



Electrical troubleshooting manual

Series 3 – E36 (316i, 318i, 318is, 320i, 323i, 328i, M3, 318tds, 325td, 325tds incl. Convertible and Touring)

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Model year 1998

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Rear right converter, B37 6621.0-01
Rear right door contact, S124 6100.0-04
Rear right door DWA conductor loop, R22 6100.0-06
Rear right flasher unit, H5 6313.0-03
Rear right power window motor, M99 5133.0-05
Rear right power window, S129z 5133.0-04
Rear right speaker, H45 6510.0-00
Rear right speaker, H45 6510.1-02

Rear right window monitoring switch (DWA), S101 6100.0-06
Rear window blower microswitch, S196 6424.0-02
Rear window blower motor, M105 6424.0-02
Rear window blower relay, K99 6424.0-02
Rear window defogger I, E9 6424.0-01
Rear window defogger/antenna 6424.0
Rear wipe/wash interval control unit, A36 6160.1
Relay module, A5 5133.0-02
Remote control ZV/DWA 6610.2
Remote thermometer sensor, B2009 1220.0-00
Remote thermometer sensor, B6232 1210
Remote thermometer sensor, B6232 6211.0
Reversing light switch, S2113 6322.0-00
Reversing light switch, S8511 6322.0-00
Reversing lights 6322.0
Right brake light, H31 6325.0-01
Right catalytic converter thermal sensor, B24 6211.0-09
Right fog light, E27 6312.0-00
Right front high range speaker, H50 6510.0-00
Right front high range speaker, H50 6510.1-02
Right front low range speaker, H51 6510.0-00
Right front low range speaker, H51 6510.1-02
Right front mid-range speaker, H54 6510.1-04
Right headlight beam angle adjust actuator, M81 6312.0-04
Right headlight, E14 6312.0-03
Right headlight, E8 6312.0-03
Right headlight, E8 6314.0-01
Right heat exchanger sensor, B12 6450.7-02
Right high beam, E12 6312.0-03
Right horn, H3 6133.0-00
Right licence plate light, E44 6320.0-00
Right mid-range/high range speaker, H43 6510.1-04
Right outside mirror, Y6 5116.0-01
Right parking light, E19 6314.0-01
Right parking light/licence plate light relay, K25 6314.0-02



Right rear high range speaker, H53	6510.1-04
Right rear lid light, E47	6313.0-03
Right rear lid light, E47	6314.0-01
Right rear lid light, E47	6314.0-04
Right rear lid light, E47	6322.0-00
Right rear lid light, E47	6325.0-01
Right rear lid light, E47	6325.0-02
Right rear low range speaker, H52	6510.1-04
Right reversing light, H28	6322.0-00
Right tail light, H39	6314.0-01
Right vent window motor, M104	5133.0-06
Right windscreen washer jet heater, E52	6169.0-00
Rollover sensor, N24	5430.1-03
Selector lever potentiometer, A140	2460.12-09
Shift lock selector lever lock, Y19	2460.11-00
SMG selector lever, S1134	2460.12
Solenoid clutch, Y2	6450.7-04
Solenoid valve, injection timing device, B2011	1360
Speed sensor EGS, Y8516	2460.12-04
Speedometer reed contact, B10	6211.0-07
Starter	1240.0
Starter, M2025	1240.0-01
Starter, M6510	1240.0-01
Switch for electrically operated convertible soft top, S143	5430.1-01
Symbols	0140.0
Tail light, left, H25	6314.0-01
Tail light, right, H30	6314.0-01
Temperature regulator, A32y	6410.5-00
Temperature sensor, transmission oil, B5238	2460.12-04
Thermal switch (LA Japan), K20	6211.0-09
Thermal switch, heated jets, S198	6169.0-00
Throttle heating, E104	3450.1-02
Throttle potentiometer, R6252	1210
Tilt/slide sunroof control unit, A56	5410.1
Tilt/slide sunroof switch (SHD), S38	5410.1-00

