

2.8L - Engine - Motronic Multiport Fuel Injection (MFI)/142 kW, code AHA,

from August 1998

Notes:

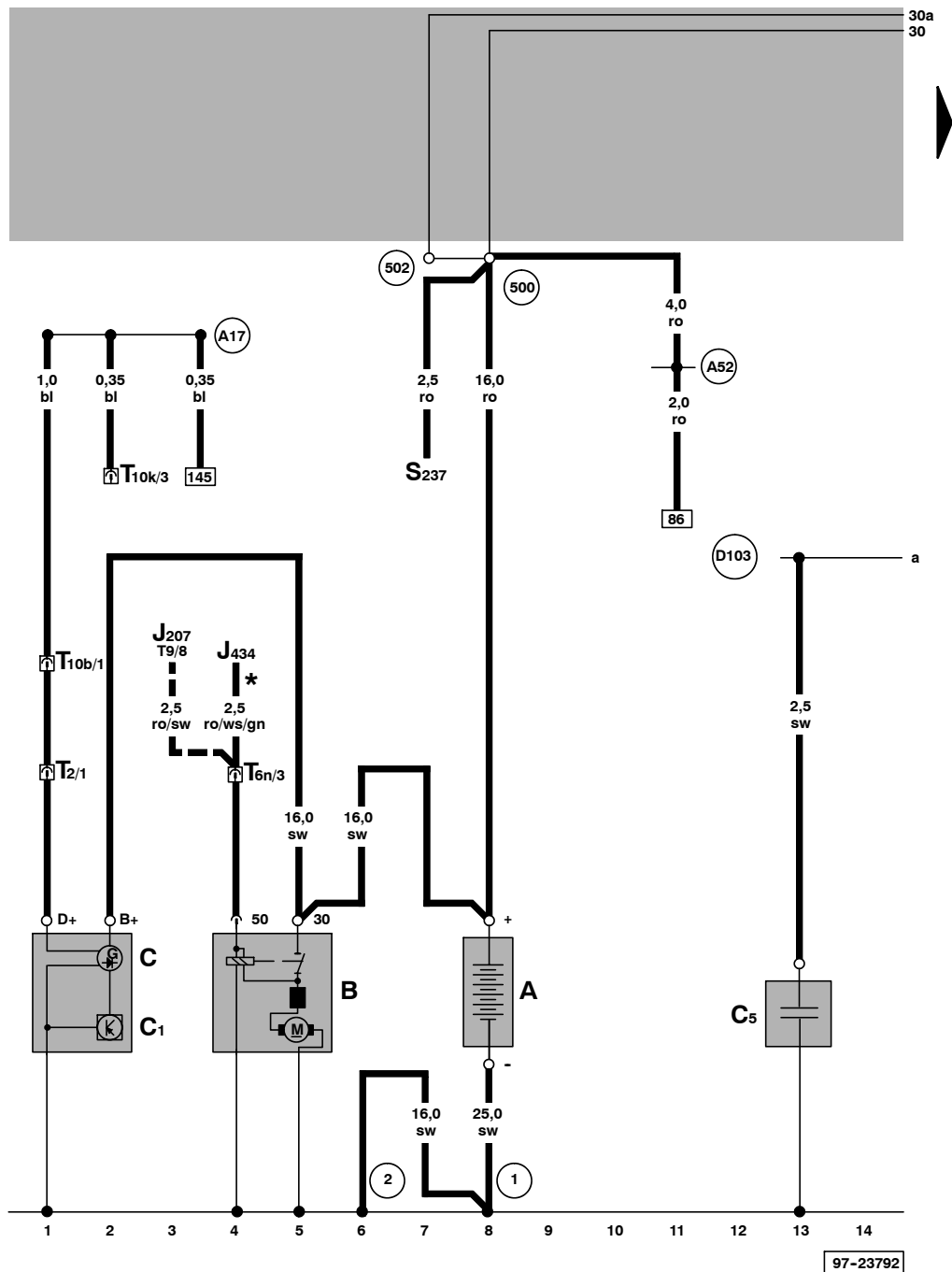
Information for

- ◆ *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 (GEN)



- A - Battery
- B - Starter
- C - Generator (GEN)
- C1 - Voltage Regulator (VR)
- C5 - Suppressor (Terminal 15), on engine
- J207 - Starting Interlock Relay
- J434 - Starting Interlock Relay (clutch position)
- S237- Fuse 37 in fuse holder
- T2 - Double Connector, on engine right
- T6n - 6-Pin Connector, red, on protective housing for control module, in engine compartment, left
- T9 - 9-Pin Connector, on Starting Interlock Relay
- T10b - 10-Pin Connector, black, on protective housing for control module, in engine compartment, left
- T10k - 10-Pin Connector, grey, coupling station, A-pillar, left

