

1998

BMW E36

**318is/c, 323i/c,
328i/c, M3/c**

Electrical

Troubleshooting

Manual

Vehicles Produced 9/97 to 8/98



ELECTRICAL TROUBLESHOOTING MANUAL

**SERIES 3 – E36 (318is, 323i, 328i, M3,
INCL. CONVERTIBLE)**

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MODEL YEAR 1998

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SEAT CUSHION TILT MOTOR, DRIVER'S, M50 5200.0-00
SEAT CUSHION TILT MOTOR, PASSENGER'S, M61 .. 5200.0-01
SEAT HEATER SWITCH, DRIVER'S SEAT, S53 5203.0-00
SEAT HEATER SWITCH, PASSENGER'S SEAT, S54 .. 5203.0-00
SEAT HEATER, DRIVER'S, E57 5203.0-00
SEAT HEATER, PASSENGER'S, E58 5203.0-00
SEAT HEIGHT MOTOR, DRIVER'S, M52 5200.0-00
SEAT HEIGHT MOTOR, PASSENGER'S, M59 5200.0-01
SEAT LUMBAR SUPPORT MOTOR/VALVE, DRIVER'S,
M55z 5200.0-02
SEAT LUMBAR SWITCH, DRIVER'S, S52 5200.0-02
SEAT MAT, I1008 3234.0-03
SEAT MOVEMENT MOTOR, DRIVER'S, M51 5200.0-00
SEAT MOVEMENT MOTOR, PASSENGER'S, M60 5200.0-01
SEAT OCCUPANCY DETECTOR, A113 3234.0-00
SEATBACK HEATER, DRIVER'S, E56 5203.0-00
SEATBACK HEATER, PASSENGER'S, E59 5203.0-00
SEATBACK RECLINER MOTOR, DRIVER'S, M53 5200.0-00
SEATBACK RECLINER MOTOR, PASSENGER'S, M58 5200.0-01
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SECONDARY AIR PUMP RELAY, Y6304 1210.20-09
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SECONDARY AIR PUMP VALVE, Y6163 1210.20-09
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SIDE IMPACT SENSOR, PASSENGER'S, B79 3234.0-01
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SLIP CONTROL (ABS/ASC) 3450.1
SLIP CONTROL MODULE (ABS/ASC), A52 3450.1
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SPATIAL SOUND SWITCH, S303 6510.1
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SPEAKER, LEFT REAR, H46 6510.1-01
SPEAKER, RIGHT REAR, H45 6510.0-00
SPEAKER, RIGHT REAR, H45 6510.1-02
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SPEED SENSOR – ABS, LEFT FRONT, B2 3450.1
SPEED SENSOR – ABS, LEFT REAR, B4 3450.0-01
SPEED SENSOR – ABS, LEFT REAR, B4 3450.1
SPEED SENSOR – ABS, RIGHT FRONT, B1 3450.0-01
SPEED SENSOR – ABS, RIGHT FRONT, B1 3450.1
SPEED SENSOR – ABS, RIGHT REAR, B3 3450.0-01
SPEED SENSOR – ABS, RIGHT REAR, B3 3450.1
SPlice LOCATION VIEWS 8000.0
START 1240.0
STARTER IMMOBILIZATION SWITCH, S235 6135.0-00
STARTER, M6510 1240.0-02
SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG) 3234.0
SUPPLEMENTAL RESTRAINT SYSTEM CONTROL MODULE,
A12 3234.0
SUPPRESSION FILTER, C900 6424.0
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TEMPERATURE SWITCH, S36 6450.7-05
THERMOSTAT, A32y 6410.5
THROTTLE POSITION SENSOR, R6252 1210.
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TILT/SLIDE SUNROOF SWITCH (SHD), S38 5410.1-00
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TRANSMISSION CONTROL MODULE (EGS), A8500 .. 2460.2-00
TRANSMISSION POSITION INDICATOR LIGHT, E82 .. 6300.0-01
TRANSMISSION VALVE UNIT, Y8505 2460.2-01
TRANSMISSION VALVE UNIT, Y8505y 2460.2-07
TRANSMISSION VALVE UNIT, Y8505y 2460.4-01
TRANSMITTER MODULE (EWS II), A835 6135.0
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TURN LIGHT, LEFT REAR, H6 6313.0-02
TURN LIGHT, RIGHT FRONT, H4 6313.0-02
TURN LIGHT, RIGHT REAR, H5 6313.0-02
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WASHER JET HEATER, RIGHT, E52 6169.0-00

