G - TESTS W/CODES

1991 Mitsubishi Montero

1990-91 ENGINE PERFORMANCE
Chrysler Motors/Mitsubishi Self-Diagnostics

Dodge; Colt, Colt Vista, Colt Wagon
Eagle; Summit
Mitsubishi; Eclipse, Galant, Mirage, Montero, Precis (1990)
Plymouth; Colt, Colt Vista, Colt Wagon

INTRODUCTION

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

SELF-DIAGNOSTIC SYSTEM

Use Chrysler Motors code charts when using Chrysler's Diagnostic Readout Box (DRB-II). If DRB-II is not available or if working on a Mitsubishi Motors vehicle, system diagnosis can only be accomplished using a voltmeter or appropriate scan tester. To diagnose Chrysler Motors and Mitsubishi models using a voltmeter, see ENTERING ON-BOARD DIAGNOSTICS (USING VOLTMETER) in this article.

SYSTEM DIAGNOSIS

SYSTEM DIAGNOSIS DESCRIPTION

NOTE: Chrysler Motors recommends using DRB-II to diagnose system. Voltmeter usage has limited diagnostic capabilities but can be used if DRB-II is not available or if working on a Mitsubishi Motors vehicle.

The Engine Control Unit (ECU) monitors several different engine control system circuits. If an abnormal input signal occurs, a fault code is stored in ECU memory and given a fault code number. Each circuit has its own fault number and message. A specific fault code indicates a particular system failure, but it DOES NOT indicate that cause of failure is necessarily within system. A fault code DOES NOT condemn any specific component; it simply points out a probable malfunctioning area. If a critical fault code is set, the ECU will turn on CHECK ENGINE light. All fault codes except speed sensor are considered critical.

Fault codes can be confirmed by using a voltmeter on Chrysler Motors and Mitsubishi models or Chrysler's Diagnostic Readout Box (DRB-II) on Chrysler Motors vehicles. See ENTERING ON-BOARD DIAGNOSTICS (USING VOLTMETER) or ENTERING ON-BOARD DIAGNOSTICS (USING DRB-II) in this article. By using the DRB-II, the self-diagnostic capabilities of this system can simplify testing and reduce diagnostic time.

System malfunctions encountered are identified as either hard failures or intermittent failures as determined by the ECU.

HARD FAILURES

Hard failures cause CHECK ENGINE light to illuminate and remain on until the malfunction is repaired. If light comes on and

remains on (light may flash) during vehicle operation, cause of malfunction must be determined by using DIAGNOSTIC FAULT CHARTS (if testing with voltmeter) or diagnostic CODE CHARTS (if testing with DRB-II). If a sensor fails, ECU will use a substitute value in its calculations to continue engine operation. In this condition, vehicle is functional, but loss of good driveability may result.

INTERMITTENT FAILURES

Intermittent failures may cause CHECK ENGINE light to flicker or illuminate and go out after the intermittent fault goes away. However, the corresponding trouble code will be retained in ECU memory. If related fault does not reoccur within a certain time frame, related trouble code will be erased from ECU memory. Intermittent failures may be caused by a sensor, connector or wiring related problems. See INTERMITTENTS in H - TESTS W/O CODES article.

PRETEST INSPECTION

Before proceeding with diagnosis, the following precautions must be followed:

* Vehicle must have a fully charged battery and functional charging system.
* Visually inspect connectors and circuit wiring being worked on.
* DO NOT disconnect battery or ECU. This will erase any fault codes stored in ECU.
* DO NOT cause short circuits when performing electrical tests.

This will set additional fault codes, making diagnosis of original problem more difficult.

* DO NOT use a test light in place of a voltmeter.
* When checking for spark, ensure coil wire is NO more than 1/4" from ground. If coil wire is more than 1/4" from ground, damage to vehicle electronics and/or ECU may result.
* DO NOT prolong testing of fuel injectors. Engine may hydrostatically (liquid) lock.
* When a vehicle has multiple fault codes, always repair lowest number fault code first.
* If DRB-II is being used to diagnose system, always perform verification test after repairs are made.

ENTERING ON-BOARD DIAGNOSTICS (USING VOLTMETER)

1) Before entering on-board diagnostics, refer to PRETEST INSPECTION in this article. Turn ignition switch to OFF position. Locate self-diagnostic connector. See SELF-DIAGNOSTIC TEST CONNECTOR LOCATION table. Using an analog voltmeter, connect voltmeter positive lead to self-diagnostic connector terminal No. 1 and negative lead to terminal No. 12 (ground). See Fig. 6.

2) Turn ignition switch to ON position and disclosure of ECU memory will begin. If 2 or more systems are non-functional, they are indicated by order of increasing code number. Indication is made by 12-volt pulses of voltmeter pointer. A constant repetition of short 12-volt pulses indicates system is normal. If system is abnormal, voltmeter will pulse between zero and 12 volts.

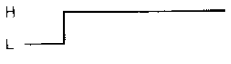
3) Signals will appear on voltmeter as long and short 12-volt pulses. Long pulses represent tens; short pulses represent ones. For example 4 long pulses and 3 short pulses indicates Code 43. See

Figs. 1 and 2. After recording abnormal code(s), perform necessary repair.

4) After repair, turn ignition off and disconnect negative battery cable for 10 seconds to erase ECU memory. Reconnect power supply and repeat self-diagnostics to confirm repair.

SELF-DIAGNOSTIC TEST CONNECTOR LOCATION TABLE

Application	Location
Colt, Colt 200, Colt Wagon & Summit	
1.5L	Next to fuse block
1.6L	Right kick panel
Colt Wagon & Colt Vista	
1.8L & 2.0L SOHC	Next to fuse block
Eclipse	Next to fuse block
Galant	Left kick panel
Mirage	Left kick panel
Montero	Inside top of glove box
Precis	Left kick panel

Output preference order	Diagnosis item	Diagnosis code: Output signal pattern	Diagnosis code: No.	Diagnosis code: Memory	Check item (Remedy)
1	Engine control unit		–	–	(Replace engine control unit)
2	Oxygen sensor		11	Retained	• Harness and connector • Fuel pressure • Injectors (Replace if defective) • Intake air leaks • Oxygen sensor
3	Air flow sensor		12	Retained	• Harness and connector (If harness and connector are normal, replace air flow sensor assembly.)
4	Intake air temperature sensor		13	Retained	• Harness and connector • Intake air temperature sensor
5	Throttle position sensor		14	Retained	• Harness and connector • Throttle position sensor • Idle position switch
6	Motor position [1] sensor		15	Retained	• Harness and connector • Motor position sensor
7	Engine coolant temperature sensor		21	Retained	• Harness and connector • Engine coolant temperature sensor
8	Crank angle sensor		22	Retained	• Harness and connector (If harness and connector are normal, replace distributor assembly.)
9	No. 1 cylinder top dead center sensor		23	Retained	• Harness and connector (If harness and connector are normal, replace distributor assembly.)

[1] – Except Sigma & Montero.

Fig. 1: Diagnostic Fault Chart (1 of 2)
Courtesy of Mitsubishi Motor Sales of America.

Output preference order	Diagnosis item	Diagnosis code			Check item (Remedy)
		Output signal pattern	No.	Memory	
10	Vehicle speed sensor (reed switch)		24	Retained	• Harness and connctor • Vehicle speed sensor (reed switch)
11	Barometric pressure sensor		25	Retained	• Harness and connector (If harness and connector are normal, replace barometric pressure sensor assembly.)
12	Injector		41	Retained	• Harness and connctor • Injector coil resistance
13	Fuel pump		42	Retained	• Harness and connctor • Control relay
14	EGR <California> [1]		43	Retained	• Harness and connctor • EGR temperature sensor • EGR valve • EGR valve control solenoid valve • EGR valve control vacuum
15	Normal state		–	–	–

[1] – Except Montero.

Fig. 2: Diagnostic Fault Chart (2 of 2)
Courtesy of Mitsubishi Motor Sales of America.

DIAGNOSTIC PROCEDURE (USING DRB-II)

DRB-II PROCEDURE

NOTE: When using diagnostic code charts, DO NOT skip any steps in chart or incorrect diagnosis may result. Always check related Technical Service Bulletins (TSB's).

Refer to ENTERING ON-BOARD DIAGNOSTICS (USING DRB-II) to retrieve fault codes. If fault codes are NOT present and/or DRB-II is used, proceed to one of the following tests:

* Go to NO START TEST 1 (NS-1) chart if a no-start condition exists or engine stalls after start-up. Perform indicated VERIFICATION PROCEDURE chart after repairs. Ensure charts apply to engine being tested.
* Go to DRIVEABILITY TEST 1 (DR-1) chart if engine runs but has performance problems. Perform indicated VERIFICATION

PROCEDURE chart after repairs. Ensure charts apply to engine being tested.

DRB-II KEY FUNCTIONS

* YES or Down Arrow & NO or Up Arrow
  Keys will move lines on screen up or down allowing you to choose an item or scroll through all selections available.
* F1 & F2 Keys
  Keys are used to scroll through sensor displays.
* ATM Key
  Key will return you to previous screen.
* ENTER Key
  Allows you to select a test or display. The flashing arrow must be on the display you wish to select. Pressing ENTER in the sensor state will cause display to change from a 3-line display to a 1-line display.
* F3 Key
  Key is used to display a help screen. This key may be used at any time.
* Number Keys
  Keys are used for choosing a display or test by the number for the test or display.
* READ/HOLD Key
  Key is used to freeze any sensor display.
* MODE & ATM Key
  Pressing MODE and ATM key at the same time will cause DRB-II to reset to copyright screen.

ENTERING ON-BOARD DIAGNOSTICS (USING DRB-II)

* PLEASE READ THIS FIRST *

1) Before entering on-board diagnostics, refer to PRETEST INSPECTION in this article. Turn ignition off. Locate self-diagnostic connector. See SELF-DIAGNOSTIC TEST CONNECTOR LOCATION table in this article. Using appropriate Mitsubishi cartridge and adapter, connect DRB-II to diagnostic connector.

2) Ensure all accessories are off. Turn ignition on. All character positions will illuminate and copyright information will appear on screen for a few seconds.

3) If DRB-II screen displays an error message, refer to DRB-II ERROR SCREENS in this article. The DRB-II will offer 4 menus: VEHICLES TESTED, HOW TO USE, CONFIGURE and SELECT VEHICLE.

VEHICLES TESTED

Press "1" key or ENTER key when VEHICLES TESTED appears on DRB-II. DRB-II shows models covered by cartridge. Screen will display for 5 seconds and return to DRB-II menu. To return to DRB-II menu sooner, press ATM key.

HOW TO USE

Press "2" key or press down arrow to display HOW TO USE option and press ENTER. Press and hold F3 key. DRB-II displays instructions for cartridge usage. To return to DRB-II menu, press ATM key.

CONFIGURE

Press "3" key or press down arrow to display CONFIGURE option and press ENTER. Configure allows user to customize DRB-II display. For example, If metric system is more useful, select METRIC from the menu. All selections in CONFIGURE option remain active until user changes selection.

SELECT VEHICLE

1) This allows the user to enter information about vehicle being tested. Usually, this option has more than one display screen. Use ENTER key to enter vehicle information.

2) When all information about vehicle is entered, DRB-II will display an information summary the technician has entered. DRB-II will show an additional option marked CONFIRM. If information is correct, press CONFIRM. DRB-II will display MAIN MENU.

MAIN MENU

The MAIN MENU represents all diagnostic functions available. Functions are SYSTEM TESTS, READ FAULTS, STATE DISPLAYS, ACTUATOR TESTS and ADJUSTMENTS. SYSTEM TESTS is NOT available.

READ FAULTS

This allows technician to read fault codes stored in ECU memory.

STATE DISPLAYS

1) This allows technician to view conditions at signal level. The 2 types of signals are analog and digital. Analog signals are monitored at pins corresponding to vehicle harness splices (e.g. fuel pump relay).

2) Digital signals correspond to data transmitted by the system controllers. Both signals are displayed in common units (e.g. temperature). Use up and down arrow keys on DRB-II to scroll through displays available.

3) The following ENGINE state displays are available on DRB-II:

* Module Information - This mode allows technician to read ECU part number and application.
* Engine Sensors - This mode allows technician to look at various engine sensors during engine operation.
* Inputs/Outputs - This mode allows technician to read input and output states of various switches and sensors.
* Custom Display - This screen allows technician to set up his/her own custom display. Two custom display screens can be programmed into DRB-II.
* Minimum/Current/Maximum - The MIN/CURRENT/MAX display shows a history of conditions for a specific sensor. When this option is selected, maximum, current (static) and minimum values can be displayed for a specific sensor. To reset sensors to a zero value, simply press ENTER key. This display may be used to isolate intermittent faults. The MIN/CURRENT/MAX display allows technician to observe operation of 6 different sensor values. Information is displayed as a 3-digit number. The first value displayed is the minimum reading, the second number is the current reading and third valve is the maximum reading. Typically sensors range between 2-252. Values less than 2 or greater than 252 will usually indicate that a

sensor is shorted or disconnected. Watch minimum and maximum values to help diagnose intermittent problems.

* Monitors - This screen shows technician sensors and system controllers which affect fuel control, spark advance, RPM and A/C relay. There are 4 different screens available. As an example, screen No. 1 will show: airflow sensor, O2 sensor, battery and fuel injector. All of these inputs affect fuel control.

Actuator Tests

This mode allows technician to actuate injectors, fuel pump, purge control, EGR solenoid, fuel pressure solenoid and wastegate.

Adjustments

This option provides a means for erasing fault code information stored in ECU. Follow DRB-II instructions to accomplish this task.

DRB-II ERROR SCREENS

ERROR SCREENS

SYSTEM FAULT ROM CHECK SUM XXXX Message

Cartridge or DRB-II failure.

SYSTEM FAULT KEYBOARD FAILURE Message

Restart DRB-II. Ensure DRB-II keys are not pressed during power up. Another possibility is DRB-II failure.

SYSTEM FAULT ROM FAILURE XXXX

DRB-II failure.

SYSTEM FAULT EEPROM FAILURE

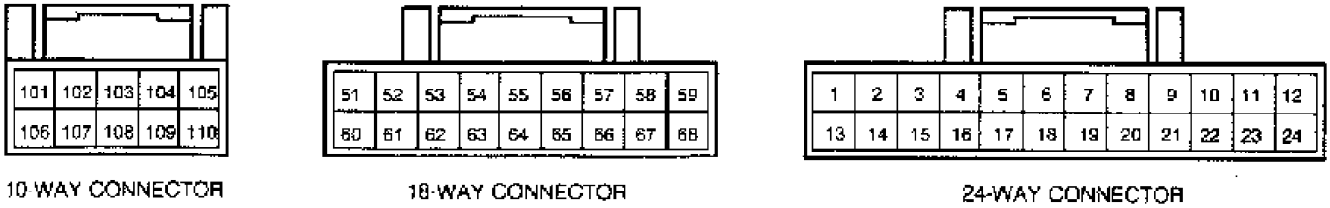
DRB-II failure.

SYSTEM FAILURE, COMMUNICATION FAILURE, REFER TO DIAGNOSTIC PROCEDURES Message

Perform diagnostic connector test. See DRIVEABILITY TEST No. 8 (DR-8). Failure of Mitsubishi Motor Corporation (MMC) adapter is another possibility.

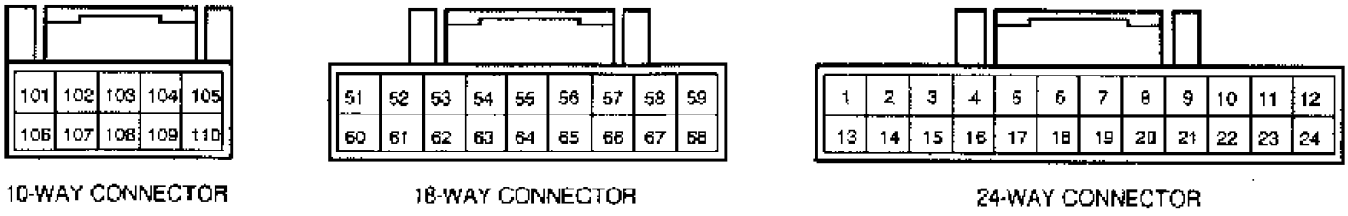
SYSTEM FAILURE NO RESPONSE FROM ADAPTER or SYSTEM FAILURE ADAPTER REQUIRED TO DIAGNOSE WITH THIS CARTRIDGE Message

Ensure you are using a correct Mitsubishi Motor Corporation cartridge. Failure of MMC adapter is another possibility.



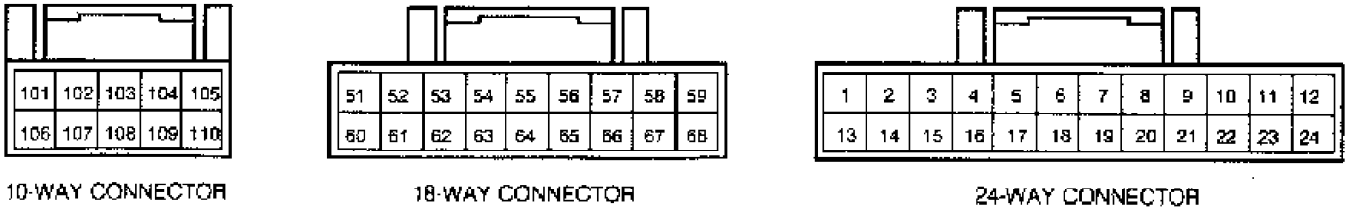
NOTE: ECU CONNECTOR ILLUSTRATIONS ARE NOT AVAILABLE FOR MONTERO 3.0L, PRECIS 1.5L & SIGMA 3.0L. SEE WIRING DIAGRAMS ARTICLE.

Fig. 3: 10-Way ECU Connector
Courtesy of Chrysler Motors.



NOTE: ECU CONNECTOR ILLUSTRATIONS ARE NOT AVAILABLE FOR MONTERO 3.0L, PRECIS 1.5L & SIGMA 3.0L. SEE WIRING DIAGRAMS ARTICLE.

Fig. 4: 18-Way ECU Connector
Courtesy of Chrysler Motors.



NOTE: ECU CONNECTOR ILLUSTRATIONS ARE NOT AVAILABLE FOR MONTERO 3.0L, PRECIS 1.5L & SIGMA 3.0L. SEE WIRING DIAGRAMS ARTICLE.

Fig. 5: 24-Way ECU Connector
Courtesy of Chrysler Motors.

Fig. 6: Self-Diagnostic Connector Terminal Identification
Courtesy of Mitsubishi Motor Sales of America.

FAULT CODES

FAULT CODES TABLE

Fault Code	System Fault Description
11	Open or short in O2 sensor circuit
12	Open or short in airflow sensor circuit
13	Open or short in intake air temp. sensor circuit
14	Open or short in TPS circuit
15 (1)	Open or short in motor position sensor circuit
21	Open or short in coolant temp. sensor circuit
22	No voltage change in crank angle sensor signal
23	No voltage change in TDC sensor circuit
24 (2)	No voltage change in vehicle speed sensor signal
25	Open or short in barometric pressure sensor
31 (3)	Open or short in detonation sensor circuit
41	Open or short in injector circuit
42	Open or short in fuel pump drive circuit
43 (4)	Open or short in EGR temp. sensor circuit

44 (5) ..... Open or short in either ignition coil circuit

(1) - Except Montero & Sigma.
(2) - Will not turn on CHECK ENGINE light.
(3) - 2.0L turbo only.
(4) - California only. Except Sigma.
(5) - Chrysler Motors models only.

CLEARING CODES

Using DRB-II, from main menu select ADJUSTMENTS. Enter ERASE FAULTS. Follow DRB-II instructions to accomplish this task. If DRB-II is not available, fault codes may be cleared by disconnecting negative battery cable for at least 10 seconds, allowing ECU to clear fault codes.

TEST CHARTS

* PLEASE READ THIS FIRST *

NOTE: The following charts are supplied for Chrysler Motors vehicles.

NS-1: TESTING IGNITION CIRCUIT - 1.5L

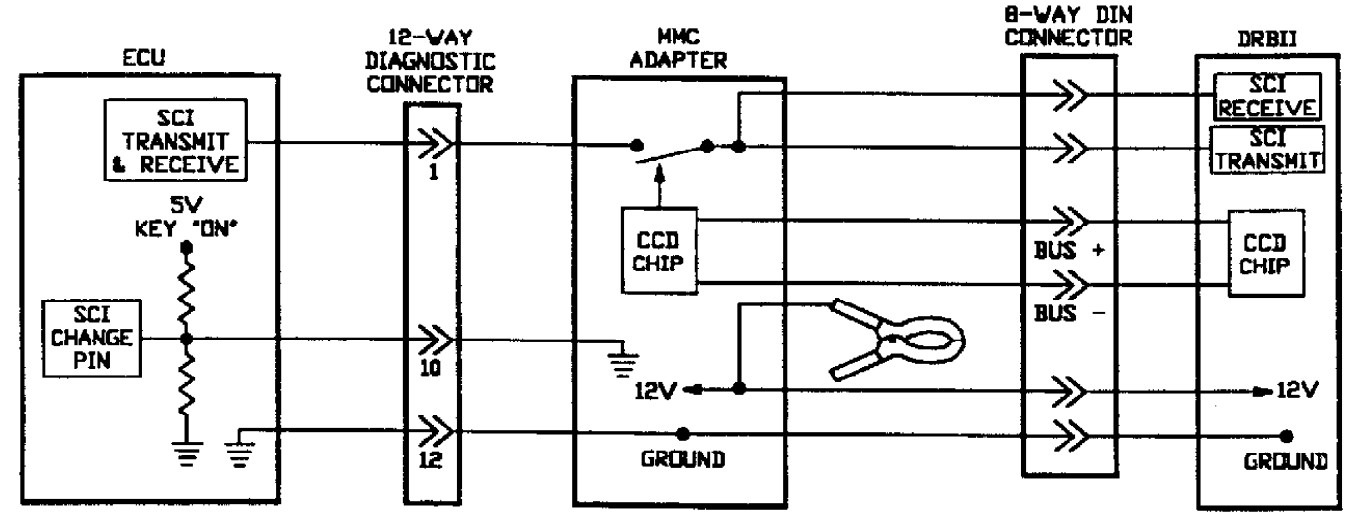


Fig. 7: Circuit Diagram NS-1 (1.5L) (1 of 2)

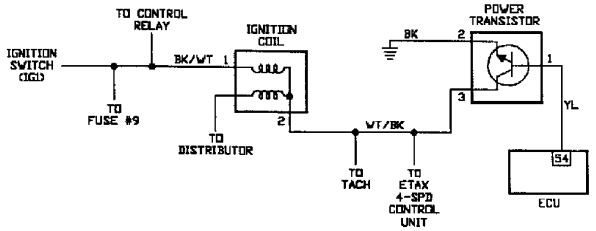


Fig. 8: Circuit Diagram NS-1 (1.5L) (2 of 2)

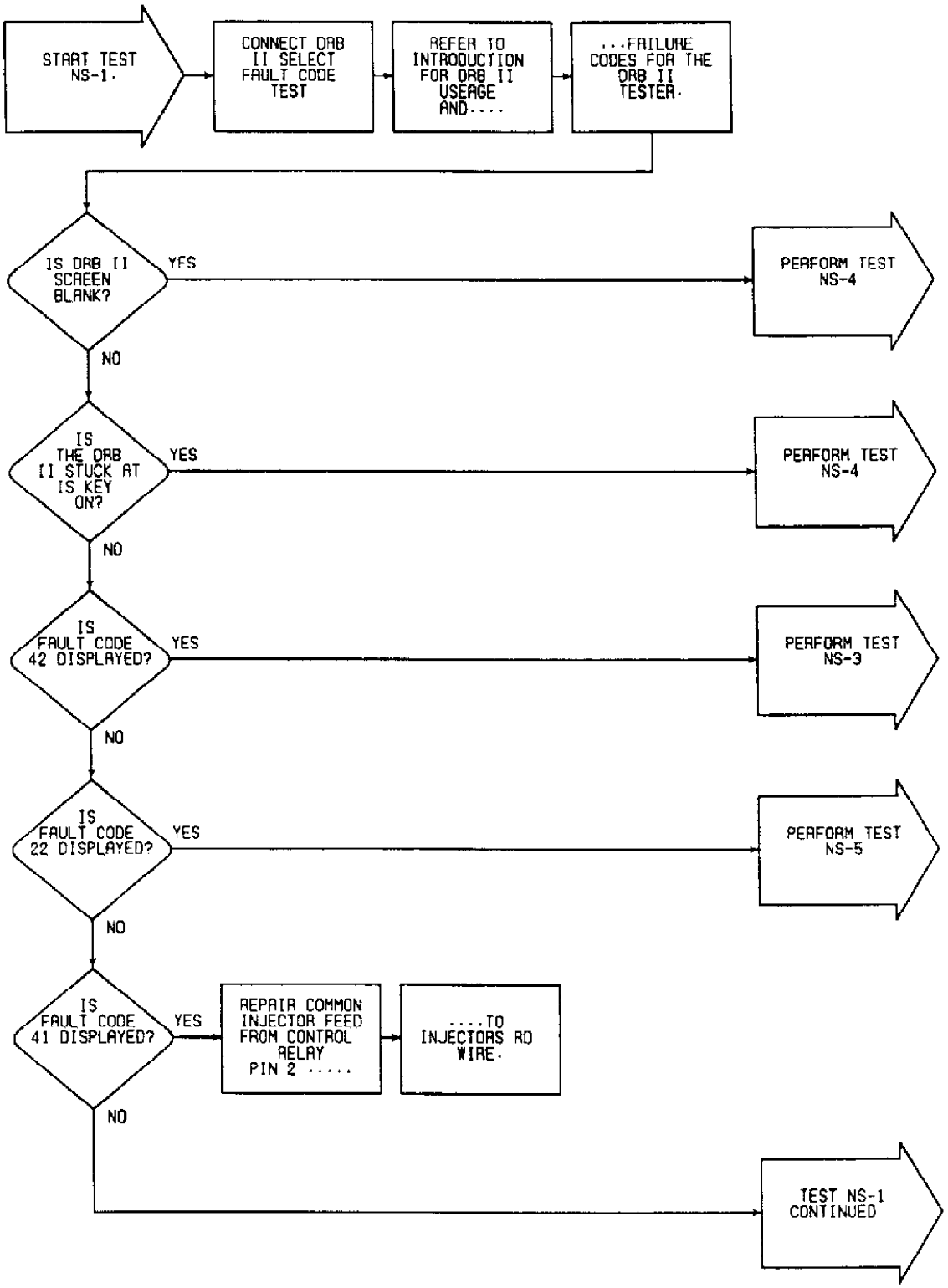


Fig. 9: Flow Chart NS-1 (1.5L) (1 of 3)

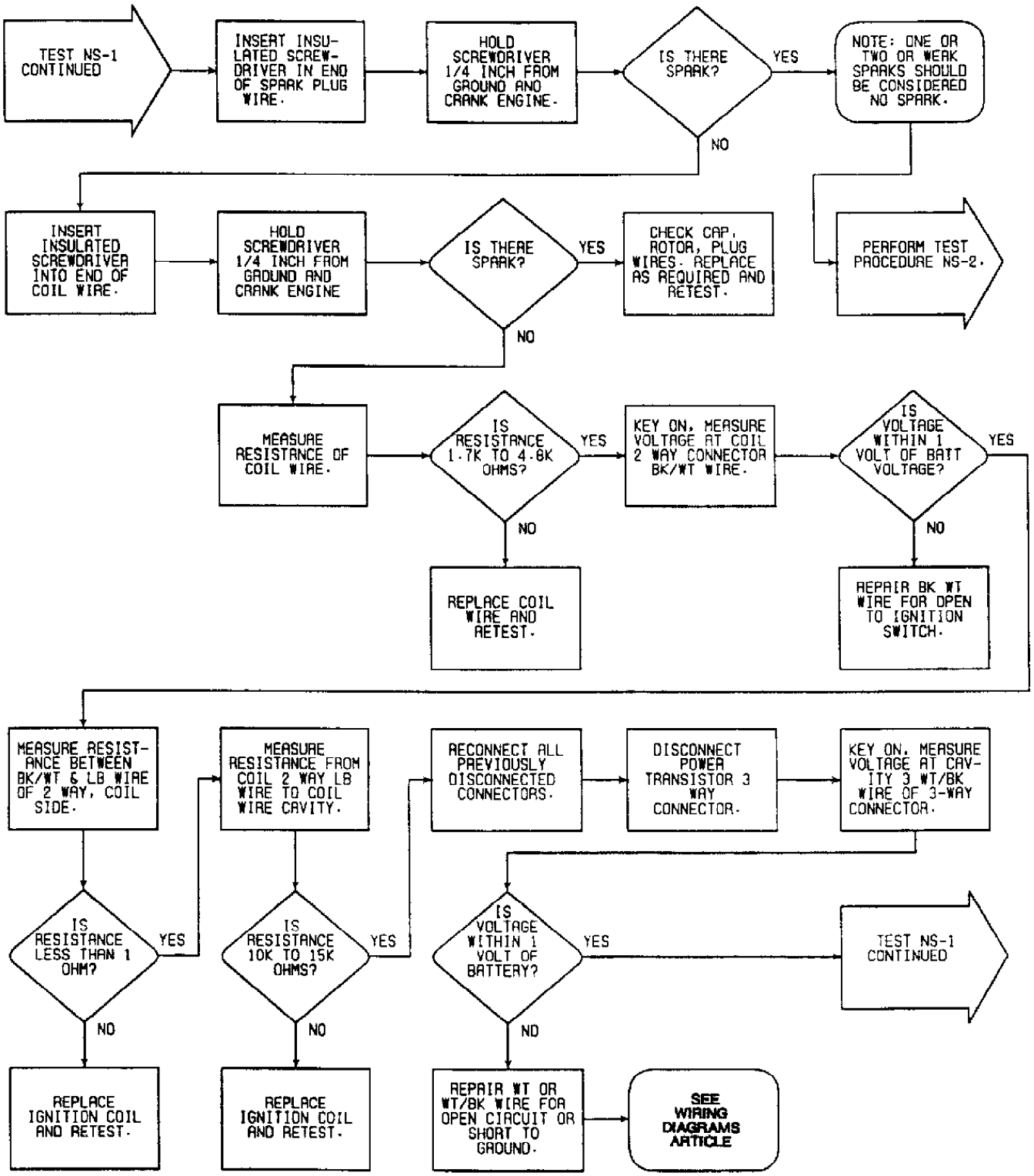


Fig. 10: Flow Chart NS-1 (1.5L) (2 of 3)

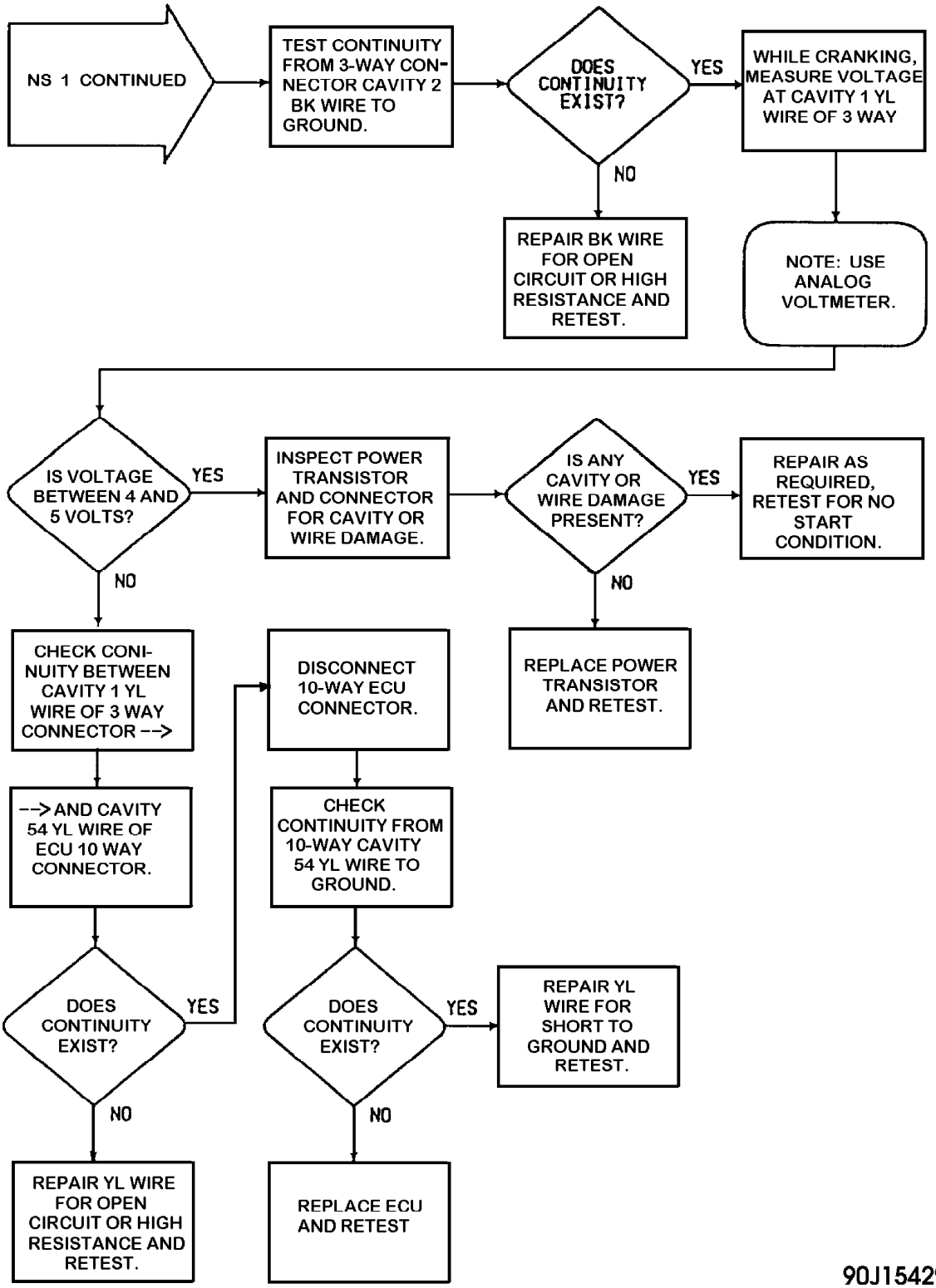


Fig. 11: Flow Chart NS-1 (1.5L) (3 of 3)

NS-2: CHECKING FOR FUEL PRESSURE - 1.5L

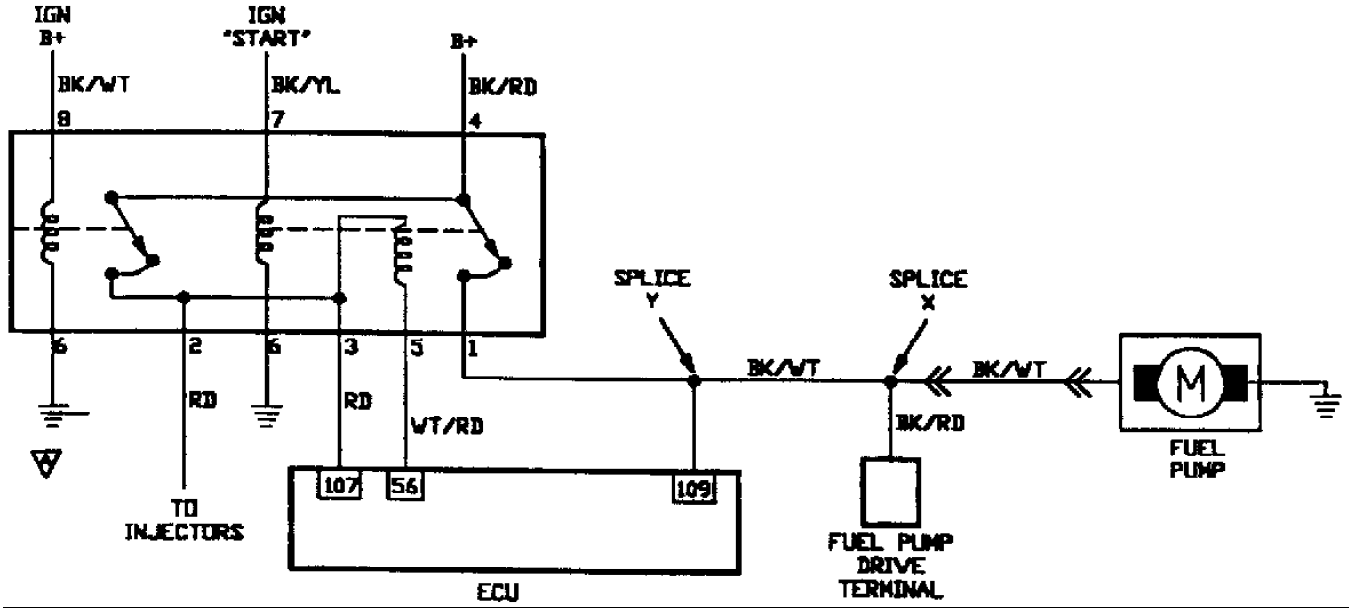


Fig. 12: Circuit Diagram NS-2 (1.5L)

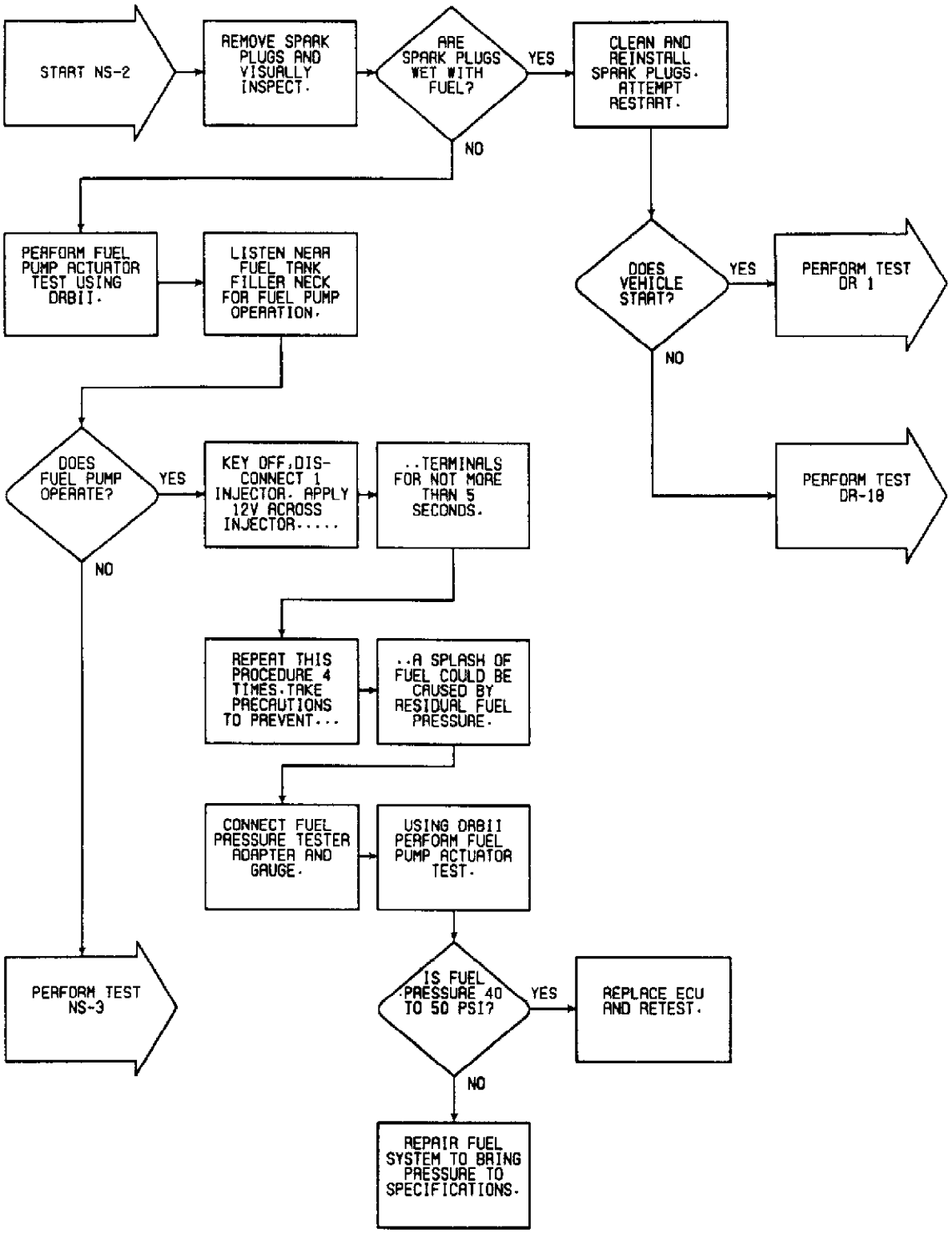


Fig. 13: Flow Chart NS-2 (1.5L)

NS-3: TESTING FUEL PUMP CIRCUIT - 1.5L

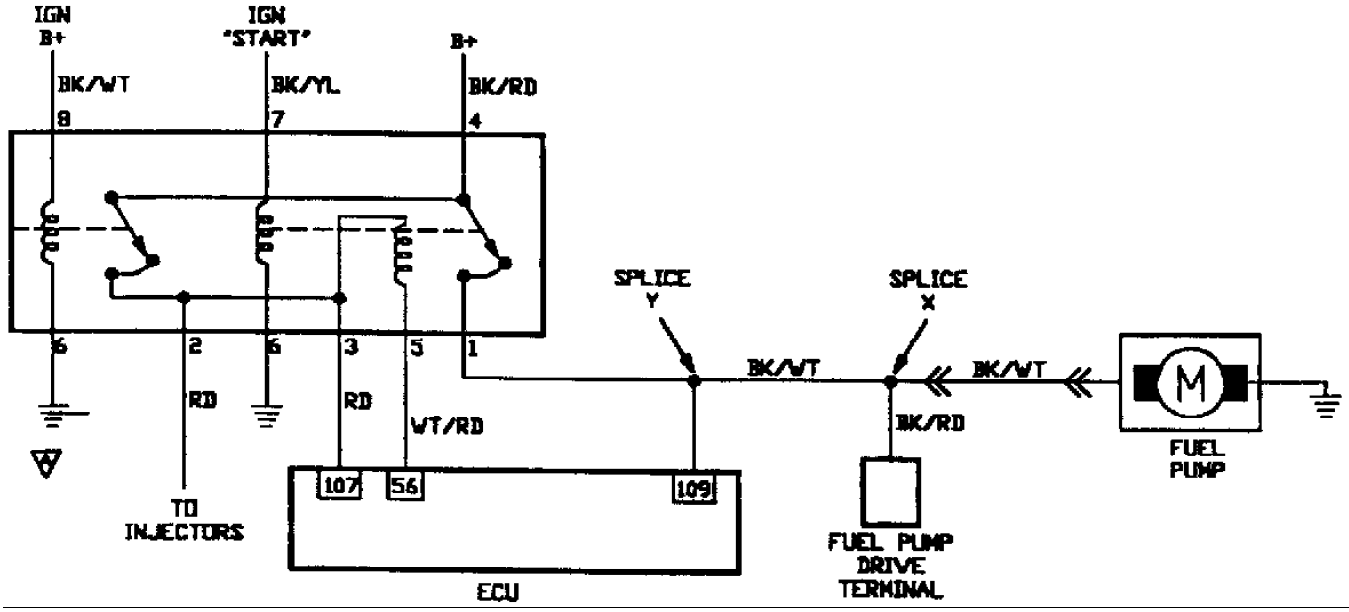


Fig. 14: Circuit Diagram NS-3 (1.5L)

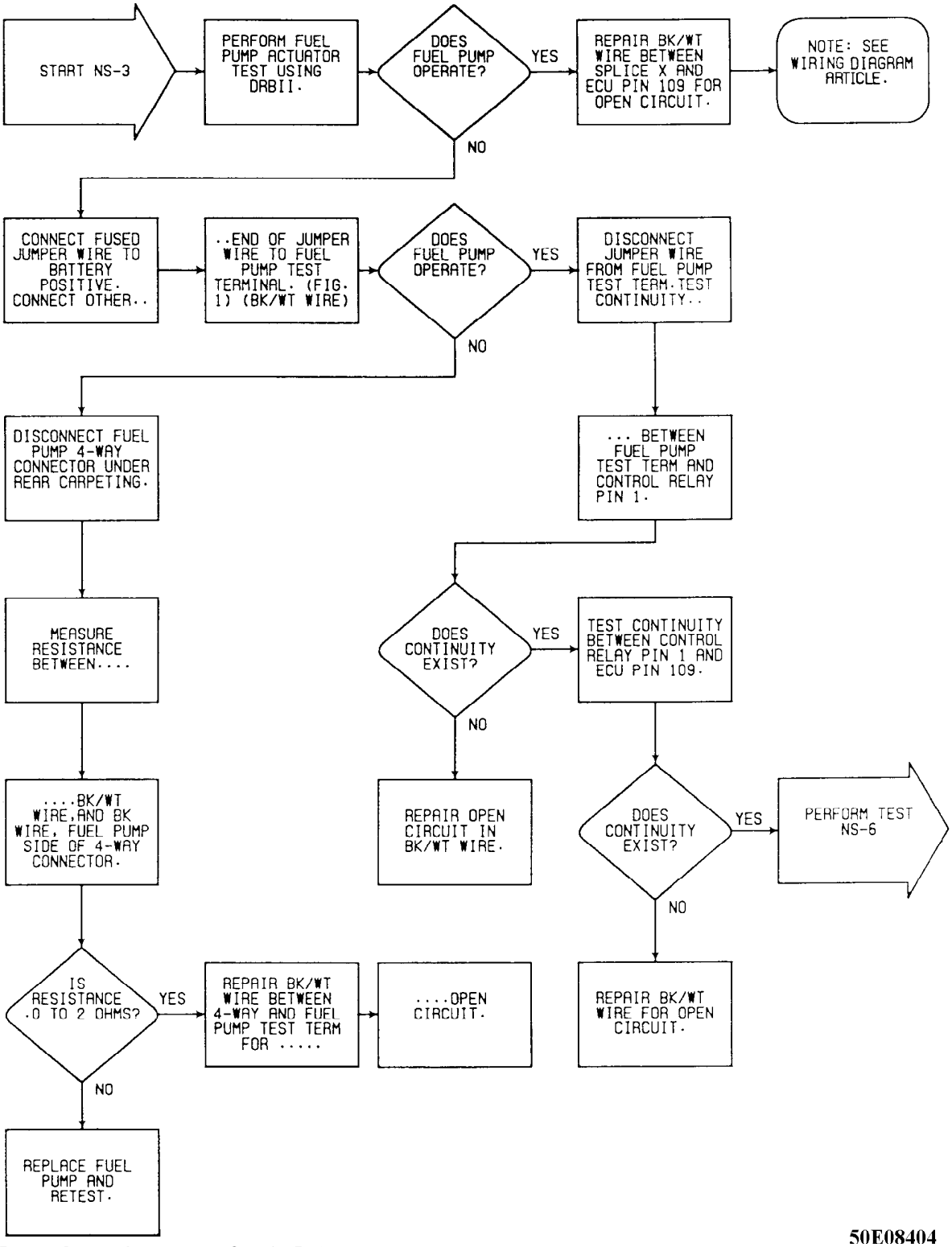


Fig. 15: Flow Chart NS-3 (1.5L)

NS-4: TESTING SELF-DIAGNOSTIC CONNECTOR - 1.5L

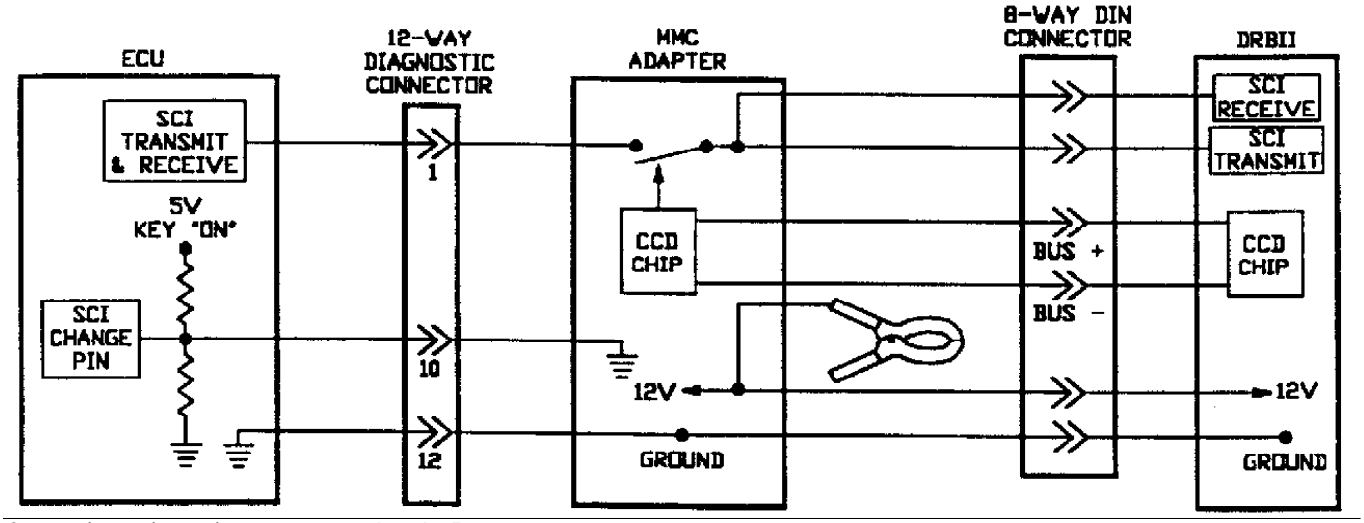


Fig. 16: Circuit Diagram NS-4 (1.5L)

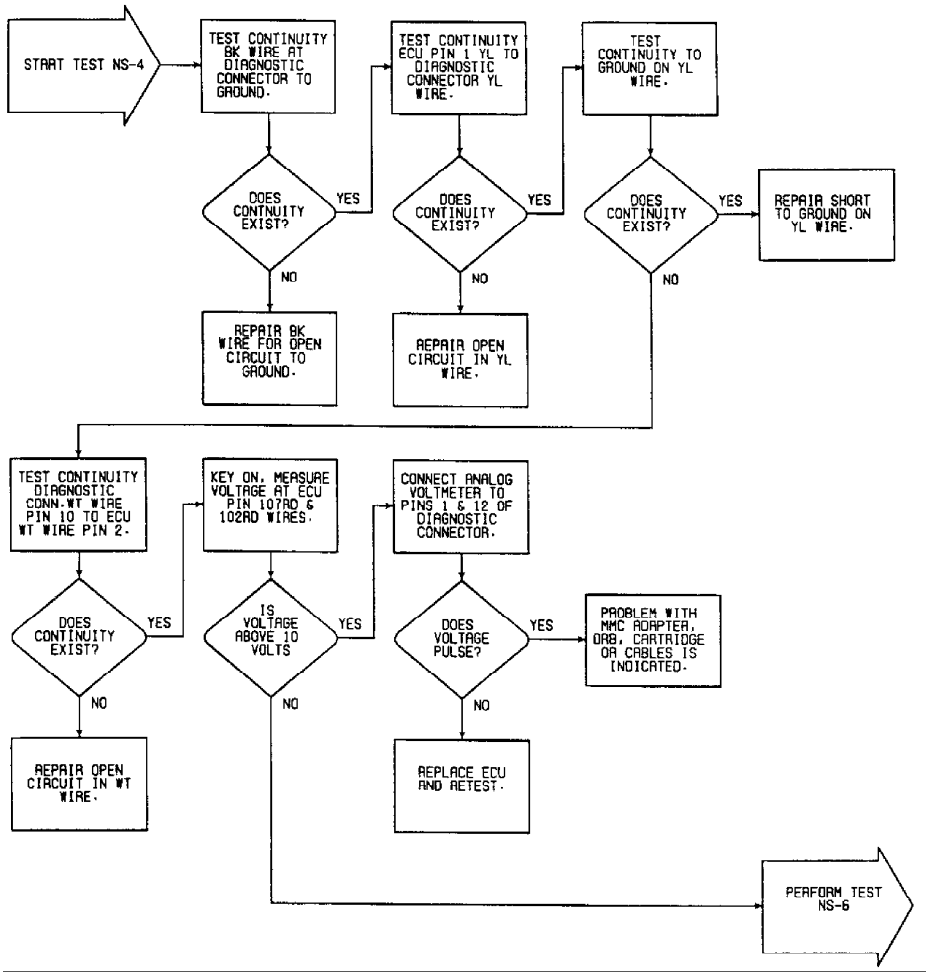


Fig. 17: Flow Chart NS-4 (1.5L)

NS-5: TESTING CRANK ANGLE SENSOR CIRCUIT - 1.5L

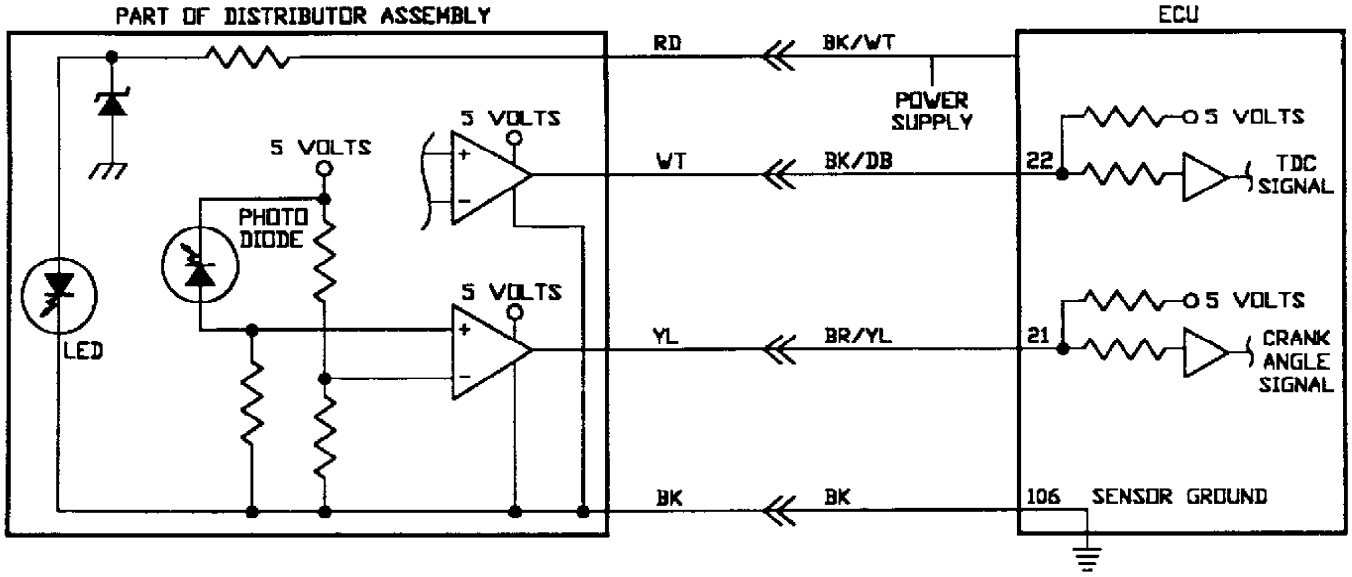


Fig. 18: Circuit Diagram NS-5 (1.5L)

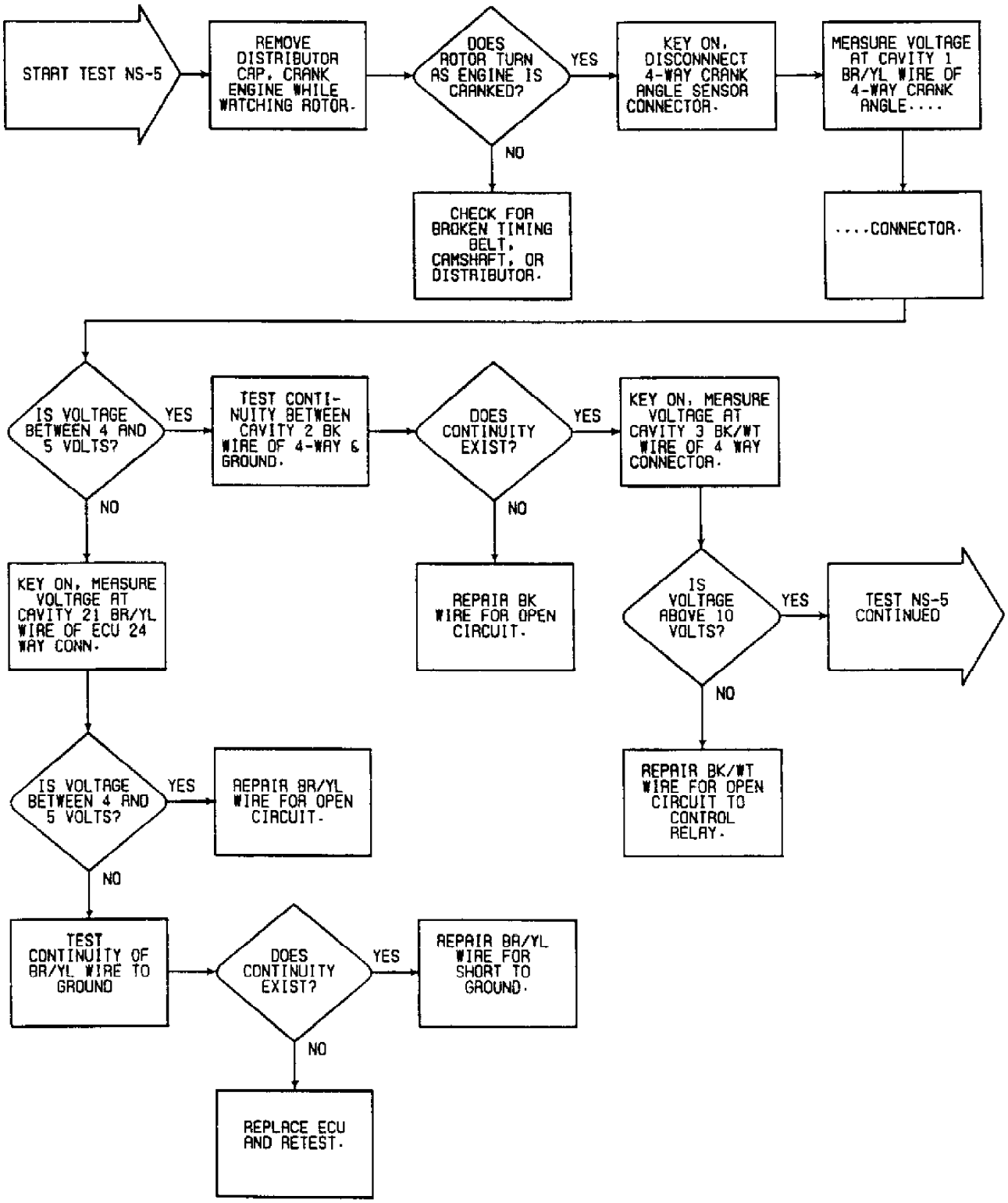


Fig. 19: Flow Chart NS-5 (1.5L) (1 of 2)

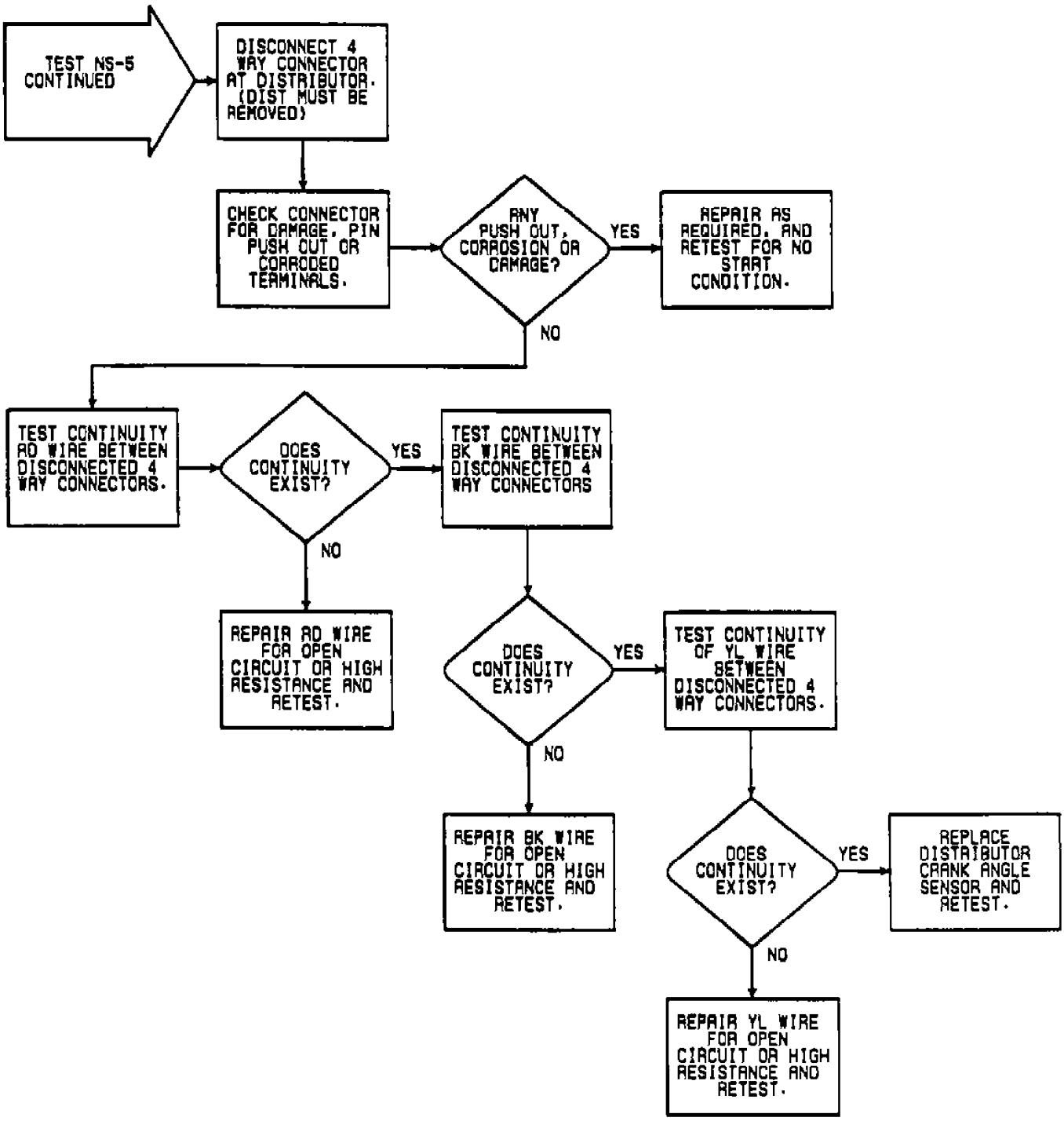


Fig. 20: Flow Chart NS-5 (1.5L) (2 of 2)

NS-6: TESTING CONTROL RELAY - 1.5L

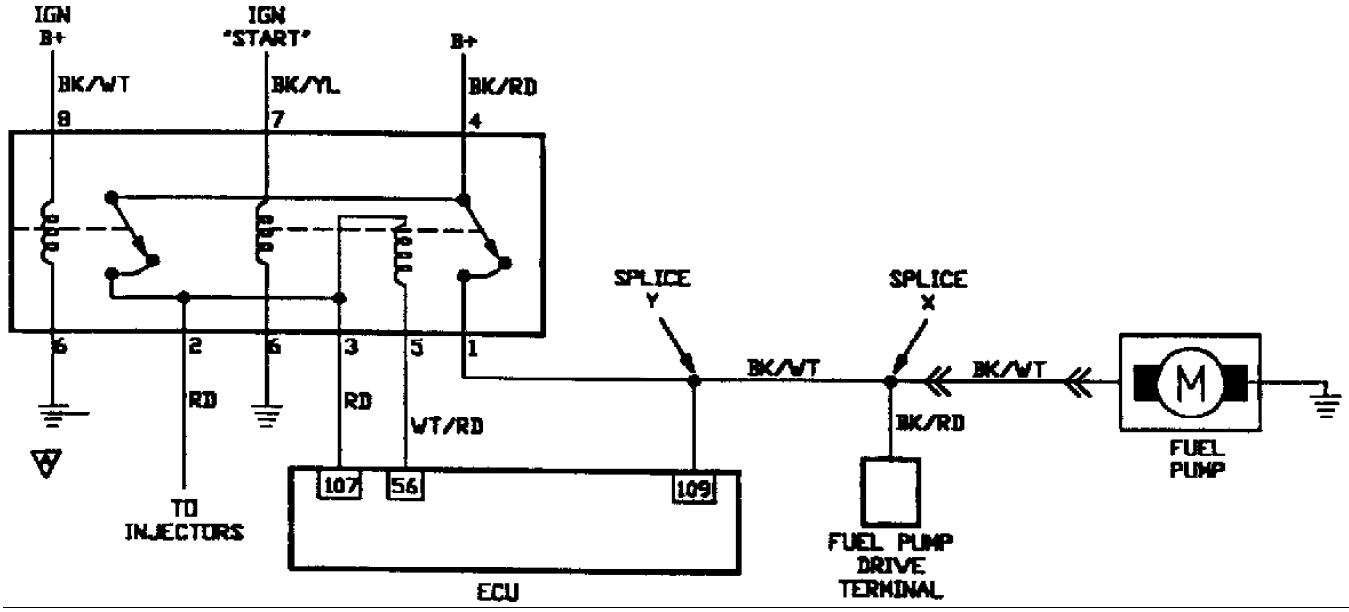


Fig. 21: Circuit Diagram NS-6 (1.5L)

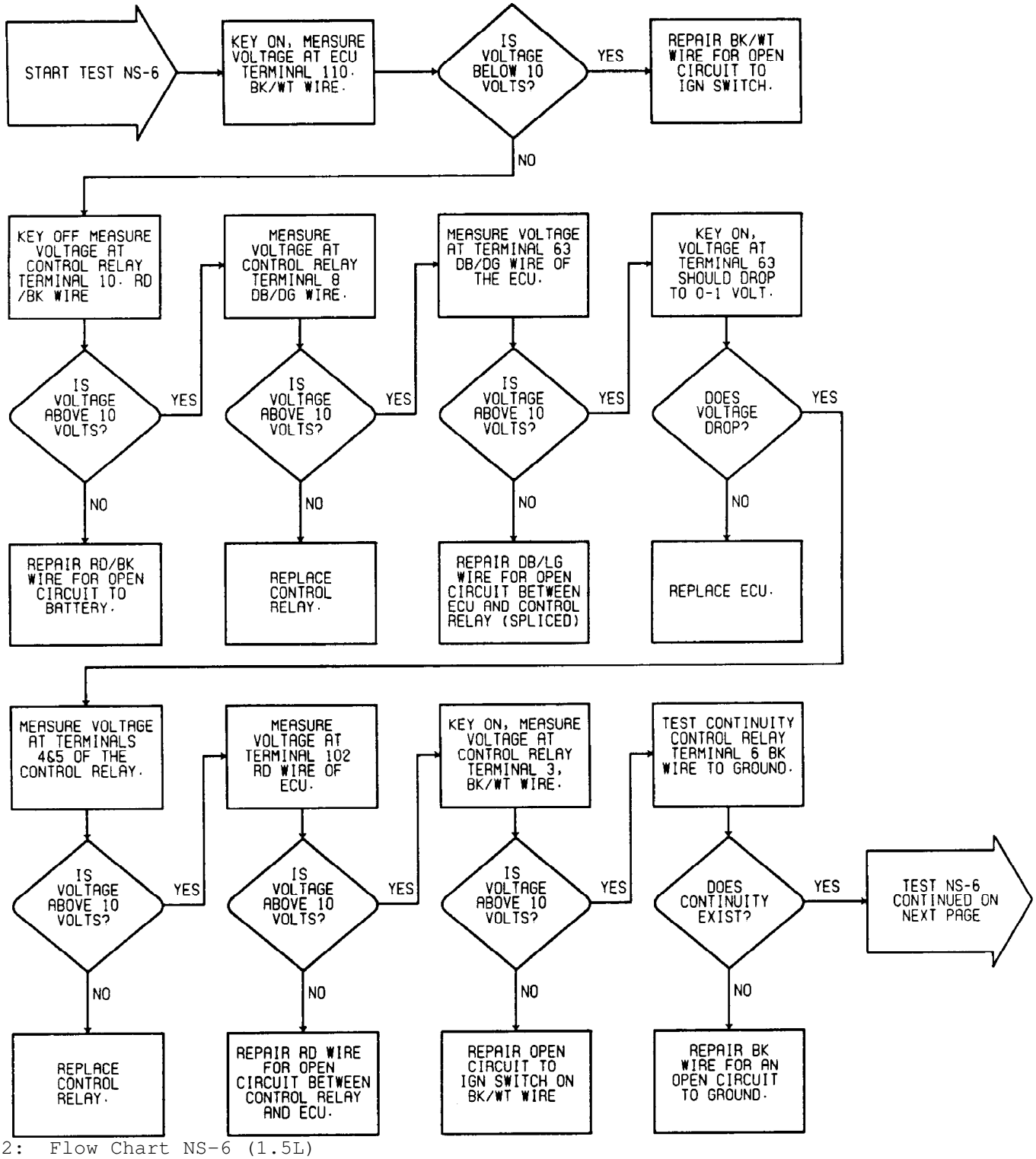


Fig. 22: Flow Chart NS-6 (1.5L)

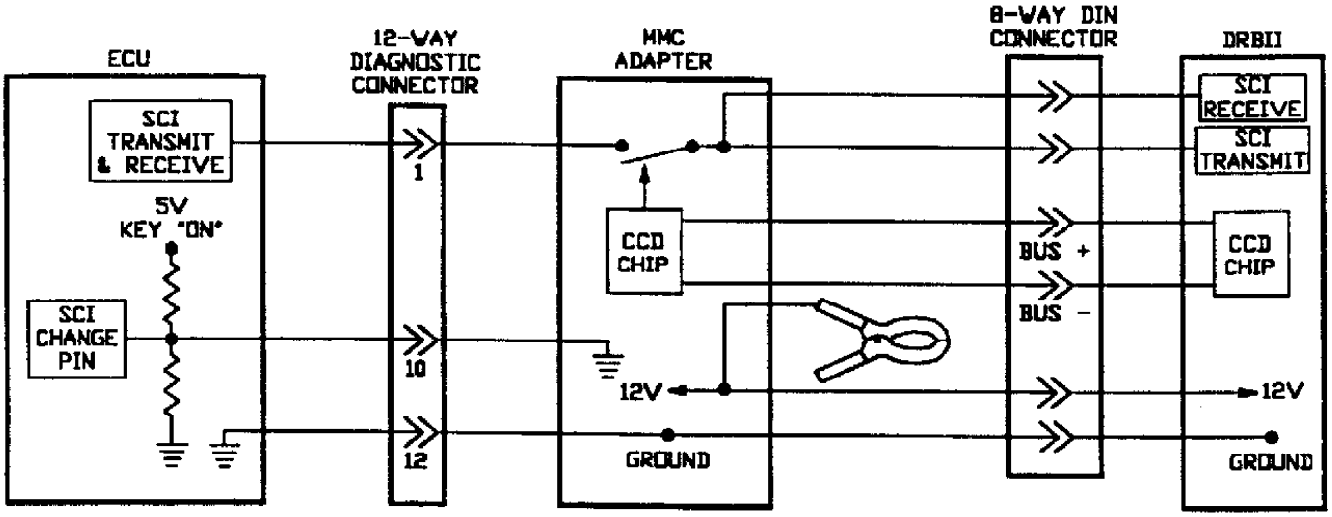


Fig. 23: Circuit Diagram DR-1 (1.5L)

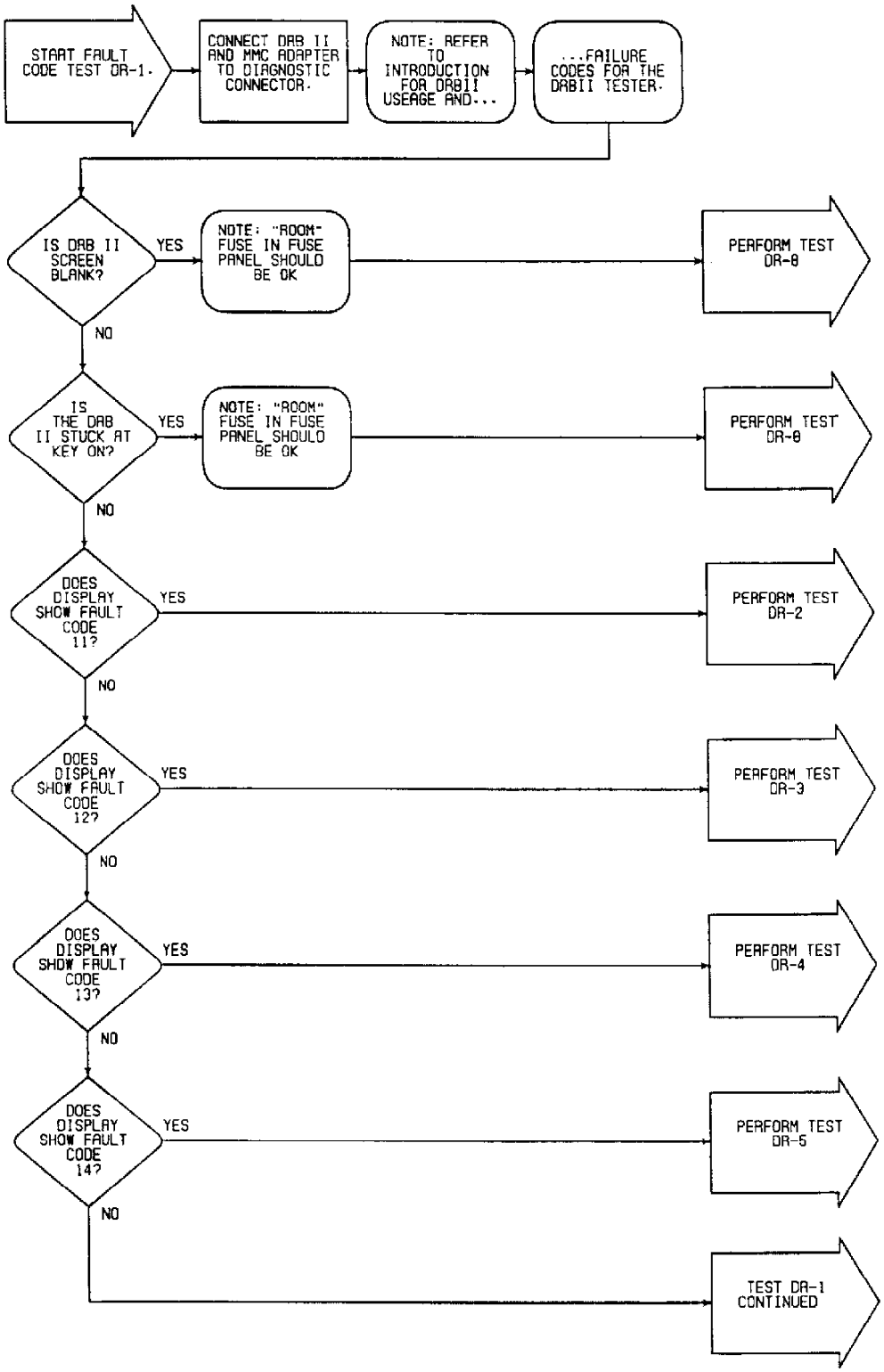


Fig. 24: Flow Chart DR-1 (1.5L) (1 of 2)

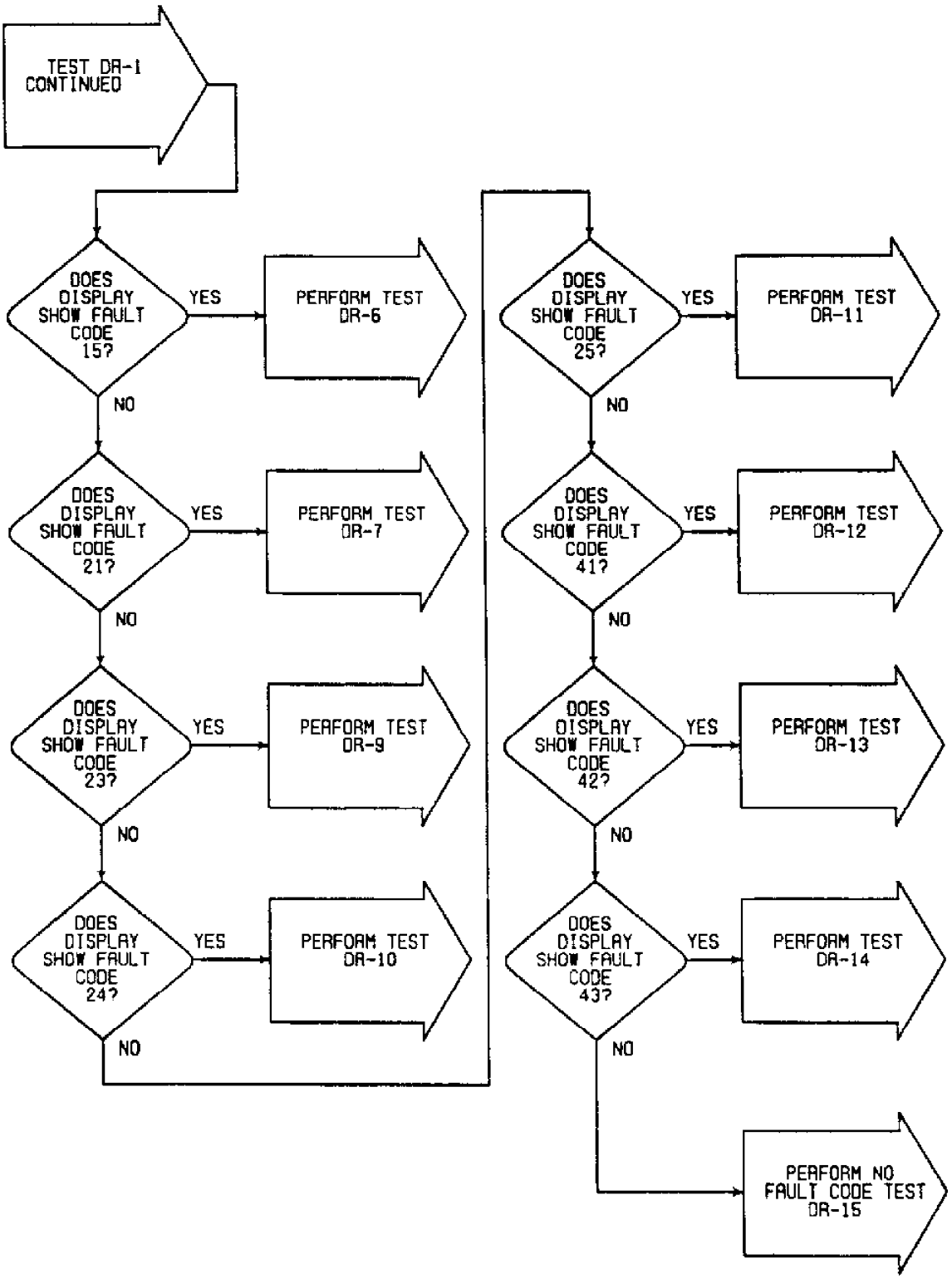


Fig. 25: Flow Chart DR-1 (1.5L) (1 of 2)

DR-2: CODE 11 OXYGEN SENSOR CIRCUIT - 1.5L

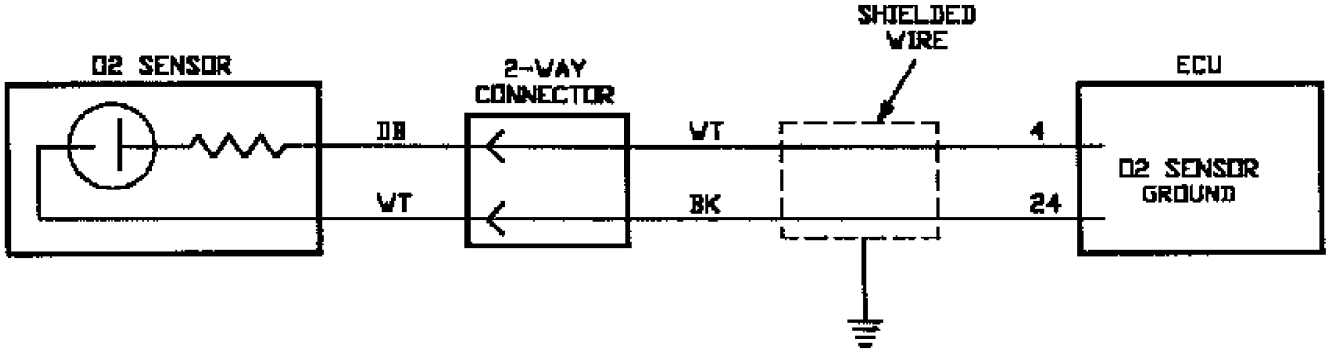


Fig. 26: Circuit Diagram DR-2 (1.5L)

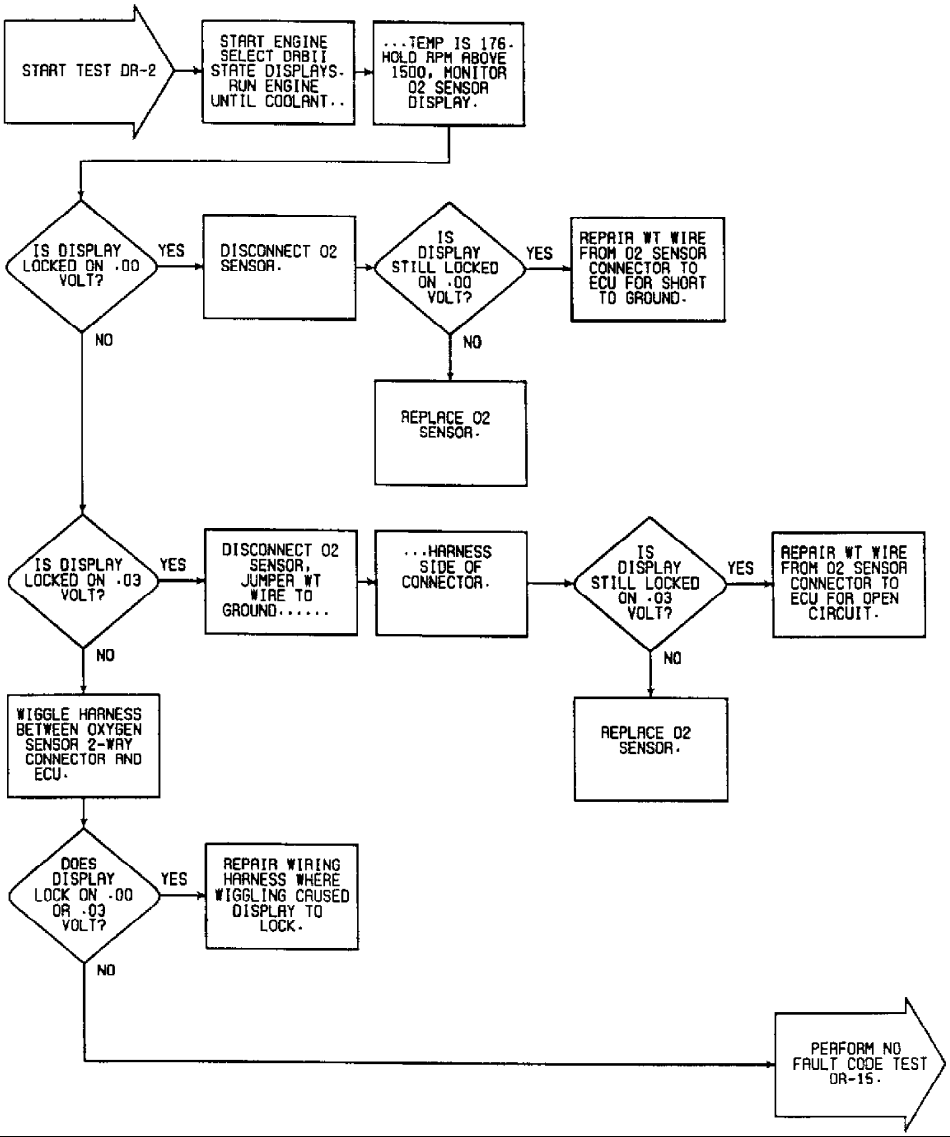


Fig. 27: Flow Chart DR-2 (1.5L)

DR-3: CODE 12 AIRFLOW SENSOR CIRCUIT - 1.5L

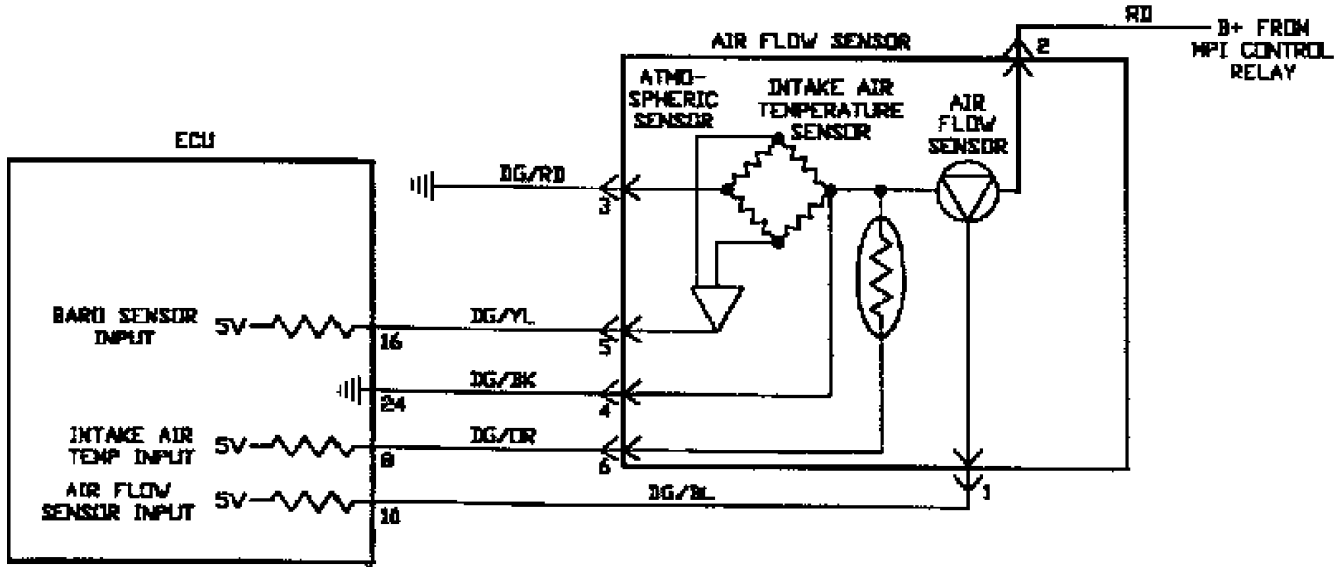


Fig. 28: Circuit Diagram DR-3 (1.5L)

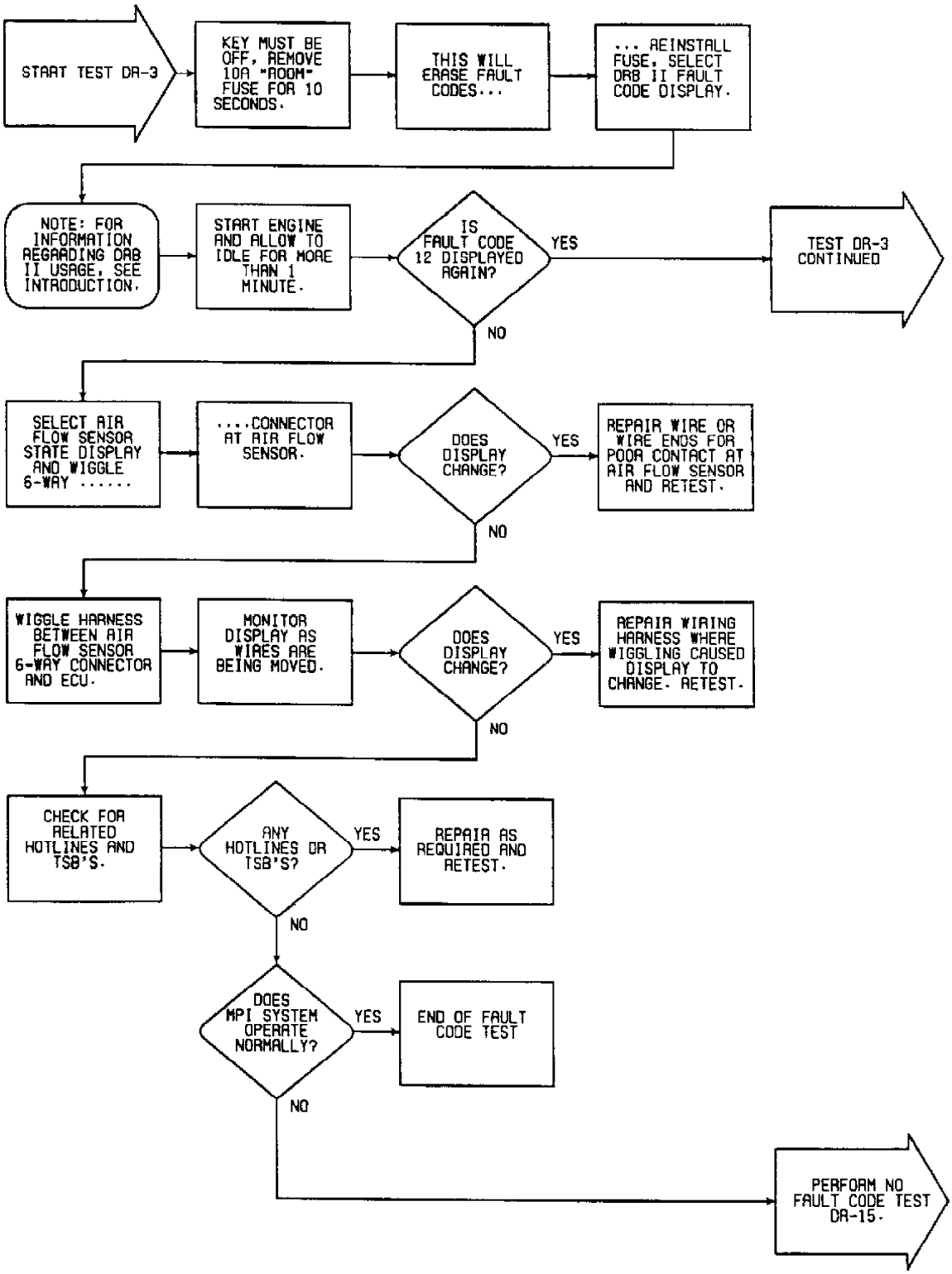


Fig. 29: Flow Chart DR-3 (1.5L) (1 of 3)

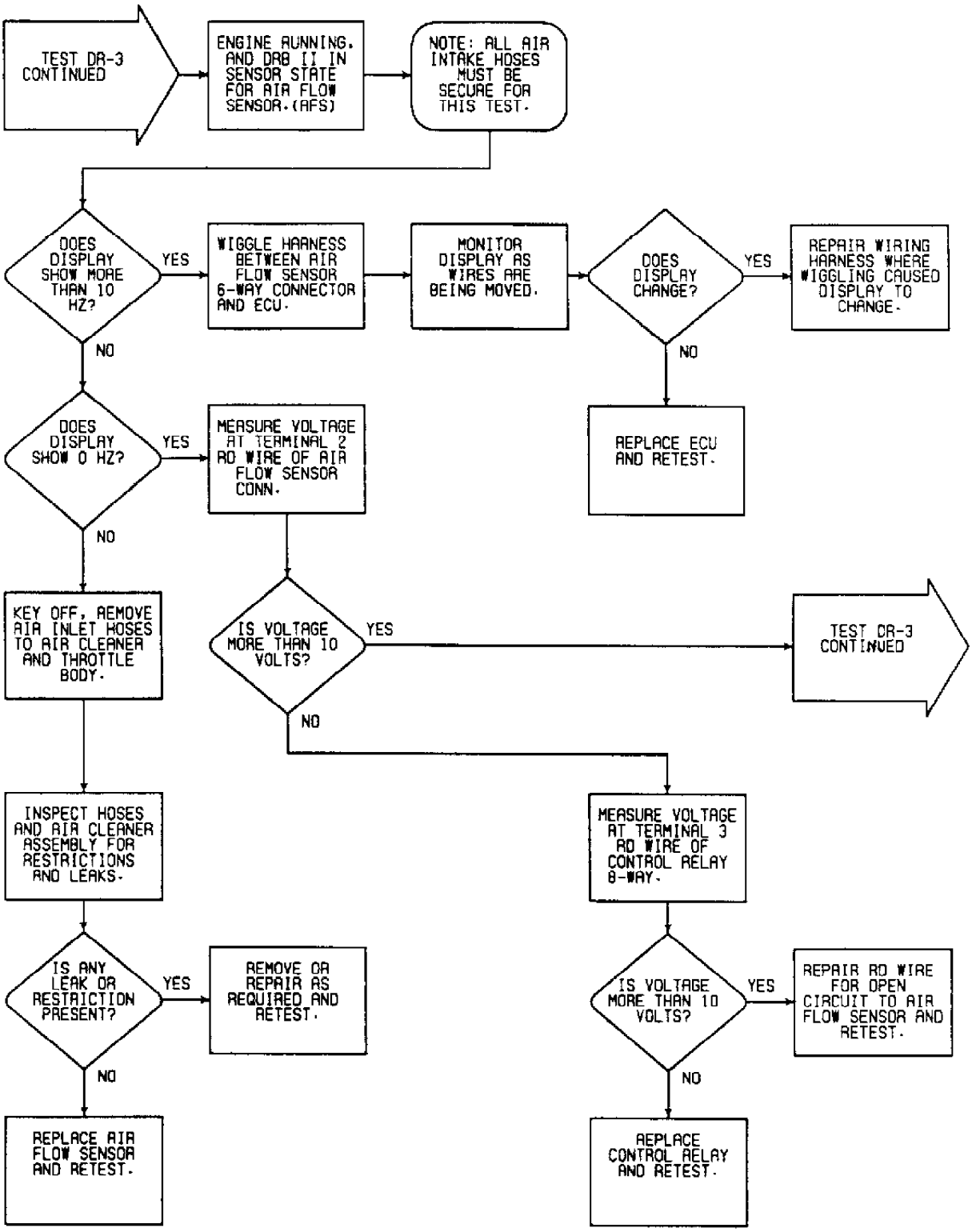


Fig. 30: Flow Chart DR-3 (1.5L) (2 of 3)

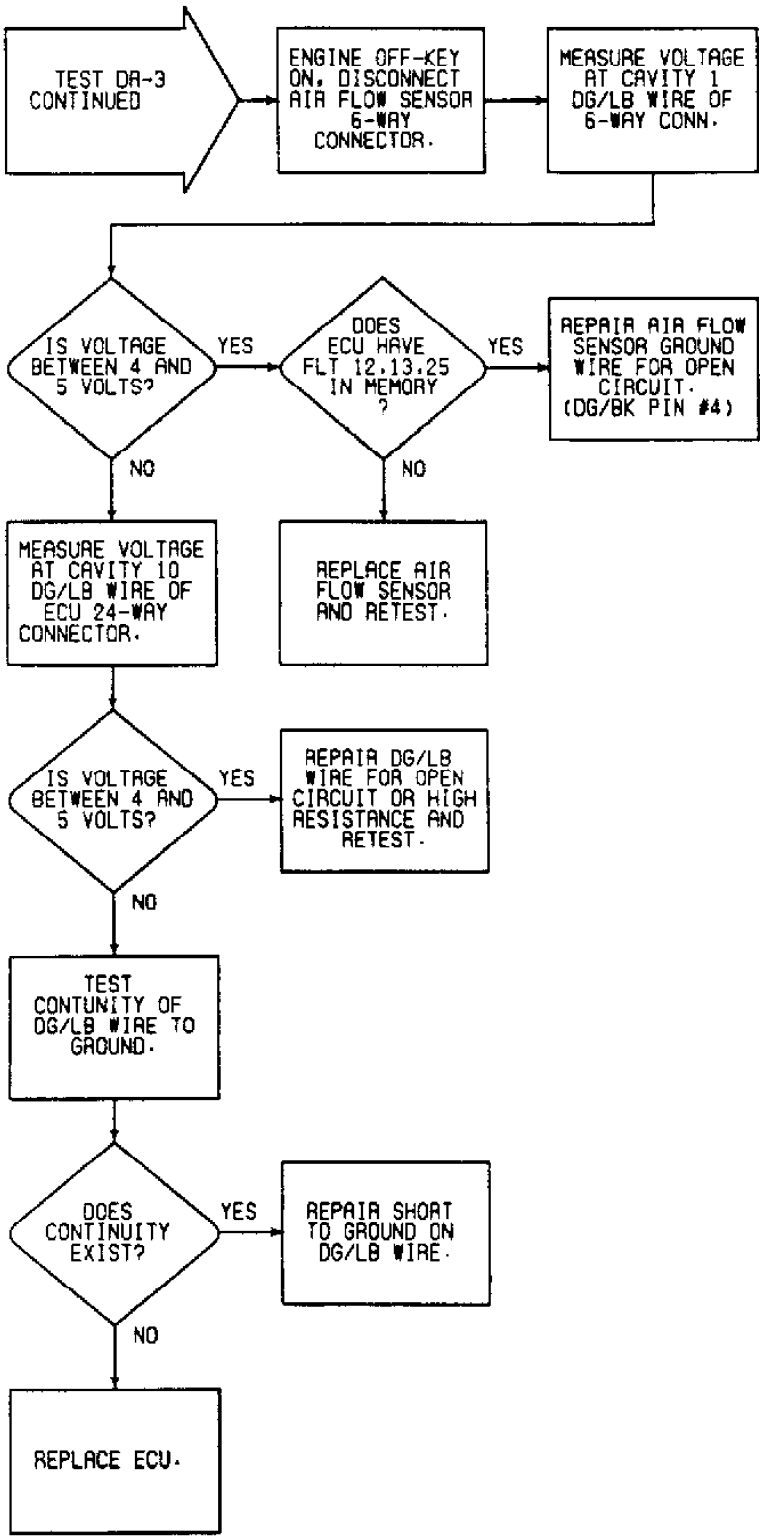


Fig. 31: Flow Chart DR-3 (1.5L) (3 of 3)

DR-4: CODE 13 INTAKE AIR TEMP. SENSOR CIRCUIT - 1.5L

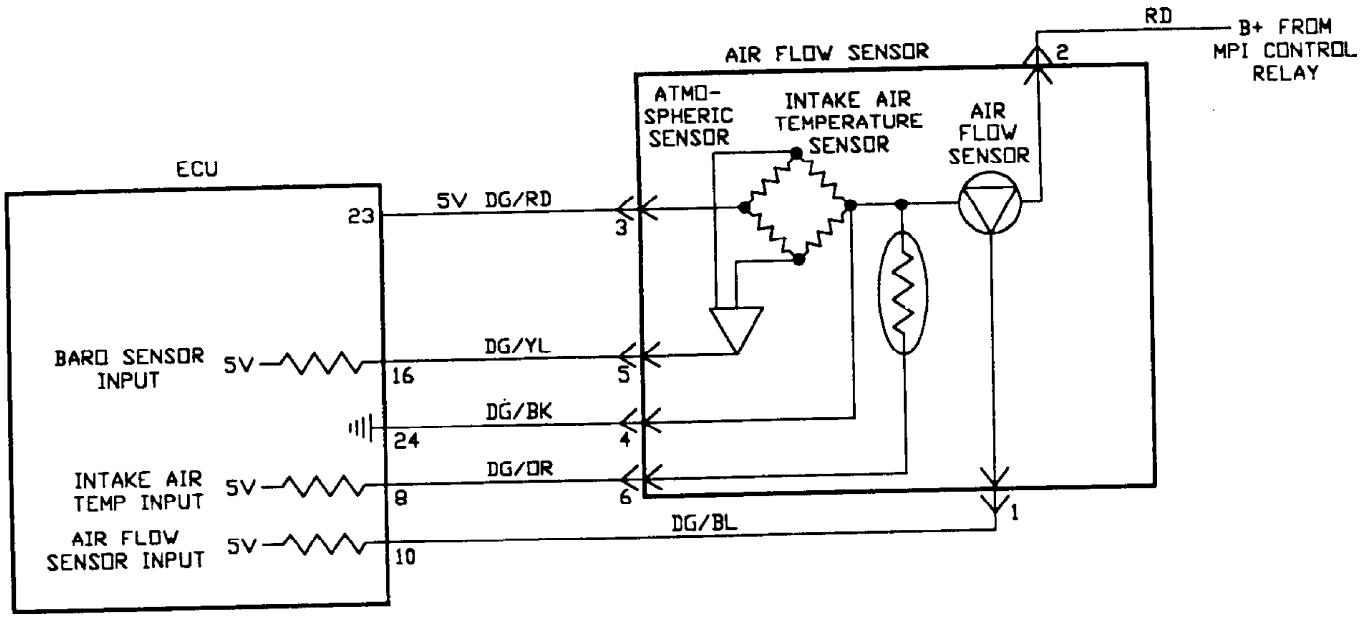


Fig. 32: Circuit Diagram DR-4 (1.5L)

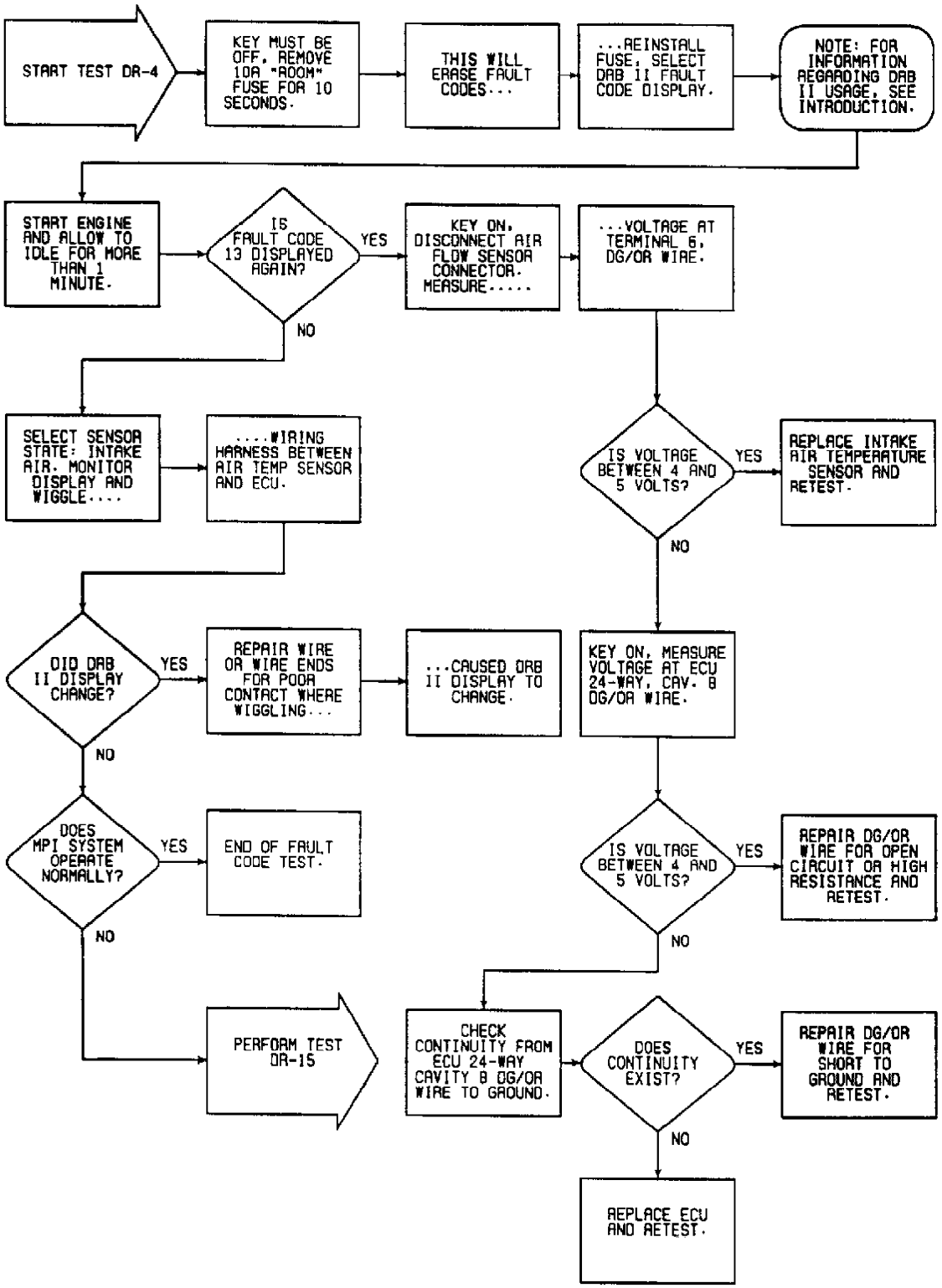


Fig. 33: Flow Chart DR-4 (1.5L)

DR-5: CODE 14 THROTTLE POSITION SENSOR CIRCUIT - 1.5L

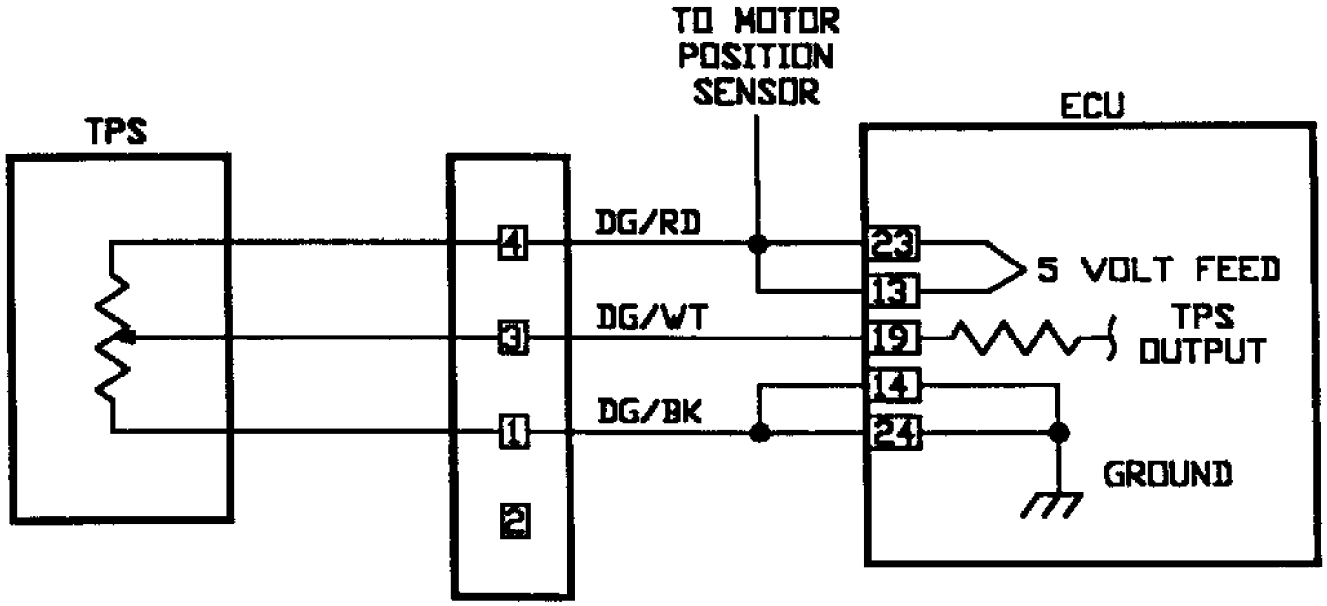


Fig. 34: Circuit Diagram DR-5 (1.5L)

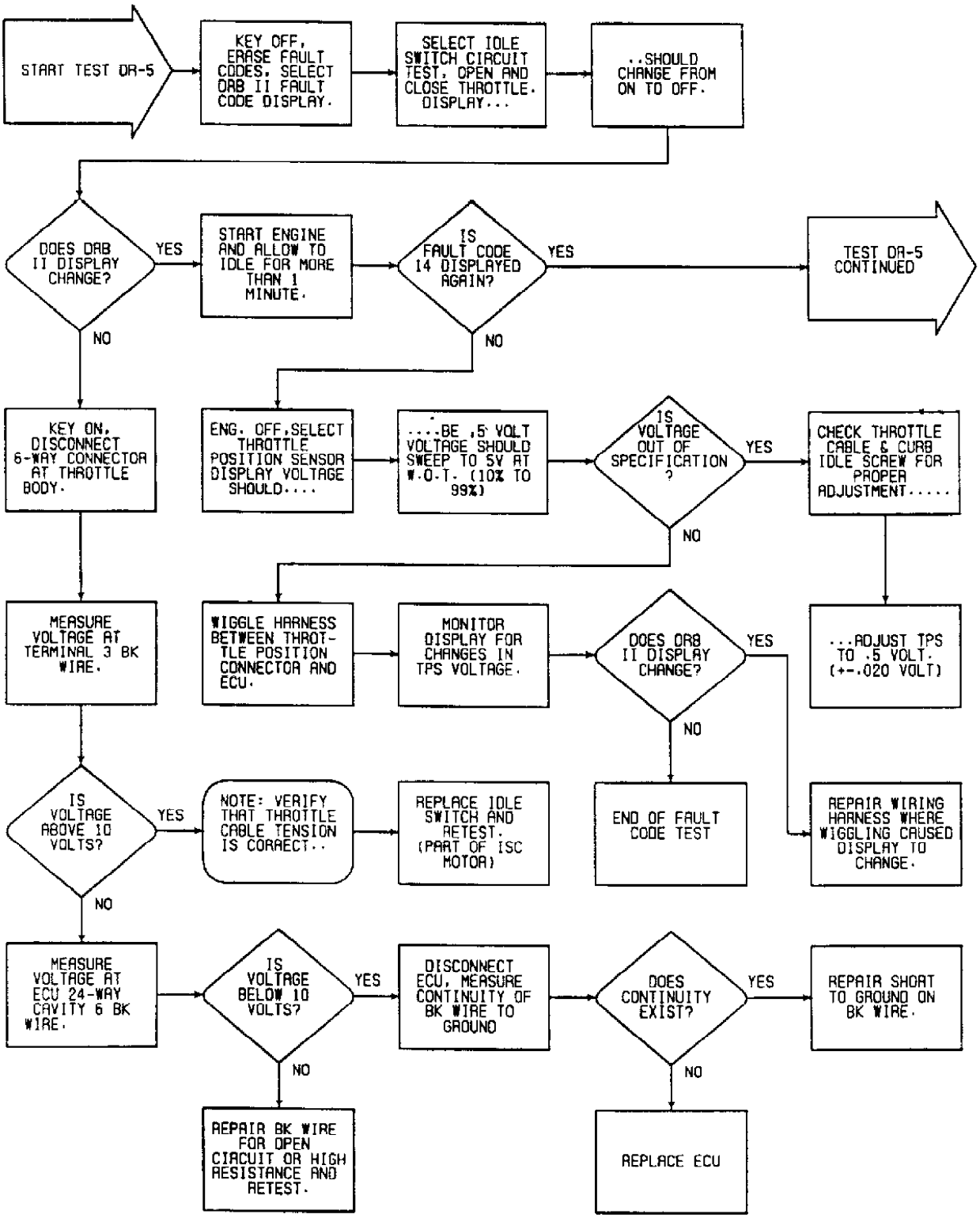


Fig. 35: Flow Chart DR-5 (1.5L) (1 of 2)

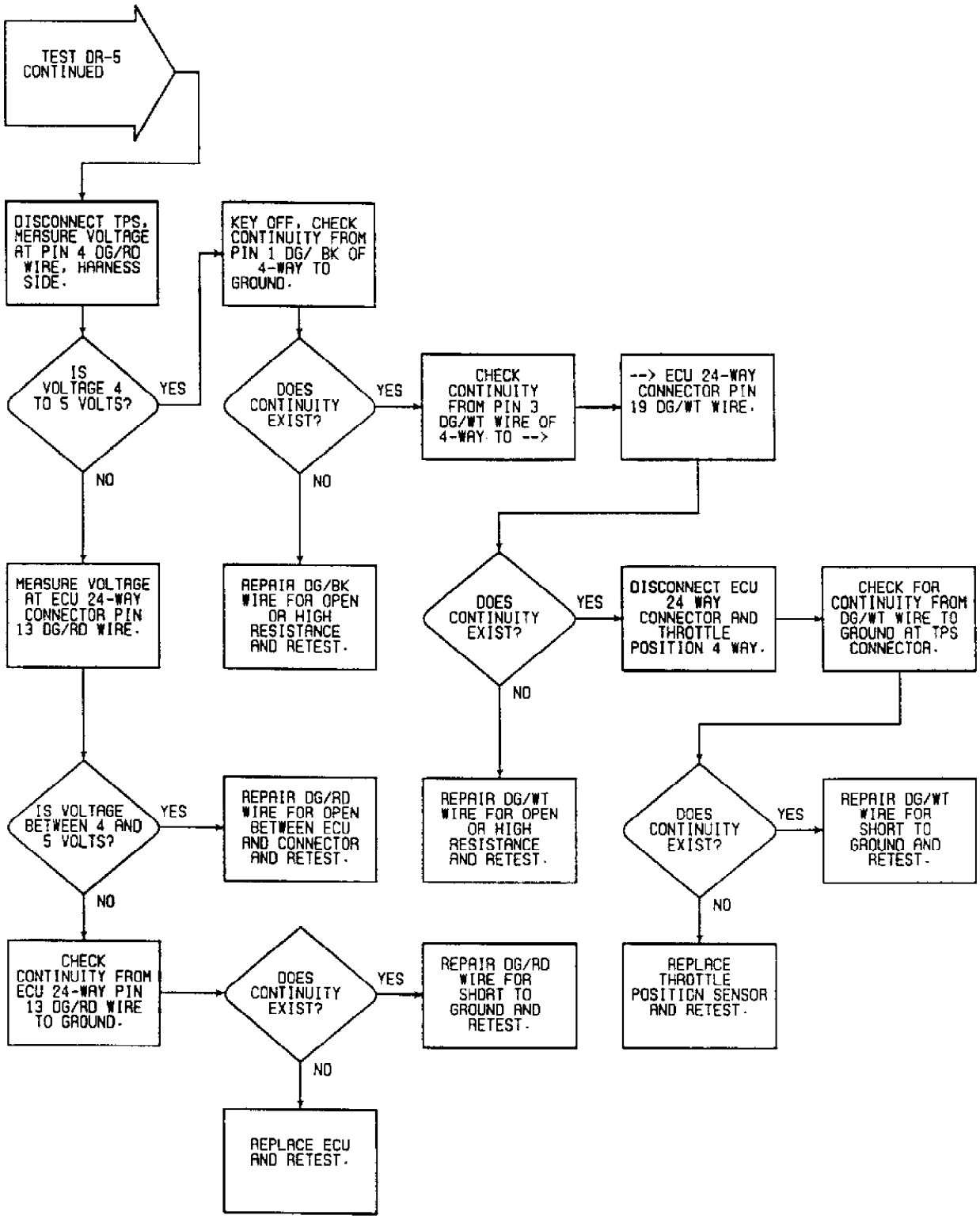


Fig. 36: Flow Chart DR-5 (1.5L) (2 of 2)

DR-6: CODE 15 MOTOR POSITION SENSOR CIRCUIT - 1.5L

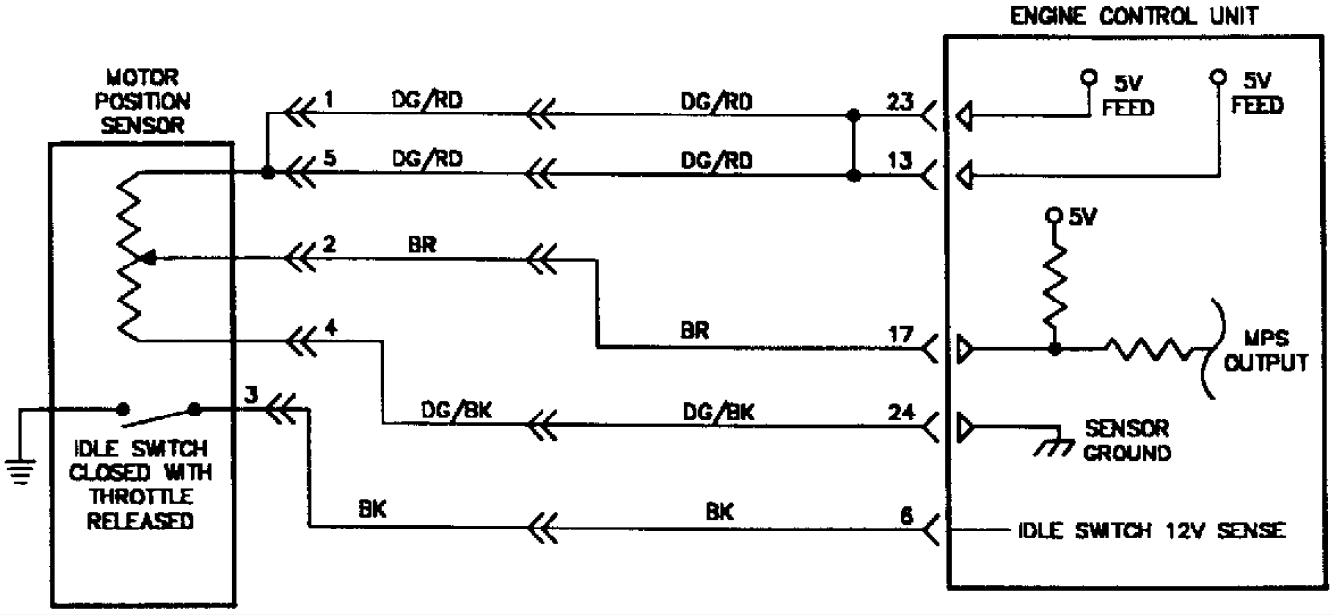


Fig. 37: Circuit Diagram DR-6 (1.5L)

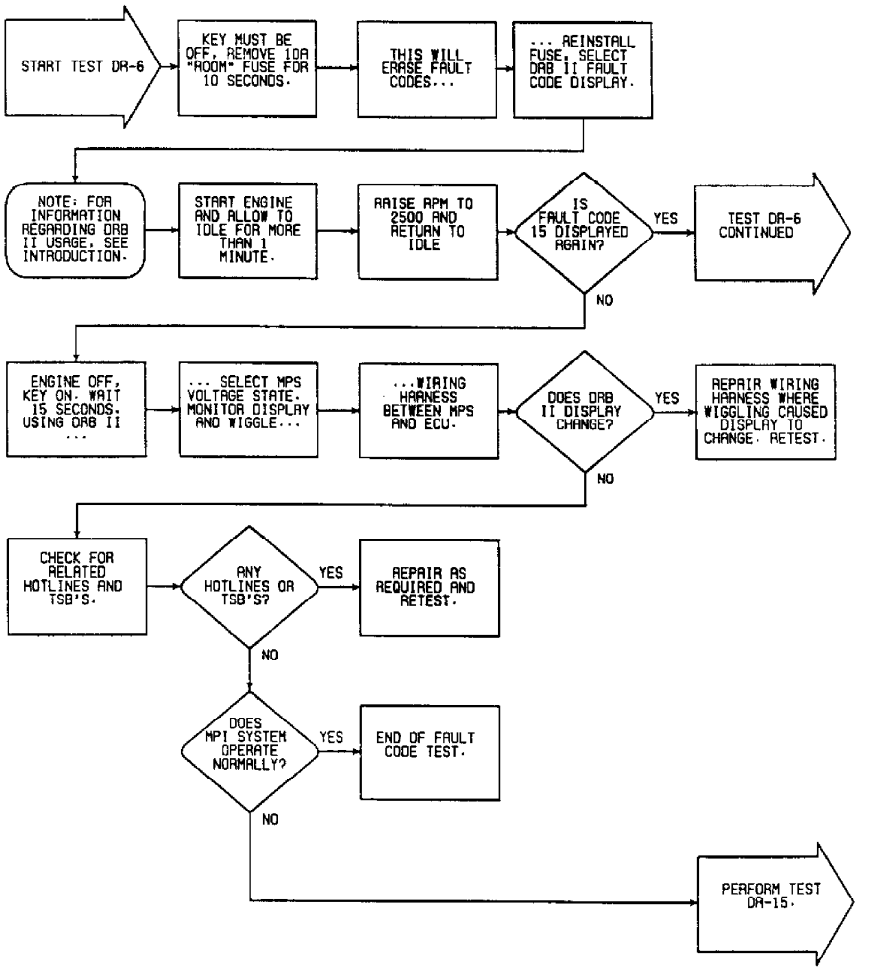


Fig. 38: Flow Chart DR-6 (1.5L) (1 of 2)

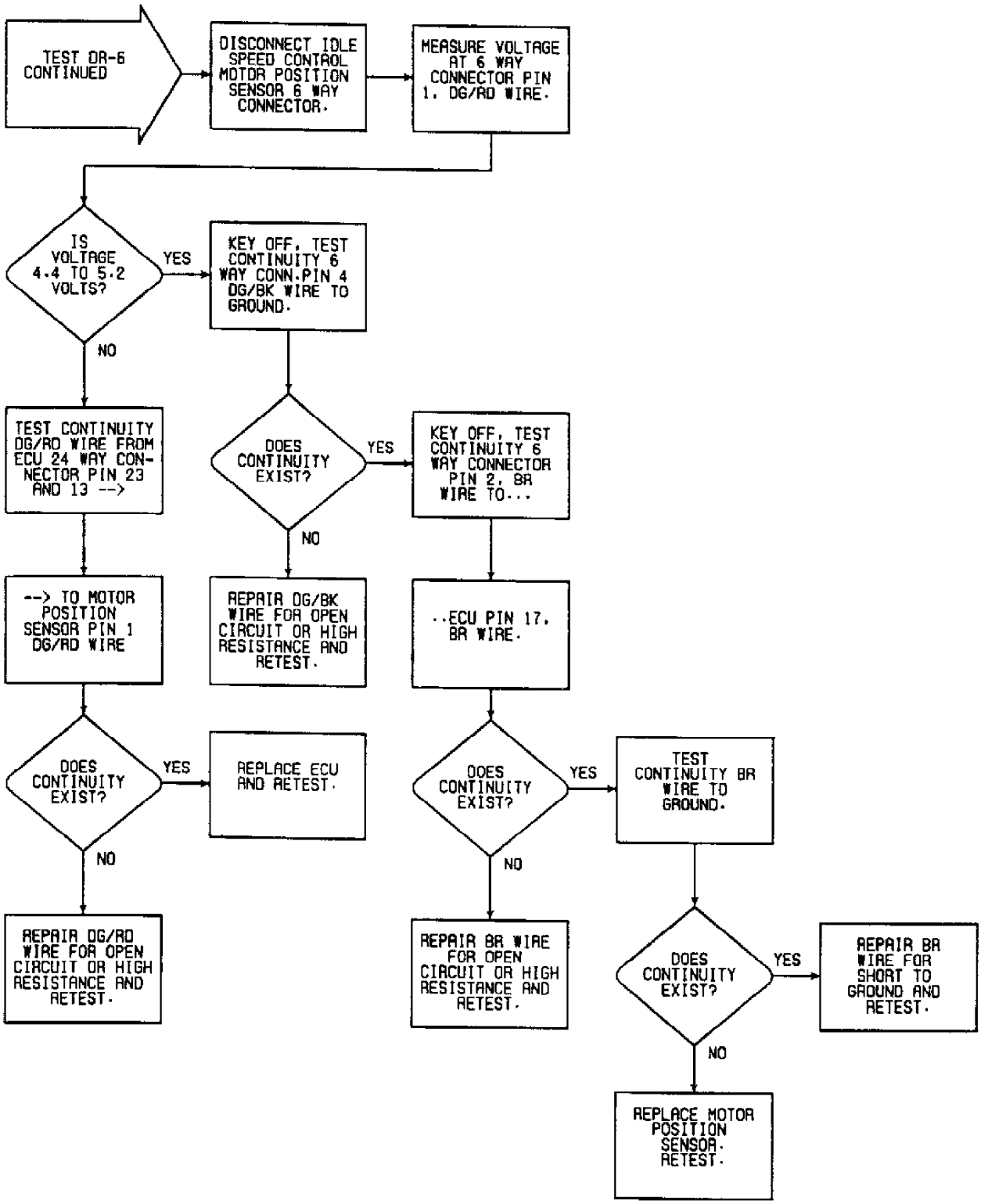


Fig. 39: Flow Chart DR-6 (1.5L) (2 of 2)

