



B600 B750 B851

BACKHOE

**OWNER'S MANUAL**

**KELLEY MANUFACTURING CORPORATION**

PO BOX 276 • 131 PROGRESSIVE DRIVE • OTTOVILLE, OHIO 45876 • PHONE 419-453-5539 • FAX 419-453-2278

## INTRODUCTION

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# ***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 CARD 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 Card. Your warranty is valid only if the Warranty Registration Card is returned to us within ten days after the delivery of your backhoe.

The warranty period is one year from the original date of purchase for parts and 6 months for labor. To verify the warranty period, you should keep the sales slip or other proof of purchase date.

This warranty does not cover damage caused by accident, misuse, or tampering with the product. A charge will be made for such repairs.

Attach your **CUSTOMER COPY** of the Warranty Registration Card or fill in the information below. This information will help you in ordering repair parts for your **KELLEY B10 BACKHOE**.

MODEL NUMBER	
SERIAL NUMBER	
DATE OF SALE	
DEALER	
ADDRESS	
CITY	
STATE	ZIP
<b>KELLEY MANUFACTURING CORPORATION OTTOWILLE, OHIO</b>	












 **CAUTION**

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 (as shown above) is used throughout this manual to bring to your attention to 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 THEY HAVE READ THIS MANUAL AND UNDERSTAND IT FULLY.*

1. Your backhoe must be mounted only on a tractor equipped with a Category 1 hitch for B600 and B750, and larger Category I, Category II and Category III for the B-851. Failure to do so may result in serious injury.
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 footpads 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 lock is 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. Be extra careful when working on hillsides and close to ditches or any place where danger of tipping or sliding is possible.
16. Do not dig under the stabilizers or backhoe, as a cave-in could occur.

## INTRODUCTION

17. Be sure you are not digging over underground wiring or other underground obstructions.
18. 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.
19. Do not attempt to raise the tractor off the ground or move the tractor forward or backward using the boom or stabilizers.
20. When leaving the backhoe for any reason, lower the bucket to the ground for safety.
21. Never leave unit unattended with engine running
22. 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.
23. Do not wear loose clothing while operating or working near the backhoe. Keep hair and clothing away from all moving parts of the backhoe.
24. Only the operator should be near the backhoe during operation. Keep all others a minimum of fifty feet away from your work area.
25. Keep your work area clear of obstacles at all times.
26. Children should never be permitted to operate the backhoe.
27. 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.
28. 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.
29. 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.
30. Perform all maintenance procedures as recommended.
31. 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.
32. Use the hand signals show below for safety during operation

<p><b>HAND SIGNALS</b> Use when noise or distance does not allow normal voice communication.</p>	 <p>Slow It Down - Decrease Speed</p>	 <p>This Far To Go</p>	 <p>Move Out - Take Off</p>	 <p>Raise Equipment</p>	 <p>Move Toward Me - Follow Me</p>
 <p>Stop</p>	 <p>Stop The Engine</p>	 <p>Start The Engine</p>	 <p>Come To Me</p>	 <p>Speed It Up - Increase Speed</p>	 <p>Lower Equipment</p>

## GENERAL SPECIFICATIONS

**⚠ CAUTION** Your backhoe must be mounted only on a tractor equipped with a Category I hitch for B600 & B750. The Category I tractors may use the B851 Category II and III hitches are required for the B851, B60 and B70 backhoes. Failure to do so voids all warranties associated with this equipment. The B600 and B750 are not safe to operate unless it is mounted on a Category I hitch. The B851 may be used on a category I hitch usually in conjunction with a frame kit, and category II and III hitches. Failure to do so may result in serious injury.

**⚠ 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 setup, 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 setup, 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 4-6 GPM for B600 and B750 and 6-8 GPM for the B851, B60, and B70 at a preferable 2000lb – 2200 PSI and a minimum of 1500lb PSI.

Since many tractor systems exceed a flow rate specified for your backhoe, the flow may have to be adjusted by throttling the engine RPM down to obtain an acceptable flow rate. 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 SELECT HYDRAULIC SYSTEM

### TRACTOR SYSTEM

- A. If an open center tractor hydraulic system is utilized, attach, the backhoe valves pressure hose to the tractor pressure hydraulic outlet, and the backhoe valve return hose to the tractors hydraulic oil pump.

### POWER BEYOND HYDRAULIC SYSTEM

- B. 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** Figure 1. Since there are so many variations for this type of setup, 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.

## ASSEMBLY

# For Power Beyond Hydraulic Systems

## Power Beyond and Closed Center Kit Part # BCV10107

For power beyond applications, a Power Beyond and Closed Center Kit (Part #BCV10107) must be purchased from your *KELLEY BACKHOE* Dealer, then perform the following steps:

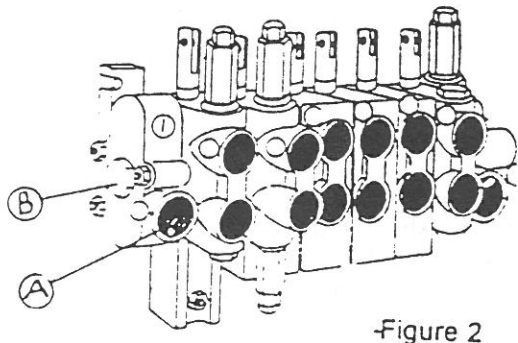
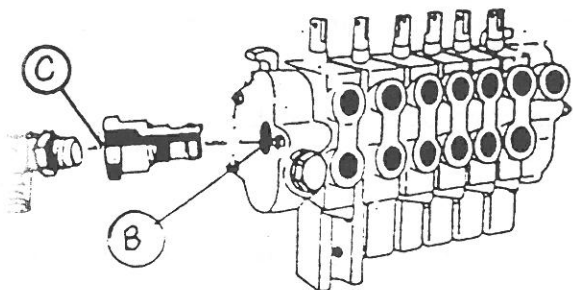


Figure 2

- A. Remove return hose and elbow, only if it was installed at point B Figure 2, on model B851 only. Models B600 & B750 return hose need not be removed.
- B. Install Power beyond sleeve at Point B—Figure 2
- C. Install a #8 O-Ring ell (Part #SFT272) into closed center sleeve opening C. This converts it to a power beyond sleeve.
- D. Install a high pressure hose going to the inlet of another valve. This hose is not furnished.
- E. If the return hose was installed at Point B (model 851 only) it must be installed at point A of the outlet section. Remove the O'Ring plug and install one C5315 8x10 adapter and one C5506 swivel nut ell. Connect the return hose to the ell and the other end to the oil sump of the tractor. For models B600 & B 750 the return hose must also be connected to the tractor oil sump.
- F. Refer to Figure 1 for hosing.



