

**1999**

**BMW Z3 (E36/7)  
Z3 Roadster, Z3 Coupe,  
M Roadster, M Coupe**

**Electrical  
Troubleshooting  
Manual**

Vehicles produced 9/98 thru 03/99



## ELECTRICAL TROUBLESHOOTING MANUAL

### SERIES 3 – E36/7 (Z3 Roadster, Z3 Coupe, M Roadster, and M Coupe)

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#### MODEL YEAR 1999

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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
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SEAT HEIGHT MOTOR, PASSENGER'S, M59 .....	5200.0-01
SEAT HEIGHT MOTOR, PASSENGER'S, M59 .....	5200.0-03
SEAT LENGTH ADJUST CUT-OFF RELAY, DRIVER'S, K921 ..	5200.0-02
SEAT LENGTH ADJUST CUT-OFF RELAY, PASSENGER'S, K911 .....	5200.0-03
SEAT LIMIT SWITCH, DRIVER'S, S910 .....	5200.0-02
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SEAT MAT, I1008 .....	3234.0-01
SEAT MOVEMENT MOTOR, DRIVER'S, M51 .....	5200.0-00
SEAT MOVEMENT MOTOR, DRIVER'S, M51 .....	5200.0-02
SEAT MOVEMENT MOTOR, PASSENGER'S, M60 .....	5200.0-01
SEAT MOVEMENT MOTOR, PASSENGER'S, M60 .....	5200.0-03
SEAT OCCUPANCY DETECTOR, A113 .....	3234.0-01
SEAT TILT ADJUST CUT-OFF RELAY, DRIVER'S, K920 .....	5200.0-02
SEAT TILT ADJUST CUT-OFF RELAY, PASSENGER'S, K910 .....	5200.0-03
SEATBACK HEATER, DRIVER'S, E56 .....	5203.0-00
SEATBACK HEATER, PASSENGER'S, E59 .....	5203.0-00
SECONDARY AIR PUMP RELAY, K6304 .....	1210.17-05
SECONDARY AIR PUMP RELAY, Y6304 .....	1210.25-04
SECONDARY AIR PUMP VALVE, Y6163 .....	1210.17-05
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 SLIP CONTROL (ABS/ASC) ..... 3450.1  
 SLIP CONTROL MODULE (ABS/ASC), A52 ..... 3450.1  
 SOLENOID VALVE ("RUNNING LOSSES"), Y6550 ..... 1210.17-05  
 SOLENOID VALVE ("RUNNING LOSSES"), Y6550 ..... 1210.25-04  
 SPEAKER, LEFT REAR, H46 ..... 6510.1-03  
 SPEAKER, RIGHT REAR, H45 ..... 6510.1-03  
 SPEED SENSOR – ABS, LEFT FRONT, B2 ..... 3450.1-04  
 SPEED SENSOR – ABS, LEFT FRONT, B2 ..... 3450.1-07  
 SPEED SENSOR – ABS, LEFT REAR, B4 ..... 3450.1-04  
 SPEED SENSOR – ABS, LEFT REAR, B4 ..... 3450.1-07  
 SPEED SENSOR – ABS, RIGHT FRONT, B1 ..... 3450.1-04  
 SPEED SENSOR – ABS, RIGHT FRONT, B1 ..... 3450.1-07  
 SPEED SENSOR – ABS, RIGHT REAR, B3 ..... 3450.1-04  
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 SUPPLEMENTAL RESTRAINT SYSTEM CONTROL MODULE,  
 A12 ..... 3234.0  
 SYMBOLS ..... 0140.0  
 TAIL LIGHT, LEFT, H25 ..... 6314.0-01  
 TAIL LIGHT, LEFT, H37 ..... 6314.0-01  
 TAIL LIGHT, RIGHT, H30 ..... 6314.0-01  
 TAIL LIGHT, RIGHT, H39 ..... 6314.0-01  
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 TEMPERATURE SWITCH, S36 ..... 6450.6-07  
 TEMPERATURE WHEEL SWITCH, S531 ..... 6450.6-01

