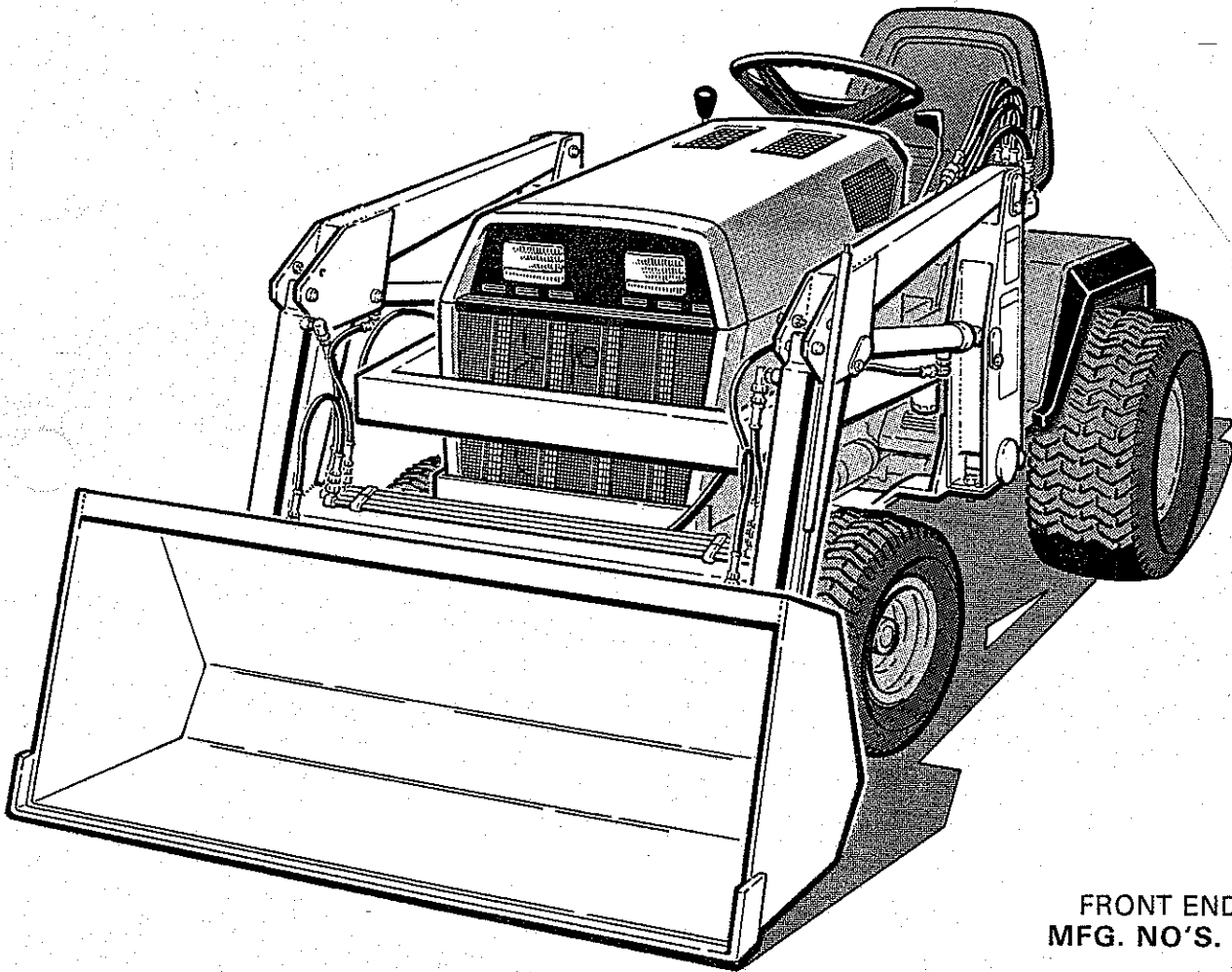


OPERATOR'S MANUAL FRONT END LOADER



FRONT END LOADER
MFG. NO'S. 1691309
1691310
1691311
1691312
1691313

FORM - 1700450
PRINTED IN U.S.A.
8610

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SAFETY DECALS

NOTE: Loader safety decals are located on the left and right side frame uprights and on the top of the bucket. Replace the decals if they are damaged or illegible. Replacement decals are available from your dealer.

⚠ WARNING

1. Use of front end loaders for handling large heavy objects; such as large round bales, large rectangular bales, logs, oil drums, etc; is NOT recommended.
2. Handling large heavy objects can be extremely dangerous due to:
 - Danger of rolling the tractor over
 - Danger of upending the tractor
 - Danger of the object rolling or sliding down the loader arms onto the operator
3. If you must perform this sort of work, protect yourself by:
 - Never lifting higher than necessary to clear the ground when moving
 - Ballast tractor rear to compensate for load
 - Never lifting large objects with equipment that does not have an anti-rollback device.
 - Move slowly and carefully, avoiding rough terrain.

26871

⚠ CAUTION

LOADER SAFETY GUIDES

1. Move and turn tractor at low speeds.
2. Carry loader arms at a low position during transport.
3. Lower loader arms, stop engine and lock brakes before leaving operator's seat.
4. Do not stand or work under raised loader.
5. Add recommended wheel ballast or rear weight for stability.
6. Mount rear wheels with rims turned to obtain widest setting.
7. Observe safety recommendations in instruction manual.
8. Do not allow riders in loader bucket or ballast box.

36141

⚠ WARNING

CONTROL VALVE RELIEF IS PRESET AT THE FACTORY. TAMPERING WITH THE RELIEF SETTING CAN CAUSE:

1. **SERIOUS OPERATOR INJURY.**
2. **LOADER OR TRACTOR DAMAGE.**
3. **VOID WARRANTY ON BOTH TRACTOR AND LOADER.**

25801

⚠ CAUTION

CARRY LOAD LOW

SAFETY PRECAUTIONS



SAFETY PRECAUTIONS

Most loader equipment accidents can be avoided by following simple safety precautions. These safety precautions, if followed at all times, will help you operate your loader safely.



CAUTION: Lower loader arms, stop engine and lock brakes before leaving tractor seat.

THE TRACTOR

1. Read the owner's manual carefully before using the loader. Lack of operating knowledge can lead to accidents.
2. Add recommended wheel ballast or rear weight to provide good stability.
3. Mount rear wheels with rims turned to obtain the widest setting.
4. Move and turn the tractor at low speeds.

THE LOADER

1. Improper use of a loader can cause serious injury or death.
2. Do not lift or carry anybody on the loader or in the bucket or in the ballast box.
3. Never allow anyone to get under the loader bucket or reach through the lift arms when the bucket is raised.
4. Do not walk or work under a raised loader or bucket. Lower loader to ground or remove loader from tractor for servicing.
5. Avoid overhead wires and obstacles when loader is raised. Contacting electric lines can cause electrocution.
6. Make sure all parked loaders on stands are on a hard, level surface. Engage all safety devices.
7. Visually check for hydraulic leaks and broken, missing, or malfunctioning parts. Make necessary repairs.
8. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. If injured by escaping fluid, obtain medical treatment immediately.
9. Before disconnecting hydraulic lines, relieve all hydraulic pressure.
10. Do not tamper with the relief valve setting. The relief valve is pre-set at the factory. Changing the setting can cause overloading the loader and tractor and serious operator injury may result.
11. Always wear safety goggles when servicing or repairing the machine.

12. When servicing or replacing pins in cylinder ends, buckets, etc., always use a brass drift and hammer. Failure to do so could result in injury from flying metal fragments.
13. Replace damaged or illegible safety decals. See page 3 for required decal.
14. Do not modify or alter or permit anyone else to modify or alter the loader or any of its components or any loader function without first consulting your local dealer.

OPERATING THE LOADER

1. It is the loader owner's responsibility to be certain anyone operating the loader has read this manual first to be aware of the safe way of operating the loader.
2. Operate the loader from the "Operator's Seat Only".
3. Exercise caution when operating the loader with a raised loaded bucket or fork.
4. Avoid loose fill, rocks, and holes. They can be dangerous for loader operation or movement.
5. Be extra careful when working on inclines.
6. Allow for the loader length when making turns.
7. Stop the loader arms gradually when lowering or lifting.
8. Use caution when handling loose or shiftable loads.
9. Carry loader arms at a low position during transport.
10. Lower loader arms, stop engine and lock brakes before leaving the tractor seat.
11. Operate the loader controls only when properly seated at the controls.
12. Using front end loaders for handling large heavy objects, such as large round or rectangular bales, logs and oil drums is NOT recommended.
13. Handling large heavy objects can be extremely dangerous due to:
 - Danger of rolling the tractor over.
 - Danger of upending the tractor.
 - Danger of the object rolling or sliding down the loader arms onto the operator.
14. If you must perform this sort of work (see above), protect yourself by:
 - Never lifting the loader higher than necessary to clear the ground when moving.
 - Ballasting the tractor rear to compensate for the load.
 - Never lifting large objects with equipment that does not have an anti-rollback device.
 - Moving slowly and carefully, avoiding rough terrain.

INTRODUCTION

This manual provides operation, maintenance, assembly and parts identification for your new loader.

Your loader has been designed to give many years of satisfactory service when installed on a twenty horsepower tractor. Successful operation and long life of the loader depends, of course, on proper operation and the care given it. Please read this manual carefully and follow all instructions, because correct assembly, operation, and maintenance will save you much time and expense. Also follow instructions included with loader mounting and hydraulic kits to insure the loader is installed correctly to the tractor.

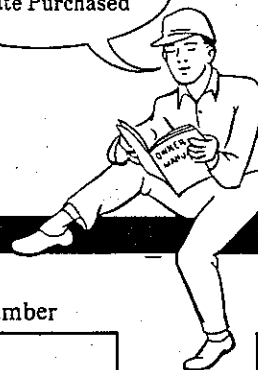


This SAFETY ALERT SYMBOL identifies IMPORTANT SAFETY MESSAGES in this manual. OBSERVE and FOLLOW all SAFETY MESSAGES to prevent personal INJURY.

The reference to left-hand and right-hand used in this manual refers to the position when standing at the rear of the unit facing forward.

If, at any time, you have a service problem with your loader or need new parts, contact your local dealer. Your dealer will need the loader model number and serial number to give you prompt efficient service.

Fill in Serial Number
and Date Purchased



*Serial Number

Date Purchased

* The serial number is located on the inside of the left-hand boom arm.

Parts orders must give the complete description, correct part number, the total amount required, the model number, all the necessary serial numbers, the method of shipment and the shipping address.



THIS SAFETY SYMBOL MEANS

ATTENTION!

BECOME ALERT!

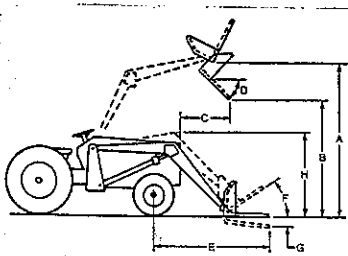
YOUR SAFETY IS INVOLVED!

SPECIFICATIONS

Specifications will vary with tractor, tire size, hydraulic system and bucket used. The specifications are given for a loader equipped with 48" material bucket operated with an average external hydraulic system of 4.75 GPM with engine operating @ 3400 RPM and control valve relief setting of 1200 PSI.

LOADER SPECIFICATIONS

Break-Away Capacity	500 lbs. (227 kg)
Lift Capacity At Full Height	400 lbs. (122 kg)
Raising Time	4.1 sec.
Lowering Time	2.4 sec.
Attachment Dumping Time	3.7 sec.
Attachment Rollback Time	2.4 sec.
Approximate Weight W/48" (1219 mm) Material Bucket	479 lbs. (217 kg)
Hydraulic Oil Capacity Operating With External Hydraulic System	1.25 gal. (4.7 liters)
External Hydraulic Pump Output W/Engine Operating @ 3400 RPM	4.75 GPM (18.0 liters/m)
External Filter Element Micron Rating	10-15
Lift Cylinder Stroke (1.50" Piston Dia. & 1.00" Rod)	14.50 in. (368 mm)
Bucket Cylinder Stroke (1.50" Piston Dia. & 1.00" Rod)	12.38 in. (314 mm)



(A) Maximum Clearance At Full Height	72 in. (1830 mm)
(B) Clearance With Bucket Dumped	55 in. (1400 mm)
(C) Reach At Maximum Height	12.5 in. (318 mm)
(D) Maximum Dump Angle	41°
(E) Reach With Attachment On Ground (Average)	425 in. (1080 mm)
(F) Attachment Rollback Angle	16°
(G) Digging Depth	3 in. (76 mm)
(H) Overall Height In Carry Position	40.75 in. (1035 mm)

(Specifications and design subject to change without notice.)

GENERAL TORQUE SPECIFICATIONS

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

NOTE: These values apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used.

METRIC CAP SCREWS				
Cap Screw Size	8.8 Grade Torque			
	Ft.-Lbs. Min./Max.	Min.	Max.	Newton-Meters
M8	15 18	21	24	
M10	27 32	36	43	
M12	50 57	67	77	
M14	84 94	113	127	
M16	134 144	181	194	
M18	181 191	244	258	

AMERICAN STANDARD CAP SCREWS WITH UNC OR UNF THREADS														
SAE GRADE NO.	2				5				8*					
Cap screw head identification marks as per grade. NOTE: Manufacturing marks will vary.	Cap Screw Size		Torque				Torque				Torque			
	Inches	Millimeters	Ft.-Lbs. Min.	Ft.-Lbs. Max.	Newton-Meters Min.	Newton-Meters Max.	Ft.-Lbs. Min.	Ft.-Lbs. Max.	Newton-Meters Min.	Newton-Meters Max.	Ft.-Lbs. Min.	Ft.-Lbs. Max.	Newton-Meters Min.	Newton-Meters Max.
	1/4	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	20.3
	5/16	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
	3/8	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
	7/16	11.11	30	35	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
	1/2	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
	9/16	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
	5/8	15.88	95	105	123.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
	3/4	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
	7/8	22.23	180	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
	1	25.40	250	300	338.8	408.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
	1-1/8	25.58					800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
	1-1/4	31.75					1120	1240	1513.7	1681.4	1820	2000	2467.9	2712.0
	1-3/8	34.93					1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
	1-1/2	38.10					1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

* Thick nuts must be used with Grade 8 bolts

OPERATION

PREPARING TRACTOR

It is recommended to use 4-ply tires inflated to 28 PSI for tractor front tires.

