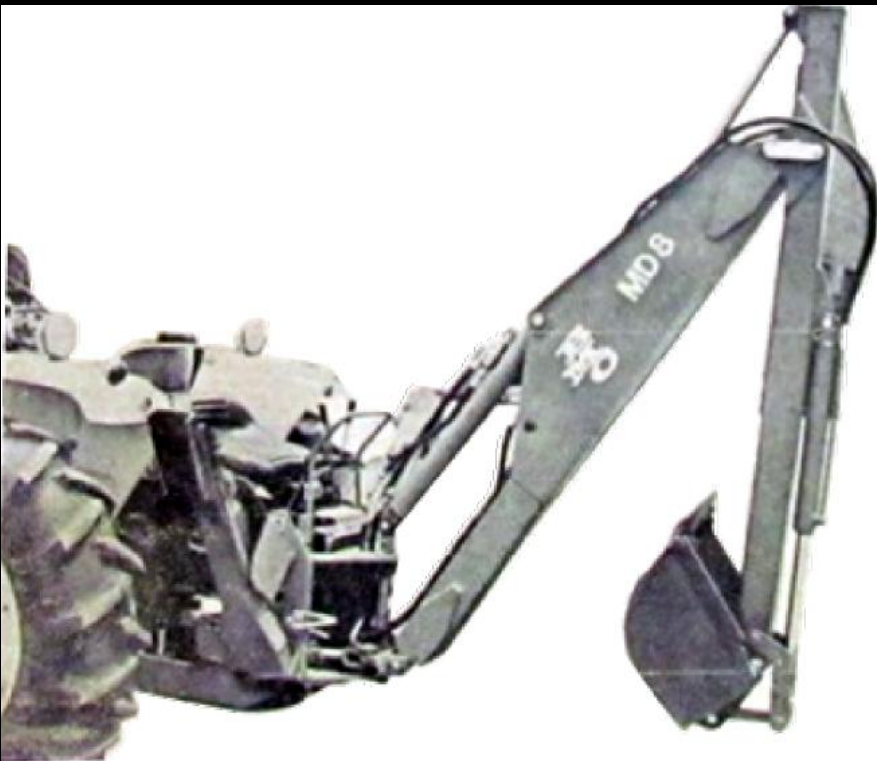


OPERATOR'S MANUAL for

LD6 & MD8 BACKHOES



- Back Hoes
- Front End Loaders
- Front Blades
- Power Steering
- Trenchers



Brantly Mfg. Co.

This manual was created from photo images provided by Member "DennyCrane" from the web site

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While this is meant to be an accurate recreation of the original manual and I have tried to be as accurate as possible correcting obvious spelling and wording mistakes (such as the word "Front" on the cover) some information was very difficult to make out given the quality of the images and as a result the information is presented as:

"USE AT YOUR OWN RISK"

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SAFETY PRECAUTIONS

The following precautions are suggested to help prevent accidents. A careful operator is the best operator.

BACKHOE SAFETY PRECAUTIONS

1. Read the Operator's Manual carefully to acquaint yourself with the backhoe. Working with unfamiliar equipment can lead to accidents.
2. Use the handholds and steps when getting on and off the backhoe.
3. Replace safety and warning decals when they become illegible.
4. For safe operation observe proper maintenance and repair of all pivot points, hydraulic cylinders, hoses and main attaching bolts prior to each day's operation.
5. Always be sure of water, gas, sewage and electrical line location when operating the backhoe.
6. Watch for overhead and underground high voltage electrical line before you start to dig.
7. Operate the backhoe controls only when properly seated at the controls.
8. Do not use the backhoe for a hoist.
9. Never allow anyone to get under the backhoe when the boom or dipper arm is raised or stabilizers are raised.
10. Always be watchful of bystanders when lowering the stabilizers or operating the backhoe.
11. To prevent upsets, avoid full reach and swinging a loaded backhoe bucket to the down hill side when operating on a slope.
12. Always lower the bucket to the ground, shut off the engine and apply parking brakes before getting off the unit.
13. Never attach pulling devices to the ROPS or backhoe for pulling purposes, as the unit can tip rearward.
14. Keep the operator's platform free of debris.
15. Adequately block up the backhoe when it is detached from the tractor.

Whenever you see this symbol it means:



TRACTOR SAFETY PRECAUTIONS

1. Do not start the engine while standing beside the tractor. Always sit in the tractor seat when starting the engine.
2. Do not get off the tractor while it is in motion.
3. Use an approved roll bar and seat belt for safe operation. If your tractor is not equipped with a roll bar and seat belt, see your tractor equipment dealer.
4. Always use the seat belt when the roll bar is installed. Do not use the seat belt if the roll bar is removed from the tractor.
5. Do not permit anyone but the operator to ride on the unit. There is no safe place for extra riders.
6. Lower the bucket to the ground, shut off the engine and apply the parking brake before getting off the tractor.
7. Do not operate the tractor engine in an enclosed building without adequate ventilation. Exhaust fumes can suffocate you.
8. Never leave the unit when it is parked on an incline. Always park the unit on level ground where possible. If the unit is parked on an incline, always lower the bucket so that the cutting lip contacts the ground, apply the parking brake and securely block the wheels.
9. Use care when operating on grades to maintain proper stability. Also drive at speeds compatible with safety, especially when operating over rough ground, crossing over ditches, slopes, or when turning.
10. Use SMV warning signs on the tractor when traveling on public roads both day and night.
11. Use the flasher / turn signal lights when traveling on public roads both day and night unless prohibited by law.
12. Never pull from the tractor rear axle or any point above the axle. Doing so may cause the tractor to upset.
13. Always check overhead clearance, especially when transporting the unit.
14. Do not lubricate or make mechanical adjustments while the unit is in motion or when the engine is running.
15. Never make repairs or tighten the hydraulic hoses or fittings when the system is under pressure, when the engine is running, or when the backhoe cylinders are under a load.
16. Always wear safety glasses when servicing or repairing the machine.

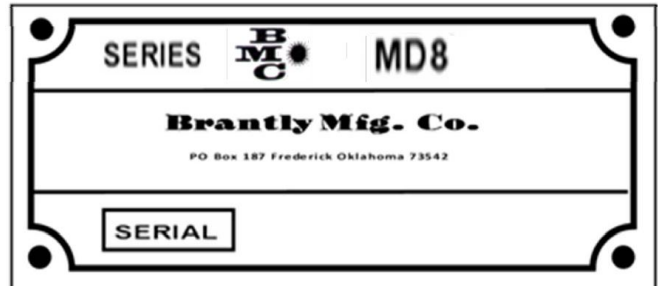
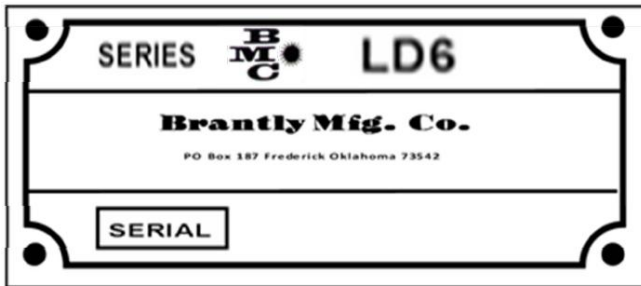
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



The BMC Series LD6, Fig 1. and MD8, Fig 2. Backhoes are shipped complete (crated) less mounting kit and bucket. To mount either of the basic Backhoes to a tractor, a mounting kit (for a specific tractor model) is required. Also required is one of the three bucket options for the LD6 and one of the four for the MD8. Items unique to each tractor fit up (pressure / return hoses, seat assemblies, mounting bolts, etc.) are included in the mounting kit for each tractor.

The BMC Series LD6 and MD8 Backhoe can be installed from the crate to the tractor in a matter of a few hours. The BMC Series Backhoes should be installed on tractors that have a front blade of front loader that will stabilize the front of the tractor. Installation of the front blade or front loader is covered in the appropriate manual.

The LD6 and MD8 Backhoe general specifications are listed on page 41 and 42. The Backhoes are identified by name plates as follows:



This manual is divided into five (5) major sections:

- Installation of LD6 Backhoe (Page 6)
- Installation of MD8 Backhoe (Page 13)
- Installation of Buckets (Page 20)
- Hosing of the LD6 and MD8 Backhoe (Page 21)
- Operation of the Backhoe (Page 26)
- Maintenance of the Backhoe (Page 36)

The mounting frame, seat and backhoe / tractor hydraulic interface is covered in the mounting frame installation sheet. During assembly and when ordering parts, the right side of the backhoe is the same as the right side of the tractor, facing forward in the tractor operator’s seat.

Your local tractor and equipment dealer is responsible for the proper assembly and pre-delivery servicing of the backhoe.

Brantly Manufacturing Company reserves the right to make design changes or improvements without incurring any obligation to up-date existing equipment or any obligation for notification to owners of existing equipment of those changes.

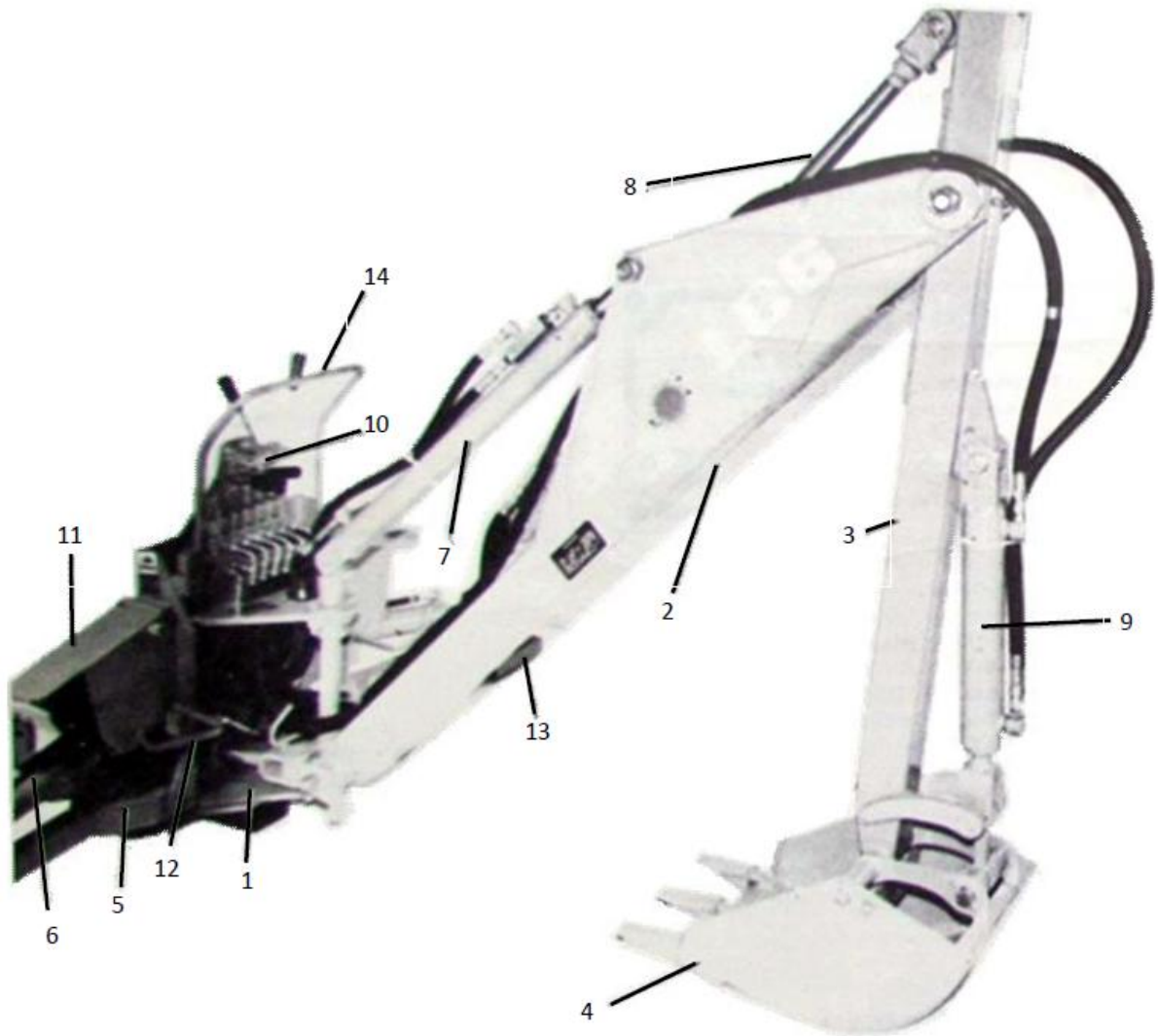


Fig. 1

SERIES LD6 BACKHOE

- | | |
|------------------------|----------------------|
| 1. Main Frame | 8. Crowd Cylinder |
| 2. Main Boom | 9. Bucket Cylinder |
| 3. Dipper Arm | 10. Control Valve |
| 4. Bucket | 11. Stabilizer Guard |
| 5. Stabilizer Arm | 12. Right Step |
| 6. Stabilizer Cylinder | 13. Stabilizer Foot |
| 7. Boom Cylinder | 14. Grab Bar |

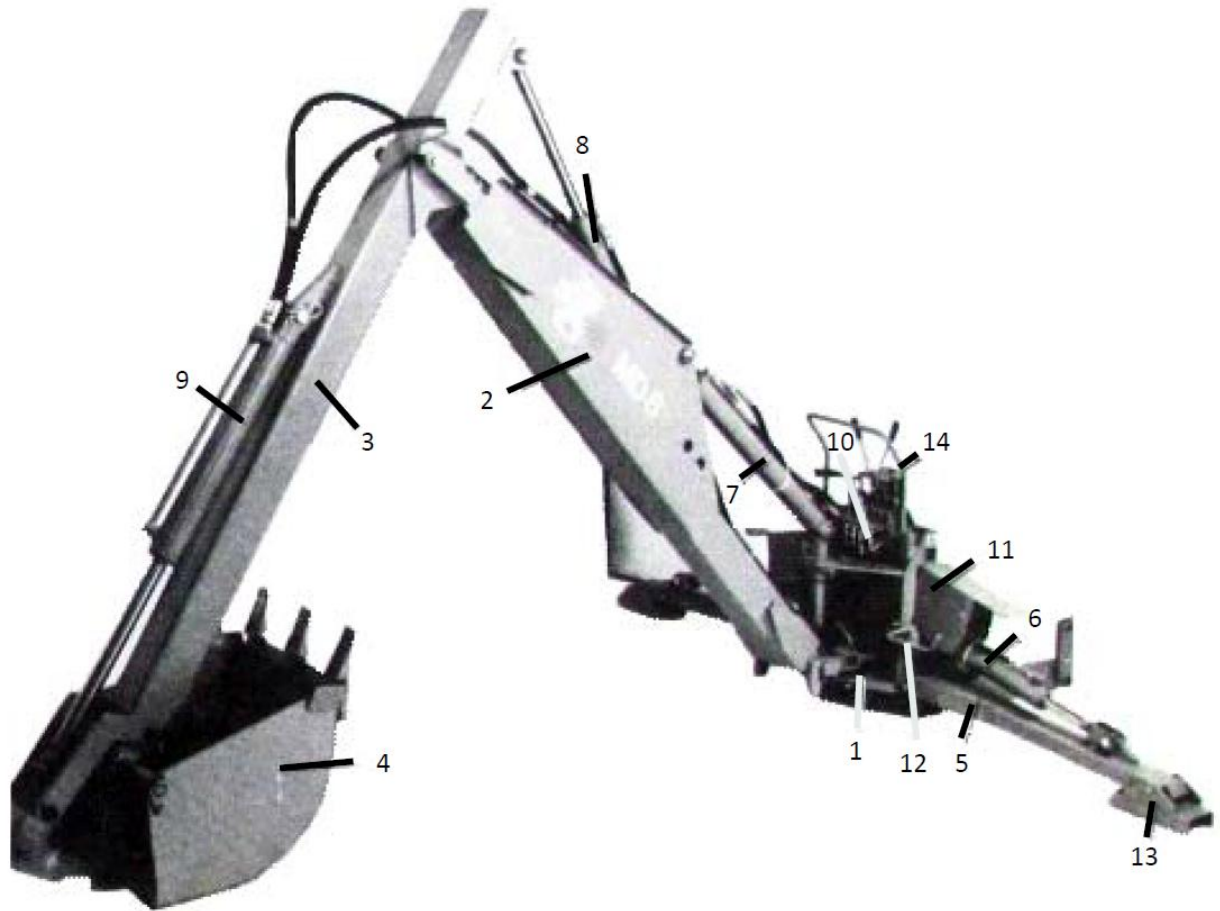


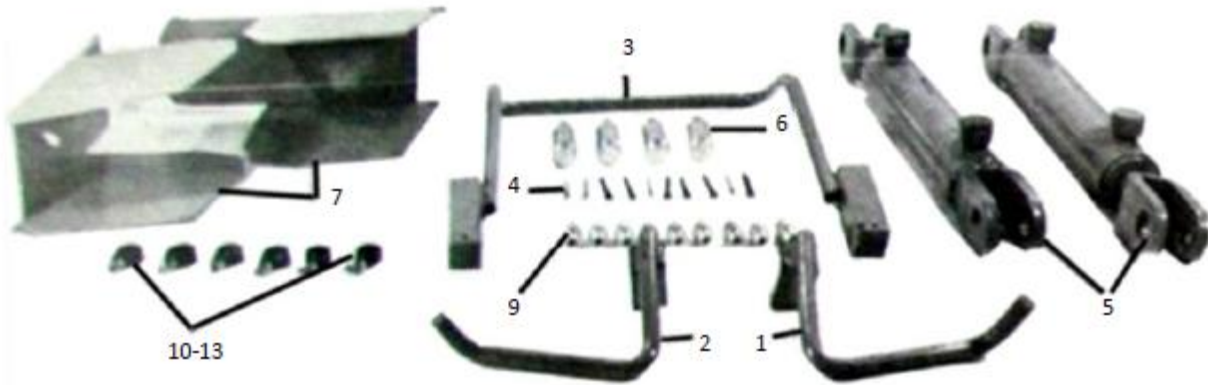
Fig. 2

SERIES MD8 BACKHOE

- | | |
|------------------------|----------------------|
| 1. Main Frame | 8. Crowd Cylinder |
| 2. Main Boom | 9. Bucket Cylinder |
| 3. Dipper Arm | 10. Control Valve |
| 4. Bucket | 11. Stabilizer Guard |
| 5. Stabilizer Arm | 12. Right Step |
| 6. Stabilizer Cylinder | 13. Stabilizer Foot |
| 7. Boom Cylinder | 14. Grab Bar |



The LD6 and MD8 box parts contains items needed to complete the assembling of the LD6 and MD8 Backhoe. Be sure to check the contents of the box against the packing list in the box or against the parts list in this manual.



Backhoe Box Parts

ITEM	DESCRIPTION	QUANTITY
1	Step, Right	1
2	Step, Left	1
3	Grab Bar	1
4	Cotter Pin 3/16" x 1 1/2"	10
5	Cylinder, Stabilizer	2
6	Pin Cylinder 1" x 3"	4
7	Guard, Stabilizer	2
8	Ties, Plastic Hose	5
9	Adaptor Fitting, SAE 6 O-Ring to JIC 6 Flare St.	10
10	Clamp, Insulated Hose 1"	6
11	Screw, Machine 3/16" x 3/4"	6
12	Washer, Lock 3/16"	6
13	Nut, Hex 3/16"	6

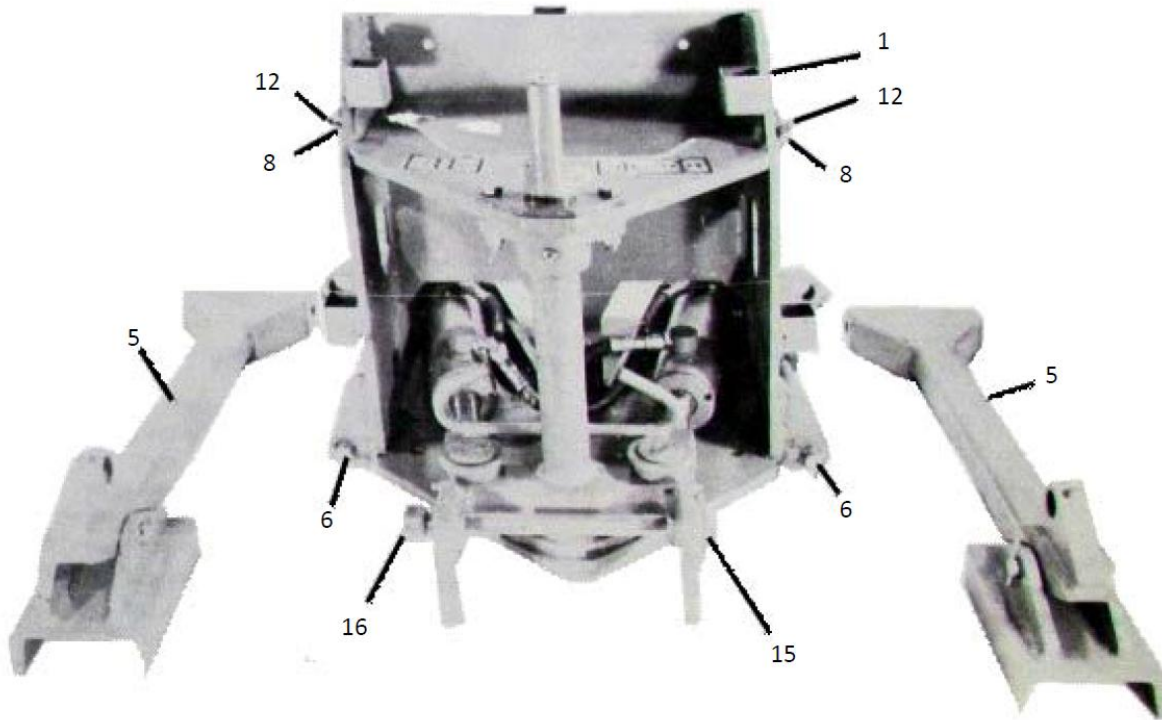


Fig. 1

ITEM	DESCRIPTION	QUANTITY
1	Main Frame	1
2	*Step, Right	1
3	*Step, Left	1
4	*Grab Bar	1
5	Arm, Stabilizer	2
6	Pin, Stabilizer $\frac{3}{4}$ " x $9\frac{1}{2}$ "	2
7	*Guard, Stabilizer	2
8	Pin, Stabilizer Guard $\frac{1}{2}$ " x 5"	2
9	*Cylinder, Stabilizer	2
10	*Pin, Cylinder 1" x 3"	4
11	*Cotter Pin $\frac{3}{16}$ " x $1\frac{1}{2}$ "	14
12	Cotter Pin $\frac{1}{8}$ " x 1"	4
13	*Adaptor Fitting SAE 6 O-Ring to JIC 6 Flare Straight	4
14	*Ties, Plastic Hose	4
15	Bolt, Machine $\frac{3}{4}$ " x $1\frac{1}{2}$ " G5P	1
16	Nut, Hex Self Locking $\frac{3}{4}$ "	1

***ITEMS NOTED ARE SHIPPED IN BACKHOE PARTS BOX**

The LD6 main frame assembly, Fig 1, is shipped with some of the retaining pins and bolts installed. It will be necessary to remove the pins as the different parts are assembled on the main frame. The main frame should be installed on the mounting frame plate as follows:

(1) Position the Backhoe Mainframe (item 1) over the Mounting plate on the Mounting Frame. Maneuver the mainframe until the eight holes in the mainframe align with the eight (8) holes in the mounting plate. Secure the mainframe with eight (8) each 5/8" x 2" machine bolts, lockwashers and hex nuts supplied in the mounting frame kit. Torque the bolts and nuts per Table 1, Page 39.

