

INSTRUMENT PANEL

1995 Volvo 850

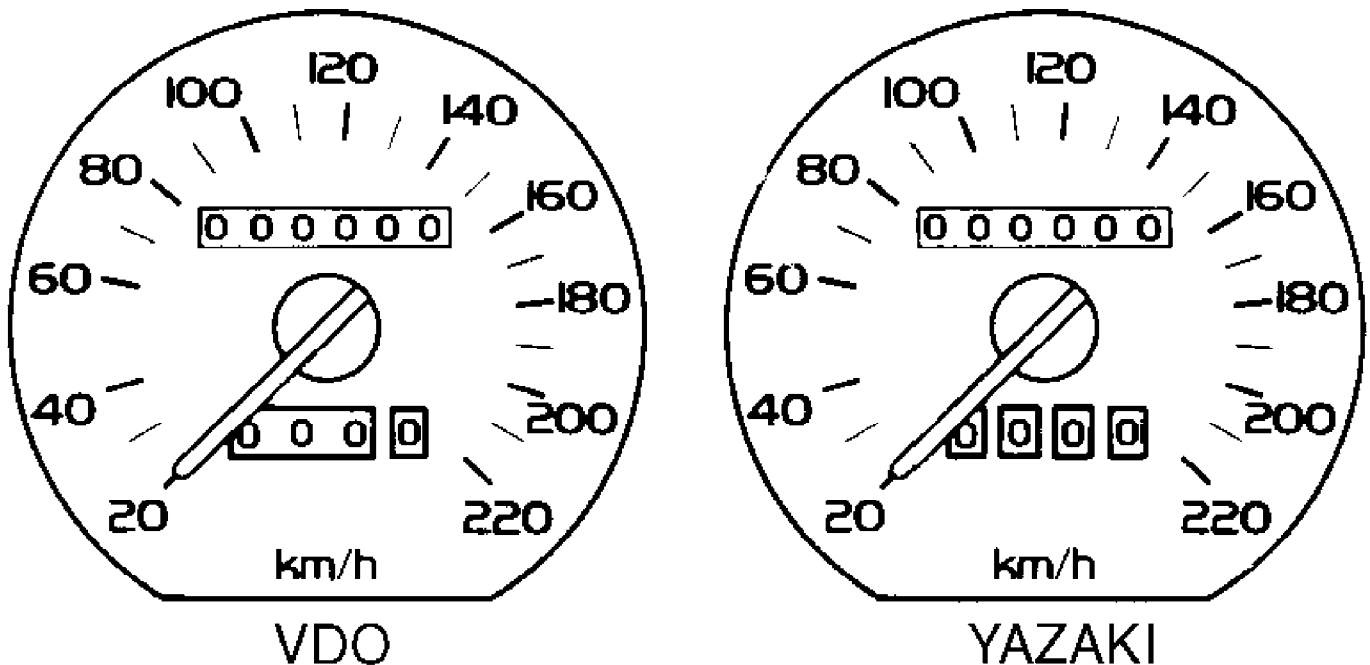
1995-96 ACCESSORIES & EQUIPMENT
Volvo Instrument Panels

850

WARNING: When working around steering column and before performing repairs, disconnect and shield battery ground terminal. Disconnect YELLOW and ORANGE Supplemental Inflatable Restraint (SIR) air bag connectors, located on driver's side of center console, near throttle pedal. Failure to follow precautions may result in air bag deployment and personal injury. See SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM see 1995 850, see AIR BAG RESTRAINT SYSTEM, or 1996 850, see AIR BAG RESTRAINT SYSTEM article.

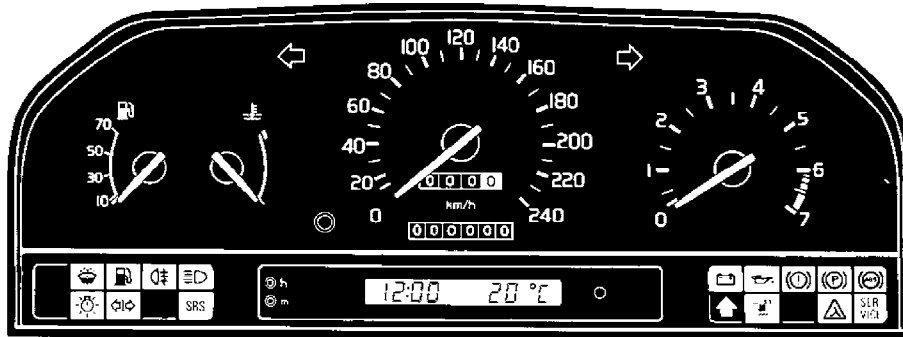
DESCRIPTION & OPERATION

All 850 models are equipped with an analog gauge instrument cluster. Speedometer is centrally located with tachometer on right and coolant temperature/fuel gauges on left. Warning/telltale lights are located at bottom left and right sides of instrument cluster. Digital clock and ambient temperature display are located under odometer. This section of instrument cluster may contain an optional trip computer that provides information on average fuel consumption, current fuel consumption, average speed, trip meter, ambient temperature and range of fuel in tank. Instrument cluster is equipped with self-diagnostic capabilities. See Fig. 2.



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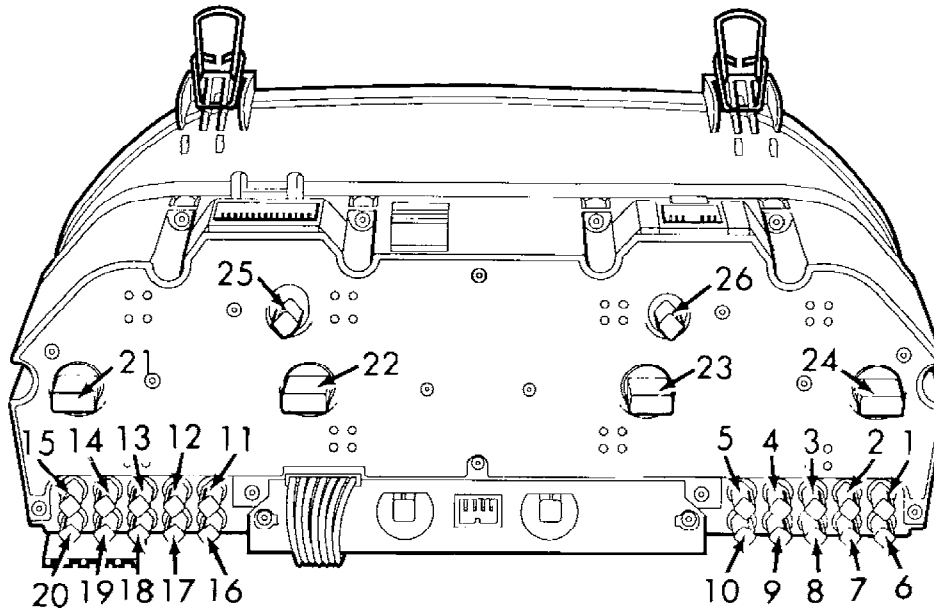
Fig. 1: Identifying Yazaki Or VDO Type Instrument Cluster
Courtesy of Volvo Cars of North America.



1	2	3	4	5
6	7	8	9	10

INSTRUMENT CLUSTER

11	12	13	14	15
16	17	18	19	20



- | | |
|---------------------------------|---------------------------------|
| 1. Spare | 14. Parking Brake |
| 2. Washer Fluid Level | 15. ABS |
| 3. Low Fuel Level | 16. Gear Indicator |
| 4. Rear Fog Light | 17. Coolant Level |
| 5. High Beam | 18. Spare |
| 6. Spare | 19. Malfunction Indicator Light |
| 7. Spare | 20. Service Reminder |
| 8. Trailer Direction Indicators | 21. General Lighting |
| 9. Spare | 22. General Lighting |
| 10. SRS | 23. General Lighting |
| 11. Battery Charge | 24. General Lighting |
| 12. Oil Pressure | 25. Right Indicator |
| 13. Brake System | 26. Left Indicator |

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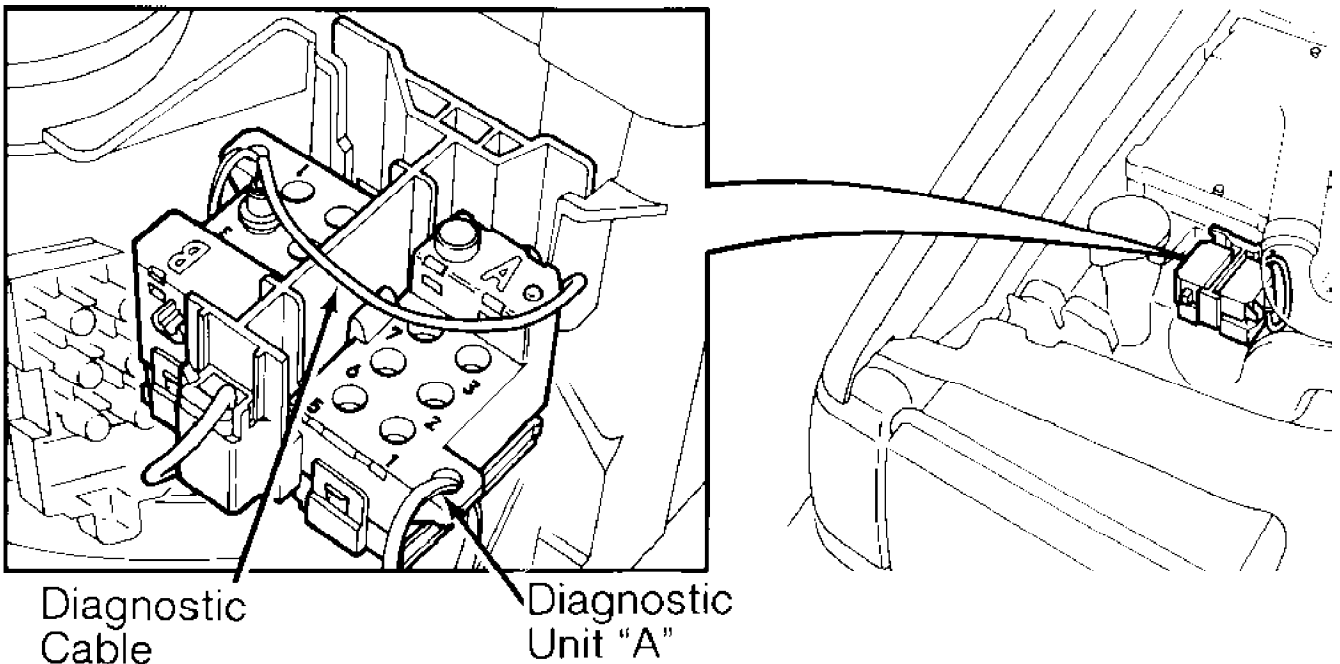
Fig. 2: Identifying Instrument Cluster & Bulb Location
 Courtesy of Volvo Cars of North America.

