

# CARDONE ProTech

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## Airflow Sensor Installation Tips and Hints

### Application:

Vehicles equipped with vane or mass air flow sensors.

### Problem:

Identification and installation problems.

### QUESTIONS, ANSWERS, TIPS & HINTS:

Q: What function does the MAF/VANE AIRFLOW sensor perform?

A: The airflow sensor measures the amount of air flowing into the engine. This information is used by the engine computer to calculate fuel delivery.

Q: How does a malfunctioning MAF/VANE AIRFLOW sensor affect vehicle operation?

A: Hesitation, stalling, poor fuel economy or poor engine performance.

Q: How can I determine if the sensor is bad?

A: Start the engine and tap lightly on the unit. If tapping causes an engine malfunction or intermittent operation the unit is faulty and must be replaced. Visually inspect a MAF for damage.

Q: What goes bad in VANE-type units?

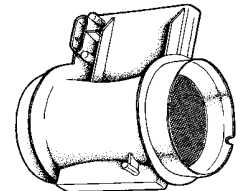
A: Worn vane assembly, cracked housing, or cracked printed circuit board. Inspect the vane door for binding. If possible, measure electrical resistance as vane is operated manually – the resistance should change smoothly.

Q: What goes bad in MAF sensors?

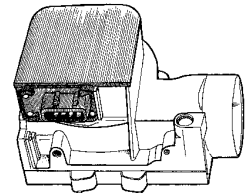
A: Cracked circuit boards, burned sensing element, poor solder joints, defective conformal-coat, or loose printed circuit board components.

Q: What should be done to protect the replacement unit?

A: Check for related trouble codes stored in the engine computer, correct as necessary. Inspect the wiring harness and connectors for damage. Check for proper voltage and ground. Vehicles with external MAF/VANE AIRFLOW relays MUST be checked for proper operation. Inspect inlet hose ducts for looseness and cracks. Check for air way obstructions and replace air filter if necessary. Be sure outlet hose duct is not loose or cracked. Problems here can allow unmeasured air to enter engine intake resulting in poor engine performance. Finally, be sure to follow supplied installation instructions. Refer to your vehicle service manual for other installation procedures specific to your vehicle.



Typical MAF



Typical VANE

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## Every MAF Sensor Needs a Breath of Fresh Air

### **Application:**

All vehicles equipped with a mass air flow sensor (MAF).

### **Problem:**

Rough running, engine surge, reduced engine power.

### **Cause:**

The cause of these engine performance problems could be a dirty MAF sensor.

### **Solution:**

The MAF sensor must be clean of dust, dirt and debris. A dirty MAF sensor will not respond as fast to air flow changes as a clean sensor. When replacing the sensor, it is recommended to replace the air filter to help prevent future dust contamination. Remove any dust, dirt and debris from the inside of the air cleaner assembly to ensure trouble-free operation.

Refer to the vehicle service manual for the recommended service intervals for air filter replacement and for the correct type of element. Following the service recommendations will ensure reliable engine performance while protecting the sensor.

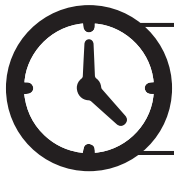
### **Note:**

Please refer to your vehicle's service manual for specific diagnostic instructions. This ProTech bulletin is supplied as technical information only and is not an authorization for repair.



# Mass Air Flow Sensors

Refer to an authorized original equipment service manual for detailed installation instructions. If you do not have the experience, proper tools or manuals, please seek the services of a qualified technician.



Replacement  
TIME:

< 1 hr

## COMMON SYMPTOMS of a failing MAF Sensor

- Engine is hard to start
- Engine stalls shortly after starting
- Engine hesitates under a load
- Excessive fuel consumption

## MYTH BUSTER!

**Myth** – Mass Air Flow Sensor screen removal will increase horsepower.

**Busted** – Without the screen the air flow entering the engine becomes turbulent resulting in incorrect readings from the MAF Sensor to the PCM.

## TIPS

- Vacuum leaks, whether major or minor, affect fuel trim adjustments made by the Powertrain Control Module (PCM) and will most likely set diagnostic trouble codes that can be misinterpreted as a defective MAF Sensor.
- A clogged air filter, faulty injector(s) or bad sensors can cause symptoms that can be misinterpreted as a defective MAF Sensor.
- High-flow oil impregnated air filters are not recommended. Use of this filter type can result in a contaminated sensor element, leading to miscalculation of the air entering the engine.
- Transfer the connector weather seal or fastening hardware from the old unit, if your specific MAF Sensor is so equipped.
- Do not reuse old mounting gasket if MAF Sensor is so equipped, but replace with a new gasket.
- Clear all Diagnostic Trouble Codes with a suitable scanner after installation.