



**IMPORTANT SERVICE  
INFORMATION FOR:**

- ✓ SERVICE MANAGER
- ✓ SERVICE ADVISOR
- ✓ TECHNICIAN
- ✓ PARTS DEPARTMENT
- ✓ WARRANTY PERSONNEL

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**ENGINE**

## MASS AIR FLOW (MAF) SENSOR RELEARN

### AFFECTED VEHICLES

- 2016-2018MY Isuzu N-Series  
Equipped with 5.2L 4HK1 Diesel Engine
- 2018MY Isuzu FTR

### INFORMATION

Whenever certain components are replaced, the ECM must acquire a new “MAF Sensor Learned” value. This is to optimally adjust the ECM for variations in the intake duct or certain sensors.

Perform the “MAF Sensor Relearn Procedure” if any of the following components are replaced:

- Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor 1
- Charge Air Cooler (CAC) Temperature Sensor 2
- Boost Pressure Sensor
- Engine Control Module (ECM)
- Air Cleaner Assembly
- Charge Air Cooler (CAC)/Intercooler
- Turbocharger
- Any or all Engine Fuel Injector(s)

***CAUTION: The MAF Sensor Relearn Procedure involves accelerating the vehicle from a stopped position to a Wide Open Throttle (WOT) condition. Ensure there are no obstacles or people in front of the vehicle. Ensure that you have a clear, safe driving path in front of the vehicle of at least ¼ mile (.4km). Wear your seatbelt and pay close attention while accelerating the vehicle. DO NOT monitor the scan tool while actually accelerating the vehicle.***

**Note:** An incomplete or improperly performed MAF Sensor Relearn Procedure may set the following Diagnostic Trouble Codes (DTC): P0401, P0402, P0171, P0172 and/or P2413. If any of these DTCs set after attempting a MAF Sensor Relearn, try clearing the DTC(s) and performing the relearn procedure again before starting any diagnosis.

### Procedure

1. The MAF Sensor Relearn Procedure must be performed on a clear length of road or street with no cross traffic, obstacles, or pedestrians. There should be a clear roadway of at least ¼ mile (.4 km) to safely perform the procedure.
2. Ensure the vehicle does not have a load.

***CAUTION: A loaded vehicle has increased inertia that requires greater acceleration and braking distances than a vehicle that is unloaded.***

3. Connect a scan tool.
4. Turn the key to ON, start and warm up the engine. The following conditions must exist before the Relearn Procedure can be performed:
  - No DTCs are present
  - The battery voltage is between 10 to 16 volts
  - The barometric pressure sensor (BARO) reading is more than 9.7 psi (67 kPa)
  - The engine coolant temperature (ECT) sensor reads between 158 to 194°F (70 to 90°C)
  - The intake air temperature (IAT) sensor reads between -22 to 127°F (-30 to 53°C)
  - The charge air cooler (CAC) temperature sensor reads between -22 to 140°F (-30 to 60°C)
  - The EGR valve position is less than 1.5%
  - The intake air flow (IAF) valve position is more than 99%
  - The turbocharger (TC) boost control position is more than 20%
  - The diesel particulate filter (DPF) regeneration is not running
5. After the conditions in Step 4 are met turn the engine OFF. Then turn the key to the ON position. Select the “**Output Control Test**” on the scan tool. Select the “**Clear MAF Learned Data**” tab and clear the MAF Learned Data.
6. Ensure that the Mass Air Flow (MAF) Learned Status reads “**Not Learned**”.

7. Start the engine. Move the shift lever to the “D” position while depressing the foot brake and wait at least 30 seconds.
8. Once at least 30 seconds have passed, move the shift lever to “2” position, release the foot brake and immediately depress the accelerator pedal 100% (WOT) to fully accelerate. Unless it is necessary to prevent or avoid a crash or accident, do not release the accelerator pedal until the engine speed (RPM) stops increasing (approximately 2,800 RPM).
9. After the engine speed increase has stopped (approximately 2,800 RPM), safely stop the vehicle.
10. Check to see if the Mass Air Flow (MAF) Learned Status reads “**Learned**”.
11. If the Mass Air Flow (MAF) Learned Status reads “**Not Learned**”, make sure that all the conditions noted in Step 4 have been met and correct as necessary. Repeat Steps 5 through 10.
12. Turn the key to OFF and wait 3 minutes.
13. Ensure the Mass Air Flow (MAF) Learned Status reads “**Learned**”. Once the status is “**Learned**”, the MAF Sensor Relearn Procedure is complete.

**NOTE:** If the Mass Air Flow (MAF) Learned Status will not set to “**Learned**” after performing the procedure several times, check for the following:

- a. MAF sensor and air cleaner fouling.
- b. Air cleaner clogging.
- c. Air intake/exhaust system leak check.
- d. MAF sensor-related, EGR-related, turbo-related, and injector-related history DTC failures. (If there is a history DTC, check for the related DTC failures).
- e. Abnormal Balancing Rate Cylinder 1 to 4. (Only one cylinder has an abnormal value compared with other cylinders, etc.)
- f. Any malfunctions in the air intake/exhaust system other than those above.