

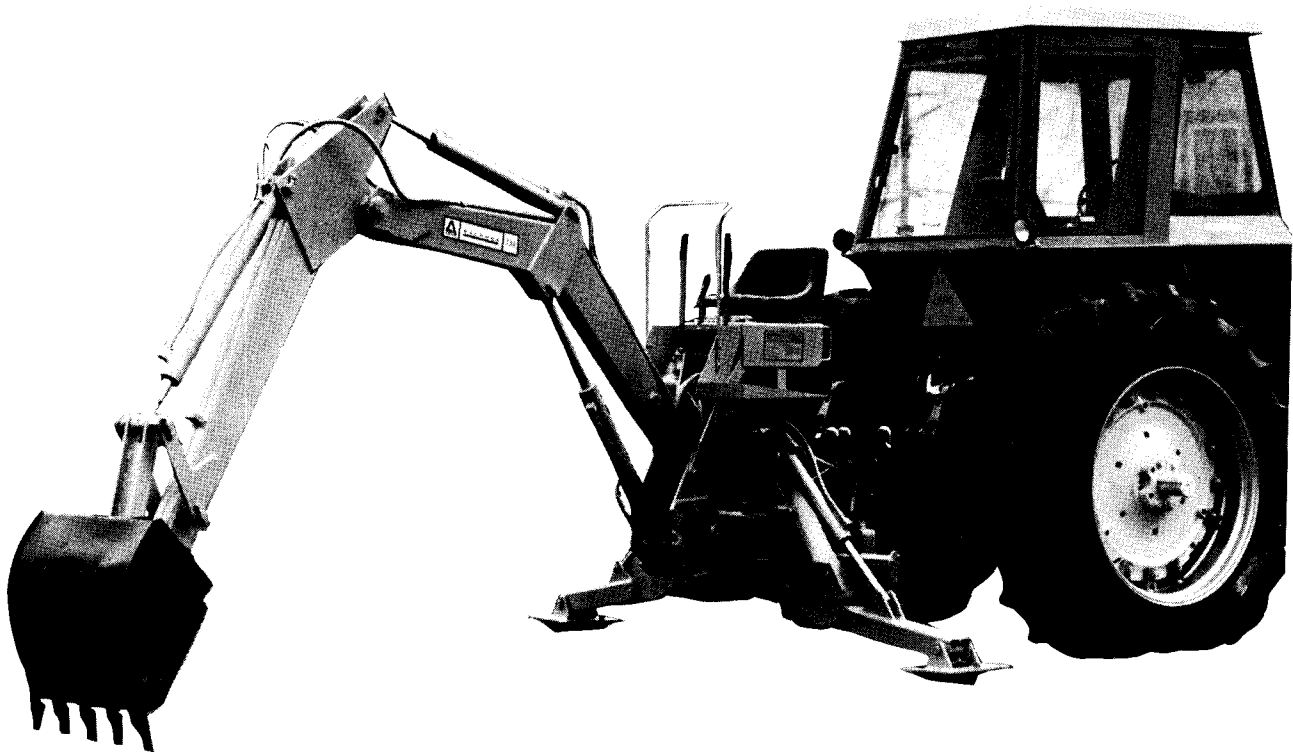
# W30 BUCKETS

FOR W30 AND LATER

## W30 BUCKETS

- W35 - BUCKET, 12"
- W36 - BUCKET, 18"
- W37 - BUCKET, 24"
- W38 - BUCKET, 36"
- W39 - BUCKET, 40"
- W40 - BUCKET, 48"
- W41 - BUCKET, 36"

- W53 - HYDRA-FLIP
- W64 - STRIKE AND HOLD
- W71 - OPEN END (MAX. CAPACITY 10 CPM)
- W152 - CLOSED END (MAX. CAPACITY 10 CPM)
- W92 - FFD (MAX. CAPACITY 10 CPM) (1000 RPM)
- W150 - FFD (MAX. CAPACITY 10 CPM) (540 RPM)



ARPS... IMPORTANT




FORM W160 185  
IO. 9850

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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 operators 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

9455

## OPERATION -

CHECK to be sure there is adequate clearance between backhoe operator and tractor cab or roll bar. See Note #1 on decal 9368, Page 2, and the minimum clearance dimensions (K) and (L), Page 16 in the Specifications Section.

OPERATE the backhoe from the operators 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 operators console.

**CAUTION**

1. KEEP BUCKET AWAY FROM STABILIZER AREA TO AVOID POSSIBLE DAMAGE TO STABILIZERS
2. TO KEEP SOLID BASE FOR STABILIZERS, AVOID DIGGING IN AREA OF STABILIZER PADS

9392

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 operators 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.

9368

## 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 operators console:



## BACKHOE - BASIC ASSEMBLY INSTRUCTIONS

### GENERAL -

The backhoe has been partially disassembled for shipping purposes and strapped to a skid. The hoe can be assembled without the need for lifting equipment such as hoists or jacks, although they may be used if desired. By hydraulically powering the hoe from the tractor, the hoe can serve as its own erecting hoist.

### ASSEMBLY PROCEDURE -

1. Do not remove any of the strapping that holds the backhoe main frame and boom in position. Remove the stabilizer legs, dipperstick, stabilizer braces, small bag of parts, and any other miscellaneous items that may have been fastened to the skid.

2. PTO Pump and Reservoir Kit Only: PTO hydraulic system should be hooked up to the backhoe at this time. See Assembly Layout and Instructions on Pages 40 and 41, for the W92 Kit (1000 RPM PTO Shaft) or the W150 Kit (540 RPM PTO Shaft).

3. Back the tractor up to the backhoe main frame and connect lower tractor links to main frame at position A, see Fig 1, using headed pins provided.

4. Connect backhoe upper link to backhoe main frame at position B, see Fig 1, using bolt, nut, and lockwasher provided. Connect backhoe slide link to tractor at upper link location. Securely tighten all hardware and U-bolts.

*IMPORTANT* - Tighten all hardware to the torque requirements specified in the Torque Chart, Page 9, of this manual.

5. Hook-Up-Tractor Hydraulic System Only: Identify the pressure and return ports of the tractors remote couplers or auxiliary valve. Refer to instructions, Pages 35-37, for hook-up to Open-Center systems or Page 37, for hook-up to Closed-Center systems.

6. Attach control levers to the operators control panel, Fig 5 and 19.

7. Remove all the remaining strapping that holds the main frame to the skid and holds the boom to main frame. The stabilizers should be attached now, Fig 2 and 20. When main frame is raised remove shipping skid. After stabilizers are attached, lower main frame so it is entirely supported by the stabilizer legs.

8. With hydraulic power available to the hoe, slowly swing boom away from main frame and stop when boom is pointing in a direction away from the tractor. Remove any strapping still attached to the boom. Raise boom slightly and remove four foot long wooden brace. Now slowly lower boom until dipperstick pin is about thirty inches off the ground. Attach dipperstick to boom and attach rod end of dipperstick cylinder to dipperstick, Fig 2 and 18.

9. Now raise dipperstick slightly so bucket can be attached with two pins, Fig 18. Remove caps and plugs from bucket cylinder and from tube lines attached to top of boom. Connect bucket cylinder to tube lines using hoses provided, Fig 12.

10. Note that the backhoe seat may be moved to any of three positions on its adapter plate. This feature is to allow the most convenient distance between the operator and control handles, Fig 2 and 17.

11. There are many variations in the way the upper link, slide link, and stabilizer braces may be installed. This allows these parts to be universally used on most large tractor models. These variations, Fig 1, are listed as follows:

A. Stabilizer brace may be attached to either hole (1) or hole (2) of the upper link.

B. Main frame may be attached to either hole (3) or hole (4) of the upper link.

C. Upper link may be attached in any of four holes in main frame, listed B through E.

D. Upper link may be attached with the slide link on top, Fig 3, or with the slide link on the bottom, Fig 4.

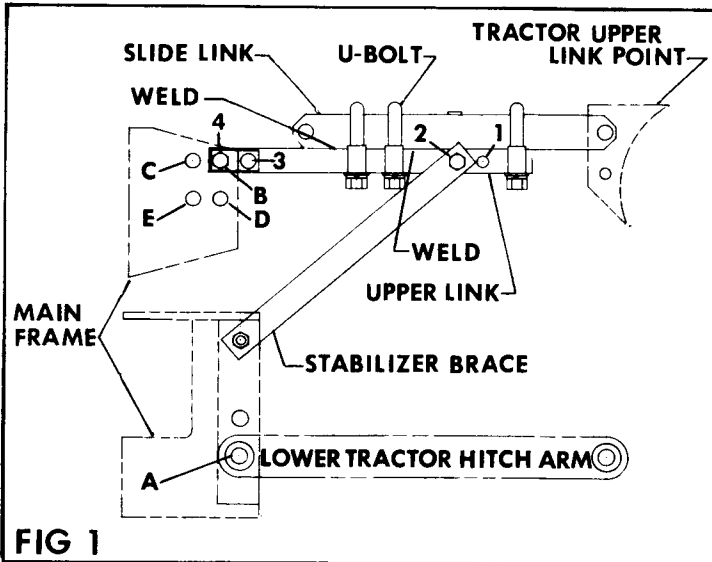


FIG 1

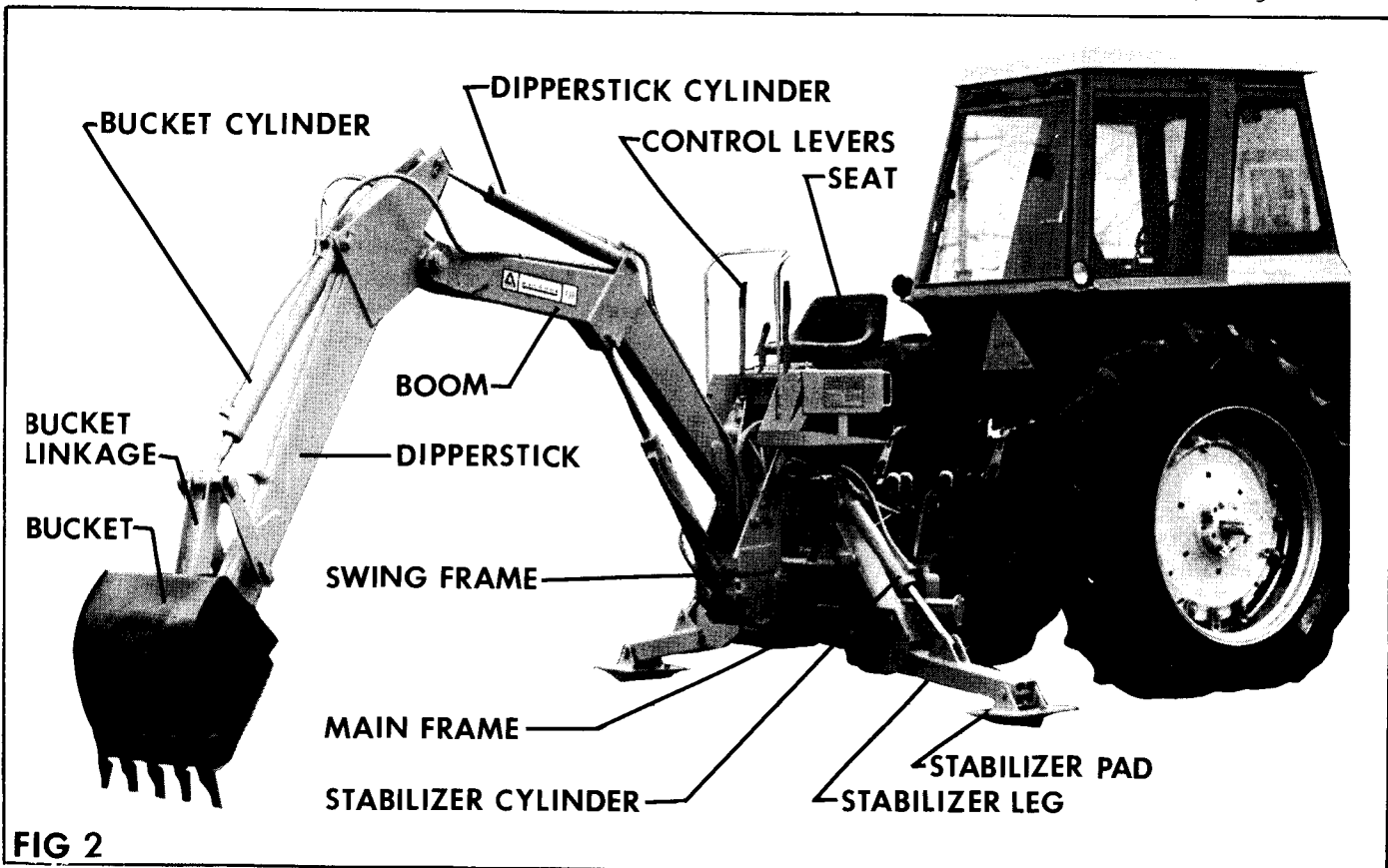
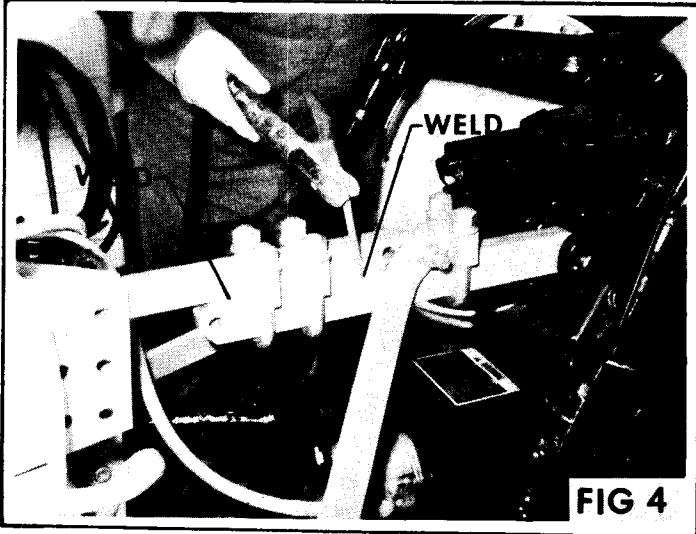
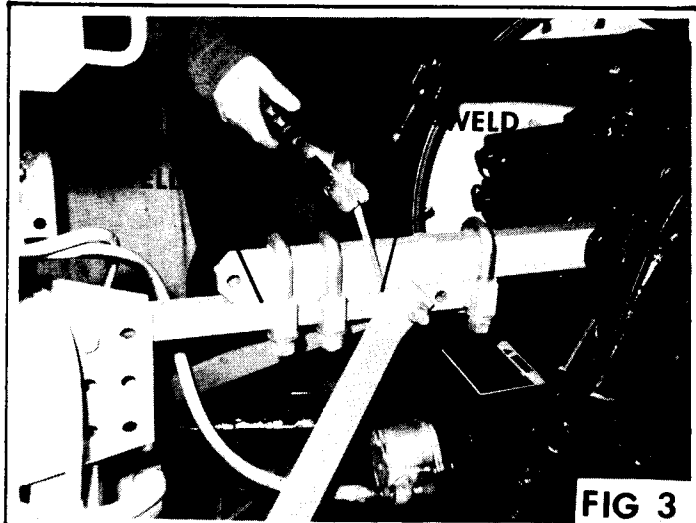


FIG 2



E. Length of upper link assembly may be adjusted by extending or retracting slide link.

12. Use backhoe stabilizers to raise the main frame hydraulically so that the boom pivot pin is approximately 36" off the ground.

13. Lower dipperstick to the ground and loosen U-bolts on upper link. By lowering or raising dipperstick and boom, adjust main frame so that it is in a vertical position in relation to the ground. Disconnect upper link from tractor upper hitch point.

14. Using all the variations listed, find the correct combination of holes so that the free end of the slide link can be very nearly reattached to the upper hitch point of the tractor - with the backhoe main frame in its present position (boom 36" off the ground).

15. Use the stabilizers to hydraulically raise or lower main frame slightly to get the hole in the slide link to line up with the tractor hitch. Secure slide link in position using tractor pin.

16. Tighten all hardware holding braces and U-bolts in position.

*IMPORTANT - Tighten all hardware to the torque requirements specified in the Torque Chart, Page 9 of this manual.*

17. Tack weld slide link to upper link on each side as shown in Fig 1 and 3.

**⚠** *CAUTION - If links are not tack welded together, the weight of the backhoe will cause the upper link assembly to extend, allowing the main frame to slip toward the ground.*

18. Check your installation very carefully to be sure all members are correctly installed and securely fastened.

Proceed to the Backhoe - General Operation Section to become familiar with the proper operation of the control levers.

# BACKHOE - 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 -

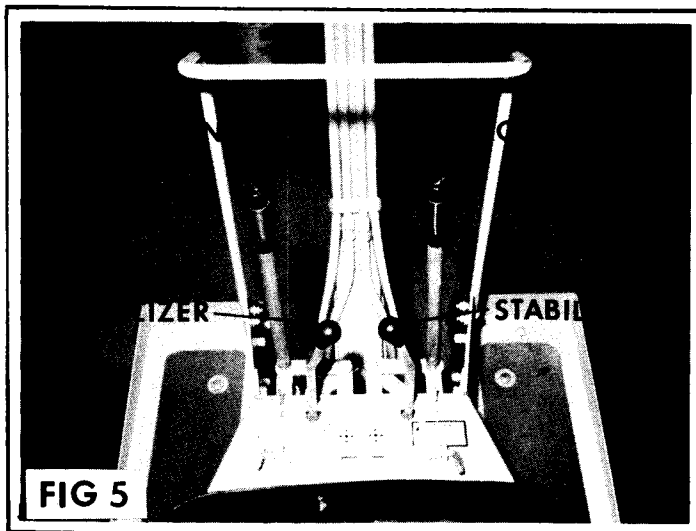
The terms right, left, front, and back shall be determined from the position of the operator when seated in the operating position on the backhoe.

