

1995/96

BMW

**840Ci, 850Ci,
850CSi (E31)**

Electrical

**Troubleshooting
Manual**

Vehicles Produced 9/94 to 8/96



ELECTRICAL TROUBLESHOOTING MANUAL

SERIES 8 – E31 (840Ci, 850Ci, 850CSi)

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MODEL YEAR 1995/96

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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.

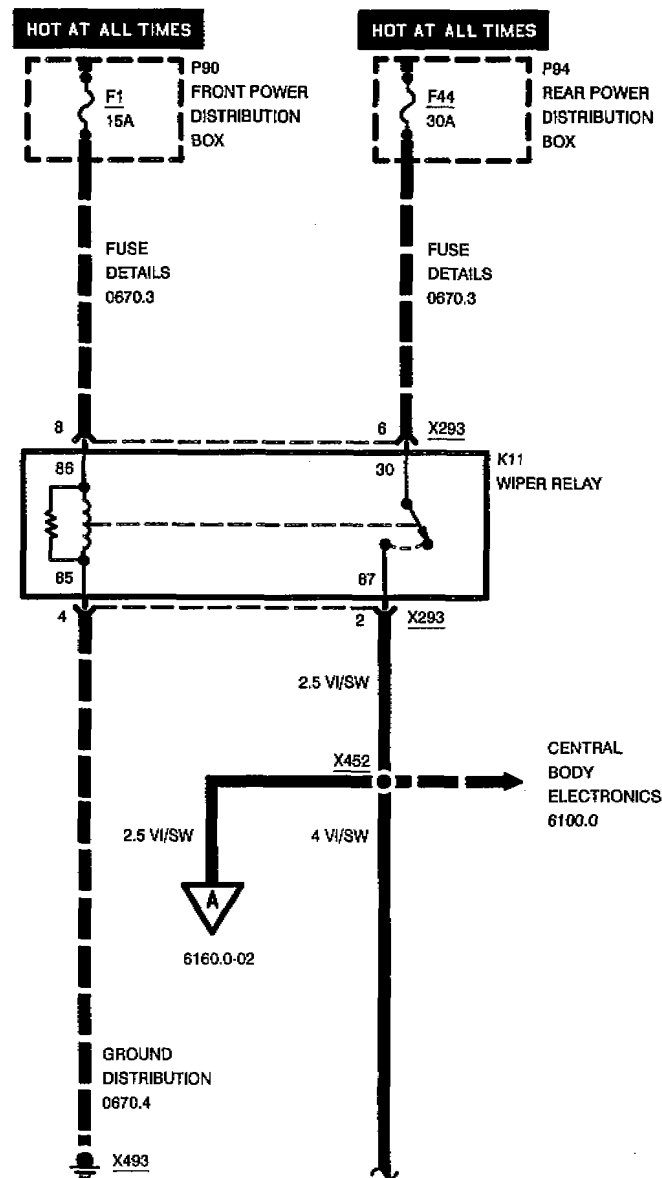
All circuit symbols used are listed and explained in cell **0140.0 Symbols**.

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 **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.





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



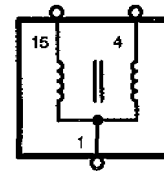
BATTERY



HEATING ELEMENT



VARIABLE RESISTANCE SENSOR
VARIABLE CONTACT IS MOVED BY AN EXTERNAL FORCE



IGNITION COIL



FUSE



LOUDSPEAKER OR HORN



VARIABLE RESISTOR
RESISTANCE IS CHANGED BY TEMPERATURE OR PRESSURE



CONTROL/POWER ELECTRONICS



FUSIBLE LINK



LIGHT



INDUCTIVE SENSOR



RADIO



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



KNOCK SENSOR



THERMO SWITCH

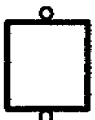
BMW
8 **SYMBOLS**



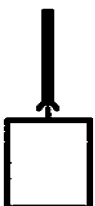
ENTIRE COM-
PONENT SHOWN



PART OF COM-
PONENT SHOWN



COMPONENT WITH
SCREW TERMI-
NALS



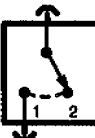
CONNECTOR
ATTACHED TO
COMPONENT



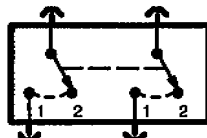
CONNECTOR
ATTACHED TO
COMPONENT
LEAD (PIGTAIL)



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



ONE POLE, TWO
POSITION SWITCH

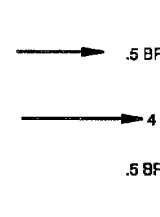


SWITCHES THAT
MOVE TOGETHER

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

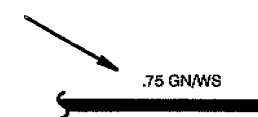
WIRE INSULATION
IS ONE COLOR



PIN NUMBER

CONNECTOR REF-
ERENCE NUMBER
FOR COMPONENT
LOCATION CHART

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



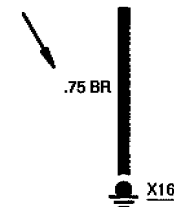
A WAVY LINE
MEANS WIRE IS
CONTINUED



TWO CONNE-
CTIONS (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 LOCA-
TION CHART