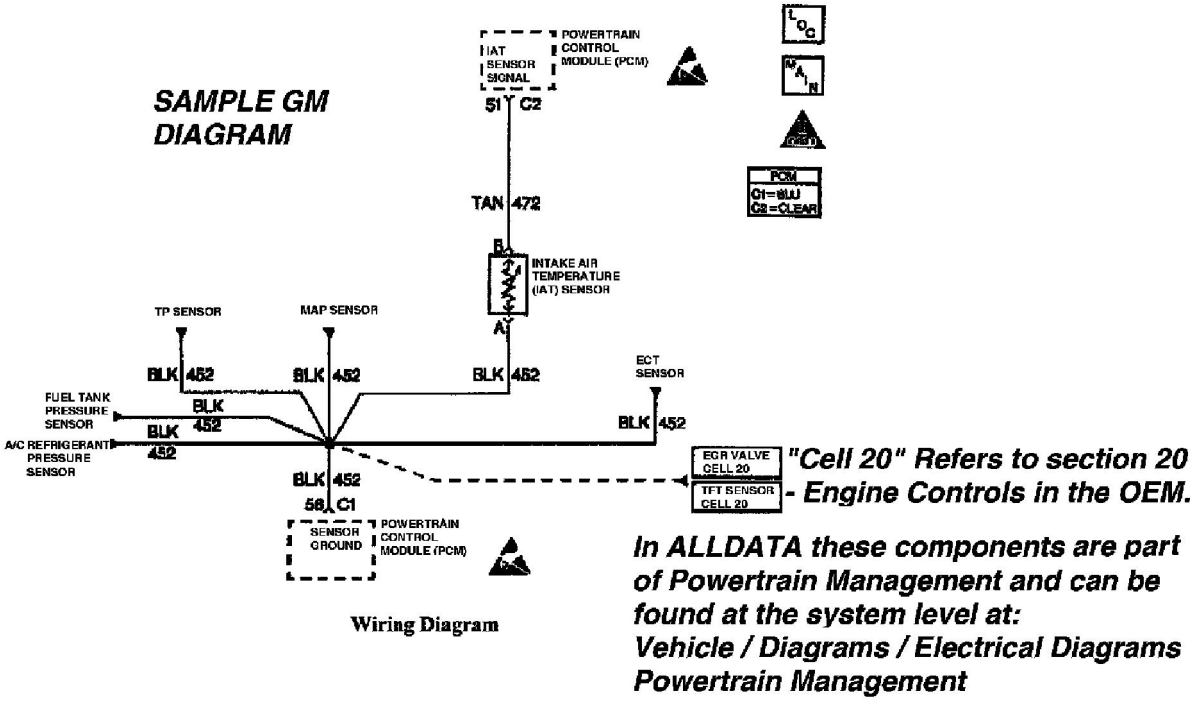
1987 Chevrolet Celebrity V6-173 2.8L

Fuel Pump Relay: Diagram Information and Instructions Cell References

CELL REFERENCES

General Motors vehicles often use **"CELL"** references in their electrical wiring diagrams. These references are used in the Original Equipment Manual to refer to a section in the manual and not a specific diagram(s).

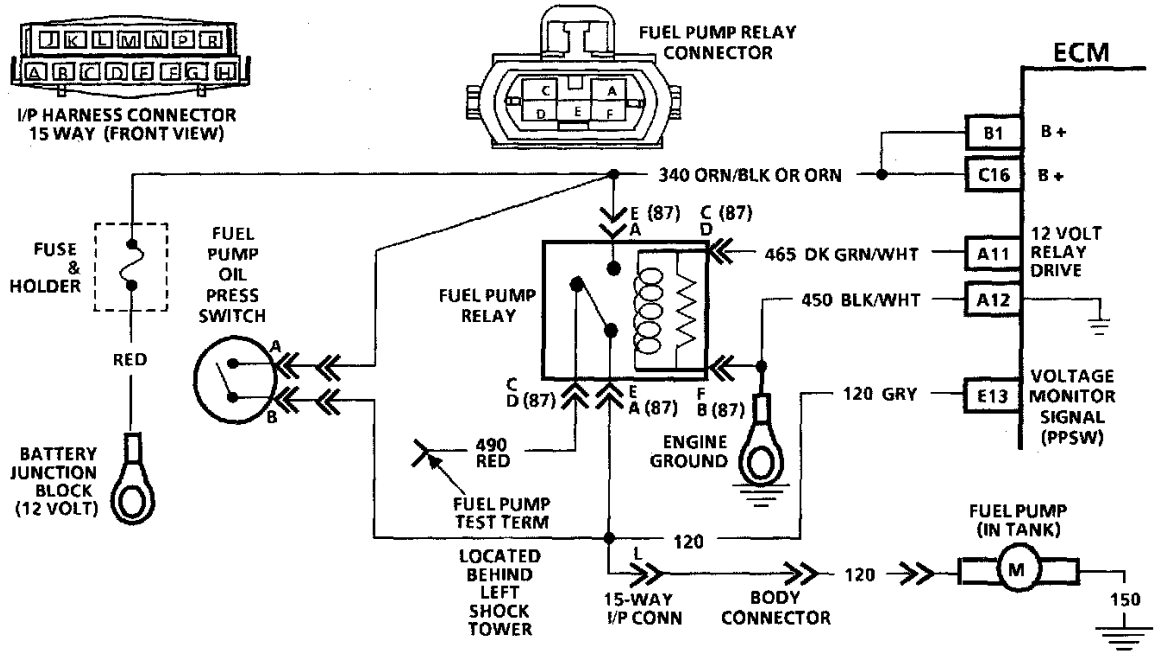


GM Sample Diagram W/ Cell Reference

For instance, in the diagram illustrated "Cell 20" is not a reference to another diagram but a reference to "Section 20" in the OE manual. In the example, "Section 20" is the engine control section of the manual.

To navigate through these "Cell" references start at the vehicle level and go to: **Diagrams / Electrical Diagrams** - for a complete list of the diagrams available for the vehicle. Choose the **system** you are working on and view those diagrams.

Note: If unsure of the system - try utilizing the search feature. Type a component in the search feature that belongs to the system and when the results are displayed note the path displayed. This will show the system the component belongs in.



