

2.0L - Engine - Turbo Diesel PD Fuel Injection (DFI)/100 kW, code BHW,

from November 2003

Notes:

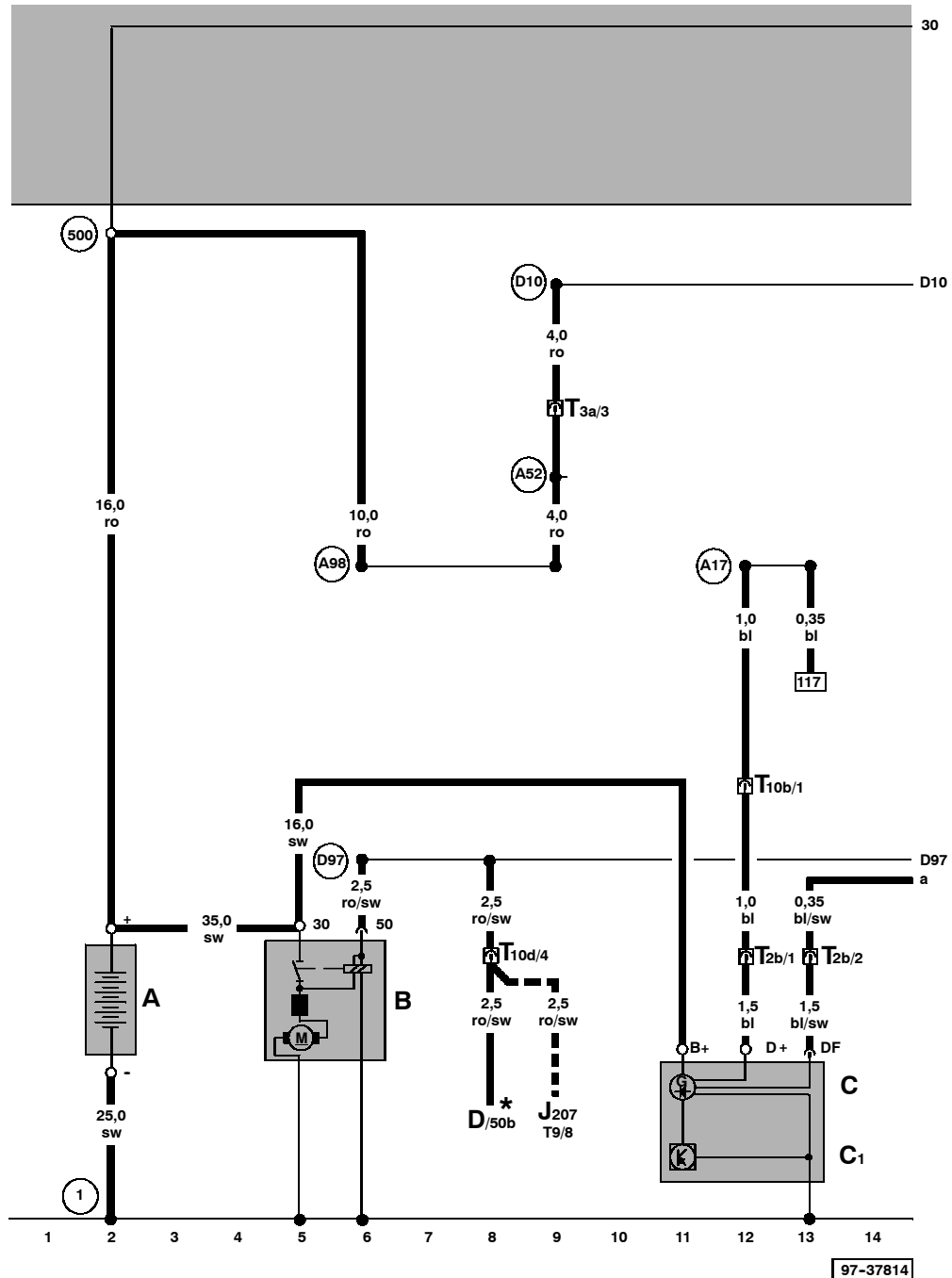
Information for

- ◆ *Relay and fuse arrangements*
 - ◆ *Connector arrangements*
 - ◆ *Control Modules and Relays*
 - ◆ *Ground connections*
- ⇒ *Component Locations!*

Information for

- ◆ *Troubleshooting Procedures*
- ⇒ *Guided Fault Finding using VAS 5051/5052*

Battery, Starter, Generator, Voltage Regulator



- A - Battery
- B - Starter
- C - Generator (GEN)
- C1 - Voltage Regulator (VR)
- D - Ignition/Starter Switch
- J207 - Starting Interlock Relay
- T2b - Double connector, black, on engine block right
- T3a - 3-Pin connector, white, on protective housing for control module, in engine compartment, left
- T9 - 9-Pin connector, black,
- T10b - 10-Pin connector, black, on protective housing for control module, in engine compartment, left
- T10d - 10-Pin connector, brown, on protective housing for control module, in engine compartment, left

