SERVICE MANUAL

T7.240 / T7.245 / T7.260

Tractor

Part number 47770440
English
October 2015

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Powered rear axle - General specification

T7.240	LA
T7.245	LA
T7.260 With cab, 18X6, TIER 3 [HCCZ7245CFCP38297 -]	LA

Pinion-ring gear ratio:	9/44 = 1:4.89
Clearance between the pinion and the ring gear	**0.25 - 0.33 mm (0.010 - 0.013 in)**
Differential	Four pinions
Differential lock control:	
- multi-disk clutch	Activated by a hydraulically controlled multi-disk oil-bath clutch
Number of clutch disks:	
- Driven disks	4
- Drive disks	4
- Thickness of driven disk (each)	**3.45 - 3.55 mm (0.136 - 0.140 in)**
- Thickness of drive disk (each)	**1.95 - 2.05 mm (0.077 - 0.081 in)**
Diameter of differential pinion bore (see **Powered rear axle - Sectional view (27.100)**)	**30.04 - 30.061 mm (1.183 - 1.184 in)**
Diameter of differential pinion journal **(6)**	**29.939 - 29.96 mm (1.1787 - 1.1795 in)**
Clearance of differential pinion	**0.080 - 0.122 mm (0.003 - 0.005 in)**
Side gear hub seat in the differential	
Diameter of case (see **Powered rear axle - Sectional view (27.100)**)	**70 mm (2.756 in)**
Diameter of side gear hub **(3)**	**68 mm (2.677 in)**

Adjustment of the pinion shaft position (see **Powered rear axle - Sectional view (27.100)**)	See **Powered rear axle - Adjust (27.100)**
- available shims	**3 mm (0.12 in) 3.1 mm (0.122 in) 3.2 mm (0.126 in) 3.3 mm (0.130 in) 3.4 mm (0.134 in) 3.5 mm (0.138 in) 3.6 mm (0.142 in) 3.7 mm (0.146 in) 3.8 mm (0.150 in) 3.9 mm (0.154 in) 4 mm (0.157 in)**
Adjustment of the pinion bearing	See **Powered rear axle - Adjust (27.100)**
Pinion bearing shims (see **Powered rear axle - Sectional view (27.100)**).	**4.40 mm (0.173 in) 4.50 mm (0.177 in) 4.60 mm (0.181 in) 4.70 mm (0.185 in) 4.80 mm (0.189 in) 4.85 mm (0.191 in) 4.90 mm (0.193 in) 4.95 mm (0.195 in) 5.0 mm (0.197 in) 5.05 mm (0.199 in) 5.10 mm (0.201 in) 5.15 mm (0.203 in) 5.20 mm (0.205 in) 5.25 mm (0.207 in) 5.30 mm (0.209 in) 5.35 mm (0.211 in) 5.40 mm (0.213 in) 5.45 mm (0.215 in) 5.50 mm (0.217 in) 5.55 mm (0.219 in) 5.60 mm (0.220 in) 5.65 mm (0.222 in) 5.70 mm (0.224 in) 5.75 mm (0.226 in) 5.80 mm (0.228 in) 5.85 mm (0.230 in) 5.90 mm (0.232 in) 5.95 mm (0.234 in) 6.0 mm (0.236 in) 6.05 mm (0.238 in) 6.10 mm (0.240 in) 6.15 mm (0.242 in) 6.20 mm (0.244 in) 6.30 mm (0.248 in) 6.40 mm (0.252 in) 6.50 mm (0.256 in) 6.60 mm (0.260 in)**

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2021-Transmission Harness Disconnected

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

Context:
Transmission disabled.

Cause:

Possible failure modes:

1. Faulty connector
2. Faulty harness
3. Faulty controller

Solution:

1. Check for other transmission related error codes.
   A. If other transmission related error codes are displayed, continue to these tests.
   B. If no other transmission related error codes are not displayed, continue to step **2**
2. Check the harness connectors **X-022**, **X-020** and the controller connectors **X-091**, **X-092**, **X-093**, **X-094** and **X-095** .
   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, download the correct level of software. If the fault re-occurs, remove and replace the controller.

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B. If the CAN bus reading is correct, continue with Step **7**.

5. Measure the resistance of the CAN bus circuit with one terminating resistor removed.

   Place the key switch OFF.

   Disconnect the wiring harness from the ECU where the CAN wires are located.

   Use a multimeter to measure the resistance from the ECU wiring harness connector between pin 24 and pin 25.

   There should be approximately **108 - 132 Ω**.

   A. If the CAN bus reading is incorrect, check the CAN bus wiring and terminating resistor between the ECU to the vehicle controllers.

