Product identification - Machine serial number

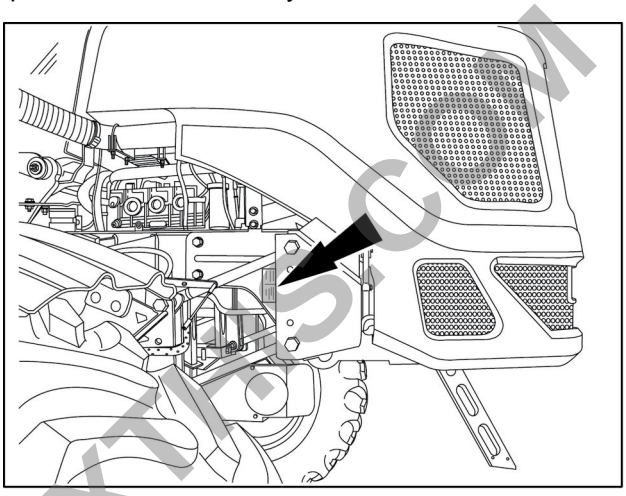
Condor Rear Boom Sprayers	

Sprayer model and serial number

Write your model number, machine serial number and serial number of major components on the lines provided. If needed, give these numbers to your dealer when you need parts or information for your machine.

Model:
Serial number:

NOTE: *Located on the right side of frame below hood.*

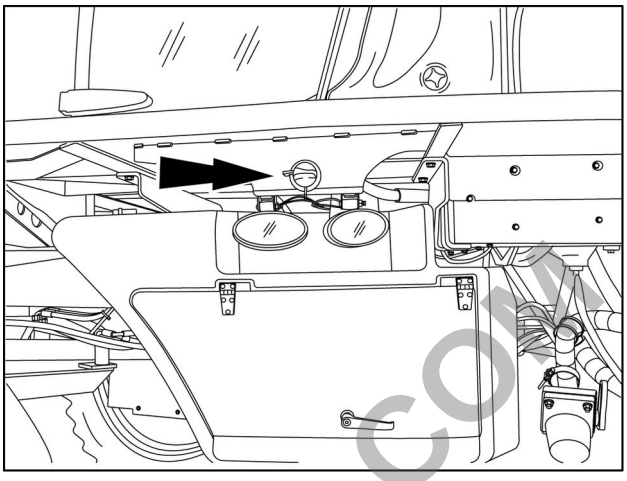


RAIL15SP00925AA 1

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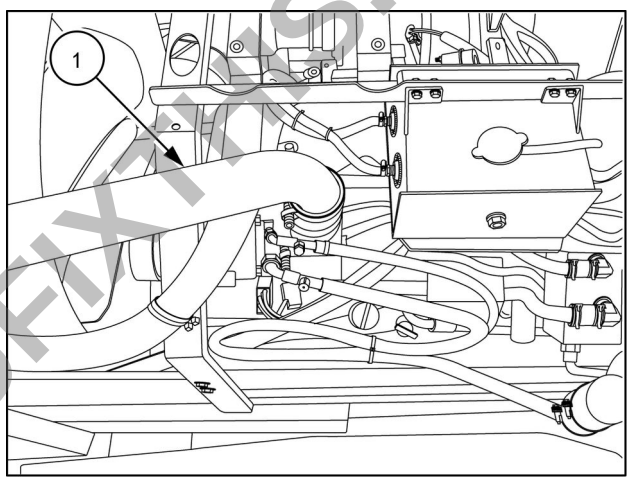
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1. Turn the power to the batteries off.



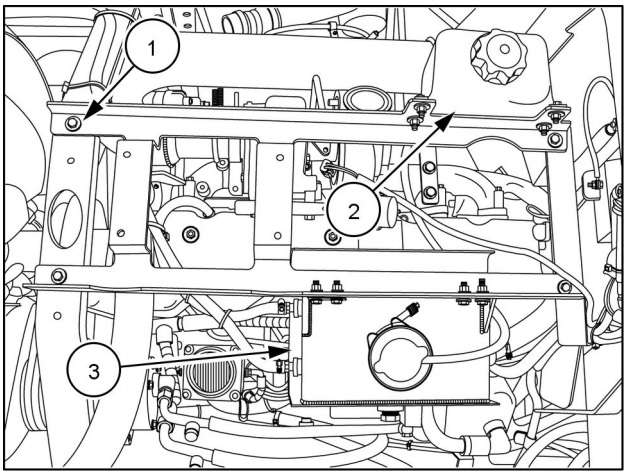
RAIL13SP04726AA 1

2. Remove the turbo lines **(1)** running from the turbo to the inner cooler.



RAIL13SP04718AA 2

3. Remove the four bolts **(1)** securing the hood frame support. The frame holds the radiator overflow tank **(2)** and the deaeration tank **(3)**.

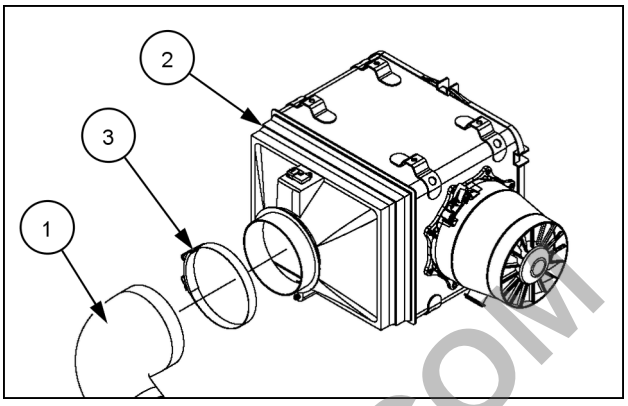


RAIL13SP04722AA 3

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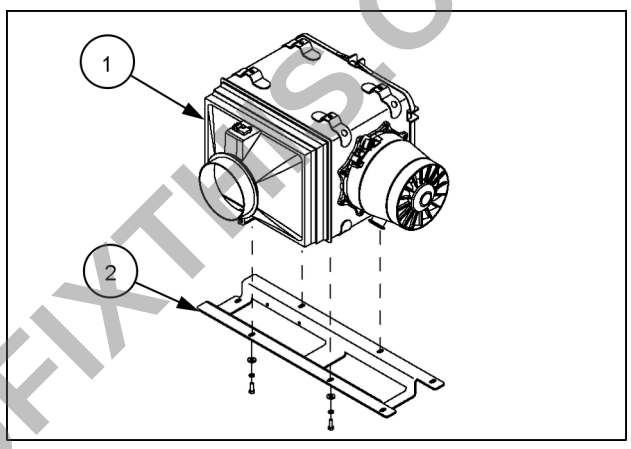
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7. Disconnect the engine air intake elbow **(1)** from the air cleaner box **(2)** by removing the hose clamp **(3)**. Pull the elbow and attached hose assembly away from the air cleaner.
8. Disconnect the electrical connection to the air cleaner restriction sensor.



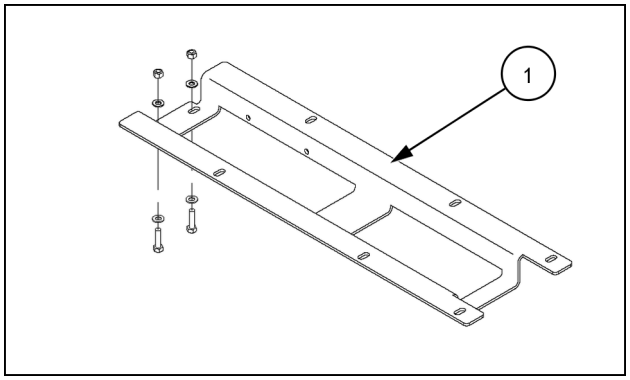
RAIL15SP01302AA 3

9. Remove the air cleaner box **(1)** from the mounting support **(2)** by removing the bolts and washers. Lift the air cleaner box from the vehicle.



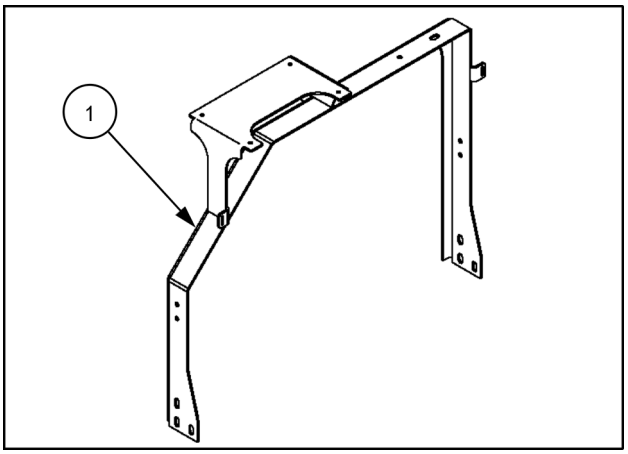
RAIL15SP01303AA 4

10. Remove the air cleaner support bracket **(1)** from the vehicle by removing the bolts, washers, and nuts. Lift the support bracket from the vehicle.



RAIL15SP01304AA 5

11. Remove the air cleaner support weldment **(1)** from the vehicle by removing the bolts, washers, and nuts. Lift the air cleaner support weldment from the vehicle.



RAIL15SP01305AA 6

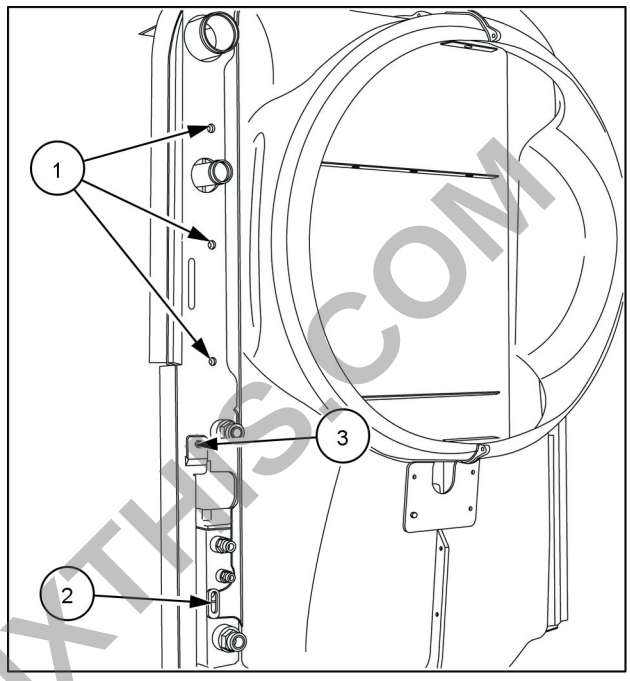
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Fan and drive - Install - Fan shroud

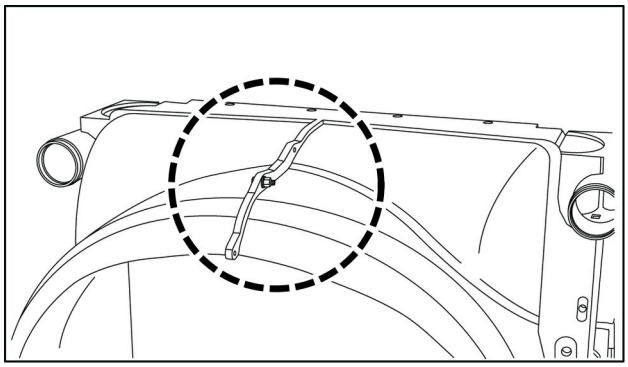
Condor Rear Boom Sprayers	

1. Position left side fan shroud and left-hand upper baffle onto cooling system assembly weldments/radiator housing.
2. Secure left side fan shroud and left-hand upper hood baffle to cooling system assembly weldment/radiator housing with four hardware sets **(1)** and **(2)** consisting of four hex bolts, flat washers, and lock washers.
3. Secure left-hand upper hood baffle to left-hand lower hood baffle with hardware set **(3)** consisting of one shoulder bolt, two flat washers, and one jam nut.
4. Repeat Steps **2** and **3** to install right-hand upper hood baffle and right side fan shroud to cooling system weldment/radiator housing.



