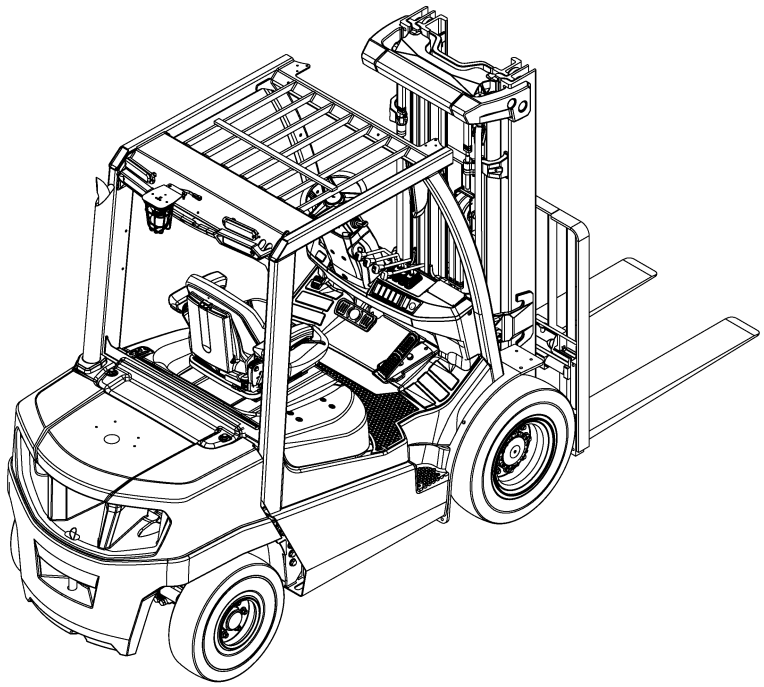
FRAME AND MAIN COMPONENTS

H2.0A, H2.5A6, H2.5A, H3.0A, H3.5A (H40A, H50A6, H60A, H70A) [R177]



HYSTER

PART NO. 4277941

8000 SRM 2306

SAFETY PRECAUTIONS
MAINTENANCE AND REPAIR

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Hyster® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **HYSTER ® APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the WARNING symbol (and word, if present) are on orange background. The CAUTION symbol (and word, if present) are on yellow background.

WARNING

Installing improper electrical accessories or installing an electrical accessory incorrectly can increase the risk of equipment damage, personal injury and fire. DO NOT install electrical accessories to the truck unless you have been trained and authorized to do so. Personnel installing the electrical accessories must document the changes made to the truck. DO NOT install accessories which affect the truck's compliance with standard ANSI/ITSDF B56.1, UL 558, or UL 583, or which otherwise affect the safe operation of the truck.

WARNING

Installing improper electrical accessories or installing an electrical accessory incorrectly can increase the risk of equipment damage, personal injury and fire. DO NOT install electrical accessories to the truck unless you have been trained and authorized to do so. Personnel installing the electrical accessories must document the changes made to the truck. DO NOT install accessories which affect the truck's compliance with standard EN 1175:2020.

WARNING

California Proposition 65 - Operating, servicing and maintaining a powered industrial truck can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

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Introduction

GENERAL
202001-001

NOTE: For any fasteners in this manual that feature standard torque specifications, please refer to **Metric and Inch (SAE) Fasteners** 8000SRM0231 for correct specifications.

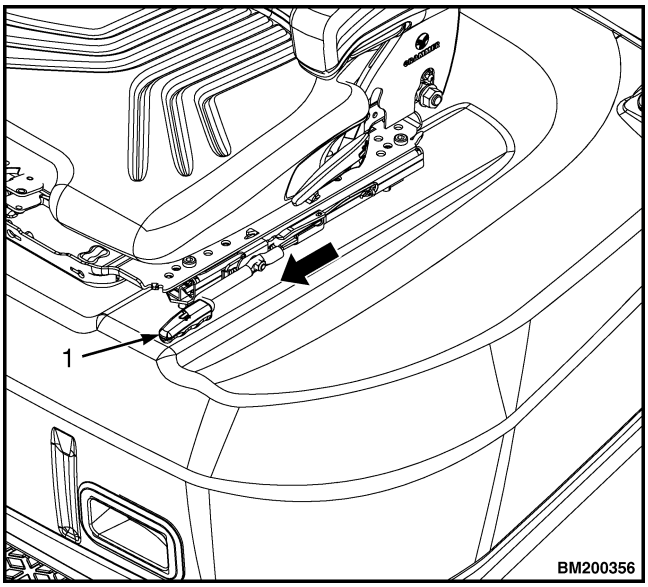
Covers, floorplates, and counterweight

COVERS REPAIR 202001-117

HOOD

Remove

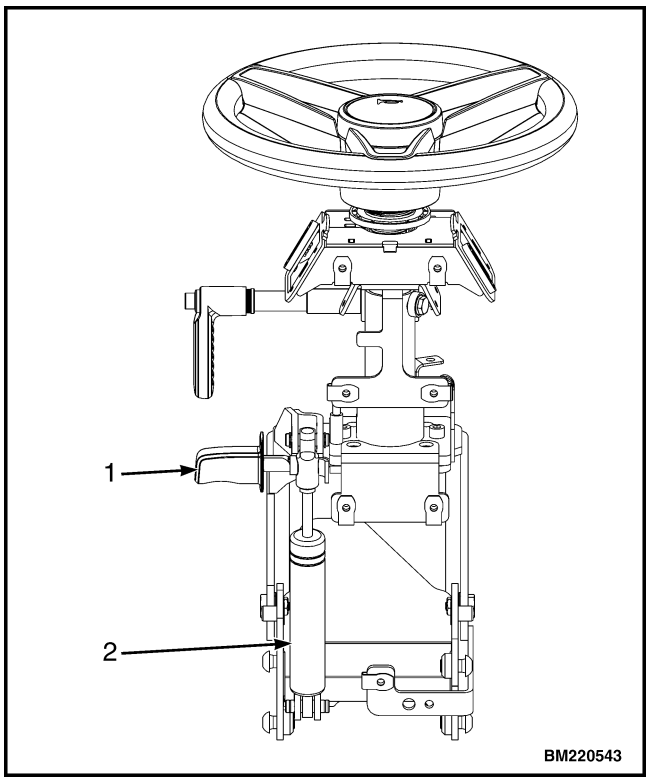
1. Slide the seat forward to the position closest to the steering column. See Figure 1.



1. FORWARD/REVERSE LEVER

Figure 1. Slide seat forward

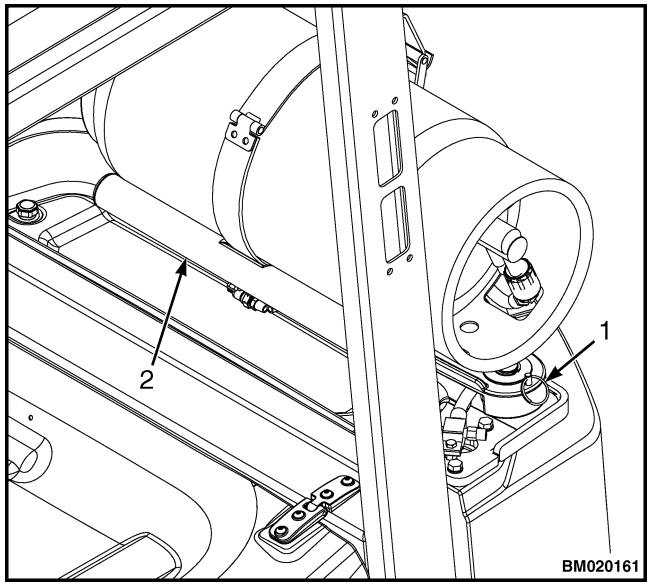
2. Fully tilt the steering column forward. See Figure 2.



1. TILT LEVER
2. GAS CYLINDER

Figure 2. Steering column tilt

3. If your truck is equipped with an LPG tank, pull the pin from the tank bracket and swing the tank to the side, off the counterweight. See Figure 3.



1. PIN
2. LPG TANK BRACKET

Figure 3. LPG tank bracket

4. Locate the latch on the front of the hood. See Figure 4.

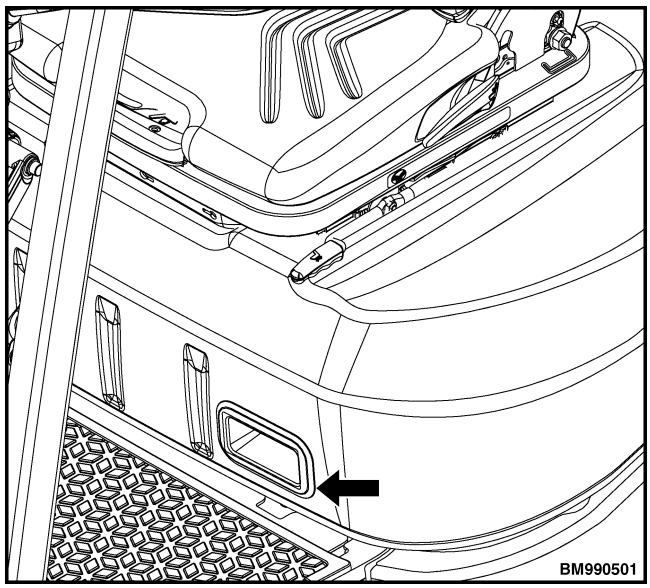
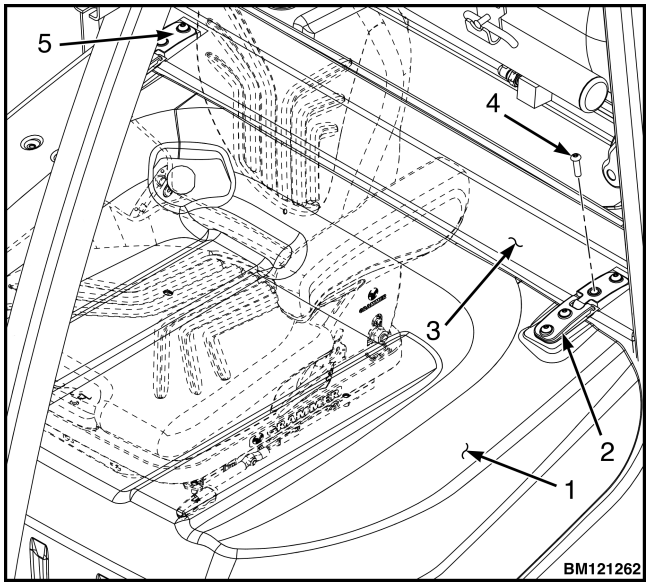


Figure 4. Hood latch

5. Lift the latch and raise the hood.

6. Remove the two capscrews from the LH hood hinge that retain the hood to the crossmember. Remove the two capscrews from the RH hood hinge. See Figure 5.



1. HOOD
2. LH HOOD HINGE
3. HOOD CROSSMEMBER
4. CAPSCREW
5. RH HOOD HINGE

Figure 5. Hood hinges

NOTE: The hood and seat assembly may weigh as much as 50 kg (110.2 lb). Make sure to use lifting chains and a lifting device with a greater capacity.

7. Attach lifting chains to a lifting device. Attach the other end of the lifting chains to the hood and remove the hood and seat assembly from the operator station.

Install

1. Use the lifting chains and lifting device to lower the hood and seat assembly into the operator station.

2. Insert the two capscrews through the RH hood hinge that retain the hood to the crossmember. Insert the two capscrews through the LH hood hinge. See Figure 5. Tighten all capscrews to standard torque.

3. Close and fully latch the hood.

4. If your truck is equipped with an LPG tank, swing the tank and bracket back into position on the counterweight. Insert the pin to lock the LPG tank bracket in place. See Figure 3.

5. Tilt the steering column back into position. See Figure 2.

STEERING COLUMN COVERS

Remove

NOTE: Use caution when removing the covers. Covers can be damaged if not removed properly. Follow the procedures below closely.

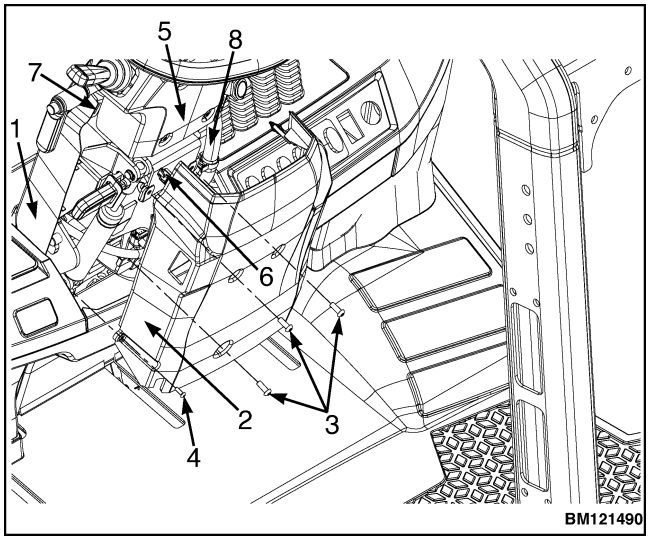
1. If your truck features a telescoping steering column, fully lower the steering column.

NOTE: The bottom section of the lower steering column cover must always be removed first.

2. Remove the two screws (item 4, Figure 6) from the sides of the bottom lower steering column cover (item 2).

3. Remove the three button head screws (item 3, Figure 6) attaching the bottom lower steering column cover to the steering column.

4. Use a flat head screwdriver to gently pry the bottom lower steering column cover from the bottom upper steering column cover (item 1, Figure 6), taking care to not damage the clips (item 6).

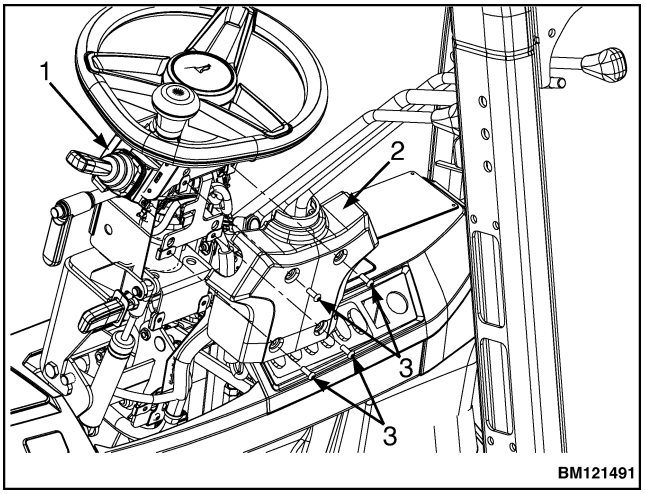


1. UPPER STEERING COLUMN COVER (BOTTOM)
2. LOWER STEERING COLUMN COVER (BOTTOM)
3. BUTTON HEAD SCREWS
4. SCREW
5. LOWER STEERING COLUMN COVER (TOP)
6. CLIP
7. TAB

Figure 6. Bottom steering column covers

5. Remove the two bottom covers.

6. Remove the four button head screws (item 3, Figure 7) retaining the top section of the lower steering column cover (item 2) to the steering column.



1. UPPER STEERING COLUMN COVER (TOP)
2. LOWER STEERING COLUMN COVER (TOP)
3. BUTTON HEAD SCREWS

Figure 7. Top steering column covers

7. Use a flat head screwdriver to gently pry the top lower steering column cover from the top upper steering column cover (item 1, Figure 7), taking care to not damage the clips.

8. Remove the two top covers.

Install

1. Install the top section of the lower steering column cover, aligned with the four holes on the steering column. See Figure 7.

2. Insert the four button head screws to secure the upper lower steering column cover to the steering column. See Figure 7.

3. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

4. Align the tabs on the top section of upper steering column cover, with the clips on the top section of the lower steering column cover. Gently press the two covers together until fully seated.

5. Install the bottom section of the lower steering column cover, aligned with the three holes on the steering column. See Figure 6.

6. Insert the three button head screws to attach the bottom lower steering column cover to the steering column. See Figure 6.

7. Insert the two screws to attach the sides of the bottom lower steering column cover to the steering column. See Figure 6.

8. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

9. Align the tabs on the bottom section of the upper steering column cover, with the clips on the bottom section of the lower steering column cover. Gently press the two covers together until fully seated.

KICK PANELS

Remove

NOTE: Use caution when removing the covers. Covers can be damaged if not removed properly. Follow the procedures below closely.

1. Lift the floormat up and remove it from the operator station. See Figure 8.

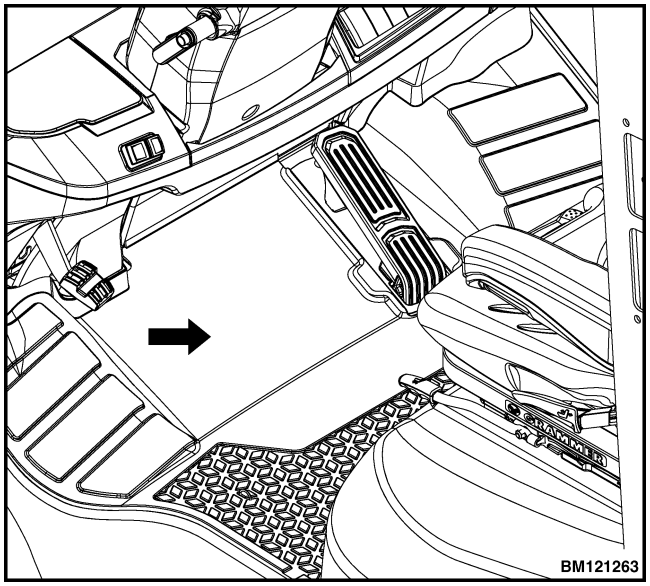
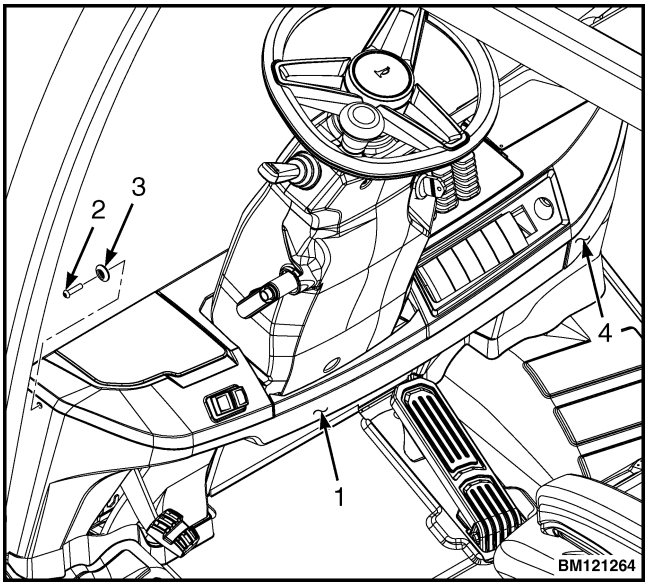


Figure 8. Floormat

2. Remove the screw and washer retaining the side of the LH kick panel. See Figure 9.

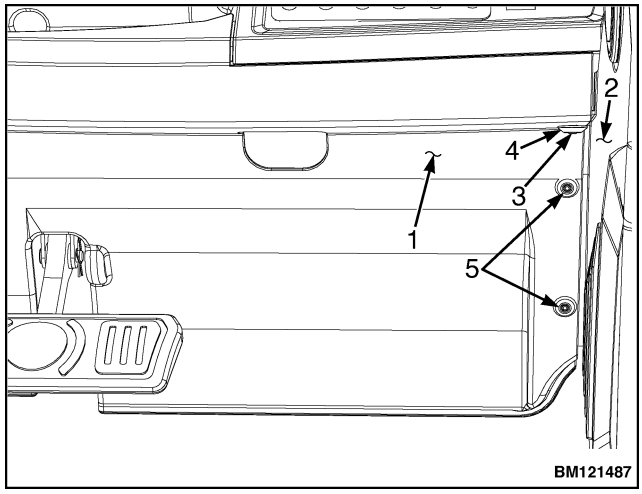


1. LH KICK PANEL
2. CAPSCREW
3. WASHER
4. RH KICK PANEL

Figure 9. Kick panels

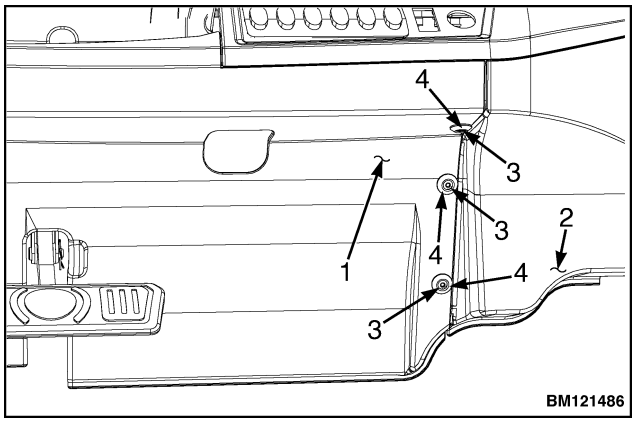
3. Remove the remaining screws on the LH kick panel.

