This file is available for free download at http://www.iluvmyrx7.com

This file is fully text-searchable – select Edit and Find and type in what you're looking for. This file is intended more for online viewing than printing out so some graphics may not print 100% legibly, you can zoom in on them if you need to.

www.iluvmyrx7.com

CRUISE CONTROL SYSTEM
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:28PM

ARTICLE BEGINNING

1983 CRUISE CONTROL SYSTEMS
Mazda

RX7

DESCRIPTION

Main switch is used to turn system on and off. A control switch with "SET (ACCEL)" and "COAST (RESUME)" is used to set desired speed. System will not operate at speeds under 25 MPH. Main switch is located on the right side of dash. Control switch is on right side of steering column.

OPERATION

MAIN SWITCH

Pressing the main switch activates the cruise control.

CONTROL SWITCH

When "SET" switch is pressed and then released, desired speed is set. If switch is continuously pressed, the vehicle will accelerate until switch is released, at which time the new or higher speed will be set.

When "COAST" switch is moved down or rearward, speed will be reduced. When switch is released, the new or lower speed will be set. If cruise control is overridden by means other than the main switch, original speed can be resumed by operating switch forward or up.

TROUBLE SHOOTING

CRUISE CONTROL SYSTEM DOES NOT WORK

Blown fuse. Faulty main switch, control switch, speed sensor or actuator. Malfunction of stop, clutch or inhibitor switch. Bad ground or wiring.

SPEED SETTING CAN'T BE CANCELED

Faulty control unit. Malfunction of clutch, stop or inhibitor switch.

SET SPEED IS NOT HELD

Faulty actuator, control unit or speed sensor. Actuator control cable malfunction.

SYSTEM DOESN'T ENGAGE IMMEDIATELY

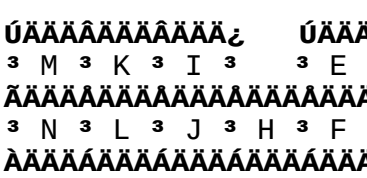
Faulty actuator, control switch or unit. Actuator control cable malfunction.

TESTING

1) Support vehicle with drive wheels off of ground. Turn ignition switch ON. With control unit connected, connect negative probe of voltmeter to terminal M of control unit connector. Refer to CRUISE CONTROL UNIT CONNECTOR DIAGRAM. Test terminals D through N. See CRUISE CONTROL UNIT TESTING table. If values do not match those specified, check appropriate circuits. If values do match those specified, go to next step.

2) Start engine and switch cruise control main switch ON. Increase speed until 30 MPH is indicated and push cruise control SET button. Connect negative probe of voltmeter to terminal M of control unit connector. Test terminals A through C. See CRUISE CONTROL UNIT TESTING table. If values do not match those specified, check appropriate circuits.

Cruise Control Unit Connector Diagram



CRUISE CONTROL UNIT TESTING TABLE

Terminal	Action	Voltage
F	At all times	12 volts
I	Push SET button	0 volts
	Release SET button	8 volts
J	Push COAST button	0 volts
	Release COAST button	8 volts
K	Push RESUME button	0 volts
	Release RESUME button	8 volts
E	Push brake or clutch pedal	12 volts
N	Push brake pedal	12 volts
D	Shift to P or N (1)	0 volts

	Shift to D or R (1)	12 volts
B	Push SET button	0 volts
	Release SET button	12 volts
A	Push COAST button	0 volts
	Release COAST button	12 volts
C	Push clutch pedal	0 volts
	Release clutch pedal	12 volts
H	* Engine OFF	0-9 volts
	* Remove speedometer cable from transmission.	
	* Ignition ON	
	* Rotate cable by hand	

(1) - Automatic transmission only.

WIRING DIAGRAM

See WIRING DIAGRAMS article for cruise control circuit diagram.

END OF ARTICLE

INSTRUMENT PANEL - STANDARD
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM

ARTICLE BEGINNING

Switches & Instrument Panels
MAZDA

DESCRIPTION & OPERATION

All models have a steering column mounted combination switch to control turn signals, headlights and wipers. The instrument cluster contains a speedometer, fuel gauge and water temperature gauge.

Some models also have a tachometer, voltmeter and oil pressure gauge. The fuel and temperature gauges operate on 7 volts, supplied by a cluster-mounted voltage regulator. The sending units are variable-resistance type and have the same resistance values on all models.

TESTING

GAUGES

1) Turn ignition on. If gauge needles do not move at all, check for blown fuse or broken power wire. If both gauges are inoperative, voltage regulator may be the cause. If only one gauge does not work, the gauge, sending unit, or connecting wiring may be at fault.

2) To test temperature gauge, disconnect sending unit wire. Connect a resistor between wire and ground, then check gauge reading. Change resistance and recheck. If gauge readings are as shown in tables, replace sending unit. If not, repair wiring or replace gauge.

3) To test fuel gauge, disconnect wire to sending unit at fuel tank (all except GLC Wagon) or unplug connector behind left kick panel (GLC Wagon). Connect resistor between Yellow wire and ground. Check gauge reading.

NOTE: Allow 2 minutes for gauge reading to stabilize. It should be within 1 pointer width of line on gauge face. See Fig. 1.

4) If gauge readings are incorrect, replace gauge. If readings are okay, test in-tank sending unit before replacing it. Resistance should measure 0-5 ohms with float raised, and 103-117 ohms with float lowered. If not, replace sending unit.

RESISTANCES FOR FUEL GAUGE TESTING

Needle Position	Test Resistor
Full Line	(1) 7 ohms
Half Tank	33 ohms
Empty Line	(2) 95 ohms

(1) - On Pickup, 3 ohms.
(2) - On Pickup, 110 ohms.

RESISTANCES FOR TEMPERATURE GAUGE TESTING

Model	Cold Line	Hot Line
GLC Wagon & 626	233 ohms	16 ohms
RX7	104 ohms	21 ohms
GLC	154 ohms	12 ohms

REMOVAL & INSTALLATION

INSTRUMENT CLUSTER

Removal (GLC Hatchback)
Disconnect battery ground. Remove steering wheel. Remove meter hood by moving it up and down with hands. Disconnect speedometer cable and remove 4 cluster screws. Pull cluster back and unplug wiring.

Installation
To install, reverse removal procedure.

Removal (GLC Wagon)
1) Disconnect battery ground. Place a strip of masking tape along edge of instrument panel under cluster to protect finish. Remove 2 screws and meter hood.
2) Remove 1 screw at left end of center panel, then unsnap panel. Remove 3 screws under edge of dashboard cover and remove cover. Remove 3 cluster screws, disconnect speedometer cable and wires and remove cluster.

Installation
To install, reverse removal procedure.

Removal (Pickups & 626)
Disconnect battery ground. Remove steering wheel and column cover. Disconnect speedometer cable. Remove cluster hood and mounting bolts. Pull cluster back, unplug wiring and remove cluster.

Installation
To install, reverse removal procedure.

Removal (RX7)
Disconnect battery ground. Remove steering wheel. Remove 2 screws and cluster cover. Remove cluster attaching screws. Disconnect speedometer cable and pull cluster back. Unplug wiring and remove cluster.

Installation

To install, reverse removal procedure.

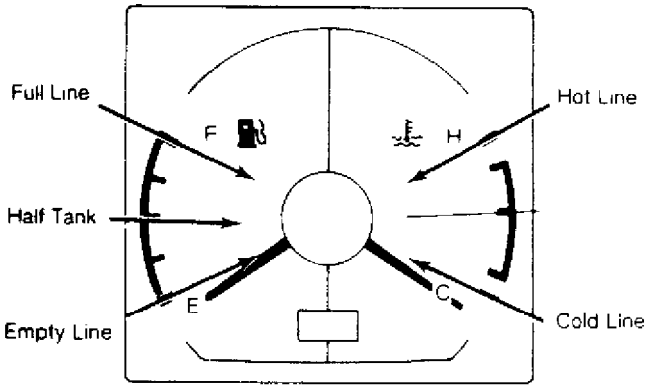
COMBINATION SWITCH

Removal

Disconnect battery ground. Remove steering wheel. Remove column covers and snap ring at top of column (if equipped). Unplug wiring connectors. Loosen combination switch screw. Remove switch.

Installation

To install, reverse removal procedure.



29767

Fig. 1: Gauge Testing Needle Locations.
Needle should indicate proper reading when test resistor is connected.

END OF ARTICLE

ARTICLE BEGINNING

1983 Wiper/Washer Systems
MAZDA

DESCRIPTION

All models have a 2-speed wiper motor with intermittent wipe feature. GLC and RX7 models may be equipped with a rear window wiper/washer system. The wiper switch for GLC Wagon is a lever on the left side of the steering column.

On all other models wiper lever is on the right side of column. A time delay relay is used to control the intermittent cycle on all except RX7 models. On RX7, wipers are timed by the "Control Processing Unit" that also operates a number of other accessories.

OPERATION

GLC WAGON

The wiper speeds are controlled by twisting the lever to the left of the steering column. The washer is operated by pressing in on the end of the lever. The rear wiper on GLC Wagon is turned on by pulling out the dash-mounted switch, while the washer operates when the switch is turned.

ALL OTHER MODELS

The wipers are controlled by a lever on the right side of the steering column. As the lever is moved down, it switches the wipers to intermittent, low speed and high speed. If the lever is pulled toward the steering wheel, the washer sprays.

If the lever is pushed away from the steering wheel, the wipers sweep until it is released. The rear wiper/washer on GLC Hatchback is controlled by a rocker switch on the instrument panel. The RX7 rear wiper switch is on the console.

TESTING

WIPER MOTOR

1) Remove wiper motor from vehicle. Connect jumper wires to connector at motor to check both speeds. For low speed, connect battery voltage to Blue wire terminal and ground the Blue/White terminal. For high speed, ground the Blue/Red terminal instead.

2) To check the park switch, apply battery voltage to the Blue wire terminal. Connect a jumper wire between Blue/White and Blue/Black. Ground the Black wire. Motor should run briefly and stop.

MAZDA INTERMITTENT WIPER RELAY LOCATIONS
ÄÄÄ

Model	Connector	Location
GLC		
Hatchback	6-pin	Left of instrument cluster
Wagon	6-pin	Left of instrument cluster
B2000 &		
B2200	4-pin	Left of instrument cluster
RX7 (1)	17-pin	Left kick panel
626	6-pin (2)	Left of instrument cluster

(1) - Time delay is controlled by "Control Processing Unit".
(2) - For 4-door models. On 2-door and 5-door models, relay has 9-pins.

3) To check rear wiper motor, apply battery voltage to Blue/Red wire and ground the Blue/White wire. Motor should run steadily.

REMOVAL & INSTALLATION

FRONT WIPER MOTOR ASSEMBLY

Removal

1) Run wipers until they are in vertical position, then turn ignition off or disconnect battery cable. Remove wiper arms and shaft nuts.

2) Remove cowl grille or access panel. Unplug at motor. Remove mounting bolts and wiper motor.

Installation

To install, reverse removal procedure.

REAR WIPER MOTOR ASSEMBLY

Removal

Disconnect battery ground. Remove wiper arm and shaft nuts. Remove trim on rear hatch. Remove fasteners and remove wiper hole cover. Disconnect wiring, remove attaching bolts and remove rear wiper motor.

Installation

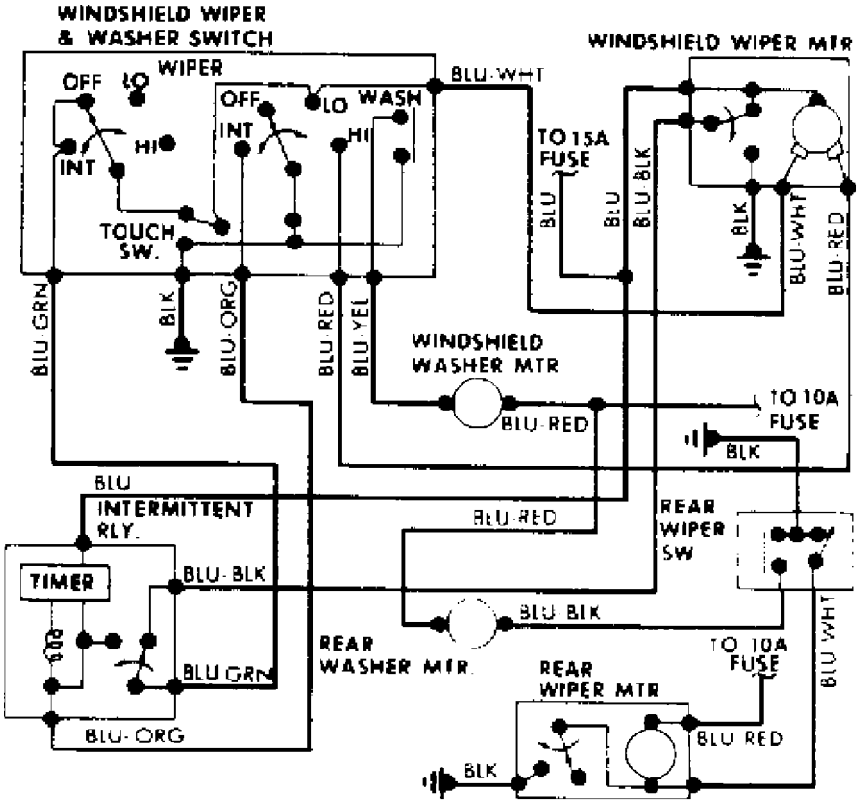
To install, reverse removal procedure.

WIPER SWITCH

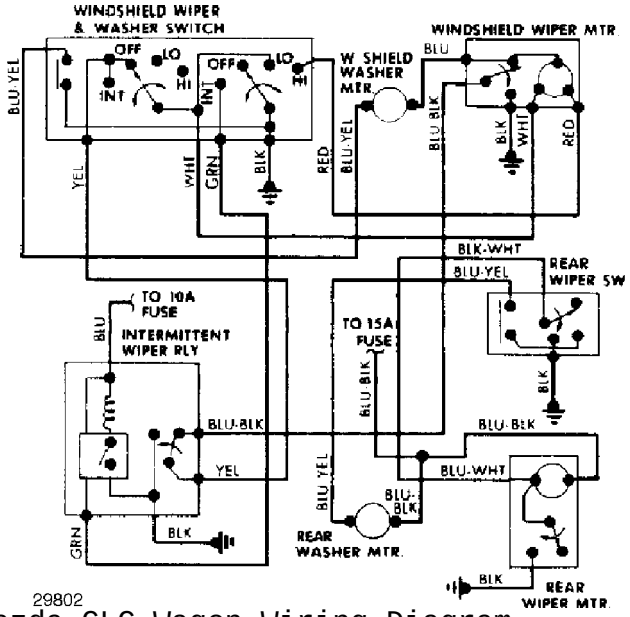
Removal

Disconnect battery ground. Remove steering wheel. Remove column covers and snap ring at top of column (if equipped). Unplug wiring connectors. Loosen combination switch screw. Remove combination switch.

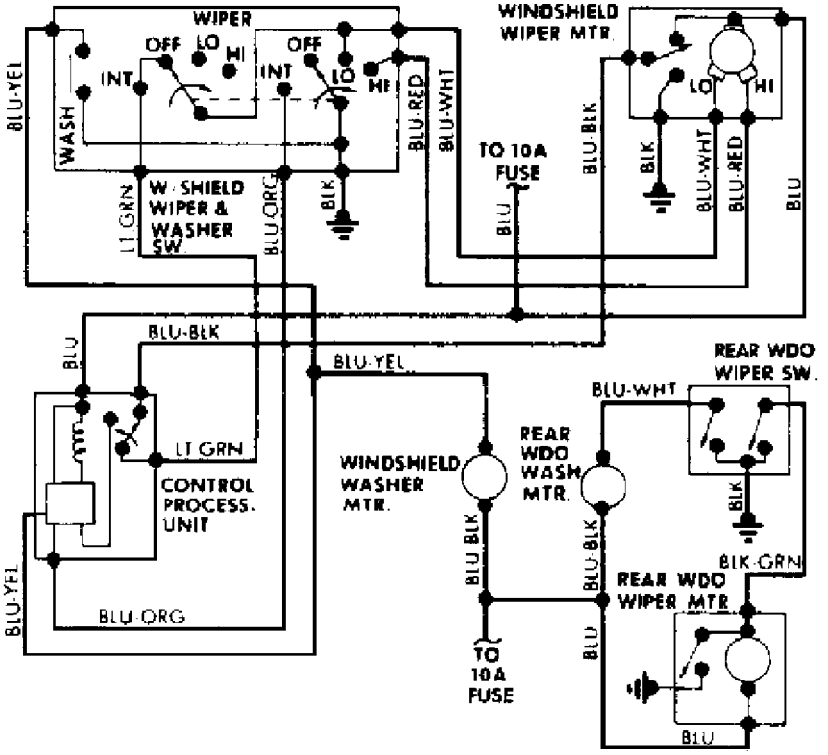
Installation
To install, reverse removal procedure.



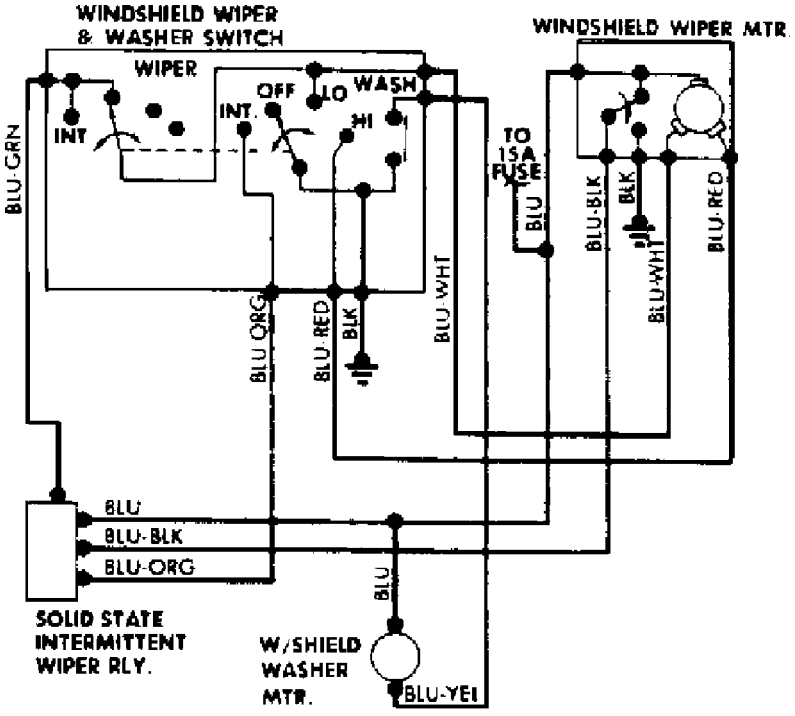
29801
Fig. 1: Mazda GLC Hatchback Wiring Diagram



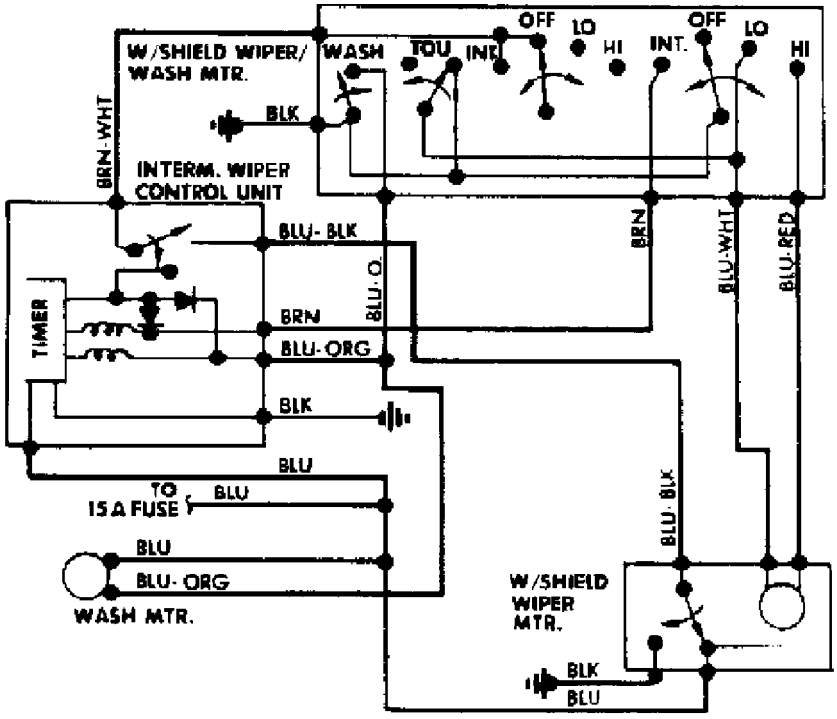
29802
Fig. 2: Mazda GLC Wagon Wiring Diagram



