

RK: Reductant Injector

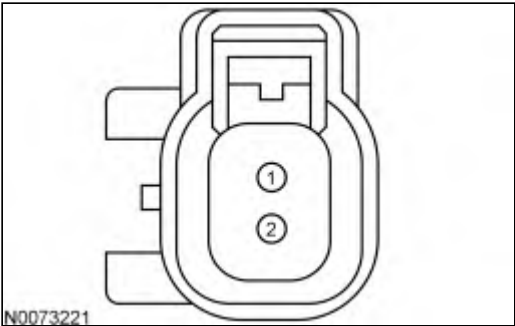
Regeneration may occur during normal operation. During regeneration, diagnostic procedures may display biased values. If a regeneration occurs during diagnostic procedures, allow the process to complete before continuing diagnostics.

This pinpoint test is intended to diagnose the following:

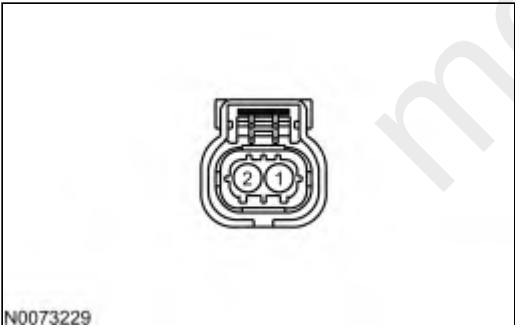
- reductant injector
- harness circuits: RDINJPWR and RDINJGND
- reductant dosage control module (5H298)
- PCM (12A650)

Reductant Injector Solenoid Connector

A

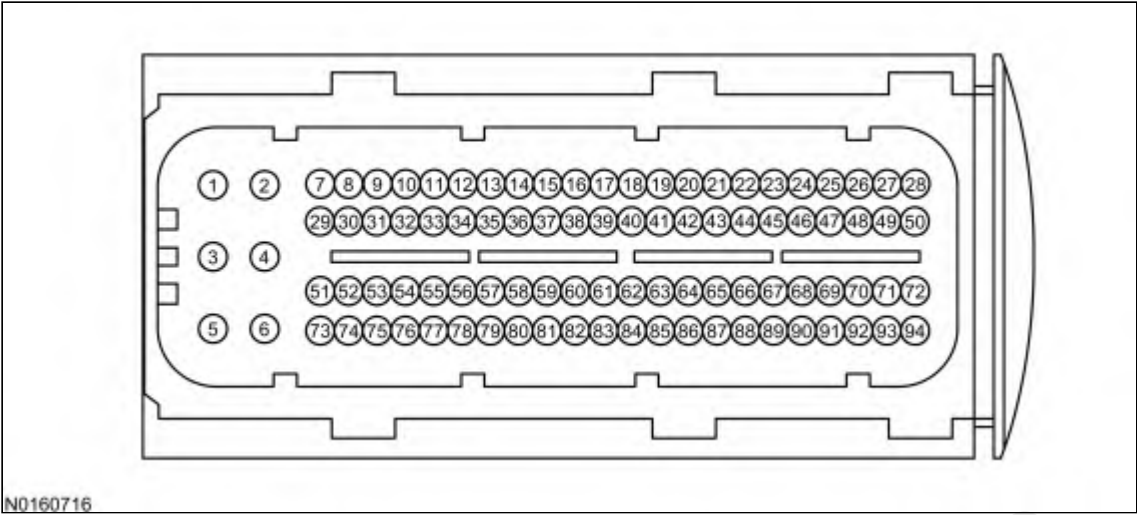


B



Vehicle	Connector	Pin	Circuit
F-650 / F-750	A	2	RDINJGND
		1	RDINJPWR
Transit, Transit Connect	B	2	RDINJGND
		1	RDINJPWR
All other vehicles	A	1	RDINJGND
		2	RDINJPWR

