Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

   NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*
4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or NEW HOLLAND Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or NEW HOLLAND Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

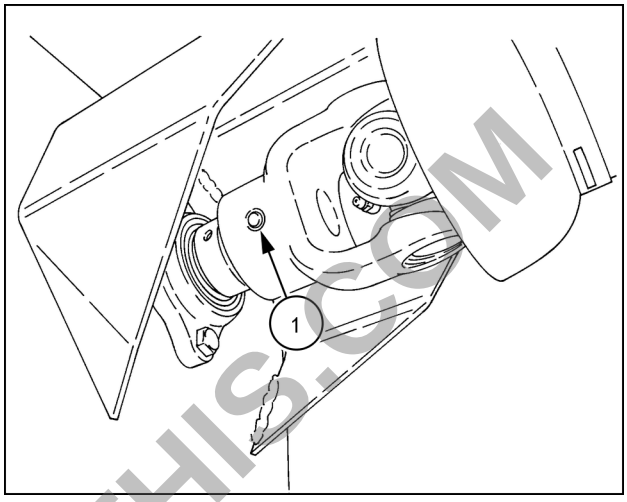
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Power Take-Off (PTO) drive shaft - Remove

NOTE: *The Power Take-Off (PTO) shaft must be removed from the jackshaft for storage and transport to prevent damage.*

1. Remove the bolt and lock nut at **(1)**.
2. Slide the PTO shaft off of the jackshaft.

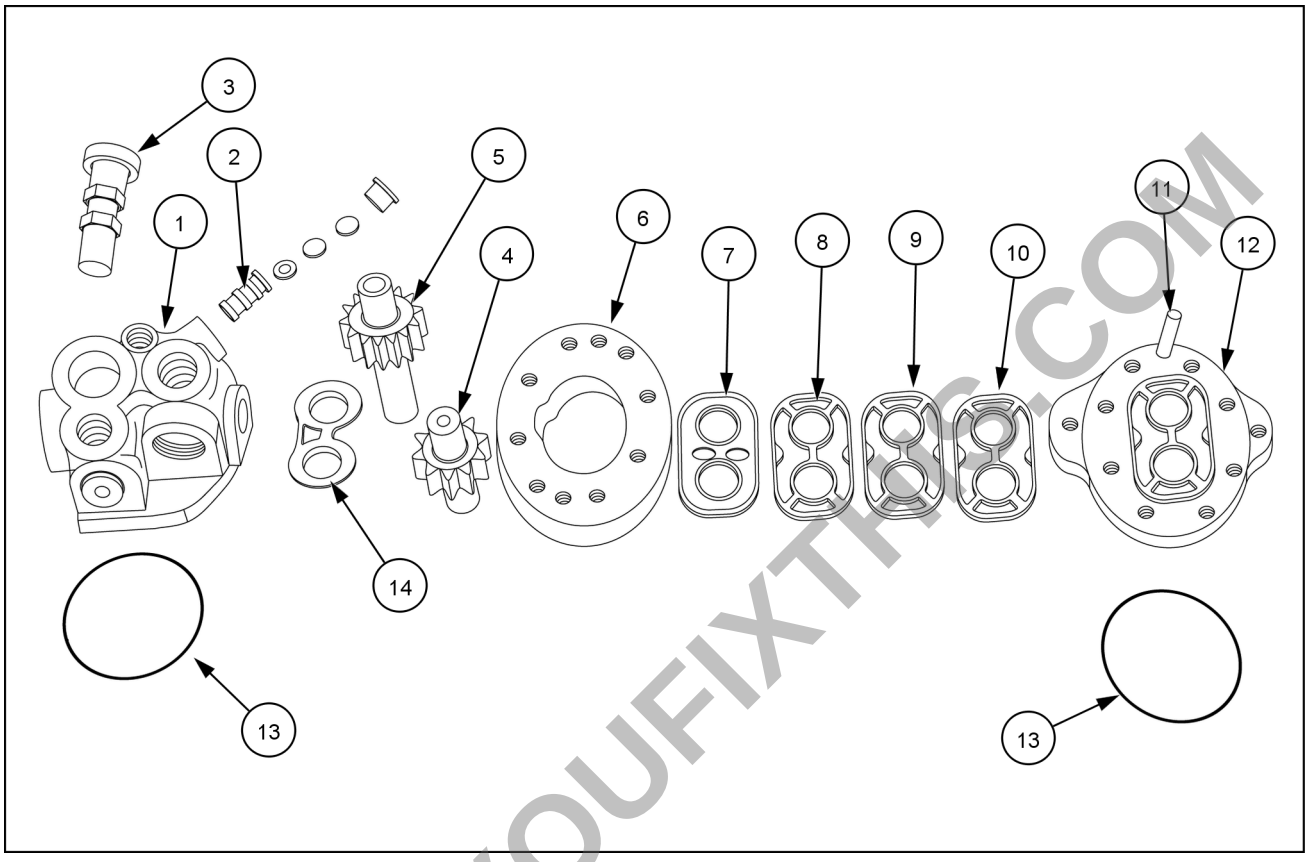


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Hydraulic systems - Disassemble – Hydraulic pump (Parker Hannifin)