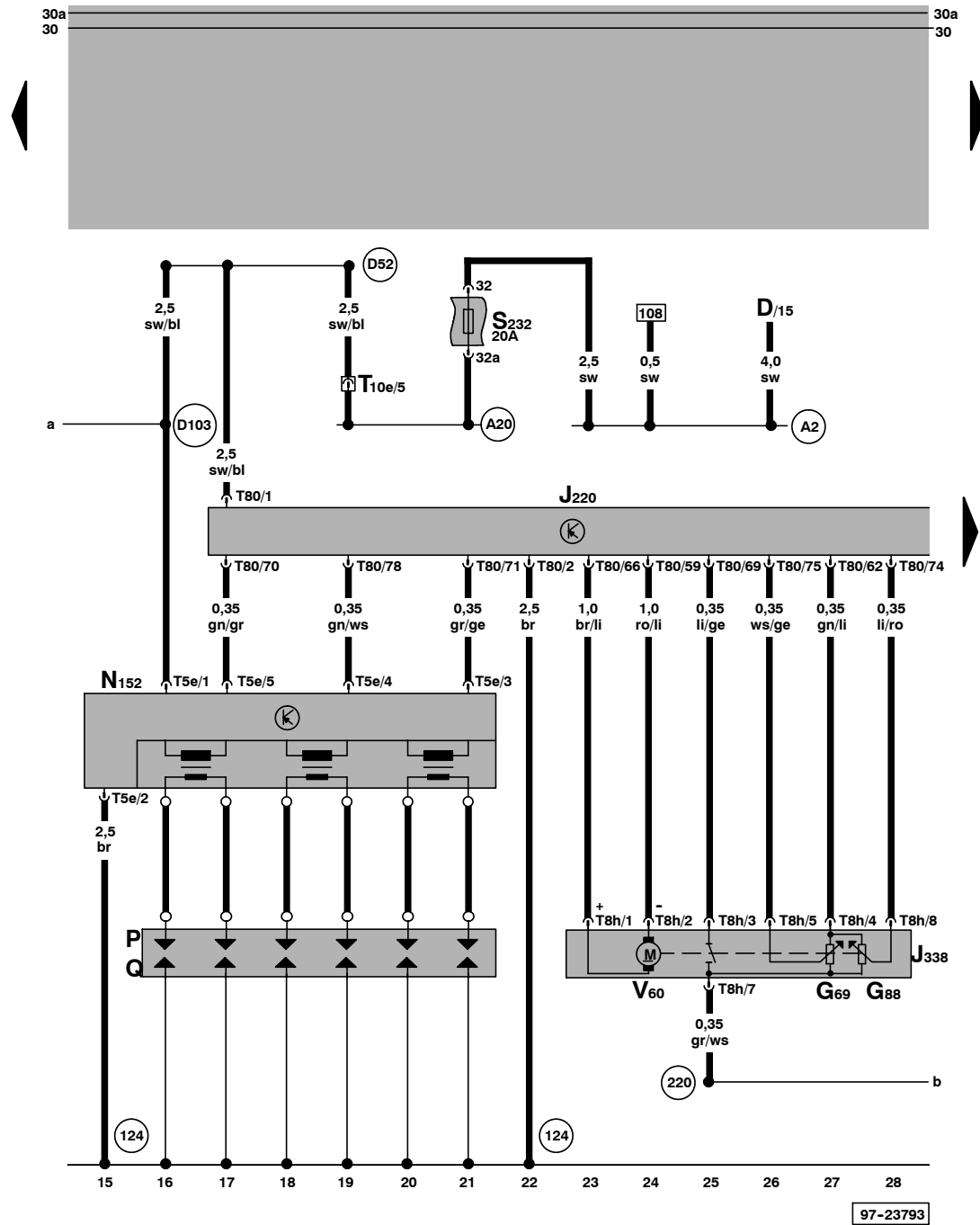
- ① - Ground strap, battery to body
- ② - Ground strap, transmission to body
- 500 - Screw Connection -1- (30), on relay panel
- 502 - Screw Connection (30a), on relay panel
- A17 - wire connection (61), in instrument panel wiring harness
- A52 - plus connection (30), in instrument panel wiring harness
- D103 - plus connection -3-, in engine compartment wiring harness
- * - manual transmission only
- automatic transmission only

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97-23792

Ignition System, Motronic Engine Control Module (ECM), Throttle Valve Control Module

- D - Ignition/Starter Switch
 - G69 - Throttle Position (TP) Sensor
 - G88 - Throttle Position (TP) Sensor
 - J220 - Motronic Engine Control Module (ECM)
 - J338 - Throttle Valve Control Module
 - N152 - Ignition Coil
 - P - Spark Plug Connectors
 - Q - Spark Plugs
 - S232 - Fuse 32 in fuse holder
 - T5e - 5-Pin Connector
 - T8h - 8-Pin Connector, on throttle valve control module
 - T10e - 6-Pin Connector, orange, on protective housing for control module, in engine compartment, left
 - T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)
 - V60 - Throttle Position (TP) Actuator
- (124) - ground connection, in engine compartment right wiring harness
 - (220) - Ground connection (sensor ground), in engine compartment wiring harness
 - (A2) - plus connection (15), in instrument panel wiring harness
 - (A20) - wire connection (15a), in instrument panel wiring harness
 - (D52) - plus connection (15a), in engine compartment wiring harness
 - (D103) - plus connection -3-, in engine compartment wiring harness

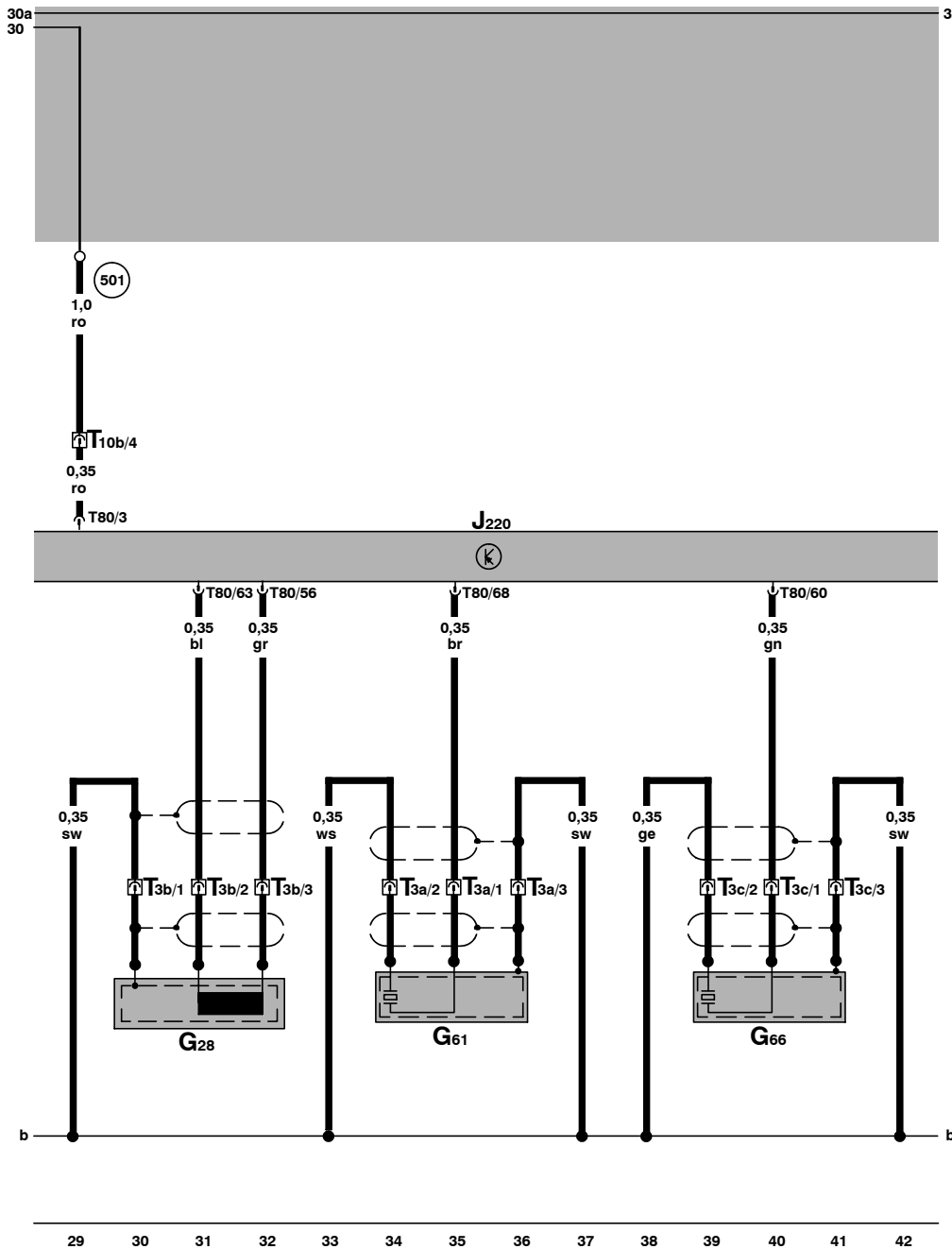


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Motronic Engine Control Module (ECM), Engine Speed (RPM) Sensor, Knock Sensor (KS)

