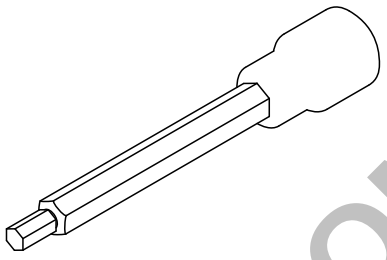
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IMPORTANT: Before the pump gear can be removed, the pump mounting screws must be loosened.

7. Loosen top pump mounting socket screw (I) using JDG10025.
8. Loosen pump mounting cap screws (K).

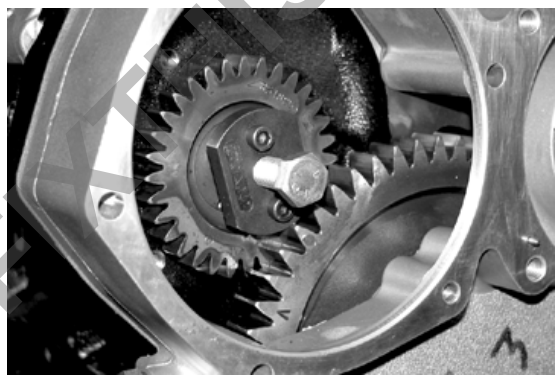


RG14255A —UN—03OCT08

Pump Socket Screw Installation/Removal Tool JDG10025

AS58880,00003FE -19-26MAY09-3/6

9. Remove pump gear nut (E).
10. Using JDG10015 Gear Puller, remove pump gear from pump shaft. Make sure the pump mounting screws are sufficiently loosened to allow the pump to be moved away from the mounting holes.
11. Remove pump gear and removal tool from gear housing.
12. Using JDG10025, remove top pump mounting socket screw (I).
13. Remove pump mounting cap screws (K).
14. Remove pump from engine.
15. If waiting on receipt of pump, replace gear housing cover (A).



RG14256 —UN—06JUN05

Pump Gear Removal Tool JDG10015

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AS58880,00003FE -19-26MAY09-4/6

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Repair Cinch Flex Box Connector

Tools Required For Repair

- CINCH Crimper Tool JDG1727



RG14578 —UN—07MAR08

CINCH Crimper Tool

RG41183,00000E9 -19-01OCT08-1/16

- CINCH Terminal Remover Tool JDG 1725
- Wire Stripper JDG145
- Jeweler's screwdriver (or equivalent, narrow, flat-bladed tool)
  Secondary Lock Release Tool

RG14579 —UN—21NOV05



CINCH Terminal Remover Tool



RG15122 —UN—13JUN07

Secondary Lock Release Tool

Continued on next page

RG41183,00000E9 -19-01OCT08-2/16

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NOTE: Some of the sensors shown are optional and are NOT used on all applications.

DN22556,0000049 -19-03OCT08-2/2

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9 Camshaft Position and Crankshaft Position Signal Test	*NOTE: See DTC procedures 000636.02 — PUMP POSITION SENSOR SIGNAL INVALID DIAGNOSTIC PROCEDURE and 000637.02 in Group 04, Section 160 later in this manual for more information on speed sensor data points.* 1. Monitor and record the following data points in Service ADVISOR: • Crankshaft Position Signal Status • Camshaft Position Signal Status • Engine Speed Indicated by Crankshaft Sensor • Engine Speed Indicated by Camshaft Sensor • Crankshaft Position Signal Improper Pattern Indicator • Camshaft Position Signal Improper Pattern Indicator • Crankshaft Position Signal Noise Indicator • Camshaft Position Signal Noise Indicator 2. Crank engine for 15 seconds. 3. Replay recording and review the recorded data points. Did the data points indicate the following while the engine is cranking at a steady speed? *NOTE: When engine first begins cranking, the data points may not indicate these values. Ignore data point values until engine has rotated at least two full revolutions.* • Crankshaft Position Signal Status – Value should be 16 at 0 rpm, 63 with engine cranking (below 400 rpm), and 47 with engine running above 400 rpm. • Camshaft Position Signal Status – Value should be 16 at 0 rpm, 63 with engine cranking (below 400 rpm), and 47 with engine running above 400 rpm. • Engine Speed Indicated by Crankshaft Sensor - The actual cranking speed (nearly same as camshaft position sensor speed). • Engine Speed Indicated by Camshaft Sensor - The actual cranking speed (nearly same as crank position sensor speed). • Crankshaft Position Signal Improper Pattern Indicator - 0 • Camshaft Position Signal Improper Pattern Indicator - 0 • Crankshaft Position Signal Noise Indicator - 0 • Camshaft Position Signal Noise Indicator - 0	**YES:** GO TO 12 **NO:** GO TO 10

RG41221,00000F0 -19-24NOV08-11/17

10 Check for Crankshaft Position Pattern Problem	1. Ignition OFF, engine OFF. 2. Disconnect crank sensor and secure connector away from rotating components. 3. Ignition ON, engine OFF. 4. Crank engine for 30 seconds. 5. Ignition OFF, engine OFF. 6. Reconnect crank sensor. Did engine start?	**YES:** Perform 000637.02 — CRANK POSITION SENSOR SIGNAL INVALID DIAGNOSTIC PROCEDURE as though DTC were active. **NO:** GO TO 11

