

## 1999 Toyota RAV4

1999 HEATER SYSTEMS RAV4, Tacoma & 4Runner

### 1999 HEATER SYSTEMS

#### RAV4, Tacoma & 4Runner

## DESCRIPTION

Major components of the heater system are a heater core, control panel, blower motor, water valve, hoses, control cables and air ducts. 4Runner may be equipped with a dual heater system with separate controls for front and rear. Rear temperature and blower controls are located in the console between front seats.

**WARNING:** To avoid injury from accidental air bag deployment, read and carefully follow all **SERVICE PRECAUTIONS** and **DISABLING & ACTIVATING AIR BAG SYSTEM** procedures in **AIR BAG SYSTEM SAFETY** article in **GENERAL SERVICING**.

**CAUTION:** When battery is disconnected, radio will go into anti-theft protection mode. Obtain radio anti-theft protection code from owner prior to servicing vehicle.

## OPERATION

### BLOWER SWITCH

Switch controls blower motor speed through blower resistor. Blower speed is adjusted by control lever, knob or push button.

### CONTROL PANEL

Temperature and mode knobs or levers are connected by cable to heater coolant valve and air doors. All models have a fresh/recirculation lever to provide choice of outside air or recirculated inside air.

### HEATER RELAY

A heater (or main) relay controls current through system. For location of heater (main) relay, see **WIRING DIAGRAMS**.

## ADJUSTMENTS

### AIR INLET DAMPER CABLE

Set air inlet damper and control lever to fresh (recirculated on RAV4) air position. Remove cable retaining clip, and ensure damper and cable are in full fresh (recirculated on RAV4) air position. Install control cable clip. Check operation of air intake damper.

### AIRFLOW MODE DAMPER CABLE

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Set control lever to correct position. See **AIRFLOW MODE DAMPER CABLE ADJUSTMENT** table. Remove cable retaining clip. Ensure airflow mode damper and cable are in their respective positions. Install cable retaining clip.

### AIRFLOW MODE DAMPER CABLE ADJUSTMENT

Application	Lever Position
Tacoma & 4Runner	Face
RAV4	(1)
(1) Information is not available from manufacturer.	

### AIR MIX DAMPER CABLE

Set air door lever to cool position. Remove cable retaining clip. Ensure cable and damper are in full cool position. Install cable retaining clip. Check air mix damper operation.

### REAR HEAT DAMPER CABLE

#### 4Runner

Set control lever to warm position. Remove cable retaining clip. Ensure cable and damper are in full warm position. Install cable retaining clip.

### WATER VALVE CONTROL CABLE

Set control lever to cool position. Remove cable retaining clip. Ensure water valve control cable is in full cool position. Install cable retaining clip.

## TROUBLE SHOOTING

### BLOWER DOES NOT WORK

Inspect for blown heater fuse or faulty heater relay. Inspect heater blower switch, heater blower resistor, heater blower motor, or wiring fault. See **WIRING DIAGRAMS** .

### INCORRECT TEMPERATURE OUTPUT

Inspect for broken or out of adjustment control cables, heater hoses leaking or clogged, or faulty water pump. Inspect for broken air dampers, clogged air ducts, leaking or clogged heater core, or faulty heater control unit.

## TESTING

**WARNING:** To avoid injury from accidental air bag deployment, read and carefully follow all **SERVICE PRECAUTIONS** and **DISABLING & ACTIVATING AIR BAG SYSTEM** procedures in **AIR BAG SYSTEM SAFETY** article in **GENERAL SERVICING**.

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### BLOWER MOTOR

Unplug blower motor connector. See **WIRING DIAGRAMS** . Replace motor if it does not operate smoothly. Perform the following test procedures:

#### RAV4 & Tacoma

Apply battery voltage to motor side terminal No. 1 and ground terminal No. 2.

#### 4Runner (Front Blower)

Apply battery voltage to motor side terminal No. 2 and ground terminal No. 1.

#### 4Runner (Rear Blower)

Apply battery voltage to motor side terminal No. 1 and ground terminal No. 2.

### BLOWER RESISTOR

**NOTE:** On some vehicles, it may be necessary to remove resistor before testing it.

#### RAV4 & Tacoma

Unplug resistor connector. See **Fig. 1** . See **WIRING DIAGRAMS** . Test for continuity between blower resistor terminals No. 1, 2, 3 and 4. If continuity does not exist between any terminals, replace resistor.

#### 4Runner (Front)

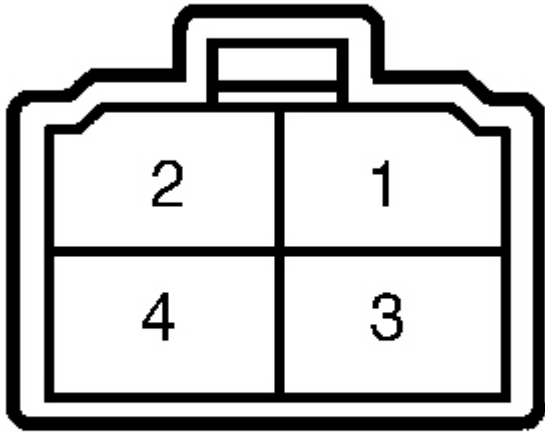
Unplug resistor connector. Using a DVOM, measure resistance between indicated terminals. See **Fig. 1** . See **WIRING DIAGRAMS** . See **BLOWER RESISTOR (4RUNNER)** table. If resistance is not as specified, replace resistor.

#### BLOWER RESISTOR (4RUNNER)

Terminals No.	Ohms
Front	
1 & 2	1.6-2.0
1 & 3	1.0-1.4
1 & 4	2.1-2.3
Rear	
1 & 2	3.0-3.4

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**Fig. 1: Identifying Blower Resistor Connector Terminals**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 4Runner (Rear)

Unplug resistor connector. Using a DVOM, measure resistance between indicated terminals. See **Fig. 2** . See **WIRING DIAGRAMS** . See **BLOWER RESISTOR (4RUNNER)** table. If resistance is not as specified, replace resistor.

