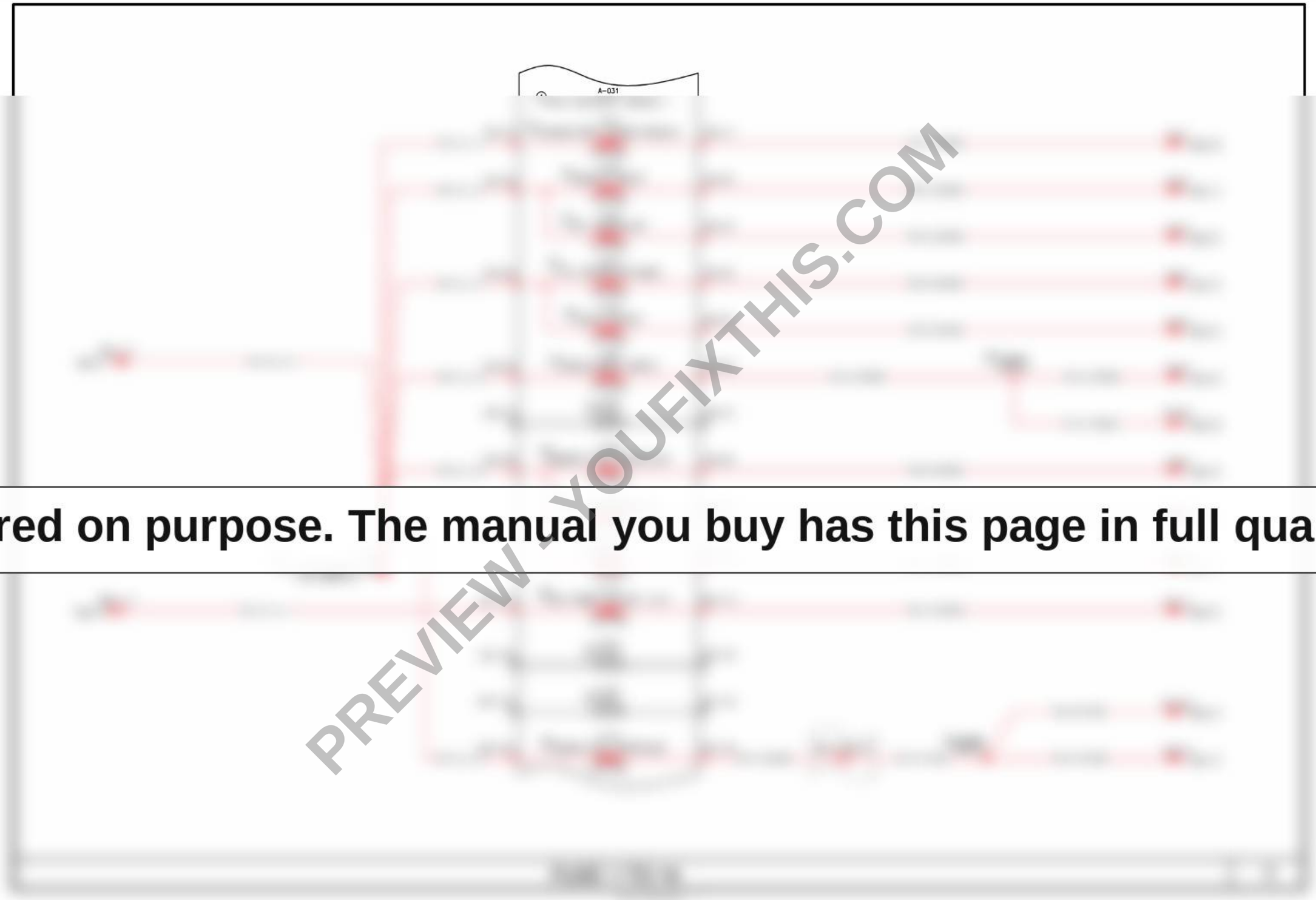


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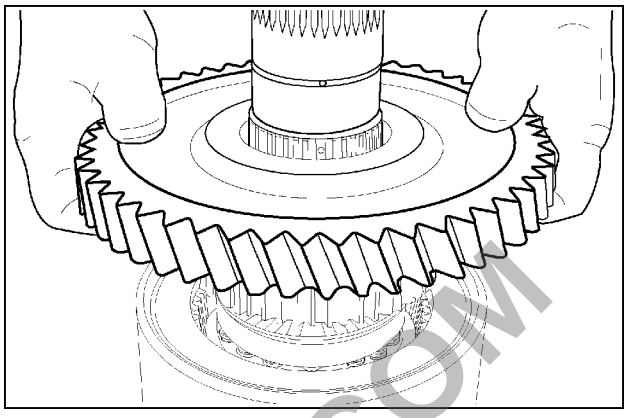


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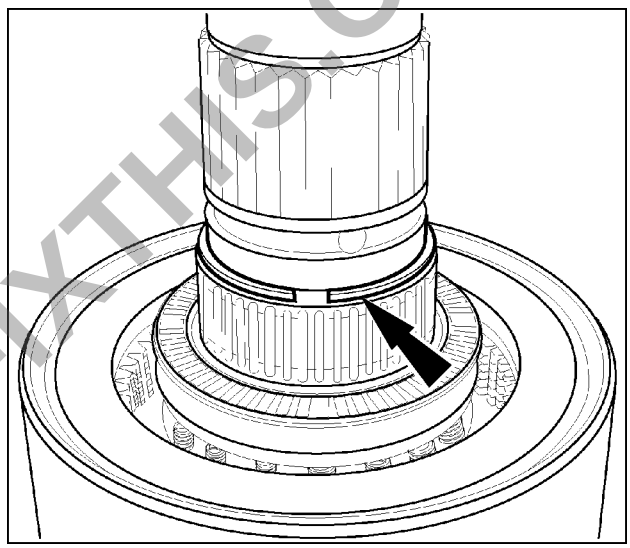
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15. Remove the 1M clutch gear from the clutch and the shaft.



