

SERVICE MANUAL

U80C Tier 4 Tractor Backhoe

from PIN NCC570800

Part number 47441616

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INTRODUCTION

Safety rules

DANGER

Improper operation or service of this machine can result in an accident.
Do not operate this machine or perform any lubrication, maintenance, or repair on it until you have read and understood the operation, lubrication, maintenance, and repair information.
Failure to comply will result in death or serious injury.

D0010A

WARNING

Maintenance hazard!
Always perform all service procedures punctually at the intervals stated in this manual. This ensures optimum performance levels and maximum safety during machine operation.
Failure to comply could result in death or serious injury.

W0132A

WARNING

Pressurized system!
Before attempting any service procedure, it is your responsibility to know the number of accumulators on the machine, and the correct procedure for releasing the pressure of each accumulator.
Failure to comply could result in death or serious injury.

W0136A

NOTICE: *Extreme working and environmental conditions require shortened service intervals.*

Use Case fluids, lubricants, and filters for the best protection and performance of your machine. All fluids, lubricants, and filters must be disposed of in compliance with environmental standards and regulations. Contact your dealer with any questions regarding the service and maintenance of this machine.

Read the safety decals and information decals on the machine. Read the Operator's Manual and safety manual. Understand the operation of the machine before you start any service.

Before you service the machine, put a 'Do Not Operate' tag on the steering wheel or over the key switch. Ensure the tag is at a location where everyone who might operate or service the machine may see clearly. One tag is included with your new machine. Additional tags are available from your dealer.

Plastic and resin parts

- Avoid using gasoline, paint thinner, etc. when cleaning plastic parts, console, instrument cluster, etc.
- Use only water, mild soap, and a soft cloth when you clean these parts.
- Using gasoline, thinners, etc. can cause discoloration, cracking, or deformation of the part being cleaned.

Safety rules Ductile iron

DANGER

Improper operation or service of this machine can result in an accident.

Any unauthorized modifications made to this machine can have serious consequences. Consult an authorized dealer on changes, additions, or modifications that may be required for this machine. Do not make any unauthorized modifications.

Failure to comply will result in death or serious injury.

D0030A

Before you weld, cut, or drill holes on any part of this machine, make sure the part is not cast ductile iron. See your dealer if you do not know if a part is cast ductile iron. The following are cast ductile iron parts:

- two wheel drive steering link
- dump links
- front axle
- Air Conditioning (A/C) compressor mounting bracket

Unauthorized modifications to cast ductile iron parts can cause injury or death. Welding, cutting, or drilling can cause cast ductile iron to break. Do not weld, cut, or drill to repair or to attach items to cast ductile iron parts on this machine.

Safety rules

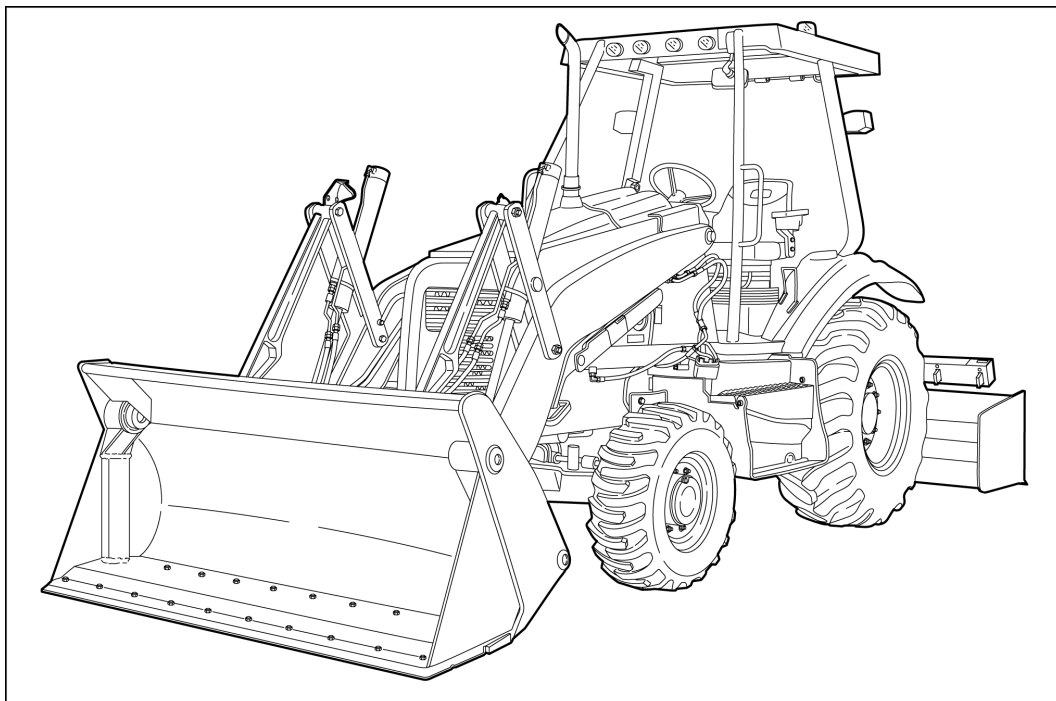
Before welding on the machine you must do the following.
If you have any questions about welding on the machine
contact your dealer.