29803
Fig. 3: Mazda RX7 Wiring Diagram

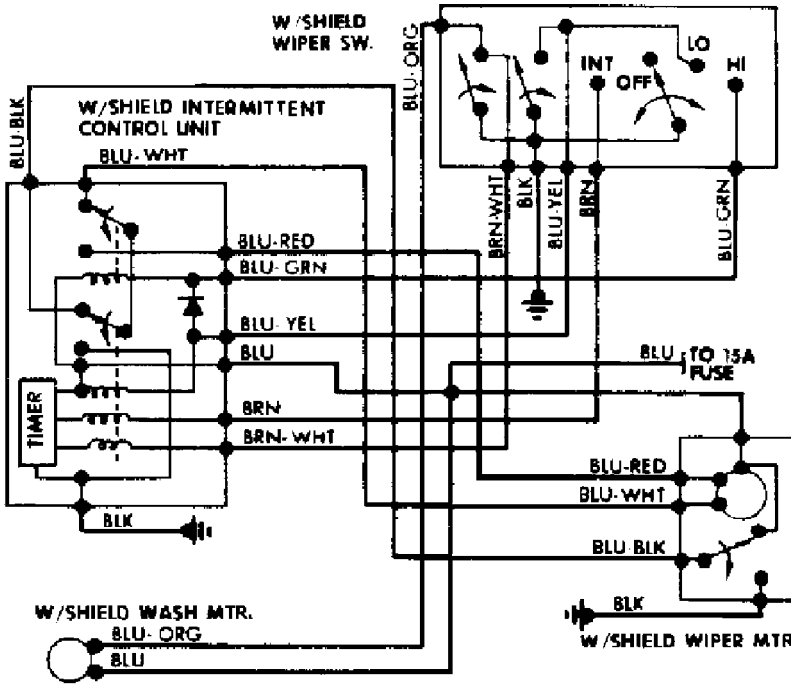


29804
Fig. 4: Mazda B2000 and B2200 Wiring Diagram



29805

Fig. 5: Mazda 626 Front Wiper Wiring Diagram (4-Door Models)



29806

Fig. 6: Mazda 626 Front Wiper Wiring Diagram (2 & 5-Door Models)

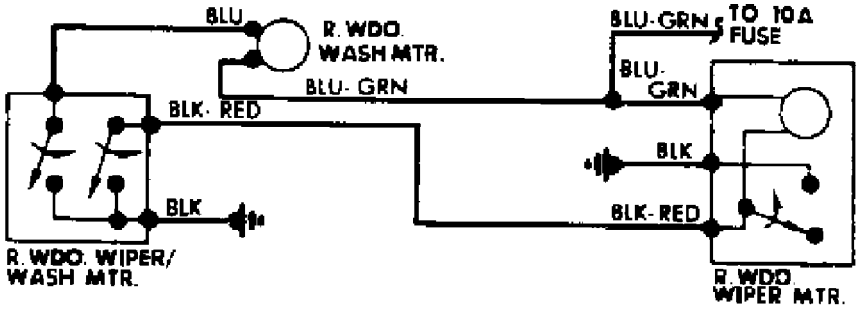


Fig. 7: Mazda 626 Rear Wiper Wiring Diagram (4-Door Models Only)

END OF ARTICLE

ELECTRICAL COMPONENT LOCATOR
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM

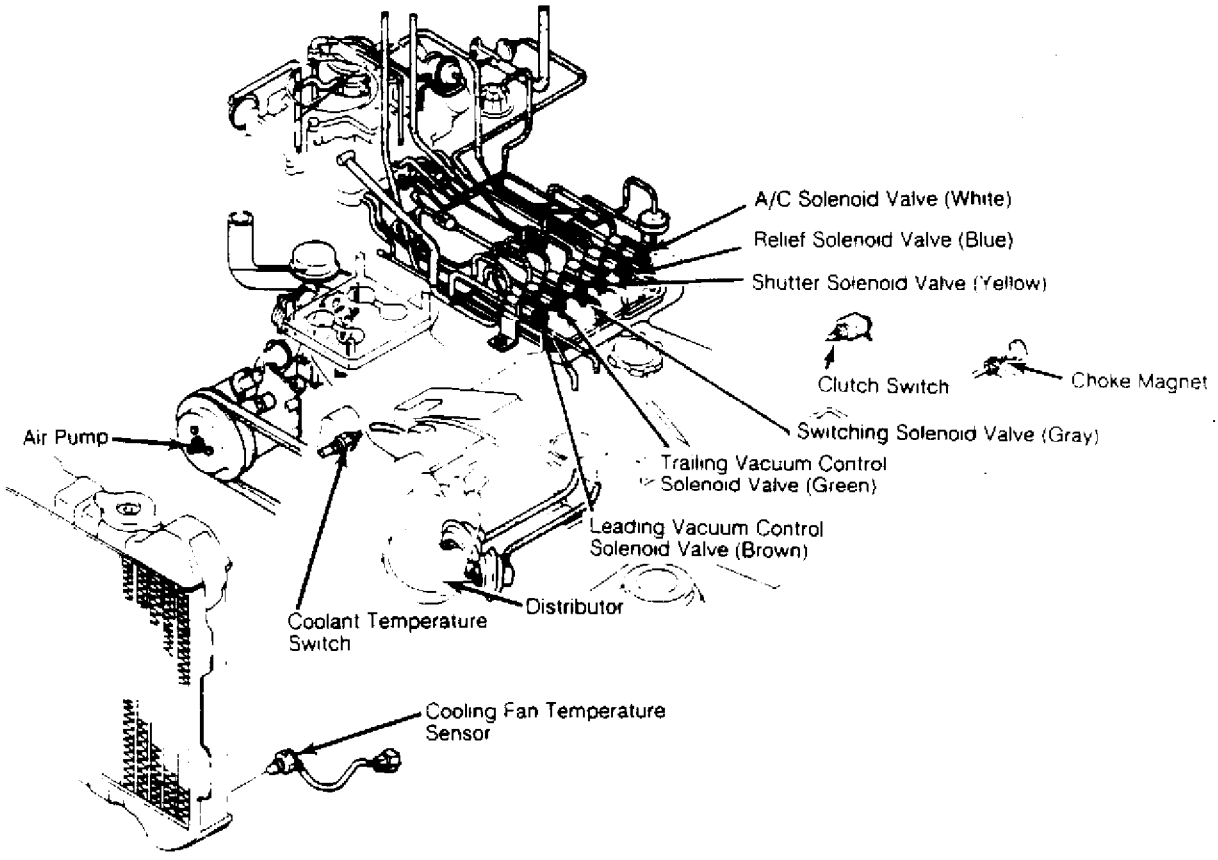
ARTICLE BEGINNING

1983 Mazda
RX7 ELECTRICAL COMPONENTS

RX7 COMPONENT LOCATOR CHART

MISCELLANEOUS COMPONENTS

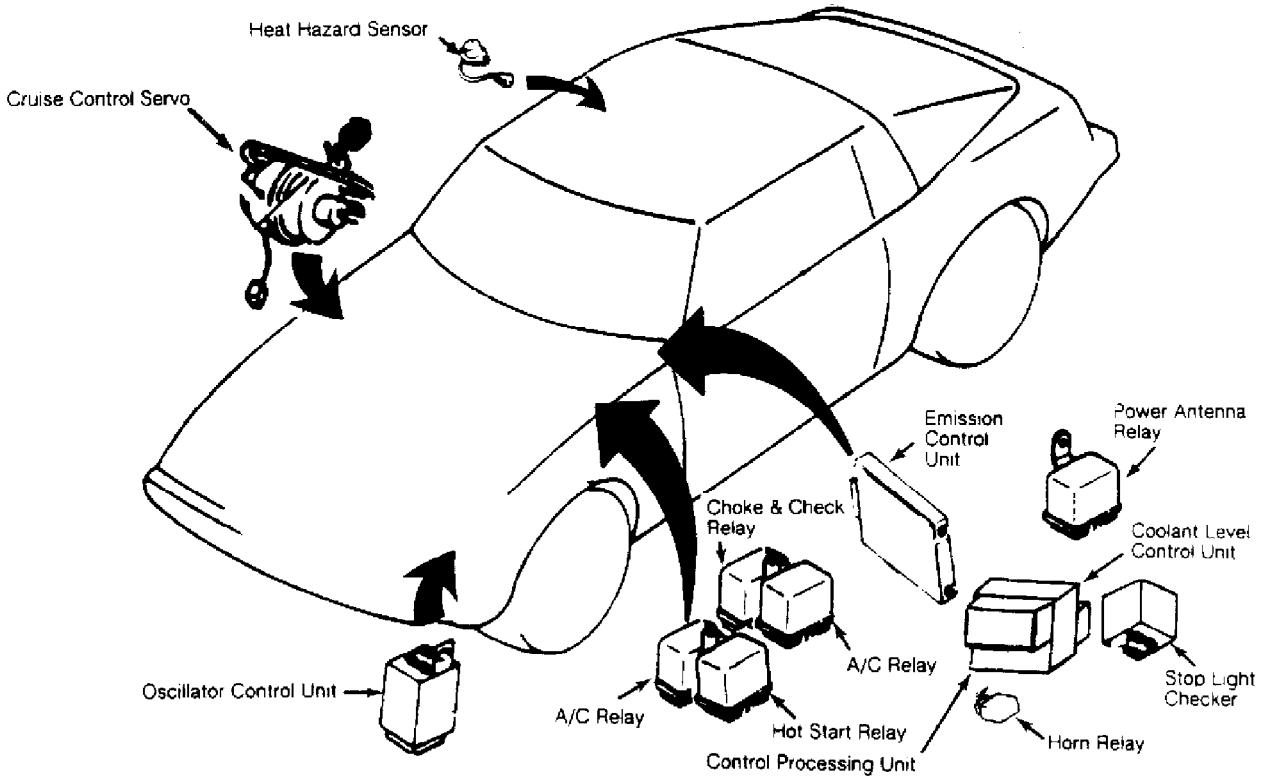
Component	Component Location
A/C-Heater Blower Motor Resistor	On blower housing under right side of dash.



Choke Magnet	In choke switch under dash.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 2)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM



Cruise Control Servo	On right inner fender panel.
Fuse Block	Below left side of dash.
Fusible Links	On left shock tower.
Seat Belt Warning Chime	Behind right side of instrument cluster.

CONTROL UNITS

Component	Component Location

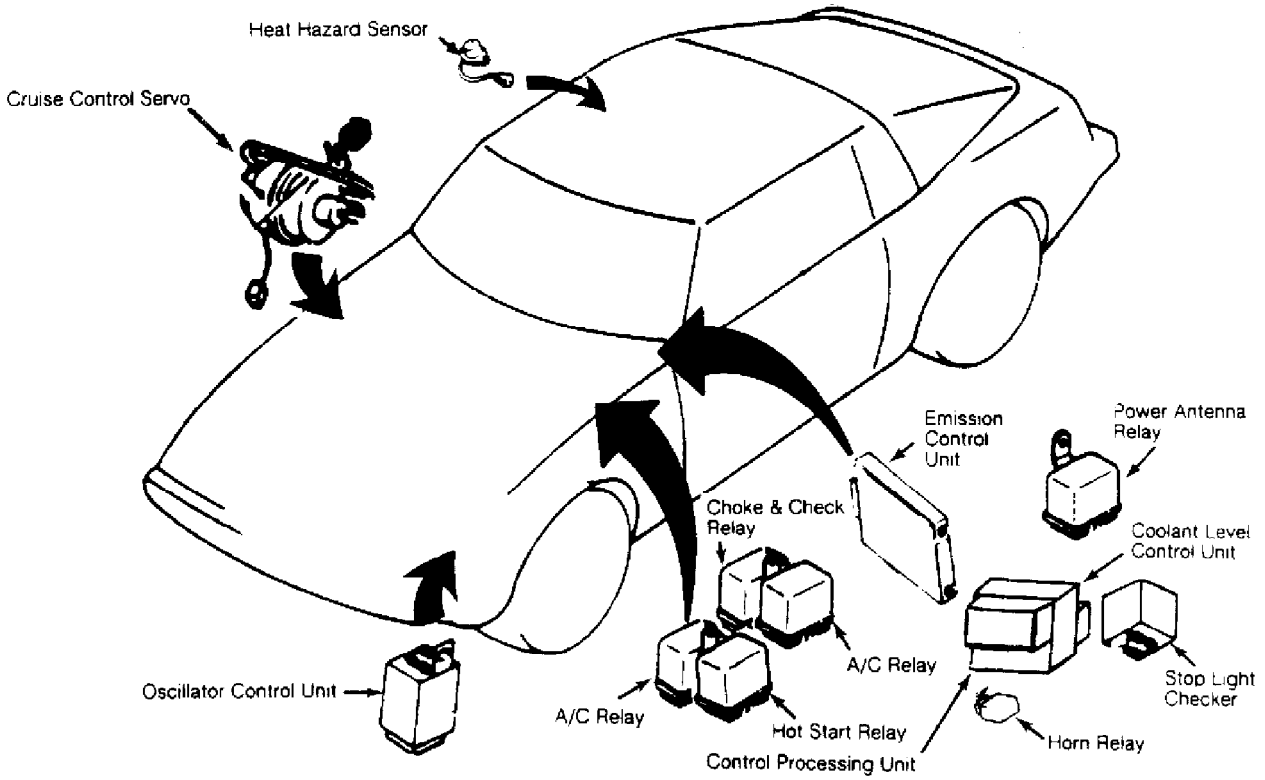
ELECTRICAL COMPONENT LOCATOR

Article Text (p. 3)

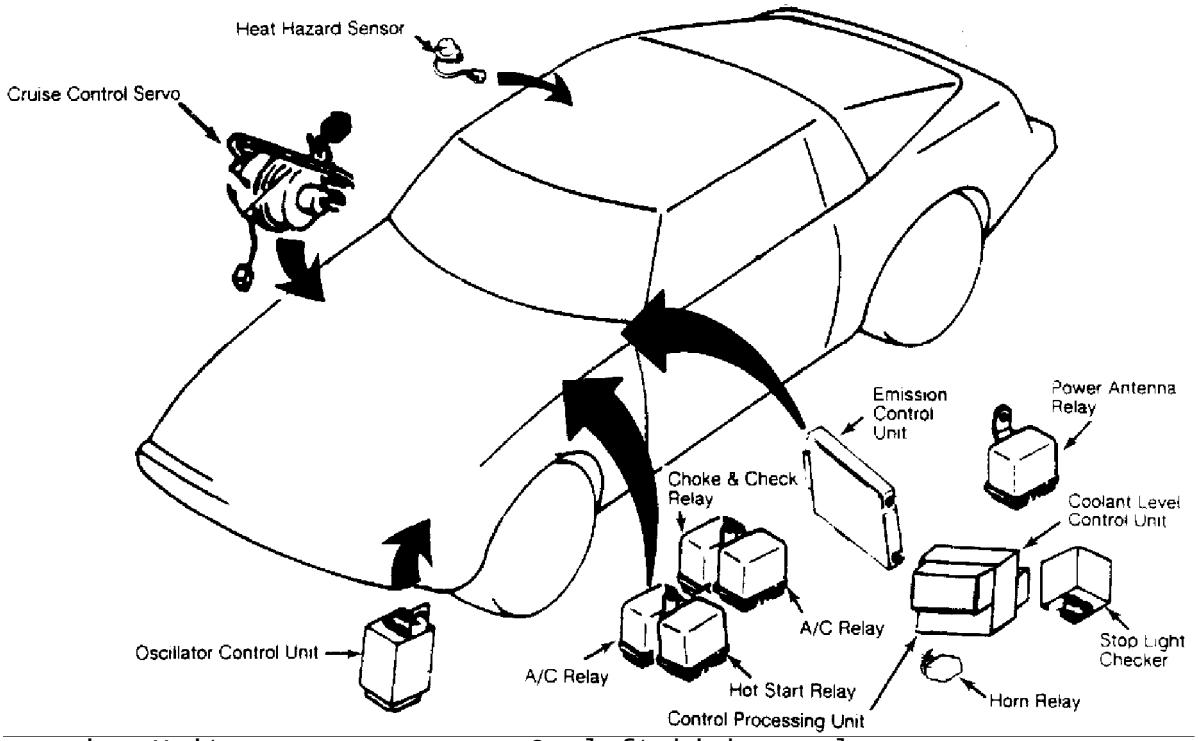
1983 Mazda RX7

For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM

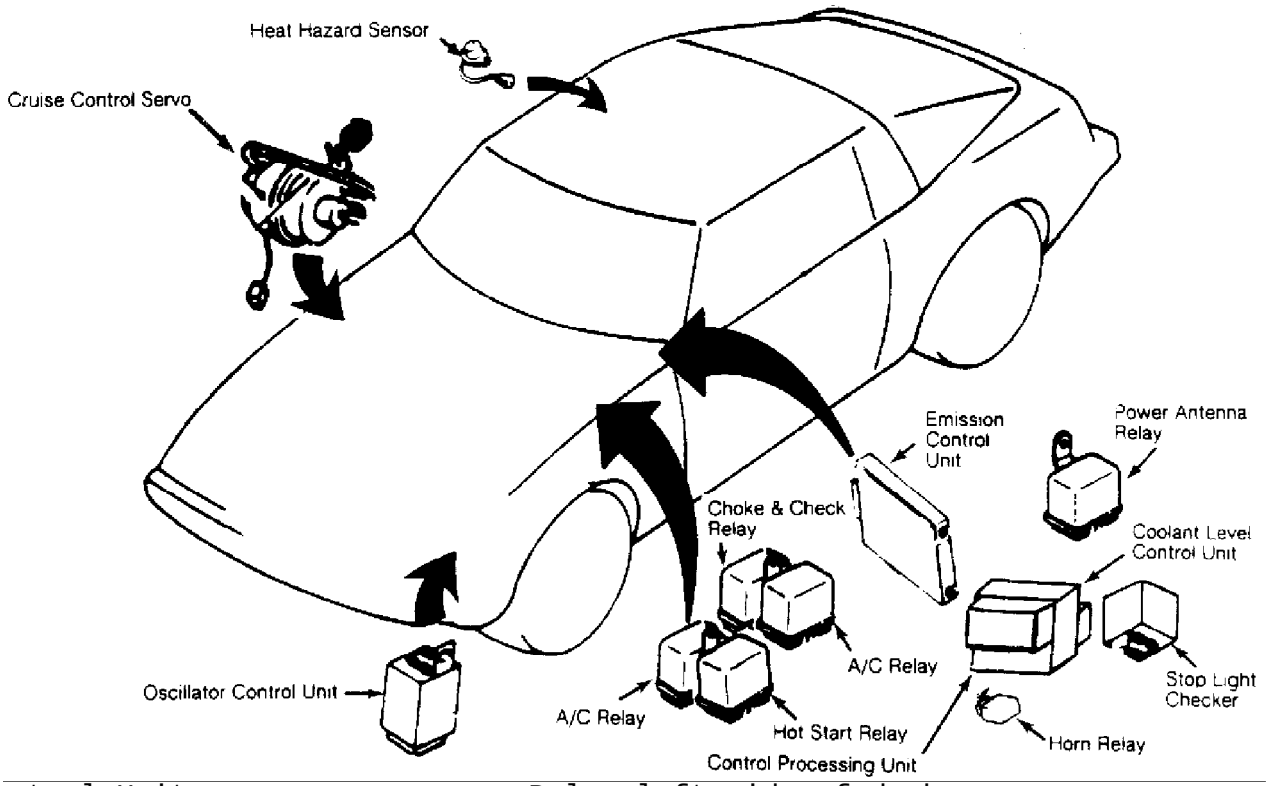


Coolant Level Control Unit	On left kick panel.

