SECTION 10

Inlet Air Control System

Contents

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Description and Operation

ENGINE APPLICATIONS

All Engines

The Inlet Air Control (IAC) System delivers filtered and controlled air flow to the engine. The IAC System is actually composed of two systems: the Intake Air System and the Idle-Speed Control System and all related components and sensors.

IAC System Air Handling Components

The IAC System consists of the following: The Air Inlet Duct, the Air Cleaner, the Throttle Body, and the Intake Plenum. The Idle Speed Control/By-Pass Air Combination Valve is mounted on the Intake Manifold (for further information on the By-Pass Air System, refer to Section 9 of this manual).

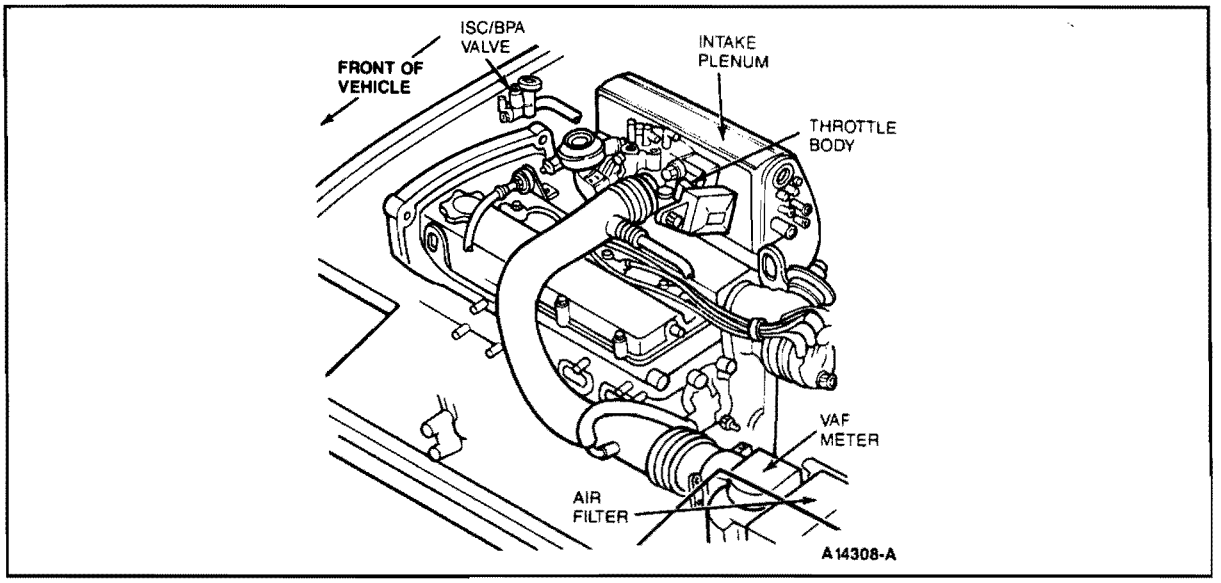
The Idle Speed Control (ISC) Valve, operated by a duty-cycle solenoid, maintains a steady idle speed when mechanical or electrical loads are added to the engine. The ECA responds to changes in engine idle speed due to changes in engine load by regulating the Solenoid Valve duty cycle which controls by-pass air flow and engine idle speed. The ISC/BPA Valve is not serviceable and must be replaced if a malfunction occurs.

Sensors used in this system include the Vane Air Flow (VAF) Meter, mounted on the Air Cleaner housing, and the Throttle Position Sensor, mounted on the Throttle Body. Also mounted on the Throttle Body is the Dash Pot, which mechanically slows the action of a rapidly closing throttle to eliminate erratic vehicle response.