- For trucks featuring a Heating, Ventilation and Air Conditioning (HVAC) unit, remove the screw and washer attaching the LH kick panel to the RH kick panel (the two bottom holes will contain plugs). See Figure 10.
- For trucks without HVAC unit, remove the three screws and the washers attaching the LH kick panel to the RH kick panel. See Figure 11.



1. LH KICK PANEL
2. RH KICK PANEL
3. SCREW
4. WASHER
5. PLUGS

Figure 10. LH kick panel hardware, with HVAC unit



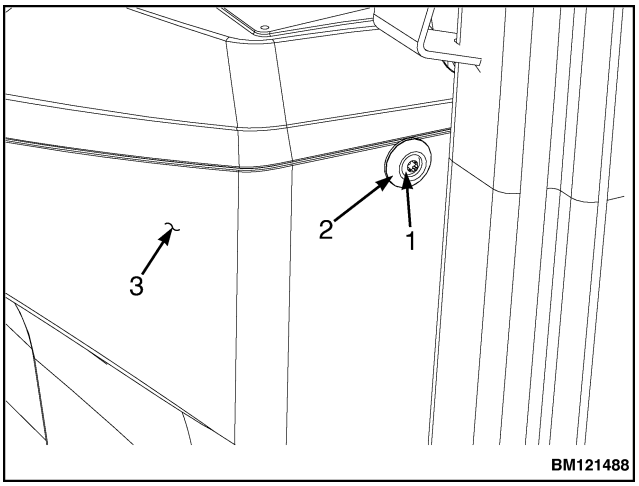
1. LH KICK PANEL
2. LH HVAC COVER
3. SCREW
4. WASHER

Figure 11. LH kick panel hardware, without HVAC unit

4. Place both hands on the LH kick panel (one hand on each side of the steering column) and gently pry the LH kick panel from the dashboard to remove. Be careful not to break any of the tabs that attach the kick panel to the dashboard.

NOTE: For trucks featuring HVAC unit, skip the following step. Proceed to Heating, Ventilation and Air Conditioning (HVAC) unit covers.

5. Remove the screw and washer retaining the RH kick panel. See Figure 12.



1. CAPSCREW
2. WASHER
3. RH KICK PANEL

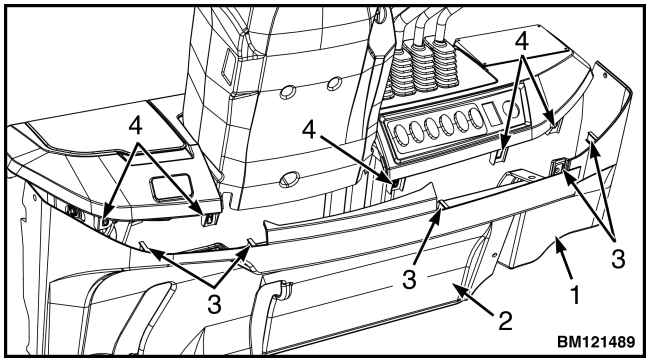
Figure 12. RH kick panel

6. Pull the RH kick panel free to remove.

Install

1. Install the RH kick panel:

- Confirm the bottom of the RH kick panel is seated in the grooves in the floorplate.
- Align the clips on the top of the RH kick panel with the tabs in the dash panel. See Figure 13.
- Firmly press the RH kick panel until the clips are fully seated in the tabs in the dash panel. See Figure 13.
- Insert the screw and washer to retain the side of the RH kick panel to the dash panel. See Figure 12.
- Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).



1. RH KICK PANEL
2. LH KICK PANEL
3. CLIPS
4. TABS

Figure 13. Kick panels and dash

2. Install the LH kick panel:

- Confirm the bottom of the LH kick panel is seated in the grooves in the floorplate.
- Align the clips on the top of the LH kick panel with the tabs in the dash panel. See Figure 13.
- Firmly press the LH kick panel until the clips are fully seated in the tabs in the dash panel. See Figure 13.
- Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

3. Attach the LH side panel to the RH side panel.

- For trucks featuring HVAC unit, insert the screw and washer to attach the LH kick panel to the RH kick panel (the two bottom holes will contain plugs). See Figure 10.
- For trucks without HVAC unit, insert the three screws and the washers to attach the LH kick panel to the RH kick panel. See Figure 11.

4. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

5. Insert the floormat. See floormat.

FLOORMATS AND FLOORPLATES

Remove

NOTE: Use caution when removing the covers. Covers can be damaged if not removed properly. Follow the procedures below closely.

1. Lift the floormat up and remove it from the operator station. See Figure 14.

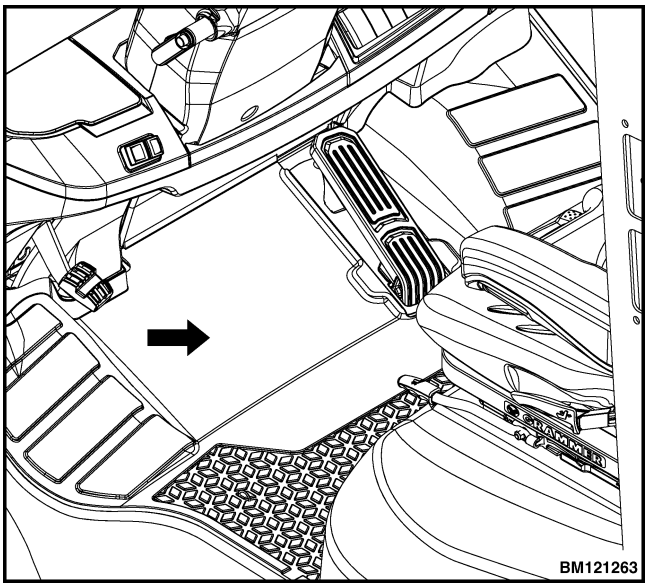
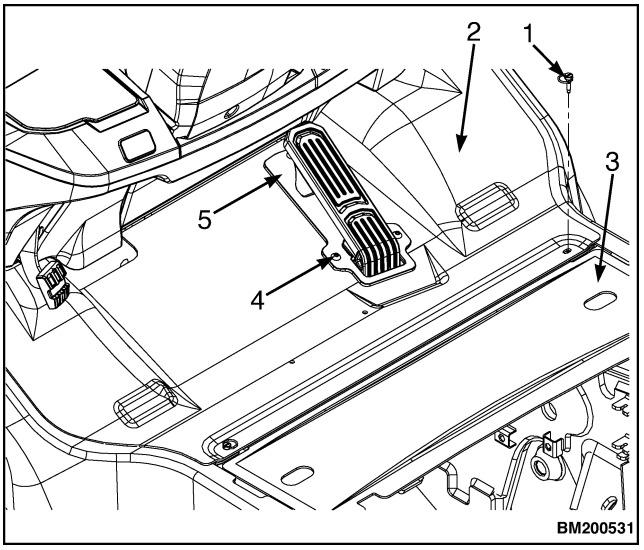


Figure 14. Floormat

2. Remove the two fasteners that retain the rear plate to the floorplate. Remove the rear plate. See Figure 15.



1. FASTENER
2. FRONT FLOORPLATE
3. REAR FLOORPLATE
4. CAPSCREW
5. THROTTLE PEDAL

Figure 15. Floorplate

3. Slide the front floorplate rearward approximately 150 mm (6 in.).

4. Rotate the front floorplate and pivot about the back edge to expose the underside of the throttle pedal. See Figure 16.

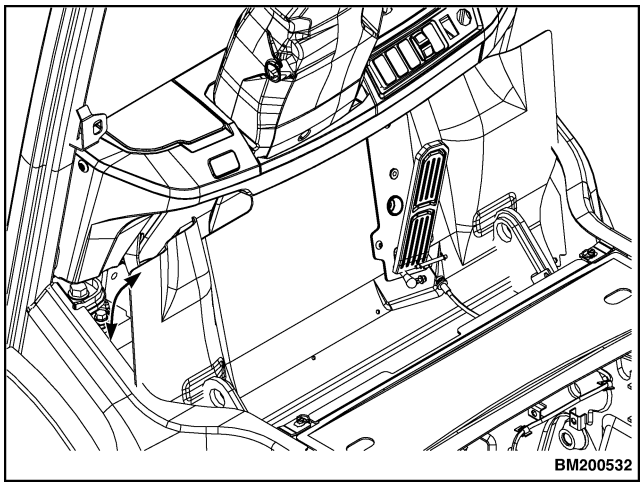


Figure 16. Pivot floorplate

5. Disconnect the throttle pedal. See **Operator's Cab** 0100SRM2298.

6. Remove the floorplate from the lift truck.

Install

1. Connect the throttle pedal. See **Operator's Cab** 0100SRM2298.

2. Slide the front floorplate forward approximately 150 mm (6 in.).

3. Insert the two fasteners (item 1, Figure 15, to attach the front floorplate to the rear floorplate. Tighten to standard torque.

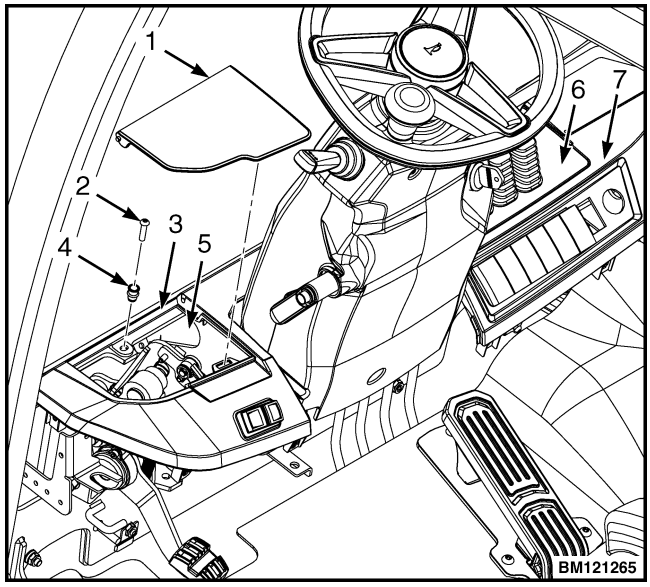
4. Install the floormat. See floormat.

DASH COVERS

Remove

NOTE: Use caution when removing the covers. Covers can be damaged if not removed properly. Follow the procedures below closely.

1. Use a flathead screwdriver to gently pry the service access cover and the manual hydraulic levers cover from the dash panel. See Figure 17 and Figure 18.



1. SERVICE ACCESS COVER
2. SCREW
3. LH DASH PANEL
4. INSERT
5. COWL
6. MANUAL HYDRAULIC LEVERS COVER
7. RH DASH PANEL

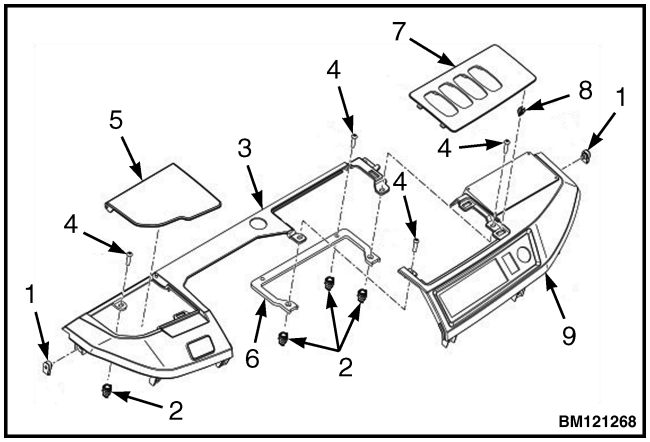
Figure 17. Dash panels remove/install

2. Remove the three screws and washers retaining the RH dash panel to the dash support plate. See Figure 18.

3. Pull the RH dash panel free and remove from the operator station.

4. Remove the two screws and inserts from the LH dash panel. See Figure 17 and Figure 18.

5. Pull the LH dash panel free and remove from the operator station.



1. FOLDOVER NUT
2. INSERT
3. LH DASH PANEL
4. SCREW
5. SERVICE ACCESS COVER
6. DASH SUPPORT PLATE
7. MANUAL HYDRAULIC LEVERS COVER
8. CLIP
9. RH DASH PANEL

Figure 18. Dash panels

Install

1. Install the RH dash panel.

2. Insert the two screws and inserts to retain the RH dash panel to the dash support plate. See Figure 18. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

3. Use hand tools to tighten screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

4. Install the LH dash panel.

5. Insert the two screws and inserts to attach the LH dash panel. See Figure 17 and Figure 18.

6. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

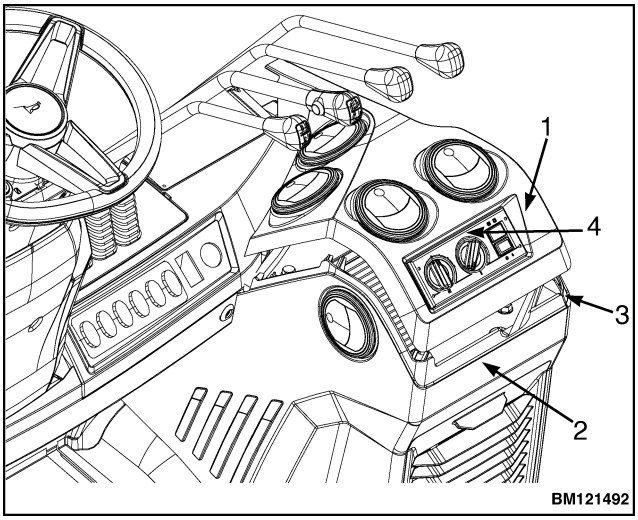
HEATING, VENTILATION AND AIR CONDITIONING (HVAC) UNIT COVERS

NOTE: Use caution when removing the covers. Covers can be damaged if not removed properly. Follow the procedures below closely.

Remove

1. Remove the LH kick panel before removing any covers on the HVAC unit. See Kick panels.

2. Use a flathead screwdriver to gently pry the top cover away from the two bottom covers. See Figure 19.

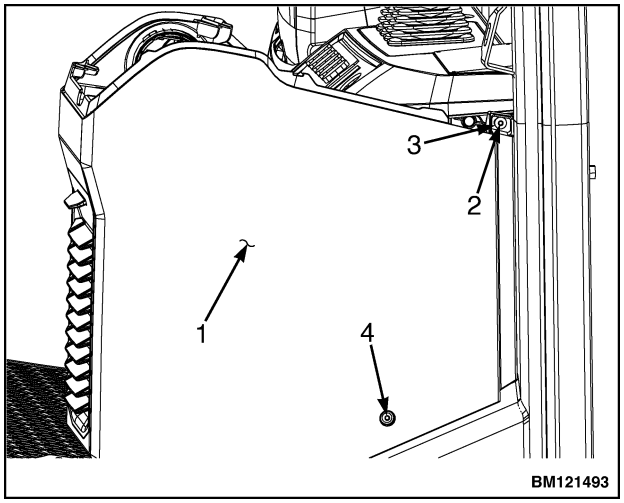


1. TOP COVER
2. LH HVAC COVER
3. RH HVAC COVER
4. HVAC CONTROL UNIT

Figure 19. HVAC unit covers

3. Disconnect the heater wire harness from the HVAC unit control panel.

4. With the top cover removed, locate and remove the capscrew (item 2, Figure 20) and washer (item 3) that connects the RH side cover to the dash.

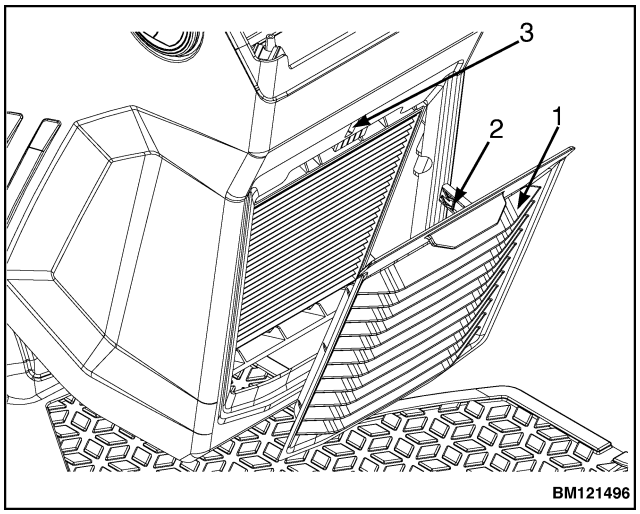


1. RH HVAC COVER
2. CAPSCREW
3. WASHER
4. SCREW

Figure 20. RH HVAC cover

5. Remove the screw (item 4, Figure 20) on the bottom of the RH cover.

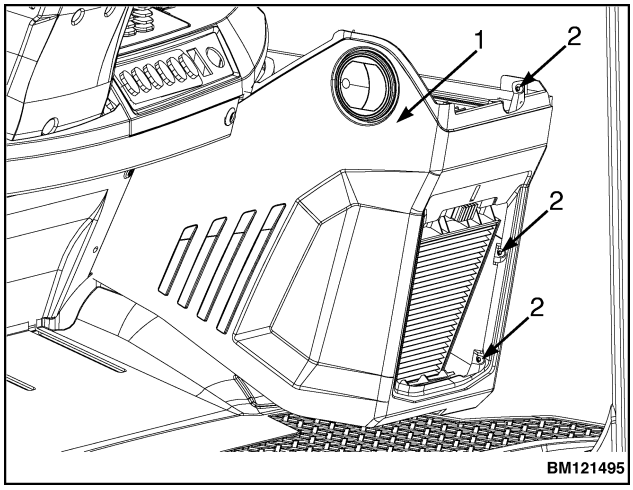
6. Gently pry the filter cover from the LH HVAC cover. See Figure 21.



1. FILTER COVER
2. CLIP
3. TAB

Figure 21. HVAC filter cover

7. Remove the three button head screws attaching the LH HVAC cover to the RH HVAC cover. See Figure 22.



1. LH HVAC COVER
2. BUTTON HEAD SCREWS

Figure 22. LH HVAC cover

8. Remove the RH and LH HVAC covers.

Install

1. Install the RH HVAC cover aligned with the hole on the side of the dash. See Figure 20.

2. Insert the capscrew and washer to retain the RH HVAC cover to the dash. See Figure 20.

3. Use hand tools to tighten the screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

4. Insert the screw to retain the bottom of the RH HVAC cover. See Figure 20.

5. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

6. Install the LH HVAC cover, making sure the three holes are aligned with the holes on the RH HVAC cover. See Figure 22.

7. Insert the three screws to retain the LH HVAC cover to the RH HVAC cover. See Figure 22.

8. Use hand tools to tighten all screws. Torque to 2.55 to 2.75 N•m (22.57 to 24.34 lbf in).

9. Connect the wire harness to the HVAC control panel.

10. Gently insert the clips on the top cover into the tabs on the RH and LH HVAC covers to install the top cover. See Figure 19.

COUNTERWEIGHT REPAIR 202001-118

COUNTERWEIGHT REPAIR

WARNING

The lift truck must be put on blocks for some types of maintenance and repair. The removal of the following assemblies will cause large changes in the center of gravity: mast, drive axle, engine and transmission, and counterweight. When the lift truck is put on blocks, put additional blocks in the following positions to maintain stability: • Before removing the mast and drive axle, put blocks under the counterweight so the lift truck cannot fall backward. • Before removing the counterweight, put blocks under the mast assembly so the lift truck cannot fall forward. The surface must be solid, even, and level when the lift truck is put on blocks. Make sure that any blocks used to support the lift truck are solid, one-piece units. See the procedure How to Put Lift Truck on Blocks in the Periodic Maintenance Manual for your lift truck.

WARNING

DO NOT operate the lift truck if the capscrew for the counterweight is not installed. When the capscrew is removed, the counterweight can fall from the lift truck.

WARNING

The counterweight is heavy. Make sure that the eyebolt and lifting devices have enough capacity to lift the weight.

NOTE: The heaviest counterweight for this truck weighs 2,092 kg (4,612 lb).

REMOVE

1. Place truck on a solid, level surface.

2. Apply the park brake.

3. Place blocks against both sides (front and back) of the tires to prevent movement of truck.

NOTE: If the truck is LPG fueled, the fuel tank (s) and bracket must be removed. Refer to Fuel tank repair and LPG tank bracket repair for details.

4. If the truck is equipped with an overhead exhaust it must be removed first. If no overhead exhaust is present proceed to Step 10.

NOTE: Illustration shown is for DPF equipped trucks, procedure is the same for DOC equipped trucks.