Top Hifi switch, S303y	6510.1-01
Trailer coupling	6328.1
Transmission shift unit, Y2121	2460.3-01
Transmission switch, Y8551	2460.11-01
Transmit/receive module (EWS II), A835	6135.0-00
Turn indicator/low beam selector, S7	6312.0-00
Turn signal/hazard warning system	6313.0
Unloader relay terminal 15, K9	5203.0-00
Unloader relay, terminal 15, K6326	1210
Valve for secondary air pump, Y6164	1210.21-04
VANOS sensor 1 (inlet), B6277	1210.21-06
VANOS sensor 2 (exhaust), B6278	1210.21-06
VANOS valve 1 and 2 (exhaust), Y5220	1210.21-06
VANOS valve 1 and 2 (inlet), Y5210	1210.21-06
VANOS valve 1, Y6275	1210.17-05
Ventilation flap regulating motor, M44	6450.7-03
Volute spring, C101	3234.0-00
Wash water level switch, S64	6581.2-03
Washer pump, M4	6160.1-01
Water valves, Y4	6410.5-00
Window lifter door rear LH (centre console), S128y	5133.0-03
Window lifter door rear LH (door), S41y	5133.0-03
Window lifter door rear RH (centre console), S129y	5133.0-03
Window lifter door rear RH (door), S42y	5133.0-02
Windscreen cowl panel lock microswitch, S231	5430.1-00
Windscreen washer jet heaters	6169.0
Windscreen wiper switch, S5	6160.1-01
Wipe-wash module (Low II), A64	6160.1-03
Wipe/wash module (WWM)	6160.1
Wipe/wash module, A51	6160.1
Wiper motor, M3	6160.1-00
ZKE control unit, A104	6100.0
ZV drive tank flap, M16	5126

Schematics

The schematics divide the entire vehicle electrical system into individual circuits. Interacting electrical components are shown on one common schematic.

Switches and other components are represented in such a way that their general layout and function are self-explicit. They are arranged on the sheet such that the current path can be followed from positive (top) to negative (bottom).

Important: The components and wires are not drawn to scale. For instance, a lead with a length of over 1m can be shown as a lead which is only a few cm long. To ensure clear arrangement, all connectors, line branches and connected components from the fuses to the component and from the component to ground connection are not shown within the individual cells. If required, reference can be made to the cells **0670.3 Fuse Details** and **0670.4 Ground Distribution** where all lines are illustrated with all plug connections, line branches and connected components.

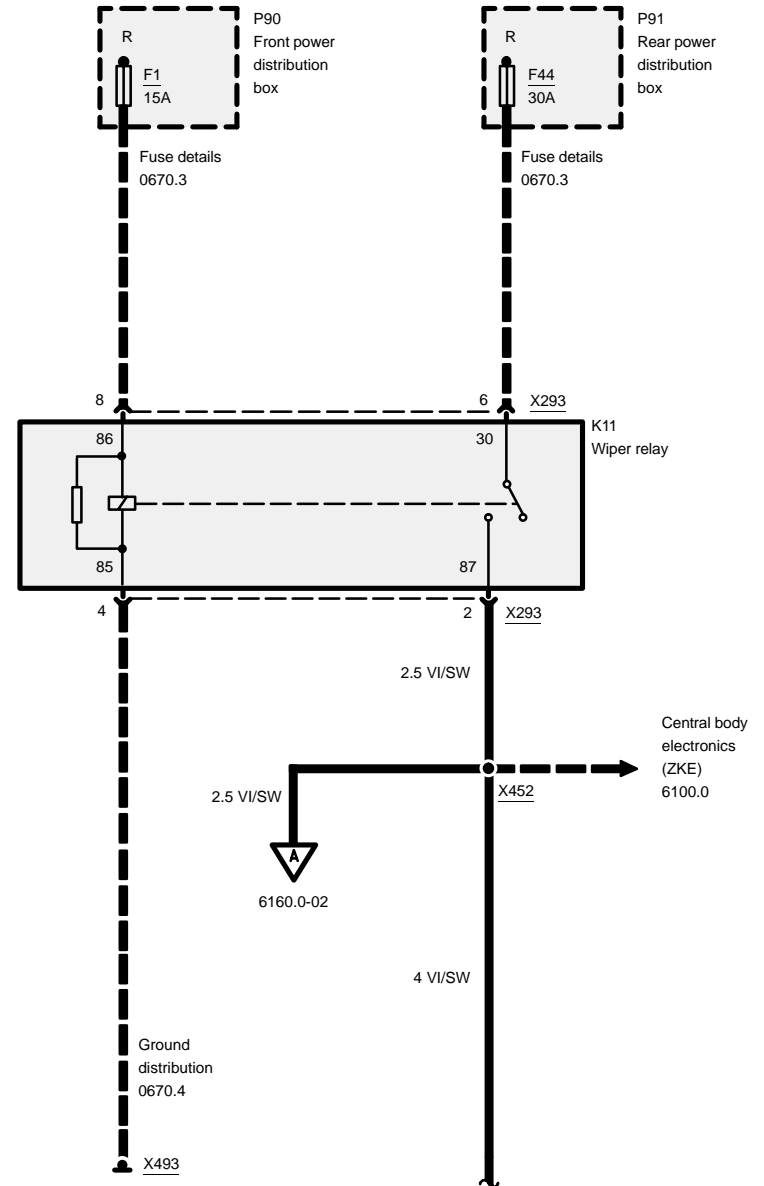
All circuit symbols used are listed and explained in the cell **0140.0 Symbols**.

