

HEATER SYSTEM

1988 Toyota Celica

1988 Heater Systems

Celica

DESCRIPTION

Heater assembly consists of heater core, control panel, blower motor assembly, control cables (electric servo motors on button controlled models) and air ducts. All components are located under instrument panel. Blower motor operation is electrically controlled.

OPERATION

SYSTEM CONTROLS

Lever Controlled Models

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

Button Controlled Models

Air vent, air mix and recirc/fresh electric servo motors control all heater functions. Celica button models use an air mix servo motor to control hot air.

BLOWER SWITCH

Switch controls speed of blower motor through resistor assembly. Switch is operated by control lever or rotating knob (push buttons on button controlled models).

HEATER RELAY

A heater (or main) relay is used in heater circuit to control current flow through system. See WIRING DIAGRAMS at end of this article for electrical circuit connections.

Relay for heater is located on right kick panel, beneath emission control computer.

CIRCUIT BREAKER

Circuit breaker is used for electrical system protection. It is identified by its round shape, with 2-prong connection. Circuit breaker is located on main fuse/relay panel under center dash. Circuit breaker can be reset (if tripped) by pushing a thin rod into hole on flat end of circuit breaker. See WIRING DIAGRAMS at end of this article.

ADJUSTMENTS

AIR INTAKE DOOR CABLE

Lever Controlled Models

Position door lever against stop in "FRESH" position. Attach control cable with retaining clip and check operation of air intake door.

MODE DOOR CABLE

Lever Type

Move mode door lever to "VENT" position. Attach cable and hold in position with retaining clip.

AIR-MIX DOOR CABLE

Lever Controlled Models

Position air door lever to "COOL" position and attach control cable. Hold in position with retaining clip.

HEATER COOLANT VALVE CABLE

Lever Controlled Models

Place coolant valve lever in "COOL" position. Hold lever in this position, attach cable, pull slack from cable and attach retaining clip. Make sure pin is located in lever hole.

TROUBLE SHOOTING

BLOWER DOES NOT WORK WHEN FAN IS ON

Check for the following conditions: Heater fuse blown. Heater relay faulty. Heater blower switch faulty. Heater blower resistor faulty. Heater blower motor faulty. Wiring or ground faulty.

INCORRECT TEMPERATURE OUTPUT

Lever Controlled Models

Check for the following conditions: Control cables broken or binding. Heater hoses leaking or clogged. Water pump faulty. Air dampers broken. Air ducts clogged. Heater core leaking or clogged. Heater control faulty.

TESTING

BLOWER SWITCH

Detach multi-pin terminal from blower switch. Use ohmmeter or circuit tester to check for continuity between terminals at different switch positions. If continuity is not as shown, replace blower switch. See BLOWER SWITCH CONTINUITY table. See Figs. 1-3.

BLOWER SWITCH CONTINUITY TABLE

Application/Switch Position	Terminal Continuity
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Button Type

"OFF" None
"LO" A16-B23
"I" A16-B23, A16-B24
"II" A16-B23, B23-B20
"HI" A16-B23, B23-B19

Lever Type

"OFF" (1) 3 to 4
"LO" 6-5, (1) 3-4
"I" 6-5, 5-1, (1) 3-4
"II" 6-5, 5-2, (1) 3 to 4
"HI" 6-5, 5-8, (1) 3 to 4

(1) - Terminals are for heater control illumination.

