

Operator's Manual

Front Loader w/ 60" Bucket

For loader Serial #1D081Z60001 and up

Model CL300

Yanmar America Corporation
101 International Parkway
Adairsville, GA 30103

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(9/12)
Mfd by MTD

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Finding Model Number

This Operator's Manual is an important part of your new front-end loader. It will help you assemble, prepare and maintain the equipment for best performance. Please read and understand what it says.



Before you start assembling your new equipment, please locate the model plate on the equipment and copy the information from it in the space provided below. The information on the model plate is very important if you need help from our Customer Support Department or an authorized dealer.

- You can locate the model number by looking on the loaders left-hand mast assembly. A sample model plate is shown below. For future reference, please copy the model number and the serial number of the equipment in the space below.

MODEL NUMBER	SERIAL NUMBER
59A40XXX727 CL300	*XXXXXXXXXX *
CUSTOMER SUPPORT 1-855-416-7091 CS_SUPPORT@YANMAR.COM	
MFG BY MTDPRODUCTS, Inc Valley City, OH 44280	

Copy the model number here: _____

Copy the serial number here: _____

Calling Customer Support

If you have difficulty with this front-end loader; have any questions regarding the controls, operation or maintenance of this equipment; or desire additional information not found in this manual, contact your nearest authorized Yanmar dealer. If you need assistance in locating a dealer in your area, contact the Customer Dealer Referral Line.

Call 1-855-416-7091 to reach the Customer Dealer Referral Line. Please have your front-end loader model number and serial number ready when you call. See previous section to locate this information. For more details about your equipment, visit our website at: www.yanmar.com. For warranty information, please refer to the Yanmar Limited Warranty included with your tractor.

SECTION 1: SAFE OPERATION PRACTICES



WARNING! This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol—HEED ITS WARNING.



DANGER! This machine was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. Failure to observe the following safety instructions could result in serious injury or death.

TRAINING

1. Safety instructions are important! Read this manual and the tractor's Operator's Manual; follow all safety rules and safety label information. (Replacement labels are available through your Yanmar dealer.) Failure to follow instructions or safety rules can result in serious injury or death.
2. If you do not understand any part of this manual and need assistance, contact your Yanmar dealer.
3. Know your controls and how to stop engine and attachment quickly in an emergency.
4. Operators must be instructed in and be capable of the safe operation of the equipment, its attachments and all controls. Do not allow anyone to operate this equipment without proper instructions.
5. Keep hands and body away from pressurized lines. Use paper or cardboard, not body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
6. Make sure that all operating and service personnel know that in the event hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury, or gangrene, serious injury or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.
7. Do not allow children or untrained persons to operate equipment.

INSTALLATION

1. During installation, the tractor engine should be off, the key removed and the parking brake engaged.
2. Do not disconnect hydraulic lines until attachments are removed or lowered to the ground and system pressure is released by operating valve levers. Never operate any hydraulic cylinders during any phase of the installation process.
3. After connecting hoses, check that all control lever positions function as instructed in this Operator's Manual. Do not operate until control lever and equipment movements are correct.

PREPARATION

1. Check that all hardware is tight and properly installed. Always tighten to torque specifications as instructed in this manual.
2. Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly.
3. Before operating or allowing anyone to approach the equipment, purge any air in the system by operating all hydraulic functions several times after connecting equipment, connecting hoses, or doing any hydraulic maintenance.
4. After connecting hoses, check that all control lever positions function as Instructed in this Operator's Manual. Do not operate until control lever and equipment movements are correct.
5. Protective sleeves must be over hydraulic hoses and securely fastened onto metal hose fittings as described in this manual. Replace if damaged or if protective sleeve is not properly positioned or secured.
6. Make sure all hydraulic hoses, fittings and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.
7. Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing and head.
8. Avoid injury or death. Never work under a raised loader. Always lower loader to the ground with bucket or loader attachment in full roll-back position. Operate valve levers to release any hydraulic pressure. If loader obstructs tractor maintenance, loader must be removed from tractor.
9. Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
10. Your Yanmar dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
11. Ensure implement is properly attached, adjusted and in good operating condition.
12. Power unit must be equipped with ROPS or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in locked up position at all times.
13. Ensure all safety labels are installed. Replace if damaged. (See Safety Labels later in this section).
14. Ensure shields and guards are properly installed and in good condition. Replace if damaged.

OPERATIONAL

1. Do not allow other people in the area when operating, attaching, removing, assembling or servicing equipment.
2. Improper use of a loader can cause injury or death.
3. Consult local utilities before working. Know location of and avoid contacting all underground cables, pipelines, overhead wires and other hazards in working area.
4. Do not attempt to lift loads in excess of the loader capacity.
5. Keep bystanders away from equipment.
6. Do not walk or work under a raised loader, bucket or attachment.
7. Never allow anyone to get under the loader bucket or reach through the lift arms when the bucket is raised.
8. Do not operate equipment while under the influence of alcohol or drugs.
9. Operate only in daylight or good artificial light.
10. Always comply with all state and local lighting and marking requirements.
11. Do not allow riders. Do not lift or carry anybody on the loader or in the bucket or attachments.
12. Power unit must be equipped with ROPS or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.
13. Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake and ensure all other controls are disengaged before starting tractor engine.
14. Look down and to the rear and make sure area is clear before operating in reverse.
15. Avoid loose fill, rocks and holes. They can be dangerous for loader operation or movement.
16. Allow for loader length and width when making turns.
17. Stop the loader arms gradually when lowering or lifting.
18. Use caution when handling loose or shiftable loads.

Avoid Injury or Death from Rollover Accidents:

- Move and turn tractor at low speeds.
- Watch for hidden hazards such as holes, ditches, and other obstructions which may cause tractor and loader to tip over.
- Carry loads close to the ground to aid visibility and lower center of gravity for improved stability.
- Balance loads so weight is evenly distributed and load is stable.
- Be extra careful when operating on a slope.
- Do not operate on steep slopes.
- Do not stop, start or change directions suddenly on slopes.

- If loader is equipped with round bale attachments, always approach bale with tractor facing uphill.
- Tractor must be equipped with a Roll-Over Protective Structure (ROPS) and seat belt.
- Keep seat belt securely fastened and keep foldable ROPS systems in "locked up" position at all times.

Avoid Injury or Death from Power Lines

- Stay away from power lines. Electrocutation can occur without direct contact.
- Check clearances before raising loader.
- Consult local utilities before digging. Know location of and avoid contacting all underground cables, pipelines, overhead wires and other hazards in digging area.
- Do not leave the operator's seat if any part of the tractor or loader contacts electric lines or underground cables.

Avoid Injury or Death from Falling Objects:

- This loader is not equipped with any method to prevent objects such as round bales, posts, logs, etc. from rolling back onto operator.
- Do not carry large objects that can fall out of loader bucket into operator zone.
- Never lift loader higher than necessary to clear the ground when moving.
- Before dismounting tractor or performing any service or maintenance, disengage the power to the implement, lower the 3-point hitch and all raised components to the ground, operate valve lever to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.
- Never work under a raised loader. Always lower loader to the ground with bucket or loader attachment in full roll-back position. Shut off tractor, set park brake and remove key. Operate valve levers to release any hydraulic pressure. If loader obstructs tractor maintenance, loader must be removed from tractor.

MAINTENANCE

1. Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.
2. Never work under a raised loader. Always lower loader to the ground with bucket or loader attachment in full roll-back position. Shut off tractor, set park brake and remove key. Operate valve levers to release any hydraulic pressure.
3. Adjustment of system relief pressure should be done by a qualified, experienced Yanmar dealer. Incorrect adjustment can result in system failures and serious personal injury.

4. Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing and head.
5. Do not allow other people in the area when operating, attaching, removing, assembling or servicing equipment.
6. Ensure implement is properly attached, adjusted and in good operating condition.
7. Keep all persons away from operator control area while performing adjustments, service or maintenance.
8. Tighten all bolts, nuts and screws securely. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before operating.
9. Ensure all safety labels are installed. Replace if damaged. (See Safety Labels later in this section)
10. Ensure shields and guards are properly installed and in good condition. Replace if damaged.
11. Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.

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.

STORAGE

Block equipment securely for storage. Stored loader can fall and cause serious injury or death. Securely store loader and attachments to prevent falling. To help prevent injury caused by a falling implement, always:

1. Detach on a hard, level surface.
2. Keep children and bystanders away
3. Engage the tractor's parking brake before detaching from storage area.

To provide necessary balance, loader frame must be equipped with bucket or attachment before attaching or detaching from tractor, or when loader is in stored position.

1. Do not loosen hydraulic fittings or hoses while loader is in stored position.
2. Do not climb or lean on equipment stored on stand.



WARNING! YOUR RESPONSIBILITY

Restrict the use of this attachment to persons who read, understand and follow the warnings and instructions in this manual, the tractor's Operator's Manual and on the tractor and loader attachment. The safety labels found on the loader attachment are illustrated on the following page

SAFETY SYMBOLS

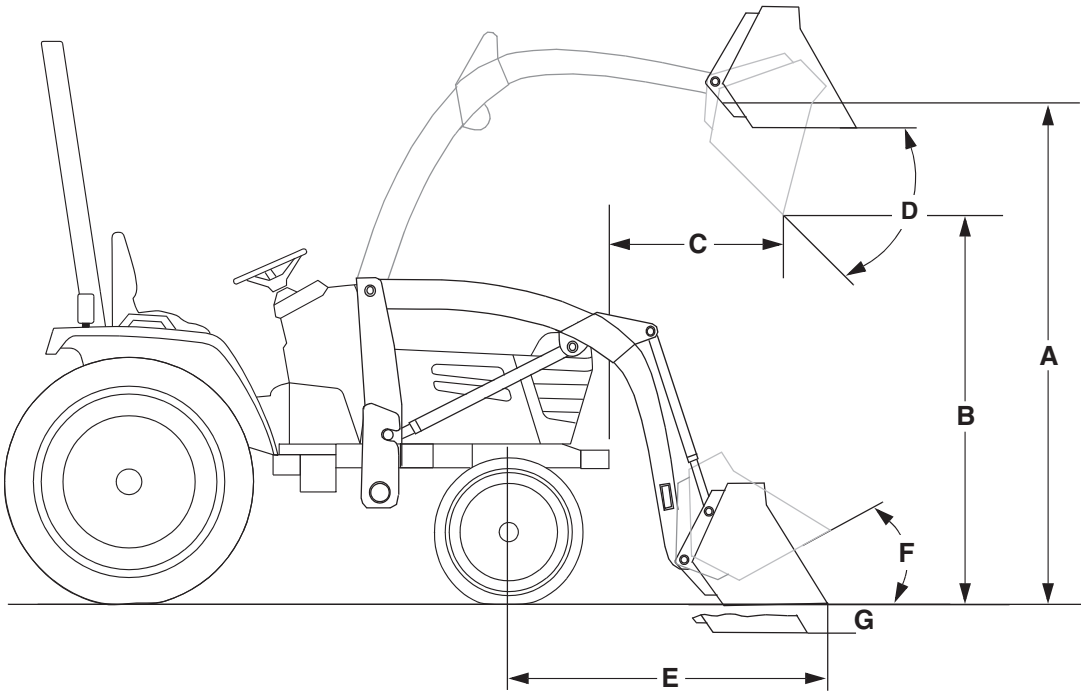
This page depicts and describes safety symbols that may appear on this product. Read, understand, and follow all instructions on the machine before attempting to assemble and operate.

