

1994

**BMW 318i/s/c,
320i, 325i/s/c,
M3 (E36)**

**Electrical
Troubleshooting
Manual**

Vehicles Produced 9/93 to 8/94



ELECTRICAL TROUBLESHOOTING MANUAL

**3 SERIES – E36 (318i, 318is, 320i, 325i, 325is, M3,
INCL. CONVERTIBLE)**

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MODEL YEAR 1994

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SUNROOF MOTOR, M24	5410.1-01	TRUNK LID RELAY, K117	5126.0-01
SUNROOF SWITCH, S38	5410.1-01	TRUNK LIGHT SWITCH, S61y	6320.0-00
SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG)	3234.0-00	TRUNK LOCK MOTOR, M17	5126.2-01
SUPPLEMENTAL RESTRAINT SYSTEM CONTROL		TURN/HAZARD LIGHTS	6313.0-00
MODULE, A12	3234.0-00	TURN LIGHT, LEFT FRONT, H7	6313.0-02
SUPPRESSION FILTER, C900	6424.0-01	TURN LIGHT, LEFT REAR, H6	6313.0-02
SYMBOLS	0140.0-00	TURN LIGHT, RIGHT FRONT, H4	6313.0-02
TAIL LIGHT, LEFT, H25	6314.0-01	TURN LIGHT, RIGHT REAR, H5	6313.0-02
TAIL LIGHT, LEFT, H37	6314.0-01	TWIN RELAY MODULE, N21	6160.1-01



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VARIABLE CAMSHAFT CONTROL SENSOR 2, B5023	1210.14-04
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WIPER/WASHER MODULE (WWM)	6160.1-00
WIPER/WASHER SWITCH, S5	6160.1-01

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, 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 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**.

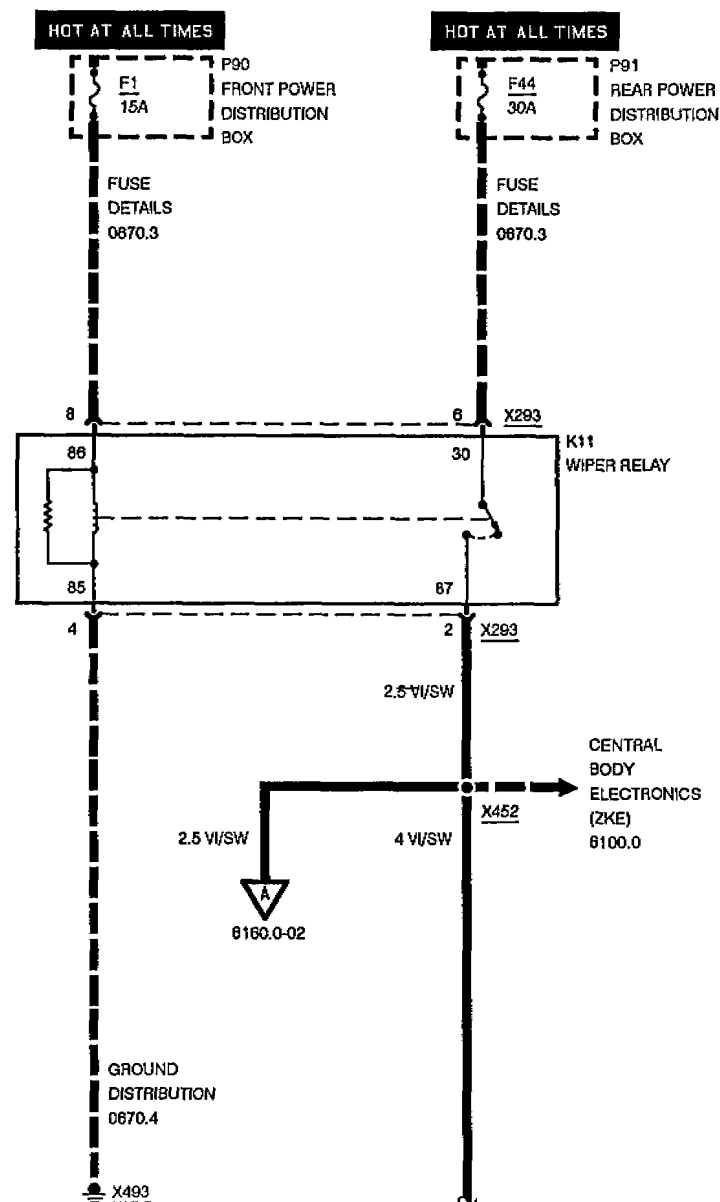
In cell **7000.0 Component Location Chart** all important connectors, ground points and components are listed in tabular form. It provides a precise description of the component locations in the vehicle.

