Kelley 30
BACK-HOE

OWNER'S MANUAL

Operating Instructions

KELLEY MANUFACTURING CORPORATION
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IMPORTANT!

KELLEY MANUFACTURING and its marketing representatives (including its distributors and dealers) accept no warranty liability whatsoever resulting from the use of the KELLEY backhoe and/or its accessories unless a signed and completed Warranty Registration Form is returned to the KELLEY factory within ten days after the KELLEY backhoe is delivered to the customer.

Instructions for Completing Warranty Registration Form

Dealer must complete the Warranty Registration Form in triplicate. Dealer and customer must sign the form. Return the yellow copy of the form to the factory. Dealer takes the pink copy. Customer retains the blue copy in his manual.

Kelley 30 Backhoe
Owner's Manual

AUGUST 1980

READ THIS PAGE BEFORE OPERATING YOUR BACKHOE

Do not operate your backhoe until you do the following:

1. Read this operator's manual thoroughly.
2. Have your dealer complete and return the Warranty Registration Form that accompanies this manual.

If you did not receive a Warranty Registration Form, contact your dealer. He will be able to obtain one for you. It is important that you return your Warranty Registration Form. Your warranty is valid only if a signed Warranty Registration Form is returned to us within ten days after the delivery of your backhoe. Also, should a safety-related problem develop concerning your backhoe, your returned Warranty Registration Form enables us to notify you directly about the problem.

⚠ WARNING

This manual is provided for you the operator to familiarize yourself with the operation, safety precautions and maintenance of this unit. This safety alert symbol ⚠ is used throughout this manual to bring to your attention the safety precautions and potentially dangerous situations that can cause injury or machine malfunction. Read the warnings below carefully before operating the backhoe. It is extremely important that you the operator understand fully the mounting, hydraulic connections, and the operation of the backhoe. Understand thoroughly the proper method of trenching or digging. Do not use this backhoe for anything other than for what it is designed. Otherwise, injury and/or machine failure may result. Follow directions and methods carefully and instruct others that may operate this machine as to its proper use. Insist that they read this manual carefully. *Let no one operate this unit until he has read the manual and understands it fully.*

1. Your backhoe must be mounted only on a tractor equipped with a Category I or Category II hitch. This backhoe is not safe to operate unless it is mounted on a Category I or Category II hitch. Failure to do so may result in serious injury or death.

2. When servicing backhoe, make sure all moving parts are on the ground.

3. To avoid injury from escaping pressurized hydraulic oil, move the control levers in all directions before disconnecting any hoses, steel lines, or couplers.

4. Keep foot pads clean to prevent foot slipping when the operator mounts the backhoe.

5. Do not transport your backhoe with the bucket fully raised.

6. Be sure your tractor has sufficient front end weight to operate and transport the backhoe.

7. When traveling on highways and roads, be sure the boom and stabilizers are in the fully raised position and transport chains are in the transport lock position.

8. When traveling on the road with your backhoe, use proper safety lights and warning signs. Check local regulations.

9. When traveling with your backhoe, do not make sudden starts, stops or turn at high speeds. Do not exceed safe speed limits on rough ground. Do not make sudden starts when climbing grades.

10. Always wear protective headgear while operating the backhoe.

11. Be sure to lower the stabilizers to the ground before operating the backhoe.

12. Watch overhead low hanging wires. Do not touch wires with any part of the backhoe.

13. Do not operate from any other position than the operator's seat.

14. Before swinging the backhoe for any reason, make sure you have room to swing and that all persons are clear of the backhoe.

15. When swinging the backhoe to either side, do not slam the swing into the stops.

16. Be extra careful when working on hillsides and close to ditches or any place where danger of tipping or sliding is possible.

17. Do not dig under the stabilizers or backhoe, as a cave-in could occur.

18. Be sure you are not digging over underground wiring or other underground obstructions.

19. When digging to either side and close to the tractor, be extremely careful that the backhoe does not contact the stabilizers as serious damage could occur.

20. Do not attempt to raise the tractor off the ground or move the tractor forward or backward using the boom or stabilizers.

21. When leaving the backhoe for any reason, lower the bucket to the ground for safety.

22. Never leave unit unattended with engine running.

23. To prevent injury during assembly, installation, operation, adjustment, or removal of the backhoe, it is recommended that gloves, safety glasses or face shield, and safety toe shoes be worn.

24. Do not wear loose clothing while operating or working near the backhoe. Keep hair and clothing away from all moving parts of the backhoe.

25. Only the operator should be near the backhoe during operation. Keep all others a minimum of fifty feet away from your work area.

26. Keep your work area clear of obstacles at all times.

27. Children should never be permitted to operate the backhoe.

28. Do not attempt any repairs, maintenance, or adjustments of your backhoe while it is in operation. Always turn off your tractor before making repairs or adjustments or performing maintenance procedures.

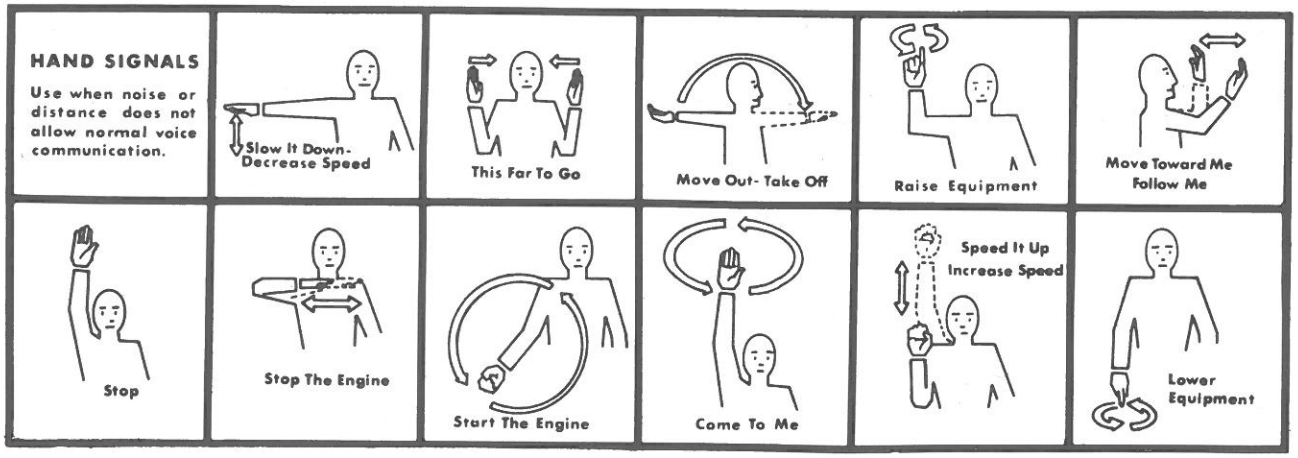
29. When the use of hand tools is required to perform any part of assembly, installation, removal or adjustment of the backhoe, be sure that the tools which are used are designed and recommended by the tool manufacturer for the specific task in which they are being used.

30. Keep all bolts and nuts tight. Replace any damaged or worn parts such as hydraulic hoses and fittings immediately. Always use replacement parts of equivalent strength and quality.

31. Perform all maintenance procedures as recommended.

32. Anytime hoses are disconnected from your backhoe, cover all open ports with protective caps or plugs in order to prevent contamination of the oil supply.

33. Use the hand signals shown below for safety during operation.



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General Specifications

⚠ CAUTION Your backhoe must be mounted only on a tractor equipped with a Category I or Category II hitch. Failure to do so voids all warranties associated with this equipment. This backhoe is not safe to operate unless it is mounted on a Category I or Category II hitch. Failure to do so may result in serious injury or death.

⚠ CAUTION The backhoe valve must be compatible with the hydraulic system that will power it. Make sure that if you are powering the backhoe with an open center hydraulic system, the backhoe is set for open center operation. If you are using a closed center hydraulic system, the valve must be set for closed center operation. If you are using a power beyond set-up, the valve must be converted for this use. See the appropriate section of this manual on how to convert your valve. If you do not know how your valve is currently set up, check with your dealer.

Your backhoe unit has been filled with oil at the factory. The oil in the unit is compatible with most tractor manufacturers' oil. Do not move any control levers on the unit until after hydraulic connections to the tractor or the independent hydraulic system have been made.

Hydraulic System Requirements: The *Kelley* backhoe has been designed to be operated at a flow rate of 5-10 GPM (19-37 liters per minute) at PSI 1900 (154 Kp/cm^2). Any tractor hydraulic system used in connection with this backhoe must have a PSI rating of 1900 minimum..

Since many tractor systems exceed a flow rate of 10 GPM, the flow may have to be adjusted either by (1) throttling the engine RPM down to obtain an acceptable adjuster, slow engine or "turtle" it down for a flow rate between 5 to 10 GPM at a comfortable engine RPM. By adjusting the flow rate correctly, you will prevent sudden shock loads on the cylinders, pins, hoses, seals, etc. This results in a smooth operation and reduced maintenance costs and down time.

Mounting The Backhoe

1. If you are not using a Kelley independent hydraulic system, proceed to Step 2.

   Install the independent hydraulic system onto the backhoe according to the following procedures. Refer to Figure 1 and page 38 of this manual for the identification of the parts. During assembly, use pipe compound on all pipe fittings. None is required on the O'ring fittings.

   a. Insert the 3/4" close nipple into the "out" port of the reservoir. (This is the port that is located on the left side of the reservoir.)

   b. Attach the filter assembly to the end of the 3/4" close nipple. The outlet hole must be down.

c. Attach the reservoir to the backhoe by bolting it through the four holes drilled in the chain anchor located below the foot pads. Use the 5/8" capscrews, lockwashers, and nuts.

d. Bolt the torque bar to the flange mounting of the pump. Use the 1/2" capscrews, lockwashers, and nuts.

e. Attach the O'ring pressure fitting and the 1/2" street ell to the outlet port of the pump per the illustration on page 38.

f. Attach the O'ring suction fitting and 1" to 3/4" reducer bushing to the suction port of the pump per illustration in Figure 1.

g. Place the PTO adapter on the pump shaft and secure it with the two set screws.

After tightening set screws take a small punch and place into set screw, set them and then retighten.

h. Attach the pump assembly to the PTO shaft of the tractor.

i. Attach one end of the torque chain to the hole in the torque bar. Use 3/8" hardware in this order: 3/8" x 2-1/4" capscrew, flatwasher, chain, flatwasher, torque bar, lockwasher and nut.

j. Attach the free end of the torque chain to either the chain tab on the backhoe frame (Figure 1) or a fixture of the tractor. Use the remaining 3/8" hardware in the same manner as above.

Imagine a plane perpendicular to the ground that passes through the torque bar and separates the tractor from the backhoe. It is very important that the chain is attached to a point located <u>on</u> this plane <u>or</u> on the <u>tractor</u> side of this plane.

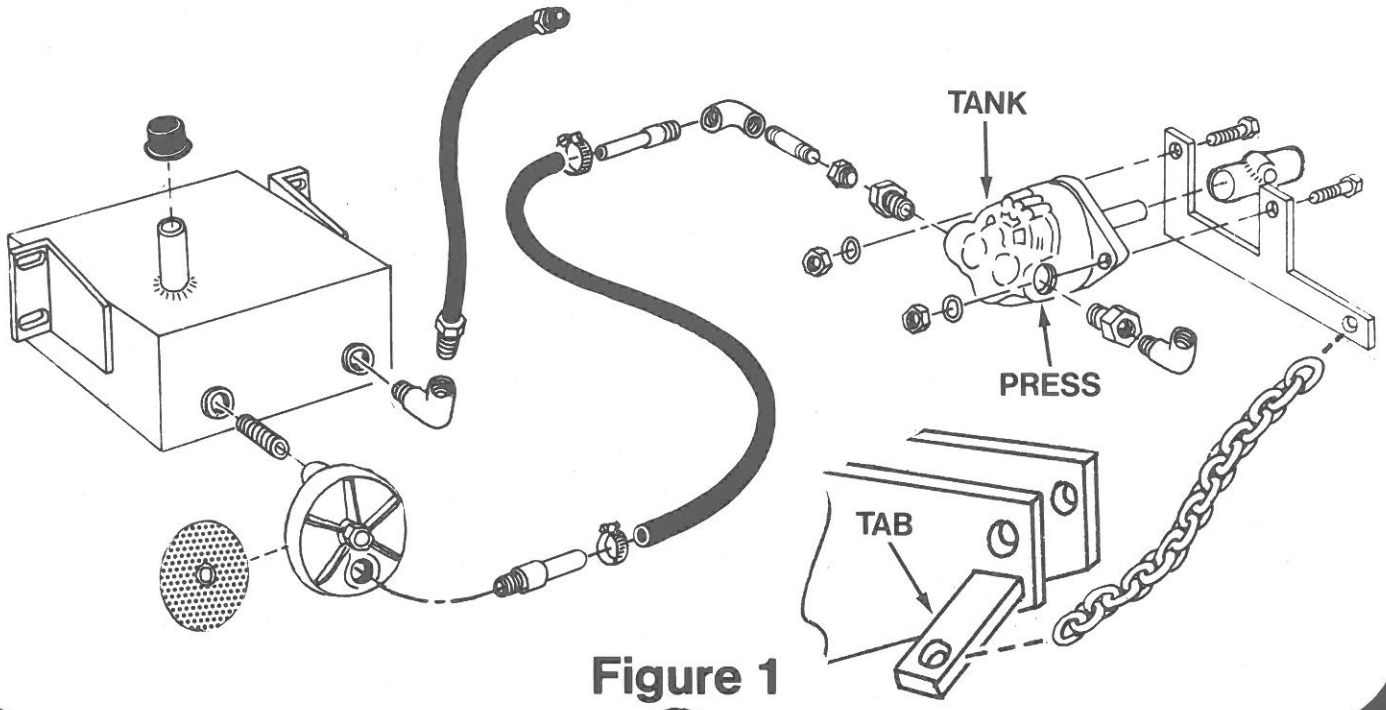


Figure 1

By attaching to such a point, the chain applies pressure on the pump so that it is not pulled off of the PTO adapter during operation.

k. Attach 1/2" 90° street ell to "in" port on reservoir.

2. Remove the seat from the seat and safety chain carton and install with the hardware supplied. The use of the safety chains is explained in Step 25.

3. Remove the cap from the 3/8" pressure hose. This is the hose connected to the right hand inlet part of the valve, just below the pressure gauge.

