

Operator & Maintenance Manual



Dual Helping Hand™



equipment for the solid waste industry



EXPERT(T) 2000™

DUAL HELPING HAND™

OPERATOR & MAINTENANCE MANUAL



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INTRODUCTION

LIABILITY

Labrie Environmental Group assumes no liability for any incidental, consequential or other liability from the use of this information. All risks and damages, incidental or otherwise, arising from use or misuse of the information contained herein are entirely the responsibility of the user. Although careful precaution has been taken in the preparation of this material, we assume no responsibility for errors or omissions.

COMPLEMENTARY MANUALS

Before operating the Expert(t) 2000™ DUAL HELPING HAND™ or performing maintenance on this system, the personnel operating the unit **MUST** have completely read and understood this booklet but also the Expert(t) 2000™ *Operator Manual* and *Maintenance Manual*.

INTRODUCING THE DUAL HELPING HAND™

The DUAL HELPING HAND™ system consists in two hydraulically-powered automated arms. That way, it allows the operator to collect carts located on both sides of a one-way street.

WARNING

EXPERT(T) 2000™ UNITS EQUIPPED WITH DUAL HELPING HAND™ MUST BE OPERATED BY ONLY ONE PERSON.



TO CONTACT LABRIEPLUS

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Parts, service and warranty
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Technical support service
(24 hours)

Web Site: www.labriegroup.com

E-mail: sales@labriegroup.com

IMPORTANT

FOR TECHNICAL SUPPORT AND PARTS ORDERING, THE SERIAL NUMBER OF YOUR VEHICLE IS REQUIRED, THEREFORE, LABRIE ENVIRONMENTAL GROUP RECOMMENDS TO KEEP RECORD OF THE INFORMATION FOUND ON THE VIN PLATE WHICH IS LOCATED IN THE CAB.

SAFETY

Safety is always of prime importance when operating any type of equipment. All operators working with this unit **MUST** be aware of the safety practices and features detailed in the Safety section of the Expert(t) 2000™ Operator and Maintenance manuals.

SAFETY IS EVERYONE'S BUSINESS

Personnel are not to use the equipment if they are not well acquainted with the operations as well as all the safety precautions of such operations.

SAFETY CONVENTIONS

DANGER

INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH.

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH.

CAUTION

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY.

CAUTION

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN PROPERTY DAMAGE.

GENERAL SAFETY INSTRUCTIONS

WARNING

IT IS MANDATORY TO COMPLETELY READ AND UNDERSTAND THE SAFETY SECTION OF THE EXPERT(T) 2000™ OPERATOR AND MAINTENANCE MANUALS BEFORE USING THE EQUIPMENT.

- Stay clear of the path of both automated arms at all time.
- Make sure that nobody is near the vehicle before activating the arms.
- Immediately report to the employer any damage or malfunction.

DANGER

NEVER DRIVE THE VEHICLE WHEN ONE OF THE HELPING-HAND™ AUTOMATED ARMS IS EXTENDED.

WARNING

Expert(t) 2000™ UNITS EQUIPPED WITH DUAL HELPING HAND™ MUST BE OPERATED BY ONLY ONE PERSON.

- Be aware of the clearance on both sides of the unit at all times, even if only one automated arm is used. Refer to Expert(t) 2000™ Operator Manual (Collecting Refuse Using the Helping-Hand™ section) to get manual automated collection procedure.
- The operator must park both automated arms alongside the truck and close both hopper doors before covering a long distance. The Arm Extended warning lights flash as soon as one of the automated arms is not parked alongside the truck.

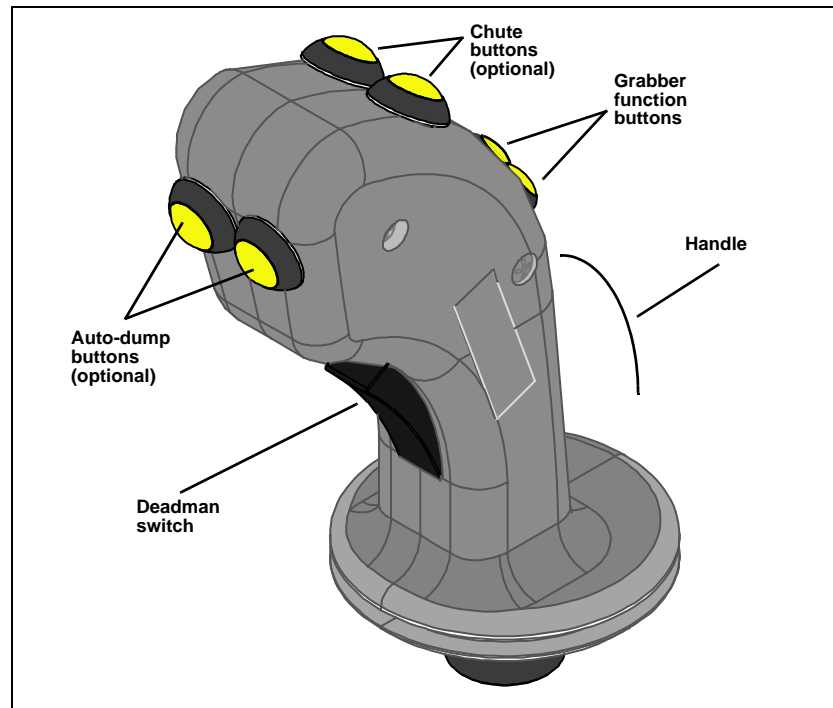
- When using only one automated arm for a long time, it is strongly recommended to close the opposite hopper door in order to avoid spillage.
- Never operate the arm or the grabber when the corresponding hopper door is closed.
- To use one of the Helping-Hand™, the other automated arm must be parked alongside the body.
- Fully raise the grabber arm in the hopper before performing manual collection. Refer to Expert(t) 2000™ Operator Manual (Manually Collecting Refuse section) to get manual collection procedure.

OPERATION

OPERATING HELPING-HAND™ ARMS

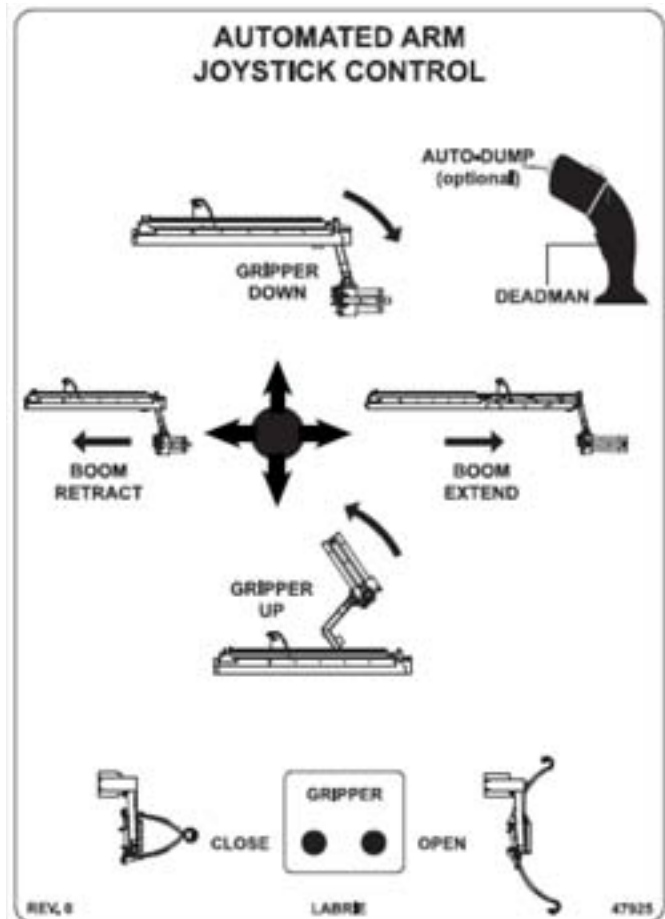
The Helping-Hand™ is a reliable and productive arm that has a maximum reach of 84 inches. It can pick up 32 to 96-gallon carts.

