

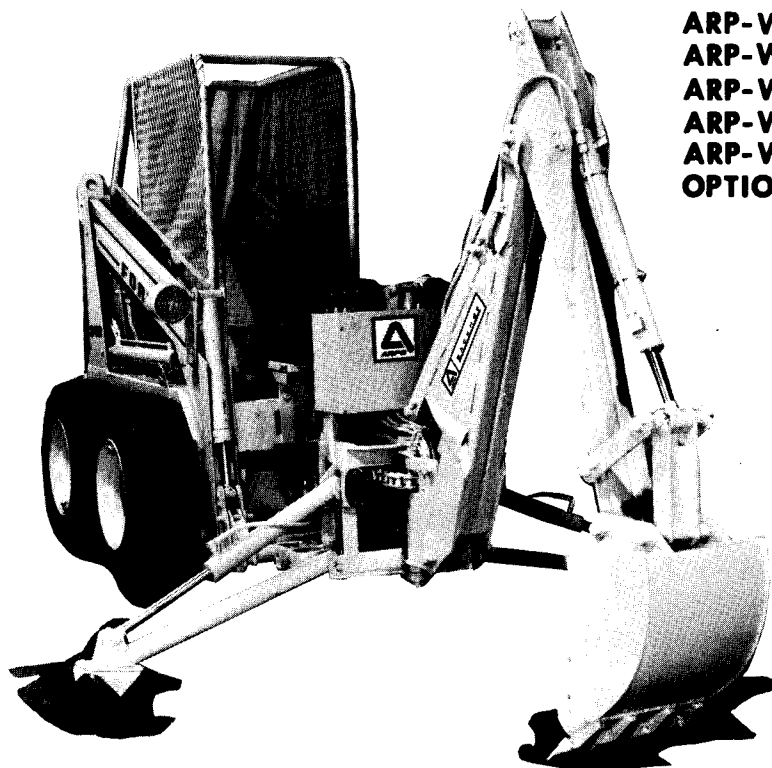


ARPS

728 BACKHOE

THIS MANUAL INCLUDES:

**ARP-W05 BASIC BACKHOE AND ADAPTER
ARP-W35 BUCKET - 12"
ARP-W36 BUCKET - 18"
ARP-W37 BUCKET - 24"
ARP-W38 BUCKET - 36"
ARP-W39 BUCKET - 40"
OPTIONAL STABILIZER PADS**



SERIAL 2001 AND LATER

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SAFETY PRECAUTIONS

Accidents involving operators of industrial equipment are generally caused by the failure of individuals to observe fundamental safety precautions. Most accidents can be avoided by following these simple safety precautions:

1. Make sure everyone is in the clear before starting the machine.
2. Do not permit anyone on the tractor or backhoe except the operator.
3. Travel slowly over rough terrain.
4. Be sure the stabilizers are properly set before operating backhoe, apply brakes.
5. Use extreme care when operating close to ditches, fences or on hillsides. Be extra cautious when workmen or spectators are present, for their safety.
6. When operating on a slope, avoid swinging the bucket to the downhill direction, if possible. This will reduce the stability of the machine. Always dump on the uphill side.
7. Don't dig under the stabilizers or tractor. Soft ground or sandy soil might cause cave-in.
8. Watch for overhead wires. Never touch wires with any part of the backhoe.
9. Do not leave the tractor when it is in motion.
10. Do not leave the tractor before lowering the bucket to the ground.
11. Always shut off the tractor engine when leaving the tractor.
12. Do not make mechanical adjustments when the tractor or backhoe is in motion.
13. Do not change relief valve settings. They are factory set for best machine performance and safety.
14. Do not attempt to repair or tighten hoses when under pressure, or when the boom is raised, or with the tractor engine running.
15. Escaping hydraulic oil under pressure can cause personal injury; therefore, be sure all connections are tight and lines and hoses are not damaged.
16. When driving connecting pins in or out, use care to guard against injury from particles that may chip off the pin or object used in striking the pin. Protect eyes with safety glasses.
17. Adequately block up backhoe when it is left detached from the tractor.
18. Keep the tractor keys where they are not available to children.
19. When transporting the backhoe on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Be sure to use the Slow Moving Vehicle Emblem.

BACKHOE OPERATION

This section will cover the operation, lubrication, preventive maintenance, and trouble shooting for the Backhoe.

BEFORE OPERATING:

Position the seat for backhoe operation and thoroughly familiarize yourself with all the controls. The 728 Backhoe has six control levers. These controls are located on the control tower directly ahead of the operator, see Fig 1. Following is a list of the controls with the function of each, reading from left to right:

STABILIZER (lever at each end of group of six):

The left and right hand stabilizer levers control the raising and lowering of the stabilizers. Push levers forward, the stabilizers lower. Pull the lever back and the stabilizers raise.

CROWD: The crowd lever controls the movement of the dipperstick. Push lever forward, the dipperstick moves out, away from the operator. Pull lever back, the dipperstick moves in toward the operator.

LIFT: The lift lever controls the movement of the boom. Push the lever forward, the boom moves down and away from the operator. Pull the lever back, the boom moves up and toward the operator.

ACTUATE (Bucket):

The actuating lever controls the extending and curling of the bucket. Push lever forward, the bucket extends. Pull lever back, the bucket curls.

SWING: The swing lever controls the swing of the boom to the left and right. Push lever forward, the boom swings to the left. Pull the lever back, the boom swings to the right.

STABILIZER: See explanation with top Stabilizer lever.

In general, a movement of a control lever away from the operator moves the controlled member away from the operator and conversely, movement of a control lever toward the operator moves the controlled member toward the operator.

TO OPERATE THE BACKHOE:

Lower the stabilizers until the rear of the tractor is totally supported by them. On a side hill or uneven ground, the hoe can be leveled with the stabilizers.

Learning to operate the Backhoe is quite simple. Lever operating guides are mounted on top of the valve cover in view of the operator, see Fig 1. The engine speed and the size of the hydraulic system will determine the speed of the cylinder operation. Therefore set the engine throttle to about one third to start and gradually increase it as you become more proficient. Operate all of the control levers a little at a time. Operate the swing to not more than 45 degrees each way for the first few times, then gradually increase the arc. To prevent damage to the swing unit, do not

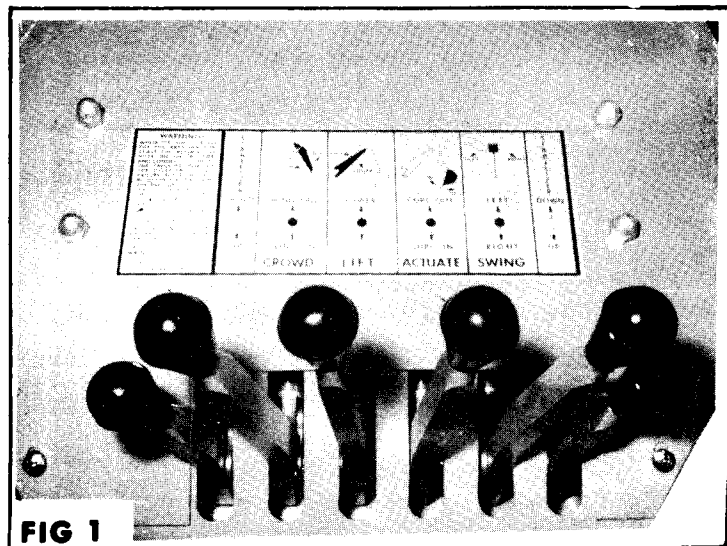


FIG 1

TO OPERATE THE BACKHOE: continued

jockey the control lever by releasing and reactivating it to obtain a greater arc when reaching the end of the swing. Release the swing lever about 10 or 15 degrees short of full swing. A cushion valve will take over and bring the swing to a controlled stop short of reaching the end of the swing travel. Experience will tell you just when to release the lever. Smooth, light handling of the controls will result in the most efficient machine operation.

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

As the operator becomes more familiar with the operation of the digger, it becomes 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 hasten and simplify the digging operation. Normally, the two or more movements will not be equal or even simultaneous, but as the pressure within the cylinders change and the resistance on an operating member of the hoe lessens, it will begin to move. It is the balancing of the force of one member against the other.

NOTE: Actuating the bucket is the key to powerful digging. Actuation of the crowd and bucket simultaneously will insure full buckets and prevent lost motion and time.



OPERATIONAL HINTS:

1. When dirt begins to pile too high, utilize crowd and bucket cylinder to move dirt away from the hole.
2. ON EXTREME SWING, CARE SHOULD BE TAKEN NOT TO OVERBALANCE THE TRACTOR.
3. WARNING - Use caution when digging far to either side and in close to the tractor. Bucket will contact the stabilizers and could cause serious damage.
4. CAUTION - The purpose of the cushion valve on your digger is to absorb the shock of swing when the control valve plunger is returned to neutral. This valve will not function if you permit swinging to the end of the stroke. Therefore do not hold the control lever open; release it approximately 10 degrees before arc limit. The inertia of a loaded bucket will carry through to the arc limit and cushion the stop. Proper use of the cushioning valve will insure the life of your digger.
5. Upon completion of the day's digging; INSPECT, TIGHTEN, AND LUBRICATE THOROUGHLY.

PREVENTIVE MAINTENANCE & LUBRICATION

CHECK - TIGHTEN - GREASE - DAILY

Continued trouble-free operation of your machine depends upon a sound program of preventive maintenance. STOP TROUBLE BEFORE IT STARTS.

A suggested program is outlined as follows:

DAILY

- A. Check and tighten all mounting bolts.
- B. Check all pins for loss of cotter pins and washers or retainers.

- C. Check cylinders for packing leaks.
- D. Check oil level. Add oil when necessary. Use only the recommended oil.
- E. Grease all fittings. Use chassis lube grease, applying generously to force dirt laden grease from the bearings. If grease fails to go through at any point, determine the cause and correct the condition at once. Thorough lubrication is very important to the life of your machine.
- F. Check all hoses and tube lines. Hydraulic hoses are the life line of any hydraulic operated equipment. It is very important that these lines be kept in good condition and all connections tight. One of the chief causes of hydraulic hose failure is twisting. When replacing any hose, be certain that it has no twists.

IMPORTANT: Never disconnect a hose or tube that is under pressure. If in doubt, move the appropriate operating levers back and forth several times, pump not running.

HYDRAULIC FLUID - On self-contained units, use 10W30 MS (or 30 MS in warm climates) engine oil of a quality brand. If the prime mover supplies the hydraulic power, then service according to the prime mover's instructions.

FREQUENTLY - Check the oil strainer located inside of the reservoir frequently on self-contained hydraulic systems. Failure to do this could result in serious damage to the hydraulic pump. Clean strainer at least every 50 hours of operation.

200 HOURS - Change oil every 200 hours, or more often if necessary. If the prime mover supplies the hydraulic power, service according to it's instruction manual.



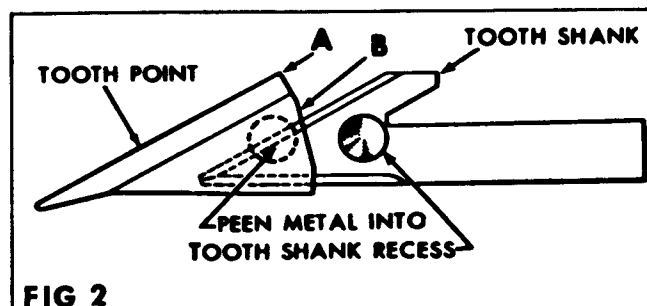
IMPORTANT DON'TS

- A. Don't set the relief valve higher than the recommended pressure of 2000 PSI in the Backhoe circuit.

Excessive pressure will damage the hydraulic system as well as the mechanical parts of the machine. Use a pressure gauge when setting the relief valve. Do not attempt to guess at a pressure setting.
- B. Don't permit dirt to enter hydraulic system. Use care while adding oil. If hoses are disconnected, use pipe caps on open ends, use pipe plugs on all open fittings.
- C. Don't use other than recommended oil.
- D. Don't operate machine with insufficient oil.
- E. Don't neglect your preventive maintenance program.

BUCKET TOOTH POINTS

The points on the bucket teeth shanks can be replaced when they become worn or broken. Tooth points can be removed from the welded tooth shanks by hammering at location "A", Fig 2, of the tooth point or by driving a chisel at point "B", Fig 2, just between the tooth point box section and the tooth shank. Install new points and anchor them to the tooth by peening at the location shown.



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, and it is decided that overhaul of components or pressure adjustments are necessary to correct malfunctioning, it is recommended that your dealer make these repairs as necessary as he is equipped to do this work.

| PROBLEM | POSSIBLE CAUSE | PROBLEM | POSSIBLE CAUSE |
|--|---|---|---------------------------|
| A. Machine fails to..... operate when initially started. | 1, 2, 5, 8, 21, 25 | L. Leaky valve..... | 9, 17, 21, 31 |
| B. Machine loses power..... after operating satisfactorily initially. | 1, 7, 9, 11, 15, 21, 25 | M. Sticky valve spool..... | 17, 20, 22, 23 |
| C. Loss of power in..... lift or crowd cyl- inder, but other cylinders func- tion properly. | 24, 26 | N. Unable to push..... valve spool in. | 17, 18, 20, 22, 23 |
| D. Loss of power in..... any one cylinder including lift and crowd. | 9, 10, 11, 12, 13, 14, 24, 26, 29 | O. Spring centered..... spools do not re- turn to neutral. | 17, 18, 19, 20, 22, 23 |
| E. Loss of power or..... loss of cushioning action in swing cyl- inders, but other cylinders function properly. | 9, 10, 11, 12, 13, 14, 24, 25, 27, 28, 29 | <u>POSSIBLE CAUSE & CORRECTION</u> | |
| F. Maximum swing action.... cannot be obtained. | 13, 16 | 1. Low oil level in reservoir. Correction: Fill reservoir to proper level. | |
| G. Slow operation of..... machine (lack of power) all cylinders. | 1, 4, 6, 7, 21, 25 | 2. No oil supply to machine. Correction: Oil is not being diverted from the prime mover hy- draulic system. Be sure that the proper controls are actuated on the prime mover. | |
| H. Spongy or jerking..... action of cylinders and/or noisy operation. | 1, 3, 4, 5, 7 | 3. Air in system. Correction: Bleed all circuits of air by operating machine at maximum oil flow and thru full movements. | |
| I. Lift, crowd or bucket... cylinders drop under load when control spools are shifted from neutral. | 30 | 4. Oil viscosity too heavy, or oil is not at operating temperature. Correction: Use recommended hydraulic fluid. Run machine until oil reaches operating temperature. | |
| J. Load drops or..... settles. | 9, 11, 14, 29, 30 | 5. Pump not running. Correction: Check pump drive to be sure it is engaged. | |
| K. Leaky cylinders..... | 11, 12, 13, 14 | 6. Insufficient pumping. Correction: Advance engine throttle. | |