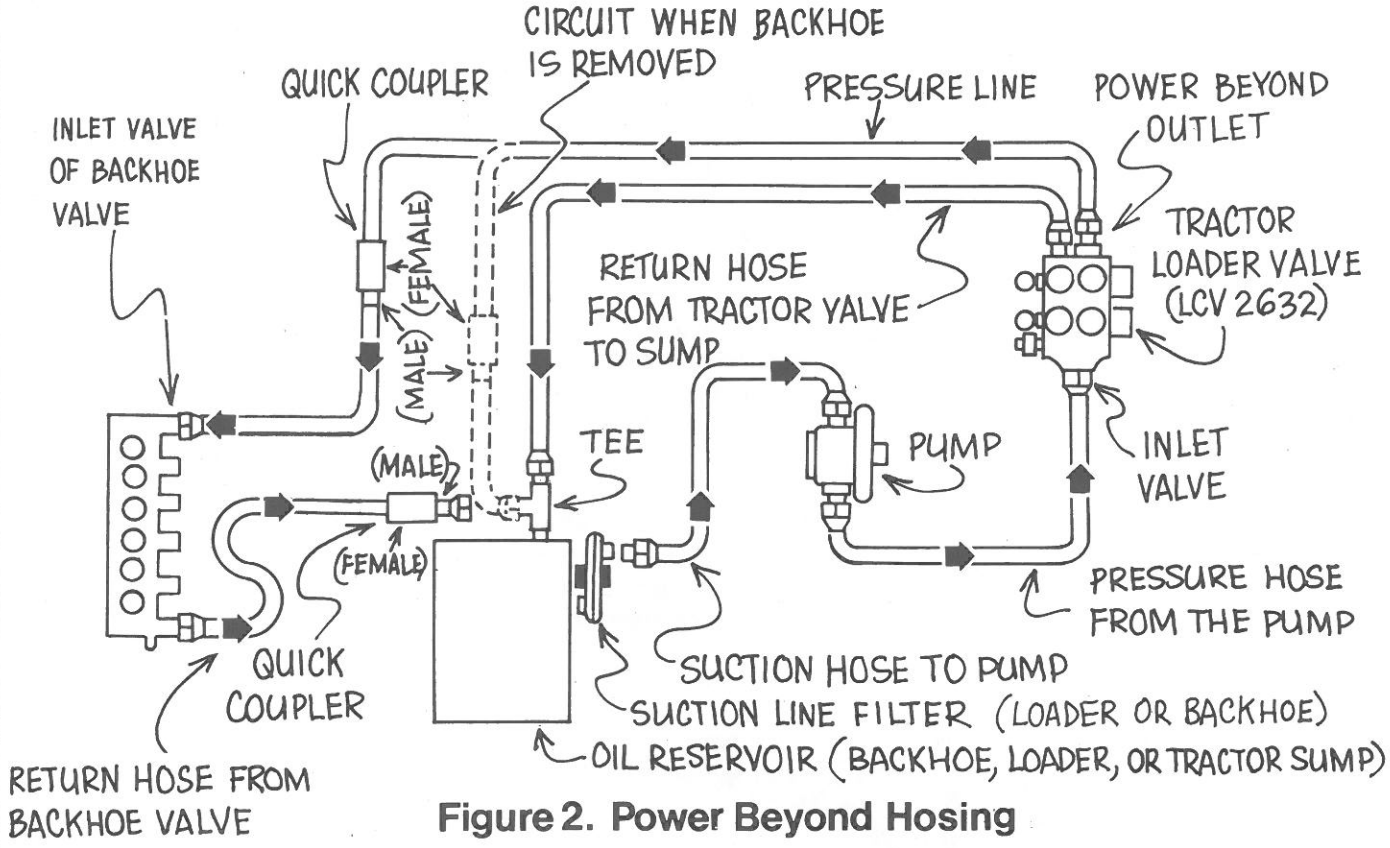


Figure 2. Power Beyond Hosing

a. If an open center tractor hydraulic system is being utilized, attach the hose to the tractor hydraulic outlet.

b. If the *Kelley* independent hydraulic system is being utilized, attach the hose to the 1/2" street ell that is connected to the independent hydraulic system's pump.

c. If a closed center tractor hydraulic system is being utilized, refer to the section of this manual entitled "Closed Center Hydraulic Systems" on page 13.

d. If you wish to run both a loader and a backhoe off of the same hydraulic system, make your connection as illustrated in Figure 2 -- Power Beyond Hosing. Also, refer to the section of this manual entitled "Power Beyond Hydraulic Systems".

Since there are so many variations for this type of set-up, we are showing only a generalized hosing scheme. If you have any questions concerning the specifics for your situation, please call the factory before attempting operation.

4. Locate the return hose which is already connected to the left hand outlet port of the valve.

5. Remove the cap from the free end of the hose.

6. Attach the 3/8" return hose via its 1/2" male fitting to the oil reservoir inlet fitting or directly to the oil sump of the tractor according to instructions below.

⚠ CAUTION Do not remove or discard the special return hose fitting as it is also a reverse flow check to prevent pressurized oil flow in the wrong direction. The return hose may be connected to a coupler directly to the tractor sump or to a coupler on the tractor valve. If the backhoe will not function after the hoses are connected, recheck your hydraulic connections, tractor hydraulic system, and/or tractor valve lever direction.

If an open center tractor hydraulic system is being utilized, attach the hose to the oil sump of the tractor.

If the *Kelley* independent hydraulic system is being utilized, attach the hose to the the 1/2" 90° ell on the "in" part of reservoir (lower left corner).

c. If a closed center tractor hydraulic system is being utilized, refer to the section of this manual entitled "Closed Center Hydraulic Systems" on page 13.

d. If you wish to run both a loader and a backhoe off ot the same hydraulic system, make your connection as illustrated in Figure 2 -- Power Beyond Hosing.

Since there are so many variations for this type of set-up, we are showing only a generalized hosing scheme. If you have any questions concerning the specifics for your situation, please contact the factory before attempting operation.

7. If you are not familiar with the operation of the *Kelley* backhoe, do not proceed until you have studied the operating instructions contained within this manual.

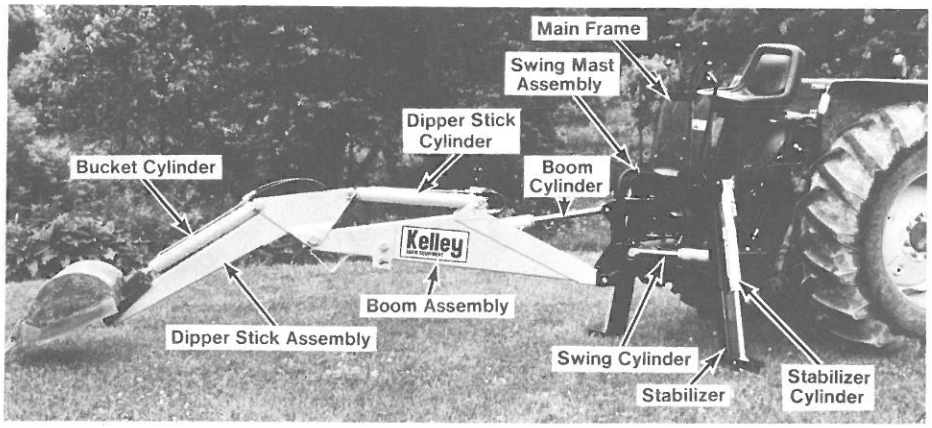


Figure 3
Description of Major Backhoe Parts

8. Familiarize yourself with all of the terms that will be employed in the following instructions by studying Figure 3 -- Description of Major Backhoe Parts.

Figure 4

9. Apply power to the backhoe.

10. Raise the boom and stabilizers to take the tension off of the transport chains. Remove and place chains in chain carrier on front of the control panel.

11. Lower the boom to the ground.

12. Remove the pin from location A of Figure 5.

13. Disconnect the strapping and padding that attaches the dipper stick cylinder to the boom.

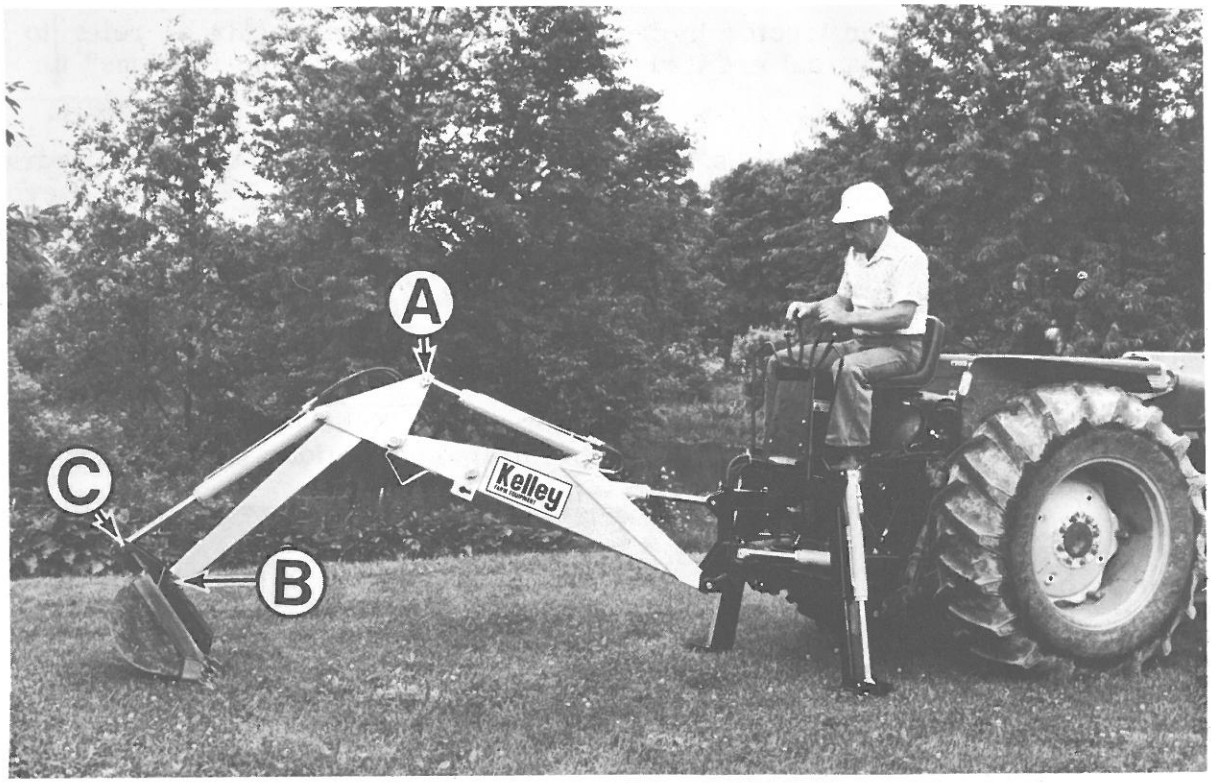


Figure 5

14. Extend the dipper stick cylinder until it is possible to align the rod bushing of the dipper stick cylinder with the bushings at point A on the dipper stick.

15. Install the pin at point A to secure the cylinder to the dipper stick. Use the 3/8" locking bolt, lockwasher, and nut to lock the pin in place.

⚠ CAUTION Keep all people clear of your work area during the next steps. Until the backhoe is securely mounted, the operator should make sure that no portion of his body is beneath any part of the backhoe.

16. By manipulating the cylinders and placing down pressure on the boom and stabilizers, lift the backhoe vertically for apporximately 10"-14" of ground clearance.

17. Remove the two lower link pins (D of FIgure 6) so that the shipping pallet (E) may be removed from the backhoe. You may discard the pallet, as it is only necessary for shipping.

18. Attach the backhoe to the lower lift arms of the tractor using the pins removed from the pallet. Secure the lower link pins with the spring lock pins. Once this attachment is secured, the lower lift arms should be placed in a "neutral" position.

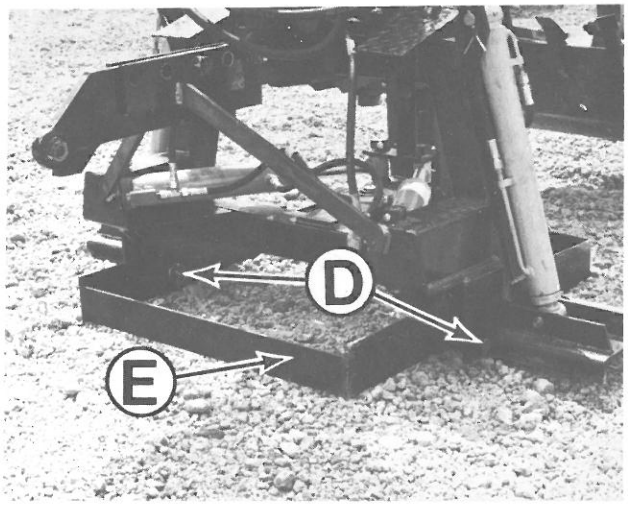


Figure 6

19. Remove the two 7/8" x 2-1/2" bolts and hardware at (F) of Figure 7 in order to free the top link (G) of Figure 6).

20. Remove the wire that holds the 1 x 3/4" reducer bushing in the top link. If you are installing your backhoe on a Category II hitch, discard the bushing; otherwise, it should be used on a Category I hitch. Do not use less than a 3/4" pin in the tractor third point.

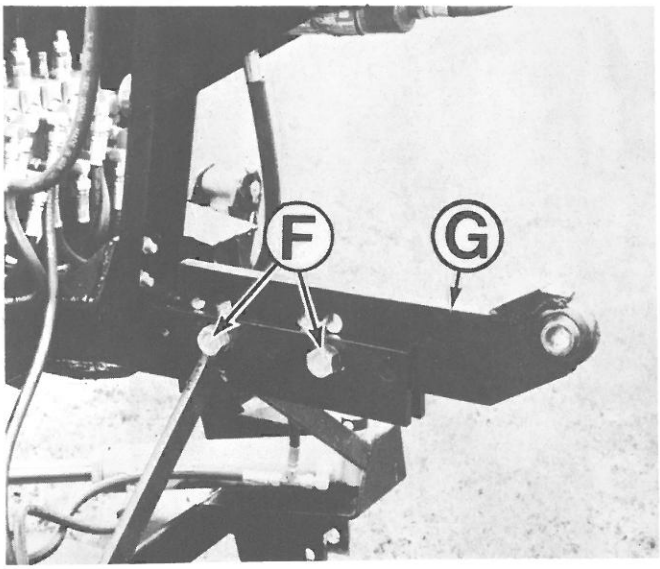


Figure 7

21. Mount the top link to the tractor third point. NOTE: There is no correct side up for the top link -- it depends on your tractor. you may have to try both sides "up" in order to find the best position for your backhoe.

22. Mount the top link of the backhoe to the main frame of the backhoe. To do this, maneuver the backhoe until you can align the holes in the backhoe frame (at F of Figure 7) with a set of holes in the top link. It is important to pick a set of holes that places the backhoe in a vertical position in relationship to the ground with a 10"-14" ground clearance. There are four possible positions - see Figure 8.

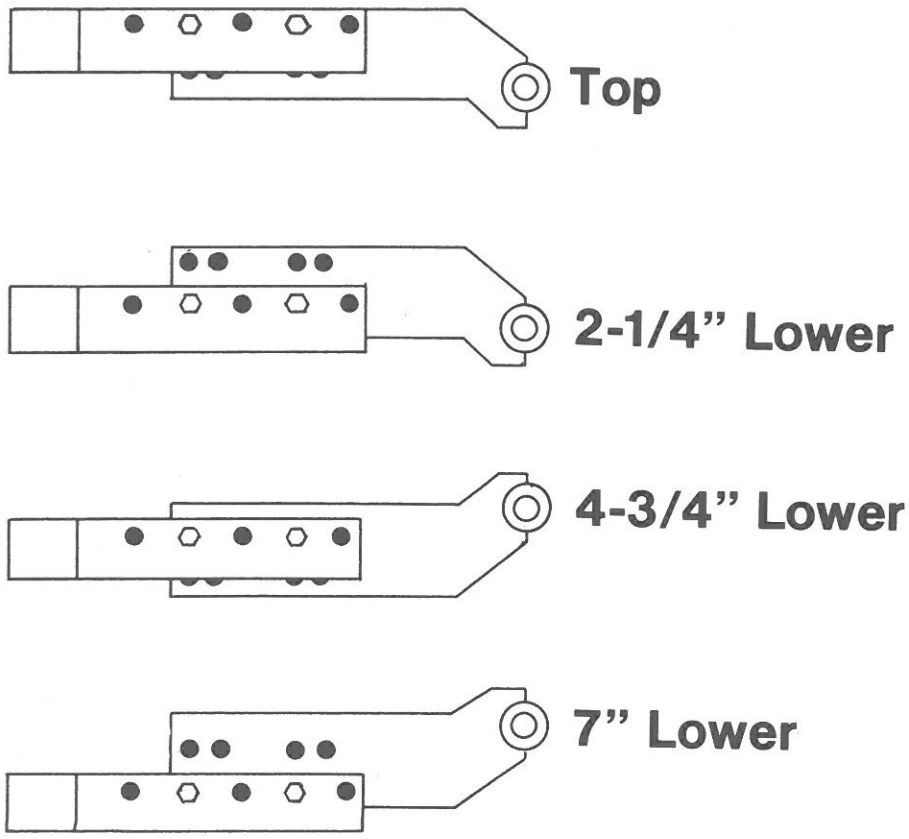


Figure 8

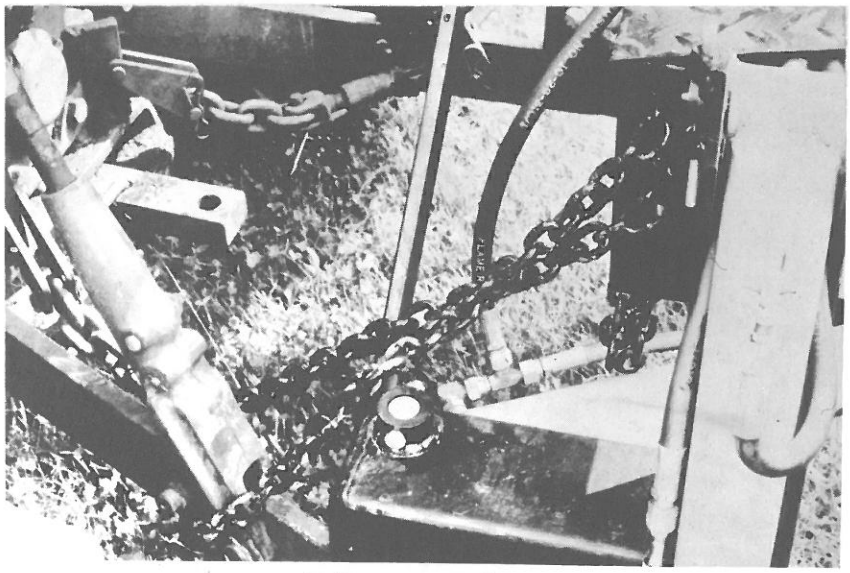


Figure 9

If you have to "cheat" in one direction, make it so that the backhoe tilts towards the tractor rather than away. If you cannot find a satisfactory set of holes, turn the top link upside down and try again. In some cases it may be necessary to drill additional holes in the top link or to shorten the top link.