The Helping-Hand™ arms are activated by one joystick (standard). This joystick can be moveable (optional). Some units are also equipped with dual joystick (optional). Each joystick can control any of the arms (depending on the arm selector position).



To use the curbside Helping-Hand™, place the arm selector switch to the Right position.



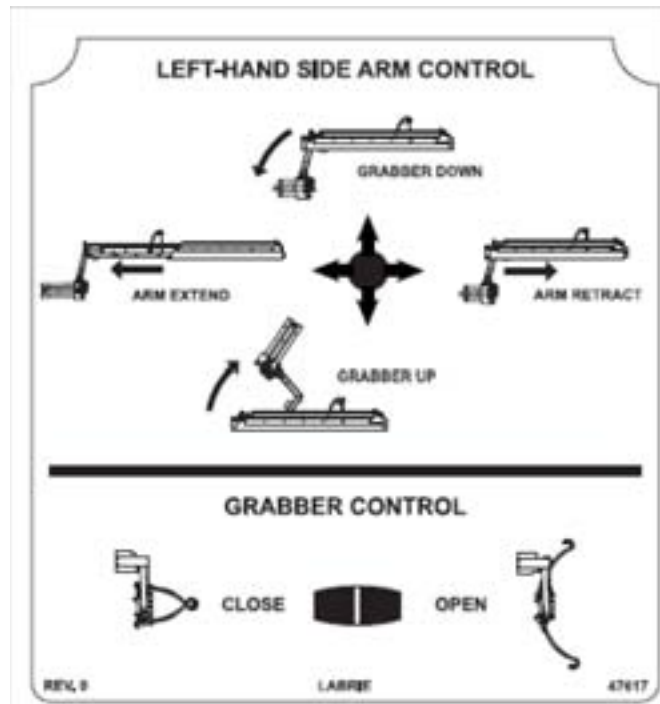


To use the streetside Helping-Hand™, place the arm selector switch to the Left position.



⚠ WARNING

THE JOYSTICK FUNCTIONS ARE INVERTED WHEN YOU SELECT THE STREET SIDE ARM. MAKE SURE TO USE THE JOYSTICK CORRECTLY WHEN YOU SELECT THE OPPOSITE ARM. FAILURE TO DO SO MAY CAUSE INJURY OR EVEN DEATH.



The joystick can perform two functions at the same time. For example, you can extend the arm and lower the grabber (or gripper) simultaneously.

- Shift the joystick forward at 90° towards the gripper down lettering to lower the gripper only.
- Shift the joystick forward at 45° between the gripper down and boom extend lettering to lower both the gripper and the extend the arm.
- Shift the joystick towards the streetside at 90° to the boom retract lettering to retract the arm only.
- Shift the joystick backward at 45° between the boom retract and gripper up lettering to retract the arm and raise the gripper.

- Shift the joystick backward at 90° to the gripper up lettering to raise the gripper only.
- Shift the joystick towards the curbside at 90° to the boom extend lettering to extend the arm only.

DEADMAN SWITCH

The deadman switch on the joystick is used as a safety device to ensure that every movement of the Helping-Hand™ is absolutely wanted and controlled by the operator. That is, if the operator is not pressing the deadman switch while trying to move the arm with the joystick, no movement will occur. With such a safety feature, an accidental movement of the joystick will not be transmitted to the selected arm. However the grabber and the chute (if equipped) are still operational at all times, even if the operator does not press on the deadman switch.

CAUTION

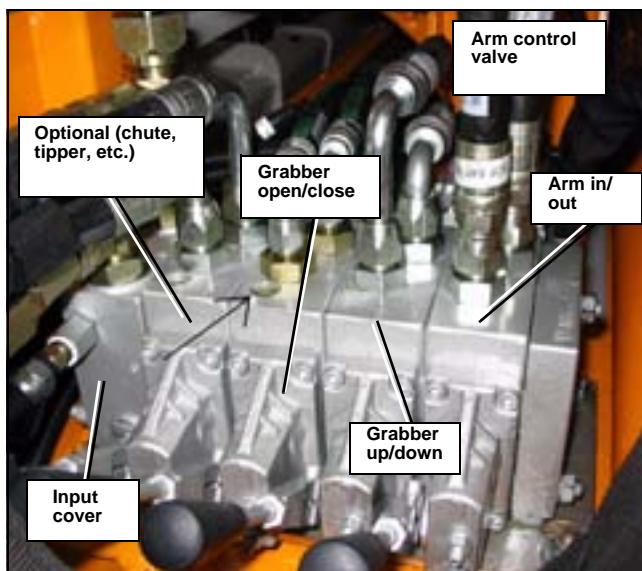
THE BUTTONS ON THE JOYSTICK ARE STILL OPERATIONAL EVEN IF THE OPERATOR DOES NOT PRESS ON THE DEADMAN SWITCH.

MAINTENANCE

HYDRAULIC SYSTEM GENERAL DESCRIPTION

The Labrie Expert(t) 2000™ side loader equipped with the DUAL HELPING HAND™, uses two independent hydraulic valves (one for each arm) to control all arm functions. This valve is on/off (grabber section) or proportional type (arm section), meaning that the amount of flow coming out of it depends on the position of the spool.

The curbside Helping-Hand™ valve has an open center in order to manage the hydraulic flow. The street side Helping-Hand™ valve has a closed center. Both valves are linked by a load sense line. The street side Helping-Hand™ valve sends a signal to the curb side valve according to its needs. Both valves have the same supply.



The hydraulic flow required to feed the valve comes from the dual vane pump. Refer to the unit hydraulic schematics for more information.

VALVE PRESSURE ADJUSTMENT

The following pressure adjustment procedure explains how to adjust the pressure of each function of the Helping-Hand™ arms.

Note: The dump valve pressure must be set properly before making any adjustments to the valve on the Helping-Hand™.

The lockout/tagout procedure explained in the *Operator Manual* must be performed each time maintenance has to be done on the vehicle.

Before adjusting the valve, make sure to identify each section, each valve and their adjustment screws.

Note: Extra personnel may be needed to perform the arm pressure adjustment. Use any precaution necessary around the vehicle to work safely at all times.

WARNING

STAY OUT OF THE PATH OF THE ARM WHILE MANUALLY MOVING ONE OF THE HELPING-HAND™. SERIOUS INJURY OR EVEN DEATH MAY OCCUR.

Pressure Adjustment Table

Arm Function	Pressure Setting	Cycle Time ^a
Arm Extend/Retract	2000 PSI	8 sec.
Grabber Up/Down	2000 PSI	6 sec.
Grabber Close	1200 PSI	2 sec.
Grabber Open	750 PSI	Less than 2 sec.

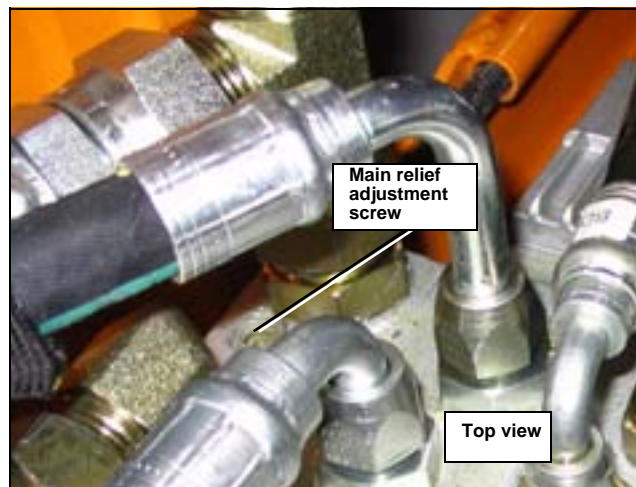
- a. Cycle time is defined as the time required for a function to complete a full back and forth movement. Cycle time may vary by cold weather.

⚠ WARNING

BEFORE MAKING ANY ADJUSTMENTS, SECURE THE ARM WORKING AREA USING SAFETY TAPE OR BARRICADES.