Continued on next page

RG41221,00000F0 -19-24NOV08-12/17

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18 Injector Leak-off Check	1. Ignition OFF, engine OFF. 2. Disconnect injector fuel leak-off line at tee and cap tee. 3. Connect a clear hose to the injector leak off line, routing the other end into a suitable container for diesel fuel. 4. Start engine and operate at 800 rpm. Is fuel flow from injector leak-off line greater than 440 mL (15 oz.) per minute?	**YES:** Check for damaged feed tubes or injectors. **NO:** No fuel flow is present. Check for restrictions in the injector leak off line and galley. **NO:** Fuel flow present and within specification. Reinstall fuel return line. GO TO 19

JB81757,000002D -19-03OCT08-22/25

19 High Pressure Fuel Pump Overflow Orifice Test	1. Ignition OFF, engine OFF. 2. Disconnect the fuel leak-off line between the tee coming from the injector and fuel rail leak-off lines, and the high pressure fuel pump overflow orifice fitting. 3. Connect a clear hose to the overflow orifice, routing the other end into a suitable container for diesel fuel. 4. Start engine and operate at 800 rpm. Is fuel flow from pump leak-off line greater than 489 mL (16.5 oz.) per minute?	**YES:** Replace high pressure fuel pump. GO TO 20 **NO:** No fuel flow is present. Replace high pressure fuel pump. GO TO 20 **NO:** Fuel flow present and within specification. Reinstall fuel return line. GO TO 20

JB81757,000002D -19-03OCT08-23/25

20 Misfire and Cut-Out Test	1. Perform ENGINE TEST INSTRUCTIONS - CYLINDER MISFIRE TEST in Service ADVISOR. 2. Perform ENGINE TEST INSTRUCTIONS - CYLINDER CUTOUT TEST in Service ADVISOR with engine at low idle. Is each cylinder's contribution within 10 percent of the others during the Cylinder Misfire Test and does the sound of the engine change equally when each injector is disabled during the Cylinder Cut-Out Test?	**YES:** High pressure fuel system is operating correctly. Return to original procedure. **NO:** GO TO 21

JB81757,000002D -19-03OCT08-24/25

21 Check Compression	Perform ENGINE TEST INSTRUCTIONS - COMPRESSION TEST in Service ADVISOR. Is compression in the cylinder(s) with low contribution identified in Step 20 also at least 10 percent less than the other cylinders (compression is low and contribution is low in the same cylinder)?	**YES:** Check compression with mechanical gauge. **NO:** Replace injector(s) in cylinder(s) with low contribution.

JB81757,000002D -19-03OCT08-25/25

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7 Linkage Disconnected Test	1. Ignition OFF, Engine OFF. 2. Disconnect actuator linkage for actuator shaft only. 3. Ignition ON, Engine OFF 4. Perform VGT TRAVEL RANGE TEST in Service ADVISOR. Did test pass?	**YES:** GO TO 8. **NO:** Replace VGT actuator and verify problem fixed.

DM59778,00000A9 -19-21NOV08-9/11

8 Test Linkage for Binding	1. Ignition OFF, Engine OFF. 2. Remove actuator linkage form turbo shaft. 3. Move linkage and check for possible binding points. Did linkage move freely with no binding?	**YES:** GO TO 9. **NO:** Replace linkage. See REMOVE AND INSTALL BET ACTUATOR LINKAGE in base engine manual

DM59778,00000A9 -19-21NOV08-10/11

9 Test Turbo for Binding	1. Install linkage. See REMOVE AND INSTALL BET ACTUATOR LINKAGE in base engine manual 2. Ignition ON, Engine OFF. 3. Perform VGT LEARN VALUE RESET TEST in Service ADVISOR. Did the test pass?	**YES:** Return to original diagnostic procedure. **NO:** Replace turbo and verify it fixed problem.

DM59778,00000A9 -19-21NOV08-11/11

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Fuel Rail Cap and Plug Kit

For instructions on connecting to Service ADVISOR, see earlier in this Group.

Engine Applications:

All JDPS diesel engines that have High Pressure Common Rail (HPCR) fuel systems.

Tool Use:

- This tool is used to determine which cylinder is causing a no start condition because the high pressure fuel system can not build pressure.

IMPORTANT: Ensure the area you are working in is free from debris. Any debris getting into the fuel system will cause problems.

Tool Use Instructions:

1. Ignition OF, Engine OFF.

IMPORTANT: Ensure engine has not been cranked for at least 5 minutes to let the rail pressure drop to a safe level.

NOTE: Test one fuel line at a time.