TEMPERATURE WHEEL SWITCH, S531 ..... 6450.6-05  
 THERMAL OIL LEVEL SENSOR (TOENS) CONTROL MODULE,  
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 THERMAL OIL LEVEL SWITCH, B6254 ..... 6211.0-07  
 THERMOSTAT, CHARACTERISTIC MAP COOLING, B6279 . 1210.25-05  
 THROTTLE POSITION SENSOR, R6252 ..... 1210.17-05  
 THROTTLE POSITION SENSOR/  
 CRUISE CONTROL ACTUATOR, R6385 ..... 1210.25-07  
 THROTTLE POSITION SENSOR/CRUISE CONTROL  
 ACTUATOR, R6385 ..... 6571.0-03  
 TILT SUNROOF MOTOR, M24y ..... 5410.5-00  
 TILT SUNROOF SWITCH, S38y ..... 5410.5-00  
 TIRE INFLATION SYSTEM ..... 3614.0-00  
 TRANSMISSION CONTROL MODULE (EGS), A8500 ..... 2460.2  
 TRANSMISSION POSITION INDICATOR LIGHT, E82 ..... 6300.0-02  
 TRANSMISSION VALVE UNIT, Y8521 ..... 2460.2-01  
 TURN LIGHT, LEFT FRONT, H7 ..... 6313.0-02  
 TURN LIGHT, LEFT REAR, H6 ..... 6313.0-03  
 TURN LIGHT, RIGHT FRONT, H4 ..... 6313.0-02  
 TURN LIGHT, RIGHT REAR, H5 ..... 6313.0-03  
 TURN/HAZARD LIGHTS ..... 6313.0  
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 UNLOADER RELAY, TERMINAL 15, K6326 ..... 1210.25-01  
 UNLOADER RELAY, TERMINAL 15, K9 ..... 6424.0  
 VALVE RELAY (ABS/ASC), K95 ..... 3450.1-00  
 VALVE, INDIVIDUAL CONTROL INTAKE SYSTEM, Y6167 ... 1210.25-03  
 VARIABLE CAMSHAFT CONTROL VALVE 1 (INLET), Y6275z 1210.25-03  
 VARIABLE CAMSHAFT CONTROL VALVE 1, Y6275 ..... 1210.17-01  
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WASHER PUMP, M4 .....	6160.1-01
WASHER PUMP, M4 .....	6160.1-02
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WIPER/WASHER MODULE, A51 .....	6167.1-00
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WIPER/WASHER SWITCH, S5 .....	6160.1-02
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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.

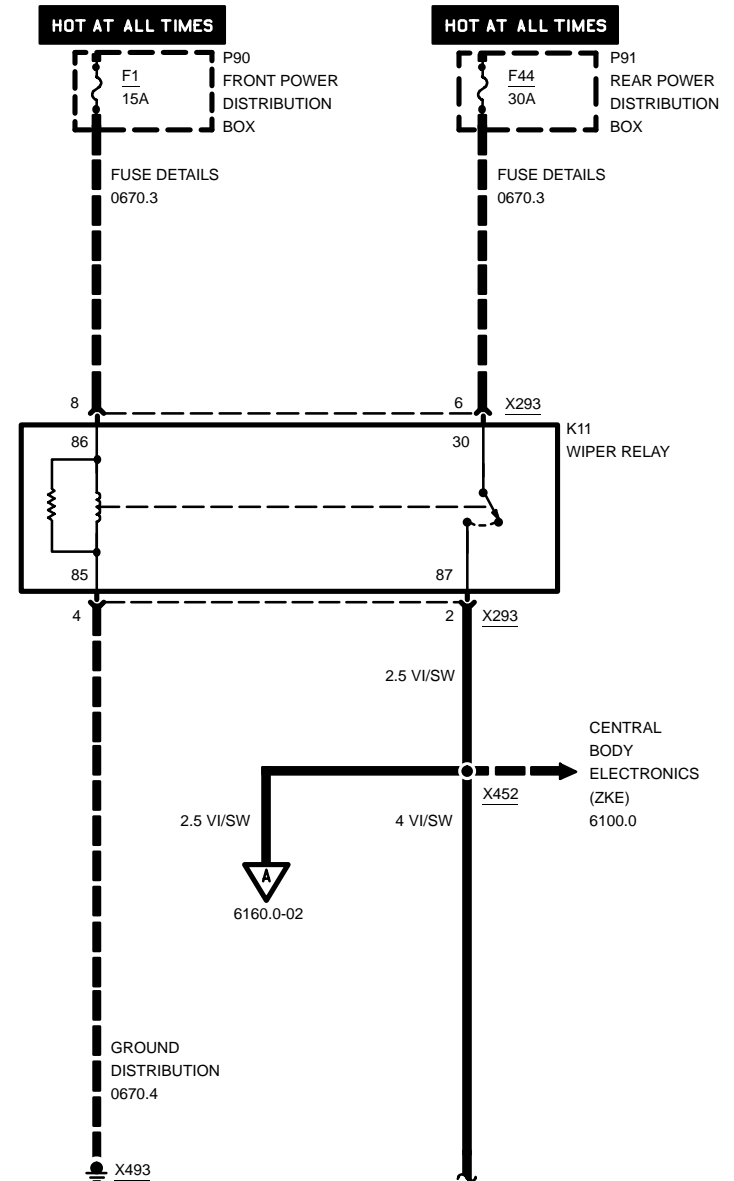
All circuit symbols used are listed and explained in cell **0140.0 Symbols**.