Valve main relief adjustment procedure:

1. Remove any residual hydraulic pressure in the system by moving the levers back and forth.
2. Connect a 0-4000 PSI gauge on the quick coupler of the curb side Helping-Hand™ valve.
3. Make sure the transmission is in neutral.
4. Reduce the pressure setting of the curb side Helping-Hand™ valve.
5. Adjust the pressure setting of the street side Helping-Hand™ valve to its maximum.
6. Start the engine.
7. Engage the hydraulic system.
8. Retract and maintain the arm to the end of its stroke in order to make the pressure rise on the gauge.
9. Adjust the main relief of the curb side Helping-Hand™ valve to 2000 PSI using the adjustment screw. Turn the hex key clockwise or counterclockwise to adjust the pressure properly.

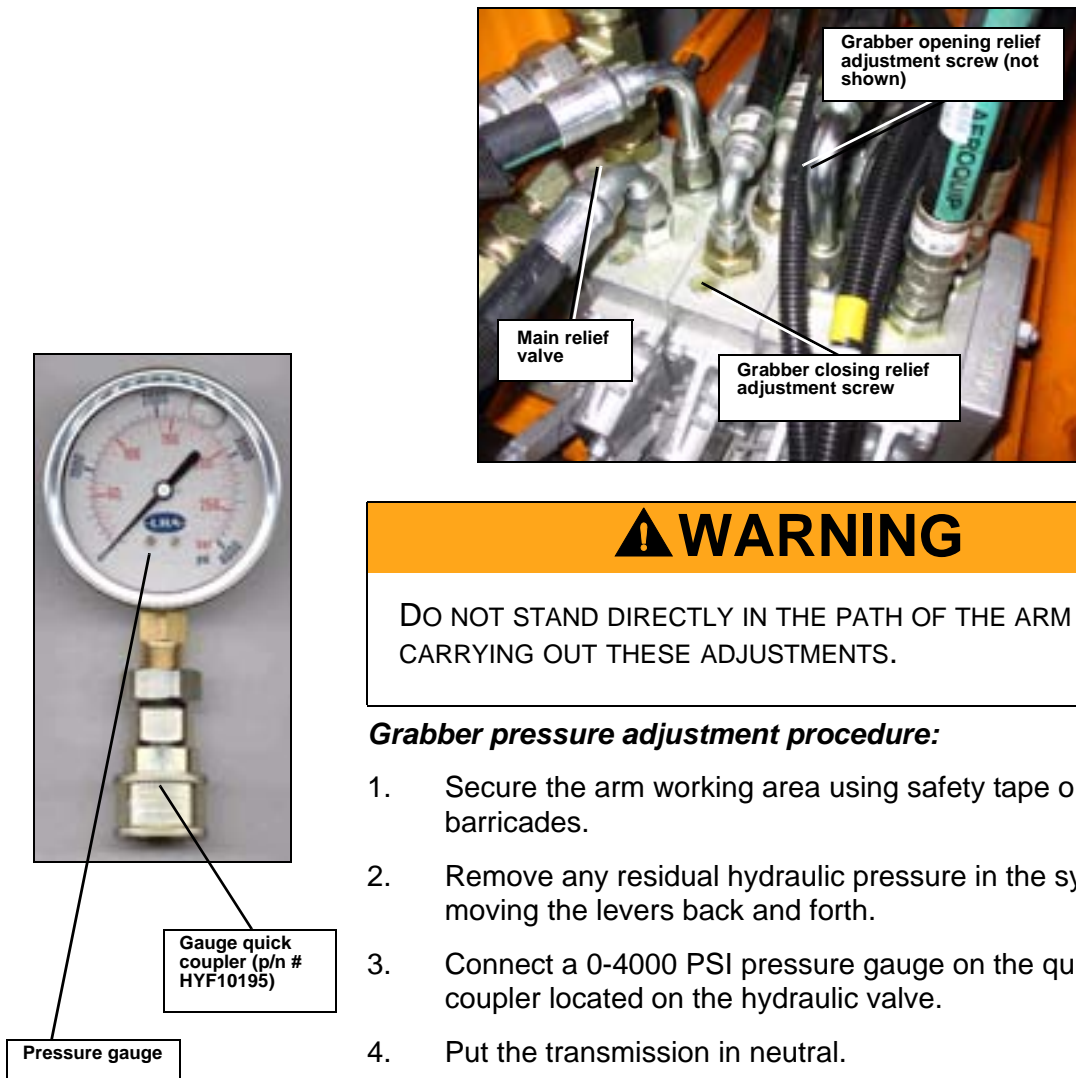


ARM FUNCTIONS ADJUSTMENT PROCEDURE

The operating pressure of the arms (retract/extend) and grabbers (up/down movement) are the same as the main relief (2000 PSI). No adjustment is required for these functions. Only the grabber closing and opening pressures require adjustment to prevent crushing the roller carts and damaging the grabbers.

Apply the following procedure to adjust the relief valves on the grabber section (refer to *Pressure Adjustment Table* on previous page).

Note: *This procedure applies to both hydraulic valves.*



⚠ WARNING

DO NOT STAND DIRECTLY IN THE PATH OF THE ARM WHILE CARRYING OUT THESE ADJUSTMENTS.

Grabber pressure adjustment procedure:

1. Secure the arm working area using safety tape or barricades.
2. Remove any residual hydraulic pressure in the system by moving the levers back and forth.
3. Connect a 0-4000 PSI pressure gauge on the quick coupler located on the hydraulic valve.
4. Put the transmission in neutral.
5. Start the engine.
6. Engage the hydraulic pump.

7. Close the grabber using the appropriate lever on the valve and maintain the lever in the closing position.
8. Adjust the relief valve for the “grabber closing” side of the valve section at 1200 PSI (screw or unscrew depending on the gauge readout).
9. Open the grabber and maintain the lever in the opening position. Adjust the relief valve for the “grabber opening” function of the valve section to 750 PSI.

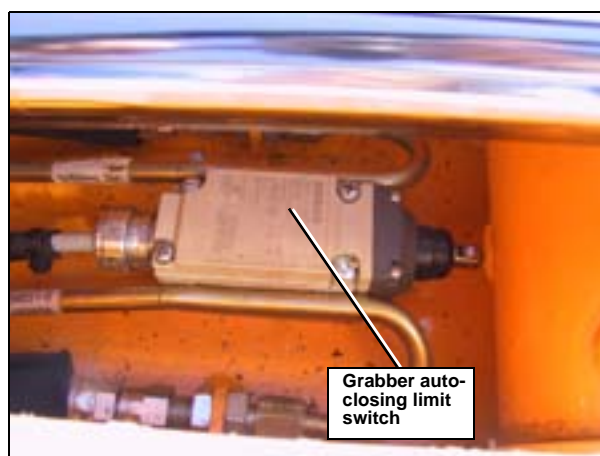
GRABBER AUTO-CLOSING SYSTEM

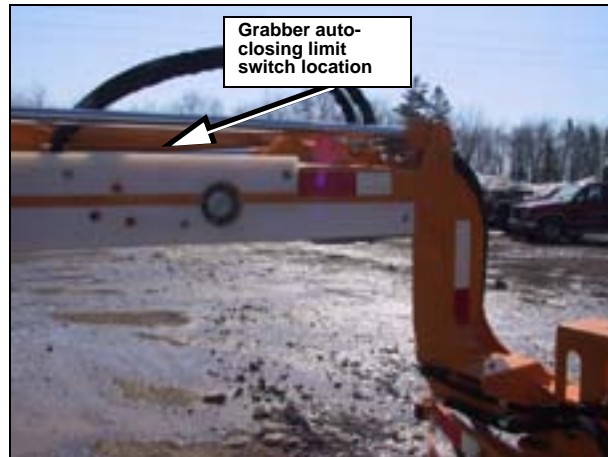
Both Helping-Hand™ automated arms are equipped with a safety system that closes the grabber automatically when the arm is returning to the hopper. The auto-closing system prevents the grabber from hitting the hopper walls, causing damage to the grabber.