Symbol	Description
	READ THE OPERATOR'S MANUAL(S) Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate
	WARNING— ROTATING BLADES Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
	WARNING—THROWN OBJECTS This machine may pick up and throw and objects which can cause serious personal injury.
	WARNING— SLOPE OPERATION Do not operate this machine on a slope greater than 15 degrees.
	WARNING— SLOPE OPERATION Do not operate this machine on a slope greater than 11 degrees.
	WARNING—THROWN OBJECTS This machine may pick up and throw and objects which can cause serious personal injury.
	DANGER — ROTATING BLADES To reduce the risk of injury, keep hands and feet away. Do not operate unless discharge cover or grass catcher is in its proper place. If damaged, replace immediately.
	WARNING— ROTATING BLADES Keep hands out of inlet and discharge openings while machine is running. There are rotating blades inside
	WARNING— ROTATING AUGER Do not put hands or feet near rotating parts, in the auger/impeller housing or chute assembly. Contact with the rotating parts can amputate hands and feet.
	BYSTANDERS Keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation.

SECTION 3: MODEL CL300 LOADER SPECIFICATIONS

A	Maximum Lift Height	96"
B	Clearance With Attachment Dumped.....	77"
C	Reach At Maximum Height	26"
D	Maximum Dump Angle.....	45°
E	Reach With Attachment On Ground.....	67"
F	Attachment Rollback Angle	25°
G	Digging Depth	4"
	Overall Height In Carrying Position	54"
	Length Of Attachment	18.06"
	Lift Capacity To Full Height	900 lbs.
	Breakout Capacity.....	2500 lbs.
	System Pressure Tested	1900 PSI
	Recommended Hydraulic Flow	4-7 GPM
	Lift Cylinder Bore.....	1-5/8"
	Bucket Cylinder Bore	2"
	Hose Working Pressure	3000 PSI

Bucket	Bucket Capacity	Weight
60"	9.0 cu. ft.	210 lbs.



SECTION 4: TO THE DEALER

Assembly and proper installation of this attachment is the responsibility of the Yanmar dealer. Read the instructions and safety precautions found in this manual carefully. Any and all front-end attachments installed on the tractor must first be removed in order to properly install the Front-end Loader.

SECTION 5: TO THE OWNER

Model CL300 Front-end Loader is designed for use ONLY with specific Yanmar tractor models. It will NOT fit nor operate safely or properly on or with any other tractor.

References to LEFT and RIGHT indicate the left and right sides of the tractor when facing forward in the operator's position. Reference to the FRONT indicates the grille end; to the REAR the drawbar end.

SECTION 6: CONTENTS

The front loader attachment components are listed below along with their part numbers. Assemblies are made up of more than one part and do not have a part number. Before beginning installation, lay all components out on a flat surface to assure everything is present. Throughout the manual the parts in the hardware pack will be identified by name, followed by their callout number in parenthesis, to aid in installation.

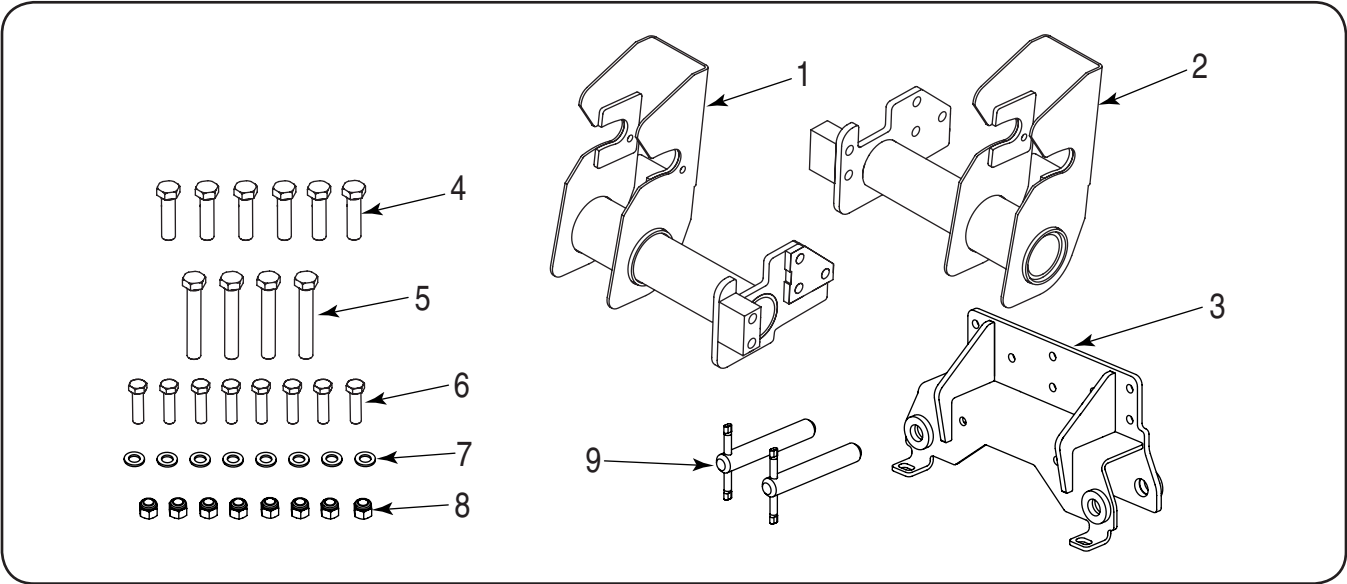


Figure 1

1. RH Mount	603-04627	1 pc.
2. LH Mount	603-04626	1 pc.
3. Front Mount Receiver	603-04629	1 pc.
4. Hx. Cp. Screw, M16-2.0 x 60	710-04700	6 pc.
5. Hex Cap Screw, M16-2.0 x 100	710-04701	4 pc.
6. Hex Cap Screw, 1/2-13 x 1.75 GR5	710-3067	8 pc.
7. Flat Washer	736-0192	8 pc.
8. Hex Lock Nut, 1/2-16 GR5	712-3083	8 pc.
9. Mounting Pin	711-05034A	2 pc.
Not Shown - Loader Bucket	603-04636	1 pc.
Not Shown - Complete Mast & Boom Assembly	N/A	1 pc.

SECTION 7: UNPACKING THE LOADER

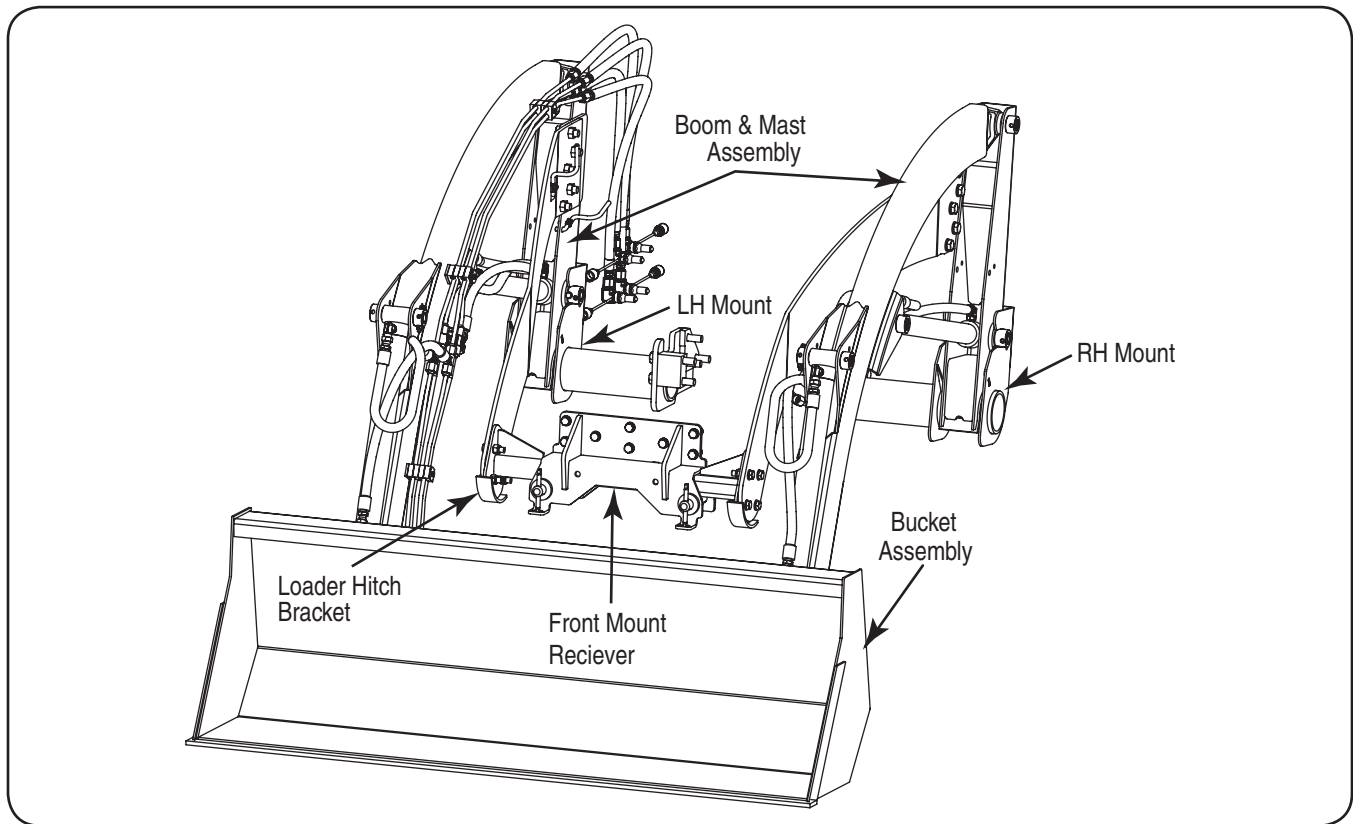


Figure 2

Move the tractor and front loader to an area large enough to accommodate both, and with access to an overhead lift. To uncrate the loader and all components, refer to Figure 2 and proceed as follows:

- Carefully remove the top and sides of the shipping crate and carefully cut off the plastic wrapping.
- Remove the hardware pack from the shipping pallet. Check the contents of the hardware pack against the list on page 8.
- Carefully remove and discard any banding wire, clamps, or screws securing the loader bucket, RH and LH mounts, front mount receiver, and the boom and mast assembly to the shipping pallet.
- Remove the front mount receiver from the assembly. by removing the two lynch pins and withdraw the mounting pins from the front mount receiver. Temporarily set aside the front mount receiver and pins.
- Remove the RH and LH mount assemblies and set aside.