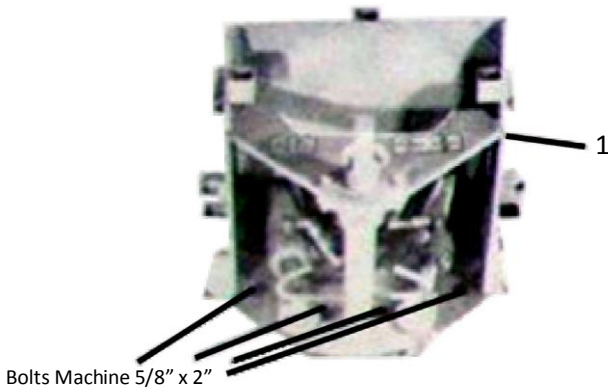


Fig. 2

(2) Install the left step (Item 3) in the step mounting receptacle located on the left side of the Backhoe main frame with orientation of the step as shown in Fig. 3.

(3) Repeat step two to install the right step (Item 2).



Fig. 3

(4) Install the grab bar (Item 4) in the grab bar mounting receptacle located on the inside of the side

plates and just above the top plate. Secure the grab bar with two (2) 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 4.



Fig. 4

(5) Attach the left stabilizer arm (Item 5) between the stabilizer mounting lugs, located on the left side of the mainframe near lower edge, securing the arm to the mainframe with one (1) each stabilizer pin (Item 6) and two (2) each 3/16" x 1 1/2" cotter pins as shown in Fig. 5.

(6) Repeat step 5 for the right side stabilizer arm.

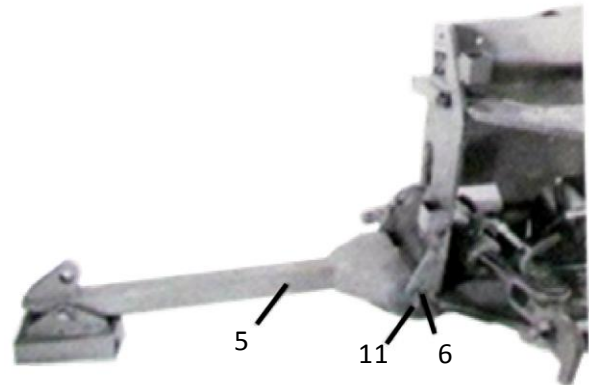


Fig. 5

(7) Attach base end of (1) each stabilizer cylinder (Item 9) to left side of main frame cylinder anchor lug, located in the center and just above the base end of the stabilizer arm, using one each cylinder pin (Item 10) and two each 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 6.

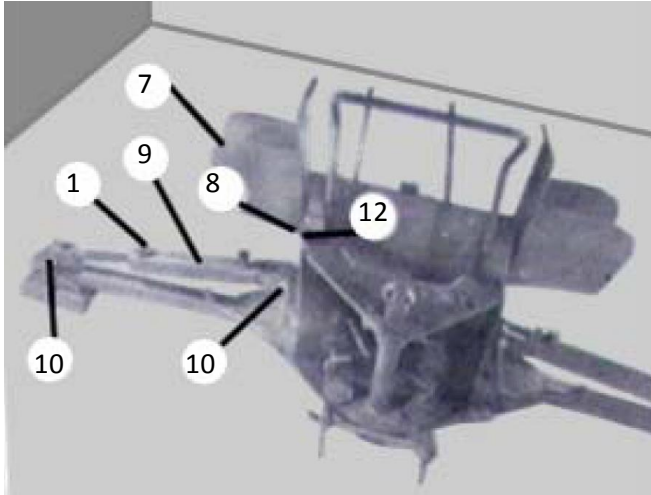


Fig. 6

(8) Attach the rod end of the stabilizer cylinder to the anchor lug, located in the center of the stabilizer arm near the stabilizer foot, using one each cylinder pin (Item 10) and two each 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 6.

(9) Attach the right side stabilizer cylinder by repeating steps 7 and 8.

(10) Attach the left stabilizer guard (Item 7) over the mounting receptacle, located on the upper portion of the main frame side plate, aligning the two holes in the stabilizer guard with the mounting receptacle and inserting the guard pin (Item 8) through the guard and receptacle. Secure the pin with two each 1/8" x 1" cotter pins (Item 12) as shown in Fig. 6.

(11) Attach the right stabilizer guard by repeating step 10.

(12) Install one each of the SAE 6 O-Ring to JIC 6 Flare Straight adapter fittings (Item 1 in box parts list, page 5) in both ports of the right and left stabilizer cylinders (four (4) required) as shown in Fig. 6.

NOTE: It is very important to check the torque on the eight 5/8" x 2" machine bolts retaining the mainframe to the mounting frame top plate after eight (8) hours of operation and every 40 hours of operation thereafter. It is acceptable, once operation of backhoe and mounting frame adaptation to tractor has proved satisfactory, to weld the mainframe to the mounting kit.

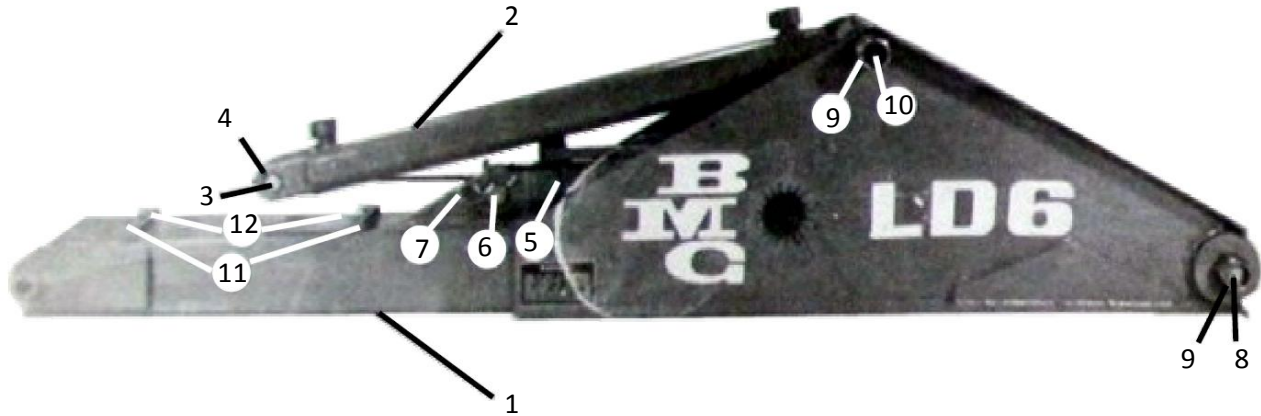


FIG. 1

ITEM	DESCRIPTION	QUANTITY
1	Main Boom	1
2	Cylinder, Main Boom	1
3	Pin, Cylinder $\frac{3}{4}$ " x $2\frac{3}{4}$ "	1
4	Cotter Pin $\frac{1}{8}$ " x 1"	2
5	Cylinder, Crowd	1
6	Pin, Cylinder 1" x 3"	1
7	Clip, Bobby Pin	2
8	Bolt, Machine G5P 1" x $6\frac{1}{2}$ "	1
9	Nut, Self-Locking Hex 1"	2
10	Bolt, Machine 1" x $5\frac{1}{2}$ "	1
11	Clamp, Hose 4"	2
12	Bolt, Machine $\frac{1}{4}$ " x 1 $\frac{1}{4}$ "	2

The LD6 main boom assembly, Fig. 1, is shipped with the retaining pins and bolts installed. It will be necessary to remove the pins and bolts as the main boom is being assembled to the main frame. The main boom should be attached to the main frame as follows:

(1) Remove the $\frac{3}{4}$ " x $10\frac{1}{2}$ " plated bolt (Item 15 in the main frame assembly) and $\frac{3}{4}$ " self-locking hex nut (Item 16 in the main frame assembly) from the yoke of the swing shaft. Position the base end of the main boom (Item 1) between the mounting ears (use two men or overhead hoist) and secure by re-inserting the $\frac{3}{4}$ " x $10\frac{1}{2}$ " plated bolt through the yoke ear and boom as shown in Fig. 2. The bolt should be seated (or locked) in the locking ring on the outside mounting ear of the yoke to prevent bolt from turning during operation. Fasten the bolt in place with the $\frac{3}{4}$ " self-locking hex nut, tightening for fit but not sufficiently to warp the yoke mounting ears.

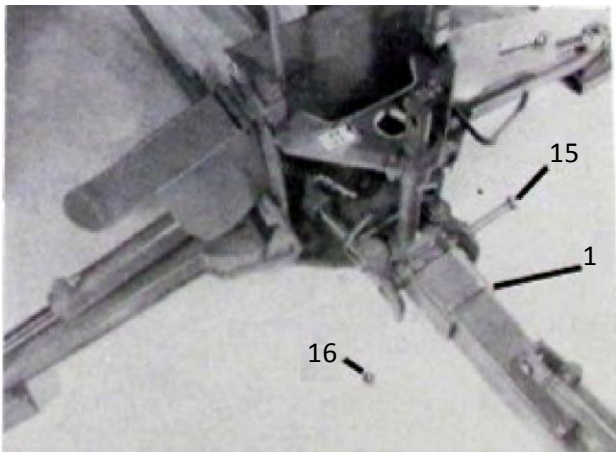


Fig. 2

(2) Mount the base end of the main boom cylinder (Item 2) with flat top end of the swing shaft between the ears of the cylinder devis. Secure the boom cylinder with a $\frac{3}{4}$ " x $2\frac{3}{4}$ " cylinder pin (Item 3) and two each $1/8$ " x 1" cotter pin (Item 4) as show in Fig. 3.

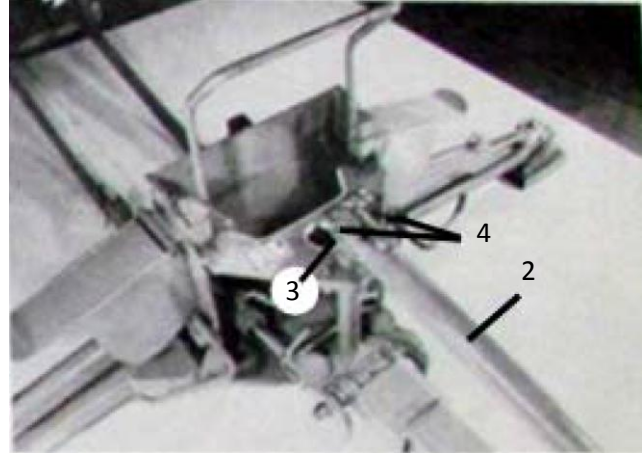


Fig. 3

(3) Install one each of the SAE 6 O-Ring to JIC 6 Flare straight adapter fittings (Item 1 in box parts, Page 5) in both ports of the crowd cylinder.

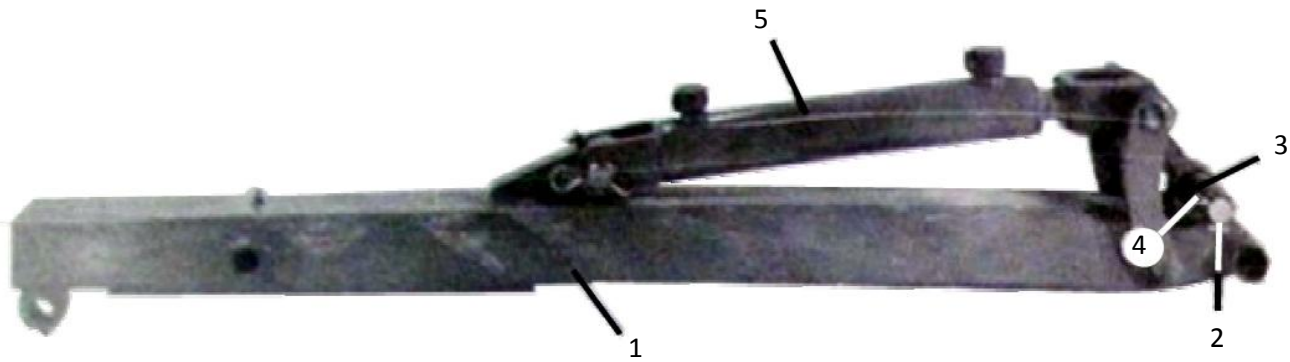


FIG. 1

ITEM	DESCRIPTION	QUANTITY
1	Dipper (Crowd) Arm	1
2	Pin, Bucket Link 1" x 6 1/4"	1
3	Spacer, Bucket Link 1" I.D. x 1 1/4" O.D. x 2"	2
4	Cotter Pin 3/16" x 1 1/2"	2
5	Cylinder, Bucket	1

The LD6 dipper arm (crowd) assembly, Fig. 1, is shipped assembled with the exception of the adaptor fittings and the retaining pin and bolt. The retaining bolt and pin are shipped installed in the main boom assembly. Attach the dipper arm to the main boom in the following manner:

(1) Remove the 1" x 6 1/2" plated bolt (Item 8 in the main boom assembly) from the main boom. Using an overhead hoist, raise the main boom until the dipper arm (Item 1) can be inserted between the side plates on the top end of the main boom as shown in Fig. 2. Re-insert the 1" x 6 1/2" plated bolt from the left side through the boom and the dipper arm. Secure the bolt with a 1" self-locking hex nut (Item 9 in the main boom assembly).

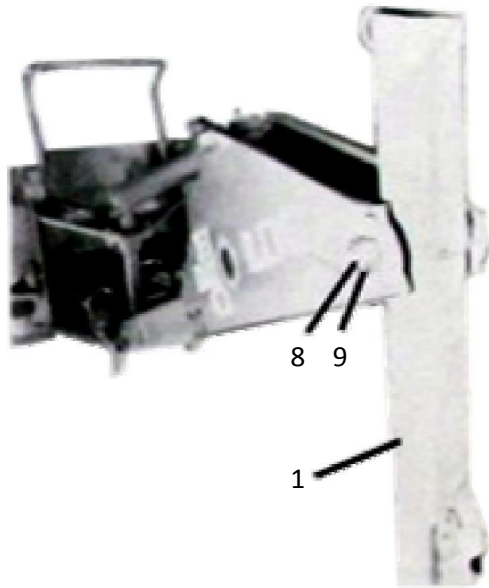


Fig. 2

(2) Raise rod end of dipper (crowd) cylinder and slide the cylinder clevis astraddle the top anchor lug on the dipper arm as shown in Fig. 3. Secure the cylinder to the dipper arm with a 1" x 3" cylinder pin (Item 6 in the main boom assembly) and two each bobby pin clips (Item 7 in the main boom assembly).

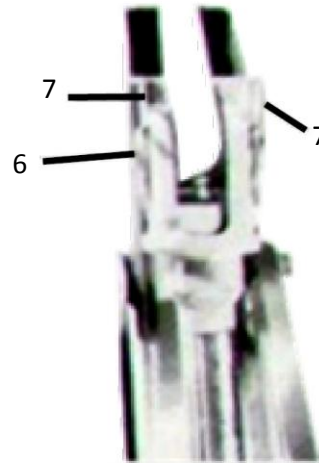


Fig. 3

(3) Install one each of the SAE 6 O-Ring to JIC 6 Flare straight adapter fittings (Item 1 in box parts) into each of the ports of the bucket cylinder (Item 5).

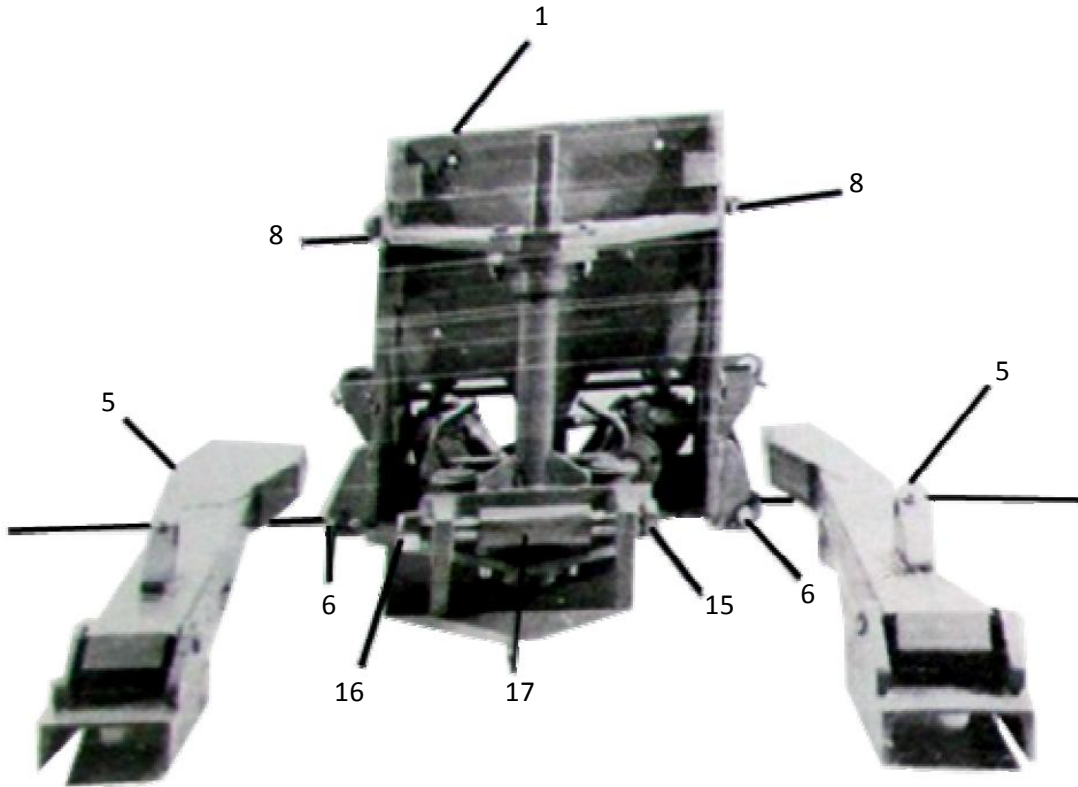


Fig. 1

ITEM	DESCRIPTION	QUANTITY
1	Main Frame	1
2	*Step, Right	1
3	* Step, Left	1
4	*Grab Bar	1
5	Arm, Stabilizer	2
6	Pin, Stabilizer Arm $\frac{3}{4}$ " x $9 \frac{1}{2}$ "	2
7	*Guard, Stabilizer	2
8	Pin, Stabilizer Guard $\frac{1}{2}$ " x 5"	2
9	*Cylinder, Stabilizer	2
10	*Pin, Cylinder 1" x 3"	4
11	*Cotter Pin $\frac{3}{16}$ " x $1 \frac{1}{2}$ "	14
12	Cotter Pin $\frac{1}{8}$ " x 1"	4
13	*Adaptor Fitting SAE 6 O-Ring to JIC 6 Flare Straight	4
14	*Ties, Plastic Hose	4
15	Bolt, Machine G5P 1" x $10 \frac{1}{2}$ "	1
16	Nut, Hex Self-Locking	1
17	Spacer 1" I.D. x $1 \frac{5}{16}$ " O.D. x 5"	1

***ITEMS NOTED ARE SHIPPED IN BACKHOE PARTS BOX**

The MD8 main frame assembly, Fig 1, is shipped with some of the retaining pins and bolts installed. It will be necessary to remove the pins as the different parts are assembled on the main frame. The main frame should be installed on the mounting frame plate as follows:

(1) Position the Backhoe Mainframe (item 1) over the mounting plate on the mounting Frame. Maneuver the main frame until the eight holes in the main frame align with the eight (8) holes in the mounting plate. Secure the mainframe with eight (8) each 5/8" x 2" machine bolts, lockwashers and hex nuts supplied in the mounting frame kit. Torque the bolts and nuts per Table 1, Page 39.

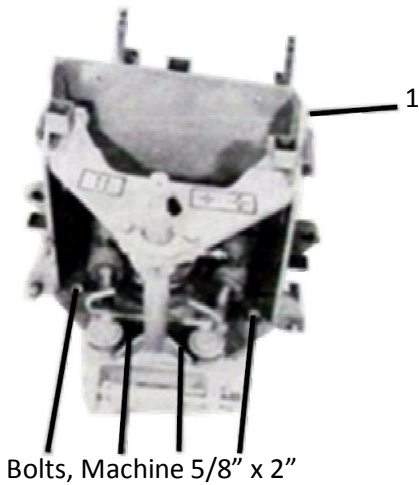


Fig. 2

(2) Install the left step (Item 3) in the step mounting receptacle located on the left side of the Backhoe main frame with orientation of the step as shown in Fig. 3.

(3) Repeat step two to install the right step (Item 2).