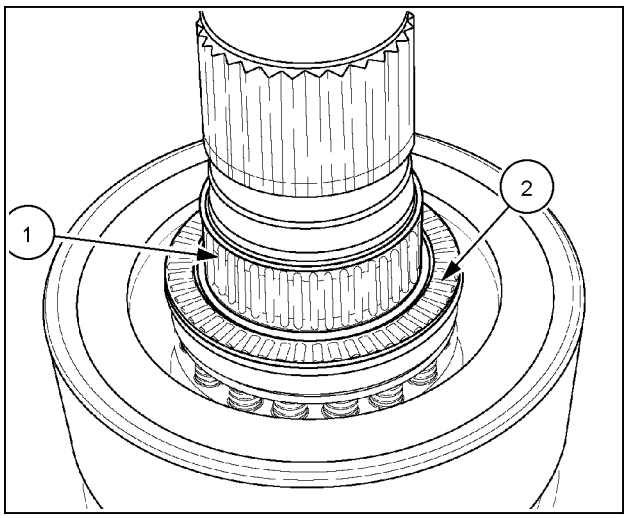
RCPH10FWD415BAC 17

16. Remove the 1M clutch gear needle bearing snap ring retainer.



RCPH10FWD416BAC 18

17. Remove the roller bearing **(1)** and thrust bearing **(2)**.

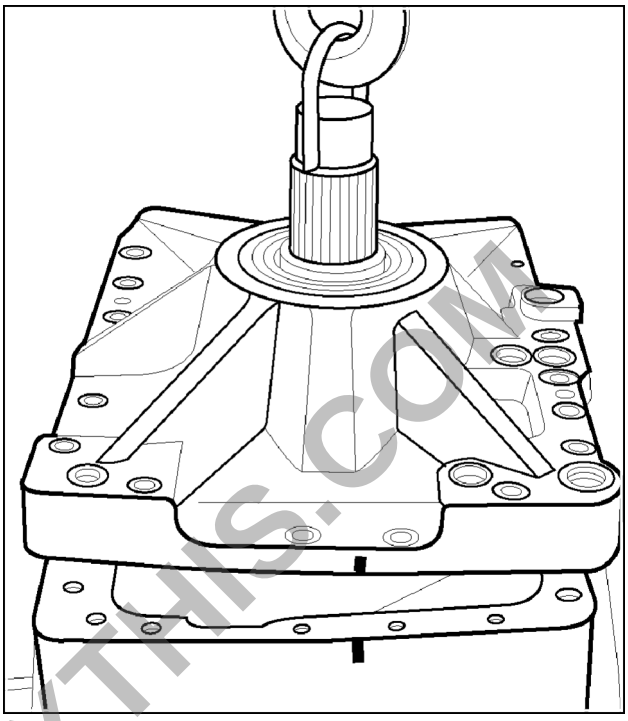


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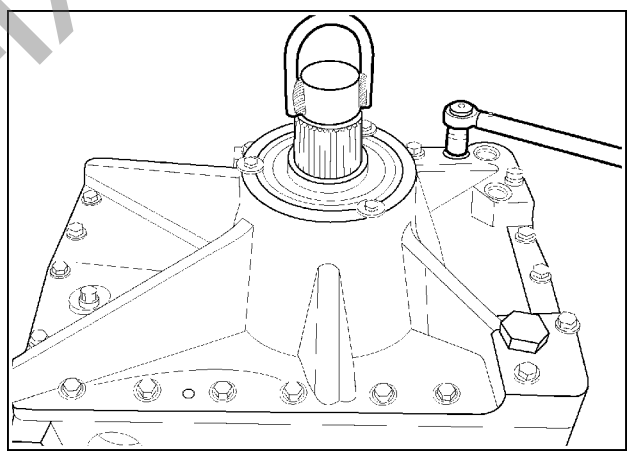
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80. Use a hoist to install the pre-assembled front cover assembly onto the alignment studs.



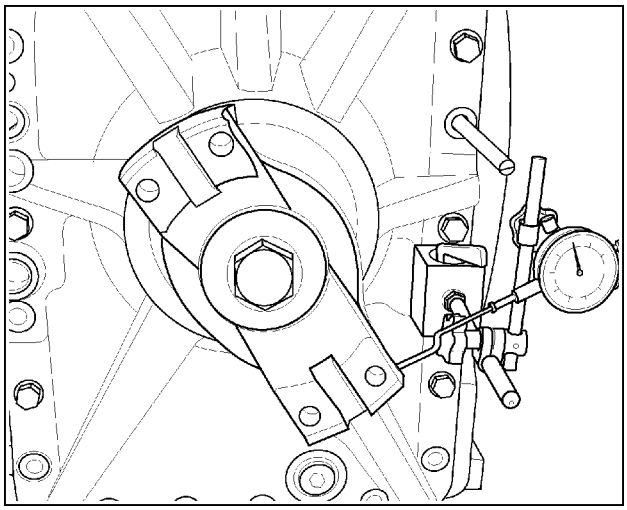
RCPH10FWD397ABJ 80

81. Install retaining bolts with washers in the center top and bottom cover holes and two bolts with washers on each side as shown. Tighten the bolts evenly to specifications.



RCPH10FWD414ABJ 81

82. Use a dial indicator to measure ring/pinion gear backlash. Set the pointer of the indicator to contact the outer edge of the drive yoke flange. Gear backlash must measure **0.2 - 0.3 mm** (**0.008 - 0.012 in**).

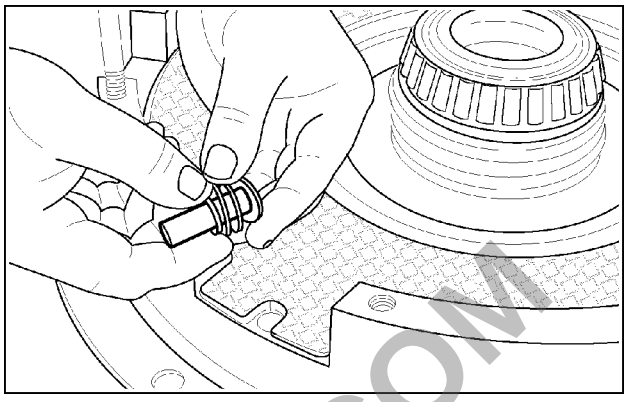


RCPH10FWD415ABJ 82

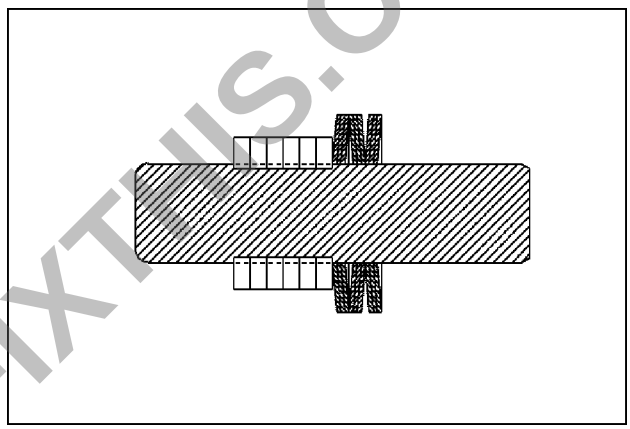
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94. Install the belleville spring washers on the brake adjuster pins. Slide 3 nested washers onto each pinup against the snap rings. Slide 3 nested washers on each pin in the opposing direction for a total of 9 belleville spring washers on each pin.

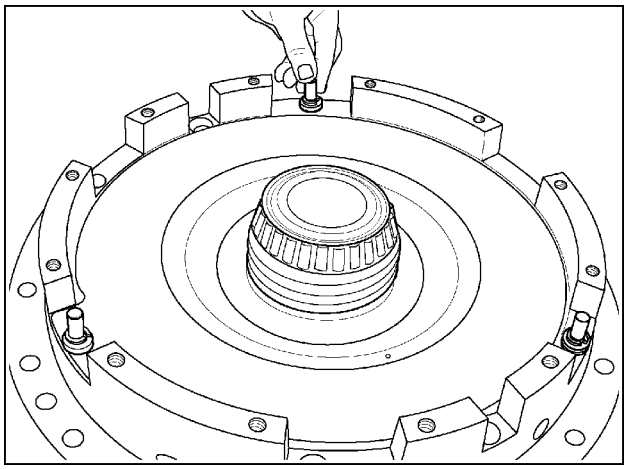


RCPH10FWD059ABJ 94



RCPH10FWD419ABJ 95

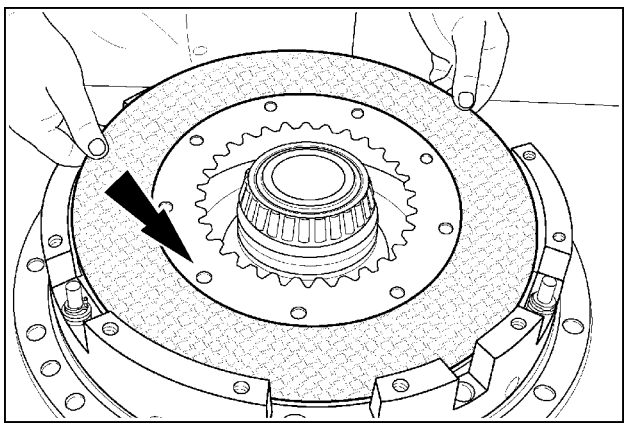
95. Place one pin with washers in each of the holes in the carrier. Be sure the spring washers are seated against the brake return plate and the shorter tapered end of the pin is pointed upwards.



