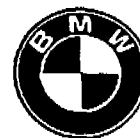


1991

**BMW
850i
(E31)**

**Electrical
Troubleshooting
Manual**



ELECTRICAL TROUBLESHOOTING MANUAL

8 SERIES – E31 (850i)

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MODEL YEAR 1991

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0100.0

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Introduction

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 enhance the clarity of the schematics, all connectors and splices between fuses and components as well as between grounds and components have been omitted. If this information should be required, it may be referenced in cells 0670.3 Fuse Details and 0670.4 Ground Distribution.

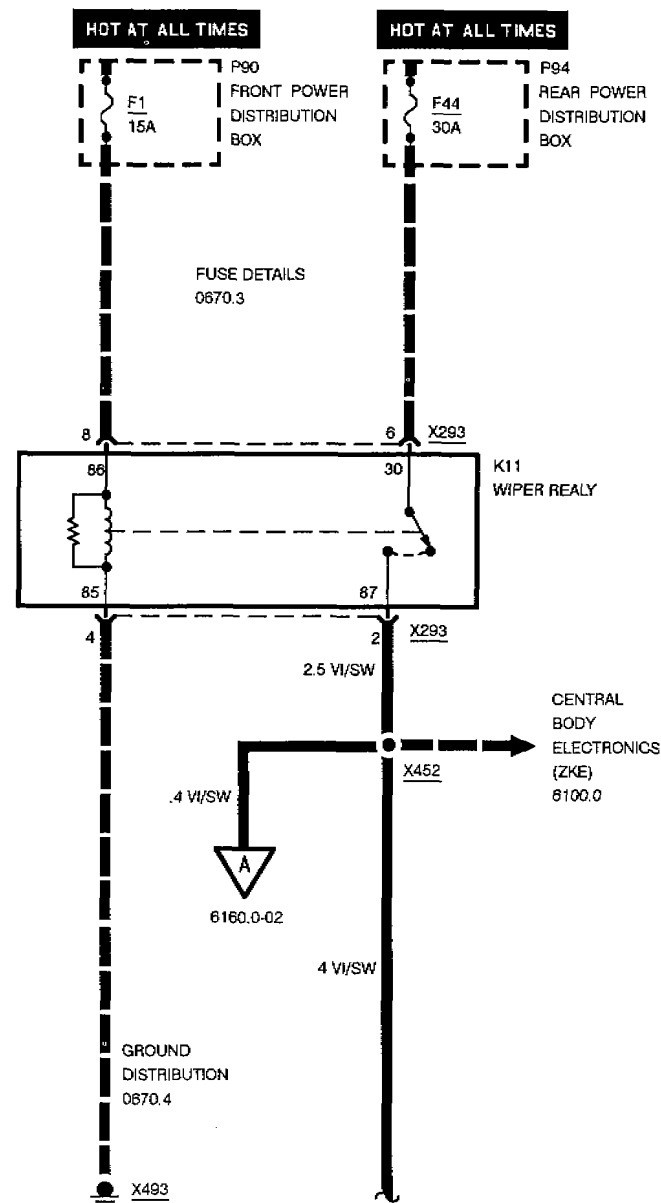
All circuit symbols used are listed and explained in cell 0140.0 Symbols.

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 locations of the connectors and components which are difficult to locate are shown in photographs. In cell 8500.0 Connector Views diagrams of all connectors with more than three pins are illustrated.

Example

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



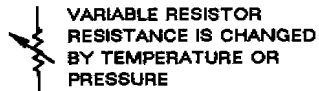
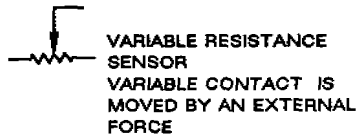
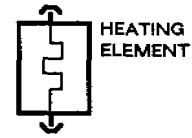
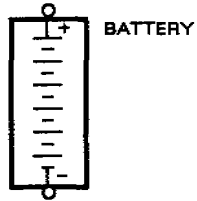


General Conventions

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 of connector X293 indicates that both pins belong connector X293.
5. The dashed line from fuse F1 to pin 8 of the connector X293 shows the positive supply of the relay K11. Detailed information regarding connectors and splices between fuse F1 and Pin 8 of X293, as well as other wires coming from fuse F1, are illustrated in 0670.3 Fuse Details at fuse F1.
6. The dashed line with arrow at connector X452 indicates that several wires lead to connector X452 to another circuit. All wires leading to the splice are illustrated in cell 6100.0 Central Body Electronics (ZKE). An solid 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. Detailed information regarding connectors and splices between pin 4 and the ground point X493, as well as other wires leading to the ground point, are illustrated in 0670.4 Ground Distribution at ground X493.
8. The solid line from splice X452 with an A in the open arrow indicates that the wire continues on another page. The page reference is located underneath the arrow.
9. Termination of the 4 VI/SW from splice X452 with a wavy line indicates that the wire is continued on the opposite page.