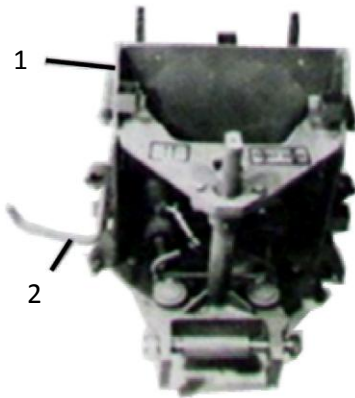


Fig. 3

(4) Install the grab bar (Item 4) in the grab bar mounting receptacle located on the inside of the side plates and just above the top plate. Secure the grab bar with two (2) 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 4.

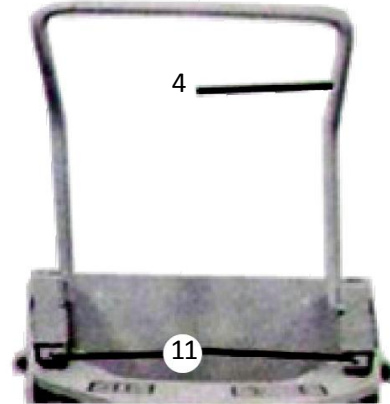


Fig. 4

(5) Attach the left stabilizer arm (Item 5) between the stabilizer mounting lugs, located on the left side of the mainframe near lower edge, securing the arm to the mainframe with one (1) each stabilizer pin (Item 6) and two (2) each 3/16" x 1 1/2" cotter pins as shown in Fig. 5.

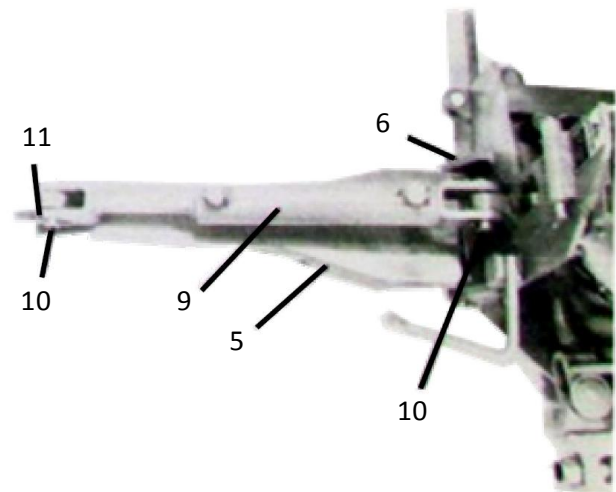


Fig. 5

(6) Repeat step 5 for the right side stabilizer arm.

(7) Attach base end of one (1) each stabilizer cylinder (Item 9) to left side of main frame cylinder anchor lug, located in the center and just above the base end of the stabilizer arm, using one each cylinder pin (Item 10) and two each 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 5.

(8) Attach the rod end of the stabilizer cylinder to the anchor lug, located in the center of the stabilizer arm near the stabilizer foot, using one each cylinder pin (Item 10) and two each 3/16" x 1 1/2" cotter pins (Item 11) as shown in Fig. 5.

(9) Attach the right side stabilizer cylinder by repeating steps 7 and 8.

(10) Attach the right stabilizer guard (Item 7) over the mounting receptacle, located on the upper portion of the main frame side plate, aligning the two holes in the stabilizer guard with the mounting receptacle and inserting the guard pin (Item 8) through the guard and receptacle. Secure the pin with two each 1/8" x 1" cotter pins (Item 12) as shown in Fig. 6.

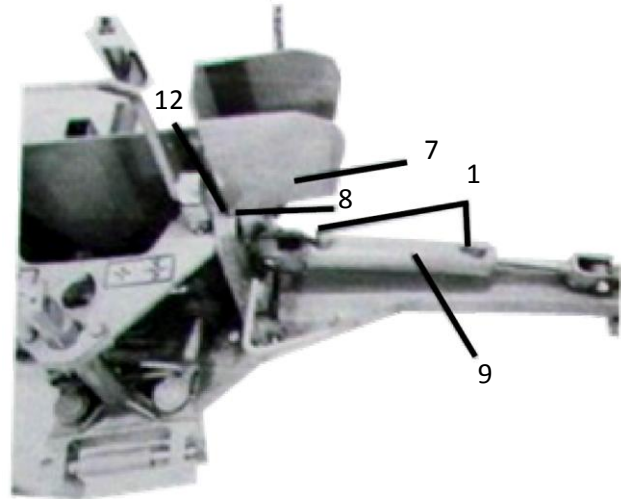


Fig. 6

(11) Attach the left stabilizer guard by repeating step 11.

(12) Install one each of the SAE 6 O-Ring to JIC 6 Flare Straight adaptor fittings (Item 1 in box parts list, page 5) in both ports of the right and left stabilizer cylinders (four (4) required) as shown in Fig. 6.

NOTE: It is very important to check the torque on the eight 5/8" x 2" machine bolts retaining the mainframe to the mounting frame top plate after eight (8) hours of operation and every 40 hours of operation thereafter. It is acceptable, once operation of backhoe and mounting frame adaptation to tractor has proved satisfactory, to weld the mainframe to the mounting kit.

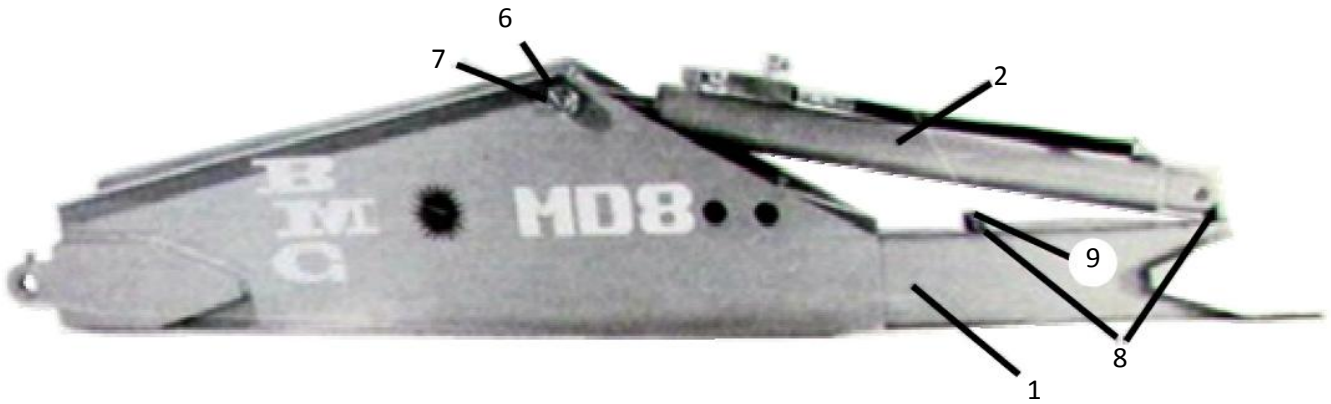


FIG. 1

ITEM	DESCRIPTION	QUANTITY
1	Main Boom	1
2	Cylinder, Main Boom	1
3	Pin, Cylinder $\frac{3}{4}$ " x $2\frac{3}{4}$ "	1
4	Cotter Pin $\frac{1}{8}$ " x 1"	2
5	Cylinder, Crowd	1
6	Bolt, Machine 1" x $6\frac{1}{2}$ "	1
7	Nut, Self-Locking 1"	1
8	Clamp, Hose 4"	2
9	Bolt, Machine $\frac{1}{4}$ " x 1 $\frac{1}{4}$ "	2

The MD8 main boom assembly, Fig. 1, is shipped with the retaining pins and bolts installed. It will be necessary to remove the pins and bolts as the main boom is being assembled to the main frame. The main boom should be attached to the swing shaft as follows:

(1) Remove the 1" x 10 1/2" plated bolt (Item 15 in the main frame assembly) and the 1" I.D. x 1 5/16" O.D. x 5" spacer (Item 17 in the main frame assembly) from the yoke of the swing shaft. Position the base end of the main boom (Item 1) between the mounting ears (use two men or overhead hoist) and insert the spacer between the boom swivel lugs. Re-insert the 1" x 10 1/2" plated bolt through the yoke ears, spacer and the boom swivel lugs as shown in Fig. 2. The head of the bolt should be seated (or locked) against the shoulder on the outside surface of the mounting ears to prevent the bolt from turning during operation. Fasten the bolt in place with the 1" self-locking hex nut and tighten for tight fit but not sufficiently to warp the yoke mounting ears.

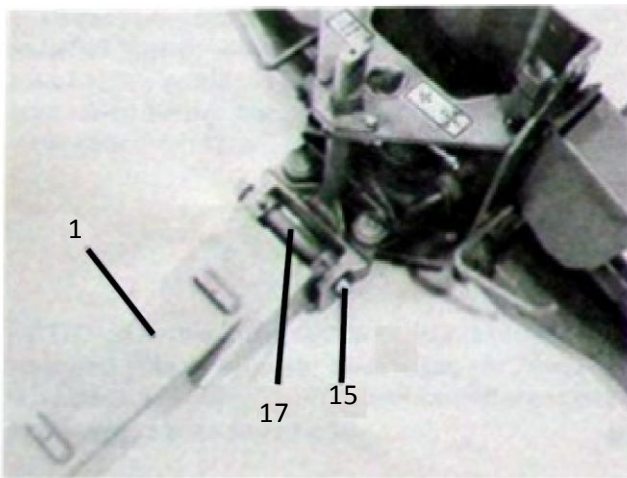


Fig. 2

(2) Mount the base end of the main boom cylinder (Item 2) with flat top end of the swing shaft between the ears on the cylinder clevis. Secure the cylinder with the 3/4" x 2 3/4" cylinder pin (Item 3) and two cotter pins (Item 4) as show in Fig. 3.

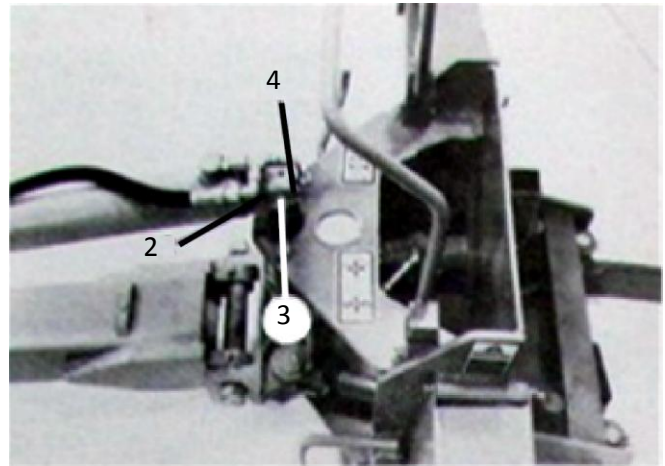


Fig. 3

(3) Install one each of the SAE 6 O-Ring to JIC 6 Flare Straight adapter fittings (Item 1 in box parts list, page 5) in both ports of the crowd cylinder.

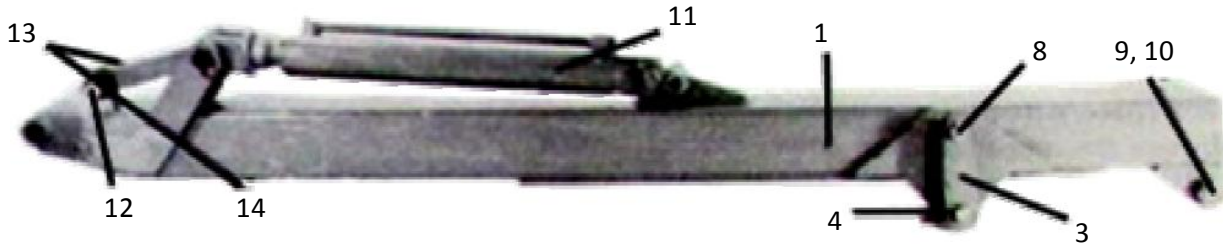


FIG. 1

ITEM	DESCRIPTION	QUANTITY
1	Dipper (Crowd) Arm	1
2	Pin, Locking Arm 1" x 7 7/8"	1
3	Plate, Locking Pin	1
4	Bolt, Machine G5P 1/2" x 1 1/2"	1
5	Washer, Lock 1/2"	3
6	Spacer, Locking Pin 1" I.D. x 1 3/4" O.D. x 1/8"	2
7	Spacer, Locking Pin 1/2" I.D. x 1" O.D. x 1 1/4"	2
8	Bolt, Machine G5P 1/2" x 2 1/4"	2
9	Bolt, Machine G5P 1" x 4 1/2"	1
10	Nut, Self-Locking Hex 1"	1
11	Cylinder, Bucket	1
12	Pin, Bucket Link 1" x 6 1/4"	1
13	Spacers, Bucket Link 1" I.D. x 1 1/4" O.D. x 2"	2
14	Cotter Pin 3/16" x 1 1/2"	2

The MD8 dipper arm (crowd) assembly, Fig. 1, is shipped assembled with the retaining pin and bolt installed in the dipper arm. It will be necessary to remove the locking pin and crowd cylinder bolt before the dipper can be attached to the main boom. Attach the dipper arm to the main boom in the following manner:

(1) Remove the locking pin (Item 2) from the dipper arm (Item 1). Using overhead hoist, raise the main boom until the dipper arm can be placed between the swivel lugs on the top end of the boom as shown in Fig. 2. Place two each spacers (Item 6, one on each side of the dipper) between the dipper and the boom. Insert the locking pin (Item 2) through the boom swivel lugs, spacers and dipper arm. Secure the locking pin in place by using the locking pin plate (Item 3), 1/2" x 1 1/2" bolt (Item 4) and a 1/2" lockwasher (Item 5). Insert a 1/2" I.D. x 1" O.D. x 1 1/4" spacer (Item 7) between the arm on the locking pin and the dipper arm, securing with a 1/2" x 2 1/4" bolt (Item 8) and 1/2" lockwasher (Item 5). Using the other 1/2" I.D. x 1" O.D. x 1 1/4" spacer (Item 7), insert between the dipper arm and the locking pin plate securing with a 1/2" x 2 1/4" bolt and 1/2" lockwasher.

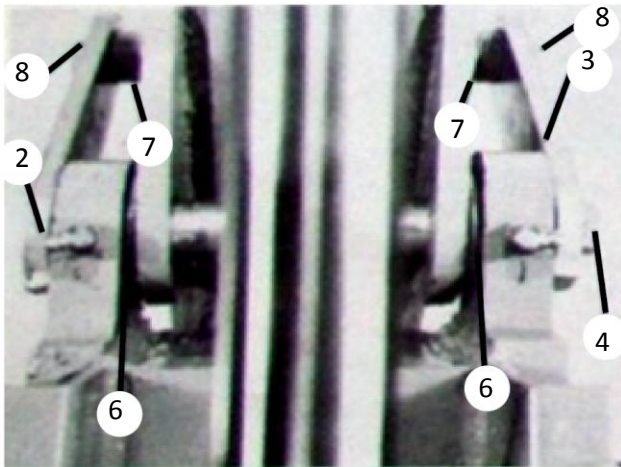


Fig. 2

(2) Raise rod end of crowd cylinder and position pin-eye on end of cylinder rod between anchor lugs on the dipper arm as shown in Fig. 3. Secure the cylinder with a 1" x 4 1/2" bolt (Item 9) and 1" self-locking hex nut (Item 10). The bolt should be inserted from the left side and the head of the bolt locked in the locking ring located on the side of the anchor lug.

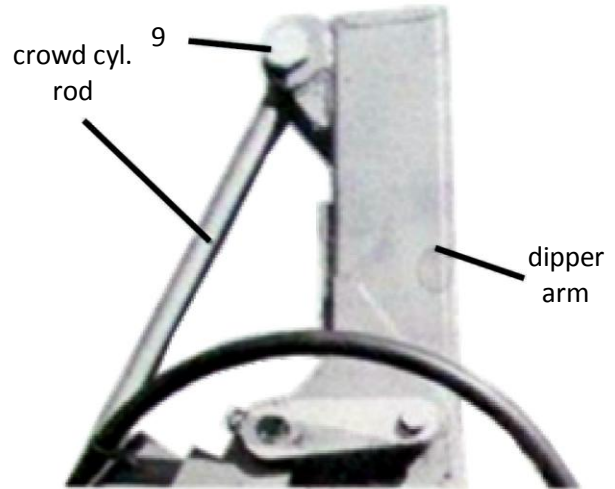


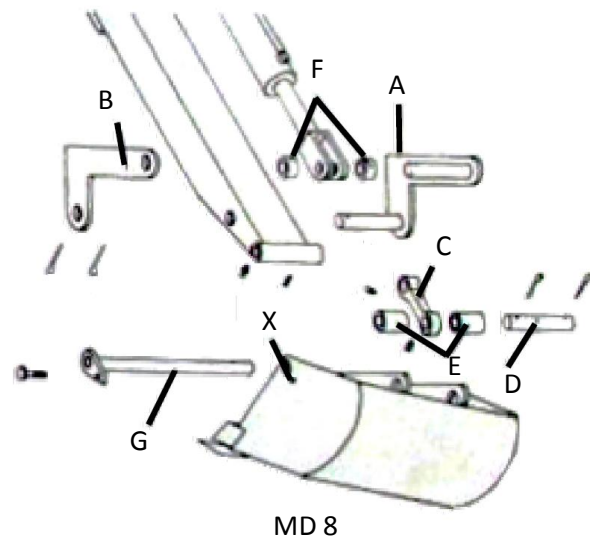
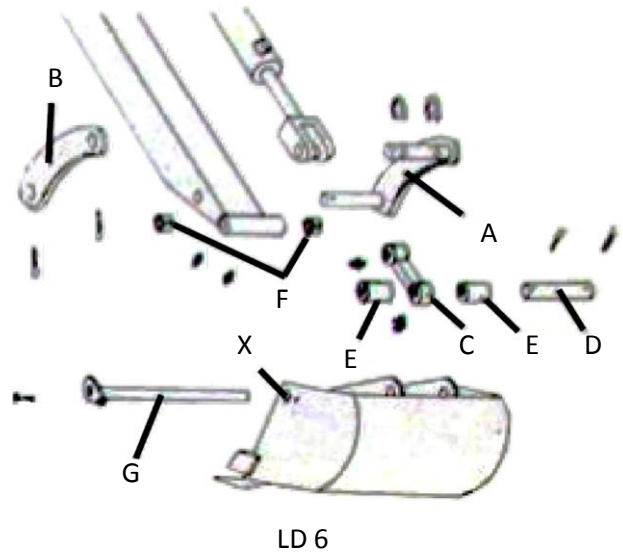
Fig. 3

(3) Install one each of the SAE 6 O-Ring to JIC 6 Flare Straight adapter fitting (Item 1 in box parts) into each of the bucket cylinder ports.

A variety of bucket sizes are available for the LD6 and MD8 Backhoes. Mounting procedures are identical for all buckets, except the 8" bucket. The Backhoe is shipped with a toggle master link (Item A), toggle link plate (Item B), bucket link (Item C), bucket link pin (Item D), two spacers (Item F), and two bucket link pin spacers (Item E). The bucket pin (Item G) is shipped with the individual bucket, and is included in the bucket price. To mount any of the buckets, except the 8", proceed as follows:

(1) Remove the bucket pin (Item G) from the bucket to be mounted. Place the bucket in position with the dipper arm and insert the bucket pin (Item G) through the bucket and dipper arm at point "X". Secure the bucket pin with 5/16" x 3/4" machine bolt provided. Remove the bucket link pin (Item D) from the bucket link (Item C) and position bucket link between mounting ears on the bucket. Insert one of the bucket link spacers (Item E) on either side of bucket link and on the inside of the bucket mounting ears and insert the bucket link pin (Item D), securing the pin with 3/16" x 1 1/2" cotter keys.

On the 8" bucket, two bucket link spacers (Item E) are not used since the spacers are part of the bucket assembly. When 8" bucket is installed the bushings should be stored for use with the larger buckets.



CAUTION: ALWAYS WEAR SAFETY GLASSES WHEN REMOVING OR INSTALLING BUCKETS. ALWAYS USE A BRASS DRIFT AND BRASS HAMMER TO INSTALL OR REMOVE PINS. FAILURE TO DO SO CAN RESULT IN INJURY.