SYSTEM TESTING

ON-BOARD DIAGNOSTICS (1995 MODELS)

Diagnostic Test Mode No. 1

1) 850 is equipped with on-board diagnostics to help locate and repair instrument cluster faults. To enter diagnostics, turn ignition on. Locate diagnostic unit "A" in right front area of engine compartment. See Fig. 3. Place diagnostic cable in diagnostic unit "A", socket No. 7. Briefly push test button, located on diagnostic unit, once. System is now in diagnostic test mode No. 1.



93H82112

Fig. 3: Locating Diagnostic Unit "A"
Courtesy of Volvo Cars of North America.

2) Count number of times LED on diagnostic unit flashes and note 3-digit fault code. See INSTRUMENT CLUSTER DIAGNOSTIC FAULT CODES (1995) table. Push button again to determine whether more trouble codes have been set. Codes are displayed in same sequence as they were set. After all stored codes have been displayed, display will begin again with first code in sequence.

Erasing Trouble Codes

1) Codes cannot be erased until all codes have been displayed at least once. To erase code, hold button down for more than 5 seconds, then release. LED will light 3 seconds later to confirm trouble code(s) have been erased. Hold button down for more than 5 seconds again and release. LED should go off. Trouble code should now be erased.

2) To ensure trouble code is erased, turn ignition off, then on again. Ensure trouble code is erased by briefly pushing test button. If Code 1-1-1 (no faults found) is displayed, trouble codes have been erased. If trouble codes are still displayed, repeat step 1).

Diagnostic Test Mode No. 3

1) Control module can check operation of some instruments by

generating a display signal which can indicate whether a particular gauge or meter is defective. To activate diagnostic test mode No. 3, briefly press test button 3 times. ECU will activate gauges, meters, and illuminate LEDs for 30-60 seconds throughout test. Gauges and meters should indicate as follows:

- * Fuel gauge needle should indicate 1/2 full.
- * Temperature gauge needle should be at edge of Red section.
- * Speedometer needle should be vertical.
- * Trip meter should indicate an extra .5 mile.
- * Tachometer needle should be vertical.

2) If gauges and meters indicate correct values during function test but incorrect values during test drive, fault is present in wiring or one of the sensors connected to instrument cluster.

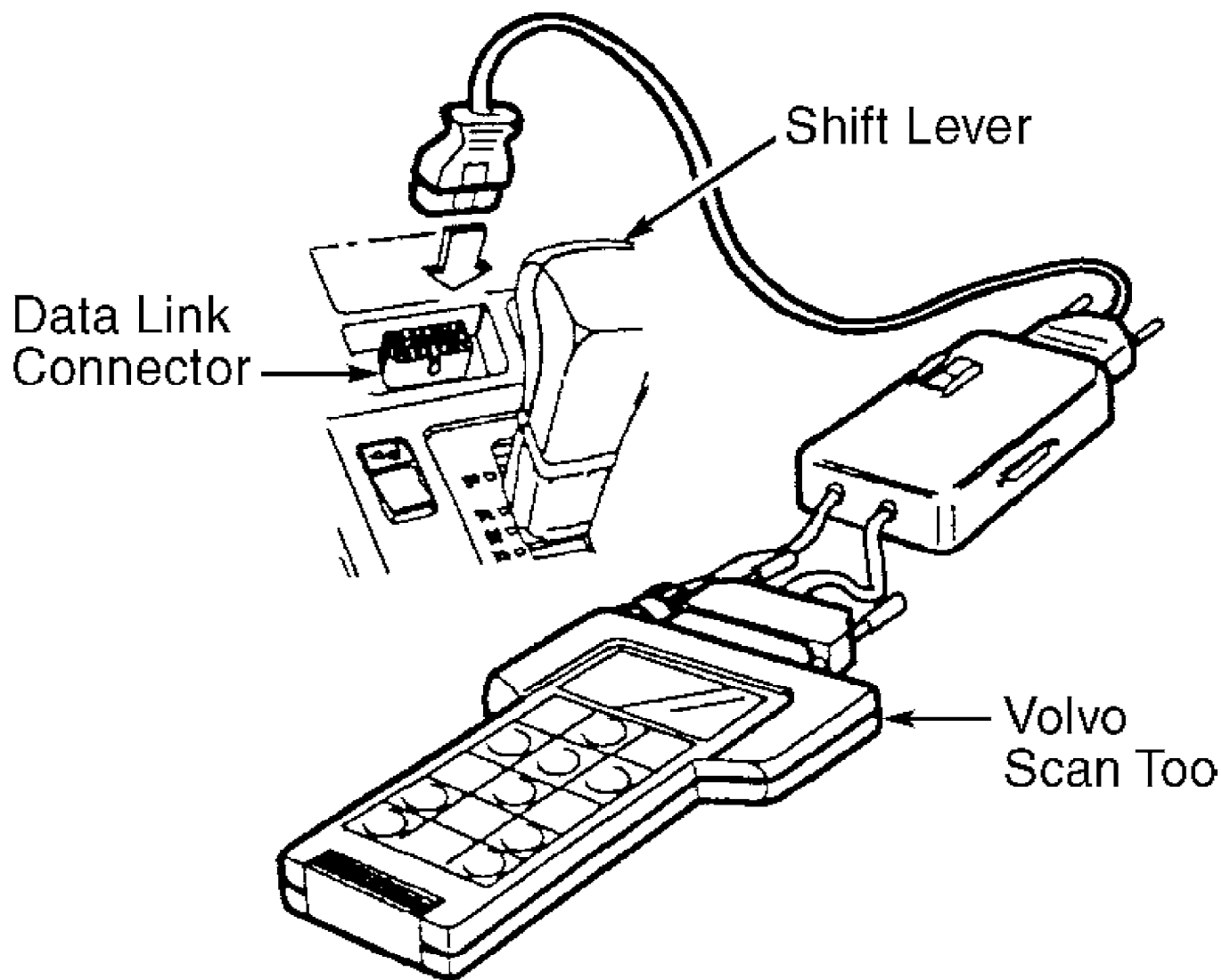
INSTRUMENT CLUSTER DIAGNOSTIC FAULT CODES TABLE (1995)

Code	Problem	Reference
1-1-1	No Faults Located	
1-1-2	Fuel Gauge/Short Circuit In Sensor	See FUEL GAUGE TEST
1-1-3	Fuel Gauge/Open Circuit In Sensor	See FUEL GAUGE TEST
1-2-1	Temperature Sensor/Interval Too Short	See TEMPERATURE GAUGE TEST
1-2-2	Temperature Sensor/Interval Too Long	See TEMPERATURE GAUGE TEST
1-2-3	Incorrect 48-Pulse Signal	See SPEEDOMETER TEST
1-3-1	Incorrect 12-Pulse Connector	See SPEEDOMETER TEST
1-3-2	Engine Speed Sensor Signal Incorrect	See TACHOMETER TEST
1-3-3	Tank Signal To Trip Computer Incorrect	Replace Instrument Cluster

ON-BOARD DIAGNOSTICS (1996 MODELS)

1) Turn ignition off. Connect memory cassette to Volvo Scan Tool (998-8686-3). Connect scan tool to Data Link Connector (DLC) in console in front of gear selector. See Fig. 4. Turn ignition on. Turn scan tool on. Select language, vehicle model and year.

2) Select function group and system. Select DIAGNOSTIC TEST to read and erase Diagnostic Trouble Codes (DTCs), as well as to activate components. Select READ DTC to read DTCs, status, and freeze values. Select ERASE DTC to erase stored DTCs and freeze values. See INSTRUMENT CLUSTER DIAGNOSTIC FAULT CODES (1996) table.



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Fig. 4: Locating Data Link Connector
 Courtesy of Volvo Cars of North America.

INSTRUMENT CLUSTER DIAGNOSTIC FAULT CODES TABLE (1996)

Code Problem

CI-112	Fuel Level Sensor/Short Circuit To Ground
CI-113	Fuel Level Sensor/Signal Interrupted
CI-114	Fuel Level Sensor/Signal Faulty
CI-121	ECT Signal/Signal Faulty
CI-123	Incorrect 48-Pulse Signal
CI-124	Engine Speed Signal/Signal Faulty
CI-131	Incorrect 12-Pulse Signal
CI-132	Engine Speed Signal/Signal Absent
CI-133	Tank Signal To Trip Comp./Short Circuit
CI-141	12-Pulse Signal/Short Circuit
CI-143	48-Pulse Signal/Short Circuit
CI-211	D+/Signal Absent
CI-221	Speed Signal/Signal Absent
CI-222	Fuel Level Sensor/Short Circuit

COMPONENT TESTS (1995)

NOTE: See SYSTEM TESTS for 1996 information.

