



series 720 backhoe

SERIAL NO. 1336 AND LATER

This Manual Includes:

W125 BASIC BACKHOE

W35 BUCKET, 12"

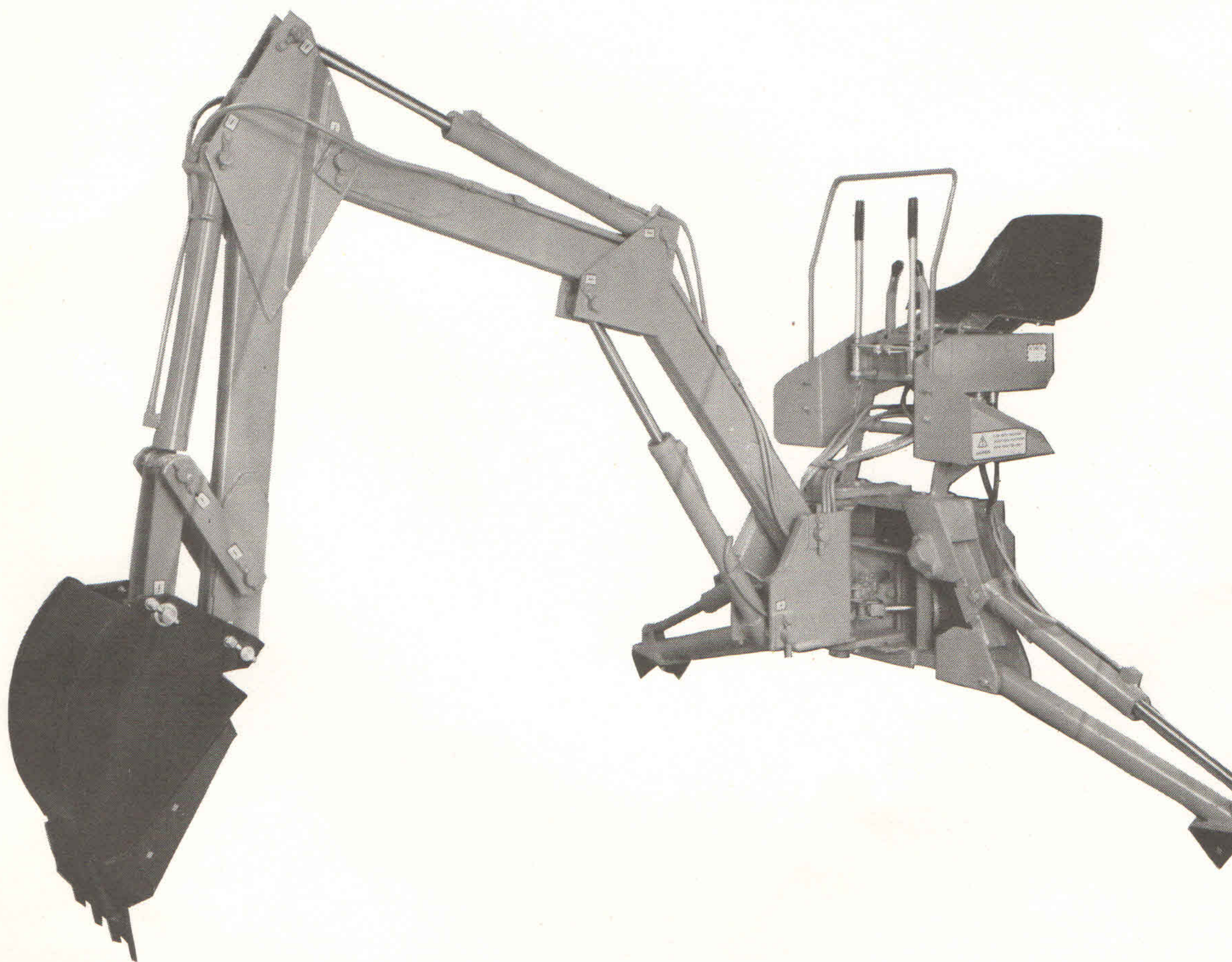
W36 BUCKET, 18"

W37 BUCKET, 24"

W38 BUCKET, 36"

W39 BUCKET, 40"

OPTIONAL STABILIZER PADS



THIS SAFETY ALERT SYMBOL IDENTIFIES IMPORTANT
SAFETY MESSAGES IN THIS MANUAL.




purchase and service record:

CONTENTS

Safety Precautions.....	1 - 3
Basic Assembly Instruction.....	3, 4
General Operation.....	4 - 6
Service.....	7, 8
Hydraulic Trouble Shooting.....	9 - 12
Removal From Tractor and Storage.....	13
Stabilizer Pads.....	14
Valve Repair, Disassembly.....	15, 16
Parts Drawings and Parts List:	
Hose Diagram.....	17, 18
Control Valve.....	19 - 24
Backhoe - Main Frame and Swing Frame.....	25, 26
Backhoe - Boom, Dipperstick, and Bucket.....	27, 28
Hydraulic Cylinder.....	29, 30
Backhoe - Valve and Handles.....	31
Specifications.....	32 - 34
Warranty.....	Back Cover

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:

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:


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.



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

<ol style="list-style-type: none">1. READ OPERATOR'S MANUAL2. OPERATE ONLY FROM OPERATOR'S SEAT3. BE SURE ALL PERSONS STAND CLEAR BEFORE OPERATING4. 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 BACKHOE7. ALWAYS LOWER THE BUCKET TO THE GROUND WHEN NOT DIGGING8. IF INJURED BY ESCAPING HYDRAULIC FLUID, SEE A DOCTOR AT ONCE. AVOID OPEN SORE CONTACT WITH FLUID AS SERIOUS INFECTION OR REACTION CAN RESULT.	<ol style="list-style-type: none">9. BE SURE TRACTOR HAS ADEQUATE FRONT END WEIGHT10. ALWAYS SWING BUCKET UPHILL TO DUMP WHEN ON A HILLSIDE. KEEP LOADED BUCKET LOW11. 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:

DO NOT attempt to enter operators platform of backhoe by using stabilizers or main frame as a step. Enter from tractor side only. The following decal is located on the foot pads:

OPERATE the backhoe from the operator's seat only.



CAUTION

STEP ONTO BACKHOE OPERATOR'S PLATFORM FROM TRACTOR ONLY.

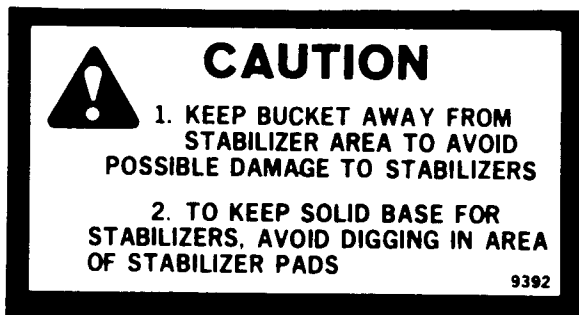
9390

Safety Precautions - continued

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 following decal is located on the operators console:



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

NEVER allow a person to work under a raised bucket.

NEVER lift a person with the backhoe.

DO NOT use the backhoe bucket as a battering ram.

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

NEVER leave the tractor unattended with the engine running.

Transportation:

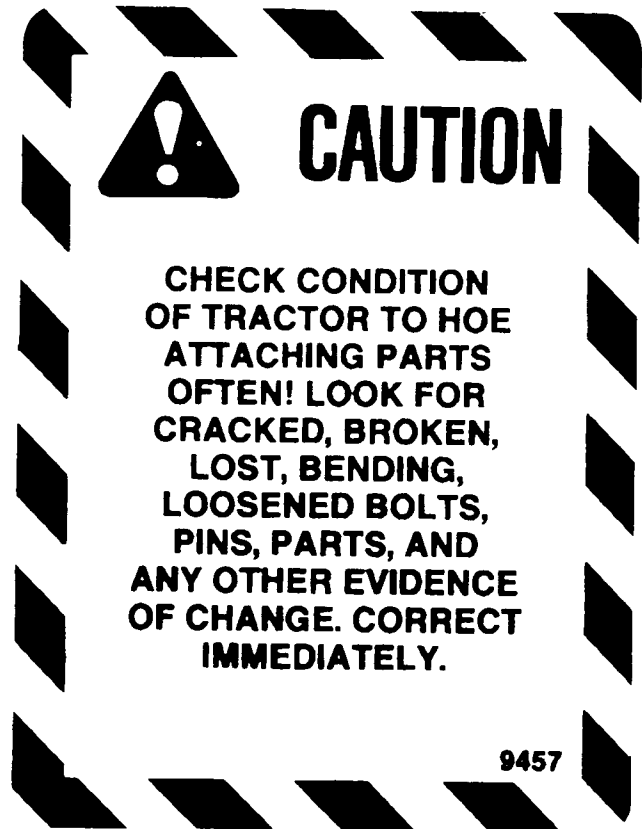
DO NOT drive the tractor near the edge of a ditch or excavation.

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

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:



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.

Safety Precautions - continued

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:



BASIC ASSEMBLY INSTRUCTIONS

General:

The backhoe has been partially disassembled and strapped to a skid for shipping purposes. Initial installation on the tractor will require a hoist or other device capable of safely lifting the main frame and boom sub-assembly from the skid. Once the initial installation is complete the backhoe can serve as its own erecting hoist, by lowering stabilizers and bucket to the ground, and additional lifting devices will not be required for normal removal and re-attaching.

Assembly Procedure:


Do not cut any strapping that fastens the backhoe main frame and boom at this time. Remove the stabilizer legs, the dipperstick, the small box of parts, and any other miscellaneous items that have been fastened to the skid.

IMPORTANT - Tighten all hardware to torque requirements specified in Torque Chart, Page 32, of this manual.

1. Assemble seat to backhoe, in any of the three sets of holes, hardware is provided.
2. Assemble handle loop with hardware provided, see Figure 9. Re-assemble handles referring to Figure 11.

3. Be sure that backhoe main frame is still strapped solidly to the skid. Carefully remove the strapping that holds the swing frame in position and slowly swing boom away from main frame until centered. Note that the "SWING" lever will have to be moved to the "SWING RIGHT" position to allow hydraulic fluid to flow from one cylinder to the other.

4. Connect hoist to upper end of boom. Raise boom slightly and remove wooden brace on cylinder. Be sure hoist is fully supporting weight of boom and then slowly move "BOOM" lever to "BOOM DOWN" position. Use hoist to slowly lower boom to ground.

 *CAUTION - Be sure hoist being used is suitable, has sufficient capacity, and is in the proper position. Do not allow anyone under a backhoe member that is supported by the hoist.*

5. Attach hoist to main frame to keep sub-assembly from tipping and remove the remaining strapping. Lift main frame sub-assembly, remove skid, and block-up at position A, B, and C as shown. Use approximately eight inches of blocking at A and B. Lower sub-assembly onto blocks but keep a small amount of tension on the hoist to keep it steady.

Basic Assembly - continued

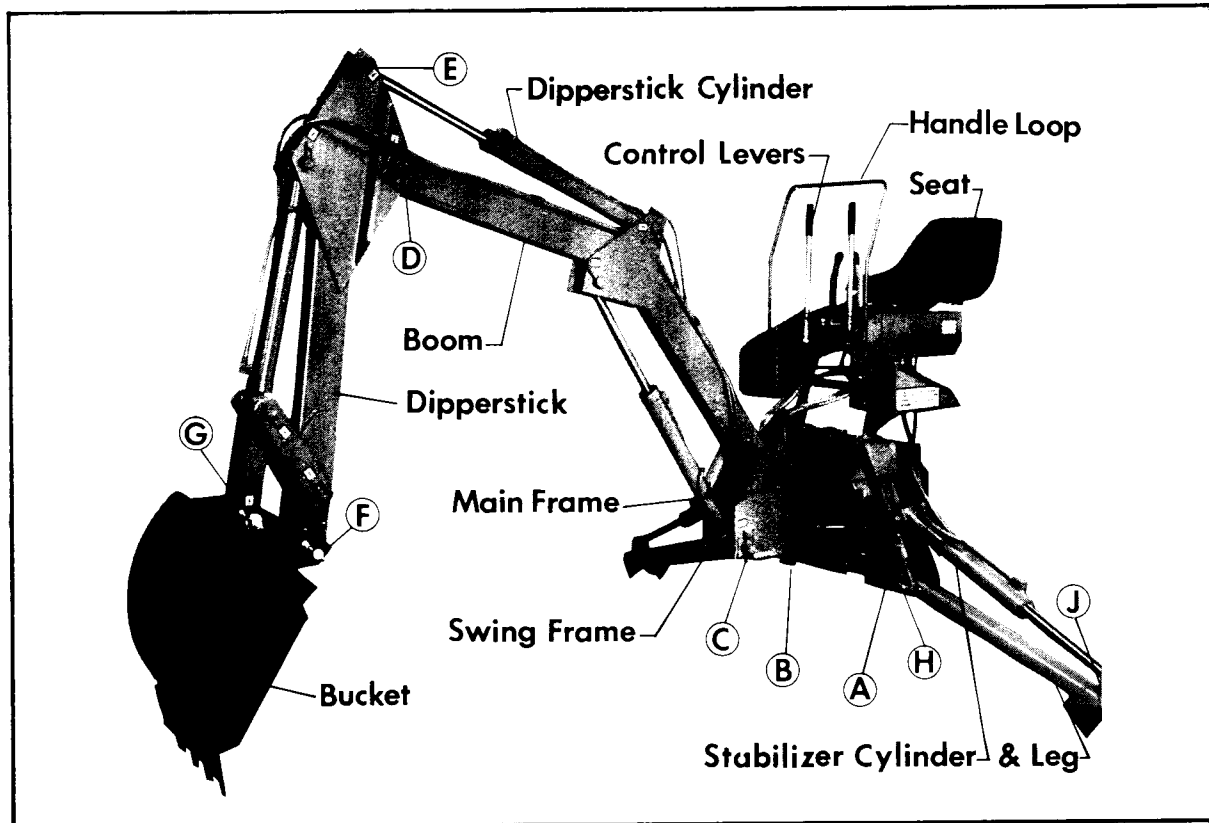
6. Now follow assembly instructions supplied with the attaching kit and mount the backhoe sub-assembly to tractor. Check the installation carefully to be sure all members are correctly installed and securely fastened.