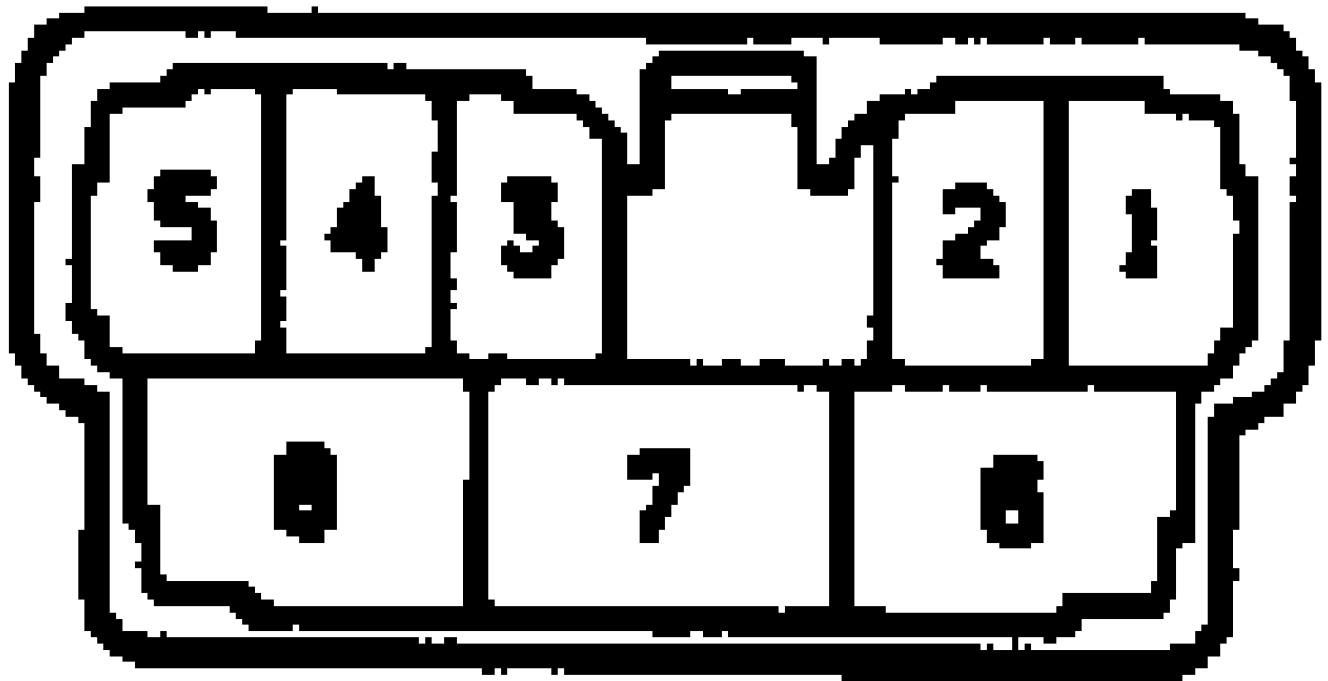


Fig. 1: Heater Blower Switch Terminal Identification (Lever Type)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

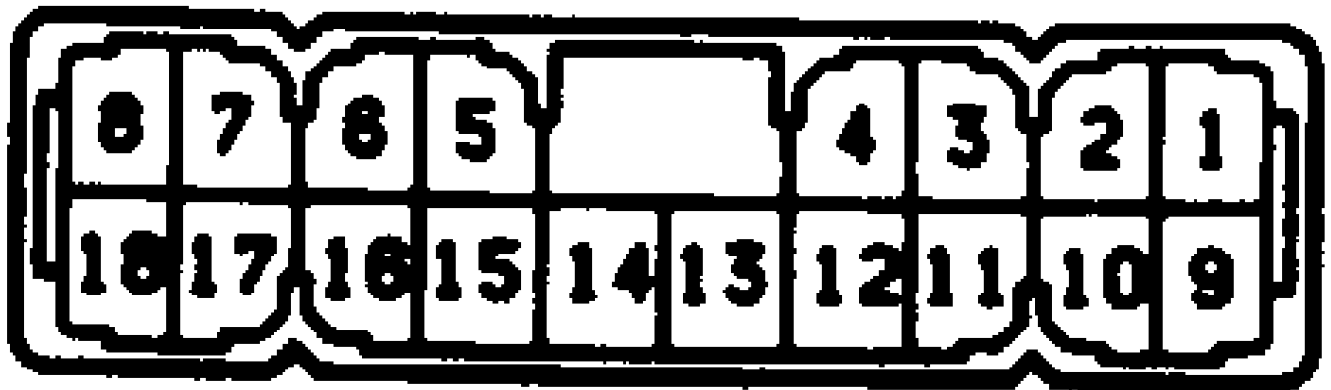


Fig. 2: Switch Terminal ID (Celica Button Type Connector A)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

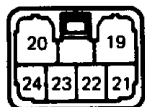


Fig. 3: Switch Terminal ID (Celica Button Type Connector B)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

BLOWER RESISTOR

Button Type

Remove resistor from vehicle, or disconnect wiring in vehicle. Using an ohmmeter, check continuity. Continuity should exist between terminals No. 5 and 6. If continuity does not exist as specified, replace resistor. See Figs. 4 & 5.

Lever Type

Remove resistor from vehicle, or disconnect wiring in vehicle. Using an ohmmeter, check continuity. Continuity should exist between terminals No. 1 and 3. If continuity does not exist as specified, replace resistor. See Figs. 4 & 5.