RCPH10FWD061ABJ 96

96. Lubricate all friction plates with clean operating fluid. Install the first friction plate over the brake return plate.

NOTE: *Align the friction plate oil cross holes as the plates are installed.*



RCPH10FWD984AAJ 97

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B. Resistance reading incorrect. Check rock shaft position potentiometer (hitch position potentiometer) directly at potentiometer, if readings are still incorrect replace potentiometer. If readings are good, make repairs to wiring harness.

5. Check for short circuit or open wire between the hitch potentiometer connector C211 and connectors C062, C066 and C067 at the tractor control unit (TCU). Use the test points in the table below to locate an open or short circuit.

Test point 1	Test point 2	Expected result
Connector C062 Pin 18	Connector C211 pin A	Less than **1 Ω** (continuity)
Connector C067 Pin 33	Connector C211 pin B	Less than **1 Ω** (continuity)
Connector C066 Pin 23	Connector C211 pin C	Less than **1 Ω** (continuity)

A. No short or open circuit found. Replace the hitch position potentiometer

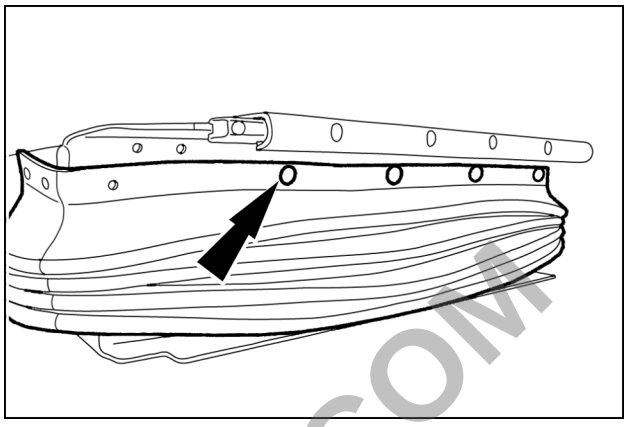
B. Circuit problem found. Check for bent or unseated pins at each connector. Repair the circuit problem. Reconnect all connectors. Clear all fault codes, calibrate the hitch and return unit to field operation.

Wire harnesses - Electrical schematic frame 59 (55.100.DP-C.20.E.59)
Wire harnesses - Electrical schematic frame 59 (55.100.DP-C.20.E.59)
Wire harnesses - Electrical schematic frame 59 (55.100.DP-C.20.E.59)

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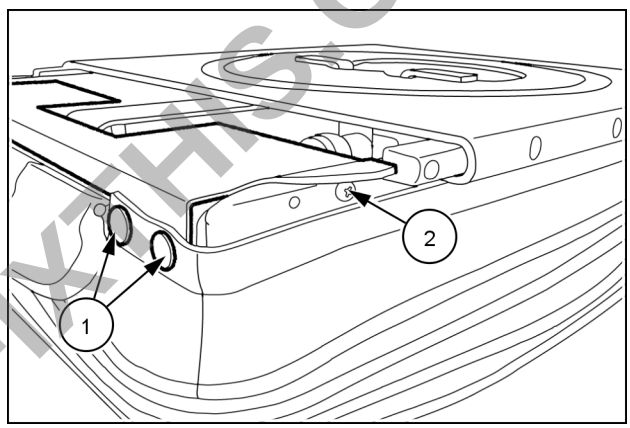
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23. Install the boot. Install the boot pins securing the boot to the seat.



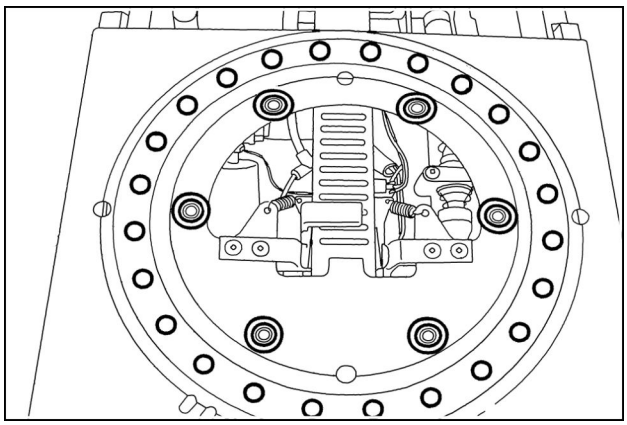
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24. Place the cover on the track. Install the two mounting screws **(2)**, one on each side, securing the cover to the track.
25. Install the boot over the cover and install the four pins **(1)**.



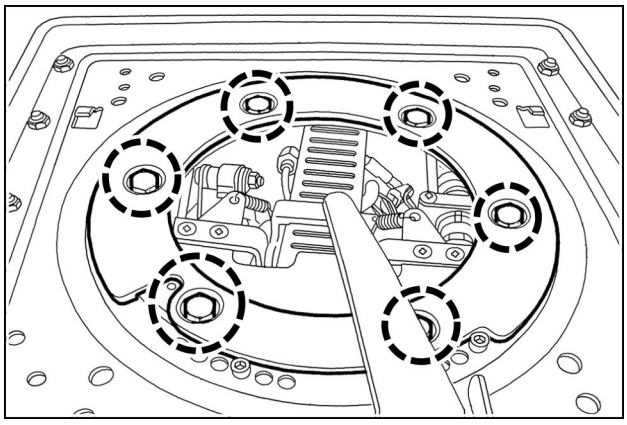
RCPH10CCH567BAO 24

26. Install the retainer plate. Install the ball bearings in the retainer plate. Install the six washers on the swivel plate.



RCPH10CCH551BAO 25

27. Install the swivel ring mounting plate and seat panel on the swivel plate. Secure the swivel ring mounting plate to the seat panel using six bolts. Tighten the bolts to **3 - 5 N·m** (**2 - 4 lb ft**).



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[35.000] Hydraulic systems 35.1

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[35.204] Remote control valves 35.5

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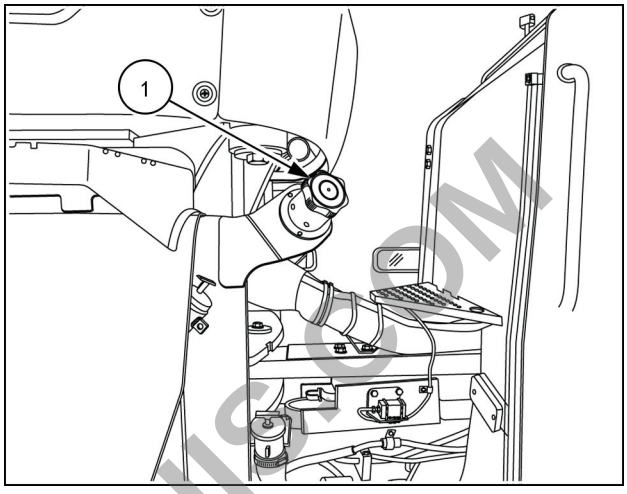
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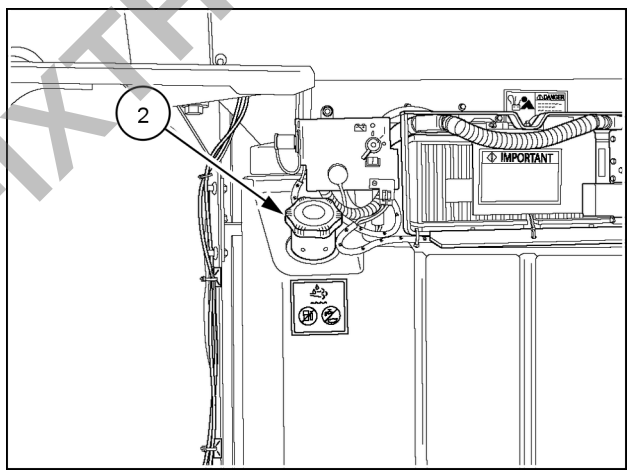
Diesel Exhaust Fluid (DEF)/AdBlue® tank - Cleaning

T9.390 WE, T9.450 WE, T9.505 WE, T9.560 WE, T9.615 WE, T9.670 WE

1. The DEF/AdBlue® tank has two fill caps. Fill cap **(1)** is located on the left side of the unit behind the cab. Fill cap **(2)** is located on the right side inside the right hand service door.

