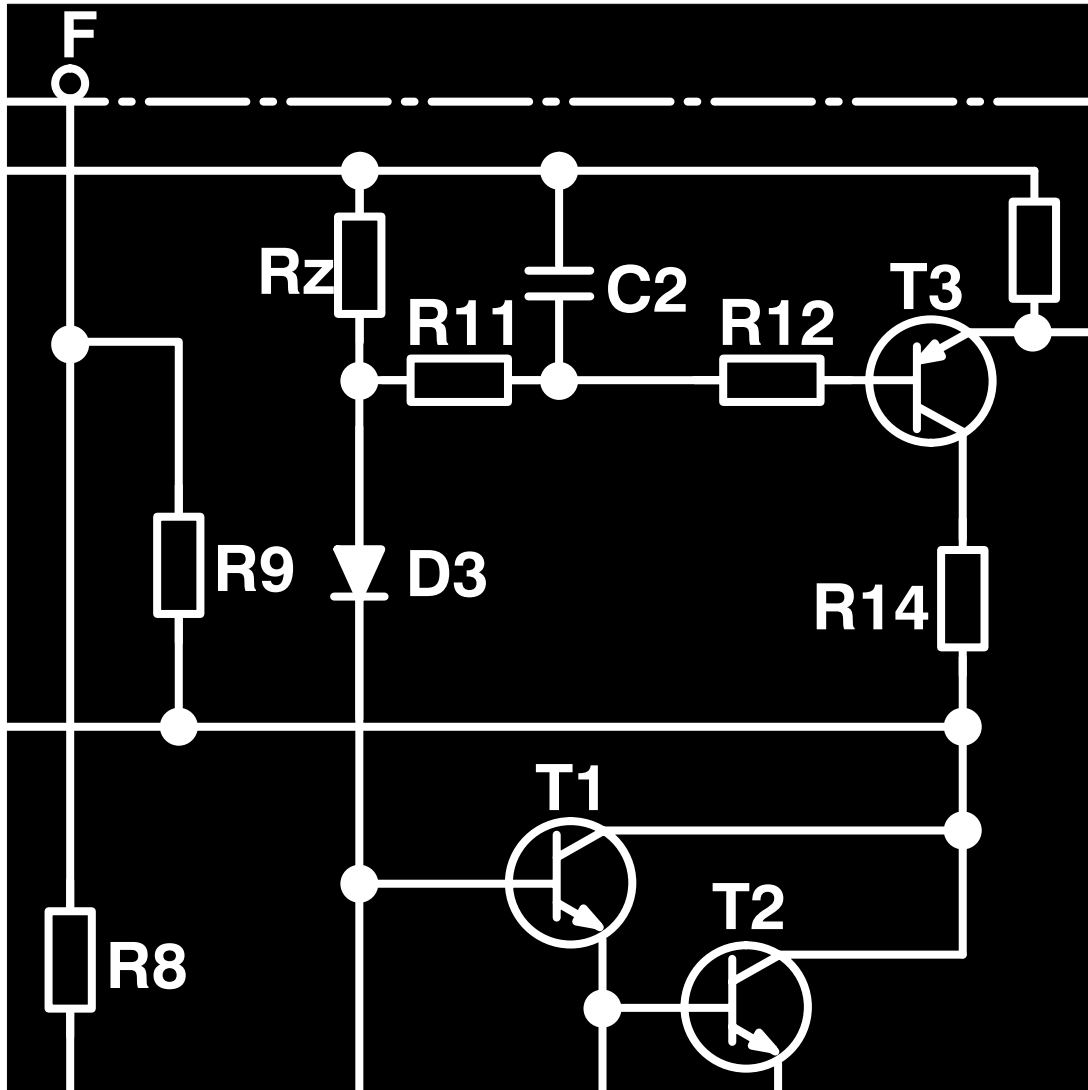




1997 BMW Z3 (E36/7)

Electrical Troubleshooting Manual

Vehicles Produced 9/96 thru 8/97





ELECTRICAL TROUBLESHOOTING MANUAL

SERIES 3 – E36/7 (Z3 Roadster)

