

1992

**BMW
850i
(E31)**

**Electrical
Troubleshooting
Manual**

Vehicles Produced 7/91 to 8/92



ELECTRICAL TROUBLESHOOTING MANUAL

8 SERIES – E31 (850i)

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MODEL YEAR 1992

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START	1240.0
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STARTER RELAY, K1	1240.0-01
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STEERING COLUMN ANGLE ADJUST MOTOR, M83	3231.0-00
STEERING COLUMN ANGLE ADJUST POTENTIOMETER, R19z	3231.1-00
STEERING COLUMN LENGTH ADJUST MOTOR, M82	3231.0-00
STEERING COLUMN MEMORY (LSM)	3231.1
SUN BLIND CONTROL MODULE, A82	5146.0-00
SUN BLIND MOTOR, M74	5146.0-00
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SUNROOF MODULE, A33	5410.0-01
SUNROOF MOTOR, M24	5410.0-01
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SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG)	3234.0
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TAIL LIGHT, UPPER LEFT, H9025	6314.0-01
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ZKE INTERIOR LIGHTS (IB)	6330.0
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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.

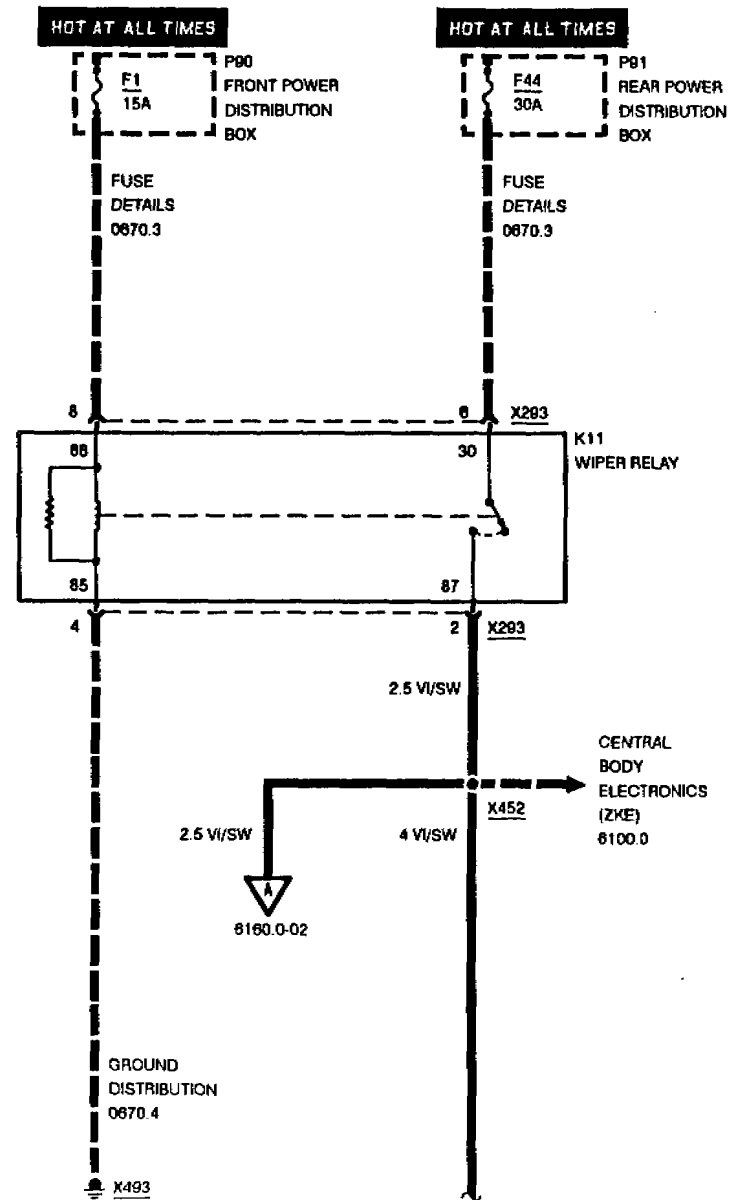
In cell 7000.0 Component Location Chart all important connectors, ground points and components are listed in tabular form. It provides a precise description of the component locations in the vehicle.

