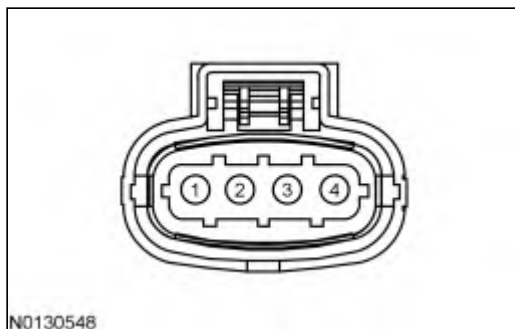
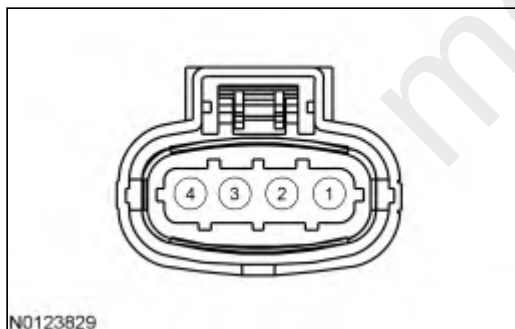


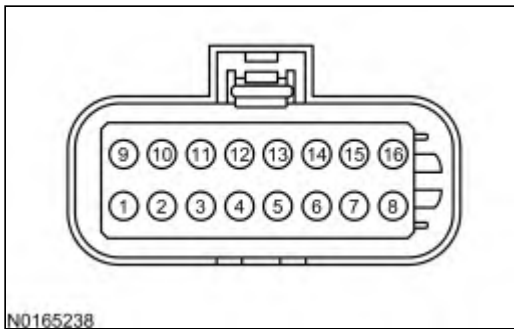
RG: Reductant Pump

Note: 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:

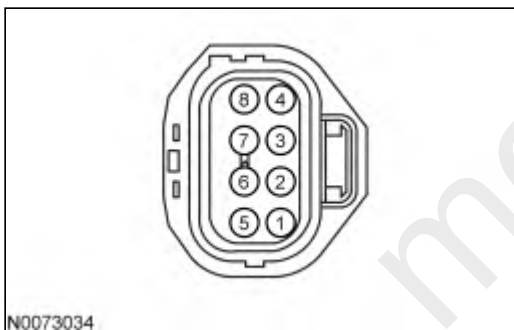
- reductant pump
- reductant pump control module
- harness circuits: RDPAP, RDPBP, RDPC, RDPCP, RDPGND, RDPM and VPWR
- reductant dosage control module (5H298)
- PCM (12A650)

Reductant Pump Assembly Connector**A****B****C**



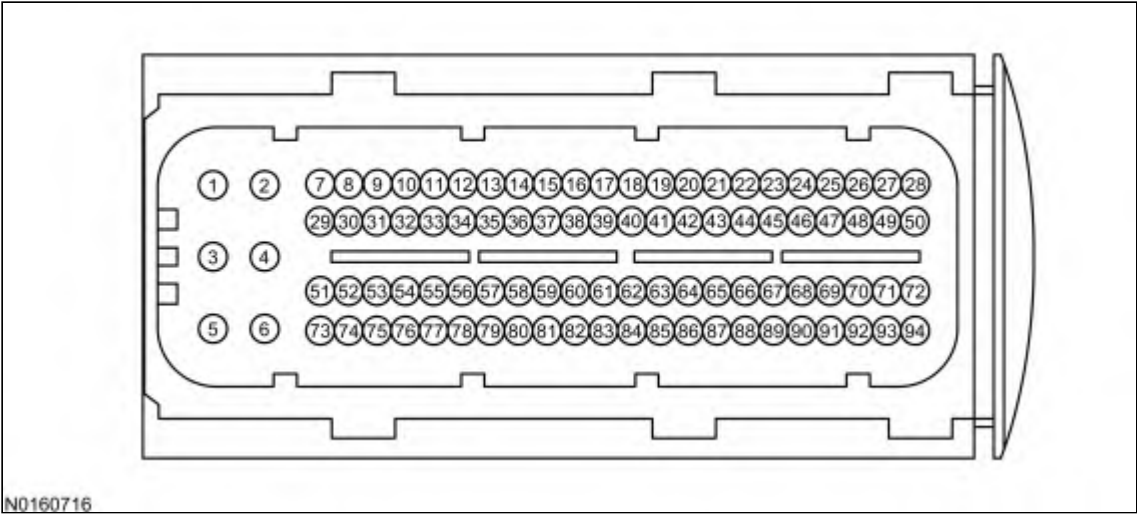
Vehicle	Connector	Pin	Circuit
Transit	A	3	VPWR
		3	RDPC
Transit Connect	B	3	RDPC
All other vehicles	C	16	RDPCP
		8	RDPBP
		7	RDPAP
		11	GND
		15	GND