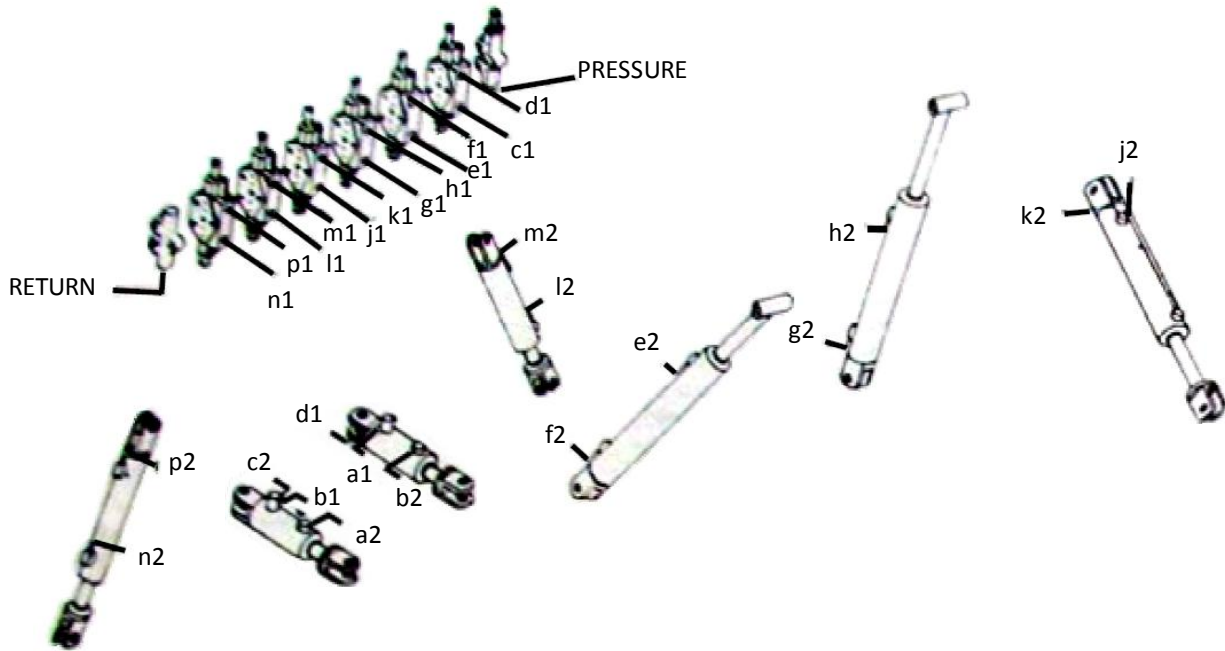


Fig. 1

ITEM	DESCRIPTION (LD6)	DESCRIPTION (MD8)	POINT-TO-POINT	QTY.
1	Valve, Control	Valve Control Dipper (Crowd) Arm		1
2	Left Swing Hose 3/8" x 21"	Left Swing Hose 3/8" x 21"	C1-C2	1
3	Right Swing Hose 3/8" x 20"	Right Swing Hose 3/8" x 20"	D1-D2	1
4	Boom Up Hose 3/8" x 46"	Boom Up Hose 3/8" x 50"	E1-E2	1
5	Boom Down Hose 3/8" x 24"	Boom Down Hose 3/8" x 24"	F1-F2	1
6	Dipper Close Hose 3/8" x 43"	Dipper Close Hose 3/8" x "	G1-G2	1
7	Dipper Open Hose 3/8" x 46"	Dipper Open Hose 3/8" x 80"	H1-H2	1
8	Bucket Open Hose 3/8" x 117"	Bucket Open Hose 3/8" x 125"	J1-J2	1
9	Bucket Close Hose 3/8" x 108"	Bucket Close Hose 3/8" x 126"	K1-K2	1
10	Right Stabilizer Down Hose 1/4" x 26"	Right Stabilizer Down Hose 1/4" x 26"	M1-M2	1
11	Right Stabilizer Up Hose 1/4" x 38"	Right Stabilizer Up Hose 1/4" x 38"	L1-L2	1
12	Left Stabilizer Down Hose 1/4" x 20"	Left Stabilizer Down Hose 1/4" x 20"	P1-P2	1
13	Left Stabilizer Up Hose 1/4" x 30"	Left Stabilizer Up Hose 1/4" x 30"	N1-N2	1
14	Swing Cross-Over Hose 1/4" x 15"	Swing Cross-Over Hose 1/4" x 15"	A1-A2, B1-B2	2

The control valve and hoses for the BMC Series LD6 and MD8 Backhoe are shipped loose, in hose kit carton except for the swing cross-over hoses which are installed. The hosing of the LD6 and MD8 Backhoe are identical except the length of the hoses and physical location of the hydraulic ports on the crowd cylinders and bucket cylinders. The photos used for illustration are mixed. To prevent chafing of the hydraulic hoses the following instructions must be followed:

- (1) Mount Control Valve (Item 1) to the inside front plate of the mainframe as oriented in Fig. 2. Secure with (2) each 3/8" x 1" machine bolts, lockwashers and hex nuts provided.
- (2) Complete installation of the stabilizer handles by aligning the hole in the right stabilizer handle with the hole in the control valve spool. Insert a 5/32" x 13/16" pin and secure the pin with 1/4" clip.
- (3) Repeat step two (2) for left stabilizer handle.

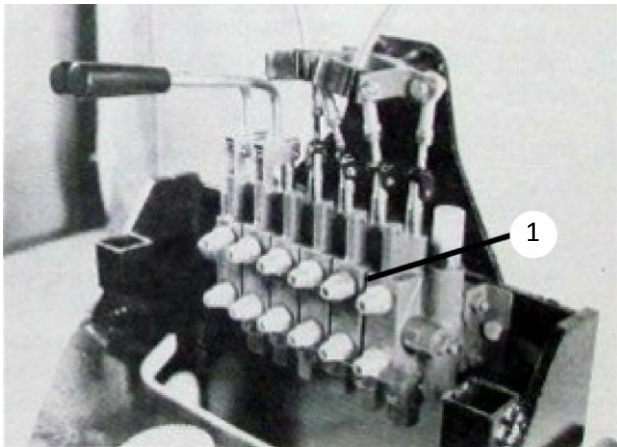


Fig. 2

- (4) Connect end of "Left Swing" hose (Item 2) equipped with short 90° fitting to lower port (Point C1) on far right hand section of control valve as shown in Fig. 3. Route through opening in the lower inside front plate on left side of main frame and connect to the top front port (Point C2) on the left swing cylinder as shown in Fig. 4.

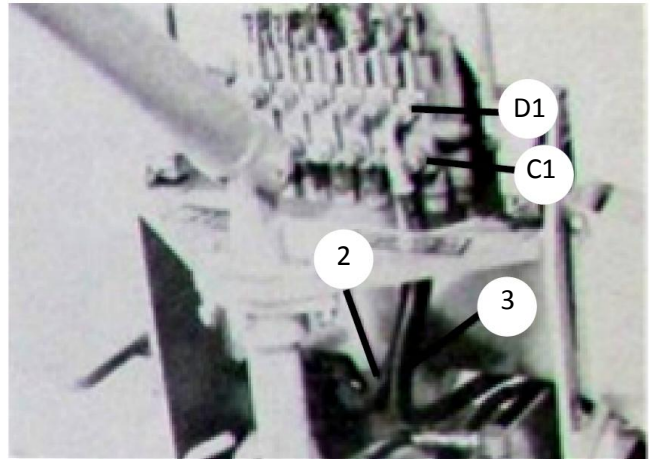


Fig. 3

- (5) Connect end of "Right Swing" hose (Item 3) equipped with long 90° fitting to upper port (Point D1) on far right hand section of control valve as shown in Fig. 2. Route through opening in the lower inside front plate on right side of mainframe and connect to the top front port (Point D2) of the right swing cylinder as shown in Fig. 4.

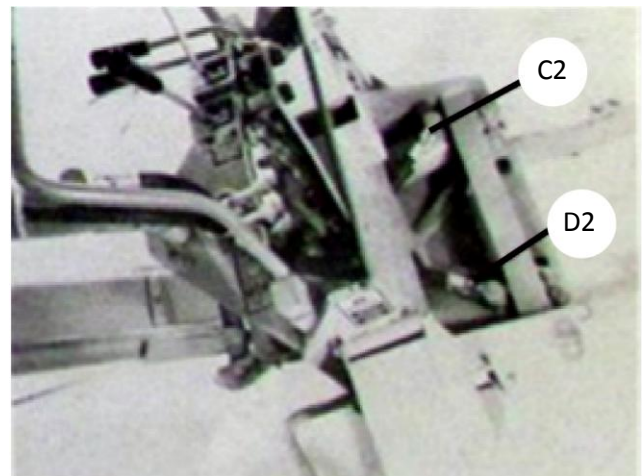


Fig. 4

- (6) Connect end of "boom up" hose (Item 4) equipped with short 90° fitting to lower port (Point E1) on second valve section from right as shown in Fig. 5. Route hose through hole in top plate of mainframe (located just behind swing shaft) and connect to fitting located on top of load check (Point E2) mounted in the top port of main boom cylinder as shown in Fig. 6. Using a plastic hose tie (Item 8) in box parts) fasten the hose to the boom cylinder approximately 1" to 2" behind the lower hydraulic port.

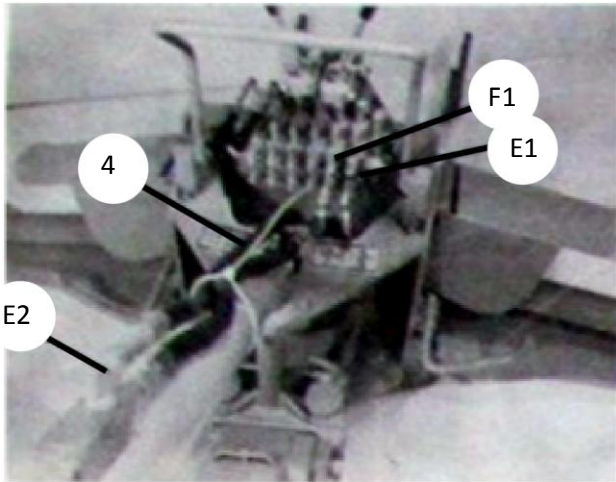


Fig. 5

(7) Connect end of “boom down” hose (item 5) equipped with long 90° fitting to upper port (Point F1) on second valve section from right as shown in Fig. 5. Route hose through hole in top plate of mainframe and connect to the open end of Tee Adaptor on lower main boom cylinder port (Point F2) as shown in Fig. 6.

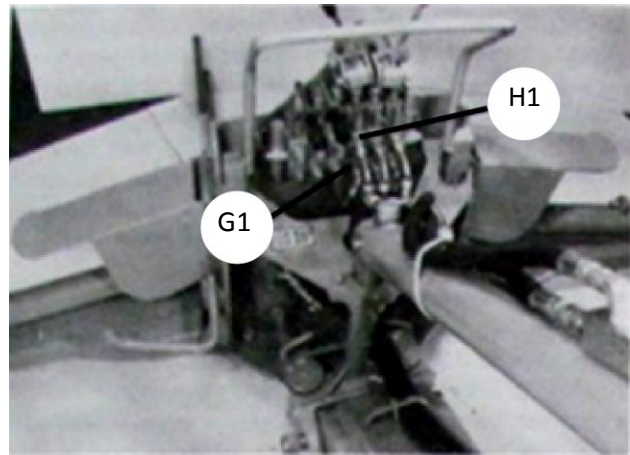


Fig. 7

(9) Connect end of “dipper open” hose (Item 7) equipped with long 90° fitting to upper port (Point H1) on third valve section from right as shown in Fig. 7. Route past lower swing shaft on the right side, over hose guard, along top of boom and connect to the cylinder port on rod end (Point H2) as shown in Fig. 8.

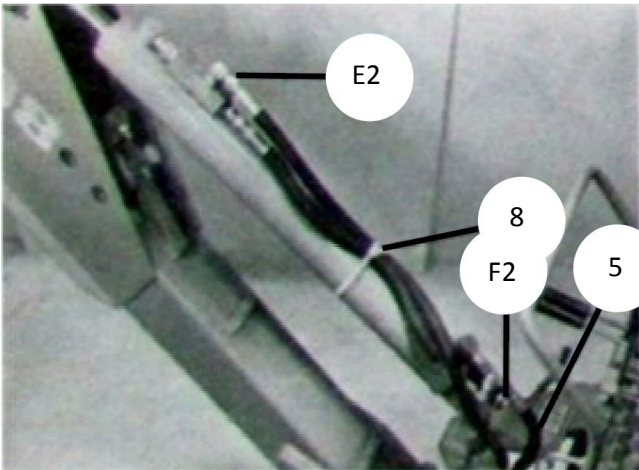


Fig. 6

(8) Connect end of “dipper close” hose (Item 6) equipped with short 90° fitting to lower port (Point F1) on third valve section from right as shown in Fig. 7. Route past lower swing shaft on the right side, over the hose guard, along top of main boom and connect to the cylinder port on the base end of the crown cylinder (Point G2) as shown in Fig. 8.

(10) Using one (1) each plastic hose tie, (Item 8 in box parts list), fasten the dipper open hose to the crowd cylinder at mid-point. Pull all the slack in the two crowd hoses toward the swing shaft and secure to the boom (loosely) with two (2) each hose clamps (Item 11 in boom assembly) and two (2) each ¼” x 1 ¼” bolts. The dipper open hose (connected at Point H1 and H2) must lay to the inside of the swing shaft and hose clamps. The dipper close hose (connected at Point G1 and G2) must lay to the outside of the swing shaft and hose clamps. See Fig. 7 and 8.

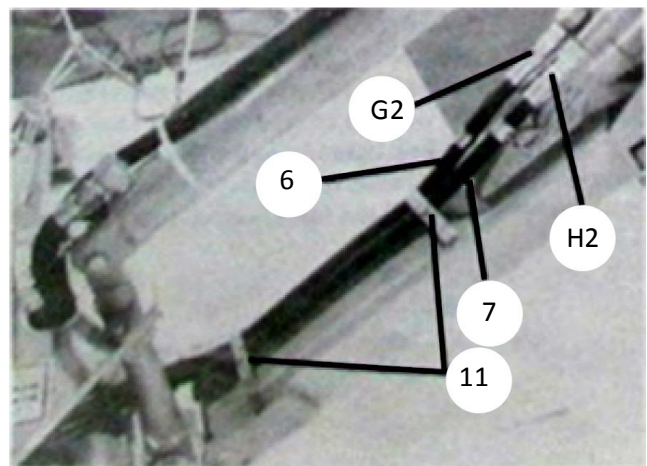


Fig. 8

(11) Connect end of “bucket open” hose (Item 8) equipped with short 90° fitting to the lower Port (Point J1) on fourth valve section from right as shown in Fig. 9. Route hose past swing shaft on the left side, over hose guard, under hose clamps on boom, crossing over to the right side of the boom at the base end of the crowd cylinder as shown in Fig. 10. Route hose on the inside of the boom side plates and over the end of the boom. Measure approximately 19” on LD6 and 37” on MD8 from the loose end of the hose and secure at that point using a 1” insulated hose clamp (Item 10 in box parts) and 3/16” x 3/4” machine screw, lockwasher and nut. Connect the hose to the rod end Port (Point J2) of the bucket cylinder as shown in Fig. 11. Complete attaching the hose to the boom side plate using two (2) other 1” insulated clamp as shown in Fig. 12. Using a plastic hose tie (Item 8 in box parts) fasten the hose to the bucket cylinder approximately 3” below the base end Port.

(12) Connect end of “bucket close” hose (Item 9) equipped with long 90° fitting to the upper Port (Point K1) on the fourth valve section from right as shown in Fig. 9. Route hose past swing shaft on the left side, inside of the left boom side plates and over end of boom measure approximately 38” on LD6 and 37” on MD8 from the loose end of the hose and secure at that point using a 1” insulated hose clamp (Item 10 in box parts) and 3/16” x 3/4” machine screw, lockwasher and nut. Connect the hose to the base end Port (Point K2) of the bucket cylinder as shown in Fig. 11. Complete attaching the hose to the boom side plate using remaining two (2) 1” insulated hose clamps as shown in Fig. 12.

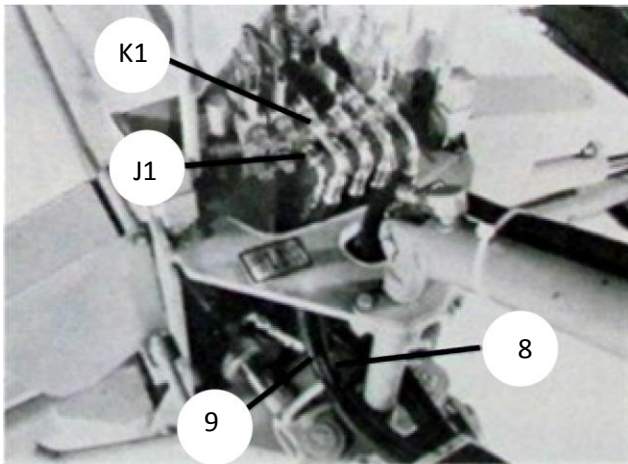


Fig. 9



Fig. 11

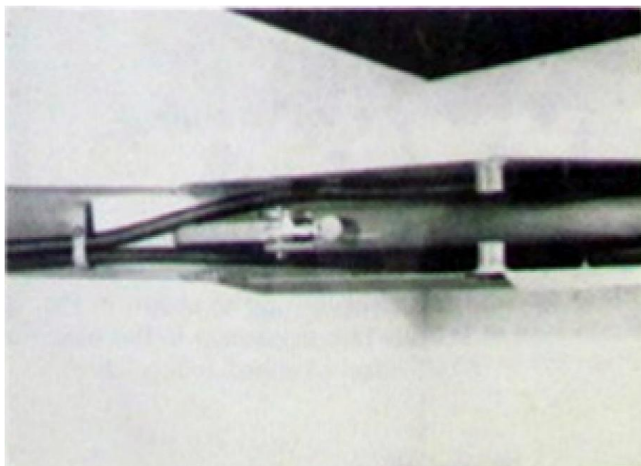


Fig. 10

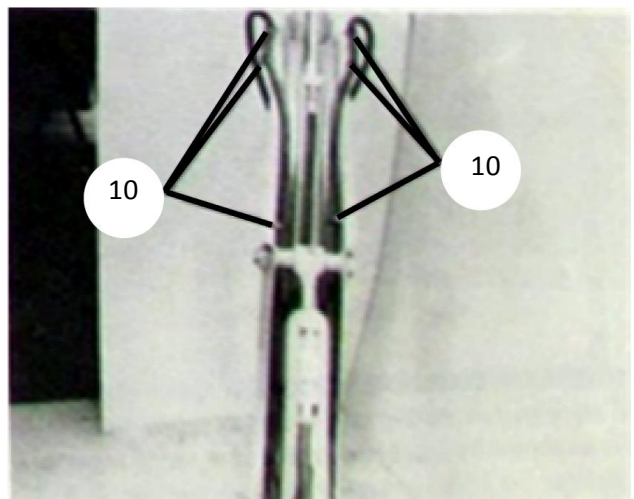


Fig. 12



(13) Connect end of “right stabilizer up” hose (item 11) equipped with short 90° fitting to lower Port (Point L1) on fifth valve section from right as shown in Fig. 13. Route hose behind all other hoses inside mainframe, through the hole in right side plate and connect to the rod end (Point L2) of right stabilizer cylinder as shown in Fig. 14. Fasten the hose approximately 2” below the base end Port of the stabilizer cylinder.

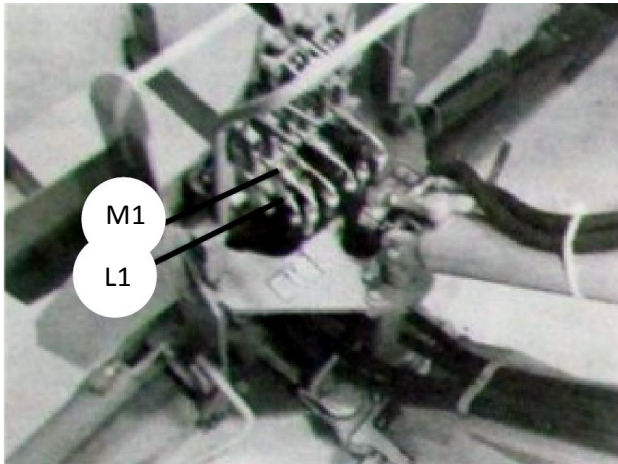


Fig. 13

(15) Connect end of “left stabilizer up” hose (Item 13) equipped with short 90° fitting to lower Port (Point N1) on far left hand valve section as shown in Fig. 15. Route hose through hole in left side plate and connect to the rod end Port (Point N2) of left stabilizer cylinder as shown in Fig. 16. Using a plastic hose tie, fasten the hose to the stabilizer cylinder approximately 2” below the base end Port.

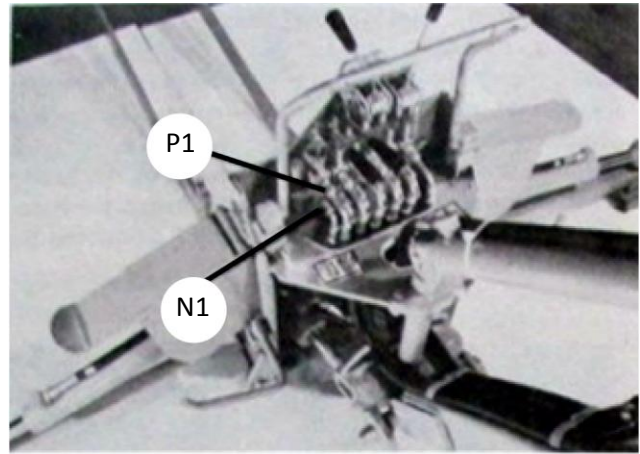


Fig 15

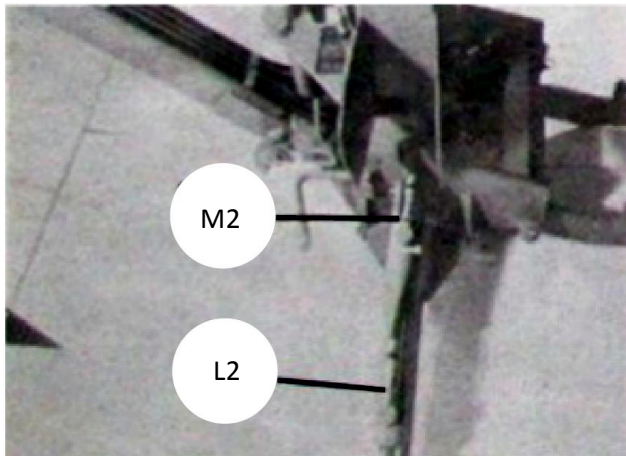


Fig. 14

(14) Connect end of “right stabilizer down” hose (Item 10) equipped with long 90° fitting to upper Port (Point M1) as shown in Fig. 13. Route hose in same manner as stabilizer up hose and connect to base end Port (Point M2) on right stabilizer cylinder as shown in Fig. 14.

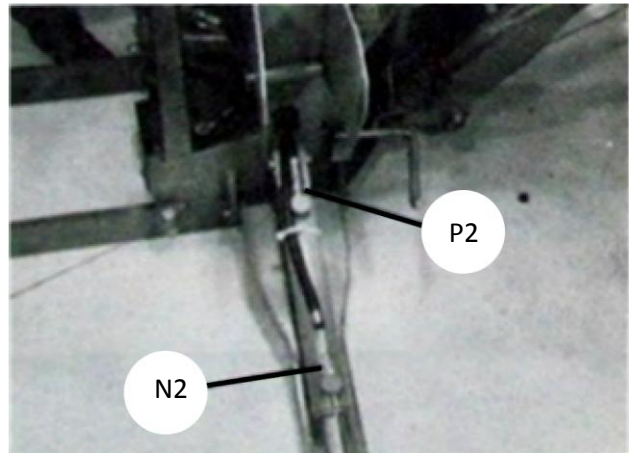


Fig. 16

(16) Connect end of “left stabilizer down” hose (Item 12) equipped with long 90° fitting to Port (Point P1) on far left hand valve section as shown in Fig. 15. Route hose as in Step 15 and connect to the base Port (Point P2) on left stabilizer as shown in Fig. 16.