## CLOSED CENTER HYDRAULIC SYSTEMS

### Power Beyond and Closed Center Kit Part #BVV10107

### CAUTION

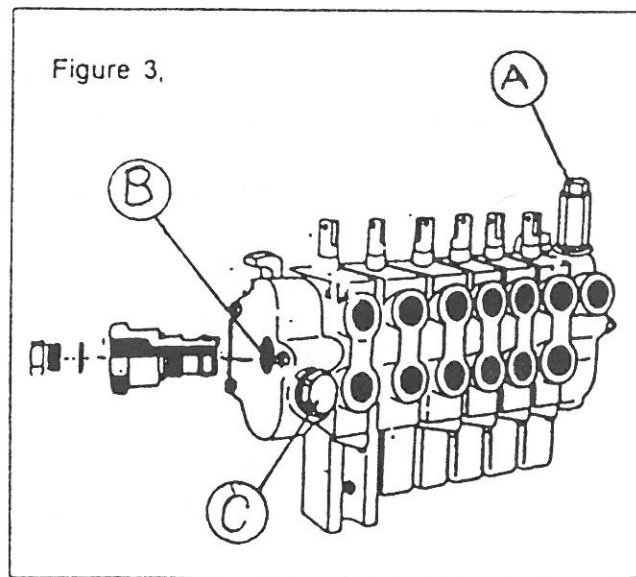
If you are going to use a closed center tractor hydraulic system to power your *KELLEY BACKHOE*, A Power Beyond and Closed Center Kit (Part #BVV10107) must be purchased from your *KELLEY BACKHOE* Dealer, then you must follow carefully the directions below. Failure to do so may cause extensive damage to your tractor and/or *KELLEY BACKHOE*.

#### 1. Adjust the Valve Bypass

- A Remove the cover nut, Point A of Figure 3, from the valve bypass. This exposes a socket head screw.
- B Loosen locknut and turn socket head screw *IN* approximately four complete turns, then tighten locknut.
- C Replace cover nut. Be sure to replace the washer with the cover nut as it acts as a gasket.

#### 2. Installing the Closed Center Sleeve

- A Return hose must be connected to the return section of the valve at point C and with the other end to the tractor.
- B Remove plug at point B and install the closed center sleeve. Use the plug that was removed to plug the sleeve.



- C. Remove the O-Ring plug from the front of outlet section of the valve Point C of Figure 3 (for model B851 only) and replace with a C-5315X8X10 adapter (Part #SFT10079). Connect return line to the adapter and return to oil sump of the tractor.


This procedure converts the valve to a closed center operation. If the valve is set for closed center operation, it may be converted back to open center by reversing the above procedure.


### 3. Choose the Appropriate Hosing

#### INDEPENDENT P.T.O. HYDRAULIC PUMP SYSTEM

Install the independent hydraulic system onto the backhoe according to the following procedures. Refer to Figure 1 and page 7 of this manual for the identification of the parts. During the assembly, use pipe compound on all pipefittings. None is required on the O-Ring fittings.

- A. Insert the filter into the **SUCTION PORT** of the reservoir. This is the port that is located on the left side of the reservoir.
- B. Attach the 1/2" street ell to the **RETURN PORT** on the reservoir. This is the port located on the right side of the reservoir.
- C. Attach the reservoir to the backhoe as shown in drawings that come with pump kit.
- D. Bolt the torque bar to the flange mounting of the pump. Use the 7/16" capscrews, lock washers, and nuts.
- E. Connect all fittings as illustrated in the instruction with the PTO hydraulic pump kit for your backhoe.

 **CAUTION** Do not connect the pressure port to return port of the backhoe valve. This will destroy a hydraulic pump in seconds. The supplier of hydraulic pumps will not warrant pumps under these conditions.

 **CAUTION** The hydraulic valve can be damaged by:

1. Reversing the flow of oil through the valve.
2. Hydraulic lines disconnected during transport.
3. Disconnecting the return line while the tractor is running.
4. A faulty quick coupler.
5. More than 12 GPM of oil flow while operating the backhoe.
6. By connecting the backhoe to a tractor valve and actuating the valve in the wrong direction causing a reverse flow through the backhoe valve.

