

ENGINE COOLING FAN

1993 Toyota Celica

1993 ENGINE COOLING
Toyota Specifications & Electric Cooling Fans

Toyota; Celica

SPECIFICATIONS

BELT ADJUSTMENT

Ensure belt tension is within specification. See appropriate BELT ADJUSTMENT table.

4-CYLINDER BELT ADJUSTMENT TABLE
Tension In Lbs. (kg) Using Burroughs Tension Gauge

Application	New Belt	(1) Used Belt
Celica		
1.6L (4A-FE)		
A/C	160 (73)	100 (45)
Alternator	160 (73)	130 (59)
Power Steering	125 (57)	80 (36)
2.0L Turbo (3S-GTE)		
A/C	165 (75)	84 (38)
Alternator		
With A/C	175 (79)	115 (52)
Without A/C	150 (68)	130 (59)
Power Steering	125 (57)	80 (36)
2.2L (5S-FE)		
A/C	165 (75)	110 (50)
Alternator		
With A/C	175 (79)	130 (59)
Without A/C	125 (57)	95 (43)
Power Steering	125 (57)	80 (36)

(1) - Used belt is a belt in operation at least 5 minutes.

COOLING SYSTEM SPECIFICATIONS

4-CYLINDER COOLING SYSTEM SPECIFICATIONS TABLE

Application	Specification
Coolant Replacement Interval	
First Service Interval (1)	45,000 Miles Or 36 Months
Coolant Capacity	
Celica	
1.6L (4A-FE)	
A/T	5.9 Qts. (5.6L)
M/T	5.5 Qts. (5.2L)
2.0L Turbo (3S-GTE)	6.3 Qts. (6.0L)
2.2L (5S-FE)	
A/T	7.0 Qts. (6.6L)
M/T	6.9 Qts. (6.5L)

(1) - After first service interval, replace coolant every 30,000 miles or 24 months.

COOLING SYSTEM BLEEDING

No special cooling system bleeding procedure is required.

ELECTRIC COOLING FAN

NOTE: Electric cooling fan may be used for the radiator or condenser. To verify electric cooling location and application, see ELECTRIC COOLING FAN IDENTIFICATION table. For condenser cooling fan testing, see appropriate A/C-HEATER SYSTEM article in the AIR CONDITIONING & HEAT section.

ELECTRIC COOLING FAN IDENTIFICATION TABLE

Application	Cooling Fan Identification
Celica	
Condenser Cooling Fan	Passenger's Side Front Of Radiator
Radiator Cooling Fan	Driver's Side Rear Of Radiator

RADIATOR COOLING FAN SYSTEM TEST

NOTE: On A/C equipped models, a A/C high-pressure switch which may be used in conjunction with cooling fan relays for controlling of radiator cooling fan. See appropriate A/C-HEATER SYSTEM article in the AIR CONDITIONING & HEAT section.

- 1) Ensure engine coolant temperature is less than specified STEP 1 temperature. See RADIATOR COOLING FAN SYSTEM TESTING TEMPERATURE SPECIFICATIONS table. Turn ignition on. Ensure radiator cooling fan stops.
- 2) If radiator cooling fan stops, proceed to step 5). If radiator cooling fan operates, check cooling fan relay No. 1 and Engine Coolant Temperature (ECT) switch. See COOLING FAN RELAY NO. 1 and ENGINE COOLANT TEMPERATURE (ECT) SWITCH under COMPONENT TESTING.
- 3) If cooling fan relay No. 1 and ECT switch are okay, check for open circuit in wire between ECT switch and cooling fan relay No. 1. Consult appropriate wiring diagram if necessary. See WIRING DIAGRAMS.
- 4) Cooling fan relay No. 1 is located in fuse/relay box. See Fig. 1. For ECT switch locations, see ECT SWITCH LOCATIONS table.
- 5) With ignition on, disconnect electrical connector at Engine Coolant Temperature (ECT) switch. For ECT switch locations, see ECT SWITCH LOCATIONS table. Ensure radiator cooling fan operates.
- 6) If radiator cooling fan operates, proceed to step 9). If radiator cooling fan does not operate, check cooling fan relay No. 1, radiator cooling fan, engine or fan main relay and necessary fuses.
- NOTE: Engine main relay is used on this model.
- 7) Consult appropriate wiring diagram for proper fuse applications. See WIRING DIAGRAMS. See COOLING FAN RELAY NO. 1, RADIATOR COOLING FAN, FAN MAIN RELAY and ENGINE MAIN RELAY under COMPONENT TESTING.
- 8) If all components are okay, check for short circuit in wire between cooling fan relay No. 1 and ECT switch. Consult appropriate wiring diagram if necessary. See WIRING DIAGRAMS.
- 9) Install electrical connector on ECT switch. Start engine.