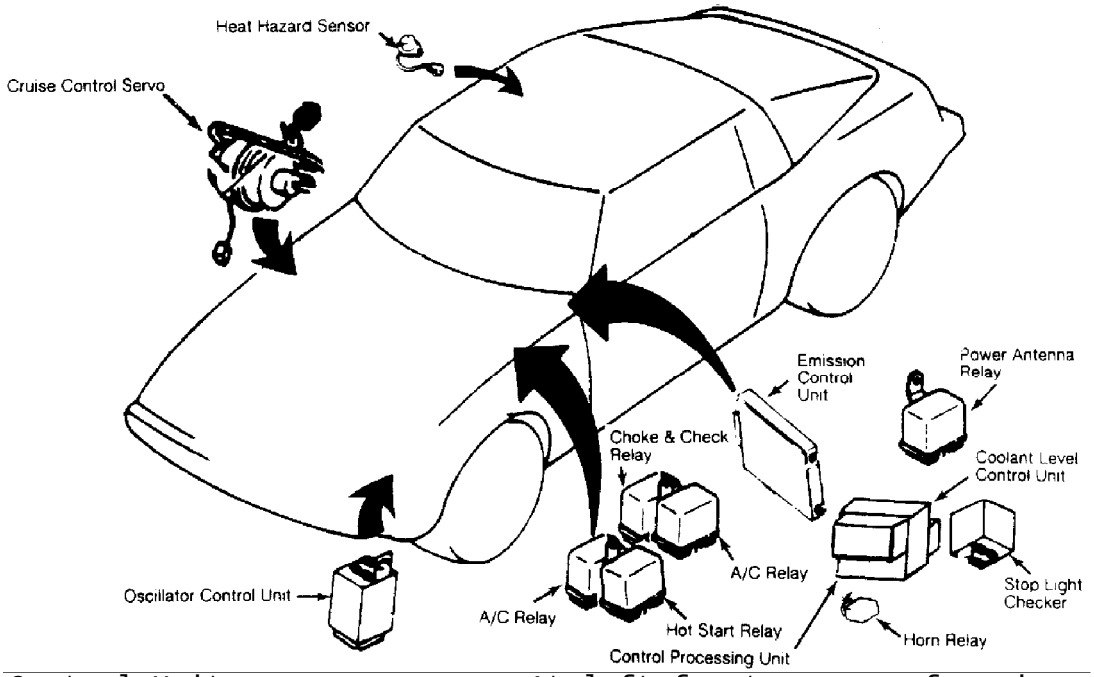


Control Processing Unit	On left kick panel.
Cruise Control Unit	At left side of luggage

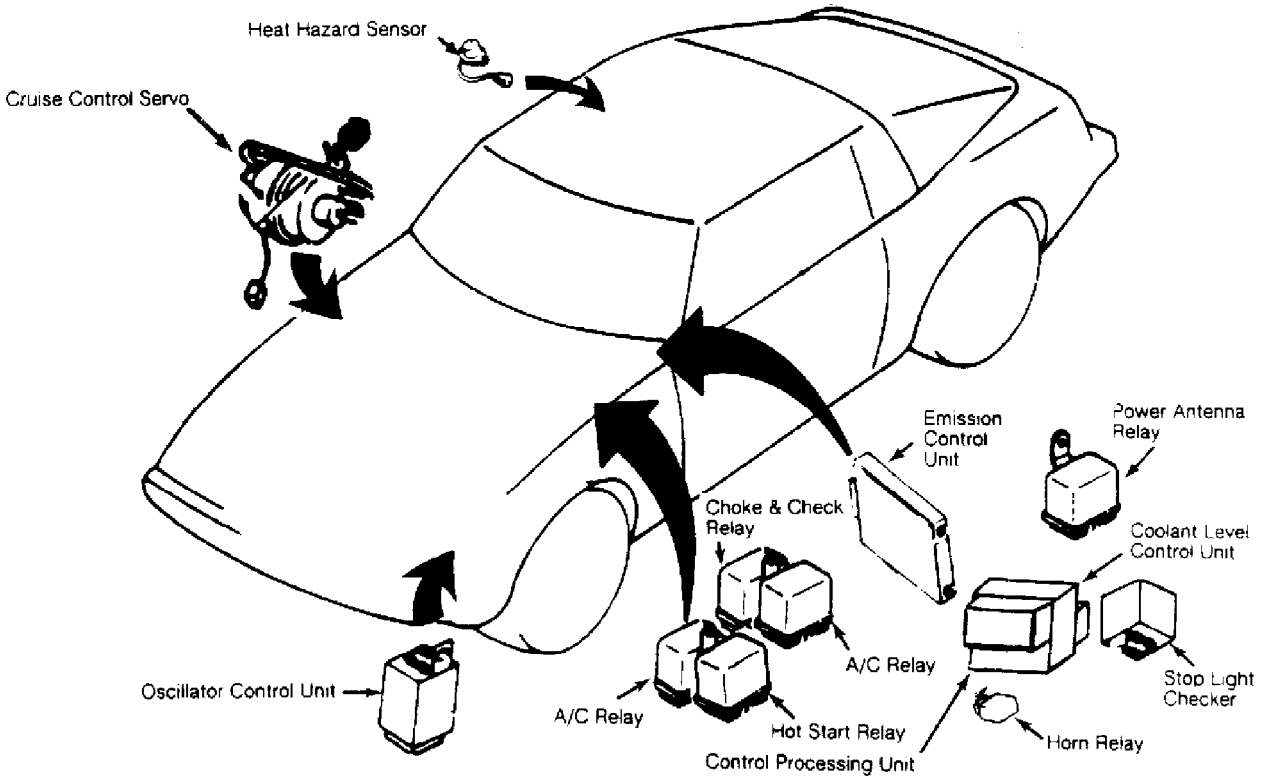
compartment.



Emission Control Unit	Below left side of dash.



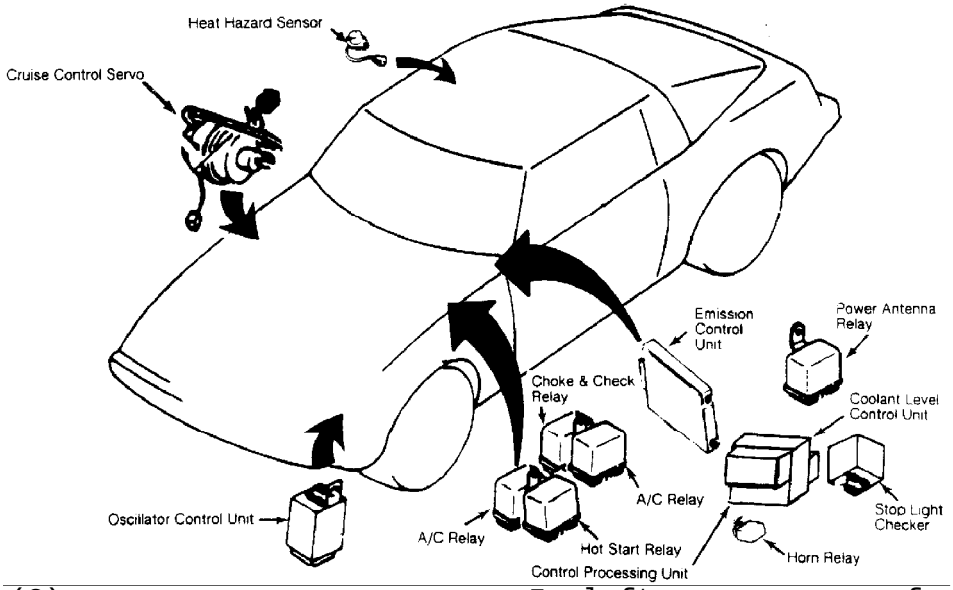
Oscillator Control Unit	At left front corner of engine compartment.



Stop Light Checker	On left kick panel.

RELAYS

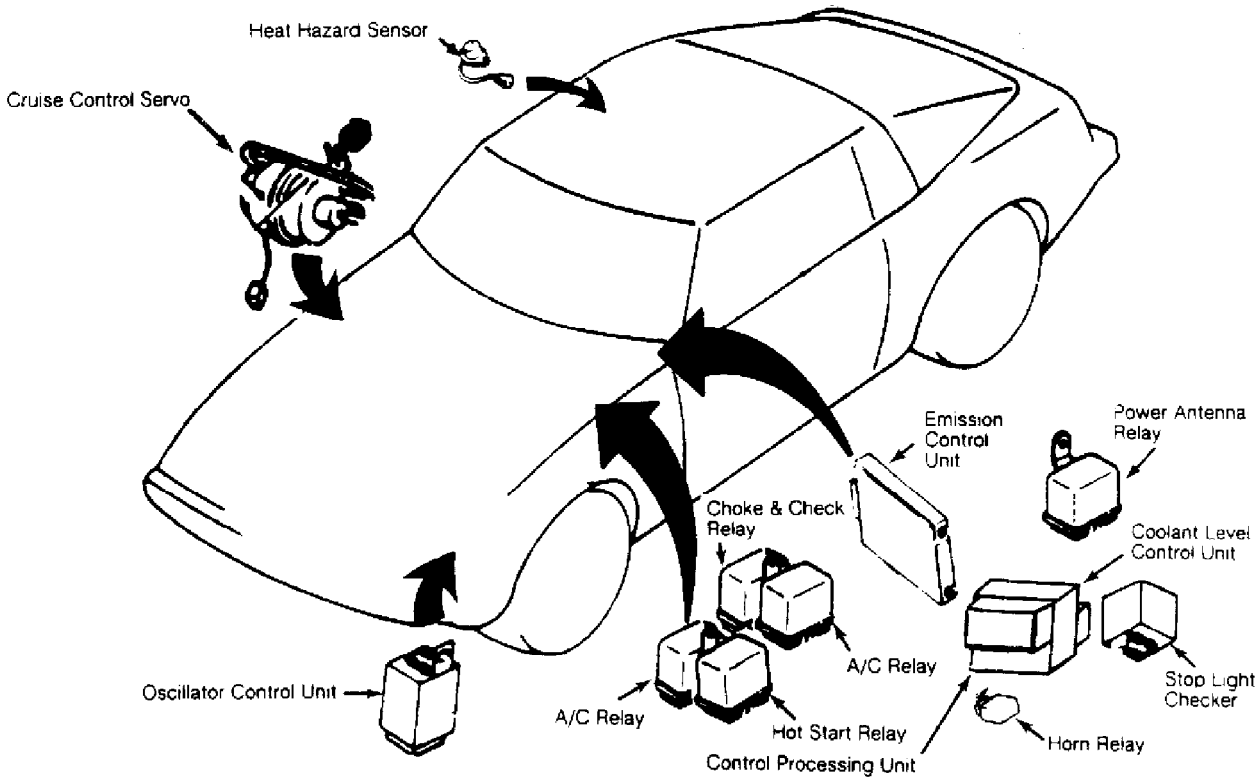
Component	Component Location



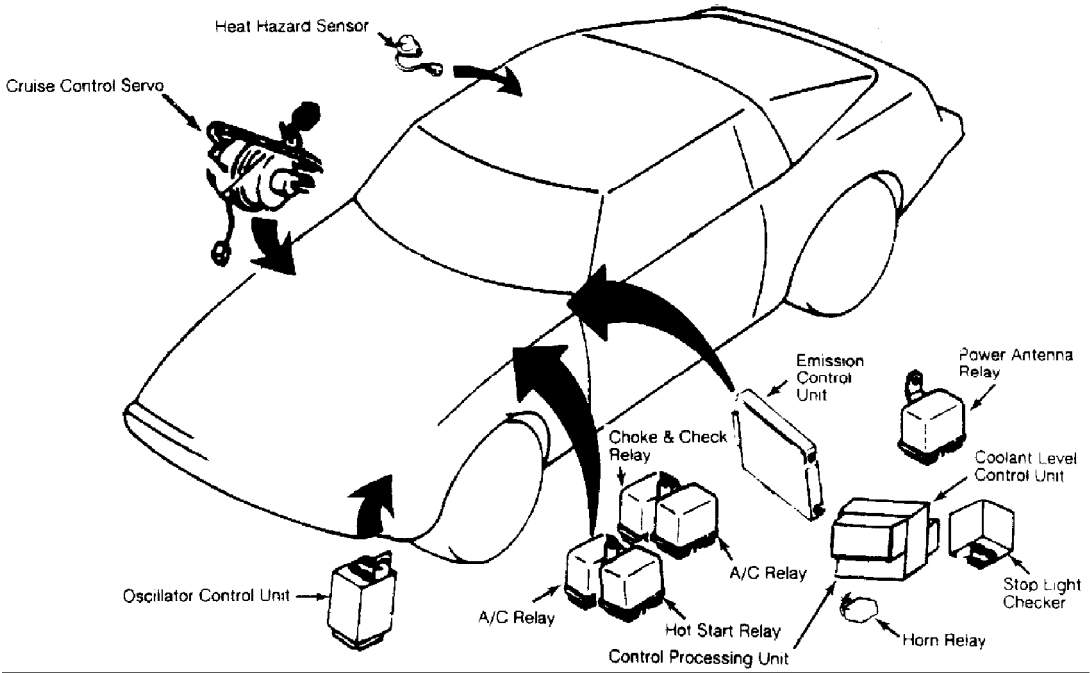
A/C Relays (2)	In left rear corner of engine compartment.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 6)
1983 Mazda RX7
For www.iluvmyrx7.com

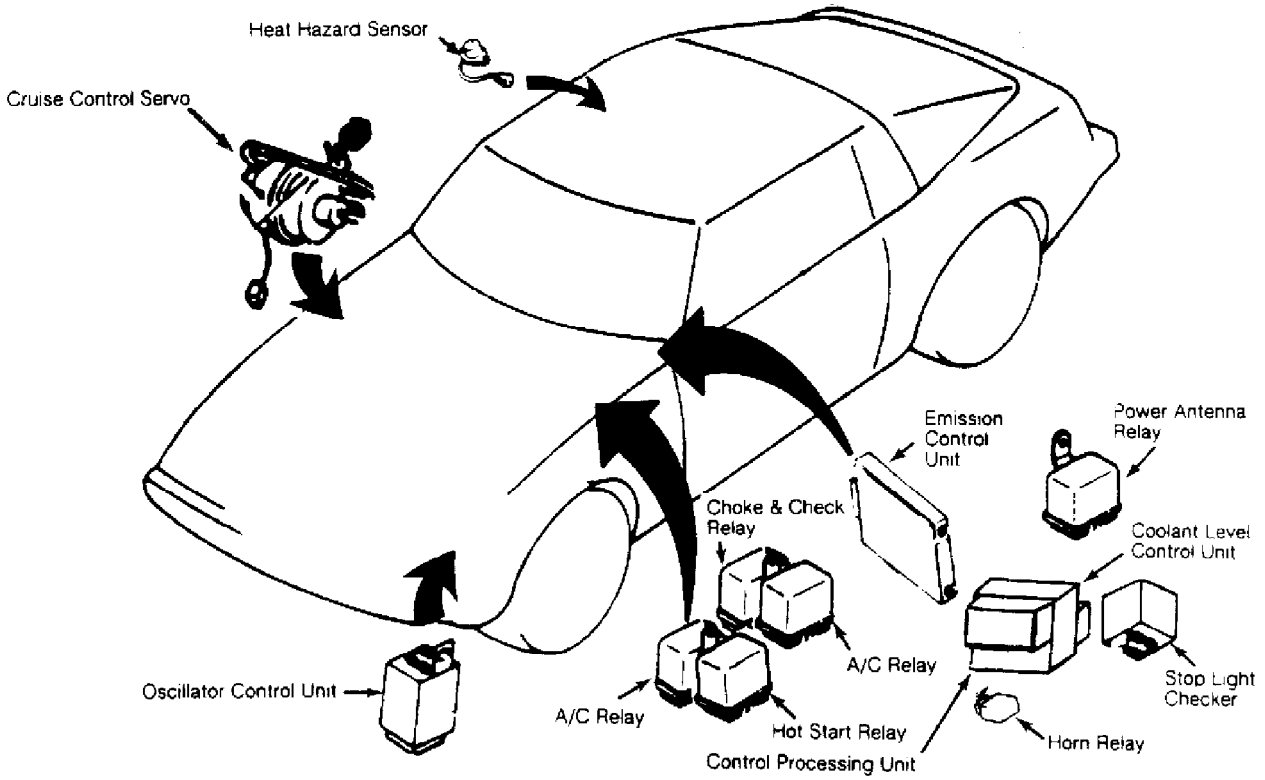
Sunday, August 26, 2001 03:29PM



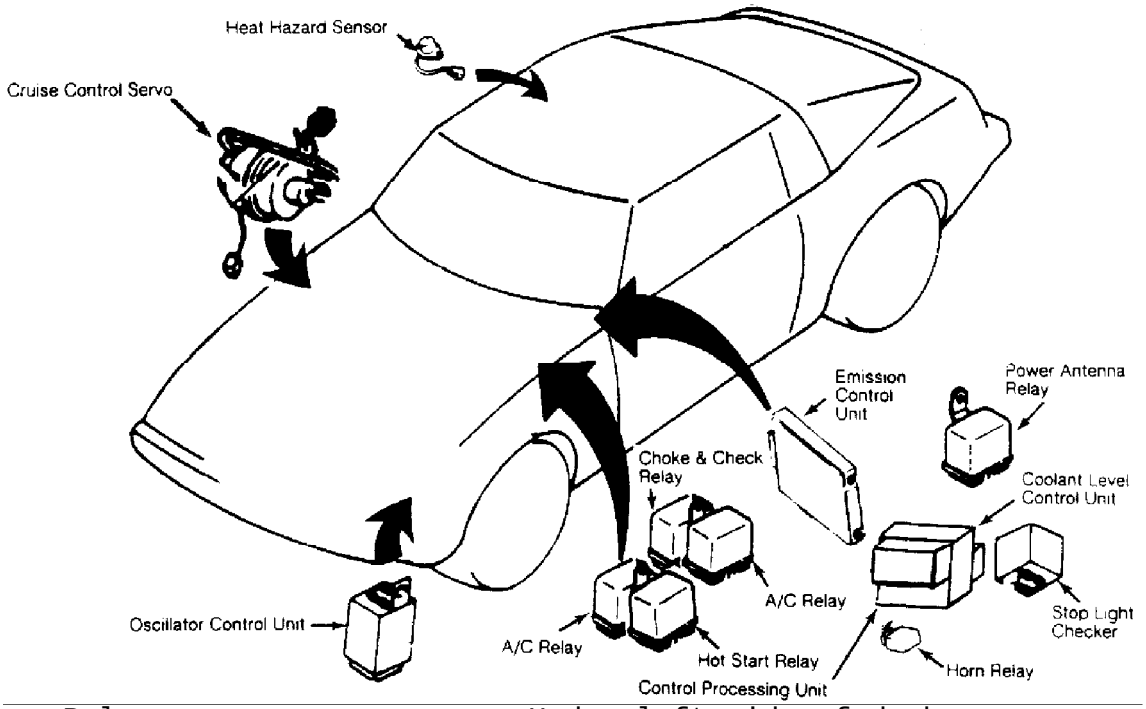
Choke & Check Relay	In left rear corner of engine compartment.



Horn Relay	At left kick panel.



Hot Start Relay	In left rear corner of engine compartment.



Power Antenna Relay	Under left side of dash.

MOTORS

ELECTRICAL COMPONENT LOCATOR

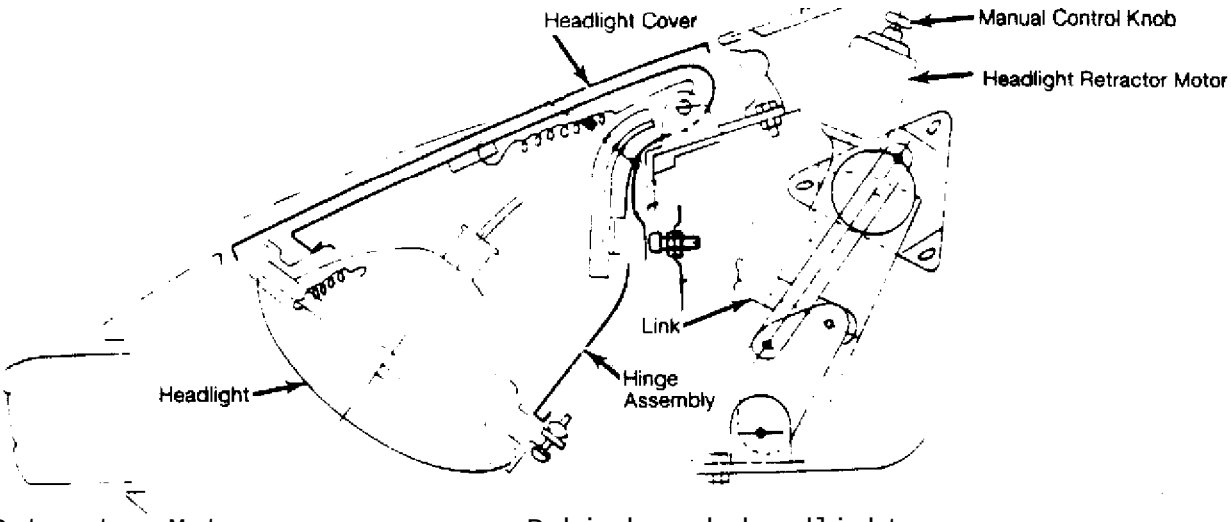
Article Text (p. 8)

1983 Mazda RX7

For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM

Component	Component Location
A/C-Heater Blower Motor	Under dash in heater box.
Front Washer Motor	On reservoir in center right side of engine compartment.
Front Wiper Motor	Under left side of cowl.
Fuel Pump	Near fuel tank on frame member.
Headlight Washer Motor	In right front corner of engine compartment.
Hot Start Assist Motor	In left rear corner of engine compartment.



Headlight Retractor Motors	Behind each headlight assembly.
Power Antenna Motor	In right rear corner of luggage compartment.
Power Window Motors	One in each door.
Rear Washer Motor	In left rear quarter panel.
Rear Wiper Motor	On bottom right side of rear hatch.