NOTE: For backhoe / tractor hydraulic interface, see mounting frame installation sheet.

The BMC LD6 and MD8 Series Backhoe are operated by two lever controls as shown in Fig. 1.

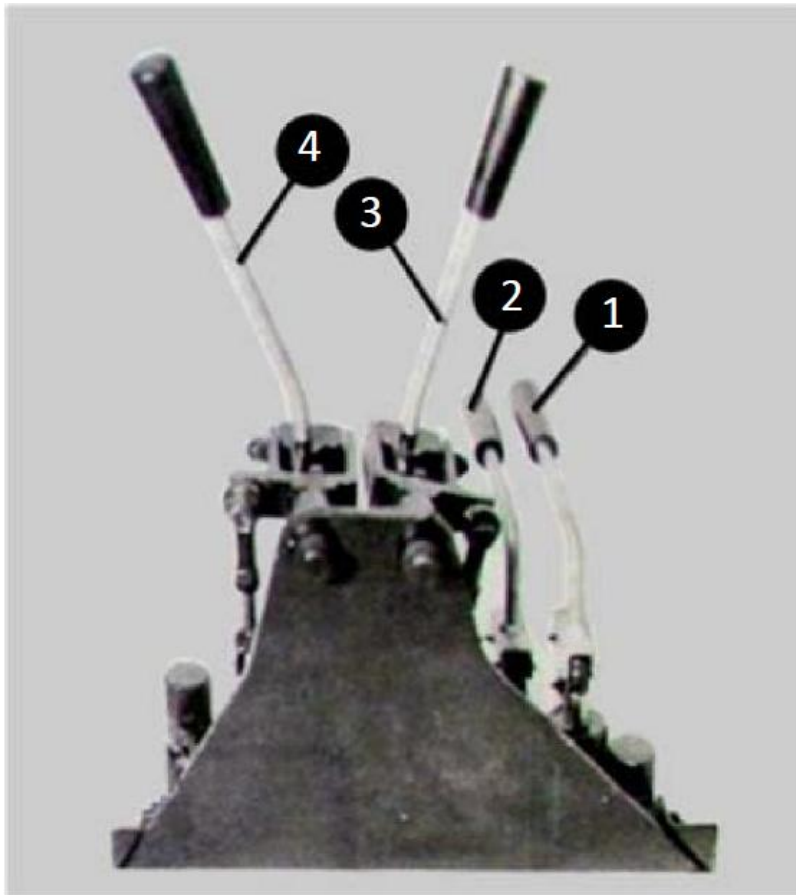
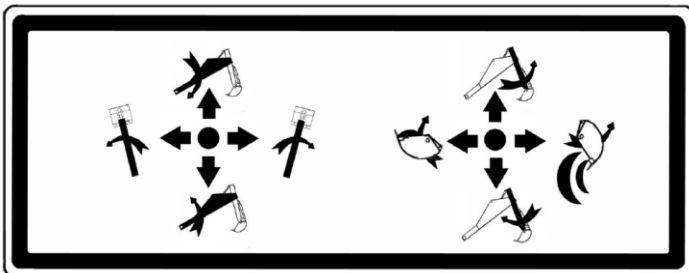
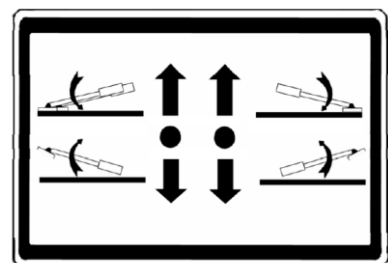


Figure 1
Two Lever Control

The easiest way to remember the various lever functions is to relate the various backhoe operations to the operator's seat facing the rear. Moving boom lever to left, boom swings left. Therefore when referring to control lever functions, the left side of backhoe will be the same as the right side of tractor.

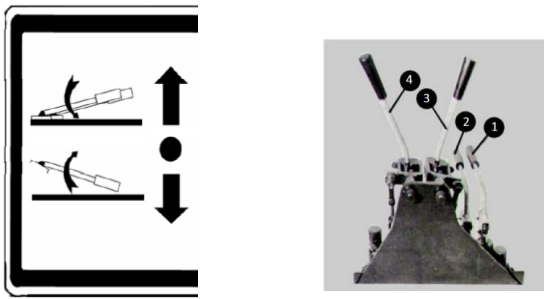


Two Lever Control
Function Decal

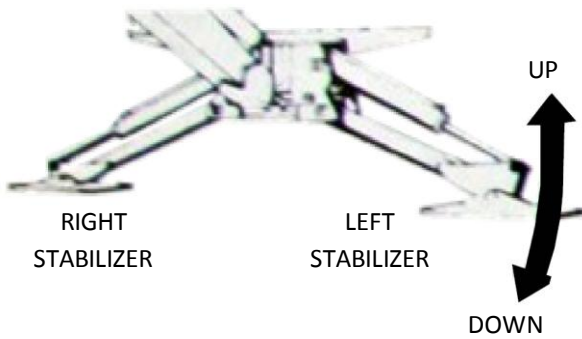


Stabilizer
Function Decal

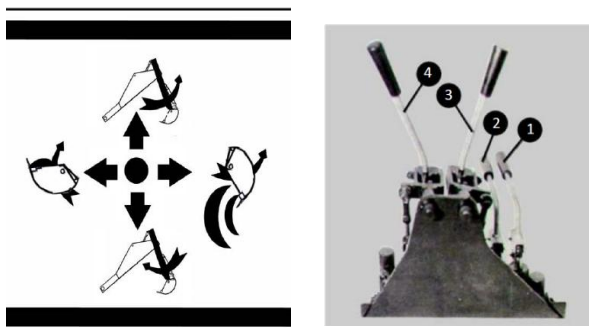
Stabilizer Levers 1-2



Moving the stabilizer lever(s) forward will move the stabilizer(s) "Down". Moving the stabilizer lever(s) rearward will move the stabilizers "Up".

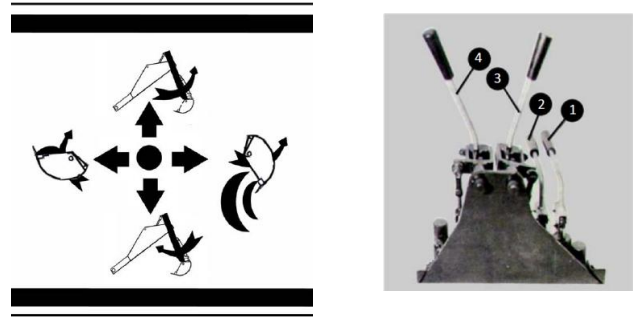


Crowd Lever 3



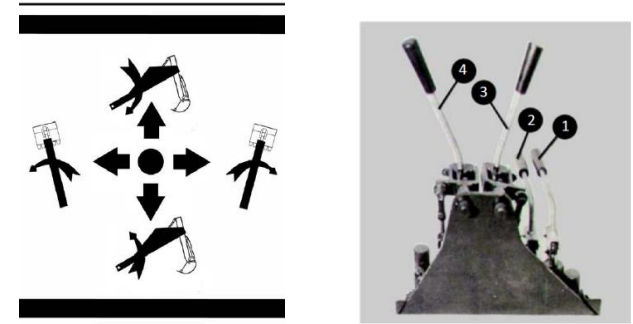
Pushing the crowd lever forward will move the dipstick and bucket "Out" or away from the operator. Pulling the crowd lever rearward will move the dipstick and bucket "In" or toward the operator.

Bucket Lever 3



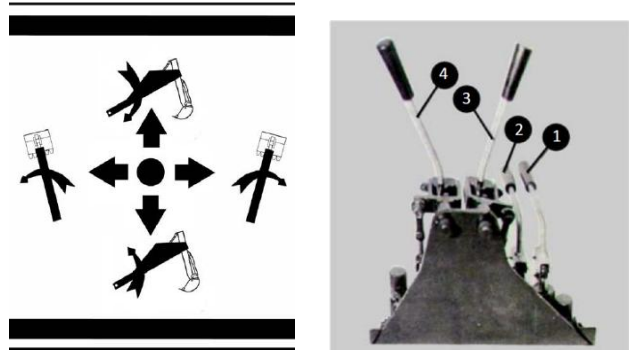
Pushing the bucket lever to the left will "Fill" or curl the bucket (move inward). Pushing the bucket lever to the right will "Dump" the bucket (move outward).

Lift Lever 4



Pushing the boom lever forward will "Lower" the boom, dipstick and bucket. Pulling the boom lever rearward will "Lift" the boom, dipstick and bucket.

Swing Lever 4



Pushing the swing lever to the left will swing the boom, dipstick and bucket to the "Left". Pushing the swing lever to the right will swing the boom, dipstick and bucket to the "Right".

The BMC LD6 and MD8 Series Backhoes are not to be used without a front loader or front blade which will lift front wheels.

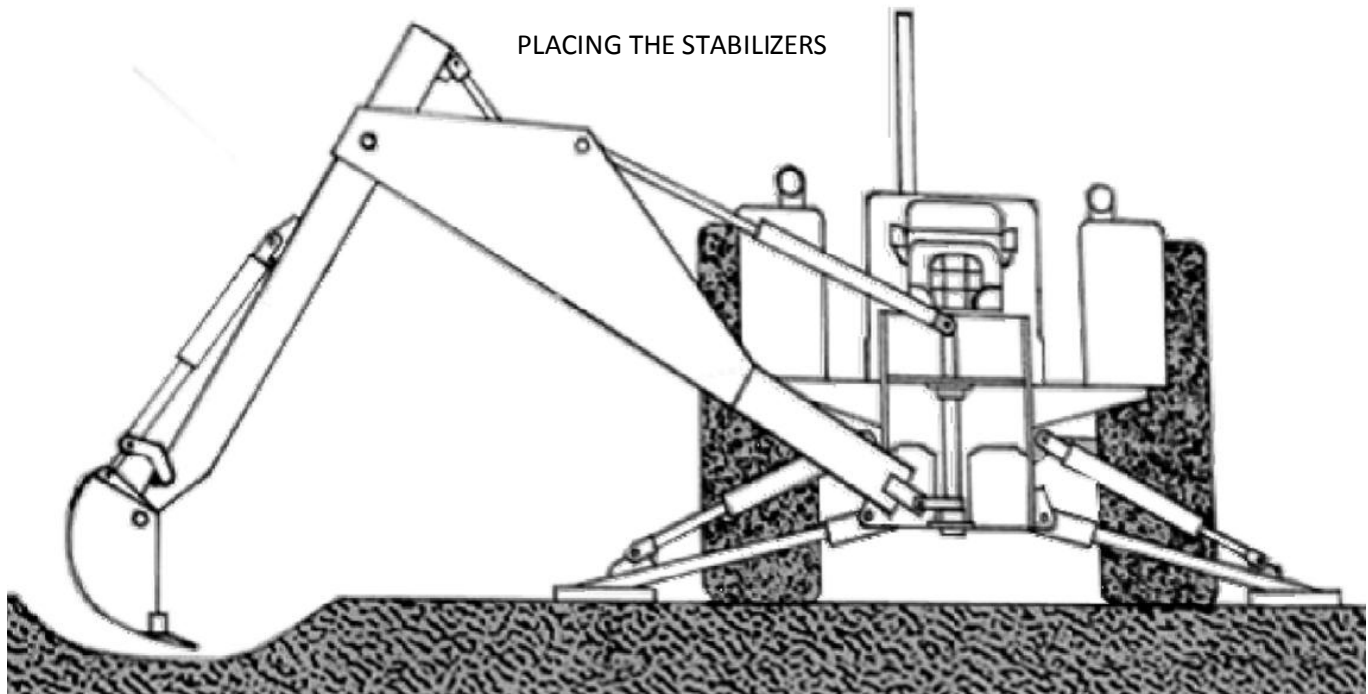
NOTE: Use hand signals shown on page 40 when operator is taking directions from others.

OPERATION

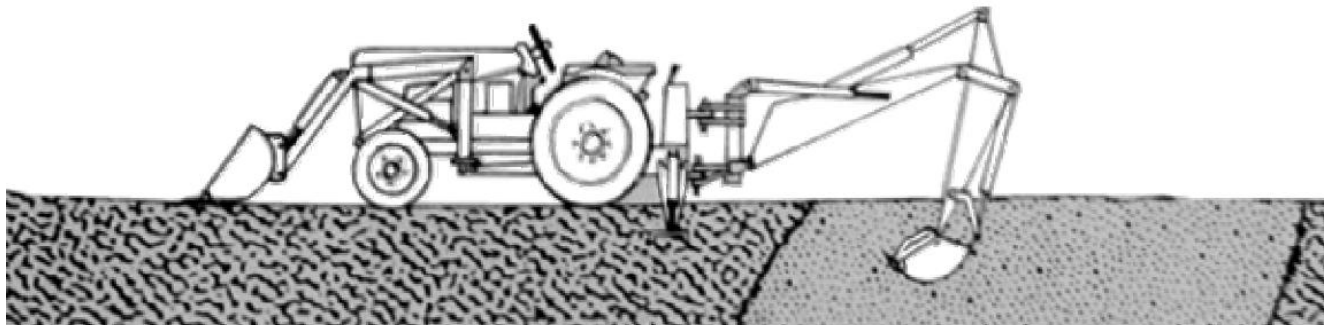


Do not use the LD6 or MD8 Series Backhoe as a personal hoist, for lifting or conveying personnel on the bucket or boom, or providing a work platform for personnel.
Never attempt to drive the tractor when seated at the Backhoe controls.
Operate the Backhoe Controls only when seated at the controls. Any other method could result in serious injury.

Proper operation of the backhoe controls will produce a smooth digging motion. Observe the following points to obtain the best results and to fully utilize the digging forces with the least amount of stress and strain on the backhoe and tractor. Practice will make you a proficient operator.

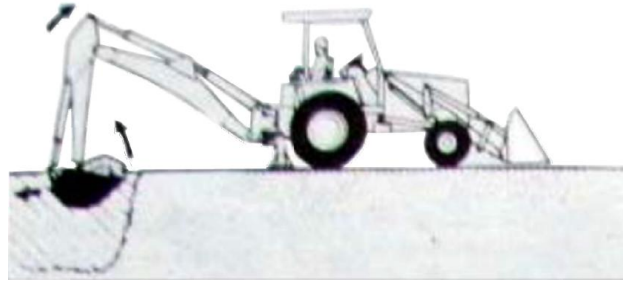
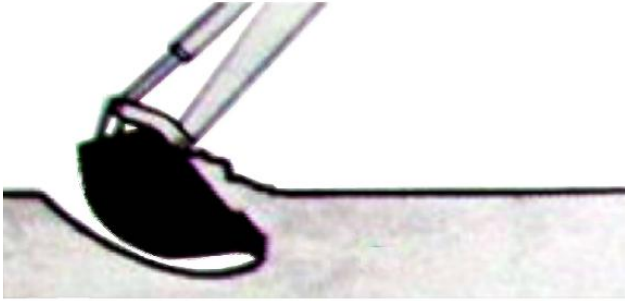


Set the stabilizers to remove as much weight from rear wheels. The Loader Bucket should also be on the ground to stabilize the front of the tractor.



Filling the Bucket

Operate two or more controlled functions at the same time throughout the filling cycle for smooth action and maximum performance.

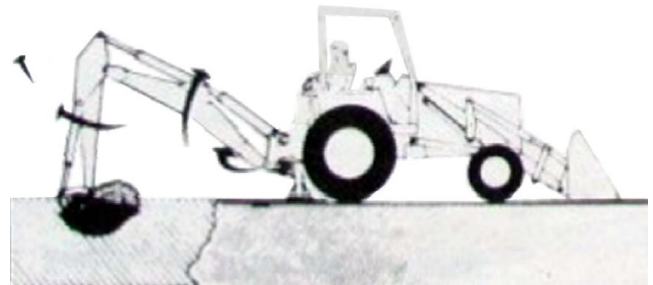
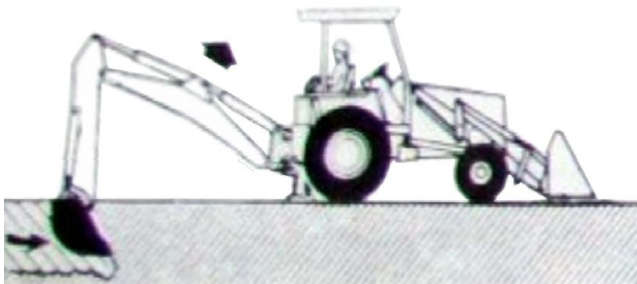


To obtain a cleaner trench and avoid the buildup of material directly in front of the backhoe, crowd out and completely curl the bucket while starting to lift it from the excavation. In this way excess material will fall back into the excavation.

Control the bucket attitude throughout the digging cycle to keep the teeth at the proper angle for best penetration. This will minimize dragging and scraping the bucket through the ground.

Dumping the Bucket

To dump the bucket at the end of the digging cycle, lift the bucket clear of the trench while crowding it out and swinging it to the spoil pile.



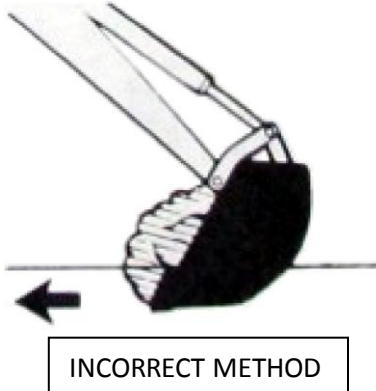
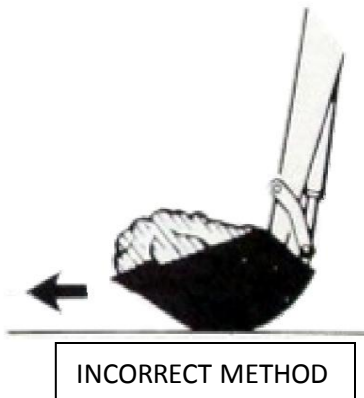
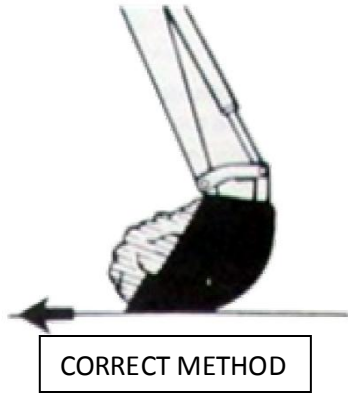
When digging in hard-packed soil, bucket penetration can be increased by applying down pressure with the boom while crowding in and curling the bucket. If the crowd action "stalls" it may be necessary to apply lift occasionally during the digging cycle to correct the bucket depth.

As the pile is approached, dump the bucket. When the bucket is empty, the dipstick and bucket are in position to resume digging upon return to the trench.

IMPORTANT: *Avoid constant jarring or hammering type contact between the spoil pile and the loaded bucket as this may cause premature wear to the backhoe pins and bushings.*

Trenching

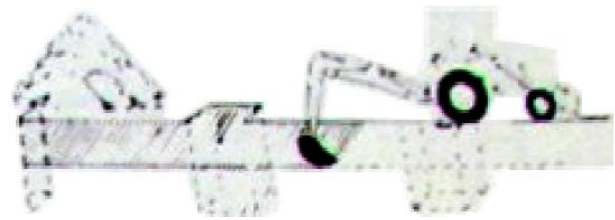
Trenching is the most basic backhoe dipping operation. Other digging operations are merely variations of this basic function (i.e. filling the bucket, dumping the bucket, and moving the unit forward).



While trenching, it is generally important to maintain a level trench bottom. This is accomplished by setting the bucket at the proper angle of approach. As the bucket is crowding in, continuously push on the bucket lever to maintain the correct cutting angle. At the same time, pull on the lift lever to relieve down pressure and keep the bucket in the same plane.

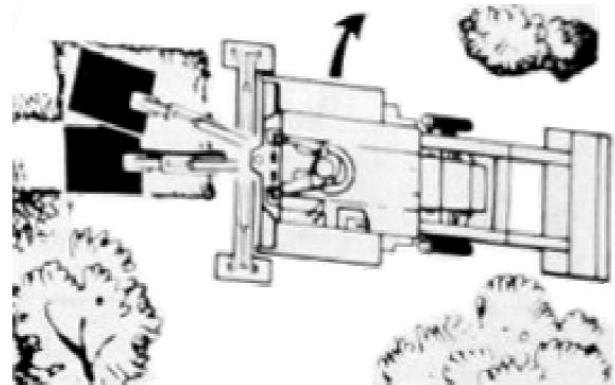
Continue the trench by moving forward. Moving too far will require excessive down pressure for digging, plus hand clean-up of the trench bottom. It is better to move a lesser amount than to move too far.

Continuous Trenching With Spaced Bellholes

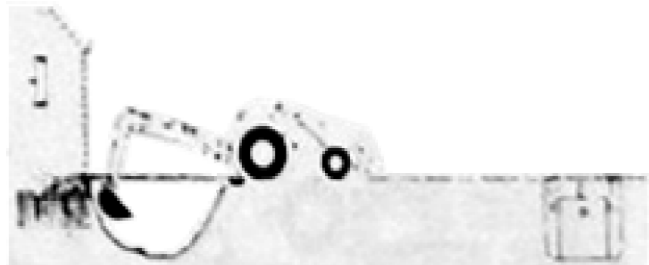


Begin by digging the trench to the desired grade. Progress along the trench to the bellhole location and dig as much of the bellhole as possible without moving the backhoe from the trench line setting.

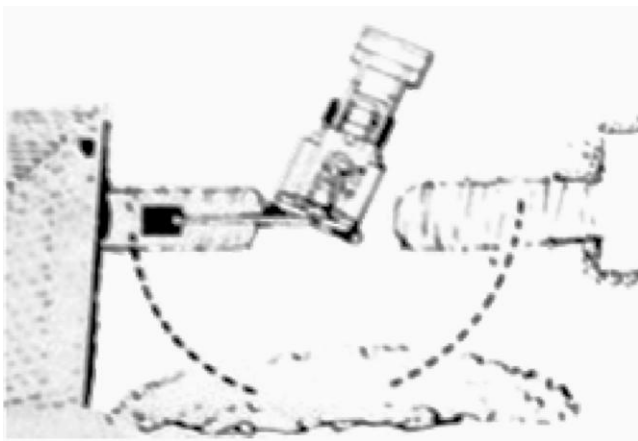
Move to the side as previously described and complete the bellhole. Realign the backhoe with the trench, and proceed trenching to the next bellhole.