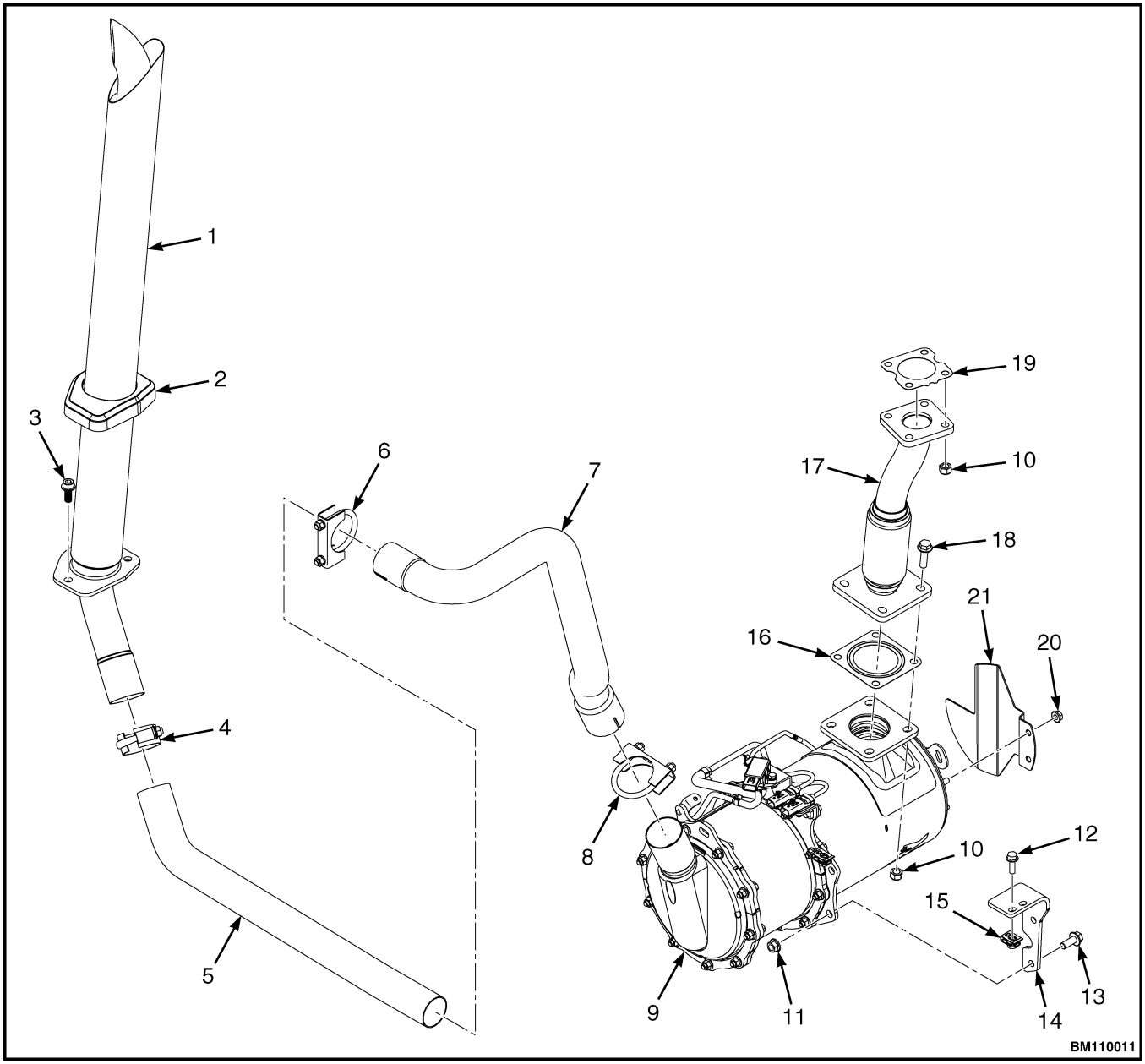


Figure 23. Overhead Exhaust

NOTE: NOT ALL COMPONENTS IN THE ILLUSTRATION WILL BE REMOVED. ONLY ITEMS NECESSARY FOR COUNTERWEIGHT REMOVAL WILL BE DISCUSSED.

Legend for Figure 23.

1. OVERHEAD EXHAUST
2. COVER
3. CAPSCREW
4. CLAMP
5. EXHAUST PIPE
6. CLAMP
7. EXHAUST PIPE
8. CLAMP
9. DIESEL PARTICULATE FILTER (DPF)
10. LOCKNUT
11. NUT
12. CAPSCREW
13. CAPSCREW
14. BRACKET - DPF MOUNT, REAR
15. NUT
16. GASKET
17. EXHAUST PIPE
18. CAPSCREW
19. GASKET
20. NUT
21. HEAT SHIELD - DPF

5. Remove clamp (item 4, Figure 23) attaching exhaust pipe (item 5, Figure 23) to overhead exhaust (item 1, Figure 23).

6. Raise up cover (item 2, Figure 23) to access three capscrews (item 3, Figure 23) securing exhaust mounting plate to counterweight (not shown).

7. Remove three capscrews (item 3, Figure 23), cover (item 2, Figure 23), and overhead exhaust (item 1, Figure 23) from truck.

8. Remove clamp (item 6, Figure 23) and exhaust pipe (item 5, Figure 23).

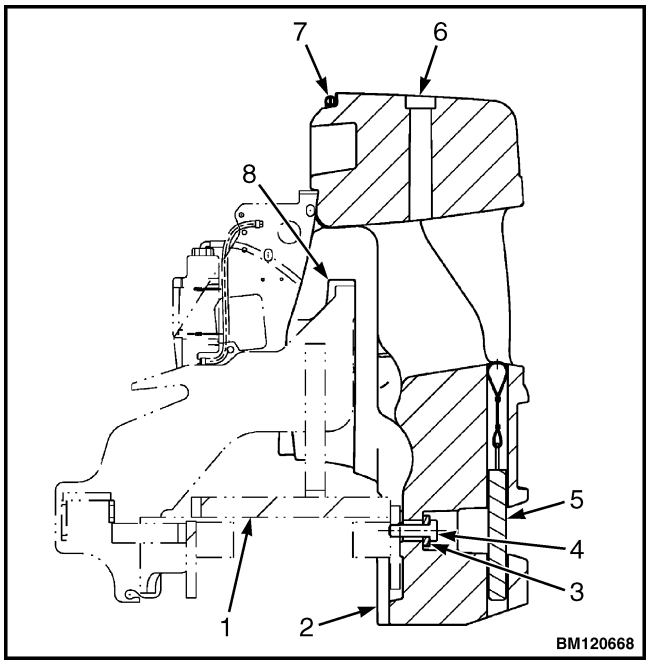
9. Remove clamp (item 8, Figure 23) and exhaust pipe (item 7, Figure 23) from DPF (item 9, Figure 23).

WARNING

The counterweight is heavy. Make sure that the eyebolt and lifting devices have enough capacity to lift the weight.

NOTE: The heaviest counterweight for this truck weighs 2,092 kg (4,612 lb).

10. Install a lifting eyebolt into lift hole of counterweight.



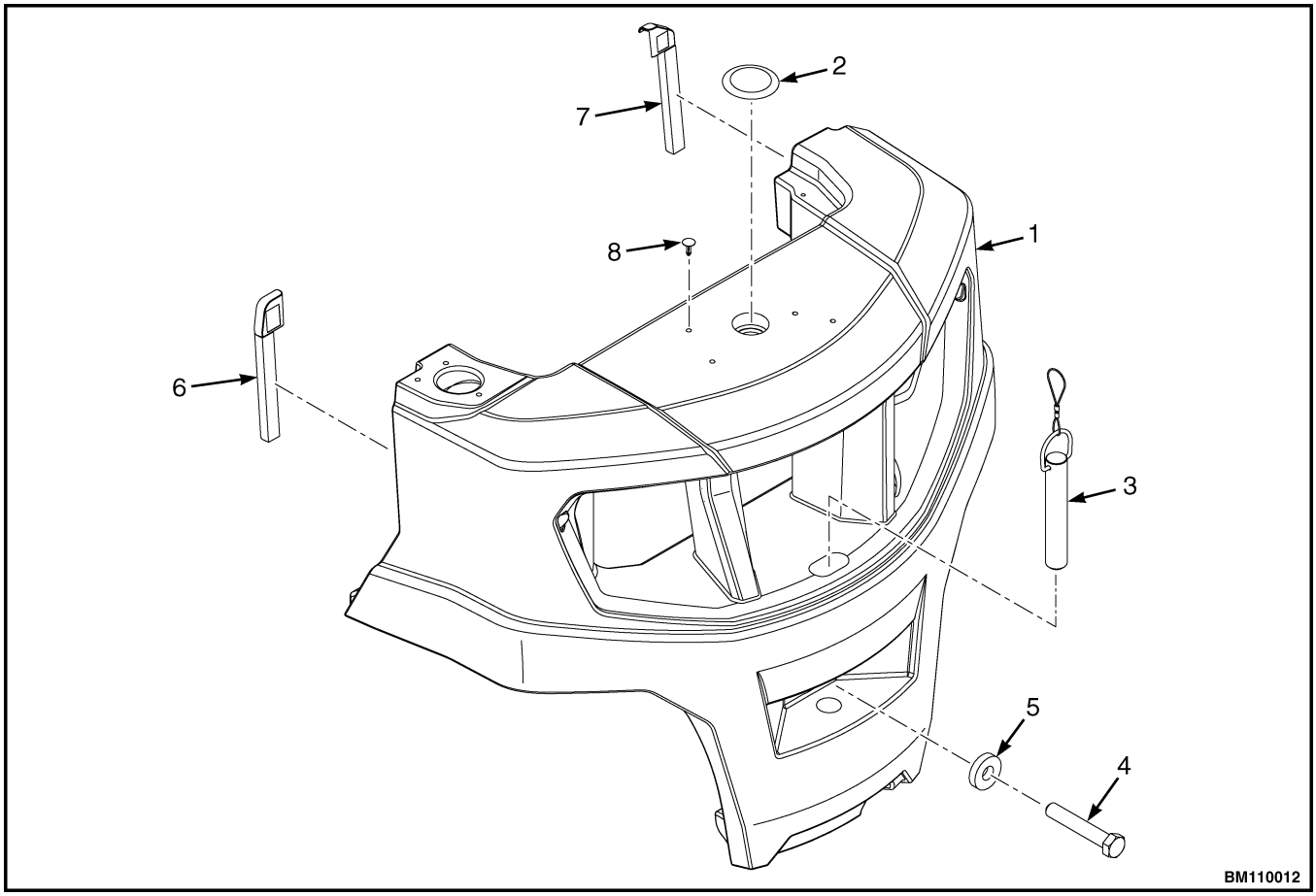
1. FRAME
2. LOWER FRAME MOUNT
3. WASHER
4. CAPSCREW
5. TOW PIN
6. LIFT HOLE
7. SEAL
8. FRAME HOOK

Figure 24. Counterweight Removal

11. Attach a lifting device to the lifting eyebolt and lift until part of the weight of counterweight is supported by the lifting device.

NOTE: Lift counterweight only enough to facilitate capscrew removal and prevent counterweight from inadvertently falling off truck.

12. Remove tow pin (item 3, Figure 25).



1. COUNTERWEIGHT
2. PLUG
3. TOW PIN
4. CAPSCREW
5. WASHER
6. FOAM SEAL - LH (WITH ADHESIVE)
7. FOAM SEAL - RH (WITH ADHESIVE)
8. FASTENER

Figure 25. Counterweight

13. Remove capscrew and washer (items 4 and 5, Figure 25) securing counterweight to frame.

14. Slowly raise the counterweight straight up to prevent damage to the exhaust. When the counterweight is above the frame, move it backward and away from the truck.

15. Lower the counterweight to the floor and ensure it is stable.

INSTALL

1. Ensure foam seals (items 6 and 7, Figure 25) are in place on counterweight.

2. Using the lifting device, install counterweight on truck frame. When counterweight is installed, make sure hooks on frame fully engage counterweight so it is aligned with parts of frame.

3. Install washer (item 5, Figure 25) and capscrew (item 4, Figure 25). Torque capscrew to 555 Nm (409 lbf-ft).

4. Install tow pin (item 3, Figure 25).

5. If truck is not equipped with an overhead exhaust proceed to Step 11.

6. Install exhaust pipe (item 7, Figure 23) to DPF (item 9, Figure 23) with clamp (item 8, Figure 23).

7. Attach exhaust pipe (item 5, Figure 23) to exhaust pipe (item 7, Figure 23) with clamp (item 6, Figure 23).

8. Install overhead exhaust (item 1, Figure 23) in truck and connect to exhaust pipe (item 5, Figure 23) with clamp (item 4, Figure 23).

9. Secure exhaust mounting plate to counterweight (not shown) with three capscrews (item 3, Figure 23).

10. Slide down cover (item 2, Figure 23) and snap in place.

NOTE: If the truck is LPG fueled, install the fuel tank (s). Refer to Fuel tank repair and LPG tank bracket repair for details.

11. Remove blocks under the mast assembly.

12. Remove blocks from both sides (front and back) of the tires.

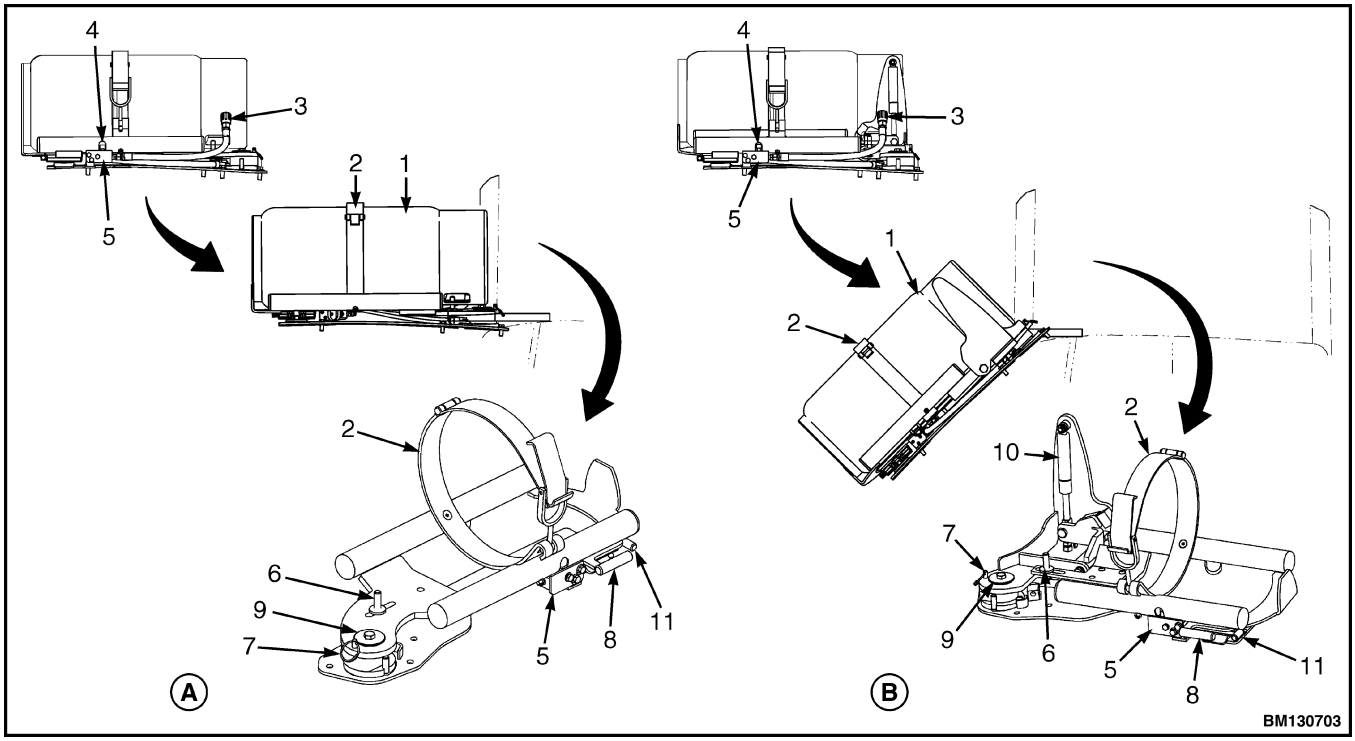
13. Release the park brake.

LPG TANK BRACKET REPAIR 202001-119

LPG TANK REMOVE/INSTALL

Remove

NOTE: The LPG tank bracket used on this line of trucks to mount the LPG tank onto the counterweight comes in multiple styles. One style of bracket swings out to the side of the truck and another style swings out to the side and drops down (EZXchange bracket). Optional bracket design may have two tank straps. See Figure 26.



A. SWING OUT TANK BRACKET

1. LPG TANK
2. TANK STRAP
3. QUICK DISCONNECT FITTING
4. HYDROSTATIC RELIEF VALVE
5. MANIFOLD BLOCK
6. ALIGNMENT PIN

B. EZXCHANGE TANK BRACKET

7. STOP PIN
8. BRACKET HANDLE
9. BRACKET PIVOT
10. GAS SPRING (EZXCHANGE BRACKET)
11. BRACKET RELEASE PIN

Figure 26. LPG tank

1. Removable LPG tanks can be replaced indoors ONLY IF the lift truck is a minimum of 8 m (26 ft) from any open flame, motor vehicles, electrical equipment, or ignition source. Move the lift truck to an area where LPG tanks are changed.

2. Turn the shutoff valve clockwise until the valve is completely closed.

3. Run the engine until it stops, then turn the key switch to OFF position if truck is equipped with key switch, or press Power ON/OFF button if truck is equipped with keyless start option.

4. Disconnect the quick-disconnect fitting on the LPG tank. See Figure 26.

5. Push in the bracket release pin, grab the bracket handle, and swing the tank and bracket out to the side of the lift truck. If your truck is equipped with a swing out and drop down LPG tank bracket (EZXchange bracket), drop the tank down to the side of the truck for ease of removal.

6. Unlatch the tank strap and remove the LPG tank from the bracket.

Install

NOTE: The LPG bracket must be in the swing out position to install the LPG tank. If your lift truck has the swing out and drop down bracket (EZXchange bracket), position the bracket in the drop down position. See Figure 26.

WARNING

When closing the LPG tank strap, do not wrap your fingers around the strap handle. The strap can close quickly and with enough force to cause injury to the fingers and hand.

1. Place the LPG tank into the bracket. Be sure the alignment pin on the tank bracket is properly aligned with the hole in the tank. If the pin is damaged, repair it before installing the tank. The type of alignment pin may vary.
   a. Steel strap and double steel strap brackets feature a standard alignment pin.
   b. Fabric strap brackets may feature an offset weldment pin to provide added adjustment for the positioning of the tank. The offset pin is reversible by removing the hardware, flipping it around, and reinstalling the hardware, allowing for more room to accommodate a larger range of tank sizes.
2. Secure the tank strap around the tank and close the strap.
3. Pull the stop pin and swing the LPG tank bracket into resting position on the counterweight. Replace the LPG tank pin if damaged. Be sure that the bracket locks into position.
4. Connect the quick-disconnect fitting on the LPG tank. See Figure 26.
5. Turn the fuel valve counterclockwise to open the fuel valve.
6. Inspect the fuel system for leaks when the fuel valve is open. There are four methods used to inspect the fuel system for leaks:
   a. **Sound** - Listen for sound of LPG escaping from a tank fitting or hose connection.
   b. **Smell** - LPG has a very distinctive odor. If you smell LPG, **DO NOT** start the engine.
   c. **Soapy water** - This method is used in conjunction with Step b above. If the odor of LPG is present but escaping fuel cannot be heard, apply soapy water to the fittings and observe for bubbles.
   d. **Frost** - If the amount of LPG escaping is sufficient, frost may appear on the fittings.