SENDING UNITS/SENSORS

ELECTRICAL COMPONENT LOCATOR

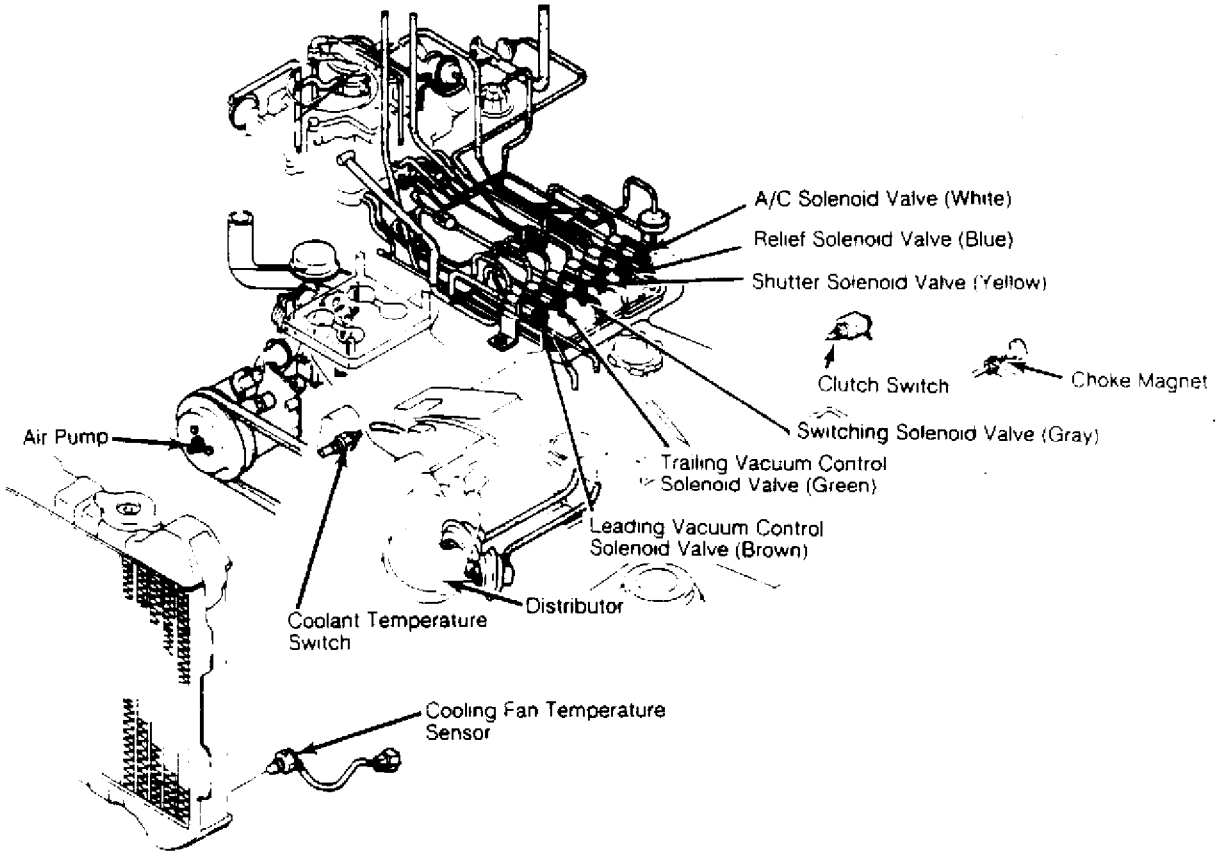
Article Text (p. 9)

1983 Mazda RX7

For www.iluvmyrx7.com

Sunday, August 26, 2001 03:29PM

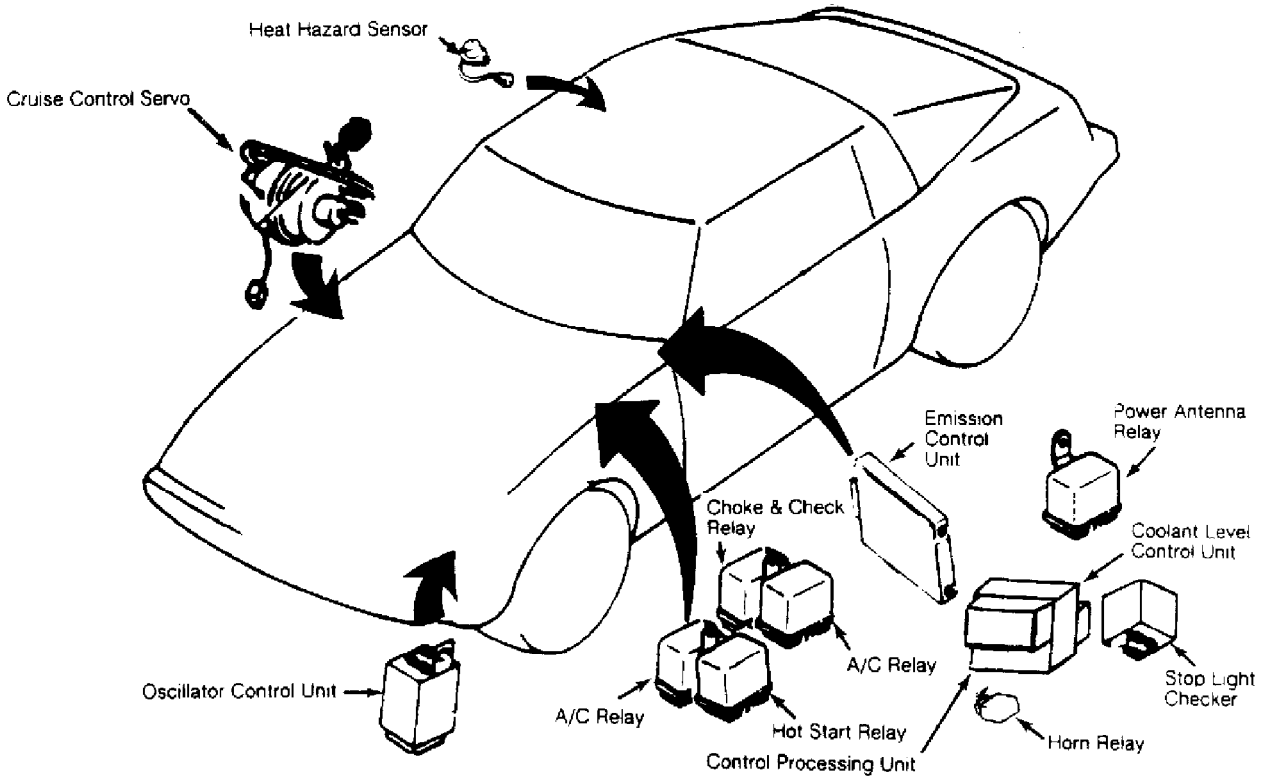
Component	Component Location
Brake Fluid Level Sensor	In brake master cylinder.
Coolant Level Sensor	On top of radiator.



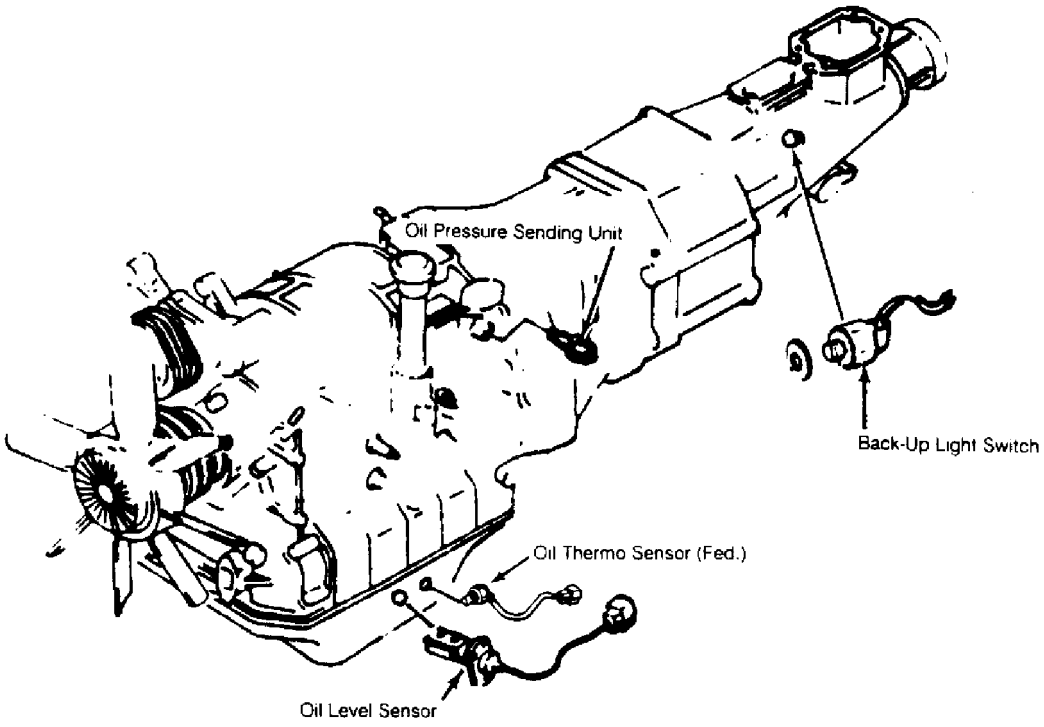
Cooling Fan Temperature Sensor	In lower left side of radiator.
Cruise Control Sensor	On back of speedometer
Fuel Gauge Sending Unit	On left side of fuel tank.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 10)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



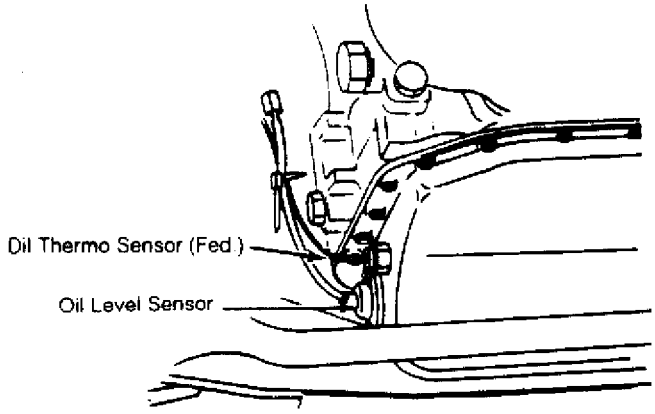
Heat Hazard Sensor	Under right side floor mat.



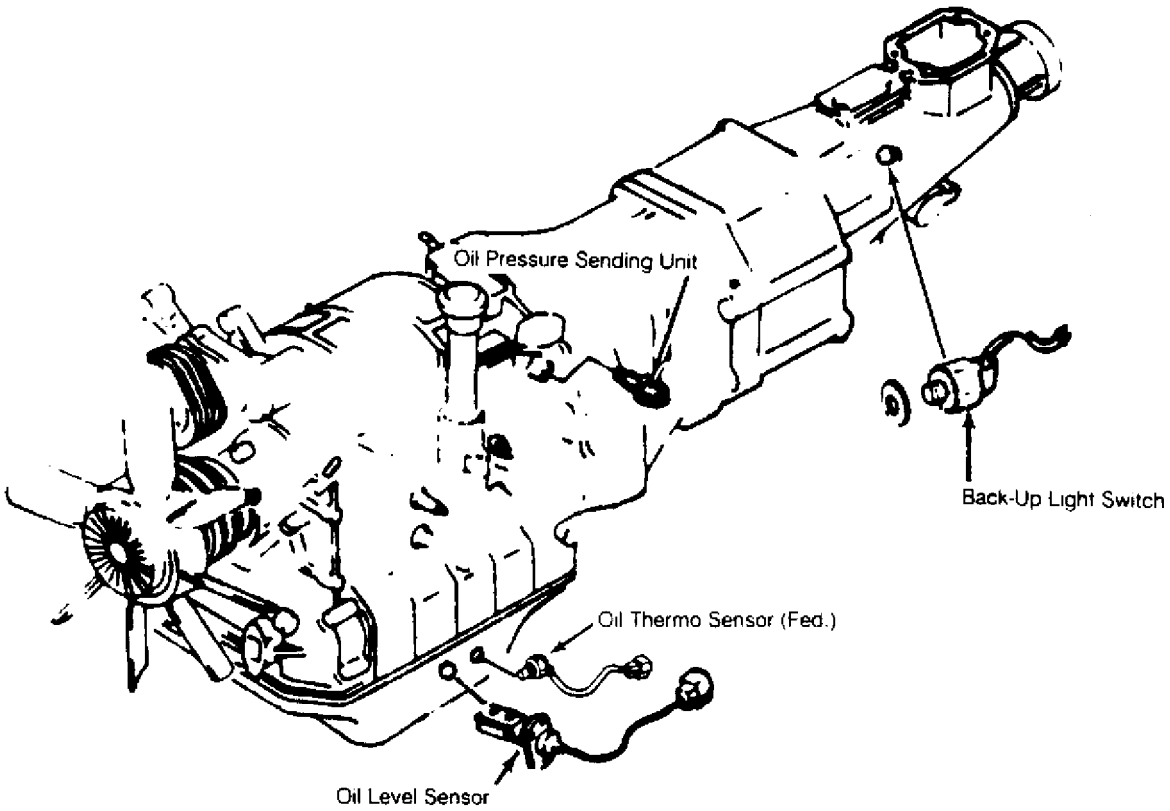
Oil Level Sensor, (Graphic 1)	In left side of oil pan.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 11)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



Oil Level Sensor, (Graphic 2)	In left side of oil pan.



Oil Pressure Sending Unit	On rear left side of block below oil filter.

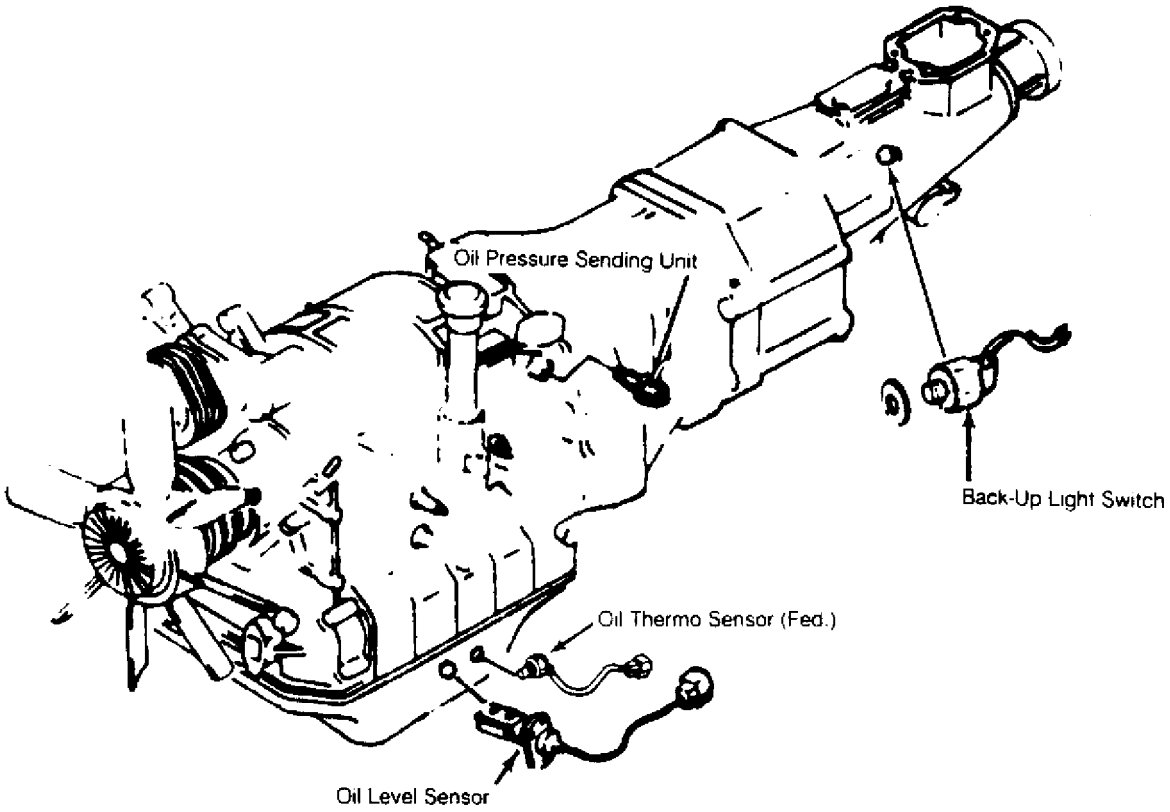
ELECTRICAL COMPONENT LOCATOR

Article Text (p. 12)

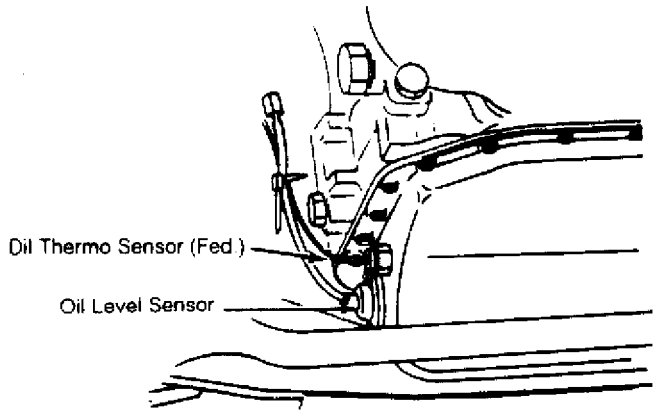
1983 Mazda RX7

For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



Oil Thermo Sensor (Fed.), (Graphic 1)	In left side of oil pan.



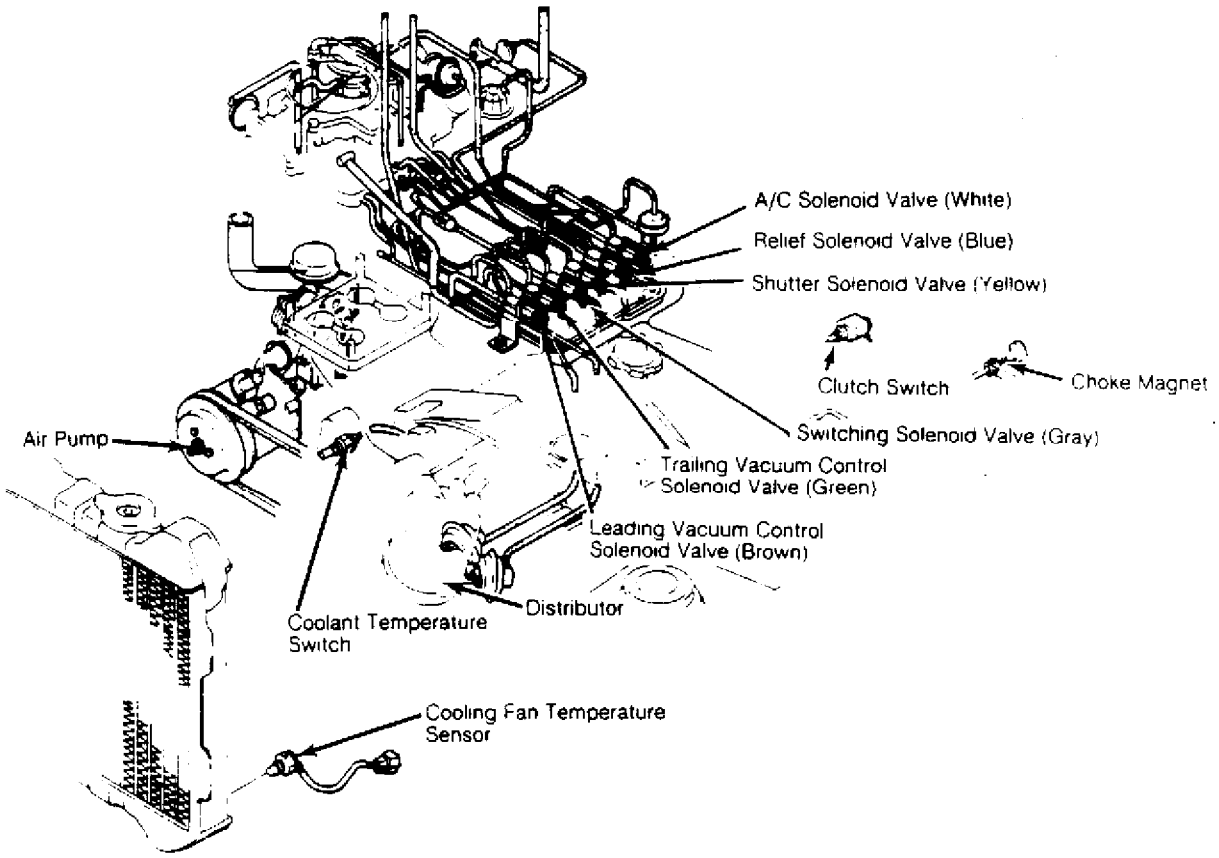
Oil Thermo Sensor (Fed.), (Graphic 2)	In left side of oil pan.
Throttle Sensor	On carburetor throttle linkage.
Washer Fluid Level Sensor	On bottom of washer fluid reservoir.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 13)
1983 Mazda RX7
For www.iluvmyrx7.com

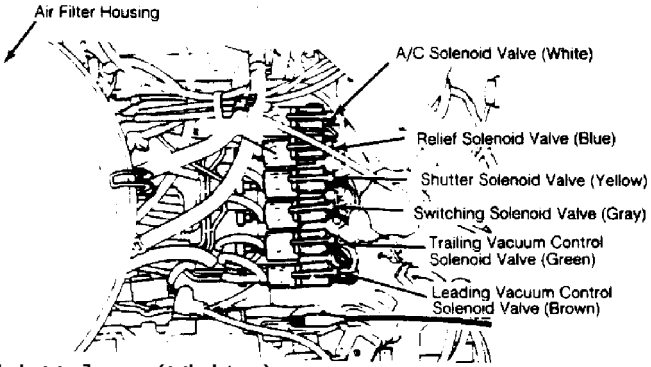
Sunday, August 26, 2001 03:30PM

SOLENOIDS/SOLENOID VALVES

Component	Component Location



A/C Solenoid Valve (White), (Graphic 1)	In solenoid block on left side of engine.