   B. If the CAN bus reading is correct, continue with Step **6**.

   NOTE: *The ECU has an internal terminating resistor.*

6. Check the internal resistor located in the ECU.

   Use a multimeter to measure the resistance from the ECU connector between pin 24 and pin 25.

   There should be approximately **108 - 132 Ω**.

   A. If the reading is incorrect, the resistor has failed. Replace the ECU.

   B. If the reading is correct, continue with Step **7**.

7. Check the power and ground supplies to the controllers (nodes).

   Verify that the connectors are fully installed.

   Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned.

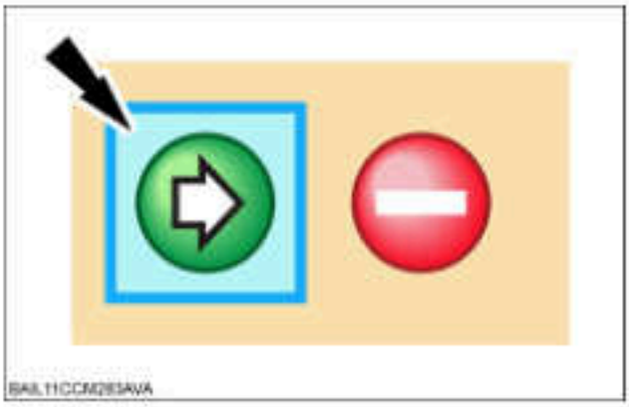
   A. If damage is found or other than normal readings are indicated, repair the damage discovered during the inspection or locate and repair the other than normal conditions and verify that the fault code has been resolved.

   B. If no damage or other than normal display readings are indicated, clear the fault code and continue operation.

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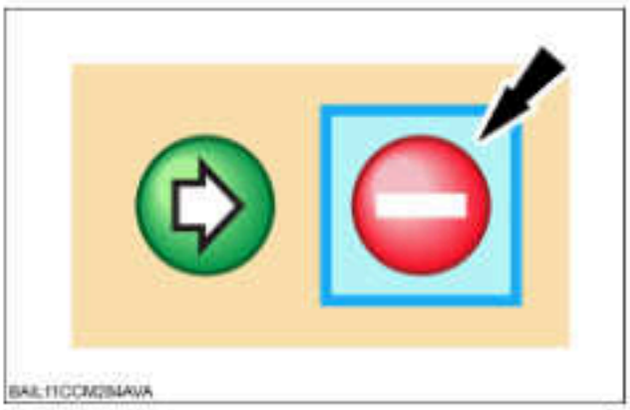
Step 5a. RAMP Test Procedure:

- On the DATAR Scope, in the bottom left corner, verify the capture trigger is "ready" to start capturing data. This is indicated with a green ball highlighted in blue as shown in the figure to the right. If the scope is not ready, then press the keyboard SPACE bar to change the scope trigger state to ready.
- Press and hold the UP SHIFT button on the transmission shift lever to run the RAMP test. The machine display will count up to 100 and then back to 0. When the test is finished the display will show "END". This test will take about 20 seconds.



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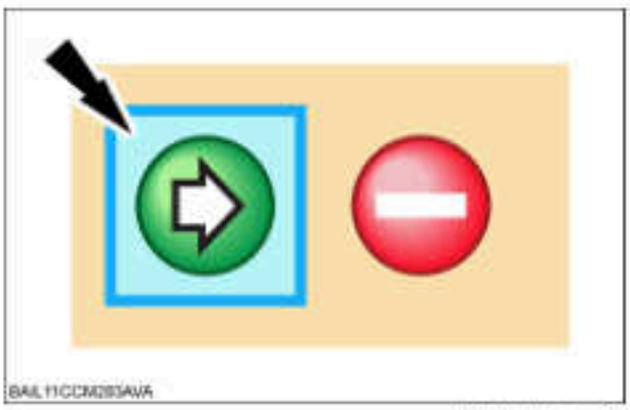
- On the DATAR Scope, when the test ramp is finished, then press the PC SPACE bar to capture and hold the result trace.
- Compare the DATAR measured trace with the expected result trace shown on the next Valve Test Assistant screen. (Remember ALT-TAB to switch between the programs)