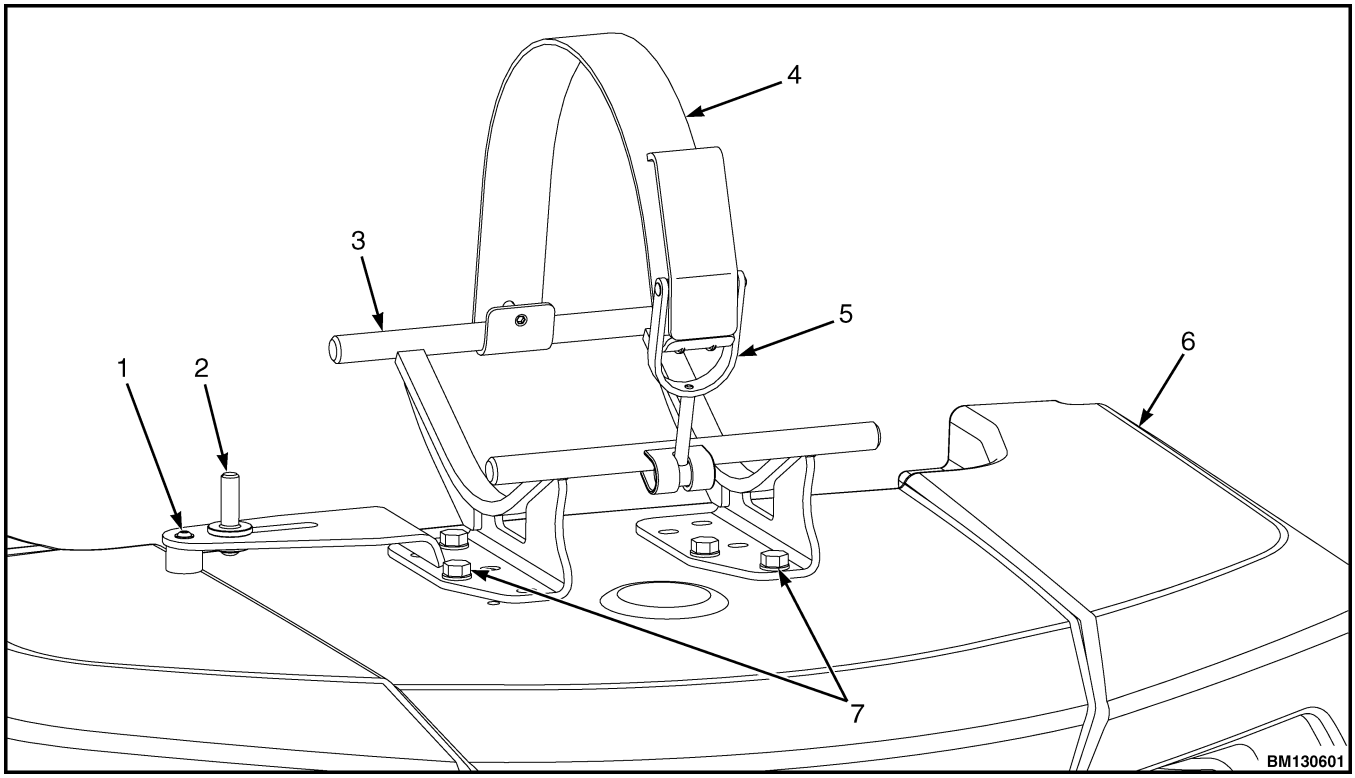
LPG TANK BRACKET REPAIR

NOTE: LPG tank brackets are mounted to the counterweight and are available in three styles: fixed, swing-out, or swing-out and drop-down. Tank straps are either steel or fabric. Steel straps are shown for illustrative purposes.

Fixed Bracket

Remove

1. Remove the four capscrews (item 7, Figure 27).



1. CAPSCREW
2. TANK ALIGNMENT PIN
3. TANK BRACKET
4. TANK STRAP
5. LATCH
6. COUNTERWEIGHT
7. CAPSCREWS

Figure 27. Fixed Tank Bracket

2. Remove the tank bracket (item 3, Figure 27) from the counterweight (item 6, Figure 27).

Install

1. Install the tank bracket (item 3, Figure 27) to the counterweight (item 6, Figure 27).

2. Secure the tank bracket (item 3, Figure 27) to the counterweight (item 6, Figure 27) with the four capscrews (item 7, Figure 27). Torque the capscrews to 51 N•m (37.6 lbf ft).

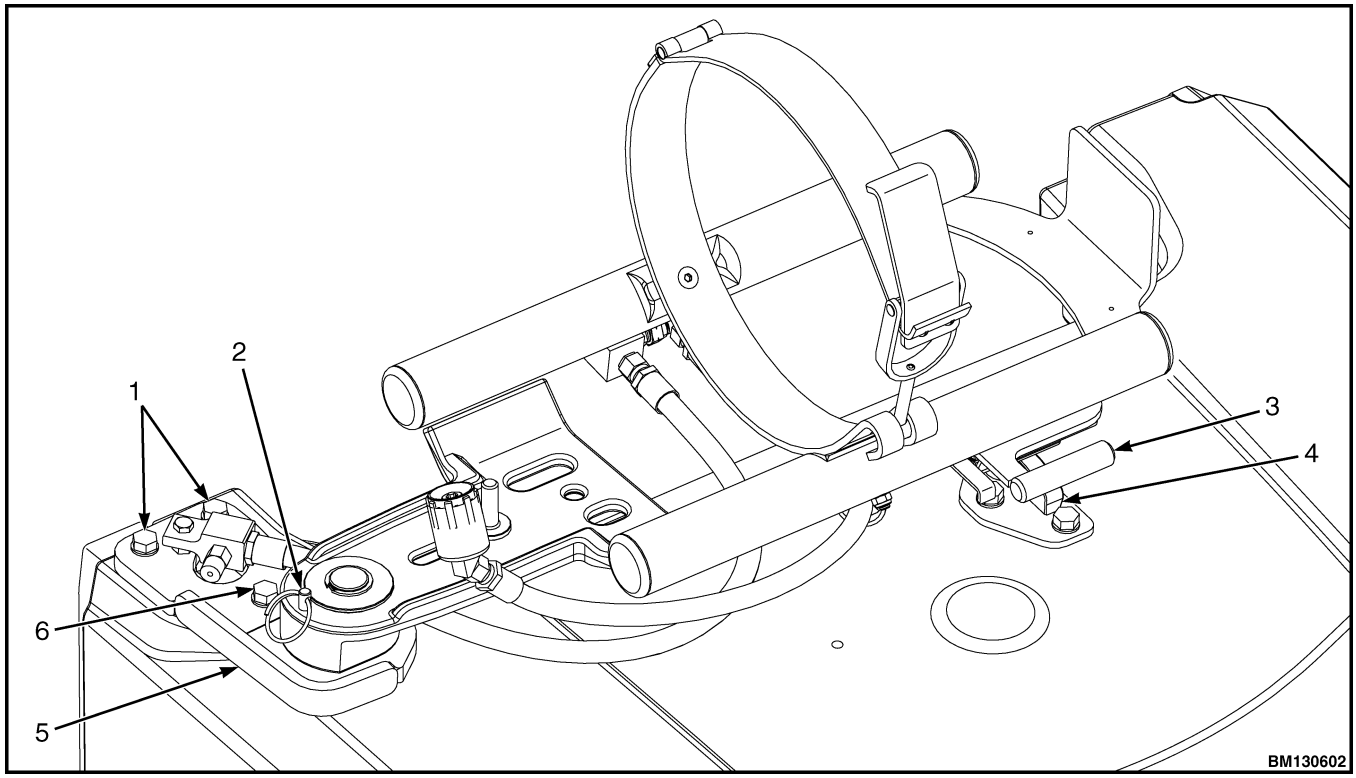
Swing-Out Bracket

Remove

WARNING

When removing the capscrews and shims, if equipped, for the LPG tank bracket, remove one capscrew (item 6, Figure 28) and shim (if equipped) with the LPG bracket in the swing-out or extended position. Remove the remaining capscrews only with the bracket in the driving position, (but not locked). The LPG tank bracket is heavy and difficult to handle if all the capscrews are removed with the bracket in the swing-out position. Personal injury and damage to the lift truck can result if the bracket is removed and handled while in the swing-out or extended position.

1. Pull the bracket stop pin (item 2, Figure 28) up, pull the latch release (item 4, Figure 28), grab the latch handle (item 3, Figure 28), and swing the LPG tank bracket to the out position. Ensure the bracket locks into position.



1. CAPSCREWS
2. BRACKET STOP PIN
3. LATCH HANDLE
4. LATCH RELEASE
5. BASEPLATE
6. CAPSCREW

Figure 28. Swing-Out Bracket

2. Remove the capscrew (item 6, Figure 28) and shim, if equipped.

3. Rotate the LPG tank bracket into original position but do not lock.

4. Remove the remaining two capscrews (item 1, Figure 28).

5. Remove the LPG tank bracket from the counterweight.

Install

1. Install the LPG tank bracket on the counterweight. Ensure bolt holes are aligned.

2. Install the two capscrews (item 1, Figure 28). Torque the capscrews to 51 N•m (37.6 lbf ft).

3. Rotate LPG tank bracket into the out position and ensure it locks in position.

4. Install one capscrew (item 6, Figure 28) and shim, if equipped. Torque capscrew to 51 N•m (37.6 lbf ft).

5. Pull bracket stop pin (item 2, Figure 28) up, grab the latch handle (item 3, Figure 28), and rotate the LPG tank bracket back into position over the counterweight. Ensure the bracket locks into position.

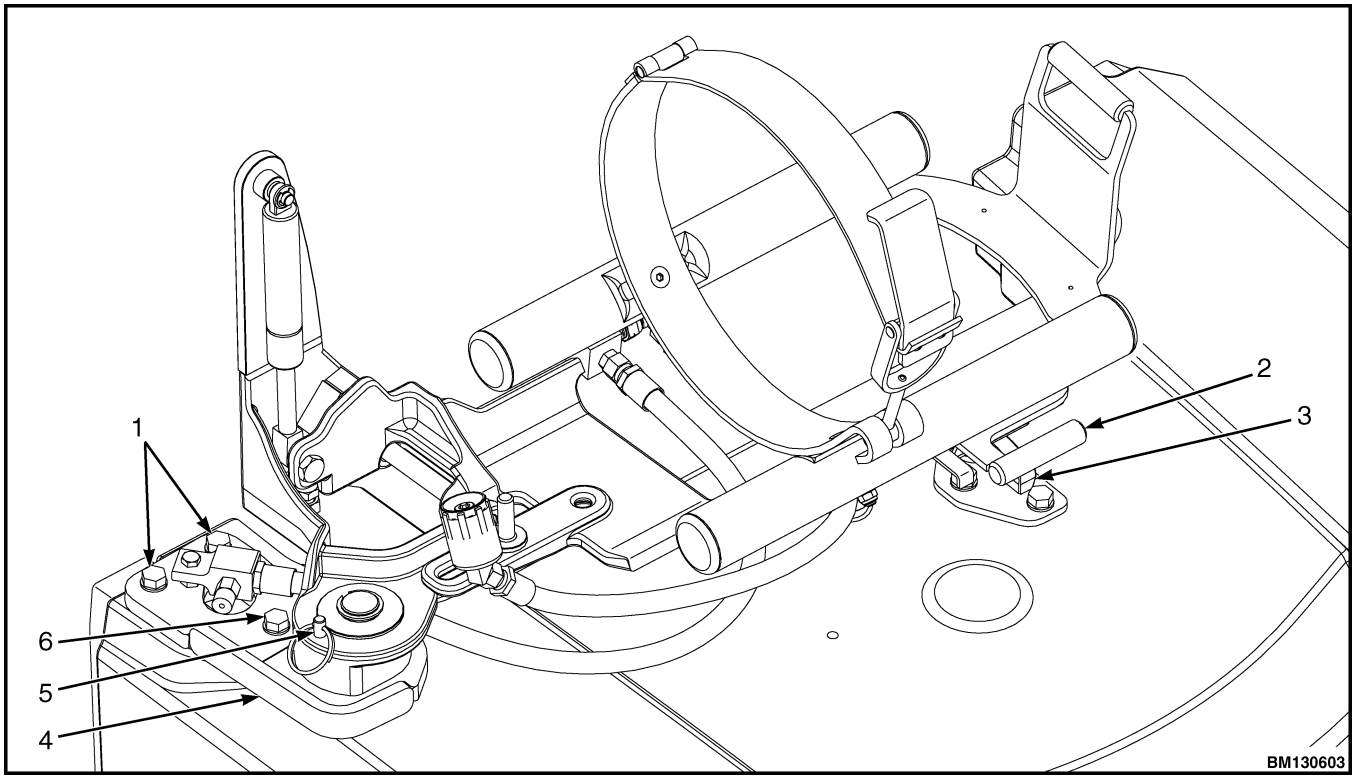
Swing-Out and Drop-Down Bracket

Remove

WARNING

When removing the capscrews and shims, if equipped, for the LPG tank bracket, remove one capscrew (item 6, Figure 29) and shim (if equipped) with the LPG bracket in the swing-out or extended position. Remove remaining capscrews only with the bracket in the driving position, (but not locked). The LPG tank bracket is heavy and difficult to handle if all the capscrews are removed with the bracket in the swing-out position. Personal injury and damage to the lift truck can result if the bracket is removed and handled while in the swing-out or extended position.

1. Pull the bracket stop pin (item 5, Figure 29) up, pull the latch release (item 3, Figure 29), grab the latch handle (item 2, Figure 29), and swing the LPG tank bracket to the out position. Ensure bracket locks into position.



1. CAPSCREWS
2. LATCH HANDLE
3. LATCH RELEASE
4. BASEPLATE
5. BRACKET STOP PIN
6. CAPSCREW

Figure 29. Swing-Out and Drop-Down Bracket

2. Remove one capscrew (item 6, Figure 29) and shim, if equipped.

3. Rotate the LPG tank bracket into original position but do not lock.

4. Remove the remaining two capscrews (item 1, Figure 29).

5. Remove the LPG tank bracket from the counterweight.

Install

1. Install the LPG tank bracket on the counterweight . Ensure the bolt holes are aligned.

2. Install the two capscrews (item 1, Figure 29). Torque capscrews to 51 N•m (37.6 lbf ft).

3. Rotate the LPG tank bracket into the out position and ensure it locks in position.

4. Install the capscrew (item 6, Figure 29) and shim, if equipped. Torque capscrew to 51 N•m (37.6 lbf ft).

5. Pull the bracket stop pin (item 5, Figure 29) up, grab the latch handle (item 2, Figure 29), and rotate the LPG tank bracket back into position over the counterweight. Ensure the bracket locks into position.

Frame repair

FRAME MODULE REPAIR 202001-120

This content is under development and will be released when available.

FUEL TANK REPAIR 202001-121

INSPECT

WARNING

Special procedures must be followed when large leaks or other repairs need welding or cutting. All work must be done by authorized personnel. If the tank is cleaned inside a building, make sure there is enough ventilation. See the following manuals for additional information:

- **Safe Practices for Welding and Cutting Containers That Have Held Combustibles by the American Welding Society, F4.1 - 1999.**
- **Safety in Welding and Cutting, American National Standard, AWS Z 49.1 - 1999.**

WARNING

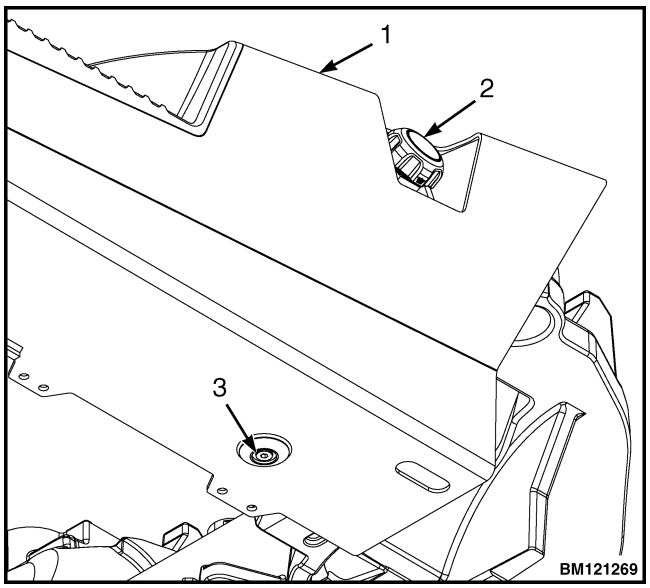
DO NOT use tools that can make sparks, heat, or static electricity. The vapors in the tank can cause an explosion.

CAUTION

Additives may damage the fuel system. Before using additives, contact your local dealer.

The fuel tank is located inside the left hand frame assembly. See Figure 30. Locate the fuel tank and make a visual inspection of the exterior on all sides of the tank. Inspect welds for cracks and leakage. Check for wet areas, accumulation of dirt, and loose or missing paint caused by leakage. Areas of tank that are not easily seen can be checked with an inspection mirror and a light that is approved for locations with flammable vapors.

1. Place a drain pan with enough capacity to hold all fluid from tank directly under the tank's drain plug. See Figure 30.



1. FUEL TANK IN LH FRAME ASSEMBLY
2. FUEL CAP
3. FUEL TANK DRAIN PLUG

Figure 30. Fuel tank drain plug

2. Remove the fuel tank drain plug and drain all contents of the tank into the drain pan.
3. After all fluid has been drained, reinstall the drain plug. Remove the drain pan from under lift the truck.

CLEAN

WARNING

When cleaning the tank, DO NOT use solutions that make dangerous gases at normal temperatures or when heated. Wear eye and face protection. Protect the body from burns.

WARNING

Be careful when cleaning with steam. Steam can cause serious burns. Wear protective clothing, gloves, and eye protection. Never expose your skin to steam.

Steam method of cleaning

WARNING

Compressed air can move particles and make them become airborne, which may cause injury. Make sure the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent eye injury.

WARNING

Be careful when cleaning with steam. Steam can cause serious burns. Wear protective clothing, gloves, and eye protection. Never expose your skin to steam.

CAUTION

Disposal of lubricants, fluids, and chemicals must meet local environmental regulations.

When cleaning with steam, use a hose with a minimum diameter of 19 mm (0.75 in.) and a valve nozzle installed on the hose to control the pressure of the steam. If a metal nozzle is used, it must be made of a material that does not make sparks. Connect a ground wire to the tank to prevent static electricity.

Perform the following procedure to clean the fuel tank with steam:

1. Install the fuel tank drain plug. See Figure 30.
2. Fill the tank 1/4 full with a solution of water and sodium bicarbonate or sodium carbonate. Mix 0.5 kg (1 lb) per 4 liter (1 gal) of water.
3. Mix the solution in the tank by inserting a compressed air wand into the tank and solution, and applying compressed air pressure. Make sure all surfaces on the inside of the tank are flushed with the solution.
4. Drain the tank.
5. Put steam into the tank until the tank does not have odors and metal is hot. Steam vapors must come from all openings.
6. Flush the inside of the tank with boiling water. Make sure all loose material is removed from the inside of the tank.
7. Make an inspection of inside of tank. If it is not clean, repeat Item 5. and Item 6. and make another inspection. When making inspections, use a light that is approved for locations with flammable vapors.
8. Place plugs in all openings in the tank. Wait 15 minutes, then remove plugs.
9. Test a sample of vapor with a special indicator for gas vapors. If amount of flammable vapors is above lower flammable limit, repeat cleaning procedures.

Chemical solution method of cleaning

WARNING

Compressed air can move particles and make them become airborne, which may cause injury. Make sure the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent eye injury.

WARNING

When cleaning the tank, DO NOT use solutions that make dangerous gases at normal temperatures or when heated. Wear eye and face protection. Protect the body from burns.

CAUTION

Disposal of lubricants, fluids, and chemicals must meet local environmental regulations.

If the tank cannot be cleaned with steam, use the following procedure:

1. Mix a solution of water and trisodium phosphate or a cleaning compound with an alkaline base. Follow instructions given by cleaning agent manufacturer.
2. Fill tank with the cleaning solution.
3. Mix the solution in the tank by inserting a compressed air wand into the tank and solution, and applying compressed air pressure.
4. Remove the fuel tank drain plug and drain the tank. Flush the inside of the tank with hot (boiling) water. Make sure all cleaning compound is removed.

5. Make an inspection of the inside of the tank. If tank is not clean, repeat Item 1. through Item 4. Make another inspection of tank. When making inspections, use a light that is approved for locations with flammable vapors.
6. Check tank for flammable vapors using special indicator for gas vapors. If amount of flammable vapors is not below lower flammable limit, repeat cleaning procedures.

ADDITIONAL PREPARATIONS FOR REPAIR

If nitrogen gas or carbon dioxide gas is available, prepare tank for welding using these gases. See manual Safe Practices for Welding and Cutting Containers That Have Held Combustibles by the American Welding Society, F4.1 - 1999. If these gases are not available, another method using water can be used as follows:

1. Fill the tank with water to just below the point where work will be done. Make sure the space above water-level has a vent.
2. Use acceptable welding practices to repair tank. See the American National Standard Safety in Welding and Cutting, AWS Z 49.1 - 1999.

SMALL LEAKS, REPAIR

Perform the following procedure to repair small leaks:

1. Use steam to clean the area around the leak. Remove all paint and dirt around the leak.
2. Apply Loctite® 290 to leak. Follow instructions of manufacturer.

LARGE LEAKS, REPAIR

1. Use one of the procedures described in the Clean section above, to clean and prepare tank for repairs.
2. Contact your dealer for Hyster lift trucks for welding instructions.
3. Use acceptable welding practices to repair tank. See the American National Standard Safety in Welding and Cutting, AWS Z 49.1 - 1999.