If the operator raises one of the arms without closing the grabber, the system will automatically close the grabber when the grabber reaches a certain height.

Note: If the selected arm is stored inside the hopper for a certain period of time, the grabber may open by itself due to pressure loss in the system. The auto-closing system will close the grabber automatically as soon as the joystick is moved off of its center (or neutral) position.

The auto-closing system is controlled by a non-adjustable limit switch located under the grabber arm.





When the joystick rests in neutral position, no signal from the limit switch is sent to the valve coil to close the grabber.

How it works:

When the grabber arm is moved up (without closing the grabber), the limit switch located under the arm sends an electrical signal to the solenoid mounted on the valve making the grabber close (works the same as pressing the grabber closing button on the joystick). Then, the hydraulic pressure is sent to the cylinder, closing the grabber before it collides with the hopper walls.

⚠ WARNING

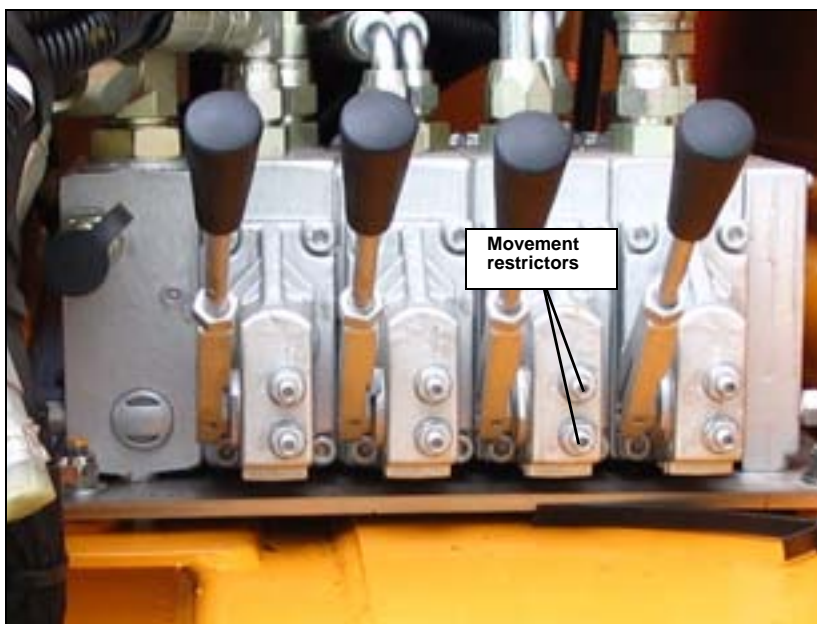
STAY OUT OF THE PATH OF THE ARM WHILE MANUALLY MOVING ONE OF THE HELPING-HAND™. SERIOUS INJURY OR EVEN DEATH MAY RESULT.

CAUTION

BEFORE PERFORMING PRESSURE ADJUSTMENTS ON THE VALVES, MAKE SURE THAT THE ARM DUMP VALVES ARE PROPERLY SET.

ARM SPEED ADJUSTMENT

The arm speed adjustment is controlled by the amount of hydraulic fluid that is being sent to the arm cylinder. The flow is also limited by a mechanical movement restrictor (stopper) located on the spool.



⚠ WARNING

PERFORM THE LOCKOUT/TAGOUT PROCEDURE AT ALL TIMES.

Note: The arm movements, extension/retraction and tilt, are preset in factory to the maximum speed. The grabber speed (opening and closing) has also been set in factory to its optimal value in order to allow smoother grabbing of the cart.

Speed adjustment procedure:

1. Secure the arm working area using barrier tape or barricades.
2. Put the transmission in neutral.
3. Start the engine and engage the hydraulic system.
4. Clearly identify the stopper screw on the valve that corresponds to the proper function (boom extension/

retraction, grabber opening/closing). Move the lever to evaluate the speed of the arm, then release the lever.

CAUTION

WHEN ADJUSTING TILT MOVEMENT SPEED, MAKE SURE THE AUTO-CLOSING FEATURE ALLOWS THE GRABBER TO CLOSE SUFFICIENTLY TO AVOID GRABBER FINGERS HITTING THE HOPPER WALLS.

5. Loosen the lock nut.
6. Screw in the restrictor adjustment only one eighth (1/8) of a turn at a time to see a significant change of the arm speed.
7. Move the lever again to evaluate the arm speed. Repeat until cycle times are properly set.
8. Tighten the lock nut.

Note: Limiting the stroke of the spools is limiting the amount of oil (flow) going through them. Controlling the oil flow means controlling arm speed.

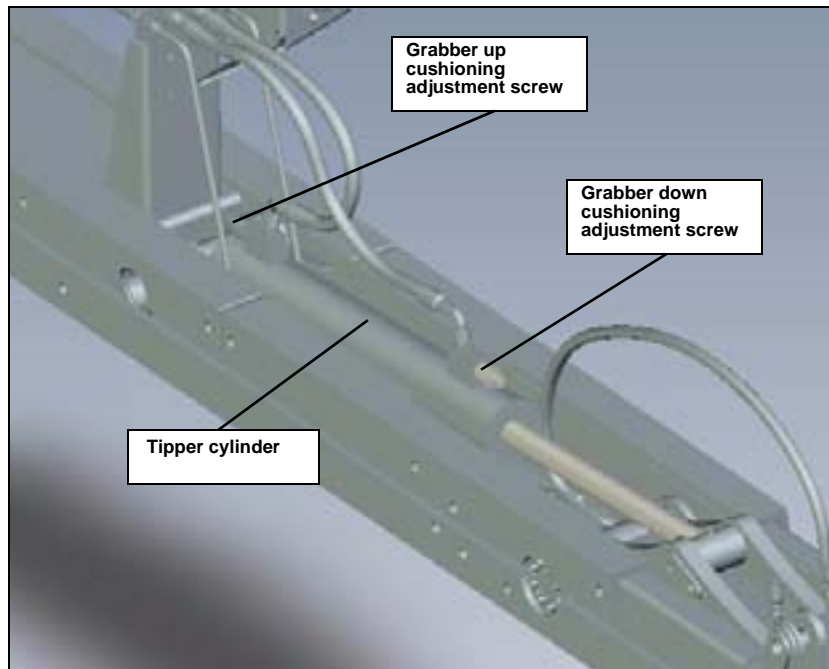
CYLINDER CUSHION ADJUSTMENT

The tipper and extension cylinders are cushioned at the end of their strokes to give a smoother movement. The cushioning speed is adjustable directly on the cylinders using two adjustment screws. If the grabber or the arm hits hard at the end of its stroke, apply the following procedure.

Tipper cylinder cushioning adjustment:

1. Secure the arm working area using barrier tape or barricades.
2. Put the transmission in neutral.
3. Start the engine and engage the hydraulic pump.
4. Fully extend the selected Helping-Hand™ to access the arm tipping cylinder from the top.
5. Cycle the grabber arm up and down functions for a full cycle to evaluate the amount of cushion.
6. If adjustments are necessary, stop the hydraulic pump and turn off the engine.
7. Tighten the corresponding adjustment screw to obtain a smoother movement at the end of the stroke or loosen the

screw if the movement is too slow (no shock should occur).



Inner rail cylinder cushioning adjustment:

1. Secure the arm working area using barrier tape or barricades.
2. Put the transmission in neutral.
3. Start the engine and engage the hydraulic pump.
4. Extend and retract the arm for a full cycle to evaluate the amount of cushion.
5. If adjustments are necessary, stop the hydraulic pump and turn off the engine.
6. To adjust the inner rail retraction movement cushioning, remove the doghouse cover. Tighten the retraction cushioning adjustment screw to obtain a smoother movement at the end of the stroke or loosen it if the movement is too slow (no shock shall occur).