NHIL14BW00018FA 1

1. Thoroughly clean the hydraulic pump with solvent or other noncorrosive cleaning fluid that will not affect rubber components.
2. Scribe a line across the three pump sections to act as a guide during the assembly process.
3. Remove the six hex screws and two bolts from the pump housing.
4. Remove the key from the drive shaft.
5. Place the pump drive shaft on a wooden place placed on a solid bench or floor.
6. Strike the end of the pump drive shaft to remove the front cover **(12)**.
7. The center section **(6)** will remain attached to either the front cover **(12)** or the back cover **(1)**. Place the drive gear **(5)** into the unseparated sections and, while holding the center section **(6)**, tap lightly to separate. Make sure that you do not strike and damage the dowel pins **(11)**.
8. Remove the wear plate **(7)**.
9. Remove the thrust plate **(14)**.
10. Mark the front cover island next to the pressure vent hole in the heat shield **(8)**, the gasket **(9)**, and the V-seal **(10)**. The location of this vent hole determines the direction of pump rotation.

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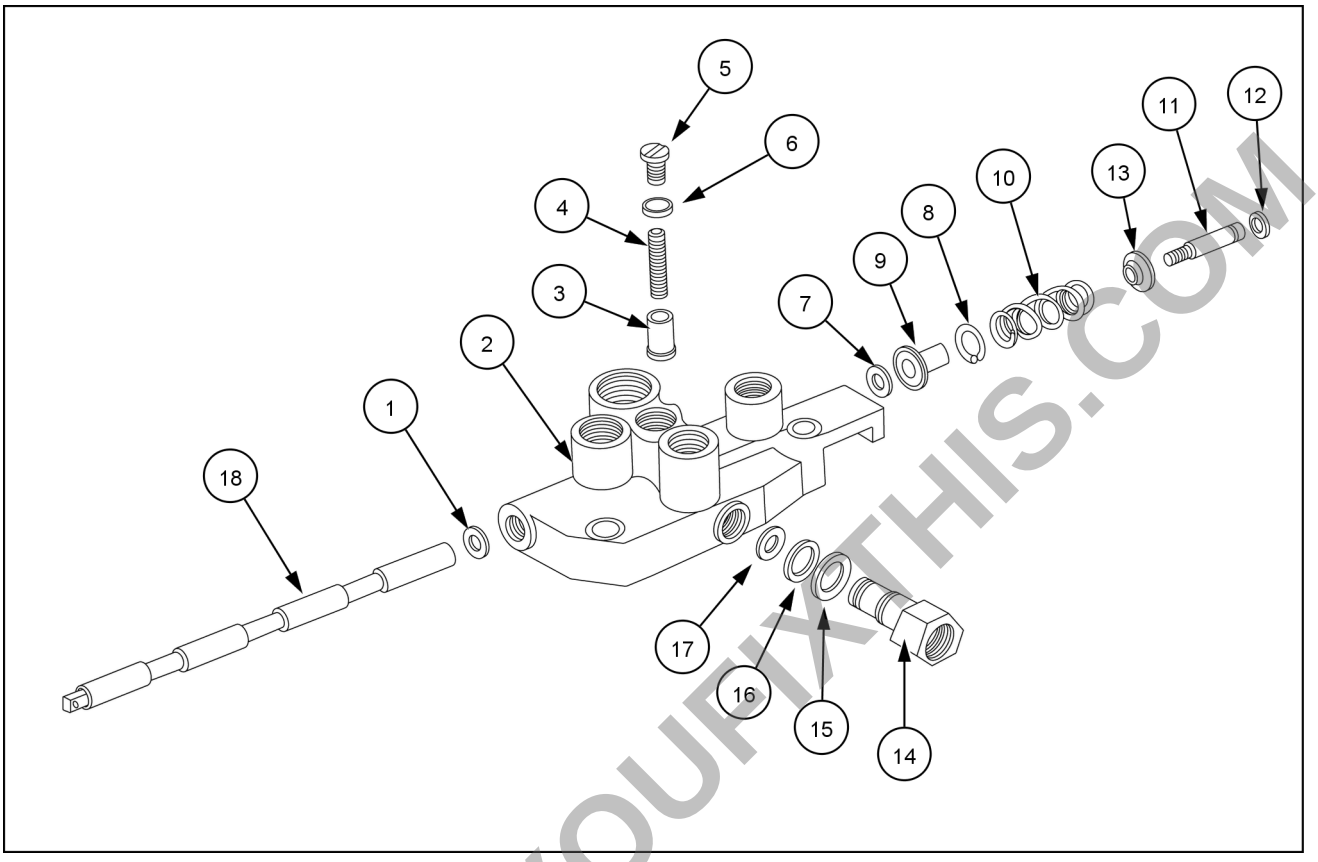
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2. Install the V-seal **(10)**, the gasket **(9)**, and the heat shield **(8)** into the front cover cavity.
   A. The small vent hole through all of these parts should be in line and positioned next to the scribe mark on the island previously made during disassembly. This position locates the vent holes on the outlet side of the pump.
   B. The lips of the V-seal should face toward the cavity and be tucked into the groove with the aid of a dull tool to prevent damage to the rubber surface. A small screwdriver can be used.
   C. The gasket should be pressed firmly toward the bottom of the cavity with the thumbs to ensure all of the gasket perimeter is completely within the groove to avoid interference with subsequent assembly components.
   D. The heat shield should be firmly pressed toward the bottom of the cavity with the thumbs to provide sufficient space for the wear plate.
3. Install the O-ring **(13)** into the groove provided in the front cover face. Apply a light coat of hydraulic oil and stretch the O-ring, if necessary, so that it will remain in the groove.
4. Install the wear plate **(7)** with the bronze surface against the gears and the small vent hole in line with the hole in the heat shield. Press the wear plate. The wear plate should be sufficiently within the oval cavity so it is axially retained.