HYDRAULIC TROUBLE SHOOTING:

POSSIBLE CAUSE & CORRECTION - continued

7. Dirty strainer on pump intake - noisy pump.
Correction: Remove strainer screen reservoir and clean, filter fluid before returning to reservoir. Pump may be damaged as a result of insufficient oil intake.
- 
8. Improper hose connections.
Correction: This is extremely dangerous. The valve outlet port for the return line to the reservoir is on the same end of the valve block as the relief valve adjusting assembly is found. This is contrary to normal valve construction practice. Improper hook-up will burst some part of the hydraulic system.
- 
9. Loose oil line connections, leaks in lines, or broken lines.
Correction: Tighten all hose connections and replace any damaged O-rings at leaking O-ring fittings. Check and replace any damaged hoses and lines.
10. Restriction in oil lines.
Correction: Check and replace any damaged hoses and lines. Check for pinched hoses.
11. Oil is bypassing cylinder piston, scored piston, worn piston packing, or defective piston assembly.
Correction: Replace or rebuild the cylinder; replace damaged parts.
12. Scored piston rods and worn rod guides in cylinder.
Correction: Replace or rebuild the cylinder; replace damaged parts.
13. Bent piston rod in cylinder.
Correction: Replace or rebuild the cylinder; replace damaged parts.
14. Worn or damaged rod seals on cylinder; external leaks.
Correction: Repack cylinder. Rebuild cylinder if necessary, replacing damaged parts.
15. Diverter valve on prime mover leaking externally or bypassing oil internally through valve to reservoir.
Correction: Diverter valve may need rebuilding or replacing.
16. Something jamming the swing linkage.
Correction: Remove interference.
17. Paint on valve spool, sticking valve spool, or scored valve spool.
Correction: Clean valve spool. Binding is usually caused from an overtightened plug, mounting bolt, or fitting in valve body. If a plug or fitting in valve body is leaking do not overtighten 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. Never force spool if binding occurs, see item 32 at end and Fig 7.
18. Oil leakage past spool seal into spool cap.
Correction: 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 tank of valve which would cause excessive back pressure, see item 32 at end and Fig 7.
- 
19. Broken springs.
Correction: Replace springs, see item 32 at end and Fig 7.

HYDRAULIC TROUBLE SHOOTING:

POSSIBLE CAUSE & CORRECTION - continued

20. Bent spool.
Correction: Return for factory repair, or replace with new spool of same size and type. See item 32 at end and Fig 7.
21. Excessive back pressure.
Correction: Relieve condition. May be restriction from outlet to tank, or counter-balance valve is failing to open. See item 32 at end and Fig 13.
- 
22. Foreign particles.
Correction: Clean system and valve.
23. Misalignment of operating linkage.
Correction: Check linkage for binding condition.
24. Spool not moved to full stroke.
Correction: Check travel, should be 5/16" either way or a total of 5/8". See item 32 at end and Fig 7.
25. Relief valve setting in backhoe control valve too low or defective.
Correction: Relief valve pressure will have to be checked and corrections made. Backhoe system pressure is 2000 PSI. Relief valve may need cleaning and overhauling, or entire relief cartridge must be replaced. See item 32 at end and Fig 8.
26. Overload relief valve in the control valve stuck open or malfunctioning.
Correction: Clean relief carefully but do not disturb its pressure setting as it can not be field calibrated, or replace cartridge. See item 32 at end and Fig 10.
27. A cross-over relief of swing circuit in control valve is leaking or malfunctioning. Raise the machine on one side by fully extending the left or the right stabilizer cylinder. Raise the bucket clear of the ground with the boom and dipper-stick in transport position. If the boom swings toward
27. continued
the low side of the machine, oil is bypassing the cross-over relief valve.
Correction: 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 32 at the end and Fig 11.
28. Regenerative flow check is stuck or malfunctioning in control valve. Cylinder voids and lost motion is experienced.
Correction: Clean check carefully, being sure that it moves freely with good spring action and seats properly or replace. See item 32 at end and Fig 12.
29. Worn control valve.
Correction: Replace the control valve.
30. Check valve in the control valve not holding.
Correction: Clean check valve(s) carefully, being sure that it moves freely with good spring action and seats properly or replace. See item 32 at the end and Figs 9 and 10.
31. Damaged or worn spool seals.
Correction: Replace spool end seals, item 32 next and Fig 7.
32. Problems involving the control valve proper:
This valve is a precision device and is not intended for any extensive field tampering even by the most qualified persons. Since field replacement parts are limited to centering springs, spool end seals, retaining rings, spool caps, seal O-rings, retaining washers, spools, cartridges, and checks, there is little additional that can be accomplished on it. Anything beyond the replacement of these parts, the opening of check cavities and certain relief valve cavities to

HYDRAULIC TROUBLE SHOOTING:

POSSIBLE CAUSE & CORRECTION - continued

32. continued

examine for trapped dirt, or the re-setting of the main relief valve with the use of a good pressure gauge, should be referred back to the factory and an exchange valve obtained. The malfunctioning valve is then returned to its manufacturer for service.

Dirt and shreds of packing material are the most usual causes of valve malfunction. Be sure that the reservoir oil supply is kept clean and that only factory supplied packings are used in the cylinder repair. Be sure everything is kept clean and free of dirt during the oil line removal and replacement and during any cylinder work. The following page will illustrate various portions of the valve with helpful suggestions.

32. continued



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

However, careful use after warranty by qualified persons (persons having extensive valve service training and experience) can correct many minor problems that may develop.


BE SURE TO HEED ALL CAUTION AND WARNING NOTES OR ELSE THE VALVE WILL HAVE TO BE RETURNED TO THE FACTORY AND THEN TO ITS MANUFACTURER FOR RECONDITIONING NEEDLESSLY.

VALVE REPAIR - DISASSEMBLY

1. GENERAL

Disassembly instructions are given for the relief valve, check valves and the various styles of spools which may be used with this series. Disassembly instructions contain index numbers, in parenthesis, for ease in location and identifying parts on their respective illustrations.

To disassemble control valve for a thorough cleaning and inspection, or repair purposes, the valve should be removed from the equipment and the operation performed on a bench. Thoroughly clean the exterior of the valve before beginning disassembly procedures.

 Make certain that spools and check valves poppets are clearly tagged so that when used in reassembly, they can be returned to their respective bore. Switching of parts may cause; improper seating, spools to stick, or excessive leakage due to increased side clearance.

2. TOOLS

Tools described in paragraph 2 (a), (b), and (c) (Figs 3, 4, and 5) are not special tools, but will aid considerably in disassembly and reassembly of spring-centered spools. These tools can be made in the shop with little effort.

(a) A sleeve type four pronged tool (see Fig 3) is required to remove or install plastic wiper (8, Fig 7).

(b) For compressing spring on spring-centered spools, two retainer plates with bolts and nuts, as shown on Fig 4 may be used. To operate spring compressor, place one retainer plate over the eye end of the spool and against the bottom spring spacer and the other retainer plate against the top spring spacer. Line up holes and install bolts and nuts. Tighten nuts evenly to compress spring sufficiently to allow removal of snap ring. Caution should be exercised as spring is decompressed. Unscrew bolts slowly until

2. TOOLS - continued

all spring pressure has been released.

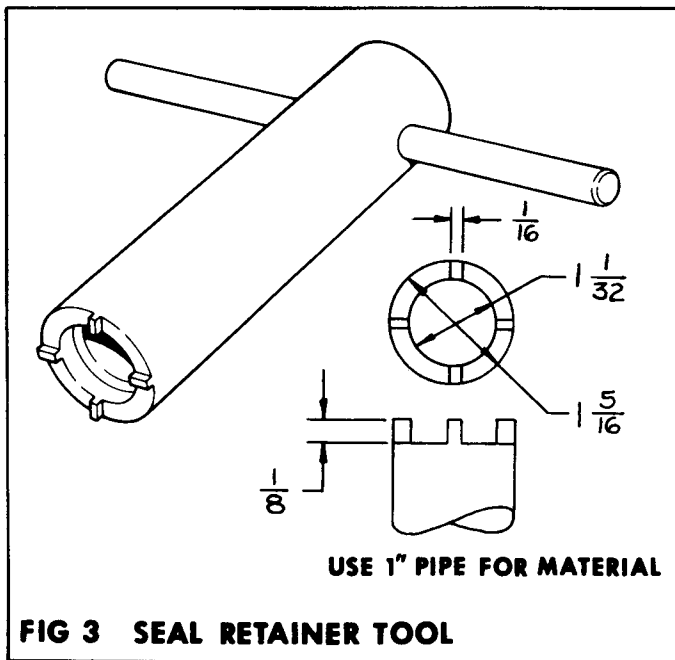


FIG 3 SEAL RETAINER TOOL

(c) A sleeve type tool (see Fig 5) can be made for ease in snap ring installation on spring-centered type spools. Select a piece of round bar stock approximately 5 inches in length and slightly larger in diameter than the snap ring being installed. Drill a hole in the stock slightly larger than the stud end of the spool. Remove any sharp edges. To use sleeve type tool when ready to install snap ring, compress spring (see Fig 4) then position snap ring on stud end of spool. Position tool against snap ring and tap rather sharply with a rawhide mallet, until snap ring is seated in groove.

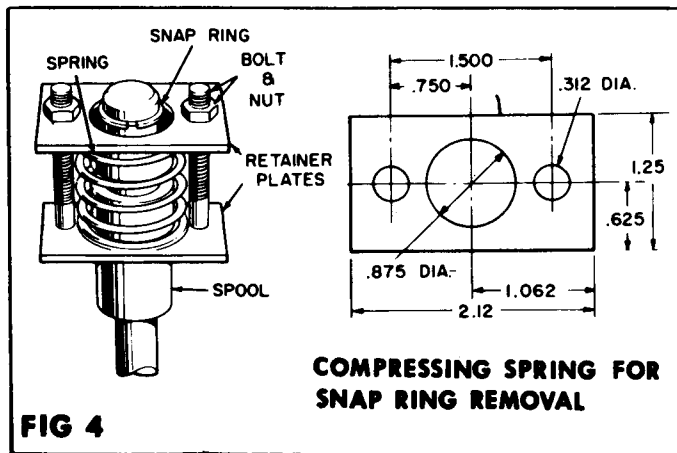


FIG 4

3. TO REMOVE AND DISASSEMBLE SPOOLS (see Fig 7)

Unscrew and remove spool cap (1). Then grasp spring end of spool and withdraw from valve body. Clamp spool in a soft-jawed vise, compress spring (see paragraph 2 (b) and Fig 4), then remove snap ring (3), outer spring spacer (2), spring (4), travel limit washer (5) and inner spring spacer (2) from spool (9) or (10).

Remove plastic wiper (8) using special tool (see paragraph 2 (a) and Fig 3), O-ring retainer (6) and O-rings (7).

! Use extreme care when removing plastic wiper (8), otherwise extensive damage to the spanner slots will result.

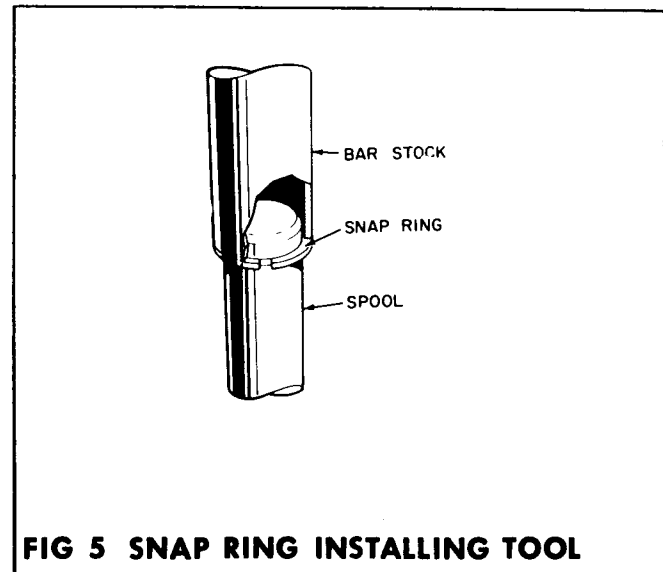


FIG 5 SNAP RING INSTALLING TOOL

4. TO REMOVE MAIN RELIEF VALVE (see Fig 8)

Unscrew and remove acorn nut (11), two seals (12), jam nut (13), and adjusting screw (15). Remove cap (14). Remove pilot plunger spring (17), pilot plunger (18), poppet spring (19) and poppet assembly (16) from body bore. Do not remove pilot seat (20) from cap (14). Do not remove seat (21) from valve body. NOTE - relief will have to be reset to 2000 PSI when valve has been reassembled.

5. TO REMOVE LOAD CHECK VALVES
(see Figs 9 and 10).

One check valve is used for each cylinder port. To remove, unscrew cap assembly (25) Fig 9 or body (34) Fig 10 spring (26) and poppet (27). A soft wire hook with smooth ends may be used. Do not remove check seat sleeve (28). Check valve parts should be identified so that when used in reassembly they can be returned to their respective bores. When changing entire assembly, seat (28) is also replaced.

6. TO REMOVE OVERLOAD RELIEF VALVES
(see Fig 10)

Remove cartridge (34) and use soft wire hook with smooth ends to remove spring (26) and poppet (27). This cartridge may be disassembled but do not misplace any shims (35) or pressure setting is lost. Remove plug (36), guide (37), shims (35), spring (38), and poppet (39). All parts should be identified so as to return to their respective bores when reassembling. If any parts are defective (other than O-rings) replace the entire assembly with a new assembly. Seat (28) will also be replaced.

7. TO REMOVE CROSS-OVER RELIEFS
(see Fig 11)

Remove body (48) and (49) noting that (49) will have a long tube attached to it. Smaller cartridge (50) may be removed from (48) and (49). Do not disassemble smaller cartridge (50) or tamper with the acorn nut and the associated adjusting screw. This destroys the pressure setting and cartridge can not be recalibrated. Spring (51) and poppet (52) may be removed from (48) or (49), but do not mix them.

8. TO REMOVE REGENERATIVE CHECK
(see Fig 12)

Remove cap (55). Form a small hook from a piece of soft wire and gently pull cone (56) out of the bore by hooking through one of its oil holes. Remove spring (57) also. If spring retainer (58) is loose, it may be removed also, otherwise leave it in the valve bore.

9. TO REMOVE COUNTER-BALANCE VALVE
(see Fig 13)

Remove cap (61). Remove spring (62). Form a small hook from a piece of soft wire and gently pull guide (63) from its seat by hooking into one of its holes. The retainer (64), sleeve (68), and the dash pot sleeve (66) should all be out. If not, gently pull them out using the soft wire hook. Plug (67) may also be removed.