DR-7: CODE 21 COOLANT TEMP. SENSOR CIRCUIT - 1.5L

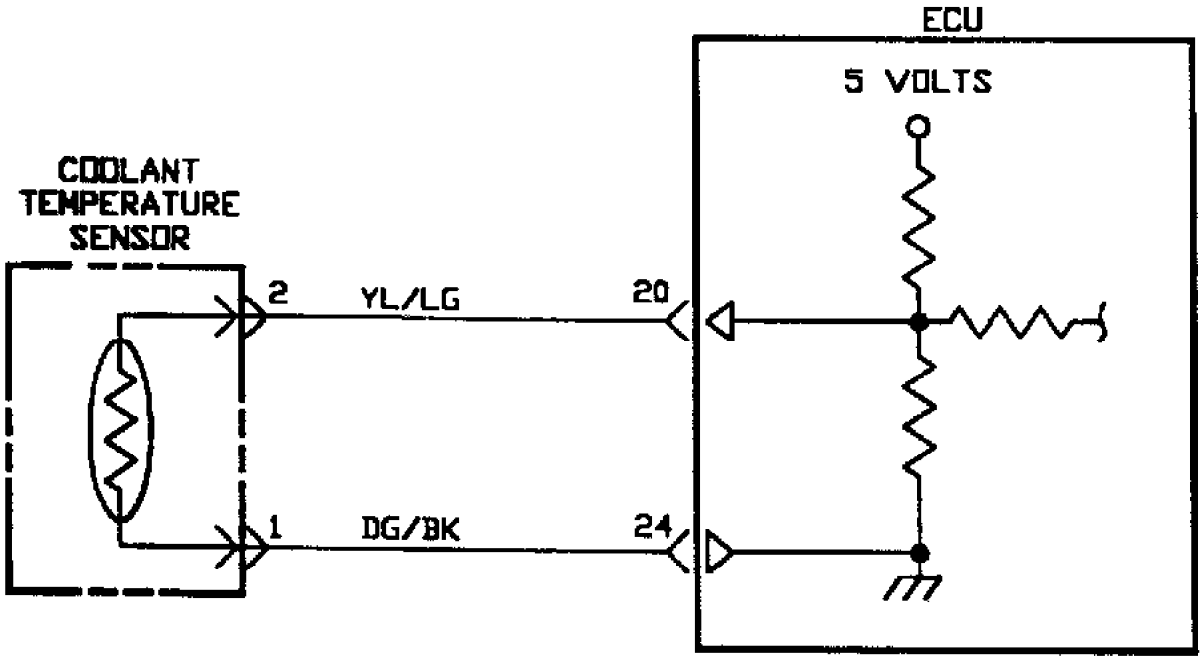


Fig. 40: Circuit Diagram DR-7 (1.5L)

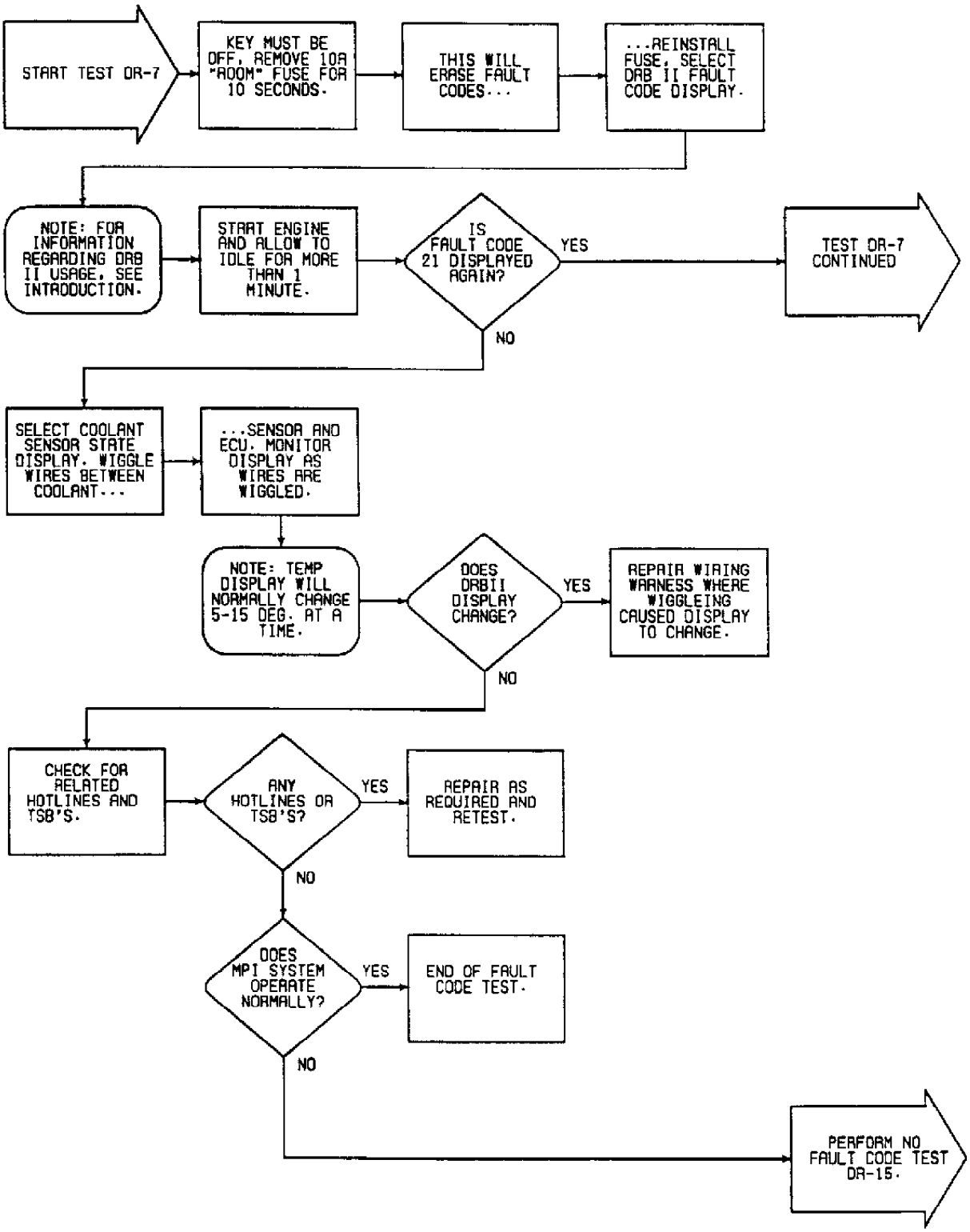


Fig. 41: Flow Chart DR-7 (1.5L) (1 of 2)

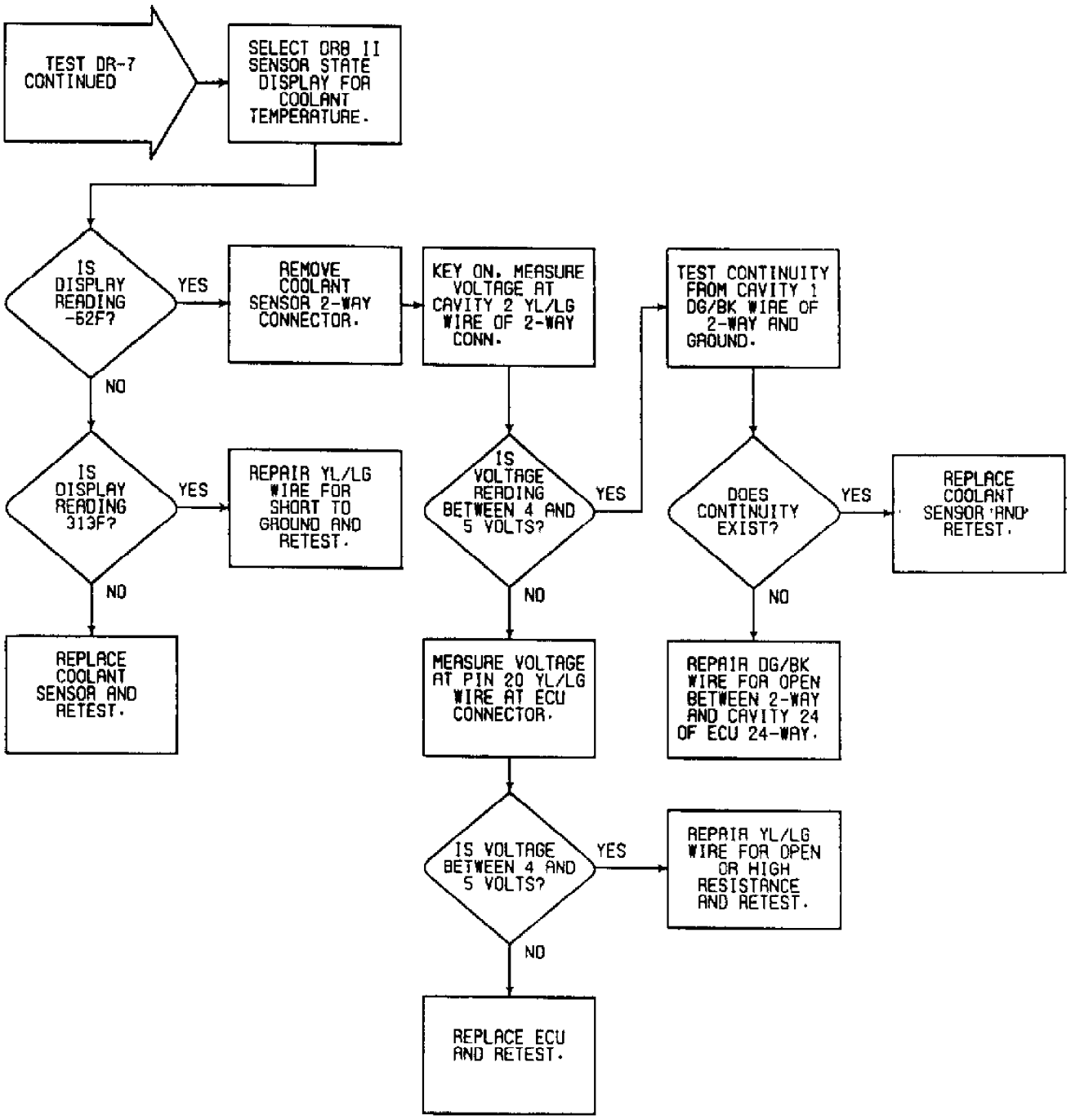


Fig. 42: Flow Chart DR-7 (1.5L) (2 of 2)

DR-8: TESTING SELF-DIAGNOSTIC CONNECTOR - 1.5L

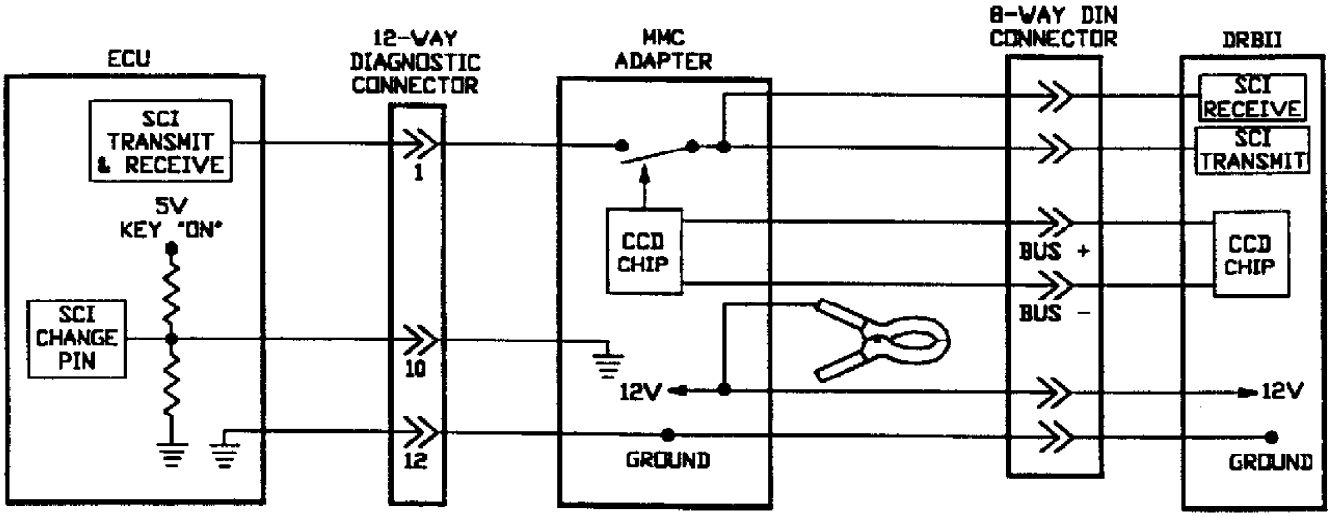


Fig. 43: Circuit Diagram DR-8 (1.5L)

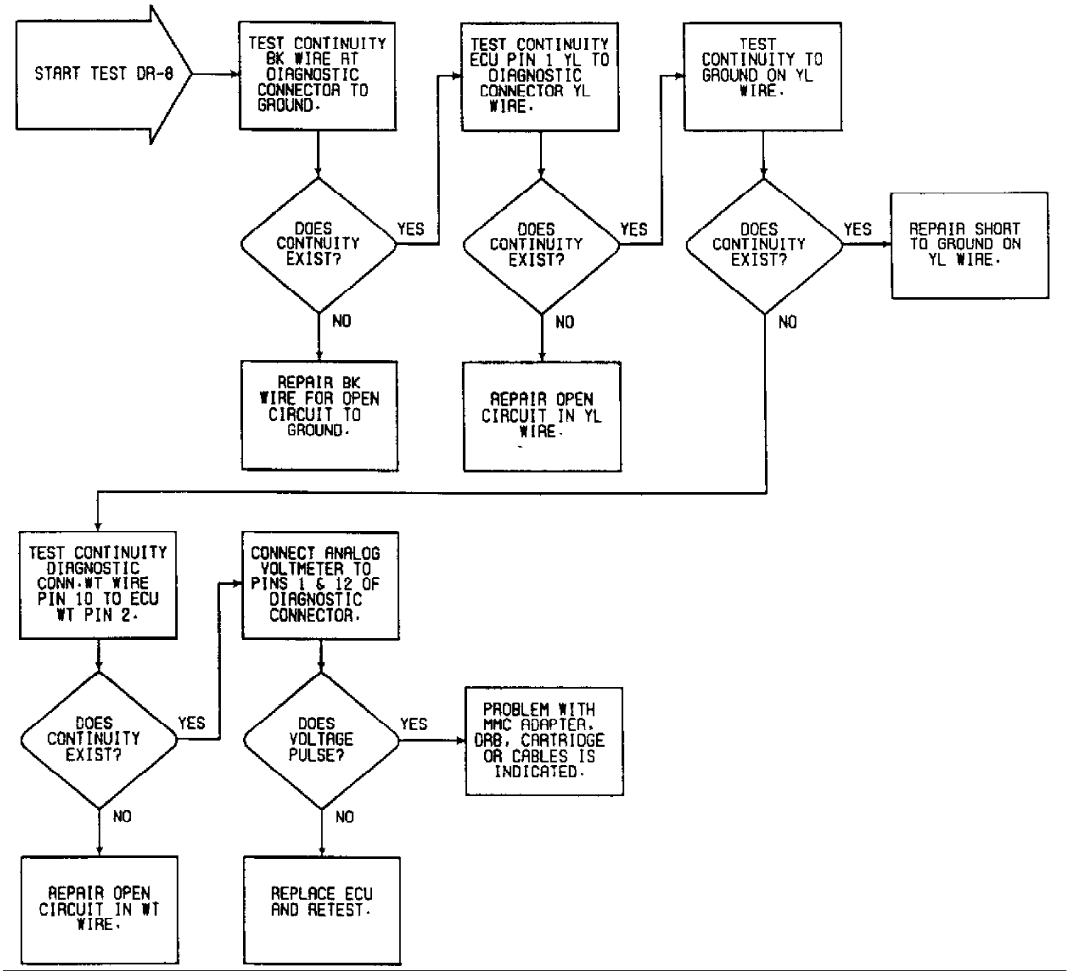


Fig. 44: Flow Chart DR-8 (1.5L)

DR-9: CODE 23 TOP DEAD CENTER SENSOR CIRCUIT - 1.5L

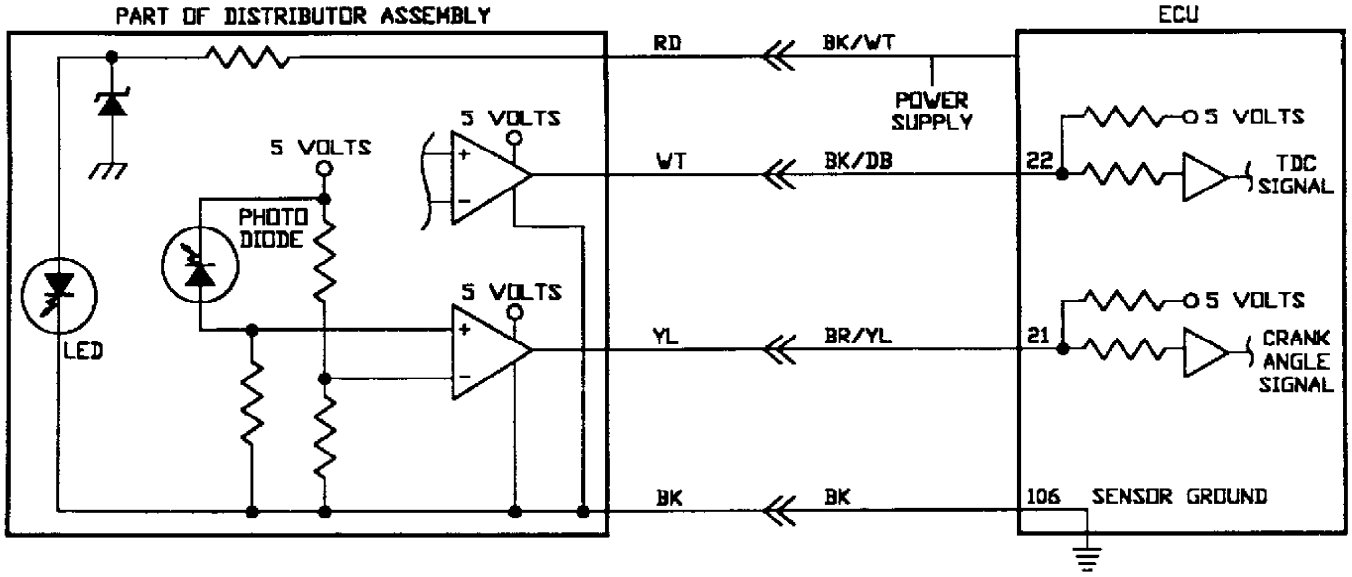


Fig. 45: Circuit Diagram DR-9 (1.5L)

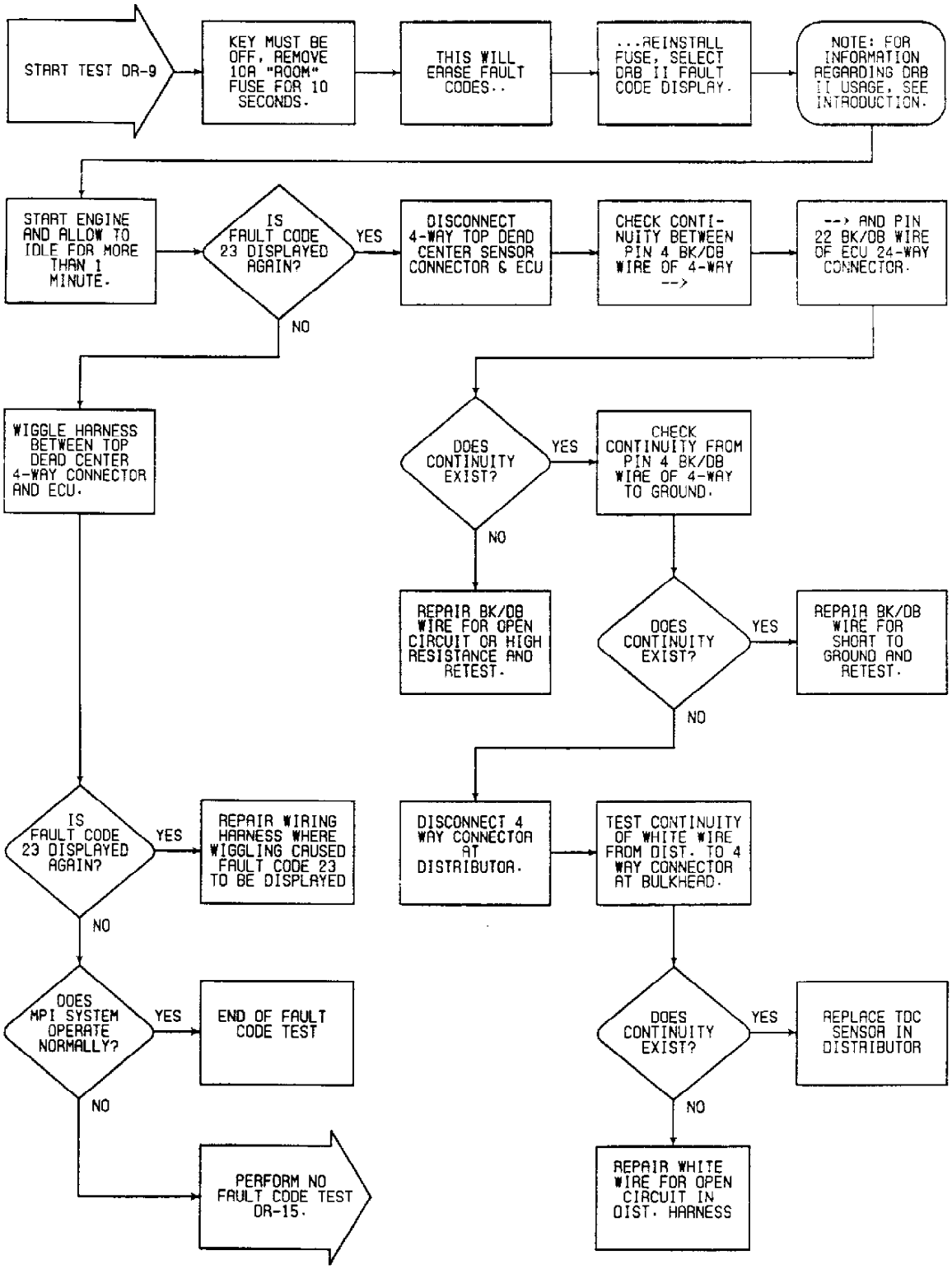


Fig. 46: Flow Chart DR-9 (1.5L)

DR-10: CODE 24 VEHICLE SPEED SENSOR CIRCUIT - 1.5L

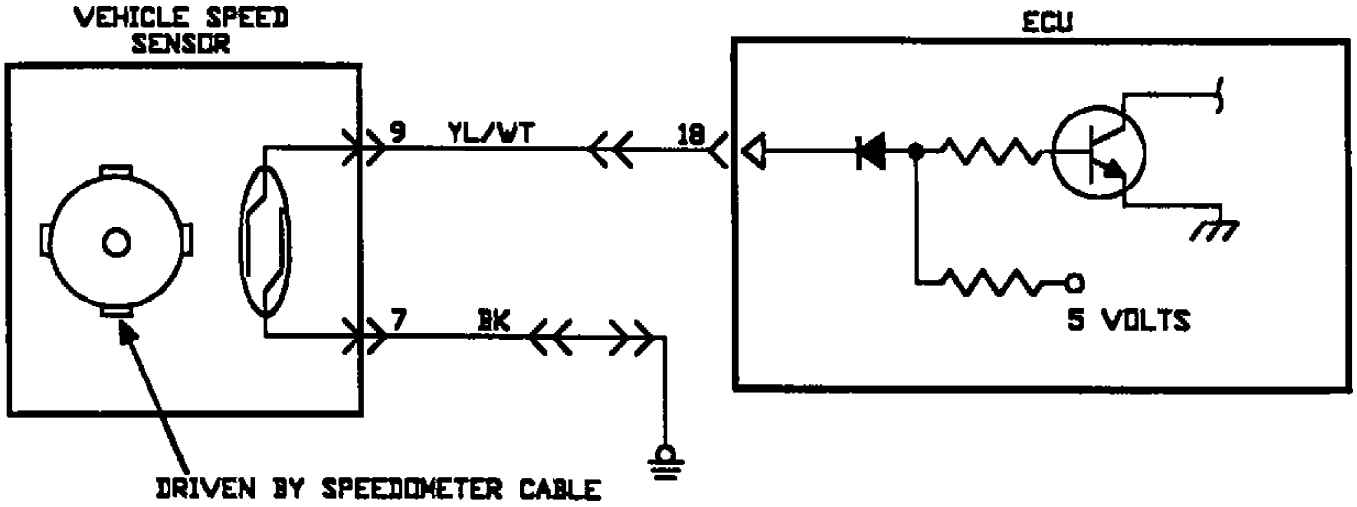


Fig. 47: Circuit Diagram DR-10 (1.5L)

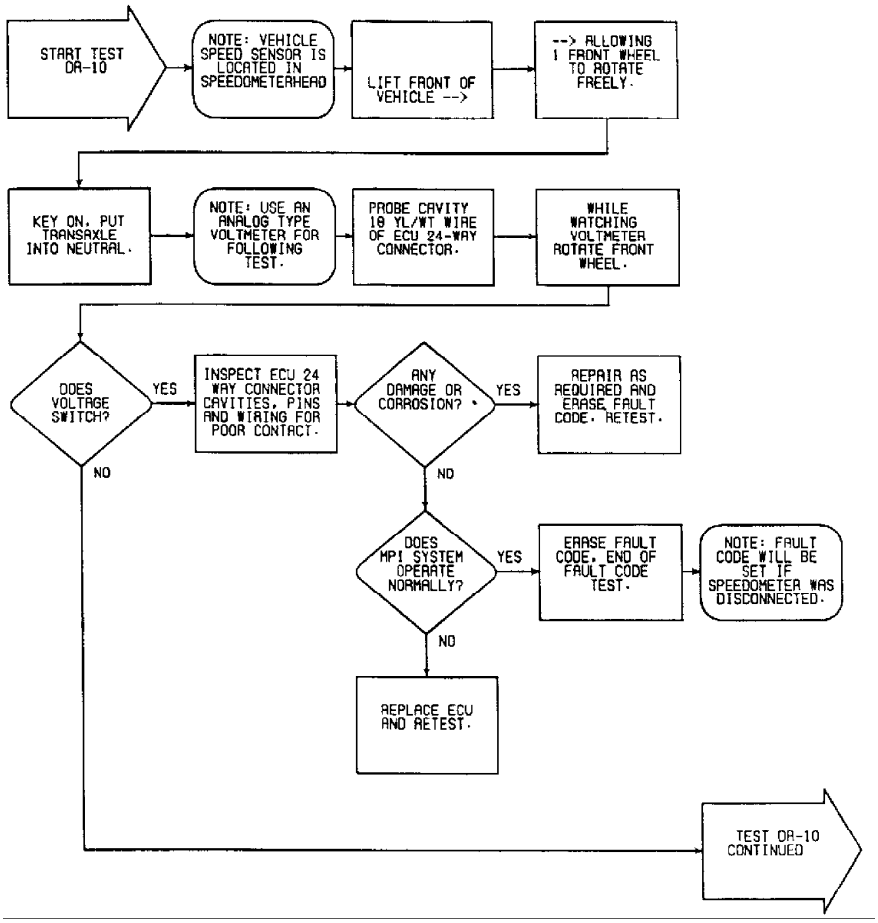


Fig. 48: Flow Chart DR-10 (1.5L) (1 of 2)

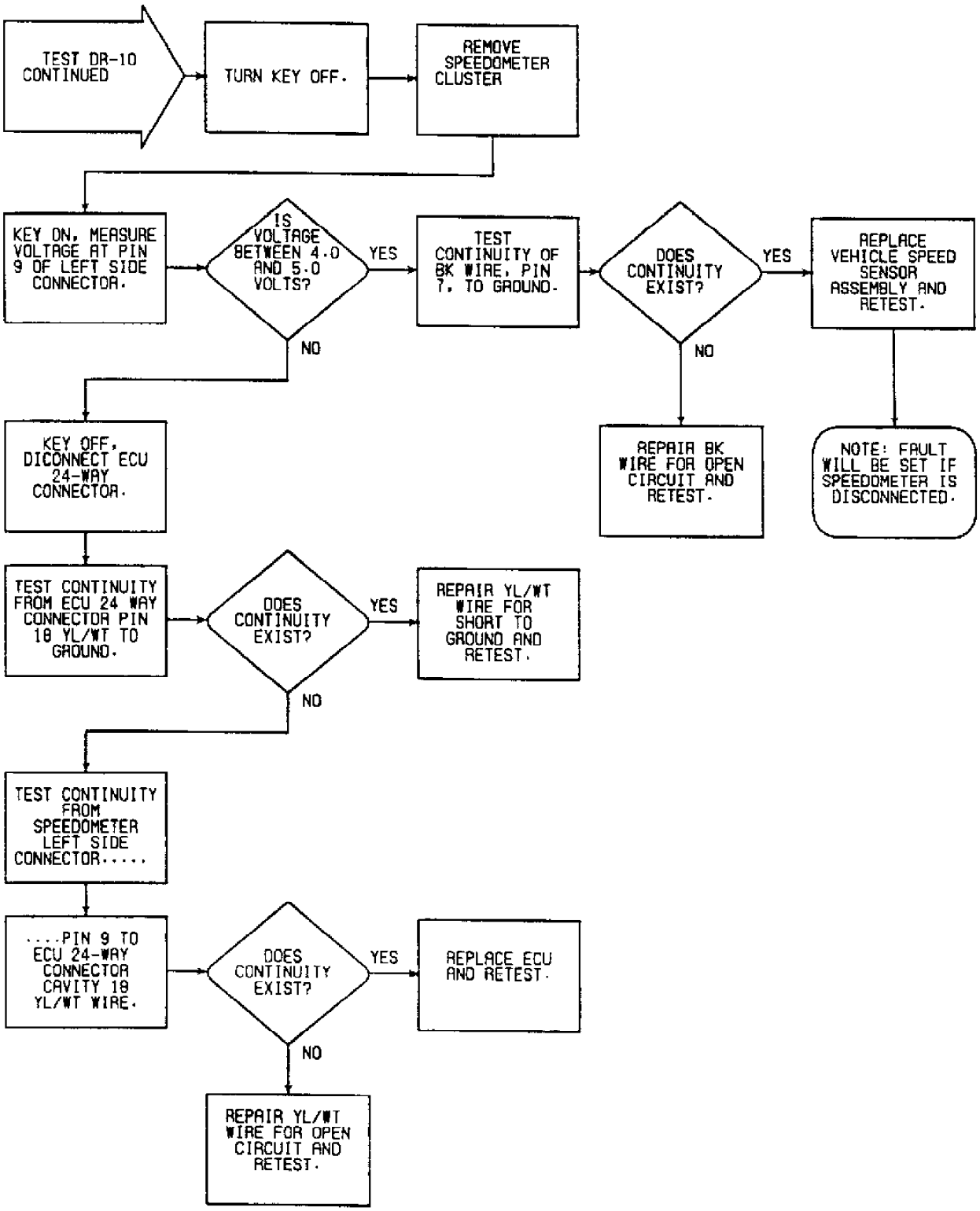


Fig. 49: Flow Chart DR-10 (1.5L) (2 of 2)

DR-11: CODE 25 BAROMETRIC PRESSURE SENSOR CIRCUIT - 1.5L

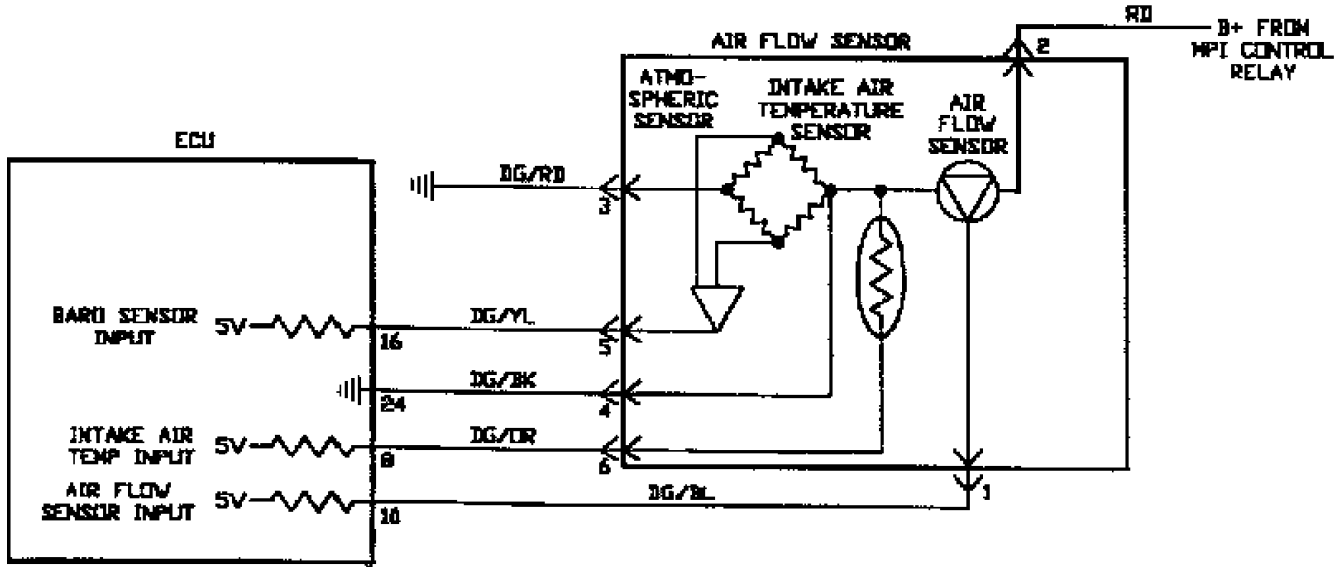


Fig. 50: Circuit Diagram DR-11 (1.5L)

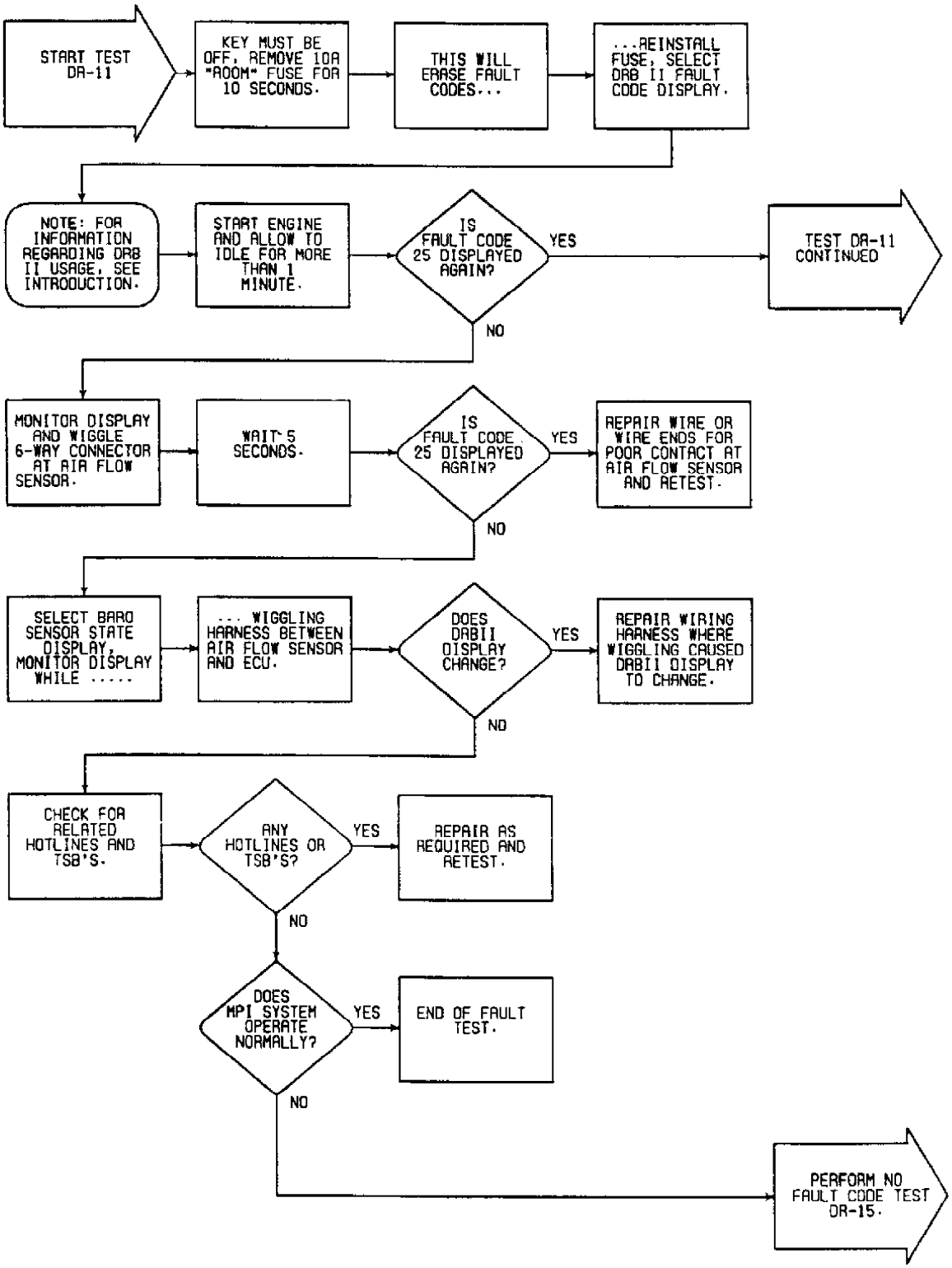


Fig. 51: Flow Chart DR-11 (1.5L) (1 of 2)

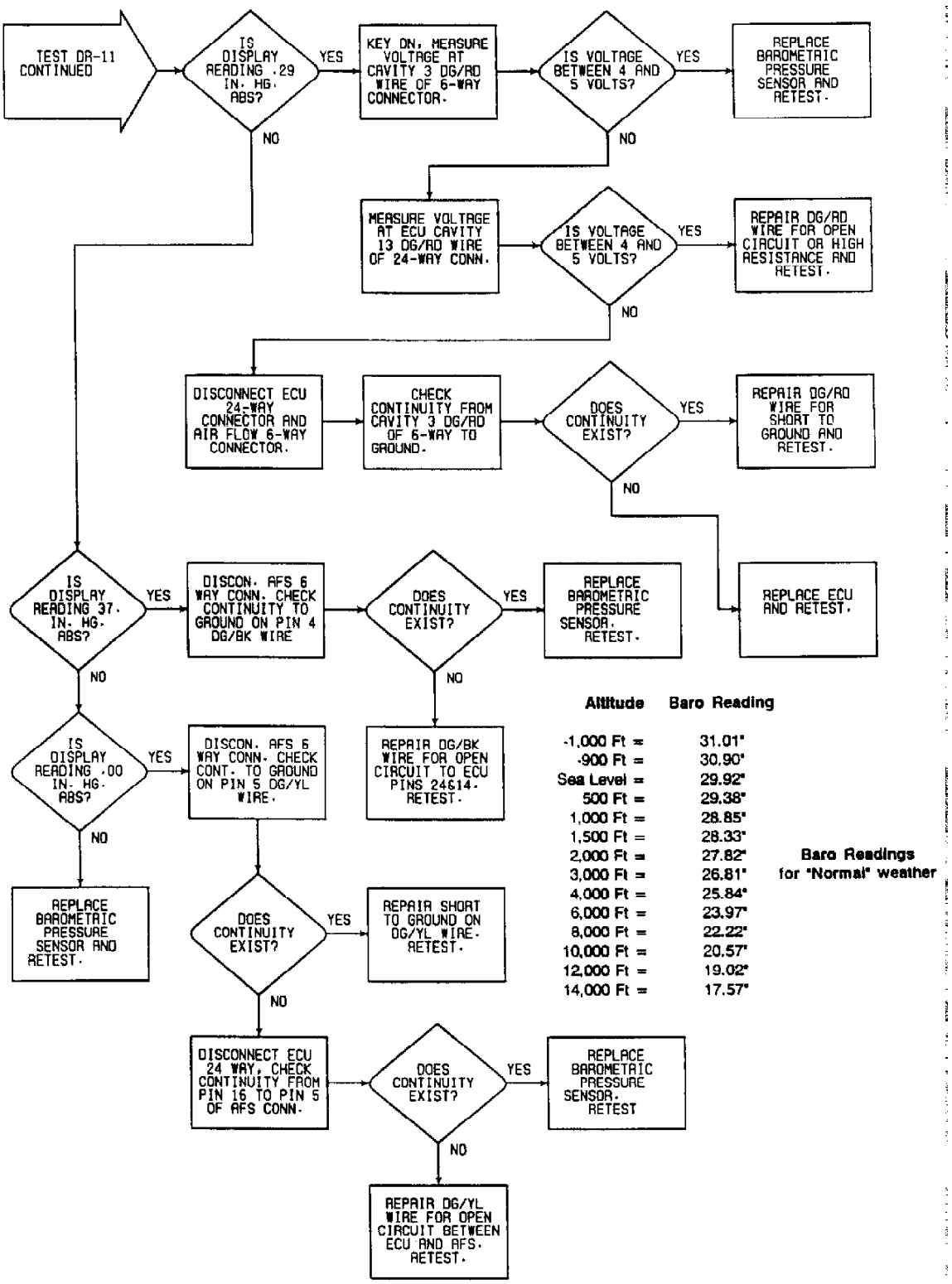


Fig. 52: Flow Chart DR-11 (1.5L) (2 of 2)

DR-12: CODE 41 INJECTOR CIRCUIT - 1.5L

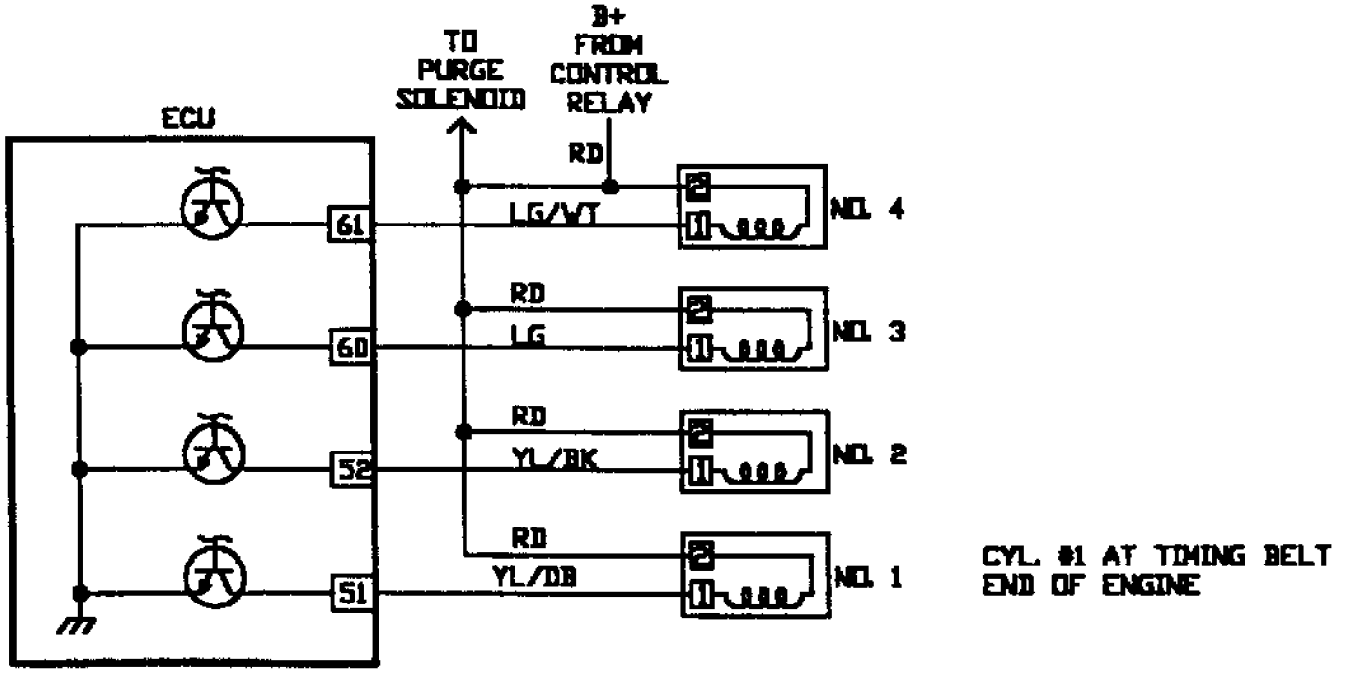


Fig. 53: Circuit Diagram DR-12 (1.5L)

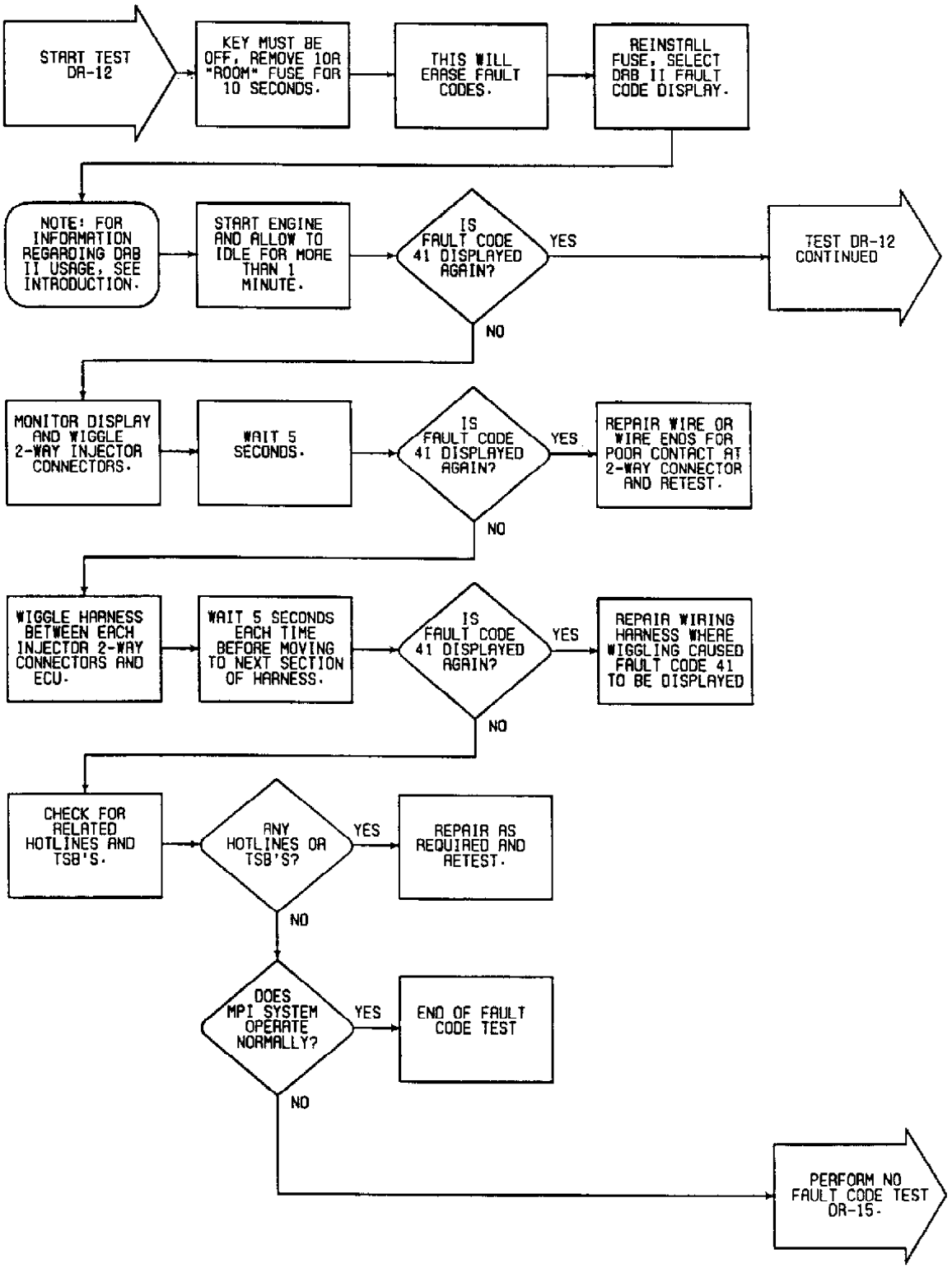


Fig. 54: Flow Chart DR-12 (1.5L) (1 of 2)

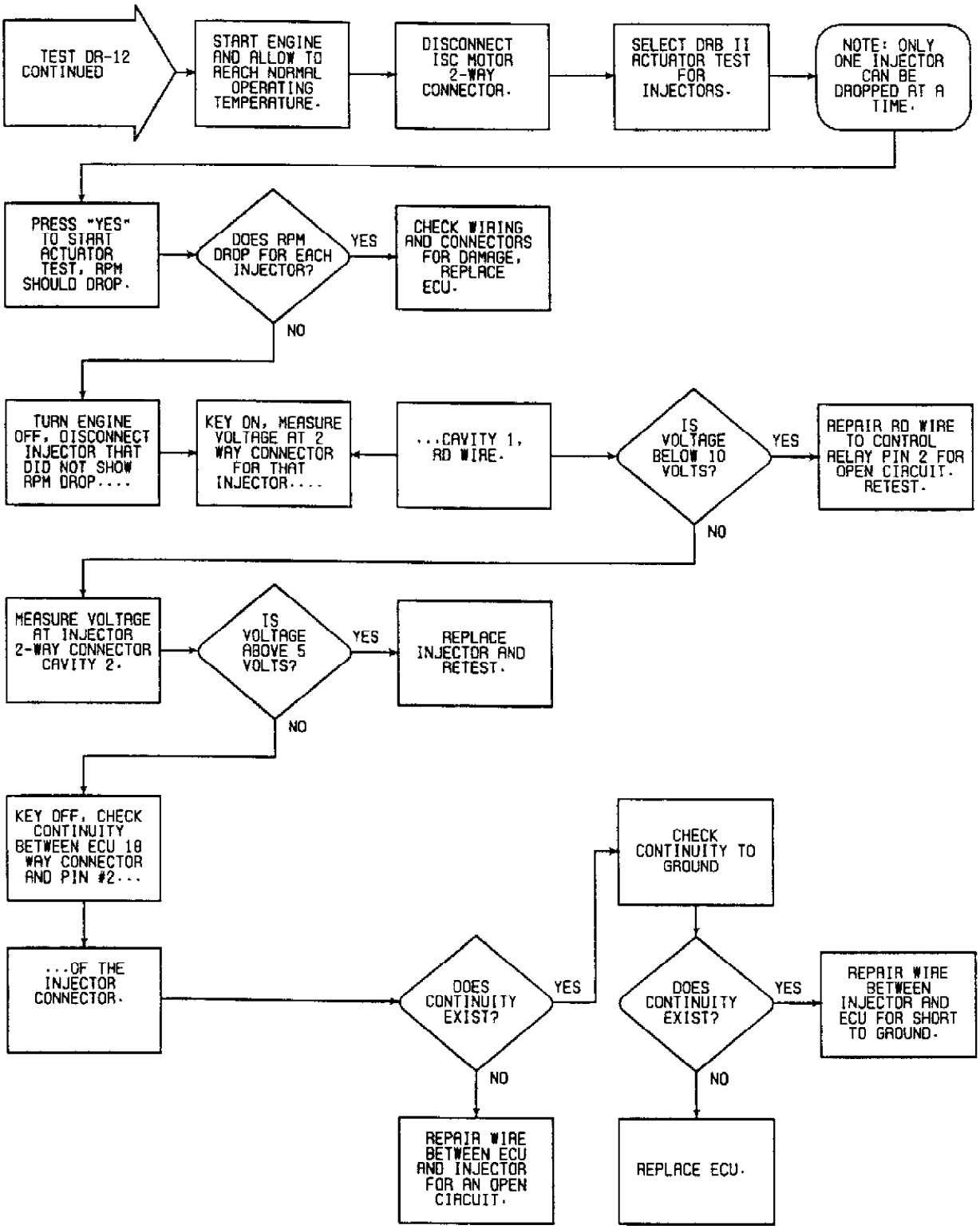


Fig. 55: Flow Chart DR-12 (1.5L) (2 of 2)

DR-13: CODE 42 FUEL PUMP CIRCUIT - 1.5L

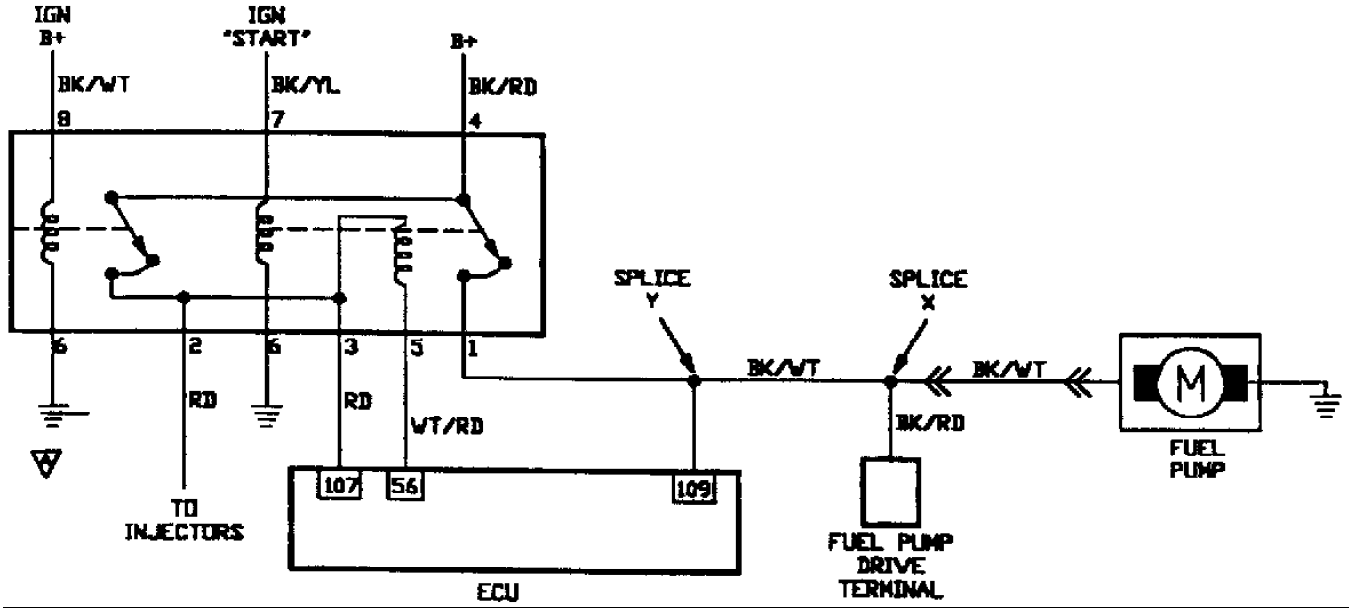


Fig. 56: Circuit Diagram DR-13 (1.5L)

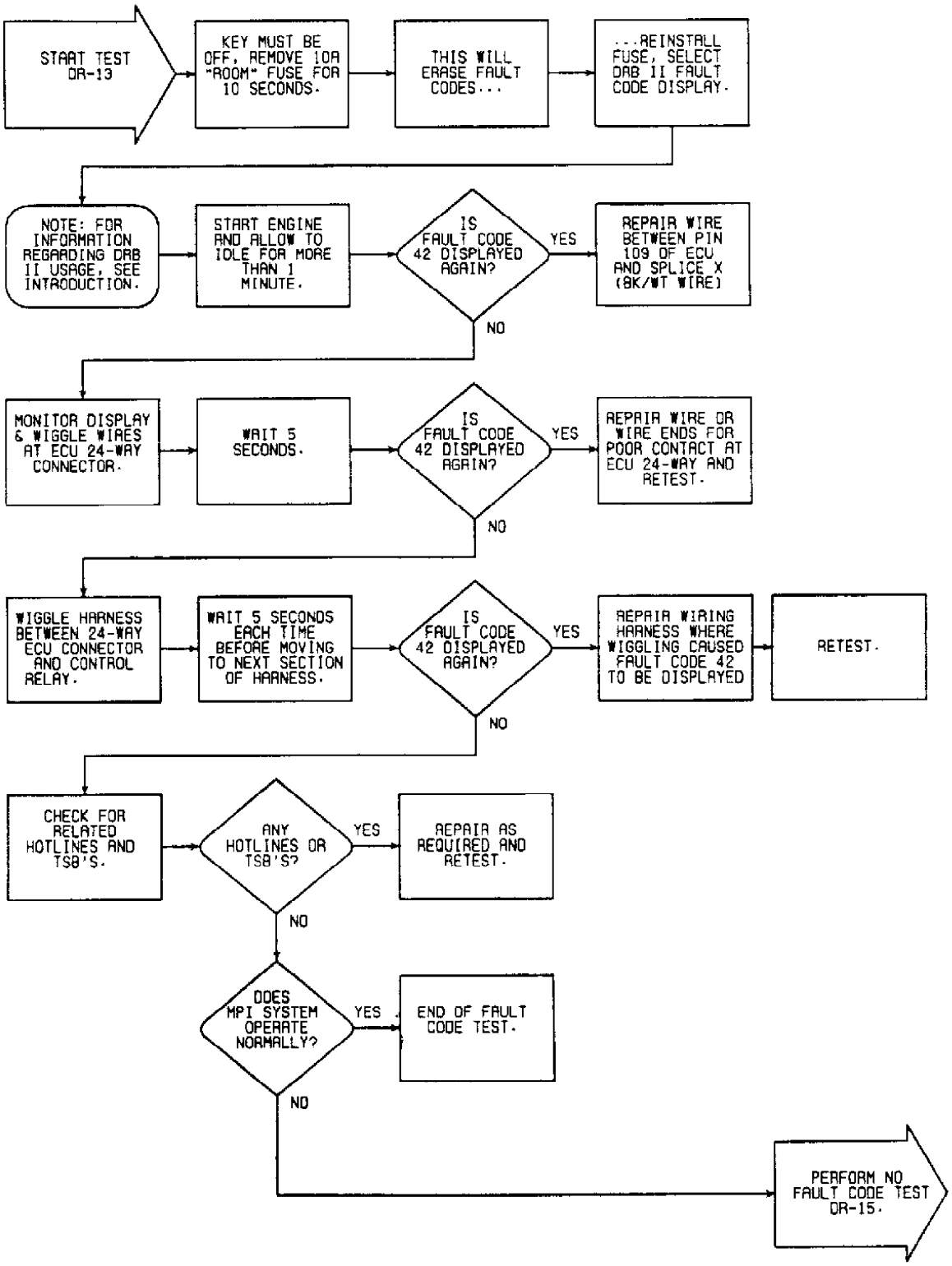


Fig. 57: Flow Chart DR-13 (1.5L)

DR-14: CODE 43 EGR TEMPERATURE SENSOR CIRCUIT - 1.5L

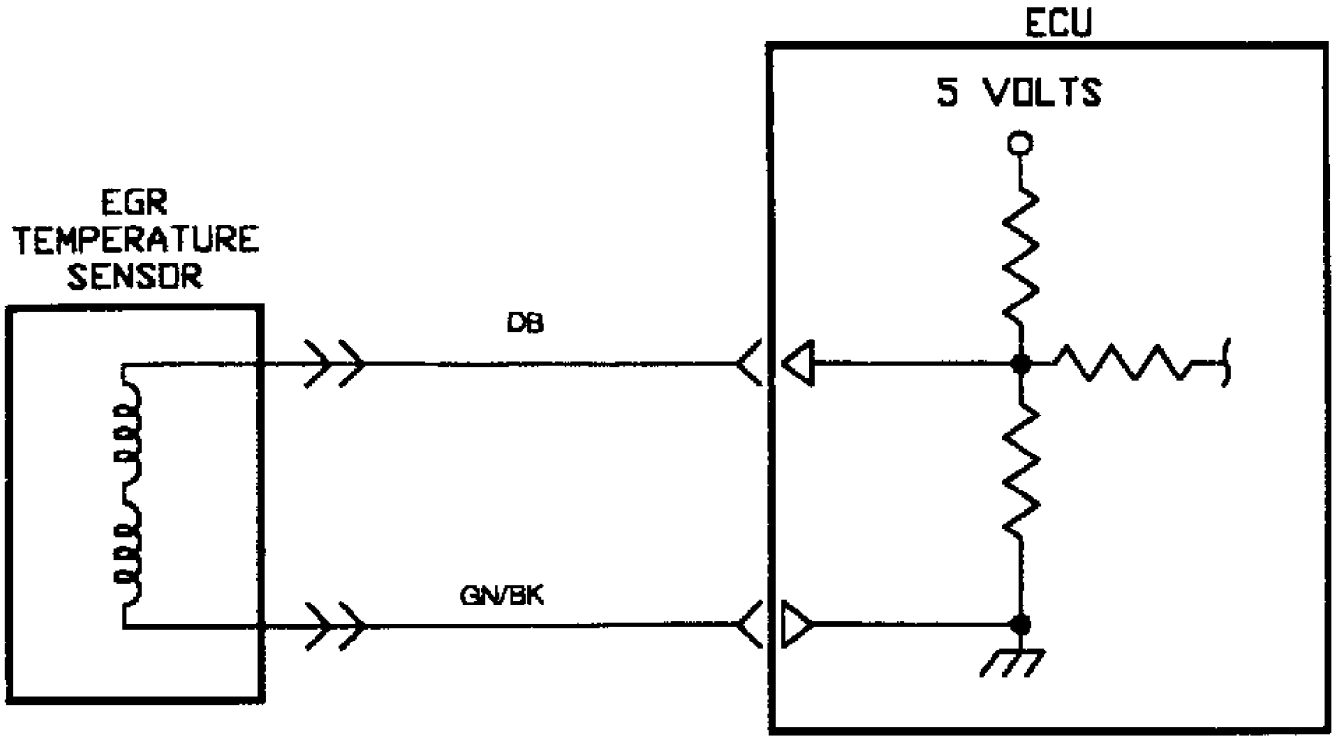


Fig. 58: Circuit Diagram DR-14 (1.5L) Circuit

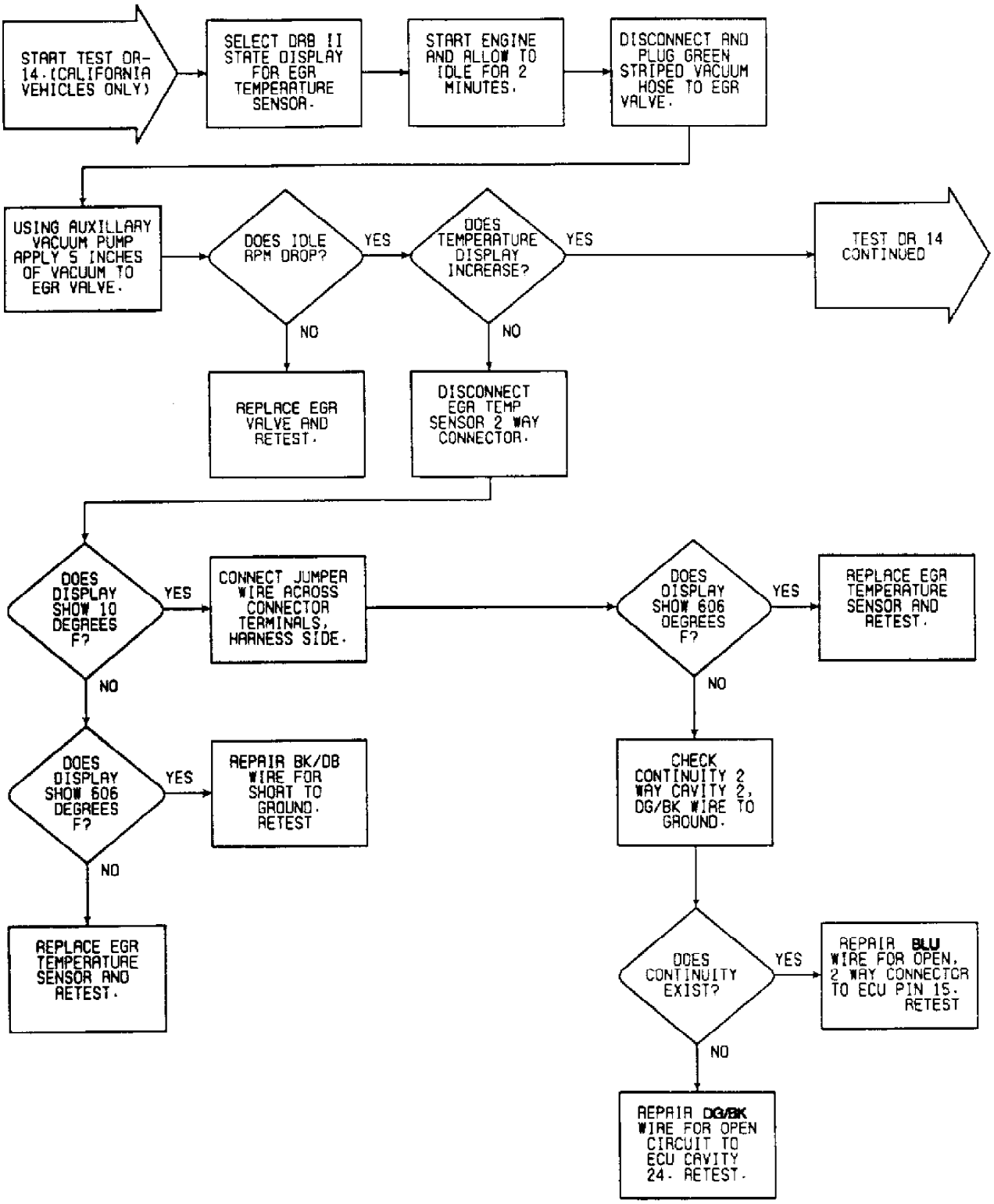


Fig. 59: Flow Chart DR-14 (1.5L) (1 of 3)

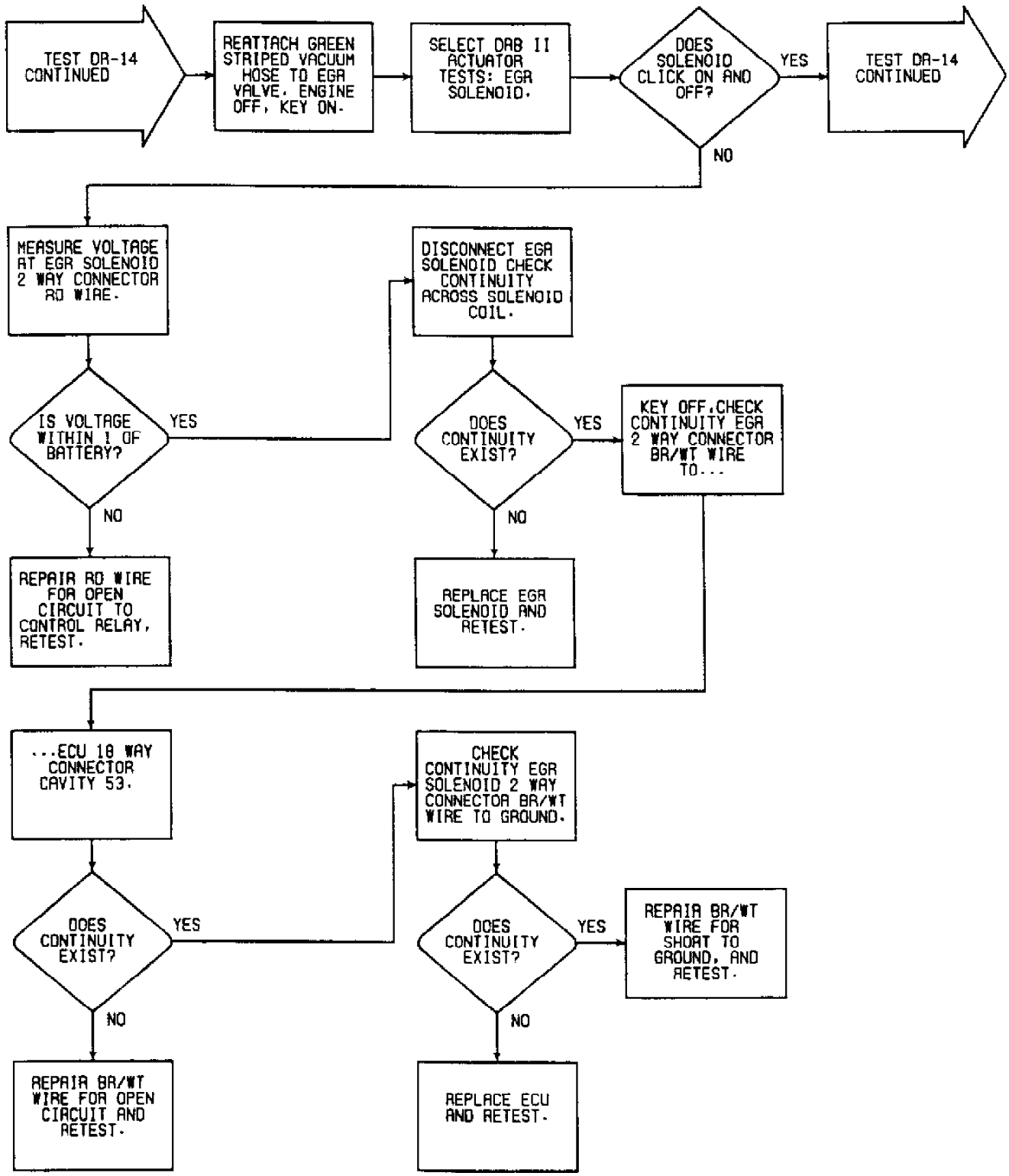


Fig. 60: Flow Chart DR-14 (1.5L) (2 of 3)

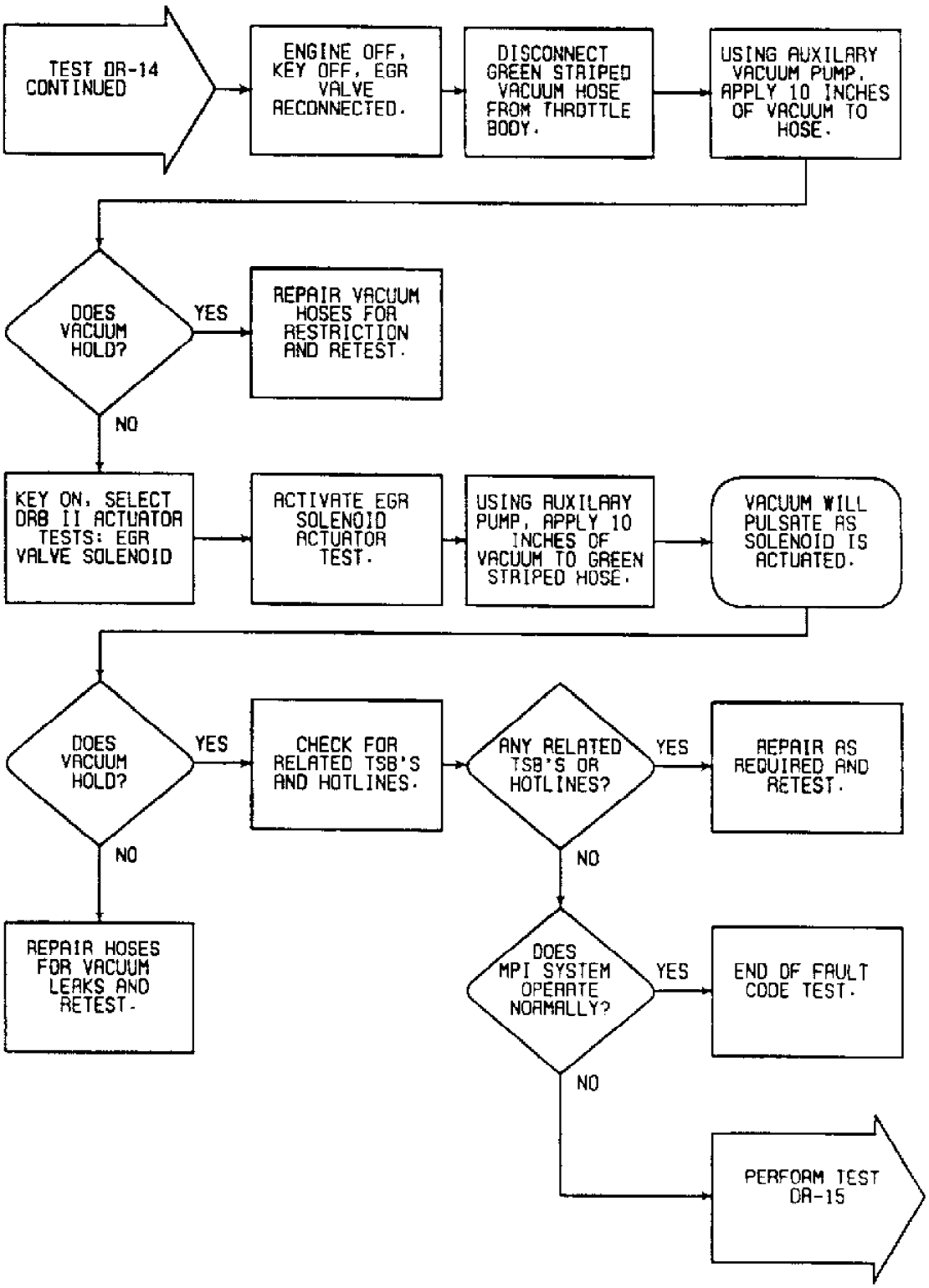


Fig. 61: Flow Chart DR-14 (1.5L) (3 of 3)

DR-15: NO FAULT CODE TESTING - 1.5L

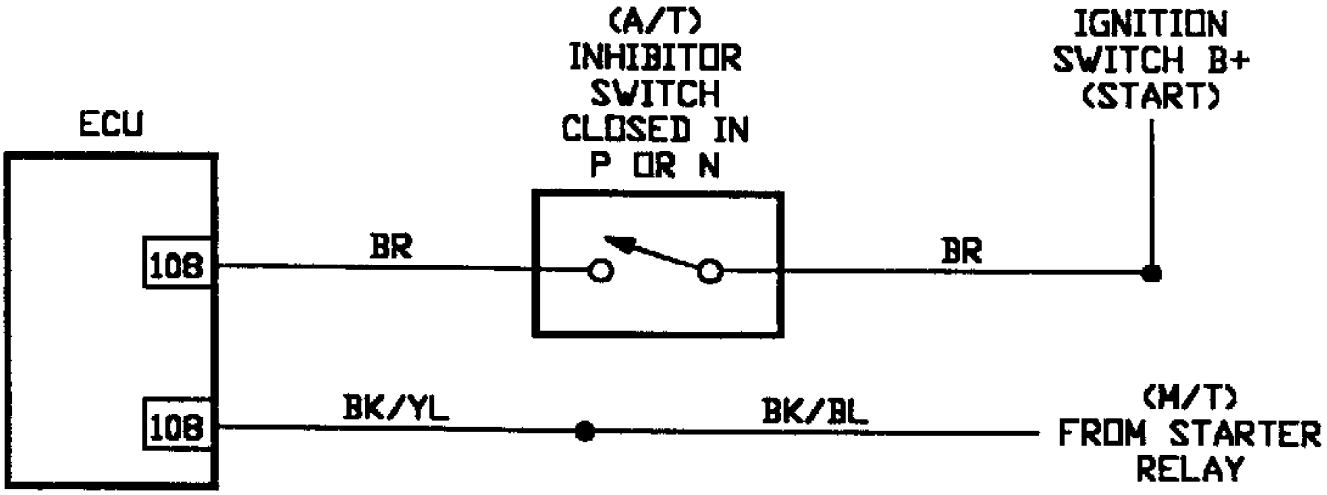


Fig. 62: Circuit Diagram DR-15 (1.5L)

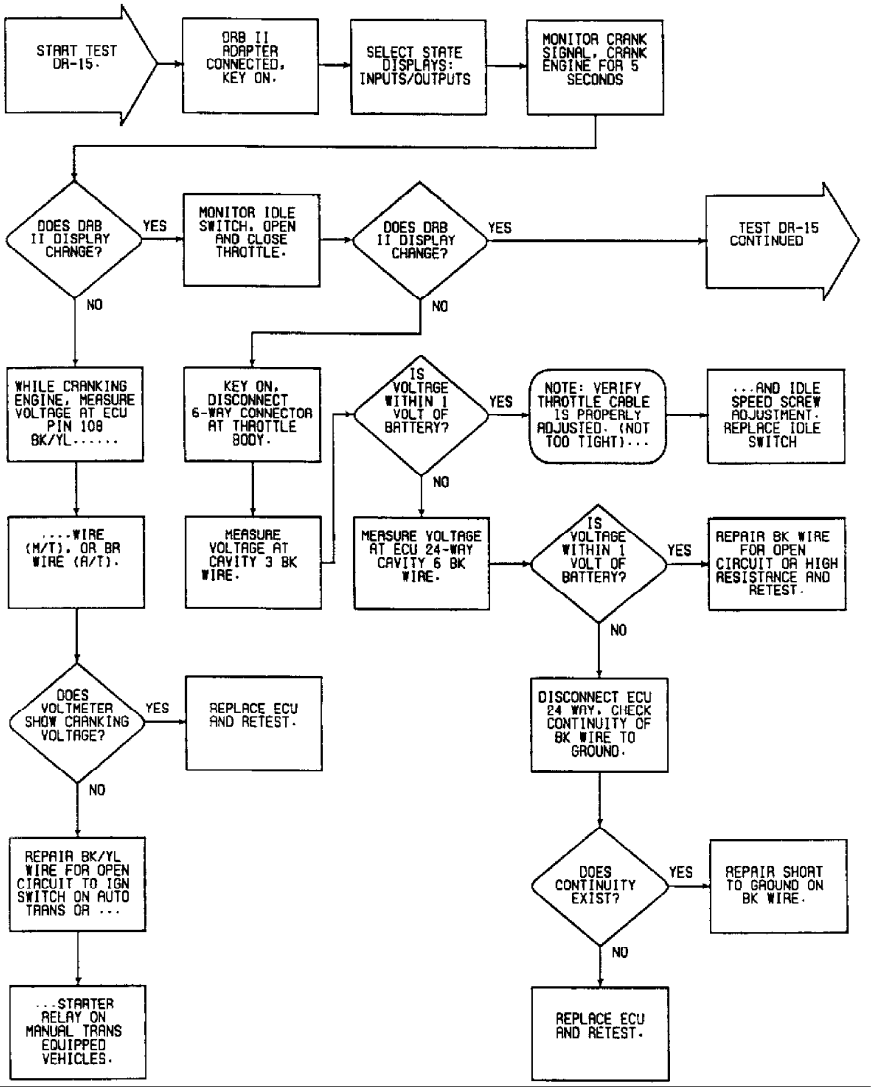


Fig. 63: Flow Chart DR-15 (1.5L)

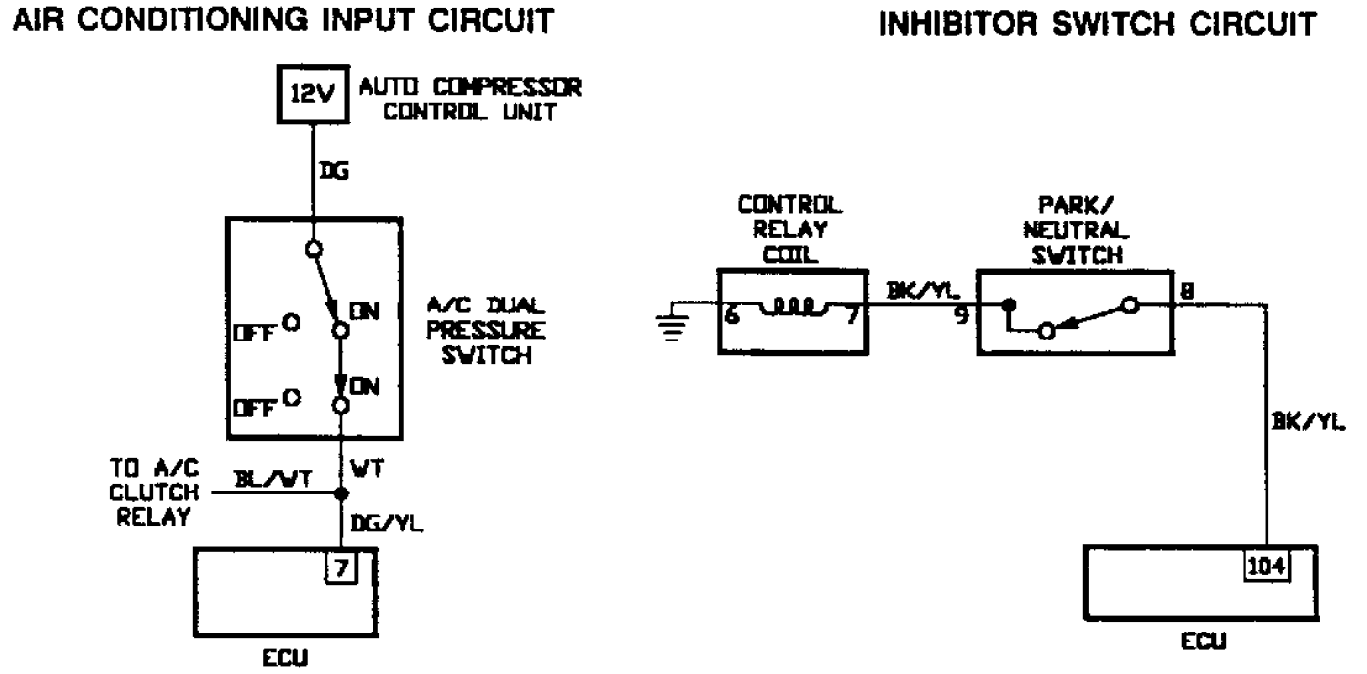


Fig. 64: Circuit Diagram DR-15 (1.5L)

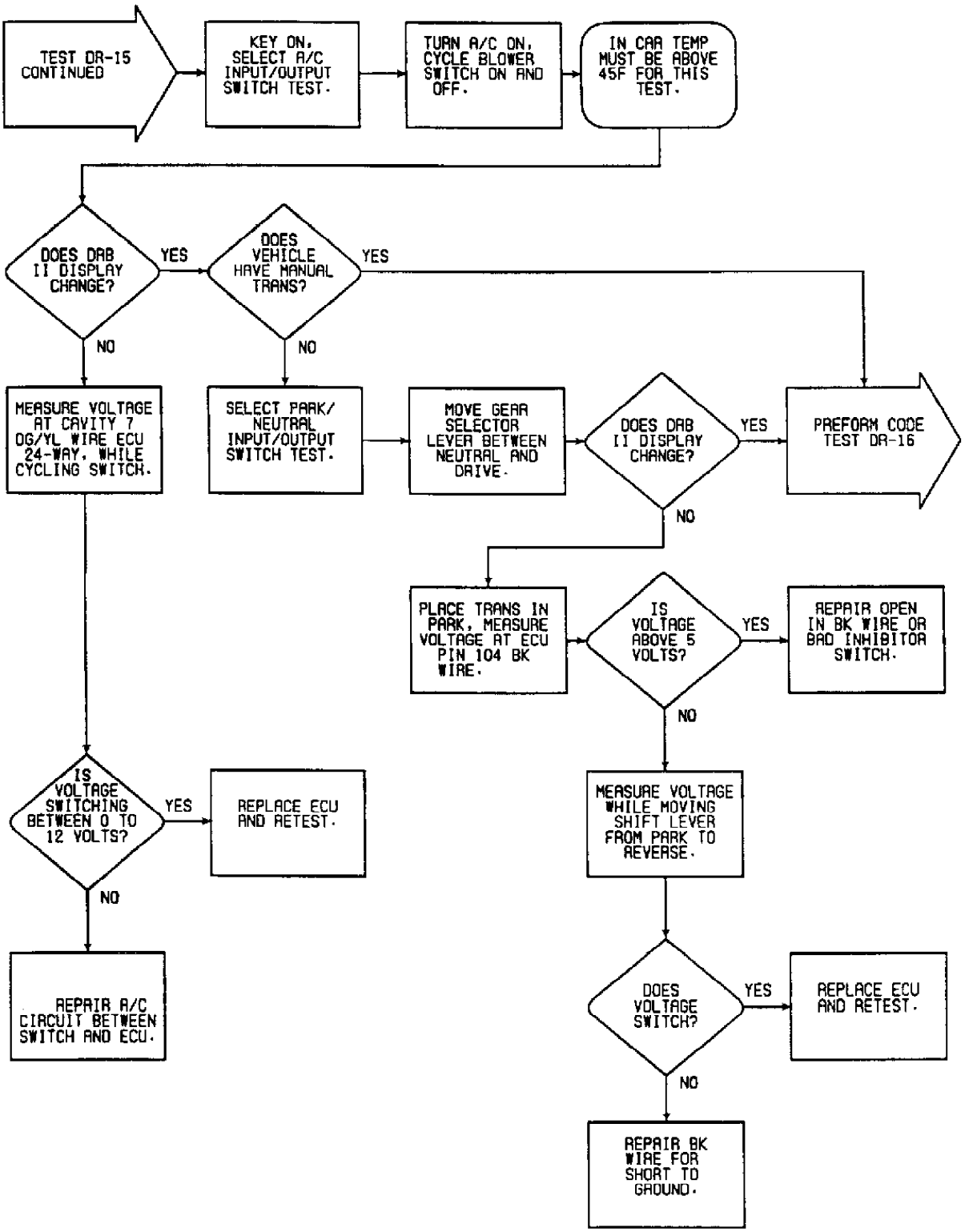


Fig. 65: Flow Chart DR-15 (1.5L)

DR-16: NO FAULT CODE SENSOR TEST - 1.5L

DR-16 NO FAULT CODE SYSTEM TEST TABLE

DRBII EGR Temp. Display	Engine Conditions
160°F	Hot Idle
350°F	25 MPH at 3,500 RPM
311°F	55 MPH at 3,500 RPM

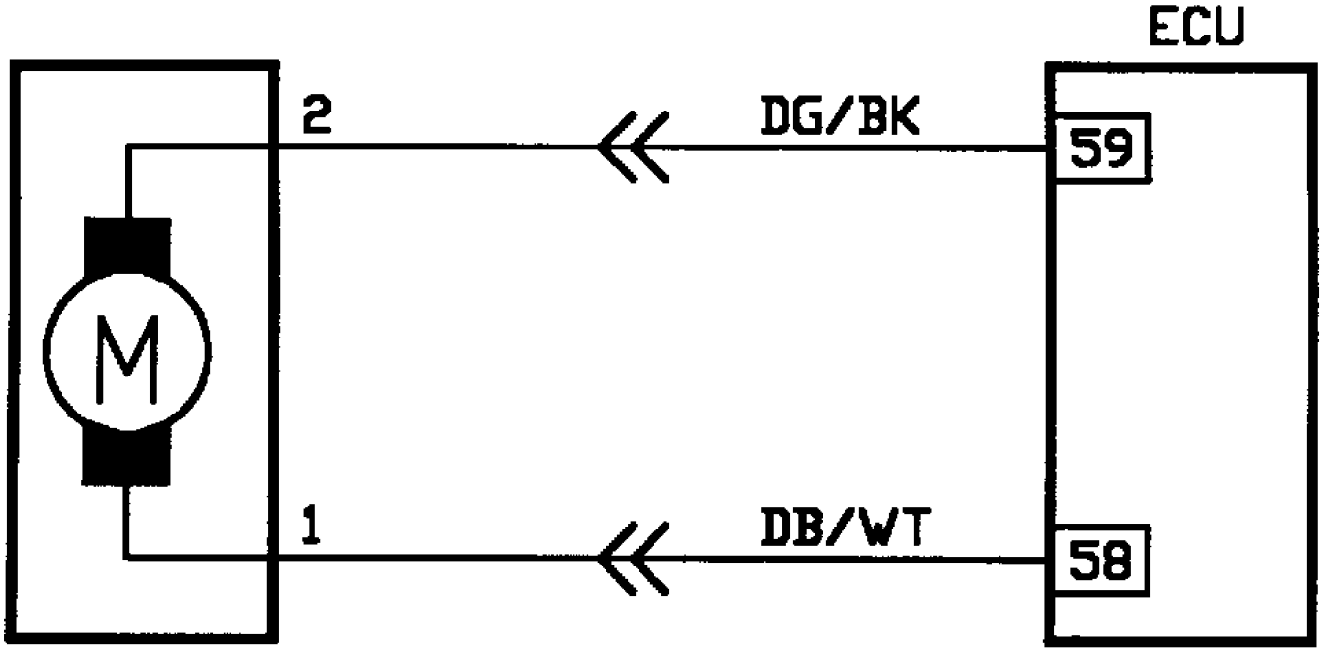


Fig. 66: Circuit Diagram DR-16 (1.5L) (1 of 2)

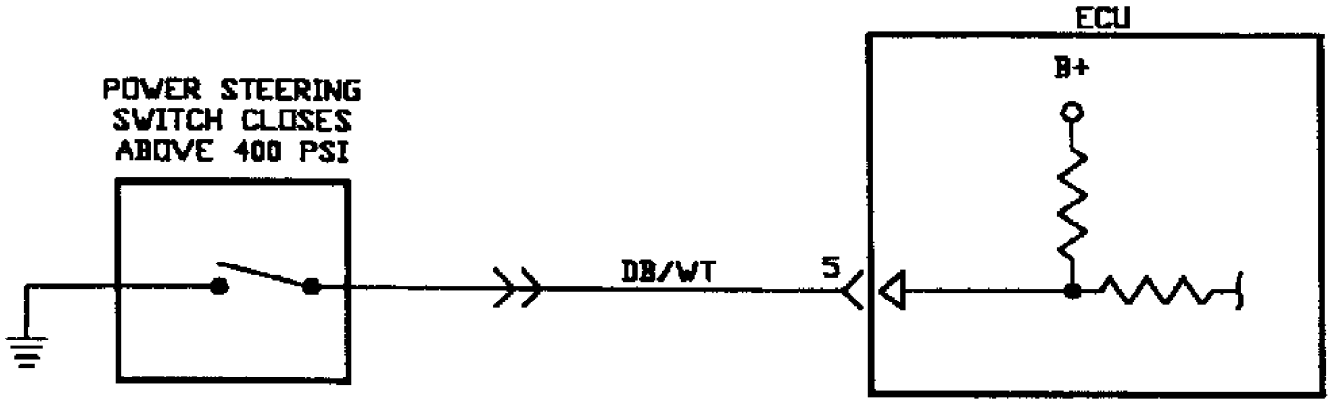


Fig. 67: Circuit Diagram DR-16 (1.5L) (2 of 2)

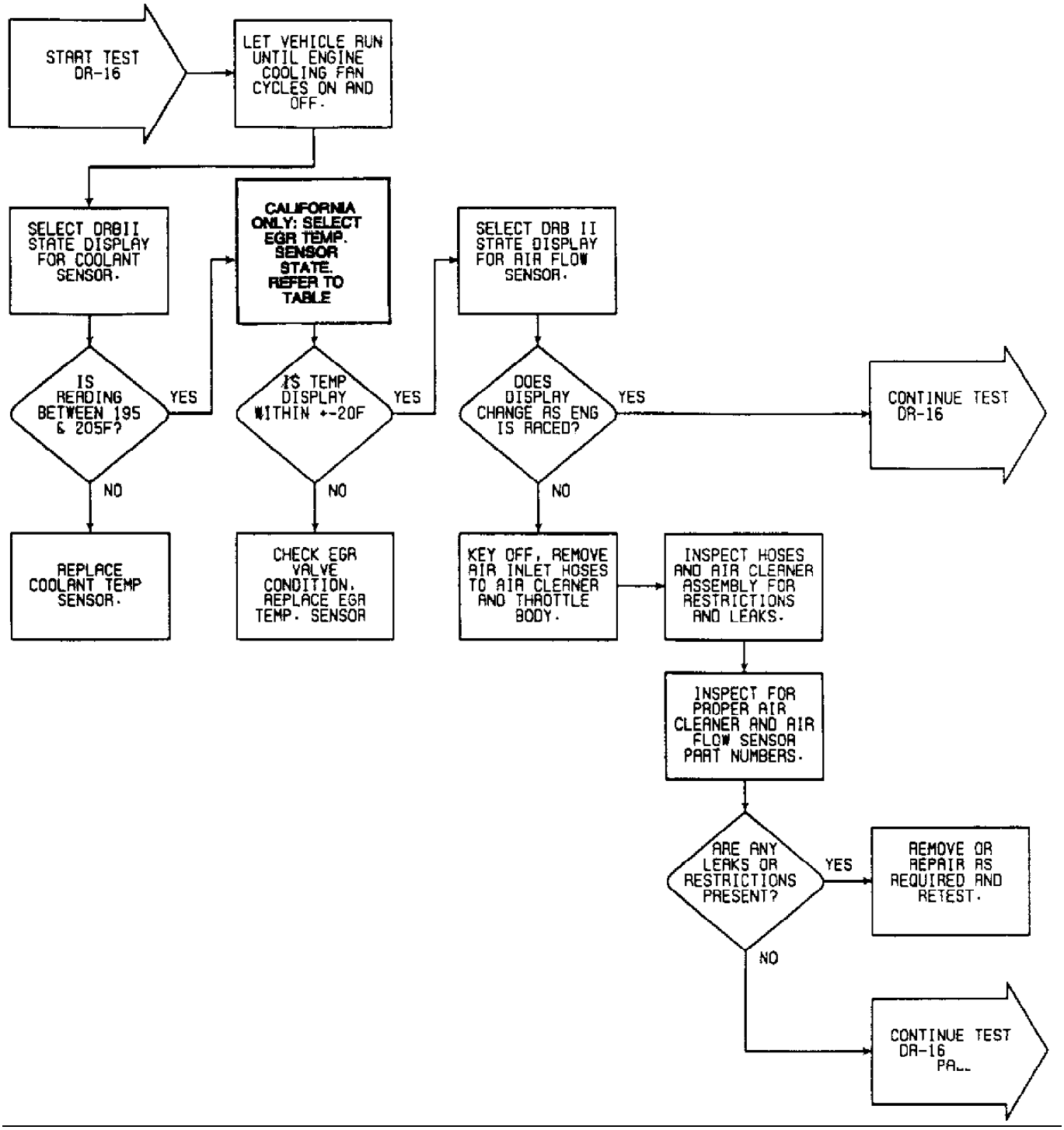


Fig. 68: Flow Chart DR-16 (1.5L) (1 of 5)

DR-16 NO FAULT CODE SYSTEM TEST TABLE

Altitude	Baro Reading
-1,000 Ft.	31.01"
-900 Ft.	30.90"

Sea Level	29.92"
500 Ft.	29.38"
1,000 Ft.	28.85"
1,500 Ft.	28.33"
2,000 Ft.	27.82"
3,000 Ft.	26.81"
4,000 Ft.	25.84"
6,000 Ft.	23.97"
8,000 Ft.	22.22"
10,000 Ft.	20.57"
12,000 Ft.	19.02"
14,000 Ft.	17.57"

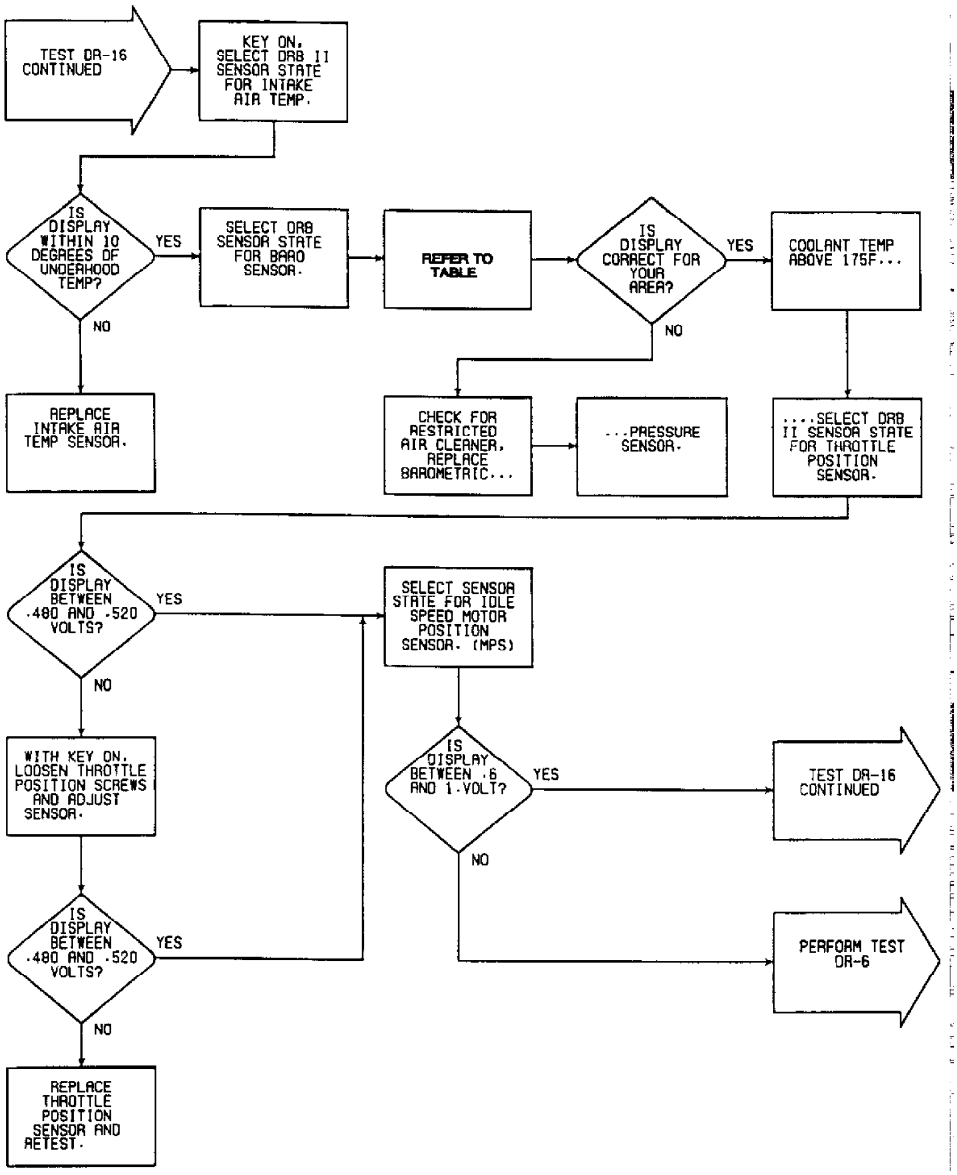


Fig. 69: Flow Chart DR-16 (1.5L) (2 of 5)

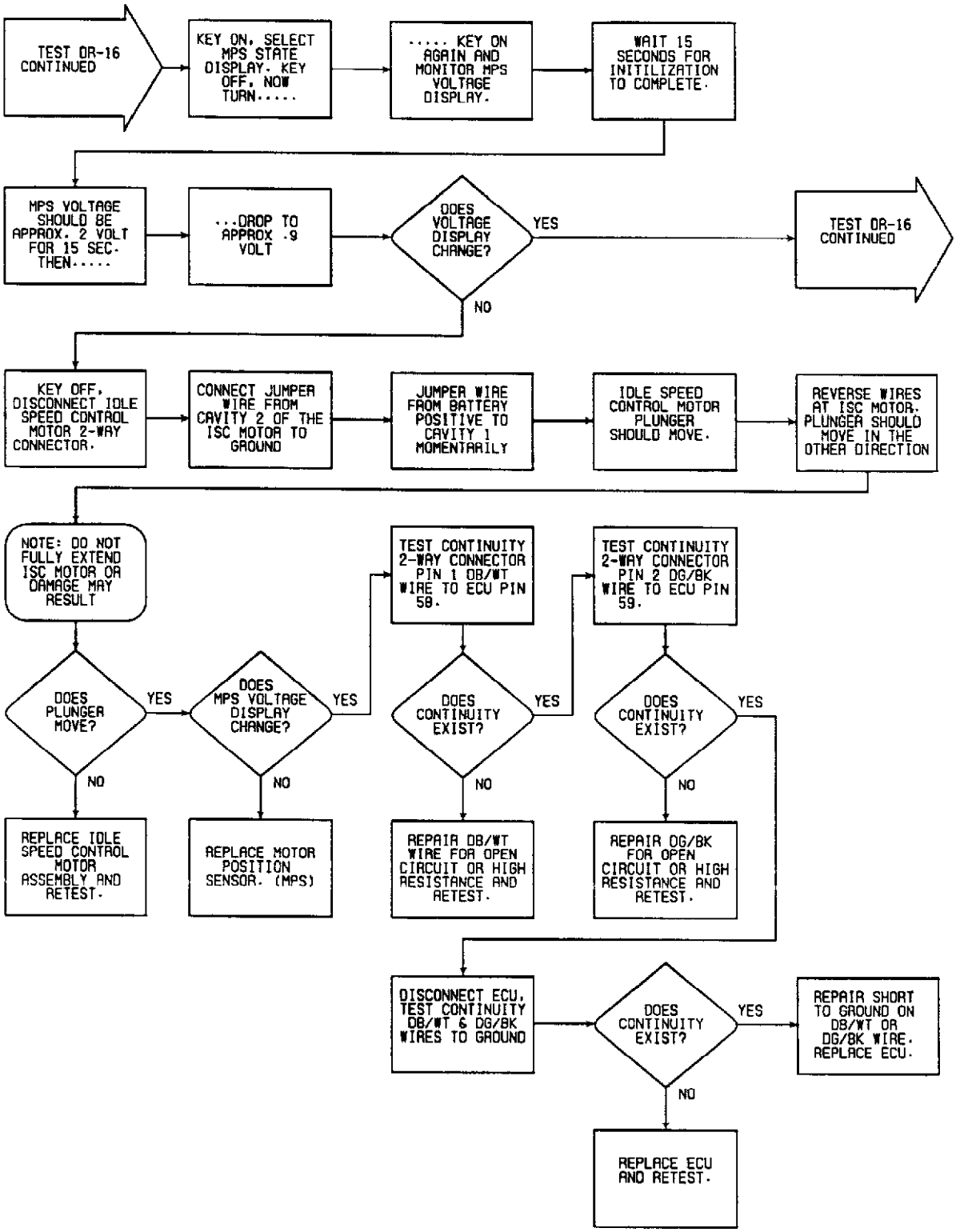


Fig. 70: Flow Chart DR-16 (1.5L) (3 of 5)

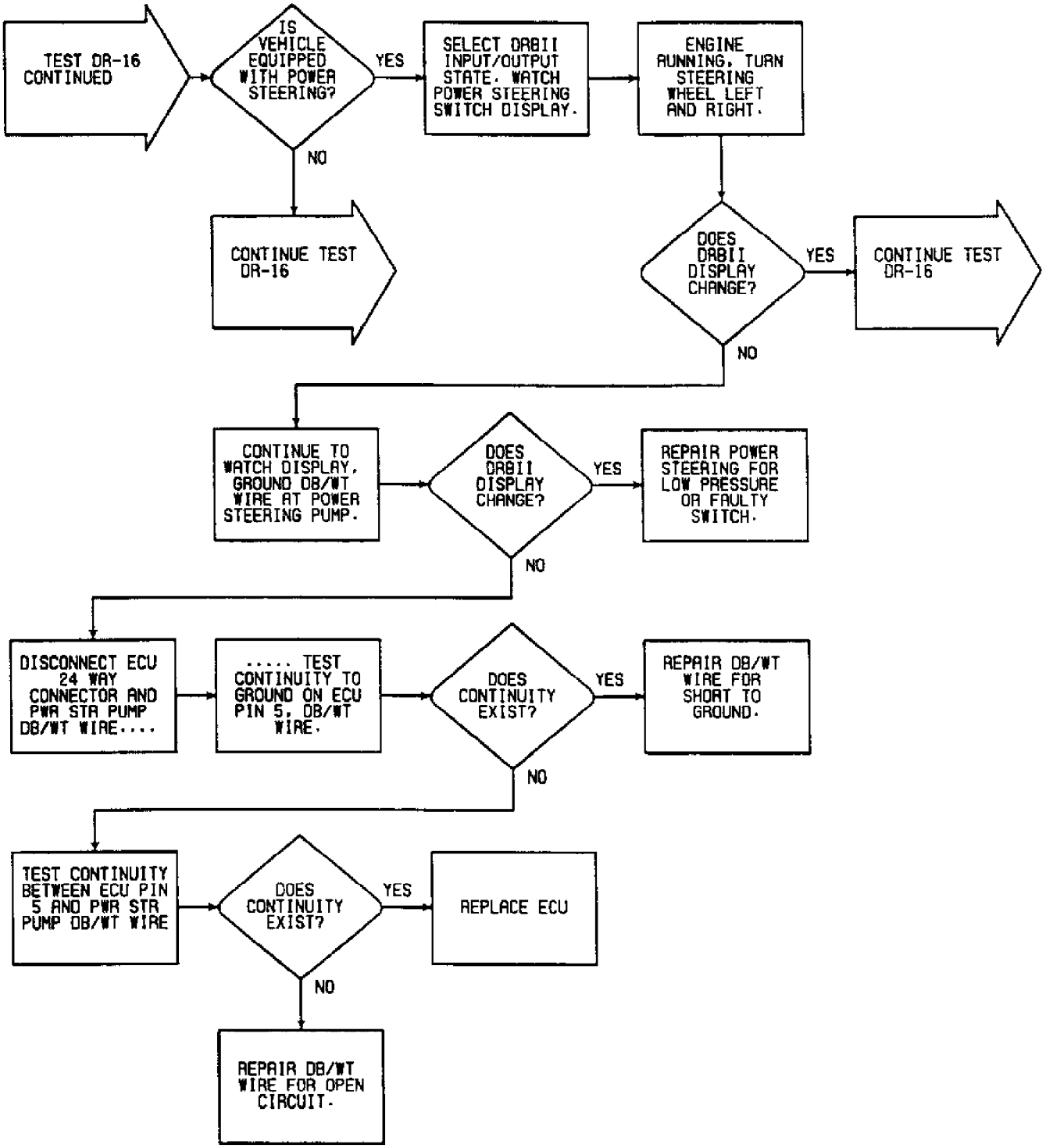


Fig. 71: Flow Chart DR-16 (1.5L) (4 of 5)

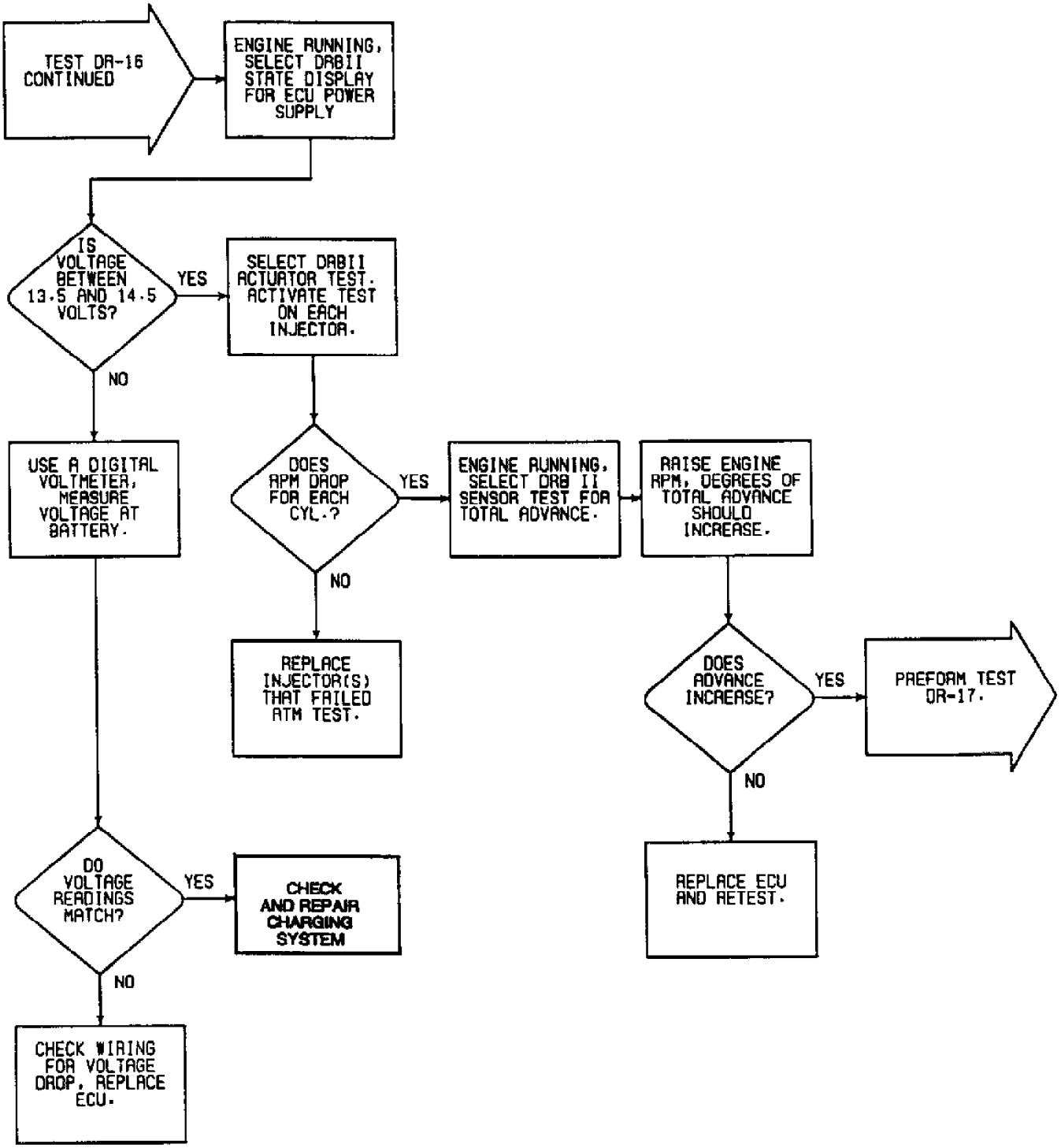


Fig. 72: Flow Chart DR-16 (1.5L) (5 of 5)

DR-17: TESTING PURGE SOLENOID CIRCUIT - 1.5L

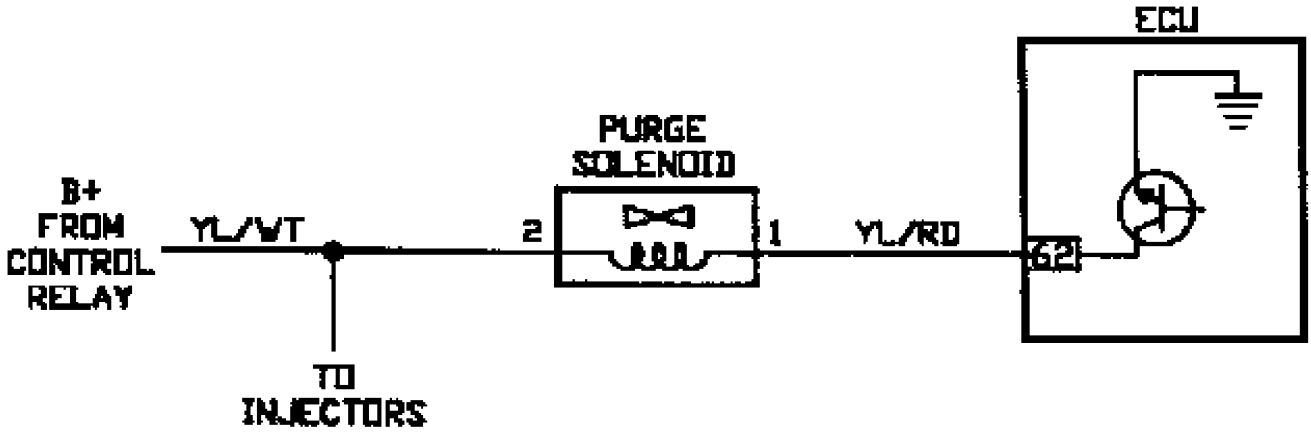


Fig. 73: Circuit Diagram DR-17 (1.5L)

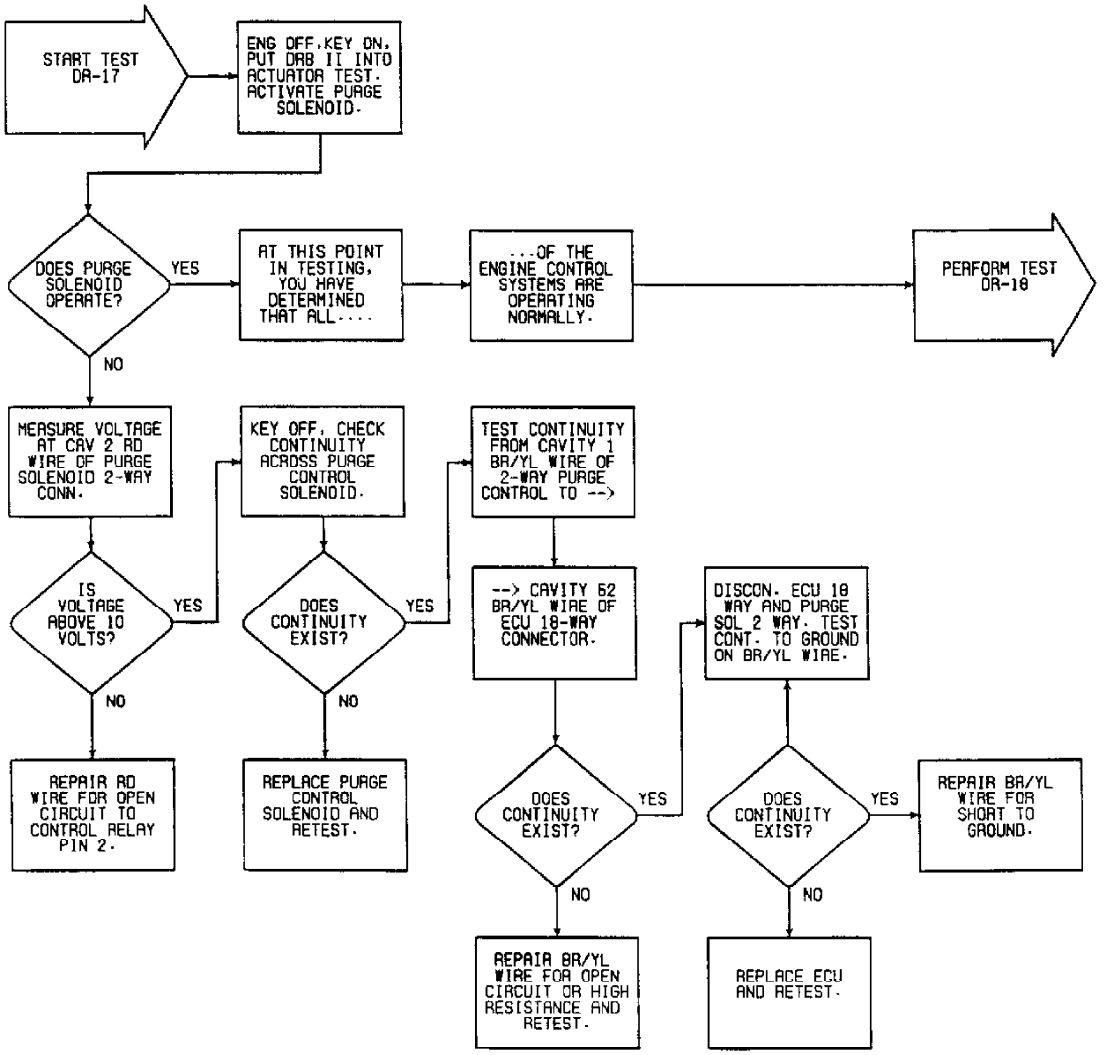


Fig. 74: Flow Chart DR-17 (1.5L)

DR-18: NO FAULT CODE MECHANICAL TEST - 1.5L

At this point in the driveability test procedure, you have determined

that all of the engine control systems are operating as they were designed to. Therefore, they are not the cause of the driveability problem.

The following additional items can not be overlooked as possible causes of a driveability problem.