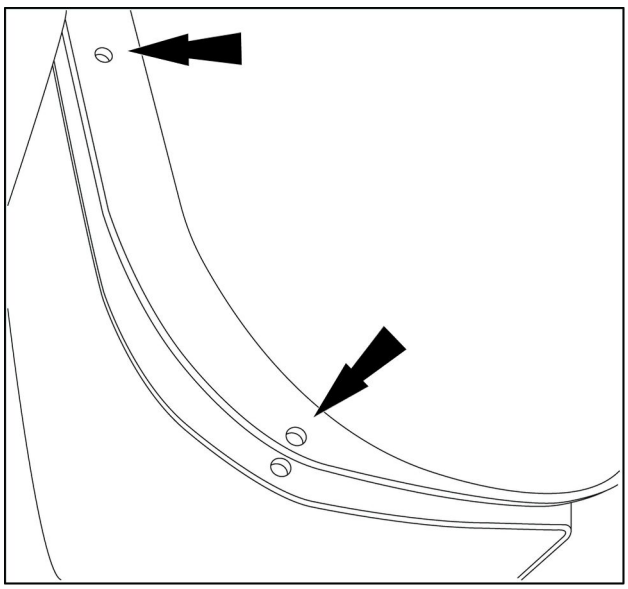
RAIL12SP00290AA 1

5. Join upper edges of left side and right side fan shrouds and secure together with three hex bolts, six flat washers, and three lock nuts.



RAIL12SP00289AA 2

6. Join lower edges of left side and right side fan shrouds and secure together with four hex bolts, eight flat washers, and four lock nuts.



RAIL12SP00291AA 3

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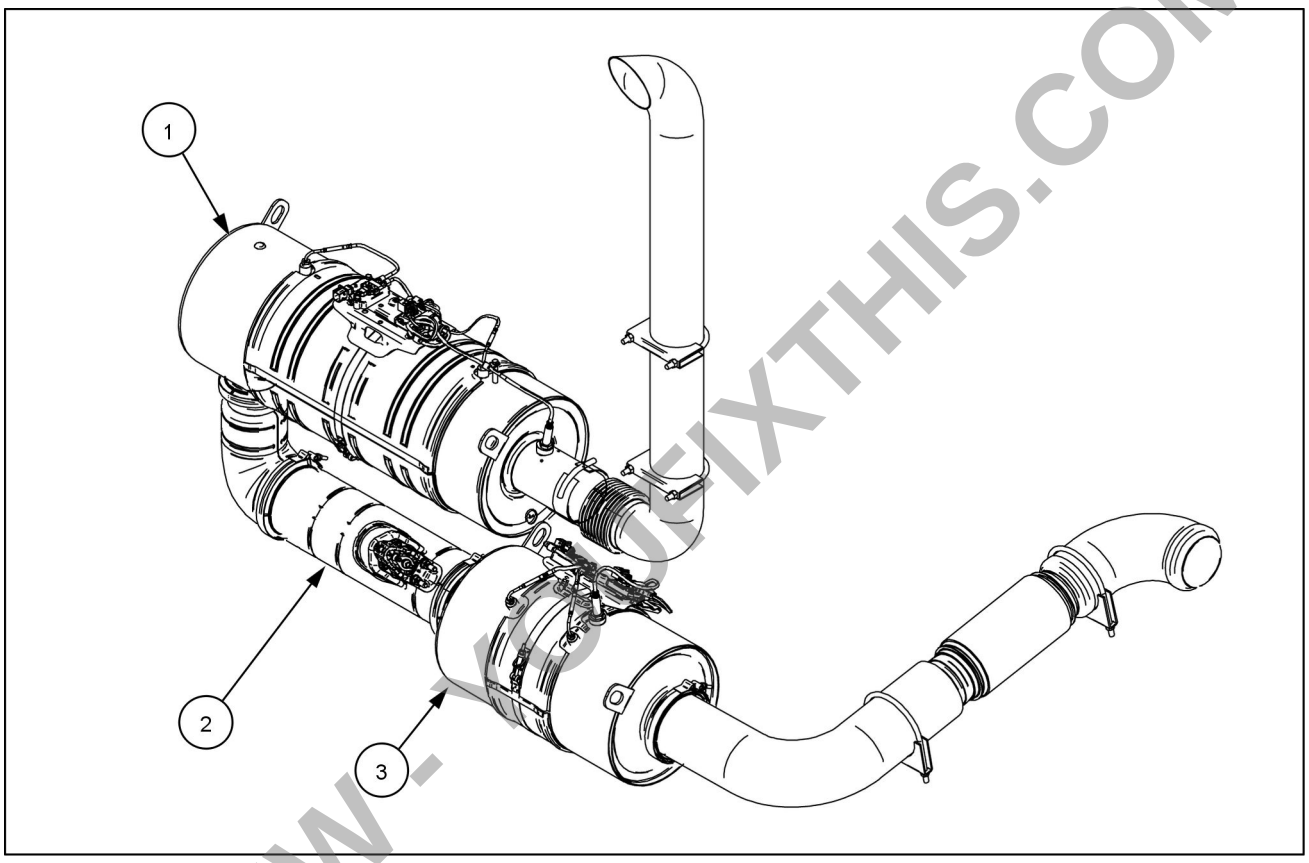
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Selective Catalytic Reduction (SCR) muffler and catalyst - Overview

Condor Rear Boom Sprayers	

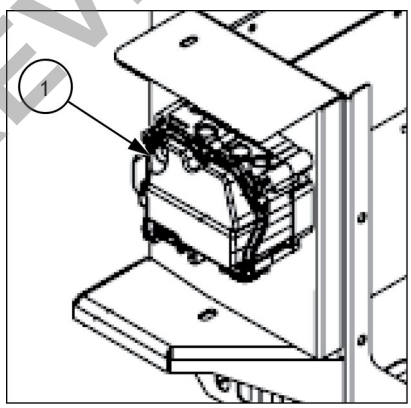
The Selective Catalytic Reduction (SCR) system attached the engine of the vehicle is used to reduce the amount of carbon dioxide emissions from the engine. The system components operate to deliver Diesel Exhaust Fluid (DEF) into the exhaust stream coming from the engine.

The Selective Catalytic Reduction (SCR) system is composed of the Selective Catalytic Reduction (SCR) chamber **(1)** , the Decomposition Reactor Tube (DRT) **(2)**, and the Diesel Oxidation Catalyst (DOC) **(3)**. The SCR system is mounted in a sheet steel enclosure attached to the right hand side of the machine.

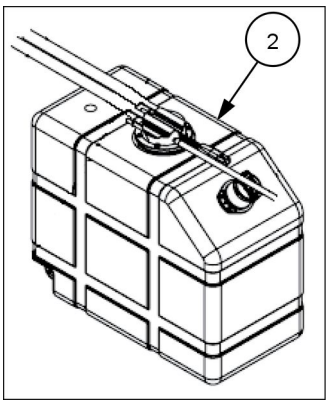


RAIL15SP01291FA 1

There are two additional components required for the complete SCR system. The two components are the DEF supply module **(1)** which is attached to the rear end of the SCR mounting box, and the DEF tank **(2)** which is mounted to the right hand side of the vehicle and is located under a protective cover.



RAIL15SP01270AA 2



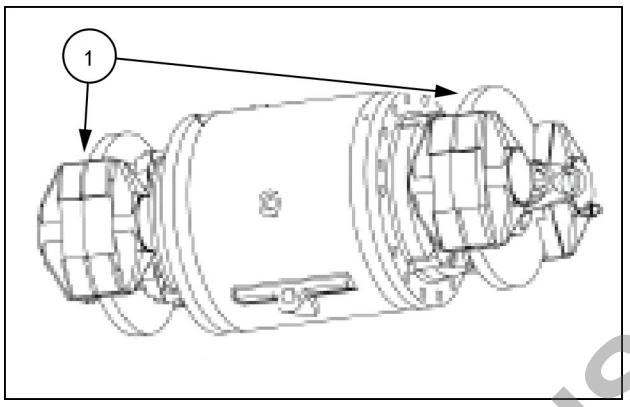
RAIL15SP01271AA 3

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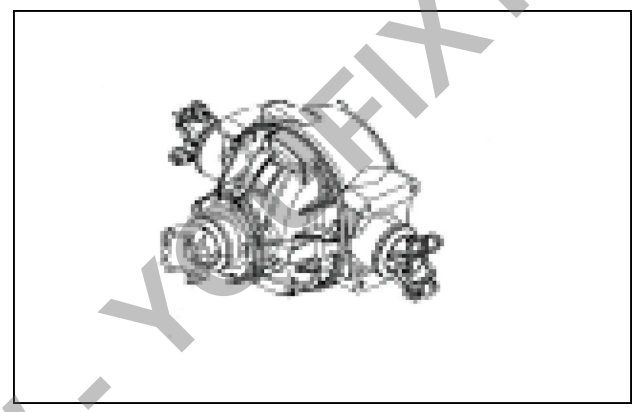
Differential

The GC260R uses an ITL manufactured transmission. The differential has an externally activated differential lock which is activated by a floor mounted pedal in the operators cab. Disc brakes **(1)** are attached to the output shafts of the differential



RAIL14SP00305AA 3

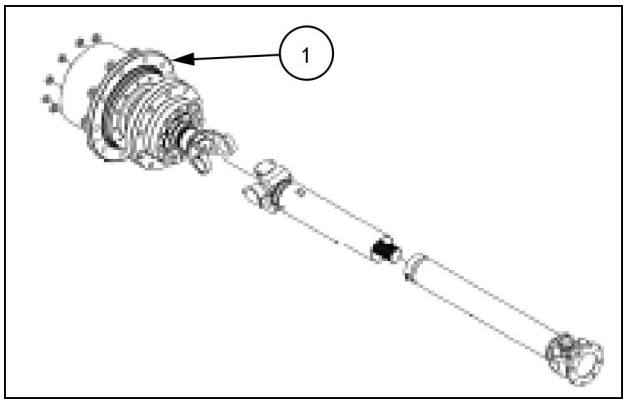
The GC300R and GC300C uses an AxleTech manufactured transmission. The differential is a limited slip differential with out differential lock which feature an automatic engagement whenever the wheeled begin to slip. This feature is fully automatic.. There are no Disc brakes attached to the differential



RAIL14SP00308AA 4

Planetary

Some models of the GC260R sprayer use an angled shaft set up. In this set up the power from the differential is sent to planetary hub assemblies **(1)** at each wheel.



RAIL14SP00307AA 5

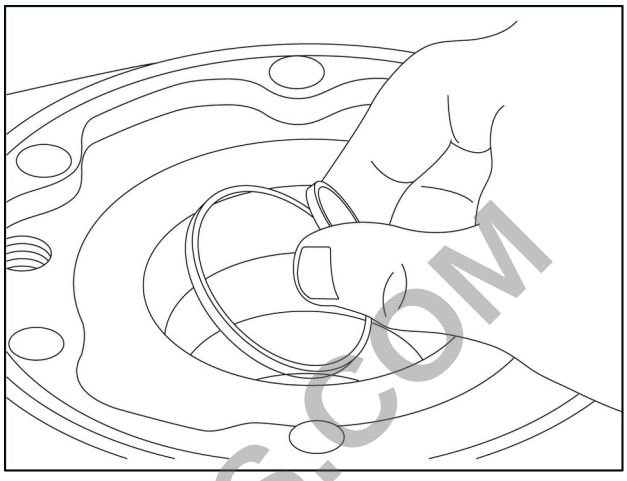
Drop Box

Some models of the GC260R sprayer use Fairfield drop box assemblies to transfer power from the differential drive shafts to each rear wheel. The drop boxes are fully enclosed This is an option on the GC260R and are required with certain tire configurations.

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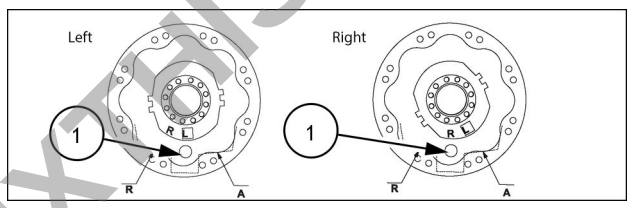
Valving reassembly

8. Lubricate and install new seals and back-up rings, ensuring the back up rings are twisted as little as possible.
9. Place the springs in their housings, previously filled with grease.
10. Lubricate the faces of the seals of the valving.
11. Press the valving into the cover.