10. REMOVE BODY PLUGS AND O-RINGS

After spools, relief valves and check valves have been removed, remove all plugs and O-rings from body.

CLEANING, INSPECTION, REPAIR & REPLACEMENT

Wash all parts thoroughly in kerosene or similar solvent. Inspect the valve body bores and spools for grooves, deep scratches or excessive wear. See that spools fit their respective body bore with a slight hand pressure and without perceptible side clearance. Valve spools may be replaced if there is no damage to the valve body. If the spools are loose, scored or damaged, or the valve body has damaged threads, cracks, or scored bores, the control valve should be replaced with a new unit.

Inspect the check valve poppets and their seating faces in the valve body for grooves or defects which may cause leakage. Check the poppets for free movement in the cap bores. If a poppet appears to be faulty, replace it with a new cartridge assembly.

CLEANING - continued

Inspect the relief valve plunger and seat for ridges or scoring which may cause improper seating and leakage. Inspect the seat sleeve for ridges or scoring which may cause leakage. Replace by cartridge assembly if worn or damaged.

Discard all O-rings, replace with new ones when reassembling the control valve.

NOTE - After worn parts have been inspected and valve is not to be reassembled immediately, coat reusable parts with hydraulic oil.

Valve Body - All component assemblies of the valve are available for service replacement except the valve body.

Valve Spools - Valve spools may be replaced if there is no damage to the valve body. When replacement spools are ordered the same color code, type code, and valve model number should be included with the order. Spring-centered spools are shipped from the factory with the spring assembled.

NOTE - Replacement valve spools are identified by the use of type and color code markings. The type code letters indicate valve function, the color code indicates the spool size. See Fig 7 for location of markings indicating color code and spool type.

ASSEMBLY

Prior to reassembly of the valve, make certain that bench, tools, and all valve parts are thoroughly clean and free from dust and foreign matter. If necessary thoroughly rewash the parts. Coat all valve component parts and body bores with a good grade hydraulic oil. Use new O-rings and back-up rings on all components. When installing components with O-rings, use extreme caution so as to avoid cutting the O-ring.

When reassembling spring - centered spools, install the spool travel limit washer between spring spacers, refer to Fig 7, (5).

ASSEMBLY - continued

When installing check valve poppets, and new parts are not used in reassembly, make certain that poppets are installed in the bores that they came from.

Relief valve components (11 through 18) can be preassembled and installed as a cartridge, Fig 8. At this point do not attempt to adjust relief valve to its proper setting. Refer to instructions for adjusting relief valve.

With spools, check valves, and relief valves installed in body, place new O-rings on all body plugs and install in valve body.

TESTING

After overhaul, the control valve should be tested. If a test stand is not available, the valve should be installed on the equipment for test.

RELIEF VALVE ADJUSTMENT (see Fig 8)

1. Provide a means for connecting a 0-3000 PSI gauge at the inlet side of the valve. A tee at the inlet port may be used.
2. Remove acorn nut (11) and seal (12) from relief valve. Loosen jam nut (13) and hold while backing off adjusting screw, (15) until no tension is felt on screw.
3. With pump running at maximum speed, operate one spool to a power position. Turn adjusting screw (15) clockwise until correct pressure setting is obtained. Correct pressure setting should be 2000 PSI.
4. After correct pressure setting has been obtained, hold screw (15) and tighten jam nut (13). Install second seal (12) and tighten acorn nut (11).

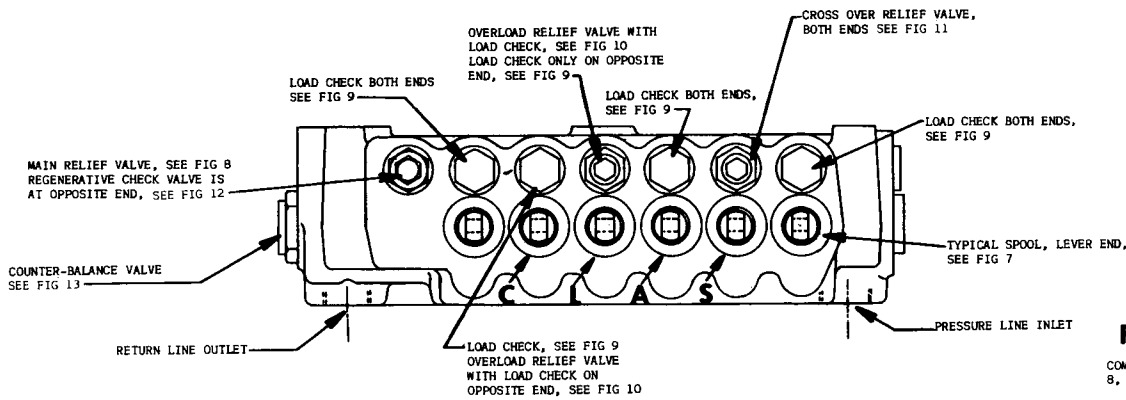


FIG 6 VALVE

COMPONENT LOCATION GUIDE FOR FIGS 7, 8, 9, 10, 11, 12 AND 13

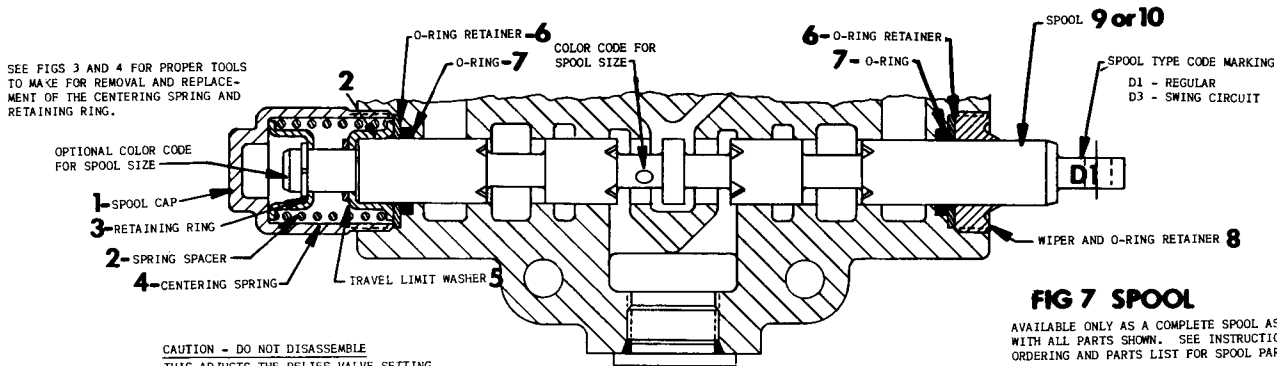


FIG 7 SPOOL

AVAILABLE ONLY AS A COMPLETE SPOOL ASSEMBLED WITH ALL PARTS SHOWN. SEE INSTRUCTIONS FOR ORDERING AND PARTS LIST FOR SPOOL PART NUMBERS.

CAUTION - DO NOT DISASSEMBLE THIS ADJUSTS THE RELIEF VALVE SETTING AND VALVE MUST THEN BE RESET. THIS IS THE ONLY RELIEF THAT CAN BE FIELD RESET IF A GOOD PRESSURE GAUGE IS AVAILABLE, SET TO 2000 PSI.

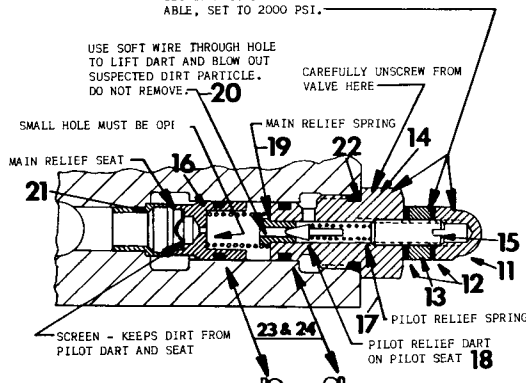
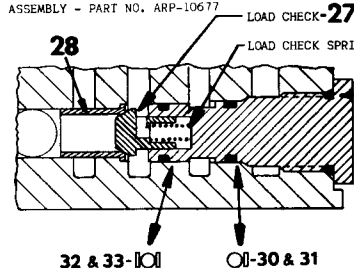


FIG 8 MAIN RELIEF VALVE

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10676

FIG 9 LOAD CHECK

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10677



WARNING - DO NOT LOSE SHIMS UNDER SPRING OR RELIEF VALVE SETTING IS DESTROYED AND THE ENTIRE ASSEMBLY MUST BE REPLACED.

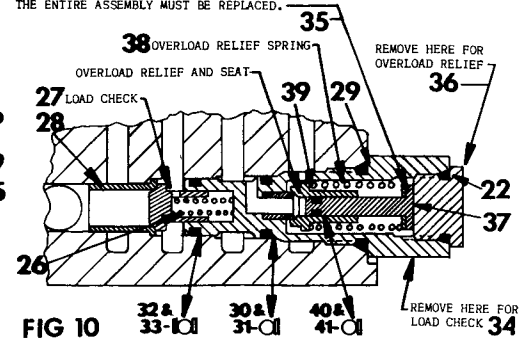


FIG 10 OVERLOAD RELIEF & LOAD CHECK

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10678

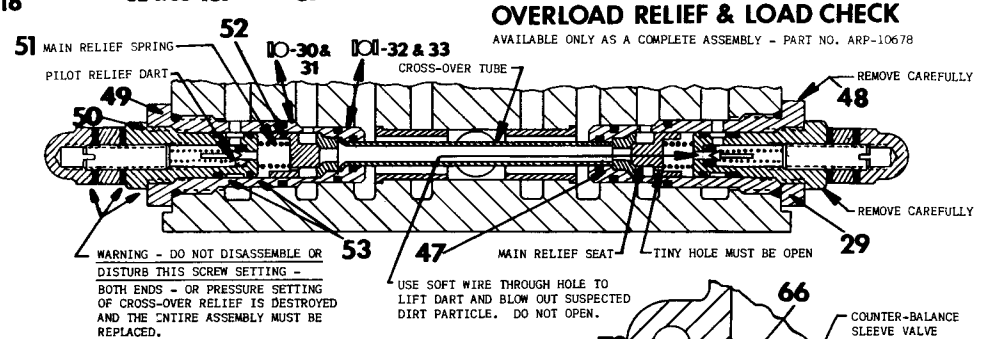


FIG 11 CROSSOVER RELIEF

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10680

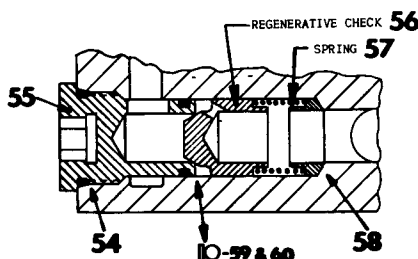


FIG 12 REGENERATIVE VALVE

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10681

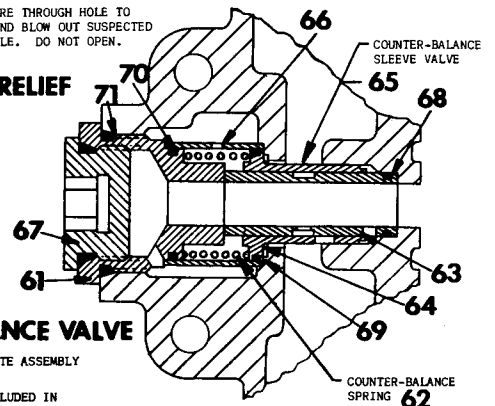


FIG 13 COUNTER-BALANCE VALVE

AVAILABLE ONLY AS A COMPLETE ASSEMBLY - PART NO. ARP-10682

NOTE: PLUG (67) IS NOT INCLUDED IN THIS ASSEMBLY GROUP. RETAIN THE ORIGINAL PLUG.

VALVE MODEL VDP42 PARTS LIST

| Index | Description | Part No. |
|-------------------------------------|--|-----------|
| <u>Fig 7 TYPICAL SPOOL ASSEMBLY</u> | | |
| 1 | Spool Cap, P-H 1652-552920..... | ARP-10665 |
| 2 | Swing Spacer..... | * |
| 3 | Retaining or Snap Ring, P-H 56 x 146..... | ARP-10666 |
| 4 | Centering Spring, P-H 1652-552944..... | ARP-10667 |
| 5 | Travel Limit Washer..... | * |
| 6 | O-Ring Retainer..... | * |
| 7 | O-Ring (104 x 116A), see Spool Seal Kit or Soft Goods Kit..... | |
| 8 | Plastic Wiper & O-Ring Retainer, P-H 1659-665060. | ARP-10684 |
| 9 | Spool, Type D1, all functions except swingSee Spool List | |
| 10 | Spool, Type D3, swing function only.....See Spool List | |

The following spools are complete assemblies, including all parts 1 through 8 listed above. Include valve model number "VDP42" when ordering.

| | | |
|-------|--------------------------------------|-----------|
| 1 ea. | D1 Spool, P-H 636019, Black..... | ARP-10668 |
| 1 ea. | D1 Spool, P-H 636019, Blue..... | ARP-10669 |
| 1 ea. | D1 Spool, P-H 636019, Yellow..... | ARP-10670 |
| 1 ea. | D1 Spool, P-H 636019, Green..... | ARP-10671 |
| 1 ea. | D3 Spool, P-H 636919, Black..... | ARP-10672 |
| 1 ea. | D3 Spool, P-H 636919, Blue..... | ARP-10673 |
| 1 ea. | D3 Spool, P-H 636919, Yellow..... | ARP-10674 |
| 1 ea. | D3 Spool, P-H 636919, Green..... | ARP-10675 |

Fig 8 MAIN RELIEF VALVE ASSEMBLY

| | | |
|----|----------------------------|---|
| 11 | Acorn Nut..... | * |
| 12 | Washer Seals..... | * |
| 13 | Jam Nut..... | * |
| 14 | Cap..... | * |
| 15 | Setscrew, Adjusting..... | * |
| 16 | Poppet Assembly..... | * |
| 17 | Pilot Spring..... | * |
| 18 | Pilot Plunger or Dart..... | * |

| Index | Description | Part No. |
|--------------------------|--|-----------|
| <u>Fig 8 - continued</u> | | |
| 19 | Main Relief or Poppet Spring..... | * |
| 20 | Pilot Seat..... | * |
| 21 | Seat..... | * |
| 22 | O-Ring (105-8L)..... | ** |
| 23 | O-Ring (104 x 14.1A)..... | ** |
| 24 | Back-up Ring (109 x 14.1T)..... | ** |
| 1 ea. | Main Relief Valve Assembly, P-H 645898, consisting of above listed parts, pre-set for 2000 PSI..... | ARP-10676 |

