SECTION 3

Emission System Description, Operation and Component Location

Contents

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SECTION 3

Emission System Description, Operation and Component Location

Contents

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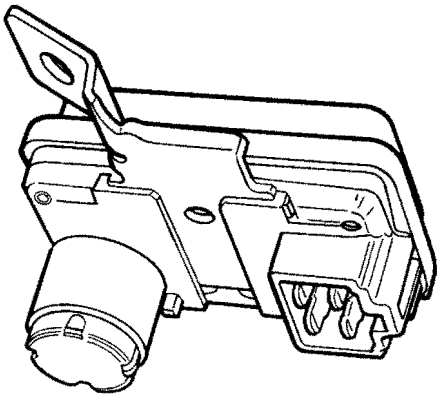
TITLE	ENGINE APPLICATION	BASIC PART NO.
Barometric Pressure (BP) Sensor	**All Engines**	

DESCRIPTION

The Barometric Pressure (BP) Sensor is used to sense changes in barometric pressure, allowing the Electronic Control Assembly (ECA) to compensate for the altitude at which the vehicle is operating.



BAROMETRIC PRESSURE SENSOR

A14345-A

AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX			XXXXX	XXXXX
Location	Passenger Side Firewall				
1.6L Turbo	XXXXX			XXXXX	XXXXX
Location	Passenger Side Firewall				

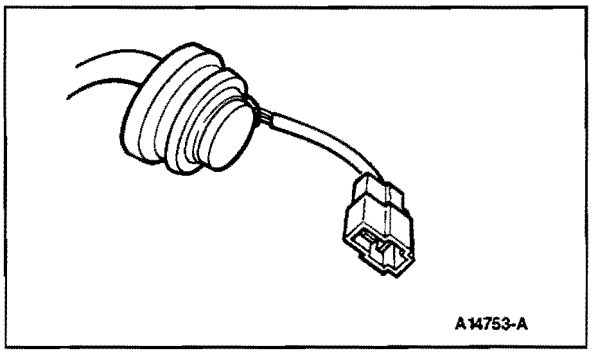
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Boost Pressure Switch (BPS)	**1.6L Turbo**	

DESCRIPTION

The Boost Pressure Switch (BPS) sends a signal to the Electronic Control Assembly (ECA) when the boost pressure reaches 71.8 to 79.8 kPa (10.4 to 11.6 psi). This is used for over-boost protection.



AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC Location	Not Used				
1.6L Turbo	XXXXX				
Location	Passenger Side Firewall				

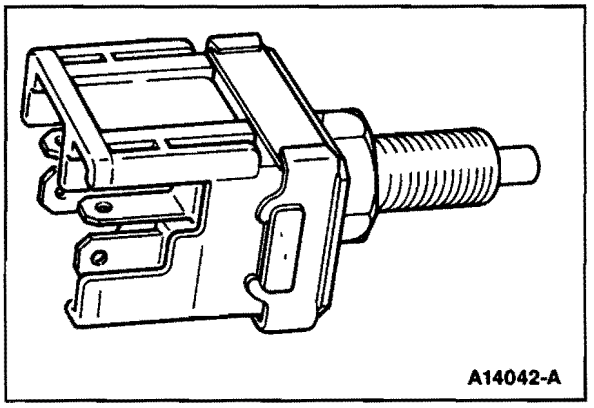
DIAGNOSIS

Refer to Section 12.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Brake On-Off (BOO) Switch	**All Engines**	

DESCRIPTION

The Brake On-Off (BOO) Switch detects braking operation and sends an input signal to the Electronic Control Assembly (ECA).



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX				
Location	Mounted at Brake Pedal				
1.6L Turbo	XXXXX				
Location	Mounted at Brake Pedal				

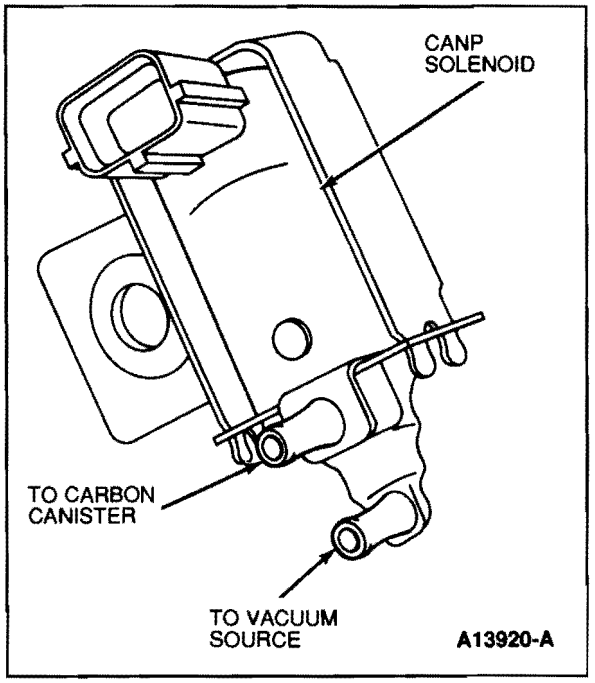
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Canister Purge (CANP) Solenoid	**All Engines**	

DESCRIPTION

The Canister Purge (CANP) Solenoid regulates the amount of evaporative vapors drawn from the Carbon Canister into the engine. The CANP Solenoid is controlled by the Electronic Control Assembly (ECA) and opens a passage between the Carbon Canister and the Intake Manifold.



ENGINE	LOCATION
1.6L DOHC	Center of the Firewall
1.6L Turbo	Center of the Firewall

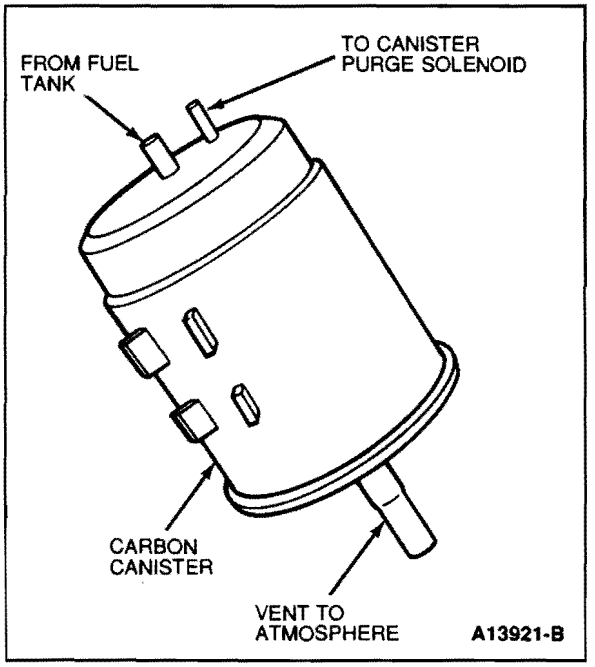
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Carbon Canister	**All Engines**	

DESCRIPTION

The Carbon Canister stores fuel vapors from the fuel tank until the vehicle is operated. During vehicle operation the Electronic Control Assembly (ECA) operates the CANP valve to purge the vapors from the canister.