- G28 - Engine Speed (RPM) Sensor
- G61 - Knock Sensor (KS) 1
- G66 - Knock Sensor (KS) 2
- J220 - Motronic Engine Control Module (ECM)
- T3a - 3-Pin Connector, blue, on firewall, left
- T3b - 3-Pin Connector, grey, on firewall, left
- T3c - 3-Pin Connector, blue, on firewall, left
- T10b - 6-Pin Connector, black, on protective housing for control module, in engine compartment, left
- T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)

(501) - Screw Connection -2- (30), on relay panel



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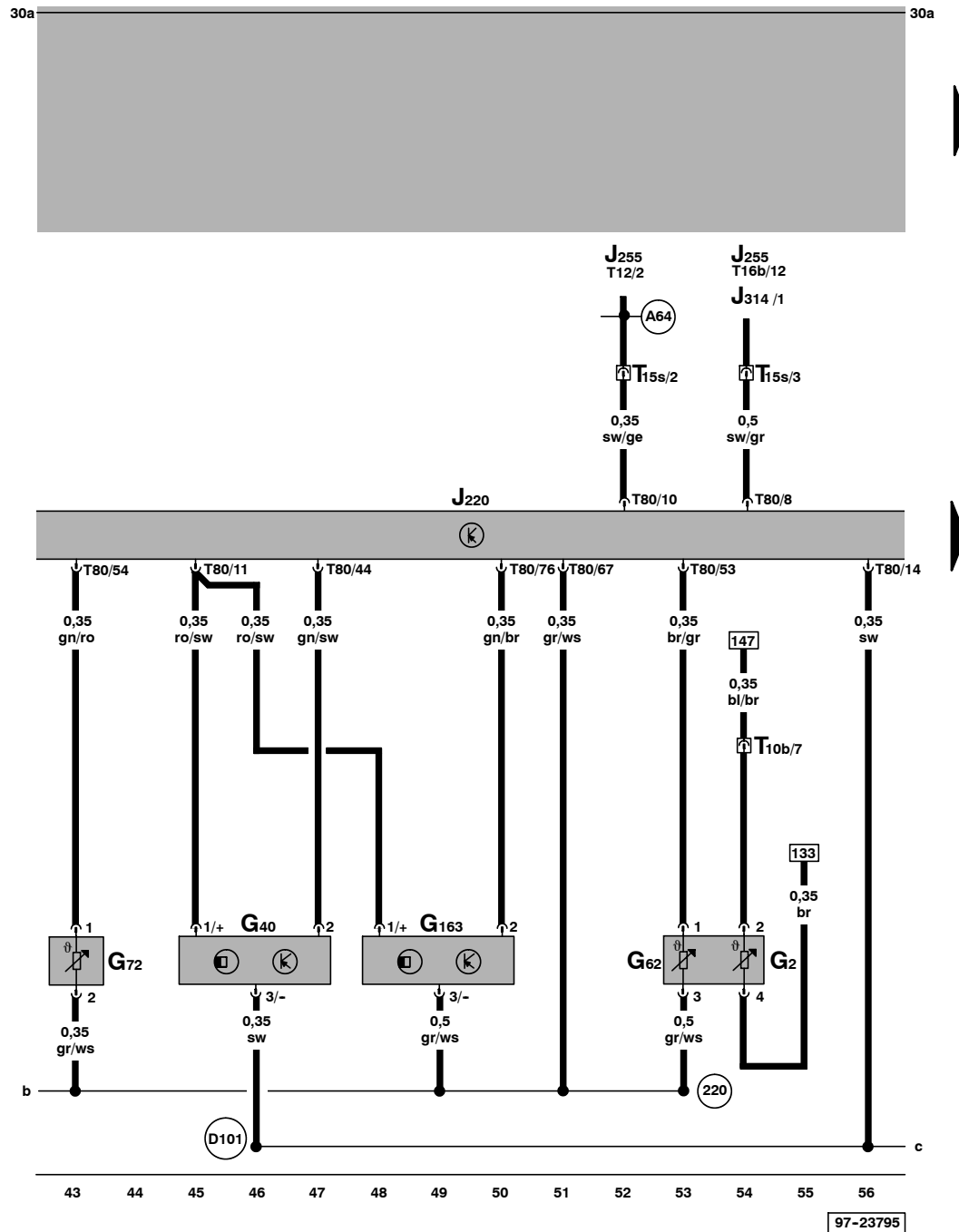
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Motronic Engine Control Module (ECM), Camshaft Position (CMP) Sensor, Engine Coolant Temperature (ECT) Sensor, Intake Air Temperature (IAT) Sensor

- G2 - Engine Coolant Temperature (ECT) Sensor
- G40 - Camshaft Position (CMP) Sensor
- G62 - Engine Coolant Temperature (ECT) Sensor
- G72 - Intake Air Temperature (IAT) Sensor
- G163 - Camshaft Position (CMP) Sensor 2
- J220 - Motronic Engine Control Module (ECM)
- J255 - Climatronic Control Module
- J314 - A/C Cut-Off Control Module
- T10b - 10-Pin Connector, black, on protective housing for control module, in engine compartment, left
- T12 - 12-Pin Connector, on Control Module for Climatronic
- T15s - 10-Pin Connector, red, on protective housing for control module, in engine compartment, left
- T16b - 16-Pin Connector, on Control Module for Climatronic
- T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)

- (220) - Ground connection (sensor ground), in engine compartment wiring harness
- (A64) - Connection (30, idle boost), in instrument panel wiring harness
- (D10) - Wire connection -1-, in engine compartment wiring harness