2. Loosen the line at both ends.
3. Disconnect the line at the fuel rail end only.
4. Using JDG10760, “Cap” the fuel rail outlet and “Plug” the disconnected end of the chosen line.
5. Tighten the chosen line at the injector feed tube.
6. Try starting the engine; if it starts you have found the bad cylinder. See troubleshooting procedure below.
7. If engine still does not start, remove cap and pug. Reinstall the chosen line to specification. Select another line to test.
8. If none of the injectors are the problem for the no start follow the Engine Cranks/Won’t Start procedure in this manual.

NOTE: Note: It is very uncommon for more than one cylinder to be bad causing a no start; however, that could be a possibility.

Troubleshooting Procedure:

1. Remove the fuel feed tube of the cylinder causing the no start.
2. Inspect the fuel feed tub and fuel inlet on injector for galling.
3. If galling is indicated on fuel feed tube only, replace fuel feed tube and try starting again.
4. If galling is indicated at the injector fuel inlet replace injector and fuel feed tube and try restarting again.

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11 Check Primary Analog Throttle Circuit Continuity	1. On the harness, measure the resistance between ECU J02-A3 and harness connector C09-M. 2. On the harness, measure the resistance between ECU J02-A4 and harness connector C09-L. 3. On the harness, measure the resistance between ECU J02-C3 and harness connector C09-C. Were all resistance measurements less than 10 ohms?	**YES:** GO TO 12 **NO:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR.

RG41221,0000203 -19-20JAN09-13/23

12 Check for Short to Voltage	1. Ignition ON, engine OFF. 2. On the harness, measure the voltage between ECU J02-A4 and single point ground. Is the voltage greater than 0.5V?	**YES:** Locate and repair short to voltage in sensor signal circuit. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 13

RG41221,0000203 -19-20JAN09-14/23

13 Check Signal Circuit for Wire-Wire Short	1. Ignition OFF, engine OFF. 2. Disconnect ECU connectors J01 and J03. 3. Measure the resistance between J02-A4 and all other terminals in ECU harness connectors J01, J02 and J03. Was any measurement less than 100k ohms?	**YES:** Locate and repair wire-wire short. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 14

RG41221,0000203 -19-20JAN09-15/23

14 Check for Intermittent Short to Voltage	1. Reconnect all electrical connectors. 2. Ignition ON, engine OFF. 3. Monitor DTCs in Service ADVISOR while gently wiggling on the wiring harness between harness connector C09 and ECU connector J02. Does the status of DTC 000091.03 toggle between active and stored?	**YES:** There is an intermittent wiring problem. Locate and repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** Replace ECU. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR.

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RG41221,0000203 -19-20JAN09-16/23

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000100.18 — Engine Oil Pressure Signal Moderately Low

The ECU senses an oil pressure below the warning value set point in the ECU.

RG41221,000020E -19-20JAN09-1/13

000100.18 — Engine Oil Pressure Signal Moderately Low Diagnostic Procedure

Trouble Shooting Sequence:
000100.18

When DTC is Displayed:
When the engine is on and the error is active.

Related Information:
The ECU senses a lower than expected engine oil pressure.
The engine must be running for the code to be set.
The warning value set point is dependent on engine speed.
001569.31 is also set when this code is active.

Alarm Level:
Warning

Control Unit Response:
Maximum engine power is derated up to 20 percent.

Additional references:
For further oil pressure sensor information, see OIL PRESSURE SENSOR in Section 03, Group 140, earlier in this manual.
For further pressure sensor information, see MEASURING PRESSURE in Section 03, Group 140 earlier in this manual.
For more information on engine protection, see ENGINE DERATE AND SHUTDOWN PROTECTION in Section 03, Group 140 earlier in this manual.

NOTE: The wiring diagrams provided are for a typical John Deere supplied OEM harness. Wire number, colors and jumper connectors do not apply to all applications.

For wiring information:
- see 9.0L 12V WIRING DIAGRAM 2
- see 9.0L 24V WIRING DIAGRAM 2
located in Section 06, Group 210 later in this manual.

For further information on connector and terminal testing see TERMINAL TEST in Section 04, Group 160 earlier in this manual.

IMPORTANT: When directed to run the HARNESS DIAGNOSTIC MODE TEST the engine temperature should be above freezing. It is recommended that the engine temperature be at least 20° C (68° F). This test is located in Service ADVISOR.

IMPORTANT: Do not force probes into connector terminals or damage will result. Use JT07328 Connector Adapter Test Kit to make measurements in connectors. This will ensure that terminal damage does not occur.