ENGINE	LOCATION
1.6L DOHC	Passenger Side of the Firewall
1.6L Turbo	Passenger Side of the Firewall

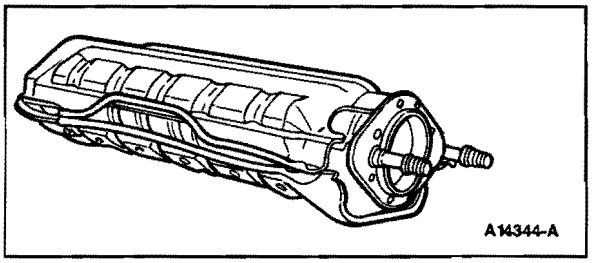
DIAGNOSIS

Refer to Section 8.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Catalytic Converter	**All Engines**	

DESCRIPTION

The Catalytic Converter is a muffler-like component in the exhaust system that promotes a chemical reaction which converts certain air pollutants in the exhaust gases into harmless substances.



ENGINE	LOCATION
1.6L DOHC	Between the Exhaust Manifold and Muffler
1.6L Turbo	Between the Exhaust Manifold and Muffler

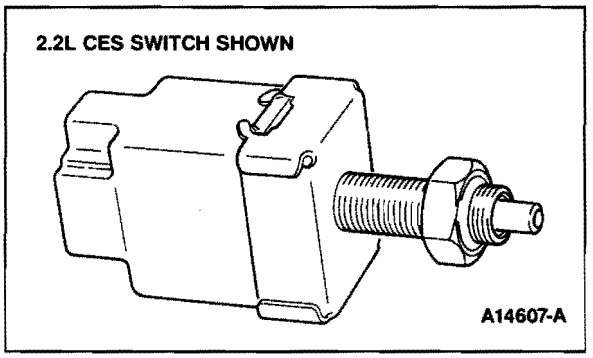
DIAGNOSIS

Refer to Section 6.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Clutch Engage Switch (CES)	**Manual Transmission**	

DESCRIPTION

The Clutch Engage Switch (CES) detects when the Clutch is engaged or disengaged and sends an input signal to the Electronic Control Assembly (ECA).



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX		XXXXX	XXXXX	XXXXX
Location	Mounted at Clutch Pedal				
1.6L Turbo	XXXXX		XXXXX	XXXXX	XXXXX
Location	Mounted at Clutch Pedal				

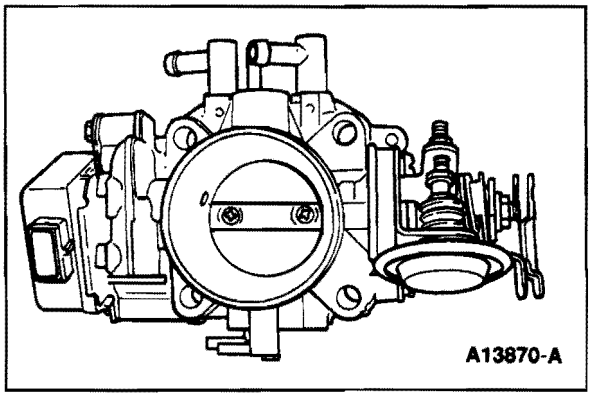
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Dashpot	**All Engines**	

DESCRIPTION

The Dashpot allows the Throttle Plate to gradually close during deceleration. This action prevents hesitation during the transition from deceleration to sudden acceleration and prevents engine stalling on sudden deceleration.



ENGINE	LOCATION
1.6L DOHC	Mounted on Throttle Body
1.6L Turbo	Mounted on Throttle Body

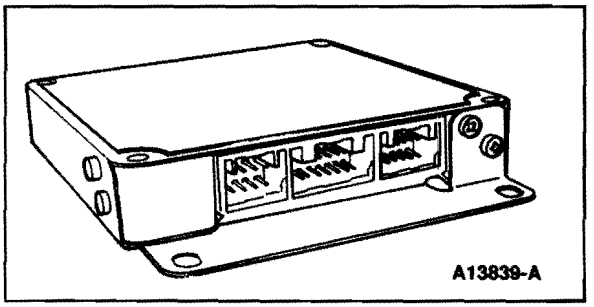
DIAGNOSIS

Refer to Section 10.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Electronic Control Assembly (ECA)	**All Engines**	

DESCRIPTION

The Electronic Control Assembly (ECA) receives signals from various inputs (VAT, VAF, EGO, TP, BP, and others). It takes the information received from the inputs and compares it with calibration information that is stored inside the ECA. The results of these comparisons produce changes on the states of ECA controlled devices (Fuel Injectors, ISC, CANP, and others). These changes are used to maintain proper Emission Levels, Fuel Economy and Driveability.



ENGINE	LOCATION
1.6L DOHC	Behind Center Console, Mounted to Firewall
1.6L Turbo	Behind Center Console, Mounted to Firewall

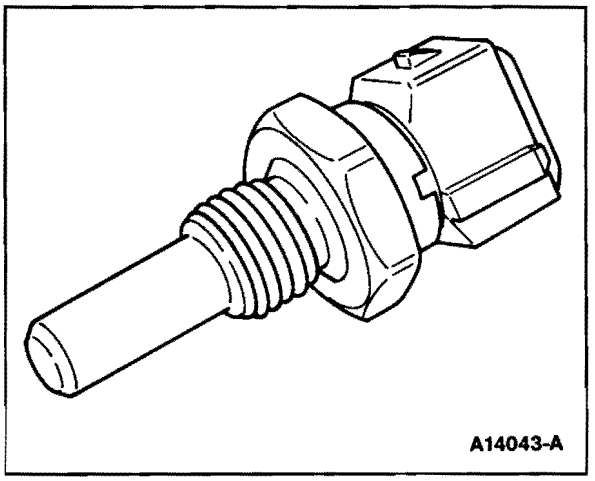
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Engine Coolant Temperature (ECT) Sensor	**All Engines**	

DESCRIPTION

The Engine Coolant Temperature (ECT) Sensor constantly supplies the Electronic Control Assembly (ECA) with a signal reflecting engine coolant temperature.



AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX		XXXXX	XXXXX	XXXXX
Location	Under-side of the Intake Manifold				
1.6L Turbo	XXXXX		XXXXX	XXXXX	XXXXX
Location	Under-side of the Intake Manifold				

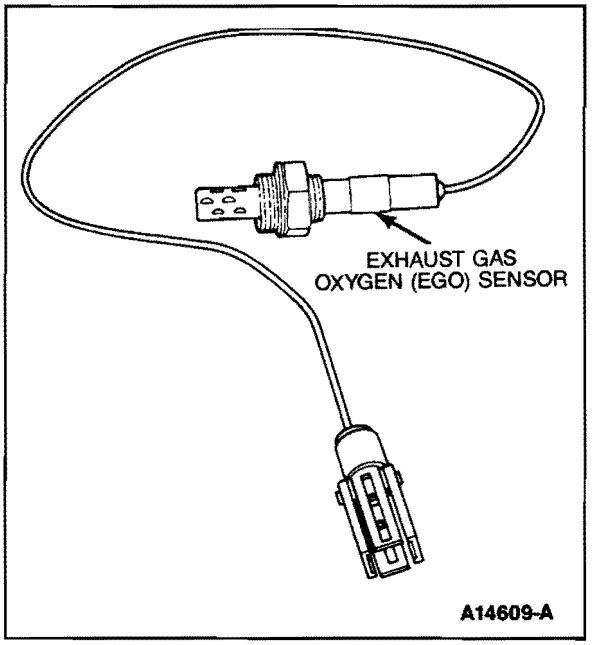
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Exhaust Gas Oxygen (EGO) Sensor	**All Engines**	

DESCRIPTION

The Exhaust Gas Oxygen (EGO) Sensor generates and supplies a signal to the Electronic Control Assembly (ECA) which reflects oxygen content in the exhaust system. The oxygen content in the exhaust gas reflects whether the fuel mixture is rich or lean. The ECA uses this information to regulate the air/fuel mixture.



AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX			XXXXX	XXXXX
Location	Threaded into Exhaust Manifold				
1.6L Turbo	XXXXX			XXXXX	XXXXX
Location	Threaded into Exhaust Manifold				

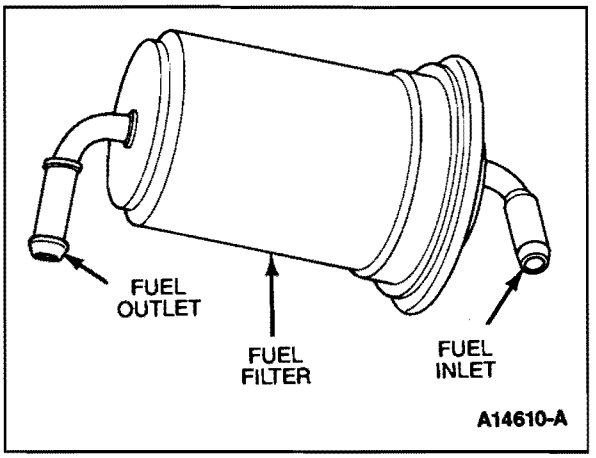
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Fuel Filter	**All Engines**	

DESCRIPTION

The Fuel Filter is a high pressure paper element type that removes solid particles from the fuel that may clog the small orifices inside the fuel injectors.



ENGINE	LOCATION
1.6L DOHC	Mounted Near the Center of the Firewall
1.6L Turbo	Mounted Near the Center of the Firewall

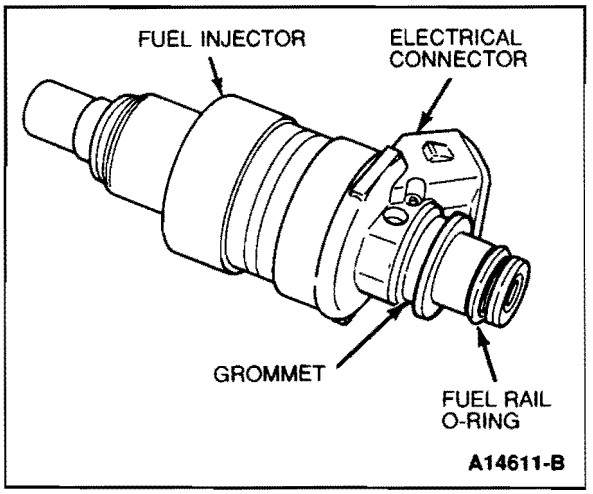
DIAGNOSIS

Refer to Section 13.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Fuel Injector	**All Engines**	

DESCRIPTION

The Fuel Injector is a solenoid operated valve that meters fuel flow into the engine. The amount of fuel that is injected into the engine is controlled by how long the Electronic Control Assembly (ECA) turns the injector on and the fuel pressure.



ENGINE	LOCATION
1.6L DOHC	Mounted in Intake Manifold
1.6L Turbo	Mounted in Intake Manifold

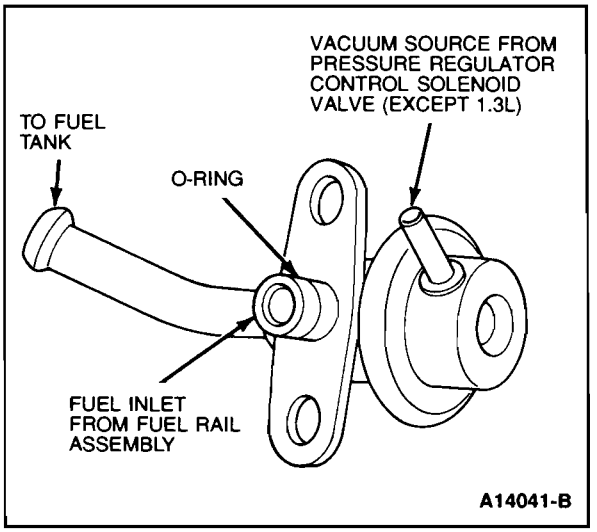
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Fuel Pressure Regulator	**All Engines**	

DESCRIPTION

The Fuel Pressure Regulator is attached to the Fuel Rail downstream from Fuel Injectors. The regulator uses a spring loaded diaphragm that is exposed to manifold vacuum to maintain constant fuel pressure across the injectors.