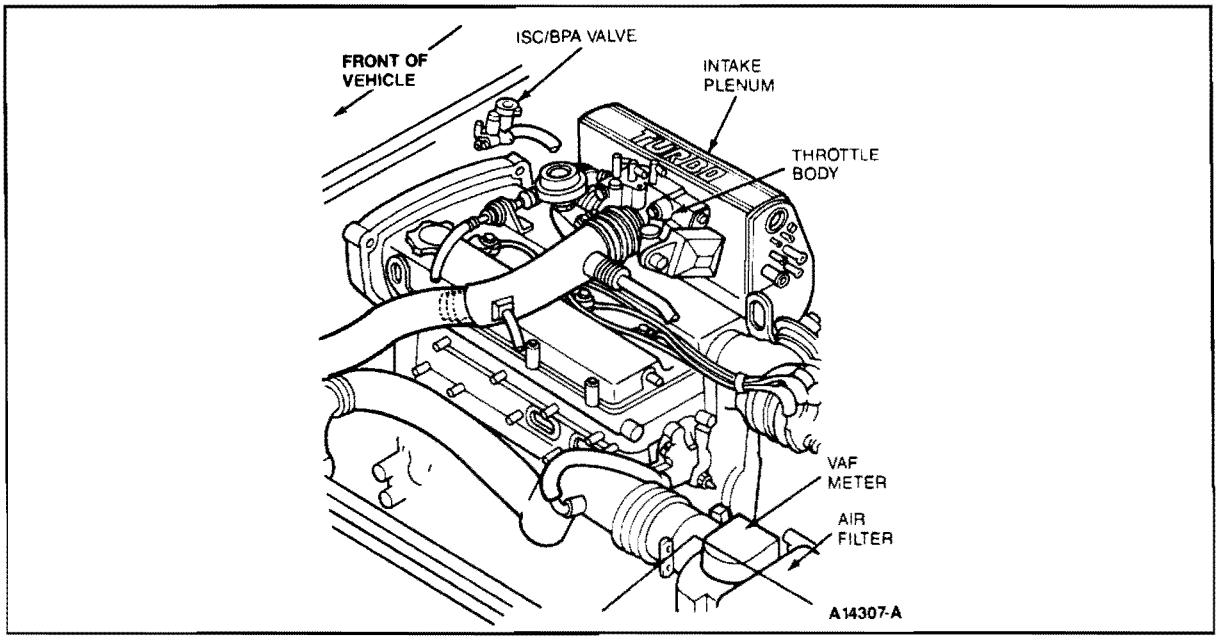
For further information regarding the makeup of this system and its relationship to other engine emission systems, refer to the appropriate Schematic Diagram, Section 4 of this manual.

Description and Operation

Non-Turbo Component Locations



Turbo Component Locations



Diagnosis and Testing

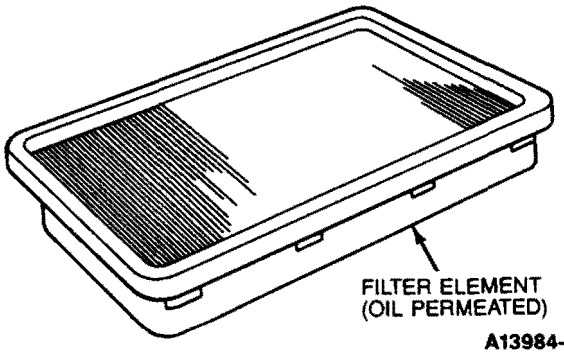
SYSTEM INSPECTION

1. Visually inspect the components of the Inlet Air System.
   Look for:

Electrical	Mechanical
• Discharged Battery • Damaged, Loose Corroded Connections • Damaged Insulation • Malfunctioning ECA • Damaged Air Flow Meter	• Loose, Kinked, Pinched or Damaged Air or Vacuum Lines • Loose, Damaged Vacuum Line Connections • Engine Timing (Refer to Section 14 of this manual) • Poor Driveability Symptoms (Refer to Diagnostic Routines)

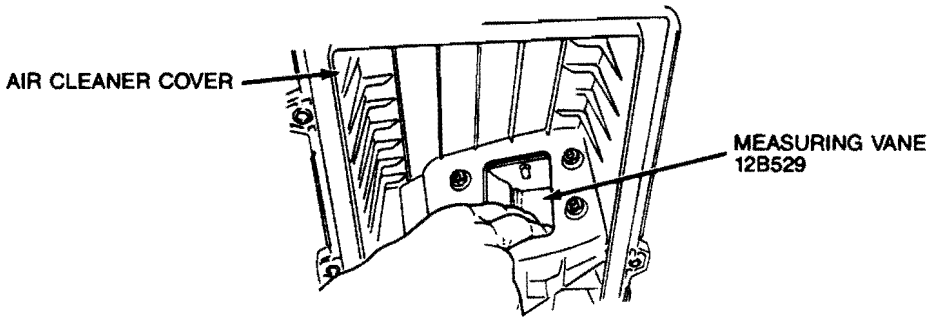
2. Exercise the wiring and connections for the VAF Meter, TP Sensor, ISC Valve and the ECA for obvious problems due to looseness, corrosion, damage, or other causes of malfunction.
3. Check the air hoses and vacuum lines for proper routing, damage, or other causes of malfunction.
4. If any component is suspected as the obvious cause of malfunction, correct the cause before proceeding.
5. If all checks are OK, proceed to Pinpoint Tests.