Reductant Pump Control Module Connector



Pin	Circuit
7	RDPCP (Reductant Pump C Phase)
2	RDPBP (Reductant Pump B Phase)
6	RDPAP (Reductant Pump A Phase)
3	RDPM (Reductant Pump Monitor)
4	RDPC (Reductant Pump Control)
1	GND (Ground)
5	VPWR (Vehicle Power)

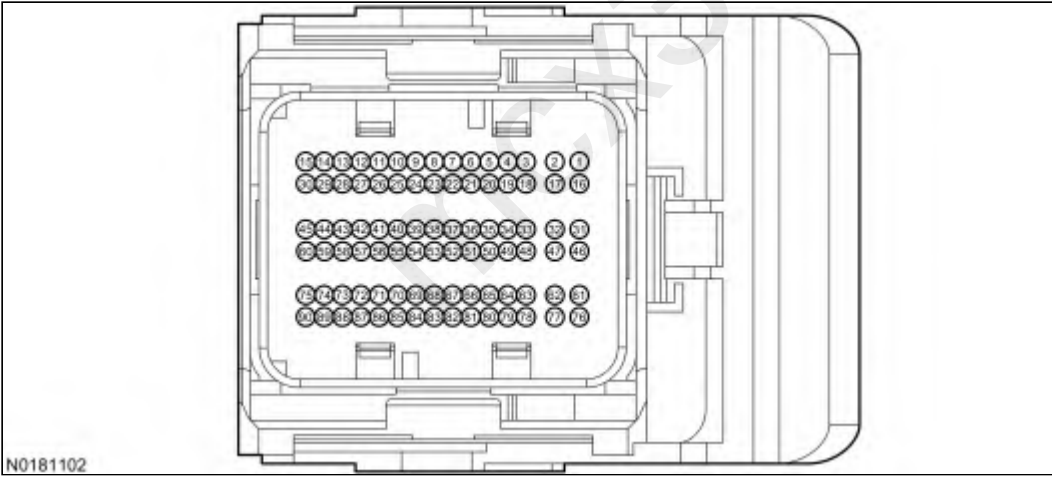
Reductant Dosage Control Module Connector



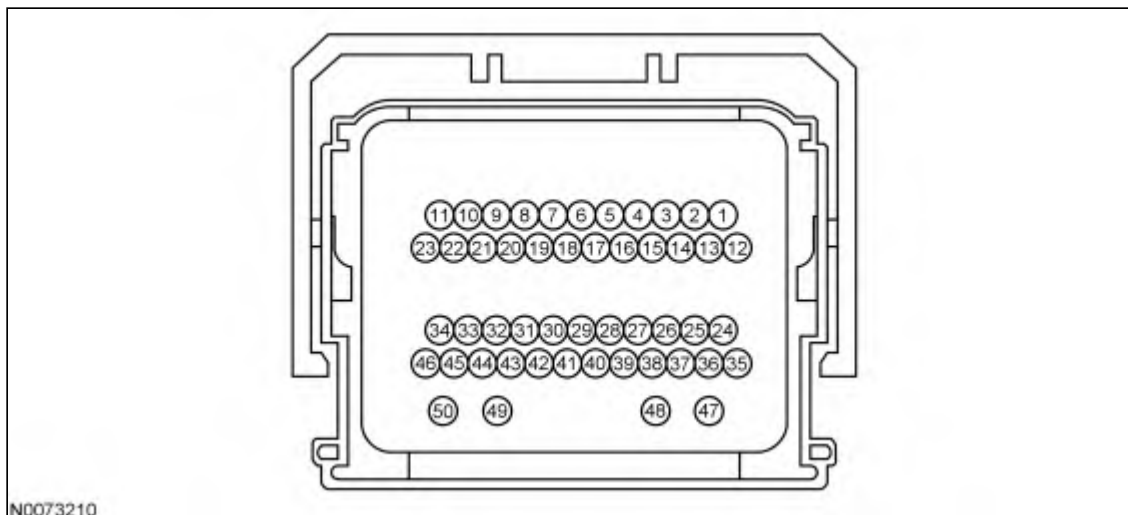
Pin	Circuit
29	RDPC (Reductant Pump Control)

Powertrain Control Module-T (PCM-T) Connector

A



B



N0073210

Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	20 17	RDPM RDPC
All other vehicles	B	29 23	RDPM RDPC

RG1 PRELIMINARY DIAGNOSIS

Are DTCs P130E, P208A, P208B, P208C, P208D, P20E8, P20E9, P20FF, P204F, P218F, P214E, P21CB, P21CC or U040F present?

