G - TESTS W/CODES
Article Text
1993 Honda Prelude
For Cadi Centre Nsk CA 95051

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ARTICLE BEGINNING

1993 ENGINE PERFORMANCE
Honda Self-Diagnostics

Prelude

INTRODUCTION

If no faults were found while performing BASIC TESTING, proceed with self-diagnostics. If no Diagnostic Trouble Codes (DTCs) or only pass codes are present after entering self-diagnostics, proceed to H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.).

SELF-DIAGNOSTIC SYSTEM

Hard Failures
Hard failures cause Malfunction Indicator Light (MIL) to illuminate and remain on until problem is repaired. If light comes on and remains on (light may flash) during vehicle operation, cause of malfunction must be determined by retrieving DTCs and using TROUBLE CODE CHARTS. See RETRIEVING CODES. If a sensor fails, control unit will use a substitute value in its calculations to continue engine operation. In this condition, commonly known as limp-in mode, the vehicle runs but driveability will not be optimum.

Intermittent Failures
Intermittent failures may cause Malfunction Indicator light (MIL) to flicker or illuminate and go out after the intermittent fault goes away. The corresponding DTC will be retained in ECM memory. If related fault does not reoccur within 50 starter operations, related DTC will be erased from control unit memory. Intermittent failures may be caused by sensor, connector or wiring related problems. See INTERMITTENTS in H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

MALFUNCTION INDICATOR LIGHT (MIL)

All models are equipped with an MIL. As a bulb check, light illuminates when ignition is on and engine is not running. MIL also illuminates when a system failure has been detected and a corresponding DTC has been set in ECM memory. Not all trouble codes will activate MIL. If MIL is on and no DTCs are in memory, see H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

RETRIEVING CODES

With ignition off, insert jumper wire in service check connector terminals, located behind right side of dash on Accord, Civic and Civic Del Sol and near center console on Prelude. See Fig. 1. Turn ignition switch to ON position. Diagnostic Trouble Codes (DTCs) will be indicated by a series of long and short flashes on MIL. The number of long flashes indicates the number in the 10s column. The number of short flashes indicates the number in the 1s column. For example, 4 long flashes followed by 3 short flashes would indicate DTC 43.

See TROUBLE CODE DEFINITION table and proceed to appropriate TROUBLE CODE CHART for testing. All voltage tests should be performed with a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm input impedance, unless specifically stated differently in testing procedure.

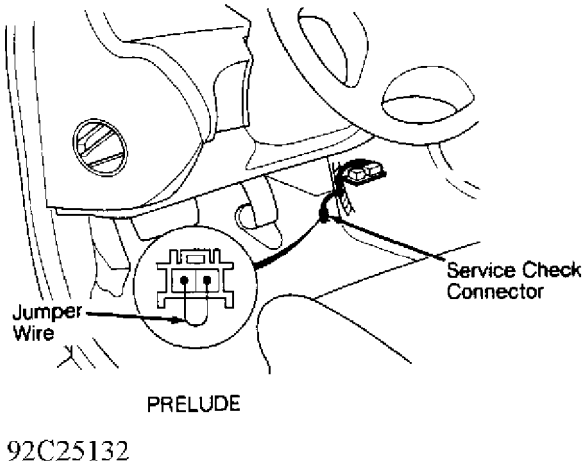

Fig. 1: Locating Service Check Connectors, Prelude
Courtesy of American Honda Motor Co.

DIAGNOSTIC TROUBLE CODE DEFINITION

DIAGNOSTIC TROUBLE CODE IDENTIFICATION TABLE

Code(1)	System Affected	Probable Cause
0	ECM	No Signal To ECM
1	Heated Oxygen Sensor (HO2S)	Problem In HO2S Circuit
3	MAP Sensor	Electrical Problem In MAP Sensor
4	Crank Angle Sensor (CKP)	Problem In CKP Circuit

5	MAP Sensor	Mechanical Problem In MAP Sensor
6	Engine Coolant Temperature (ECT) Sensor	Open Or Shorted Signal Circuit
7	Throttle Position (TP) Sensor	Open Or Shorted Signal Circuit
8	Crank Angle Sensor (TDC)	Open Or Shorted Signal Circuit
9	Crank Angle Sensor (CYP)	Open Or Shorted Signal Circuit
10	Intake Air Temperature(IAT)	Problem With Sensor
12	EGR System	No EGR Action
13	Barometric Pressure (BARO) Sensor	Problem With PA Circuit
14	Idle Air Control(IAC) Valve	Open Or Shorted Signal Circuit
15	Ignition Output Signal	Electrical Problem In Signal Circuit
16	Fuel Injector	Problem In Fuel Injector Circuit
17	Vehicle Speed Sensor (VSS)	Open Or Shorted Signal Circuit
19	A/T Lock-Up Control Solenoid Valve (Civic & Civic Del Sol)	Problem In Lock-Up Solenoid Circuit
20	Electrical Load Detector (ELD)	Problem With ELD Circuit
21	Spool Solenoid Valve (Civic & Civic Del Sol)	Problem With VTEC Spool Solenoid Circuit
22	VTEC Oil Pressure Switch (Civic & Civic Del Sol)	Problem In VTEC Oil Pressure Switch Circuit
23	Knock Sensor (Prelude)	Problem With Knock Sensor Circuit
30	A/T FI Signal A (Accord & Prelude)	Problem In A/T Control Unit And ECM Circuit

31	**A/T FI Signal B (Accord & Prelude)**	**Problem In A/T Control Unit And ECM Circuit**
41	**Heated Oxygen Sensor (HO2S) Heater**	**Problem With HO2S Circuit**
43	**Fuel Supply System (Except D15Z1 Engine)**	**Problem With HO2S Circuit Or Fuel System**
48	**Heated Oxygen Sensor (HO2S - D15Z1 Engine)**	**Problem With HO2S Circuit**

(1) - If codes other than these are indicated, repeat self-diagnosis. If code(s) reappear, substitute a known good ECM, and recheck codes. If code(s) clear, replace ECM.

ECM RESET PROCEDURE/CLEARING CODES

NOTE: Some models have an anti-theft code built into the radio circuit. Clearing codes cancels clock and radio settings; make note of settings before beginning reset procedure. After ECM reset, the radio will not function until code is entered.

To reset ECM, remove BACK UP fuse (CLOCK/RADIO fuse on Prelude) from underhood fuse/relay block. Leave fuse out for 10 seconds to reset ECM.

ECM LOCATION

On Accord and Prelude, ECM is located under carpet in passenger-side footwell. The ECM is located in passenger side kick panel on Civic and Civic Del Sol. See Fig. 1.

SUMMARY

If no hard trouble codes (or only pass codes) are present, driveability symptoms exist or intermittent codes exist, proceed to H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.) or intermittent diagnostic procedure.

DIAGNOSTIC TROUBLE CODE CHARTS

NOTE: In the following diagnostic trouble code charts, illustrations and schematics are courtesy of American Honda

Motor Co., Inc.

Using Diagnostic Trouble Code Charts

To use DIAGNOSTIC TROUBLE CODE CHARTS, see RETRIEVING CODES under SELF-DIAGNOSTIC SYSTEM. After codes have been recorded, proceed to appropriate DIAGNOSTIC TROUBLE CODE CHART.

When directed by chart to install ECM test harness, turn ignition off. Connect ECM Test Harness (07LAJ-PT3010A) between ECM and connector. See Fig. 2. Follow code chart directions.

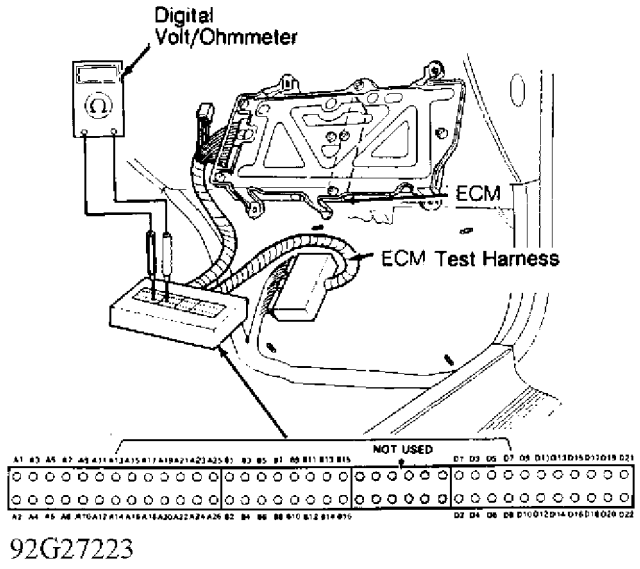

Fig. 2: Installing PGM-FI ECM Test Harness & Identifying Terminals Courtesy of American Honda Motor Co., Inc.

CODE/NO CODE NO START TROUBLE SHOOTING

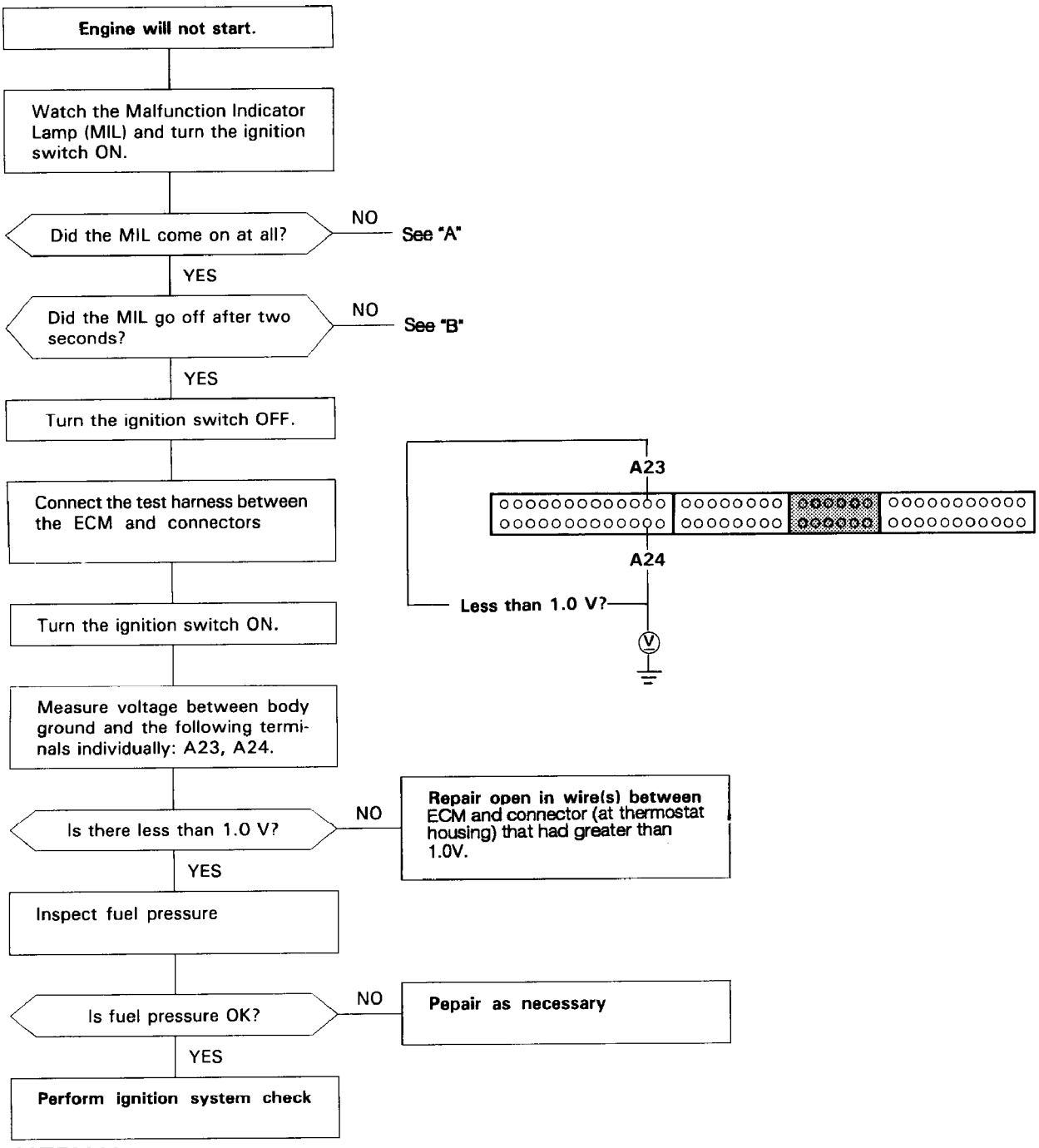

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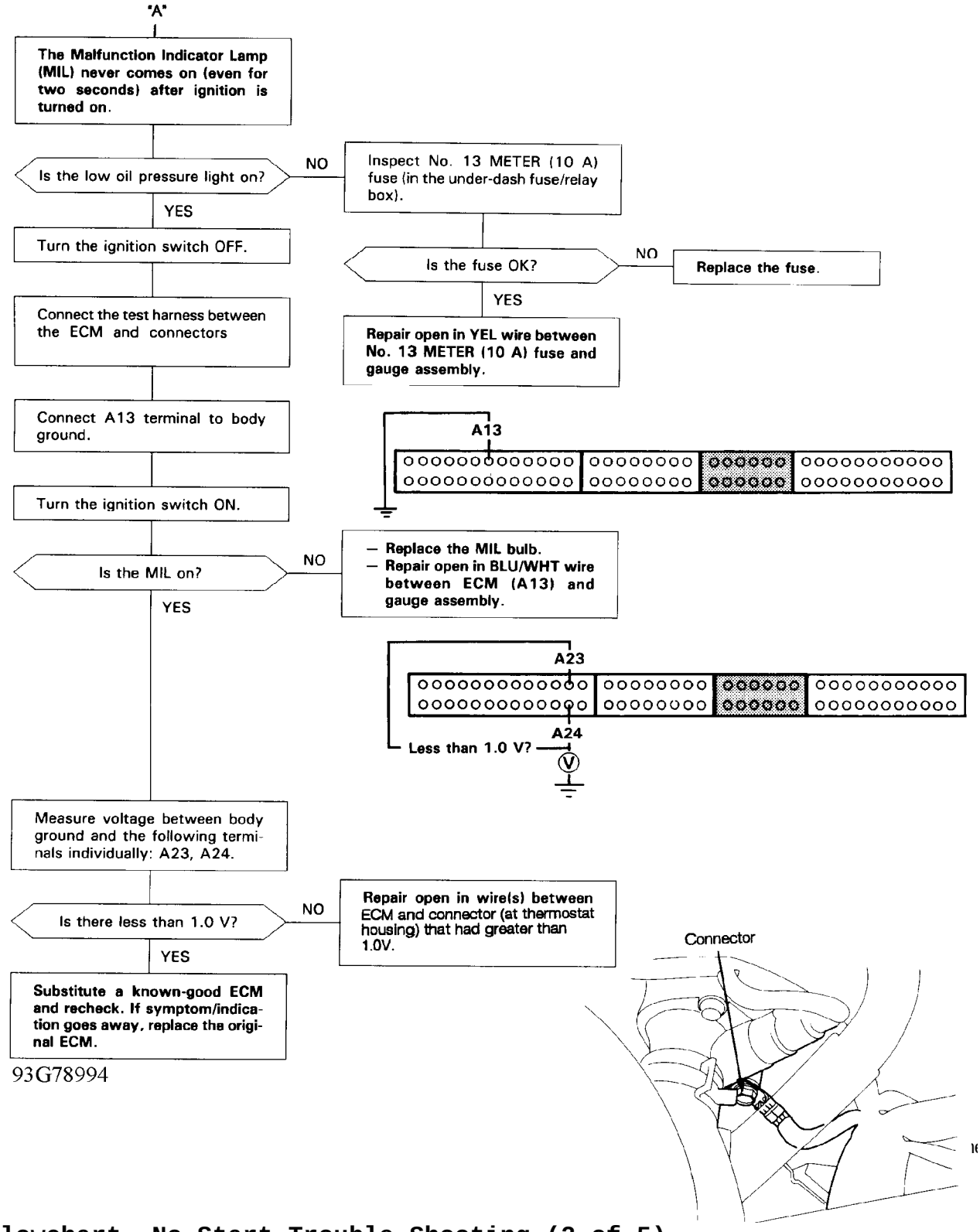
Fig. 3: Flowchart, No Start Trouble Shooting (1 of 5)
Courtesy of American Honda Motor Co., Inc.

G - TESTS W



G - TESTS W

Fig. 4: Flowchart, No Start Trouble Shooting (2 of 5)
Courtesy of American Honda Motor Co., Inc.

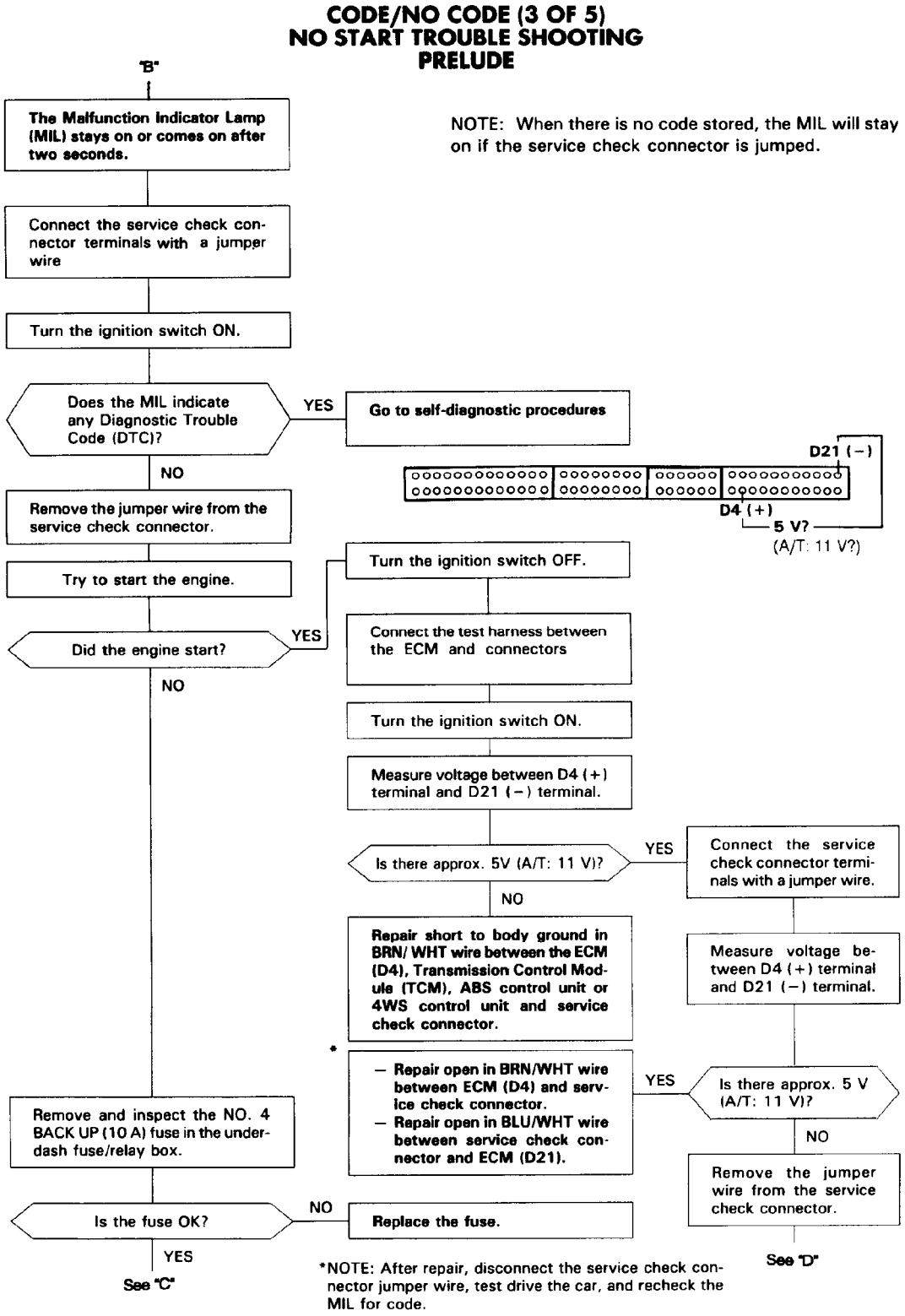


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Fig. 5: Flowchart, No Start Trouble Shooting (3 of 5)
Courtesy of American Honda Motor Co., Inc.

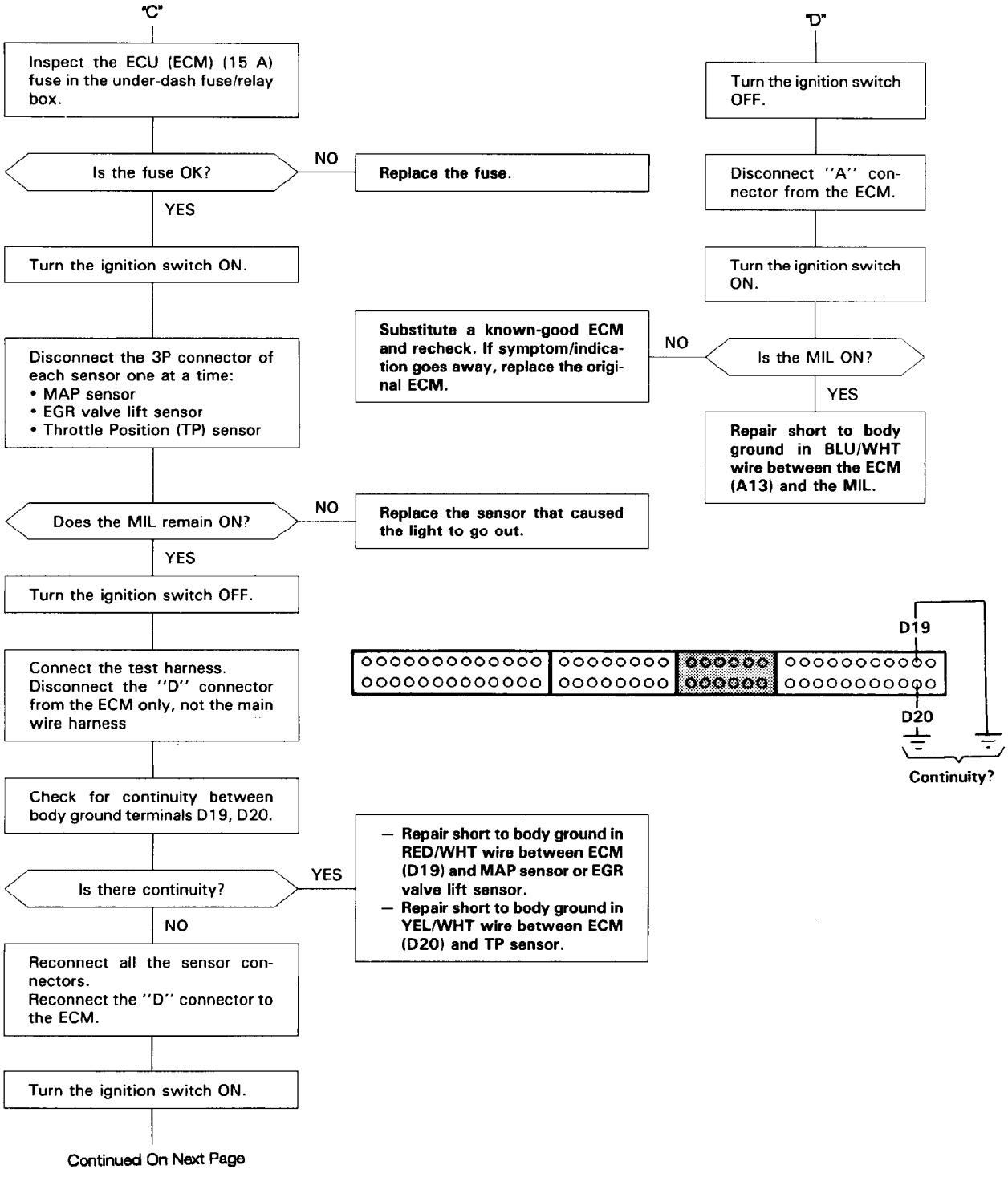

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Fig. 6: Flowchart, No Start Trouble Shooting (4 of 5)
Courtesy of American Honda Motor Co., Inc.