- Disconnect the batteries.
- Disconnect the alternator terminal wires.
- Disconnect the instrument cluster.
- Disconnect the engine control unit. Disconnect all connectors from the engine harness to the ECU.
- Disconnect the controller for the loader 4 in 1 bucket or auxiliary hydraulics, if equipped (one connector, located under the loader valve at the rear, left underside of the machine).



SERVICE MANUAL

Engine



U80C

Engine - General specification

Model	Diesel, F5HFL413D*A
Type	Four cylinder, turbocharged
Firing order	1 - 3 - 4 - 2
Bore and stroke	99mm x 110mm (3.9 in x 4.33 in)
Displacement	3.4 l (207 in³)
Compression ratio	16.5 to 1
Fuel injection	Direct HPCR
Horsepower - rated at 2200 RPM Gross Net with 39° fan	63 kW (85 Hp) 58 kW (79 Hp)
Peak torque at 1400 RPM Gross Net with 39° fan Maximum torque rise	374 N·m (276 lb ft) 364 N·m (268 lb ft) 36% ± 5 RPM

Engine - Speeds stall test check sheet

Results from stall test procedure (fill in values accordingly)

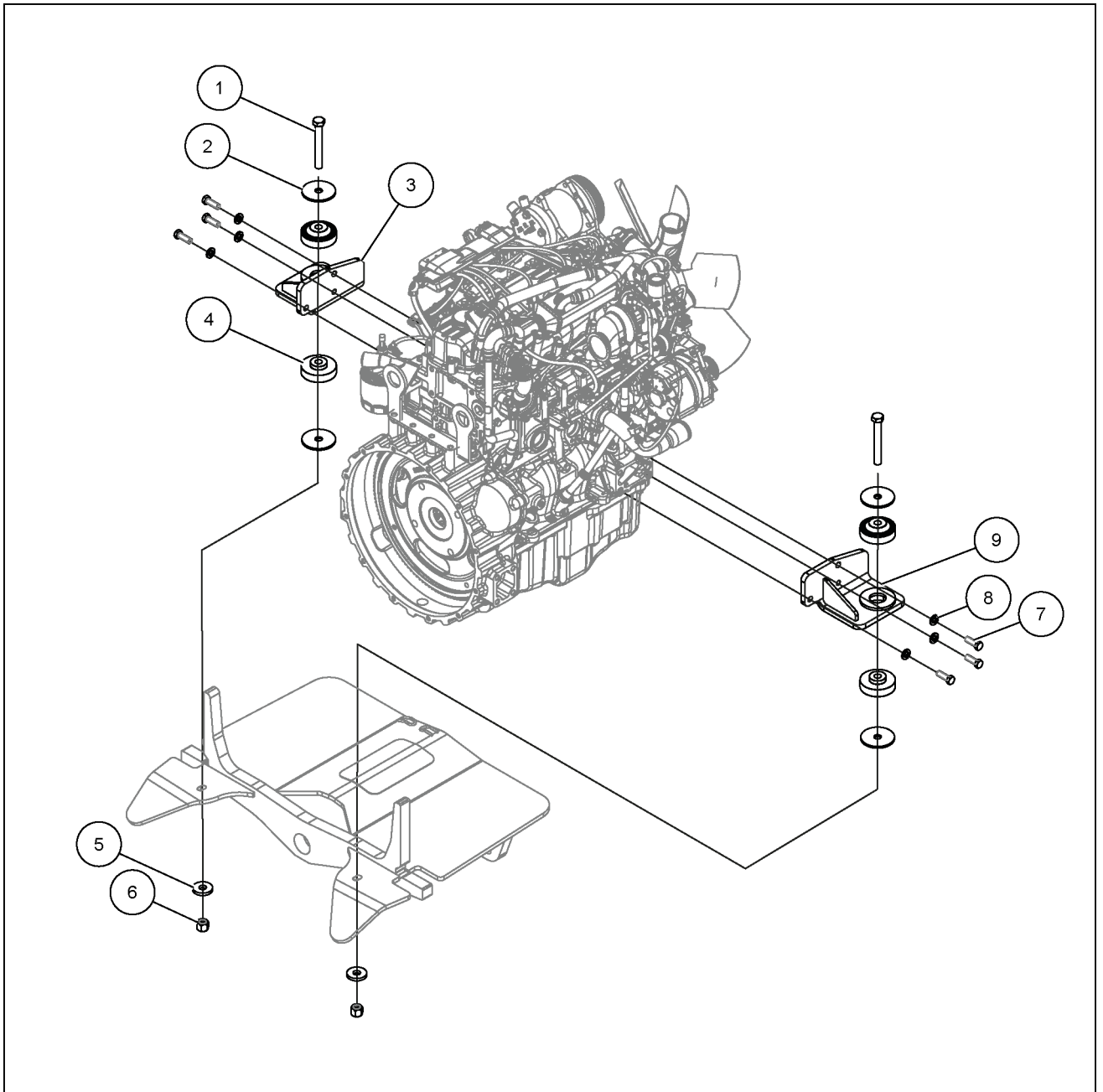
ID	RPM test valve	Stall test component (specified value)
1		Loader hydraulic stall speed (2200 - 2330 RPM)
2		Torque converter stall speed (2150 - 2310 RPM)
3		Combined - loader hydraulic and torque converter - stall speed (1610 - 1890 RPM)

Stall test reference chart

ID	RPM	Results
1	2230 to 2330	All systems operating within normal specified RPM values.
2	2180 to 2310	
3	1610 to 1890	
1	Above 2330	Engine problem. Check engine speeds. Refer to the engine service manual.