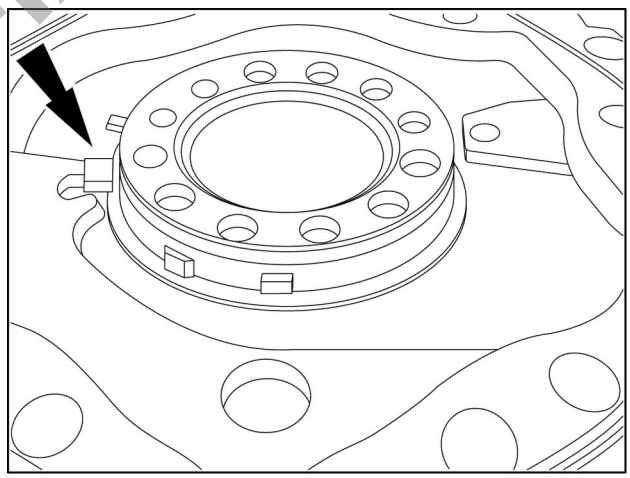
RAIL13SP03660AA 7

12. Place the chosen letter, R or L, indicating the rotation direction in front of the displacement change spool **(1)**.

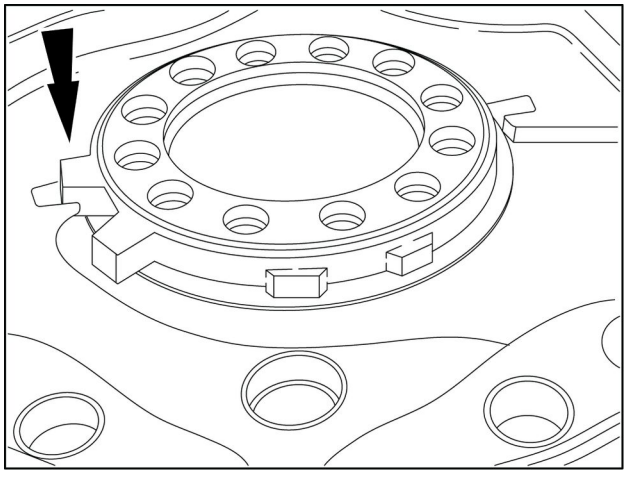


RAIL13SP04586AA 8

13. If there is no letter, do the indexing according to the marks made during disassembly.



RAIL13SP03653AA 9

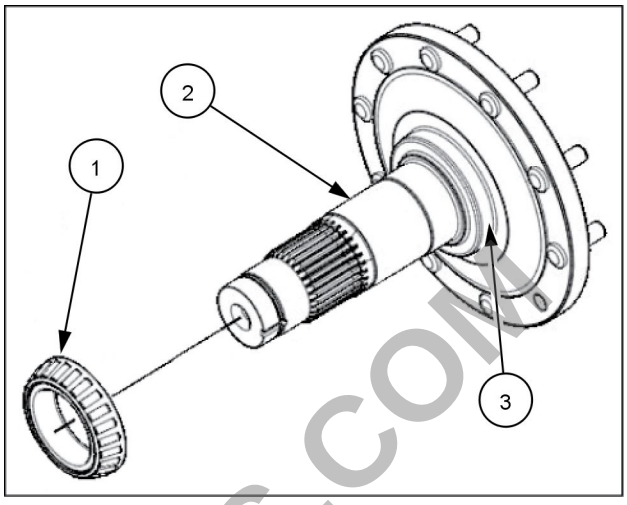


RAIL13SP03654AA 10

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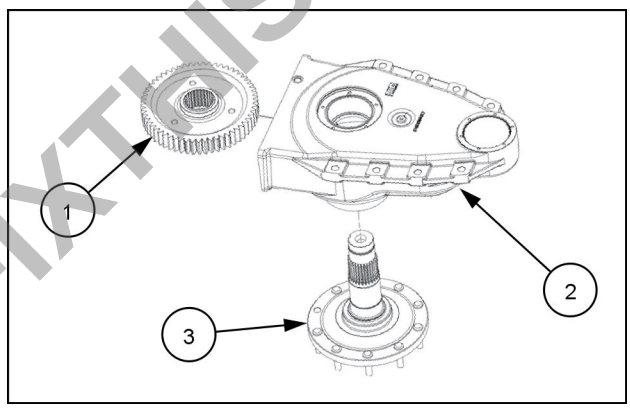
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13. Install the bearing cone **(1)**, with wide face down, onto the spindle **(2)**. Insure that the bearing cone is fully seated against the bearing shoulder.
14. Clean the spindle at the seal interface area **(3)**. Apply a thin film of rubber lubricant to the outer diameter of the spindle seal surface and seal inner diameter.



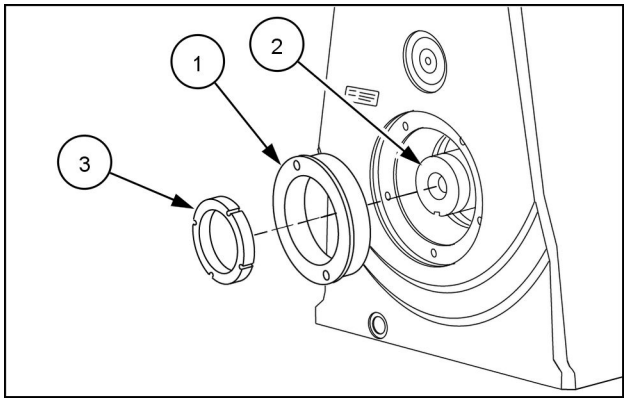
RAIL15SP01181AA 7

15. Install the gear **(1)** into housing **(2)** through the opening in the bottom of the drop box housing. The counterbore of the gear must face the spindle shaft spline.
16. Install the spindle **(3)** into the housing **(2)** and through the gear **(1)**. Insure that the spindle is centered evenly onto the previously installed seal. Lightly press the spindle into the seal with just enough press to seat the seal.
    Support the spindle in place.



RAIL16SP00149AA 8

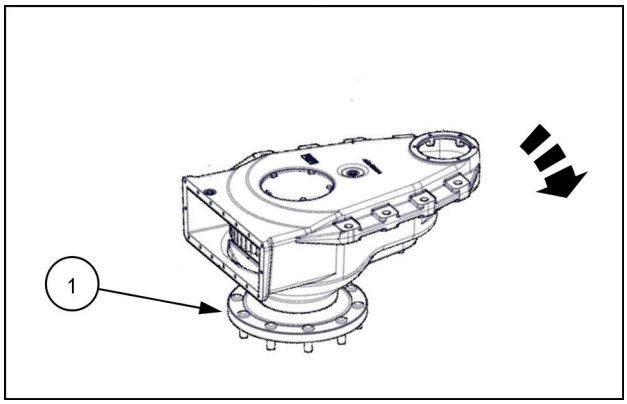
17. Assemble the Output Shaft Alignment Tool **380003408 (1)** onto the spindle **(2)**.
    Attach the bearing nut **(3)** onto the spindle in order to hold the spindle in position.



RAIL16SP00150AA 9

18. Roll the drop box housing over so that the spindle hub is facing downward. Properly support the spindle and the drop box housing. The spindle must be kept in place against the seal and the bearing cone, and must not rotate. Be careful not to move the spindle, or damage the threads of the wheel mounting studs **(1)** installed to the spindle flange.

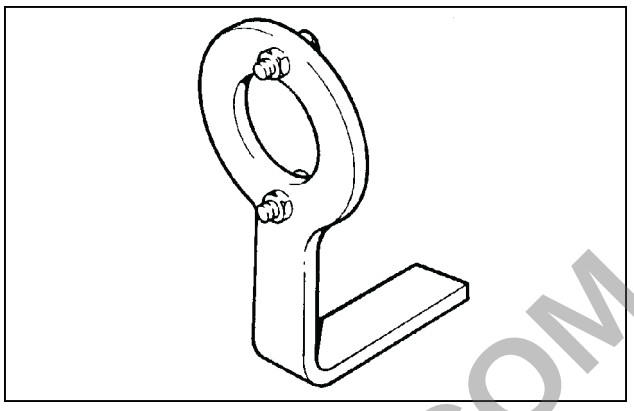
NOTE: *The spindle must be kept stationary so as not to damage the seal or bearing. Insure that the spindle and bearing cup is seated properly into the housing.*



RAIL16SP00151AA 10

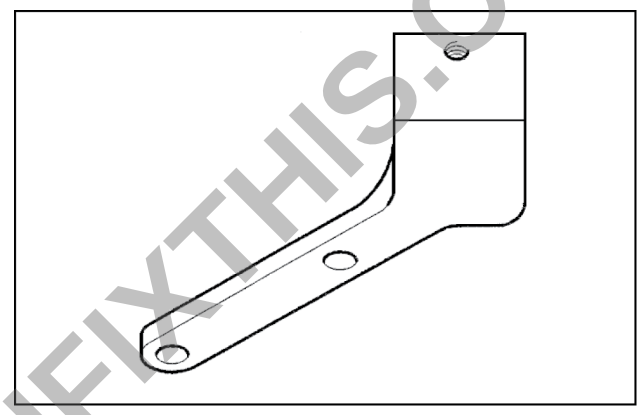
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Flange spanner



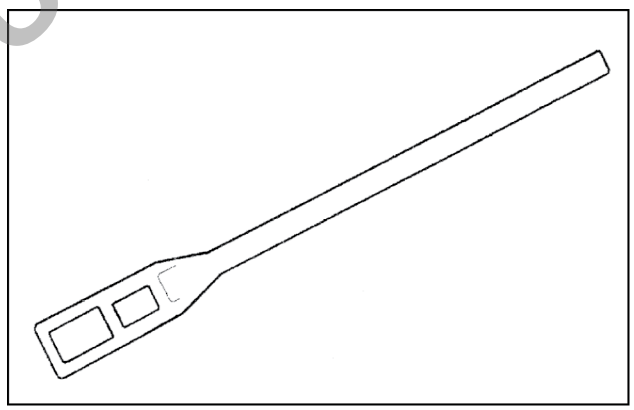
RAIL15SP01993AA 1

Support bracket



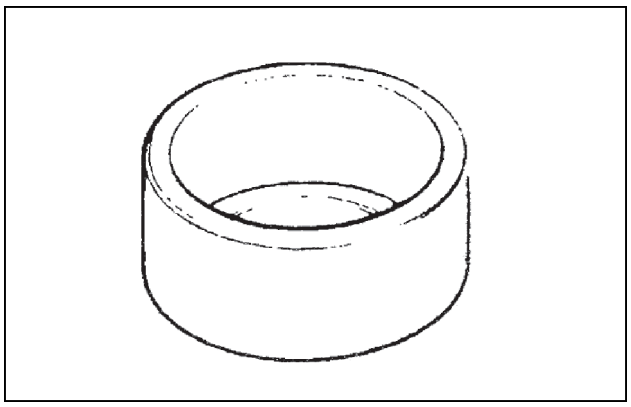
RAIL15SP01999AA 2

Drive coupling spanner



RAIL15SP01997AA 3

Measuring cup — Pinion head bearing



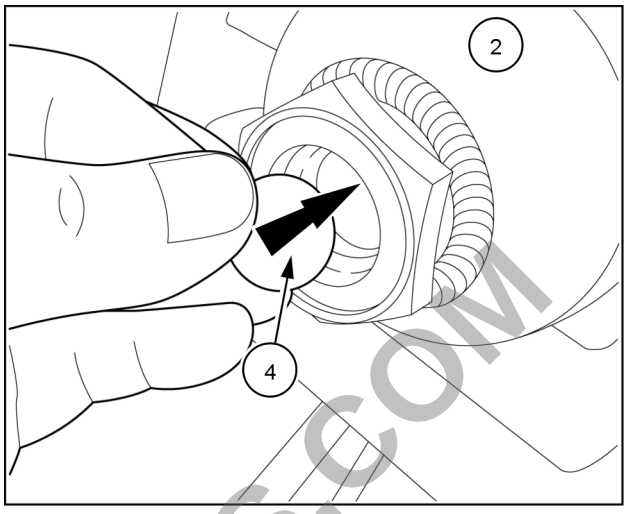
RAIL15SP01995AA 4

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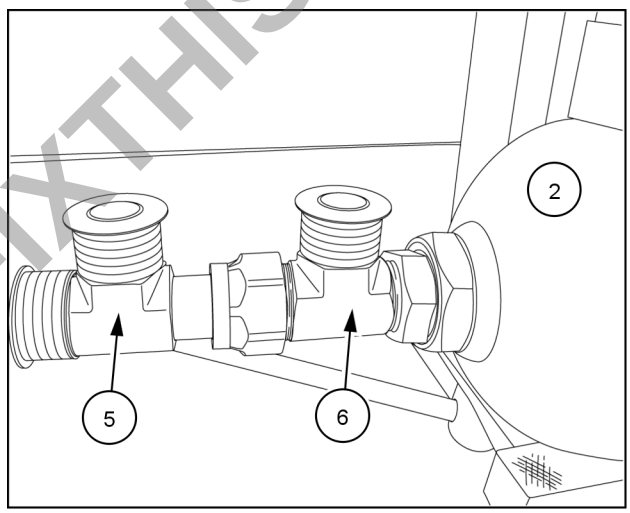
3. Insert **0.5 cm** (**0.203 in**) orifice disk **(4)** into opening on base of accumulator **(2)**.