SCHEMATICS

MODEL YEAR 1997

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STARTER IMMOBILIZATION SWITCH, S235	1240.0-00
STARTER, M6510	1240.0-01
SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG)	3234.0
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
TEMPERATURE SWITCH, S36	6450.6-03
TEMPERATURE WHEEL SWITCH, S531	6450.6-01
THROTTLE FLAP HEATER, E104	3450.1-02
THROTTLE POSITION SENSOR, R6252	1210.17-05
THROTTLE POSITION SENSOR, R6252	1210.20-05
TRANSMISSION CONTROL MODULE (EGS), A8500	2460.2
TRANSMISSION POSITION INDICATOR LIGHT, E82	6300.0-02
TRANSMISSION VALVE UNIT, Y8505y	2460.2-05
TRANSMISSION VALVE UNIT, Y8521	2460.2-01
TRANSMITTER MODULE (EWS II), A835	6135.0-00
TRUNK COMPARTMENT LIGHT, E32	6320.0-00
TRUNK LOCK MOTOR, M17	5126.0-03
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
UNLOADER RELAY, TERMINAL 15, K6326	1210.17-02
UNLOADER RELAY, TERMINAL 15, K6326	1210.20-02
UNLOADER RELAY, TERMINAL 15, K9	5203.0-00
VARIABLE CAMSHAFT CONTROL VALVE 1, Y6275	1210.17-01
VEHICLE SPEED SENSOR, B10	6211.0-04

WASHER JET HEATER, LEFT, E51	6169.0-00
WASHER JET HEATER, RIGHT, E52	6169.0-00
WASHER PUMP, M4	6160.1-01
WASHER PUMP, M4	6160.1-02
WATER VALVE, Y4z	6450.6-01
WINDOW MOTOR, DRIVER'S, M21	5133.0-02
WINDOW MOTOR, PASSENGER'S, M23	5133.0-02
WINDSHIELD WASHER JET HEATERS	6169.0-00
WIPER MOTOR, M3	6160.1-00
WIPER MOTOR, M3	6160.1-02
WIPER/WASHER MODULE (LOW II), A64	6160.1-02
WIPER/WASHER MODULE (WWM)	6160.1
WIPER/WASHER MODULE, A51	6160.1
WIPER/WASHER MODULE, A51	6167.1-00
WIPER/WASHER SWITCH, S5	6160.1-01
WIPER/WASHER SWITCH, S5	6160.1-02
ZKE CENTRAL LOCKING (ZV)	5126.0
ZKE POWER WINDOWS (FH)	5133.0

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.

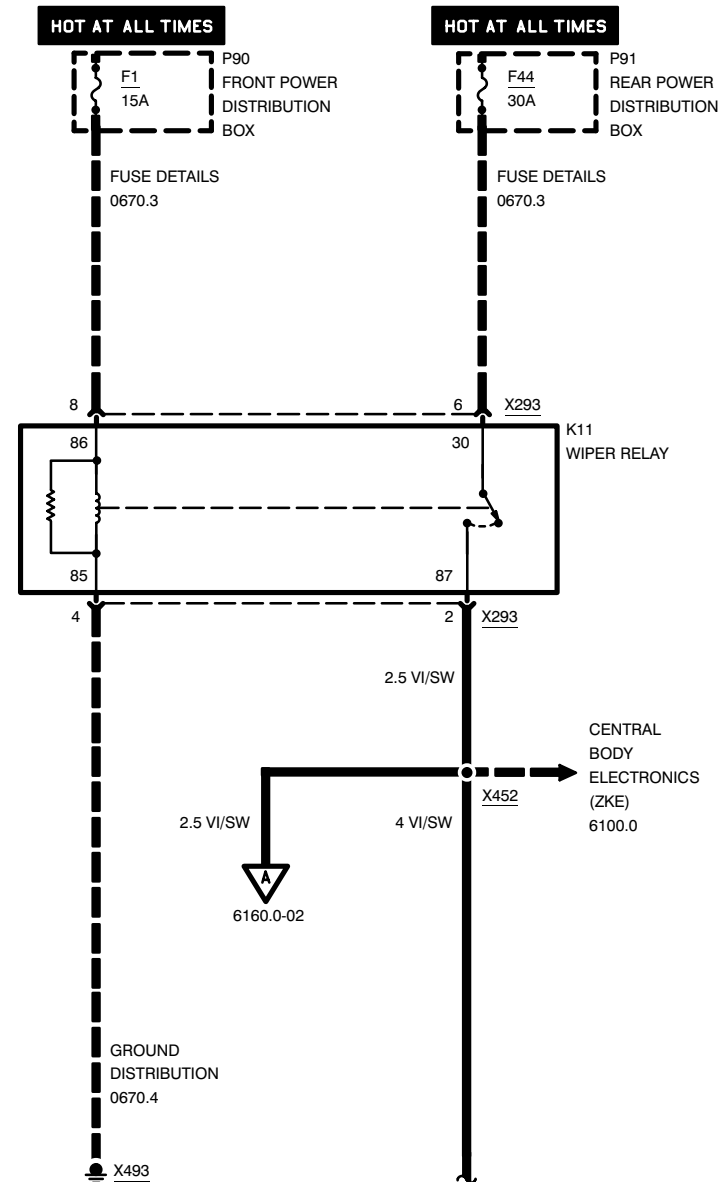
All circuit symbols used are listed and explained in cell **0140.0 Symbols**.