2	Above 2310	
3	Above 1890	
1	Below 2230	Engine problem. Check engine speeds. Replace the fuel and air filters. Refer to the engine service manual.
2	Below 2180	
3	Below 1610	
1	Below 2230	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump.
2	2180 to 2310	
3	Below 1610	
1	Above 2330	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump. Check for leakage in the loader control valve.
2	2180 to 2310	
3	Above 1890	
1	2230 to 2330	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump.
2	2180 to 2310	
3	1610 to 1890	
1	2230 to 2330	Torque converter or transmission problems.
2	Above 2310	
3	Above 1890	
1	2230 to 2330	Torque converter or transmission problems.
2	Below 2180	
3	Below 1610	

Engine - Exploded view

1.	Bolt	6.	Nut
2.	Washer	7.	Bolt
3.	Bracket, Left hand engine mount	8.	Washer
4.	Mount	9.	Bracket, Right hand engine mount
5.	Washer		



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Engine - Prepare for stall tests

Perform the stall test to find the cause of poor performance.

The main relief valve must be set within specifications to achieve accurate readings when performing the following stall tests.

The engine is run at full throttle and the transmission and hydraulic systems are engaged separately, and then together.

Comparing the engine speeds from the stall test with the check sheets in this section will help to find the cause of the problem. It can be necessary to check a separate system to find the exact cause of the problem.

