

A/C-HEATER SYSTEM

1998 Toyota Supra

1998 Automatic A/C-Heater System

Supra

* PLEASE READ THIS FIRST *

WARNING: To avoid injury from accidental air bag deployment, read and follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

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.

A/C SYSTEM SPECIFICATIONS

A/C SYSTEM SPECIFICATIONS TABLE

Application	Specification
Compressor Type	Nippondenso 10-Cyl.
Compressor Belt Tension (1)	
Compressor Oil Capacity	(2) 4.8 ozs.
Refrigerant (R-134a) Capacity	23.2-26.7 ozs.
System Operating Pressures	
High Side	199-228 psi (14-16 kg/cm ²)
Low Side	21-36 psi (1.5-2.5 kg/cm ²)

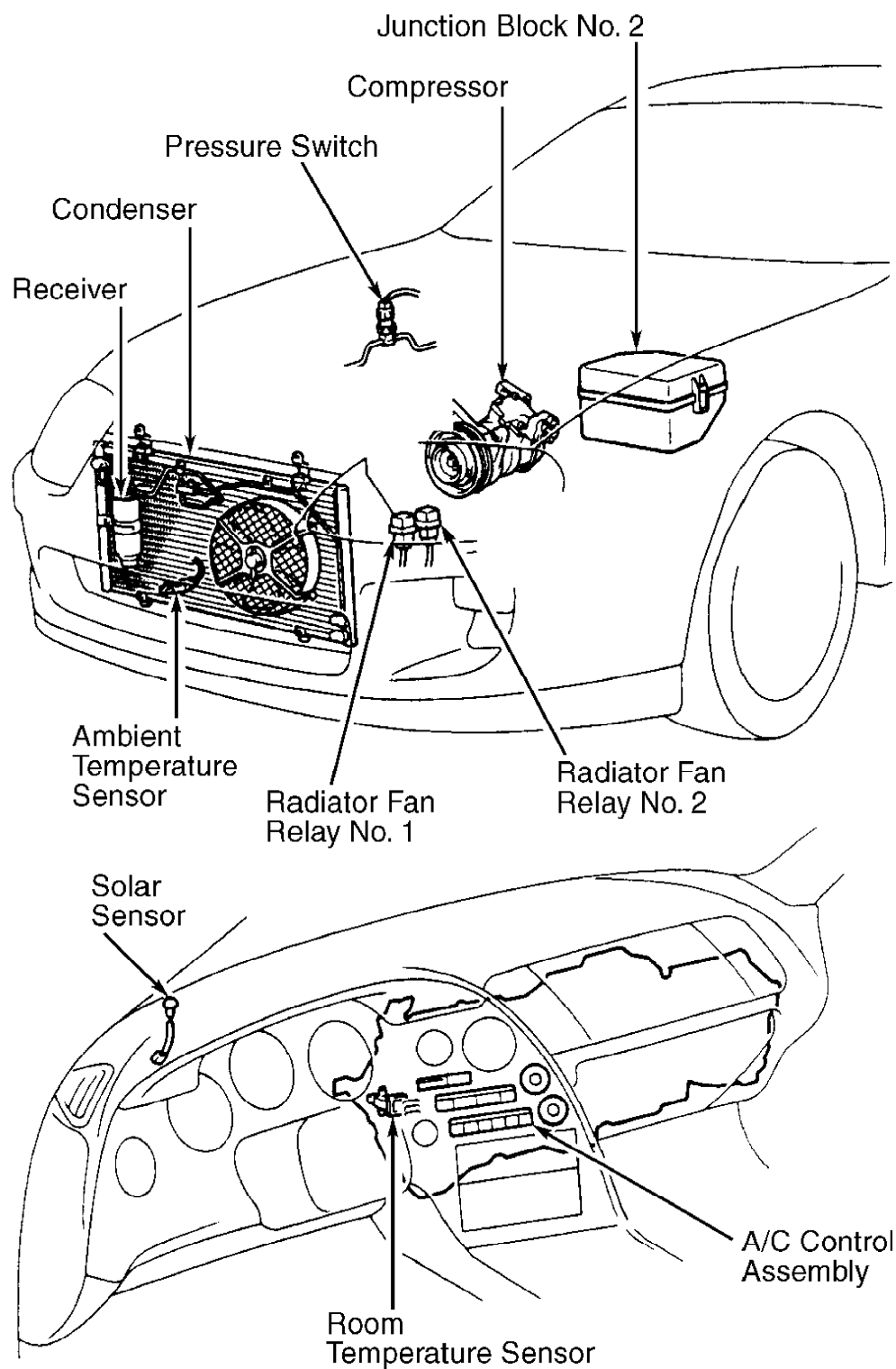
(1) - See COMPRESSOR BELT TENSION under ADJUSTMENTS.

(2) - Use ND-Oil 8 (Part No. 08885-09109).

DESCRIPTION & OPERATION

Automatic temperature control system is a cycling clutch type with an expansion valve. See Fig. 1. Sensors respond to various conditions in A/C system and provide signals for A/C-heater control panel and A/C amplifier. Based on signals from sensors, A/C-heater control panel and A/C amplifier control operation of compressor clutch and air control door servomotors.

- * Ambient temperature sensor monitors outside air temperature.
- * Room temperature sensor monitors passenger compartment air temperature.
- * Engine coolant temperature sensor monitors engine coolant temperature.
- * Solar sensor monitors sunlight load.
- * Evaporator temperature sensor monitors evaporator temperature.



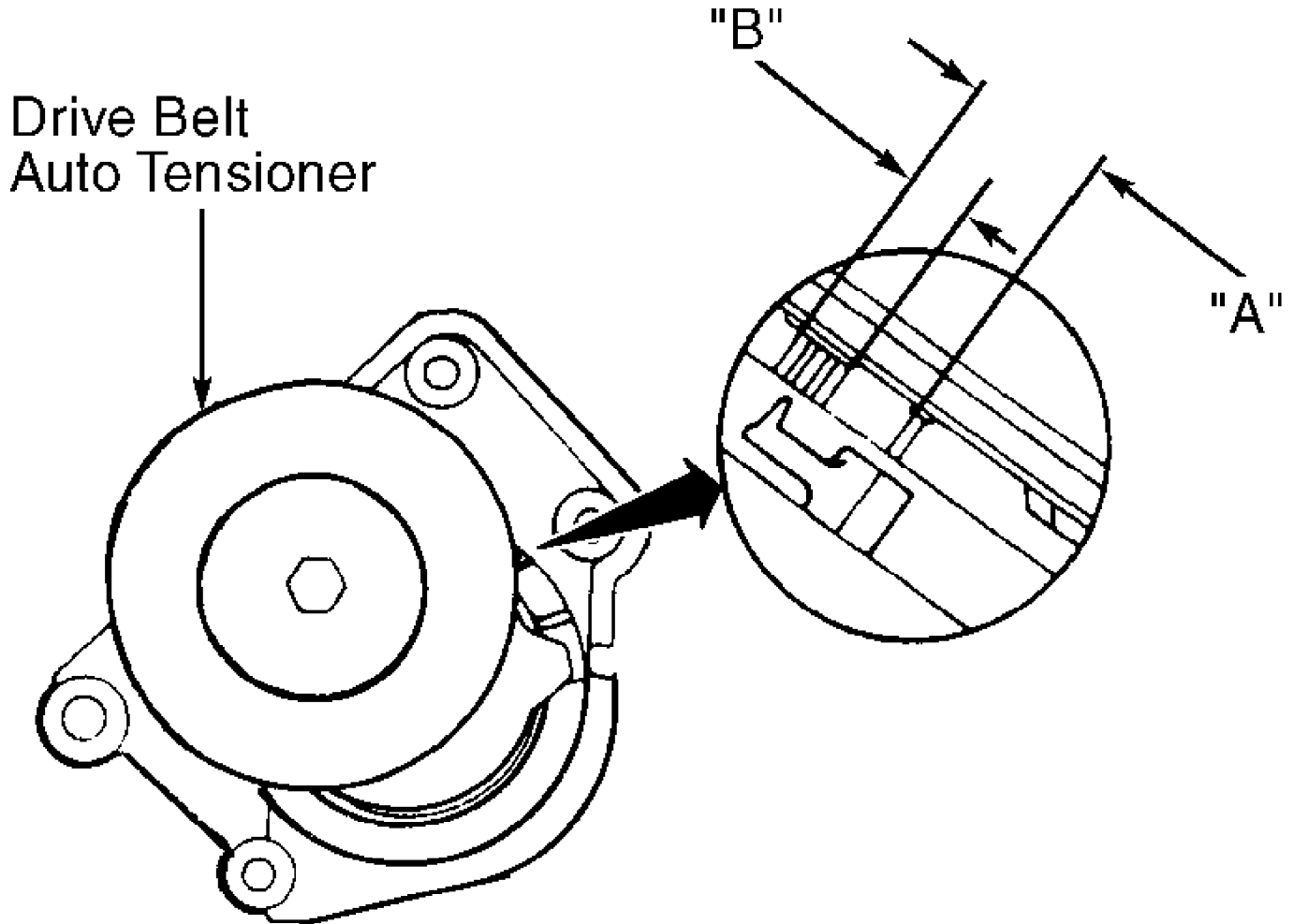
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Fig. 1: Automatic A/C-Heater System Components
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

ADJUSTMENTS

COMPRESSOR BELT TENSION

Ensure drive belt tension falls within "A" range of belt tensioner scale. See Fig. 2. If tension does not fall within "A" range, replace belt. When installing a new belt, belt tension indicator should be within "B" range of belt tensioner scale.



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Fig. 2: Checking Compressor Drive Belt Tension
Courtesy of Toyota Motor Sales, U.S.A., Inc.

SELF-DIAGNOSTICS

PRELIMINARY INFORMATION

A/C amplifier monitors A/C-heater system circuits and stores trouble codes in memory if problems are detected. If a malfunction has occurred in A/C-heater system, Diagnostic Sensor Check (DSC) may be performed. DSC will retrieve stored trouble codes, check individual circuits and perform an actuator functional check. Trouble codes are identified by a blinking LED of A/C-heater control panel switch(s). To retrieve stored trouble codes, see DIAGNOSTIC SENSOR CHECK (DSC). No malfunctions present is indicated by blinking AUTO LED. If no trouble

codes exist and a fault is still present, proceed to TROUBLE SHOOTING.

DIAGNOSTIC SENSOR CHECK (DSC)

Description

There are 4 check procedures of the Diagnostic Sensor Check (DSC). Depressing OFF switch at any time will exit DSC and return system to normal A/C-heater control operation. See Fig. 3. DSC check procedures are:

- * Indicator Check
- * DSC Continuous Operation
- * DSC Stepped Operation
- * Actuator Functional Check

Indicator Check

Turn ignition off. Hold down AUTO and recirculated/fresh air switches. Turn ignition on and release switches. See Fig. 3. All LEDs will flash 4 times at one-second intervals. Verify all LEDs are functioning. System will automatically enter into DSC continuous operation. If switches were not held down when ignition was turned on, system will not enter into DSC.

DSC Continuous Operation

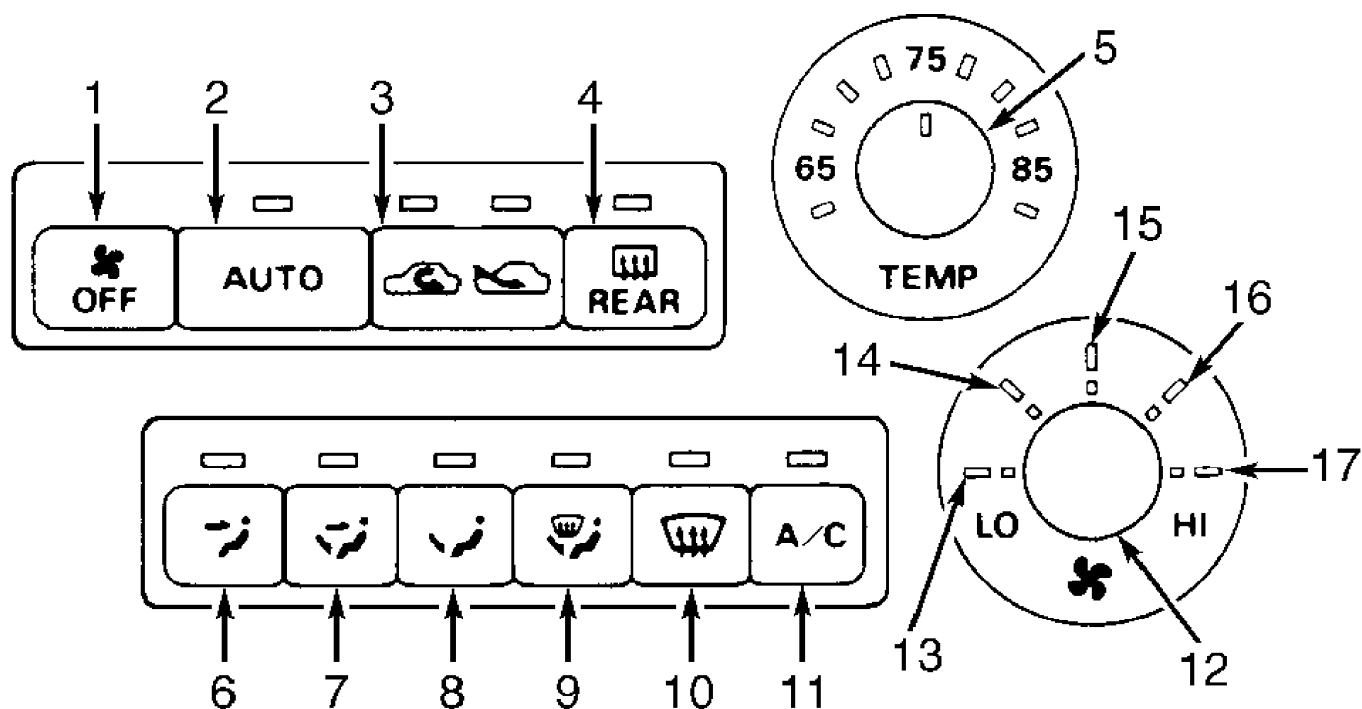
Self-diagnostic check is performed, indicating any trouble codes present. Stored trouble codes will be identified by blinking LED of appropriate A/C-heater control panel switch. See DIAGNOSTIC CODE IDENTIFICATION table. See Fig. 3. Blinking AUTO LED indicates normal operation and no trouble codes present. To enter DSC stepped operation from DSC continuous operation, depress rear defroster switch. To enter into actuator functional check from DSC continuous operation, depress recirculate/fresh air switch.