7. To adjust the inner rail extension movement cushioning, tighten the extension cushioning adjustment screw to obtain a smoother movement at the end of the stroke or loosen it if the movement is too slow (no shock shall occur).

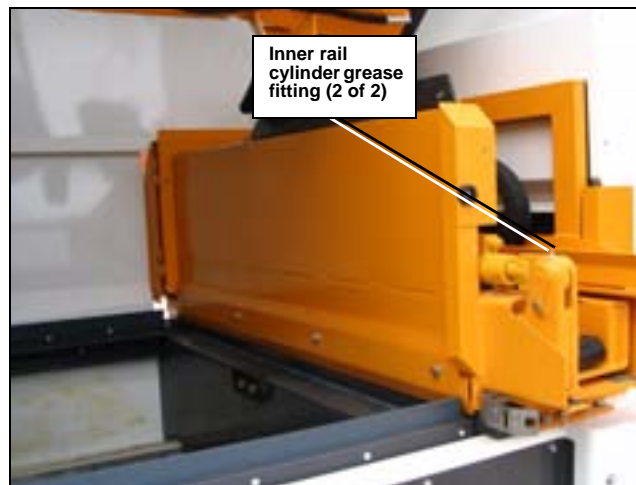


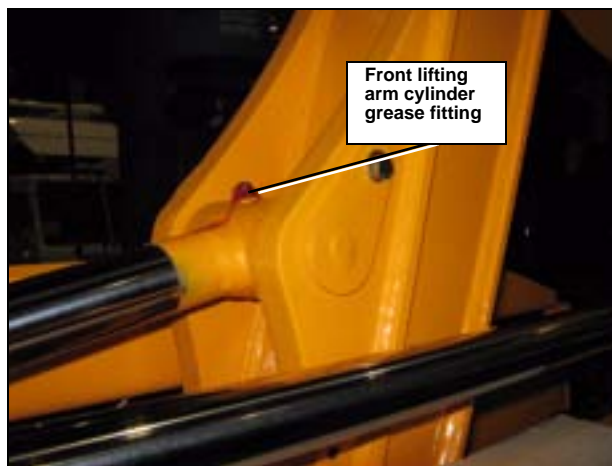
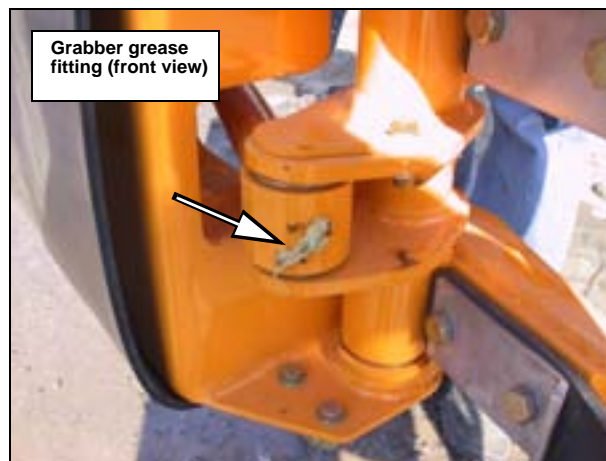
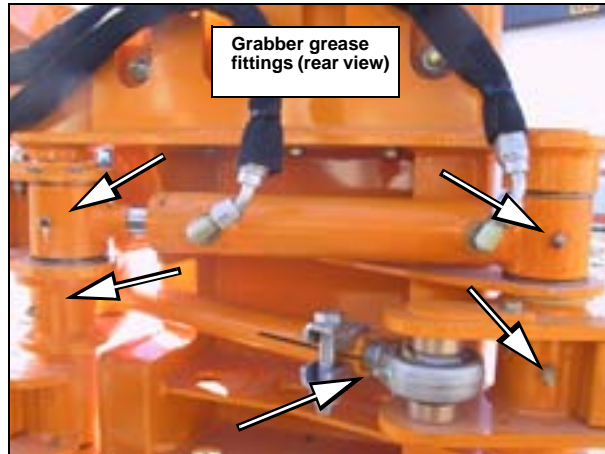
⚠ WARNING

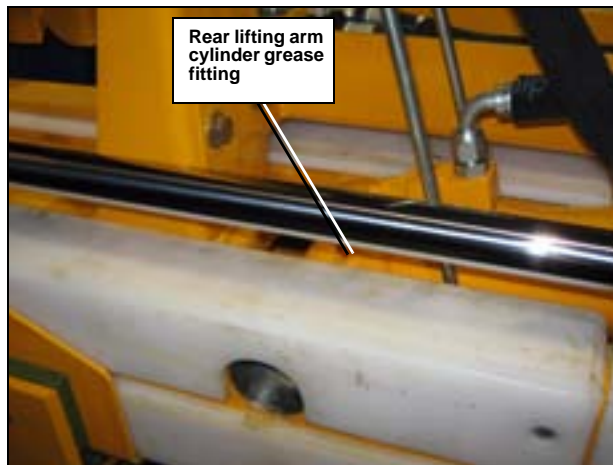
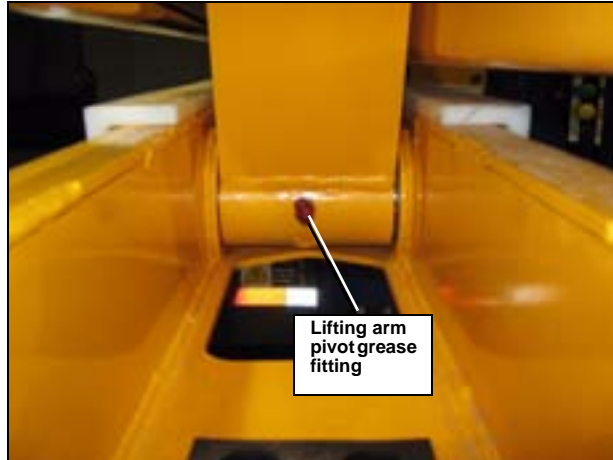
DO NOT STAND DIRECTLY IN THE PATH OF THE ARM WHILE CARRYING OUT THESE ADJUSTMENTS.

HELPING-HAND™ CYLINDER LUBRICATION

It is very important to lubricate Helping-Hand™ cylinders weekly to ensure their optimal performance. Please note that there is a grease fitting at each cylinder end.





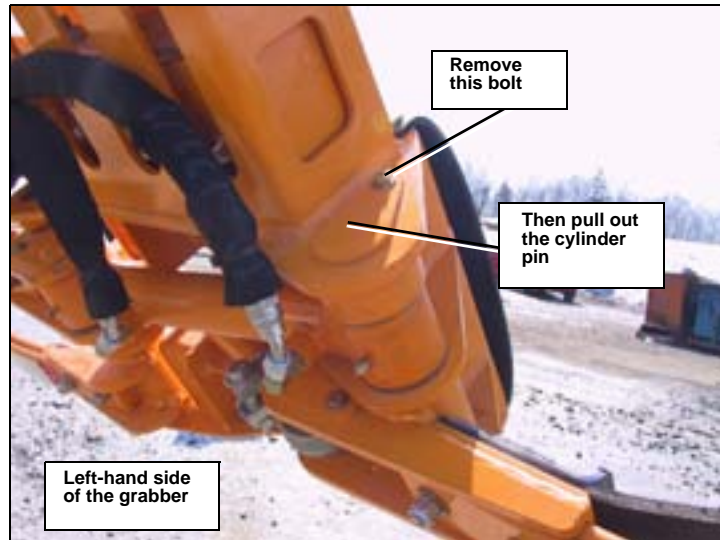


GRABBER BUSHING MAINTENANCE

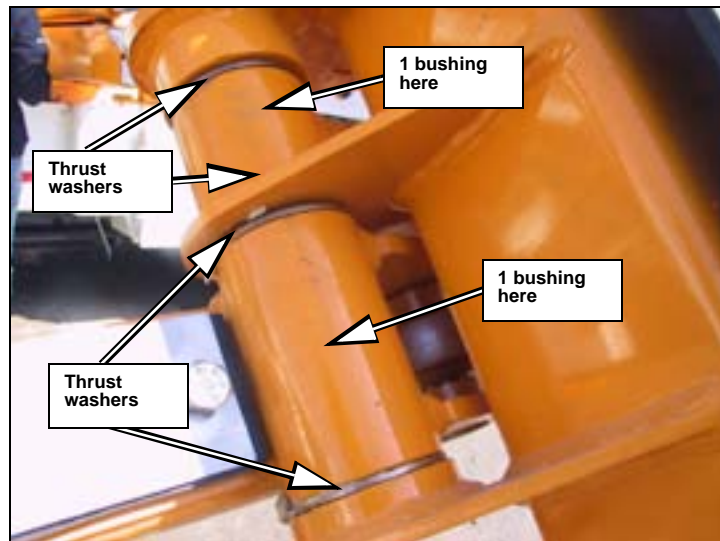
Visual inspection of grabber bushings must be performed at least once a year.