⚠ CAUTION For tractors with a top link draft control system, make sure the draft control is in its heavy position. It is very important to prevent the top link from exerting pressure that may activate the draft control system. Continued operation with the draft control system activated can cause overheating of the hydraulic fluid and can cause tractor hydraulic pump failure. Put the draft control lever to the bottom of the quadrant.

Once an appropriate set of holes is found, secure the backhoe to the top link using the two (2) 7/8" x 2-1/2" bolts and hardware that were removed in Step 19.

⚠ CAUTION You must secure the backhoe top link to the main backhoe frame with two 7/8" x 2-1/2" bolts and hardware. EXTREME DANGER exists to the operator if this procedure is not properly followed.

23. Remove the pin attached to the rod bushing of the bucket cylinder. Also, remove the strapping and padding attached to the bucket cylinder.

24. Remove the pin on the dipper stick assembly (B of Figure 5).

Position the dipper stick and bucket cylinder in order to mount the bucket. Mount the bucket at points B and C of Figure 5. Secure the bucket pins with the 3/8" locking bolts, lockwashers, and nuts.

⚠ CAUTION Safety chains are provided for the operators protection and the protection of the three point system of the tractor.

25. Safety chains must be securely wrapped around the lower hitch arms at the radius rod pivot point. Then secured to the chain anchor located below the foot pad as in Figure 9.

Power Beyond Hydraulic Systems

For power beyond applications, perform the following steps:

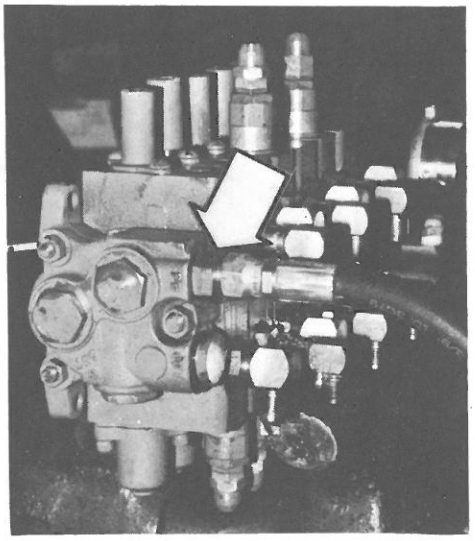


Figure A

a. Perform Step 1 Install the Closed Center Plug in the section entitled "Closed Center Hydraulic Systems".

b. Remove the plug at the location indicated by the arrow in Figure A. Note the letters "PB" which are embossed in the valve.

c. Insert a C5512x8x10 O'ring ell port outlet fitting (Kelley Part # BFT156) into the valve.

d. Connect the fitting to your auxiliary valve with a appropriate pressure hose. The finished connection will appear as in Figure A.

Closed Center Hydraulic Systems

⚠ CAUTION If you are going to use a closed center tractor hydraulic system to power your *Kelley* backhoe, you must follow the directions below carefully. Failure to do so may cause extensive damage to your tractor and/or *Kelley* backhoe.

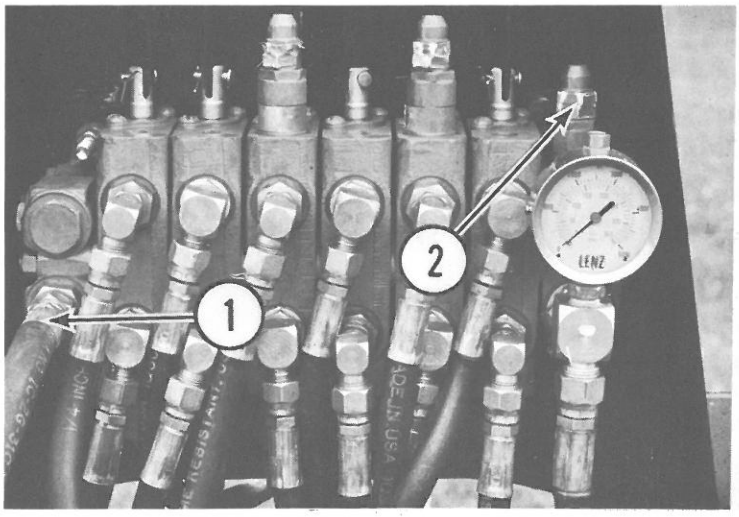


Figure B

1. Install the Closed Center Plug.

   a. Remove the O'ring plug (1 of Figure B)

   b. Figure C indicates some threads that are located about 1" deep within the exposed valve opening. Thread the 3/8" Allen head pipe plug supplied with your backhoe into these threads using an Allen head wrench as shown in Figure D. Torque it tight to 50 ft./lbs. When you are finished, the plug will appear as in Figure E.

   c. Reinstall the O'ring plug.

2. Adjust the Valve Bypass.

   a. Remove the cover nut (2 of Figure B) from the valve bypass. This exposes a slotted screw.

   b. Turn the slotted screw in approximately four complete turns.

   c. Replace the cover nut. Be sure to replace the washer with the cover nut, as it acts as a gasket.

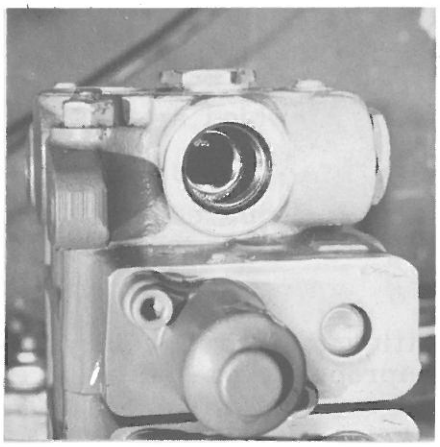


Figure C

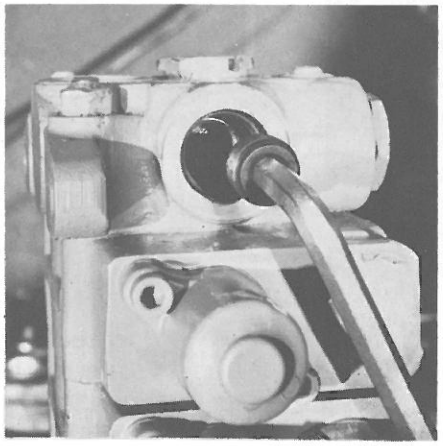


Figure D

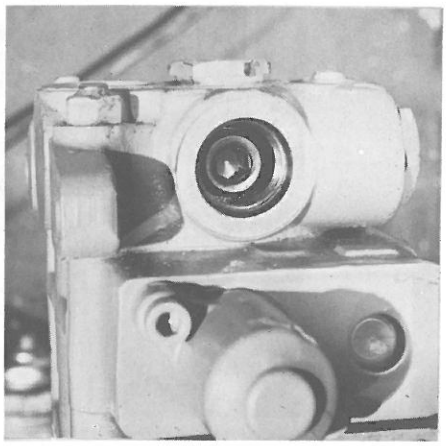


Figure E

3. Choose the Appropriate Hosing

⚠ CAUTION Do not remove or discard the special return hose fitting as it is also a reverse flow check to prevent pressurized oil flow in the wrong direction. The return hose may be connected to a coupler directly to the tractor sump or to a coupler on the tractor valve. If the backhoe will not function after the hoses are connected, recheck your hydraulic connections, tractor hydraulic system, and/or tractor valve lever direction.

For *John Deere* Tractors:

The return hose supplied with your *Kelley* backhoe will not be long enough. You will have to purchase a 1/2" return hose with a length suitable for the following procedure.

Purchase a Port Filter Cover (*John Deere* Part Number AT301970) from your dealer. Install it on your tractor.

Attach the backhoe's pressure hose to the tractor quick coupler. Attach the backhoe's return hose to the port filter cover that you installed. Move the control lever on the tractor so that it starts a flow to the backhoe valve, and secure it in full open position.

The above procedure results in a direct connection to the *John Deere* master pump, and it eliminates a return into the rear transfer pump chamber. The problem with returning oil into the rear transfer pump chamber is that if the tractor engine RPM is throttled down to a point at which the oil transfer pump cannot supply sufficient oil to the main system pump, the main pump runs out of oil in its sump and starts chattering.

For Other Tractors:

We highly suggest that you purchase a *Kelley* independent hydraulic system for your backhoe.

However, if you wish to use the tractor hydraulic system, consult the dealer of your tractor for a safe and proper method of connecting the *Kelley* backhoe to your tractor.

Closed Center to Open Center Conversion

1. Reverse the steps indicated in Step 1 Install the Closed Center Plug in the section entitled "Closed Center Hydraulic Systems".
2. Remove the cover nut (2 of Figure B) from the valve bypass.
3. Turn the slotted screw in the valve bypass out until you feel the spring tension on it release.
4. Apply power to the backhoe, and raise one of the stabilizers as high as it will go.
5. Continue holding the stabilizer contol lever back (in the "raise" position). Turn the slotted screw in the valve bypass in until a pressure gauge reading of 2200 P.S.I. is obtained.
6. Replace the cover nut. Be sure to replace the washer with the cover nut, as it acts as a gasket.

Converting Back from Power Beyond

1. Reverse the steps indicated in Step 1 Install the Closed Center Plug in the section entitled "Closed Center Hydraulic Systems".
2. Remove the hose and fitting indicated by the arrow of Figure A.
3. Plug the port exposed in Step 2 with a 7/8" O'ring hex head plug.

Transporting The Backhoe

⚠ CAUTION While traveling with the backhoe, the tractor must have at least 20% of the combined tractor/backhoe weight on its front wheels. Add additional front end weight, if necessary, to meet this requirement. This is necessary in order to maintain complete control of the tractor during travel.

Your backhoe comes equipped with transport chains. These should be put into proper position anytime you are transporting your backhoe. To ready your backhoe for transport, perform the following:

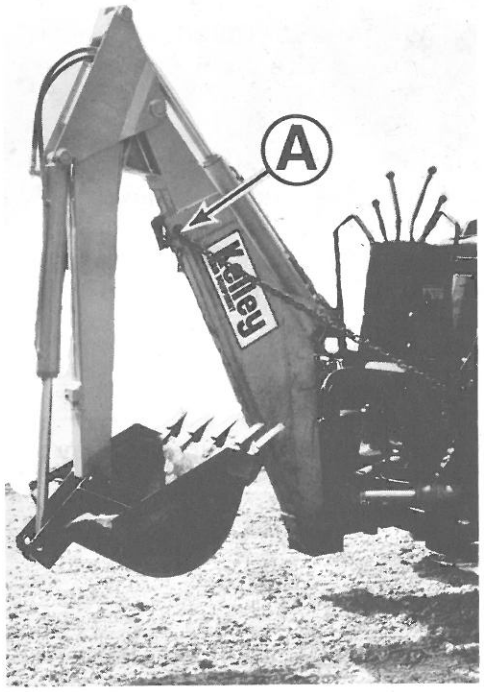


Figure 1

Raise both stabilizers completely. Raise the boom as high as possible. Curl the bucket completely in. Close the dipper stick in towards the boom assembly as far as possible. Your backhoe should now appear similar to Figure 1.

Locate the end of the transport chain which is not bolted to the unit. Thread this end through the hole on the plate that is welded to the boom (A of Figure 1). Pull the chain taut and lock it in place by slipping it into the slot in the plate. Repeat this procedure with the transport chain on the other side of the backhoe.

Observe the following precautions while transporting the backhoe:

1. When traveling on roads, use the proper safety lights and warning signs. (Check your local regulations.)
2. When traveling over rough ground, do not exceed safe speed limits.
3. Do not make sudden starts or stops.
4. Do not make turns at high speeds.
5. When climbing grades, be particularly careful not to make sudden starts.

Preparing For Operation

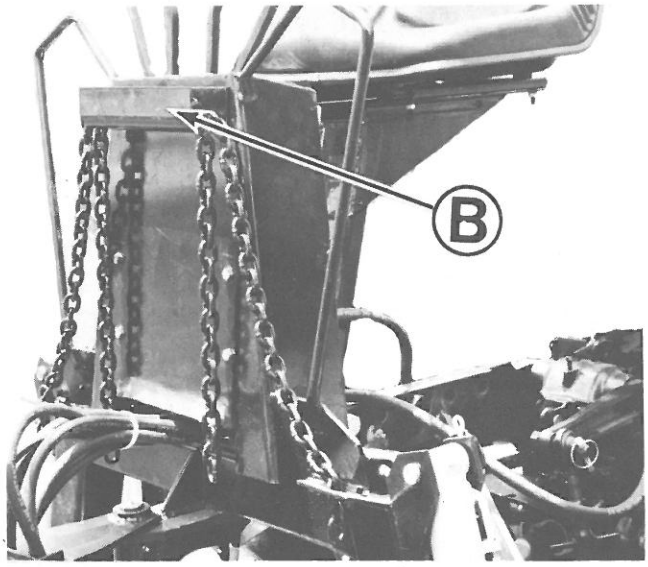


Figure 2

Preparing the Backhoe

You must first place the transport chains in their operating position. To do this, disconnect the transport chains from the boom. (You may have to raise the boom in order to relax the tension on the chains.) Connect the free ends of the transport chains to the storage rack on the front of the console. (B of Figure 2) Secure the chains by pushing a link into the slot in each of the racks.

Preparing the Tractor

Move the tractor's gear shift lever to a neutral position. Set the engine throttle to the correct RPM. For added stability, lower the front end loader or blade to the ground (if so equipped). Move the draft control lever to the bottom-most position. If you are using an independent hydraulic system, engage the PTO.

Operating The Backhoe

⚠ CAUTION Operate the backhoe only from the operator's seat. Be sure to place your feet on the foot pads during operation. This protects them from injury that could result from moving parts.