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.





INTRODUCTION

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 V1/SW from splice X452 with a wavy line indicates that the wire is continued on the opposite page.

SYMBOLS



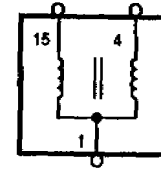
BATTERY



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



INDUCTIVE SENSOR



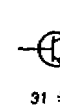
RADIO



LIGHT



DIODE
CURRENT CAN FLOW ONLY
IN DIRECTION OF ARROW



TRANSISTORIZED SWITCH



CIRCUIT BREAKER



PERMANENT MAGNET MOTOR
ONE SPEED



ZENER DIODE
TO REGULATE VOLTAGE



OXYGEN SENSOR



SOLENOID



PERMANENT MAGNET MOTOR
TWO SPEEDS



LIGHT EMITTING DIODE



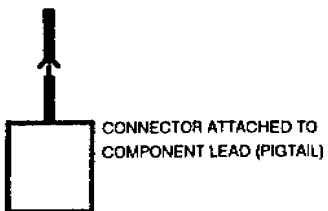
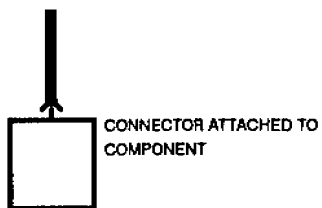
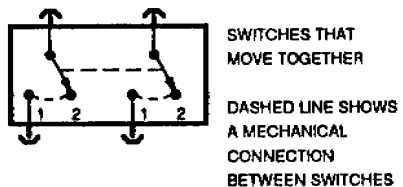
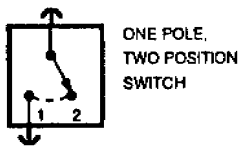
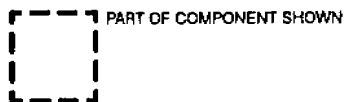
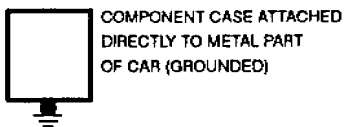
VEHICLE SPEED SENSOR



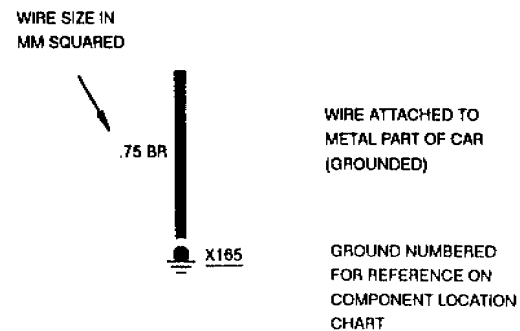
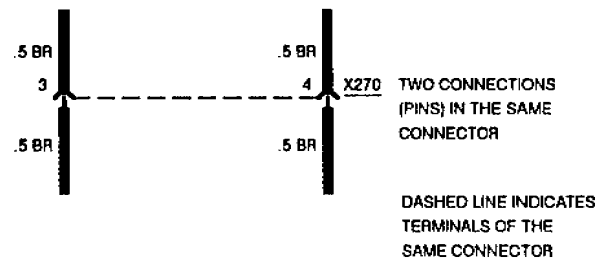
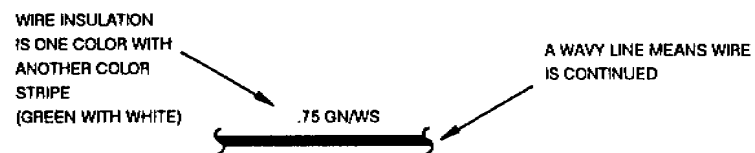
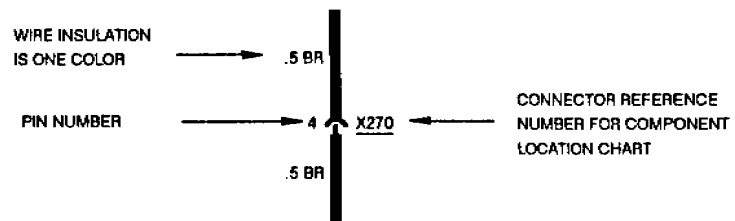
SOLENOID CONTROLLED VALVE
OR CLUTCH SOLENOID