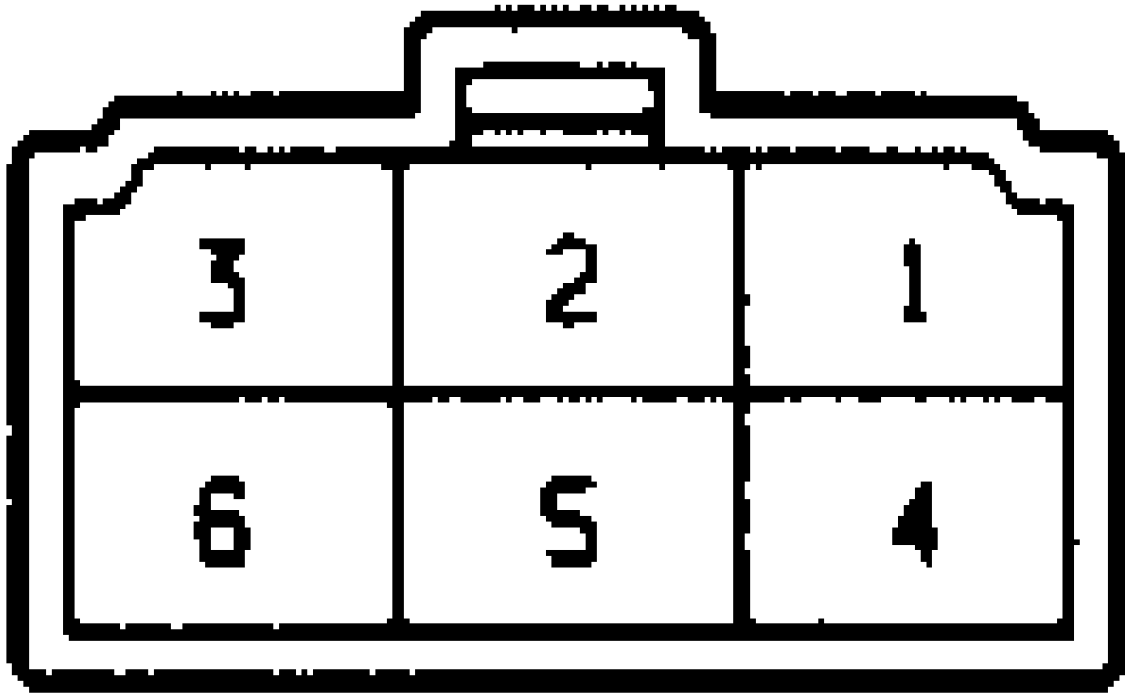


Fig. 4: Heater Blower Resistor Terminal Identification (Button Type)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

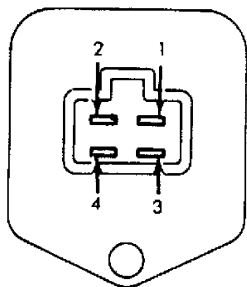


Fig. 5: Heater Blower Resistor Terminal Identification (Lever Type)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

HEATER RELAY

1) Disconnect battery and check continuity with an ohmmeter. Continuity should exist between terminals No. 1 and 3 and between terminals No. 2 and 4. No continuity should exist between terminals No. 4 and 5. If continuity does, or does not exist where specified, replace relay. See Fig. 6.

2) Apply battery voltage across terminals No. 1 (positive) and 3 (negative) and check continuity. Continuity should exist between terminals No. 4 and 5. No continuity should exist between terminals No. 2 and 4. If continuity does, or does not exist as specified, replace relay. See Fig. 6.