Yes	For Transit, GO to RG2 . For all others with DTC P20FF, INSTALL a new Reductant Pump Control Module. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CLEAR the DTCs. REPEAT the self-test. For all others, GO to RG7 .
No	RETURN to Section 3, Symptom Charts for further direction.

RG2 CHECK THE REDUCTANT PUMP MOTOR FOR INTERNAL SHORTS

- Reductant Pump Assembly connector disconnected.
- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Component Side	(-) Reductant Pump Assembly Connector, Component Side
RDPC	GND
RDPC	GND

Are the resistances greater than 10K ohms?

Yes	GO to RG3 .
No	INSTALL a new Reductant Pump assembly. REFER to the Workshop Manual Section 303-08, Engine

Emission Control. Clear the RDCM and PCM DTCs. REPEAT the self-test.
--

RG3 CHECK THE VPWR CIRCUIT FOR VOLTAGE

Note: The VPWR voltage will drop soon after the ignition is turned ON. Connect the digital multimeter before turning the ignition ON.

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

(+) Reductant Pump Assembly Connector, Harness Side	(-)
VPWR	Ground

- Immediately record the voltage value on the digital multimeter.

Is the voltage greater than 10 V?

Yes	GO to RG4 .
No	REPAIR the open circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RG4 CHECK THE RDPC AND GND CIRCUITS FOR AN OPEN

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

(+) Reductant Pump Assembly Connector, Harness Side	(-) Reductant Dosage Control Module Connector, Harness Side
RDPC	RDPC - Pin 29

- For all others,
- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Harness Side	(-) Reductant Dosage Control Module Connector, Harness Side
RDPC	RDPC - Pin 29
GND	RDPGND

Are the resistances less than 5 ohms?

Yes	GO to RG5 .
No	For DTC P130E, REPAIR the open circuit. CARRY OUT the Selective Catalytic Reduction (SCR) System Procedure. REFER to Section 2, Drive Cycles . DRIVE the vehicle until the system warning message has cleared from the instrument cluster message center. Clear the RDCM and PCM DTCs. REPEAT the self-test. For all others, REPAIR the open circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RG5 CHECK THE RDPC CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Harness Side	(-)
RDPC	Ground

Is the resistance greater than 10K ohms?

Yes	GO to RG6 .
No	REPAIR the short circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.

RG6 CHECK THE RDPC CIRCUIT FOR A SHORT TO VOLTAGE

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

(+) Reductant Pump Assembly Connector, Harness Side	(-)
RDPC	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the RDCM and PCM DTCs. REPEAT the self-test.
No	GO to RG19 .

RG7 CHECK THE VOLTAGE TO THE REDUCTANT PUMP CONTROL MODULE

- Ignition OFF.
- Reductant Pump Control Module connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Reductant Pump Control Module Connector, Harness Side	(-)
VPWR - Pin 5	Ground

Is the voltage greater than 10.5 V?

Yes	GO to RG8 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

RG8 CHECK THE GND CIRCUIT FOR AN OPEN

- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-)
GND - Pin 1	Ground

Is the resistance less than 5 ohms?

Yes	GO to RG9 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

RG9 CHECK THE RDPC AND RDPM CIRCUITS FOR AN OPEN

- PCM-T connector disconnected.
- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-) PCM-T Connector, Harness Side
RDPC - Pin 4	RDPC
RDPM - Pin 3	RDPM

Are the resistances less than 5 ohms?

Yes	GO to RG10 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

RG10 CHECK THE RDPC AND RDPM CIRCUITS FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-)
RDPC - Pin 4	Ground
RDPM - Pin 3	Ground

Are the resistances greater than 10K ohms?

Yes	GO to RG11 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

RG11 CHECK THE RDPC AND RDPM CIRCUITS FOR A SHORT TO VOLTAGE

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

(+) Reductant Pump Control Module Connector, Harness Side	(-)
RDPC - Pin 4	Ground
RDPM - Pin 3	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to RG12 .