In cell **7000.0 Component Location Chart** all important connectors, ground points and components are listed in tabular form. It provides a precise description of the component locations in the vehicle.

In cell **7100.0 Component Location Views** the locations of the connectors and components which are difficult to locate are shown in line arts or illustrations. In cell **8000.0 Solder Connector Location Views** all splices are listed in numerical order and illustrations are provided to assist in locating splices on larger harnesses. In cell **8500.0 Connector Views** diagrams of connectors with more than 2 pins are illustrated.

Example

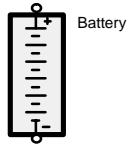
General conventions can be explained based on the following schematic example.



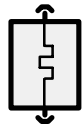


General conventions

1. Switches and relays are always shown in rest position (e.g. K11).
2. A component shown in a dashed frame signifies that the component is illustrated only in part (e.g. P90 and P94).
3. A component shown in a completely drawn frame signifies that the component is illustrated in full (e.g.K11).
4. The dashed line between pin 8 and pin 6 at the connector X293 indicates that both pins belong to the connector X293.
5. The dashed line from fuse 1 to pin 8 of the connector X293 shows the positive supply of the relay K11. If required, refer to cell **0670.3 Fuse details** at fuse F1 for the complete line progression with all plug connections, line branches, wire colours and cross sections.
6. The dashes line with arrow at the connector X452 indicates that several wires lead to the connector X452. All lines leading to the connection are illustrated in cell **6100.0 Central body electronics (ZKE)**. An uninterrupted line with arrow indicates that only this one line leads to another circuit.
7. The dashes line from pin 4 of connector X293 to ground X493 shows the ground supply of the relay K11. If required, refer to cell **0670.4 Ground distribution** at ground X493 for the complete line progression with all plug connections, line branches, wire colours and cross sections.
8. The uninterrupted line from connector X452 with an **A** in the open arrow is continued on Page 6160.0–02.
Termination of the wire 4 VI/SW from connector X452 with a wavy line indicates that the wire is continued on the opposite page.