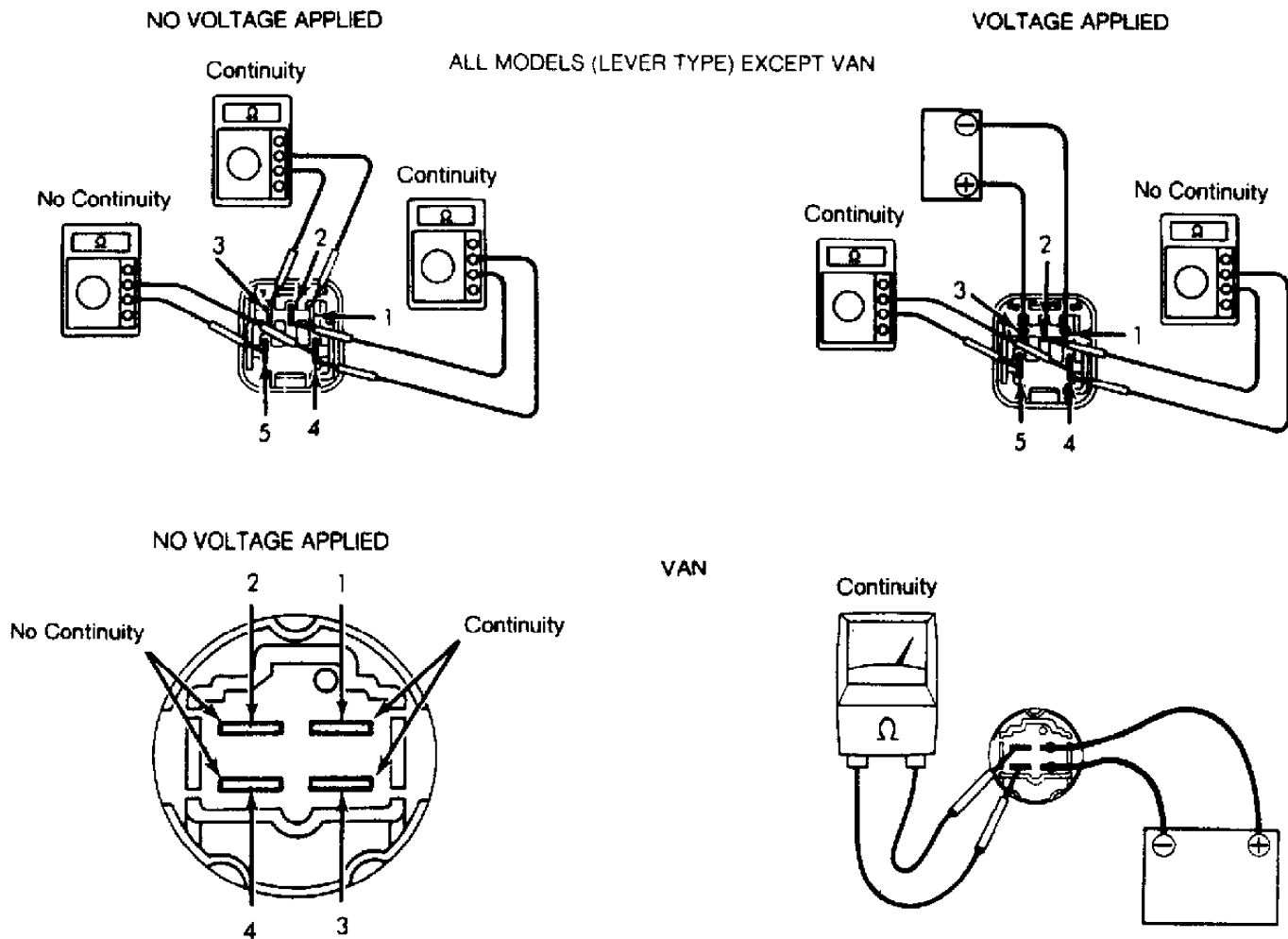


Fig. 6: Testing Heater Relay for Continuity
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

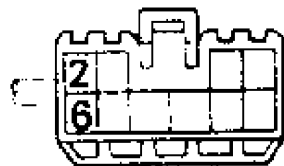
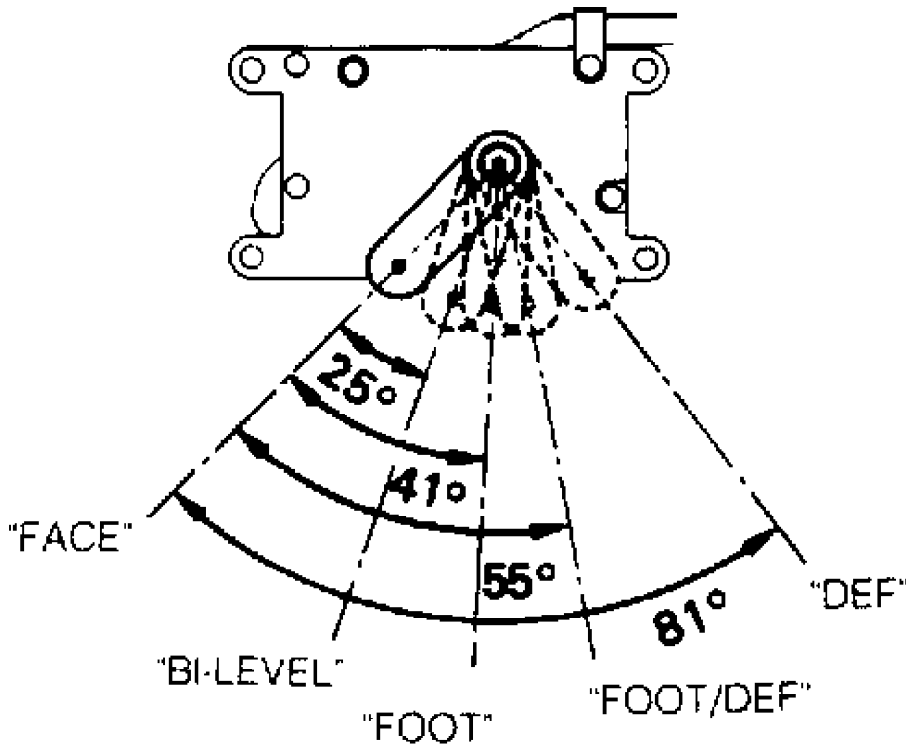
AIR VENT SERVO MOTOR

Button Controlled Models

Detach multi-pin terminal from air vent servo motor. Connect a battery positive jumper lead to terminal No. 1. Connect battery negative jumper lead to terminal No. 2. Use ohmmeter or circuit tester to check for continuity between terminals. If continuity is not as shown, replace air vent servo motor. See AIR VENT SERVO MOTOR CONTINUITY table. See Fig. 7.

AIR VENT SERVO MOTOR CONTINUITY TABLE

Application/Switch Position	Terminal Continuity
Button Type	
"FACE"	None
"BI-LEVEL"	10-4, 4-5
"FOOT"	10-6, 6-5
"FOOT/DEF"	6-5, 10-9, 6-10
"DEF"	6-4, 4-3, 6-11, 11-9



Connector "B"

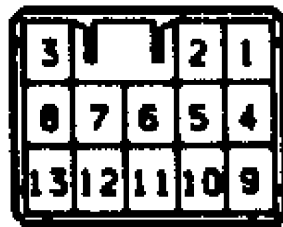
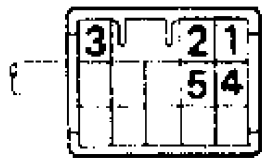


Fig. 7: Air Vent Servo Motor Connector
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

1) Disconnect air-mix servo motor connector. Connect a battery positive jumper lead to terminal No. 2. Connect battery negative jumper lead to terminal No. 8. Check that servo motor lever moves smoothly from warm to cool. Reverse battery jumper leads. Servo motor lever should move smoothly to warm position. See Fig. 8.