The tractor rear wheels should be mounted with rims turned to obtain the widest tread setting. Inflate rear tires to 10 PSI.

Before operating the loader, for optimum stability install ballast box and fill with material weighing 200-250 pounds.



CAUTION: DO NOT ALLOW RIDERS IN BALLAST BOX.

OPERATING LOADER



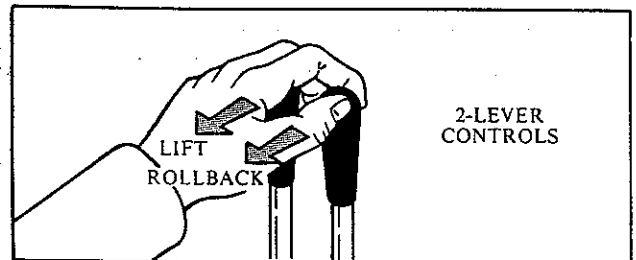
CAUTION: Lower loader arms, stop engine and lock brakes before leaving tractor seat.

The loader should be operated with the tractor engine running at 3000-3400 rpm. Excessive speeds are dangerous, and may cause bucket spillage and unnecessary strain on the tractor and loader.

When operating in temperatures below 30°F., run the tractor engine below 1200 rpm until the oil temperature exceeds 30°F.

The following text and illustrations offer suggested loader and tractor operating techniques.

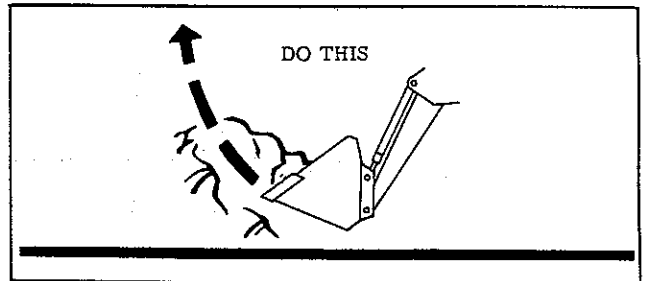
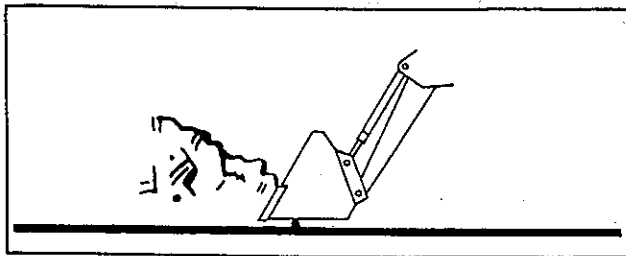
Loaders with 2-lever controls, ease both levers back to lift and rollback the bucket.



The lift and rollback of the bucket will increase efficiency because . . .

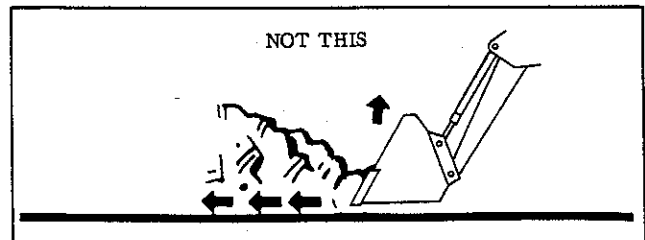
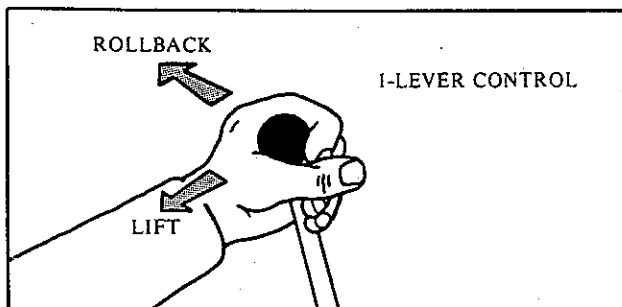
FILLING THE BUCKET

Approach and enter the pile with a level bucket.



. . . a level bucket throughout the lifting cycle resists bucket lift and increases breakaway effort.

Loaders with 1-lever control, ease lever back and away from you to lift and rollback the bucket.

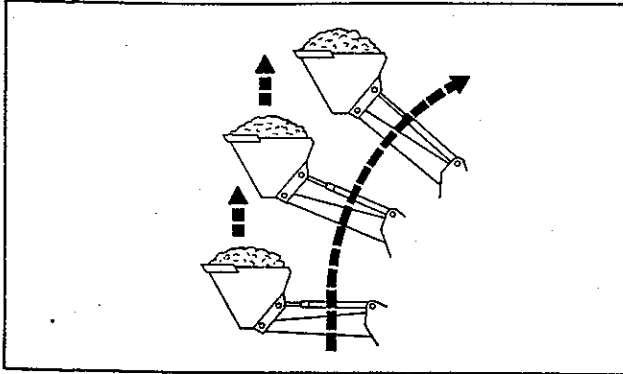


NOTE: Do not be concerned if the bucket is not completely filled during each pass. Maximum productivity is determined by the amount of material loaded in a given period of time. Time is lost if two or more attempts are made to fill the bucket on each pass.

OPERATION

LIFTING THE LOAD

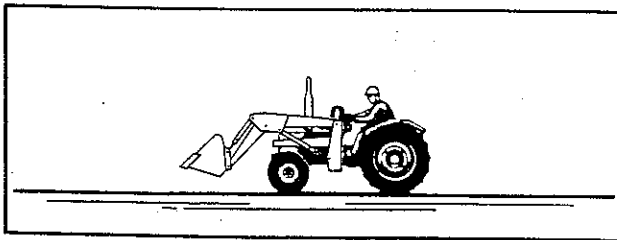
When lifting the load, keep the bucket positioned to avoid spillage.



CAUTION: Do not attempt to lift bucket loads in excess of the loader capacity.

CARRYING THE LOAD

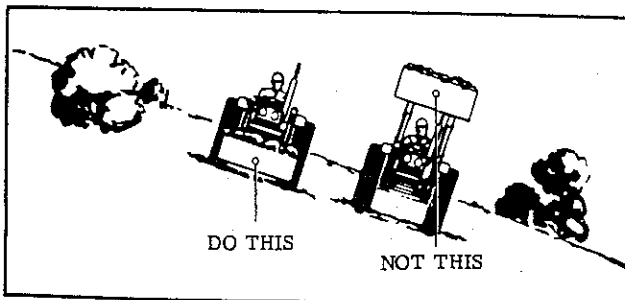
Position the bucket just below the level of the tractor hood for maximum stability and visibility, whether the bucket is loaded or empty.



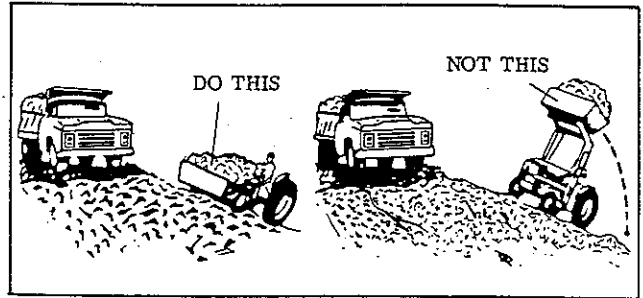
Use extreme care when operating the loader on a slope, keep the bucket as low as possible. This keeps the bucket and tractor center of gravity low and will provide maximum tractor stability.



CAUTION: Operating the loader on a hillside is dangerous. Extreme care is recommended. Keep bucket as low as possible.

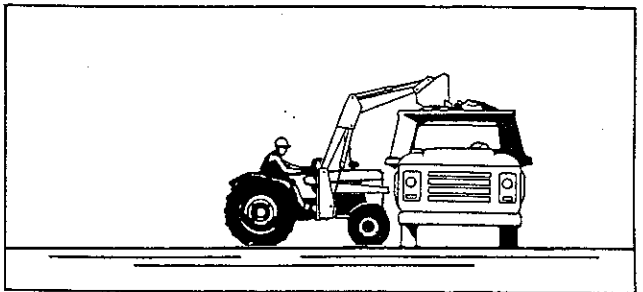


When transporting the load, keep the bucket as low as possible to avoid tipping, in case a wheel drops in a rut.



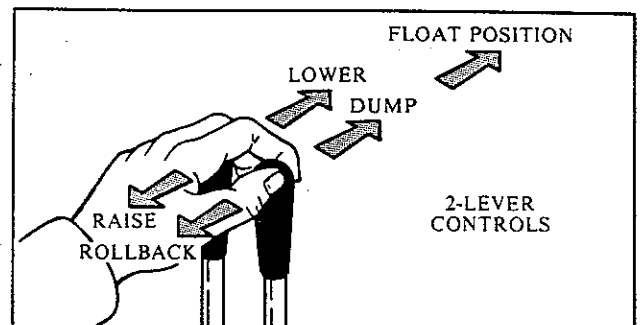
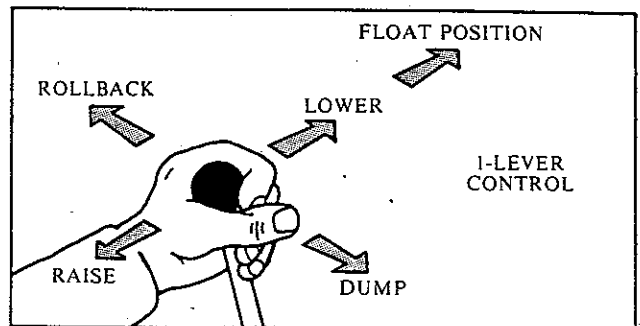
DUMPING THE BUCKET

Lift the bucket high enough to clear the side of the vehicle. Move the tractor in as close to the side of the vehicle as possible, then dump the bucket.



LOWERING THE BUCKET

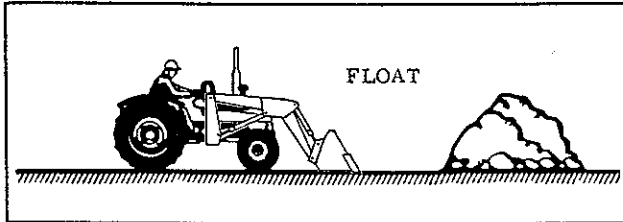
After the bucket is dumped, back away from the vehicle while lowering and rolling back the bucket.



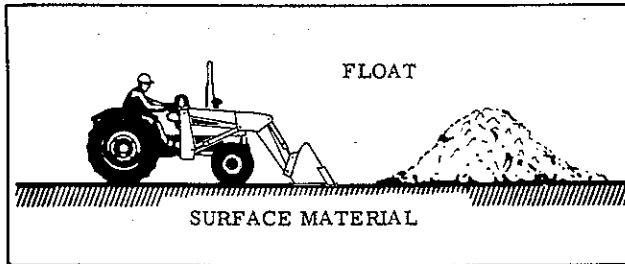
OPERATION

OPERATING WITH FLOAT CONTROL

During hard surface operation, keep the bucket level and put the lift control in the float position to permit the bucket to float on the working surface. If hydraulic down pressure is exerted on the bucket, it will wear faster than normal.

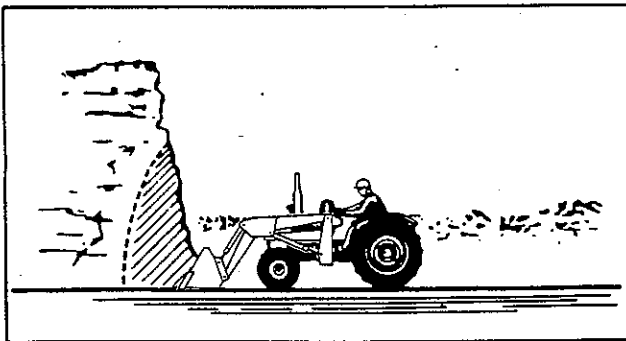


The float will also prevent the mixing of surface material with stockpile material. The float position will reduce the chance of surface gouging when removing snow or other material, or when working with a blade.

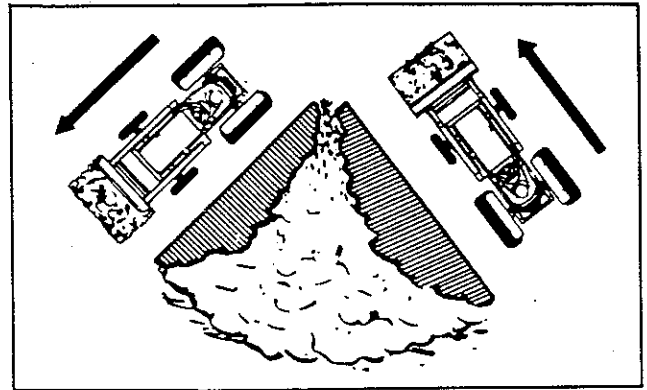


LOADING FROM A BANK

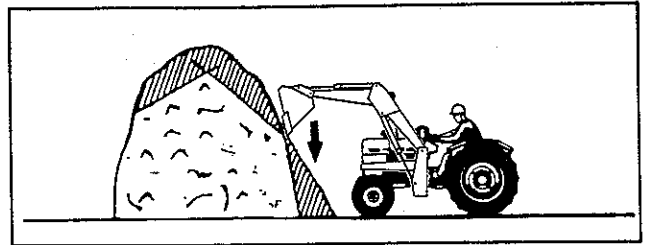
Choose a forward gear that provides sufficient ground speed for loading.



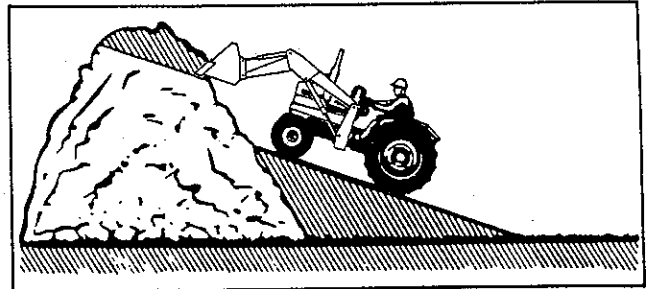
Exercise caution when undercutting high banks. Dirt slides can be dangerous. Load from as low as possible for maximum efficiency. Loader lift and break-away capacity diminish as loading height is increased.