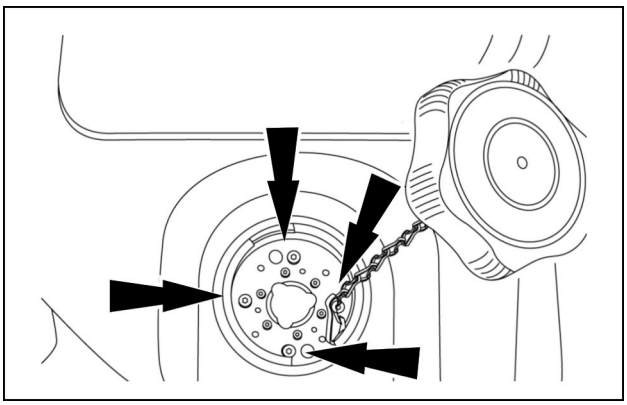


RCPH10FWD823BAM 1



RCPH10FWD101BAG 2

2. Open the cap and remove the four Allen head screws.



RCPH10FWD018ABM 3

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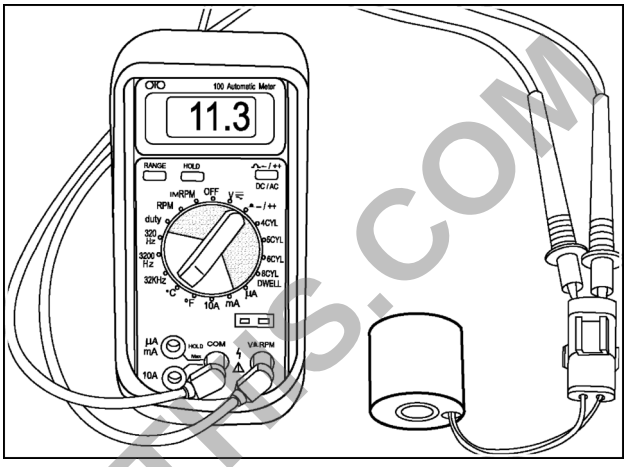
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Transmission control valve - Test - Master clutch lubrication solenoid valve

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Master clutch lubrication solenoid valve coil

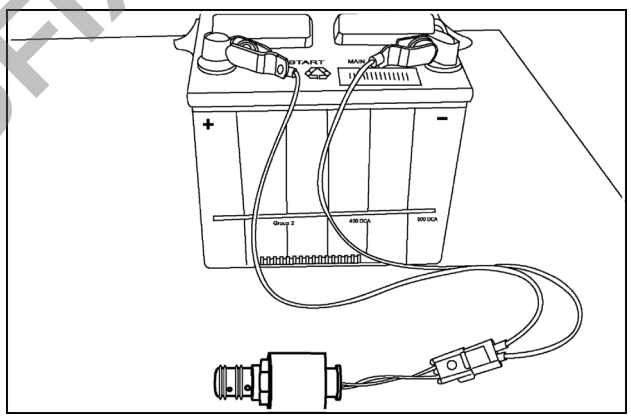
1. Set the multimeter to the Ohms scale. Connect the black ground (-) lead to one pin in the coil wire terminal connector and connect the red positive (+) lead to the other pin. The resistance reading for the master clutch lube solenoid coil should be **10 - 12 Ω**.



RCPH10FWD391GAG 1

Master clutch lubrication solenoid valve

2. Install the coil on the solenoid and tighten the coil retaining nut. Connect a **12 V** DC power source to the coil. An audible “click” must be heard each time power is applied. If a “click” is not audible, replace the solenoid.

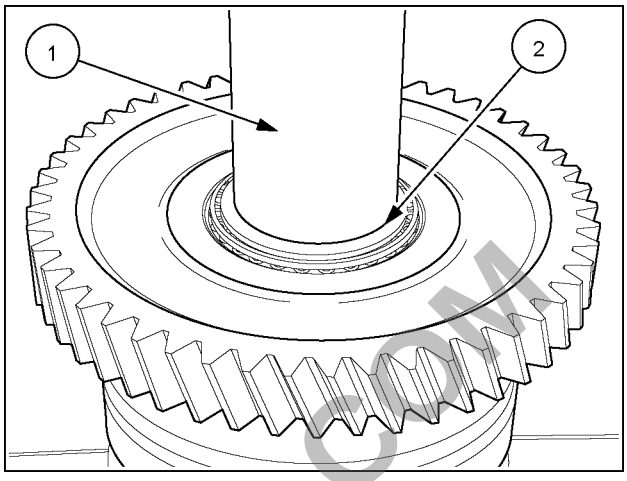


RCPH10FWD392GAG 2

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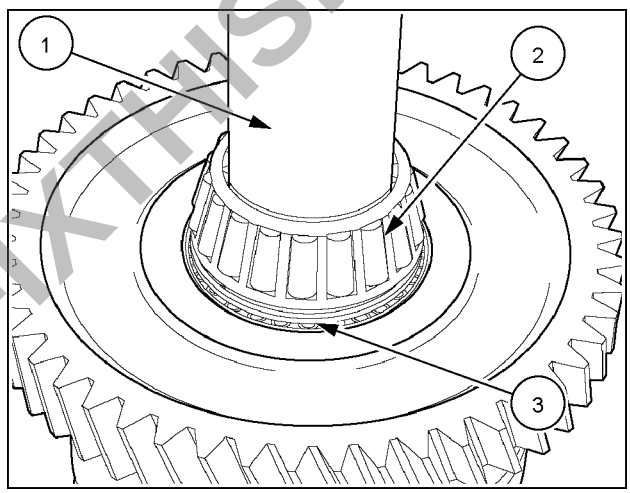
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28. Use the **CNH299031** bearing installer **(1)** to press the 1R clutch gear outer bearing cone **(2)** on the shaft until it is firmly seated in the gear against the bearing cup.



RCPH11FWD164BAC 27

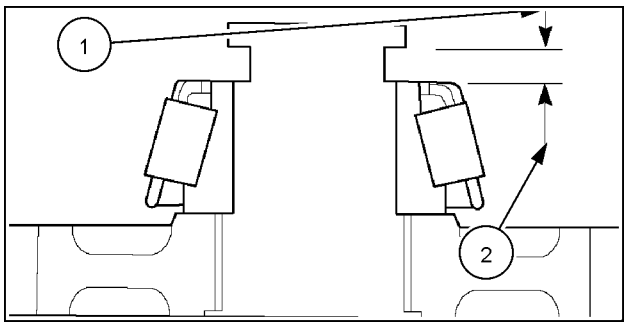
29. Use a **55 mm** (**2.175 in**) inside diameter tube **(1)** to press the rear bearing cone **(2)** on the shaft until it is fully seated against the 1R clutch gear outer bearing cone **(3)**.