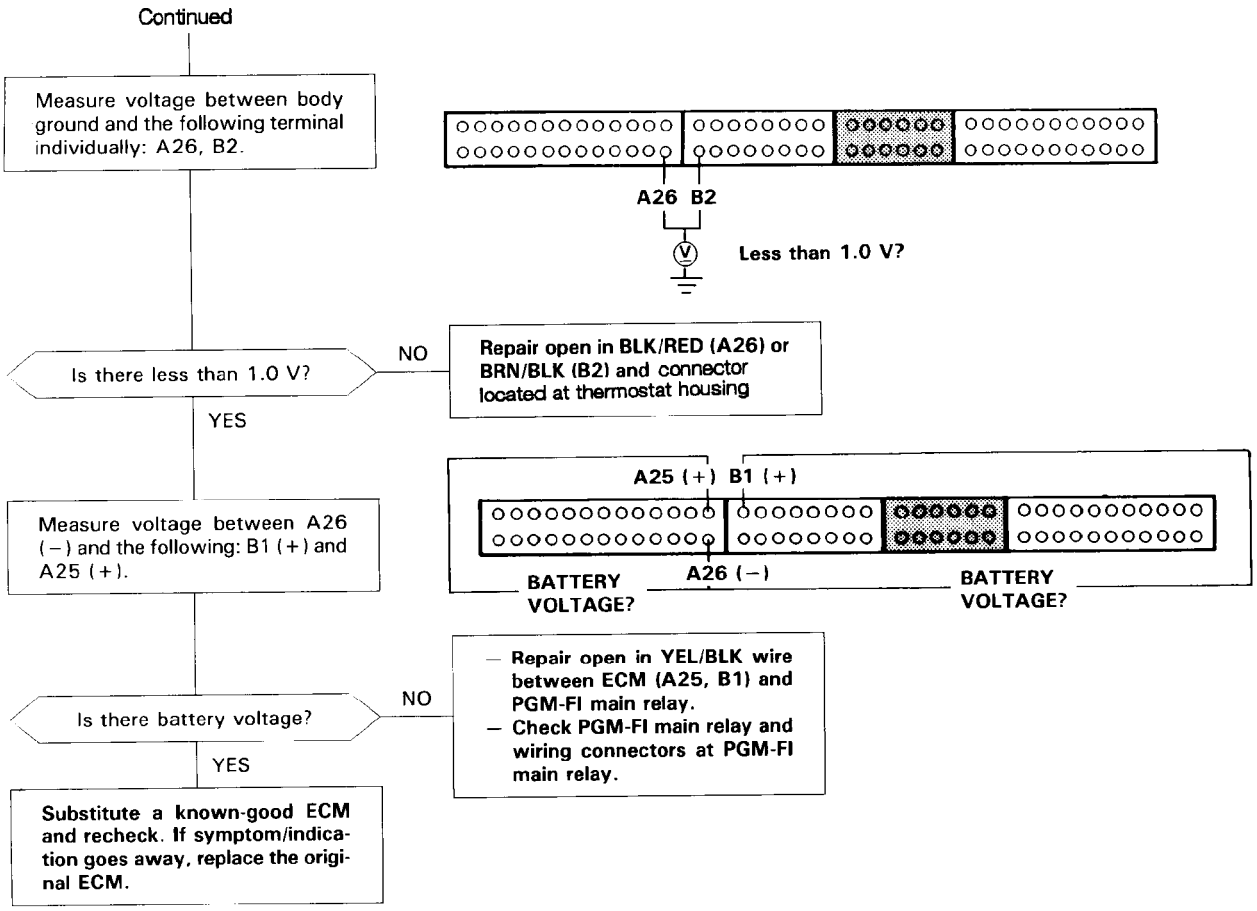

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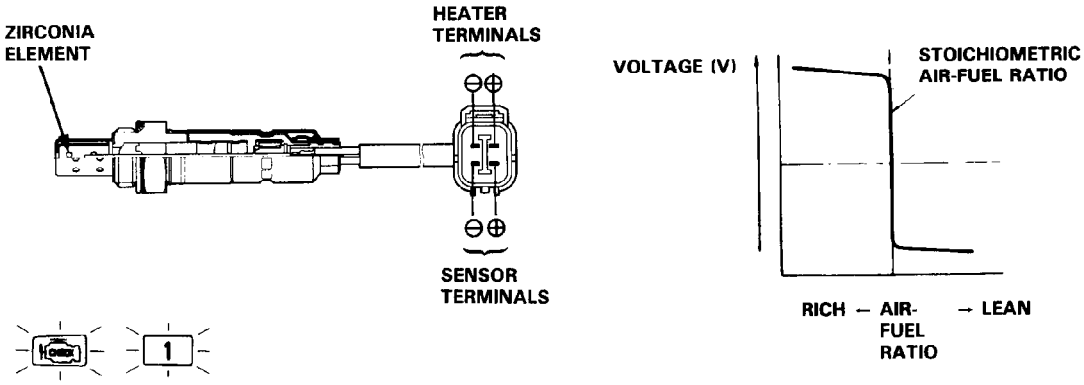
Fig. 7: Flowchart, No Start Trouble Shooting (5 of 5)
Courtesy of American Honda Motor Co., Inc.

CODE 1 - HEATED OXYGEN SENSOR (HO2S)

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 1: A problem in the Heated Oxygen Sensor (HO2S) circuit.

The Heated Oxygen Sensor (HO2S) detects the oxygen content in the exhaust gas and signals the ECM. In operation, the ECM receives the signals from the sensor and varies the duration during which fuel is injected. The HO2S has an internal heater. The heater stabilizes the sensor's output. The HO2S is installed in the exhaust manifold (H23A1 engine (USA: Si/Canada: SR), H22A1 engine (USA: Si VTEC/Canada: SR-V): in the exhaust pipe A).



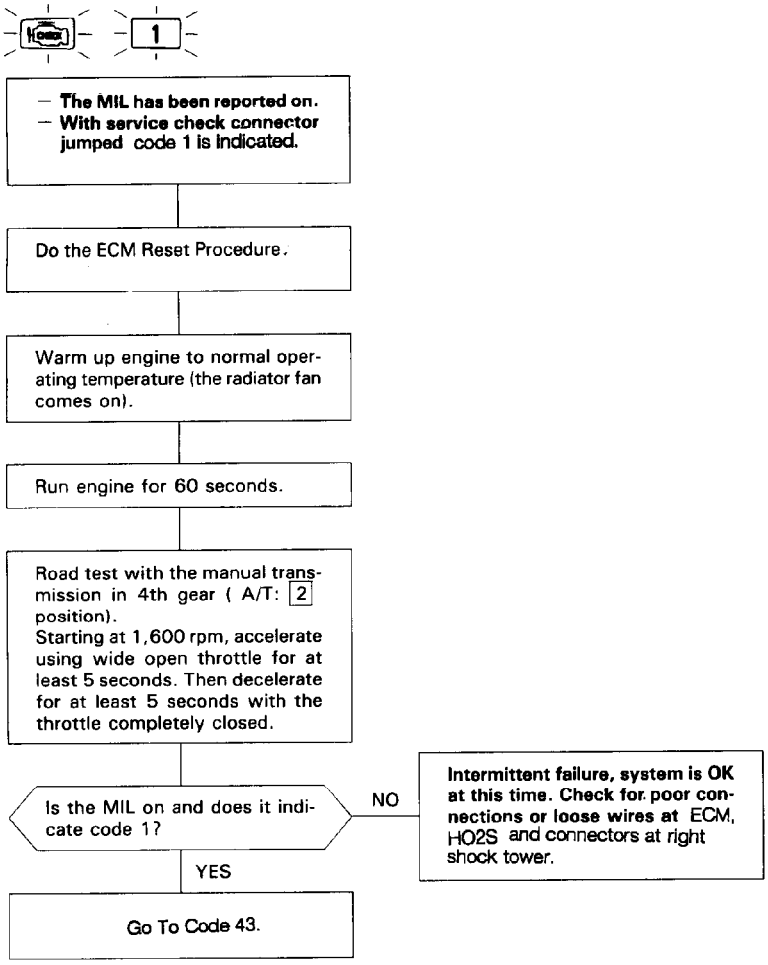


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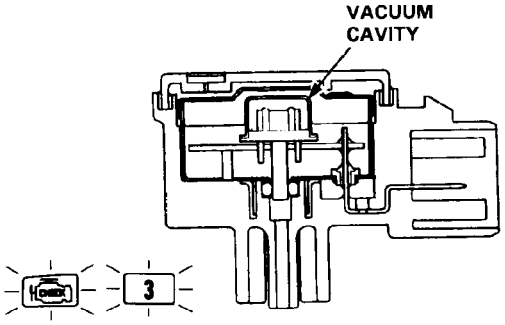
Fig. 8: Code 1 Flowchart, Heated Oxygen Sensor
Courtesy of American Honda Motor Co., Inc.

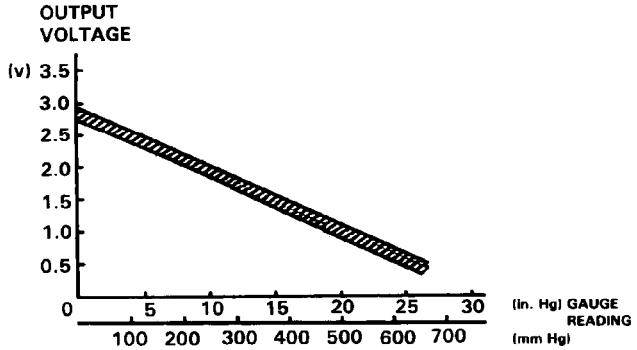
CODE 3 - MAP SENSOR CIRCUIT

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 3: An electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 5: A mechanical problem (vacuum leak) in the Manifold Absolute Pressure (MAP) Sensor System.

The MAP sensor converts manifold absolute pressure into electrical signals and inputs the ECM.





- Engine is warm and running.
- The MIL has been reported on.
- With service check connector jumped code 3 is indicated.

Do the ECM Reset Procedure.

Start the engine and allow it to idle.

Is the MIL on and does it indicate code 3?

NO

Intermittent failure, system is OK at this time (test drive may be necesary).
Check ECM, MAP Sensor and connector under left side of dash for poor connections and loose wires.

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

CONTINUED ON THE NEXT GRAPHIC

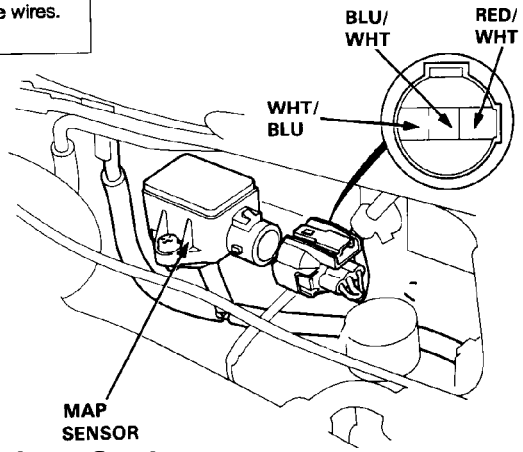


Fig. 9: Code 3 Flowchart, MAP Sensor Circuit (1 of 3)
Courtesy of American Honda Motor Co., Inc.

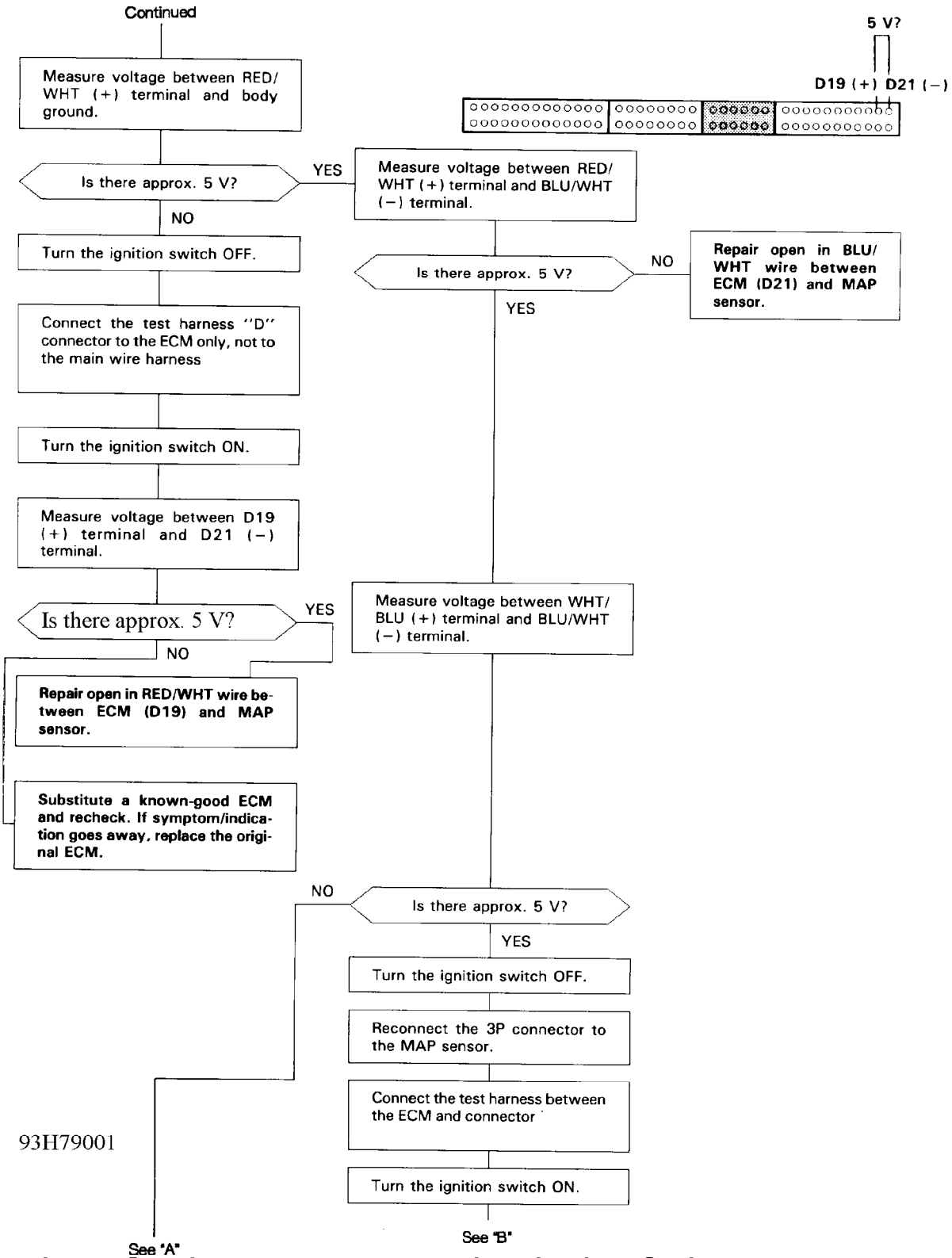


Fig. 10: Code 3 Flowchart, MAP Sensor Circuit (2 of 3)
Courtesy of American Honda Motor Co., Inc.

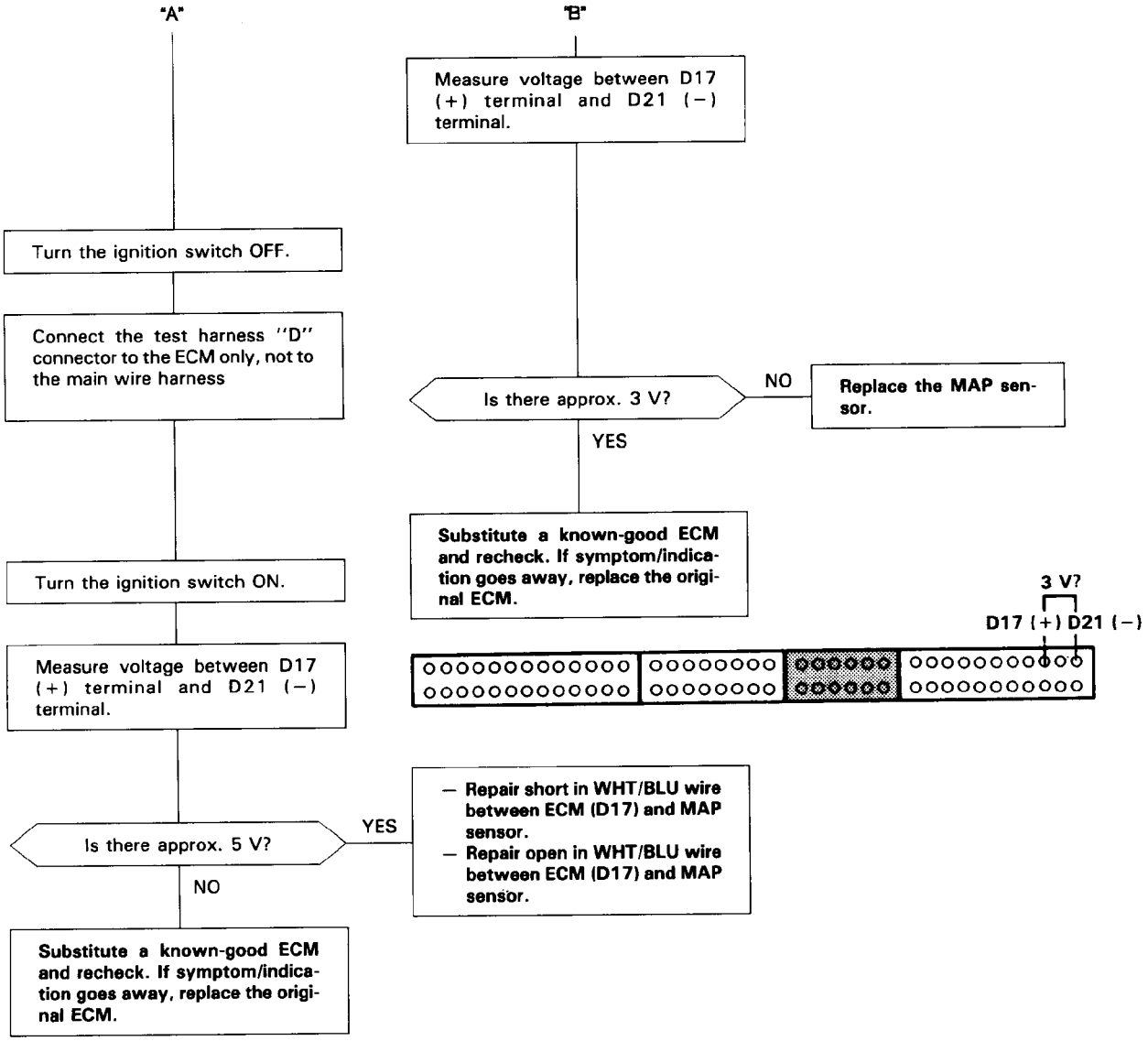


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Fig. 11: Code 3 Flowchart, MAP Sensor Circuit (3 of 3)
Courtesy of American Honda Motor Co., Inc.

CODE 4, 8 AND/OR 9 - TDC/CKP/CYP SENSOR

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 4: A problem in the Crankshaft Position (CKP) Sensor circuit.

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 8: A problem in the Top Dead Center (TDC) Sensor circuit.

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 9: A problem in the Cylinder Position (CYP) Sensor circuit.

The CKP Sensor determines timing for fuel injection and ignition of each cylinder and also detects engine speed. The TDC Sensor determines ignition timing at start-up (cranking) and when crank angle is abnormal. The CYP Sensor detects the position of No. 1 cylinder for sequential fuel injection to each cylinder.