NOTE: Usage of an overhead lift apparatus is strongly recommended to support and lift the boom and mast assembly when performing the INITIAL installation of the front loader. If an overhead lift is not available, the aid of at least one assistant will be necessary.

If Using an Overhead Lift

NOTE: When positioning the lifting devices, use care to avoid damage to the hydraulic lines, while also maintaining the balance of the boom and mast assembly.

If using lift straps and an overhead lift, position the straps around the boom and mast assembly so that the assembly is balanced when lifted from the shipping pallet.

- Carefully lift the loader assembly off the shipping pallet.

If an Overhead Lift is Not Available

- With the aid of at least one assistant, carefully maneuver the loader assembly off the shipping pallet.

Carefully cut the shipping tie securing the free ends of the loader hydraulic hoses to the right end of the loader hitch bracket. Remove the packaging material from the hydraulic fittings on the ends of the hoses.

SECTION 8: INITIAL INSTALLATION TRACTOR PREPARATION

Remove the front weight bracket from the front of the tractor by removing the six hex screws and nuts securing it to the front frame. Store the front weight bracket for reinstallation when removing the loader and attaching rear mounted equipment.

Installing the LH and RH Mounts

NOTE: The LH and RH mounts are heavy and awkward to handle. Usage of a lifting device (e.g. floor jack), or the aid of an assistant, while positioning the tower mounts for installation is recommended.

Install the RH and LH mounts as follows:

- Look at the RH mount (1) to note the configuration of the holes on the mounting plate of the assembly.
- From the right side of the tractor, locate the three holes in a triangular pattern on the tractor's clutch housing, and the two vertical holes on the front frame. Remove the protective plugs from the holes. See Figure 3.

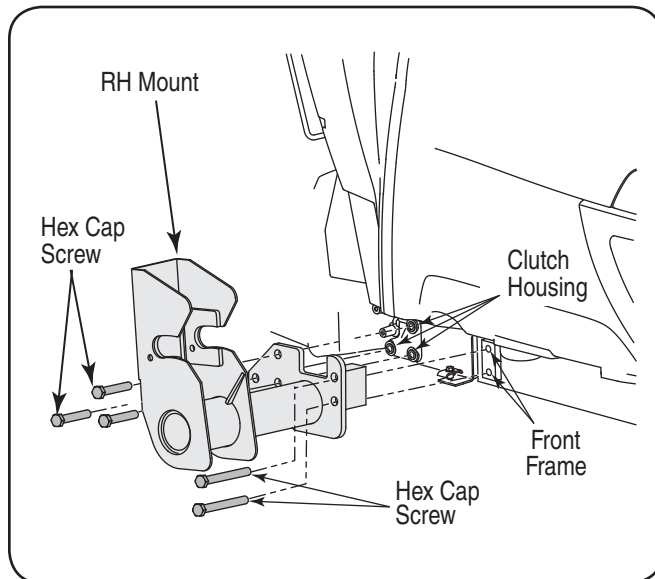


Figure 3

NOTE: When positioning the RH mount on the tractor, be especially careful to avoid damaging the small hydraulic lines running along the bottom of the frame. Temporarily move the rubber hose out of the way.

- Lift the RH mount (1) and carefully place against the tractor, aligning its holes with the holes in the tractor's clutch housing and frame.
- Insert three hex cap screws (5) through the RH mount and thread into the clutch housing. Insert two hex cap screws (6) through the front of the mount and thread into the frame. In a staggered pattern, evenly tighten the five hex cap screws to secure the RH mount. Torque the screws to 145 - 167 ft. lbs. (196-225 N•M). Refer to Figure 3.
- From the left side of the tractor, locate the mounting holes and remove the protective plugs.

- Lift the LH mount (2) and carefully place against the tractor, aligning its holes with the holes in the tractor's clutch housing and frame.
- Insert three hex cap screws (5) through the LH mount and thread into the clutch housing. Insert two hex cap screws (6) through the front of the mount and thread into the frame. In a staggered pattern, evenly tighten all hex cap screws to secure the LH mount. Torque the screws to 145 - 167 ft. lbs. (196-225 N•M). Refer to Figure 3.

Installing the Front Mount Receiver

If not already done, remove the two lynch pins and withdraw the mounting pins to separate the front mount receiver from the loader hitch bracket (Refer to Figure 1).

- Slide a flat washer (8) onto each of the eight hex cap screws (7). Refer to Figure 4.

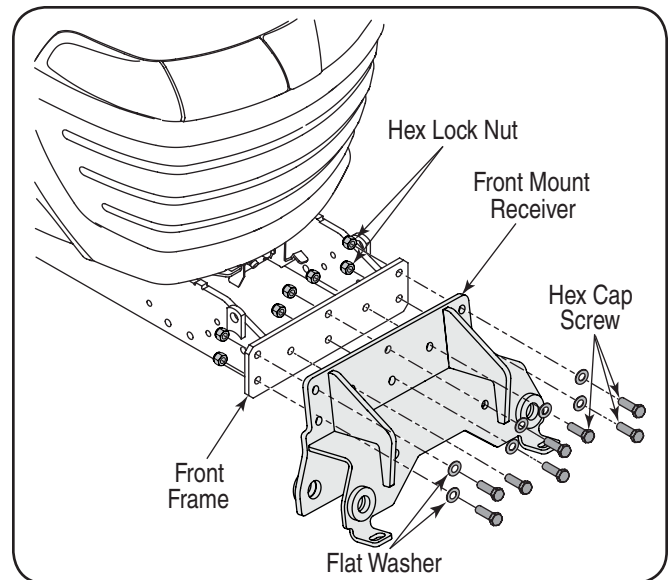


Figure 4

- Position the front mount receiver (3) so that its open channel is facing downward. Then place the front mount receiver against the front of the tractor frame (where the front weight bracket was previously removed).
- Align the eight holes in the front mount receiver with the corresponding holes in the front frame. While holding the front mount receiver in position, insert eight hex cap screws w/ washers through the front mount receiver and tractor frame. See Figure 4.
- Thread a hex lock nut (9) onto each hex cap screw. In a staggered pattern, evenly tighten all hex cap screws and lock nuts. Torque the fasteners to 60-70 ft. lbs. (81-94 N•M).

FIRST INSTALLATION OF LOADER ON TRACTOR

The initial installation of the front loader onto the tractor can be accomplished by utilizing an overhead lift (strongly recommended), or by pre-charging the loader hydraulic cylinders before beginning the installation procedures.

The instructions in this sub-section apply only to the initial installation. Once the hydraulic lines and cylinders have been charged with oil during the initial installation, the dismounting procedure should leave the loader in position to be re-mounted.



WARNING! Some installation steps require the tractor to be running and driven. Use caution when completing these steps. Engage the parking brake before dismounting the tractor. If working with an assistant, make certain that person is made aware that the tractor or any part of the loader is about to be moved.

Using an Overhead Lift For Initial Installation

To complete the initial installation of the loader using an overhead lift, proceed as follows:

- Using the overhead lift apparatus, raise the loader so that the bottoms of the masts are high enough to clear the front axle/tire of the tractor and the tubular bars of the RH and LH loader mounts. Refer to Figure 5.

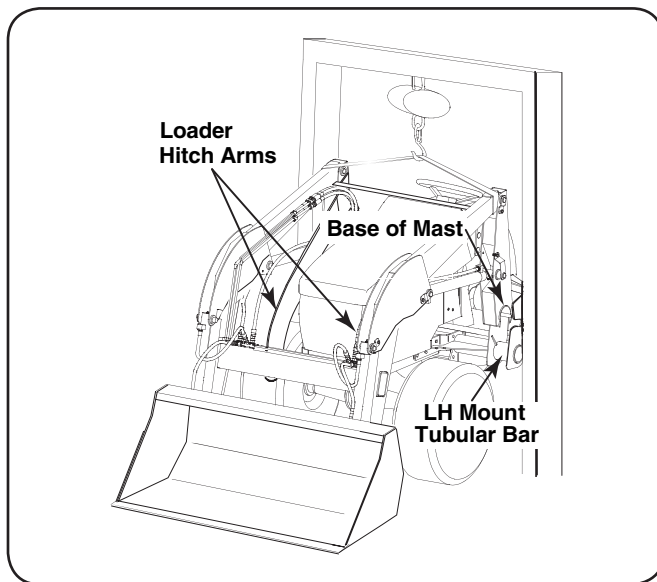


Figure 5

- Slowly drive the tractor forward while guiding the bottoms of masts into the RH and LH mounts. Refer to Figure 6. Carefully lower the overhead lift to set the notches at the bottom of the masts partially onto the tubular bars of the mounts.
- Stop the tractor engine and set the tractor's parking brake before leaving the operator's seat. Proceed to "Installing the Front Loader" in this section.

Pre-Charging Cylinders for Initial Installation

If an overhead lift is not available, the front loader cylinders can be used to position the loader for installation. To position the loader, proceed as follows:

- Start the tractor and carefully drive the tractor to position it along the right side of the front loader, facing in the opposite direction of the loader.

NOTE: Stop the tractor engine and set the tractor's parking brake before leaving the operator's seat.

- Remove the four protective caps from the male couplers at the free ends of the hydraulic hoses.
- Locate the color coded protective plugs in the female hydraulic couplers on the lower right side of the tractor, just in front of the right/rear tire. Refer to Figure 6.

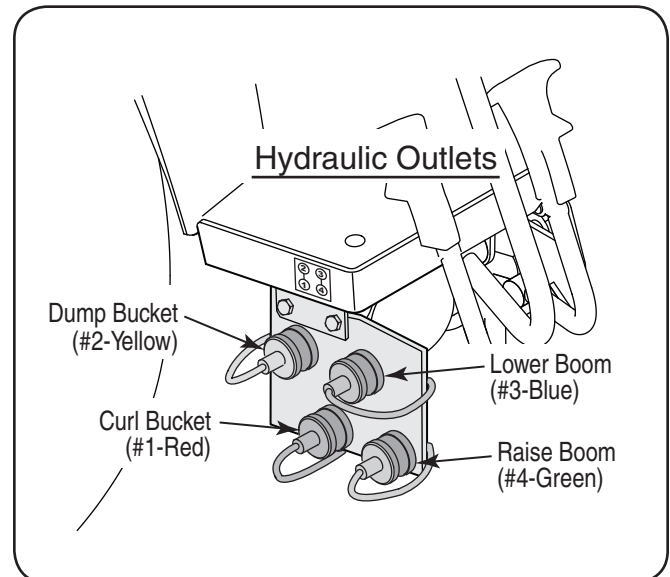


Figure 6

- Using the color coded plugs and matching color coded washers on the loader hoses to guide you, remove the plugs and connect each loader hose to the appropriate hydraulic coupler. Refer to Figure 6.