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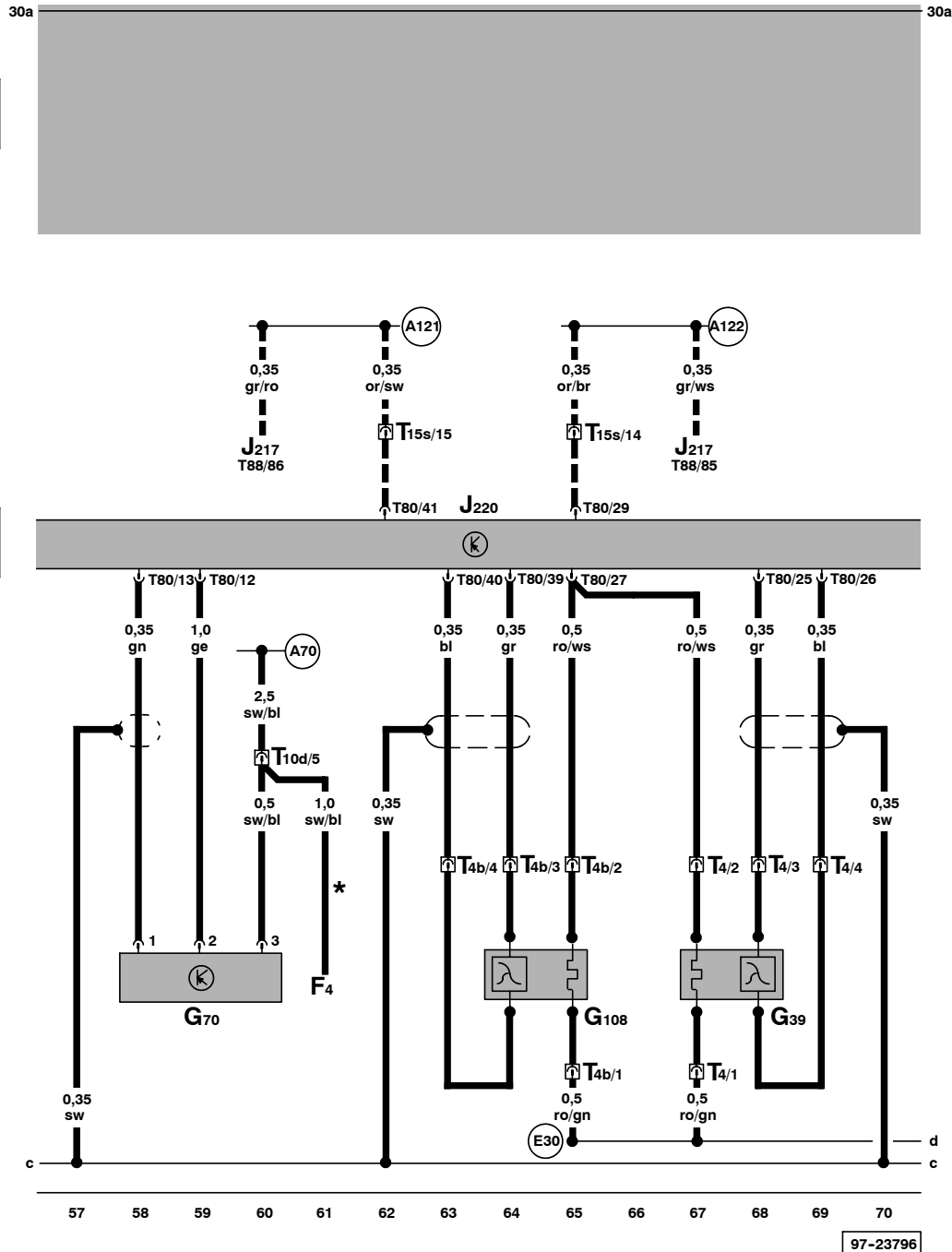
Motronic Engine Control Module (ECM), Mass Air Flow (MAF) Sensor, Heated Oxygen Sensors (HO2S)

- F4 - Back-Up Light Switch
- G39 - Heated Oxygen Sensor (HO2S)
- G70 - Mass Air Flow (MAF) Sensor
- G108 - Heated Oxygen Sensor (HO2S) 2
- J217 - Transmission Control Module (TCM)
- J220 - Motronic Engine Control Module (ECM)
- T4 - 4-Pin Connector, black
- T4b - 4-Pin Connector, black
- 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
- T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)
- T88 - Connector, 88 point, on Transmission Control Module (TCM)

- (A70) - Connection (15a, fuse 231), in instrument panel wiring harness
- (A121) - Connection (High-Bus), in instrument panel wiring harness
- (A122) - Connection (Low-Bus), in instrument panel wiring harness
- (E30) - Connection (87a), in wiring harness engine