Warm engine until coolant temperature is greater than specified STEP 2 temperature. See RADIATOR COOLING FAN SYSTEM TESTING TEMPERATURE SPECIFICATIONS table.

10) Ensure radiator cooling fan operates. Replace ECT switch if radiator cooling fan fails to operate and recheck operation.

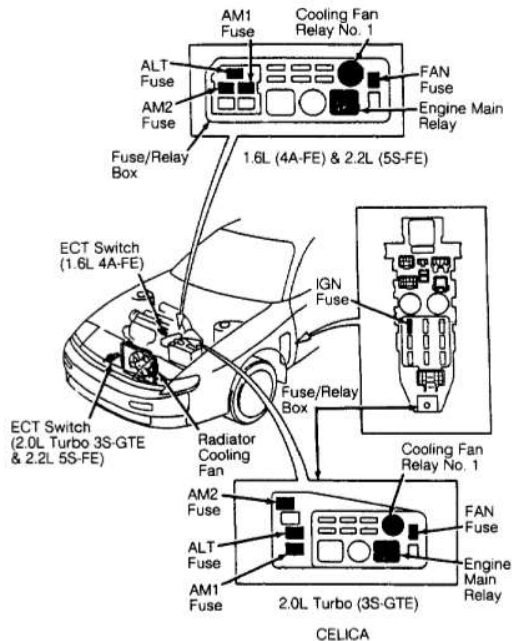
RADIATOR COOLING FAN SYSTEM TESTING TEMPERATURE SPECIFICATIONS TABLE

Application	Step 1 Temp. °F (°C)	Step 2 Temp. °F (°C)
Celica Without A/C	181 (83)	199 (93)

ECT SWITCH LOCATIONS TABLE

Application	(1) Switch Location
Celica	
1.6L (4A-FE)	(2)
2.0L Turbo (3S-GTE) & 2.2L (5S-FE)	Bottom Of Radiator

- (1) - For additional information on ECT switch locations, see Fig. 1.
- (2) - ECT switch is located in coolant housing below distributor and contains a single-pin connector with a Blue/Black wire.



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Fig. 1: Identifying Radiator Cooling Fan & Components
Courtesy of Toyota Motor Sales, U.S.A., Inc.

COMPONENT TESTING

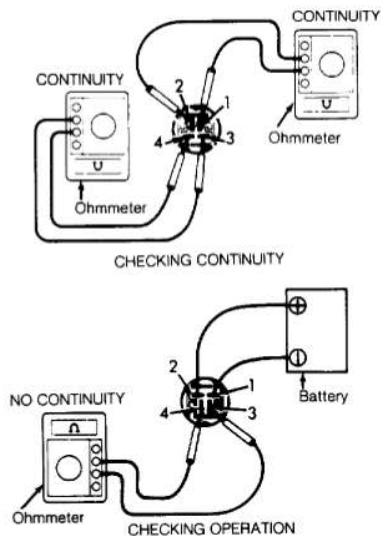
CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

A/C AMPLIFIER CIRCUIT TEST TABLE

Wiring Harness Terminals	Condition	Specification
No. 3 & Ground		Continuity
No. 4 & Ground	Ignition On	Battery Voltage
No. 9 & 15	185°F (85°C) (1)	1350 Ohms
No. 9 & 15	194°F (90°C) (1)	1190 Ohms
No. 9 & 15	203°F (95°C) (1)	1050 Ohms
No. 10 & Ground	Ignition On	Battery Voltage
No. 13 & Ground		Continuity

(1) - This is the coolant temperature.

- Cooling Fan Relay No. 1
- 1) Disconnect negative battery cable. Remove cooling fan relay No. 1 relay from fuse/relay box. See Fig. 1. Using ohmmeter, ensure continuity exists between specified terminals. See Fig. 2.
- 2) To check relay operation, connect battery to specified terminals of cooling fan relay No. 1. See Fig. 2. Using ohmmeter, ensure no continuity exists between specified terminals. See Fig. 2. Replace cooling fan relay No. 1 if defective.