When left-hand side grabber bushings need to be replaced, perform the following procedure:

1. Remove the bolt.
2. Pull out the cylinder pin.



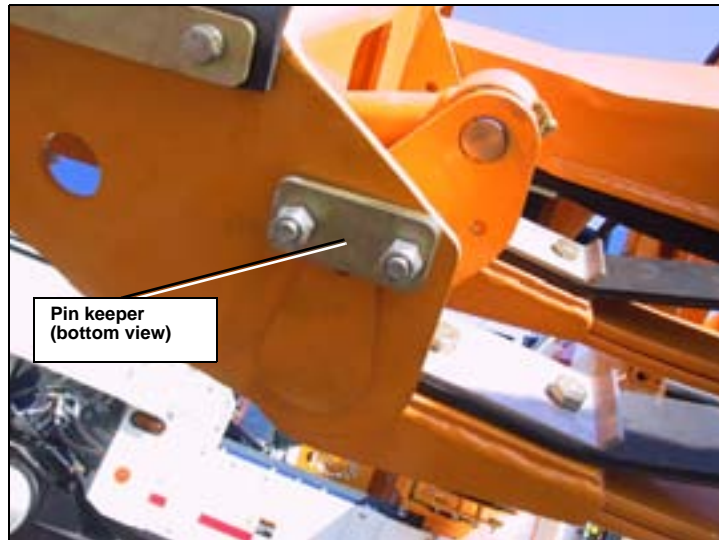
3. Inspect the bushings and thrust washers and replace if necessary.



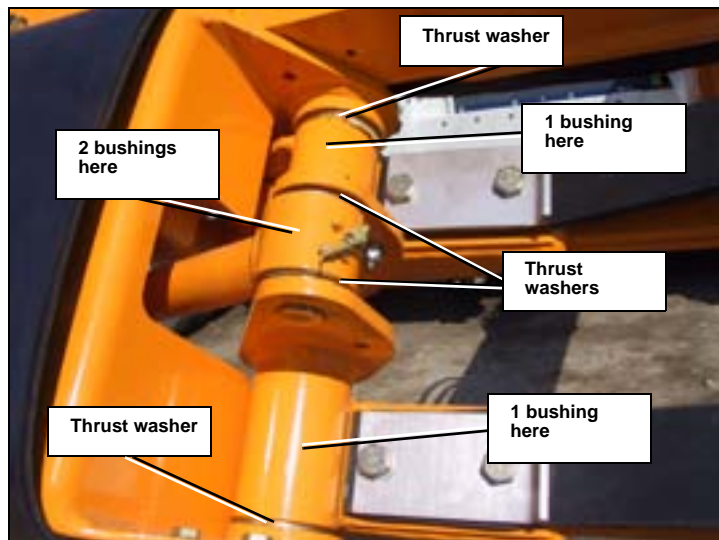
4. Perform the reverse procedure to reinstall bushings, thrust washers and pin.

When right-hand side grabber bushings need to be replaced, perform the following procedure:

1. Remove the pin keeper.



2. Pull out the pin.
3. Inspect the bushings and thrust washers and replace if necessary.



4. Perform the reverse procedure to reinstall bushings, thrust washers, pin and keeper.

LIFTING ARM CYLINDER BUSHING MAINTENANCE

1. Fully extend the Helping-Hand™.
2. Raise the lifting arm until it reaches the position illustrated below.

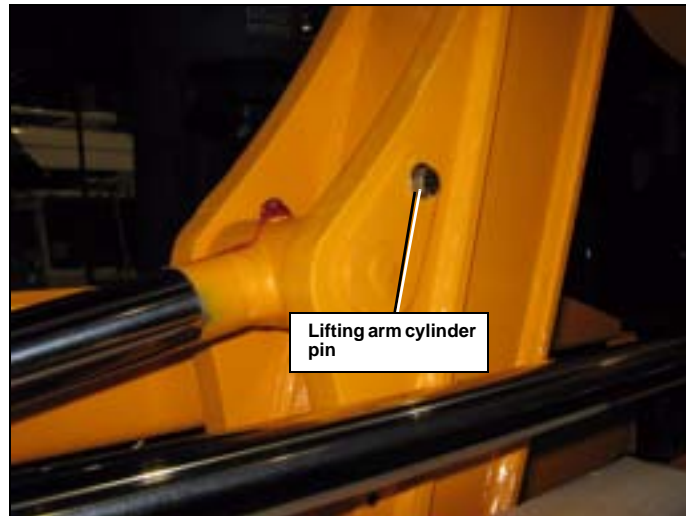


3. Support the lifting arm using an overhead crane or other proper lifting device.

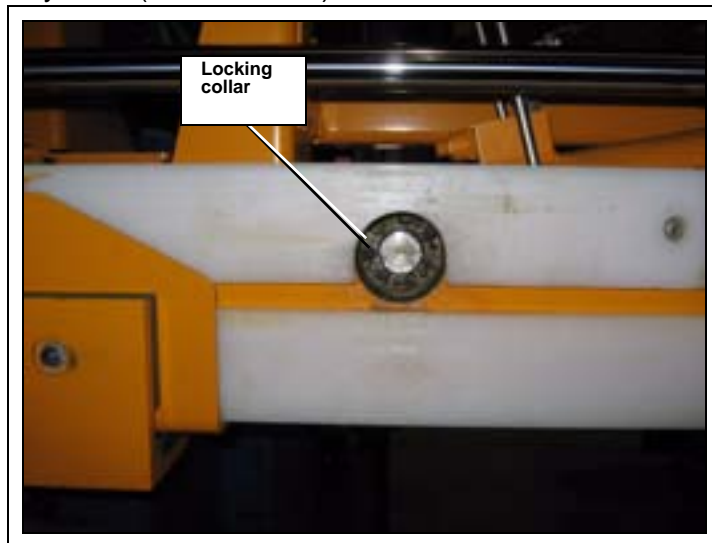
⚠ WARNING

BEFORE LIFTING ANY EQUIPMENT, MAKE SURE THE LIFTING DEVICE IS APPROPRIATE. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY OR EVEN DEATH.

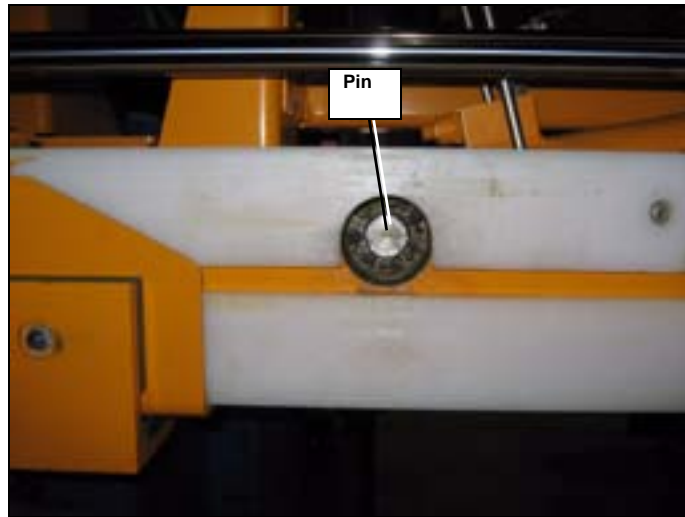
4. Remove the lifting arm cylinder pin.