### FOR ALL TRACTORS

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

# ASSEMBLY - OPERATION

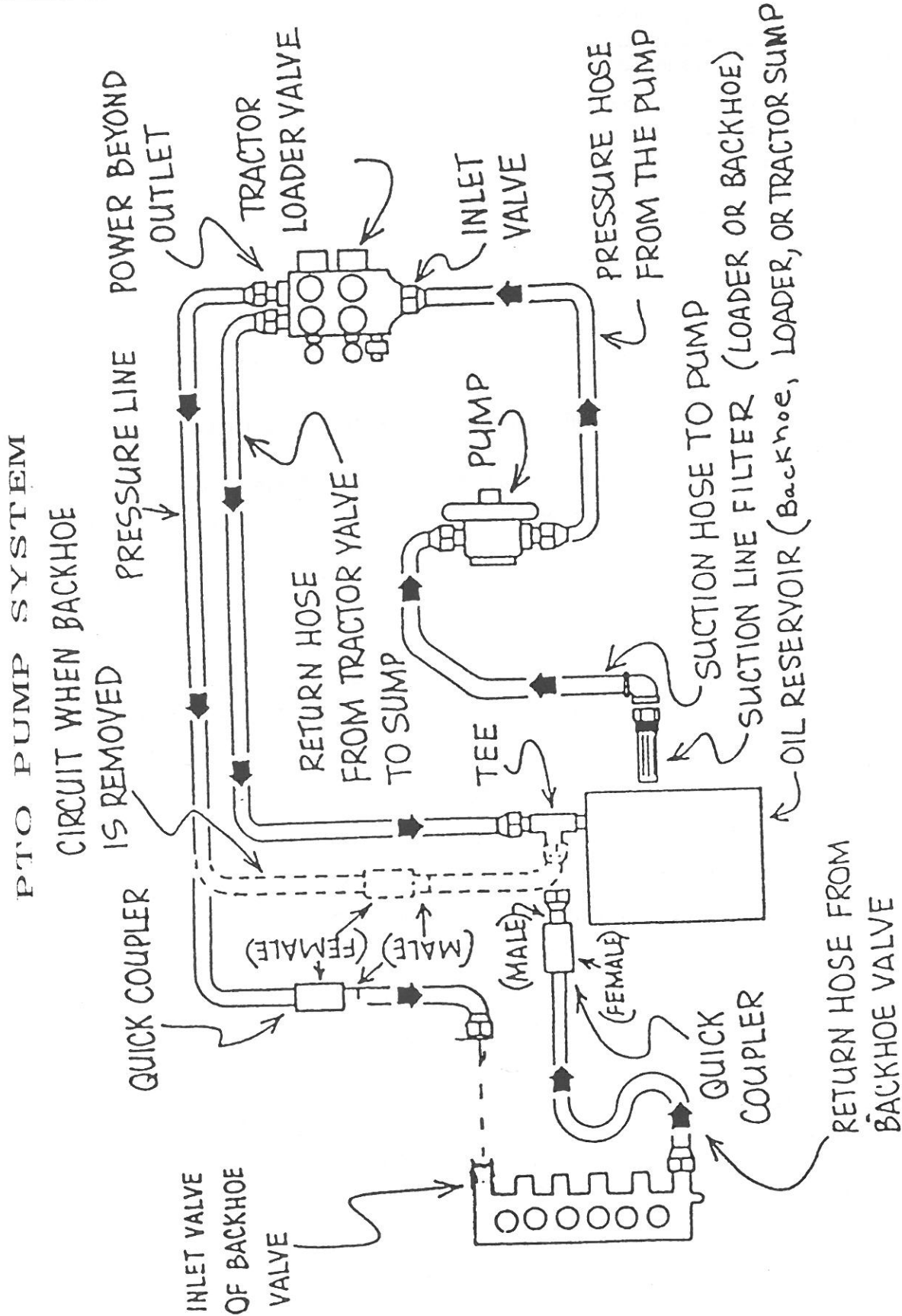


Figure 1



## FOR JOHN DEERE TRACTORS

The return hose supplied with your *KELLEY BACKHOE* will not be long enough. You will have to purchase a ½" 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 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.

## MOUNTING THE BACKHOE

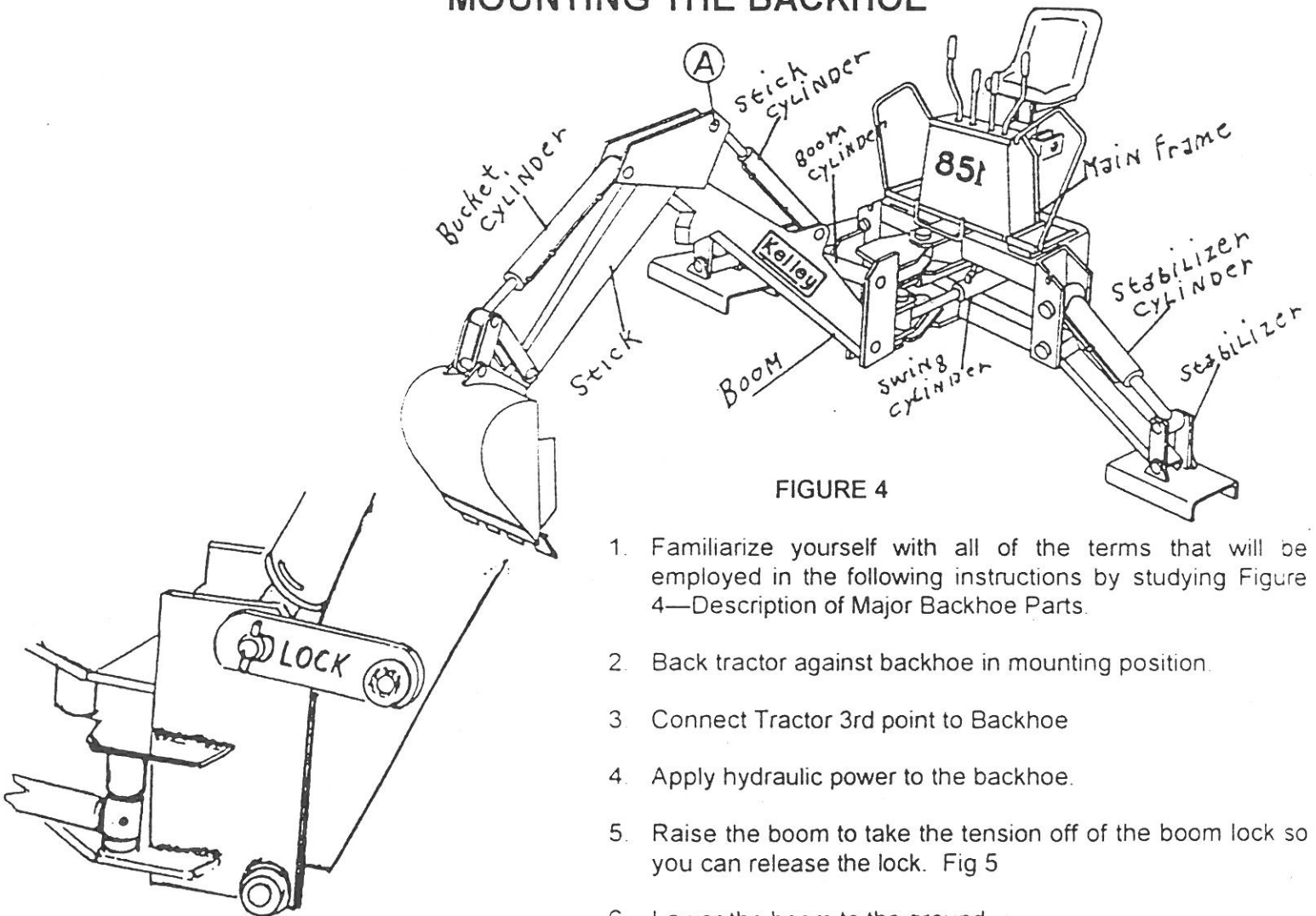


FIGURE 5

# ASSEMBLY - OPERATION

## MOUNTING THE BACKHOE

7. Remove the pin from Point A of Figure 4 & connect dipper cylinder.

**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.

8. Extend boom, dipper stick and stabilizers until they contract with the ground. Remove shipping pallet. FIGURE 6
9. Install lower link hitch bracket (B600, B851)
10. By manipulating the cylinder and placing down pressure on the boom and stabilizers, lift the backhoe vertically for approximately 8" to 12" of ground clearance.
11. Attach the backhoe to the lower lift arms of the tractor using the handle pins supplied.
12. Install Backhoe stabilizer kit according to FIGURE 7