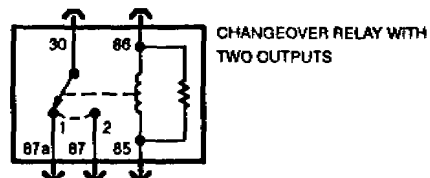
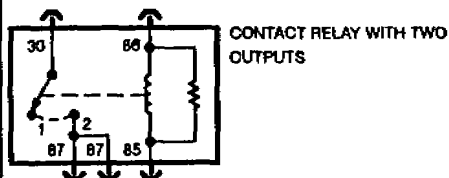
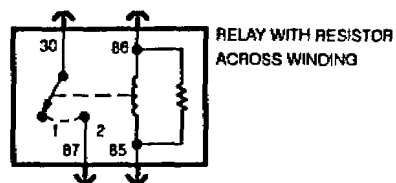
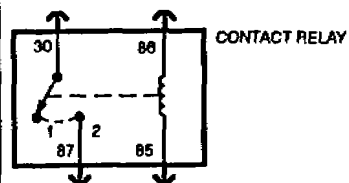
SYMBOLS



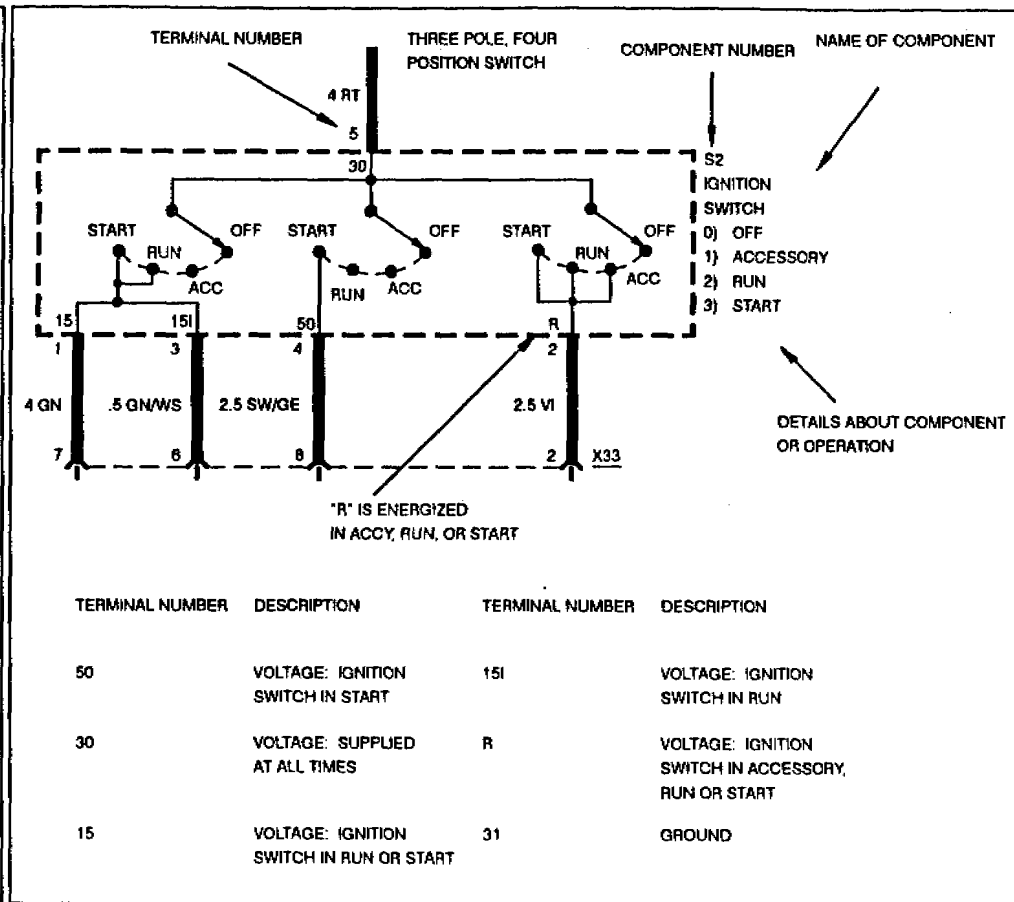
WIRE COLOR	
BL	BLUE
BR	BROWN
GE	YELLOW
GN	GREEN
GR	GRAY
OR	ORANGE
RS	PINK
RT	RED
SW	BLACK
VI	VIOLET
WS	WHITE
TR	TRANSPARENT