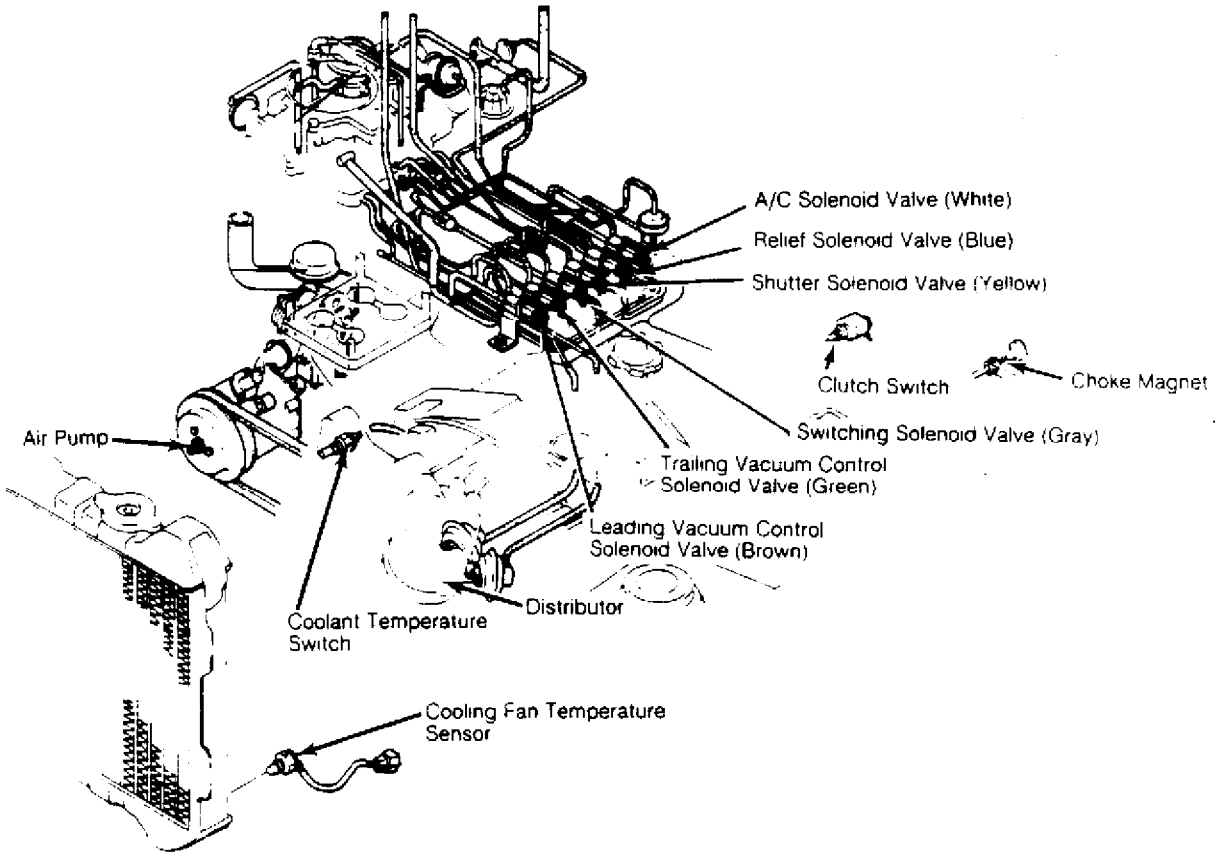


A/C Solenoid Valve (White), (Graphic 2)	In solenoid block on left side of engine.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 14)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM

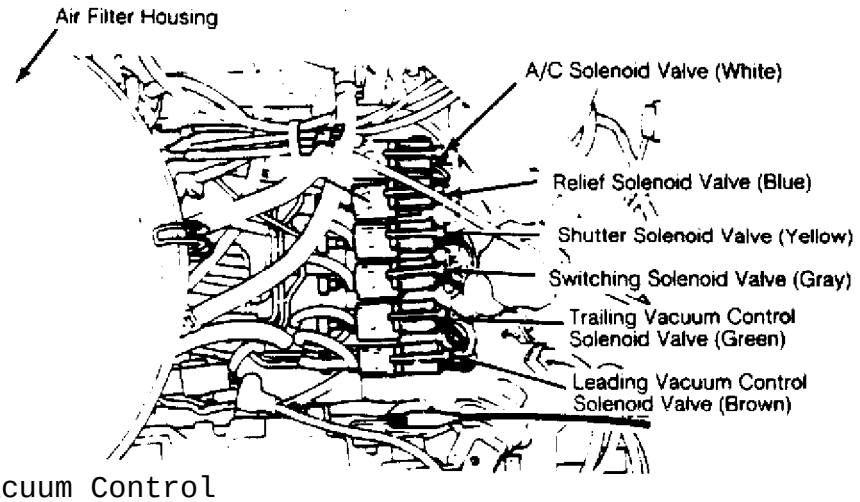
Air Vent Solenoid Valve	On side of carburetor.
Downshift Solenoid (A/T)	On left side of transmission case.
Fuel Door Release Solenoid	In left rear quarter panel.



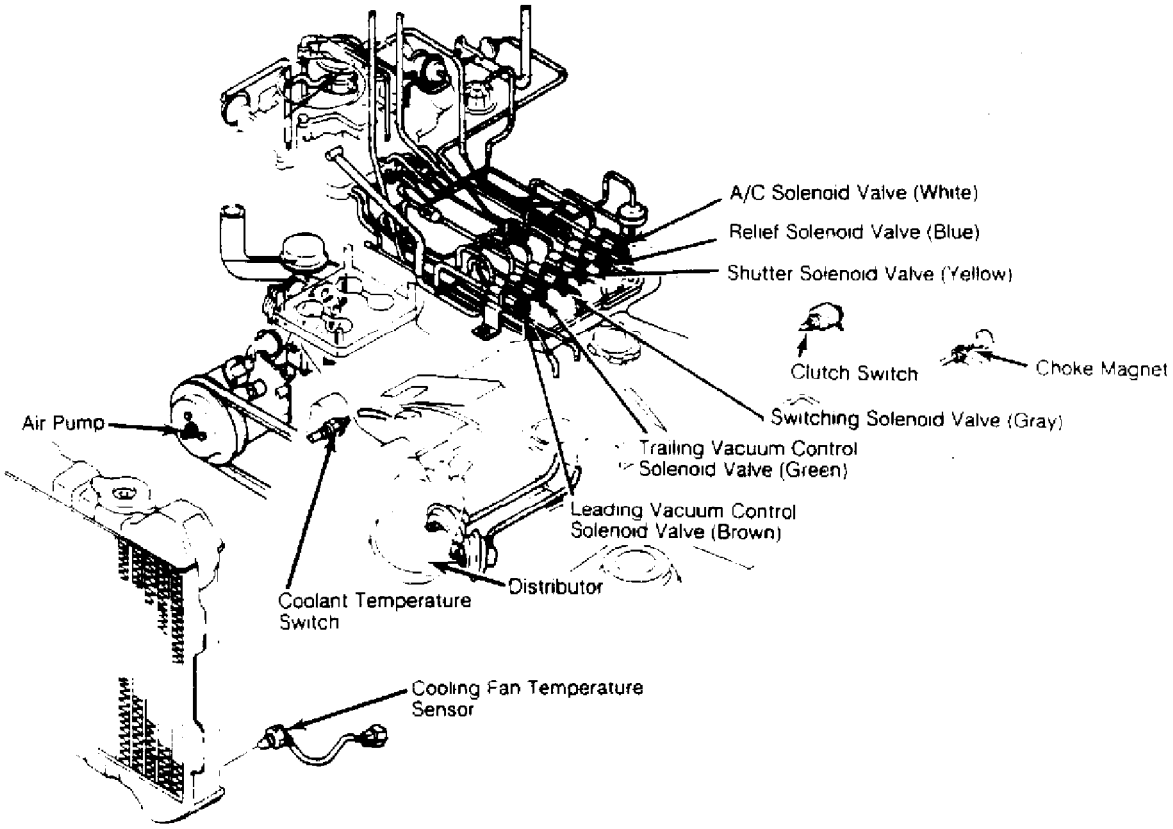
Leading Vacuum Control Solenoid, Valve (Brown), (Graphic 1)	In solenoid block on left side of engine.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 15)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



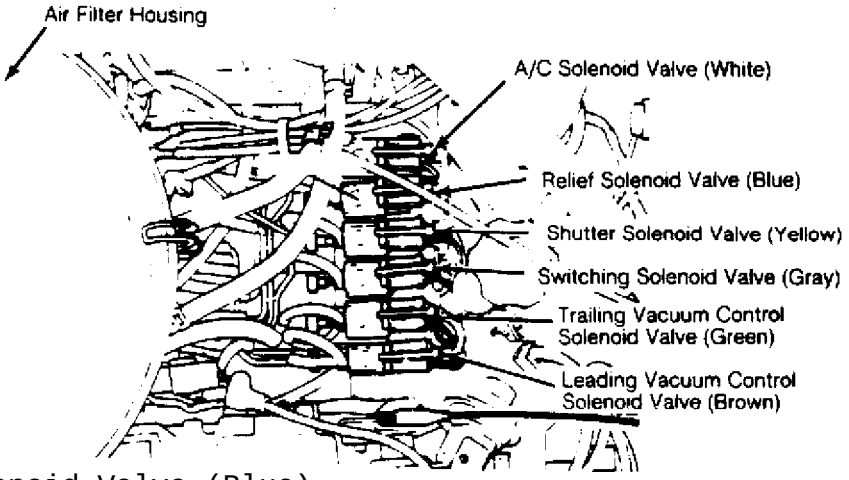
Leading Vacuum Control Solenoid, Valve (Brown), (Graphic 2)	In solenoid block on left side of engine.
Rear Hatch Release Solenoid	In center of rear finish panel.



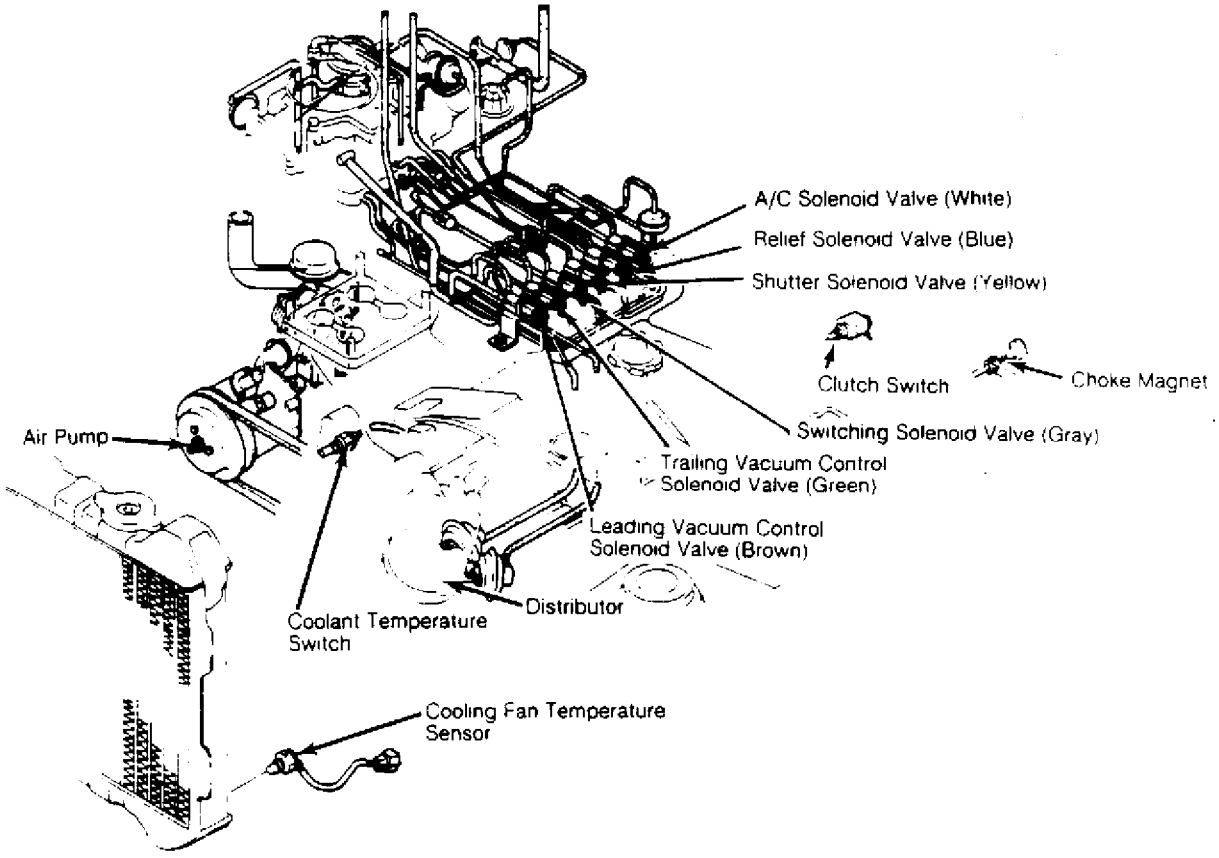
Relief Solenoid Valve (Blue), (Graphic 1)	In solenoid block on left side of engine.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 16)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



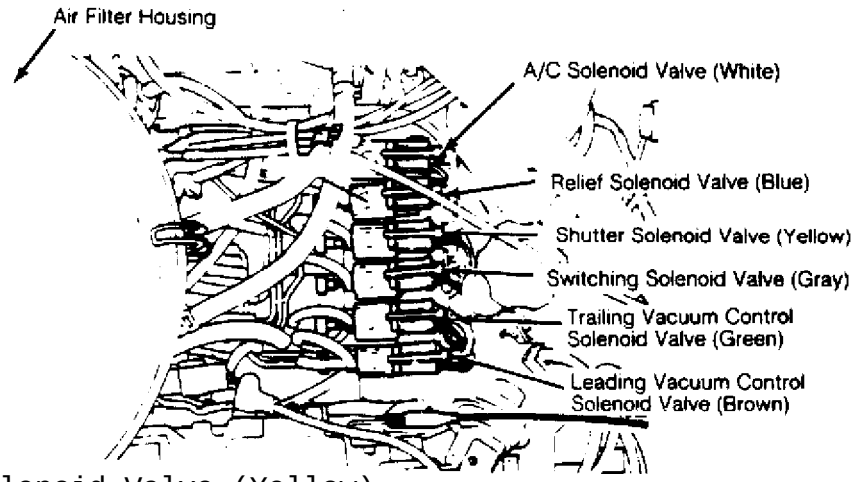
Relief Solenoid Valve (Blue), (Graphic 2) In solenoid block on left side of engine.



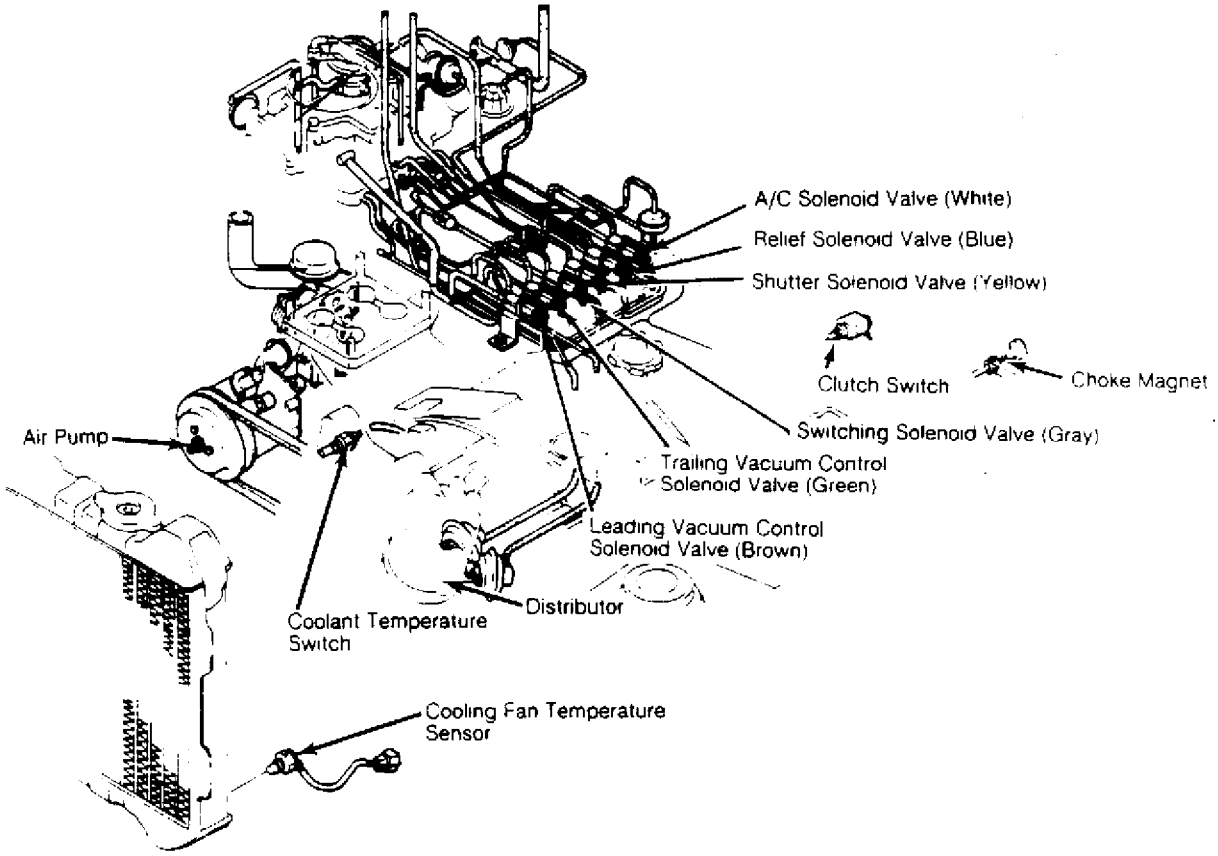
Shutter Solenoid Valve (Yellow), (Graphic 1) In solenoid block on left side of engine.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 17)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



Shutter Solenoid Valve (Yellow), (Graphic 2) — In solenoid block on left side of engine.



Switching Solenoid Valve (Gray), (Graphic 1) — In solenoid block on left side of engine.