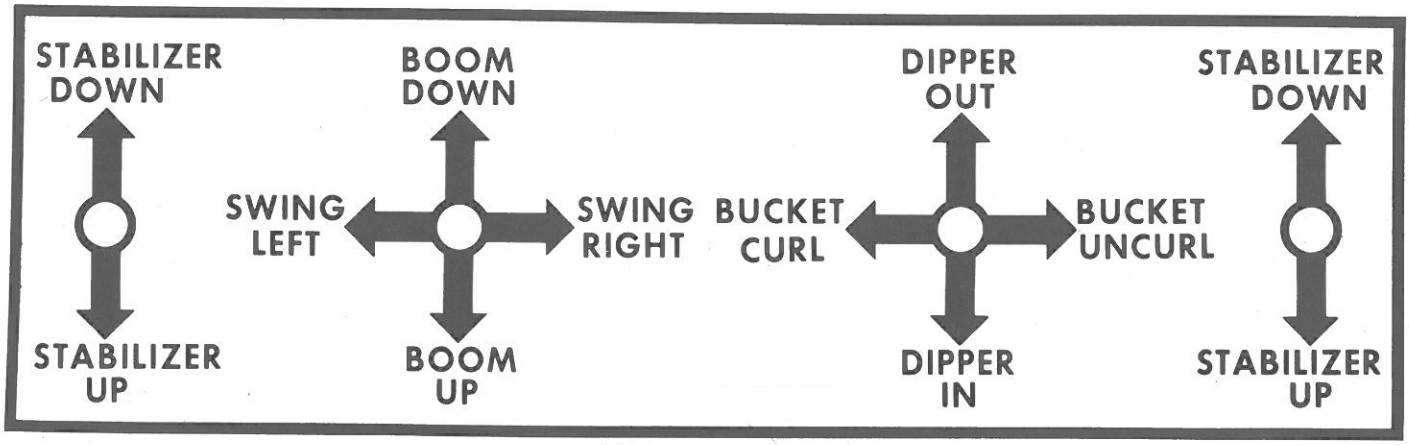


Figure 3

To operate your backhoe, mount yourself on the operator's seat. In front of you there are four control levers. Beneath the control levers is a decal that instructs you on the proper operation of the levers. Figure 3 above shows this control diagram as it appears on your backhoe. Refer to it for interpreting the following instructions. (All directions such as "right" or "left" are determined from a seated postion in the operator's seat.)

Stabilizers: The levers on the extreme right and extreme left of the operator's console control the stabilizers. The left lever is for the left stabilizer, and the right lever is for the right stabilizer. To raise the stabilizers, pull the levers towards yourself. To lower the stabilizers, push the levers forward (i.e. away from yourself).

The two levers in the center of the console control the operation of the backhoe. The left-hand lever controls the boom and the swing. The right-hand lever controls the dipper stick and the bucket.

Boom: The second lever from the left controls the boom. Pulling the lever towards yourself raises the boom; pushing the lever forward lowers the boom.

Moving the lever to the left swings the boom to the left; moving the lever to the right swings the boom to the right.

Dipper Stick and Bucket: The second lever from the right controls the dipper stick and the bucket. Pulling the lever towards yourself moves the dipper stick in; pushing the lever forward moves the dipper stick out.

Moving the lever to the left curls the bucket; moving the lever to the right uncurls the bucket.

Familiarize yourself with these controls before beginning to operate the backhoe. After a little experience, you will be able to operate the unit with a smooth steady motion.

Digging Suggestions

⚠ CAUTION Always make sure that the stabilizers maintain contact with the ground during digging operations. Take the time to readjust the stabilizers when necessary during digging.

Before you begin digging, extend the stabilizers so that they make a firm contact with the ground. This is essential in order to gain the necessary stability and weight transfer to insure safe digging.

Observe the following cautions while digging.

⚠ CAUTION Before swinging the backhoe, make sure you have room to swing and that all people are clear of the backhoe. For added protection, place a barricade around the swing area before commencing operation.

⚠ CAUTION Be sure that you are not digging over any underground wiring, pipes, or other obstructions. If there is any doubt, call your public service agency.

⚠ CAUTION When digging to either side and/or close to the tractor, be extremely careful that the bucket does not contact the stabilizers, as serious damage may occur.

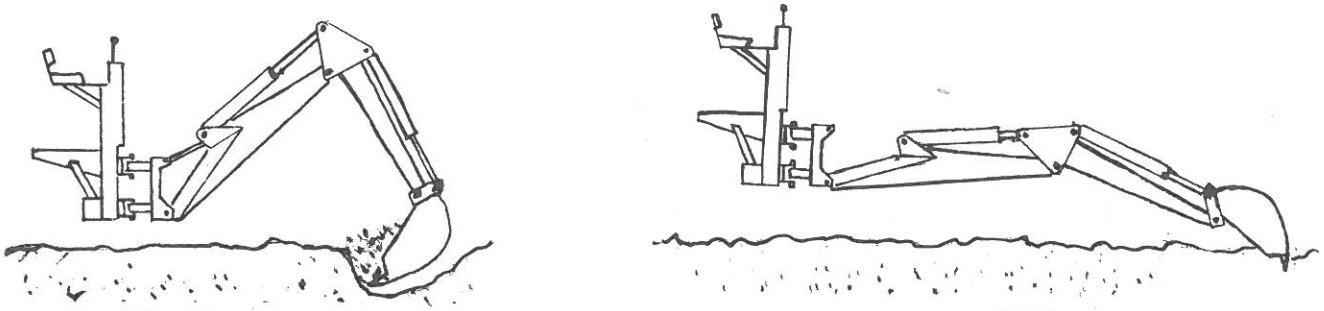
⚠ CAUTION When swinging the backhoe to either side, do not slam the swing mast into the stops.

⚠ CAUTION Be extra careful when working on hillsides and/or close to ditches. It is always extremely dangerous to work in a position where the danger of tipping or sliding exists.

⚠ CAUTION Digging on a slope should be done from the top down. When digging across a slope, use the stabilizers to keep the backhoe level and always dump uphill. Use caution when digging under these conditions. Move the unit carefully and at a safe ground speed.

The following suggestions should aid you in gaining maximum efficiency with your backhoe.

Digging at the correct angle is essential. To obtain the best penetration, the dipper arm assembly should be at an angle. Do not extend the boom and the dipper arm out into a straight line. See Figure 4.



Correct **Figure 4** **Wrong**

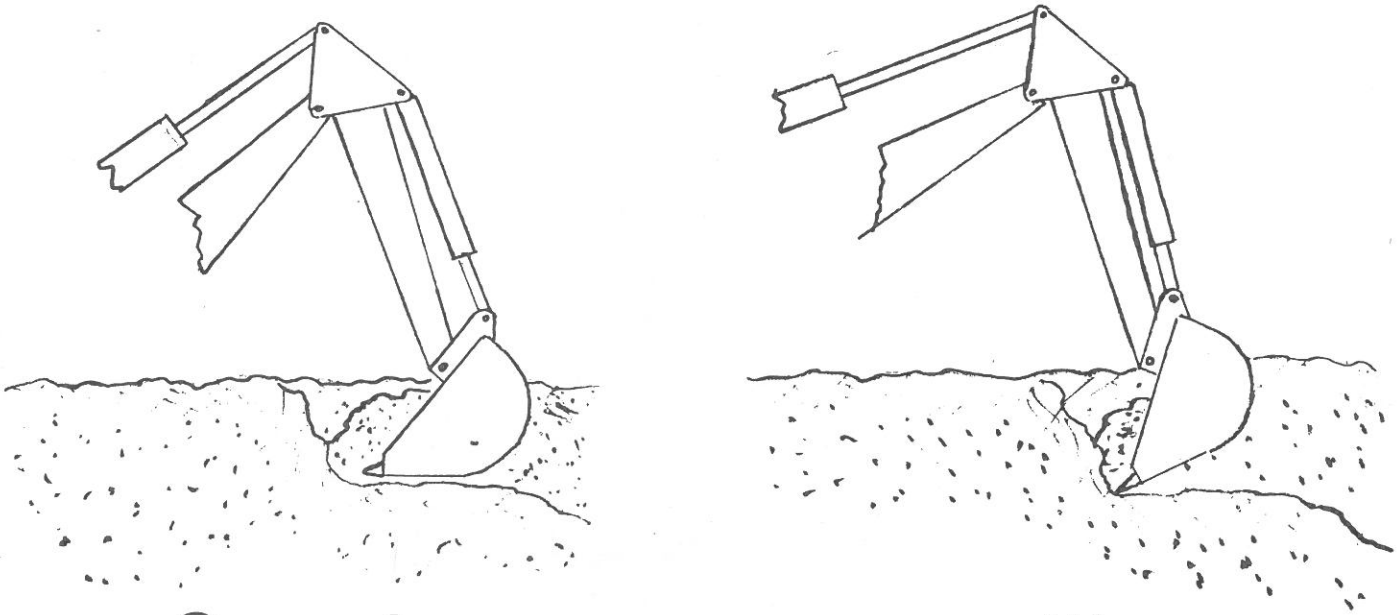
Figure 5 shows the correct angle of the bucket for digging. After you have filled the bucket, do not pull the dipper arm any closer to the boom than is necessary in order to clear the hole. When the bucket is clear, swing it to the side to dump. Always start dumping far enough to the side so as not to run out of dumping room. It is desirable while swinging to the side to make contact with the already removed material in order to lessen shock on the machine. This also aids the operator in pushing the material away from the working area.

The length of the pass should be just long enough so that the bucket will be full at the end of the pass. The depth of the pass will depend upon the type of soil. Do not drag a full bucket of dirt. After making a pass you will be able to determine how deep you will be able to dig. To control the depth of the pass, work the bucket and dipper arm controls alternately. In this way you can take an even bite each time you make a pass and obtain a full bucket. See Figure 6.

When loading trucks, curling the bucket close to the dipper arm will prevent undue spillage when the bucket is raised so that it can be dumped in the truck bed.

To obtain a level bottom, set the bucket teeth at a slight angle. Keep this angle as you drag the bucket with the dipper arm by gradually uncurling the bucket. Intermittently pull the boom lever at the same time to maintain a level bottom.

When digging for pipe leaks or underground cables, dig parallel to the pipe or cable run -- never across it.



Correct **Wrong**

Figure 5

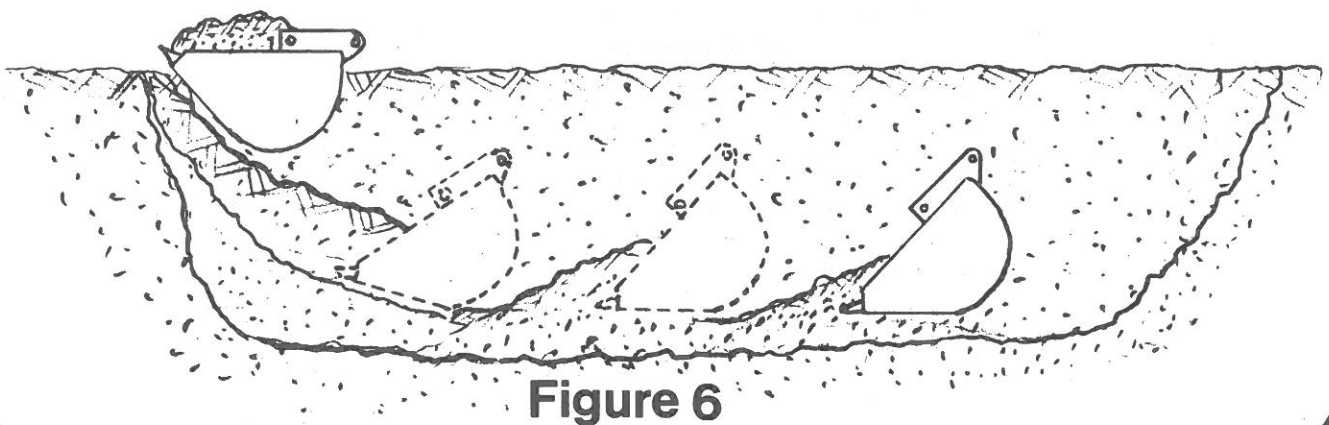


Figure 6

Maintenance and Lubrication

⚠ CAUTION Failure to perform the routine maintenance procedures outlined below may cause your backhoe to operate improperly. Such operation could lead to personal injury. Your *Kelley* backhoe requires only a few minutes of maintenance before each use. For your own safety, follow the procedures suggested below.

⚠ CAUTION When servicing the backhoe, make sure all moving parts are resting on the ground.

⚠ CAUTION Do not service, adjust, or work on the backhoe while it is operating. Remove all power from both the backhoe and the tractor while servicing the backhoe.

⚠ CAUTION To avoid injury from escaping pressurized hydraulic oil, move the control levers in all directions before disconnecting any hoses, steel lines, or couplers.

Initial Break-in Period

If you are using a *Kelley* Independent Hydraulic System, clean the suction line filter after the first 10 hours of operation. See the section entitled "Suction Line Filter Cleaning".

Daily

Check all hardware and hoses in order to be sure that they are secure. Check particularly the 3-point bolts, the lower link pins and locking pins, and the snap lock pins in the 3-point mounting top link. Check all retaining bolts in pins.

⚠ CAUTION Check to make sure that the two 7/8" x 2-1/2" bolts that attach the backhoe top link to the backhoe main frame are tightened securely.

2. Check the hoses for cracks, cuts, or leaks. If a hose is defective, replace it.

   ⚠ CAUTION Under no circumstances should you attempt to repair a defective hose. Always replace defective hoses.

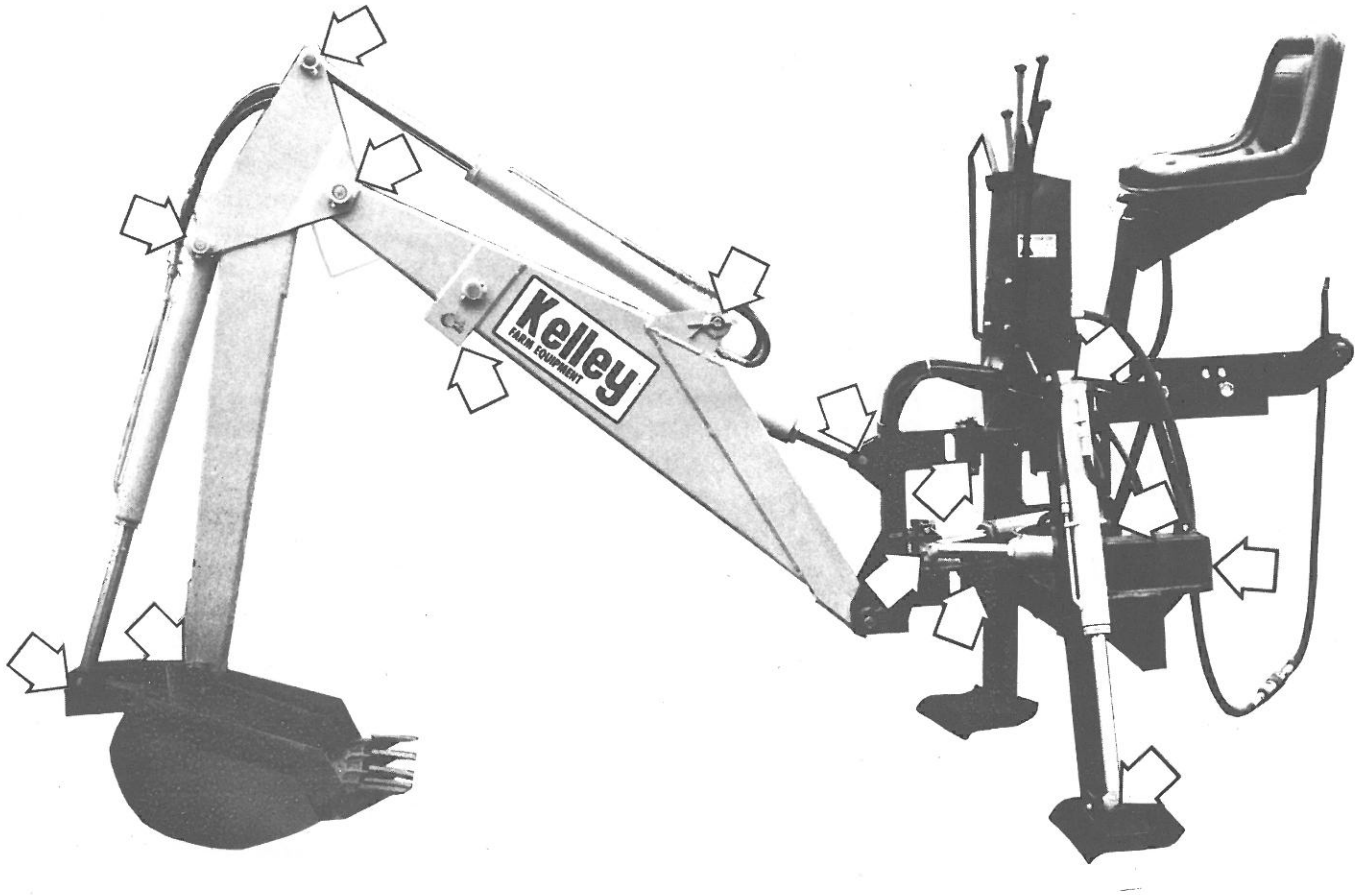
3. Check for defective parts. If any are found, repair or replace them before operating the backhoe.