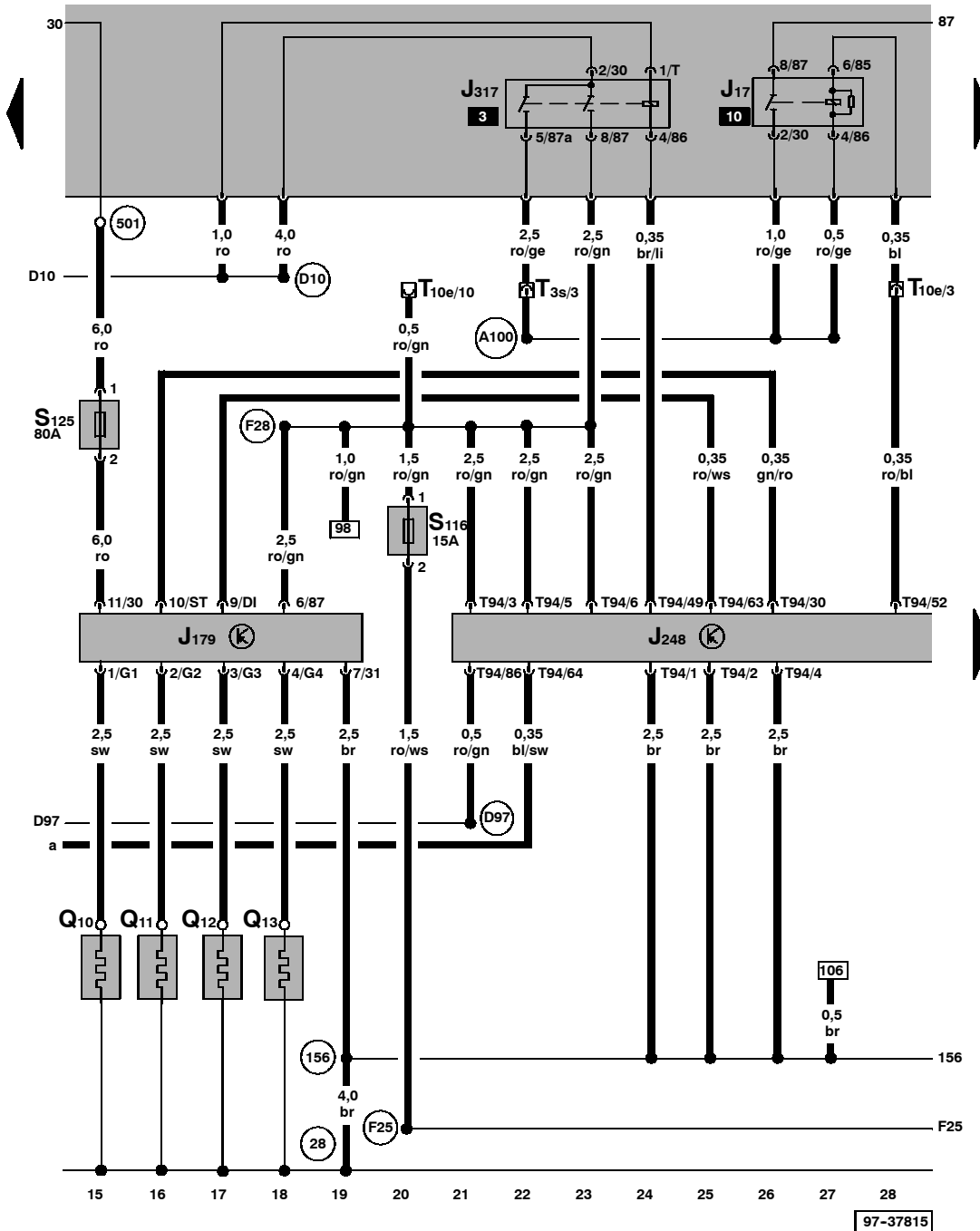
- 1 - Ground strap, battery to body
- 500 - Threaded connection -1- (30) on the relay plate
- A17 - wire connection (61), in instrument panel wiring harness
- A52 - Plus Connection 2 (30) (in instrument panel wiring harness)
- A98 - Plus connector -4- (30), in instrument panel wiring harness
- D10 - plus connection (30), in right front wiring harness
- D97 - Wire connection (50), in engine compartment wiring harness, right

- * - manual transmission only
- - - - automatic transmission only

ws = white
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97-37814

Automatic Glow Time Control Module, Diesel Direct Fuel Injection Engine Control Module, Fuel Pump Relay, Glow Plug



- J17 - Fuel Pump (FP) Relay
- J179 - Automatic Glow Time Control Module
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- J317 - Power Supply (Terminal 30, B+) Relay
- S116 - Fuse for injectors
- S125 - Fuse for glow plug
- T3s - 3-Pin connector
- T10e - 10-Pin connector, orange, on protective housing for control module, in engine compartment, left
- T94 - 94-Pin connector
- Q10 - Glow Plug 1
- Q11 - Glow Plug 2
- Q12 - Glow Plug 3
- Q13 - Glow Plug 4