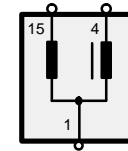
Battery



Heating element



Potentiometer Wiper moved by external force



Ignition coil



Fuses



motor with blower or fan



Potentiometer Change by pressure or temperature



Control/performance electronics



Fuse link



Bulb



Diode Current flows in direction of arrow only



Radio



Variable resistor



Hall-effect sensor



Automatic cut-out



Overtemperature protection



Z-diode for voltage control



Transistor switch



Solenoid coil



Permanent magnet motor one speed



LED



Knock sensor



Solenoid valve



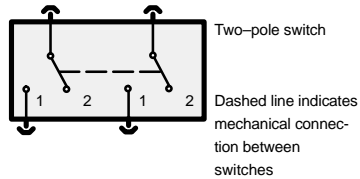
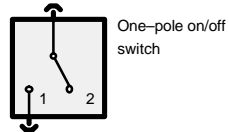
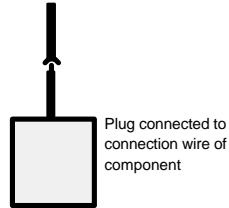
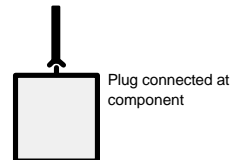
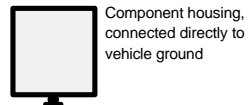
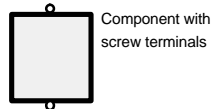
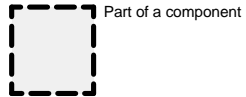
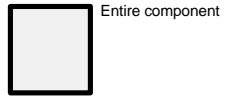
Permanent magnet motor two speeds



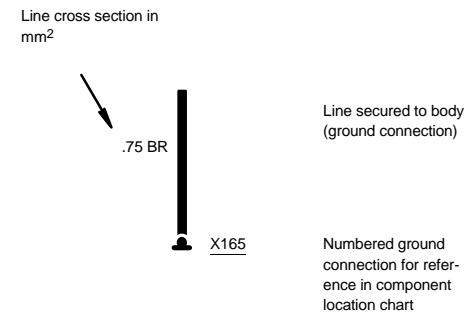
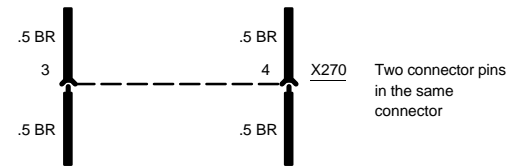
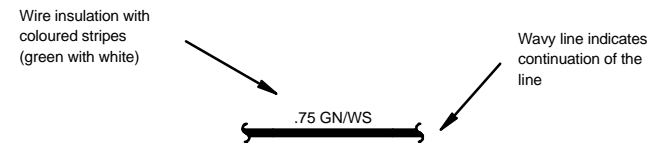
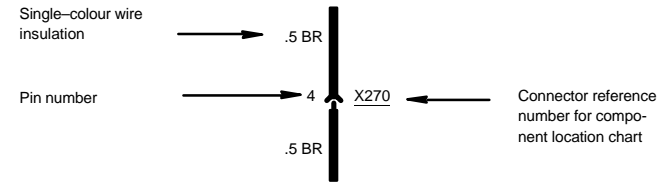
Oxygen sensor

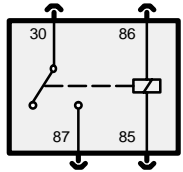


Heating element

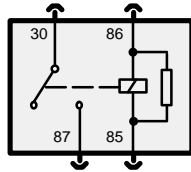


Wire colour	
BL	blue
BR	brown
GE	yellow
GN	green
GR	grey
OR	orange
RS	pink
RT	red
SW	black
VI	violet
WS	white
TR	transparent