1. THROTTLE VALVE AREA - Dirt or ice buildup causing rough idle and stalling.
2. ENGINE IGNITION TIMING - Must be set with timing terminal grounded.
3. ENGINE VACUUM - Must be normal for your altitude.
4. ENGINE VALVE TIMING - To specifications.
5. ENGINE COMPRESSION - To specifications.
6. ENGINE P.C.V. SYSTEM - Must flow freely.
7. ENGINE EXHAUST SYSTEM - Must be free of any restrictions.
8. POWER BRAKE BOOSTER - No internal vacuum leaks.
9. TORQUE CONVERTER CONDITION - May cause very low power at breakaway or high speed (Only 1 condition at a time).
10. FUEL CONTAMINATION - High alcohol or water content.
11. FUEL INJECTORS - Rough idle may be caused by injector wiring not connected to correct injector.
12. ENGINE SECONDARY IGNITION CHECK - Abnormal scope patterns.
13. TECHNICAL SERVICE BULLETINS - Any that apply to vehicle.
14. All air intake piping and vacuum hoses must be in place and secure. The proper air filter element must be used.
15. FUEL PRESSURE - Must be correct.
    Specification: With no vacuum at the regulator:
    48 PSI on V6 & non-turbo 4 Cyl. engines
    36 PSI on turbo engines

NS-1: TESTING IGNITION CIRCUIT - 1.6L

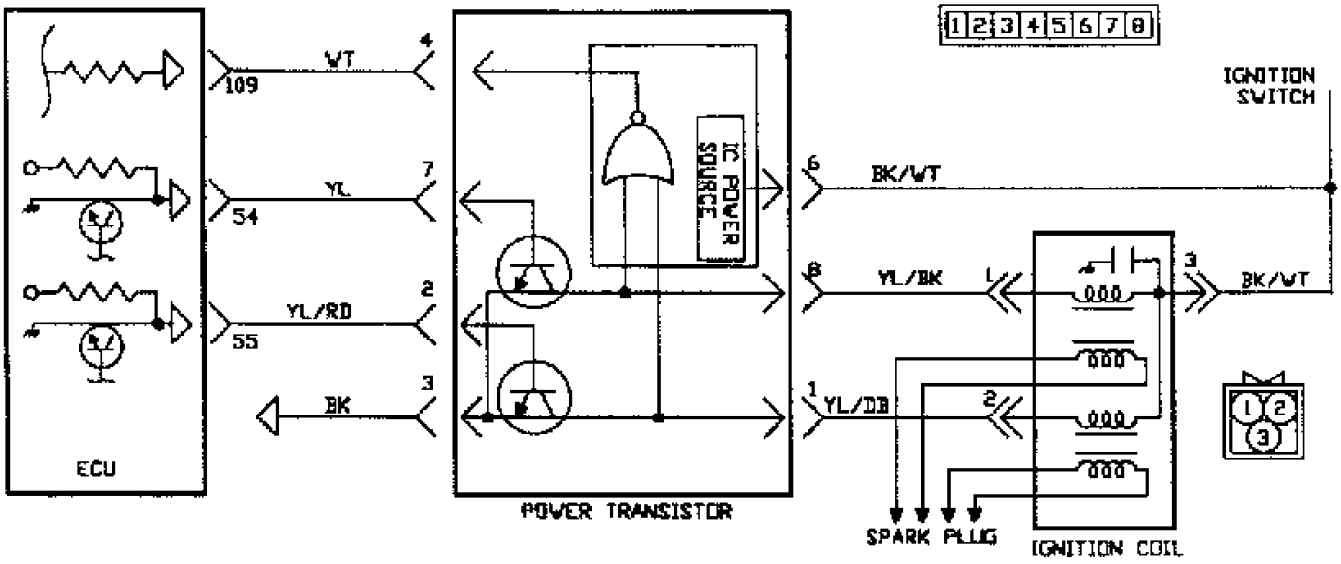


Fig. 75: Circuit Diagram NS-1 (1.6L)

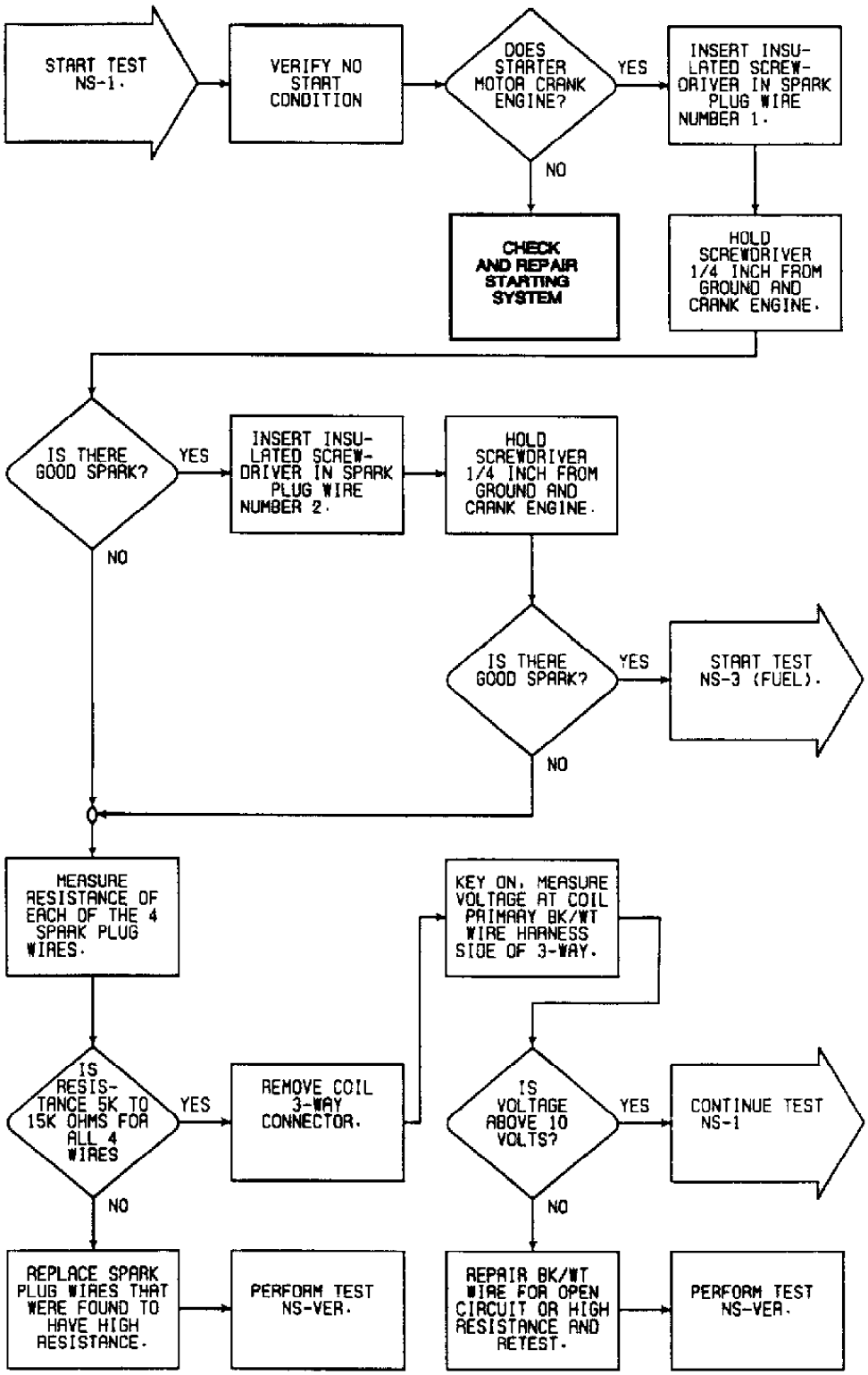


Fig. 76: Flow Chart NS-1 (1.6L)

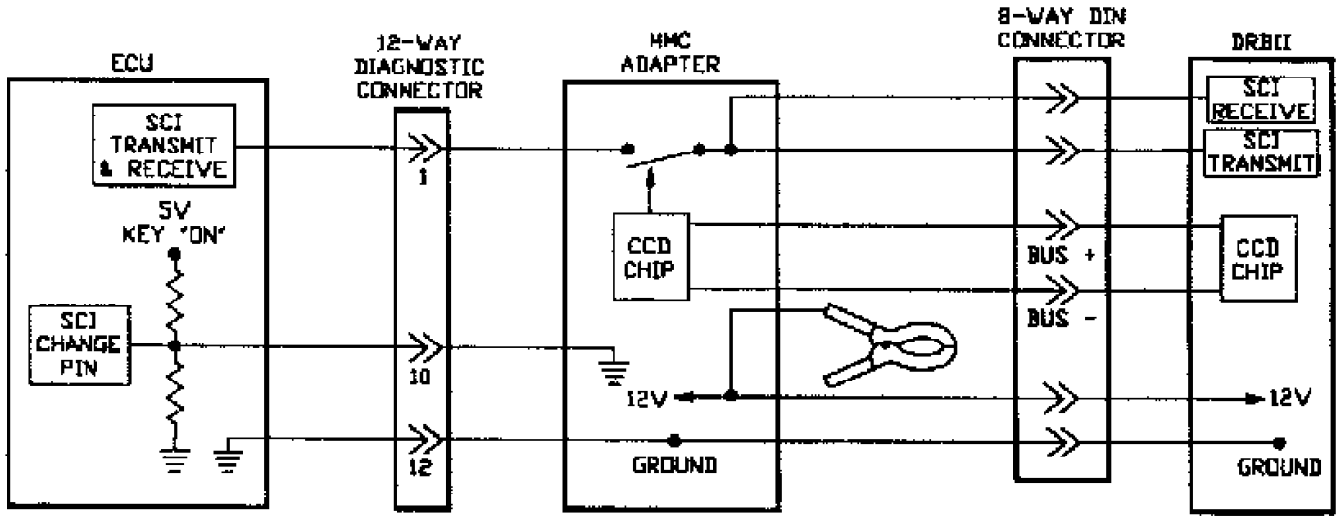


Fig. 77: Circuit Diagram NS-1 (1.6L)

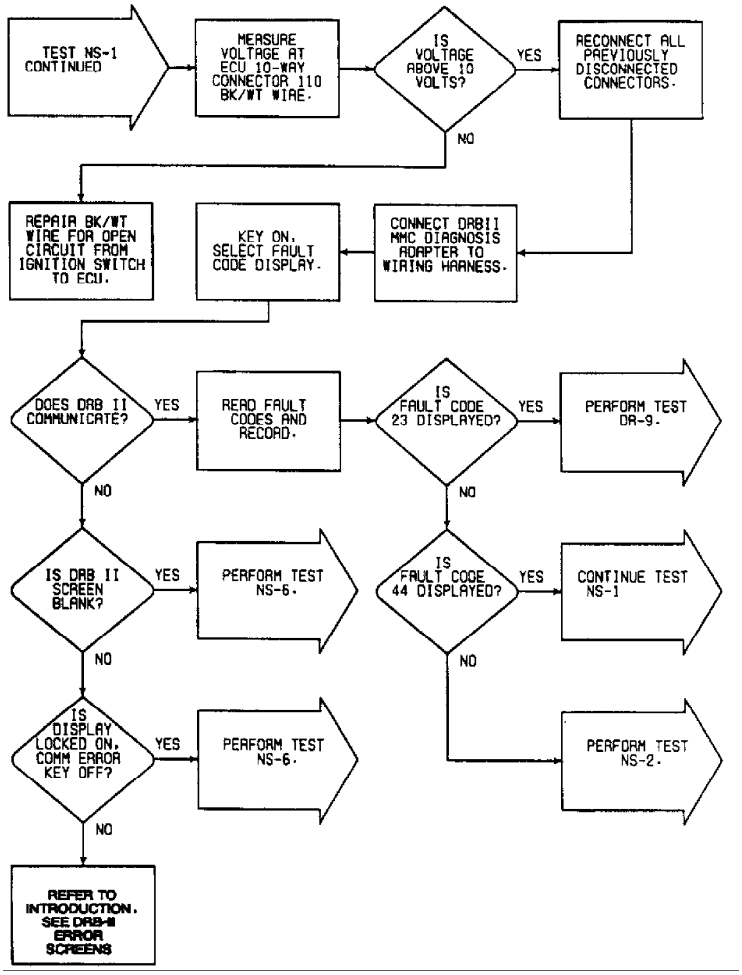


Fig. 78: Flow Chart NS-1 (1.6L) (1 of 4)

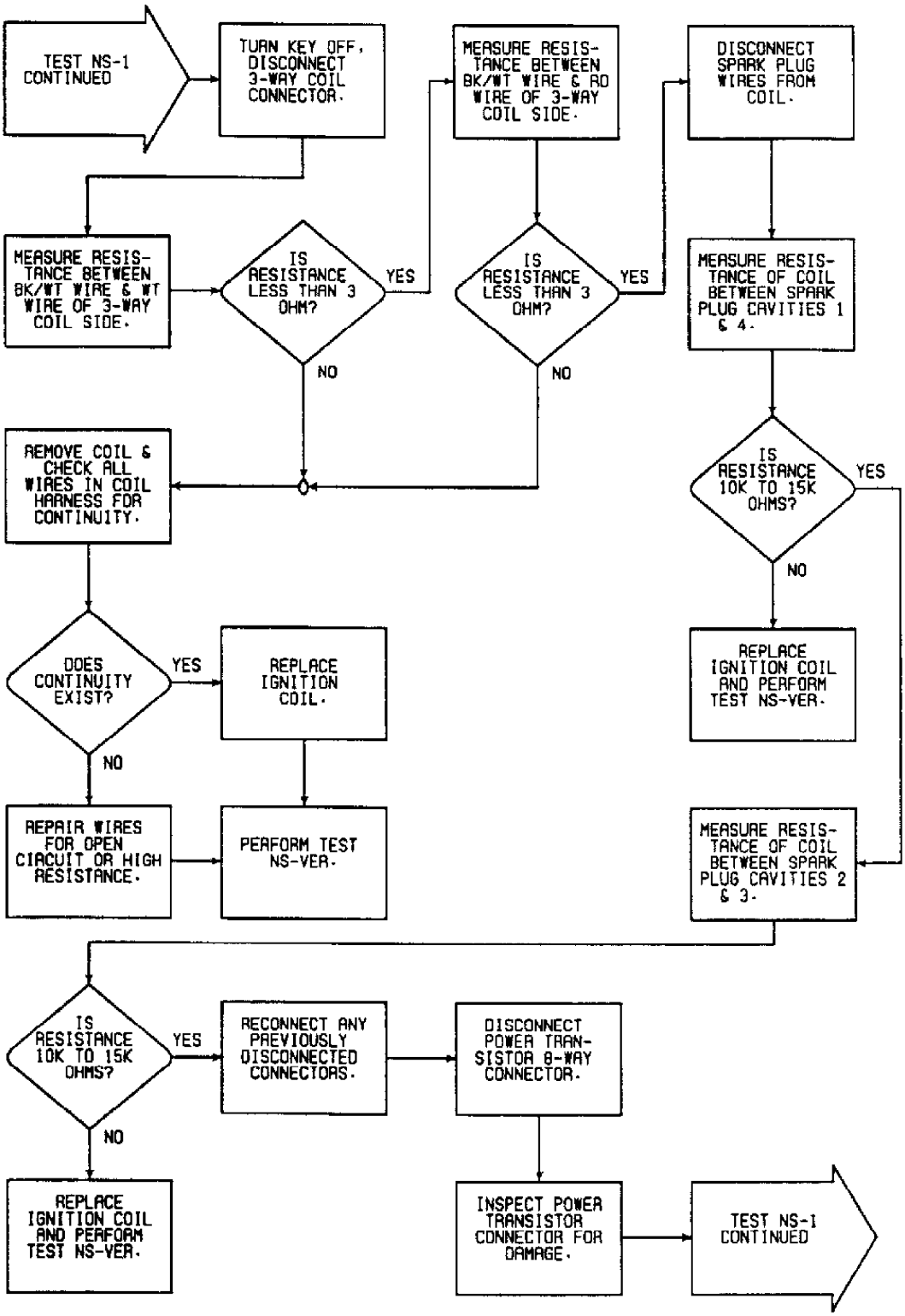


Fig. 79: Flow Chart NS-1 (1.6L) (2 of 4)

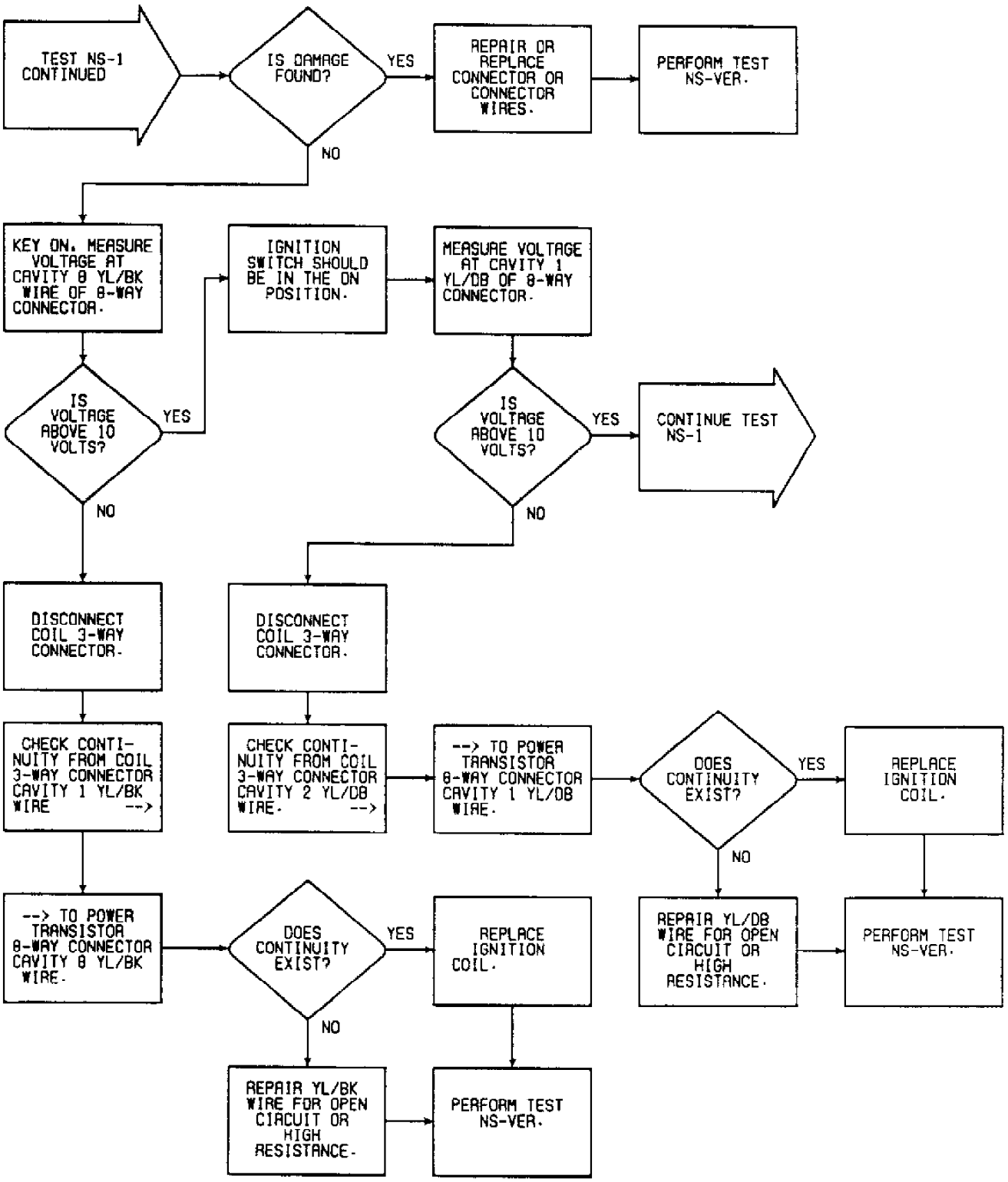


Fig. 80: Flow Chart NS-1 (1.6L) (3 of 4)

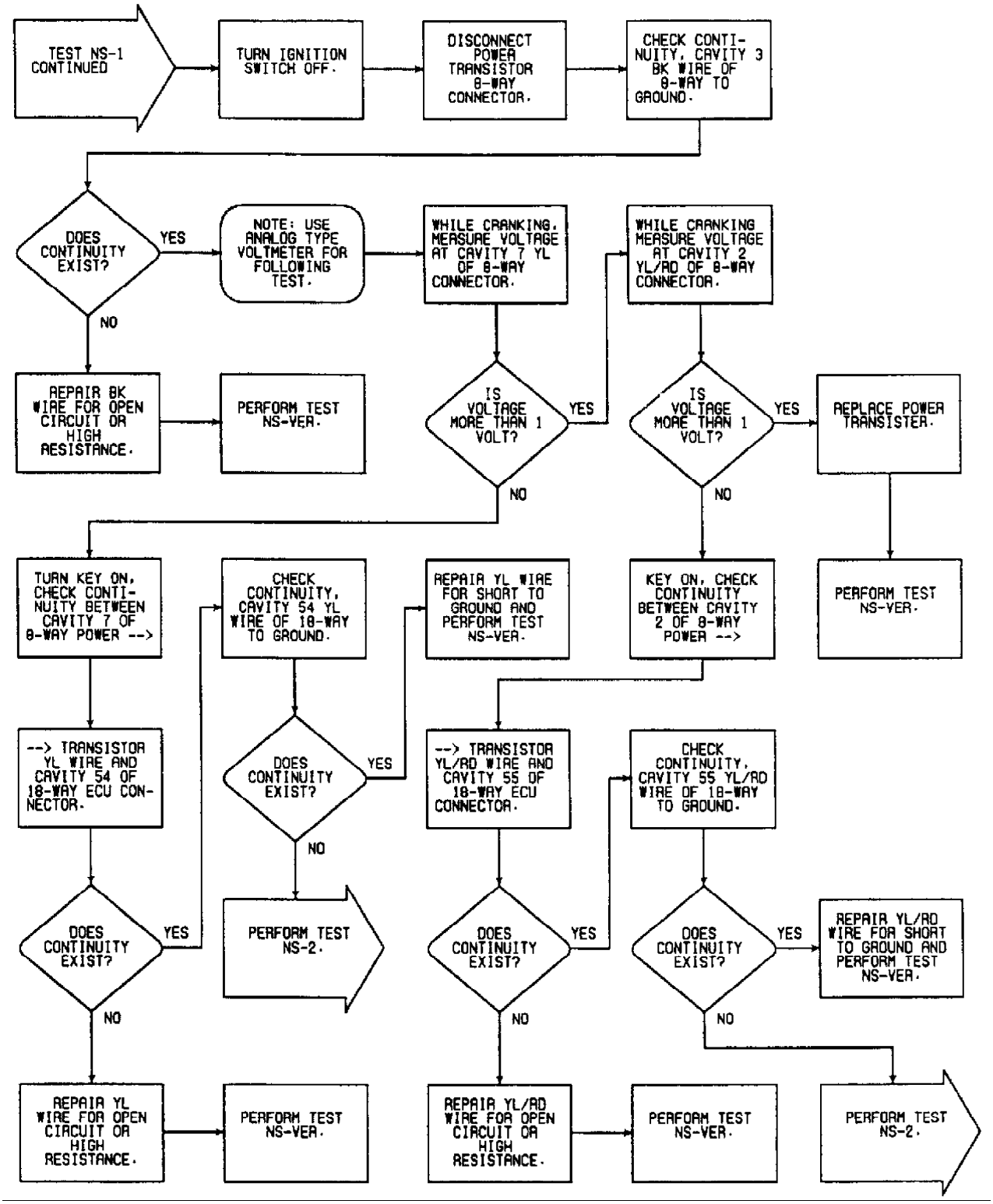


Fig. 81: Flow Chart NS-1 (1.6L) (4 of 4)

NS-2: TESTING CRANK ANGLE SENSOR CIRCUIT - 1.6L

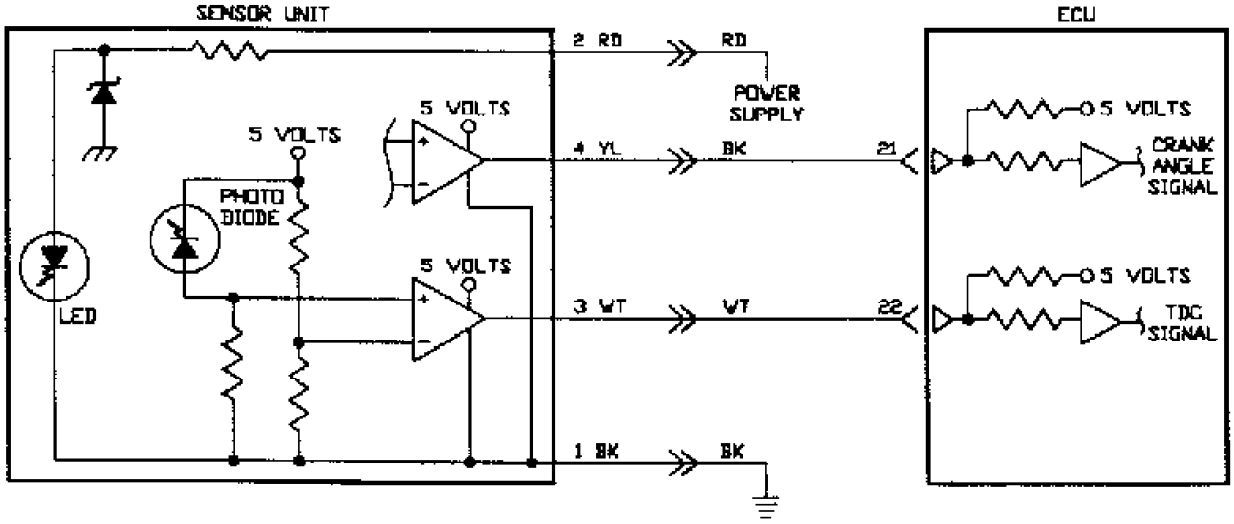


Fig. 82: Circuit Diagram NS-2 (1.6L)

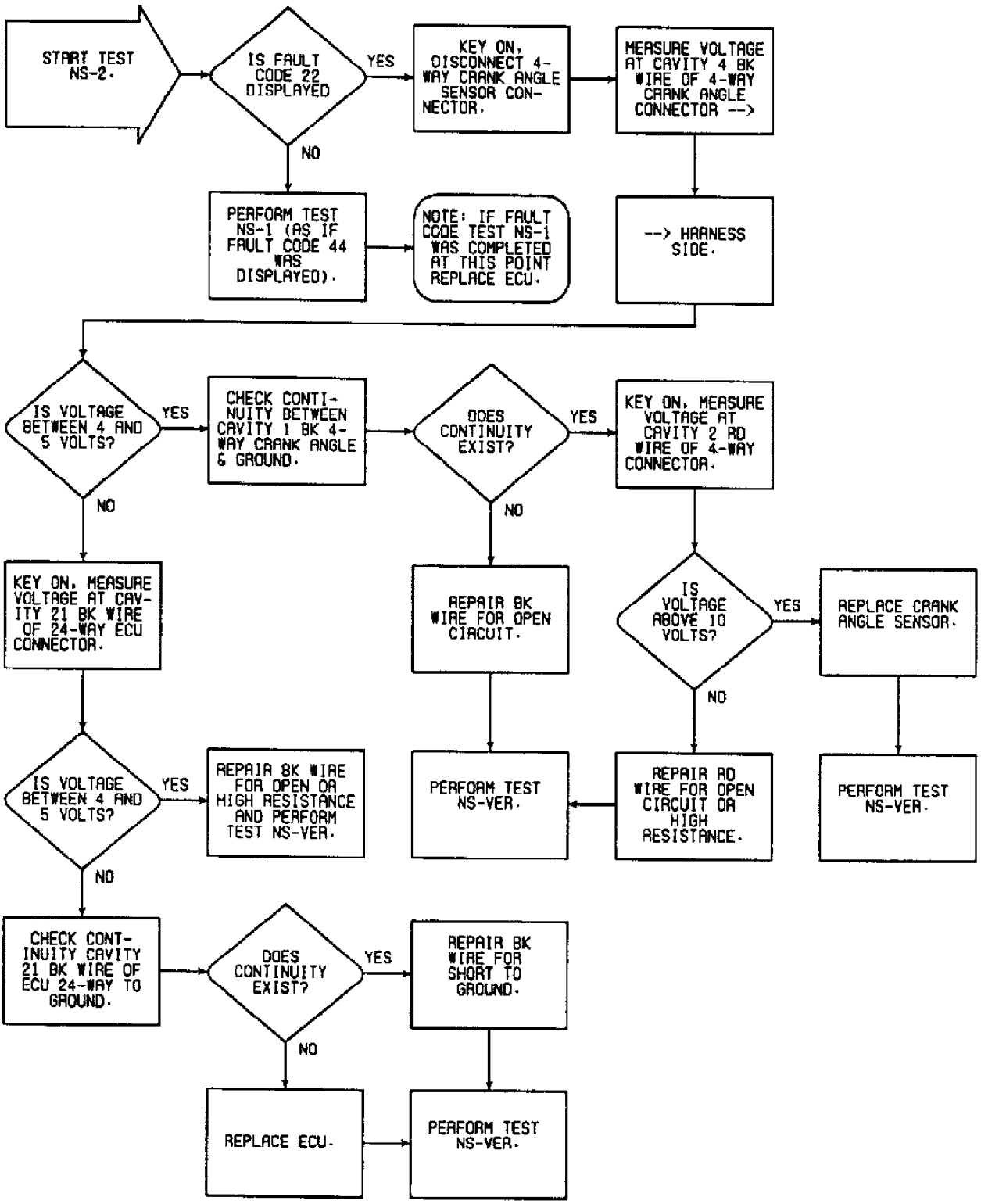


Fig. 83: Flow Chart NS-2 (1.6L)

NS-3: TESTING FUEL SYSTEM - 1.6L

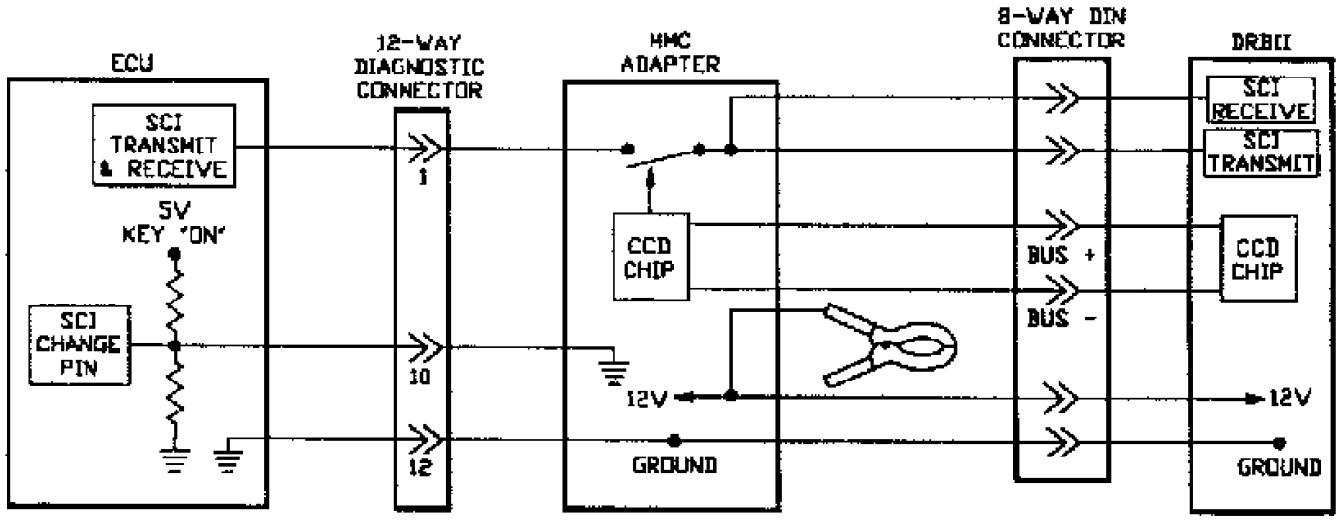


Fig. 84: Circuit Diagram NS-3 (1.6L)

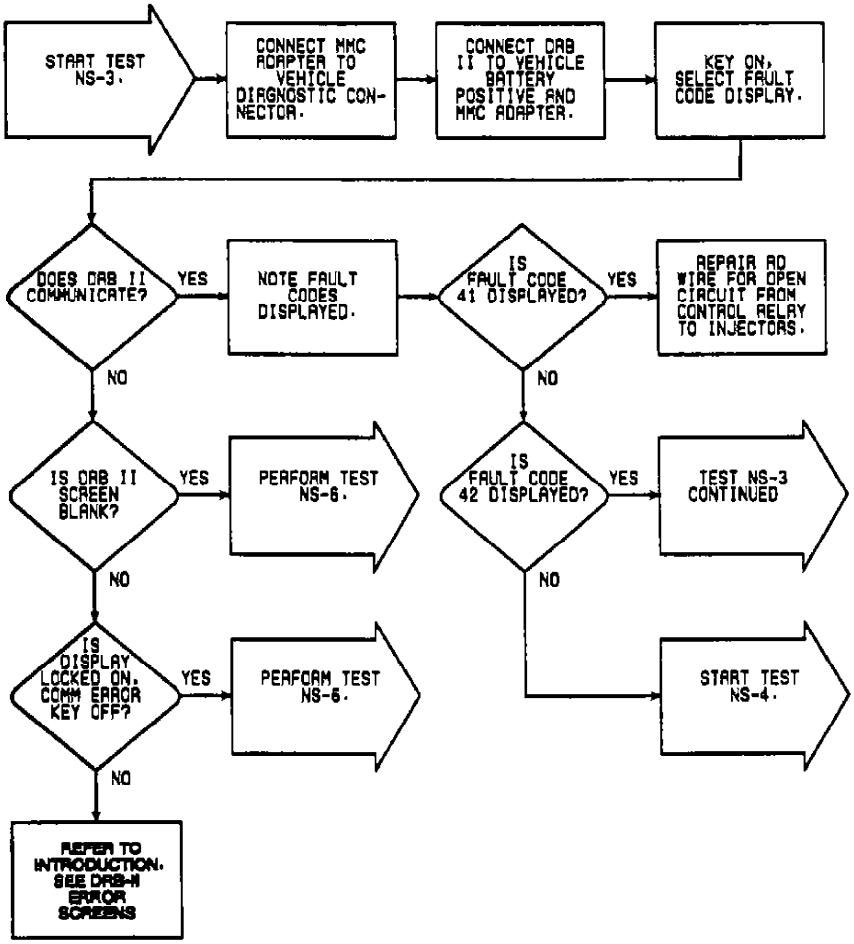


Fig. 85: Flow Chart NS-3 (1.6L) (1 of 3)

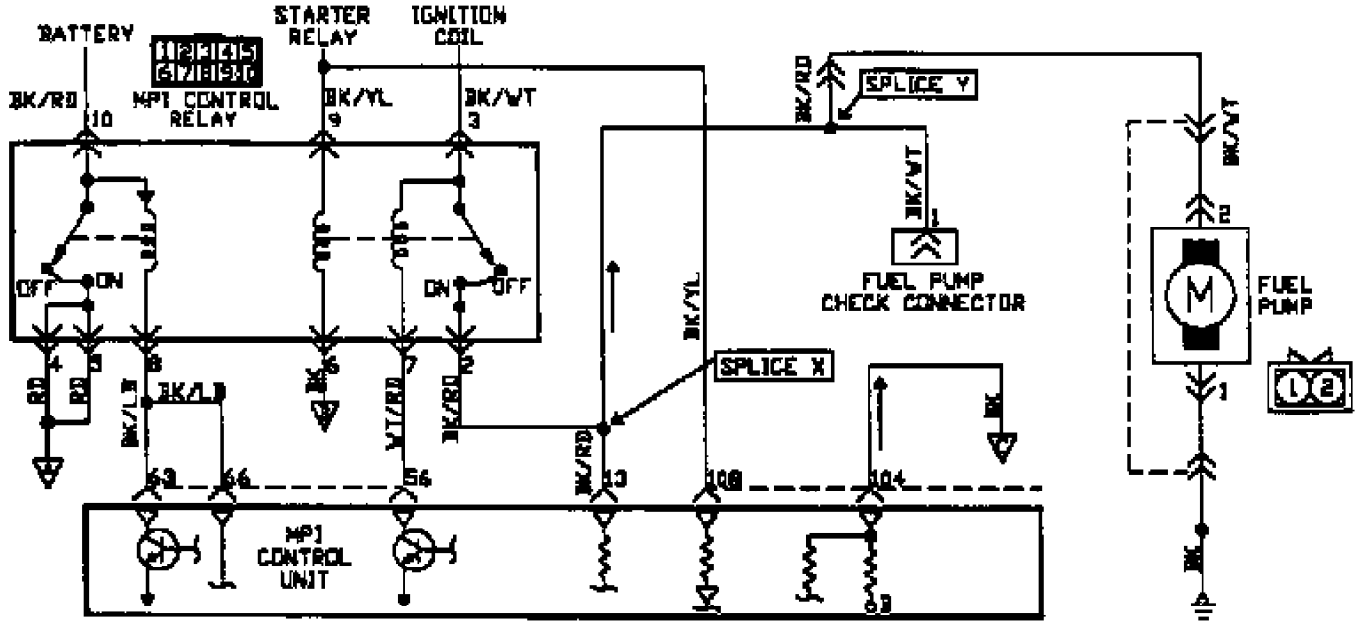


Fig. 86: Circuit Diagram NS-3 (1.6L)

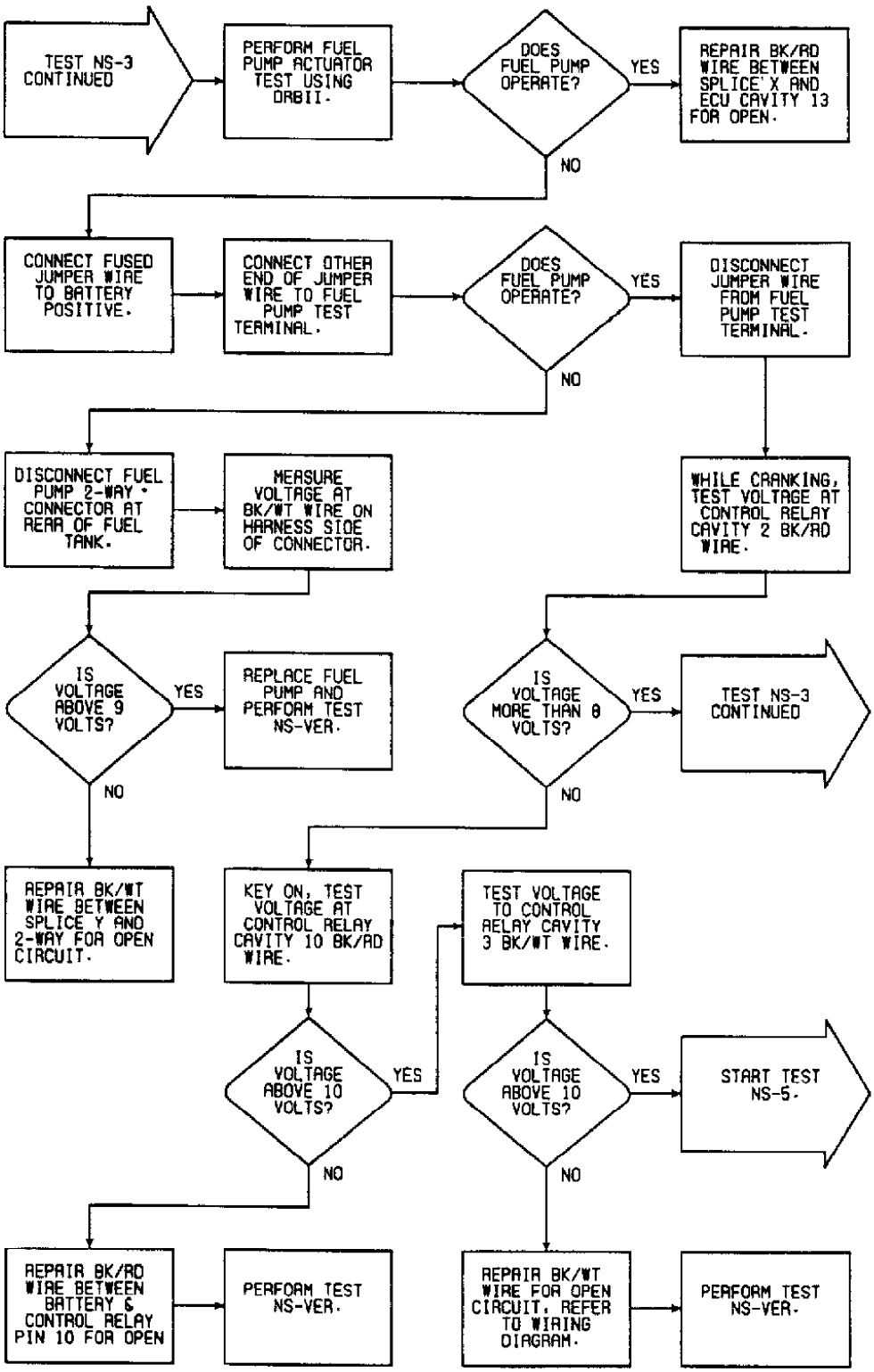


Fig. 87: Flow Chart NS-3 (1.6L) (2 of 3)

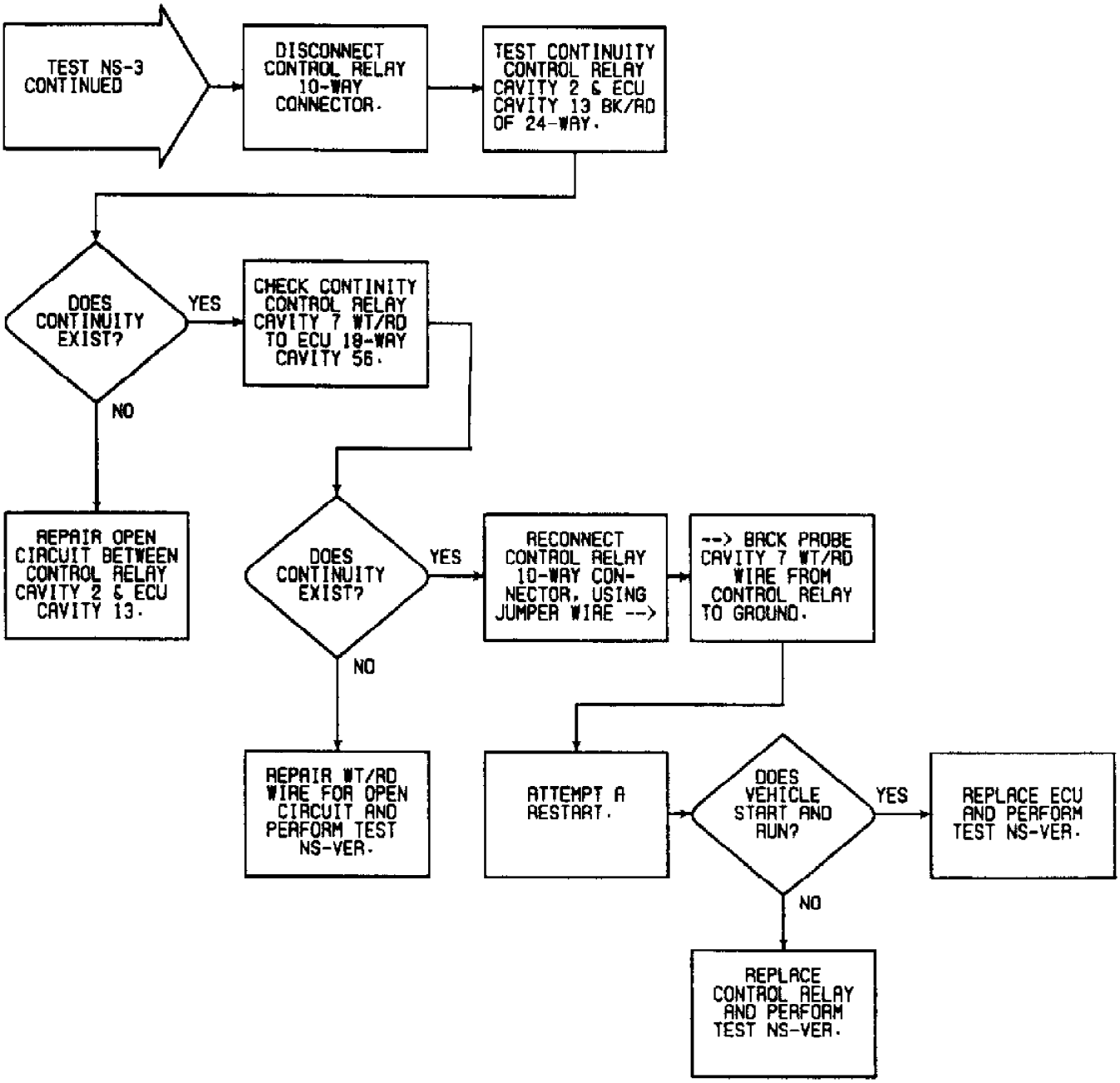


Fig. 88: Flow Chart NS-3 (1.6L) (3 of 3)

NS-4: TESTING FUEL PUMP CIRCUIT - 1.6L

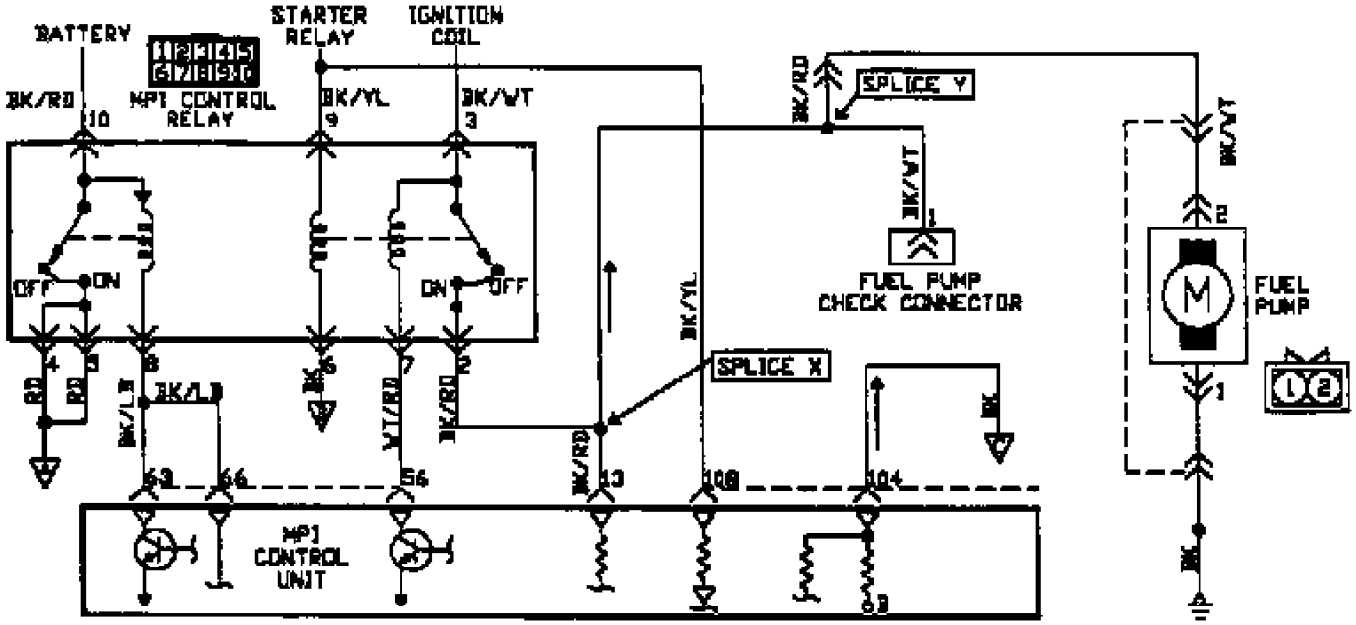


Fig. 89: Circuit Diagram NS-4 (1.6L)

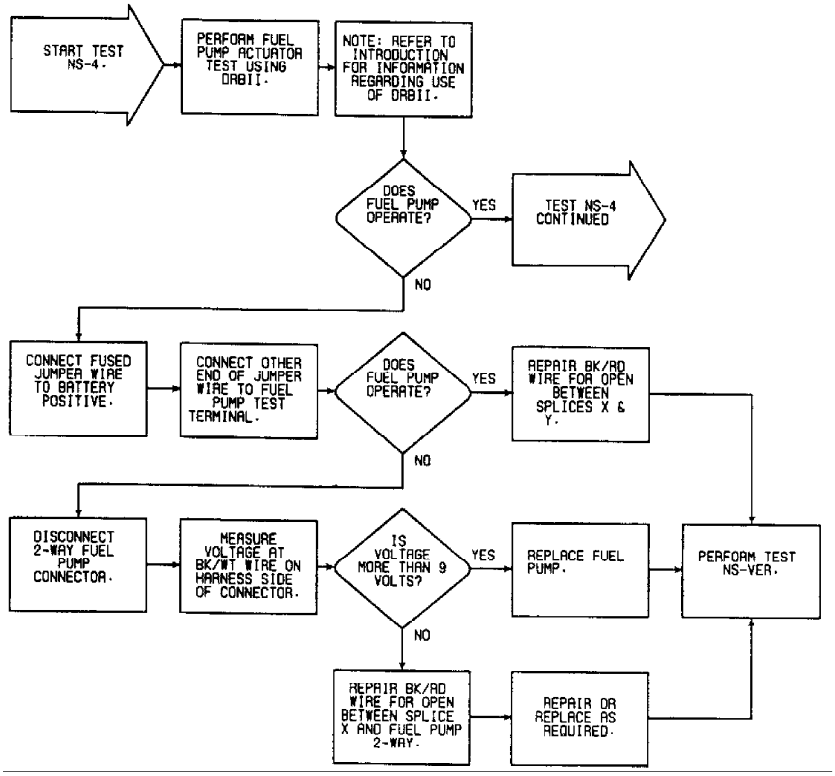


Fig. 90: Flow Chart NS-4 (1.6L) (1 of 2)

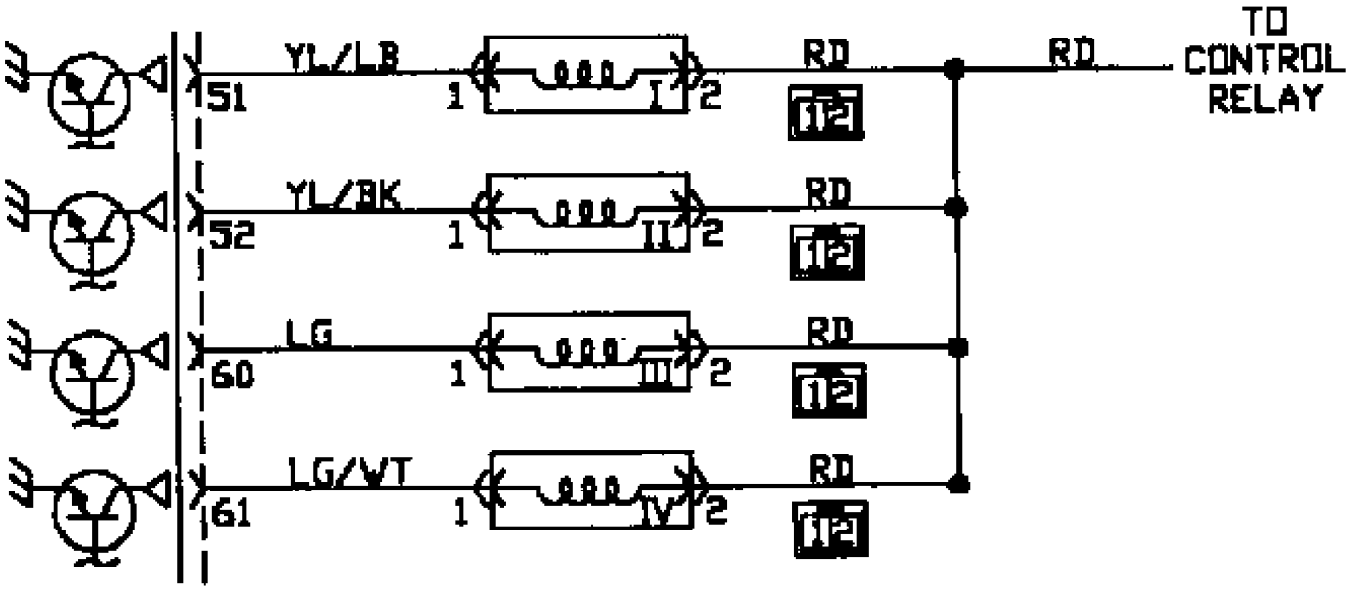


Fig. 91: Circuit Diagram NS-4 (1.6L)

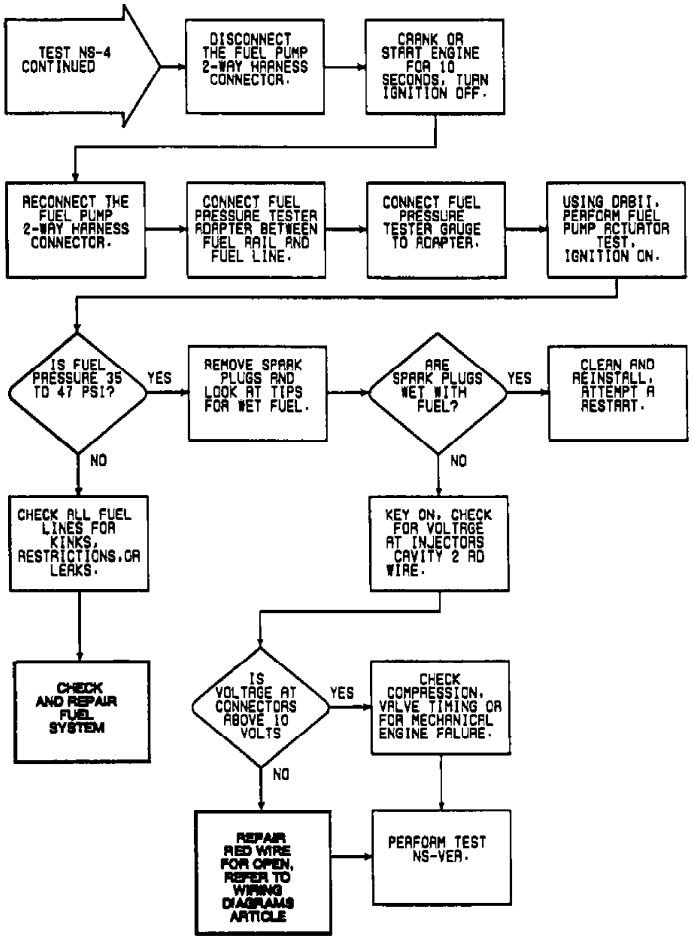


Fig. 92: Flow Chart NS-4 (1.6L) (2 of 2)

NS-5: TESTING CONTROL RELAY CIRCUIT - 1.6L

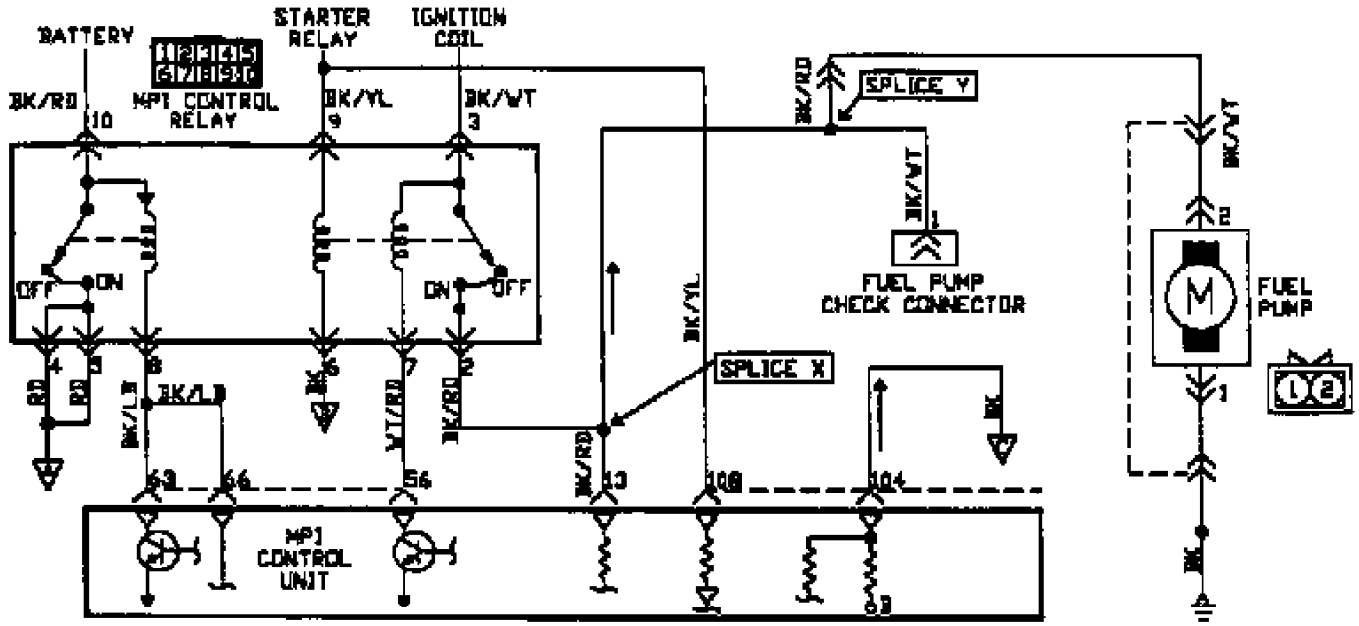


Fig. 93: Circuit Diagram NS-5 (1.6L)

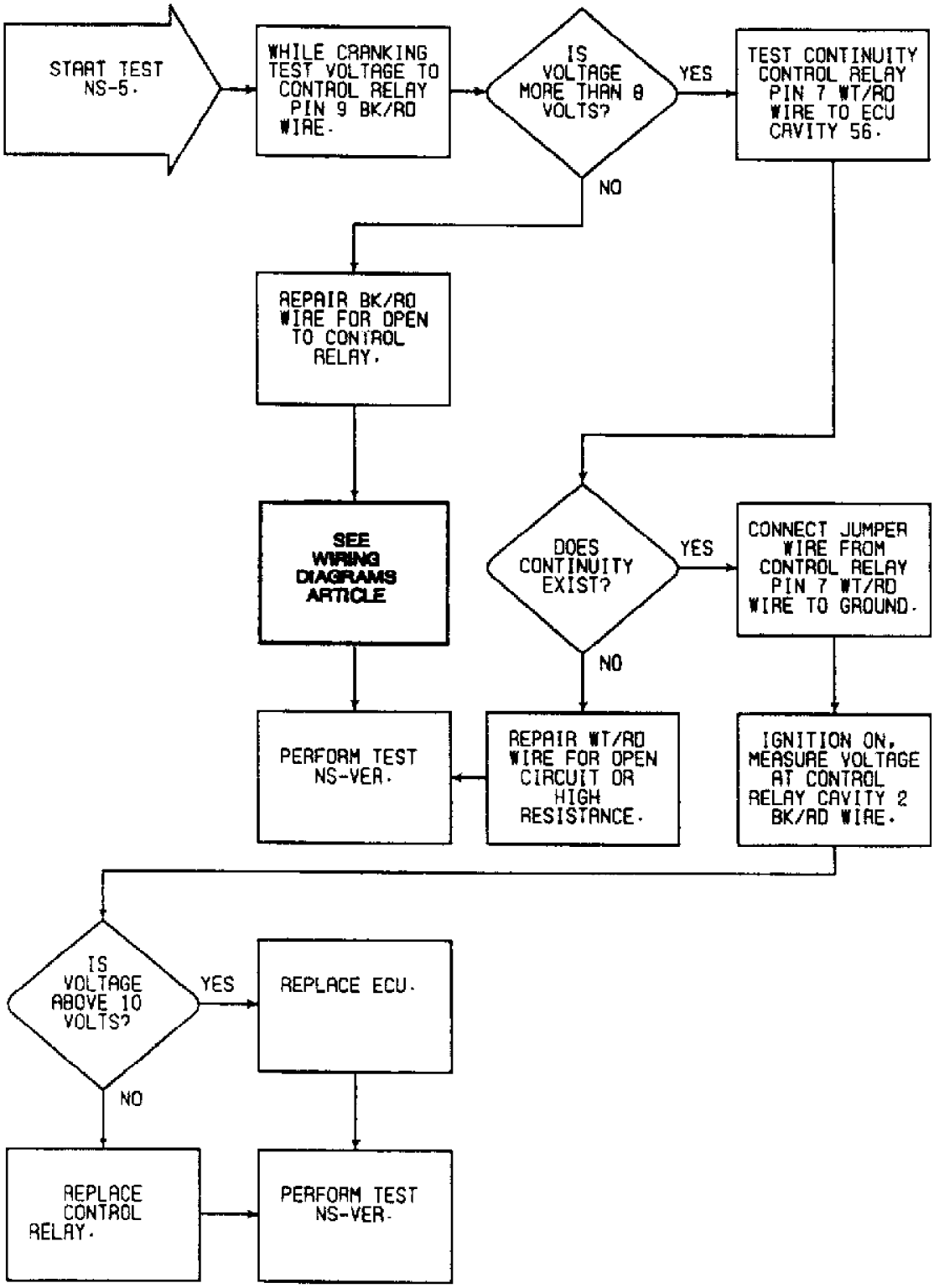


Fig. 94: Flow Chart NS-5 (1.6L)

NS-6: TESTING SELF-DIAGNOSTIC CONNECTOR - 1.6L

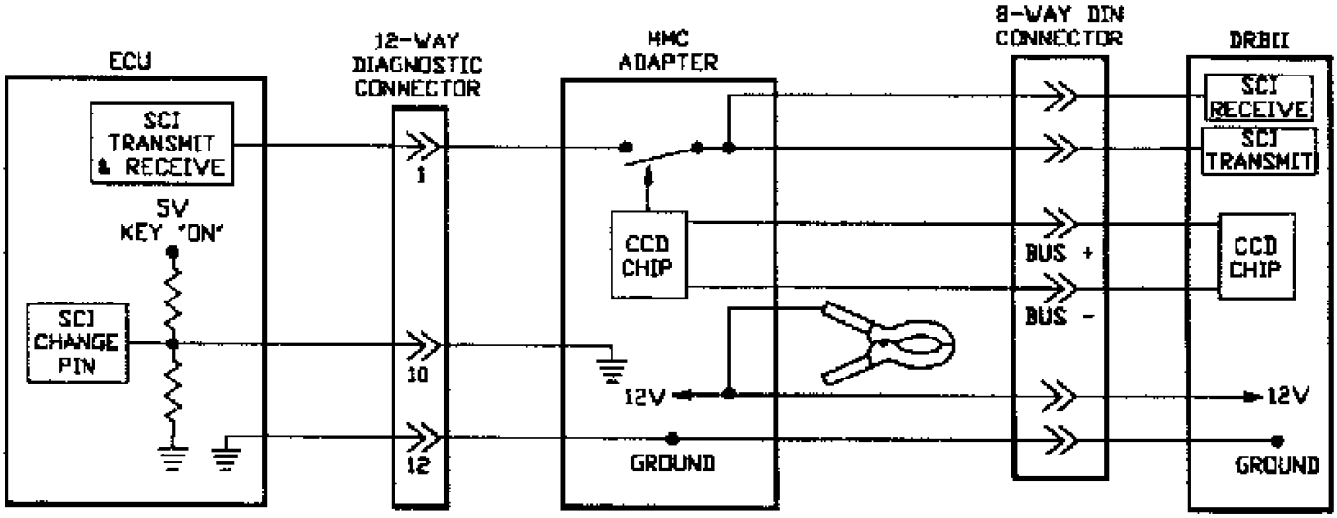


Fig. 95: Circuit Diagram NS-6 (1.6L)

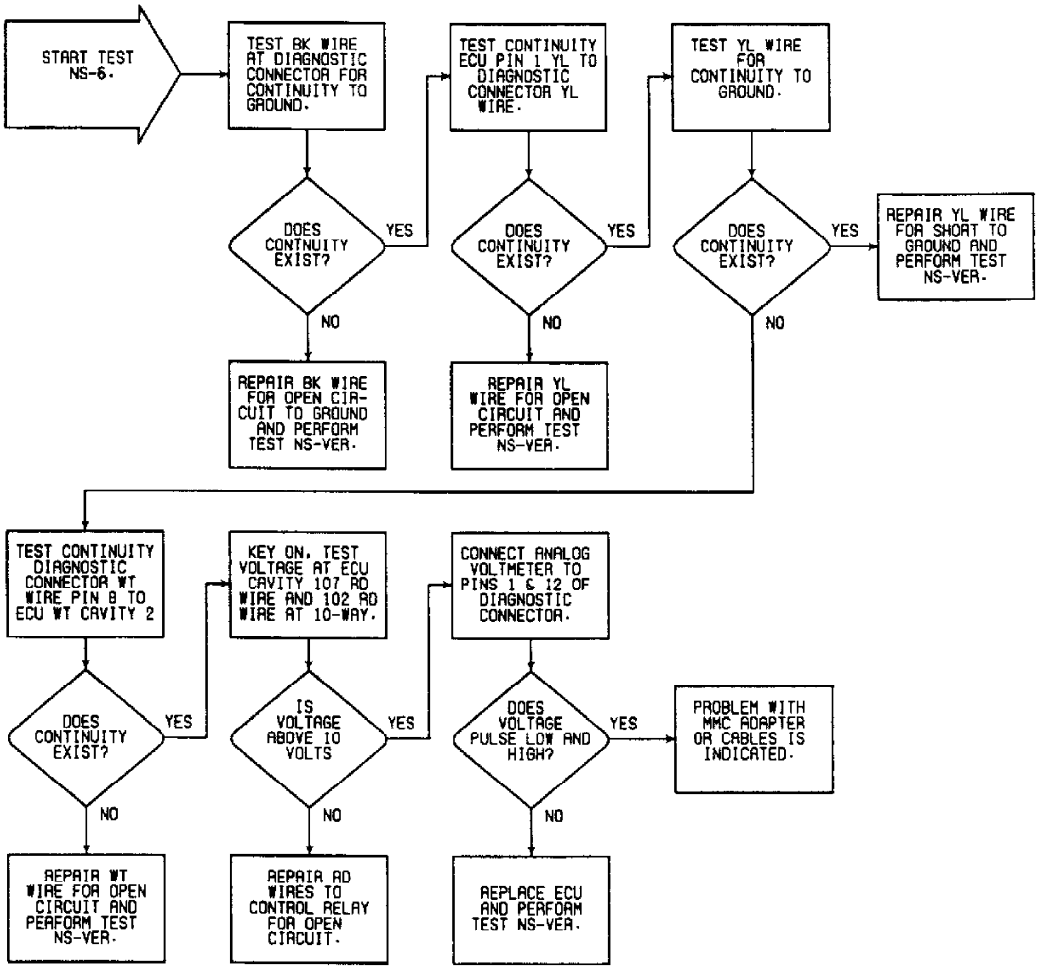


Fig. 96: Flow Chart NS-6 (1.6L)

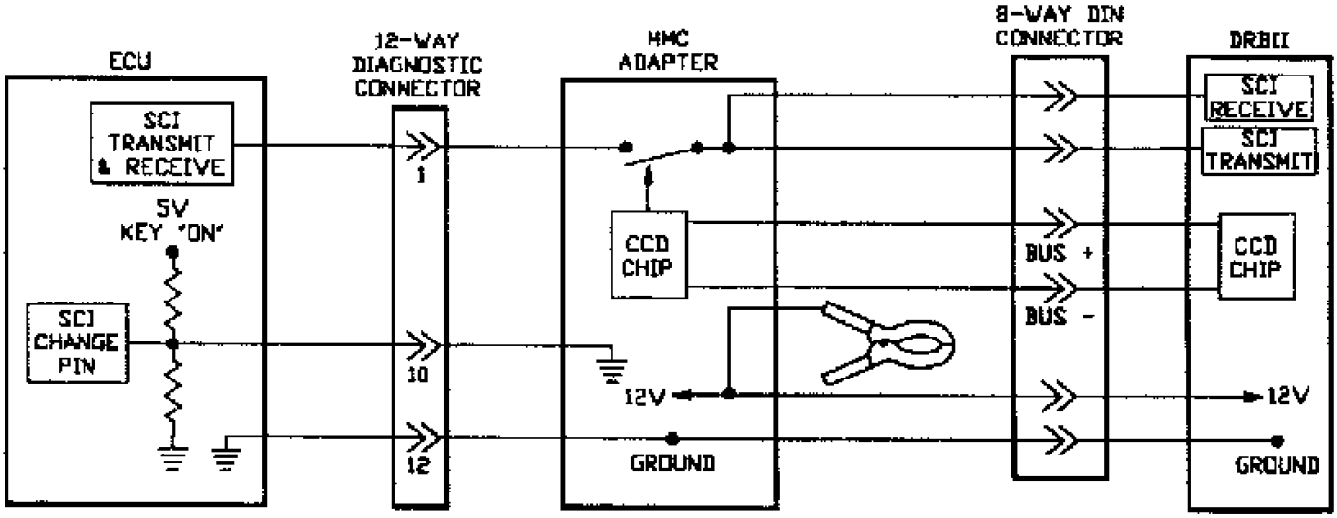


Fig. 97: Circuit Diagram DR-1 (1.6L)

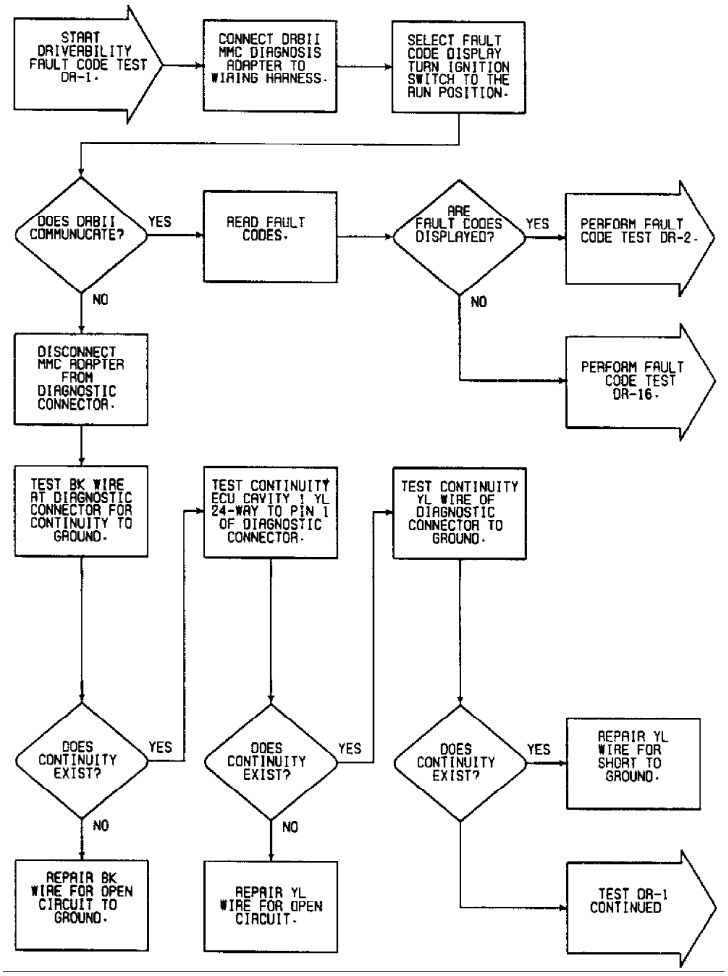


Fig. 98: Flow Chart DR-1 (1.6L) (1 of 2)

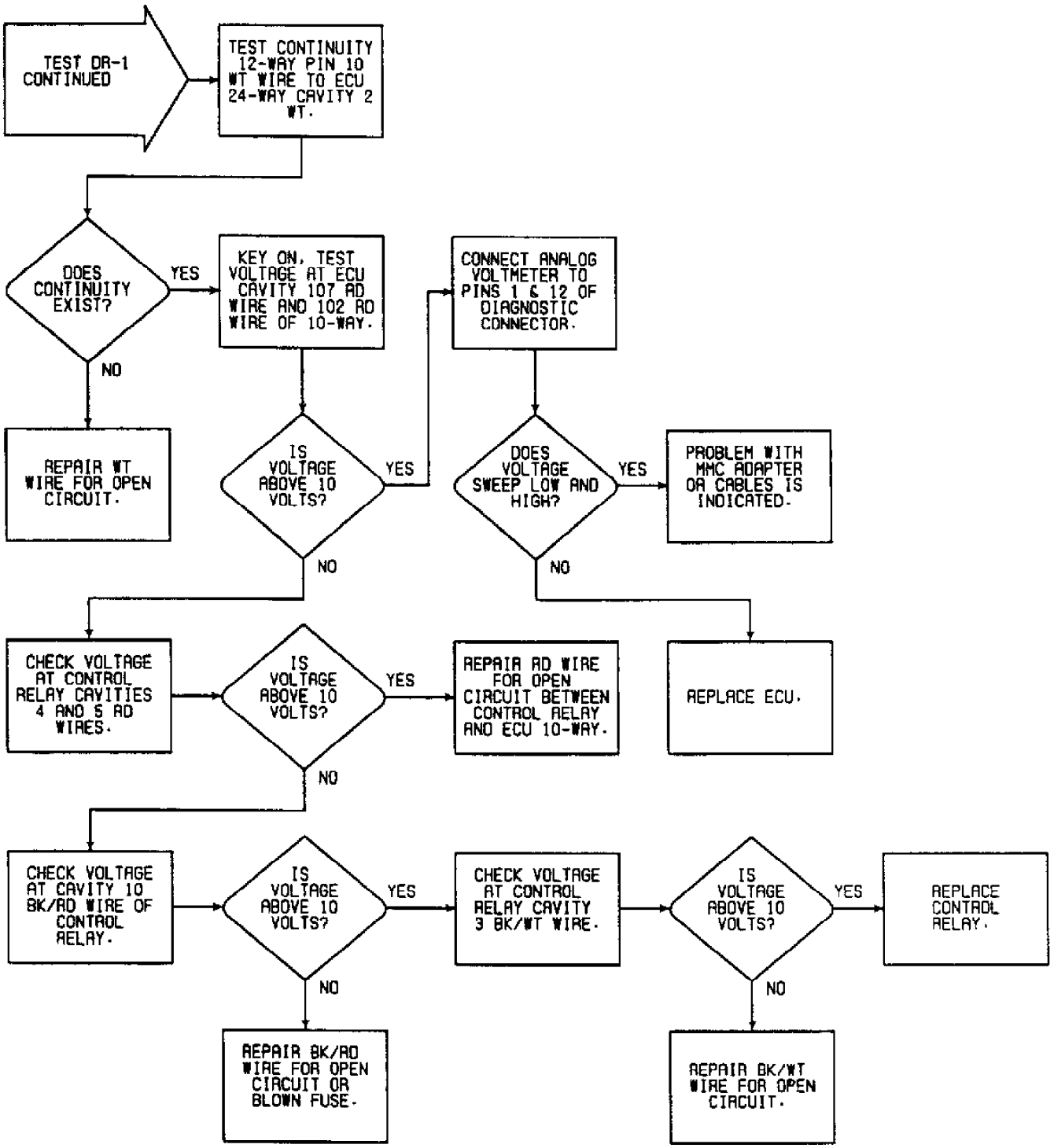


Fig. 99: Flow Chart DR-1 (1.6L) (2 of 2)

DR-2: FAULT CODE TESTS - 1.6L

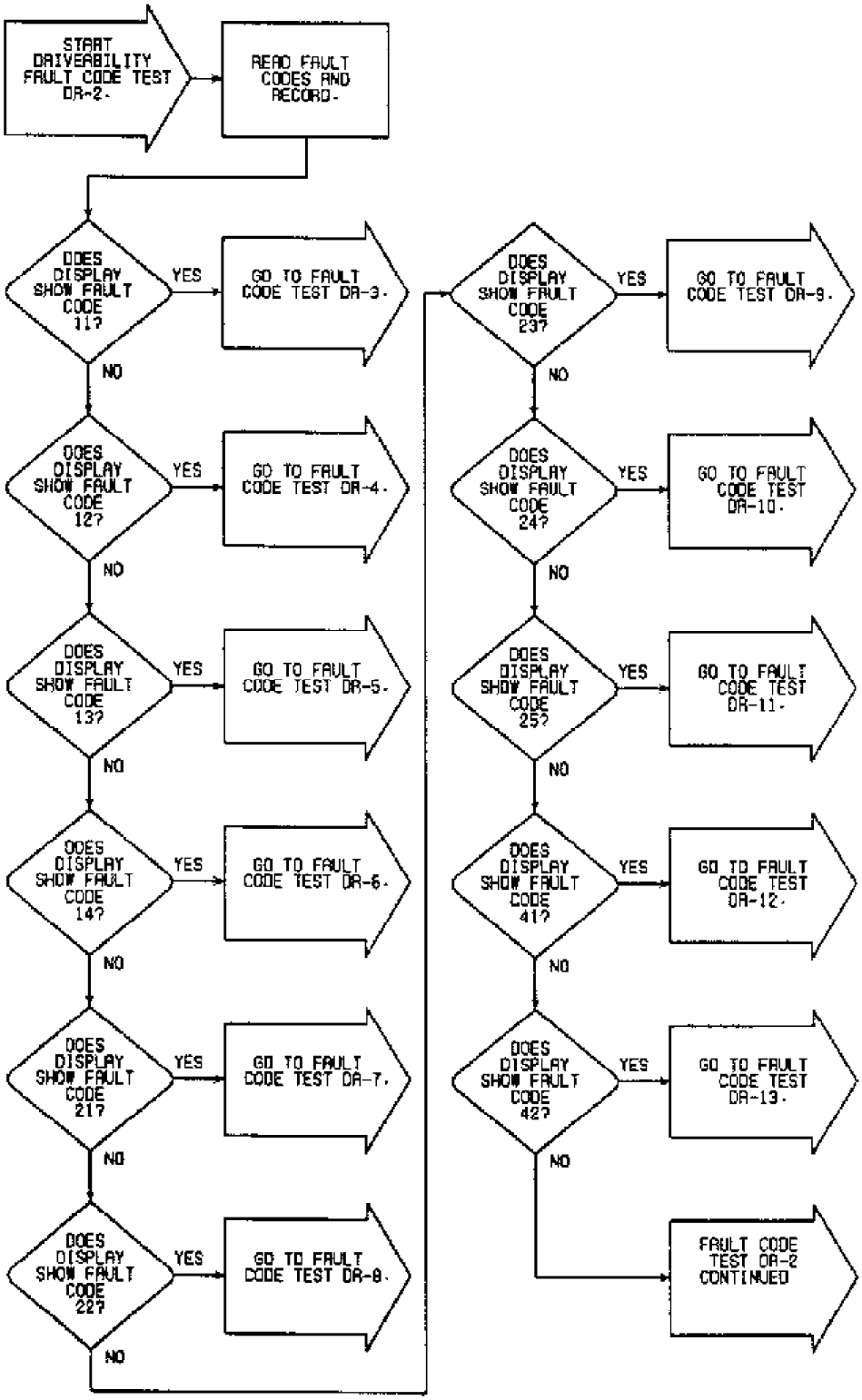


Fig. 100: Flow Chart DR-2 (1.6L) (1 of 2)

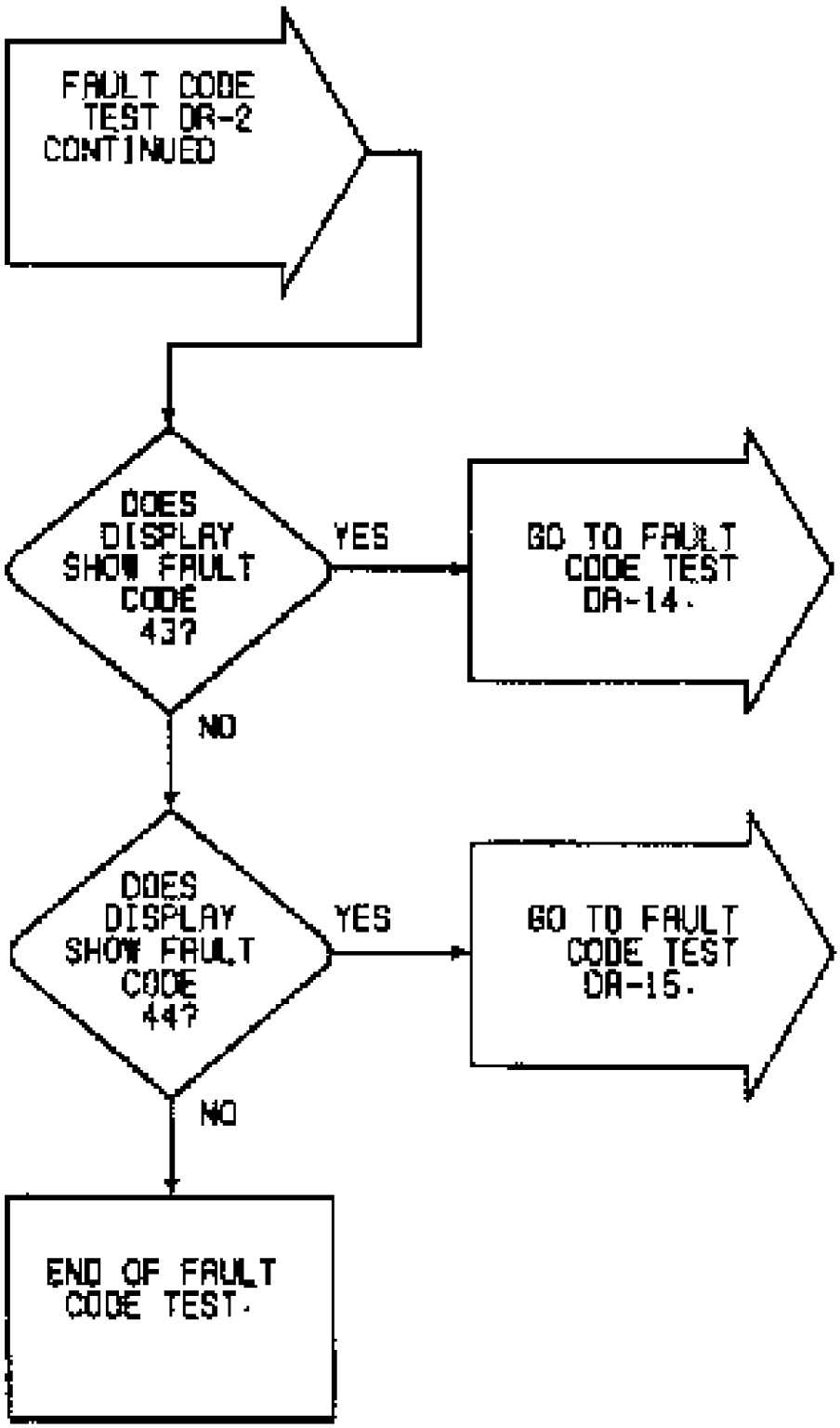


Fig. 101: Flow Chart DR-2 (1.6L) (2 of 2)

DR-3: CODE 11 OXYGEN SENSOR CIRCUIT - 1.6L

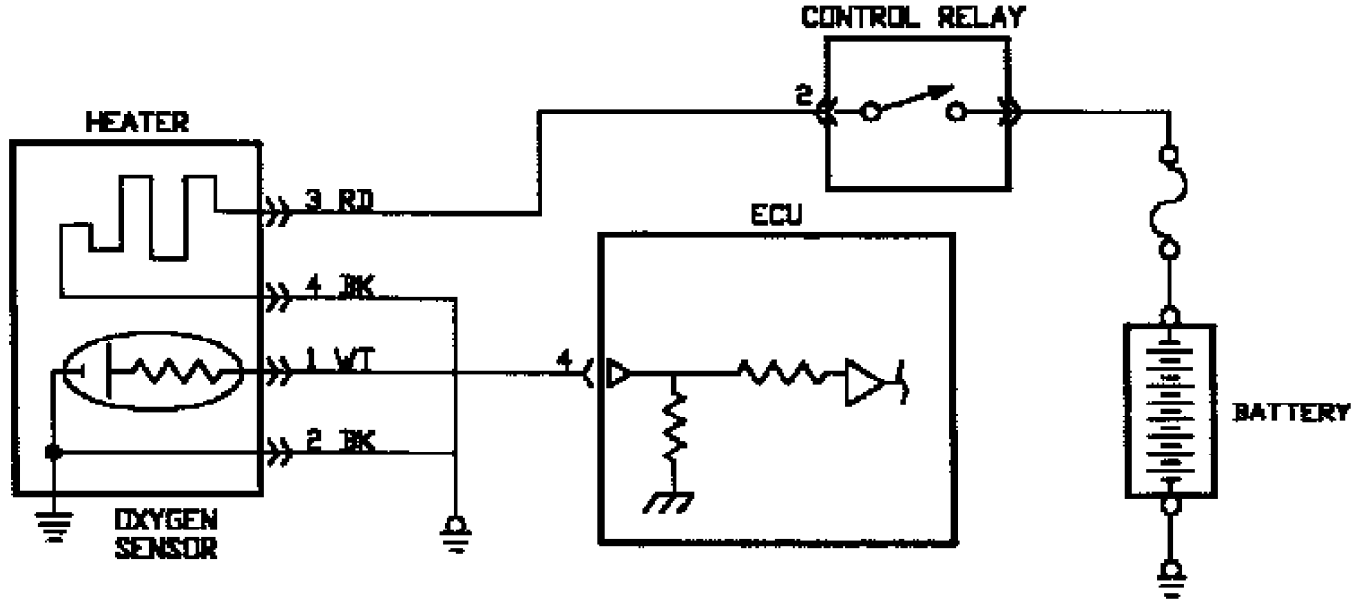


Fig. 102: Circuit Diagram DR-3 (1.6L)

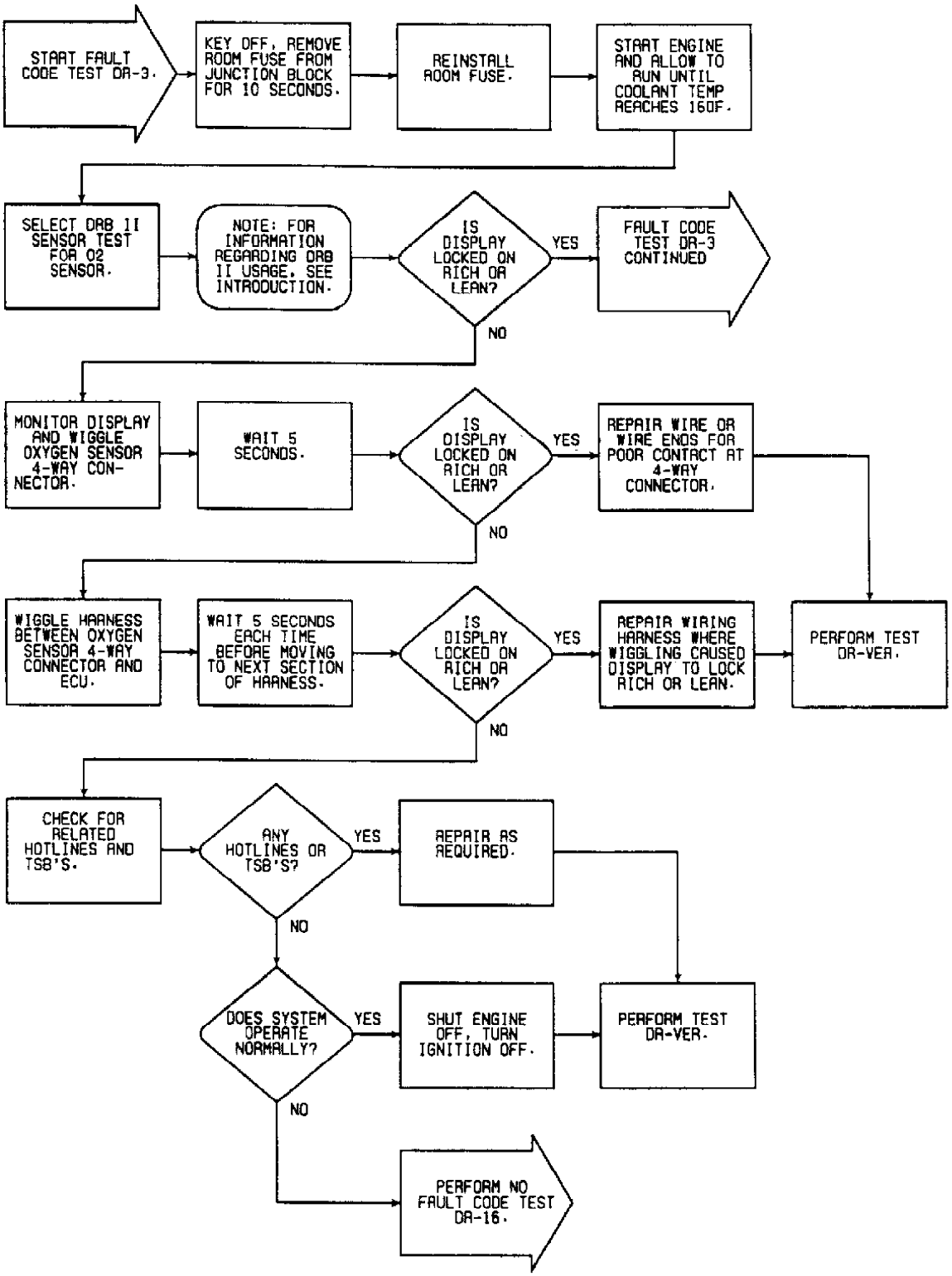


Fig. 103: Flow Chart DR-3 (1.6L) (1 of 3)

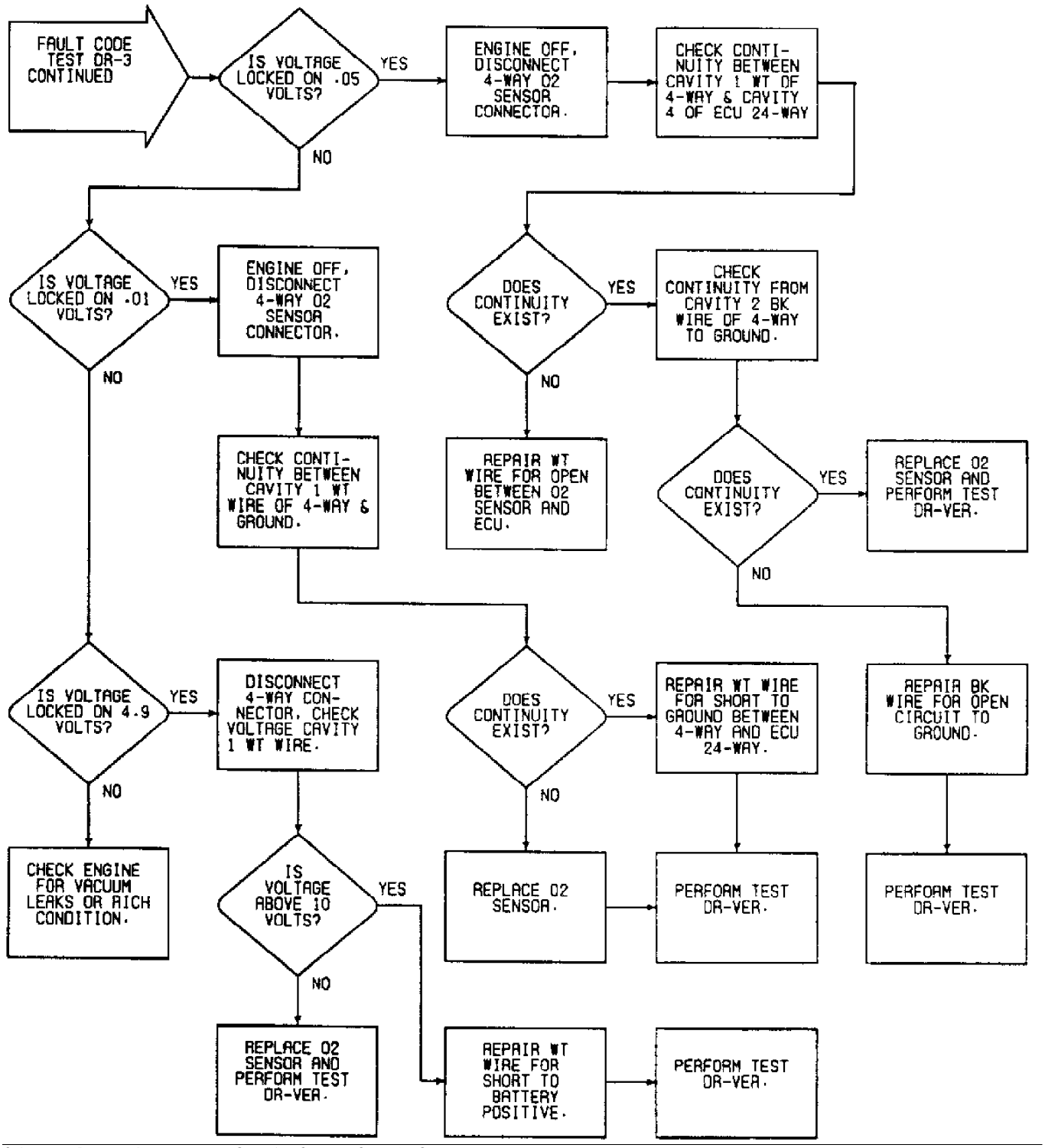


Fig. 104: Flow Chart DR-3 (1.6L) (2 of 3)

DR-4: CODE 12 AIRFLOW SENSOR CIRCUIT - 1.6L

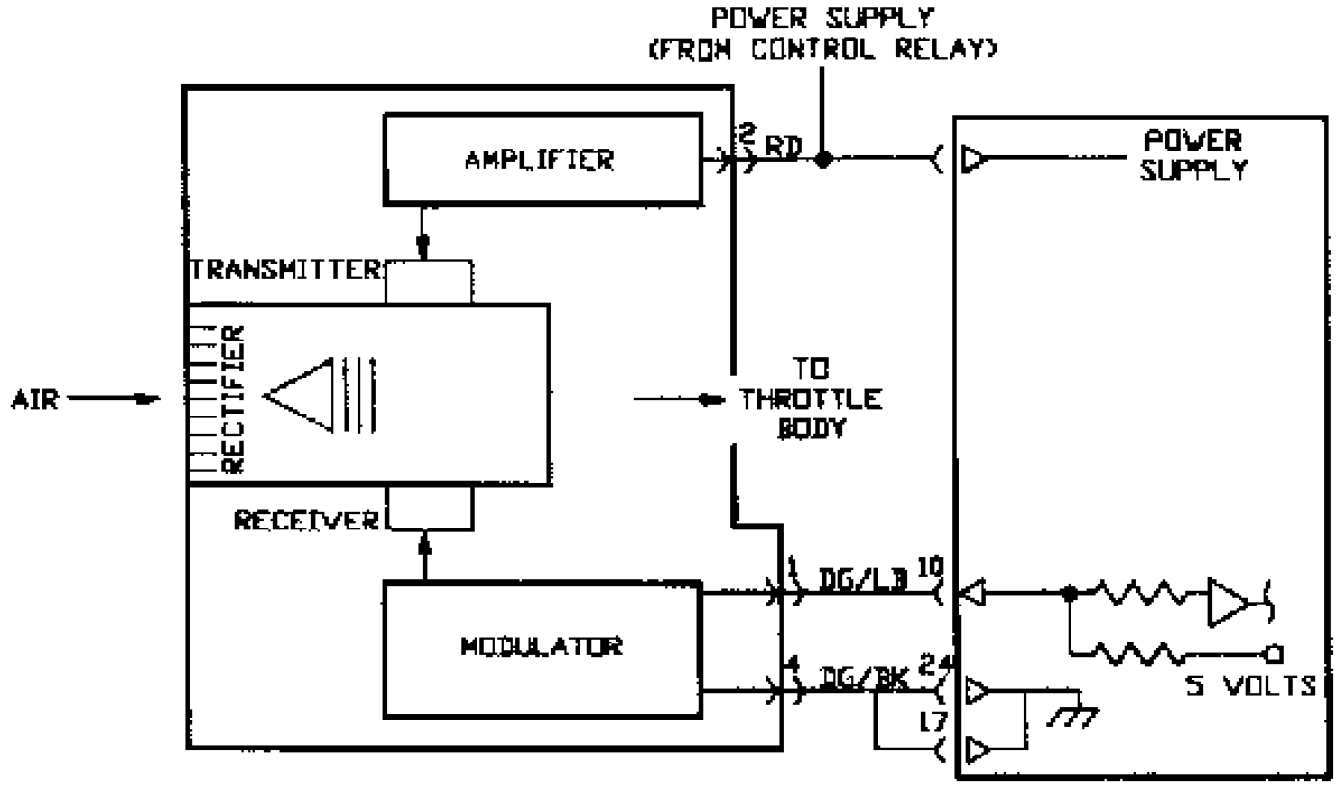


Fig. 105: Circuit Diagram DR-4 (1.6L)

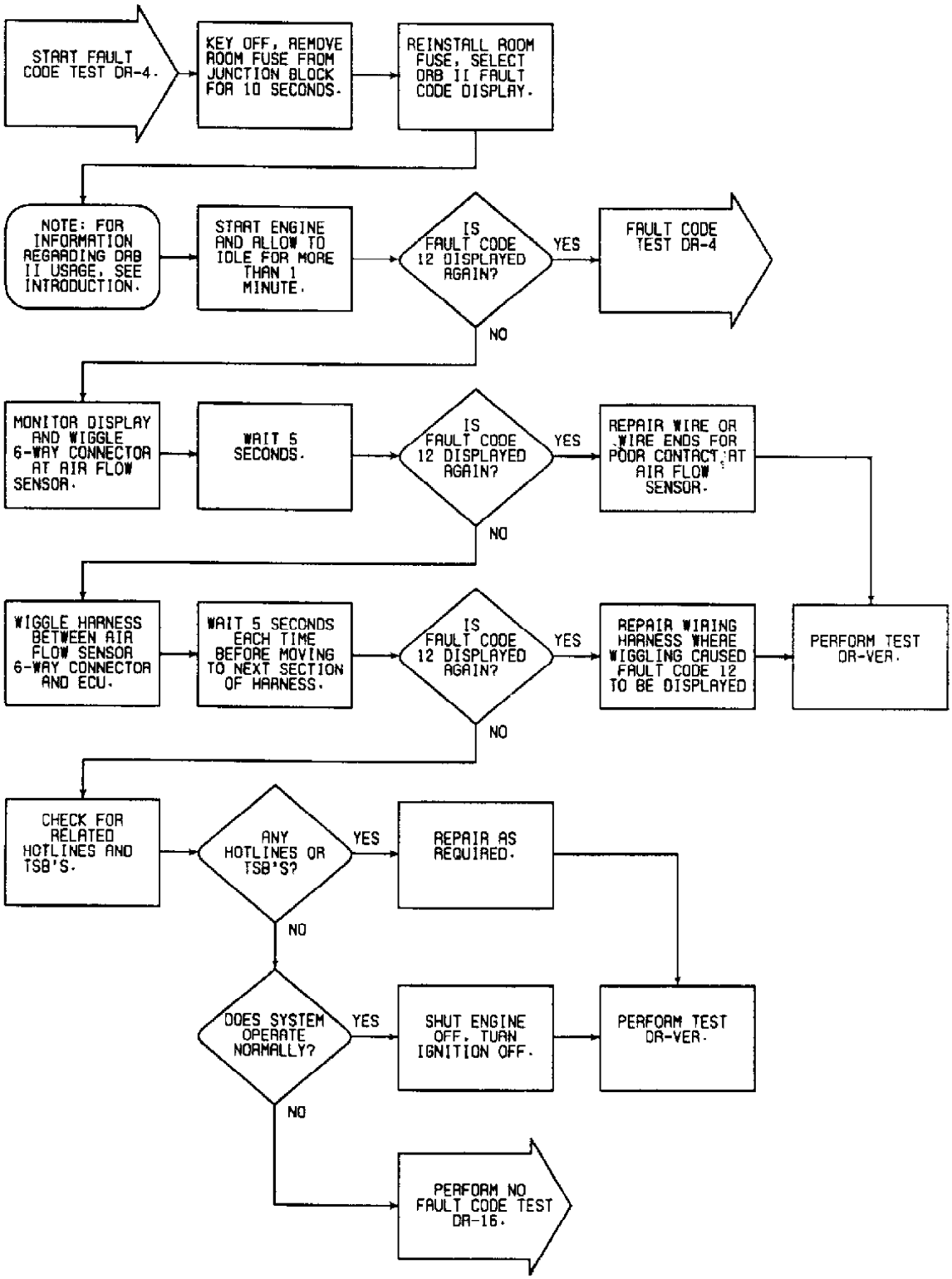


Fig. 106: Flow Chart DR-4 (1.6L) (1 of 3)

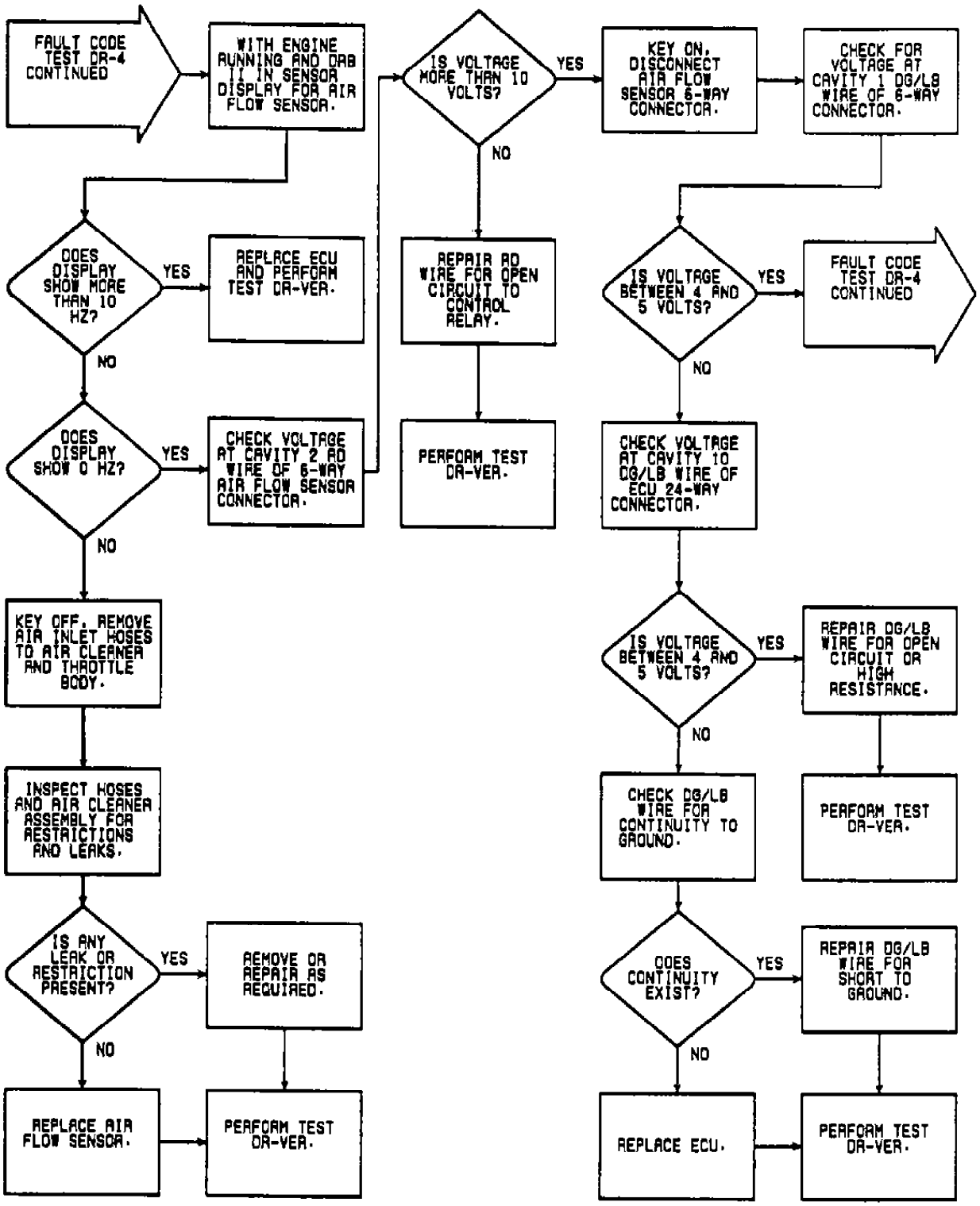


Fig. 107: Flow Chart DR-4 (1.6L) (2 of 3)

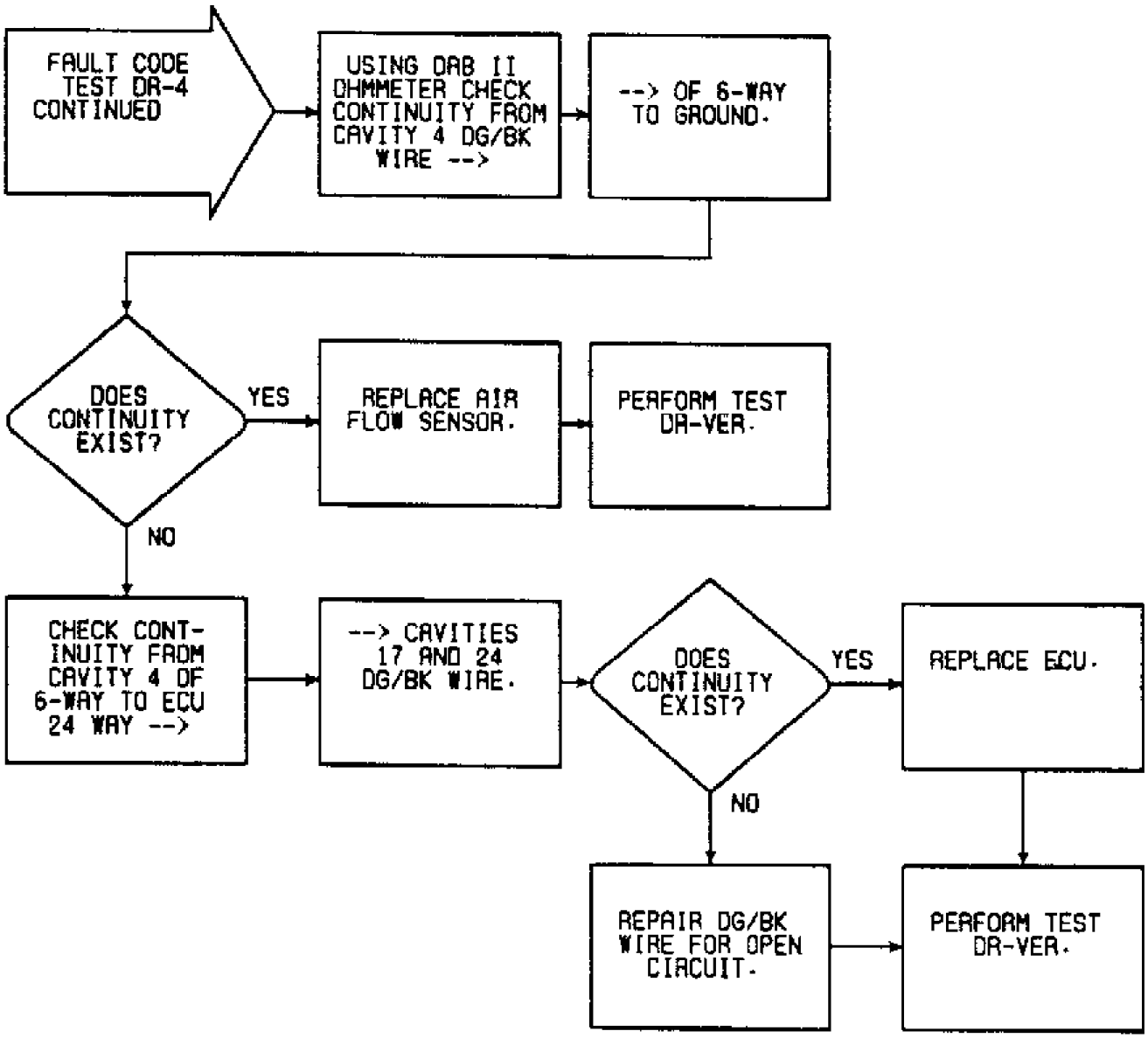


Fig. 108: Flow Chart DR-4 (1.6L) (3 of 3)

DR-5: CODE 13 INTAKE AIR TEMPERATURE SENSOR CIRCUIT - 1.6L

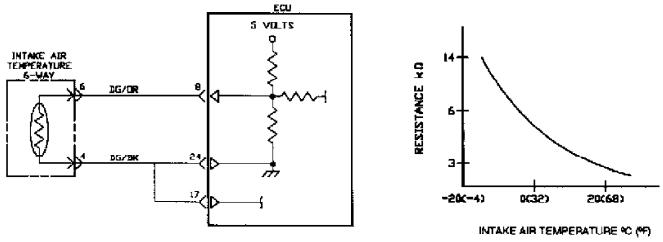


Fig. 109: Circuit Diagram DR-5 (1.6L)

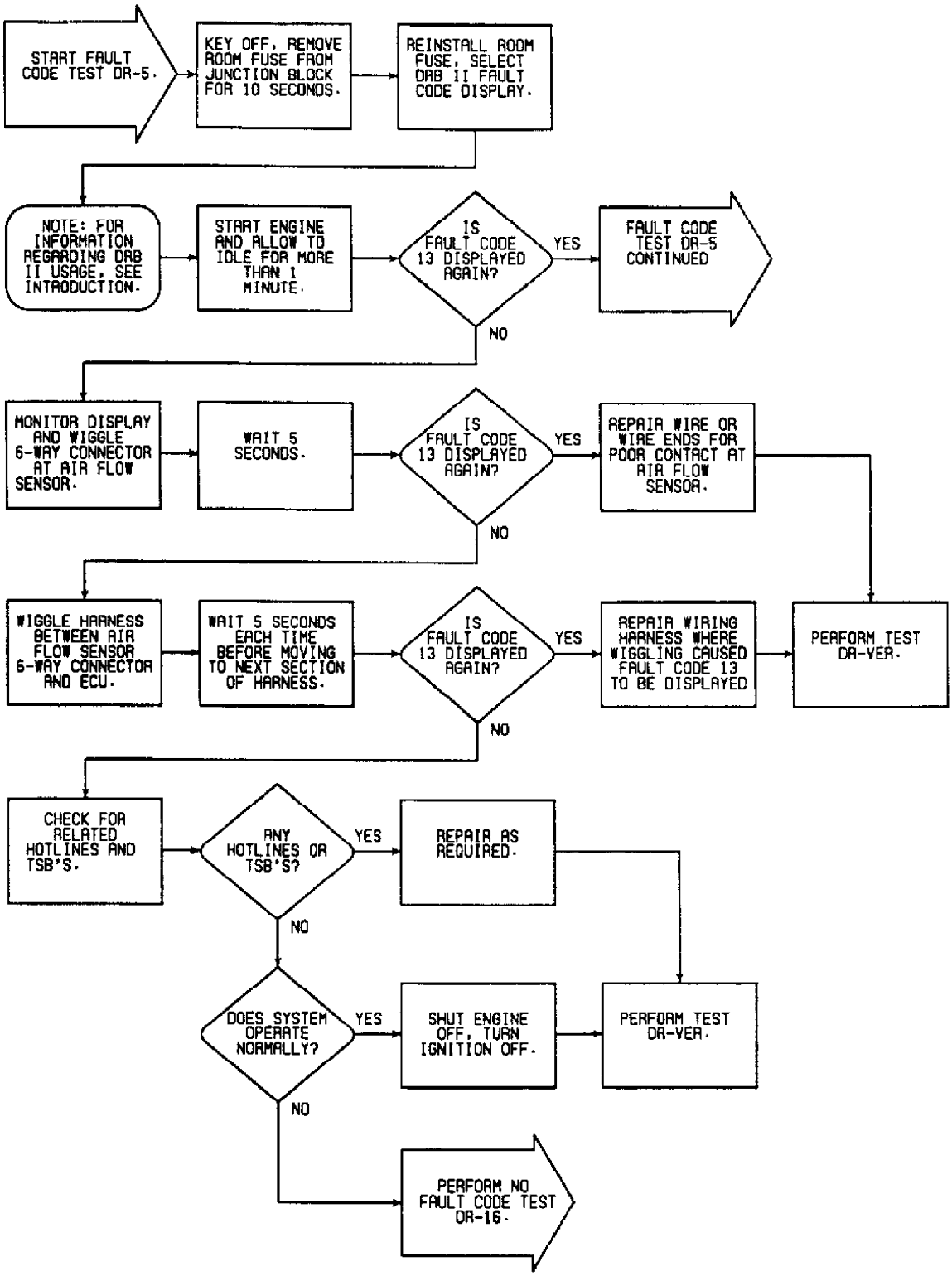


Fig. 110: Flow Chart DR-5 (1.6L) (1 of 2)

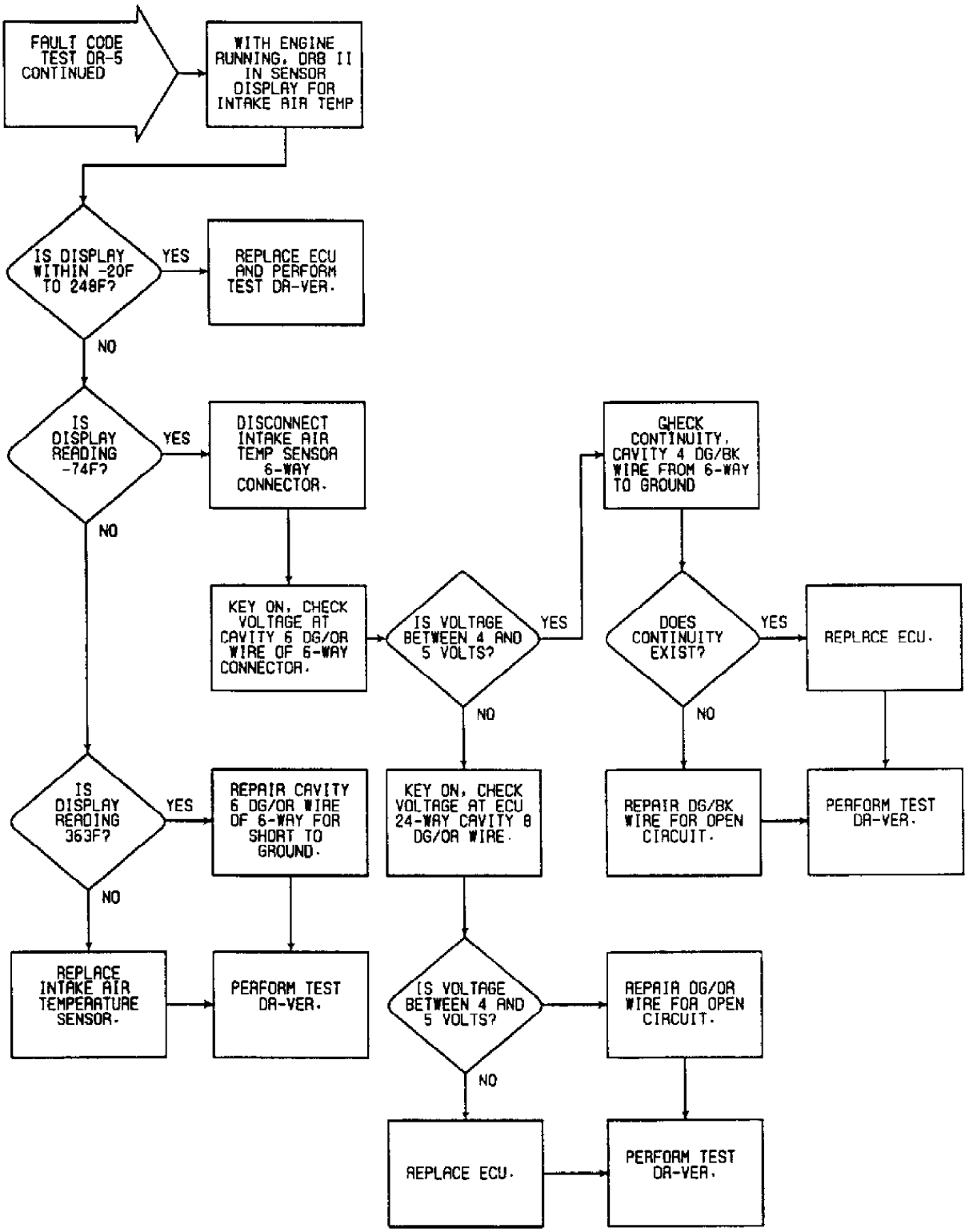


Fig. 111: Flow Chart DR-5 (1.6L) (2 of 2)

DR-6: CODE 14 THROTTLE POSITION SENSOR CIRCUIT - 1.6L

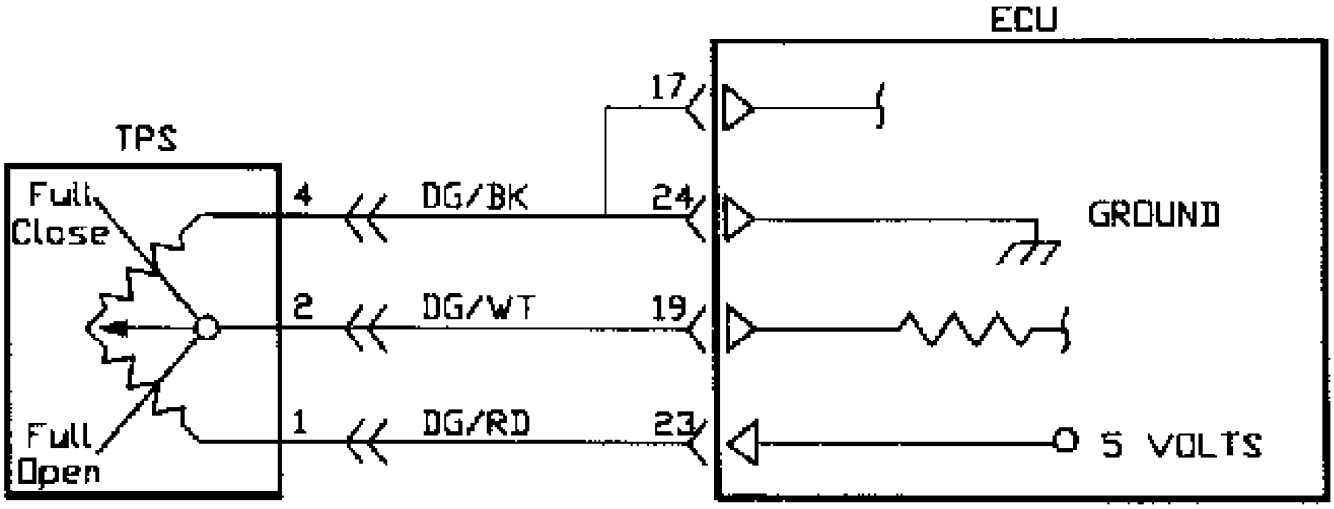


Fig. 112: Circuit Diagram DR-6 (1.6L)

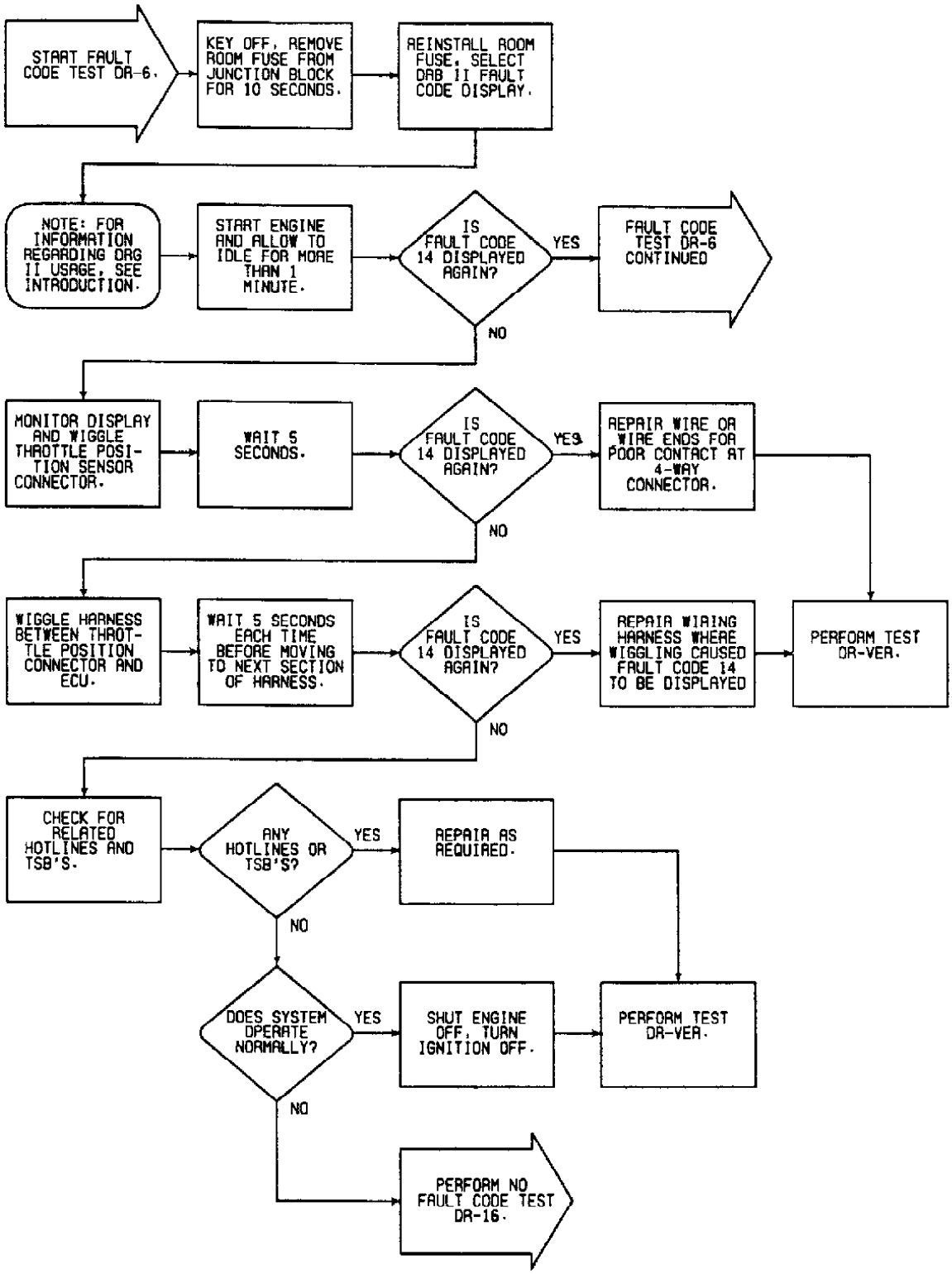


Fig. 113: Flow Chart DR-6 (1.6L) (1 of 3)

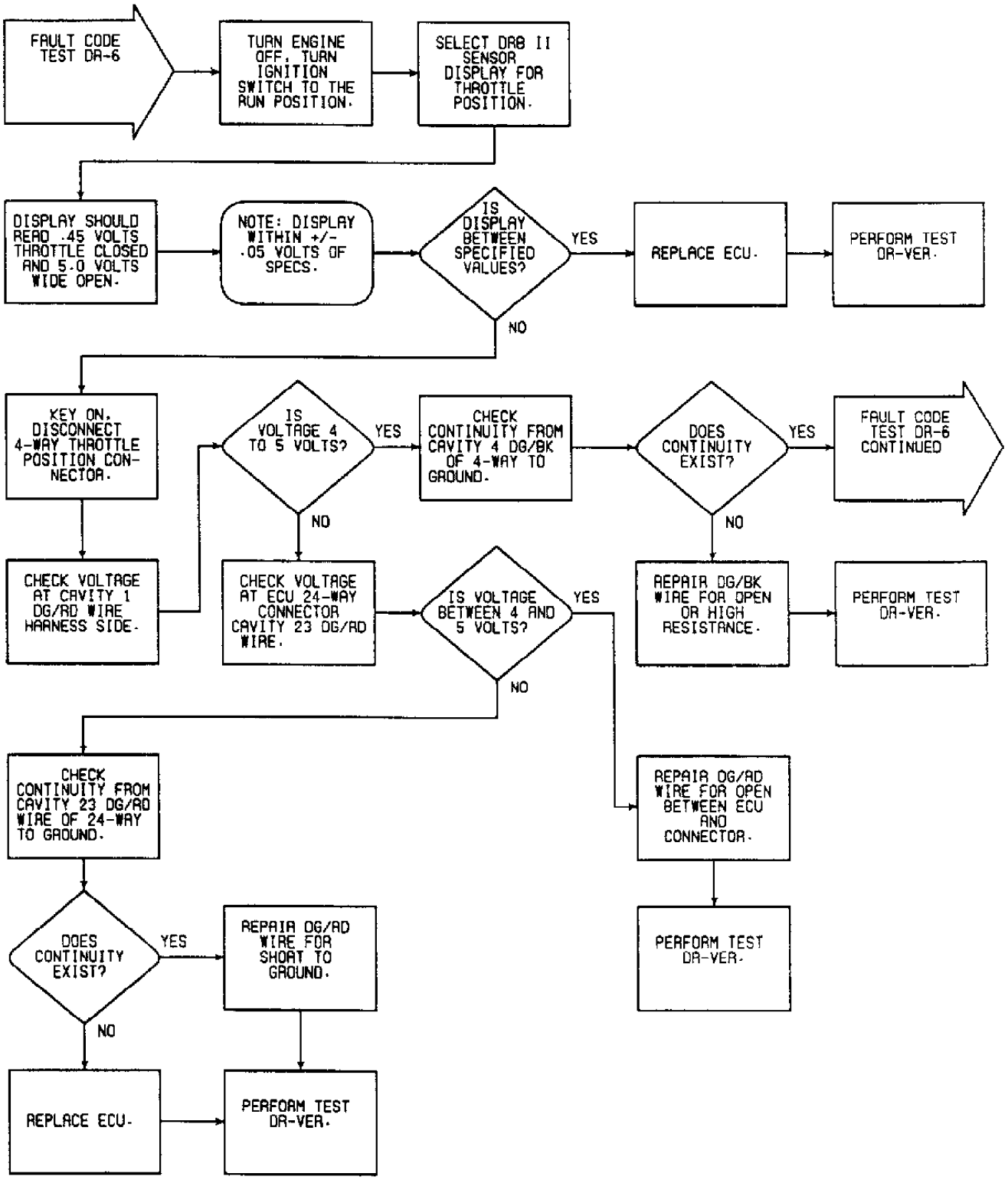


Fig. 114: Flow Chart DR-6 (1.6L) (2 of 3)

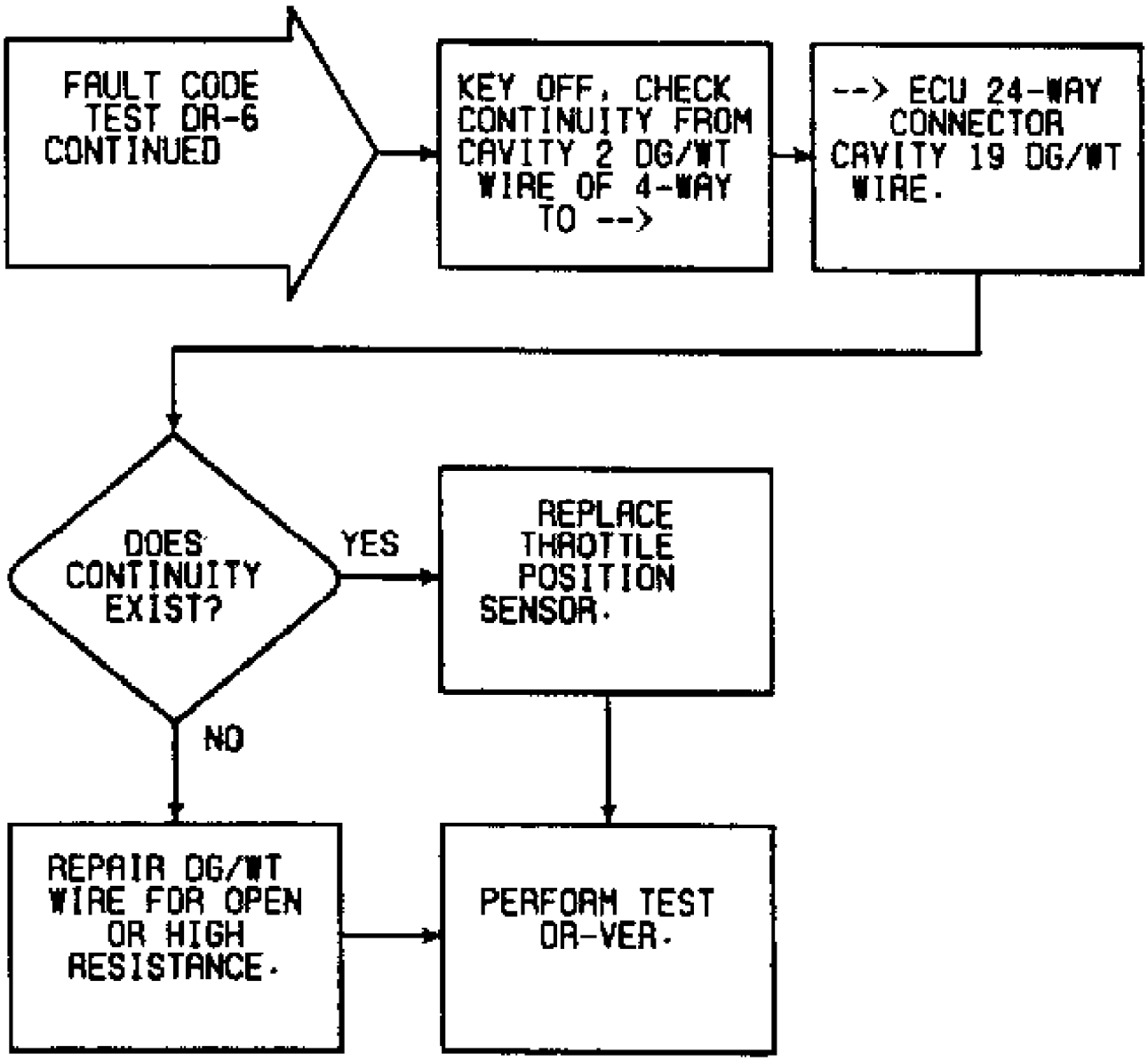


Fig. 115: Flow Chart DR-6 (1.6L) (3 of 3)

DR-7: CODE 21 COOLANT TEMPERATURE CIRCUIT - 1.6L

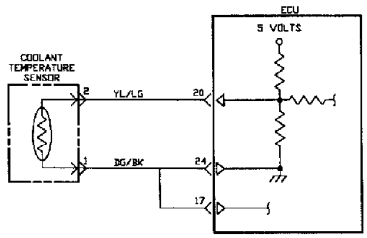


Fig. 116: Circuit Diagram DR-7 (1.6L)

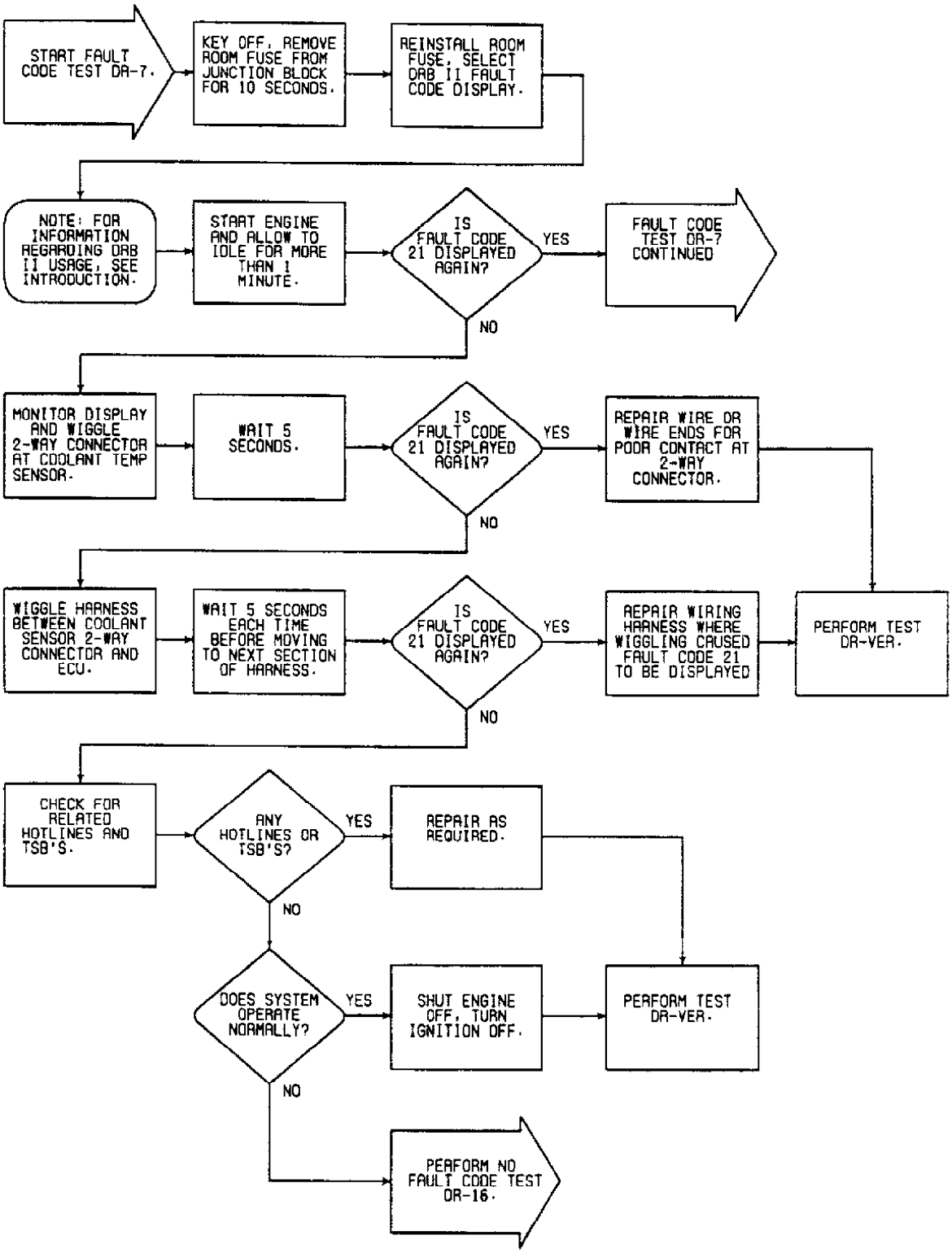


Fig. 117: Flow Chart DR-7 (1.6L) (1 of 2)