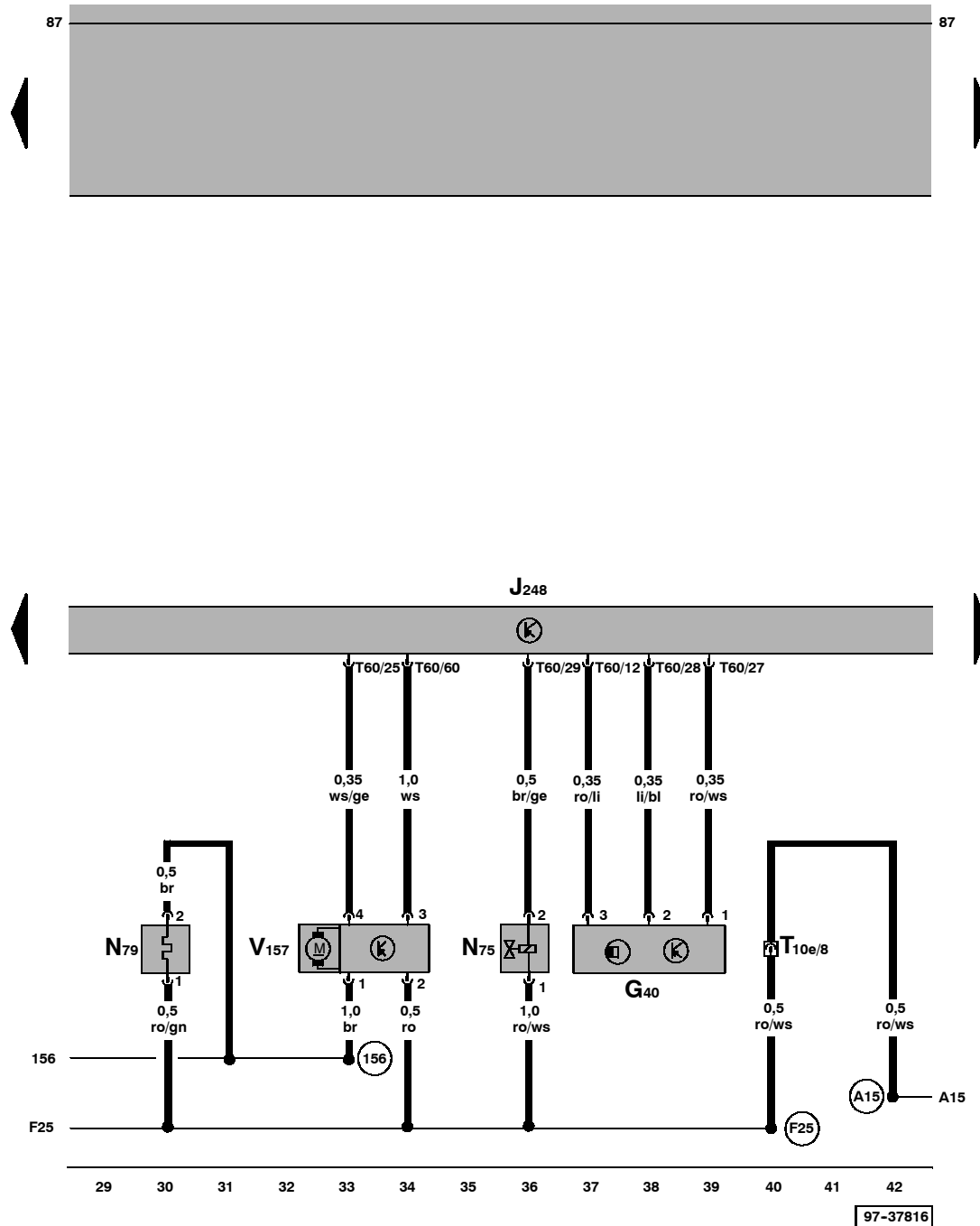
- (28) - Ground connection, on firewall
- (156) - Ground connection, in Diesel Direct Fuel Injection (DFI) wiring harness
- (501) - Threaded connection -2- (30) on the relay plate
- (A100) - Connector -2- (87), in instrument panel wiring harness
- (D10) - plus connection (30), in right front wiring harness
- (D97) - Wire connection (50), in engine compartment wiring harness, right
- (F25) - Wire connection -1-, in Diesel Direct Fuel Injection (DFI) system wiring harness
- (F28) - Wire connection -3-, in Diesel Direct Fuel Injection (DFI) system wiring harness

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Diesel Direct Fuel Injection Engine Control Module, Camshaft Position Sensor, Wastegate Bypass Regulator Valve

- G40 - Camshaft Position (CMP) Sensor
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- N75 - Wastegate Bypass Regulator Valve
- N79 - Positive Crankcase Ventilation (PCV) Heating Element
- T10e - 10-Pin connector, orange, on protective housing for control module, in engine compartment, left
- T60 - 60-Pin connector
- V157 - Motor for intake flap

- (156) - Ground connection, in Diesel Direct Fuel Injection (DFI) wiring harness
- (A15) - plus connection (15) in instrument panel wiring harness
- (F25) - Wire connection -1-, in Diesel Direct Fuel Injection (DFI) system wiring harness



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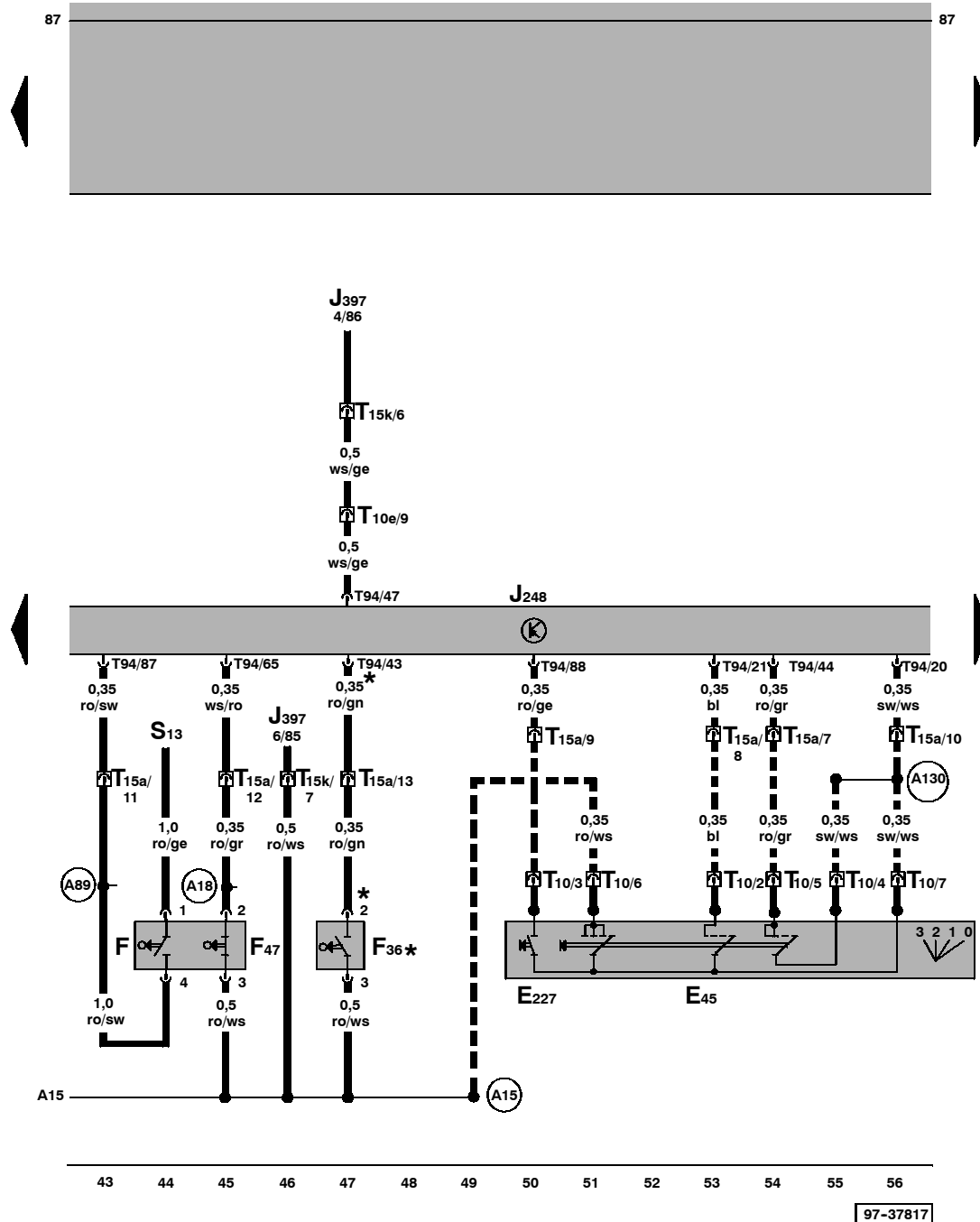
Diesel Direct Fuel Injection Engine Control Module, Cruise Control Switch, Brake Light Switch, Clutch Vacuum Venr Valve Switch