## 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 732 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 5. 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 the 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 lever forward and to the right.

SWING RIGHT AND RAISE the boom by moving the 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.



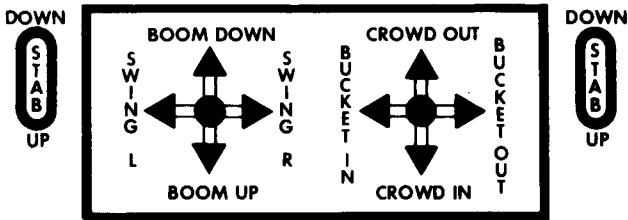
In general, the direction of movement of a control lever corresponds to the movement of the operating member.

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 all loose bolts, nuts, and set-screws,

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 the 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.

## BACKHOE PTO HYDRAULIC SYSTEM -

Maintain the reservoir fluid level at 2-1/2 inches below the tank top when the bucket is extended to full reach, bucket rolled back for loading and resting on the ground and stabilizers fully raised. Do not over-fill, fluid may be forced out of the breather filler cap.

Fill with:

SAE 10W40 engine oil with API "SD" classification in northern climates.

SAE 40W engine oil with API "SD" classification in southern climates.

Change oil every 200 hours or more often if necessary.

**LUBRICATION -**

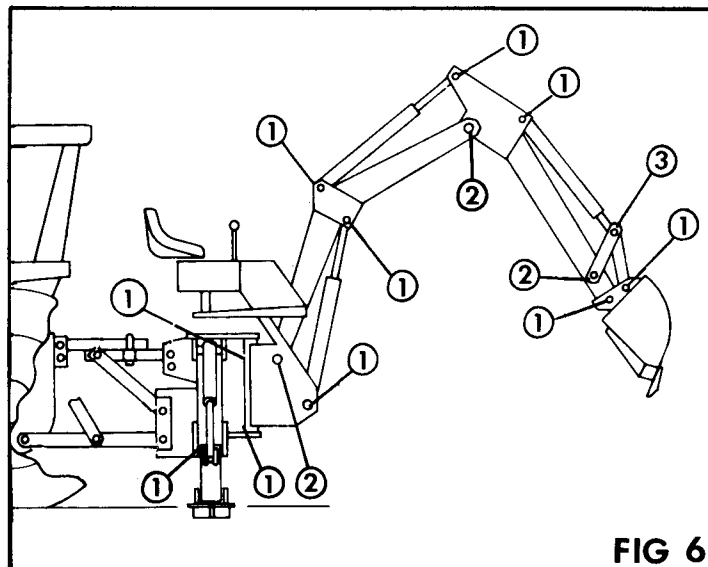
Economical, efficient operation of any machine depends on regular lubrication of all moving parts with a quality lubricant.

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 6 for grease fittings location and number of grease fittings at each location.



**FIG 6**

The following locations should be oiled with SAE 30 oil:

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

<b>TORQUE VALUES</b>			
Common bolts and nuts.			
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

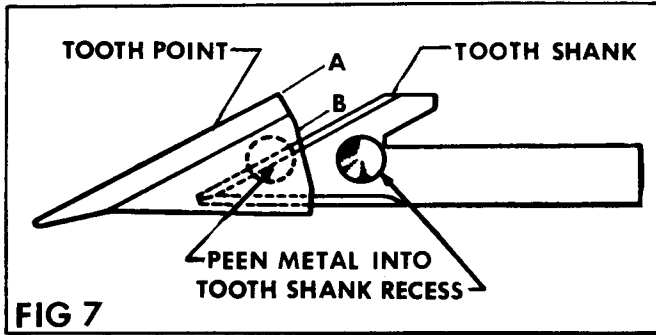
Tightening Torque  $\pm$  20%

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

**TIGHTENING NUTS AND BOLTS -**

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

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



**BUCKET TOOTH POINTS -**

The bucket tooth points are self-sharpening and will require little attention.

Tooth points on the 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 point, or by driving a chisel at (B) between the tooth point box section and the tooth shank. Install the new point and anchor it to the shank by peening at the location shown in Fig 7.

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.

## 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

Hydraulic Trouble Shooting - continued

PROBLEM	POSSIBLE CAUSE
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

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 movement.
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. Incorrect hose connection.....	<i>IMPORTANT - Be sure inlet and return hoses are hooked up correctly. Incorrect hook-up will result in hydraulic fluid being diverted away from return port of 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. Restriction 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.

Hydraulic Trouble Shooting - continued

POSSIBLE CAUSE:

AND CORRECTION -

- 
15. Something jamming the swing linkage.....remove interference.
  16. Excessive back pressure.....relieve condition. May be restriction from outlet to reservoir.
  17. Paint on valve spool, sticking valve.....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 foot-pounds. Never force spool, if binding occurs, see item 31 at the end.
  18. Oil leakage past spool seal into.....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 8.
  19. Broken return springs.....replace springs, see item 31 at the end and Fig 8.
  20. Bent spool.....return for factory repair, or replace with new spool section. See item 31 at the end and Fig 13 and 14.
  21. Foreign particles.....clean system and valve.
  22. Misalignment of control handle.....check linkage for binding condition. linkage.
  23. Spool not moved to full stroke.....check travel, should be 5/16 either way or a total of 5/8. See item 31 at the end.
  24. Relief valve setting in backhoe control 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 15.
  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 end and Fig 13.

POSSIBLE CAUSE:

AND CORRECTION -

26. Worn control valve.....replace the control valve.
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 16.  
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 valve in the control valve not.....clean check valve(s) carefully, being sure that it moves freely with good holding. spring action and seats properly or replace. See item 31 at the end and Fig 13 and 14.
29. Damaged or worn spool seals.....Replace spool end seals, item 31 at the end and Fig 13 and 14.
30. Check ball in anti-cavitation check.....clean anti-cavitation valve carefully, valve is stuck or not seating properly. being sure that checks move freely and seat properly, or replace cartridge. See item 31 next, and Fig 13.
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 14 and 15, Valve Repair - Disassembly, explain the procedure to follow for valve repair. Pages 22 through 27 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 TAMPERED 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.*

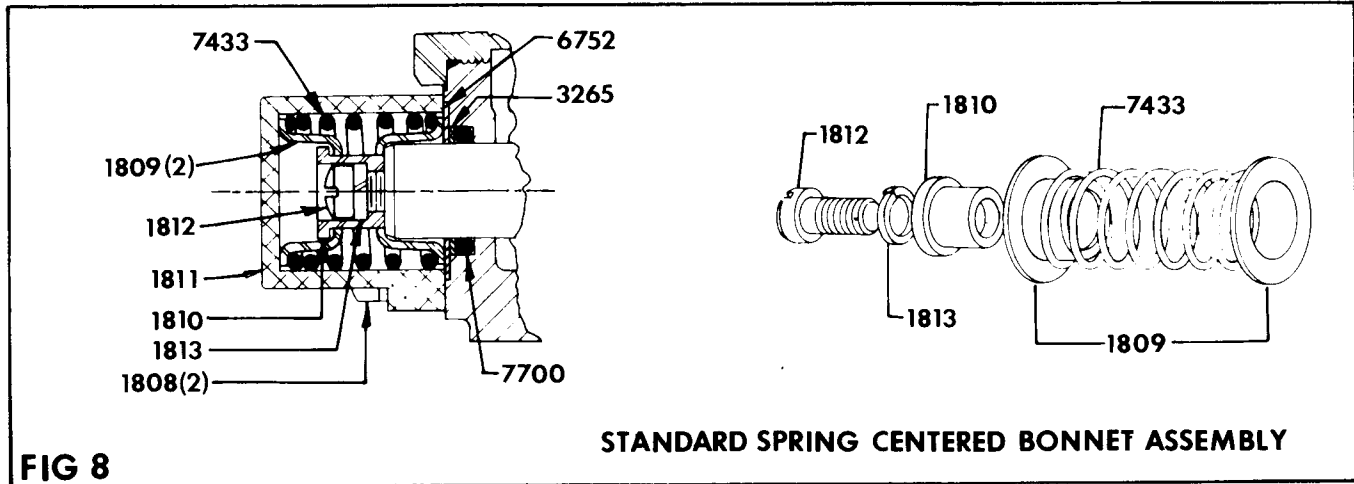
1. Remove control valve from the backhoe.
2. Thoroughly clean the exterior of the valve before beginning disassembly procedures.
3. Since the valve will be assembled in the same order, each section should be marked numerically so that they can be reassembled in the same sequence.
4. Mount the valve vertically 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 foot-pounds 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 8 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 foot-pounds torque to tighten assembly screw.





**FIG 8**

**STANDARD SPRING CENTERED BONNET ASSEMBLY**

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

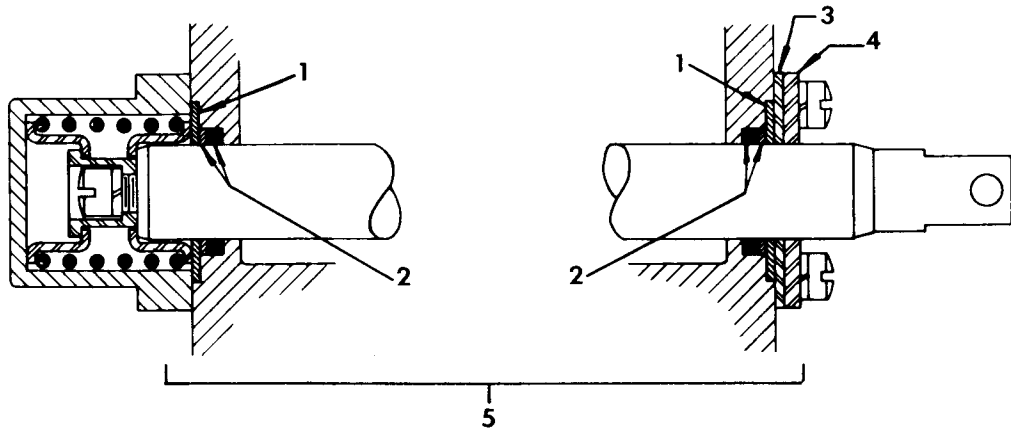
9. At the FRONT of the valve remove seal plate retainer, seal retainer, back-up washer, and spool O-ring seal.

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

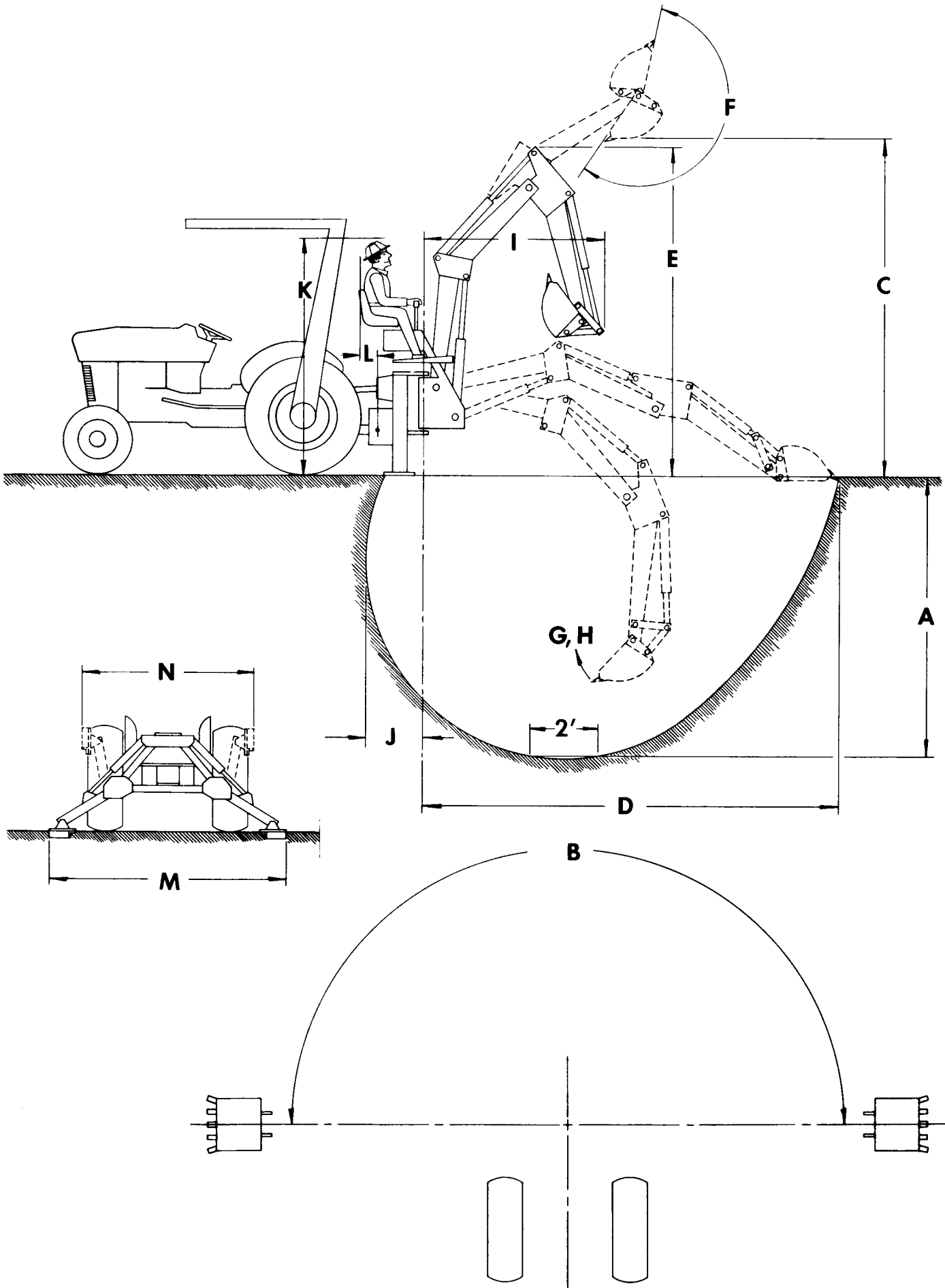


**FIG 9**

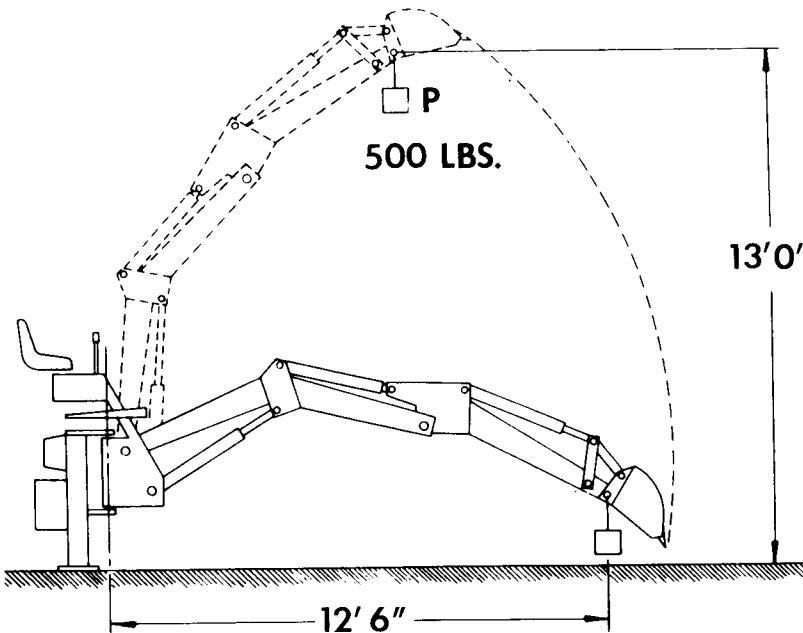
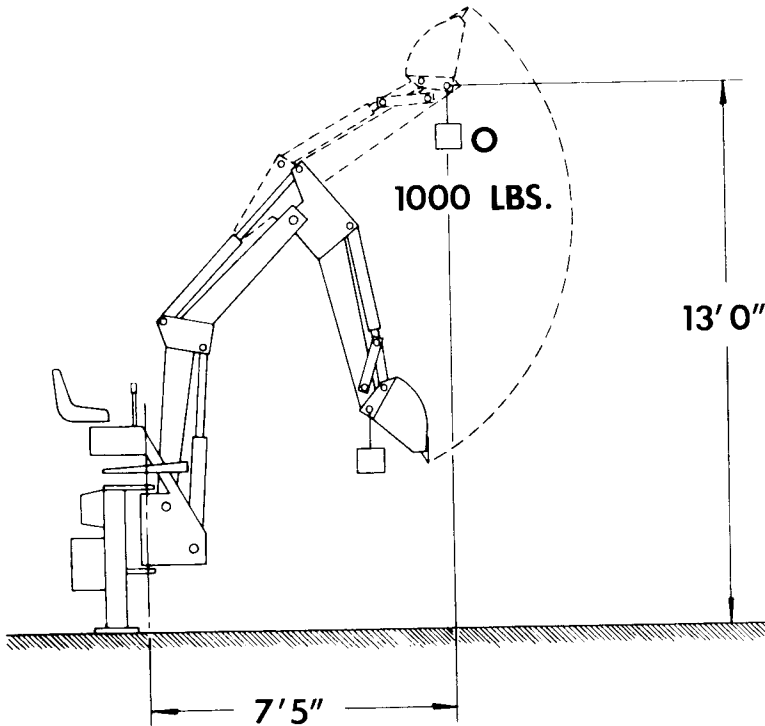
Index Part No.	ARPS Part No.	Description	Quantity Per Section
1	*	Heavy Duty Seal Retainer.....	2
2	10316	O-Ring Seal and Back-Up Kit.....	1
3	*	Regular Duty Retainer Plate.....	1
4	*	Heavy Duty Retainer Plate.....	1
5	852170	Heavy Duty Spool Seal Kit.....	1