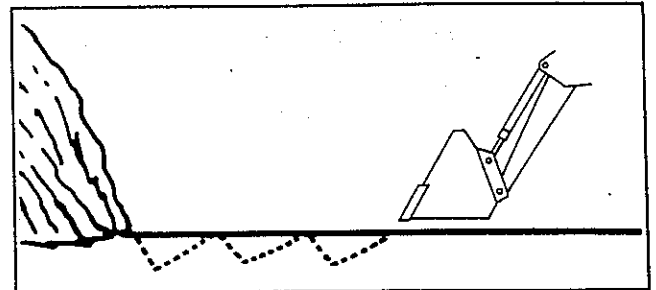
Sidecutting is a good technique for cutting down a big pile.



If the pile sides are too high and liable to cause cave-in, use the loader to break down the sides until a slot can be cut over the top.



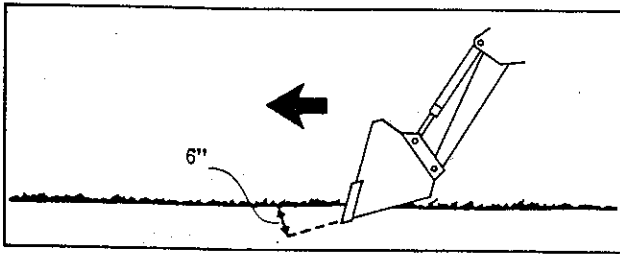
Another method for large dirt piles is to build a ramp approach to the pile.



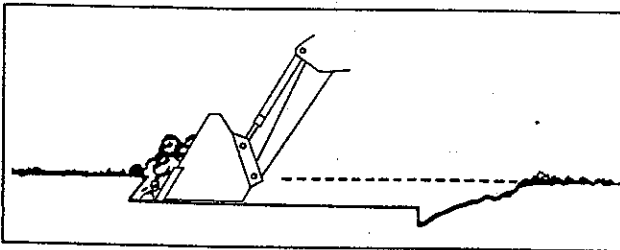
It's important to keep the bucket level when approaching a bank or pile. This will help prevent gouging the work area.

OPERATION

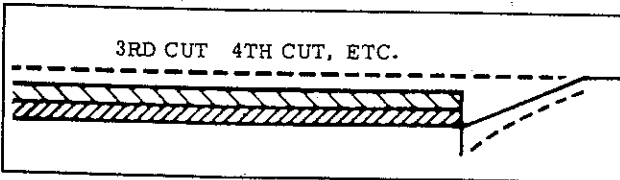
PEELING AND SCRAPING



Use a slight bucket angle, travel forward, and hold the lift control forward to start the cut. Make a short, 5 to 8 foot, angle cut and break-out cleanly.

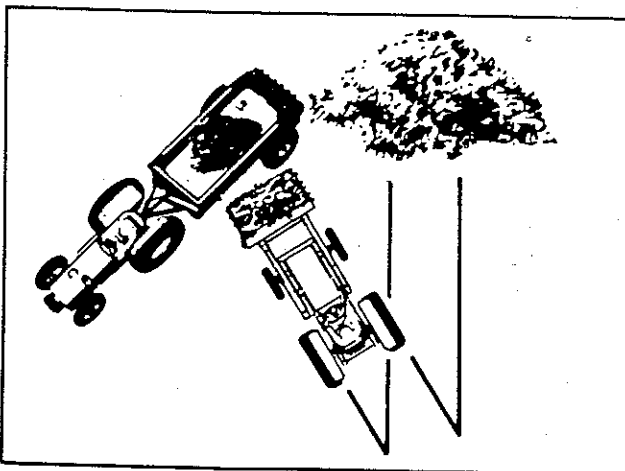


With the bucket level, start a cut at the notch approximately 2" deep. Hold the depth by feathering the bucket control to adjust the cutting lip up or down. When the front tires enter the notch, adjust the lift cylinder to maintain proper depth.

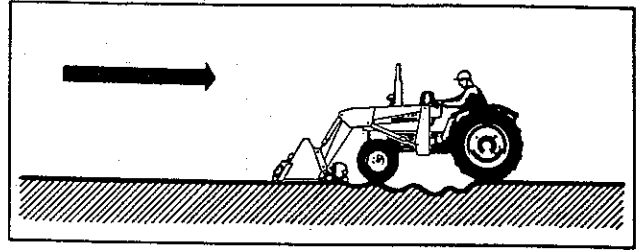


Make additional passes until the desired depth is reached. During each pass, only use the bucket control while at working depth. This will allow you to concentrate on controlling the bucket angle to maintain a precise cut.

LOADING LOW TRUCKS OR SPREADERS FROM A PILE

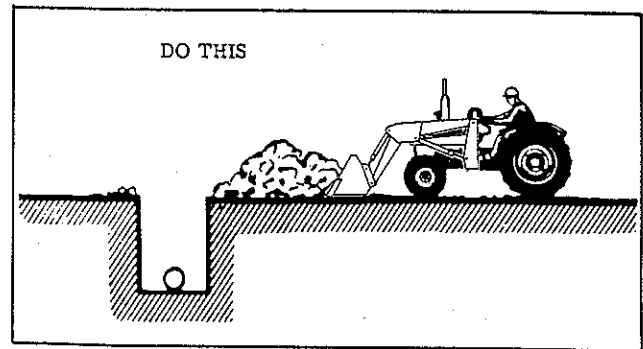


For faster loading, minimize the angle of turn and length of run between pile and spreader.

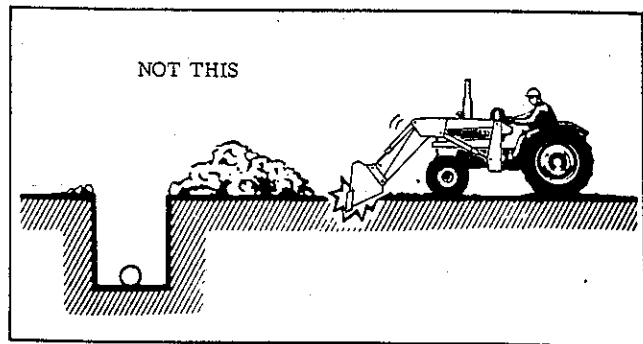


Backgrade occasionally with a loaded bucket to keep the working surface free of ruts and holes. Also, hold the lift control forward so the full weight of the bucket is scraping the ground. Use the heel of the bucket.

BACKFILLING



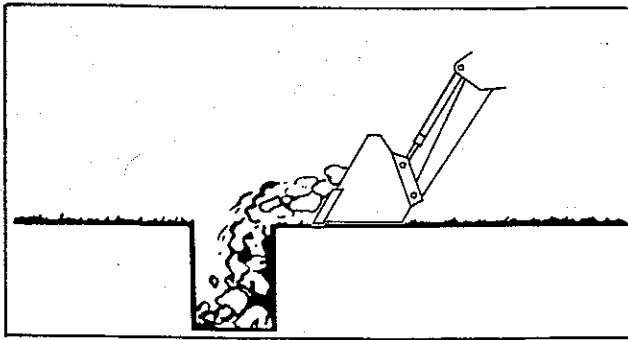
Approach the pile with a flat bucket.



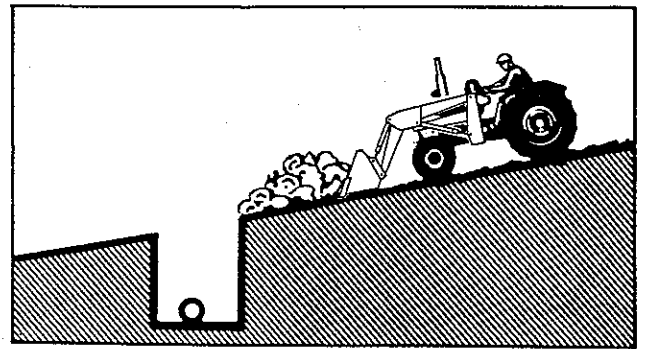
Poor methods actually move no more dirt and make it more difficult to hold a level grade.

Do not use the bucket in the dumped position for bulldozing. This method, shown above, will impose severe shock loadings on the dump linkage, the bucket cylinder, and the tractor.

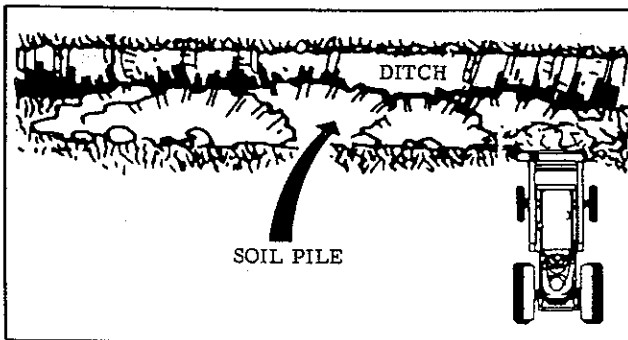
OPERATION



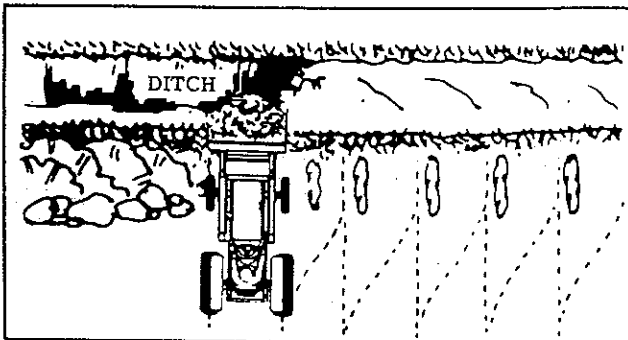
Leave dirt in the bucket because dumping on each pass wastes time.



Pile dirt on the high side for easier backfilling on a slope.



Operate at right angles to the ditch. Take as big a bite as the tractor can handle without lugging down.



Leave dirt which drifts over the side of the bucket for final clean-up.

HANDLING LARGE HEAVY OBJECTS

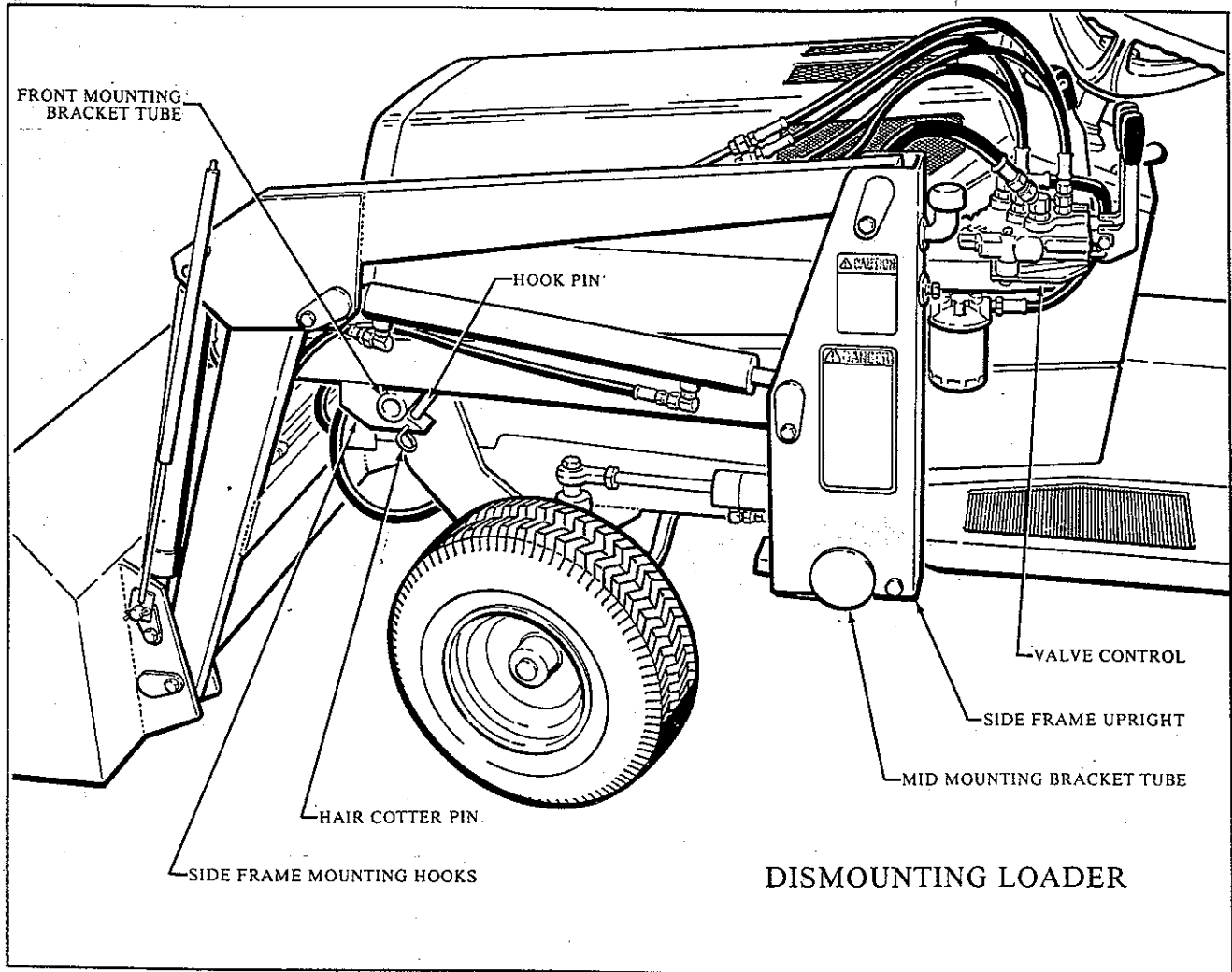


1. Using front end loaders for handling large heavy objects such as large round or rectangular bales, logs and oil drums is not recommended.
2. Handling large heavy objects can be extremely dangerous due to:
 - (a) Danger of rolling the tractor over.
 - (b) Danger of upending the tractor.
 - (c) Danger of the object rolling or sliding down the loader arms onto the operator.
3. If you must perform the above work, protect yourself by:
 - (a) Never lifting the load higher than necessary to clear the ground when moving.
 - (b) Ballasting the tractor rear to compensate for the load.
 - (c) Never lifting large objects with equipment that does not have an anti-rollback device.
 - (d) Moving slowly and carefully, avoiding rough terrain.