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.

### Example

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





Z3

## INTRODUCTION

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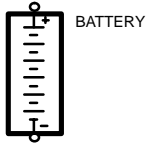
### General Conventions

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.

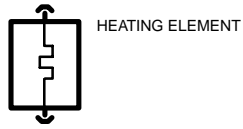


# 0140.0 SYMBOLS

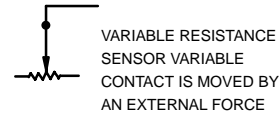
Z3



BATTERY



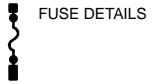
HEATING ELEMENT



VARIABLE RESISTANCE SENSOR VARIABLE CONTACT IS MOVED BY AN EXTERNAL FORCE



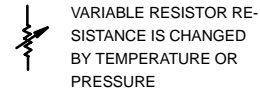
ANTENNA



FUSE DETAILS



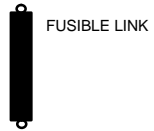
LOUDSPEAKER OR HORN



VARIABLE RESISTOR RESISTANCE IS CHANGED BY TEMPERATURE OR PRESSURE



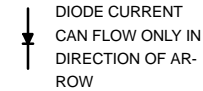
CONTROL/POWER ELECTRONICS



FUSIBLE LINK



LIGHT



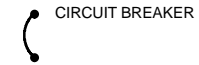
DIODE CURRENT CAN FLOW ONLY IN DIRECTION OF ARROW



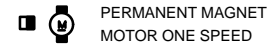
HALL EFFECT SENSOR



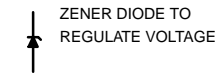
RADIO



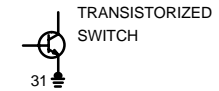
CIRCUIT BREAKER



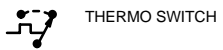
PERMANENT MAGNET MOTOR ONE SPEED



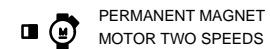
ZENER DIODE TO REGULATE VOLTAGE



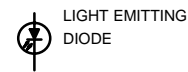
TRANSISTORIZED SWITCH



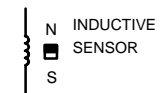
THERMO SWITCH



PERMANENT MAGNET MOTOR TWO SPEEDS



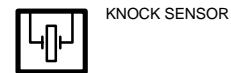
LIGHT EMITTING DIODE



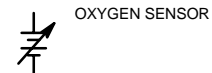
INDUCTIVE SENSOR



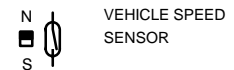
SOLENOID



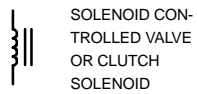
KNOCK SENSOR



OXYGEN SENSOR



VEHICLE SPEED SENSOR



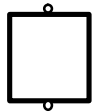
SOLENOID CONTROLLED VALVE OR CLUTCH SOLENOID



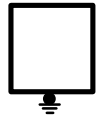
ENTIRE COM-  
PONENT SHOWN



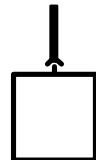
PART OF COM-  
PONENT SHOWN



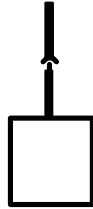
COMPONENT WITH  
SCREW TERMI-  
NALS



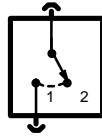
COMPONENT CASE  
ATTACHED DI-  
RECTLY TO METAL  
PART OF CAR  
(GROUNDED)