In cell **7100.0 Component Location Views** the location of connectors and components which are difficult to locate are shown in line arts. 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 modules of the system being diagnosed.

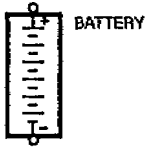
Example

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

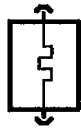


General Conventions

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.



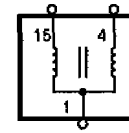
BATTERY



HEATING ELEMENT



VARIABLE RESISTANCE SENSOR
VARIABLE CONTACT IS
MOVED BY AN EXTERNAL
FORCE



IGNITION COIL



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



THERMO SWITCH



PERMANENT MAGNET MOTOR
ONE SPEED



ZENER DIODE
TO REGULATE VOLTAGE



TRANSISTORIZED SWITCH



SOLENOID



PERMANENT MAGNET MOTOR
TWO SPEEDS



LIGHT EMITTING DIODE



INDUCTIVE SENSOR



SOLENOID CONTROLLED VALVE
OR CLUTCH SOLENOID



KNOCK SENSOR

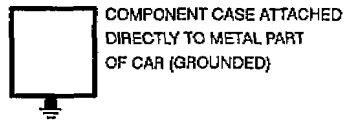
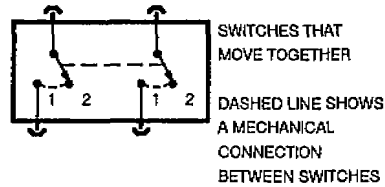
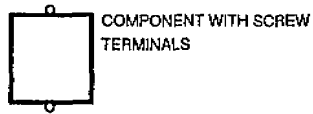
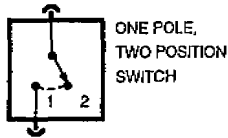
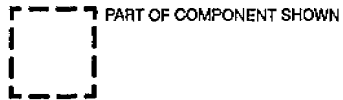
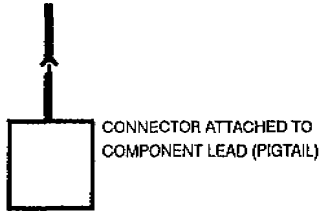


OXYGEN SENSOR

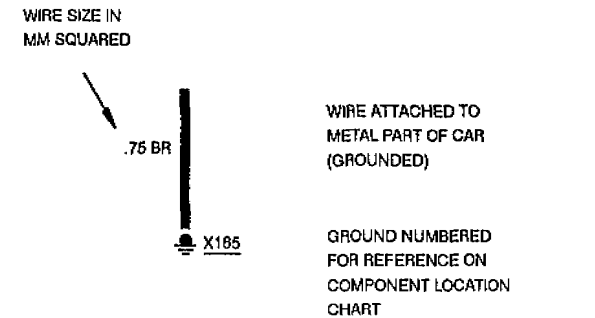
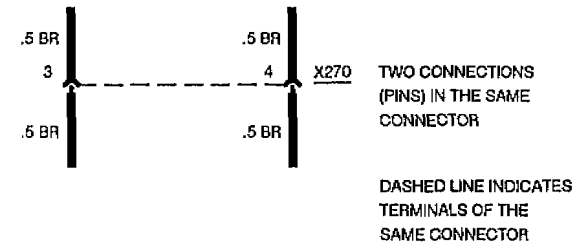
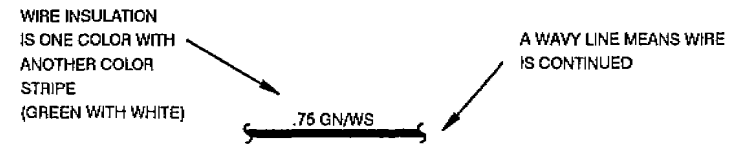
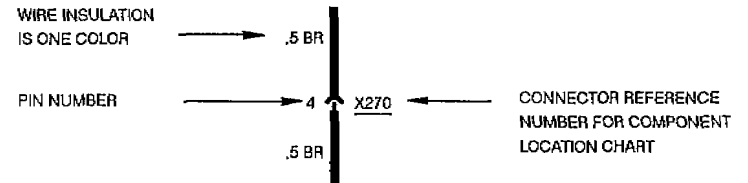
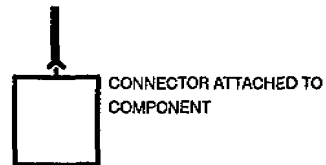


