

J: Mass Airflow (MAF) Sensor

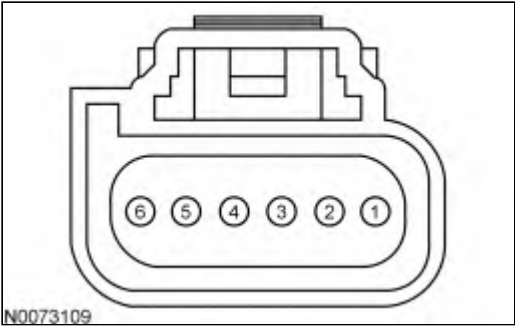
Note: Regeneration may occur during normal operation. During regeneration, diagnostic procedures may display biased values. If a regeneration occurs during diagnostic procedures, allow the process to complete before continuing diagnostics.

This pinpoint test is intended to diagnose the following:

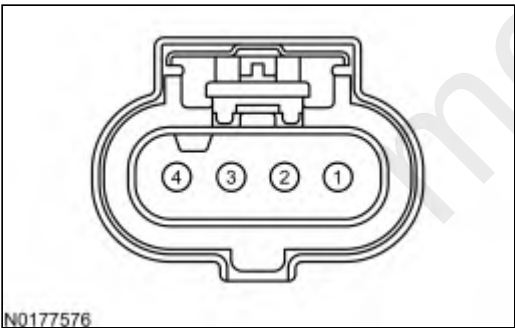
- mass air flow/intake air temperature (MAF/IAT) sensor (12B579)
- harness circuits: MAF, SIGNAL, SIGRTN, and VPWR
- PCM (12A650)