NOTE: *Both sides of the **0.5 cm** (**0.203 in**) orifice disk are the same, so either side can be inserted first into the accumulator base.*



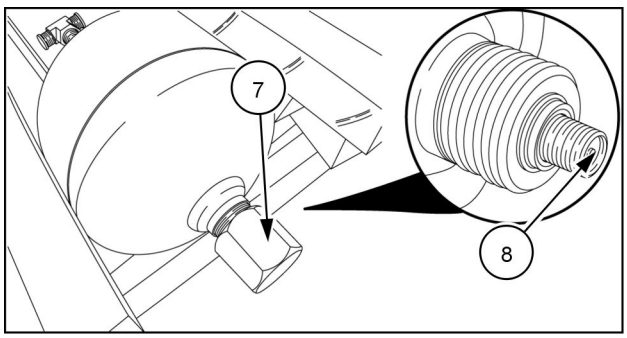
RAIL12SP00393AA 3

4. Make sure orifice stays in place inside accumulator **(2)** and install tee fittings **(5)** and **(6)**.



RAIL12SP00394AA 4

5. Remove metal protector cap **(7)** on opposite end of accumulator, exposing inflator nipple **(8)**.

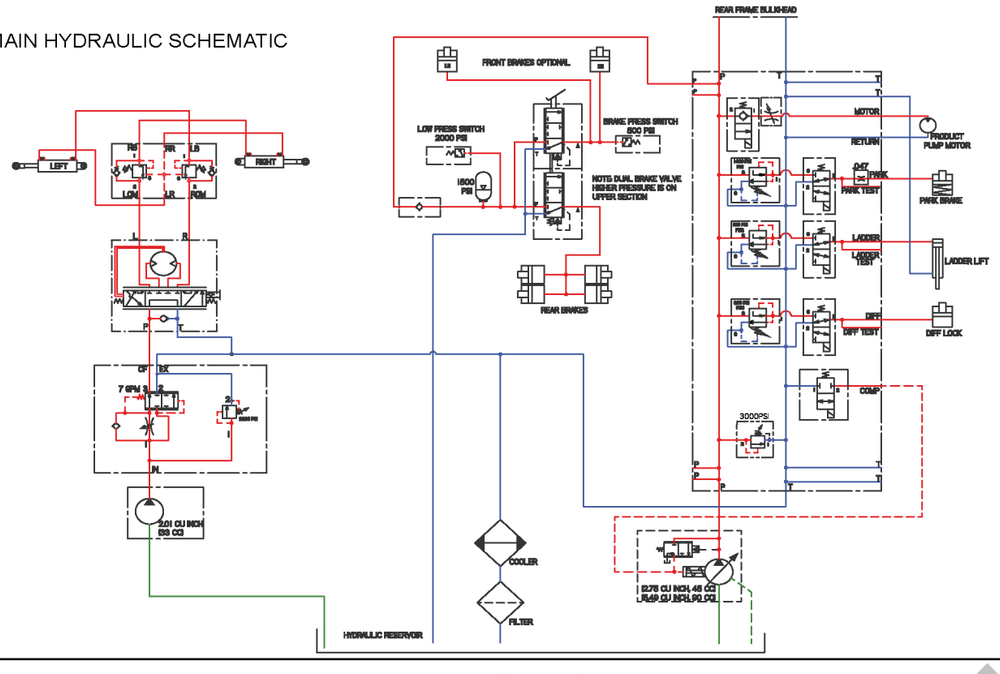


RAIL12SP00395AA 5

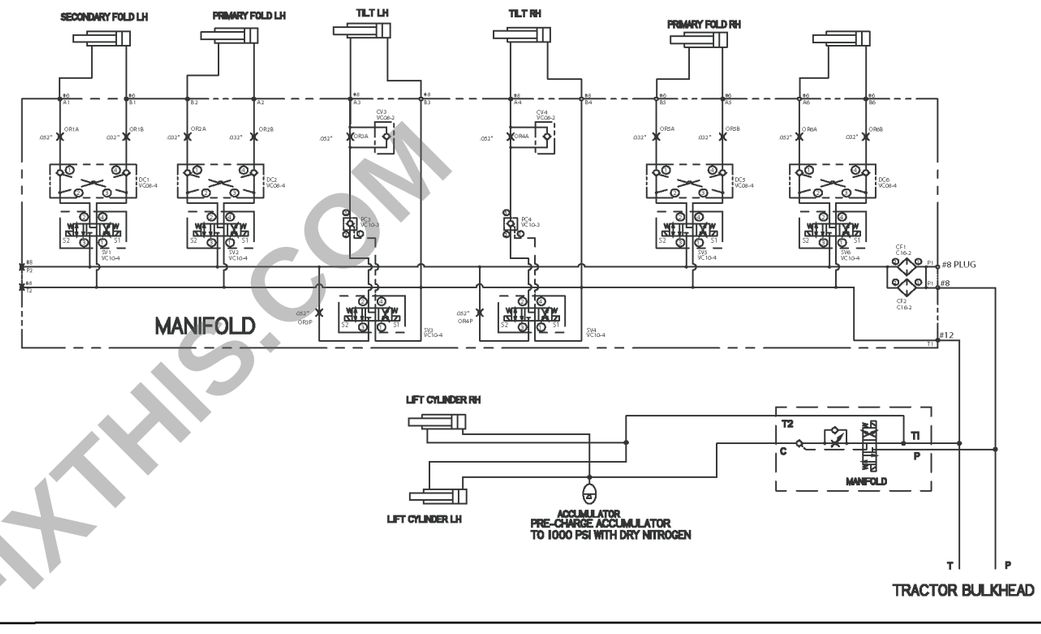
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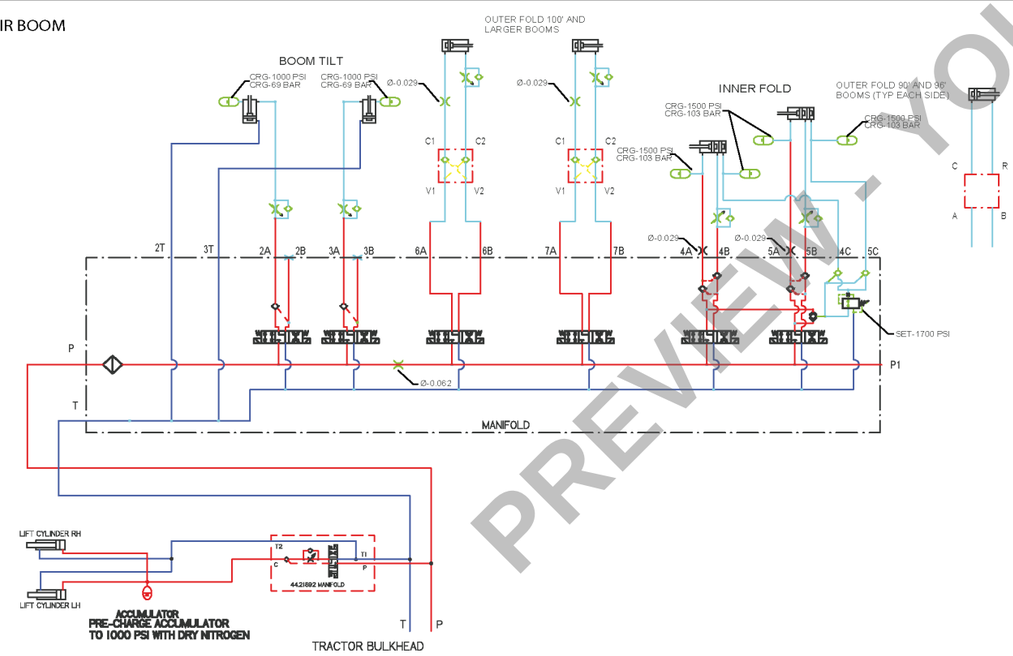
MAIN HYDRAULIC SCHEMATIC



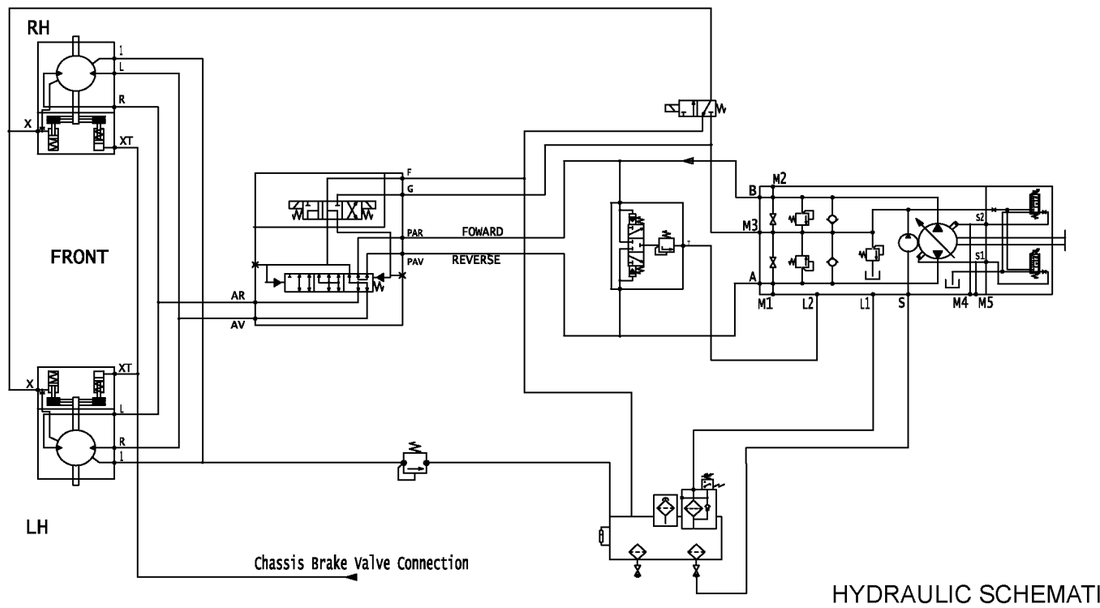
MONO BOOM



AIR BOOM



FRONT WHEEL ASSIST



HYDRAULIC SCHEMATIC
REAR BOOM SPRAYER
AND
COMBO MACHINE

RAIL15SP01201JA 1

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Auxiliary hydraulic pump - Remove

Condor Rear Boom Sprayers	

⚠ WARNING

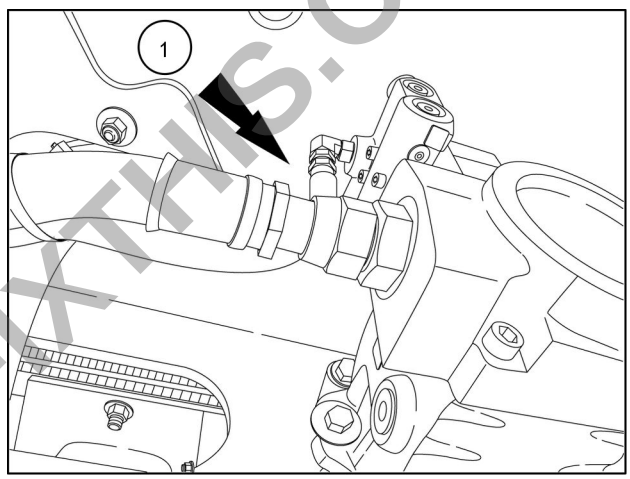
Heavy parts!
Support designated component(s) with adequate lifting equipment.
Failure to comply could result in death or serious injury.