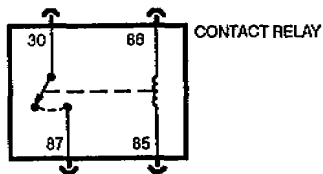
VEHICLE SPEED SENSOR

SYMBOLS

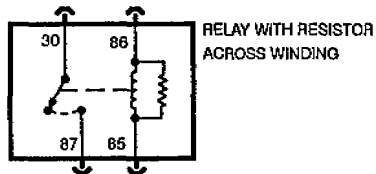


WIRE COLOR	
BL	BLUE
BR	BROWN
GE	YELLOW
GN	GREEN
GR	GRAY
OR	ORANGE
RS	PINK
RT	RED
SW	BLACK
VI	VIOLET
WS	WHITE
TR	TRANSPARENT

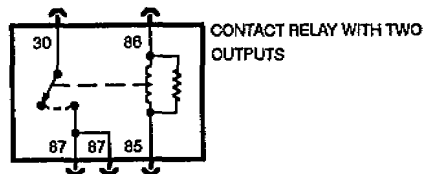




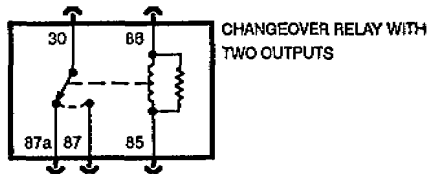
CONTACT RELAY



RELAY WITH RESISTOR ACROSS WINDING



CONTACT RELAY WITH TWO OUTPUTS



CHANGEOVER RELAY WITH TWO OUTPUTS

TERMINAL NUMBER DESCRIPTION

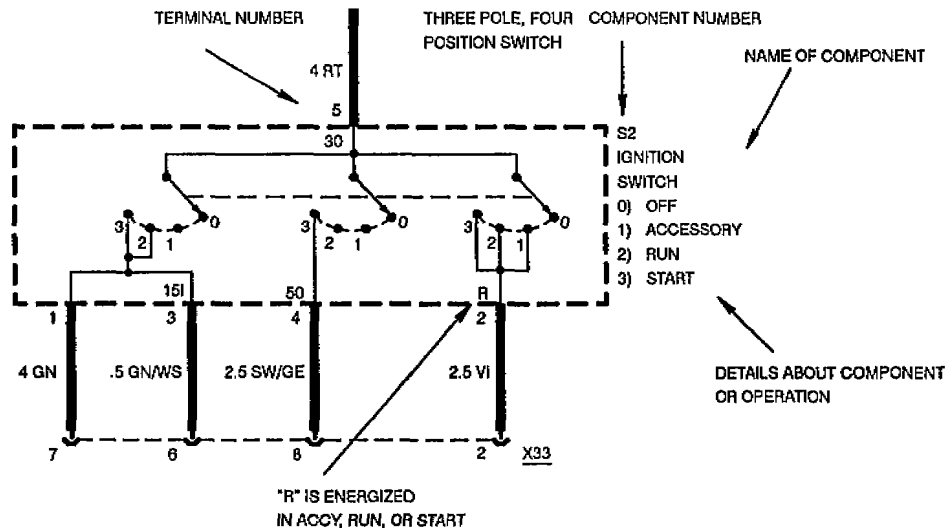
30 RELAY INPUT

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

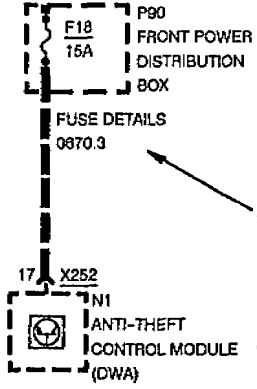
VOLTAGE: SUPPLIED AT ALL TIMES

VOLTAGE: IGNITION SWITCH IN RUN OR START

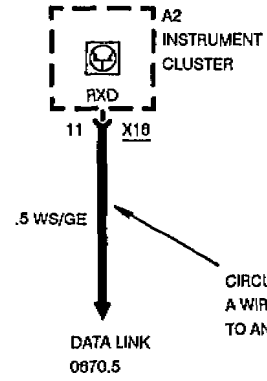
VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START

SYMBOLS

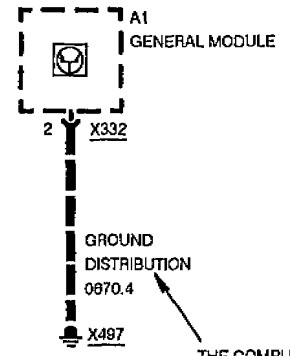
HOT IN ACCY, RUN AND START



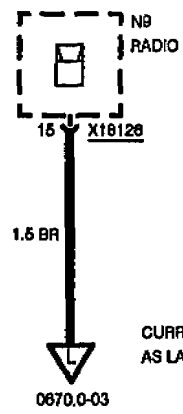
THE COMPLETE WIRE
PROGRESSION AND FURTHER
CIRCUITS CONNECTED TO
FUSE 18 ARE SHOWN IN CELL
"0670.3 FUSE DETAILS" AT
FUSE 18