Use a photo tachometer or other tachometer of equal accuracy to get accurate results from the stall test.

The engine, transmission and hydraulic system must be at operating temperature before doing the stall test. Heat the oil according to instructions in this section.

Machines with standard transmission

NOTE: Check the throttle linkage adjustments.

1. Apply the parking brake.
2. Move the transmission gear selector into fourth gear.
3. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
4. Release the parking brake.
5. With the engine running at low idle, move the direction control lever forward.
6. Slowly increase the engine speed to full throttle.
7. If the machine begins to move at any time, decrease the engine speed to low idle and stop the engine.

Procedure to heat torque converter and hydraulic oil

1. Apply the parking brake.
2. Start and run the engine at low idle.
3. Run the engine at full throttle, hold the loader control lever in the rollback position for 15 seconds.
4. Return the loader control lever to neutral for 15 seconds.
5. Repeat steps 3 and 4 until the temperature of the oil is **52 °C (126 °F)**. The side of the reservoir will be very warm at this temperature.
6. With the engine running at low idle, move the transmission control to fourth gear and the direction control lever to forward.
7. Run the engine at full throttle for 15 seconds.
8. Decrease the engine speed to low idle and move the direction control lever to neutral for 15 seconds.
9. Repeat steps 6 through 8 until the pointer in the gauge for transmission oil temperature is in the center of the green zone of the gauge for transmission oil temperature.

Stall test procedure

1. Prepare the machine for the stall test according to instructions in this section.
2. Heat the oil according to instructions in this section.
3. Apply the parking brake and start the engine.
4. With the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Record the reading on line 1 of the check sheet.
5. Decrease the engine speed to low idle.
6. Move the transmission control lever to fourth gear.
7. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
8. Release the parking brake.
9. Move the direction control lever to forward.
10. Slowly increase the engine speed to full throttle and read the tachometer. Record the reading on line 3 on the check sheet.
11. With the transmission control lever in fourth gear, the direction control lever in forward, and the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Record the reading on line 4 on the check sheet.
12. Decrease the engine speed to low idle, move the directional control lever to neutral.
13. Run the engine at low idle for two minutes and then stop the engine.
14. See the check sheet to understand the results of the stall test.

Engine - Remove

Prior operation:

Drain the hydraulic tank.

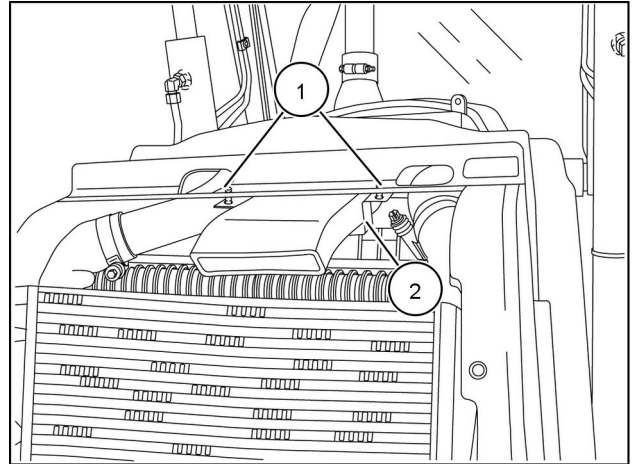
Prior operation:

Disconnect the batteries.

Prior operation:

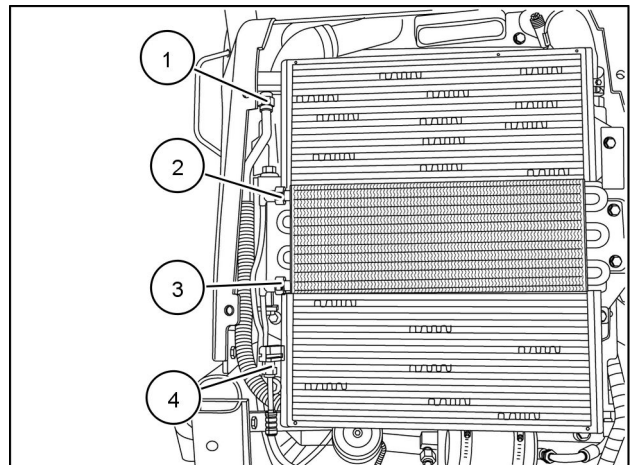
Remove the engine hood.