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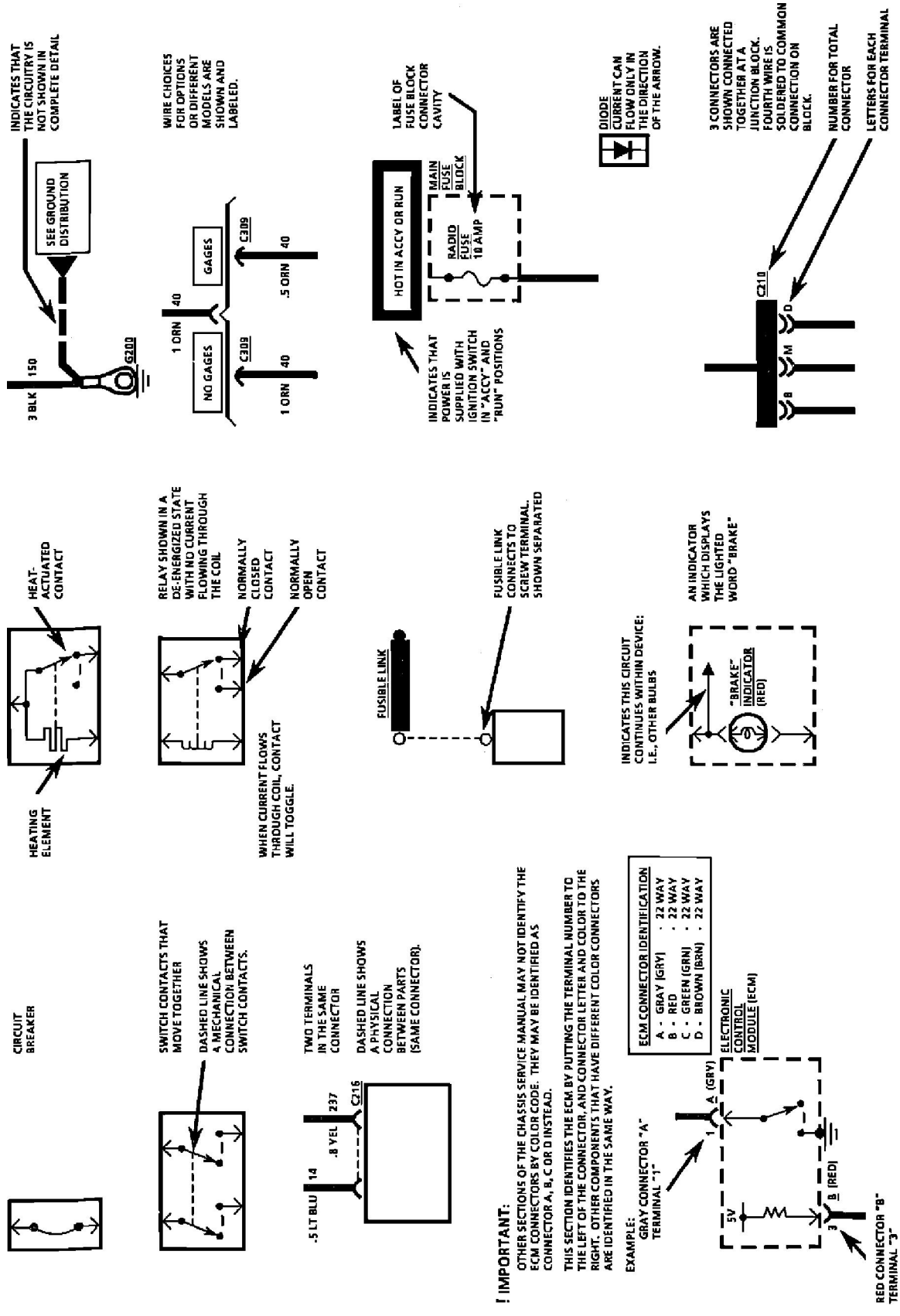
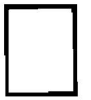
Fuel Pump Relay: Diagram Information and Instructions
Schematic Symbols

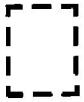


Symbols

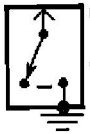
Symbols



ENTIRE COMPONENT SHOWN

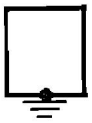


PART OF A COMPONENT SHOWN

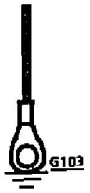


NAME OF COMPONENT

DETAILS ABOUT COMPONENT OR ITS OPERATION



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

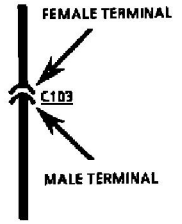


WIRE IS ATTACHED TO METAL PART OF CAR (GROUNDED).

GROUND IS NUMBERED FOR REFERENCE ON COMPONENT LOCATION LIST.

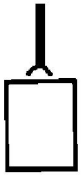
WIRE IS INDIRECTLY CONNECTED TO GROUND.

WIRE MAY HAVE ONE OR MORE SPLICES BEFORE IT IS GROUNDED.

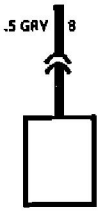


CONNECTOR REFERENCE NUMBER FOR COMPONENT LOCATION LIST

TABLE ALSO SHOWS TOTAL NUMBER OF TERMINALS POSSIBLE. C103 (6 CAVITIES)

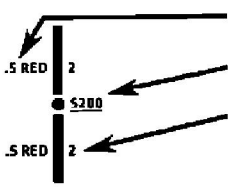


CONNECTOR ATTACHED TO COMPONENT



CONNECTOR ON COMPONENT LEAD (PIGTAIL)

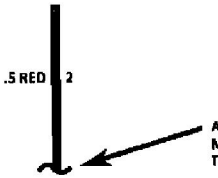
WIRE INSULATION IS RED WITH A YELLOW STRIPE.



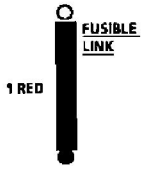
WIRE GAGE AND INSULATION COLOR ARE LABELED.

SPLICES ARE SHOWN AND NUMBERED.

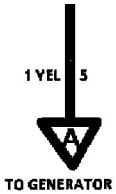
CIRCUIT NUMBER IS SHOWN TO HELP IN TRACING CIRCUITS.



A WAVY LINE MEANS A WIRE IS TO BE CONTINUED.

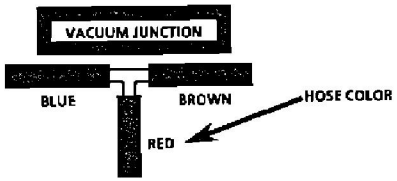


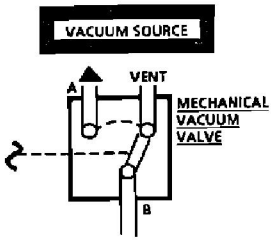
WIRE SIZE AND INSULATION COLOR ARE LABELED.



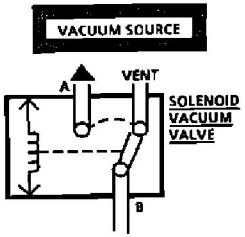
CURRENT PATH IS CONTINUED AS LABELED. THE ARROW SHOWS THE DIRECTION OF CURRENT FLOW AND IS REPEATED WHERE CURRENT PATH CONTINUES.

A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT. THE WIRE IS SHOWN AGAIN ON THAT CIRCUIT.





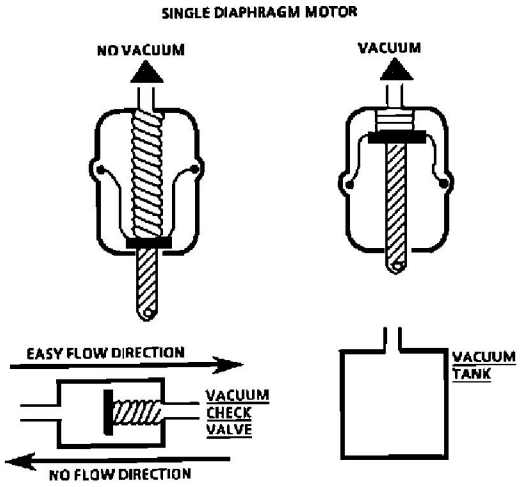
IN THE "AT REST" POSITION SHOWN, THE VALVE DOES THE FOLLOWING:
PORT A IS SEALED.
PORT B IS VENTED TO THE ATMOSPHERE.

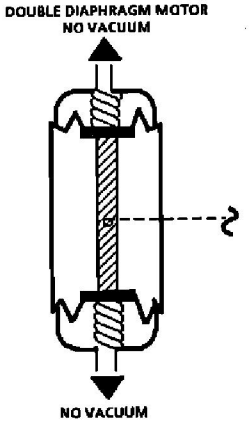


WHEN THE VALVE IS MOVED TO THE "OPERATED" POSITION, VACUUM FROM PORT A IS CONNECTED TO PORT B.

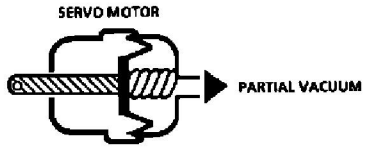
THE SOLENOID VACUUM VALVE USES THE SOLENOID TO MOVE THE VALVE.

Vacuum motors operate like electrical solenoids, mechanically pushing or pulling a shaft between two fixed positions. When vacuum is applied, the shaft is pulled in. When no vacuum is applied, the shaft is pushed all the way out by a spring.