W1024A

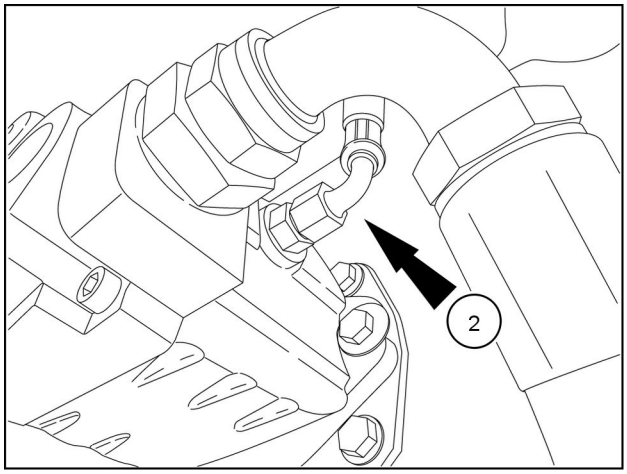
Prior operation:
Engine hood - Remove (90.105)

1. Tag and mark hydraulic lines.
2. Disconnect four hydraulic lines (two from left side **(1)** and two from right side **(2)** of hydraulic pump).
3. Cap and plug hydraulic lines and fittings.
4. Support weight of hydraulic pump with suitable lifting device before removing securing hardware.

NOTE: *If necessary, drain hydraulic fluid from hydraulic tank and retain for reuse. A container of at least a* ***151 l*** *(****40 US gal****) capacity will be required to retain hydraulic fluid.*

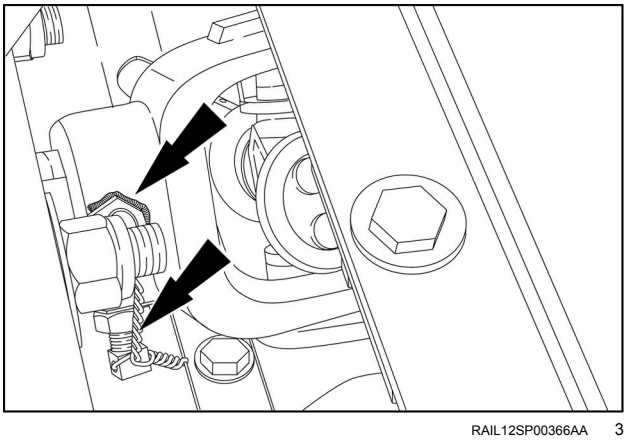


RAIL12SP00364AA 1



RAIL12SP00365AA 2

5. Use an appropriate heat appliance to break and release the threadlocking and bore locking compounds used on the set screws and yoke bore. Then remove set screw locking wire, two set screws, and two jam nuts from driveshaft yoke that secure pump shaft into driveshaft.



RAIL12SP00366AA 3

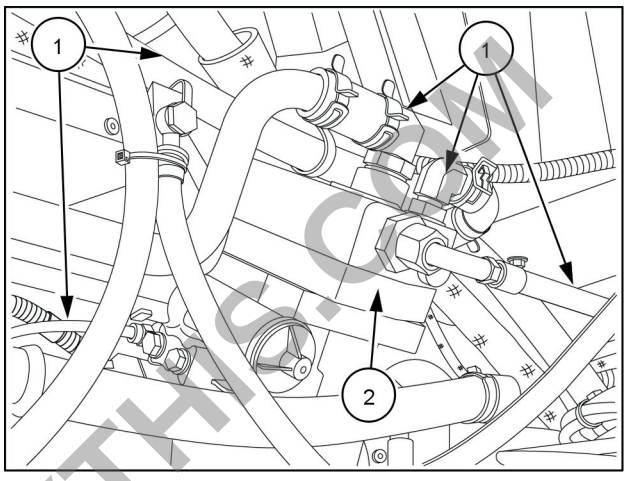
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Pneumatic compressor - Remove

Condor Rear Boom Sprayers	

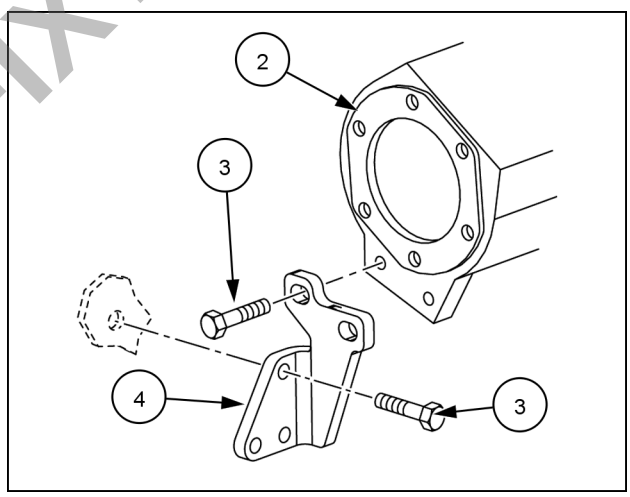
Prior operation:
Engine cooling system - Remove - Cooling package (10.400)

1. Before removing the air compressor, clean it with steam and dry with compressed air.
2. Tag and mark all lines (two coolant, one oil, two air) connected to air compressor.
3. Cut cable ties as necessary and disconnect five lines **(1)** from air compressor **(2)**.



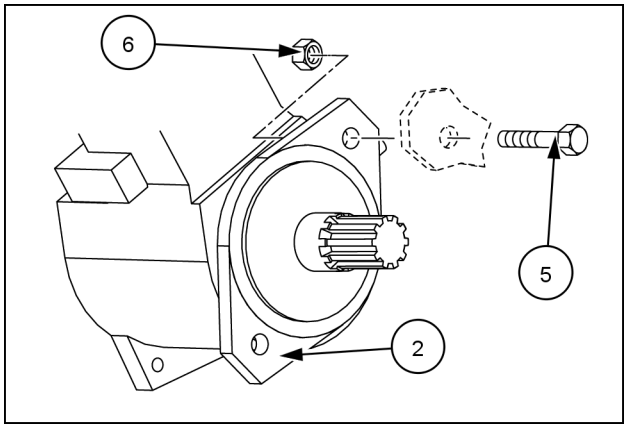
RAIL12SP00329AA 1

4. Remove five bolts **(3)** securing bracket **(4)** and air compressor **(2)**. Remove bracket.



RAIL12SP00330AA 2

5. Remove two bolts **(5)** and nuts **(6)** securing air compressor **(2)** to gear housing and remove air compressor and O-ring. Discard O-ring.
6. Remove lifting device.

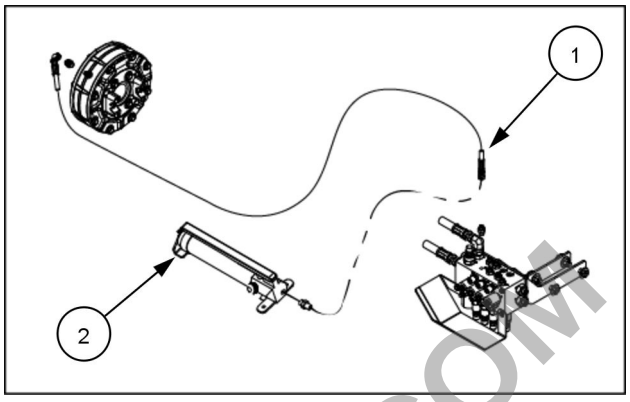


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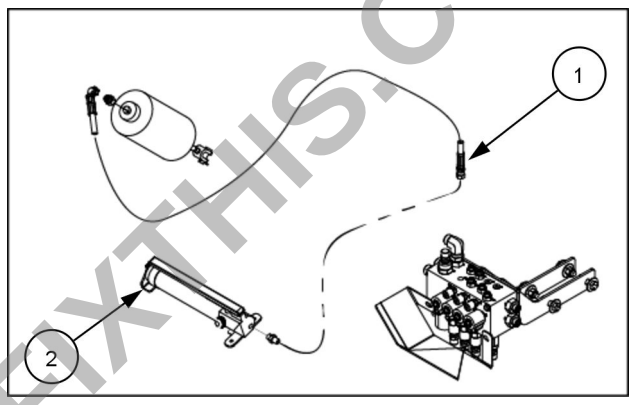
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4. Assemble the removed end of the hydraulic hose **(1)** to a portable hydraulic pump **(2)**.
5. Use the portable hydraulic pump **(2)** to apply **69 - 103 bar** (**1000 - 1500 psi**) of hydraulic pressure to the park brake. This will release the park brake.
   Close the needle valve to maintain the pressure.
6. Secure the portable hydraulic pump to the vehicle.

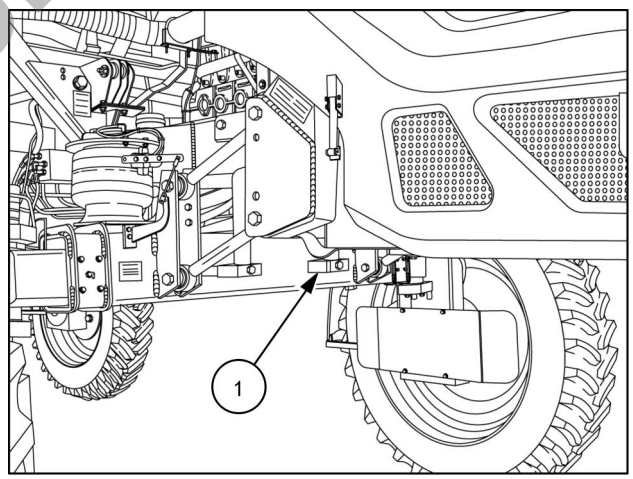


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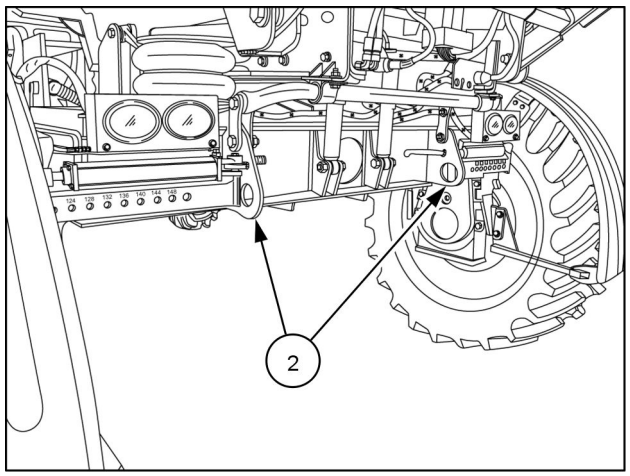


RAIL16SP00944AA 5

7. Attach tow cables from the towing vehicle to the sprayer. Attach the cables to the front **(1)** or rear **(2)** tie down loops.