SYMBOLS



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



HDT 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

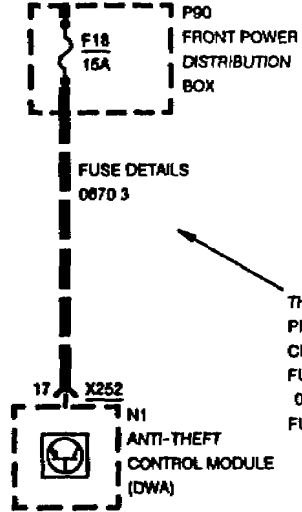
VOLTAGE: IGNITION SWITCH IN RUN OR START

VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START

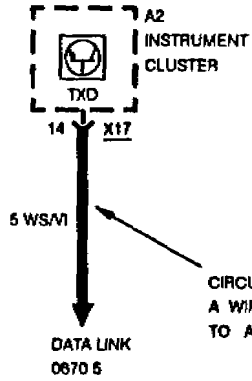


SYMBOLS

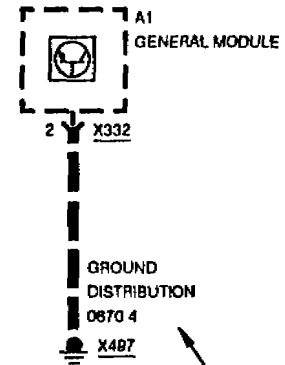
HOT IN ACCY, RUN AND START



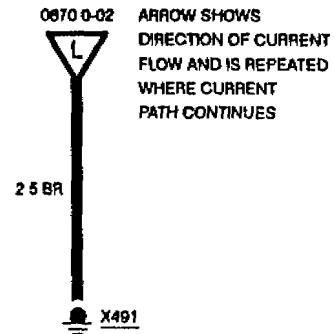
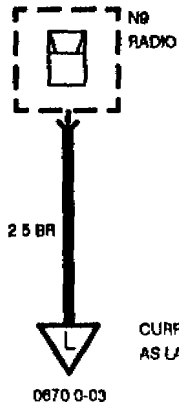
THE COMPLETE WIRE PROGRESSION AND FURTHER CIRCUITS CONNECTED TO FUSE 18 ARE SHOWN IN CELL 0670 3 FUSE DETAILS* AT FUSE 18