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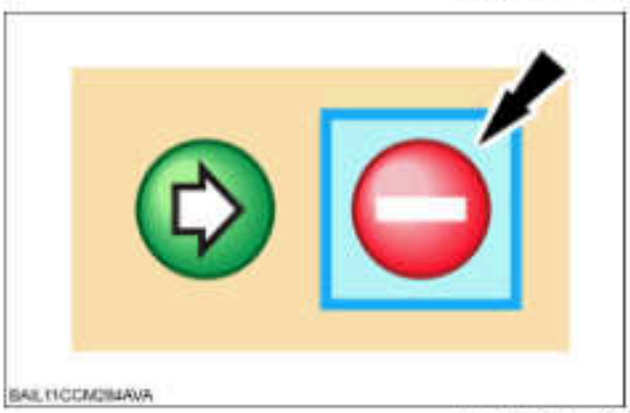
Step 5b. STEP Test Procedure:

- On the DATAR Scope, in the bottom left corner, verify the capture trigger is "ready" to start capturing data. This is indicated with a green ball highlighted in blue as shown in the figure to the right. If the scope is not ready, then press the keyboard SPACE bar to change the scope trigger state to ready.
- Press and hold the DOWN SHIFT button on the transmission shift lever to run the STEP test. The machine display will count up from 1 to 4. When the test is finished the display will show "END". This test will take about 5 seconds.



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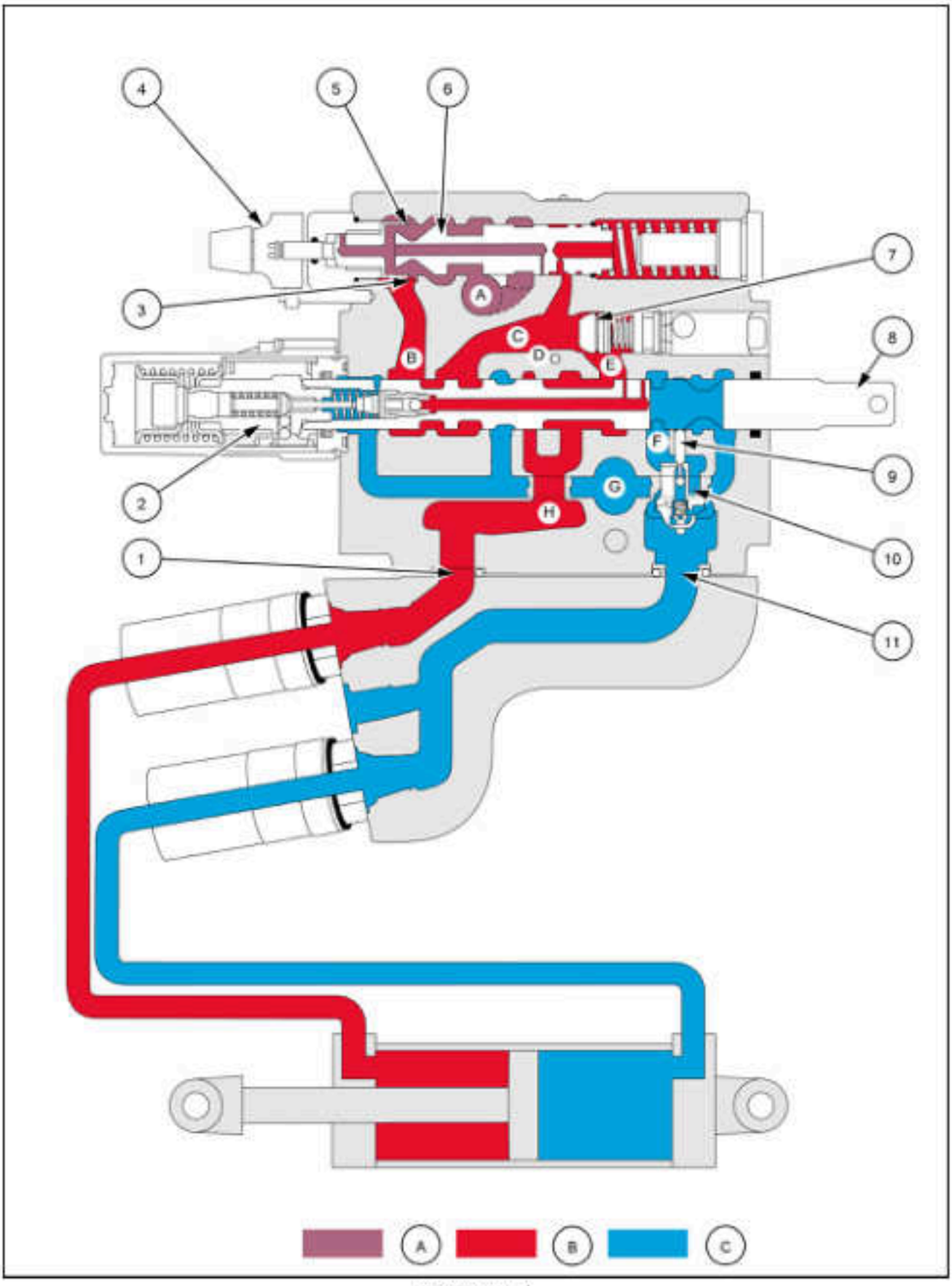
- On the DATAR Scope, when the test ramp is finished, then press the PC SPACE bar to capture and hold the result trace.
- Compare the DATAR measured trace with the expected result trace shown on the next Valve Test Assistant screen. (Remember ALT-TAB to switch between the programs)