   ⚠ CAUTION Whenever you replace a part, make sure it is replaced with a part having a strength rating equivalent to or greater than that of the original part.

4. If you are using the *Kelley* Independent Hydraulic System, make sure that the oil level is at the proper height. Add a Type A non-foaming hydraulic fluid if necessary.

5. Remove all dirt from the machine. Particularly remove any dirt on the swing mast or on the top side of the stabilizers around the stabilizer cylinders. Clogged dirt can damage cylinders and hoses.

6. Check for any hoses that may be rubbing against sharp edges. If you find any such hoses, try to reposition them to a safer place.
7. Lubricate all zerks as indicated by the arrows on the drawing "Lubrication Points".



Lubrication Points

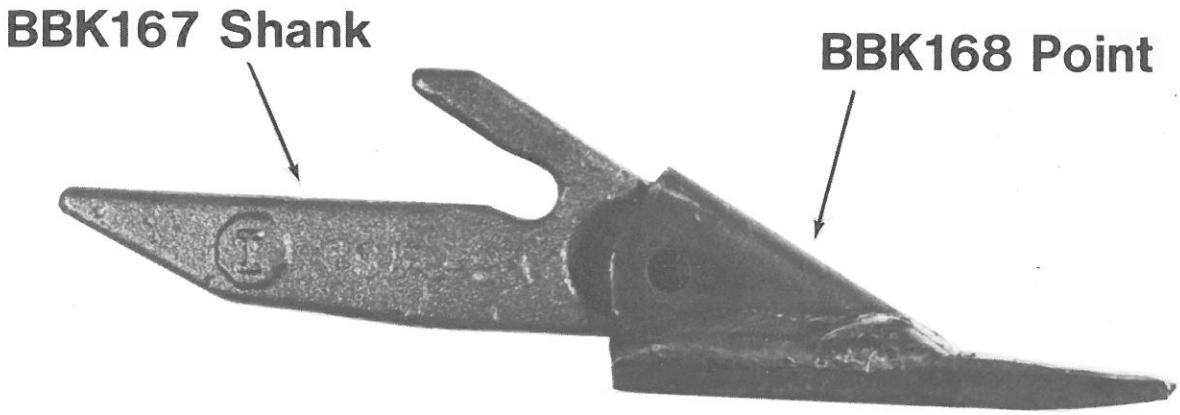
Every 50 Hours of Operation

If you are using a *Kelley* Independent Hydraulic System, clean the suction line filter as outlined in the section entitled "Suction Line Filter Cleaning".

Suction Line Filter Cleaning

Remove the bolt from the center of the suction line filter. The filter will then come apart in two halves. Remove the screen. Wash it and replace it. Then screw the two halves of the filter back together.

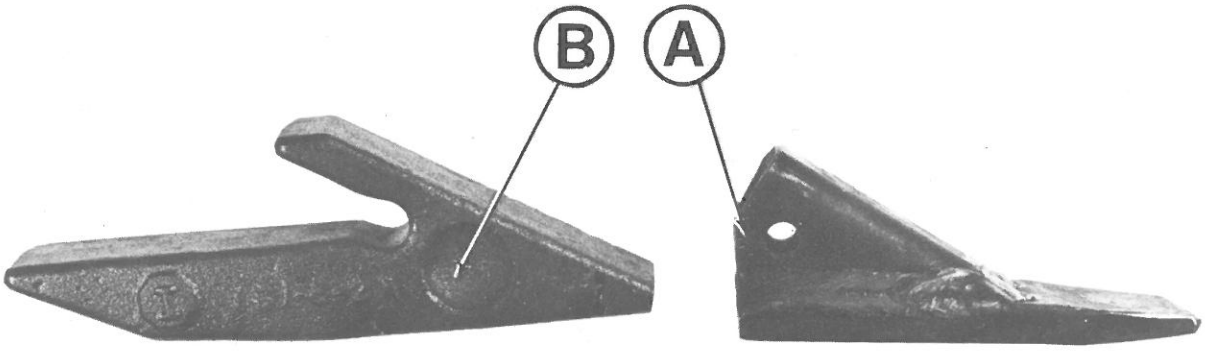
Bucket Tooth Replacement



BBK192 Tooth Assembly

To remove a tooth point, heat the point with a torch at A (the peened section that overlaps B). Then hammer at the top of the point until the point comes free from the shank.

To replace a tooth point, hammer the point onto the shank. Heat at A and hammer the heated section into recess B.



Storing the Backhoe

⚠ CAUTION To avoid injury while disconnecting the backhoe from a tractor, slow the tractor RPM down to avoid sudden and quick reactions from the hydraulic cylinders.

⚠ CAUTION To avoid injury from escaping pressurized hydraulic oil, move the control levers in all directions before disconnecting any hoses, steel lines, or couplers.

The first step in removing your *Kelley* backhoe from your tractor is to lower the hydraulic stabilizers to the ground. Then lower the bucket to the ground. This will provide a third position point for stability.

Now by maneuvering the stabilizers and the boom cylinder, position the backhoe so that the weight load is removed from the pins connecting the backhoe to the 3-Pt. of the tractor. Be sure that the backhoe maintains a stable position that will not shift once the pins are removed.

Remove the lower hitch pins. Then remove the top link pin (you may have to reposition the backhoe to do so.) While removing pins, make sure you keep your body above the frame of the backhoe in case it shifts its position.

At this point the backhoe can be removed from its hydraulic source. It is advisable to block the base of the backhoe if you wish to prevent the stabilizer cylinders from settling down and letting the backhoe sit directly on the ground.

Once the backhoe is removed, perform the recommended procedures below.

Storing for Short Periods

Coat all exposed cylinder shafts with grease or a corrosion preventive. (Remove before operating again.)

Install dust caps on the quick couplers, if so equipped, to prevent dirt contamination of the hydraulic system. Or, if possible, connect the quick couplers together.

Storing at the End of a Season

Coat all exposed cylinder shafts with grease or a corrosion preventive.

Store the backhoe in a dry protected place.

Clean the unit of all mud and dirt. Touch up the paint to prevent rust.

Install dust caps on the quick couplers, if so equipped, to prevent dirt contamination of the hydraulic system. Or, if possible, connect the quick couplers together.

At the Start of a Season

Clear all dirt and debris from all quick couplers, if so equipped.

Remove the protective coatings.

Check all hydraulic hoses and replace if necessary.

Tighten loose bolts and nuts.

Lubricate the unit.

Check bucket teeth. Sharpen or replace if required.

Run the unit slowly and check the operating controls before starting to dig.

Pressure Measurements

The Model 30 Backhoe has a pressure gauge installed in the main pressure line.

Main Relief Valve

To measure the setting of the main relief valve, perform the following steps:

1. Apply power to the backhoe, and raise one of the stabilizers as high as it will go.

2. Continue holding the stabilizer control lever back (in the "raise" position). Read the pressure gauge.

The normal reading should be approximately 1900 P.S.I. If you need to make an adjustment, follow the procedure outlined under "How To Set Pressure on Main Relief Valve".

The main relief valve measurement procedure outlined above uses the stabilizer cylinders because the stabilizer cylinders do not contain circuit reliefs. This enables a true reading of the main relief valve pressure setting.

Circuit Relief Valves

Whether the circuit relief valves are functioning correctly ca be determined by observing the pressure readings on the gauge. (The true setting at a circuit relief valve can only be measured by isolating it from the effects of the main relief valve). The circuit relief valves ar pre-set at the factory at:

Boom Circuit Relief	2500 PSI
Swing Circuit Relief	1500 PSI

To test a circuit relief for a cylinder, do the following:

1. Apply power to the backhoe, and extend the troublesome cylinder as far as it will go.

2. While still holding the control lever for the cylinder in the "extend" position, take a pressure reading.

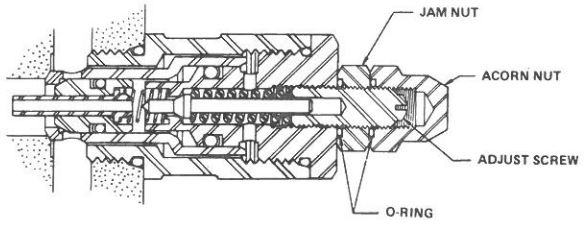
3. Now retract the same cylinder as far as it will go.

4. While still holding the control lever for the cylinder in the "retract" position, take a pressure reading.

If both readings for the boom circuit relief are 1900 PSI, this is the normal Main Relief setting, the reliefs can be considered operational. If the readings for the swing reliefs are 1500 PSI, they can be considered operational. If the readings do not correspond; remove, clean and re-adjust. If the above procedure does not correct the problem it can indicate that a cylinder needs to be re-sealed.

Valve Maintenance

⚠ CAUTION Do not attempt any repairs on the backhoe until you have studied all the cautions in the Maintenance section of this manual.



(U.S.A. & FOREIGN PATENT APPLICATIONS PENDING)

HOW TO SET PRESSURE ON MAIN RELIEF VALVE

Remove acorn nut and loosen jam nut. Make sure several threads on adjusting screw are engaged in pilot section.

Use a screw driver and set adjusting screw as follows:

a. Run engine at normal operating speed, so that pump is developing required flow.

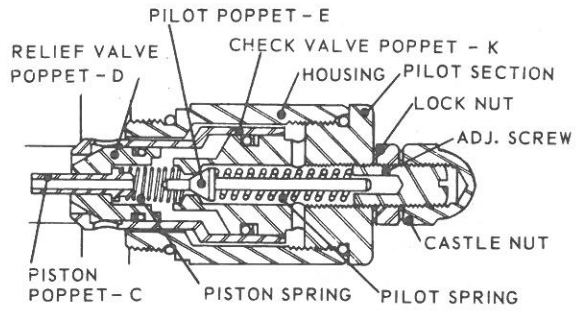
b. Operate one spool of control valve at its extreme position long enough to get a pressure reading on the gauge.

c. Turn adjusting screw clockwise until desired pressure setting is obtained.

d. Holding adjusting screw, tighten jam nut and install and tighten acorn nut.

e. Retest to check pressure setting.

NOTE: Results of the above settings will indicate a relatively constant relief valve setting across full engine RPM.



HOW TO SET PRESSURE ON CIRCUIT RELIEF

A load must be applied in a manner to reach the set pressure of the circuit relief unit. Then, follow these steps:

a. Remove castle nut and loosen lock nut.

b. Use screw driver and set adjusting screw to desired pressure setting.

c. Tighten lock nut and reassemble castle nut.

d. Retest in similar manner as above.

The Void Control Feature is not adjustable but is designed to operate whenever the cylinder port pressure is lower than the reservoir pressure.

SERVICE AND REPAIR INFORMATION

The cartridge type circuit reliefs used in the *Husco* valves are of the pilot poppet type with external adjustment. Any malfunctioning is usually the result of foreign matter lodging between the piston, relief valve poppet, and check valve.

To perform service, clean the surrounding area and remove the complete relief valve cartridge. Examine the seat in the main valve housing and if grooves or ridges are present, the valve must be returned to *Husco* for re-machining the section or it may be replaced.

The design of the pilot poppet and its seat provides positive seating and very seldom requires any maintainance. Therefore, the pilot section can be removed from the cartridge housing without disturbing the setting. With it will come the check valve poppet and other internal parts. These are easily disassembled and should be examined for foreign matter. All seats and seating surfaces should be smooth and free of nicks, scratches or grooves. Examine O'rings and back up washers for any damage. Any O'rings or back up rings found to be faulty must be replaced. If any metal components are found to be defective, the complete relief valve must be replaced. All moving parts should slide freely, with only seal friction being present.

After inspecting and cleaning, immerse all parts in hydraulic oil and re-assemble. Since pressure setting was not disturbed, unit can be tested for proper functioning under actual working conditions.

If operating difficulties indicate that the pilot poppet is leaking or sticking, remove internal parts of the pilot section, and follow same procedure as above.

If unit still does not function properly, contact C.C. Kelley and Son.

Valve Troubleshooting

Husco Valve

In the disassembly and servicing of the *Husco* valve it should be noted that plungers if removed must be replaced in the same bore.

Problem	Possible Cause	Possible Remedy
Sticking Plungers	1. Excessively high oil temperature. 2. Dirt in oil. 3. Pipe fittings too tight. 4. Valve warped from mounting. 5. Excessively high pressure in valve. 6. Handle or linkage binding. 7. Plunger bent. 8. Return spring damaged. 9. Spring or detent cap binding. 10. Valve not at thermal equilibrium.	1. Eliminate restrictions in pipe lines and filtering system. 2. Change oil - clean system. 3. Check torque. 4. Loosen valve and check. 5. Check with gauge on inlet and cylinder lines. 6. Free up linkage. 7. Replace valve or section. 8. Replace faulty parts. 9. Loosen cap, re-center and re-tighten. 10. Let system warm up.
Leaking Seals	1. Paint on or under seal. 2. Excessive back pressure. 3. Dirt under seal. 4. Scored plunger. 5. Loose seal plates. 6. Cut or scored seal.	1. Remove and clean. 2. Open or enlarge line to reservoir. 3. Remove and clean. 4. Replace valve or section. 5. Clean and tighten. 6. Replace fautly parts.
Unable to Move Plunger	1. Dirt in valve. 2. Plunger cap full of oil. 3. Bind in linkage.	1. Clean and flush out. 2. Replace seals. 3. Free up linkage.