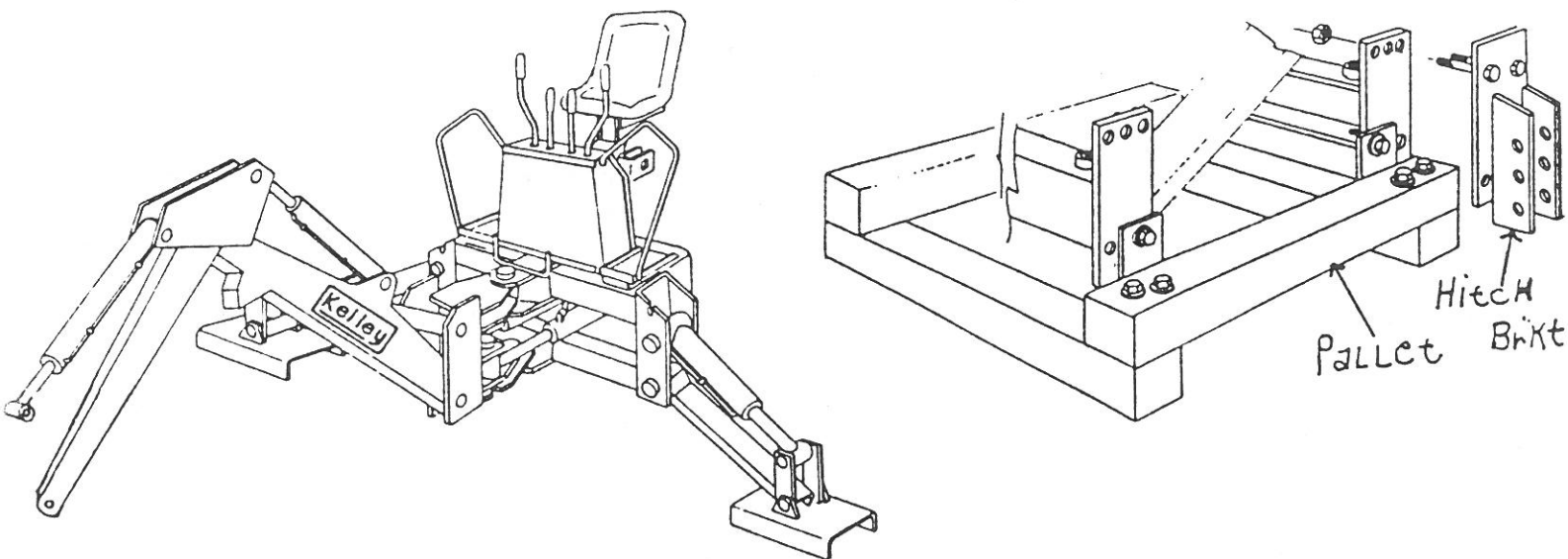


FIGURE 6

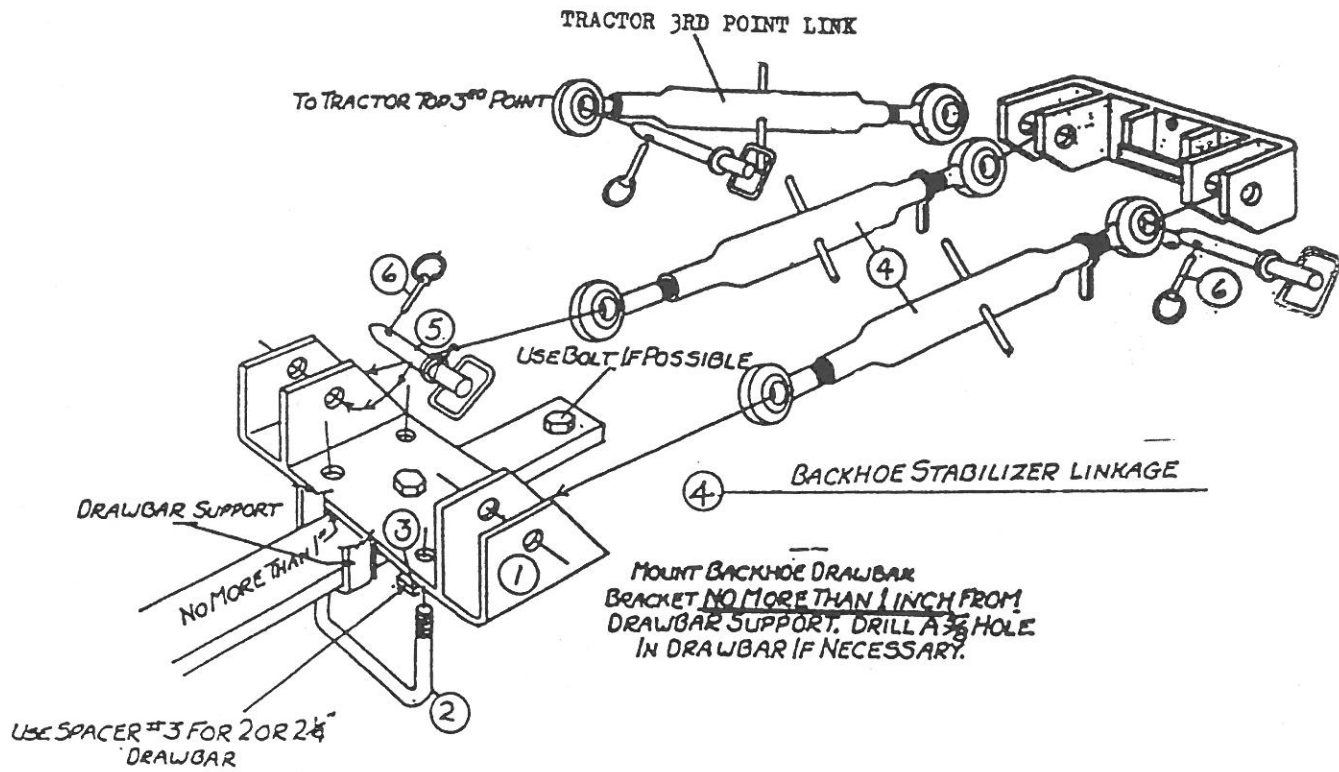
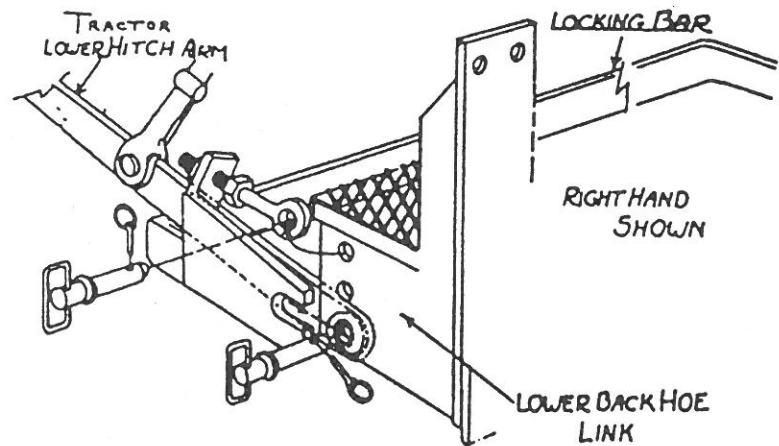


FIGURE 7

LOWER BACK-HOE HITCH LOCKING BAR  
 B-600-BMT12990 B-750 BMT14020  
 B851-BMT13255 B-60,70 BMT12977



OPTIONAL - LOCKING BAR MOUNT KIT - B-851 SHOWN

FIGURE 8

## OPERATION

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NOTE: WHEN LOADING OR UNLOADING WITH SAFETY CHAINS STILL SECURED TO BOOM, STICK **MUST** BE EXTENDED (AS SHOWN) TO AVOID CONTACT WITH GROUND. FAILURE TO DO SO, MAY RESULT IN SERIOUS DAMAGE TO BACKHOE ASSEM.