**Safe Operation
Is Your Best Protection
Against Accidents**

DISMOUNTING & MOUNTING LOADER



DISMOUNTING PROCEDURE

IMPORTANT: The loader must be equipped with a bucket to dismount the loader from the tractor.

1. Locate tractor and loader on firm level ground.
2. Level the bucket and lower it to the ground. Engage tractor brakes and shut off tractor engine. Move lift control lever back and forth several times to relieve pressure on the lift cylinders.
3. Loosen bolts which clamp side frame uprights to the mid mounting assembly. Remove bolts, washers, and nuts.
4. Start tractor engine and adjust to slow idle. Pull valve lift control back to actuate lift cylinders and rotate side frames on the front mounting bracket tubes until the bottom of uprights are approximately 24 inches from ground. Shut off tractor engine.
5. Install parking stands and secure to side frame flat with bolts, washers, and nuts used for clamping hinge.

6. Start tractor engine. Push valve lift control forward to actuate lift cylinders and lower the stands to the ground. Shut off tractor engine.
7. Remove hair cotter pins from hook pins in side frame mounting hooks and place hair cotter pins in lower hole of pins for storage.

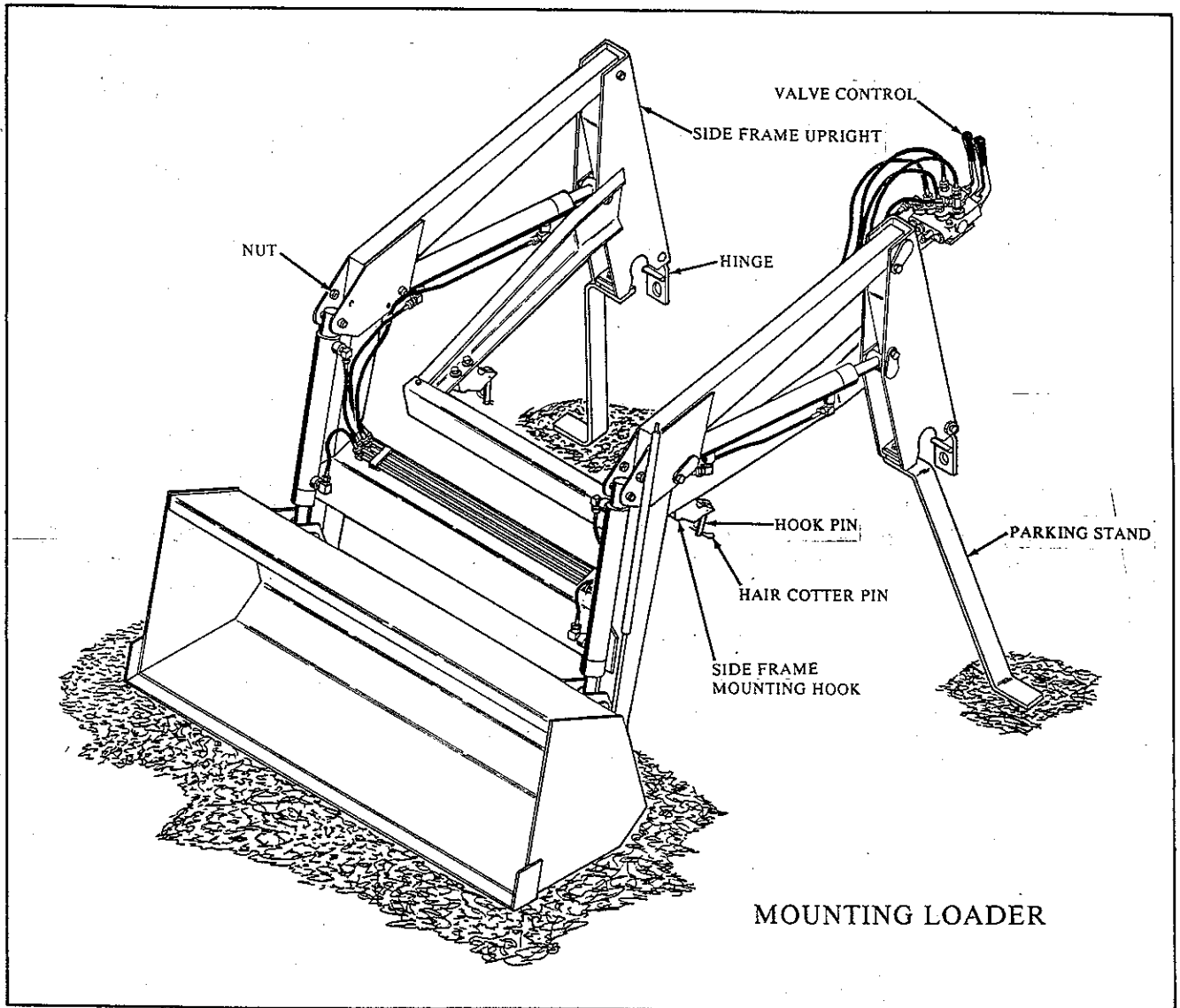
NOTE: The pins will automatically drop down when side frames are lowered onto the stands.



WARNING: Do not lower hook pins until stands are properly positioned, because the loader could shift or fall causing personal injury.

8. Restart tractor engine and release tractor brakes. Back the tractor up so front of tractor clears the side frame uprights. Engage tractor brakes and shut off tractor engine.
9. Remove hair cotter pins holding front pump assembly to the tractor and slide pump drive shaft off tractor spline shaft. Hang pump assembly over the loader front bumper for storage.

DISMOUNTING & MOUNTING LOADER



MOUNTING PROCEDURE

Mounting procedure is basically the reverse of dismounting.

1. Slowly drive tractor up to loader while staying approximately 2 feet away from side frame uprights. Engage tractor brakes and shut off tractor engine.
 2. Slide pump drive shaft onto tractor spline shaft and secure with hair cotter pins.
 3. Restart tractor engine, release brakes and slowly drive tractor ahead until front mounting bracket tubes are properly positioned in the side frame mounting hooks. Engage tractor brakes and shut off tractor engine.
 4. Raise side frame hook pins and secure with hair cotter pins.
- WARNING:** Ensure that hook pins are raised into position before the stands are removed to prevent the loader from shifting or falling to the ground.
5. Restart tractor engine. Pull lift control lever back to actuate lift cylinders and raise stands off the ground. Shut off tractor engine.
 6. Remove parking stands from side frame uprights.
 7. Restart tractor engine. Push lift control lever forward to actuate lift cylinders and lower side frame uprights over the mid mounting bracket. Shut off tractor engine.
 8. Clamp hinge assembly of upright around tube of mid mounting bracket. Install bolts, washers and nuts and torque to 75-100 ft.-lbs.

NOTE: It may be necessary to activate lift control lever to align mounting hooks with front mounting bracket tubes.

MAINTENANCE

Regular maintenance of the loader hydraulic system will insure maximum loader efficiency and long life.

WARNING: NEVER perform maintenance beneath a raised loader.

DAILY MAINTENANCE

- Check level of hydraulic oil in loader left side frame reservoir before starting each day's operation. If necessary, add oil to bring the oil level up to the level plug at the rear of side frame. Use a good quality AW#15 hydraulic oil. Type A or F transmission fluid is acceptable.

If the hydraulic system becomes contaminated with moisture or other foreign material, drain the system, flush with clean hydraulic oil and refill with new hydraulic oil.

After the first fifty hours of operation, change the oil filter element (10-15 micron rating) and thereafter, after every two hundred and fifty hours of operation.

After the first twenty-five hours of operation, clean the screen in Y-strainer and thereafter, after every two hundred and fifty hours of operation. Clean screen by removing threaded cap and screen from Y-strainer body, then use a suitable cleaning solvent to remove any foreign particles from screen and put it back into Y-strainer body.

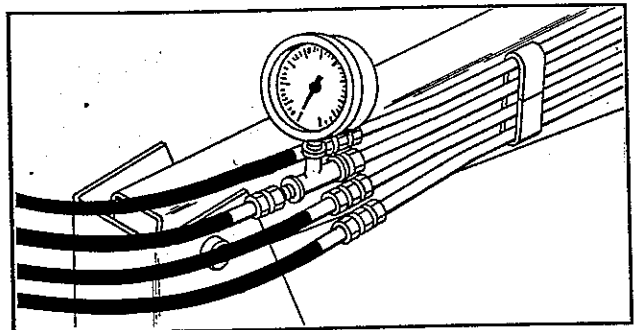
- After every eight hours of operation, lubricate the eight grease fittings: one at each lift boom arm to side frame and bucket pivot, and one at rod end of each bucket and lift cylinder.
- After every ten hours of operation, check all hardware and tighten where required.
- Replace hoses immediately if they are damaged by a cut or scrape, extruded at the fittings or leaking. Hydraulic oil leaks should be repaired promptly to avoid loss of oil and serious personal injury from escaping oil.

CAUTION: Use a piece of cardboard or wood rather than hands and wear eye protection when searching for hydraulic leaks. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin. If oil is injected into skin, it must be surgically removed within a few hours by a doctor or gangrene may result.

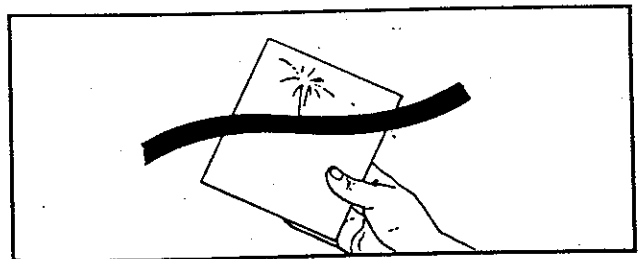
HYDRAULIC PRESSURE CHECK

Follow the following procedure to check if the loader is operating at the correct hydraulic pressure.

1. Obtain a pressure gauge that registers 3000 PSI in 50 PSI increments.
2. Install pressure gauge into the hydraulic line connecting loader valve to the base port of bucket cylinders.
3. Start tractor engine and adjust throttle so engine is running at 3000-3400 RPM.



4. Push bucket control to pressurize hydraulic line with gauge attached. Hold control until cylinders reach the fully extended position. Holding control with cylinders fully extended will give you the hydraulic system pressure on the gauge.
5. The pressure for your loader hydraulic system should be 1400 PSI maximum when equipped with Dukes Fluid Power model 1627 DM valve.
6. If the pressure is not correct, refer to the "Troubleshooting" section for possible remedy, or contact an authorized service department.



Safe Practice . . . Is your Best Protection

TROUBLESHOOTING

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
1. Loader slow or will not lift and/or dump.	Hydraulic oil too heavy. Oil filter plugged. Hydraulic pump worn. Oil line restricted or leaking. Control valve does not shift properly. Air in hydraulic system. Cylinder leaks internally. Faulty valve.	Change to proper oil Clean or replace filter. Repair or replace pump. See "Pump Service". Check all hoses and tubes for leaks, damage or restrictions. Replace damaged or restricted hoses or tube lines. Inspect, clean, repair or replace valve. See "Valve Service". Cycle lift cylinders and bucket cylinders several times to free system of air. Replace seals. See "Cylinder Service". Repair or replace valve. See "Valve Service".
2. Loader chatters or vibrates when raising or lowering.	Air leak in pump inlet line. Air in hydraulic system. Oil level too low.	Check, tighten or replace inlet line. Cycle lift cylinders and bucket cylinders. Add oil as required.
3. Pump noisy.	Inlet line restricted or leaking. Oil level too low. Pump worn or damaged.	Check for air leaks, restrictions or collapsed hose. Tighten or replace hose. Clean filter if necessary. Add oil as required. Repair or replace pump. See "Pump Service".
4. Oil leaks.	Defective fittings or hoses. Loose connections. Worn or damaged o-ring or wiper seal in cylinder rod end. Worn or damaged o-rings in valve.	Replace defective parts. Tighten fittings. Install a seal repair kit. See "Cylinder Service". Install an o-ring repair kit. See "Valve Service".
5. Insufficient lift capacity.	Improper hydraulic pump operation. Load is greater than boom lift capacity. Internal boom cylinder leakage. Improper hydraulic valve operation.	Repair or replace pump. See "Pump Service". Check loader specifications. Replace any worn parts and install a seal repair kit. See "Cylinder Service". Repair or replace valve. See "Valve Service".
6. Excessive wear on bucket cutting edge.	Bucket is riding on cutting edge instead of wear pads.	Use boom "FLOAT" position or bucket level indicator to ensure bucket rides on wear pads.



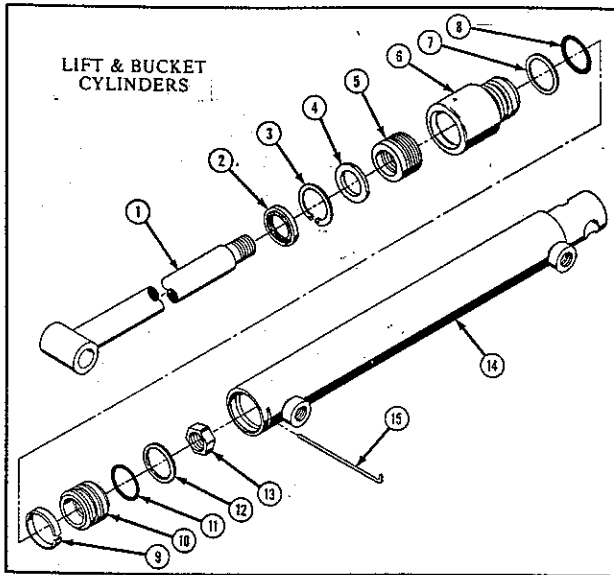
ALIBIS don't excuse ACCIDENTS!

SERVICE

CYLINDER SERVICE

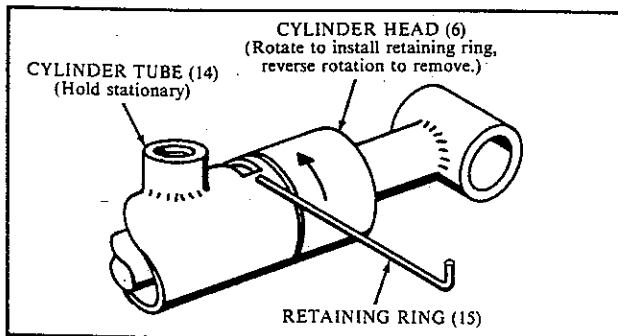
The cylinders are designed to be reliable and easy to service. If a cylinder should malfunction during the warranty period, return the complete cylinder assembly, without disassembling, to your authorized service department or contact your authorized service department for instructions. Unauthorized disassembly of a cylinder in the warranty period will VOID WARRANTY.

