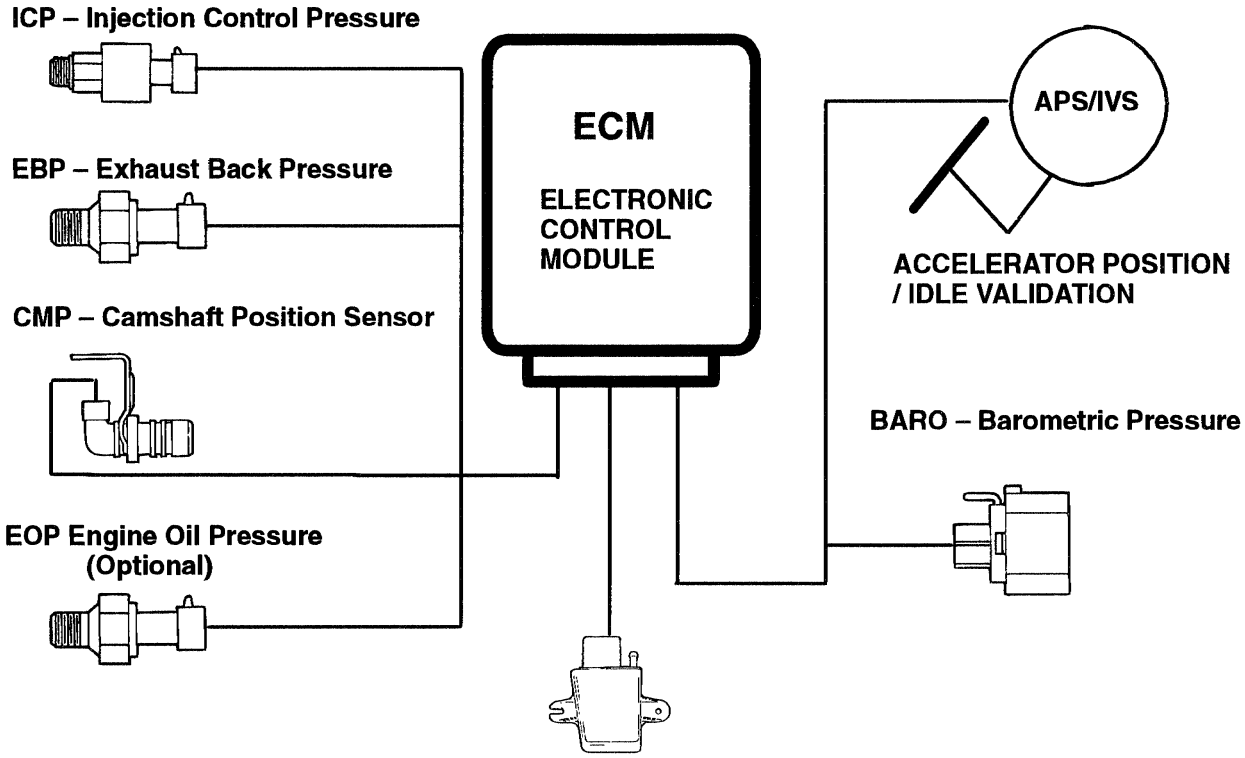
ELECTRONIC CONTROL SYSTEM DIAGNOSTICS

VOLTAGE REFERENCE CIRCUITS (VREF)

V REF VOLTAGE REFERENCE



CIRCUIT FUNCTIONS

The V Ref circuit is a 5 ± .5 volt power supply from the ECM that provides power to the three wire engine and vehicle sensors and provides a benchmark or reference voltage for the ECM.

FAULT DETECTION/MANAGEMENT

There is no fault detection specifically for the V Ref signal directly, but if there is a V Ref circuit fault the sensor(s) in the section of the circuit affected may set an out of range high or low code. Multiple high or low codes are usually an indication of a V Ref or in some instances a Signal Ground fault condition.