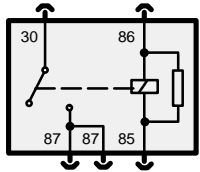




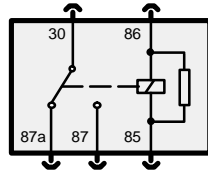
Contact relay



Contact relay with protective resistor

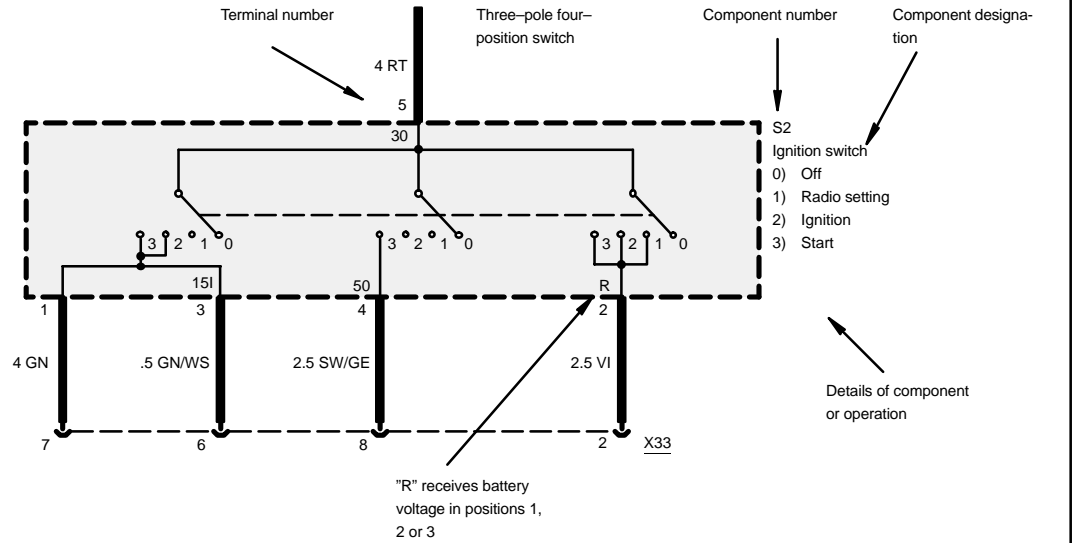


Contact relay with 2 outputs

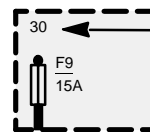


Centre-zero relay with 2 outputs

Terminal number	Designation
30	Relay input
85	Relay output (coil)
86	Relay input (coil)
87	Relay output (switched)
87a	Relay output (non-switched)



Terminal number	Designation	Terminal number	Designation
50	Battery voltage: Ignition switch in position 3	15I	Battery voltage: Ignition switch in position 2
30	Battery voltage: Supplied constantly	R	Battery voltage: Ignition switch in position 1, 2 or 3
15	Battery voltage: Ignition switch in position 2 or 3	31	Ground

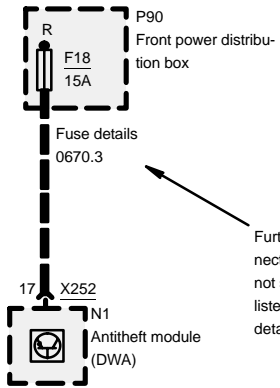


Fuse constantly connected in current path

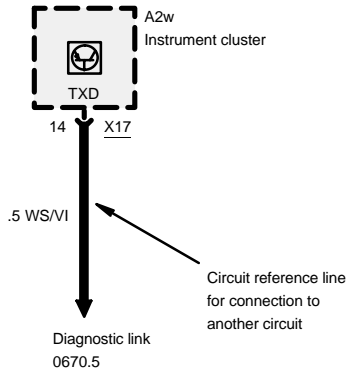
Terminal number	Designation
30	Battery voltage: Supplied constantly
15	Battery voltage: Ignition switch in position 2 or 3
R	Battery voltage: Ignition switch in position 1, 2 or 3



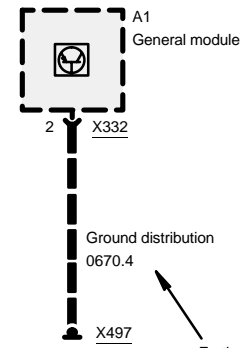
Symbols



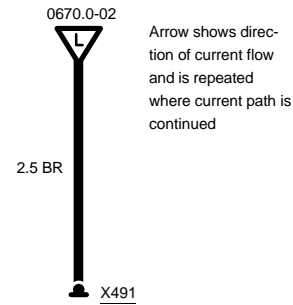
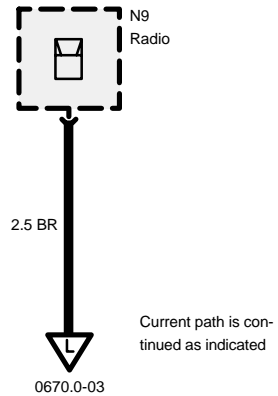
Further circuits connected to fuse 18 are not shown but are listed under "fuse details"