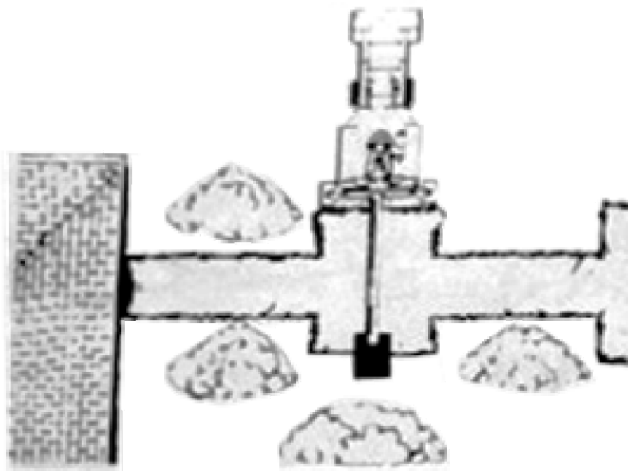
Trenching Between a Building and Open Excavations



Start the trench at the building. Trench out halfway to the excavation. Then start trenching from the excavation to the first trench. Dig toward the first trench until there is just enough room to move the unit out from between the two trenches.

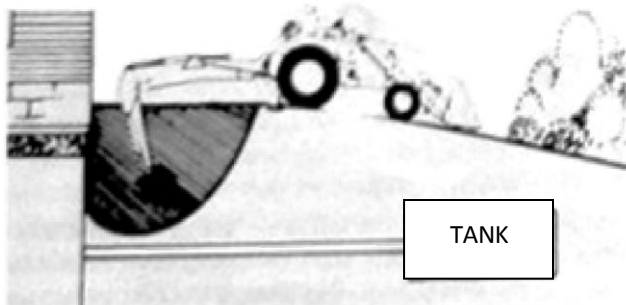


Position the unit so the backhoe swing post is over the centerline of the trench connection. Dig with the backhoe at extreme swing positions, and in as close to the stabilizers as possible. Pile the spoil on the opposite side of the trenches.

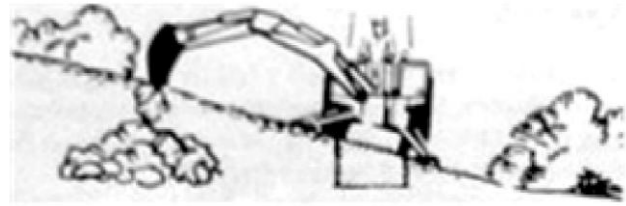


Position the unit forward with the lift and crowd levers so the two trenches can be connected. Pile the spoil on the opposite side of the trench.

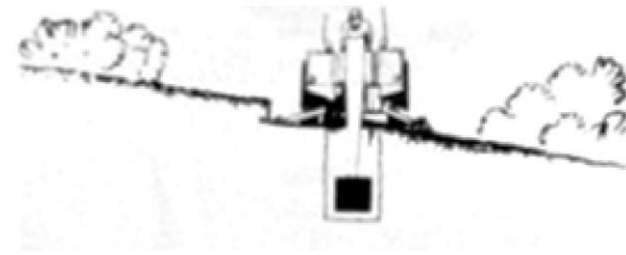
Side Slope Excavating or Trenching



Dig with the backhoe uphill wherever possible.



Level the backhoe on slopes with the stabilizers to dig plumb trenches, or use the backhoe or loader to cut a level slot for the uphill wheel and stabilizer. Pile the spoil from the slot on the low side.

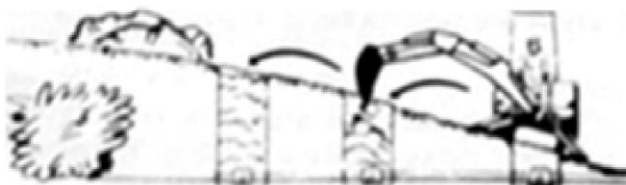


When on the side of a steep slope, cut a level surface along the uphill side of the trench with the loader.

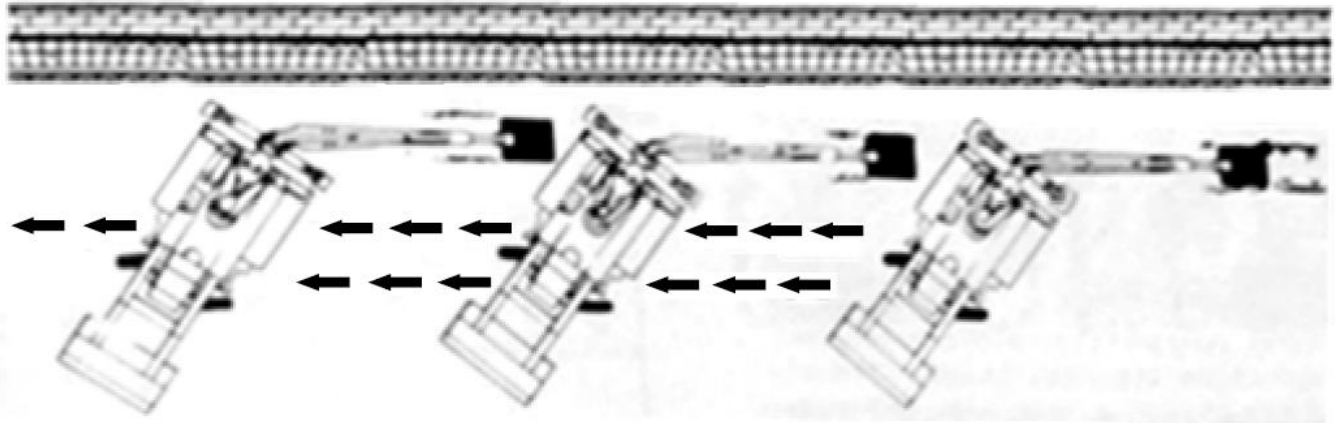
Pile the spoil of the cut downhill. When digging, pile the spoil of the trench uphill.



Dig field tile trenches progressively. As soon as one trench is completed, have the workmen lay the tile. Start the next trench, using the spoil to fill the previous trench.



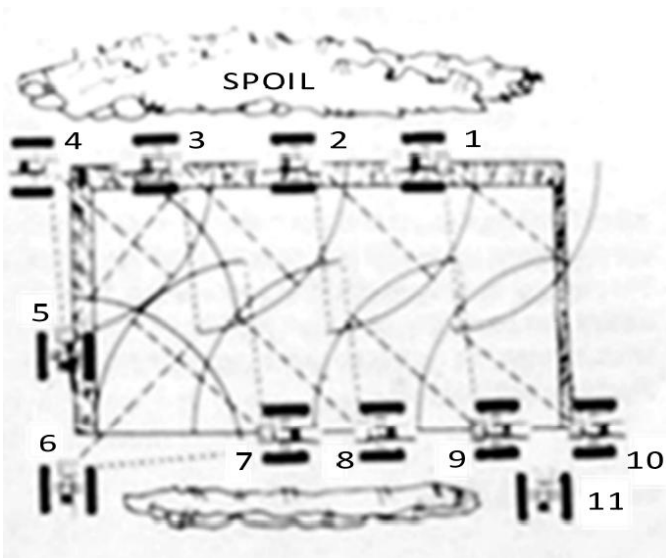
Trenching Close to Walls



Back the unit in at an angle close to the wall. Determine the width of the trench and position the swing post pin half the trench width from the wall.

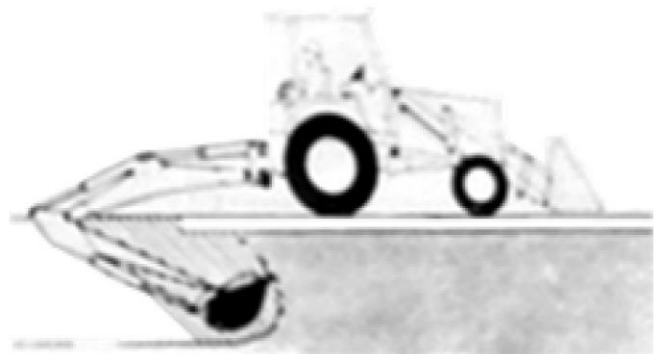
Turn the front wheels so they are parallel to the wall. This will allow the backhoe operator to reset the unit along the course of the trench with the lift and crowd levers. Keep the stabilizer closest to the wall raised, and set the other stabilizer down firmly.

DIGGING STRAIGHT WALL SHALLOW BASEMENTS



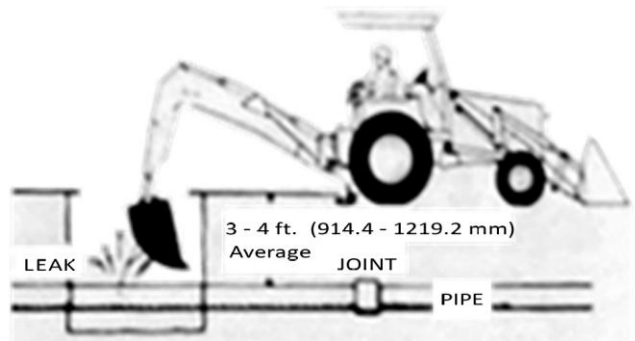
Begin at one corner, removing as much material as possible to grade level. Then, reset the unit forward and continue digging to grade. Progress around the edge of the basement, finishing each corner as you come to it.

DIGGING UNDER A SIDEWALK OR CURB



To continue a trench or excavation under a sidewalk or curb position the backhoe as shown.

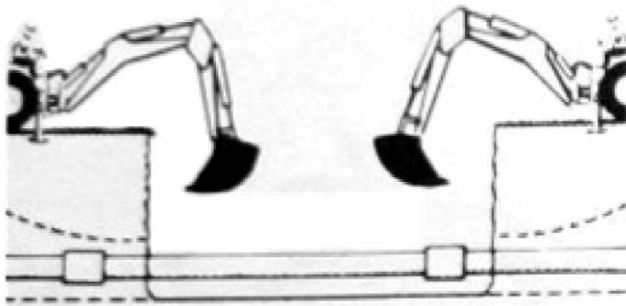
PIPELINE LEAK REPAIR



Locate the pipeline with a bellhole about six feet (1828.8 mm) wide and ten feet (3048 mm) long. Then, dig lengthwise along the pipeline to locate the leak.

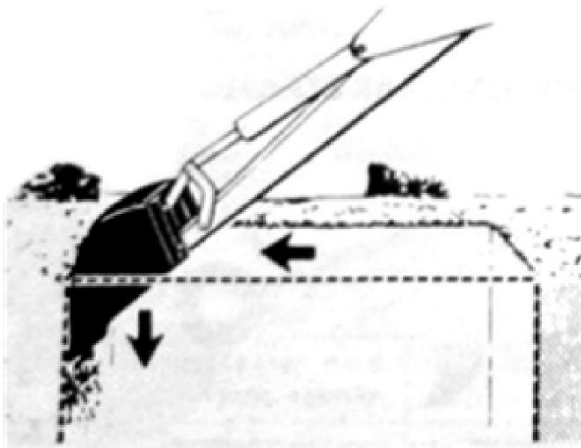


When the leak is located, position the unit to dig at grade level on both sides of the pipeline.

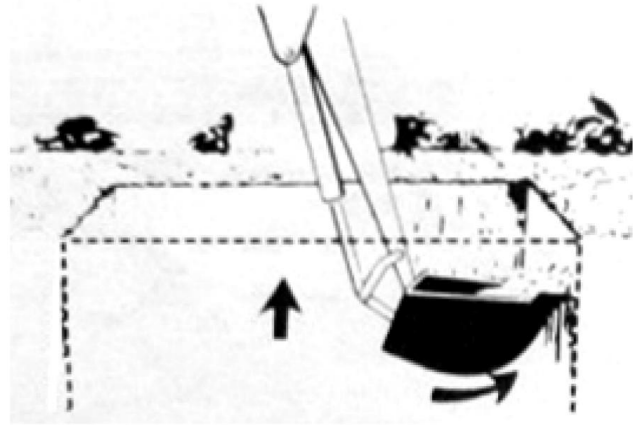


If a length of pipe must be replaced, strip the soil from both ends of the bellhole. Dig the bellhole or trench enough to allow the workmen adequate space in the leak area.

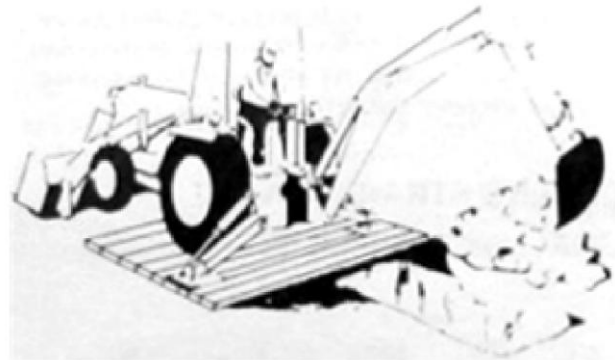
FINISHING STRAIGHT WALLS



Finish the far wall by crowding out while forcing the bucket down with the boom. Actuate the bucket (curl out) to keep the bottom of the bucket vertical.



To finish the rear wall, lift up and crowd in. Keep the edges of the bucket horizontal.



When finishing straight walls or bellholes in sandy soil, use a platform under the rear tires and the stabilizers. The platform distributes the load over a large area and lessens the possibility of a cave-in. The platform also tends to keep the unit from creeping rearward if hard digging is encountered.

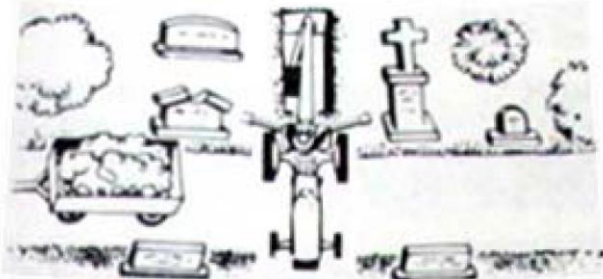
BACKFILLING

Backfill by lifting the bucket over the spoil pile and then crowding in. Pull both the crowd and lift levers for smooth, even backfilling.

IMPORTANT: *Do not backfill by using the swing circuit and dragging the bucket sideways. Doing so can cause damage to the dipstick, boom, swing cylinders, or mainframe.*

Grave Digging

For the best grave digging position, back the tractor straight in toward the gravesite.



When grave markers prevent a straight-in position, back the tractor in at a 45° or 90° angle to the gravesite.

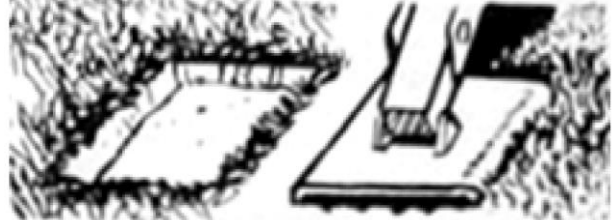


Position the tractor close enough to the grave to dig a full depth straight wall at the far end of the grave.

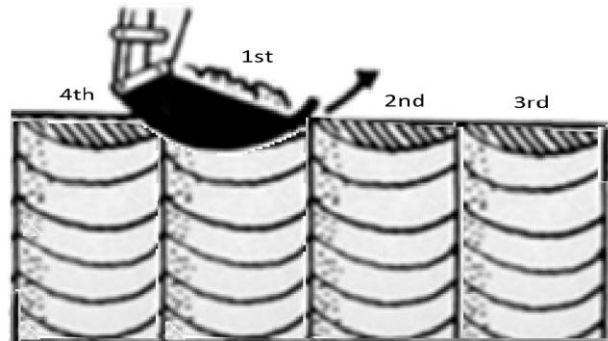
When digging graves in sandy soil, use a platform under the rear tires and stabilizers. The platform distributes the load over a larger area and lessens the possibility of a cave-in. The platform also tends to keep the tractor from creeping rearward when hard digging is encountered.



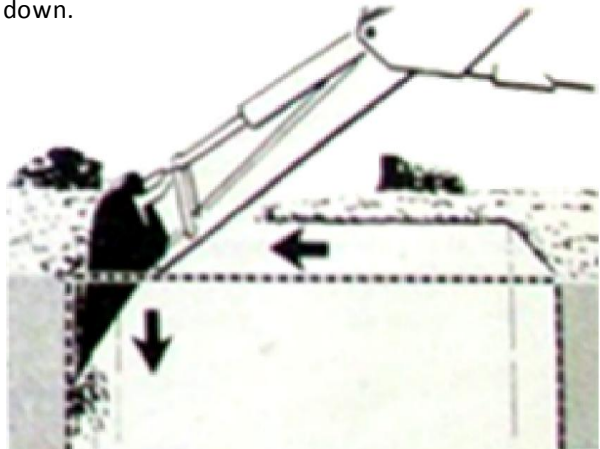
When a platform is not used, remove sod from under each stabilizer pad, as shown below.



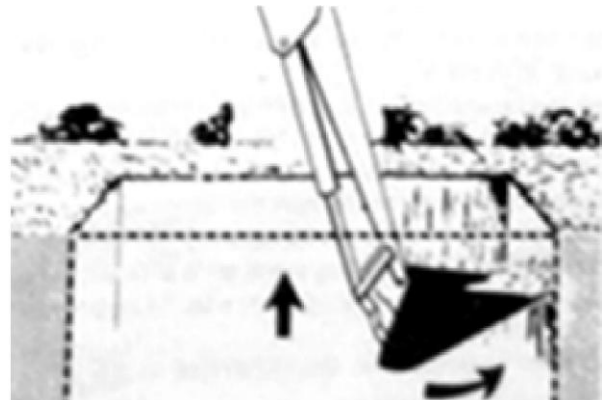
Start digging in the middle of the grave. At first, take shallow bites around the edges to avoid damage to the surrounding sod. After a one foot (304.8 mm) depth is reached, full buckets can be removed, wherever possible.



When the desired depth is reached, finish the end walls. Finish the far wall by crowding out and forcing down.



Lift up and crowd in to finish the close end wall.



1. Position the tractor on a flat surface where the backhoe will be stored.
2. Lower both stabilizers until they take the backhoe weight. Place the bucket on the ground with the dipper arm vertical to the ground as shown in Fig. 1.

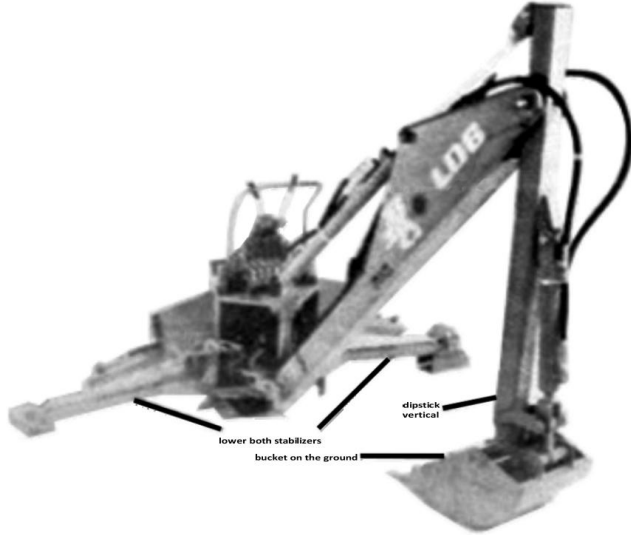


FIGURE 1

3. Remove operator's seat.
4. Refer to mounting frame installation sheet for specific instructions for mounting frame removal.

5. Place blocks under backhoe main frame for support and raise stabilizers until backhoe is resting on blocks. Tilt the backhoe with the boom control until mounting blades clear underside of loader and tractor.
6. Stop engine and relieve hydraulic pressure from hoses by working the front loader or front blade control levers.

CAUTION: DO NOT ACTIVATE THE CONTROL LEVERS OF THE BACKHOE AFTER THE ENGINE HAS BEEN STOPPED. DOING SO MAY UPSET THE BACKHOE AND CAUSE PERSONAL INJURY.

7. Disconnect the pressure hose at the backhoe control valve (right side of control valve) and disconnect the backhoe return hose at the loader or front blade control valve.
8. Connect the pressure hose, removed from backhoe control valve, to the loader valve inlet.
9. Connect the backhoe return hose (removed from the loader inlet) to the backhoe inlet port.
10. Tractor is now ready to operate.

IMPORTANT: FAILURE TO PROPERLY CONNECT THE HYDRAULIC HOSES WILL RESULT IN SEVERE HYDRAULIC PUMP DAMAGE AND POSSIBLE PERSONAL INJURY.

STORAGE

Store the Backhoe in a clean, dry place wherever possible. Coat exposed parts of the hydraulic cylinders and spool stems of control valve with a rust preventative. Make sure the hydraulic system is sealed off to keep foreign material from entering.

INSTALLATION

NOTE: Before installing the Backhoe, after storage, check all the hydraulic hoses and major swivel points for wear.

1. Position the tractor-loader to the Backhoe so the subframe is aligned and hydraulic hoses may be connected to their respective ports.
2. Stop engine and relieve the hydraulic pressure by actuating the loader control lever.
3. Disconnect the hose from the right side of the Backhoe control valve (inlet port).
4. Disconnect the hose from the loader control valve on the inlet port.
5. Connect the hose removed from the loader inlet port to the backhoe inlet port.
6. Connect the hose; attach to the return of the backhoe control valve to the inlet of the loader valve.
7. Level the backhoe mounting blade arms with the boom control. It may be necessary to lower the stabilizer arms to help support the Backhoe, but do not raise the backhoe off the blocks until the mounting blade arms are horizontal to the backhoe mainframe.
8. Raise the backhoe with the stabilizers to the point the mounting blade arms can be attached to the loader sub-frame.



9. Using the boom control and stabilizers raise the backhoe mainframe, the saddle block mounting clamps with the lower 3-point pins.
10. Install operator's seat.
11. Work all functions of the backhoe control valve to remove air from the hydraulic system.

NOTE: See backhoe mounting instruction sheet for specific instructions on installation of mounting frame.

GENERAL MAINTENANCE

Regular maintenance is the key to long equipment life and safe operation.