Relief Valve

Problem	Possible Cause	Possible Remedy
Can't Get Pressure	1. Poppet D, E or K stuck open or dirt under seat.	1. Check for foreign matter between poppets D, E or K and their mating members. Members must slide freely.
Erratic Pressure	1. Pilot poppet seat damaged. Poppet C sticking in D.	1. Clean dirt, if parts are damaged, replace complete relief valve.
Pressure Setting Not Correct	1. Wear due to dirt. Lock nut & adj. screw loose.	1. See "How to Set Pressure on Circuit Relief". 2 Check seats for scratches, nicks or other marks, replace relief valves if damaged.
Leaks	1. Damaged seats, worn O'rings, parts sticking due to dirt.	1. Replace worn or damaged O'rings and back up rings, inspect for free movement of components, replace complete relief if metal parts are damaged. 2. Check seat for scratches, nicks or other marks

Anti-Void

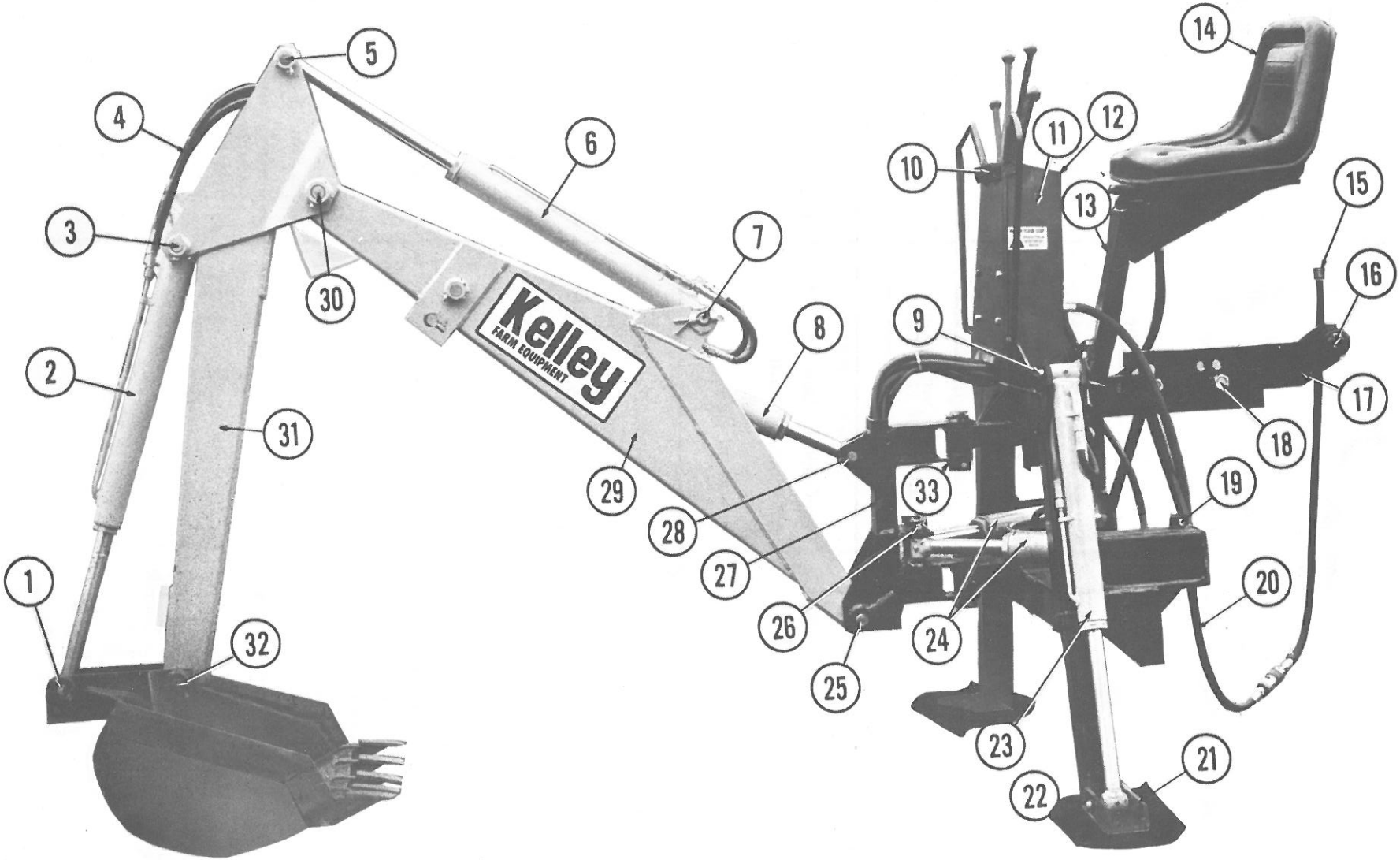
Malfunctions	1. Foreign matter plugging the sensing hole or preventing free movement of poppet.	1. Clean. 2. Check seat for scratches, nicks or other marks.

General Troubleshooting

⚠ CAUTION Do not attempt any repairs on the backhoe until you have studied all the cautions in the Maintenance section of this manual.

Problem	Possible Cause	Possible Remedy
Backhoe Does Not Operate	1. Low oil supply. 2. Hoses not properly connected. 3. Worn or damaged pump. 4. Broken oil line.	1. Add oil. 2. Check hose connections. 3. Replace or repair pump. 4. Check for leaks. Replace line.
Slow Operation and Poor Hydraulic System Performance	1. Engine speed to low. 2. Defective pump. 3. Dirty oil filter. 4. Circuit relief not holding. 5. Load too heavy. 6. Faulty main relief valve. 7. Internal valve crack. 8. Suction line filter plugged. 9. Oil too heavy for cold weather use. 10. Power supply may not be pumping enough oil. 11. Low oil level. 12. Pressure line restricted. 13. Collapsed suction line. 14. Valve spool not at full stroke.	1. Adjust RPM's. 2. Check pressure or replace. 3. Replace. 4. Remove and clean. See Maintenance topic. "Circuit Relief Cleaning". 5. Check line pressure. 6. Clean or replace. 7. Replace valve section. 8. Clean. 9. Replace with lighter oil. 10. Use a flow meter to check out whether a 5-10 GPM flow rate is being achieved. 11. Add oil. 12. Check for obstruction. 13. Check for damage. 14. Check movement and linkage.
Backhoe Does Not Hold Up Load	1. Cylinder seals leaking. 2. Valve spool leaking. 3. Oil bypassing valve spool. 4. Faulty circuit relief.	1. Replace. 2. Replace seals. 3. Replace valve bank. 4. Replace circuit relief.

Problem	Possible Cause	Possible Remedy
Load Drops When Valve Spool Moved From Neutral	1. Dirt in check valve. 2. Scored circuit relief valve poppet not seating properly.	1. Disassemble and clean. 2. Replace poppet or lap poppet.
Excess Oil Heat	1. Damaged or worn pump. 2. Too fast of an engine speed. 3. Main relief bypass valve improperly set. 4. Draft control lever not all the way down.	1. Repair or replace. 2. Reduce throttle. 3. Check relief setting. 4. Position correctly.
Loss of Power on a Single Cylinder	1. Circuit relief sticking.	1. Remove and clean.
Oil Leakage	1. Valve spool seals. 2. Loose hose fittings. 3. Broken oil line.	1. Replace seals. 2. Tighten just enough to stop leakage. 3. Replace hose or line.
Independent Hydraulic System Pump Failure	1. Improperly set relief valve.	1. Set relief at 1800 P.S.I.
Independent Hydraulic System Pump Noisy	1. Suction line filter plugged. 2. Oil too heavy.	1. Clean filter 2. Use a lighter oil.
Jerky or Erratic Action	1. Air in system. 2. Wrong type oil. 3. Foamy oil.	1. Check for loose connections. Cycle all valves to remove air. 2. Check tractor manual. For Independent Hydraulic System, use a Type A non-foaming hydraulic oil. 3. Check tractor manual. For Independent Hydraulic System, use a Type A non-foaming hydraulic oil.
Blown Return Line	1. Improperly connected.	1. Make sure all connections are as shown in the assembly section of this manual.


Kelley
FARM EQUIPMENT
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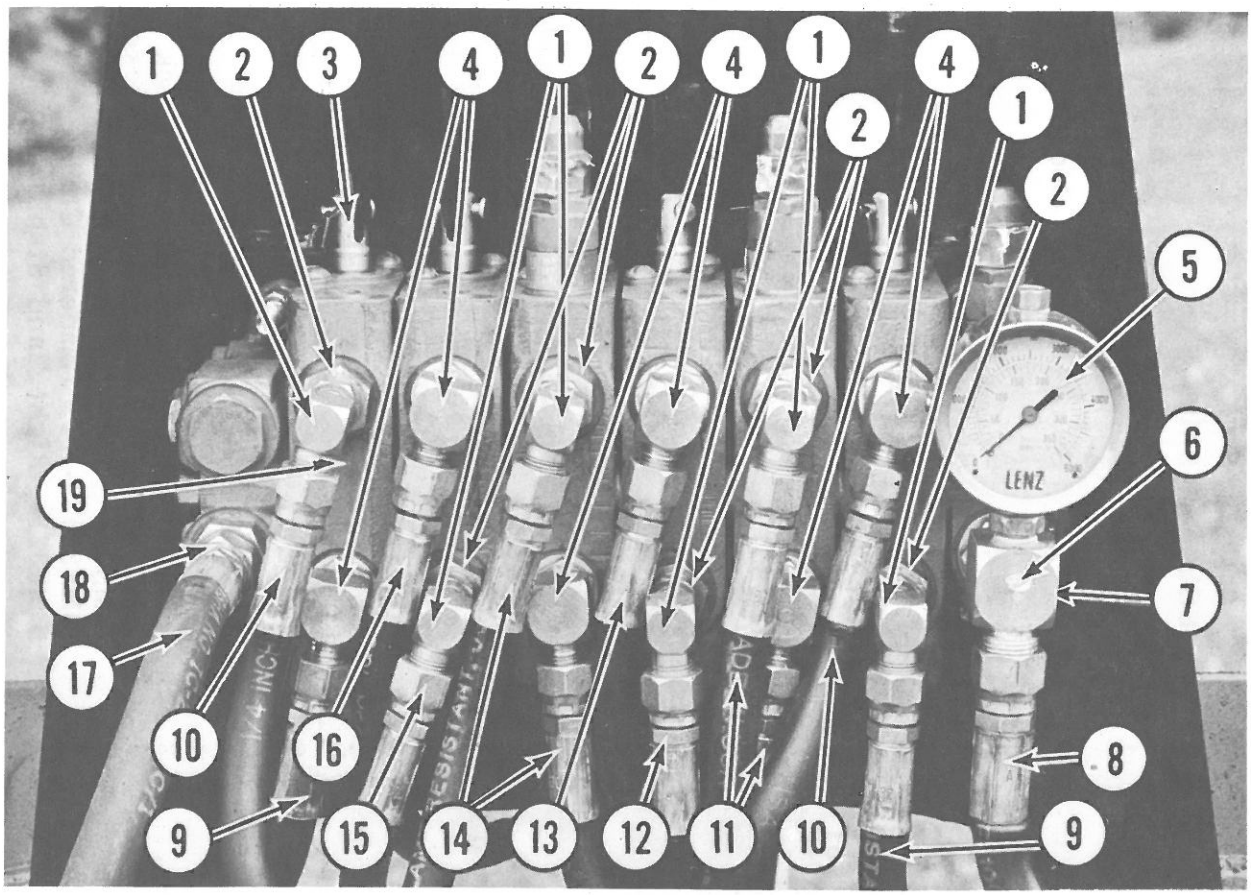
30 Backhoe

Reference Number	Qty		Description
1	1	BMS118	Ram Pin, Rod End 1" x 5-1/2"
2	1	BCY304	Bucket Ram 2-1/2" x 20" Stroke
3	1	BMS118	Ram Pin, Base End 1" x 5-1/2"
4	2	BHO345	Bucket Ram Hose 4P-6JFS-6JM-30"
5	1	BMS118	Ram Pin, Rod End 1" x 5-1/2"
6	1	BCY304	Dipper Ram 2-1/2" x 20" Stroke
7	1	BMS118	Ram Pin, Base End 1" x 5-1/2"
8	1	BCY303	Boom Ram 2-1/2" x 20" Stroke
9	2	BMS117	Stabilizer Ram Pin, Base End, 1" x 4"
10	1	BMT318	Transport Chain Carrier
11	1	BMF315	Main Frame Weld Assembly
12	1	BMF316	Control Panel Cover
13	1	BMF328	Seat Bracket
14	1	BMS231	Seat
15	1	BHO252	Pressure Hose
16	1	BFT327	Category I Bushing
17	1	BMF326	Third Point Link
18	2	BMS169	Third Point Link Bolt, 7/8" x 2-1/2" W/Nut & Lockwasher
19	2	BMS115	Swing Ram Pin, Base Pin 1" x 4-3/4"
20	1	BHO252	Return Hose 6P-8-8JFS-50"
21	1	BMF320	Left Hand Stabilizer
22	2	BMS117	Stabilizer Ram Pin, Rod End, 1" x 4"
23	2	BCY305	Stabilizer Ram, 2" x 16" Stroke
24	2	BCY302	Swing Ram, 2-1/2" x 10" Stroke
25	1	BMS329	Boom Pivot Pin 1-2/4" x 8"
26	2	BMS333	Swing Ram Pin, Rod End, 1" x 4-3/4"
27	1	BMF319	Swing Mast
28	1	BMS332	Boom Ram Pin, Rod End, 1" x 3"
29	1	BMF323	Boom Weld Assembly
30	1	BMS330	Dipper Pivot Pin, 1-1/4" x 7-1/4"
31	1	BMF322	Dipper Weld Assembly
32	1	BMS114	Bucket Pivot Pin, 1-1/4" x 7"
33	2	BMS331	Swing Pivot Pin 1-1/4 x 5 1/8

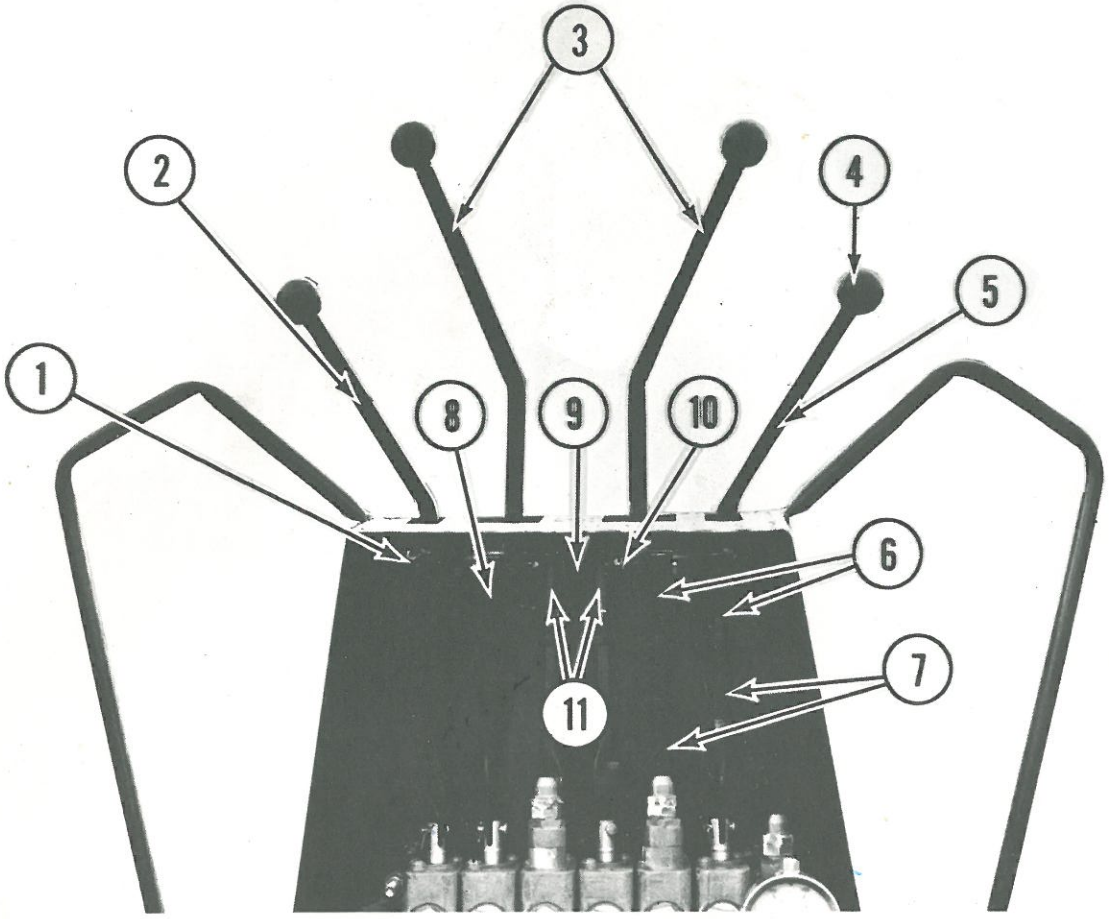
Unillustrated Parts

1	BMS215	Seat Assembly
2	BMS232	Seat Adjusters
1	BHO341	Dipper In Hose, 4P-6JM 11"
1	BHO340	Dipper Out Hose 4P-6JFS-6JM 11"
1	BMT325	Bulkhead Elbow Retaining Plate
2	BFT311	Bulkhead Elbow W/Nut (for bucket ram hose)
9	BMS172	Locking Pin W/Nut, 3/8" x 2-1/4"
5	BMS173	Locking Pin W/Nut, 3/8" x 2-1/2"
2	BMT324	Hose & Line Clamp Plate (inside boom)
8	BMS133	Steel Bushing for 1-1/4" Pin Pivot Point
19	LMS2012	5/16" Drive Zerk
7	LMS2006	5/16" x 3-1/2" Cotter Pin
2	BMT352	Steel Hydraulic Line (stick ram)
2	BMT353	Steel Hydraulic Line (bucket ram)
2	BMS349	1/4" Tempered Chain - 72"
2	BMS350	1/4" Tempered Chain - 45"
1	BMF321	Right Hand Stabilizer



