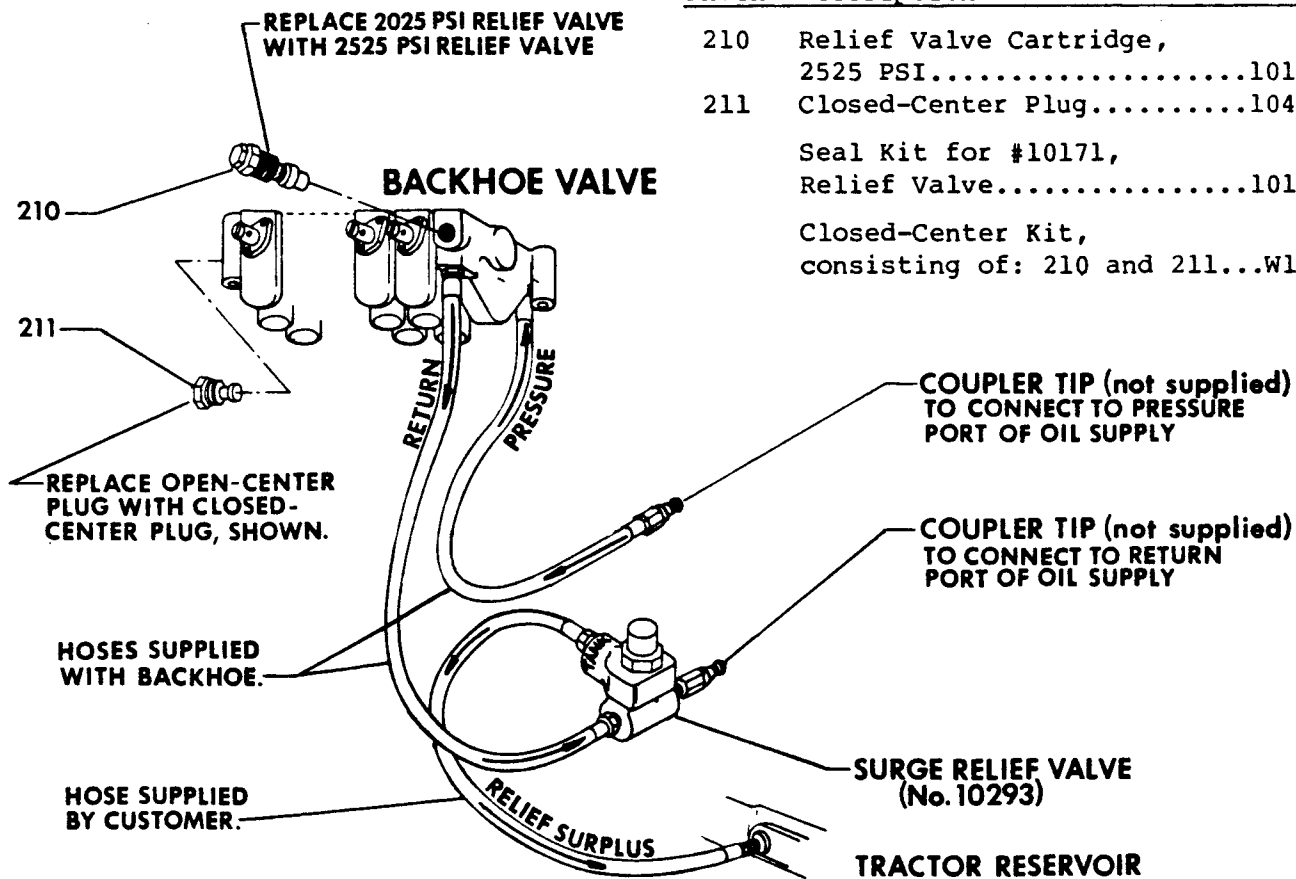


FIG 25

WEIGHT TRANSFER

PARTS LIST - FIG 26

Index	Description	Part No.
220	Bolt, 1" NF x 5", SAE 5.....	7314
221	Nut, 1" NF.....	7612
222	Nut, 1" NC.....	7613
223	Lockwasher, 1".....	8131
224	Flat Washer, 1".....	8203
225	Roll Pin.....	9021
226	Rod Weldment.....	853190
227	Weight Transfer Arm.....	853195
228	Mount Pad Weldment.....	853210
229	Mount Pad.....	853211
230	Bolt Weldment.....	853215
231	Stop Pad.....	853239
232	Stop Gusset.....	853241