NOTE: If for any reason the color coded plugs of the outlets and/or caps and washers of the hoses are unavailable or incorrect, follow the routing of each hydraulic hose/tube to the loader cylinders to determine the loader connection of each hydraulic line. Use the following information to determine the appropriate hose to hydraulic outlet connection. Working from the right side of the tractor, facing the hydraulic outlets, proceed as follows:

Outlet #1 (lower left) - connect the hydraulic line from the piston ends of the bucket cylinders (roll back bucket).

Outlet #2 (upper left) - connect the hydraulic line from the cylinder body ends of the bucket cylinders (dump bucket).

Outlet #3 (upper right) - connect the hydraulic line from the piston ends of the boom cylinders (lower boom).

Outlet #4 (lower right) - connect the hydraulic line from the cylinder body ends of the boom cylinders (raise boom).

- Check for ties that may be installed end to end around both of the boom cylinders. Cut and remove the ties if present.

NOTE: Re-start the tractor and perform the hydraulic test described below in “Checking Implement Control Lever Operation” to assure that all implement control lever movements result in the loader movements described. If loader movements do not respond correctly, turn the tractor’s engine off, set the parking brake and recheck all hydraulic connections as described above. Loader control movements must be correct before proceeding.

NOTE: If you were unable to connect the pistons of the two bucket cylinders to the bucket rear mounting brackets as instructed earlier, use the tractor’s implement control lever to extend the pistons as needed and connect the cylinders now.



WARNING! Use extreme caution when performing the loader boom cylinder charging procedure.

NOTE: For packaging purposes the two boom cylinders are fully collapsed. This results in the loader masts being positioned beyond their normal vertical position, which causes the loader’s center of gravity to be shifted rearward of normal. Consequently the loader hitch arms may not pivot downward when initially extending the boom cylinders pistons. When performing the initial priming of the boom cylinders, it will be necessary to apply downward force on the front of the bucket (e.g.; placing weight on bucket shave plate; an assistant applying downward pressure on the bucket) to pivot the hitch arms downward and raise the loader masts.

- While observing the hoses to ensure they do not become pinched or stretched, slowly and carefully move the implement control lever rearward to extent the boom cylinders. The loader hitch arms should pivot downward toward the ground and raise the bottoms of the masts.
- Continue to carefully extend the boom cylinders (and roll back the bucket if necessary) until the center points of the support plates on the bottom of the loader hitch bracket at the front of loader hitch arms are resting on the ground (Refer to Figure 11). The support plates and bucket should be supporting the loader and the bottom of each mast should now be higher than the tubular bars of the loader mounts.
- Stop the tractor engine and engage the parking brake. Disconnect the loader hoses from the hydraulic couplers by pushing inward the locking collars of the tractor’s female hydraulic couplers.
- Start the tractor and drive to the rear of the front loader. Align with the opening between the loader masts, and slowly drive the tractor forward while guiding the bottoms of masts into the RH and LH mounts.
- Stop the tractor engine and engage the parking brake.

Checking Implement Control Lever Operation

The tractor’s implement control lever is used to control the movements of the loader. Perform the following test to make certain that the loader hydraulic hoses and tubes are correctly connected. All implement control lever movements should result in the loader movements described in this sub-section.

- Using the color coded plugs and matching color coded washers on the loader hoses to guide you, remove the plugs and connect each loader hose to the appropriate hydraulic coupler. If for any reason the color coded plugs of the outlets and/or washers of the hoses are unavailable or incorrect, refer to the hose routing information on page 12.



WARNING! Always comply with all Safety Rules before starting the tractor.

- Start the tractor’s engine and operate at a low/safe RPM.
- Shift the tractor’s hydraulic lock lever to the center position. See Figure 7 and refer to the tractor Operator’s Manual.

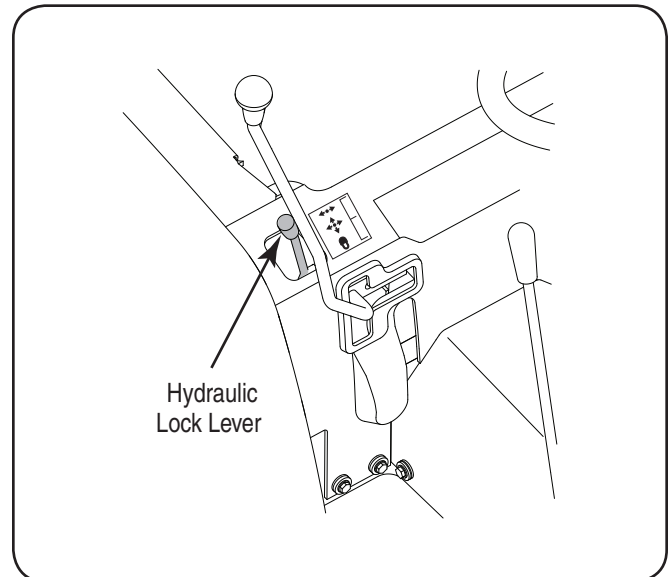


Figure 7

- By SLIGHTLY moving the implement control lever in the various directions, check that all control lever positions correctly operate the loader movements as indicated in Figure 8.

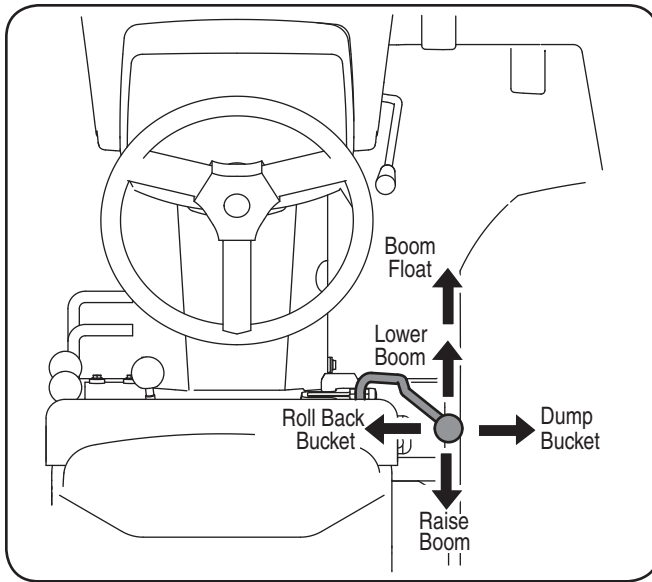


Figure 8

NOTE: Move the control lever only slightly.

- If loader movements do not respond correctly, turn the tractor's engine off, set the parking brake and recheck all hydraulic connections. Loader control movements must be correct before proceeding.

Initial Installation of Loader on Tractor

The control lever will be used to aid in mounting the loader to the tractor. To complete the initial installation, proceed as follows:

- If an overhead lift was used to position the loader, lower the lift to make certain it is no longer supporting the loader. Do not remove the attaching devices yet. Re-start the tractor engine.

- While observing the base of the masts, slowly push the implement control lever forward to lower the boom, and to the right to dump the bucket. Drive the tractor forward (as needed) to settle the masts onto the tubular bars of the RH and LH mounts. Refer to Figure 9.

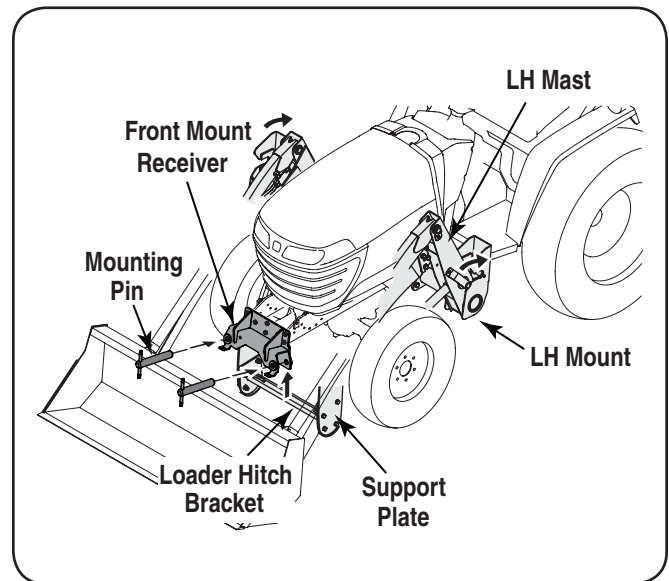


Figure 9

- When the masts are firmly settled into the tower mounts, continue to slowly push the control lever forward, and to the right, to raise the loader hitch bracket upward into the front mount receiver. As the loader hitch bracket is raised, the boom cylinder pivot pins should also rotate back into the notches of the RH and LH mounts. Refer to Figure 9. Drive the tractor forward as necessary.

NOTE: The loader hitch bracket must fit squarely in the front mount receiver to allow installation of the mounting pins. If the hitch bracket does not fit squarely in the channel of the front receiver, loosen the hex screws and lock nuts fastening the loader hitch bracket to the RH and LH loader hitch arms. Again, use the implement control lever to raise the loader hitch bracket fully upward in the front mount receiver. Re-tighten hex screws and lock nuts to secure the loader hitch bracket.

- When the strut of the loader hitch bracket is fully up inside the front mount receiver, re-insert the two mounting pins removed earlier. Secure the mounting pins by sliding the handles into the bracket receptacle at the bottom of the loader bracket.
- Disconnect the overhead lift apparatus from the front loader.

- Route the hydraulic hoses forward along the inside of the RH loader hitch arm and place the hoses between the loader arm and the hook of the hose retainer rod; then loop the hoses rearward and place the hoses between the RH loader mast and the second hose retaining rod. Refer to Figure 10.