7. Assemble the dipperstick to the boom hinge at D, and attach rod end of dipperstick cylinder to dipperstick at E as shown. Also refer to Fig 10.

8. Attach bucket to dipperstick with pins F and G as shown. Assemble with hardware provided, as shown in Fig 10.

9. Attach stabilizer legs to the main frame at H and stabilizer cylinders at J as shown.

10. Continue with the general Backhoe Operation Section and familiarize yourself with the proper operation of the control levers.



GENERAL OPERATION

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

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

Directions:

The terms right, left, front, and back shall be determined from the position of

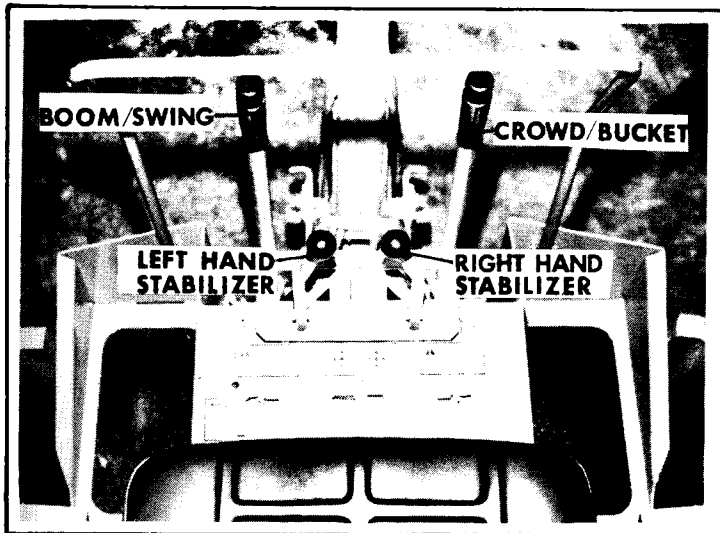
the operator when seated in the operating position on the backhoe.

Engine Speed:

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

Controls:

The Model 722 Backhoe has two major control levers plus the stabilizer control levers. These controls are located on the control panel directly ahead of



the operator, see photo. 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:

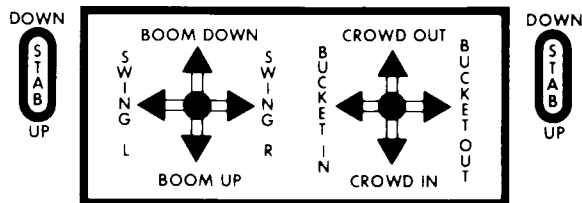
! CAUTION - To avoid possible injury, observe the following safety rules WHEN OPERATING the backhoe:

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.

General Operation - continued

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 digger, 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 ap-

proaches 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 workpiece or striking tool.

Beginning Of Season:

Remove all protective covering.

Check hydraulic hoses for deterioration and, if necessary, replace.

Lubricate all grease fittings and oil handle linkage.

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

Tighten all loose bolts, nuts, and set-screws.

Inspect bucket teeth and, if necessary, sharpen or replace them.

Operate the backhoe slowly for a short time before placing the 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 sealer.

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 hoses so they can move fully and freely, without kinking, and can not be pinched or cut by any part of the backhoe.

Hydraulic System Reservoir:

On PTO pump self-contained systems, 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.

Service - continued

Fill with:

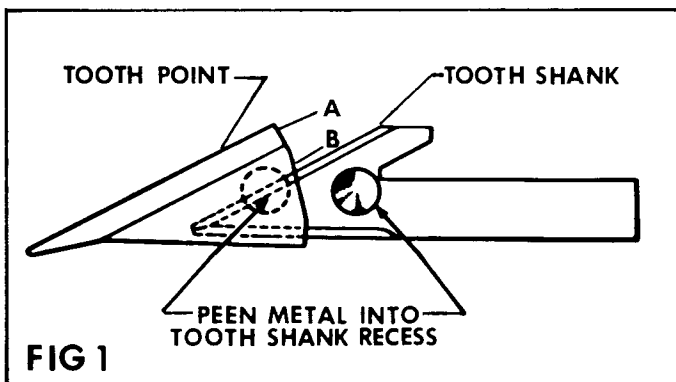
SAE 10W40 engine oil with API "SD" classification in northern climates.

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

Change oil every 200 hours or more often if necessary.

If the tractor system supplies the hydraulic power, service according to the tractor instruction manual.

Bucket Tooth Points:



The bucket tooth points are self-sharpening and will require little attention; however, these points on the bucket shanks can be replaced when they become badly worn or broken.

A tooth point can be removed from the welded tooth shank by hammering at "A" on the toothpoint or by driving a chisel at "B", just 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.

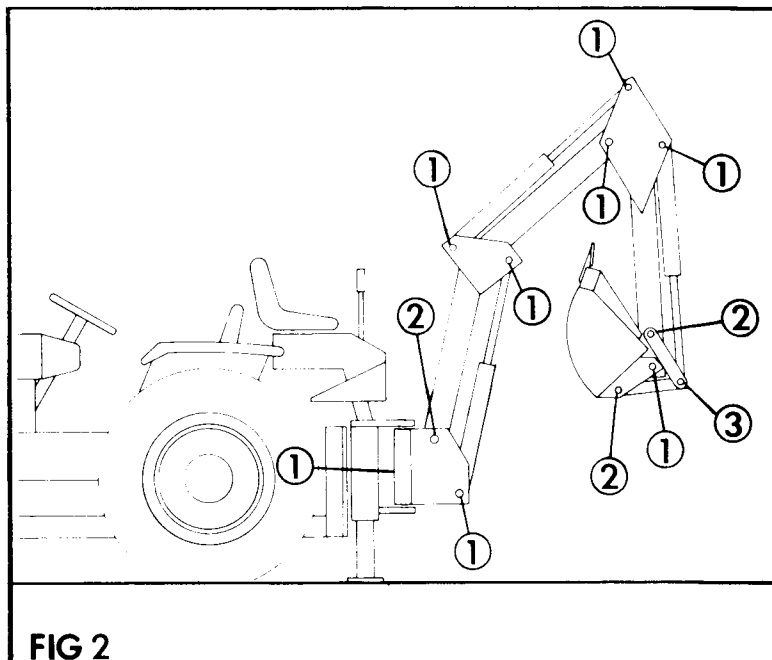
If a tooth shank breaks off, becoming lost or damaged so that it can not hold a tooth point, a new shank should be welded to the bucket in its place.

Tightening Nuts And Bolts:

Periodically, check to be sure all bolts and nuts are tight, see Torque Chart, Page 32.

Check all pivot pins for cotter pins, washers, and retainers; if missing - replace.

Lubrication:



Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant.

All parts provided with grease fittings should be lubricated with a good quality chassis lube type grease. If any grease fittings are missing, replace them 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.

See Fig 2, for the location of all grease fittings.

The following locations should be oiled with SAE 30 oil:

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

IMPORTANT - Avoid excessive greasing. Dirt collects on exposed grease and increases wear greatly. After greasing wipe off excessive grease from fittings.

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 as necessary. He is equipped to do this work.

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

Hydraulic Trouble Shooting - continued

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

<u>POSSIBLE CAUSE:</u>	<u>AND CORRECTION -</u>
17. Paint on valve spool, sticking valve..... spool, or scored valve spool.	clean valve spool. Binding is usually caused from an over tightened plug, mounting bolt, fitting in valve body, or tie rod bolt. If a plug or fitting in valve body is leaking do not over-tighten in an effort to stop leak. This will distort body casting and cause spools to bind. Instead, the plug or fitting should be removed from valve body and be reconnected, using a new O-ring. Do not apply excessive pressure on mounting bolts. The rods should be torqued to 20 foot/pounds. Never force spool, if binding occurs, see item 31 at the end.
18. Oil leakage past spool seal into..... spool cap.	remove cap, if it contains oil, replace spool seal O-rings. Check O-ring retainer to see if it is flat. If it has been "belled" check for restriction from outlet to tank of valve which would cause excessive back pressure, see item 31 at end and Fig 3.
19. Broken return springs.....	replace springs, see item 31 at end and Fig 3.
20. Bent spool.....	return for factory repair, or replace with new spool section. See item 31 at end and Fig 5 and 6.
21. Foreign particles.....	clean system and valve.
22. Misalignment of control handle..... linkage.	check linkage for binding condition.
23. Spool not moved to full stroke.....	check travel, should be 5/16 either way or a total of 5/8. See item 31 at end.
24. Relief valve setting in backhoe con-..... trol valve too low or defective.	relief pressure will have to be checked and corrections made. Backhoe system pressure is 1825 PSI. Relief valve may need cleaning and overhauling, or entire cartridge must be replaced. See item 31 at end and Fig 7.
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 5.
26. Worn control valve.....	replace the control valve.

POSSIBLE CAUSE:

AND CORRECTION -

27. A cross over relief in swing circuit.....clean reliefs carefully but do not disturb their pressure setting as they can not be field calibrated, or replace the entire cross over relief assembly. See item 31 at the end and Fig 8.
28. Check poppet in the control valve not.....clean check poppet(s) carefully, being holding. sure that it moves freely with good spring action and seats properly or replace. See item 31 at end and Fig 5 and 6.
29. Damaged or worn spool seals.....replace spool end seals, item 31 at end and Fig 5 and 6.
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 5.
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 the manufacturer for service.

Dirt or 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 oil line removal and replacement or during any cylinder work.

Pages 15 and 16, Valve Repair - Disassembly, explain the procedure to follow for valve repair. Pages 17 through 24 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.

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, dipper arm, and bucket, as shown in photo. Lower the bucket to the ground so that it rests there solidly.
3. Place suitable blocking under the backhoe frame to support it adequately, as shown in photo.
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. Gently lower the backhoe onto the blocking as shown in photo. Leave the stabilizers outstretched and firmly in contact with the ground for added stability.

6. The hydraulic system can now be de-actuated.

- 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 can be disconnected now.

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

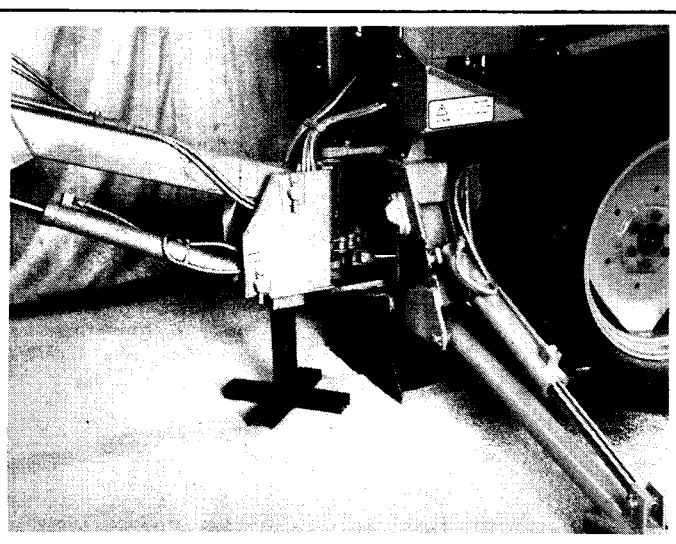
Be sure to cap the ends of the lines to keep clean while in storage.