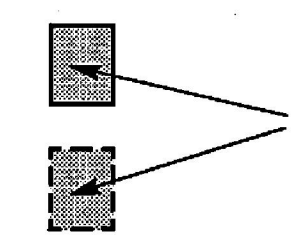




Double diaphragm motors can be operated by vacuum in two directions. When there is no vacuum, the motor is in the center "at rest" position.



Some vacuum motors such as the servo motor in the Cruise Control can position the actuating arm at any position between fully extended and fully retracted. The servo is operated by a control valve that applies varying amounts of vacuum to the motor. The higher the vacuum level, the greater the retraction of the motor arm. Servo motors work like the two position motors; the only difference is in the way the vacuum is applied. Servo motors are generally larger and provide a calibrated control.



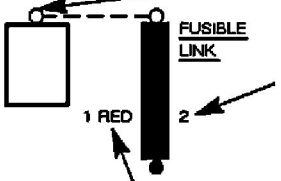
ENTIRE COMPONENT SHOWN

SCREEN USED TO EMPHASIZE COMPONENT

PART OF A COMPONENT SHOWN

NAME OF COMPONENT

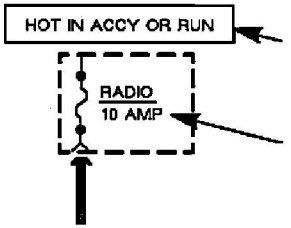
DETAILS ABOUT COMPONENT OR ITS OPERATION



FUSIBLE LINK CONNECTS TO SCREW TERMINAL (SHOWN SEPARATED)

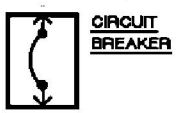
CIRCUIT NUMBER

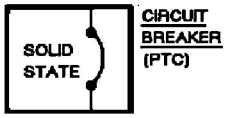
WIRE SIZE AND INSULATION COLOR

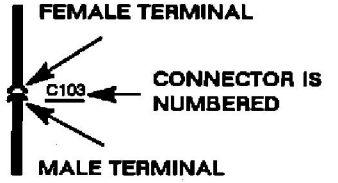


INDICATES POWER IS SUPPLIED WITH IGNITION SWITCH IN ACCY AND RUN POSITIONS

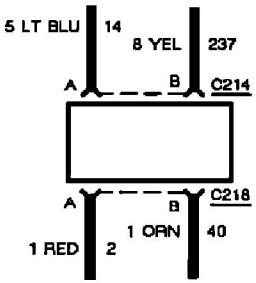
LABEL OF FUSE BLOCK CONNECTOR CAVITY







CONNECTOR ATTACHED TO COMPONENT

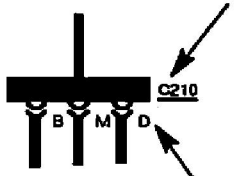


TWO TERMINALS IN THE SAME CONNECTOR

DASHED LINE SHOWS A PHYSICAL CONNECTION BETWEEN PARTS (SAME CONNECTOR)

SECOND CONNECTOR ON THE SAME COMPONENT

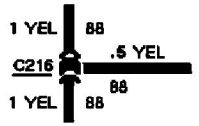
CONNECTOR ON COMPONENT LEAD (PIGTAIL)



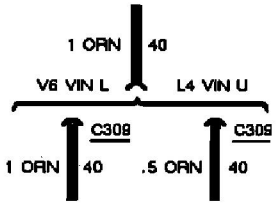
CONNECTOR NUMBER

3 CONNECTIONS ARE SHOWN CONNECTED TOGETHER AT A JUNCTION BLOCK. FOURTH WIRE IS SOLDERED TO COMMON CONNECTION ON BLOCK

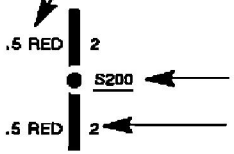
LETTERS FOR EACH CAVITY



3 WIRES ARE SHOWN CONNECTED TOGETHER WITH A PIGGYBACK CONNECTOR



WIRE CHOICES FOR OPTIONS OR DIFFERENT MODELS ARE SHOWN AND LABELED



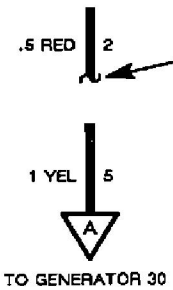
WIRE SIZE AND INSULATION COLOR ARE LABELED

SPLICE IS NUMBERED

CIRCUIT NUMBER IS SHOWN TO HELP IN TRACING CIRCUITS

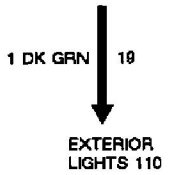
GROMMET IS NUMBERED

WIRE INSULATION IS ONE COLOR WITH ANOTHER

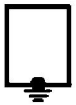


A WAVY LINE MEANS A WIRE IS TO BE CONTINUED

A CURRENT PATH IS CONTINUED AS LABELED. ARROW SHOWS THE DIRECTION OF CURRENT FLOW AND IS REPEATED WHERE CURRENT PATH CONTINUES



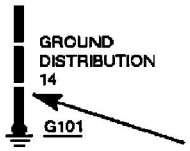
A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT. THE WIRE IS SHOWN AGAIN IN THAT CIRCUIT. ARROW SHOWS DIRECTION OF CURRENT FLOW



COMPONENT CASE IS DIRECTLY ATTATCHED TO METAL PART OF CAR (GROUNDED)

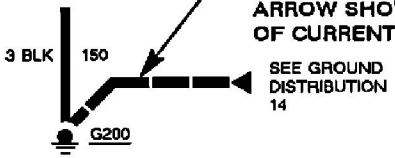
WIRE IS ATTACHED TO METAL PART OF CAR (GROUNDED)

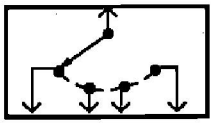
GROUND IS NUMBERED



WIRE IS INDIRECTLY CONNECTED TO GROUND

BROKEN WIRE INDICATES THAT CIRCUITRY IS NOT SHOWN IN COMPLETE DETAIL BUT IS COMPLETE IN THE INDICATED CELL. ARROW SHOWS DIRECTION OF CURRENT FLOW

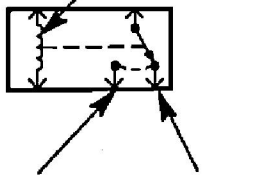




MULTI-POSITION SWITCH

SWITCH CONTACTS THAT MOVE TOGETHER

DASHED LINE SHOWS A MECHANICAL CONNECTION BETWEEN SWITCH CONTACTS



RELAY COIL

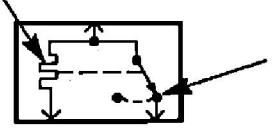
RELAY SHOWN WITH NO CURRENT FLOWING THROUGH COIL