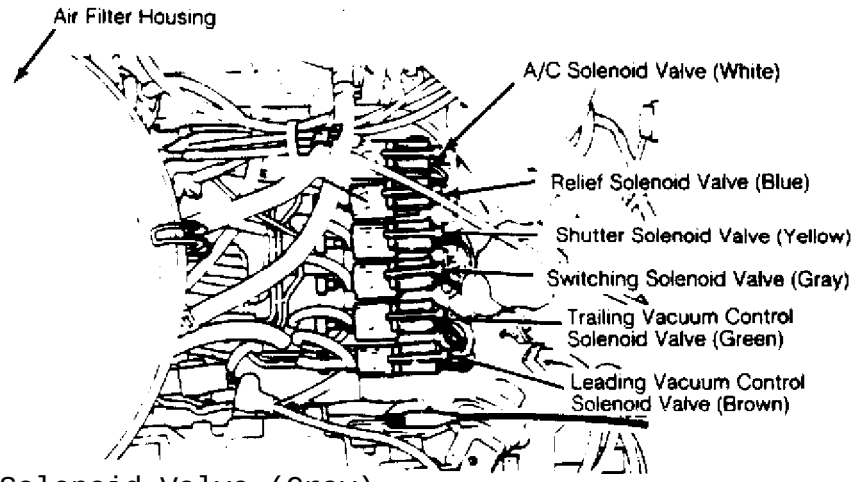
ELECTRICAL COMPONENT LOCATOR

Article Text (p. 18)

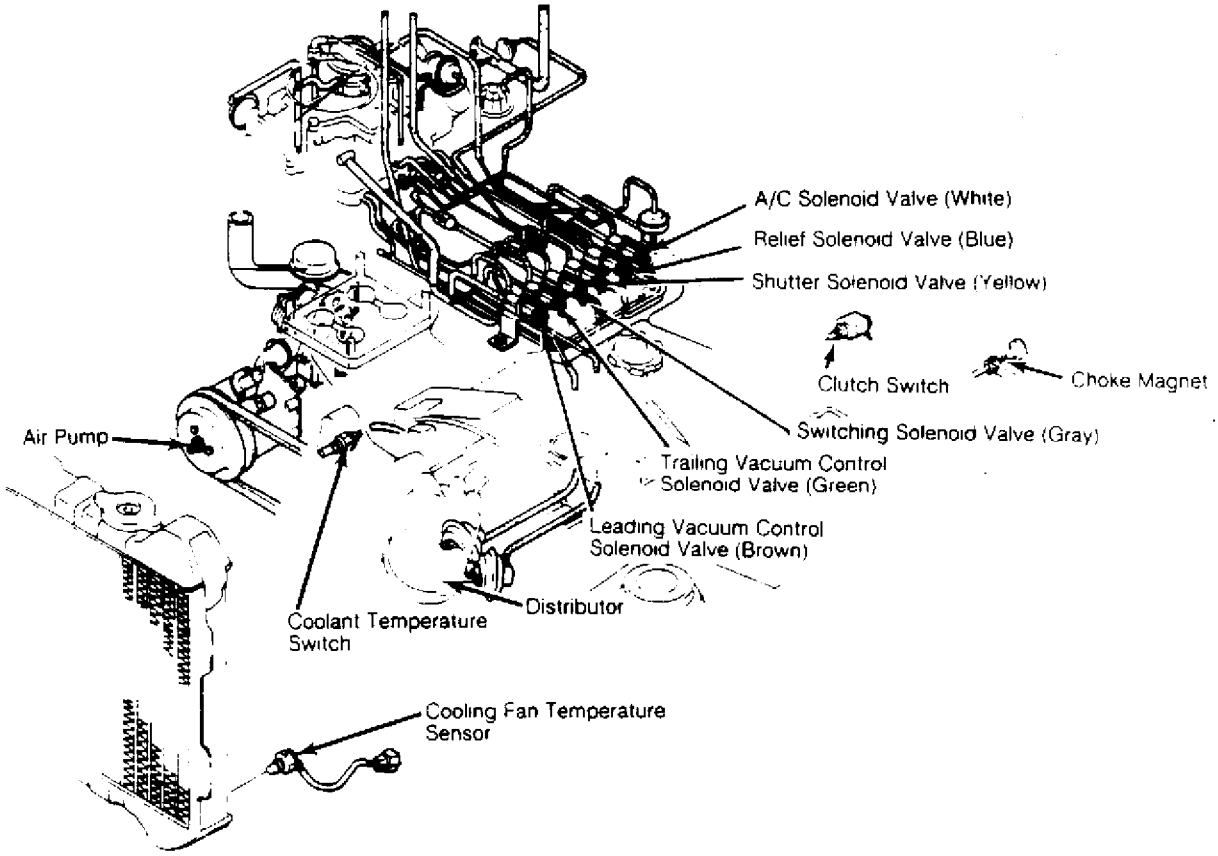
1983 Mazda RX7

For www.iluvmyrx7.com

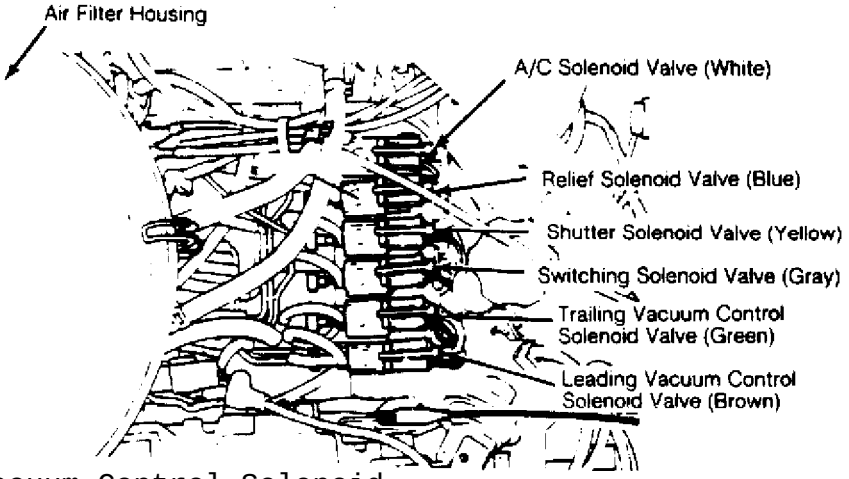
Sunday, August 26, 2001 03:30PM



Switching Solenoid Valve (Gray), (Graphic 2) In solenoid block on left side of engine.



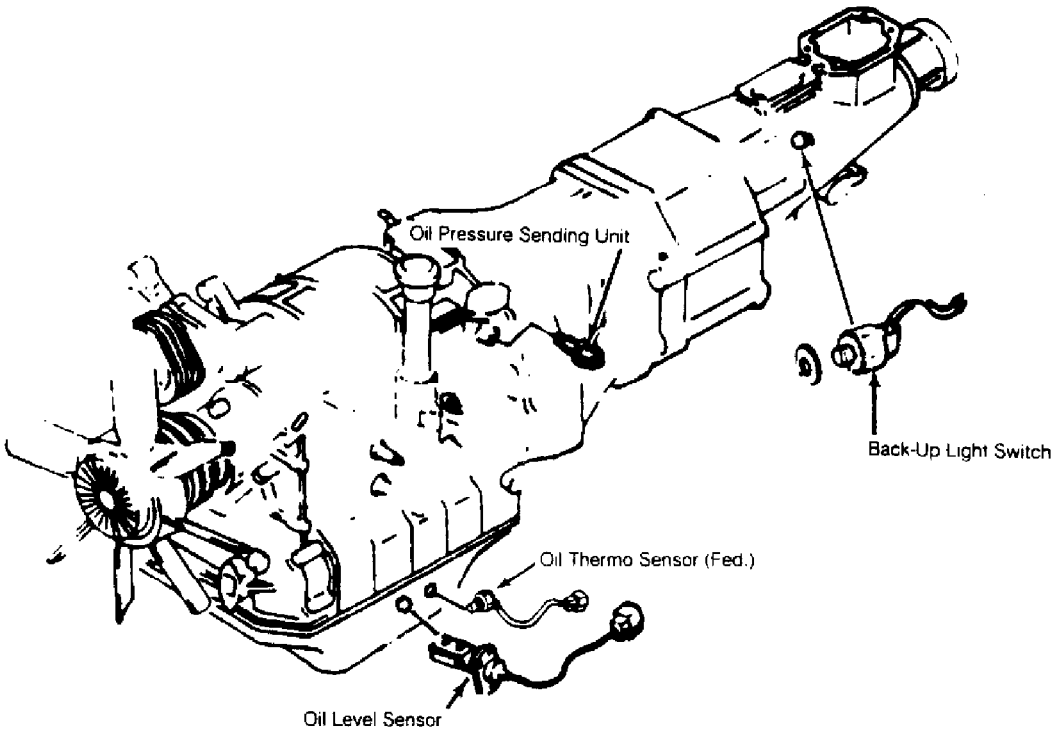
Trailing Vacuum Control Solenoid, (Graphic 1) In solenoid block on left side of engine.



Trailing Vacuum Control Solenoid, (Graphic 2)	In solenoid block on left side of engine.

SWITCHES

Component	Component Location
A/C Low Pressure Switch	Below right side of dash.

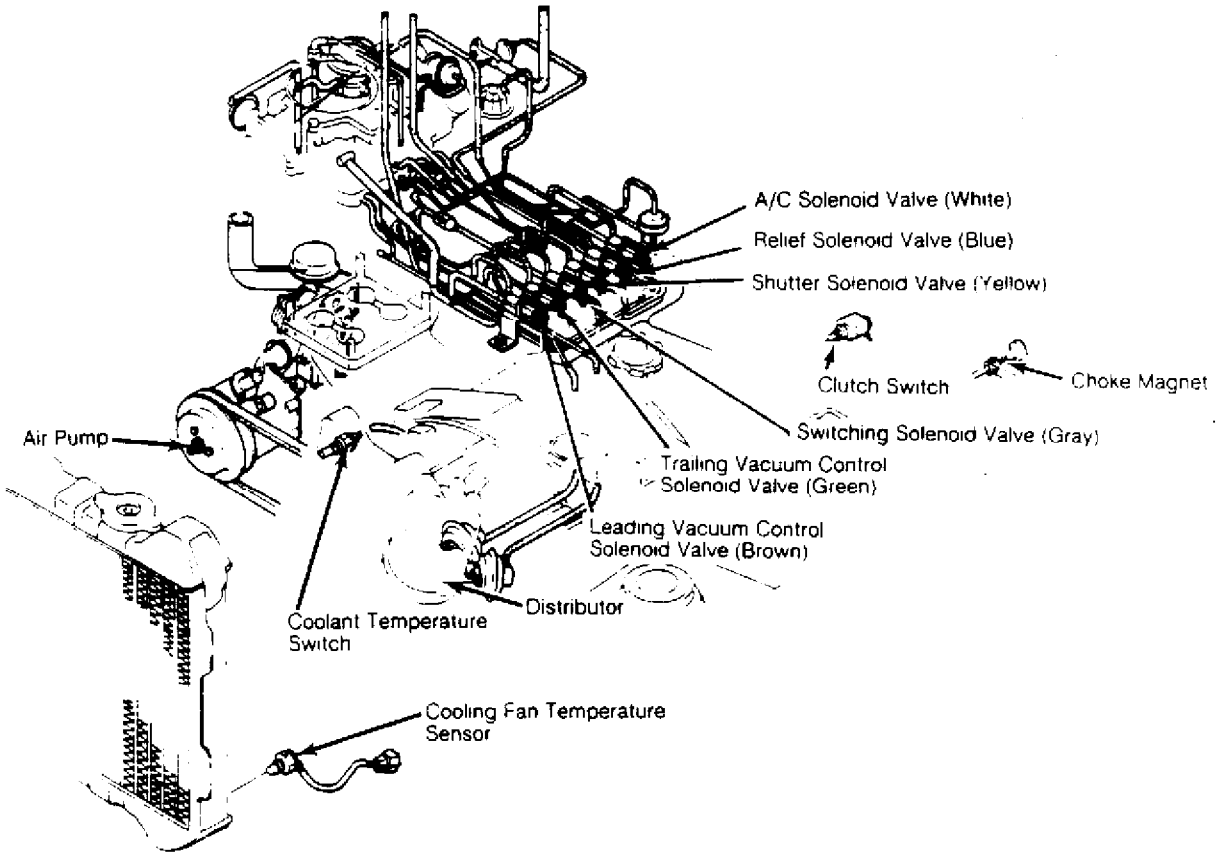


Back-Up Light Switch (M/T)	On left side of transmission case.

ELECTRICAL COMPONENT LOCATOR
Article Text (p. 20)
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM

Brake/Stop Light Switch	On top of brake pedal bracket.



Clutch Switch	On top of clutch pedal bracket.

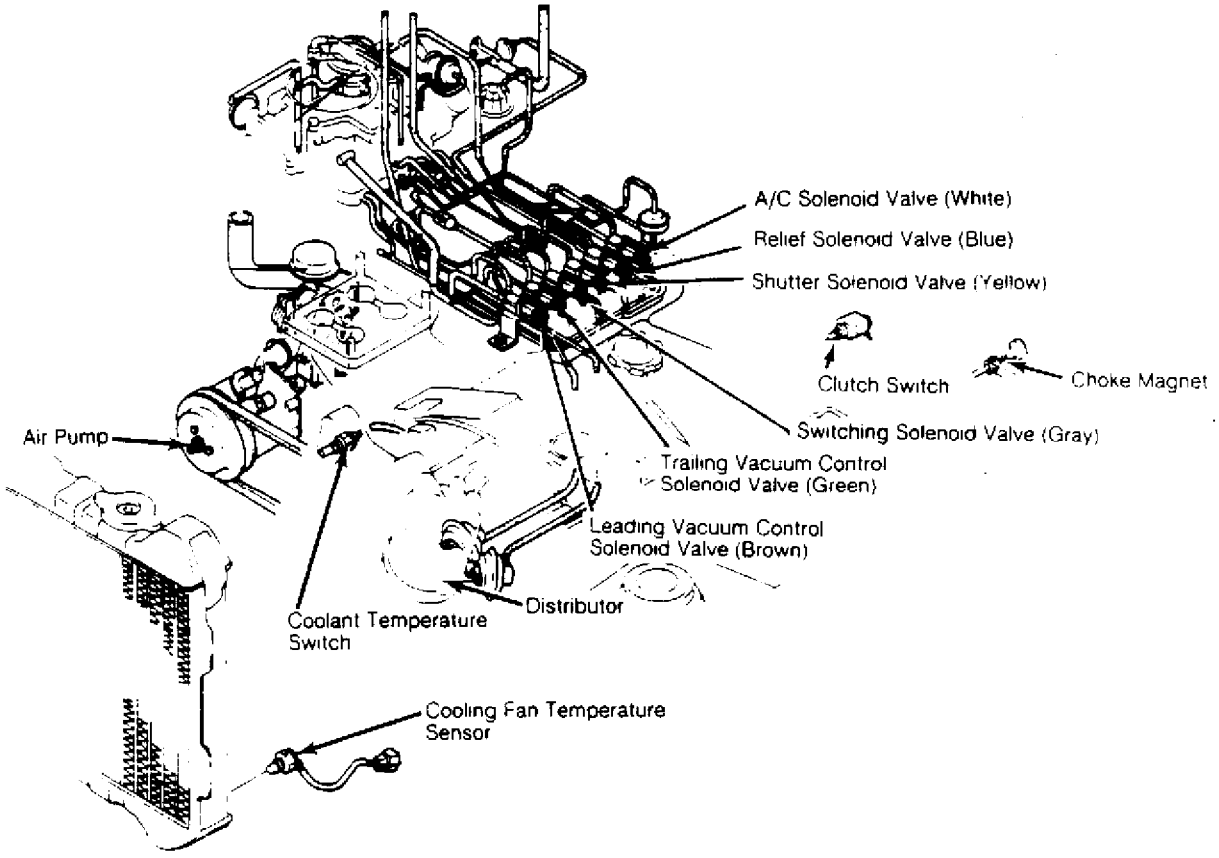
ELECTRICAL COMPONENT LOCATOR

Article Text (p. 21)

1983 Mazda RX7

For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM



Coolant Temperature Switch	At water pump.
Inhibitor Switch (A/T)	On left side of transmission case.
Kickdown Switch	On accelerator pedal bracket.
Parking Brake Switch	On bottom of parking brake lever.

END OF ARTICLE

ALTERNATOR & REGULATOR
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM

ARTICLE BEGINNING

1983 Alternators & Regulators
MITSUBISHI ALTERNATORS WITH INTEGRAL REGULATORS

Mazda

DESCRIPTION

Mitsubishi alternators are conventional 3-phase, self-rectifying type units containing 6 diodes (3 positive and 3 negative) which are used to rectify current. A case-mounted Integrated Circuit (IC) regulator is used on all models.

APPLICATION

Model	Volt/Amps	Part No.
Mazda		
B2000	13.5/50	A00IT23370
B2200	13.5/40	A00IT23479
GLC		
FWD	12/50	(1) E56318300A
RWD	14/30	(1) D50116300R
RX7	12/50	(1) N22118300
626	12/60	(1) FE0118300R

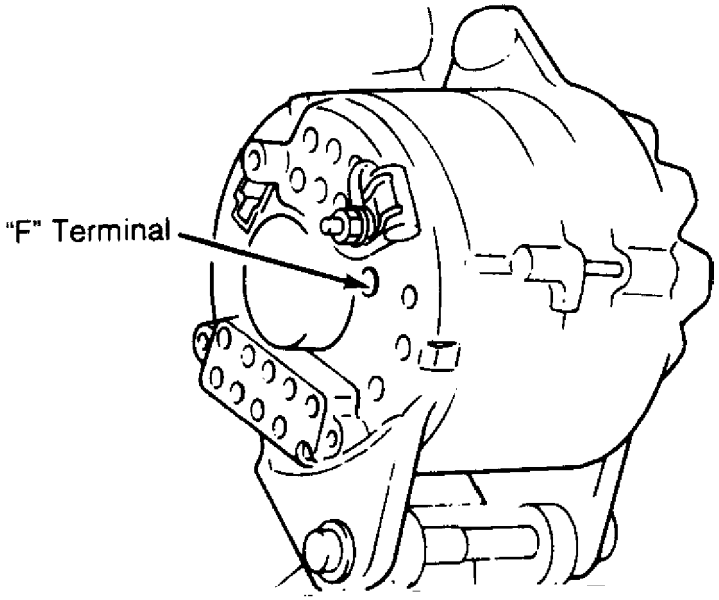
(1) - Vehicle manufacturer's part number.

TESTING

ON-VEHICLE TEST

CAUTION: DO NOT short across any alternator terminals or run vehicle with any wires disconnected. Battery must be fully charged for tests to be accurate.

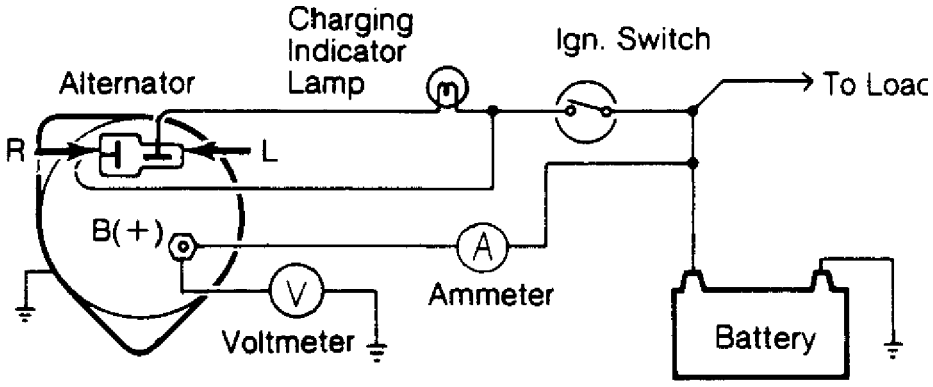
Output Test
1) With ignition switch off, check voltage at "R" terminal and "L" terminal. Reading at both terminals should be 0 volts. If not 0 volts, alternator is defective.
2) Turn ignition switch on but do not start engine. Voltage at "L" should be 1-3 volts. If voltage is 0, alternator and regulator are defective.
3) If voltage at "L" is close to battery voltage with ignition on, short circuit the "F" terminal to rear alternator housing. See Fig. 1.



29386
Fig. 1: Alternator "F" Terminal Location
Terminal is located .8" (20 mm) below the hole.

4) Read the voltage at "L" with "F" terminal shorted. If voltage is lower than battery voltage, regulator is defective. If voltage is close to battery voltage, alternator is defective.

5) With ignition switch off and battery ground cable disconnected, connect ammeter between alternator terminal "B" and cable. Connect voltmeter between "B" (+) terminal and ground. See Fig. 2.



29387
Fig. 2: Alternator Output Test Arrangement

6) Start engine and accelerate to 2000-3000 RPM. Turn on all lights and check ammeter for output.

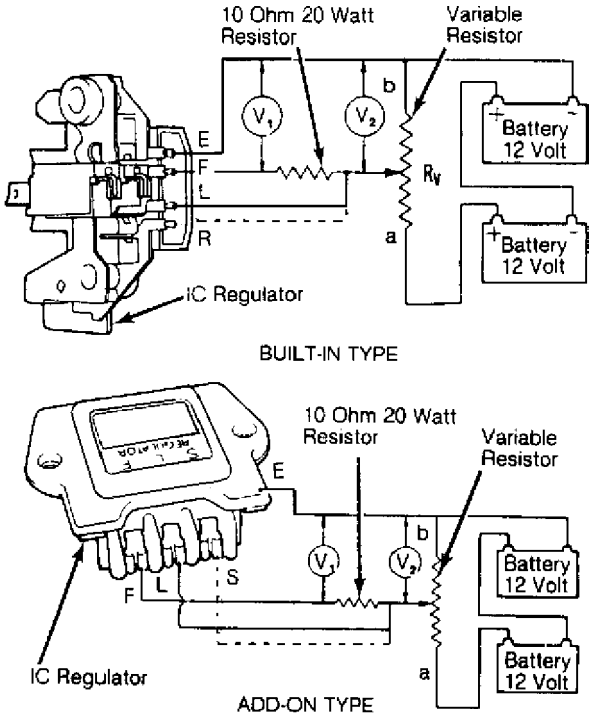
OVERHAUL

DISASSEMBLY

1) After removing through bolts, insert screwdriver between front housing and stator to separate.
2) Hold the rotor in a soft jawed vice. Remove pulley nut, pulley, fan, and spacer. Remove rotor drive end housing by lightly tapping end housing with a soft mallet.
3) To separate stator from diode end housing, unsolder three negative diode leads and connections between diodes. Hold the stator lead with a needle nose plier to prevent rectifier from overheating.
4) Remove condenser from the "B" terminal. Unsolder the "L" and "B" terminal from the rectifier assembly. Lift out rectifier assembly and brush holder.