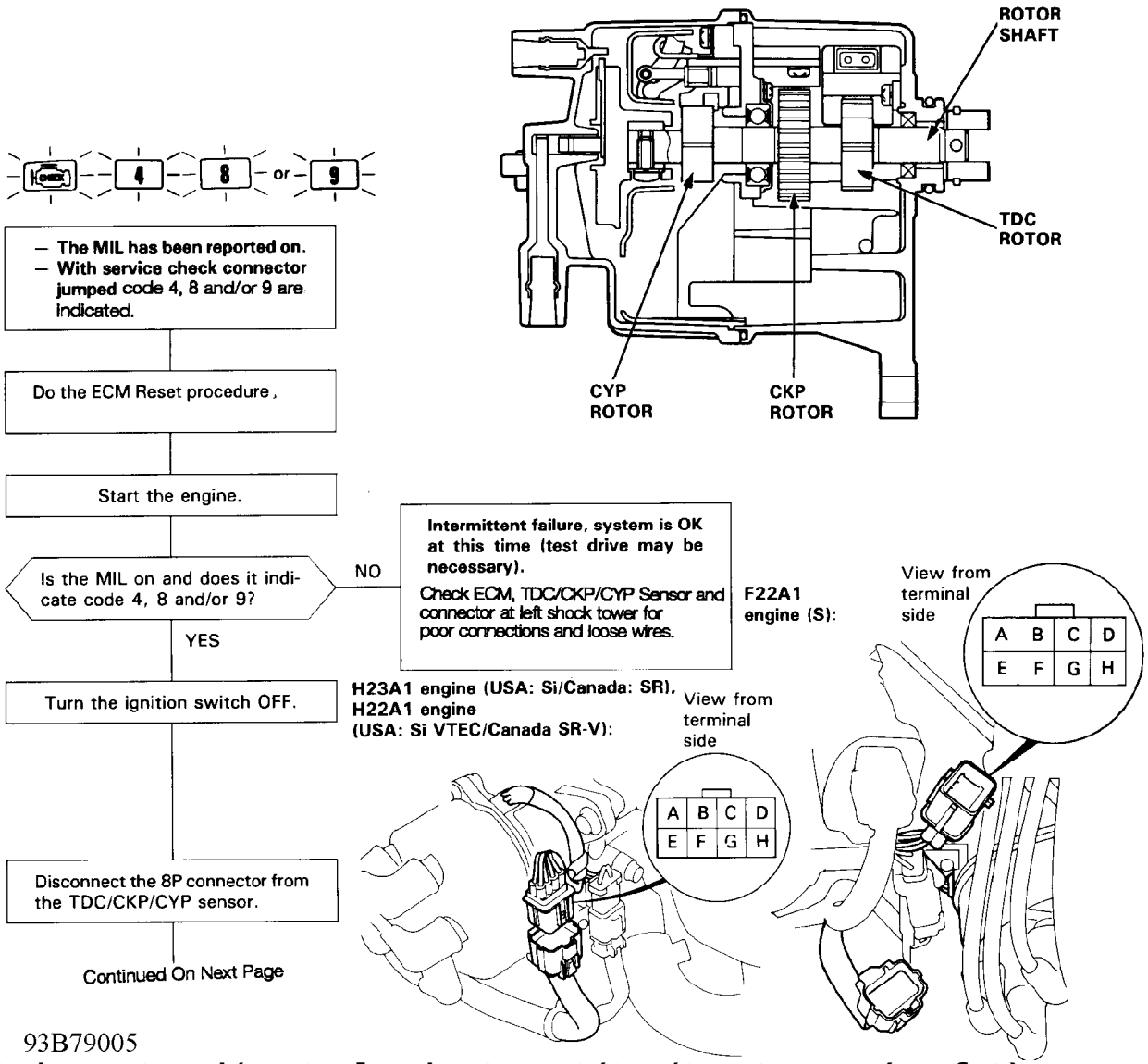

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Fig. 12: Code 4, 8 and/or 9 Flowchart, TDC/CKP/CYP Sensor (1 of 2) Courtesy of American Honda Motor Co., Inc.

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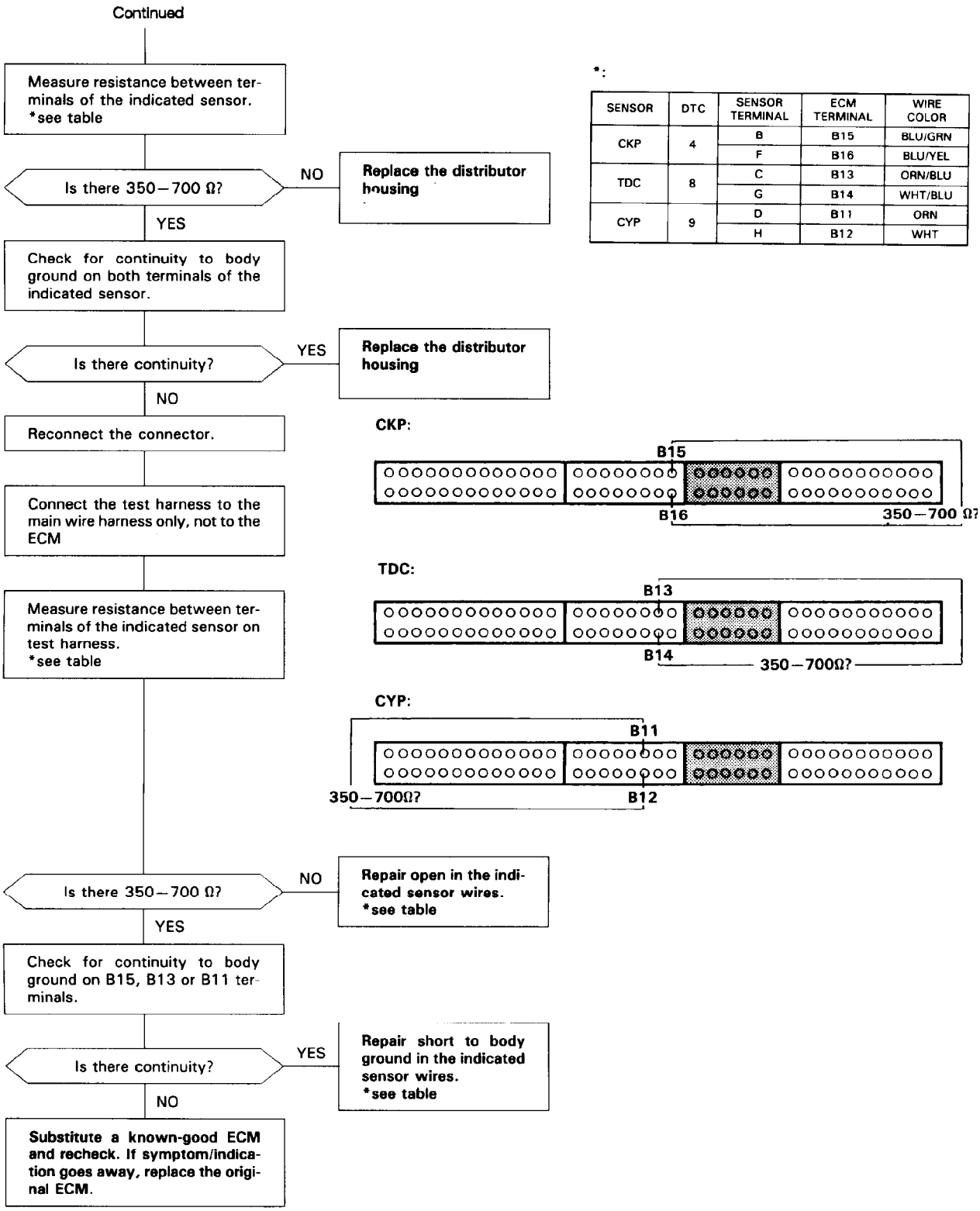

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Fig. 13: Code 4, 8 and/or 9 Flowchart, TDC/CKP/CYP Sensor (2 of 2)
Courtesy of American Honda Motor Co., Inc.

CODE 5 - MAP SENSOR CIRCUIT

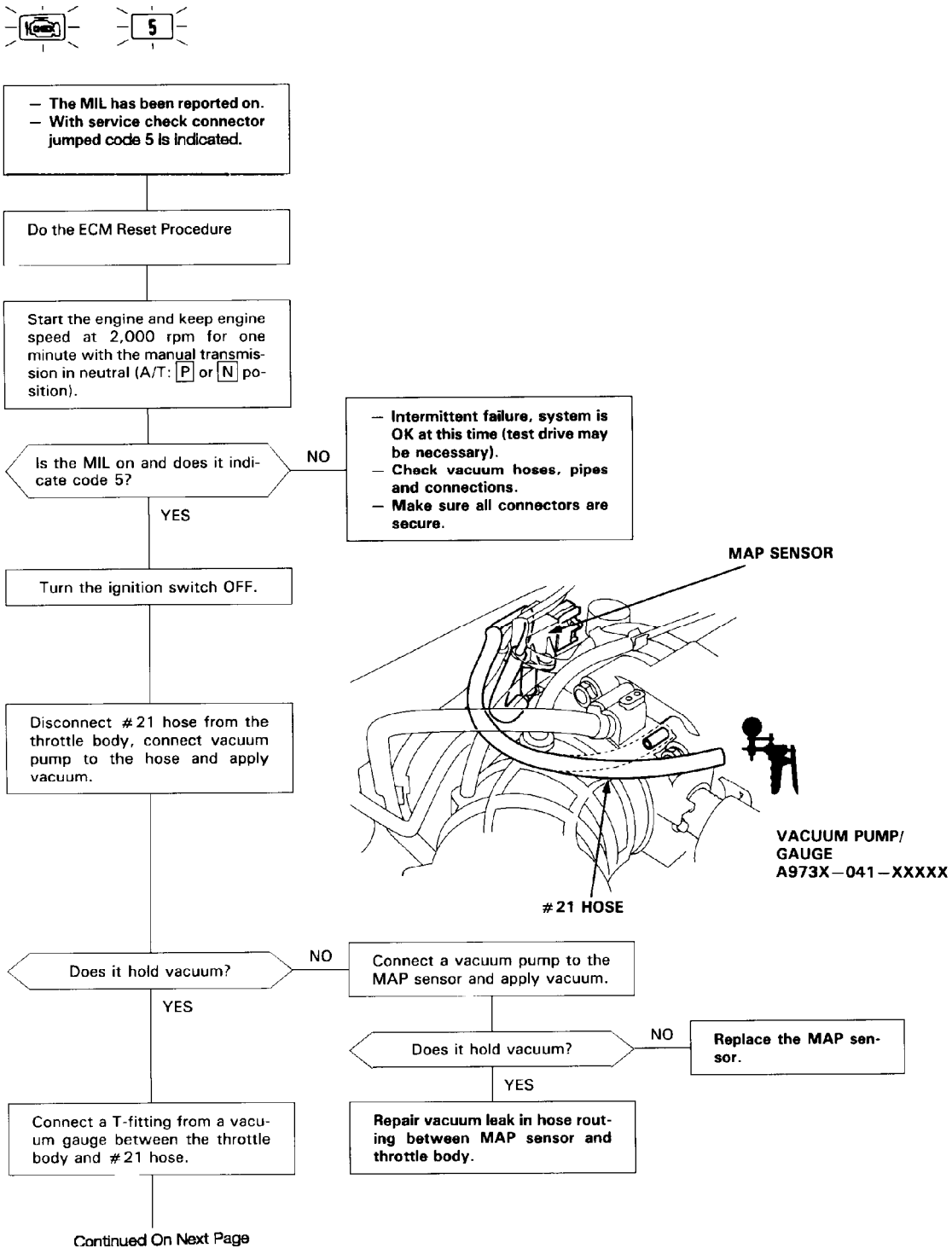

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Fig. 14: Code 5 Flowchart, MAP Sensor Circuit (1 of 2)
Courtesy of American Honda Motor Co., Inc.

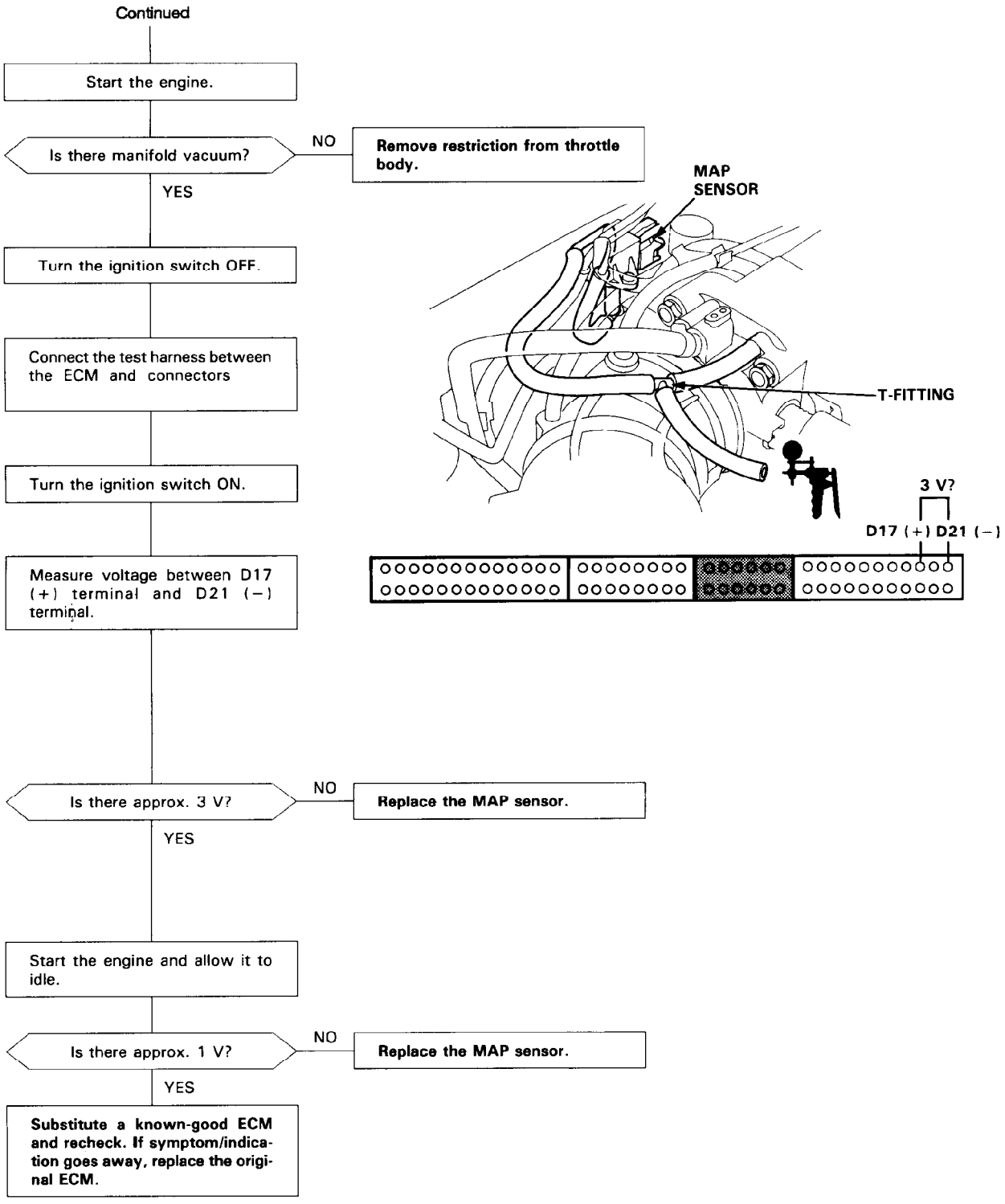

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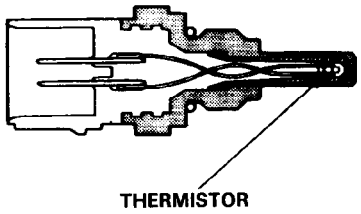
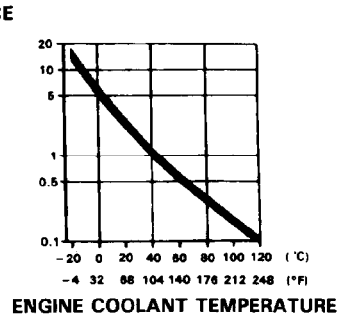
Fig. 15: Code 5 Flowchart, MAP Sensor Circuit (2 of 2)
Courtesy of American Honda Motor Co., Inc.

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 6: A problem in the Engine Coolant Temperature (ECT) Sensor circuit.

The ECT Sensor is a temperature dependant resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases as shown below.





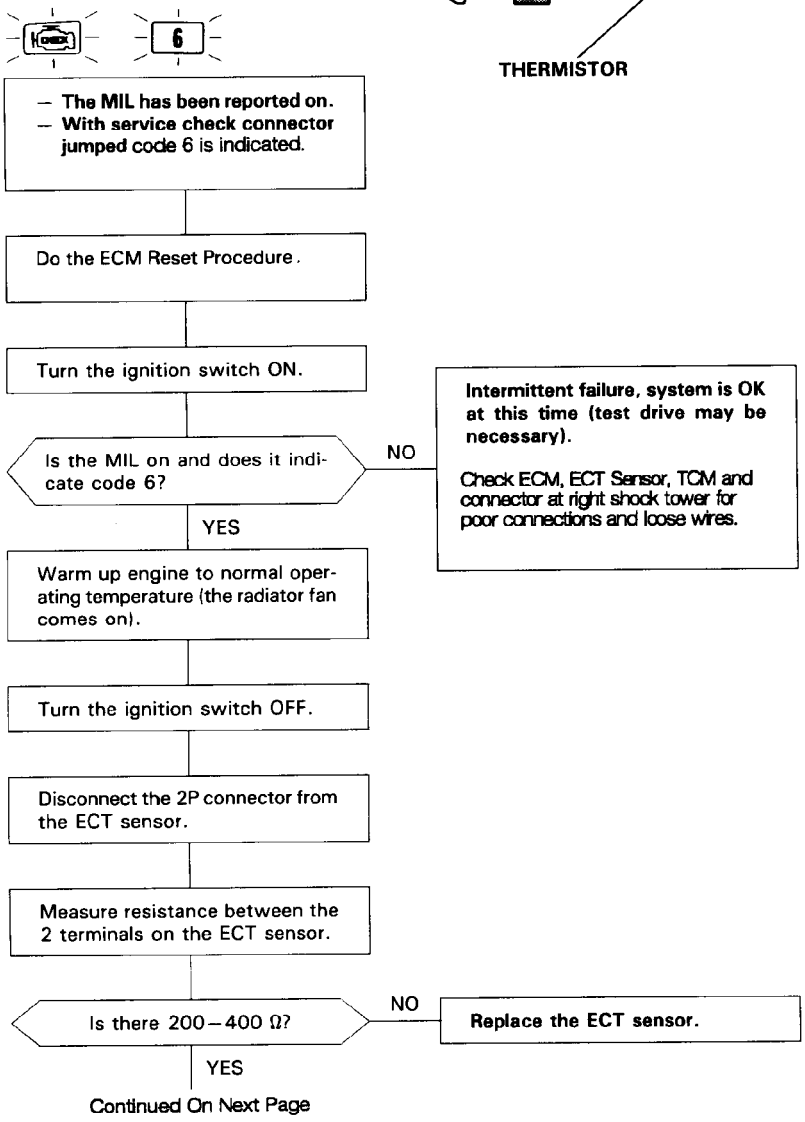


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Fig. 16: Code 6 Flowchart, Engine Coolant Temperature Sensor (1 of 2) Courtesy of American Honda Motor Co., Inc.

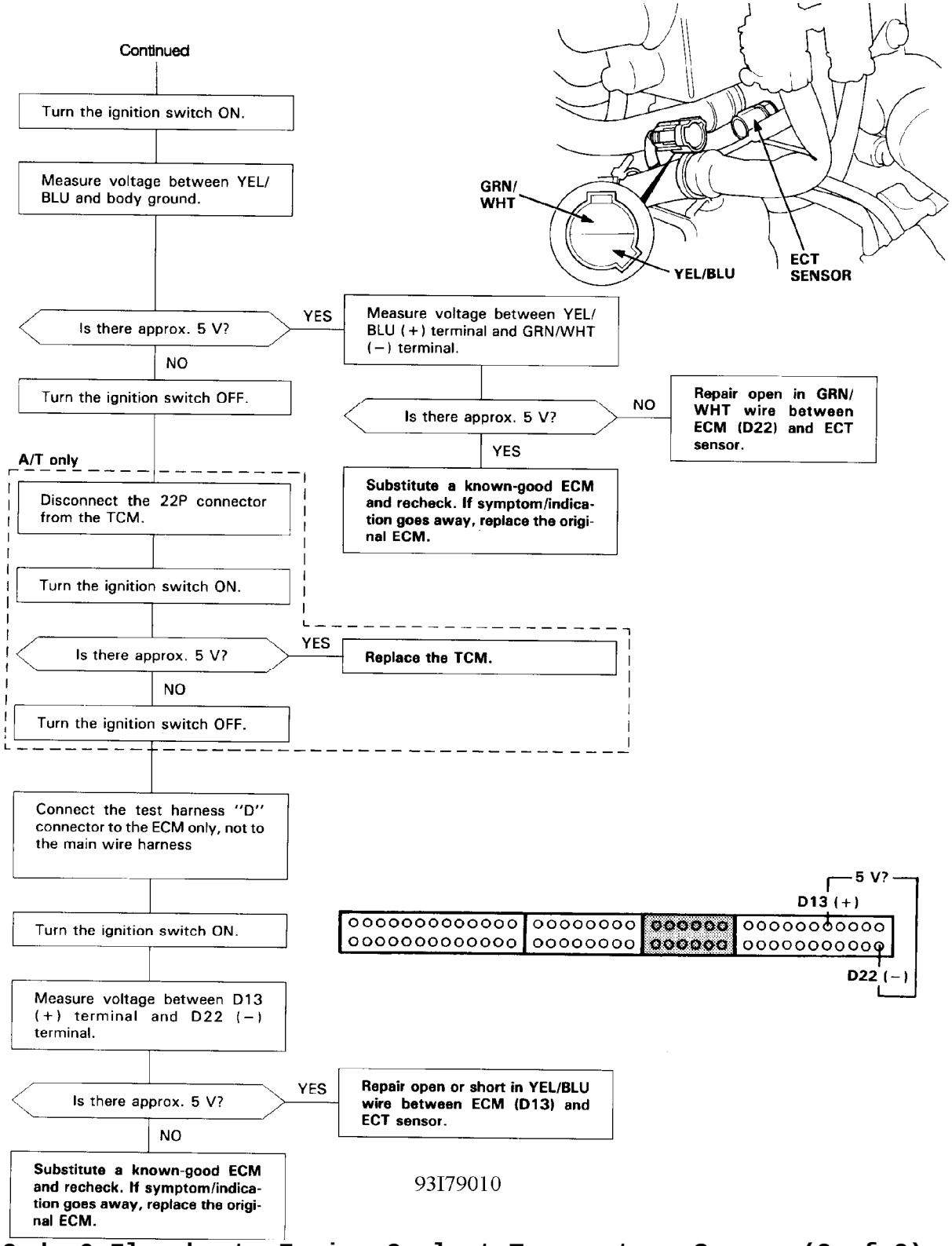
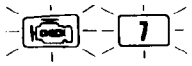


Fig. 17: Code 6 Flowchart, Engine Coolant Temperature Sensor (2 of 2)
Courtesy of American Honda Motor Co., Inc.