WHEN CURRENT FLOWS THROUGH COIL, CONTACT MOVES TO NORMALLY OPEN POSITION

NORMALLY OPEN CONTACT

NORMALLY CLOSED CONTACT

HEATING ELEMENT



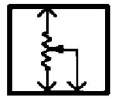
HEAT ACTUATED CONTACT

HORN OR SPEAKER

SOLENOID OR COIL

RESISTOR

VARIABLE RESISTOR



POTENTIOMETER

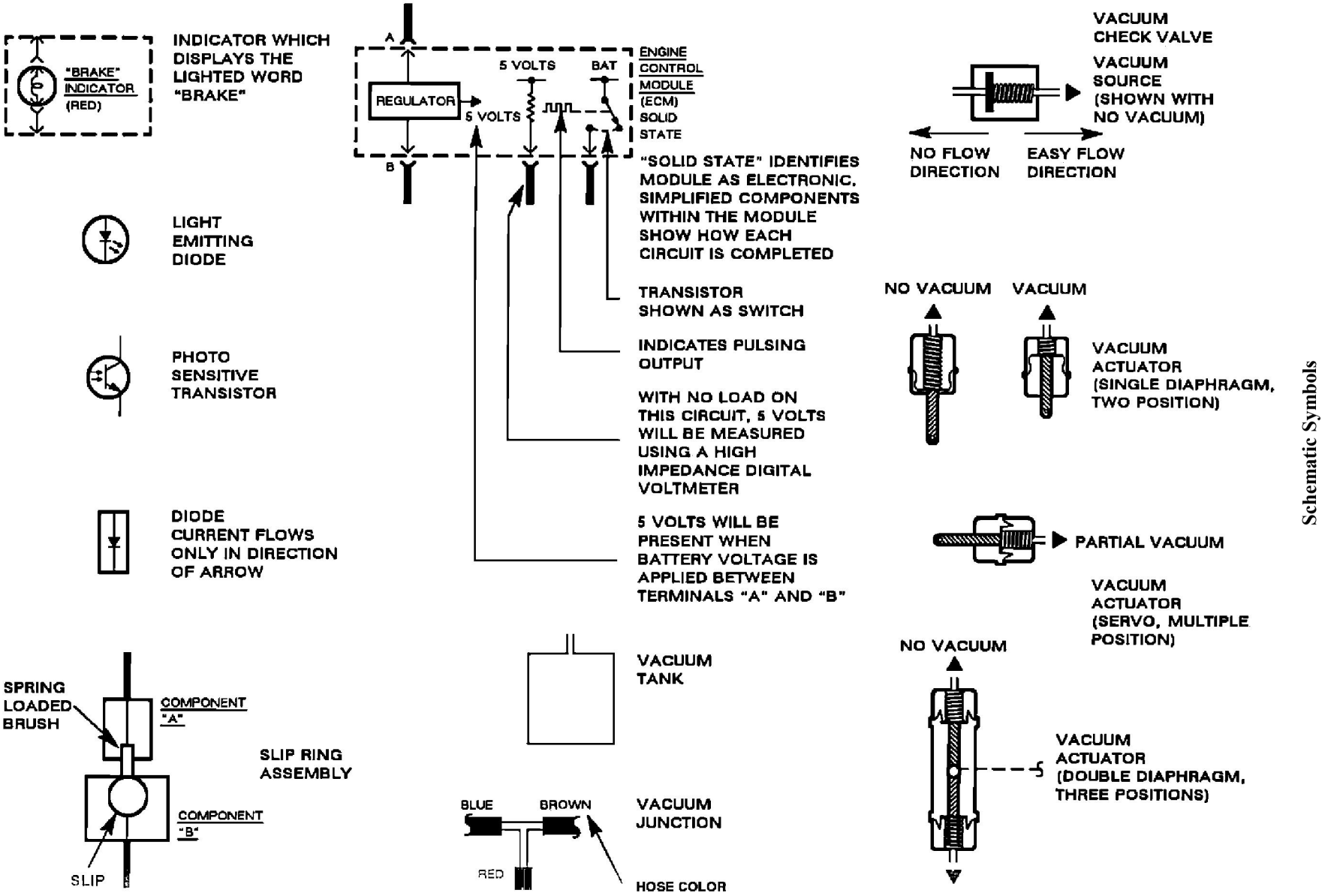
CAPACITOR

BRUSH

MOTOR

CRYSTAL

Schematic Symbols



Schematic Symbols

SOLID STATE SYMBOLS

A group of special symbols is used to represent electronic circuits used in solid state modules. These symbols are greatly simplified versions of the actual circuits. They can be very useful for troubleshooting purposes if properly used. It is important to remember that these symbols apply only to modules with all connectors in place and supply voltages on.

OUTPUTS

The Solid State Switch (see Figures 1 and 2) is used to turn on a circuit outside the module. When the switch closes, the voltage or ground shown will be applied to the connected circuit. Additional information about what makes the switch close is often provided. The voltage controlled by the switch may be measured just as if it were a mechanical switch.

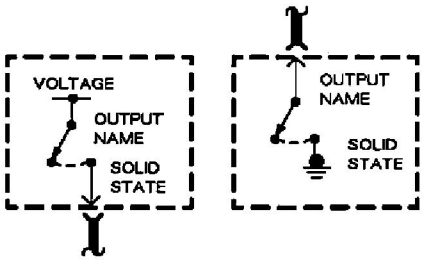


Figure 1

Figure 2

These symbols (see Figures 3 and 4) are similar to the Solid State Switch. The pulses represent the rate at which the switch is turned on and off.

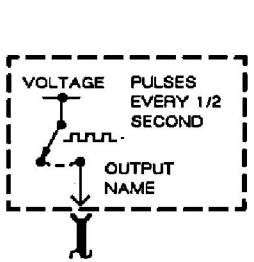


Figure 3

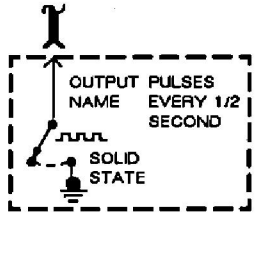


Figure 4

These two symbols (see Figures 5 and 6) are special versions of the Solid State Switch. They represent serial data inputs and outputs. Serial data consists of coded groups of voltage pulses transmitted at high speed. These pulses cannot usually be measured with a Digital Voltmeter. There are cases however where procedures in System Diagnosis may describe such measurements. A Scan tool can often read and display this data.

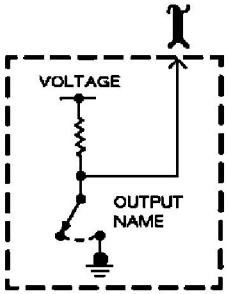


Figure 5

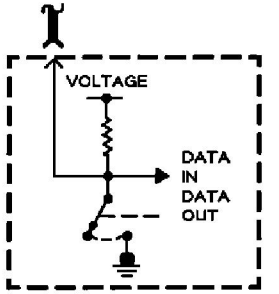


Figure 6

INPUTS

These symbols (see Figures 7 and 8) represent the equivalent circuit at the input terminals of electronic modules. You should not attempt to measure the resistance of these terminals unless instructed to do so by a service procedure. These inputs can be used to check wiring to electronic modules as shown under Troubleshooting Tests (Cell 4).

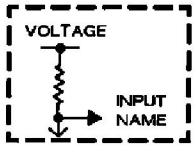


Figure 7

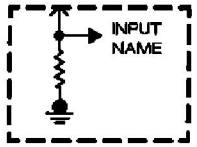
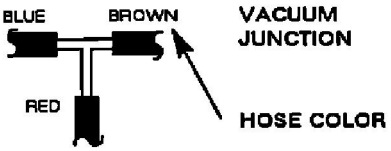
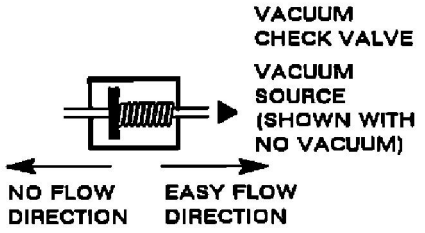
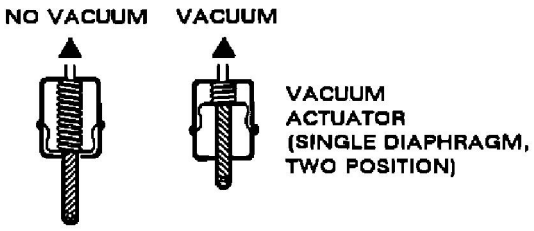
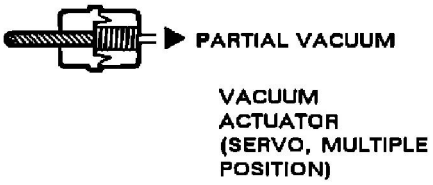


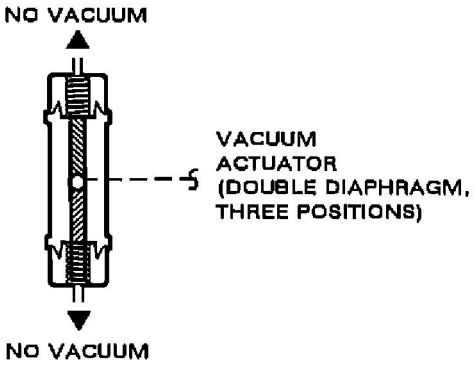
Figure 8











SOLID STATE SYMBOLS

A group of special symbols is used to represent electronic circuits used in solid state modules. These symbols are greatly simplified versions of the actual circuits. They can be very useful for troubleshooting purposes if properly used. It is important to remember that these symbols apply only to modules with all connectors in place and supply voltages on.