FUEL GAUGE TEST

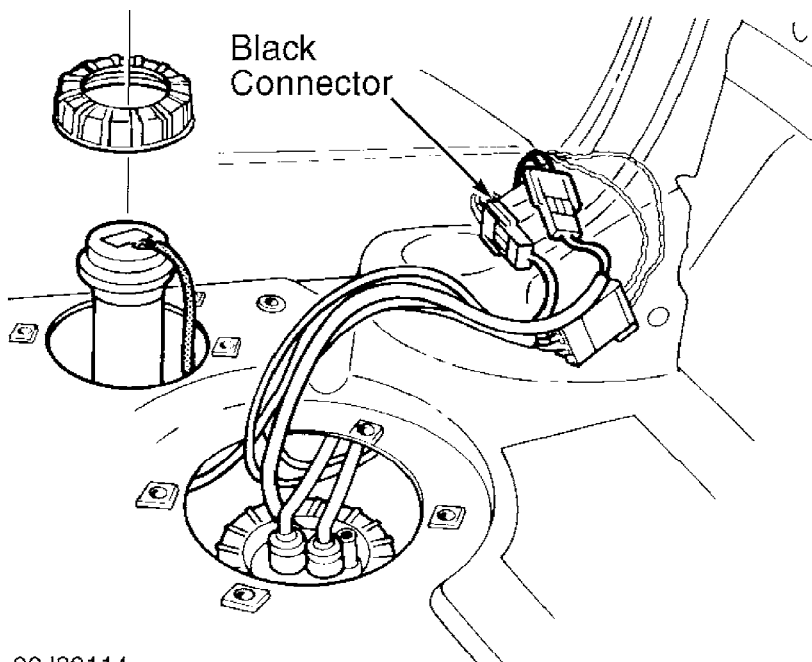
Fuel Gauge Does Not Operate

1) Turn ignition on. Activate diagnostic test mode No. 3. See On-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. If fuel gauge indicates 1/2 full, go to next step. If fuel gauge does not indicate 1/2 full, replace instrument cluster.

2) Turn ignition off. Remove right side panel in trunk. Disconnect Black 2-pin electrical connector. See Fig. 5. Connect an ohmmeter between sensor connections. Depending on amount of fuel in tank, if ohmmeter indicates 7.5-12.5 to 322.5-327.5 ohms, go to next step and check sensor ground connection. If ohmmeter does not indicate 7.5-12.5 to 322.5-327.5 ohms, replace fuel level sensor.

3) Ensure ignition is off. Connect an ohmmeter between harness connector terminal No. 2 (Yellow/Red wire) and ground. If about zero ohms is present, go to next step and check sensor signal circuit. If about zero ohms is not present, check for an open circuit in wiring between connector terminal No. 2 (Yellow/Red wire) and 30-pin connector on instrument cluster.

4) Connect voltmeter between harness connector terminal No. 2 (Yellow/Gray wire) and ground. Turn ignition on. If about 7 volts is present, replace instrument cluster. If zero volts is present, check for a short to ground or an open circuit. If battery voltage is present, check wiring for a short to voltage.



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Fig. 5: Locating Black 2-Pin Connector In Trunk
Courtesy of Volvo Cars of North America.

Fuel Gauge Reading Incorrect

1) Turn ignition on. Activate diagnostic test mode No. 3. See

ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. If fuel gauge indicates significantly more or less than 1/2 full, replace instrument cluster. If fuel gauge indicates 1/2 full, go to next step and check fuel level sensor ground.

2) Turn ignition off. Remove right side panel in trunk.

Disconnect Black 2-pin fuel level sensor connector. See Fig. 5. Connect an ohmmeter between connector terminal No. 2 (Yellow/Red wire) and ground. If zero ohms is present, go to next step and check fuel level sensor. If zero ohms is not present, check Yellow/Red wire between connector in trunk and 30-pin instrument cluster connector.

3) Turn ignition off. Locate fuel level sensor Black 2-pin connector behind right side panel in trunk. Connect ohmmeter between connector terminals on fuel level sensor side of harness.

4) Depending on amount of fuel in tank, if ohmmeter indicates 7.5-12.5 to 322.5-327.5 ohms, replace instrument cluster. If ohmmeter does not indicate 7.5-12.5 to 322.5-327.5 ohms, replace fuel level sensor. If amount of fuel in tank is unknown, remove fuel level sensor from tank and turn it upside down.

5) Connect an ohmmeter between fuel level sensor connector terminals. Turn sensor slowly to same position that it had when in tank. Resistance should rise from about 10 ohms (full tank) to about 325 ohms (empty tank). If resistances are incorrect, replace sensor. If resistances are correct, replace instrument cluster.

FUEL GAUGE SENDING UNIT TEST

NOTE: On 850, fuel gauge sending unit should not be tested independently of rest of circuit. For fuel gauge sending unit testing, see FUEL GAUGE TEST.

SPEEDOMETER TEST

Speedometer Does Not Operate

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. If speedometer needle moves to vertical position, go to next step and check speed sensor. If speedometer does not operate, replace instrument cluster.

2) Turn ignition off. Raise and support vehicle. Disconnect vehicle speed sensor connector at transmission. See Fig. 6. Connect an ohmmeter between sensor terminals. If resistance is 1700-1940 ohms, go to next step and check vehicle speed sensor ground connection. If resistance is not 1700-1940 ohms, replace vehicle speed sensor.

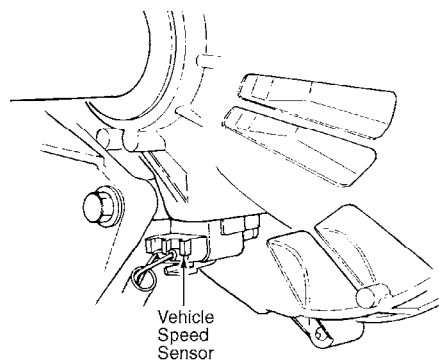


Fig. 6: Disconnecting Vehicle Speed Sensor Connector
Courtesy of Volvo Cars of North America.

3) Turn ignition off. Connect an ohmmeter between vehicle sensor connector terminal No. 2 (Green/Yellow wire) and ground. If

resistance is not zero ohms, check for an open circuit in wiring between connector terminal No. 2 (Green/Yellow wire) and instrument cluster 30-pin connector. If resistance is zero ohms, reconnect vehicle speed sensor and go to next step.

4) Turn ignition off. Remove instrument cluster. See INSTRUMENT CLUSTER under REMOVAL & INSTALLATION. Connect ohmmeter between instrument cluster 30-pin connector terminals No. 2 (Green/Yellow wire) and No. 3 (Yellow/Brown wire). If resistance is 1700-1940 ohms, replace instrument cluster. If resistance is not 1700-1940 ohms, check for open circuit in Yellow/Brown wire between instrument cluster 30-pin connector terminal No. 3 and vehicle speed sensor connector terminal No. 1.

Speedometer Reading Incorrect

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. If speedometer needle moves to vertical position, go to next step and check vehicle speed sensor ground circuit. If speedometer is significantly out of vertical position, replace instrument cluster.

2) Turn ignition off. Raise vehicle and disconnect vehicle speed sensor connector from transmission. See Fig. 6. Connect ohmmeter between sensor connector terminal No. 2 (Green/Yellow wire) and ground. If ohmmeter does not indicate zero ohms, go to next step. If ohmmeter indicates zero ohms, check vehicle speed sensor mounting. If sensor is mounted incorrectly, distance to toothed wheel may be too far. If sensor mounting is okay, go to step 4).

3) If ohmmeter did not indicate zero ohms in step 2), check for an open circuit in Green/Yellow wire between vehicle speed sensor connector terminal No. 2 and instrument cluster 30-pin connector terminal No. 2. If circuit is okay, check for an open ground in circuit between instrument cluster 30-pin connector terminal No. 15 (Brown wire) and ground.