CODE 7 - THROTTLE POSITION (TP) SENSOR



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 7: A problem in the Throttle Position (TP) Sensor circuit.

The TP Sensor is a potentiometer. It is connected to the throttle valve shaft. As the throttle position changes, the TP Sensor varies the voltage signal to the ECM.

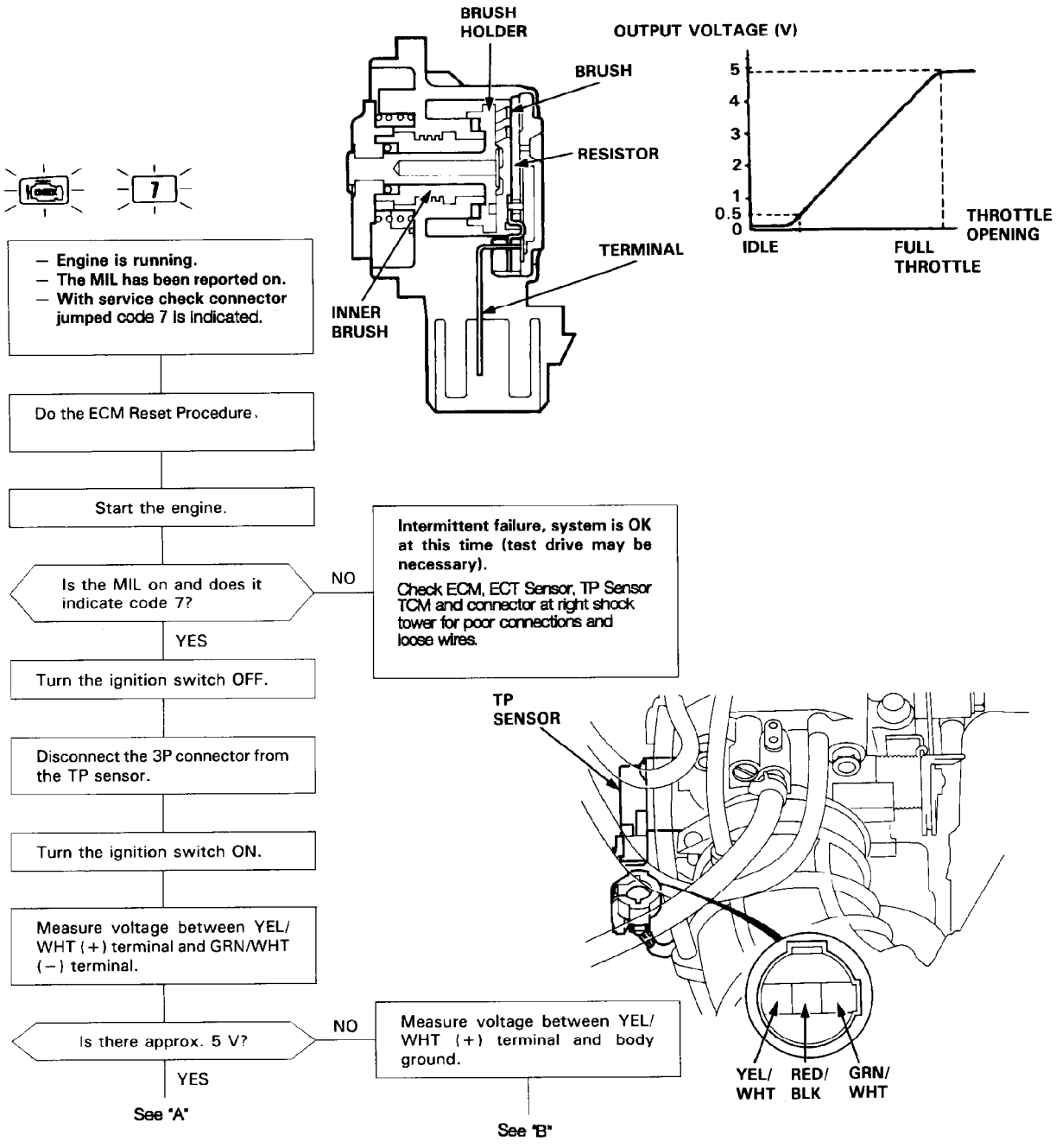


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Fig. 18: Code 7 Flowchart, Throttle Position Sensor (1 of 2)
Courtesy of American Honda Motor Co., Inc.

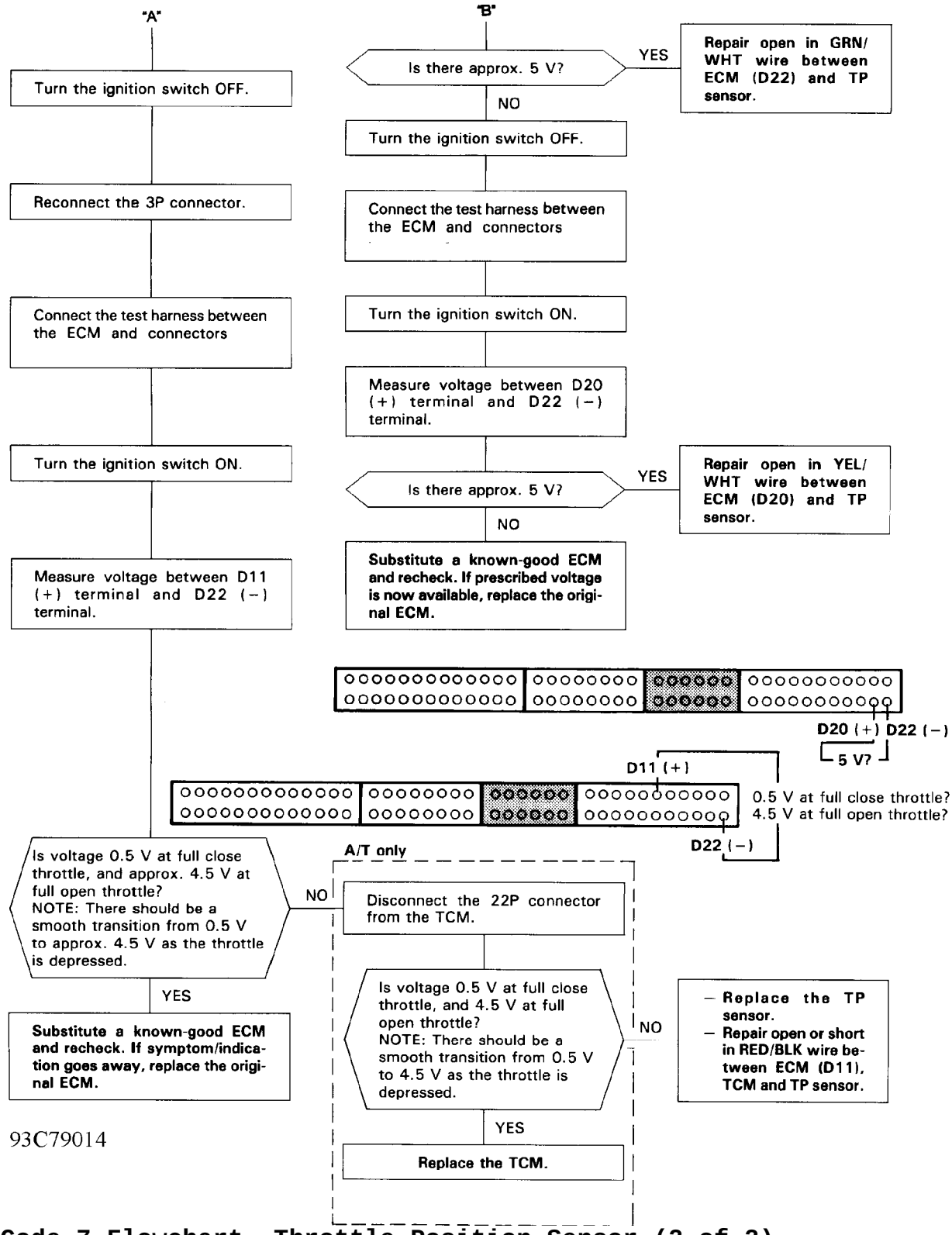
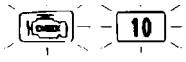


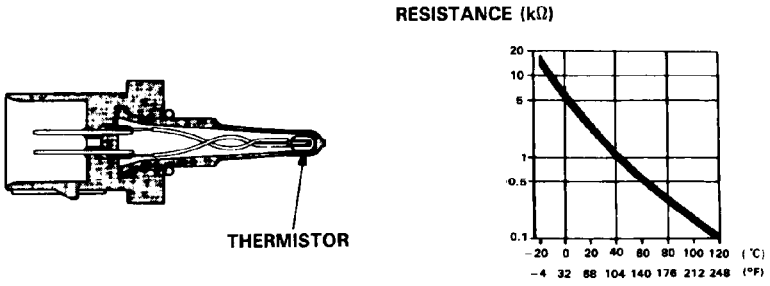
Fig. 19: Code 7 Flowchart, Throttle Position Sensor (2 of 2)
Courtesy of American Honda Motor Co., Inc.

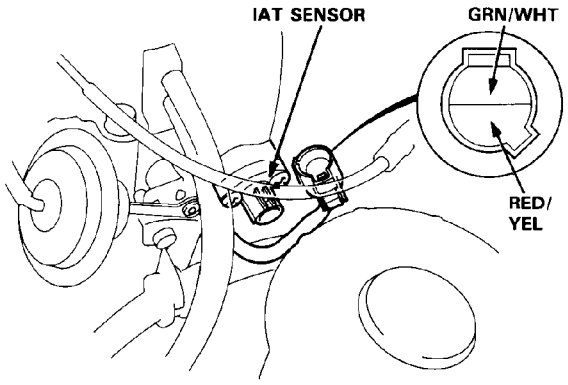
CODE 10 - INTAKE AIR TEMPERATURE (IAT) SENSOR



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 10: A problem in the Intake Air Temperature (IAT) Sensor circuit.

The IAT Sensor is a temperature dependant resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases as shown below.





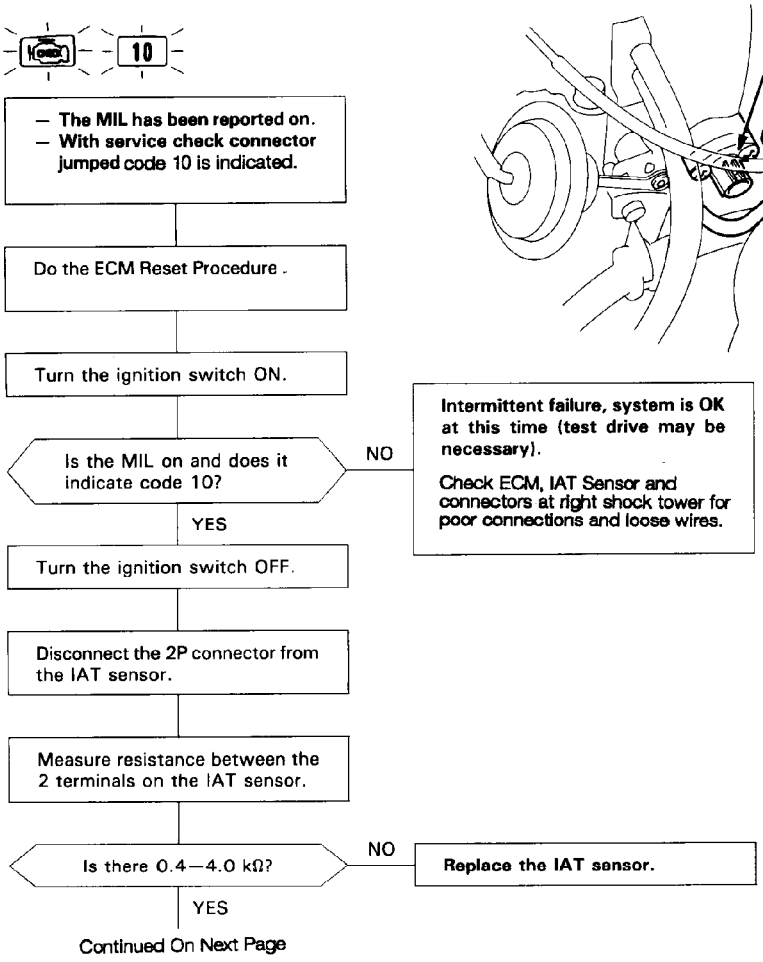


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Fig. 20: Code 10 Flowchart, Intake Air Temperature Sensor (1 of 2) Courtesy of American Honda Motor Co., Inc.

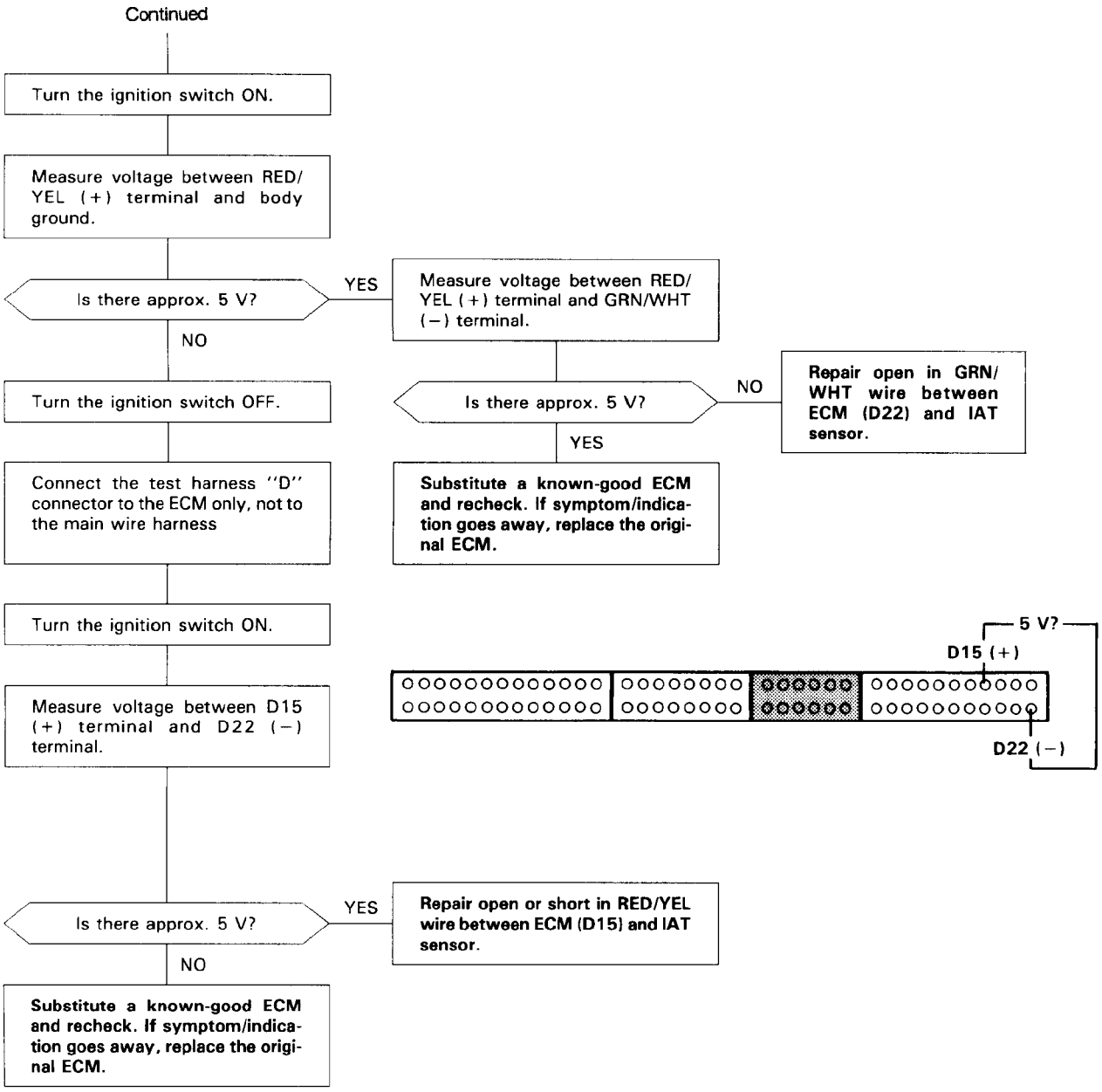

Fig. 21: Code 10 Flowchart, Intake Air Temperature Sensor (2 of 2) Courtesy of American Honda Motor Co., Inc.

CODE 12 - EGR SYSTEM

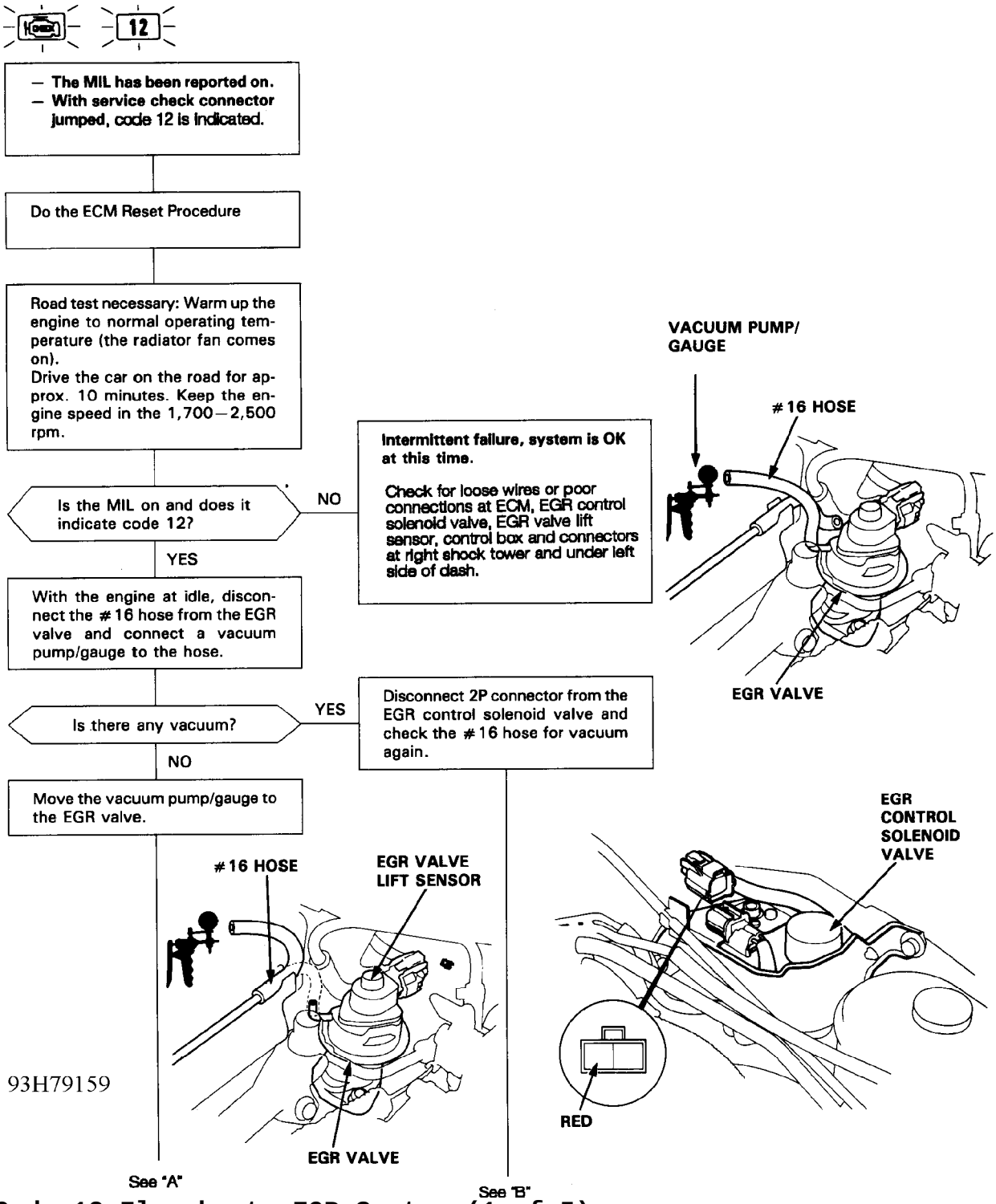

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Fig. 22: Code 12 Flowchart, EGR System (1 of 5)
Courtesy of American Honda Motor Co., Inc.

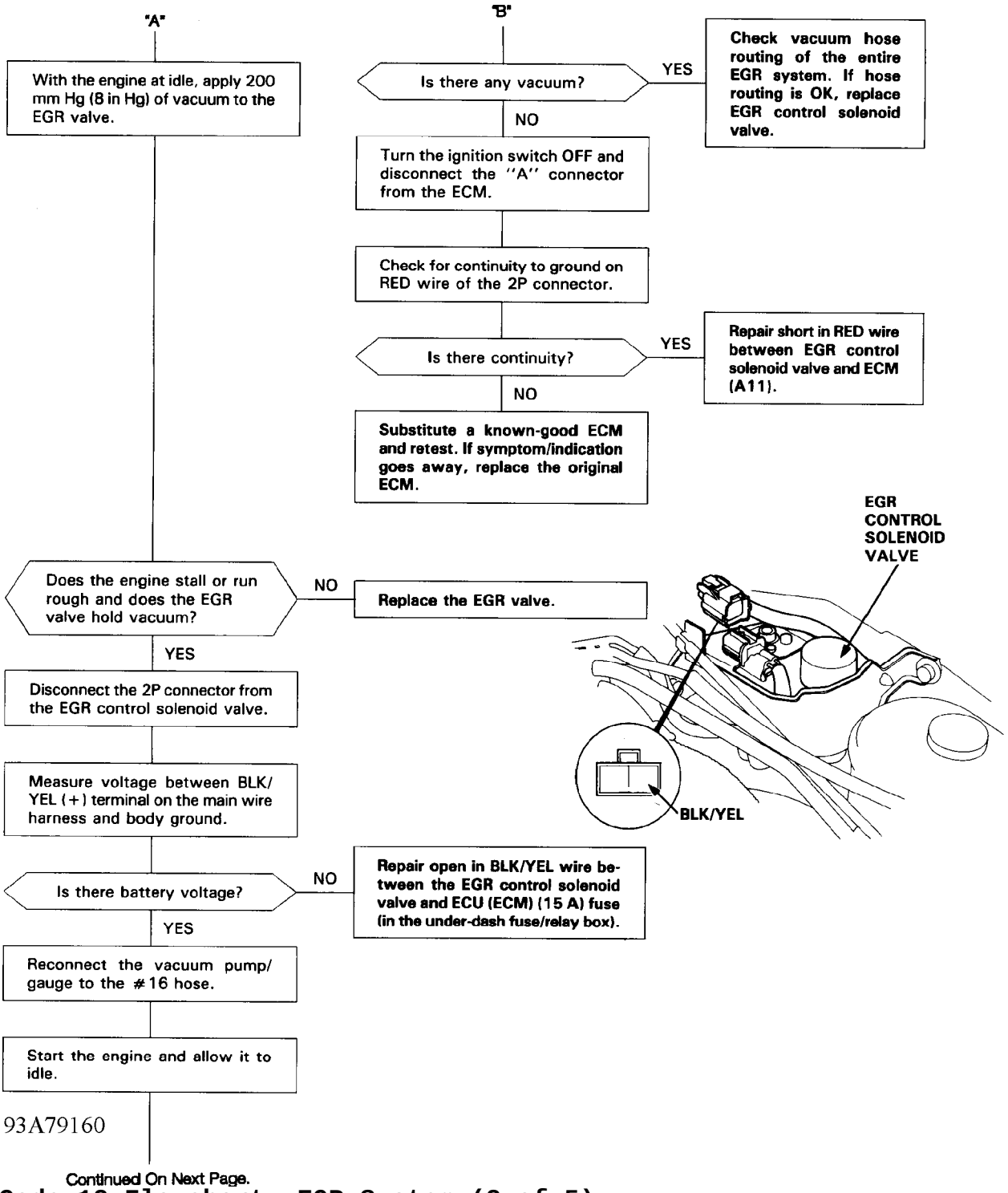

Fig. 23: Code 12 Flowchart, EGR System (2 of 5)
Courtesy of American Honda Motor Co., Inc.