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

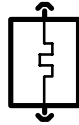
INTRODUCTION

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



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

31



INDUCTIVE SENSOR



SOLENOID



KNOCK SENSOR



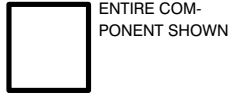
OXYGEN SENSOR



VEHICLE SPEED SENSOR

SYMBOLS

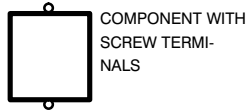
Z3



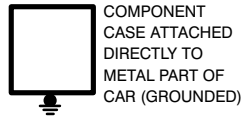
ENTIRE COMPONENT SHOWN



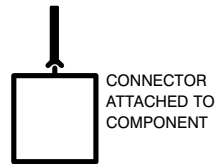
PART OF COMPONENT SHOWN



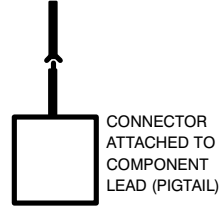
COMPONENT WITH SCREW TERMINALS



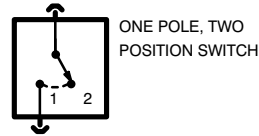
COMPONENT CASE ATTACHED DIRECTLY TO METAL PART OF CAR (GROUNDED)



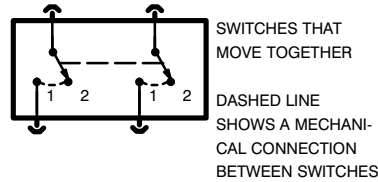
CONNECTOR ATTACHED TO COMPONENT



CONNECTOR ATTACHED TO COMPONENT LEAD (PIGTAIL)



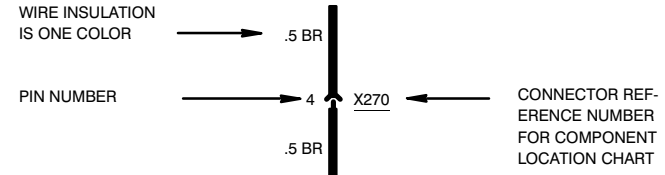
ONE POLE, TWO POSITION SWITCH



SWITCHES THAT MOVE TOGETHER

DASHED LINE SHOWS A MECHANICAL CONNECTION BETWEEN SWITCHES

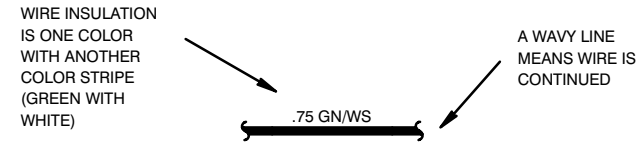
WIRE COLOR	
BL	BLUE
BR	BROWN
GE	YELLOW
GN	GREEN
GR	GRAY
OR	ORANGE
RS	PINK
RT	RED
SW	BLACK
VI	VIOLET
WS	WHITE
TR	TRANSPARENT



WIRE INSULATION IS ONE COLOR

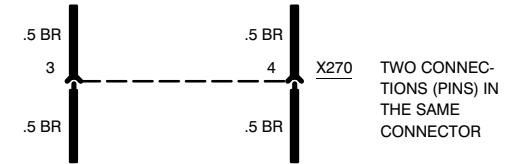
PIN NUMBER

CONNECTOR REFERENCE NUMBER FOR COMPONENT LOCATION CHART



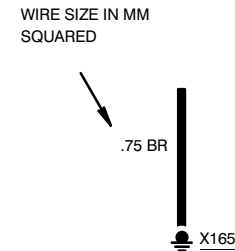
WIRE INSULATION IS ONE COLOR WITH ANOTHER COLOR STRIPE (GREEN WITH WHITE)