5. Install the drive gear **(5)** and driven gear **(4)** assemblies into the front cover. Apply oil to the shaft at the drive end to prevent damage to the shaft seal caused by sharp edges on the drive shaft passing through the shaft seal. An oil-coated shaft, rotated slowly, will usually cause no damage to the seal. Check to see that the shaft seal lip and spring are not pushed out by the shaft.
6. Check the wear plate to ensure it is still seated into the oval cavity. Install the center section **(6)** over the gears until it engages the wear plate. The center section must be positioned so that the previously scribed lines on the housing exteriors are in line with those scribed on the front cover. The small slot located midway between the bores should align with the small vent hole in wear plate. The face containing the slot should be in contact with the wear plate.
7. Install the dowel pins **(11)** and add a generous amount of clean hydraulic oil into the gear cavities. Rotate the gears to distribute the oil.
8. Position the thrust plate **(14)** on top of the gears in the center section, with the bronze face toward the gears. The open side should be toward the inlet.
9. Install the O-ring **(13)** into the grove in the back cover face. Apply hydraulic oil to the O-ring, the cover face, and the bearings. Install the back cover so that the scribe marks are in line with the marks on the center section and front cover.

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Control valve - Disassemble – Spring-centered control valve (Cessna)



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(1) O-ring
(2) Body/housing
(3) Lift check plunger
(4) Spring
(5) Plug assembly
(6) O-ring
(7) O-ring
(8) Spacer
(9) Deep washer
(10) Spring
(11) Screw, hex socket cap
(12) Retaining ring
(13) Shallow washer
(14) Plug assembly
(15) O-ring
(16) Back-up washer
(17) O-ring
(18) Spool

1. Install plugs in all of the outlets of the control valve.
2. Thoroughly clean the outside of the valve.
3. Remove the lift check plugs **(5)**, the spring **(15)**, and the lift check plunger **(3)**.
4. Mark the spool and body position of the spool.

NOTE: *The spool and the body are a matched set.*

5. Remove the retaining ring **(12)**, the washer **(13)**, the spring **(10)**, the spacer **(8)**, and the washer **(9)**.
6. Heat the socket head cap screw **(11)** to soften the thread locking compound, and then remove the screw from the body.
7. Remove the pressure beyond plug **(14)**, the O-ring **(15)**, the back-up washer **(16)**, and the O-ring **(17)**.