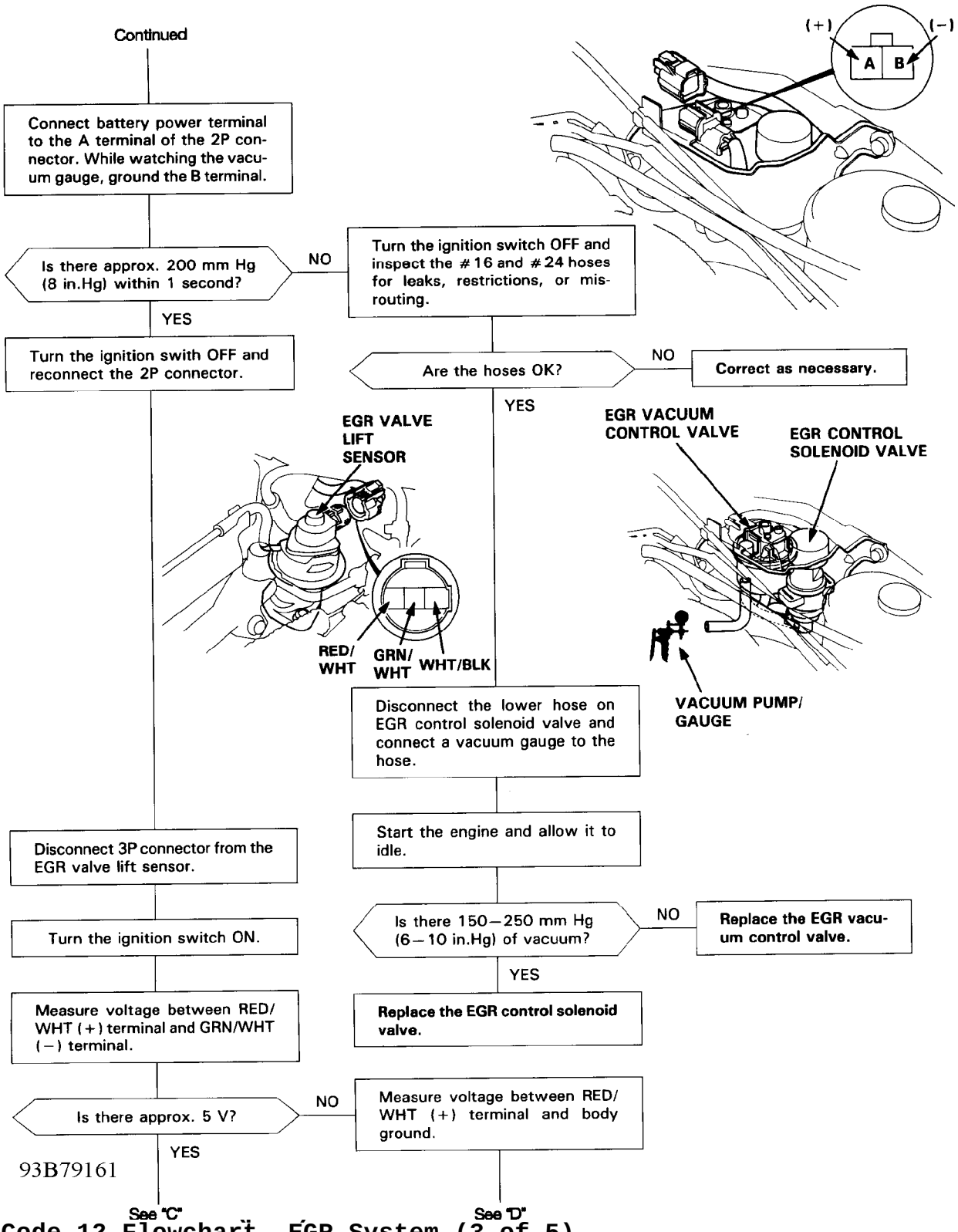

Fig. 24: Code 12 Flowchart, EGR System (3 of 5)
Courtesy of American Honda Motor Co., Inc.

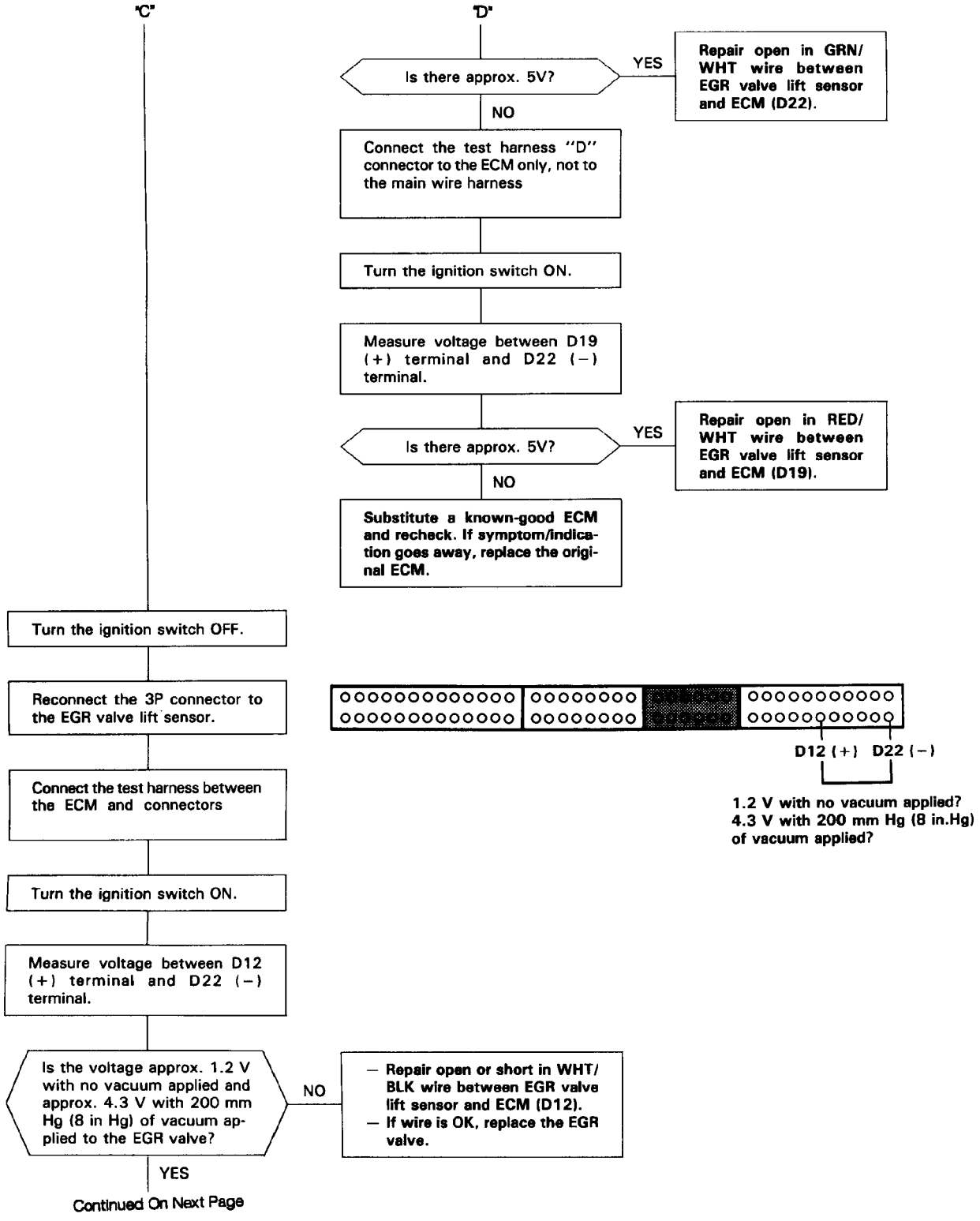

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Fig. 25: Code 12 Flowchart, EGR System (4 of 5)
Courtesy of American Honda Motor Co., Inc.

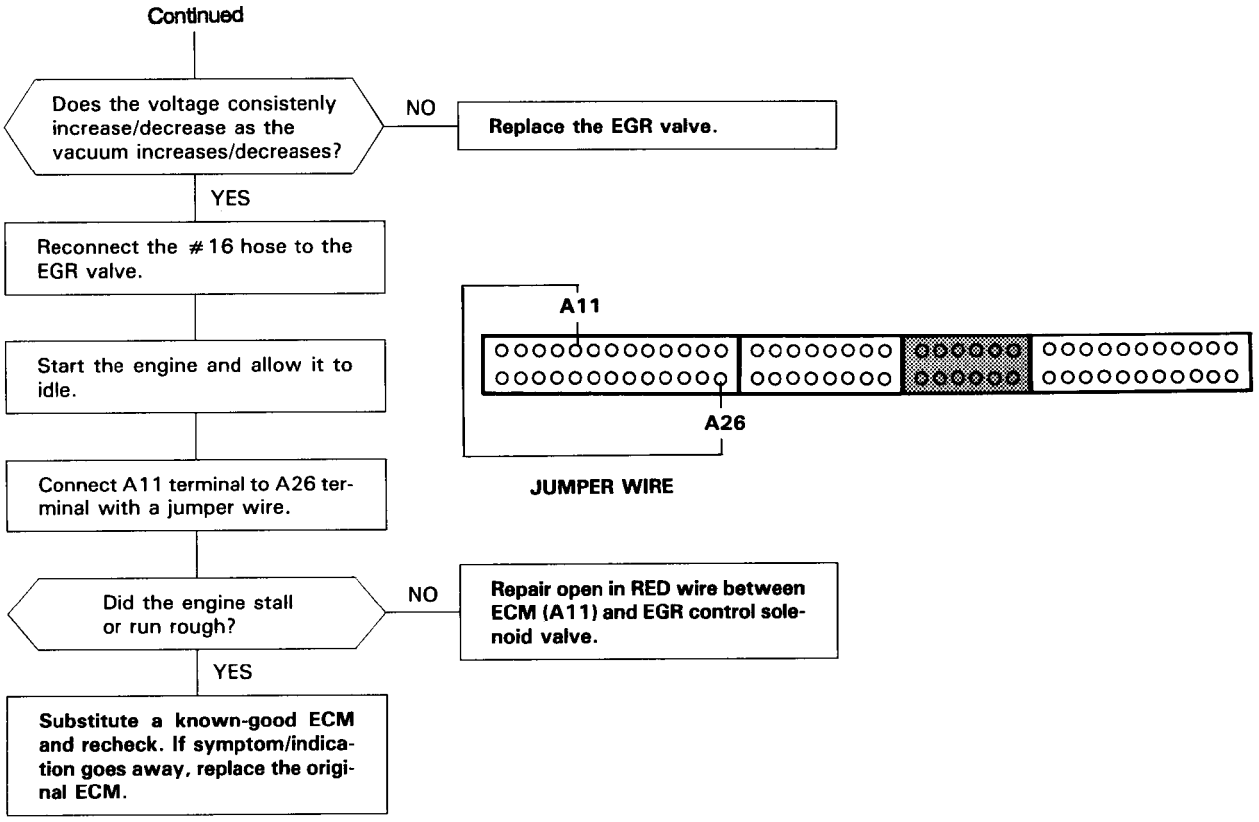


Fig. 26: Code 12 Flowchart, EGR System (5 of 5)
Courtesy of American Honda Motor Co., Inc.

CODE 13 - BAROMETRIC PRESSURE (BARO) SENSOR

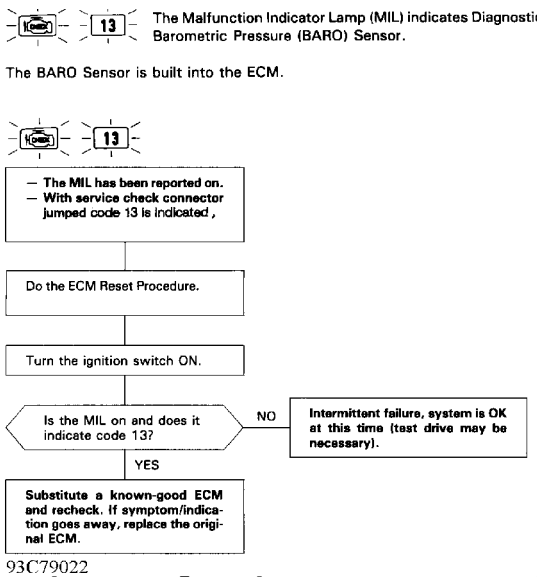


Fig. 27: Code 13 Flowchart, Barometric Pressure Sensor
Courtesy of American Honda Motor Co., Inc.

CODE 14 - IDLE AIR CONTROL (IAC) VALVE

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 14: A problem in the Idle Air Control (IAC) Valve circuit.

The IAC Valve changes the amount of air bypassing the throttle body in response to a current signal from the ECM in order to maintain the proper idle speed.

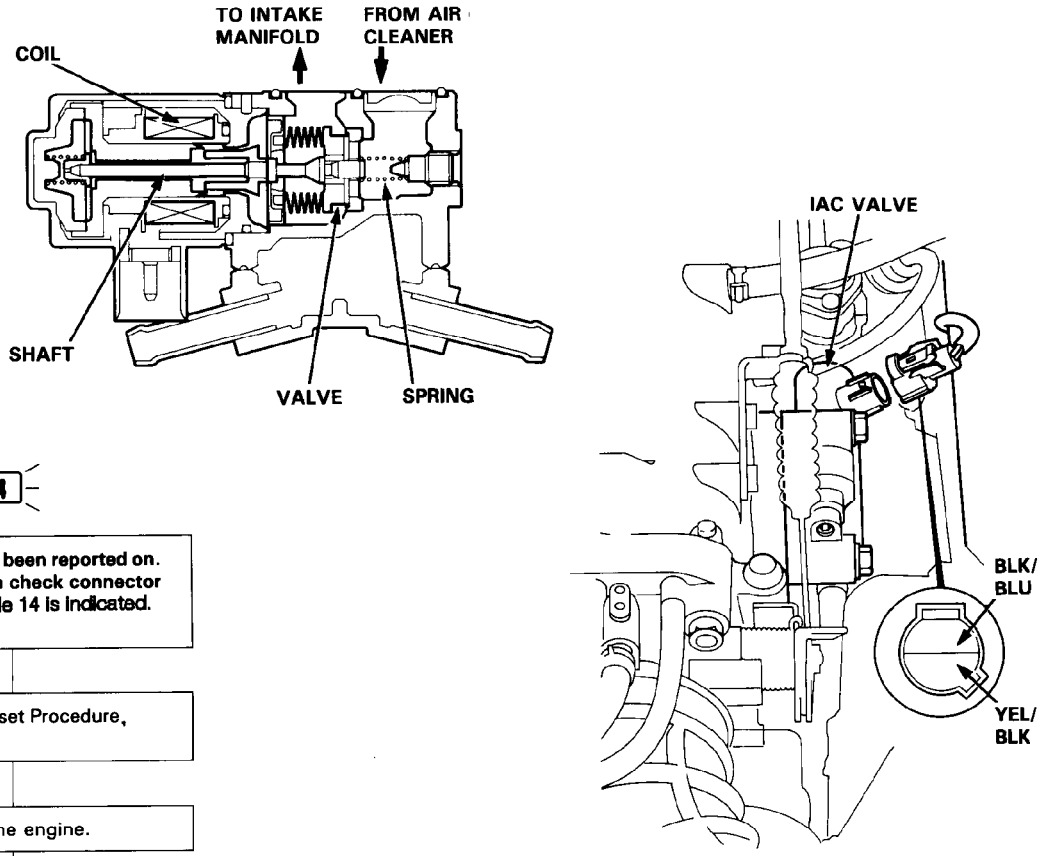
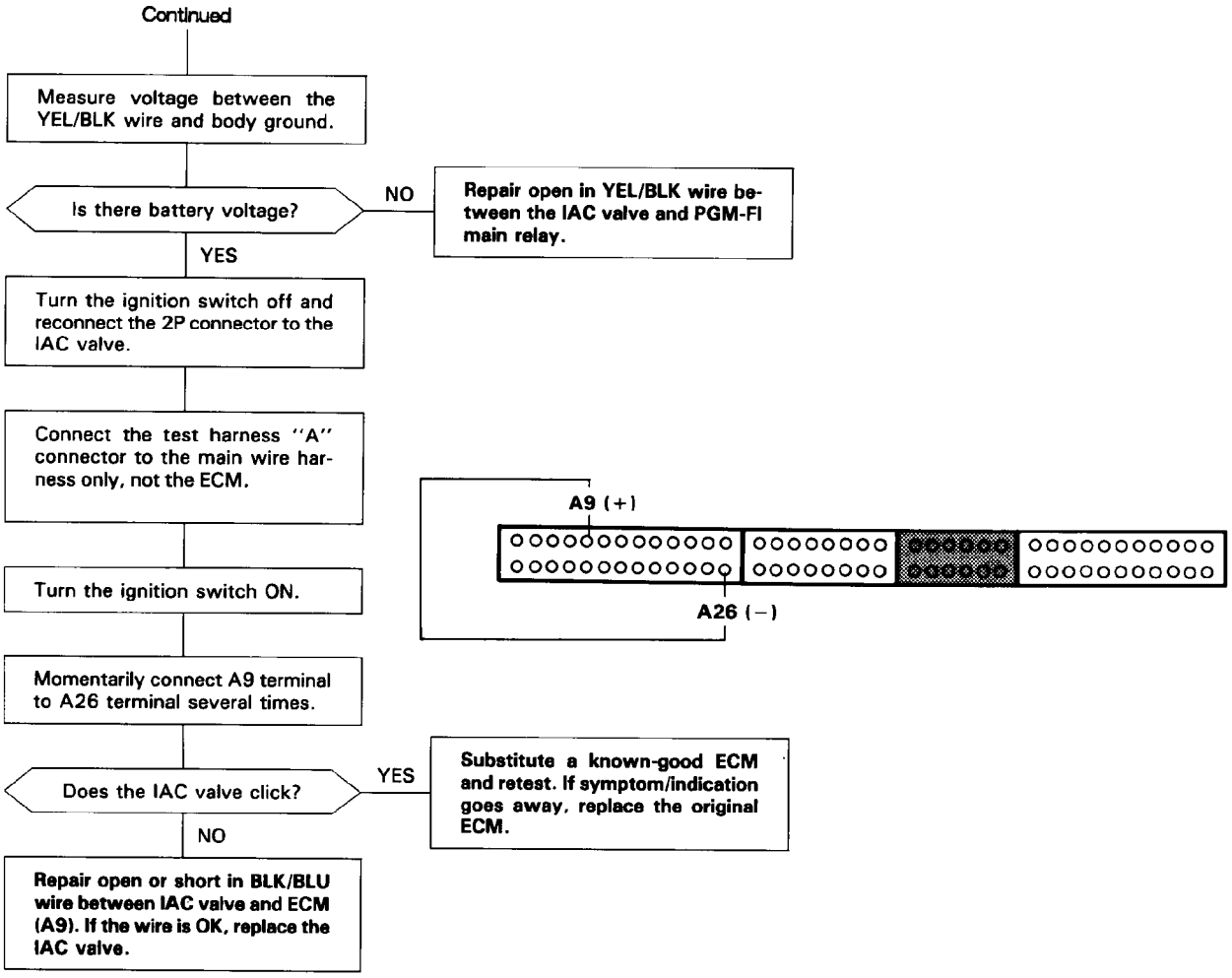


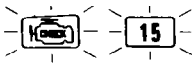
Fig. 28: Code 14 Flowchart, Idle Air Control Valve (1 of 2)
Courtesy of American Honda Motor Co., Inc.



