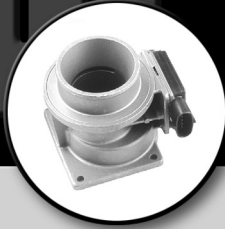


CARDONE ProTech

Supporting Today's Professional Technician



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.

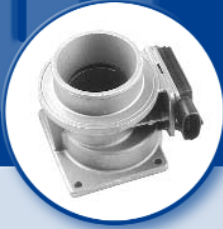
Refer to the vehicle service manual for the recommended service intervals for air filter replacement and for the correct type of element. Following the service recommendations will ensure reliable engine performance while protecting the sensor.

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.

CARDONE ProTech

Supporting Today's Professional Technician



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?

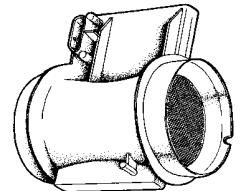
A: Worn vane assembly, cracked housing, or cracked printed circuit board. Inspect the vane door for binding. If possible, measure electrical resistance as vane is operated manually – the resistance should change smoothly.

Q: What goes bad in MAF sensors?

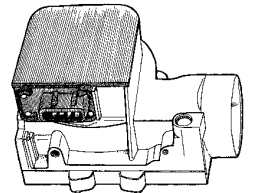
A: Cracked circuit boards, burned sensing element, poor solder joints, defective conformal-coat, or loose printed circuit board components.

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 unmetered 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.



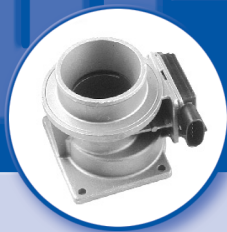
Typical MAF



Typical VANE

CARDONE ProTech

Supporting Today's Professional Technician



Ford MAF Diagnosis and Installation Tips

Application:

Ford Mass Airflow Sensors

Problem:

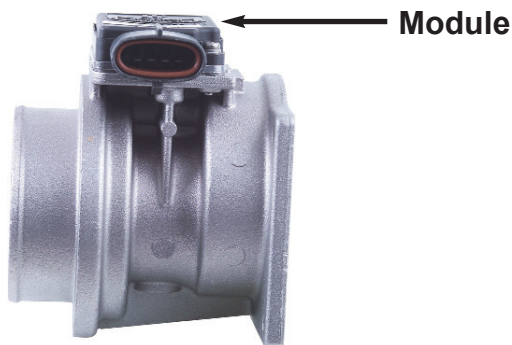
Lack of power, spark knock/detonation, buck/jerk, hesitation/surge on acceleration, with or without codes 26, 56, 66 and 76.

Cause:

MAF module failure due to OEM design problem. Road shock causes spot-welded jumper wires inside module to break.

Solution:

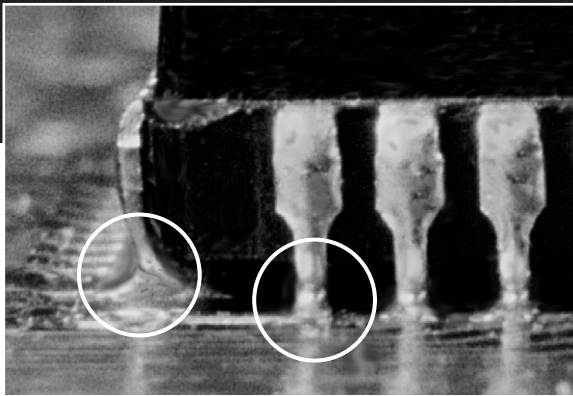
Replace with CARDONE MAF unit that comes with a fully repaired module. Each sealed module is opened, protective gel removed, broken jumper wires discarded and new wires soldered into original position. Soldering provides a more secure physical connection while insuring proper electrical contact. The module is tested, any other failed components replaced, protective jell reapplied and finally the module is hermetically sealed. **INSTALLER TIP: Check for faulty wiring harness or defective burn-off relay (if applicable) before replacing sensor. Always refer to vehicle service manual for complete test procedures.**



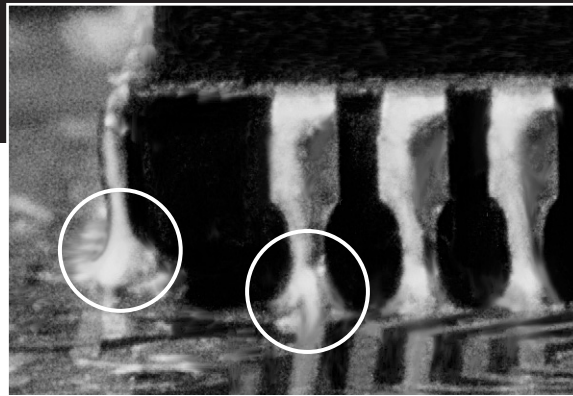
Note:

Ford Technical Service Bulletin 98-23-10 identifies problems with contamination on sensing element causing erratic operation or failure. CARDONE cleans or replaces the sensor element to resolve this TSB.

ECCs may look the same, but at 20x magnification, the difference may shock you.



Competitor ECC



CARDONE (A-1) ECC

What's the difference? Compare the magnified views of the CARDONE circuit chip and the leading competitor chip. Notice how much thicker the "J" leads surrounding the CARDONE chip are. This detail may seem insignificant, but it determines whether or not your ECC sale will come back to bite you.

On a typical ECC board, there are about 400 "J" leads that provide electrical connections to the board. If just one of these connections breaks loose, the whole ECC can fail. And failure is inevitable if you have weak "J" leads. Corrosion, heat and vibration constantly attack them, causing the solder around the "J" leads to crack.

That's why CARDONE goes the extra mile with their soldering process. The solid mass created

around each lead ensures stable electrical connections, even under adverse conditions.

But CARDONE doesn't stop there. Every ECC is 100% full-function tested under simulated on-the-car extremes of thermal shock and vibration. Then, every connector pin function is verified and loaded to exceed circuit specifications. For example, if the circuit requires 400 milli-amps, CARDONE tests up to 1000 milli-amps.

The bottom line is that CARDONE ECCs typically don't come back. This saves your time, money and reputation. So the next time you purchase ECCs (or any electronics product for the matter) consider your source. When you look through the zoom lens, CARDONE Electronics stand above the rest.

CARDONE[®]

ABS Modules • Air Supply Modules • Body Control Computers • Cruise Control Modules
Engine Control Computers • Electronic Struts • GM PROM Chips • Ignition Distributors
Mass Airflow Sensors • Power Supply Modules • Relay Control Modules • Suspension Control
Modules • Transmission Control Modules • Vane Airflow Meters

Learn more about replacement air intake parts we have.