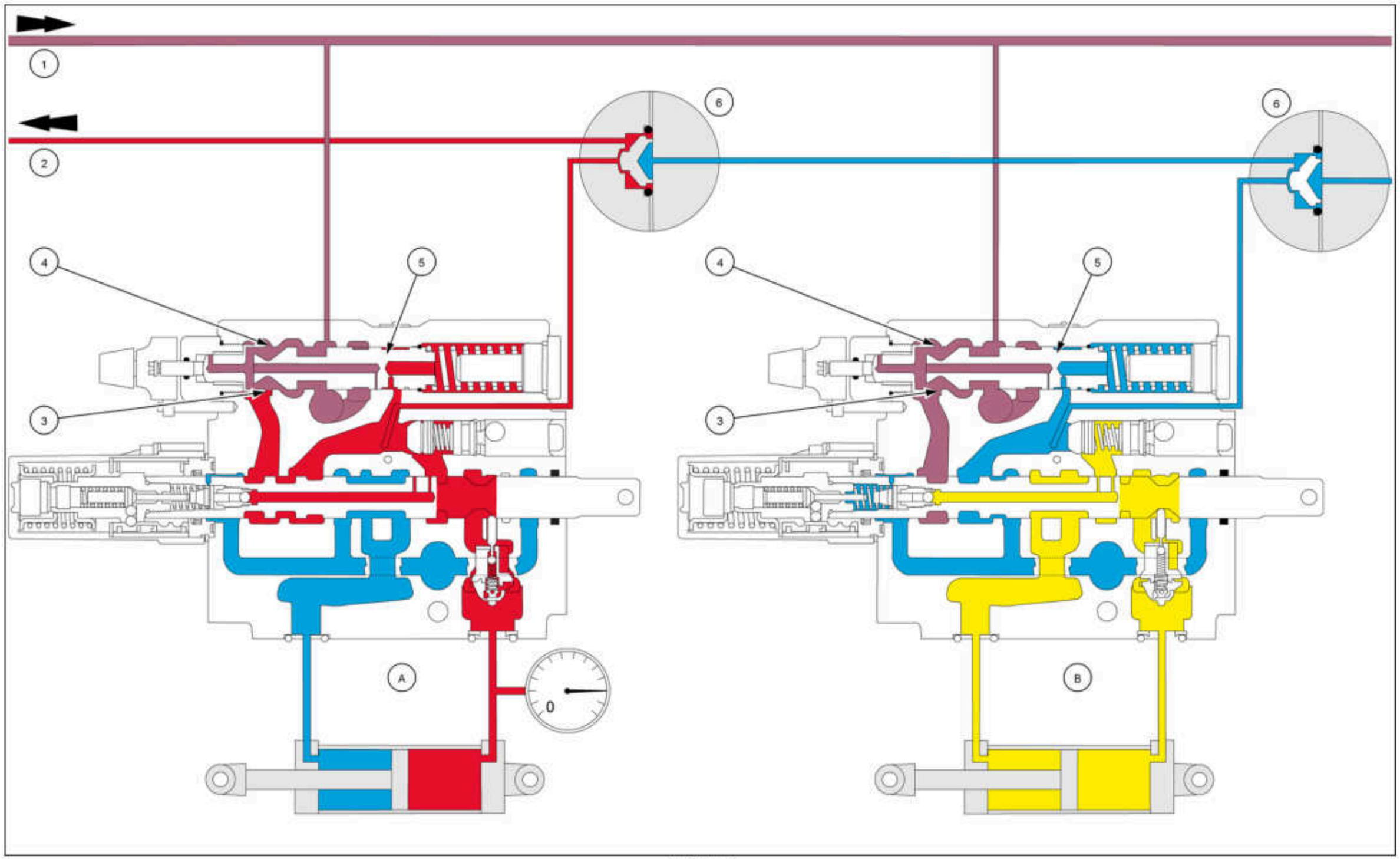
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NOTE: *During the step test, the machine software makes two quick engagements of the clutch. With some clutches, there will be a banging sound.*

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