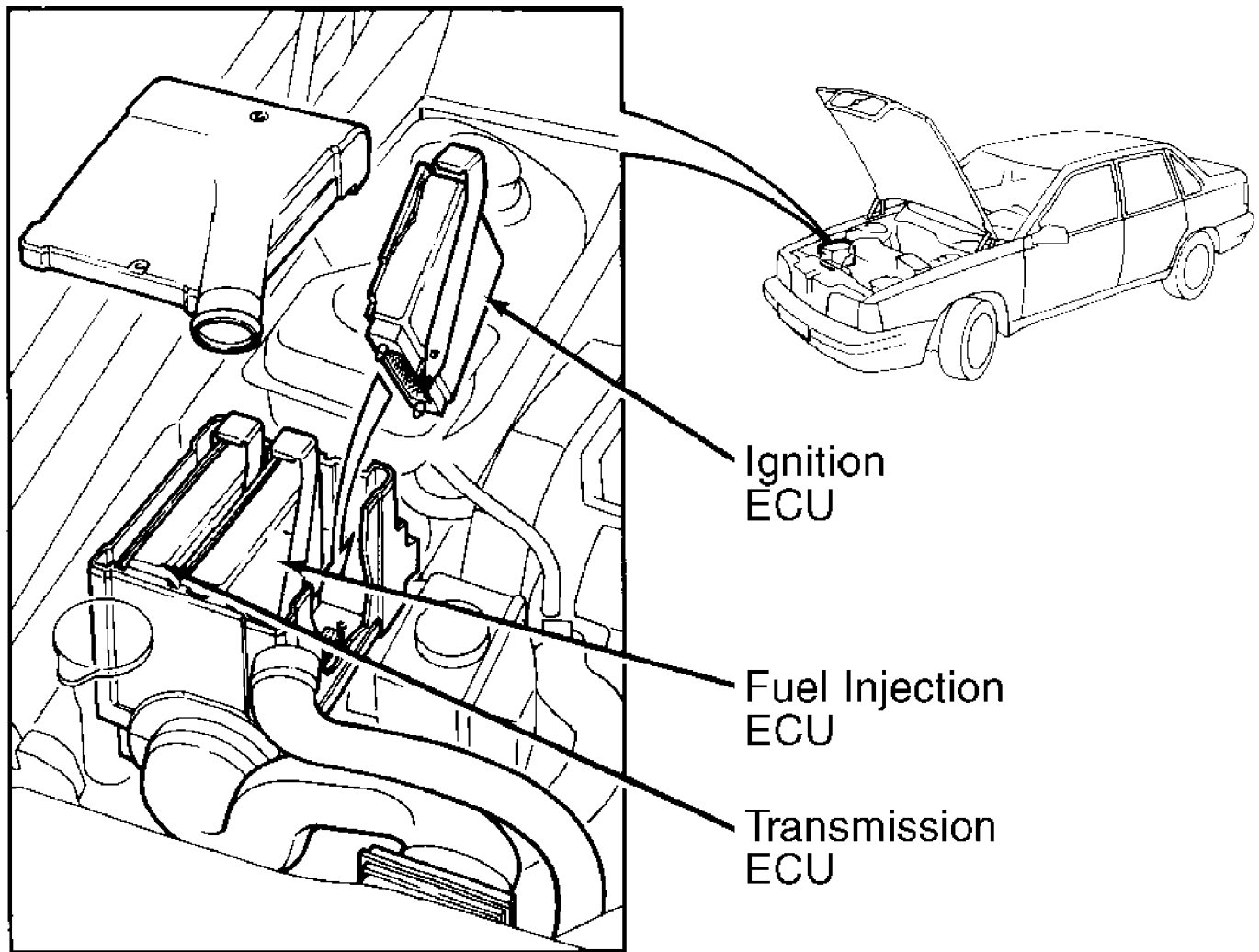
4) Turn ignition off. Raise and support vehicle. Disconnect vehicle speed sensor connector at transmission. See Fig. 6. Connect an ohmmeter between sensor terminals. If resistance is 1700-1940 ohms, replace instrument cluster. If resistance is not 1700-1940 ohms, replace vehicle speed sensor.

TEMPERATURE GAUGE TEST

Temperature Gauge Does Not Work

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. Check if temperature gauge needle is at edge of Red section. If temperature gauge does not operate as specified, replace instrument cluster.

2) If temperature gauge needle is at edge of Red section, there is a possibility a fault exists between sensor and fuel injection ECU, between fuel injection ECU and ignition system ECU, or between ignition system ECU and instrument cluster. See Fig. 7. Ensure testing is performed in correct sequence as a fault between sensor and fuel injection ECU may cause faults in all 3 ECUs.



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Fig. 7: Locating Electronic Control Units
 Courtesy of Volvo Cars of North America.

3) Start testing by checking whether fuel injection ECU exhibits Code 1-2-3 in diagnostic test mode No. 1 on diagnostic output A2. Diagnose Code 1-2-3 as necessary.

See G - TESTS W/CODES - NON-TURBO (A/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO (M/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO - MOTRONIC 4.3, or

See G - TESTS W/CODES - TURBO - MOTRONIC 4.3, articles.

4) If fuel injection ECU does not exhibit Code 1-2-3, check whether ignition system ECU exhibits Code 1-2-3 in diagnostic test mode No. 1 on diagnostic output A6. Diagnose Code 1-2-3 as necessary.

See G - TESTS W/CODES - NON-TURBO (A/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO (M/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO - MOTRONIC 4.3, or

See G - TESTS W/CODES - TURBO - MOTRONIC 4.3, articles.

5) If ignition ECU exhibits Code 1-2-3, there is no temperature signal going to ignition ECU or it is shorted to ground, voltage, or both.

See G - TESTS W/CODES - NON-TURBO (A/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO (M/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO - MOTRONIC 4.3, or

See G - TESTS W/CODES - TURBO - MOTRONIC 4.3, articles.

If ignition ECU does not exhibit Code 1-2-3, check for an open circuit in temperature signal Green/Gray wire between instrument cluster 30-pin connector terminal A26 and ignition ECU connector terminal B23.

Temperature Gauge Reading Incorrect

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. Check if temperature gauge needle is at edge of Red section. If temperature gauge does not operate as specified, replace instrument cluster.

2) If temperature gauge needle is at edge of Red section, check ground circuit between instrument cluster 30-pin connector terminal A15 (Brown wire) and ground. Repair as necessary. In addition, check temperature signal from fuel injection ECU terminal B23. See Fig. 7. With ignition on, digital signal of 5-6 volts to 15 volts should be present. If signal voltage is incorrect, diagnose fuel injection ECU.

See G - TESTS W/CODES - NON-TURBO (A/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO (M/T) - MOTRONIC 4.4, or

See G - TESTS W/CODES - NON-TURBO - MOTRONIC 4.3, or

See G - TESTS W/CODES - TURBO - MOTRONIC 4.3, articles.

If signal voltage and ground are okay, replace instrument cluster.

TACHOMETER TEST

Tachometer Does Not Operate

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. Tachometer needle should go to vertical position. Check ignition ECU by reactivating test mode No. 3 on diagnostic unit "A", but placing socket in terminal No. 6. See Fig. 3. If tachometer needle again goes to vertical position, tachometer circuit is okay.

2) If tachometer does not operate at all, check for short circuit to ground in White/Black wire between 30-pin connector terminal A11 and ignition ECU connector "B" terminal B29. See Fig. 7. If wiring is okay, replace instrument cluster.

3) If tachometer does not operate in diagnostic test mode No. 3, check for open circuit in White/Black wire between instrument cluster 30-pin connector terminal A11 and ignition ECU connector "B" terminal B29.

Tachometer Shows Incorrect Value

1) Turn ignition on. Activate diagnostic test mode No. 3. See ON-BOARD DIAGNOSTICS (1995 MODELS) under SYSTEM TESTING. Tachometer needle should go to vertical position. If tachometer needle significantly varies from vertical position, check ignition ECU by activating test mode No. 3 on diagnostic unit "A", but placing socket in terminal No. 6. See Fig. 3. If no fault is found in ignition ECU, replace instrument cluster. If tachometer needle goes to vertical position, go to next step.

2) Check ground circuit wiring between instrument cluster connector 30-pin connector terminal A15 (Brown wire) and ground. If ground circuit is okay, replace instrument cluster.

WIPER SWITCH TEST

For testing information on wipers, see WIPER/WASHER SYSTEM article.

SYSTEM TESTS (1996)

DTC CI-112

Fuel Level Sensor Signal Shorted To Ground

1) This DTC will set if resistance in fuel level sensor is less than 6 ohms for more than 10 seconds. If resistance in fuel level sensor is less than 6 ohms for more than 10 seconds, fuel gauge may read permanently empty and/or fuel gauge may read empty when tank is full.

2) To correct this problem, check for short circuit in fuel level sensor. Check signal leads for short circuit to ground. Also check for faulty fuel level sensor (resistance too low).

DTC CI-113

Fuel Level Sensor Signal Interrupted

1) This DTC will set if resistance in fuel level sensor exceeds 335 ohms for more than 10 seconds. The fuel gauge may read permanently empty or too low.

2) To correct this problem, check for a break in fuel level sensor, broken fuel level sensor ground lead, signal leads shorted to voltage, broken fuel level sensor signal lead, faulty fuel level sensor (resistance too high), high contact resistance, or poor contact.

DTC CI-114

Fuel Level Sensor Signal Faulty

This DTC will set if there is no change in fuel level sensor for at least 94 miles. The fuel level needle does not move. To correct this problem, replace or repair stuck fuel level sensor.

DTC CI-121

Engine Temperature Signal Faulty

1) This DTC will set if control module receives a signal from ECT sensor which corresponds to a temperature less than -49°F (-45°C) or greater than 302°F (150°C). The coolant temperature gauge may permanently read low temperature.

2) To correct this problem, check for open, shorted to voltage or grounded signal leads. Also check for a fault in ignition/fuel system, high contact resistance, or poor contact.

DTC CI-123

48-Pulse Speed Signal Short-Circuited To Supply

1) This DTC will set if signal leads have short circuit to supply. On vehicles equipped with Electronic Climate Control (ECC), fan speed may not decrease at higher road speeds. On vehicles equipped with a trip computer, incorrect values are shown for average speed, average consumption, instantaneous consumption, and trip computer trip recorder.

2) To correct this problem, check signal leads for speed output signal for a short circuit to supply between instrument cluster and ECC or trip computer.

DTC CI-124

Engine Speed Signal Faulty

1) This DTC will set if instrument cluster registers engine speed signal that exceeds 300 Hz (9000 RPM). Tachometer may read too high.

2) To correct this problem, check signal leads between ignition/fuel control module and instrument cluster for a short

circuit to voltage or ground.

DTC CI-131

12-Pulse Speed Signal Short-Circuited To Supply

1) This DTC will set if signal leads are short-circuited to supply. Instrument cluster shows no symptoms for this DTC. A DTC will set in ignition/fuel injection ECU and emission warning light will come on. Cruise control will shut down and set a DTC, and automatic volume control will not function.

2) To correct this problem, check for shorted speed output signal leads between instrument cluster and ignition system, fuel system, cruise control, audio, and other accessories.

DTC CI-132

Engine Speed Signal Absent

1) This DTC will set if engine speed signal is absent for at least 10 seconds when generator sends charge signal (D+). Tachometer will not function.

2) To correct this problem, check for open, shorted to voltage or grounded signal leads. Also check for connector contact resistance or a fault in ignition/fuel system.