7. Now slowly drive the tractor forward and away from the backhoe. Be careful that all parts clear each other during separation.

8. Refer to the installation instructions for the attaching kit, this will help with the removal and reattaching.

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.



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" x 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

Index	Description	Part No.
-------	-------------	----------

Group A:

	Turf Plate Kit (pair).....	W41
1	Pivot Shaft.....	601552
2	Turf Plate Weldment.....	851260
11	Cotter Pin.....	8602

Group B:

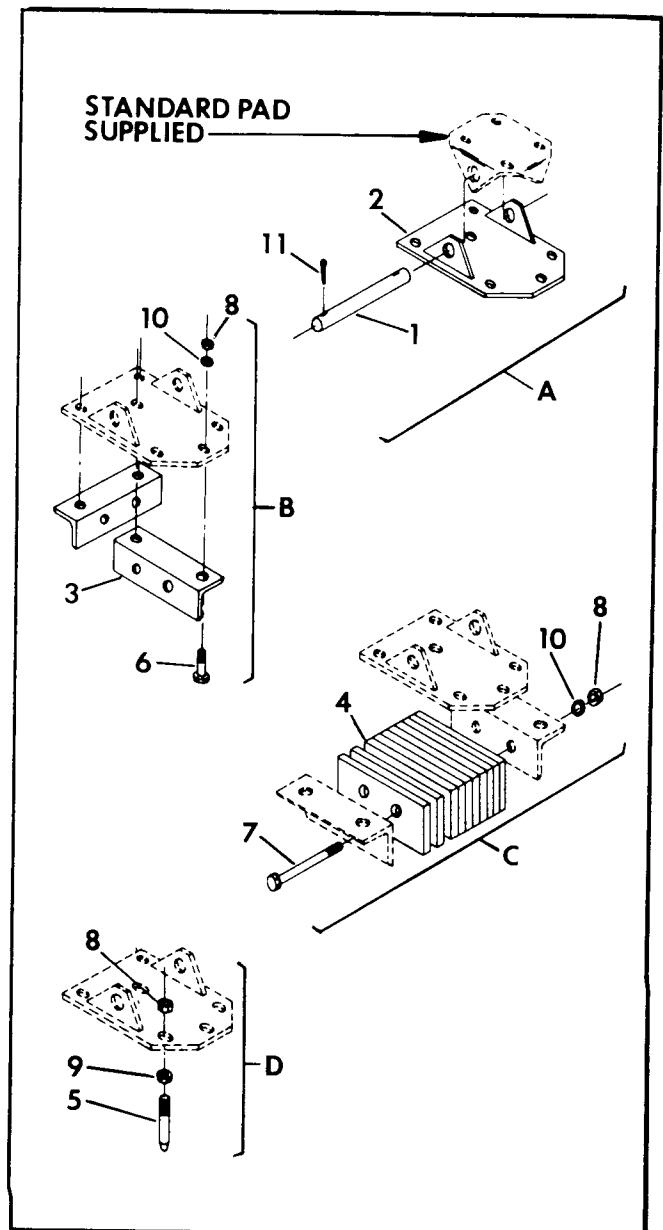
	Angle Kit (four Angles and four bolts).....	W42
3	Angle.....	851266
6	Bolt, 5/8 NF x 1-1/2.....	7130
8	Nut, 5/8 NF.....	7536
10	Lockwasher, 5/8.....	8111

Group C:

	Street Pad Kit (sufficient material for both stabilizers; includes four long bolts).....	W43
4	Street Pad, order.....	W43
7	Bolt, 5/8 NF x 6-1/2.....	7196
8	Nut, 5/8 NF.....	7536
10	Lockwasher, 5/8.....	8111

Group D:

	Spike Kit (eight spikes and sixteen nuts).....	W53
5	Spike, order.....	W53
8	Nut, 5/8 NF.....	7536
9	Jam Nut, 5/8 NF.....	7674



VALVE REPAIR- DISASSEMBLY

REPLACE CENTER SECTION ASSEMBLIES:

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

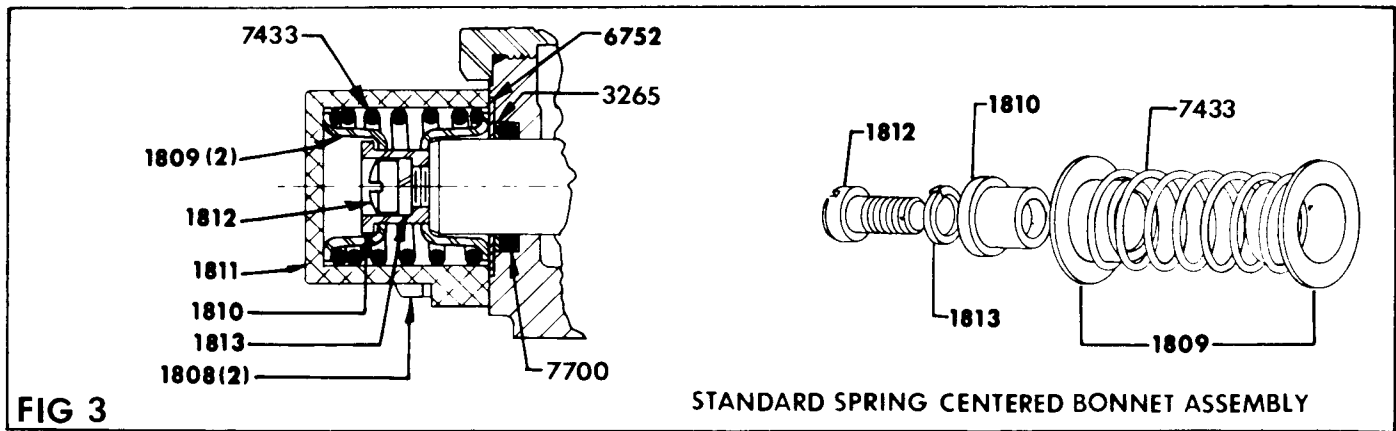
1. Remove control valve from the backhoe.
2. Thoroughly clean the exterior of the valve before beginning disassembly procedures.
3. Since the valve will be assembled in the same order, each section should be marked numerically so that they can be reassembled in the same sequence.
4. Mount the valve vertically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

REPLACING SPOOL SEALS:

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

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

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



8. At the FRONT of the valve remove all parts connected to the spool (handle, linkage, etc.).
9. At the FRONT of the valve remove seal plate retainer, seal retainer, back-up washer, and spool O-ring seal.
10. Thoroughly clean counter-bore.

11. Lightly oil new O-ring seal. Slide O-ring seal over valve spool and insert in seal counter-bore. Replace back-up washer, seal retainer, and seal plate retainer.
12. Reattach all parts connected to the spool (handle, linkage, etc.).

HEAVY DUTY SPOOL SEAL KIT

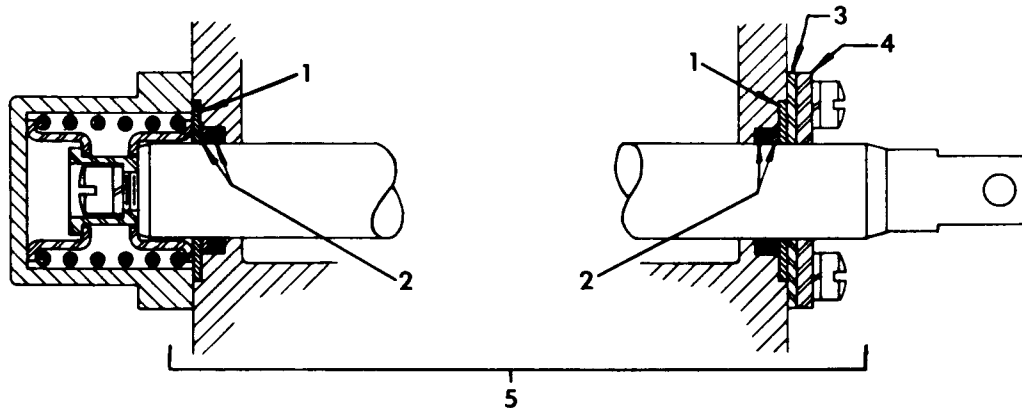


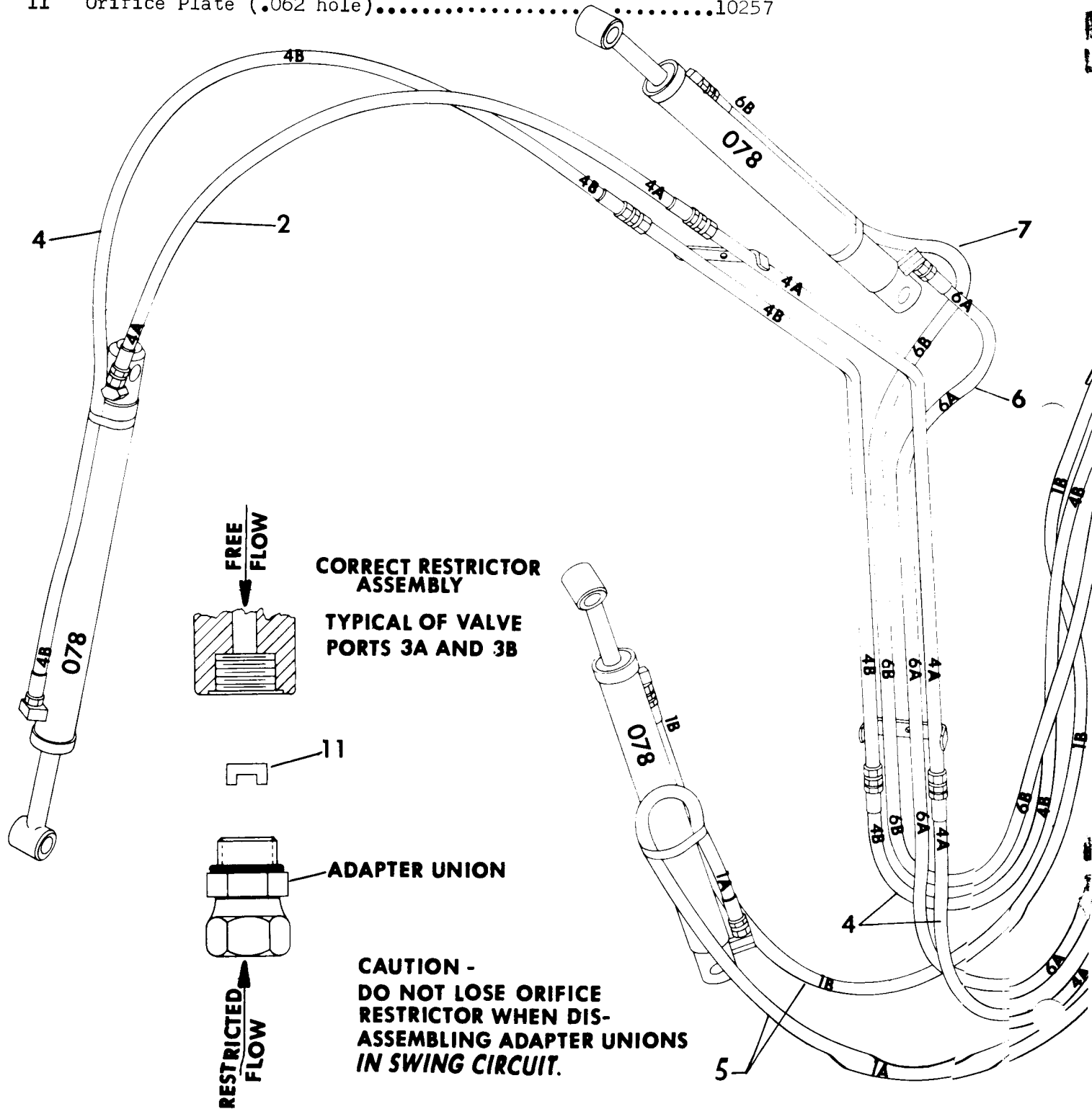
FIG 4

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.