Fig 9 LOAD CHECK ASSEMBLY

| | | |
|-------|---|-----------|
| 25 | Cap Assembly..... | * |
| 26 | Spring..... | * |
| 27 | Load Check Poppet..... | * |
| 28 | Check Seat Sleeve..... | * |
| 29 | O-Ring (105 x 10L)..... | ** |
| 30 | O-Ring (104 x 15L)..... | ** |
| 31 | Back-up Ring (109 x 15T).. | ** |
| 32 | O-Ring (104 x 14L)..... | ** |
| 33 | Back-up Ring (109 x 14T).. | ** |
| 1 ea. | Load Check Assembly,, P-H 635740, consisting of above listed parts..... | ARP-10677 |

Fig 10 OVERLOAD RELIEF & LOAD CHECK ASSEMBLY

| | | |
|-------|---|-----------|
| 22 | O-Ring (105 x 8L)..... | ** |
| 26 | Spring..... | * |
| 27 | Load Check Poppet..... | * |
| 28 | Check Seat Sleeve..... | * |
| 29 | O-Ring (105 x 10L)..... | ** |
| 30 | O-Ring (104 x 15L)..... | ** |
| 31 | Back-up Ring (109 x 15T).. | ** |
| 32 | O-Ring (104 x 14L)..... | ** |
| 33 | Back-up Ring (109 x 14T).. | ** |
| 34 | Body..... | * |
| 35 | Shims..... | * |
| 36 | Plug..... | * |
| 37 | Guide..... | * |
| 38 | Spring..... | * |
| 39 | Poppet..... | * |
| 40 | O-Ring (104 x 5A)..... | ** |
| 41 | Back-up Ring (107 x 5)..... | ** |
| 1 ea. | Overload Relief & Load Check Assembly, P-H 1653-645525, consisting of above parts, pre-set for 2700 PSI..... | ARP-10678 |

VALVE PARTS LIST - continued

| Index | Description | Part No. |
|--|--|-----------|
| <u>Fig 11 CROSS-OVER RELIEF ASSEMBLY</u> | | |
| 29 | O-Ring (105 x 10L)..... | ** |
| 30 | O-Ring (104 x 15L)..... | ** |
| 31 | Back-up Ring (109 x 15T).. | ** |
| 32 | O-Ring (104 x 14L)..... | ** |
| 33 | Back-up Ring (109 x 14T).. | ** |
| 47 | O-Ring (104 x 11L)..... | ** |
| 48 | Body, Female Assembly..... | * |
| 49 | Body, Male Assembly..... | * |
| 50 | Cartridge Assembly..... | * |
| 51 | Spring..... | * |
| 52 | Poppet..... | * |
| 53 | O-Ring (104 x 12L)..... | ** |
| 1 ea. | Cross-Over Relief Assembly, P-H 1653-645714, consisting of above listed parts, pre-set for 2350 PSI..... | ARP-10680 |

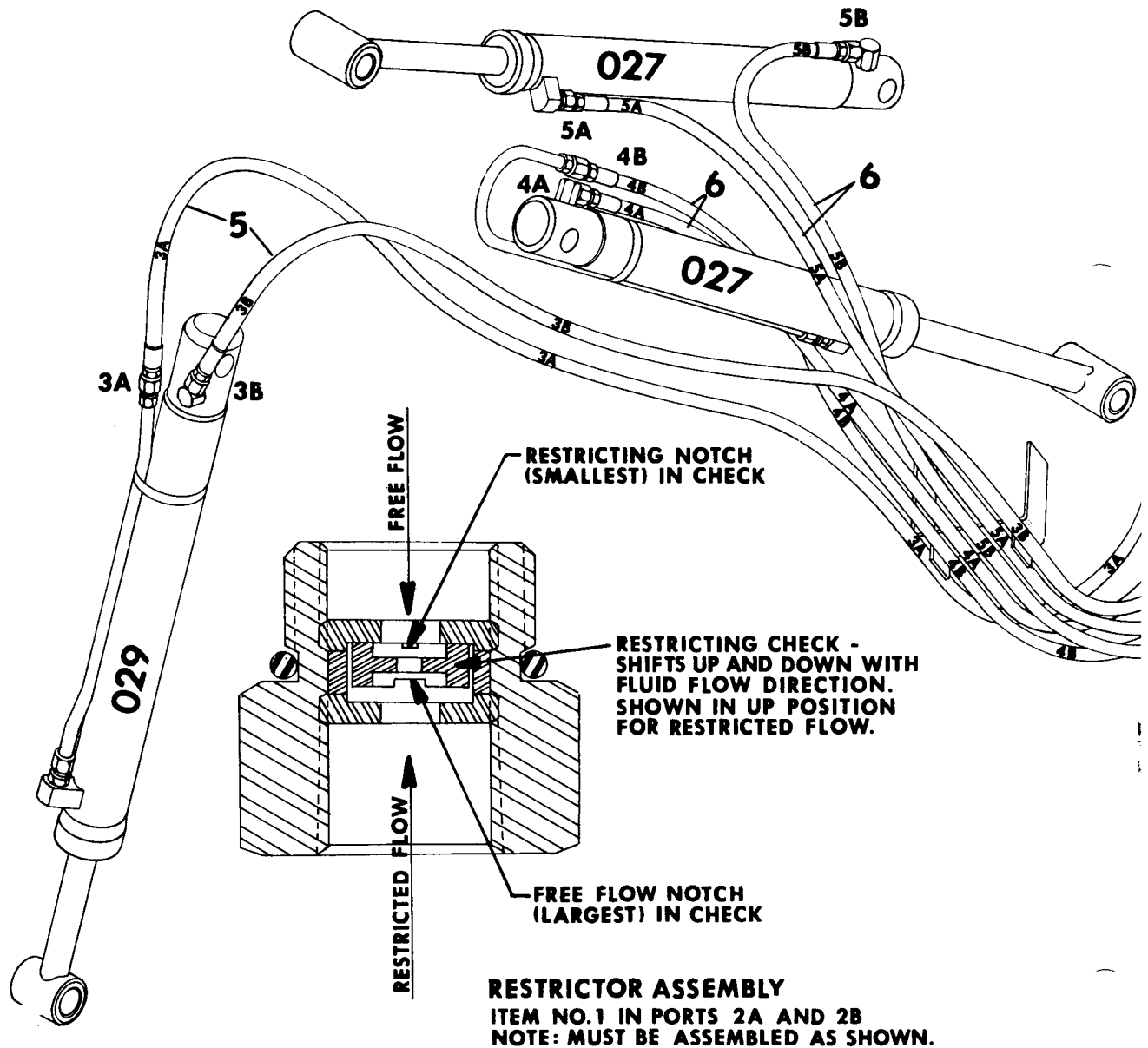
| Index | Description | Part No. |
|---|---|-----------|
| <u>Fig 12 REGENERATIVE CHECK VALVE ASSEMBLY</u> | | |
| 54 | O-Ring (105 x 12L)..... | ** |
| 55 | Cap..... | * |
| 56 | Regenerative Check Cone... | * |
| 57 | Spring..... | * |
| 58 | Spring Retainer..... | * |
| 59 | Back-up Ring (109 x 18T).. | ** |
| 60 | O-Ring (104 x 18A)..... | ** |
| 1 ea. | Regenerative Check Valve Assembly, P-H 1652-645895, consisting of above listed parts..... | ARP-10681 |

| Index | Description | Part No. |
|--|--|-----------|
| <u>Fig 13 COUNTER-BALANCE VALVE ASSEMBLY</u> | | |
| 61 | Cap..... | * |
| 62 | Spring..... | * |
| 63 | Guide..... | * |
| 64 | Retainer..... | * |
| 65 | Sleeve..... | * |
| 66 | Dash Pot Sleeve..... | * |
| 67 | Plug..... | * |
| 68 | O-Ring (104 x 17L)..... | ** |
| 69 | O-Ring (104 x 126A)..... | ** |
| 70 | O-Ring (104 x 28A)..... | ** |
| 71 | O-Ring (105 x 24L)..... | ** |
| 1 ea. | Counter-Balance Valve Assembly, P-H 1652-645922, consisting of above listed parts..... | ARP-10682 |

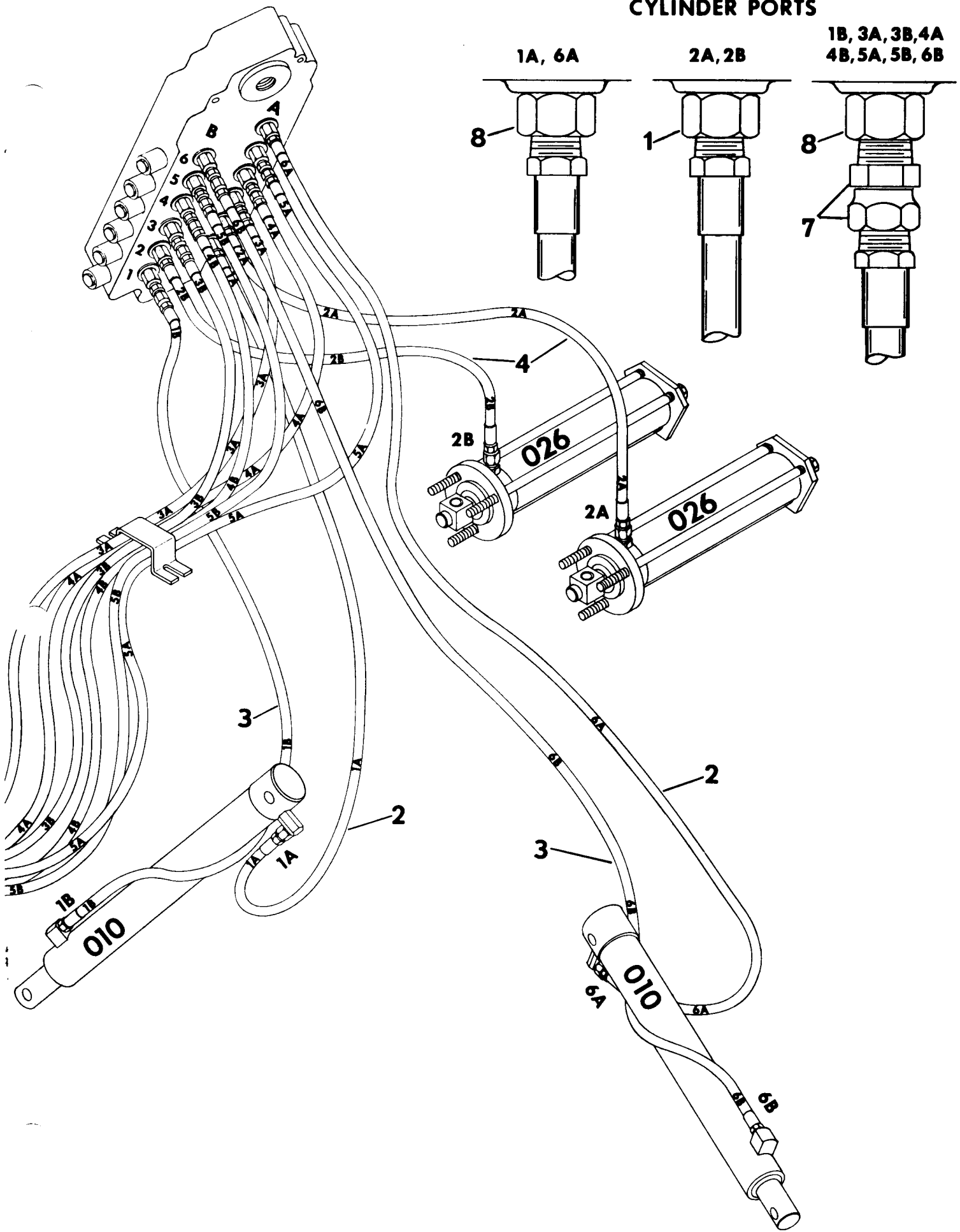
| Index | Description | Part No. |
|-------|--|-----------|
| 1 ea. | Six-Spool Valve, Complete..... | ARP-10436 |
| 1 ea. | Soft Goods Replacement Kit, consisting of most commonly used O-rings and back-up rings in valve..... | ARP-10683 |
| 1 ea. | Spool Seal Kit, consisting of 12 each P-H 104 x 116A O-Rings..... | ARP-10685 |
| | (not required when using Soft Goods Replacement Kit) | |
| * | Not available as separate repair part, order complete assembly. | |
| ** | Not available as separate repair part, order Soft Goods Kit unless complete assembly is ordered. | |