TESTING

Diode Assemblies
1) Check each diode with ohmmeter in forward and reverse direction. If the diode shows large resistance in one direction and small resistance in other direction, diode is normal.
2) If diode shows small resistance in both directions, it is shorted. If large resistance is shown in both directions, diode is open. Heat sink and diodes are replaced as an assembly.



29388
Fig. 3: Testing Mitsubishi Integral Regulator
Ensure variable resistor is set to middle of resistance range.

Rotor Field Continuity
Check continuity across field coil slip rings. A reading of 3-4 ohms must be obtained. No continuity, replace rotor.

Rotor Field Coil Ground
Check continuity between individual slip rings and rotor core/shaft. If there is continuity, coil or slip ring is grounded, replace rotor.

Stator Coil Ground
Ensure no continuity exists between stator coil leads and stator core.

Stator Coil Continuity
Check continuity between leads of stator coil. If there is no continuity, replace stator.

Brush Wear Limit
Brushes must be replaced when worn to 1/3 of original length. This limit is indicated by a wear limit line on the side of each brush.

Brush Spring Pressure
Standard tension should be 12-16 oz. (340-453 g). Replace if less than 7 oz. (198 g) or if springs are corroded.

COMPONENT REPLACEMENT

Brushes
To remove brushes from holder, unsolder pigtail from terminal. To replace, solder pigtail to terminal ensure that 1/4" of brush will be located in brush holder.

Diodes
The diodes and rectifier are serviced as an assembly. If any diodes are defective, replace rectifier assembly.

Drive End Bearing
Remove bearing retainer set screws. Press bearing out of front housing.

Rear Bearing
Remove rear bearing from housing assembly using a press or bearing puller.

Voltage Regulator
The voltage regulator and brush holder are combined in one unit. If regulator is found to be defective, replace as an assembly.

REASSEMBLY

Reassemble by reversing disassembly procedures. Soldering of rectifier leads should be done in less than 5 seconds to prevent damage to diodes. When installing the rotor assembly in the rear housing, hold the brushes in position by inserting a stiff piece of wire into the access hole in rear housing.

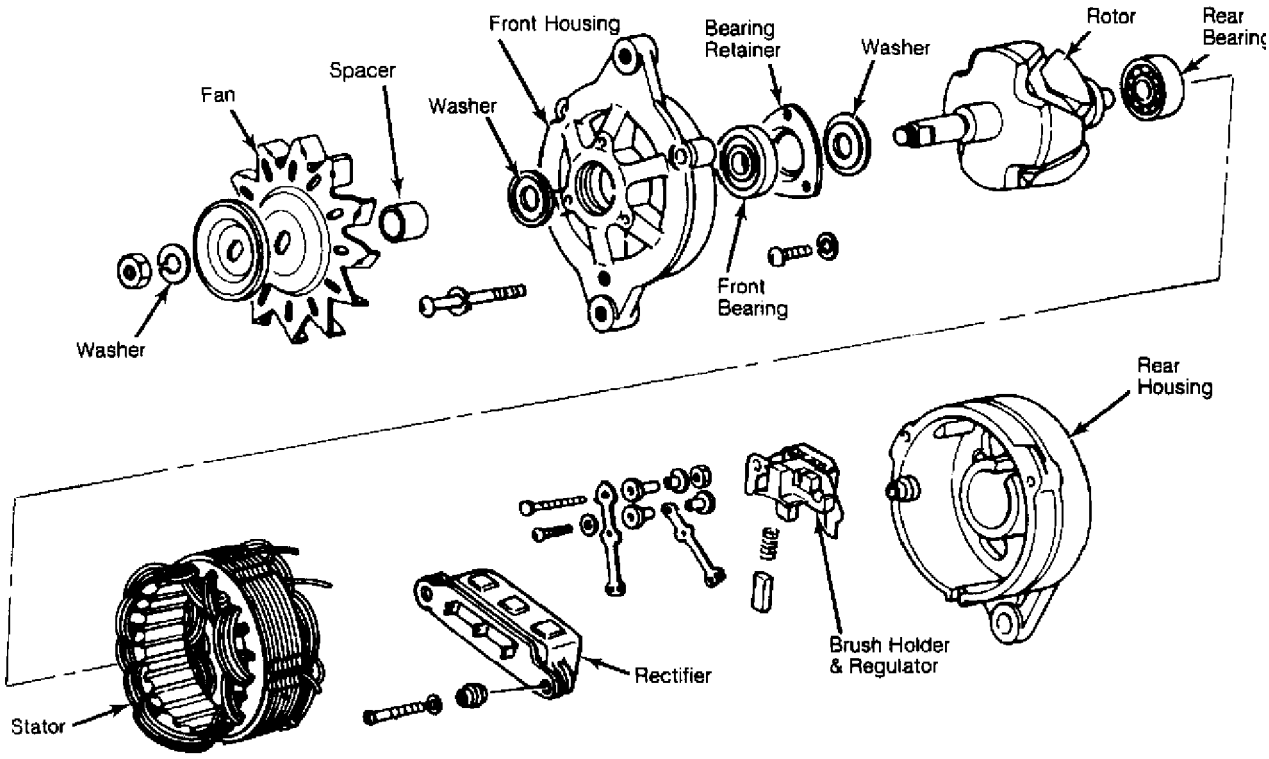


Fig. 4: Exploded View of Mitsubishi Alternator

END OF ARTICLE

FUSE & FLASHER LOCATIONS
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:30PM

ARTICLE BEGINNING

1983 Fuse Blocks, Flashers & Relays
MAZDA

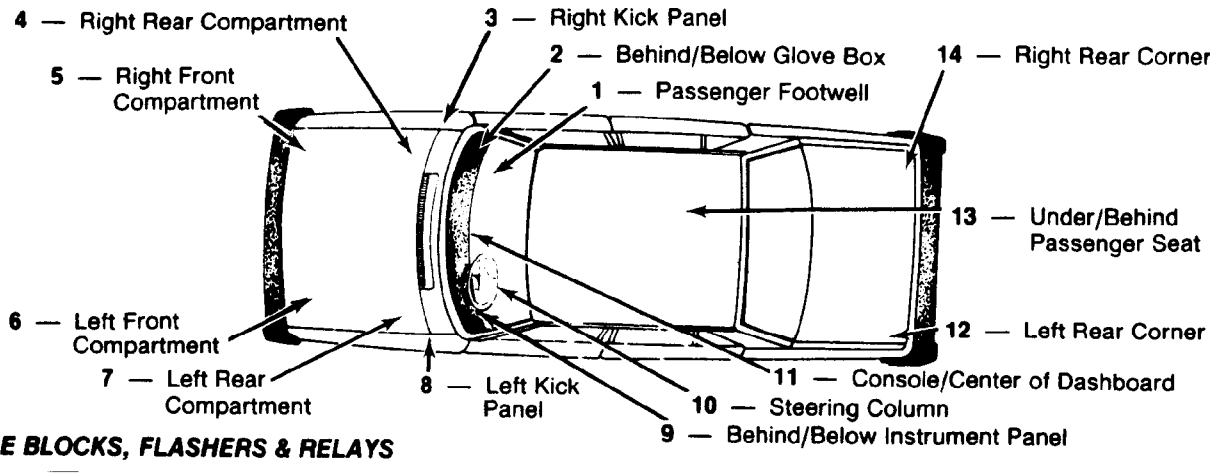


Fig. 1: Fuses & Flasher Locations

FUSES & FLASHER LOCATIONS

Manufacturer & Models	Component Location in Fig. 1:
Mazda	
B2000 & B2200 Pickups	
Fuse Locations	(7)
Flasher Locations	(9)
Relay Locations	
Check & Choke	(4)
Glow Plug	(7)
Horn, A/C	(6)
Wipers	(9)
GLC Hatchback	
Fuse Locations	(9)
Flasher Locations	(9)
Relay Locations	
Choke, A/C; Horn	(6)
Wipers, Others	(9)
GLC Wagon	
Fuse Locations	(9)
Flasher Locations	(9)
Relay Locations	
Check	(6)
Horn	(5)
Wipers	(9)
RX7	

END OF ARTICLE

FUSES & CIRCUIT BREAKERS
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:31PM

ARTICLE BEGINNING

Fuses & Circuit Breakers
1983-85 Mazda

RX7

FUSES & CIRCUIT BREAKERS

FUSE PANEL LOCATION

The main fuse block is located at the right rear side of the engine compartment and contains high amperage fuses which protect multiple circuits. Fuse box located above driver's left knee, accessible through a removable cover, contains fuses for individual circuits.

FUSE PANEL & FUSE BLOCK IDENTIFICATION (1983-85)

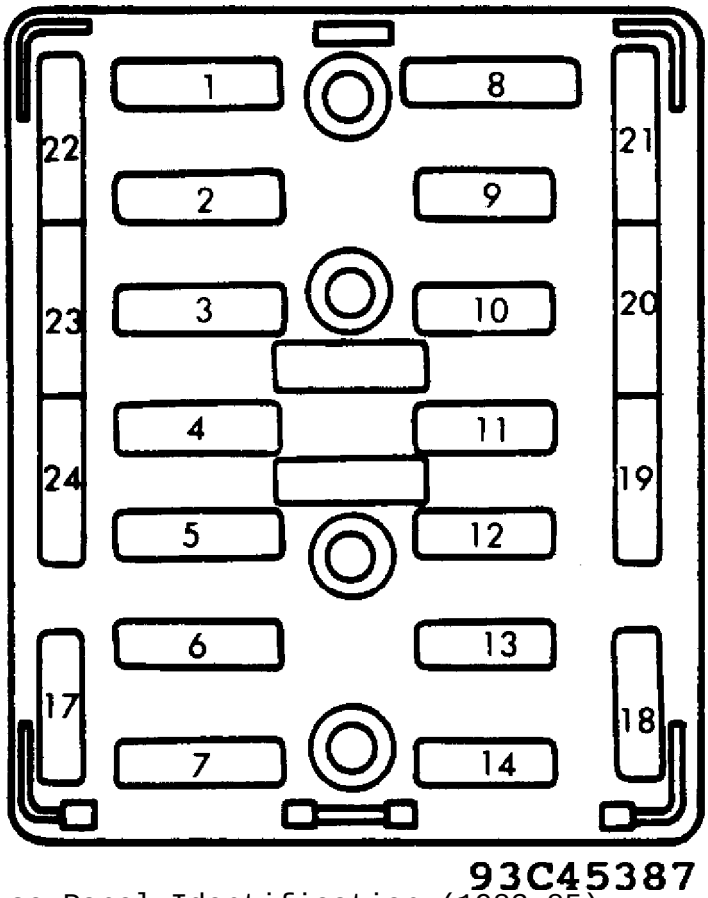


Fig. 1: Fuse Panel Identification (1983-85)
Courtesy of Mazda Motor of America Inc.

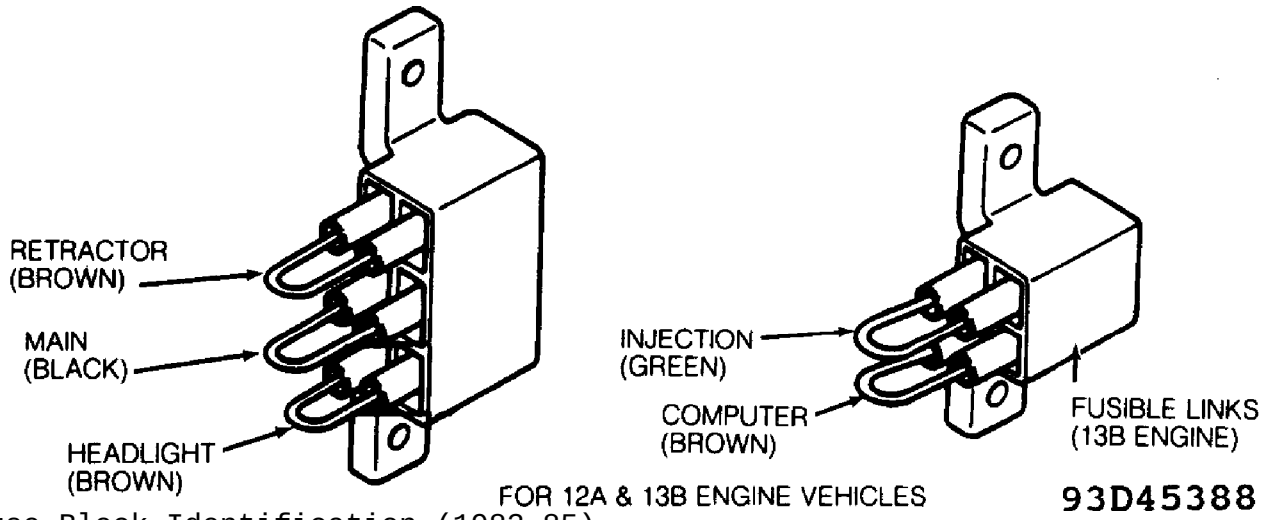


Fig. 2: Fuse Block Identification (1983-85)
Courtesy of Mazda Motor of America Inc.

1 - Empty
2 - 15 Amp
Horn
3 - 15 Amp
Hazard Warning Lights
4 - 10 Amp
Taillights
5 - 20 Amp
Roof Opener
6 - 10 Amp
Cigarette Lighter
7 - 20 Amp
Radio & Antenna
8 - 15 Amp
Gauges & Back-Up Lights
9 - 20 Amp
Engine
10 - 30 Amp
Power Windows
11 - 20 Amp
Heater Blower
12 - 15 Amp
Rear Defogger
13 - 15 Amp
Windshield Wipers
14 - 10 Amp
Rear Wiper
15 - Empty
16 - Empty
17 - Empty
18 - Empty
19 - 15 Amp
Air Conditioning
20 - Empty

21 - Empty
22 - Empty
23 - Empty
24 - Empty

CAUTIONS & WARNINGS

BRAKE PAD WEAR INDICATOR

Indicator will cause a squealing or scraping noise warning that the pads need replacement.

HEADLIGHT RETRACTOR

Never operate headlight retractor when a person's hands, or other objects are on or near the headlights. When working on the headlights always remove the headlight retractor fuse.

AIR BAG SYSTEM

Always remove air bag system fuse when working on any controls associated with the steering wheel or steering column.

END OF ARTICLE

IGNITION SYSTEM
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:31PM

ARTICLE BEGINNING

1983 Distributors & Ignition Systems
MITSUBISHI ELECTRONIC IGNITION - MAZDA ROTARY ENGINE

Mazda RX7

DESCRIPTION

The Mitsubishi electronic ignition system, used on the Mazda RX7 rotary engine, is unique in that it has 2 sets of spark plugs (leading and trailing). There is one set in the front rotor housing and one in the rear rotor housing. See Fig. 1. There are also 2 ignition coils, 2 pick-up coils located in the distributor, and 2 coil-to-distributor high tension wires.

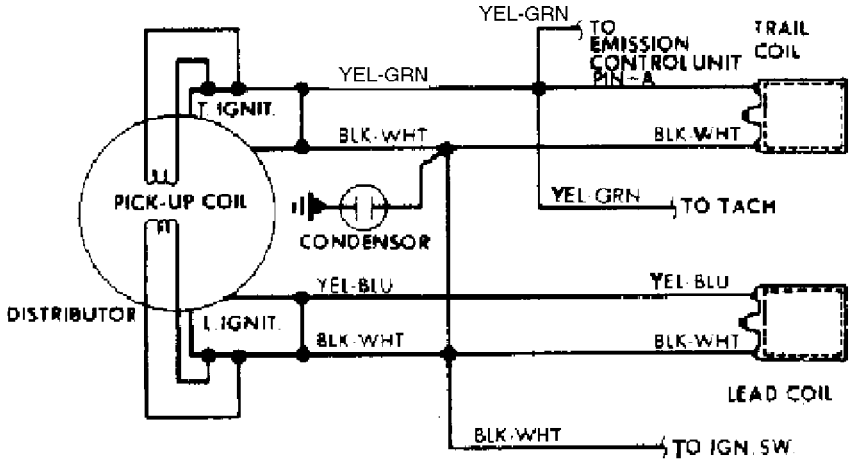


Fig. 1: Schematic of RX7 Ignition System

There are 2 separate igniters, mounted externally on the distributor housing. One is for the leading side and the other for the trailing side. Other system components include a battery, ignition switch, ignition control switches, (water temperature, altitude, etc.), and various relays.

All models are equipped with an ignition control system and centrifugal advance mechanisms. All models have vacuum control units for both leading and trailing sides.

OPERATION

A reluctor (signal rotor) is mounted on the reluctor (rotor) shaft. It turns inside 2 magnetic pick-up coils, one for the leading side and one for the trailing side. See Fig. 2.

As each tooth of the reluctor approaches and then passes the leading pick-up coil, a signal is generated. It is sent to the leading ignitor, which breaks the primary circuit in the leading ignition coil.

As each tooth passes the leading pick-up coil, the previous passing tooth approaches and becomes aligned with the trailing pick-up coil. This triggers a signal to the trailing ignitor, which breaks the primary circuit in the trailing ignition coil.

Therefore, immediately after the leading spark plug fires, the trailing spark plug also fires, providing more complete and efficient combustion while reducing HC and CO emissions.

As the primary circuit is broken in the leading and trailing ignition coils, a voltage surge occurs in the secondary circuit of the ignition coils. This high voltage is transmitted through the leading and trailing high tension wires to the distributor, rotor and spark plugs.

An emission control unit is also included in the ignition control system, along with different sensing switches to provide proper timing under varying engine operating conditions.

ADJUSTMENTS

RELUCTOR-TO-PICK-UP COIL AIR GAP

1) Remove distributor cap and rotor. Turn distributor shaft until the extended tooth of the reluctor (signal rotor) aligns with core of pick-up coil. See Fig. 2.

2) Using a feeler gauge, check for .020-.035" (.5-.9 mm) air gap. If gap is incorrect, replace pick-up coil and bearing assembly or distributor drive shaft, if necessary.

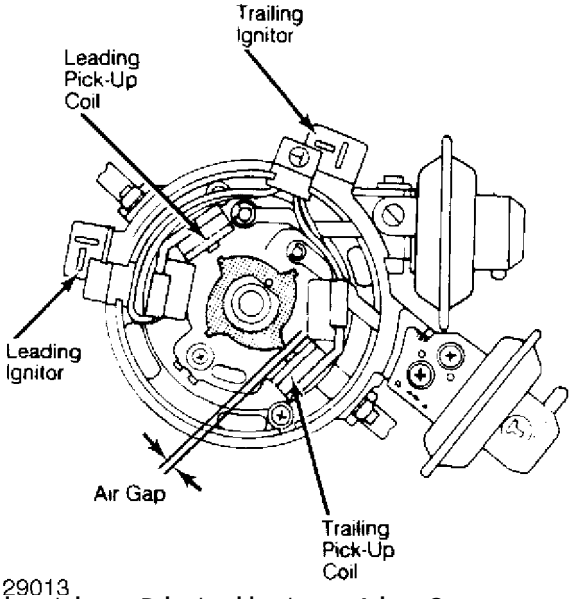


Fig. 2: Adjusting Distributor Air Gap
Check air gap at all teeth and both pick-up coils.

IGNITION TIMING

1) To adjust leading timing, loosen distributor lock nut, and rotate distributor housing until correct timing is obtained. See

Fig. 3.

2) To adjust trailing timing, loosen the screws securing the trailing vacuum unit. Move the vacuum unit outward (to advance) or inward (to retard). Retighten screws when correct timing is obtained.

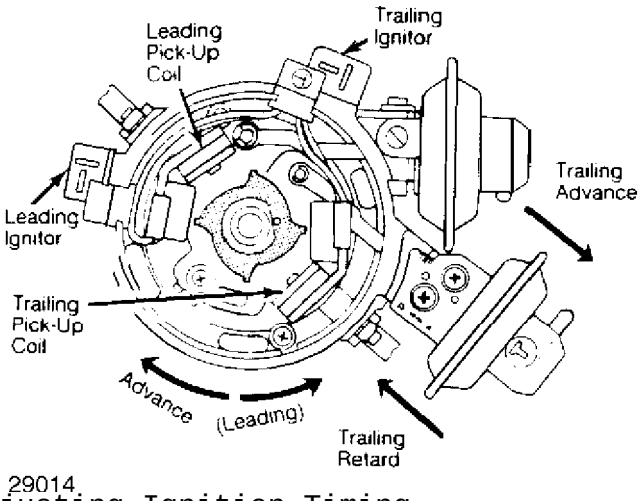


Fig. 3: Adjusting Ignition Timing
Distributor position determines leading time. Vacuum unit position adjusts trailing timing.

TESTING

HIGH TENSION WIRE RESISTANCE CHECK

Turn ignition switch "OFF". Connect ohmmeter leads to each end of coil-to-distributor high tension wire. Resistance should not exceed 16,000 ohms (plus or minus 400 ohms) per 39.37" (1 m).