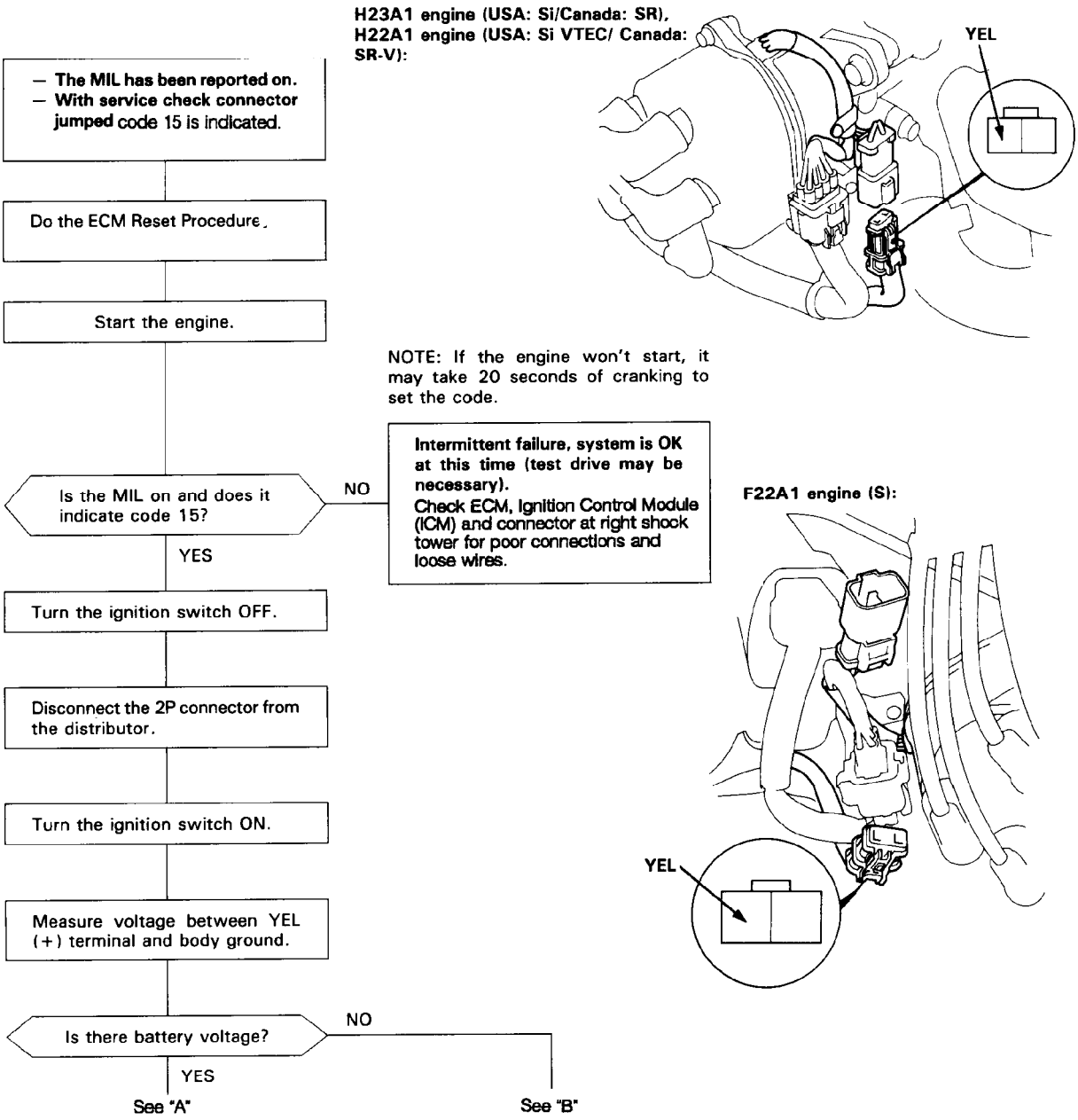
93F79024

Fig. 29: Code 14 Flowchart, Idle Air Control Valve (2 of 2) Courtesy of American Honda Motor Co., Inc.

CODE 15 - IGNITION OUTPUT SIGNAL



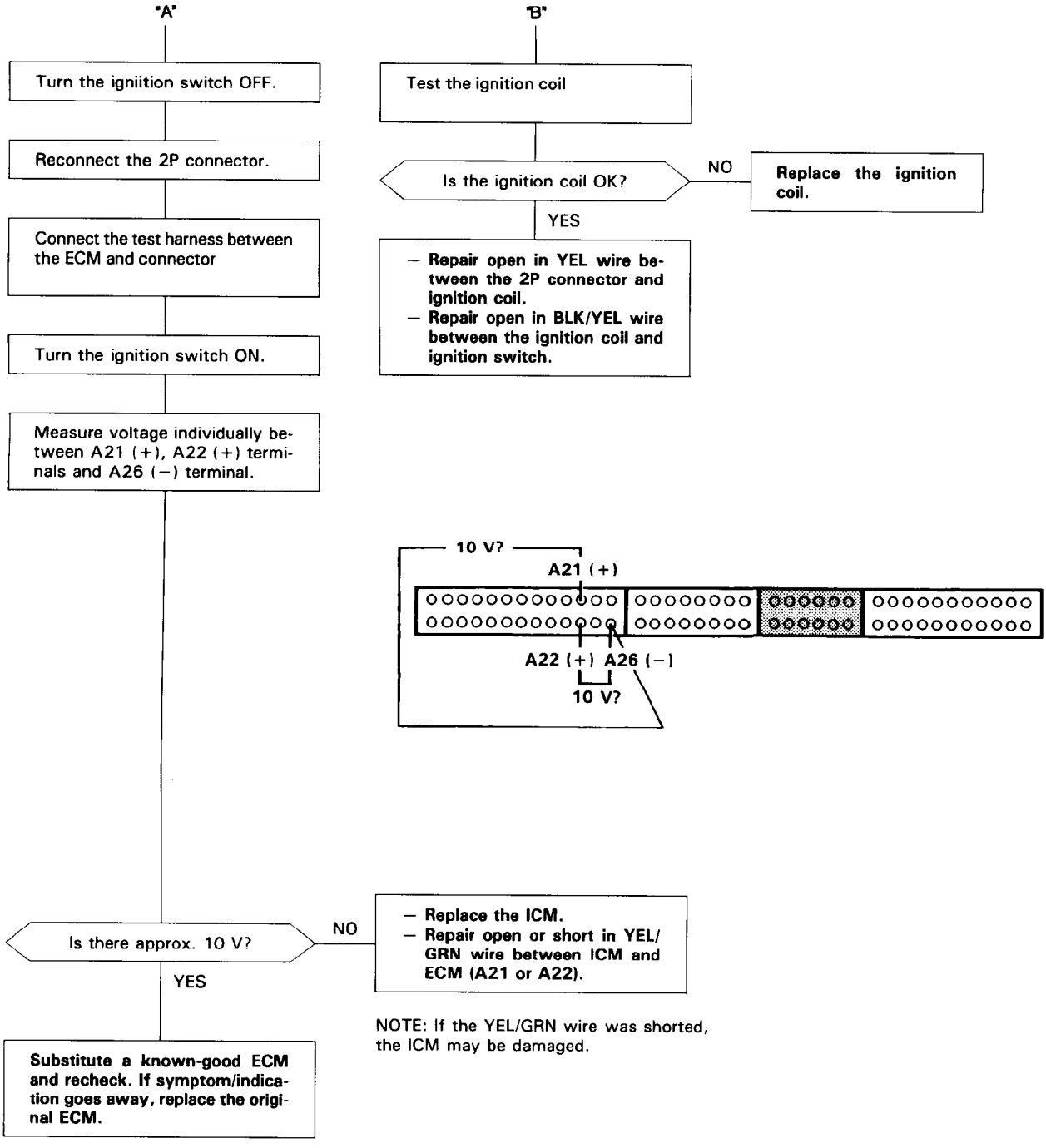
The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 15: A problem in the Ignition Output Signal circuit.



93F79025

Fig. 30: Code 15 Flowchart, Ignition Output Signal (1 of 2)
Courtesy of American Honda Motor Co., Inc.

G - TESTS W



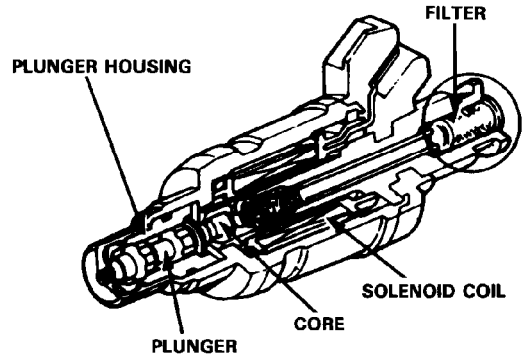
93I79028

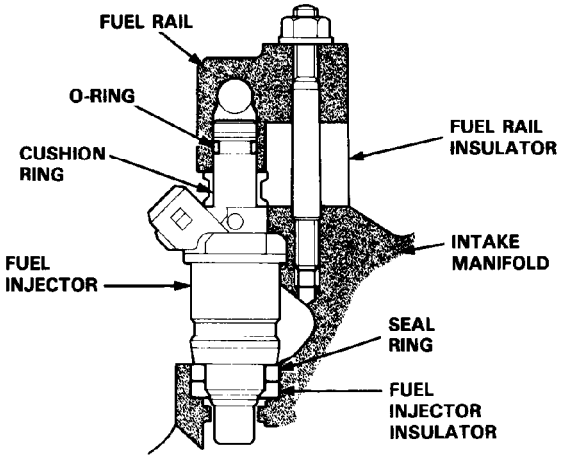
Fig. 31: Code 15 Flowchart, Ignition Output Signal (2 of 2)
Courtesy of American Honda Motor Co., Inc.

Troubleshooting Flowchart

The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 16: A problem in the Fuel Injector circuit.

The Fuel Injectors are a solenoid-actuated constant-stroke pintle type consisting of a solenoid, plunger needle valve and housing. When current is applied to the solenoid coil, the valve lifts up and pressurized fuel is injected. Because the needle valve lift and the fuel pressure are constant, the injection quantity is determined by the length of time that the valve is open (i.e., the duration the current is supplied to the solenoid coil). The Fuel Injector is sealed by an O-ring and seal ring at the top and bottom. These seals also reduce operating noise.





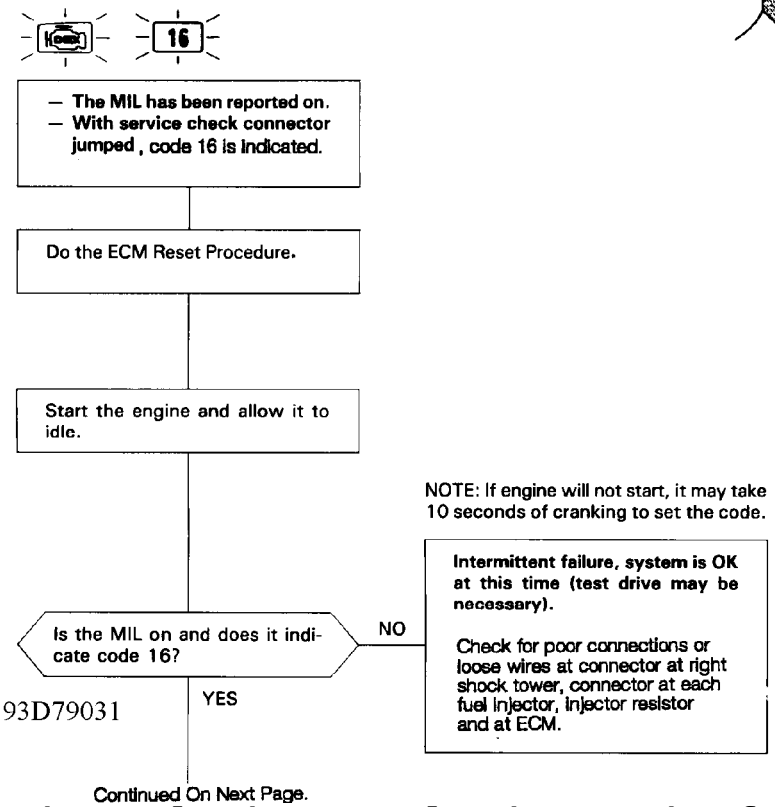


Fig. 32: Code 16 Flowchart, Fuel Injectors (1 of 3)
Courtesy of American Honda Motor Co., Inc.

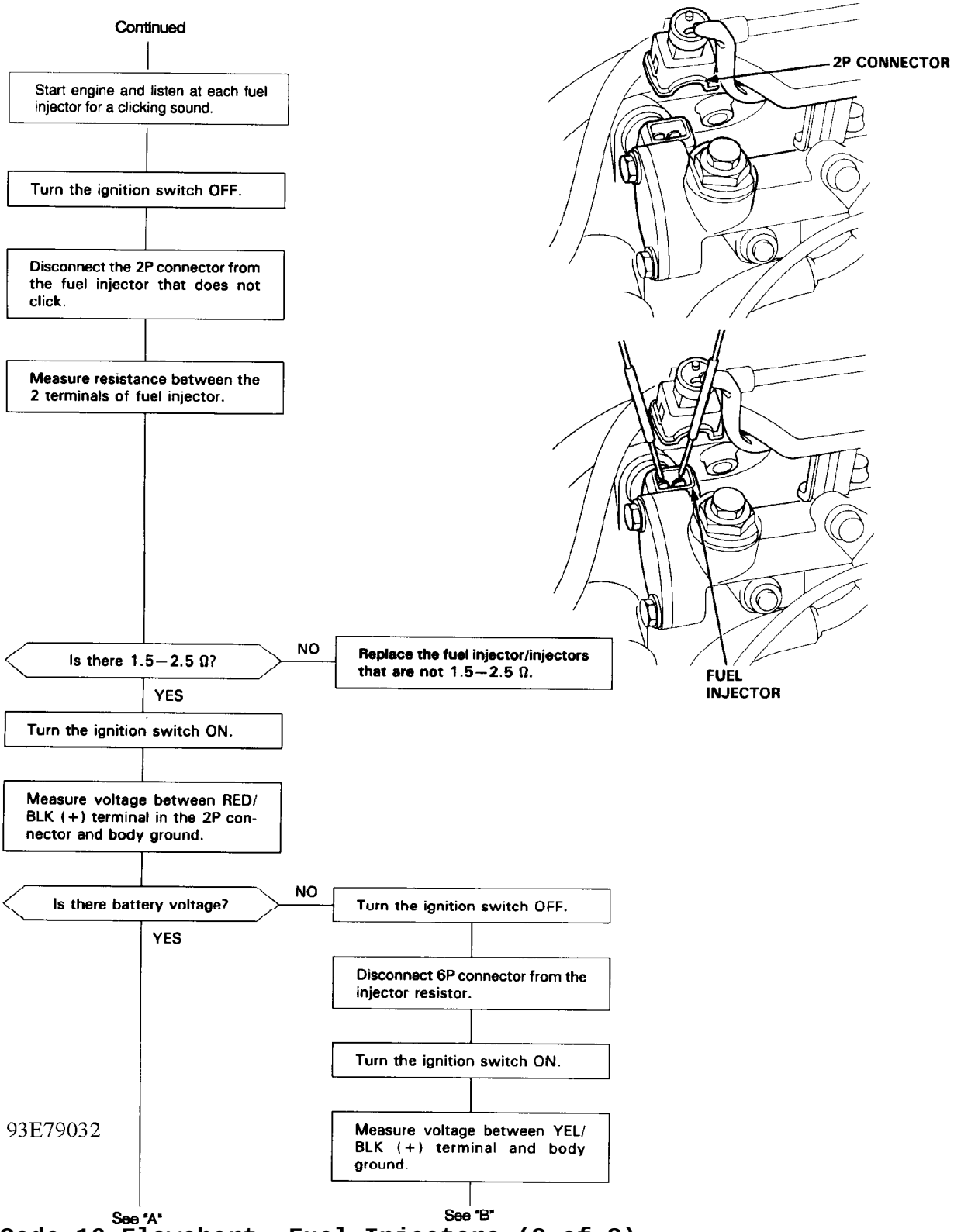
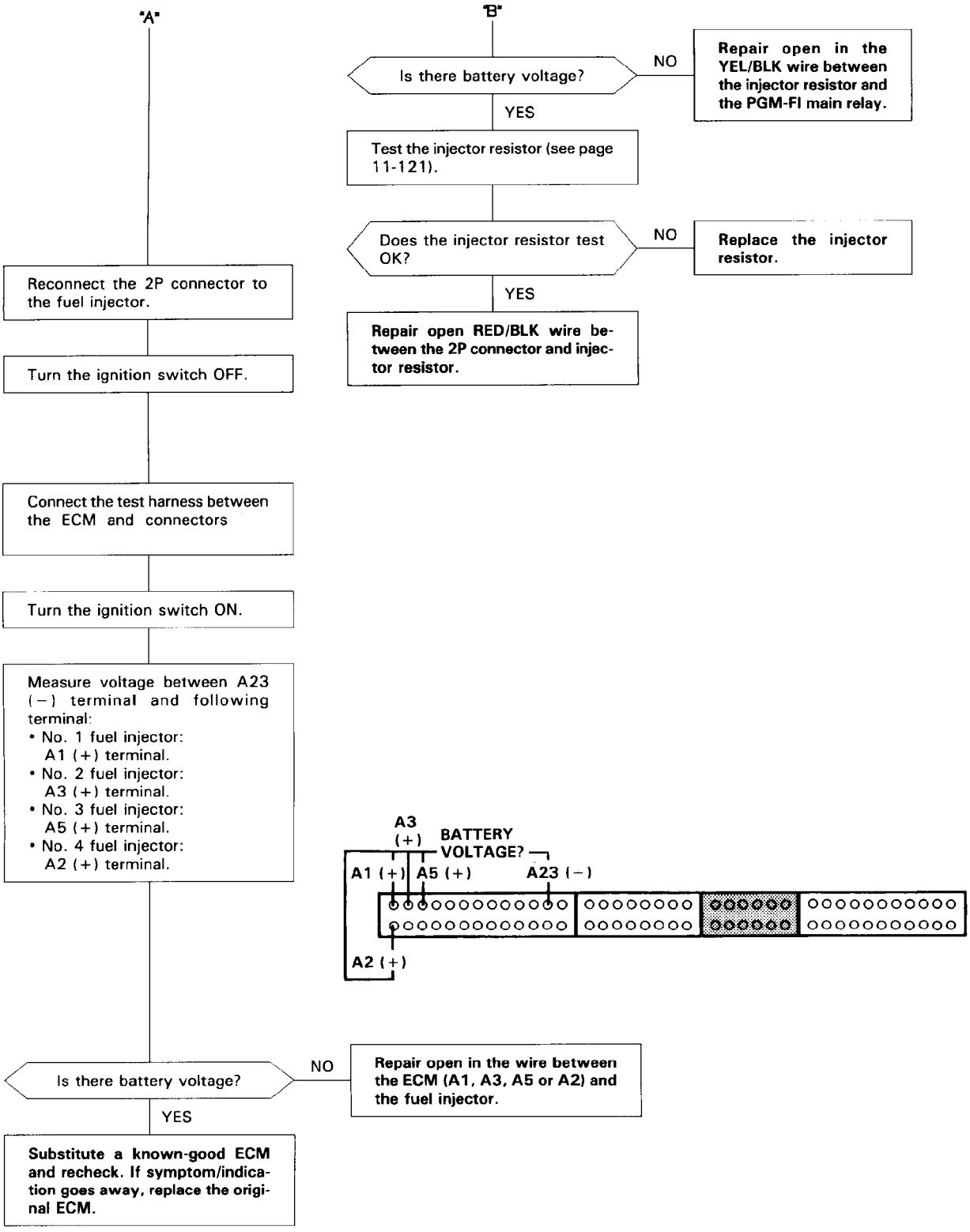


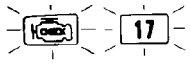
Fig. 33: Code 16 Flowchart, Fuel Injectors (2 of 3)
Courtesy of American Honda Motor Co., Inc.



93F79033

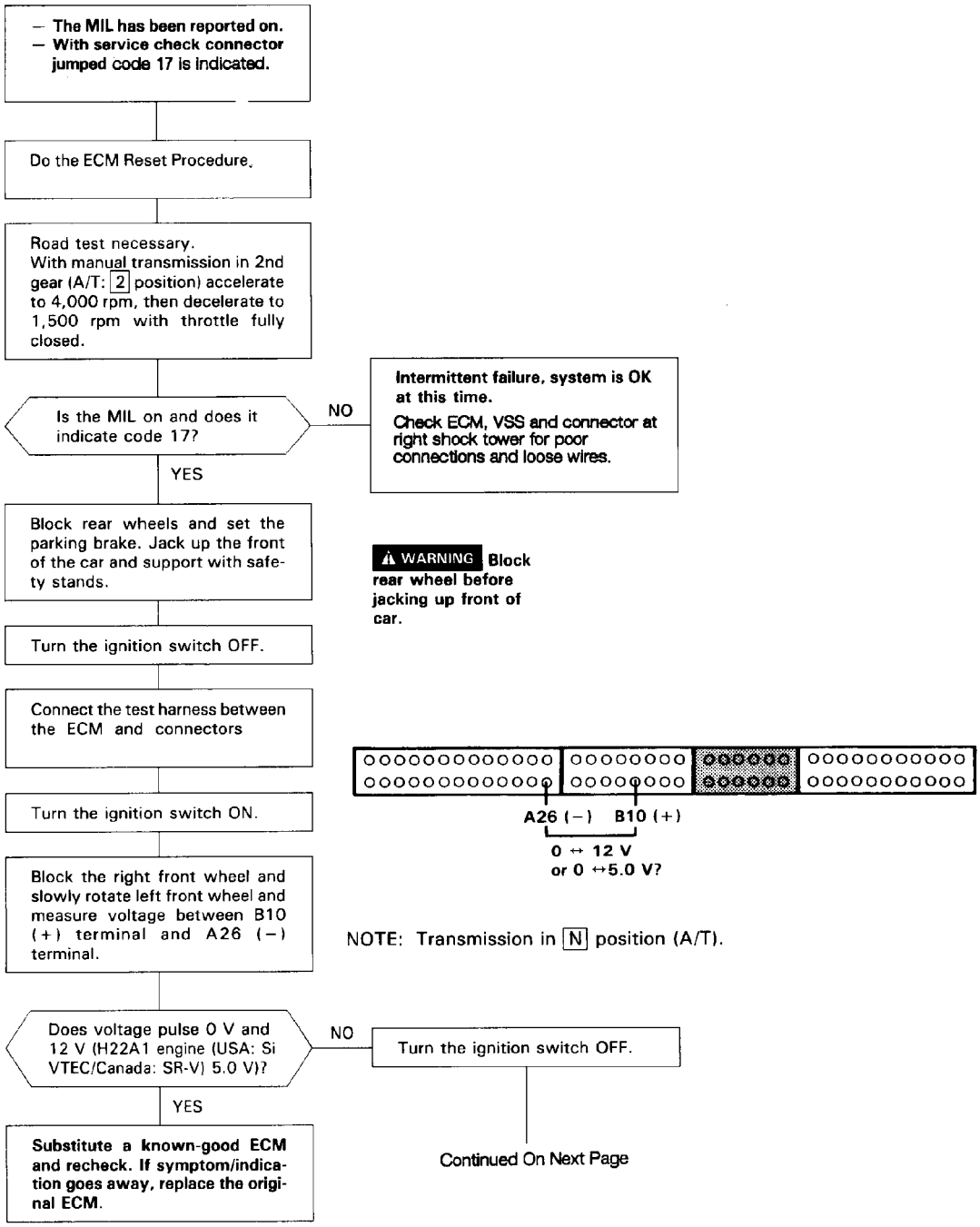
Fig. 34: Code 16 Flowchart, Fuel Injectors (3 of 3)
Courtesy of American Honda Motor Co., Inc.