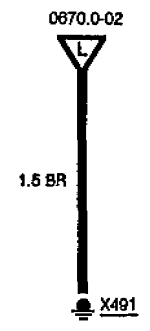
CIRCUIT REFERENCE-
A WIRE WHICH CONNECTS
TO ANOTHER CIRCUIT



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



CURRENT PATH IS CONTINUED
AS LABELED

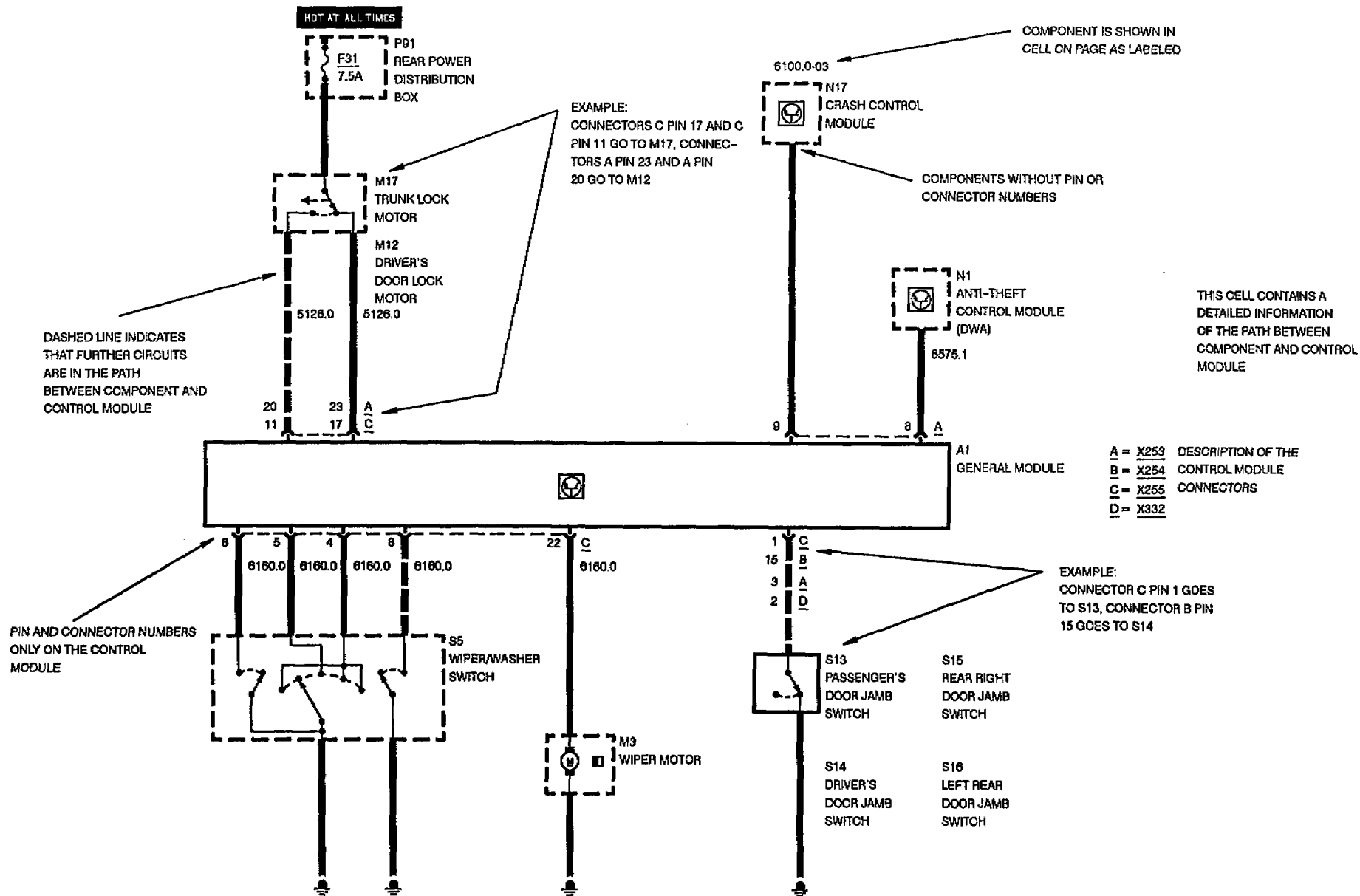


ARROW SHOWS
DIRECTION OF CURRENT