- E45 - Cruise Control Switch
- E227 - Button for cruise control (set)
- F - Brake Light Switch
- F36 - Clutch Vacuum Vent Valve Switch
- F47 - Brake Pedal Switch (cruise control/Diesel Direct Fuel Injection)
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- J397 - Relay for Radiator Fan Afterrun
- S13 - Fuse
- T10 - 10-Pin connector, black
- T10e - 10-Pin connector, orange, on protective housing for control module, in engine compartment, left
- T15a - 15-Pin connector, white, on protective housing for control module, in engine compartment, left
- T15k - 15-Pin connector, grey
- T94 - 94-Pin connector

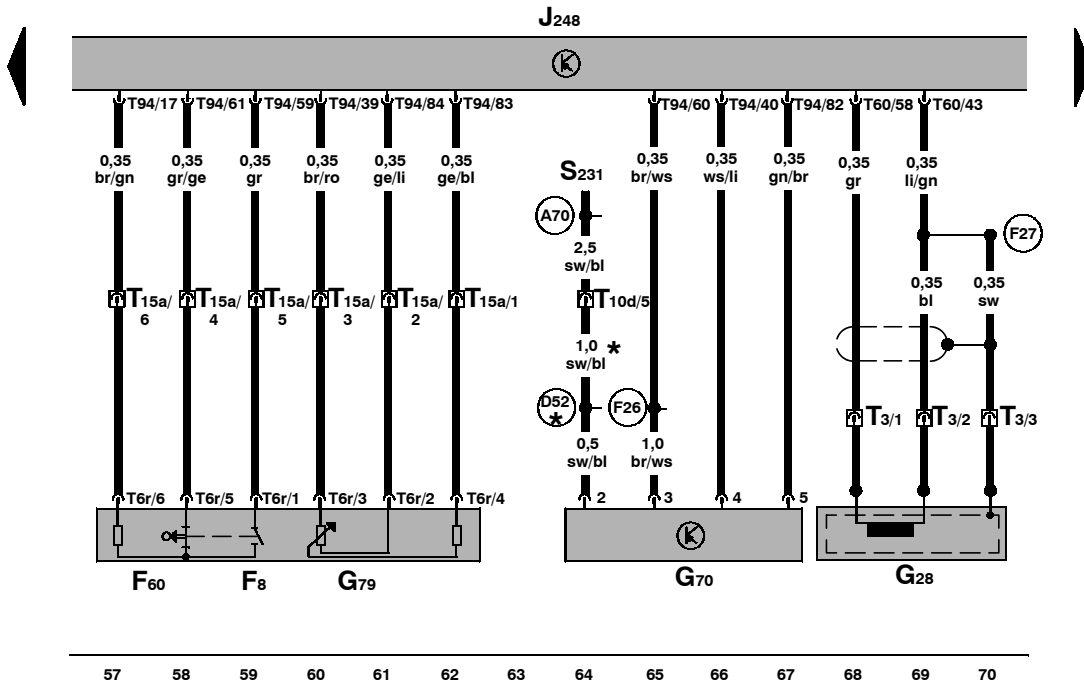
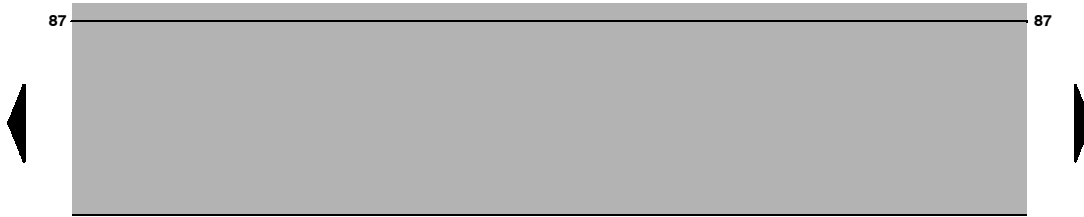
- (A15) - plus connection (15) in instrument panel wiring harness
- (A18) - wire connection (54), in instrument panel wiring harness
- (A89) - Connection 2 (54) (in instrument panel wiring harness)
- (A130) - Connection for Cruise Control (instrument panel wiring harness)

- * - manual transmission only
- - cruise control only

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Diesel Direct Fuel Injection Engine Control Module, Kick Down Switch, Closed Throttle Position Switch, Mass Air Flow Sensor, Engine Speed Sensor