CODE 17 - VEHICLE SPEED SENSOR (VSS)



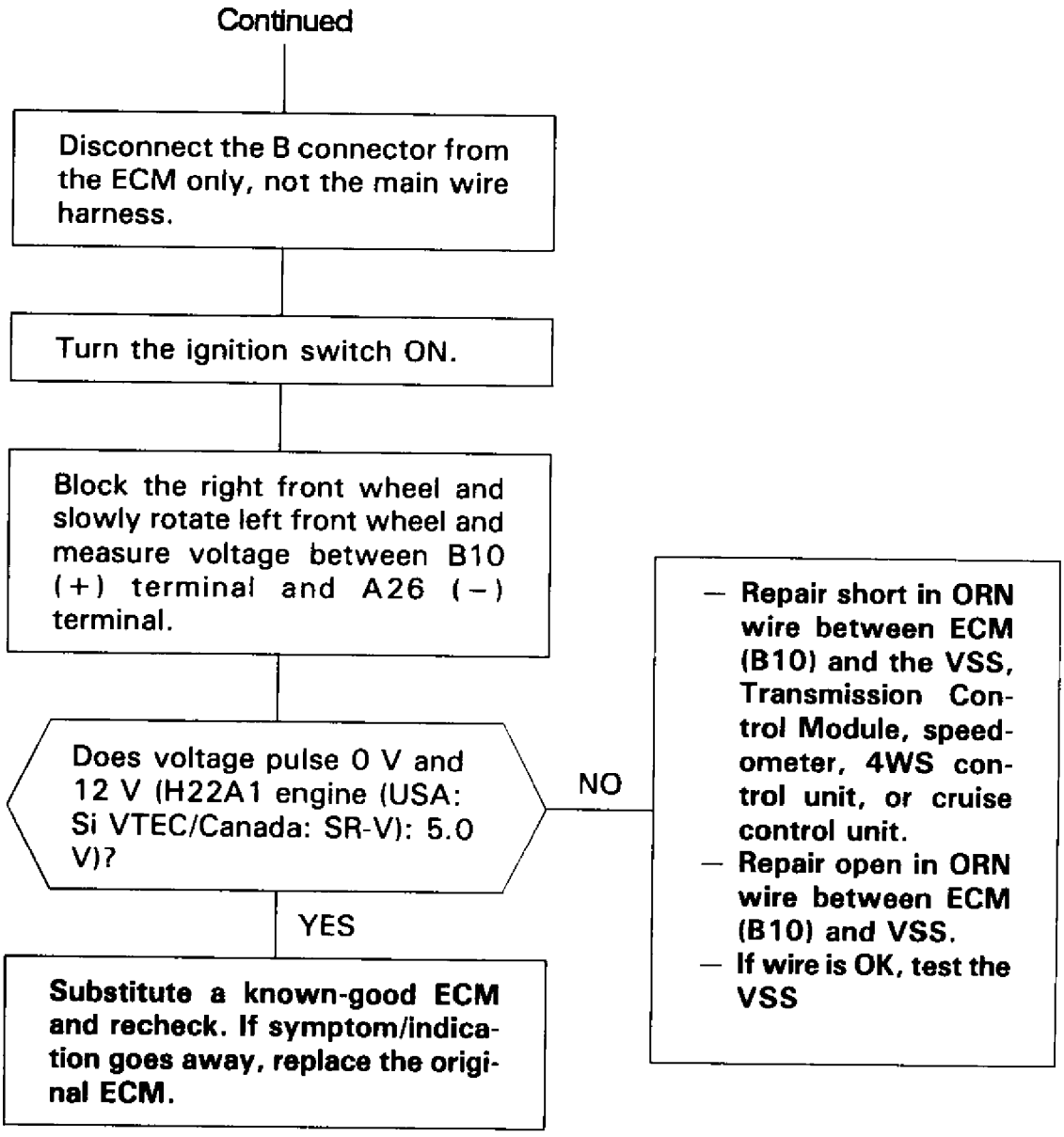
The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 17: A problem in the Vehicle Speed Sensor (VSS) circuit.

The VSS generates a pulsing signal when the front wheels turn.



93G79034

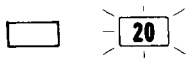
Fig. 35: Code 17 Flowchart, Vehicle Speed Sensor (1 of 2)
Courtesy of American Honda Motor Co., Inc.



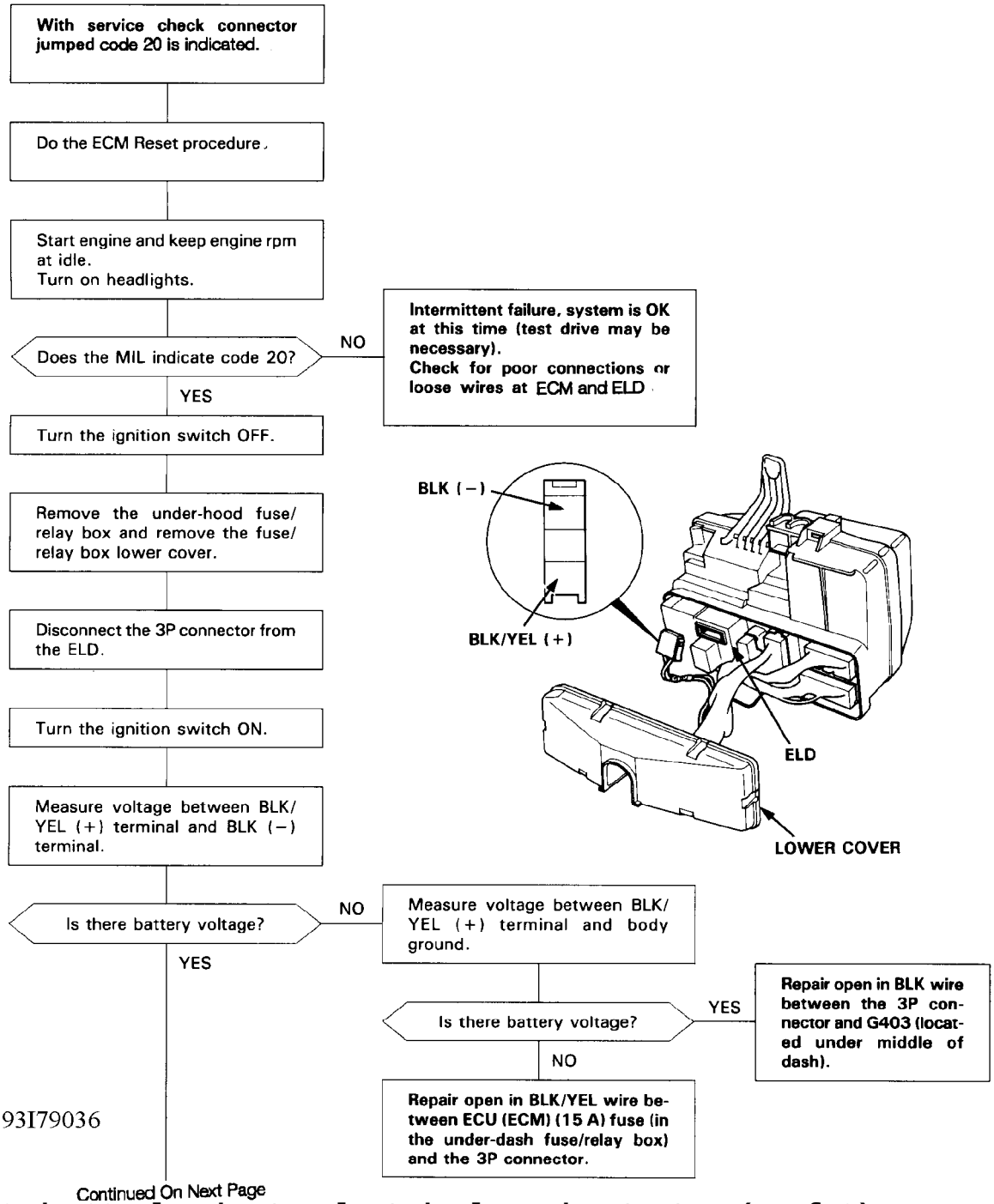
93H79035

Fig. 36: Code 17 Flowchart, Vehicle Speed Sensor (2 of 2)
Courtesy of American Honda Motor Co., Inc.

CODE 20 - ELECTRICAL LOAD DETECTOR (ELD)



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 20: A problem in the Electrical Load Detector (ELD) circuit.



 93I79036

Fig. 37: Code 20 Flowchart, Electrical Load Detector (1 of 2)
Courtesy of American Honda Motor Co., Inc.

CODE 20 (2 OF 2)
ELECTRICAL LOAD DETECTOR (ELD)
PRELUDE

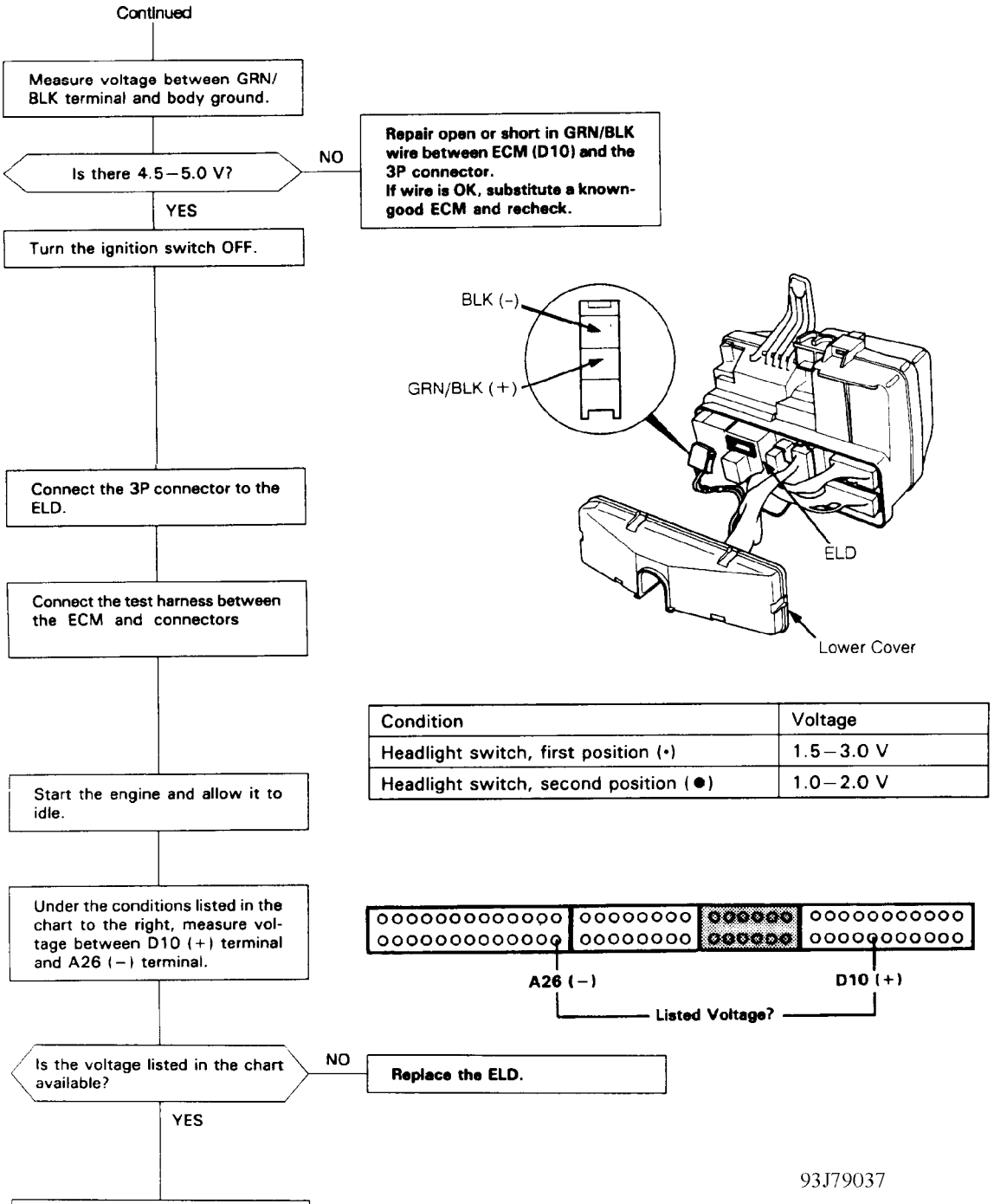
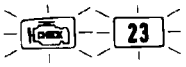
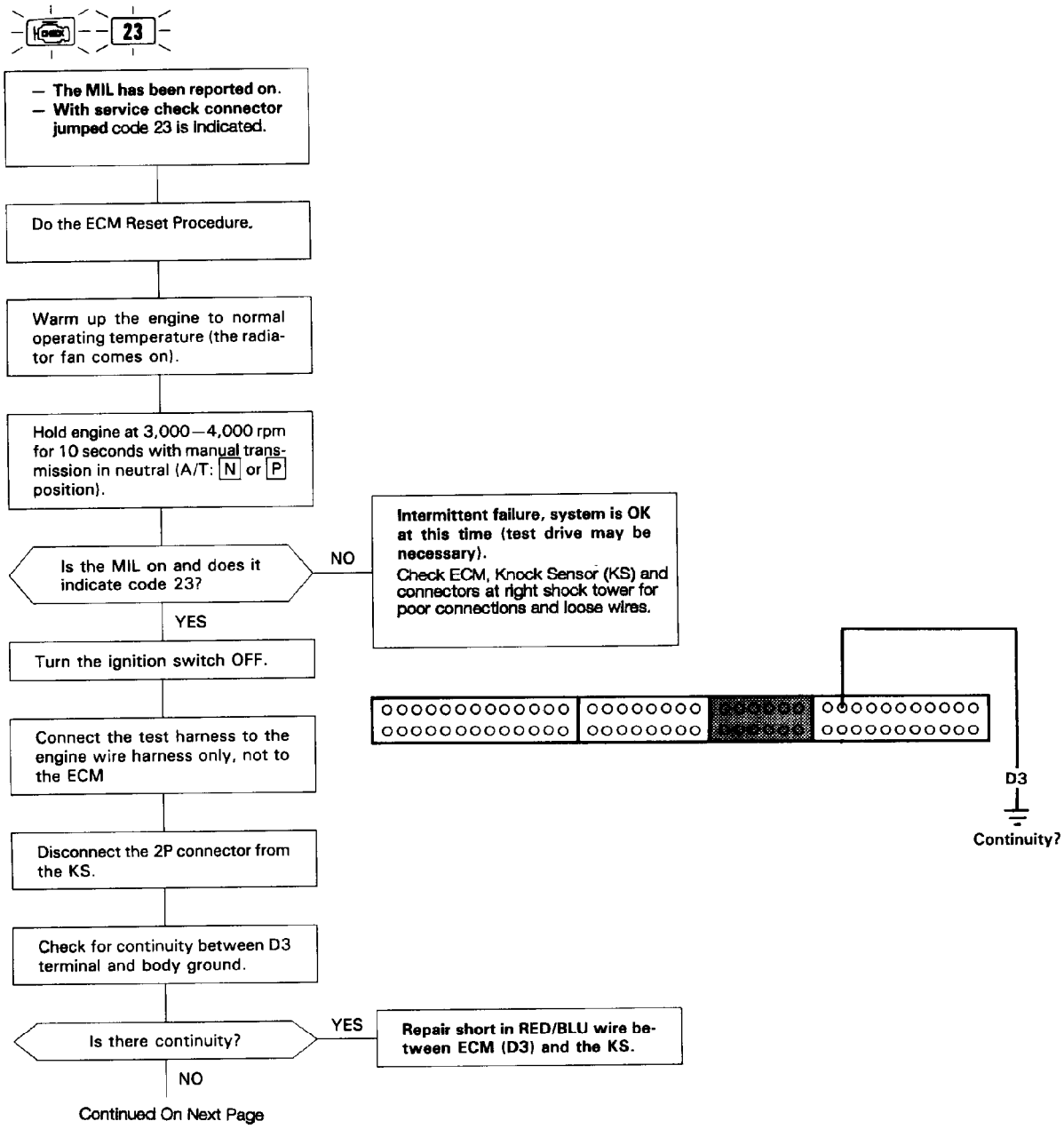


Fig. 38: Code 20 Flowchart, Electrical Load Detector (2 of 2)
Courtesy of American Honda Motor Co., Inc.

CODE 23 - KNOCK SENSOR (KS)



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 23: A problem in the Knock Sensor (KS) circuit.



93E79040

Fig. 39: Code 23 Flowchart, Knock Sensor (1 of 2)
Courtesy of American Honda Motor Co., Inc.

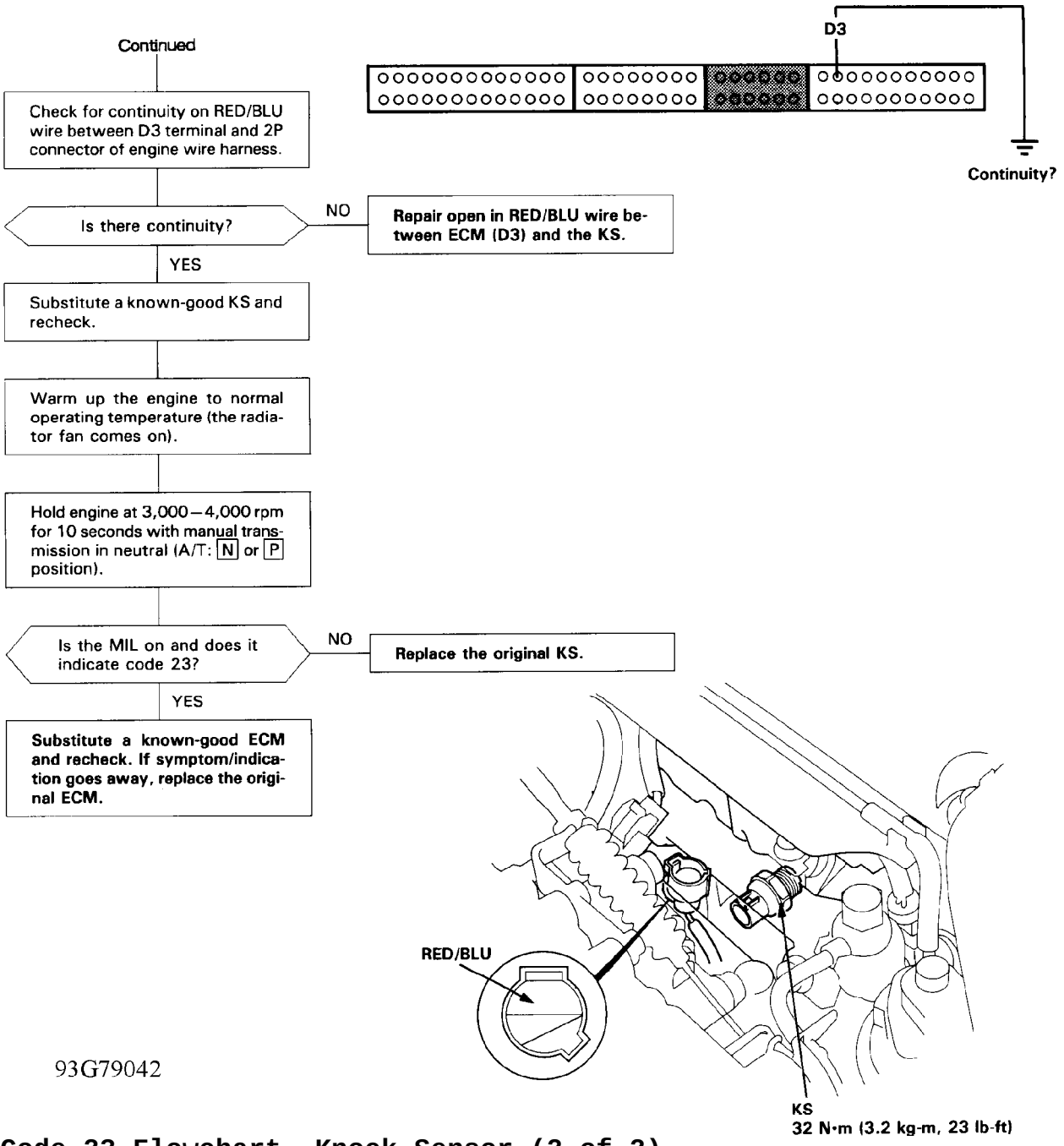
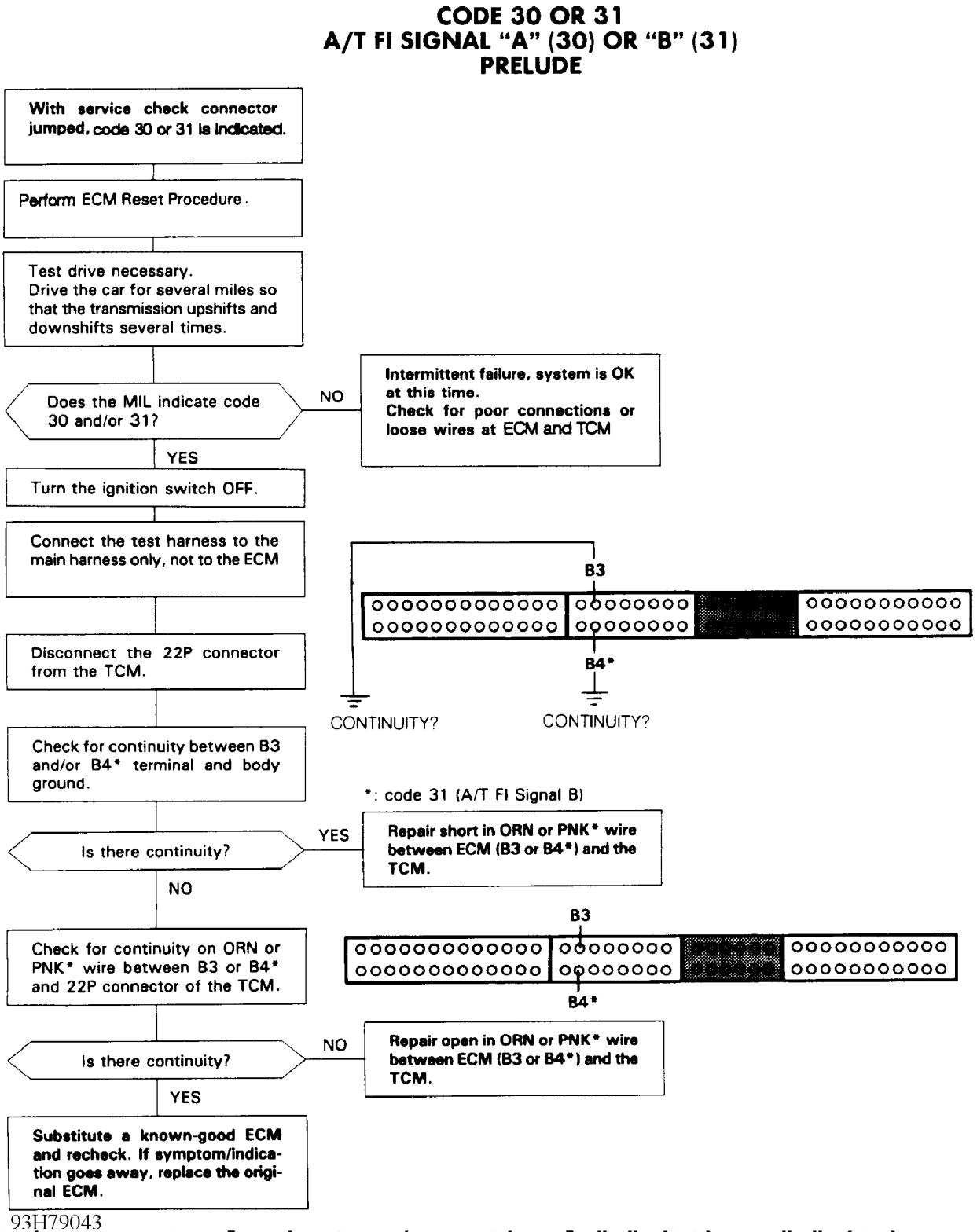


Fig. 40: Code 23 Flowchart, Knock Sensor (2 of 2)
Courtesy of American Honda Motor Co., Inc.