WASHER PUMP, M4 6160.1-01
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WINDOW MOTOR, RIGHT REAR, M99 5133.1-05
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WIPER/WASHER MODULE (LOW II), A64 6160.1-00
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WIPER/WASHER SWITCH, S5 6160.1
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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 that is only a few cm long. To ensure clear arrangement, all connectors, lines 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 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 cell **0140.0 Symbols**.

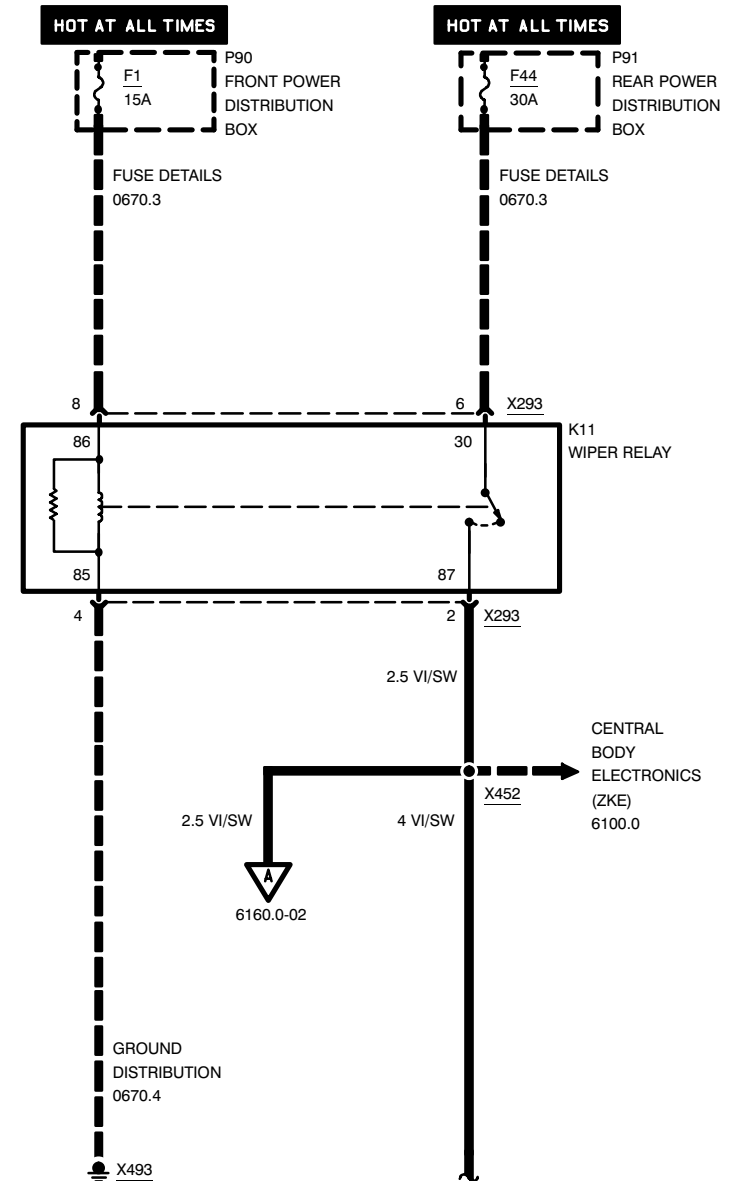
In cell **7000.0 Component Location Chart** all important connectors, ground points and components are listed in tabular form. It provides a precise description of the component locations in the vehicle.

In cell **7100.0 Component Location Views** the location of connectors and components which are difficult to locate are shown in line arts or illustrations. In cell **8000.0 Splice 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.

Included in this ETM are foldout block diagrams. These are overviews of the entire system (EGS, ABS, AC, etc.) which helps understand the relationships between various components and control unit of the system being diagnosed.