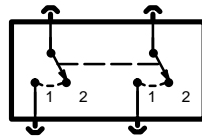
CONNECTOR AT-  
TACHED TO COM-  
PONENT



CONNECTOR AT-  
TACHED TO COM-  
PONENT LEAD  
(PIGTAIL)



ONE POLE, TWO  
POSITION SWITCH

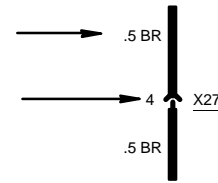


SWITCHES THAT  
MOVE TOGETHER

DASHED LINE  
SHOWS A ME-  
CHANICAL CON-  
NECTION  
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

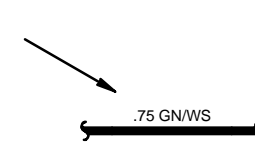
WIRE INSULATION  
IS ONE COLOR



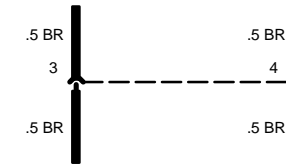
PIN NUMBER

CONNECTOR REF-  
ERENCE NUMBER  
FOR COMPONENT  
LOCATION CHART

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



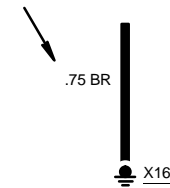
A WAVY LINE  
MEANS WIRE IS  
CONTINUED



TWO CONNEC-  
TIONS (PINS) IN  
THE SAME  
CONNECTOR

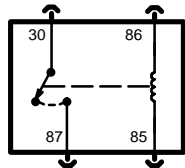
DASHED LINE INDI-  
CATES TERMINALS  
OF THE SAME  
CONNECTOR

WIRE SIZE IN MM  
SQUARED

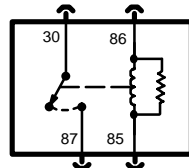


WIRE ATTACHED  
TO METAL PART  
OF CAR  
(GROUNDED)

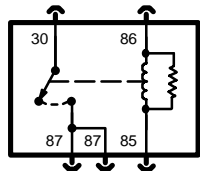
GROUND NUM-  
BERED FOR REF-  
ERENCE ON COM-  
PONENT LOCATION  
CHART



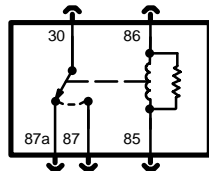
CONTACT RELAY



RELAY WITH RESISTOR ACROSS WINDING

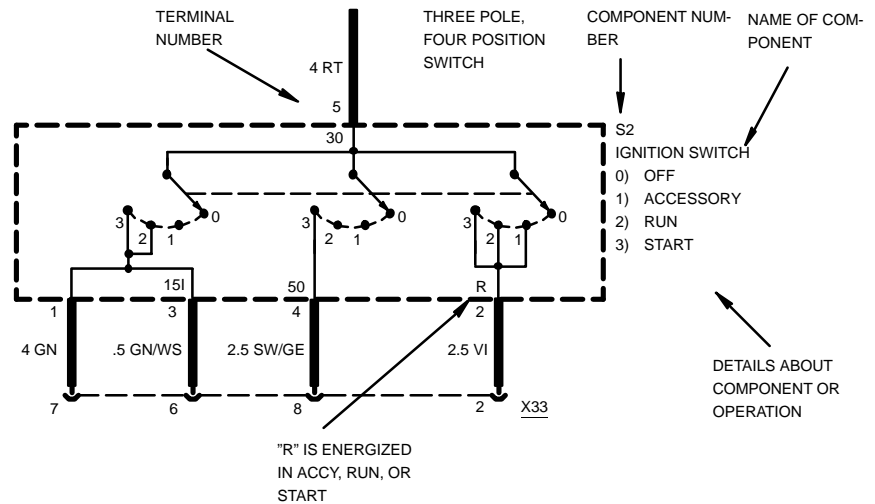


CONTACT RELAY WITH TWO OUTPUTS



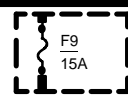
CHANGEOVER RELAY WITH TWO OUTPUTS

TERMINAL NUMBER	DESCRIPTION
30	RELAY INPUT
85	RELAY OUTPUT (WINDING)
86	RELAY INPUT (WINDING)
87	RELAY OUTPUT (ENERGIZED)
87a	RELAY OUTPUT (AT REST)