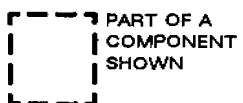
SYMBOLS



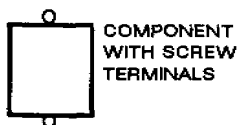
SYMBOLS



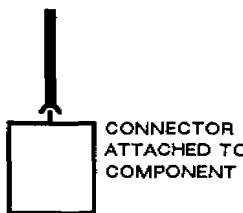
ENTIRE COMPONENT SHOWN



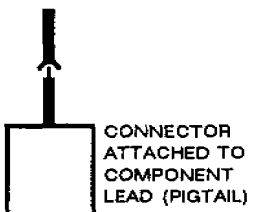
PART OF A COMPONENT SHOWN



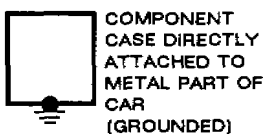
COMPONENT WITH SCREW TERMINALS



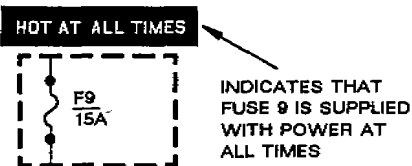
CONNECTOR ATTACHED TO COMPONENT



CONNECTOR ATTACHED TO COMPONENT LEAD (PIGTAIL)

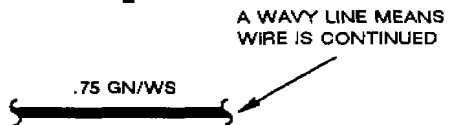
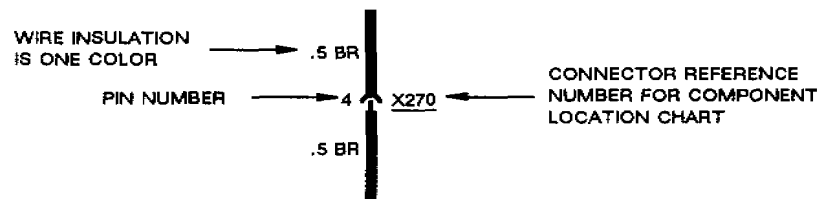


COMPONENT CASE DIRECTLY ATTACHED TO METAL PART OF CAR (GROUNDED)

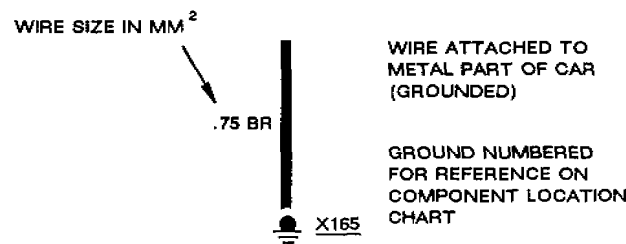
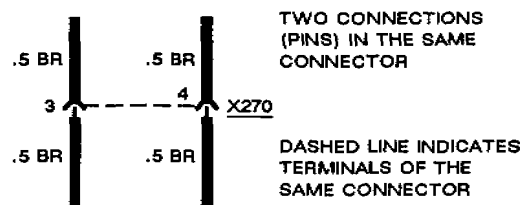


INDICATES THAT FUSE 9 IS SUPPLIED WITH POWER AT ALL TIMES

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



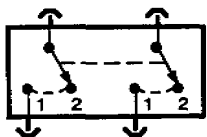
1. FIRST COLOR IS THE WIRE INSULATION.
2. SECOND COLOR IS THE "TRACER" OR "STRIPE" COLOR.
3. THIRD COLOR IS THE COLOR OF THE DOTS.