PARTS LIST FOR HOSE DIAGRAM

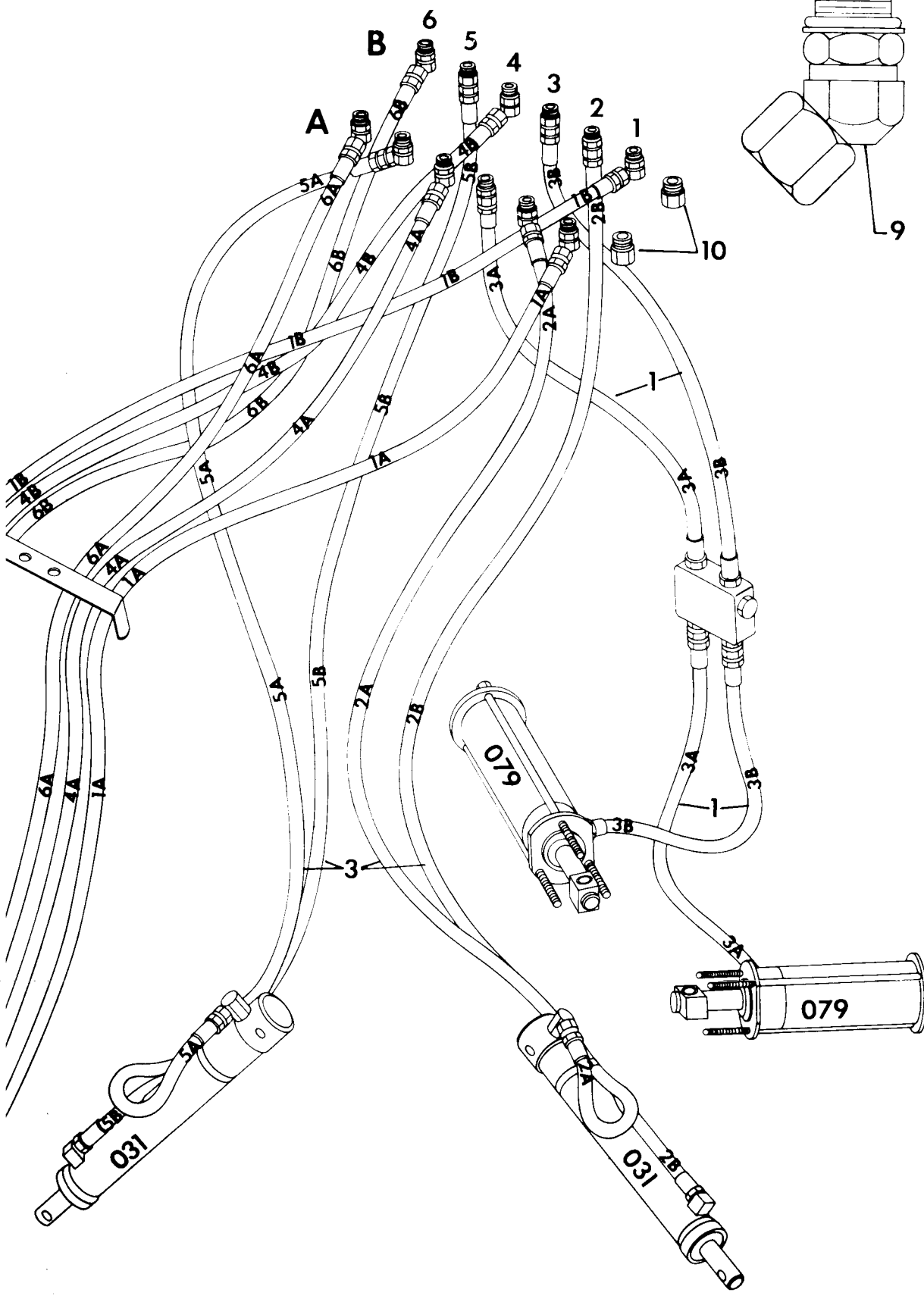
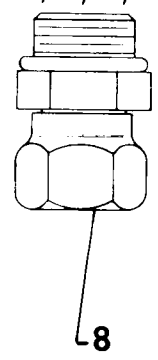
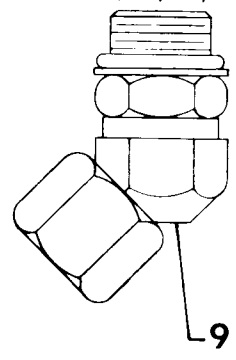
Index	Description	Part No.
1	Hydraulic Hose, 3/8 NPT x 13".....	10877
2	Hydraulic Hose, 3/8 NPT x 30".....	10907
3	Hydraulic Hose, 3/8 NPT x 45".....	10911
4	Hydraulic Hose, 3/8 NPT x 52".....	10933
5	Hydraulic Hose, 3/8 NPT x 65".....	10935
6	Hydraulic Hose, 3/8 NPT x 72".....	10939
7	Hydraulic Hose, 3/8 NPT x 92".....	10947
8	Adapter Union, 3/4-16 M x 3/8 NPT F Straight.....	11118
9	Adapter Union, 3/4-16 M x 3/8 NPT F x 45°.....	11149
10	Pipe Adapter, 7/8-14 M x 1/2 NPT F.....	11219
11	Orifice Plate (.062 hole).....	10257



CYLINDER PORTS

1A, 1B, 2A, 4A,
4B, 5A, 6A, 6B

2B, 3A, 3B, 5B



CONTROL VALVE SECTION

TYPICAL SECTION FOR LIFT AND CROWD CIRCUITS

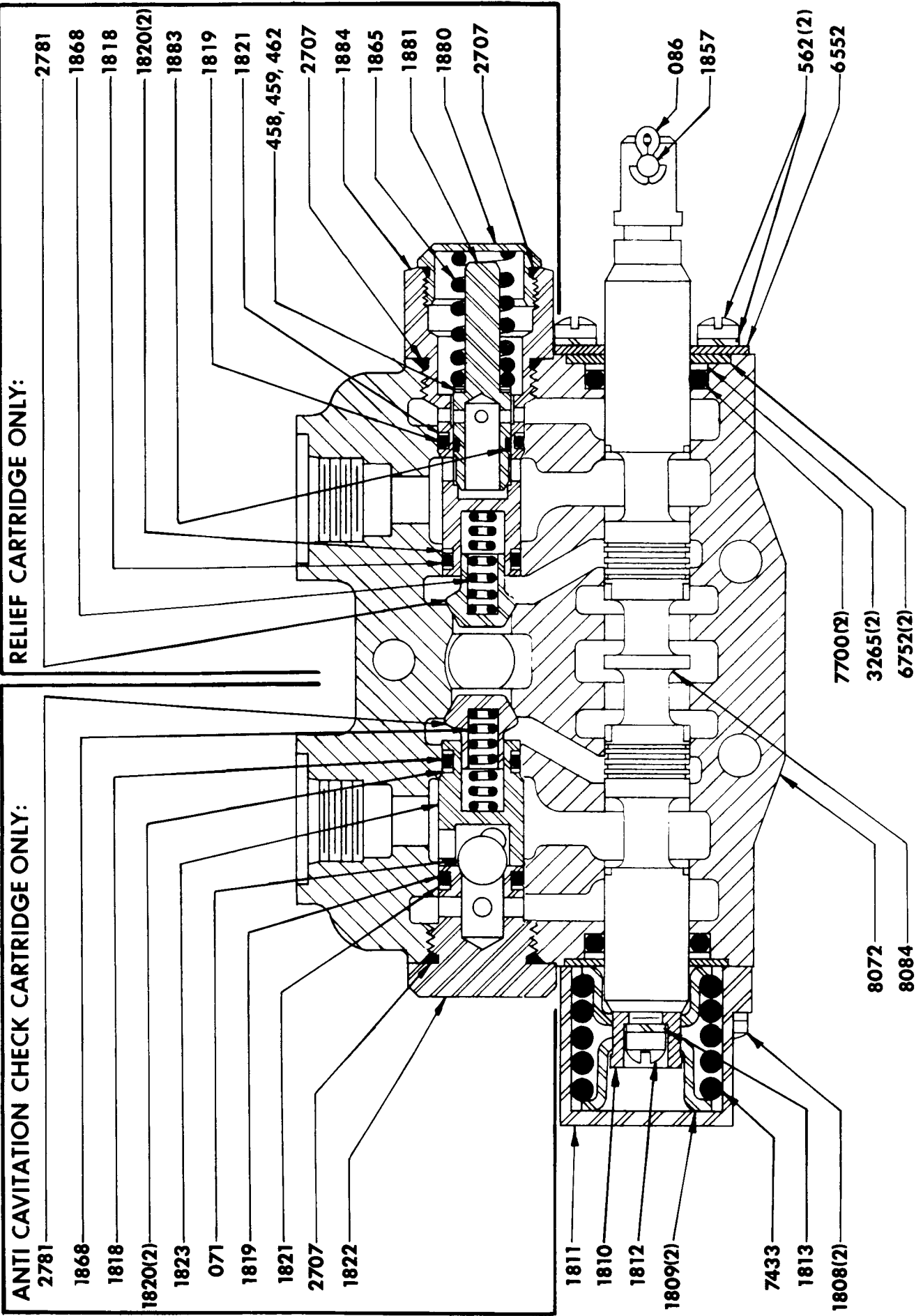


FIG 5

CONTROL VALVE SECTION - LIFT AND CROWD CIRCUITS

PARTS LIST - FIG 5

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

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

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

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

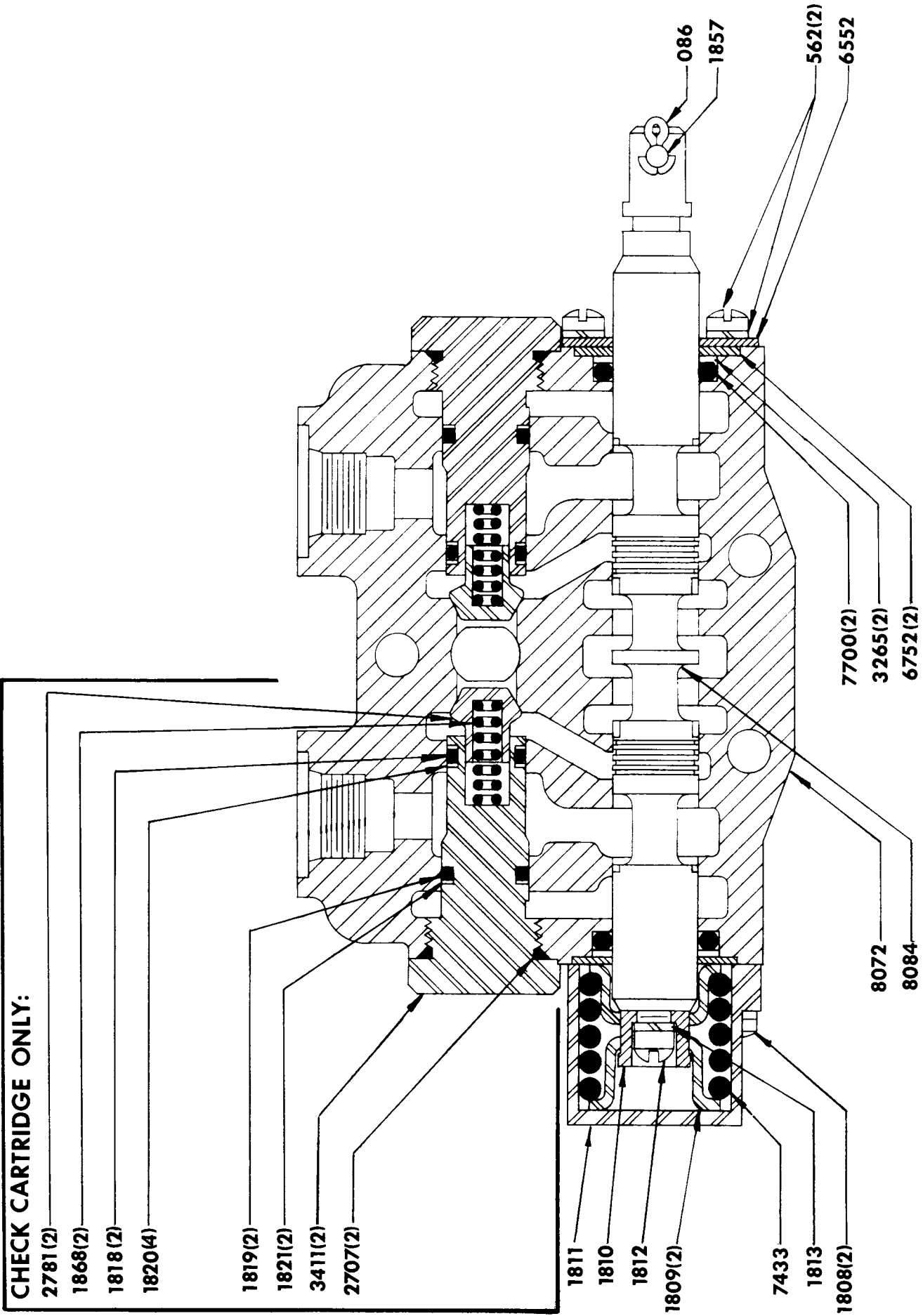


FIG 6

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

PARTS LIST - FIG 6

Gresen Part No.	ARPS Part No.	Description	Quantity Per Section
086	*	Handle Pin Cotter.....	1
562	*	Machine Screw and Lockwasher.....	2
1808	*	Bonnet Screw.....	2
1809	*	Stop Collar.....	2
1810	*	Spool Collar.....	1
1811	*	Bonnet.....	1
1812	*	Spool Assembly Screw.....	1
1813	*	Spool Assembly Screw Lockwasher.....	1
1818	**	Check Plug O-Ring Seal (Inner).....	2
1819	**	Check Plug O-Ring Seal (Outer).....	2
1820	**	Back-Up Washer (Inner).....	4
1821	**	Back-Up Washer (Outer).....	2
1857	*	Handle Pin.....	1
1868	*	Lift Check Spring.....	2
2707	**	Lift Check Plug O-Ring Seal.....	2
2781	*	Lift Check Poppet.....	2
3265	**	Back-Up Washer.....	2
3411	*	Lift Check Plug.....	2
6552	*	Seal Plate Retainer.....	1
6752	*	Seal Retainer.....	2
7433	*	Centering Spring.....	1
7700	**	Spool O-Ring Seal.....	2
8072	*	Center Section Housing.....	1
8084	*	Four-Way Spool.....	1
	10156	Control Valve Section - Actuate (Bucket), Swing, and Stabilizer Circuits, consisting of above listed parts.....	1
		<i>NOTE - Two Orifice Plates (10257) must be added to complete Swing Section.</i>	
K-6027	10315	Control Valve Section Seal Kit - Actuate (Bucket), Swing, and Stabilizer Circuits, 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-6005A	10313	Check Cartridge Seal Kit; consisting of: 1818 (1), 1819 (1), 1820 (2), 1821 (1), and 2707 (2).....	2