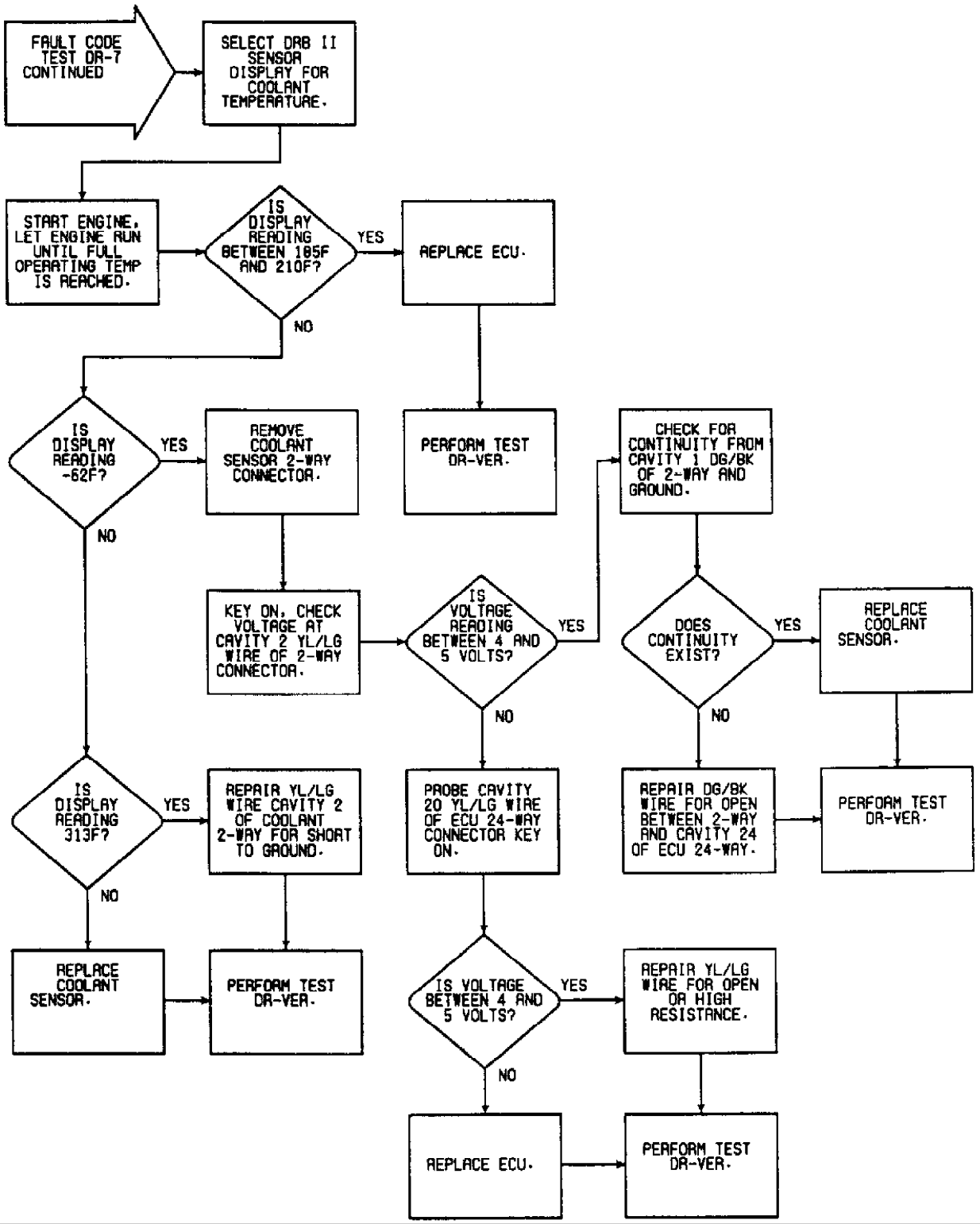


Fig. 118: Flow Chart DR-7 (1.6L) (2 of 2)

DR-8: CODE 22 CRANK ANGLE SENSOR CIRCUIT - 1.6L

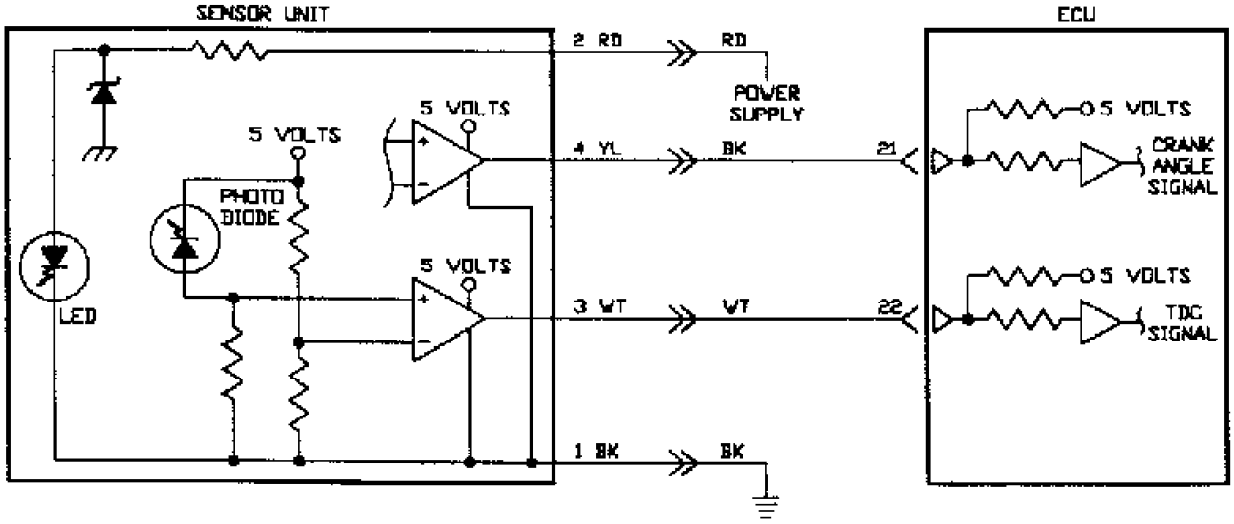


Fig. 119: Circuit Diagram DR-8 (1.6L)

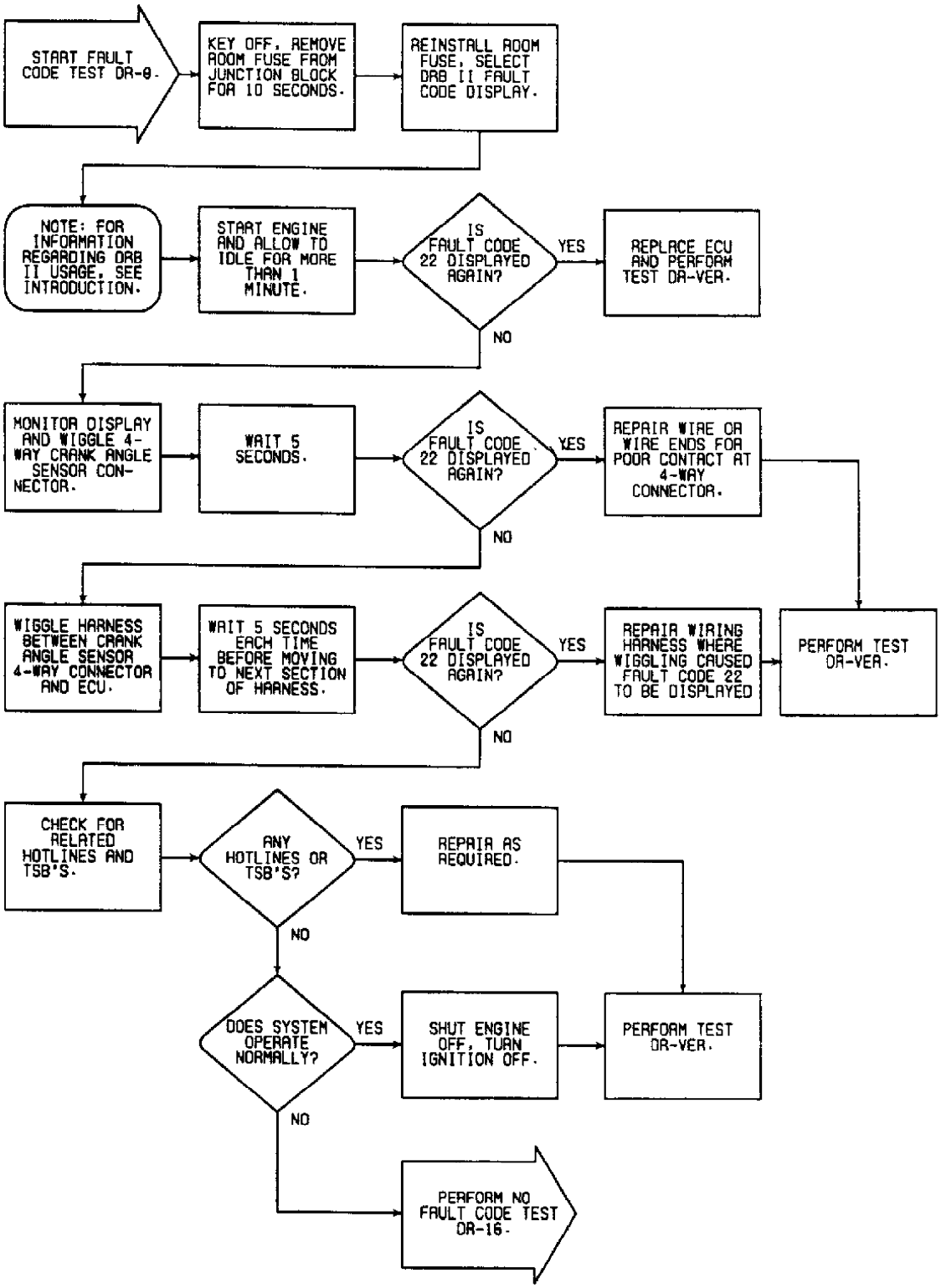


Fig. 120: Flow Chart DR-8 (1.6L)

DR-9: CODE 23 TOP DEAD CENTER SENSOR CIRCUIT - 1.6L

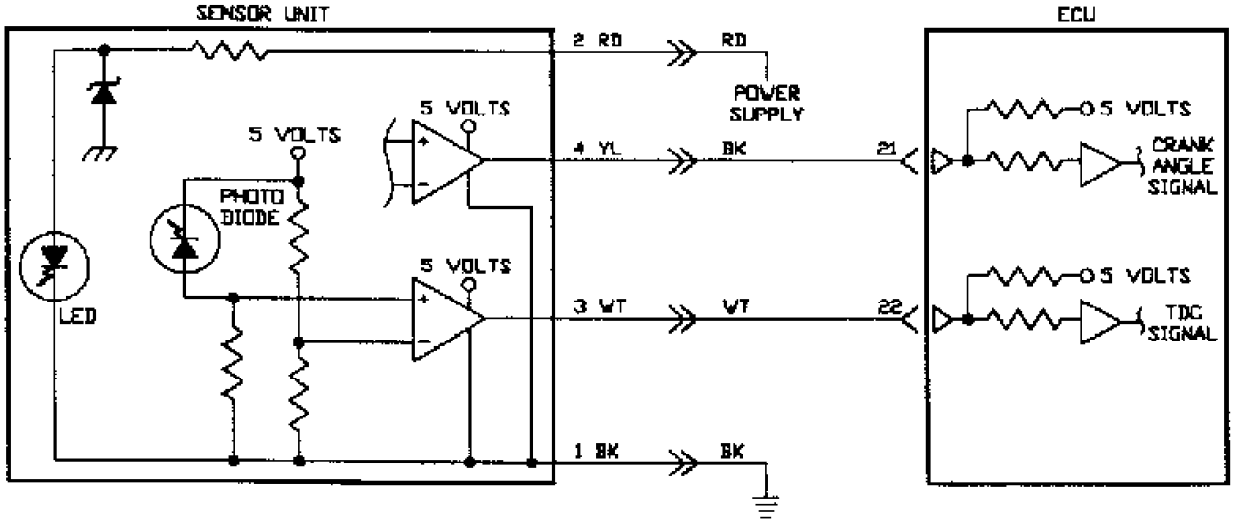


Fig. 121: Circuit Diagram DR-9 (1.6L)

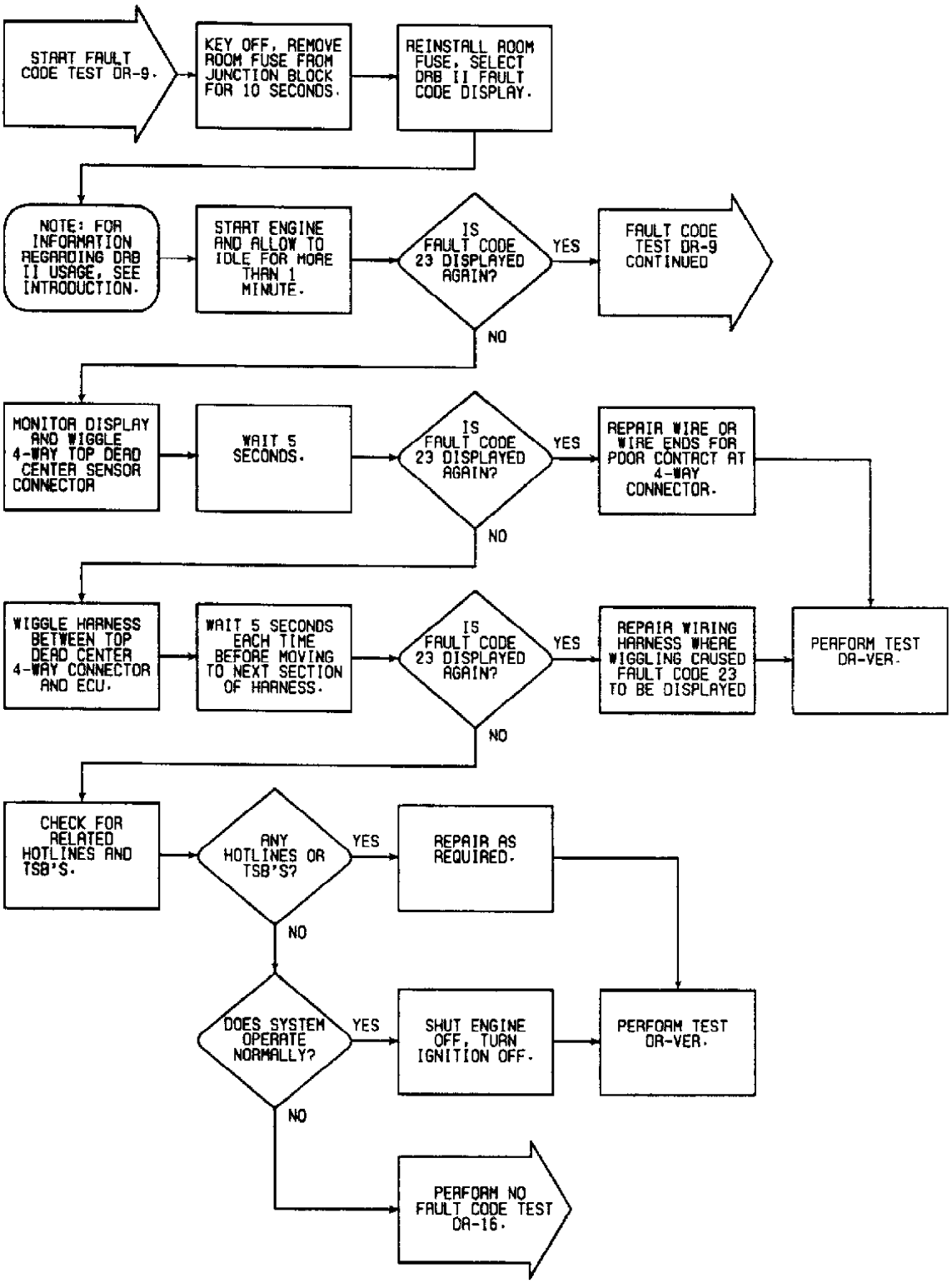


Fig. 122: Flow Chart DR-9 (1.6L) (1 of 2)

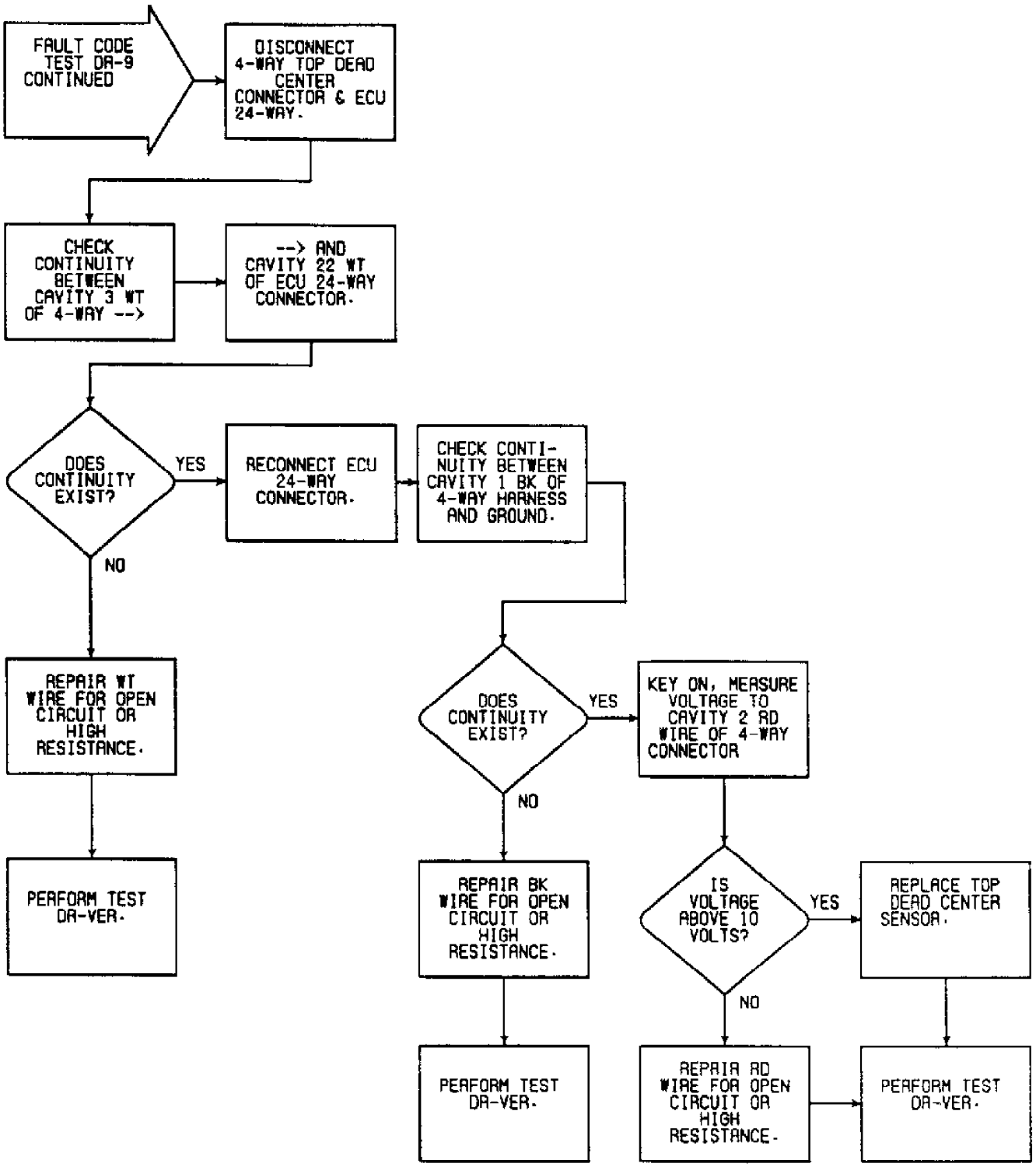


Fig. 123: Flow Chart DR-9 (1.6L) (2 of 2)

DR-10: CODE 24 VEHICLE SPEED SENSOR CIRCUIT - 1.6L

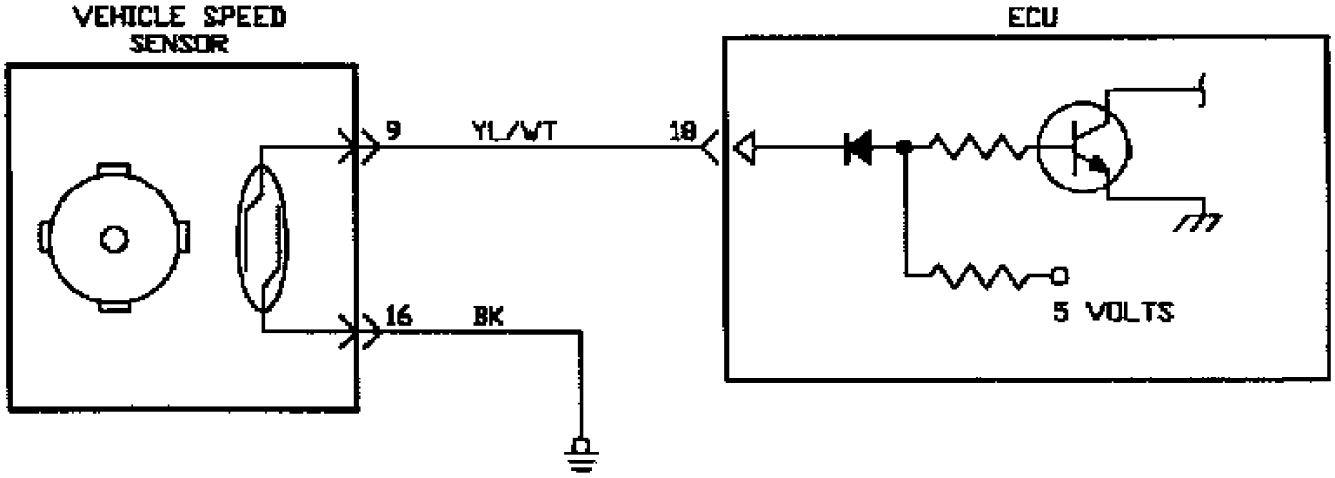


Fig. 124: Circuit Diagram DR-10 (1.6L)

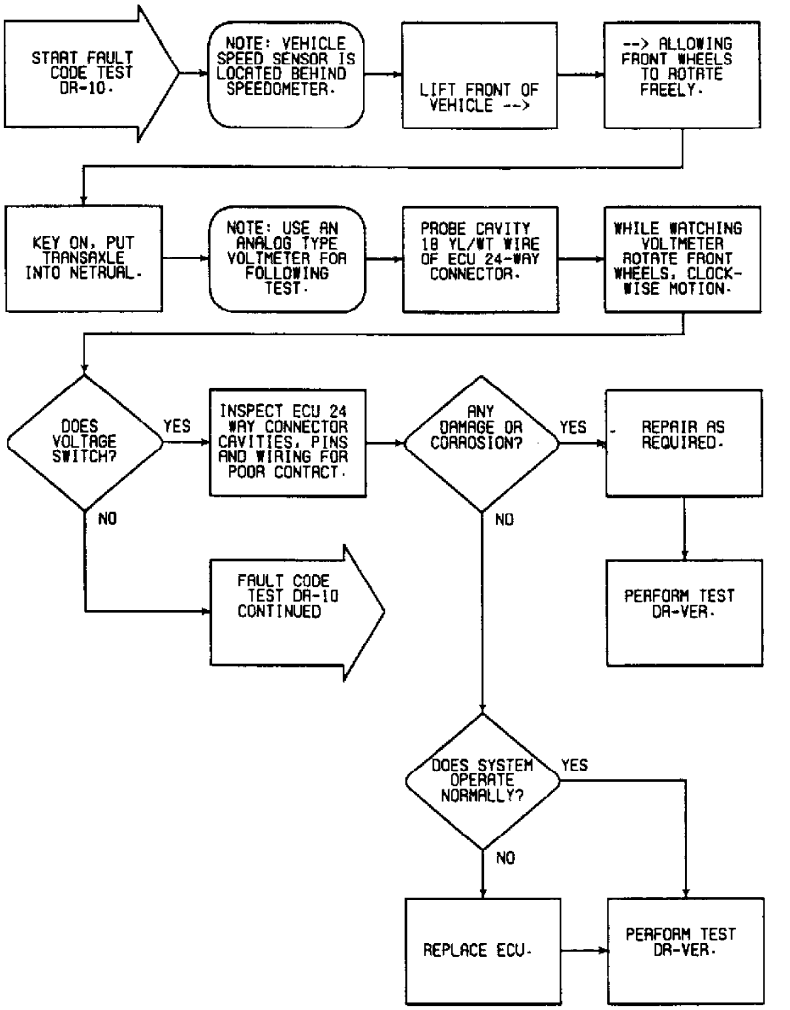


Fig. 125: Flow Chart DR-10 (1.6L) (1 of 2)

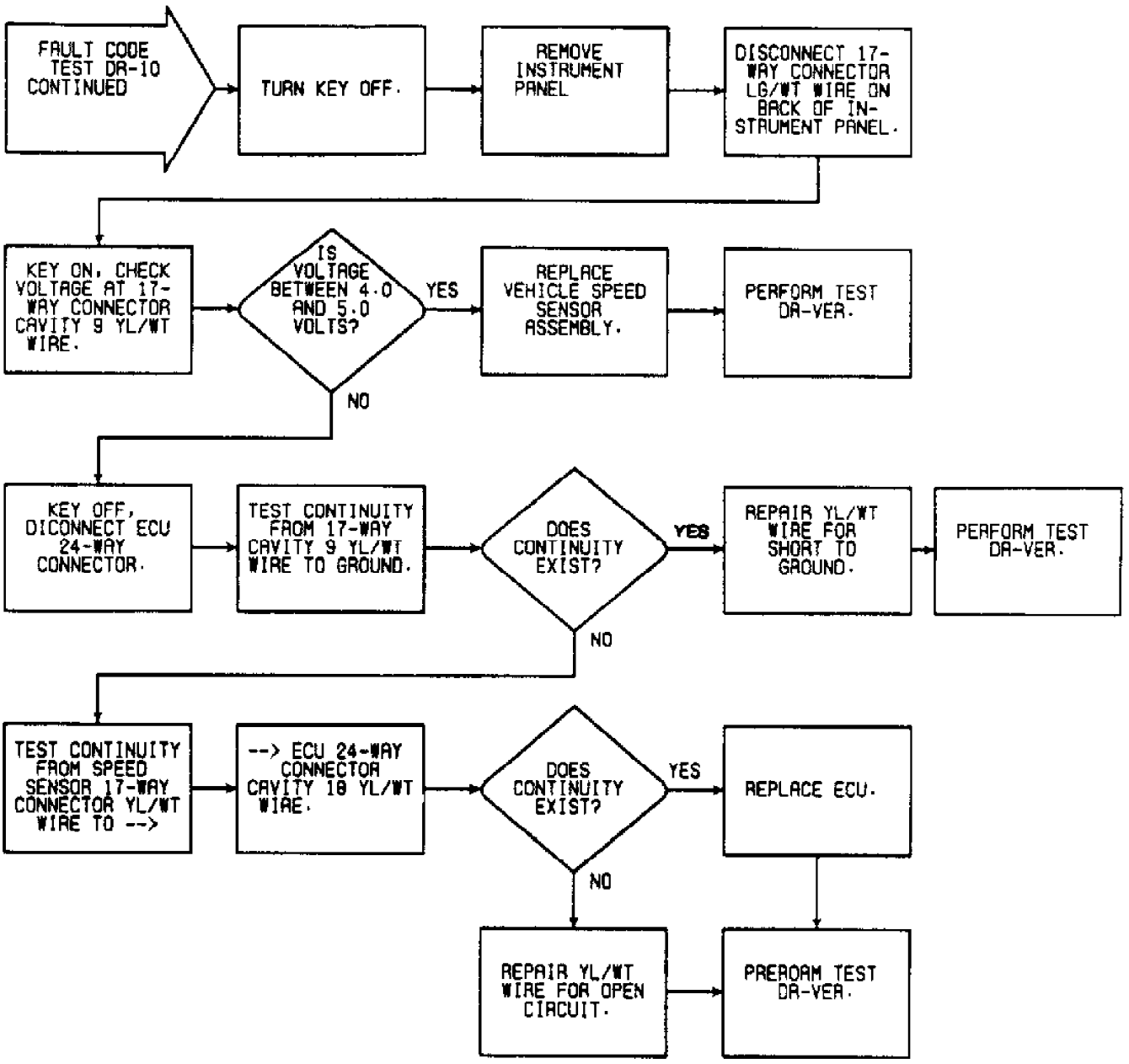


Fig. 126: Flow Chart DR-10 (1.6L) (2 of 2)

DR-11: CODE 25 BAROMETRIC PRESSURE SENSOR CIRCUIT - 1.6L

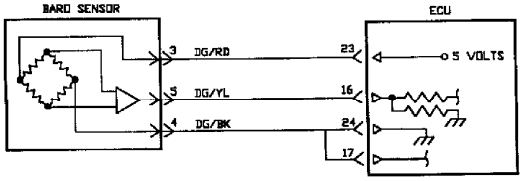


Fig. 127: Circuit Diagram DR-11 (1.6L)

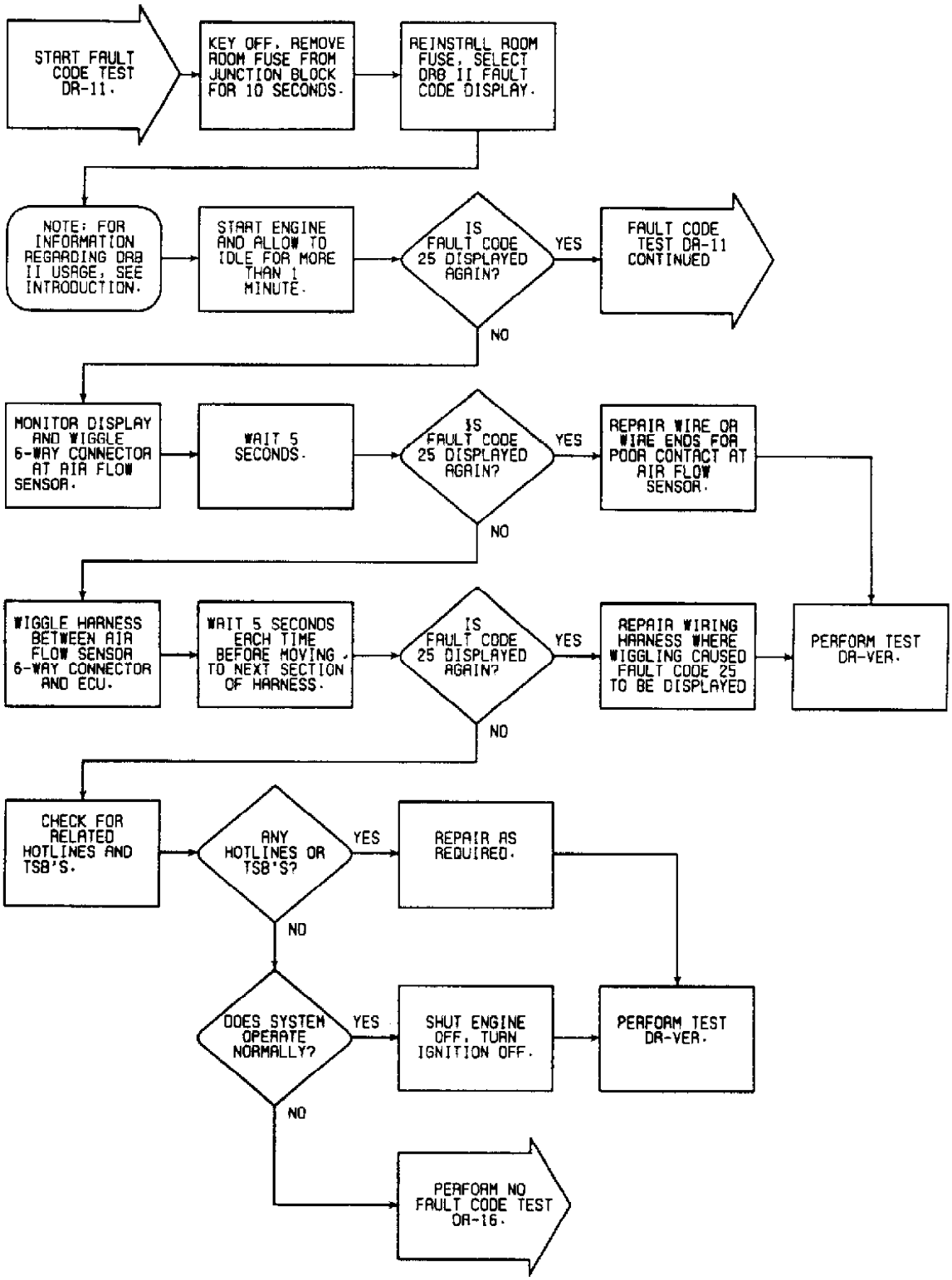


Fig. 128: Flow Chart DR-11 (1.6L) (1 of 2)

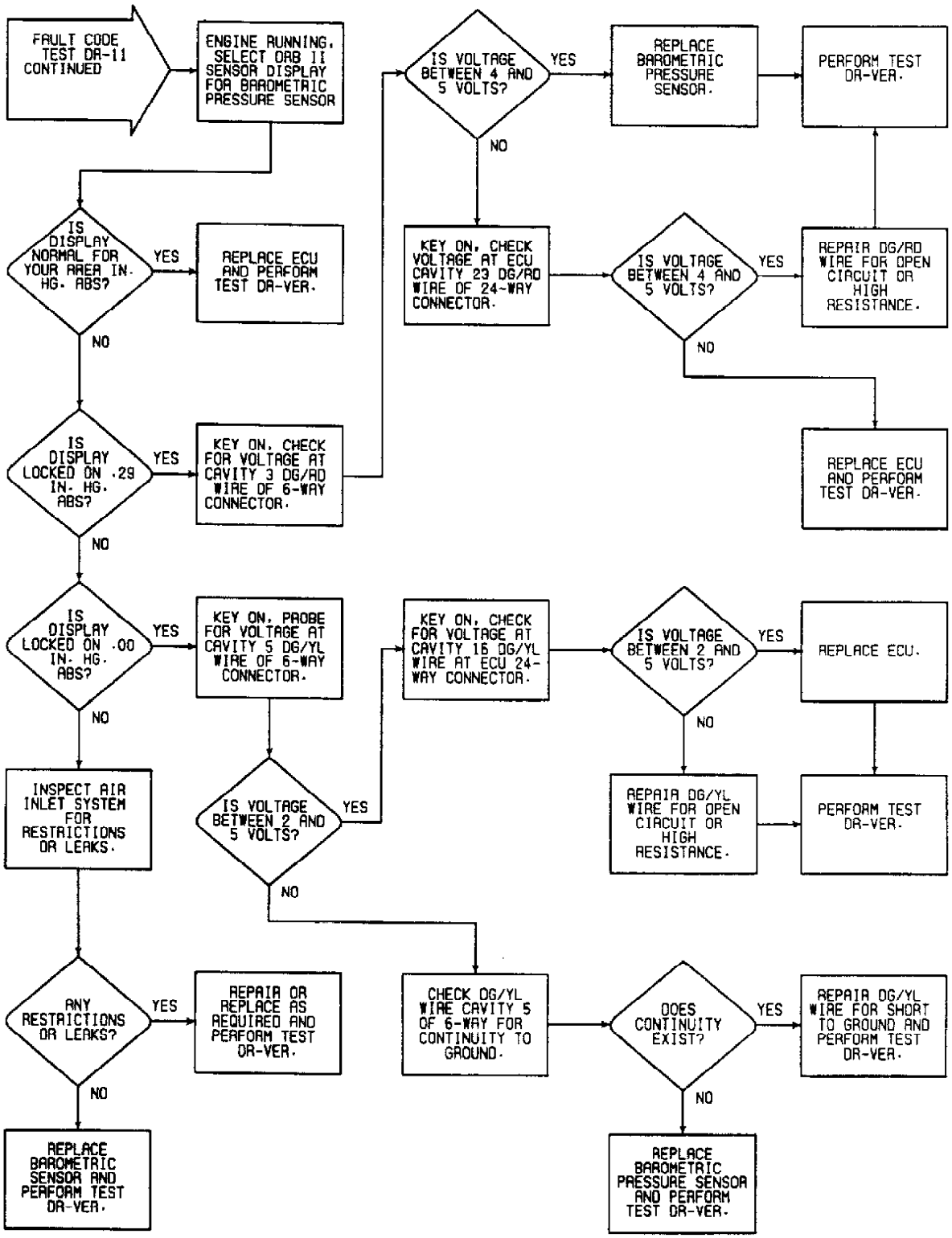


Fig. 129: Flow Chart DR-11 (1.6L) (2 of 2)

DR-12: CODE 41 INJECTOR CIRCUIT - 1.6L

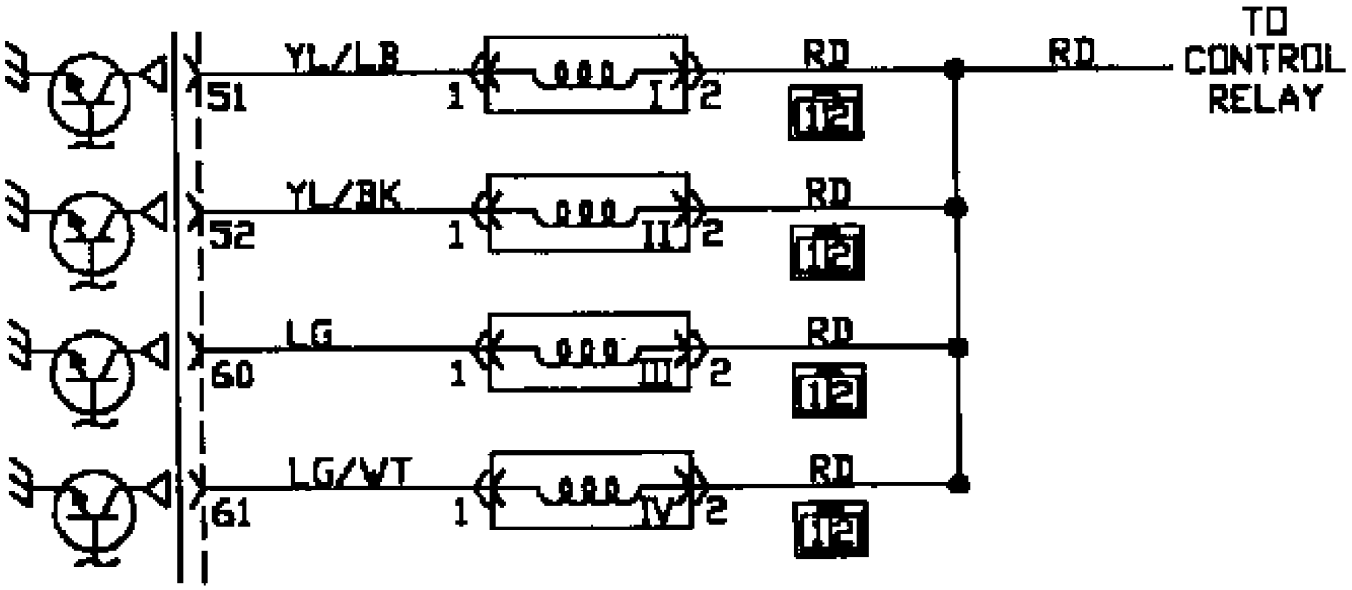


Fig. 130: Circuit Diagram DR-12 (1.6L)

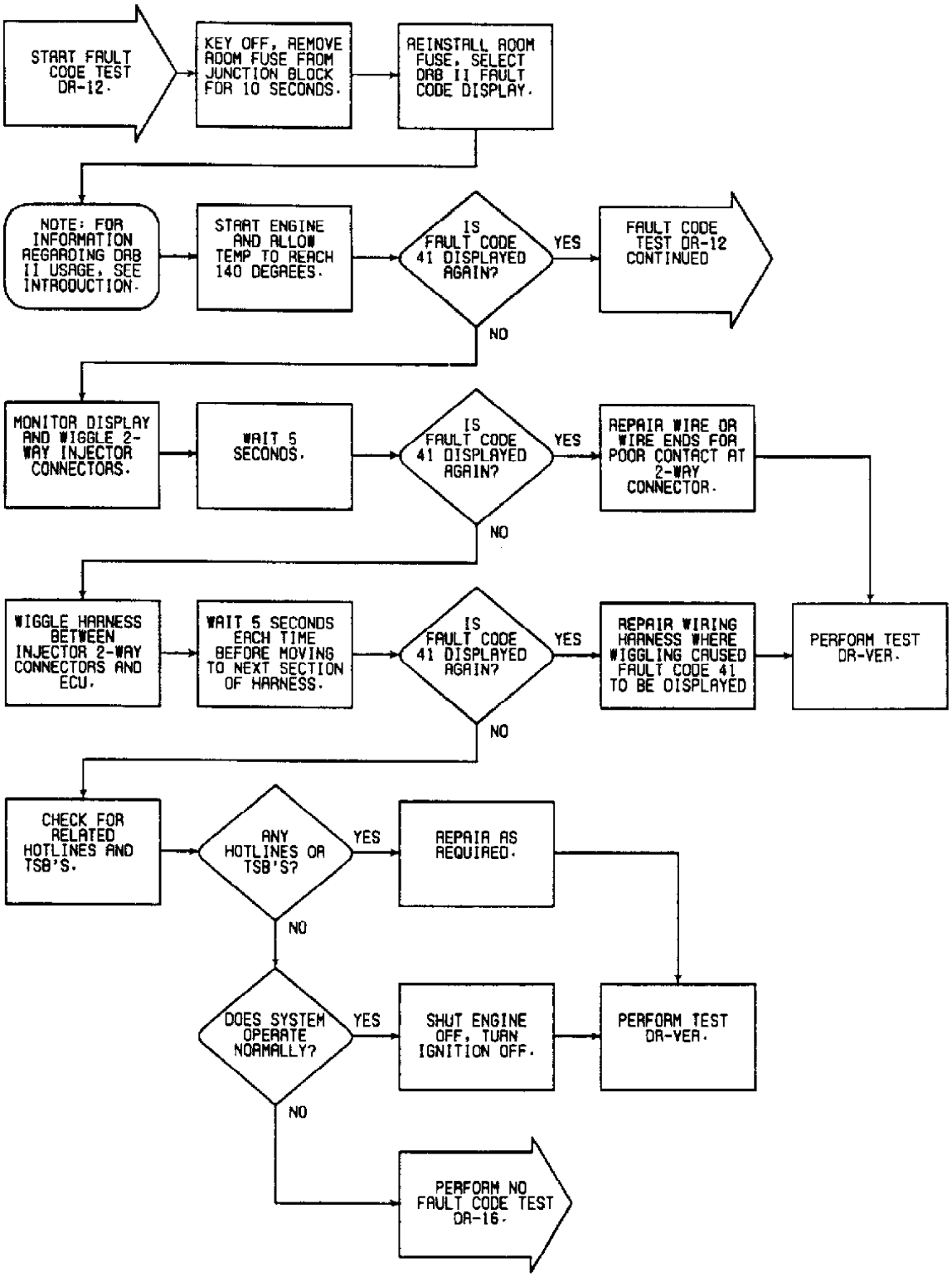


Fig. 131: Flow Chart DR-12 (1.6L) (1 of 5)

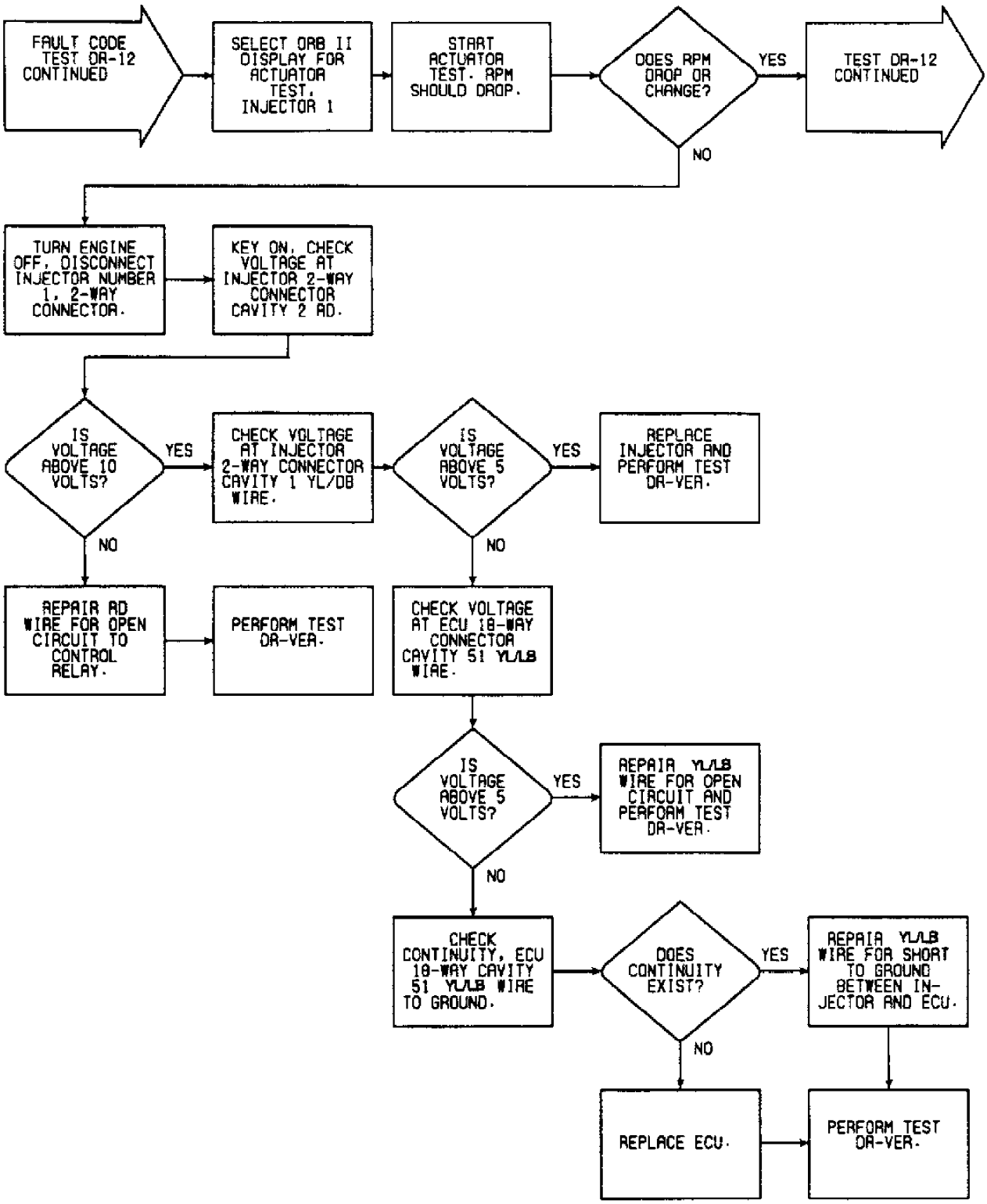


Fig. 132: Flow Chart DR-12 (1.6L) (2 of 5)

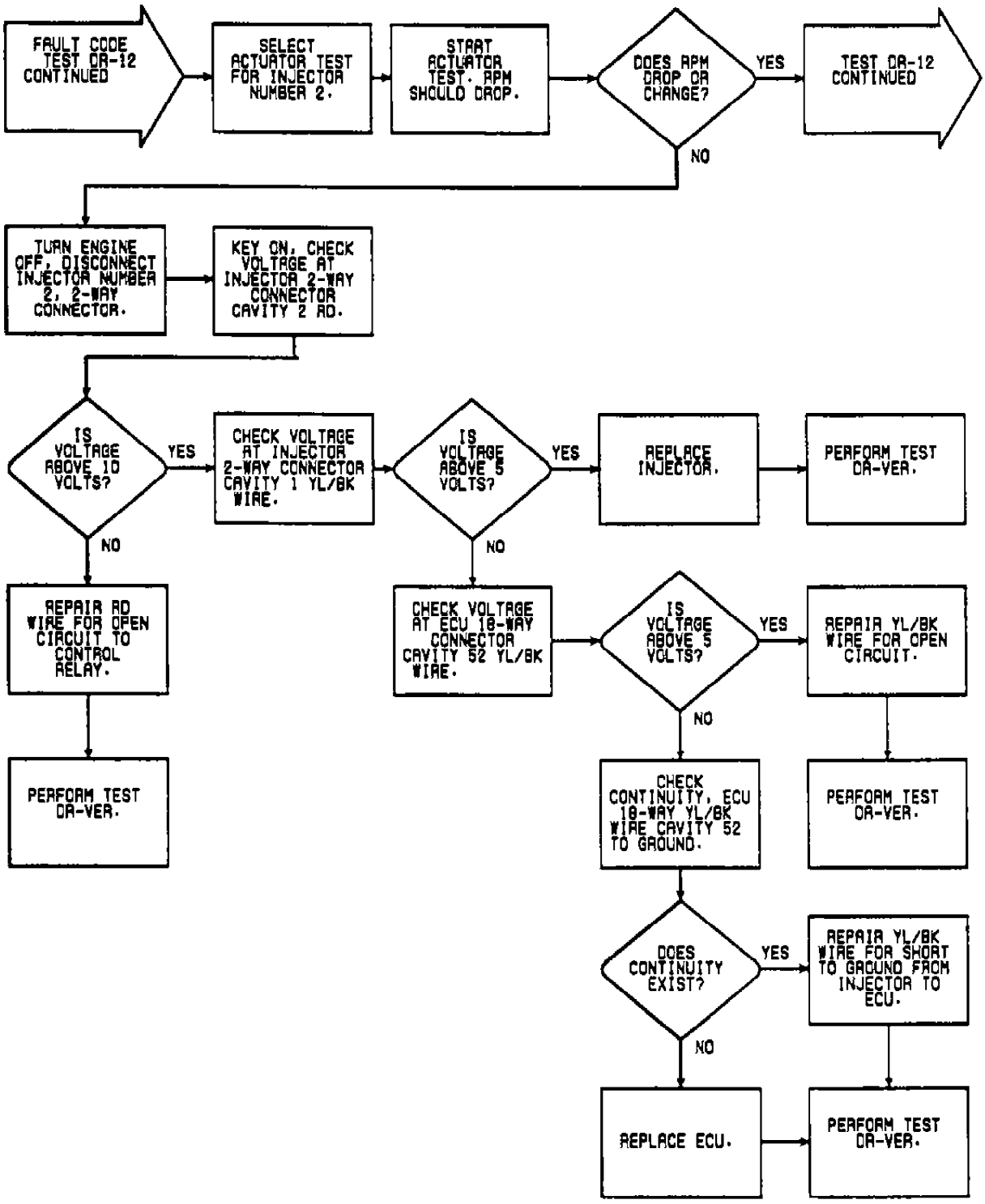


Fig. 133: Flow Chart DR-12 (1.6L) (3 of 5)

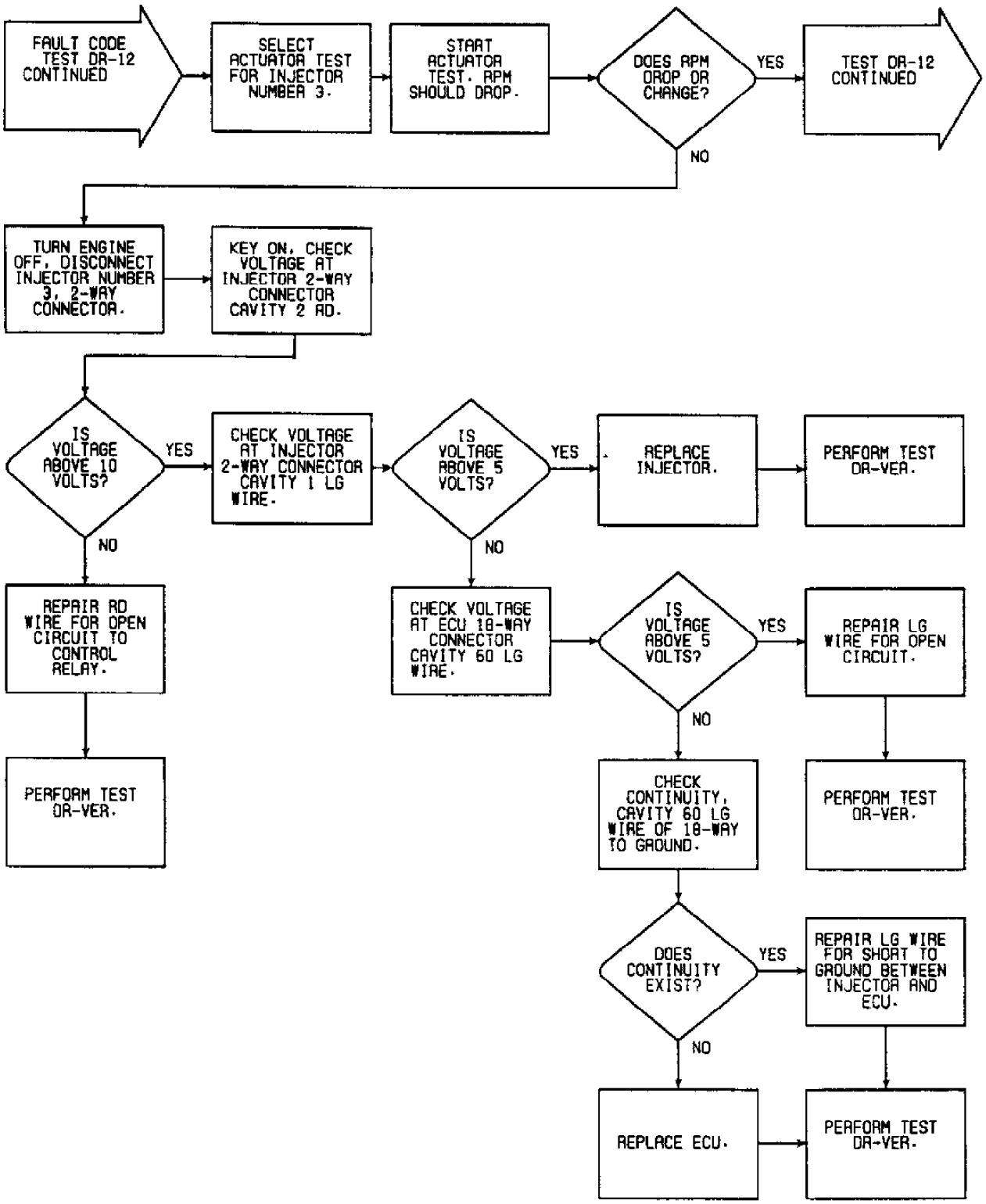


Fig. 134: Flow Chart DR-12 (1.6L) (4 of 5)

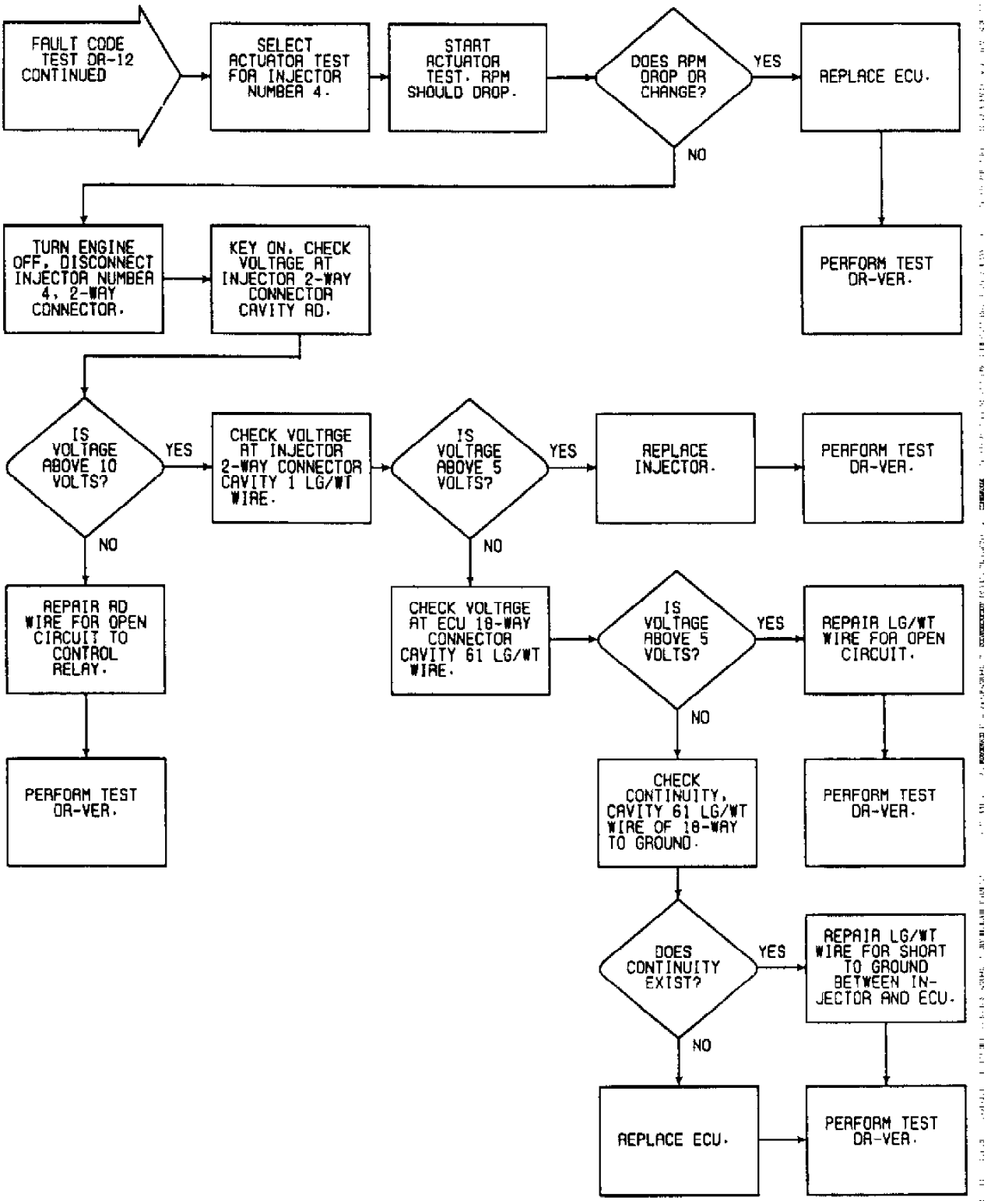


Fig. 135: Flow Chart DR-12 (1.6L) (5 of 5)

DR-13: CODE 42 FUEL PUMP CIRCUIT - 1.6L

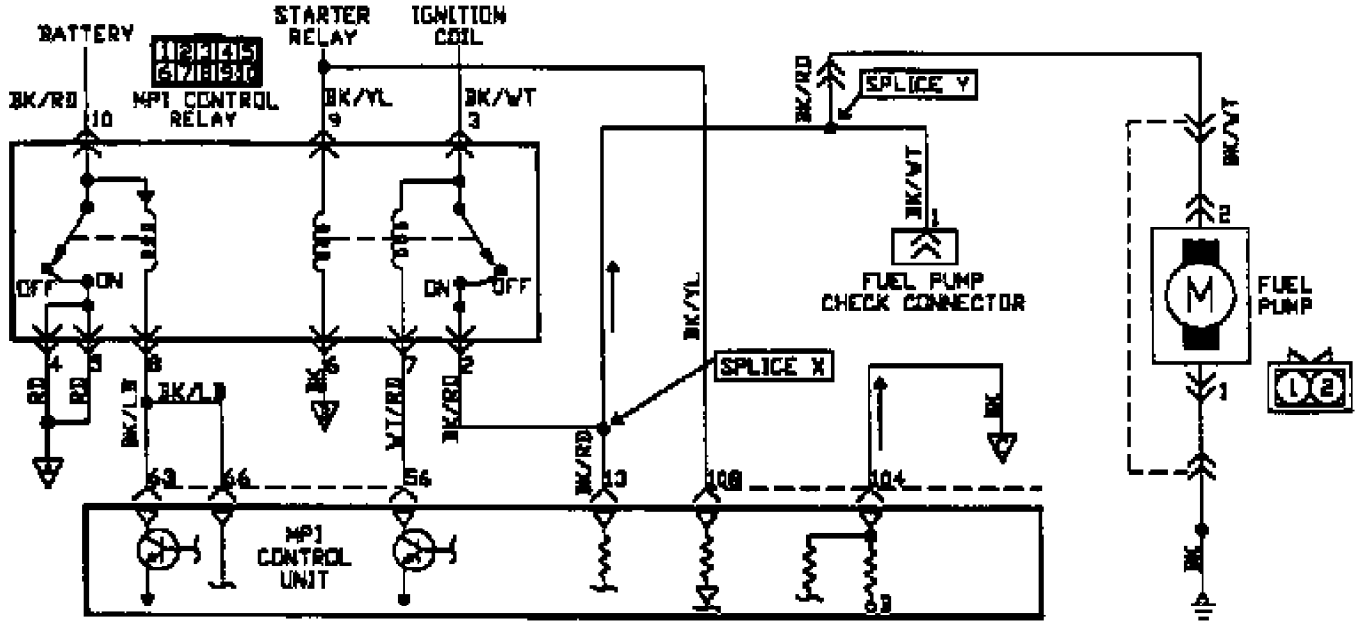


Fig. 136: Circuit Diagram DR-13 (1.6L)

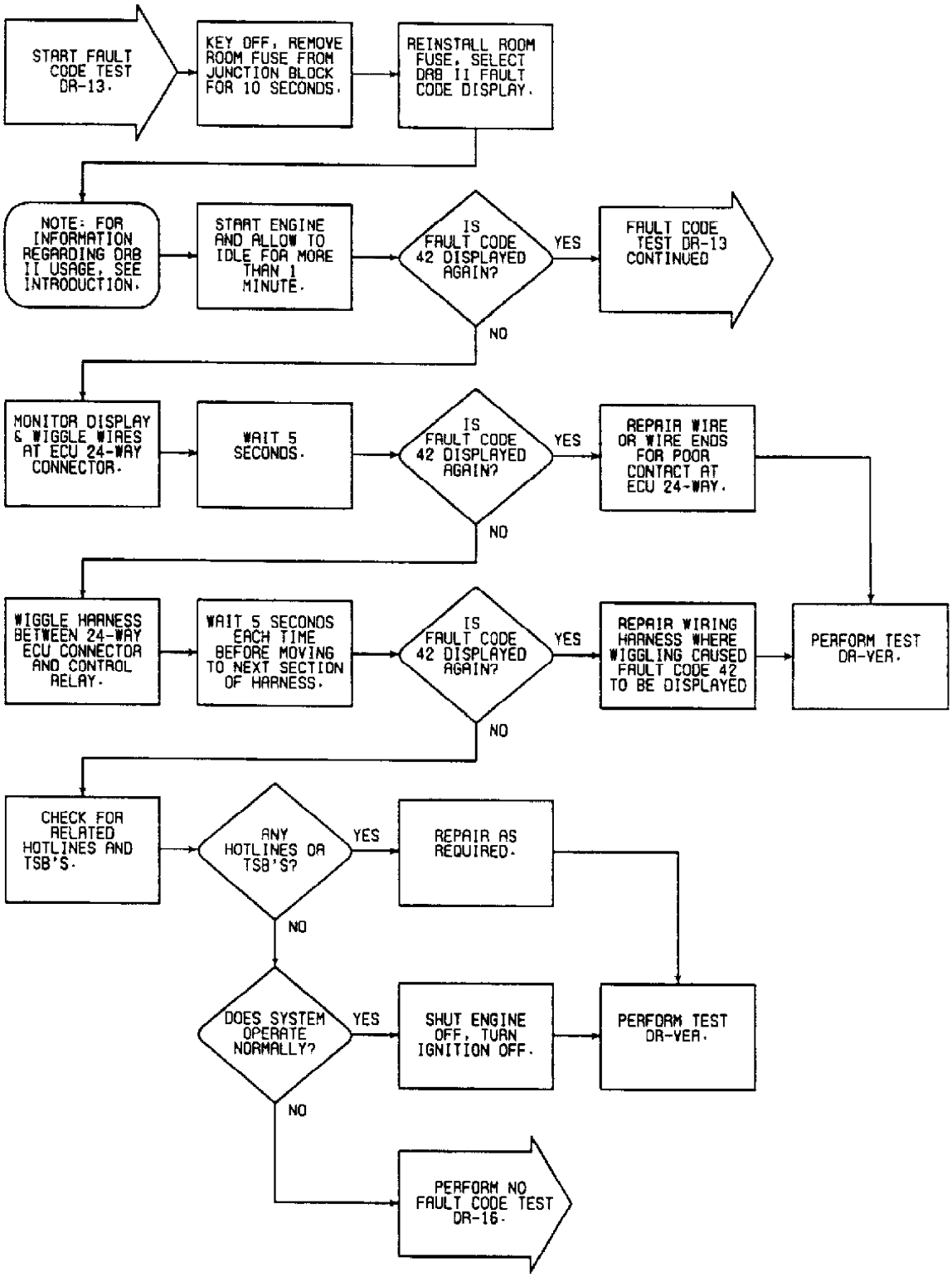


Fig. 137: Flow Chart DR-13 (1.6L) (1 of 2)

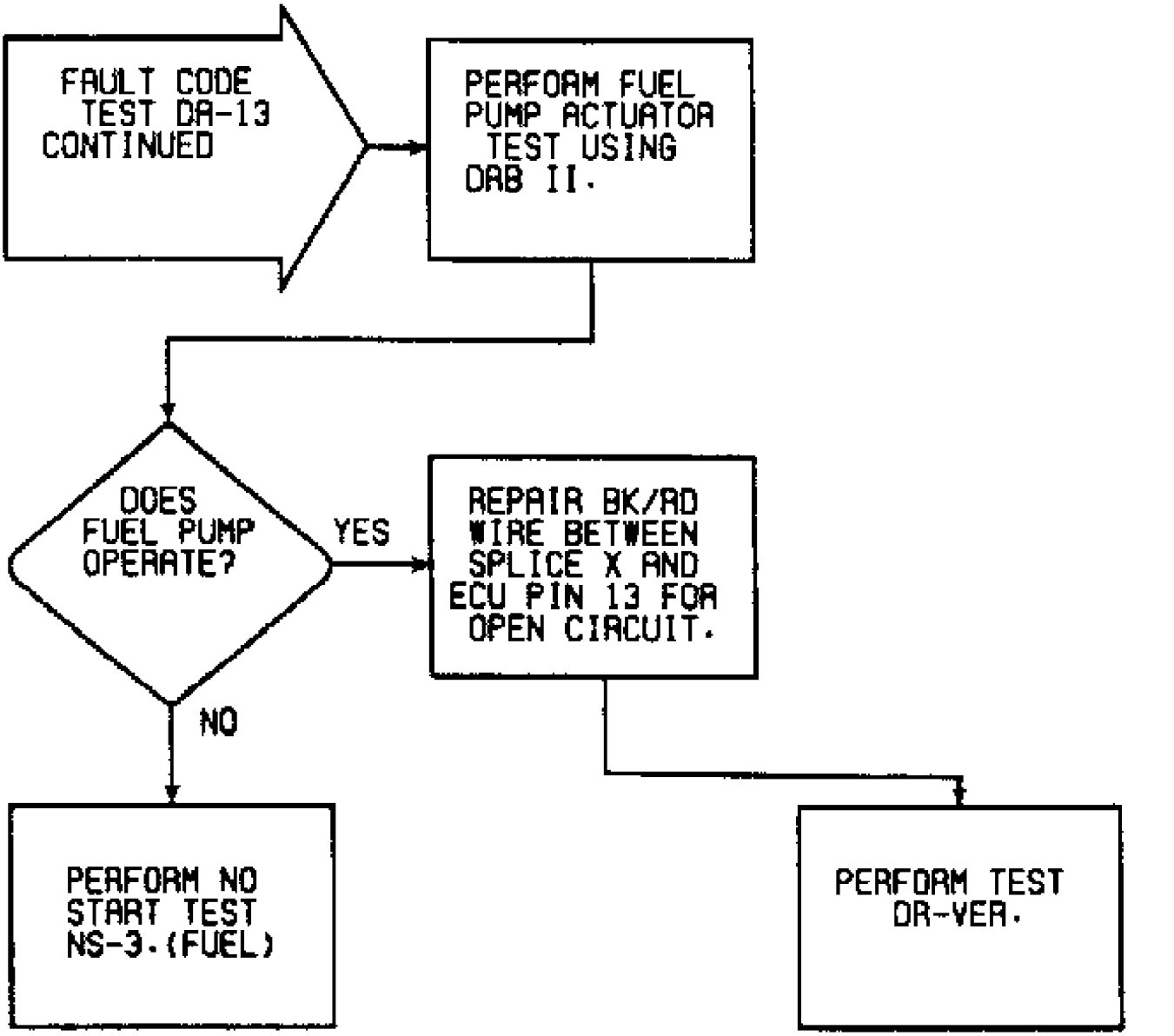


Fig. 138: Flow Chart DR-13 (1.6L) (2 of 2)

DR-14: CODE 43 EGR TEMPERATURE SENSOR CIRCUIT - 1.6L

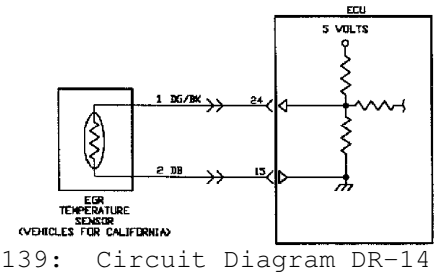


Fig. 139: Circuit Diagram DR-14 (1.6L)

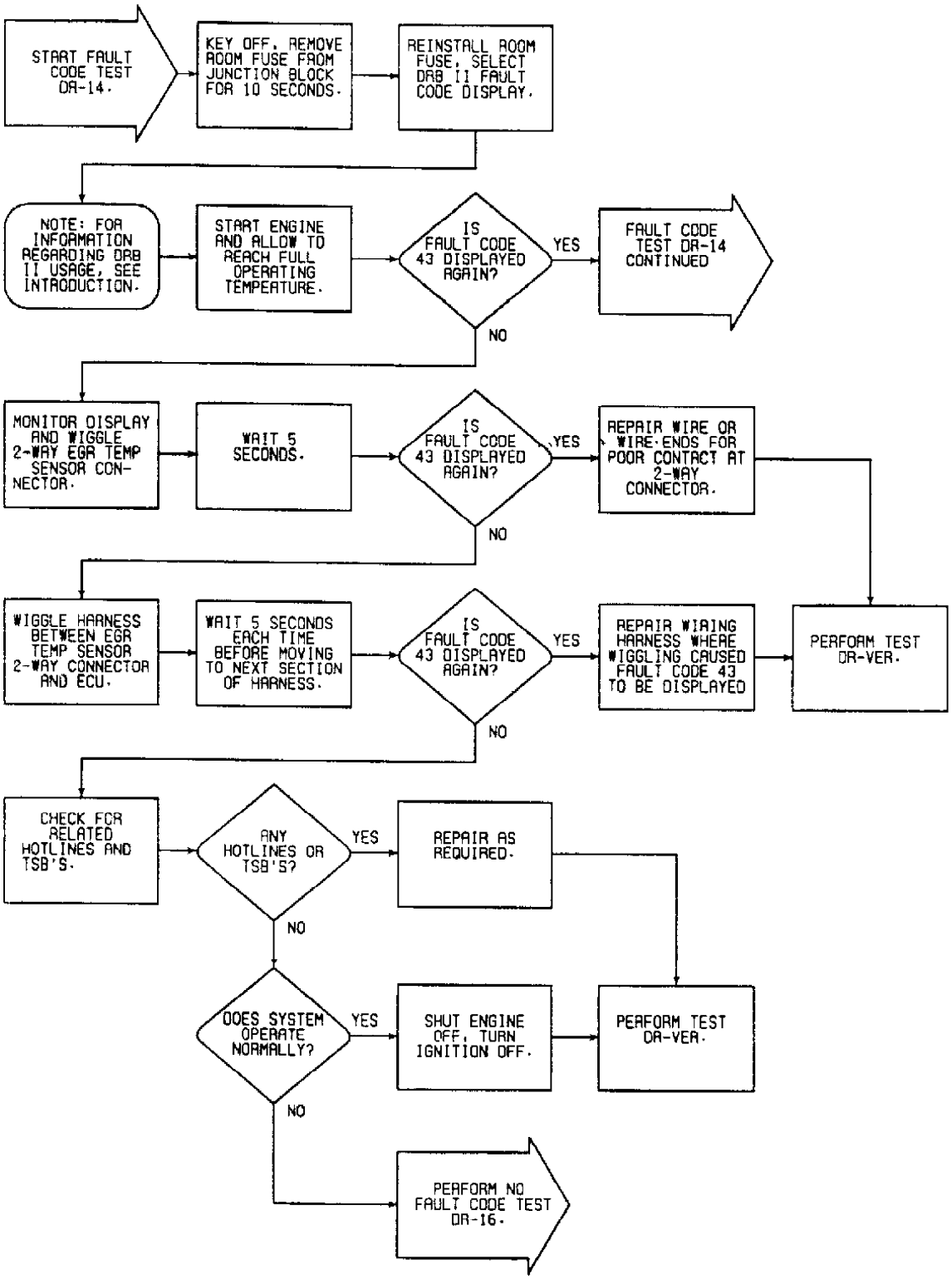


Fig. 140: Flow Chart DR-14 (1.6L) (1 of 2)

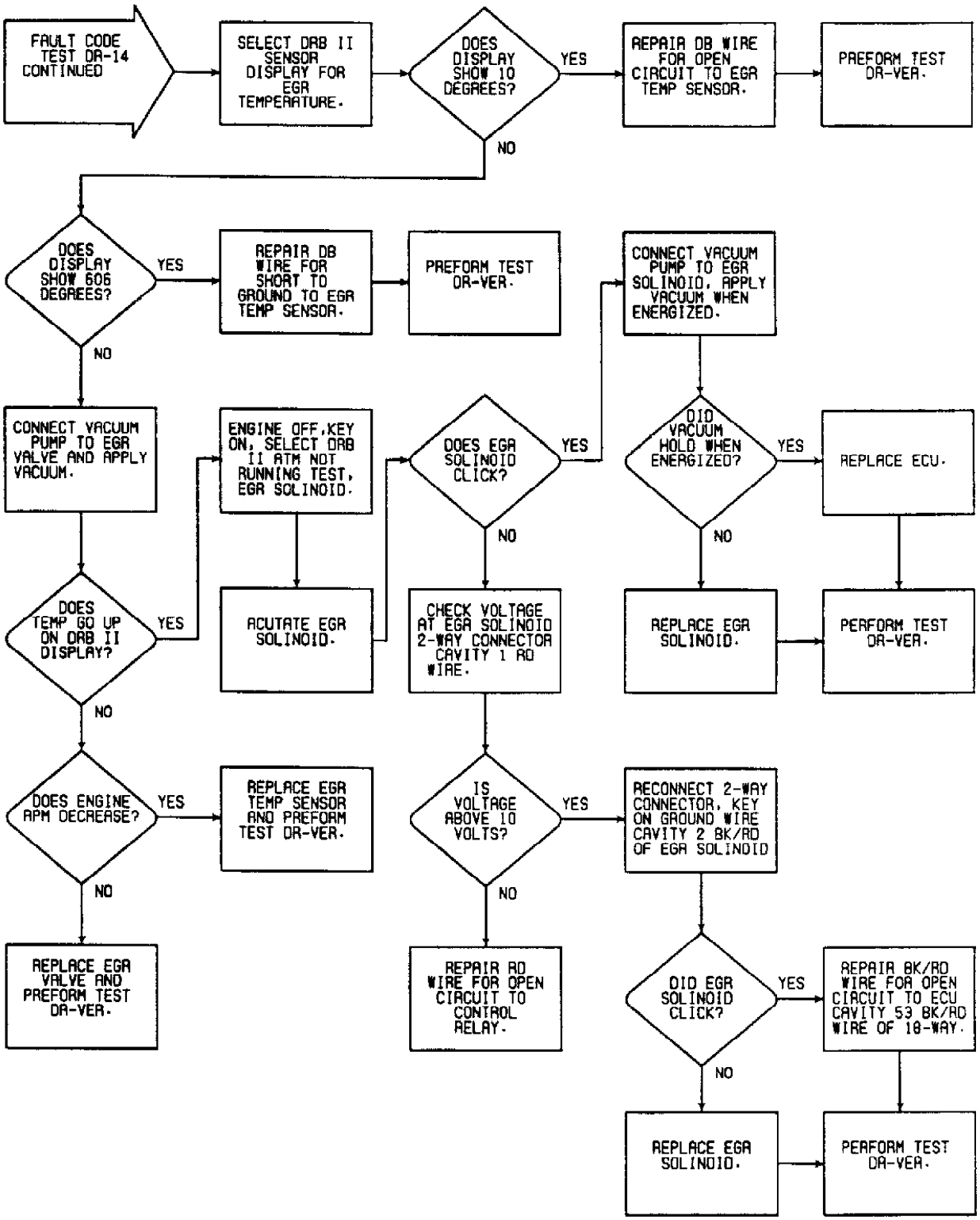


Fig. 141: Flow Chart DR-14 (1.6L) (2 of 2)

DR-15: CODE 44 IGNITION COIL CIRCUIT - 1.6L

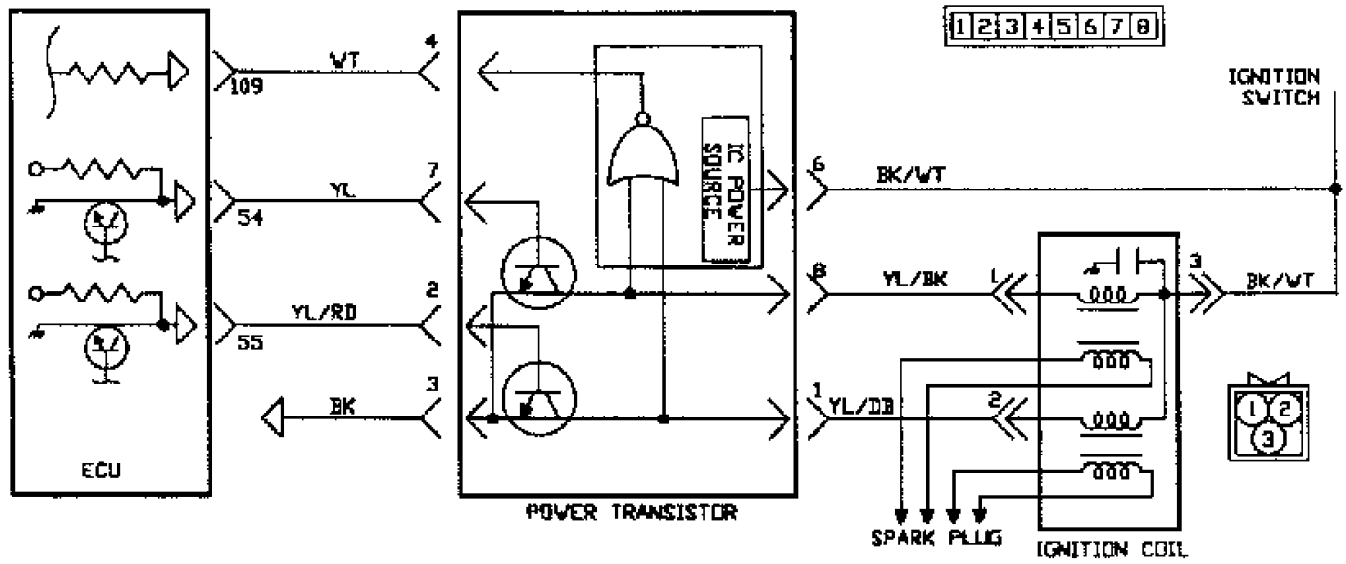


Fig. 142: Circuit Diagram DR-15 (1.6L)

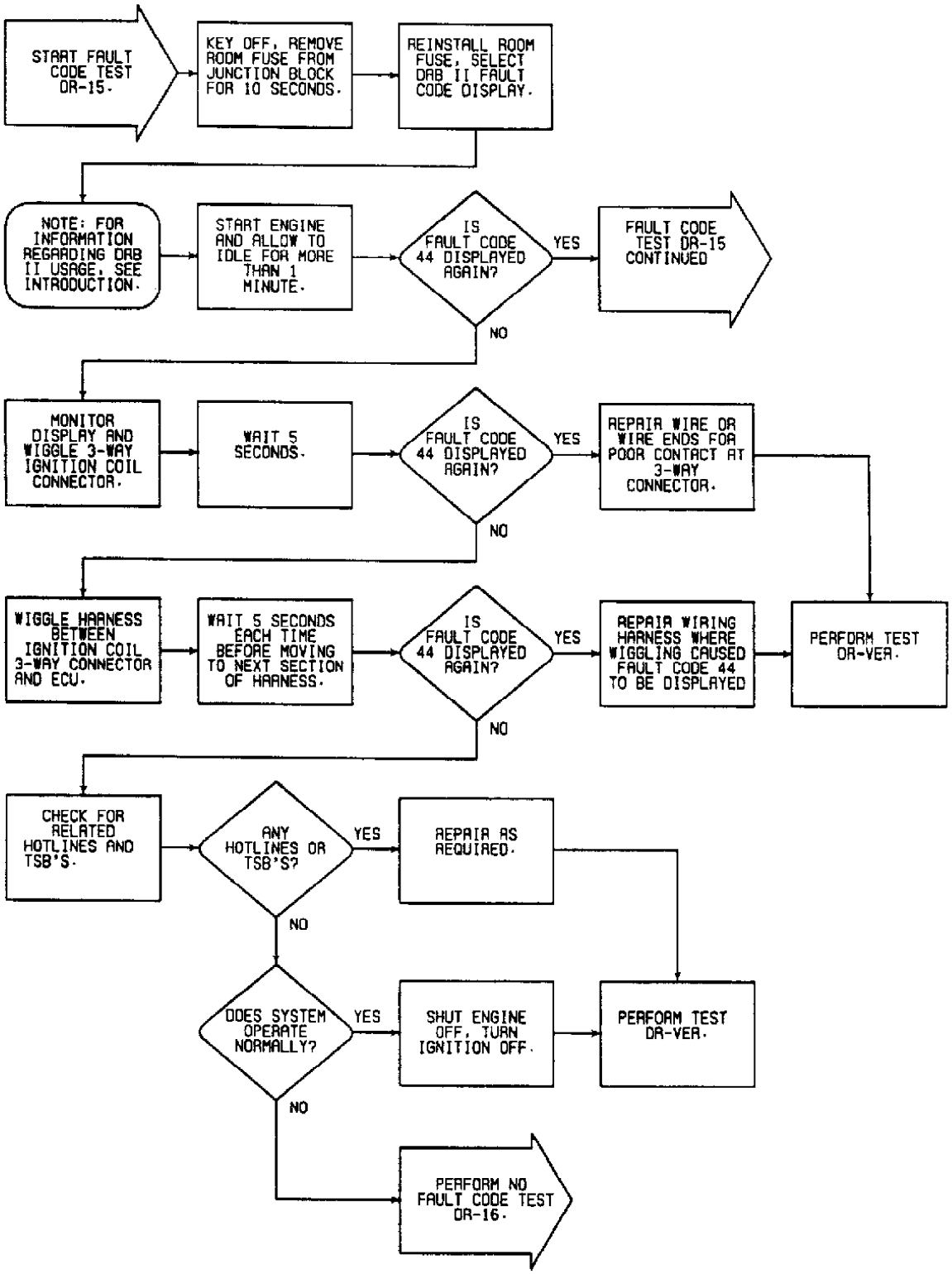


Fig. 143: Flow Chart DR-15 (1.6L) (1 of 4)

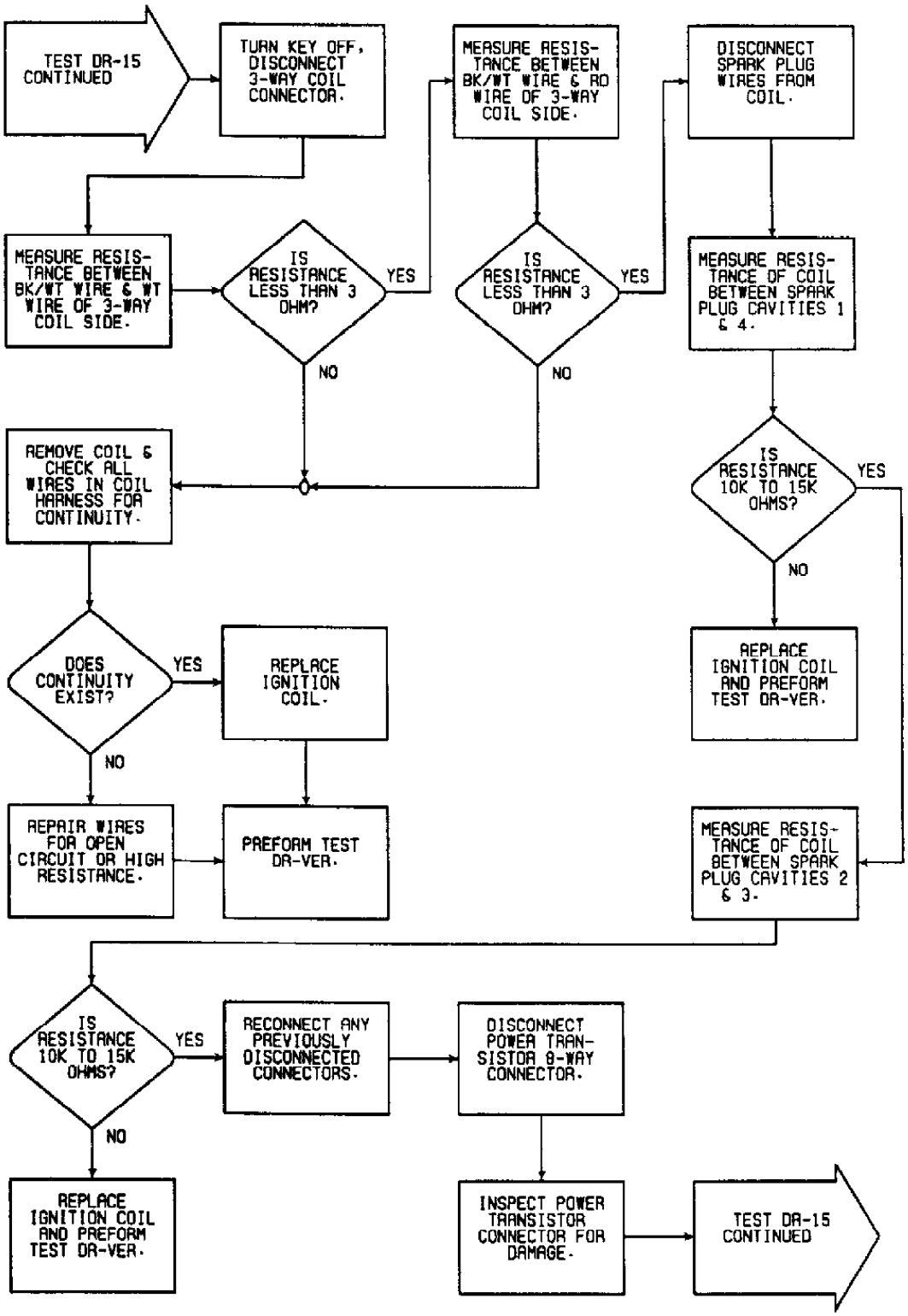


Fig. 144: Flow Chart DR-15 (1.6L) (2 of 4)

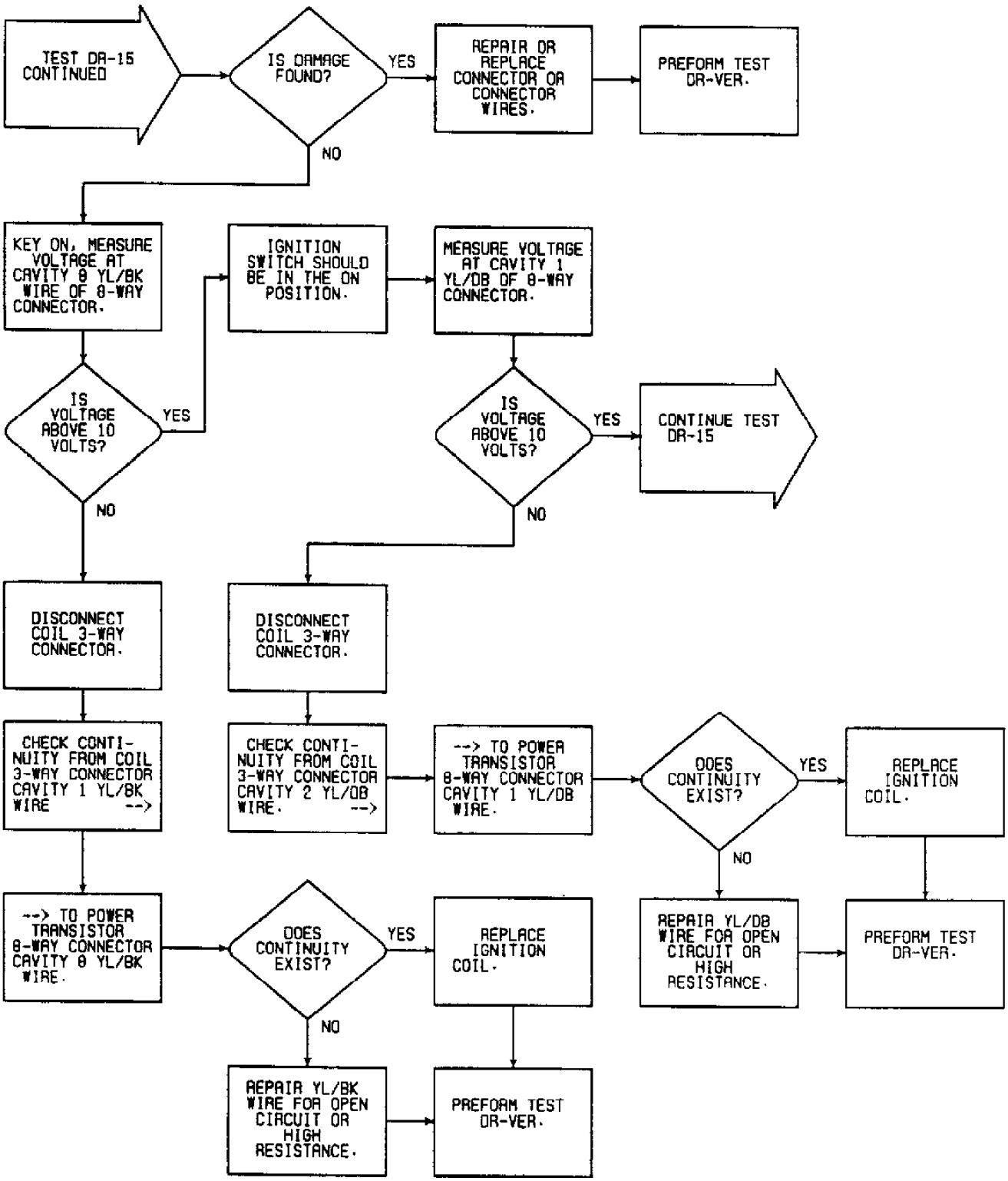


Fig. 145: Flow Chart DR-15 (1.6L) (3 of 4)

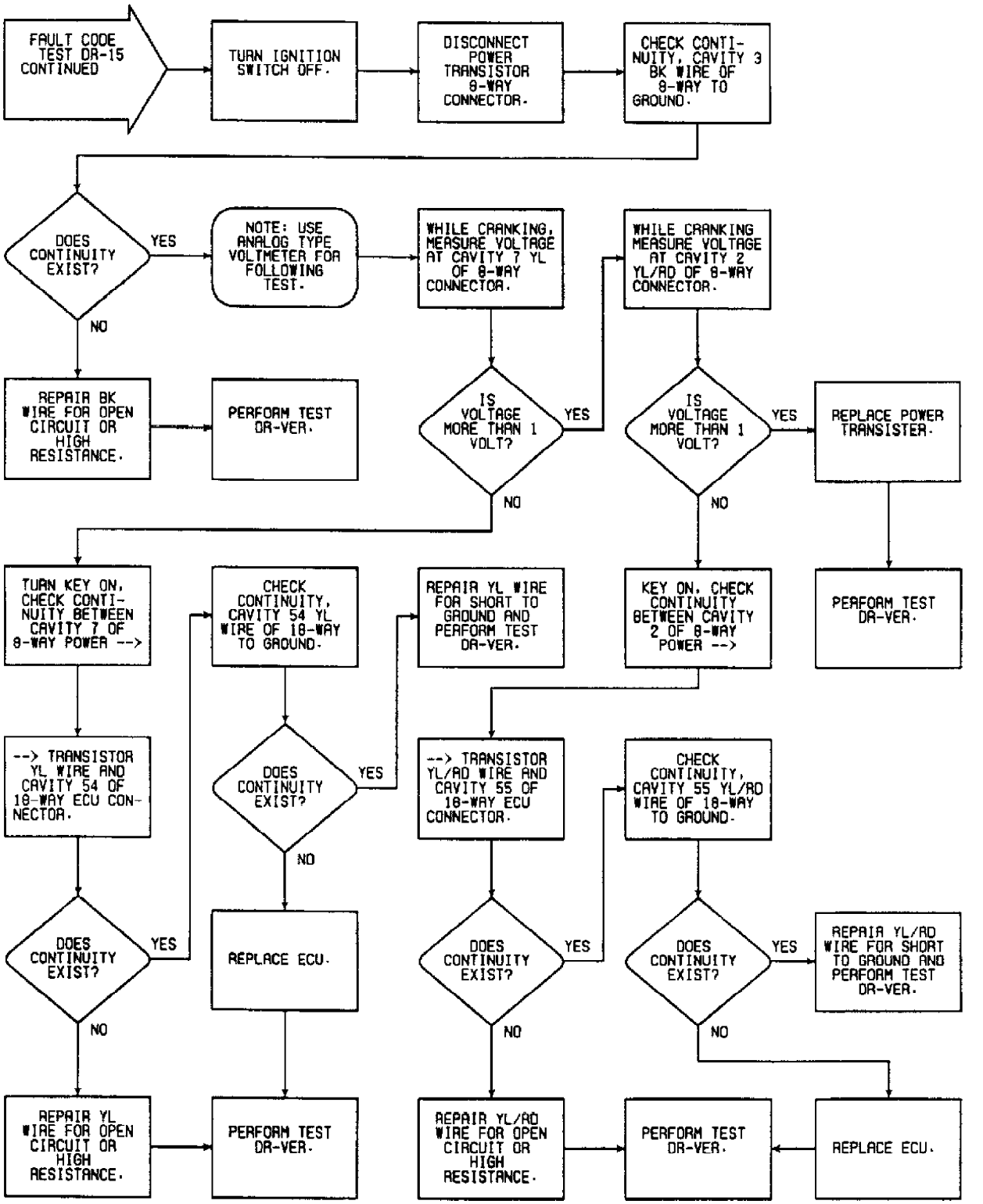


Fig. 146: Flow Chart DR-15 (1.6L) (4 of 4)

DR-16: NO FAULT CODE TESTS - 1.6L

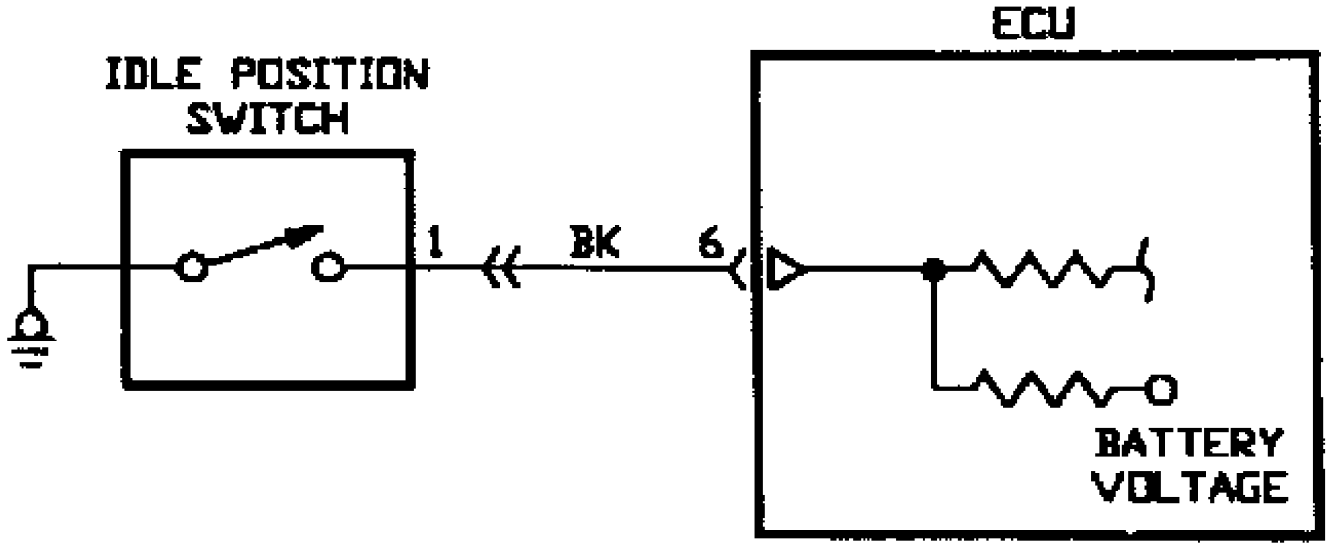


Fig. 147: Circuit Diagram DR-16 (1.6L)

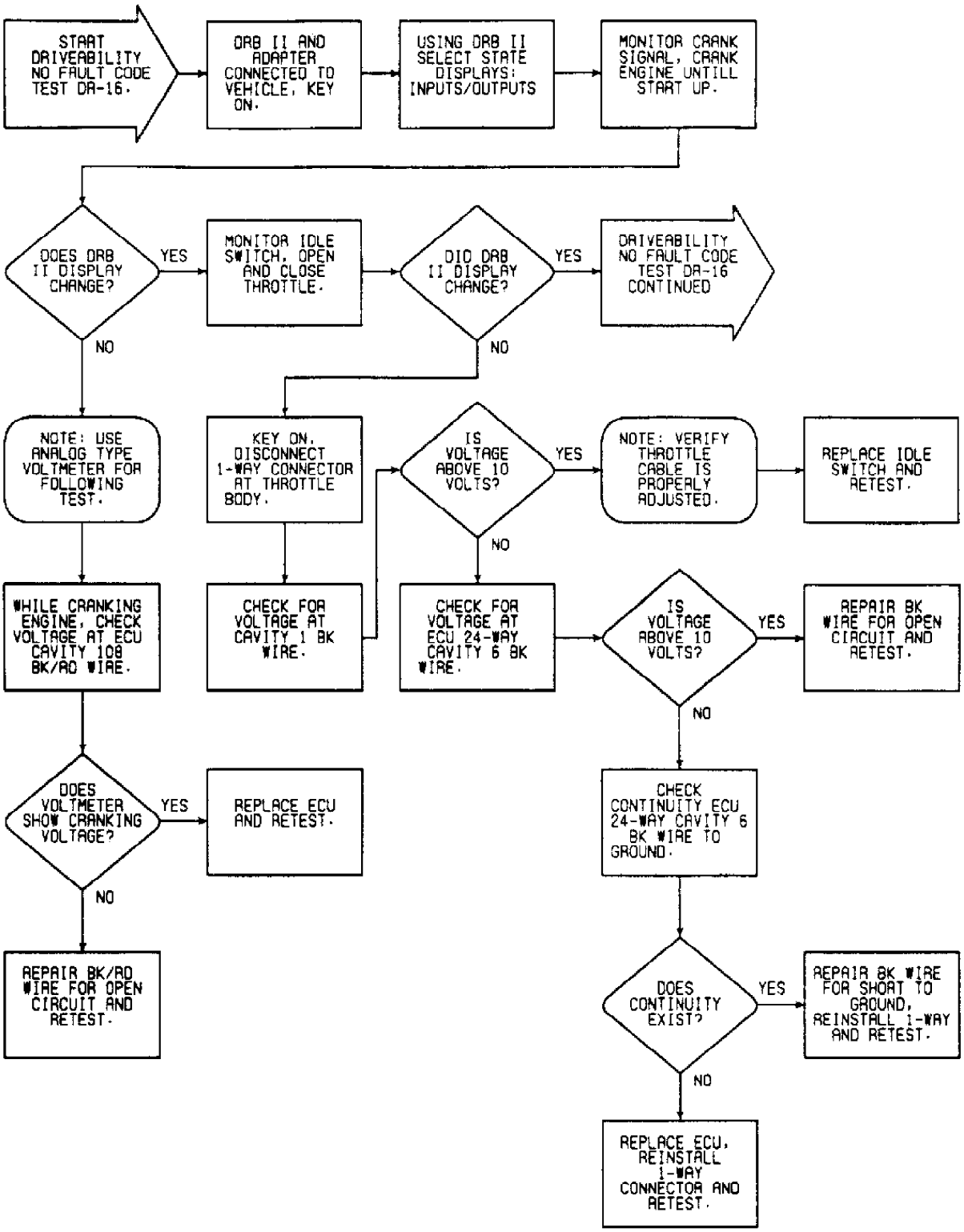


Fig. 148: Flow Chart DR-16 (1.6L) (1 of 3)

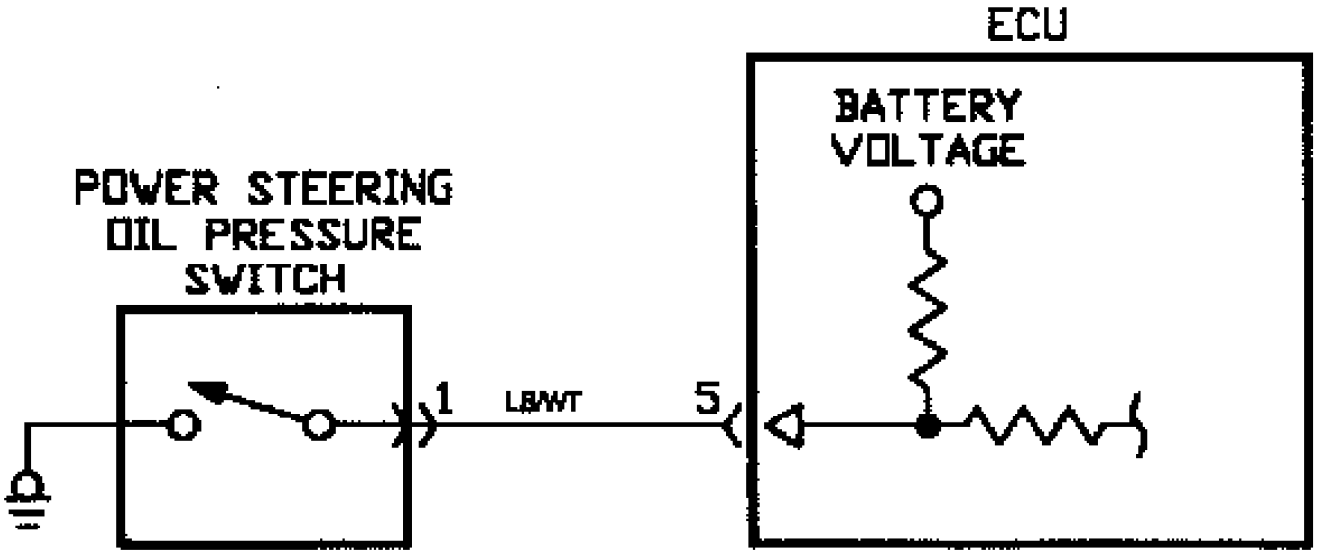


Fig. 149: Circuit Diagram DR-16 (1.6L)

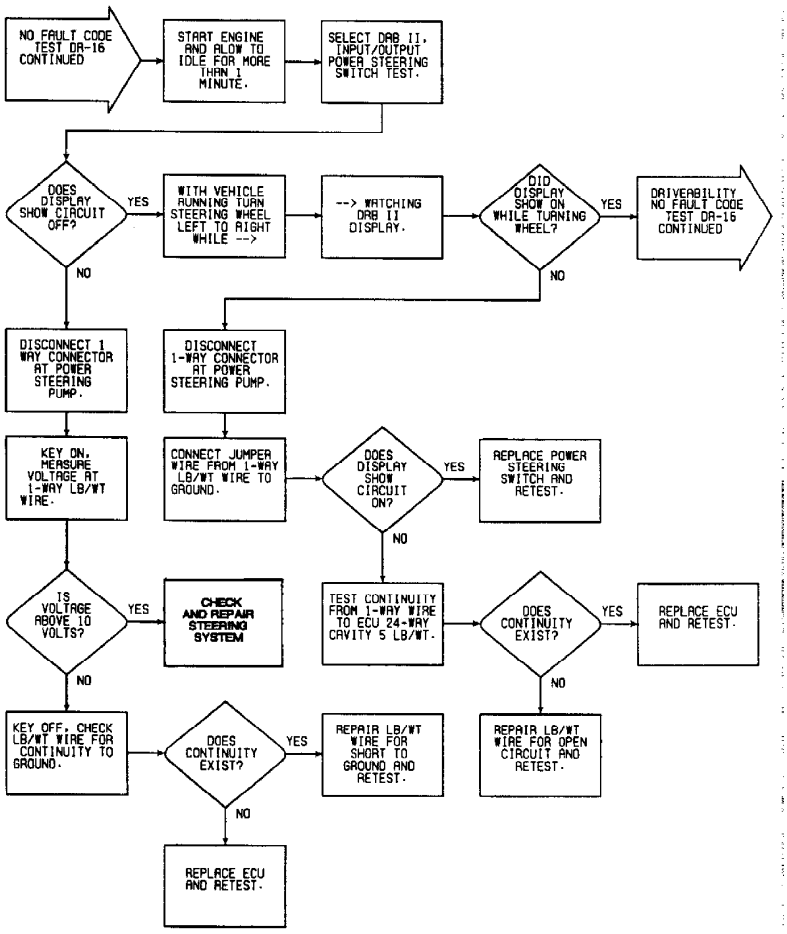


Fig. 150: Flow Chart DR-16 (1.6L) (2 of 3)

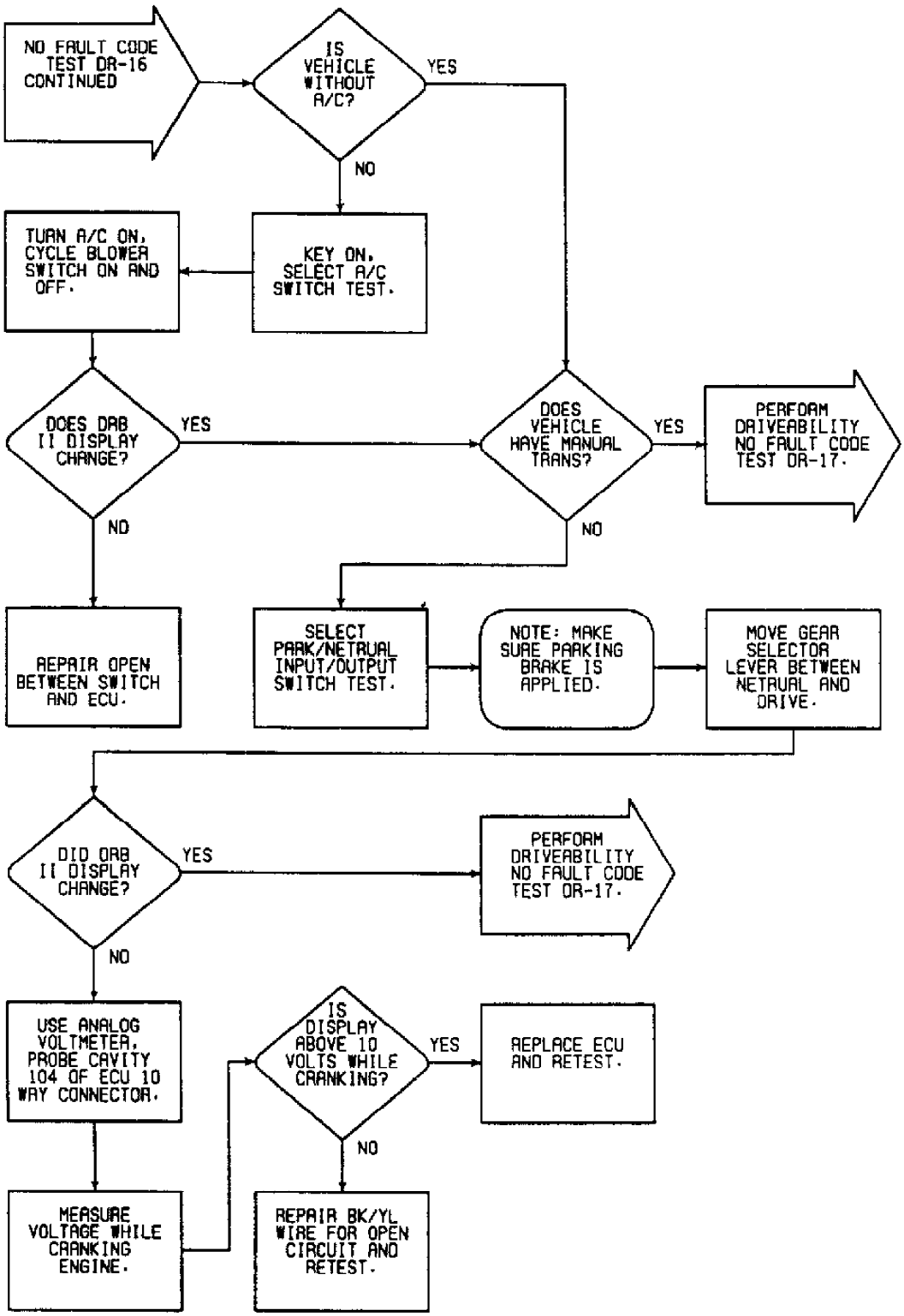


Fig. 151: Flow Chart DR-16 (1.6L) (3 of 3)

DR-17: NO FAULT CODE SENSOR TESTS - 1.6L

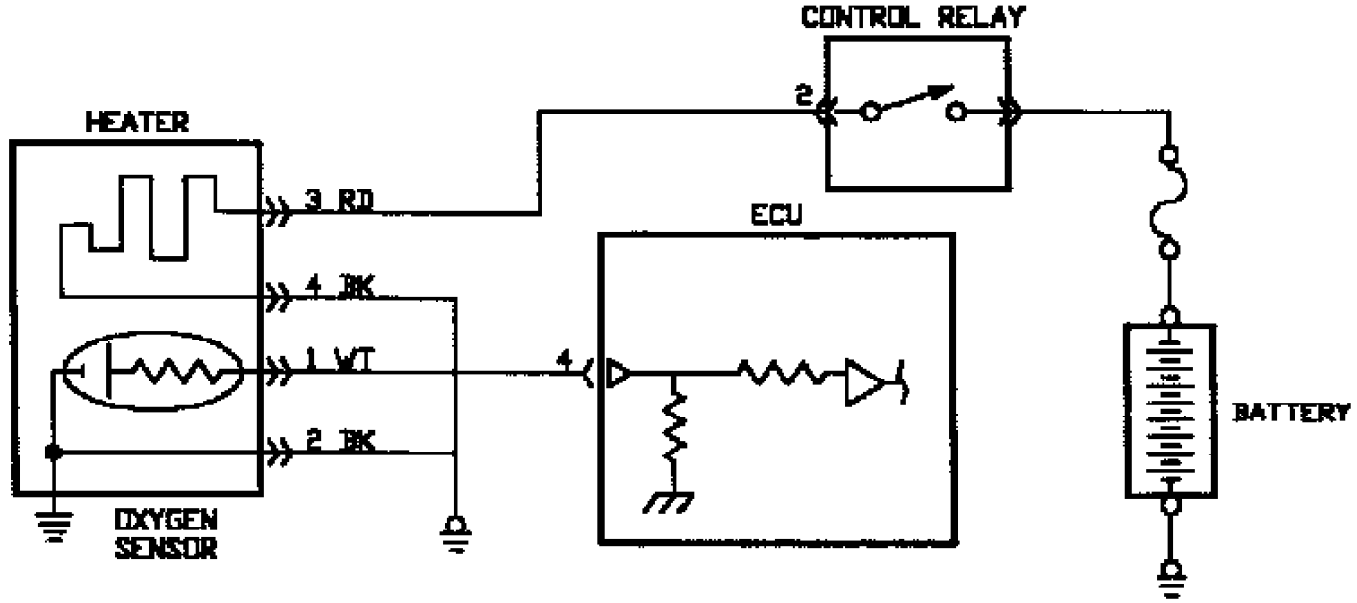


Fig. 152: Circuit Diagram DR-17 (1.6L)

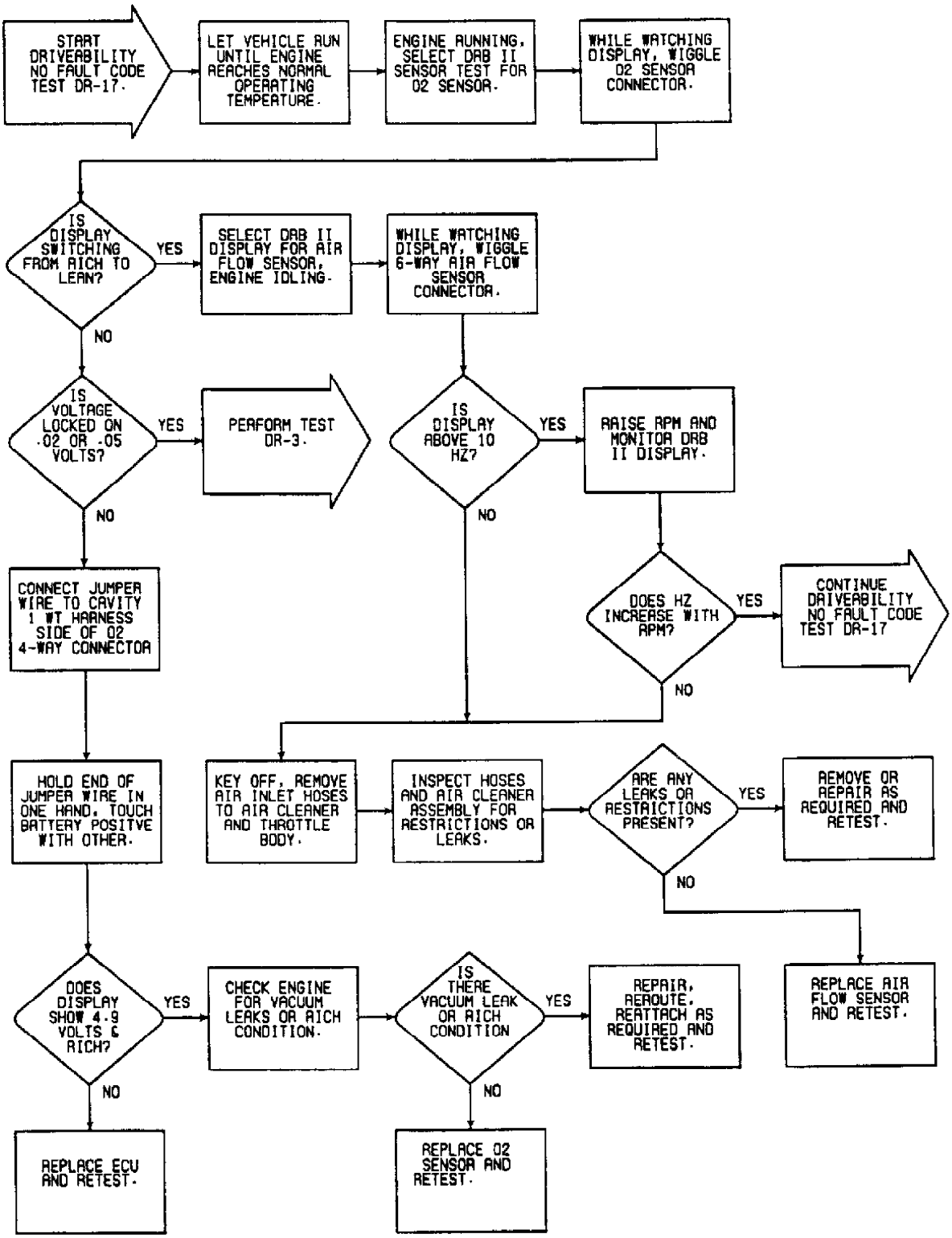


Fig. 153: Flow Chart DR-17 (1.6L) (1 of 6)

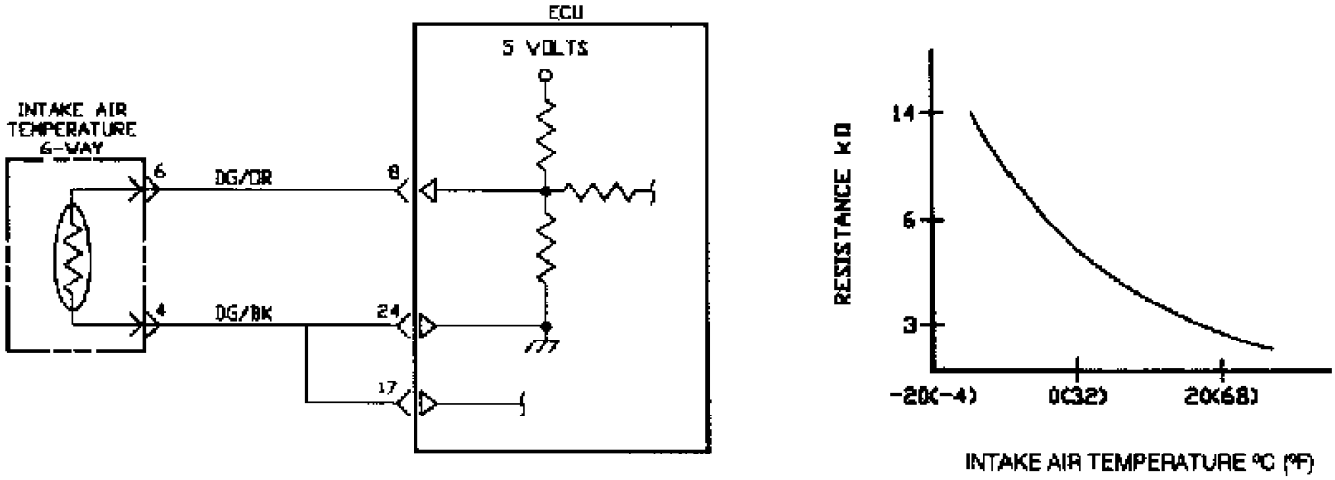


Fig. 154: Circuit Diagram DR-17 (1.6L)

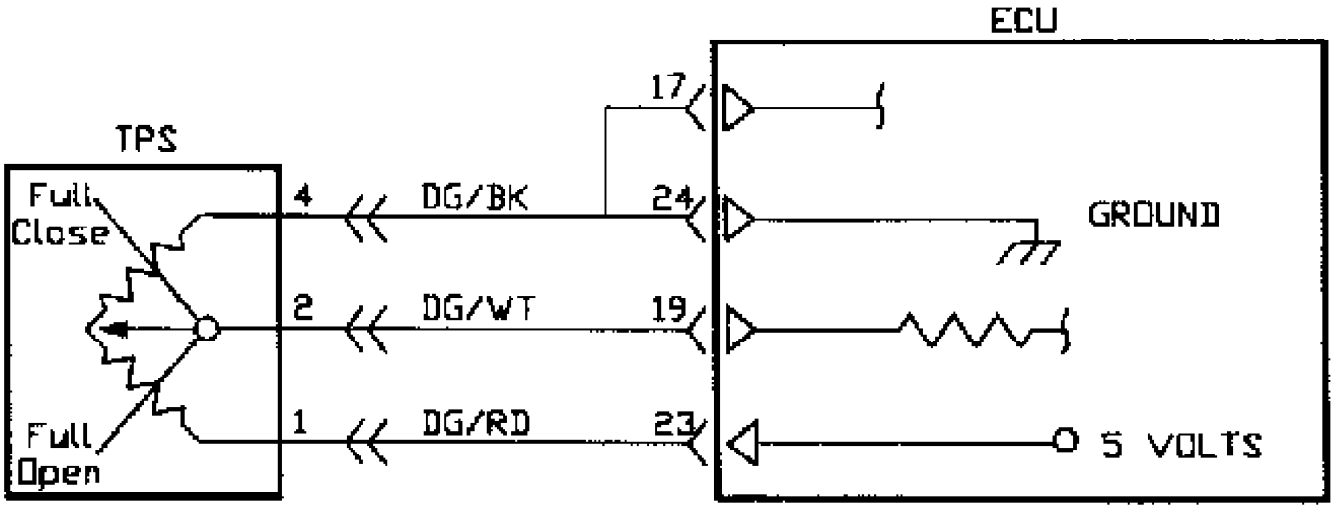


Fig. 155: Circuit Diagram DR-17 (1.6L)

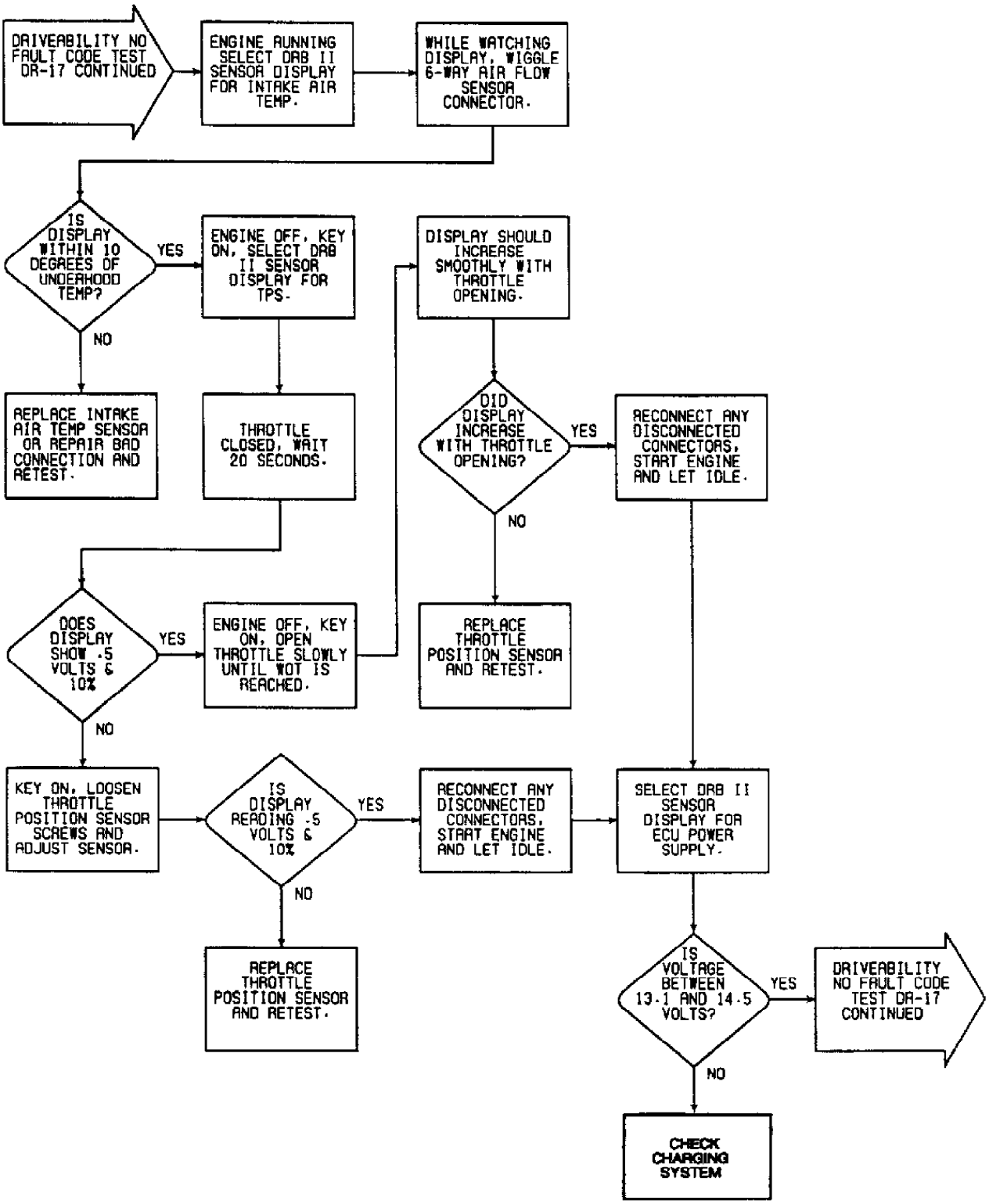


Fig. 156: Flow Chart DR-17 (1.6L) (2 of 6)

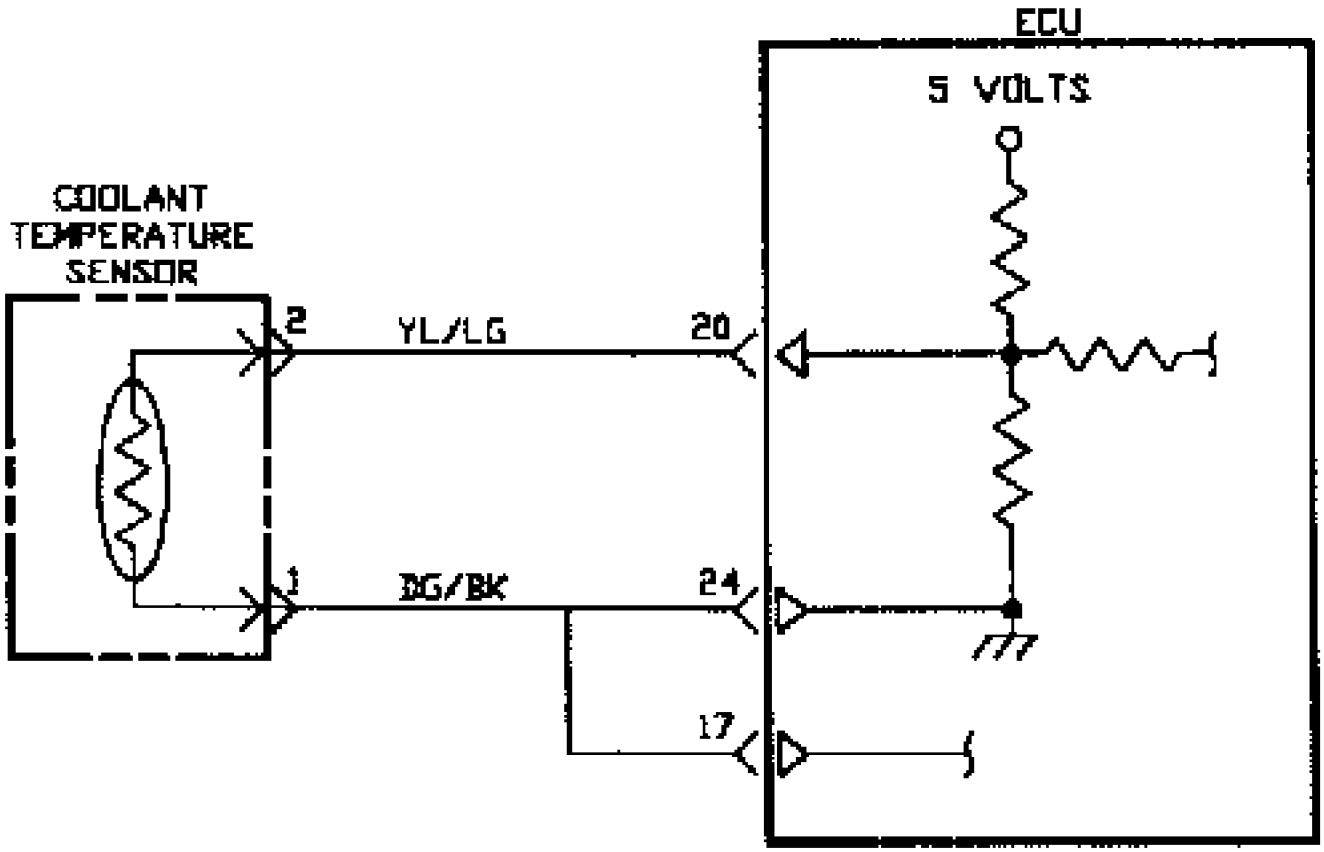


Fig. 157: Circuit Diagram DR-17 (1.6L)