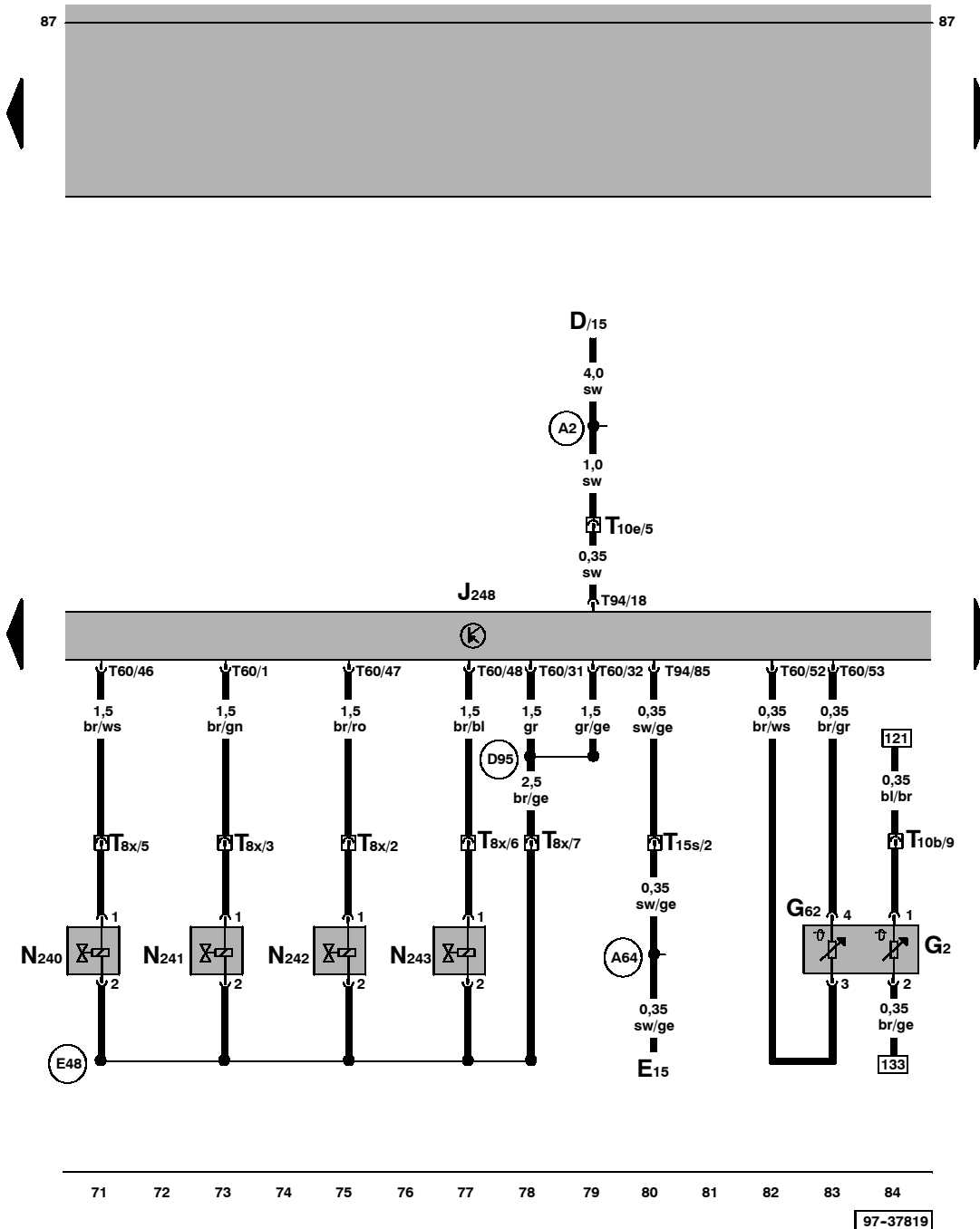
- F8 - Kick Down Switch
- F60 - Closed Throttle Position (CTP) Switch
- G28 - Engine Speed (RPM) Sensor
- G70 - Mass Air Flow (MAF) Sensor
- G79 - Throttle Position (TP) Sensor
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- S231 - Fuse in fuse holder
- T3 - 3-Pin connector
- T6r - 6-Pin connector, black
- T10d - 10-Pin connector, brown, on protective housing for control module, in engine compartment, left
- T15a - 15-Pin connector, white, on protective housing for control module, in engine compartment, left
- T60 - 60-Pin connector
- T94 - 94-Pin connector

- (A70) - Connector (15a, fuse 231), in instrument panel wiring harness
- (D52) - plus connection (15a), in engine compartment wiring harness
- (F26) - Wire connection -2-, in Diesel Direct Fuel Injection (DFI) system wiring harness
- (F27) - Wire connection (screening), in Diesel Direct Fuel Injection (DFI) system wiring harness

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Diesel Direct Fuel Injection Engine Control Module, Engine Coolant Temperature Sensor, Valve for pump/injector



- D - Ignition/Starter Switch
- E15 - Rear window defogger switch
- G2 - Engine Coolant Temperature (ECT) Sensor
- G62 - Engine Coolant Temperature (ECT) Sensor
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- N240 - Valve for pump/injector, cylinder 1
- N241 - Valve for pump/injector, cylinder 2
- N242 - Valve for pump/injector, cylinder 3
- N243 - Valve for pump/injector, cylinder 4
- T8x - 8-Pin connector
- T10b - 10-Pin connector, black, on protective housing for control module, in engine compartment, left
- T10e - 10-Pin connector, orange, on protective housing for control module, in engine compartment, left
- T15s - 15-Pin connector, red, on protective housing for control module, in engine compartment, left
- T60 - 60-Pin connector
- T94 - 94-Pin connector