Example

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



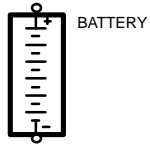


General Conventions

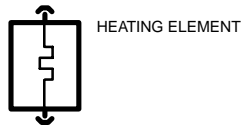
1. Switches and relays are always shown in rest position (e.g. K11).
2. A component shown in a dashed frame signifies that the component is illustrated only in part (e.g. P90 and P91).
3. A component shown in a completely drawn frame signifies that the component is illustrated in full (e.g. K11).
4. The dashed line between pin 8 and pin 6 of connector X293 indicates that both pins belong to connector X293.
5. The dashed line from fuse F1 to pin 8 of connector X293 shows the positive supply of relay K11. If required, refer to cell **0670.3 Fuse Details** at fuse F1 for the complete line progressing with plug connections, line branches, wire colors and cross sections.
6. The dashed line with an arrow at splice X452 indicates that several wires lead to splice X452. All lines leading to the connection are illustrated in cell **6100.0 Central Body Electronics (ZKE)**. An interrupted line with an arrow indicates that only this one wire leads to another circuit.
7. The dashed line from pin 4 of connector X293 to ground X493 shows the ground supply for 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 colors, and cross sections.
8. The interrupted line from splice X452 with an **A** in the open arrow is continued on page 6160.0-02. Termination of wire 4 VI/SW from splice X452 with a wavy line indicates that the wire is continued on the opposite page.