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

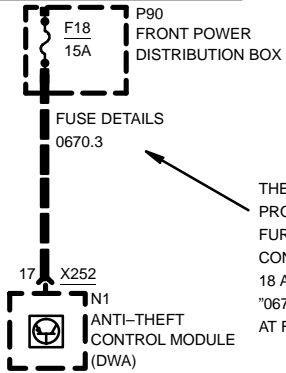
VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START



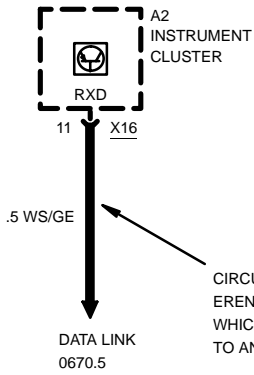
# SYMBOLS

Z3

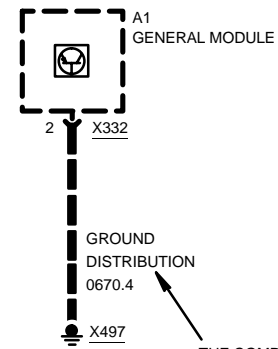
## HOT IN ACCY, RUN AND START



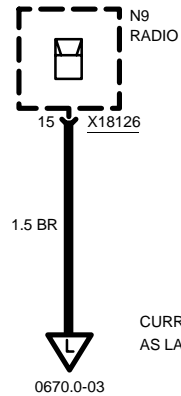
THE COMPLETE WIRE  
PROGRESSION AND  
FURTHER CIRCUITS  
CONNECTED TO FUSE  
18 ARE SHOWN IN CELL  
"0670.3 FUSE DETAILS"  
AT FUSE 18



CIRCUIT REF-  
ERENCE-A WIRE  
WHICH CONNECTS  
TO ANOTHER CIRCUIT



THE COMPLETE  
WIRE PROGRES-  
SION AND FUR-  
THER CIRCUITS  
CONNECTED TO  
GROUND X497 ARE  
SHOWN IN CELL  
"0670.4 GROUND  
DISTRIBUTION" AT  
GROUND X497