RAIL12SP01328AA 6



RAIL12SP01327AA 7

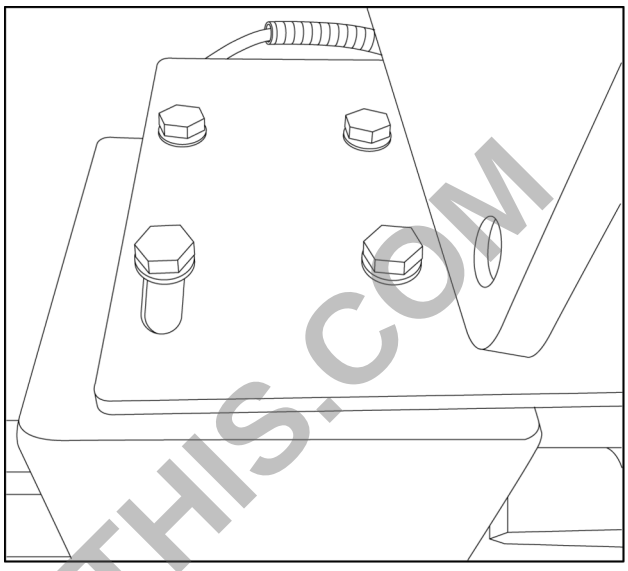
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Power steering control valve - Install

Condor Rear Boom Sprayers	

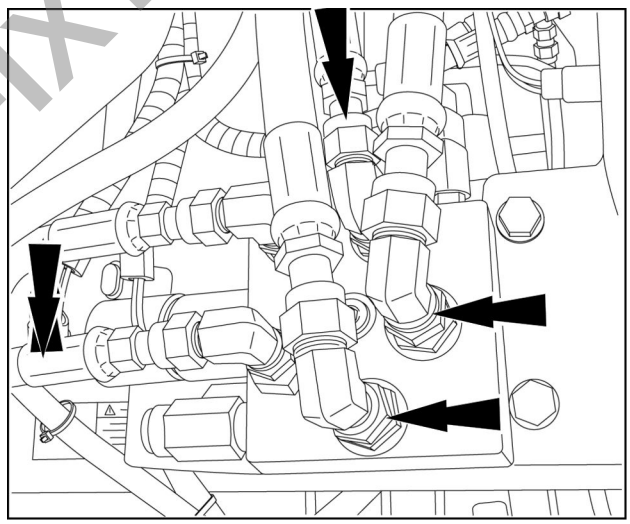
1. Position steering valve block onto upright weldment bracket and secure with four hex bolts and flat washers. Torque tighten.



RAIL12SP00384AA 1

2. Remove caps and plugs from lines and fittings and install five hydraulic hoses (three on interior side, two on back side) to steering valve block. Wipe up any hydraulic fluid spills or drips.

NOTE: *The steering valve shown in the following procedures is the one used with the Raven spray monitoring system. The configuration of a standard steering valve may be slightly different.*

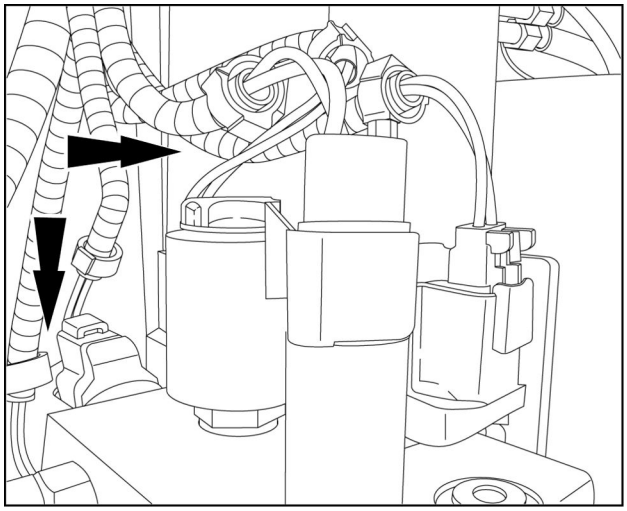


RAIL12SP00383AA 2

3. Connect five electrical connectors (three on top of block, two on the side) to steering valve block mating electrical connectors.

NOTE: *The steering valve shown in the following procedures is the one used with the Raven spray monitoring system. The configuration of a standard steering valve may be slightly different.*

4. Secure hoses and lines as required with cable ties. Remove tags from hoses and lines.
5. If hydraulic tank was drained, fill hydraulic tank with filtered hydraulic fluid. Or if vacuum method was used, remove vacuum apparatus from hydraulic oil tank.
6. Operate engine to check for leaks and proper function of all applicable systems.

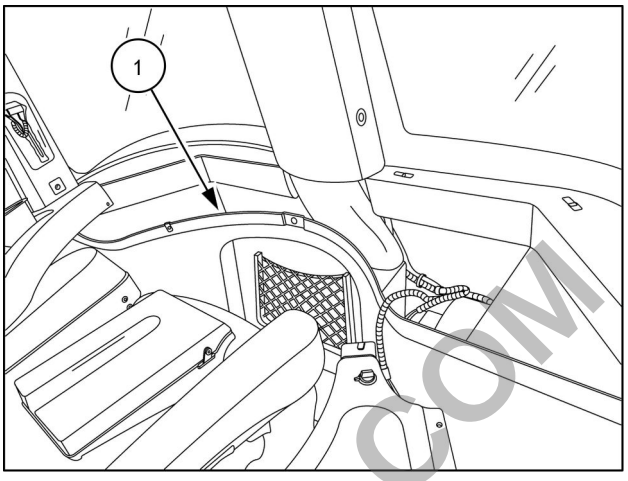


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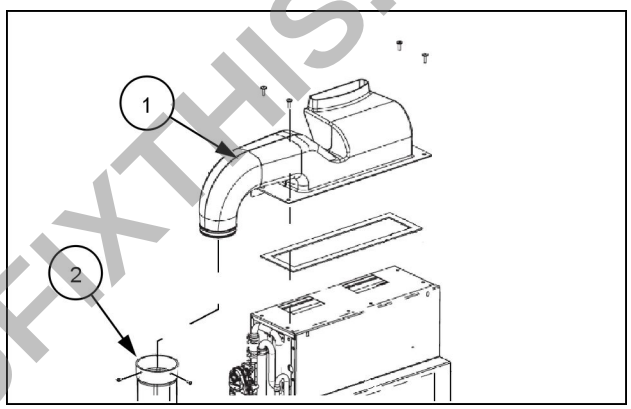
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12. Remove the back panel **(1)** from the interior of the cab.



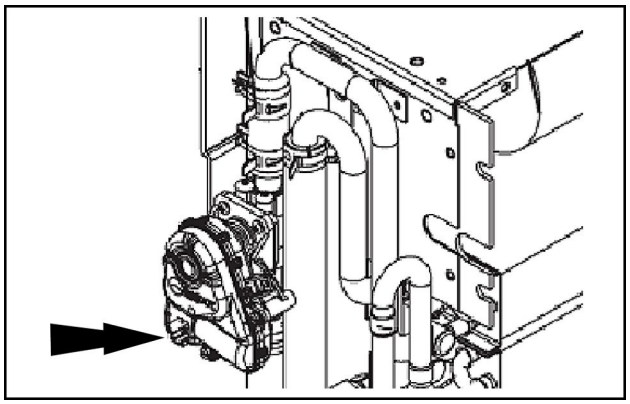
RAIL13SP04731AA 9

13. Remove the four screws attaching the plenum duct **(1)** to the evaporator housing. Remove the two screws attaching the inner duct **(2)** to the plenum duct.
14. Remove the plenum duct from the interior of the cab.



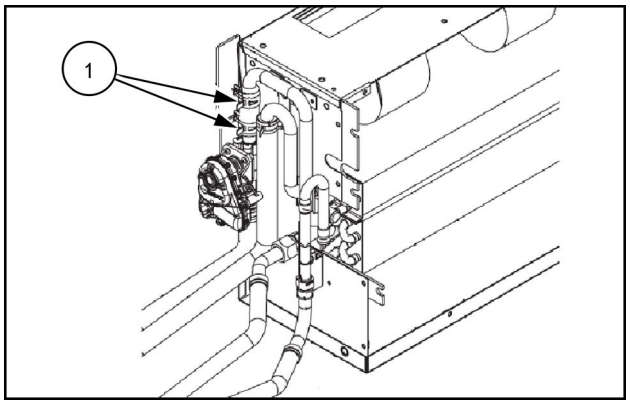
RAIL13SP04975AA 10

15. Unhook the electrical connection on the front of the water valve.



RAIL13SP04977AA 11

16. Slide the two hose clamps **(1)** off of the fitting on the top of the water valve.
17. Remove the heater hose from the fitting on the top of the water valve.



RAIL13SP04978AA 12

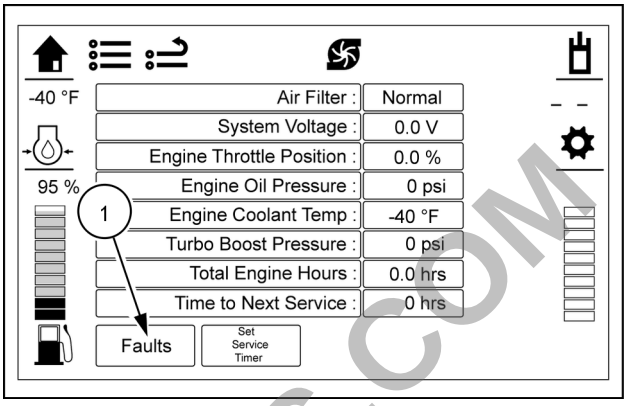
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Engine Control Unit (ECU) - Overview - Engine fault codes

Condor Rear Boom Sprayers	

The Cummins QSB and QSL engines have built-in on-board diagnostic capabilities in order to troubleshoot the engine fault codes.

Engine fault codes can be detected while the engine is running. If a fault occurs, the engine computer takes a snapshot of engine operating parameters and logs the fault code into memory. If the fault is active (currently being detected) while the engine is running, one of the engine warning lamps will light up in the cab overhead side display panel and will stay on and a chime will sound. The lamp color will indicate the severity of the fault.



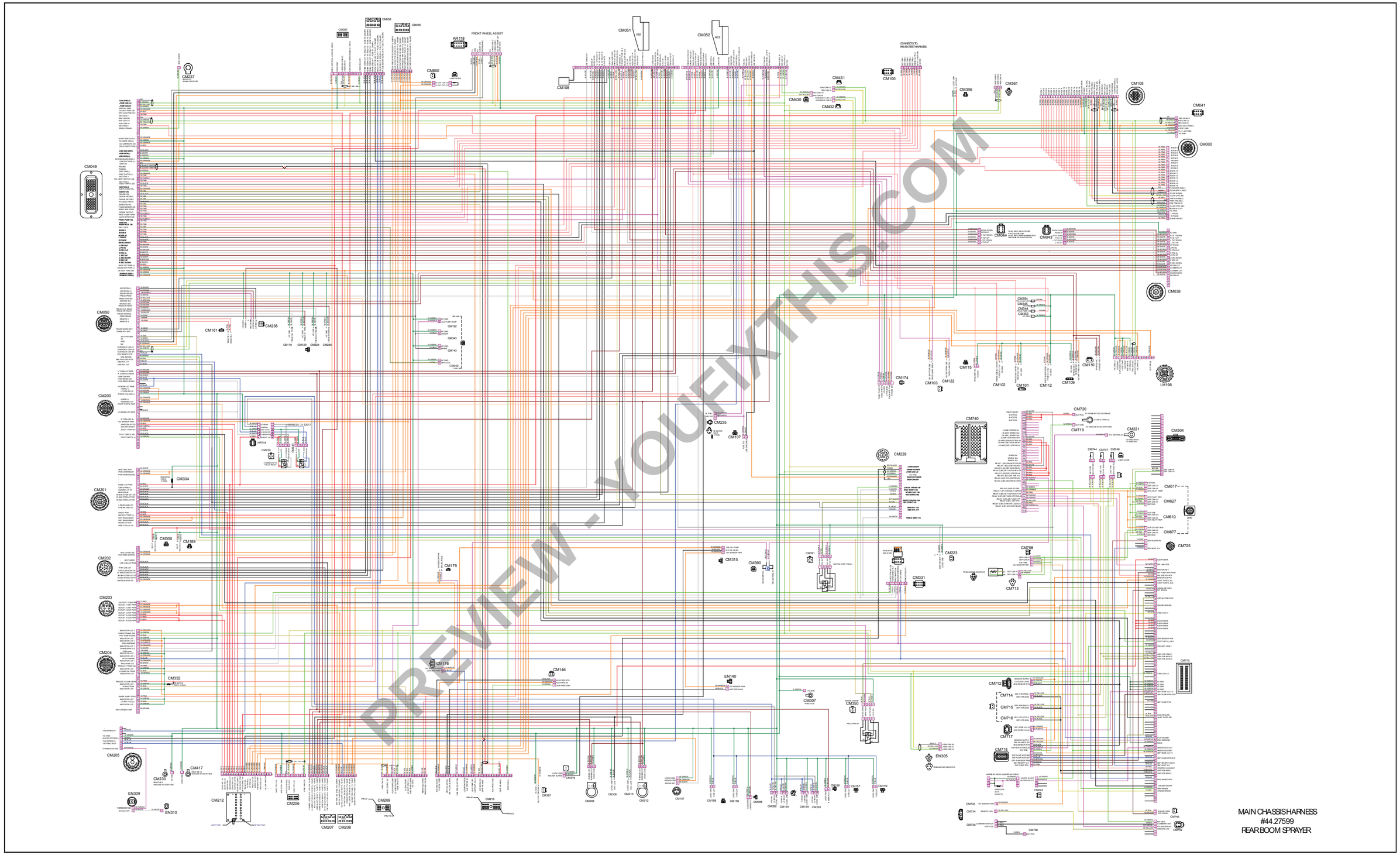
RAIL15SP00667AA 1

The chassis monitor will display active fault codes as they occur. To access the engine fault codes page, press the Engine window icon on the List screen. The Engine screen will display. Press the Faults button **(1)** on the Engine screen to display the engine fault codes screen.