RCPH11FWD165BAC 28

30. Use a thickness gauge to measure the distance from the bearing hub **(1)** to the top edge of the snap ring groove **(2)**. Select a retainer snap ring that allows **0.000 - 0.15 mm** (**0.0 - 0.006 in**) clearance. Refer to the parts catalog for the correct retaining ring.

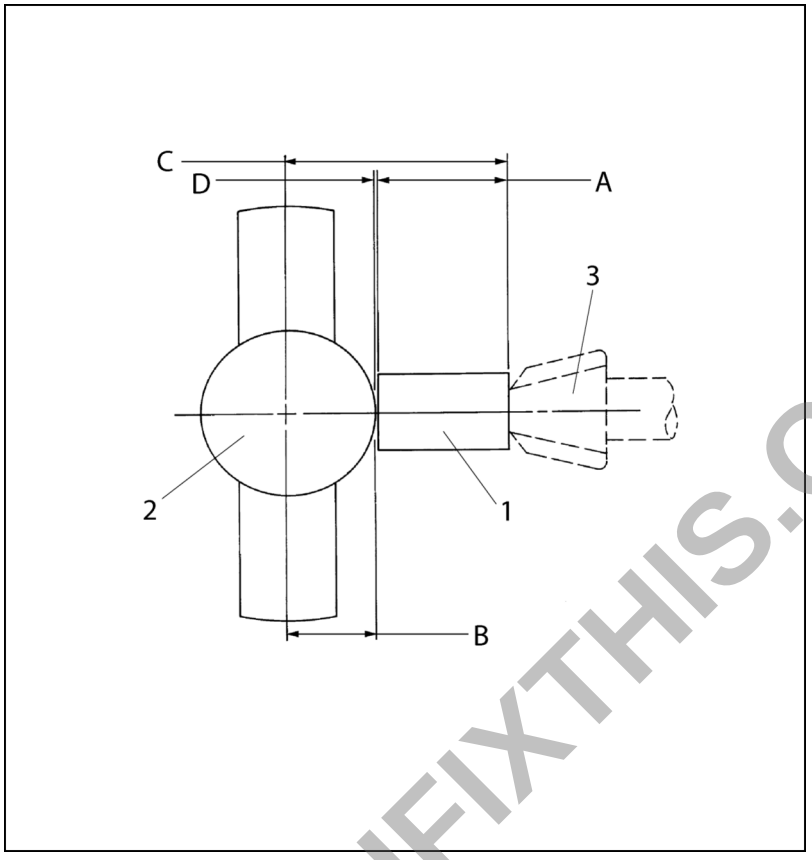
NOTICE: *Coat the bearings liberally with clean operating fluid before installing the shaft assembly into the transmission housing.*



RCPH11FWD166AAC 29

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RCPH10FWD120FBJ 60

(1) CNH299088 pinion depth gauge arbor, (2) CNH299076 pinion depth gauge block, (3) pinion

Item	Metric value	U.S. value
A	**97.99 mm**	**3.858 in**
B	**75.82 mm**	**2.985 in**
C	**174.25 mm**	**6.860 in**
D Gap measurement	**.44 mm**	**0.017 in**

Example:

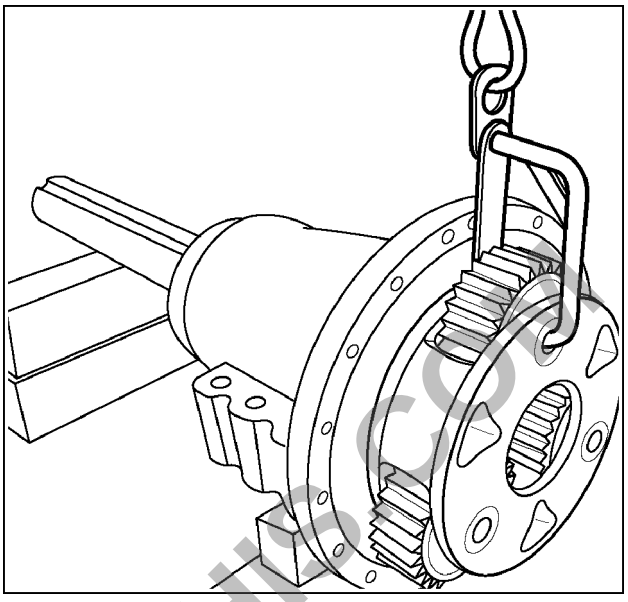
Item	Metric value	U.S. value
Tool constant dimension (A = B)	**173.81 mm**	**6.840 in**
Gap measurement (D)	**.44 mm**	**0.017 in**
Total measured distance (A + B + D = C)	**174.25 mm**	**6.860 in**
Standard nominal pinion depth	**174.81 mm**	**6.882 in**
Reading on the pinion	**-0.07 mm**	**0.005 in**
Actual nominal pinion depth	**174.74 mm**	**6.880 in**
Minus total measured distance	**174.25 mm**	**6.860 in**
Shim requirement	**0.49 mm**	**0.019 in**

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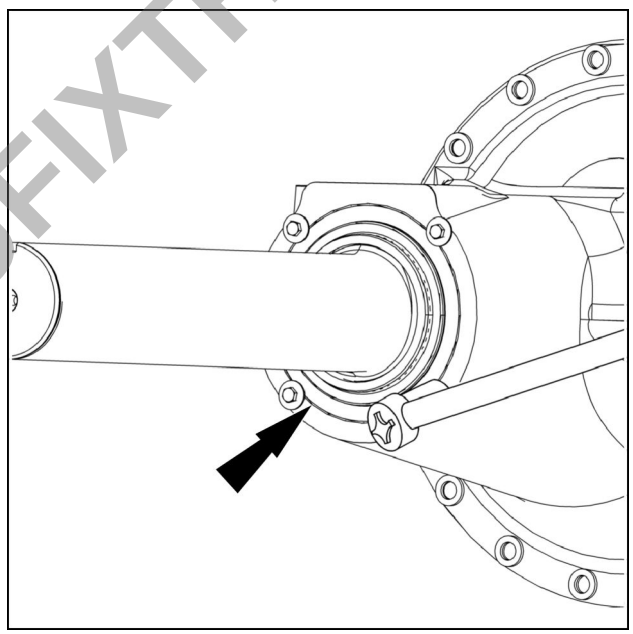
4. Use the **CNH299046** planetary carrier lifting hook to remove the planetary assembly from the housing.