Continued on next page

RG41221,000020E -19-20JAN09-2/13

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9 Terminal Test	*NOTE: From here on through the manual, the manifold air temperature will be referred to as MAT* 1. Ignition OFF, Engine OFF. 2. Disconnect the MAT sensor connector T02. 3. Perform TERMINAL TEST on the harness and sensor connector. Are there any problems with the wiring or connectors?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 10

RG41221,0000219 -19-20JAN09-12/26

10 Check for DTC	1. Ignition ON, Engine OFF. 2. Refresh codes. Did 000105.03 become active?	**YES:** Replace MAT sensor **NO:** GO TO 11

RG41221,0000219 -19-20JAN09-13/26

11 Check for Intermittent Short to Ground	1. Ignition OFF, engine OFF. 2. Reconnect all connectors. 3. Ignition ON, engine OFF. 4. Monitor Manifold Air Temperature Input Voltage data point in Service ADVISOR while gently wiggle wire harness between MAT sensor and ECU J03 connector. *NOTE: The Manifold Air Temperature Input Voltage will decrease to approximately 0V when the sensor circuit is shorted to ground.* Was the source of the intermittent short to ground found?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 12

RG41221,0000219 -19-20JAN09-14/26

12 Terminal Test	1. Ignition OFF, engine OFF. 2. Disconnect ECU J03 connector. 3. Perform TERMINAL TEST on terminals J03-F1 and J03-B2. Were any problems found?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 13

RG41221,0000219 -19-20JAN09-15/26

13 Check Sensor Circuit Continuity	1. On the harness, measure the resistance between ECU J03-F1 and MAT sensor T02-A. 2. On the harness, measure the resistance between ECU J03-B2 and MAT sensor T02-B. Were both resistance measurements less than 10 ohms?	**YES:** GO TO 14 **NO:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR.

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RG41221,0000219 -19-20JAN09-16/26

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11 Check for DTC Active Status Change with J03 Disconnected	*NOTE: Many new error codes will appear in the next step. Disregard all codes except 000110.04.* 1. Verify ECU J03 connector is still disconnected. 2. Ignition ON, Engine OFF. 3. Refresh codes. Is DTC 000110.04 still active with J03 disconnected?	**YES:** GO TO 15 **NO:** GO TO 12

RG41221,0000222 -19-20JAN09-13/23

12 Check for Wire-Wire Short	1. Ignition OFF, engine OFF. 2. Disconnect ECU connectors J01 and J02. 3. Measure the resistance between ECU J03-D3 and all other terminals in the ECU harness connectors J01, J02, and J03. Was any measurement less than 100k ohms?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 13

RG41221,0000222 -19-20JAN09-14/23

13 Check for Intermittent Short to Ground	1. Ignition OFF, engine OFF. 2. Reconnect all connectors. 3. Ignition ON, engine OFF. 4. Monitor Coolant Temperature Sensor Input Voltage data point in Service ADVISOR while gently wiggle wire harness between coolant temperature sensor and ECU J03 connector. *NOTE: The engine coolant temperature sensor input voltage will decrease to approximately 0V when the sensor circuit is shorted to ground.* Was the source of the intermittent short to ground found?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 14

RG41221,0000222 -19-20JAN09-15/23

14 Check for Active DTC 000110.04	Refresh DTCs Is DTC 000110.04 still active?	**YES:** Recheck measurements. GO TO 2 **NO:** Problem is intermittent. Contact DTAC for support.

RG41221,0000222 -19-20JAN09-16/23

15 Replace ECU	1. Replace ECU. 2. Reconnect all electrical connectors. 3. Refresh DTCs. Is DTC 000110.04 still active?	**YES:** Contact DTAC for support. **NO:** Problem fixed.

Continued on next page

RG41221,0000222 -19-20JAN09-17/23

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6 Check Fuel Temperature Sensor Operation	1. With fuel sensor removed from engine, reconnect fuel temperature sensor to its harness connector. 2. Ignition ON, Engine OFF. 3. Monitor the fuel temperature from within Service ADVISOR. 4. Perform one of two steps below. *NOTE: The fuel temperature sensor is more accurate at higher temperatures.* a. Let the sensor cool down to the ambient temperature. b. Place the sensor in hot water and monitor water temperature with a thermometer. Does the sensor reading closely match either the ambient or the hot water temperature?	**YES:** Fuel temperature sensor and harness are OK. Diagnose engine cooling system. GO TO 11 **NO:** Check harness. GO TO 7

RG41221,000022B -19-20JAN09-8/14

7 Check Signal Wire In Harness	1. Ignition OFF, Engine OFF. 2. Disconnect the fuel temperature sensor connector. 3. Ignition ON, Engine OFF. 4. Monitor Fuel Temperature Input Voltage from within Service ADVISOR. Is the voltage greater than 4.90 volts?	**YES:** Wire harness is OK. Replace fuel temperature sensor. GO TO 11 **NO:** GO TO 8

RG41221,000022B -19-20JAN09-9/14

8 Terminal Test	1. Ignition OFF, Engine OFF. 2. Disconnect ECU connector J3. 3. Perform TERMINAL TEST on ECU J3 connector. Were any problems found?	**YES:** Fix problem. GO TO 11 **NO:** GO TO 9

RG41221,000022B -19-20JAN09-10/14

9 Check ECU	1. Ignition ON, Engine OFF. 2. Refresh Codes from within Service ADVISOR. Did 000174.03 reappear active?	**YES:** GO TO 11 **NO:** Replace ECU. GO TO 11

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RG41221,000022B -19-20JAN09-11/14

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000412.16 — EGR Temperature Signal Moderately High

The ECU senses the Exhaust Gas Recirculation (EGR) temperature above specification.