Mass Airflow/Intake Air Temperature (MAF/IAT) Sensor Connector

A



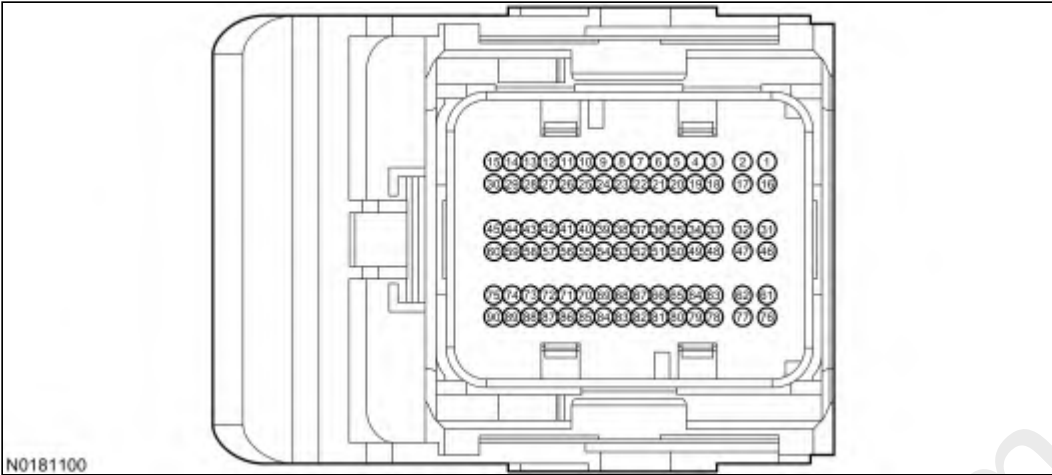
B



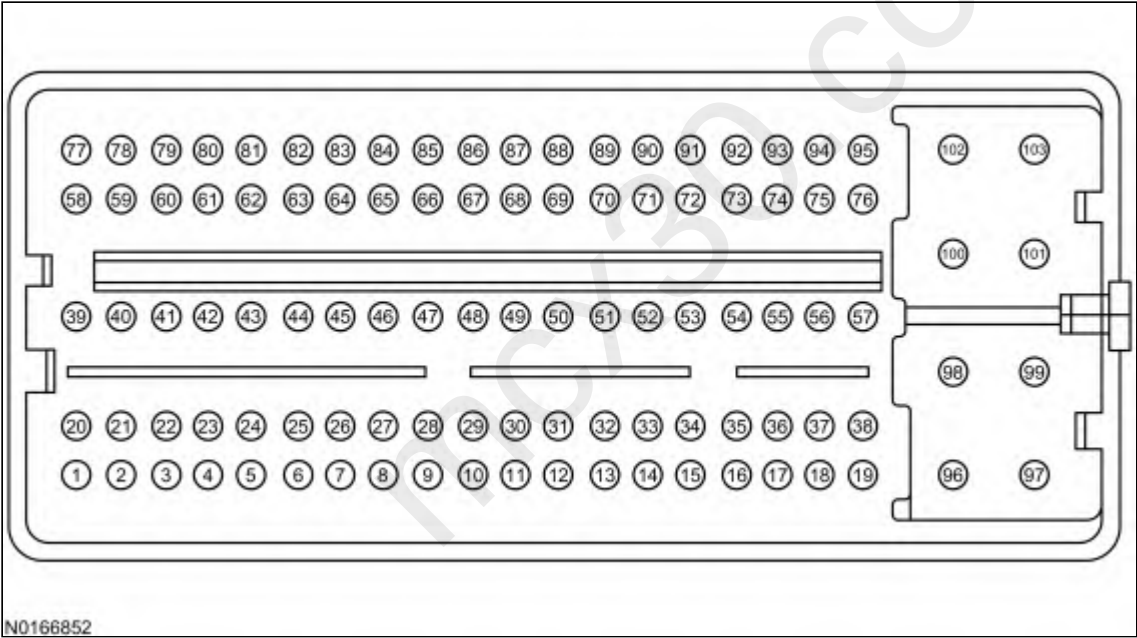
Vehicle	Connector	Pin	Circuit
F-150, F-650 / F-750, Transit, Transit Connect	A	5 3 4	MAF VPWR SIGRTN
F-Series Super Duty	B	1 3 2	SIGNAL SIGRTN VREF