Circuit reference line for connection to another circuit



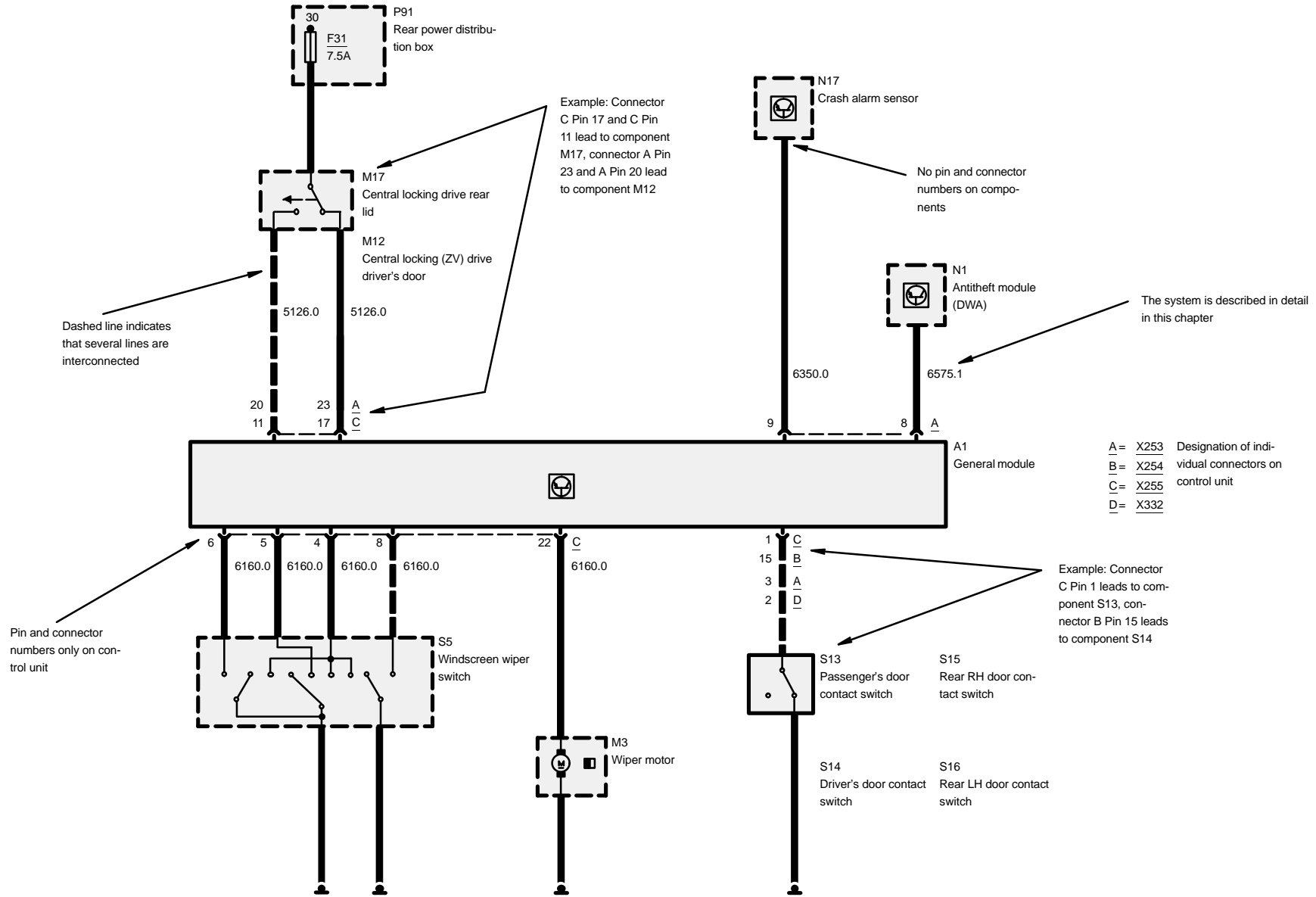
Further circuits connected at ground X497 are not shown but are listed under "ground distribution"