5. Remove locking collars located at the other end of the cylinder (on both sides).



6. Remove the pin. You can now access the cylinder in order to replace bushings located at both ends of the cylinder.



Note: This procedure could be performed without unplugging cylinder hydraulic hoses. However, the hose removal facilitates the work.

7. Perform the reverse procedure for reassembly.

LIFTING ARM BUSHING MAINTENANCE

1. Fully extend the Helping-Hand™.
2. Raise the arm until it reaches the position illustrated below.

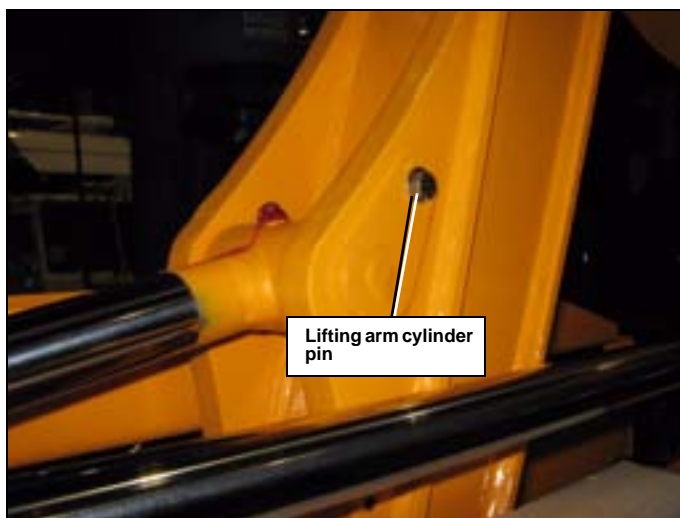


3. Support the lifting arm using an overhead crane or other proper lifting device.

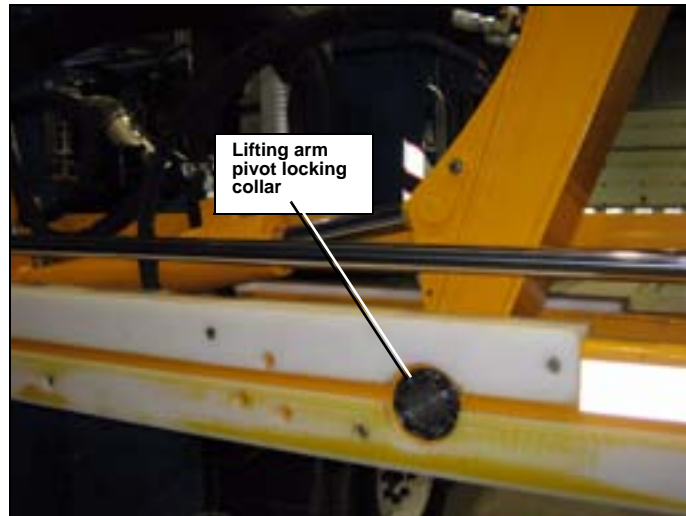
WARNING

BEFORE LIFTING ANY EQUIPMENT, MAKE SURE THE LIFTING DEVICE IS APPROPRIATE. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY OR EVEN DEATH.

4. Remove the lifting arm cylinder pin.



5. Remove lifting arm pivot locking collars.



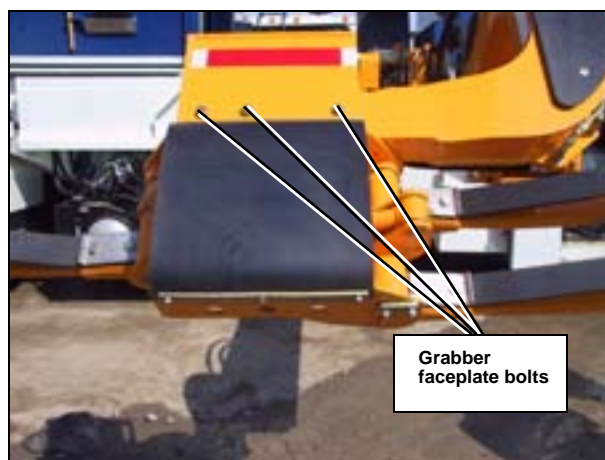
6. Remove the pin. You can now access the lifting arm in order to replace pin bushings.
7. Perform the reverse procedure for reassembly.

GRABBER HEIGHT SETTING

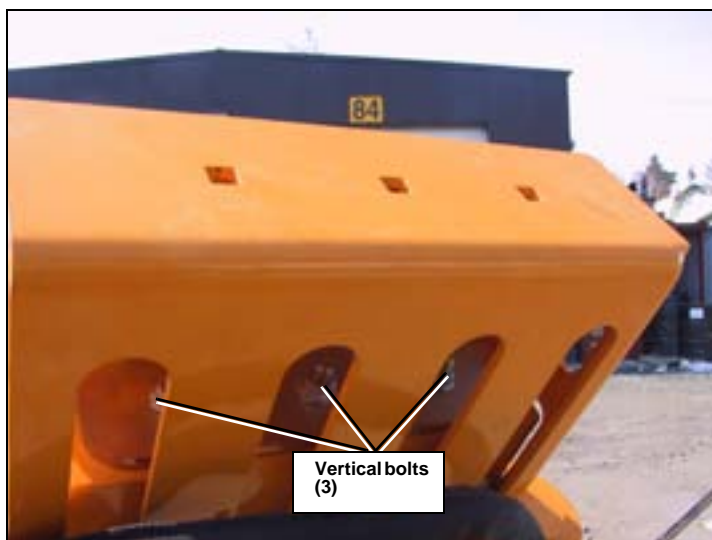
Grabber height is preset in factory, however, there are two possible height settings.

To change grabber position:

1. Using appropriate hardware, secure the grabber.
2. Remove bolts on grabber faceplate (3).

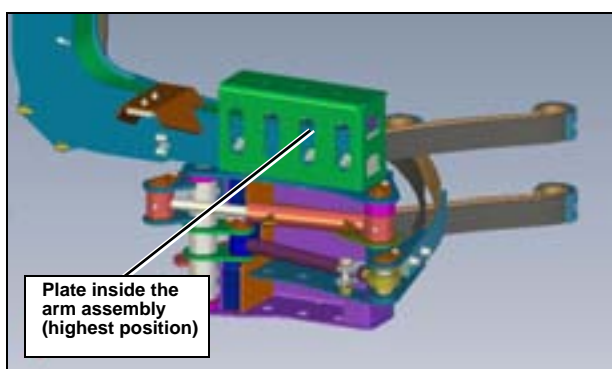
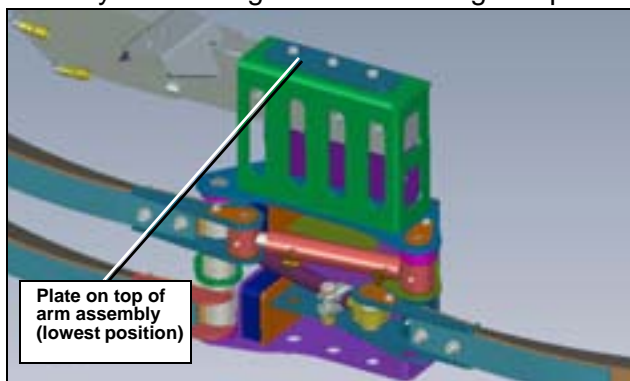