NOTICE: *Be sure the retaining strap is positioned behind the gear to prevent the lifting fixture from pulling out of the pinion gear shaft.*



RCPH10FWD477ABJ 4

5. Remove the screws, washers and cover plate from the outer end of the final drive.

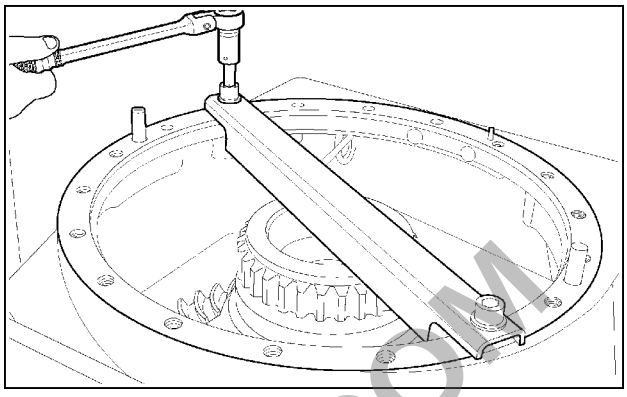


RCPH10FWD508ABJ 5

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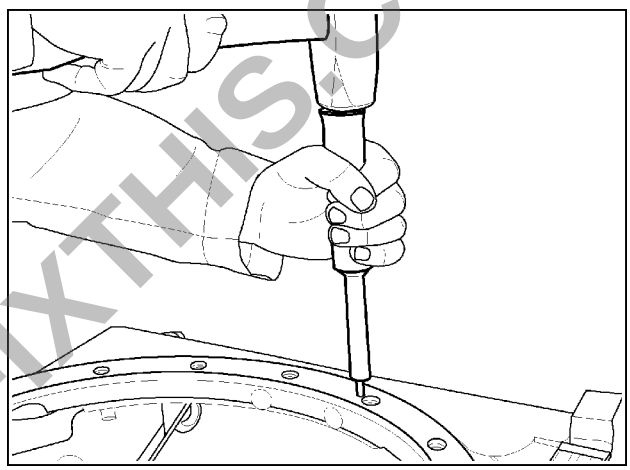
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64. Rotate the housing so the right hand side is on top and the differential is supported in the left hand side bearing carrier. Remove the differential support bracket.



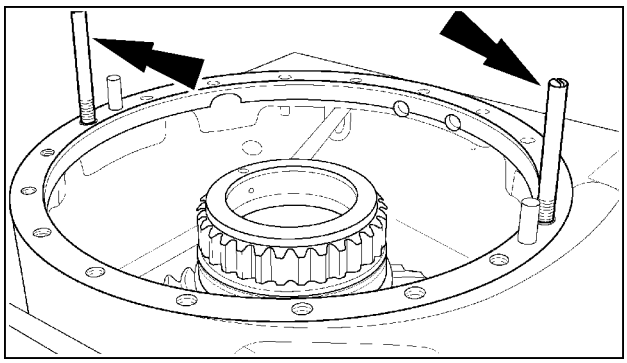
RCPH10FWD405ABJ 64

65. Use a brass drift and hammer to drive in the locating dowel pin for the oil return tube until flush with the housing.



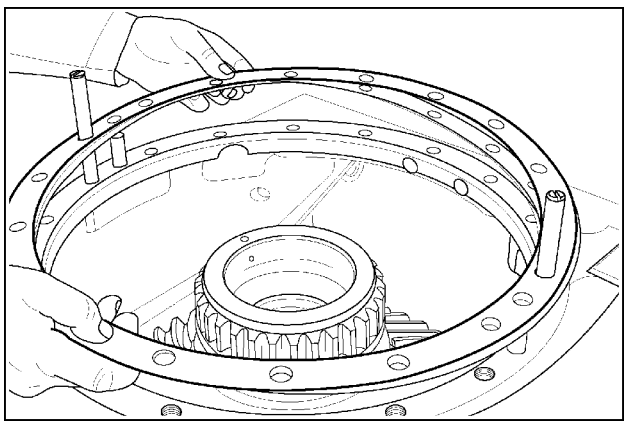
RCPH10FWD406ABJ 65

66. Install two of the **CNH299082** alignment studs into opposite holes of the housing.



RCPH10FWD407ABJ 66

67. Install the original shim pack for the right hand side brake carrier and bearing support over the alignment studs so that all holes align.

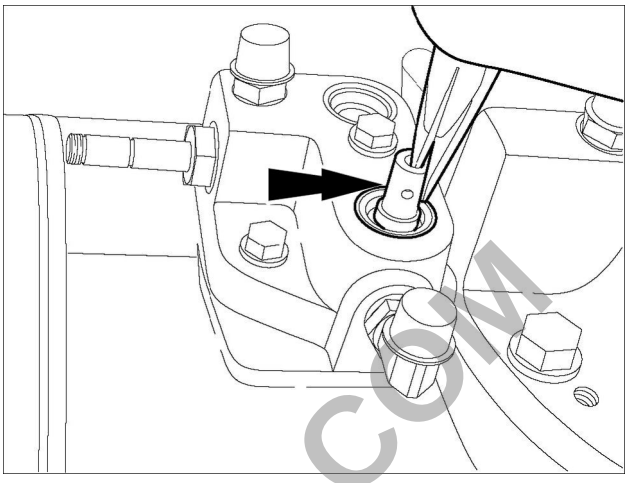


RCPH10FWD408ABJ 67

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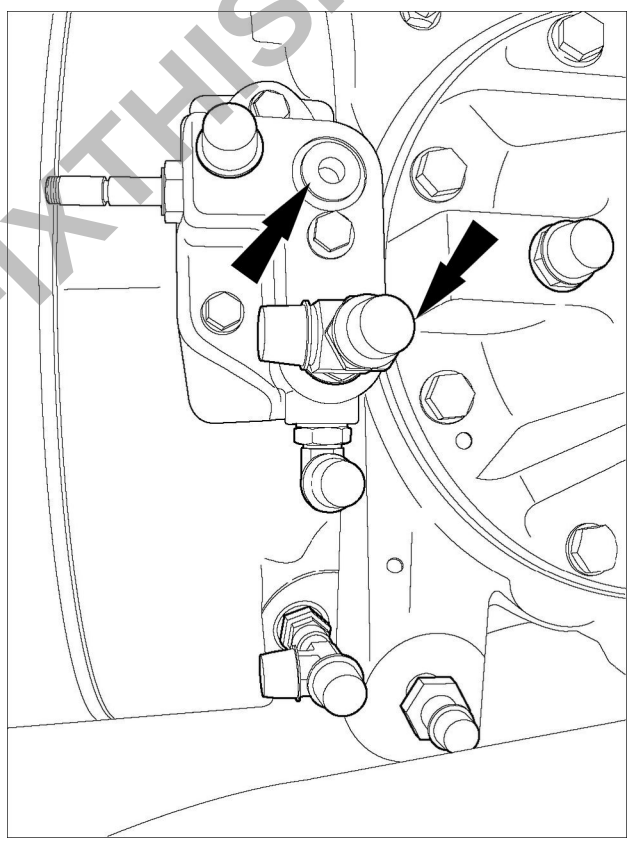
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119. Lubricate and install new O-rings on the jumper tube for the lube supply. Install the jumper tube into the lube supply port.



RCPH11FWD350BAC 126

120. Install the plug and fitting removed during disassembly.



RCPH11FWD349BAC 127

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Power Take-Off (PTO) - 31

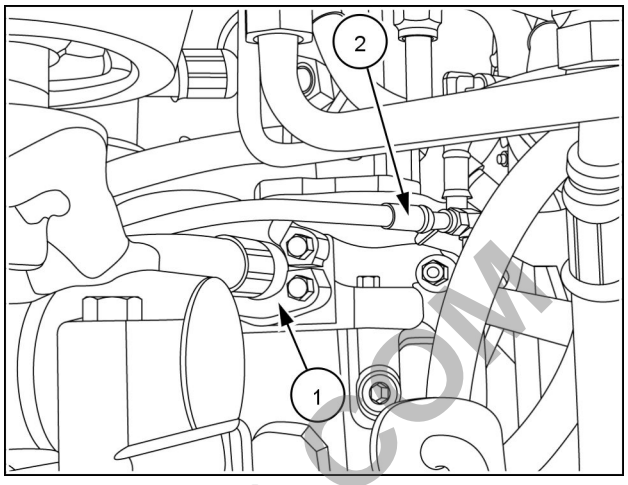
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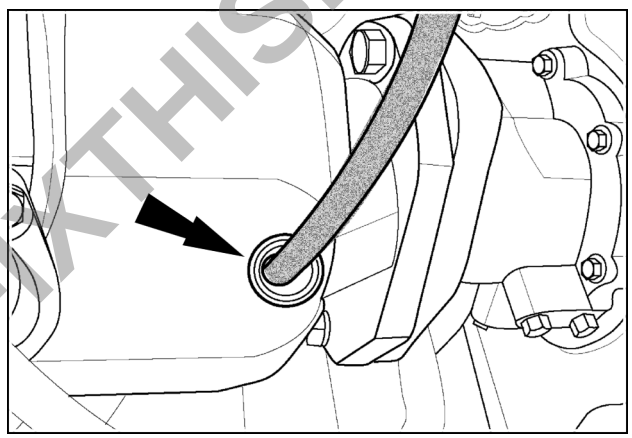
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10. Install new O-ring and assemble split clamp **(1)**. Torque bolts to **135 - 152 N·m** (**100 - 112 lb ft**). Connect and tighten load sense hose **(2)** to compensator.