Powertrain Control Module-B (PCM-B) Connector

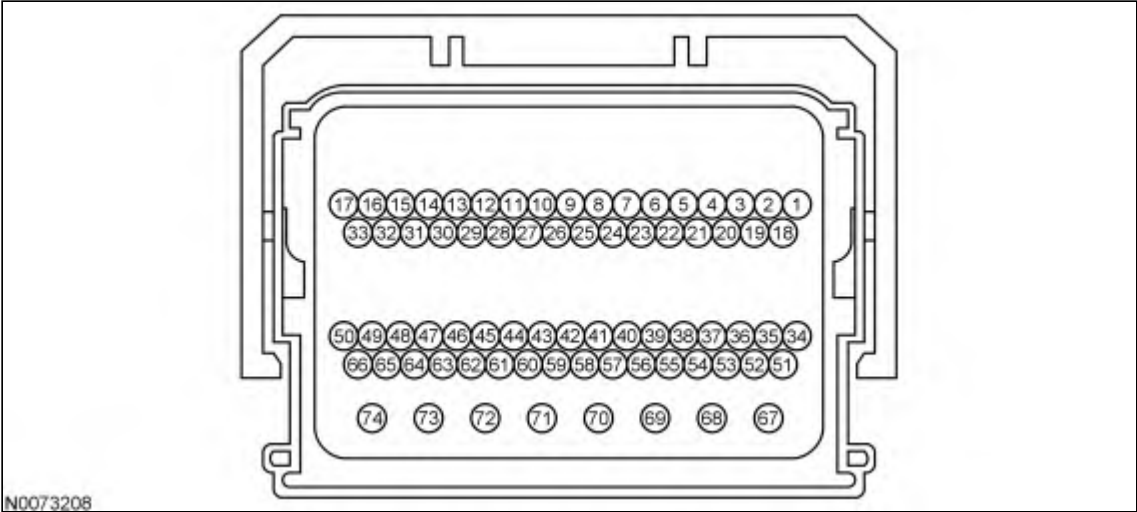
A



B

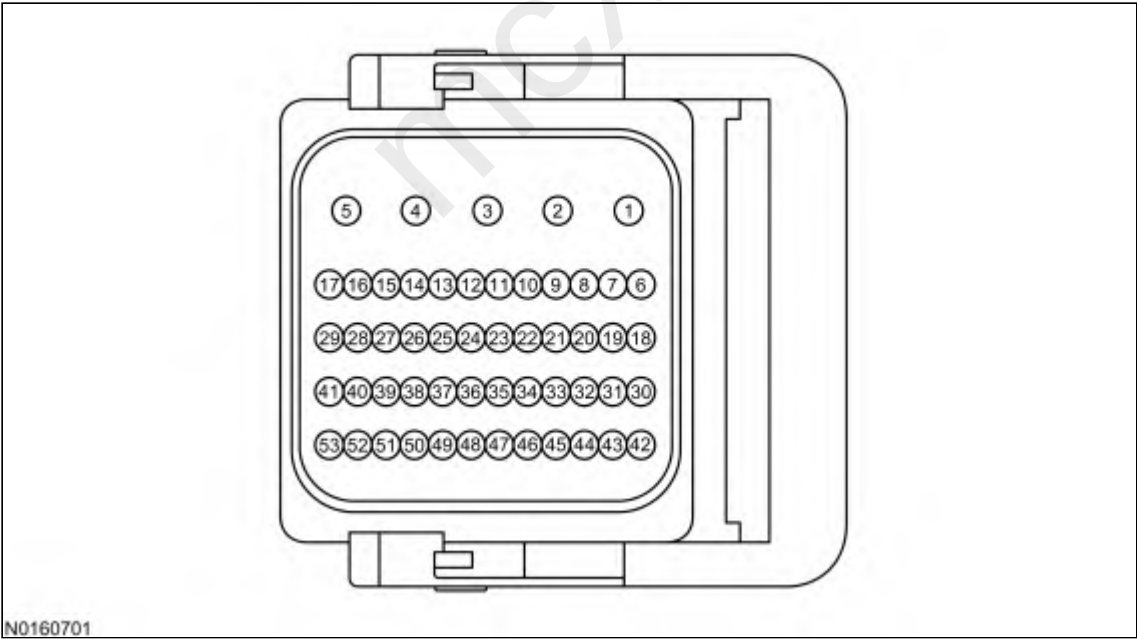


C



Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	11 10	SIGRTN SIGNAL
Transit Connect	B	30 4	MAF SIGRTN
All other vehicles	C	40 60	MAF SIGRTN

Powertrain Control Module-T (PCM-T) Connector



Pin	Circuit
15	SIGRTN (Signal Return)

Pin	Circuit
24	MAF (Mass Airflow)

J1 PRELIMINARY DIAGNOSIS

Note: Diagnose circuit DTCs before range or performance DTCs.

Are DTCs P00BC, P00BD, P00C7, P00F2, P00F3, P0100, P0101, P0102, P0103, P0110, P0111, P012A, P02EC, P02ED, P1102, P1103, P2073, P2074, U060F or U068B present?

Yes	For F-Series Super Duty, GO to J2 . For all others, GO to J3 .
No	For symptoms without DTCs, GO to J3 . For all others, RETURN to Section 3, Symptom Charts for further direction.

J2 CHECK FOR VOLTAGE AT THE SENSOR

- Ignition OFF.
- MAF/IAT Sensor connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) MAF/IAT Sensor Connector, Harness Side
VREF	SIGRTN

Is the voltage between 4.5 - 5.5 V?