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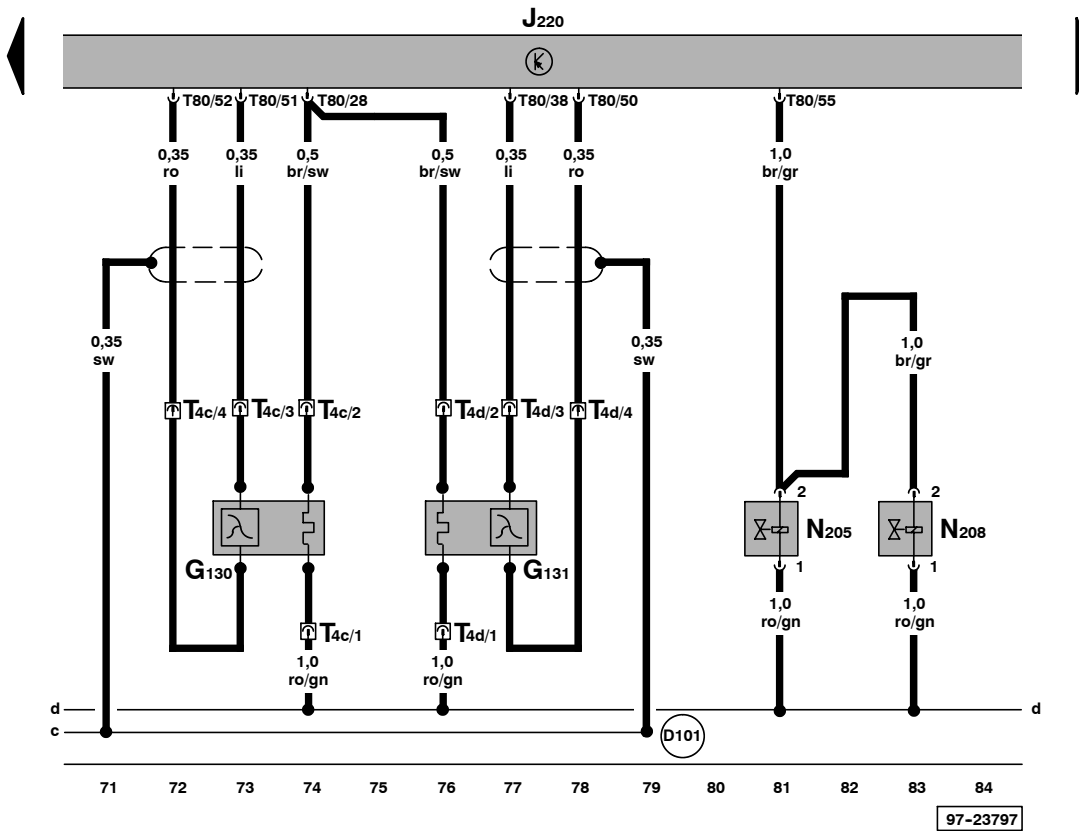
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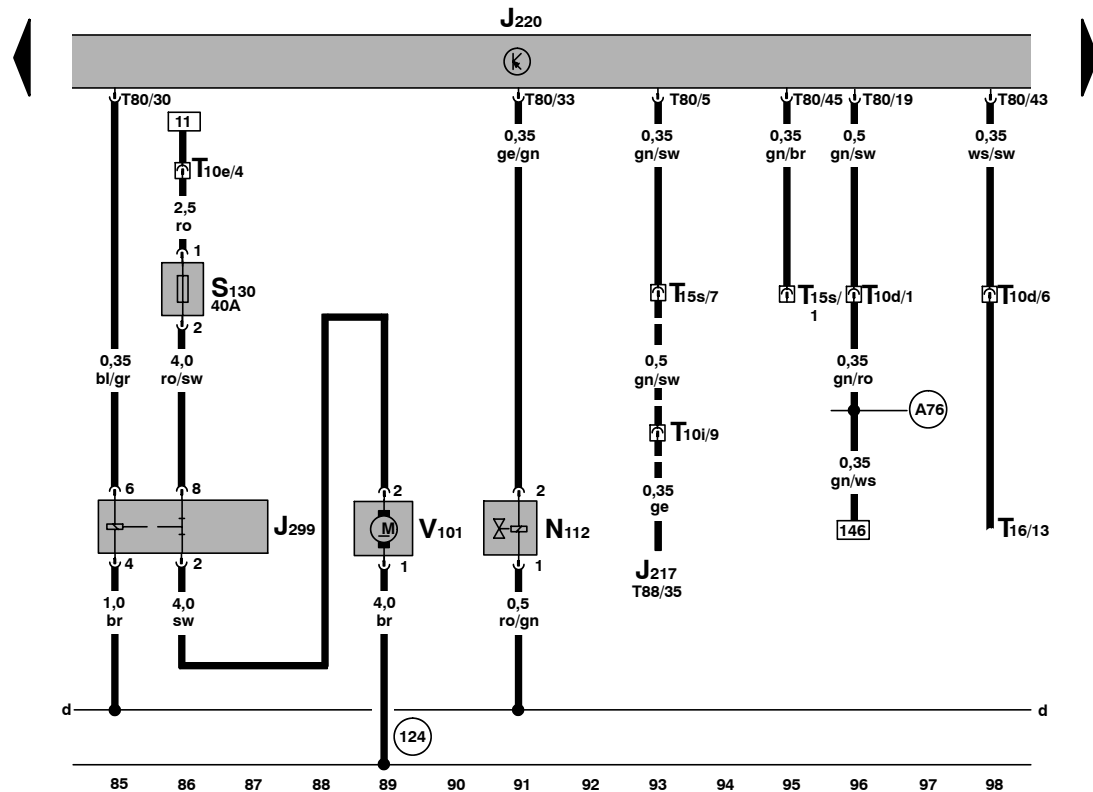
Motronic Engine Control Module (ECM), Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC), Valve for Camshaft Adjustment

- G130 - Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
- G131 - Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
- J220 - Motronic Engine Control Module (ECM)
- N205 - Valve -1- for camshaft adjustment
- N208 - Valve -2- for camshaft adjustment
- T4c - 4-Pin Connector, green
- T4d - 4-Pin Connector, brown
- T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)

(D101) - Wire connection -1-, in engine compartment wiring harness



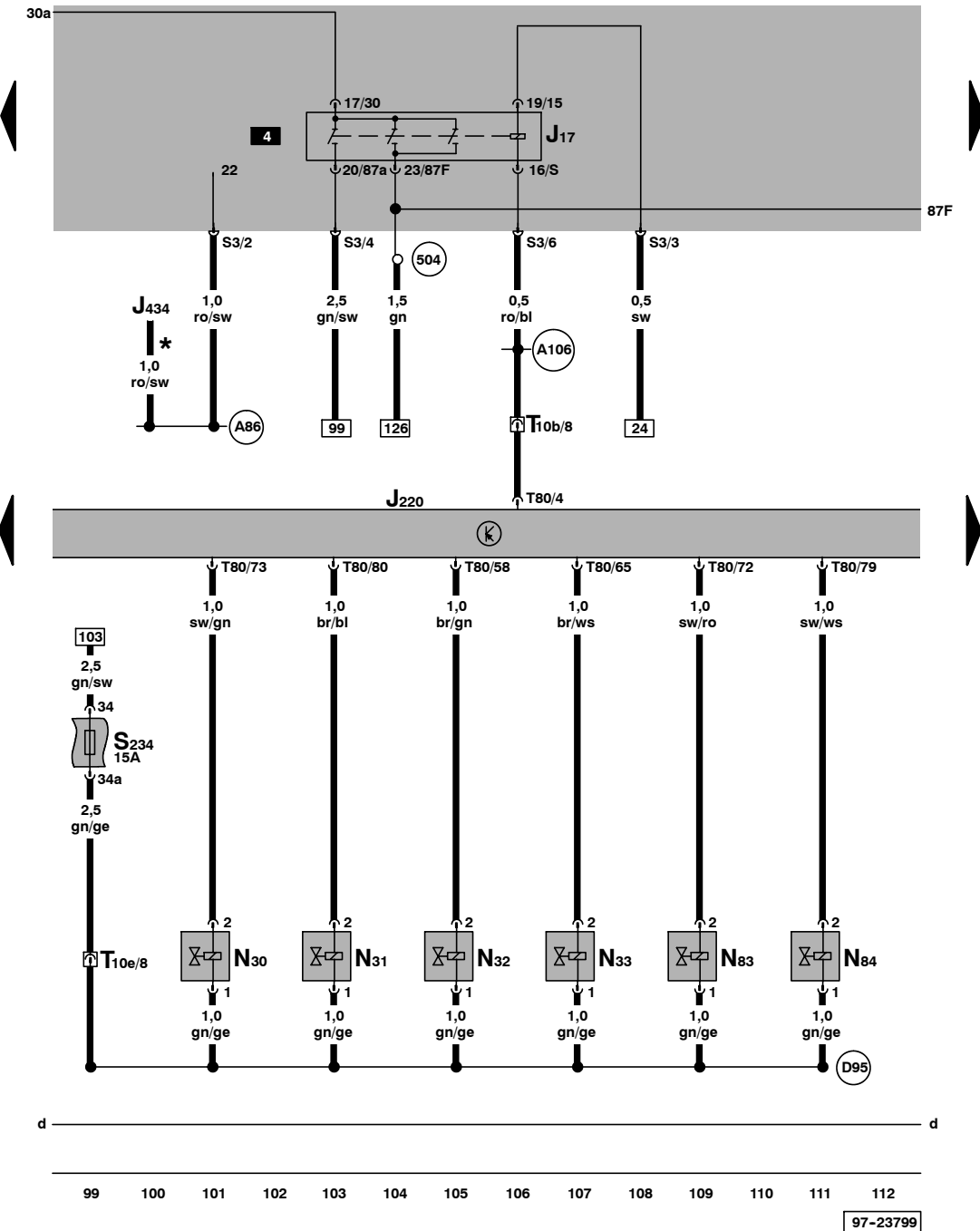
Motronic Engine Control Module (ECM), Secondary Air Injection (AIR) System, Data Link Connector (DLC)