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

# SPECIFICATIONS



# SPECIFICATIONS - General Data:



- A. Digging Depth.....9' 6"\*  
(two foot flat bottom)
  - B. Swing Arc.....180°\*
  - C. Loading Height.....11' 6"\*
  - D. Reach from Center Line  
of Swing Pivot.....15' 0"\*
  - E. Transport Height.....11' 0"\*  
(maximum)
  - F. Bucket Rotation.....197°\*
  - G. Bucket Roll Force (at 2025 PSI)  
.....4,800 lbs.\*
  - H. Bucket Pry-Out Force  
.....in excess of 8,000 lbs.\*\*
  - I. Transport Overhang.....5' 10"  
(from center line of  
swing pivot)
  - J. Undercut.....1' 8"  
(from center line of  
swing pivot)
  - K. Minimum overhead clear-  
ance for Operator.....8' 9"\*\*\*  
(with boom/swing frame  
pivot 36" from ground)
  - L. Minimum swing-by clear-  
ance for Operator.....1' 3"\*\*\*  
(with lower link pin  
16" from ground)
  - M. Hydraulic Stabilizer  
Spread, down.....9' 3"
  - N. Hydraulic Stabilizer  
Clearance, raised.....6' 4"\*
  - O. Dipperstick Lift  
Ability.....1,000 lbs.\*  
(boom up, lifting with dipper  
cylinder only, weight attached  
as shown, at 2025 PSI)
  - P. Boom Lift Ability... ....500 lbs.\*  
(dipper arm and boom extended,  
lifting with boom cylinder only,  
weight attached as shown,  
at 2025 PSI)
- Shipping Weight.....1,500 lbs.  
(less bucket)

\* 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
W35	12 in.	1.2 cu. ft.	2.0 cu. ft.	73 lbs.
W36	18 in.	1.8 cu. ft.	2.8 cu. ft.	90 lbs.
W37	24 in.	2.5 cu. ft.	3.3 cu. ft.	111 lbs.
W38	36 in.	3.1 cu. ft.	4.0 cu. ft.	150 lbs.
W39	40 in.	3.5 cu. ft.	4.5 cu. ft.	162 lbs.
W40	48 in.	3.0 cu. ft.	4.0 cu. ft.	130 lbs.
W81	36 in.	2.1 cu. ft.	2.6 cu. ft.	102 lbs.

## Cylinder Data:

CYLINDER	PISTON DIA.	STROKE	RETRACTED LENGTH	EXTENDED LENGTH	ROD DIA.	PIVOT PIN DIA.	TYPE OF ACTION
064 - BOOM	2-3/4	24	34	58	1-1/2	1-3/4 Base 1-1/4 Rod	DA
*032 - DIPPER	2-1/2	24	34	58	1-1/2	1-1/4	DA
*032 - BUCKET	2-1/2	24	34	58	1-1/2	1-1/4	DA
031 - STABILIZER	2-1/2	14-1/2	22-1/16	36-9/16	1-1/2	7/8	DA
034 - SWING	3-1/2**	12-1/4	DNA***	DNA***	1-1/4	DNA***	SA

\* Identical cylinders used for both functions.

\*\* Effective area is 3-1/2 Dia. less 1-1/4 Dia. for rod, or 8.394 sq. in.

\*\*\*Spherical socket mounted cylinder.

## Hydraulic Data:

Gallons Per Minute.....Average requirements for backhoe would be approximately 8 - 10 GPM.

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

2525 PSI (backhoe relief valve setting for closed-center systems - refer to W152 Closed-Center Kit).

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

Filtration, PTO Pump and Reservoir System.....Ten micron screw on cannister (return line).

Fluid, PTO Pump and Reservoir System....SAE 10W40 SD Engine Oil (use SAE 40W SD in Southern climates).

# 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 hoe slightly.
2. Stretch out the boom, dipperstick, and bucket, as shown in Fig 10. 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 11.
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 11. The stabilizers should remain outstretched and firmly in contact with the ground for stability.

6. Detach the backhoe from the tractor hydraulically.

a. On PTO Pump Systems, remove the pump from the tractor PTO shaft. The hydraulic system should always remain complete. No hoses should be disconnected during correct removal and storage procedure.

b. On Tractor Hydraulic Systems, disconnect the hydraulic hoses running to the tractor.

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

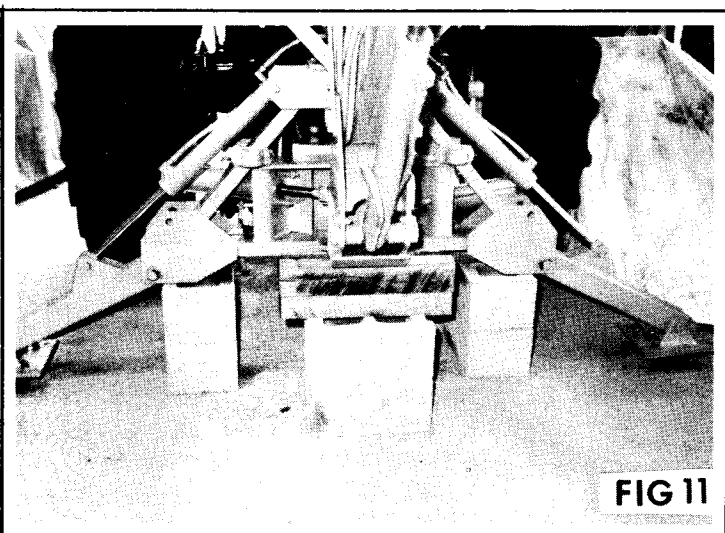
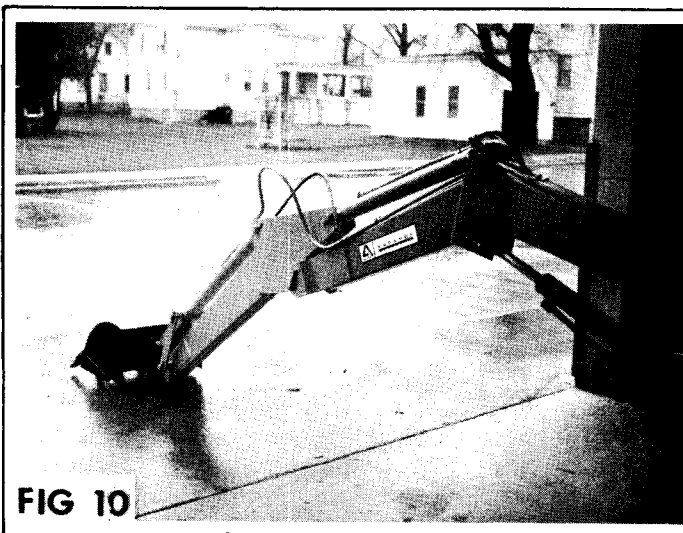
*IMPORTANT - Be sure to mark the lines to prevent mix-up when the hoe is again attached to the tractor.*

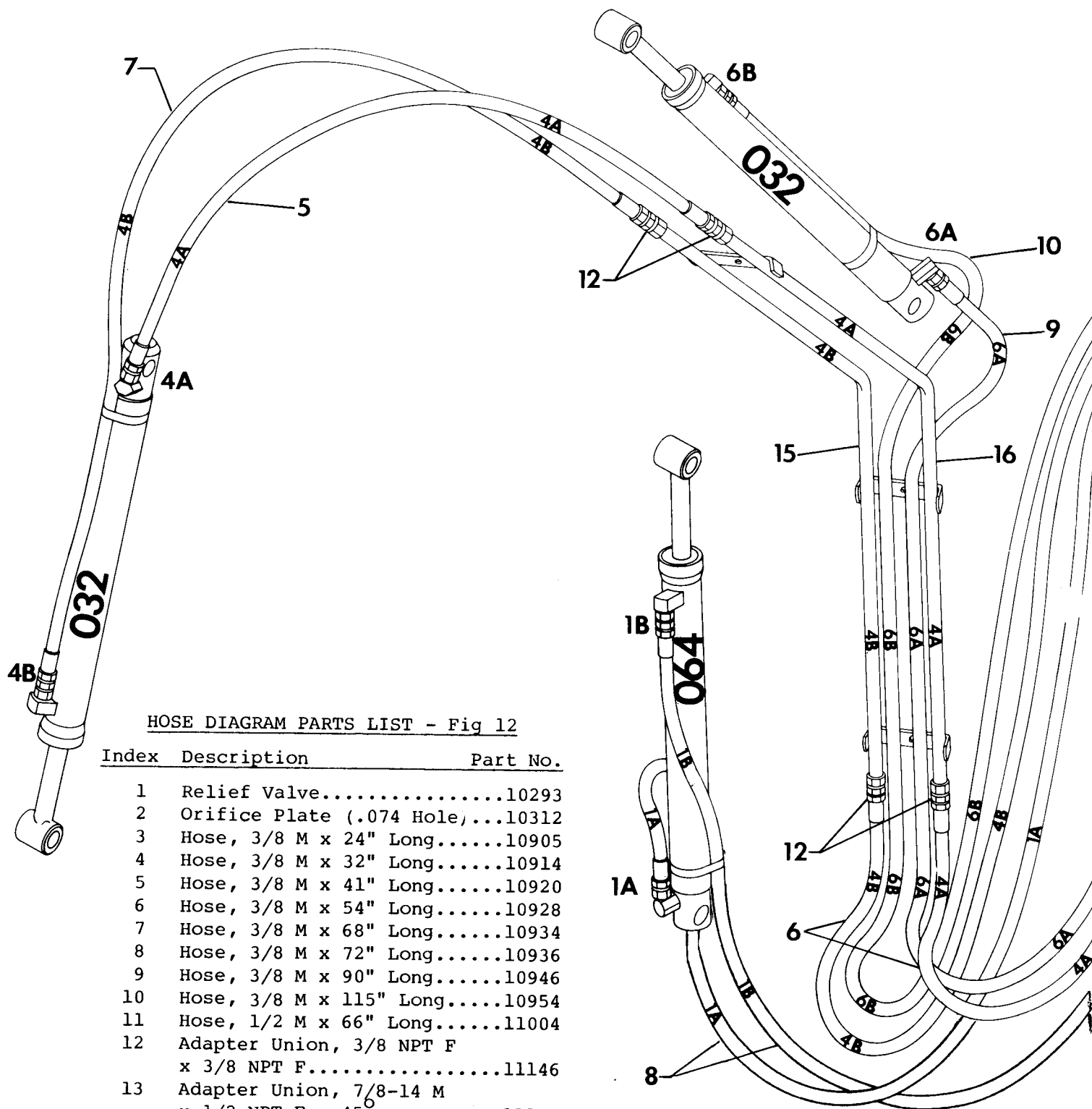
7. Slowly drive the tractor forward and away from the backhoe. Be sure that all parts clear each other during separation.

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.