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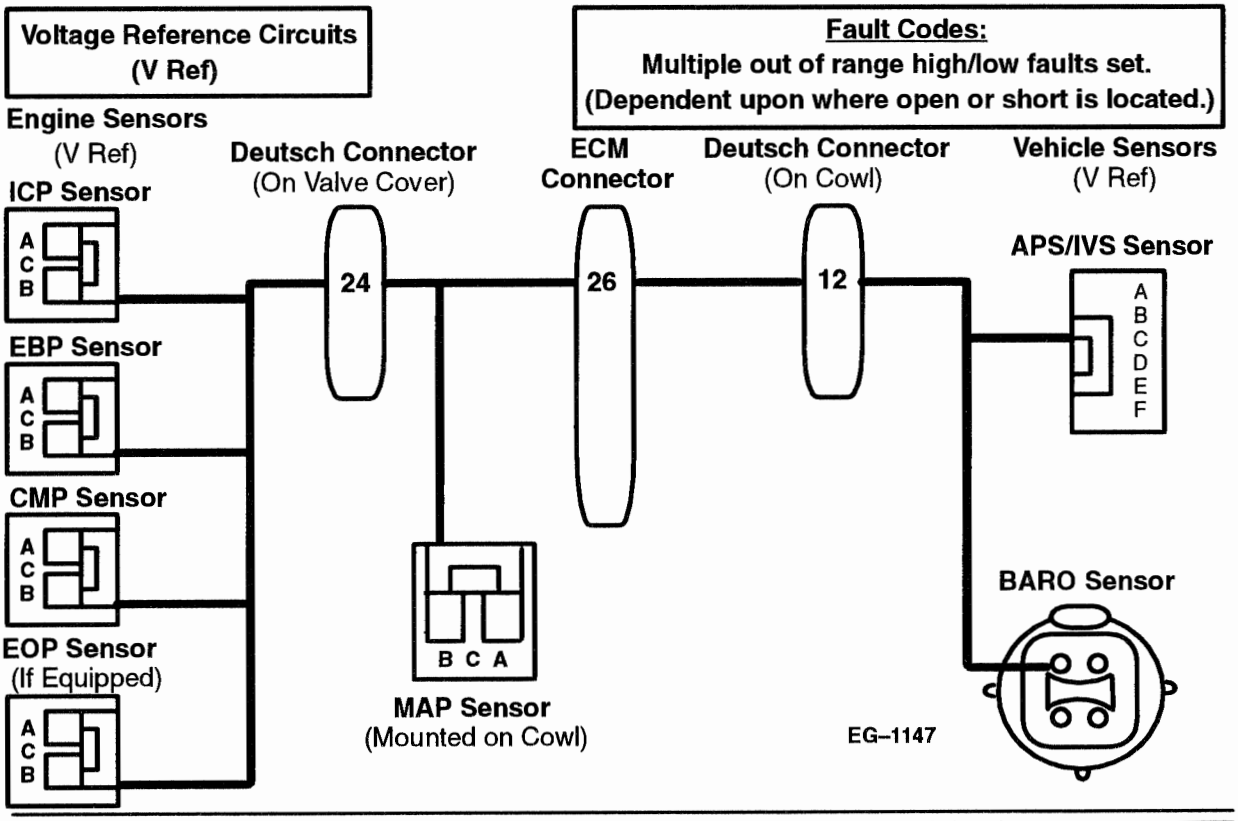

Connector V Ref Voltage Checks

(If multiple faults set remove and measure V Ref at suspected sensor circuits)

Sensor	Test Points	Spec.	Comments
ICP	B to Grd	5 ± .5 v	Check V Ref at suspected sensors one at a time. Identifying which sensors do not have V Ref and which ones share common V Ref feed will more quickly help isolate the area of a short or open circuit. If disconnecting a sensor causes V Ref to be present at a circuit that had previously lost V Ref it is likely that the disconnected sensor had shorted V Ref to ground.
EBP	B to Grd	5 ± .5 v	
CMP	B to Grd	5 ± .5 v	
MAP	B to Grd	5 ± .5 v	
APS/IVS	C to Grd	5 ± .5 v	
BARO	B to Grd	5 ± .5 v	

Connector Checks to Chassis Ground

(Check with Sensor Connector(s). Disconnected and ignition key OFF, all accessories off)

Sensor	Test Points	Spec.	Comments
ICP	B to Grd	> 1000 ohms	Resistance < 1000 ohms indicates a short to grd. If a short to grd condition is identified, remove all sensor connectors that are connected to V Ref and ECM to determine if short is in a sensor, ECM or wire harness. If the short is identified in the harness, remove the intermediate Deutsch connectors and measuring to grd will identify which part of the harness the short is located in.
EBP	B to Grd	> 1000 ohms	
CMP	B to Grd	> 1000 ohms	
MAP	B to Grd	> 1000 ohms	
APS/IVS	C to Grd	> 1000 ohms	
BARO	B to Grd	> 1000 ohms	

Harness Resistance Checks

(Check with breakout box installed on harness only)

Sensor	Test Points	Spec.	Comments
ICP	B to #26	< 5 ohms	The measurement is taken form the sensor connector to the ECM 60 pin connector. Resistance greater than 5 ohms indicates high resistance or an open in the V Ref supply circuit.
EBP	B to #26	< 5 ohms	
CMP	B to #26	< 5 ohms	
MAP	B to #26	< 5 ohms	
APS/IVS	C to #26	< 5 ohms	
BARO	B to #26	< 5 ohms	

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VOLTAGE REFERENCE
EXTENDED SYSTEM DESCRIPTION

FUNCTION

The Electronic Control Module contains a regulated 5 volt DC voltage reference source to power engine and vehicle control sensors. The sensor signals are compared to the Voltage Reference to determine actual sensor output signal values. These values are processed by the ECM for engine operation.