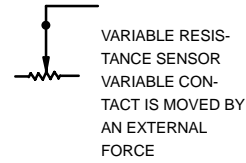
0140.0 SYMBOLS



BATTERY



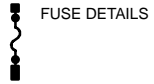
HEATING ELEMENT



VARIABLE RESISTANCE SENSOR
VARIABLE CONTACT IS MOVED BY AN EXTERNAL FORCE



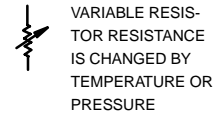
ANTENNA



FUSE DETAILS



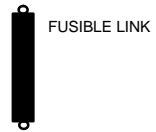
LOUDSPEAKER OR HORN



VARIABLE RESISTOR
RESISTANCE IS CHANGED BY TEMPERATURE OR PRESSURE



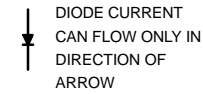
CONTROL/POWER ELECTRONICS



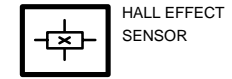
FUSIBLE LINK



LIGHT



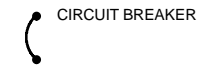
DIODE CURRENT CAN FLOW ONLY IN DIRECTION OF ARROW



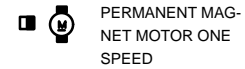
HALL EFFECT SENSOR



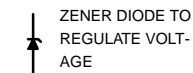
RADIO



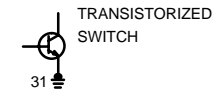
CIRCUIT BREAKER



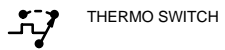
PERMANENT MAGNET MOTOR ONE SPEED



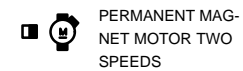
ZENER DIODE TO REGULATE VOLTAGE



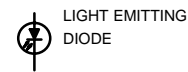
TRANSISTORIZED SWITCH



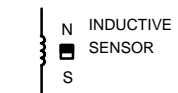
THERMO SWITCH



PERMANENT MAGNET MOTOR TWO SPEEDS



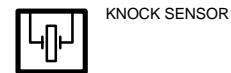
LIGHT EMITTING DIODE



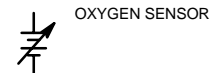
INDUCTIVE SENSOR



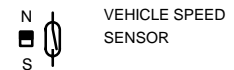
SOLENOID



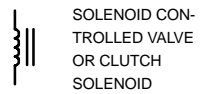
KNOCK SENSOR



OXYGEN SENSOR



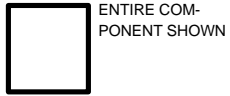
VEHICLE SPEED SENSOR



SOLENOID CONTROLLED VALVE OR CLUTCH SOLENOID



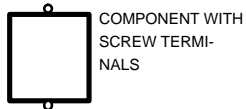
SYMBOLS



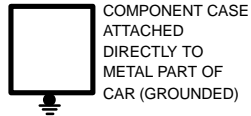
ENTIRE COMPONENT SHOWN



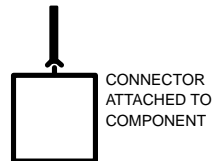
PART OF COMPONENT SHOWN



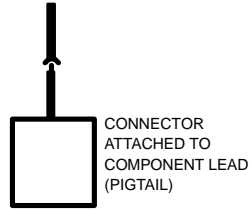
COMPONENT WITH SCREW TERMINALS



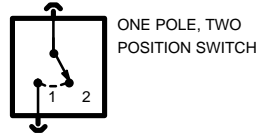
COMPONENT CASE ATTACHED DIRECTLY TO METAL PART OF CAR (GROUNDED)



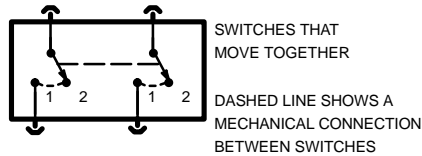
CONNECTOR ATTACHED TO COMPONENT



CONNECTOR ATTACHED TO COMPONENT LEAD (PIGTAIL)



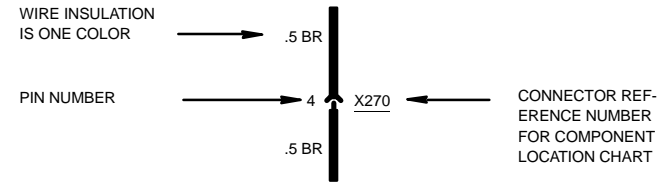
ONE POLE, TWO POSITION SWITCH



SWITCHES THAT MOVE TOGETHER

DASHED LINE SHOWS A MECHANICAL CONNECTION BETWEEN SWITCHES

WIRE COLOR	
BL	BLUE
BR	BROWN
GE	YELLOW
GN	GREEN
GR	GRAY
OR	ORANGE
RS	PINK
RT	RED
SW	BLACK
VI	VIOLET
WS	WHITE
TR	TRANSPARENT



WIRE INSULATION IS ONE COLOR

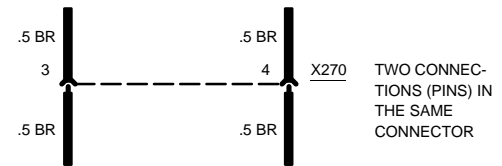
PIN NUMBER

CONNECTOR REFERENCE NUMBER FOR COMPONENT LOCATION CHART



WIRE INSULATION IS ONE COLOR WITH ANOTHER COLOR STRIPE (GREEN WITH WHITE)

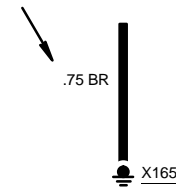
A WAVY LINE MEANS WIRE IS CONTINUED



TWO CONNECTIONS (PINS) IN THE SAME CONNECTOR

DASHED LINE INDICATES TERMINALS OF THE SAME CONNECTOR

WIRE SIZE IN MM SQUARED

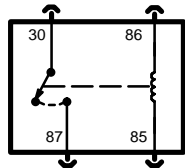


WIRE ATTACHED TO METAL PART OF CAR (GROUNDED)