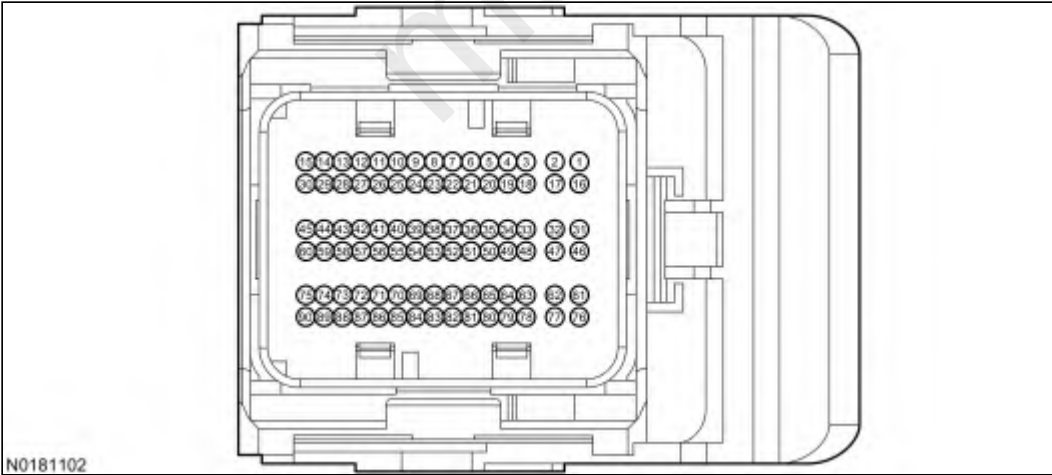
Reductant Dosage Control Module Connector



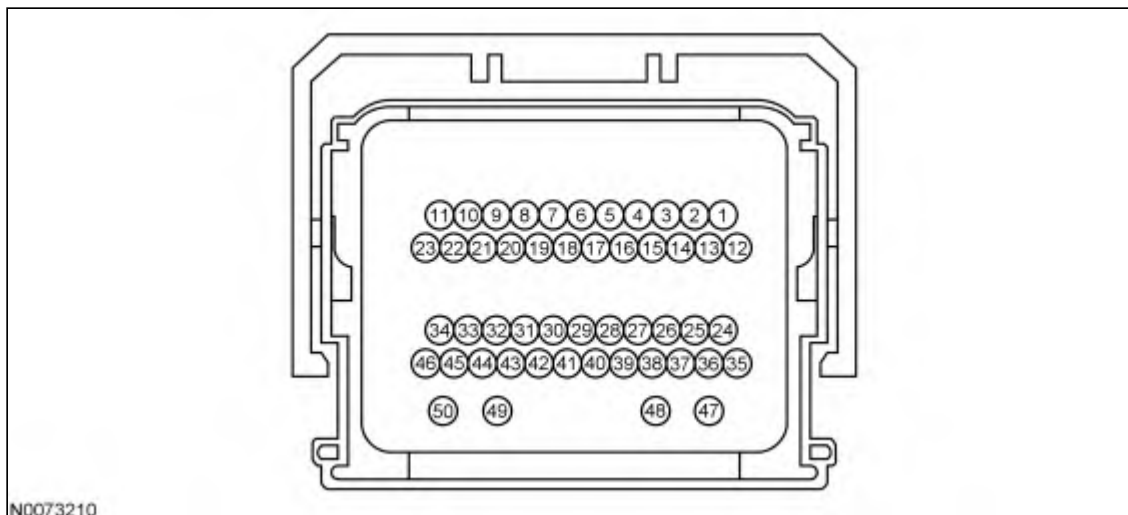
Vehicle	Connector	Pin	Circuit
Transit	A	91 74	RDINJGND RDINJPWR
Transit Connect	A	75 74	RDINJGND RDINJPWR

Powertrain Control Module-T (PCM-T) Connector

A



B



N0073210

Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	62 61	RDINJGND RDINJPWR
All other vehicles	B	14 21	RDINJGND RDINJPWR

RK1 PRELIMINARY DIAGNOSIS

Are DTCs P202D, P202E, P2047, P2048, P2049, P204F, P2054, P2055, P208E, P20FE, P218F, P249D or P249E present?