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**Fig. 2: Identifying Rear Blower Resistor Connector Terminals (4Runner)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### BLOWER SPEED CONTROL SWITCH

Unplug connector from blower speed control switch. Test for continuity between specified terminals. See appropriate **FRONT/REAR BLOWER SPEED CONTROL SWITCH** table. See **Fig. 3** and **Fig. 4** . If continuity is not as specified, replace blower switch.

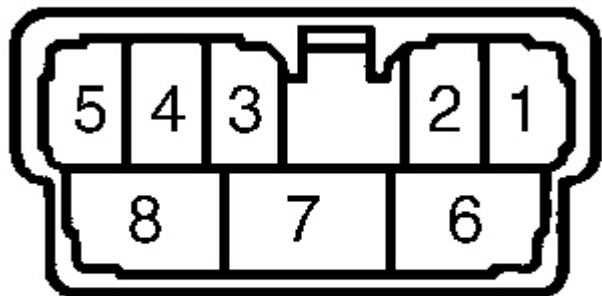
### FRONT BLOWER SPEED CONTROL SWITCH

Switch Position	(1) Continuity Between Terminals No.
RAV4	
OFF	(1)
LO	5 & 6
(D) <sup>(2)</sup>	1, 5 & 6
(D) <sup>(3)</sup>	2, 5 & 6
HI	5, 6 & 8
Tacoma & 4Runner	
OFF	(1)
LO	1 & 8
(D) <sup>(2)</sup>	1, 3 & 8
(D) <sup>(3)</sup>	1, 2 & 8
HI	1, 6 & 8

- (1) With switch in any position, continuity should exist between terminals No. 3 and 4. With switch in OFF position, continuity should not exist between any other terminals.
- (2) Circle (D) closer to LO position.
- (3) Circle (D) closer to HI position.

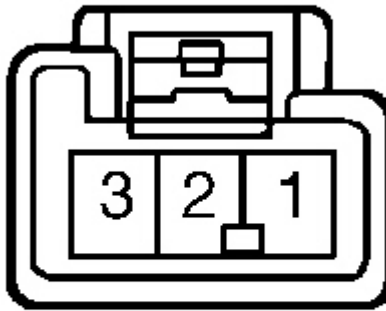
REAR BLOWER SPEED CONTROL SWITCH (4RUNNER)

Switch Position	Continuity Between Terminals No.
OFF	(1)
LO	2 & 3
HI	1, 2 & 3
(1) No continuity between terminals.	



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**Fig. 3: Identifying Front Blower Speed Control Switch Connector Terminals (All Models)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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**Fig. 4: Identifying Rear Blower Speed Control Switch Connector Terminals (4Runner)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## HEATER BLOWER HIGH & MAIN RELAYS

### RAV4 & Tacoma

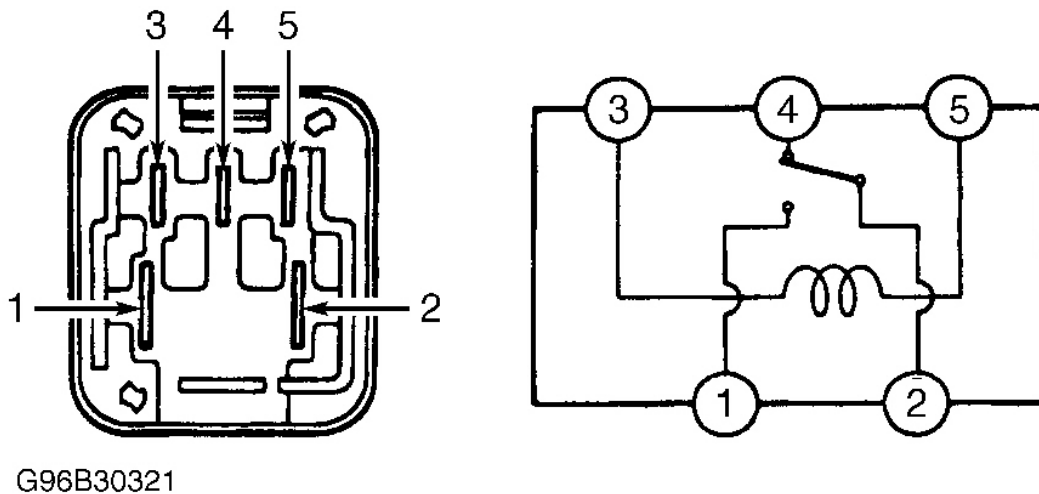
1. Disconnect negative battery cable. Remove relay. See **WIRING DIAGRAMS** . Using a DVOM, check for continuity between relay terminals No. 3 and 5, No. 2 and 4 and No. 1 and 2. See **Fig. 5** . If continuity exists between terminals No. 3 and 5 and No. 2 and 4, and does not exist between No. 1 and 2, go to next step. If continuity does not exist between terminals No. 3 and 5 or No. 2 and 4, or exists between No. 1 and 2, replace relay.
2. Connect battery voltage to terminal No. 3 and ground terminal No. 5. Check for continuity between terminals No. 1 and 2 and No. 1 and 4. If continuity exists between No. 1 and 2, relay is good. If continuity does not exist between No. 1 and 4, replace relay.

### 4Runner (Front)

1. Disconnect negative battery cable. Remove relay. See **WIRING DIAGRAMS** . Using a DVOM, check for continuity between relay terminals No. 3 and 5, No. 2 and 4 and No. 1 and 2. See **Fig. 5** . If continuity exists between terminals No. 3 and 5 and No. 2 and 4, and does not exist between No. 1 and 2, go to next step. If continuity does not exist between terminals No. 3 and 5 or No. 2 and 4, or exists between No. 1 and 4, replace relay.
2. Connect battery voltage to terminal No. 3 and ground terminal No. 5. Check for continuity between terminals No. 1 and 2 and No. 1 and 4. If continuity exists between No. 1 and 2, relay is good. If continuity does not exist between No. 1 and 4, replace relay.