DTC CI-133

Tank Signal To Trip Computer Signal Shorted To Supply

1) This DTC will set if fuel level signal leads between instrument cluster and trip computer are shorted to voltage. Fault will display in both RANGE TO EMPTY and fuel consumption modes in trip computer.

2) To correct this problem, check fuel level signal leads between instrument cluster and trip computer for a short circuit to voltage.

DTC CI-141

12-Pulse Speed Signal Shorted To Ground

1) This DTC will set if signal is shorted to ground and speed is greater than 1.2 MPH. Cruise control will shut down and set a DTC. Automatic volume control will not function.

2) To correct this problem, check speed output signal leads for a short circuit to ground between instrument panel and ignition system, fuel system, cruise control, automatic volume control, and other accessories.

DTC CI-143

48-Pulse Speed Signal Shorted To Ground

1) This DTC will set within 2 seconds when signal is shorted to ground and vehicle speed is greater than 1.2 MPH. On vehicles equipped with Electronic Climate Control (ECC), fan speed does not decrease with increased road speed. On vehicles equipped with trip computer, faults occur in displays for average speed, average consumption, instantaneous consumption, and trip computer trip recorder.

2) To correct this problem, check speed output signal leads between instrument cluster and ECC or trip computer for a short circuit to ground.

DTC CI-211

D+ Signal Absent

1) This DTC will set if instrument cluster registers no charge signal (D+) from generator when engine speed signal exceeds 1000 RPM for at least 10 seconds. Generator charge warning light will come on with engine running. Warning lights for filament sensor, braking circuit, parking brake, coolant level, SRS, low fuel level, service, and washer fluid level will also come on.

2) To correct this problem, check for defective generator, broken signal leads, high contact resistance, or loose drive belt.

DTC CI-221

Speed Signal Absent

1) This DTC will set if instrument cluster does not register a speed signal (input signal) when engine speed signal exceeds 1500 RPM for at least one minute and engine temperature exceeds 122°F (50°C).

2) Speedometer may read too low or give no output. DTC is set in engine control system. On vehicles equipped with Electronic Climate Control (ECC), fan speed does not reduce with increased road speed. On vehicles equipped with trip computer, faults occur in displays for average speed, average consumption, instantaneous consumption and trip computer trip recorder. Cruise control will shut down and a DTC will set. If ABS light comes on, see appropriate BRAKES - ANTI-LOCK article.

3) To correct this problem, check for broken signal lead, high contact resistance, idle above 1500 RPM, or ABS system. See appropriate BRAKES - ANTI-LOCK article.

DTC CI-222

Fuel Level Sensor Signal Shorted To Ground

1) This DTC will set if instrument cluster registers an input speed signal that exceeds 2000 Hz (175 MPH). Speedometer may read too high or give full output. Cruise control may shut down and set a DTC. If ABS light comes on, see appropriate BRAKES - ANTI-LOCK article.

2) Speedometer may read too high or give full output. Cruise control will shut down and set a DTC. If ABS light comes on, see appropriate BRAKES - ANTI-LOCK article.

DTC CI-231

Fault In Control Module

This DTC will set if there is an internal fault in instrument cluster. A DTC can set without instrument cluster showing any detectable fault. To repair this problem, replace instrument cluster microprocessor.

TESTING BY SYMPTOM

No Instruments Function

Check for blown fuse, open voltage supply, open ground, internal fault in microprocessor, or poor contact in 30-pin or 16-pin connector.

Information Module Clock Does Not Function

Check for open voltage supply, defective module, open 5-volt signal, or open ground.

Panel Lighting Does Not Function

Check for open ground, defective rheostat, or burned out bulbs.

Fuel Gauge Reads Too Low
Check if ignition was on or engine running during fuel filling.

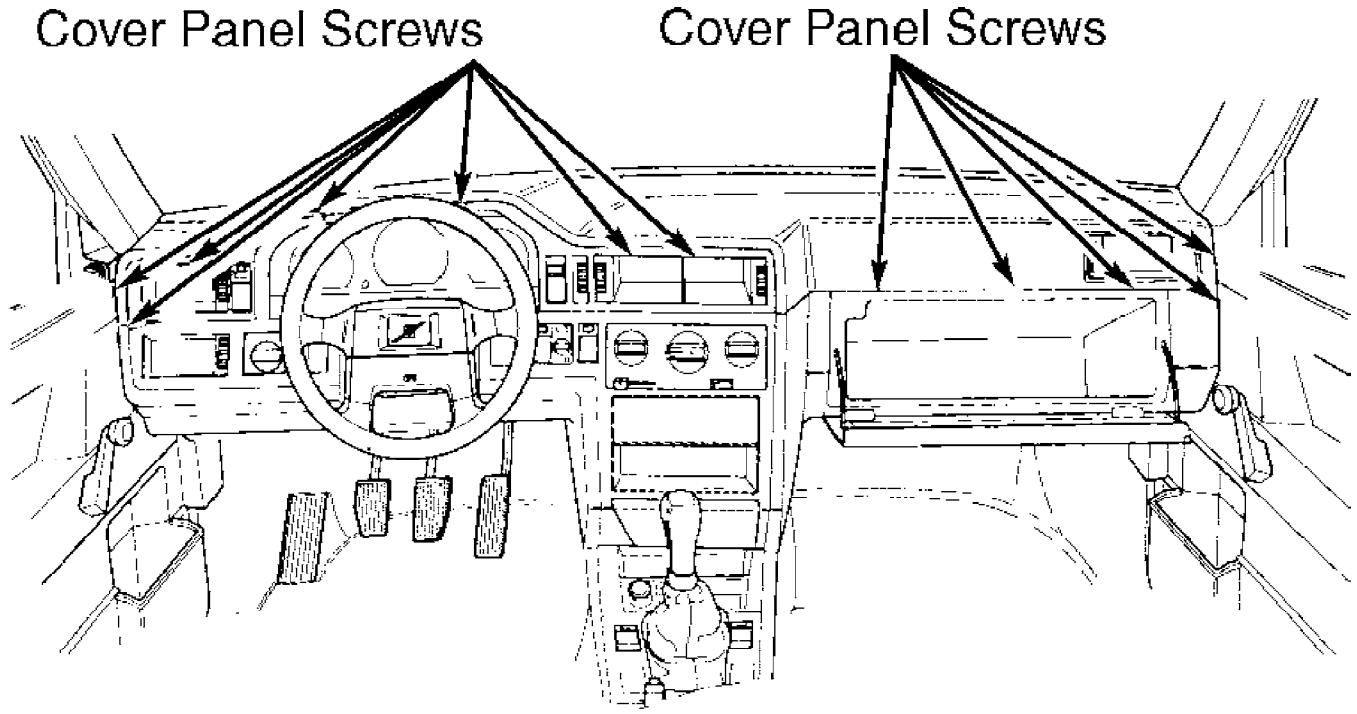
REMOVAL & INSTALLATION

INSTRUMENT CLUSTER

NOTE: ALWAYS disconnect negative battery cable before removing ANY instrument panel components.

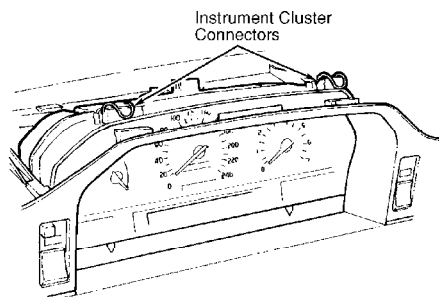
Removal & Installation

Disconnect negative battery cable. Remove 12 cover panel screws holding instrument panel. See Fig. 8. Disconnect 2 instrument cluster connectors by releasing spring catches on upper edge of cluster. See Fig. 9. To install, reverse removal procedure.



93J82080

Fig. 8: Removing Cover Panel Screws
Courtesy of Volvo Cars of North America.



93G82079

Fig. 9: Removing Instrument Cluster
Courtesy of Volvo Cars of North America.