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

MAIN SYSTEM RELIEF VALVE (1825 PSI)

LOCATION: LEFT HAND VALVE COVER

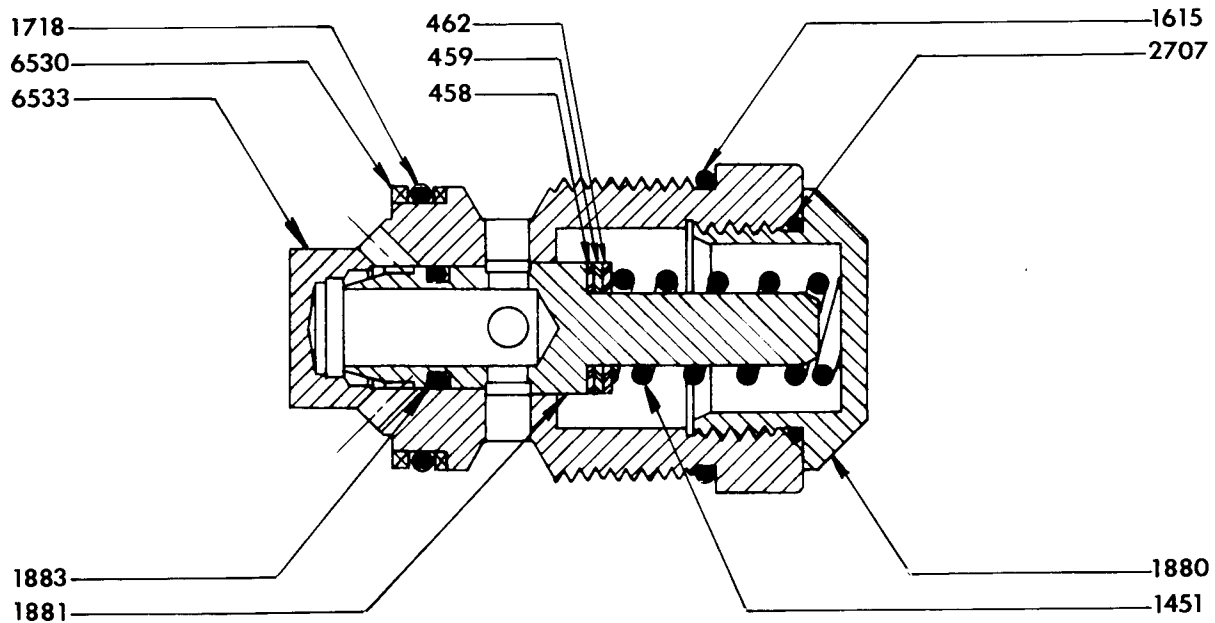


FIG 7

MAIN SYSTEM RELIEF VALVE

PARTS LIST - FIG 7

Gresen Part No.	ARPS Part No.	Description	Required
458	*	Shim, .040" Thick)	
459	*	Shim, .020" Thick).....	as required
462	*	Shim, .010" Thick)	
1451	*	Spring (1751-2200 PSI Crack).....	1
1615	**	O-Ring Seal.....	1
1718	**	O-Ring Seal.....	1
1880	*	Relief Cap.....	1
1881	**	Relief Poppet.....	1
1883	**	Piston Ring.....	1
2707	**	O-Ring Seal.....	1
6530	**	Back-Up Washer.....	2
6533	*	Body.....	1
	10184	Main System Relief Valve, consisting of above listed parts.....	1
	10172	Seal and Service Kit; consisting of: 1615 (1), 1718 (1), 1881 (1), 1883 (1), 2707 (1), and 6530 (2).....	1

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

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

CROSS-OVER RELIEF VALVE

LOCATED IN SWING CIRCUIT OF HYDRAULIC SYSTEM

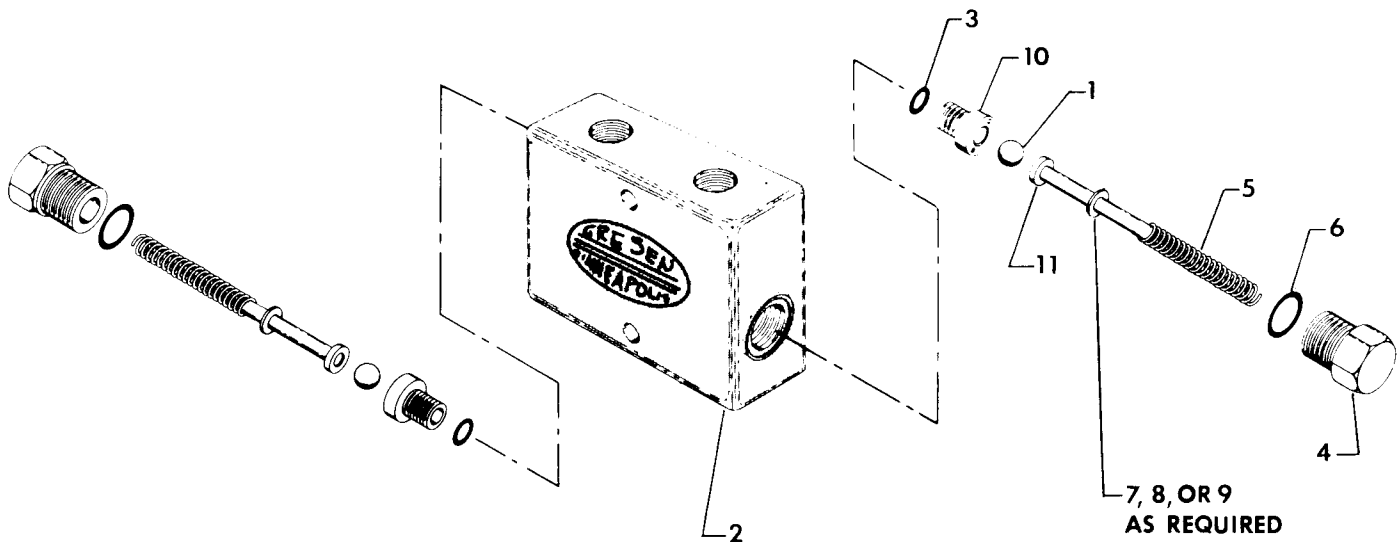


FIG 8

CROSS-OVER RELIEF VALVE

PARTS LIST - FIG 8

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
	10179	Six-Spool Valve.....	1
K-6109	10160	Tie Rod Kit (Six-Spool) contains three Studs and three Stud Nuts.....	1
	10183	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

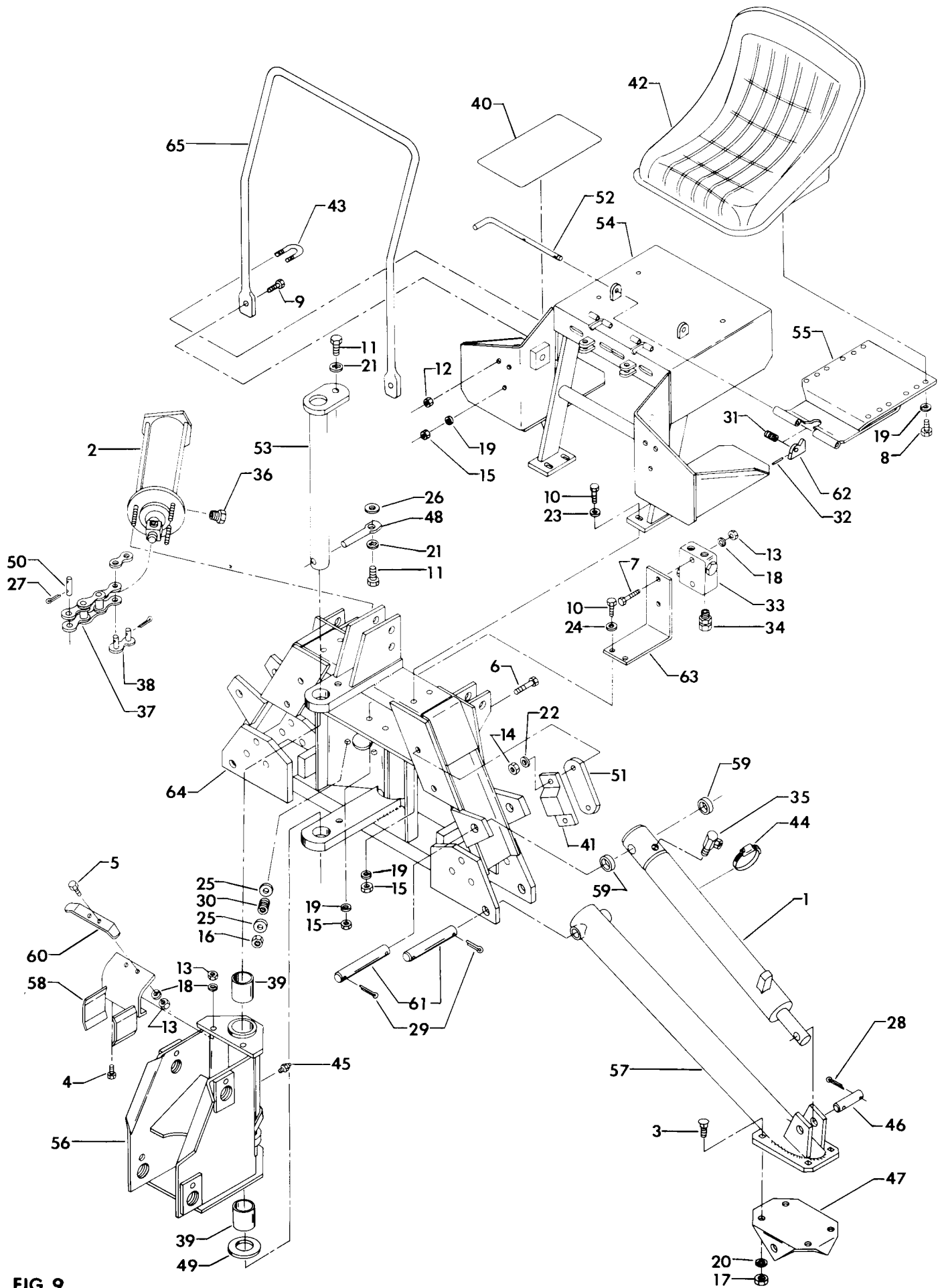


FIG 9

FIG 9 - Parts List

Index	Description	Part No.
1	Hydraulic Cylinder, 2-1/2 Dia. x 14-1/2 Stroke.....	031
2	Hydraulic Cylinder, 3" Dia. x 8" Stroke.....	079
3	Carr. Bolt, 1/2 NC x 1-1/4....	6664
4	Bolt, 5/16 NC x 7/8.....	6791
5	Bolt, 5/16 NC x 1-1/4.....	6798
6	Bolt, 5/16 NC x 2".....	6807
7	Bolt, 5/16 NC x 2-1/2.....	6813
8	Bolt, 3/8 NC x 3/4.....	6829
9	Bolt, 3/8 NF x 7/8.....	6838
10	Bolt, 3/8 NF x 1-1/4.....	6859
11	Bolt, 1/2 NF x 1".....	7012
12	Nut, 1/4 NC.....	7401
13	Nut, 5/16 NC.....	7431
14	Lock Nut, 5/16 NC.....	7433
15	Nut, 3/8 NF.....	7461
16	Lock Nut, 7/16 NF.....	7487
17	Nut, 1/2 NC.....	7501
18	Lockwasher, 5/16.....	8071
19	Lockwasher, 3/8.....	8079
20	Lockwasher, 1/2.....	8101
21	Lockwasher, 1/2 Shakeproof ...	8103
22	Washer, 5/16 Flat.....	8151
23	Washer, 3/8 Flat.....	8156
24	Washer, 3/8 SAE.....	8158
25	Washer, 7/16 Flat.....	8163
26	Washer, 1/2 SAE.....	8173
27	Cotter Pin, 3/16 x 1-1/4....	8582
28	Cotter Pin, 3/16 x 1-1/2....	8584
29	Cotter Pin, 1/4 x 1-1/2....	8602
30	Spring.....	8673
31	Spring.....	8711
32	Roll Pin, 1/8 x 1-3/4.....	8944
33	Cushion Valve.....	10442
34	Adapter Union, 3/8 M x 3/8 F.....	11109
35	Adapter Union, 3/8 M x 3/8 F x 90°.....	11127
36	Reducer Adapter, 1/2 M x 3/8 F.....	11154
37	Three-Link Section, 140....	11415
38	Connector Link, 140.....	11423
39	Bronze Bushing.....	11999
40	Foot Pad Surfacing.....	12905
41	Bumper Stop.....	13681
42	Seat.....	13912
43	U-Bolt, with nuts.....	14002
44	Hose Clamp, 2-13/16 to 3-3/4.....	14157