Yes	For DTCs P249D or P249E, GO to RK9 . For DTCs P202D, P204F, P208E or P218F, GO to RK7 . For all others, GO to RK2 .
No	RETURN to Section 3, Symptom Charts for further direction.

RK2 CHECK THE REDUCTANT INJECTOR SOLENOID RESISTANCE

- Ignition OFF.
- Reductant Injector Solenoid connector disconnected.
- Measure the resistance between:

(+) Reductant Injector Solenoid Connector, Component Side	(-) Reductant Injector Solenoid Connector, Component Side
RDINJPWR	RDINJGND

Is the resistance between 11 - 13 ohms?

Yes	GO to RK3 .
No	For F-650 / F-750 with DTC P202E, INSTALL a new Reductant Injector solenoid. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CARRY OUT the Selective Catalytic Reduction (SCR) System Procedure. REFER to Section 2, Drive Cycles .

Clear the PCM DTCs. REPEAT the self-test.

For all others, INSTALL a new Reductant Injector solenoid.

REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RK3 CHECK THE REDUCTANT INJECTOR CIRCUITS FOR AN OPEN

- For Transit and Transit Connect,
- Reductant Dosage Control Module connector disconnected.
- Measure the resistance between:

(+) Reductant Injector Solenoid Connector, Harness Side	(-) Reductant Dosage Control Module Connector, Harness Side
RDINJPWR	RDINJPWR
RDINJGND	RDINJGND

- For all others,
- PCM-T connector disconnected.
- Measure the resistance between:

(+) Reductant Injector Solenoid Connector, Harness Side	(-) PCM-T Connector, Harness Side
RDINJPWR	RDINJPWR
RDINJGND	RDINJGND

Are the resistances less than 5 ohms?

Yes	GO to RK4 .
No	For F-650 / F-750 with DTC P202E, REPAIR the open circuit. CARRY OUT the Selective Catalytic Reduction (SCR) System Procedure. REFER to Section 2, Drive Cycles . Clear the PCM DTCs. REPEAT the self-test. For all others, REPAIR the open circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RK4 CHECK THE REDUCTANT INJECTOR CIRCUITS FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Reductant Injector Solenoid Connector, Harness Side	(-)
RDINJPWR	Ground
RDINJGND	Ground

Are the resistances greater than 10K ohms?

Yes	GO to RK5 .
No	REPAIR the short circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RK5 CHECK THE REDUCTANT INJECTOR CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Reductant Injector Solenoid Connector, Harness Side	(-)
RDINJPWR	Ground
RDINJGND	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.
No	GO to RK6 .

RK6 CHECK FOR THE REDUCTANT INJECTOR CIRCUITS SHORTED TOGETHER

- Measure the resistance between:

(+) Reductant Injector Solenoid Connector, Harness Side	(-) Reductant Injector Solenoid Connector, Harness Side
RDINJPWR	RDINJGND

Is the resistance greater than 10K ohms?

Yes	For Transit and Transit Connect, GO to RK10 . For all others, GO to RK11 .
No	REPAIR the short circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RK7 CARRY OUT THE SCR DOSING MEASUREMENT TEST

Note: Verify there are no low diesel exhaust fluid warnings on the message center. Fill the reductant tank as needed.

Note: Check for external leaks during the SCR Dosing Measurement Test. Repair as necessary.

Note: During the SCR Dosing Measurement Test the REDUCT_PMP_DC PID value may cycle above 50%.