CURRENT PATH IS CONTINUED  
AS LABELED



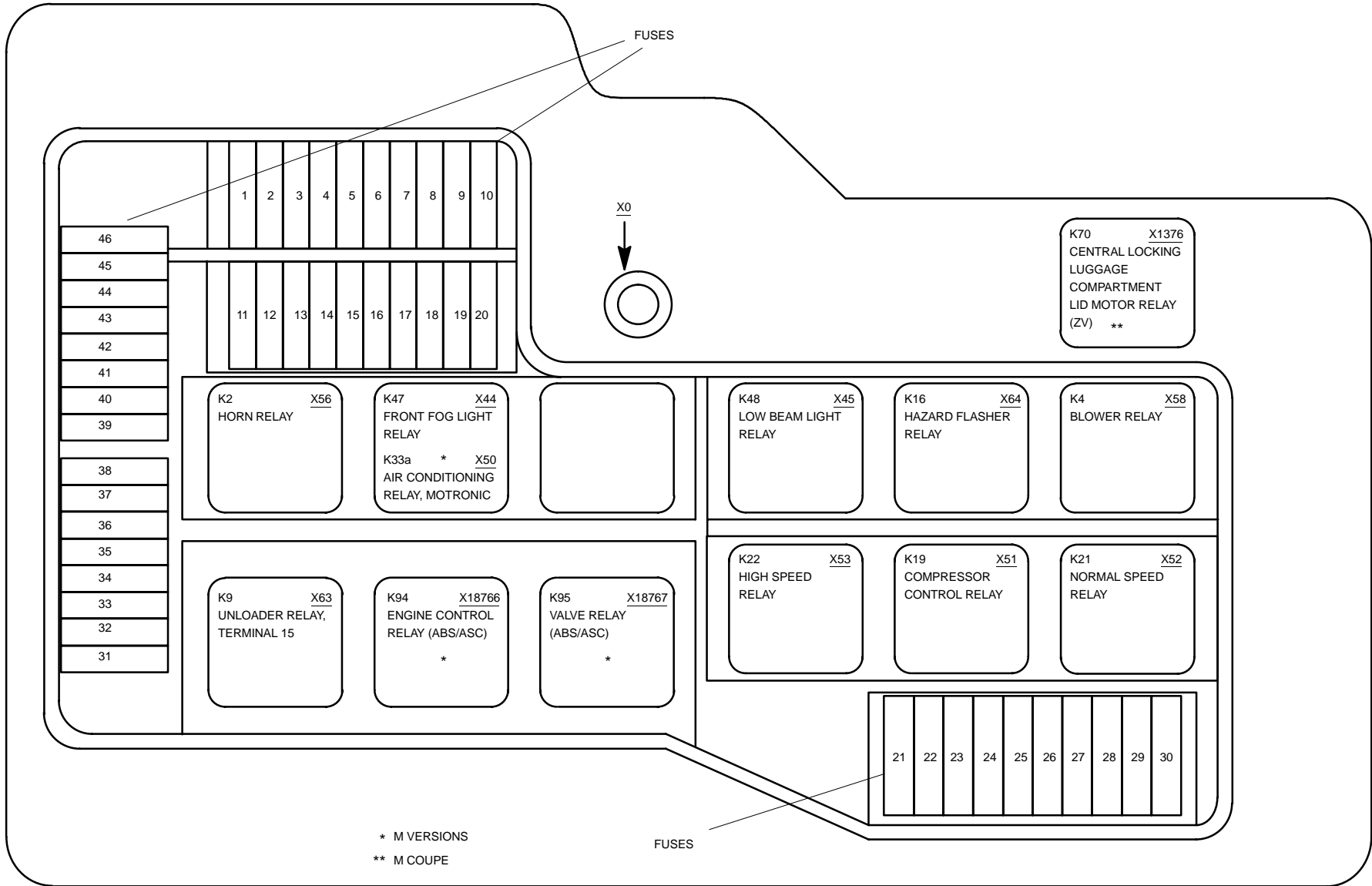
ARROW SHOWS  
DIRECTION OF  
CURRENT FLOW  
AND IS REPEATED  
WHERE CURRENT  
PATH CONTINUES