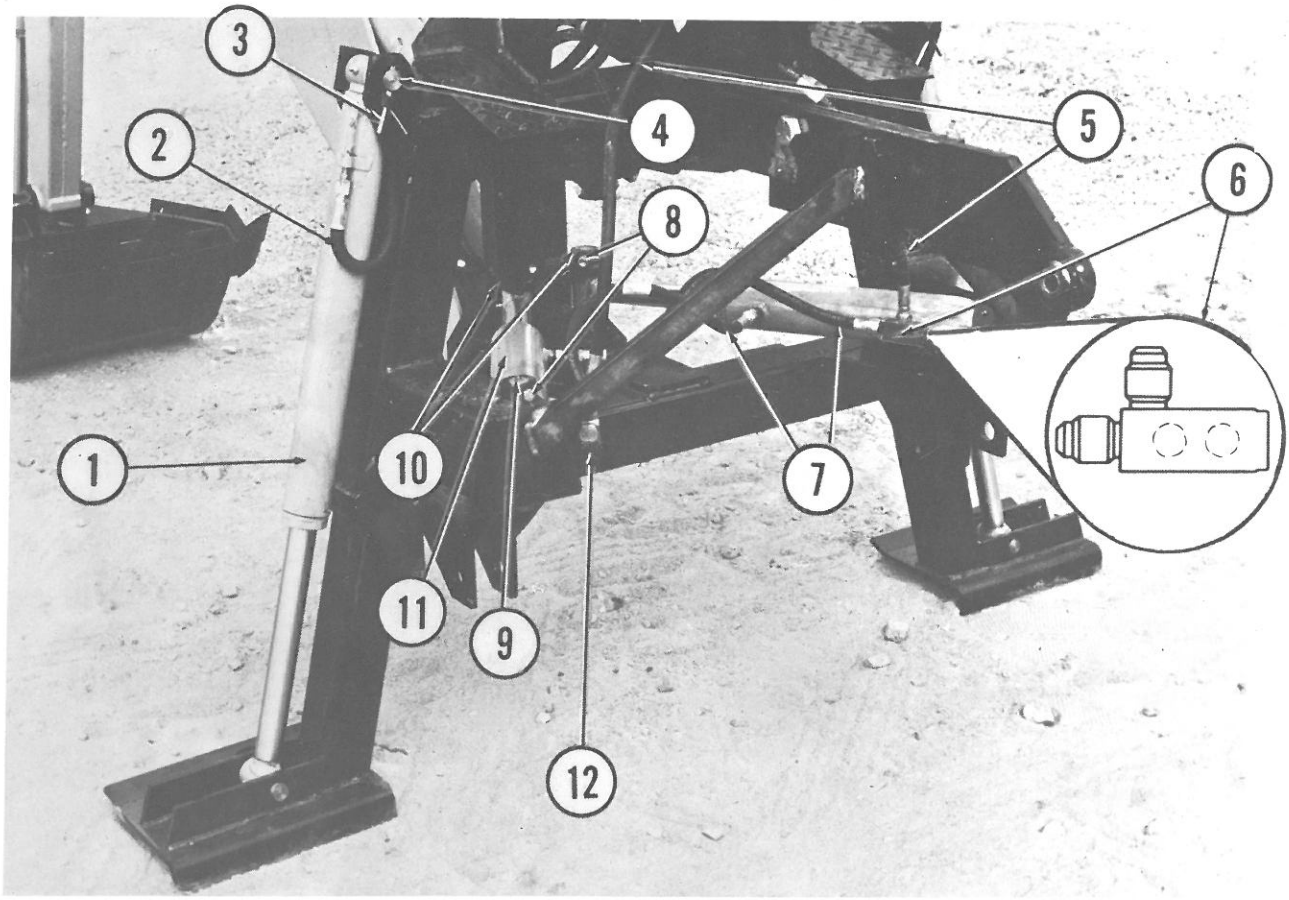
Valve Hoses and Fittings

Ref. No	Quantity	Part No.	Description
1	6	BFT308	Fitting 863 B x 6 swivel ell
2	6	BFT307	850 B 6 x 8 adaptor
3	6	BMS300	Control rod pin
4	6	BFT306	853 B x 8 90 O'ring elbow
5	1	GAUGE	Hydraulic gauge
6	1	BFT250	Inlet & gauge fitting
7			Pressure side of valve (not a part)
8	1	BHO252	Pressure hose 6P-8-8JFS-50"
9	2	BHO336	Stabilizer ram hose 4P-6JM-6JFS-28"
10	2	BHO337	Stabilizer ram hose 4P-6JM-6JFS-29"
11	2	BHO342	Dipper ram hose 4P-6JM-6JFS-67"
12	1	BHO338	Bucket ram hose 4P-6JM-6JFS-48"
13	1	BHO339	Bucket ram hose 4P-6JM-6JFS-50"
14	2	BHO347	Swing ram hose 4P-6JM-6JFS-26"
15	1	BHO343	Boom ram hose 4P-6JM-6JFS-82"
16	1	BHO344	Boom ram hose 4P-6JM-6JFS-84"
17	1	BHO252	Return hose 6P-8-8JFS-50"
18	1	BFT310	Special return fitting with check 850 B x 8 x 10
19	1	BCV258	Husco 6 bank hydraulic valve



Valve Controls

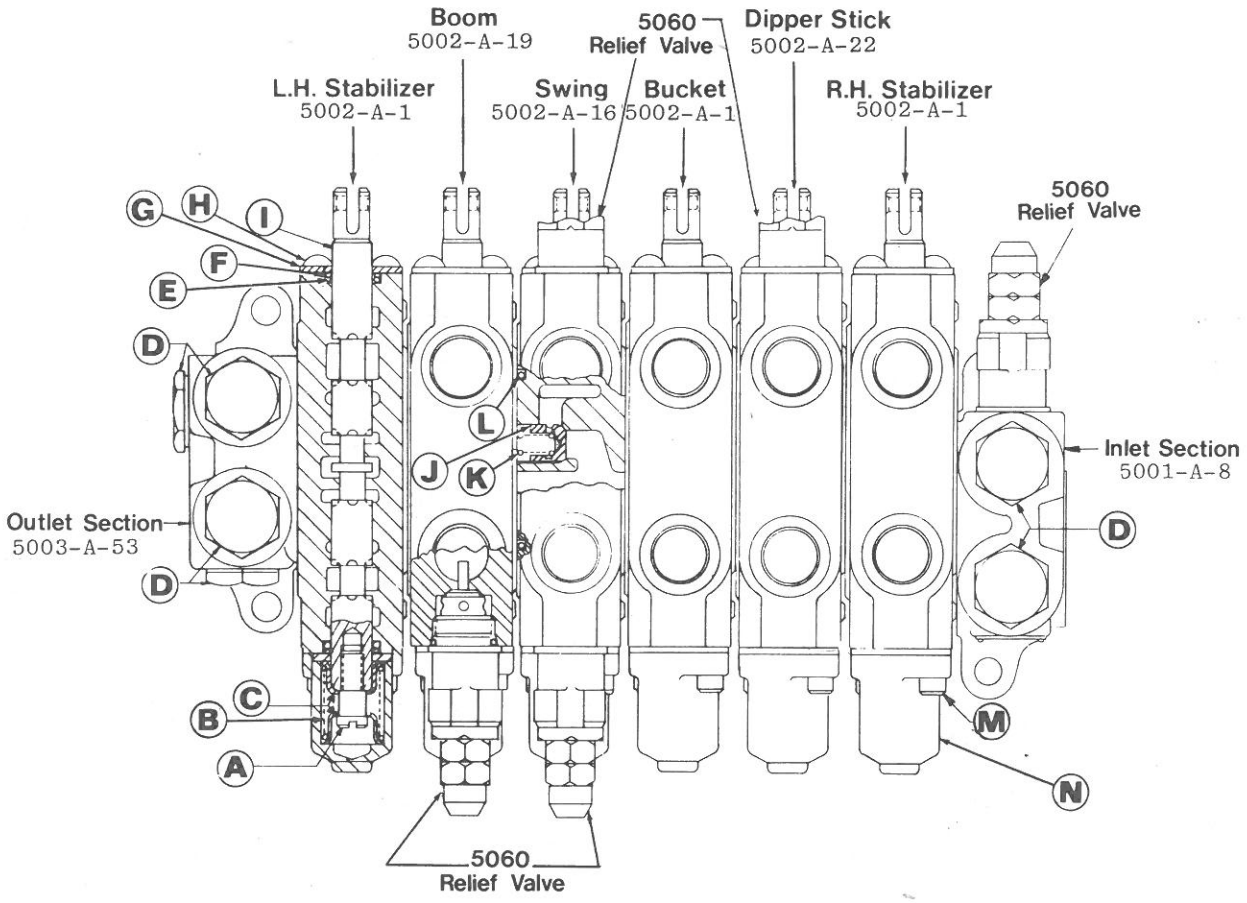
Ref. No.	Quantity	Part No.	Description
1	2	BMS297	1/16" x 1" cotter pin
2	1	BMS263	Stabilizer control handle, L.H.
3	2	BMS264	Dipper-bucket & boom-swing (center control handle)
4	4	LMS3149A	Control handle knob
5	1	BMS262	Stabilizer control handle, R.H.
6	4	BCV143	Ball joint connector
7	6	BCV335	Control rod
8	2	BMS153	Lever bolt with locknut
9	1	BMT261	Control bracket
10	2	BMS299	Control pivot bracket assembly
11	2	BCV259	Special ball joint connector - short
		Not Illustrated Parts	
	1	BMF316	Control lever panel cover



Swing and Stabilizer Hoses and Fittings

Ref. No.	Qty.	Part No.	Description
1	2	BCY305	Stabilizer Ram 2" x 16" Stroke
2	2	BHO336	Stabilizer Hose 4P-6JFS-6JM-28"
3	4	LMS2006	Cotter Pin 5/16" x 3-1/2"
4	4	BMS117	Stabilizer Ram Pin Rod & Base End 1" x 4"
5	2	BHO347	Swing Ram Out Hose 4P-6JFS-6JFS-26"
6	1	BFT314	RH Manifold with cushion
7	2	BHO348	Swing Ram Hoses 4P-6 O'ring-6JFS-21"
8	4	BMS172	Locking Pin W/Nut, 3/8" x 2-1/2"
9	2	BMS115	Swing Ram Pin, Base End 1" x 6-1/4"
10	2	BMS333	Swing Ram Pin, Rod End 1" x 4-3/4"
11	2	BCY302	Swing Ram 2-1/2" x 10" Stroke
12	1	BFT313	LH Manifold with cushion

Husco Valve



Service Parts List

Outlet Section Assembly

Ref. Letter	Quantity Required	Part Number	Description
NI	1	5006-C-9	Housing*
D	4	11180	Plug

*Order complete section

Inlet Section Assembly

Ref. Letter	Quantity Required	Part Number	Description	Material
NI	1	5004-A-7	Valve Housing	
NI	1	5060	Relief Valve	
D	2	11180	Plug	
K	1	564	O-ring	

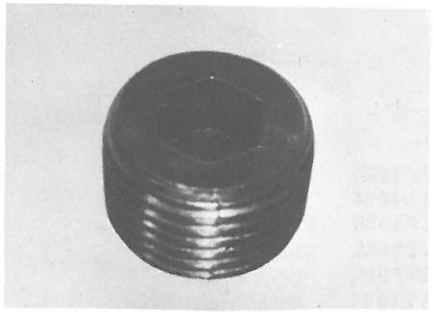
Plunger (Spool) Section Assembly

Unit No.	Relief Valve Assemblies	No. Required
5002-A-1		
5002-A-19	5060 Relief Valve Ass'y	1
5002-A-16	5060 Relief Valve Ass'y	2
5002-A-22	5060 Relief Valve Ass'y	1

Seal Kits

(1)	Complete Spool and Section	#51949
(1)	Spool	#51951
(1)	Section	#51086

Closed Center Plug



BCV301

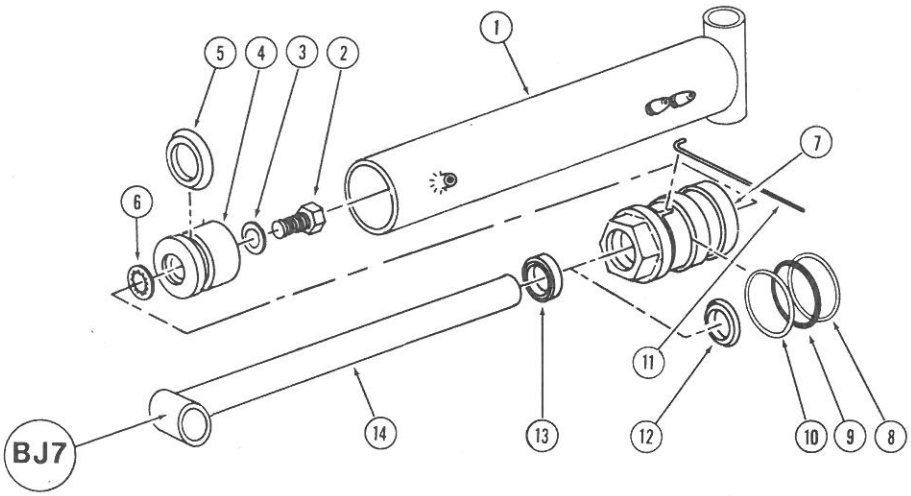
Plunger (Spool) Parts

All plunger (spool) plunger parts typical for the plunger housings.

Ref. Letter	Quantity Required/Plunger	Part No.	Description
A	1	5015	Cap Screw
B	1	5014	Plunger Spring
C	2	5013	Spring Seat
E	2	130	O-ring
F	2	5029	Wiper
G	2	5012	Seal Plate
H	2	3432	Machine Screw
I	1	5031*	Plunger
J	1	5011	Poppet
K	1	5064	Spring
L	1	564	O-ring
M	2	5035	Cap Screw
N	1	5028	Plunger Cap

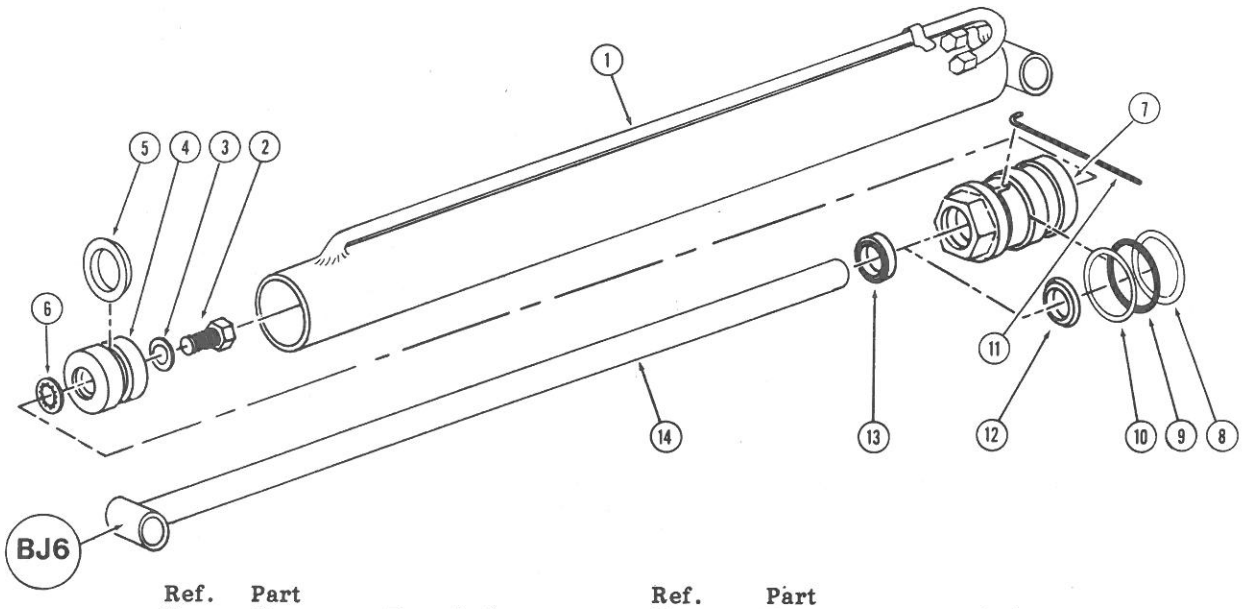
*Plungers and housings are match fitted and are not field replacable items.