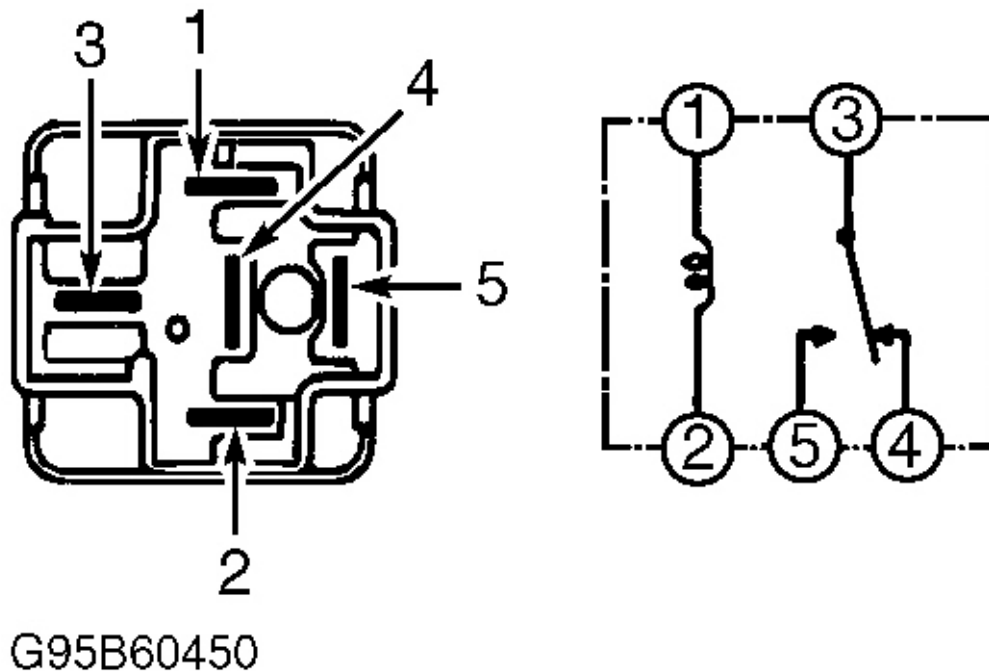
**4Runner (Rear)**

1. Disconnect negative battery cable. Remove relay. See **WIRING DIAGRAMS** . Using a DVOM, check for continuity between relay terminals No. 1 and 2, No. 3 and 4 and No. 3 and 5. See **Fig. 6** . If continuity exists between terminals No. 1 and 2 and No. 3 and 4, and does not exist between No. 3 and 5, go to next step. If continuity does not exist between terminals No. 1 and 2 or No. 3 and 4, or exists between No. 3 and 5, replace relay.
2. Connect battery voltage to terminal No. 1 and ground terminal No. 2. Check for continuity between terminals No. 3 and 5. If continuity exists between No. 3 and 5, relay is good. If continuity does not exist between No. 3 and 5, replace relay.



**Fig. 5: Identifying 5-Pin Heater Main Relay Connector Terminals (Tacoma, RAV4 & 4Runner - Front)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.





**Fig. 6: Identifying 5-Pin Heater Main Relay Connector Terminals (4Runner - Rear)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL & INSTALLATION

**WARNING:** To avoid injury from accidental air bag deployment, read and carefully follow all **SERVICE PRECAUTIONS** and **DISABLING & ACTIVATING AIR BAG SYSTEM** procedures in **AIR BAG SYSTEM SAFETY** article in **GENERAL SERVICING**.

### BLOWER MOTOR

#### Removal & Installation (Except 4Runner Rear)

Disconnect negative battery cable. Remove glove box, if necessary. Unplug blower motor and resistor connectors. Remove blower motor. To install, reverse removal procedure. See **Fig. 7** , **Fig. 8** or **Fig. 9** .

#### Removal & Installation (4Runner Rear)

Remove rear heater assembly. See **HEATER ASSEMBLY** . Remove wire harness and clamps. Separate heater

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case and remove blower motor. To install, reverse removal procedure. See **Fig. 10** .

## HEATER ASSEMBLY

**NOTE:** Tacoma and 4Runner may require removal of instrument panel and/or glove box components. See **INSTRUMENT PANEL** .

### Removal & Installation (All Except 4Runner Rear)

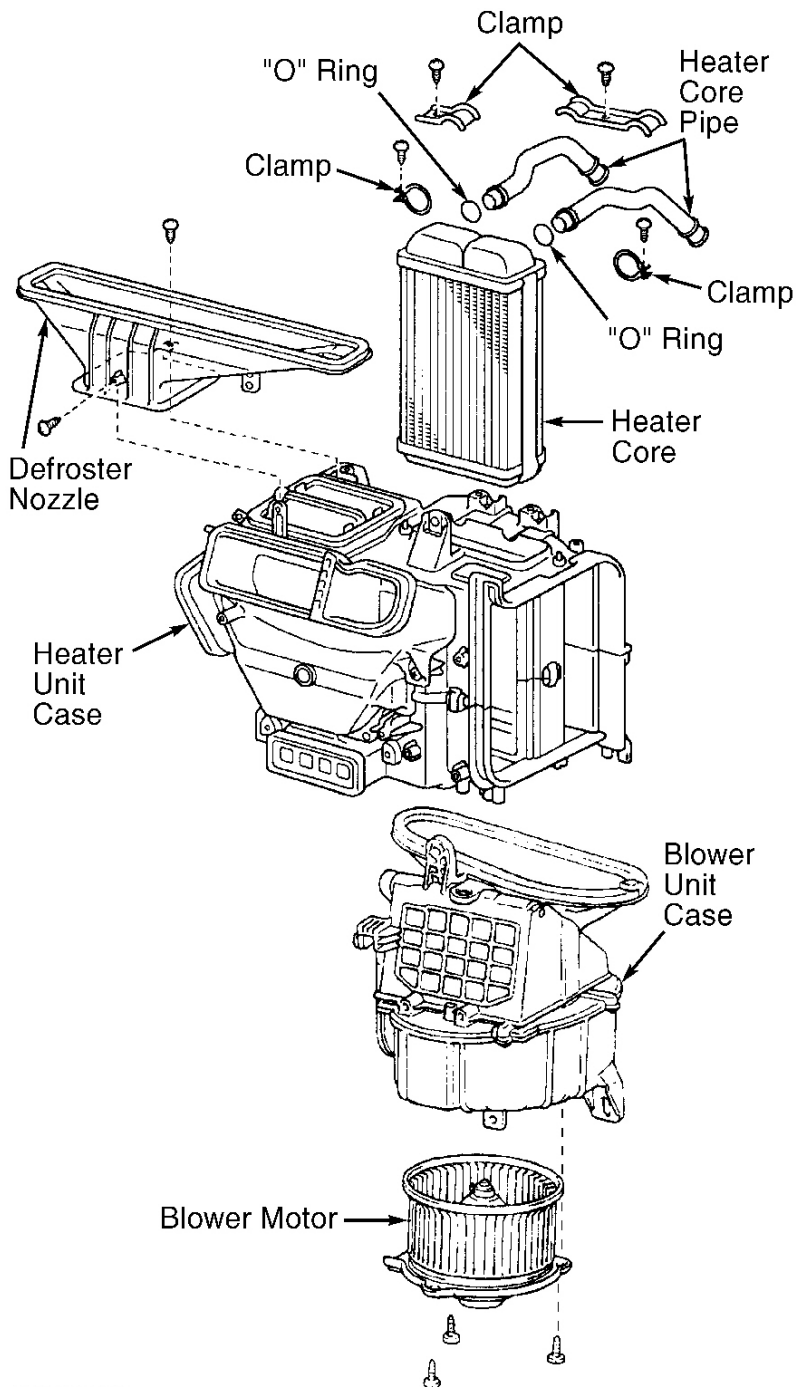
1. Remove A/C cooling unit (if equipped). See appropriate MANUAL A/C-HEATER SYSTEMS article. Drain cooling system. Disconnect hoses from heater core. Remove grommets from hoses. Remove instrument panel (if required).
2. Disconnect control cables from heater assembly. Remove defroster nozzle and heater duct. Remove heater unit. See **Fig. 7** , **Fig. 8** or **Fig. 9** . Remove screws, clamps and heater core. To reassemble and install, reverse removal procedure.