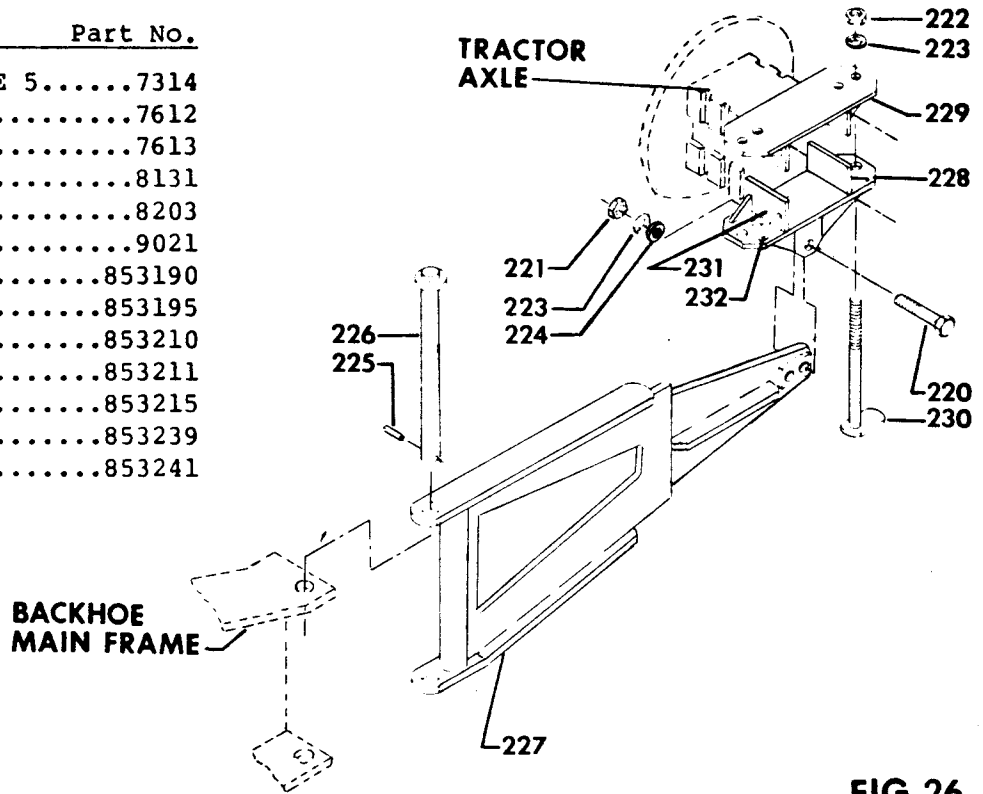


FIG 26

UPPER LINK

PARTS LIST - FIG 27

Index	Description	Part No.
240	Nut, 7/8 NF.....	7599
241	Lockwasher, 7/8.....	8126
242	Flat Washer, 7/8.....	8197
243	Washer, 1-1/4 SAE.....	8206
244	Linch Pin.....	13489
245	U-Bolt.....	853222
246	Upper Hitch Pin.....	853259
247	Upper Link Weldment.....	853350