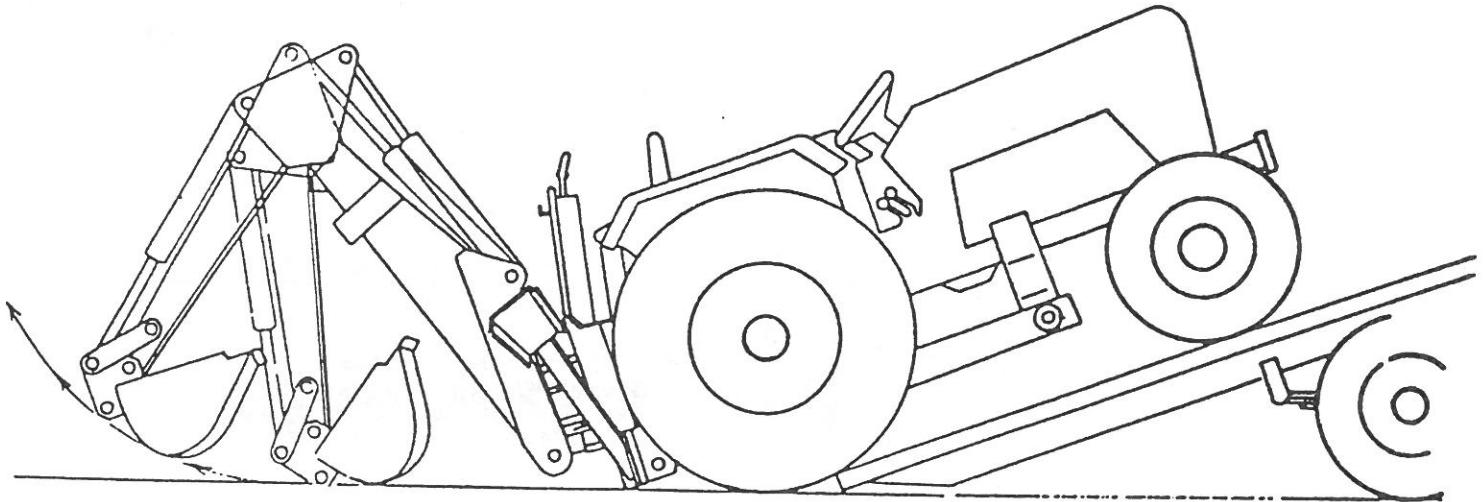


FIGURE 10

## PREPARING FOR OPERATION

### PREPARING THE BACKHOE


To unlock the boom lock you may have to raise the boom in order to relax the tension on the lock.

### PREPARING THE TRACTOR

Move the tractor's gearshift 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 footpads during operation. This protects them from injury that could result from moving parts.

**IMPORTANT  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.

If you are not familiar with the operation of the *KELLEY BACKHOE*, **DO NOT PROCEED** until you have studied the operating instruction transporting the backhoe contained within this manual.

## TRANSPORTING THE BACKHOE

** CAUTION** While traveling with the backhoe, the tractor must have at least 20% of the combined tractor and 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.

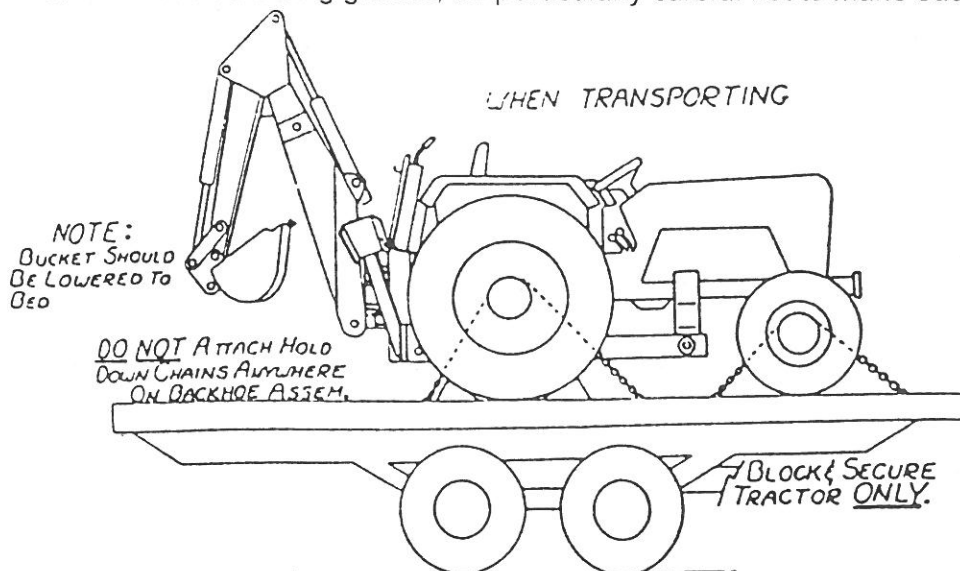
Your backhoes come equipped with a boom lock. This boom lock should be put into proper position anytime you are transporting your backhoe. To ready your backhoe for transport, perform the following:

When hauling the backhoe on a trailer lower the boom on stick to the trailer if possible.

When unloading from the trailer it may save damage to the backhoe if you extend the stick out.

Observe the following precautions while transporting the backhoe with tractor:

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 sudden starts or stops.
5. When climbing grades, be particularly careful not to make sudden starts.



## OPERATING THE BACKHOE

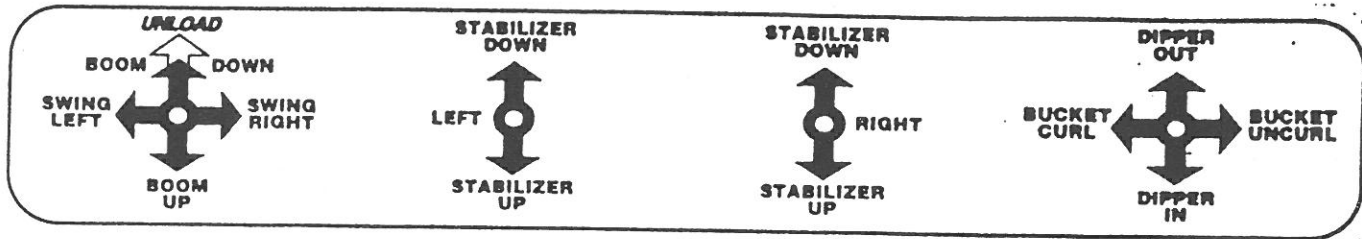


Figure 11  
CONTROL FUNCTION FOR B600, B750, AND B851

To operate your backhoe, mount yourself on the operator's seat. In front of you there are four control levers. Figure 11 above shows this control diagram as it appears on your backhoe. Refer to it for interpreting the following instructions. All directions such as *Right* and *Left* are determined from a seated position in the operator's seat.