### Removal & Installation (4Runner Rear)

1. Drain cooling system. Remove front seats and center console box. Roll floor carpet back and disconnect water hoses. Remove heater duct.
2. Disconnect control cable and remove heater control assembly. Remove heater unit. See **Fig. 10** . Remove wire harness and clamps. Separate heater case and heater core. To reassemble and install, reverse removal procedure.

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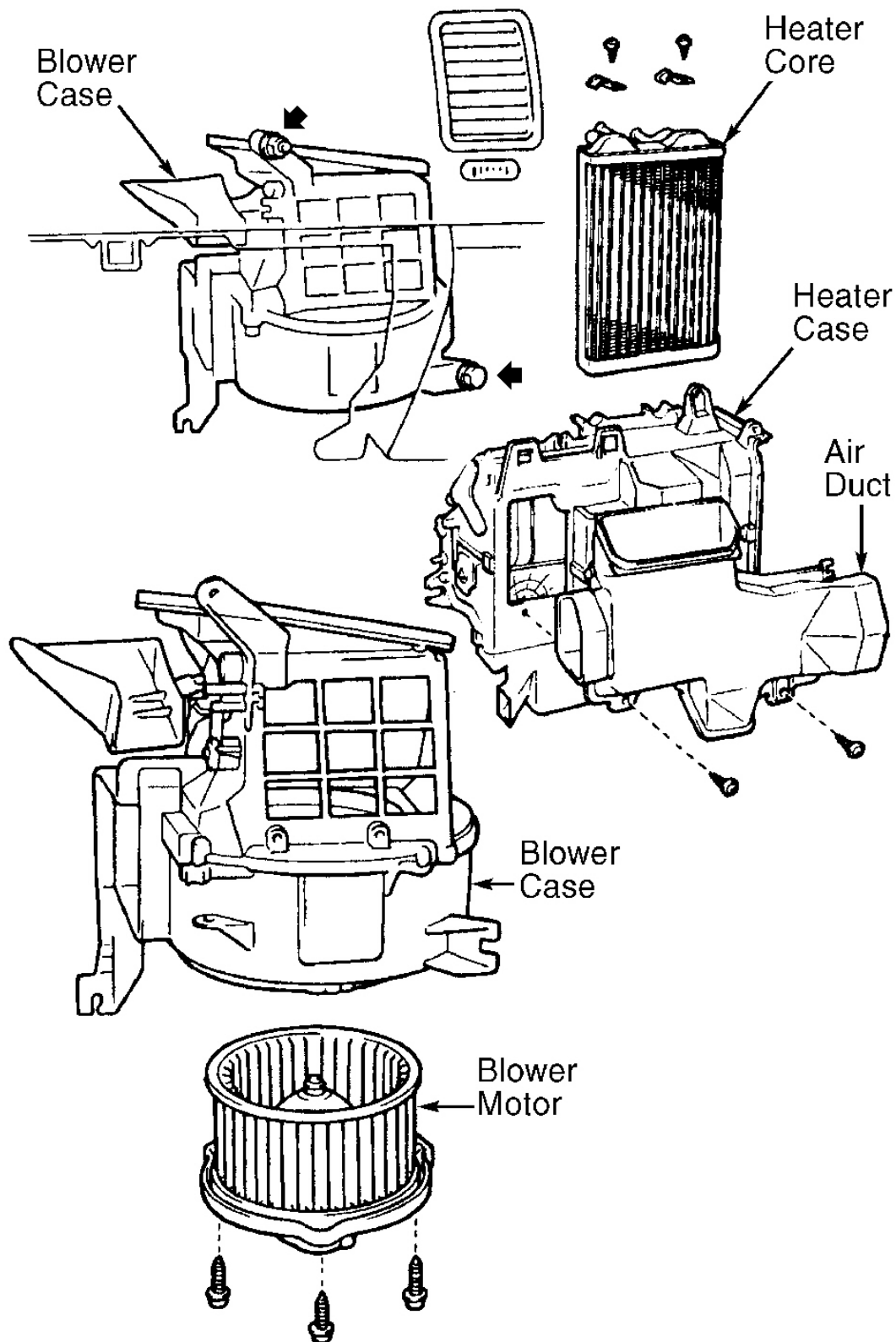