Follow the following procedure to disassemble and reassemble lift and bucket cylinders.



CYLINDER DISASSEMBLY

1. Hold cylinder tube (14) stationary and rotate cylinder head (6) to thread the wire retaining ring (15) out of the slot in the cylinder tube.



2. Pull shaft (1) with all assembled parts out of cylinder tube (14).

NOTE: Resistance will be felt until piston seal (12) slides over the wire retaining ring groove.

3. Remove 3/4 jam lock nut (13) from end of shaft and slide cylinder piston (10), and cylinder head (6) off the shaft.

4. Remove piston wear ring (9), piston seal (12) and ring (11) from outside grooves of piston (10).
5. Remove wiper seal (2), snap ring (3), reinforcing washer (4), v-pack set (5) from inside of cylinder head. Remove o-ring (8) and backup washer (7) from outside groove of cylinder head (6).
6. Clean all parts, including cylinder tube, in a suitable cleaning solvent, then use air pressure to blow any dirt or excess solvent from all parts.
7. Examine all parts for wear or damage and replace, if necessary.

CYLINDER REASSEMBLY

NOTE: Be careful not to damage seals, packings and o-rings on the edges or holes in cylinder tube. Inspect and remove burrs and sharp edges if necessary before reassembling.

1. Place new v-pack set (5) in head (6).

NOTE: Lips on v-pack must face toward the inside of head.

2. Place reinforcement washer (4) on top of v-pack set (5) and force down below snap ring groove.
3. Install snap ring (3) into snap ring groove.

NOTE: Rounded outside edge of snap ring must face inward and snap ring must be firmly seated in groove.

4. Install wiper seal (2) with lip of seal facing out and flush with top of cylinder head (6).
5. Place backup washer (7), then o-ring (8) in groove on outside of head (6).
6. Remove sharp edges on outer edge of threaded end of shaft (1). Lubricate wiper seal (2) and v-packing (5) in head and carefully slide head (6) onto shaft.

7. Place o-ring (11), piston seal (12) and piston wear ring (9) in grooves on outside of piston (10).

NOTE: For easier installation, place piston seal (12) in 120° F water to warm seal.

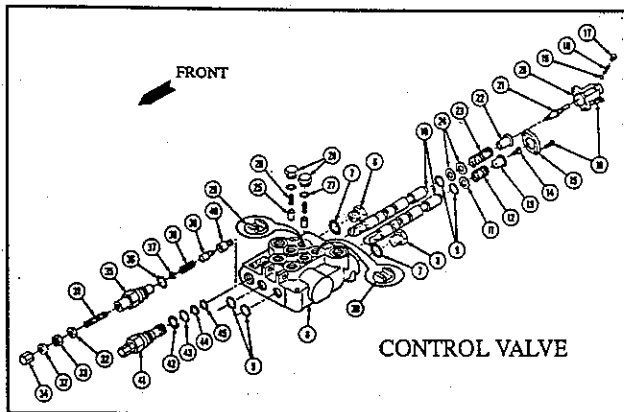
8. Slide piston (10) onto threaded end of shaft. Install 3/4 jam lock nut (13) and torque to 100 ft.-lbs.
9. Lubricate piston wear ring (9), piston seal (12) on piston (10) and o-ring (7) on head (6) and carefully slide piston and head into cylinder tube (14).
10. Insert wire retaining ring (15) into the slot in the cylinder tube and turn cylinder head to thread the wire ring into the groove.

CONTROL VALVE SERVICE

The control valve is designed to be reliable and easy to service. The valve body and spools are not sold as separate repair items, because the body is factory honed to fit the spools. If the valve should malfunction during the warranty period, return the complete valve assembly, without disassembling, to your authorized service department or contact your authorized service department for instructions. Unauthorized disassembly of the valve in the warranty period will VOID WARRANTY.



WARNING: The valve has a relief setting pre-set at the factory. Tampering with this setting can cause **SERIOUS INJURY** to the operator and **DAMAGE** to the tractor or loader. Unauthorized adjustments or service to the valve relief will VOID WARRANTY of both loader and tractor. If adjustments of service to the valve relief are required during the warranty period, and authorized service department must be consulted for authorization.



Follow the following procedure to disassemble and reassemble the valve.

VALVE DISASSEMBLY

NOTE: It is advisable to mark or tag all hoses and parts so they will be reinstalled at their proper location.

1. Remove one-way restrictor plate with .109 hole (29) from working port "B" and one-way restrictor plate with .062 hole (30) from working port "D" of valve body (6) by holding the valve body upside-down and lightly tapping on the bottom of valve.
2. Remove detent screws (17), detent springs (18) and steel balls (19) from both sides of detent end cap (20). Remove detent end cap (20) and end cap (15) from rear of valve body (6) by removing two screws (16) from each end of cap.

3. Remove detent stud (21), spring spacer (22), detent centering spring (23) and flat washers (24) from detent spool. Remove screw (14), spring spacer (13), centering spring (12) and flat washer (11) from the other spool.

NOTE: If spring centering parts are not damaged, it is advisable not to remove the parts from the spools, because detent stud (21) and screw (14) are installed with thread locking compound and tightened to 3 ft.-lbs.

4. Push spools (10) into valve body (6) from the rear until rear spool o-rings (9) are exposed, then remove o-rings by using a wire hook and a screwdriver. Push spools back into the valve body from the front and pull spools out of the valve body from the rear. Remove front spool o-rings (5) with a wire hook and screwdriver.
5. Remove load check plugs (28), load check springs (26) and load check poppets (25) from the top of valve body. Remove load check plug o-rings (27) from plugs only if o-rings are damaged.
6. Remove plugs (8) from rear of valve body. Remove plug o-rings (7) from plugs only if o-rings are damaged.
7. For valves with pilot operated relief (41 through 45), remove pilot-operated relief valve cartridge (41) from front of valve body. Remove o-rings (43 & 45) and seals (42 & 44) only if they are to be replaced.

IMPORTANT: Do not loosen cap nut on relief valve cartridge as this will allow tampering with relief valve setting.

For valves with poppet operated relief (34 through 40), remove relief valve head (35) from front of valve body and remove washer (37), relief spring (38) and relief poppet (39). Remove o-ring (36) from relief valve head only if o-ring is o-ring is damaged. Remove relief valve seat (40) only if the seat is damaged because it is installed with thread sealant and tightened to 10 ft.-lbs.

IMPORTANT: Do not remove relief cap (34), washers (32), jam nut (33) and set screw (31) from relief valve head (35).

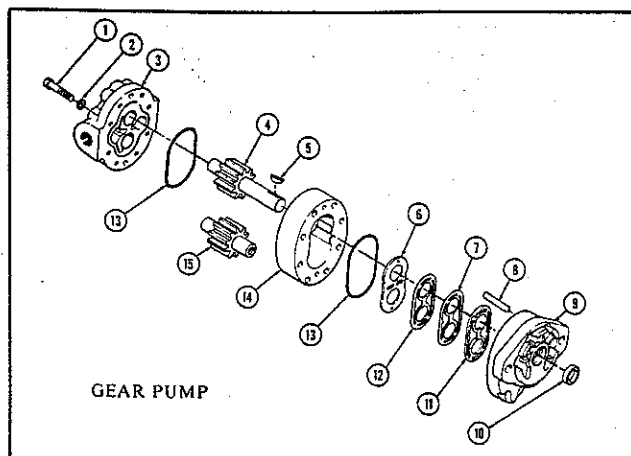
VALVE REASSEMBLY

1. Examine All parts for wear and damage and replace if necessary.
2. Lubricate all o-rings and spools with oil to prevent damage when assembling.
3. Lubricate all detent and spring centering parts with a light coat of grease before assembling.
4. Reassemble all parts in reverse order of disassembly.

GEAR PUMP SERVICE

The gear pump is designed to be reliable and easy to service. The pump housing and gears are not sold as separate repair items, because the gears must be factory fit to the pump housing. If the pump should malfunction during the warranty period, return the complete pump assembly, without disassembling, to your authorized service department or contact your authorized service department for instructions. Unauthorized disassembly of the pump in the warranty period will VOID WARRANTY.

The following is an outline of the procedures for disassembling and reassembling the pump.



PUMP DISASSEMBLY

1. Clean unit thoroughly with solvent or other non-corrosive cleaning fluid which will not affect the rubber components.
2. Remove woodruff key (5) from the drive gear shaft.
3. Scribe a line across the first three sections of the pump, starting from the front cover (9). This line should be drawn approximately parallel with the drive shaft, and later act as a guide to properly position the sections during reassembly.
4. Remove the bolts (1) and washers (2) which hold the three sections together, consisting of the front cover assembly (9), the center section (14) and the back cover (3).
5. Separate the three sections. Do not try to pry between the sections to avoid damaging machined surfaces. Instead, overcome the resistance to disassembly by holding on to the front cover and tapping the back cover with a soft metal mallet while maintaining parallelism between the sections as they separate to prevent "cocking" on the dowel

pins (8). After separation, the center section may still be attached to either the front or back cover assembly. In this event, place the short end of the drive gear (4) into one cover assembly bearing, place the driven gear (15) into the other bearing, and gently tap the protruding gear shaft ends with a soft hammer while holding on to the center section. Gears shall be alternately tapped to avoid "cocking" the cover on the dowel pins.

6. Remove the wear plate (6).
7. Scribe a mark on the front cover (9) island next to the small pressure vent hole in the phenolic material heat shield (12). This mark will later act as a guide during the reassembly.

Remove the phenolic material heat shield (12), the paper compounded gasket (7) and the rubber v-seal (11). These parts are readily removed by installing a small diameter rod, such as the end of a paper clip, into the small pressure vent hole.

8. Remove o-rings (13) from grooves located in the front and back cover faces.
9. Remove rotary seal (10) by exercising great care to avoid damage to the housing bore because it is contained by a force fit which must not leak. It is recommended an expandable hook type tool be used to engage the steel retainer portion of the seal. The seal should be pulled out of its bore without "cocking" to avoid damaging the seal bore. Heating the aluminum housing to 250° F. will reduce the force fit, the load necessary to remove the seal, and consequently minimize the possibility of damaging the bore.

NOTE: It is advisable not to remove the rotary seal (10) if it is in good condition and did not leak.

10. Clean all parts, including pump housing, in a suitable solvent. After cleaning parts with solvent, use air pressure to blow any dirt or excess solvent from all parts including inside of pump housing.
11. Examine all parts for wear or damage and remove any nicks or burrs.

PUMP REASSEMBLY

1. Install rotary seal (10) (if it was removed) in front cover with the spring loaded lip facing inward. Force seal into place using a flat steel rod larger than the seal O.D. so as to permit the tool rather than the seal to bottom on the housing. Load to force seal into place should be applied exactly in line with the housing seal bore to prevent bending

SERVICE

the seal steel retainer and/or scouring the seal housing bore. The front cover (9) must be backed up on a smooth clean surface to prevent damaging its face.

2. Install v-seal (11), gasket (7), and finally heat shield (12) into the front cover cavity as follows:

The small vent hole thru all of these parts should be in line and positioned next to the scribe mark on the island previously made during disassembly. This position locates the vent holes on the outlet side of the pump.

The lips on the v-seal (11) should face toward the cavity and be tucked into the groove with the aid of a dull tool to prevent damage to the rubber surface.

The gasket (7) should be pressed firmly toward the bottom of the cavity with the thumbs so as to insure all of its perimeters are completely well within the groove to avoid interference with subsequent assembly.

The heat shield (12) should be firmly pressed toward the bottom of the cavity with the thumbs to provide sufficient space for the wear plate (6).

3. Install o-ring (13) into the groove provided in front cover face. Oil the o-ring and stretch it slightly if necessary so that it will remain in its groove.
4. Install the wear plate (6) with the small vent hole in line with the hole in the heat shield. Press wear plate in firm contact with the heat shield with the thumbs without bending wear plate.

Wear plate should be sufficiently within the oval cavity so that it is axially retained. The lead bronze surface should face outward.

5. Install drive gear (4) and driven gear (15) into the front cover bearings. The long shaft end on the drive gear should pass thru the rotary seal (10).

Use an oil coated smooth bullet-nosed type shaft seal protector in contact with the shaft end chamfer to prevent damage to the rotary seal. Diameter of the seal protector can be equal to but not more than .010 below shaft diameter. Assembly without the protector is not recommended, however, when it is not readily available, an oil coated shaft will pass thru the shaft seal if the gear is rotated slightly during the interval the shaft end chamfer is in contact with the seal lips.

6. Check wear plate to insure it is still seated into its oval cavity and install the center section (14) allowing the gears to pass thru the bores until it engages the wear plate. Then install dowel pins (8) and add a generous amount of clean oil into the gear cavities. Rotate gears to distribute the oil.

Center section must be positioned so that the previously scribed lines on the housing exteriors are in line. Proper positioning will align the small slot located midway between the bores, with the small vent hole in wear plate. The face containing the slot should be in contact with the wear plate.