PREPARATIONS FOR USE AFTER REPAIR

1. Add more water to tank so that water goes above point of where work was done. Check for any leaks coming from the tank.
2. If there are no leaks coming from tank, drain all water from the tank.

HYDRAULIC OIL TANK REPAIR 202001-122

INSPECT

WARNING

Special procedures must be followed when large leaks or other repairs need welding or cutting. All work must be done by authorized personnel. If the tank is cleaned inside a building, make sure there is enough ventilation. See the following manuals for additional information:

- **Safe Practices for Welding and Cutting Containers That Have Held Combustibles by the American Welding Society, F4.1 - 1999.**
- **Safety in Welding and Cutting, American National Standard, AWS Z 49.1 - 1999.**

WARNING

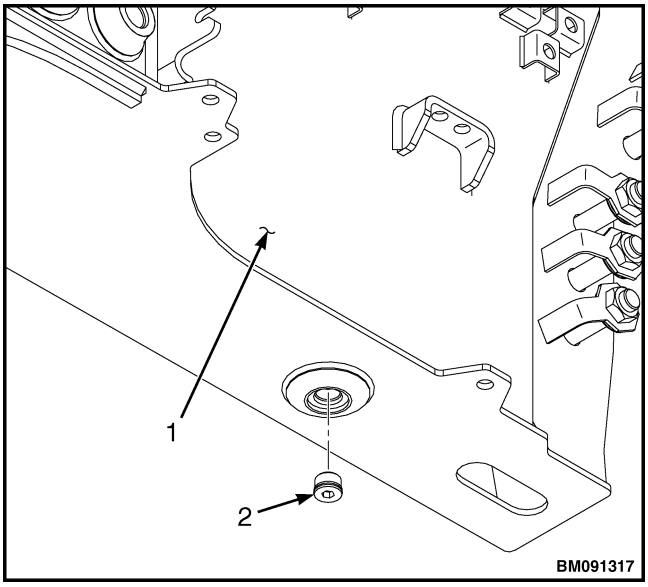
DO NOT use tools that can make sparks, heat, or static electricity. The vapors in the tank can cause an explosion.

CAUTION

Additives may damage the hydraulic system. Before using additives, contact your local dealer.

The hydraulic oil tank is located inside the right hand frame assembly. See Figure 31. Locate the hydraulic oil tank and make a visual inspection of the exterior on all sides of the tank. Inspect welds for cracks and leakage. Check for wet areas, accumulation of dirt, and loose or missing paint caused by leakage. Areas of tank that are not easily seen can be checked with an inspection mirror and a light that is approved for locations with flammable vapors.

1. Place a drain pan with enough capacity to hold all fluid from tank directly under the tank's drain plug. See Figure 31.



1. HYDRAULIC OIL TANK IN RH FRAME ASSEMBLY
2. HYDRAULIC OIL TANK DRAIN PLUG

Figure 31. Hydraulic oil tank drain plug

2. Remove the hydraulic oil tank drain plug and drain all contents of the tank into the drain pan.
3. After all fluid has been drained, reinstall the drain plug. Remove the drain pan from under lift the truck.

CLEAN

WARNING

When cleaning the tank, DO NOT use solutions that make dangerous gases at normal temperatures or when heated. Wear eye and face protection. Protect the body from burns.

WARNING

Be careful when cleaning with steam. Steam can cause serious burns. Wear protective clothing, gloves, and eye protection. Never expose your skin to steam.

Steam method of cleaning

WARNING

Compressed air can move particles and make them become airborne, which may cause injury. Make sure the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent eye injury.

WARNING

Be careful when cleaning with steam. Steam can cause serious burns. Wear protective clothing, gloves, and eye protection. Never expose your skin to steam.

CAUTION

Disposal of lubricants, fluids, and chemicals must meet local environmental regulations.

When cleaning with steam, use a hose with a minimum diameter of 19 mm (0.75 in.) and a valve nozzle installed on the hose to control the pressure of the steam. If a metal nozzle is used, it must be made of a material that does not make sparks. Connect a ground wire to the tank to prevent static electricity.

Perform the following procedure to clean the fuel tank with steam:

1. Install the fuel tank drain plug. See Figure 31.
2. Fill the tank 1/4 full with a solution of water and sodium bicarbonate or sodium carbonate. Mix 0.5 kg (1 lb) per 4 liter (1 gal) of water.
3. Mix the solution in the tank by inserting a compressed air wand into the tank and solution, and applying compressed air pressure. Make sure all surfaces on the inside of the tank are flushed with the solution.
4. Drain the tank.
5. Put steam into the tank until the tank does not have odors and metal is hot. Steam vapors must come from all openings.
6. Flush the inside of the tank with boiling water. Make sure all loose material is removed from the inside of the tank.

7. Make an inspection of inside of tank. If it is not clean, repeat Item 5. and Item 6. and make another inspection. When making inspections, use a light that is approved for locations with flammable vapors.
8. Place plugs in all openings in the tank. Wait 15 minutes, then remove plugs.
9. Test a sample of vapor with a special indicator for gas vapors. If amount of flammable vapors is above lower flammable limit, repeat cleaning procedures.

Chemical solution method of cleaning

WARNING

Compressed air can move particles and make them become airborne, which may cause injury. Make sure the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent eye injury.

WARNING

When cleaning the tank, DO NOT use solutions that make dangerous gases at normal temperatures or when heated. Wear eye and face protection. Protect the body from burns.

CAUTION

Disposal of lubricants, fluids, and chemicals must meet local environmental regulations.

If the tank cannot be cleaned with steam, use the following procedure:

1. Mix a solution of water and trisodium phosphate or a cleaning compound with an alkaline base. Follow instructions given by cleaning agent manufacturer.
2. Fill tank with the cleaning solution.
3. Mix the solution in the tank by inserting a compressed air wand into the tank and solution, and applying compressed air pressure.
4. Remove the hydraulic oil tank drain plug and drain the tank. Flush the inside of the tank with hot (boiling) water. Make sure all cleaning compound is removed.
5. Make an inspection of the inside of the tank. If tank is not clean, repeat Item 1. through Item 4. Make another inspection of tank. When making inspections, use a light that is approved for locations with flammable vapors.
6. Check tank for flammable vapors using special indicator for gas vapors. If amount of flammable vapors is not below lower flammable limit, repeat cleaning procedures.

ADDITIONAL PREPARATIONS FOR REPAIR

If nitrogen gas or carbon dioxide gas is available, prepare tank for welding using these gases. See manual Safe Practices for Welding and Cutting Containers That Have Held Combustibles by the American Welding Society, F4.1 - 1999. If these gases are not available, another method using water can be used as follows:

1. Fill the tank with water to just below the point where work will be done. Make sure the space above water-level has a vent.
2. Use acceptable welding practices to repair tank. See the American National Standard Safety in Welding and Cutting, AWS Z 49.1 - 1999.

SMALL LEAKS, REPAIR

Perform the following procedure to repair small leaks:

1. Use steam to clean the area around the leak. Remove all paint and dirt around the leak.
2. Apply Loctite® 290 to leak. Follow instructions of manufacturer.

LARGE LEAKS, REPAIR

1. Use one of the procedures described in the Clean section above, to clean and prepare tank for repairs.
2. Contact your dealer for Hyster lift trucks for welding instructions.
3. Use acceptable welding practices to repair tank. See the American National Standard Safety in Welding and Cutting, AWS Z 49.1 - 1999.

PREPARATIONS FOR USE AFTER REPAIR

1. Add more water to tank so that water goes above point of where work was done. Check for any leaks coming from the tank.
2. If there are no leaks coming from tank, drain all water from the tank.

FRAME CHECKS AND ADJUSTMENTS 202001-123

This content is under development and will be released when available.

Paint and labels

GENERAL PAINTING CONCERNS 202001-124

GENERAL PAINTING CONCERNS

WARNING

Always wear protection equipment (gloves, goggles, face shield, safety glasses, and a mask) if an electric sander is used or spraying paint, using either an aerosol can or spray gun.

WARNING

Always use solvents and paints in an area with ventilation. DO NOT use solvents or paints near heat, fire, or electrical equipment that can make sparks. Follow the manufacturer's instructions and cautions.

1. Remove all dirt from surface to be painted. Clean area to be painted. Use a solvent for painted surfaces to remove grease and oil before sandings. **DO NOT** use solvent on new paint. Make sure all oil and grease is removed.
2. Use sandpaper to remove top surface of the paint and rust from metal. All metal surfaces where paint is completely removed, must be painted. Use a primer. Apply primer before applying final coat of paint.
3. Protect all surfaces that will not be painted. See list of items in Figure 32.

CAUTION

DO NOT paint the pads, plastic covers or knobs, cables, labels, and information plates, or controls. Paint can make some assemblies not operate correctly.

4. Paint surfaces. Use the correct paint from your dealer for Hyster lift trucks. Follow directions on container. The correct arrangement of colors is shown in Figure 32 .
5. Check that all labels are installed in the correct locations on lift truck. See Label replacement. New labels are available from your Hyster dealer.

NOTE: USE COLORS APPROVED BY HYSTER COMPANY . **DO NOT** PAINT THE FOLLOWING ITEMS: PEDAL PADS, LEVER KNOBS, INSTRUMENTS, STEERING WHEEL, SEAT ASSEMBLY AND SEAT RAILS, INFORMATION CASE AND COVER, TIRES, MAST CHAINS, AND HOSES, ALL LABELS AND INFORMATION PLATES, BATTERY CONNECTOR, PARKING BRAKE HANDLE, KEY SWITCH, CYLINDER RODS, ALL PLASTIC COVERS, AND STEERING COLUMN COVER.
NOTE: LIGHT AREAS = YELLOW; DARK AREAS = BLACK; AND FORKS = RED.

Figure 32. Color Arrangement

LABEL REPLACEMENT 202001-125

WARNING

Safety labels are installed on the lift truck to provide information about operation and possible hazards. It is important that all safety labels are installed on the lift truck and can be read. DO NOT add to or modify the lift truck. Any change to the lift truck, the tires, or its equipment can change the lifting capacity. The lift truck must be rated as equipped, and the Nameplate must show the new capacity rating. Contact your Hyster dealer for a new Nameplate.

NOTE: Not all labels that are used on lift trucks covered in this manual are shown in the figure below. See **Parts Manual** for a complete listing of all labels used on these lift trucks and their part numbers.

If a new label must be installed, use the following procedure to install a new label.

1. If a label must be replaced, remove the label and clean the surface. DO NOT use solvent on paint. Clean the surface of the paint with soap and water.
2. Confirm the surface is dry and has no oil or grease.
3. Remove the paper from the back of the label. DO NOT touch adhesive surface.

NOTE: The label cannot be moved after it touches the surface.

4. Carefully hold the label in the correct position above the surface. Apply the label on the surface. Make sure that all air is removed from under the label, and corners and edges are tight.

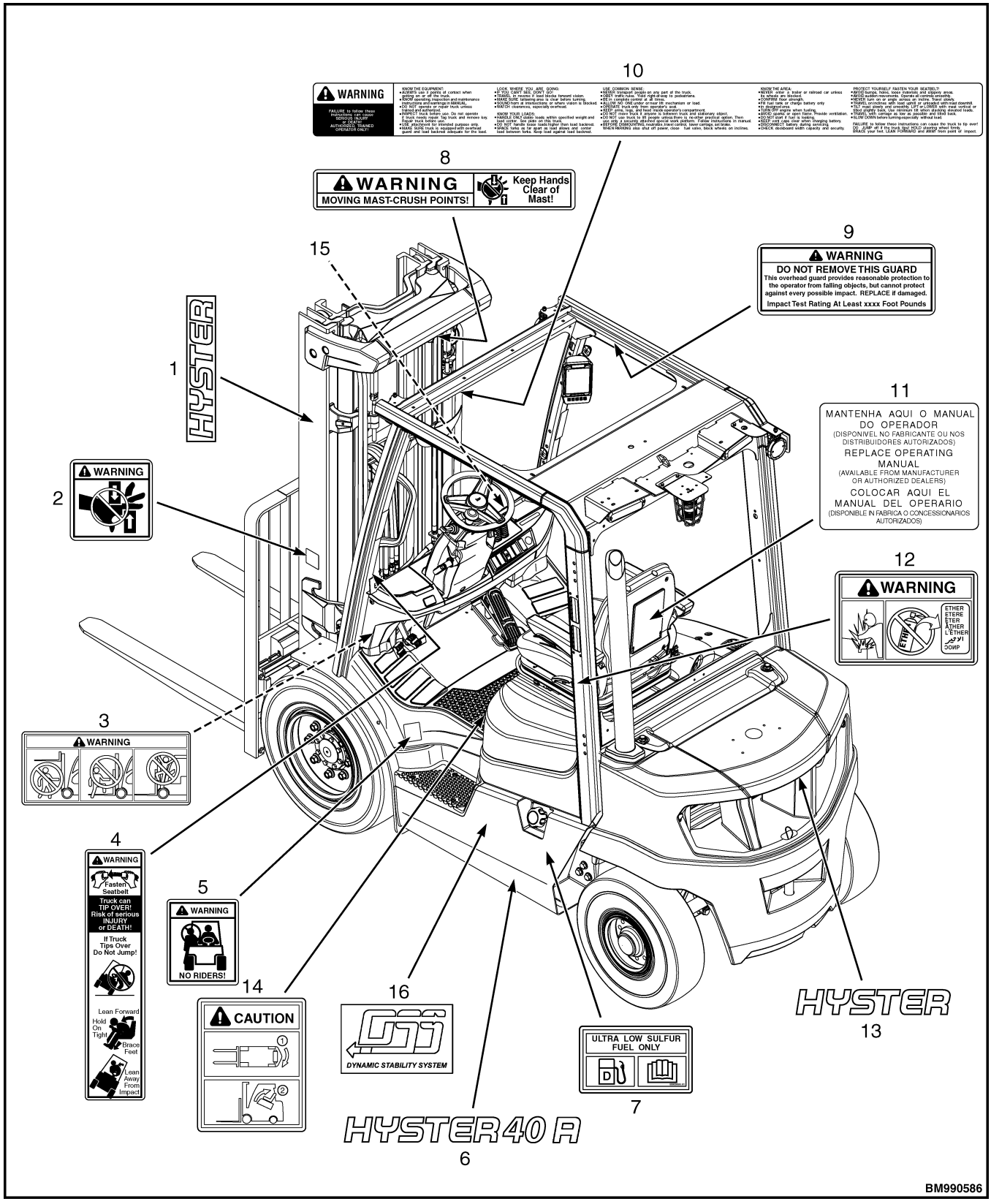


Figure 33. Nameplates and labels

Legend for Figure 33.

1. COMPANY LOGO LABEL
2. PINCH POINT
3. MAST WARNING
4. OPERATOR RESTRAINT
5. NO RIDERS
6. CAPACITY
7. FUEL FILL
8. MAST WARNING
9. RATING PLATE
10. OPERATOR WARNING
11. REPLACE OPERATOR MANUAL
12. ETHER WARNING
13. COUNTERWEIGHT
14. HOOD OPENING
15. RADIAL TIRE WARNING
16. DSS

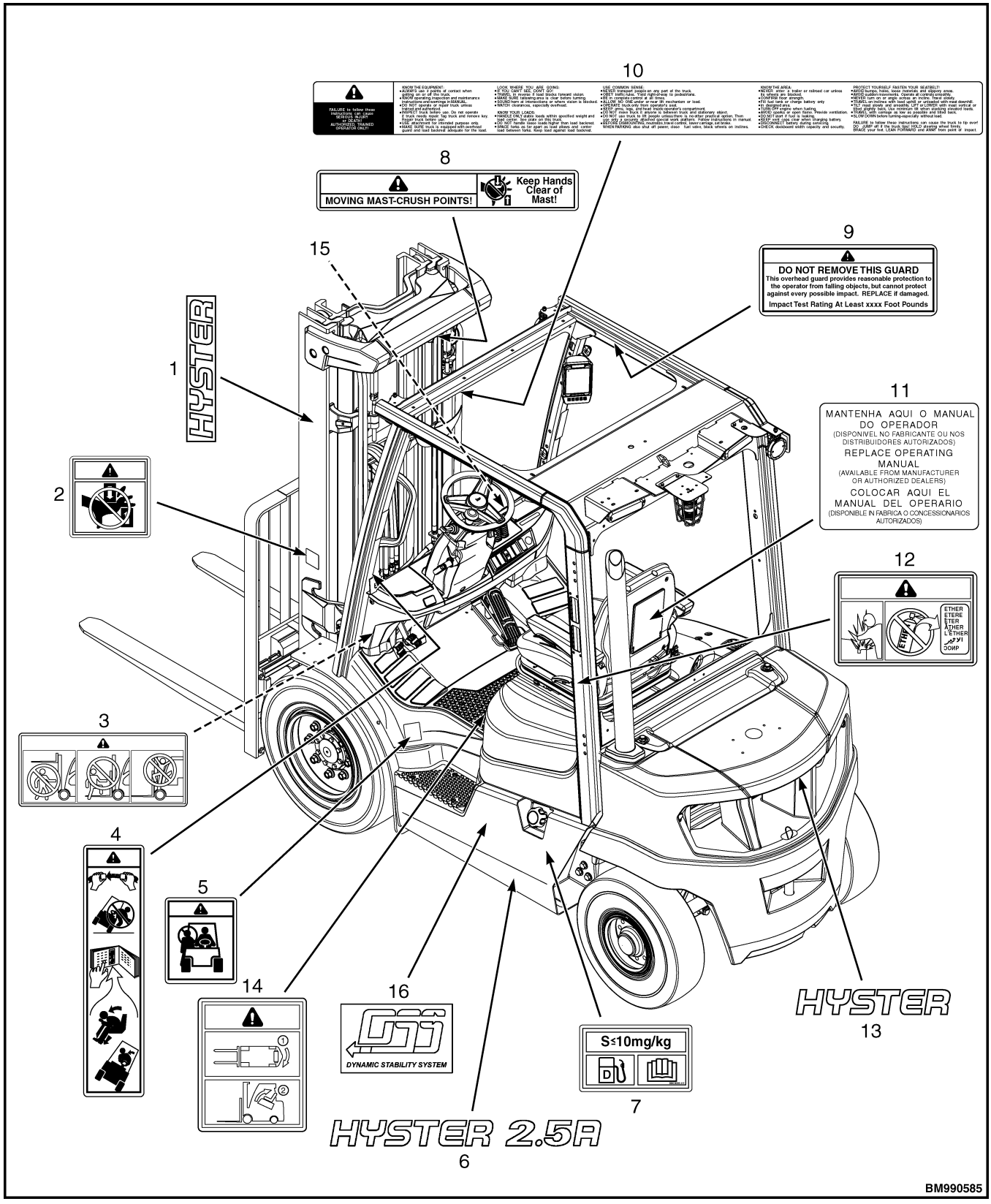


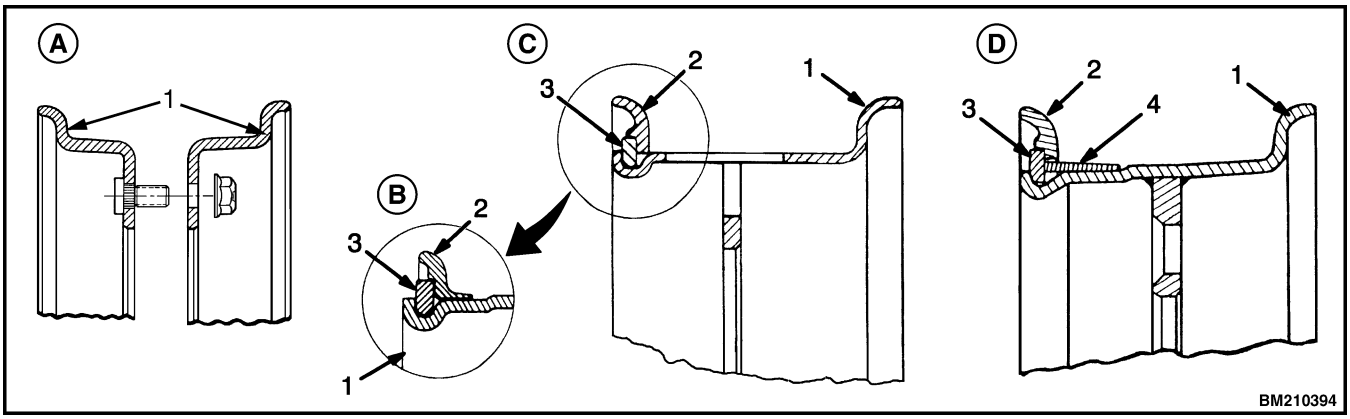
Figure 34. Nameplates and labels

Legend for Figure 34.