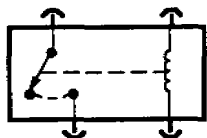
SYMBOLS



ONE POLE,
TWO POSITION
SWITCH

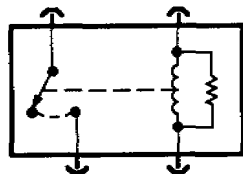


SWITCHES THAT MOVE
TOGETHER
DASHED LINE SHOWS
A MECHANICAL
CONNECTION BETWEEN
SWITCHES

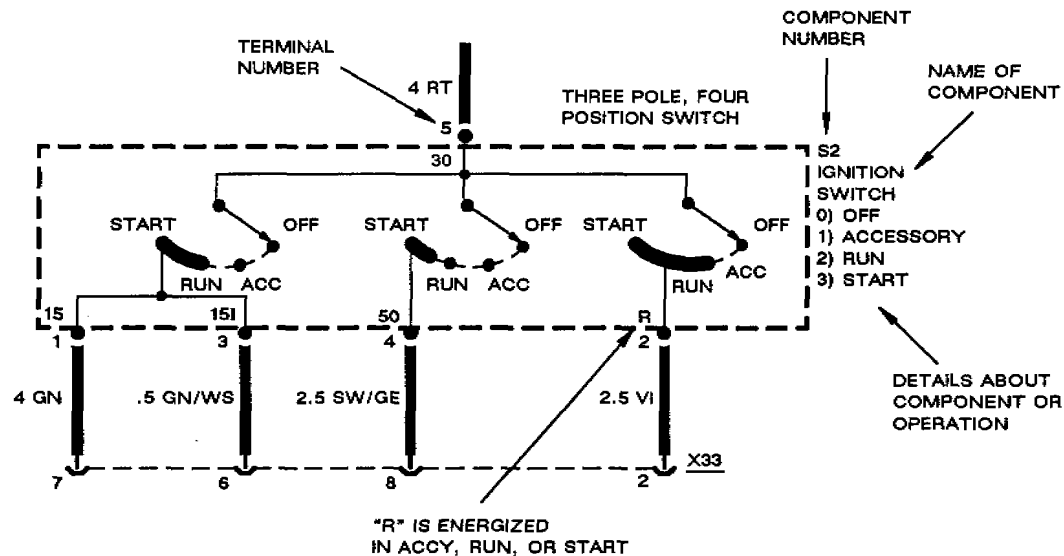


RELAY WITH NO
CURRENT FLOWING
THROUGH COIL

WHEN COIL IS
ENERGIZED, SWITCH
IS PULLED CLOSED



RELAY WITH
RESISTOR ACROSS
COIL

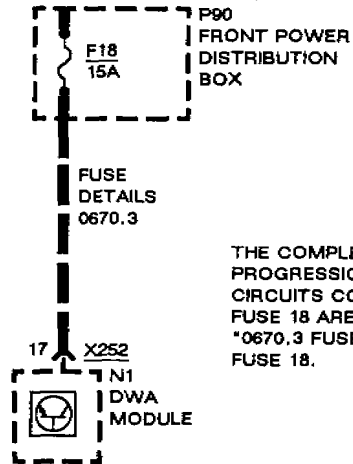


TERMINAL NUMBER	DESCRIPTION
50	VOLTAGE: IGNITION SWITCH IN START
30	VOLTAGE: SUPPLIED AT ALL TIMES
15	VOLTAGE: IGNITION SWITCH IN RUN OR START
15I	VOLTAGE: IGNITION SWITCH IN RUN
R	VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN, OR START
31	GROUND

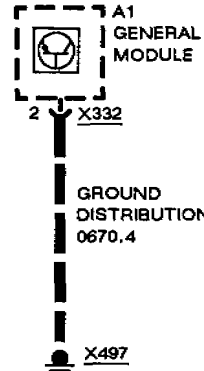


SYMBOLS

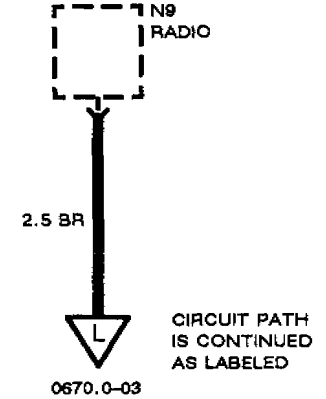
HOT IN ACCY RUN OR START



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



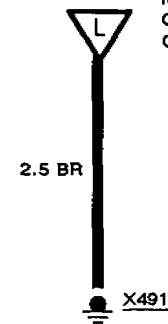
THE COMPLETE WIRE PROGRESSION AND FURTHER CIRCUITS CONNECTED AT GROUND X497 ARE SHOWN IN CELL "0670.4 GROUND DISTRIBUTION" AT GROUND X497.