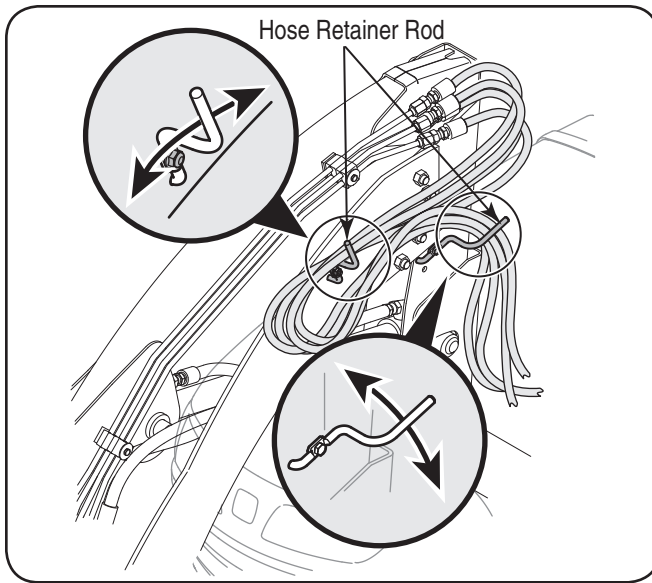


Figure 10

- Using the hydraulic control lever, fully cycle all cylinders several times to purge air from the hydraulic system. After air has been purged from system, roll the bucket back and lower to the ground.
- Check the tractor's transmission oil level as instructed in tractor Operator's Manual. Refill the transmission to the full mark before operating the tractor and/or the loader. When adding oil to the tractor transmission, always use the type of oil specified for the tractor. NEVER MIX OIL TYPES.

SECTION 9: DISMOUNTING AND MOUNTING THE LOADER

DISMOUNTING THE LOADER



WARNING! A stored loader can fall and cause serious injury or death. Securely store loader and attachments on a hard level surface to prevent falling.



WARNING! To provide necessary balance, the loader bucket must be installed before attaching or detaching from tractor, or when loader is in stored position.

NOTE: The bucket must be installed to remove and re-mount the loader.

Move the tractor and loader to a firm, level storage site.

- Using the implement control lever, level the bucket and lower it to the ground to take the weight off the mounting pins securing the loader hitch bracket in the front mount receiver. Set the tractor's parking brake.
- Withdraw the two mounting pins that secure the loader hitch bracket in the front receiver. Refer to Figure 9.
- Carefully use the control lever to raise the boom and lower the loader hitch bracket out of the front receiver.
- Continue raising the boom until center points of the support plates on the bottom of the loader hitch bracket are resting on the ground, the loader hitch arms and bucket are supporting the weight of the loader, and the bottom of the RH and LH masts have lifted off the tubular bars of the RH and LH mounts. Refer to Figure 9.

- Stop the tractor engine and engage the parking brake.
- Disconnect the loader hoses from the tractor's hydraulic couplers by pushing inward the locking collar on each female coupler of the tractor. Leave the hoses in the hose retainer rod.
- Re-install the protective plugs in the tractor's hydraulic couplers, and push the protective caps onto the male couplers of the loader hoses.
- Re-start the tractor and carefully back the tractor away from the front loader.
- Re-install the mounting pins in the front mount receiver and secure with the two lynch pins.



WARNING! Do not climb or lean on the loader while it's in a stored position. Keep children and bystanders away from the stored loader.

MOUNTING THE LOADER

With completion of the initial installation and operation, all loader cylinders should be filled with hydraulic oil and should maintain the position of the boom and mast when dismounted.

NOTE: If the loader is in storage for an extended period of time, it may become necessary to again raise the base of the masts to re-mount the loader. If this occurs, drive the tractor along the right side of the loader, connect the loader hoses, and use the control lever to raise the masts as described in "Pre-Charging Cylinders for Initial Installation" earlier in this manual.

Mount the loader as follows:

- Start the tractor; then carefully drive the tractor between the masts, loader hitch arms, and boom assembly. Slowly drive the tractor forward while guiding the base of each mast into the RH and LH mounts.
- Stop the tractor engine and engage the parking brake.
- Remove the two lynch pins and withdraw the mounting pins from the front mount receiver. Refer to Figure 9.
- Using the color coded plugs and matching color coded washers on the loader hoses to guide you, remove the plugs and connect each loader hose to the appropriate hydraulic coupler.
- Re-start the tractor engine.
- While observing the base of the masts, slowly push the implement control lever forward to lower the boom and to the right to dump the bucket. Drive the tractor forward (as needed) to settle the masts onto the tubular bars of the RH and LH mounts.
- When the masts are firmly settled into the RH and LH mounts, continue to slowly push the control lever forward, and/or to the right, to raise the loader hitch bracket upward into the front mount receiver. As the hitch bracket is raised, the boom cylinder pivot pins should also rotate back into the notches of the RH and LH mounts. Refer to Figure 9. Drive the tractor forward as necessary.
- When the loader hitch bracket is fully up inside the front mount receiver, re-insert the two mounting pins removed earlier. Secure the mounting pins with the two lynch pins.
- Place the hydraulic hoses in the hose retainer rod on the RH loader hitch arm if not already in the retainer.
- Use the implement control lever to raise the bucket off the ground.

SECTION 10: OPERATION

PRE-OPERATION CHECK LIST (OPERATOR'S RESPONSIBILITY)

The operator should perform the following check list before operating loader.

- Review and follow all safety rules and safety labels on pages 3 through 5.
- Check that all safety labels are installed and in good condition. Replace if damaged.
- Check that equipment is properly and securely attached to tractor, and that the bucket is securely attached to the loader using the pins and retaining hardware supplied. Check that all hardware (including all screws, nuts and pins) are properly installed and secured.
- Check all lubrication points and grease as instructed on Page 23 of this manual.
- Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- Make sure tractor ROPS and seat belt are in good condition. Never operate the loader without the tractor ROPS installed and in the up position, and the seat belt securely fastened around you lap.
- Do NOT allow riders.

TRACTOR BALLAST

If installing only the front loader (without the backhoe), weight must be added to the rear of the tractor. The most common methods of adding weight are mounting the rear weight box (Mod. No. 59A40013727) and/or filling the rear wheels with liquid ballast.

Rear Weight Box

Requires a minimum total weight of 500 pounds in a rear weight box, with the center of gravity of the weight positioned approximately 41" from the center of rear axle and 20" above ground. If the weight box is positioned closer to the rear axle or carried higher, additional weight must be added to effectively counterbalance the front loader.

Liquid Ballast

A water solution of calcium chloride may be used as liquid ballast in each rear tire. Refer to the tractor operator's manual for information on adding liquid ballast to the rear tires. Liquid ballast alone may not provide adequate counterbalance to the front loader.

Because special equipment and a familiarity with the practice is required, only a qualified tire technician should perform this procedure. Consult with your Yanmar dealer about having liquid ballast added to your tires, and for any special maintenance instructions after the procedure is performed.

USING IMPLEMENT CONTROL LEVER

The tractor's implement control lever is located at the front/right corner of the operator's seat and is used to control the movements of the loader. All implement control lever movements should result in the loader movements described below. If loader movements do not respond correctly, turn the tractor's engine off, set the parking brake and recheck all hydraulic connections as described in "Pre-Charging Cylinders for Initial Installation" in the "Initial Installation" section earlier in this manual.

While seated in the operator's seat of the tractor, use the implement control lever to control the loader movements as follows (Refer to Figure 11):

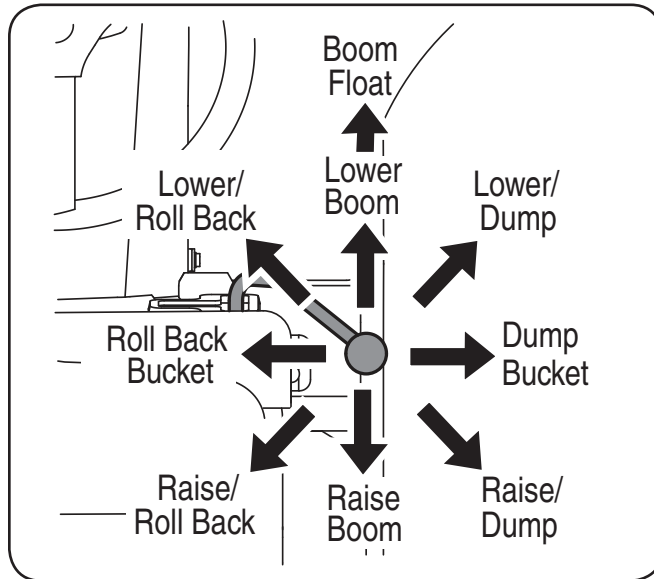


Figure 11

- Move the control lever rearward to raise the loader boom.
- Move the control lever to the right to dump bucket.
- Move the control lever to the left to roll back bucket.
- Move the control lever rearward and to the right to raise the boom and dump the bucket.
- Move the control lever rearward and to the left to raise the boom and roll back the bucket.
- Move the control lever forward to lower the loader boom.
- Move the control lever forward and to the right to lower the boom and dump the bucket.
- Move the control lever forward and to the left to lower the boom and roll back the bucket.
- Move the control lever fully forward past the detent to place the boom in the float position. The boom will float and allow the bucket will follow the contour of the ground. The bucket control cannot be used when the lever is in the float position.

Note: The loader is equipped with a regenerative hydraulic circuit. The further to the right the control lever is moved, in any of the Dump positions, the faster the bucket will travel.

OPERATING THE LOADER



WARNING! Do not operate unless all control lever positions function as instructed in Figure 10.

The loader should be operated with the tractor engine running at a safe RPM. Excessive speeds are dangerous, and may cause bucket spillage and unnecessary strain on the tractor and loader.

NOTE: To prevent possible damage to the tractor transmission, engage the 4WD only when additional traction is needed while operating in loose soil or on slippery surfaces, or when descending a slope. Disengage the 4WD when operating on firm, flat surfaces or when operating at high speeds. Refer to the tractor operator's manual for instructions on using the 4WD feature.

- Approach and enter the pile with a level bucket. See Figure 12.

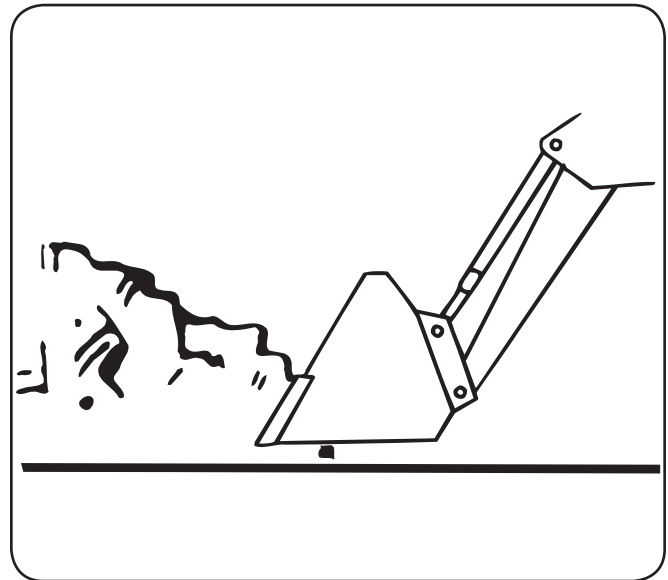


Figure 12

The lift and rollback of the bucket will increase efficiency because maintaining a level bucket throughout the lifting cycle resists bucket lift and increases breakaway effort. See Figure 13.