Diagnosis and Testing | All Engines | IA

TEST STEP		RESULT ▶	ACTION TO TAKE
IA0	AIR CLEANER AND FILTER ELEMENT CONDITION		
• Inspect the Air Cleaner Body, Cover and connecting components for damage, blockage, looseness, missing fasteners, and for filter misfit due to wrong Filter Element. Remove the Air Cleaner Cover and inspect the Filter Element for dirt. • **Is the Air Cleaner free of damage and dirt and is the Filter Element OK?** CAUTION **Do not use compressed air to clean the Filter Element.**  A13984-A		Yes ▶	GO to IA1.
		No ▶	SERVICE/REPLACE/ CLEAN Air Cleaner components as required. REPLACE Air Filter Element as required.

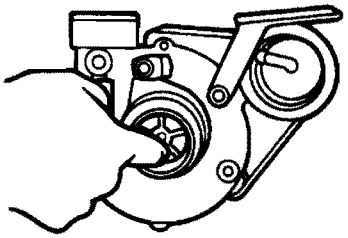
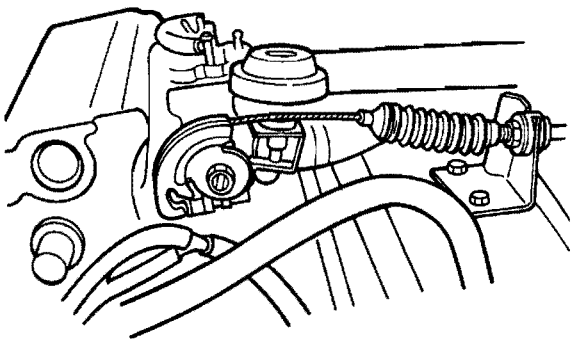
Diagnosis and Testing	All Engines	IA

TEST STEP	RESULT ▶	ACTION TO TAKE
IA1 VAF METER FUNCTION		
• Visually check the Vane Air Flow (VAF) Meter for cracks, loose mounting and damage to electrical connector or sealed plastic cover. Remove the VAF and inspect bottom plate for cracks or loose fasteners. Verify that the measuring vane moves smoothly and springs shut when pushed forward and then released. • **Is the VAF meter OK?** **NOTE: Electronic Component troubleshooting is covered in the Electronic Pinpoint Test, Section 16 of this manual.**	Yes ▶	Turbo: GO to IA2. Non-Turbo: GO to IA3.
	No ▶	REPLACE VAF Meter.

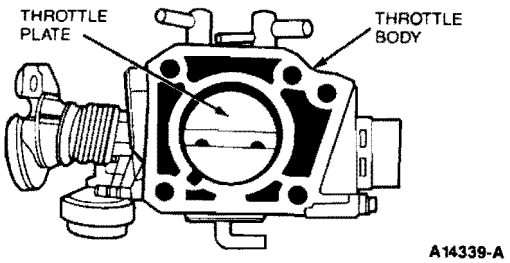


A13985-A

Diagnosis and Testing	All Engines	IA

TEST STEP	RESULT ▶	ACTION TO TAKE
IA2 CHECK		
• Visually inspect the Intercooler for leaks, cracks, restrictions, or other damage. • **Is the Intercooler OK?**  A14316-A	Yes ▶ No ▶	GO to **IA3**. SERVICE/REPLACE Intercooler.
IA3 THROTTLE LINKAGE FUNCTION		
• Check the Throttle Linkage for damage, proper installation, and pedal freedom of movement when the accelerator pedal is depressed. • **Is the linkage correctly installed and does it operate freely without binding when the accelerator pedal is depressed?**  A14338-A	Yes ▶ No ▶	GO to **IA4**. CORRECT/CLEAN or REPLACE as required any binding or damaged linkage and adjust cable free play to 1-3mm (0.039-0.118 inch).

Diagnosis and Testing	All Engines	IA

TEST STEP	RESULT ▶	ACTION TO TAKE
IA4 THROTTLE BODY CONDITION CHECK		
• Inspect Throttle Body and components for cracks, looseness, or other damage. • With the engine running at idle, listen for a hissing sound indicating a water or air leak. • Without removing the Throttle Body from the engine, check the vacuum and electrical lines for looseness, misrouting, pinching, corrosion or other obvious damage. • Refer to the Electronic Pinpoint Tests for checking the electrical integrity of the TP Sensor and ISC Solenoid. • Check the Throttle Lever for freedom of movement. • Check that the Throttle Body Valve Plate moves smoothly from the full closed position to the full open position. • Check for a loose, bent or damaged plate, and for contamination that may cause binding. • **Are the Throttle Body and attachments in good operating condition?** **NOTE: Electronic component troubleshooting is covered in the Electronic Pinpoint Test, Section 16 of this manual.**  A14339-A	Yes ▶ No ▶	RETURN to Diagnostic Routines, Section 2. SERVICE/REPLACE the Throttle Body and/or related components as required.

Specifications

SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Throttle Linkage Freeplay	1-3mm (0.039-0.118 inch)