RG12 CHECK THE REDUCTANT PUMP MOTOR FOR INTERNAL SHORTS

- Ignition OFF.
- Reductant Pump Assembly connector disconnected.
- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Component Side	(-) Reductant Pump Assembly Connector, Component Side
RDPAP	GND
RDPBP	GND
RDPCP	GND
RDPAP	GND
RDPBP	GND
RDPCP	GND

Are the resistances greater than 10K ohms?

Yes	GO to RG13 .
No	INSTALL a new Reductant Pump assembly. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test.

RG13 CHECK THE REDUCTANT PUMP MOTOR RESISTANCE

- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Component Side	(-) Reductant Pump Assembly Connector, Component Side
RDPAP	RDPBP
RDPAP	RDPCP
RDPBP	RDPCP

Are the resistances between 0.36 - 0.42 ohms?

Yes	GO to RG14 .
No	INSTALL a new Reductant Pump assembly. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test.

RG14 CHECK THE REDUCTANT PUMP MOTOR DRIVE CIRCUITS FOR AN OPEN

- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-) Reductant Pump Assembly Connector, Harness Side
RDPAP - Pin 6	RDPAP

(+) Reductant Pump Control Module Connector, Harness Side	(-) Reductant Pump Assembly Connector, Harness Side
RDPBP - Pin 2	RDPBP
RDPCP - Pin 7	RDPCP

Are the resistances less than 5 ohms?

Yes	GO to RG15 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

RG15 CHECK THE REDUCTANT PUMP MOTOR DRIVE CIRCUITS FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Harness Side	(-)
RDPAP	Ground
RDPBP	Ground
RDPCP	Ground

Are the resistances greater than 10K ohms?

Yes	For DTCs P208A, P208B, P208C or P208D, GO to RG16 . For all others, GO to RG17 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

RG16 CHECK FOR THE RDPAP, RDPBP AND RDPCP CIRCUITS SHORTED TOGETHER

- Ignition OFF.
- Reductant Pump Assembly connector disconnected.
- Measure the resistance between:

(+) Reductant Pump Assembly Connector, Harness Side	(-) Reductant Pump Assembly Connector, Harness Side
RDPAP	RDPBP
RDPAP	RDPCP
RDPBP	RDPCP

Are the resistances greater than 10K ohms?

Yes	INSTALL a new Reductant Pump assembly. REFER to the Workshop Manual Section 303-03, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test.
No	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.

RG17 CHECK THE REDUCTANT PUMP MOTOR DRIVE CIRCUITS FOR A SHORT TO VOLTAGE

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

(+) Reductant Pump Assembly Connector, Harness Side	(-)
RDPAP	Ground
RDPBP	Ground
RDPCP	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to RG18 .

RG18 INTERMITTENT CHECK

- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-) PCM-T Connector, Harness Side
RDPC - Pin 4	RDPC
RDPM - Pin 3	RDPM

- While monitoring the resistance measurement, wiggle, shake, and bend small sections of the wiring harness while working from the reductant pump control module to the PCM.
- Measure the resistance between:

(+) Reductant Pump Control Module Connector, Harness Side	(-) Reductant Pump Assembly Connector, Harness Side
RDPAP - Pin 6	RDPAP
RDPBP - Pin 2	RDPBP
RDPCP - Pin 7	RDPCP

- While monitoring the resistance measurement, wiggle, shake, and bend small sections of the wiring harness while working from the reductant pump control module to the reductant pump assembly.

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	For DTC U040F, INSTALL a new Reductant Pump Control Module. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test. For all others, GO to RG19 .

RG19 CHECK FOR CORRECT REDUCTANT PUMP OPERATION

- For Transit,

- Reductant Pump Assembly connector connected.
- Reductant Dosage Control Module connector connected.
- Ignition ON, engine OFF.
- Access the DCU and monitor the REDUCT_TNK_P (PRESS) PID.
- Carry out the SCR Leak Test on the scan tool to pressurize the system.
- For all others,
- PCM-T connector connected.
- Reductant Pump Assembly connector connected.
- Reductant Pump Control Module connector connected.
- Ignition ON, engine OFF.
- Access the PCM and monitor the REDUCT_TNK_P (PRESS) PID.
- Carry out the SCR Leak Test on the scan tool to pressurize the system.

Does the REDUCT_TNK_P PID value increase to greater than 65 psi?

Yes	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
No	INSTALL a new Reductant Pump assembly. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the RDCM and PCM DTCs. REPEAT the self-test.