A WAVY LINE MEANS WIRE IS CONTINUED



TWO CONNECTIONS (PINS) IN THE SAME CONNECTOR

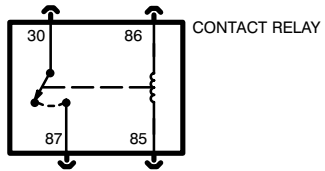
DASHED LINE INDICATES TERMINALS OF THE SAME CONNECTOR



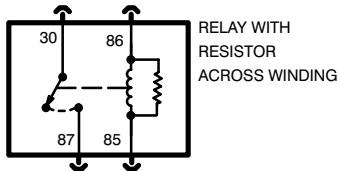
WIRE SIZE IN MM SQUARED

WIRE ATTACHED TO METAL PART OF CAR (GROUNDED)

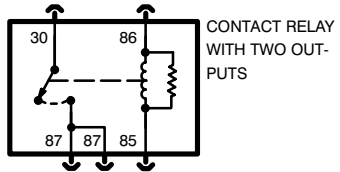
GROUND NUMBERED FOR REFERENCE ON COMPONENT LOCATION CHART



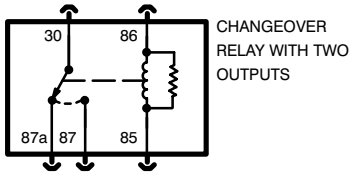
CONTACT RELAY



RELAY WITH RESISTOR ACROSS WINDING

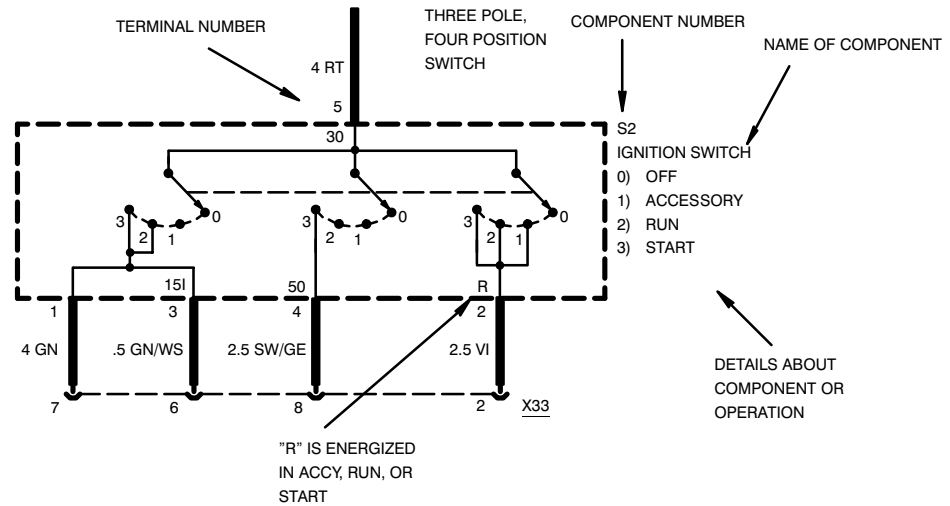


CONTACT RELAY WITH TWO OUTPUTS



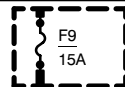
CHANGEOVER RELAY WITH TWO OUTPUTS

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

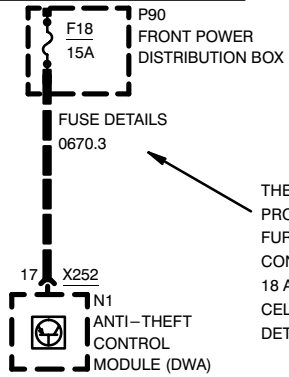
VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START