Yes	GO to J3 .
No	GO to Pinpoint Test B .

J3 CHECK THE INTAKE AIR SYSTEM FOR CORRECT INSTALLATION, DAMAGE, LEAKS OR RESTRICTIONS

Note: Visually inspect the vehicle for aftermarket accessories and performance modifications (exhaust system, turbocharger, performance chip). Refer to Section 1 [Engine Control \(EC\) System](#), Modifications to OBD Vehicles.

Note: All PIDs may not be available on all vehicles.

- Ignition OFF.
- Check all the intake air system components for correct installation, damage, leaks, or restrictions. Refer to the Workshop Manual Section 303-12, Intake Air Distribution And Filtering and Section 303-14, Electronic Engine Controls, removal and installation procedures for correct installation of the intake air system components.
- Check the throttle body bore for sludge.
- Check the crankcase ventilation system for leaks or restrictions.
- Check the charge air cooler (CAC) system for leaks or restrictions.
- Access the PCM and monitor the MAFLRN_AIDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Is a concern present?

Yes	REPAIR as necessary. For F-150, with MAFLRN_AIDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test.
------------	---

	For F-150, with MAFLRN_IDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.
No	For F-Series Super Duty, GO to J5. For all others, GO to J4.

J4 CHECK FOR VOLTAGE AT THE SENSOR

Note: All PIDs may not be available on all vehicles.

- MAF/IAT Sensor connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
VPWR	Ground

- Access the PCM and monitor the MAFLRN_AIDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Is the voltage greater than 10.5 V?

Yes	GO to J5 .
No	REPAIR the open circuit. For F-150, with MAFLRN_AIDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_AIDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.

J5 CHECK FOR AN OPEN

Note: All PIDs may not be available on all vehicles.

- Ignition OFF.
- For Transit,
- PCM-T connector disconnected.
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) PCM-T Connector, Harness Side
MAF	MAF - Pin 24
SIGRTN	SIGRTN - Pin 15

- For F-Series Super Duty,
- PCM-B connector disconnected.
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) PCM-B Connector, Harness Side
SIGNAL	SIGNAL
SIGRTN	SIGRTN

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

(+) MAF/IAT Sensor Connector, Harness Side	(-) PCM-B Connector, Harness Side
MAF	MAF
SIGRTN	SIGRTN

- Access the PCM and monitor the MAFLRN_AIDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Are the resistances less than 5 ohms?

Yes	GO to J6 .
No	REPAIR the open circuit. For F-150, with MAFLRN_AIDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_AIDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.

J6 CHECK FOR A SHORT TO GROUND

Note: All PIDs may not be available on all vehicles.

- For F-Series Super Duty,
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
SIGNAL	Ground

- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) MAF/IAT Sensor Connector, Harness Side
SIGNAL	SIGRTN

- For all others,
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
MAF	Ground

- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) MAF/IAT Sensor Connector, Harness Side
MAF	SIGRTN

- Access the PCM and monitor the MAFLRN_IDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Are the resistances greater than 10K ohms?

Yes	GO to J7 .
No	REPAIR the short circuit. For F-150, with MAFLRN_IDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_IDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.

J7 CHECK FOR A SHORT TO VOLTAGE

Note: All PIDs may not be available on all vehicles.

- Ignition ON, engine OFF.
- For F-Series Super Duty,
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
SIGNAL	Ground

- For all others,
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
MAF	Ground

- Access the PCM and monitor the MAFLRN_AIDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Is any voltage present?

Yes	REPAIR the short circuit. For F-150, with MAFLRN_AIDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_AIDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.
No	GO to J8 .

J8 INTERMITTENT CHECK

Note: The MAF_HZ PID value fluctuates while the engine is running.

Note: All PIDs may not be available on all vehicles.

- Ignition OFF.
- MAF/IAT Sensor connector connected.
- For Transit,
- PCM-T connector connected.