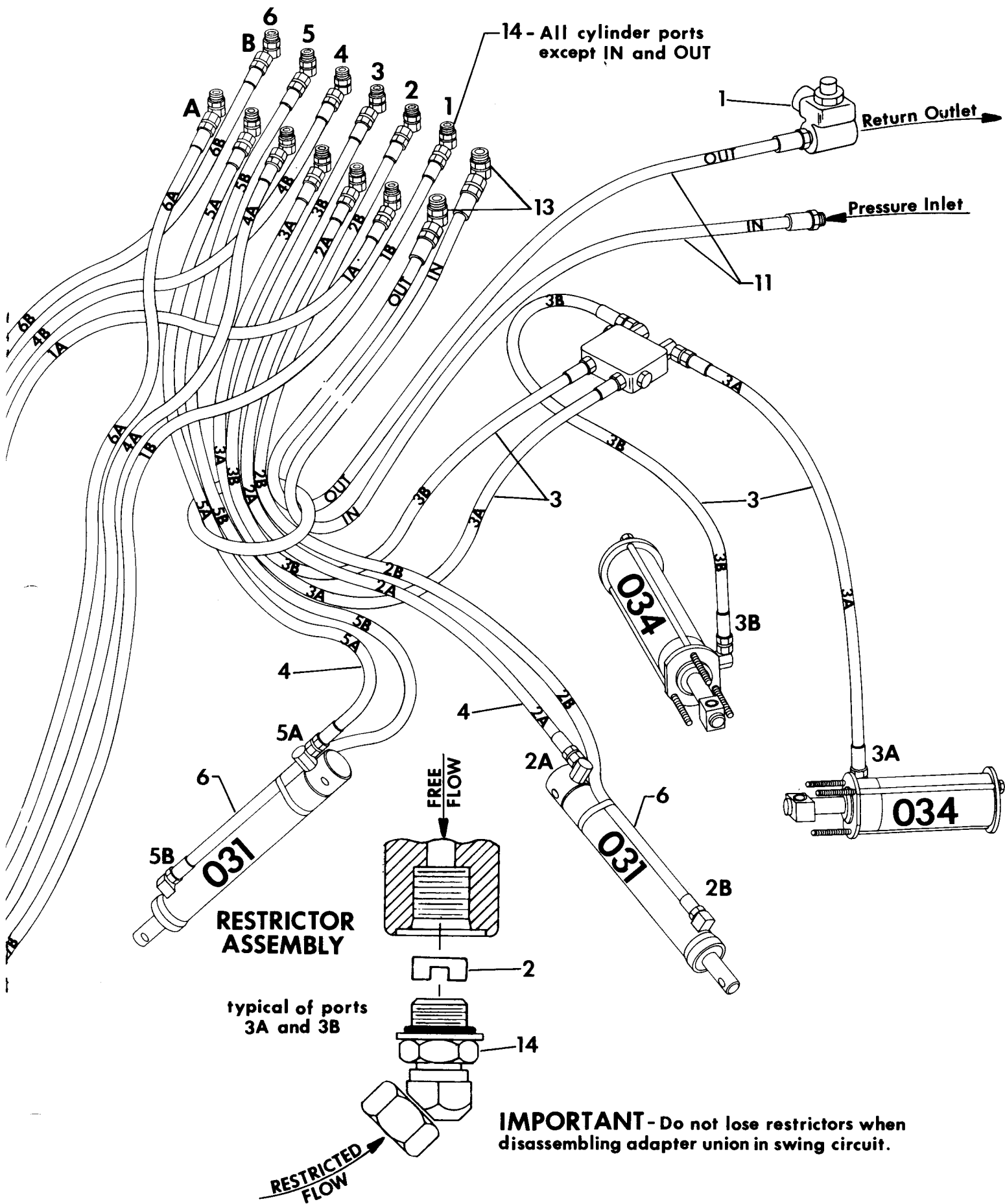




HOSE DIAGRAM PARTS LIST - Fig 12

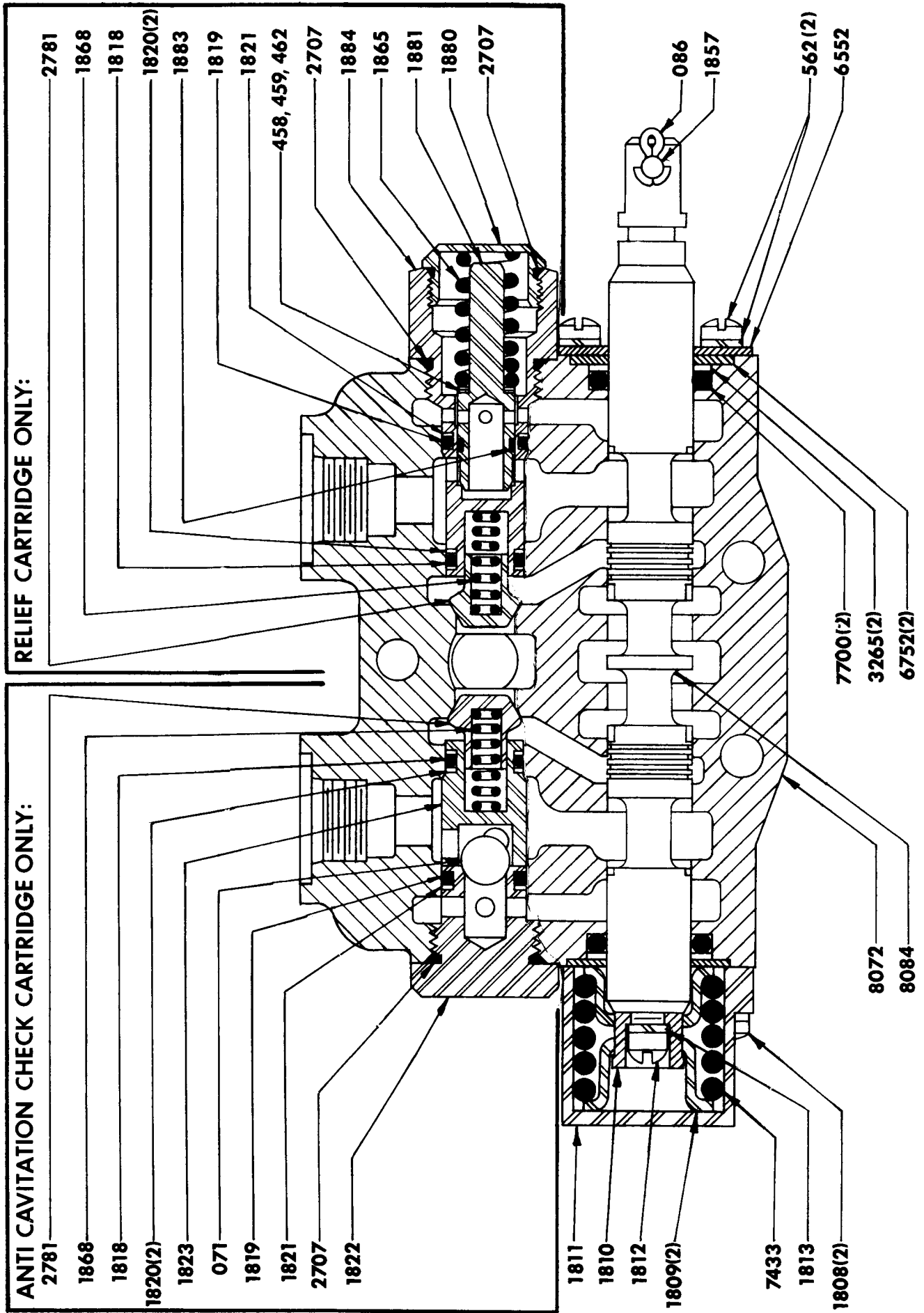
Index	Description	Part No.
1	Relief Valve.....	10293
2	Orifice Plate (.074 Hole)...	10312
3	Hose, 3/8 M x 24" Long.....	10905
4	Hose, 3/8 M x 32" Long.....	10914
5	Hose, 3/8 M x 41" Long.....	10920
6	Hose, 3/8 M x 54" Long.....	10928
7	Hose, 3/8 M x 68" Long.....	10934
8	Hose, 3/8 M x 72" Long.....	10936
9	Hose, 3/8 M x 90" Long.....	10946
10	Hose, 3/8 M x 115" Long.....	10954
11	Hose, 1/2 M x 66" Long.....	11004
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	Pipe Line - RH.....	852193
16	Pipe Line - LH.....	852194

FIG 12



# CONTROL VALVE SECTION

## TYPICAL SECTION FOR LIFT AND CROWD CIRCUITS



**FIG 13**



CONTROL VALVE SECTION - LIFT AND CROWD CIRCUITS

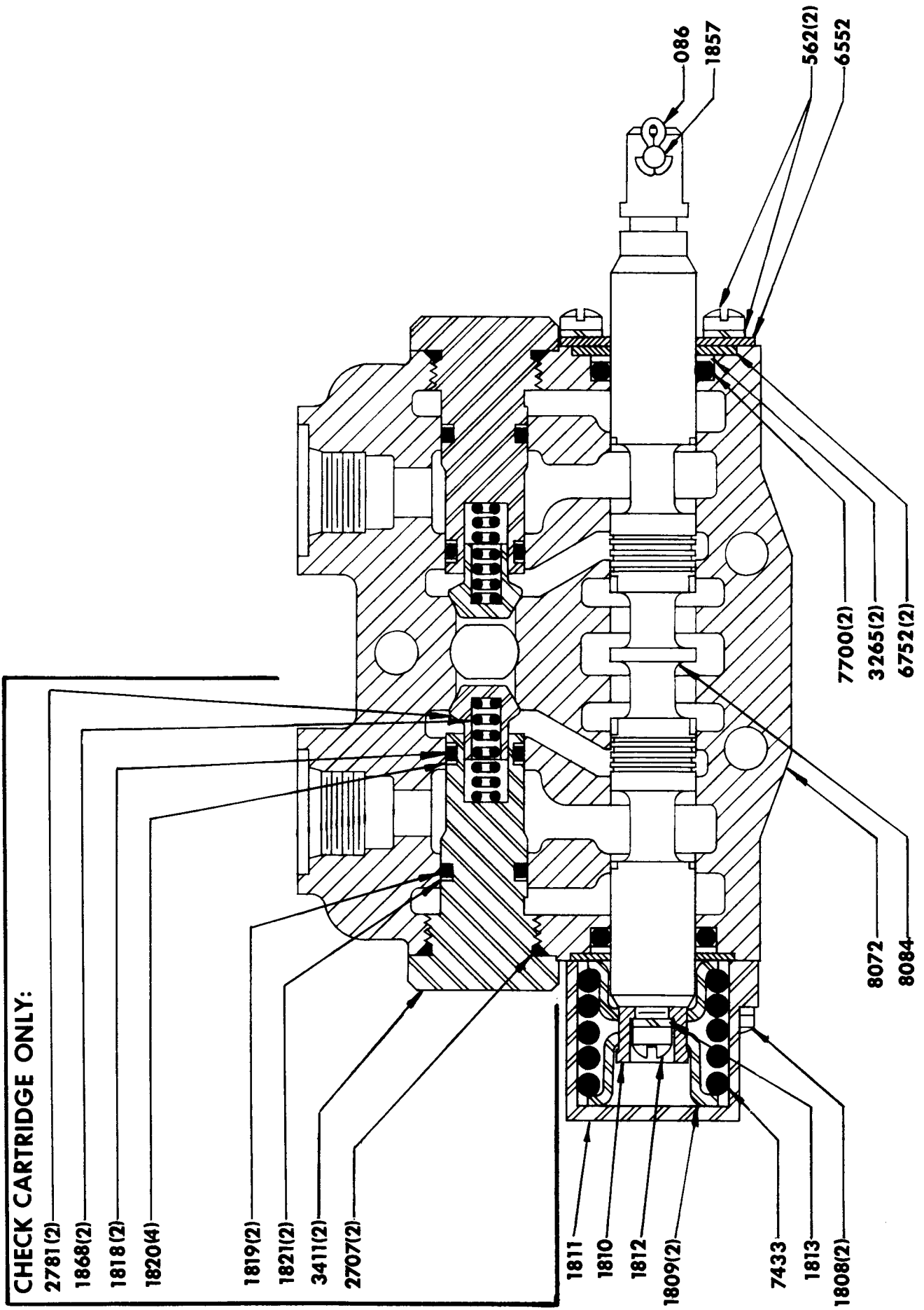
PARTS LIST - FIG 13

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
7700	**	Spool O-Ring Seal.....	2
8084	*	Four-Way Spool.....	1
7433	*	Centering Spring.....	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
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
8072	*	Center Section Housing.....	1
6752	*	Seal Retainer.....	2
	10155	Control Valve Section - Lift and Crowd Circuits, consisting of above listed parts.....	1
K-6027	10315	Control Valve Section - Lift and Crowd Circuits Seal Kit; consisting of: 7700 (2), 1818 (2), 1819 (2), 1820 (4), 1821 (2), 2707 (2), 6814 (2), and 6815 (2).....	1
K-6035	10316	Spool Seal Kit; consisting of: 7700 (2) and 3265 (2).....	1
	10303	Relief Cartridge (2500 PSI), as shown.....	1
K-6005	10313	Relief Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), 1883 (1), and 2707 (2).....	1
K-6021	10304	Anti-Cavitation Check Cartridge, as shown.....	1
K-6005	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 14**

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

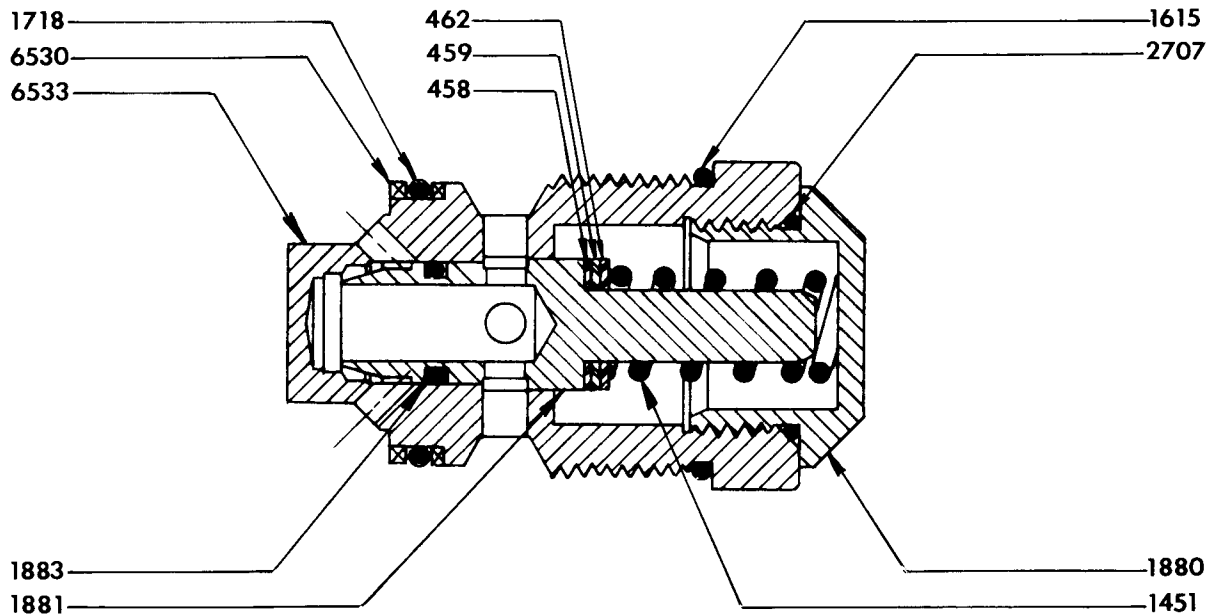
PARTS LIST - FIG 14

Gresen Part No.	ARPS Part No.	Description	Quantity Per Section
086	*	Handle Pin Cotter.....	1
562	*	Machine Screw and Lockwasher.....	2
7700	**	Spool O-Ring Seal.....	2
8084	*	Four-Way Spool.....	1
7433	*	Centering Spring.....	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
3411	*	Lift Check Plug.....	2
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
2707	**	Lift Check Plug O-Ring Seal.....	2
2781	*	Lift Check Poppet.....	2
3265	**	Back-Up Washer.....	2
6552	*	Seal Plate Retainer.....	1
8072	*	Center Section Housing.....	1
6752	*	Seal Retainer.....	2
	10156	Control Valve Section - Actuate (Bucket), Swing, and Stabilizer Circuits, consisting of above listed parts.....	1
		NOTE - Two Orifice Plates (10312) must be added to complete Swing Section.	
K-6027	10315	Control Valve Section - Actuate (Bucket), Swing, and Stabilizer Circuits Seal Kit; consisting of: 7700 (2), 1818 (2), 1819 (2), 1820 (4), 1821 (2), 2707 (2), 6814 (2), and 6815 (2).....	1
K-6035	10316	Spool Seal Kit; consisting of: 7700 (2) and 3265 (2).....	1
K-6030	10305	Check Cartridge, as shown.....	2
K-6005	10313	Check Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), 1883 (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

LOCATION: LEFT HAND VALVE COVER



**FIG 15**

MAIN SYSTEM RELIEF VALVE - PARTS LIST - FIG 15

Gresen Part No.	ARPS Part No.	Description	Required
458	*	Shim, .040")	
459	*	Shim, .020")	as required
462	*	Shim, .010")	
1451	*	Spring (1751 - 2200 PSI Crack)	1
1615	**	O-Ring Seal	1
1718	**	O-Ring Seal	1
1880	*	Cap	1
1881	**	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

LOCATION: BOLTED TO TOP OF BACKHOE MAIN FRAME  
(IN SWING CIRCUIT OF HYDRAULIC SYSTEM)

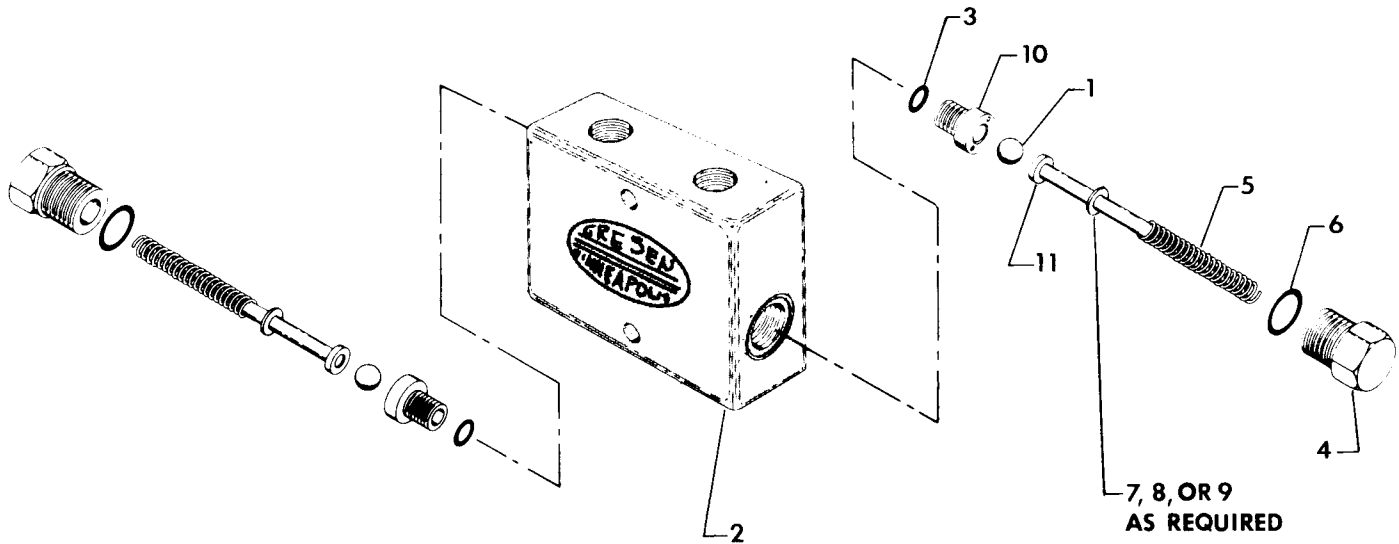


FIG 16

## CROSS-OVER RELIEF VALVE - PARTS LIST - FIG 16

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
	10150	Six-Spool Valve.....	1
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
	10308	Right Hand End Cover.....	1
6814	10317	Section Seal (Pressure).....	2
6815	10318	Section Seal (Exhaust).....	2