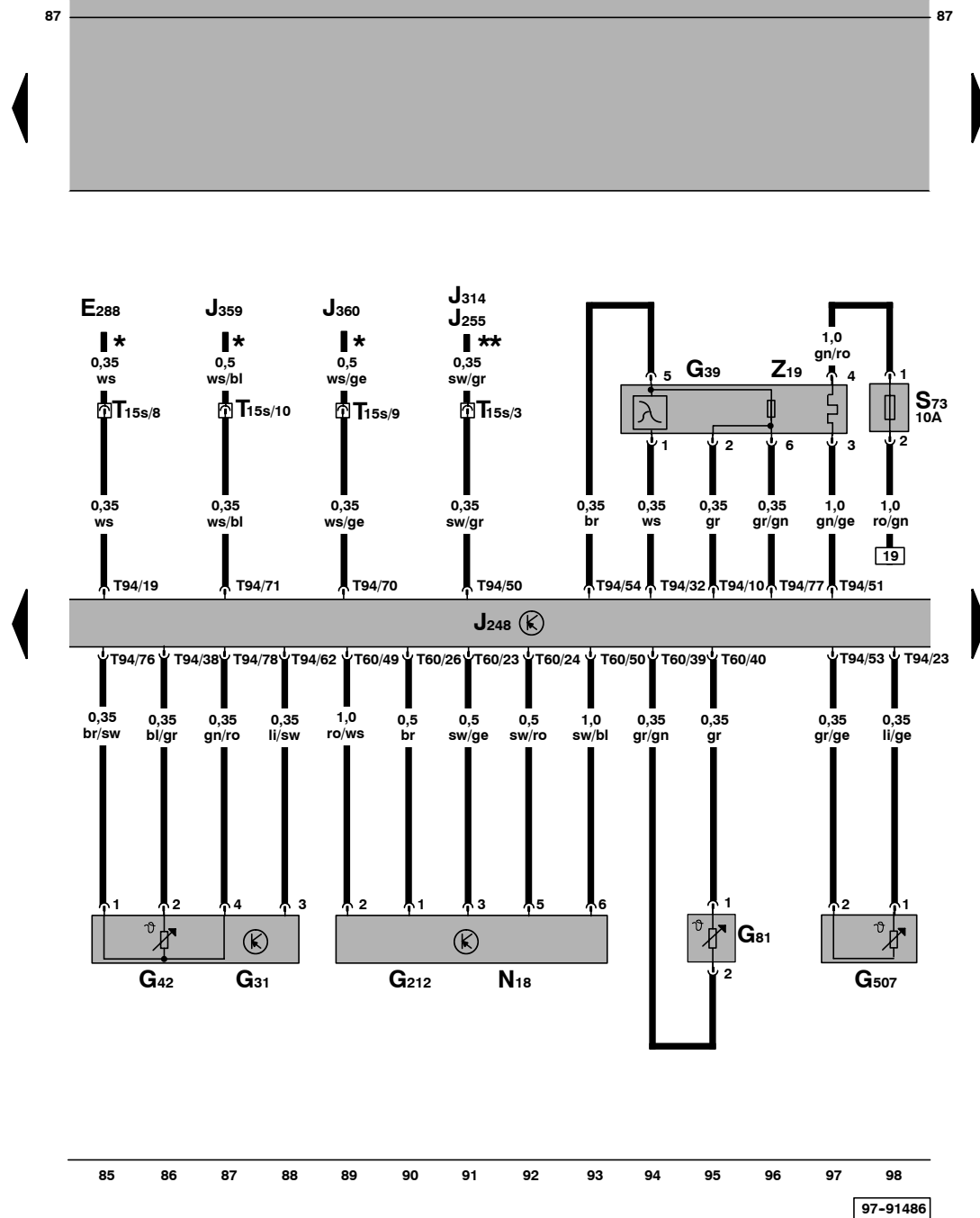
- (A2) - plus connection (15), in instrument panel wiring harness
- (A64) - Connector (30, idle boost), in instrument panel wiring harness
- (D95) - wire connection (injectors), in engine compartment wiring harness
- (E48) - Fuel Injector Connection (in fuel injection system wiring harness)

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Diesel Direct Fuel Injection Engine Control Module, Fuel Temperature Sensor, Charge Air Pressure Sensor, Potentiometer for EGR, Heated Oxygen Sensor

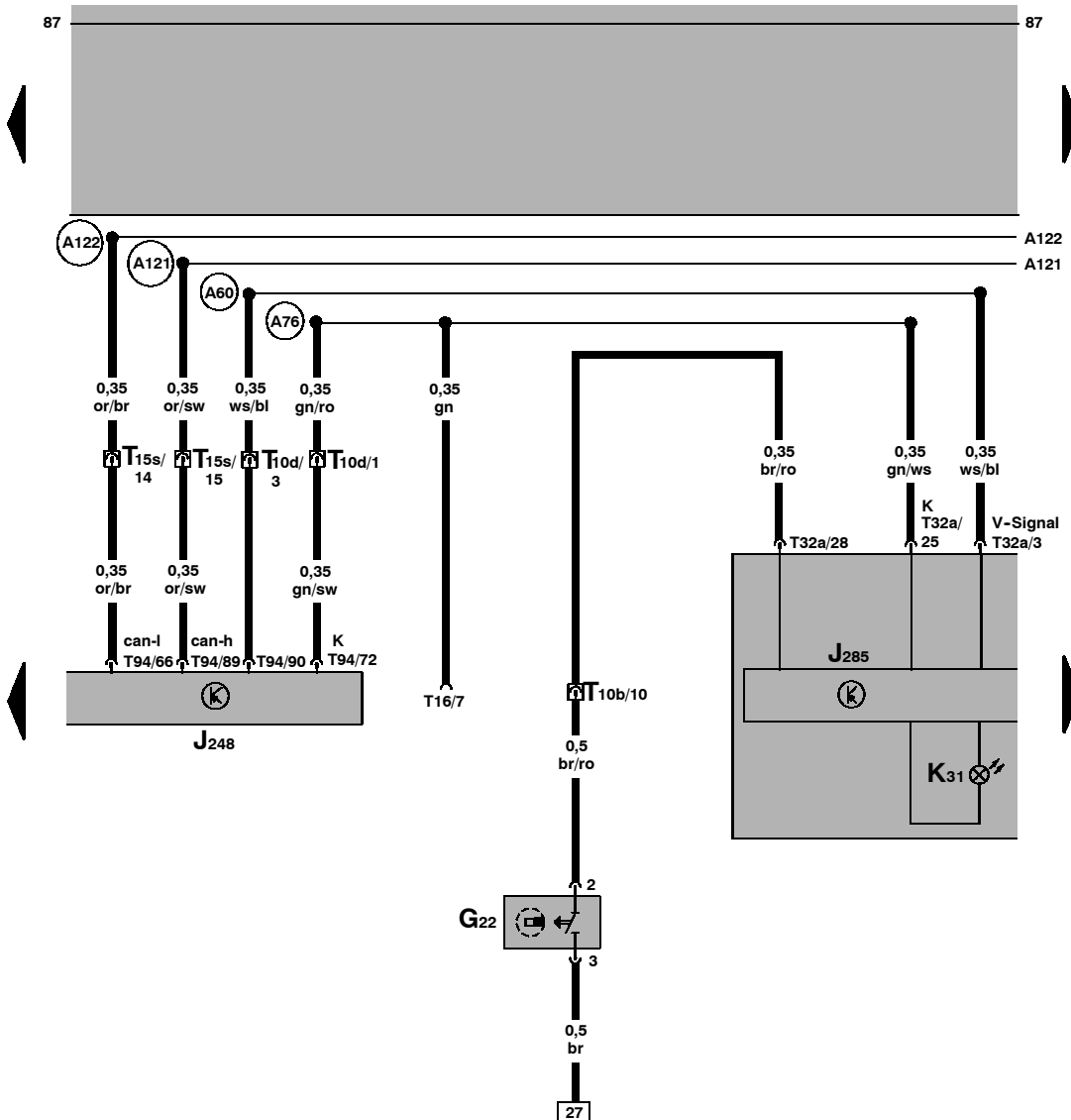
- E288 - Additional Heater Button (ECON)
- G31 - Charge Air Pressure Sensor
- G39 - Heated Oxygen Sensor (HO2S)
- G42 - Intake Air Temperature (IAT) Sensor
- G81 - Fuel Temperature Sensor
- G212 - Potentiometer for EGR
- G507 - Turbocharger (TC) Intake Temperature Sensor
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- J255 - Climatronic Control Module
- J314 - A/C Cut-Off Control Module
- J359 - Relay for Preheating Coolant, Low Heat Output
- J360 - Relay for Preheating Coolant, High Heat Output
- N18 - EGR Vacuum Regulator Solenoid Valve
- S73 - Heated Oxygen Sensor (HO2S) Circuit Breaker
- T15s - 15-Pin connector, red, on protective housing for control module, in engine compartment, left
- T60 - 60-Pin connector
- T94 - 94-Pin connector
- Z19 - Oxygen Sensor (O2S) Heater