Maintenance requirements have been reduced to an absolute minimum. However, it is important that these maintenance functions be performed as described below.

EVERY 8 HOURS OF OPERATION

- A. Grease all swivel points (Ram and base end of all cylinders) thoroughly. Excessive wear and even mechanical damage to pins and cylinders can result from inadequate lubrication. Only an S.A.E. multi-purpose grease should be used.

REGULAR AND ROUTINE LUBRICATION OF THE BACKHOE IS THE KEY TO LONG EQUIPMENT LIFE. IT WILL BE NECESSARY TO GREASE THE FOLLOWING LOCATIONS

When preparing to lube the Backhoe, the Bucket should be half open, the Crowd (Dipper) Arm should be fully open, the Boom Lower half way down and the Stabilizers in the Down Position.

Swing Shaft Assembly

Swing Cylinders

Base End	90° Zerk	Required 2	(1 ea. side)
Rod End	St. Zerk	Required 2	(1 ea. side)

Swing Shaft

Lower Bearing	90° Zerk	Required 1	
Upper Bearing	St. Zerk	Required 1	
Anchor Lug	90° Zerk	Required 1	

Stabilizer Assembly

Stabilizer Cylinders

Rod End	St. Zerk	Required 2	(1 ea. side)
Base End	90° Zerk	Required 2	(1 ea. side)

BOOM Assembly

Boom

Swing Shaft End	90° Zerk	Required 2	(1 ea. side)
Dipper End	90° Zerk	Required 2	(1 ea. side)

Boom Cylinder

Rod End	St. Zerk	Required 1	
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Crowd Cylinder

Base End	90° Zerk	Required 1	
Rod End	St. Zerk	Required 1	

Dipper Assembly

Bucket Cylinder

Base End	90° Zerk	Required 1	
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Bucket Link

Bucket End	90° Zerk	Required 1	
Cylinder End	90° Zerk	Required 1	

Dipper Arm

Toggle Link	St. Zerk	Required 1	
Bucket Pin	St. Zerk	Required 1	

**SERIES LD6 BACKHOE
LUBRICATION FITTINGS**



GENERAL MAINTENANCE

Swing Shaft Assembly

Swing Cylinders

Base End	90° Zerk	Required 2	(1 ea. side)
Rod End	St. Zerk	Required 2	(1 ea. side)

Swing Shaft

Lower Bearing	90° Zerk	Required 1	
Upper Bearing	St. Zerk	Required 1	
Anchor Lug	90° Zerk	Required 1	

Stabilizer Assembly

Stabilizer Cylinders

Base End	90° Zerk	Required 2	(1 ea. side)
Rod End	St. Zerk	Required 2	(1 ea. side)

BOOM Assembly

Boom

Swing shaft End	St. Zerk	Required 1	
Dipper End	St. Zerk	Required 1	

Boom Cylinder

Rod End	St. Zerk	Required 1	
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Crowd Cylinder

Base End	St. Zerk	Required 1	
Rod End	St. Zerk	Required 1	

Dipper Assembly

Bucket Cylinder

Base End	90° Zerk	Required 1	
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Bucket Link

Cylinder End	90° Zerk	Required 1	
Bucket End	90° Zerk	Required 1	

Dipper Arm

Toggle Link	St. Zerk	Required 1	
Bucket Pin	St. Zerk	Required 1	

MD8 BACKHOE LUBRICATION FITTINGS



IT SHOULD BE STRESSED THAT NO AMOUNT OF DESIGN PRECAUTIONS CAN PREVENT RAPID COMPONENT WEAR WHERE THESE COMPONENTS ARE UNDER STRESSES SUCH AS THOSE ENCOUNTERED ON A BACKHOE. THE ONLY PREVENTIVE AGAINST SUCH WEAR IS GREASE AND NO ONE CAN APPLY THAT BUT YOU.

- B. Make a thorough check (Prior to start of work each day) for obvious signs of wear, leakage, loose fitting / pins, etc. Careful, routine visual checks can provide valuable forewarning of impending failures allowing sufficient time to acquire replacement parts and thus reducing down time to a minimum.

EVERY 40 HOURS OF OPERATION

- A. Check hydraulic reservoir fluid level. If oil is low, check all lines, fittings, and control valve for signs of leakage. Refill in accordance with tractor owner's manual.

NOTE: HYDRAULIC FLUID LEVEL SHOULD BE CHECKED WITH BACKHOE AND LOADER IN TRANSPORT POSITION.

EVERY 40 HOURS OF OPERATION



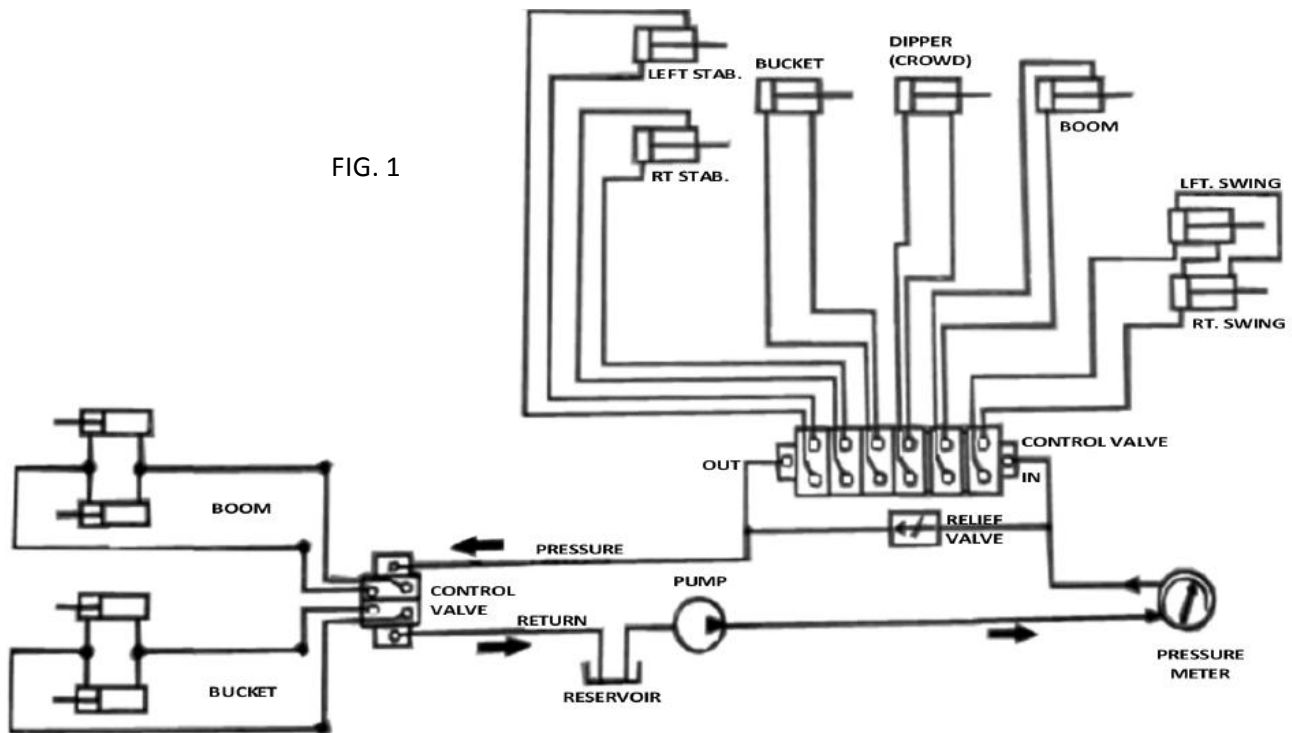
Note: Escaping hydraulic fluid, under pressure, can be dangerous. Hydraulic fluid escaping under pressure can have enough force to penetrate the skin or destroy eye-sight. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by hydraulic fluid, seek medical attention at once. Make sure all connections are tight and that hoses are in good condition before applying pressure to system. Relieve all pressure to system (Stop Engine) before disconnecting lines or attempting to perform other work on the system. To locate small leaks, use a small piece of cardboard, paper, or wood ... never use your hands.

- B. Physically check all pins, cotter pins, nuts, etc. for signs of wear or loose fit. Tighten as required, replacing where necessary. (Bolts, pins, may vibrate loose during operation). Clean equipment of all dirt, oil, and excess grease. This will assist you in making usual inspections and help avoid dangerous slips.

EVERY 200 HOURS OF OPERATION

Hydraulic oil should be drained out of system and replaced with clean Fluid per filling instructions. Pressure relief valve operation should be checked to assure operation at designated level.

To check pressure an “in-line” type pressure meter (not “end-of-line”) should be used. Fig. 1 below is a line drawing indicating proper connection for checking pressure on both backhoe and loader. (Always stop tractor engine prior to making any hydraulic connections). Once the meter is properly connected into the fluid circuit, “bottom” out any cylinder on the backhoe. As cylinder moves, pressure will rise and will level off as relief valve (located in input section of control valve) opens. This leveling off should occur at 1800 P.S.I. (1750–1850). Reverse the handle movement, moving cylinder in opposite direction so that cylinder is no longer “bottomed” and then release handle so it can return to center position. Should it be necessary to adjust relief valves this is accomplished with a screwdriver adjustment of spring tension inside acorn nut cover on relief valve. Turning screw to right raises pressure; to left lowers pressure. Each turn of this screw will change relief valve operation pressure point by approximately 700 P.S.I.



DO NOT SET RELIEF VALVE OPERATING PRESSURE HIGHER THAN THAT LEVEL SPECIFIED ABOVE. THE RELIEF VALVE IS THERE TO PROTECT YOUR EQUIPMENT AND YOUR PERSONAL SAFETY. DAMAGE DONE DUE TO TOO HIGH PRESSURE IS NOT COVERED BY PRODUCT WARRANTY. IT IS YOUR RESPONSIBILITY, AS THE OWNER OR OPERATOR, TO MAINTAIN PROPER FLUID LEVELS AND PROPER PRESSURE SETTINGS.



TORQUE VALUES FOR BOLT

BOLT SIZE	GRADE 5			
	MIN.		MAX.	
	N m	Ft-lbs	N m	Ft-lbs
1/4	12	9	14	10
5/16	26	19	28	21
3/8	43	33	50	37
7/16	71	53	81	60
1/2	108	80	122	90
9/16	156	115	176	130
5/8	217	160	244	180
3/4	298	290	434	320
7/8	583	420	637	470
1	854	630	963	710
1-1/8	1152	850	1288	950
1-1/4	1726	1200	1830	1350
1-1/2	5423	2000	5830	2300
1-3/4	8541	3300	9084	3700
2	13559	5000	14236	5500

TABLE 1

TORQUE VALUES FOR TUBE NUTS

(FOR 37° FLARED FITTINGS)

SIZE	TUBING O.D.	THREAD SIZE	TORQUE N m		TORQUE Ft-lbs	
			MIN.	MAX.	MIN.	MAX.
4	1/4	7/16-20	13.6	27.1	10	20
5	5/16	1/2-20	20.3	33.9	15	25
6	3/8	9/16-18	33.9	47.5	25	35
8	1/2	3/4-16	54.2	61.0	40	55
10	5/8	7/8-14	61.0	101.7	55	75
12	3/4	1-1/16-12	101.7	128.8	75	95
14	7/8	1-3/16-12	128.8	155.9	95	115
16	1	1-5/16-12	155.9	196.6	115	145
20	1-1/4	1-5/8-12	203.4	244.0	150	180
24	1-1/2	1-7/8-12	271.2	338.9	200	250
32	2	2-1/2-12	406.7	474.5	300	350

TABLE 3

TORQUE VALUES FOR O-RING BOSS PLUGS, JIC 37° SEAT, SWIVEL NUTS

SIZE	TORQUE N m		TORQUE Ft-lbs	
	MIN.	MAX.	MIN.	MAX.
4	8.1	13.6	6	10
5	13.6	20.3	10	15
6	20.3	27.1	15	20
8	33.9	40.7	25	30
10	47.5	54.2	35	40
12	81.4	94.9	60	70
14	94.9	108.5	70	80
16	108.5	122.0	80	90
20	128.8	155.9	95	115
24	162.7	189.8	120	140
32	338.9	406.7	250	300

TABLE 2

FITTING AND ADAPTOR THREAD DATA

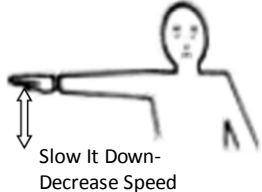



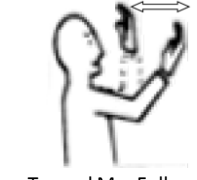




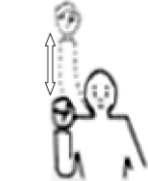
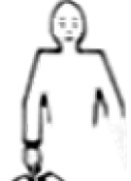
Size Symbol	Thread Size
2	5/16-24
3	3/8-24
4	7/16-20
5	½-20
6	9/16-18
8	¾-16
10	7/8-14
12	1-1/16-12
14	1-3/16-12
16	1-1/16-12
20	1-1/8-12
24	1-7/8-12
32	2-1/2-12

TABLE 4

S.A.E. GRADE	BOLT IDENTIFICATION CHART DESCRIPTION	BOLT HEAD MARKING
Equivalent 1 or 2	WILL HAVE NO RADIAL LINES Low or Medium Carbon Steel Not Heat Treated	
5	WILL HAVE 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
8	WILL HAVE 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

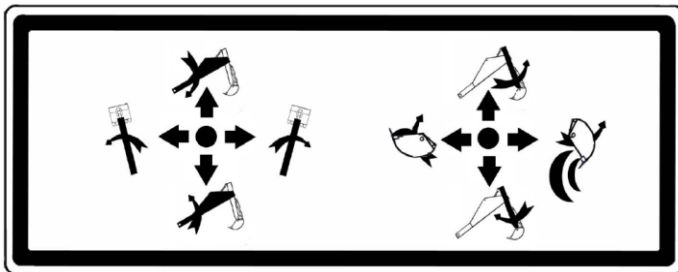


HAND SIGNALS

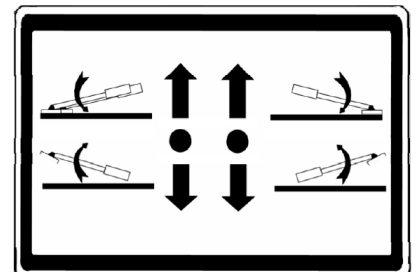
<p>Use when noise or distance does not allow normal voice communication</p>	 <p>Slow It Down - Decrease Speed</p>	 <p>This Far To Go</p>	 <p>Move Out - Take Off</p>
 <p>Raise Equipment</p>	 <p>Move Toward Me - Follow Me</p>	 <p>Stop</p>	 <p>Stop The Engine</p>
 <p>Start The Engine</p>	 <p>Come To Me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

For Replacement Manual Order No. OAM 68
 For Parts & Service Manual Order No. PSM 68

DECALS Replace Decals when they become illegible



Function Decal Part No. BMC 1038



Function Decal Part No. BMC 1037



Brantly Logo Part No. BMC 1066



Series Label Part No. BMC 1067



Series Label Part No. BMC 1068



Warning Label Part No. BMC 1054



Warning Label Part No. BMC 1036



LD6 Backhoe

OPERATING CRITERIA

Digging Depth: (A) (2 Ft. Flat Bottom)	6 Ft. (182.9 cm)
Digging Radius: (B)	9 Ft. (274.3 cm)
Bucket Clearance:	
60° Rotation: (C)	49.5 In. (125.73 cm)
40° Rotation: (D)	62.0 In. (157.48 cm)
Max. Power: (E)	72.0 In. (182.88 cm)
Swing Radius:	135 Degrees
Controls:	4 - Lever
Transport Height: (F)	6 Ft. (182.9 cm)
Stabilizer Spread:	
Transport: (G)	48 In. (121.92 cm)
Operating: (H)	
Digging Force:	
With Bucket Cylinder:	3000 Lbs.
With Dipper Cylinder:	1560 Lbs.

Mounting Data:

Separate mounting kit required to mount LD6 to specific tractor model.

BUCKET OPTIONS	WIDTH	NO. TEETH	CAPACITY	WEIGHT
LD Series: 615-1	8"	2	.50 cu. ft.	30 Lbs.
615-2	13"	3	1.0 cu. ft.	48 Lbs.
615-3	16"	3	1.25 cu. ft.	56 Lbs.

SHIPPING DATA:	WEIGHT
LD Series Backhoe	500 Lbs.
Mounting Kit	225 Lbs.
6 Ft. Backhoe with Mtg. Kit	725 Lbs.

HYDRAULIC SYSTEM DATA

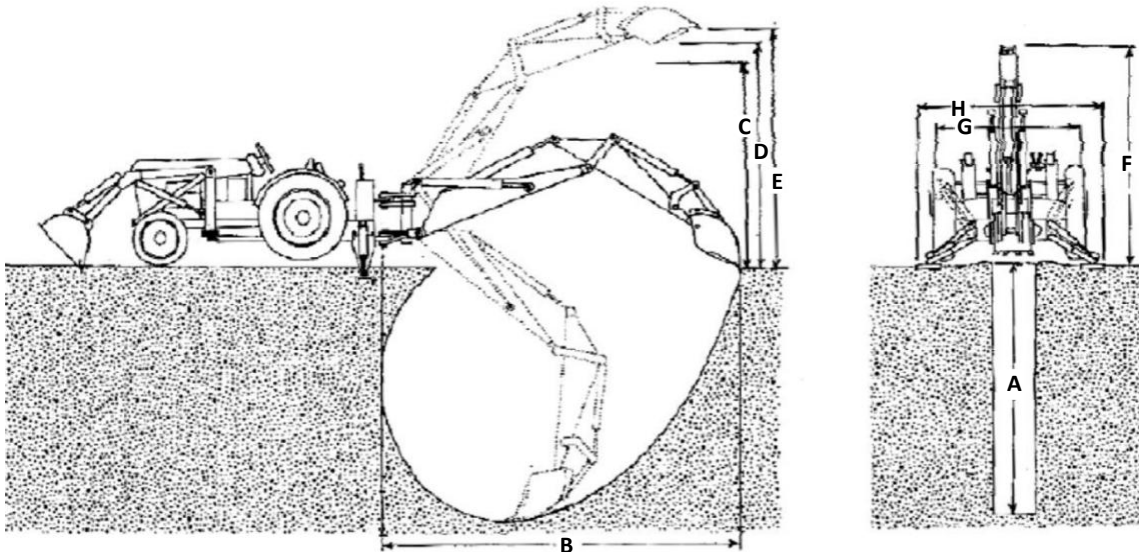
Operating Pressure:	1800 P.S.I
Flow Requirements:	4.0 G.P.M
Fluid Type:	Type "F"
System Capacity:	10 Qts.
Cylinders:	
Boom:	2.0 x 22 ½ x 1 ¼
Crowd (Dipper):	2.0 x 16 x 1 ¼
Bucket:	2.0 x 10 x 1 1/8
Swing:	2.5 x 6 x 1 1/8
Stabilizer:	2.0 x 10 x 1 1/8

CYCLE TIMES

Bucket Open:	3.0 sec.
Bucket Closed:	3.5 sec.
Dipper Open:	2.5 sec.
Dipper Closed:	3.0 sec.
Boom Up:	6.0 sec.
Boom Down:	4.5 sec.
Boom Right:	3.0 sec.
Boom Left:	3.0 sec.

CRATED DIMENSIONS

25" W x 29" H x 78" L
 22" W x 16" H x 81" L
 25" W x 29" H x 78" L



May vary with individual tractor model due to system efficiency, tire size, etc.
 (Design and Specifications subject to change without notice.)



MD8 Backhoe

OPERATING CRITERIA

Digging Depth: (A) (2 Ft. Flat Bottom)	8.0 Ft. (243.84 cm)
Digging Radius: (B)	11 Ft. (340.36 cm)
Bucket Clearance:	
60° Rotation: (C)	57.25 In. (145.41 cm)
40° Rotation: (D)	78.0 In. (198.12 cm)
Max. Power: (E)	96.0 In. (243.84cm)
Swing Radius:	135 Degrees
Controls:	4 - Lever
Transport Height: (F)	7 Ft. (213.36 cm)
Stabilizer Spread:	
Transport: (G)	48 In. (121.92 cm)
Operating: (H)	
Digging Force:	
With Bucket Cylinder:	4200 Lbs.
With Dipper Cylinder:	2280 Lbs.

Mounting Date:

Separate mounting kit required to mount MD8 to specific tractor model.

BUCKET OPTIONS	WIDTH	NO. TEETH	CAPACITY	WEIGHT
LD Series: 818-1	8"	2	.75 cu. ft.	38 Lbs.
818-2	13"	3	1.5 cu. ft.	52 Lbs.
818-3	16"	3	2.0 cu. ft.	64 Lbs.

SHIPPING DATA:	WEIGHT
MD Series Backhoe	700 Lbs.
Mounting Kit	225 Lbs.
8 Ft. Backhoe with Mtg. Kit	925 Lbs.