WIRING DIAGRAMS

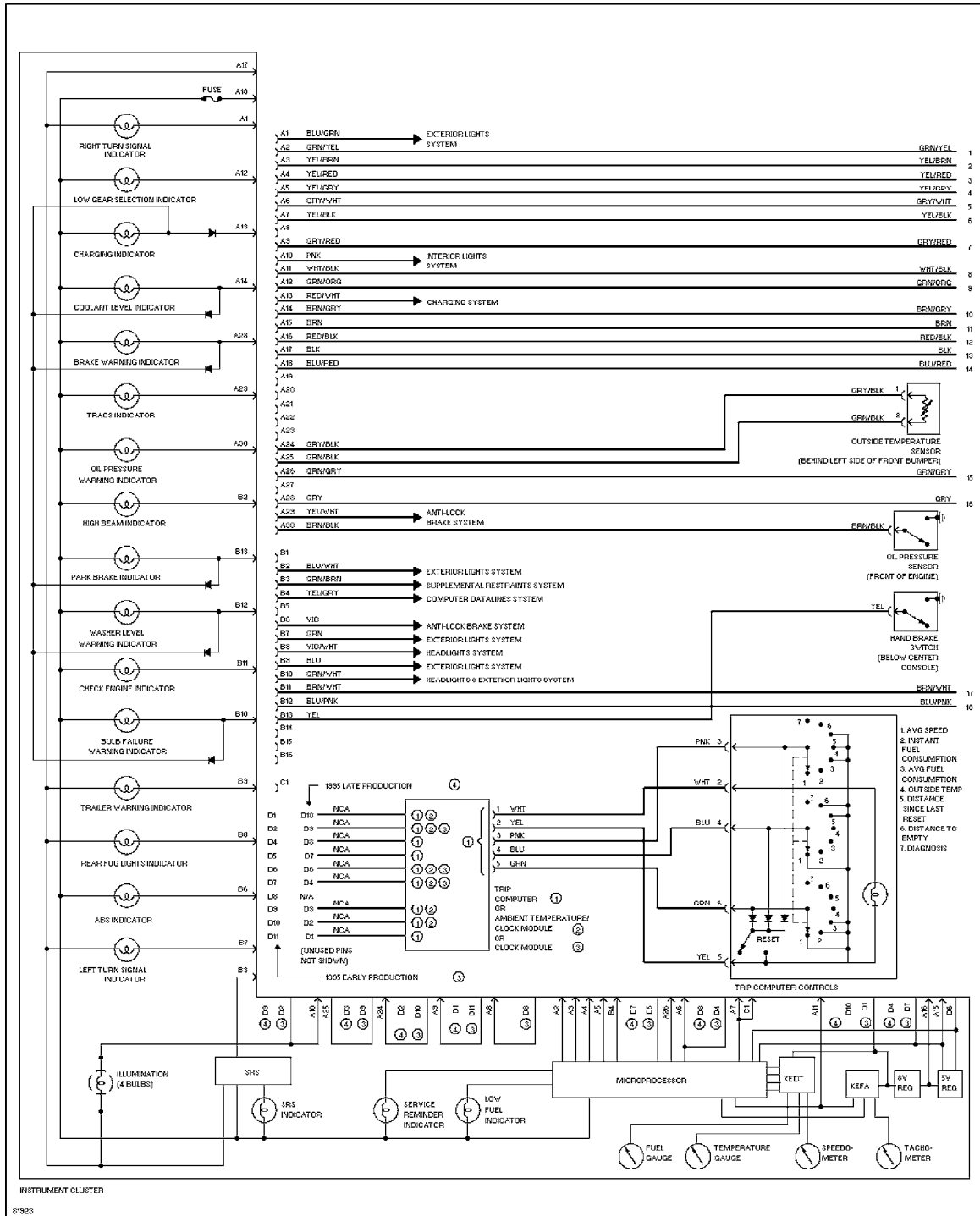


Fig. 10: Instrument Panel Wiring Diagram (1995 - With VDO - 1 Of 2)

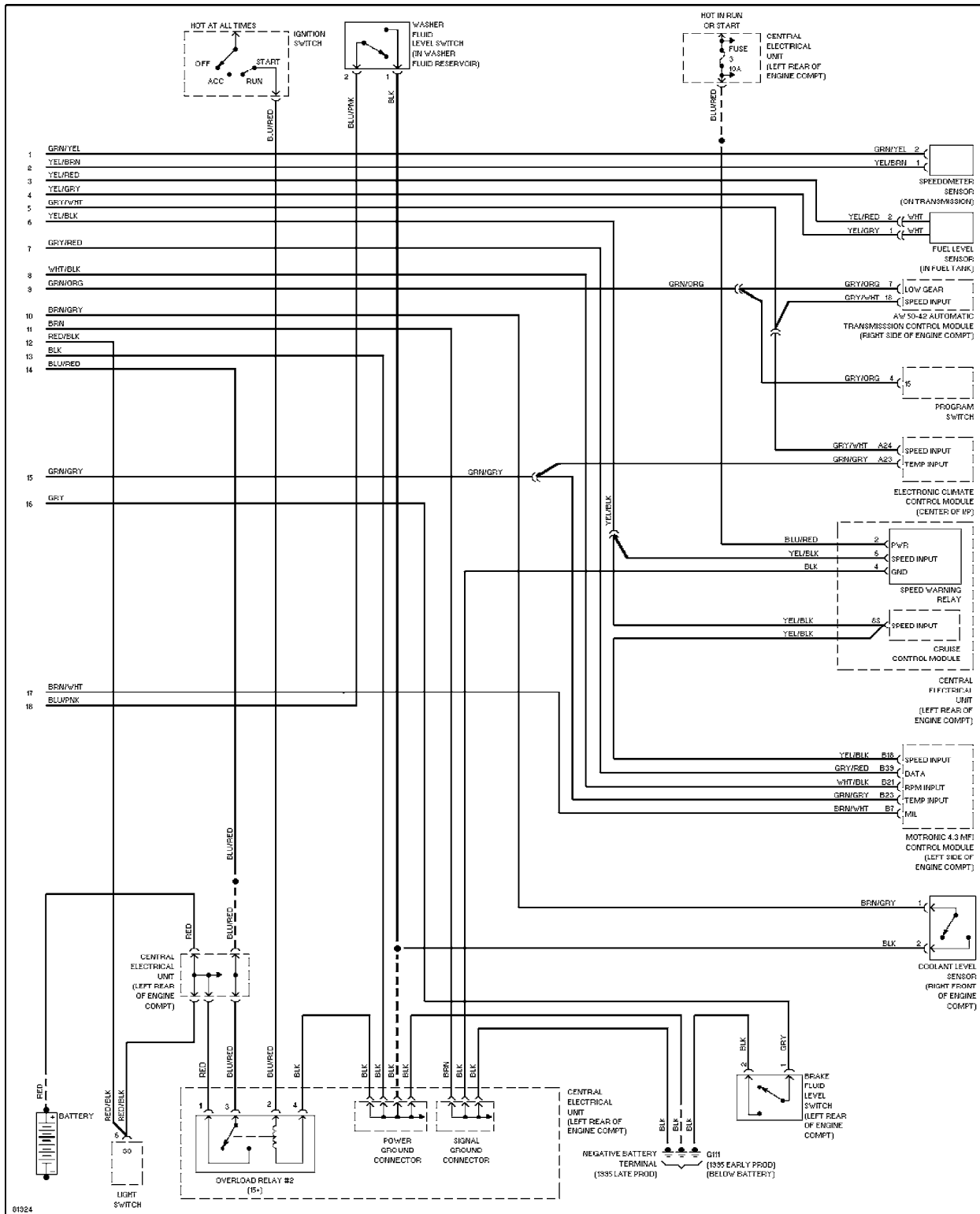


Fig. 11: Instrument Panel Wiring Diagram (1995 - With VDO - 2 Of 2)

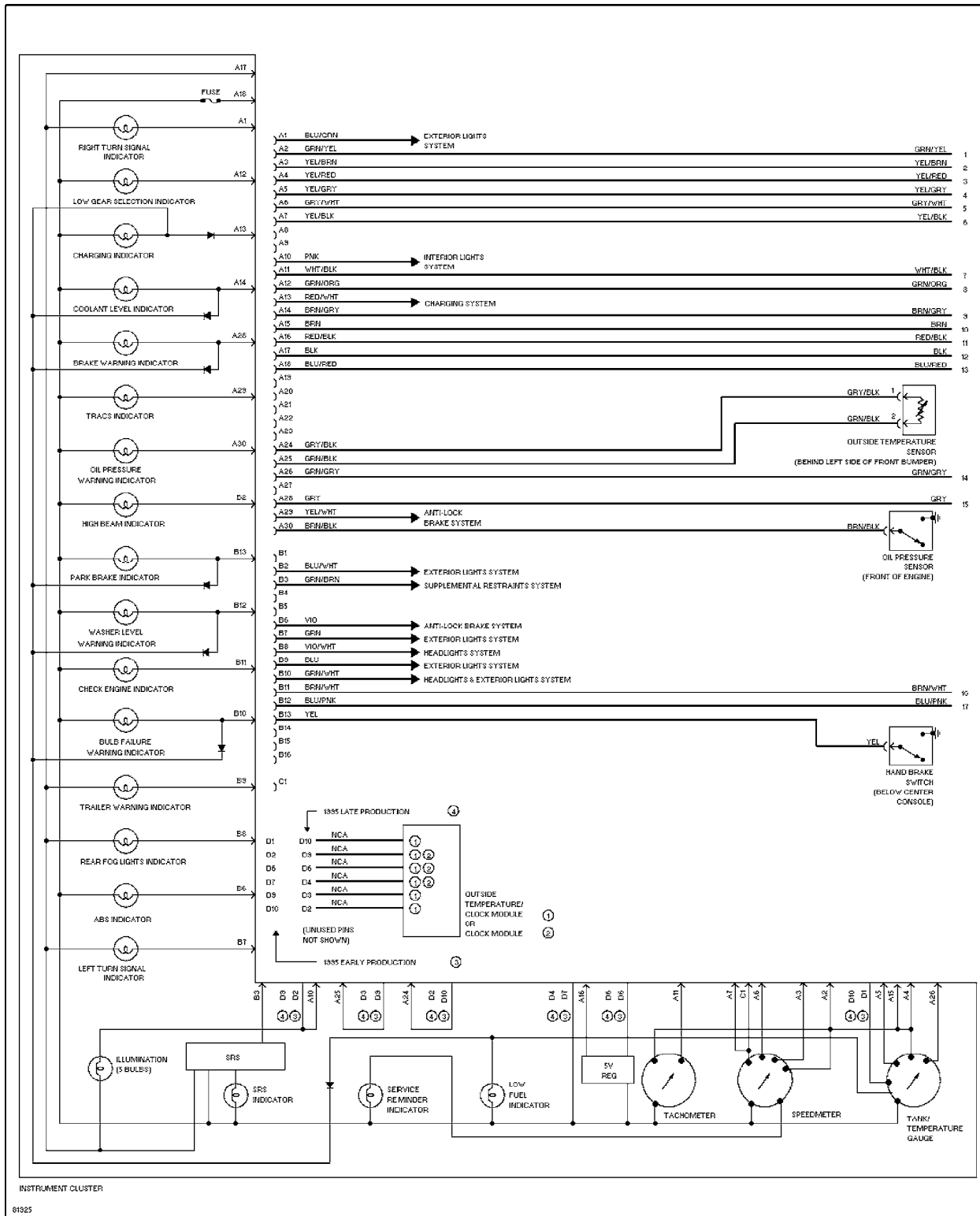


Fig. 12: Instrument Panel Wiring Diagram (1995 - With Yasaki - 1 of 2)