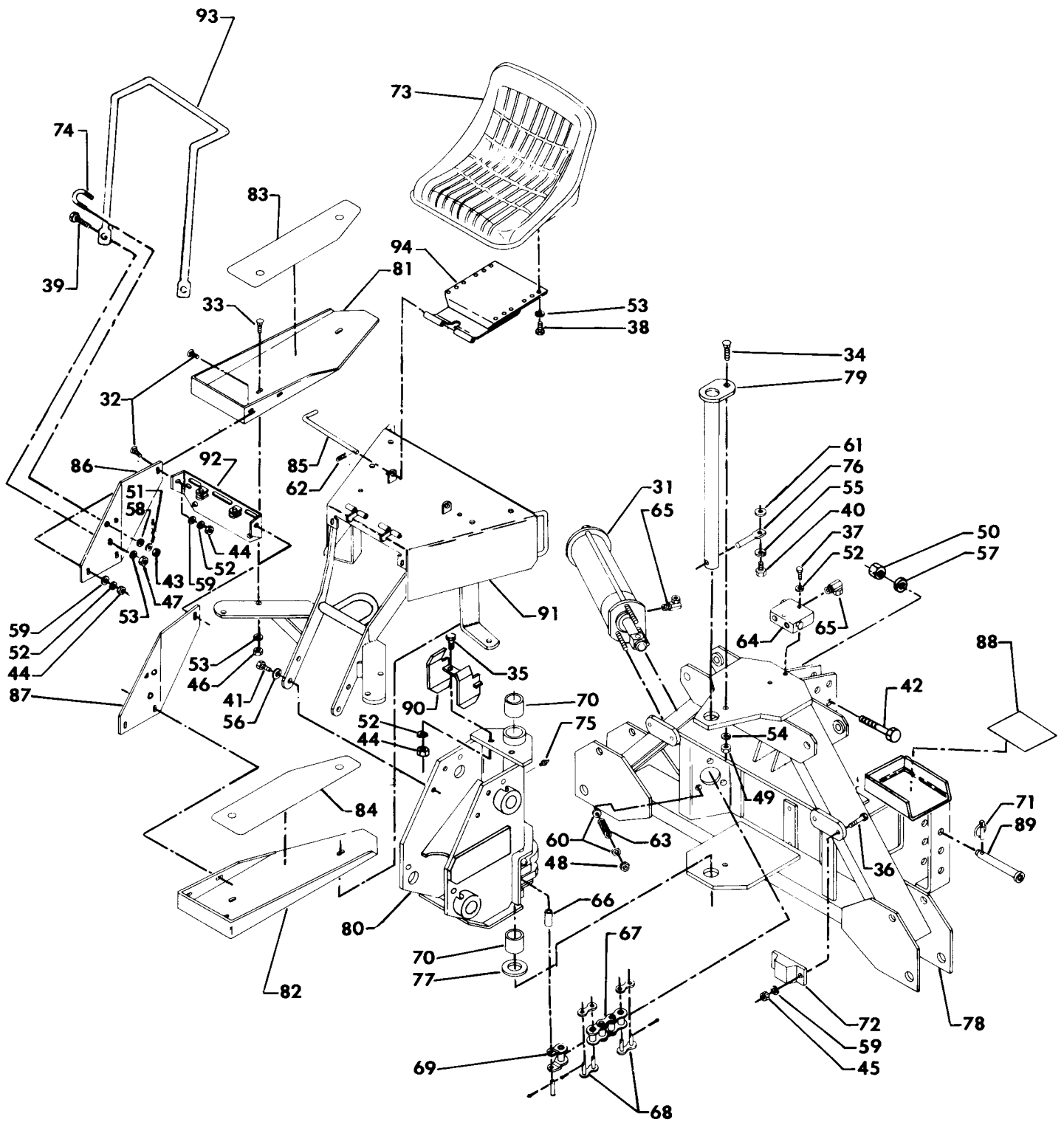
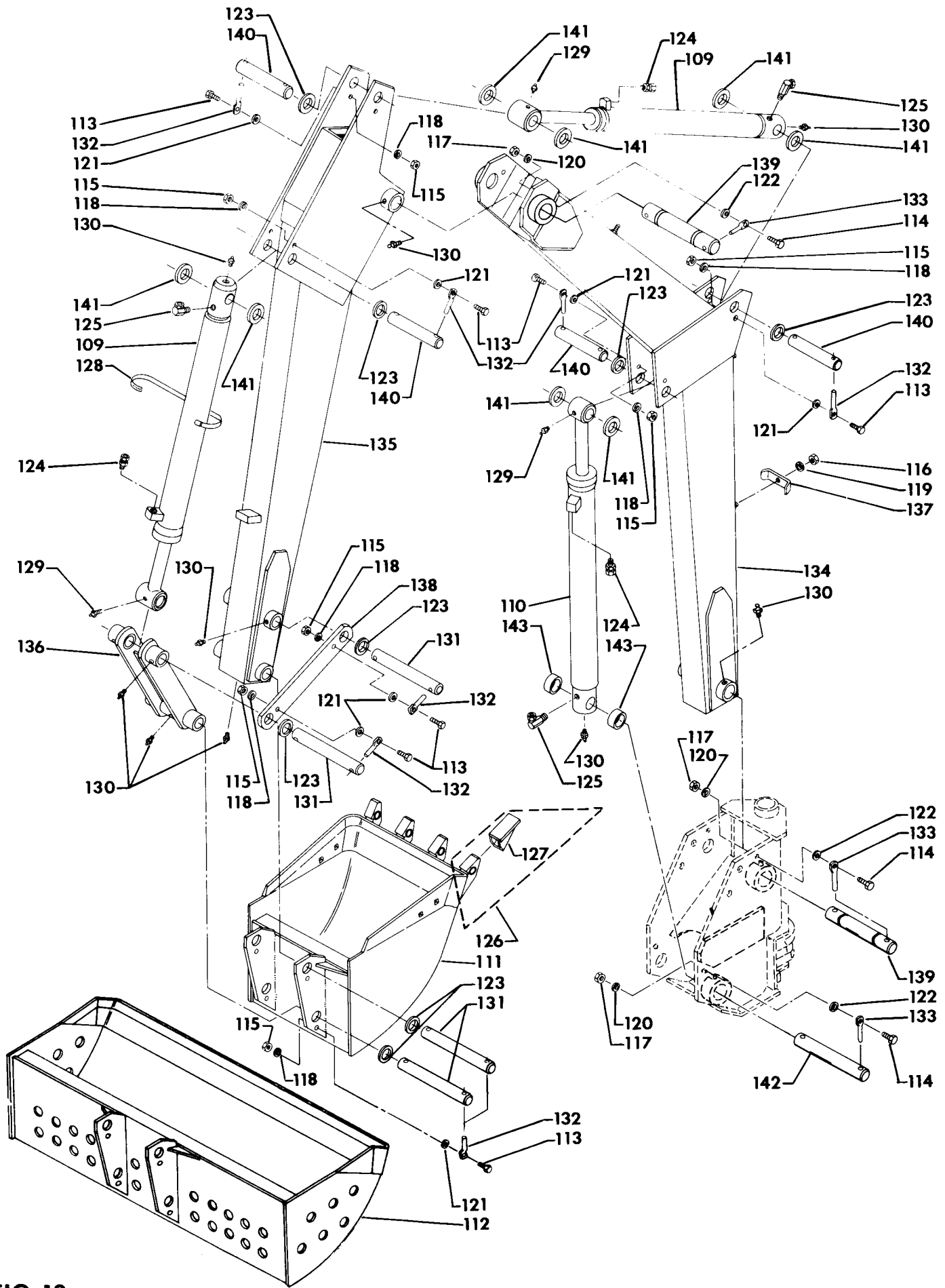


FIG 17

PARTS LIST - FIG 17

<u>Index</u>	<u>Description</u>	<u>Part No.</u>	<u>Index</u>	<u>Description</u>	<u>Part No.</u>
31	Swing Cylinder Assembly, 3-1/2" Dia x 12" Stroke.....	034	76	Pin Retainer - Large.....	851123
32	Carriage Bolt, 5/16 NC x 1".....	6577	77	Thrust Washer.....	851136
33	Carriage Bolt, 3/8 NC x 1".....	6608	78	Main Frame Weldment.....	852005
34	Carriage Bolt, 1/2 NC x 1-3/4.....	6669	79	Swing Shaft Weldment.....	852040
35	Bolt, 5/16 NC x 1".....	6794	80	Swing Frame Weldment.....	852150
36	Bolt, 5/16 NC x 1-1/2.....	6800	81	Foot Pad - Right Side.....	852176
37	Bolt, 5/16 NC x 2-1/2.....	6813	82	Foot Pad - Left Side.....	852177
38	Bolt, 3/8 NC x 3/4.....	6829	83	Foot Pad Surfacing - Right Side.....	852178
39	Bolt, 3/8 NF x 7/8.....	6838	84	Foot Pad Surfacing - Left Side.....	852179
40	Bolt, 1/2 NF x 1-1/4.....	7017	85	Adapter Pin.....	852183
41	Bolt, 5/8 NF x 1-1/4.....	7119	86	Foot Guard - Right Side....	852203
42	Bolt, 1" NF x 5", SAE 5.....	7314	87	Foot Guard - Left Side....	852204
43	Nut, 1/4 NC.....	7401	88	Step Pad Surfacing.....	852214
44	Nut, 5/16 NC.....	7431	89	Lower Link Pin.....	852224
45	Lock Nut, 5/16 NC.....	7433	90	Hose Retainer Weldment....	852330
46	Nut, 3/8 NC.....	7451	91	Seat Adapter Weldment.....	852505
47	Nut, 3/8 NF, SAE 5.....	7461	92	Control Mount Weldment....	852510
48	Lock Nut, 7/16 NF.....	7487	93	Handle Loop.....	852517
49	Nut, 1/2 NC.....	7501	94	Seat Plate Weldment.....	854055
50	Nut, 1" NF.....	7612			
51	Lockwasher, 1/4.....	8061			
52	Lockwasher, 5/16.....	8071			
53	Lockwasher, 3/8.....	8079			
54	Lockwasher, 1/2.....	8101			
55	Lockwasher, 1/2, Internal Shakeproof.....	8103			
56	Lockwasher, 5/8.....	8111			
57	Lockwasher, 1".....	8131			
58	Flat Washer, 1/4.....	8146			
59	Flat Washer, 5/16.....	8151			
60	Flat Washer, 7/16.....	8163			
61	Flat Washer, 1/2 SAE.....	8173			
62	Wire Form Cotter.....	8618			
63	Spring.....	8814			
64	Cushion Valve.....	10442			
65	Adapter Union, 3/8 M x 3/8 F x 90°.....	11127			
66	Roller Chain, 8-160H, Chain Pin Bushing.....	11427			
67	Roller Chain, 8-160H, Three-Link Section.....	11428			
68	Roller Chain, 8-160H, Connector Link.....	11433			
69	Roller Chain, 8-160H, Offset Link.....	11437			
70	Bronze Bushing.....	11999			
71	Linch Pin.....	13489			
72	Bumper Stop.....	13681			
73	Seat.....	13912			
74	U-Bolt and Nuts.....	14002			
75	Grease Fitting, 1/8 NPT Self-Tapping.....	14500			

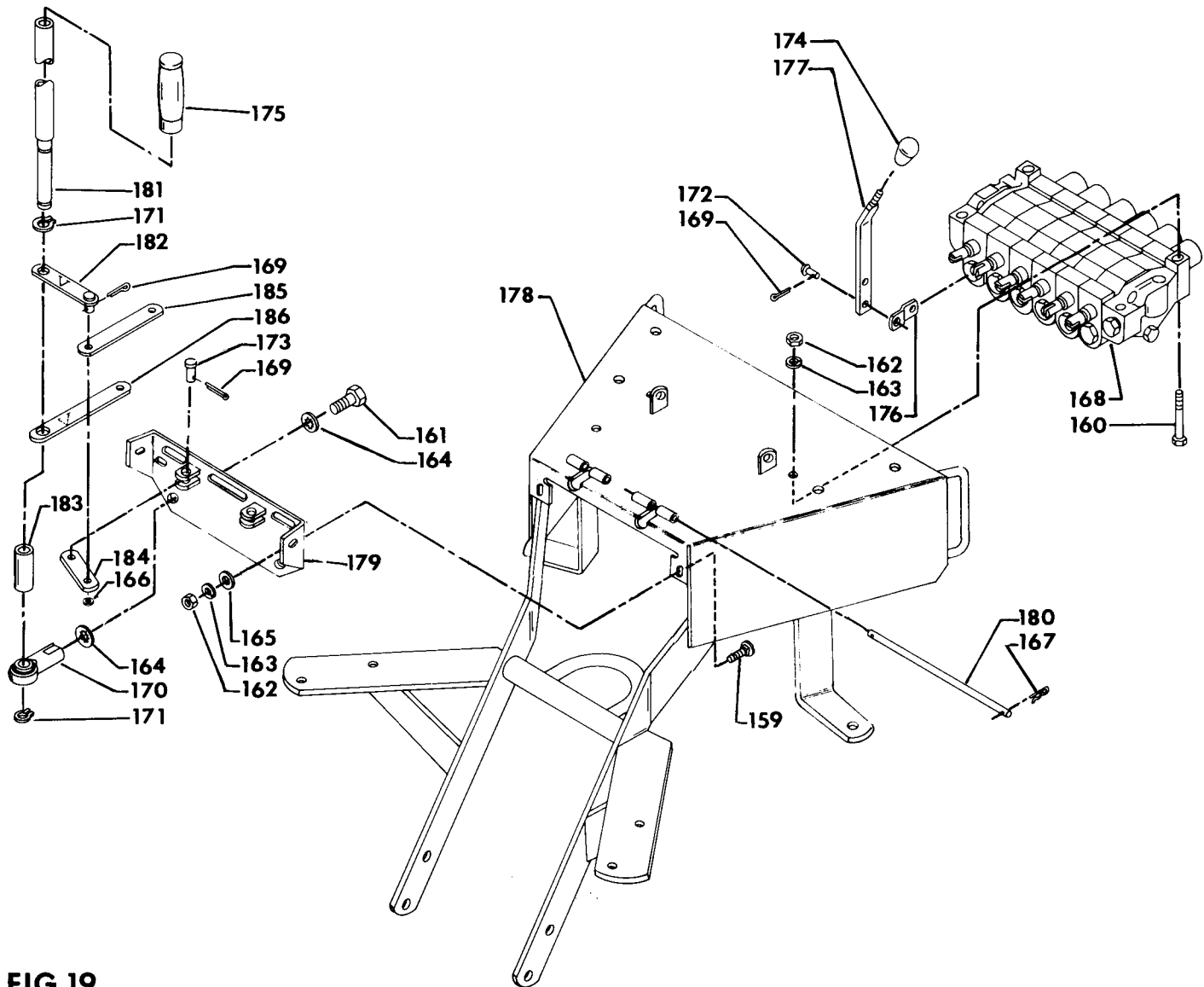


**FIG 18**



PARTS LIST - FIG 18

<u>Index</u>	<u>Description</u>	<u>Part No.</u>
109	Bucket and Dipperstick Cylinder Assembly, 2-1/2 Dia x 24" Stroke.....	032
110	Boom Cylinder Assembly, 2-3/4 Dia x 24" Stroke.....	064
111	Bucket, 12".....	W35
111	Bucket, 18".....	W36
111	Bucket, 24".....	W37
111	Bucket, 36".....	W38
111	Bucket, 40".....	W39
112	Silt Bucket, 48".....	W40
112	Silt Bucket, 36".....	W81
113	Bolt, 3/8 NF x 1-1/4.....	6859
114	Bolt, 1/2 NF x 1-1/2.....	7028
115	Nut, 3/8 NF, SAE 5.....	7461
116	Nut, 7/16 NF.....	7484
117	Nut, 1/2 NF.....	7511
118	Lockwasher, 3/8.....	8079
119	Lockwasher, 7/16.....	8086
120	Lockwasher, 1/2.....	8101
121	Flat Washer, 3/8 SAE.....	8158
122	Flat Washer, 1/2 SAE.....	8173
123	Mach. Bushing, 1-7/8 OD x 1-1/4 ID x 18 ga.....	8290
124	Adapter Union, 3/8 M x 3/8 F.....	11109
125	Adapter Union, 3/8 M x 3/8 F x 90°.....	11127
126	Tooth and Shank Assembly....	13613
127	Tooth only.....	13617
128	Hose Clamp.....	14157
129	Grease Fitting, 1/8 NPT Self-Tapping.....	14500
130	Grease Fitting, 1/4-28 Self-Tapping.....	14505
131	Bucket Link Pin.....	851116
132	Pin Retainer - Small.....	851122
133	Pin Retainer - Large.....	851123
134	Boom Weldment.....	852080
135	Dipperstick Weldment.....	852110
136	Bucket Link Weldment.....	852135
137	Hose Strap.....	852182
138	Guide Link.....	852189
139	Pivot Pin.....	852191
140	Cylinder Pin.....	852192
141	Spacer Washer.....	852196
142	Pivot Pin.....	852208
143	Cylinder Spacer.....	852209



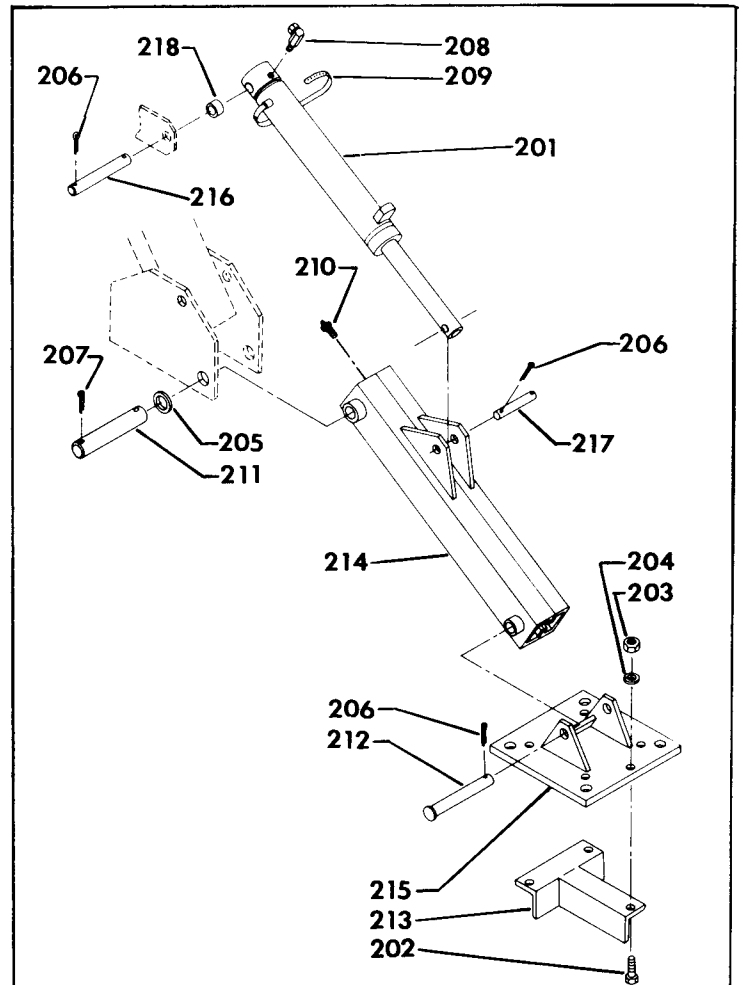
**FIG 19**

VALVE AND CONTROL LEVERS - PARTS LIST - FIG 19

<u>Index</u>	<u>Description</u>	<u>Part No.</u>	<u>Index</u>	<u>Description</u>	<u>Part No.</u>
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	Seat Adapter Weldment .....	852505
165	Flat Washer, 5/16 .....	8151	179	Control Mount Weldment .....	852510
166	Flat Washer, 3/8 SAE .....	8158	180	Handle Pivot Pin .....	852516
167	Wire Form Cotter .....	8618	181	Control Stick Weldment .....	853065
168	Control Valve .....	10150	182	Push Link Weldment .....	853075
169	Cotter Pin, 1/8 x 7/8 .....	11503	183	Spacer Tube .....	853234
170	Ball Joint .....	11995	184	Pivot Link .....	853236
171	Retaining Ring .....	13427	185	Inside Spool Link .....	853237
172	Clevis Pin, 5/16 x 1" .....	13437	186	Outside Spool Link .....	853238