The engine fault codes screen will display engine fault codes with an SPN and FMI number. These numbers correspond with the codes on the following table. Use these codes to determine corrective action.

SPN #	FMI #	FAULT CODE	LAMP COLOR	REASON	EFFECT	ACTION
27	4	2272	AMBER	Low signal voltage detected at the EGR valve position sensor circuit	Possible reduced engine performance	Call Cummins Service
91	2	1242	RED	Accelerator position sensor number 1 and number 2 are reading different values	Engine will only idle	Check accelerator pedal, check accelerator pedal wiring
91	3	131	RED	High voltage detected at accelerator pedal position 1 circuit	The engine will operate in limp home mode	Check accelerator pedal, check accelerator pedal wiring
91	4	132	RED	Low voltage detected at accelerator pedal position 1 circuit	The engine will operate in limp home mode	Check accelerator pedal, check accelerator pedal wiring
91	19	1515	RED	The J1939 multiplexing controller has indicated a malfunction of the multiplexed accelerator pedal	Engine will only idle	Check chassis J1939 wiring connections, terminating resistors and nodes
97	3	428	AMBER	High voltage detected at the water-in-fuel circuit	None on performance	Check filter wire harness

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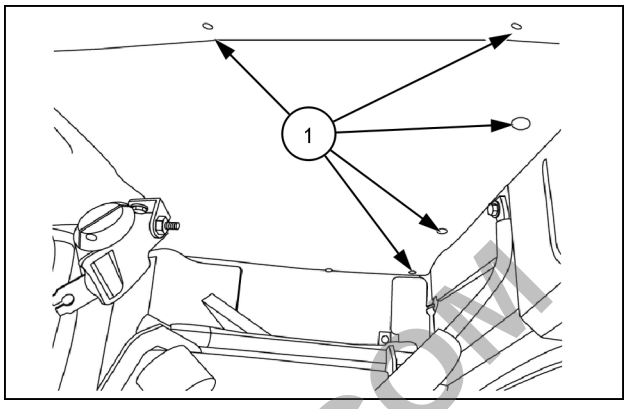


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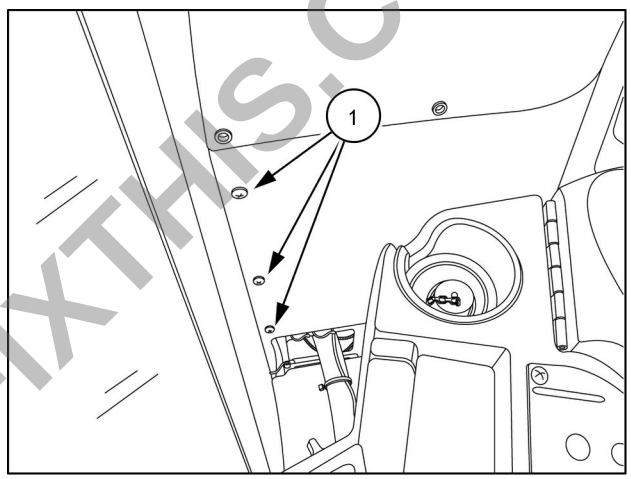
RAIL16SP00709JA 1

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12. Remove the back panel mounting bolts **(1)** securing the back panel in position.

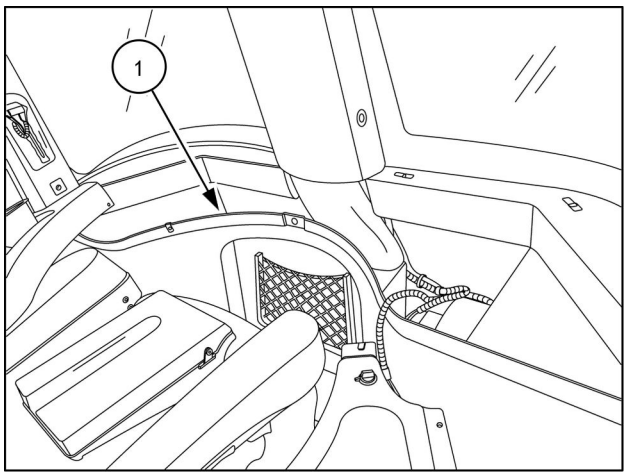


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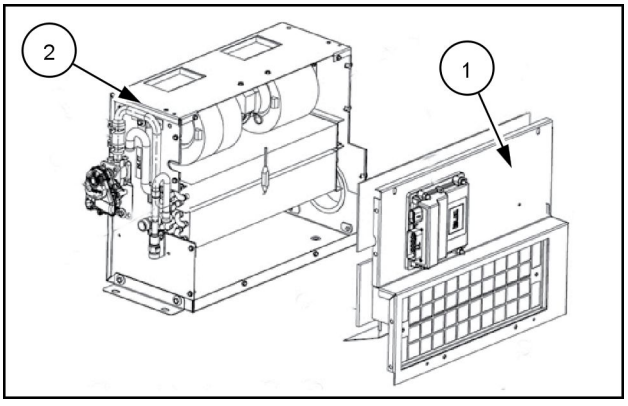
RAIL13SP04734AA 9

13. Remove the back panel **(1)** from the cab.



RAIL13SP04731AA 10

14. Remove the screws attaching the front panel **(1)** to the blower/evaporator housing **(2)**.
15. Remove the front plate from the blower motor housing.
16. Unhook the electrical connector connected to the blower motor.

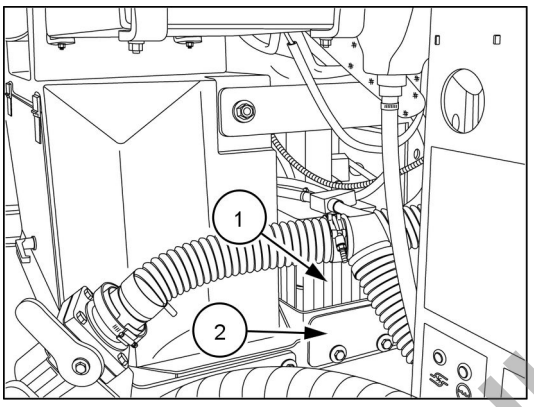


RAIL13SP04968AA 11

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Batteries

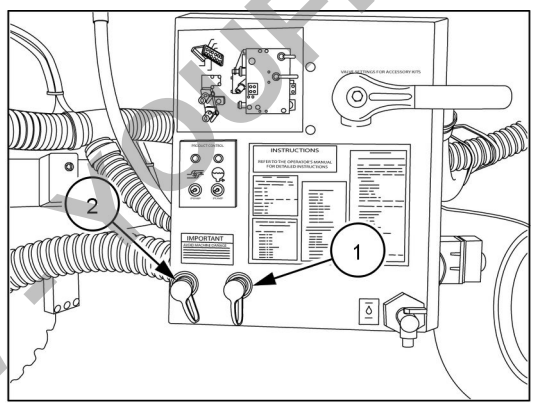
Two batteries **(1)** supply power to the vehicle. The batteries are hybrid style with high temperature flooded epoxy bonded plates. Battery rating is **12 V** at 925 cold cranking amps. The batteries are connected in parallel.
The batteries are located at the middle of the vehicle on the left hand side behind the storage bin. To remove the batteries, remove the retaining plate **(2)** and slide the batteries out towards the rear of the vehicle.



RAIL14SP00124AA 3

Jumper posts

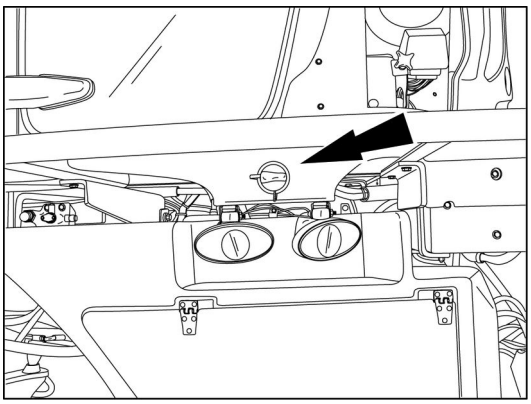
The battery jumper post are connected directly to the batteries, and are located on the fill station. The positive leg **(1)** of the power coming from the jumper post is connected to the battery cut out switch, and the other leg **(2)** connects to the battery ground stud



RAIL14SP00134AA 4

Battery disconnect switch

The battery disconnect switch is located on the left hand side of the vehicle near the tool box and side lights. When the switch is turned to OFF the positive feed from the battery is disconnected from the vehicle.



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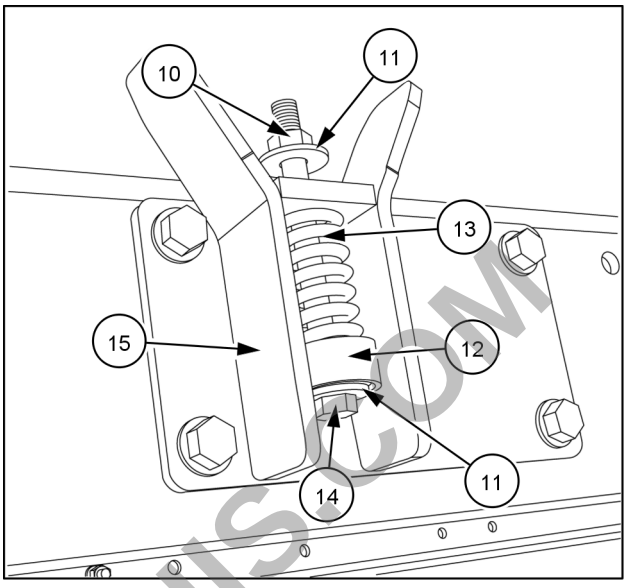
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9. Remove locknut **(10)**, two flat washers **(11)**, spring weldment guide **(12)**, spring **(13)**,and hex bolt **(14)** from hold-down assembly **(15)** and skid weldment flange **(16)** (see figure 7). Repeat step to remove second product tank hold-down assembly hardware set.

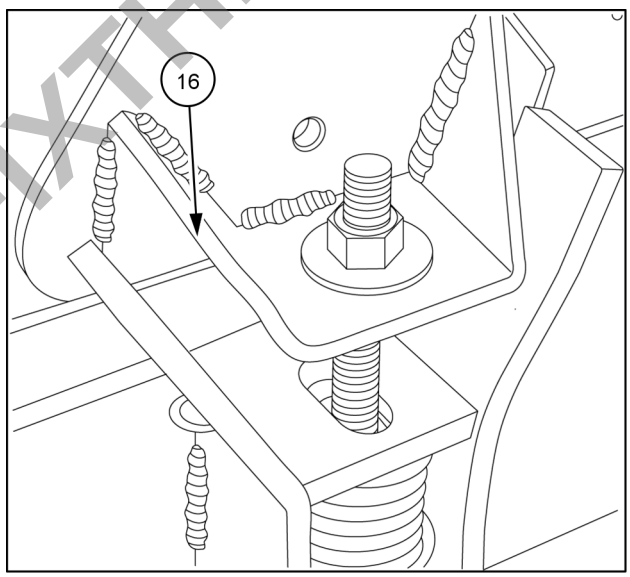
NOTE: *Removal of only one set of product tank hold-down assembly hardware is shown.*

NOTE: *Product tank remains secured to skid weldments and entire assembly is removed from the vehicle. Tank can then be disengaged from the skid weldments, if necessary, while situated on the ground.*

10. Remove product tank/skid weldments assembly from vehicle.
11. If disassembling product tank from skid weldments, leave lifting device attached. If not, remove lifting device from product tank/skid weldments assembly.