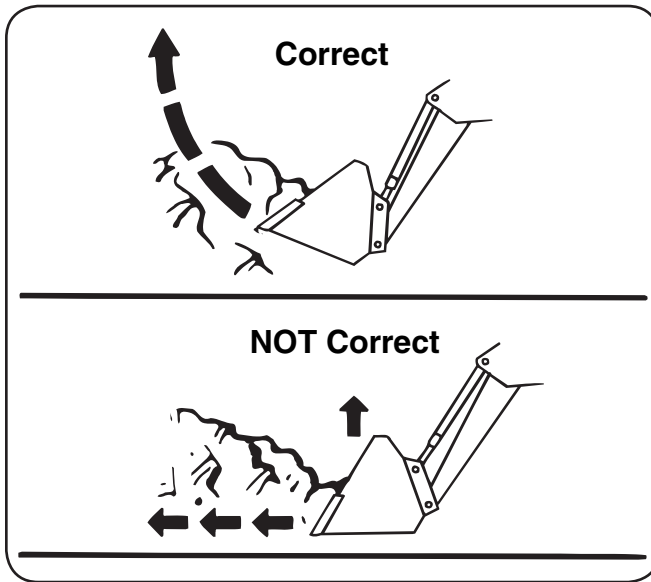


Figure 13

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.

Lifting the Load

When lifting the load, keep the bucket positioned to avoid spillage. See Figure 14.

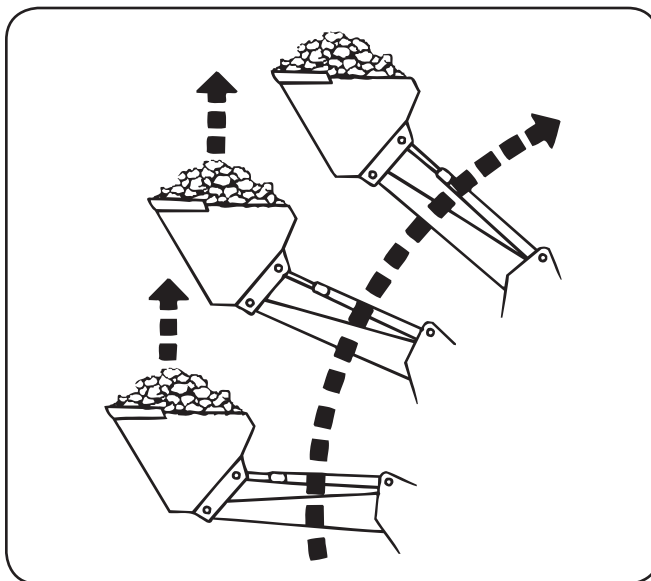


Figure 14

NOTE: If you should discover that your tractor requires increased stability for a particular application, contact your Yanmar dealer about additional weighting for the rear of the tractor.

Carrying the Load

Position the bucket below the level of the tractor hood for maximum stability and visibility, whether the bucket is loaded or empty. See Figure 15.

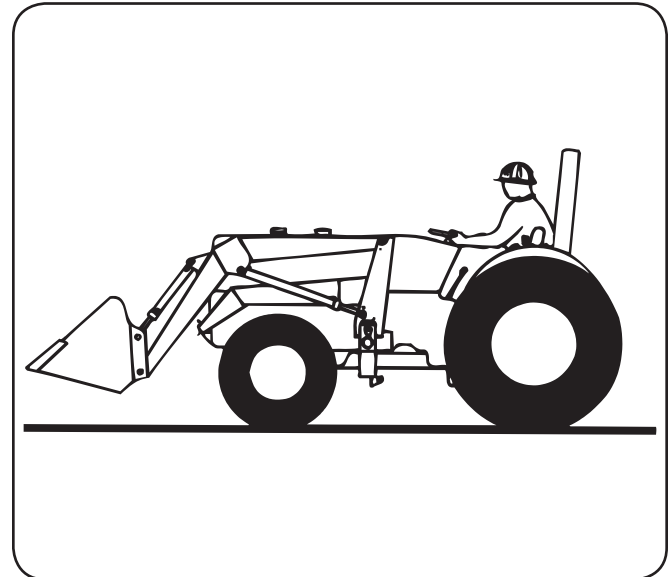


Figure 15

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. See Figure 17.

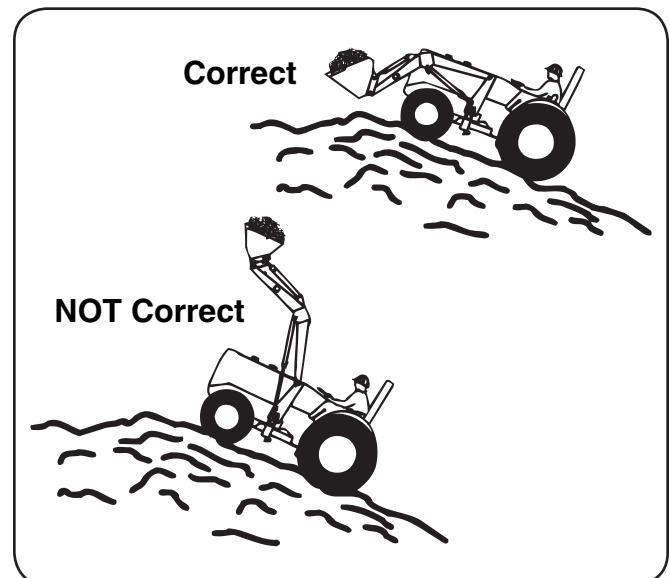


Figure 16



WARNING! Do not attempt to lift bucket loads in excess of the loader capacity.



WARNING! Avoid injury or death from rollover accidents:

- Move and turn tractor at low speeds.
- Watch for hidden hazards such as holes, ditches, and other obstructions which may cause tractor and loader to tip over.
- Carry loads close to the ground to aid visibility and lower center of gravity for improved stability.
- Balance loads so weight is evenly distributed and load is stable.
- Be extra careful when operating on a slope.
- Do not operate on steep slopes.
- Do not stop, start or change directions suddenly on slopes.
- Tractor seat belt and Roll-Over Protective Structure (ROPS) must be present. Keep seat belt securely fastened and keep ROPS systems in “up” position at all times.

NOTE: When transporting the load, keep the bucket as low as possible to avoid tipping, in case a wheel drops in a rut. Refer to Figure 16.

Dumping the Bucket

Lift the bucket high enough to clear the side of the vehicle. Move the tractor in as close as possible, then dump the bucket. See Figure 17.



Figure 17

Lowering the Bucket

After the bucket is dumped, back away from the vehicle while lowering and rolling back the bucket. See Figure 18.

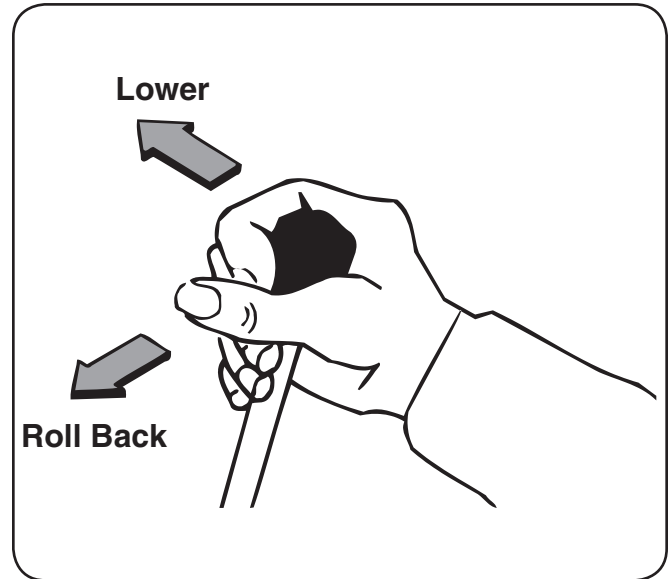


Figure 18

Operating with a 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. See Figure 19.

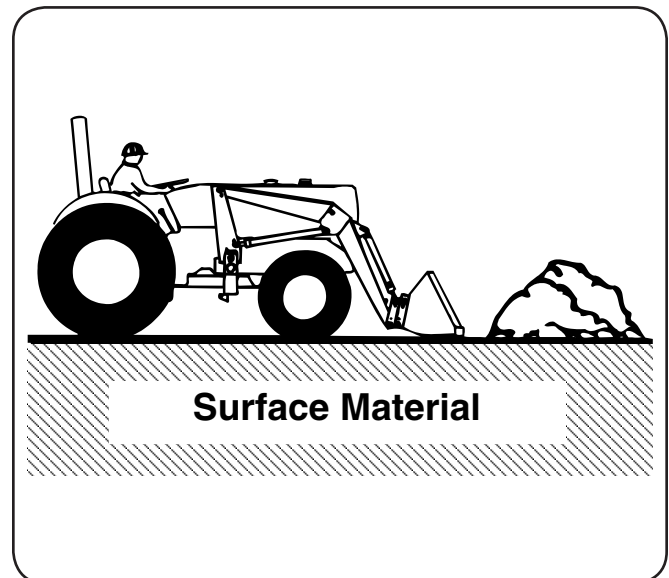


Figure 19

NOTE: 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.

Loading from a Bank

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.

It's important to keep the bucket level when approaching a bank or pile. This will help prevent gouging in the work area. See Figure 20.

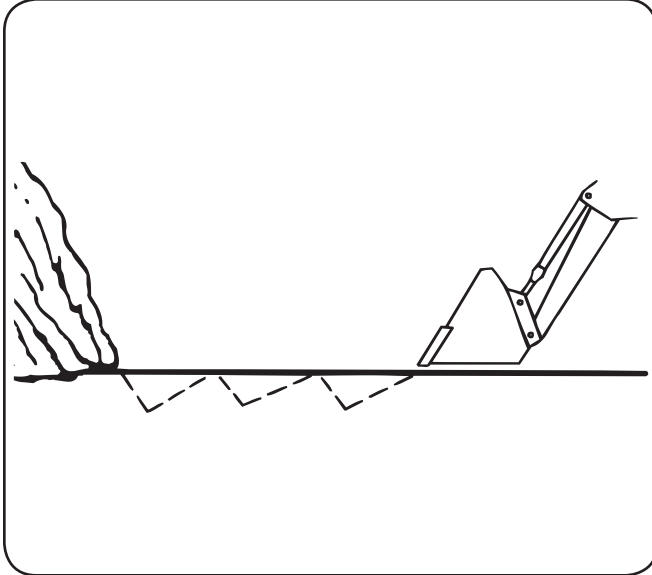


Figure 20

Peeling and Scraping

Use a slight bucket angle, travel forward, and hold the lift control forward to start the cut. Make a five- to eight-inch angle cut and break-out cleanly. See Figure 21.