**STABILIZERS-** In the center of the operator's console is the controls for the stabilizers. The center left lever controls the left stabilizer, and the center right lever controls the right stabilizer. To raise the stabilizers, pull the levers towards yourself. To lower the stabilizers, push the levers forward (that is away from yourself).

The two levers toward the out side 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 lever on the left side of console controls the boom. Pulling the lever towards you raises the boom; pushing the lever forward lowers the boom. Pushing the lever further into detent float position renders the valve functions inoperable.

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 on the right side of console controls the dipper stick and the bucket. Pulling lever towards your self 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 be 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.

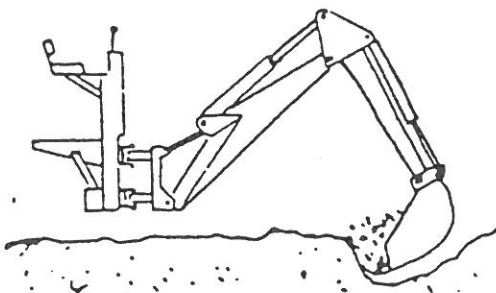
**▲ CAUTION** When digging to either side and/or close to the tractor, be extremely careful that the bucket does not contact the stabilizers, as serious damage may occur.

**▲ CAUTION** 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 stick should be at an angle. Do not extend the boom and the dipper stick out into a straight line. See FIGURE 12.



**Correct**

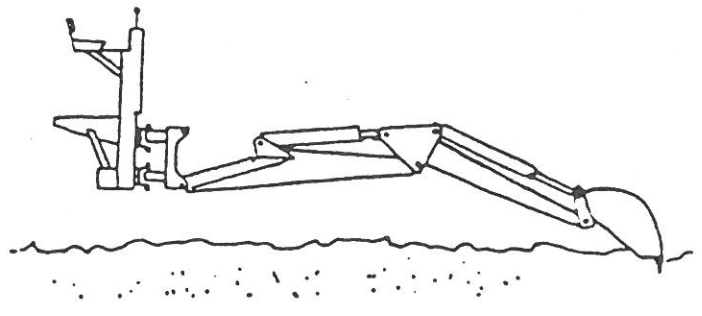
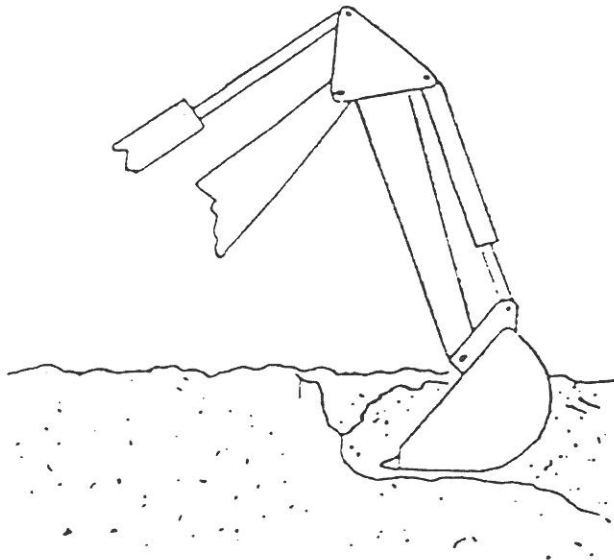


FIGURE 12

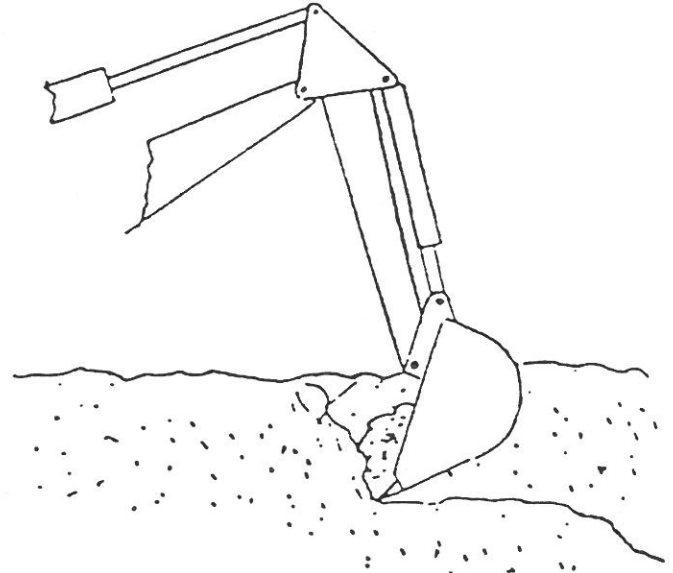
**Wrong**

## OPERATION

Figure 13 shows the correct angle of the bucket for digging. After you have filled the bucket, do not pull the dipper stick 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.



**Correct**



**Wrong**

FIGURE 13

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 stick controls alternately. In this way you can take an even bite each time you make a pass and obtain a full bucket. See Figure 14.

When loading trucks, curling the bucket close to the dipper stick 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 stick by gradually uncurling the bucket. Intermittently pull the boom lever at the same time to maintain a level bottom.

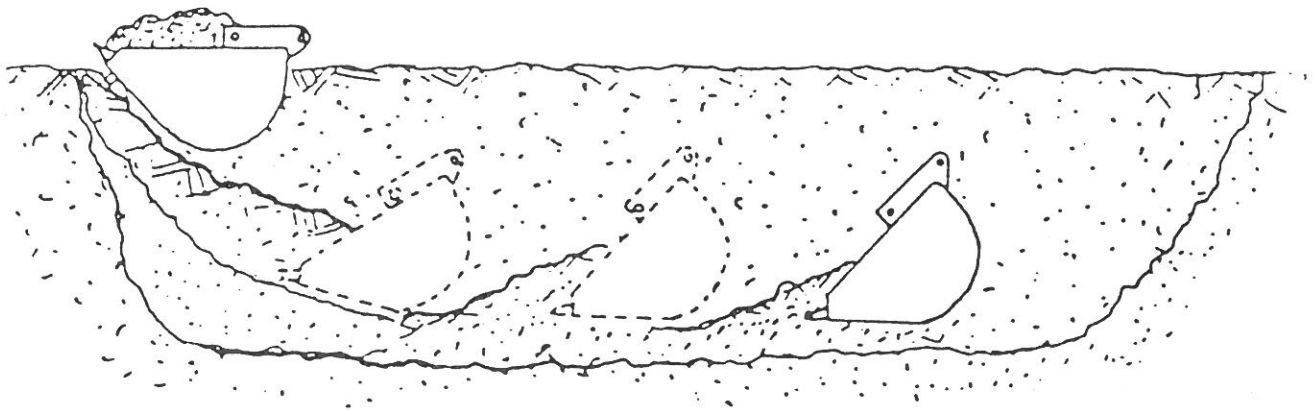




FIGURE 14



## 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

1. 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.
2. Check the hoses for cracks, cuts, or leaks. If a hose is defective, replace it.