OPERATION

The ECM is supplied with Battery Voltage when the ignition key is ON at terminals 37 and 57. Ground circuits are supplied at terminals 20, 40 and 60. The ECM provides a constant regulated 5 volt reference signal from terminal 26 to supply voltage to engine and vehicle sensors. A return circuit for sensors is supplied at terminal 46.

ECM VOLTAGE REFERENCE DIAGNOSTICS

If multiple sensor codes are set, it is possible that the V REF signal circuit is open or the return signal circuit is open. Follow troubleshooting procedures to determine if V REF circuits are at fault. The engine will not run without a valid V REF signal.

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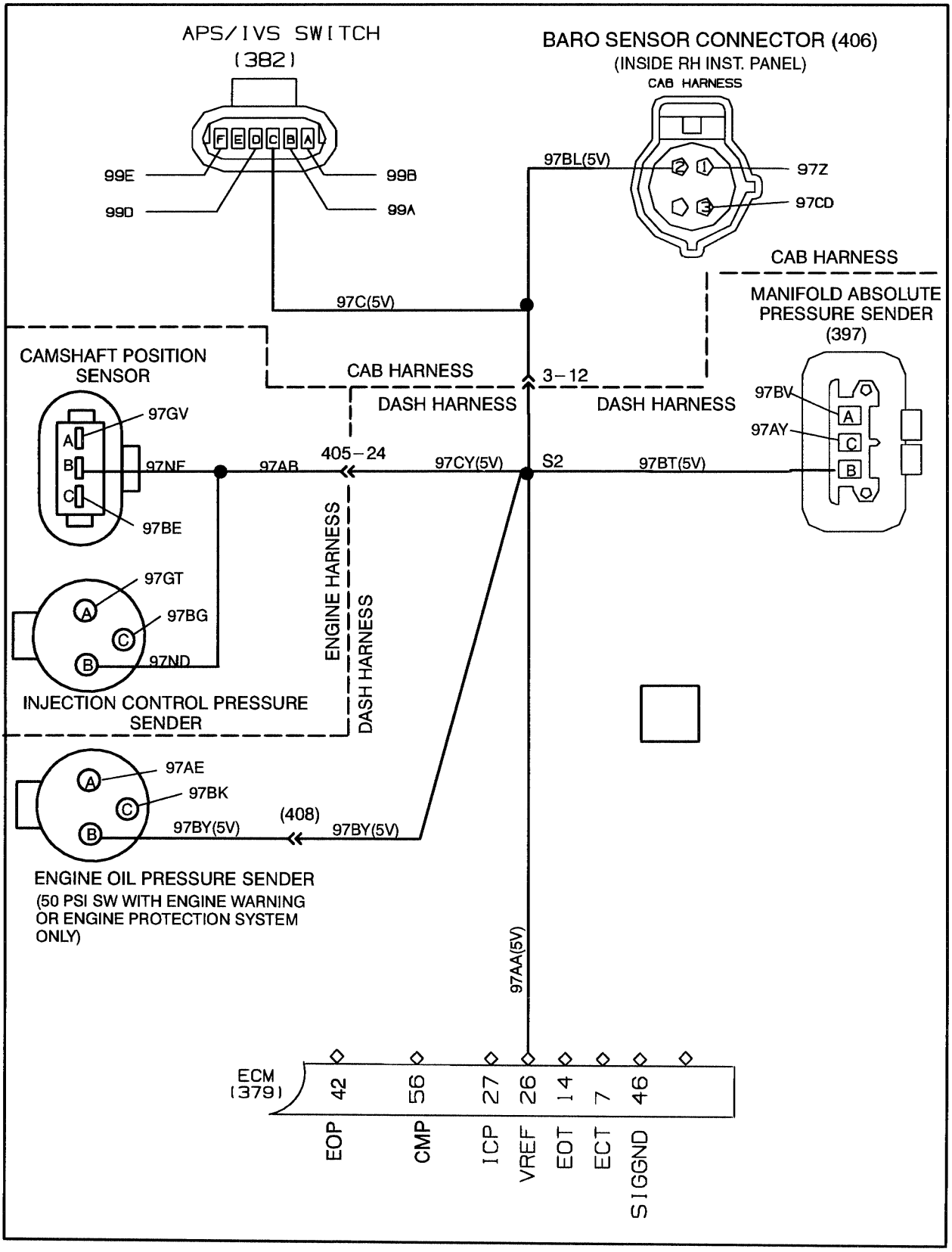
VREF CIRCUITS