1. COMPANY LOGO LABEL
2. PINCH POINT
3. MAST WARNING
4. OPERATOR RESTRAINT
5. NO RIDERS
6. CAPACITY
7. FUEL FILL
8. MAST WARNING
9. RATING PLATE
10. OPERATOR WARNING
11. REPLACE OPERATOR MANUAL
12. ETHER WARNING
13. COUNTERWEIGHT
14. HOOD OPENING
15. RADIAL TIRE WARNING
16. DSS

Tires and wheels

WHEEL AND TIRE OVERVIEW 202001-209



NOTE: TUBELESS TIRES ARE MOUNTED ON WHEEL TYPES SHOWN IN ILLUSTRATIONS B OR D.

A. TWO-PIECE WHEEL
B. OPTIONAL RIM ASSEMBLY
C. THREE-PIECE WHEEL
D. FOUR-PIECE WHEEL

1. WHEEL RIM
2. SIDE FLANGE
3. LOCK RING
4. FLANGE SEAT

Figure 35. Types of Pneumatic Wheels

SNAP-ON WHEEL REMOVAL AND REPLACEMENT 202001-126

SNAP-ON-TIRE, CHANGE

WARNING

Wheels must be changed and tires repaired by trained personnel only.

Always wear safety glasses.

1. Put lift truck on blocks as described in How to put a lift truck on blocks in **Periodic Maintenance** 8000SRM2305.

2. Remove wheel nuts and remove wheel and tire from lift truck. Lift truck tires and wheels are heavy.

NOTE: When you disassemble the wheels, see Figure 36. There are several types of wheels used on these series of lift trucks.

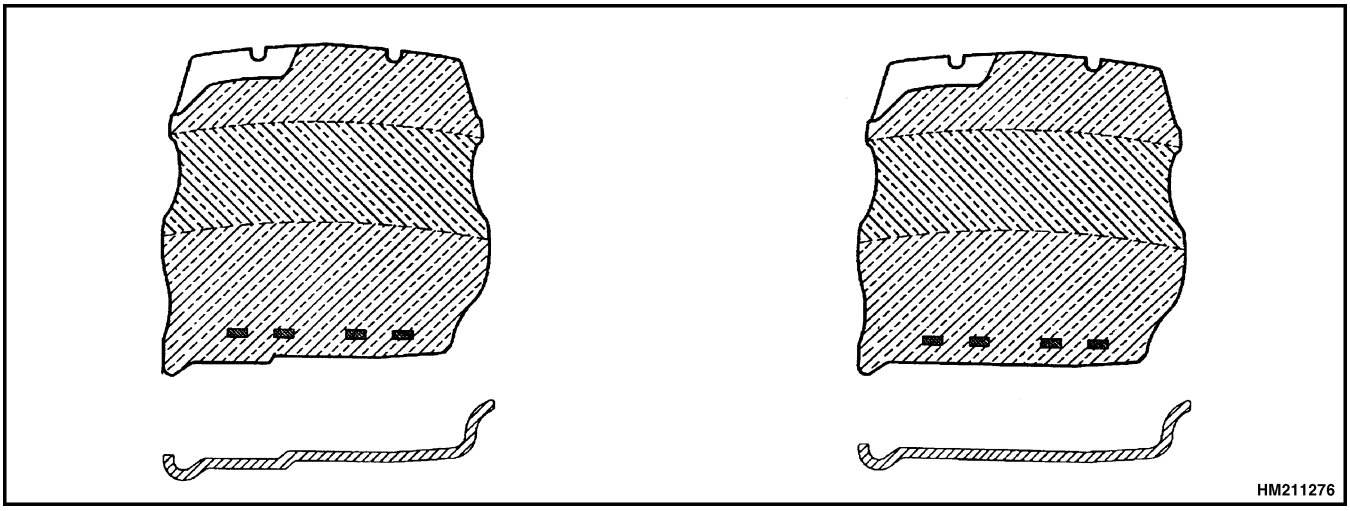


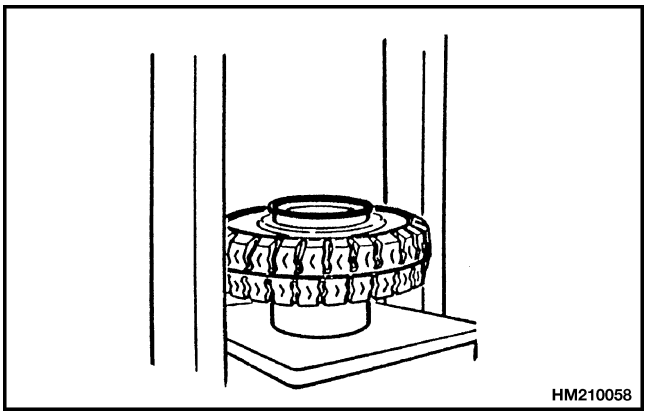
Figure 36. Snap-On-Tire and Rim Configurations

Remove Snap-On-Tire, Solid Tire From Wheel

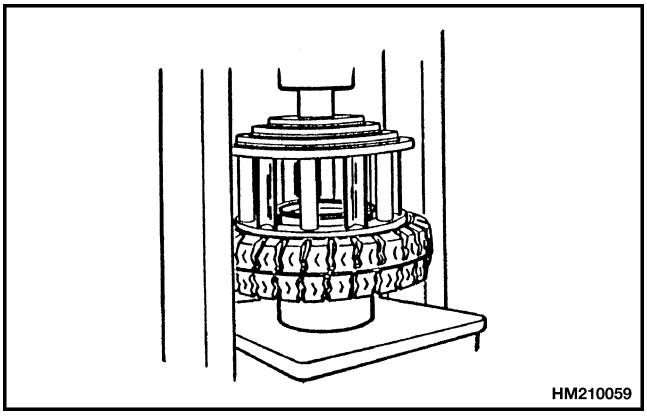
WARNING

Keep tire tools in firm contact with the wheel. If the tool slips, it can move with enough force to cause serious injury.

STEP 1.
Put a support under wheel rim. Make sure wheel rim is at least 150 to 200 mm (6 to 8 in.) from bed of press.



STEP 2.
Put cage in position on tire. Use press to push tire from wheel rim.



Install Snap-On-Tire, Solid Tire on Wheel

NOTE: When you assemble the wheels, see Figure 36. There are several types of wheels used on these series of lift trucks. DO NOT use a two-piece pneumatic wheel for solid rubber tires.

CAUTION

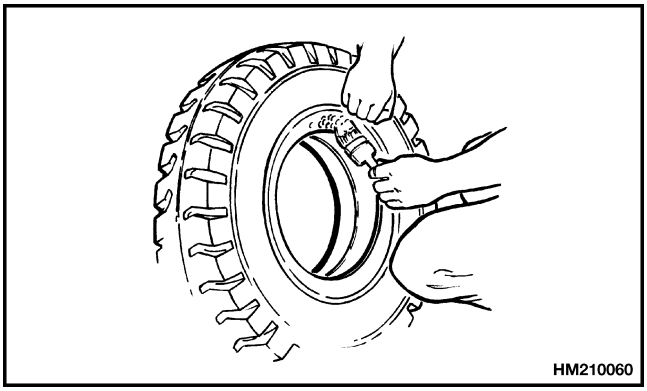
Failure to follow these procedures will cause damage to the tire and wheel assembly and can cause an injury.

- **Clean and inspect all parts of the wheel before installing the tire.**
- **DO NOT use any damaged or repaired wheel parts.**
- **Make sure all parts of the wheel are the correct parts for that wheel assembly.**
- **DO NOT mix parts between different types or manufacturers of wheels.**
- **DO NOT mix types of tires, types of tire tread, or wheel assemblies of different manufacturers on any one lift truck.**

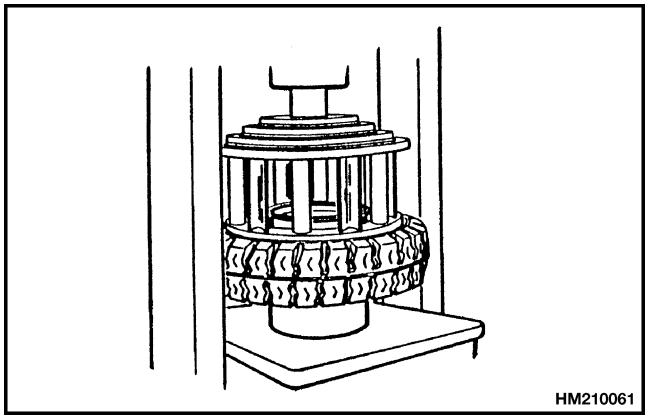
CAUTION

Too much lubricant can cause the tire to slide and move around the wheel rim.

STEP 1.
Lubricate wheel rim and inner surface of tire with tire lubricant.



STEP 2.
Put wheel rim on bed of press. Put tire over wheel rim. Put cage in position on tire. Use press to install tire on wheel rim.



PNEUMATIC TIRE REMOVAL AND REPLACEMENT (WITH TUBE) 202001-128

REMOVE WHEELS FROM LIFT TRUCK

WARNING

A solid rubber tire that is the same shape as a pneumatic tire can be installed on a three-piece or fourpiece wheel for a pneumatic tire. DO NOT make changes in the parts of the rim if this type of solid rubber tire is installed instead of a pneumatic tire. Changes to the parts of the rim can cause a failure of the wheel and cause an accident.

The type of tire and the tire pressure (pneumatic tires) are shown on the Nameplate. Make sure the Nameplate is correct for the type of tires on the lift truck. If the truck is equipped with bias-ply tires, the ply rating listed on the Nameplate is the minimum ply rating that must be installed. Tires with ply ratings greater than or equal to the Nameplate listed ply rating may be acceptable. Check with your dealer whether a specific biasply tire is approved for use on Hyster trucks.

WARNING

Wheels must be changed and tires repaired by trained personnel only.

Deflate tire completely before removing the wheel from the lift truck. If dual wheels are used, deflate both tires. Air pressure in the tires can cause the tire and rim parts to explode causing serious injury or death.

Always wear safety glasses.

Never loosen the nuts that hold the inner and outer wheel halves together when there is air pressure in the tire.

CAUTION

Not all makes of radial tires have sufficient sidewall strength for successful use on forklift trucks. This can affect stability and ride quality. Check with your dealer whether a specific bias-ply tire is approved for use on Hyster trucks.

1. Put lift truck on blocks as described in How to put a lift truck on blocks in **Periodic Maintenance** 8000SRM2305.
2. Remove all air from the tire. Remove the valve core to make sure that all of the air is out of the inner tube. Push a wire through the valve stem to make sure that valve stem does not have a restriction.
3. Remove wheel nuts and remove the wheel and tire from lift truck. Lift truck tires and wheels are heavy.

REMOVE TIRE FROM WHEEL

When disassembling wheels, there are several types of wheels used on this series of lift trucks. See Figure 35.

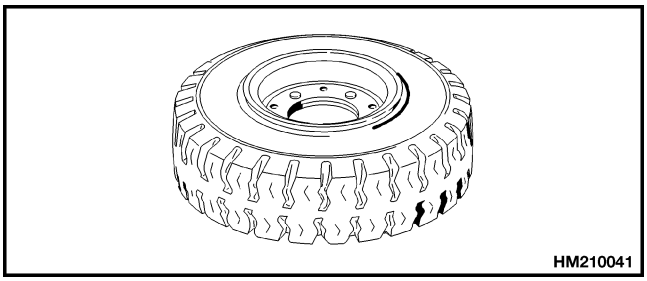
REMOVE TIRE FROM TWO-PIECE WHEEL

WARNING

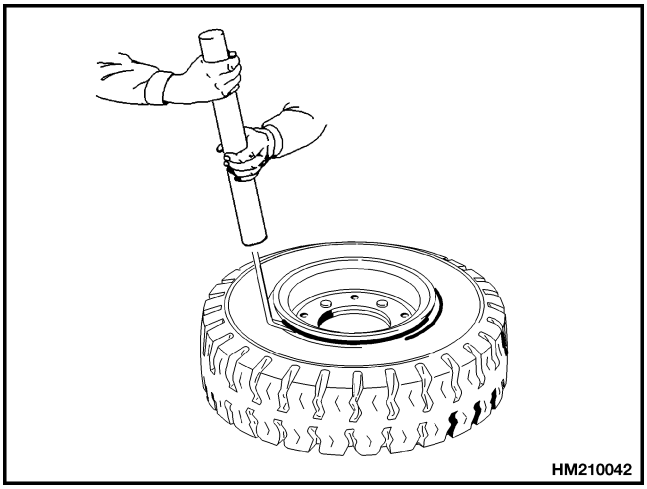
Make sure all the air pressure is removed from the tire before a wheel is disassembled. Air pressure in the tires can cause the tire and rim parts to explode, causing serious injury or death.

Keep tire tools in firm contact with the wheel parts. If the tool slips, it can move with enough force to cause an injury.

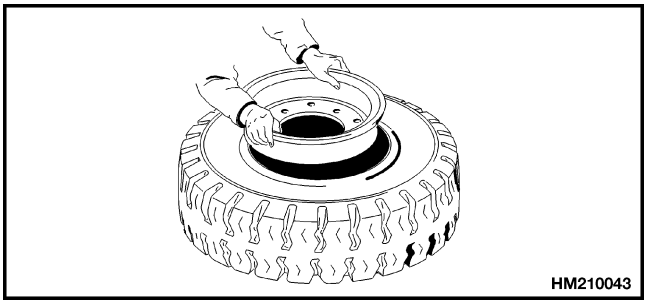
STEP 1.
Remove nuts that fasten wheel rims together.



STEP 2.
Loosen tire bead from wheel rim.



STEP 3.
Remove wheel rims from tire. Remove inner tube and flap.



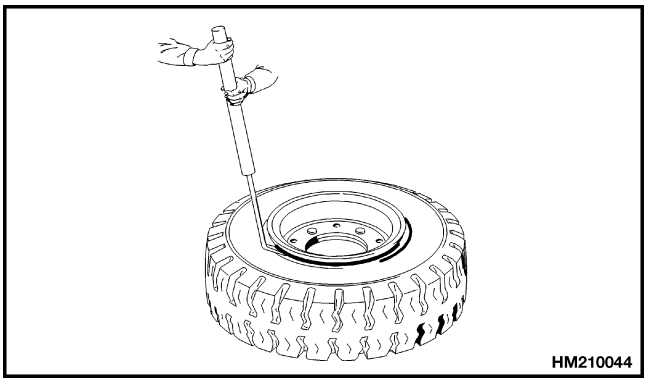
REMOVE TIRE FROM THREE AND FOUR-PIECE WHEELS

WARNING

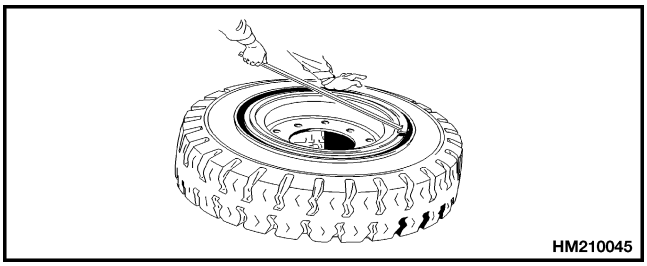
Make sure all the air pressure is removed from the tire before a wheel is disassembled. Air pressure in the tires can cause the tire and rim parts to explode, causing serious injury or death.

Keep tire tools in firm contact with the wheel parts. If the tool slips, it can move with enough force to cause an injury.

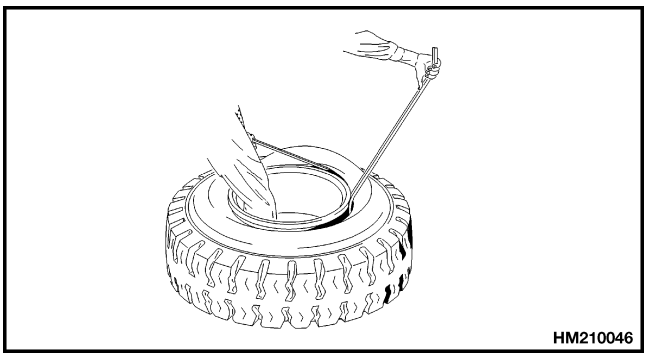
STEP 1.
Loosen tire bead from side flange.



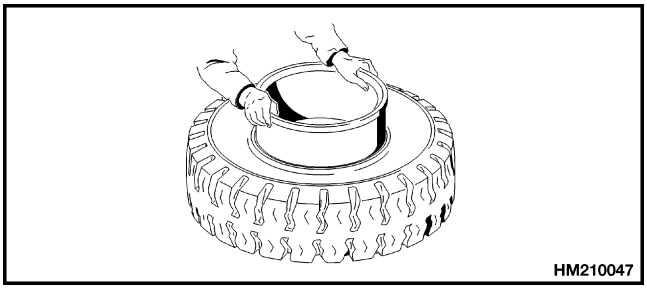
STEP 2.
Put tire tool into slot between lock ring and wheel rim. Remove lock ring and side flange. If there is a flange seat, remove it.



STEP 3.
Loosen bead from other side of wheel rim. Remove valve stem from wheel.



STEP 4.
Remove wheel from tire.



INSTALL WHEEL IN TIRE

WARNING

Damage to the tire and wheel assembly and injury or death can occur if you do not do the following procedures:

- **Clean and inspect all parts of the wheel before installing the tire.**
- **DO NOT use any damaged or repaired wheel parts.**
- **Make sure that all parts of the wheel are the correct parts for that wheel assembly.**
- **DO NOT mix parts between different types or manufacturers of wheels.**
- **DO NOT mix types of tires, type of tire tread, or wheel assemblies of different manufacturers on any one lift truck.**

Do not use a steel hammer on the wheel. Use a rubber, lead, plastic, or brass hammer to put parts together. Make sure that the side ring is in the correct position. The ends of the side ring must not touch. The clearance at the ends of the side ring will be approximately 13 to 25 mm (0.5 to 1.0 in.) after it is installed. If the clearance is wrong, the wrong part has been used.

1. Clean and inspect all parts of the wheel. Paint any parts that have rust or corrosion.

NOTE: Use only new inner tubes. Used tubes and flaps can cause tire failure.

2. Install a new inner tube in the tire.

WARNING

Do not lubricate the tire bead with antifreeze or petroleum-based liquid. Vapors from these liquids can cause an explosion during inflation or use.

3. Apply a rubber lubricant or a soap solution to the tire bead and tube.

4. Install a new rubber tire flap.

5. Make sure the rim is the correct size for the tire. Lubricate the part of the wheel that contacts the bead and the flap.

Install Three-Piece or Four-Piece Wheel in Tire

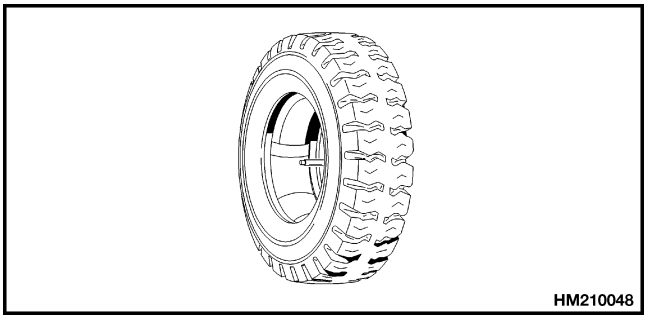
WARNING

Damage to the tire and wheel assembly and injury or death can occur if you do not do the following procedures:

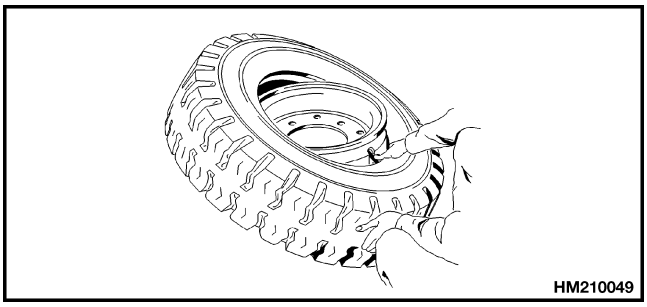
- **Clean and inspect all parts of the wheel before installing the tire.**
- **DO NOT use any damaged or repaired wheel parts.**
- **Make sure all parts of the wheel are the correct parts for that wheel assembly.**
- **DO NOT mix parts between different types or manufacturers of wheels.**
- **DO NOT mix types of tires, type of tire tread, or wheel assemblies of different manufacturers on any one lift truck.**

DO NOT use a steel hammer on the wheel. Use a rubber, lead, plastic, or brass hammer to put parts together. Make sure the side ring is in the correct position. The ends of the side ring must not touch. The clearance at the ends of the lock ring will be approximately 13 to 25 mm (0.5 to 1.0 in.) after it is installed. If the clearance is wrong, the wrong part has been used.