RG41221,000029B -19-20JAN09-1/16

00412.16 — EGR Temperature Signal Moderately High Diagnostic Procedure

Troubleshooting Sequence:
000110.0, 000110.15, and 00110.16
000412.16

When DTC is Displayed:
When the engine has been running 3 minutes and the error is active.

Related Information:

The ECU senses an EGR temperature of 290° C (554° F) on OEM engines.
The engine has to be running for 3 minutes before the code is set.
001569.31 is set when this code is active.

Alarm Level:
Stop

Control Unit Response:
Maximum engine power is derated up to 50 percent.

Additional References:
For further temperature sensor information, see MEASURING TEMPERATURE in Section 03, Group 140 earlier in this manual.
For further EGR temperature sensor information, seeEXHAUST GAS RECIRCULATION (EGR) EXHAUST TEMPERATURE SENSOR in Section 03, Group 140 earlier in this manual.
For more information on engine protection, see ENGINE DERATE AND SHUTDOWN PROTECTION in Section 03, Group 140 earlier in this manual.
For more information on exhaust gas recirculation valve, see EXHAUST GAS RECIRCULATION VALVE in Section 03, Group 135 earlier in this manual.

NOTE: The wiring diagrams provided are for a typical John Deere supplied OEM harness. Wire number, colors and jumper connectors do not apply to all applications.

For wiring information:
- see 9.0L 12V WIRING DIAGRAM 3
- see 9.0L 24V WIRING DIAGRAM 3
located in Section 06, Group 210 later in this manual.

For further information on connector and terminal testing see TERMINAL TEST in Section 04, Group 160 earlier in this manual.

IMPORTANT: When directed to run the HARNESS DIAGNOSTIC MODE TEST the engine temperature should be above freezing. It is recommended that the engine temperature be at least 20° C (68° F). This test is located in Service ADVISOR.

IMPORTANT: Do not force probes into connector terminals or damage will result. Use JDG10466 Connector Adapter Test Kit to make measurements in connectors. This will ensure that terminal damage does not occur.

Flex probe information:
• ECU small terminal - Orange/Blue
• ECU large terminal - Orange/Green
• EGR temperature sensor T03 - Purple/Gray

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RG41221,000029B -19-20JAN09-2/16

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1 Read DTCs and Store Snapshot Information	1. Ignition ON, engine OFF. *NOTE: When DTCs are cleared Snapshot information for ALL DTCs will also be cleared.* 2. Connect Service ADVISOR, see CONNECTING TO SERVICE ADVISOR earlier in this Group. 3. Write down all DTCs and their occurrence count. If any DTCs have snapshot capture or snapshot recording information, save the information. For instructions on saving and using snapshot information, see SNAPSHOT INSTRUCTIONS earlier in this Group. 4. Start or crank engine. 5. Refresh DTCs. Did 000636.10 reappear active with engine running or cranking?	**YES:** GO TO 2 **NO:** GO TO 23

RG41221,0000242 -19-20JAN09-3/25

2 Check for Open or Shorted Sensor Circuit	1. Ignition ON, engine OFF. 2. Perform HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. Is 000636.05, 000636.06, or any DTC with SPN 000637 now active?	**YES:** Discontinue test for 000636.10 and perform test 000636.05 — PUMP POSITION SENSOR CIRCUIT HAS HIGH RESISTANCE DIAGNOSTIC PROCEDURE, 000636.06 — PUMP POSITION SENSOR CIRCUIT HAS LOW RESISTANCE DIAGNOSTIC PROCEDURE, or DTC with SPN 000637. **NO:** GO TO 3

RG41221,0000242 -19-20JAN09-4/25

3 Check for Crank Sensor Signal Problem	1. Ignition OFF, engine OFF. 2. Disconnect crank sensor and secure connector away from rotating components. Ignore DTC 000637.08 which will be generated for the disconnected crank sensor. 3. Ignition ON, engine OFF. 4. Refresh DTCs. 5. Attempt to start engine. 6. Operate engine for one minute through rpm range and monitor DTCs, if engine started. 7. Ignition OFF, engine OFF. 8. Reconnect crank sensor. Did engine start and run without generating 000636.10?	**YES:** Check for loose crankshaft oil pump drive gear. **NO:** GO TO 4

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RG41221,0000242 -19-20JAN09-5/25

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1 Read DTCs and Store Snapshot Information	1. Ignition ON, engine OFF *NOTE: When DTCs are cleared Snapshot information for ALL DTCs will be cleared.* 2. Connect Service ADVISOR, see CONNECTING TO SERVICE ADVISOR earlier in this Group. 3. Write down all DTCs and their occurrence count. If any DTCs have snapshot capture or snapshot recording information, save the information. For instructions on saving and using snapshot information, see SNAPSHOT INSTRUCTIONS earlier in this Group. 4. Run HARNESS DIAGNOSTIC MODE TEST. 5. Refresh codes. Is 000641.13 active?	**YES:** GO TO 2 **NO:** Checks good. Return to service.