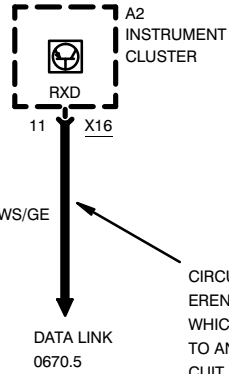
SYMBOLS

Z3

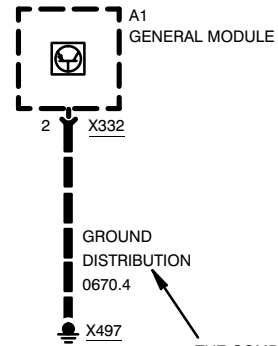
HOT IN ACCY, RUN AND START



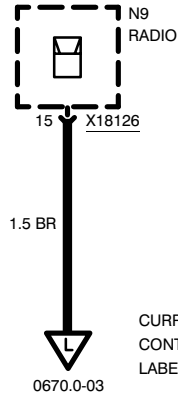
THE COMPLETE WIRE
PROGRESSION AND
FURTHER CIRCUITS
CONNECTED TO FUSE
18 ARE SHOWN IN
CELL "0670.3 FUSE
DETAILS" AT FUSE 18



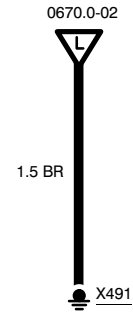
CIRCUIT REF-
ERENCE - A WIRE
WHICH CONNECTS
TO ANOTHER CIR-
CUIT



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



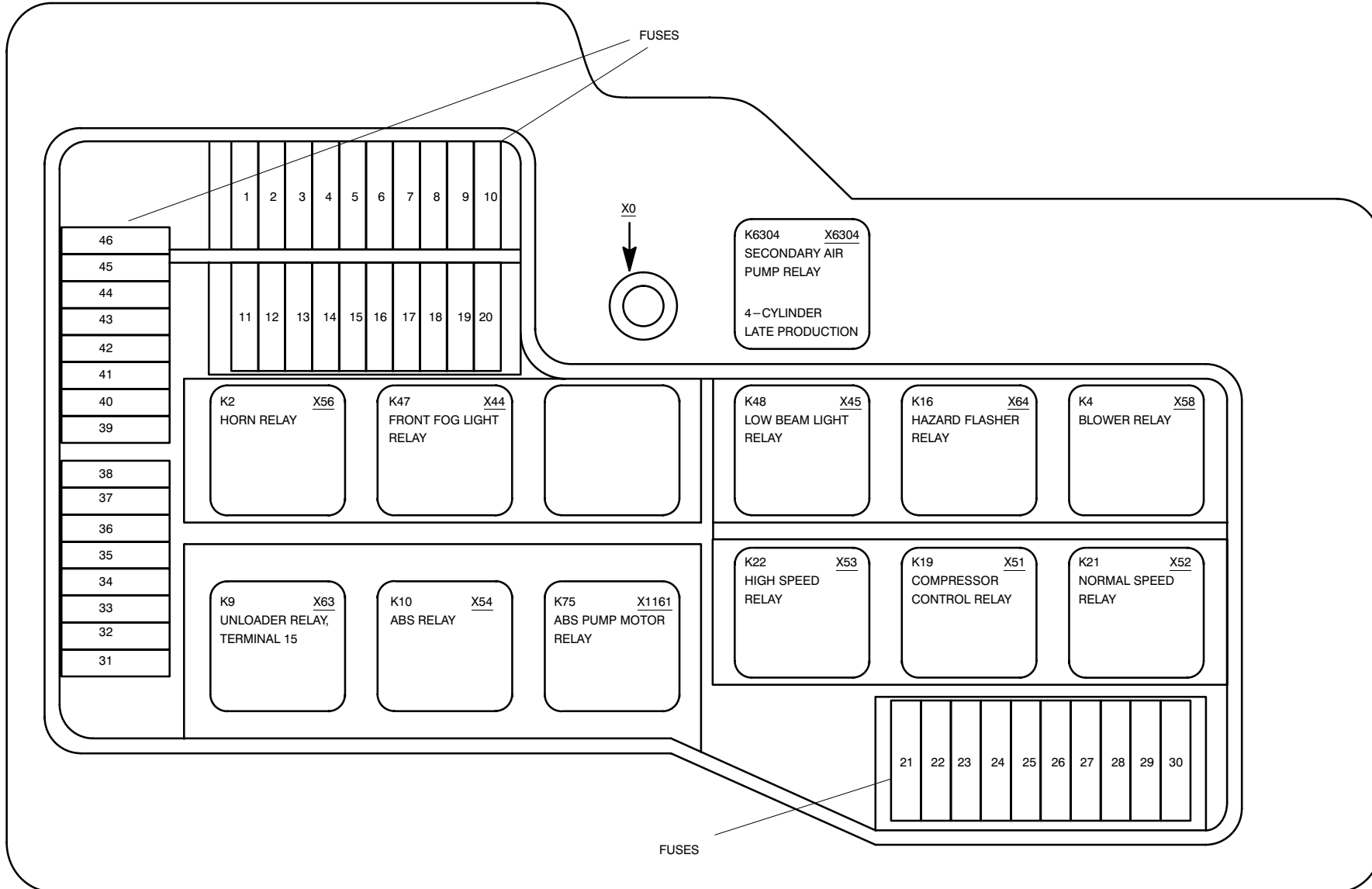
ARROW SHOWS
DIRECTION OF
CURRENT FLOW
AND IS REPEATED
WHERE CURRENT
PATH CONTINUES