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**Fig. 7: Exploded View Of Heater Assembly (RAV4)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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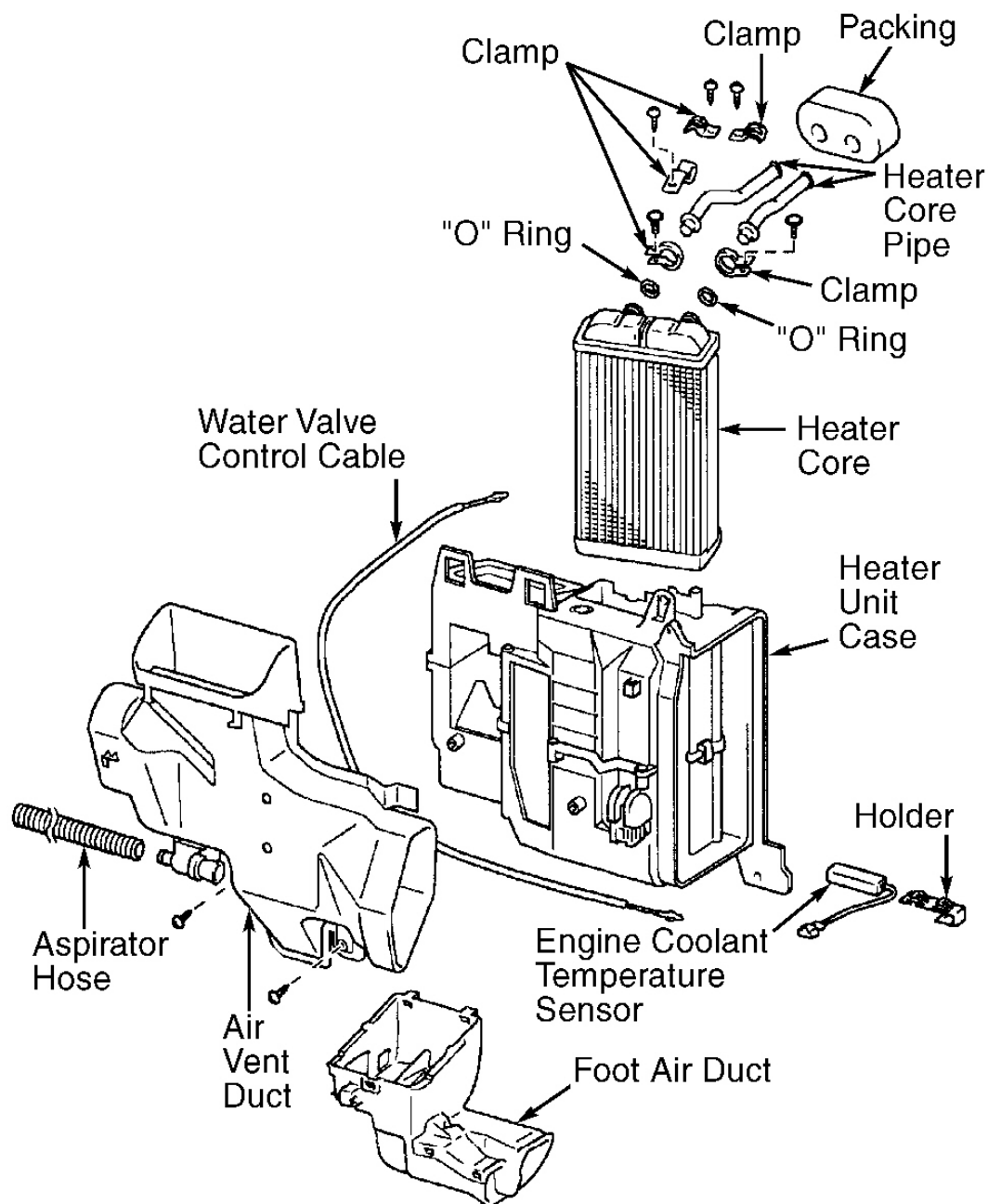


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**Fig. 8: Exploded View Of Heater Assembly (Tacoma)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



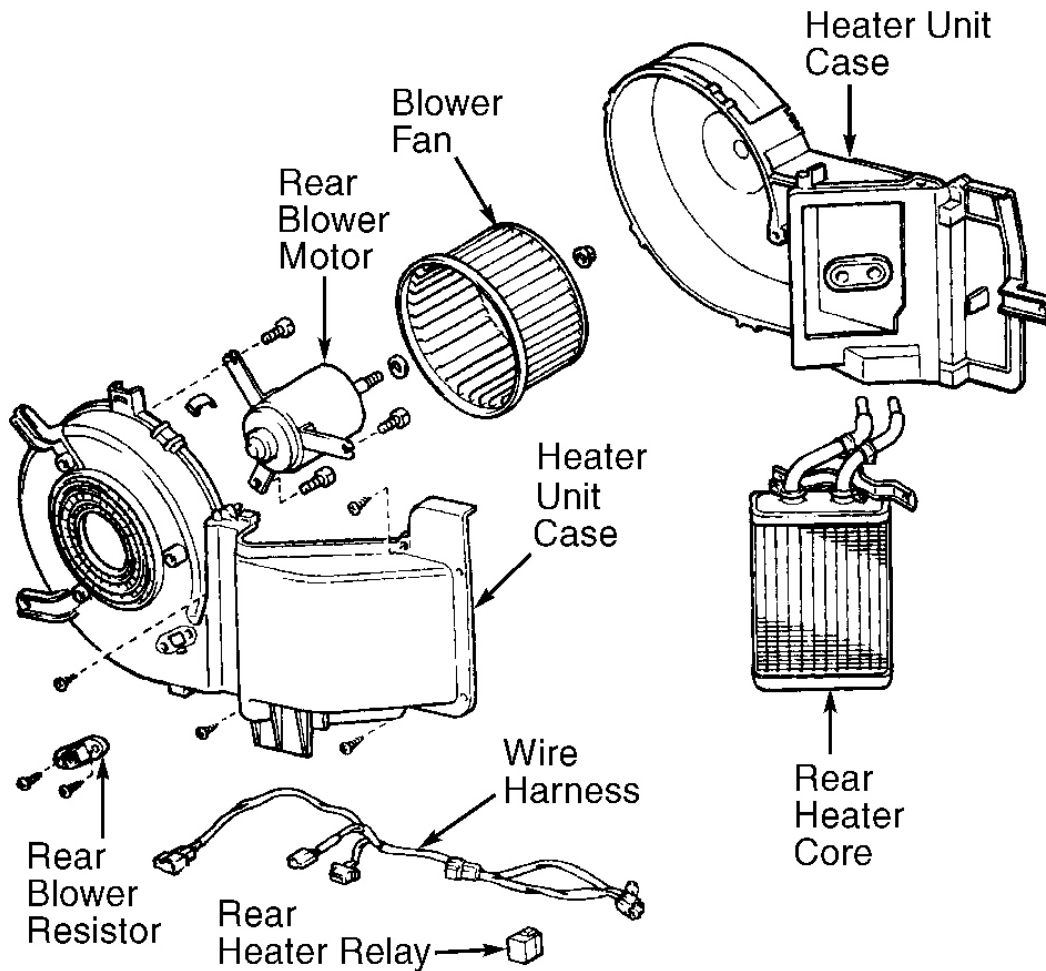
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**Fig. 9: Exploded View Of Heater Assembly (4Runner - Front)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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**Fig. 10: Exploded View Of Heater Assembly (4Runner - Rear)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### INSTRUMENT PANEL