2) Connect an ohmmeter across terminals No. 13 and 15. While operating servo motor in step 1), check resistance. When servo motor is in cool position, ohmmeter should read 1800-2000 ohms. When in warm position, ohmmeter should read 150-250 ohms. If servo motor fails tests in either step, replace servo motor.

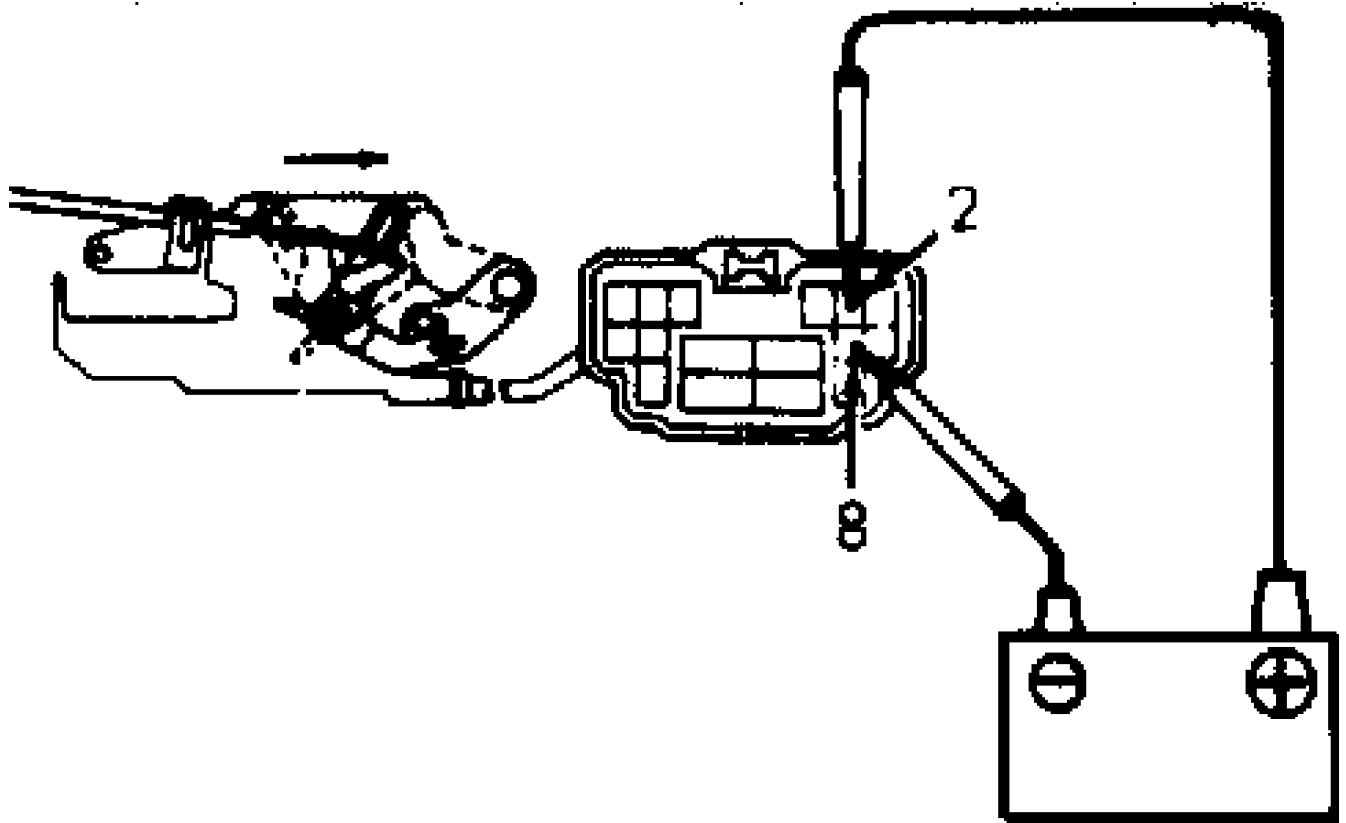


Fig. 8: Air-Mix Servo Motor Connector
Courtesy of Toyota Motor Sales, U.S.A., Inc.

RECIRC/FRESH SERVO MOTOR

1) Disconnect recirc/fresh servo motor connector. Connect a battery positive jumper lead to terminal No. 1. Connect battery negative jumper lead to terminal No. 2. Servo motor lever should move smoothly from fresh to recirc. See Fig. 9.

2) Move battery negative jumper lead to terminal No. 3. Servo motor lever should move smoothly from recirc to fresh. If servo motor operation is not as specified, replace servo motor.