Index	Description	Part No.
45	Grease Fitting, 1/8 NPT.....	14500
46	Stabilizer Rod Pin.....	502026
47	Stabilizer Pad.....	850118
48	Pin Retainer - Large.....	851123
49	Thrust Washer.....	851136
50	Chain Pin.....	851137
51	Stop Block.....	852026
52	L-Pin.....	852183
53	Swing Shaft Weldment.....	854030
54	Seat Adapter Weldment.....	854050
55	Seat Plate Weldment.....	854055
56	Swing Frame Weldment.....	854110
57	Stabilizer Arm Weldment....	854145
58	Hose Retainer Weldment.....	854155
59	Cylinder Base Spacer.....	854177
60	Hose Strap.....	854179
61	Stabilizer Pin.....	854187
62	Stop Block.....	854189
63	Mount Bracket.....	854527
64	Main Frame Weldment.....	854550
65	Handle Loop.....	855167

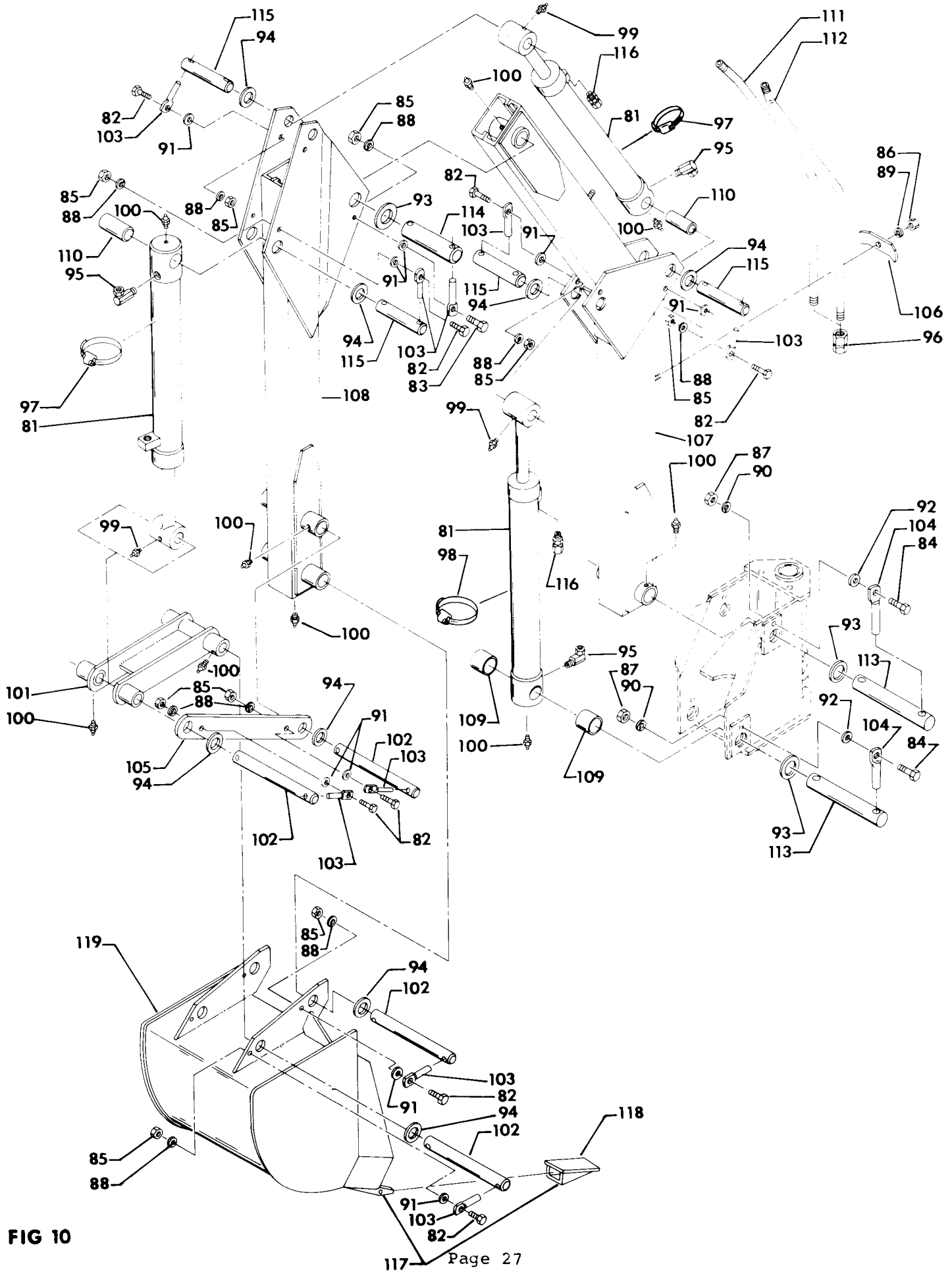
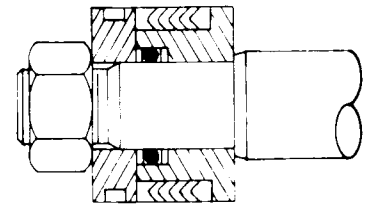
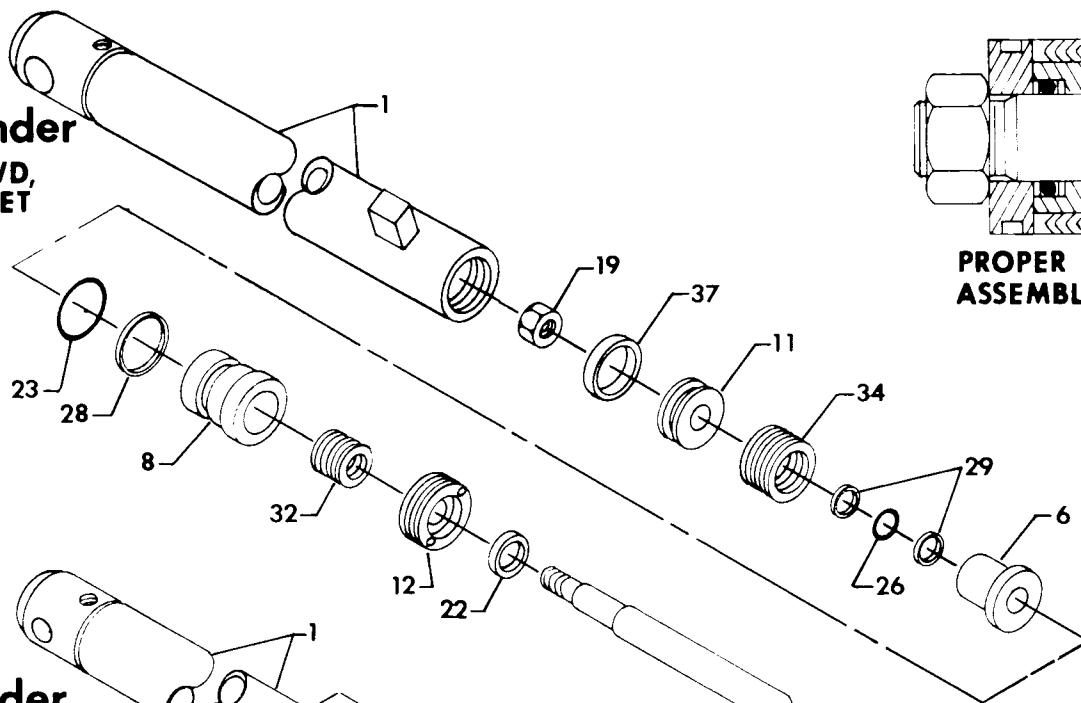


FIG 10

FIG 10 - Parts List

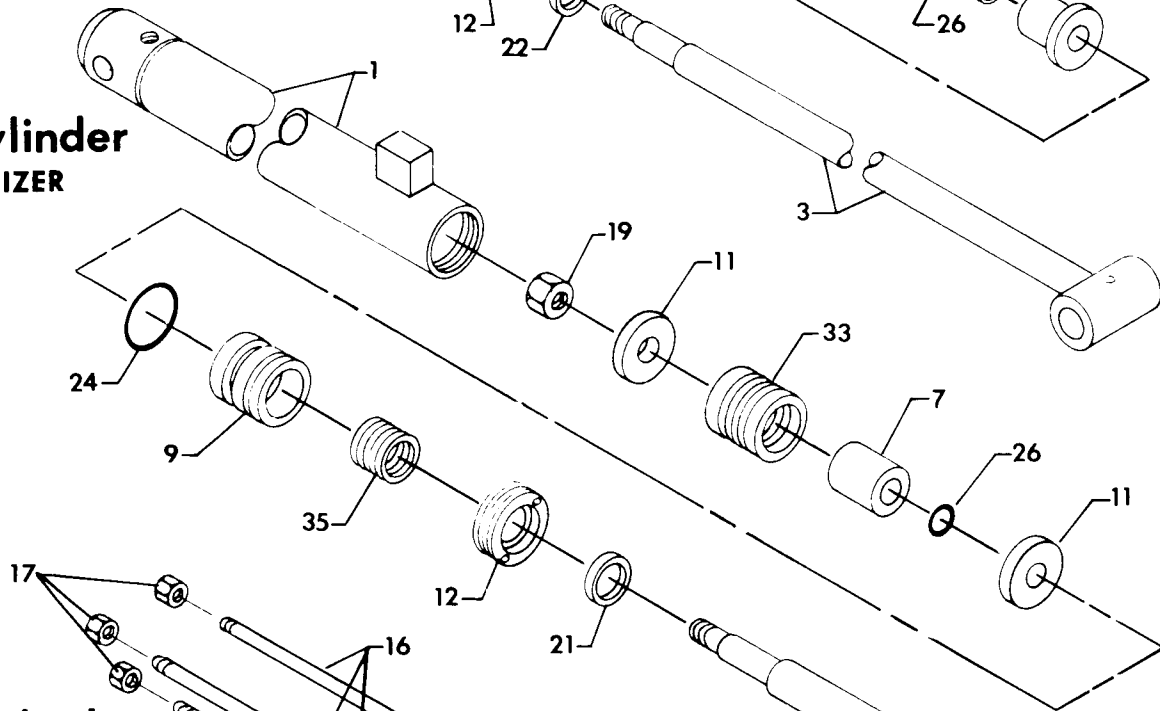
Index	Description	Part No.
81	Hydraulic Cylinder, 2-1/4 Dia. x 18" Stroke.....	078
82	Bolt, 3/8 NF x 1-1/4.....	6859
83	Bolt, 3/8 NF x 1-1/2.....	6864
84	Bolt, 1/2 NF x 1-3/4.....	7032
85	Nut, 3/8 NF.....	7461
86	Nut, 7/16 NF.....	7484
87	Nut, 1/2 NF.....	7511
88	Lockwasher, 3/8.....	8079
89	Lockwasher, 7/16.....	8086
90	Lockwasher, 1/2.....	8101
91	Washer, 3/8 SAE.....	8158
92	Washer, 1/2 SAE.....	8173
93	Washer, 1-1/2 x 2-1/4.....	8232
94	Washer, 1-1/4 x 1-7/8.....	8290
95	Adapter Union, 3/8 M x 3/8 F x 90°.....	11127
96	Adapter Union, 3/8 F x 3/8 F.....	11146
97	Hose Clamp, 1-13/16 to 2-3/4.....	14140
98	Hose Clamp, 2-13/16 to 3-3/4.....	14157
99	Grease Fitting, 1/8 NPT.....	14500
100	Grease Fitting, 1/4-28.....	14505
101	Bucket Link Weldment.....	851090
102	Bucket Pin.....	851116
103	Pin Retainer - Small.....	851122
104	Pin Retainer - Large.....	851123
105	Guide Link.....	851138
106	Hose Strap.....	852182
107	Boom Weldment.....	854060
108	Dipperstick Weldment.....	854090
109	Cylinder Spacer.....	854176
110	Cylinder Base Bushing.....	854178
111	Pipe Line - RH.....	854181
112	Pipe Line - LH.....	854182
113	Lift & Boom Pin.....	854183
114	Dipperstick Pin.....	854184
115	Cylinder Pin.....	854186
116	Adapter Union, 3/8 M x 3/8 F.....	11109
117	Tooth and Shank Assembly....	13613
118	Tooth Point.....	13617
119	Bucket Complete - 12".....	W35
119	Bucket Complete - 18".....	W36
119	Bucket Complete - 24".....	W37
119	Bucket Complete - 36".....	W38
119	Bucket Complete - 40".....	W39