PARTS LIST - FIG 20

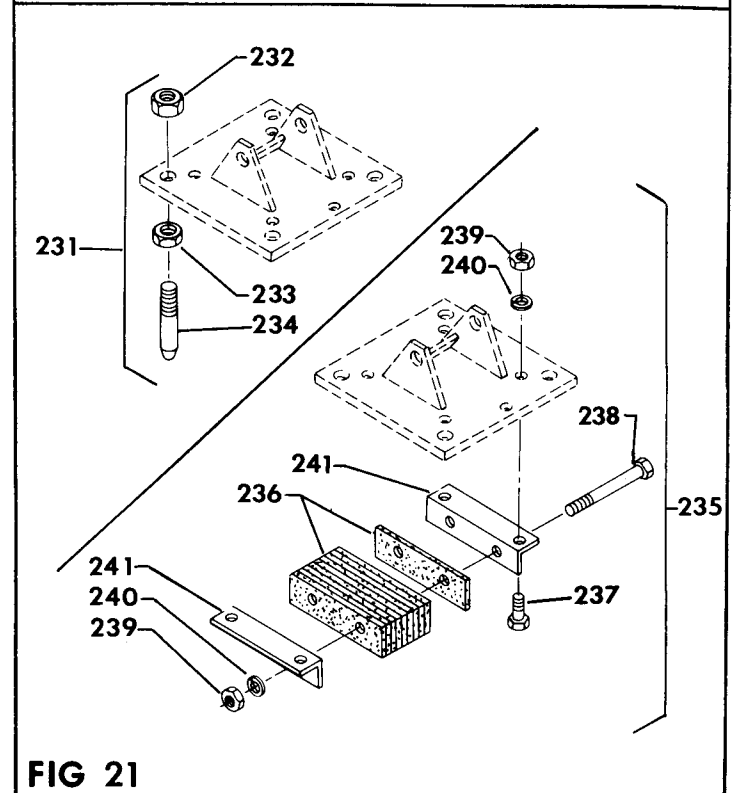
Index	Description	Part No.
201	Stabilizer Cylinder Assembly, 2-1/2 Dia x 14-1/2 Stroke.....	031
202	Bolt, 5/8 NF x 1-3/4.....	7136
203	Nut, 5/8 NF.....	7536
204	Lockwasher, 5/8.....	8111
205	Mach. Bushing, 1-7/8 OD x 1-1/4 ID x 10 gauge.....	8293
206	Cotter Pin, 3/16 x 2".....	8587
207	Cotter Pin, 5/16 x 2-1/2.....	8614
208	Adapter Union, 3/8 M x 3/8 F x 90°.....	11127
209	Hose Clamp.....	14157
210	Grease Fitting, 1/4-28 Self-Tapping.....	14505
211	Leg Pin.....	852221
212	Stabilizer Pin.....	852222
213	Pad Angle Weldment.....	852225
214	Hydraulic Stabilizer Weldment.....	852230
215	Stabilizer Pad Weldment....	852240
216	Cylinder Base Pin.....	852256
217	Cylinder Rod Pin.....	852257
218	Cylinder Base Spacer.....	852259



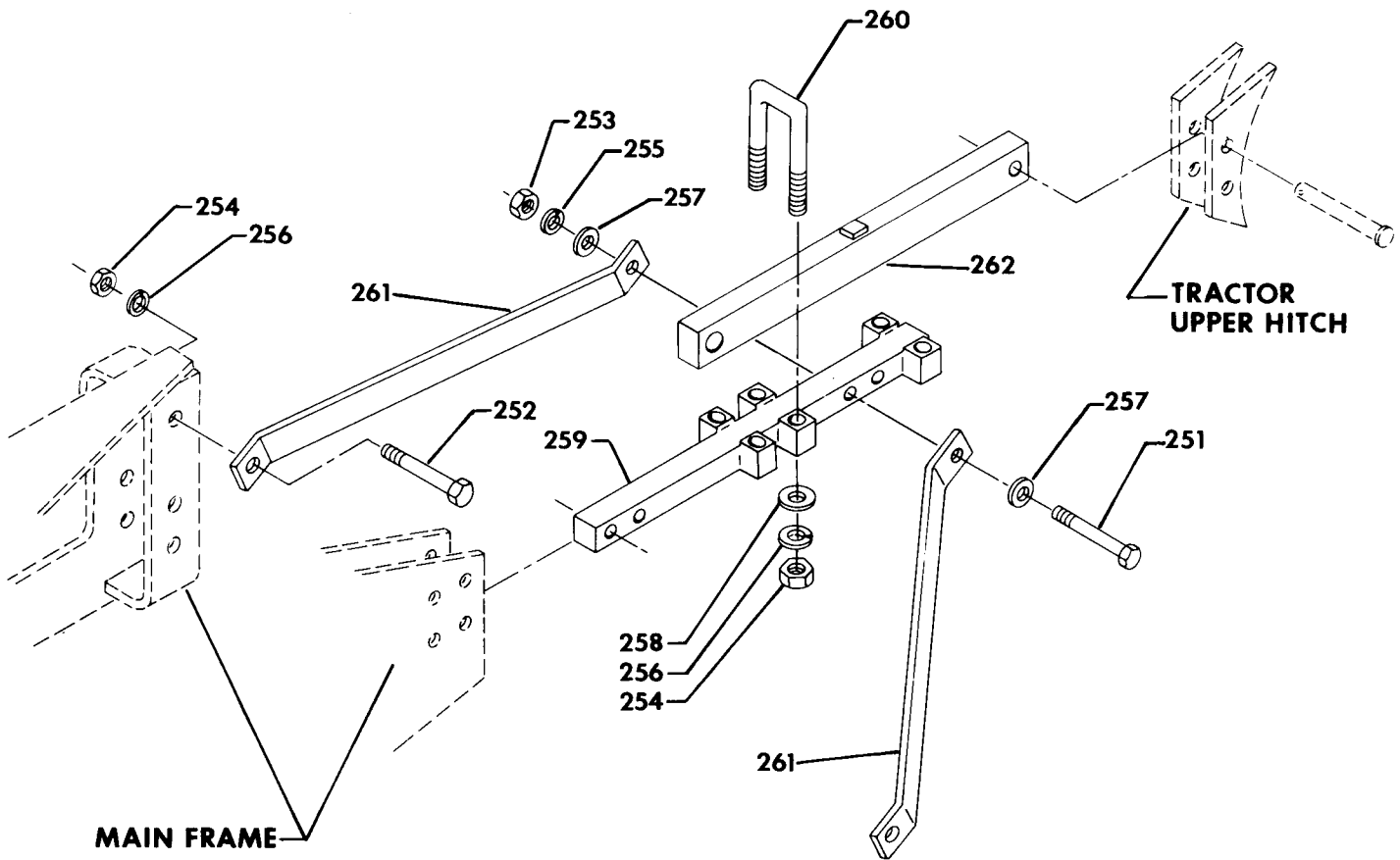
**FIG 20**

PARTS LIST - FIG 21

Index	Description	Part No.
231	Spike Kit (eight Spikes, eight Nuts, and eight Jam Nuts).....	W63
232	Nut, 1" NF.....	7612
233	Jam Nut, 1" NF.....	7711
234	Spike.....	852223
235	Street Pad Kit (Pads, Angles, and Hardware for both Stabilizers).....	W64
236	Pad Set (pair).....	W43
237	Bolt, 5/8 NF x 1-1/2.....	7130
238	Bolt, 5/8 NF x 6-1/2.....	7196
239	Nut, 5/8 NF.....	7536
240	Lockwasher, 5/8.....	8111
241	Angle.....	851266



**FIG 21**



**IMPORTANT-**  
 TRACTOR LIFT LINKS MUST BE KEPT FREE  
 OF LIFTING FORCES AT ALL TIMES, AFTER  
 THE WEIGHT TRANSFER INSTALLATION, BY  
 KEEPING TRACTOR QUADRANT LEVER IN  
 LOWERED POSITION.

**FIG 22**

PARTS LIST - FIG 22

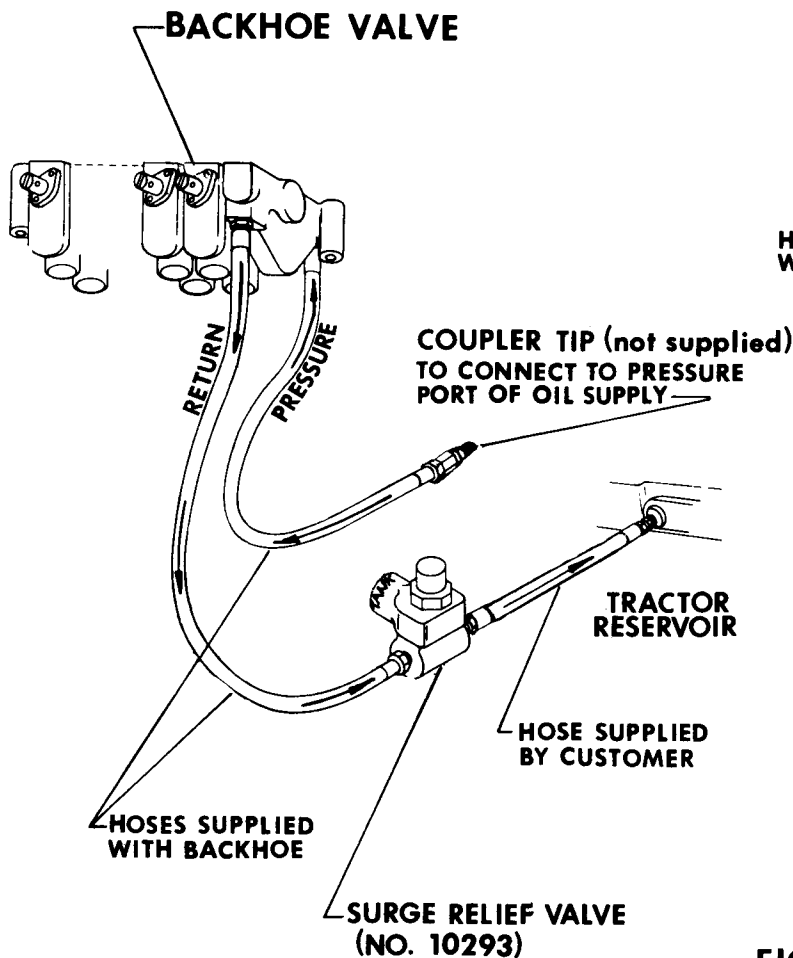
<u>Index</u>	<u>Description</u>	<u>Part No.</u>	<u>Index</u>	<u>Description</u>	<u>Part No.</u>
251	Bolt, 3/4 NF x 5", SAE 5.....	7264	257	Flat Washer, 3/4 SAE.....	8192
252	Bolt, 7/8 NF x 5".....	7301	258	Flat Washer, 7/8 SAE.....	8197
253	Nut, 3/4 NF.....	7569	259	Upper Link Weldment.....	852245
254	Nut, 7/8 NF.....	7599	260	U-Bolt.....	852262
255	Lockwasher, 3/4.....	8121	261	Stabilizer Brace.....	852263
256	Lockwasher, 7/8.....	8126	262	Slide Link Weldment.....	852275

# HYDRAULIC HOOK-UP TO TRACTOR HYDRAULIC SYSTEMS

## GENERAL DESCRIPTION OF SYSTEMS:

There are four basic methods of hooking up the 730 Backhoe to the hydraulic system of a tractor. The correct method for the particular tractor will depend on the tractor's pump output in gallons at rated engine RPM, remote couplers, and 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 four hook-up methods are as follows:

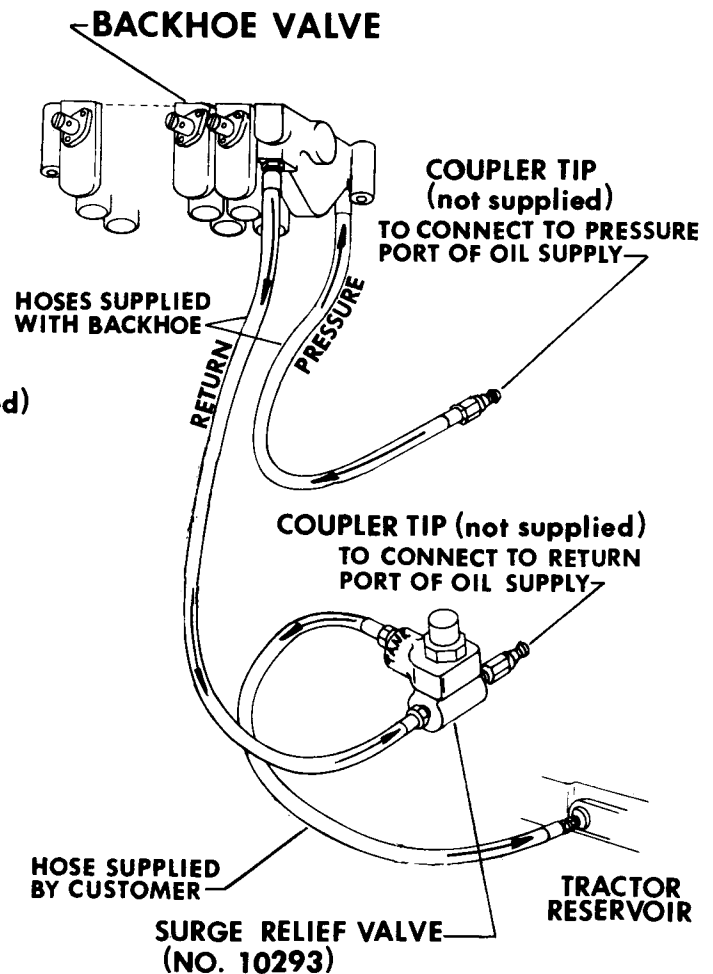
hose on the backhoe control valve should be connected directly to a port on the reservoir. Do not remove surge relief valve from return line. This relief is supplied to protect the return side of the backhoe control valve from damage caused by accidental pressurization. In the event of accidental pressurization of the return line, oil will be vented to the atmosphere from the port marked TANK. The plastic plug should remain in the TANK port to prevent the entry of dirt.



**FIG 23**

1. OPEN-CENTER SYSTEM WITH LESS THAN TEN GPM AT THE REMOTE COUPLER, RETURN OIL NOT REQUIRED FOR LUBRICATION - Fig 23:

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



**FIG 24**

2. OPEN-CENTER SYSTEM WITH LESS THAN TEN GPM AT THE REMOTE COUPLER, RETURN OIL REQUIRED FOR LUBRICATION - Fig 24:

On some tractors, the return oil can not be routed directly to the reservoir because it is required for the lubrication of other functions. Check this characteristic with your dealer. The pressure hose on the backhoe control valve should

be connected to the pressure port of the tractors 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.