Symbols

Block diagram

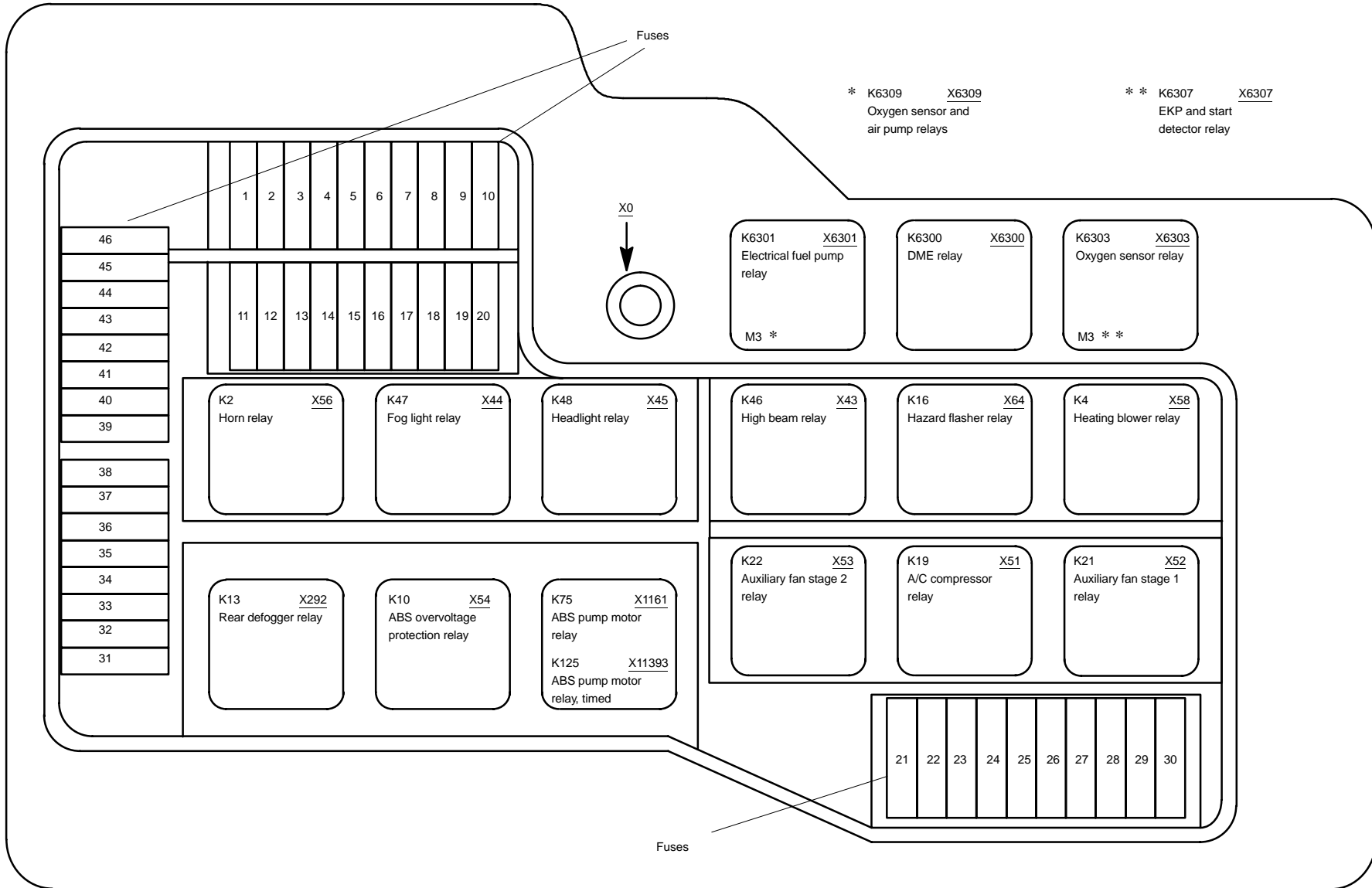




0670.0 Power distribution chart

Petrol-driven vehicle

Front power distribution box