- J217 - Transmission Control Module (TCM)
 - J220 - Motronic Engine Control Module (ECM)
 - J299 - Secondary Air Injection (AIR) Pump Relay (203), in protective housing for control module
 - N112 - Secondary Air Injection (AIR) Solenoid Valve, green
 - S130 - Fuse for secondary air pump, in fuse adaptor above relay panel
 - T10d - 10-Pin Connector, brown, 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
 - T10i - 10-Pin Connector, blue, on coupling station A-pillar, right
 - T15s - 15-Pin Connector, red, on protective housing for control module, in engine compartment, left
 - T16 - 16-Pin Connector, On Board Diagnostic (OBD), below instrument panel, left
 - T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)
 - T88 - Connector, 88 point, on Transmission Control Module (TCM)
 - V101 - Secondary Air Injection (AIR) Pump Motor
- 124 - ground connection, in engine compartment right wiring harness
A76 - Connector (K-diagnosis wire), in instrument panel wiring harness
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Motronic Engine Control Module (ECM), Fuel Injectors, Fuel Pump (FP) Relay



- J17 - Fuel Pump (FP) Relay, production control number (208)
- J220 - Motronic Engine Control Module (ECM)
- J434 - Starting Interlock Relay (clutch position)
- N30 - Cylinder 1 Fuel Injector
- N31 - Cylinder 2 Fuel Injector
- N32 - Cylinder 3 Fuel Injector
- N33 - Cylinder 4 Fuel Injector
- N83 - Cylinder 5 Fuel Injector
- N84 - Cylinder 6 Fuel Injector
- S234 - Fuse 34 in fuse holder
- 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
- T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)

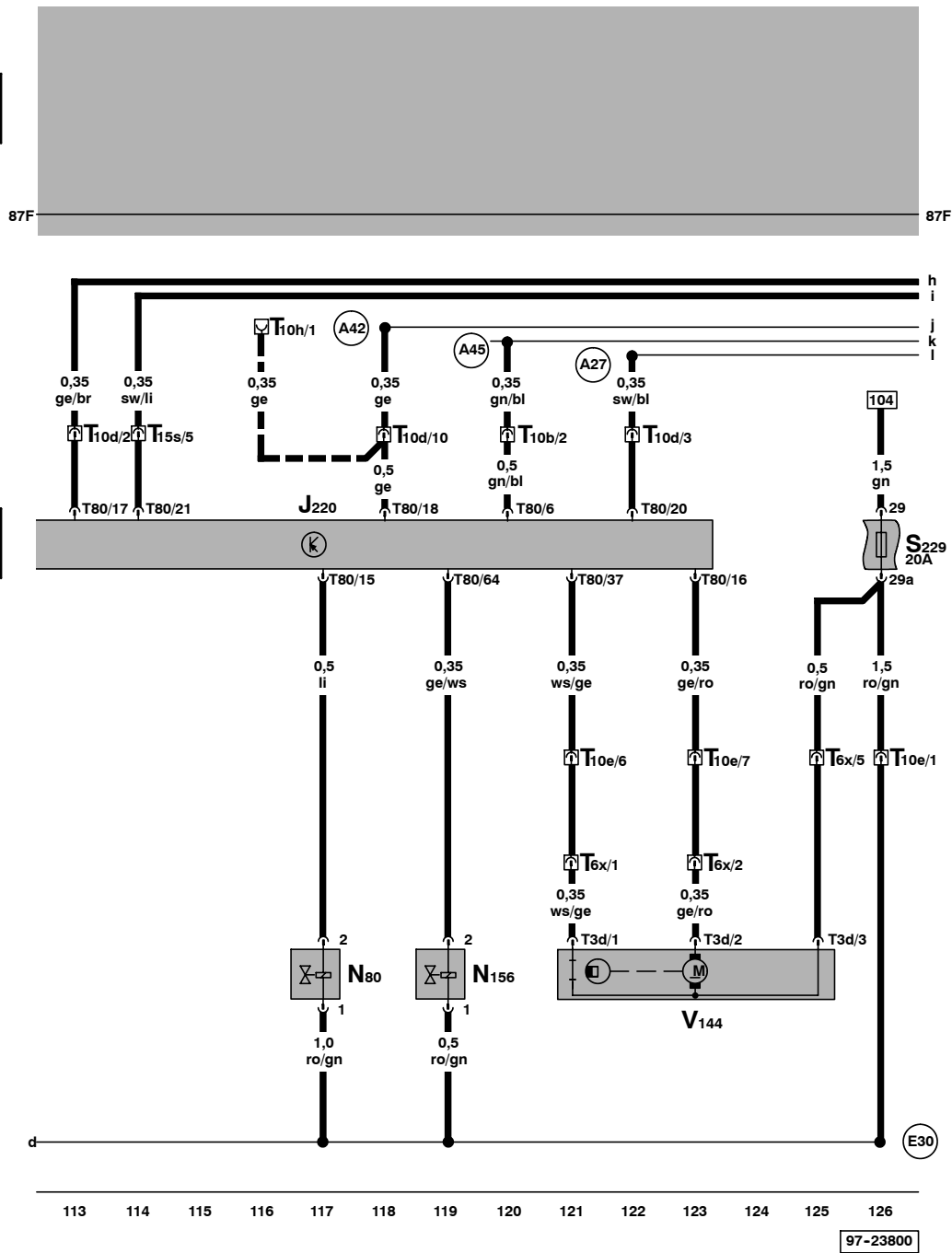
- (504) - Screw Connection (87F), on relay panel
- (A86) - Connection (50a) in instrument panel wiring harness
- (A106) - Connection -2- (86s), in instrument panel wiring harness
- (D95) - wire connection (injectors), in engine compartment wiring harness