RG41221,000024C -19-20JAN09-3/7

2 Actuator Linkage Test	1. Ignition OFF, Engine OFF. **CAUTION: Turbo and linkage may be very hot.** 2. Check turbo to actuator linkage for free movement through it's complete travel, see REMOVE AND INSTALL ACTUATOR LINKAGE in base engine manual. Is linkage movement free?	**YES:** GO TO 3 **NO:** GO TO 5

RG41221,000024C -19-20JAN09-4/7

3 Actuator Linkage Hold Position Check	1. Not the position of the actuator linkage. It should change in the next step. 2. Ignition ON, Engine ON. 3. Linkage should have moved slightly and is being held in that position. Did linkage move and is it being held in position?	**YES:** GO TO 4 **NO:** Remove and replace Actuator. Recalibrate actuator , see TURBOCHARGER ACTUATOR CALIBRATION, in Service ADVISOR.

RG41221,000024C -19-20JAN09-5/7

4 Other Codes Check	1. Ignition ON, Engine OFF. 2. Refresh DTC list. Are there any 000641 error codes active?	**YES:** Troubleshoot those active codes. **NO:** Replace Actuator. Recalibrate actuator , see TURBOCHARGER ACTUATOR CALIBRATION, in Service .

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RG41221,000024C -19-20JAN09-6/7

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5 Input Injector Data Again	1. Select Injector Calibration in Service ADVISOR. 2. Select the injector to calibrate and type in the required information. 3. Select Next. 4. Select Submit. 5. Select OK. 6. Select No. 7. Refresh codes. Is 000653.02 active?	**YES:** GO TO 6 **NO:** Problem fixed, return application to service.

RG41221,0000258 -19-28AUG07-7/14

6 ECU Programming Check	1. Download the latest ECU software payload. 2. Reprogram ECU. Was the ECU programming successful?	**YES:** GO TO 7 **NO:** Check payload and try again.

RG41221,0000258 -19-28AUG07-8/14

7 Input Injector Data Again	1. Select Injector Calibration in Service ADVISOR. 2. Select the injector to calibrate and type in the required information. 3. Select Next. 4. Select Submit. 5. Select OK. 6. Select No. 7. Refresh codes. Is 000653.02 active?	**YES:** Start a DTAC case. **NO:** Problem fixed, return application to service.

RG41221,0000258 -19-28AUG07-9/14

8 Automatic Input of Injector Data	1. Select Injector Calibration in Service ADVISOR. 2. Select the injector to calibrate. 3. Select the sequence number of the injector file downloaded from the list of injectors. 4. Select Next. 5. Select Submit. 6. Select OK. 7. Select No. 8. Refresh codes. Is 000653.02 active?	**YES:** GO TO 9 **NO:** Problem fixed, return application to service.

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RG41221,0000258 -19-28AUG07-10/14

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14 Reconnect and Retest	1. Reconnect all connectors. 2. Ignition ON, engine ON. 3. Refresh DTCs. Did 000655.06 reappear active with engine running?	**YES:** GO TO 1. **NO:** GO TO 15.

RG41221,0000264 -19-20JAN09-16/17

15 Reprogram ECU	1. Download latest ECU payload and reprogram ECU. 2. Ignition ON, engine ON. 3. Refresh DTCs. Did 000655.06 reappear active with engine running?	**YES:** GO TO 1 **NO:** Replace injector #5. GO TO 10

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5 Test ECU	1. Ignition OFF, Engine OFF.	
	2. Disconnect all connectors from ECU.	
	3. Remove ECU from application. Isolate ECU from any hot areas.	
	4. Reconnect ECU connector J2.	
	5. Ignition ON, Engine OFF.	
	6. Wait 20 minutes.	
	7. Refresh codes from within Service ADVISOR.	**YES:** Bad sensor. Replace ECU. GO TO 6
	Is 001136.00 still active?	**NO:** Recheck physical environment. GO TO 1

RG41221,0000275 -19-20JAN09-7/9

6 Verification	1. Ignition OFF, Engine OFF.	
	2. Reconnect all connectors, hoses, sensors, etc.	
	3. Ignition ON, Engine ON.	
	4. Monitor DTCs in Service ADVISOR.	
	5. Let engine run for 10 minutes.	
	6. Refresh DTCs.	
	7. Operate engine through normal speed and load.	**YES:** GO TO 1
	Did DTC 001136.00 reappear as active with engine running?	**NO:** Problem fixed.

RG41221,0000275 -19-20JAN09-8/9

7 Review Snapshot Information	1. Retrieve snapshot information, see SNAPSHOT INSTRUCTIONS earlier in this Group.	**YES:** Found a possible problem. Repair possible problem. Retest.
	2. Review information to see if you can determine a possible problem or the operating point that causes the code to become active.	**YES:** Found operating point at which the code becomes active. Try to determine cause. Repair and retest.
	Did you find a possible problem or the operating point at which the code becomes active?	**NO:** Contact dealer or DTAC.