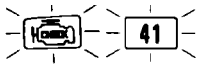
CODE 30 OR 31 - A/T FI SIGNAL "A" (30) OR "B" (31)



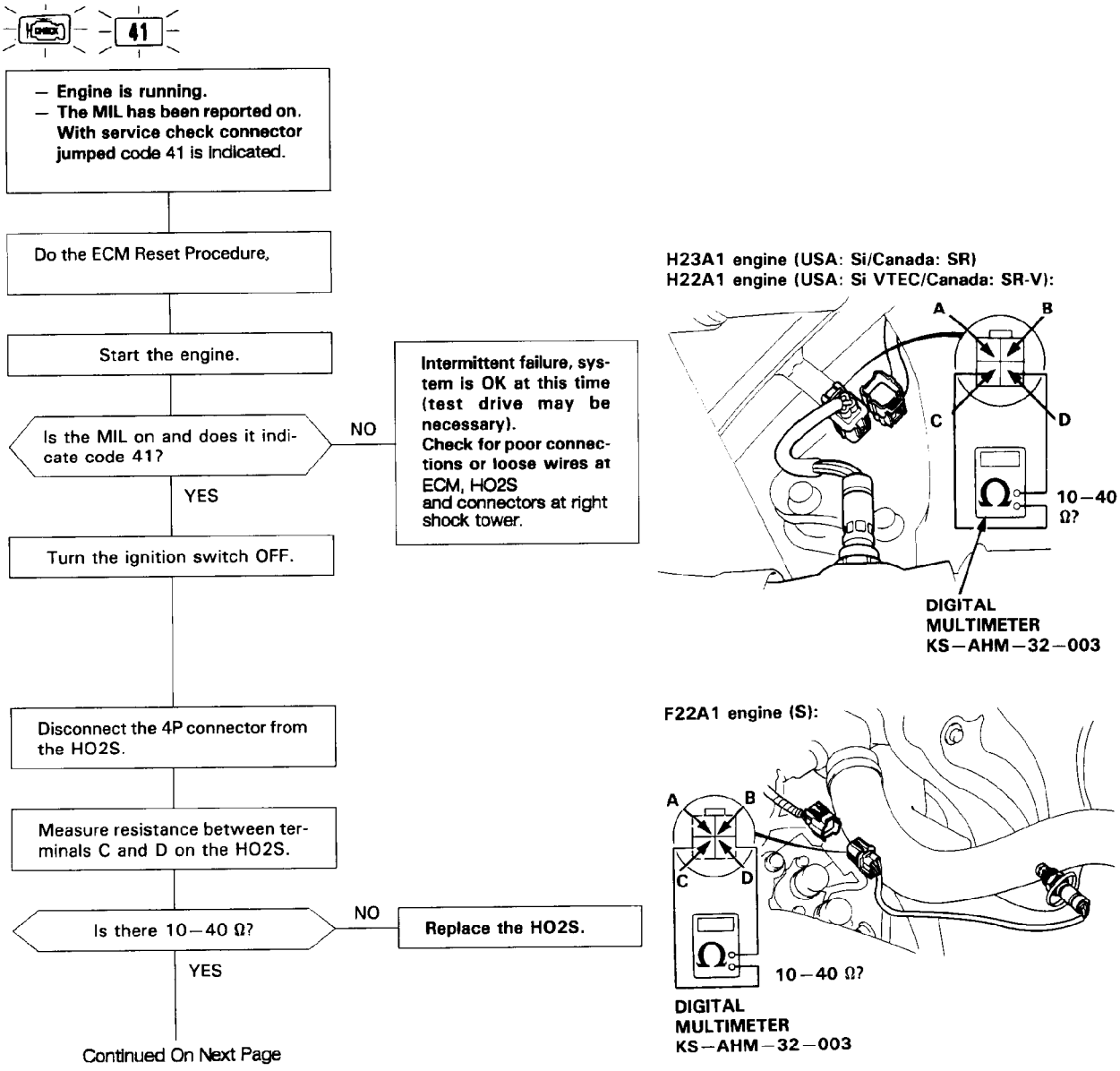
93H79043

Fig. 41: Code 30 or 31 Flowchart, A/T FI Signal "A" (30) or "B" (31)
Courtesy of American Honda Motor Co., Inc.

G - TESTS W



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 41: A problem in the Heated Oxygen Sensor (HO2S) Heater circuit.



93J79045

Fig. 42: Code 41 Flowchart, Heated Oxygen Sensor Heater (1 of 3) Courtesy of American Honda Motor Co., Inc.

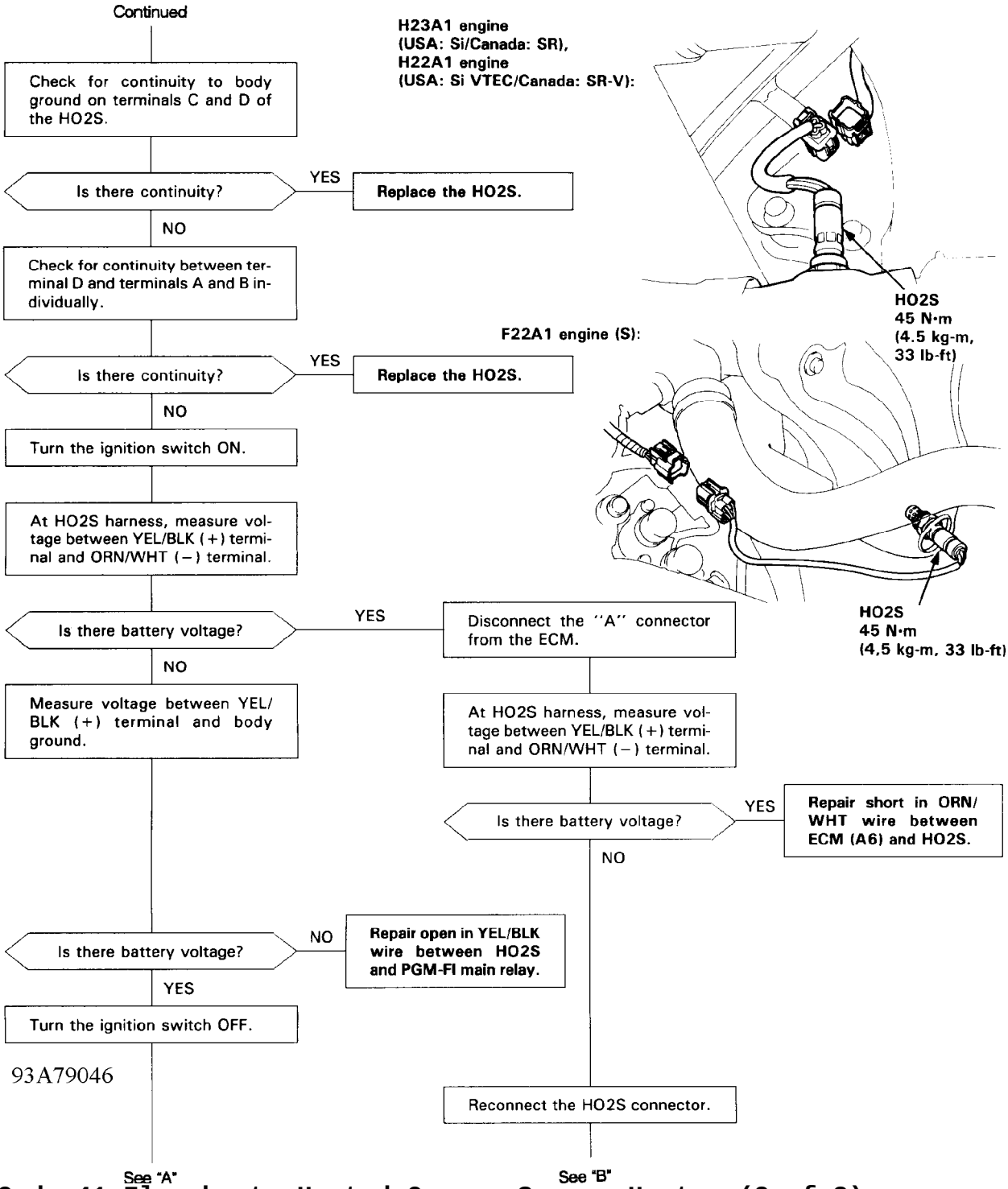


Fig. 43: Code 41 Flowchart, Heated Oxygen Sensor Heater (2 of 3)
Courtesy of American Honda Motor Co., Inc.

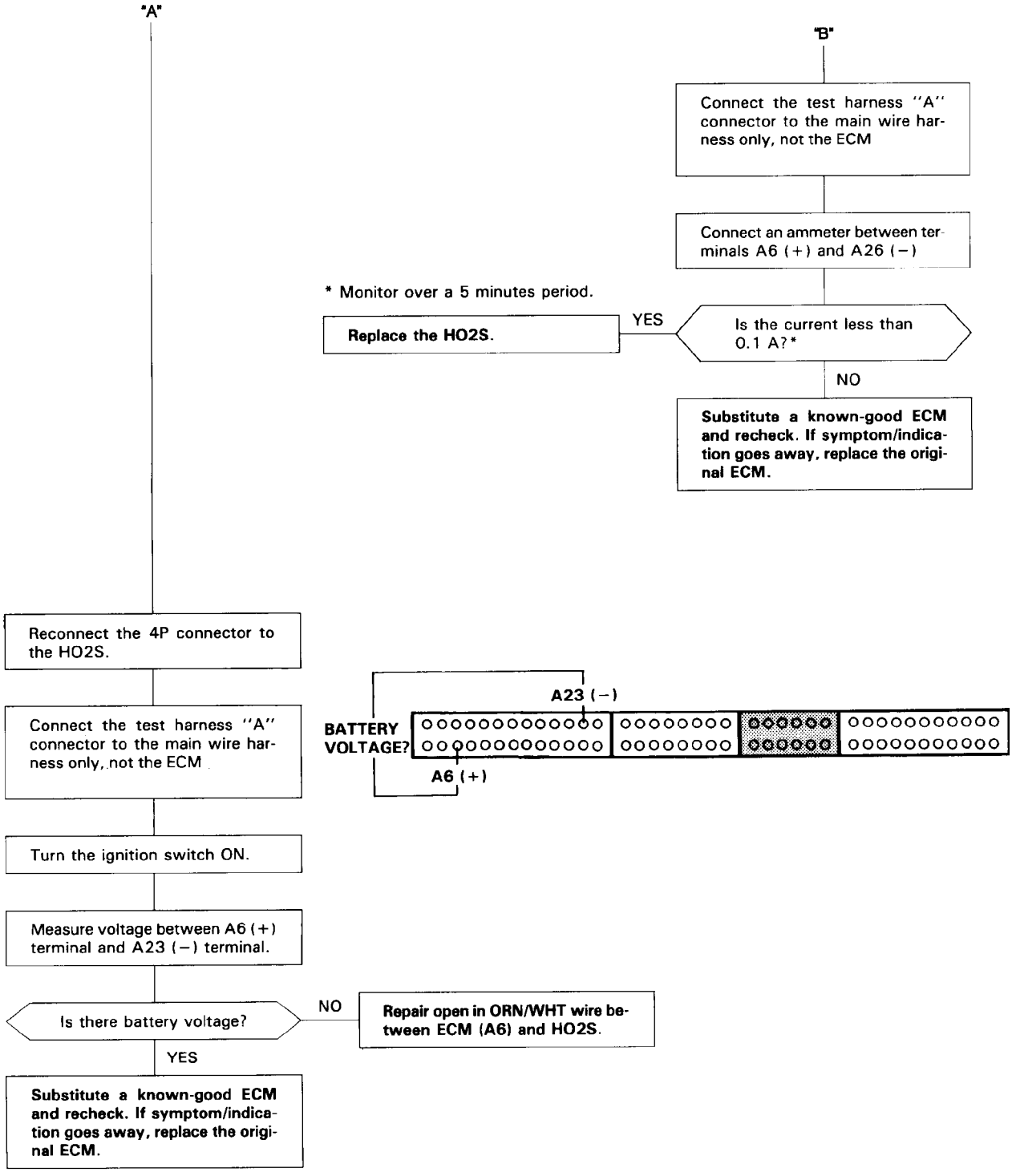
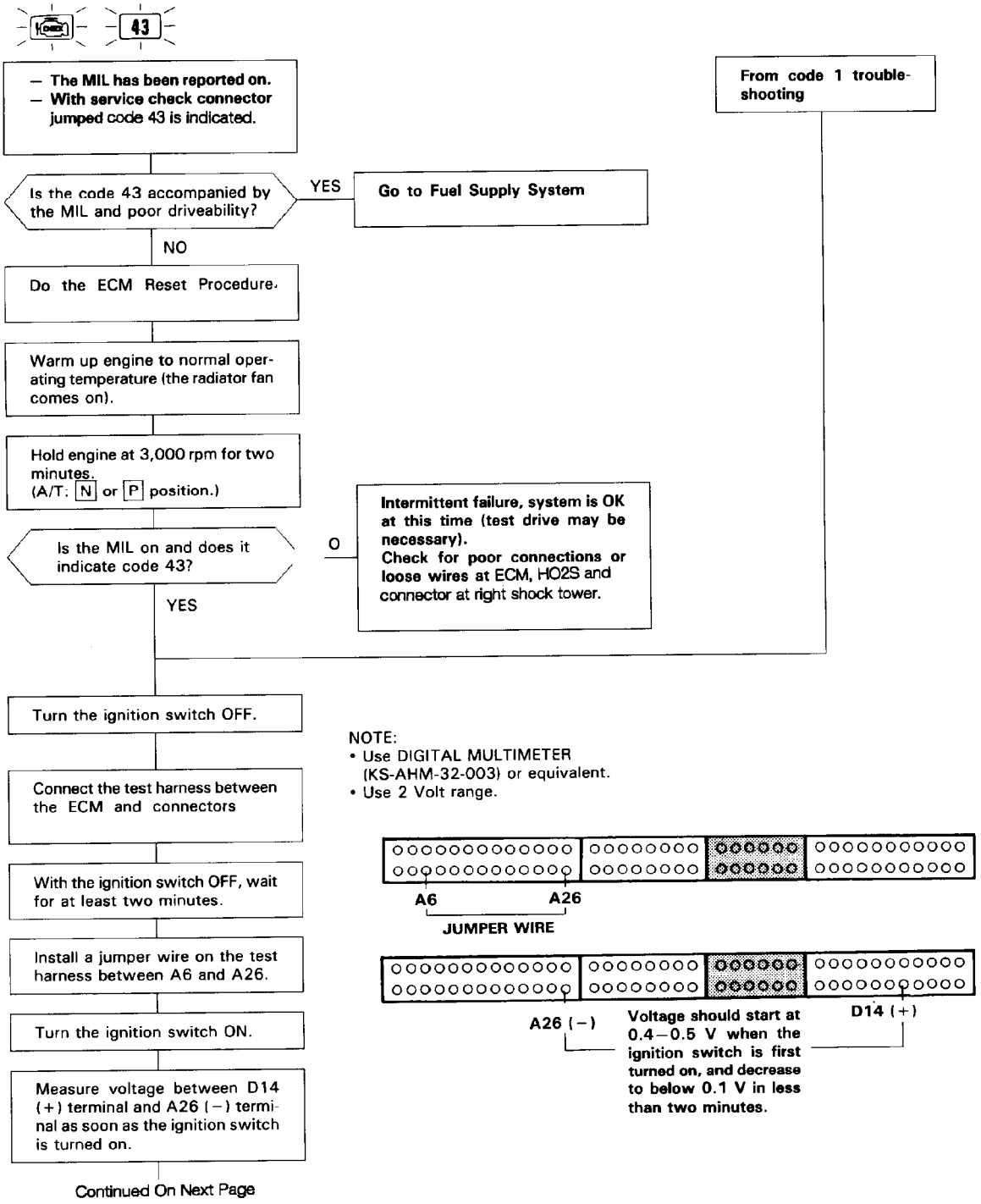


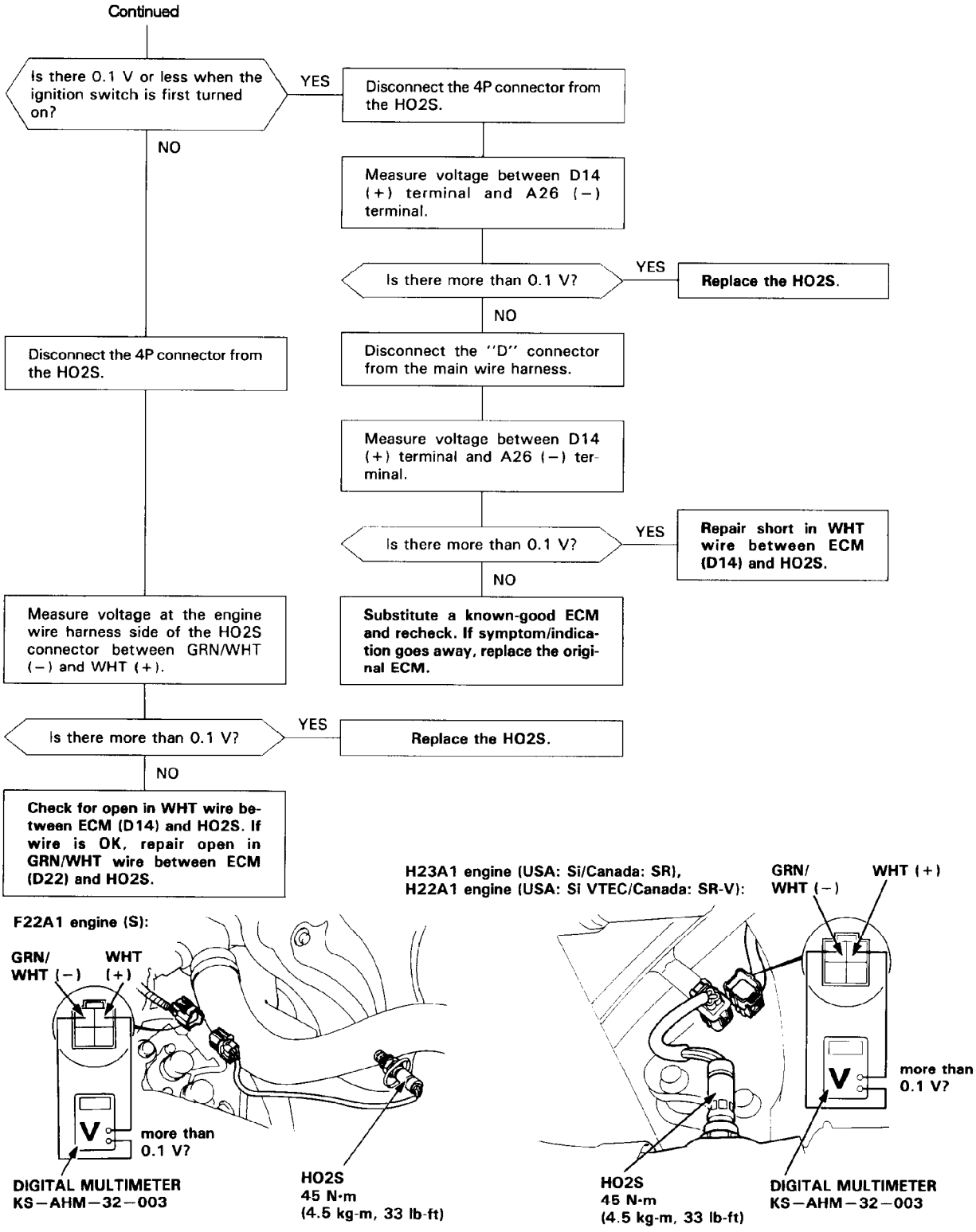
Fig. 44: Code 41 Flowchart, Heated Oxygen Sensor Heater (3 of 3)
Courtesy of American Honda Motor Co., Inc.

43 The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 43: A problem in the Heated Oxygen Sensor (HO2S) circuit or a problem in the Fuel Supply System.



93C79048

Fig. 45: Code 43 Flowchart, Fuel Supply System (1 of 2)
Courtesy of American Honda Motor Co., Inc.



93D79049

Fig. 46: Code 43 Flowchart, Fuel Supply System (2 of 2)
Courtesy of American Honda Motor Co., Inc.

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