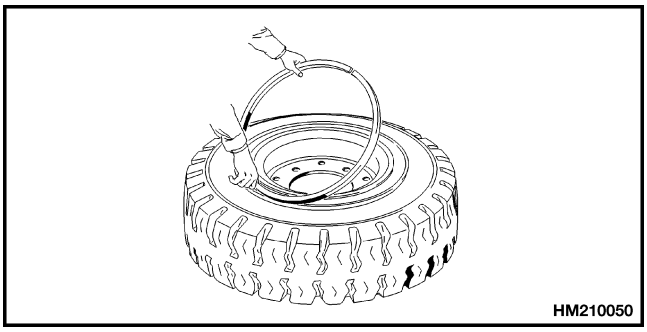
STEP 1.
Confirm inner tube and rubber flap in tire.



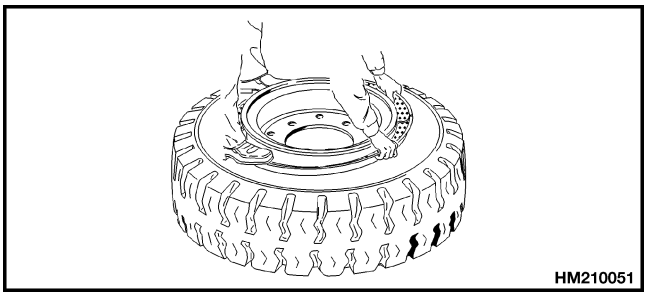
STEP 2.
Install wheel rim in tire. Make sure stem of inner tube is aligned with slot in rim.



STEP 3.
Turn over rim and tire. Put blocks under rim so rim is 8 to 10 cm (3 to 4 in.) above floor. Install flange seat (if used) and lock ring.

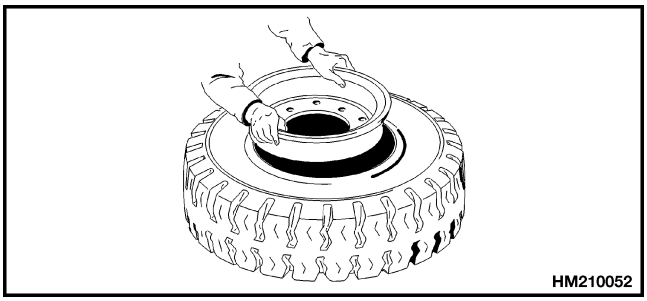


STEP 4.
Put lock ring in the correct position on rim. Add air pressure to tire as described in Add air to pneumatic tires with tube.

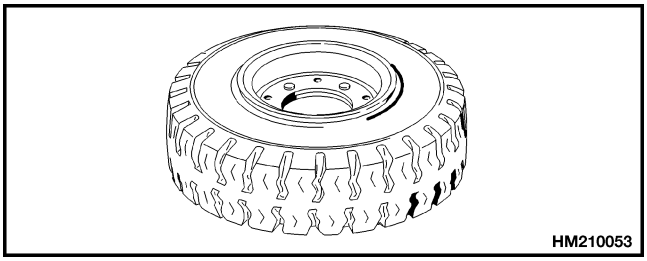


Install Two-Piece Wheel in Tire

STEP 1.
Install inner tube and rubber flap in tire. Install both halves of wheel rim in tire. Make sure stem of inner tube is aligned with slot in rim.



STEP 2.
Tighten nuts that hold rim halves together to 175 N•m (130 lbf ft). Add air pressure to tire (see Nameplate).



Add air to pneumatic tires with tube

WARNING

Add air pressure to the tires only in a safety cage. See Add Air to Pneumatic Tires With Tube. Inspect the safety cage for damage before use. When air pressure is added, use a chuck that fastens onto the valve stem of the inner tube. Make sure there is enough hose to permit the operation to stand away from the safety cage when air pressure is added to the tire.

WARNING

Do not sit or stand by the safety cage. Do not use a hammer to try and correct the position of the side flange or lock ring when the tire has air pressure greater than 20 kPa (3 psi) of air pressure to the tire

STEP 1.
Put tire in a safety cage. See Figure 37.

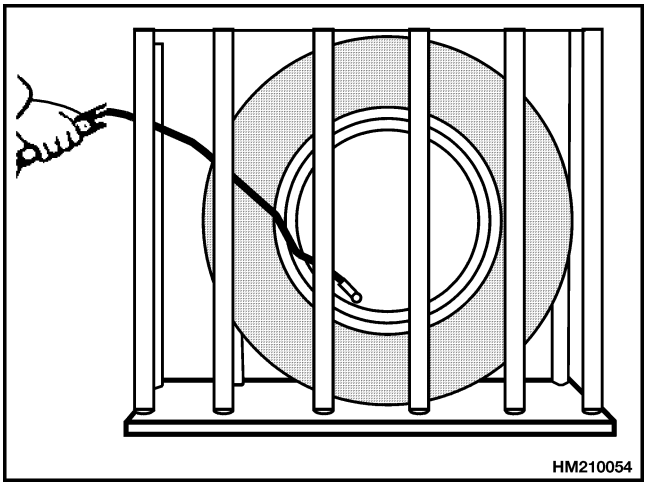


Figure 37. Safety cage

STEP 2.
Add 20 kPa (3 psi) of air pressure to tire.

STEP 3.
Check that all wheel parts are correctly installed. Tap the lock ring lightly to make sure that it is correctly seated.

STEP 4.
If installation is correct, add air pressure to tire to specified pressure. See the Nameplate for your truck.

STEP 5.
Check again that all wheel parts are correctly installed. If installation is not correct, remove all of the air pressure from tire. Remove valve core to make sure all of the air pressure has been removed and then make adjustments. Clearance at the ends of the lock ring will be approximately 13 to 25 mm (0.5 to 1.0 in.) when tire has correct air pressure.

INSTALL THE WHEELS

Install wheel on hub. Tighten nuts in a cross pattern and torque to
339 to 380 N•m (250 to 280 lbf ft) for drive wheel nuts and 155 to 175 N•m (114 to 129 lbf ft) for steer wheel nuts. If wheels are two-piece rims, make sure nuts that fasten rim halves together are toward hub when they are installed

PNEUMATIC TIRE REMOVAL AND REPLACEMENT (WITHOUT TUBE) 202001-129

REMOVE WHEELS FROM LIFT TRUCK

WARNING

Wheels must be changed and tires repaired by trained personnel only.

Deflate tire completely before removing the wheel from the lift truck. If dual wheels are used, deflate both tires. Air pressure in the tires can cause the tire and rim parts to explode causing serious injury or death.

Always wear safety glasses.

Never loosen the nuts that hold the inner and outer wheels halves together when there is air pressure in the tire.

WARNING

DO NOT mix brands of rubber sealing rings and tires. Serious injury to personnel or damage to the lift truck can occur if the rubber sealing rings are not compatible with the tire brand.

Specially designed rubber sealing rings enable tubeless tires to be used on wheel rims that were designed to be used with a tube. A rubber sealing ring is inserted inside the tire between the tire beads and ensures air tightness of the existing wheel and tubeless tire. This rubber sealing ring is referred to as either a Tubeless Bead Seal (TBS) or a Tubeless Sealing Ring (TSR). The TBS has a separate valve stem and can be removed separately from the rubber sealing ring. On a TSR tire, the valve stem is integrated into the rubber sealing ring and cannot be removed separately from the rubber sealing ring. See Figure 35.

STEP 1.
If the tire is equipped with a Tubeless Bead Seal (TBS) style rubber sealing ring with a separate valve stem, turn the valve stem ¼ turn and remove valve stem from wheel, as shown in illustration. If the tire is equipped with a Tubeless Sealing Ring (TSR) style rubber sealing ring, the valve stem is an integral part of the rubber sealing ring and is not removable.

1. Put lift truck on blocks as described in How to put a lift truck on blocks in **Periodic Maintenance** 8000SRM2305.

2. Remove all air from the tire. Remove the valve core to make sure that all of the air is out of the inner tube. Push a wire through the valve stem to make sure that valve stem does not have a restriction.

3. Remove wheel nuts and remove the wheel and tire from lift truck. Lift truck tires and wheels are heavy.

REMOVE TIRE FROM WHEEL

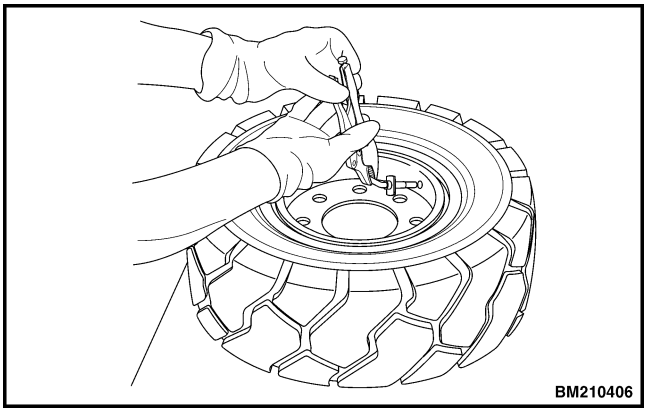
WARNING

Make sure all of the air pressure is removed from the tire before a wheel is disassembled. Air pressure in the tires can cause the tire and rim parts to explode causing serious injury or death.

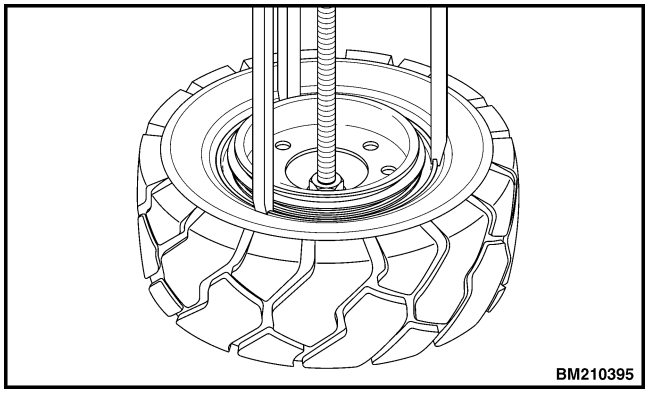
WARNING

Keep tire tools in firm contact with the wheel parts. If the tool slips, it can move with enough force to cause injury.

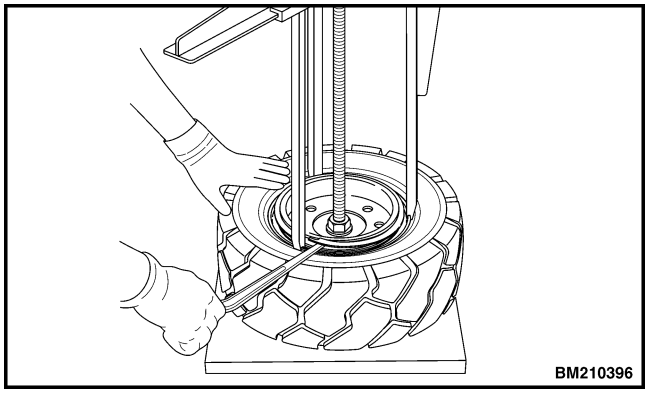
NOTE: There are several types of wheels used on these lift trucks. When disassembling wheels, see Figure 35.



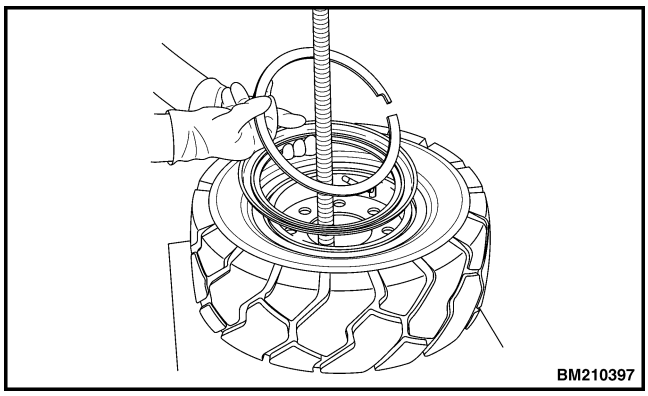
STEP 2.
Put wheel and tire assembly on the press. Position the feet of the press on the loose flange. Press down on loose flange to expose the locking ring.



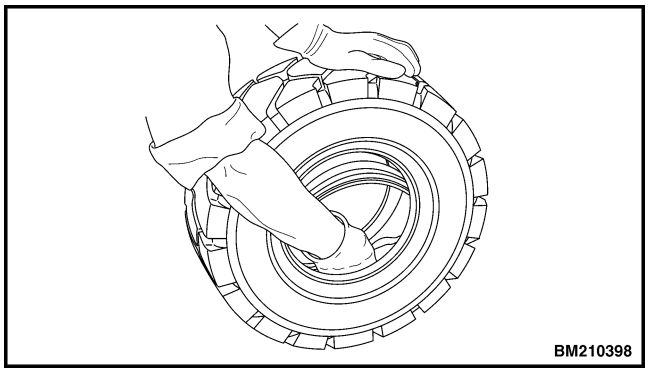
STEP 3.
Use a tire tool to remove the loose flange locking ring and the advance band (four-piece wheel only).



STEP 4.
Remove the press and remove the loose flange locking ring and the advance band (four-piece wheel only) from the tire and wheel assembly.



STEP 5.
Push the TBS or TSR toward the inside of the tire to remove it.



INSTALL TIRE ON WHEEL

WARNING

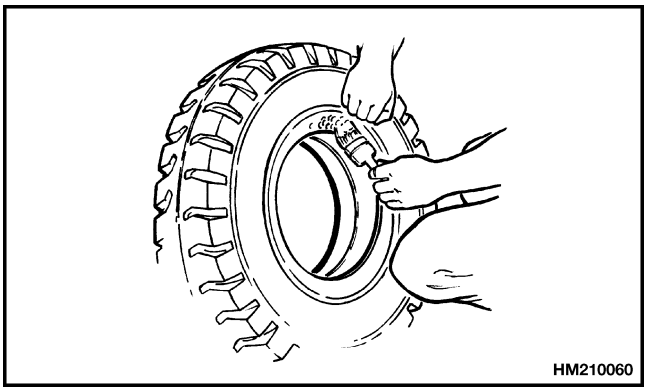
Damage to the tire and wheel assembly and injury or death can occur if you do not do the follow procedures:

- **Clean and inspect all parts of the wheel before installing the tire.**
- **DO NOT use any damaged or repaired wheel parts.**
- **Make sure that all parts of the wheel are the correct parts for that wheel assembly.**
- **DO NOT mix parts between different types or manufacturers of wheels.**
- **DO NOT mix types of tires, type of tire tread, or wheel assemblies of different manufacturers on any one lift truck.**

WARNING

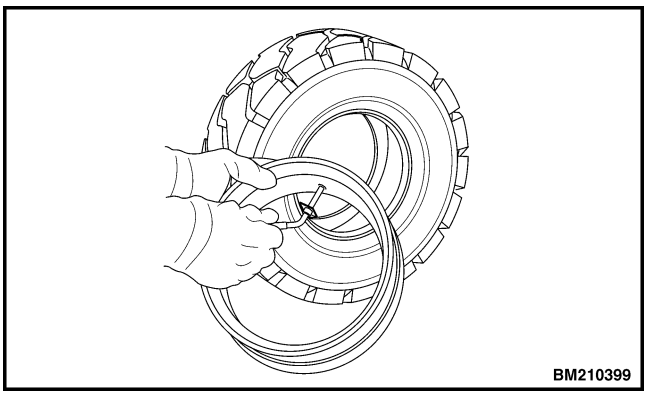
DO NOT use a steel hammer on the wheel. Use a rubber, lead, plastic, or brass hammer to put parts together.

STEP 1.
Clean interior and exterior bead of the tire. Lubricate tire beads and the inside of the tire, up to the tire shoulders. Apply lubricant to the entire underside of the TBS or TSR. Use lubricant approved by the tire manufacturer.


HM210060

STEP 2.
For TBS, apply lubricant to the needle valve and the valve hole that will be used (see **NOTE**) by inserting and removing the lubricated valve several times. If a three- or four-piece wheel is being used, remove the valve. If a two-piece wheel is being used, leave valve in valve hole.

If the TBS has two-valve holes, lubricate the plastic plug and insert into valve hole that will not be used.


BM210399

WARNING

DO NOT lubricate the tire bead with antifreeze or petroleum-based liquid. Vapors from these liquids can cause an explosion during inflation or use.

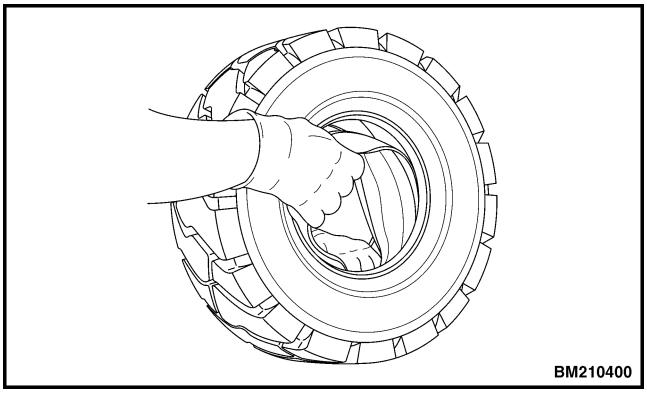
WARNING

DO NOT mix brands of rubber sealing rings and tires. Serious injury to personnel or damage to the lift truck can occur if the rubber sealing rings are not compatible with the tire brand.

NOTE: If the wheel rim width is less than 152 mm (6 in.), the TBS will contain one valve hole to accommodate the needle valve. If the wheel rim width is greater than 152 mm (6 in.), the TBS will have two holes for the needle valve.

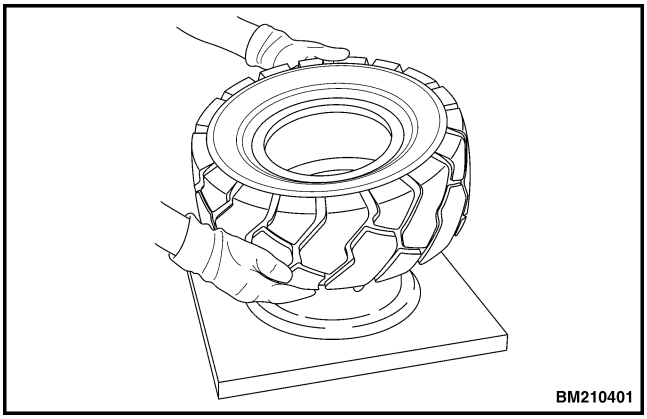
One hole is centrally located and the other is offset, to ensure the correct positioning of the valve in the valve slot. The valve hole that is not used should be sealed with a small plastic plug.

STEP 3.
Place the TBS or TSR rubber sealing ring inside the tire, making sure the wings are not folded over. For the TBS rubber sealing ring, with separate valve stem, make a mark on the tire to note the position of the valve hole. For TSR rubber sealing ring with integral valve stem, align valve slot in the rim with the TSR valve stem.

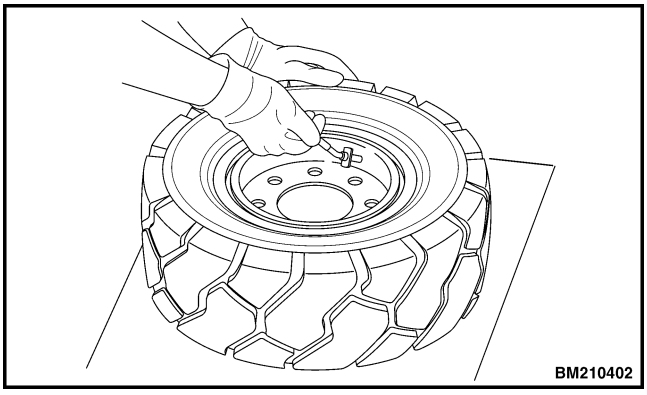


STEP 4.
Apply lubricant to the rim. If a four-piece wheel is being used, lubricate the advance band. Slide the tire and the rubber sealing ring onto the wheel.

For TSR, use a lever to push the valve stem through the valve slot in the wheel. For TBS tires, line up the valve hole in the TBS with the valve slot in the wheel. Lubricate and insert the valve into the valve hole. Make sure it is fully inserted.