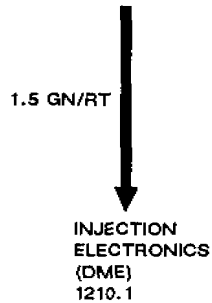
CIRCUIT PATH IS CONTINUED AS LABELED

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

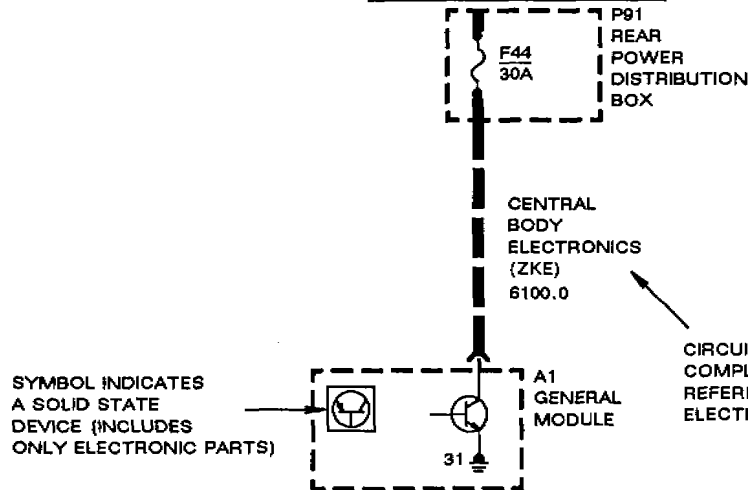
0670.0-02



CIRCUIT REFERENCE- A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT



HOT IN ACCY RUN OR START



BMW
8

0140.0-04

BMW
8



09/90

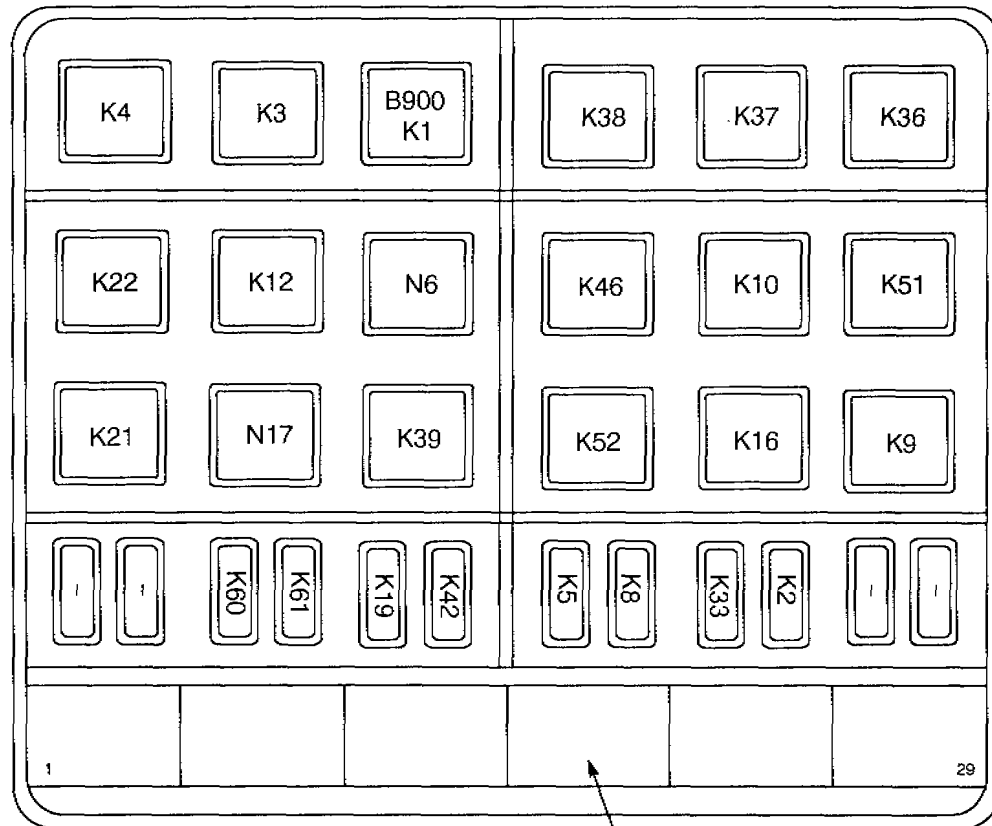
0670.0

1991



POWER DISTRIBUTION CHART

FRONT POWER DISTRIBUTION BOX





POWER DISTRIBUTION CHART

FRONT POWER DISTRIBUTION BOX

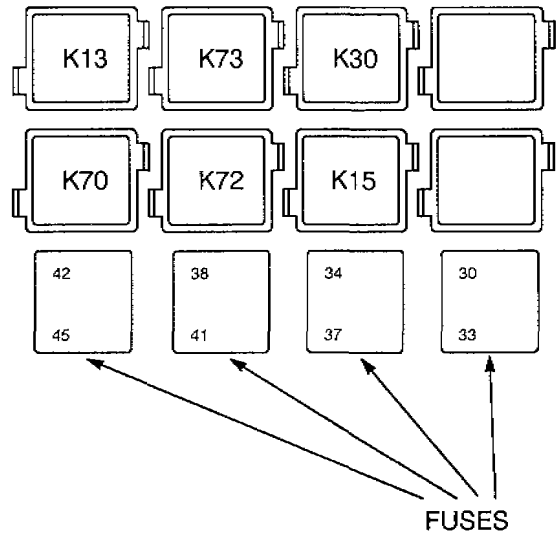
COMPONENTS IN FRONT POWER DISTRIBUTION BOX		
NUMBER	CONNECTOR	DESCRIPTION
B900	X55	JUMPER PLUG
K1	X55	STARTER RELAY
K2	X10039	HORN RELAY
K3	X57	UNLOADER RELAY TERMINAL R
K4	X58	BLOWER RELAY
K5	X10040	WASHER PUMP RELAY
K8	X10040	AUXILIARY WATER PUMP RELAY
K9	X63	UNLOADER RELAY, KL15
K10	X54	ABS OVERVOLTAGE PROTECTION RELAY, WITHOUT ASC + T
K12	X291	WIPER PRESSURE CONTROL RELAY (ADV)
K16	X64	HAZARD FLASHER RELAY
K19	X10041	AIR CONDITIONING MOTRONIC RELAY