**NOTE:** Instrument panel removal and installation procedure may vary slightly depending upon model application.

#### Removal & Installation

1. Disconnect negative battery cable. Remove front pillar trim, front door scuff plate and cowl side trim. Remove steering wheel and steering column cover.
2. Remove right and left side lower panels, lower center cover and glove box door. Remove hood lock release lever. Remove combination switch. Remove upper and lower center cluster panels (center console

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box, if equipped). Remove instrument cluster panel and instrument cluster.

3. Remove instrument panel vents and heater ducts. Remove glove box door reinforcement and instrument panel braces. Unplug any connectors necessary for instrument panel removal.
4. Remove bolts at instrument cluster opening. Disengage instrument panel from clips along top edge of panel. To install, reverse removal procedure.

## **WATER VALVE**

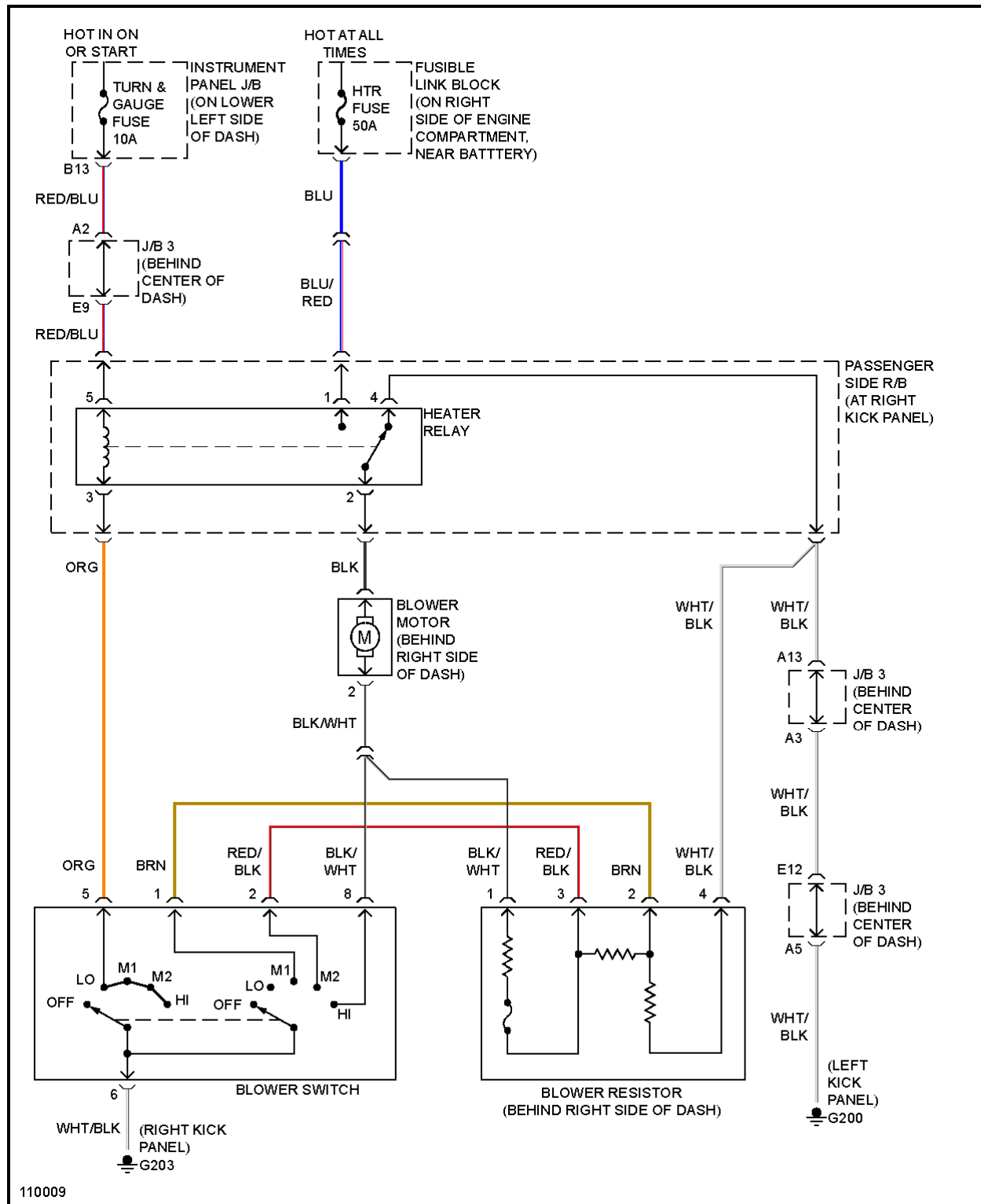
### **Removal & Installation**

Drain cooling system. Disconnect control cable from water valve. Disconnect water hoses from heater core. Remove water valve. To install, reverse removal procedure. When connecting water hose to heater core, push hose onto pipe until it contacts ridge. Adjust water valve control cable. See **WATER VALVE CONTROL CABLE** under ADJUSTMENTS.