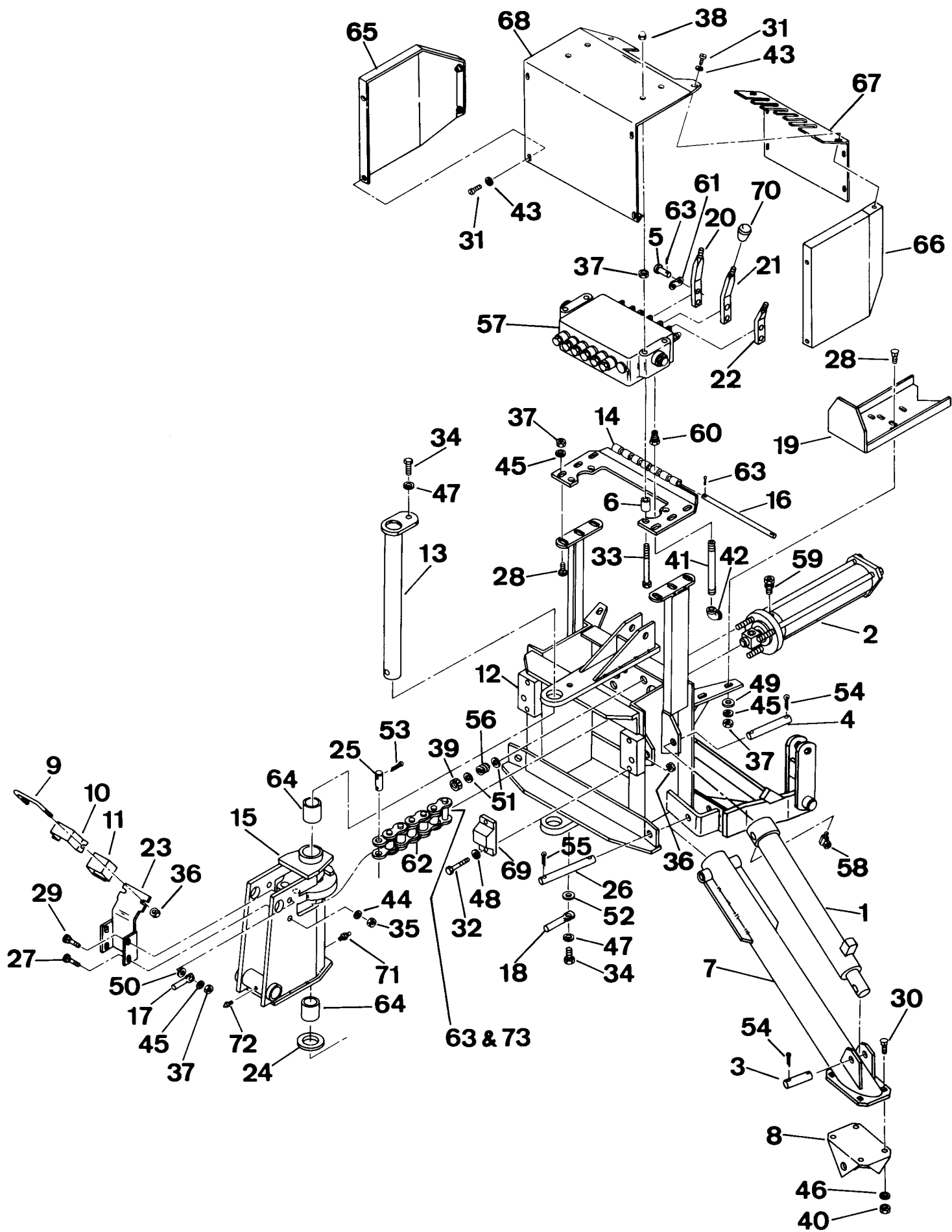
PARTS LIST

| Index | Description | Part No. |
|-------|---|------------|
| 1 | Restrictor Assembly..... | ARP-851150 |
| 2 | Hose, Hydraulic, 1/2-14 Pipe x 3/8-18 Pipe x 32..... | ARP-10913 |
| 3 | Hose, Hydraulic, 1/2-14 Pipe x 3/8-18 Pipe x 48..... | ARP-10926 |
| 4 | Hose, Hydraulic, 1/2-14 Pipe x 19..... | ARP-10976 |
| 5 | Hose, Hydraulic, 1/2-14 Pipe x 114..... | ARP-10991 |
| 6 | Hose, Hydraulic, 1/2-14 Pipe x 82..... | ARP-11013 |
| 7 | Union, 1/2-14 Pipe, Male-Female, Straight..... | ARP-11150 |
| 8 | Adapter, Pipe, 1-1/16-12 Male x 1/2-14 Pipe Female... | ARP-11227 |



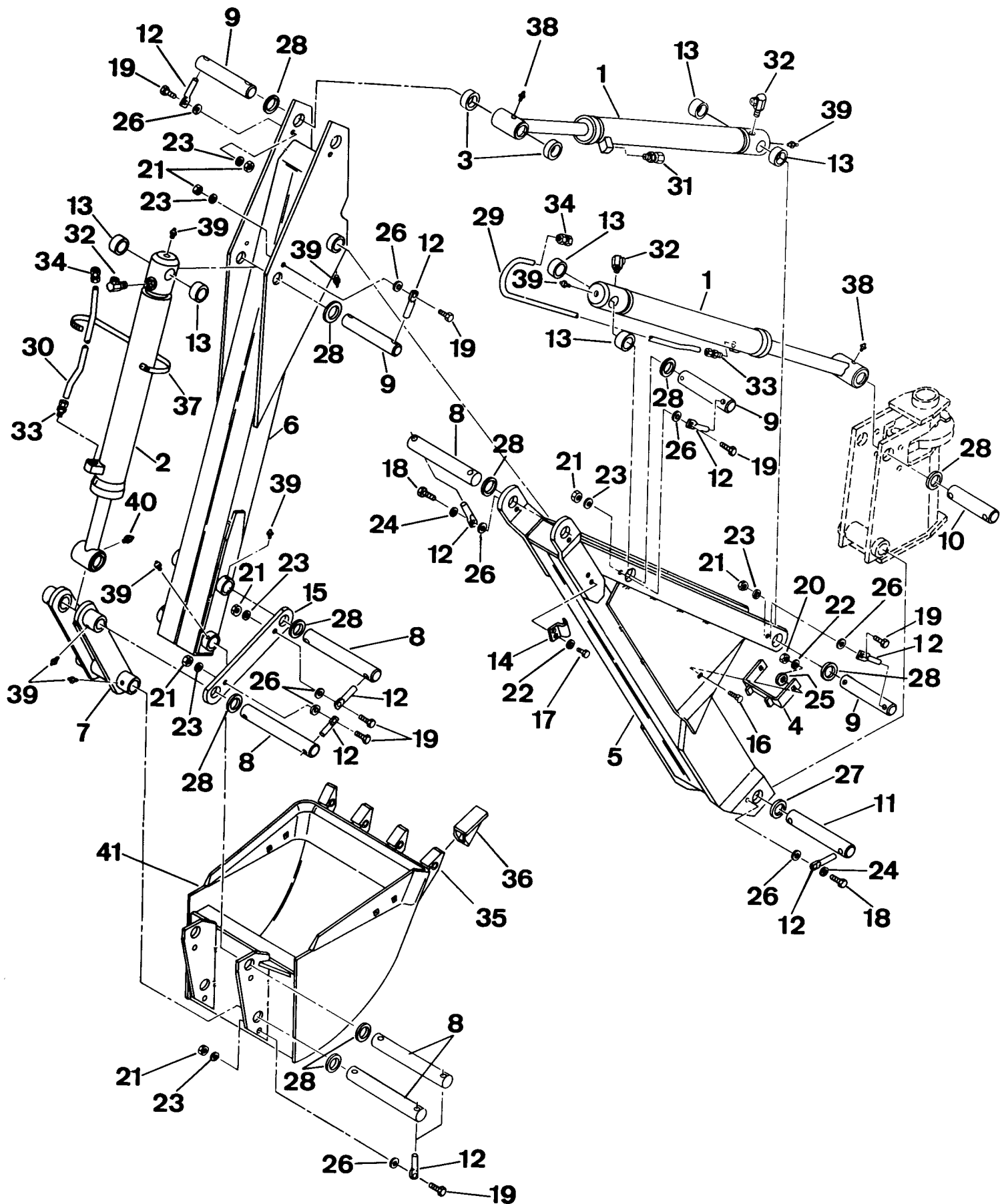
CYLINDER PORTS





PARTS LIST FOR PAGE 16

| Index | Description | Part No. | Index | Description | Part No. |
|-------|--|------------|-------|--|-----------|
| 1 | Hydraulic Cylinder, 2-1/2 Dia. x 16-1/2 Stroke..... | ARP-010 | 42 | Pipe Elbow, 1/2-14 x 90°... | ARP-7924 |
| 2 | Hydraulic Cylinder, 3" Dia. x 11-1/2 Stroke..... | ARP-026 | 43 | Lockwasher, 1/4 Shakeproof..... | ARP-8062 |
| 3 | Pivot Pin..... | ARP-502026 | 44 | Lockwasher, 5/16..... | 34806-S8 |
| 4 | Base Pin..... | ARP-502027 | 45 | Lockwasher, 3/8..... | 34807-S36 |
| 5 | Rivet..... | ARP-780672 | 46 | Lockwasher, 1/2..... | 34809-S8 |
| 6 | Bushing..... | ARP-786223 | 47 | Lockwasher, 1/2 Shakeproof..... | ARP-8103 |
| 7 | Stabilizer Arm Weldment.. | ARP-850075 | 48 | Washer, 5/16 Std. Flat..... | 44824-S8 |
| 8 | Stabilizer Pad..... | ARP-850118 | 49 | Washer, 3/8 Std. Flat..... | 44728-S8 |
| 9 | Hose U-Bolt..... | ARP-850134 | 50 | Washer, 3/8 SAE..... | 44826-S8 |
| 10 | Hose Strap..... | ARP-850136 | 51 | Washer, 7/16 Std. Flat..... | 44832-S8 |
| 11 | Belting..... | ARP-850366 | 52 | Washer, 1/2 SAE..... | 44734-S8 |
| 12 | Main Frame Weldment..... | ARP-851665 | 53 | Cotter Pin, 3/16 x 1-1/4... | 72055-S8 |
| 13 | Swing Shaft Weldment..... | ARP-851035 | 54 | Cotter Pin, 3/16 x 1-1/2... | 72073-S8 |
| 14 | Valve Plate Weldment..... | ARP-851095 | 55 | Cotter Pin, 1/4 x 1-1/2.... | 72075-S8 |
| 15 | Swing Frame Assembly, w/Bearing..... | ARP-851105 | 56 | Spring..... | ARP-8673 |
| 16 | Handle Pivot Pin..... | ARP-851121 | 57 | Valve, Parker #VDP42DDDDDD - 27..... | ARP-10436 |
| 17 | Pin Retainer..... | ARP-851122 | 58 | Union, 3/8-18 Male x 3/8-18 Female x 90°..... | ARP-11127 |
| 18 | Pin Retainer..... | ARP-851123 | 59 | Union, 1/2-14 Male- Female, Straight..... | ARP-11150 |
| 19 | Foot Pad..... | ARP-851124 | 60 | Pipe Adapter, 1-5/16-12 Male x 1/2-14 Female..... | ARP-11231 |
| 20 | Inner Control Lever..... | ARP-851129 | 61 | Chain Side Bar..... | ARP-11406 |
| 21 | Outer Control Lever..... | ARP-851131 | 62 | Six-Link Section, less 25 & 53..... | ARP-11418 |
| 22 | Stabilizer Control Lever..... | ARP-851132 | 63 | Cotter Pin, 1/8 x 7/8 Alloy..... | ARP-11503 |
| 23 | Hose Support Bracket..... | ARP-851133 | 64 | Bronze Bushing..... | ARP-11999 |
| 24 | Thrust Washer..... | ARP-851136 | 65 | Side Plate Weldment, Right Hand..... | ARP-13561 |
| 25 | Chain Pin..... | ARP-851137 | 66 | Side Plate Weldment, Left Hand..... | ARP-13562 |
| 26 | Stabilizer Pivot Shaft... | ARP-851141 | 67 | Handle Cover..... | ARP-13563 |
| 27 | Carriage Bolt, 5/16-18 x 1-1/4..... | 23932-S8 | 68 | Valve Cover..... | ARP-13564 |
| 28 | Carriage Bolt, 3/8-16 x 1"..... | 23921-S8 | 69 | Bumper Stop..... | ARP-13681 |
| 29 | Carriage Bolt, 3/8-16 x 1-1/4..... | 23933-S8 | 70 | Ball Knob, Black..... | ARP-14064 |
| 30 | Carriage Bolt, 1/2-13 x 1-1/4..... | 23935-S8 | 71 | Grease Fitting, 1/8-27 PTF..... | 87901-S8 |
| 31 | Mach. Screw, 1/4-20 x 1/2..... | 27718-S8 | 72 | Grease Fitting, 1/4-28 SAE..... | 87907-S8 |
| 32 | Bolt, 5/16-18 x 2-1/2..... | 300878-S8 | 73 | Pin..... | ARP-11414 |
| 33 | Bolt, 3/8-16 x 5-1/2..... | 300990-S8 | | | |
| 34 | Bolt, 1/2-20 x 1"..... | 304689-S8 | | | |
| 35 | Nut, 5/16-18 Hex..... | 33797-S8 | | | |
| 36 | Lock Nut, 5/16-18, Self-Locking..... | 55671-S8 | | | |
| 37 | Nut, 3/8-16 Hex..... | 33799-S8 | | | |
| 38 | Nut, Acorn, 3/8-16..... | ARP-7468 | | | |
| 39 | Lock Nut, 7/16-20, Self-Locking..... | 55675-S8 | | | |
| 40 | Nut, 1/2-13 Hex..... | 33845-S8 | | | |
| 41 | Pipe Nipple, 1/2-14 x 8-1/2..... | 304160 | | | |

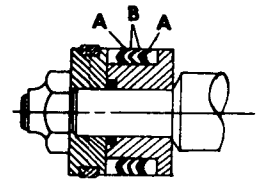
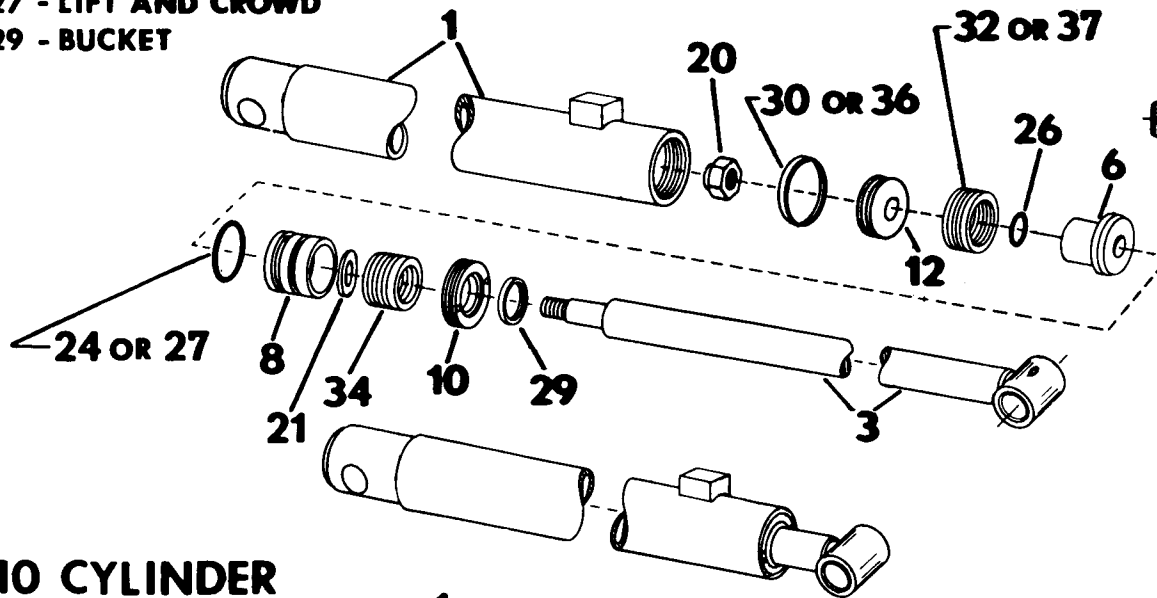