ENGINE	LOCATION
1.6L DOHC	Mounted on the Drivers Side of the Fuel Rail
1.6L Turbo	Mounted on the Drivers Side of the Fuel Rail

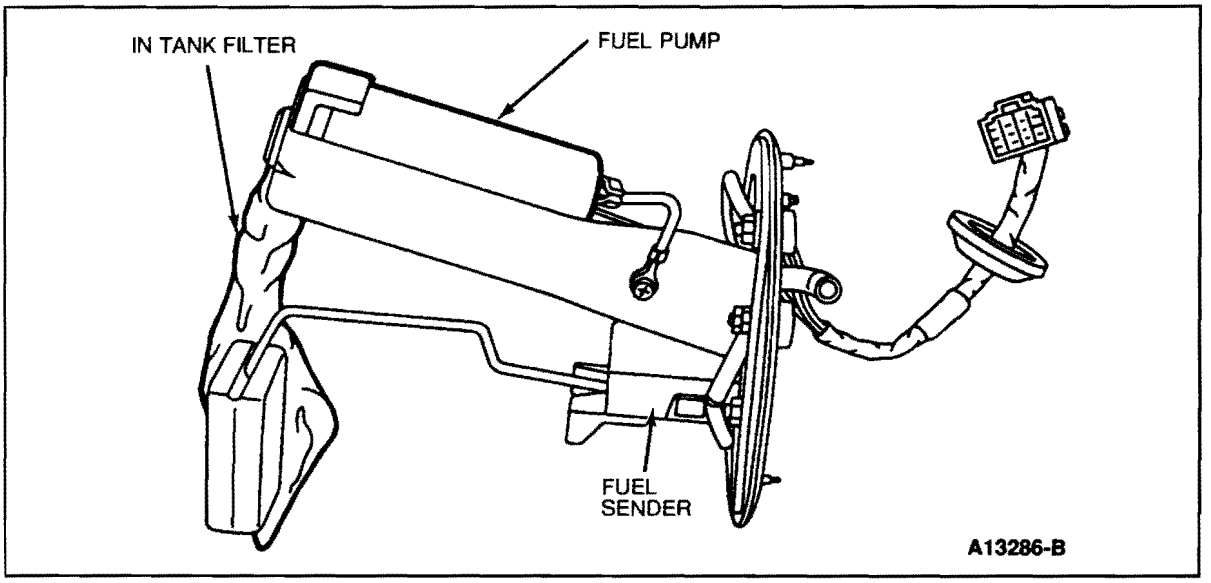
DIAGNOSIS

Refer to Section 13.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Fuel Pump	**All Engines**	

DESCRIPTION

The Electronic Fuel Injection (EFI) system uses High Pressure Electrical Fuel Pump to supply the injectors.



ENGINE	LOCATION
1.6L DOHC	Mounted in the Fuel Tank
1.6L Turbo	Mounted in the Fuel Tank

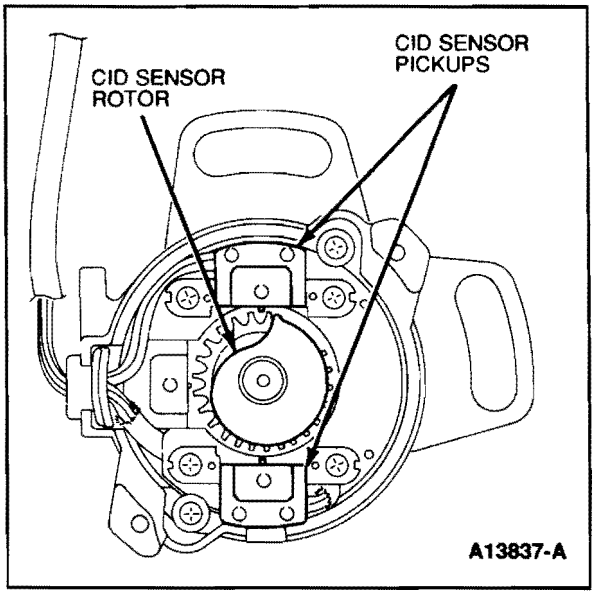
DIAGNOSIS

Refer to Section 13.

TITLE	ENGINE APPLICATION	BASIC PART NO.
CID Sensor	**All Engines**	

DESCRIPTION

The CID Sensor provides a crankshaft position input signal to the Electronic Control Assembly (ECA).



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC		XXXXX			
Location	Mounted in Distributor Housing				
1.6L Turbo		XXXXX			
Location	Mounted in Distributor Housing				

DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Idle Speed Control/By-Pass Air (ISC-BPA) Valve	**All Engines**	