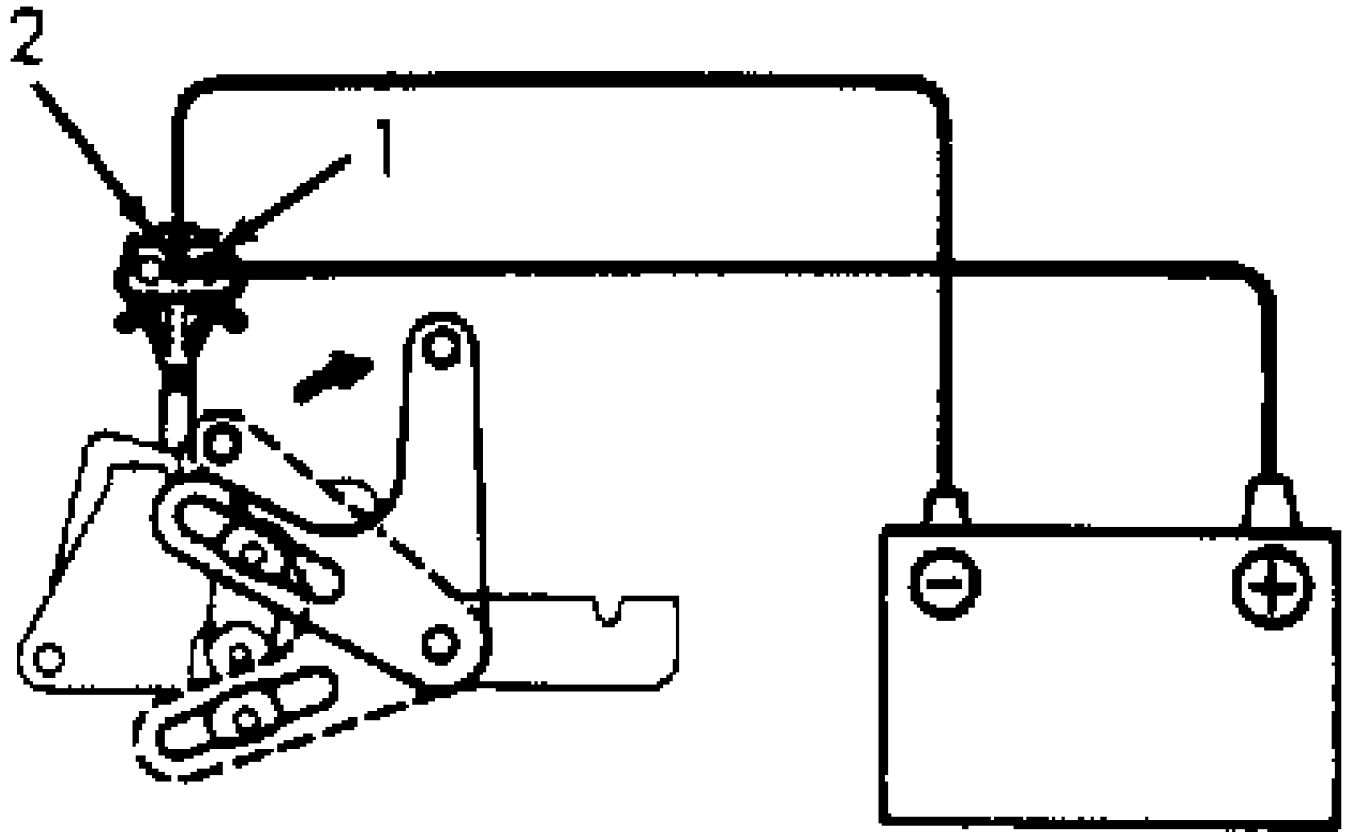


Fig. 9: Recirc/Fresh Servo Motor Connector
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

AIR VENT CONTROL SWITCH

Disconnect electrical connector at control panel. Using an ohmmeter, check continuity across terminals at all switch positions. See AIR VENT CONTROL SWITCH CONTINUITY table. See Figs. 1-3

AIR VENT CONTROL SWITCH CONTINUITY TABLE

Application/Switch Position	Terminal Continuity
Button Type	
"AUTO"	A16-A5
"FACE"	A16-A12
"BI-LEVEL"	A16-A17
"FOOT"	A16-A6
"FOOT/DEF"	A16-A13
"DEF"	A16-A11

AIR-MIX CONTROL SWITCH

1) Disconnect electrical connector at control panel. Using an ohmmeter, check resistance across terminals No. A1 and A9 (No. A1 and A10 on Celica). See Figs. 1-3.

2) With temperature control lever at maximum cool position, ohmmeter should read infinity. With lever in center, ohmmeter should read 1.3-1.7 ohms. With lever in maximum warm position, ohmmeter should read zero ohm.

RECIRC/FRESH CONTROL SWITCH

1) Connect a battery positive jumper lead to terminal No. A2. Connect battery negative jumper lead to terminal No. A16. Recirc indicator light should come on. If light does not come on, replace switch. Remove battery jumper leads. See Fig. 1-3.

2) Set recirc/fresh switch to fresh position. Using an ohmmeter, check that continuity exists across terminals No. A15 and A16. Check that no continuity exists across terminals No. A14 and A16.

3) Set recirc/fresh switch to recirc position. Check that continuity exists across terminals No. A14 and A16. Check that no continuity exists across terminals No. A15 and A16. If recirc/fresh control switch operation is not as specified, replace switch.