OUTPUTS

The Solid State Switch (see Figures 1 and 2) is used to turn on a circuit outside the module. When the switch closes, the voltage or ground shown will be applied to the connected circuit. Additional information about what makes the switch close is often provided. The voltage controlled by the switch may be measured just as if it were a mechanical switch.

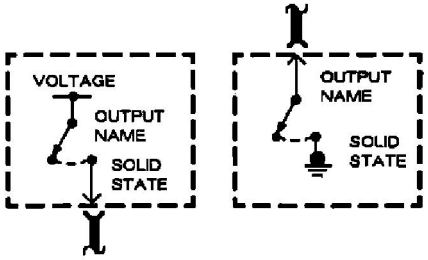


Figure 1

Figure 2

These symbols (see Figures 3 and 4) are similar to the Solid State Switch. The pulses represent the rate at which the switch is turned on and off.

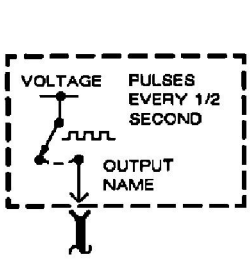


Figure 3

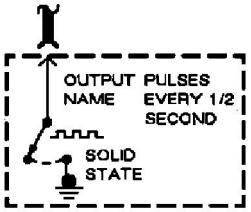


Figure 4

Schematic Symbols

These two symbols (see Figures 5 and 6) are special versions of the Solid State Switch. They represent serial data inputs and outputs. Serial data consists of coded groups of voltage pulses transmitted at high speed. These pulses cannot usually be measured with a Digital Voltmeter. There are cases however where procedures in System Diagnosis may describe such measurements. A Scan tool can often read and display this data.

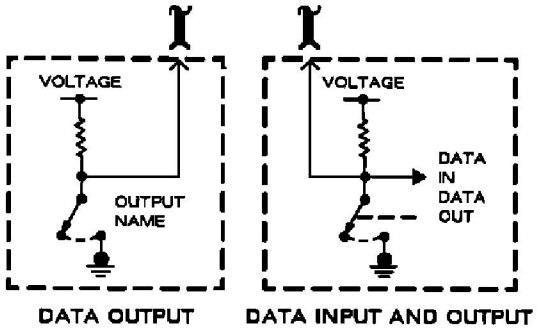


Figure 5 **Figure 6**

INPUTS

These symbols (see Figures 7 and 8) represent the equivalent circuit at the input terminals of electronic modules. You should not attempt to measure the resistance of these terminals unless instructed to do so by a service procedure. These inputs can be used to check wiring to electronic modules as shown under Troubleshooting Tests (Cell 4).

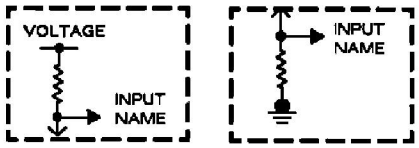
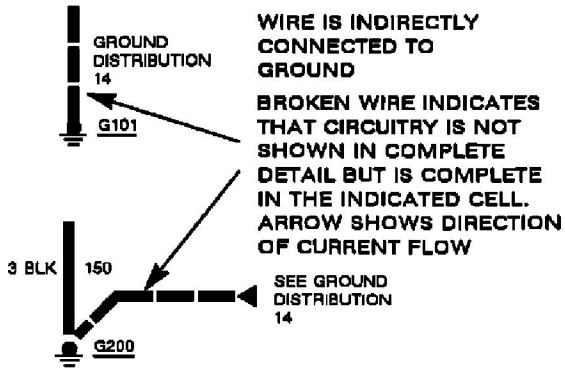
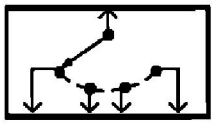