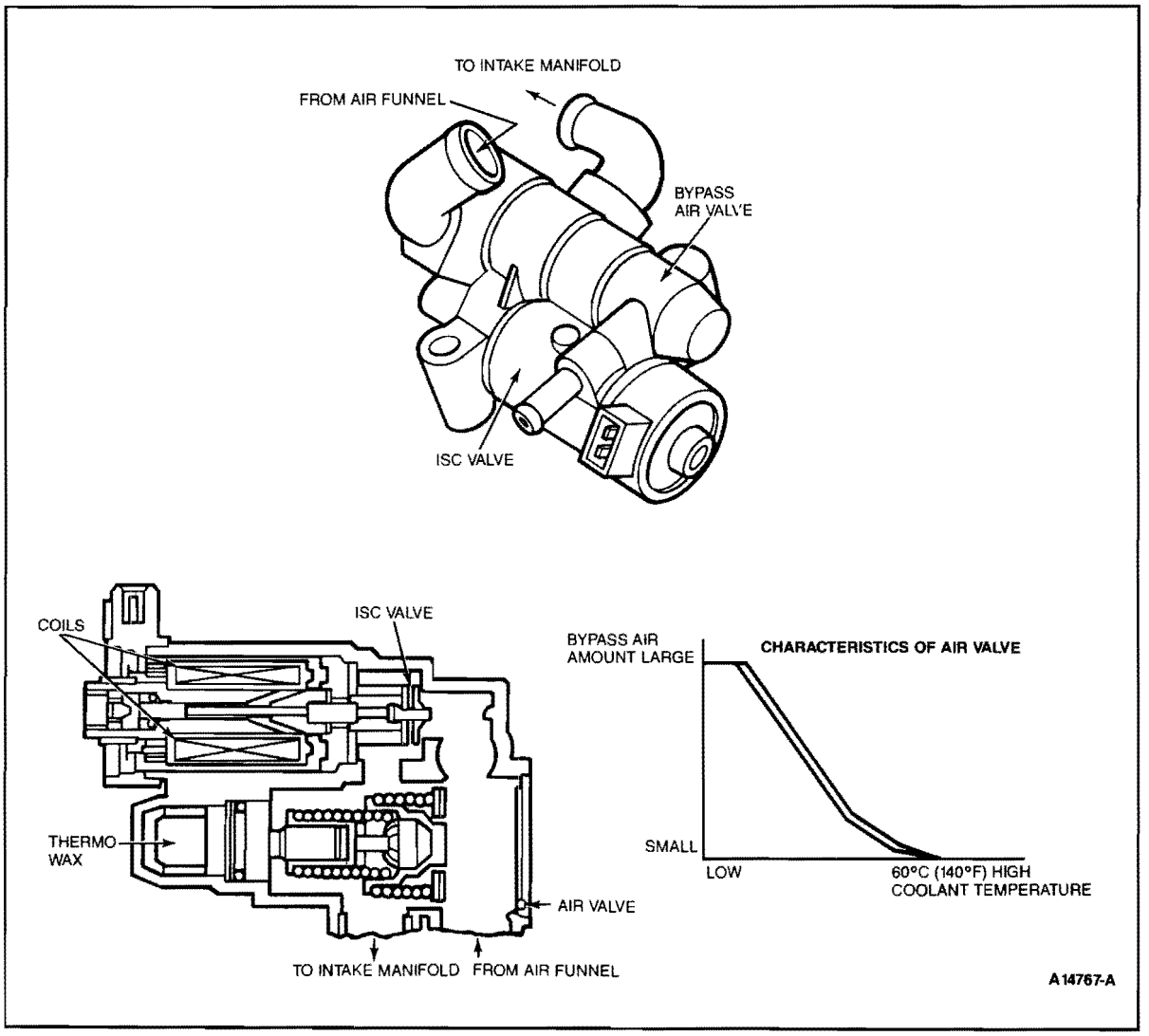
DESCRIPTION

The Idle Speed Control By-Pass Air (ISC-BPA) Valve controls idle speed by regulating air that by-passes the throttle plate.

There are two parts to the (ISC-BPA), The By-Pass Air Valve (BPA) and the Idle Speed Control Solenoid (ISC). The BPA Valve is thermally controlled and functions only during cold engine conditions (below 60°C [140°F]). The ISC Valve is controlled by the Electronic Control Assembly (ECA) and operates under all engine speed and temperature conditions.

The ISC-BPA valve controls:

- Cold Engine Fast Idle
- No Touch Start
- Hot Engine Idle Speed
- Engine Idle Load Corrections



TITLE	ENGINE APPLICATION	BASIC PART NO.
Idle Speed Control/By-Pass Air (ISC-BPA) Valve	**All Engines**	

ENGINE	LOCATION
1.6L DOHC	Mounted to RH Side of Intake Manifold
1.6L Turbo	Mounted to RH Side of Intake Manifold

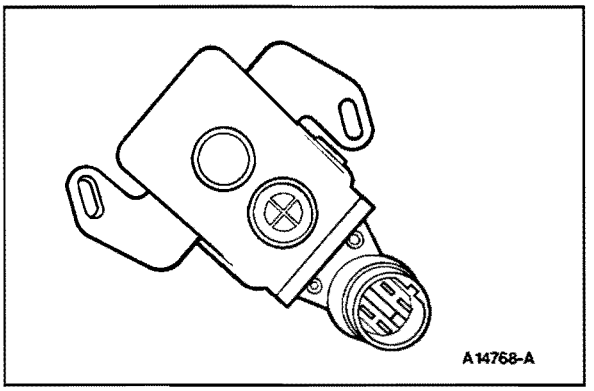
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Idle Switch (IDL)	**All Engines**	

DESCRIPTION

The Idle Switch (IDL) sends an input to the Electronic Control Assembly (ECA) based on the throttle being at idle or off idle. The Idle Switch is integrated with the Throttle Position (TP) Sensor.



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC Location	XXXXX		XXXXX	XXXXX	
1.6L Turbo Location	XXXXX		XXXXX	XXXXX	

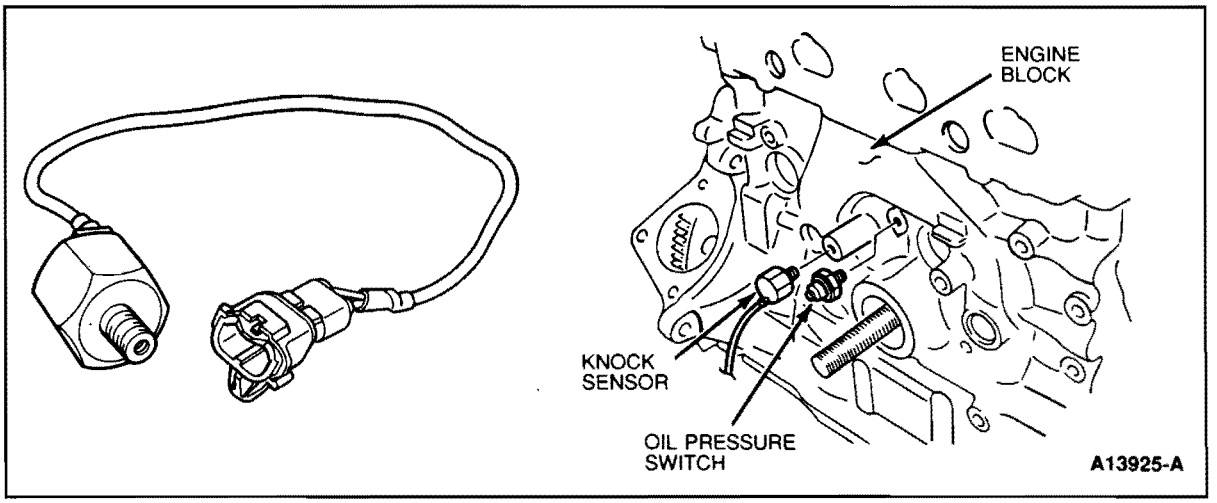
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Knock Sensor (KS) and Knock Control Unit (KC)	**1.6L Turbo**	

DESCRIPTION

The Knock Sensor (KS) is an electronic device capable of measuring vibration and converting it to an electrical signal reflecting engine knock. The Knock Sensor (KS) signal is fed into the Knock Control Unit (KC). The Knock Control Unit filters the signal to determine if engine knock is present. If Spark Knock is detected, the Knock Control Unit will retard the spark timing.