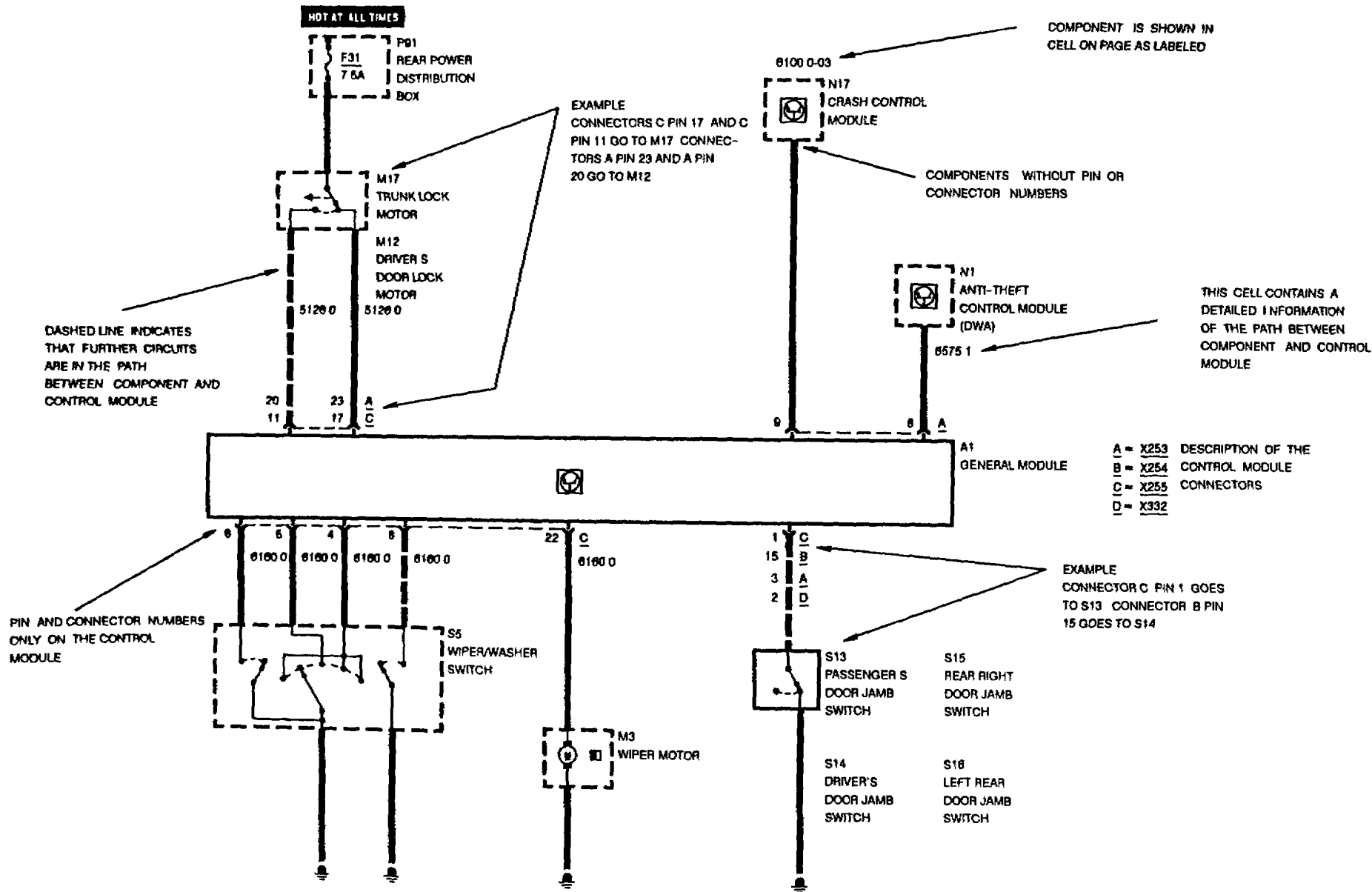
CIRCUIT REFERENCE- A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT



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



BMW
8 **SYMBOLS**
BLOCK DIAGRAM



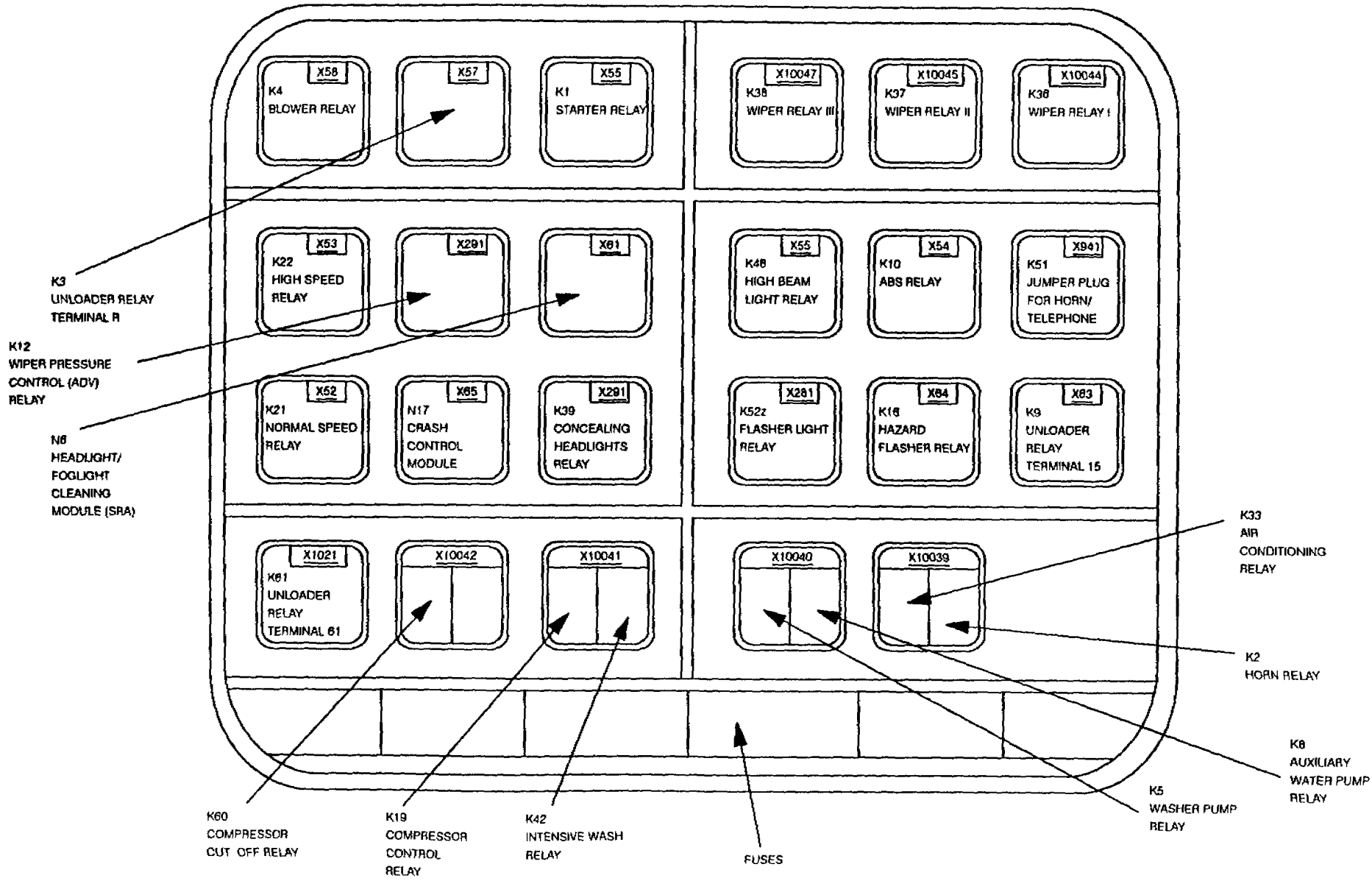
BMW
8

0670.0



POWER DISTRIBUTION CHART

FRONT POWER DISTRIBUTION BOX



BMW 8 POWER DISTRIBUTION CHART REAR POWER DISTRIBUTION BOX