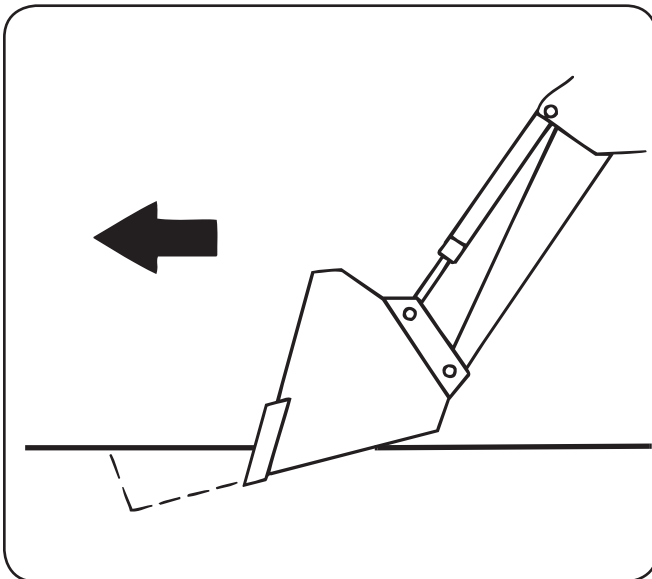


Figure 21

With the bucket level, start a cut at the notch approximately four inches 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. See Figure 22.

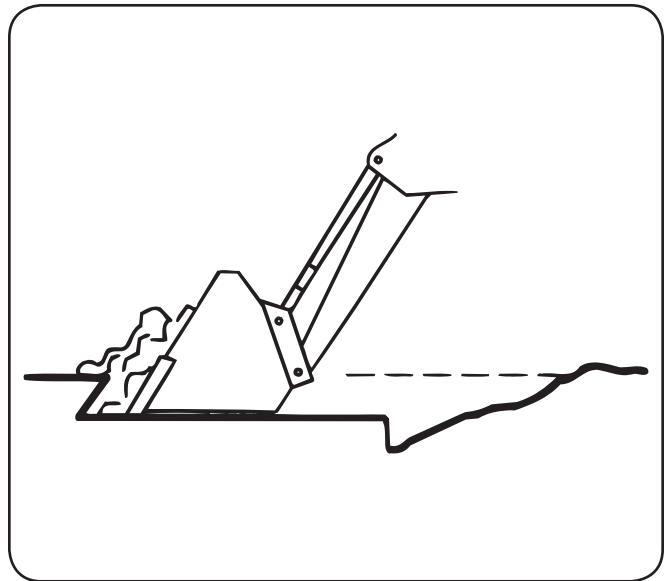


Figure 22

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 easier loading, minimize the angle of turn and length of run between pile and spreader. See Figure 23.

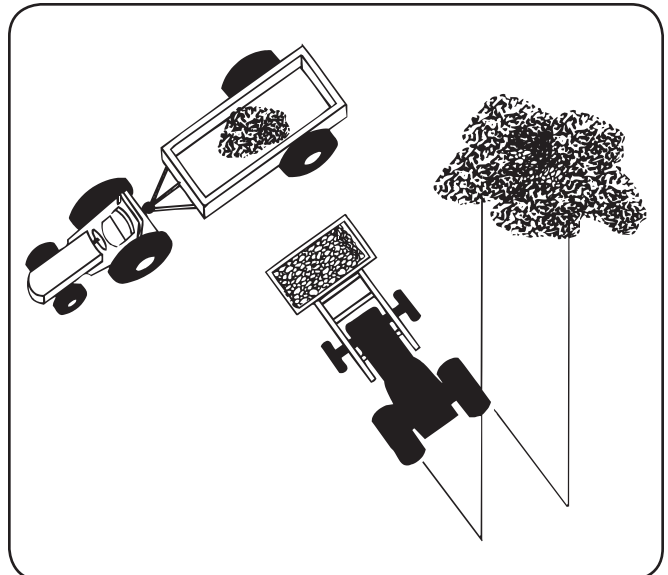


Figure 23

Backgrading

Backgrade occasionally with a loaded bucket to keep the working surface free of ruts and holes. Also, hold the control lever forward so the full weight of the bucket is scraping the ground. Use the heel of the bucket. See Figure 24.

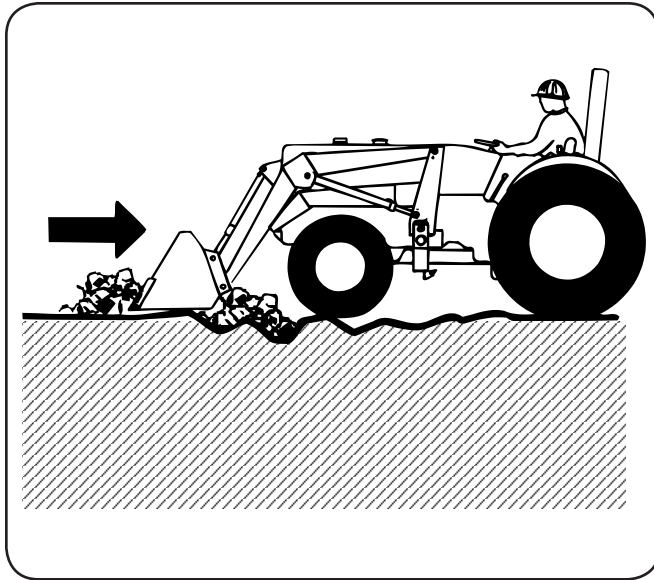


Figure 24

Backfilling

Approach the pile with a flat bucket. Do not use the bucket in the dump position for bulldozing. This method will impose severe shock loadings on the dump linkage, the tilt cylinder, and the tractor. Refer to Figure 26.

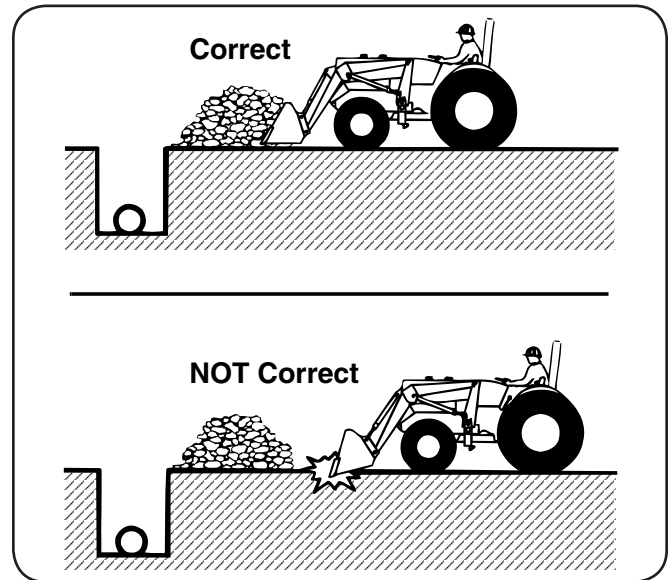
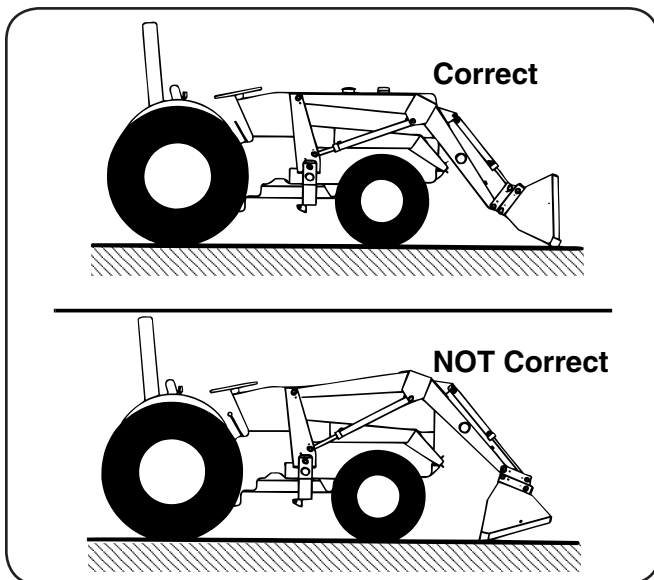


Figure 26

Backblading

Position the bucket at an angle of less than 45° and backup slowly. See Figure 25.



Backgrading or backblading with bucket tilted too far will result in damage to tilt cylinders and void warranty. See Figure 25.

- Leave dirt in the bucket because dumping on each pass wastes time.
- 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.
- Pile dirt on the high side for easier backfilling on a slope.

Handling Objects



WARNING! Avoid injury or death from falling objects. This loader is not equipped with any method to prevent objects such as round bales, posts, logs, etc. from rolling back onto operator.



WARNING! Do not carry large objects that can fall out of loader bucket into operator zone.



WARNING! Never lift loader higher than necessary to clear the ground when moving.

SECTION 11: MAINTENANCE

LUBRICATION

Daily

- Check the level of hydraulic oil in tractor before starting each day's operation. If necessary, add oil as recommended in your tractor owner's manual.

NOTE: When adding oil to the tractor reservoir, always use hydraulic oil as specified in the tractor operator's manual.

- Lubricate after every eight hours of operation (See Figure 27):

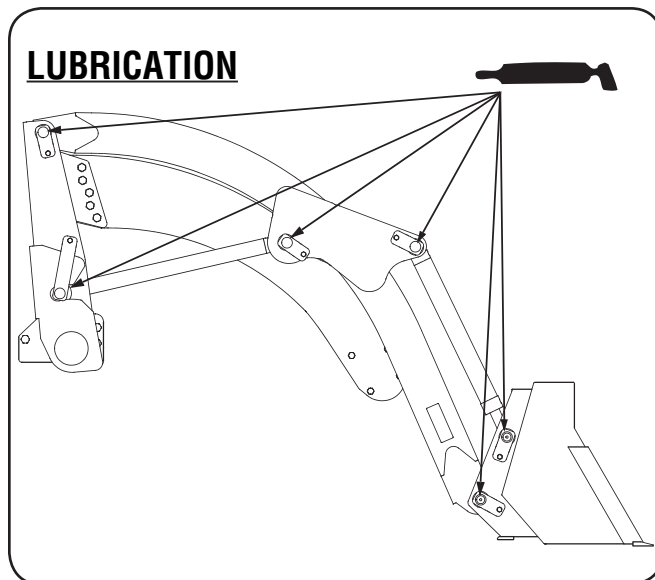


Figure 27

- Apply lubrication to the grease fitting in the hub at the mast end (rearward end) of each boom arm.
- Apply lubrication to the grease fittings at the each end of both boom lift cylinders.
- Apply lubrication to the grease fitting in the hub at the upper end of each bucket cylinder.
- Apply lubrication to the grease fittings in the outer end of all four pivot pins of the loader bucket.