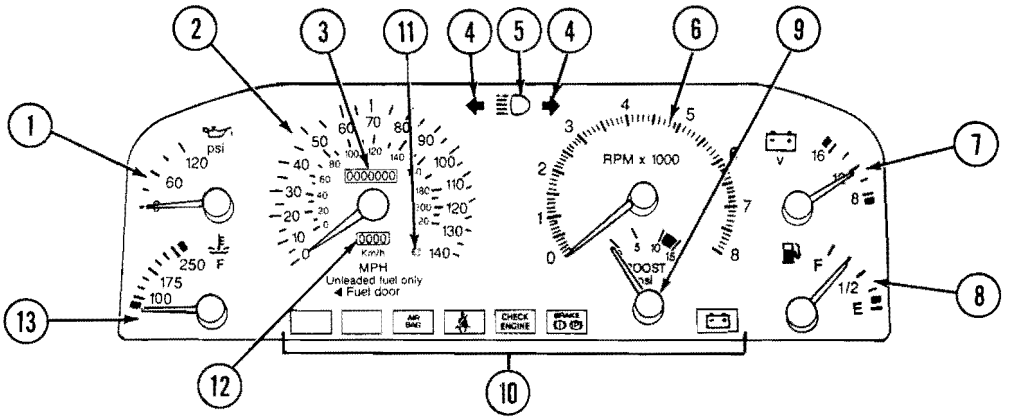
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Malfunction Indicator Light (MIL)	**All Engines**	

DESCRIPTION

The Malfunction Indication Light (MIL) provides a visual warning to the driver in the event of an Engine Control failure. The MIL light also flashes codes during the Quick Test.



TURBO INSTRUMENTATION

1. ENGINE OIL PRESSURE GAUGE
2. SPEEDOMETER
3. ODOMETER
4. TURN SIGNAL/HAZARD INDICATOR LAMP
5. HIGH BEAM INDICATOR LAMP
6. TACHOMETER
7. BATTERY VOLTAGE GAUGE
8. FUEL GAUGE
9. TURBO BOOST GAUGE
10. WARNING INDICATOR LAMPS
11. TRIP ODOMETER RESET BUTTON
12. TRIP ODOMETER
13. ENGINE COOLANT TEMPERATURE GAUGE

K14522-A

ENGINE	LOCATION
1.6L DOHC	Instrument Panel Cluster
1.6L Turbo	Instrument Panel Cluster

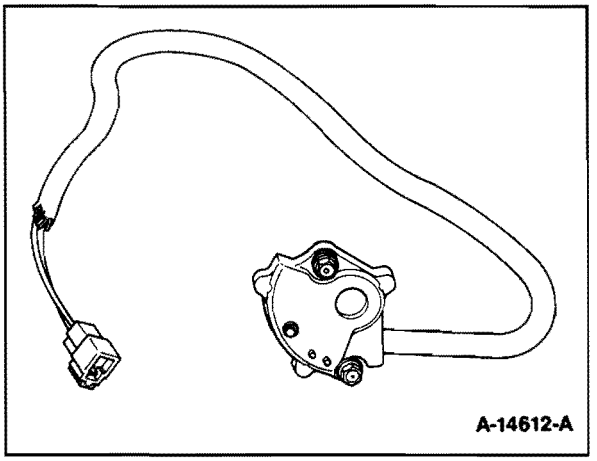
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Neutral Drive Switch (NDS)	**Automatic Transmission**	

DESCRIPTION

The Neutral Drive Switch (NDS) detects what gear the Automatic Transaxle is in and sends an input to the Electronic Control Assembly (ECA).



AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX		XXXXX	XXXXX	XXXXX
Location	Threaded into Transaxle				
1.6L Turbo	XXXXX		XXXXX	XXXXX	XXXXX
Location	Not Used on Turbo				

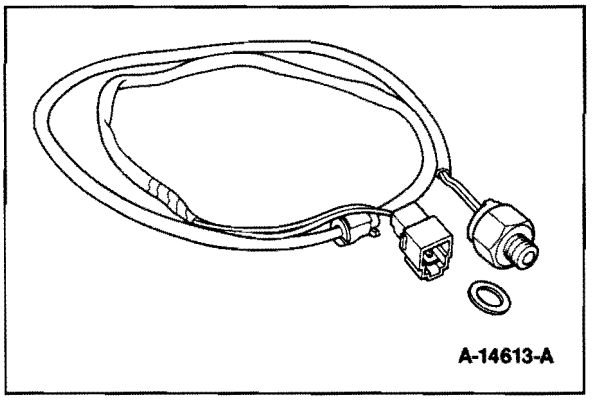
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Neutral Gear Switch (NGS)	**Manual Transmission**	

DESCRIPTION

The Neutral Gear Switch (NGS) detects when the Manual Transaxle is in the In-Gear or Neutral position and sends an input to the Electronic Control Assembly (ECA).



AFFECTED OUTPUTS					
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX		XXXXX	XXXXX	XXXXX
Location	Threaded into Transaxle				
1.6L Turbo	XXXXX		XXXXX	XXXXX	XXXXX
Location	Threaded into Transaxle				

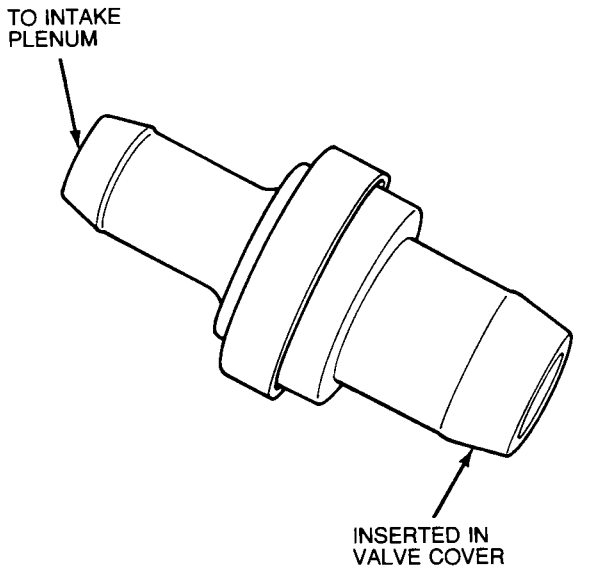
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Positive Crankcase Ventilation (PCV) Valve	**All Engines**	

DESCRIPTION

The Positive Crankcase Ventilation (PCV) Valve controls the amount of blow-by gas (vapors) pulled into the intake manifold from the crankcase. It also acts as a check valve by preventing the air from entering the crankcase in the opposite direction.