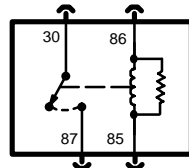
GROUND NUMBERED FOR REFERENCE ON COMPONENT LOCATION CHART



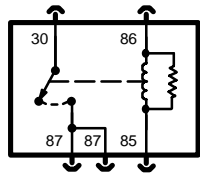
SYMBOLS



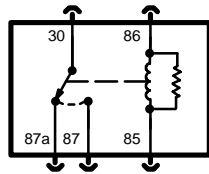
CONTACT RELAY



RELAY WITH RESISTOR ACROSS WINDING



CONTACT RELAY WITH TWO OUTPUTS



CHANGEOVER RELAY WITH TWO OUTPUTS

TERMINAL NUMBER DESCRIPTION

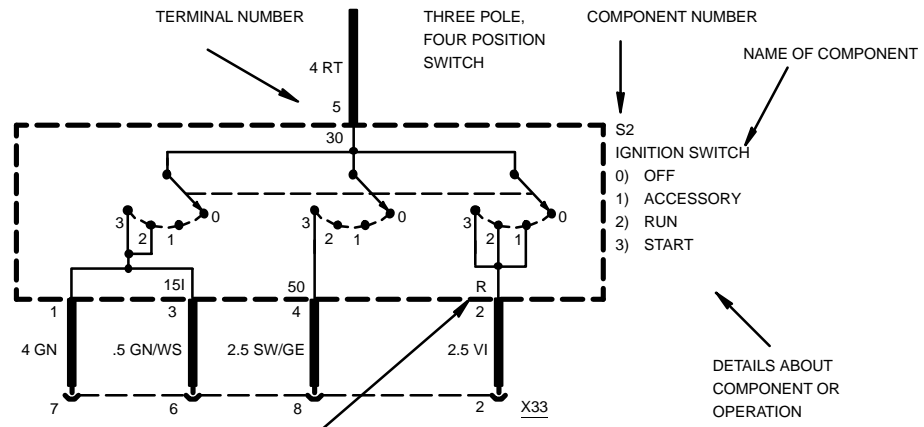
30 RELAY INPUT

85 RELAY OUTPUT (WINDING)

86 RELAY INPUT (WINDING)

87 RELAY OUTPUT (ENERGIZED)

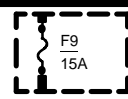
87a RELAY OUTPUT (AT REST)



"R" IS ENERGIZED IN ACCY, RUN, OR START

TERMINAL NUMBER	DESCRIPTION	TERMINAL NUMBER	DESCRIPTION
50	VOLTAGE: IGNITION SWITCH IN START	15I	VOLTAGE: IGNITION SWITCH IN RUN
30	VOLTAGE: SUPPLIED AT ALL TIMES	R	VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START
15	VOLTAGE: IGNITION SWITCH IN RUN OR START	31	GROUND

HOT AT ALL TIMES



INDICATES THAT FUSE 9 IS SUPPLIED WITH POWER AT ALL TIMES

POWER STATUS

HOT AT ALL TIMES

HOT IN RUN AND START

HOT IN ACCY, RUN AND START

DESCRIPTION

VOLTAGE: SUPPLIED AT ALL TIMES

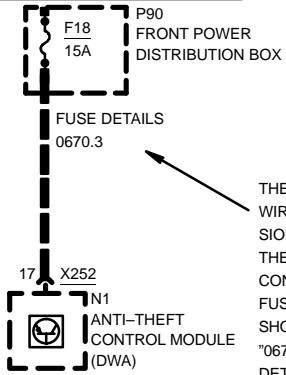
VOLTAGE: IGNITION SWITCH IN RUN OR START

VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START

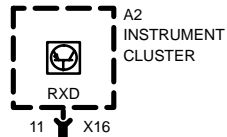


SYMBOLS

HOT IN ACCY, RUN AND START



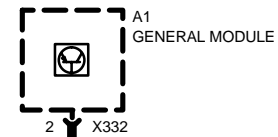
THE COMPLETE WIRE PROGRESSION AND FURTHER CIRCUITS CONNECTED TO FUSE 18 ARE SHOWN IN CELL "0670.3 FUSE DETAILS" AT FUSE 18



.5 WS/GE

DATA LINK
0670.5

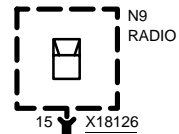
CIRCUIT REFERENCE-A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT



GROUND DISTRIBUTION
0670.4

X497

THE COMPLETE WIRE PROGRESSION AND FURTHER CIRCUITS CONNECTED TO GROUND X497 ARE SHOWN IN CELL "0670.4 GROUND DISTRIBUTION" AT GROUND X497