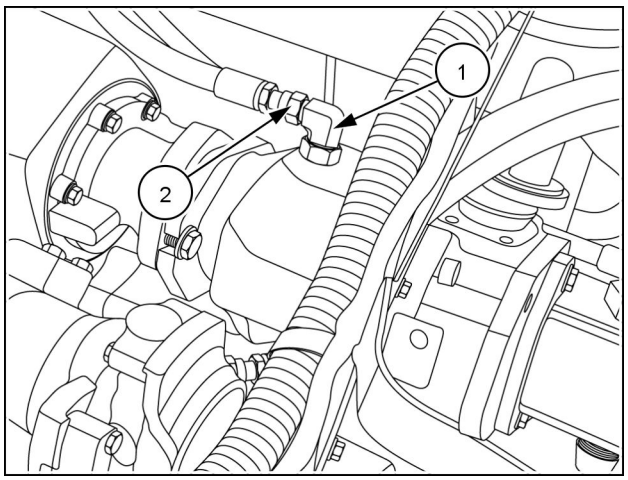
RCPH10FWD257BBC 10

11. Remove the elbow adapter from the case drain port. Use the case drain port to fill the pump assembly with clean operating fluid.



RCPH10FWD281GAG 11

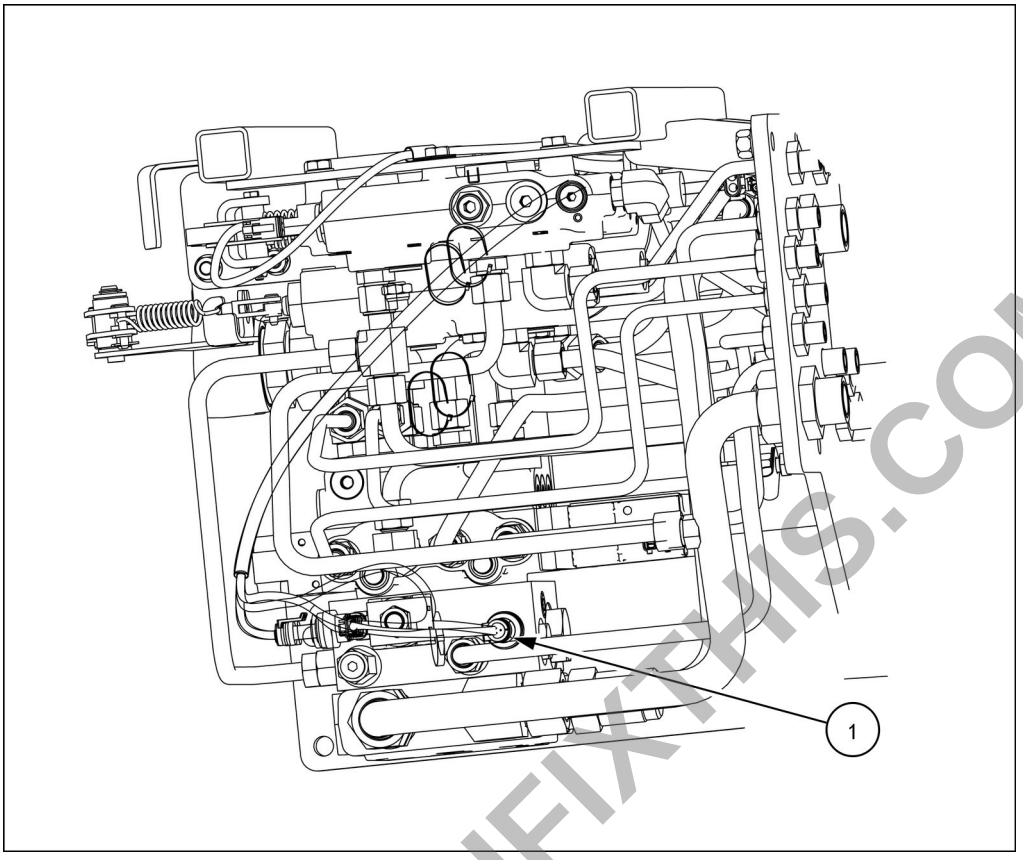
12. Install new O-rings
Install elbow fitting **(1)** to pump.
Attach case drain hose **(2)** and tighten.
Tighten jam nut.



RCPH10FWD259BBC 12

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RAIL12TR01892FA 5

1. Secondary steering pressure sensor

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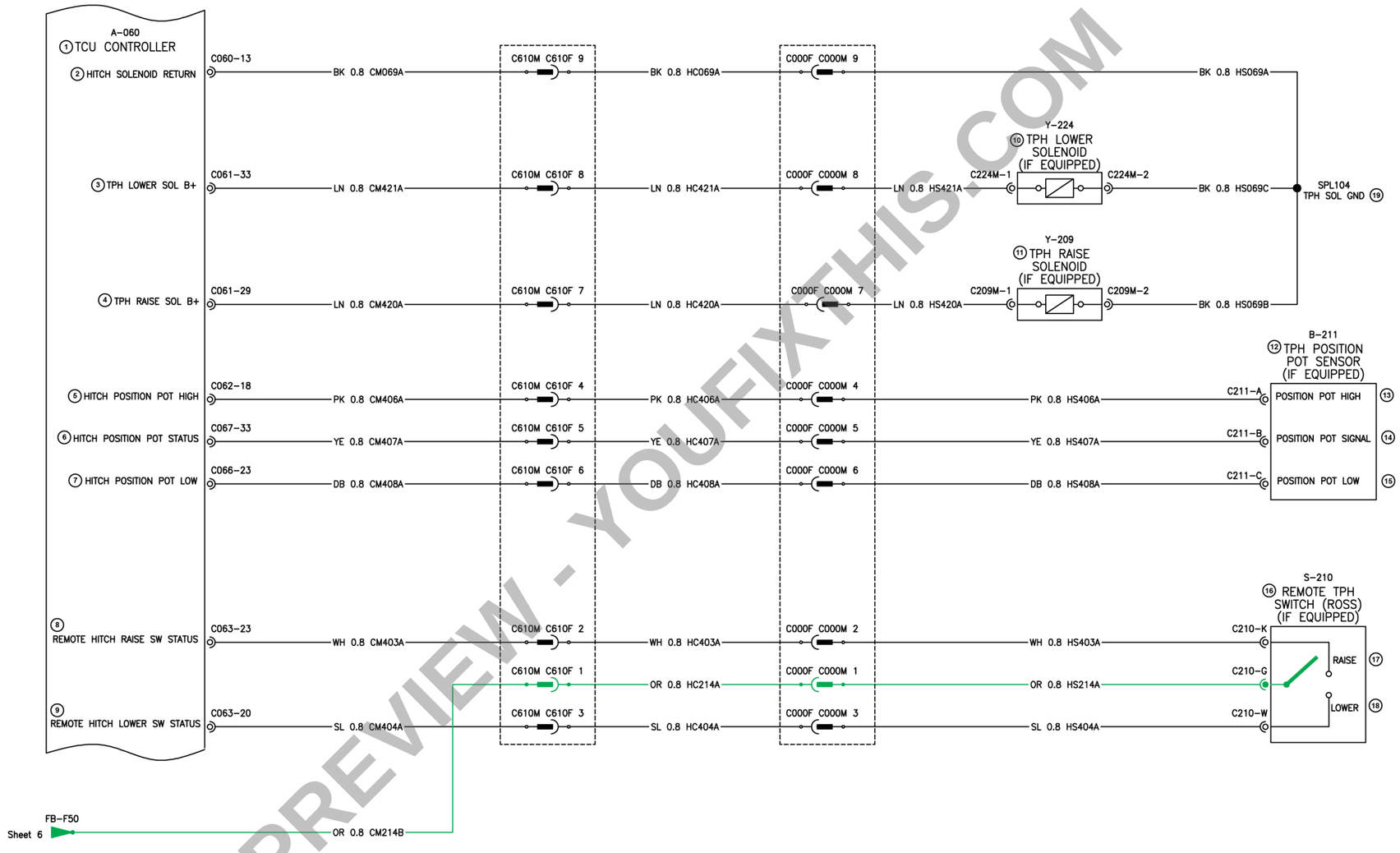
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THREE POINT HITCH (IF EQUIPPED) 59