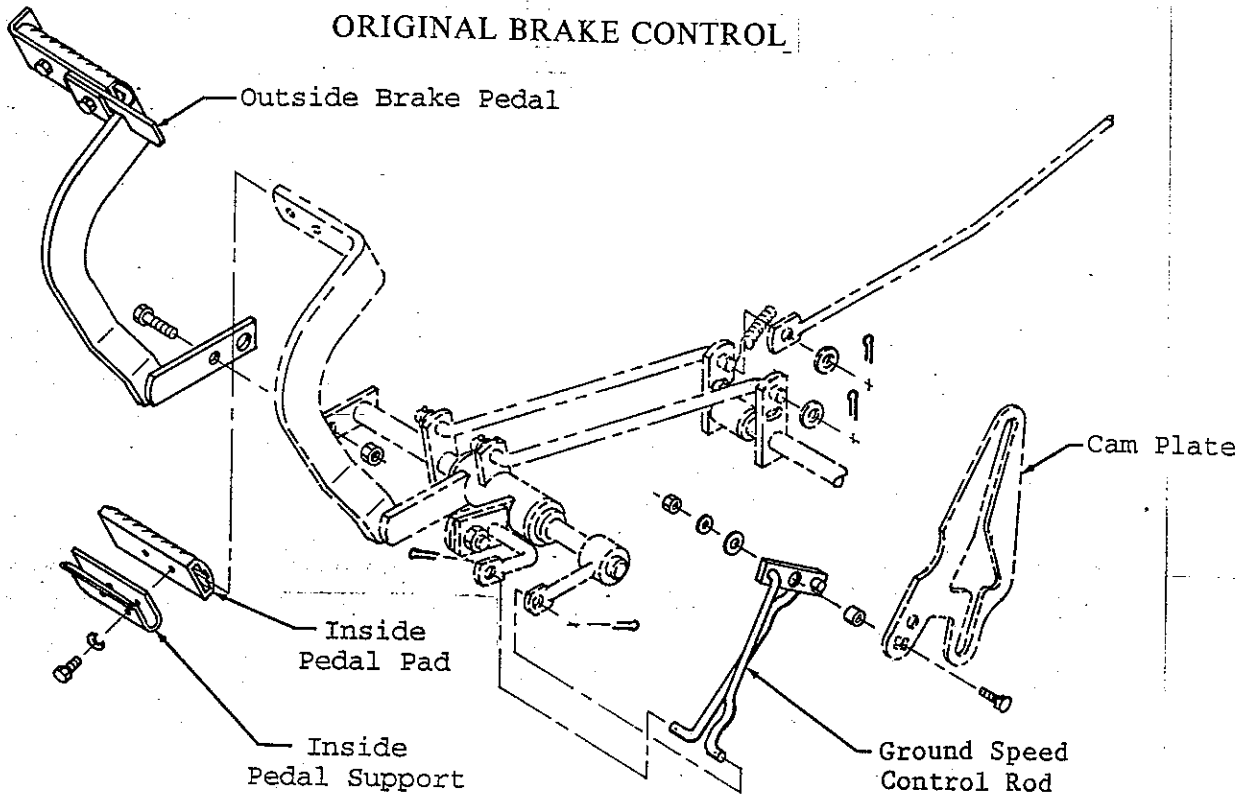
7. Install o-ring (13) into the back cover face groove. Oil o-ring and cover face so that o-ring will remain in place and to insure the face will be lubricated.
8. With wear plate and o-rings still seated in their cavities, install the back cover (3) by engaging both shafts into the bearing bores. Back cover must be positioned so that the previously scribed lines on the exterior of the housing are in line.
9. Install housing retaining screws (1) and washers (2). Screws shall be alternately tightened to 190-210 inch pounds.
10. Add a generous amount of clean oil into both ports to insure the pump is adequately lubricated, then rotate the drive shaft to distribute the oil and check for freedom of shaft rotation. Shaft shall be free enough to rotate by hand.



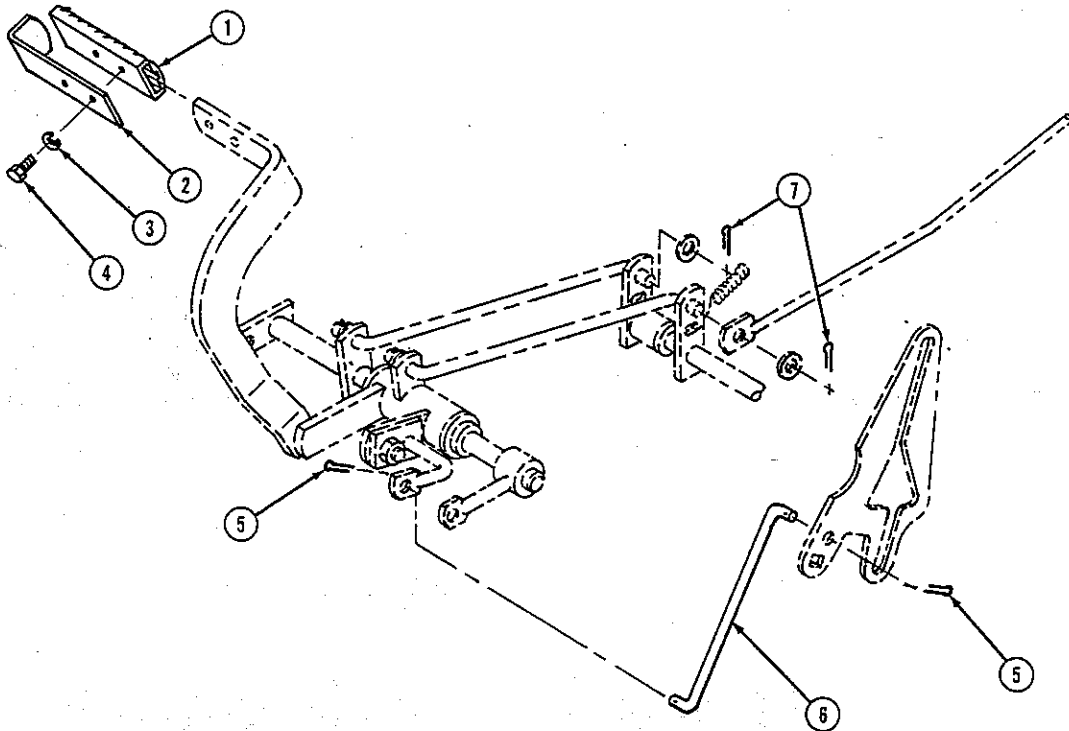
be careful ... avoid accidents

ASSEMBLY & PARTS

ORIGINAL BRAKE CONTROL



MODIFIED BRAKE CONTROL



ASSEMBLY & PARTS

PARTS LIST — BRAKE CONTROL CONVERSION

Item	Description	Qty.
1	PAD, Pedal	1
2	SUPPORT, Pedal	1
3	WASHER, Lock, 1/4	2
4	SCREW, Cap, 1/4-20 x 3/4	2
5	PIN, Cotter, 3/32 x 1"	2
6	ROD, Ground Speed Control	1
7	PIN, Cotter, 1/8 x 1"	2

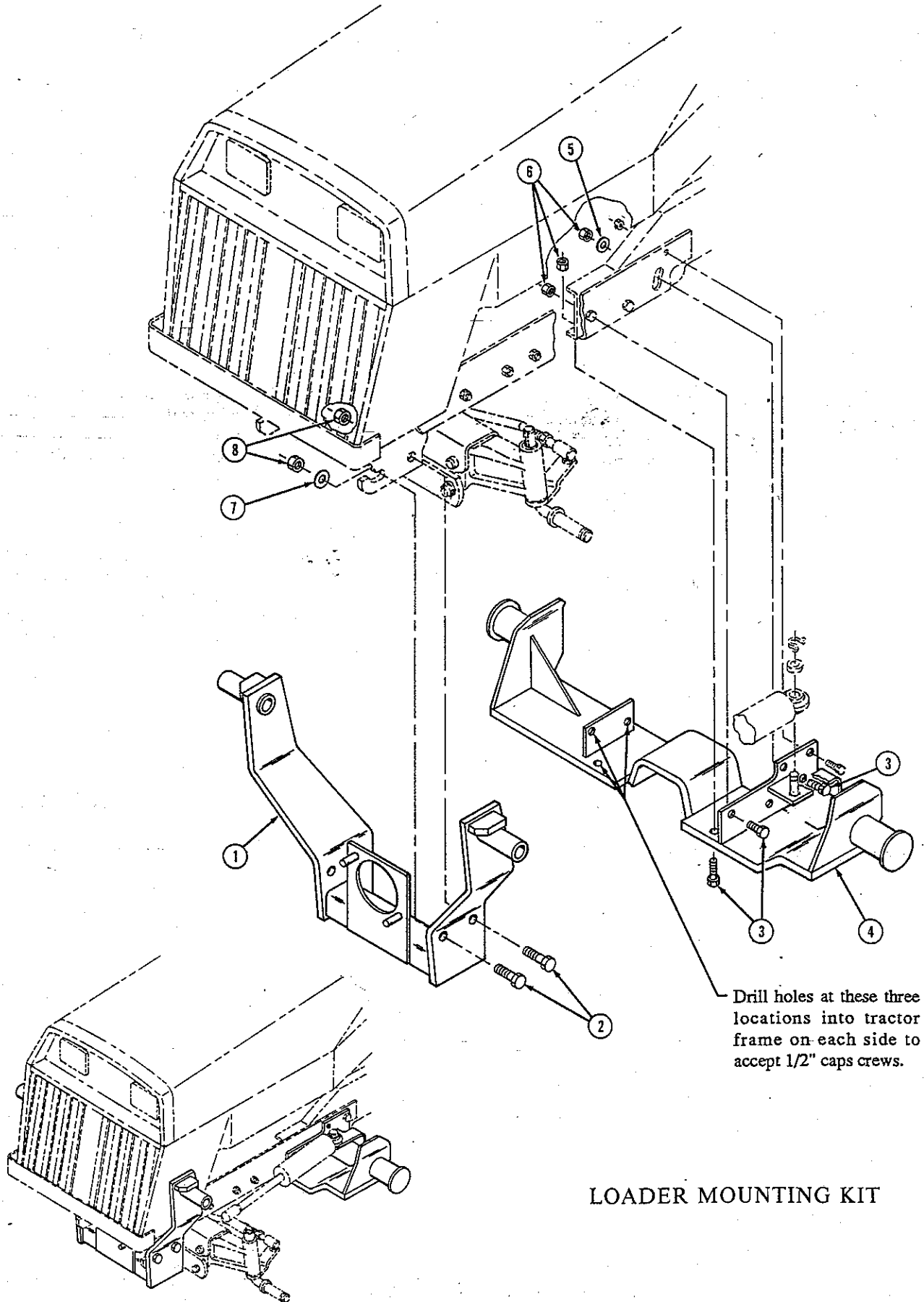
ASSEMBLY INSTRUCTIONS

BRAKE CONTROL CONVERSION

NOTE: Dual brake lever conversion to single brake lever is required to prevent brake lever interference with loader side frame. Retain all removed parts for future reconversion without loader equipped.

1. Remove outside brake pedal by removing 7/16 x 1-1/4 cap screw and lock nut. Remove pedal support, pedal pad and hardware from inside brake pedal.
2. Remove tractor right hand side panels for easy access to the hydrostatic controls. Remove cotter pins fastening ground speed control rods to brake lever rods. Remove nut, washers, control rods, spacer and carriage bolt from cam plate.
3. Install new ground speed control rod (6) as shown. Secure with 3/32 cotter pins (5) on each end of control rod (6). Replace tractor side panels covering the hydrostatic controls.
4. Install new pedal pad (1) and support (2) to inside brake pedal with 1/4 x 3/4 cap screws (4) and lock washers (3).
5. Remove cotter pin and flat washer from inside brake rod. Remove cotter pin, washer and right hand side connecting rod from outside brake rod. Install connecting rod onto inside brake rod and secure with washer and new 1/8 cotter pin (7). Install original washer and new 1/8 cotter pin (7) onto outside brake rod. Relocate spring from outside brake rod to inside brake rod.

ASSEMBLY & PARTS



LOADER MOUNTING KIT

ASSEMBLY & PARTS

PARTS LIST — LOADER MOUNTING KIT

Item	Description	Qty.
1	BRACKET, Front Mounting	1
2	SCREW, Cap, 5/8-11 x 2"	4
3	SCREW, Cap, 1/2-13 x 1-1/2	7
4	BRACKET, Mid Mounting	1
5	WASHER, Flat, 1/2	1
6	NUT, Lock, 1/2-13	7
7	WASHER, Flat, 5/8	2
8	NUT, Lock, 5/8-11	4

ASSEMBLY INSTRUCTIONS

NOTE: Leave all attaching hardware loose until the loader is completely assembled to facilitate assembly and proper loader alignment.

LOADER MOUNTING KIT

1. Before installing the loader mounting brackets, reverse the direction of the 1/2 x 2-3/4 cap screws in lower link of front axle on both the left and right side. Route cap screws through the axle from the axle from front to rear. Install lock washers and nuts. Tighten hardware to 90-120 ft.-lbs. of torque.
2. Fasten front mounting bracket (1) to tractor frame with 5/8 x 2" cap screws (2), flat washers (7) and lock nuts (8).

NOTE: Flat washers (7) must be used between nut (8) and slotted hole in tractor frame.