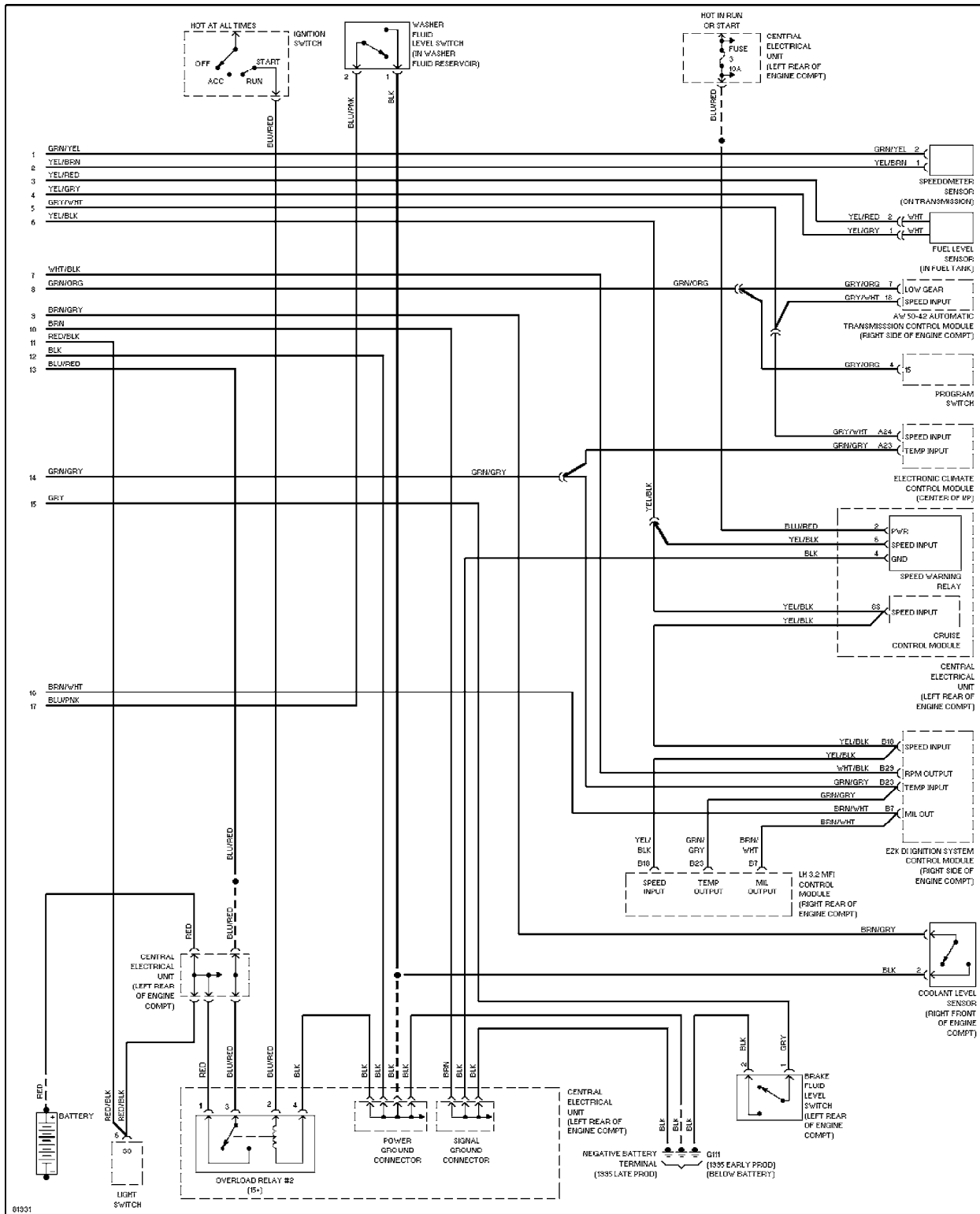


Fig. 13: Instrument Panel Wiring Diagram (1995 - With Yasaki - 2 Of 2)

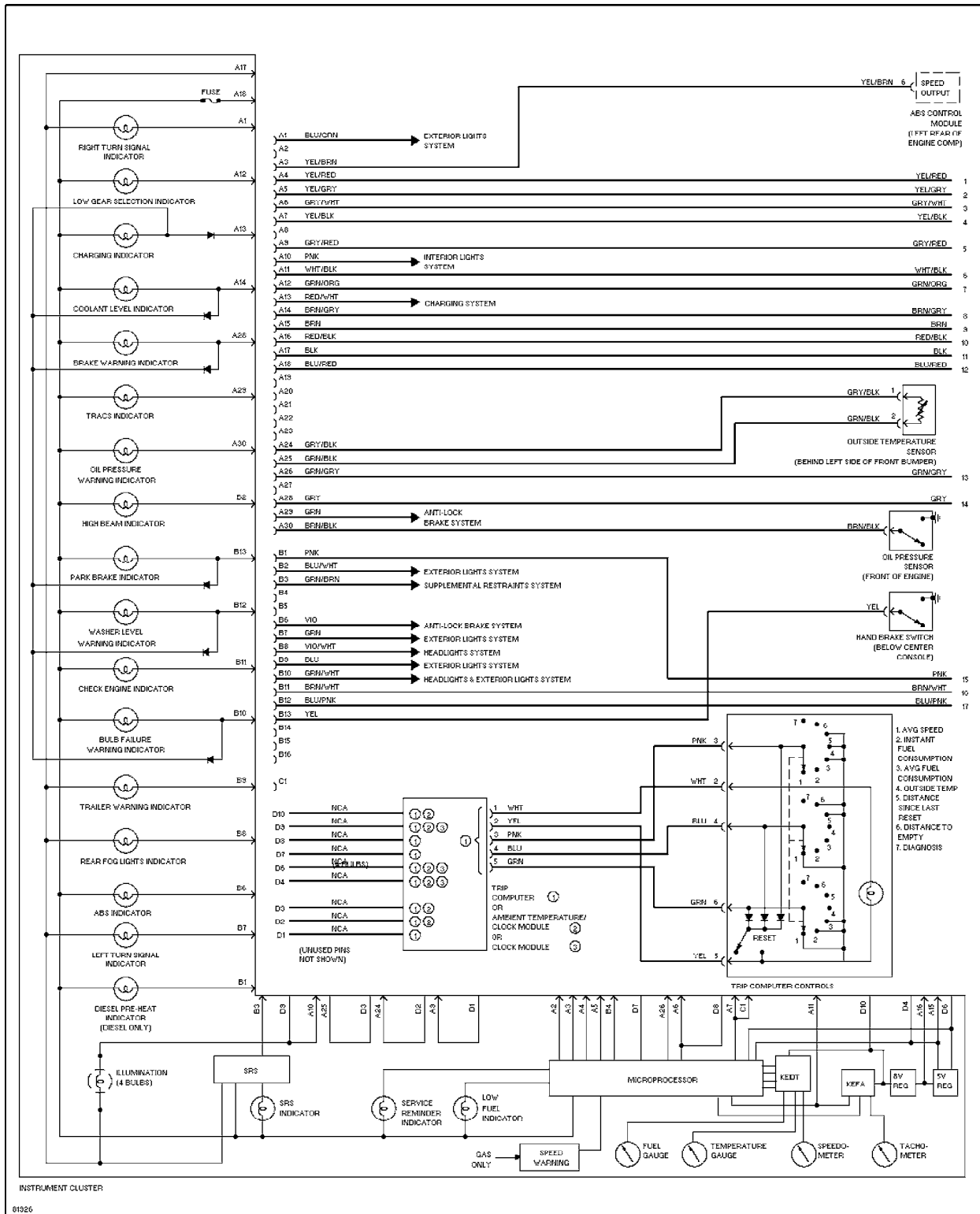


Fig. 14: Instrument Panel Wiring Diagram (1996 - With VDO - 1 Of 2)