1.5 BR

0670.0-03

CURRENT PATH IS CONTINUED AS LABELED



1.5 BR

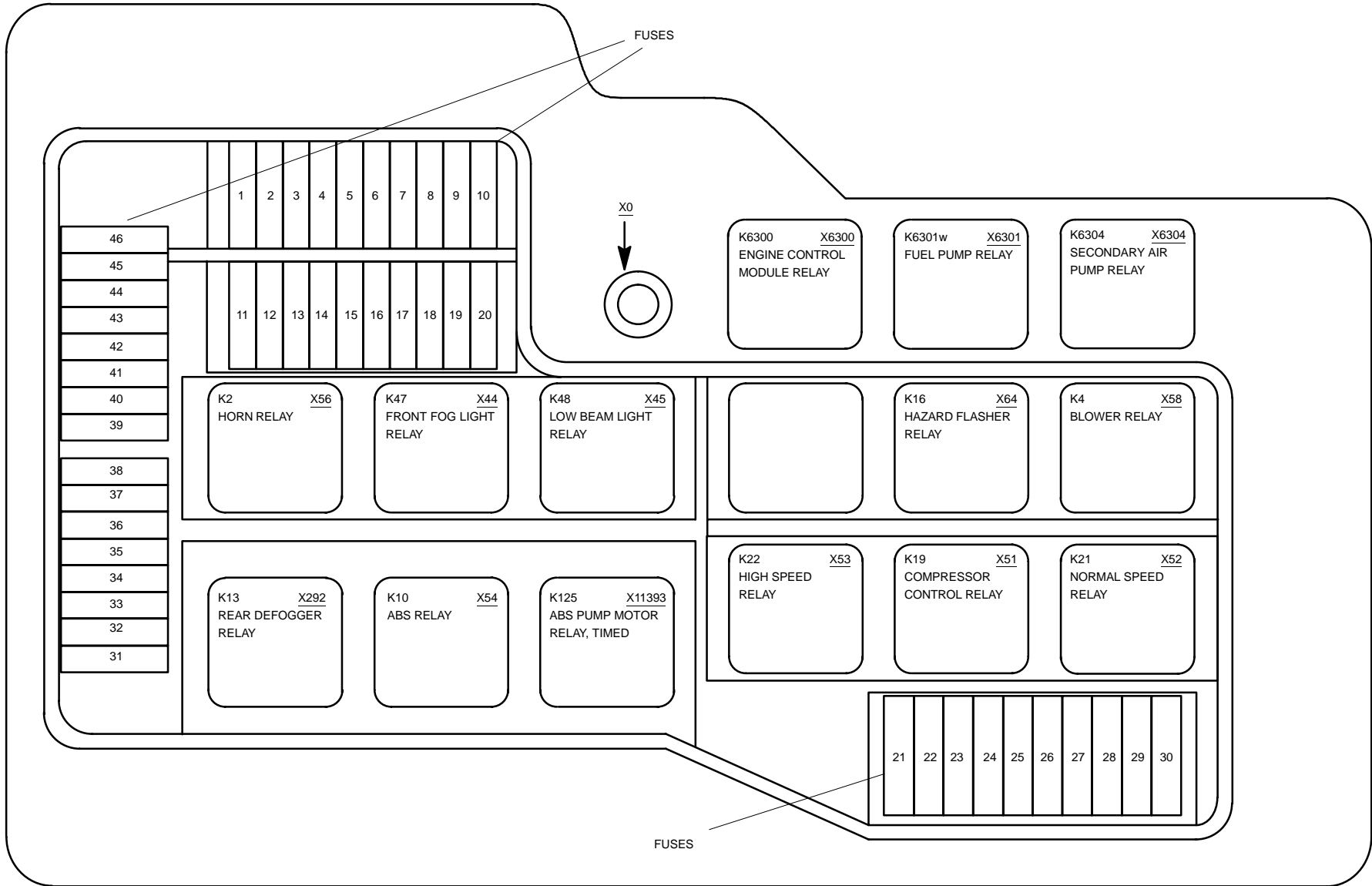
X491

ARROW SHOWS DIRECTION OF CURRENT FLOW AND IS REPEATED WHERE CURRENT PATH CONTINUES



0670.0 POWER DISTRIBUTION CHART

FRONT POWER DISTRIBUTION BOX





POWER DISTRIBUTION CHART

RELAY PANEL UNDER LH SIDE OF DASHBOARD