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Cylinder - Disassemble – Load rack cylinder

1. Drain all of the oil from the cylinder barrel.
2. Clamp the base clevis of the cylinder in a vise.

NOTICE: *Never clamp the cylinder barrel in a vise as it may result in distortion and damage to the cylinder barrel.*

3. Remove the three retaining bolts, and then slip the head cap out of the cylinder.
4. Use a large drift punch and hammer to tap the head into the barrel until the head O-ring is partially visible in the cylinder port.
5. Use a blunt screwdriver (with all sharp edges removed from the tip) to remove the retaining ring from the retaining ring groove.
6. Remove any nicks made in the cylinder during the retaining ring removal with emery cloth.
7. Clean all of the emery particles from the retaining ring groove before you remove the head.
8. Grasp the cylinder shaft-and-clevis assembly, and then rapidly pull the shaft out of the cylinder. The piston will force the head out of the cylinder barrel.
9. To service the cylinder head shaft seal, it will be necessary to remove the piston nut and piston.

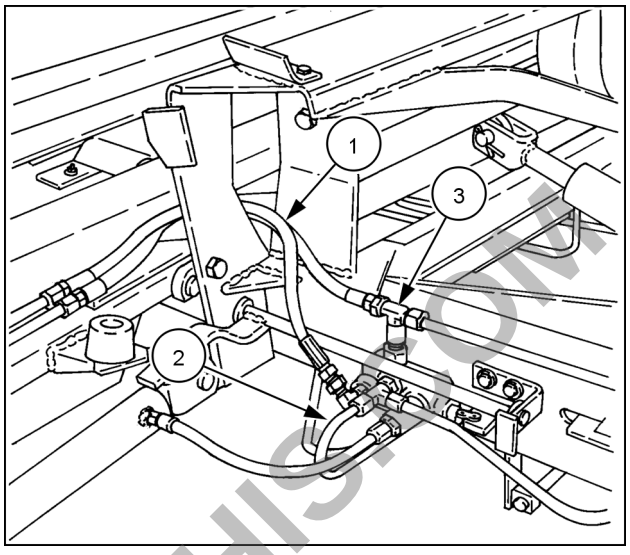
NOTICE: *Never clamp on the shaft or the piston, or damage will result.*

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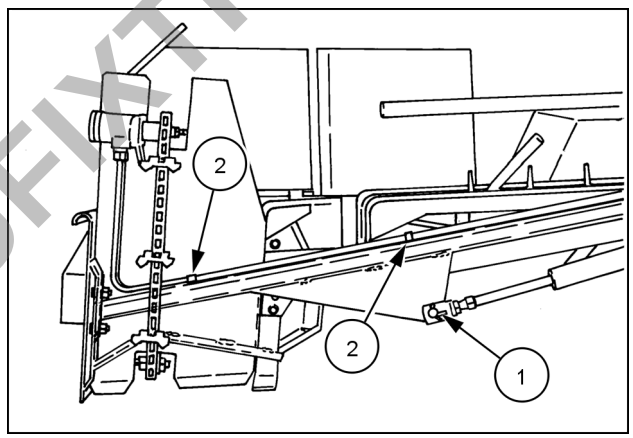
Bale loader - Remove

1. Disconnect the rear hose from the tee fitting **(3)** in the top port of the loader valve.
2. Disconnect the hose that routes from the front port of the motor from the elbow fitting **(2)** in the “B” port of the loader valve.
3. Thread the loader motor hoses **(1)** through the opening and away from the main frame.



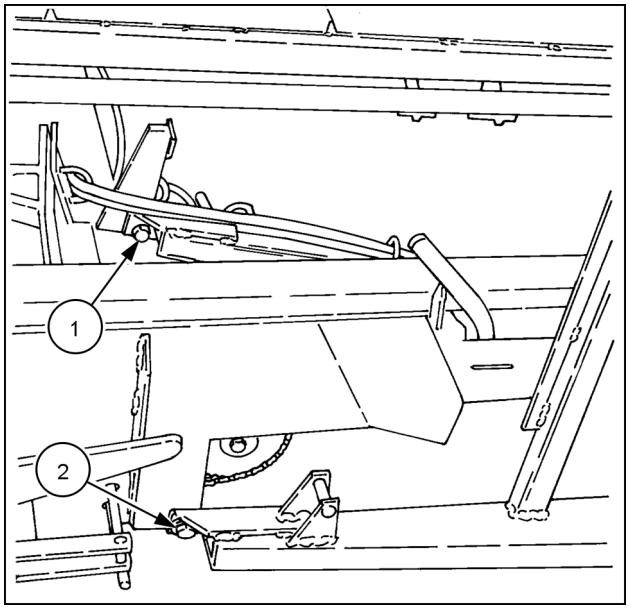
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4. Remove the clips and self tapping screws at **(2)**, and then remove the hydraulic tubes from the loader frame.
5. Remove the cotter pin and clevis pin, and then remove the hydraulic cylinder **(1)** from the loader.