GENERAL MAINTENANCE

After every eight hours of operation, check all hardware and tighten where required.

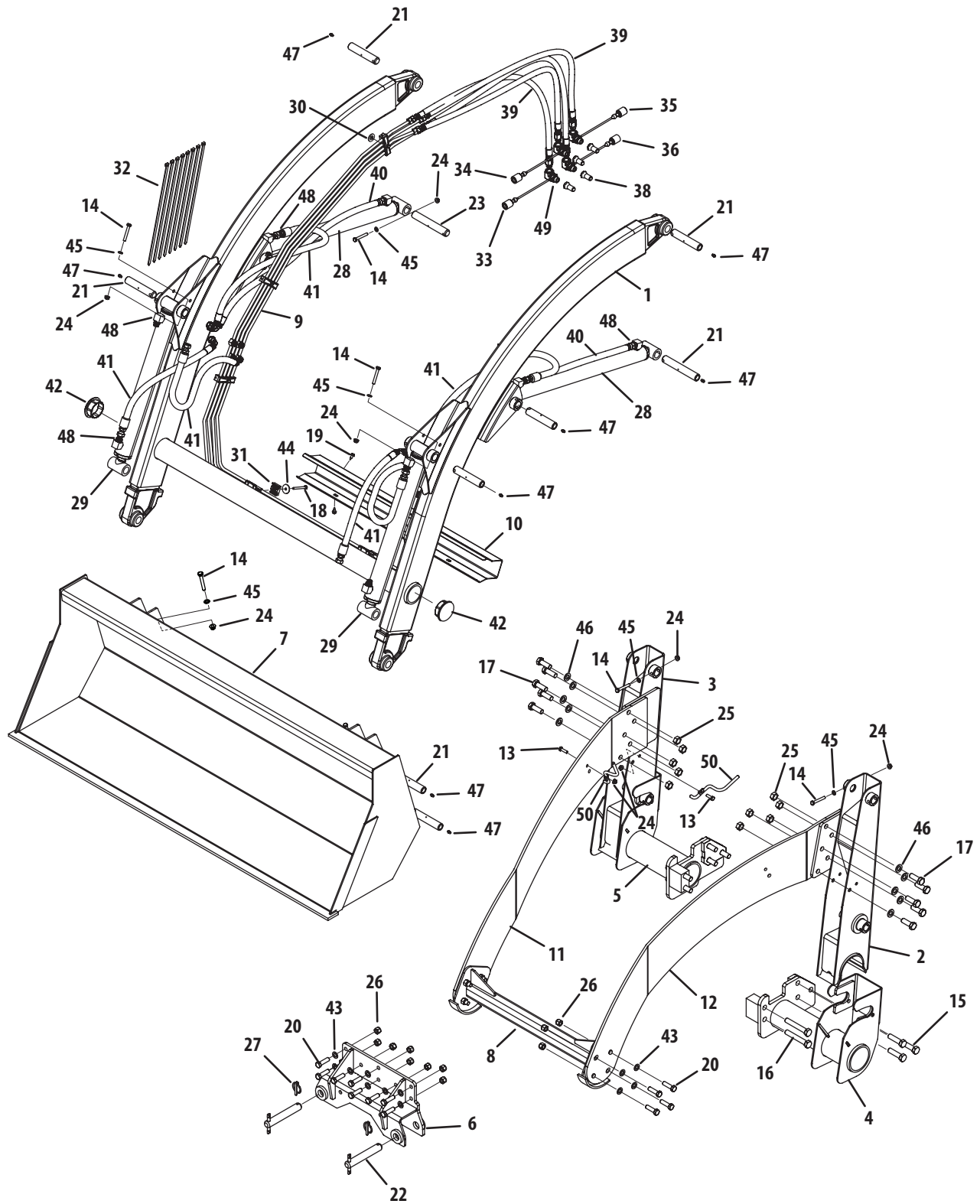
Replace hoses immediately if they are damaged by a cut or scrape, extruded at the fittings, or leaking. Hydraulic oil leaks should be repaired promptly to avoid loss of oil and serious personal injury from escaping oil.

SECTION 12: TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Jerky Operation	- Air in hydraulic system - Cold hydraulic oil - Low hydraulic oil level - Poor oil circulation - Worn or damaged hydraulic pump - Air leak in pump inlet line	- Cycle cylinders several times to purge system of air. - Run engine to warm oil. - Add oil to level specified. - Change oil filter and clean screen in tractor hydraulic system. - Repair or replace pump. - Check, tighten or replace inlet line.
Slow Operation	- Faulty valve - Air in hydraulic system - Hydraulic oil too heavy - Oil filter plugged - Slow engine speed - Cylinder piston seals leaking - Valve out of adjustment or malfunctioning - Tractor hydraulic pump malfunctioning - Hydraulic couplers not completely engaged	- Repair or replace valve. - Cycle lift cylinders and bucket cylinders several times to free system from air. - Change to proper oil. - Clean and replace filter. - Increase engine speed rate. - Repair (if available) or replace - Adjust, repair or replace. - Repair or replace pump. - Connect hydraulic couplers.
Oil Leaks	- Loose hose connections - Fittings or hoses defective - Hydraulic cylinder seals worn or damaged - Valve components worn or damaged	- Tighten fittings. - Use thread sealer on pipe (tapered) threads. - Repair seals (if available) or replace cylinder. - Repair and/or replace.
Cannot Raise Load	- Low oil supply - Bucket overloaded - Hose fittings not fully engaged in couplers - Cylinder piston seal leakage - Valve out of adjustment or malfunctioning - Hydraulic pump malfunctioning - Load is greater than boom lift capacity	- Check oil level. - Try lighter load. - Recouple hoses. - Repair or replace. - Repair or replace. - Repair or replace. - Check loader specifications.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Bucket or Boom Leaks Down from “Hold” Position	• Leaks in hydraulic circuits • Cylinder piston seals leaking • Remote valve worn or damaged • Tractor valve worn or damaged	• Tighten loose fittings. Use thread sealer on pipe threads. • Repair (if available) or replace. • Repair. • Repair.
Cannot Lower Boom	• Hydraulic couplers not fully engaged.	• Recouple hoses.
Loss of Bucket Tilt Control When Lever is Pushed Completely Forward	• Tractor lever in “Float” position	• Shift control lever from “Float” position.
Couplers Hard to Hook Up	• Pressure in circuit	• Place control levers in “Float” when connecting.
Boom & Bucket Operation Does Not Correspond To Control Lever Position	• Improperly installed hydraulic couplers • Hoses improperly connected	• Install hydraulic couplers correctly. • Connect hoses properly.
Excessive Wear on Bucket Cutting Edge and Wear Pads	• Bucket is tilted too far forward and is riding on cutting edge. • Excessive down pressure when cleaning feedlots and working on concrete.	• Keep bottom of bucket parallel to ground. • Use “Float” position on boom lift control lever.

SECTION 13: PARTS LIST



Ref.	Part Number	Description	Ref.	Part Number	Description
1	603-04623A	Arm Assembly, Main	26	712-3083	Nut, Hex Lock, 1/2-13, GrB, Nylon
2	603-04624	Support Assembly, Vertical, LH	27	714-0143	Pin, Klik, .245 Dia X 1.406
3	603-04625	Support Assembly, Vertical, RH	28	717-04625	Cylinder, 28", 1.625" Bore
4	603-04626	Mount Assembly, LH	29	717-04626	Cylinder, 24", 2" Bore
5	603-04627	Mount Assembly, RH	30	726-0233	Nut, Push, .25 Id X .50 OD
6	603-04629	Receptacle Assembly, Loader	31	726-04081	Clamp, Tube
7	603-04636	Bracket Assembly, Loader	32	726-04098	Cable Tie, 18"
8	603-04641	Bracket Assembly, Hitch Loader	33	727-04197	Plug, Female, Hydr' Coupler, Green
9	627-00001	Tube Assembly, Loader	34	727-04198	Plug, Female, Hydr' Coupler, Blue
10	703-06857	Cover, Tube, Loader	35	727-04199	Plug, Female, Hydr' Coupler, Yellow
11	703-07143	Bracket, Loader, RH	36	727-04200	Plug, Female, Hydr' Coupler, Red
12	703-07145	Bracket, Loader, LH	38	727-04259	Coupling, Hydraulic, Male Sae, 3/8
13	710-0376	Hex Screw, 5/16-18, 1.00, Gr5	39	727-04332	Hose, Hydr', 1/2 ORB, 3/8 ORFS
14	710-0395	Hex Screw, 5/16-18, 2.25, Gr5	40	727-04333	Hose, Hydr', 3/8 ORFS-3/8 ORFS 90
15	710-04700	Screw, M16-20, 60mm	41	727-04334	Hose, Hydr', 3/8 ORFS-3/8 ORFS 90
16	710-04701	Screw, M16-2.00, 100mm	42	731-06405	Plug, Tube, Round
17	710-04706	Hex Screw, 5/8-11, 1.75, Gr8	43	736-0192	Washer, Flat, .535x.930x.090
18	710-1122	Hex Screw, 1/4-20, 2.50, Gr5	44	736-0211	Washer, Flat, .285 X 1.25 X .06
19	710-1652	Screw, Self-tapping 1/4-20 x .625	45	736-0264	Washer, Flat, .330 x .630 x .064
20	710-3067	Hex Screw, 1/2-13, 1.75, Gr5	46	736-0366	Washer, Flat, .640x1.120x.125
21	711-05018	Pin, 1"OD, 5", Grease, w/ 5/16" Hole	47	737-0146	Grease Fitting
22	711-05034B	Pin, 1"OD, w/ Handle	48	737-04186A	Fitting, Straight, 3/8 ORFS X 3/8 ORB
23	711-05194	Pin, 1"OD, 6.5", Grease, 5/16" Hole	49	737-04229	Fitting, Hydr', 90, -8 ORB X -8 FORB
24	712-04063	Nut, Flange Lock, 5/16-18, GrF,	50	747-04753	Rod, Hook
25	712-04143	Nut, Flange, 5/8-11 Top Lock	—	727-04213A	Hose Sleeve

NOTES

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