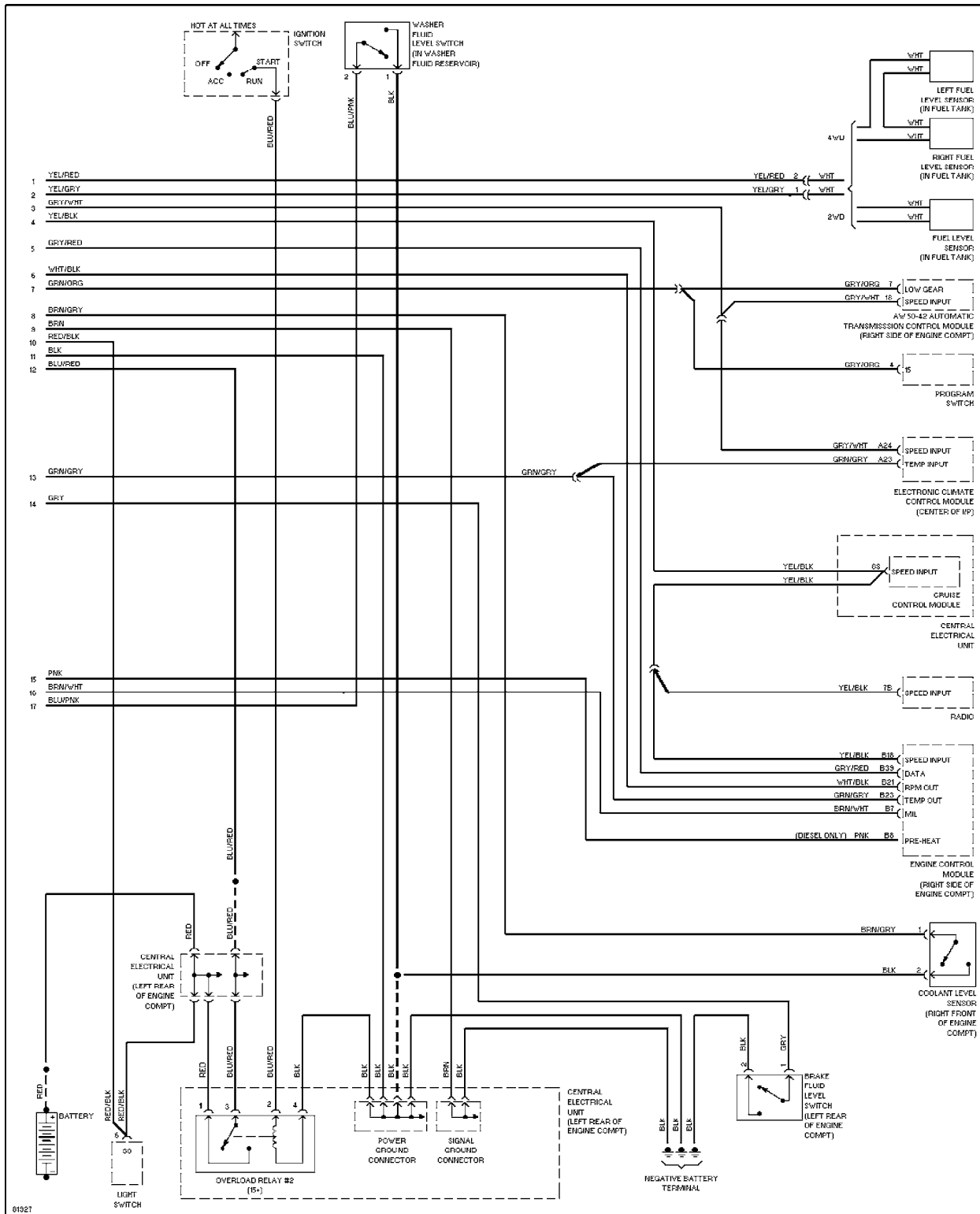


Fig. 15: Instrument Panel Wiring Diagram (1996 - With VDO - 2 Of 2)

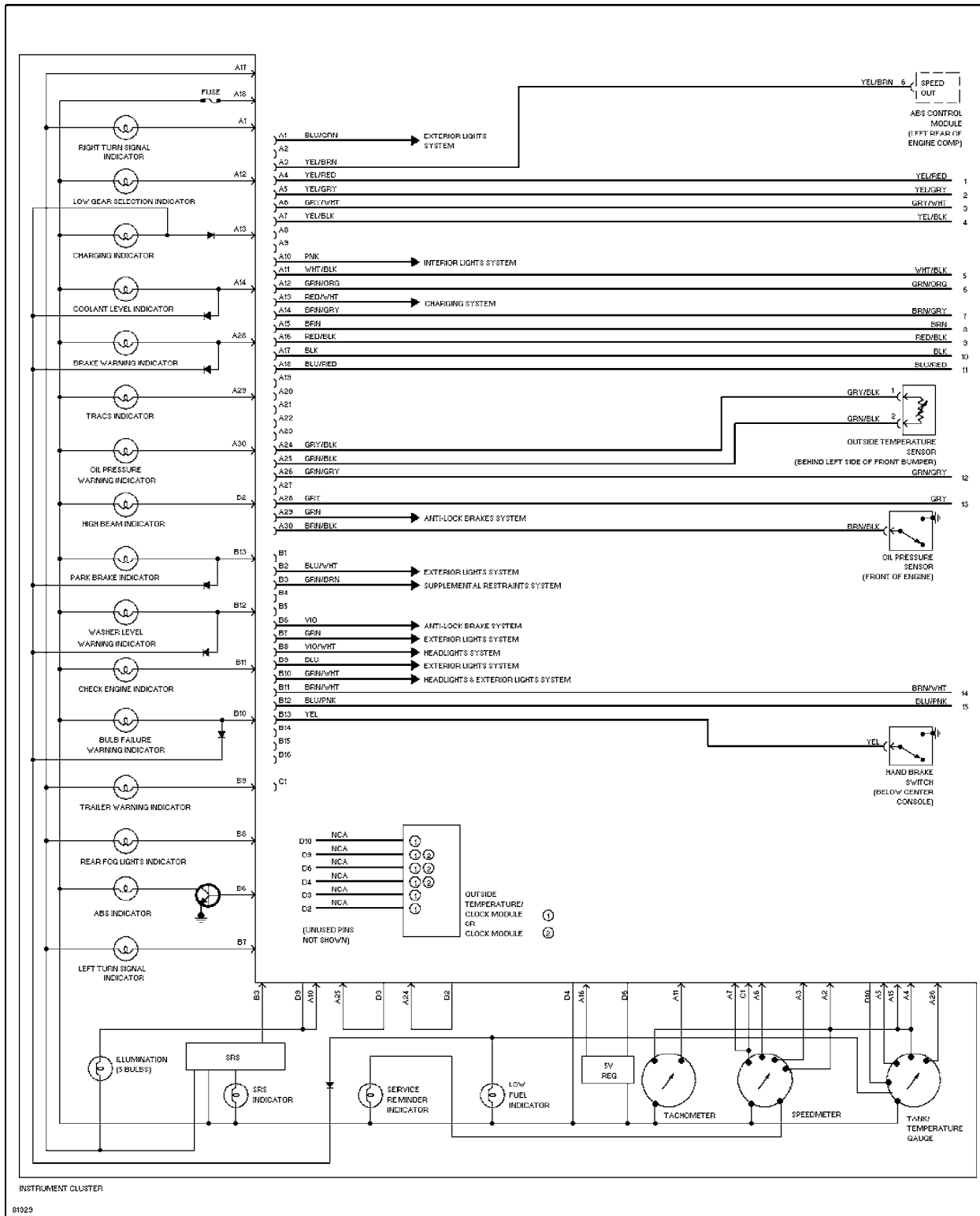


Fig. 16: Instrument Panel Wiring Diagram (1996 - With Yasaki - 1 of 2)

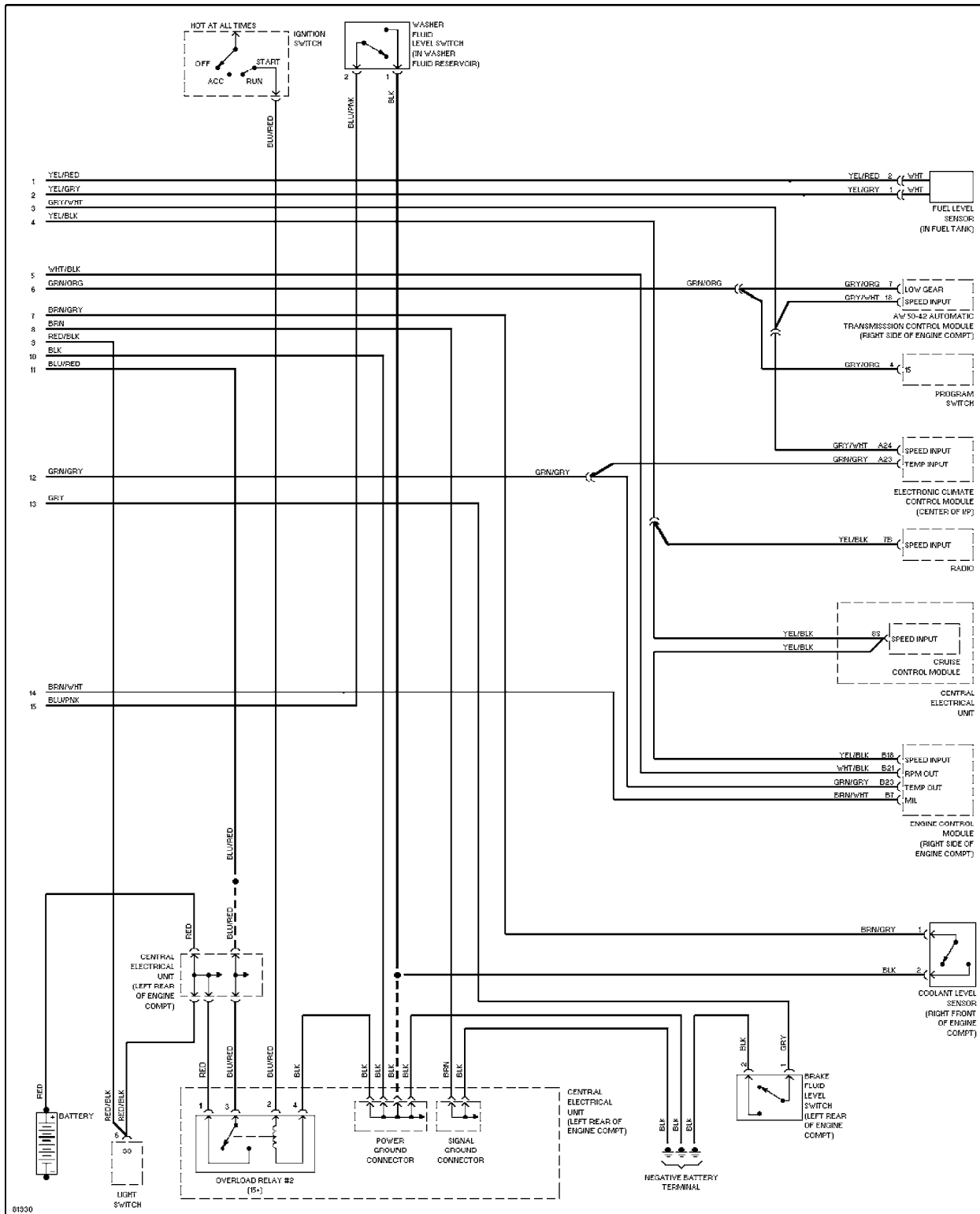


Fig. 17: Instrument Panel Wiring Diagram (1996 - With Yasaki - 2
Of 2)