- * - Not applicable to USA/CDN
- ** - air conditioning only



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Diesel Direct Fuel Injection Engine Control Module, Control module with indicator unit in instrument panel insert, Speedometer Vehicle Speed Sensor

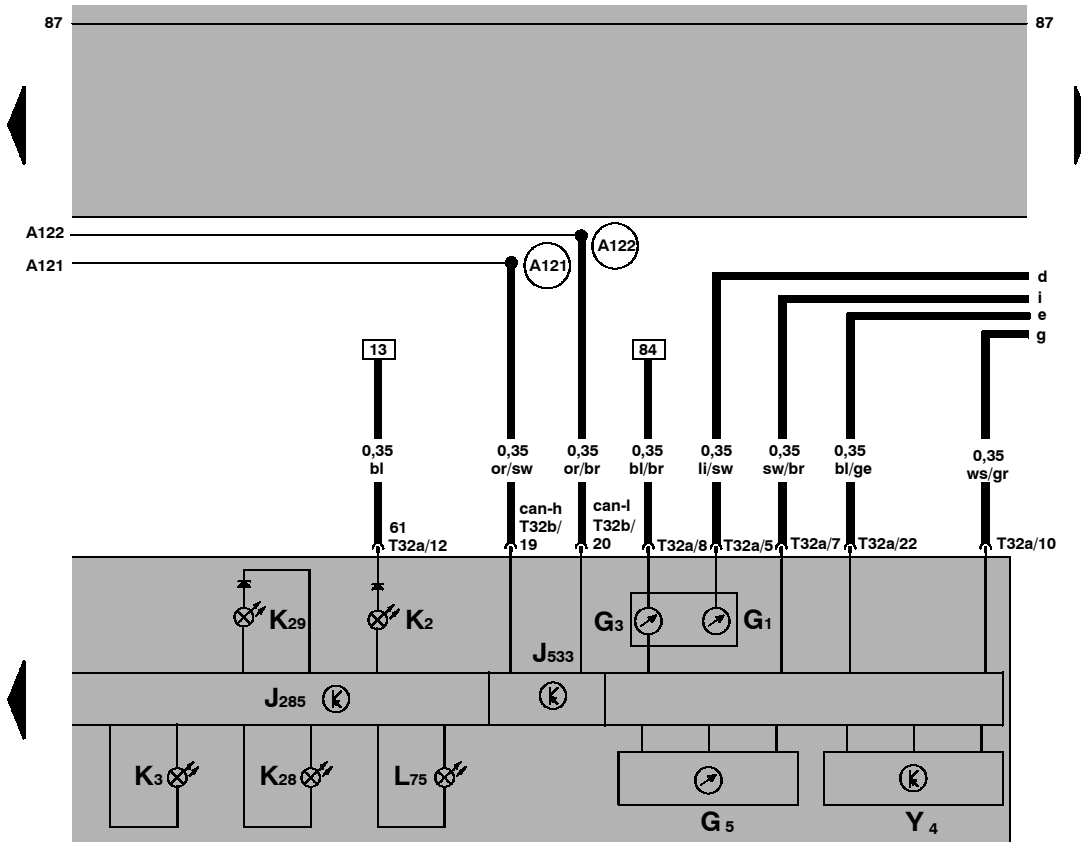


- G22 - Speedometer Vehicle Speed Sensor (VSS)
- J248 - Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM)
- J285 - Control module with indicator unit in instrument panel insert
- K31 - Cruise Control Indicator Light
- T10b - 10-Pin connector, black, on protective housing for control module, in engine compartment, left
- T10d - 10-Pin connector, brown, on protective housing for control module, in engine compartment, left
- T15s - 15-Pin connector, red, on protective housing for control module, in engine compartment, left
- T16 - 16-Pin Connector, data link connector (DLC),
- T32a - 32-Pin connector, blue, on instrument cluster
- T94 - 94-Pin connector