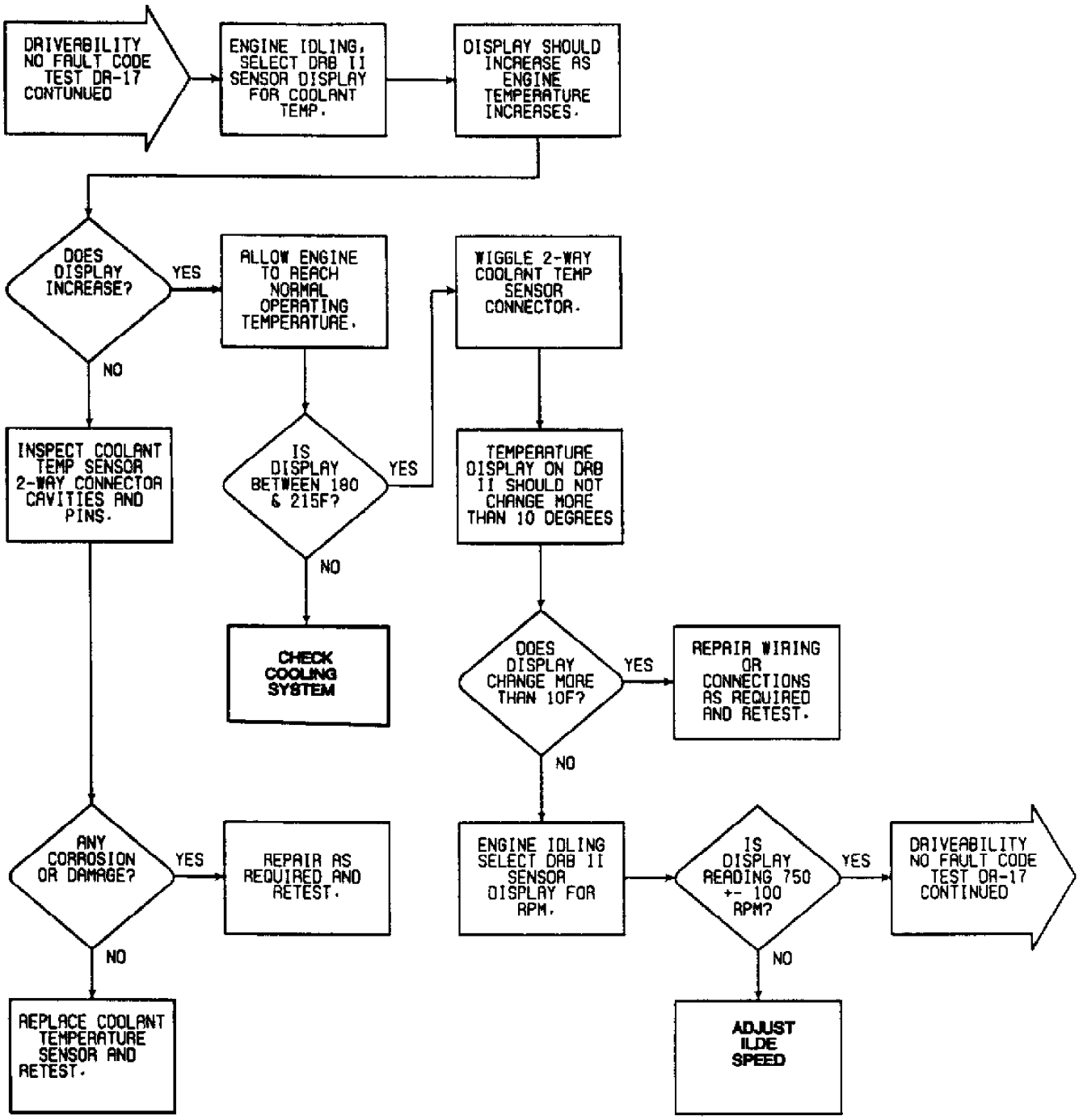


Fig. 158: Flow Chart DR-17 (1.6L) (3 of 6)

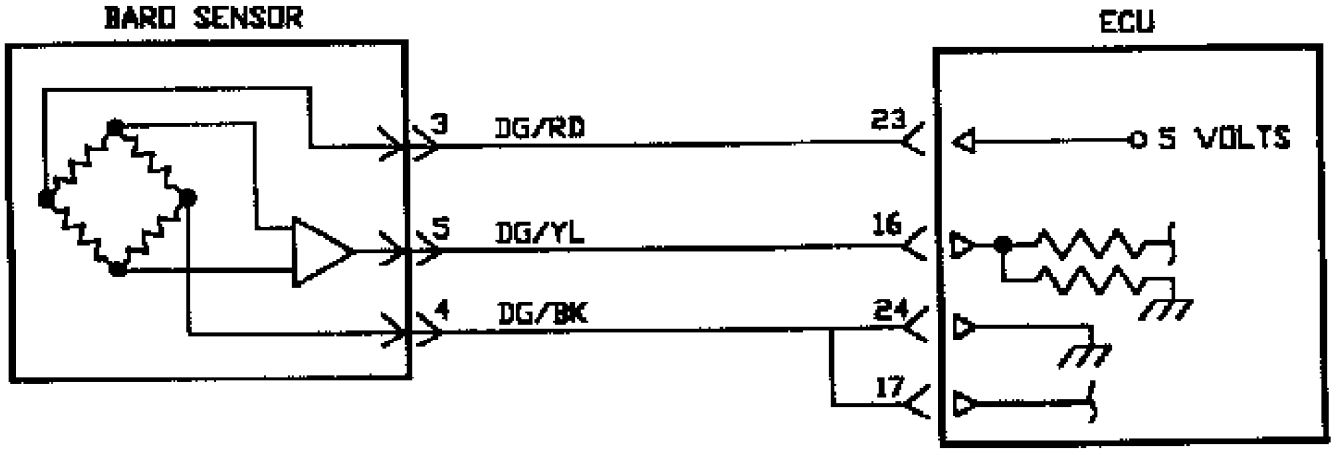


Fig. 159: Circuit Diagram DR-17 (1.6L)

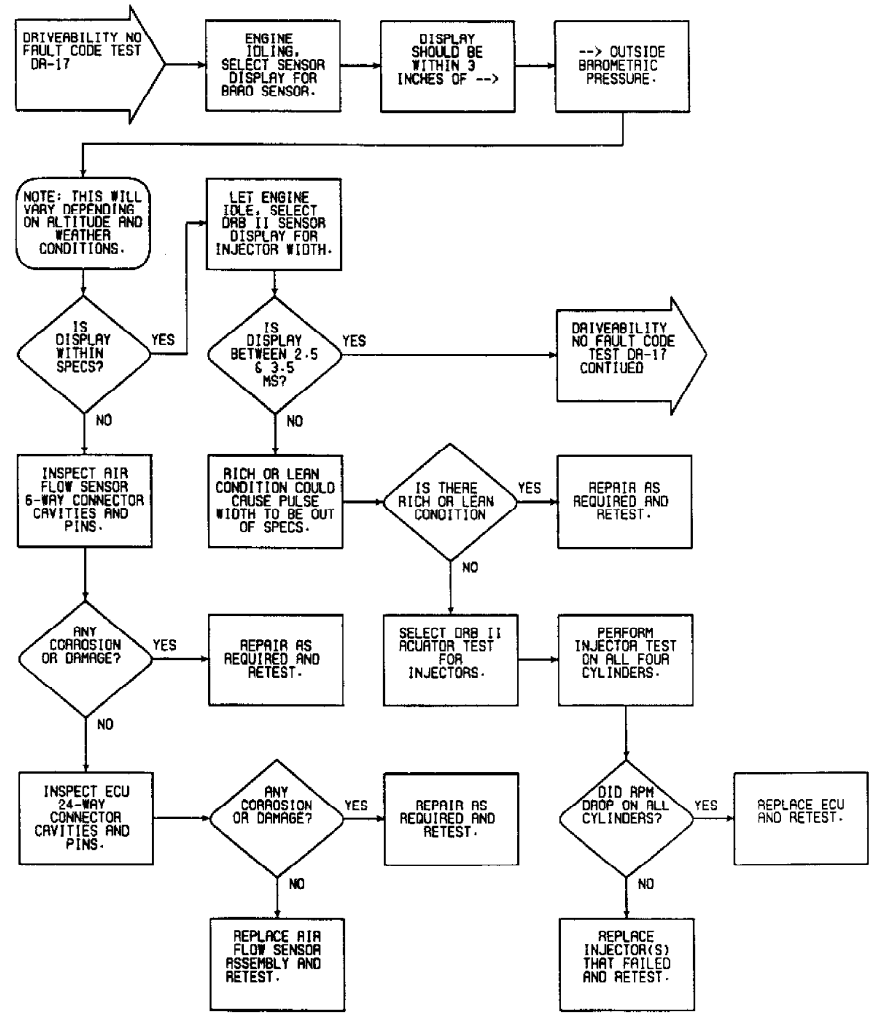


Fig. 160: Flow Chart DR-17 (1.6L) (4 of 6)

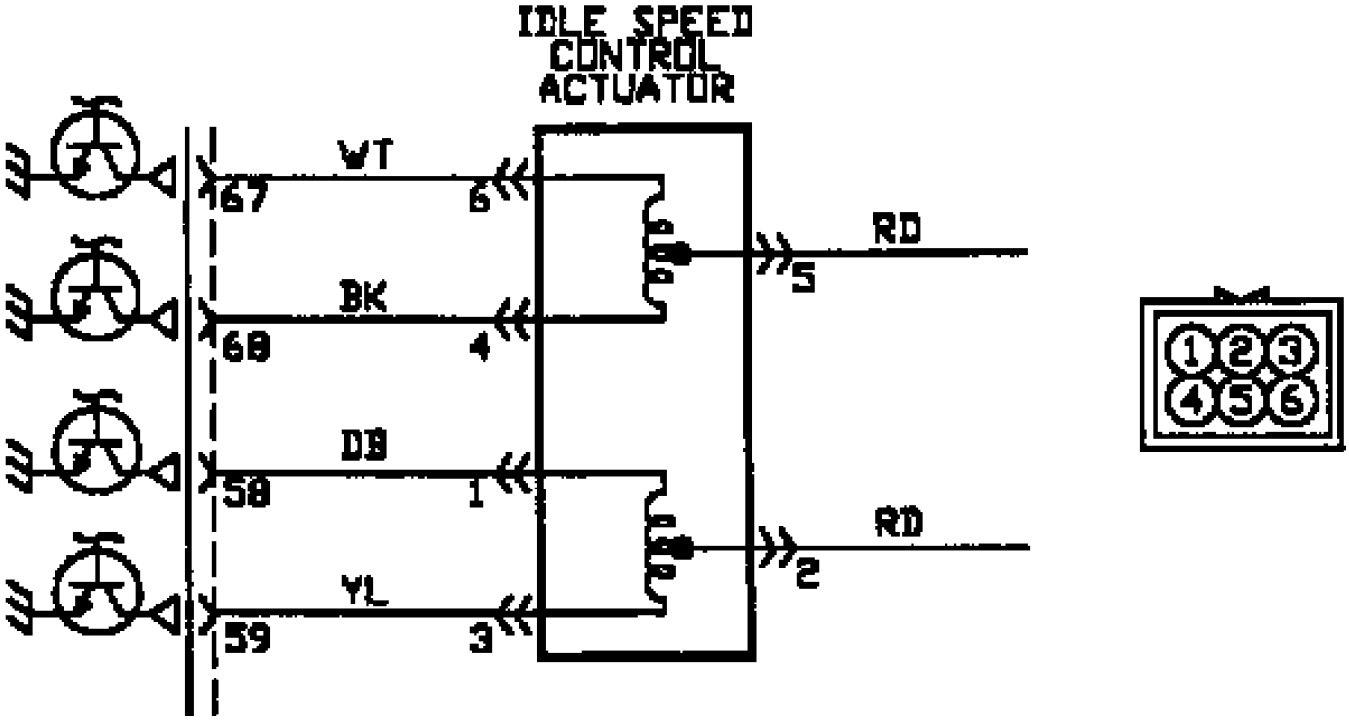


Fig. 161: Circuit Diagram DR-17 (1.6L)

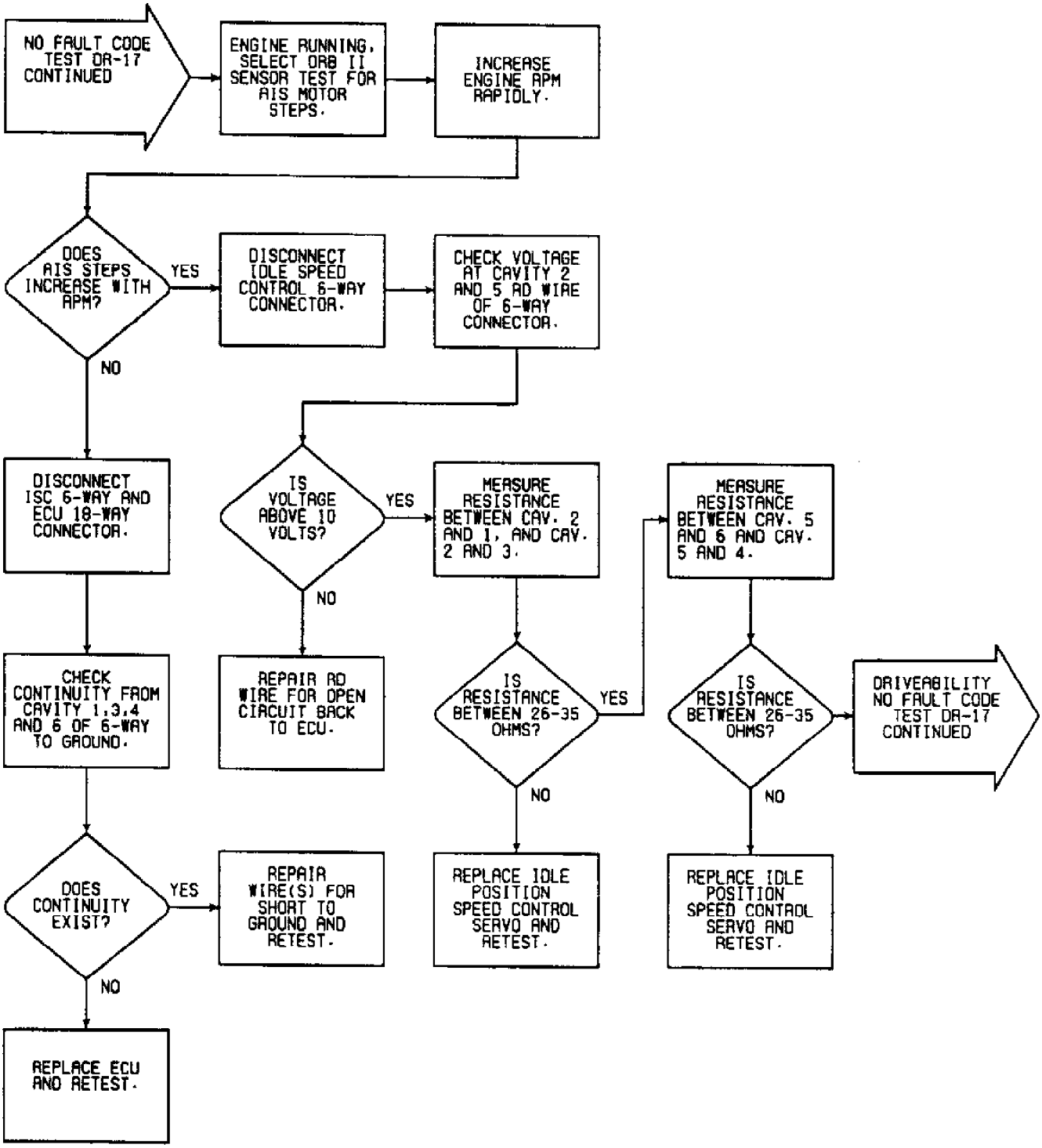


Fig. 162: Flow Chart DR-17 (1.6L) (5 of 6)

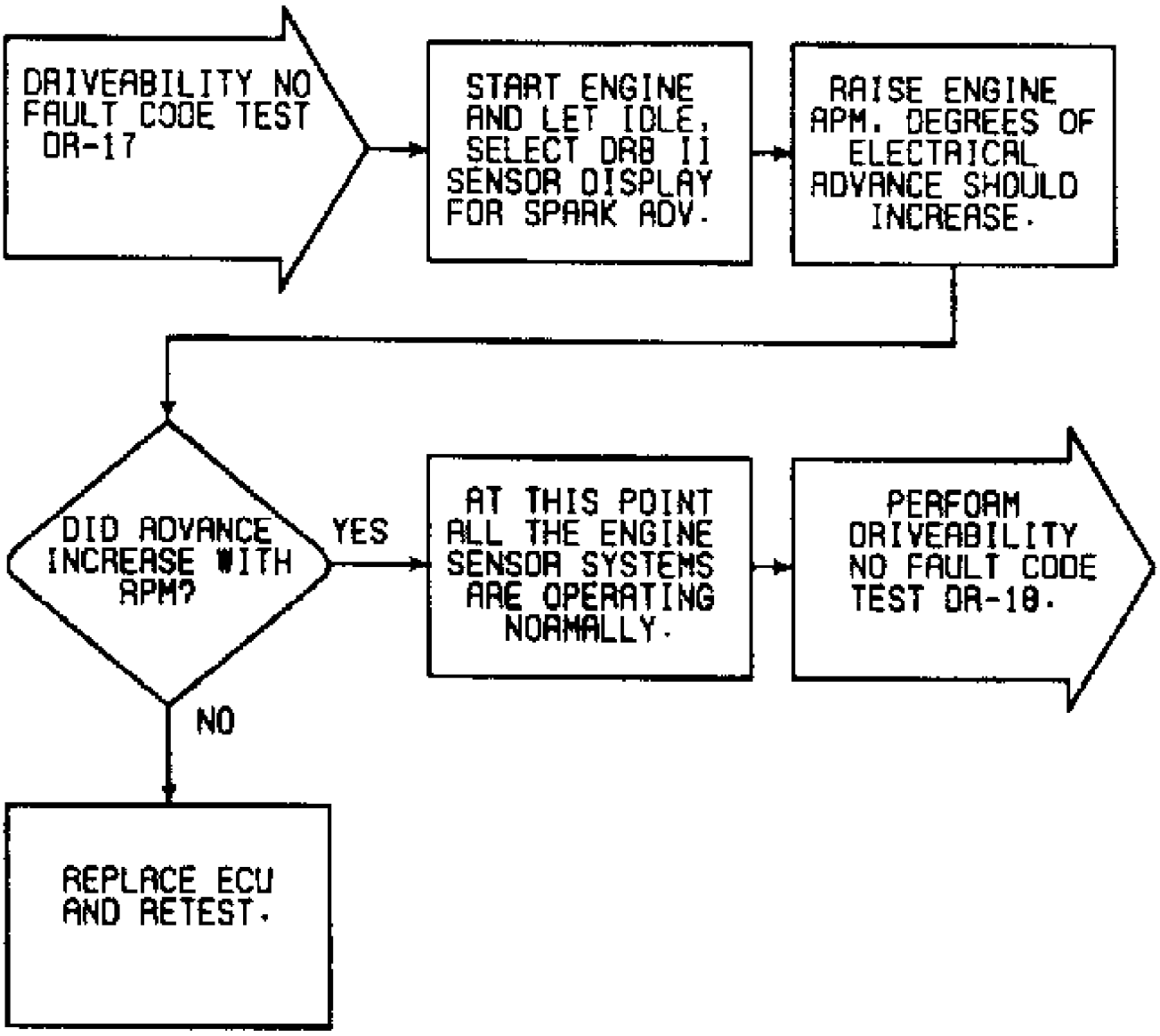


Fig. 163: Flow Chart DR-17 (1.6L) (6 of 6)

DR-18: NO FAULT CODE FUEL PRESSURE TEST - 1.6L

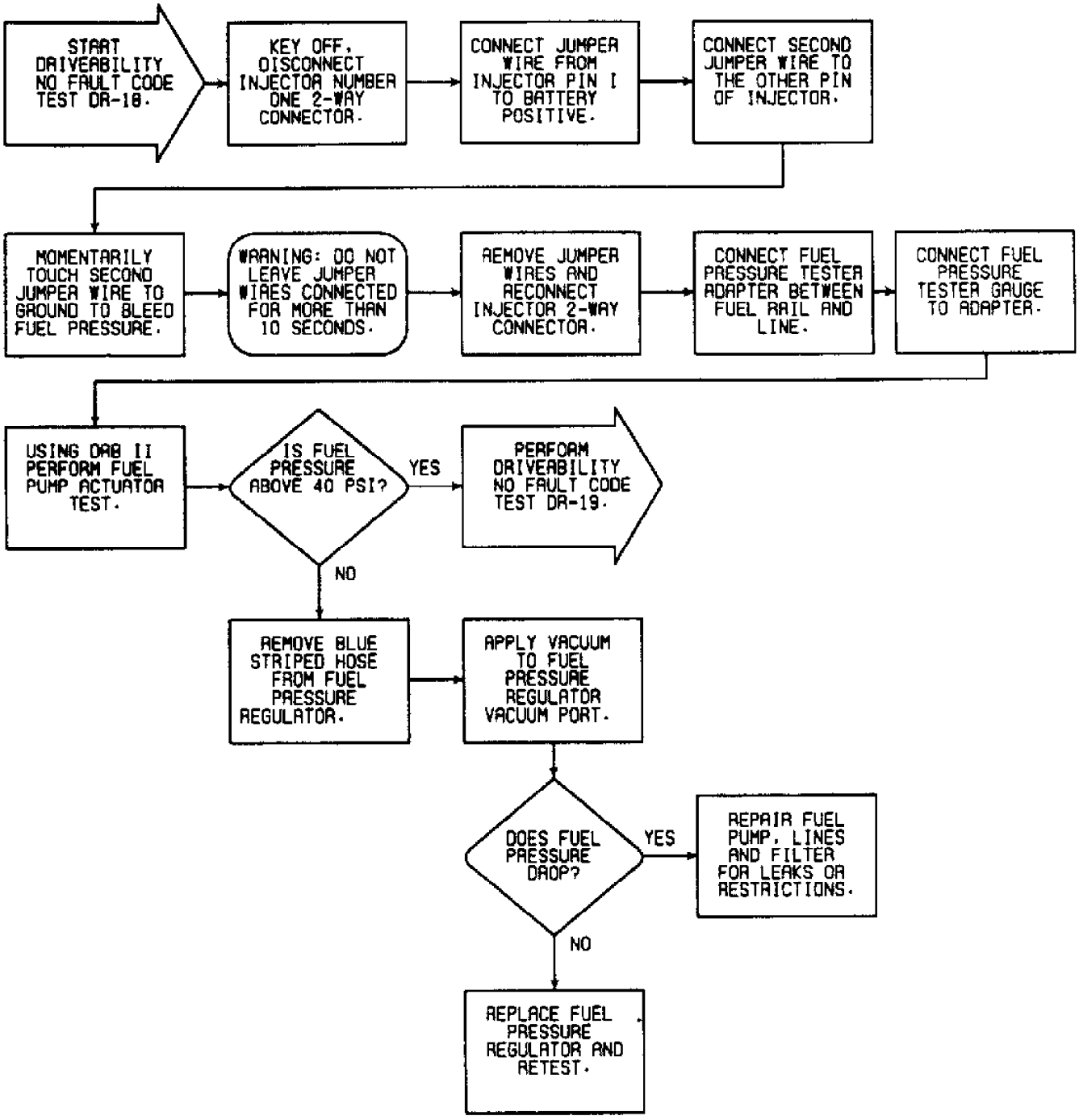


Fig. 164: Flow Chart DR-18 (1.6L)

DR-19: NO FAULT CODE EGR SYSTEM TEST - 1.6L

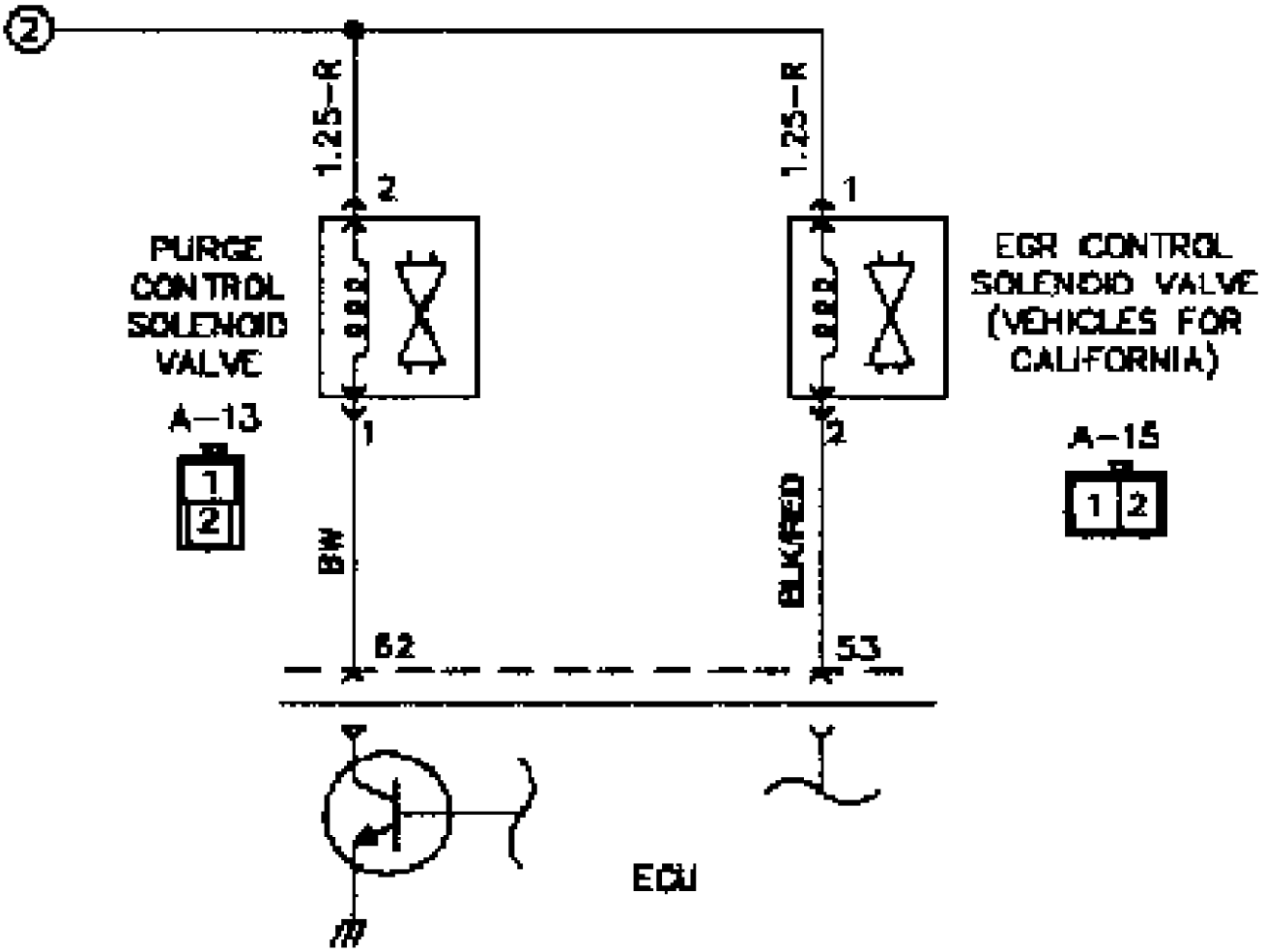


Fig. 165: Circuit Diagram DR-19 (1.6L)

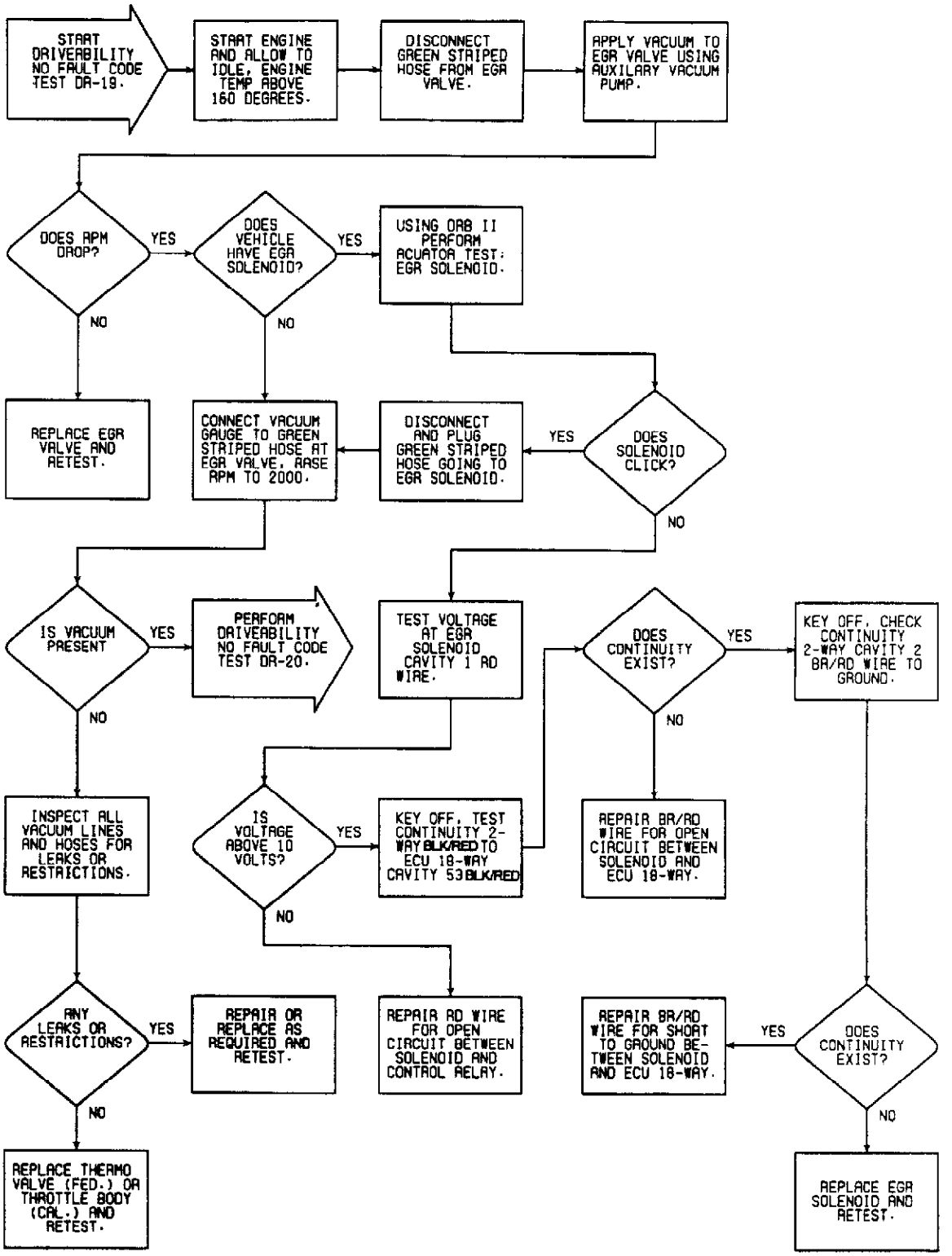


Fig. 166: Flow Chart DR-19 (1.6L)

DR-20: NO FAULT CODE PURGE CONTROL CIRCUIT TEST - 1.6L

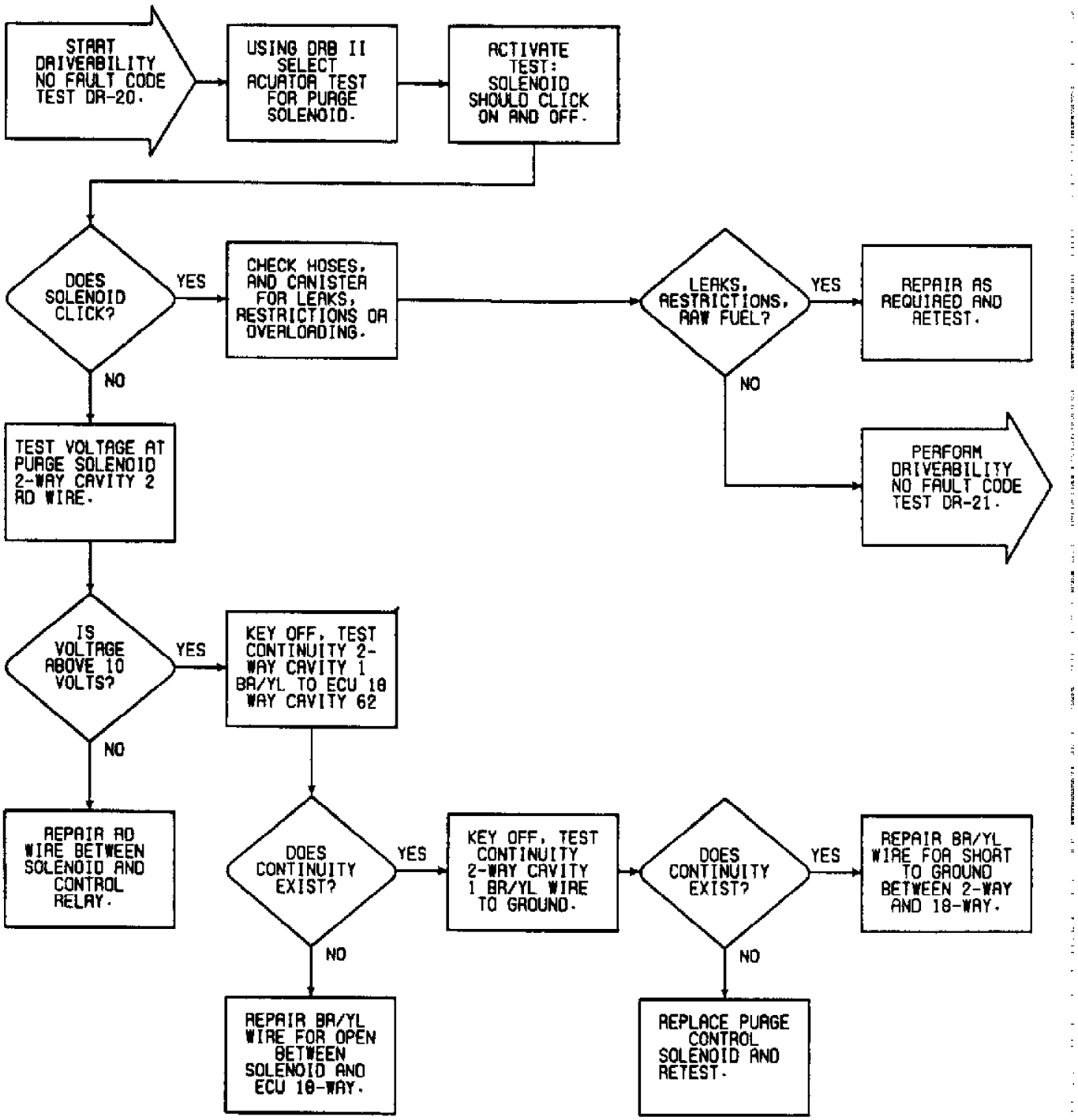


Fig. 167: Flow Chart DR-19 (1.6L)

DR-21: NO FAULT CODE MECHANICAL TEST - 1.6L

At this point in the driveability test procedure, you have determined that all of the engine control systems are operating as they were designed to. Therefore, they are not the cause of the driveability problem.

The following additional items can not be overlooked as possible causes of a driveability problem.

1. ENGINE IGNITION TIMING - Must be set with timing terminal grounded.
2. ENGINE VACUUM - Must be normal for your altitude.
3. ENGINE VALVE TIMING - To specifications.
4. ENGINE COMPRESSION - To specifications.
5. ENGINE P.C.V. SYSTEM - Must flow freely.
6. ENGINE EXHAUST SYSTEM - Must be free of any restrictions.
7. POWER BRAKE BOOSTER - No internal vacuum leaks.
8. TORQUE CONVERTER CONDITION - May cause very low power at breakaway or high speed (Only 1 condition at a time).
9. FUEL CONTAMINATION - High alcohol or water content.
10. FUEL INJECTORS - Rough idle may be caused by injector wiring not connected to correct injector.
11. ENGINE SECONDARY IGNITION CHECK - Abnormal scope patterns.
12. TECHNICAL SERVICE BULLETINS - Any that apply to vehicle.
13. All air intake piping and vacuum hoses must be in place and secure. The proper air filter element must be used.
14. FUEL PRESSURE - Must be correct.
    Specification: With no vacuum at the regulator:
    48 PSI on V6 & non-turbo 4 Cyl. engines
    36 PSI on turbo engines

NS-VER: NO START VERIFICATION PROCEDURE - 1.6L

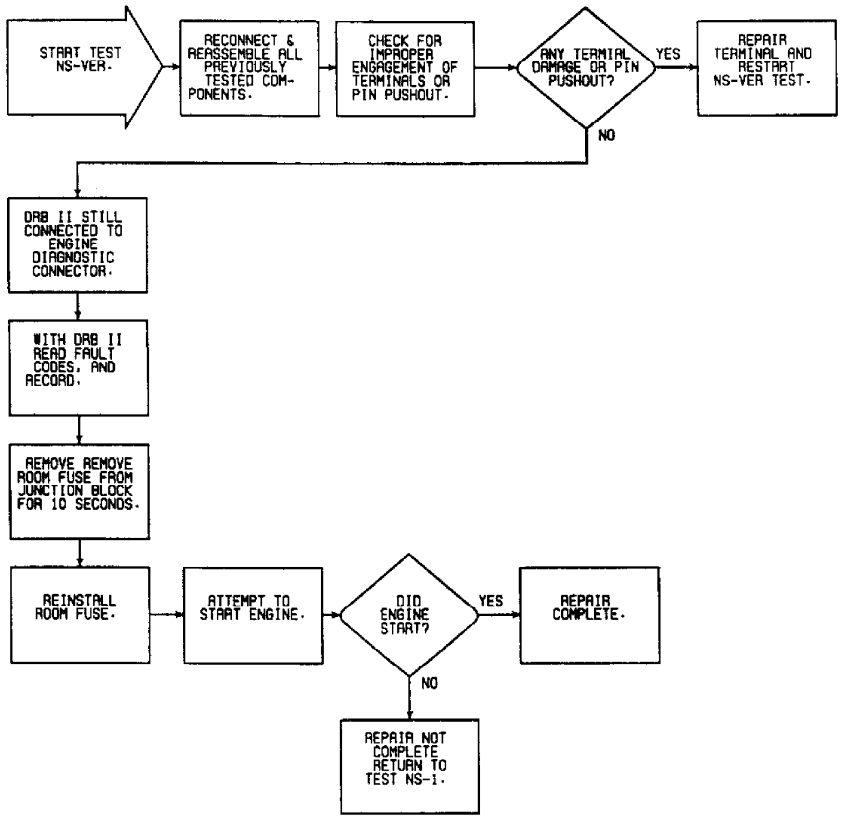


Fig. 168: Flow Chart NS-VER (1.6L)

DR-VER: DRIVEABILITY VERIFICATION PROCEDURE - 1.6L

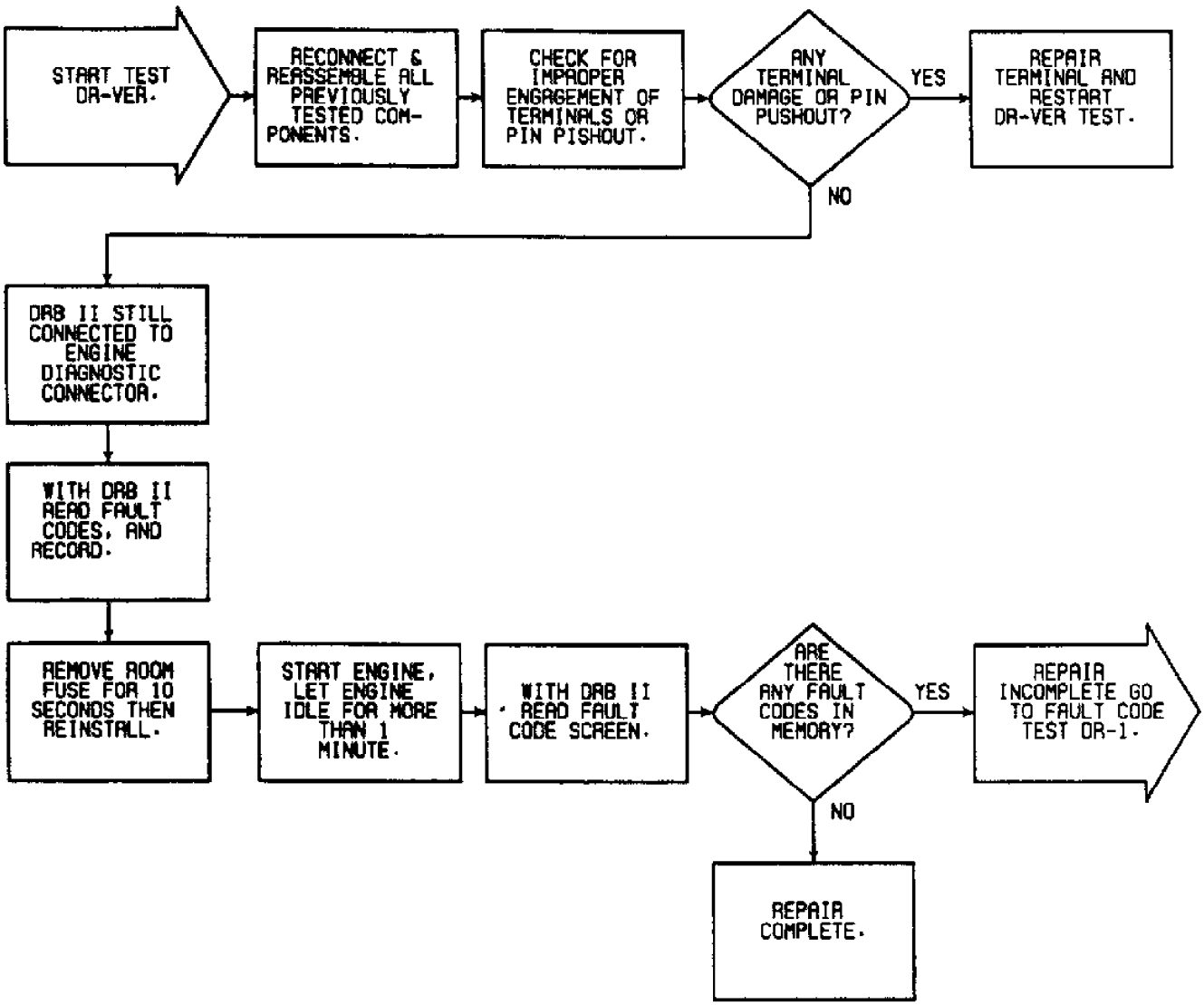


Fig. 169: Flow Chart DR-VER (1.6L)

NS-1: TESTING IGNITION CIRCUIT - 1.8L

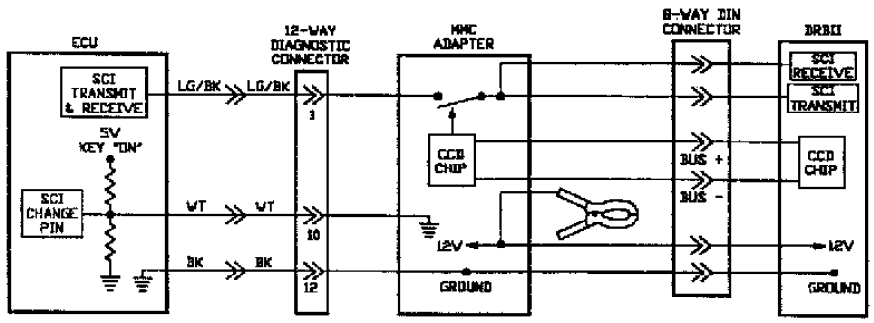


Fig. 170: Circuit Diagram NS-1 (1.8L)

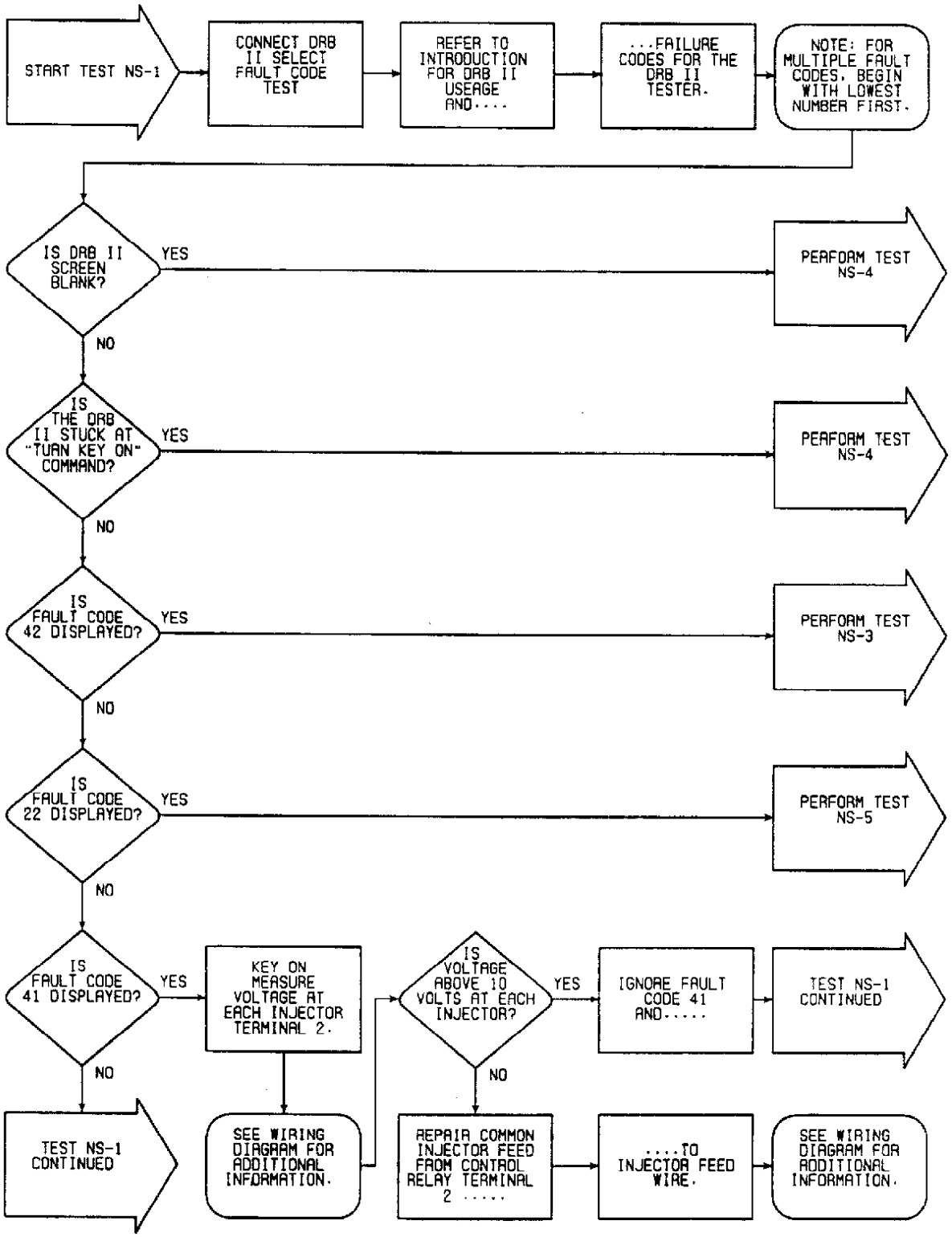


Fig. 171: Flow Chart NS-1 (1.8L) (1 of 3)

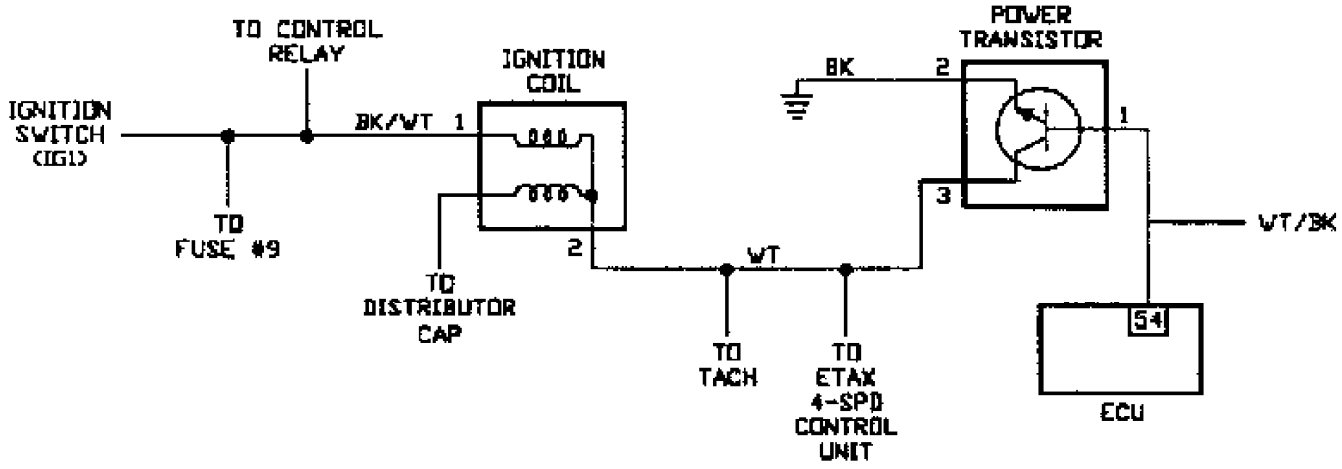


Fig. 172: Circuit Diagram NS-1 (1.8L)

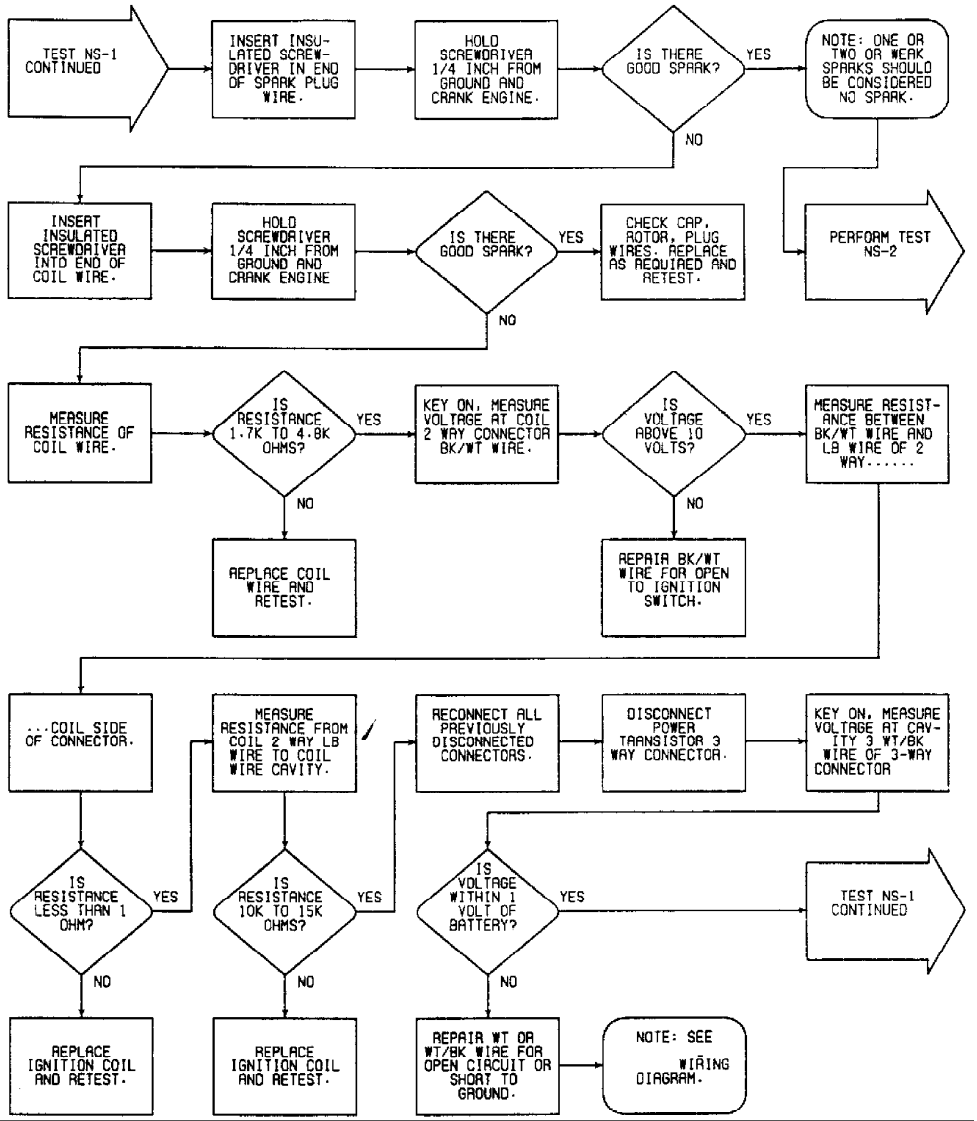


Fig. 173: Flow Chart NS-1 (1.8L) (2 of 3)

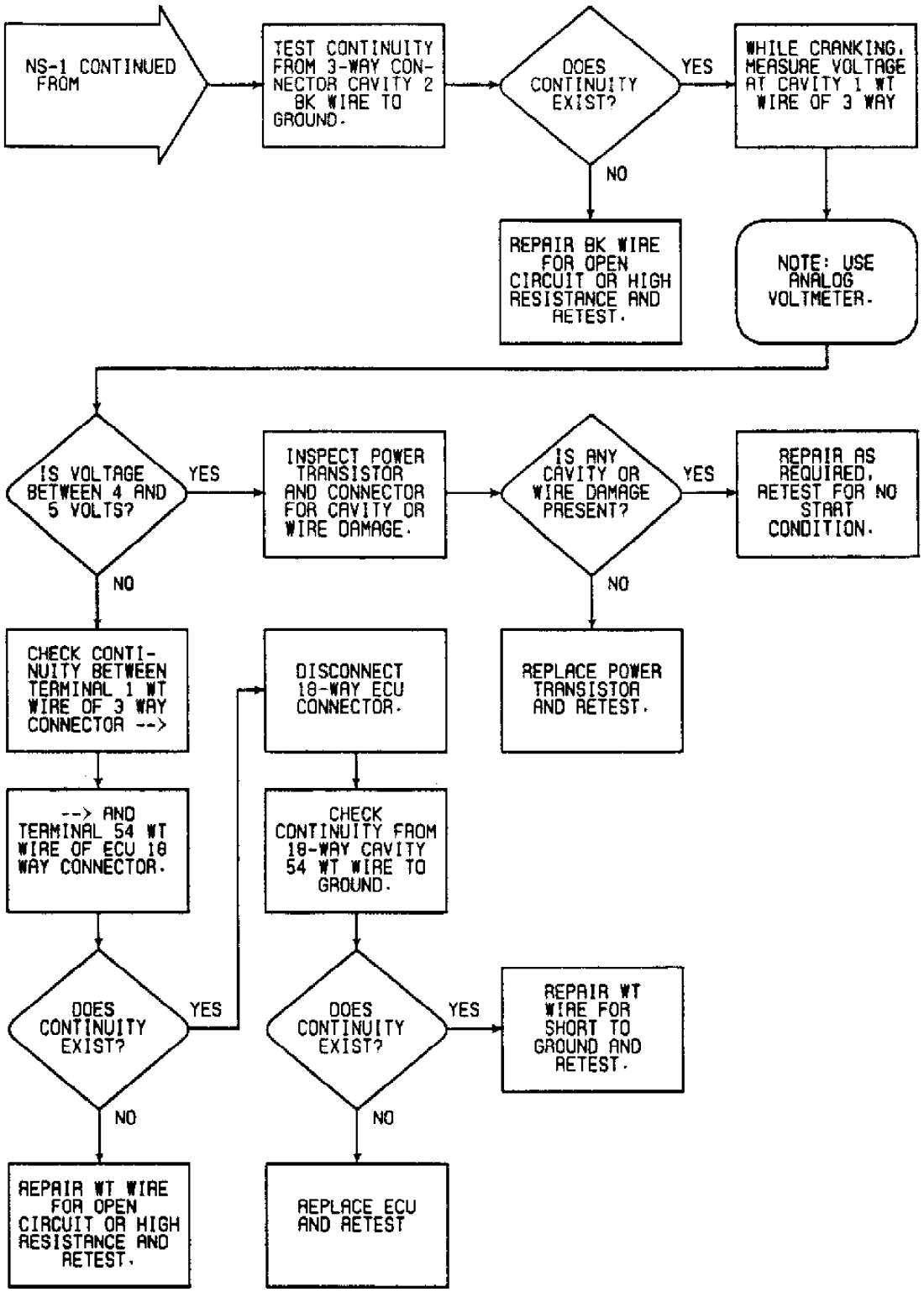


Fig. 174: Flow Chart NS-1 (1.8L) (3 of 3)

NS-2: TESTING FOR FUEL - 1.8L

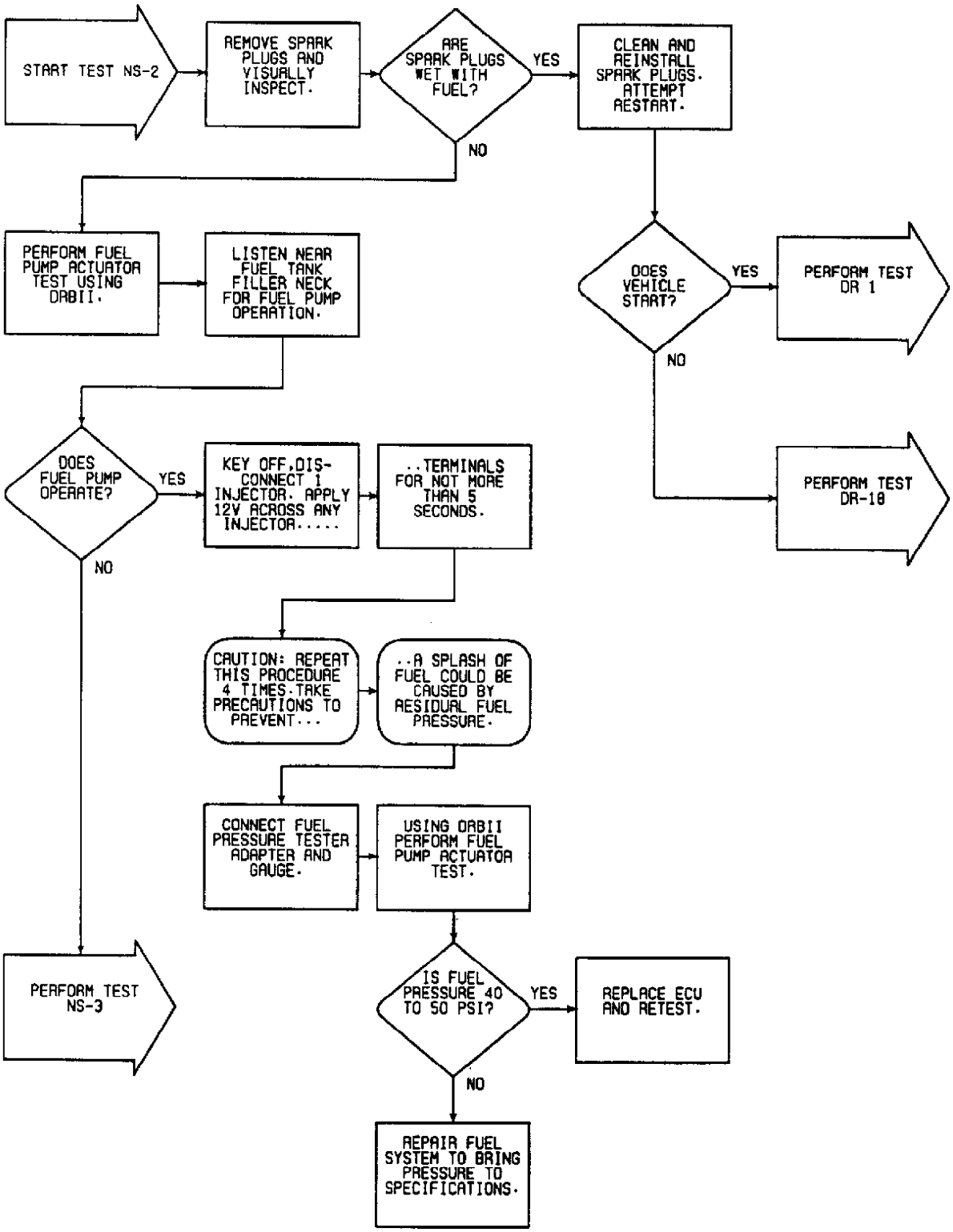


Fig. 175: Flow Chart NS-2 (1.8L)

NS-3: CODE 42 FUEL PUMP CIRCUIT - 1.8L

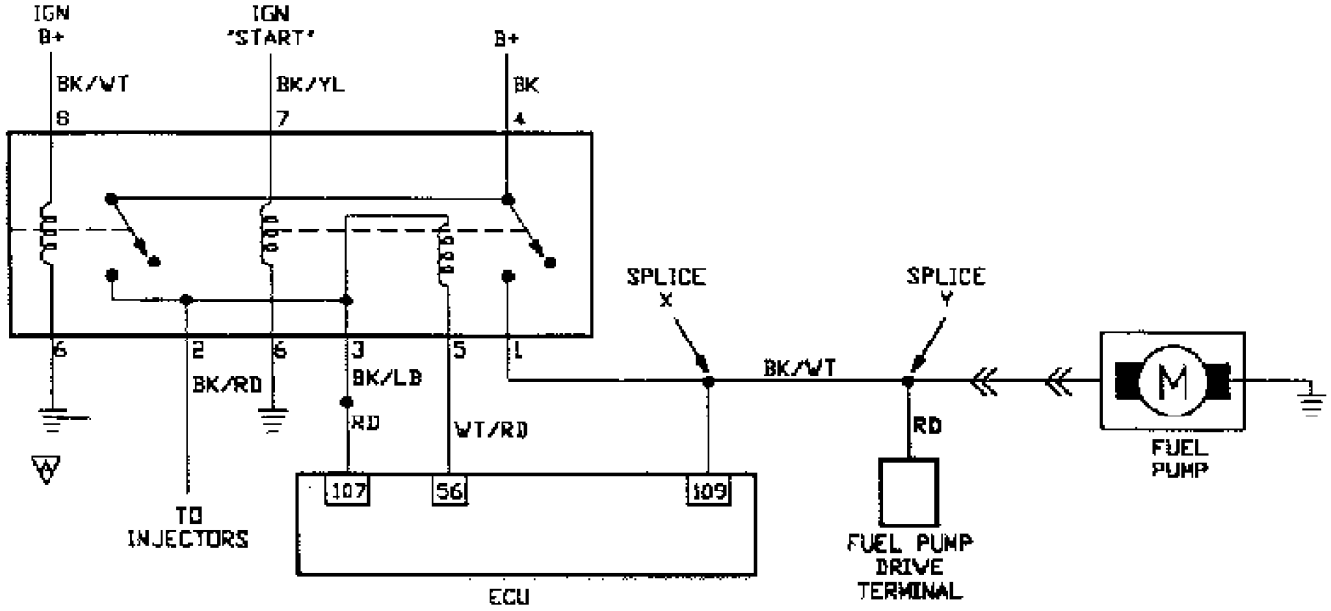


Fig. 176: Circuit Diagram NS-3 (1.8L)

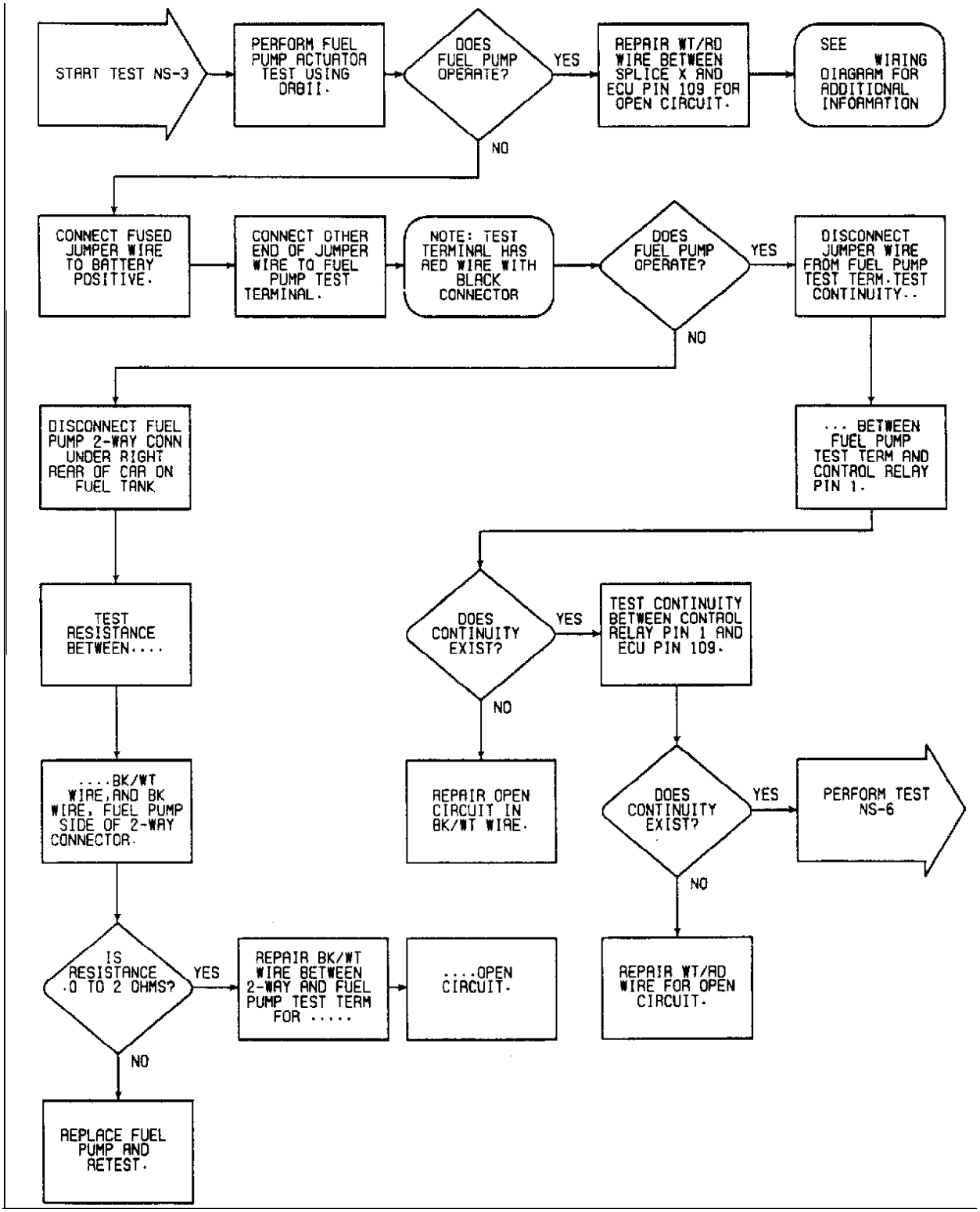


Fig. 177: Flow Chart NS-3 (1.8L)

NS-4: TESTING DIAGNOSTIC CONNECTOR - 1.8L

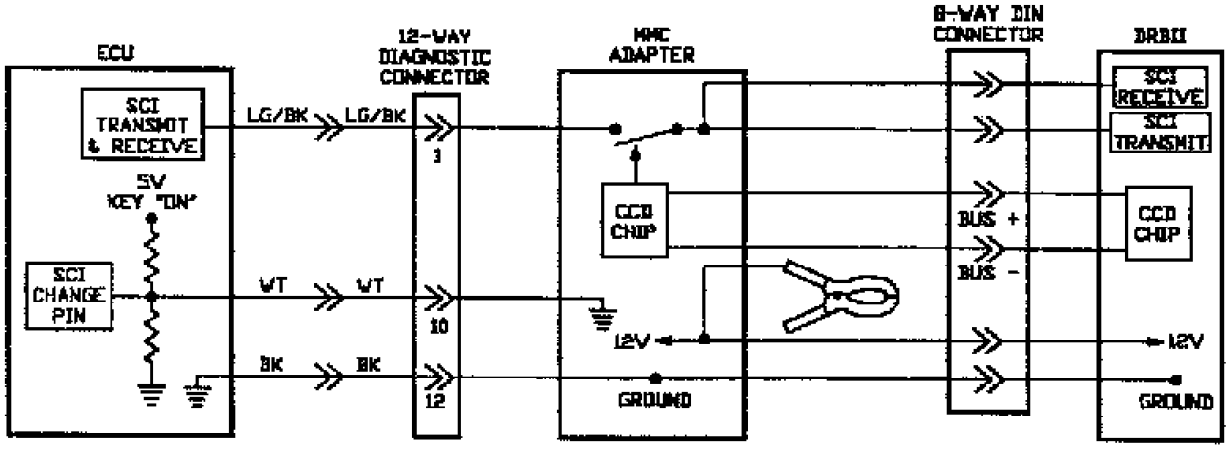


Fig. 178: Circuit Diagram NS-4 (1.8L)

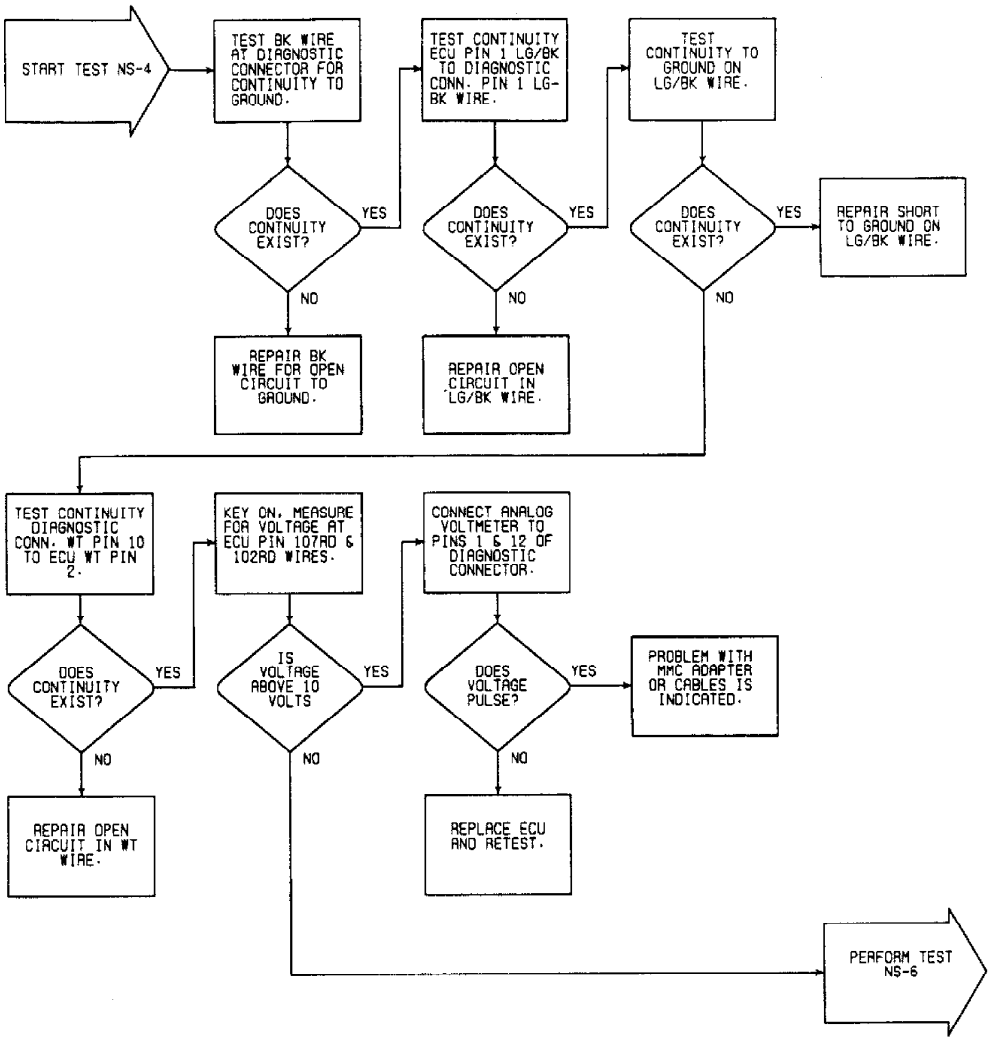


Fig. 179: Flow Chart NS-4 (1.8L)

NS-5: CODE 22 CRANK ANGLE SENSOR - 1.8L

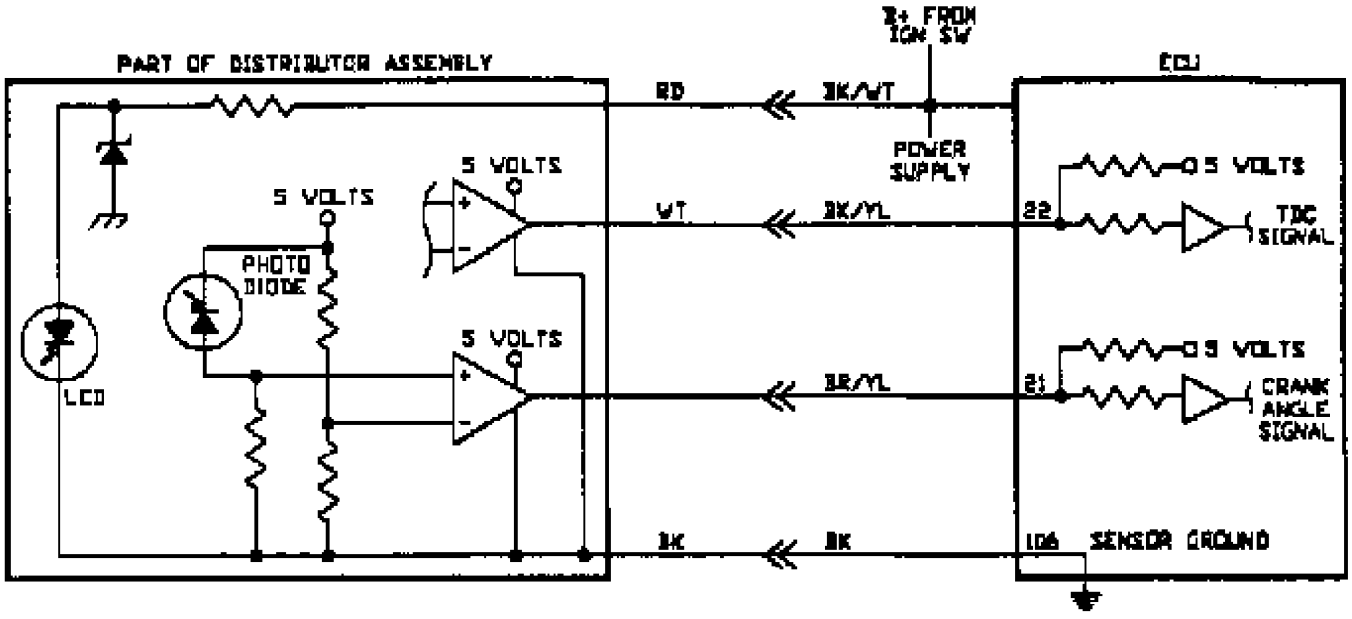


Fig. 180: Circuit Diagram NS-5 (1.8L)

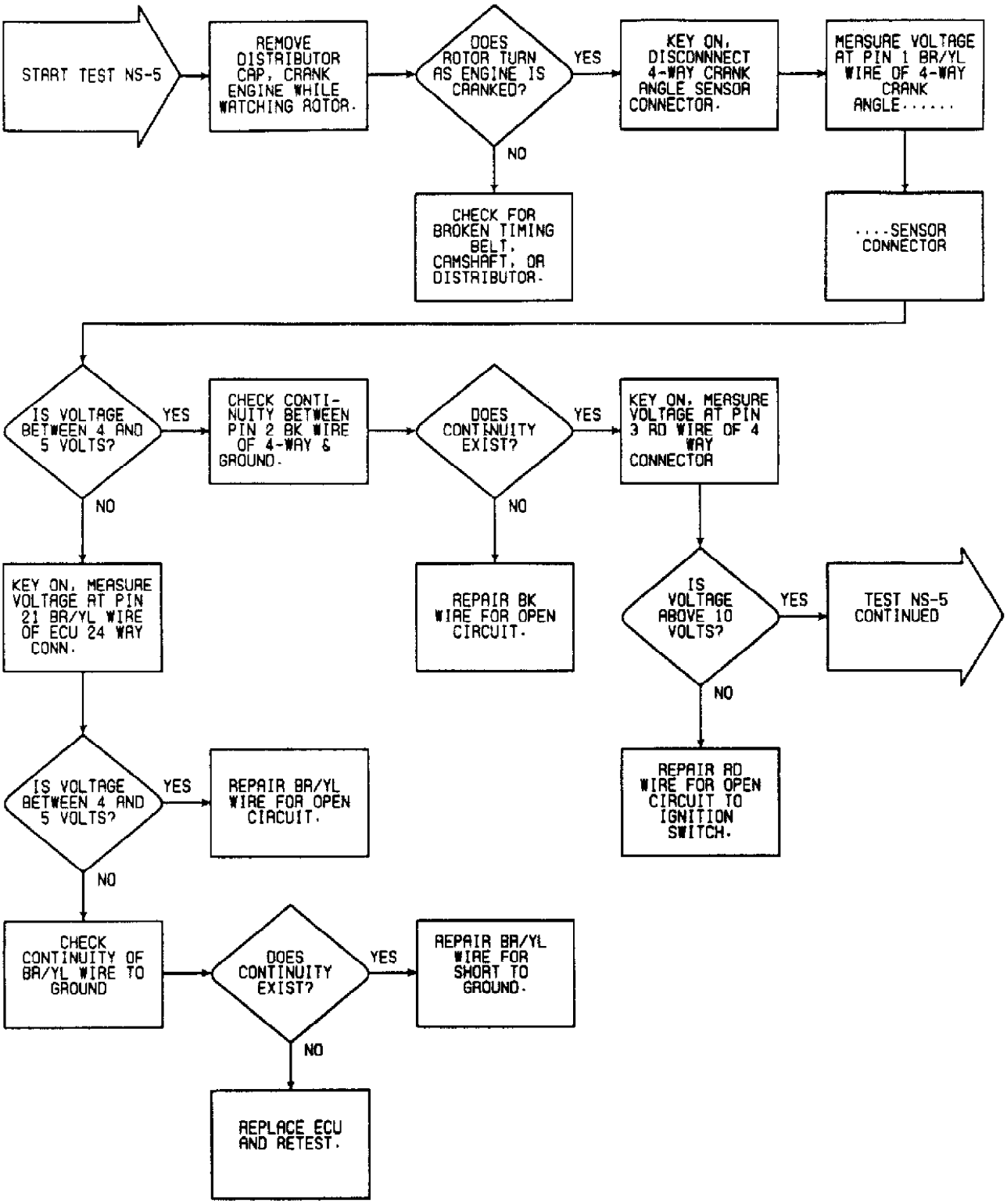


Fig. 181: Flow Chart NS-5 (1.8L) (1 of 2)

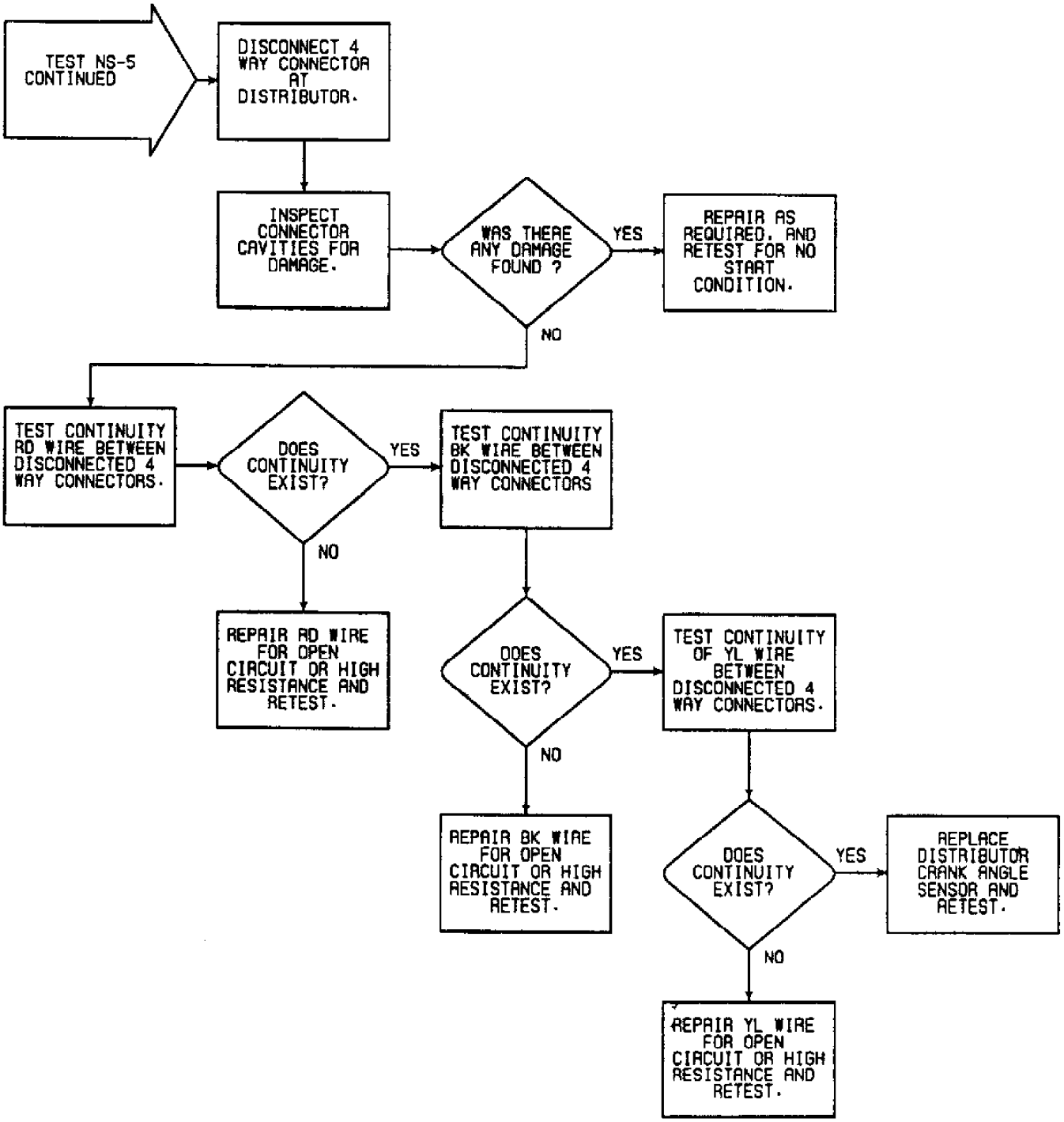


Fig. 182: Flow Chart NS-5 (1.8L) (2 of 2)

NS-6: TESTING CONTROL RELAY - 1.8L

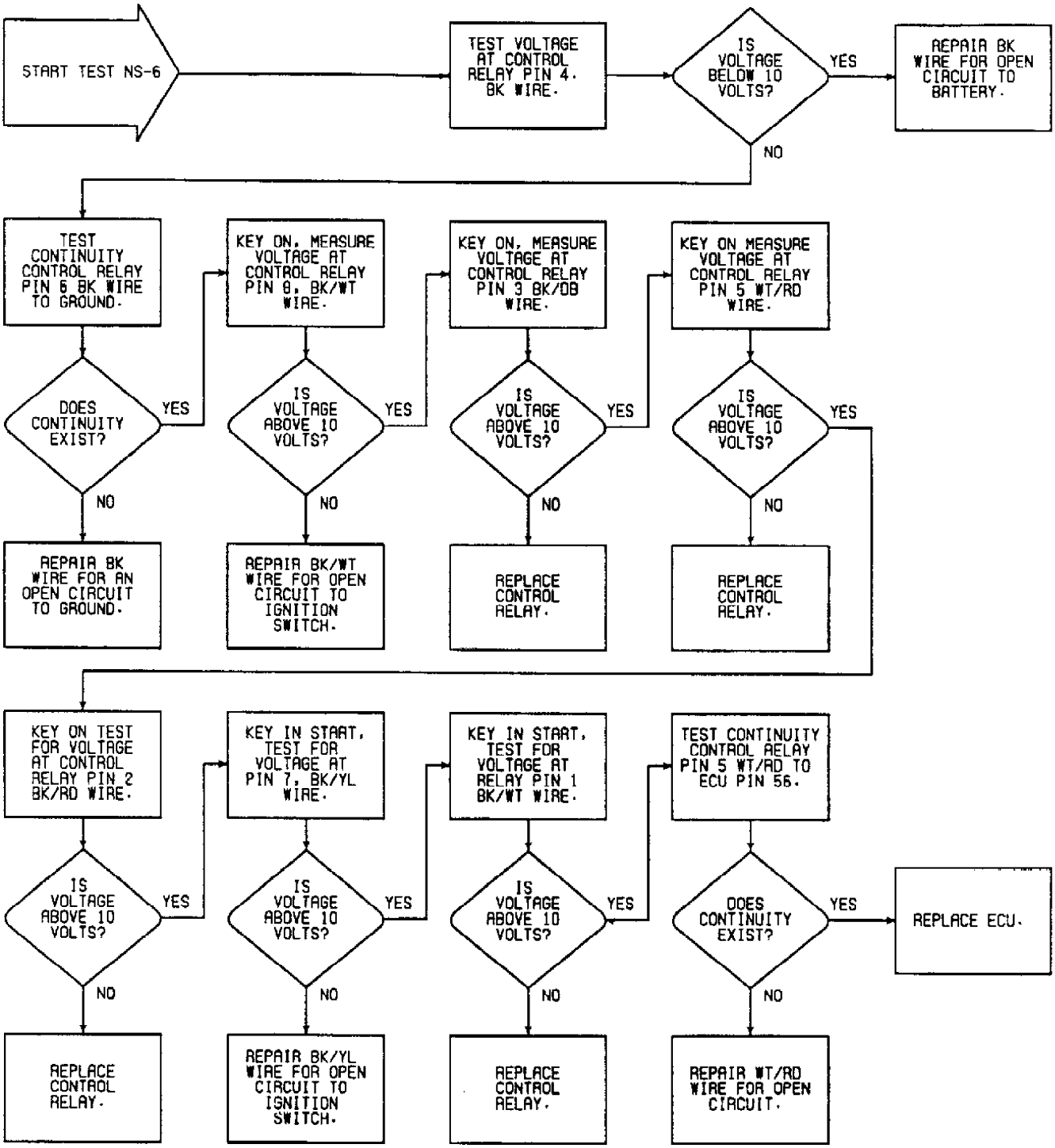


Fig. 183: Flow Chart NS-6 (1.8L)

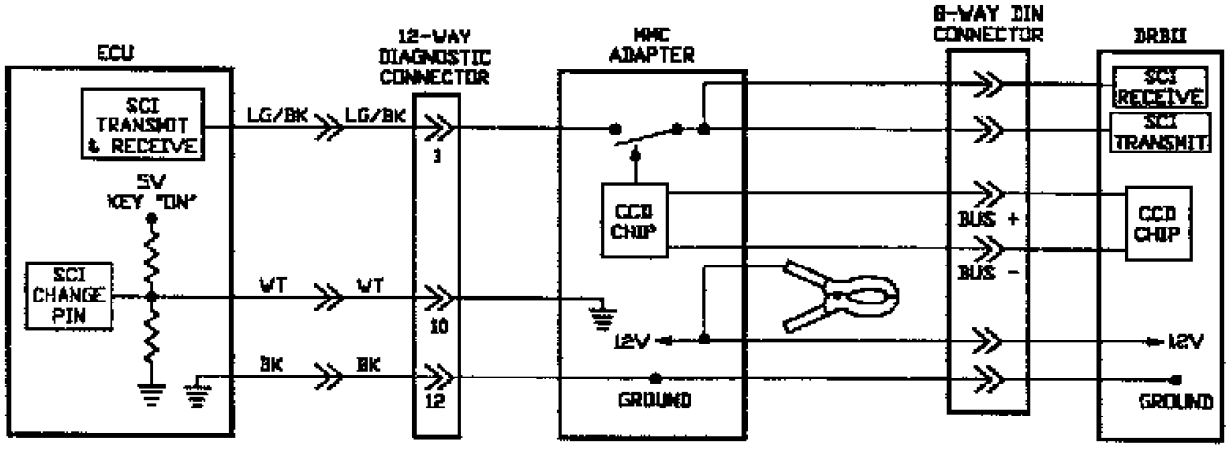


Fig. 184: Circuit Diagram DR-1 (1.8L)

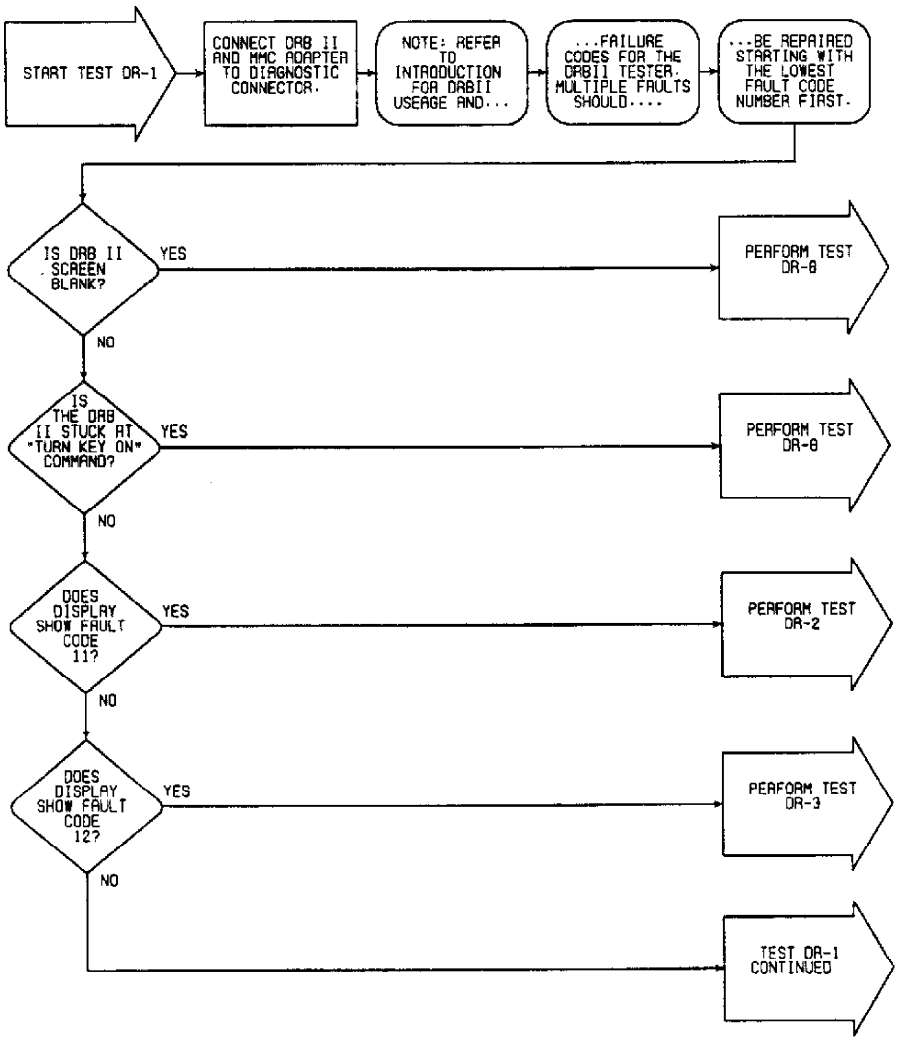


Fig. 185: Flow Chart DR-1 (1.8L) (1 of 2)

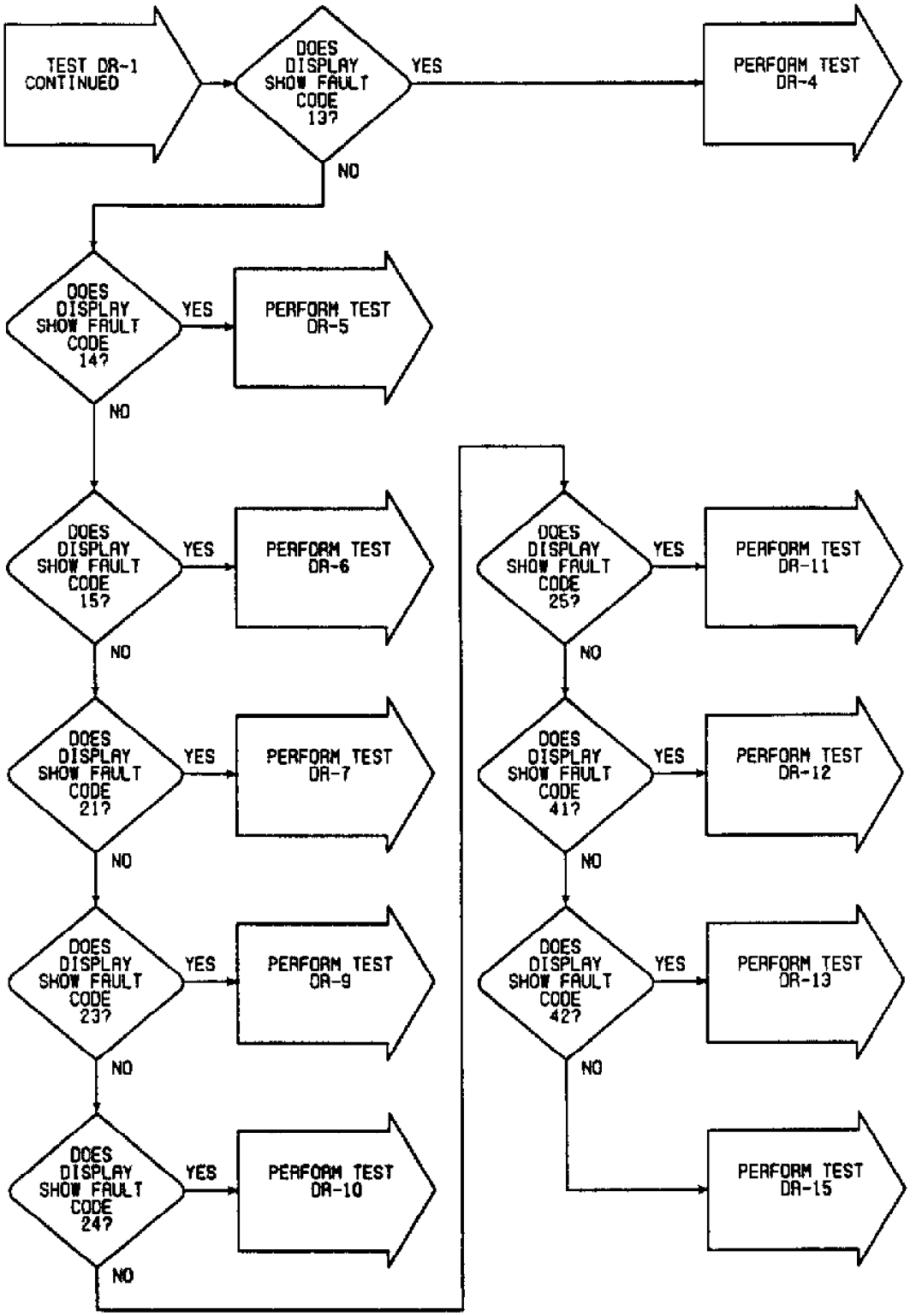


Fig. 186: Flow Chart DR-1 (1.8L) (2 of 2)

DR-2: CODE 11 OXYGEN SENSOR CIRCUIT - 1.8L

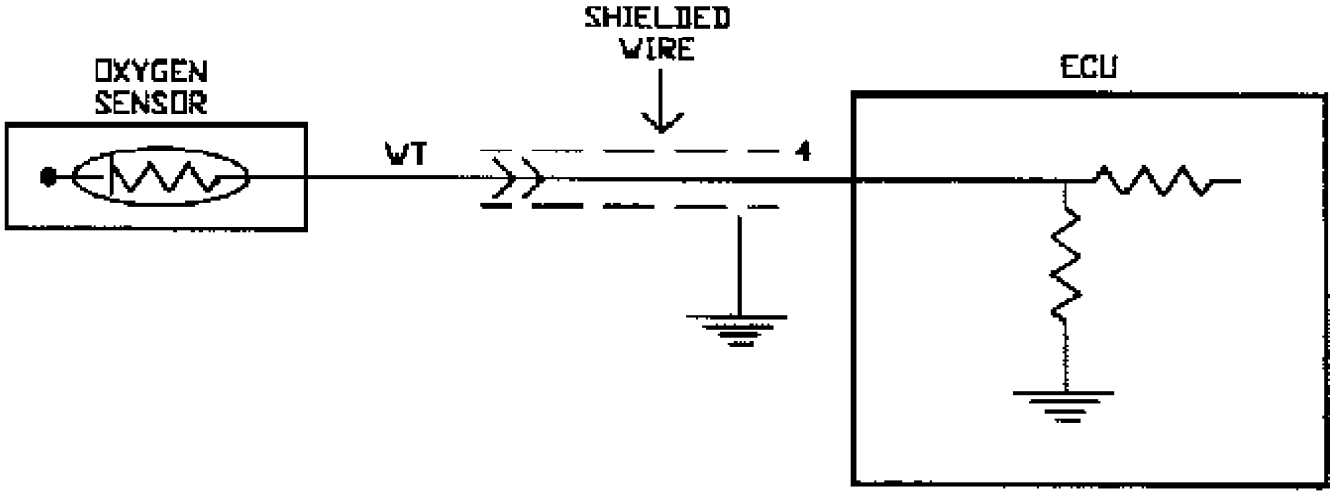


Fig. 187: Circuit Diagram DR-2 (1.8L)

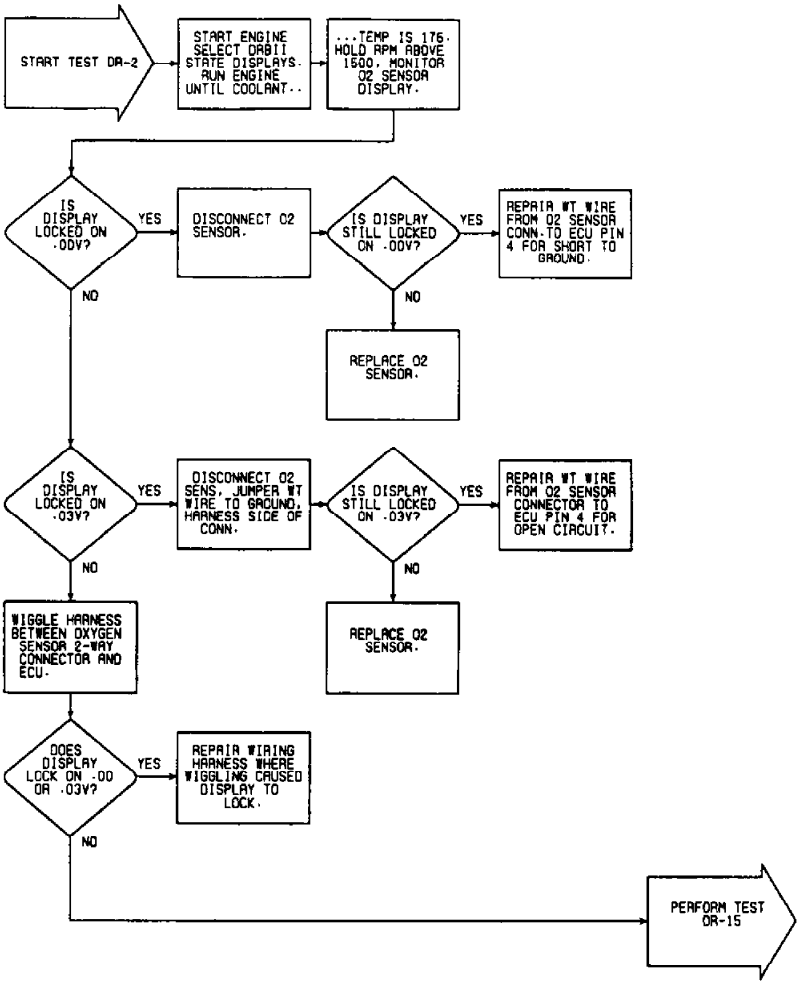


Fig. 188: Flow Chart DR-2 (1.8L)

DR-3: CODE 12 AIRFLOW SENSOR CIRCUIT - 1.8L

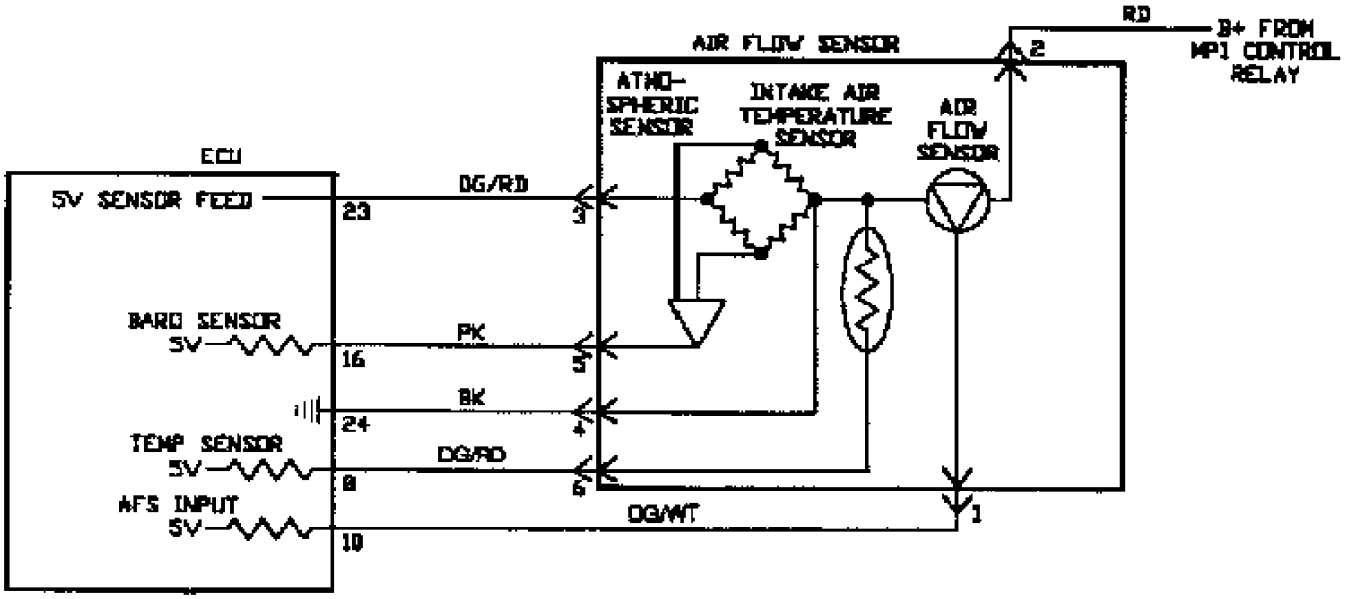


Fig. 189: Circuit Diagram DR-3 (1.8L)

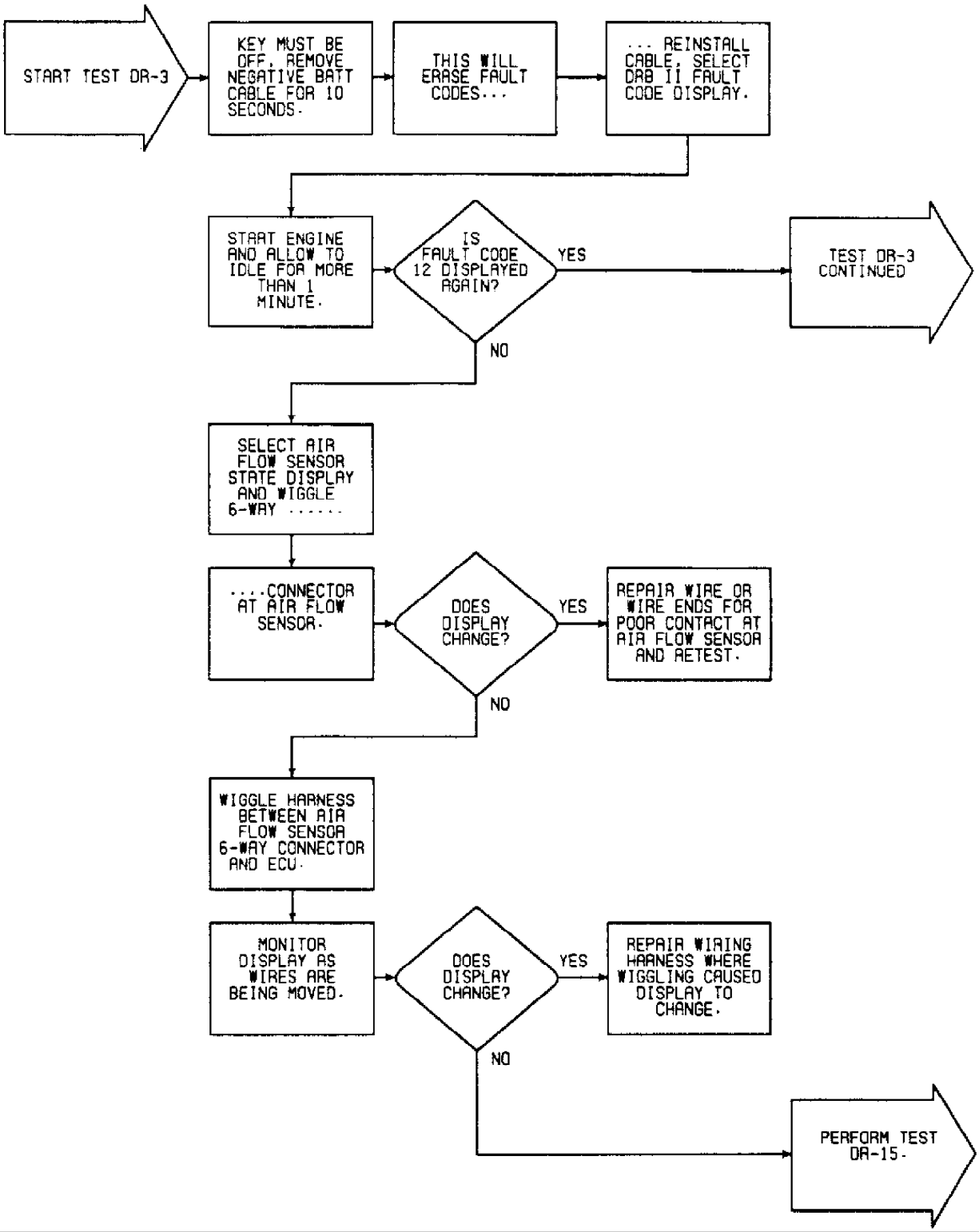


Fig. 190: Flow Chart DR-3 (1.8L) (1 of 3)

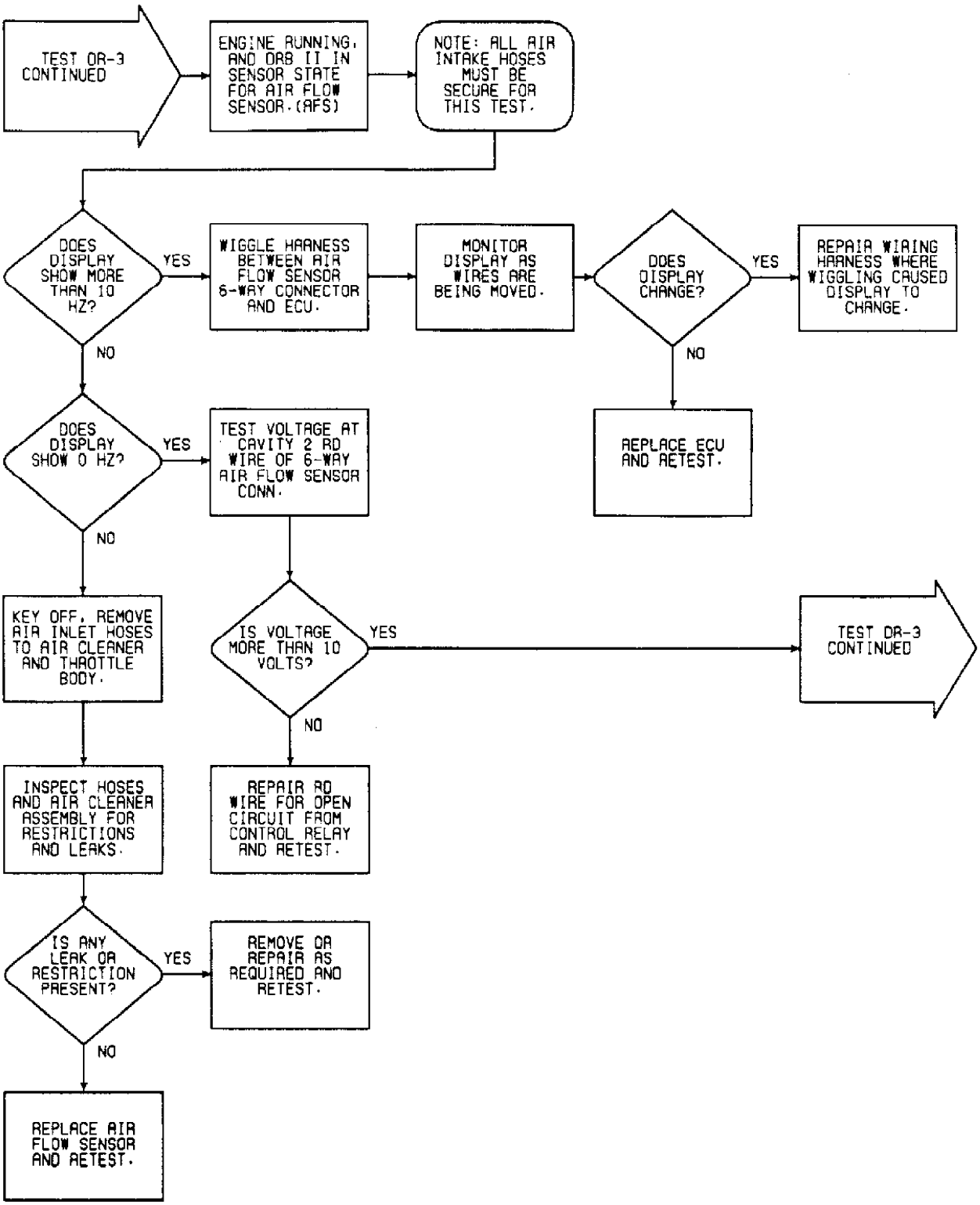


Fig. 191: Flow Chart DR-3 (1.8L) (2 of 3)

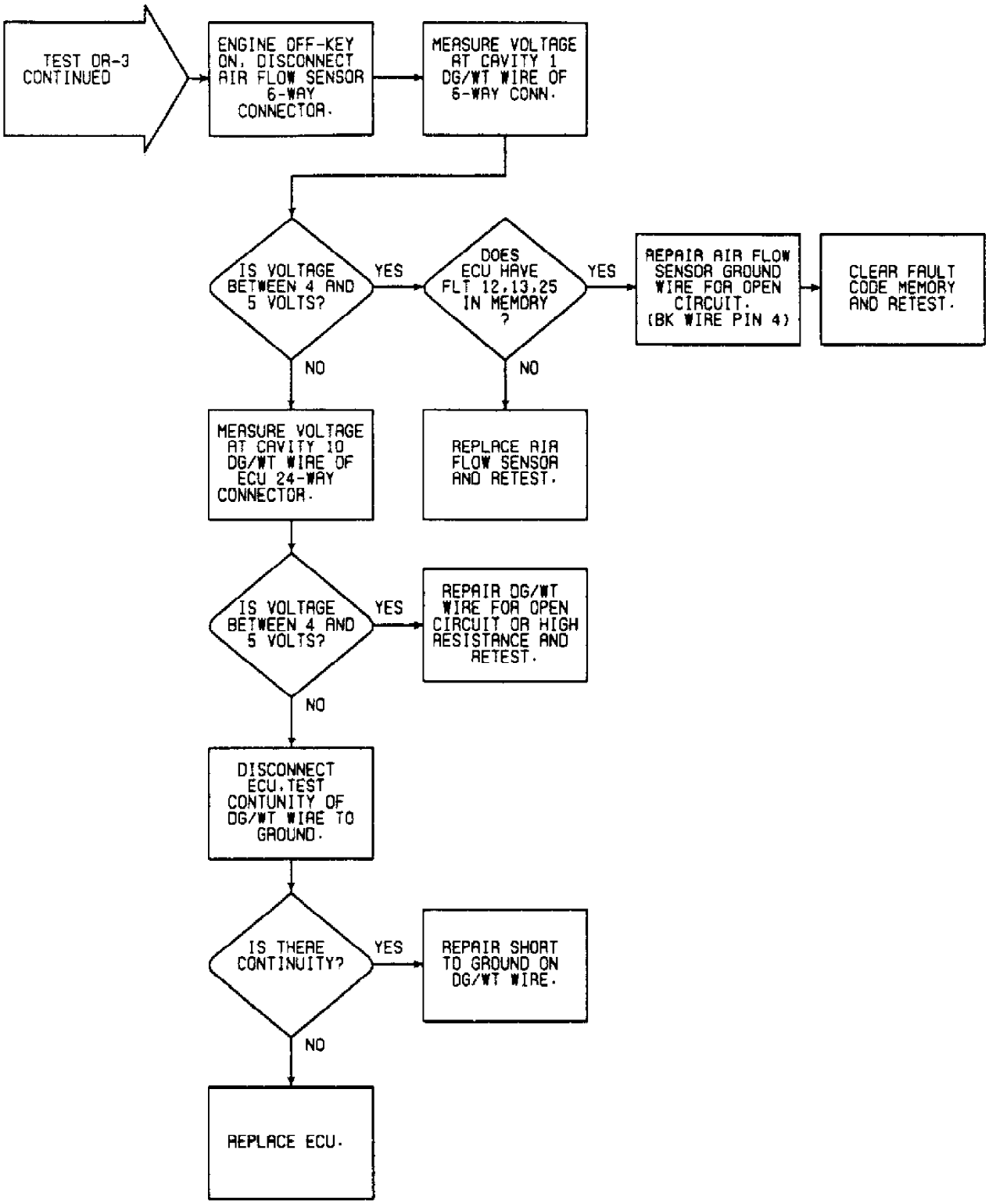


Fig. 192: Flow Chart DR-3 (1.8L) (3 of 3)

DR-4: CODE 13 INTAKE AIR TEMP. SENSOR CIRCUIT - 1.8L

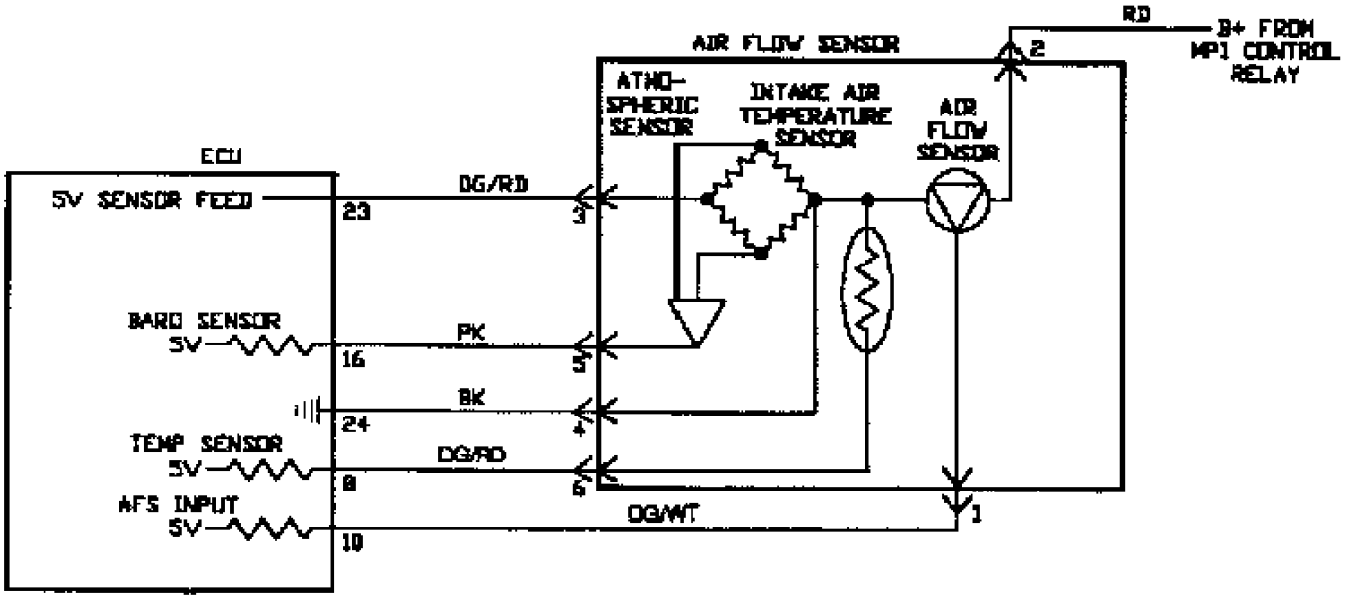


Fig. 193: Circuit Diagram DR-4 (1.8L)

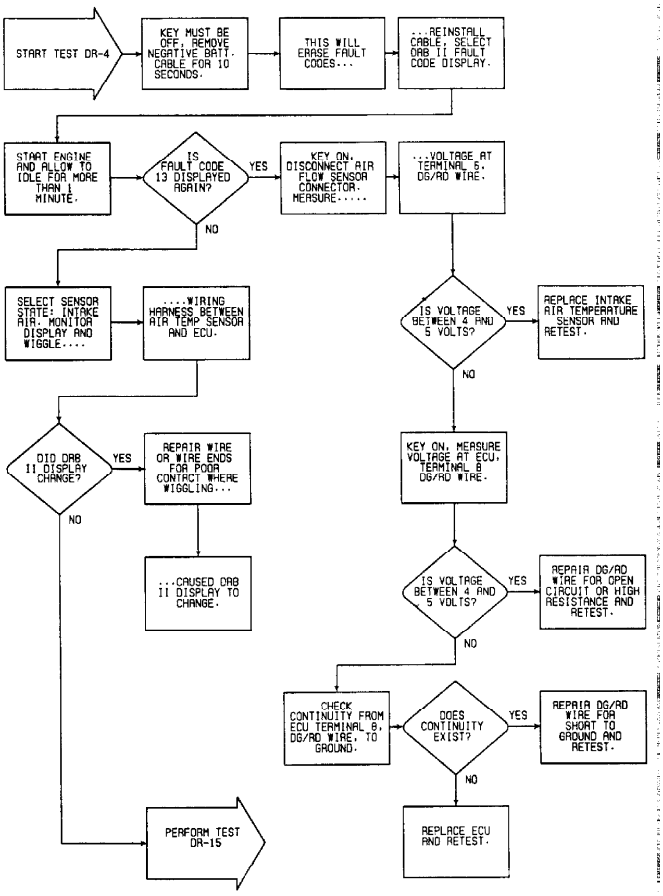


Fig. 194: Flow Chart DR-4 (1.8L)

DR-5: CODE 14 THROTTLE POSITION SENSOR CIRCUIT - 1.8L

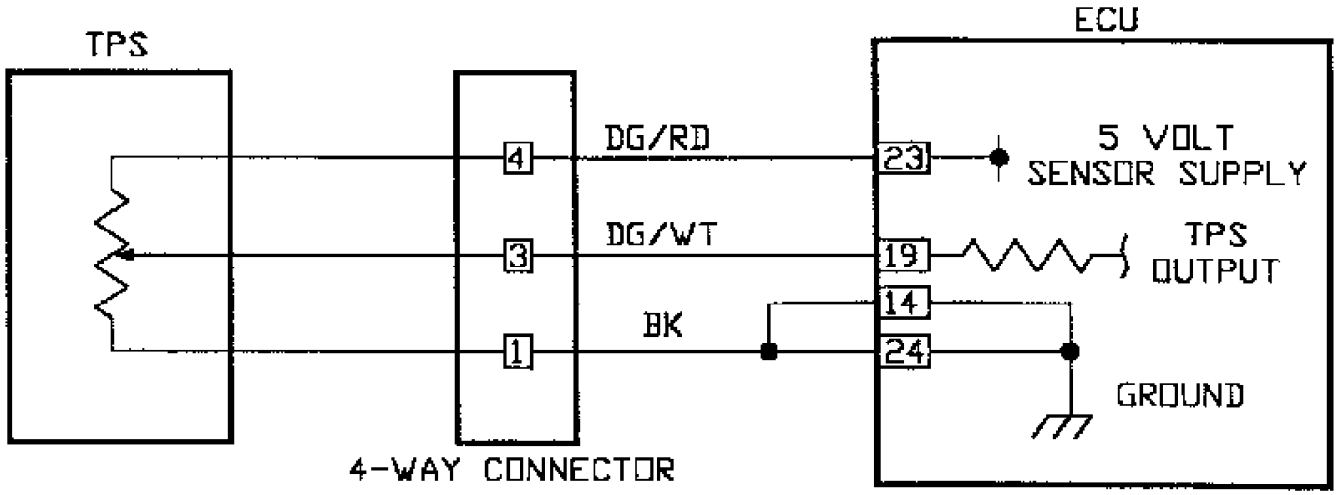


Fig. 195: Circuit Diagram DR-5 (1.8L)

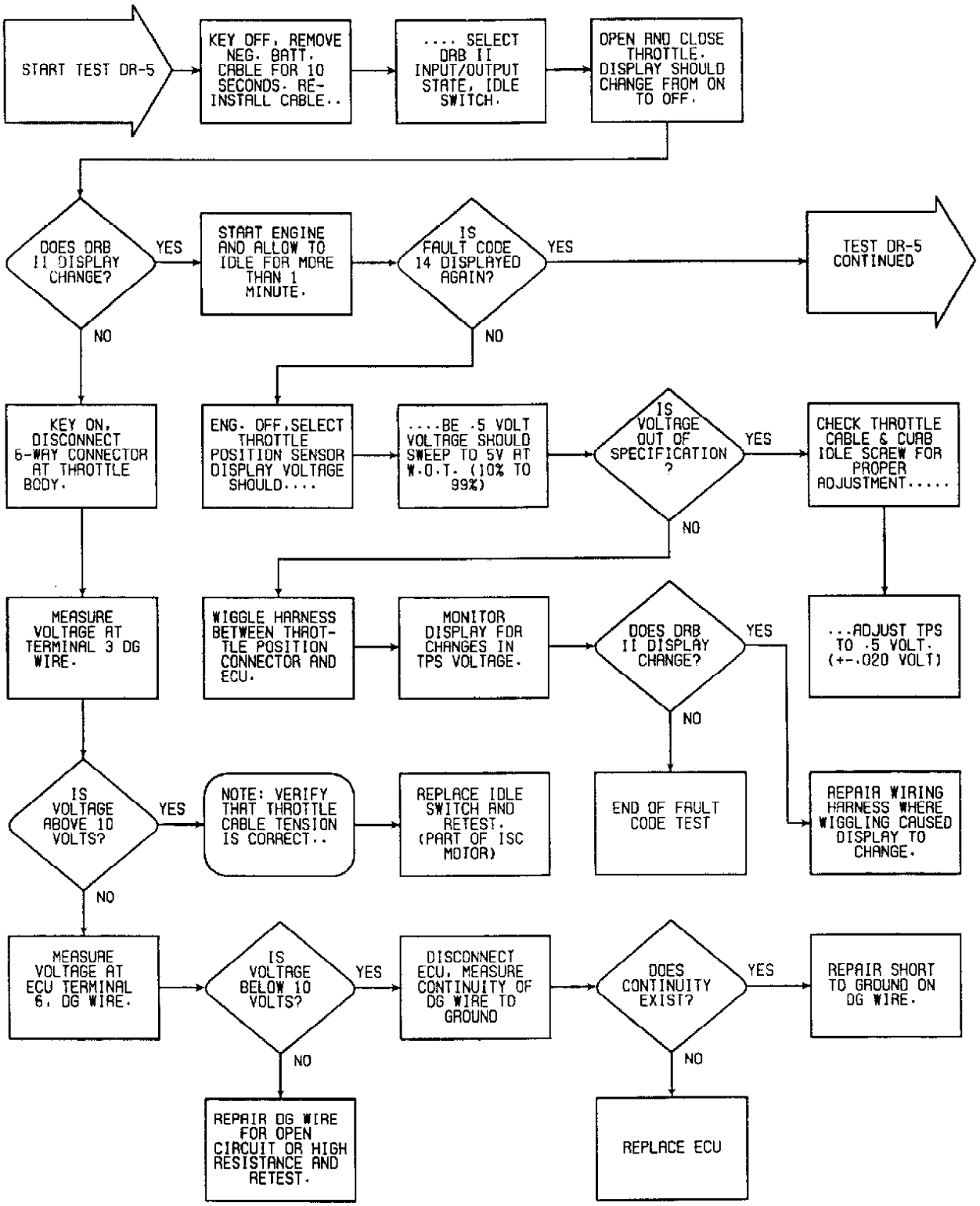


Fig. 196: Flow Chart DR-5 (1.8L) (1 of 2)