Figure 7 **Figure 8**

Schematic Symbols

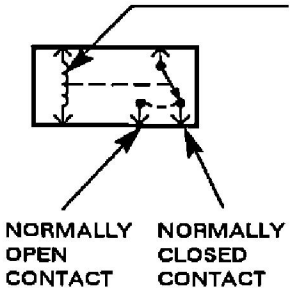


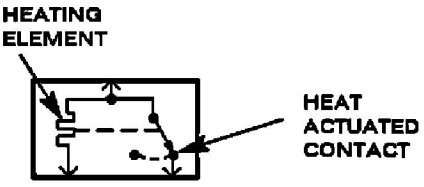


MULTI-POSITION SWITCH

SWITCH CONTACTS THAT MOVE TOGETHER

DASHED LINE SHOWS A MECHANICAL CONNECTION BETWEEN SWITCH CONTACTS



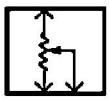


HORN OR SPEAKER

SOLENOID OR COIL

RESISTOR

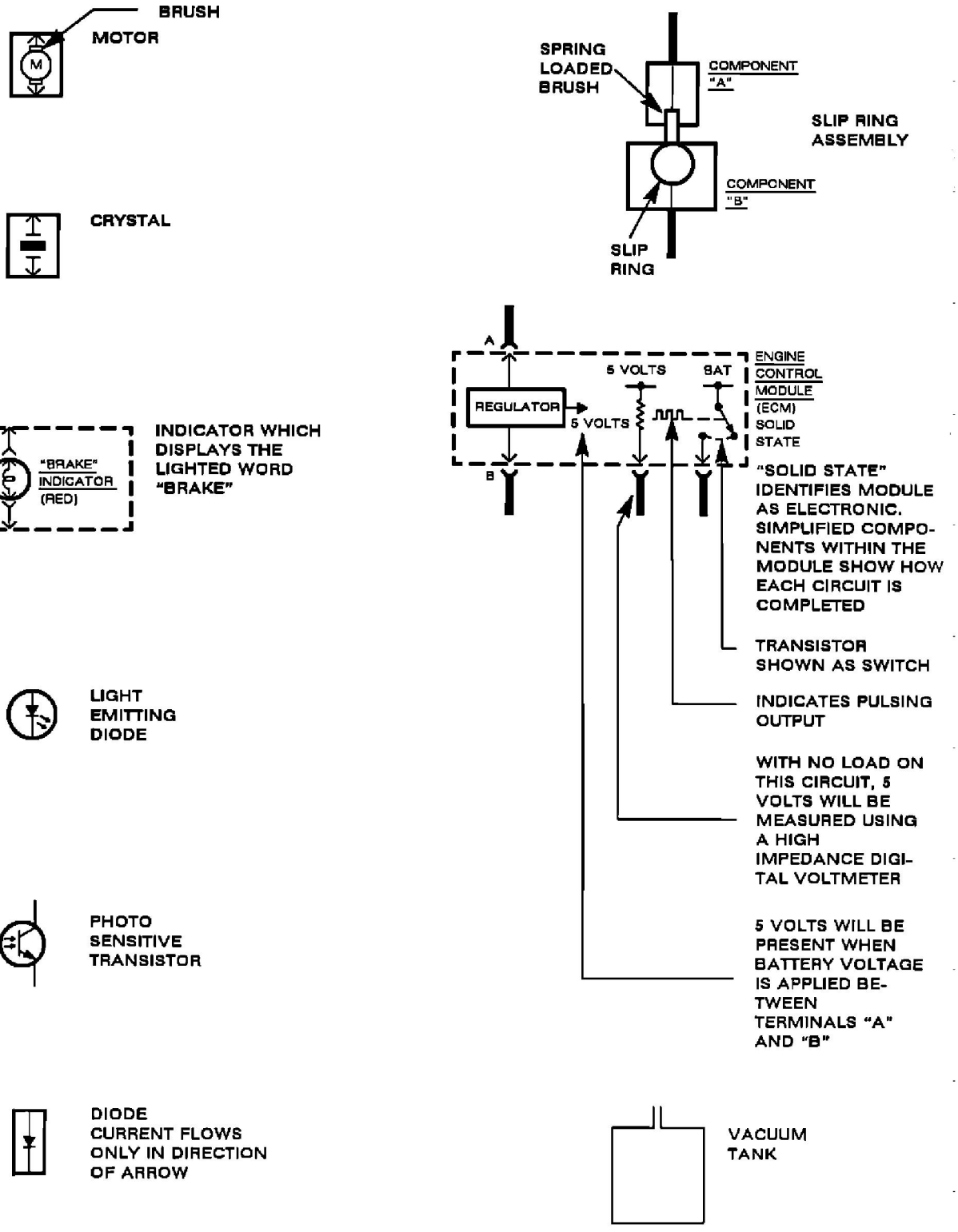
VARIABLE RESISTOR



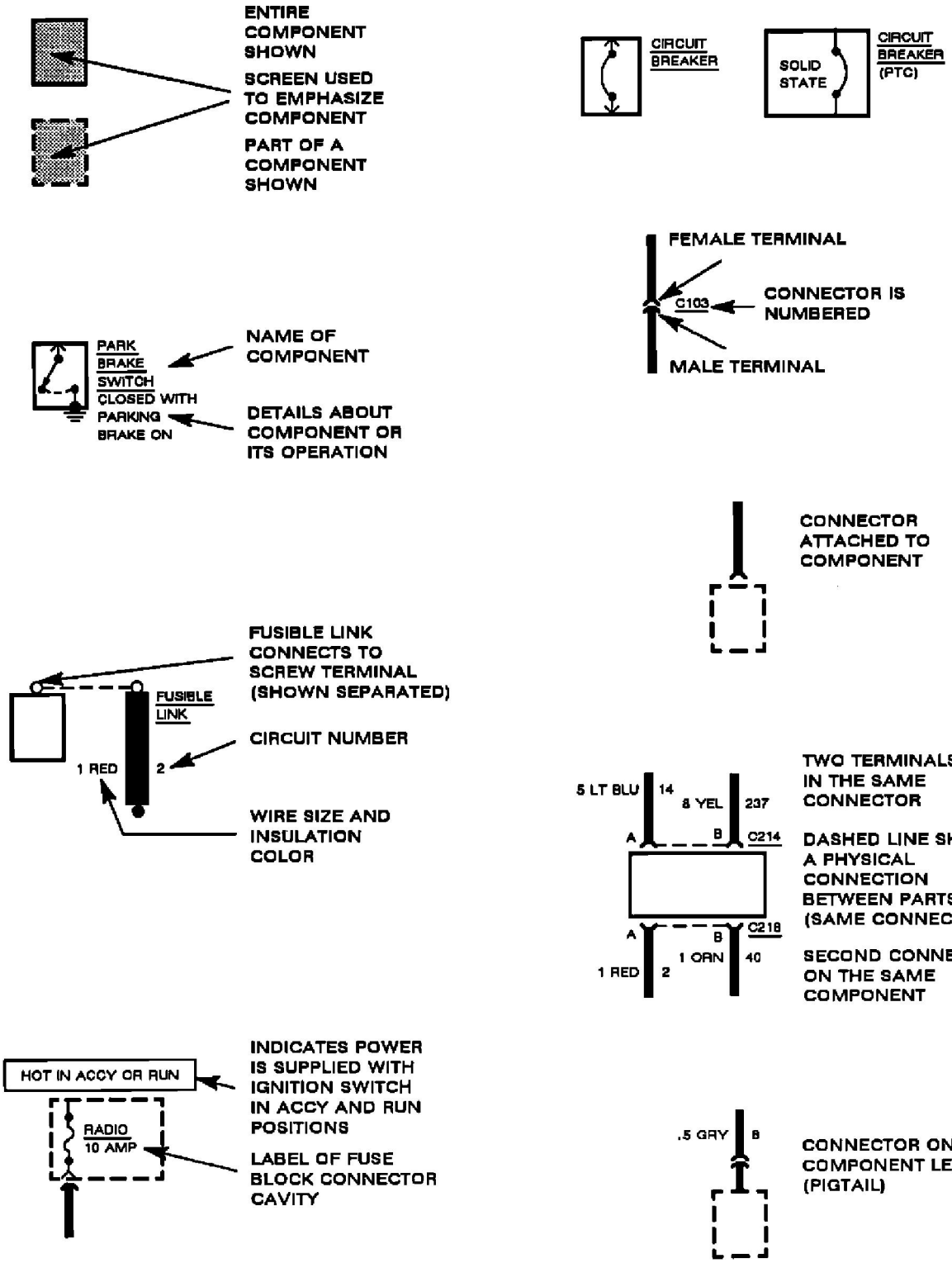
POTENTIOMETER

CAPACITOR

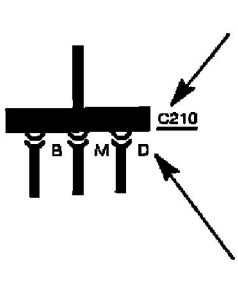
Schematic Symbols



Schematic Symbols



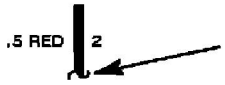
Schematic Symbols



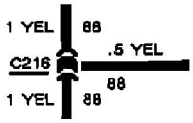
CONNECTOR NUMBER

3 CONNECTIONS ARE SHOWN CONNECTED TOGETHER AT A JUNCTION BLOCK. FOURTH WIRE IS SOLDERED TO COMMON CONNECTION ON BLOCK

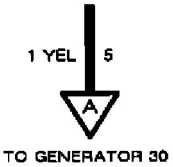
LETTERS FOR EACH CAVITY



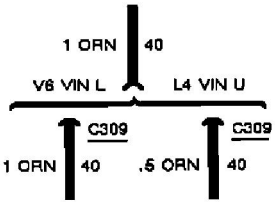
A WAVY LINE MEANS A WIRE IS TO BE CONTINUED



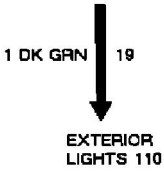
3 WIRES ARE SHOWN CONNECTED TOGETHER WITH A PIGGYBACK CONNECTOR



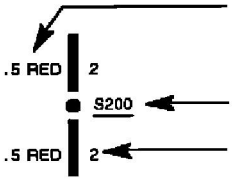
A CURRENT PATH IS CONTINUED AS LABELED. ARROW SHOWS THE DIRECTION OF CURRENT FLOW AND IS REPEATED WHERE CURRENT PATH CONTINUES



WIRE CHOICES FOR OPTIONS OR DIFFERENT MODELS ARE SHOWN AND LABELED



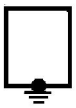
A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT. THE WIRE IS SHOWN AGAIN IN THAT CIRCUIT. ARROW SHOWS DIRECTION OF CURRENT FLOW



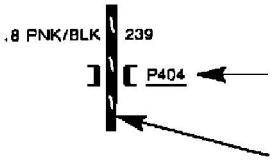
WIRE SIZE AND INSULATION COLOR ARE LABELED

SPLICE IS NUMBERED

CIRCUIT NUMBER IS SHOWN TO HELP IN TRACING CIRCUITS

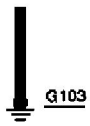


COMPONENT CASE IS DIRECTLY ATTACHED TO METAL PART OF CAR (GROUNDED)