078 Cylinder
LIFT, CROWD,
AND BUCKET

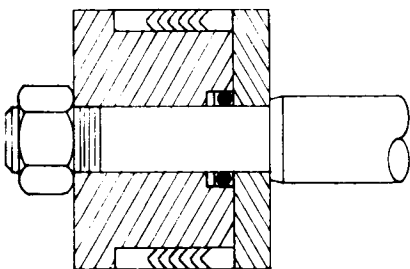
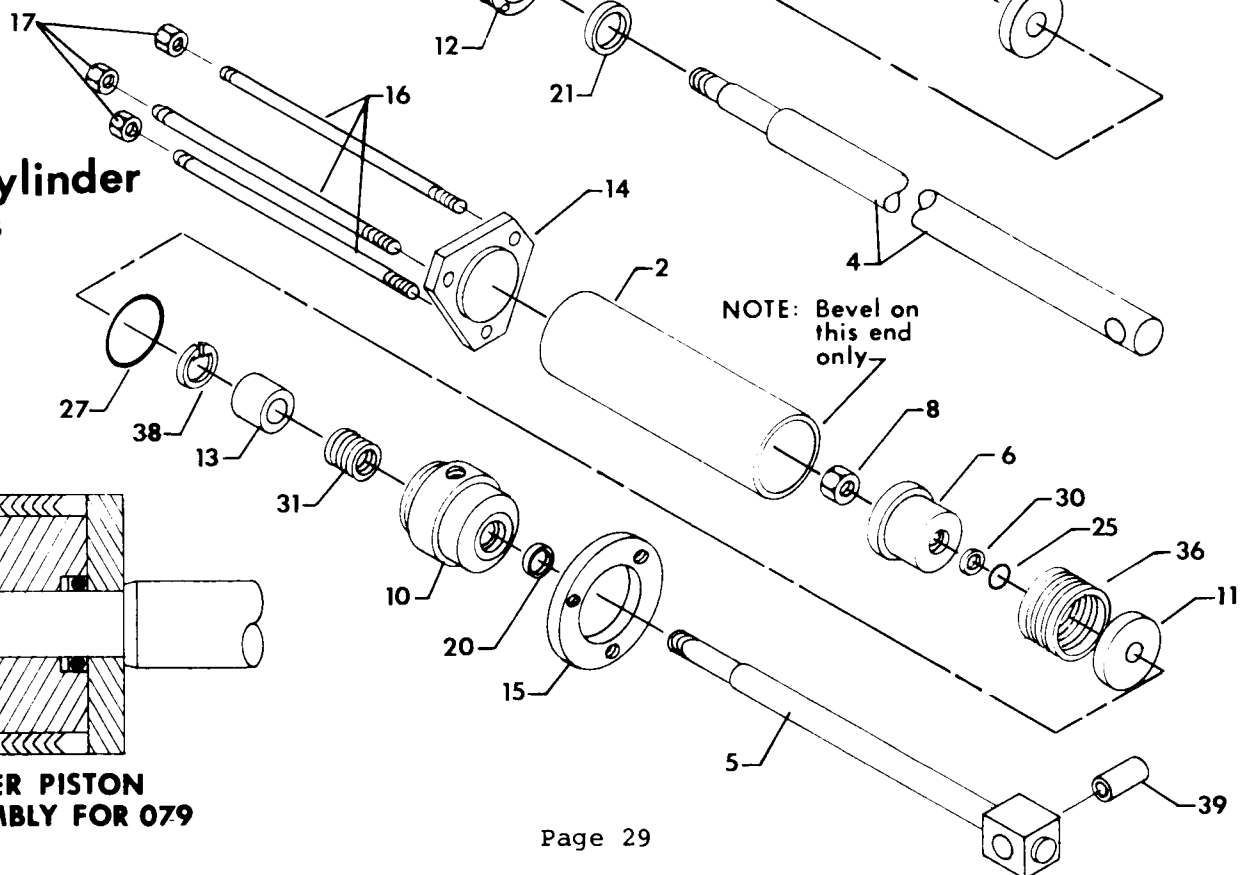


**PROPER PISTON
ASSEMBLY FOR 078**

031 Cylinder
STABILIZER



079 Cylinder
SWING



**PROPER PISTON
ASSEMBLY FOR 079**

HYDRAULIC CYLINDERS - PARTS LIST

Index	Description	078:	031:	079:
1	Cylinder Tube Weldment.....	904935	905265	
2	Cylinder Tube.....			906201
3	Piston Rod Weldment.....	904910		
4	Piston Rod.....		905271	
5	Piston Rod Assembly, with Bushing.....			906205
6	Piston, with O-Ring and Back-Ups.....	904920		906090
7	Piston.....		905078	
8	Gland, with O-Ring and Back-Up.....	904925		
9	Gland.....		905027	
10	End Cap.....			906087
11	Washer.....	904916	905126	906027
12	Gland Cap.....	904918	905028	
13	Spacer Ring.....			906086
14	End Plate.....			906088
15	Nut Plate.....			906091
16	Bolt.....			906202
17	Lock Nut, 7/16 NF.....			7487
18	Lock Nut, 3/4 NF.....			7574
19	Lock Nut, 7/8 NF.....	7609	7609	
20	Oil Seal, 1-1/4 OD x 1" ID.....			*
21	Oil Seal, 1-7/8 OD x 1-1/2 ID.....		*	
22	Oil Seal, 1-5/8 OD x 1-1/4 ID.....	*		
23	O-Ring, 2-1/4 OD x 2-1/16 ID.....	*		
24	O-Ring, 2-9/16 OD x 2-3/8 ID.....		*	
25	O-Ring, 1" OD x 3/4 ID.....			*
26	O-Ring, 1-1/4 OD x 1" ID.....	*	*	
27	O-Ring, 3" OD x 2-3/4 ID.....			*
28	Back-Up Ring, 2-1/4 OD x 2-1/16 ID.....	*		
29	Back-Up Ring, 1-1/4 OD x 1" ID.....	*		
30	Back-Up Ring, 1" OD x 3/4 ID.....			*
31	Packing Assembly, 1-1/2 OD x 1" ID x .824.....			*
32	Packing Assembly, 1-3/4 OD x 1-1/4 ID x .824.....	*		
33	Packing Assembly, 2-1/2 OD x 2" ID x 1-1/4.....		*	
34	Packing Assembly, 2-1/4 OD x 1-3/4 ID x .824.....	*		
35	Packing Assembly, 2" OD x 1-1/2 ID x .824.....		*	
36	Packing Assembly, 3" OD x 2-1/2 ID x 1-3/8.....			*
37	Wear Ring, 2-1/4 OD x 2" ID x 1/4.....	*		
38	Retaining Ring, N5000-162.....			*
39	Chain Pin Bushing.....			11413
	For Complete Cylinder order.....	078	031	079
	Seal Repair Kit, consists of: #19 (1), #22 (1), #23 (1), #26 (1), #28 (1), #29 (2), #32 (1), #34 (1), #37 (1).....	904930		
	Seal Repair Kit, consists of: #21 (1), #24 (1), #26 (1), #33 (1), #35 (1).....		905040	
	Seal Repair Kit, consists of: #20 (1), #25 (1), #27 (1), #30 (1), #31 (1), #36 (1), #38 (1).....			906000
*	Not available as a separate repair part, order appropriate Seal Repair Kit.			

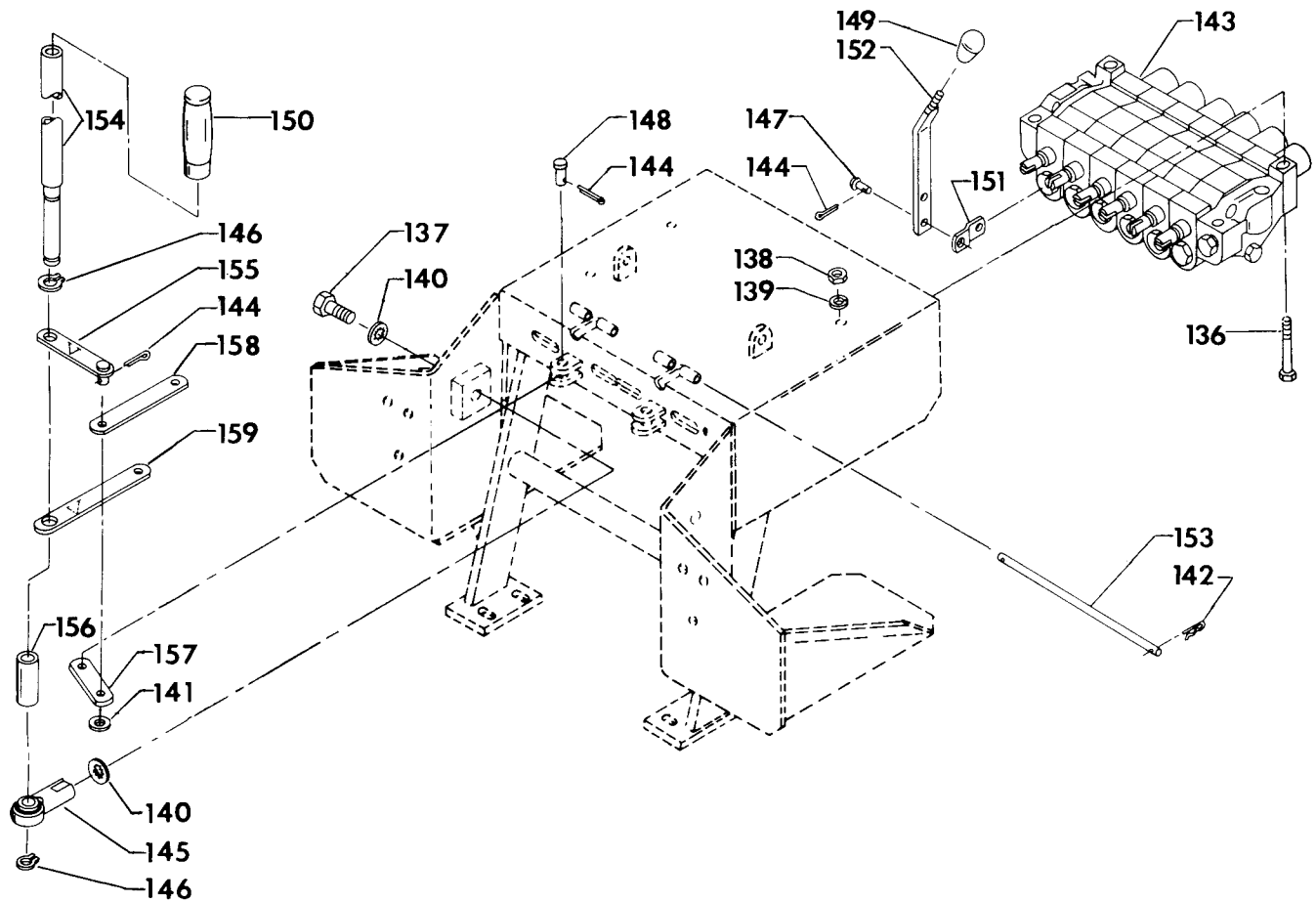


FIG 11

PARTS LIST - FIG 11

Index	Description	Part No.	Index	Description	Part No.
136	Bolt, 5/16 NC x 2-3/4.....	6819	147	Clevis Pin, 5/16 x 1".....	13437
137	Bolt, 5/8 NF x 2-1/2.....	7154	148	Clevis Pin, 3/8 x 1".....	13438
138	Nut, 5/16 NC.....	7431	149	Ball Knob.....	14064
139	Lockwasher, 5/16.....	8071	150	Handle Grip.....	14067
140	Lockwasher, 5/8 Shakeproof ...	8114	151	Link.....	852181
141	Washer, 3/8 SAE.....	8158	152	Stabilizer Lever.....	852258
142	Wire Form Cotter.....	8618	153	Pivot Pin.....	852516
143	Valve, Six-Spool (See pages 19-23 for breakdown).....	10179	154	Control Stick Weldment.....	853065
144	Alloy Cotter Pin, 1/8 x 7/8.....	11503	155	Push Link Weldment.....	853075
145	Ball Joint.....	11995	156	Spacer Tube.....	853234
146	Retaining Ring.....	13427	157	Pivot Link.....	853236
			158	Inside Spool Link.....	853237
			159	Outside Spool Link.....	853238

SPECIFICATIONS

Bucket Data:

BUCKET	WIDTH	SAE STRUCK CAPACITY	HEAPED CAPACITY	SHIPPING WEIGHT
W35	12 in.	1.20 cu.ft.	2.00 cu.ft.	75 lbs.
W36	18 in.	1.80 cu.ft.	2.75 cu.ft.	94 lbs.
W37	24 in.	2.50 cu.ft.	3.25 cu.ft.	110 lbs.
W38	36 in.	3.10 cu.ft.	4.00 cu.ft.	145 lbs.
W39	40 in.	3.50 cu.ft.	4.50 cu.ft.	161 lbs.