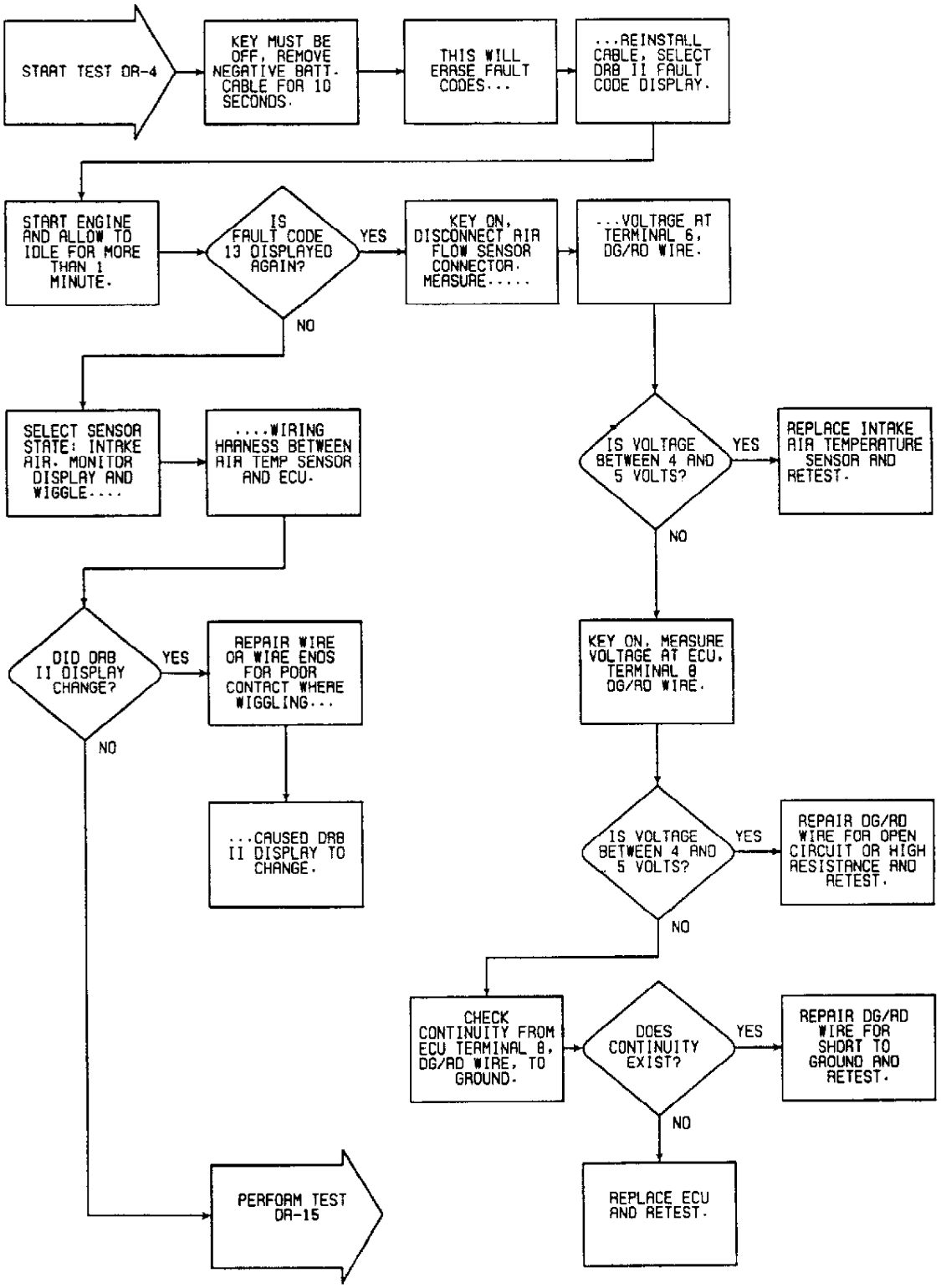


Fig. 197: Flow Chart DR-5 (1.8L) (2 of 2)

DR-6: CODE 15 MOTOR POSITION SENSOR CIRCUIT - 1.8L

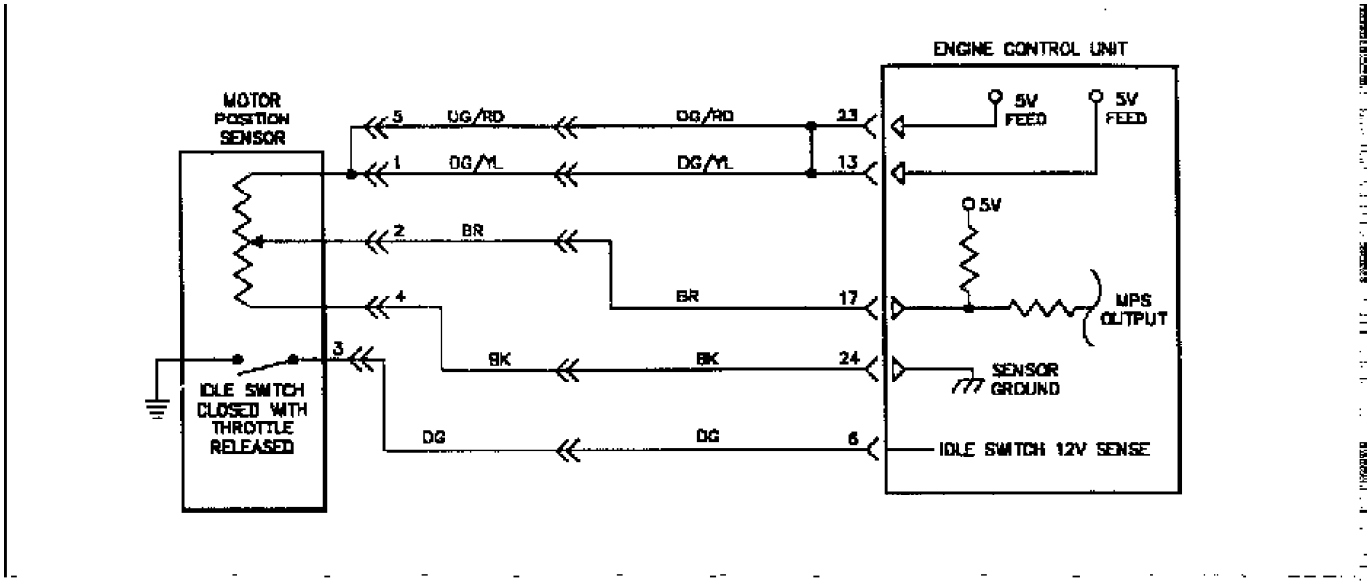


Fig. 198: Circuit Diagram DR-6 (1.8L)

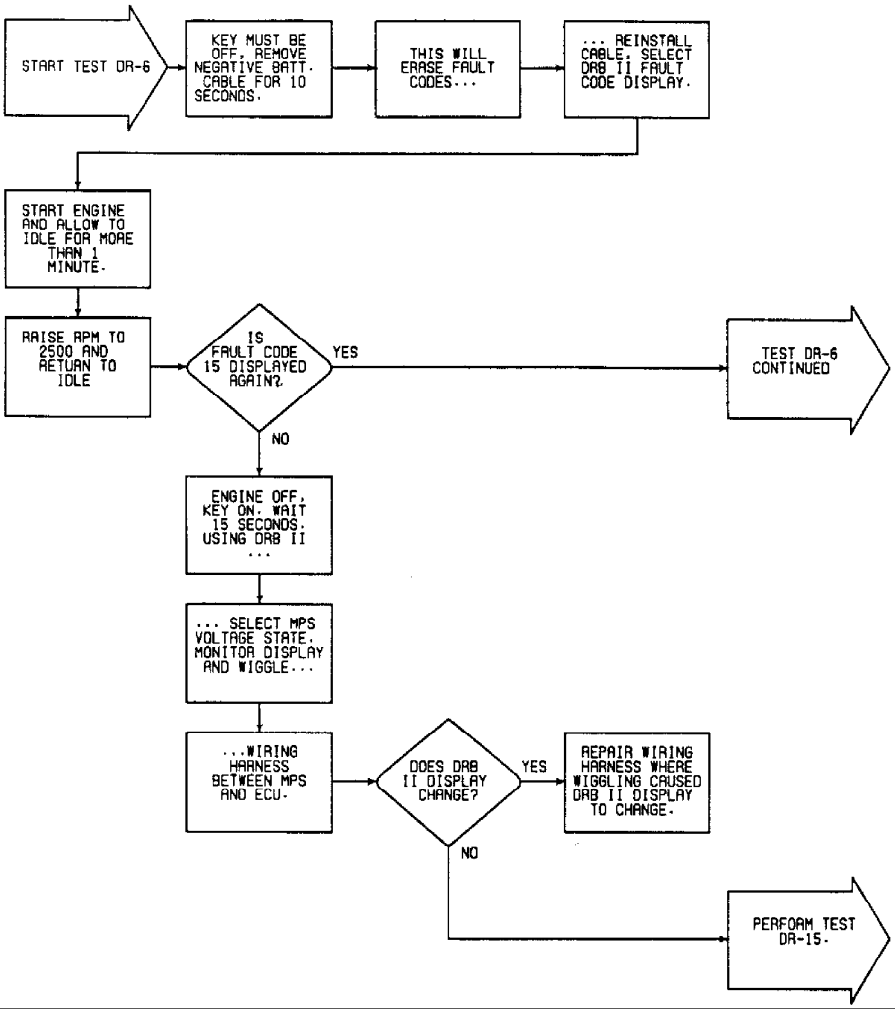


Fig. 199: Flow Chart DR-6 (1.8L) (1 of 2)

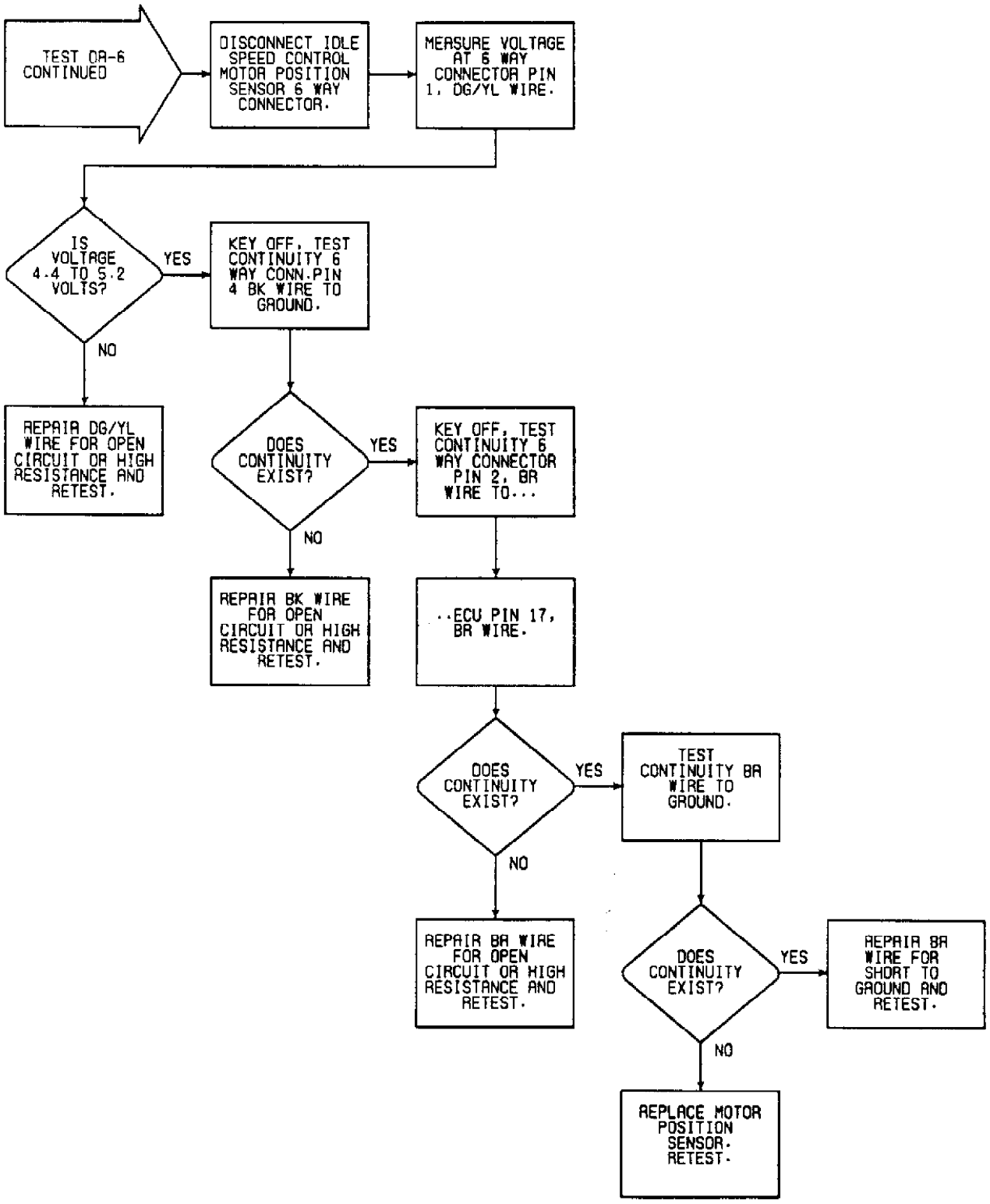


Fig. 200: Flow Chart DR-6 (1.8L) (2 of 2)

DR-7: CODE 21 COOLANT TEMP. SENSOR CIRCUIT - 1.8L

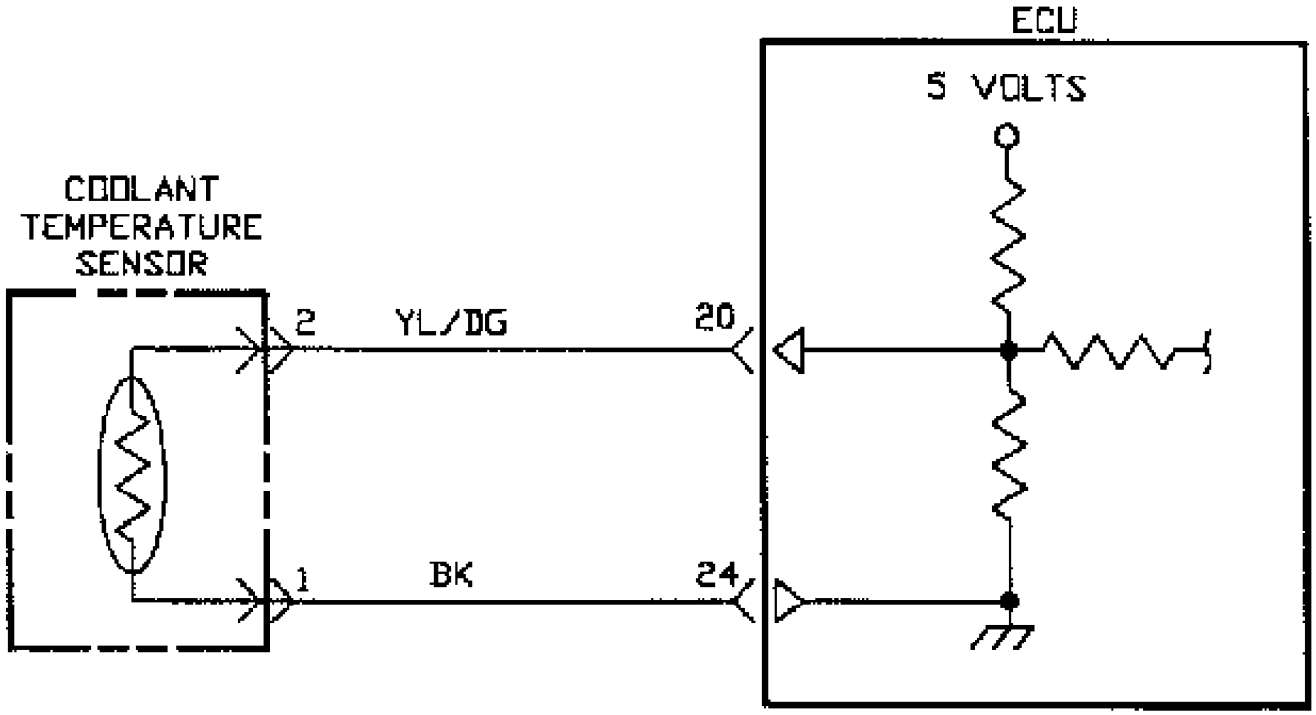


Fig. 201: Circuit Diagram DR-7 (1.8L)

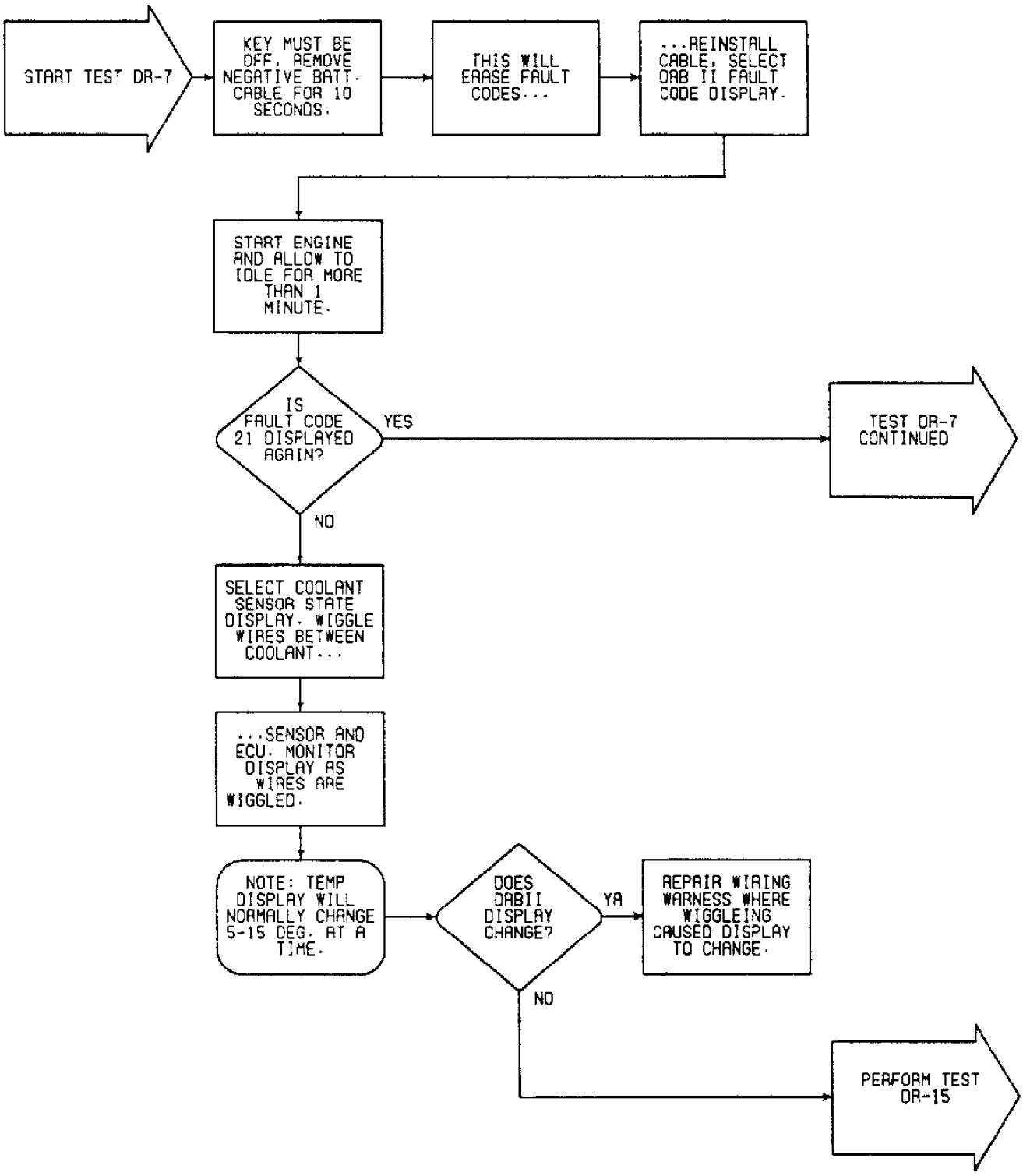


Fig. 202: Flow Chart DR-7 (1.8L) (1 of 2)

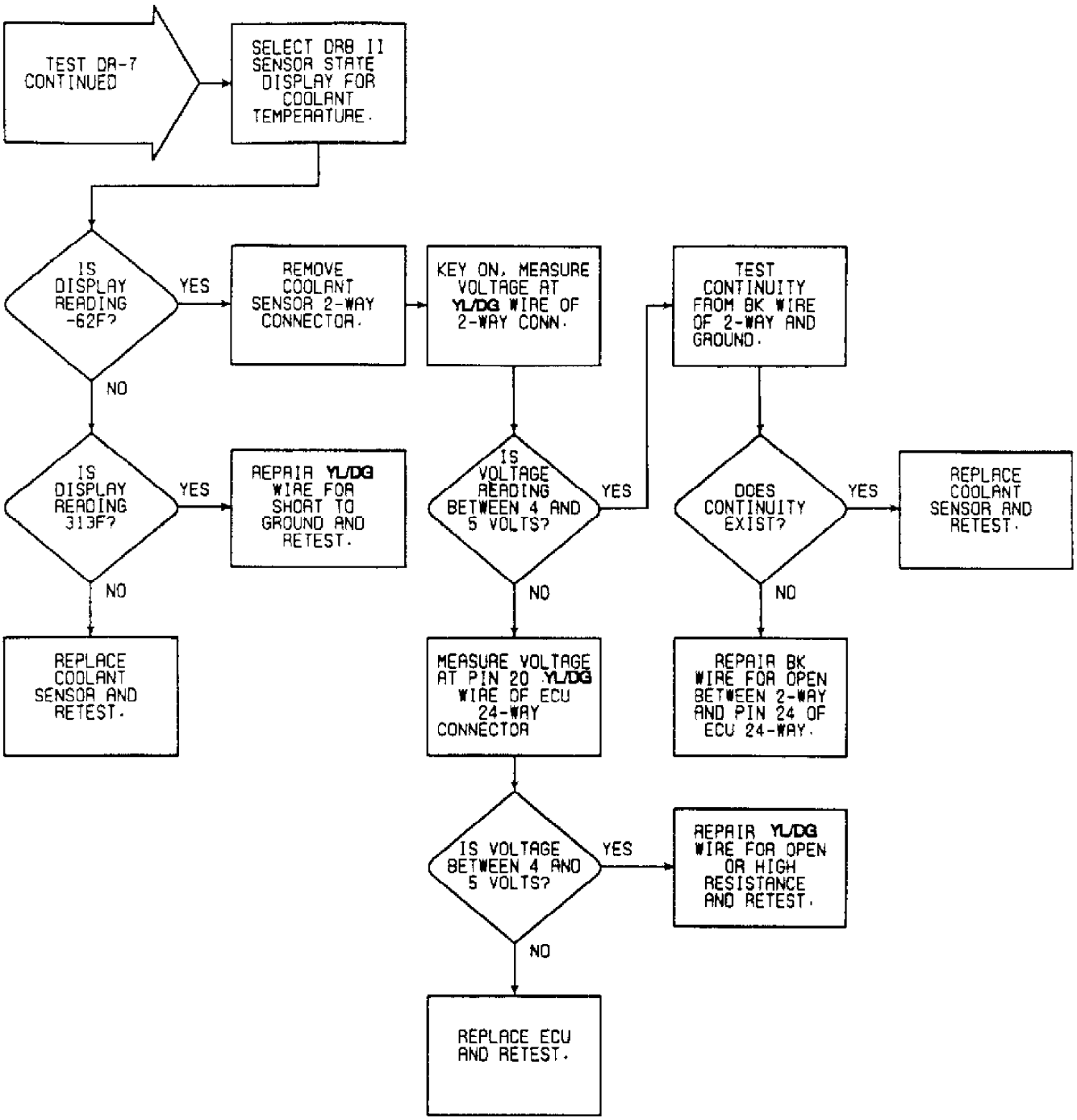


Fig. 203: Flow Chart DR-7 (1.8L) (2 of 2)

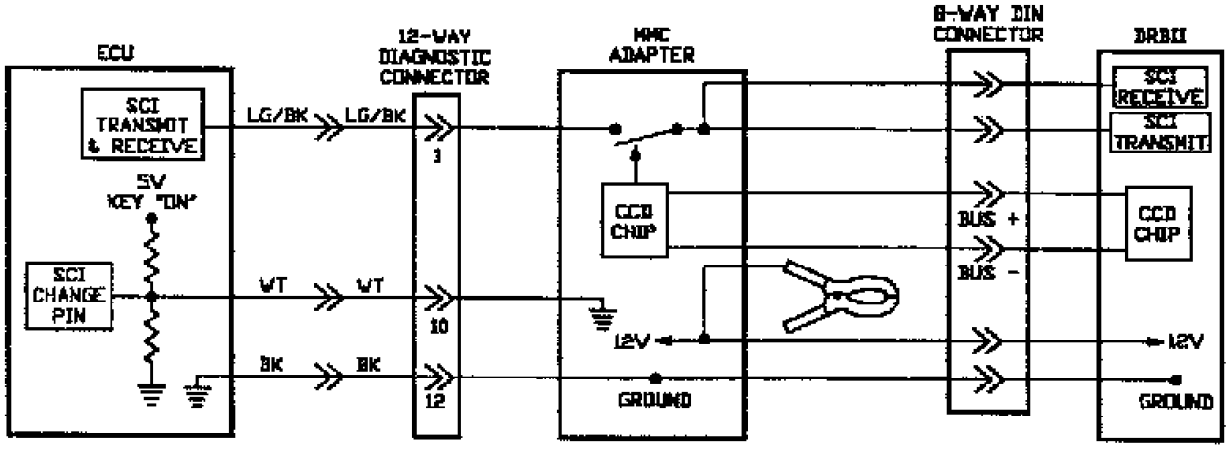


Fig. 204: Circuit Diagram DR-8 (1.8L)

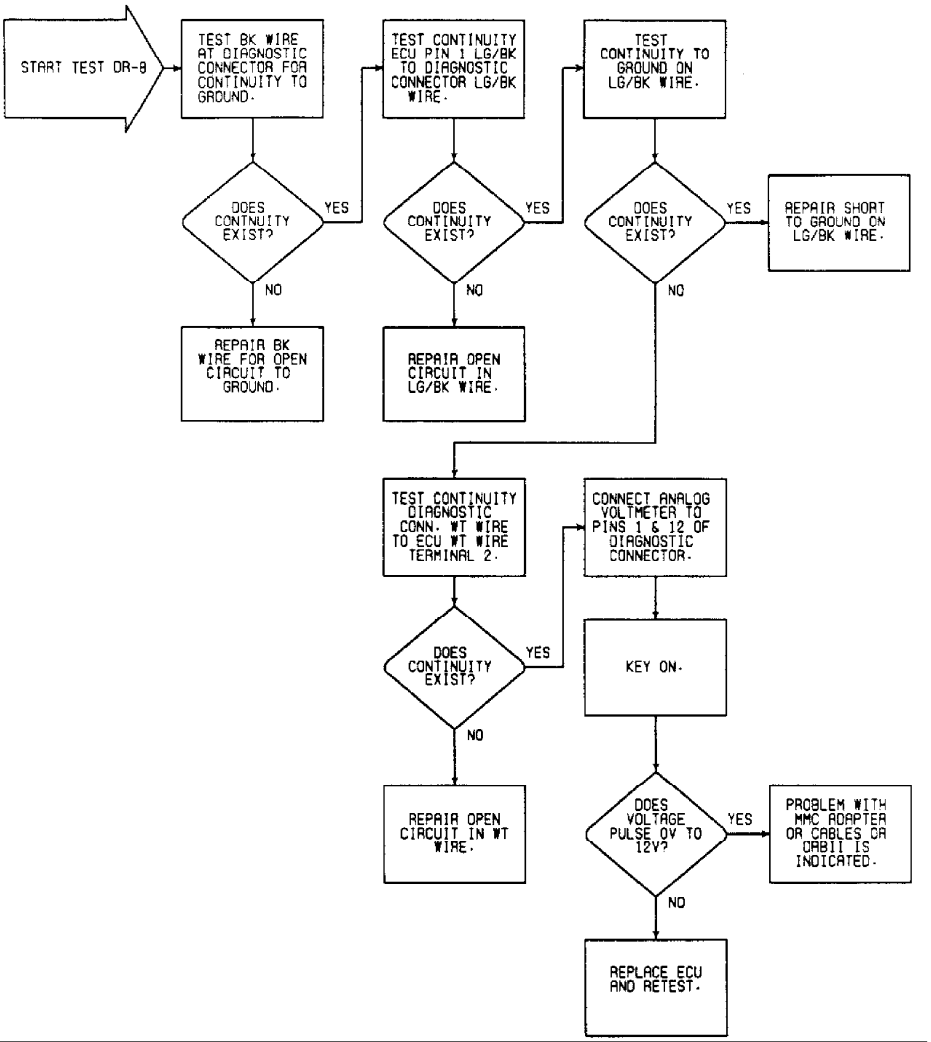


Fig. 205: Flow Chart DR-8 (1.8L)

DR-9: CODE 23 TOP DEAD CENTER SENSOR CONNECTOR - 1.8L

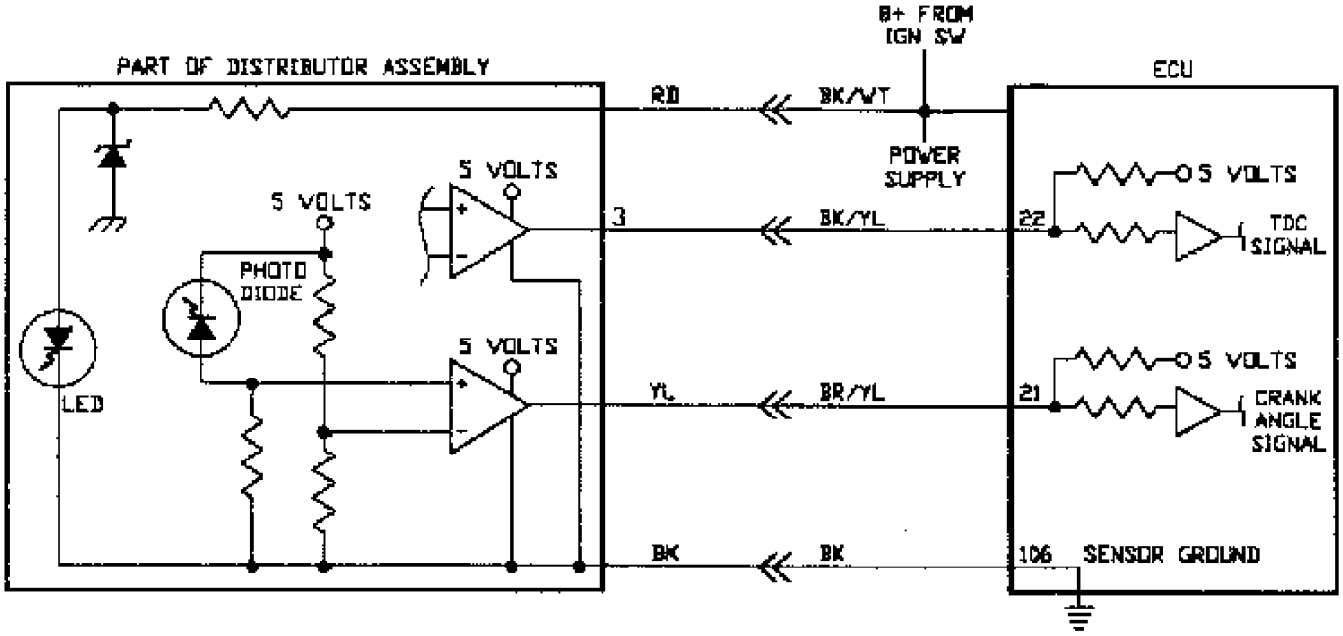


Fig. 206: Circuit Diagram DR-9 (1.8L)

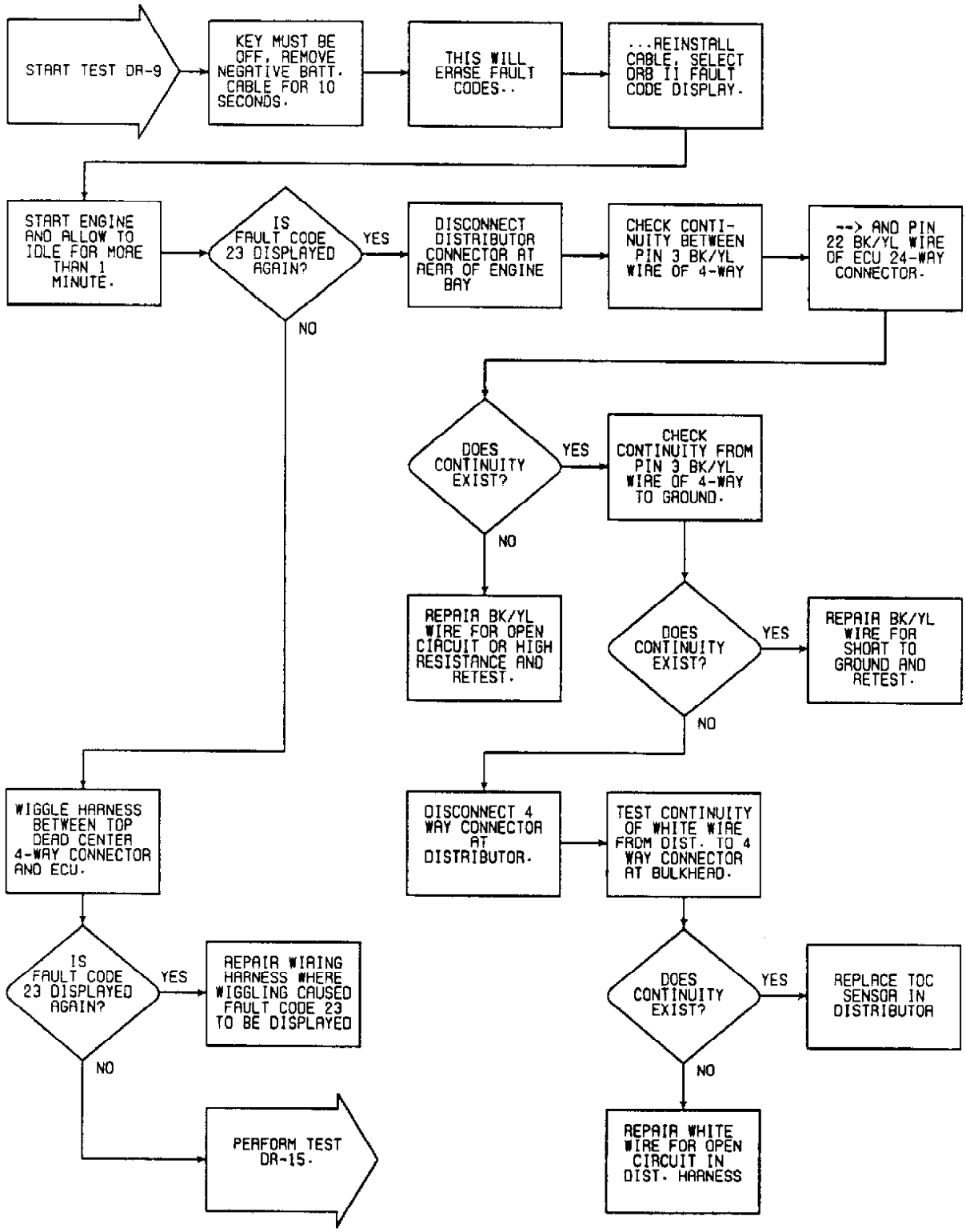


Fig. 207: Flow Chart DR-9 (1.8L)

DR-10: CODE 24 VEHICLE SPEED SENSOR CIRCUIT - 1.8L

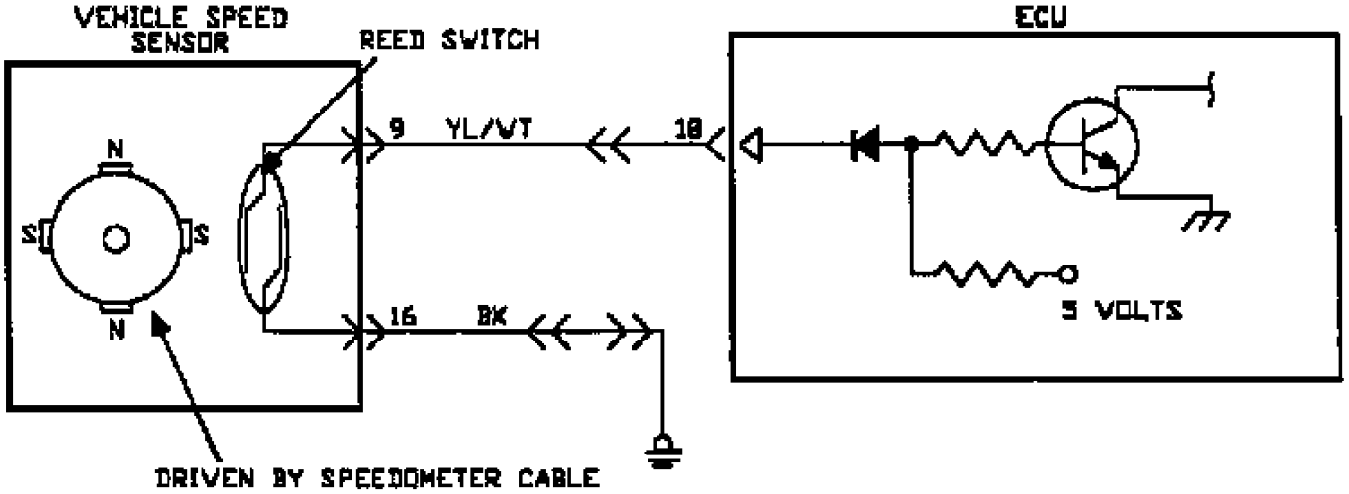


Fig. 208: Circuit Diagram DR-10 (1.8L)

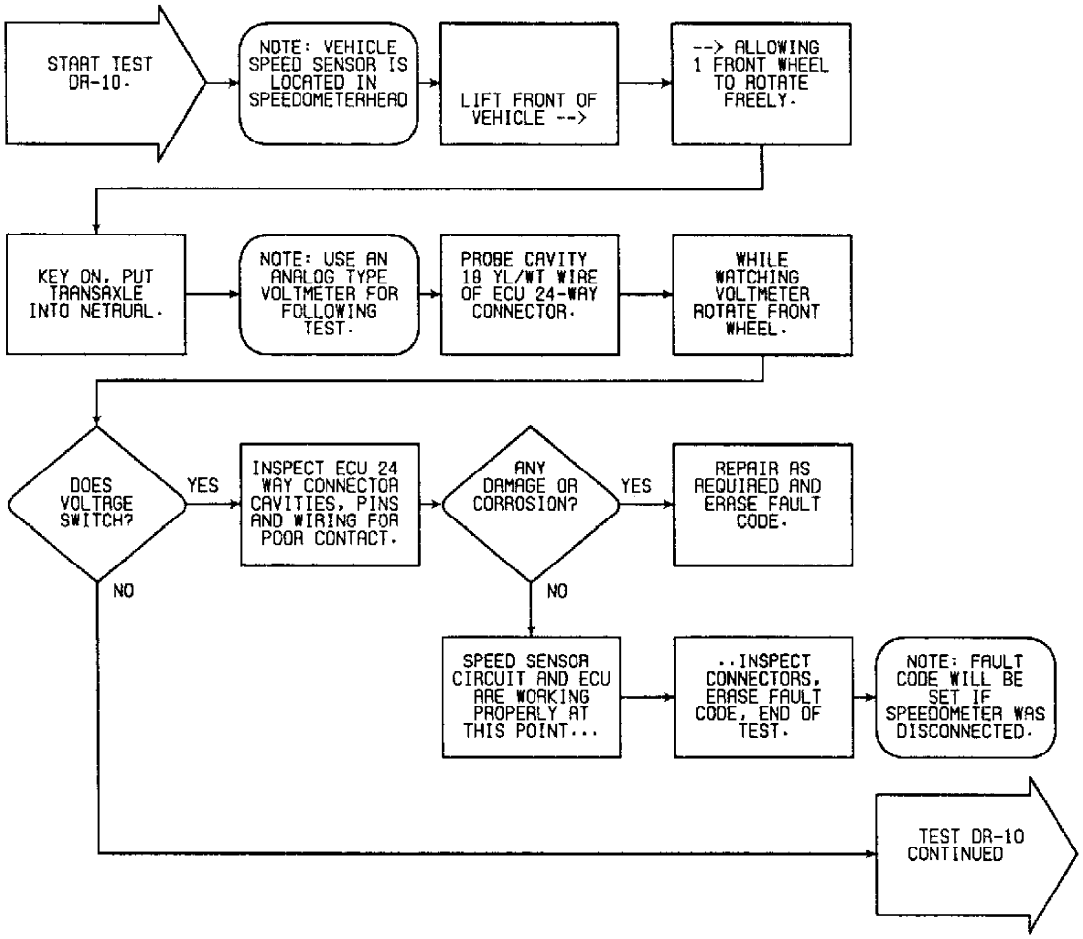


Fig. 209: Flow Chart DR-10 (1.8L) (1 of 2)

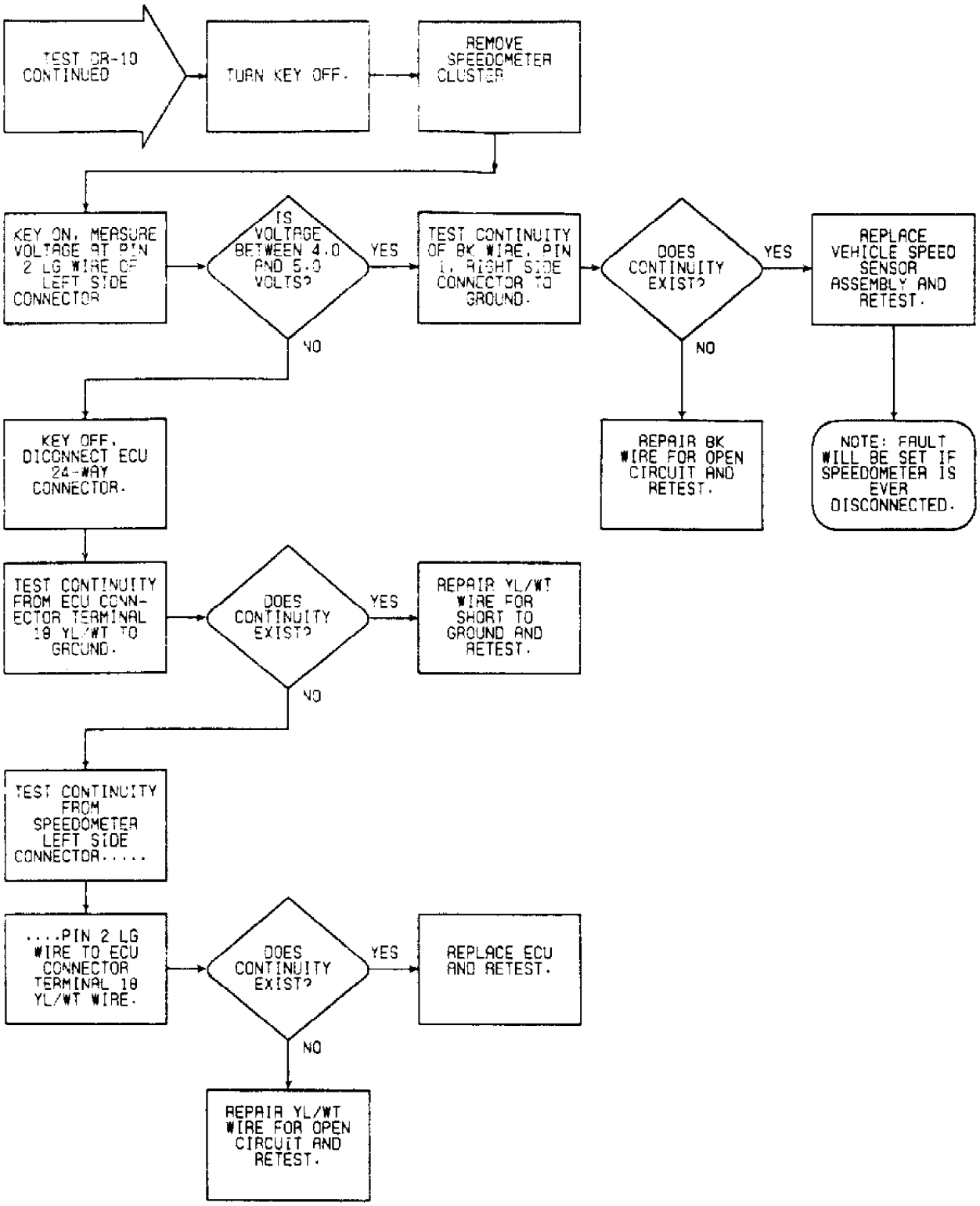


Fig. 210: Flow Chart DR-10 (1.8L) (2 of 2)

DR-11: CODE 25 BAROMETRIC PRESSURE SENSOR CIRCUIT - 1.8L

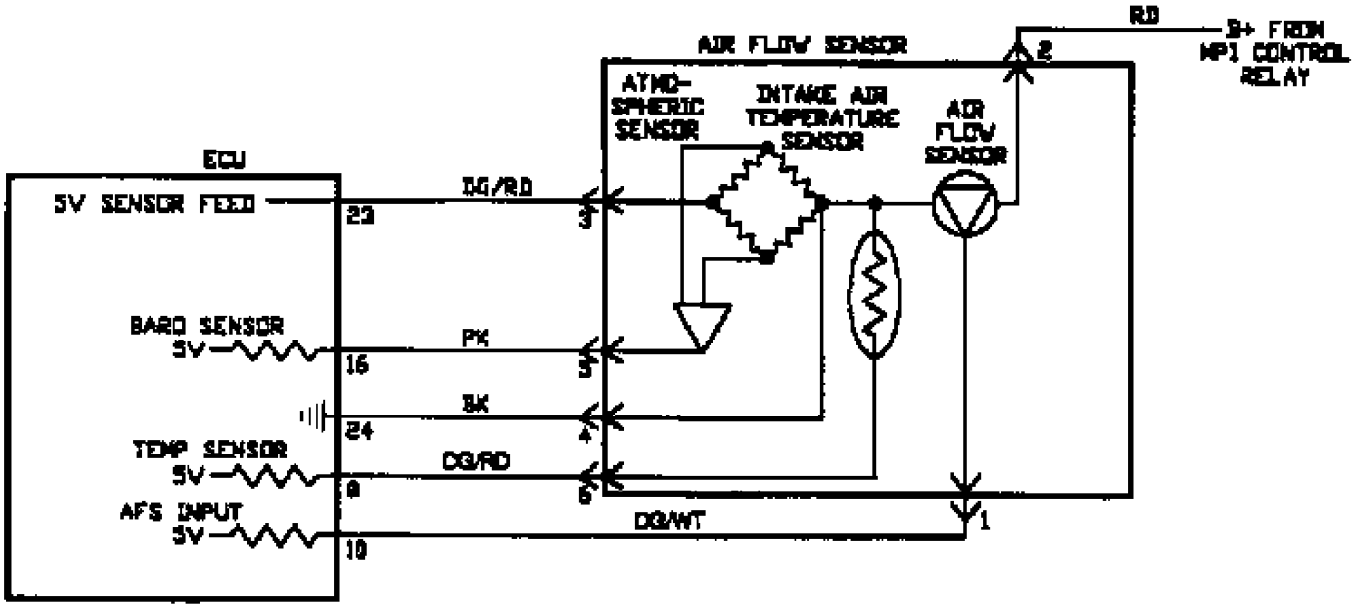


Fig. 211: Circuit Diagram DR-11 (1.8L)

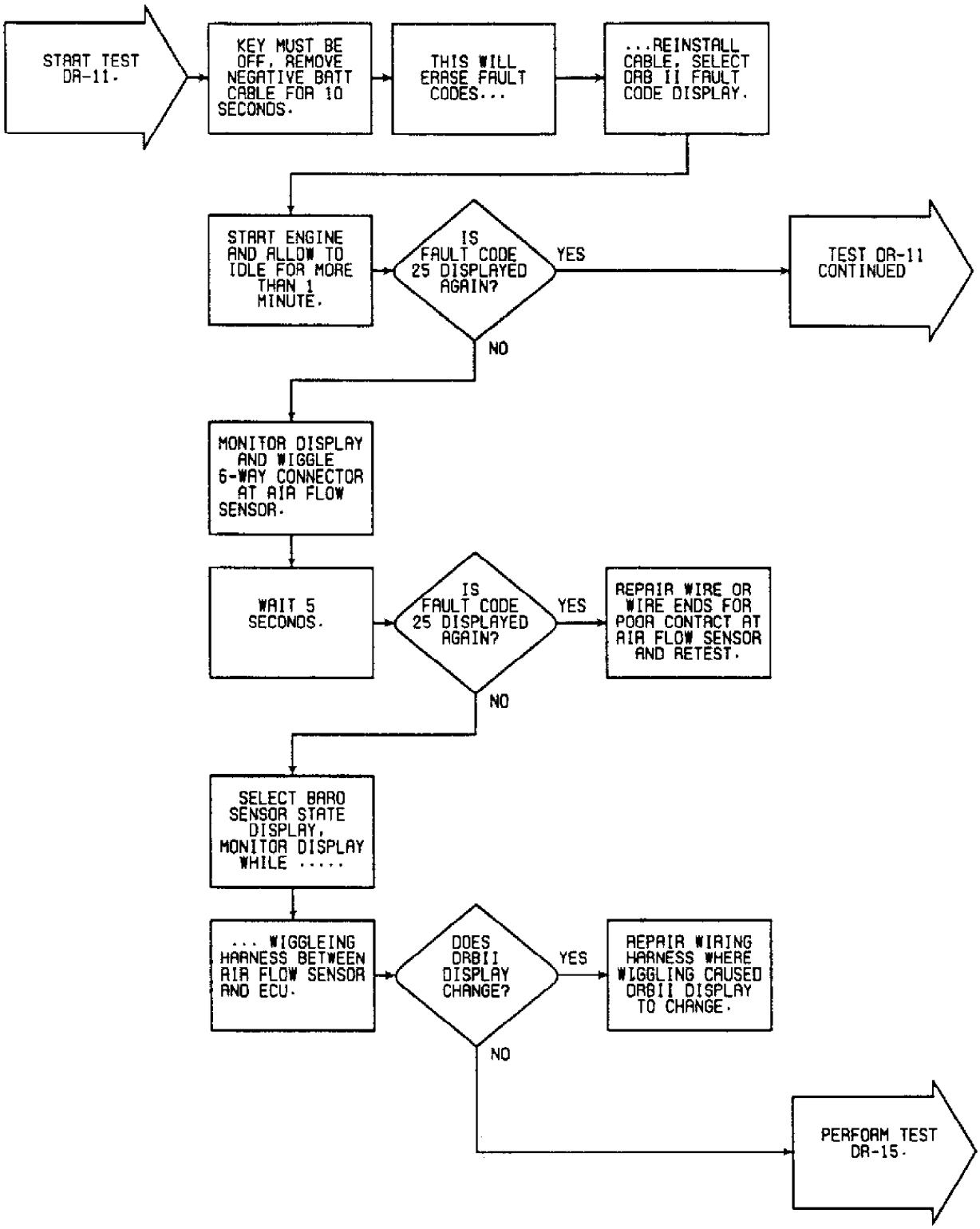


Fig. 212: Flow Chart DR-11 (1.8L) (1 of 2)

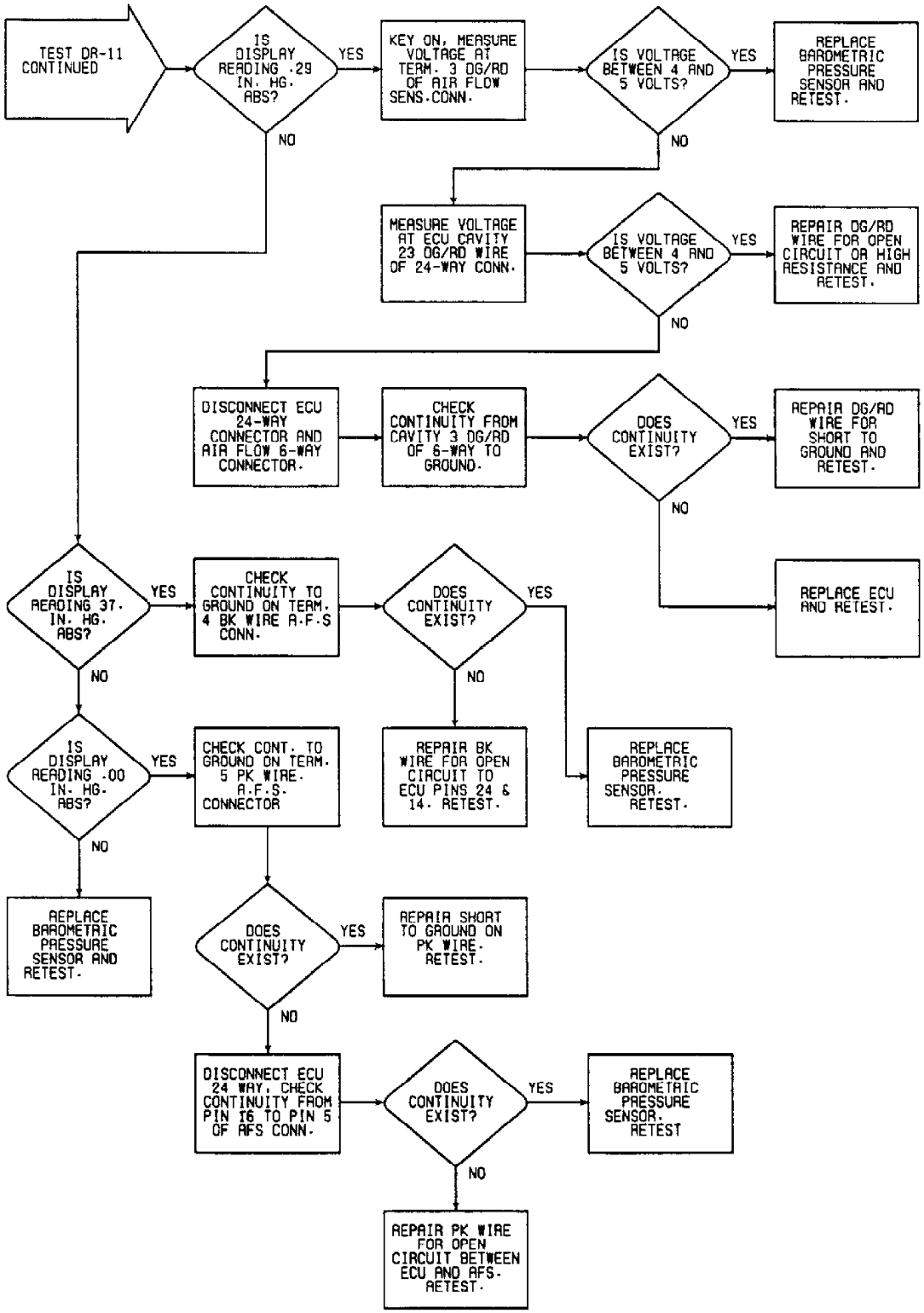


Fig. 213: Flow Chart DR-11 (1.8L) (2 of 2)

DR-12: CODE 41 INJECTOR CIRCUIT - 1.8L

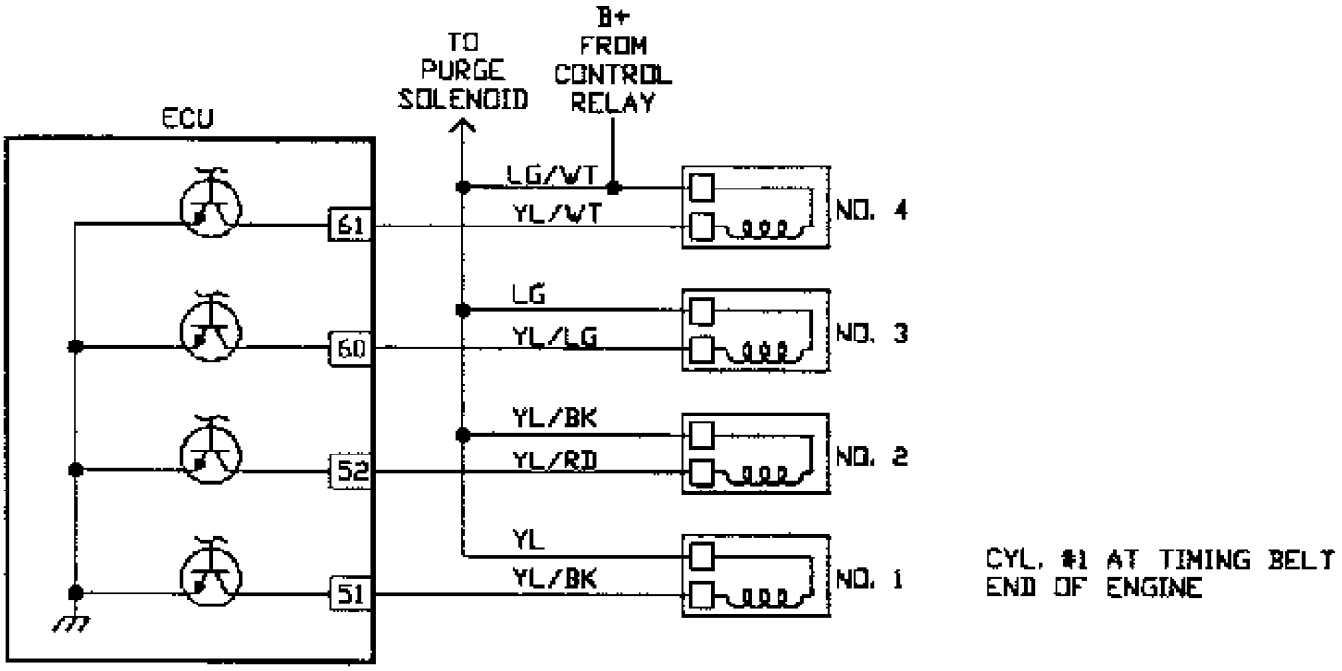


Fig. 214: Circuit Diagram DR-12 (1.8L)

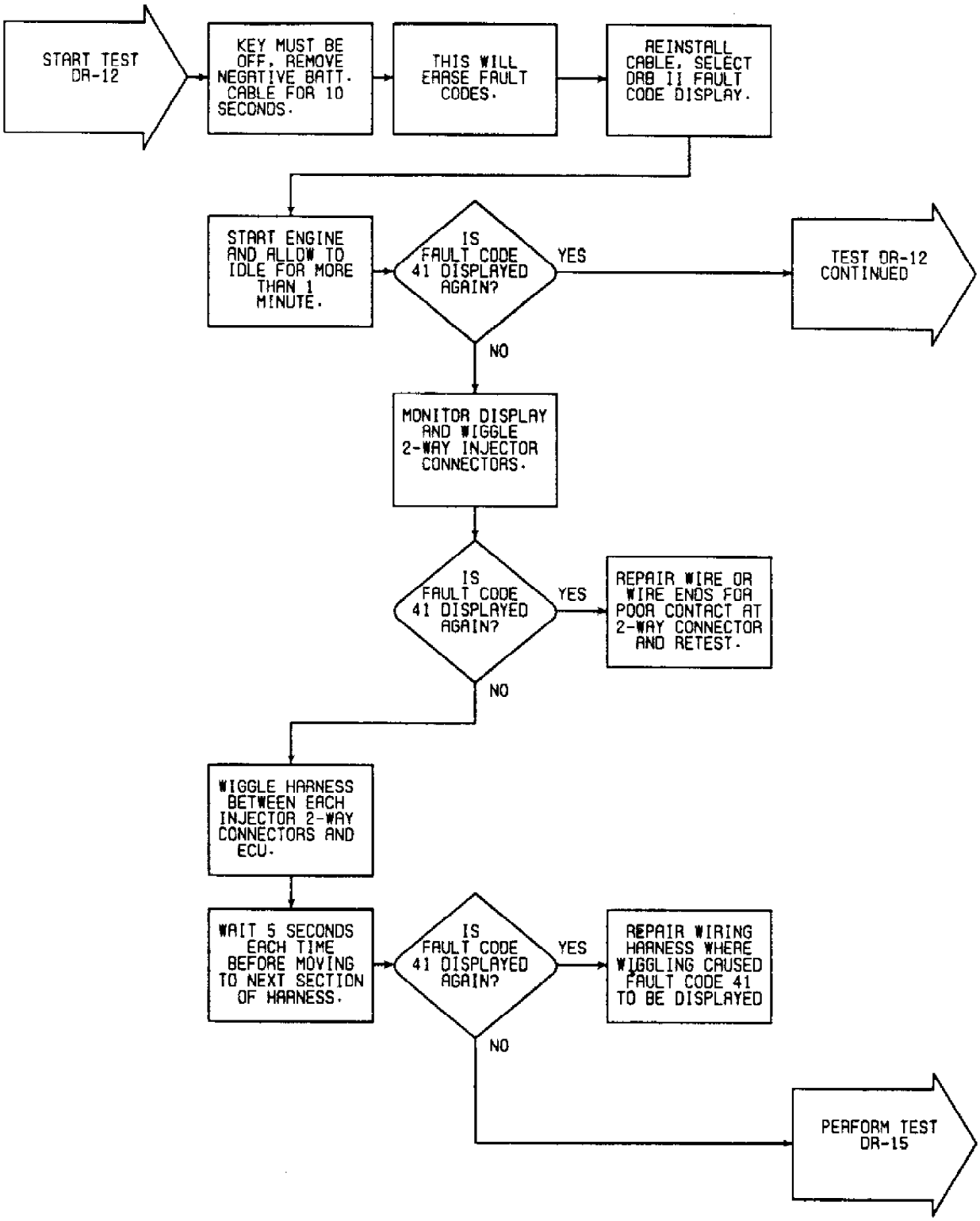


Fig. 215: Flow Chart DR-12 (1.8L) (1 of 5)

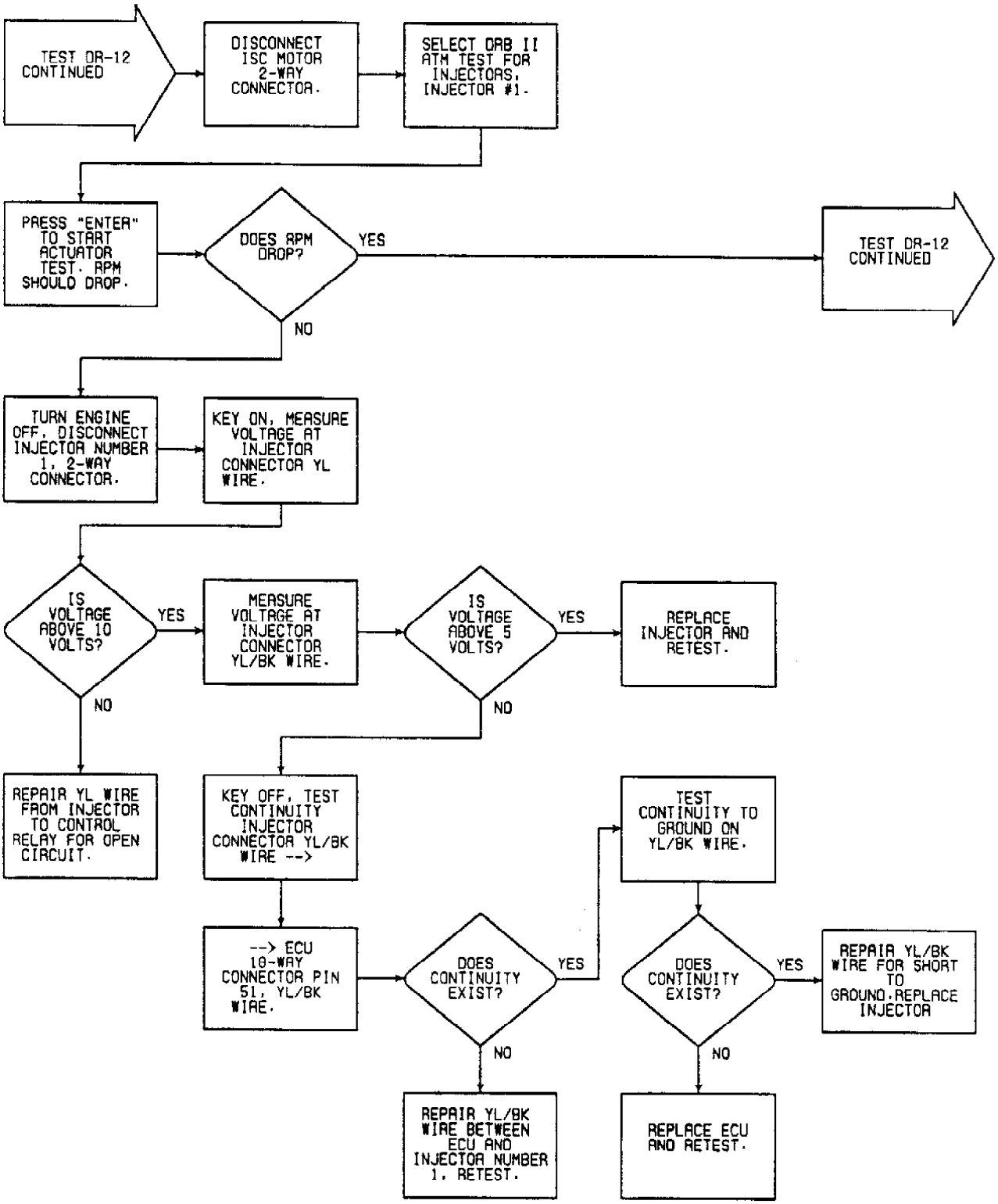


Fig. 216: Flow Chart DR-12 (1.8L) (2 of 5)

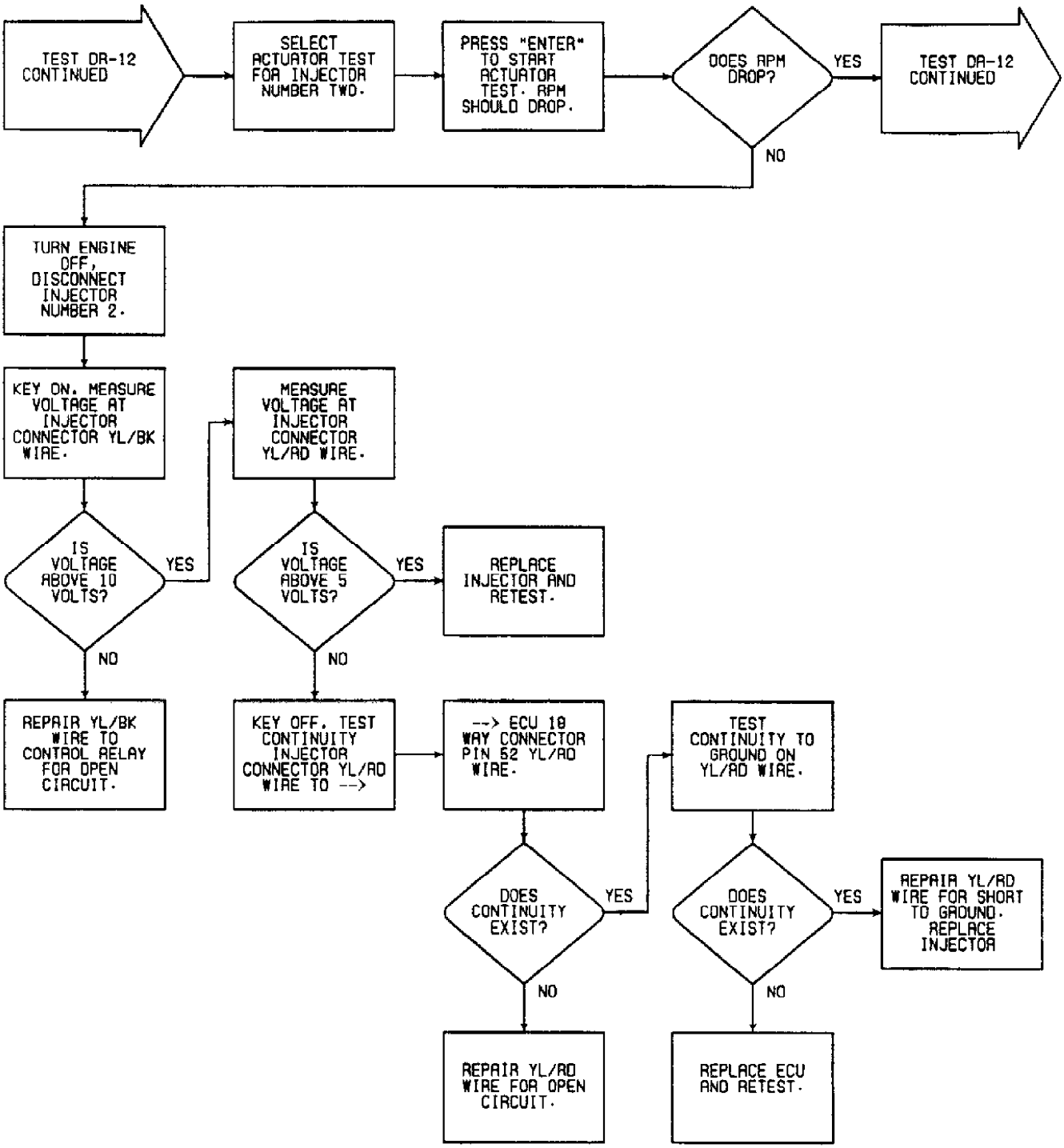


Fig. 217: Flow Chart DR-12 (1.8L) (3 of 5)

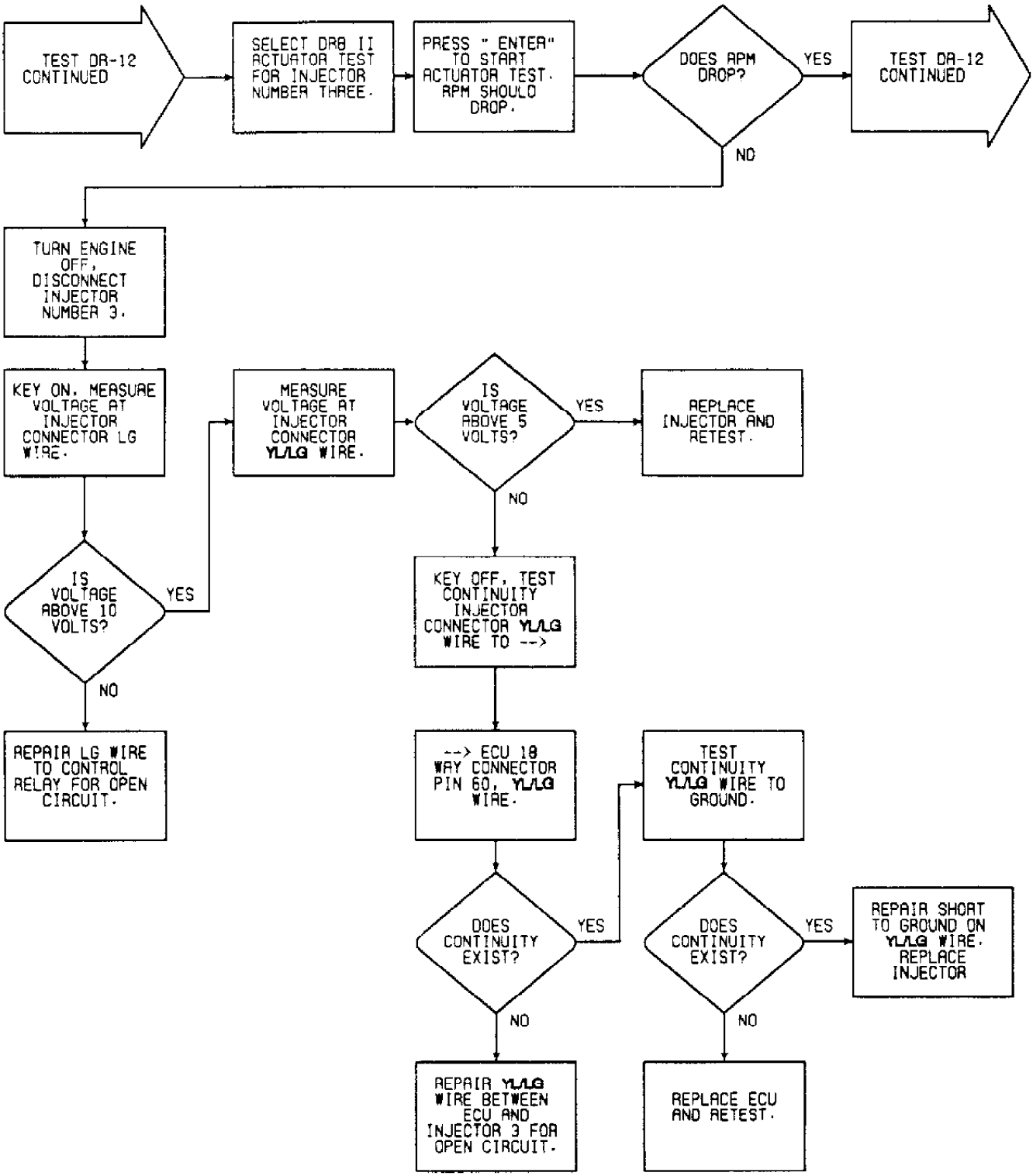


Fig. 218: Flow Chart DR-12 (1.8L) (4 of 5)

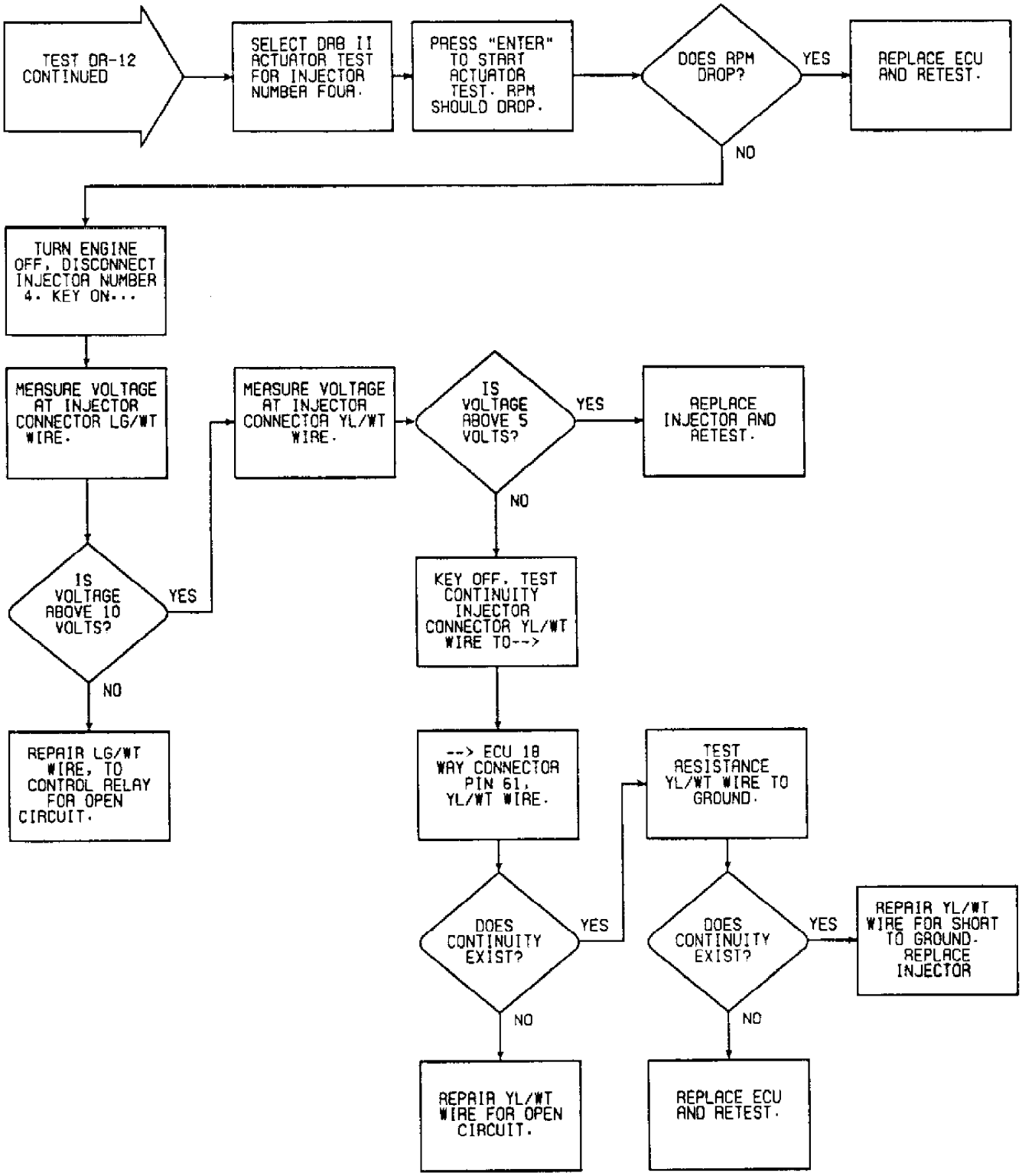


Fig. 219: Flow Chart DR-12 (1.8L) (5 of 5)

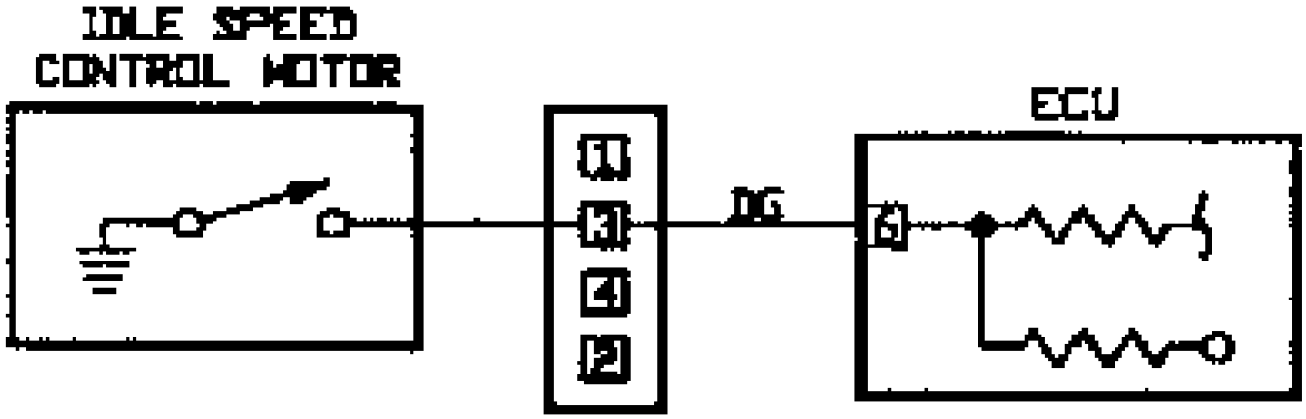


Fig. 220: Circuit Diagram DR-15 (1.8L) (1 of 2)

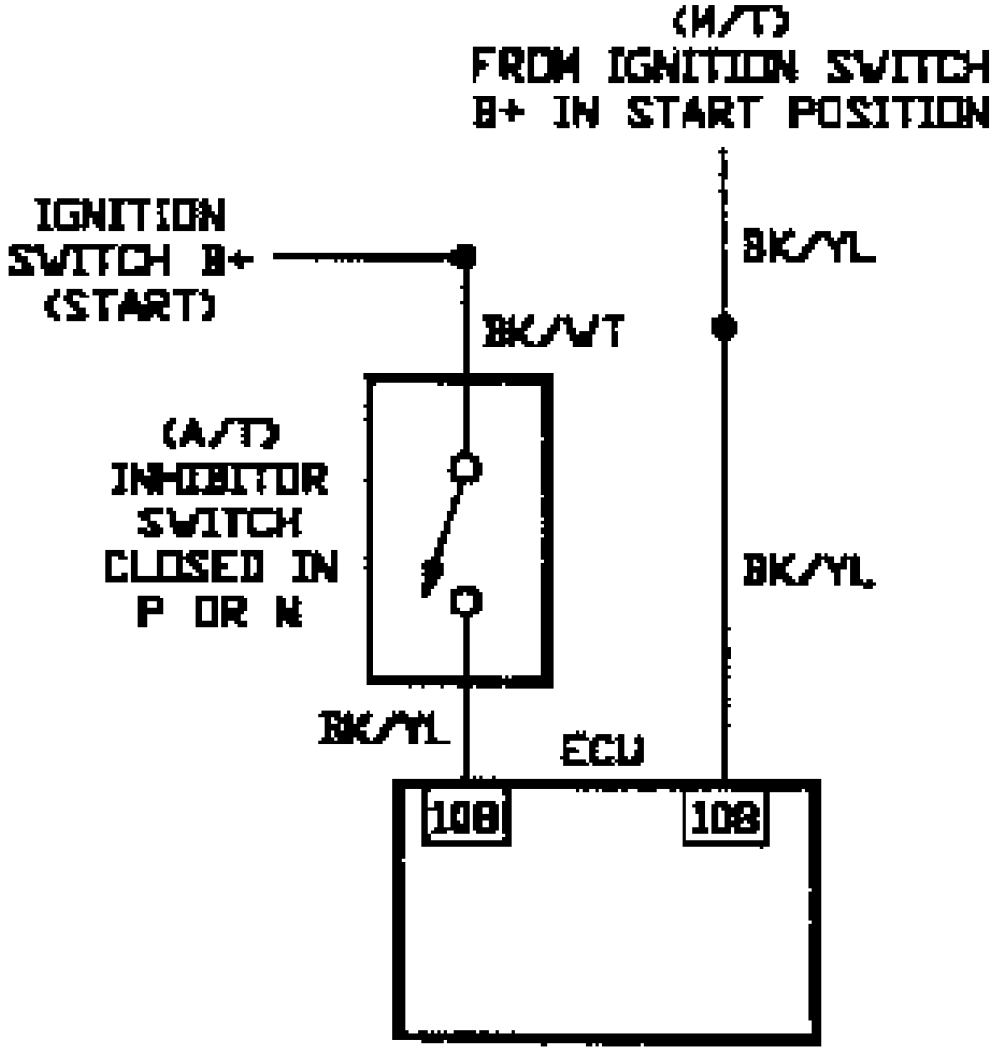


Fig. 221: Circuit Diagram DR-15 (1.8L) (2 of 2)

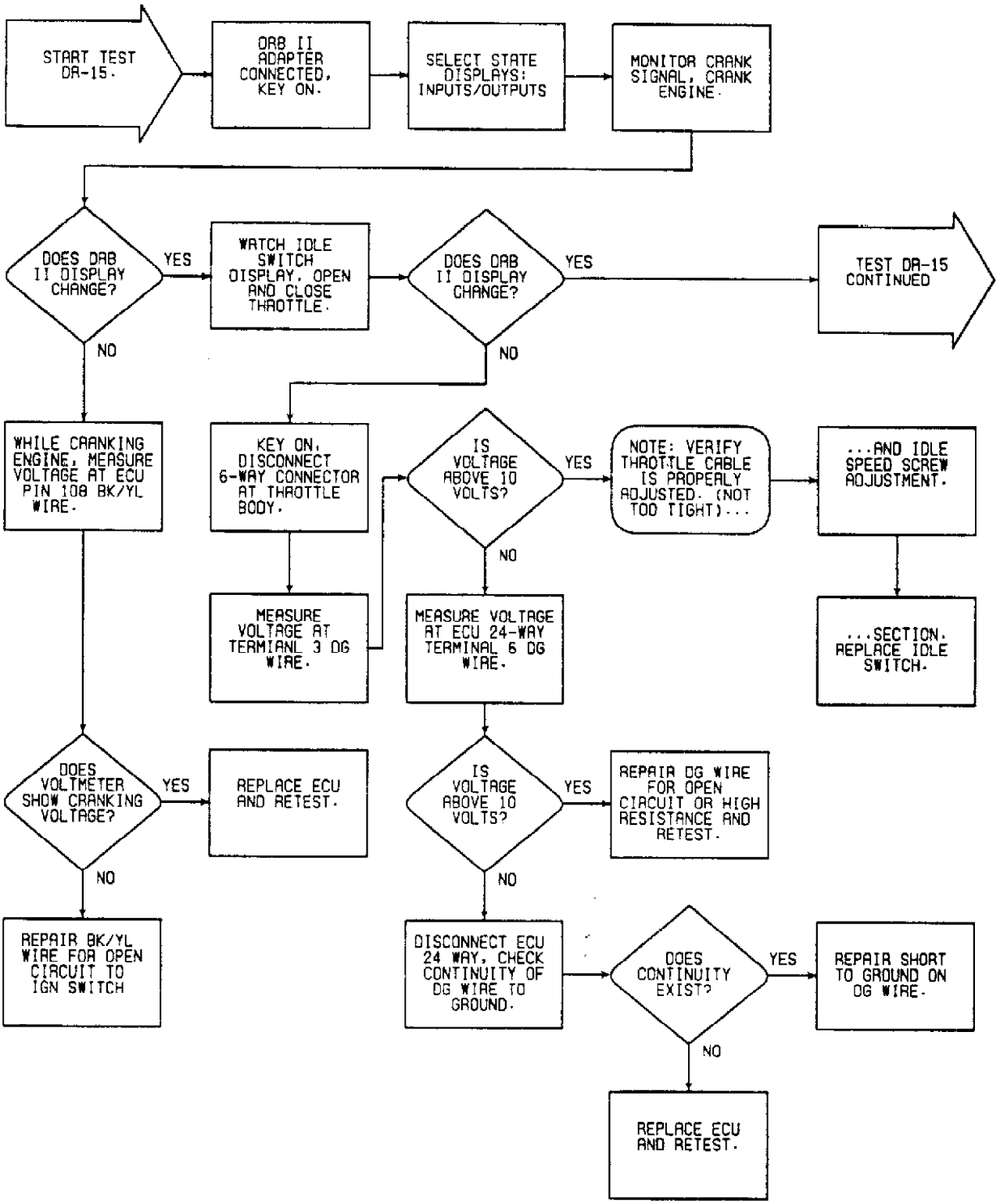


Fig. 222: Flow Chart DR-15 (1.8L) (1 of 2)

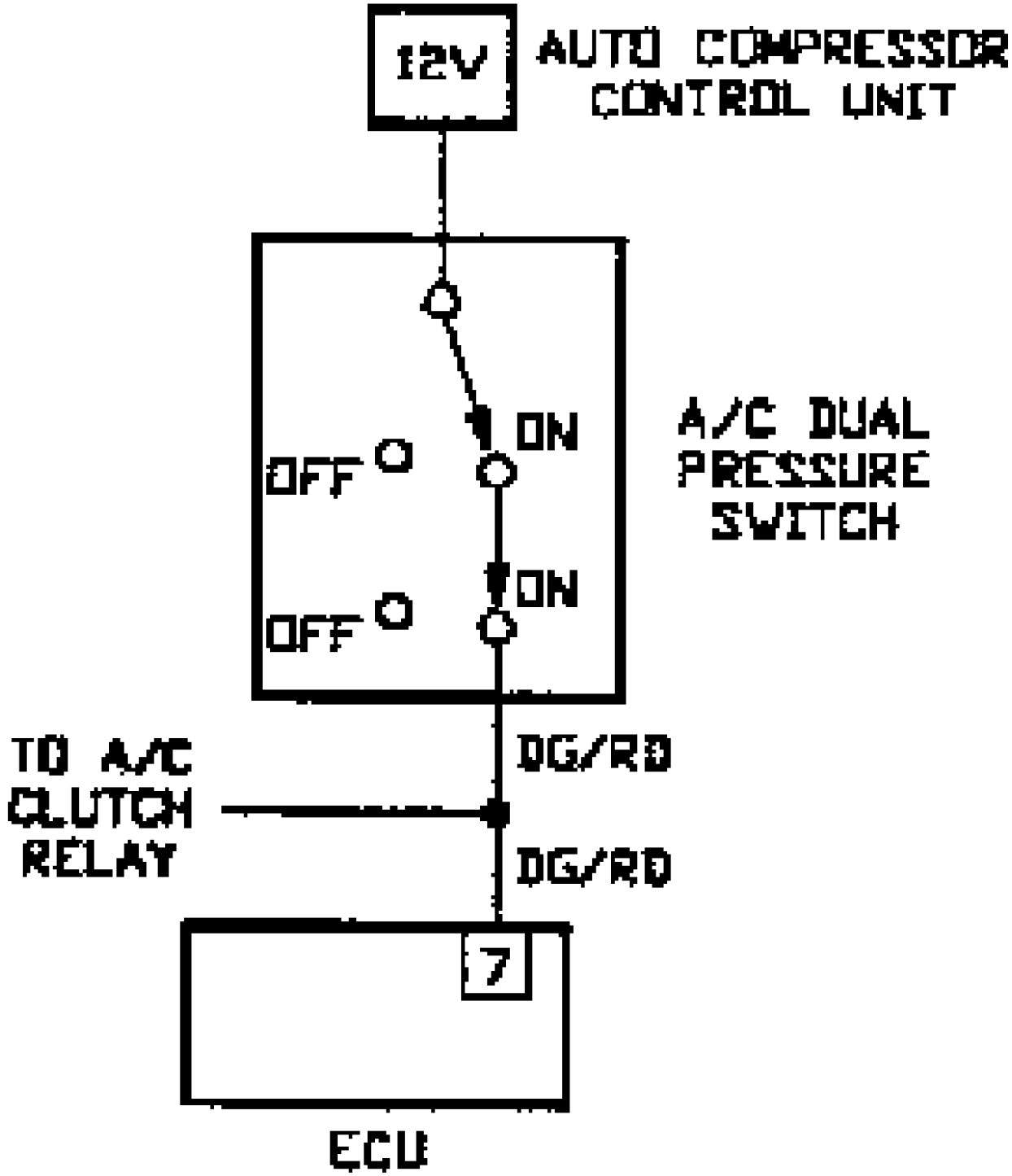


Fig. 223: Circuit Diagram DR-15 (1.8L) (1 of 2)

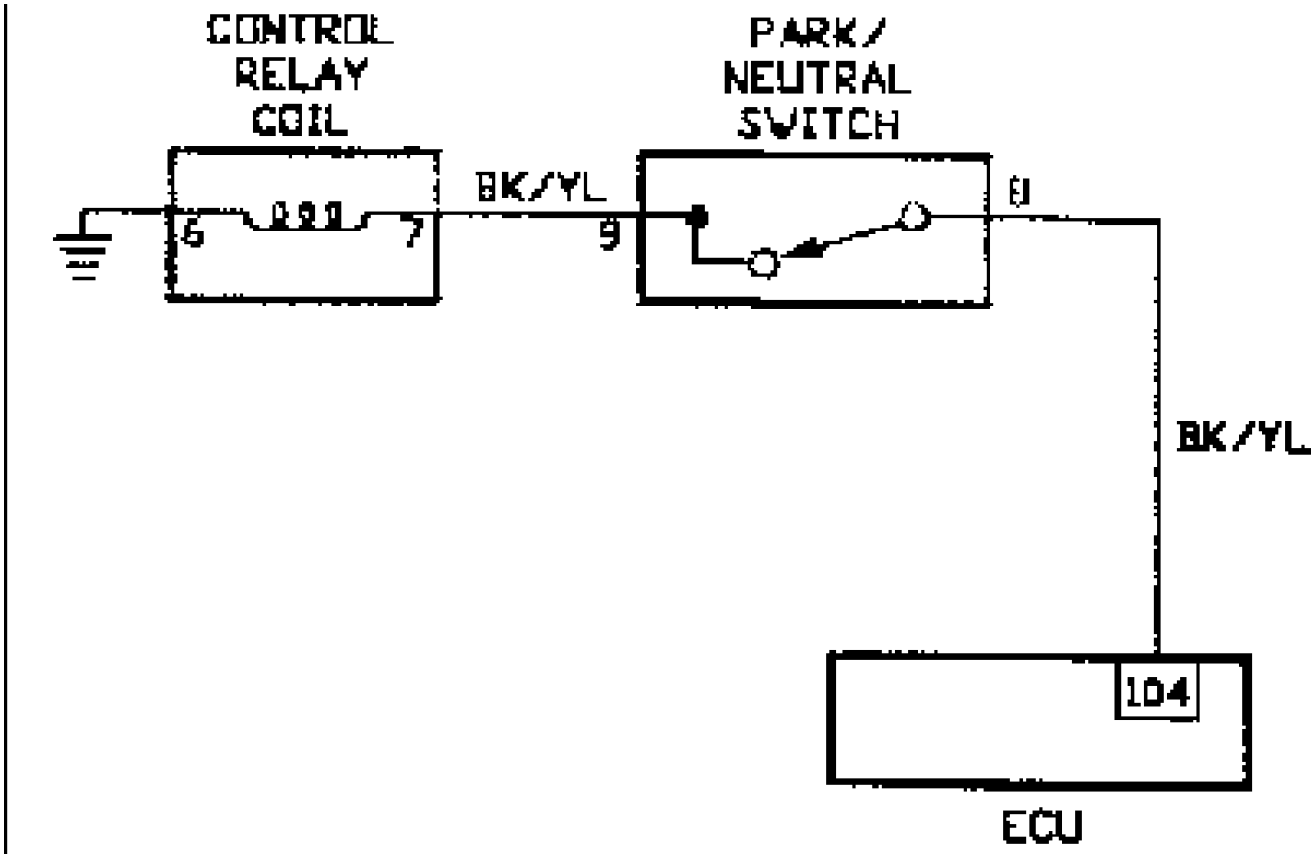


Fig. 224: Circuit Diagram DR-15 (1.8L) (2 of 2)

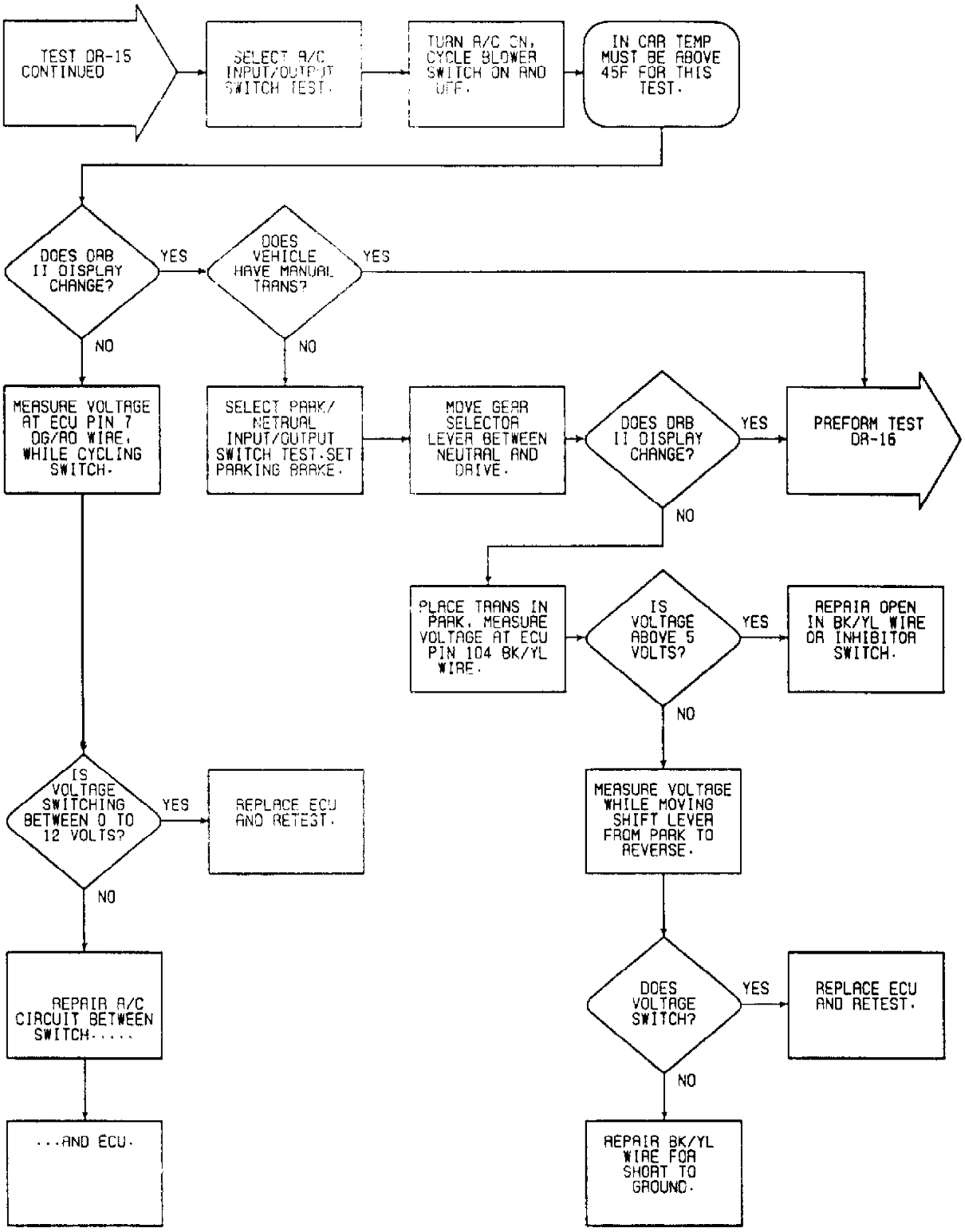


Fig. 225: Flow Chart DR-15 (1.8L) (2 of 2)

DR-16: NO FAULT CODE SENSOR TEST - 1.8L

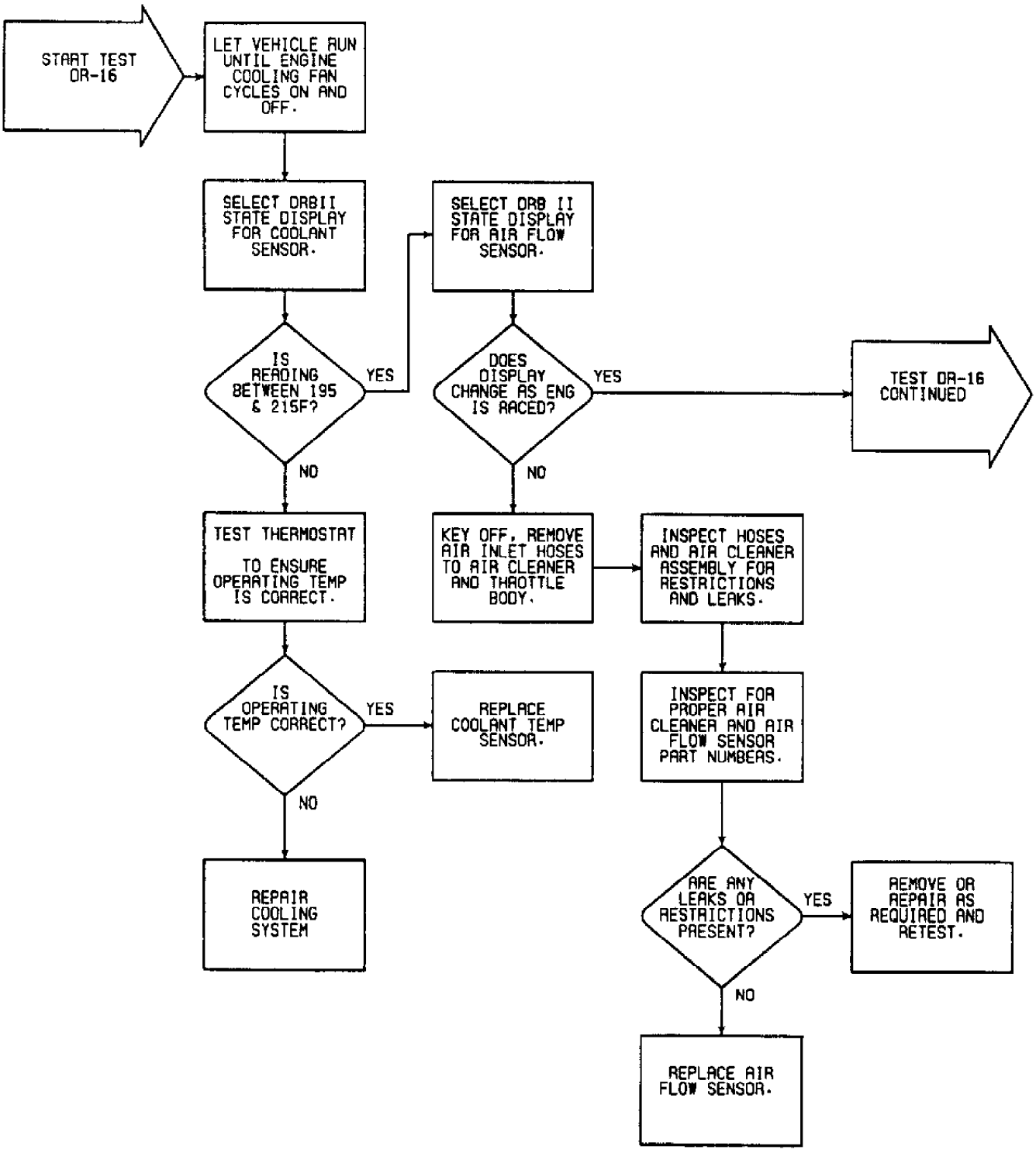


Fig. 226: Flow Chart DR-16 (1.8L) (1 of 5)

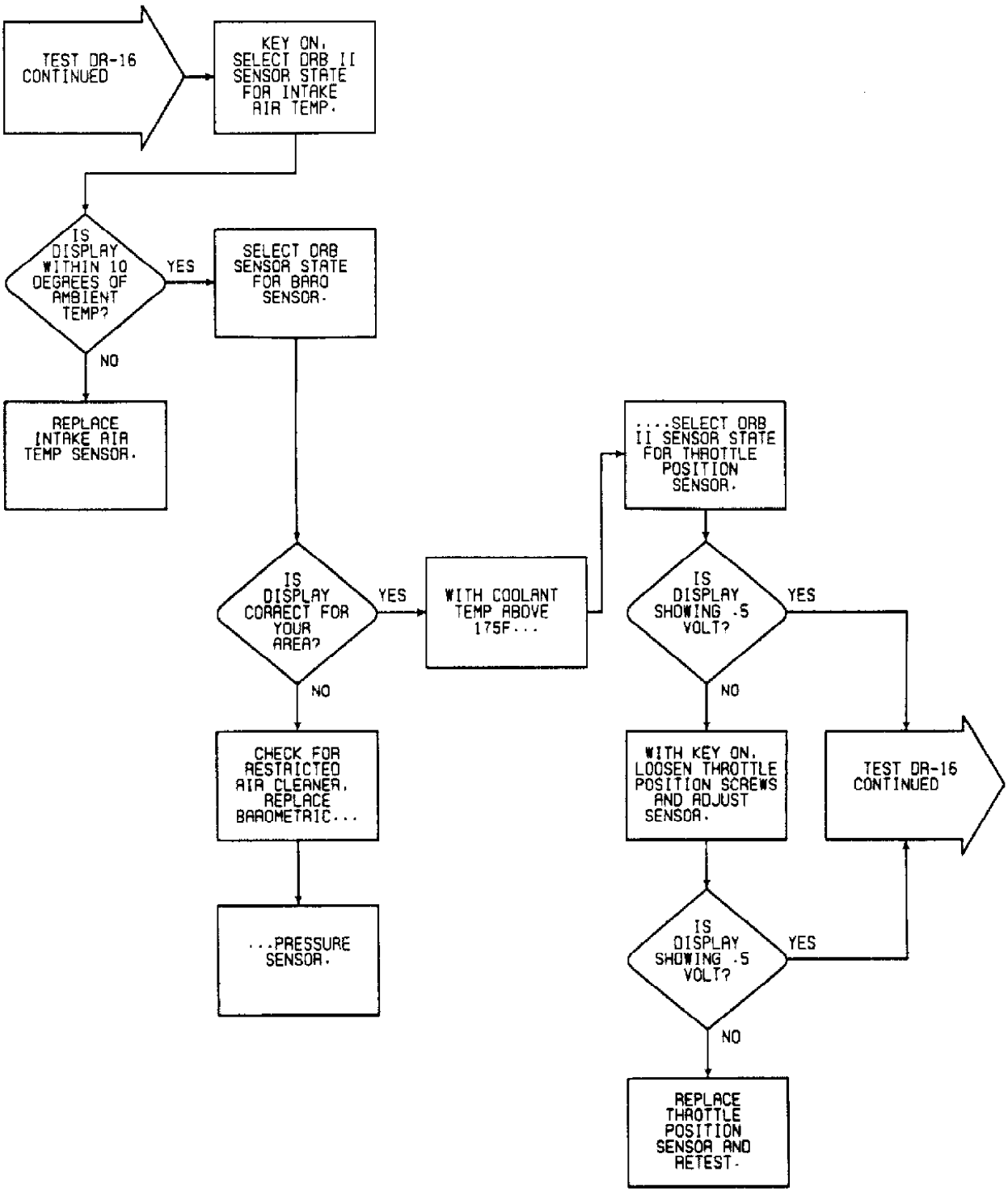


Fig. 227: Flow Chart DR-16 (1.8L) (2 of 5)

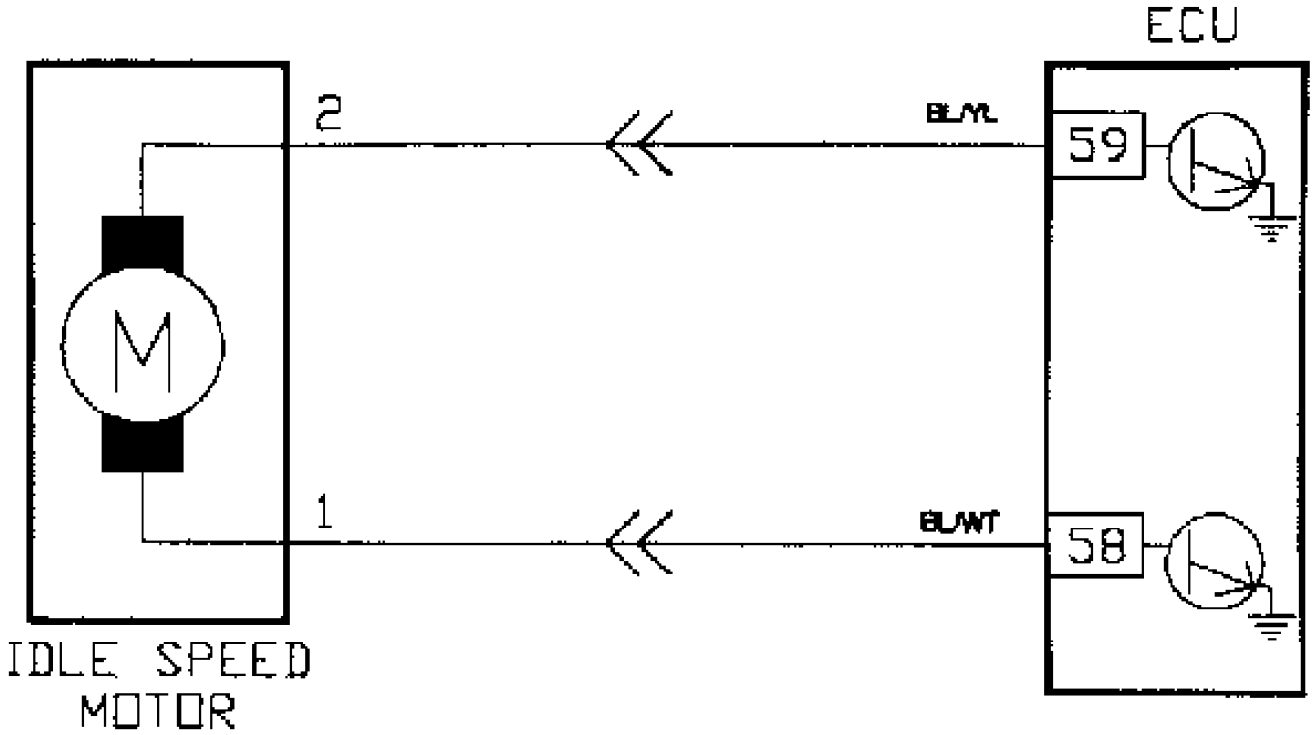


Fig. 228: Circuit Diagram DR-16 (1.8L)

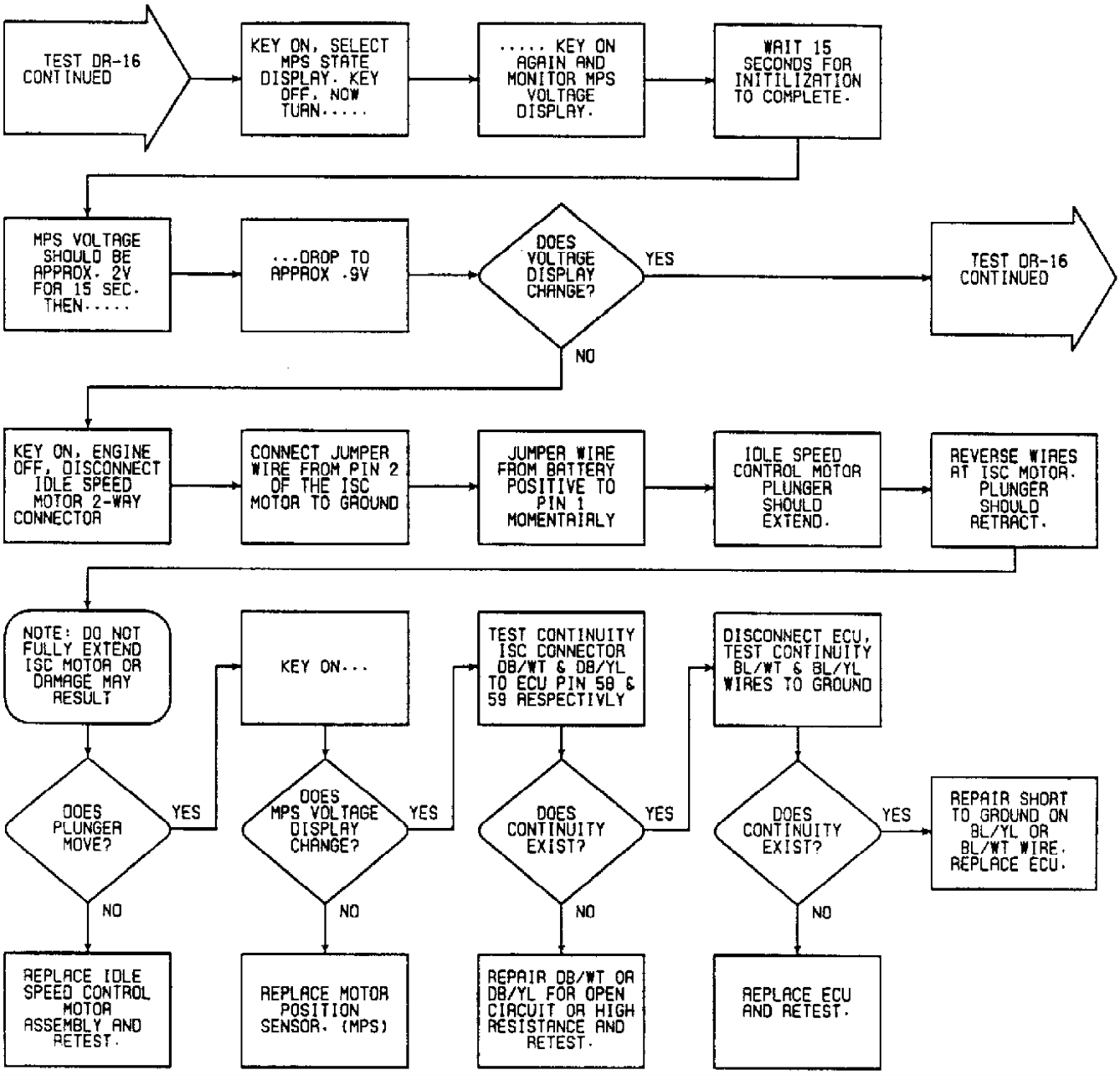


Fig. 229: Flow Chart DR-16 (1.8L) (3 of 5)

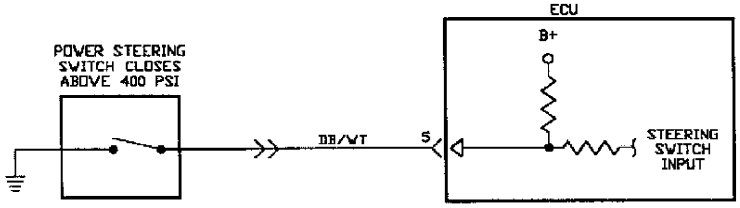


Fig. 230: Circuit Diagram DR-16 (1.8L)

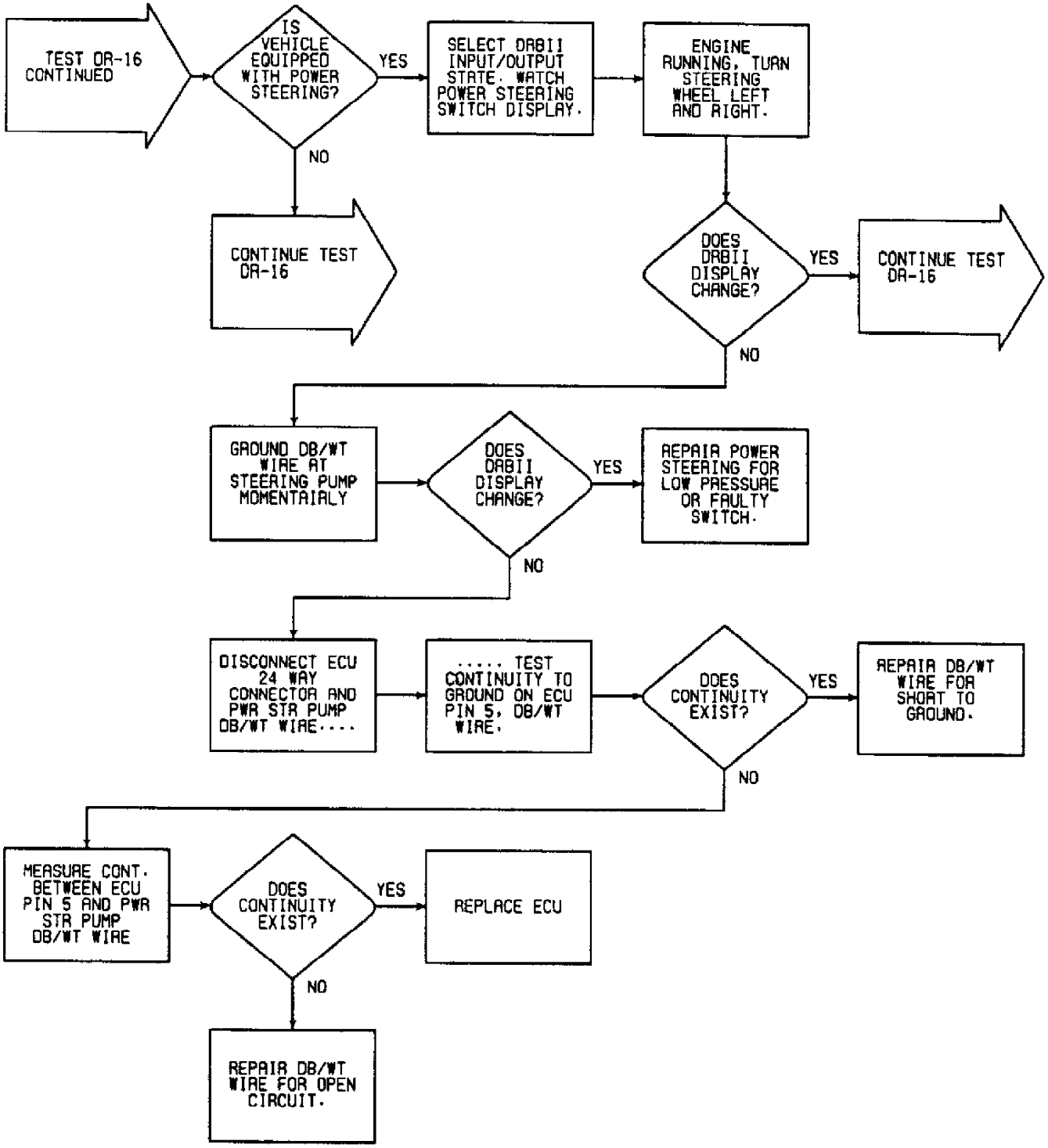


Fig. 231: Flow Chart DR-16 (1.8L) (4 of 5)

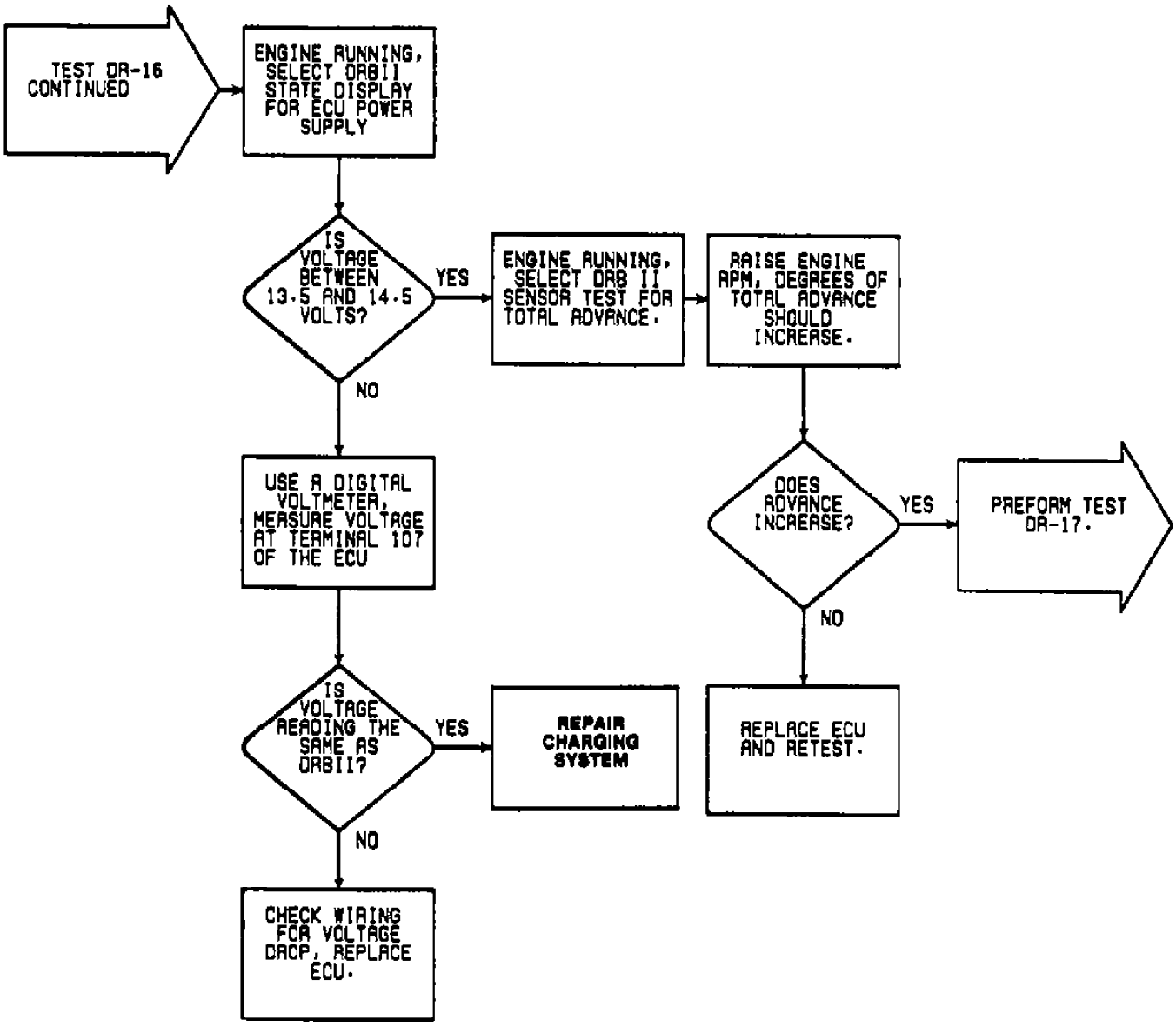


Fig. 232: Flow Chart DR-16 (1.8L) (5 of 5)

DR-17: PURGE SOLENOID - 1.8L

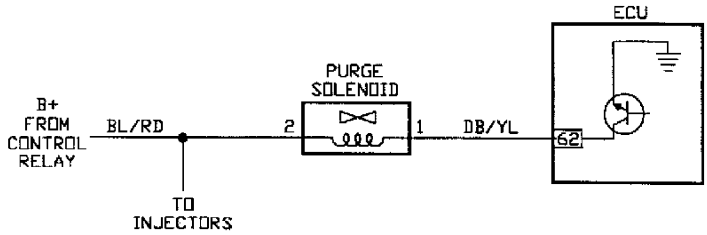


Fig. 233: Circuit Diagram DR-17 (1.8L)

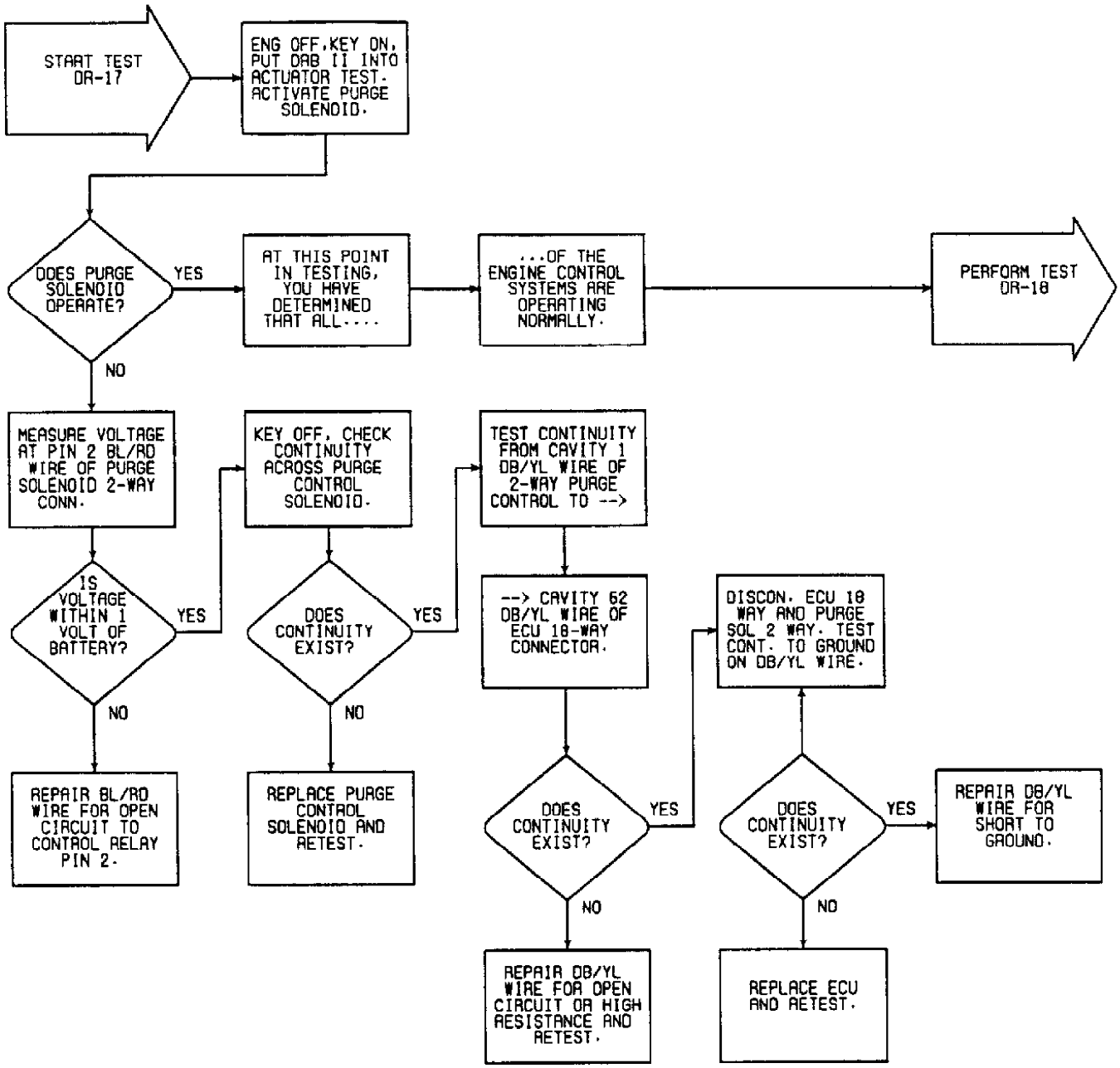


Fig. 234: Flow Chart DR-17 (1.8L)

DR-18: NO FAULT CODE MECHANICAL TEST - 1.8L

At this point in the driveability test procedure, you have determined that all of the engine control systems are operating as they were designed to. Therefore, they are not the cause of the driveability problem.