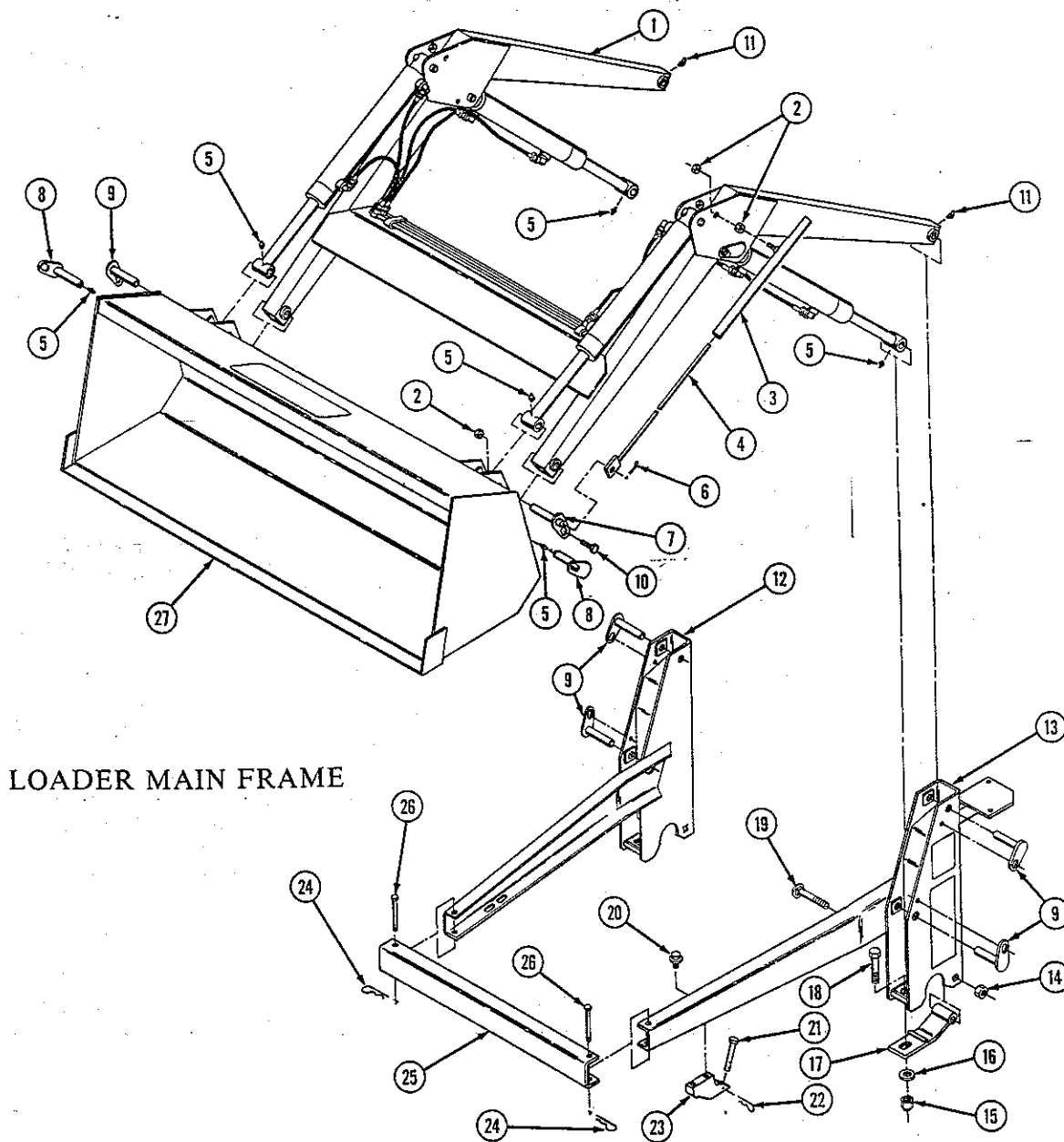
3. Remove the hoses from the power steering cylinder. Remove original power steering bracket from left side of tractor frame. Remove cap screw and nut which secures cylinder to power steering bracket.

4. Remove two bolts on each side of tractor frame and the front two bolts on underside of frame.

NOTE: The six mounting holes used to install the mid mounting bracket (4) may need to be redrilled to accept 1/2" cap screws.

5. Position mid mounting bracket (4) to underside of tractor frame and secure to sides of frame with 1/2 x 1-1/2 cap screws (3) and lock nuts (6). Fasten mid mounting bracket to underside of tractor frame with two 1/2 x 1-1/2 cap screws (3) and lock nuts (6). Install original 3/8" hardware into the upper rear hole located on mid mounting bracket. Tighten 1/2" hardware to 80-96 ft.-lbs. of torque.
6. Secure power steering cylinder to mid mounting bracket with the original cap screw and nut. Tighten hardware to 200-220 ft.-lbs. torque. Route hydraulic hoses through the opening in mid mounting bracket (4) and reinstall hoses onto the power steering cylinder.

ASSEMBLY & PARTS



LOADER MAIN FRAME

PARTS LIST — LOADER MAIN FRAME

Item	Description	Qty.
1	FRAME, Lift Boom	1
2	NUT, Lock, 3/8-16	10
3	TUBE, Indicator Guide	1
4	ROD, Indicator	1
5	FITTING, Grease, 1/4-28	6
6	PIN, Cotter, 5/32 x 1-1/2	1
7	PIN, 3/4 x 3-1/4	1
8	PIN, 3/4 x 3-1/4	2
9	PIN, 3/4 x 3-1/4	5
10	BOLT, Shoulder, 3/8-16 x 1"	8
11	FITTING, Grease, 1/4-28 x 45°	2
12	FRAME, Right Side	1
13	FRAME, Left Side	1
14	NUT, Lock, 5/8-11	2
15	NUT, Elastic Lock, 5/8-11	2

(Continued)

ASSEMBLY & PARTS

PARTS LIST — LOADER MAIN FRAME (Continued)

Item	Description	Qty.
16	WASHER, Flat, 5/8	2
17	HINGE	2
18	SCREW, Cap, 5/8-11 x 3"	2
19	BOLT, Carriage, 5/8-11 x 3-3/4	2
20	SCREW, Cap, Serrated Head, 1/2-13 x 3/4	4
21	PIN, Clevis, 5/8 x 3-1/4	2
22	PIN, Hair Cotter, 5/32 x 2-11/16	2
23	HOOK, Side Frame Mounting	2
24	PIN, Hair Cotter, 3/32 x 1-7/8	2
25	BUMPER, Front	1
26	PIN, Clevis, 3/8 x 4"	2
27	BUCKET, Material, 38" or 48" wide	1

ASSEMBLY INSTRUCTIONS

NOTE: Leave all attaching hardware loose until the loader is completely assembled to facilitate assembly and proper loader alignment.

INSTALLING LOADER SIDE FRAMES

- Place 5/8 x 3-1/4 pins (21) into the hole in side frame mounting hooks (23). Fasten hooks (23) to side frames (12 & 13) with 1/2 x 3/4 serrated head cap screws (20), but do not tighten.
- Position hinges (17) inside of side frames. Install 5/8 x 3-3/4 carriage bolts (19) as shown and secure with lock nuts (14).
- Position side frames over the loader mounting brackets and clamp hinges (17) around tube of mid mounting bracket. Install 5/8 x 3" cap screws (18), flat washers (16) and elastic lock nuts (15), but do not tighten. Raise side frame hook pins (21) and secure with 2-11/16 hair cotter pins (22). See page 12 for reference.

INSTALLING FRONT BUMPER

- Attach front bumper (25) to side frames (12 & 13) with 3/8 x 4" clevis pins (26) and 1-7/8 hair cotter pins (24).

INSTALLING GREASE FITTINGS

- Install 1/4 straight grease fittings (5) into the tube at the rod end of each lift and bucket cylinders. Install 1/4 x 45° grease fittings (11) pointing up into the tube at the end of lift boom frame arm. Install 1/4 straight grease fittings (5) into bucket pins (8).

INSTALLING LIFT BOOM FRAME

- Attach lift boom frame (1) and lift cylinders into side frame uprights with 3/4 x 3-1/4 pins (9), 3/8 x 1" shoulder bolts (10) and lock nuts (2).
- With the loader centered on the tractor mounting brackets, securely tighten hinges (17) around mid mounting bracket.
- Slide side frame mounting hooks (23) against front mounting bracket tubes to properly position hooks, then securely tighten 1/2 x 3/4 serrated cap screw (20).

INSTALLING BUCKET

- Attach bucket to the lift boom frame and bucket cylinders with 3/4 x 3-1/4 pins (7, 8 & 9), 3/8 x 1" shoulder bolts (10) and lock nuts (2).

INSTALLING BUCKET LEVEL INDICATOR

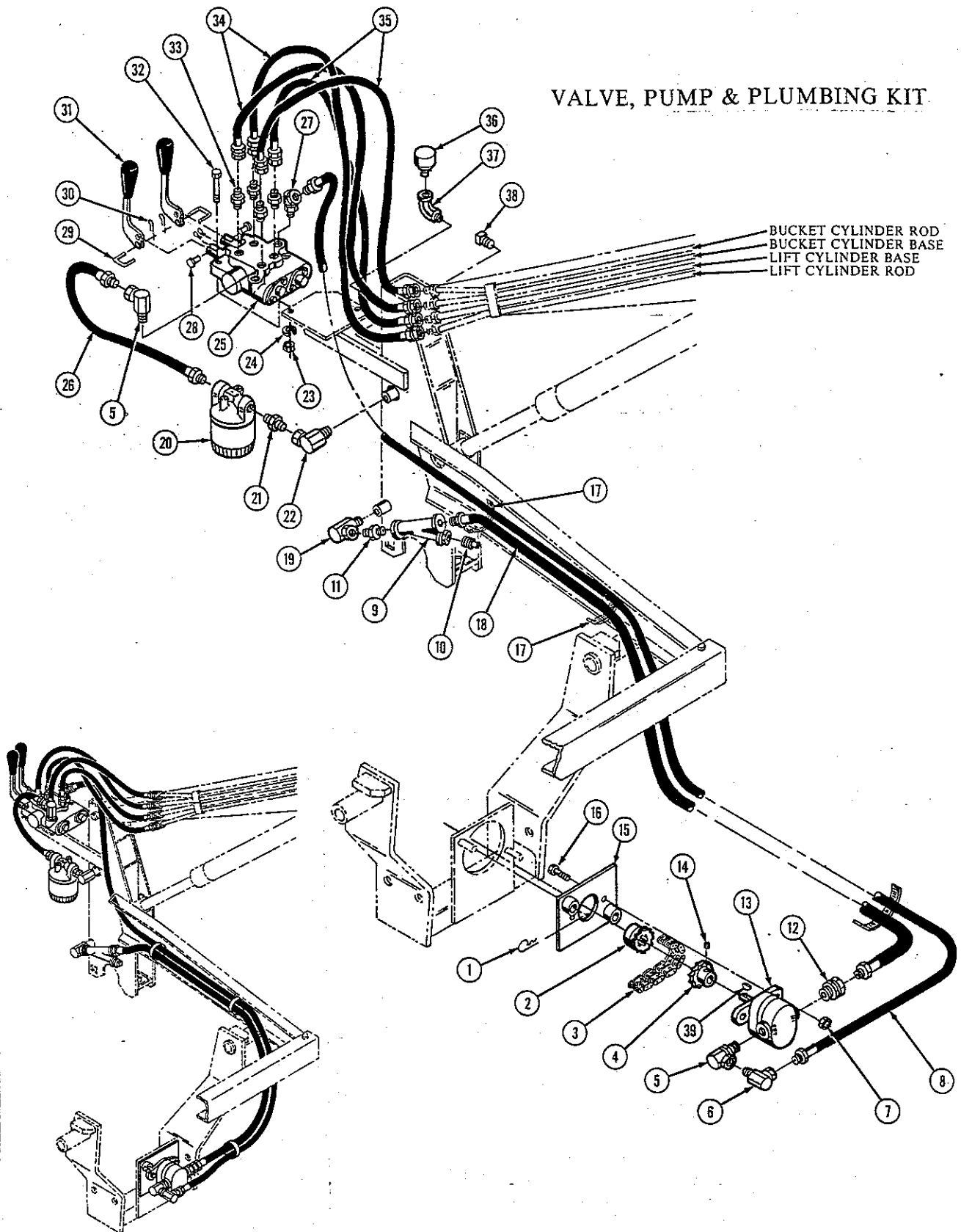
- Attach indicator guide tube (3) to the bucket cylinder mount on the left side of lift boom frame with 3/8 lock nuts (2).

NOTE: Leave lock nuts loose enough so tube rotates freely.

- Slide bucket level indicator rod (4) into the guide tube and attach the other end of rod to bucket cylinder pin (7) with 5/32 x 1-1/2 cotter pin (6).
- Locate tractor and loader on level surface. With the bottom of bucket resting on surface, cut off the excess rod (4) flush with the end of guide tube (3).

ASSEMBLY & PARTS

VALVE, PUMP & PLUMBING KIT



32
 25

ASSEMBLY & PARTS

PARTS LIST — VALVE, PUMP & PLUMBING KIT

Item	Description	Qty.
1	PIN, Hair Cotter, 3/32 x 1-7/8	2
2	SPROCKET, W/Spline Hub, #40B12	1
3	CHAIN, Roller, #40-2 x 12 Pitches	1
4	SPROCKET, W/Keyway Hub, #40B12	1
5	FITTING, Elbow Adaptor, 3/4-3/8 x 90°	2
6	FITTING, Elbow Adaptor, 3/8-3/8 x 90°	1
7	NUT, Lock, 3/8-16	2
8	HOSE, 3/8 x 72"	1
9	Y-STRAINER	1
10	PLUG, Pipe, 3/8	1
11	FITTING, Adaptor, 1/2-1/2	1
12	FITTING, Adaptor Union, 7/8-1/2	1
13	PUMP, Parker Model D14AA2A	1
14	SCREW, Set, Socket Head, 1/4-20 x 1/4 or 10-24 x 1/4	1
15	BRACKET, Pump Mounting	1
16	SCREW, Cap, 3/8-16 x 1-1/4	2
17	STRAP, Adjustable Tie	3
18	HOSE, 1/2 x 48"	1
19	FITTING, Elbow Adaptor, 1/2-1/2 x 90°	1
20	FILTER ASSEMBLY	1
21	FITTING, Adaptor, 3/8-3/8	1
22	FITTING, Elbow Adaptor, 1/2-3/8 x 90°	1
23	NUT, Hex, 1/4-20	2
24	WASHER, Lock, 1/4	2
25	VALVE, Dukes Fluid Power Model 1627 DM	1
26	HOSE, 3/8 x 14"	1
27	FITTING, Adaptor Union, 3/4-3/8 x 45°	1
28	PIN, 1/4 x 3/4	2
29	U-HOOK	2
30	PIN, Cotter, 1/16 x 1/2	4
31	HANDLE, Valve	2
32	SCREW, Cap, 1/4-20 x 2-1/4	2
33	FITTING, Adaptor, 9/16-9/16	4
34	HOSE, 1/4 x 22-1/2	2
35	HOSE, 1/4 x 20"	2
36	CAP, Breather	1
37	FITTING, Street Elbow, 1/2 x 90°	1
38	PLUG, Pipe, 1/4	1
39	KEY, Woodruff, 1/8 x 5/8 Diameter	1

ASSEMBLY INSTRUCTIONS

INSTALLING TWO LEVER VALVE

1. Install 1/2 x 90° street elbow fitting (37) to upper port located at the rear of left side frame.
2. Fasten valve (25) to the valve mounting bracket on side frame with 1/4 x 2-1/4 cap screw (32), lock washers (24), and nuts (23).
3. Attach valve handles (31) to the valve spools with 1/4 x 3/4 pins (28) and 1/16 x 1/2 cotter pins (30). Fasten valve handles to the valve mounting bracket with u-hooks (29) and 1/16 x 1/2 cotter pins (30).