K21	X52	NORMAL SPEED RELAY

COMPONENTS IN FRONT POWER DISTRIBUTION BOX		
NUMBER	CONNECTOR	DESCRIPTION
K22	X53	HIGH SPEED RELAY
K33	X10039	AIR CONDITIONING RELAY
K36	X10044	WIPER RELAY I
K37	X10045	WIPER RELAY II
K38	X10047	WIPER RELAY III
K39	X280	CONCEALING HEADLIGHTS RELAY
K42	X10041	INTENSIVE WASH RELAY
K46	X43	HIGH BEAM LIGHT RELAY
K51	X941	RELAY FOR HORN TELEPHONE US
K52	X281	HEADLIGHT FLASHER RELAY
K60	X10042	COMPRESSOR CUT-OFF RELAY
K61	X10042	KL61 UNLOADER RELAY
N6	X61	HEADLIGHT/FRONT FOG LIGHT MODULE
N17	X65	CRASH CONTROL UNIT



POWER DISTRIBUTION CHART

P94 REAR POWER DISTRIBUTION BOX





POWER DISTRIBUTION CHART

P94 REAR POWER DISTRIBUTION BOX

COMPONENTS IN FRONT POWER DISTRIBUTION BOX		
NUMBER	CONNECTOR	DESCRIPTION
K13	X292	REAR DEFOGGER RELAY
K15	X294	ELECTRIC POWER PROTECTION RELAY
K30	X287	ELECTRIC POWER PROTECTION RELAY II
K70	X1376	CENTRAL LOCKING TRUNK LID MOTOR RELAY
K72	X13001	CONSUMER CUT-OFF RELAY I
K73	X13015	CONSUMER CUT-OFF RELAY II

09/90

0670.0-03

1991