- (A60) - Wire connection (Vehicle speed signal), in instrument cluster wiring harness
- (A76) - Connector (K-diagnosis wire) in instrument panel wiring harness
- (A121) - Connection (high bus) in instrument panel wiring harness
- (A122) - Connection (low bus) in instrument panel wiring harness

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Control module with indicator unit in instrument panel insert, Fuel Gauge, Tachometer, Odometer Display



- G1 - Fuel Gauge
- G3 - Engine Coolant Temperature (ECT) Gauge
- G5 - Tachometer
- J285 - Control module with indicator unit in instrument panel insert
- J533 - Data Bus On Board Diagnostic Interface
- K2 - Generator (GEN) Warning Light
- K3 - Oil Pressure Warning Light
- K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
- K29 - Glow Plug Indicator Light
- L75 - Digital Display Light
- T32a - 32-Pin connector, blue, on instrument cluster
- T32b - 32-Pin connector, green, on instrument cluster
- Y4 - Odometer Display

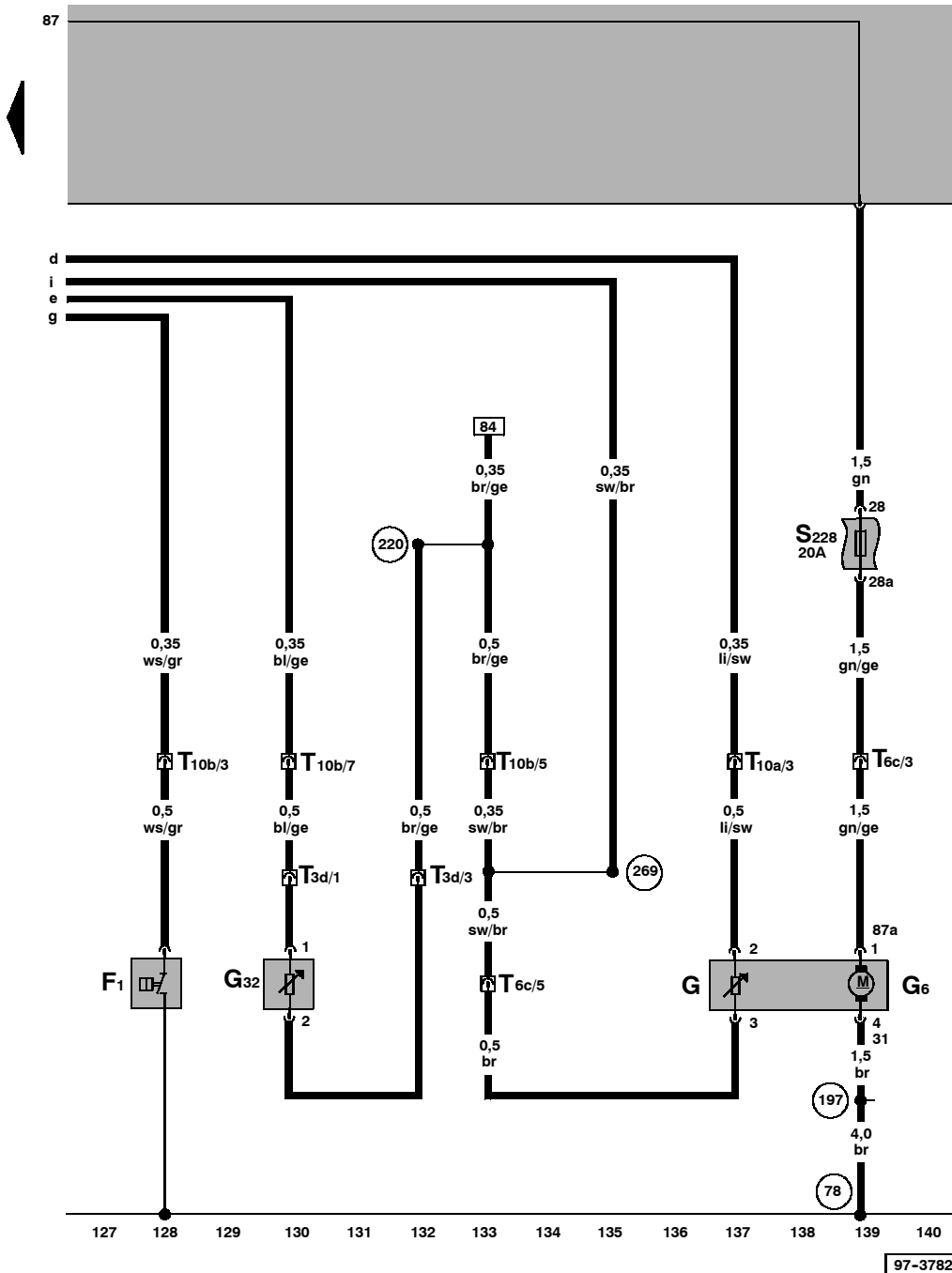
-  - Connection (high bus) in instrument panel wiring harness
-  - Connection (low bus) in instrument panel wiring harness

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97-37822

Sender for fuel gauge, Fuel Pump, Engine Coolant Level Sensor, Oil Pressure Switch



- F1 - Oil Pressure Switch
- G - Sender for fuel gauge
- G6 - Fuel Pump (FP)
- G32 - Engine Coolant Level (ECL) Sensor
- S228 - Fuse in fuse holder
- T3d - 3-Pin connector
- T6c - 6-Pin Connector, blue, connector station A-pillar, left
- T10a - 10-Pin Connector, brown, connector station A-pillar, left
- T10b - 10-Pin connector, black, on protective housing for control module, in engine compartment, left
- (78) - Ground Connection (lower right B-pillar)
- (197) - Ground connection -4-, in wiring harness rear
- (220) - Ground connection (sensor ground), in engine compartment wiring harness
- (269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness

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97-37823