ENGINE	LOCATION
1.6L DOHC Location	Connects to the Right Rear of the Valve Cover
1.6L Turbo Location	Connects to the Right Rear of the Valve Cover

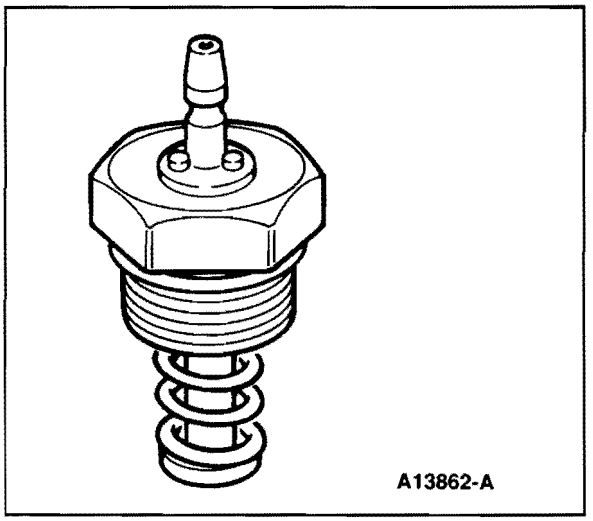
DIAGNOSIS

Refer to Section 11.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Power Steering Pressure Switch (PSPS)	**All Engines**	

DESCRIPTION

The Power Steering Pressure Switch (PSPS) detects when the Power Steering Pressure is above a pre-set level and sends an input signal to the Electronic Control Assembly (ECA).



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC				XXXXX	
Location	Threaded into Power Steering Pump				
1.6L Turbo				XXXXX	
Location	Threaded into Power Steering Pump				

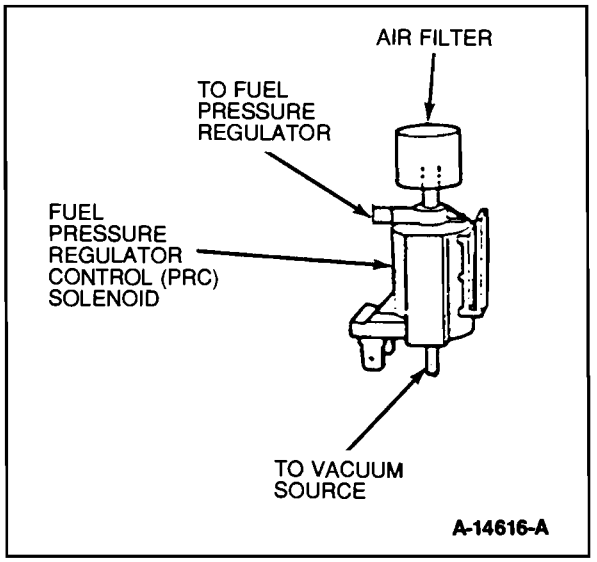
DIAGNOSIS

Refer to Section 16.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Pressure Regulator Control (PRC) Solenoid	**All Engines**	

DESCRIPTION

The Pressure Regulator Control (PRC) Solenoid is normally open and allows vacuum to the fuel pressure regulator. On a hot start the Electronic Control Assembly (ECA) activates the PRC Solenoid to the increase fuel pressure, the increased fuel pressure helps prevent fuel percolation.



ENGINE	LOCATION
1.6L DOHC	Center of the Firewall
1.6L Turbo	Center of the Firewall

DIAGNOSIS

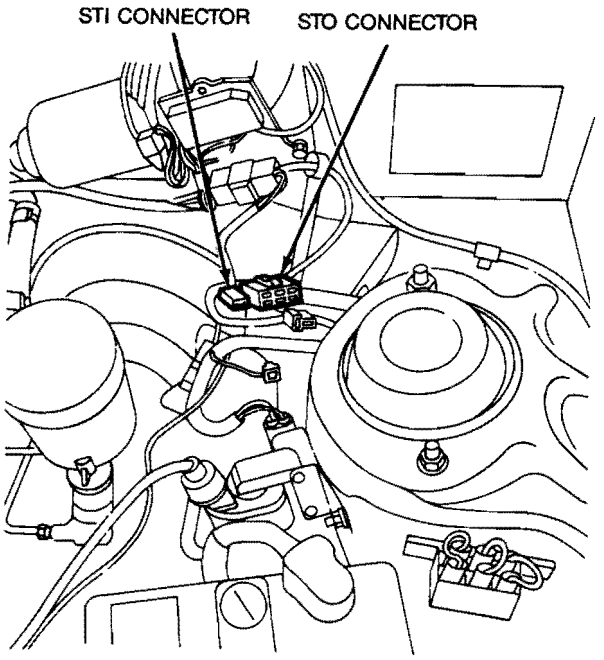
Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Self-Test Output/Self-Test Input (STO/STI)	**All Engines**	

DESCRIPTION

The Self-Test Output (STO) and Self-Test Input (STI) connectors are used to perform engine control tests.

When the STI connector is jumped to ground, a signal is sent to the Electronic Control Assembly (ECA) activating the Self-Test mode. Information is sent from the ECA to the STO connector, this information can be read by using an Analog Voltmeter or a Super STAR II tester.



ENGINE	LOCATION
1.6L DOHC	Passengers Side of the Firewall
1.6L Turbo	Passengers Side of the Firewall

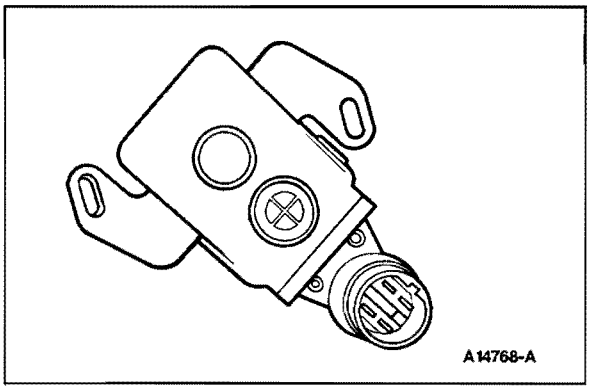
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Throttle Position Sensor (TP)	**All Engines**	

DESCRIPTION

The Throttle Position (TP) Sensor detects Throttle Plate opening angle and supplies the Electronic Control Assembly (ECA) with an input signal indicating throttle position.