PARTS LIST FOR PAGE 18

| Index | Description | Part No. | Index | Description | Part No. |
|-------|---|------------|-------|--------------------------------------|----------|
| 1 | Hydraulic Cylinder, 2½ Dia. x 20-7/8 Stroke..... | ARP-027 | 38 | Grease Fitting, 1/8-27 PTF..... | 87901-S8 |
| 2 | Hydraulic Cylinder, 2-3/4 Dia. x 17-3/8 Stroke..... | ARP-029 | 39 | Grease Fitting, 1/4-28 SAE..... | 87907-S8 |
| 3 | Spacer, Short..... | ARP-651717 | 40 | Grease Fitting, 1/8-27 x 65°..... | 87914-S8 |
| 4 | Hose Clip Weldment..... | ARP-850355 | 41 | Bucket Complete - 12"..... | ARP-W35 |
| 5 | Boom Weldment..... | ARP-851055 | 41 | Bucket Complete - 18"..... | ARP-W36 |
| 6 | Dipper Stick Weldment.... | ARP-851075 | 41 | Bucket Complete - 24"..... | ARP-W37 |
| 7 | Bucket Link Weldment.... | ARP-851090 | 41 | Bucket Complete - 36"..... | ARP-W38 |
| 8 | Bucket Linkage Pin..... | ARP-851116 | 41 | Bucket Complete - 40"..... | ARP-W39 |
| 9 | Cylinder Pin..... | ARP-851117 | | | |
| 10 | Pivot Shaft..... | ARP-851118 | | | |
| 11 | Pivot Shaft/Boom..... | ARP-851119 | | | |
| 12 | Pin Retainer..... | ARP-851122 | | | |
| 13 | Spacer..... | ARP-851128 | | | |
| 14 | Hose Clip..... | ARP-851134 | | | |
| 15 | Guide Link..... | ARP-851138 | | | |
| 16 | Carriage Bolt, 5/16-18 x 3/4..... | 23908-S8 | | | |
| 17 | Bolt, 5/16-24 x 3/4..... | 304649-S8 | | | |
| 18 | Bolt, 3/8-24 x 7/8..... | 304667-S8 | | | |
| 19 | Bolt, 3/8-24 x 1-1/4..... | 304723-S8 | | | |
| 20 | Nut, 5/16-18 Hex..... | 33797-S8 | | | |
| 21 | Nut, 3/8-24 Hex..... | 33800-S8 | | | |
| 22 | Lockwasher, 5/16..... | 34806-S8 | | | |
| 23 | Lockwasher, 3/8..... | 34807-S8 | | | |
| 24 | Lockwasher, 3/8, Shakeproof..... | ARP-8081 | | | |
| 25 | Washer, 5/16 Std. Flat.... | 44824-S8 | | | |
| 26 | Washer, 3/8 SAE..... | 44826-S8 | | | |
| 27 | Washer, 2-1/4 x 1-33/64 x 1/16..... | ARP-8232 | | | |
| 28 | Mach. Bushing, 1-7/8 x 1-1/4 x 18 ga..... | ARP-8290 | | | |
| 29 | Tube Line, 1/2 OD x 34-1/4..... | ARP-10511 | | | |
| 30 | Tube Line, 1/2 OD x 20-1/16..... | ARP-10512 | | | |
| 31 | Union, 3/4-16 Male x 1/2-14 Female, Straight.. | ARP-11119 | | | |
| 32 | Union, 3/4-16 Male x 1/2-14 x 90°..... | ARP-11144 | | | |
| 33 | Connector, 1/2 Tube x 3/4-16 Male, with O-Ring..... | ARP-11196 | | | |
| 34 | Connector, 1/2 Tube x 1/2-14..... | ARP-11221 | | | |
| 35 | Tooth Shank..... | ARP-13616 | | | |
| 36 | Tooth Point..... | ARP-13617 | | | |
| 37 | Hose Clamp..... | ARP-14157 | | | |

027 OR 029 CYLINDER

027 - LIFT AND CROWD
029 - BUCKET

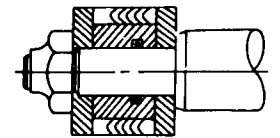
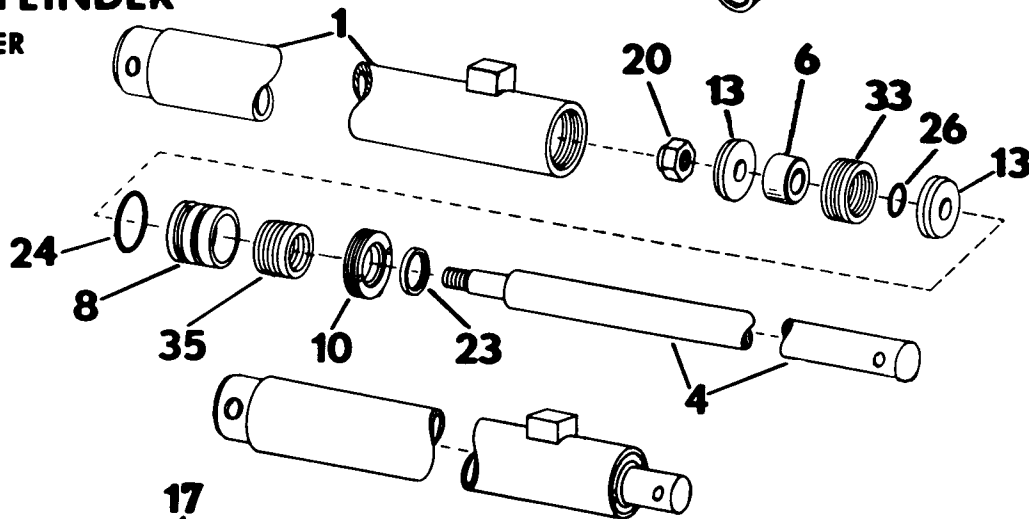


PROPER PISTON ASSEMBLY

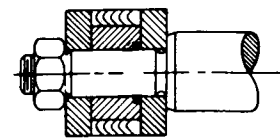
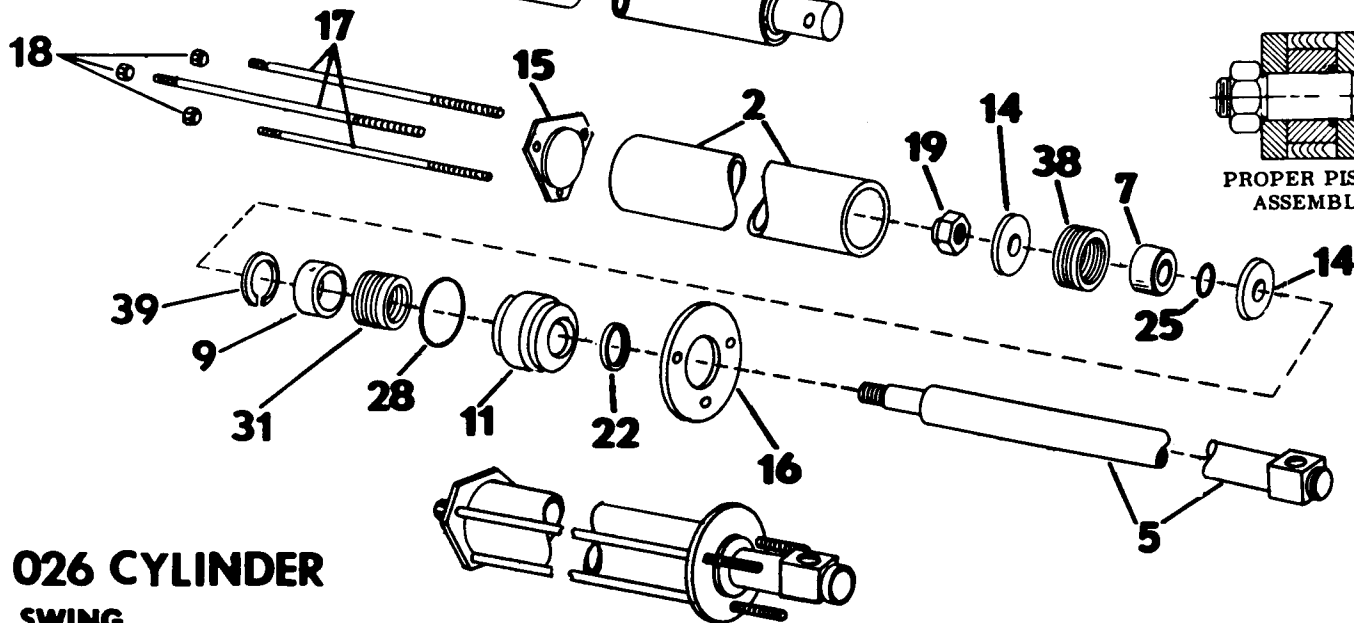
A = HARD VEE'S
B = SOFT VEE'S

010 CYLINDER

STABILIZER



PROPER PISTON ASSEMBLY



PROPER PISTON ASSEMBLY

026 CYLINDER

SWING

HYDRAULIC CYLINDERS - PARTS LISTS

| Index | Description | ARP-027 | ARP-029 | ARP-010 | ARP-026 |
|-------|---|------------|------------|------------|------------|
| 1 | Cylinder Tube Weldment..... | ARP-905250 | ARP-905505 | ARP-905030 | |
| 2 | Cylinder Tube..... | | | | ARP-906089 |
| 3 | Piston Rod Weldment..... | ARP-905245 | ARP-905260 | | |
| 4 | Piston Rod..... | | | ARP-905026 | |
| 5 | Piston Rod Assembly..... | | | | ARP-906075 |
| 6 | Cylinder Piston..... | ARP-905176 | ARP-905516 | ARP-905078 | |
| 7 | Spacer..... | | | | ARP-906026 |
| 8 | Gland, Cylinder Packing..... | ARP-905177 | ARP-905517 | ARP-905027 | |
| 9 | Spacer Ring..... | | | | ARP-906086 |
| 10 | Gland Cap..... | ARP-905178 | ARP-905518 | ARP-905028 | |
| 11 | End Cap..... | | | | ARP-906087 |
| 12 | Piston Washer..... | ARP-905179 | ARP-905519 | | |
| 13 | Cylinder Stop..... | | | ARP-905126 | |
| 14 | Washer..... | | | | ARP-906027 |
| 15 | End Plate..... | | | | ARP-906088 |
| 16 | Nut Plate..... | | | | ARP-906091 |
| 17 | Bolt..... | | | | ARP-906092 |
| 18 | Nut, 7/16-20, Self-Locking..... | | | | 55675-S8 |
| 19 | Nut, 3/4-16, Self-Locking..... | | | | 55684-S8 |
| 20 | Nut, 7/8-14, Self-Locking..... | 55686-S8 | 55686-S8 | 55686-S8 | |
| 21 | Washer, Wavy Spring Type..... | ARP-10662 | ARP-10662 | | |
| 22 | Oil Seal, 1-1/4 OD x 1" ID..... | | | | ARP-11569 |
| 23 | Oil Seal, 1-7/8 OD x 1-1/2 ID.. | | | ARP-11584 | |
| 24 | O-Ring, 11-142..... | FAS-11730 | | FAS-11730 | |
| 25 | O-Ring, 11-210..... | | | | ARP-11733 |
| 26 | O-Ring, 11-214..... | 87053-S91 | 87053-S91 | 87053-S91 | |
| 27 | O-Ring, 11-230..... | | ARP-11760 | | |
| 28 | O-Ring, 11-232..... | | | | ARP-11766 |
| 29 | Wiper Seal, 1-5/8 OD x 1 1/4 ID... | ARP-11817 | ARP-11817 | | |
| 30 | Wear Ring, 2-3/4 OD x 2-1/2 ID x 3/8 wide..... | | ARP-11831 | | |
| 31 | Packing Assembly, 1-1/2 OD x 1" ID x .824 Stack Height..... | | | | ARP-11836 |
| 32 | Packing Assembly, 2-3/4 OD x 2 1/4 ID x .824 Stack Height..... | | ARP-11846 | | |
| 33 | Packing Assembly, 2-1/2 OD x 2" ID x 1-1/4 Stack Height..... | | | 194190 | |
| 34 | Packing Assembly, 1-3/4 OD x 1-1/4 ID x 1-1/2 Stack Height.. | ARP-11851 | ARP-11851 | | |
| 35 | Packing Assembly, 2" OD x 1 1/2 ID x .824 Stack Height..... | | | FAS-980511 | |
| 36 | Wear Ring, 2-1/2 OD x 2-1/4 ID x 3/8 wide..... | ARP-11861 | | | |
| 37 | Packing Assembly, 2-1/2 OD x 2" ID x .820 Stack Height..... | ARP-11862 | | | |
| 38 | Packing Assembly, 3" OD x 2-1/2 ID x 1-3/8 Stack Height.. | | | | ARP-11864 |
| 39 | Snap Ring, N5000-162..... | | | | ARP-13401 |
| | For complete cylinder, order: | | | | |
| | 2-1/2 Dia x 20-7/8 Stroke..... | ARP-027 | | | |
| | 2-3/4 Dia x 17-3/8 Stroke..... | | ARP-029 | | |
| | 2-1/2 Dia x 16-1/2 Stroke..... | | | ARP-010 | |
| | 3" Dia x 11-1/2 Stroke..... | | | | ARP-026 |

STABILIZER PADS - ACCESSORY ITEMS

The Backhoe is supplied with bolt on stabilizer pads as standard equipment. They are suitable for most backhoe work and generally will be all that is ever required. However, accessory pads are available that pin to the standard pads to increase the versatility of the hoe. These items are shown below and are used in groups.

Group A - Basic flat plate that is pinned to the standard pad and has a limited amount of pivot action for leveling itself. It may be used as shown or have Groups B, B and C, or D added to it. It measures 9" by 10".

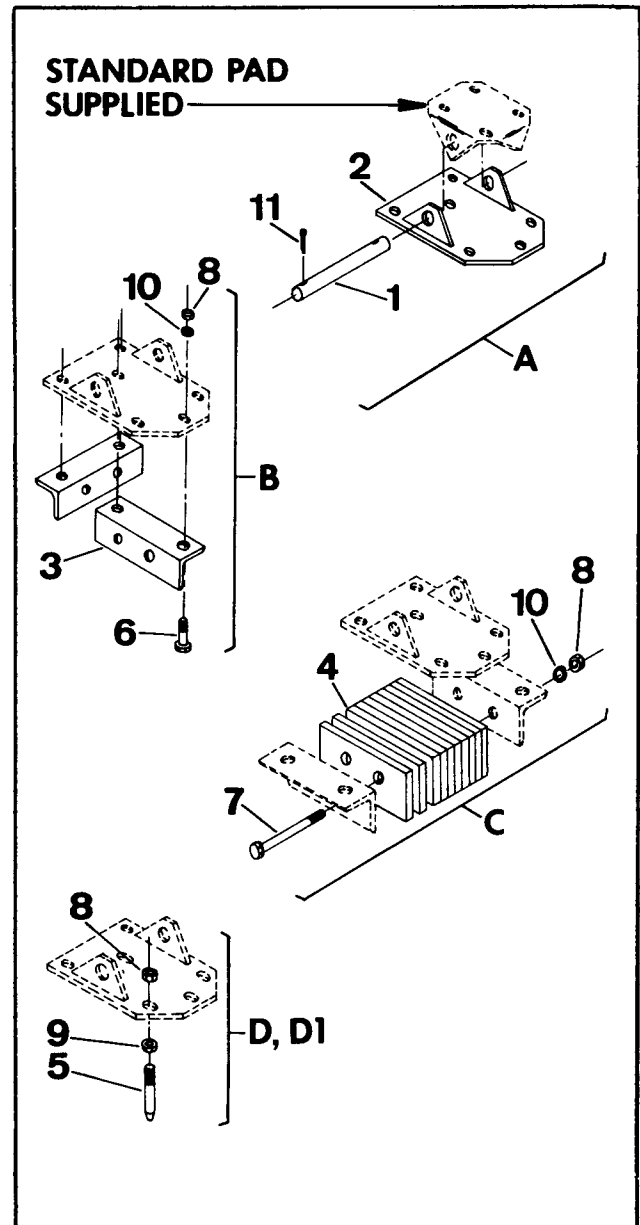
Group B - Four angles which may be bolted to Group A to form a soil engaging cleat in the form of a tee or a channel. The angles are 1-1/2" x 1-1/2" x 1/4" x 8-1/4" long.