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6. Support the front loader arm with an adequate lifting device.
7. Remove the 3/4 inch x 3 inch bolt, the special washer, and the spacer bushing at **(2)**.
8. Remove the two 3/4 inch x 3 inch bolts and nuts at **(1)**.
9. Remove the front loader arm from the main frame.



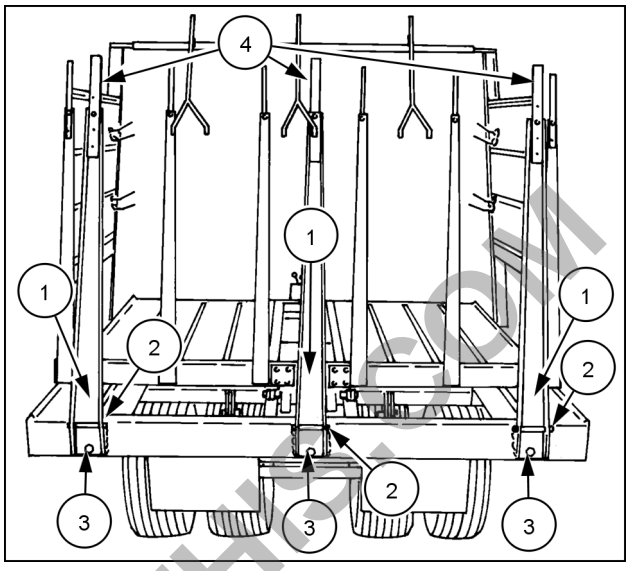
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Load rack - Remove – Load rack fingers and extensions

1. Remove the load rack finger extensions **(4)** by removing the 3/8 inch x 1 inch carriage bolts and lock nuts.
2. Remove the drilled rod and the cotter pins at **(2)**.
3. Remove the 1/2 inch x 2 inch bolt, the flat washer, and the lock nut at **(3)**.
4. Remove each load rack finger **(1)** from the rear of the load rack.



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Safety rules – Personal safety

⚠ General safety rules ⚠

Use caution when you operate the machine on slopes. Raised equipment, full tanks, and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol or drugs, or while you are otherwise impaired.

When digging or using ground-engaging attachments, be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop the engine, remove the key, and relieve the pressure before you connect or disconnect fluid lines.
- Make sure that all components are in good condition. Tighten all connections before you start the engine or pressurize the system.
- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

DO NOT attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Make sure that all guards and shields are in good condition and properly installed before you operate the machine. Never operate the machine with shields removed. Always close access doors or panels before you operate the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate the engine in enclosed spaces as harmful exhaust gases may build up.

Before you start the machine, be sure that all controls are in neutral or park lock position.

Start the engine only from the operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting, and Slow-Moving Vehicle (SMV) emblem clean to provide the best possible visibility while you operate the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

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DO NOT stand on or use a hose as a step. DO NOT pull or apply external forces to the hose. The hose may fail and cause injury.

Keep all persons away from the working area. Mechanisms controlled by fluid power can become hazardous if a hose fails. Lifted mechanisms can fall to the ground, machine steering may fail, etc.

Stay clear of a pressurized hose assembly that has blown apart. Hose fittings can be thrown off at high speed and a loose hose can whip around with great force.

Hydraulic fluid can reach high temperatures. Allow fluid to cool before servicing the system.

Escaping fluid under pressure may form a mist or fine spray which can flash or explode upon contact with an ignition source.

Vibration can reduce hose service life. Make sure all retaining clamps and/or devices are secured.

Environmental conditions can cause hose and fittings to deteriorate. Inspect hydraulic hoses periodically. Replace worn or damaged hoses and fittings.

⚠ General maintenance safety ⚠

Keep the area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm, level surface.

Install guards and shields after you service the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions, or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure that working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment, causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless the equipment is securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When you tow a disabled machine follow the procedure in this manual. Use only rigid tow bars.

Stop the engine, remove the key, and relieve pressure before you connect or disconnect fluid lines.

Stop the engine and remove the key before you connect or disconnect electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling systems operate under pressure. Hot coolant can spray out if you remove a cap while the system is hot. Allow the system to cool before you remove the cap. When you remove the cap, turn it slowly to allow pressure to escape before you completely remove the cap.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

The engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when you service such components. Allow surfaces to cool before you handle or disconnect hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before you weld on the machine. Always wash your hands after you handle battery components.

⚠ Wheels and tires ⚠

Make sure that tires are correctly inflated. Do not exceed any recommended load or pressure. Follow the instructions in the manual for proper tire inflation.

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