FLOW AND IS REPEATED
WHERE CURRENT
PATH CONTINUES



SYMBOLS

BLOCK DIAGRAM



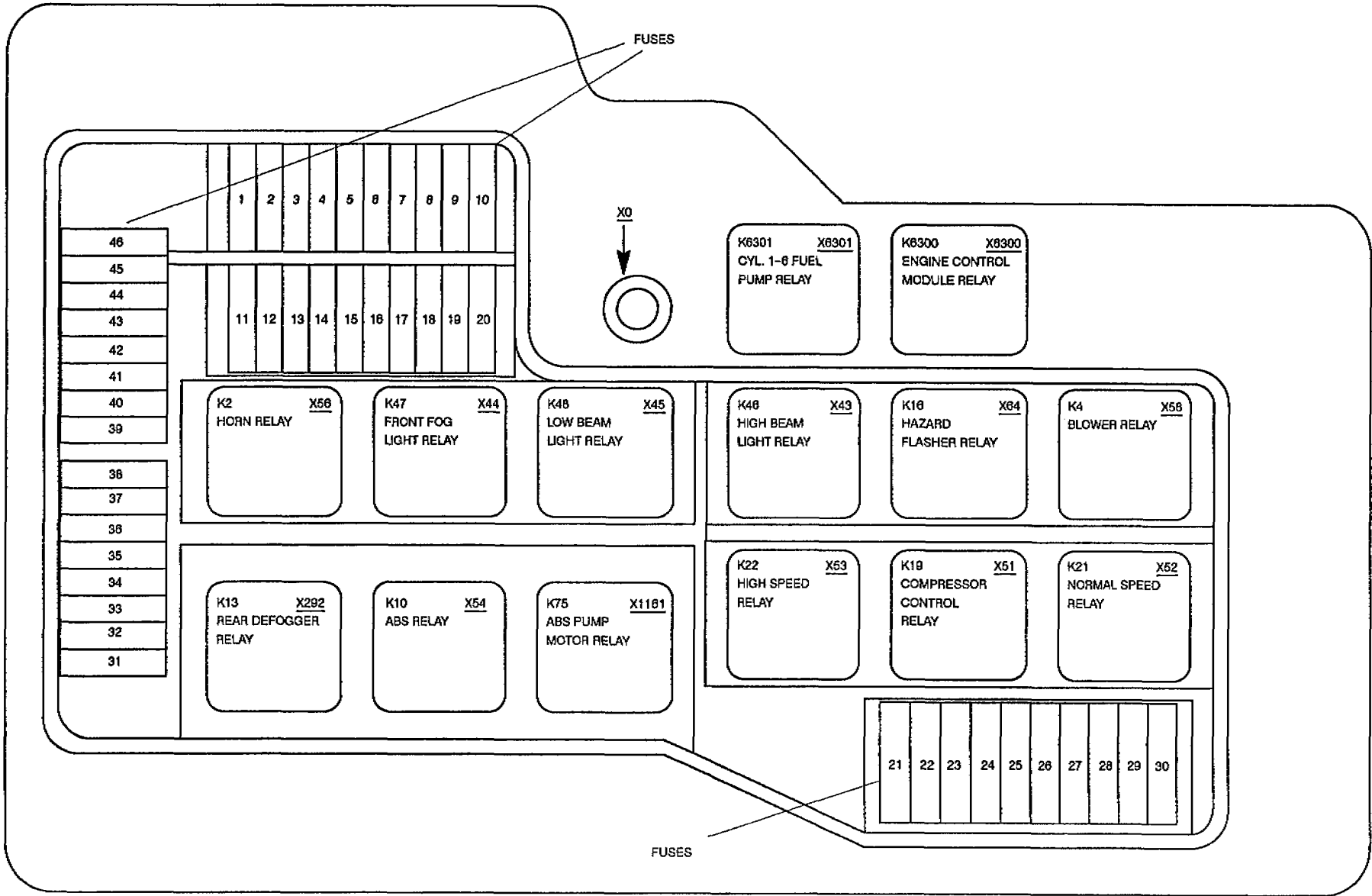
BMW
3

0670.0



POWER DISTRIBUTION CHART

P90 FRONT POWER DISTRIBUTION BOX





POWER DISTRIBUTION CHART

RELAY PANEL UNDER LH SIDE OF DASHBOARD