BLOWER SPEED CONTROL RELAY

Relay A

1) Using an ohmmeter, check that continuity exists across terminals No. 5 and 7. Check that no continuity exists across terminals No. 3 and 4. See Fig. 10.

2) Using battery jumper leads, connect positive jumper lead to terminal No. 5 and negative jumper lead to No. 7. Using an ohmmeter, check that continuity exists across terminals No. 3 and 4. If readings are not as specified, replace relay.

Relay B

1) Using an ohmmeter, check that continuity exists across terminals No. 5 and 8. Check that no continuity exists across terminals No. 2 and 3. See Fig. 10.

2) Using battery jumper leads, connect positive jumper lead to terminal No. 5 and negative jumper lead to No. 8. Using an ohmmeter, check that continuity exists across terminals No. 2 and 3. If readings are not as specified, replace relay.

Relay C

1) Using an ohmmeter, check that continuity exists across terminals No. 5 and 6. Check that no continuity exists across terminals No. 1 and 3. See Fig. 10.

2) Using battery jumper leads, connect positive jumper lead to terminal No. 5 and negative jumper lead to No. 6. Using an ohmmeter, check that continuity exists across terminals No. 1 and 3. If readings are not as specified, replace relay.

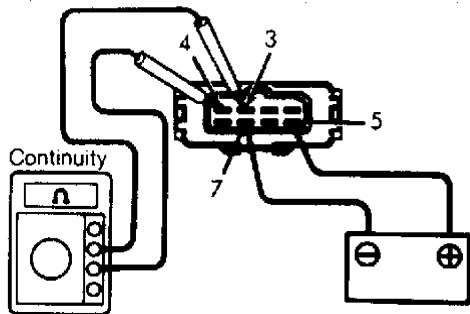


Fig. 10: Blower Speed Control Relay Connector
Courtesy of Toyota Motor Sales, U.S.A., Inc.

REMOVAL & INSTALLATION

NOTE: REMOVAL & INSTALLATION procedures are not available from the manufacturer. Exploded views of heater systems are provided. See Fig. 11