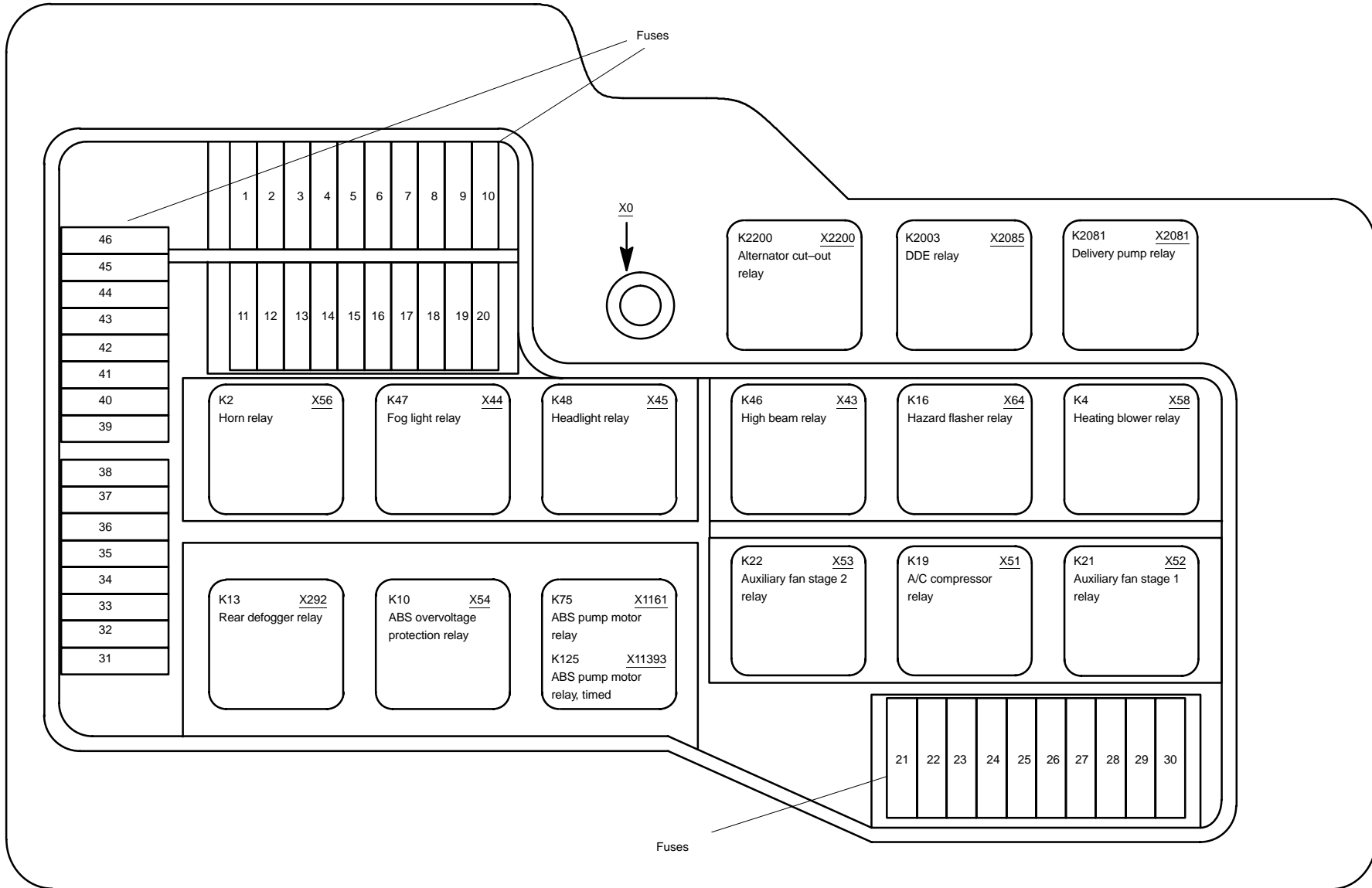




Power distribution chart

Diesel

Front power distribution box





Power distribution chart

Relay carrier under LH side of dash