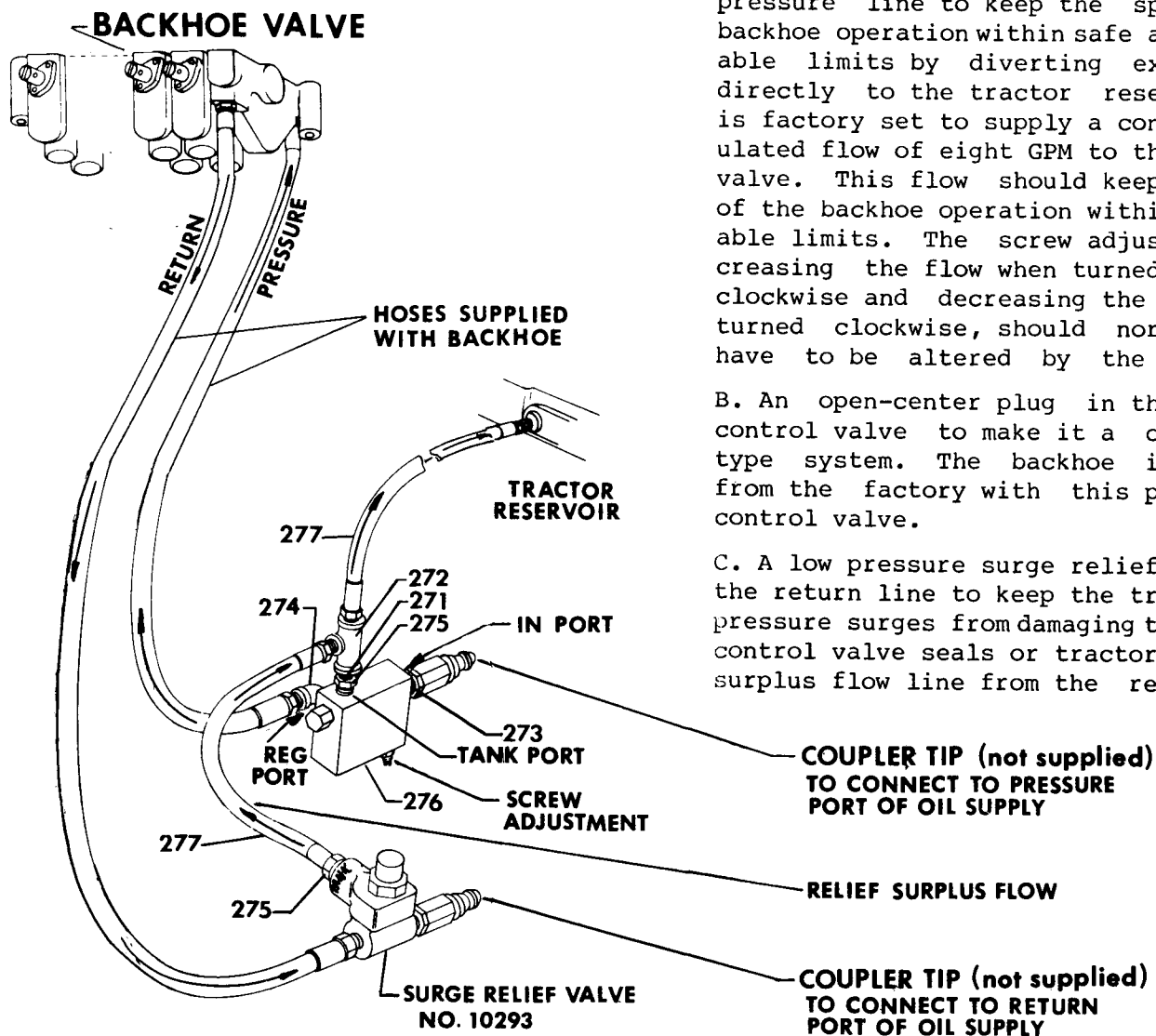


FIG 25

3. OPEN-CENTER SYSTEM WITH MORE THAN TEN GPM AT THE REMOTE COUPLER - Fig 25:

Because of the high volume of oil that is pumped through many tractor hydraulic systems, the backhoe becomes almost impossible to operate effectively and safely when connected to these systems. This is generally true on systems over ten GPM because often the tractor engine can not be throttled down sufficiently to reduce flow to an acceptable rate.

The hook-up of the backhoe to the high volume open-center system requires more than connecting it to the remote couplers. Some of the required devices are:

A. A priority flow regulator in the pressure line to keep the speed of the backhoe operation within safe and acceptable limits by diverting excess flow directly to the tractor reservoir. It is factory set to supply a constant regulated flow of eight GPM to the backhoe valve. This flow should keep the speed of the backhoe operation within acceptable limits. The screw adjustment, increasing the flow when turned counter-clockwise and decreasing the flow when turned clockwise, should normally NOT have to be altered by the operator.

B. An open-center plug in the backhoe control valve to make it a circulating type system. The backhoe is shipped from the factory with this plug in the control valve.

C. 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

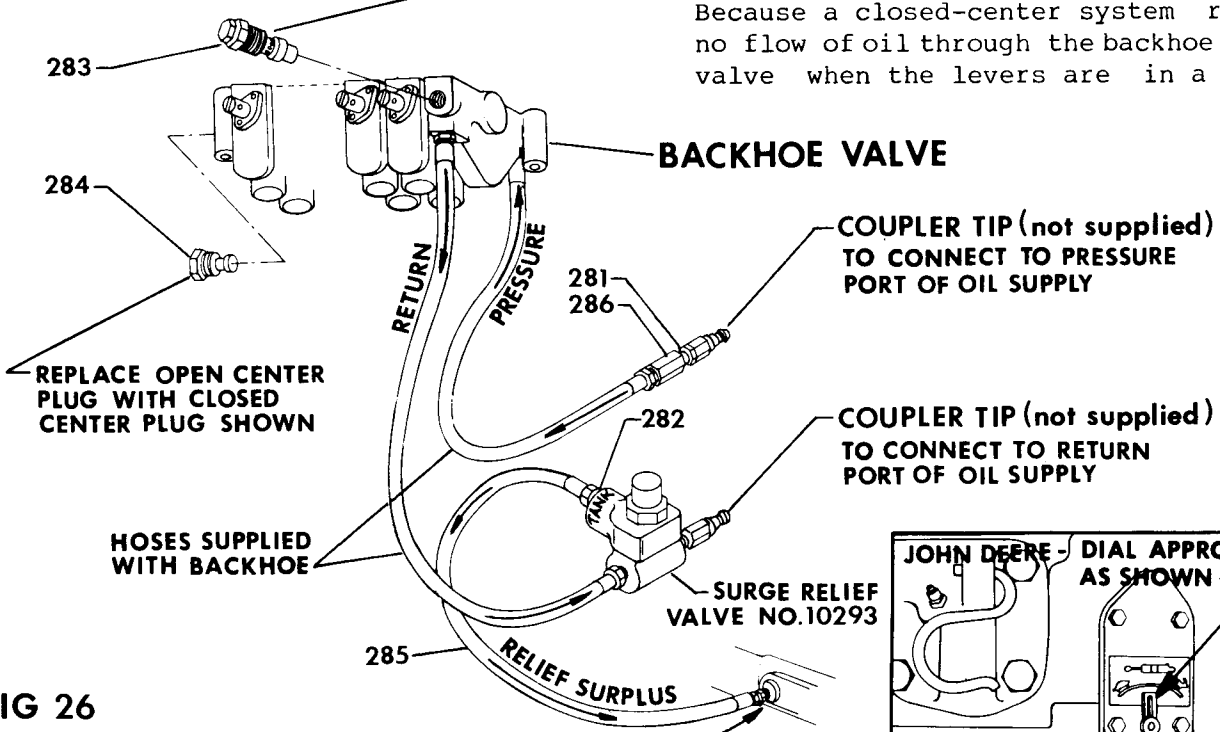
carries only the excess surge oil directly back to the tractor hydraulic reservoir so that it bypasses all other tractor functions. The backhoe is shipped from the factory with the low pressure surge relief valve in the return line.

The pressure and return hoses on the backhoe control valve should be connected to the tractor remote couplers using the flow regulator as shown in Fig 25. 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 and will flow back to the tractor reservoir.

PARTS LIST - FIG 25

Index	Description	Part No.
271	Close Nipple, 3/8.....	7825
272	Pipe Tee, 3/8.....	7879
273	Close Nipple, 1/2.....	7903
274	Street Elbow, 1/2 x 90°.....	7921
275	Reducing Bushing, 1/2 x 3/8..	7936
276	Flow Regulator.....	10362
277	Hose, 3/8 NPT x 24" Long, with swivel.....	10903
	High Volume Open-Center Kit, consists of parts 271 - 277...	W71

**REPLACE 2025 PSI RELIEF VALVE WITH 2525 PSI RELIEF VALVE**



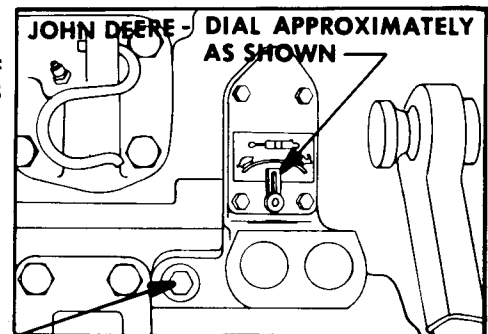
4. CLOSED-CENTER SYSTEM - Fig 26:

Because a closed-center system requires no flow of oil through the backhoe control valve when the levers are in a neutral

**FIG 26**

For John Deere Tractors use a reservoir plug. Remove plug, drill plug with a 37/64 drill, and tap 3/8 NPT pipe. Screw plug onto hose, locking with Loctite to make sure assembly will remain together during connecting and disconnecting procedures. Use a new plug when backhoe is removed from tractor.

Other tractor makes use; a filler plug, drain plug, or any other port that goes directly into the hydraulic reservoir. DO NOT rely on remote coupler return alone.



Typical plug for surplus relief flow line. Check carefully that it enters the reservoir before using. Note that the location varies with different tractor makes and models. A John Deere Tractor is shown.

position, the backhoe must be converted for this operation. As long as the engine and pump are running, a constant stand-by oil pressure of approximately 2000 PSI or more will be maintained in the system. Pressurized oil is available instantaneously to go to work when any one of the operating valves is opened.

The hook-up of the backhoe to the closed-center system requires more than connecting it to the remote couplers. Some of the required devices are:

- A. A flow restrictor in the pressure line to keep the speed of the backhoe operation within safe and acceptable limits.
- B. A main relief valve pressure setting in the backhoe control valve that is always higher than the tractor system.
- C. A closed-center plug in the backhoe control valve to make it a non-circulating or a demand type system.
- D. 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.

The pressure and return hoses on the backhoe control valve should be connected to the tractor remote couplers using the flow restrictor, as shown in Fig 26. 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 and will flow back to the tractor reservoir. Assemble 2525 PSI relief valve cartridge and closed-center plug as shown in Fig 26.

PARTS LIST - FIG 26

<u>Index</u>	<u>Description</u>	<u>Part No.</u>
281	Close Nipple, 1/2.....	7903
282	Reducer Bushing, 1/2 x 3/8...	7936
283	Relief Valve Cartridge, 2525 PSI.....	10171
284	Closed-Center Plug.....	10444
285	Hose, 3/8 NPT x 24" Long, with swivel.....	10903
286	Restrictor.....	852296
	Seal Kit for 10171	
	Relief Valve.....	10172
	Closed-Center Kit, consists of parts 281 - 286.....	W152



# HYDRAULIC HOOK-UP TO PTO SELF-CONTAINED SYSTEMS

## GENERAL DESCRIPTION OF SYSTEMS:

The PTO Self-Contained System consists of those parts required to power the 730 Backhoe from the tractors PTO shaft. It includes the PTO pump and adapter, reservoir, filtration system, hydraulic hoses, and fittings. In addition, it includes a pump torque arm which attaches to the tractors lower link and keeps the pump from turning with the PTO shaft. The correct hydraulic kit will depend on the tractors PTO speed. Each kit includes a pump with the proper volume output for a particular PTO speed. The two kits are as follows:

### 1. 1000 RPM PTO Self-Contained System - Fig 27:

A. Using Fig 27 as a guide, attach the reservoir to the backhoe main frame. Assemble the filter to the reservoir. Connect the hose marked INLET to the pump as shown and connect the hose marked RETURN to the filter.

B. Connect the suction hose to the pump and reservoir as shown in Fig 27. Assemble the PTO adapter all the way onto the pump shaft and secure with setscrews.

*IMPORTANT - To avoid pump bearing breakage:*

1. Do not drive the PTO adapter onto the pump shaft.
2. Do not drive the pump assembly onto the PTO shaft.
3. Do not strike the pump when on the PTO shaft.

C. Assemble the torque arm to the pump as shown in Fig 27. Fill the reservoir with 10W40 engine oil.

D. When the backhoe has been attached to the three-point hitch linkage of the tractor, slide the pump assembly onto the PTO shaft and secure it with the lock pin. Attach the pump plate to the lower lift arm of the tractor using the chain as shown in Fig 27.

*IMPORTANT - Position the large suction hose, between the pump and reservoir, in such a way that it will not tend to pull loose at either end or kink when the backhoe is raised and lowered on the tractors three-point hitch linkage.*

### 2. 540 RPM PTO Self-Contained System - Fig 28:

A. Using Fig 28 as a guide, attach the reservoir to the backhoe main frame. Assemble the filter to the reservoir. Connect the hose marked INLET to the pump as shown and connect the hose marked RETURN to the filter.

*IMPORTANT - Pressure port of pump can be determined from view A, Fig 28. If hoses are hooked-up incorrectly, serious damage to the pump or backhoe valve will result.*

B. Connect the suction hose to the pump and reservoir as shown in Fig 28. Assemble the PTO adapter all the way onto the pump shaft and secure with setscrews.

*IMPORTANT - To avoid pump bearing breakage:*

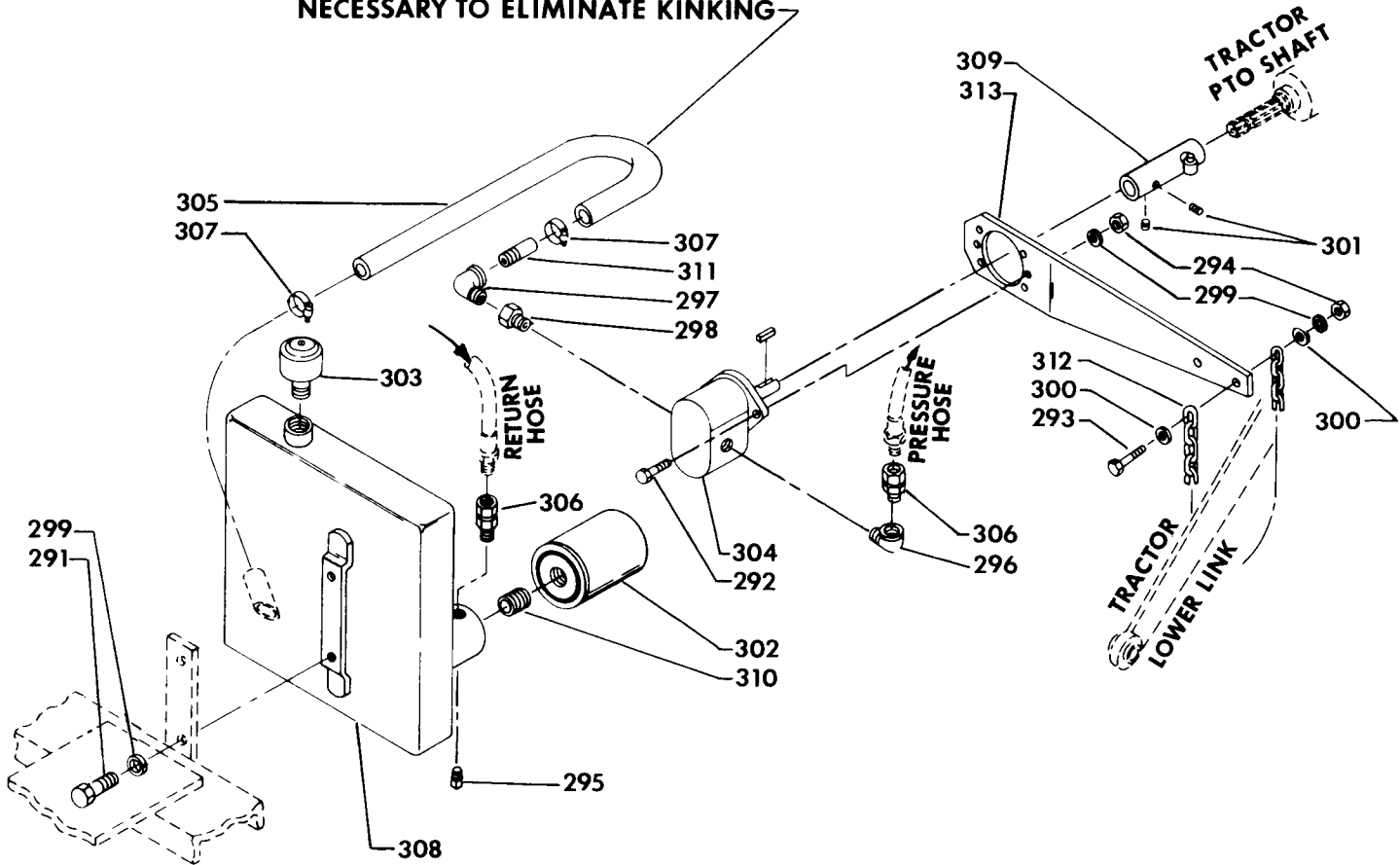
1. Do not drive the PTO adapter onto the pump shaft.
2. Do not drive the pump assembly onto the PTO shaft.
3. Do not strike the pump when on the PTO shaft.

C. Assemble the torque arm to the pump as shown in Fig 28. Fill the reservoir with 10W40 engine oil.

D. When the backhoe has been attached to the three-point hitch linkage of the tractor, slide the pump assembly onto the PTO shaft and secure it with the lock pin. Attach the pump plate to the lower lift arm of the tractor using the chain as shown in Fig 28.