- For all others,
- PCM-B connector connected.
- Ignition ON, engine running.
- Access the PCM and control the EGR_A_CMD (PER) PID.
- Decrease the EGR_A_CMD PID to 0%.
- Access the PCM and control the EGRTP_CMD (PER) PID.
- Decrease the EGRTP_CMD PID to 0%.
- Access the PCM and control the VGTDC (PER) PID.
- Decrease the VGTDC PID to 0%.
- Access the PCM and monitor the MAF_HZ (FREQ) PID.
- Record the MAF_HZ PID high and low values.
- Set the scan tool MAF_HZ PID graph limits 0.2 kHz above and below the previously recorded high and low values.
- While observing the PID, wiggle the harness from the MAF/IAT sensor to the PCM.
- Access the PCM and monitor the MAFLRN_IDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Does the MAF_HZ PID reading exceed the set limits range?

Yes	For F-150, with MAFLRN_IDLE values between -0.06 and 0.06, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_IDLE values less than -0.06 or greater than 0.06, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values between 0.00 and 0.12, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values less than 0.00 or greater than 0.12, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.
No	For DTCs U060F or U068B, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test. For all others, GO to J9.

J9 CHECK THE INTAKE AIR SYSTEM FOR LEAKS AND RESTRICTIONS

NOTICE: Pressure above 241 kPa (35 psi) can cause damage to system components. Regulate the shop air to 137.9 kPa (20 psi) before connecting to the system.

Note: Remember to reinstall the manifold absolute pressure (MAP) sensor (Transit) or the exhaust gas recirculation temperature bank 1, sensor 2 (EGRT12) (all others) and remove the plastic bag from the air filter at the completion of this step.

Note: All PIDs may not be available on all vehicles.

- Ignition OFF.
- For Transit,
- Remove the MAP sensor.
- For all others,
- Remove the EGRT12 sensor.

- Place the air filter in a plastic bag to prevent air flow out the intake port and reinstall it in the vehicle.
- Connect the Rotunda Smoke Machine, Fuel Evaporative Emission System Tester 218-00001 (522) or equivalent to the intake air system using the appropriate adapter for the sensor fitting.
- Fill the intake air system with smoke.
- Pressurize the intake air system with 137.9 kPa (20 psi) regulated shop air.
- Check the intake air system for leaks and restrictions.
- Access the PCM and monitor the MAFLRN_IDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Are any leaks or restrictions present?

Yes	REPAIR the leaks or restrictions. For F-150, with MAFLRN_IDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_IDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750, Transit and Transit Connect, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values between 0.00 and 0.12, Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_IDLE PID values less than 0.00 or greater than 0.12, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.
No	For DTC P00F3, GO to J11. For DTC P0111, GO to J12. For DTC P00C7, GO to J13. For Transit Connect with DTC P2073, INSTALL a new EGR valve. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For Transit Connect with out DTC P2073, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, GO to J10.

J10 CHECK MAF SENSOR OPERATION

Note: All PIDs may not be available on all vehicles.

- Ignition ON, engine running.
- Access the PCM and monitor the MAF_HZ (FREQ) PID.
- Access the PCM and control the EGRVPDES (PER) PID.
- Decrease the commanded PID to the minimum value.
- Access the PCM and control the EGRTP_CMD (PER) PID.
- Decrease the EGRTP_CMD PID to 0%.
- Access the PCM and control the VGTDC (PER) PID.
- Decrease the VGTDC PID to 0%.

- Monitor the MAF_HZ PID at idle and record the value.
- Access the PCM and control the RPMDSD (RPM) PID.
- Increase the engine speed to 2,000 RPM.
- Record the MAF_HZ PID value.
- Access the PCM and monitor the MAFLRN_AIDLE (NUM) and MAFLRN_IDLE (NUM) PIDs.
- Record the PID values.