3. Remove vertical bolts (3).

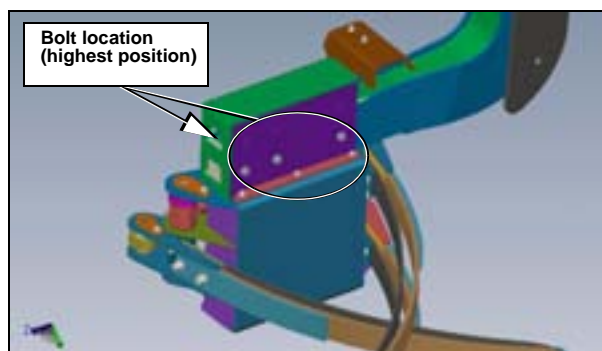
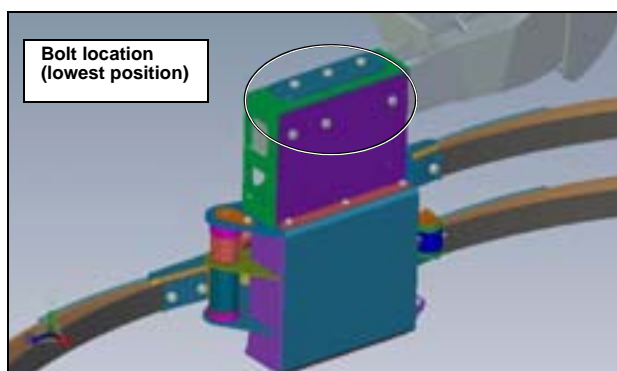


4. Raise or lower the grabber (according to the original grabber position).

5. Reposition the plate correctly (on top of the arm assembly when the grabber is at its lowest position; inside the arm assembly when the grabber is at its highest position).



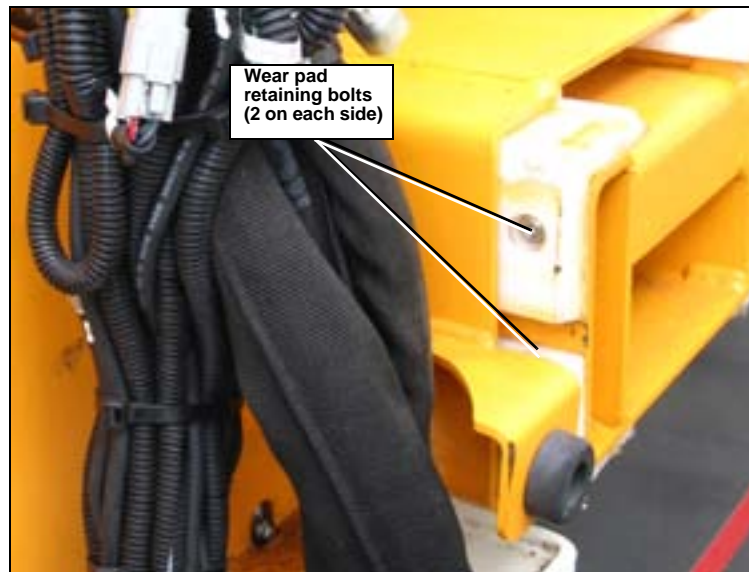
6. Reinstall all the bolts (6).



INNER RAIL WEAR PAD REPLACEMENT PROCEDURE (WHITE)

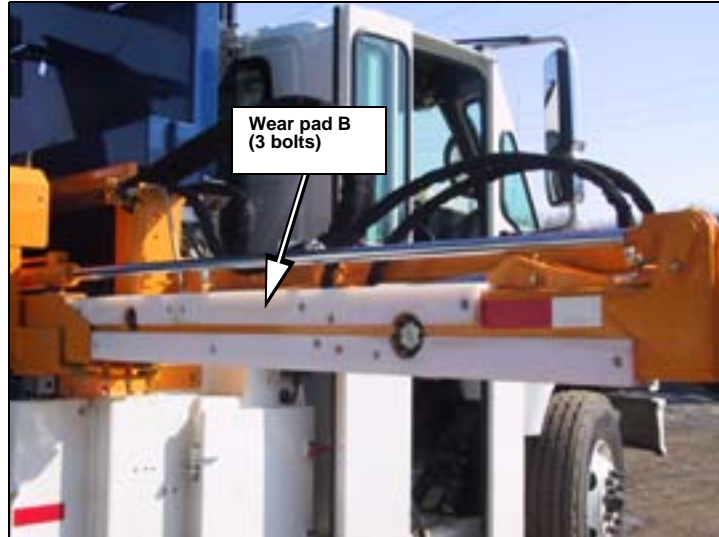
To replace inner rail wear pads:

1. Fully retract the selected Helping-Hand™.
2. Open the corresponding doghouse and remove the 4 wear pad retaining bolts.

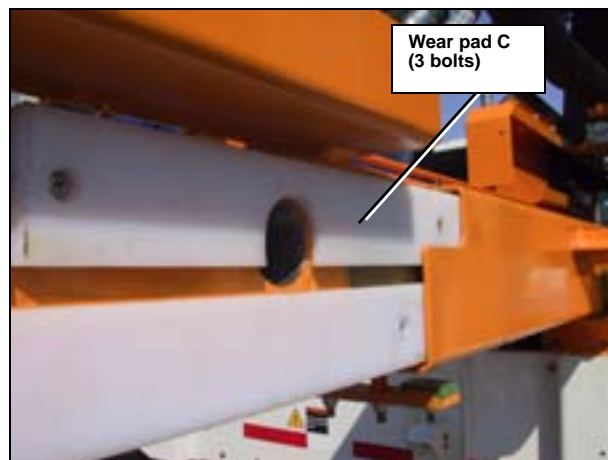


3. Fully extend the selected arm.
4. Remove wear pads A and B (3 bolts each). Do not install the new wear pads at this time.





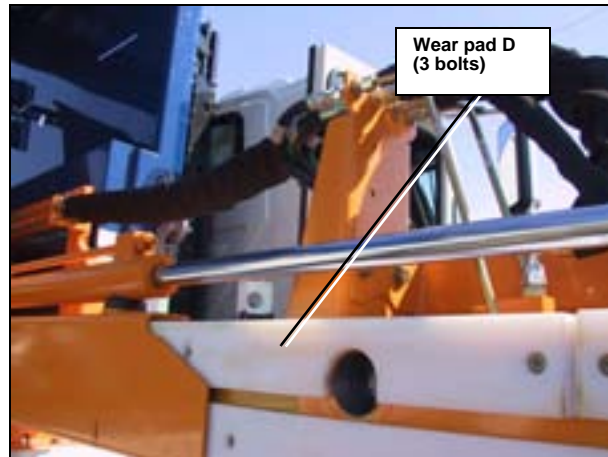
5. Remove wear pad C (3 bolts) and replace it by a new one.



IMPORTANT

AS DUST PARTICLES AND SAND STICK TO GREASE, NEVER LUBRICATE HELPING-HAND™ WEAR PADS. GREASE MAY JAM THE MOVING PARTS AND/OR CAUSE PREMATURE WEAR.

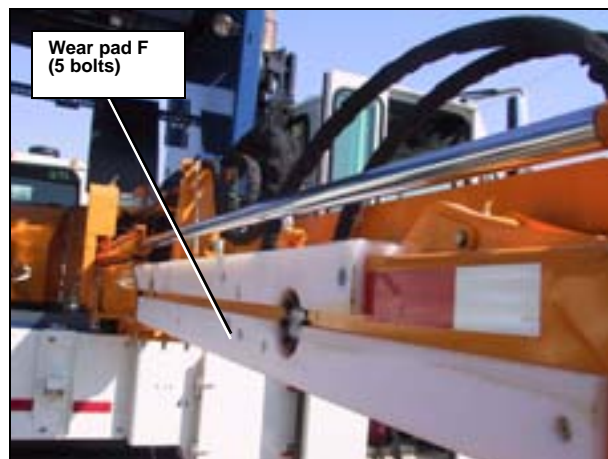
6. Remove wear pad D (3 bolts) and replace it by a new one.



7. Remove wear pad E (5 bolts) and replace it by a new one.



8. Remove wear pad F (5 bolts) and replace it by a new one.



9. Now you may install new wear pads A and B.

labrie *plus*

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