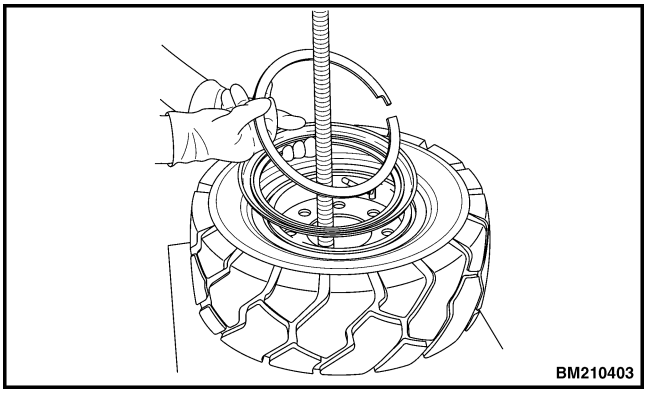


STEP 5.
For TBS, with separate valve stems, place the wheel and tire assembly on a flat surface. Turn the valve a 1/4 turn to lock the collar under the edges of the rim valve slot.

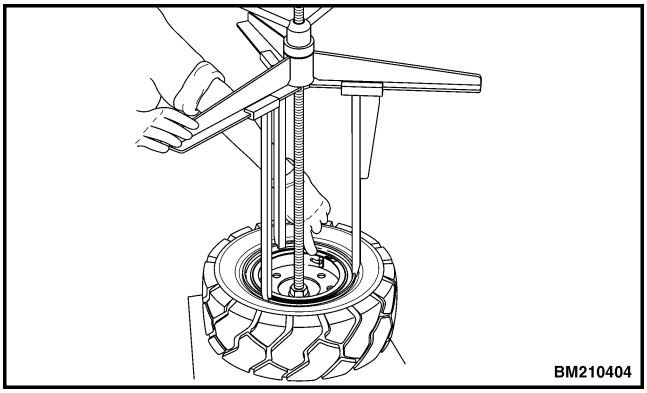


STEP 6.
Raise the tire and position the base and threaded stem of the press through the hole in the center of the wheel. Insert in wheel assembly, the following parts:

- Advance band (four-piece wheel only)
- Loose flange
- Locking ring



STEP 7.
Position the advance band. Ensure that it does not go in too far and damage the valve. Position the arms of the press onto the loose flange.

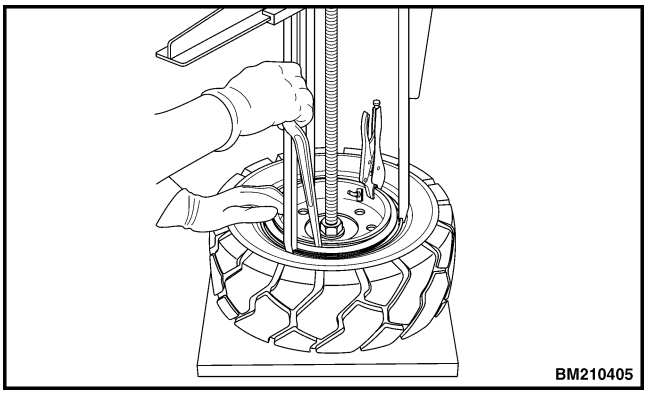


CAUTION

DO NOT compress the bead too far and cause the rubber sealing ring to become dislocated and damage the valve stem.

Push down on the press to depress the tire beads until locking ring groove is fully exposed.

STEP 8.
Insert tire tool into the locking ring groove, and a vise grip on other end. Remove vise grip. Release the press and check that all component parts are correctly positioned. Replace the valve core.



STEP 9.
Inflate tire to 103 kPa (15 psi). Tap wheel with a mallet to ensure all components are correctly sealed. Remove the press from wheel and tire assembly.

ADD AIR TO PNEUMATIC TUBELESS TIRE

WARNING

Add air pressure to tires only in safety cage. Inspect safety cage for damage before use. When air pressure is added, use a chuck that fastens onto valve stem. Make sure there is enough hose to permit operator to stand away from safety cage when air pressure is added to tire.

DO NOT sit or stand by safety cage.

1. Put tire in safety cage. See Figure 38.
2. Add air to tire to the recommended air pressure that is shown on the Nameplate. Install valve cap to ensure air stays in the tire.

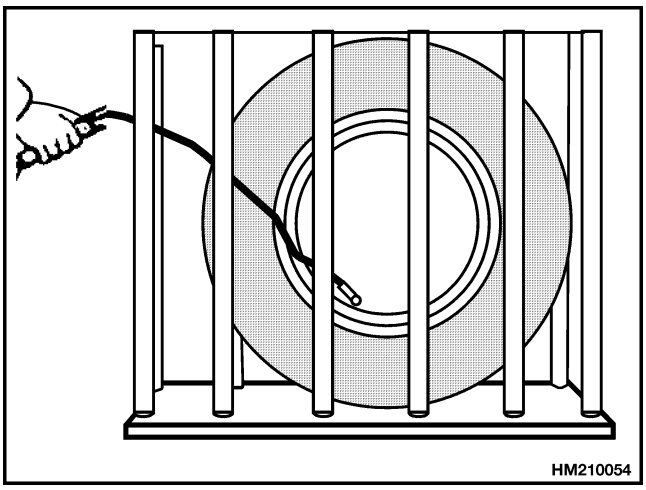


Figure 38. Add Air to Tires

WHEELS, INSTALL

WARNING

Lift truck tires and wheels are heavy. Use caution when removing and installing lift truck tires and wheels or personal injury can occur.

Install wheel on hub. Tighten nuts in a cross pattern to a torque value of
339 to 380 N•m (250 to 280 lbf ft) for drive wheel nuts and 155 to 175 N•m (114 to 129 lbf ft) for steer wheel nuts. If wheels are two-piece rims, make sure nuts that fasten rim halves together are toward brake drum when they are installed.

SOLID PNEUMATIC TIRE REPAIR AND REPLACEMENT 202001-130

SOLID RUBBER TIRES ON PNEUMATIC WHEELS, CHANGE

WARNING

Wheels must be changed and tires repaired by trained personnel only.

STEP 1.
Put wheel rim on bed of press. Put cage in position on tire. Use press to push tire away from side flange.

Always wear safety glasses.

Lift truck tires and wheels are heavy. Use caution when removing and installing lift truck tires and wheels or personal injury can occur.

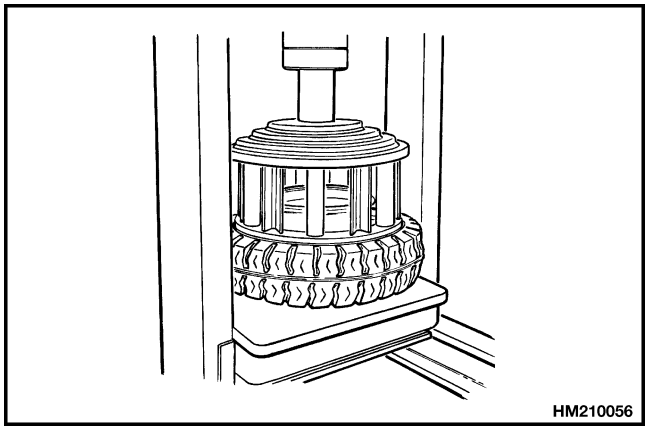
1. Put lift truck on blocks as described in How to put a lift truck on blocks in the **Periodic Maintenance** 8000SRM2305 manual.
2. Remove wheel nuts and remove wheel and tire from lift truck.

REMOVE TIRE FROM WHEEL

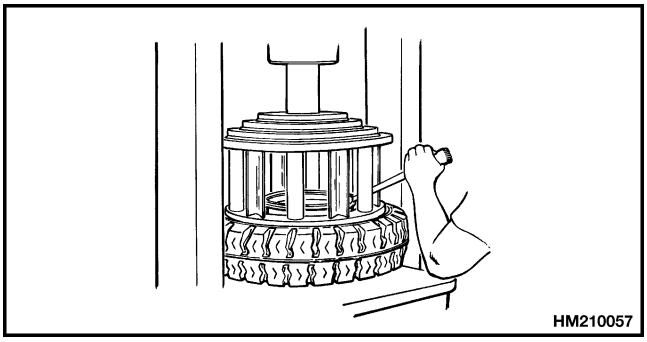
Prior to disassembling the wheels, see Figure 35 in the Wheel and tire overview section of this manual. There are several types of wheels used on these series of lift trucks.

WARNING

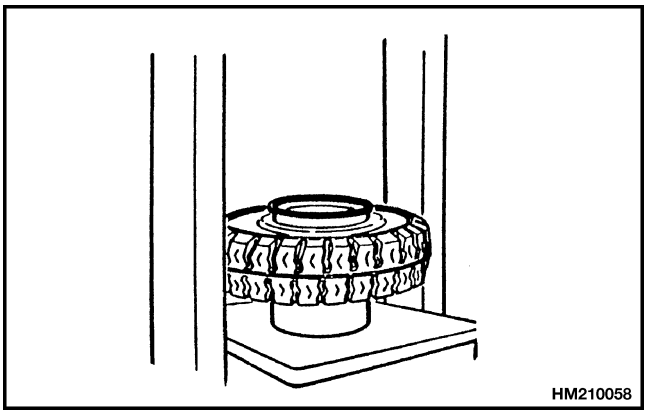
Keep tire tools in firm contact with the wheel. If the tool slips, it can move with enough force to cause serious injury. Always wear safety glasses.



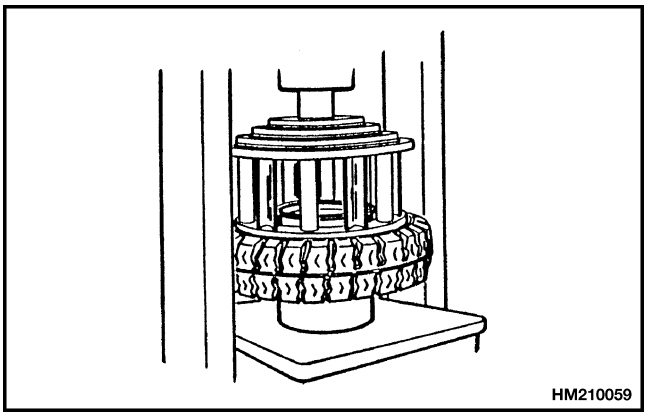
STEP 2.
Put tire tool into slot between lock ring and wheel rim. Remove lock ring and side flange.



STEP 3.
Turn tire over. Put a support under wheel rim. Make sure wheel rim is at least 150 to 200 mm (6 to 8 in.) from bed of press.



STEP 4.
Put cage in position on tire. Use press to push tire from wheel rim.



INSTALL TIRE ON WHEEL

NOTE: Prior to assembling the wheels, see Figure 35 in the Wheel and tire overview section of this manual. There are several types of wheels used on these series of lift trucks. DO NOT use a two-piece pneumatic wheel for solid rubber tires.

WARNING

Damage to tire and wheel assembly and injury or death can occur if you do not do the following procedures.

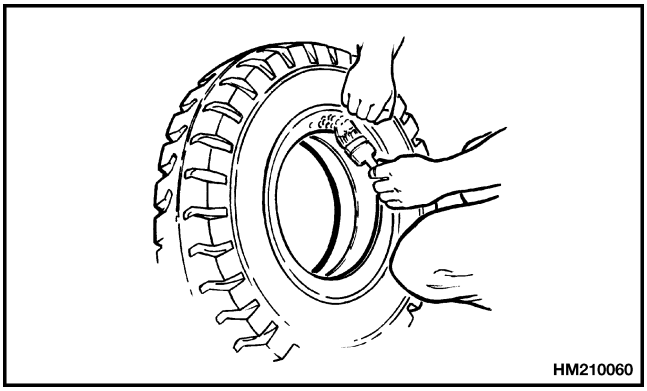
- **Clean and inspect all parts of the wheel before installing the tire.**
- **DO NOT use any damaged or repaired wheel parts.**
- **Make sure all parts of the wheel are the correct parts for that wheel assembly.**
- **DO NOT mix parts between different types or manufacturers of wheels.**
- **DO NOT mix types of tires, type of tire tread, or wheel assemblies of different manufacturers on any one lift truck.**

DO NOT use a steel hammer on the wheel. Use a rubber, lead, plastic, or brass hammer to put parts together. Make sure the side flange is in the correct position. The ends of the side flange must not touch. The clearance at the ends of the lock ring will be approximately 13 to 25 mm (0.5 to 1.0 in.) after it is installed. If the clearance is wrong, the wrong part has been used.

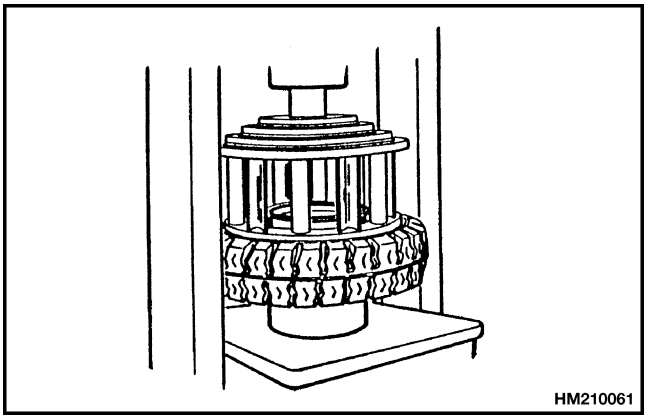
CAUTION

Too much lubricant can cause the tire to slide and move around the wheel rim.

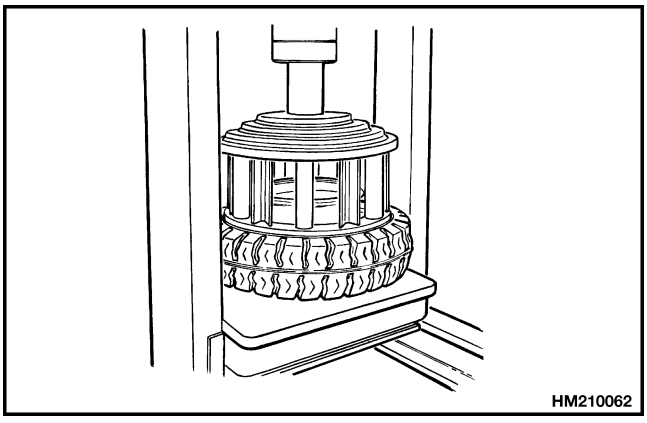
STEP 1.
Lubricate wheel rim and inner surface of tire with tire lubricant or soap.



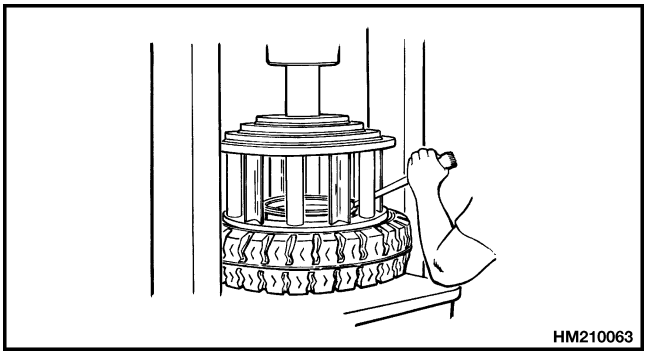
STEP 2.
Put wheel rim on bed of press. Put tire over wheel rim. Put cage in position on tire. Use press to install tire on wheel rim.



STEP 3.
Remove cage and put flange seat (if used), side flange, and lock ring in position on wheel rim. Install cage on tire. Use press to push tire onto wheel rim so side flange and lock ring can be installed.



STEP 4.
While the cage is holding the tire on the wheel rim, install lock ring. Use a tire tool to make sure lock ring is in the correct position.



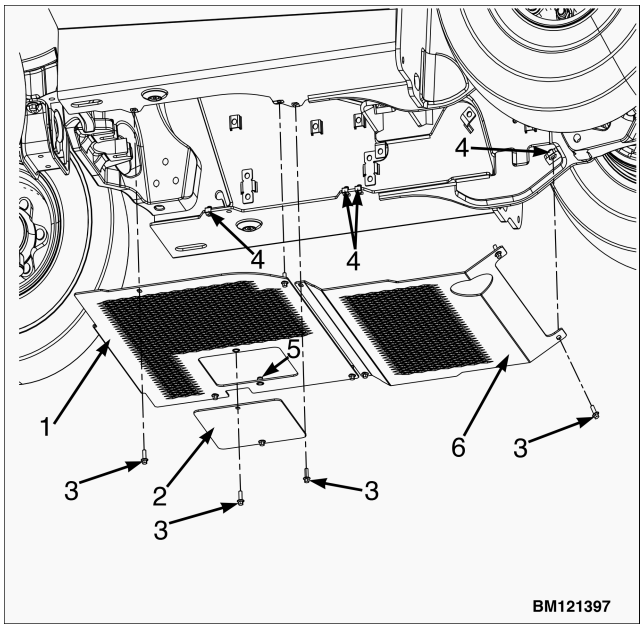
Optional features

DEBRIS SCREEN 202001-289

The debris screens are an optional feature that may be mounted to the bottom of the frame from underneath.

REMOVE

1. Locate the debris screens under the frame. See Figure 39.
2. Remove the screws (item 3, Figure 39) retaining the debris screen to the underside of the frame.
3. Remove the debris screen(s). See Figure 39.



1. LOWER DEBRIS SHIELD (REAR)
2. OIL FILTER COVER PLATE
3. SCREWS
4. FOLDOVER NUT
5. INSERT
6. LOWER DEBRIS SHIELD (FRONT)

Figure 39. Debris screen

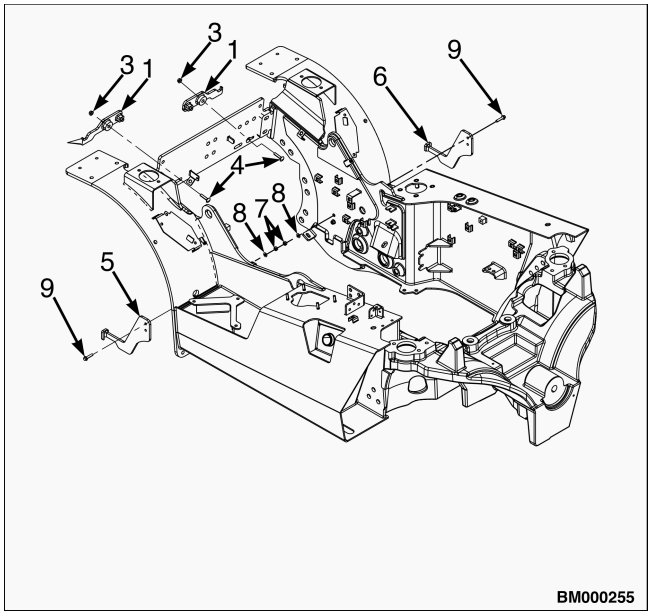
INSTALL

1. Align the holes on the debris screen(s) with the holes on the underside of the frame.
2. Insert the screws through the holes on the screen(s) and into the foldover nuts (item 4, Figure 39) to retain the screen(s) to the frame.
3. Tighten the screws to standard torque.

STRING CUTTER 202001-290

REMOVE

1. Remove the bolt (item 4, Figure 40) attaching the upper right hand string cutter guard (item 1) to the front of the frame.
2. Remove the bolt (item 4, Figure 40) attaching the upper left hand string cutter guard (item 2) to the front of the frame.
3. Remove the string cutter guards and nuts. See Figure 40.
4. Remove the capscrew (item 9, Figure 40) attaching the lower right hand string cutter guard (item 6) to the frame.
5. Remove the capscrew (item 9, Figure 40) attaching the lower left hand string cutter guard (item 5) to the frame.
6. Remove the string cutter guards and hardware. See Figure 40.



1. STRING CUTTER GUARD (RH, UPPER)
2. STRING CUTTER GUARD (LH, UPPER)
3. NUT
4. BOLT
5. STRING CUTTER GUARD (LH, LOWER)
6. STRING CUTTER GUARD (RH, LOWER)
7. NUT
8. WASHER
9. CAPSCREW

Figure 40. String cutters

INSTALL

1. Align the holes on the lower right hand string cutter guard (item 6, Figure 40) to the holes on frame.

2. Insert the capscrew (item 9, Figure 40) and hardware to attach the lower right hand string cutter guard (item 6) to the frame.

3. Tighten to standard torque.

4. Align the holes on the lower left hand string cutter guard (item 5, Figure 40) to the holes on frame.

5. Insert the capscrew (item 9, Figure 40) and hardware to attach the lower left hand string cutter guard (item 5) to the frame.

6. Tighten to standard torque.

7. Align the holes on the upper right hand string guard (item 1, Figure 40) to the holes on the front of the frame.

8. Insert the bolt (item 4, Figure 40) and hardware to attach the upper right hand string cutter guard (item 1) to the front of the frame.

9. Tighten to standard torque.

10. Align the holes on the upper left hand string guard (item 2, Figure 40) to the holes on the front of the frame.

11. Insert the bolt (item 4, Figure 40) and hardware to attach the upper left hand string cutter guard (item 2) to the front of the frame.

12. Tighten to standard torque.