DSC Stepped Operation

Stepped operation will check each circuit one at a time. In DSC stepped operation, each time rear defrost switch is pressed, blinking LED will change by one step. See Fig. 3. To return to DSC continuous operation, depress AUTO switch. To go to actuator functional check, depress recirculate/fresh air switch.

Actuator Functional Check

Actuator functional check will verify proper operation of actuators. Each time temperature dial is rotated, actuator operation will change by one step. Check for proper actuator operation visually and by hand. To return to DSC continuous operation, depress AUTO switch. See Fig. 3. Pressing OFF switch at any time will return system to normal A/C-heater controls.



1. OFF Switch
2. AUTO Switch
3. Recirculated/Fresh Air Switch
4. Rear Defrost Switch
5. Temperature Set Dial
6. Face Mode Switch
7. Bi-Level Mode Switch
8. Foot Mode Switch
9. Foot/Defrost Mode Switch
10. Defrost Mode Switch
11. A/C Switch
12. Fan Speed Dial
13. Fan Speed: LO
14. Fan Speed: M1
15. Fan Speed: M2
16. Fan Speed: M3
17. Fan Speed: HI

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Fig. 3: Identifying A/C-Heater Control Panel Switches
Courtesy of Toyota Motor Sales, U.S.A., Inc.

DIAGNOSTIC CODE IDENTIFICATION TABLE

Blinking LED	Diagnosis
AUTO	Normal
Face (1)	Room Temperature Sensor Circuit
Bi-Level (2)	Ambient Temperature Sensor Circuit
Foot	Evaporator Temperature Sensor Circuit
Foot/Defrost	Coolant Temperature Sensor Circuit
Defrost (3)	Solar Sensor Circuit
A/C (4)	Compressor Lock Sensor Circuit
Fresh Air (4)	Pressure Switch Circuit
Recirculated Air	Air Mix Door Position Sensor Circuit
LO	Air Outlet Door Position Sensor Circuit
M2	Air Mix Door Servomotor Circuit

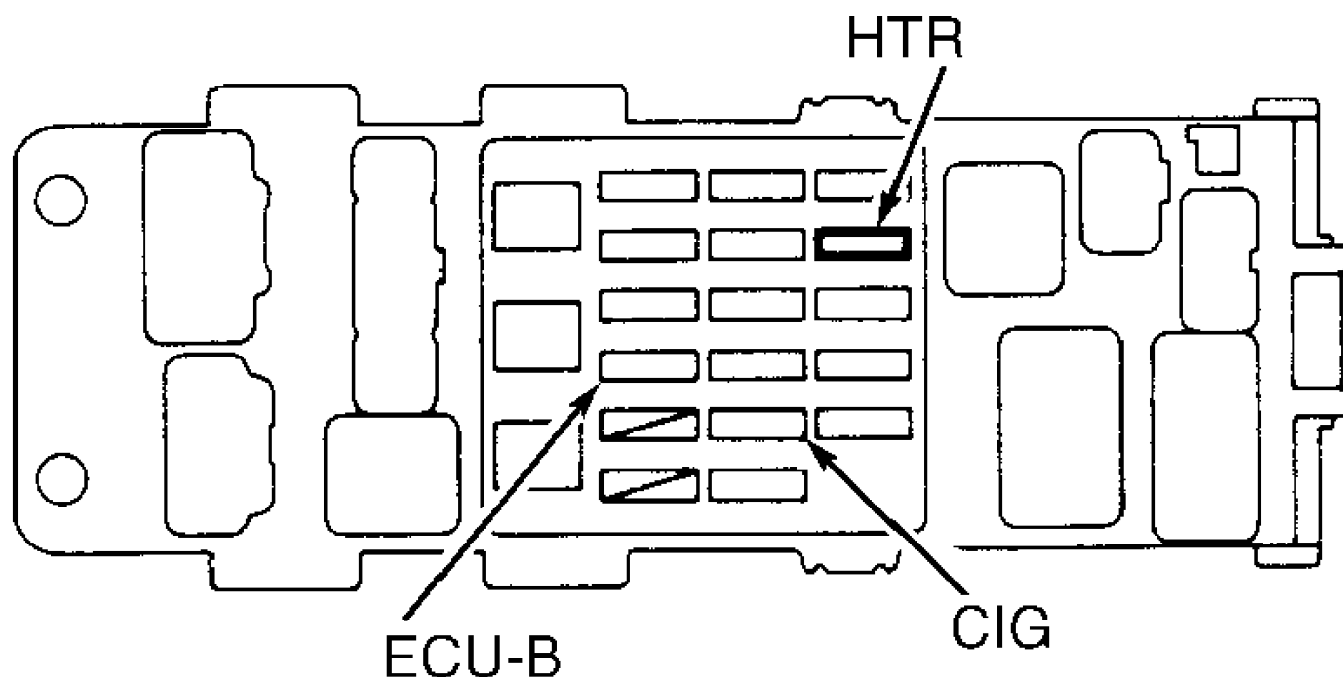
HI Air Outlet Door Servomotor Circuit

- (1) - If in-vehicle temperature is -4°F (-20°C) or less, face LED may blink even though system is normal.
 - (2) - If outside air temperature is -58°F (-50°C) or less, bi-level LED may blink even though system is normal.
 - (3) - If testing in dark area, defrost LED may blink even though system is normal. Shine a light at solar sensor and recheck codes.
 - (4) - Current compressor lock malfunction indicated.
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CLEARING CODES

1) Remove ECU-B fuse (10-amp) from junction block No. 1, located behind left kick panel. See Fig. 4. Wait at least 10 seconds before reinstalling fuse. Attempt to retrieve trouble codes. See DIAGNOSTIC SENSOR CHECK (DSC). Verify only normal code (AUTO LED blinking) is displayed.

2) An additional method for clearing codes may be performed. To do so, press rear defroster and A/C switches simultaneously during DSC continuous operation. See Fig. 3.



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Fig. 4: Locating Junction Block No. 1 Fuses
Courtesy of Toyota Motor Sales, U.S.A., Inc.

TROUBLE SHOOTING

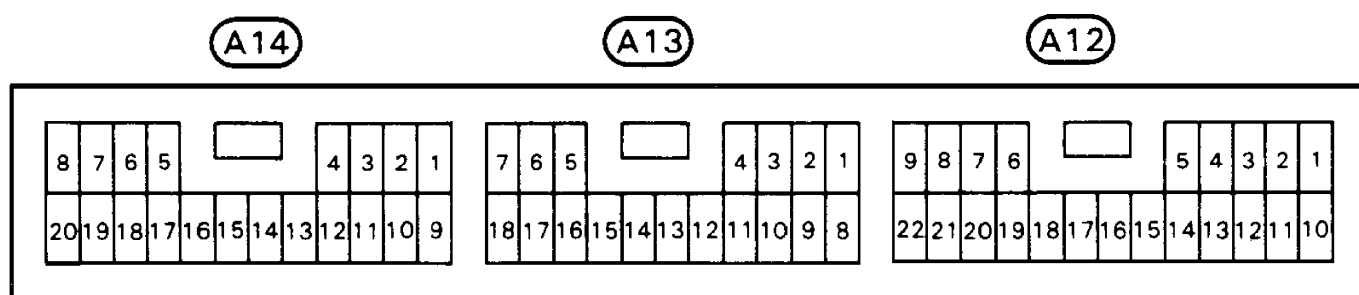
* PLEASE READ FIRST *

WARNING: To avoid injury from accidental air bag deployment, read and follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

ACCESSORY POWER SOURCE CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Set ignition switch to ACC position. Using a voltmeter, measure voltage (backprobe) between ground and terminal A12-20 (Blue/Red wire) of A/C amplifier harness connector. See Fig. 5.

2) If battery voltage is present, no problem is indicated at this time. If battery voltage is not present, inspect CIG fuse (15-amp) in junction block No. 1 located under left kick panel. See Fig. 4. If fuse is okay, check wiring harness between A/C amplifier and battery. Repair wiring as necessary. If fuse is blown, check for short circuit and replace fuse.



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Fig. 5: Identifying A/C Amplifier Connector Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR INLET DOOR SERVOMOTOR CIRCUIT

1) Start engine and allow it to reach normal operating temperature. Retrieve trouble codes. See DIAGNOSTIC SENSOR CHECK (DSC) under SELF-DIAGNOSTICS. After system enters DSC continuous operation, perform actuator functional check. Air inlet door operation should be as specified. See AIR INLET DOOR AIRFLOW table.

2) If air inlet door functions as specified, no problem is indicated at this time. If air inlet door does not function as specified, test air inlet door servomotor. See AIR INLET DOOR SERVOMOTOR TEST. Replace air inlet door servomotor as necessary. If servomotor is okay, go to next step.

3) Check wiring harness and connectors between servomotor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, substitute a known good A/C amplifier, then retest system.

AIR INLET DOOR AIRFLOW TABLE

Set Temperature °F (°C)	Door Position
Less Than 68 (20)	Recirculated Air
68-74 (20-23)	Recirculated/Fresh Air
Greater Than 74 (23)	Fresh Air

AIR MIX DOOR POSITION SENSOR CIRCUIT

NOTE: If only LED for M2 is blinking, see AIR MIX DOOR SERVOMOTOR CIRCUIT for additional trouble shooting information.

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION.

2) Turn ignition on. Using a voltmeter, measure voltage (backprobe) between terminals A13-18 (Green/White wire) and A13-9

(Blue/White wire) of A/C amplifier harness connector. See Fig. 5. Measure sensor circuit voltage while changing set temperature to activate air mix door. See AIR MIX DOOR POSITION SENSOR CIRCUIT SPECIFICATIONS table.

AIR MIX DOOR POSITION SENSOR CIRCUIT SPECIFICATIONS TABLE

Set Temperature	(1) Volts
Maximum Cool	3.5-4.5
Maximum Hot	0.5-1.5
(1) - As set temperature increases, voltage should decrease.	

3) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test air mix door position sensor. See AIR MIX DOOR POSITION SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

4) Check wiring harness and connectors between servomotor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

AIR MIX DOOR SERVOMOTOR CIRCUIT

NOTE: See AIR MIX DOOR POSITION SENSOR CIRCUIT for additional trouble shooting information.

1) Start engine and allow it to reach normal operating temperature. Retrieve trouble codes. See DIAGNOSTIC SENSOR CHECK (DSC) under SELF-DIAGNOSTICS. After system enters DSC continuous operation, perform actuator functional check. Air mix door operation should be as specified. See AIR MIX DOOR AIRFLOW table.

2) If air mix door functions as specified, no problem is indicated at this time. If air mix door does not function as specified, test air mix door servomotor. See AIR MIX DOOR SERVOMOTOR TEST. Replace air mix door servomotor as necessary. If servomotor is okay, go to next step.

3) Check wiring harness and connectors between servomotor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, substitute a known good A/C amplifier. Retest system.

AIR MIX DOOR AIRFLOW TABLE

Set Temperature °F (°C)	Air Mix Door	Airflow
Less Than 68 (20)	Fully Closed	Cool Air
68-74 (20-23)	Half Open	Blend Air
Greater Than 74 (23)	Fully Open	Hot Air

AIR OUTLET DOOR POSITION SENSOR CIRCUIT

NOTE: If only the LED for HI is blinking, refer to AIR OUTLET DOOR SERVOMOTOR CIRCUIT for additional trouble shooting information.

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION.

2) Turn ignition on. Using a voltmeter, measure voltage (backprobe) between terminals A14-10 (Light Green wire) and A13-9

(Blue/White wire) of A/C amplifier harness connector. See Fig. 5. Observe voltage reading while operating mode switches to activate air outlet door. See AIR OUTLET DOOR POSITION SENSOR CIRCUIT SPECIFICATIONS table.

AIR OUTLET DOOR POSITION SENSOR CIRCUIT SPECIFICATIONS TABLE

Mode Switch	(1) Volts
Face	3.5-4.5
Defrost	0.5-1.5

(1) - As air outlet servomotor is moved from face to defrost position, voltage should gradually decrease.

3) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test air outlet door position sensor. See AIR OUTLET DOOR POSITION SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

4) Check wiring harness and connectors between servomotor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, substitute a known good A/C amplifier. Retest system.

AIR OUTLET DOOR SERVOMOTOR CIRCUIT

NOTE: See AIR OUTLET DOOR POSITION SENSOR CIRCUIT for additional trouble shooting information.

1) Start engine and allow it to reach normal operating temperature. Retrieve trouble codes. See DIAGNOSTIC SENSOR CHECK (DSC) under SELF-DIAGNOSTICS. After system enters DSC continuous operation, perform actuator functional check. Air outlet door operation should be as specified. See AIR OUTLET DOOR AIRFLOW table. Turn temperature control dial to specified temperature while checking for airflow from specified outlet.

AIR OUTLET DOOR AIRFLOW TABLE

Set Temperature °F (°C)	Airflow
Less Than 68 (20)	Face
68-74 (20-23)	Bi-Level
74-80 (23-27)	Foot
80-86 (27-30)	Foot/Defrost
Greater Than 86 (30)	Defrost

2) If air outlet door functions as specified, no problem is indicated at this time. If air outlet door does not function as specified, test air outlet door servomotor. See AIR OUTLET DOOR SERVOMOTOR TEST. Replace air outlet door servomotor as necessary. If servomotor is okay, go to next step.

3) Check wiring harness and connectors between servomotor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier, then retest system.

AMBIENT TEMPERATURE SENSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION.