- Ignition OFF.
- Remove the reductant injector from the SCR catalyst. Leave the electrical connector and reductant pressure line connected.
- Install the Tool, 5.4L Injector Test 310-190 or equivalent to the reductant injector.
- Carry out the SCR Dosing Measurement Test on the scan tool.
- Monitor the REDUCT_TNK_P (PRESS) and REDUCT_PMP_DC (PER) PIDs during the test.
- Record the amount of reductant fluid generated by the reductant injector. The normal operation of a reductant injector is 40-50 ml (1.35-1.69 oz) during the test.
- Record the REDUCT_TNK_P PID during the test. The PID value should increase to greater than 345 kPa (50 psi) during the test.
- Record the REDUCT_PMP_DC PID value during the test. The PID value should be less than 50% after the generated pressure is above 345 kPa (50 psi).

Is a concern present?

Yes	For DTCs P204F or P218F, INSPECT the reductant pressure line for kinks or other restrictions. If no
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	concerns are present, GO to RK8. For DTC P208E, INSTALL a new Reductant Injector solenoid. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the RDCM and PCM DTCs. REPEAT the self-test. For all others, CHECK the reductant sample for urea concentration and contamination using the appropriate test equipment. REFER to Section 1, Engine Control Components, Selective Catalytic Reduction (SCR) Catalyst for additional information. If a concern is still present, Clear the RDCM and PCM DTCs. REPEAT the self-test.
No	The system is operating correctly at this time.

RK8 INSTALL A NEW REDUCTANT INJECTOR

- Install a new Reductant Injector solenoid. Refer to the Workshop Manual Section 303-08, Engine Emission Control.
- For Transit and Transit Connect,
- Clear the DCU DTCs.
- Carry out the DCU self-test.
- For all others,
- Clear the PCM DTCs.
- Carry out the PCM self-test.

Are DTCs P204F or P218F still present?

Yes	GO to Pinpoint Test RG .
No	The system is operating correctly at this time. CARRY OUT the Selective Catalytic Reduction (SCR) System Procedure. REFER to Section 2, Drive Cycles. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RK9 VERIFY CORRECT SCR SYSTEM OPERATION

Note: Follow all the scan tool instructions during and after the manual regeneration.

- Ignition OFF.
- Remove the reductant injector from the SCR catalyst. Leave the electrical connector and reductant pressure line connected.
- Install the Tool, 5.4L Injector Test 310-190 or equivalent to the reductant injector.
- Carry out the SCR Dosing Measurement Test on the scan tool.
- Check the quality of the reductant sample using the appropriate test equipment. Replace the reductant if necessary. Refer to Section 1, [Engine Control Components](#), Selective Catalytic Reduction (SCR) Catalyst for additional information.
- Carry out the diesel particulate filter manual regeneration with the scan tool. Refer to Section 2, [Scan Tool Setup and Functionality](#).
- Carry out the SCR parameter reset. Refer to the scan tool manufacturer's manual for specific information on the scan tool setup, operation, and specific cables and adapters required.
- For Transit and Transit Connect,
- Clear the DCU DTCs.
- Carry out the DCU self-test.
- For all others,
- Clear the PCM DTCs.
- Carry out the PCM self-test.

Is a concern still present?

Yes	INSTALL a new Selective Catalytic Reduction (SCR) Catalyst. REFER to the Workshop Manual Section 309-00, Exhaust System. CARRY OUT the Diesel Particulate Regeneration System DPF Parameter Reset function on the scan tool. REFER to Section 2, Resetting The Diesel Particulate Filter Parameter. CARRY OUT the Reset And Clear The Specified Function Oxidation Catalyst and the SCR System SCR Parameter Reset on the scan tool. REFER to Section 2, Clear The Continuous Diagnostic Trouble Codes (DTCs) And Reset The Emission Monitors Information in The Powertrain Control Module (PCM). Clear the RDCM and PCM DTCs. REPEAT the self-test.
No	The system is operating correctly at this time.

RK10 CHECK FOR CORRECT REDUCTANT DOSAGE CONTROL MODULE OPERATION

- Reductant Dosage Control Module connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect the reductant dosage control module connector and make sure it seats correctly.
- Carry out the DCU self-test.
- Verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new Reductant Dosage Control module. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

RK11 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.