ASSEMBLY & PARTS

PLUMBING TWO LEVER VALVE TO LOADER

1. Install 1/2 x 3/8 x 90° elbow fitting (22) into the upper port located on inside of left side frame. Install 3/8 - 3/8 straight fitting (21) onto the outlet port of filter base (20). Install the other end of fitting (21) into elbow fitting (22). Install 3/8 x 14" hose (26) to inlet port of filter base (20). Install filter element into filter base.
2. Install 3/4 - 3/8 x 90° elbow fitting (5) into the outlet of valve. Install 3/4 - 3/8 x 45° elbow fitting (27) into the inlet port of valve. Connect 3/8 x 14" hose (26) from filter assembly (20) to outlet port fitting (5) on valve.
3. Install 9/16 - 9/16 adapter fittings (33) into the four working ports of valve (25). Connect 1/4 x 20" hoses (35) to fittings (33) in the front two working ports of valve. Connect 1/4 x 22-1/2" hoses (34) to fittings (33) in the rear two working ports of valve.
4. Hand bend the oil line tubes away from boom arms and each other. Connect the hose from the left rear port of auxiliary valve to bottom oil line tube on loader arm. Connect hose from the left front port to the second lowest oil line. Connect hose from the right rear port to the second highest oil line. Connect hose from the right front port to the top oil line.

INSTALLING FRONT MOUNTED PUMP

1. Fasten pump (13) to pump mounting bracket (15) with 3/8 x 1-1/4 cap screws (16) and lock nuts (7). Slide sprocket with keyway hub (4) onto shaft of pump (13) so shaft is recessed 1/8" from end of sprocket. Secure with 1/4 x 1/4 or 10-24 x 1/4 socket head set screw.

NOTE: Use thread locking compound on set screw (14) to keep it from vibrating loose.

2. Attach sprocket with spline hub (2) to sprocket (4) with #40-2 x 12 roller chain (3). Install pump and bracket onto pins on loader front mounting bracket and install 3/32 x 1-7/8 hair cotter pins (1).

PLUMBING PUMP TO VALVE & LOADER

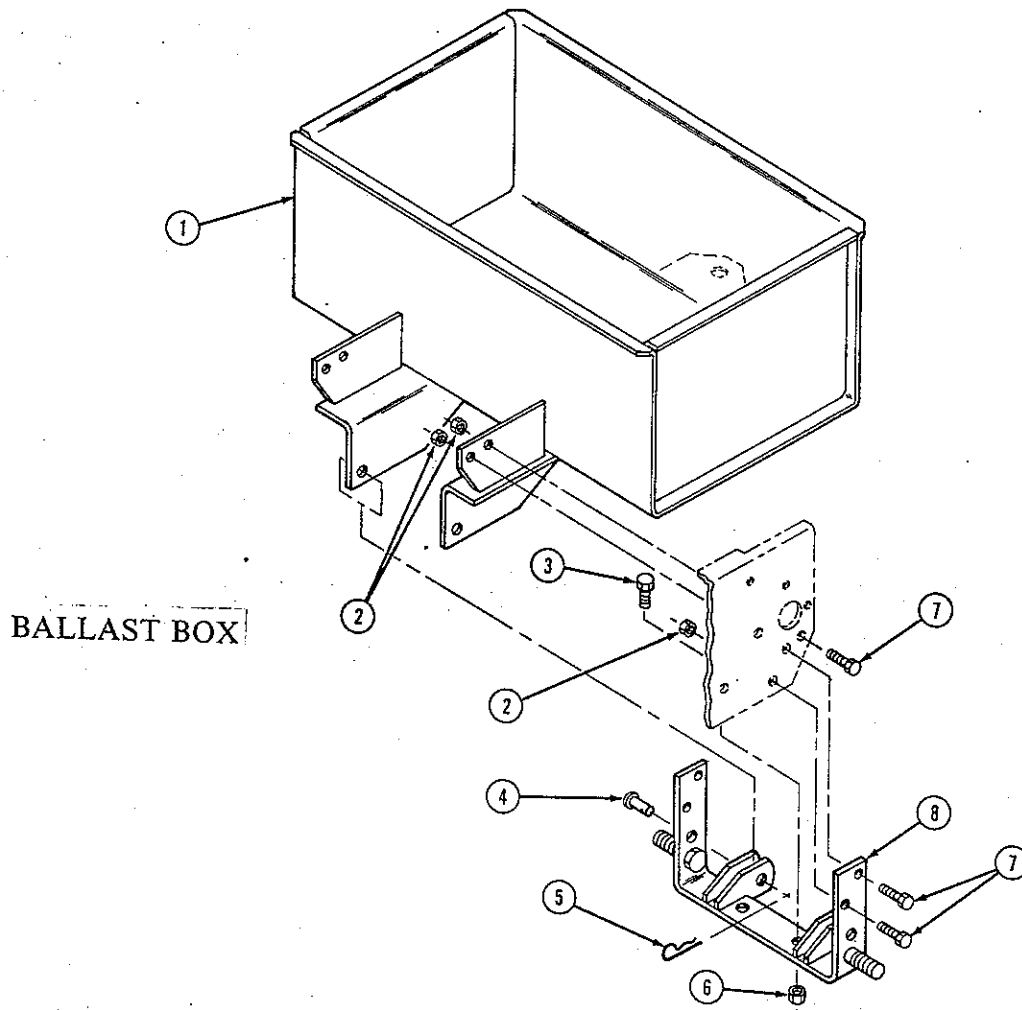
1. Install 3/4 - 3/8 x 90° elbow fitting (5) onto the outlet port of pump (13). Install 3/8 - 3/8 x 90° elbow fitting (6) into fitting (5). Install union fitting (12) into inlet port of pump.
2. Connect 1/2 x 48" hose (18) to outlet port of Y-strainer (9). Install 3/8" plug (10) into drain port of Y-strainer. Install 1/2 - 1/2 adapter fitting (11) to inlet port of Y-strainer. Install 1/2 - 1/2 x 90° elbow fitting (19) into the lower port located on the inside of left side frame. Connect fitting (11) to fitting (19).
3. Connect 3/8" hose (8) to fitting (27) in the inlet port of valve. Route hoses (8 & 18) along side frame channel to the upright. Connect 1/2" hose (18) to fitting (12). Connect 3/8" hose (8) to fitting (6) in the outlet port of pump. Secure hoses (8 & 18) together with three adjustable tie straps (17).
4. Remove the 1/4 pipe plug at the rear of side frame. Fill side frame with approximately 3/4 gallons of good quality AW#15 hydraulic fluid. Type A or F transmission fluid is acceptable.
5. Start the tractor engine and slowly cycle the lift and bucket cylinders several times to purge any air out of the hydraulic system, then retract cylinders and shut off tractor engine.
6. Add additional hydraulic fluid until fluid is level with oil level plug (38) at rear of side frame. Install breather cap (36) into fitting (37) at rear of side frame.

NOTE: When cycling the loader, pulling lift control lever back should raise the loader and pushing it forward should lower the loader. Pulling bucket control lever back should curl the bucket and pushing it forward should dump the bucket. If direction of control lever is reversed, switch hose connections at valve working ports.



WARNING: Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. If injured by escaping fluid, obtain medical treatment immediately.

ASSEMBLY & PARTS



BALLAST BOX

PARTS LIST — BALLAST BOX

Item	Description	Qty.
1	BOX, Ballast	1
2	NUT, Lock, 7/16-14	6
3	SCREW, Cap, 1/2-13 x 1-1/4	2
4	PIN, Clevis, 1/2 x 1-5/16	2
5	PIN, Hair Cotter, 5/32 x 2-11/16	2
6	NUT, Lock, 1/2-13	2
7	SCREW, Cap, 7/16-14 x 1-1/4	6
8	BRACKET, Hitch	1

ASSEMBLY INSTRUCTIONS

INSTALLING BALLAST BOX

1. Position hitch bracket (8) to rear of tractor frame and secure to tractor hitch with 1/2 x 1-1/4 cap screws (3) and lock nuts (6). Install one 7/16 x 1-1/4 cap screw (7) on each side to secure hitch bracket to tractor frame and fasten with nuts (2).
2. Position angles of ballast box (1) into the flats of hitch bracket (8). Install 1/2 x 1-5/16 pins (4) and hair pins (5). Install 7/16 x 1-1/4 cap screws (7) and lock nuts (2).

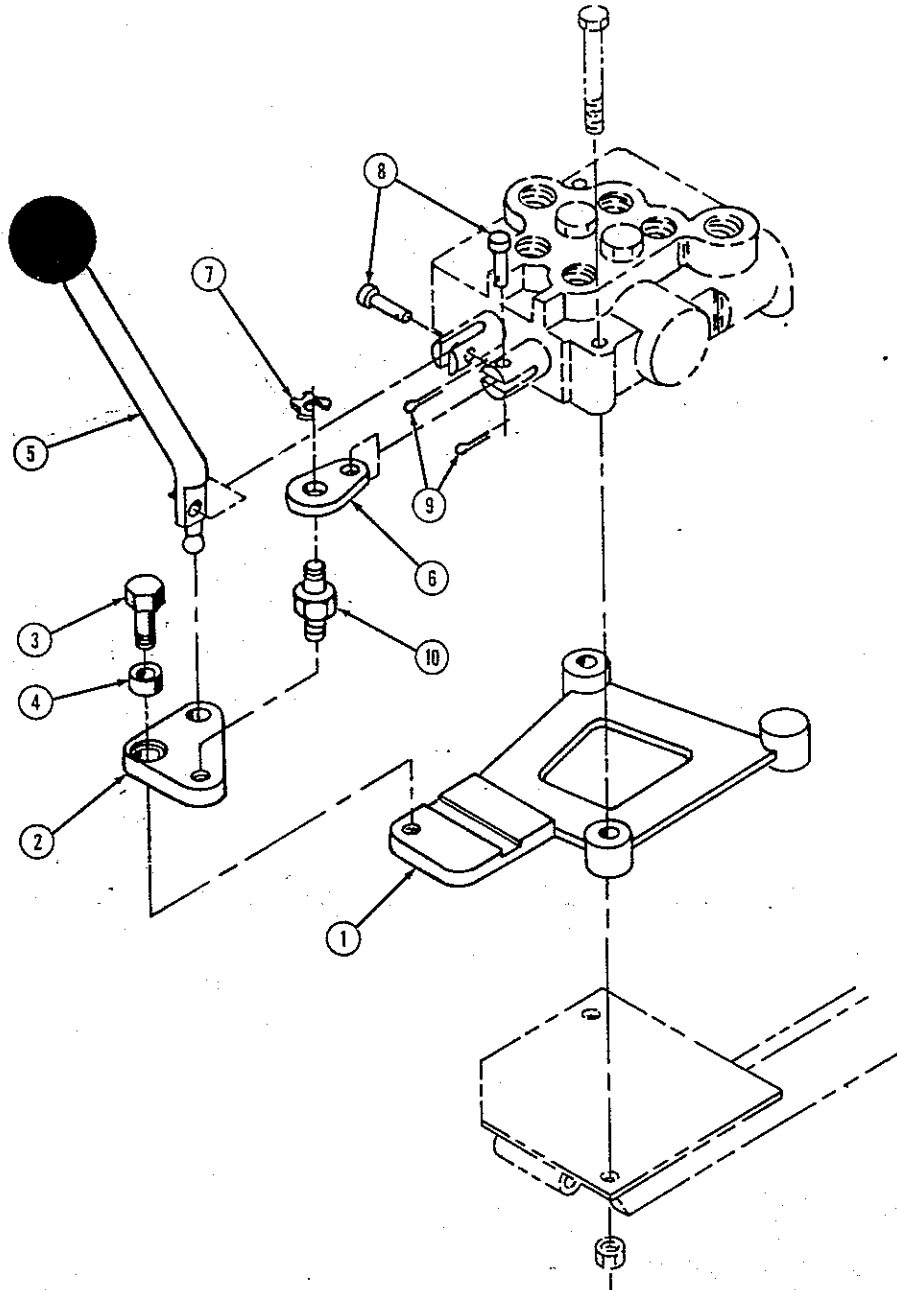
FILLING BALLAST BOX

1. Fill the ballast box with material weighing 200-250 pounds.



CAUTION: DO NOT ALLOW RIDERS IN BALLAST BOX.

ASSEMBLY & PARTS



VALVE 1-LEVER CONTROL
(Optional)

ASSEMBLY & PARTS

PARTS LIST — VALVE LEVER CONVERSION FROM TWO LEVER TO ONE LEVER CONTROL

Item	Description	Qty.
1	PLATE, Lever Mounting	1
2	PLATE, Lever Pivot	1
3	SCREW, Cap, 1/4-28 x 5/8, Grade 8	1
4	BUSHING, Sleeve	1
5	LEVER, Valve	1
6	LINK, Spool	1
7	RETAINER, Clip	1
8	PIN, 1/4 x 3/4	2
9	PIN, Cotter, 1/16 x 1/2	2
10	STUD, Pivot Plate	1

ASSEMBLY INSTRUCTIONS

REMOVING TWO-LEVER VALVE CONTROLS

1. Remove two-lever controls from valve by removing 1/16 x 1/2 cotter pins, 1/4 x 3/4 pins and u-hooks.
2. Remove 1/4 x 2-1/2 cap screws and lock nuts which secure valve to the valve mounting bracket.

INSTALLING SINGLE LEVER VALVE CONTROL

1. Attach valve lever (5) to the left valve spool with 1/4 x 3/4 pin (8) and 1/16 cotter pin (9).

NOTE: If the valve has a relief, the valve spool must be rotated to install 1/4 x 3/4 pin (8).

2. Install pivot plate stud (10) into lever pivot plate (2). Place bushing (4) onto 1/4-28 x 5/8 cap screw (3). Fasten lever pivot plate (2) to the lever mounting plate (1) with cap screw (3) and bushing (4).

NOTE: When installing pivot plate stud (10) and screw (3), apply thread locking compound and tighten to 8-10 ft.-lbs. of torque.

3. Position lever mounting plate (1) on the valve mounting bracket, then position valve over the lever mounting plate and at the same time slide valve lever (5) into the hole in lever pivot plate (2). Fasten lever mounting plate (1) and valve to the valve mounting bracket with original 1/4 x 2-1/2 cap screws and lock nuts.
4. Attach spool link (6) to the pivot plate stud (10) with clip retainer (7), then attach the other end of link to the valve right spool with 1/4 x 3/4 pin (8) and 1/16 x 1/2 cotter pin (9). Lubricate all pivot points and thereafter lubricate after every eight hours of operation.