Z3

POWER DISTRIBUTION CHART

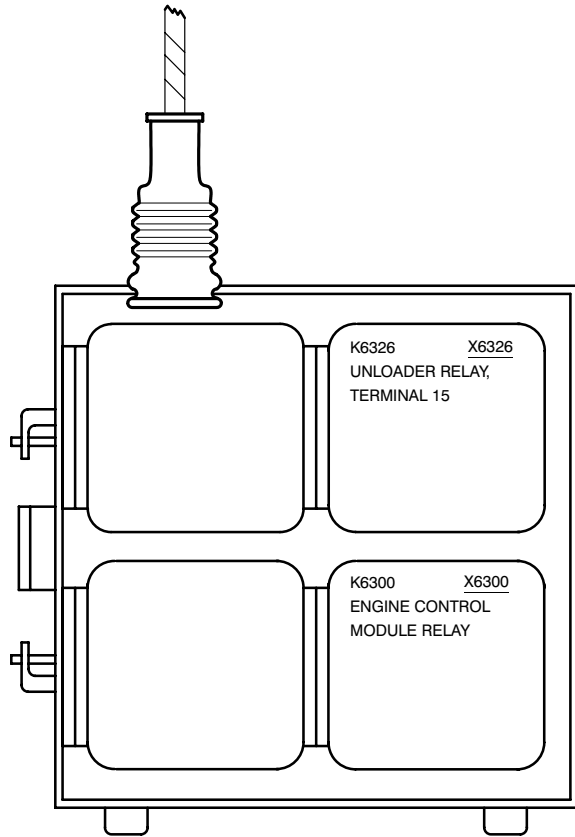
FRONT POWER DISTRIBUTION BOX



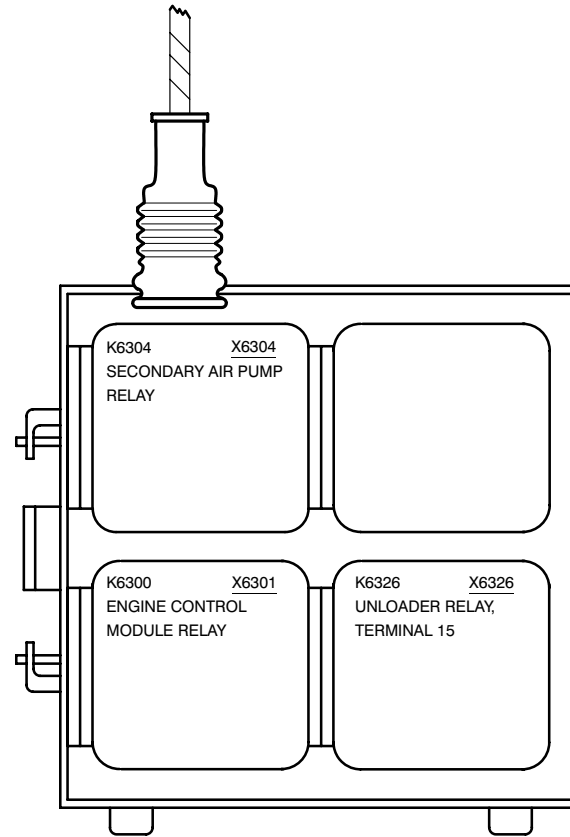


POWER DISTRIBUTION CHART

IN E-BOX



4-CYLINDER



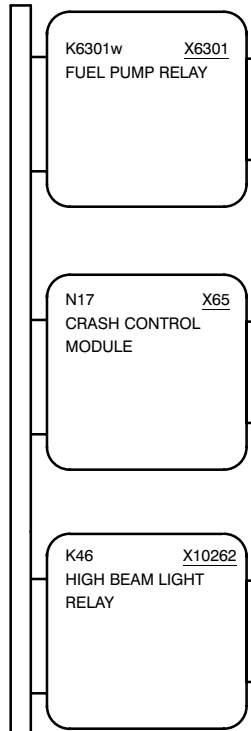
6-CYLINDER



Z3

POWER DISTRIBUTION CHART

RELAY PANEL UNDER LH SIDE OF DASHBOARD



03/98

0670.0-02

1997



FUSE CHART

FUSES 1 TO 29

Z3

	FUSE NUMBER																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	30A	15A	30A	15A	30A	20A	5A	15A	20A	30A	7.5A	7.5A	5A	30A	15A	5A		15A	30A	30A	5A	5A	5A	10A	5A	10A	5A	5A	7.5A
1210.17 ENGINE CONTROL SYSTEM MS41.1 (6-CYLINDER M52)													●			●		●											
1210.20 ENGINE CONTROL SYSTEM (DME M5.2, 4-CYLINDER M44)													●			●		●											
1230.0 CHARGING SYSTEM																										●			
1240.0 START																												●	
1290.0 E-BOX FAN																													
2460.2 ELECTRONIC TRANSMISSION CONTROL (EGS A4S 310R)																										●		●	
3234.0 SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG)																											●		
3450.0 SLIP CONTROL (ABS)										●											●						●		
3450.1 SLIP CONTROL (ABS/ASC)										●											●						●	●	
5116.0 POWER MIRRORS																									●				
5126.0 ZKE CENTRAL LOCKING (ZV)							●																						
5133.0 ZKE POWER WINDOWS (FH)														●															
5200.0 POWER SEATS					●															●									
5203.0 HEATED SEATS			●																			●							
5430.0 ELECTRO-MECHANICAL CONVERTIBLE TOP	●																												
6100.0 CENTRAL BODY ELECTRONICS (ZKE IV)														●															
6133.0 HORN								●																					