Group C - A quantity of pierced belting strips and long bolts that can be added to Group B to form a rubber-fabric street pad.

Group D - A spike with two retaining nuts that can be attached to Group A in any quantity desired, up to six, per stabilizer. The spike will provide about 2" penetration.

STABILIZER PADS - PARTS LIST

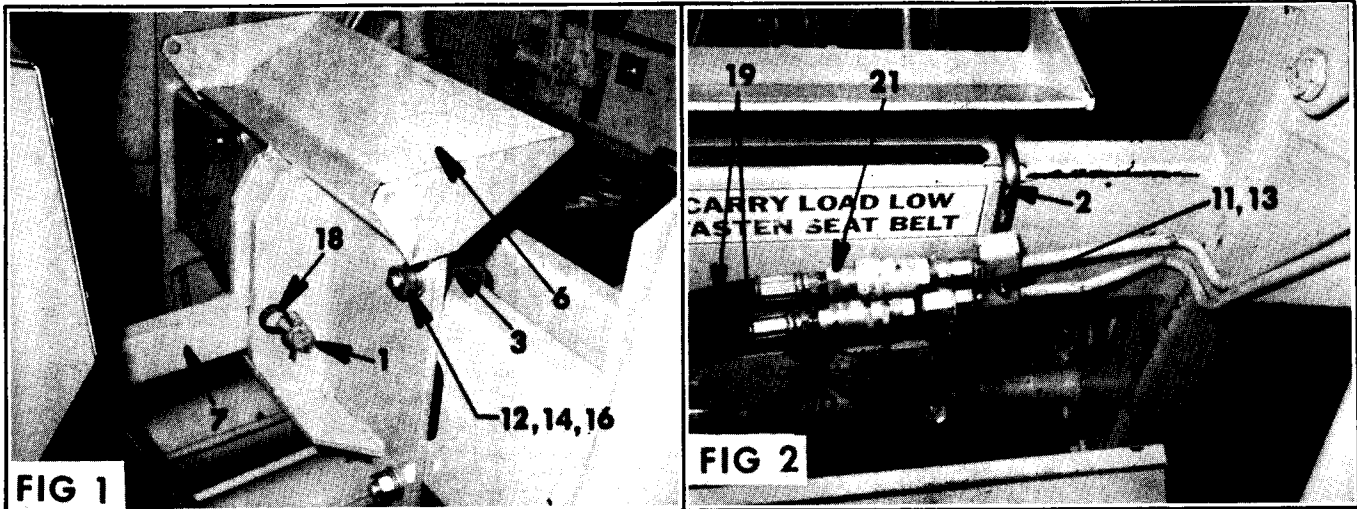
| Group | Index | Description | Part No. |
|-------|-------|---|------------|
| A | - | Turf Plate Kit (pair)..... | ARP-W41 |
| | 1 | Pivot Shaft..... | ARP-601552 |
| | 2 | Turf Plate Weldment.... | ARP-851260 |
| | 11 | Cotter Pin..... | 72075-S8 |
| B | - | Angle Kit (four angles and bolts)..... | ARP-W42 |
| | 3 | Angle..... | ARP-851266 |
| | 6 | Bolt, 5/8-18 x 1-1/2.... | 304769-S8 |
| | 8 | Nut, 5/8-18..... | 33850-S36 |
| | 10 | Lockwasher, 5/8..... | 34811-S36 |
| C | - | Street Pad Kit (sufficient material for both stabilizers; includes: four long bolts)..... | ARP-W43 |
| | 4 | Street Pad, order..... | ARP-W43 |
| | 7 | Bolt, 5/8-18 x 6-1/2.... | 302604-S8 |
| | 8 | Nut, 5/8-18..... | 33850-S36 |
| | 10 | Lockwasher, 5/8..... | 34811-S36 |
| D | - | Spike Kit (one spike and two nuts)..... | ARP-W44 |
| | 5 | Spike, order..... | ARP-W44 |
| | 8 | Nut, 5/8-18..... | 33850-S36 |
| | 9 | Jam Nut, 5/8-18..... | 33947-S8 |
| D1 | - | Spike Set (eight spikes and sixteen nuts)..... | ARP-W53 |
| | 5 | Spike, order..... | ARP-W44 |
| | 8 | Nut, 5/8-18..... | 33850-S36 |
| | 9 | Jam Nut, 5/8-18..... | 33947-S8 |



MOUNTING THE BACKHOE TO THE COMPACT LOADER

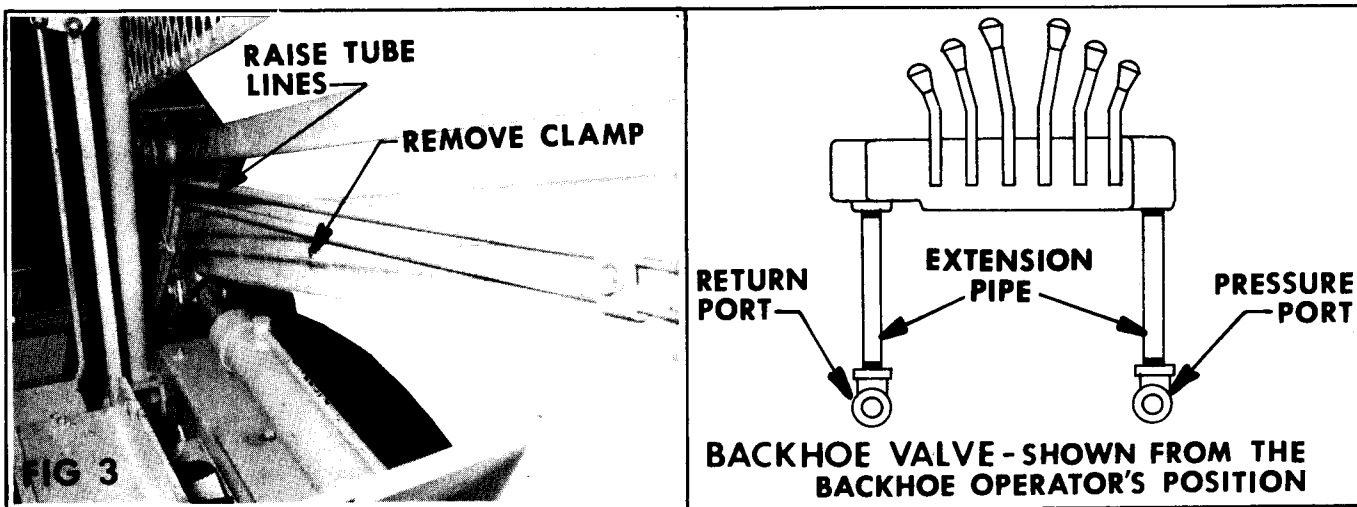
GENERAL DESCRIPTION OF THE ATTACHING ADAPTER:

This adapter will attach the ARPS 728 Backhoe to the Ford Model 340 Compact Loader. The backhoe main frame mounts directly to the tool bar in place of the bucket, which must be removed. The backhoe is restrained additionally by a link connecting the main frame to an anchor bracket that is clamped to the cross member of the lift arms. The self-leveling linkage of the loader lift arms will allow the backhoe to be lifted to truck or trailer bed for transportation. The loader seat is remounted with a device that permits it to be positioned for convenient backhoe operation or changed back to convenient loader operation.



ASSEMBLY PROCEDURE:

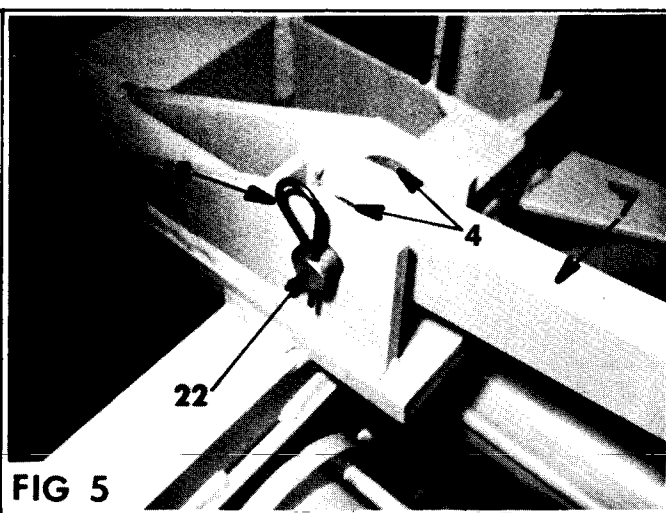
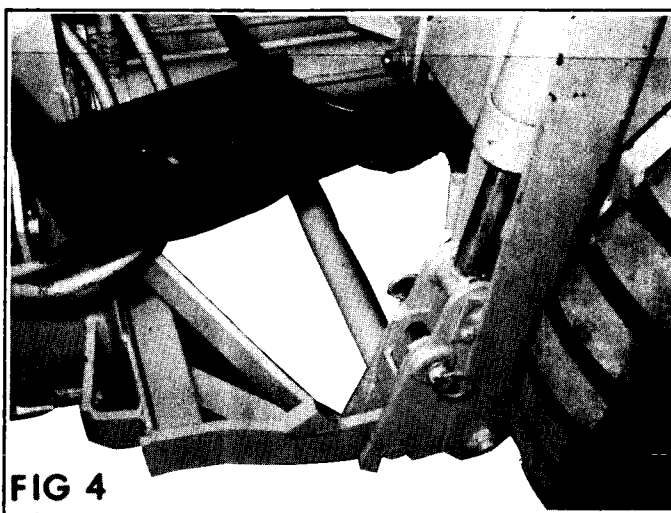
To mount the ARPS 728 Backhoe on the Ford Model 340 Compact Loader, the loader lift arms must be completely lowered and bucket removed from the tool bar. Attach anchor weldment (6) to the center of the lift arms cross member using clamp bolts (2 and 3) and hardware provided, see Fig 1 and 2. Tube lines for the remote hydraulic supply must be removed from the underside of the cross member and moved up on the right hand



ASSEMBLY PROCEDURE - continued

loader lift arm, as shown in Fig 3, so the ends can be attached to the right hand clamp bolt with the hardware provided, as shown in Fig 2. Note that Fig 3 shows that the center clamp holding the tube lines to the loader lift arm must be removed. Make sure that these tube lines do not come in contact with any part of the loader frame, roll-over cage or cab, when the lift arms are raised and lowered. Continue installation by removing pipe plugs from the backhoe valve extension pipes. Attach two hoses (19) provided to the extension pipes. Drive the 340 Loader close enough to the backhoe so the hoses will reach to the remote couplers. After determining which of the remote couplers is the pressure line, connect it to the pressure hose and connect the return line to the return hose using couplers (20 and 21) provided, as shown in Fig 2. Pressure and return hoses can be determined from the valve diagram sketch.

⚠ CAUTION - If the hoses are hooked up incorrectly, serious damage to the backhoe valve will occur.



To activate the remote hydraulic supply depress the hydraulic valve pedal to lock open. Now drive the 340 Loader forward until the backhoe main frame can be attached to the tool bar, as shown in Fig 4. The backhoe can be raised or lowered by extending the stabilizer legs. Once the backhoe is connected to the tool bar, using bucket pins, fully lower loader lift arms and retract bucket cylinder. Next insert link (7) and washers (4) between the upper lugs on the backhoe frame, see Fig 5, and connect with headed pin (22) and wire form cotter (18). Backhoe boom can now be raised or lowered so that the other end of link (7) lines up with the hole in the anchor weldment (6), as shown in Fig 1. Lock link in place using L-shaped pin (1) and cotters (17 and 18). Remove seat cushion from operator's seat and remove seat frame from four mounting studs. Reassemble seat frame to seat plate weldment (5) using carriage bolts and hardware provided, as shown in Fig 6, and replace seat cushion. Attach seat adapters (8 and 9) to the four studs on loader using hardware provided as shown in Fig 7. Seat may be attached to the loader or to the backhoe as desired by sliding seat plate weldment (5) into position and locking with wire form cotter (18) as shown in Fig 6.

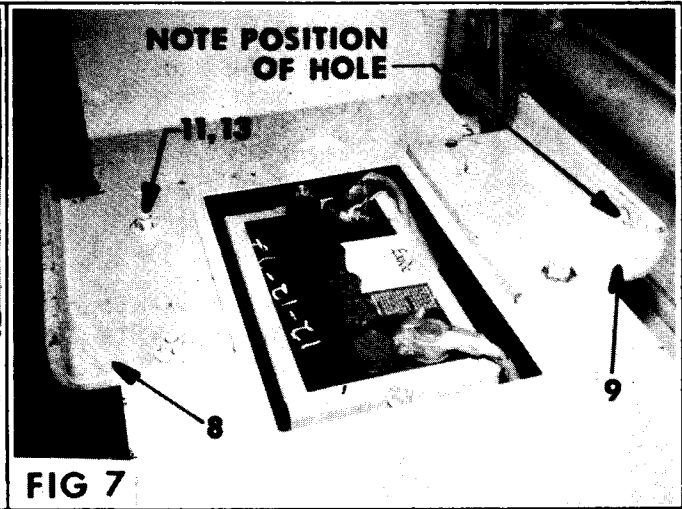
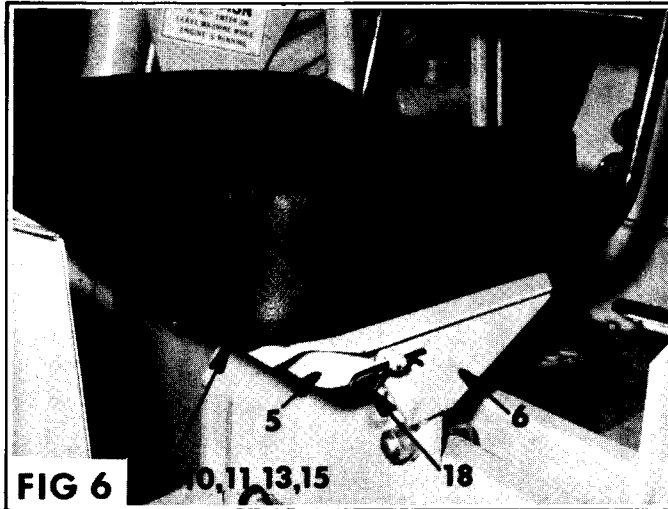
USING THE ATTACHING KIT:

When the installation is completed, the kit permits fast removal and reattaching of the hoe to the loader with the use of quick removal pins and hydraulic quick couplers. The anchor bracket clamped to the loader cross member, and loader seat modifying parts are left in place permanently.