The following additional items can not be overlooked as possible causes of a driveability problem.

1. THROTTLE VALVE AREA - Dirt or ice buildup causing rough idle and stalling.

2. ENGINE IGNITION TIMING - Must be set with timing terminal grounded.
3. ENGINE VACUUM - Must be normal for your altitude.
4. ENGINE VALVE TIMING - To specifications.
5. ENGINE COMPRESSION - To specifications.
6. ENGINE P.C.V. SYSTEM - Must flow freely.
7. ENGINE EXHAUST SYSTEM - Must be free of any restrictions.
8. POWER BRAKE BOOSTER - No internal vacuum leaks.
9. TORQUE CONVERTER CONDITION - May cause very low power at breakaway or high speed (Only 1 condition at a time).
10. FUEL CONTAMINATION - High alcohol or water content.
11. FUEL INJECTORS - Rough idle may be caused by injector wiring not connected to correct injector.
12. ENGINE SECONDARY IGNITION CHECK - Abnormal scope patterns.
13. TECHNICAL SERVICE BULLETINS - Any that apply to vehicle.
14. All air intake piping and vacuum hoses must be in place and secure. The proper air filter element must be used.
15. FUEL PRESSURE - Must be correct.
    Specification: With no vacuum at the regulator:
    48 PSI on V6 & non-turbo 4 Cyl. engines
    36 PSI on turbo engines

NS-1: IGNITION CHECK FLOW CHARTS - 2.0L

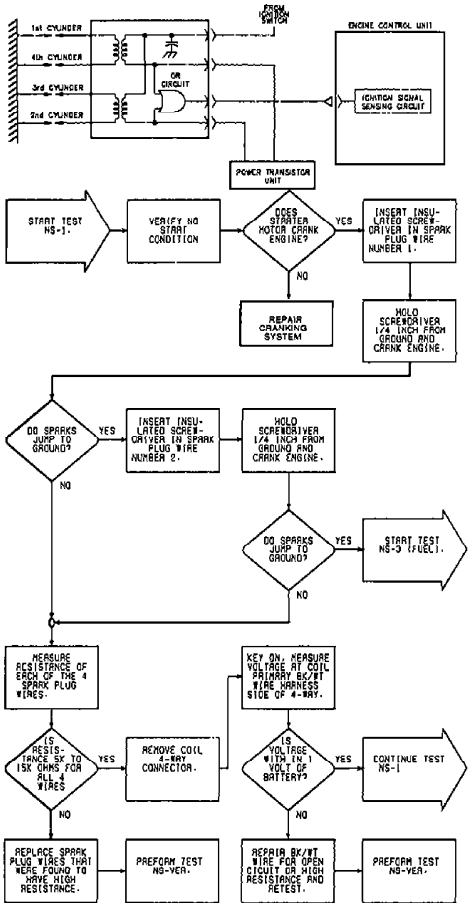


Fig. 235: NS-1 Flow Chart & Circuit Diagram (2.0L) (1 of 5)

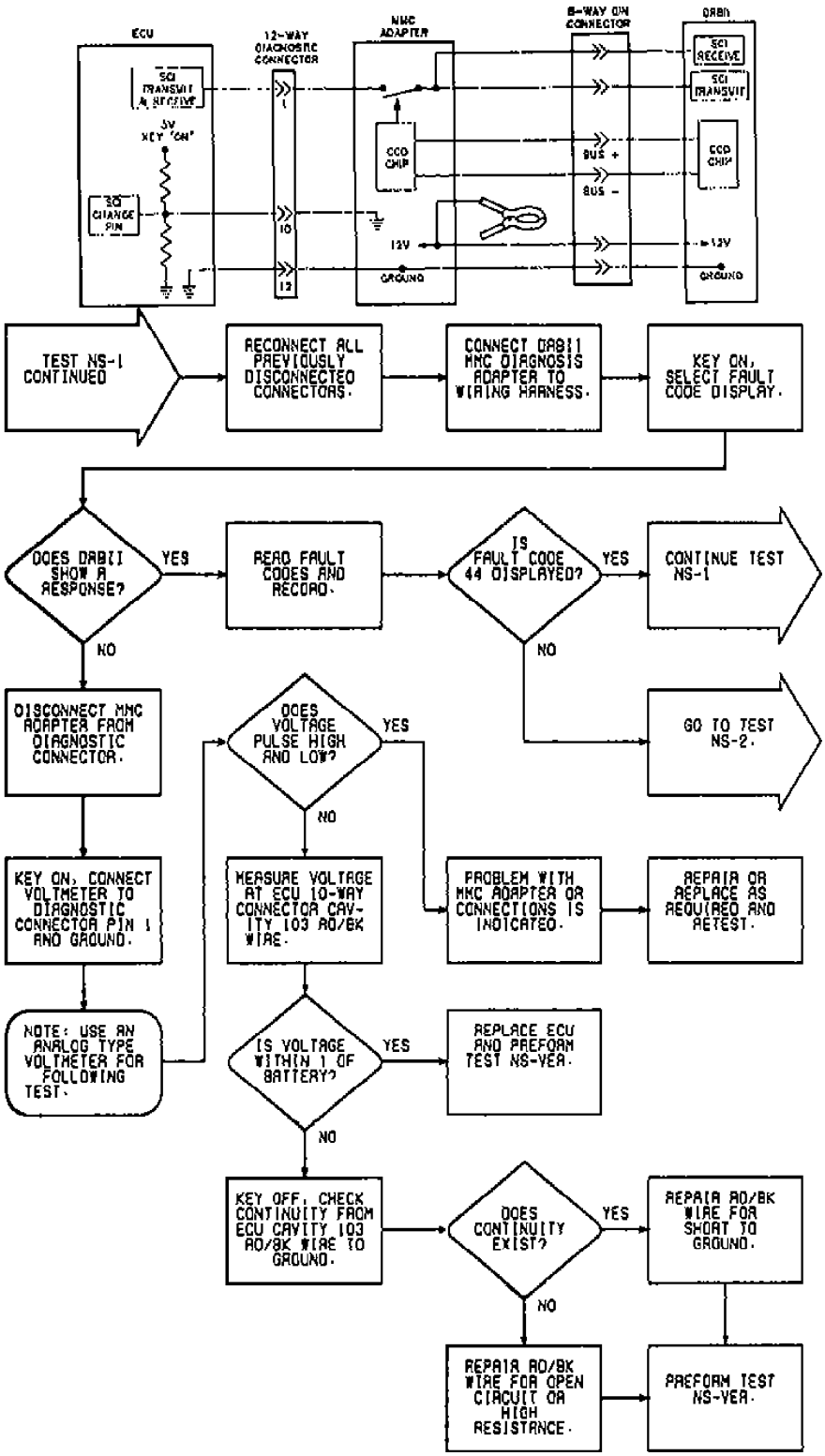


Fig. 236: NS-1 Flow Chart & Circuit Diagram (2.0L) (2 of 5)

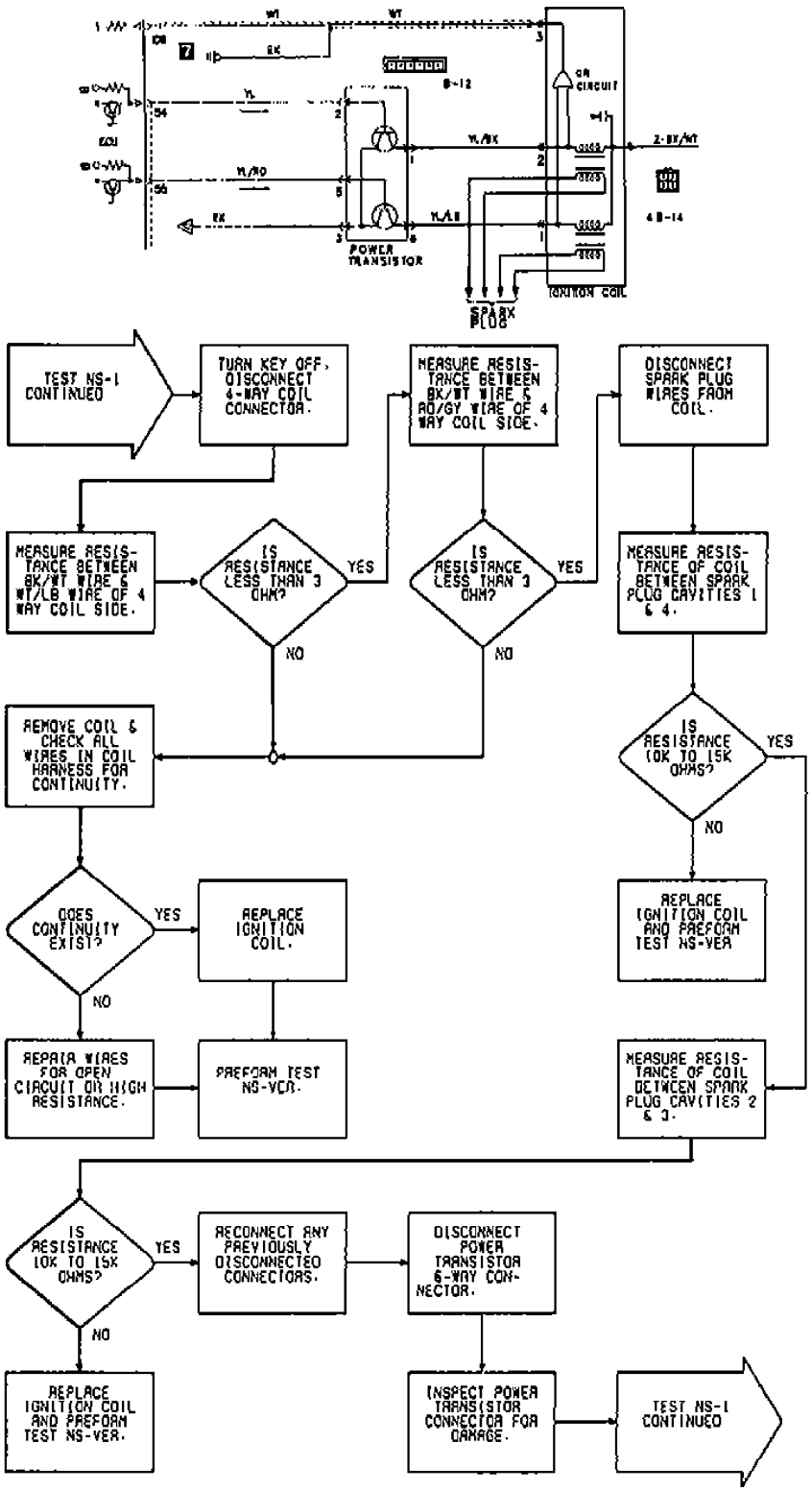


Fig. 237: NS-1 Flow Chart & Circuit Diagram (2.0L) (3 of 5)

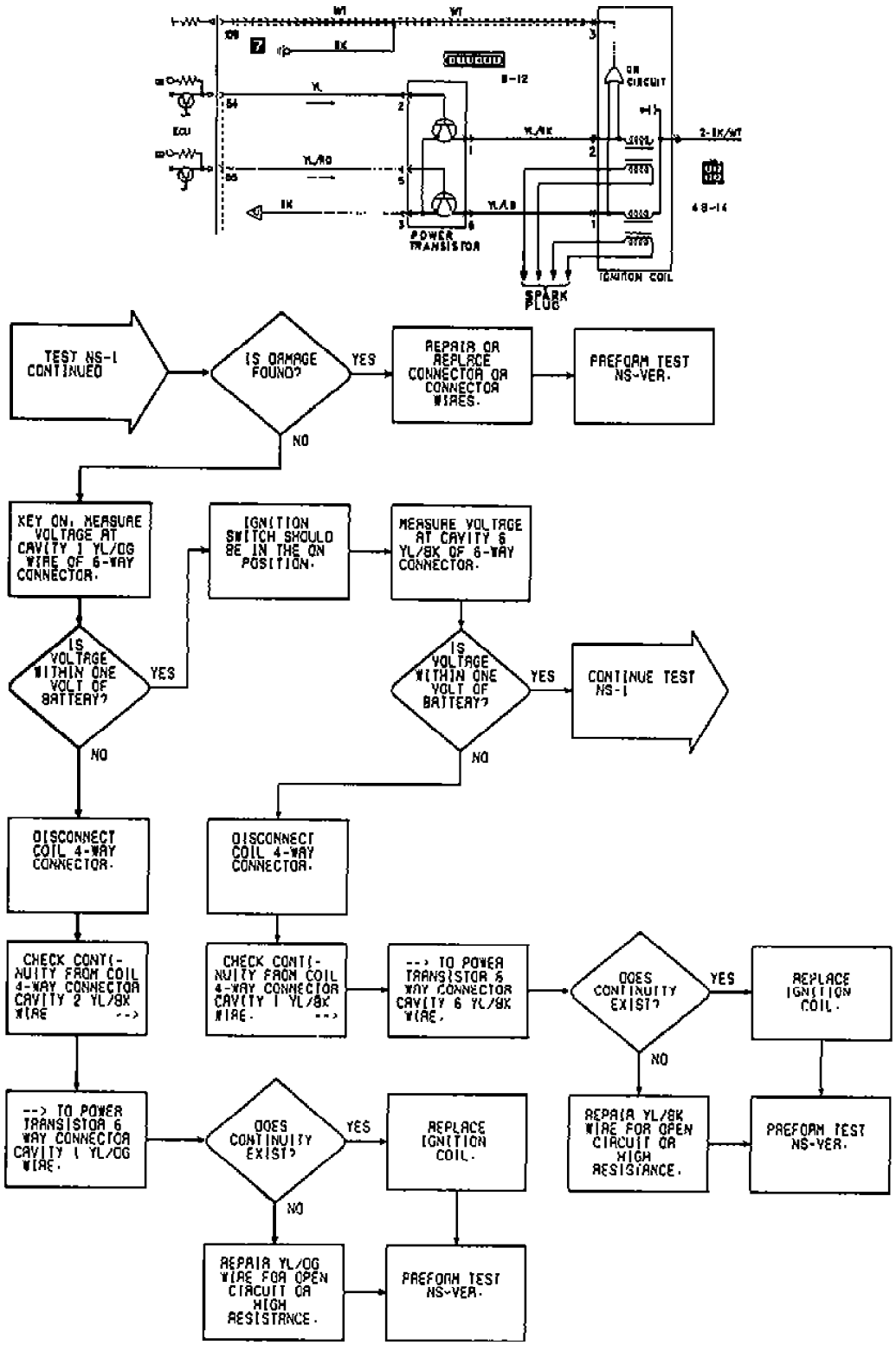


Fig. 238: NS-1 Flow Chart & Circuit Diagram (2.0L) (4 of 5)

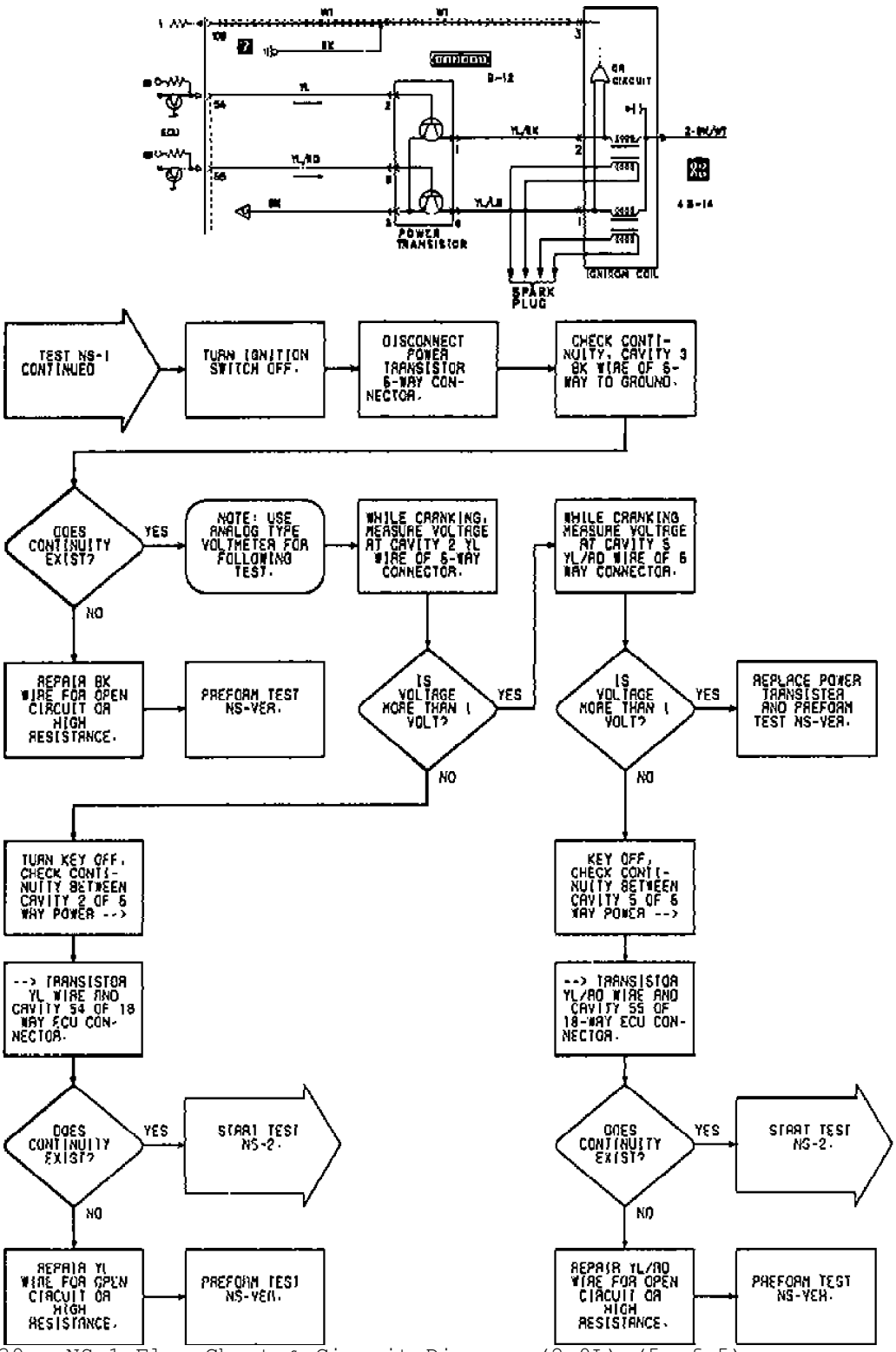


Fig. 239: NS-1 Flow Chart & Circuit Diagram (2.0L) (5 of 5)

NS-2: CHECKING CRANK ANGLE SENSOR - 2.0L

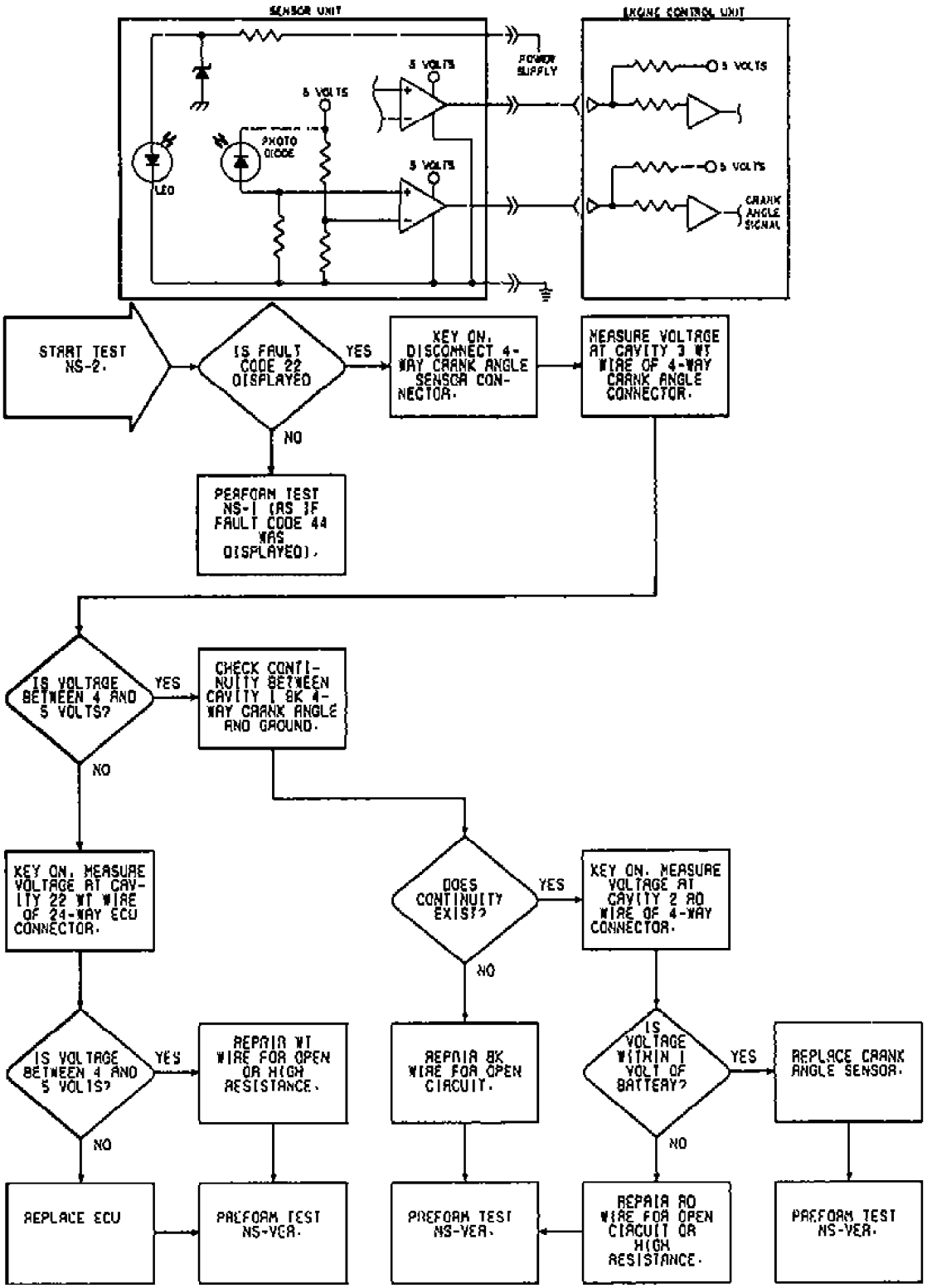


Fig. 240: NS-2 Flow Chart & Circuit Diagram (2.0L)

NS-3: FUEL TEST - 2.0L

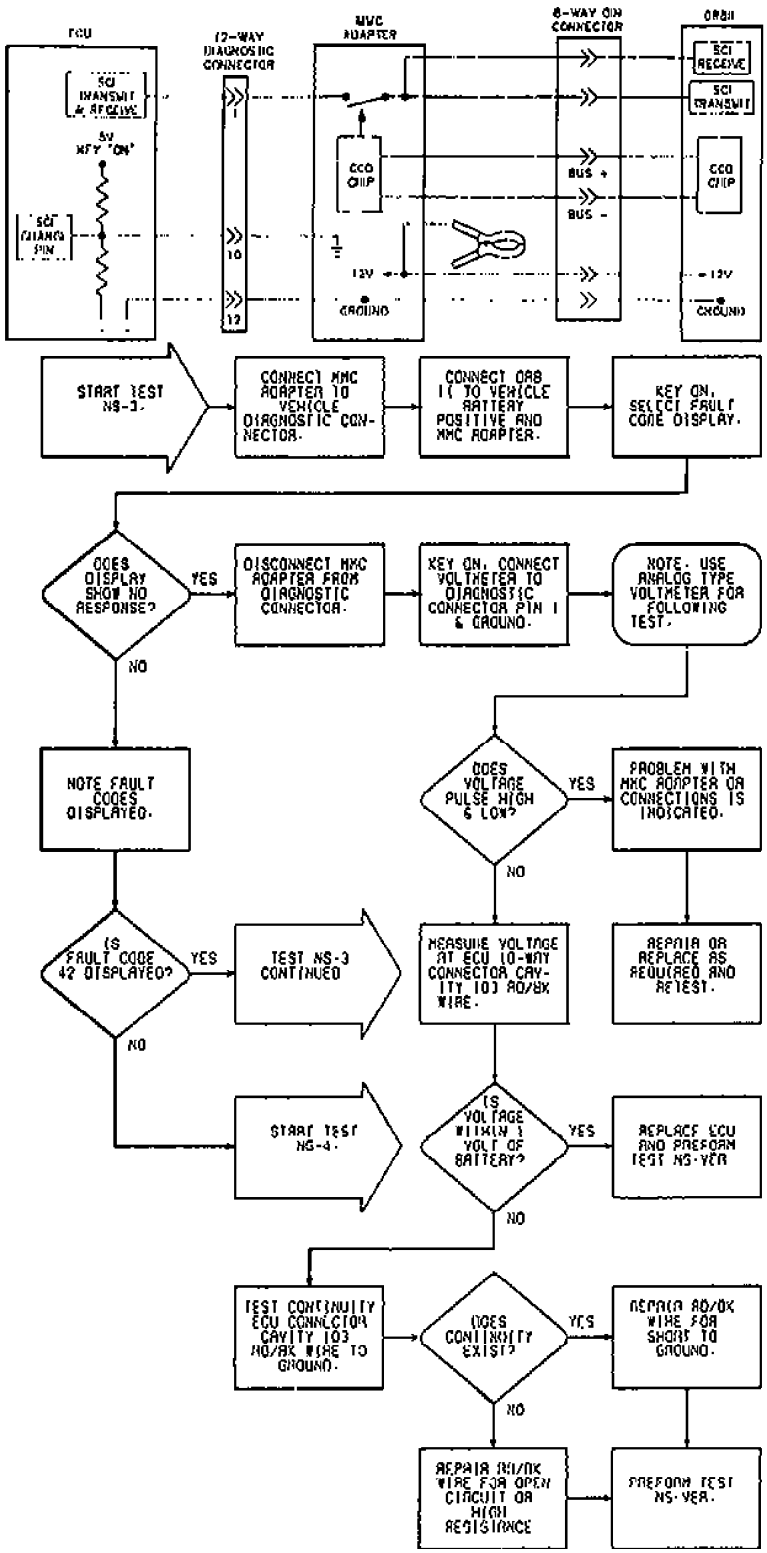


Fig. 241: NS-3 Flow Chart & Circuit Diagram (2.0L) (1 of 3)

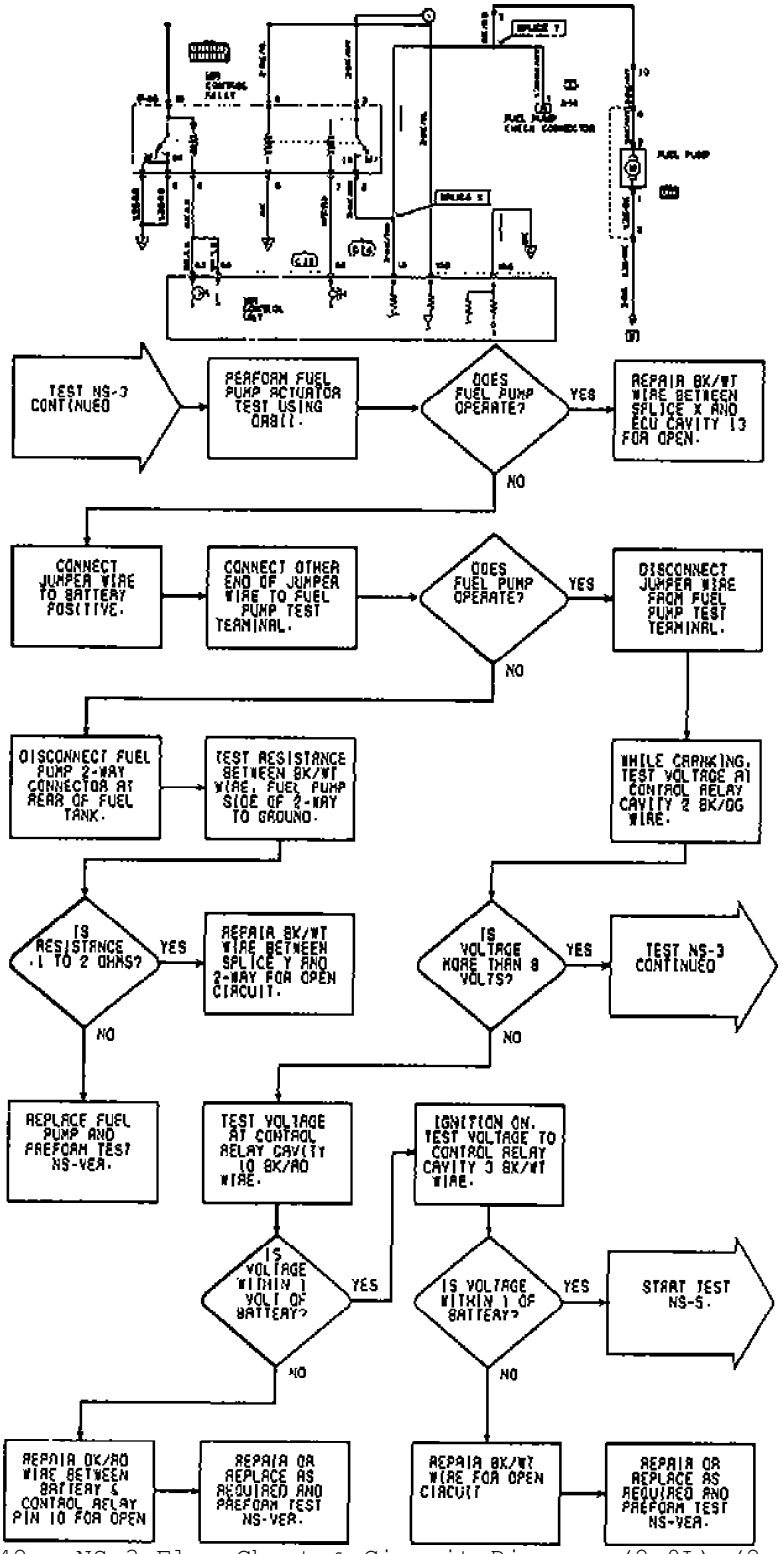


Fig. 242: NS-3 Flow Chart & Circuit Diagram (2.0L) (2 of 3)

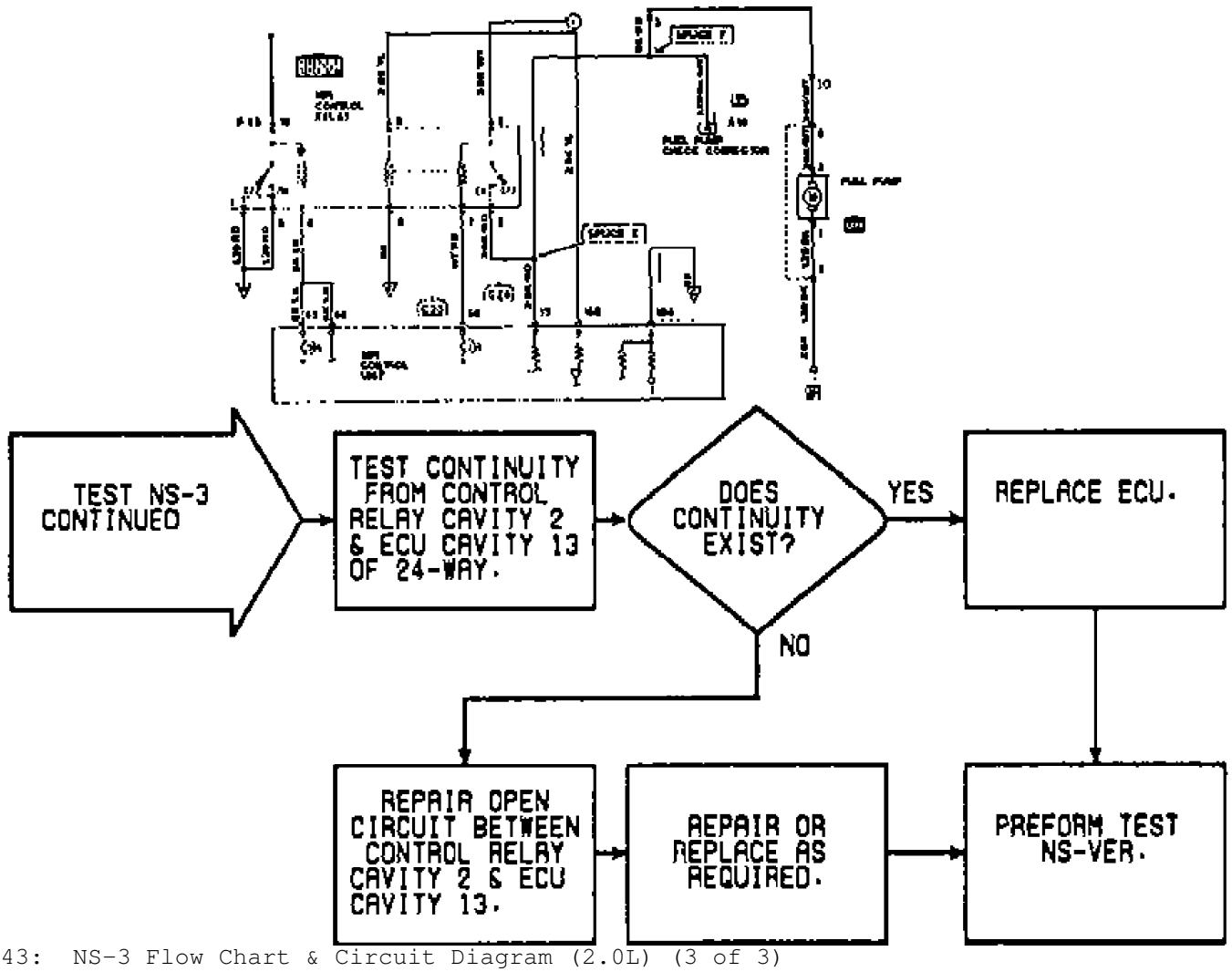


Fig. 243: NS-3 Flow Chart & Circuit Diagram (2.0L) (3 of 3)

NS-4: CHECKING FUEL PUMP OPERATION - 2.0L

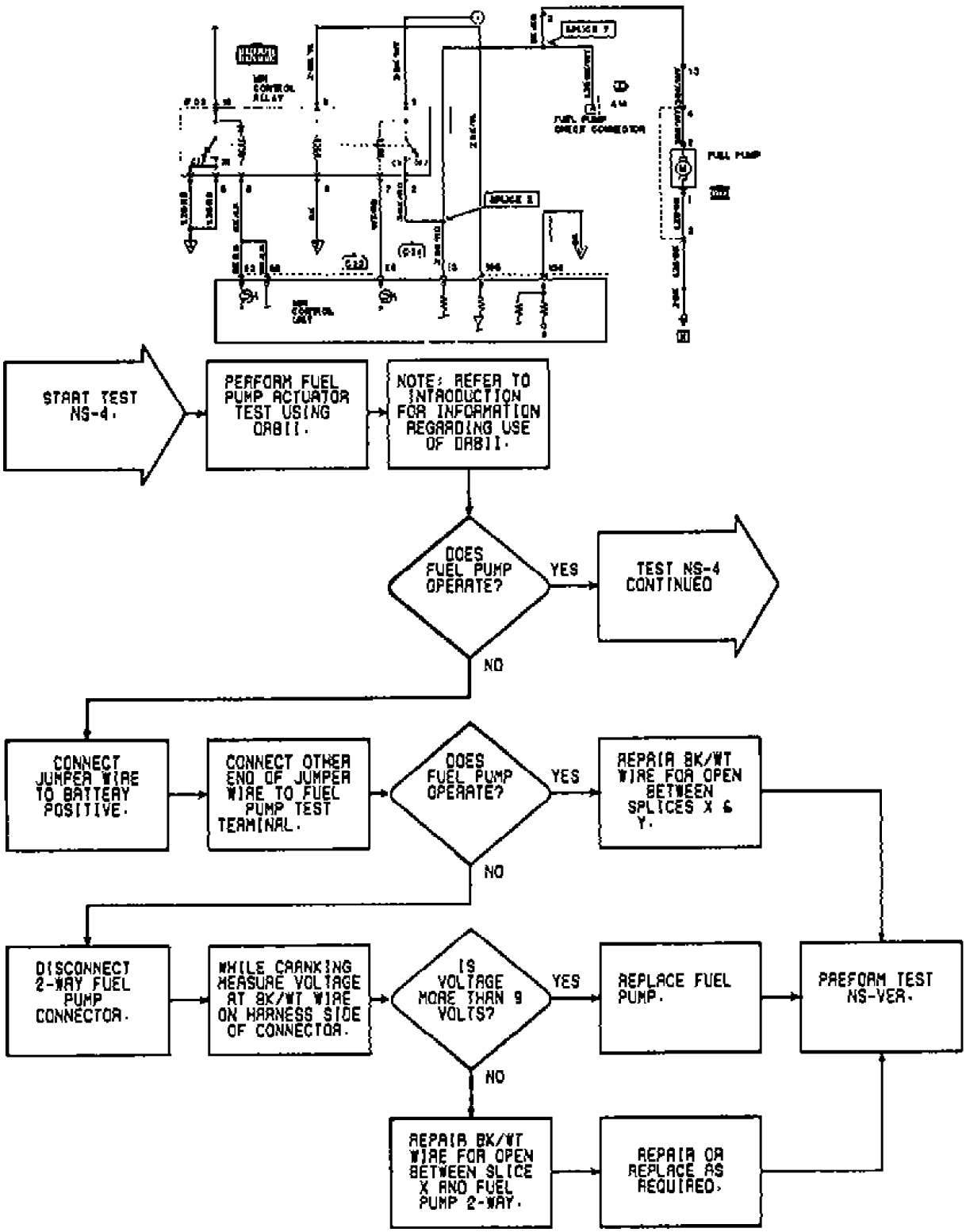


Fig. 244: NS-4 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

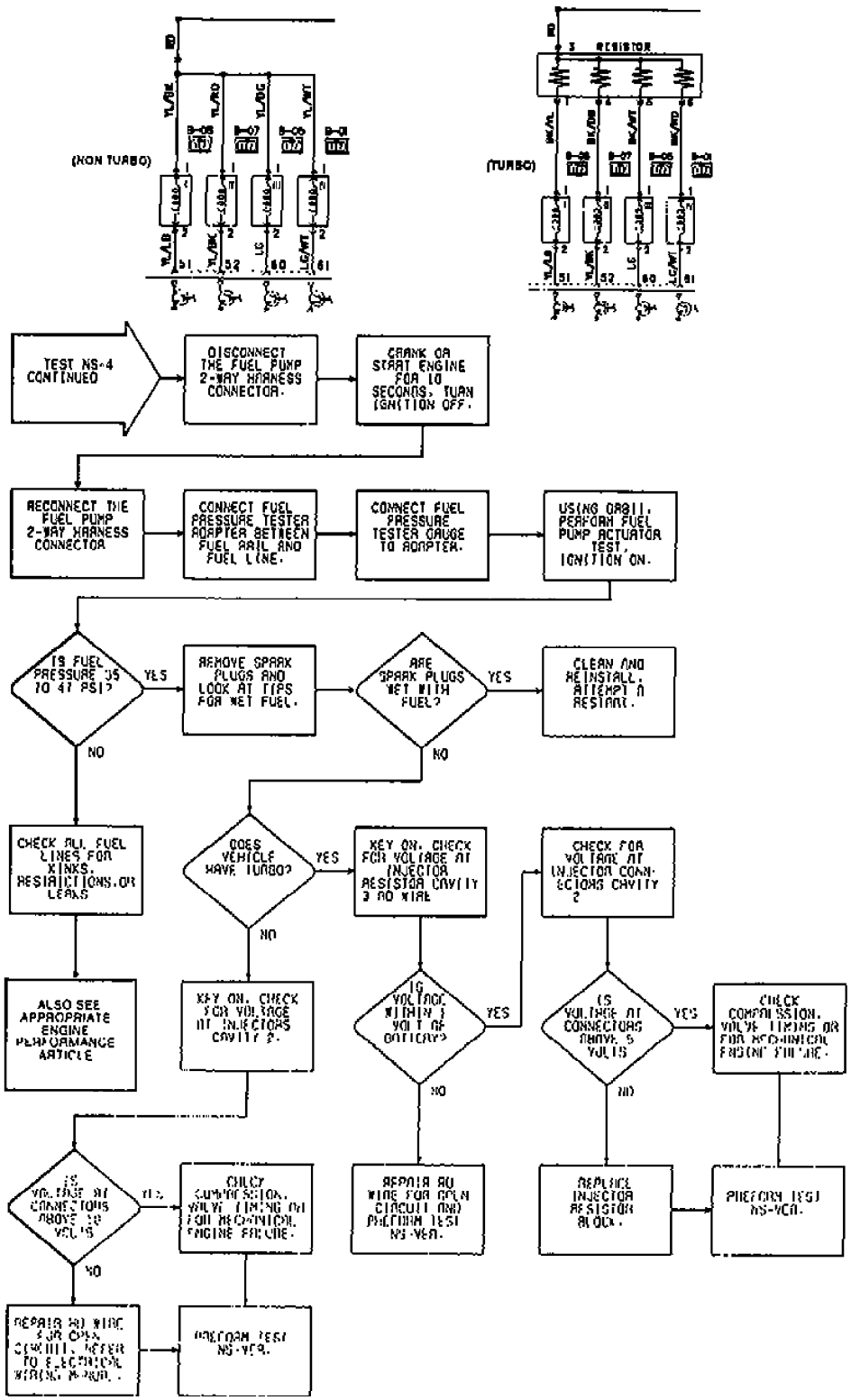


Fig. 245: NS-4 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

NS-5: CHECKING CONTROL RELAY CIRCUIT - 2.0L

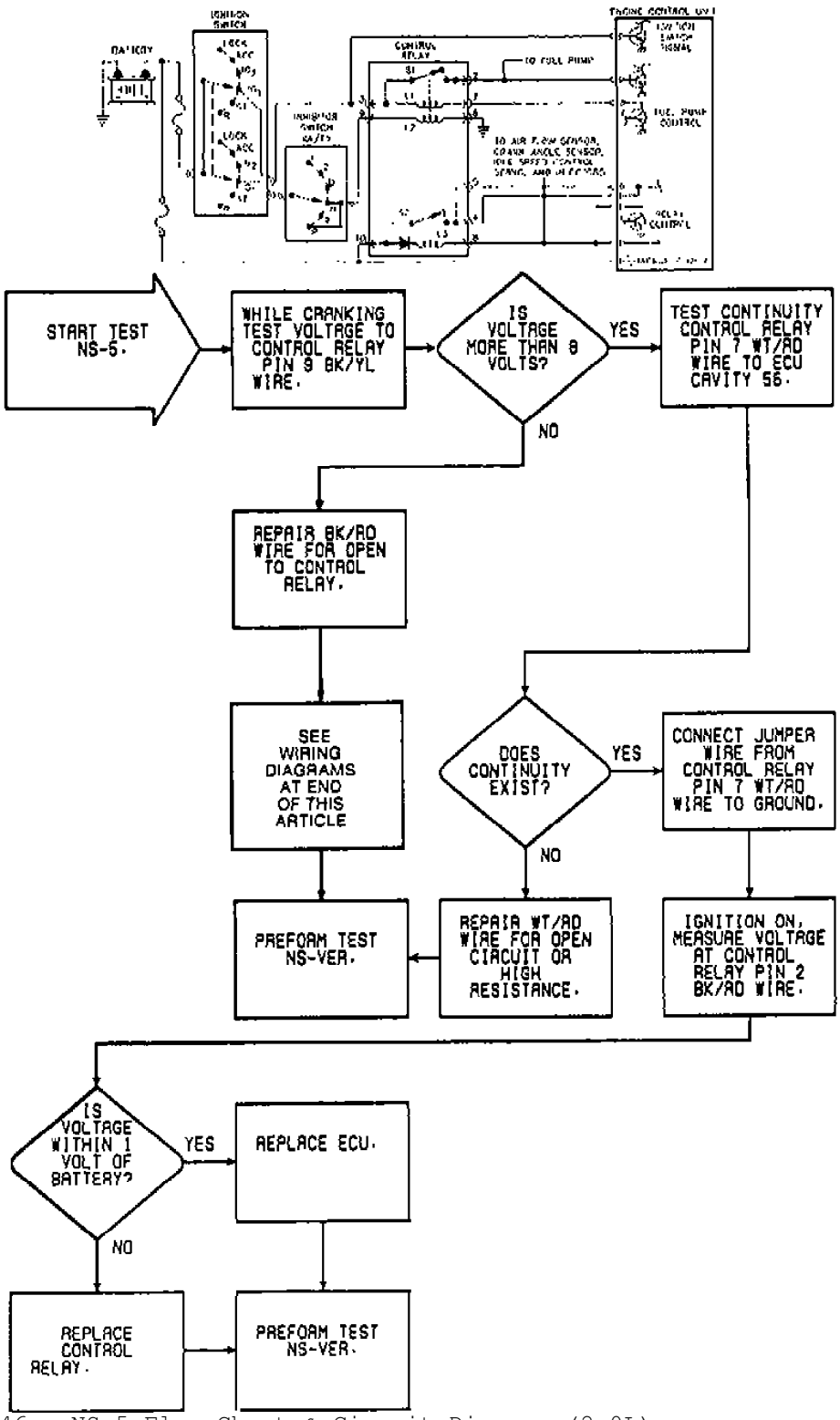


Fig. 246: NS-5 Flow Chart & Circuit Diagram (2.0L)

NS-VER: NO START VERIFICATION TEST - 2.0L

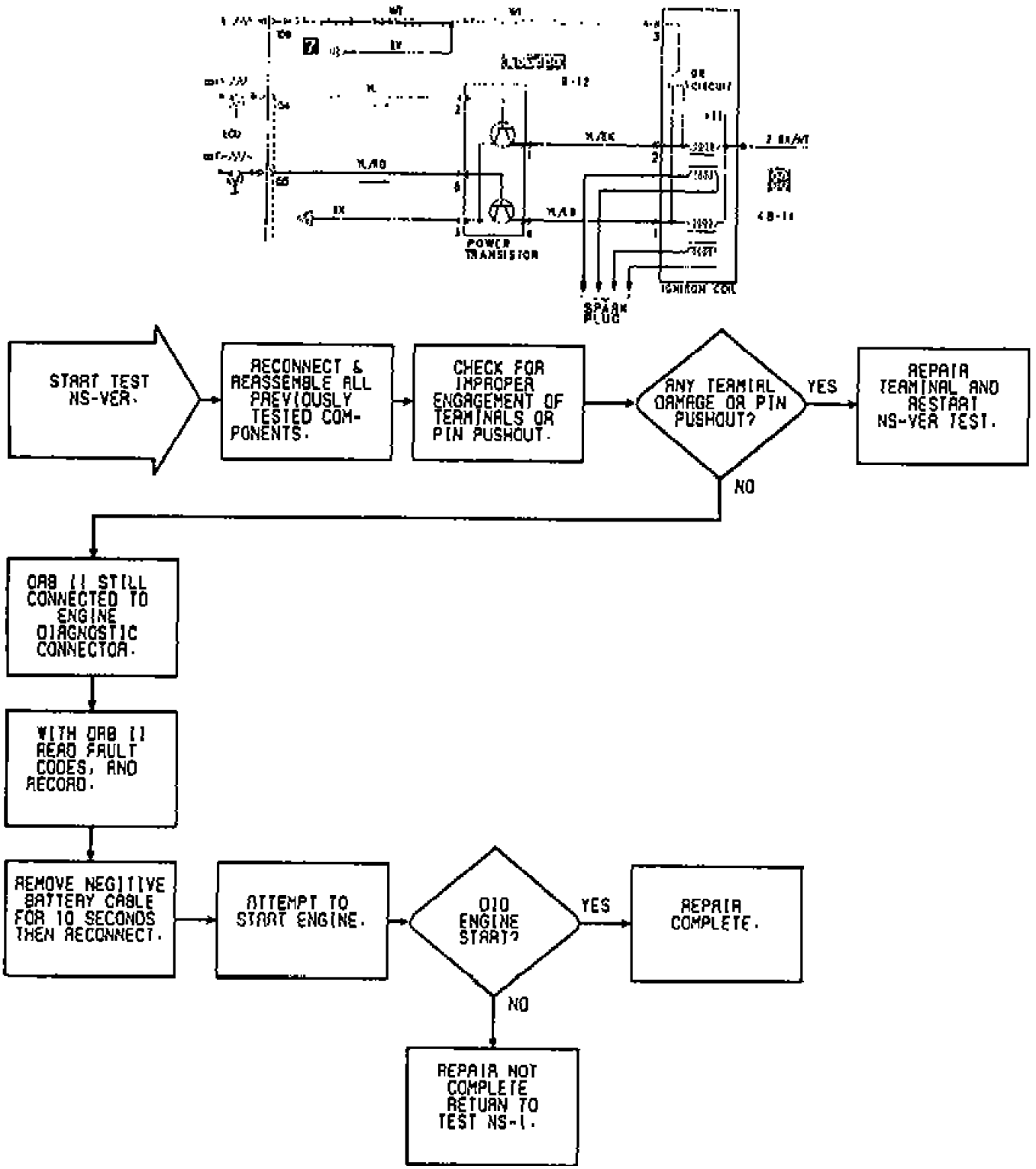


Fig. 247: NS-VER Flow Chart & Circuit Diagram (2.0L)

DR-1: FAULT CODE CHECK - 2.0L

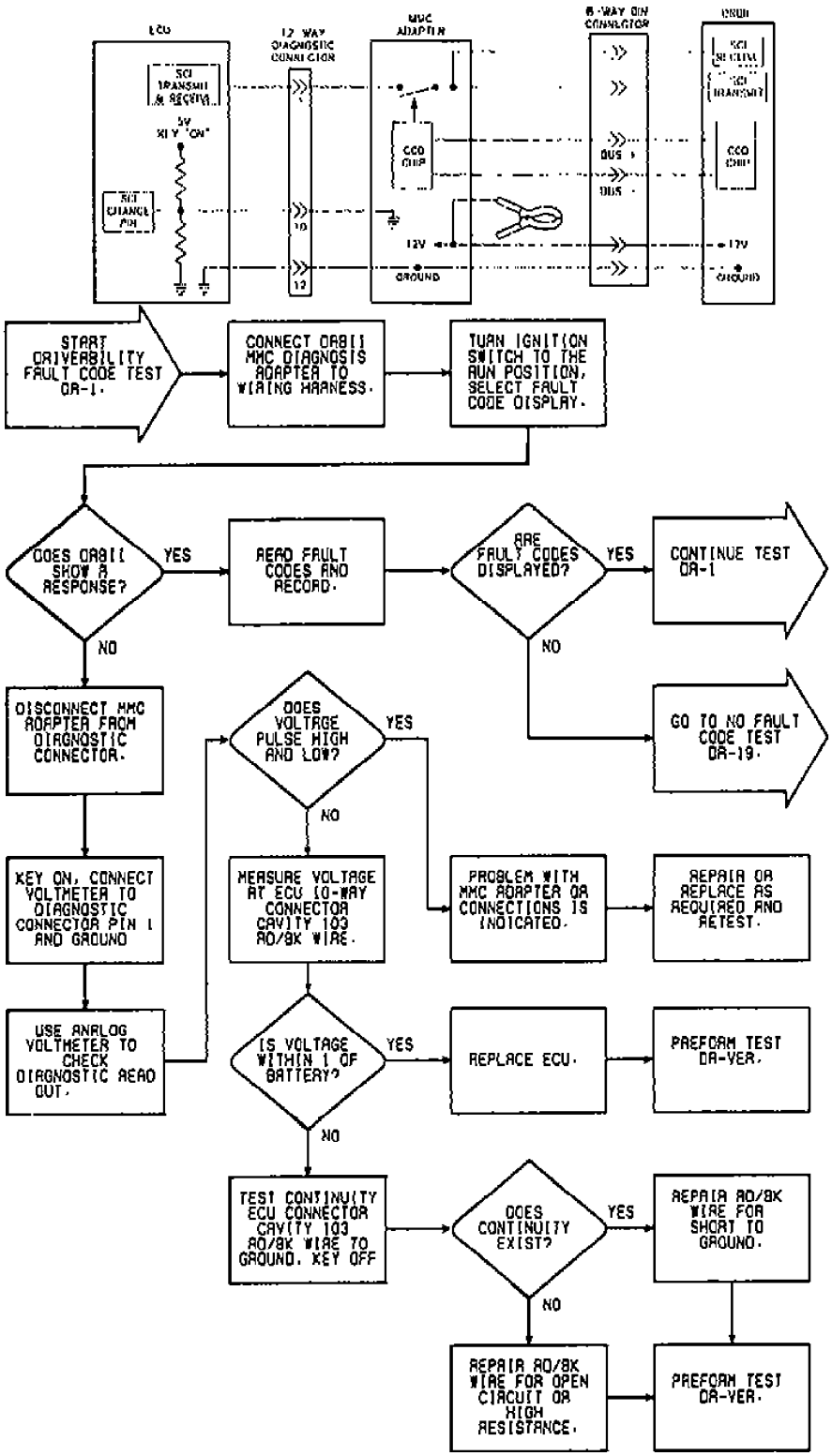


Fig. 248: DR-1 Flow Chart & Circuit Diagram (2.0L) (1 of 3)

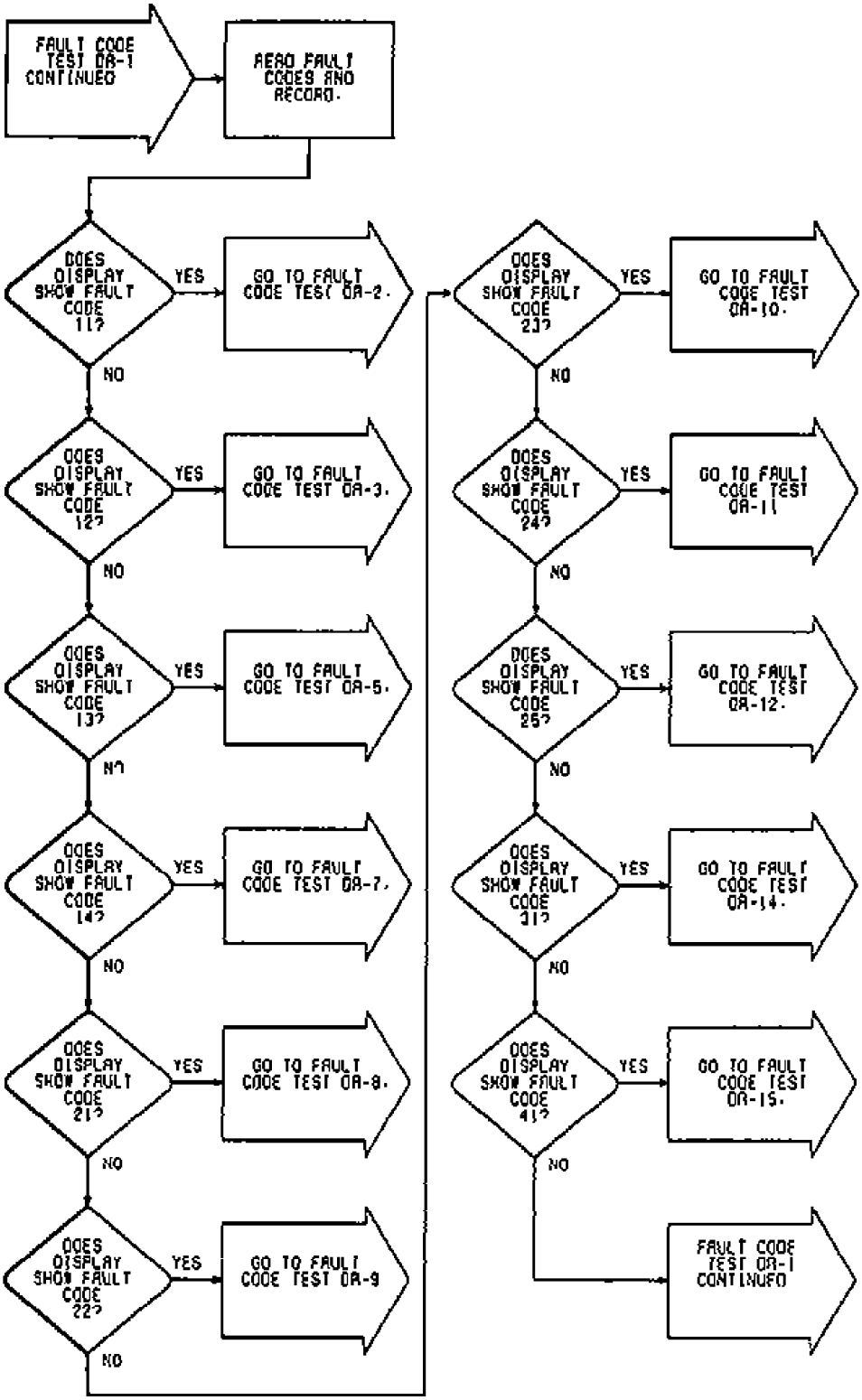


Fig. 249: DR-1 Flow Chart & Circuit Diagram (2.0L) (2 of 3)

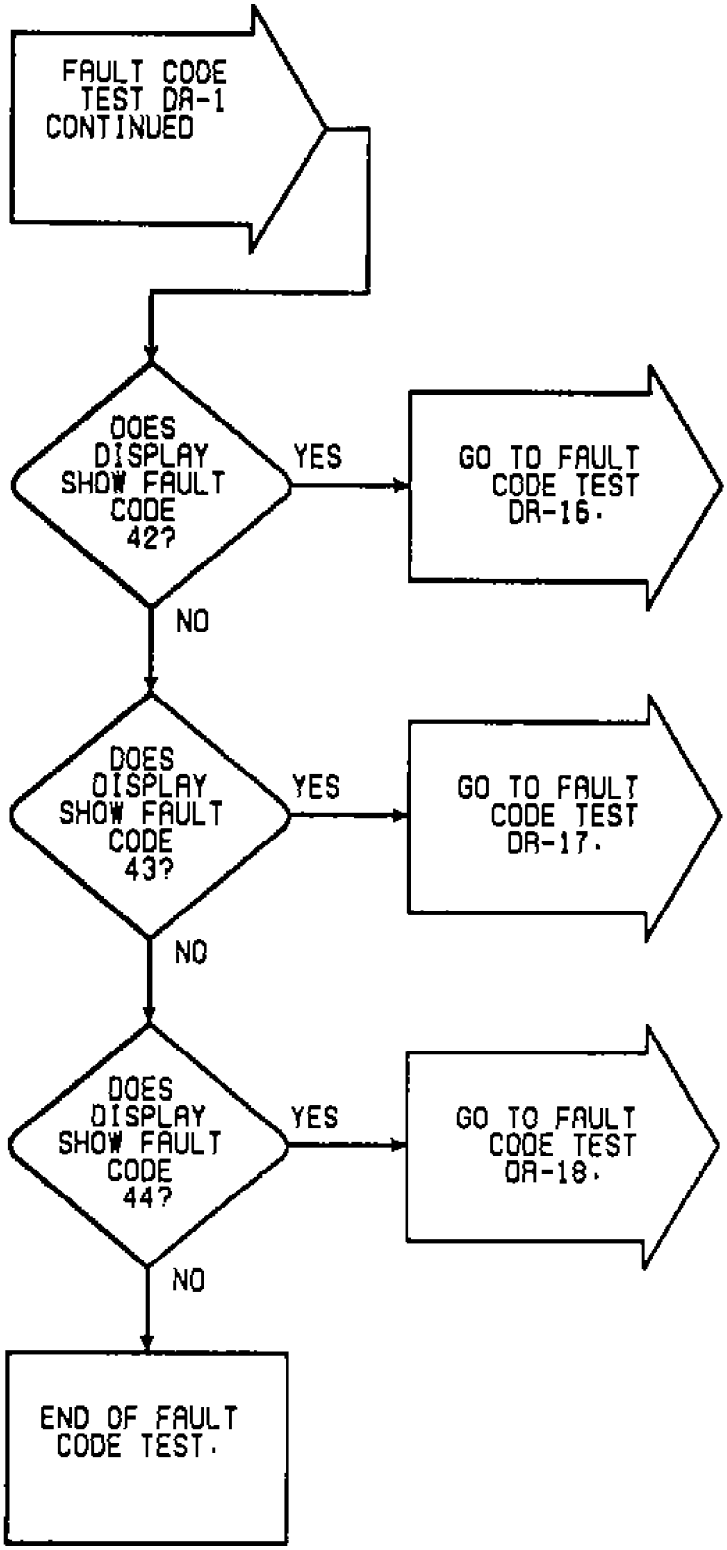


Fig. 250: DR-1 Flow Chart & Circuit Diagram (2.0L) (3 of 3)

DR-2: CHECKING OXYGEN SENSOR - 2.0L

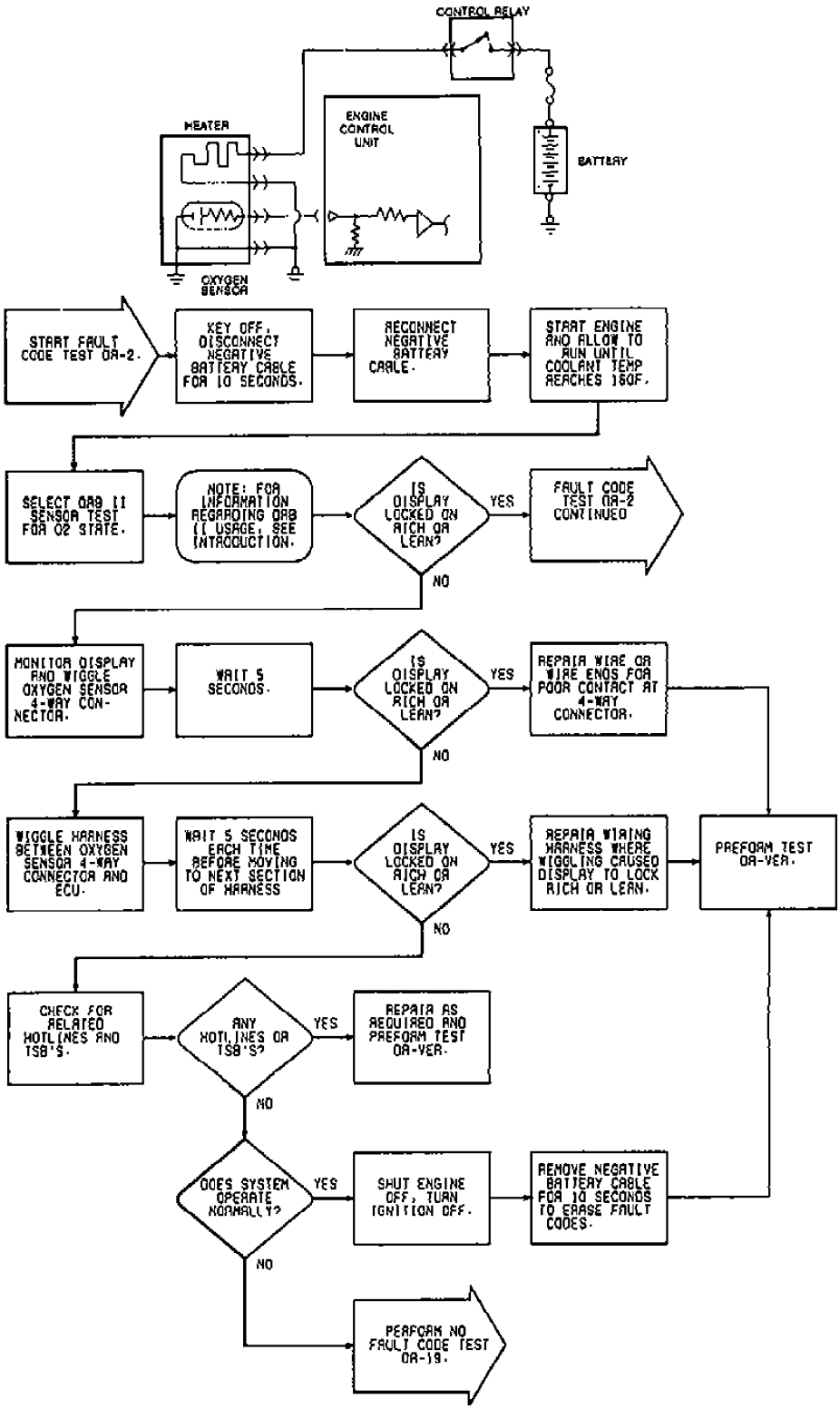


Fig. 251: DR-2 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

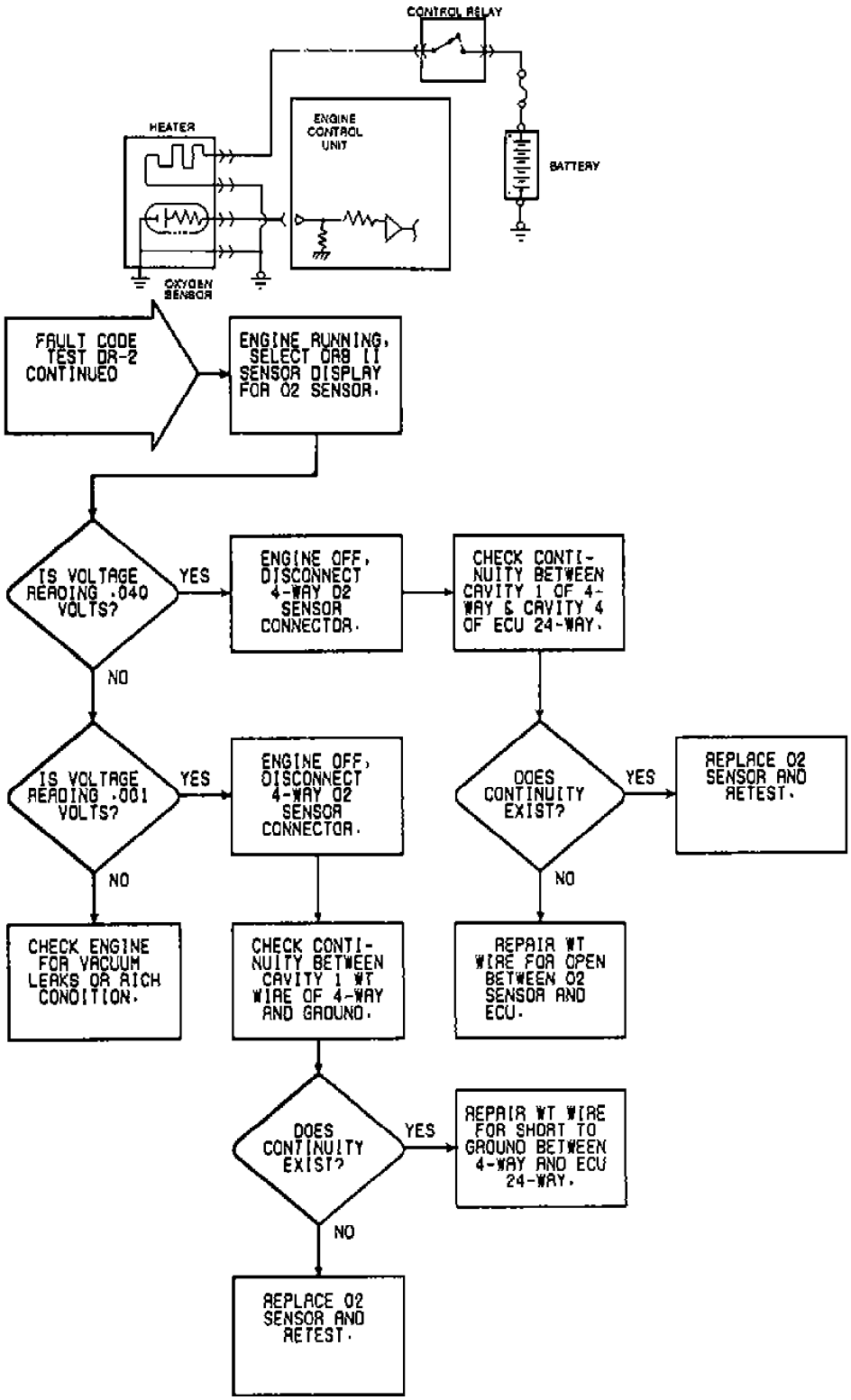


Fig. 252: DR-2 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-3: CHECKING AIRFLOW SENSOR - 2.0L TURBO

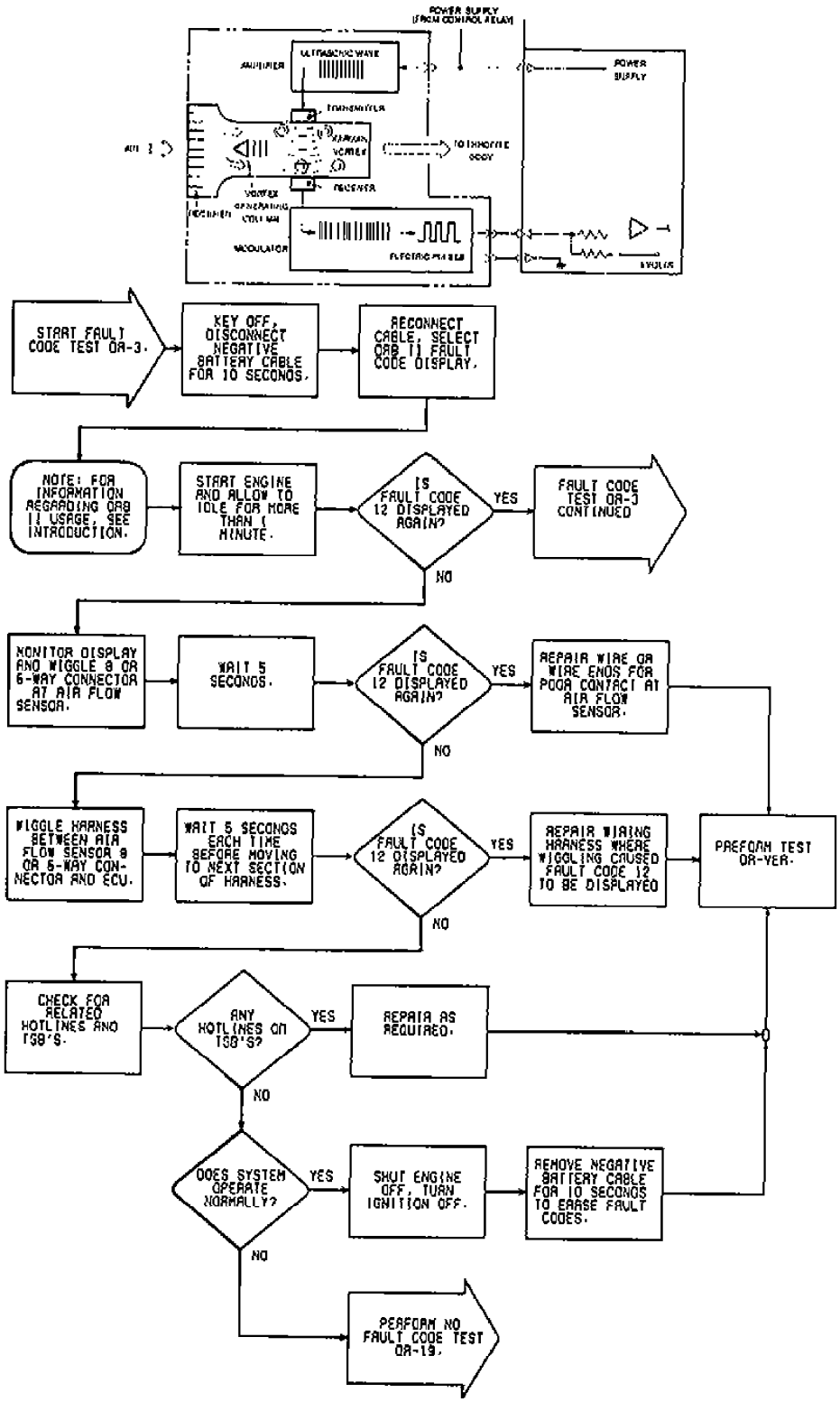


Fig. 253: DR-3 Flow Chart & Circuit Diagram (2.0L Turbo) (1 of 3)

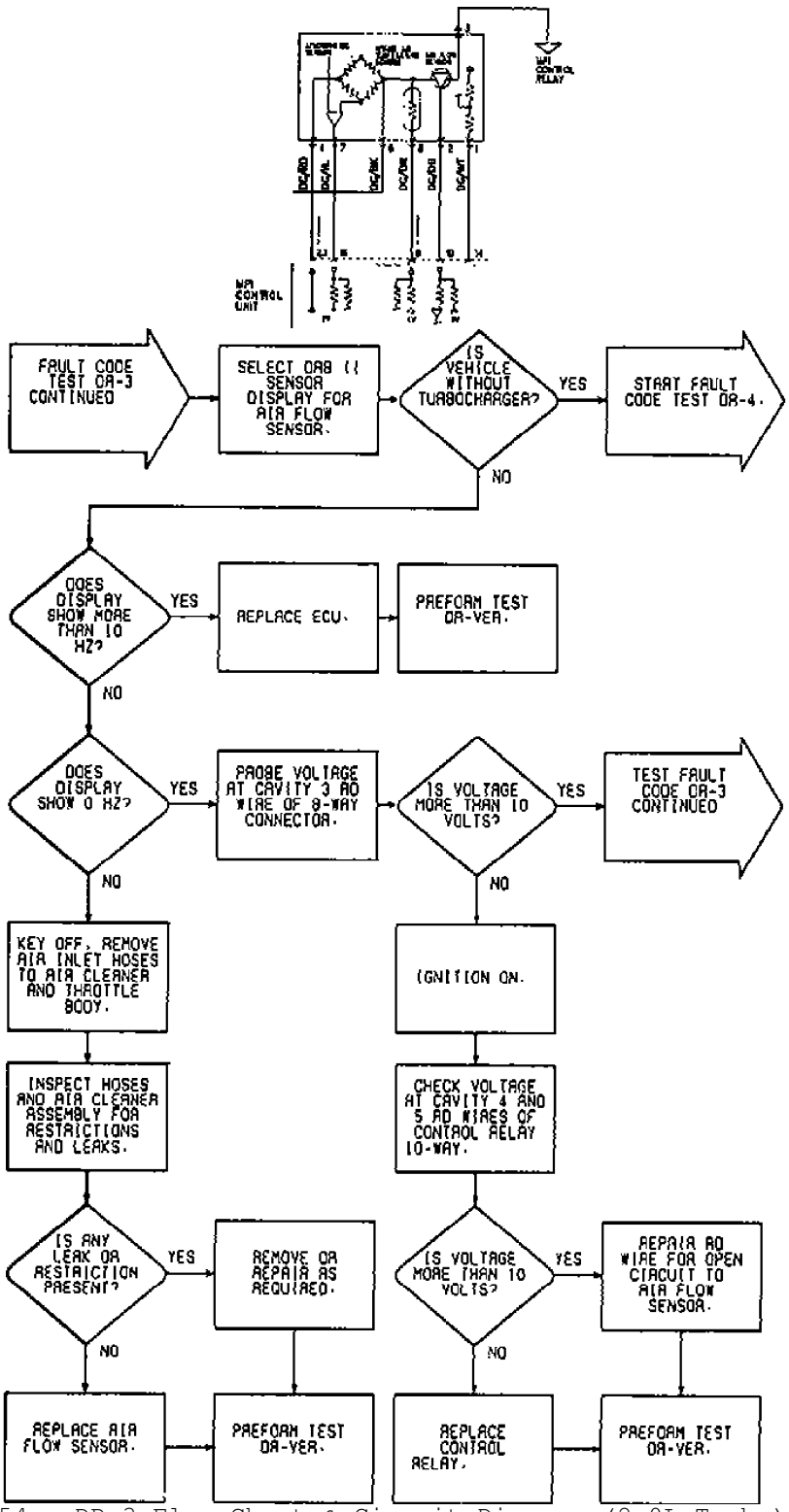


Fig. 254: DR-3 Flow Chart & Circuit Diagram (2.0L Turbo) (2 of 3)

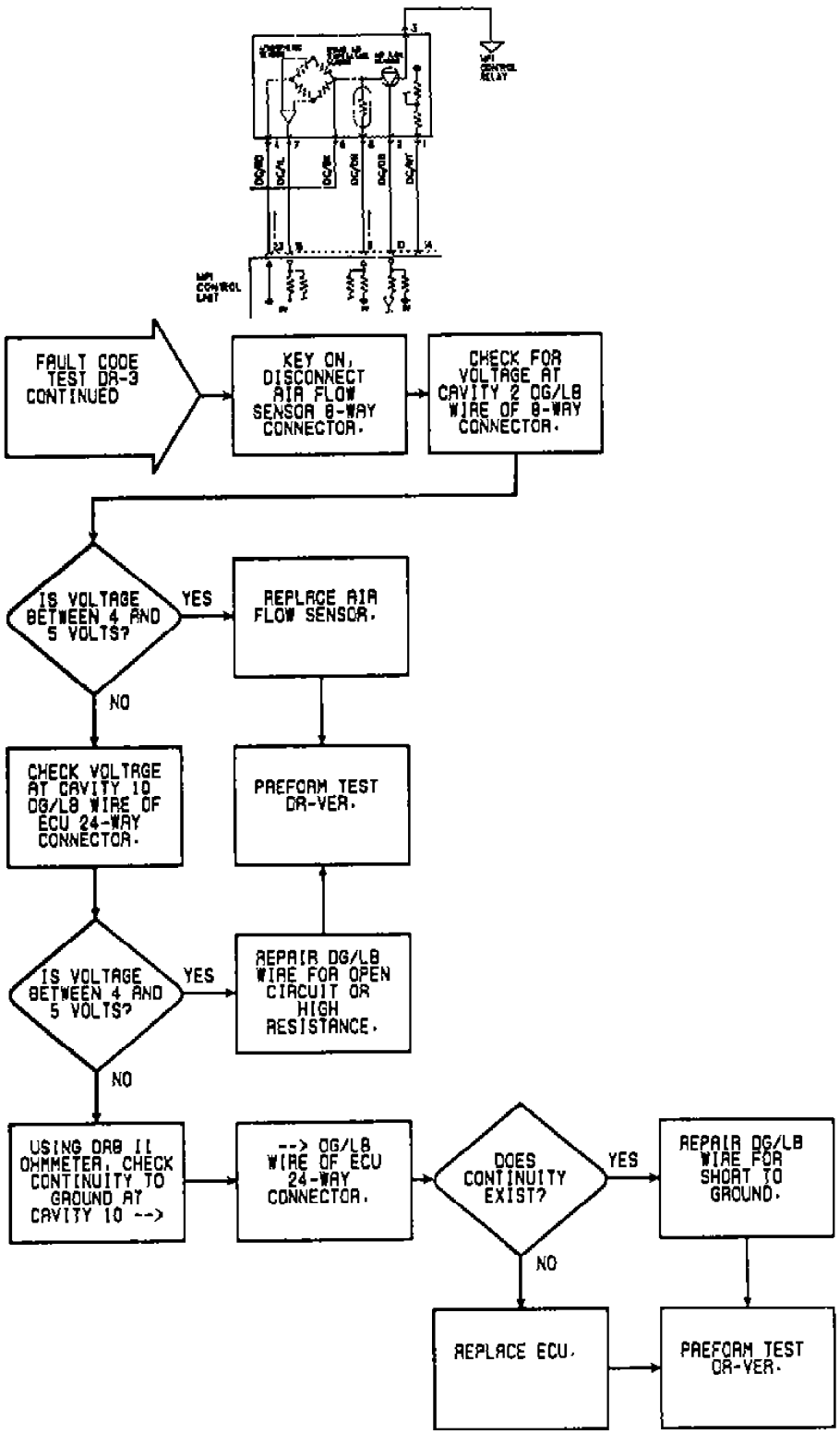


Fig. 255: DR-3 Flow Chart & Circuit Diagram (2.0L Turbo) (3 of 3)

DR-4: CHECKING AIRFLOW SENSOR - 2.0L NON-TURBO

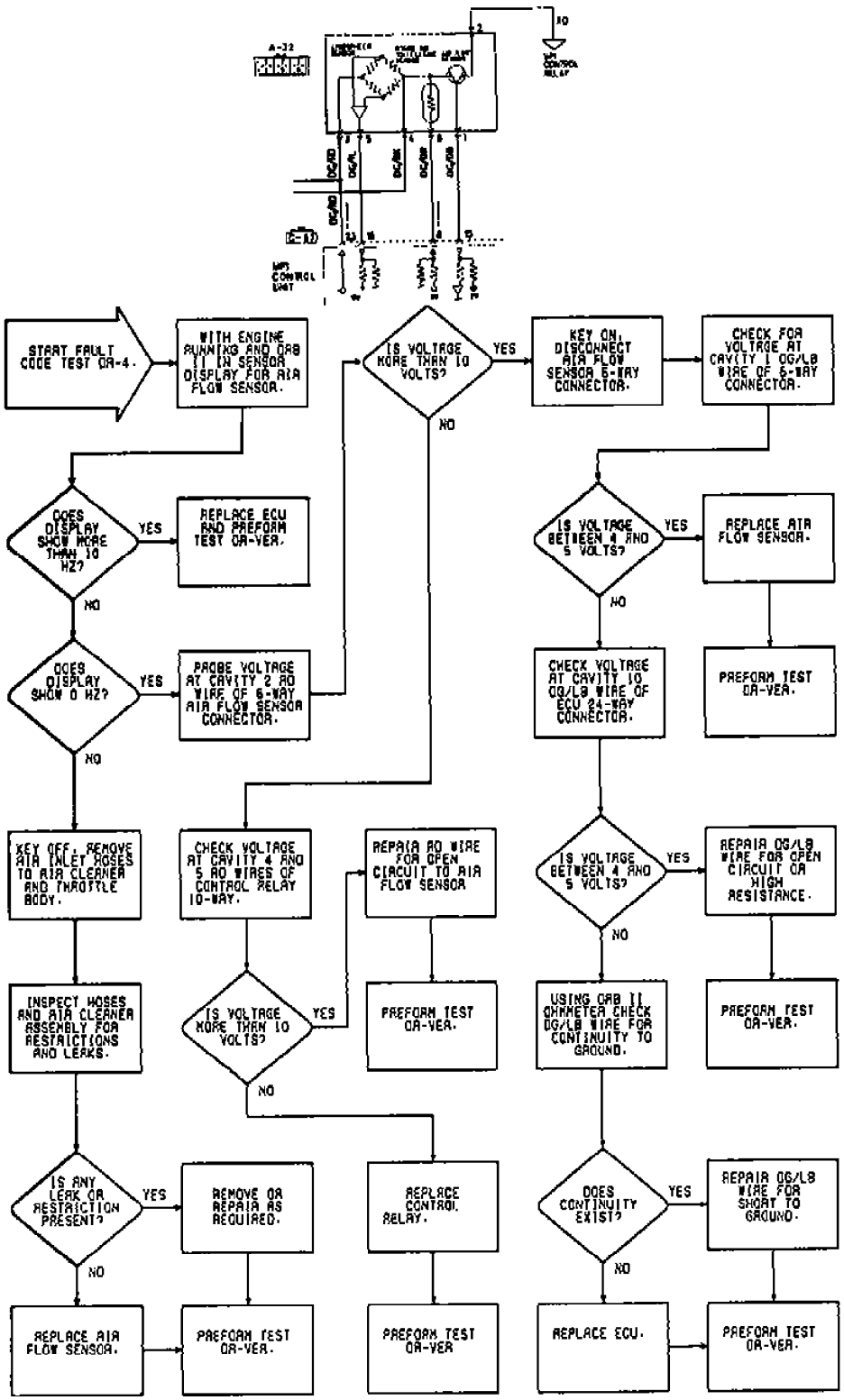
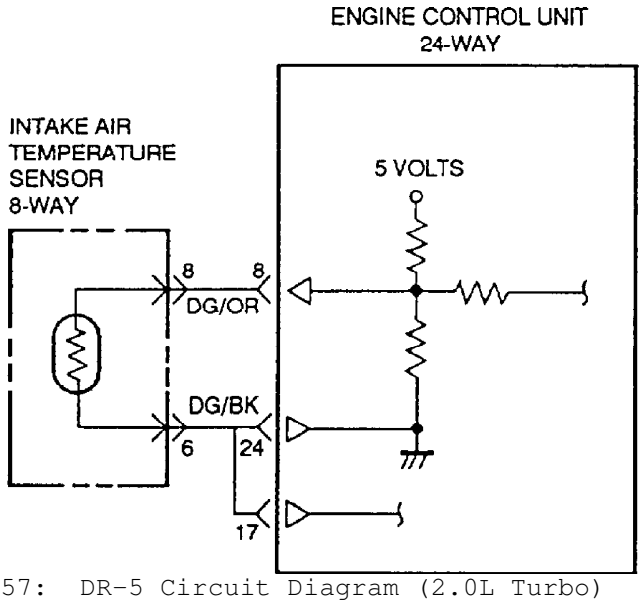


Fig. 256: DR-4 Flow Chart & Circuit Diagram (2.0L Non-Turbo)

DR-5: CHECKING INTAKE AIR TEMP SENSOR - 2.0L TURBO



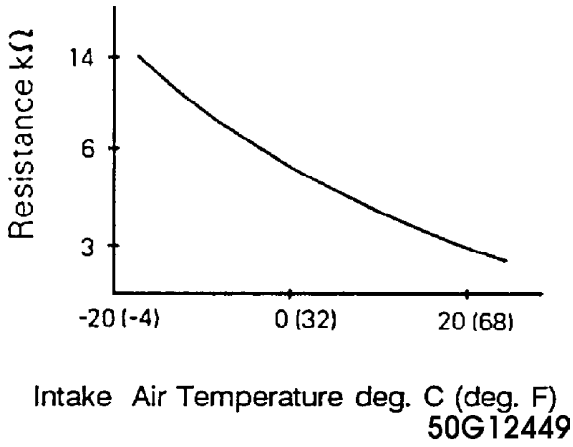


Fig. 257: DR-5 Circuit Diagram (2.0L Turbo)

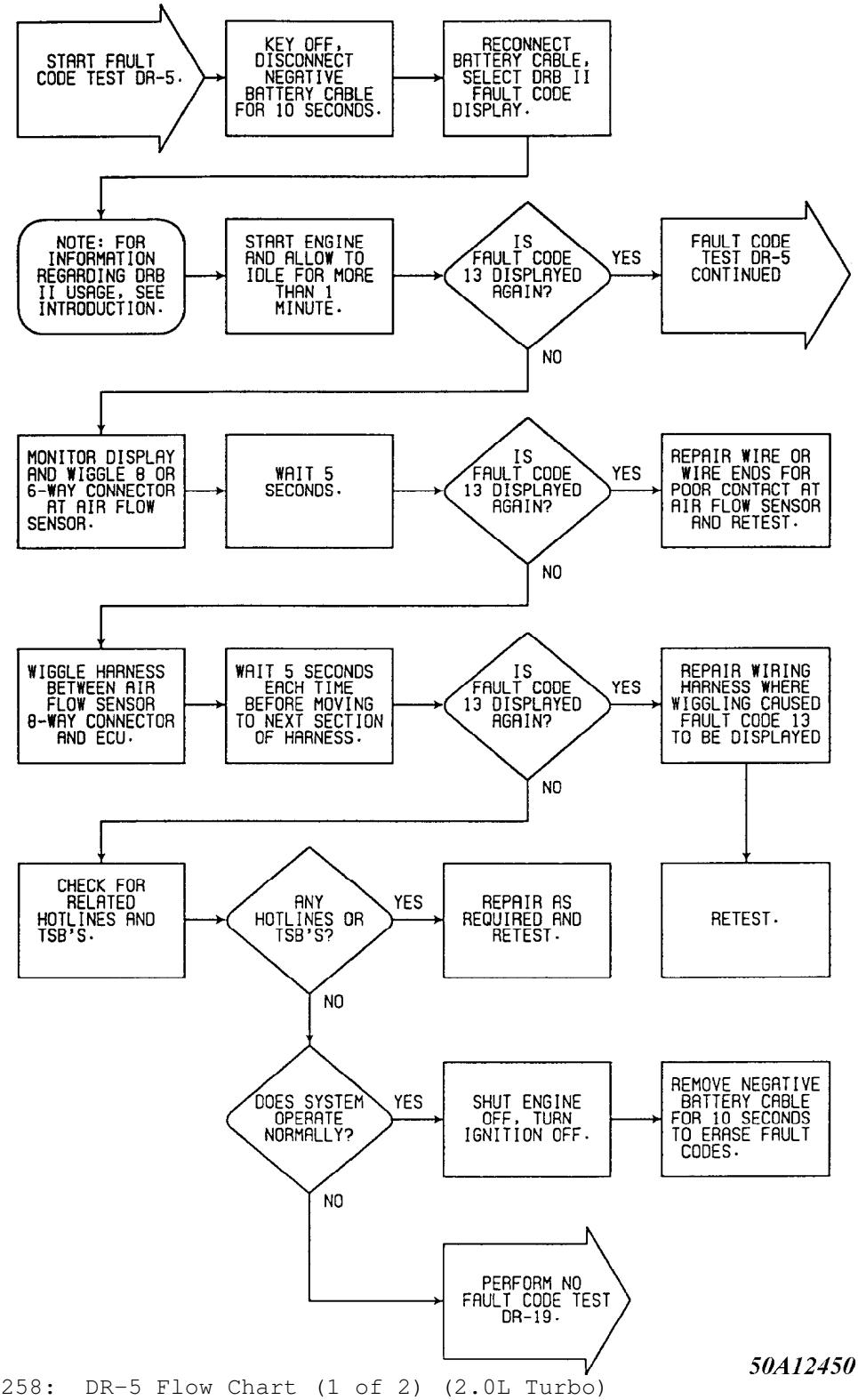


Fig. 258: DR-5 Flow Chart (1 of 2) (2.0L Turbo)

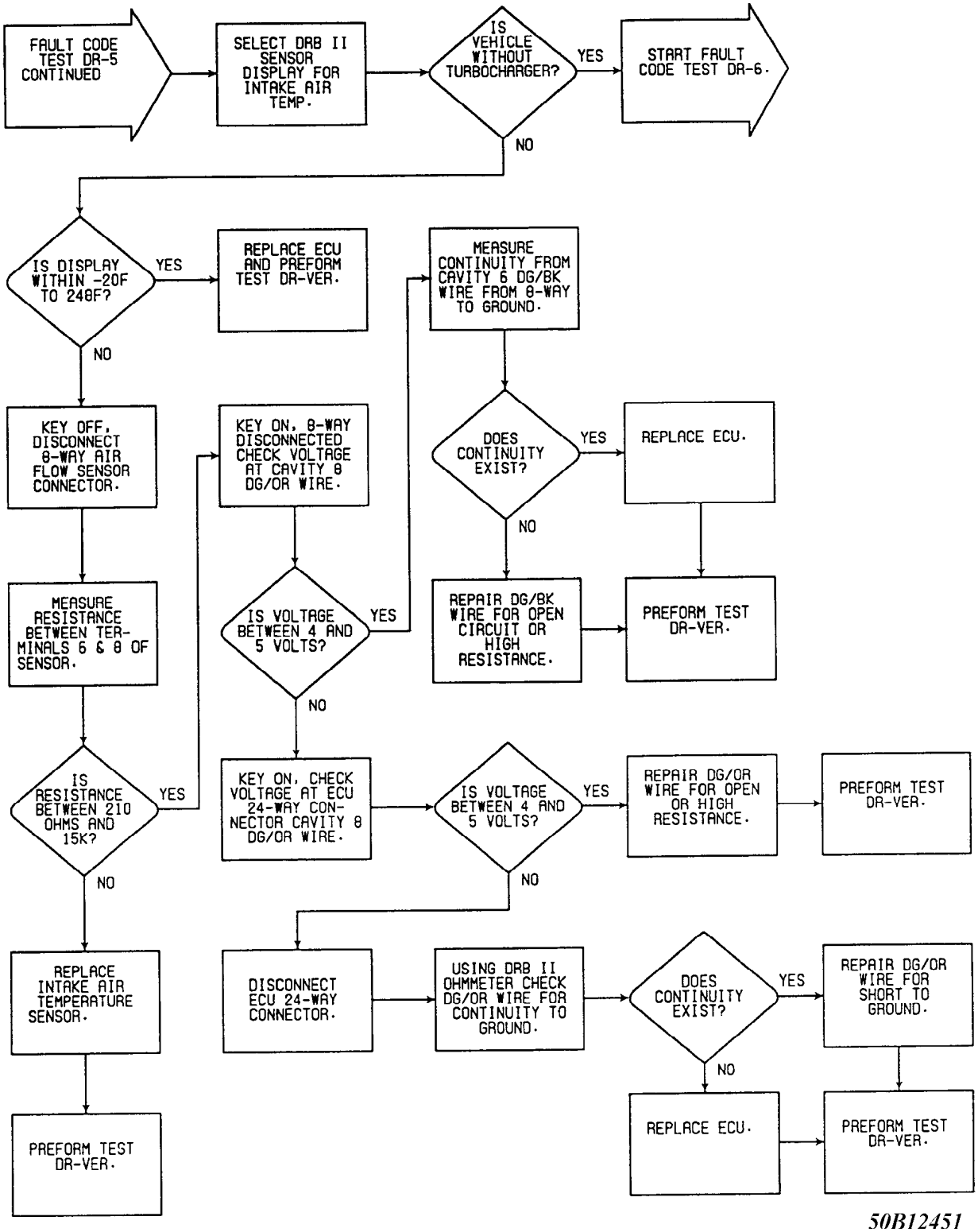


Fig. 259: DR-5 Flow Chart (2 of 2) (2.0L Turbo)

DR-6: CHECKING INTAKE AIR TEMP SENSOR - 2.0L NON-TURBO

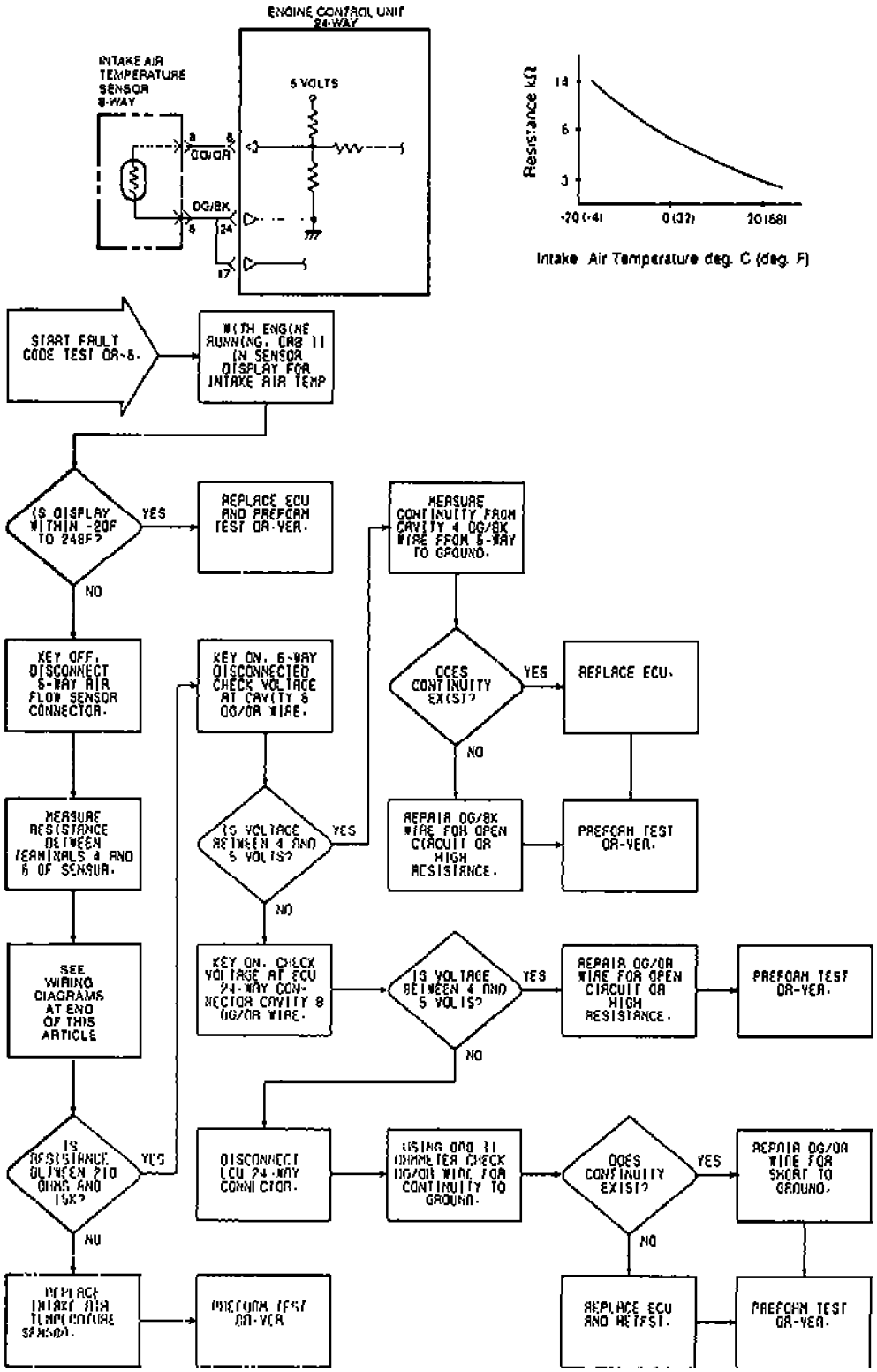


Fig. 260: DR-6 Flow Chart & Circuit Diagram (2.0L Non-Turbo)

DR-7: CHECKING THROTTLE POSITION SENSOR (TPS) - 2.0L

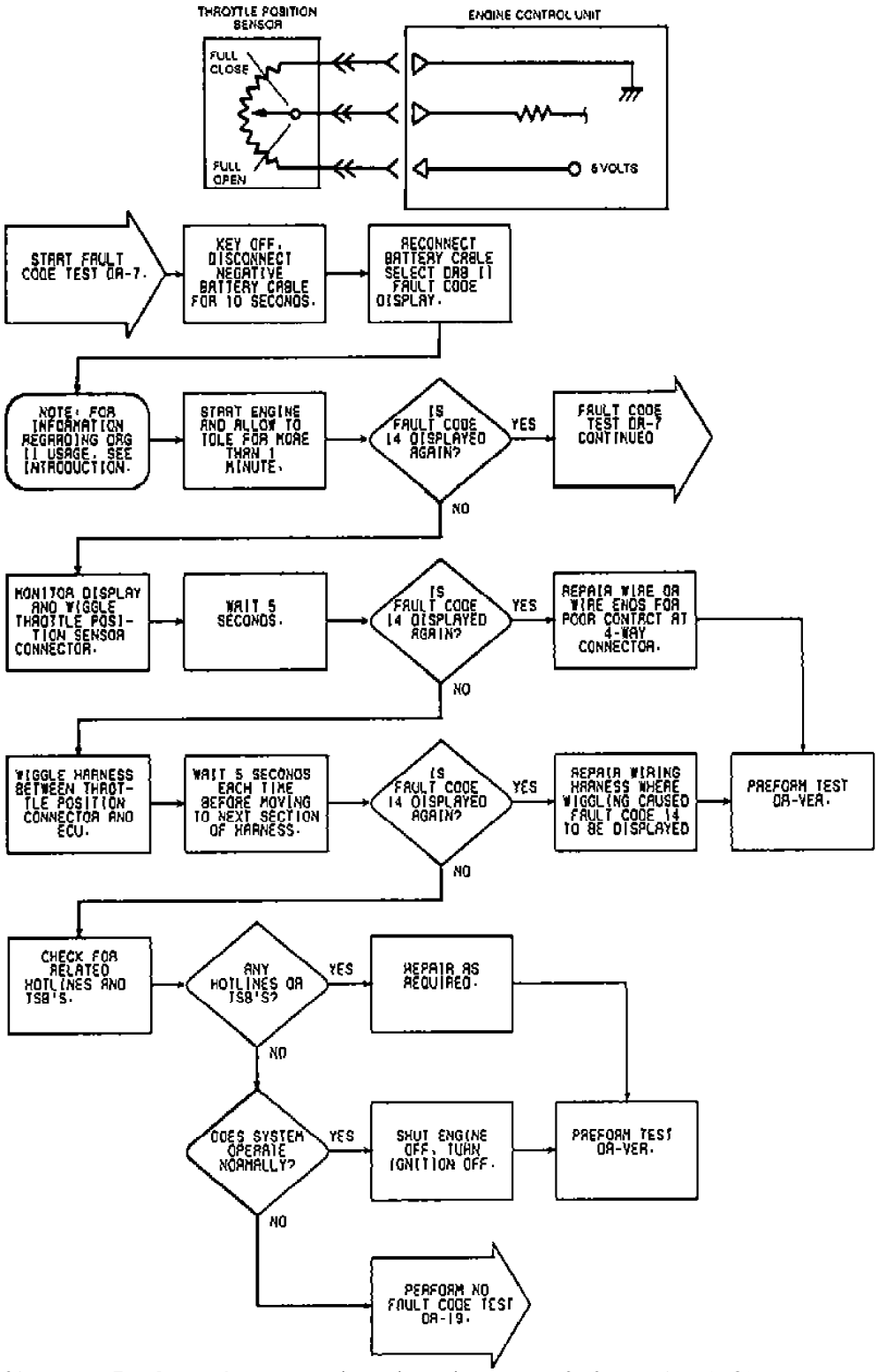


Fig. 261: DR-7 Flow Chart & Circuit Diagram (2.0L) (1 of 3)

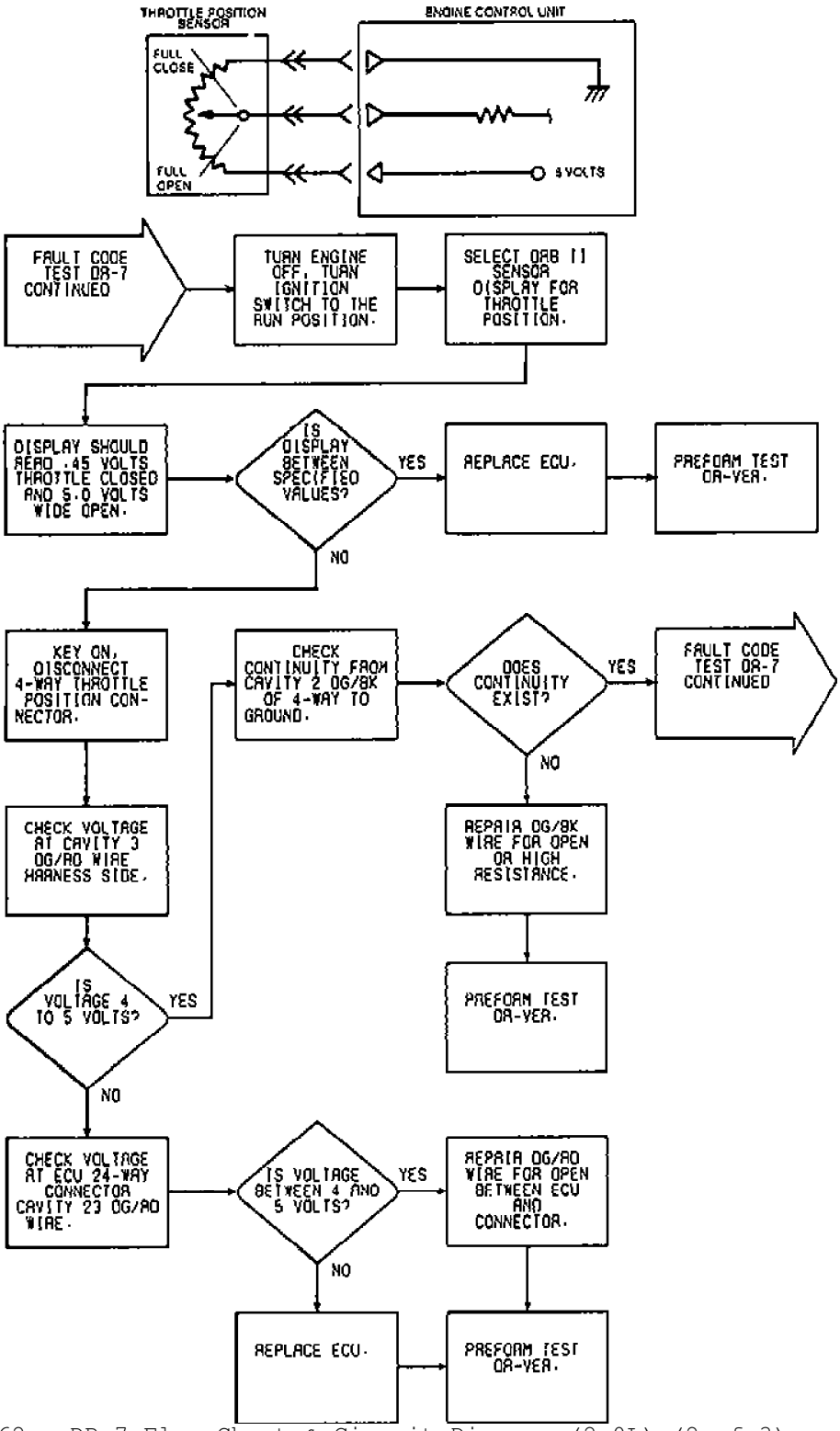


Fig. 262: DR-7 Flow Chart & Circuit Diagram (2.0L) (2 of 3)

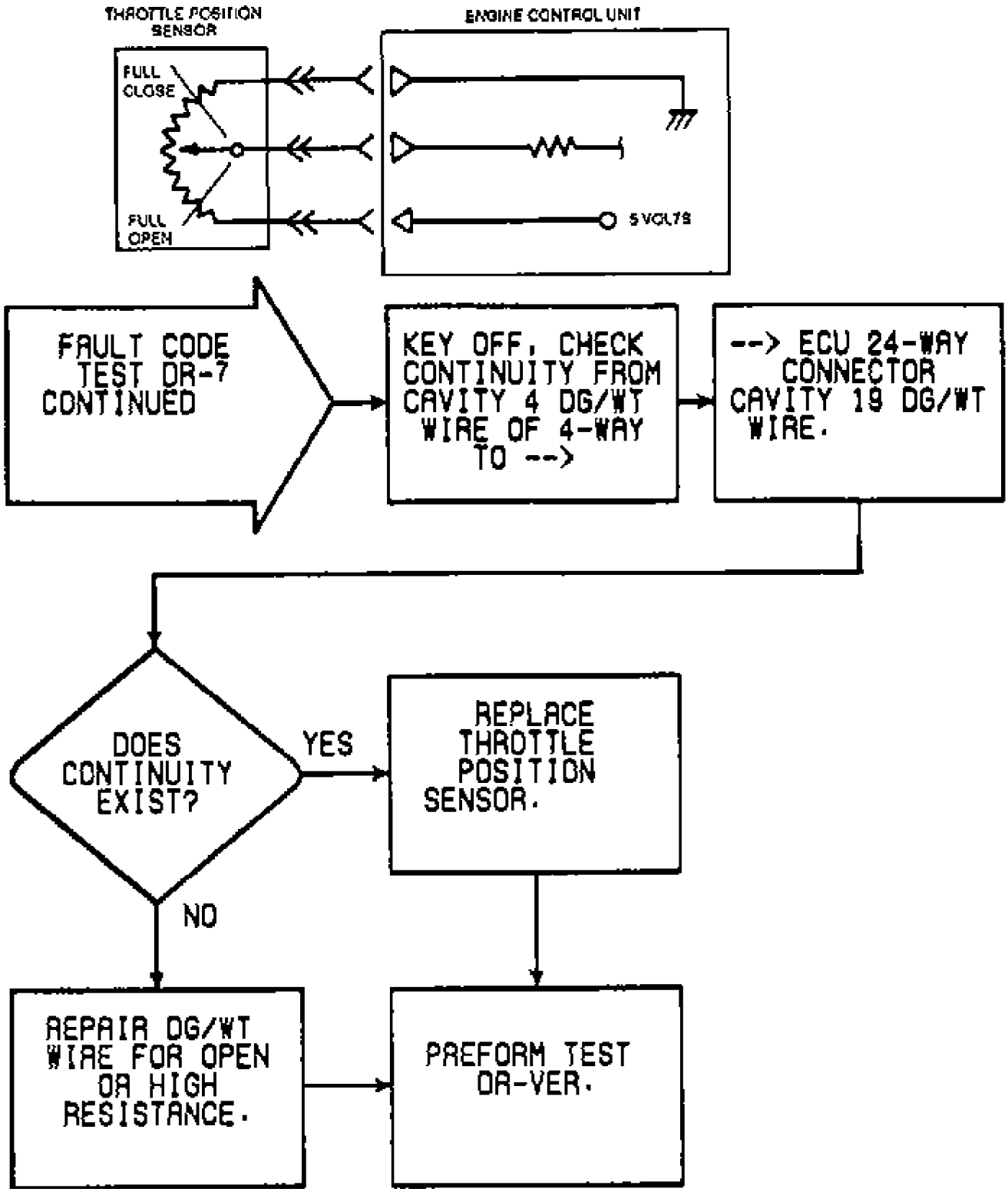


Fig. 263: DR-7 Flow Chart & Circuit Diagram (2.0L) (3 of 3)

DR-8: CHECKING COOLANT TEMPERATURE SENSOR (CTS) - 2.0L

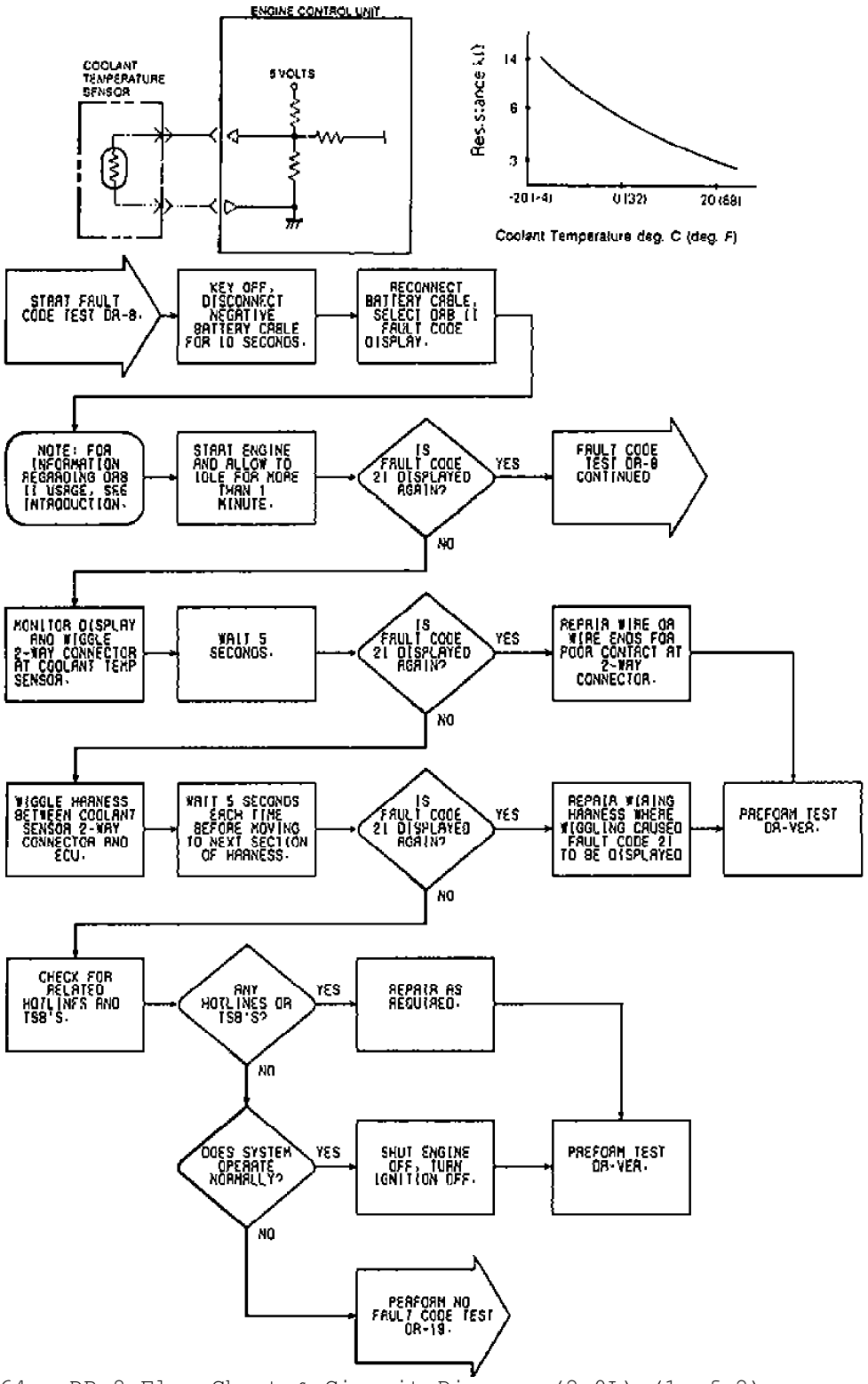


Fig. 264: DR-8 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

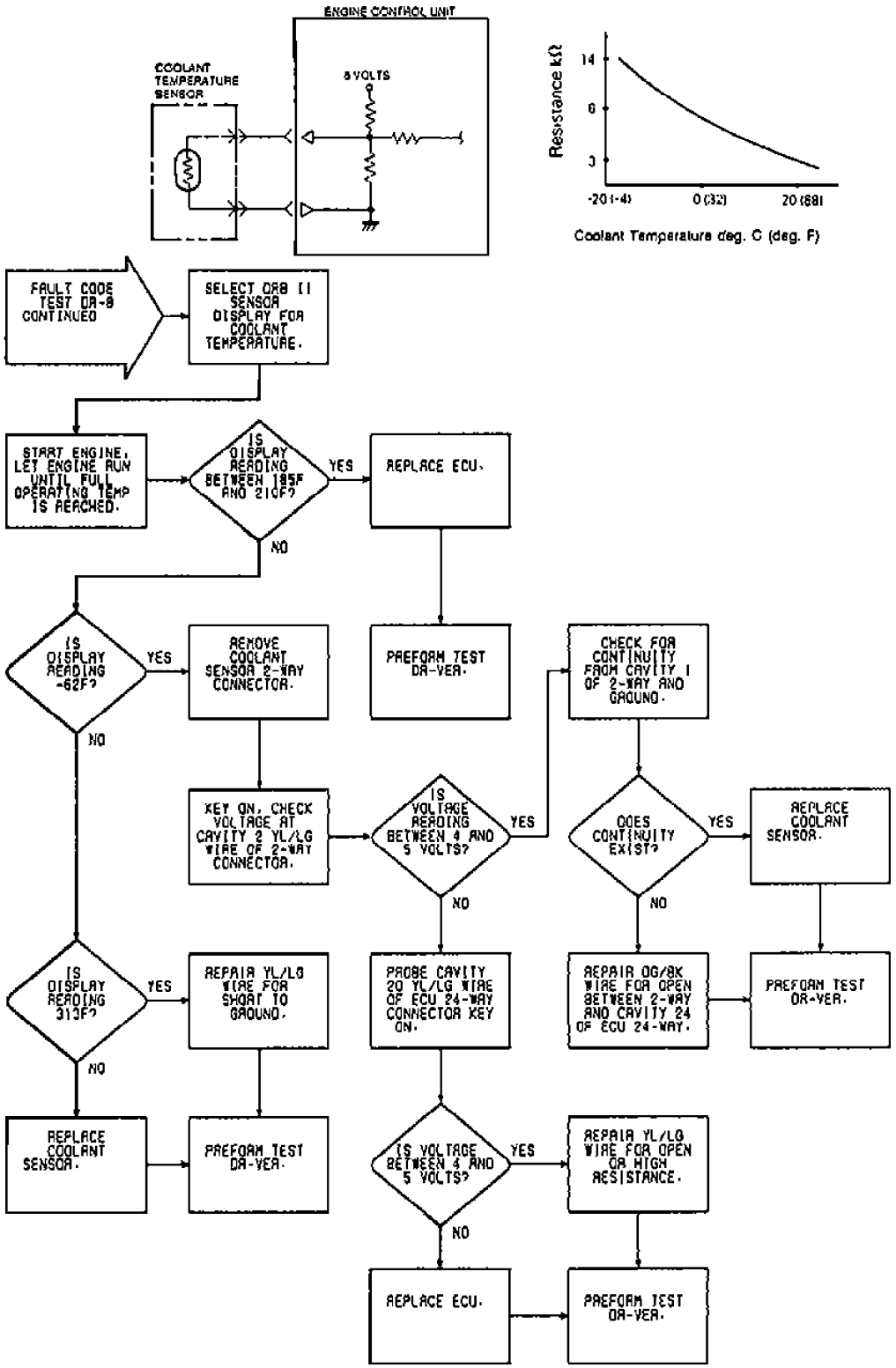


Fig. 265: DR-8 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-9: CHECKING CRANK ANGLE SENSOR - 2.0L

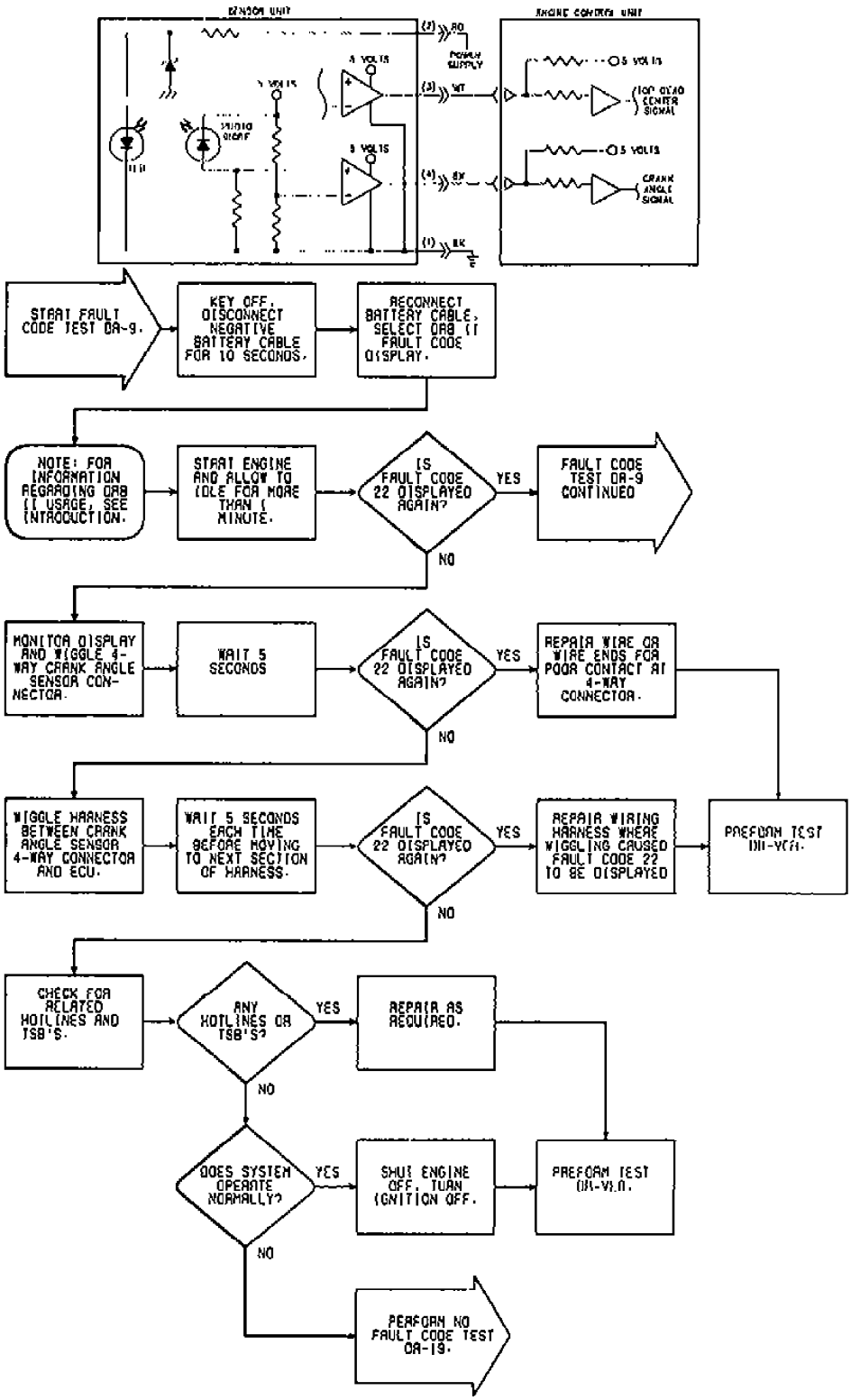


Fig. 266: DR-9 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

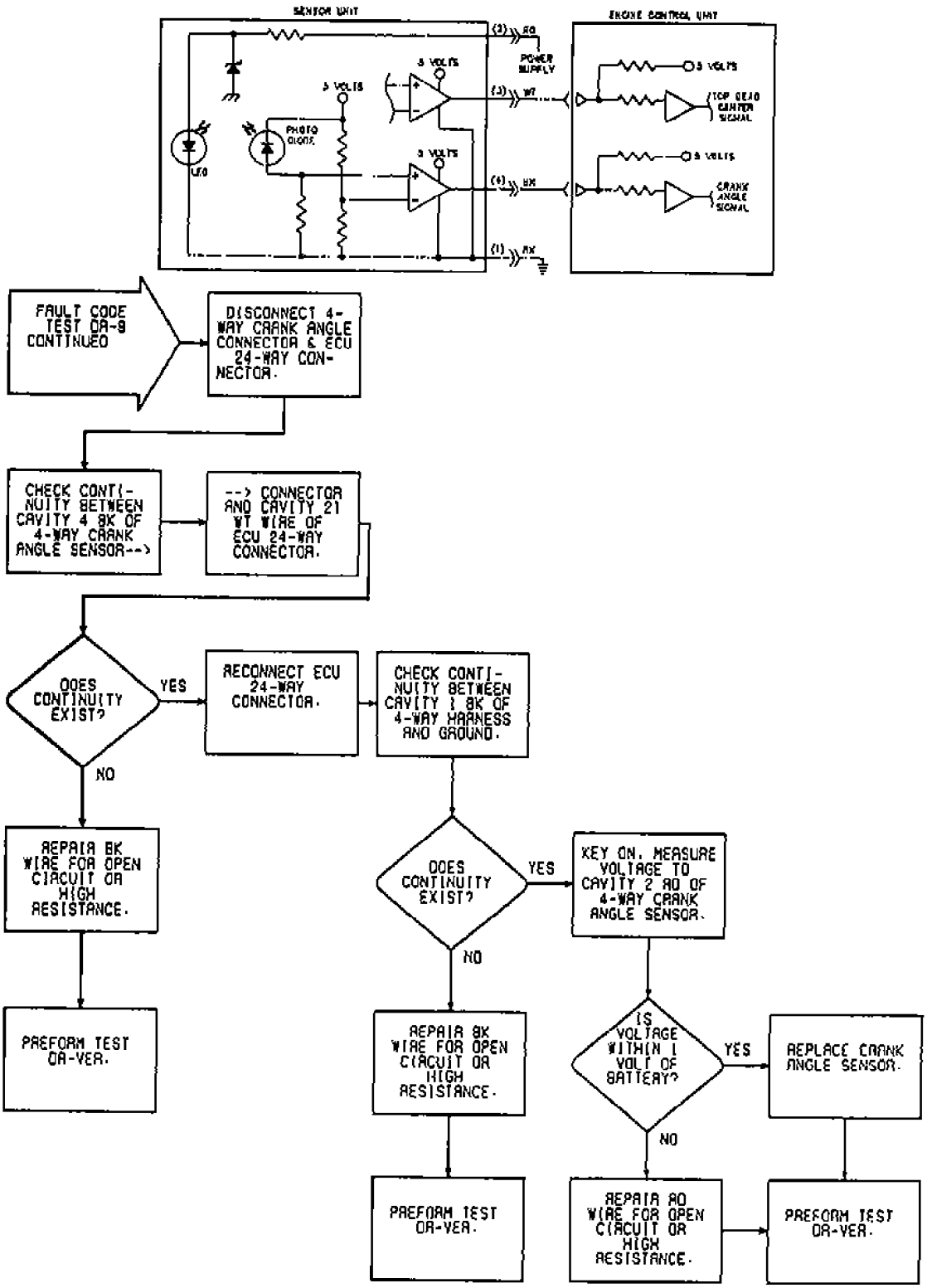


Fig. 267: DR-9 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-10: CHECKING TDC SENSOR - 2.0L