Is the MAF_HZ PID between 3.3 to 3.6 kHz (F-150) 3.2 to 3.8 kHz (all others) at idle and 5.1 to 5.7 kHz (F-150) 5.0 to 5.4 kHz (Transit) 5.5 to 6.3 kHz (all others) at 2,000 RPM?

Yes	For F-150 with DTC P2073, with MAFLRN_AIDLE values between -0.06 and 0.06, INSTALL a new EGR valve. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test. For F-150 with DTC P2073, with MAFLRN_AIDLE values less than -0.06 or greater than 0.06, INSTALL a new EGR valve. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750 and Transit with DTC P2073, INSTALL a new EGR valve. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-Series Super Duty with DTC P2073, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between -0.12 and 0.12, INSTALL a new EGR valve. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test. For F-Series Super Duty with DTC P2073, with MAFLRN_IDLE or MAFLRN_AIDLE PID values less than -0.12 or greater than 0.12, INSTALL a new EGR valve. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, GO to J14.
No	For F-150, with MAFLRN_AIDLE values between -0.06 and 0.06, Clear the PCM DTCs. REPEAT the self-test. For F-150, with MAFLRN_AIDLE values less than -0.06 or greater than 0.06, CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For F-650 / F-750 and Transit, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values between 0.00 and 0.12, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test. For all others, with MAFLRN_IDLE and MAFLRN_AIDLE PID values less than 0.00 or greater than 0.12, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the Reset And Clear The Specified Function MAF Sensor 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 PCM DTCs. REPEAT the self-test.

J11 CHECK RELATIVE HUMIDITY

Note: Most local weather reports include the relative humidity for the day.

Note: Humidity levels will be considerably different between indoor and outdoor environments. Check humidity values while engine is at ambient conditions, cold soak the vehicle outside for a minimum of 8 hours if necessary.

- Ignition ON, engine OFF.
- Access the FCIM and monitor the REL_HMDTY (PER) PID.
- Record the PID value.
- Verify that the REL_HMDTY PID value is approximately the same as the daily humidity level from your local weather report.

Does the REL_HMDTY PID value compare with the reported humidity level?

Yes	Unable to duplicate the condition. CHECK for a loose connection, and damaged or corroded terminals. WIGGLE the harness attempting to recreate the concern. REPAIR as necessary.
No	INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.

J12 CHECK INTAKE AIR TEMPERATURE SENSOR CORRELATION

Note: Check temperature values while engine is at ambient temperature, cold soak the engine for a minimum of 8 hours if necessary.

- Ignition ON, engine OFF.
- Access the PCM and monitor the AAT (TEMP), CAC_T (TEMP), ECT2_1 (TEMP), EGRTC (TEMP) and IAT11 (TEMP) PIDs.
- The IAT temperature must be within the following ranges:
 - Within 15°C (27°F) degrees of the AAT reading
 - Within 16°C (28.8°F) degrees of the CAC_T reading
 - Within 20°C (36°F) degrees of the ECT2_1 reading (F-650 / F-750, F-Series Super Duty)
 - Within 20°C (36°F) degrees of the EGRTC reading

Is the IAT11 PID within specification?

Yes	Unable to duplicate the condition. CHECK for a loose connection, and damaged or corroded terminals. WIGGLE the harness attempting to recreate the concern. REPAIR as necessary.
No	INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.

J13 CHECK THE TURBOCHARGER INLET PRESSURE FOR BIAS

- Ignition ON, engine OFF.
- Access the PCM and monitor the BARO (PRESS), EBP (PRESS), MAP (PRESS) and TURBO_INLET (PRESS) PIDs.

Is the suspect sensor PID reading within 4.5 kPa (0.65 psi) of the other sensors?

Yes	REMOVE and CHECK the MAP and MAP/CACT sensor for moisture, ice or any other type of restriction. REPAIR as necessary. If a driveability concern exists, RETURN to Section 3, Symptom Charts for further direction.
No	INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test.

J14 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.

mcx30.com