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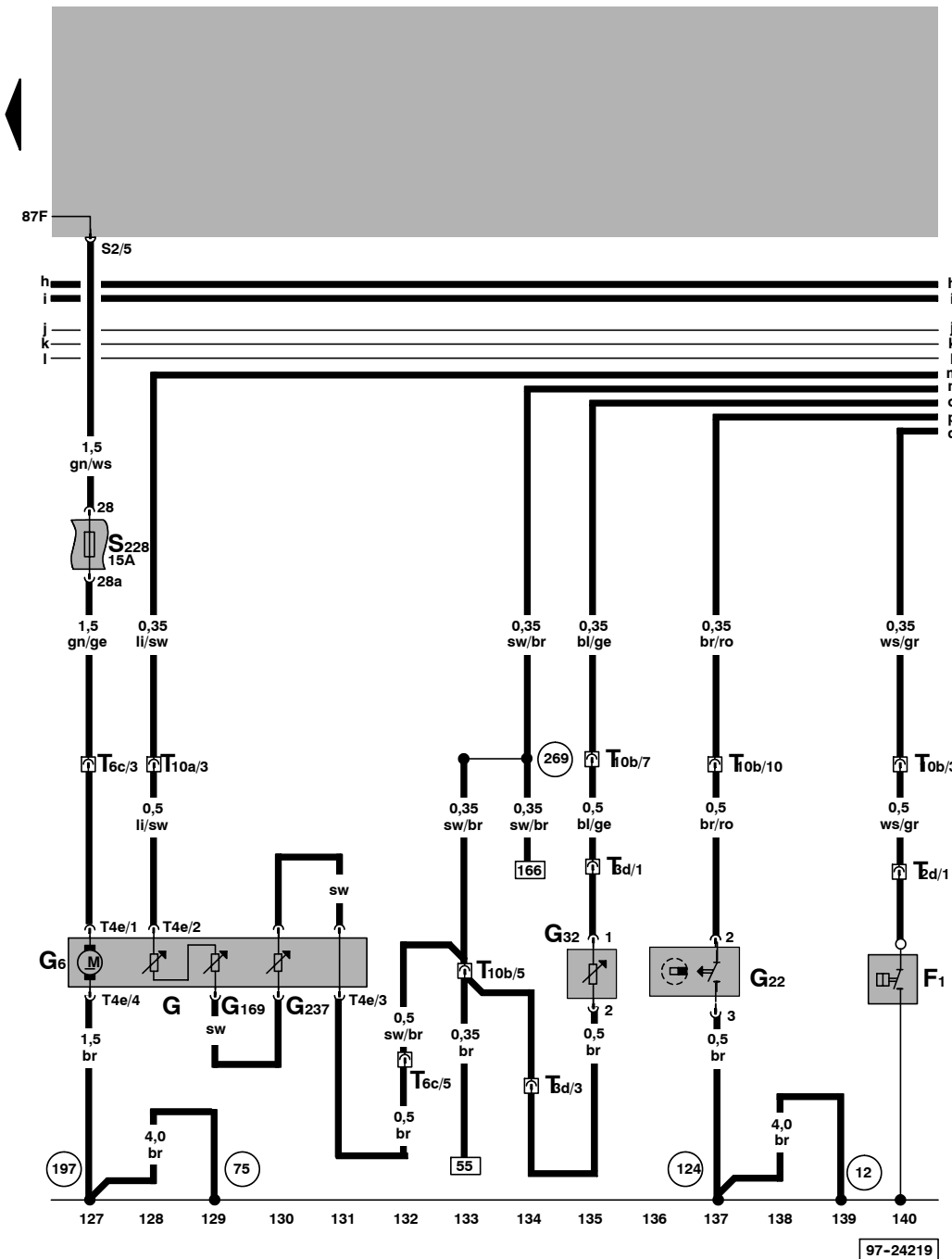
Leak Detection Pump (LDP), Evaporative Emission (EVAP) Canister Purge Regulator Valve, Intake Manifold Change-Over Valve

- J220 - Motronic Engine Control Module (ECM)
 - N80 - Evaporative Emission (EVAP) Canister Purge Regulator Valve
 - N156 - Intake Manifold Change-Over Valve
 - S229 - Fuse 29 in fuse holder
 - T3d - 3-Pin Connector
 - T6x - 6-Pin Connector, brown, connector station A-pillar, right
 - 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
 - T10e - 10-Pin Connector, orange, on protective housing for control module, in engine compartment, left
 - T10h - 10-Pin Connector, blue, 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
 - T80 - Connector, 80 point, on Motronic Engine Control Module (ECM)
 - V144 - Leak Detection Pump (LDP)
- (A27) - Wire Connection (vehicle speed signal), in instrument panel wiring harness
 - (A42) - plus connection (fuel gauge), in instrument panel wiring harness
 - (A45) - wire connection (RPM-signal), in instrument panel wiring harness
 - (E30) - Connection (87a), in wiring harness engine
- - automatic transmission only



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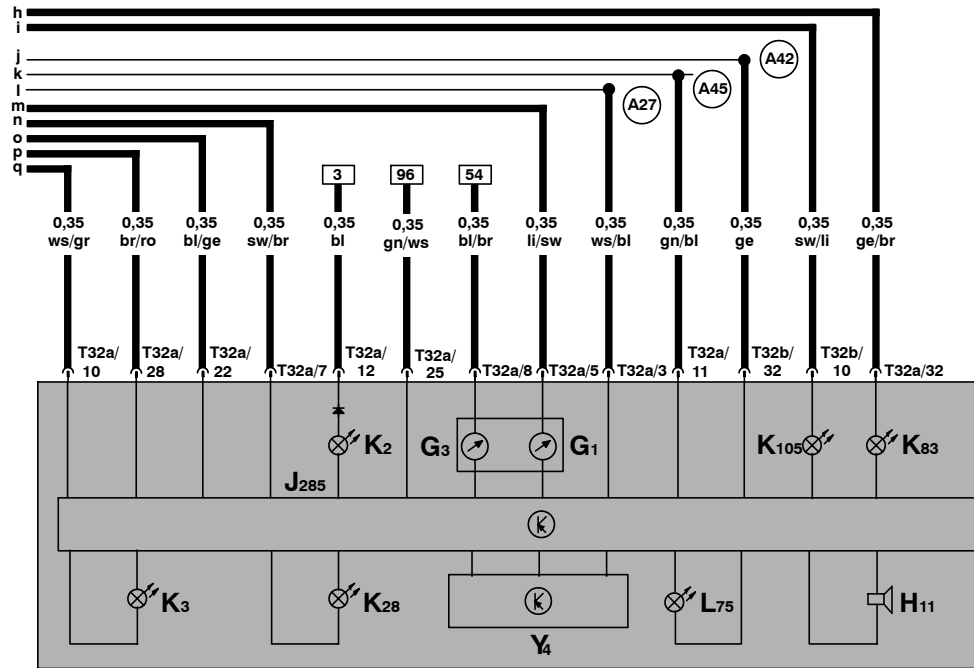
Oil pressure switch, Fuel Pump (FP), sender for fuel gauge, sender -2- and -3- for fuel supply, speedometer vehicle speed sensor