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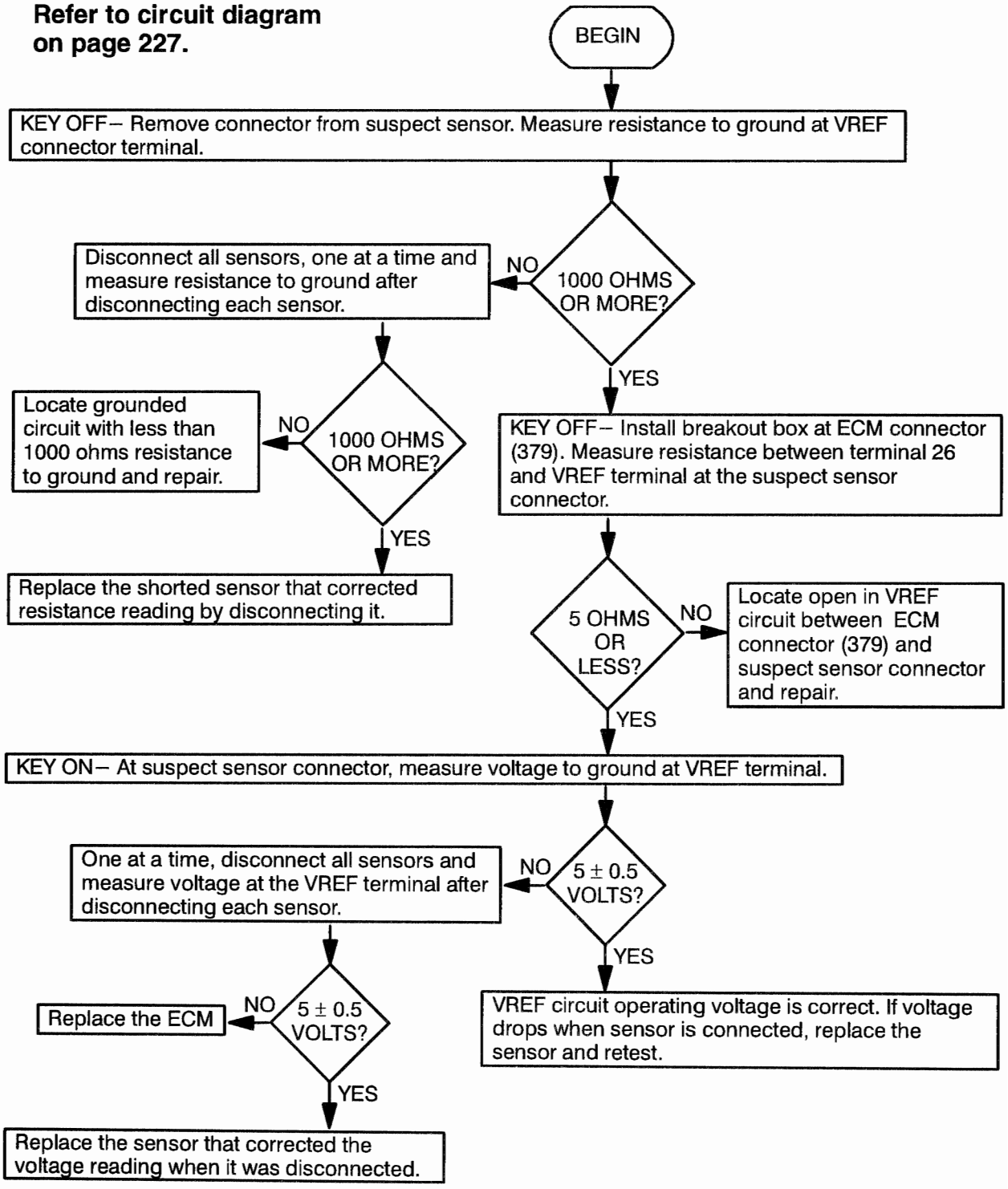
ELECTRONIC CONTROL SYSTEM DIAGNOSTICS

VOLTAGE REFERENCE CIRCUITS (VREF)

VREF CIRCUITS (CONTINUED)

Refer to circuit diagram on page 227.



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