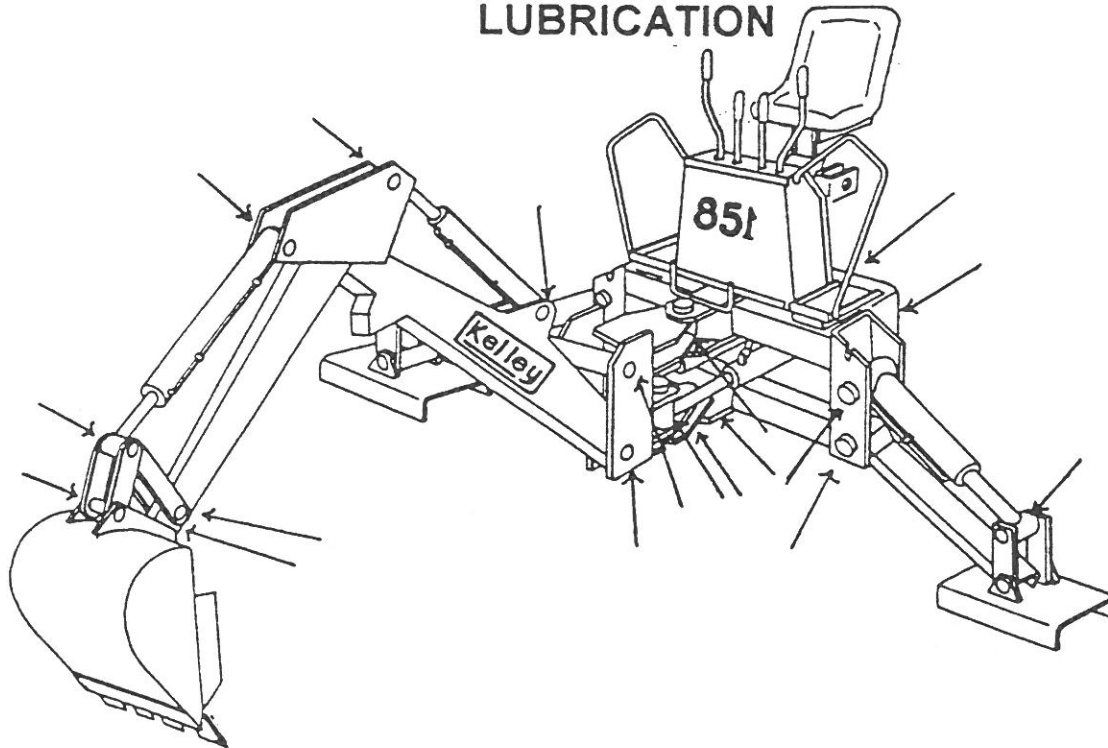
 **CAUTION** Under no circumstances should you attempt to repair a defective hose. Always **REPLACE** defective hoses.

3. Check for defective parts. If any are found, repair and 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 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 Figure 15—LUBRICATION POINTS.

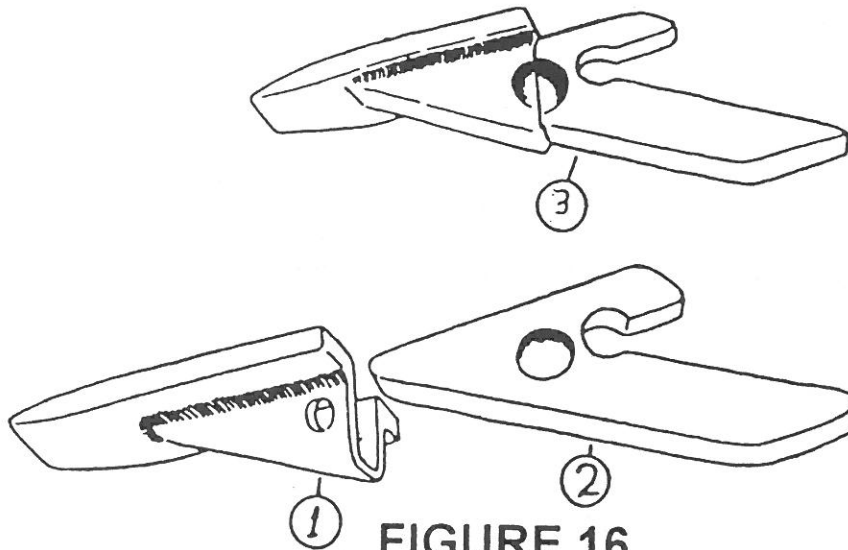
**FIGURE 15  
LUBRICATION**



**BUCKET TOOTH REPLACEMENT**

#1-BBK168 POINT

#2 BBK167 SHANK




**FIGURE 16**

**#3 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-Point 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.

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 THE SEASON

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

Store the backhoe in a dry, protective 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

1. Clear all dirt and debris from all quick couplers, if so equipped.
2. Check all hydraulic hoses and replace if necessary.
3. Tighten loose bolts and nuts.
4. Lubricate the unit.
5. Check bucket teeth. Sharpen or replace if required.
6. Run the unit slowly and check the operating controls before starting to dig.

## MAINTENANCE - TROUBLESHOOTING

### BACKHOE VALVE RELIEF

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

1. B600 & B700 Requires Part # BCV12969 Hydraulic gauge kit). Remove the rod end hose on stabilizer. Cap Stabilizer cylinder fitting and connect hose to hydraulic gauge and lift stabilizer. The gauge will indicate the operating pressure. (The B851 has a gauge mounted on Valve). The maximum operating pressure for the B600 and B750 is 2000 P.S.I. The operating pressure is 2200 P.S.I. for the B851.
2. Start tractor engine and set RPM at operating speed.
3. Raise stabilizer to top position, continue to hold lever until a reading can be take. The pressure should be 2000 P.S.I. For B600 and B750 and 2200 P.S.I. for the B851

### Adjusting the main relief pressure

To adjust the main relief (Point A – Figure 17) remove cap, loosen locknut, hold stabilizer in top position as described in item number 3 above. Screw clockwise to increase pressure or counter clockwise to decrease pressure. When the correct pressure is reached (2000 P.S.I.) for B600 and B750 and 2200 P.S.I. for the B851.