*IMPORTANT - Position the large suction hose, between the pump and reservoir, in such a way that it will not tend to pull loose at either end or kink when the backhoe is raised and lowered on the tractors three-point hitch linkage.*

SUCTION HOSE CAN BE SHORTENED IF NECESSARY TO ELIMINATE KINKING



MAIN FRAME

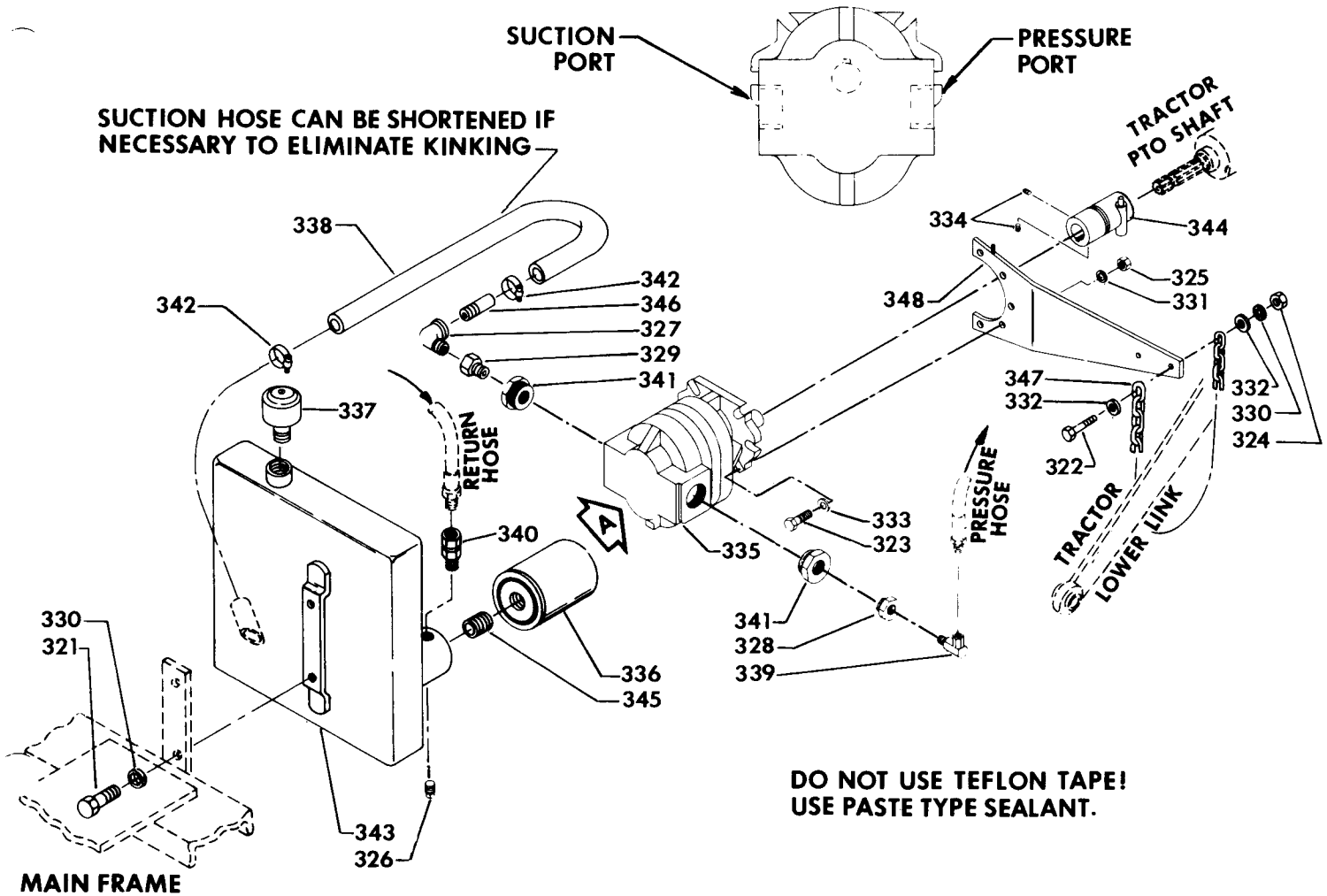
DO NOT USE TEFLON TAPE!  
USE PASTE TYPE SEALANT.

FIG 27

PARTS LIST - FIG 27

Index	Description	Part No.	Index	Description	Part No.
291	Bolt, 3/8 NC x 1".....	6844	305	Hose, 1" ID x 1-1/2 OD x 36" Long.....	11026
292	Bolt, 3/8 NC x 1-1/4.....	6857	306	Adapter Union, 1/2 NPT M x 1/2 NPT F.....	11150
293	Bolt, 3/8 NC x 2".....	6872	307	Hose Clamp.....	14150
294	Nut, 3/8 NC.....	7451	308	Reservoir.....	14193
295	Pipe Plug, 1/4 Square Head...	7795	309	Special PTO Adapter.....	15079
296	Street Elbow, 1/2 NPT x 90°..	7921	310	Filter Nipple.....	659527
297	Street Elbow, 3/4 NPT x 90°..	7975	311	Hose Nipple.....	780833
298	Reducer Bushing, 1" M x 3/4 F.....	8015	312	Hook-Up Chain.....	784584
299	Lockwasher, 3/8.....	8079	313	Pump Plate.....	852271
300	Flat Washer, 3/8.....	8156		PTO Pump and Reservoir Kit (1000 RPM), consisting of parts 291 - 313.....	W92
301	Setscrew, 5/16 NC x 3/8 Socket Head.....	8321			
302	Filter.....	10372			
303	Breather.....	10385			
304	Hydraulic Pump.....	10410			

BACK OF PUMP VIEWED IN  
DIRECTION OF ARROW "A"



**FIG 28**

PARTS LIST - FIG 28

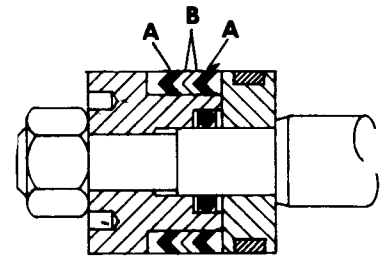
Index	Description	Part No.	Index	Description	Part No.
321	Bolt, 3/8 NC x 1".....	6844	338	Hose, 1" ID x 1-1/2 OD x 36" Long.....	11026
322	Bolt, 3/8 NC x 2".....	6872	339	Adapter Union, 1/2 NPT M x 1/2 NPT F x 90°.....	11129
323	Bolt, 1/2 NC x 1-3/4.....	7031	340	Adapter Union, 1/2 NPT M x 1/2 NPT F.....	11150
324	Nut, 3/8 NC.....	7451	341	Pipe Adapter, 1-7/8-12 M x 1" NPT F.....	11188
325	Nut, 1/2 NC.....	7501	342	Hose Clamp.....	14150
326	Pipe Plug, 1/4 NPT.....	7795	343	Reservoir.....	14193
327	Street Elbow, 3/4 NPT x 90°..	7975	344	Special PTO Adapter.....	15086
328	Reducer Bushing, 1" NPT M x 1/2 NPT F.....	8013	345	Filter Nipple.....	659527
329	Reducer Bushing, 1" NPT M x 3/4 NPT F.....	8015	346	Hose Nipple.....	780833
330	Lockwasher, 3/8.....	8079	347	Hook-Up Chain.....	784584
331	Lockwasher, 1/2.....	8101	348	Pump Arm.....	852436
332	Washer, 3/8 Flat.....	8156			
333	Washer, 1/2 SAE.....	8173			
334	Setscrew, 3/8 NC x 3/8 Socket Head.....	8332			
335	Hydraulic Pump.....	10218			
336	Hydraulic Filter.....	10372			
337	Breather.....	10385			
				PTO Pump and Reservoir Kit (540 RPM), consisting of parts 321 - 348.....	W150

# 032 OR 064 CYLINDER

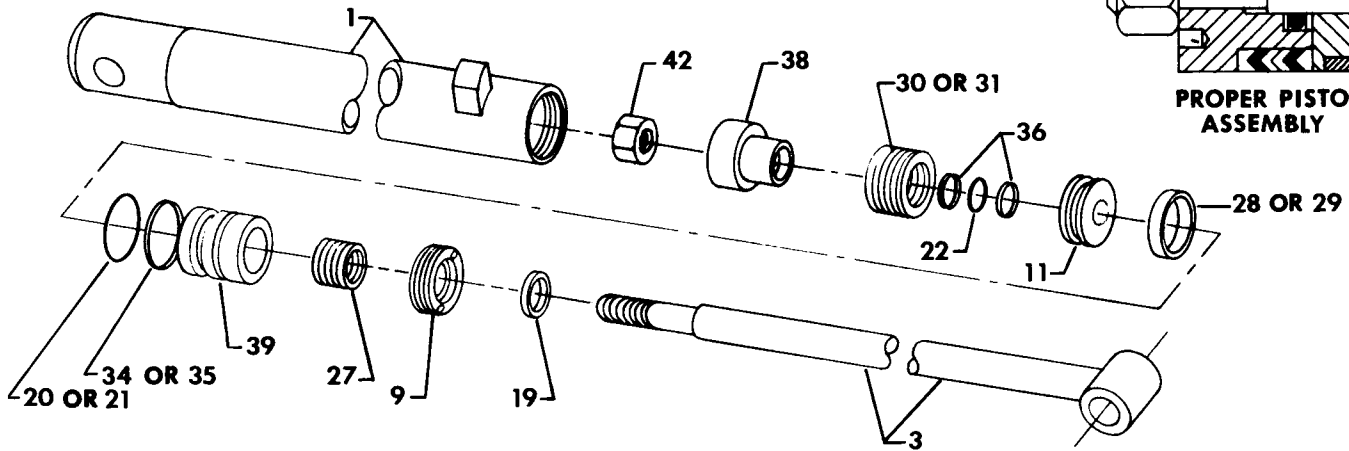
032 CROWD AND BUCKET  
064 LIFT

A - HARD VEE'S  
B - SOFT VEE'S

NOTE - USE LOCKTITE TO  
RETAIN NUT ON ROD.

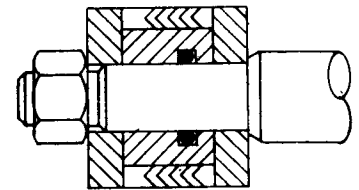


PROPER PISTON  
ASSEMBLY

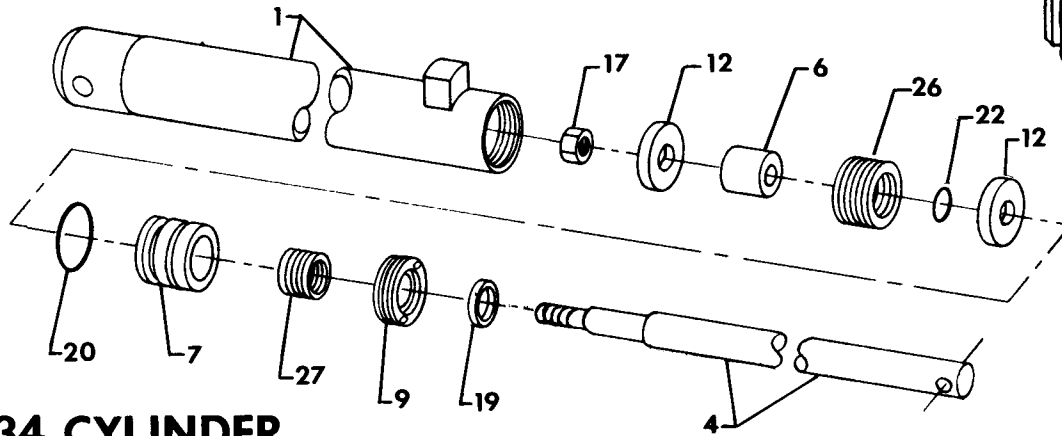


# 031 CYLINDER

STABILIZER



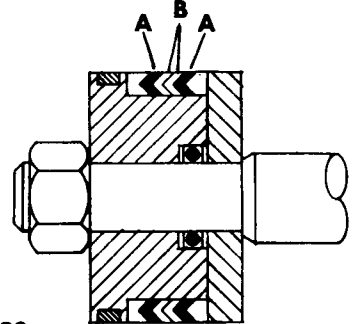
PROPER PISTON  
ASSEMBLY



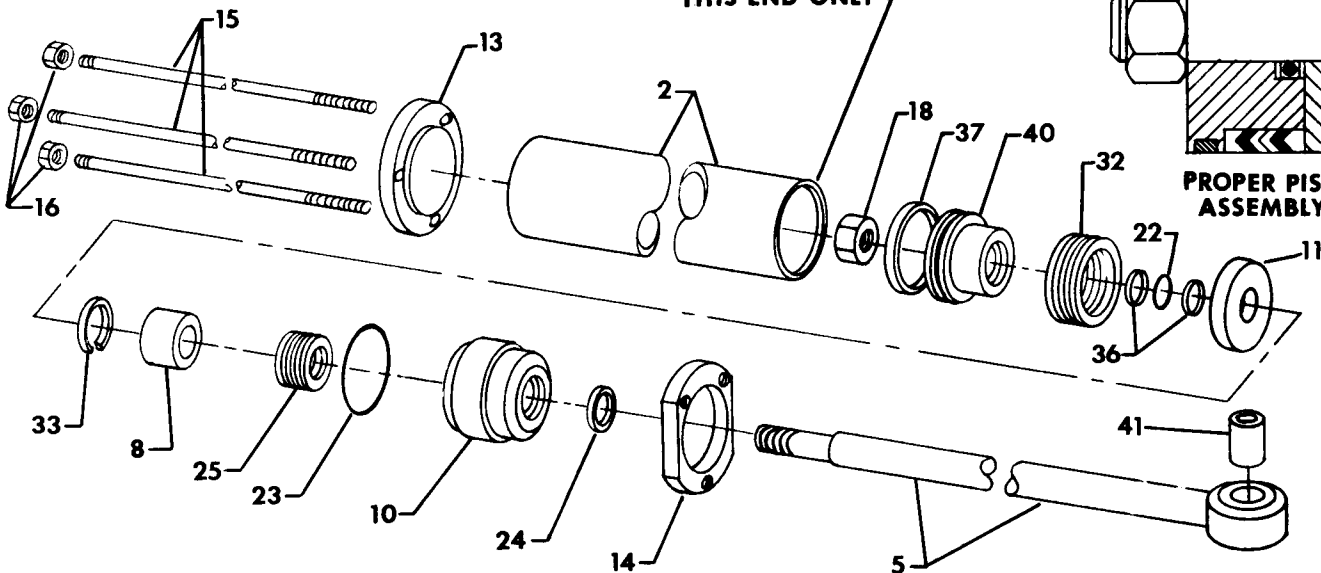
# 034 CYLINDER

SWING

NOTE - BEVEL ON  
THIS END ONLY



PROPER PISTON  
ASSEMBLY



# HYDRAULIC CYLINDERS - PARTS LIST:

Index	Description	032:	064:	031:	034:
1	Cylinder Tube Weldment.....	905275	905530	905265	
2	Cylinder Tube.....				907012
3	Piston Rod Weldment.....	905360	905360		
4	Piston Rod.....			905271	
5	Piston Rod Assembly, w/Bushing.....				907000
6	Cylinder Piston.....			905078	
7	Gland, Cylinder Packing.....			905027	
8	Spacer Ring.....				907017
9	Gland Cap.....	905028	905538	905028	
10	End Cap.....				907016
11	Piston Washer.....	905179	905519		907021
12	Cylinder Stop.....			905126	
13	End Plate.....				907011
14	Nut Plate.....				907018
15	Bolt.....				907019
16	Nut, 7/16 NF, Self-Locking.....				7487
17	Nut, 7/8 NF, Self-Locking.....			7609	
18	Nut, 1" NF, Self-Locking.....				7616
19	Oil Seal, 1-7/8 OD x 1-1/2 ID.....	11584	11584	11584	
20	O-Ring, 11-142.....	11730		11730	
21	O-Ring, 11-230.....		11760		
22	O-Ring, 11-214.....	11739	11739	11739	11739
23	O-Ring, 11-236.....				11768
24	Oil Seal, 1-5/8 OD x 1-1/4 ID.....				11817
25	Packing Assembly, 1-3/4 OD x 1-1/4 ID x .824 Stack Height.....				11845
26	Packing Assembly, 2-1/2 OD x 2" ID x 1-1/4 Stack Height.....			11848	
27	Packing Assembly, 2" OD x 1-1/2 ID x .824 Stack Height.....	11857	11857	11857	
28	Wear Ring, 2-1/2 OD x 2-1/4 ID x 3/8 Wide.....	11861			
29	Wear Ring, 2-3/4 OD x 2-1/2 ID x 3/8 Wide.....		11831		
30	Packing Assembly, 2-1/2 OD x 2" ID x .824 Stack Height.....	11862			
31	Packing Assembly, 2-3/4 OD x 2-1/4 ID x .824 Stack Height.....		11846		
32	Packing Assembly, 3-1/2 OD x 3" ID x .824 Stack Height.....				11868
33	Snap Ring, N5000-185.....				13405
34	Back-Up Ring, 2-9/16 OD.....	11802			
35	Back-Up Ring, 2-3/4 OD.....		11801		
36	Back-Up Ring, 1" ID.....	11803	11803		11803
37	Wear Ring, 3-1/2 OD x 3-1/4 ID x 1/4 Wide.....				11832
38	Cylinder Piston, w/O-Ring & Back-Up Rings.....	905365	905545		
39	Gland, w/O-Ring & Back-Up Ring.....	905285	905550		
40	Piston, w/O-Ring, Back-Ups, & Wear Ring.....				907020
41	Chain Pin Bushing, 8-160H.....				11427
42	Nut, 1" NF Hex.....	7612	7612		
	For Complete Cylinder order.....	032	064	031	034
	Seal Repair Kit (includes all Packings, Wear Rings, O-Rings, Back-Ups, Rod Wipers, & Snap Rings for one cylinder).....	905050	905555	905040	907025



**ARPS MANUFACTURING, INC.**

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