1. Remove the air intake tube support bracket bolts (1) and bracket (2).



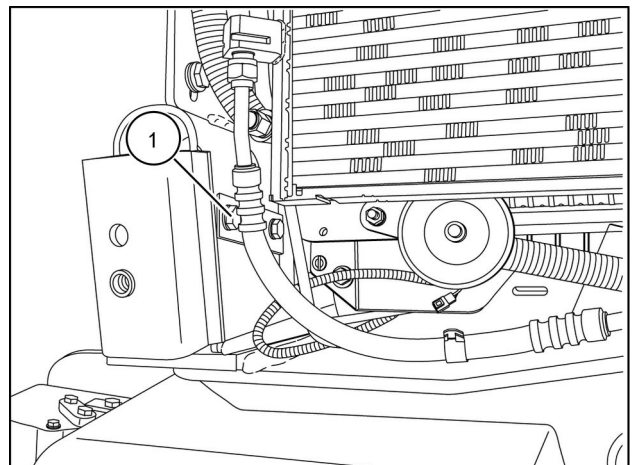
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2. Disconnect the A/C condenser inlet line (1).
3. Disconnect the inlet fuel cooler line (2).
4. Disconnect the outlet fuel cooler line (3).
5. Disconnect the A/C condenser outlet line (4).



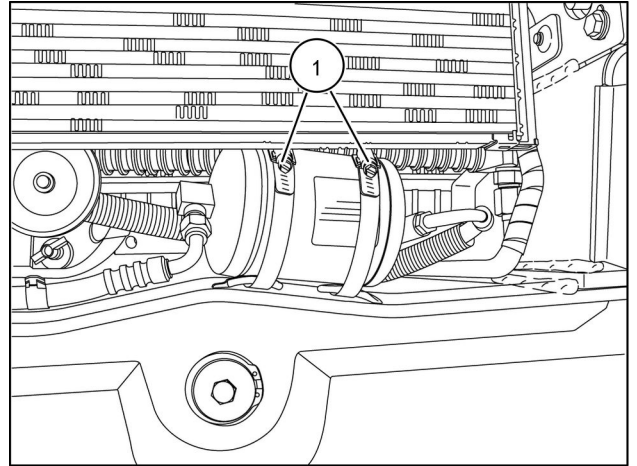
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6. Remove the horn bracket nut (1). Place the horn and horn bracket away from the cooling package.



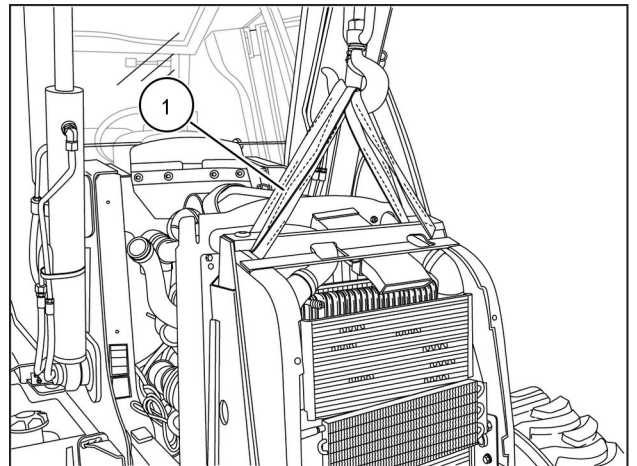
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7. Loosen and remove the receiver/dryer hold-down clamps (1). Place the receiver/dryer away from the cooling package.