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX				
Location	Mounted on Throttle Body				
1.6L TURBO	XXXXX				
Location	Mounted on Throttle Body				

DIAGNOSIS

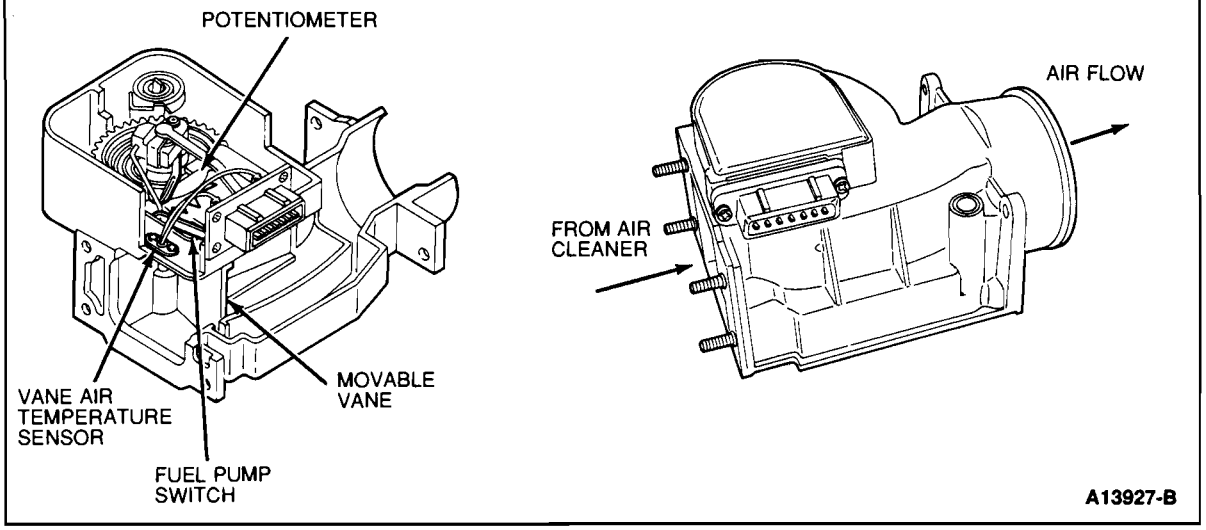
Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Vane Airflow (VAF) Meter	**All Engines**	

DESCRIPTION

The Vane Airflow (VAF) Meter measures air flow into the engine and is mounted between the Air Cleaner and The Throttle Body Assembly. The VAF Meter contains a movable vane which connects to a potentiometer. As air flows through the VAF Meter the Vane position is converted to a signal that is sent to the Electronic Control Assembly (ECA).

There are several components located inside the Vane Flow Meter Assembly, The Vane Air Temperature (VAT) Sensor and a Fuel Pump Switch which provides a ground for the Fuel Pump Circuit after the engine has started.



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX				XXXXX
Location	Above Air Filter Assembly				
1.6L Turbo	XXXXX				XXXXX
Location	Above Air Filter Assembly				

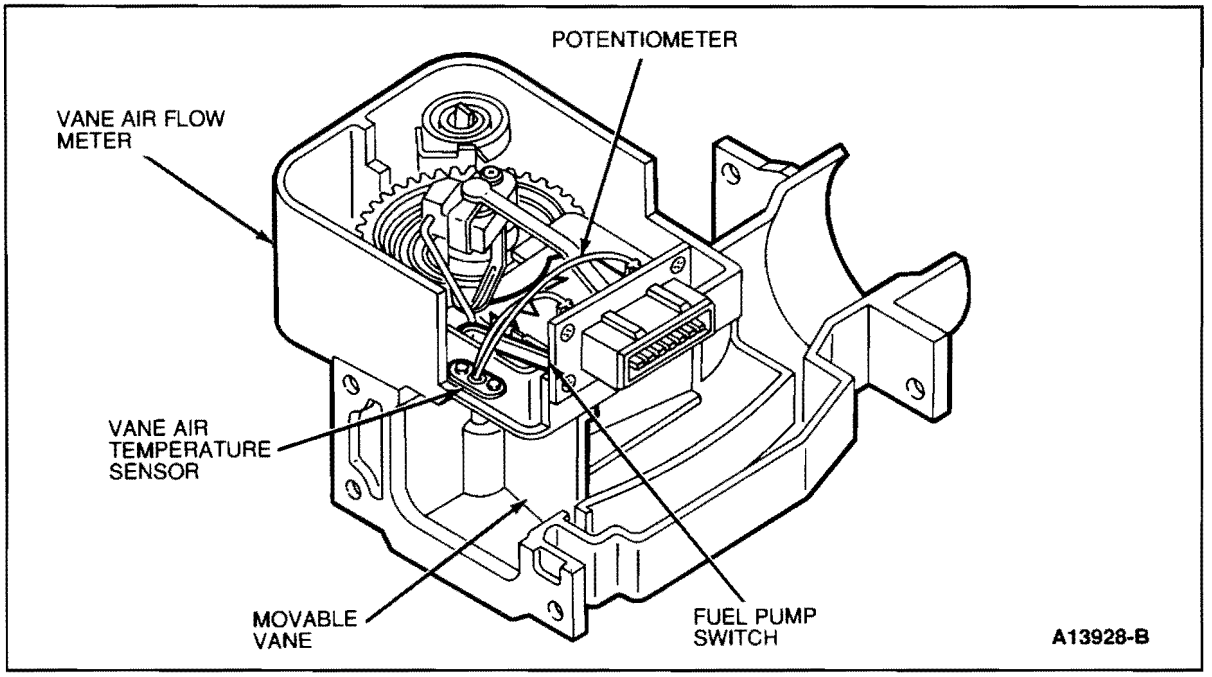
DIAGNOSIS

Refer to Section 15.

TITLE	ENGINE APPLICATION	BASIC PART NO.
Vane Air Temperature (VAT) Sensor	**All Engines**	

DESCRIPTION

The Vane Air Temperature (VAT) Sensor is an integral part of the Vane Airflow Meter. The VAT Sensor measures the inlet air temperature and sends an input signal to the Electronic Control Assembly (ECA) based on the air temperature.



	AFFECTED OUTPUTS				
	FUEL INJECTION AMOUNT	**FUEL INJECTION TIMING**	**PRCV SOLENOID**	**ISC VALVE**	**LINEAR PURGE SOLENOID**
1.6L DOHC	XXXXX		XXXXX	XXXXX	XXXXX
Location					
1.6L Turbo	XXXXX		XXXXX	XXXXX	XXXXX
Location					

DIAGNOSIS

Refer to Section 15.