2) Turn ignition on. Using a voltmeter, measure voltage (backprobe) between terminals A13-6 (Green wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5. Observe the voltage reading while heating ambient temperature sensor. See AMBIENT TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS table.

AMBIENT TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS TABLE

Sensor Temperature °F (°C)	(1) Volts
77 (25)	1.35-1.75
104 (40)	0.85-1.25

(1) - As temperature increases, voltage should decrease.

3) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test ambient temperature sensor. See AMBIENT TEMPERATURE SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

4) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier, then retest system.

BACK-UP POWER SOURCE CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on. Using a voltmeter, measure voltage (backprobe) between ground and terminal A14-7 (White/Red wire) of A/C amplifier harness connector. See Fig. 5.

2) If battery voltage is present, no problem is indicated at this time. If battery voltage is not present, inspect ECU-B fuse (10-amp) in junction block No. 1, located behind left kick panel. See Fig. 4. If fuse is okay, check wiring harness between A/C amplifier and battery. Repair as necessary. If fuse is blown, check for short circuit and replace fuse.

BLOWER MOTOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on. Operate blower motor. Using a voltmeter, measure voltage (backprobe) between ground and terminal A14-15 (Blue wire) of A/C amplifier harness connector. See Fig. 5.

2) If reading is 1-3 volts, no problem is indicated at this time. If reading is not as specified, remove blower motor. See BLOWER MOTOR R & I.

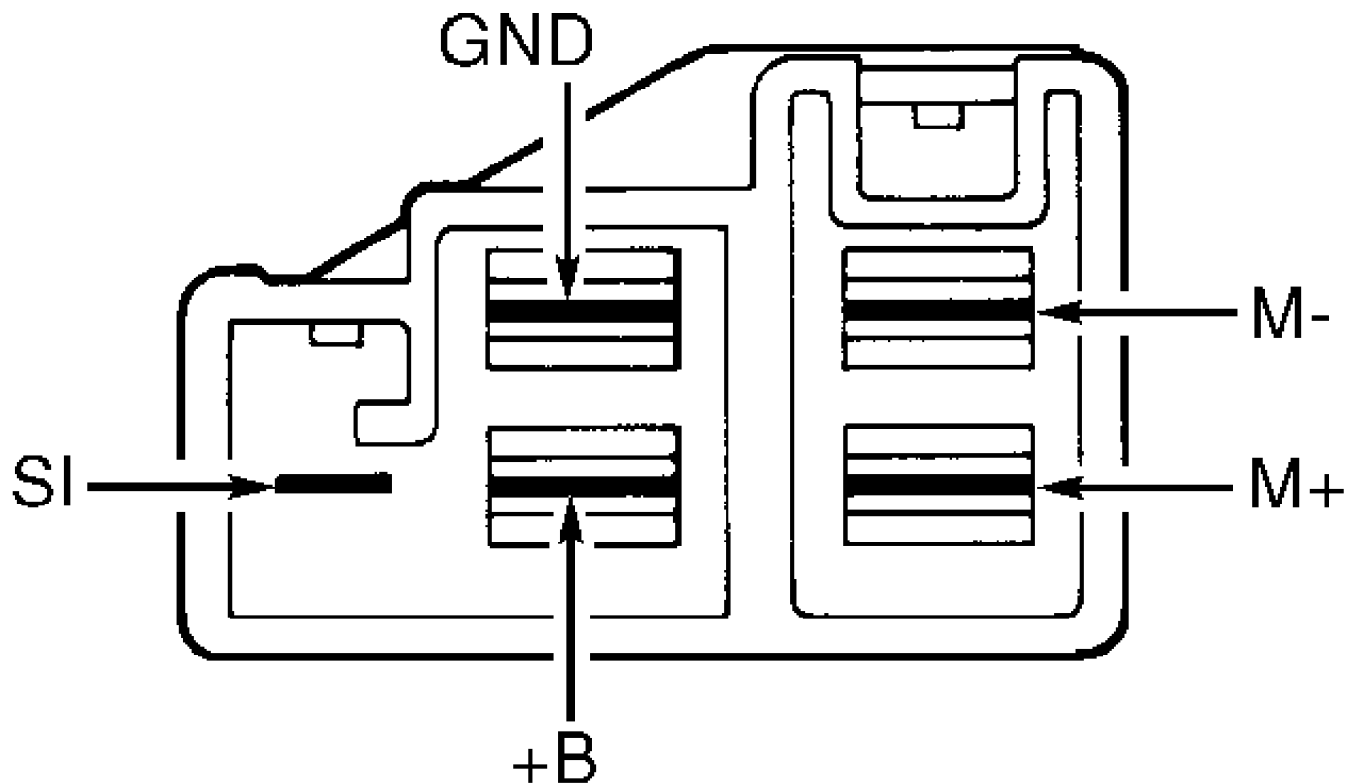
3) Using fused jumper wires, apply battery voltage to blower motor terminal No. 2 (Black wire), and ground terminal No. 1 (Brown wire). If blower motor does not operate smoothly, replace blower motor. If blower motor operates smoothly, go to next step.

4) Remove blower motor relay, leaving harness connectors attached. Turn ignition on. Operate blower motor. Backprobe specified terminals as indicated. See Fig. 6.

See BLOWER MOTOR RELAY SPECIFICATIONS table. If measurements are not as specified, replace relay. If measurements are as specified, repair wire harness or connector as necessary.

BLOWER MOTOR RELAY SPECIFICATIONS TABLE

Terminals	Specification
GND & Ground	Continuity
+B & Ground	Battery Voltage
M+ & Ground	Battery Voltage
M+ & M-	Battery Voltage
SI & Ground	1-3 Volts



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Fig. 6: Identifying Blower Motor Relay Connector Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

COMPRESSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. Start engine. Using a voltmeter, measure voltage (backprobe) between ground and terminal A12-7 (Blue wire) of A/C amplifier harness connector. See Fig. 5. Turn A/C on. When compressor clutch engages, reading should be 10-14 volts. Turn A/C off. Reading should drop to less than one volt. If reading is as specified, go to next step. If reading is not as specified, go to step 4).

2) Disconnect compressor clutch harness connector. Using fused jumper wires, apply battery voltage to compressor clutch terminal No. 4 (Blue wire). Apply ground to body of compressor. Repair or replace compressor clutch if it does not engage.

3) If compressor clutch engages, check wiring harness and connectors between compressor clutch relay and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, go to next step.

4) Start engine. Using a voltmeter, measure voltage (backprobe) between ground and terminal A14-6 (Blue/Red wire) of A/C amplifier harness connector. Turn A/C on. When compressor clutch

engages, reading should be less than one volt. Turn A/C off. Reading should rise to battery voltage. If reading is as specified, go to step 8). If reading is not as specified, go to next step.

WARNING: Following procedure involves installing Test Harness "A" (09990-01000) between harness and PCM. PCM memory will be erased. Ensure any necessary information is retrieved prior to installation of Test Harness "A".

5) Turn ignition off. Remove Powertrain Control Module (PCM) and remove harness connectors. Install Test Harness "A" (09990-01000) between PCM and harness connector. Turn ignition on. Turn A/C on.

6) Using a voltmeter, measure voltage between ground and A/C terminal of Test Harness "A". See Fig. 7. Reading should be less than one volt with compressor clutch engaged, and voltage should rise to 4-6 volts when compressor clutch is disengaged. If reading is as specified, go to next step. If reading is not as specified, temporarily substitute a known good PCM. Retest system.

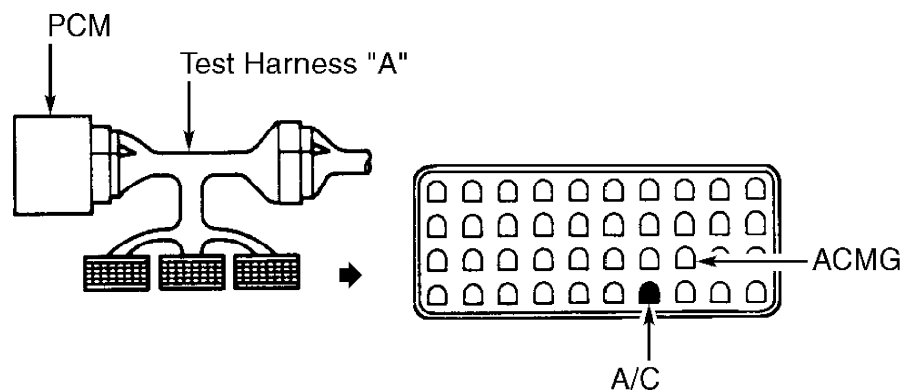
7) Check wiring harness and connectors between A/C amplifier and PCM. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

8) Remove compressor clutch relay from junction block No. 2, located in left side of engine compartment. See Fig. 8. Using an ohmmeter, check for continuity between relay terminals. Continuity should be present between terminals No. 1 and 2. See Fig. 9. Continuity should not be present between terminals No. 3 and 5.

9) Using fused jumper wires, apply battery voltage to relay terminal No. 1, and ground terminal No. 2. Continuity should now be present between terminals No. 3 and 5. If continuity is not as specified, replace compressor clutch relay. If continuity is as specified, go to next step.

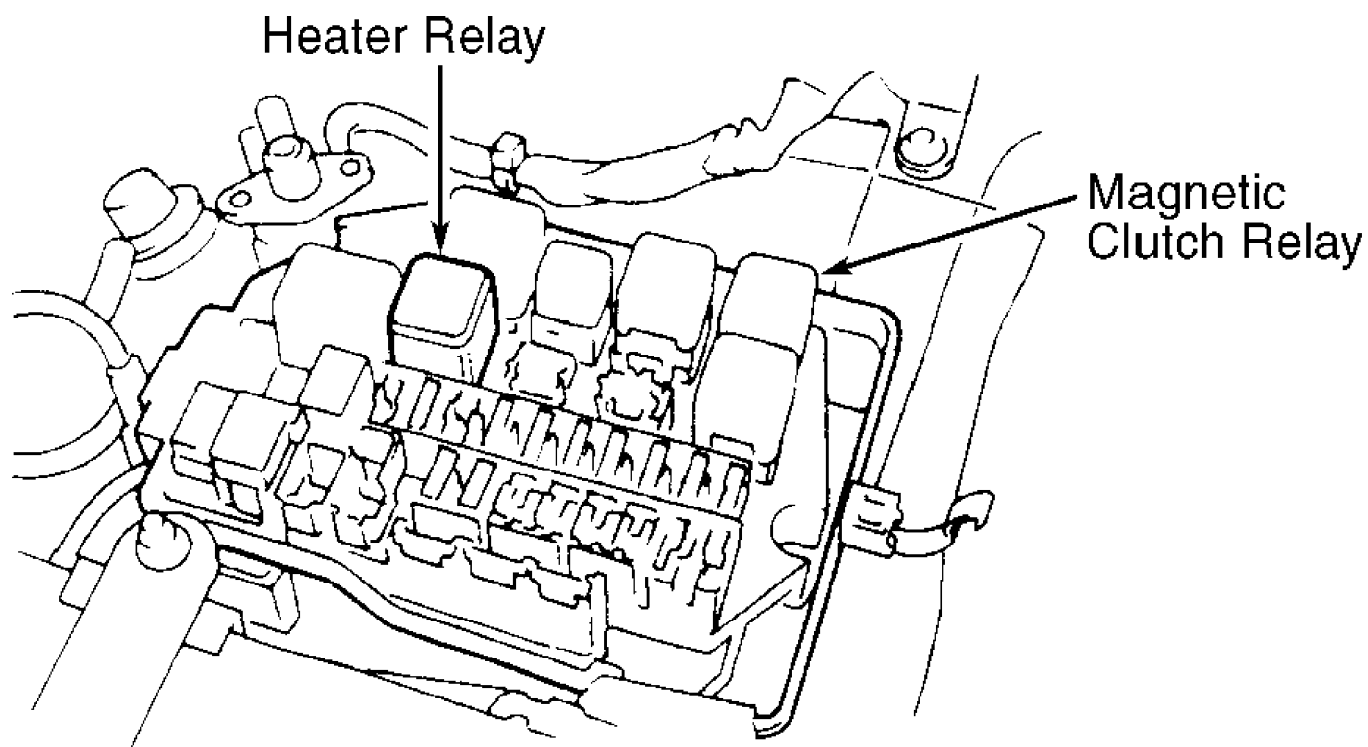
10) Turn ignition on. Set fan to any speed. Using a voltmeter, measure voltage between ground and terminal ACMG of Test Harness "A" (09990-01000). See Fig. 7. With A/C system on, reading should be about 1.3 volts. With A/C system off, reading should be between 1.3 volts and battery voltage. If reading is not as specified, go to next step. If reading is as specified, no problem is indicated at this time.

11) Check wiring between PCM and battery. Repair or replace as necessary. If wiring is okay, temporarily substitute a known good PCM and retest system.



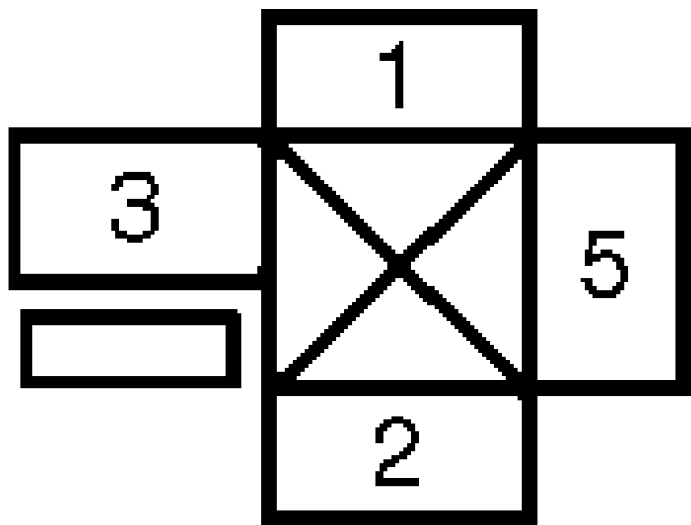
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Fig. 7: Identifying Terminals Of Test Harness "A"
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 8: Locating Heater & Compressor Clutch Relays
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 9: Identifying Compressor Clutch Relay Terminals
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

COMPRESSOR LOCK SENSOR CIRCUIT

NOTE: When installing a NEW drive belt, ensure belt tension indicator is in range "B" on tensioner scale. See Fig. 2.