- F1 - Oil Pressure Switch
 - G - Sender for fuel gauge
 - G6 - Fuel Pump (FP)
 - G22 - Speedometer Vehicle Speed Sensor (VSS), hall sender on transmission, left
 - G32 - Engine Coolant Level (ECL) Sensor
 - G169 - Sender -2- for fuel supply, only Syncro
 - G237 - Sender -3- for fuel supply, only Syncro
 - S228 - Fuse 28 in fuse holder
 - T2d - Double Connector
 - T3d - 3-Pin Connector, in engine compartment, left front
 - T4e - 4-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
- (12) - Ground connection, in engine compartment, left
 - (75) - Ground connection, on right rear pillar
 - (124) - ground connection, in engine compartment right wiring harness
 - (197) - Ground connection -4-, in wiring harness rear
 - (269) - Ground connection (sensor ground) -1-, in instrument panel wiring harness

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97-24219



Instrument cluster, engine coolant temperature (ECT) gauge, low fuel level warning light, oil pressure warning light, Malfunction Indicator Lamp (MIL)

- G1 - Fuel Gauge
- G3 - Engine Coolant Temperature (ECT) Gauge
- H11 - Oil Pressure Warning Buzzer
- J285 - Control module with indicator unit in instrument panel insert
- K2 - Generator (GEN) Warning Light
- K3 - Oil Pressure Warning Light
- K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
- K83 - Malfunction Indicator Lamp (MIL)
- K105 - Low Fuel Level Warning Light
- L75 - Digital Display Light
- T32a - 32-Pin Connector, blue, on instrument cluster
- T32b - 32-Pin Connector, green, on instrument cluster
- Y4 - Odometer Display

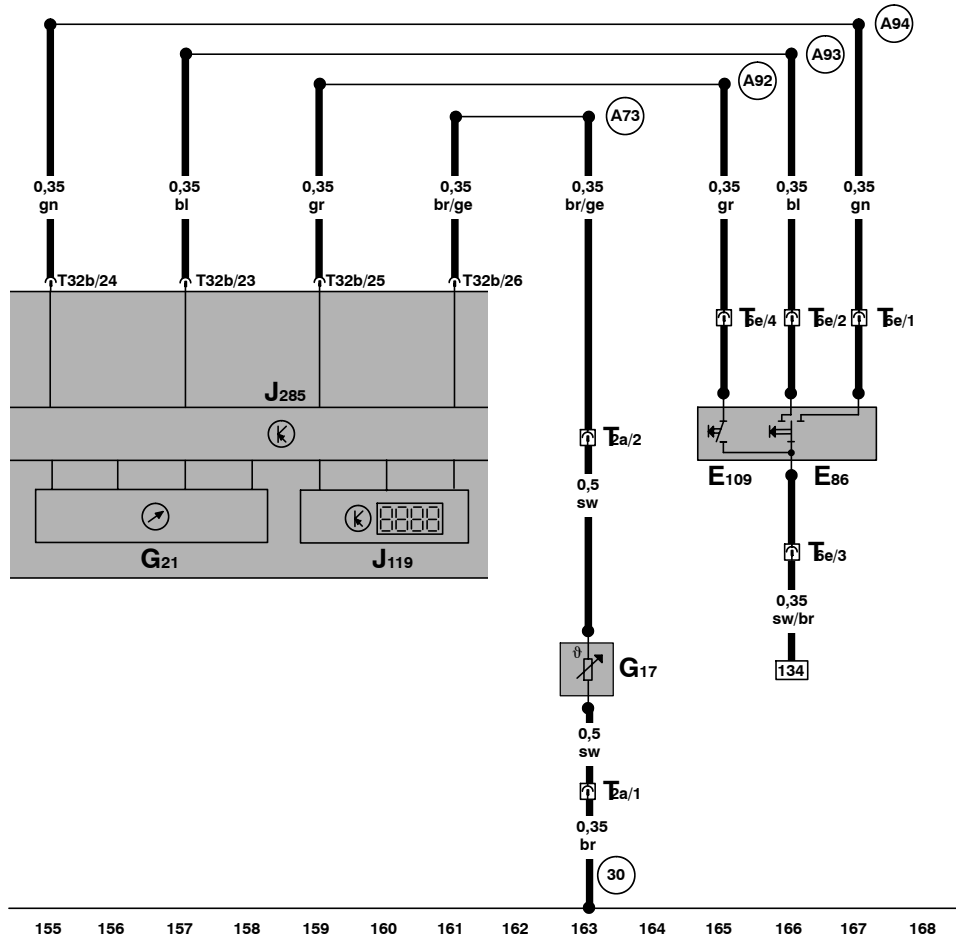
- (A27) - Wire Connection (vehicle speed signal), in instrument panel wiring harness
- (A42) - plus connection (fuel gauge), in instrument panel wiring harness
- (A45) - wire connection (RPM-signal), in instrument panel wiring harness

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Instrument cluster, multi-function indicator (MFI), multi-function indicator switches, speedometer, outside air temperature sensor

- E86 - Multi-Function Indicator Mode Select Switch
- E109 - Multi-Function Indicator Memory Switch
- G17 - Outside Air Temperature Sensor (use corresponding wiring diagram on vehicles with A/C)
- G21 - Speedometer
- J119 - Multi-function Indicator (MFI)
- J285 - Control module with indicator unit in instrument panel insert
- T2a - Double Connector, in engine compartment left
- T6e - 6-Pin Connector, black, behind steering column switch cover
- T32b - 32-Pin Connector, green, on instrument cluster

- (30) - Ground connection, -1-, beside fuse/relay panel
- (A73) - Connection (outside temperature indicator), in instrument panel wiring harness
- (A92) - Connection (MFI-Reset), in instrument panel wiring harness
- (A93) - Connection -1- (MFI), in instrument panel wiring harness
- (A94) - Connection -2- (MFI), in instrument panel wiring harness



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