IGNITION COIL RESISTANCE CHECK

Set an ohmmeter in the low scale. With ignition switch turned "OFF", and coil wires disconnected, attach ohmmeter leads to primary terminals of leading coil and then trailing coil. Primary resistance should be 1.22-1.48 ohms for each ignition coil.

PICK-UP COIL RESISTANCE CHECK

1) Set an ohmmeter in the x100 scale. Turn ignition switch "OFF". Disconnect connector between ignitor and distributor. See Fig. 4.

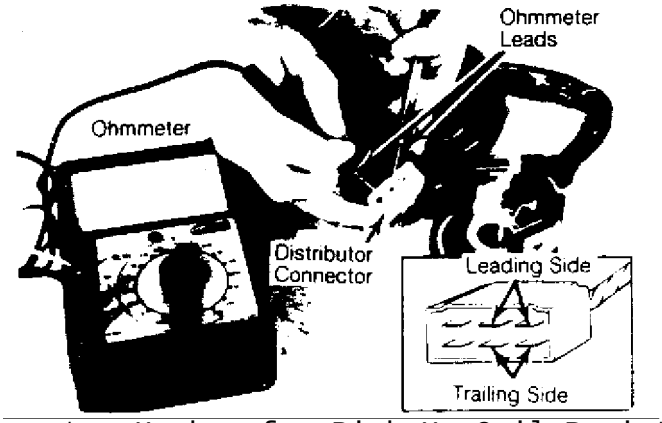


Fig. 4: Ohmmeter Hookup for Pick-Up Coil Resistance Check
Replace pick-up coil and bearing plate assembly if reading is not 600-700 ohms.

2) Connect ohmmeter leads to leading terminals and then to trailing terminals. Resistance should be 600-700 ohms at 68ø F (20ø C) for each set of pick-up coils. If not, replace pick-up coil and bearing assembly.

PICK-UP COIL OPERATION CHECK

1) With distributor connector still disconnected, touch ammeter leads to leading terminals and then to trailing terminals.
2) Place a screwdriver against core of pick-up coil being tested. Indicator of meter should move each time screwdriver is taken quickly away from core. If not, replace pick-up coil and bearing assembly.

IGNITER CHECK

1) Remove ignitor from distributor base. Make a circuit as shown in Fig. 5 using wire and a test bulb. Use a 12 volt bulb of less than 10 watts.

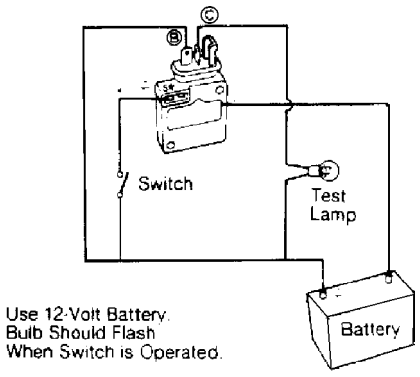


Fig. 5: Test Lamp Hookup for Checking Ignitor Operation
Bulbs should flash when switch is operated.

2) Quickly operate switch "ON " and "OFF", and make sure test lamp flashes. If not, replace ignitor.

OVERHAUL

DISASSEMBLY

1) Remove distributor cap, rotor and seal cover. See Fig. 6. Remove igniters and attaching screws from distributor housing. Remove clips holding vacuum diaphragm links. Remove attaching screws and vacuum control units from distributor housing. Remove condenser.
2) Remove reluctor shaft attaching screw from end of shaft. Remove pick-up coil base bearing attaching screws. Remove reluctor, reluctor shaft, pick-up coils and coil base bearing assembly from top of distributor drive shaft.
3) Remove reluctor from reluctor shaft, using puller. Remove spring pin. Remove governors by removing springs. Drive lock pin out of drive gear, using a small drift. Remove gear and washers. Remove drive shaft through top of distributor housing.

REASSEMBLY

1) Inspect distributor cap and rotor for cracks, carbon tracks, and burned or corroded terminals.
2) Assemble distributor in reverse order of disassembly, noting the following: Install reluctor shaft onto distributor drive shaft, engaging slots of reluctor shaft and governor pins. Install pick-up coil and coil base bearing assembly and tighten attaching screws. Install reluctor on shaft, driving spring pin in with a punch.

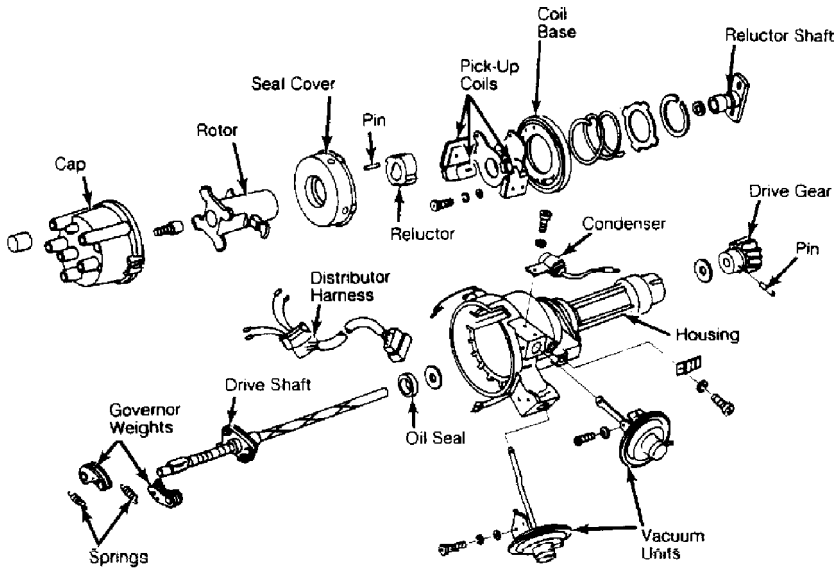


Fig. 6: Disassembled View of RX7 Mitsubishi Distributor

END OF ARTICLE

STARTER - HITACHI/MITSUBISHI
Article Text
1983 Mazda RX7
For www.iluvmyrx7.com

Sunday, August 26, 2001 03:31PM

ARTICLE BEGINNING

1983 Starters
HITACHI & MITSUBISHI

Mazda

DESCRIPTION

Starter is a conventional 12-volt, 4-pole brush-type motor, with either direct or reduction gear drive. The starter-mounted solenoid shifts overrunning clutch and pinion into flywheel when starter is energized.

MITSUBISHI STARTER APPLICATION TABLE

Model	Type or Part No.
Mazda	
B2000 Pickup Gasoline	
Man. Trans.	(1) HE19-18-400A
Auto. Trans.	(1) HE20-18-400
B2200 Pickup Diesel	(1) S211-18-400
GLC	
FWD Sedan	(1) E301-18-400
RWD Wagon	
Man. Trans.	(1) D501-18-400
Auto. Trans.	(1) D502-18-400
RX7	
Man. Trans.	(1) N221-18-400
Auto. Trans.	(1) N202-18-400A
626	(1) FE05-18-400

(1) - Vehicle manufacturer's part number.

TESTING

STARTER PERFORMANCE TESTS

No Load Tests
Connect starter in series with a 12-volt battery, a voltmeter and a 1000 amp ammeter. Compare readings with Starter No Load Specifications.

MITSUBISHI STARTER NO LOAD SPECIFICATIONS TABLE (1)

Application	Max. Amps	Min. RPM
Mazda		
B2000 Pickup	53	6800

B2200 Pickup	180	3800
GLC		
FWD Sedan	53	6800
RWD Wagon	53	6800
RX7		
Man. Trans.	60	6500
Auto. Trans.	100	3500
626		
Man. Trans.	60	6500
Auto. Trans.	60	6600

(1) - Applied voltage of 11.5-12 volts.

Load (Lock Torque) Test

Mount starter in a test stand to perform torque measurement test. Follow manufacturer's instructions for test stand operation. With voltage adjusted, ammeter reading and torque should be within specifications.

MITSUBISHI STARTER LOAD TEST SPECIFICATIONS TABLE (1)

Application	Max. Amps	Volts	Torque Ft. Lbs. (N.m)
Mazda			
B2000 Pickup	310	5	5.4 (7.5)
B2200 Pickup	1050	2	21.7 (30)
GLC			
FWD	310	5	5.4 (7.5)
Wagon	310	5	5.4 (7.5)
RX7			
Man. Trans.	600	5	6.9 (9.6)
Auto. Trans.	1100	4	22.4 (31)
626	310	5	5.4 (7.5)

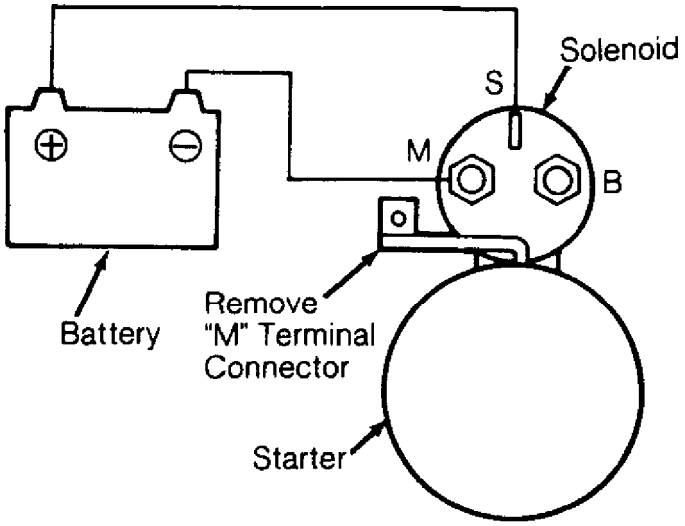
(1) - Turning speed not specified by manufacturer.

SOLENOID TESTS

NOTE: Make tests with solenoid removed from starter or remove solenoid lead to starter before testing. Ensure solenoid plunger and sleeve are clean and dry before performing tests. Make tests in less than 10 seconds to prevent coil damage.

Pull-In Coil Test

1) Connect jumper between positive post of 12-volt battery and "S" terminal. Connect a second jumper to negative battery terminal and touch "M" (MT) terminal (and between terminal "S" and switch body). See Fig. 1.

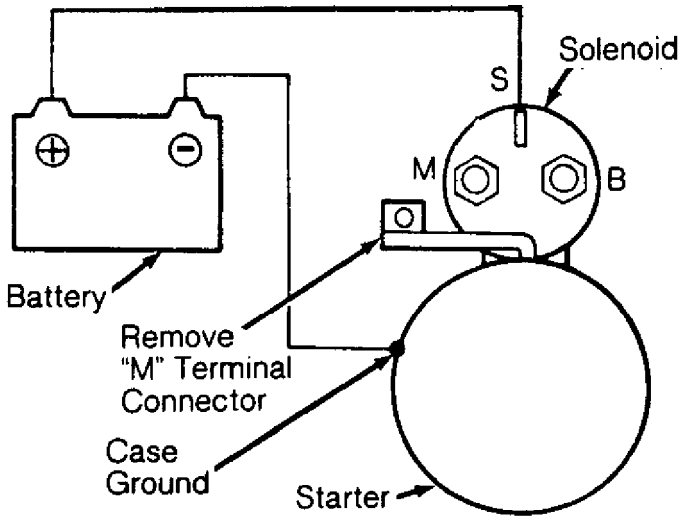


29414
Fig. 1: Connections for Conducting Solenoid Pull-In Test
Remove solenoid-to-starter lead before testing.

2) If pinion moves outward (or plunger is pulled-in), pull-in coil is good. If not, replace magnetic switch.

Hold-In Coil Test

1) Connect a jumper wire between the "M" (MT) terminal and solenoid case. Apply 8 volts to "S" terminal to pull in the plunger. See Fig. 2. Disconnect lead to "M" (MT) terminal.



29415
Fig. 2: Connections for Conducting Solenoid Hold-In Test
Make tests in less than 10 seconds to avoid solenoid damage.

2) If pinion remains out (plunger is pulled-in), hold-in coil is good. If not, replace magnetic switch.

Return Test

1) Apply 12 volts between "M" (MT) terminal and the solenoid case. Pull pinion out and release it (push plunger into solenoid body by hand). See Fig. 3.

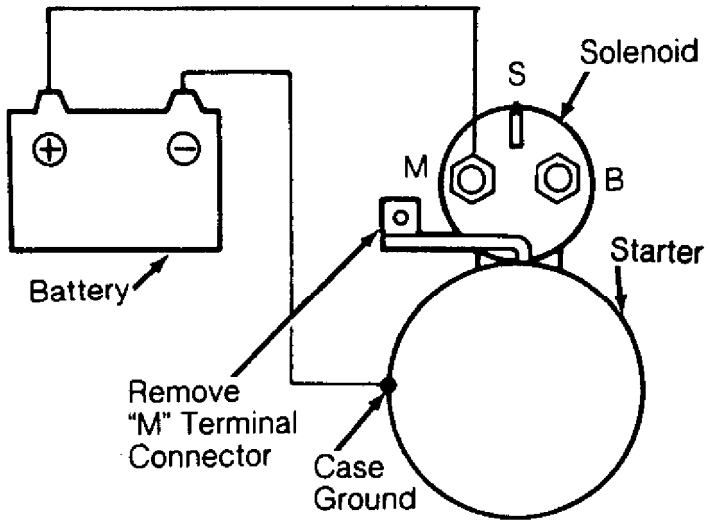


Fig. 3: Connections for Conducting Return Test
Connect battery to "M" terminal and solenoid case.

2) If the case is short-circuited, the pinion will remain out (plunger will be attracted). If nothing happens, solenoid is good.

REMOVAL & INSTALLATION

1) On all models, remove negative battery cable. If necessary raise vehicle on hoist. Remove starter mounting bolts. Remove starter from vehicle.
2) To install, reverse removal procedure.

OVERHAUL

DISASSEMBLY

NOTE: Procedures may vary slightly between conventional and reduction gear starters.

1) Loosen nut securing connecting plate-to-magnetic switch "M" terminal. Remove screws securing magnetic switch and remove switch (solenoid) assembly. Remove through bolts and brush cover assembly. Tap yoke assembly loose with wooden mallet. Remove yoke, armature assembly and pinion shift lever.
2) Remove pinion stop ring from end of armature shaft by pushing stop ring to clutch side. Remove snap ring and overrunning clutch assembly from armature shaft.

CLEANING & INSPECTION

Clean all parts. Do not use grease dissolving solvent on overrunning clutch, armature assembly, solenoid assembly or field coils due to possible damage. Inspect all parts for damage or wear and replace as required.

BENCH TESTS

Brushes & Springs

Check brush spring tension using a spring scale. Check brush contact surface condition and brush length. Check lead clip and wire connections and condition of brush holders. Replace as required. See Brush Spring Tension and Minimum Brush Length Charts.

BRUSH SPRING TENSION TABLE

Application	Ozs. (g)
Mazda	
B2000 & B2200 Pickups	50-62 (1415-1766)
RX7	50-92 (1415-2604)
All Other Models	46-60 (1302-1700)

MINIMUM BRUSH LENGTH TABLE

Application	In. (mm)
Mazda	.45 (11.5)

Armature

Check external condition of armature for scoring or other damage. Measure shaft distortion with dial indicator. Replace armature if shaft distortion exceeds .004" (.10 mm).

Commutator

1) Inspect commutator for roughness, grooves, burns or pitting. Sand lightly with 500 grit sandpaper if necessary. Check commutator for out-of-round and mica insulators undercut to a depth of .020-.031" (.5-.8 mm).

2) If necessary, commutator may be turned less than .04" (1 mm) from original size and mica undercut. Replace if excessively worn.

Field Coil

1) Check field coil continuity by connecting test probe of circuit tester or an ohmmeter to the field coil positive terminal and brush holder. If circuit is open, replace field coil.

2) Check for grounding of field coils by placing one probe of circuit tester on starter housing and other probe to field coil positive terminal. If little or no resistance, field coil is grounded and must be replaced.

Overrunning Clutch Assembly

1) Inspect pinion assembly and sleeve. Sleeve should slide freely on armature shaft and spline. If damage or resistance is noted, replace assembly.

2) Check pinion and flywheel teeth for excessive rubbing or damaged teeth. Replace as required.

Pinion Gear Clearance

1) The clearance between the pinion gear and pinion stopper collar should be .012-.098" (.3-2.5 mm) on Hitachi starters, or .02-.08" (.51-2.03 mm) on Mitsubishi starters, when solenoid is engaged. Adjust as necessary by changing shims between solenoid and starter yoke.

2) On Mazda B2200 models, projection distance (starter housing-to-front face of gear) should be .67" (17 mm). On Mazda RX-7 models, projection should be 1.06" (27.5 mm).

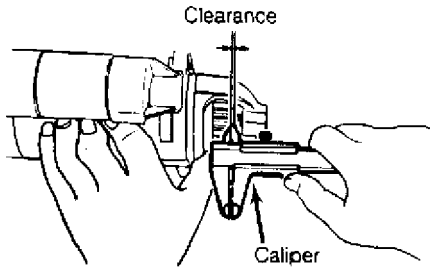
Pinion Case Bearing

Inspect bearing for wear and check side play. If clearance exceeds .008" (.2 mm), replace bearing. New bearing clearance should be .001-.004" (.025-.10 mm) for Hitachi or .002-.004" (.05-.10 mm) for Mitsubishi starters.

NOTE: Ensure that bearing is installed so that end of bearing is flush with gear case end.

REASSEMBLY

To reassemble, reverse disassembly procedure. Fill gear case on reduction gear models with grease. Lightly oil pinion and all bearing surfaces.



29418

Fig. 4: Measuring Pinion Edge-to-Pinion Stopper Clearance

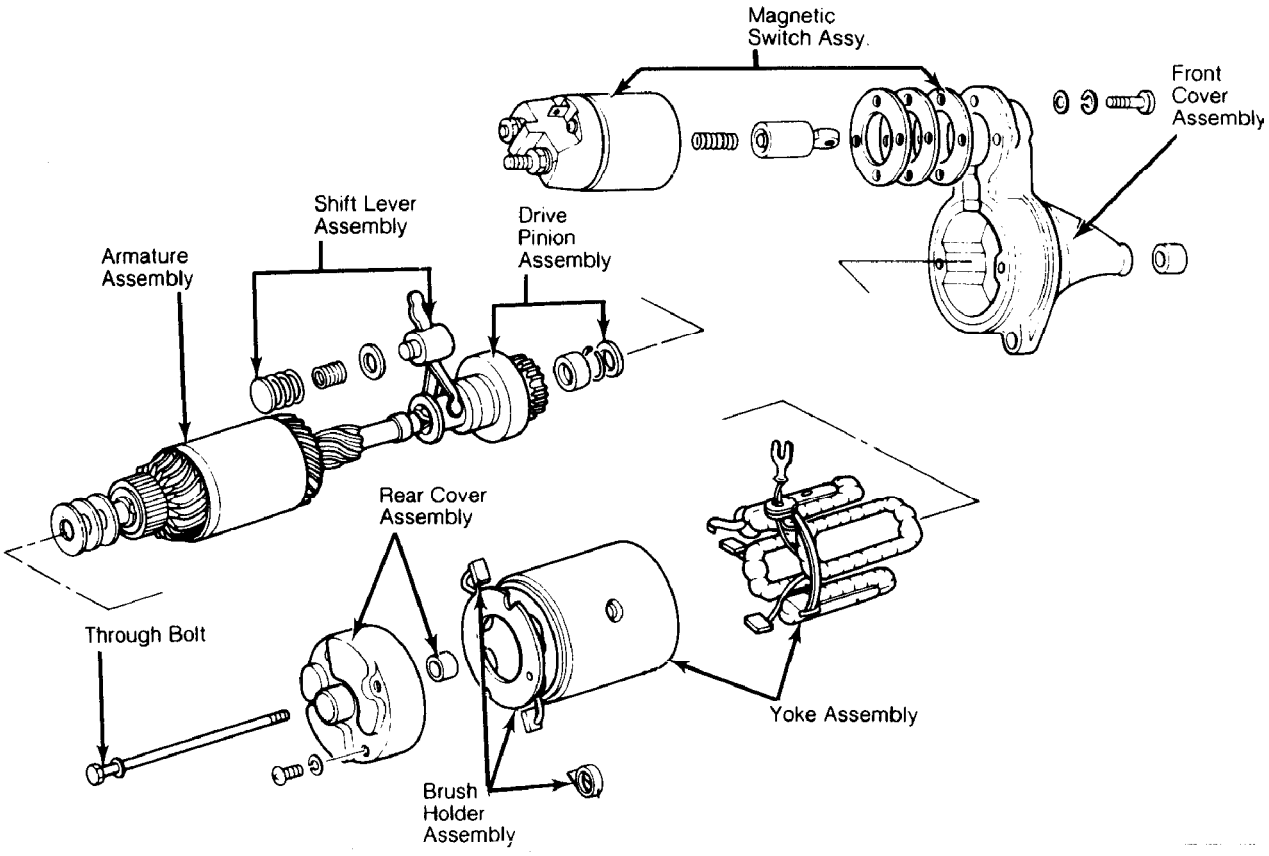


Fig. 5: Disassembled View of Typical Mitsubishi Conventional Starter

END OF ARTICLE