1) Ensure drive belt fits properly on compressor pulley. If tension is not in range "A" on scale, replace belt. See Fig. 2. If tension is okay, go to next step.

2) Start engine. Turn blower and A/C on. Observe compressor. If compressor locks during operation, repair compressor. If compressor does not lock during operation, test compressor lock sensor. See COMPRESSOR LOCK SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

3) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

COOLANT TEMPERATURE SENSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on.

2) Using a voltmeter, backprobe between terminals A13-16 (Light Green/Red wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5.

3) Measure voltage at specified temperatures. See COOLANT TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS table.

COOLANT TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS TABLE

Sensor Temperature °F (°C)	(1) Volts
32 (0)	2.8-3.2
104 (40)	1.8-2.2
158 (70)	1.3-1.5

(1) - As temperature increases, voltage should gradually decrease.

4) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test coolant temperature sensor. See COOLANT TEMPERATURE SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

5) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

EVAPORATOR TEMPERATURE SENSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on.

2) Using a voltmeter, measure voltage (backprobe) between terminals A13-7 (Blue/Yellow wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5.

3) Measure voltage at specified temperatures. See EVAPORATOR TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS table.

EVAPORATOR TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS TABLE

Sensor Temperature °F (°C)	(1) Volts
32 (0)	2.0-2.4

59 (15) 1.4-1.8

- (1) - As temperature increases, voltage should gradually decrease.

4) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test evaporator temperature sensor. See EVAPORATOR TEMPERATURE SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

5) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

HEATER RELAY CIRCUIT

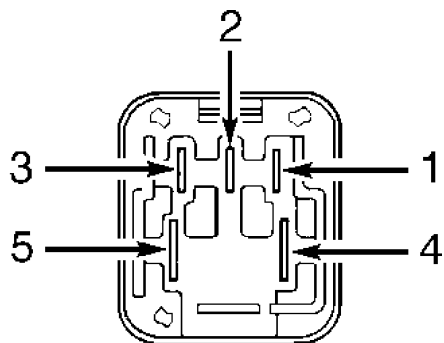
1) Remove A/C amplifier, leaving harness attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Using a voltmeter, measure voltage (backprobe) between ground and terminal A14-16 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5.

2) Turn ignition off, reading should be zero volts. Turn ignition on. Turn blower off, reading should be B+. Turn blower off, reading should be less than 1 volt. If reading is not as specified, go to next step. If reading is as specified, no problem is indicated at this time.

3) Remove heater relay from junction block No. 2, located on left side of engine compartment. See Fig. 8. Using an ohmmeter, check for continuity between relay terminals. Continuity should be present between terminals No. 1 and 3, and between terminals No. 2 and 4. See Fig. 10. Continuity should not be present between relay terminals No. 4 and 5.

4) Using fused jumper wires, apply battery voltage to terminal No. 1, and ground terminal No. 3. Continuity should now be present between terminals No. 4 and 5. Continuity should no longer be present between terminals No. 2 and 4.

5) If continuity is not as specified, replace heater relay. If continuity is as specified, inspect HTR fuse (7.5-amp) in junction block No. 1, located behind left kick panel. See Fig. 4. If fuse is okay, check wiring between A/C amplifier and battery. Repair as necessary. If fuse is blown, check for short circuit and replace fuse.



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Fig. 10: Identifying Heater Relay Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

IGNITION POWER SOURCE CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on. Using a voltmeter, measure voltage (backprobe) between terminals A14-8 (Red/Blue wire) and A14-9 (White/Black wire) of A/C amplifier harness connector. See Fig. 5.

2) If battery voltage is present, no problem is indicated at this time. If battery voltage is not present, turn ignition off. Using an ohmmeter, check for continuity between ground and A/C amplifier harness connector terminal A14-9 (White/Black wire). If continuity is present, go to next step. If continuity is not present, repair open in White/Black wire between terminal A14-9 and ground.

3) Inspect HTR fuse (7.5-amp) in junction block No. 1, located behind left kick panel. See Fig. 4. If fuse is okay, check wiring harness and connector between A/C amplifier and battery. Repair as necessary. If fuse is blown, check for short circuit and replace fuse.

ROOM TEMPERATURE SENSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Turn ignition on.

2) Using a voltmeter, measure voltage (backprobe) between terminals A13-5 (Gray/Red wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5. Observe voltage reading while heating room temperature sensor.

See ROOM TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS table.

ROOM TEMPERATURE SENSOR CIRCUIT SPECIFICATIONS TABLE

Sensor Temperature °F (°C)	(1) Volts
77 (25)	1.8-2.2
104 (40)	1.2-1.6

(1) - As temperature increases, voltage should gradually decrease.

3) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test room temperature sensor. See ROOM TEMPERATURE SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

4) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier and retest system.

PRESSURE SWITCH CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER under REMOVAL & INSTALLATION. Install A/C manifold gauge set.

2) Turn ignition on. Using a voltmeter, measure voltage (backprobe) between ground and terminal A13-14 (Blue/Yellow wire) of A/C amplifier harness connector. See Fig. 5.

3) Start engine. Turn blower and A/C on. Battery voltage should be present with low-side pressure less than 28 psi (2.0 kg/cm²). Battery voltage should be present with high-side pressure greater than 455 psi (32 kg/cm²). If voltage is as specified, temporarily substitute a known good A/C amplifier, then retest system.

4) If voltage is not as specified, test pressure switch. See PRESSURE SWITCH TEST. Replace pressure switch as necessary. If switch

is okay, go to next step.

5) Check wiring harness and connectors between pressure switch and A/C amplifier and/or between pressure switch and ground. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

SOLAR SENSOR CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER R & I. Turn ignition on.

2) Using a voltmeter, measure voltage (backprobe) between terminals A13-2 (Brown/White wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5. Measure voltage under specified conditions. See SOLAR SENSOR CIRCUIT SPECIFICATIONS table.

SOLAR SENSOR CIRCUIT SPECIFICATIONS TABLE

Condition	(1) Volts
Sensor Subjected To Bright Light	Less Than 0.8
Sensor Covered By Cloth	0.8-4.3

(1) - As light intensity decreases, voltage should increase.

3) If voltage is as specified and LED is still blinking, temporarily substitute a known good A/C amplifier, then retest system. If voltage is not as specified, test solar sensor. See SOLAR SENSOR TEST. Replace sensor as necessary. If sensor is okay, go to next step.

4) Check wiring harness and connectors between sensor and A/C amplifier. Repair as necessary. If wiring harness and connectors are okay, temporarily substitute a known good A/C amplifier. Retest system.

TEMPERATURE SET DIAL CIRCUIT

1) Remove A/C amplifier, leaving harness connectors attached. See A/C AMPLIFIER R & I. Turn ignition on. Using a voltmeter, measure voltage (backprobe) between terminals A14-11 (Blue/Black wire) and A13-9 (Blue/White wire) of A/C amplifier harness connector. See Fig. 5.

2) With temperature dial set to indicated temperatures, voltage reading should be as specified. See TEMPERATURE SET DIAL VOLTAGE SPECIFICATIONS table. If reading is not as specified, go to next step. If reading is as specified, no problem is indicated at this time.

3) Remove A/C-heater control panel, leaving harness connectors attached. Using a voltmeter, measure voltage at specified terminals. See A/C CONTROL ASSEMBLY VOLTAGE SPECIFICATIONS table. If reading is not as specified, go to next step. If reading is as specified, repair or replace harness or connector between A/C amplifier and A/C-heater control panel.

4) Check harness and connectors in Brown/White wire and Blue/White wire circuits. Repair or replace as necessary. If harness and connectors are okay, temporarily substitute a known good A/C-heater control panel. Retest system.

TEMPERATURE SET DIAL VOLTAGE SPECIFICATIONS TABLE

Set Temperature °F (°C)	Volts
68 (20)	3.88
77 (25)	2.50

A/C CONTROL ASSEMBLY VOLTAGE SPECIFICATIONS TABLE

Between Terminal No.	Volts
H12-9 & H12-2	(1)
H12-9 & H12-10	4.5-5.5
H12-9 & H12-11	Less Than 1

(1) - Test for voltage as indicated in
TEMPERATURE SET DIAL VOLTAGE SPECIFICATIONS table.

TESTING

* PLEASE READ FIRST *

WARNING: To avoid injury from accidental air bag deployment, read and follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

A/C SYSTEM PERFORMANCE TEST

Connect A/C manifold gauge set. Operate engine at 1500 RPM. Set blower fan control on highest speed. Set temperature control switch to maximum cool position. Set airflow to recirculated air mode. Temperature at air inlet should be 86-95°F (30-35°C). System operating pressures should be within specifications.

See A/C SYSTEM SPECIFICATIONS table at beginning of article.

A/C CONTROL ASSEMBLY TEST

1) Press each switch and operate fan speed dial on A/C-heater control panel. Each LED should illuminate when appropriate switch is operated. If operation is as specified, A/C-heater control panel is okay. If some LEDs DO NOT illuminate, go to next step. If no LEDs illuminate, check ignition (IG) switch circuit. See IGNITION POWER SOURCE CIRCUIT under TROUBLE SHOOTING.

2) Disconnect A/C-heater control panel harness connector. Using a voltmeter, check for voltage between terminal of LED under test and terminal H12-9 (White/Black wire). See Fig. 11.

3) With switch on, voltage should be less than one volt. With switch off, battery voltage should be present. If voltage is not as specified, go to next step. If voltage is as specified, repair or replace A/C-heater control panel.

4) Using an ohmmeter, check for continuity between A/C-heater control panel and A/C amplifier. If continuity is present, go to next step. If continuity is not present, repair as necessary.

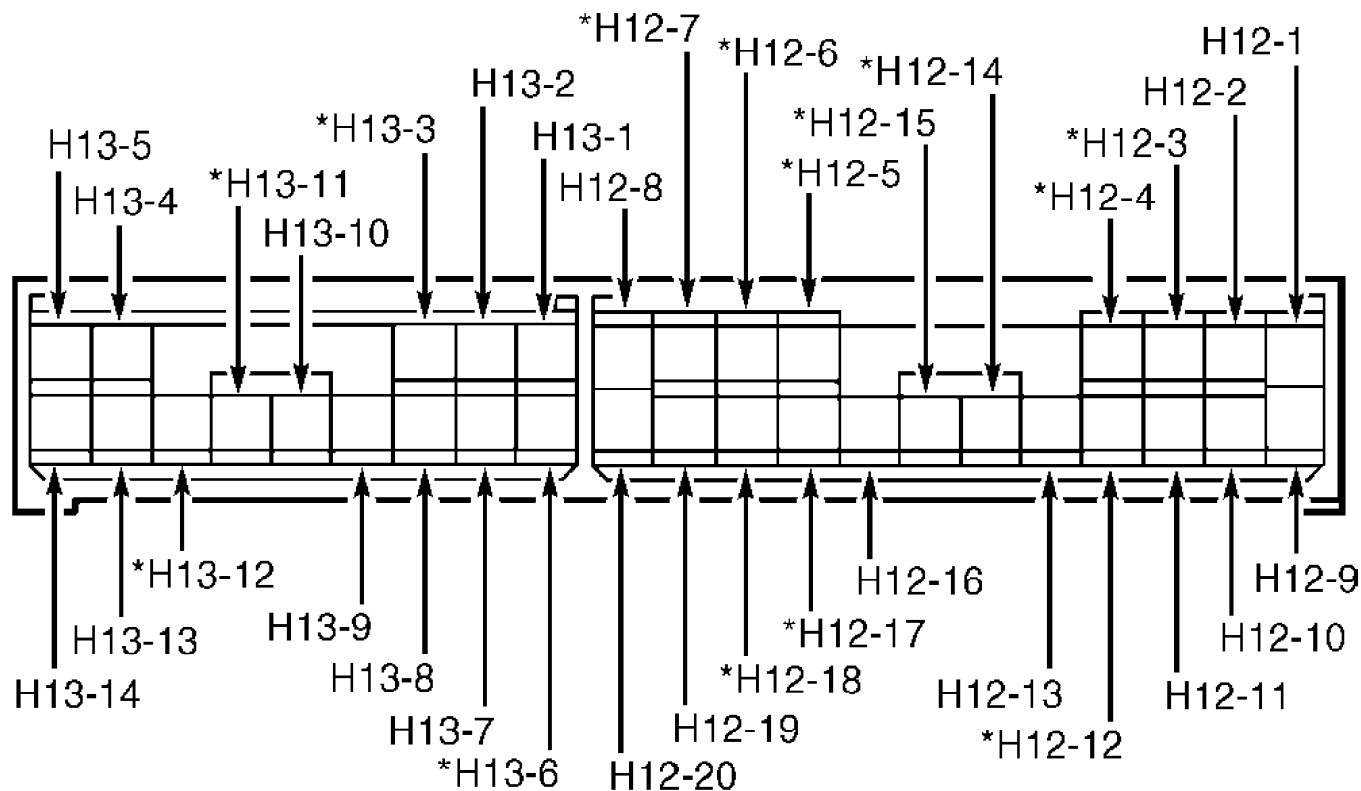
5) Remove A/C-heater control panel. Unplug all harness connectors. Using an ohmmeter, check for continuity between indicated terminals. See SWITCH TERMINAL IDENTIFICATION table. With switch pressed, continuity should be present. When switch is off, continuity should not be present.

6) If continuity is not as specified, substitute a known good A/C-heater control panel, then retest system. If continuity is as specified, substitute a known good A/C amplifier, then retest system.