6135.0 DRIVE-AWAY PROTECTION (EWS II)																												●	
6160.1 WIPER/WASHER MODULE (WWM)			●																										
6167.1 HEADLIGHT WASHER (SRA)			●																										
6169.0 WINDSHIELD WASHER JET HEATERS																								●					



FUSE CHART

FUSES 1 TO 29

Z3

		FUSE NUMBER																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
		30A	15A	30A	15A	30A	20A	5A	15A	20A	30A	7.5A	7.5A	5A	30A	15A	5A		15A	30A	30A	5A	5A	5A	10A	5A	10A	5A	5A	7.5A
6211.0	INSTRUMENT CLUSTER																							●				●		
6213.3	DIGITAL CLOCK																													
6300.0	LIGHT SWITCH DETAILS																						●	●		●				
6312.0	HEADLIGHTS/FOG LIGHTS										●	●			●								●	●		●			●	
6313.0	TURN/HAZARD LIGHTS																							●						
6314.0	PARK/TAIL/UNDERHOOD LIGHTS																													
6320.0	LICENSE PLATE/LUGGAGE COMPARTMENT LIGHTS																													
6322.0	BACK UP LIGHTS																											●		
6325.0	BRAKE LIGHTS																													
6330.3	INTERIOR LIGHTS																													
6332.0	INTERIOR ACCESSORIES																													
6350.0	CRASH CONTROL MODULE										●	●														●				
6424.0	REAR WINDOW DEFOGGER					●																								
6450.6	INTEGRATED HEATING- AND CLIMATE CONTROL															●					●									
6510.1	RADIO/HIFI								●																					
6561.0	CELLULAR TELEPHONE (PROVISIONS)																													
6571.0	CRUISE CONTROL (TEMPOMAT)																													
6575.2	ANTI-THEFT SYSTEM (ALPINE)																												●	
6581.3	BOARD COMPUTER (BC-LOW)																													