HYDRAULIC SYSTEM DATA

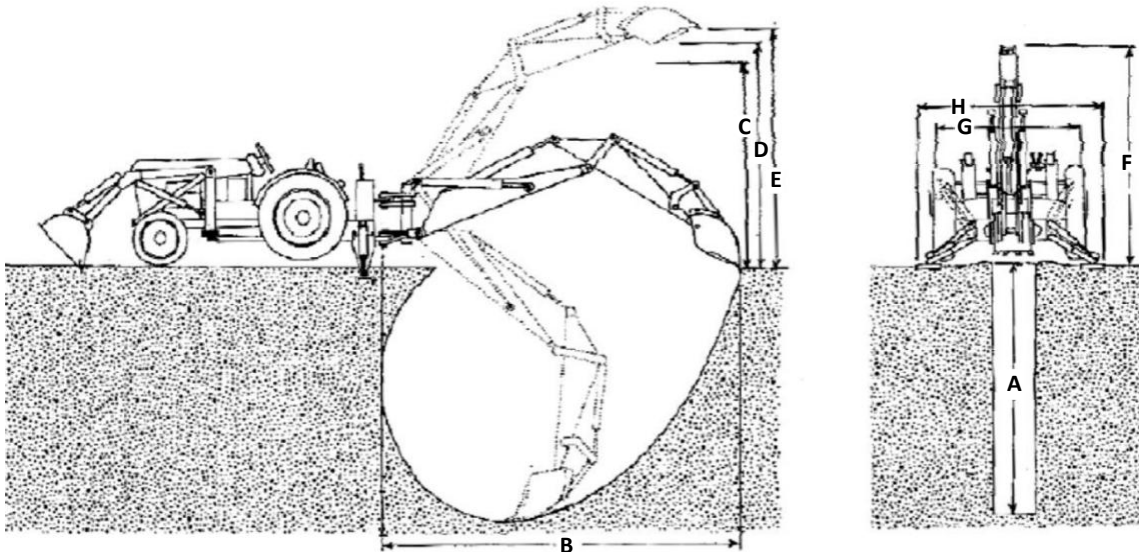
Operating Pressure:	1800 P.S.I
Flow Requirements:	4.0 G.P.M
Fluid Type:	Type "F"
System Capacity:	12 Qts.
Cylinders:	
Boom:	2.5 x 22 ½ x 1 ¼
Crowd (Dipper):	2.0 x 22 ½ x 1 ¼
Bucket:	2.0 x 16 x 1 ¼
Swing:	2.5 x 6 x 1 1/8
Stabilizer:	2.0 x 10 x 1 1/8

CYCLE TIMES

Bucket Open:	3.5 sec.
Bucket Closed	4.5 sec.
Dipper Open:	4.0 sec.
Dipper Closed:	5.0 sec.
Boom Up:	6.5 sec.
Boom Down:	5.0 sec.
Boom Right:	3.0 sec.
Boom Left:	3.0 sec.

CRATED DIMENSIONS

25" W x 29" H x 84" L
 22" W x 16" H x 81" L
 25" W x 29" H x 84" L



May vary with individual tractor model due to system efficiency, tire size, etc.
 (Design and Specifications subject to change without notice.)



(Check and Adjust as Required)

1. Hydraulic system oil level.
2. Lubricate backhoe.
3. Remove paint from finished surfaces (backhoe cylinder rods and valve spools.)
4. Backhoe control handles for proper operation.
5. Cycle cylinders to purge air from system.
6. Hydraulic connections for leaks and hoses for proper position to reduce chafing and binding.
7. Control valve relief pressure.
8. Backhoe attachment bolts.

IMPORTANT Warranty registration card must be filled out and returned to Brantly Mfg. Co., P.O. Box 187, Frederick, Ok., 73542 with pressure, flow and performance information completed to validate warranty. No warranty claim will be honored unless this data is on file at the factory.

BRANTLY MFG. CO.

**OPERATOR'S MANUAL
FOR**

MODEL 605B BACKHOE

for

BOLEN HT-20 TRACTOR

P. O. Box 187

73542
Frederick, Oklahoma

405-335-3812



Brantly Mfg. Co.

P.O. Box 187, Frederick, Oklahoma 73542 • 405 335-5593

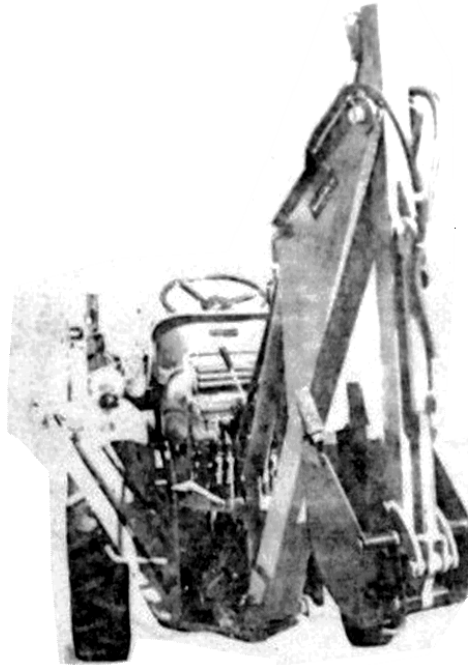
LD6 Backhoe

for tractors ranging from 12 to 24 h.p.

Allis Chalmers—620/720/5020
 Ariens—S14 thru S18
 Bolens—HT20/HT23
 Ditch Witch 2200/2300
 Economy—Power King
 Ford—125/145/165/195/1100/1300/1500
 Jacobsen—1250/1450/1650/53500

John Deere—300/312/314/316/317/400
 Kubota—B6100/B7100/185/185DT
 Massey Ferguson—205/210/220
 Satch—S370/ST1370
 Simplicity—9020/4040/4041/9523
 Yanmar—135/155/155D

If your tractor model is not listed above, ask your dealer to check with the factory, since new models are continuously being fitted at the factory.



LD6 Backhoe

Quality Features

Design New, improved design by Mr. N.O. Brantly offers hardened steel replaceable bushings around major pin wear areas, larger stabilizer cylinders, larger rod size in boom and crowd cylinders and rubber, steel-braid hose throughout. Plated steel pins and plated hex-head locking bolts are used throughout. Reinforced swing shaft and mainframe offer improved durability and service life. Replaceable steel teeth on bucket add to digging capability.

Hydraulic System The rugged construction of the Brantly LD6 Backhoe is carried thru into the heart of the system, the hydraulic pump and cylinders. The hydraulic pump functions efficiently even at low tractor RPM...you don't have to "ract your motor" for the LD6 to do the job. As a matter of fact, the efficiency is such that only one pump is required to operate both Backhoe and Loader.

All Steel Construction The improved rugged all-steel welded construction of the LD6 Backhoe offers increased strength in swing shaft and mainframe area over 330/430 models.

Easily Installed The LD6 Backhoe can be installed, from shipping pad to Tractor, in a matter of an hour or less and can be removed and re-installed by one man in 15 minutes or less. Operation of the LD6 Backhoe follows logical, natural patterns employing a stacked control valve with toggle type control arrangement that assures operator ease and comfort.

Ideal For Landscape Architects, Nurseries, Plumbers, Builders, Farmers, Estate Owners, Golf Courses, Contractors...anyone with a digging job to do.

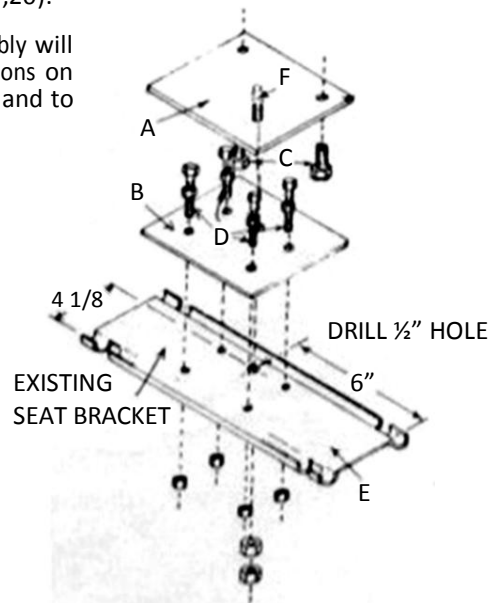
MOUNTING INSTRUCTIONS

NOTE: (1) Right or left designations have reference to right or left side of tractor when seated facing forward.

- 1 — Remove 2" x 6" cross-pieces from shipping pad. Remove bolts holding 605 Backhoe to shipping pad. (Located inside mainframe, about the center of the pad.)
- 2 — Cut wire holding control handles into place, raise each one into place and insert pin, fastening with C-ring provided. (Pins and C-ring are shipped inserted in appropriate holes.)
- 3 — Stabilizers are shipped separately boxed. Mount right side stabilizer 601. (Note flange position on assembly drawing. Turned-down portion of stabilizer plate faces forward.) Insert 667 pin and fasten with cotter keys. Fasten stabilizer cylinder to mounting ear on backhoe mainframe using 604 pin and cotter pins. (Ref. Stabilizer Assembly Drawing, page 16, for details.) Connect short hose (638) to top of cylinder and long hose (627) to bottom of cylinder. Repeat process for left side stabilizer 602, connecting hoses 634 and 629 respectively to top and bottom of left cylinder. (See Hose Assembly, page 20.)
- 4 — Remove 713 extension arms from shipping pad. Slide right side 713 extension arm over top of 591 loader mainframe (Ref. 505 Loader Manual, page 11) and attach loosely, using ½ x 2 bolts provided, to tractor mainframe. (Holes in tractor mainframe located just forward of loader 591 maincross frame.) Mount 713 left side extension in same manner.
- 5 — Back HT-20 Tractor over extended short arms of 605 Backhoe until holes (C) are situated directly under mounting ears on right and left side tractor axles. Use small jack (or manually) lift 605 Backhoe until holes (C) align with mounting ears on tractor axle (points D and H in Loader Manual, page 7). Remove bolt in tractor mounting ears, raise backhoe until bolts can be re-inserted thru hole (C) on backhoe. Do not tighten.
- 6 — Tilt backhoe until notched end of 605 extended arms align with holes (B) in 713 extension arms. Fasten loosely with ¾ x 2 bolts provided. Also align notched end of 713 extension arms with lower holes (A) in 605 mounting arms. Fasten with ¾ x 2 bolts provided. Tighten all bolts (D), (B), (A) and at point (C).
- 7 — When used with Brantly 505 Front End Loader, pump assembly will already be mounted.
 - a. Remove 595 hose (supplied with loader) from pump output (point M) and loader control valve input (point N).
 - b. Attach 677 hose to point M (pump output), passing hose down left side of tractor over 591 loader main crossframe, thru opening in lower right front panel on 605 Backhoes and connect other end to point E (input on backhoe control valve; Ref. page 18,20).
 - c. Attach 676 hose to 505 loader valve input (point N), passing hose down right side of tractor, thru opening in lower left panel on 605 Backhoe and connect other end to point F (output of backhoe control valve; Ref. page 18,20).

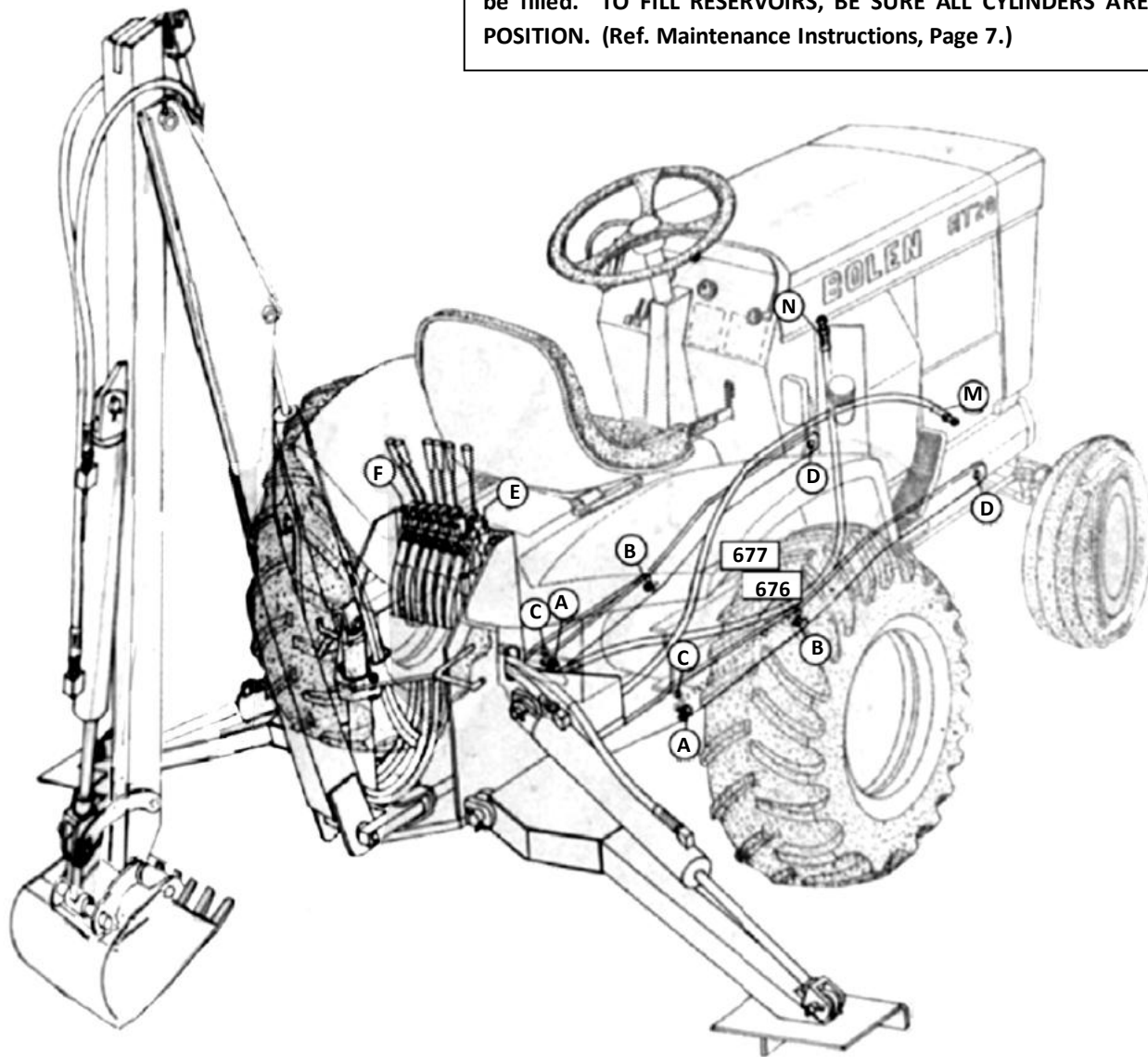
NOTE: If 505 loader is not used, then 675 pump assembly will be required. Mount in accordance with instructions on page 14, connect 676 hose to output of pump and to point F on backhoe control valve.

- 8 — Mount seat swivel as follows: (1) Remove existing seat bolts (C) holding seat to existing bracket (E). Drill ½ inch hole, as shown, in existing bracket (E). Mount seat swivel top plate (A) to bottom of seat using bolts previously holding seat to existing bracket. (NOTE: Bolt (F) should point downward). Mount seat swivel lower plate using four bolts (D) provided to existing seat bracket (E) as shown. Place seat with top swivel plate over lower swivel plate. Insert bolt (F) thru hole in lower swivel plate and thru hole drilled in bracket (E). Fasten with two 5/16" nuts provided so that seat swivels easily, but does not wobble.



- 9 — The Brantly Backhoe should now be fully mounted and ready for use. Check all hoses, bolts pins to assure secure mounting. (Bolts, pins, etc. may vibrate loose during shipping.)

NOTE: Hydraulic reservoir must be filled prior to operation. (1) If P.T.O pump is not used, hydraulic oil must be added to loader reservoir. (2) If P.T.O. pump kit is used (without loader), accessory reservoir special ordered with 605 Backhoe must be filled. TO FILL RESERVOIRS, BE SURE ALL CYLINDERS ARE IN COLLAPSED POSITION. (Ref. Maintenance Instructions, Page 7.)



BRANTLY MODEL 605B BACKHOE

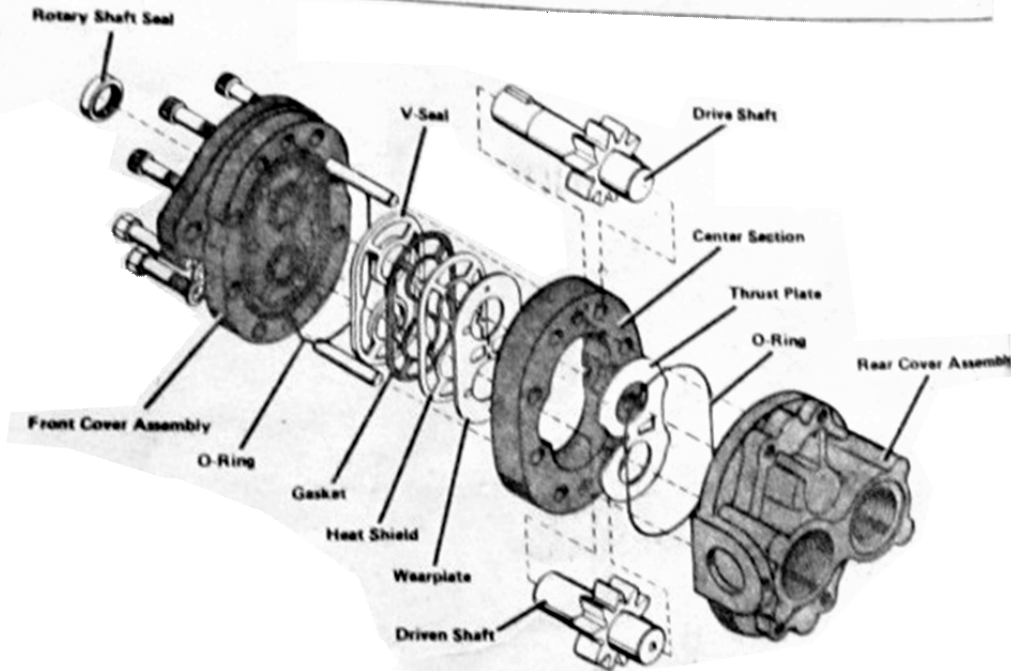
for
BOLEN HT-20 TRACTOR

Fluidpower Components

Catalogue
0103
1/85/100m



D/H/M Series Pumps, Fixed Gear



Quick Reference Data Chart

Pump Series	Displacement IN ³ /REV.	Pump Delivery @ 1000 RPM in GPM	Weight in Pounds
D	.11 - .63	.5 - 2.7	2 - 3
H	.47 - 2.15	2.0 - 9.3	5 - 7
M	2.08 - 3.25	9.0 - 14.1	11 - 13

Fluid Compatibility

All data based on Petroleum

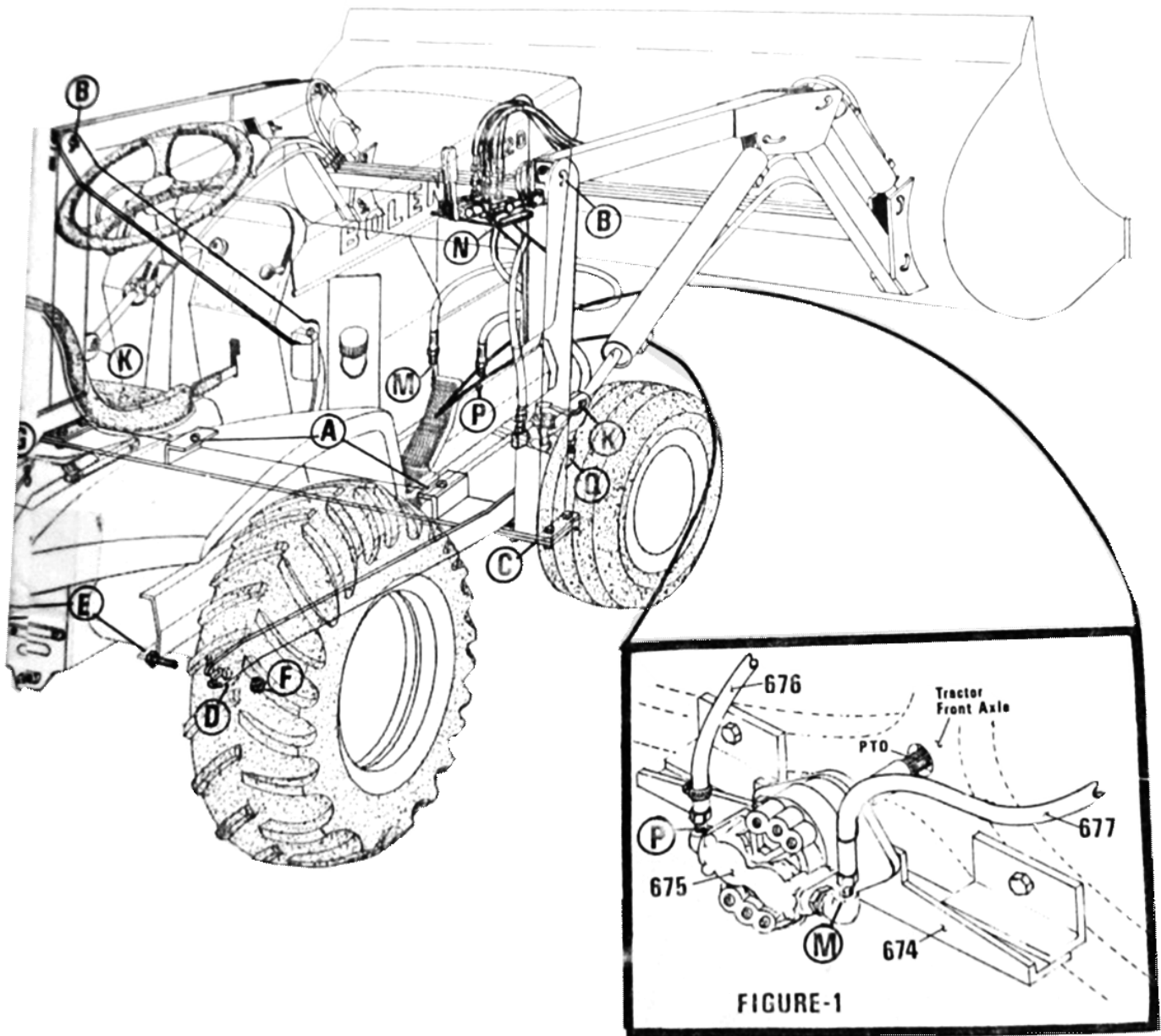
- **Water Base Fluids**
Water Glycols
Water Emulsions
 - Pressure ratings reduced by 1/2 specified ratings of model
 - RPM reduced by 1000 specified rating of model
 - Always use "DU" bushings
 - Use Nitrile (Buna "N") seals
- **Phosphate Ester Fluids**
Hydraul, Skydrols, Celulubes (Fyrquel), etc.
 - Use pump as rated
 - Use viton seals
 - Quintrolubic Fluids require "DU" bushings

- **Synthetic/Special Fluids**
Transmission Fluid
Brake Fluid
Diesel Fluid
Mineral Oil Fluids
 - May need to de-rate based on viscosity
 - Use Nitrile (Buna "N") seals

H25AA1B

Parker Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112

For Fast Delivery and Service
Call your local Parker Fluidpower Distributor



BRANTLY MODEL 505 LOADER
for
BOLEN HT-20 TRACTOR