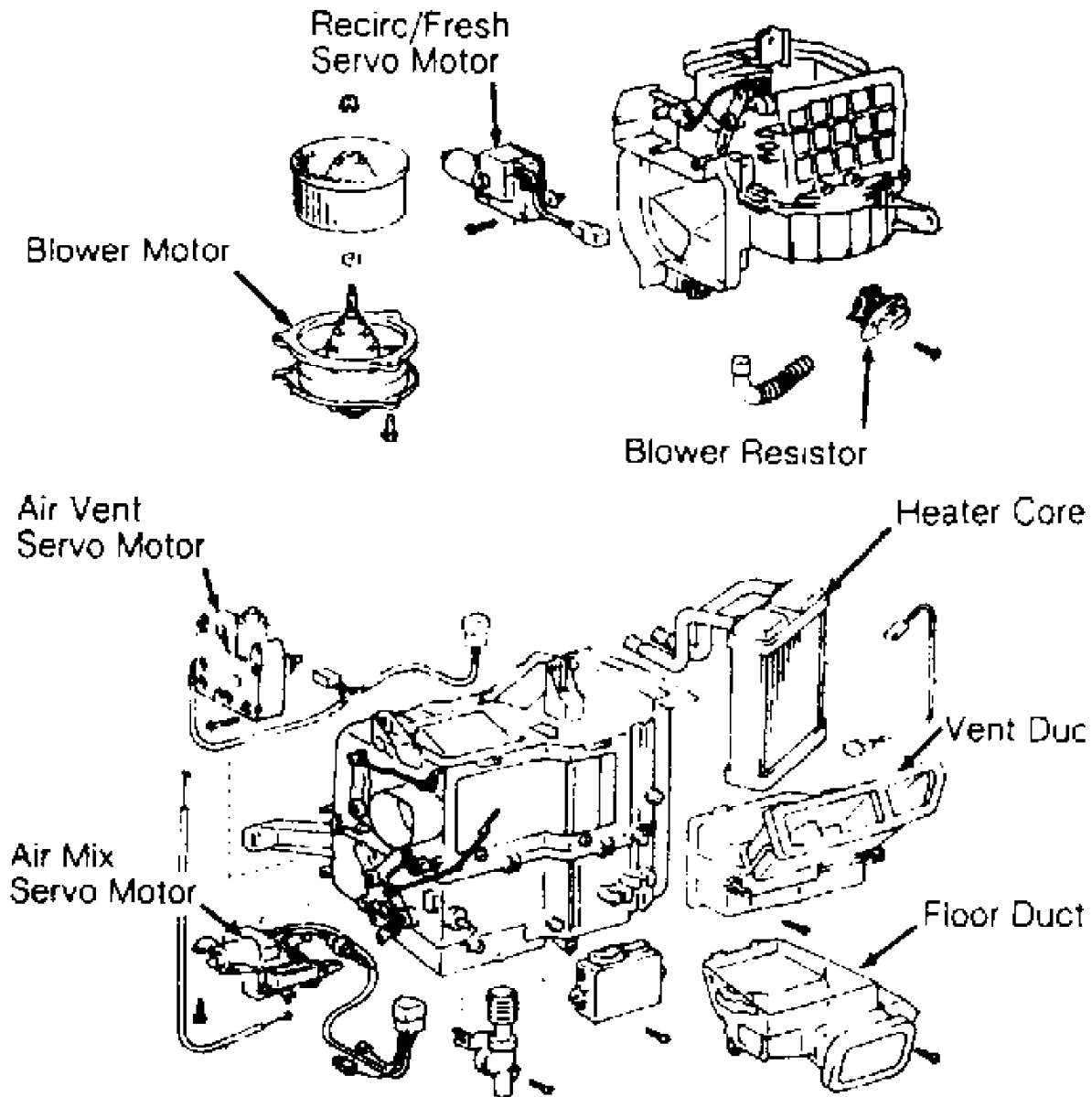


Fig. 11: Exploded View of Celica Button Type Heater Assembly
Courtesy of Toyota Motor Sales, U.S.A., Inc.

WIRING DIAGRAMS

NOTE: See MANUAL A/C-HEATER SYSTEMS section for Toyota Celica push-button control panel wiring diagrams.

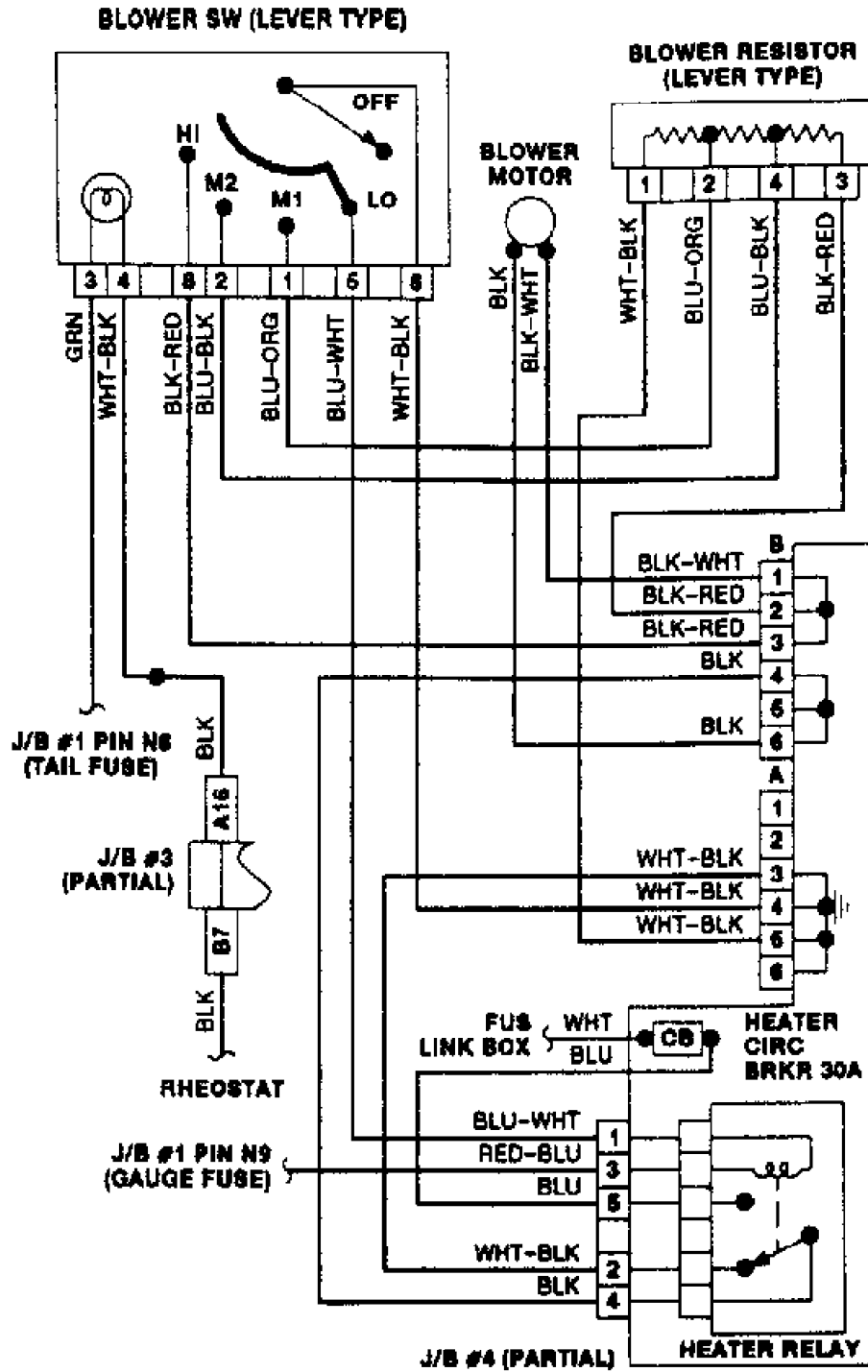


Fig. 12: Lever Type Heater System Wiring Diagram