# 0670.0 POWER DISTRIBUTION CHART

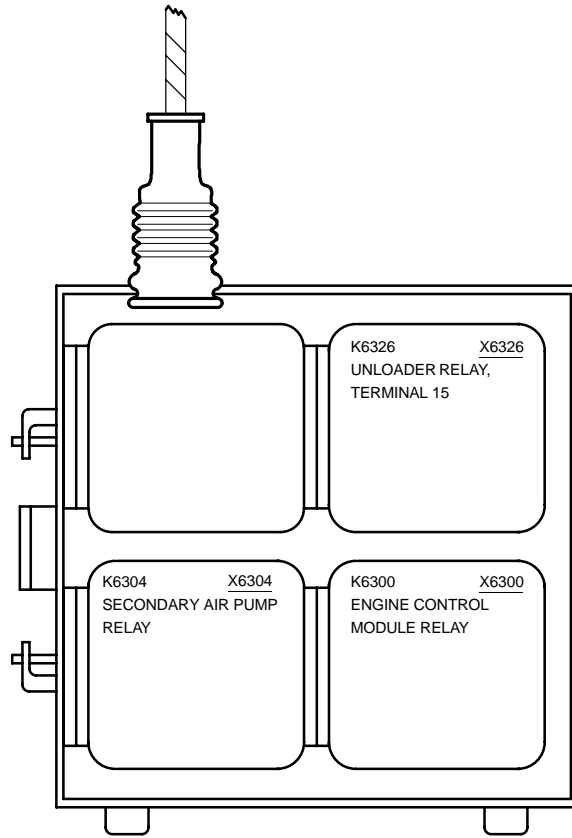
## FRONT POWER DISTRIBUTION BOX



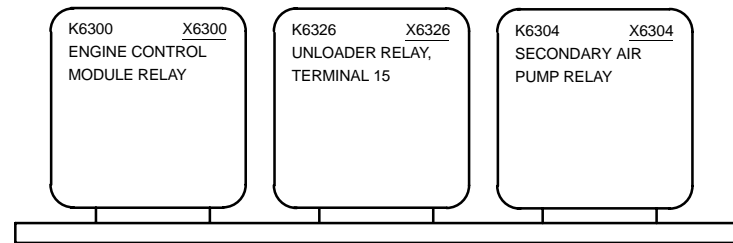


# POWER DISTRIBUTION CHART

IN E-BOX



M VERSIONS



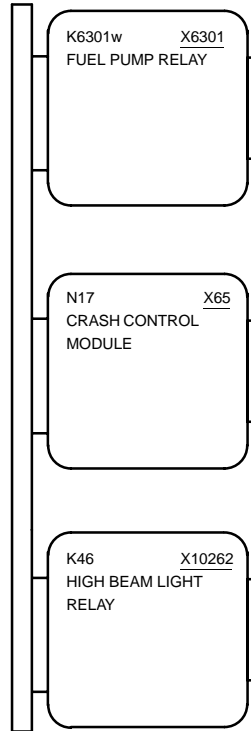
Z3 VERSIONS



Z3

# POWER DISTRIBUTION CHART

## RELAY PANEL UNDER LH SIDE OF DASHBOARD

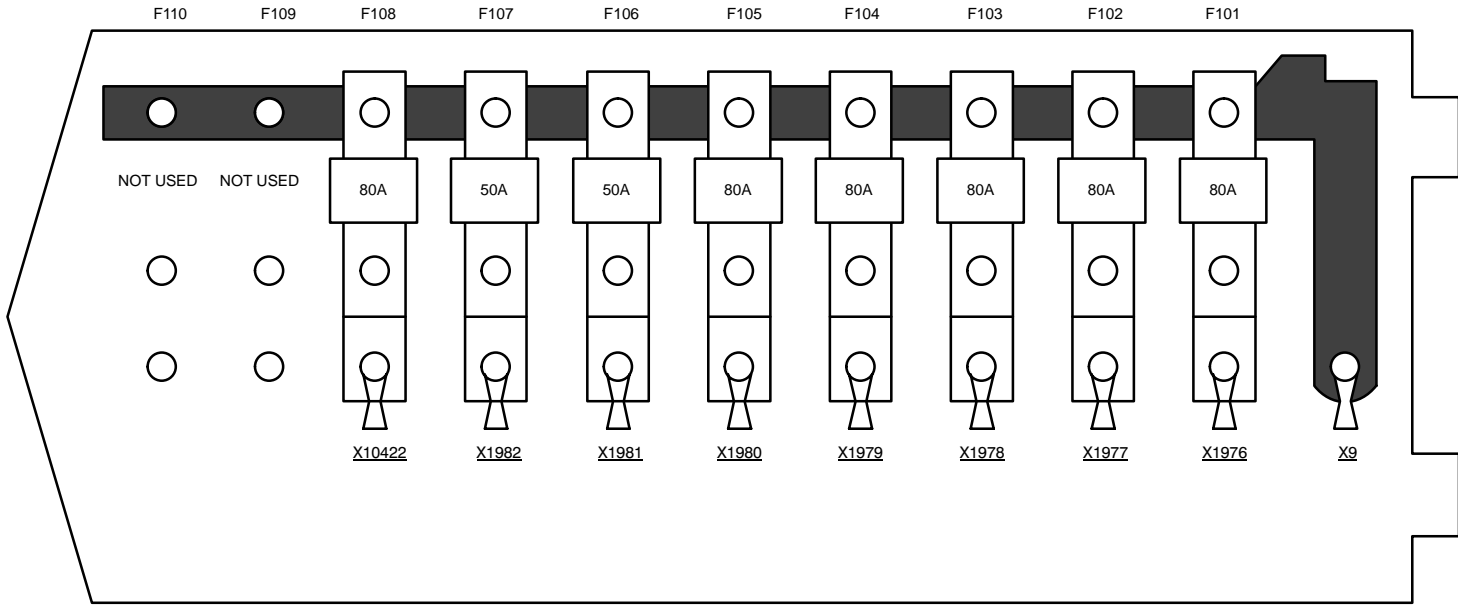




# POWER DISTRIBUTION CHART

Z3 VERSIONS

B+ JUNCTION POINT UNDER LH SIDE OF DASHBOARD



03/00

0670.0-03

1999