RG41221,0000275 -19-20JAN09-9/9

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11 Check Sensor Circuit Continuity	On the harness, measure the resistance between: • ECU J03-G2 and Dual Fuel Rail Pressure Sensor P05-3. • ECU J03-A3 and Dual Fuel Rail Pressure Sensor P05-4. • ECU J03-D4 and Dual Fuel Rail Pressure Sensor P05-5. Were all resistance measurements less than 10 ohms?	**YES:** GO TO 12 **NO:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR.

BB78437,0000143 -19-24NOV08-13/23

12 Check for Wire-Wire Short	1. Ignition OFF, engine OFF. 2. Disconnect ECU connectors J01 and J02. 3. Measure the resistance between the terminal(s) with the high voltage from Step 9 and all other terminals in the ECU harness connectors J01, J02, and J03. Was any measurement less than 100k ohms?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 13

BB78437,0000143 -19-24NOV08-14/23

13 Check for Intermittent Short to Voltage	1. Ignition OFF, engine OFF. 2. Reconnect all connectors. 3. Ignition ON, engine OFF. 4. Monitor the Fuel Rail Pressure and Redundant Fuel Rail Pressure Input Voltage data points in Service ADVISOR while gently wiggle wire harness between Dual Fuel Rail Pressure Sensor and ECU J03 connector. *NOTE: Both voltages will increase to approximately 5V when the sensor circuit is shorted to voltage.* Was the source of the intermittent short to voltage found?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** Recheck Measurements. GO TO 9

BB78437,0000143 -19-24NOV08-15/23

14 Terminal Test	1. Ignition OFF, engine OFF. 2. Disconnect ECU J03 connector. 3. Perform TERMINAL TEST on terminals J03-A3, J03-D4, J03-G1, J03-C1, J03-A2 and J03-G2. Were any problems found?	**YES:** Repair problem. Run HARNESS DIAGNOSTIC MODE TEST in Service ADVISOR. **NO:** GO TO 15

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BB78437,0000143 -19-24NOV08-16/23

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1 Read DTCs and Store Snapshot Information	1. Ignition ON, Engine OFF. *NOTE: When DTCs are cleared Snapshot information for ALL DTCs will be cleared.* 2. Connect Service ADVISOR, see CONNECTING TO SERVICE ADVISOR earlier in this Group. 3. Write down all DTCs and their occurrence count. If any DTCs have snapshot capture or snapshot recording information, save the information. For instructions on saving and using snapshot information, see SNAPSHOT INSTRUCTIONS earlier in this Group. 4. Refresh Codes. Did 002630.16 reappear active?	**YES:** GO TO 2 **NO:** GO TO 11

RG41221,0000286 -19-20JAN09-3/13

2 Restricted or Dirty Charge Air Cooler	*NOTE: See application troubleshooting for information on removing, testing, and cleaning charge air cooler.* Make sure that the charge air cooler is clean and free from excess debris. The charge air cooler needs to be cleaned periodically. Is the charge air cooler clean of debris?	**YES:** GO TO 3 **NO:** Clean the charge air cooler. GO TO 10

RG41221,0000286 -19-20JAN09-4/13

3 Preliminary Check of Cooling System	Visually inspect cooling system components. See CHECK AND SERVICE COOLING SYSTEM in base engine manual, Section 04, Group 150. • Remove any blockage on or near radiator. • Inspect radiator hoses for signs of leakage or cracks. • Loose cooling fan belt. See CHECKING BELT TENSIONER SPRING TENSION AND BELT WEAR in base engine manual, Section 02, Group 070. • Malfunctioning cooling fan. See INSPECT AND INSTALL FAN ASSEMBLY in base engine manual, Section 02, Group 070. • Inspect radiator cap for failure. See PRESSURE TEST COOLING SYSTEM AND RADIATOR CAP in base engine manual, Section 04, Group 150. • Check radiator coolant is filled to proper level. • Inspect cooling fan shroud for damage. • Excessively high ambient air temperature. Were any problems found?	**YES:** Fix problem(s). GO TO 10 **NO:** GO TO 4

RG41221,0000286 -19-20JAN09-5/13

4 Terminal Test	1. Ignition OFF, Engine OFF. 2. Disconnect the charge air cooler outlet temperature sensor connector. 3. Perform TERMINAL TEST on the harness and sensor connector. 4. Inspect surrounding ares for pinched or melted wires. Were any defects found?	**YES:** Fix problem. GO TO 10 **NO:** GO TO 5

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RG41221,0000286 -19-20JAN09-6/13

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9 EGR Valve Cleaning Cycle	1. Reconnect EGR valve connector.	
	2. Ignition ON, Engine ON.	
	3. Warm engine to normal operating temperature.	
	4. Run EGR VALVE CLEAN CYCLE test.	
	5. Ignition ON, Engine OFF.	
	6. Run HARNESS DIAGNOSTIC MODE TEST.	**YES:** Troubleshoot that DTC.
	7. Refresh codes.	**NO:** No DTCs appeared. Cleaning fixed problem. Return to service.
	Did 002791.03 or 002791.04 appear active?	**NO:** DTC 002791.02 appeared. Remove and replace EGR valve. Recalibrate using EXHAUST GAS RECIRCULATION VALVE RECALIBRATION.