SWITCH TERMINAL IDENTIFICATION TABLE

Switch Position	Check Continuity Between Terminal No.
Off	H12-16 & H13-7
Recirculated/Fresh Air	H12-16 & H13-2
Defrost	H12-13 & H12-16
Foot	H13-1 & H13-7
Foot/Defrost	H13-1 & H13-2
A/C	H12-13 & H13-1
Rear Defrost	H13-7 & H13-10
Face	H13-2 & H13-10
Fan Speed Dial (1)	H12-13 & H13-10
Auto	H13-7 & H13-9
Bi-Level	H13-2 & H13-9
Fan Speed Dial (2)	H12-13 & H13-9

- (1) - Rotate fan speed dial counterclockwise.
(2) - Rotate fan speed dial clockwise.



NOTE: Asterisk (*) indicates LED circuit.

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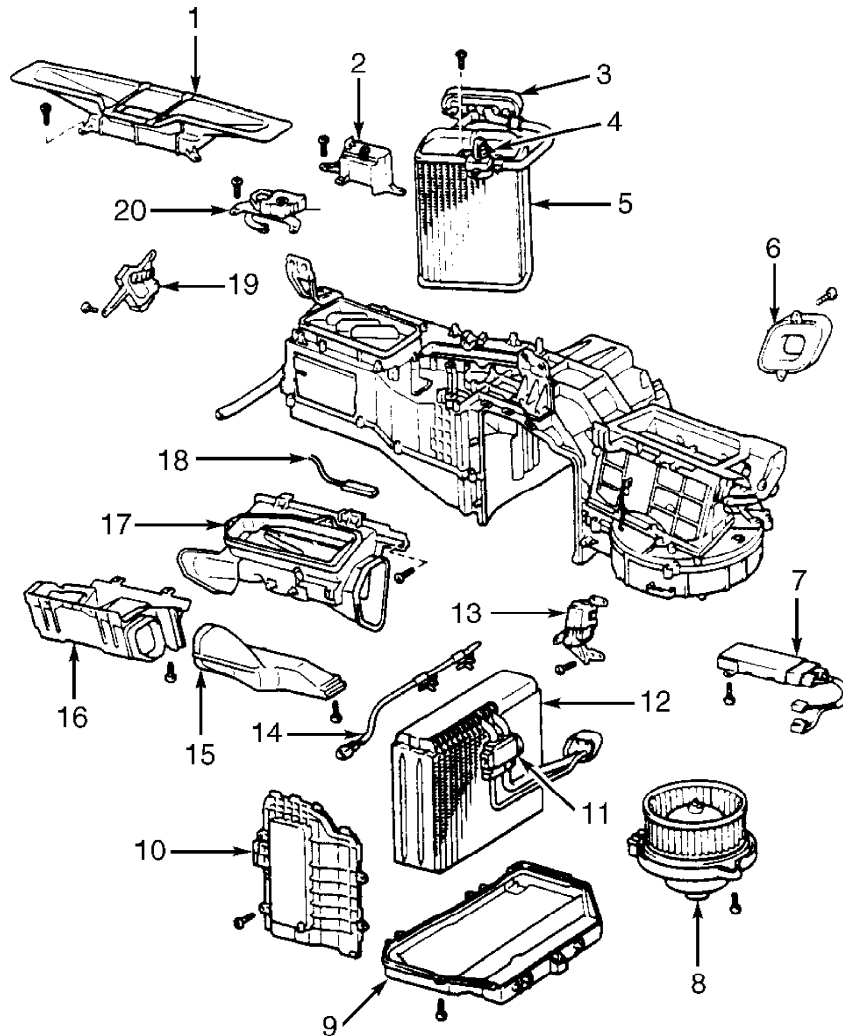
Fig. 11: Identifying A/C-Heater Control Panel Connector Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR INLET DOOR SERVOMOTOR TEST

1) Remove instrument panel. See INSTRUMENT PANEL R & I.
Remove air inlet door servomotor. See Fig. 12. Using fused jumper wires, apply battery voltage to terminal No. 2, and ground terminal No. 5. Lever should move smoothly to recirculated air position. See

Fig. 13.

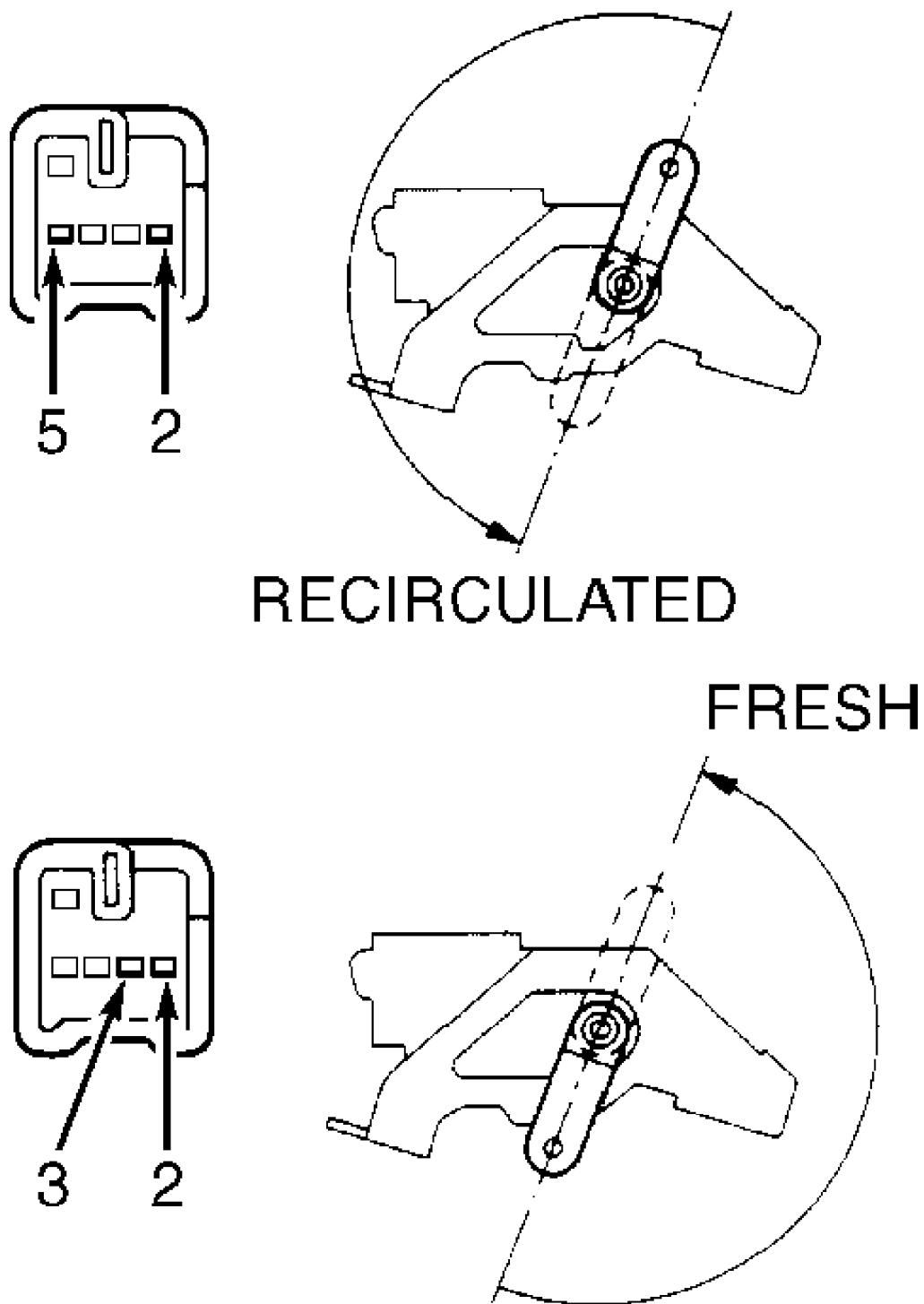
2) Connect battery positive lead to terminal No. 2, and negative lead to terminal No. 3. Lever should move smoothly to fresh air position. If operation is not as specified, replace servomotor.



- | | |
|-------------------------|-----------------------------------|
| 1. Defroster Nozzle | 12. Evaporator |
| 2. Water Valve Cover | 13. Air Inlet Servomotor |
| 3. Plate | 14. Evaporator Temperature Sensor |
| 4. Water Valve | 15. Foot Air Duct |
| 5. Heater Core | 16. Heater Air Duct |
| 6. A/C Unit Block Joint | 17. Vent Air Duct |
| 7. Blower Motor Relay | 18. Coolant Temperature Sensor |
| 8. Blower Motor | 19. Air Outlet Servomotor |
| 9. Lower Case | 20. Air Mix Servomotor |
| 10. Evaporator Cover | |
| 11. Expansion Valve | |

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Fig. 12: Exploded View Of A/C Unit Components
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 13: Testing Air Inlet Servomotor
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR MIX DOOR POSITION SENSOR TEST

1) Remove instrument panel. See INSTRUMENT PANEL R & I. Unplug air mix door servomotor harness connector. See Fig. 12. Using an ohmmeter, measure resistance between terminals No. 4 and 5. See Fig. 14. Resistance should be 4800-7200 ohms.

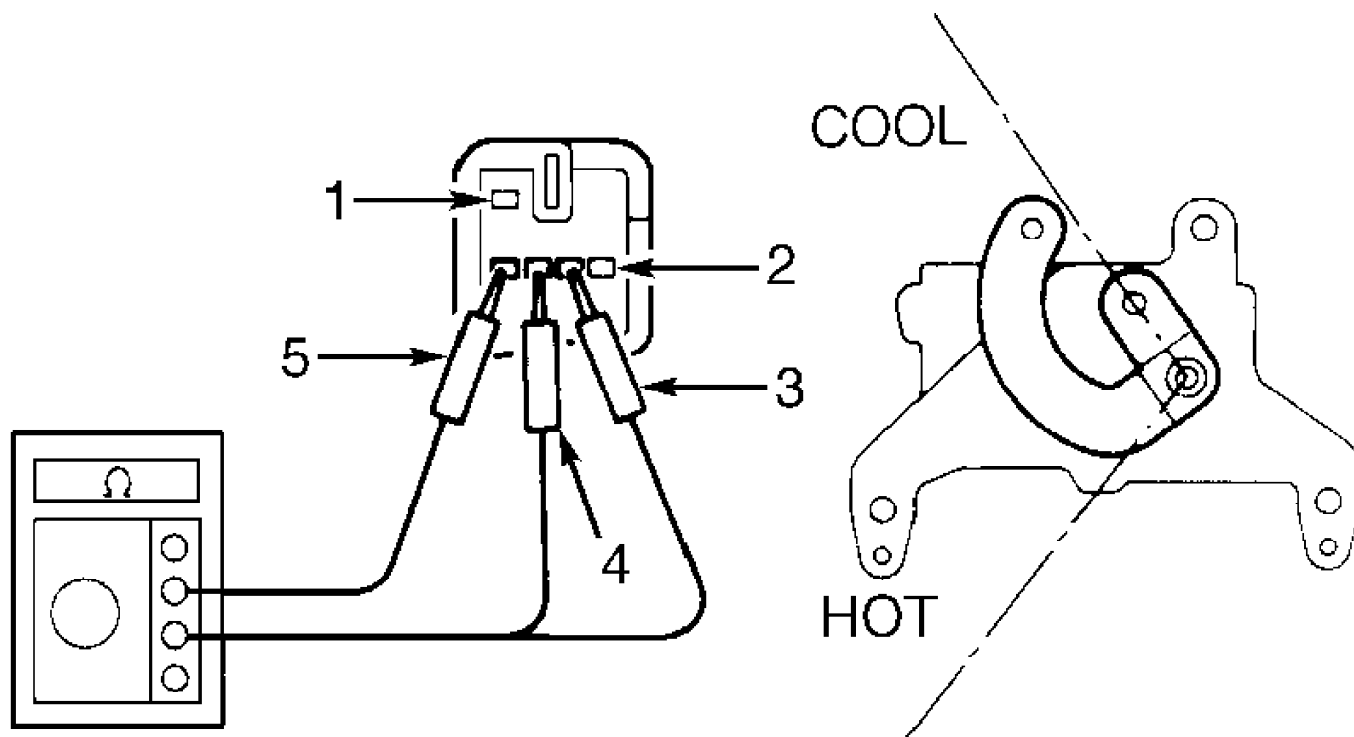
2) Using fused jumper wires, apply battery voltage to terminal No. 2, and ground terminal No. 1. Servomotor lever should move smoothly to hot position. Reverse jumper leads. Lever should move smoothly to cool position.

3) While operating servomotor in this manner, measure resistance between terminals No. 3 and 5. See AIR MIX DOOR POSITION SENSOR RESISTANCES table. If resistances are not as specified, replace sensor.

AIR MIX DOOR POSITION SENSOR RESISTANCES TABLE

Position	(1) Ohms
Maximum Cool	3840-5760
Maximum Hot	960-1440

(1) - Moving lever from cool to hot, resistance should decrease.



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Fig. 14: Testing Air Mix Door Position Sensor
Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR MIX DOOR SERVOMOTOR TEST

Remove air mix door servomotor. See Fig. 12. Using fused jumper wires, apply battery voltage to terminal No. 1, and ground terminal No. 2. Lever should move smoothly to hot position. See Fig. 14. Reverse jumper wires. Lever should move smoothly to cool

position. If operation is not as specified, replace servomotor.