Cylinder Data:

CYLINDER	PISTON DIA.	STROKE	RETRACTED LENGTH	EXTENDED LENGTH	ROD DIA.	PIVOT PIN DIA.	TYPE OF ACTION
*078 - BOOM	2-1/4	18	26	44	1-1/4	1-1/2 Base 1-1/4 Rod	DA
*078 - DIPPER	2-1/4	18	26	44	1-1/4	1-1/2 Base 1-1/4 Rod	DA
*078 - BUCKET	2-1/4	18	26	44	1-1/4	1-1/2 Base 1-1/4 Rod	DA
031 - STABILIZER	2-1/2	14-1/2	22-1/16	36-9/16	1-1/2	7/8	DA
079 - SWING	3**	8	DNA***	DNA***	1	DNA***	SA

* Identical cylinders used for three functions.




** Effective area is 3" diameter less 1" diameter for rod, or 6.28 sq. in.
(pull type cylinder).

*** Spherical socket mounted cylinder.

TORQUE VALUES

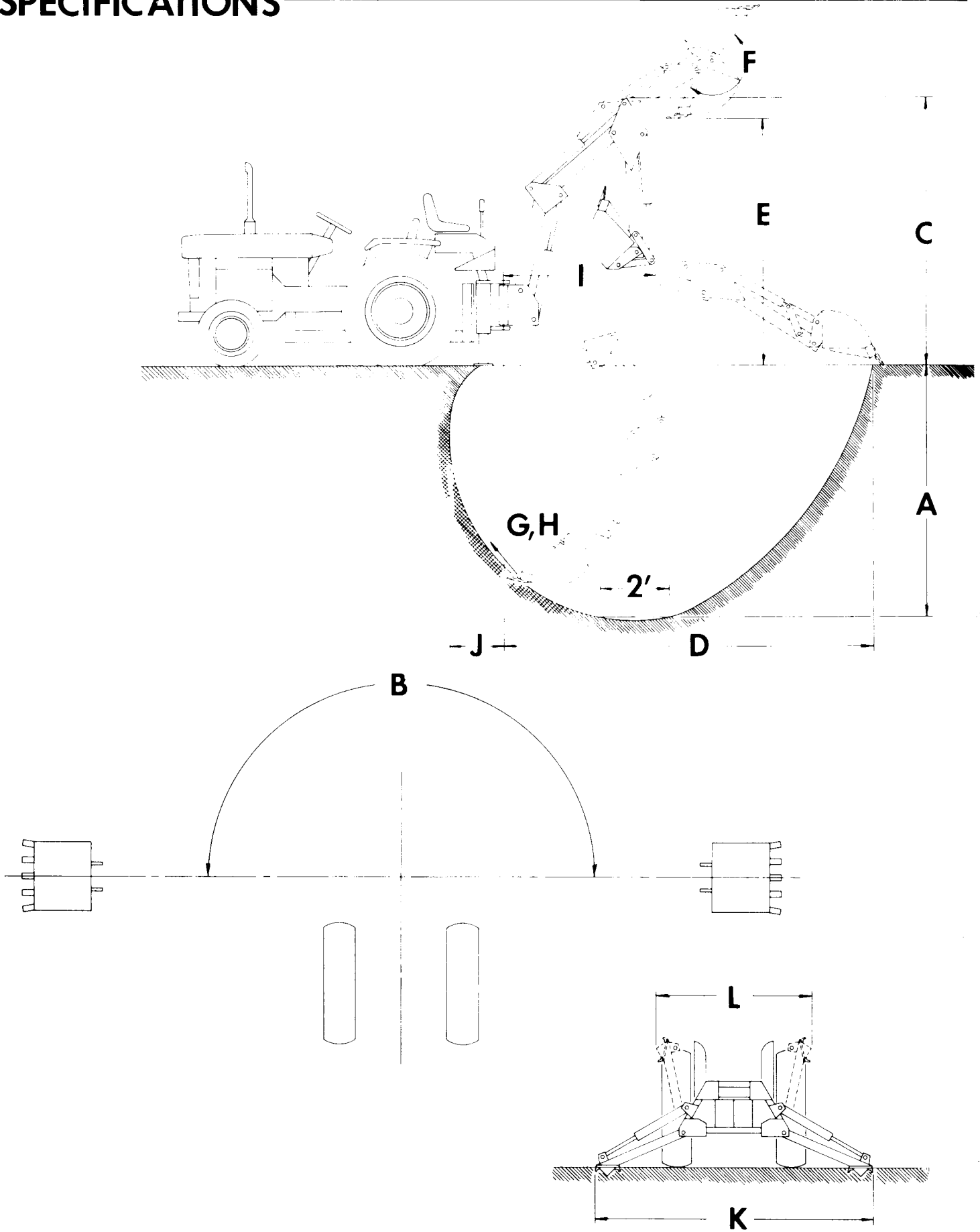
Common bolts and nuts.

Tightening Torque \pm 20%

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

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

SPECIFICATIONS



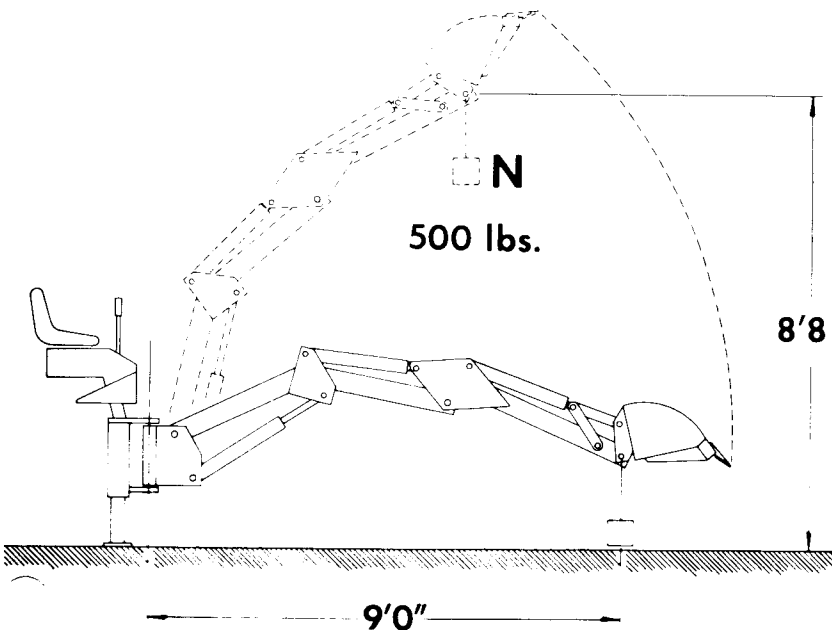
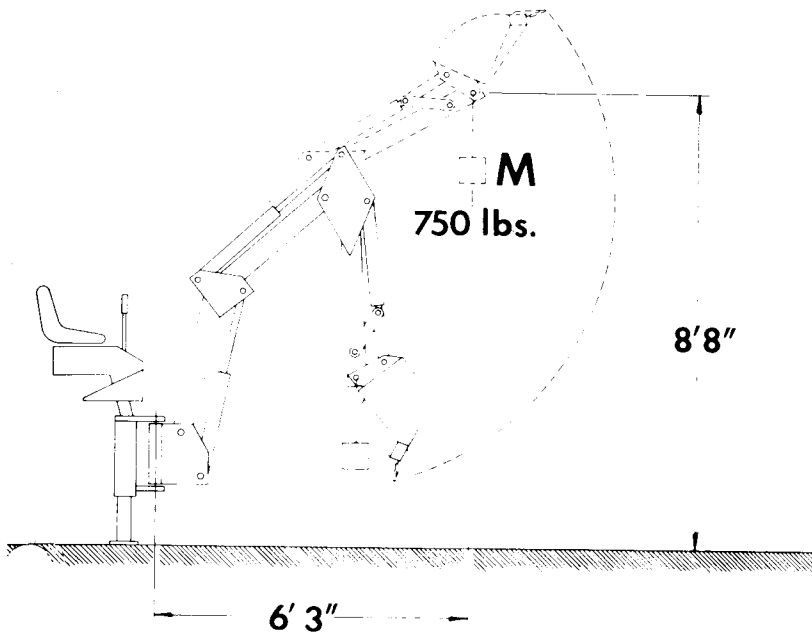
SPECIFICATIONS

General Data:

- A. Digging Depth.....7' 0"*
(two foot flat bottom)
- B. Swing Arc.....180°*
- C. Loading Height.....7' 1"*
- D. Reach from Center Line of
Swing Pivot.....10' 8"*
- E. Transport Height (maximum).....7' 9"*
- F. Bucket Rotation.....180°*
- G. Bucket Roll Force.....4000 lbs.*
(at 1825 PSI)
- H. Bucket Pry-Out Force.....
.....in excess of 7000 lbs.**
- I. Transport Overhang.....4' 5"
(from center line of
swing pivot)
- J. Undercut.....1' 5"
(from center line of
swing pivot)
- K. Hydraulic Stabilizer Spread,
down.....8' 0"
- L. Hydraulic Stabilizer Spread,
up.....4' 6"
- M. Dipperstick Lift Ability....750 lbs.*
(boom up, lifting with
dipper cylinder only,
weight attached as
shown, at 1825 PSI)
- N. Boom Lift Ability.....500 lbs.*
(dipper arm and boom
extended, lifting with
boom cylinder only,
weight attached as
shown, at 1825 PSI)
- O. Shipping Weight.....1000 lbs.
(less bucket)

* Meets specifications definitions of IEMC.

** Depending on fulcrum established by bucket attitude.



SERVICE NOTES

SERVICE NOTES

Limited WARRANTY — 90 Day

ARPS DIVISION OF CHROMALLOY WARRANTS EACH NEW PRODUCT TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF 90 DAYS FROM THE DATE OF DELIVERY TO THE ORIGINAL RETAIL PURCHASER OR DATE OF FIRST RENTAL.

LIMITATIONS:

1. Obligation under this warranty is limited to repair or replacement of parts which ARPS determines to be defective.
2. This warranty does not apply to components or other trade accessories not manufactured by ARPS. Customer shall rely solely on the existing warranty, if any, of the respective manufacturers thereof.
3. Products which have been operated improperly, subjected to abuse, negligence, accident, or upon which unauthorized repairs or alterations have been made, are not covered by warranty. It does not cover depreciation or damage caused by normal wear.
4. ARPS is not liable for warranty or service transportation expenses incurred between the customer and dealer.
5. Parts may not be returned to ARPS without authorization. Warranty shipping charges between the dealer and ARPS, will be paid by ARPS, if authorization has been given to the dealer.
6. Form AWAR-674 must be received by ARPS within 30 days of the date of repair to be considered for warranty.
7. This warranty is in lieu of all other warranties, expressed or implied, and there are no warranties of merchantability or of fitness for a particular purpose; in no event will ARPS be liable for consequential or special damages.
8. In keeping with ARPS' policy of constant improvement, we reserve the right to change our specifications or design at any time.

1-78



ARPS DIVISION OF CHROMALLOY

NEW HOLSTEIN WISCONSIN 53061 U.S.A.
PHONE 414/898-4291