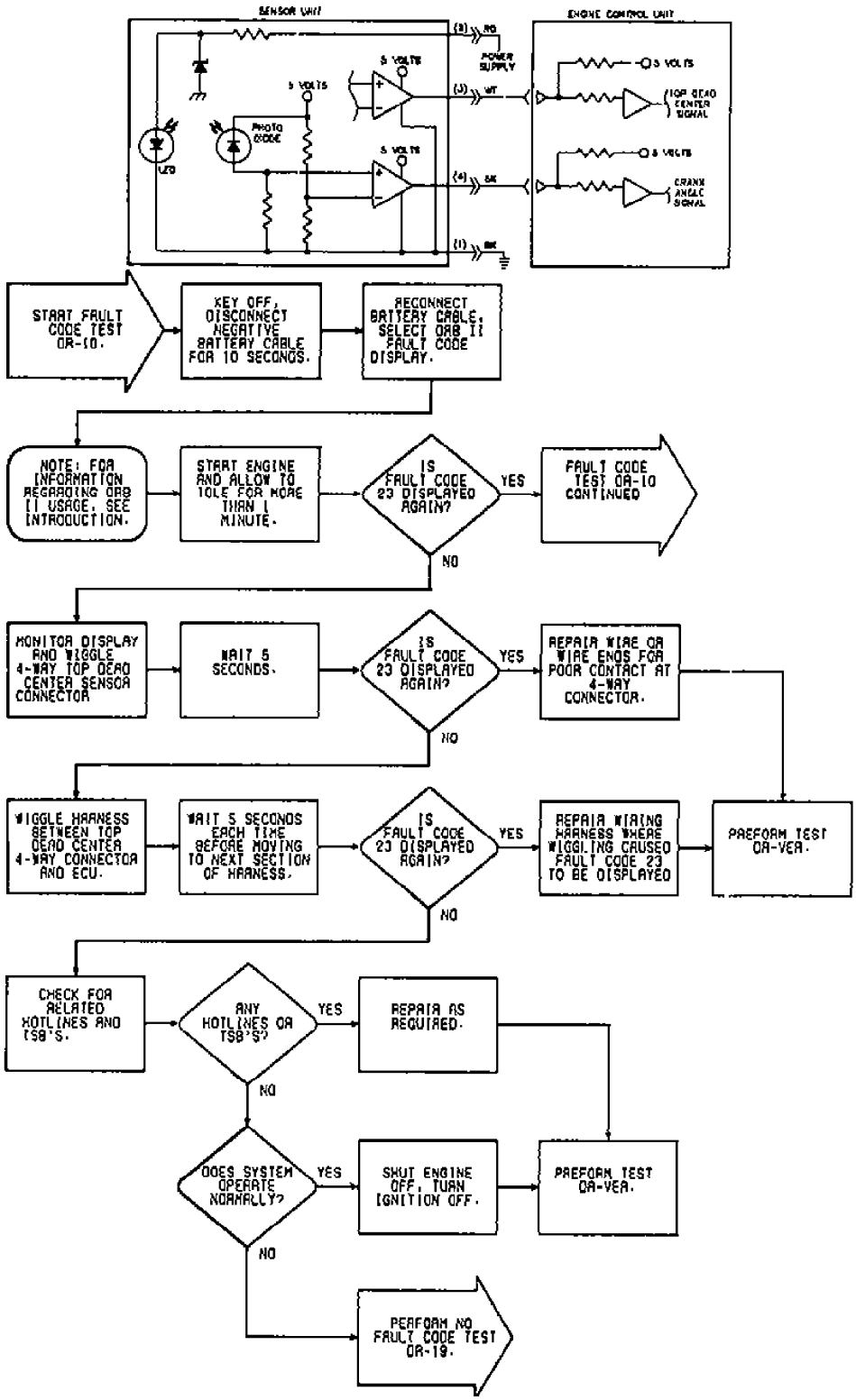


Fig. 268: DR-10 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

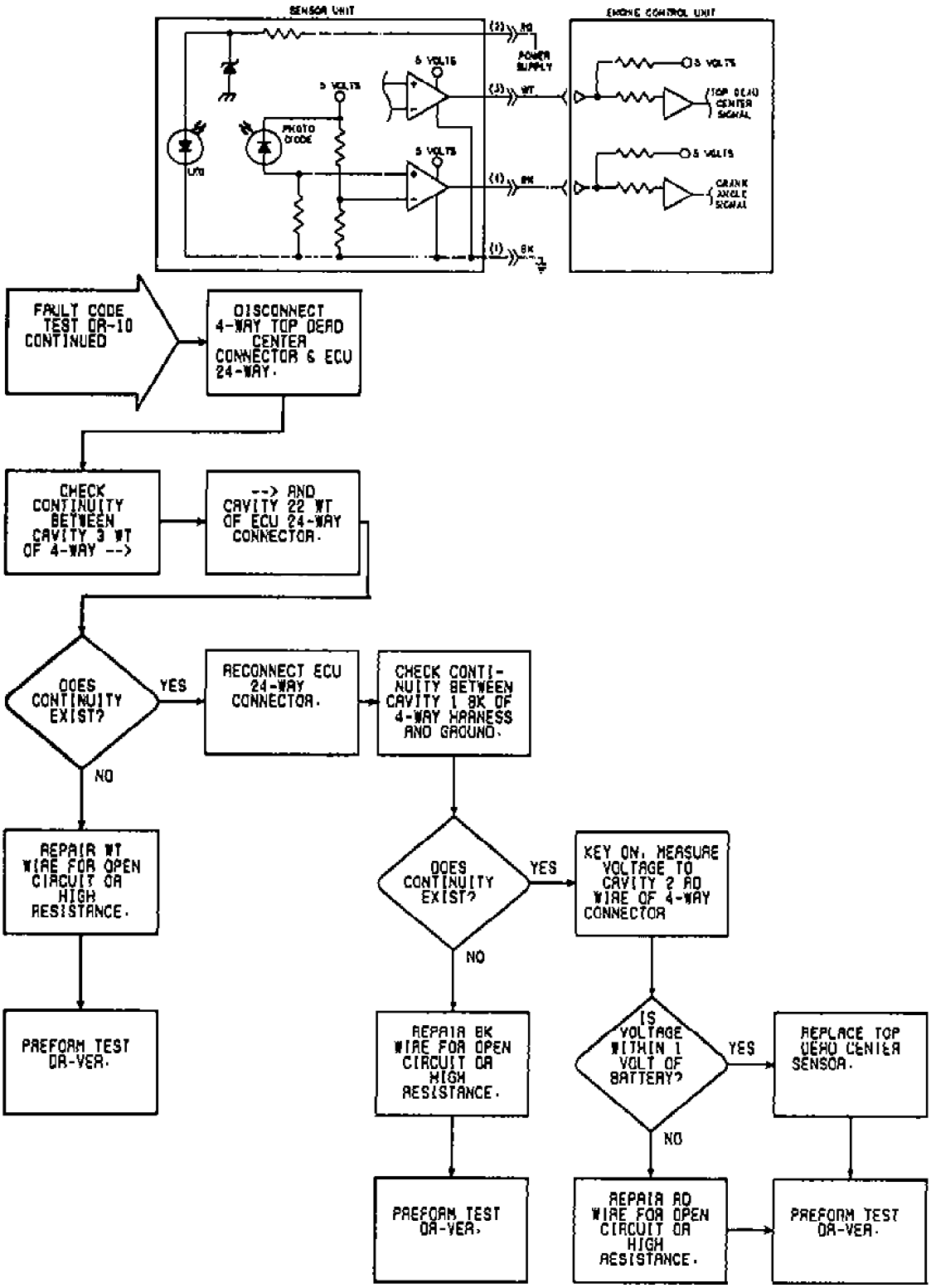


Fig. 269: DR-10 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-11: CHECKING VEHICLE SPEED SENSOR - 2.0L

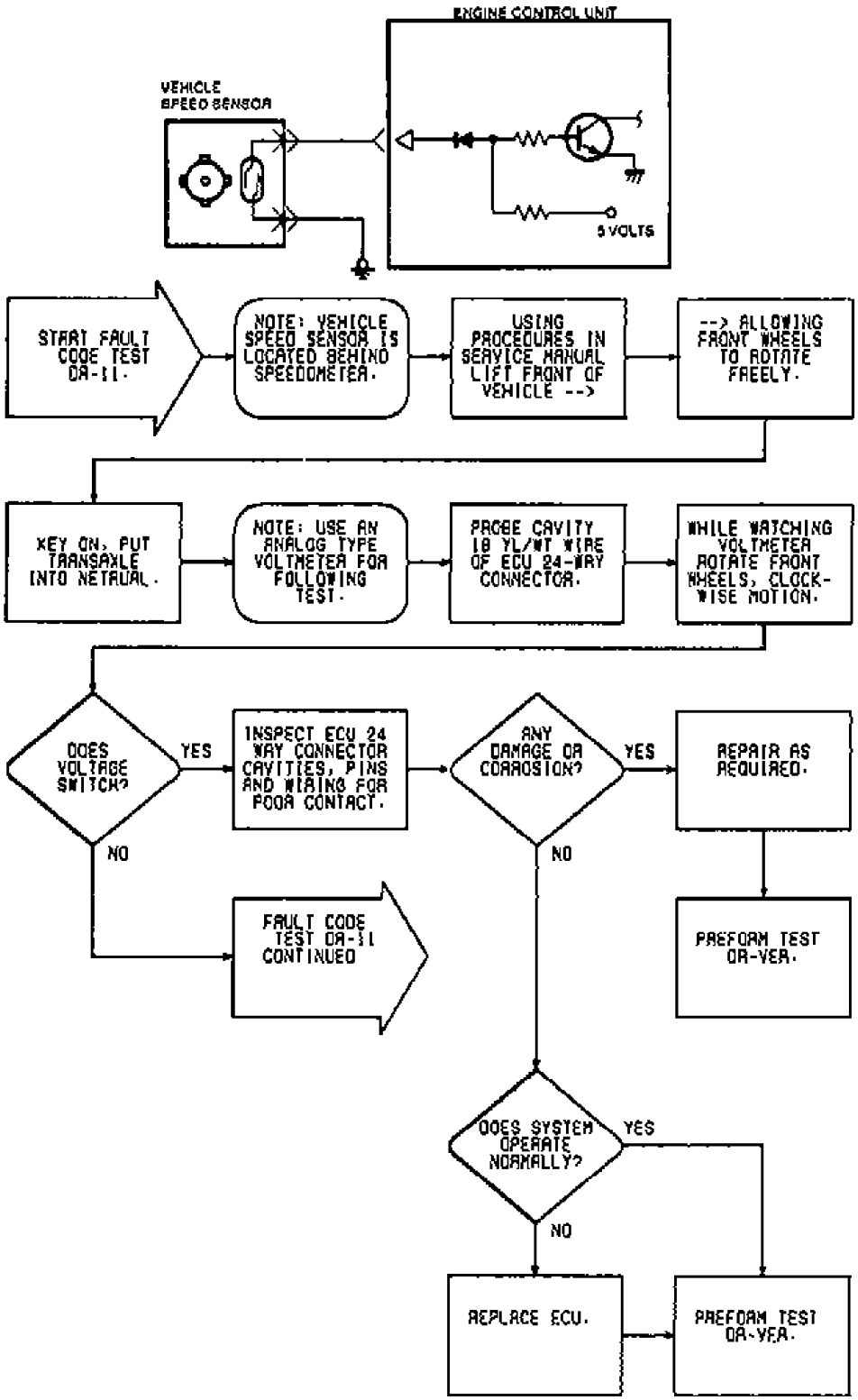


Fig. 270: DR-11 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

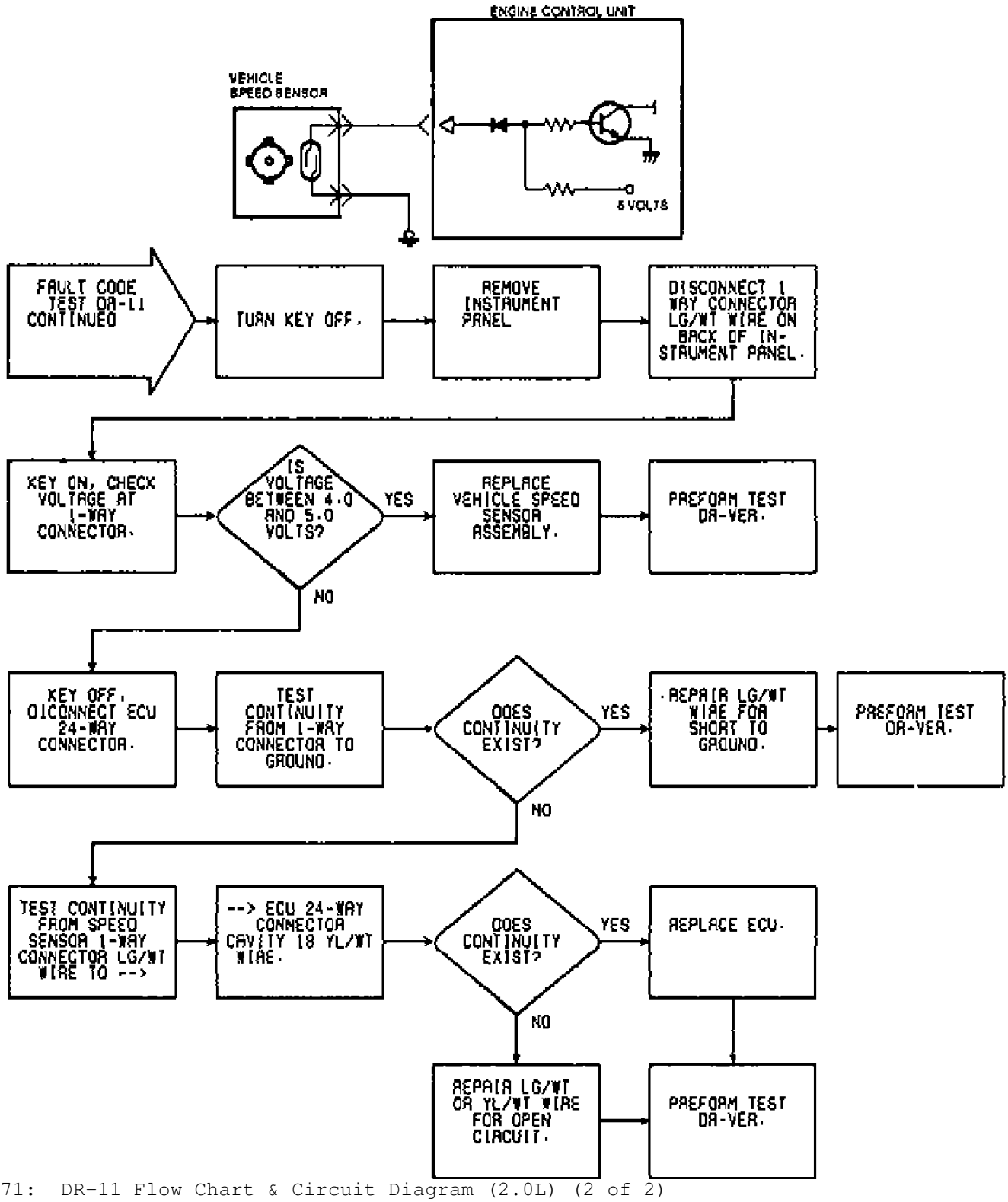


Fig. 271: DR-11 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-12: CHECKING BAROMETRIC PRESSURE SENSOR - 2.0L TURBO

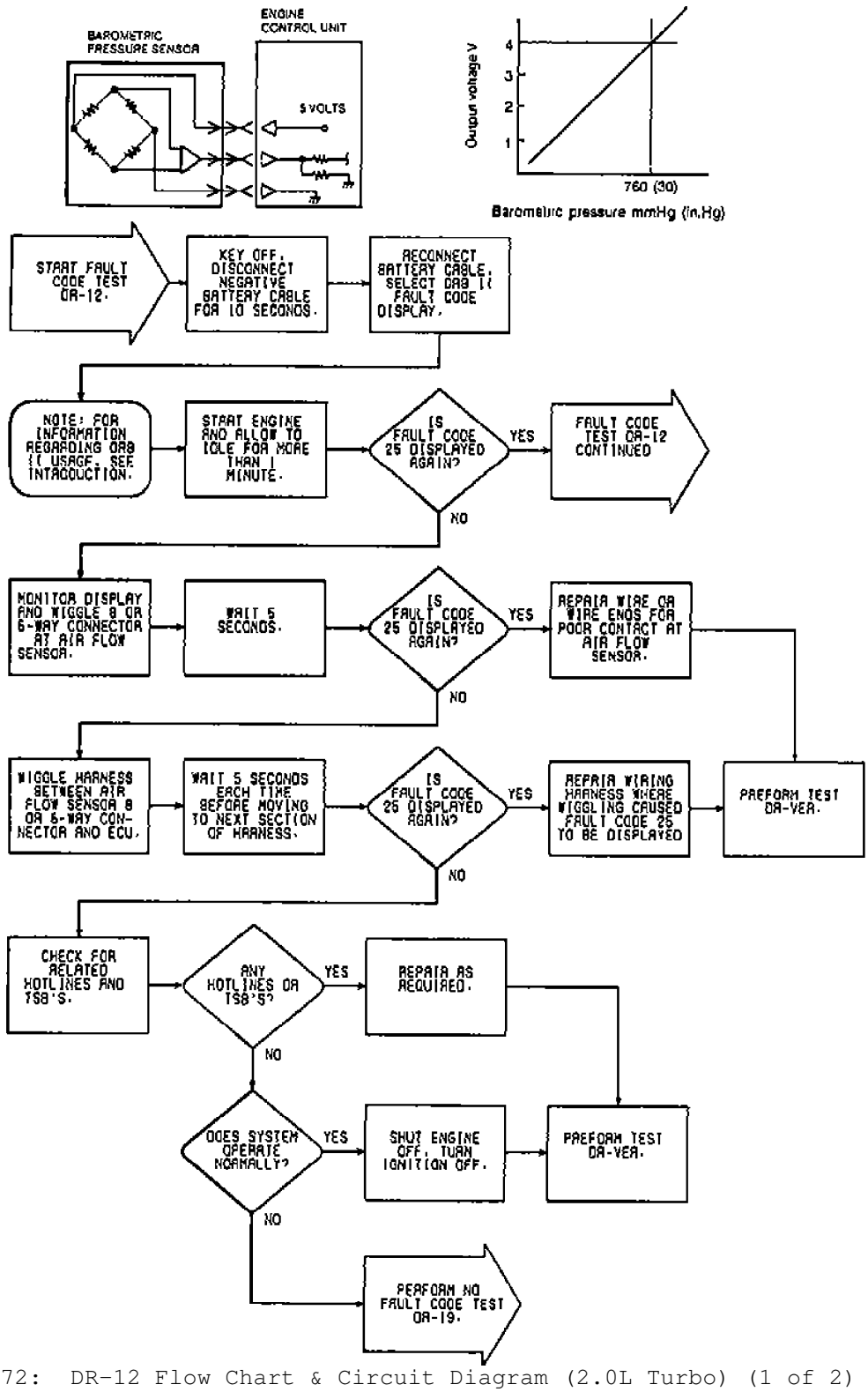


Fig. 272: DR-12 Flow Chart & Circuit Diagram (2.0L Turbo) (1 of 2)

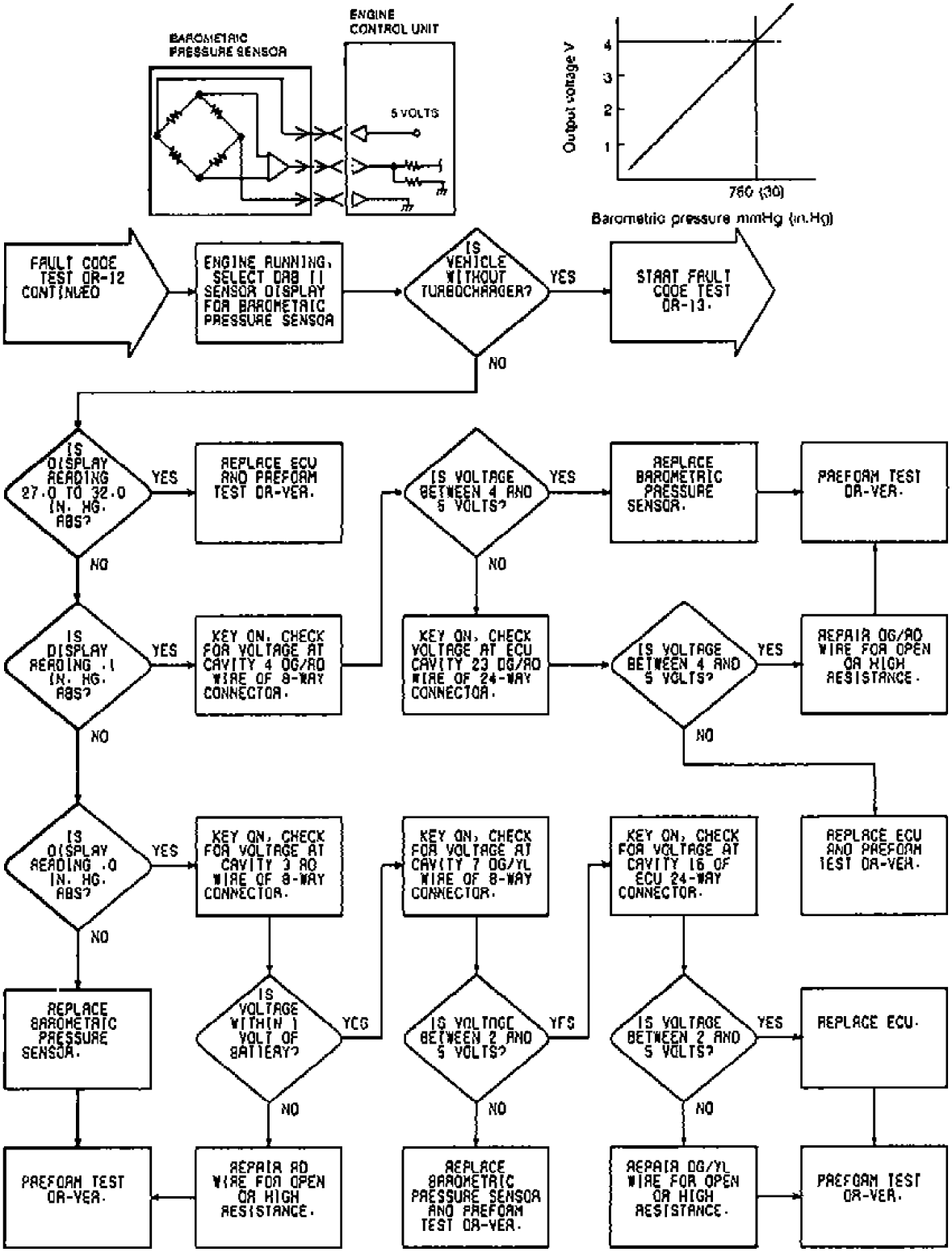


Fig. 273: DR-12 Flow Chart & Circuit Diagram (2.0L Turbo) (2 of 2)

DR-13: CHECKING BAROMETRIC PRESSURE SENSOR - 2.0L NON-TURBO

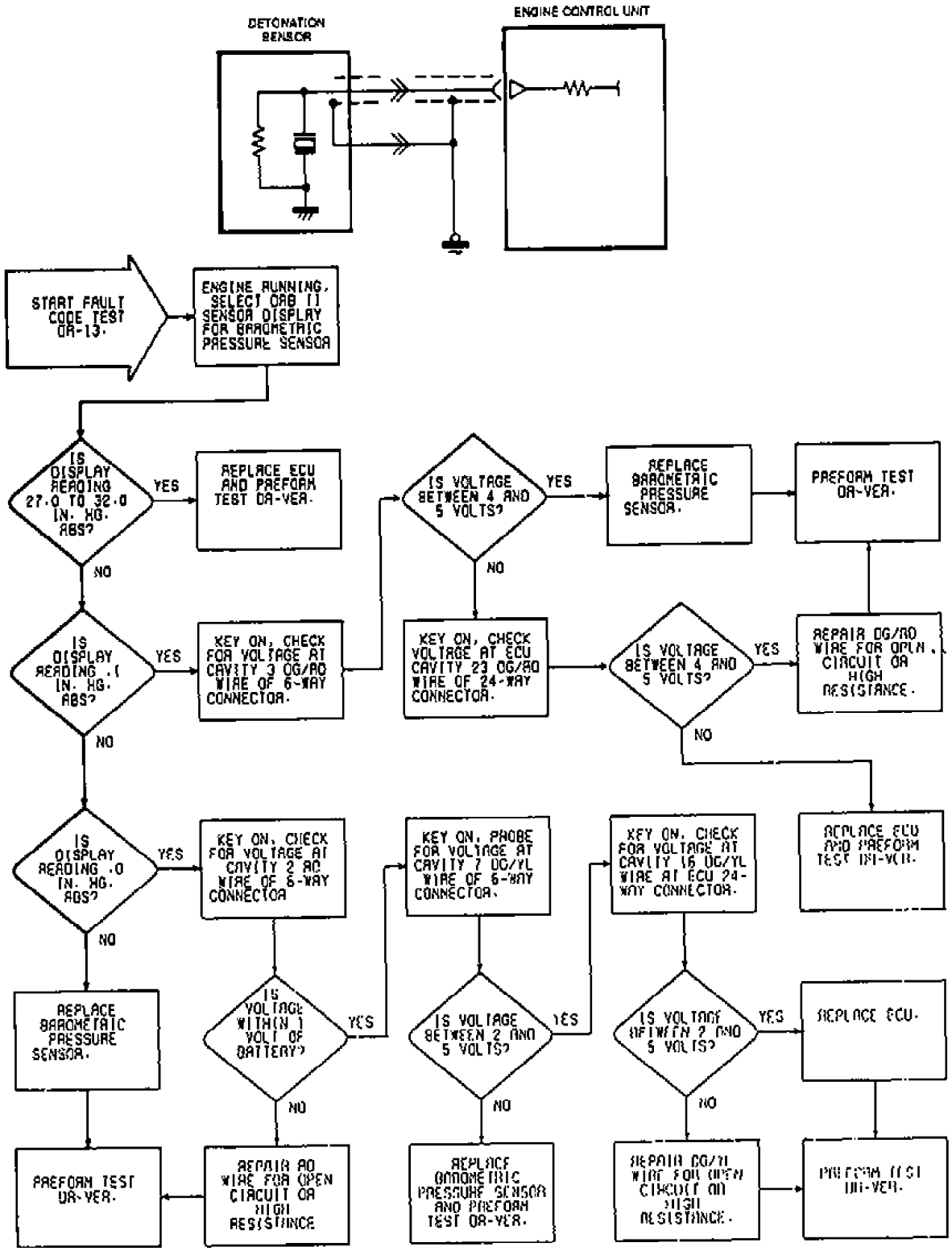


Fig. 274: DR-13 Flow Chart & Circuit Diagram (2.0L)

DR-14: CHECKING DETONATION SENSOR - 2.0L

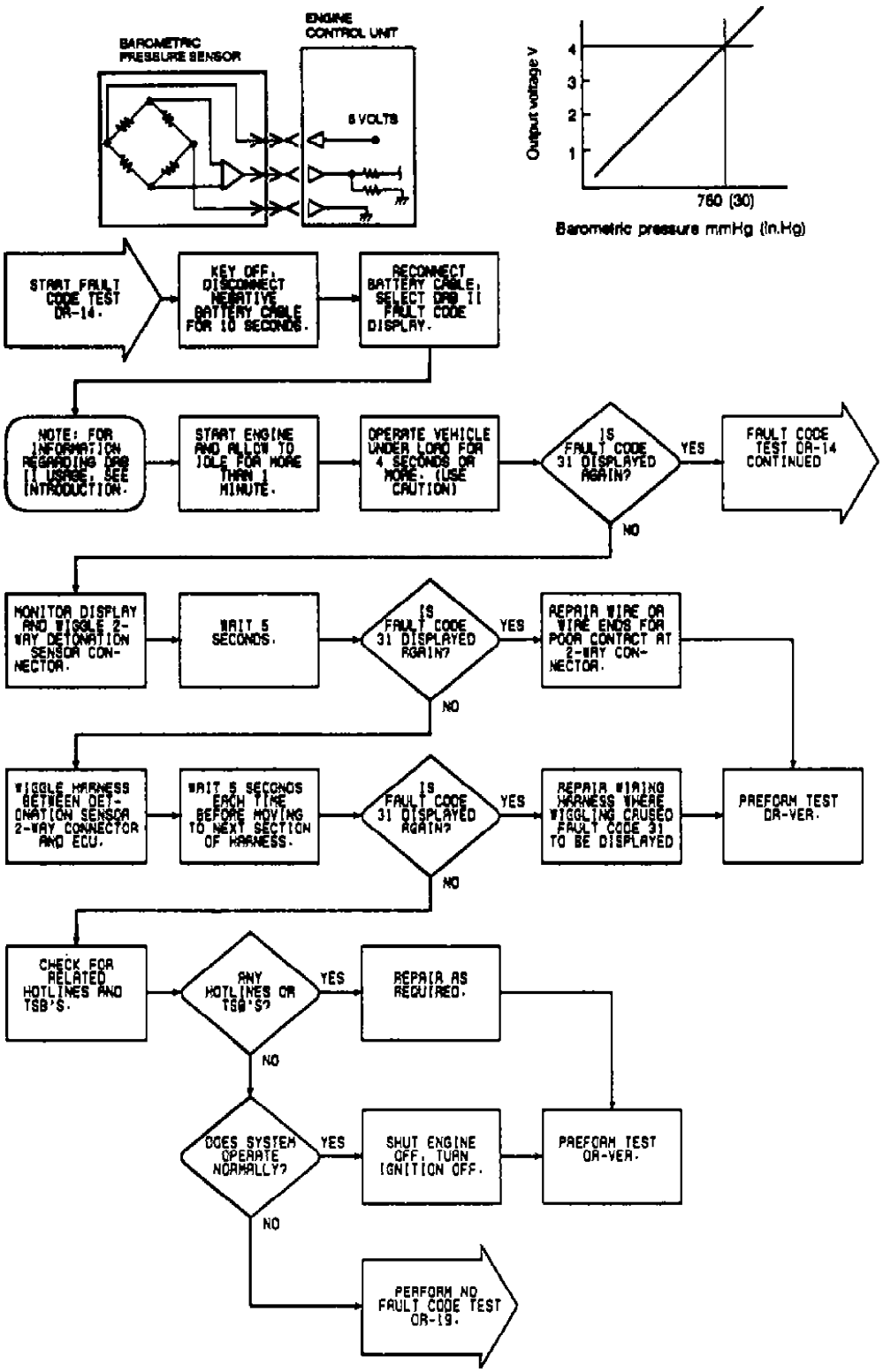


Fig. 275: DR-14 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

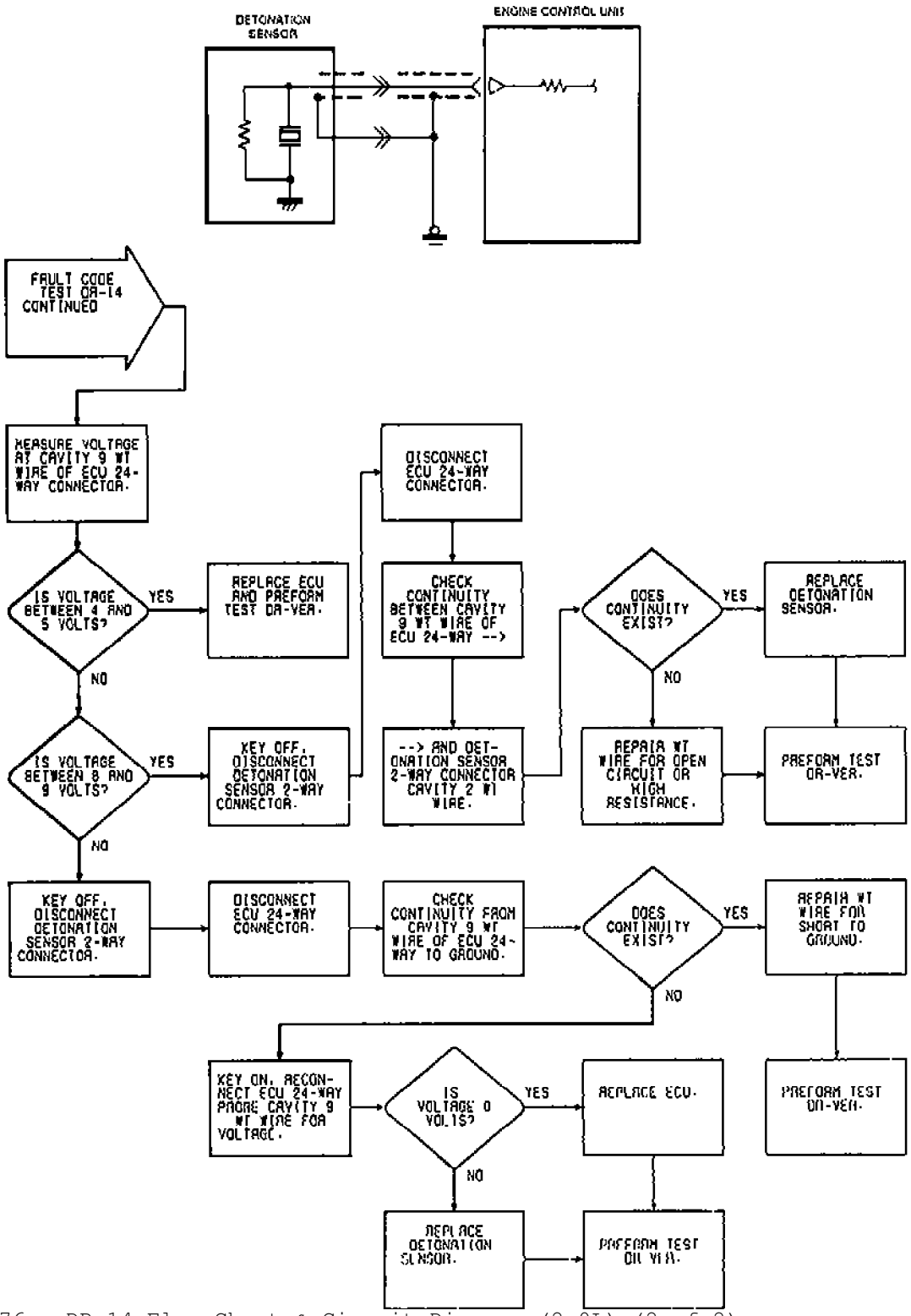


Fig. 276: DR-14 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-15: CHECKING INJECTOR CIRCUIT - 2.0L

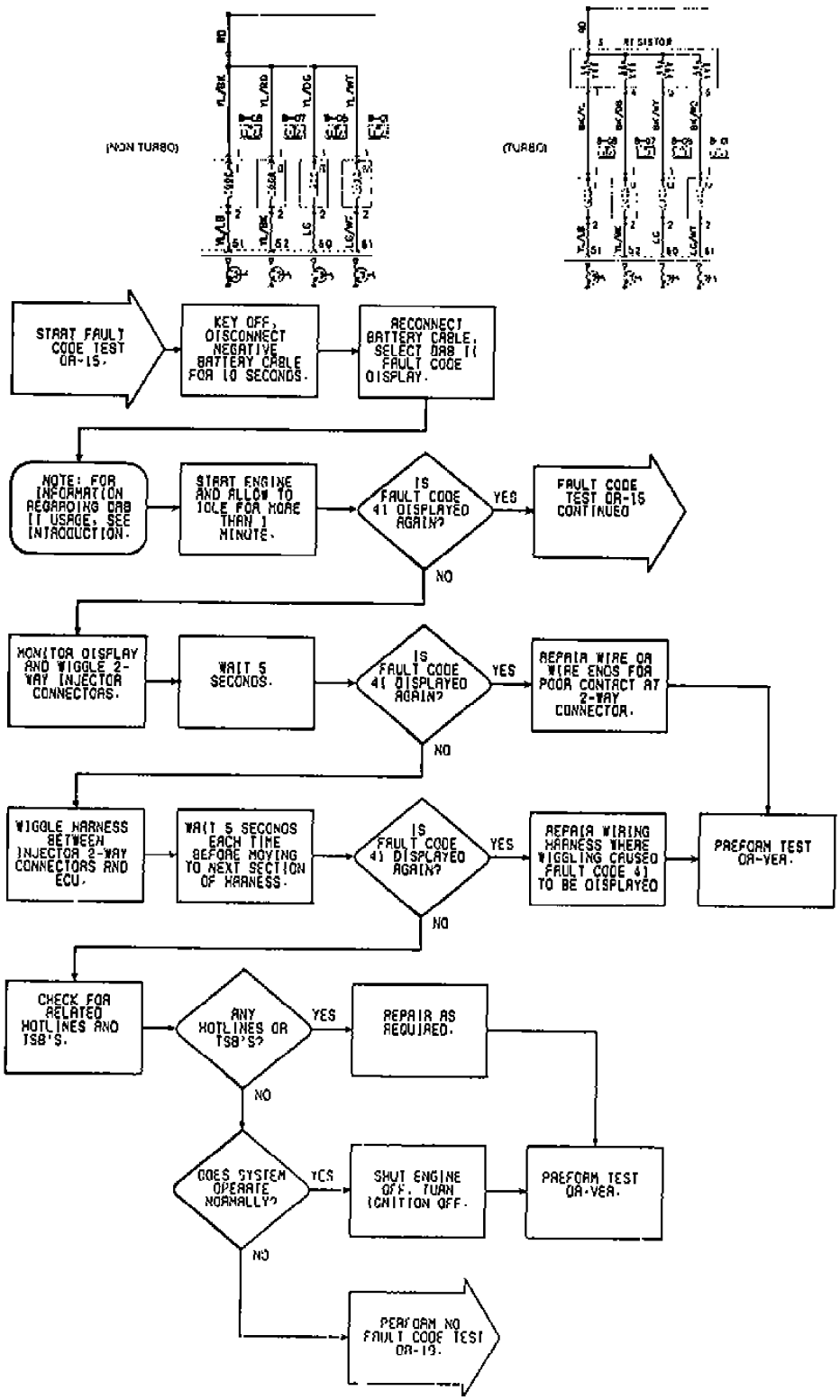


Fig. 277: DR-15 Flow Chart & Circuit Diagram (2.0L) (1 of 5)

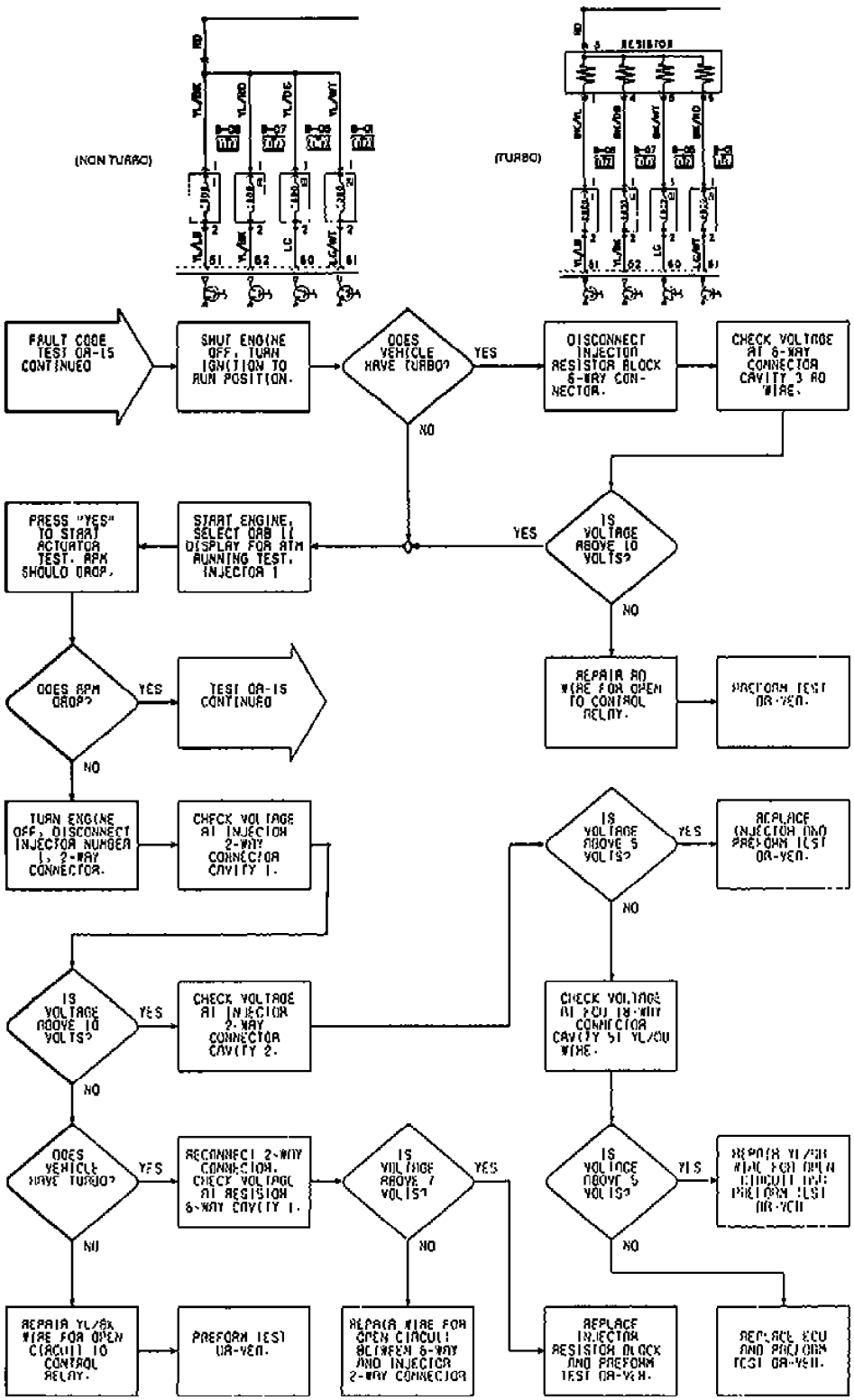


Fig. 278: DR-15 Flow Chart & Circuit Diagram (2.0L) (2 of 5)

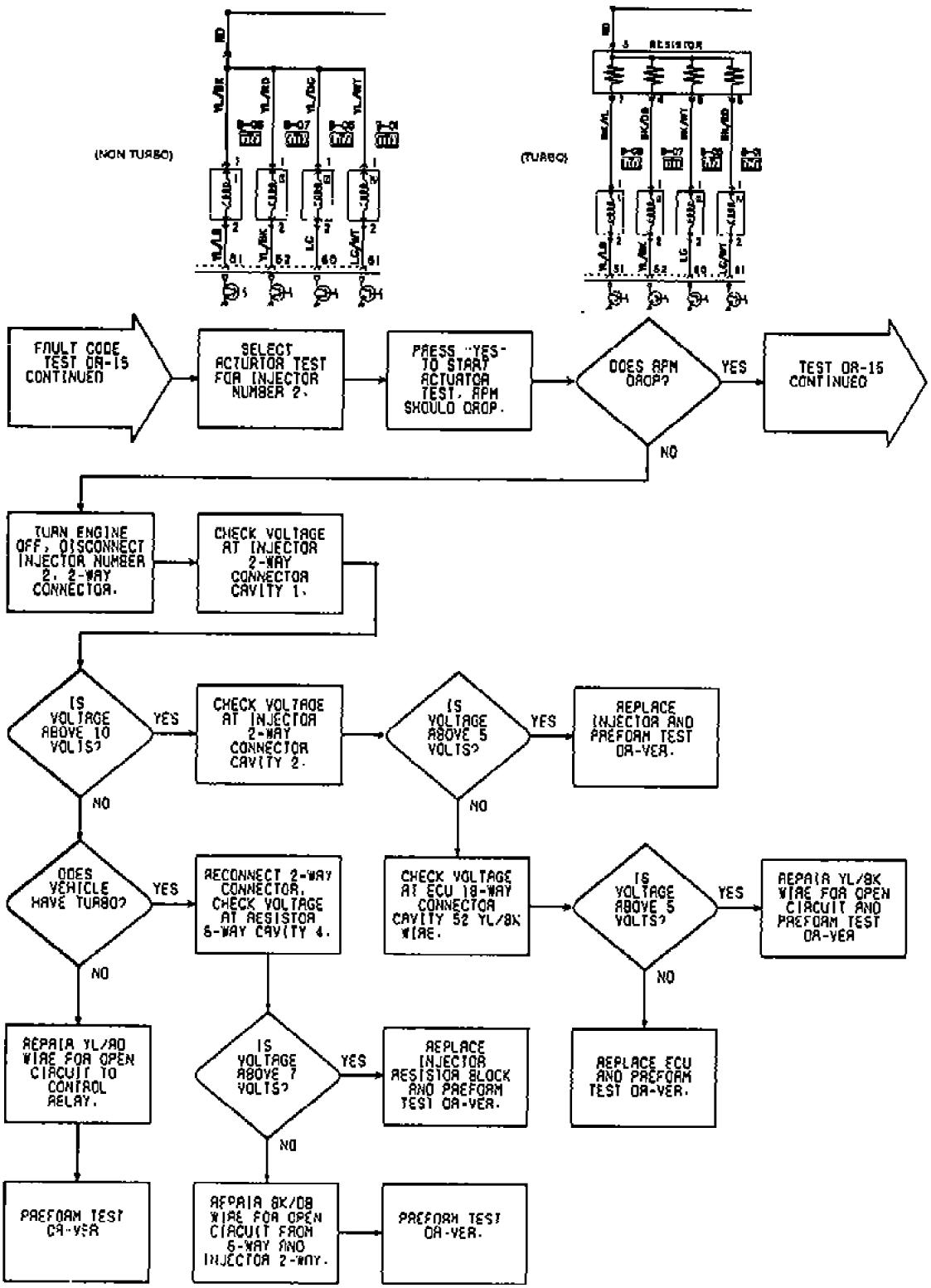


Fig. 279: DR-15 Flow Chart & Circuit Diagram (2.0L) (3 of 5)

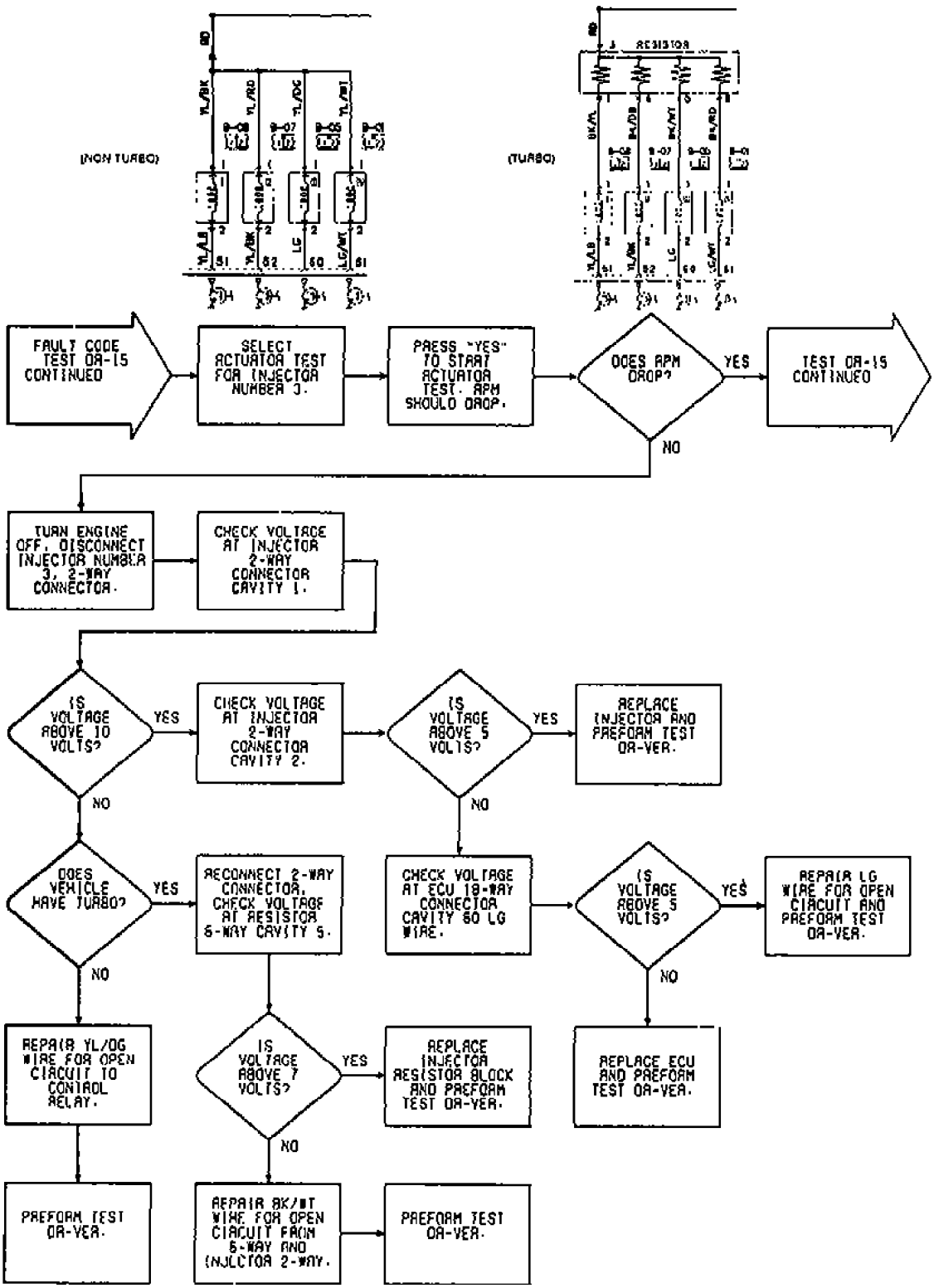


Fig. 280: DR-15 Flow Chart & Circuit Diagram (2.0L) (4 of 5)

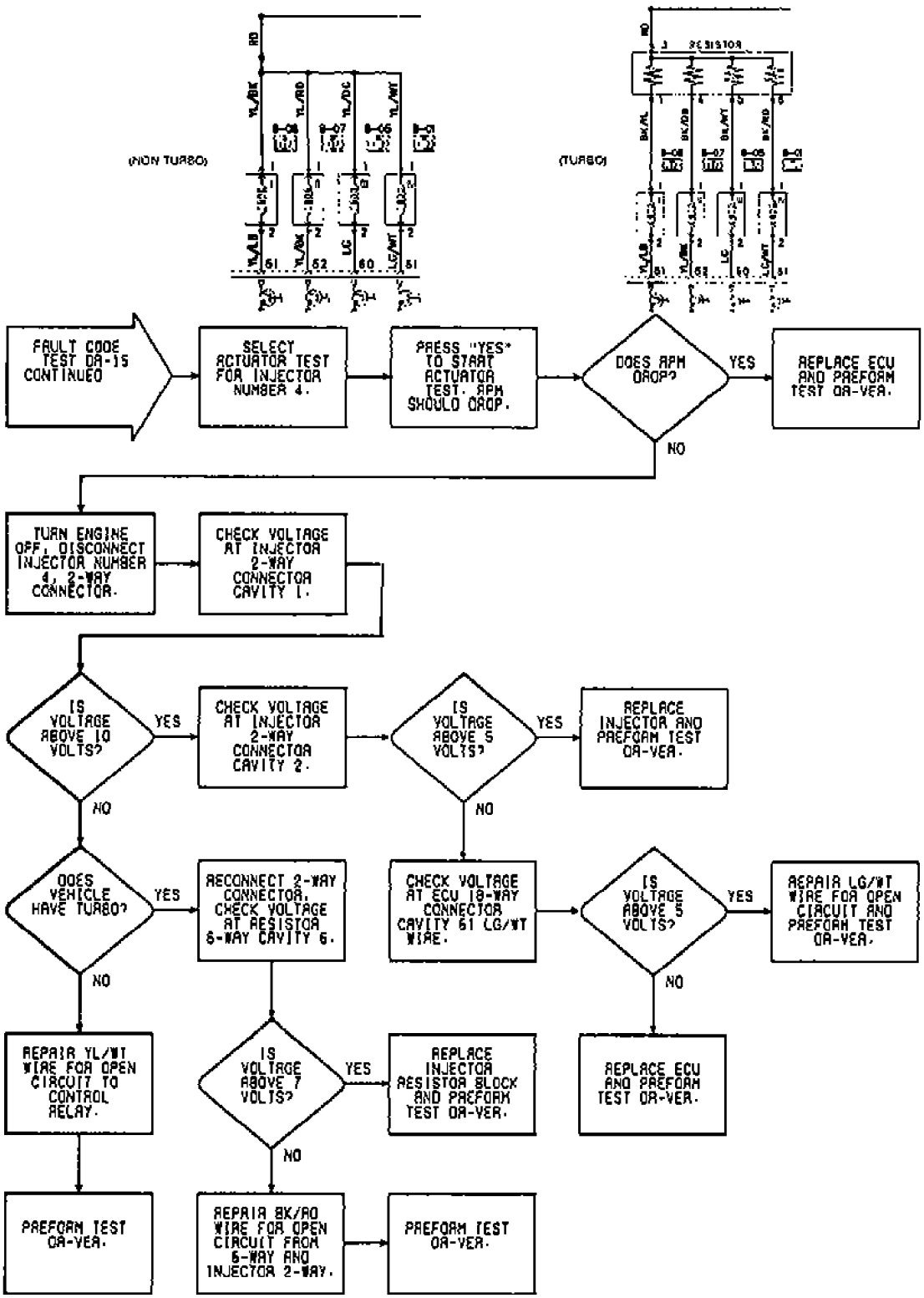


Fig. 281: DR-15 Flow Chart & Circuit Diagram (2.0L) (5 of 5)

DR-16: CHECKING FUEL PUMP CONTROL CIRCUIT - 2.0L

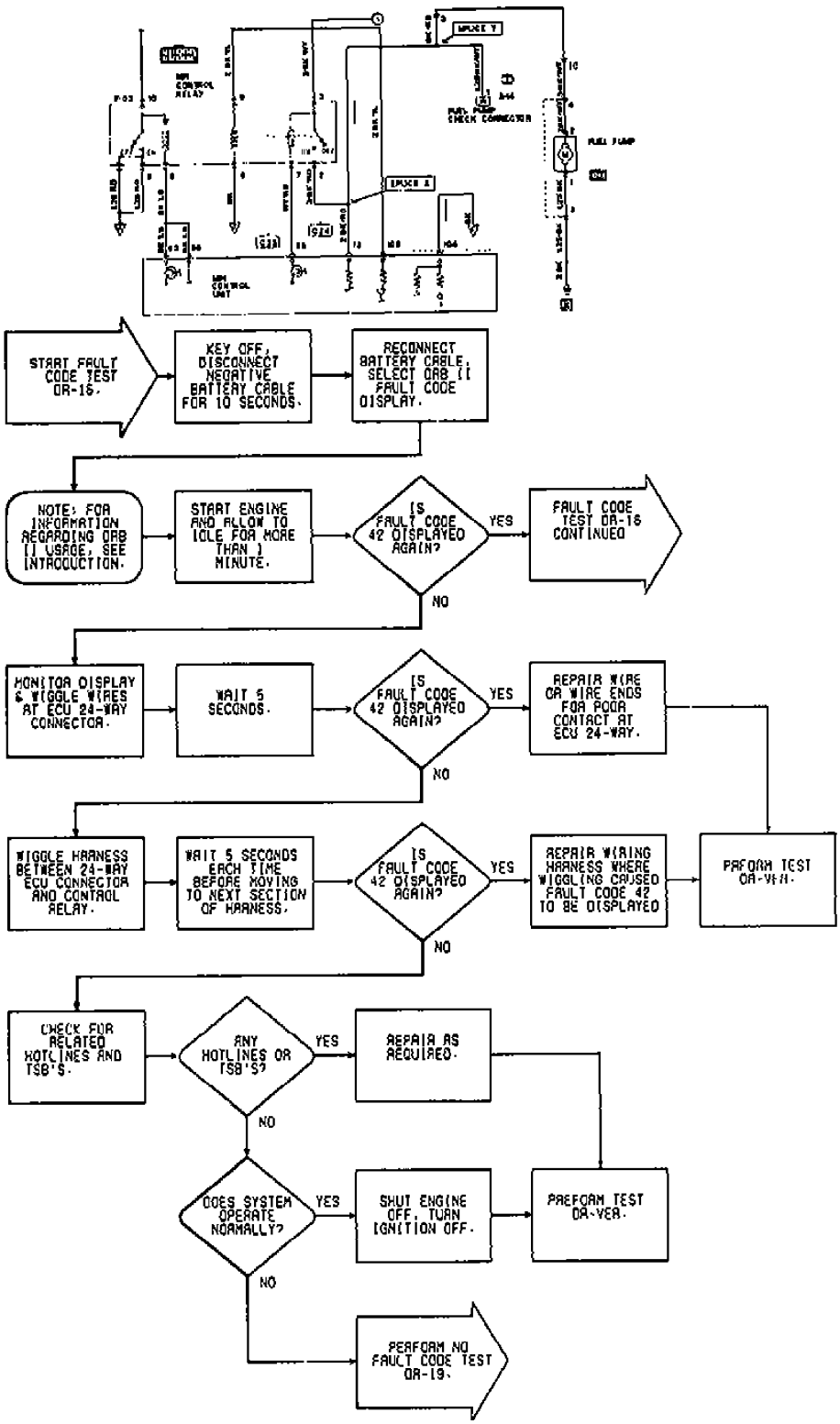


Fig. 282: DR-16 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

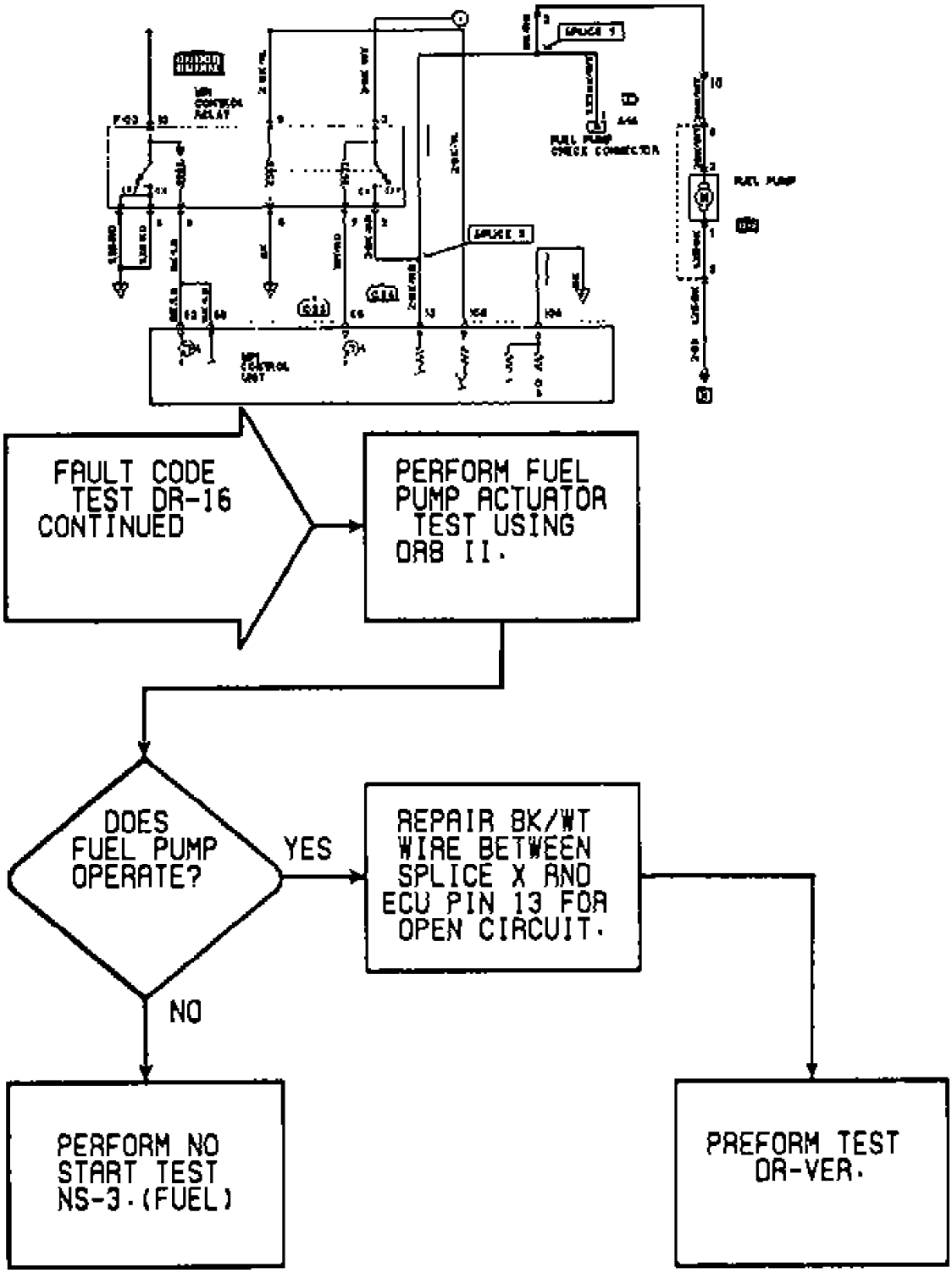


Fig. 283: DR-16 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-17: TESTING EGR TEMPERATURE SENSOR CIRCUIT - 2.0L

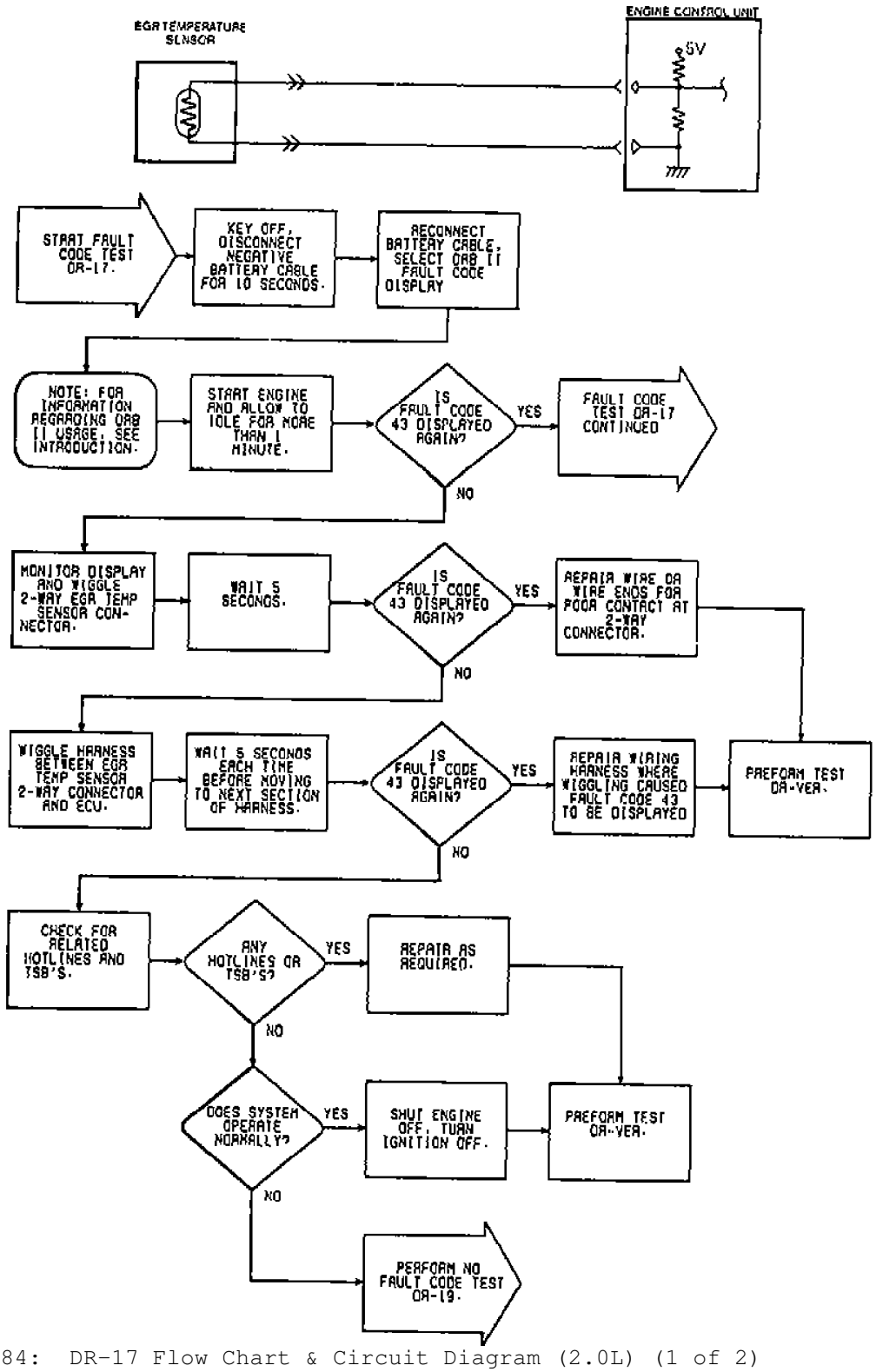


Fig. 284: DR-17 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

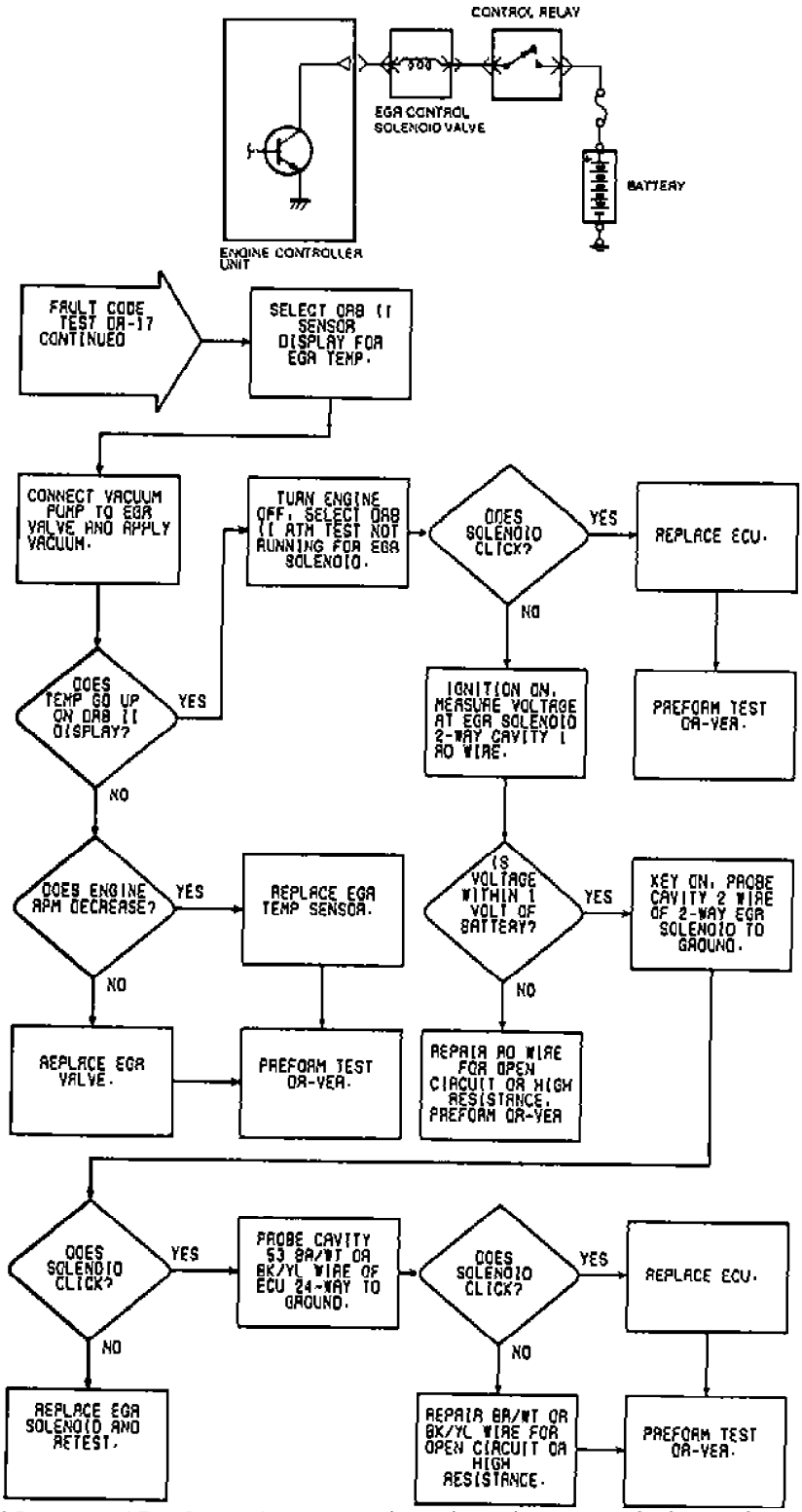


Fig. 285: DR-17 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-18: CHECKING IGNITION COIL CIRCUIT - 2.0L

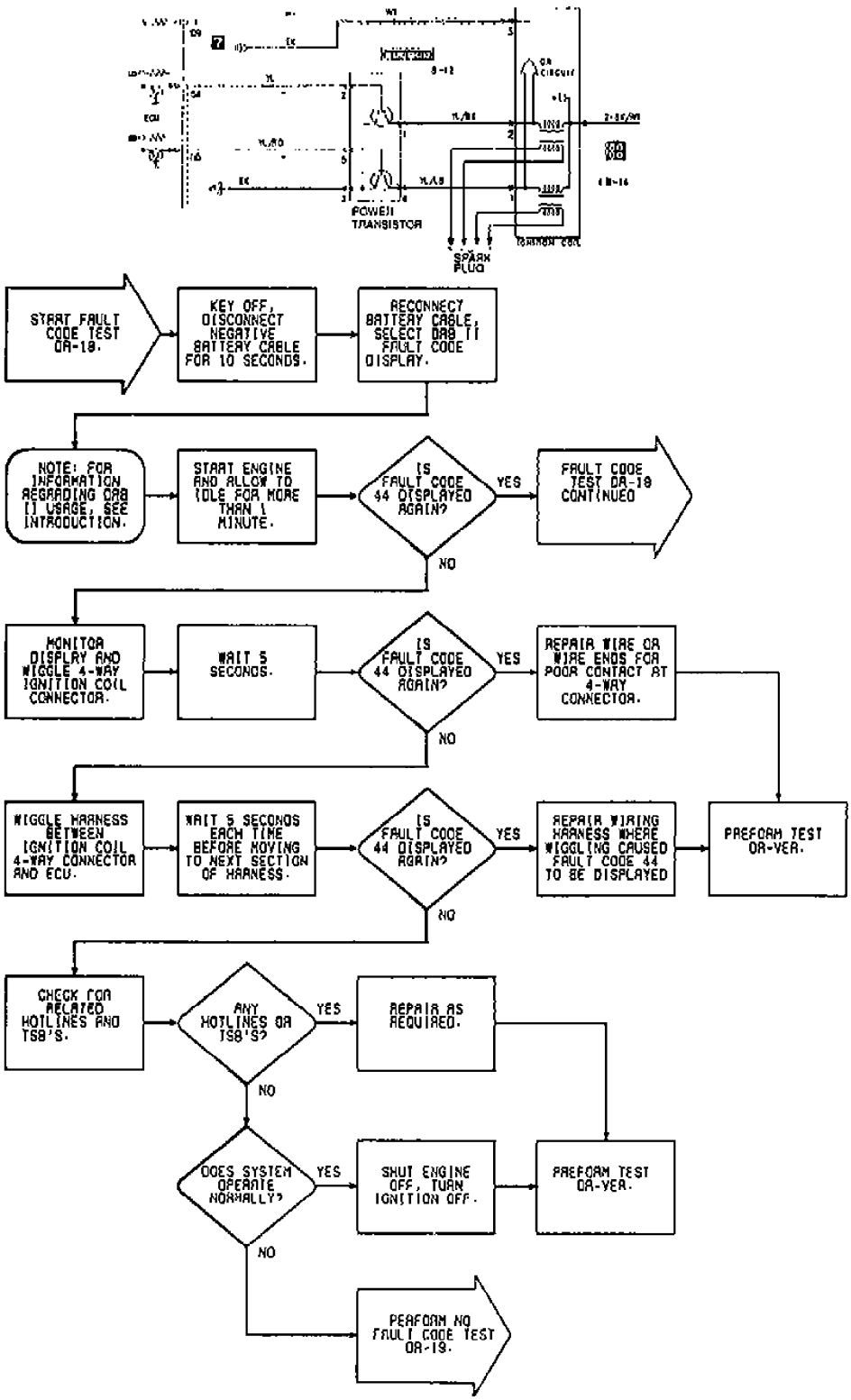


Fig. 286: DR-18 Flow Chart & Circuit Diagram (2.0L) (1 of 4)

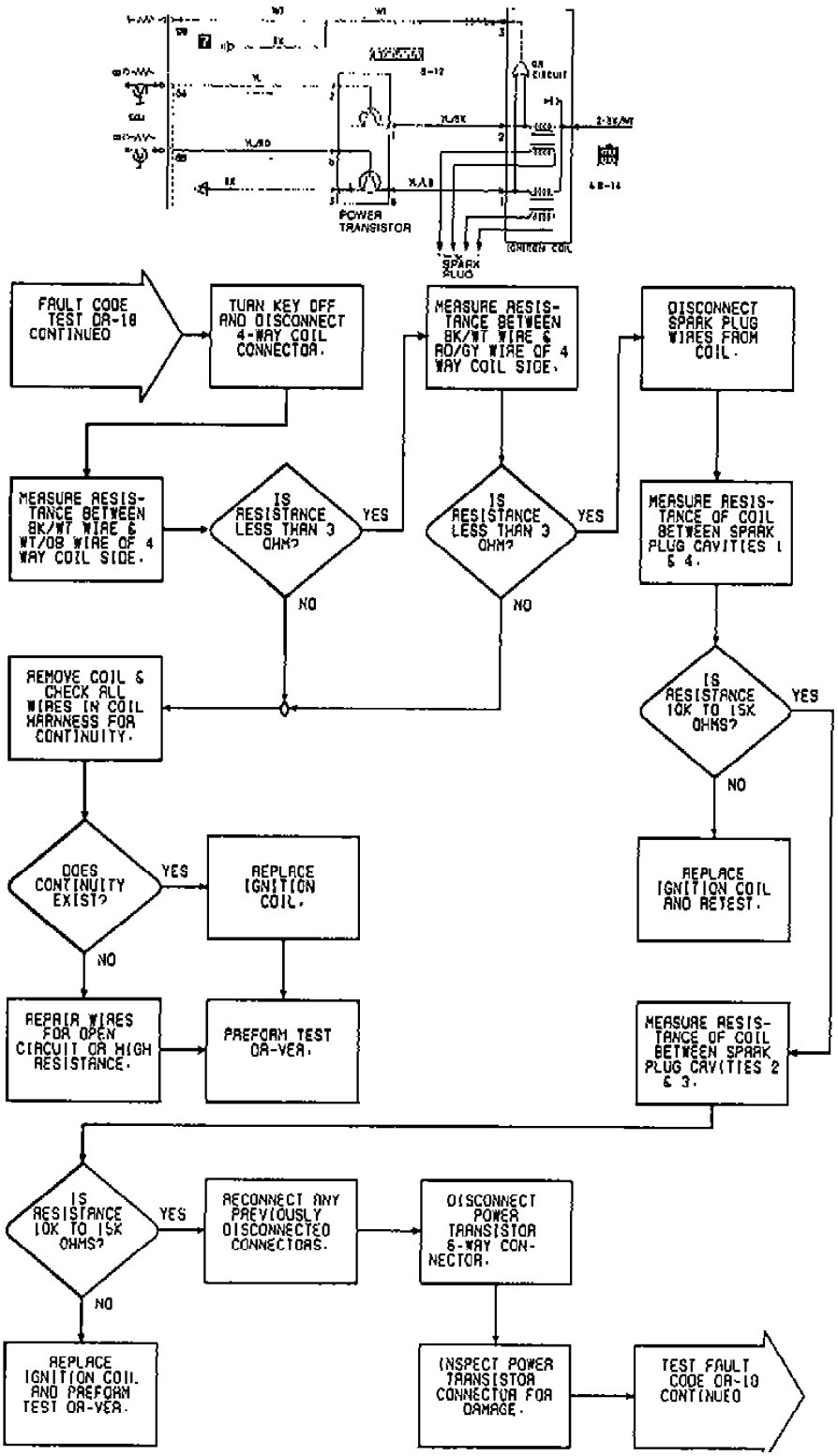


Fig. 287: DR-18 Flow Chart & Circuit Diagram (2.0L) (2 of 4)

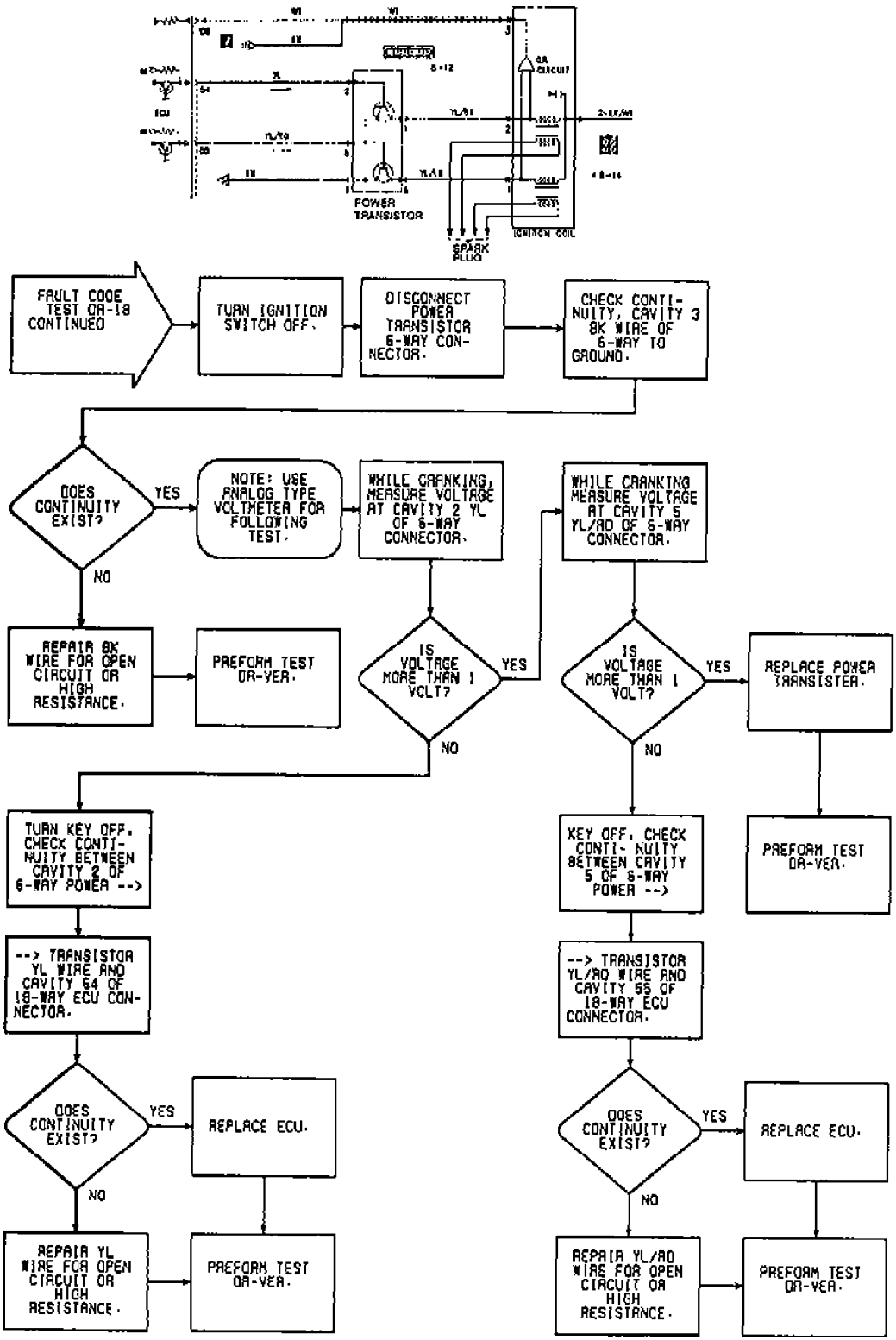


Fig. 288: DR-18 Flow Chart & Circuit Diagram (2.0L) (3 of 4)

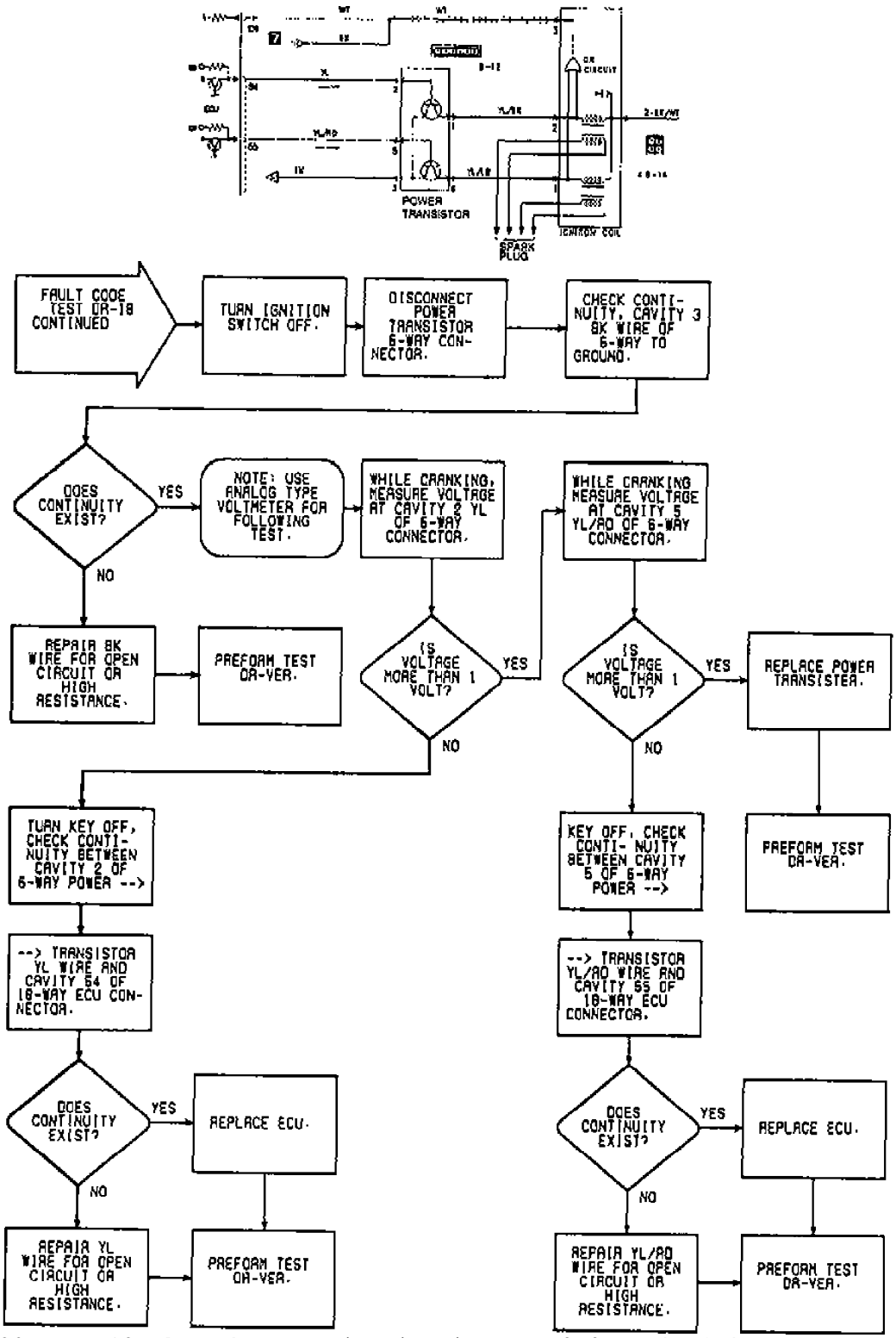


Fig. 289: DR-18 Flow Chart & Circuit Diagram (2.0L) (4 of 4)

DR-19: NO-FAULT CODE, DRB-II ATM NOT RUNNING TEST - 2.0L

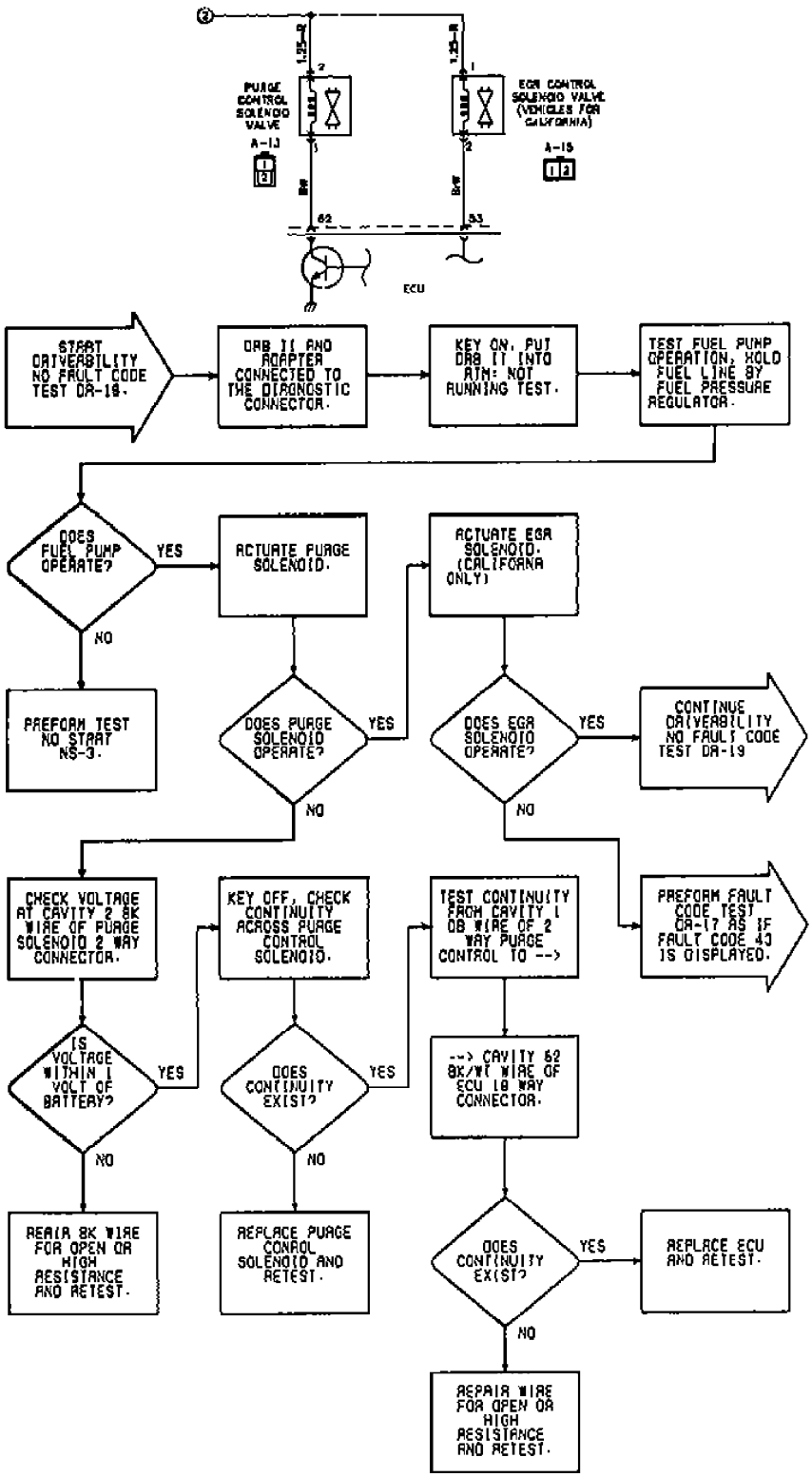


Fig. 290: DR-19 Flow Chart & Circuit Diagram (2.0L) (1 of 3)

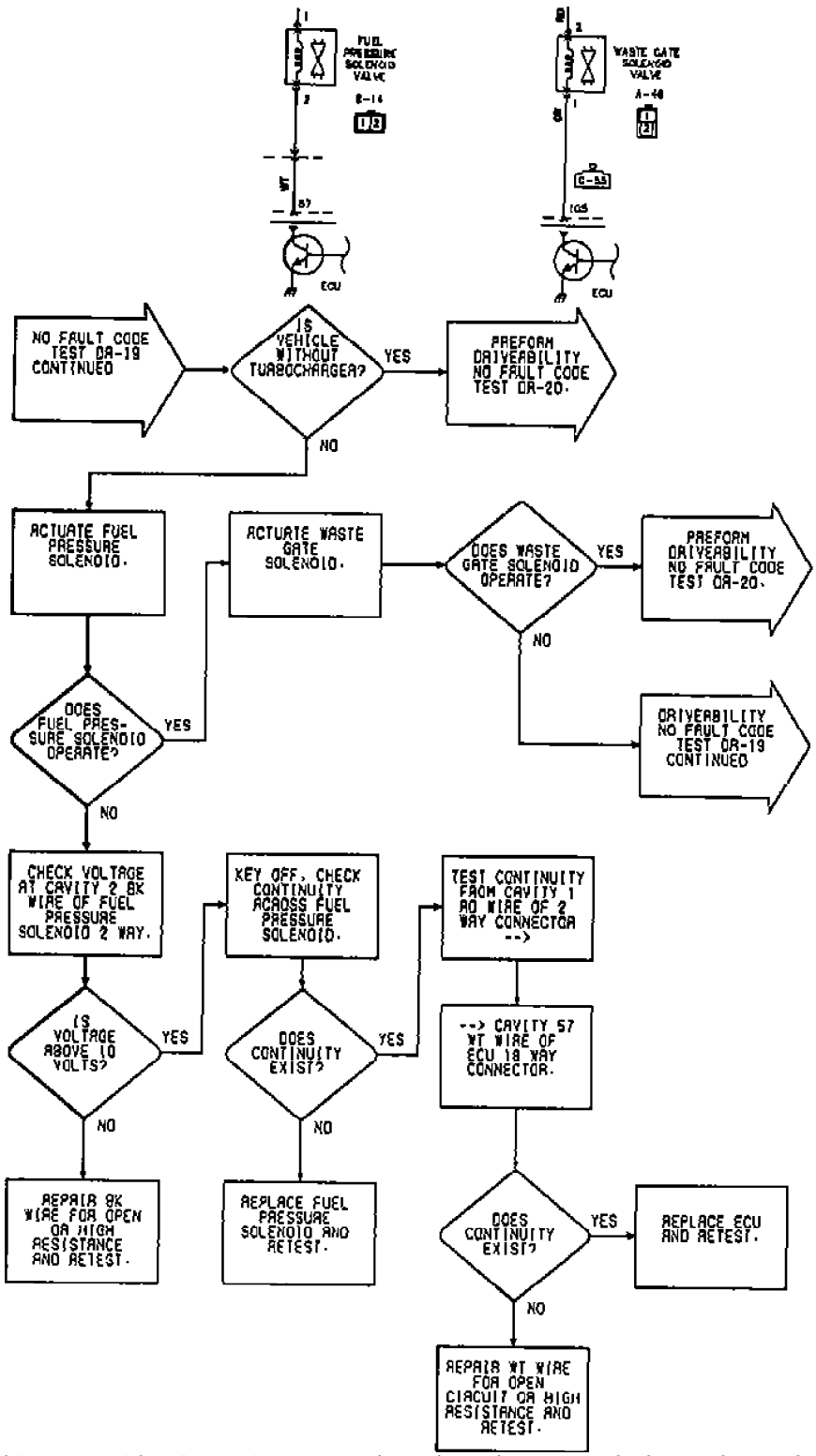


Fig. 291: DR-19 Flow Chart & Circuit Diagram (2.0L) (2 of 3)

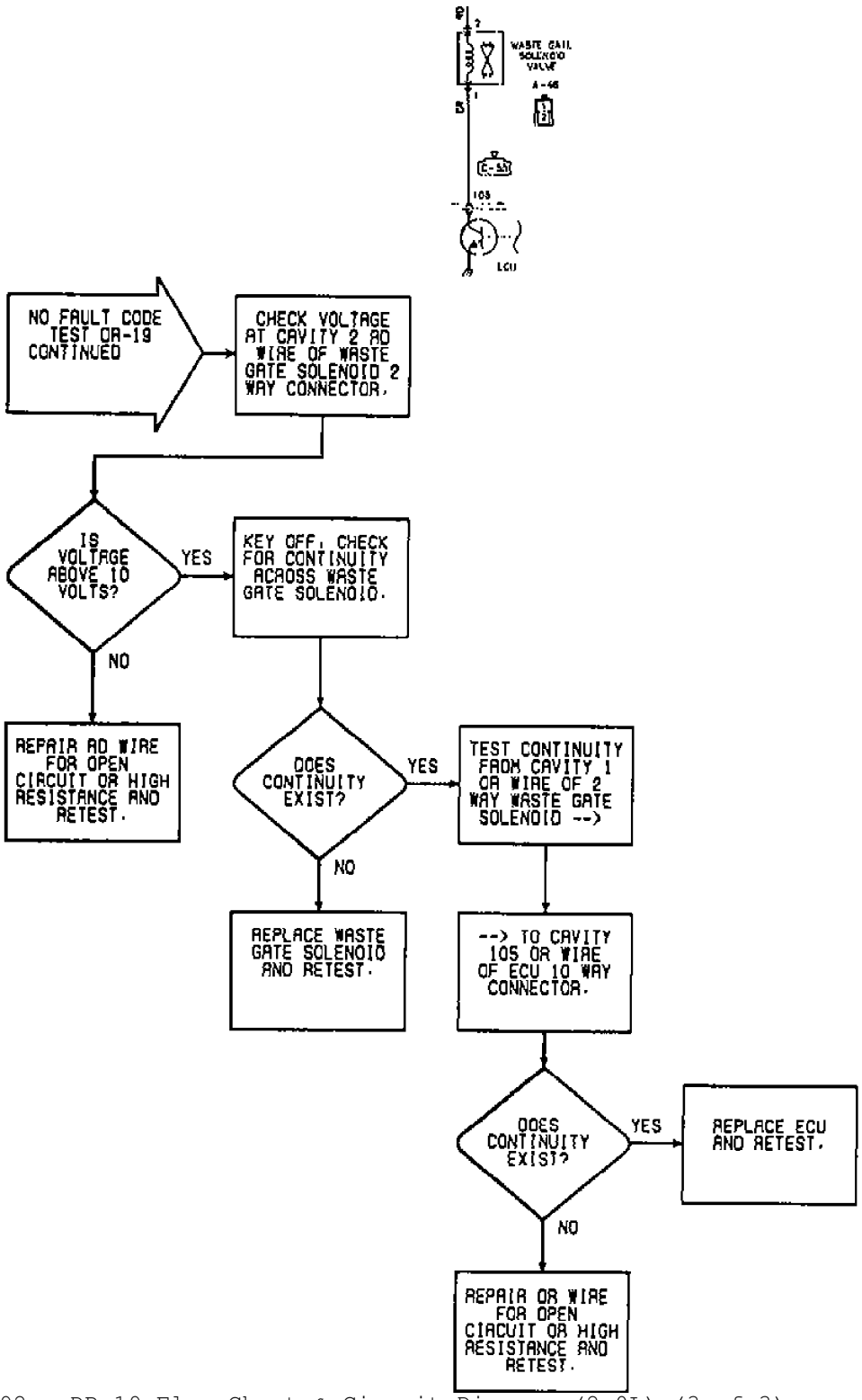


Fig. 292: DR-19 Flow Chart & Circuit Diagram (2.0L) (3 of 3)

DR-20: NO-FAULT CODE, DRB-II SWITCHES NOT RUNNING TEST - 2.0L

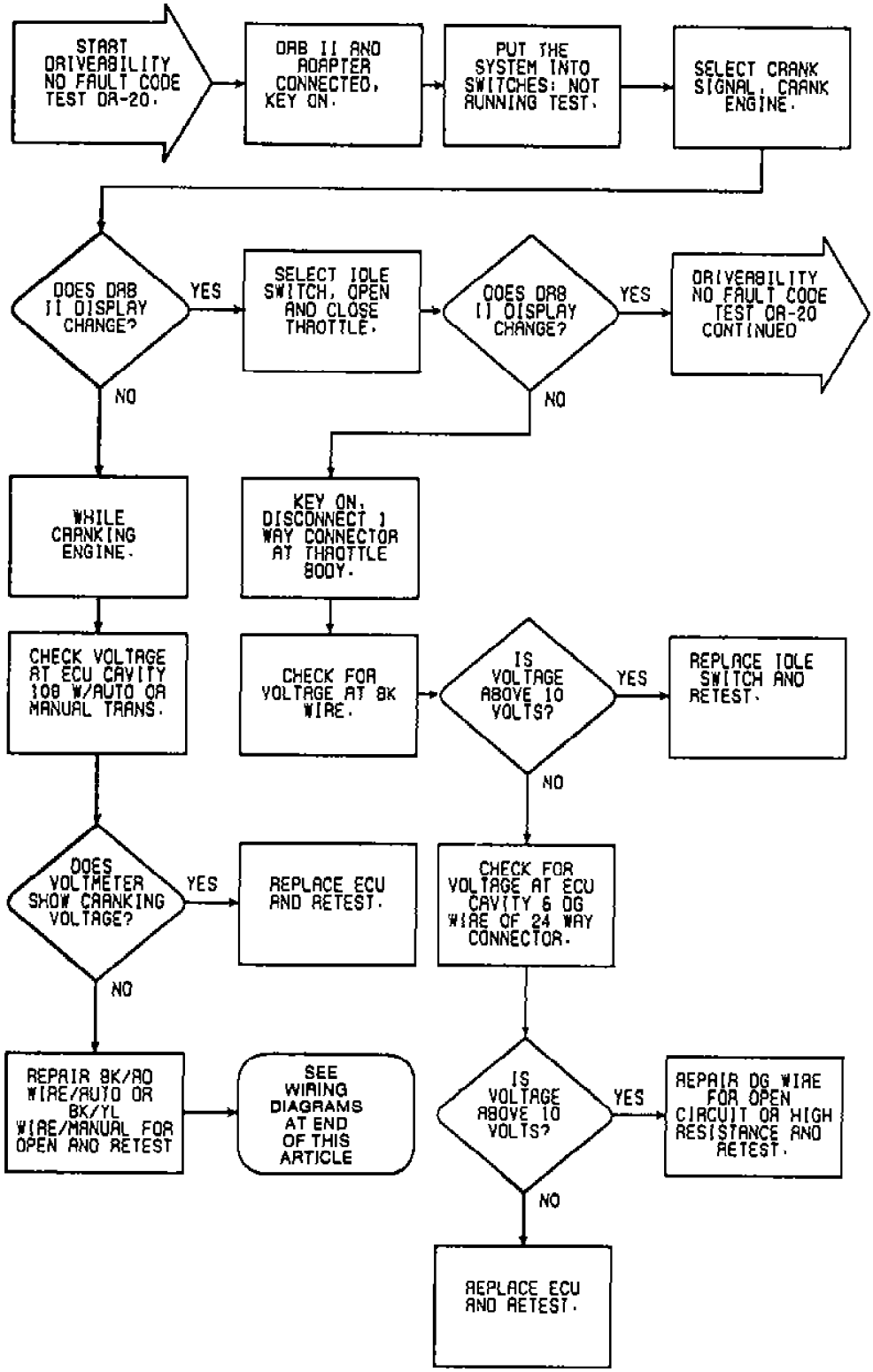


Fig. 293: DR-20 Flow Chart & Circuit Diagram (2.0L) (1 of 2)

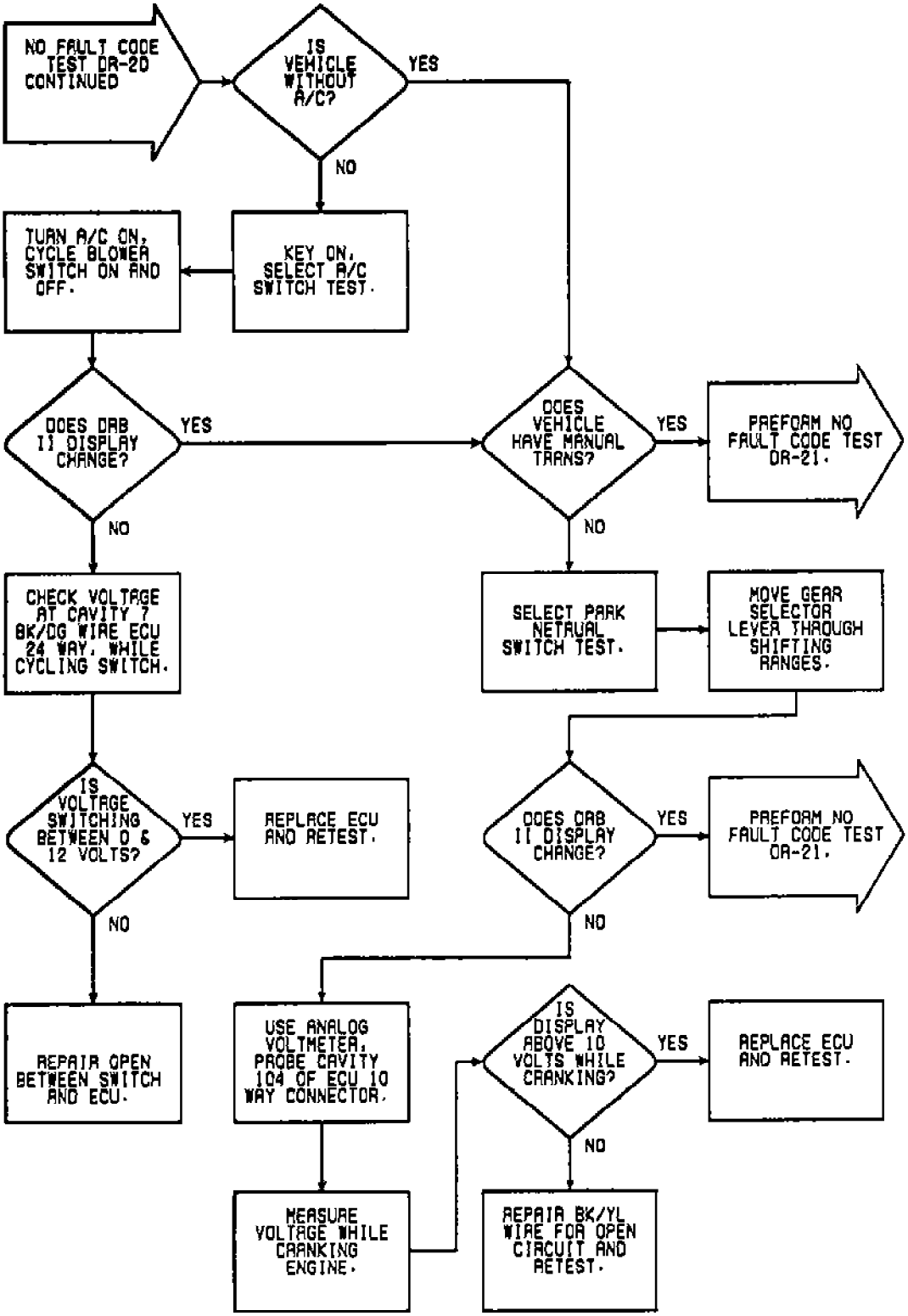


Fig. 294: DR-20 Flow Chart & Circuit Diagram (2.0L) (2 of 2)

DR-21: NO-FAULT CODE TEST, DRB-II SENSOR TEST - 2.0L

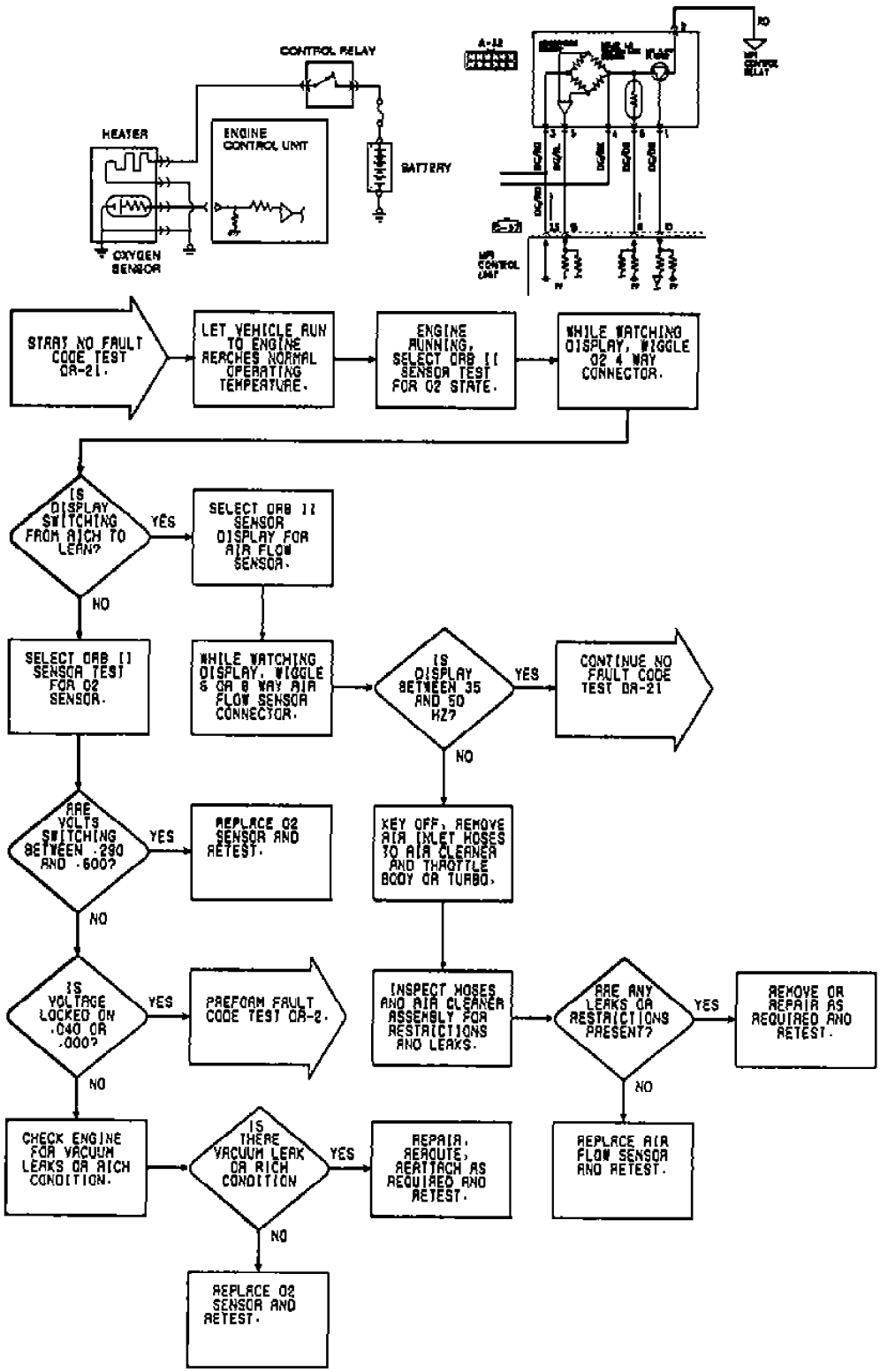


Fig. 295: DR-21 Flow Chart & Circuit Diagram (2.0L) (1 of 5)

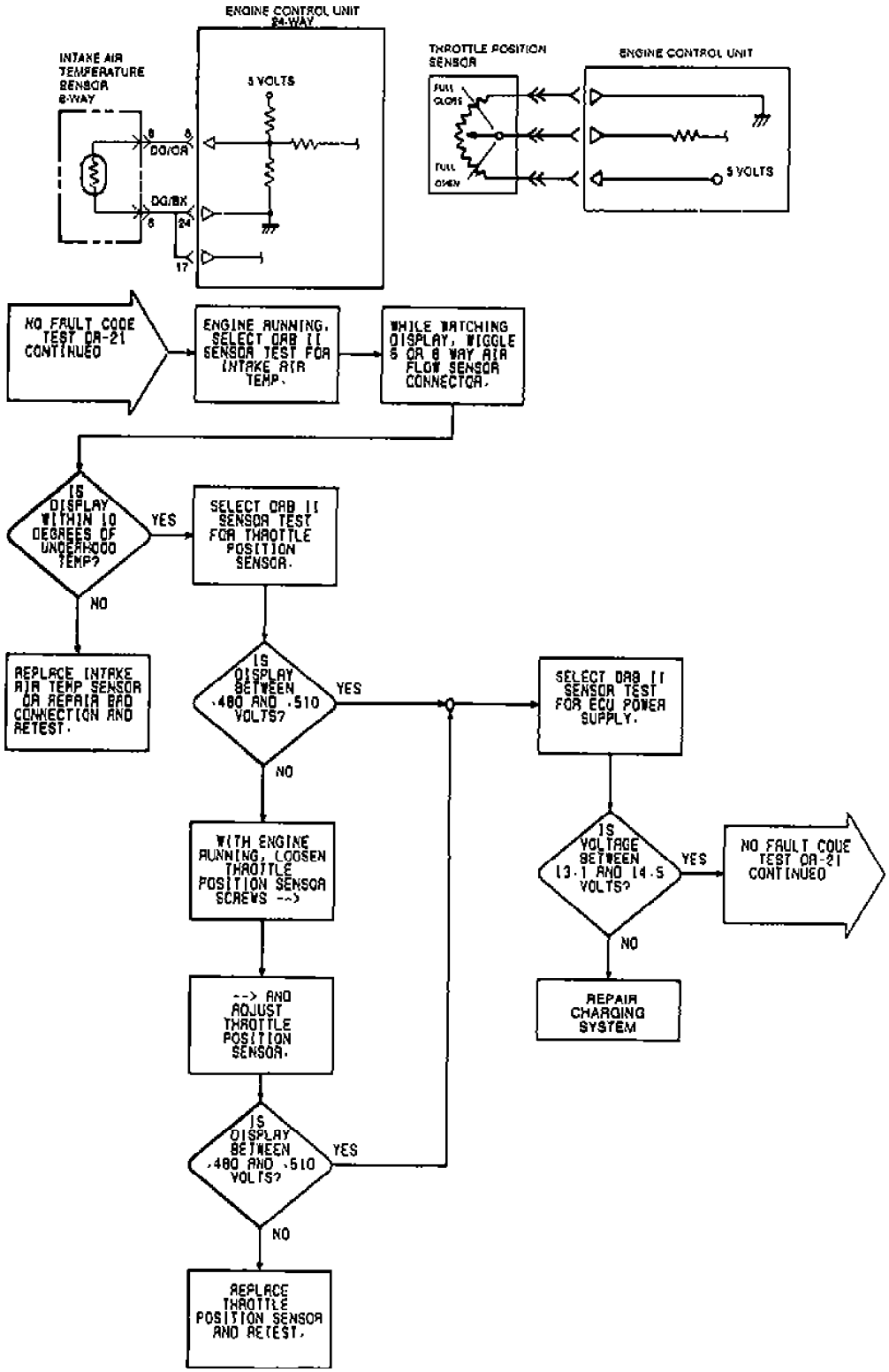


Fig. 296: DR-21 Flow Chart & Circuit Diagram (2.0L) (2 of 5)

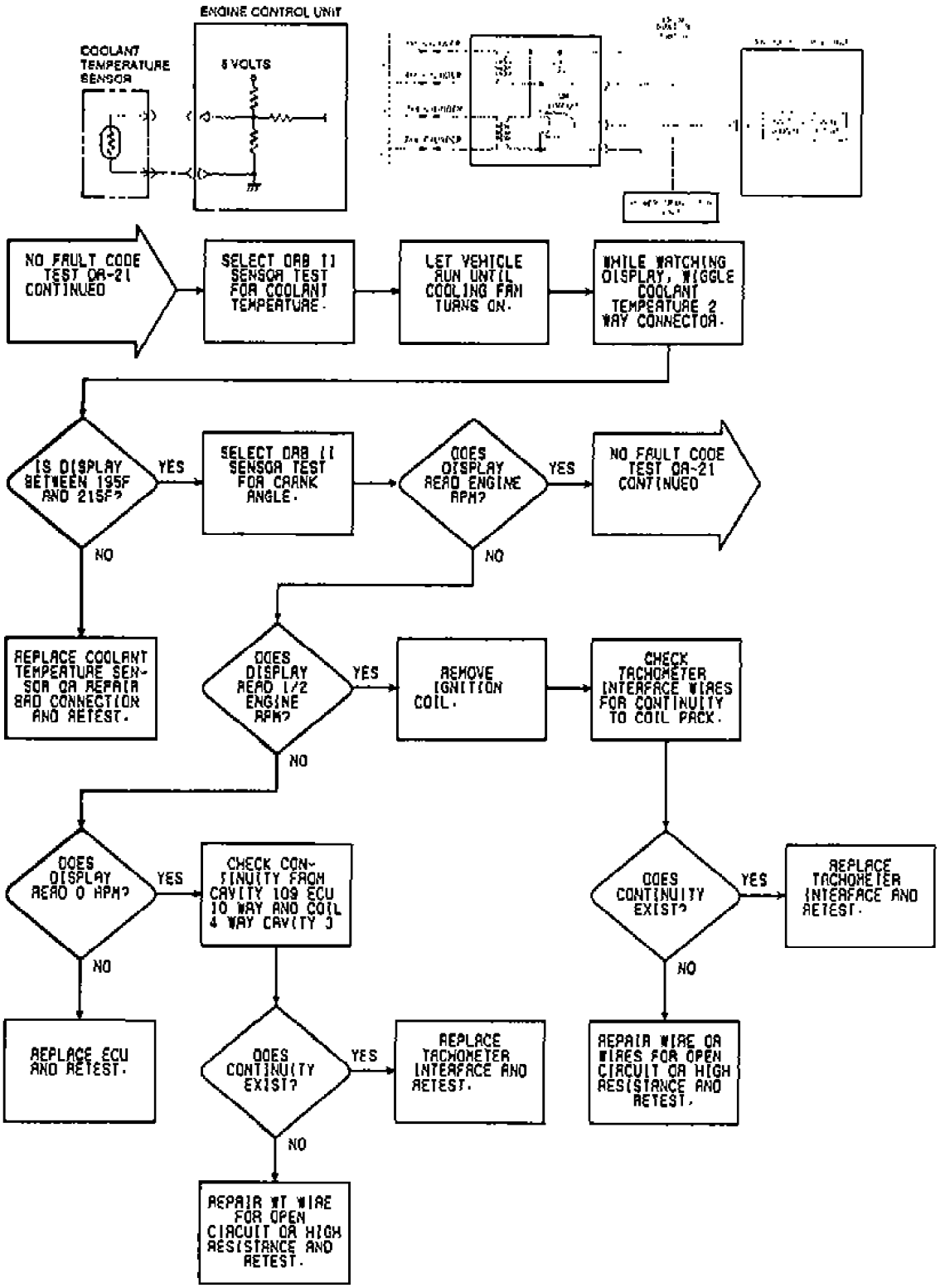


Fig. 297: DR-21 Flow Chart & Circuit Diagram (2.0L) (3 of 5)

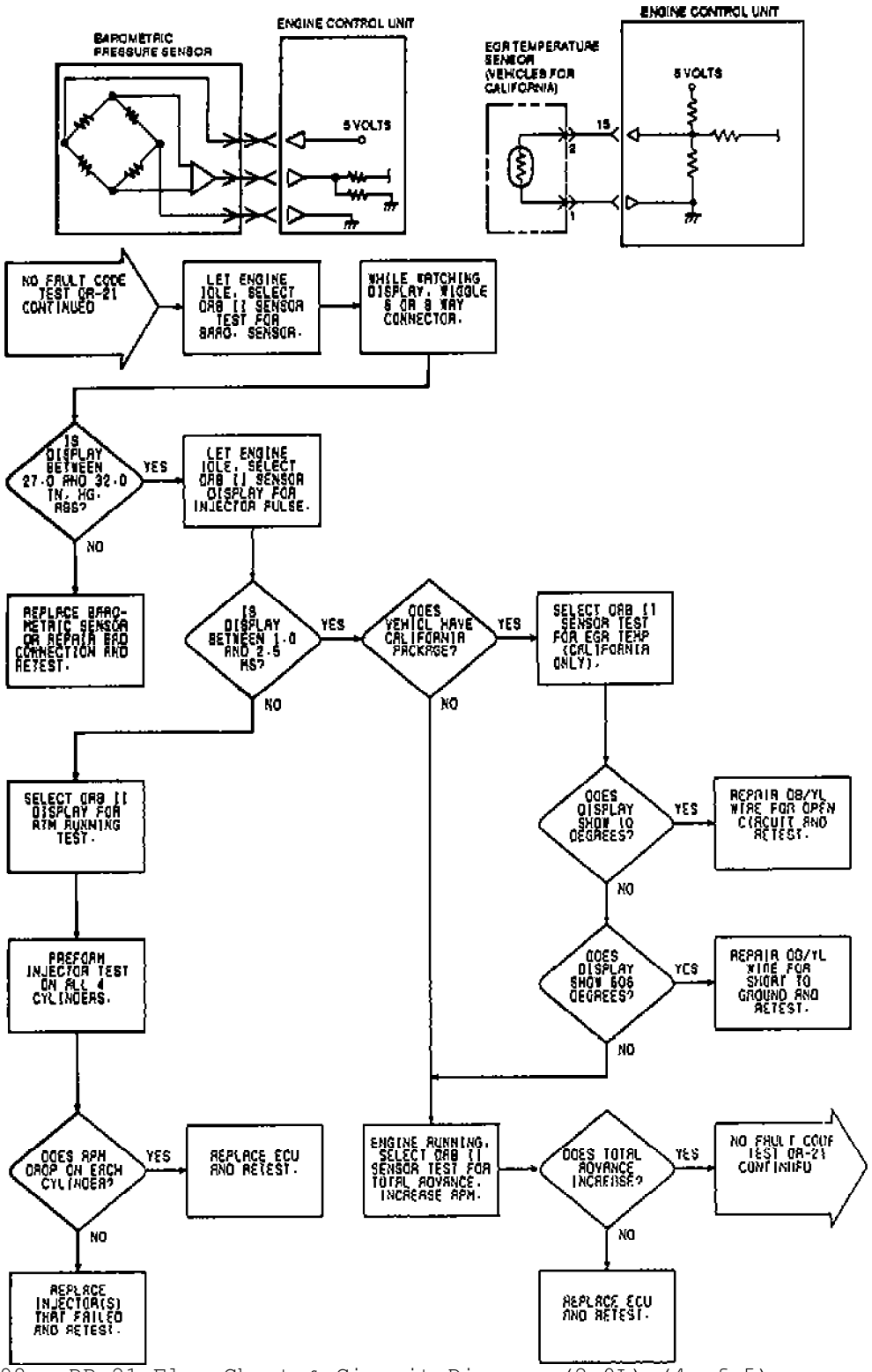


Fig. 298: DR-21 Flow Chart & Circuit Diagram (2.0L) (4 of 5)

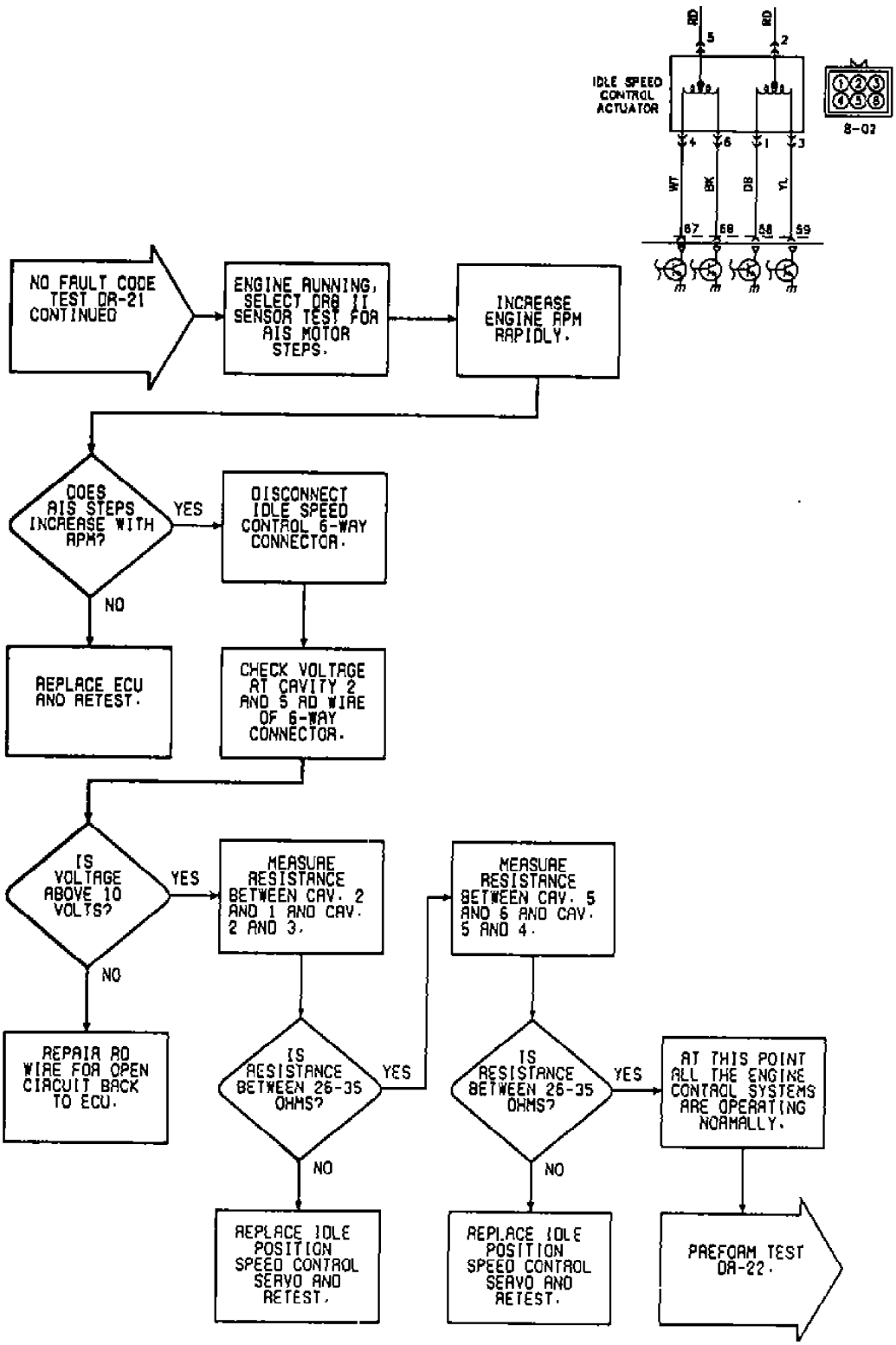


Fig. 299: DR-21 Flow Chart & Circuit Diagram (2.0L) (5 of 5)

DR-22: NO-FAULT CODE MECHANICAL TEST - 2.0L

At this point in the driveability test procedure you have

determined that all of the engine controls systems are operating as they were designed to. Therefore, they are not the cause of the driveability problem. The following additional items should be checked as possible causes:

1) ENGINE VACUUM - Must be at least 13 inches in neutral.
2) ENGINE VALVE TIMING - Set to specifications.
3) ENGINE COMPRESSION - To specifications.
4) EXHAUST SYSTEM - Free from any restrictions.
5) PCV SYSTEM - Must flow freely.
6) DRIVE SPROCKETS - Camshaft and crank shaft.
7) TORQUE CONVERTER STALL SPEED - To specifications.
8) POWER BRAKE BOOSTER - No internal vacuum leak.
9) FUEL CONTAMINATION - High alcohol and water content.
10) FUEL INJECTORS - Rough idle may be caused by injector control wire not connected to correct injector.
11) TECHNICAL SERVICE BULLETINS - Any that may apply to vehicle.
12) ENGINE SECONDARY IGNITION CHECK - Any abnormal scope pattern.
13) TECHNICAL SERVICE BULLETINS - Any that apply to vehicle.
14) All air intake piping and vacuum hoses must be in place and secure. The proper air filter element must be used.
15) FUEL PRESSURE - Must be correct.
    Specification: With no vacuum at the regulator:
    48 PSI on V6 & non-turbo 4 Cyl. engines
    36 PSI on turbo engines

DR-VER: DRIVEABILITY VERIFICATION TEST - 2.0L

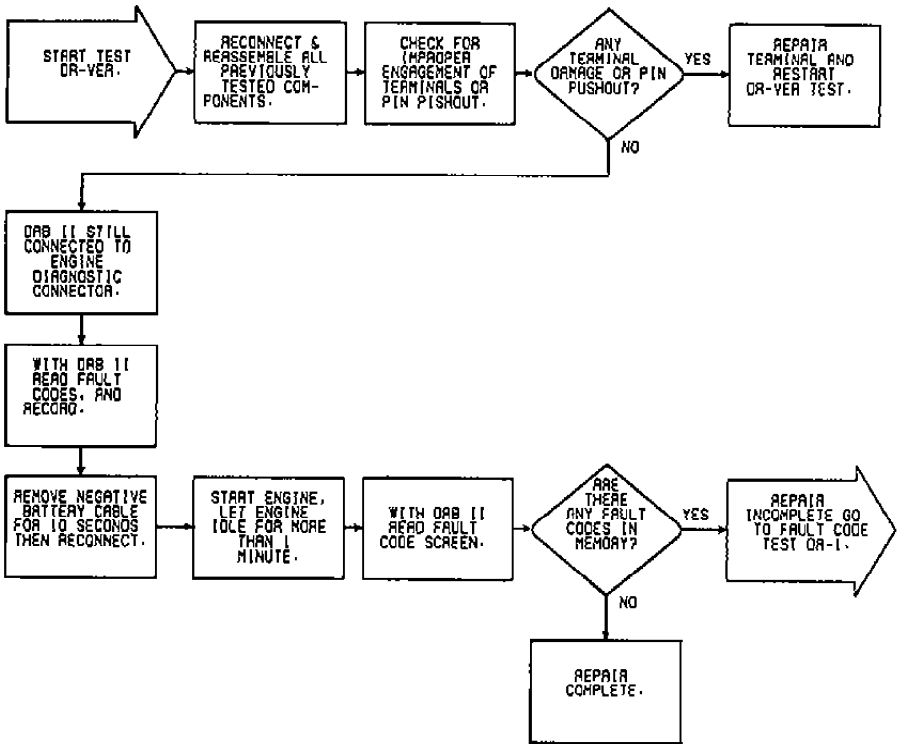


Fig. 300: DR-VER Flow Chart (2.0L)

SUMMARY

If no hard fault codes (or only pass codes) are present, proceed to H - TESTS W/O CODES article for diagnosis by symptom (i.e. ROUGH IDLE, NO START, etc.) or intermittent diagnostic procedures.