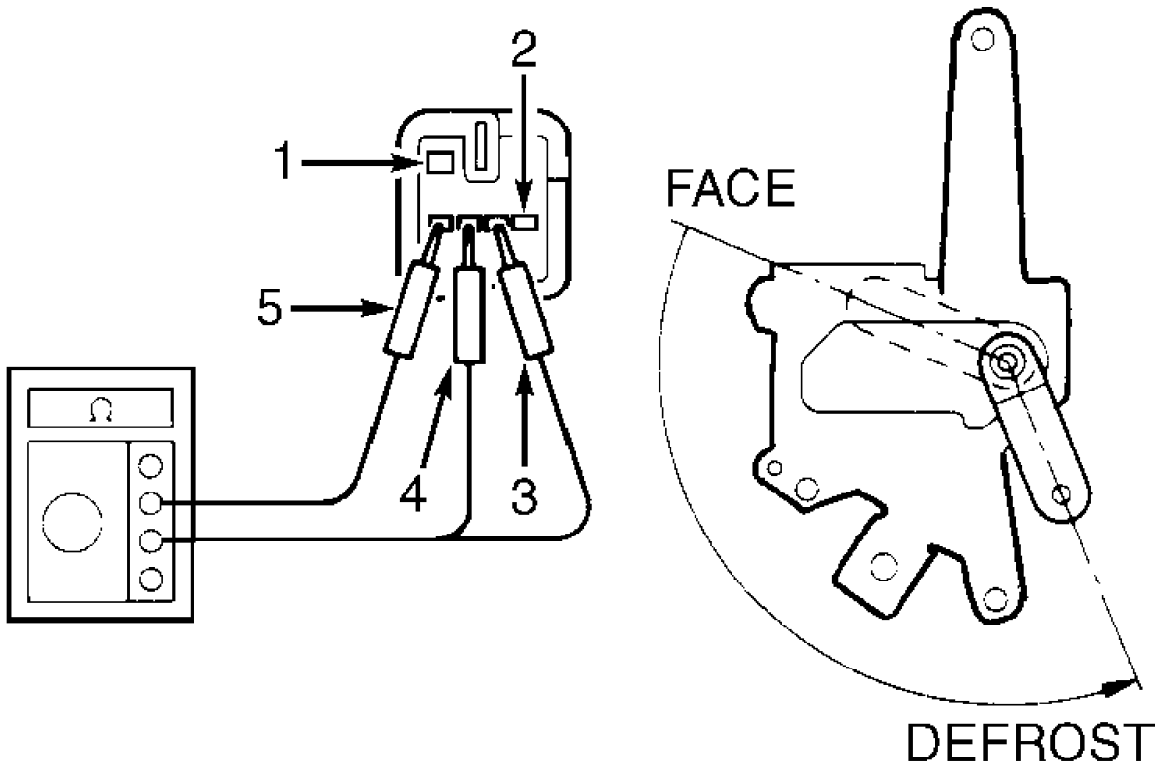
AIR OUTLET DOOR POSITION SENSOR TEST

- 1) Remove instrument panel. See INSTRUMENT PANEL R & I. Unplug air outlet door servomotor harness connector. See Fig. 12. Using an ohmmeter, measure resistance between terminals No. 4 and 5. See Fig. 15. Resistance should be 4700-7200 ohms.
- 2) Using fused jumper wires, apply battery voltage to terminal No. 1, and ground terminal No. 2. Servomotor lever should move smoothly to defrost position. Reverse jumper wires. Lever should move smoothly to face position.
- 3) While operating servomotor in this manner, measure resistance between terminals No. 3 and 5. See AIR OUTLET DOOR POSITION SENSOR RESISTANCES table. If resistances are not as specified, replace sensor.

AIR OUTLET DOOR POSITION SENSOR RESISTANCES TABLE

Position	(1) Ohms
Face	3840-5760
Defrost	960-1440

(1) - Moving lever from face to defrost, resistance should decrease.



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Fig. 15: Testing Air Outlet Door Position Sensor
Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR OUTLET DOOR SERVOMOTOR TEST

Remove instrument panel. See INSTRUMENT PANEL R & I. Remove air outlet door servomotor. See Fig. 12. Using fused jumper wires, apply battery voltage to terminal No. 1, and ground terminal No. 2. Lever should move smoothly to defrost position. See Fig. 15. Reverse jumper wires. Lever should move smoothly to face position. If operation is not as specified, replace servomotor.

AMBIENT TEMPERATURE SENSOR TEST

NOTE: When installing ambient temperature sensor, connect sensor before connecting battery.

Remove clip and sensor from right side of bumper reinforcement. Unplug ambient temperature sensor harness connector. Using an ohmmeter, measure resistance between sensor terminals at specified temperatures. See AMBIENT TEMPERATURE SENSOR RESISTANCES table. If resistances are not as specified, replace sensor.

AMBIENT TEMPERATURE SENSOR RESISTANCES TABLE

Sensor Temperature °F (°C)	(1) Ohms
77 (25)	1600-1800
122 (50)	500-700

(1) - As temperature increases, resistance should gradually decrease.

COMPRESSOR LOCK SENSOR TEST

Unplug compressor lock sensor harness connector, located on compressor. Using an ohmmeter, measure resistance between sensor terminals. With ambient temperature of 68°F (20°C), resistance should be 160-210 ohms. If resistance is not as specified, replace sensor.

CONDENSER FAN MOTOR TEST

Disconnect negative battery cable. Unplug condenser fan harness connector. Using fused jumper wires, apply battery voltage and ground to condenser fan motor harness connector. Condenser fan should rotate smoothly. Connect an ammeter in series and measure condenser fan motor current draw. Current should be 6.0-7.4 amps. If operation is not as specified, replace condenser fan motor.

COOLANT TEMPERATURE SENSOR TEST

1) Remove coolant temperature sensor. See COOLANT TEMPERATURE SENSOR R & I. Place sensor and a thermometer in a pan of water. Heat or cool water as necessary.

2) Using an ohmmeter, measure resistance between sensor terminals at indicated temperatures. See COOLANT TEMPERATURE SENSOR RESISTANCES table. If resistances are not as specified, replace sensor.

COOLANT TEMPERATURE SENSOR RESISTANCES TABLE

Ambient Temperature °F (°C)	(1) Ohms
32 (0)	Less Than 50,000
104 (40)	2400-2800
212 (100)	Greater Than 200

(1) - As temperature increases, resistance should gradually decrease.

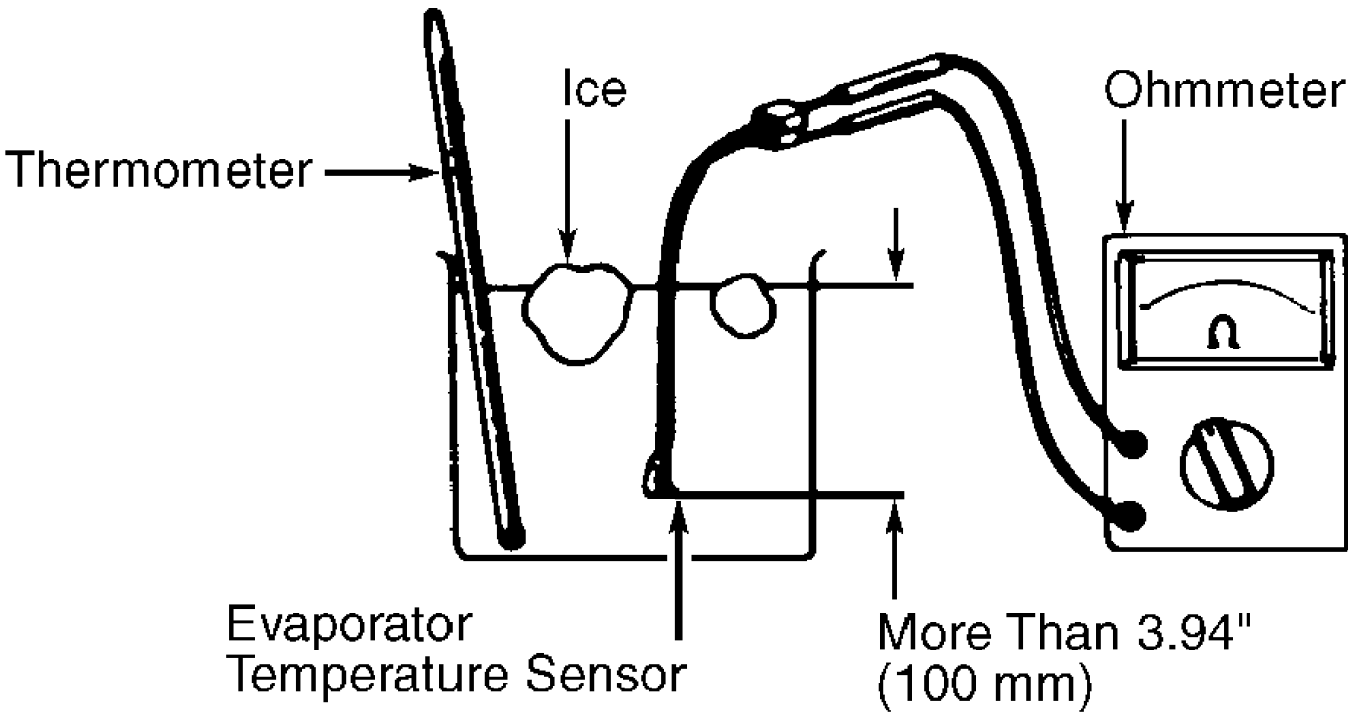
EVAPORATOR TEMPERATURE SENSOR TEST

- 1) Remove evaporator temperature sensor. Submerge sensor at least 3.94" (100 mm) deep in cold water. See Fig. 16. Place thermometer in water.
- 2) Using an ohmmeter, measure resistance between sensor terminals at specified temperatures. See EVAPORATOR TEMPERATURE SENSOR RESISTANCES table. If resistances are not as specified, replace sensor.

EVAPORATOR TEMPERATURE SENSOR RESISTANCES TABLE

Ambient Temperature °F (°C)	(1) Ohms
32 (0)	4500-5200
59 (15)	2000-2700

(1) - As temperature increases, resistance should gradually decrease.



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Fig. 16: Testing Evaporator Temperature Sensor
Courtesy of Toyota Motor Sales, U.S.A., Inc.

EXPANSION VALVE TEST

Ensure refrigerant quantity is sufficient. Connect A/C manifold gauge set. Run engine at 1500 RPM for at least 5 minutes with A/C on. High-side pressure should be 199-228 psi (14-16 kg/cm²). If low-side pressure drops to zero psi, expansion valve is clogged.

Replace expansion valve.

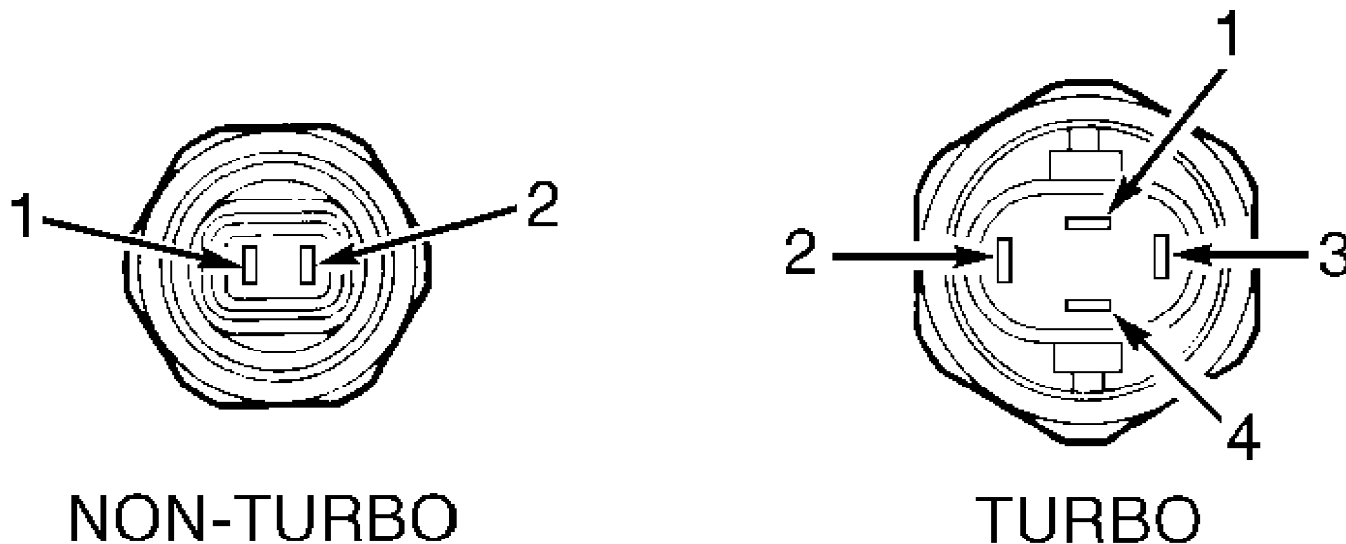
ROOM TEMPERATURE SENSOR TEST

Remove instrument panel. See INSTRUMENT PANEL R & I. Unplug room temperature sensor harness connector. See Fig. 1. Using an ohmmeter, measure resistance between sensor terminals. With ambient temperature of 77°F (25°C), resistance should be 1600–1800 ohms. If resistance is not as specified, replace sensor.

PRESSURE SWITCH TEST

1) Unplug pressure switch harness connector. See Fig. 1. Turn ignition on. Using an ohmmeter, check for continuity between terminals No. 1 and 2 (non-turbo), or terminals No. 1 and 4 (turbo). See Fig. 17.

2) With a low-side pressure less than 28 psi (2.0 kg/cm²), or a high-side pressure greater than 455 psi (32 kg/cm²), continuity should not be present. If continuity is present, replace pressure switch.



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Fig. 17: Identifying Pressure Switch Connector Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

RADIATOR FAN MOTOR TEST

Disconnect negative battery cable. Unplug radiator fan motor harness connector. Using fused jumper wires, apply battery voltage and ground to radiator fan motor harness connector. Radiator fan should rotate smoothly. Connect an ammeter in series and measure radiator fan motor current draw. Current should be 2.5–4.5 amps. If operation is not as specified, replace radiator fan motor.