## **WIRING DIAGRAMS**

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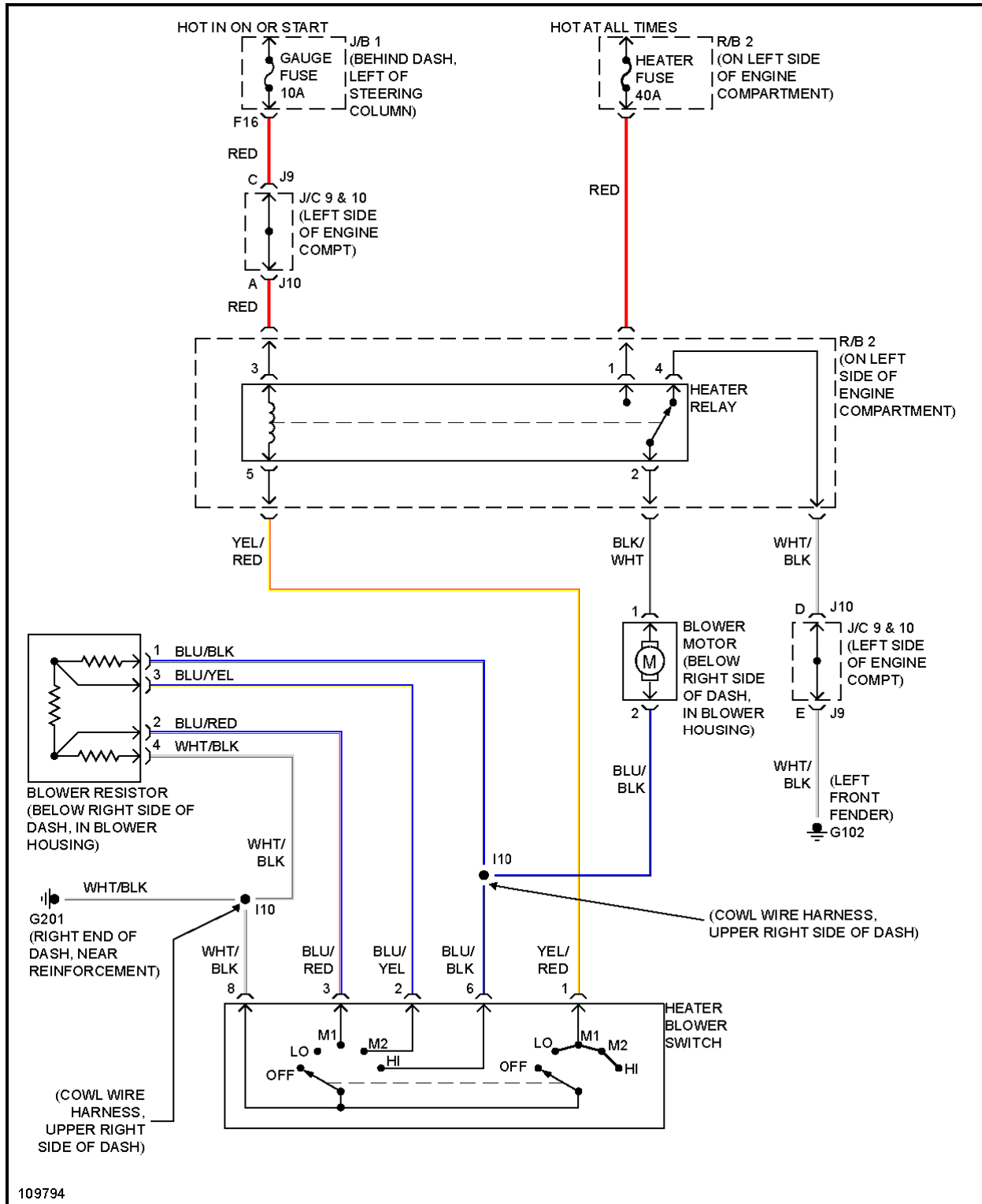


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**Fig. 11: Heater System Wiring Diagram (RAV4)**