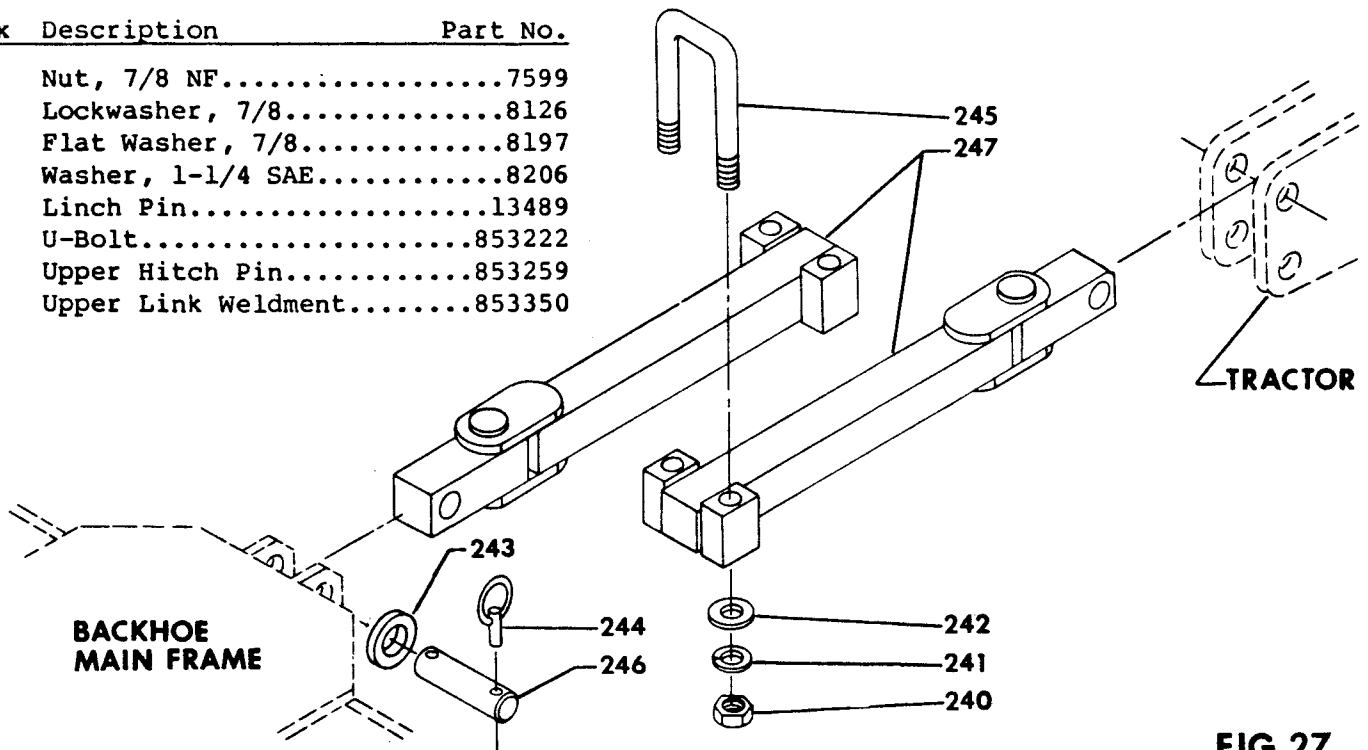


FIG 27

HYDRAULIC CYLINDERS

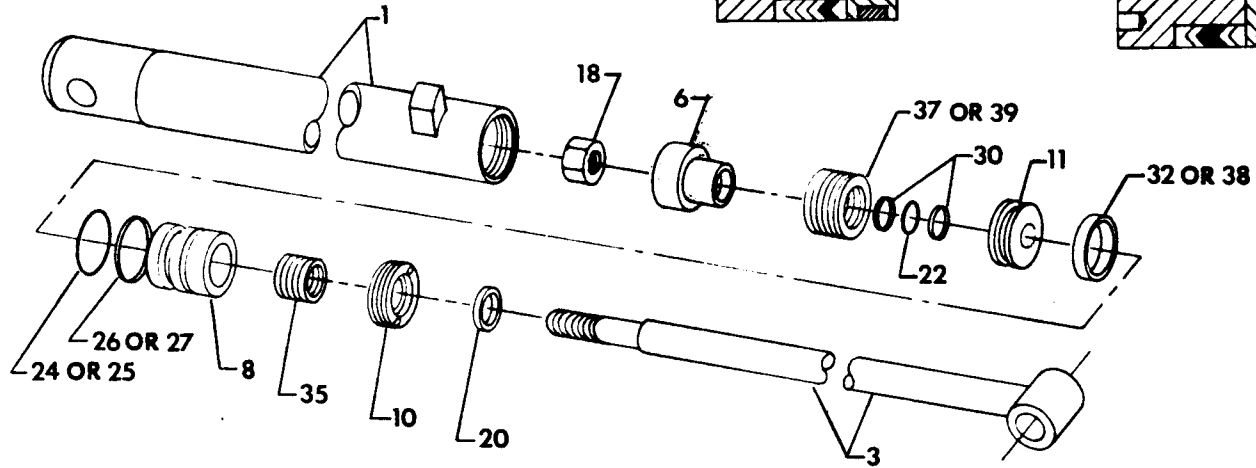
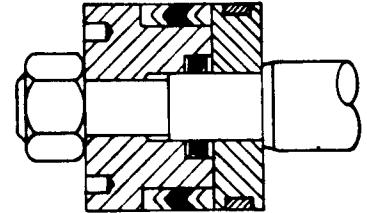
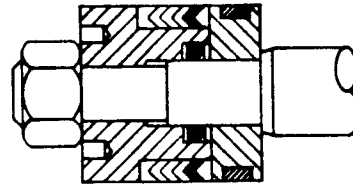
PROPER PISTON ASSEMBLY FOR:

071

070

070 Lift or 071 Crowd and Bucket

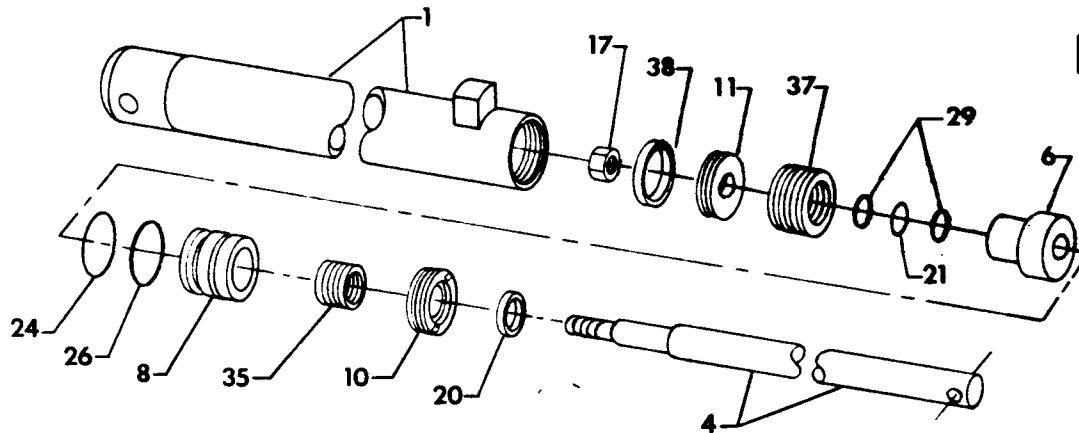
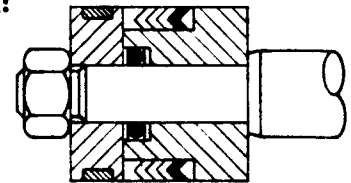
NOTE: USE LOCKTITE TO RETAIN NUT ON ROD



072 Stabilizer

PROPER PISTON ASSEMBLY FOR:

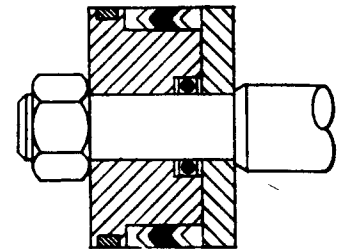
072



069 Swing

PROPER PISTON ASSEMBLY FOR:

069



NOTE: USE LOCKTITE TO RETAIN NUT ON ROD

NOTE: BEVEL ON THIS END ONLY

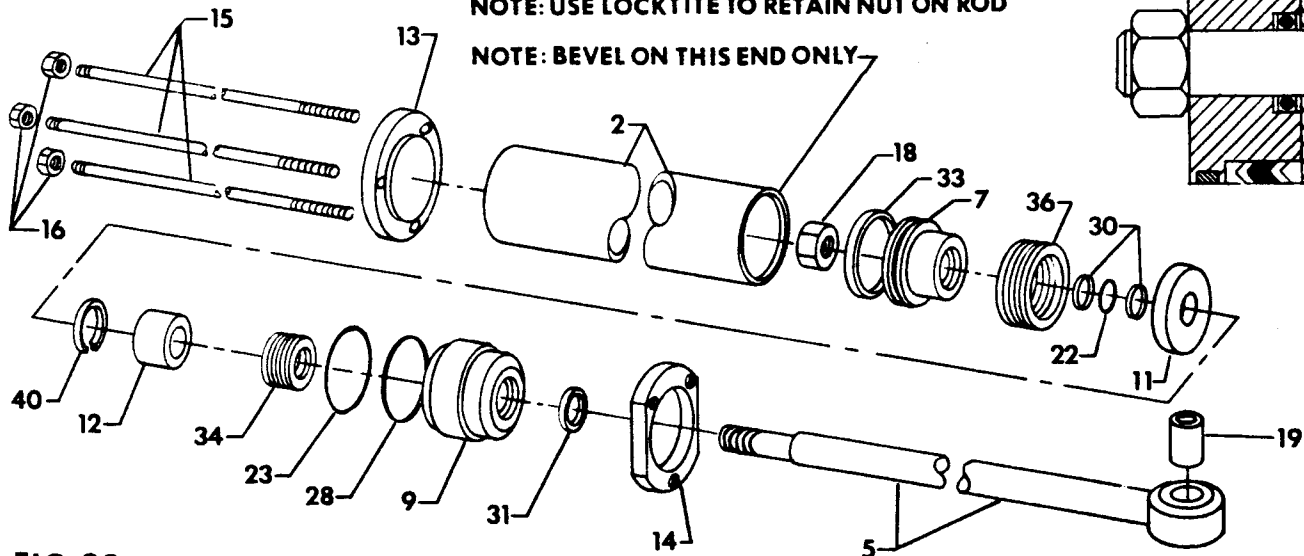


FIG 28

HYDRAULIC CYLINDERS - PARTS LISTS

Index	Description	070:	071:	072:	069:
1	Cylinder Tube Weldment.....	907070	906175	906190	
2	Cylinder Tube.....				907566
3	Piston Rod Weldment.....	907075	907075		
4	Piston Rod.....			906196	
5	Piston Rod Assembly, w/Bushing.....				907550
6	Piston, w/O-Rings and Back-Up Rings.....	907090	906185	906070	
7	Piston, w/O-Rings, Back-Up Rings, and Wear Ring..				907575
8	Gland, w/O-Ring and Back-Up Ring.....	907095	906005	906005	
9	End Cap, w/O-Ring and Back-Up Ring.....				907540
10	Gland Cap.....	907084	906003	906003	
11	Retainer Washer.....	907082	906182	906066	907561
12	Spacer Ring.....				907517
13	Dust Cap.....				907563
14	End Plate.....				907564
15	Tie Rod.....				907567
16	Lock Nut, 1/2 NF.....				7515
17	Lock Nut, 7/8 NF.....			*	
18	Jam Nut, 1-1/4 NF.....	7717	7717		7717
19	Chain Pin Bushing, ASA200.....				11493
20	Oil Seal, 2-1/8 OD x 1-3/4 ID.....	*	*	*	
21	O-Ring, 568-214.....			*	
22	O-Ring, 568-218.....	*	*		*
23	O-Ring, 568-240.....				*
24	O-Ring, 568-232.....		*	*	
25	O-Ring, 568-236.....	*			
26	Back-Up Ring, 8-232.....		*	*	
27	Back-Up Ring, 8-236.....	*			
28	Back-Up Ring, 8-240.....				*
29	Back-Up Ring, 811-214.....			*	
30	Back-Up Ring, 811-218.....	*	*		*
31	Oil Seal, 1-7/8 OD x 1-1/2 ID.....				*
32	Wear Ring, 3-1/2 OD.....	*			
33	Wear Ring, 4" OD.....				*
34	Packing Assy, 2" OD x 1-1/2 ID x .824 Stack...				*
35	Packing Assy, 2-1/4 OD x 1-3/4 ID x .824 Stack...	*	*	*	
36	Packing Assy, 4" OD x 3-1/2 ID x .824 Stack...				*
37	Packing Assy, 3" OD x 2-1/2 ID x .824 Stack...		*	*	
38	Wear Ring, 3" OD.....		*	*	
39	Packing Assy, 3-1/2 OD x 3" ID x .824 Stack...	*			
40	Retaining Ring, N5000-206.....				*
	For Complete Cylinder order.....	070	071	072	069
	Seal Repair Kit, consists of: #20 (1), #22 (1), #25 (1), #27 (1), #30 (2), #32 (1), #35 (1), and #39 (1).....	907050			
	Seal Repair Kit, consists of: #20 (1), #22 (1), #24 (1), #26 (1), #30 (2), #35 (1), #37 (1), and #38 (1).....		906170		
	Seal Repair Kit, consists of: #17 (1), #20 (1), #21 (1), #24 (1), #26 (1), #29 (2), #35 (1), #37 (1), and #38 (1).....			906200	
	Seal Repair Kit, consists of: #22 (1), #23 (1), #28 (1), #30 (2), #31 (1), #33 (1), #34 (1), #36 (1), and #40 (1).....				907570
*	Not available as a separate repair part, order appropriate Seal Repair Kit.				

Service Notes

Service Notes



ARPS MANUFACTURING, INC.

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