GROMMET IS NUMBERED

WIRE INSULATION IS ONE COLOR WITH ANOTHER COLOR STRIPE

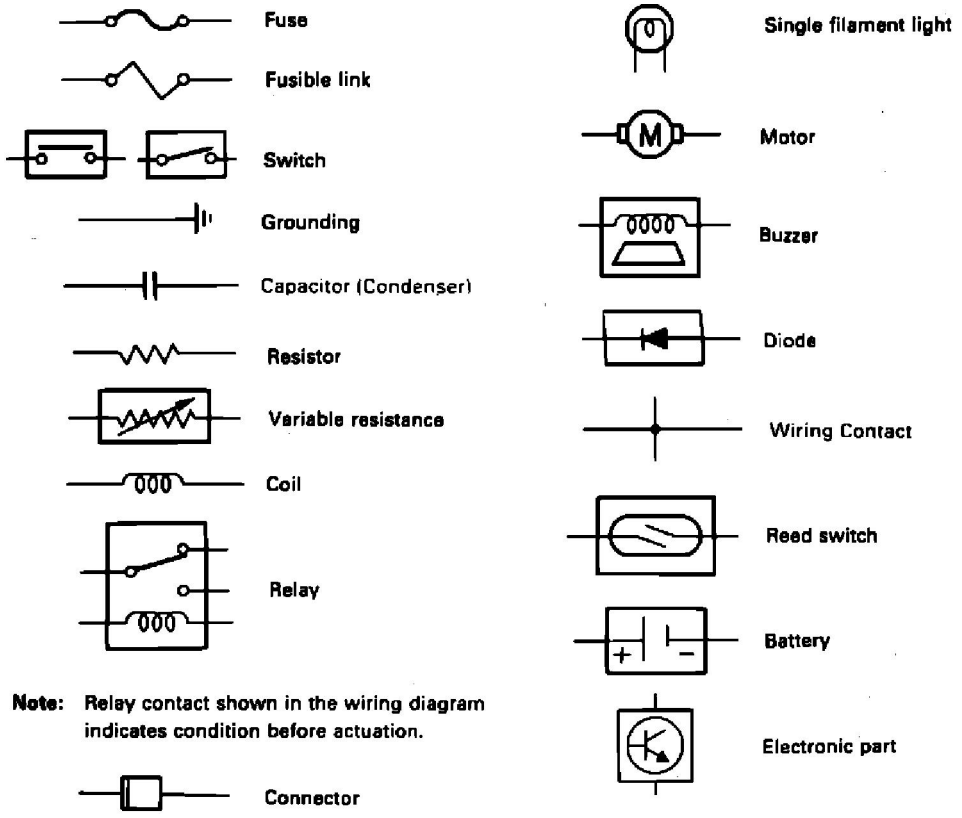


WIRE IS ATTACHED TO METAL PART OF CAR (GROUNDED)

GROUND IS NUMBERED

Schematic Symbols

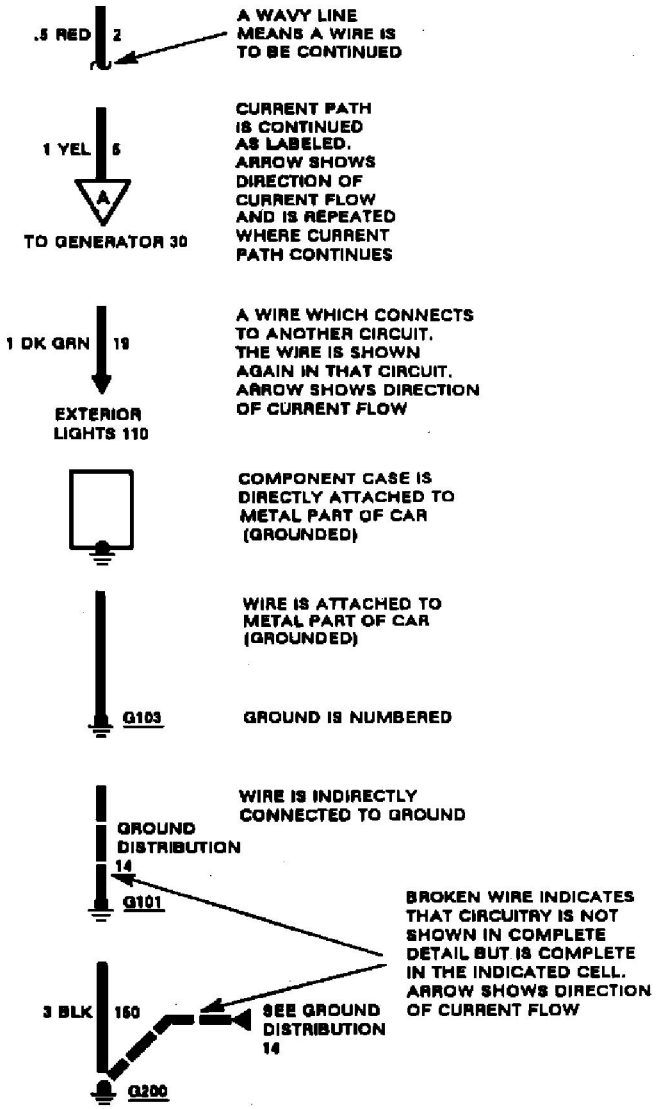
Fuel Pump Relay: Diagram Information and Instructions
Symbol Identification

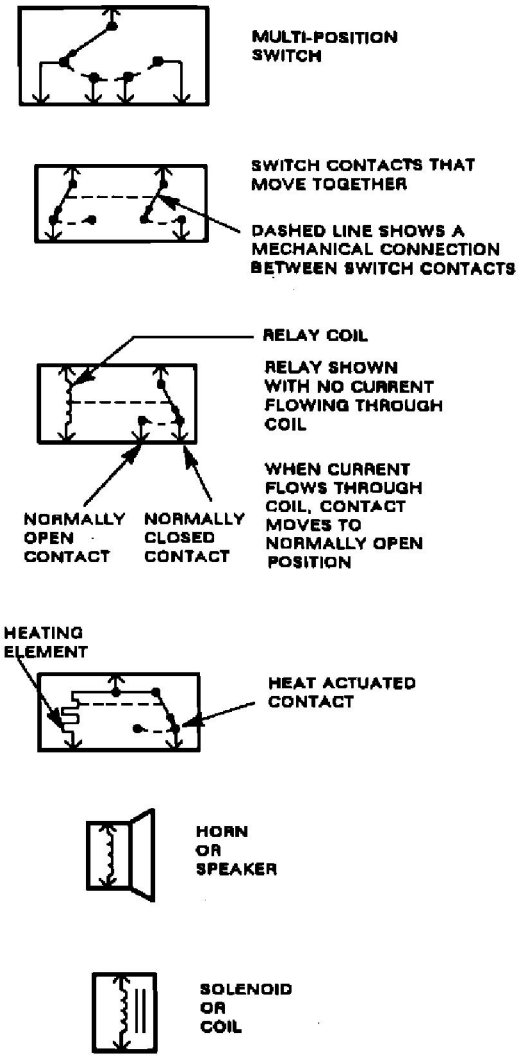


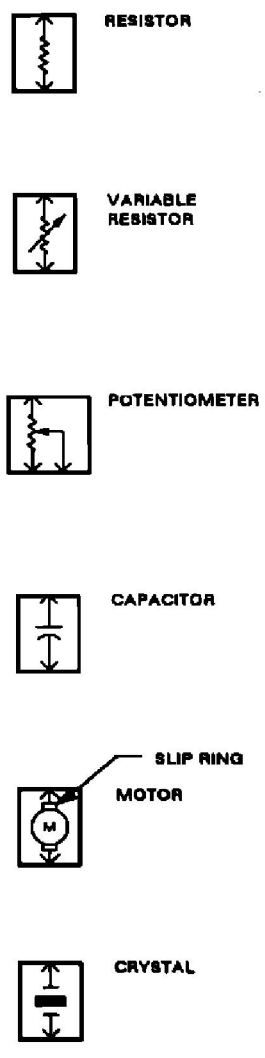
Note: Relay contact shown in the wiring diagram indicates condition before actuation.