RADIATOR FAN RELAYS TEST

Radiator Fan Relay No. 1

1) Remove radiator fan relay No. 1. See Figs. 1 and 18. Using an ohmmeter, check for continuity between terminals No. 3 and 4. See Fig. 19. Continuity should be present. Ensure continuity is not

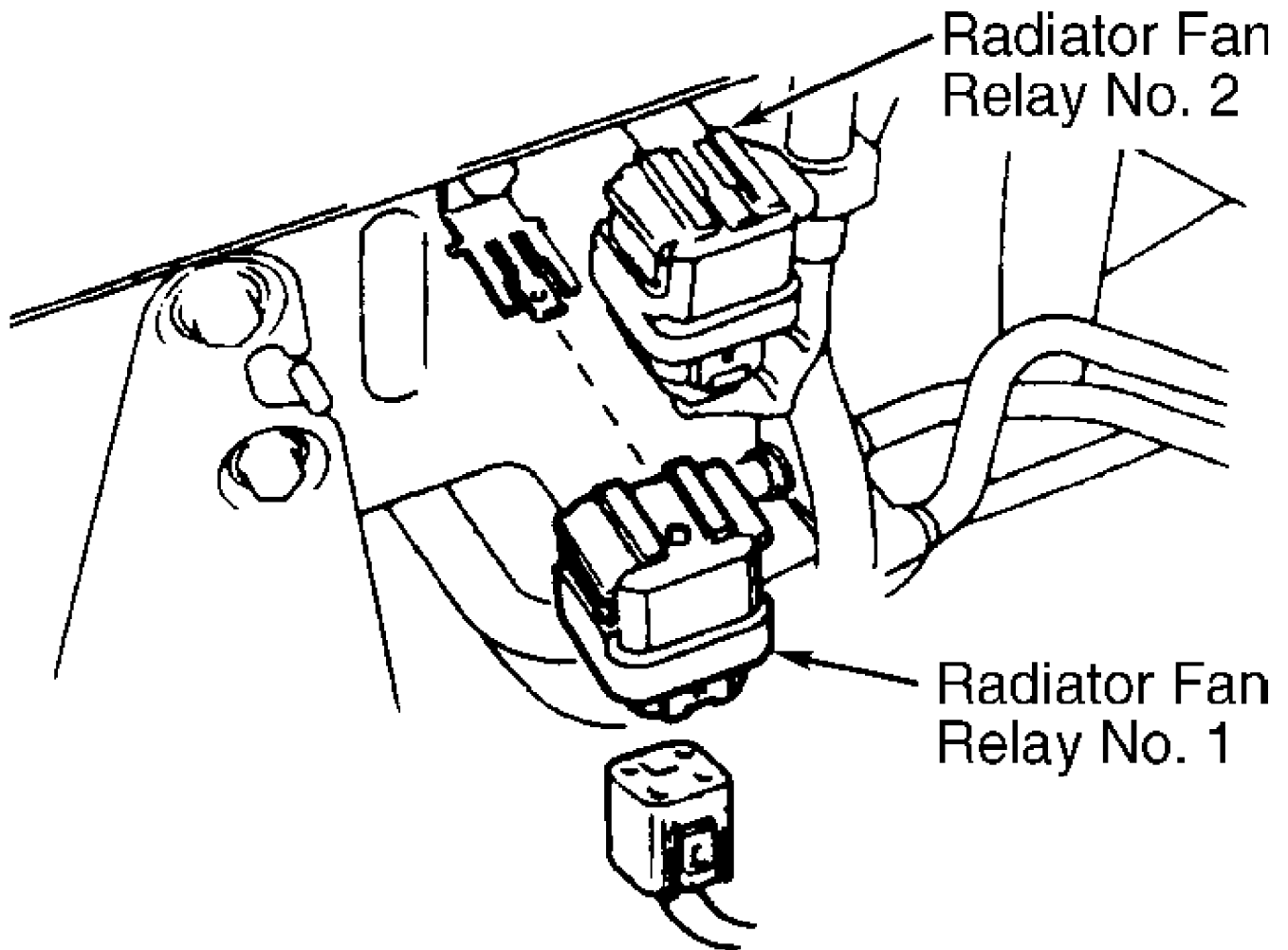
present between terminals No. 1 and 2.

2) Using fused jumper wires, apply battery voltage to terminal No. 3, and ground terminal No. 4. Continuity should now be present between terminals No. 1 and 2. If continuity is not as specified, replace relay.

Radiator Fan Relay No. 2

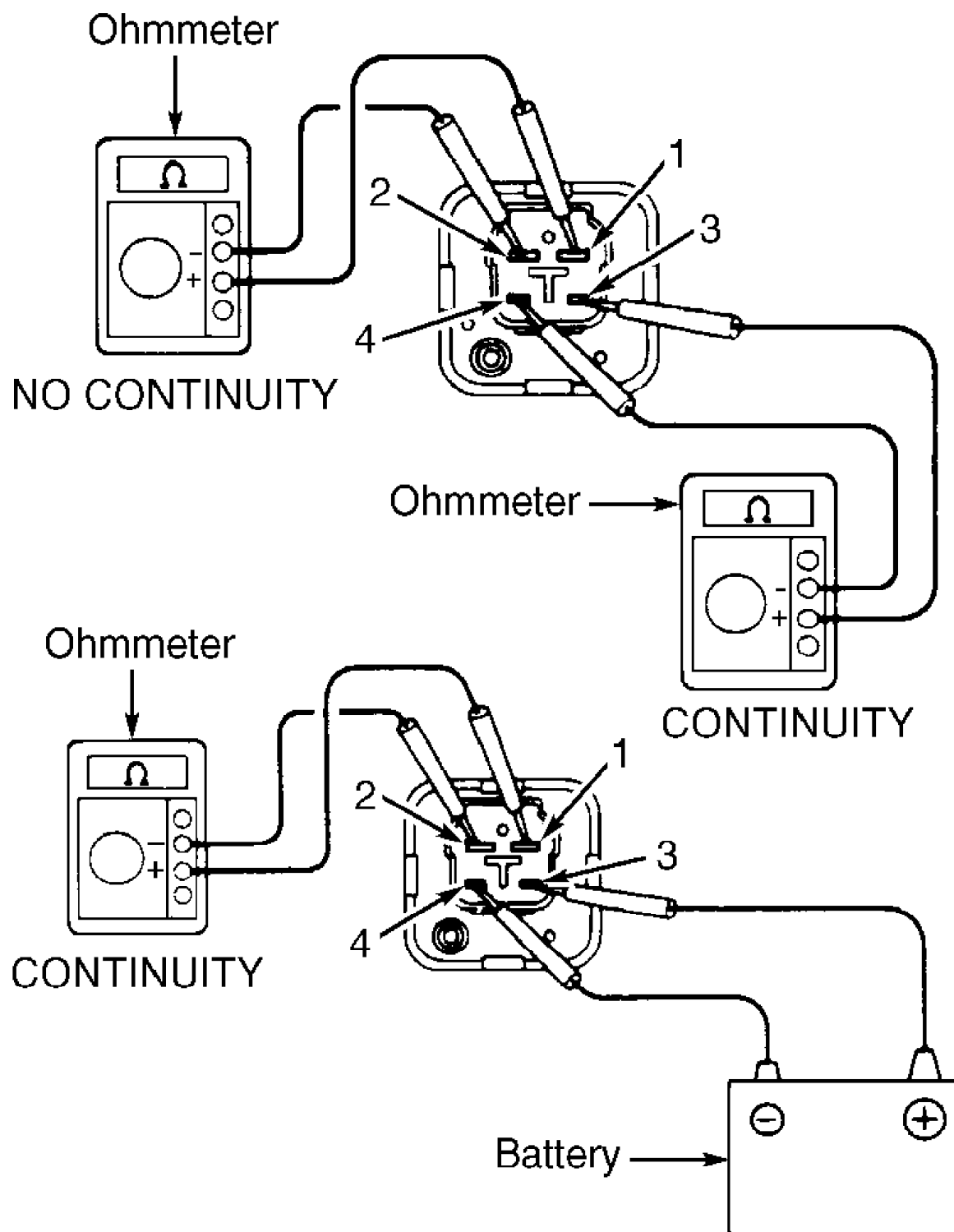
1) Remove radiator fan relay No. 2. See Figs. 1 and 18. Using an ohmmeter, check for continuity between terminals No. 1 and 6, and between terminals No. 3 and 5. See Fig. 20. Continuity should be present. Ensure continuity is not present between terminals No. 2 and 5.

2) Using fused jumper wires, apply battery voltage to terminal No. 1, and ground terminal No. 6. Ensure continuity is no longer present between terminals No. 3 and 5. Continuity should be present between terminals No. 2 and 5. If continuity is not as specified, replace relay.



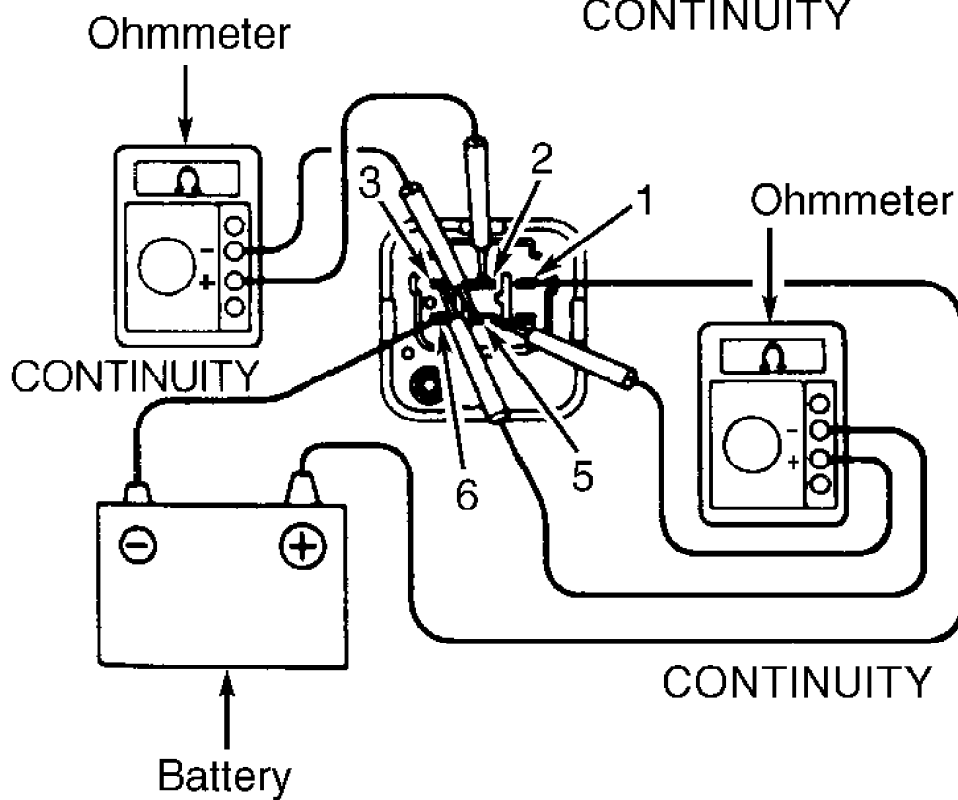
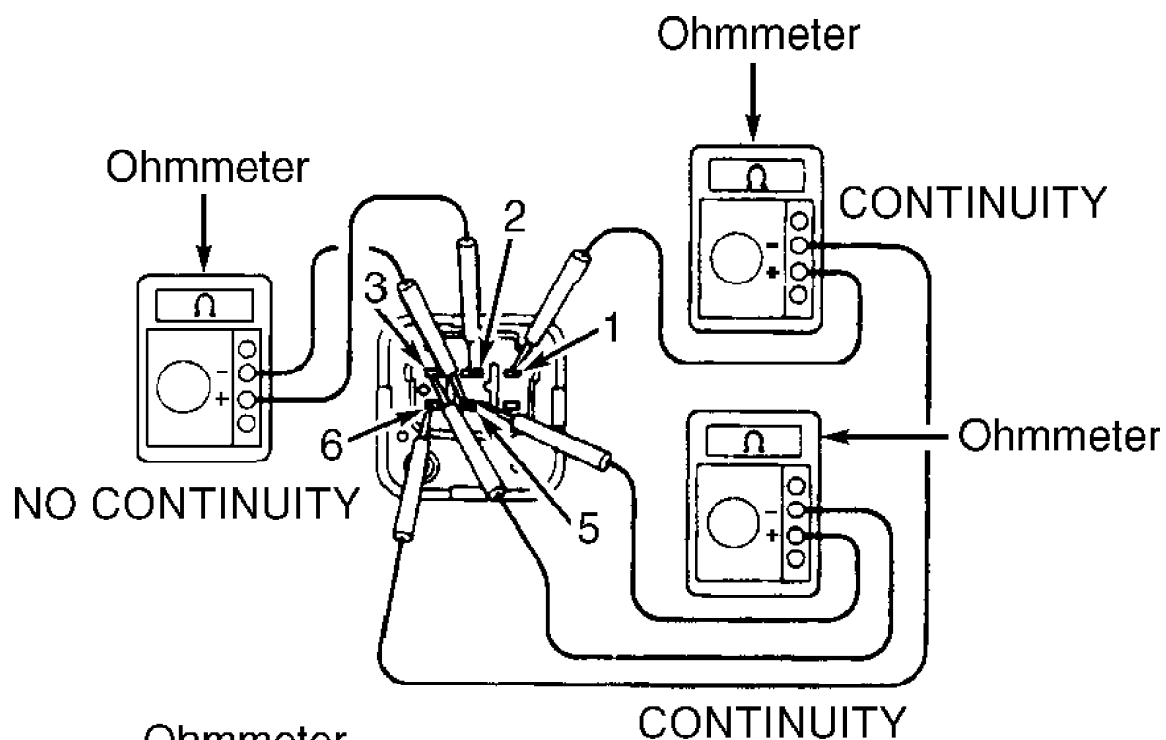
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Fig. 18: Locating Radiator Fan Relays
Courtesy of Toyota Motor Sales, U.S.A., Inc.



94B10513

Fig. 19: Testing Radiator Fan Relay No. 1
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



94C10514

Fig. 20: Testing Radiator Fan Relay No. 2
Courtesy of Toyota Motor Sales, U.S.A., Inc.

SOLAR SENSOR TEST

1) Remove glove box. Remove solar sensor. Cover sensor with cloth. Using an ohmmeter, connect positive lead to terminal No. 2 (Brown/White wire). Connect negative lead to terminal No. 1 (Yellow/Green wire). Continuity should not be present.