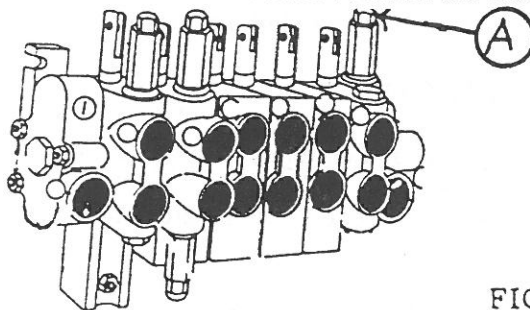


FIGURE 17

## HYDRAULIC VALVE TROUBLESHOOTING

In the disassembly and servicing of the 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	1 Eliminate restrictions in pipe lines and filtering system
	2 Dirt in oil	2 Change oil—clean system
	3 Pipe fittings too tight	3 Check torque
	4 Valve warped from mounting	4 Loosen valve and check
	5 Excessively high pressure in valve	5 Check with gauge on inlet and cylinder lines
	6 Handle or linkage binding	6 Free up linkage
	7 Plunger bent	7 Replace valve or section
	8 Return spring damaged	8 Replace faulty parts
	9 Spring or detent cap binding	9 Loosen cap re-center and re-tighten
	10 Valve not at thermal equilibrium	10 Let system warm up

## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Leaking Seals	<ol style="list-style-type: none"> <li>1. Paint on or under seal.</li> <li>2. Excessive back pressure</li> <li>3. Dirt under seal</li> <li>4. Scored plunger.</li> <li>5. Loose seal plates.</li> <li>6. Cut or scored seal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove and clean.</li> <li>2. Open or enlarge line to reservoir.</li> <li>3. Remove and clean.</li> <li>4. Replace valve or section.</li> <li>5. Clean and tighten.</li> <li>6. Replace faulty parts.</li> </ol>
Unable to move plunger	<ol style="list-style-type: none"> <li>1. Dirt in valve.</li> <li>2. Plunger cap full of oil.</li> <li>3. Bind in linkage</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and flush out.</li> <li>2. Replace seals.</li> <li>3. Free up linkage</li> </ol>
Blown or Leaking O-Ring Seals Between Valve Sections	<ol style="list-style-type: none"> <li>1. Improperly connected.</li> <li>2. Return line was replaced with high pressure hose.</li> <li>3. Valve used in power beyond application without installation of power beyond sleeve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace O-Ring seals. Make sure all connections are as shown in the assembly section of this manual.</li> <li>2. Replace O-Ring seals. Remove high pressure hose and replace it with correct low pressure lose.</li> <li>3. Replace O-Ring seals. Install power beyond sleeve as shown in assembly section of this manual.</li> </ol>

## RELIEF VALVE

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Can't Get Pressure	Poppet stuck open or dirt under seat.	Check for foreign matter between poppets and their mating members. Members must slide freely.
Erratic Pressure	Pilot poppet seat damaged Poppet sticking in relief valve housing	Remove and clean dirt out. If parts are damaged, replace complete relief valve
Pressure Setting Not Correct	Wear due to dirt Locknut and adjustment screw loose	<ol style="list-style-type: none"> <li>1. See "How to Set Pressure"</li> <li>2. Check seats for scratches, nicks or other marks. Replace valve if damaged</li> </ol>
Leaks	Damaged seats, worn O-Rings, parts sticking due to dirt	Replace worn or damaged O-Rings and back up rings. Inspect for free movement of components, check seat for scratches, nicks or other marks. Replace complete relief if metal parts are damaged

## 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	<ol style="list-style-type: none"> <li>1. Low oil supply</li> <li>2. Hoses not properly connected</li> <li>3. Worn or damaged pump</li> <li>4. Broken line</li> </ol>	<ol style="list-style-type: none"> <li>1. Add oil</li> <li>2. Check hose connections</li> <li>3. Replace or repair pump</li> <li>4. Check for leaks. Replace line</li> </ol>

# TROUBLESHOOTING

Slow Operation and Poor Hydraulic System Performance	<ol style="list-style-type: none"> <li>1. Engine speed too low.</li> <li>2. Defective pump.</li> <li>3. Load too heavy.</li> <li>4. Faulty main relief valve.</li> <li>5. Internal valve crack.</li> <li>6. Suction line filter plugged.</li> <li>7. Oil too heavy for cold weather use</li> <li>8. Power supply may not be plumbing enough oil</li> <li>9. Low oil Level</li> <li>10. Pressure line restricted.</li> <li>11. Collapsed suction line.</li> <li>12. Valve spool not at full stroke</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust RPM's.</li> <li>2. Check pressure or replace.</li> <li>3. Check line pressure.</li> <li>4. Clean or replace main relief valve.</li> <li>5. Replace valve section.</li> <li>6. Clean.</li> <li>7. Replace with lighter oil.</li> <li>8. Use a flow meter to check out whether 4-8 GPM flow rate is being achieved.</li> <li>9. Add oil.</li> <li>10. Check for obstruction.</li> <li>11. Check for damage.</li> <li>12. Check movement and linkage</li> </ol>
Backhoe Does Not Hold Up Load	<ol style="list-style-type: none"> <li>1. Cylinder seals leaking.</li> <li>2. Valve spool leaking.</li> <li>3. Oil bypassing valve spool</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace seals.</li> <li>2. Replace seals.</li> <li>3. Replace valve bank.</li> </ol>
Load Drops When Valve Spool Moved From Neutral	Dirt in load check valve	Disassemble and clean
Excess Oil Heat	<ol style="list-style-type: none"> <li>1. Damaged or worn pump.</li> <li>2. Too fast of an engine speed.</li> <li>3. Main relief bypass valve improperly set.</li> <li>4. Draft control lever not all the way down.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace.</li> <li>2. Reduce throttle.</li> <li>3. Check relief setting</li> <li>4. Position correctly</li> </ol>
Oil Leakage	<ol style="list-style-type: none"> <li>1. Valve spool seals.</li> <li>2. Loose hose fittings.</li> <li>3. Broken oil line.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace seals.</li> <li>2. Tighten just enough to stop leakage</li> <li>3. Replace hose or line</li> </ol>
Independent Hydraulic System Pump Failure	Improperly set relief valve.	Set relief at 1400 PSI.
Independent Hydraulic System Pump Noisy	<ol style="list-style-type: none"> <li>1. Suction line filter plugged</li> <li>2. Oil too heavy.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean filter</li> <li>2. Use a lighter oil.</li> </ol>
Jerky or Erratic Action	<ol style="list-style-type: none"> <li>1. Air in system</li> <li>2. Wrong type of oil</li> <li>3. Foamy oil</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for loose connections and/or cycle all valves to remove air</li> <li>2. Check tractor manual. For Independent Hydraulic System use Type A non-foaming hydraulic oil</li> <li>3. Check tractor manual. For Independent Hydraulic System use a Type A non-foaming hydraulic oil.</li> </ol>
Blown Return Line	Improperly connected.	Make sure all connections are as shown in the assembly section of this manual



# **Kelley**

**FARM EQUIPMENT**