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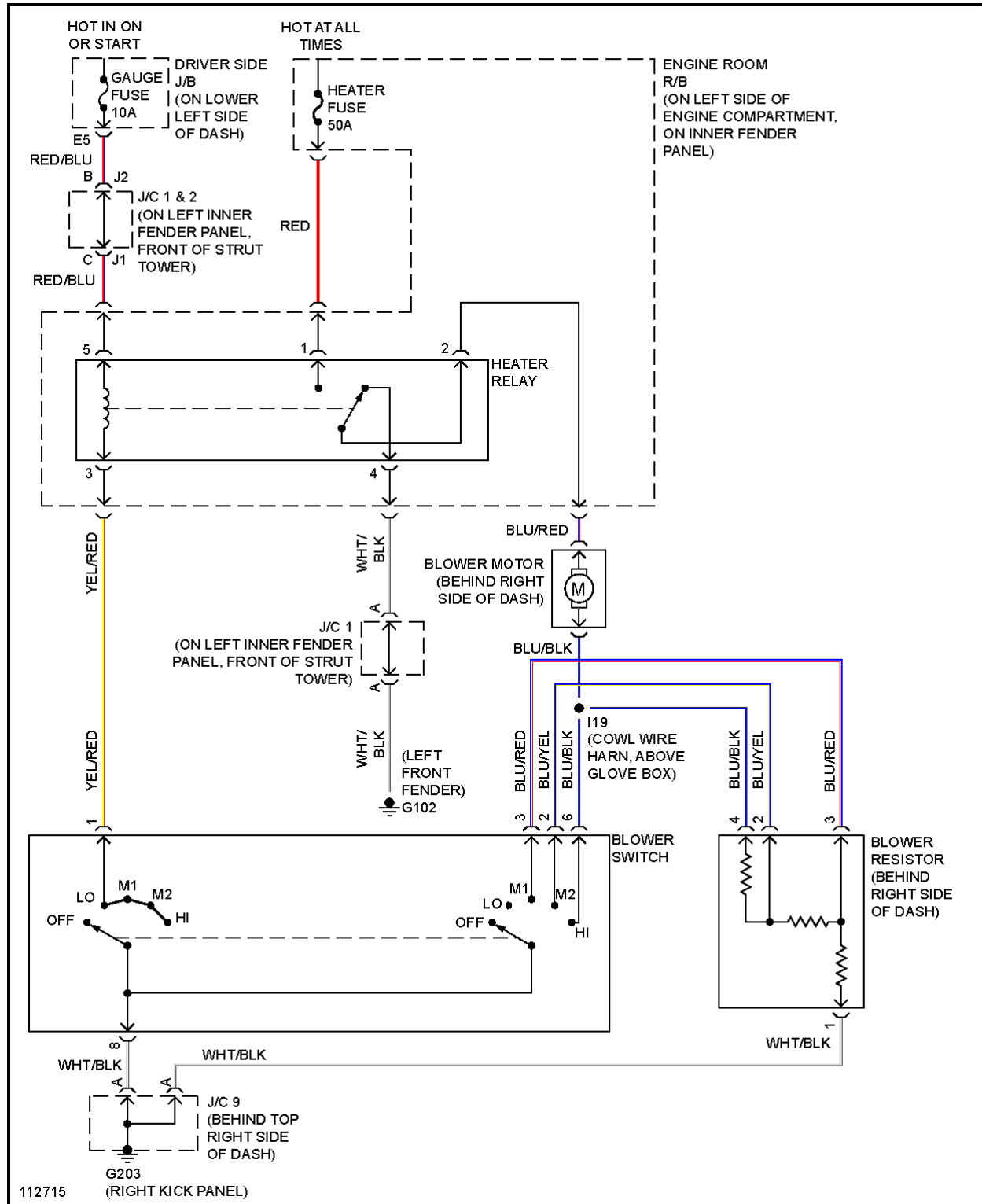


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**Fig. 12: Heater System Wiring Diagram (Tacoma)**

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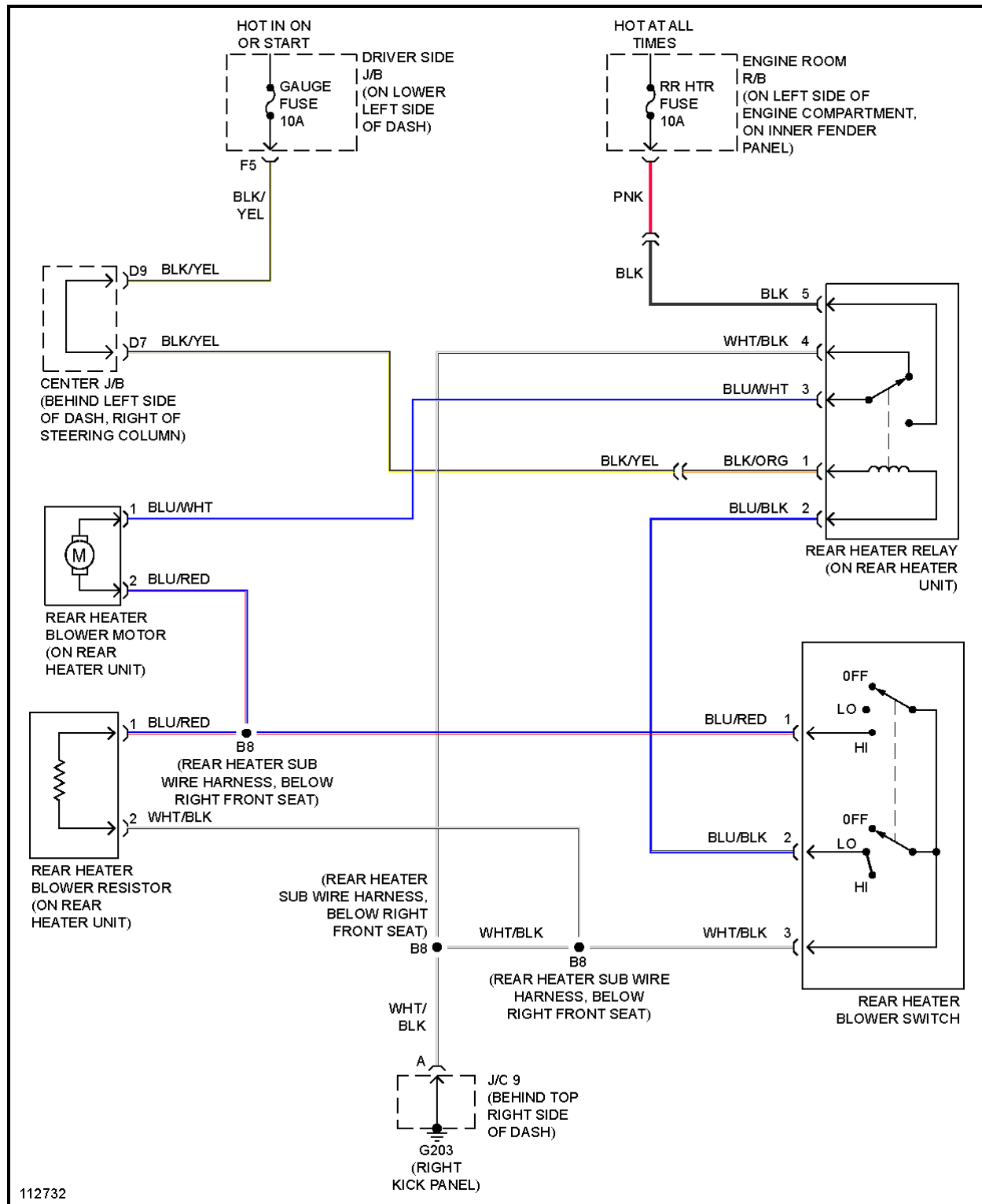


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**Fig. 13: Heater System Wiring Diagram (4Runner - Front)**

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**Fig. 14: Heater System Wiring Diagram (4Runner - Rear)**