RH	Right hand side	A/C	Air conditioner
LH	Left hand side	V.S.V.	Vacuum switching valve
SW	Switch	VFT	Vacuum fluorescent tube
A/T	Automatic transmission	SHS	Super heat switch
M/T	Manual transmission	TPS	Throttle position sensor
O/D	Over-drive	STD	Standard
Ft	Front	OPT	Option
Rr	Rear	DSB	Distributor
Temp.	Temperature	SOL	Solenoid
Int.	Intermittent	RAD	Radiator

Symbol Identification







Symbol Indentification

Fuel Pump Relay: Diagram Information and Instructions
Wire Color Code Identification

WIRE COLOR	ABBREVIATION
BLACK	BLK
BLUE	BLU
DARK BLUE	DK BLU
LIGHT BLUE	LT BLU
BROWN	BRN
GRAY	GRY
GREEN	GRN
DARK GREEN	DK GRN
LIGHT GREEN	LT GRN
ORANGE	ORN
PINK	PNK
PURPLE	PPL
RED	RED
TAN	TAN
WHITE	WHT
YELLOW	YEL

ECM TERMINAL END VIEW
2.8L (VIN W)

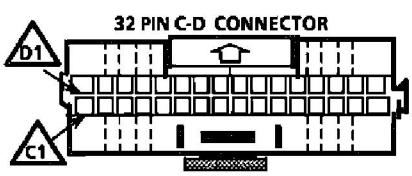
PORT FUEL INJECTION ECM CONNECTOR IDENTIFICATION

This ECM voltage is for use with a digital voltmeter to further aid in diagnosis. The voltages you get may vary due to low battery charge or other reasons, but they should be very close.

B + in Chart refers to system voltage.

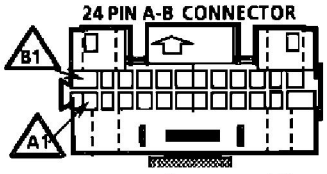
THE FOLLOWING CONDITIONS MUST BE MET BEFORE TESTING:

• Engine at operating temperature • Engine idling in "Closed Loop" (for "Engine Run" column) in park or neutral • Test terminal not grounded • "Scan" tool not installed



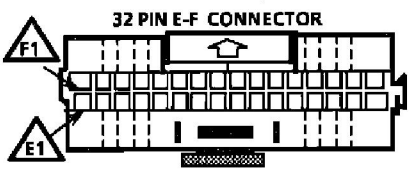
BACK VIEW OF CONNECTOR

(BLACK)



BACK VIEW OF CONNECTOR

(BLACK)



BACK VIEW OF CONNECTOR

(YELLOW)

	VOLTAGE				
	KEY "ON"	ENG. RUN	CIRCUIT	PIN	WIRE COLOR
				A1	
				A2	
	2	2	EGR POSITION	A3	PNK
	5	5	5V REF	A4	GRY/RED
	5	5	5V REF	A5	GRY
	B+	B+	IGN	A6	PNK/BLK
				A7	
				A8	
(2)	4.8	4.8	SERIAL DATA	A9	ORN/BLK
				A10	
(3)	0*	B+	FUEL PUMP RELAY CONTROL	A11	DK GRN/ WHT
	0*	0*	POWER GND.	A12	BLK/WHT

VOLTAGE				
WIRE COLOR	PIN	CIRCUIT	KEY "ON"	ENG RUN
ORN	B1	BATTERY	B+	B+
	B2			
	B3			
	B4			
BLK	B5	5V RETURN	0*	0*
PPL	B6	5V RETURN	0*	0*
	B7			
	B8			
	B9			
	B10			
	B11			
	B12			

* Less than .5 volts.
1. Varies from .60 to battery voltage depending on position of drive wheels.
2. Varies.
3. B + first two seconds.

ECM TERMINAL END VIEW
2.8L (VIN W)

VOLTAGE				
KEY "ON"	ENG. RUN	CIRCUIT	PIN	WIRE COLOR
			C1	
			C2	
			C3	
			C4	
			C5	
(1)		VSS SIGNAL	C6	BRN/RD
0*	5	BYPASS	C7	TAN/BLK
0*	1.3	EST	C8	WHT
B+ 0*	B+ 0*	B+ WITH A/C "ON" A/C REQUEST	C9	LT GRN/ WHT
			C10	
B+	B+	INJECTOR 1, 3, 5	C11	LT BLU/ WHT
B+	B+	INJECTOR 2.4.6	C12	LT GRN
			C13	
			C14	
			C15	
B+	B+	BATTERY	C16	ORN

VOLTAGE				
WIRE COLOR	PIN	CIRCUIT	KEY "ON"	ENG RUN
TAN	D1	ECM GND.	0*	0*
	D2			
	D3			
	D4			
	D5			
BLK/WHT	D6	INJ. DRIVE LOW	0*	0*
BLK/WHT	D7	INJ. DRIVE LOW	0*	0*
PPL/WHT	D8	REFERENCE	0*	2.3
BLK/RED	D9	REF. LOW	0*	0*
	D10			
	D11			
DK.GRN/ WHT	D12	A/C PRESS FAN SW.	0*	0*
TAN/BLK	D13	PSPS	B+	B+
LT.BLU	D14	4TH. GEAR (440)	0*	0*
DK.GRN	D15	3RD. GEAR (440)	0*	0*
ORN/BLK	D16	P/N SWITCH	0*	0*

VOLTAGE				
KEY "ON"	ENG. RUN	CIRCUIT	PIN	WIRE COLOR
			E1	
			E2	
NOT USEABLE		IAC "A" HI	E3	LT.BLU/ WHT
NOT USEABLE		IAC "A" LO	E4	LT.BLU/ BLK
NOT USEABLE		IAC "B" HI	E5	LT.GRN/ WHT
NOT USEABLE		IAC "B" LO	E6	LT.GRN/ BLK
0*	B+	SERVICE ENGINE SOON LIGHT	E7	BRN/ WHT
B+	B+	FAN RELAY CONTROL	E8	DK.GRN/ WHT
B+	B+	EGR CONTROL	E9	GRY
			E10	
			E11	
5	5	DIAG. TERM.	E12	WHT/BLK
(3)	B+	FUEL PUMP SIGNAL	E13	GRY
.35-.55	(2)	O^2 SIGNAL	E14	PPL
0*	0*	O^2 GND.	E15	TAN/ WHT
(4)	(4)	COOLANT TEMP.	E16	YEL

VOLTAGE				
WIRE COLOR	PIN	CIRCUIT	KEY "ON"	ENG RUN
DK GRN	F1	A/C RELAY CONTROL	B+	B+
BLK/PNK	F2	AIR DIVERT CONTROL M/T	B+	B+
	F3			
	F4			
	F5			
TAN/BLK	F6	TCC CONTROL A/T SHIFT LIGHT M/T	0* B+	0* B+ (5)
DK.GRN/ YEL	F7	PURGE CONTROL	0*	0*
	F8			
DK BLU/ WHT	F9	ESC SIGNAL	2.5	2.5
BRN/WHT	F10	MAF SIGNAL	2.5	2.5
	F11			
	F12			
DK BLU	F13	TPS SIGNAL	.55 ±.1	.55 ±.1
	F14			
LT GRN	F15	MAP SIGNAL	4.57	(2)
TAN	F16	MAT SIGNAL	(4)	(4)

* Less than .5 volts.
1. Varies from .60 to battery voltage depending on position of drive wheels.
2. Varies.
3. B+ first two seconds.
4. Varies with temperature.
5. 440 - T4 Transmission should measure 12 volts.

ECM Terminal I.D. & Voltage Specifications (Part 2 of 2)