2) Remove cloth. Expose sensor to bright light. Resistance should be about 4000 ohms. As light intensity decreases, resistance should increase. If resistances are not as specified, replace sensor.

REMOVAL & INSTALLATION

*** PLEASE READ FIRST ***

WARNING: To avoid injury from accidental air bag deployment, read and follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

A/C AMPLIFIER R & I

Removal & Installation

Remove center cluster panel. A/C amplifier is located on top of radio. Remove radio, leaving A/C amplifier attached. See INSTRUMENT PANEL. Separate A/C amplifier and radio. To install, reverse removal procedure.

A/C UNIT R & I

Removal

1) Disconnect negative battery cable. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Drain cooling system. Remove engine wiring harness bracket mounting bolt. Remove brake line bracket bolts from engine compartment side of engine bulkhead.

2) Remove heater hoses from heater core. Remove insulator retainer. Remove ABS actuator (if equipped). Disconnect refrigerant lines. Remove plate cover. Remove instrument panel. See INSTRUMENT PANEL.

3) Remove instrument panel brace and reinforcement. Remove carpet. Remove heater center duct. Disconnect control link and harness connector from air inlet servomotor. Remove air inlet servomotor. See Fig. 12.

4) Remove defroster duct. Remove water valve cover. Disconnect control link and harness connector from air mix servomotor. Remove air mix servomotor.

5) Unplug air outlet servomotor harness connector. Remove air outlet servomotor. Unplug remaining electrical connectors. Remove A/C unit.

Disassembly

1) Remove blower motor relay and blower motor. See Fig. 12. Remove foot air duct. Remove A/C unit wiring harness and block joint. Remove lower case and evaporator cover. Remove evaporator.

2) Remove evaporator temperature sensor and expansion valve. Remove heater core and water valve. Remove heater and vent air ducts. Remove coolant temperature sensor.

Reassembly & Installation

To reassemble and install, reverse disassembly and removal procedure. When installing A/C unit drain hose, pull hose forward until Yellow paint mark on hose is visible in engine compartment. If installing a NEW evaporator, add 1.4 ounces of refrigerant oil. Evacuate, charge and leak-test system.

BLOWER MOTOR R & I

Removal & Installation

Disconnect negative battery cable. Remove glove box and side air duct. Remove scuff plate, carpet, and PCM cover. Unplug blower motor harness connector. Remove blower motor. To install, reverse removal procedure.

COMPRESSOR R & I

Removal & Installation

1) Start engine and run with A/C on for 10 minutes (if possible). Turn engine off. Disconnect battery cables, and remove battery. Discharge A/C system, using approved refrigerant recovery/recycling equipment.

2) Rotate drive belt tensioner clockwise to loosen tension, and remove drive belt. Remove power steering pump. Disconnect refrigerant hoses from compressor. Cap all openings to prevent moisture contamination.

3) Unplug harness connector from compressor. Remove compressor. To install, reverse removal procedure. If replacing compressor, add 4.8 ounces of refrigerant oil. Evacuate, charge and leak-test system.

CONDENSER R & I

Removal & Installation

1) Discharge A/C system, using approved refrigerant recovery/recycling equipment. Disconnect battery cables, and remove battery. Remove air cleaner. On turbocharged engines, remove turbocharger air hose clamp. Move hose toward engine side.

2) On all models, remove front bumper. Remove clips and radiator support upper seal. Remove receiver-drier and mounting bracket. Disconnect refrigerant lines from condenser. Remove radiator and condenser upper mount. Remove piping clamp from condenser. Remove condenser.

3) To install, reverse removal procedure. If installing a NEW condenser, add 1.4 ounces of refrigerant oil. Evacuate, charge and leak-test system.

COOLANT TEMPERATURE SENSOR R & I

Removal & Installation

Disconnect negative battery cable. Remove engine undercover. Drain cooling system. Unplug the coolant temperature sensor harness connector, located on left side of radiator. Remove sensor and "O" ring. To install, reverse removal procedure. Use a NEW "O" ring.

INSTRUMENT PANEL R & I

Removal

1) Disable air bag system. See AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section. Disconnect negative battery cable. Remove steering wheel. Remove front pillar garnishes, foot rest, and front door scuff inside plates. Remove steering column cover, upper console panel and parking brake hole cover. Remove console box.

2) Remove lower panels. Remove cluster finish panels. Remove instrument cluster. Remove instrument panel center heater duct. Remove combination switch, radio and PCM cover.

3) Remove glove box door plates. Carefully unplug air bag

harness connector. Remove glove box. Remove mounting brackets and air duct. Remove passenger air bag assembly.

4) Remove parking brake lever, right-side defroster nozzle and steering column. Unplug instrument panel harness connectors. Remove instrument panel. Remove instrument panel reinforcement.

Installation

To install, reverse removal procedure. Use NEW passenger air bag assembly bolts.

PRESSURE SWITCH R & I

Removal & Installation

Discharge A/C system, using approved refrigerant recovery/recycling equipment. Unplug pressure switch harness connector. Pressure switch is located next to right-side strut tower. Using back-up wrench on pressure switch mount, carefully remove switch. To install, reverse removal procedure. Evacuate, charge and leak-test system.

RADIATOR FAN RELAYS R & I

Removal & Installation

Disconnect negative battery cable. On models without automatic spoiler, remove engine undercover. On models with automatic spoiler, remove left-side headlight. On all models, remove radiator fan relay. See Figs. 1 and 18. To install, reverse removal procedure.

RECEIVER-DRIER R & I

Removal & Installation

1) Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove front bumper. Remove radiator support upper seal. Disconnect refrigerant lines from receiver-drier. Cap all openings to prevent moisture contamination. Remove receiver-drier.
2) To install, reverse removal procedure. If receiver-drier is replaced, add 0.34 ounce of refrigerant oil. Evacuate, charge and leak-test system.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Compressor Mounting Bolts	38 (52)
Compressor Stud Bolt	19 (26)
Instrument Panel Reinforcement Bolts	15 (21)
Power Steering Bolt	43 (58)
INCH Lbs. (N.m)	
Condenser Mounting Bolts	36 (4)
Coolant Temperature Sensor	65 (7.4)
Refrigerant Hoses	
Compressor	87 (10)
Condenser	87 (10)
Evaporator	87 (10)
Receiver-Drier	48 (5.4)
Compressor Lock Sensor	52 (6)
Steering Wheel Pad Bolts	62 (7)

WIRING DIAGRAMS

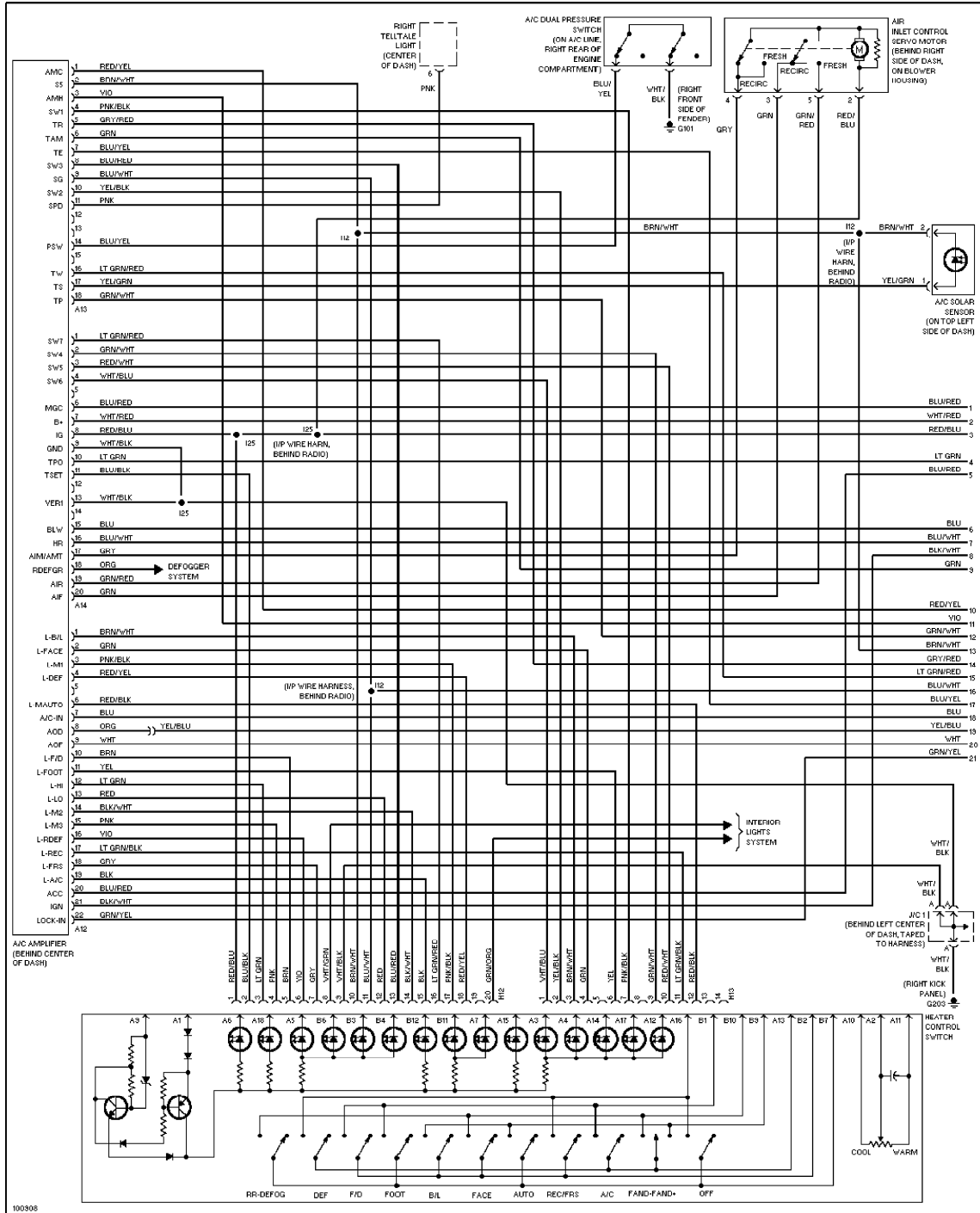


Fig. 21: Automatic A/C-Heater System Wiring Diagram (1 Of 2)

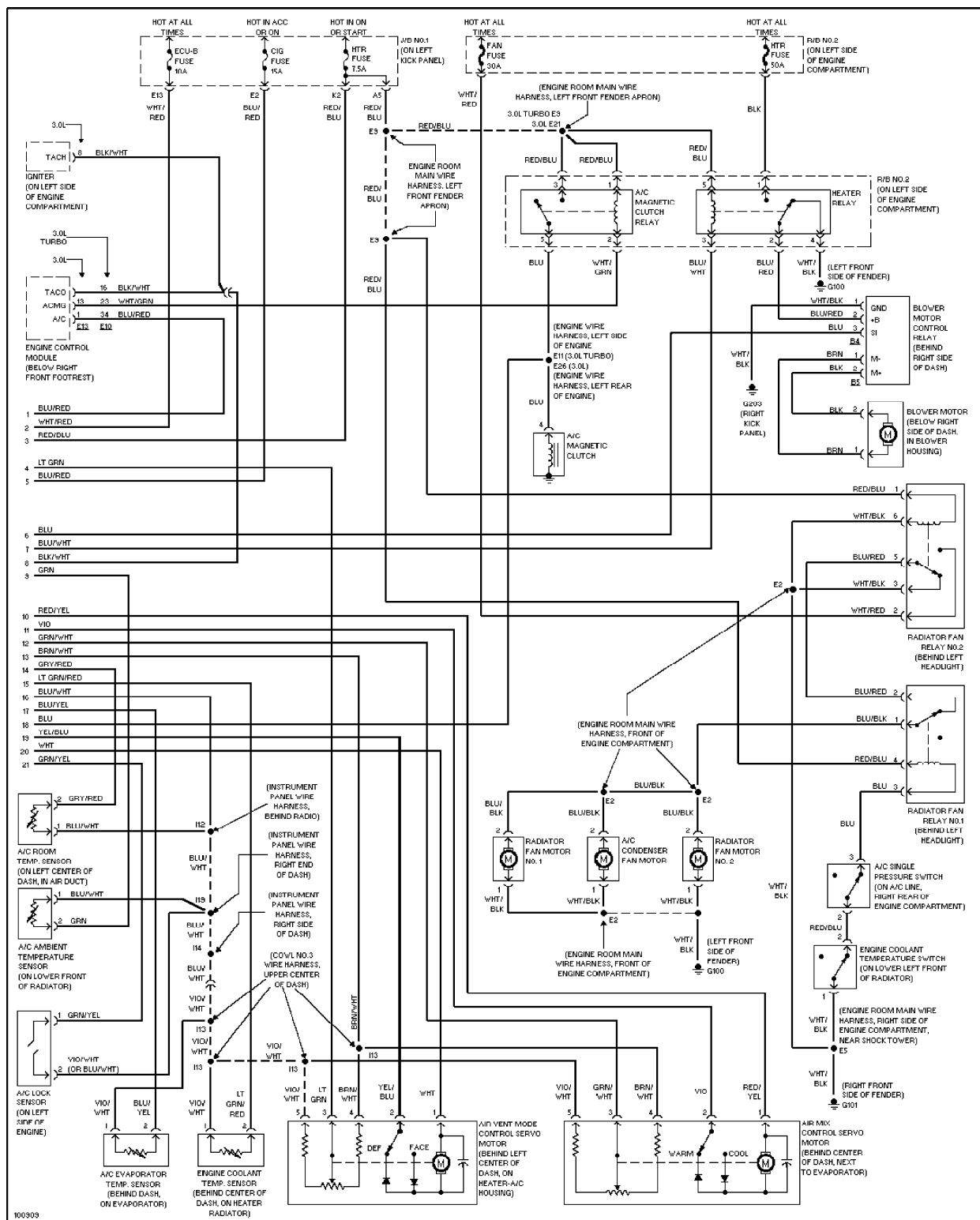


Fig. 22: Automatic A/C-Heater System Wiring Diagram (2 Of 2)