BCY302 2-1/2" X 10" Swing Cylinder



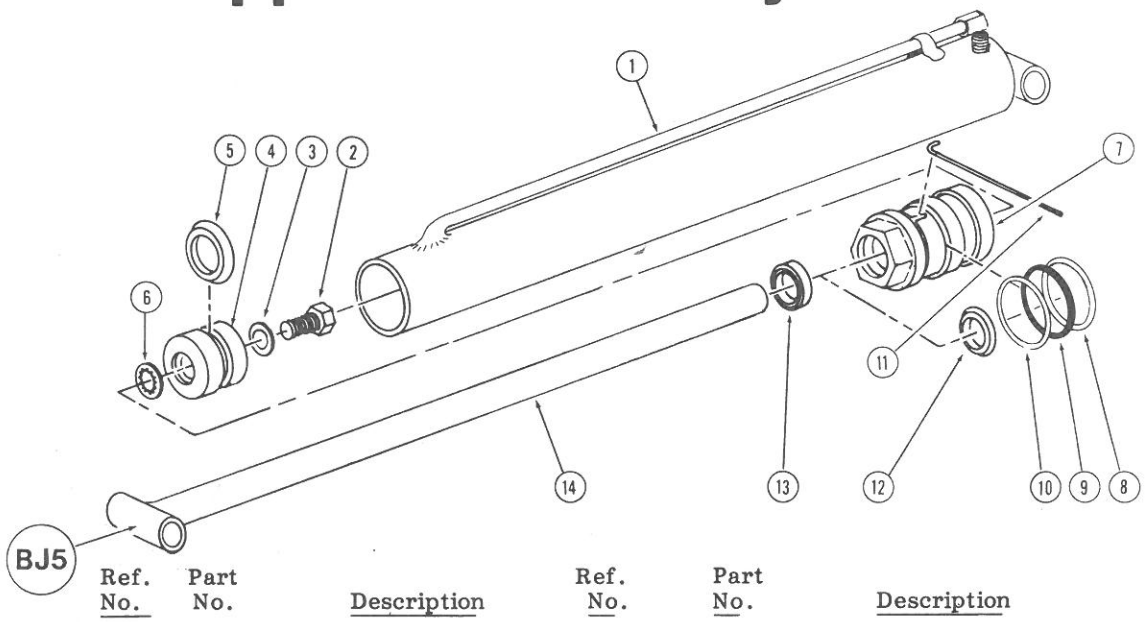
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	BCY1083	Barrel Assembly	8 & 10	LCY1070	Back-up Ring
2	LCY1017	7/8" Capscrew	9	LCY1024	O'ring
3	LCY1018	7/8" Dyna Seal	11	LCY1026	Lockwire
4	BCY356	Piston	12	LCY1025	Rod Seal
5	LCY1019	Piston Seal	13	LCY1027	Rod Wiper
6	BMS245	Internal Lockwasher	14	BCY1082	Rod Assembly
7	LCY1023	Ram Head		LCY1030	Seal Kit

BCY303 2-1/2" X 26" Boom Cylinder



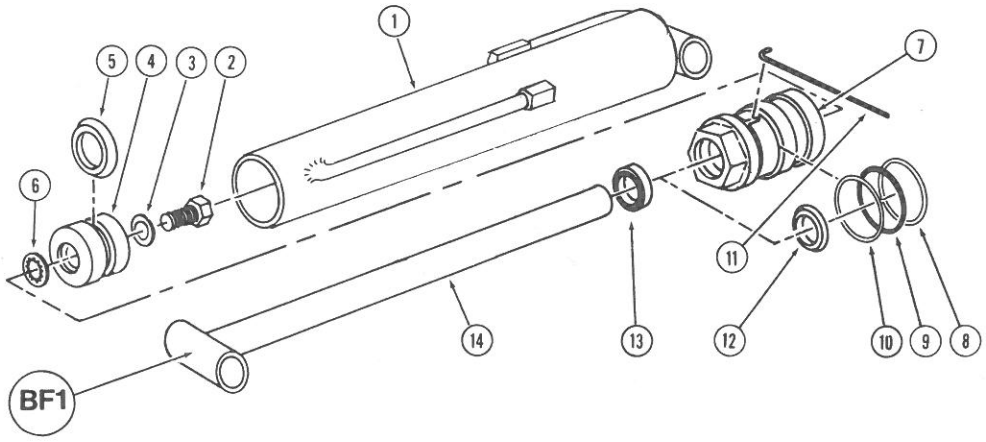
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	BCY1085	Barrel Assembly	8 & 10	LCY1070	Back-up Ring
2	LCY1017	7/8" Capscrew	9	LCY1024	O'ring
3	LCY1018	7/8" Dyna Seal	11	LCY1026	Lockwire
4	LCY1020	Piston	12	LCY1025	Rod Seal
5	LCY1019	Piston Seal	13	LCY1027	Rod Wiper
6	BMS245	Internal Lockwasher	14	BCY1084	Rod Assembly
7	LCY1023	Ram Head		LCY1030	Seal Kit

BCY304 2-1/2" X 20" Dipper & Bucket Cylinder



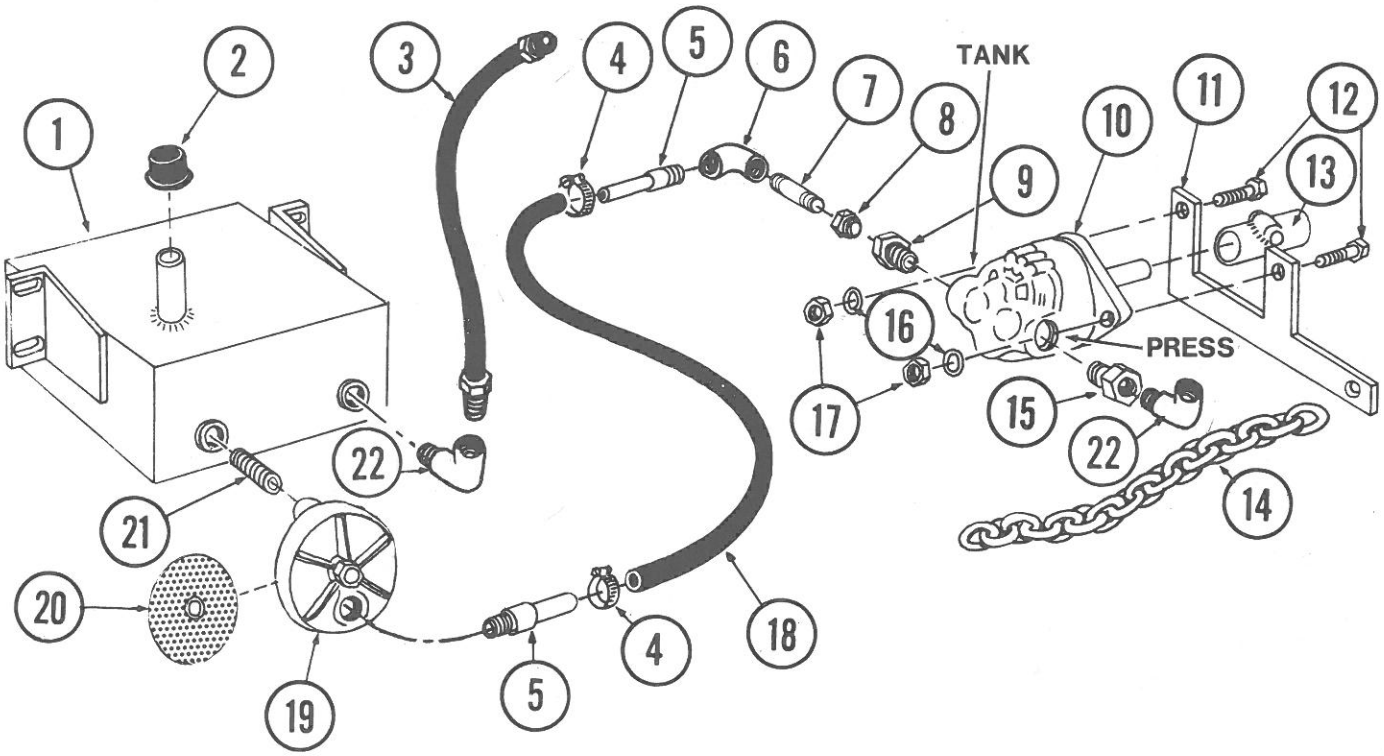
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	BCY1087	Barrel Assembly	8 & 9	LCY1070	Back-up Ring
2	LCY1017	7/8" Capscrew	9	LCY1024	O'ring
3	LCY1018	7/8" Dyna Seal	11	LCY1026	Lockwire
4	LCY1020	Piston	12	LCY1025	Rod Seal
5	LCY1019	Piston Seal	13	LCY1027	Rod Wiper
6	LCY245	Internal Lockwasher	14	BCY1086	Rod Assembly
7	LCY1023	Ram Head		LCY1030	Seal Kit

BCY305 2" X 16" Stabilizer Cylinder



Ref. No.	Part No.	Description	No.	No.	Description
1	BCY1089	Barrel Assembly	8 & 10	LCY1070	Back-up Ring
2	LCY1017	7/8" Capscrew	9	LCY1024	O'ring
3	LCY1018	7/8" Dyna Seal	11	LCY1026	Lockwire
4	LCY1020	Piston	12	LCY1025	Rod Seal
5	LCY1019	Piston Seal	13	LCY1027	Rod Wiper
6	BMS245	Internal Lockwasher	14	BCY1988	Rod Assembly
7	LCY1023	Ram Head		LCY1030	Seal Kit

BPP200-30 Independent Hydraulic System



1	1	BPP354	Reservoir
2	1	LPP2639	Breather Cap
3	1	BHO252	6P-8-8JFS-50" (already on Backhoe)
4	2	LMS2640	1" Hose Clamp
5	2	LFT2562	3/4" Hose Nipple
6	1	LFT251	3/4" 90° Ell
7	1	LFT2650	3/4" x 3" Nipple
8	1	LFT2565	1" to 3/4" Reducer Bushing
9	1	LFT2644	6405-20 Pump Adapter Fitting
10	1	LPP6242	388KB 1 Webster Pump
11	1	LPP6245	Torque Bar
12	2	LMS2047	1/2" x 2" Capscrew
13	1	LPP6243	Standard PTO Pump Drive Adapter, 540 RPM. 1-3/8"
13	1	LPP6251	Optional PTO Pump Drive Adapter, 1000 RPM. 1-3/4"
14	1	BPP101	24" Torque Chain
15	1	LFT2645	5406-20-12 Pump Adapter Pressure Fitting
16	2	LMS2061	1/2" Lockwasher
17	2	LMS2062	1/2" Nut
18	1	LHO2854	16R-O-O-24" Suction Hose
19	1	LPP2638	F-240 Filter Assembly
20	1	LPP6246	80 Mesh Filter Screen
21	1	LFT2509	3/4" Close Nipple
22	2	LFT2527	1/2" 90° St. Ell
		BPP355	Pump Carton (all above parts except reservoir)

specifications

Digging Depth	8' with 2' Flat Bottom	2.44 m./.61 m.
Maximum Digging Depth	8'6"	2.6 m.
Reach (from swing pivot)	11'-1"	3.38 m.
Reach (from rear axle)	14'-8"	4.47 m.
Transport Height	6'-9"	2.06 m.
Loading Height	5'-6"	1.68 m.
Shipping Weight	1125	510.3 kg.
Bucket Curl	131° max.	
Swing	180°	
Bucket Pryout Power	Tophole 5605 lb.	2542 kg.
	Bottom Hole 5890 lb.	2672 kg.
Dipper Stick Power	2470 lb.	1120 kg.
Stabilizer Spread:		
Operating Position	5' - 7-1/2"	1.75 m.
Transport Position	4' - 11" - 1/2"	1.51 m
System Relief Valve Setting	1900 PSI	163 KP-cm^2

Independent Hydraulic System	Optional
Pump Furnished	Webster 388K (LPP6242)
Pump Rating	9GPM @ 600 RPM/34.07 liters @ 600 RPM
Hydraulic System Capacity	5 gallons/18.93 liters
Filter	Suction Type

BUCKETS

Width	Weight	Struck Capacity
12"/30.48 cm.	97 lb./44.9 kg.	1 cu. ft./.028 m^3
18"/45.72 cm.	121 lb./55.7 kg.	1.5 cu. ft./.042 m^3
24"/60.96 cm.	145 lb./66.6 kg.	2 cu. ft./.056 m^3

NOTE: Specifications will vary with tractor model and are based on boom pivot 11" above ground level.

CYLINDERS

Type	Piston Diameter	Stroke	Closed Length	Open Length	Rod Diameter
Swing	2-1/2"	10"	17"	27"	1-3/8"
(BCY302)	6.35 cm.	25.40 cm.	43.18 cm.	68.58 cm.	3.49 cm.
Boom	2-1/2"	26"	33"	59"	1-3/8"
(BCY303)	6.35 cm.	66.04 cm.	83.82 cm.	149.86 cm.	3.49 cm.
Dipper Stick	2-1/2"	20"	27"	47"	1-3/8"
(BCY304)	6.35 cm.	50.80 cm.	68.50 cm.	109.88 cm.	3.49 cm.
Bucket	2-1/2"	20"	27"	47"	1-3/8"
(BCY304)	6.35 cm.	50.80 cm.	68.50 cm.	109.88 cm.	3.49 cm.
Stabilizer	6.35 cm.	16"	23"	39"	1-3/8"
(BCY305)	5.08 cm.	40.64 cm.	58.42 cm.	99.06 cm.	3.49 cm.

RELIEF VALVE SETTING

Main relief	1900 PSI
Boom and dipper	2500 PSI
Swing	1500 PSI

Note: When replacing the main relief on the swing relief valves it will be necessary to adjust them to the correct relief pressure.

Limited Warranty

C. C. Kelley and Son, Inc., hereinafter referred to as Kelley, warrants to the original retail purchaser of Kelley equipment that it will either repair or replace any part which proves, upon inspection by Kelley, to have been defective within 180 days from the date of original retail purchase. This warranty is valid only if the purchaser has returned to Kelley a signed Warranty Registration Form within ten days after the equipment is delivered to the purchaser.

This warranty shall not apply to any part of the equipment if it has been installed, altered, repaired, or misused in a way that in the opinion of Kelley affects the reliability of or detracts from the performance of the equipment. Neither does this warranty apply to any part of the equipment if its serial number has been altered, defaced, or removed; nor does it cover replacements or repairs necessitated by loss or damage resulting from any cause beyond the control of Kelley including, but not limited to, Acts of God, acts of government, floods, fires, shortages of materials, and labor difficulties.

Within 180 days from date of purchase any warranty claim must be brought to the attention of the Kelley dealer from whom the equipment was purchased. The dealer will complete a Request for Credit Authorization form and return it to Kelley for consideration. All defective parts must be returned freight prepaid to Kelley before a warranty claim will be considered.

Kelley will not assume liability for any costs involving labor, altering of design, or welding unless prior authorization is granted by Kelley. Kelley reserves the right to make the final determination of time and hourly rate for labor claims. The purchaser of the Kelley equipment is responsible for any transportation expenses, damages, or losses that result from a warranty claim.

Defects in components purchased by Kelley as complete units for installation in or with Kelley equipment will only be made good by Kelley to the extent that the original manufacturer warrants them to Kelley. Standard warranty on all purchased items is replacement only of defective parts upon inspection by the original manufacturer. Kelley will not be liable for any operational delays or consequential damages under this warranty.

Kelley neither assumes nor authorizes any person to assume for Kelley any other obligation or liability in connection with the sale of this equipment.

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