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19056-Replace Dosing Control Unit (DCU) - (DEF/AdBlue® internal temperature sensor failure)

T9.390 WE, T9.450 WE, T9.505 WE, T9.560 WE, T9.615 WE, T9.670 WE

Context:
The Dosing Control Unit (DCU) has detected a failure of the DEF/AdBlue® temperature sensor. The DEF/AdBlue® temperature sensor is located inside the DCU.

Cause:
This fault occurs when the sensor signal level is below **0.2 V** for over **700 ms**. This fault is corrected if sensor returns to normal output for greater than **1.0 s**.

Possible failure modes:

1. The wiring is the faulty.
2. The software is the faulty.
3. The DCU is the faulty.

Solution:

1. Verify the fault is still present and in an active state.

   A. If the fault is still present and active, continue with step **2**.

   B. If the fault is not present, the fault may be intermittent. Check for an intermittent the fault. If no the faults are found, clear the fault code. Return machine to service.
2. Check the DCU connector for proper operation of the power supply and ground circuits.

   Disconnect the harness from the DCU at connector.

   Use a multi-meter to measure the voltage from the harness side of connector pin 3 to pin 14. The meter should read between **20–28 V**.

   Use a multi-meter to measure the voltage from the harness side of connector pin 4 to pin 15. The meter should read between **20–28 V**.

   Use a multi-meter to measure the voltage from the harness side of connector pin 24 to chassis ground. The meter should read between **20–28 V**.

   A. All of the expected voltage measurements are not present, repair/replace the circuit to the DCU connector.

   B. All of the expected voltage measurements are present, continue with step **3**.

   NOTE: *Inspect the DCU power relays to verify correct part is installed (verify a **24 V** relay is NOT installed in the **12 V** position).*
3. Clear the fault code.

   A. If the fault code did not clear, continue with step **4**.

   B. If the fault code has cleared, return the machine back to service.
4. Verify the proper software level is installed in the DCU.

   A. The incorrect software level is installed. Install the correct software level. Test the system for proper operation.

   B. The correct software level is installed, replace the DCU. Install the current software level. Test the system to verify repairs.

   NOTE: *If the unit is equipped with 2010 or 2011 software, you can update the software to 2012. If you update the Engine Control Unit (ECU) software, the Display software also needs to be updated. This will change how the*

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2849-The park brake driver has detected an open circuit condition

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:

Possible failure modes:

1. Faulty connector
2. Faulty solenoid
3. Faulty harness
4. Faulty tractor control unit (TCU)

Solution:

1. Check park brake solenoid connector C138, tractor control unit (TCU) connector C065 and cab bulkhead connector C001.
   A. Ensure the connectors are connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as required.
   B. If the connectors are okay, continue to step **2**
2. Check the park brake solenoid.
   A. Disconnect park brake solenoid connector C138. Measure the resistance between the solenoid terminals:
   Terminal 1 and terminal 2
   If the resistance indicated is not between **4.5 - 7.5 Ohms** remove and replace the park brake solenoid.
   B. If park brake solenoid is okay, continue to step **3**
3. Check for an open circuit.
   A. Disconnect connector C065 from the tractor control unit (TCU). Check between park brake connector:
   C138 pin 1 and C065 pin 21
   C138 pin 2 and ground
   If an open circuit is indicated, repair or replace the harness as required.
   B. If an open circuit is not indicated, continue to step **4**
4. Check for a short circuit in harness.
   A. Check between harness end connector:
   C138 pin 1 and C138 pin 2
   If a short circuit is indicated, repair or replace the harness as required
   B. If a short circuit is not indicated continue to step **5**
5. Check for a short to ground.
   A. Check between connector:
   C138 pin 1 and ground
   If a short to ground is indicated, repair or replace the harness as required.
   B. If the harness is okay, download the correct level of software. If the fault re-occurs, submit a concern to ASIST.

Wire harnesses - Electrical schematic frame 27 (55.100.DP-C.20.E.27)
Wire harnesses - Electrical schematic frame 27 (55.100.DP-C.20.E.27)
Wire harnesses - Electrical schematic frame 32 (55.100.DP-C.20.E.32)
Wire harnesses - Electrical schematic frame 32 (55.100.DP-C.20.E.32)
Wire harnesses - Electrical schematic frame 27 (55.100.DP-C.20.E.27)
Wire harnesses - Electrical schematic frame 32 (55.100.DP-C.20.E.32)

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4106-Rear remote no.1 - spool movement too low

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:

Possible failure modes:

1. Incorrect hydraulic pressure
2. Faulty EHR valve

Solution:

1. Check for other EHR error code(s).
   A. Make a note of the error code(s), clear the error code(s) and test the system for normal operation.
   B. If the fault is still present, continue to step **2**
2. Check the regulated hydraulic pressure supplied to remote manifold, for further information refer to hydraulic testing in service manual.
   A. If the pressure is incorrect, repair or replace component(s) as required.
   B. If the pressure is okay, download the correct level of software and configure the EHR valve. If the fault re-occurs, remove, replace, and configure the EHR valve section.

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3309-Rail Pressure Above Maximum Limit In Controlled Mode

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Control Module : EDC

Context:
The engine control unit (ECU) has determined that the Fuel Rail/System Pressure is too low. The rail pressure is monitored by various fault paths during active pressure control by the metering unit. The fault path at hand detects if the rail pressure has fallen below a minimum pressure threshold. The monitoring is only active if the high pressure governor is operating in closed loop control and the monitoring has not been inhibited by other faults. If the rail pressure is below the engine speed dependent limit from a curve, established by the ECU, over 2.5 seconds this error will occur. This error is the result of a leak in the high or low pressure side of the fuel rail system. On the high pressure side check for worn or stuck open injector, worn high pressure pump or leaking pressure relief valve. On the low pressure side check for low fuel pressure before or after the gear pump, clogged fuel filter or leakage.

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