RG41221,000028C -19-18FEB09-11/14

10 Further Review of Snapshot Information	1. Retrieve snapshot information, see SNAPSHOT INSTRUCTIONS earlier in this Group.	**YES:** Found a possible problem. Repair possible problem. Run HARNESS DIAGNOSTIC MODE TEST.
	2. Review information to see if you can determine a possible problem or the operating point that causes the code to become active.	**YES:** Found operating point at which the code becomes active. GO TO 11
	Did you find a possible problem or the operating point at which the code becomes active?	**NO:** GO TO 12

RG41221,000028C -19-18FEB09-12/14

11 Engine Error Operating Point Test	1. Ignition ON, Engine ON.	
	2. Set engine to operating point that caused error.	**YES:** GO TO 12
	Did Code reappear active?	**NO:** GO TO 10 and review the data again.

Continued on next page

RG41221,000028C -19-18FEB09-13/14

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003510.03 — Sensor Supply #2 Voltage Out of Range High

The ECU detects a supply voltage above specification on the ECU 5 volt supply circuit.

RG41183,0000121 -19-10APR08-1/12

003510.03 — Sensor Supply #2 Voltage Out of Range High Diagnostic Procedure

Troubleshooting Sequence:
003510.03

When DTC is Displayed:
When ever the ignition is on and the error is active.

Related Information:
The ECU detects a supply voltage greater than 5.26 volts on the Sensor Supply #2 circuit.

There are two outputs from this supply. One from J1 and the other from J3. The outputs on J1 are currently not connected to any components.

Alarm Level:
Warning

Sensors Using Sensor Supply #2 Voltage from ECU connector J1:
Currently None.
Sensors Using Sensor Supply #2 Voltage from ECU connector J3:
Intake Manifold Air Pressure Sensor.
Engine Oil Pressure Sensor.
Low Pressure Fuel Pressure Sensor (optional).

Control Unit Response:
The ECU will try to operate normally. Engine performance may be affected.

Additional References:
For more Sensor Supply #2 information, see POWER SUPPLY #2 in Section 03, Group 140 earlier in this manual.

NOTE: The wiring diagrams provided are for a typical John Deere supplied OEM harness. Wire number, colors, and jumper connectors do not apply to all applications.

For wiring information:
- see 9.0L 12V WIRING DIAGRAM 2
- see 9.0L 24V WIRING DIAGRAM 2
located in Section 06, Group 210 later in this manual.

For more information on connector and terminal testing see TERMINAL TEST in Section 04, Group 160 earlier in this manual.

IMPORTANT: When directed to run the HARNESS DIAGNOSTIC MODE TEST the engine temperature should be above freezing. It is recommended that the engine temperature be at least room temperature 20° C (68° F). This test is located in Service ADVISOR.

IMPORTANT: Do not force probes into connector terminals or damage will result. Use JDG10466 Connector Adapter Test Kit to make measurements in connectors. This will ensure that terminal damage does not occur.

Flex probe information:
• ECU small terminal - Orange/Blue
• ECU large terminal - Orange/Green

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RG41183,0000121 -19-10APR08-2/12

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A—See Diagram (1,7,8)
B—Alternator Excitation
C—Male Pin
D—Female Socket
E—120 Ω Resister
F—See Diagram (6)
G—Twisted Pair
H—Shield
I— See Diagram (5,6)
J—Fuel Heater (If Equipped)
K—Original Connection. See Instruction for Update
L—Chassis Ground
M—Fuse (10 Amp)
N—Fuel Heater Relay (If Equipped)
O—Solenoid B+
P—Starter Relay
Q—Starter Solenoid 'S' Terminal
R—Single Point Ground
B1—24 Volt
C02— Accessory Connector A
C07— Accessory Connector B
C09— Control Panel Connector
C10— CAN Terminator
C11— Diagnostic Connector
C12— Transient Voltage Protection (TVP)
C13— Starter Relay Coil Return
C14— Starter Relay Coil Control
C15— Remote Switch
C18— Fuel Heater Option
F01— 30 Amp
F02— 20 Amp
J02— ECU Harness Connector (Red Face)
J2-A1—[5904A Yellow] CAN High
J2-B1—[5905A Dark Green] CAN Low
J2-B2—[5012A Red] Ignition Key Start/Run Switch
J2-K2—[5020A Black] CAN Shield
J2-L1—[5022A Red] Battery Positive
J2-L2—[5050A Black] Battery Negative
J2-L3—[5050B Black] Battery Negative
J2-L4—[5022B Red] Battery Positive
J2-M1—[5022C Red] Battery Positive
J2-M2—[5050C Black] Battery Negative
J2-M4—[5022D Red] Battery Positive
VBatt—Battery Positive

BK53208,000003F -19-03OCT08-2/2

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