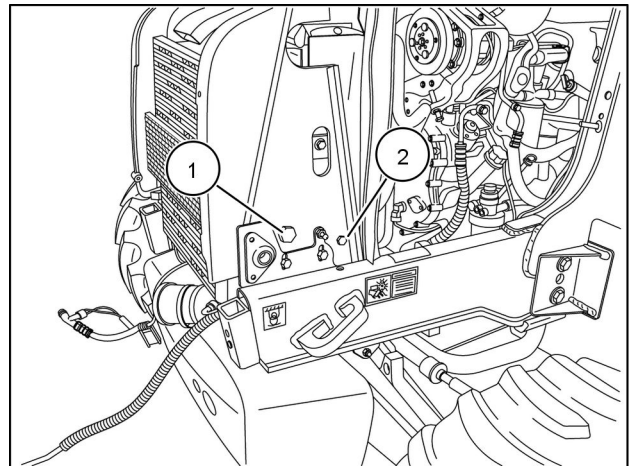
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8. Support the cooling package housing wrapper.



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9. Remove the cooling package housing wrapper bolts (1), (2).



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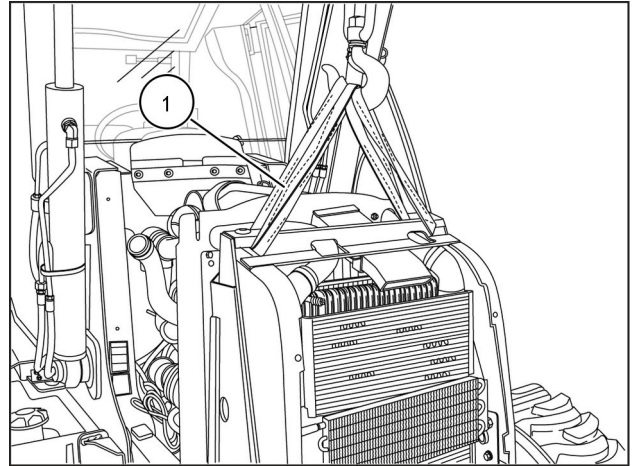


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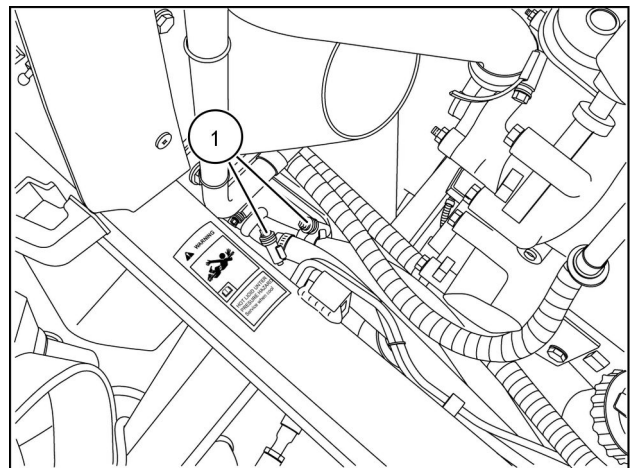
Thank you so much for reading.

10. Carefully lift and remove the cooling package housing wrapper.



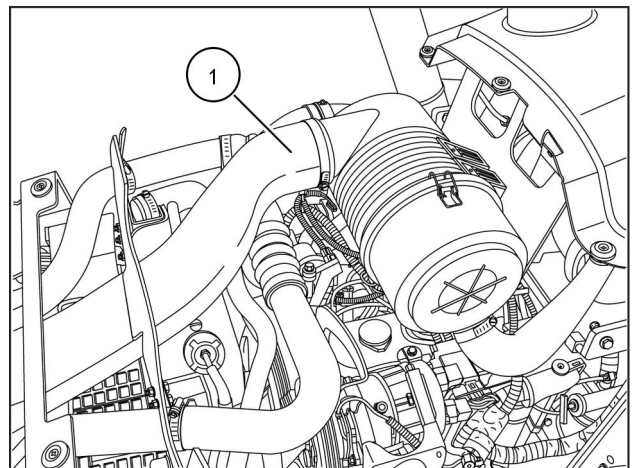
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11. Label and disconnect the hydraulic oil hoses (1) leading to the hydraulic oil cooler.



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12. Disconnect the air intake tube (1) from the air cleaner.



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