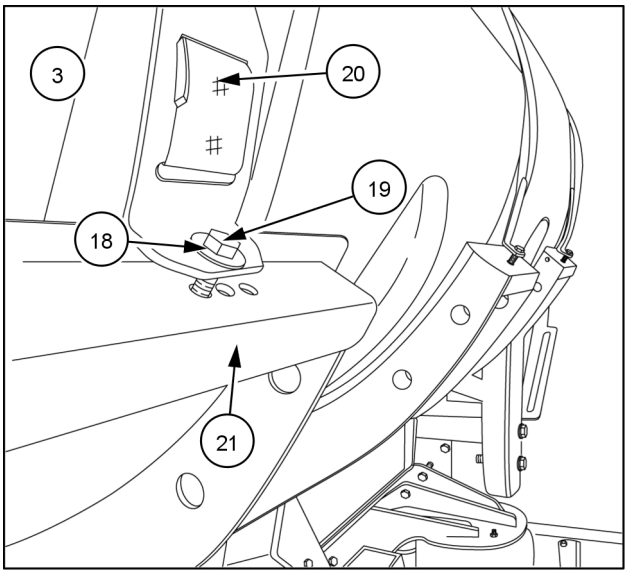


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RAIL12SP00514AA 7

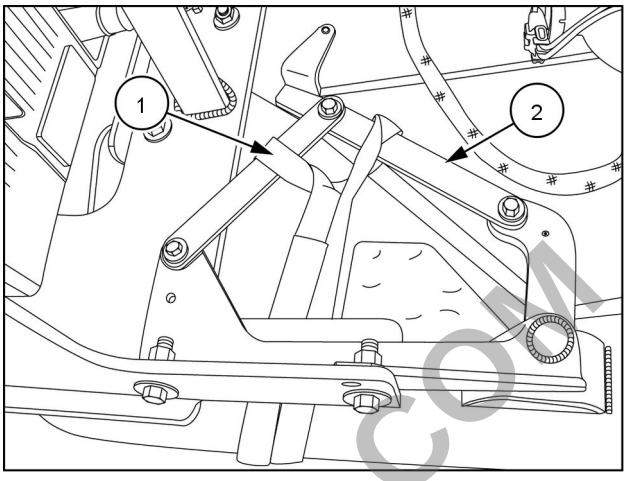
12. Remove three locknuts, six flat washers **(18)**, and three hex bolts **(19)**, that secure product tank securing straps **(20)** to skid weldments **(21)**.
13. Set to the side product tank securing straps **(20)** in such a way as to not interfere with product tank removal from skid weldments.
14. Using lifting device, remove product tank **(3)** from skid weldments **(21)**.
15. If necessary or desired to remove remaining product tank securing straps from skid weldments, repeat Step **12** for remaining three sets of hardware.
16. Remove lifting device.



RAIL12SP00515AA 8

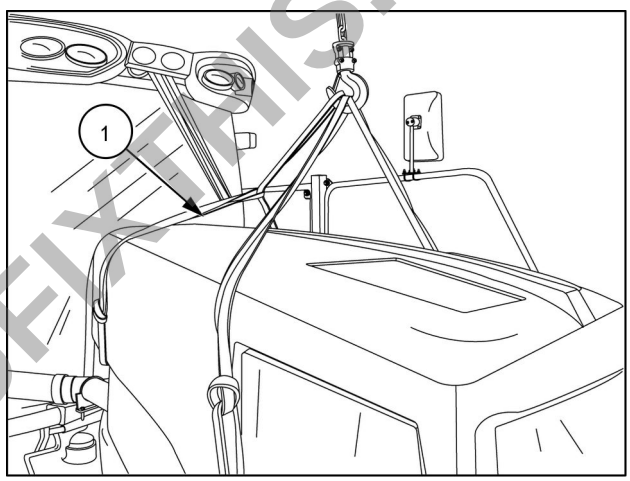
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7. Attach lifting straps **(1)** to the right and left hand side hood pivot brackets **(2)** to support the front end of the hood.



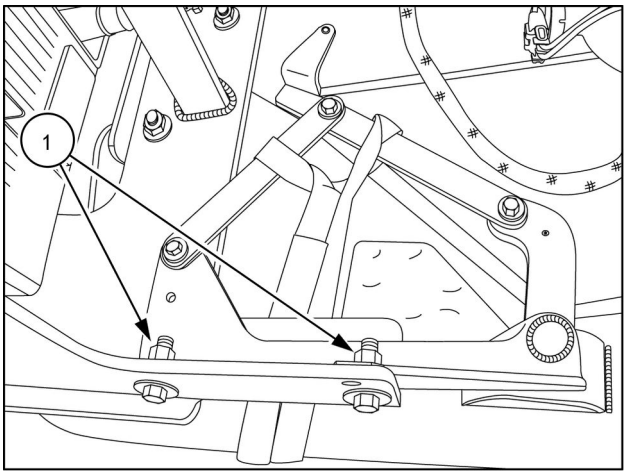
RAIL13SP04753AA 3

8. Attach additional lifting straps around the rear end of the hood **(1)**.
9. Attach the front and rear lifting straps to an appropriate lifting device and support the hood before removal of the hood mounting hardware.



RAIL13SP04752AA 4

10. Access the interior of the hood mounting area and remove the mounting bolts and nuts **(1)** from the hood mounting brackets.



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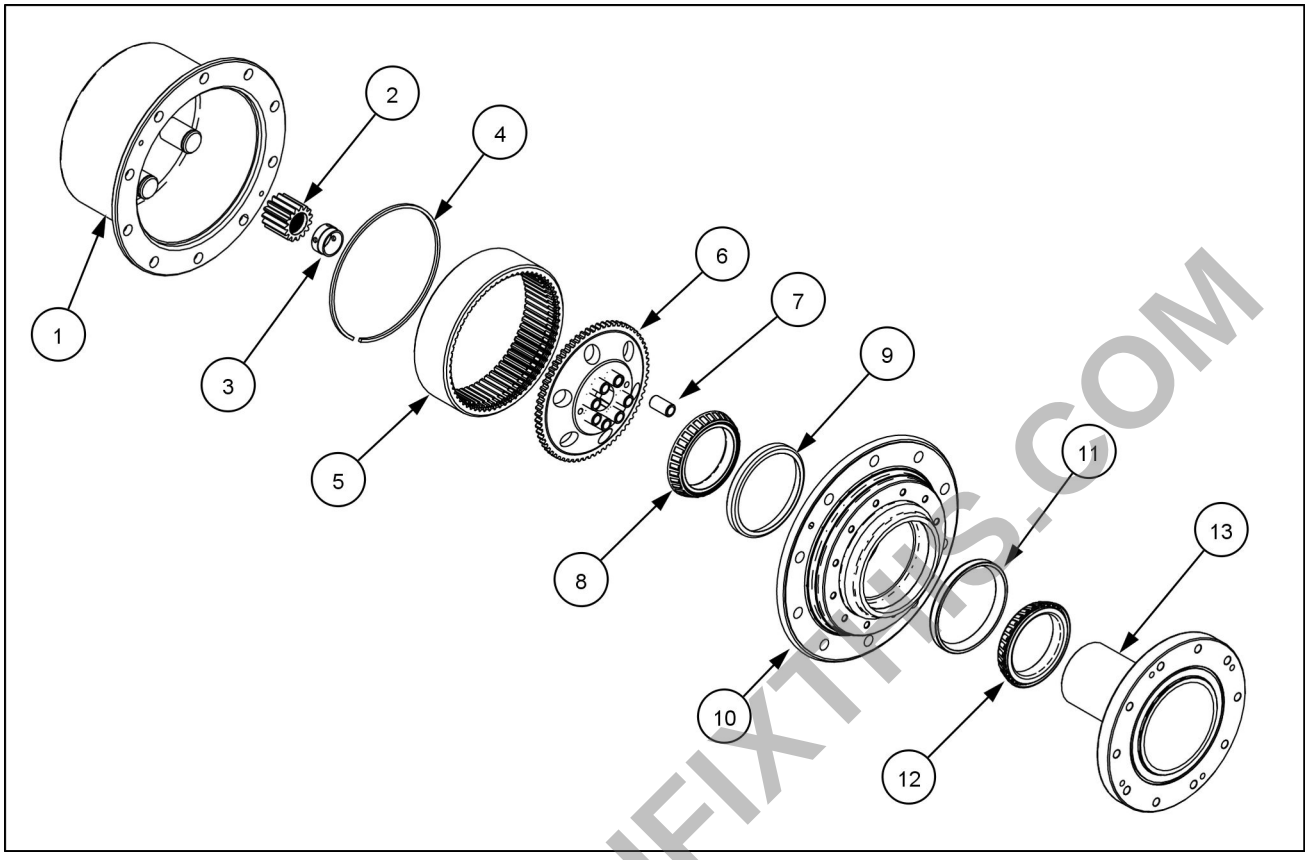
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Planetary assembly

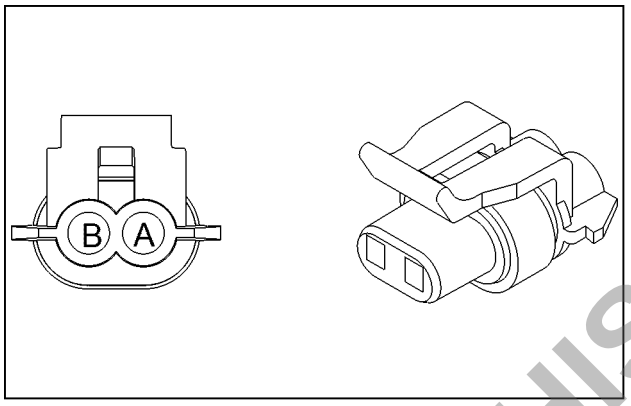
Item	Description	Item	Description
1	Drive hub	8	Bearing cone
2	Sun gear	9	Oil seal
3	Spacer	10	Bearing housing
4	Retaining ring	11	Bearing cup
5	Ring gear	12	Bearing cone
6	Drive gear	13	Stub shaft
7	Stud		

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CONNECTOR BH036 Boom Hydraulic Harness

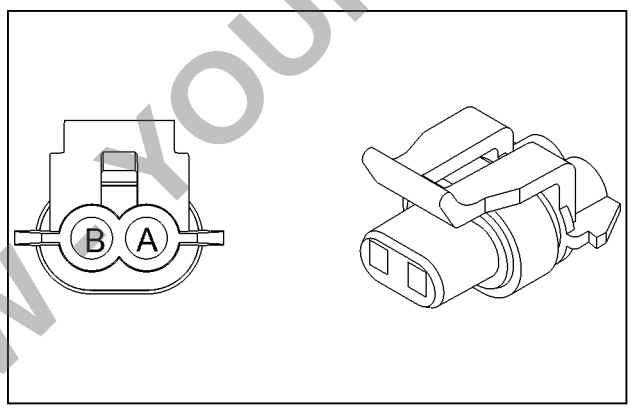
PIN Number	Wire gauge/color	Circuit reference	Electrical schematic frame
A	18/GREEN	GROUND	**SHEET 13**
B	18/WHITE	R SEC DOWN	



87693821 7

CONNECTOR BH037 Boom Hydraulic Harness

PIN Number	Wire gauge/color	Circuit reference	Electrical schematic frame
A	18/GREEN	GROUND	**SHEET 13**
B	18/BROWN	R SEC UP	



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