USING THE ATTACHING KIT - continued

When digging, the loader arms are kept in the lowest position, so that they engage the guides that are provided for them on the compact loader chassis. Bucket cylinders are normally fully retracted when digging.

CAUTION - For safest backhoe operation, the 340 Compact Loader should be equipped with the electric brake lock and the wheel brakes must be applied during the digging operation.




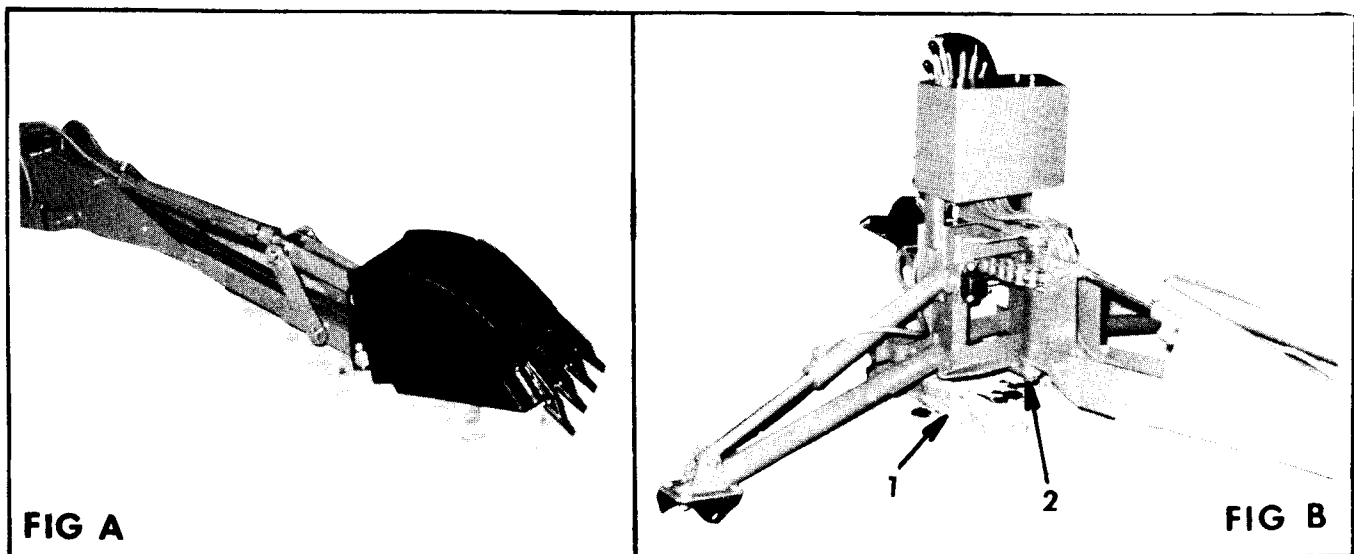
ATTACHING ADAPTER PARTS LIST

| Index | Description | Part No. |
|-------|---|------------|
| 1 | Pin..... | ARP-850122 |
| 2 | Clamp Bolt Weldment..... | ARP-850525 |
| 3 | Clamp Bolt..... | ARP-850532 |
| 4 | Washer..... | ARP-850862 |
| 5 | Seat Plate Weldment..... | ARP-851680 |
| 6 | Anchor Weldment..... | ARP-851690 |
| 7 | Link..... | ARP-851701 |
| 8 | Seat Adapter - RH..... | ARP-851702 |
| 9 | Seat Adapter - LH..... | ARP-851703 |
| 10 | Carriage Bolt, 3/8-16 x 1", Square Neck..... | 23921-S8 |
| 11 | Nut, 3/8-16, Hex Head..... | 33799-S8 |
| 12 | Nut, 5/8-18, Hex Head..... | 33850-S36 |
| 13 | Lockwasher, 3/8..... | 34807-S8 |
| 14 | Lockwasher, 5/8..... | 34811-S8 |
| 15 | Washer, 3/8 Std Flat..... | 44728-S8 |
| 16 | Washer, 1-1/4 OD x 11/16 ID x 10 gauge..... | 351505-S8 |
| 17 | Cotter Pin, 3/16 x 1-1/2..... | 72073-S8 |
| 18 | Wire Form Cotter..... | 149498 |
| 19 | Hydraulic Hose, 1/2 ID x 1/2-14 Pipe Male x 1/2-14 Pipe Male x 38" Long..... | ARP-10986 |
| 20 | Body Coupler, 1/2 NPSF..... | ARP-11243 |
| 21 | Nose Coupler, 1/2 NPSF..... | ARP-11244 |
| 22 | Clevis Pin, 3/4 x 3"..... | ARP-13462 |

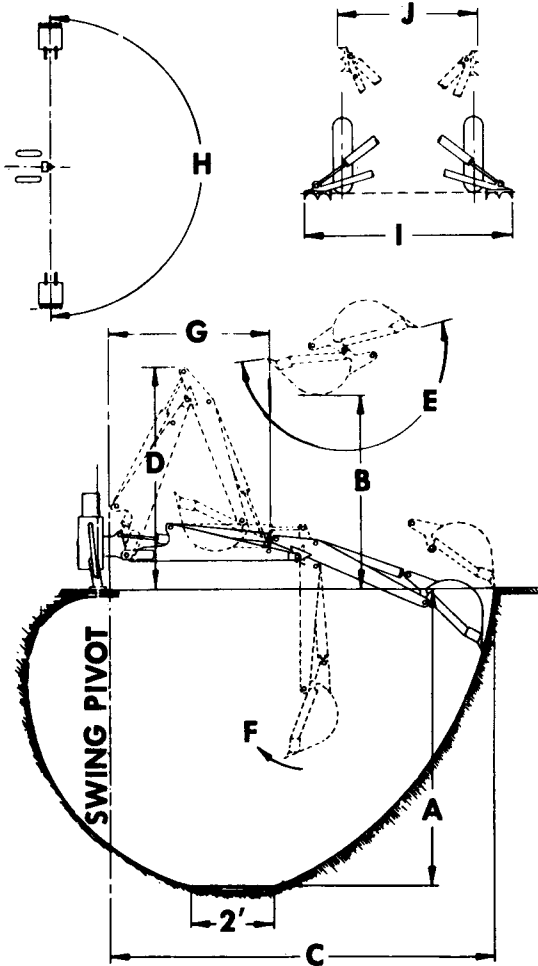
REMOVAL AND STORAGE

The Backhoe is self-assisting during removal and re-attaching procedures. For normal removal and storing, follow these steps:

1. Put the stabilizers down and lift the backhoe slightly.
 2. Stretch out the boom, dipper arm, and bucket as shown in Fig A and lower the bucket to the ground so that it rests there solidly.
 3. Place suitable blocking under the backhoe frame that will support it adequately, as shown in Fig B, (1) and (2).
 4. Detach the backhoe from the tractor (mechanically only, not hydraulically at this point) and move the tractor a few inches away from the hoe. Note, to facilitate this procedure, the hoe still may be hydraulically raised, lowered or moved to release connection points of carrying forces.
 5. Gently lower the hoe onto the blocking (1) and (2), shown in Fig B. Leave the stabilizers outstretched and also firmly in contact with the ground for added stability.
 6. The hydraulic system now can be removed or disconnected:
 - a. On PTO pump self-contained systems, the pump should be removed from the PTO shaft. The hydraulic system should always remain complete. No hoses or oil lines should be disconnected during correct removal and storage procedure.
 - b. On systems that tap into the tractor for hydraulic power, these lines should now be disconnected. Be sure to close the ends of the lines to exclude dirt.
-  Be sure to mark the lines so as to prevent any mix-up during hook up when the hoe is again attached to the tractor.
7. Various other parts such as the seat changing brackets, etc, remain in place on the tractor.
 8. Refer to the instruction that covers the installation of the attaching kit, this will help with the removal and re-attaching.



SPECIFICATIONS - GENERAL DATA



- A. Digging Depth (2' flat bottom).....98"*
- B. Loading Height (over truck box).....77"*
- C. Maximum Reach from Swing Pivot 10' 5"*
- D. Transport Height Clearance (maximum).....81"*
- E. Bucket Roll, Normal Digging
(all buckets).....180°*
- F. Bucket Roll Force at Teeth
(maximum).....210 lbs. per 100 PSI*(**)
Bucket Pry-out Force, in excess
of.....500 lbs. and up per 100 PSI**
Depending on fulcrum established
by bucket attitude.
- G. Transport Overhang to Rear
from Center Swing.....54"
- H. Swing Arc.....180°*
- I. Stabilizer Spread, Down (approx.).....96"
- J. Stabilizer Clearance, Raised (approx.)...51"
- K. Lift ability, dipper arm and boom extended,
lift with boom cylinder, weight attached,
with bucket.....25 lbs. per 100 PSI**
- L. Lift ability, boom up, lift with dipper arm
only, weight attached as shown,
with bucket.....50 lbs. per 100 PSI**

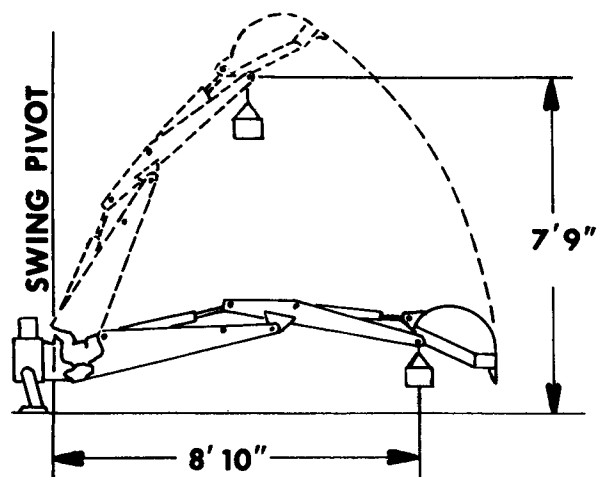
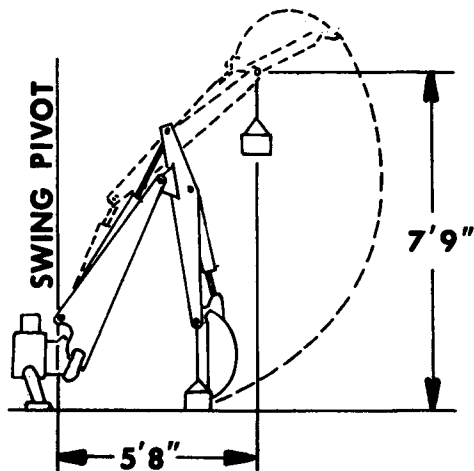
* Meets specification definitions of IEMC.

** Multiply by number of 100 PSI's in hydraulic system pressure for total force:

- Example: 1500 PSI - Multiply by 15
- 1750 PSI - Multiply by 17.5
- 2000 PSI - Multiply by 20

NOTE - on systems of 2000 PSI or over, use 20 as multiplier, as Backhoe-relief valve limits force to this value.

WEIGHT, HOE ONLY, LESS BUCKET.....1010 lbs.



SPECIFICATIONS - continued

BUCKET DATA:

| <u>BUCKET</u> | <u>WIDTH</u> | <u>SAE STRUCK CAPACITY</u> | <u>HEAPED CAPACITY</u> | <u>WEIGHT</u> |
|---------------|--------------|--------------------------------|----------------------------|---------------|
| W35 | 12 in. | 1.20 cu.ft. | 2 cu.ft. | 73 lbs. |
| W36 | 18 in. | 1.80 cu.ft. | 2-3/4 cu.ft. | 90 lbs. |
| W37 | 24 in. | 2.50 cu.ft. | 3-1/4 cu.ft. | 111 lbs. |
| W38 | 36 in. | 3.10 cu.ft. | 4 cu.ft. | 150 lbs. |
| W39 | 40 in. | 3.50 cu.ft. | 4-1/2 cu.ft. | 162 lbs. |

CYLINDER DATA:

| | <u>PISTON DIA.</u> | <u>STROKE</u> | <u>COLLAPSED LENGTH</u> | <u>EXTENDED LENGTH</u> | <u>ROD DIA.</u> | <u>PIVOT DIA.</u> | <u>TYPE OF ACTION</u> |
|---------------------------------------|------------------------|---------------|-----------------------------|----------------------------|---------------------|-----------------------|---------------------------|
| Stabilizer Cyl..... | 2-1/2" | 16-1/2" | 23-13/16" | 40-5/16" | 1-1/2" | 7/8" | DA |
| Boom and Dipper Cylinders (1)..... | 2-1/2" | 21" | 31" | 52" | 1-1/4" | 1-1/4" | DA |
| Bucket Cylinder.... | 2-3/4" | 17-1/2" | 27-1/2" | 45" | 1-1/4" | 1-1/4" | DA |
| Swing Cylinder..... | 3"(2) | 10-1/2" | 1-7/8"(3) | 12-3/8"(3) | 1" | DNA | SA |

(1) Identical cylinders used for both functions.

(2) Effective area is 3" dia. less 1" dia. for the rod or 6.28 sq. in. (pull type cyl).

(3) Spherical socket mounted cylinder.

WARRANTY

ARPS CORPORATION warrants each Model 728 Backhoe to be free of defects in material and workmanship for a period of one year (except as herein after provided) from the date of delivery to the retail purchaser, provided that the unit has been delivered to the purchaser in new condition. Obligation under this warranty is limited to the repair or replacement of parts which are found to be defective in material or workmanship. This warranty does not obligate the manufacturer to bear the cost of labor or transportation charges related to the repair or replacement of defective parts, nor shall it apply to products on which repairs or alterations have been made unless authorized by the manufacturer. Warranty on any components, not of ARPS manufacture, shall be extended only as directed by the manufacturer of the components. This warranty will not apply if a failure occurs as a result of misuse, negligence, or accident, nor will it apply to any part requiring replacement as the result of normal wear. IMPORTANT - be sure to read the warranty limitations on the six-spool control valve as outlined on page seven. This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on the part of the Company. The Company reserves the right to make changes in its products at any time without notice or without incurring obligation.



ARPS CORPORATION New Holstein, Wisconsin 53061

(A Chromalloy American Subsidiary)

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