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Fig. 2: Testing Cooling Fan Relay No. 1 & Engine Compartment Cooling Fan Relay

Courtesy of Toyota Motor Sales, U.S.A., Inc.

- Engine Coolant Temperature (ECT) Switch (Celica 2.0L 5S-FE)
- 1) Disconnect negative battery cable. Drain cooling system. Disconnect electrical connector and remove ECT switch. See ECT SWITCH LOCATIONS table. Place probe end of ECT switch in container of water.
- 2) Using ohmmeter, check for continuity and then no continuity between electrical terminals on ECT switch while heating water to specified temperatures. See ECT SWITCH CONTINUITY SPECIFICATIONS table.
- 3) Replace ECT switch if not as specified. Reinstall ECT switch using NEW "O" ring (if equipped). Fill cooling system. On MR2, air must be bled from cooling system. See COOLING SYSTEM BLEEDING.

- Engine Coolant Temperature (ECT) Switch (Celica 1.6L 4A-FE)
- 1) Disconnect negative battery cable. Drain cooling system.

Disconnect electrical connector and remove ECT switch. See ECT SWITCH LOCATIONS table. Place probe end of ECT switch in container of water.

2) Using ohmmeter, check for continuity and then no continuity between electrical terminal on ECT switch and switch body while heating water to specified temperatures. See ECT SWITCH CONTINUITY SPECIFICATIONS table. Replace ECT switch if not as specified. Reinstall and fill cooling system.

ECT SWITCH LOCATIONS TABLE

Application	(1) Switch Location
Celica	
1.6L (4A-FE)	(2)
2.0L Turbo (3S-GTE) & 2.2L (5S-FE)	Bottom Of Radiator
(1) - For additional information on ECT switch locations, see Figs. 1 and 5.	
(2) - ECT switch is located in coolant housing below distributor and contains a single-pin connector with a Blue/Black wire.	

ECT SWITCH CONTINUITY SPECIFICATIONS TABLE

Application	Temperature
Celica	
Continuity	Less Than 181°F (83°C)
No Continuity	Greater Than 199°F (93°C)

Engine Main Relay

1) Disconnect negative battery cable. Remove engine main relay from fuse/relay box. See Fig. 1. Using ohmmeter, ensure continuity and no continuity exists between specified terminals. See Fig. 3.

2) To check relay operation, connect battery to specified terminals of engine main relay. See Fig. 3. Using ohmmeter, ensure continuity and no continuity exists between specified terminals. See Fig. 3. Replace engine main relay if defective.

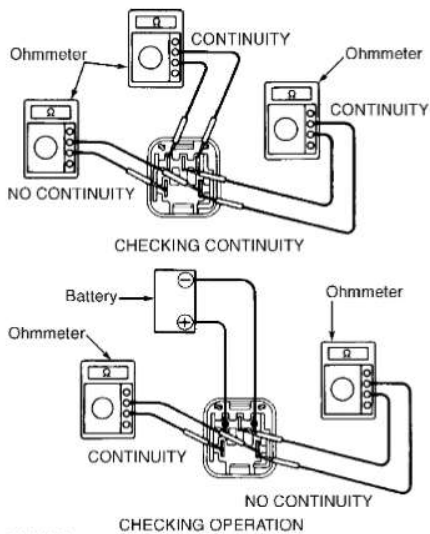


Fig. 3: Testing Engine Main Relay
Courtesy of Toyota Motor Sales, U.S.A., Inc.

- Radiator Cooling Fan
- 1) Disconnect electrical connector from radiator cooling fan. Connect battery and ammeter to electrical connector on radiator cooling fan.
 - 2) Radiator cooling fan should operate smoothly and amperage draw should be within specification. See RADIATOR COOLING FAN AMPERAGE DRAW SPECIFICATIONS table.
 - 3) Replace radiator cooling fan if it fails to rotate smoothly or amperage draw is not within specification. Reinstall electrical connector.

RADIATOR COOLING FAN AMPERAGE DRAW SPECIFICATIONS TABLE

Application	Amps
Celica	
1.6L 4A-FE & 2.2L 5S-FE	5.8-7.4
2.0L Turbo (3S-GTE)	8.8-10.8

WIRING DIAGRAMS

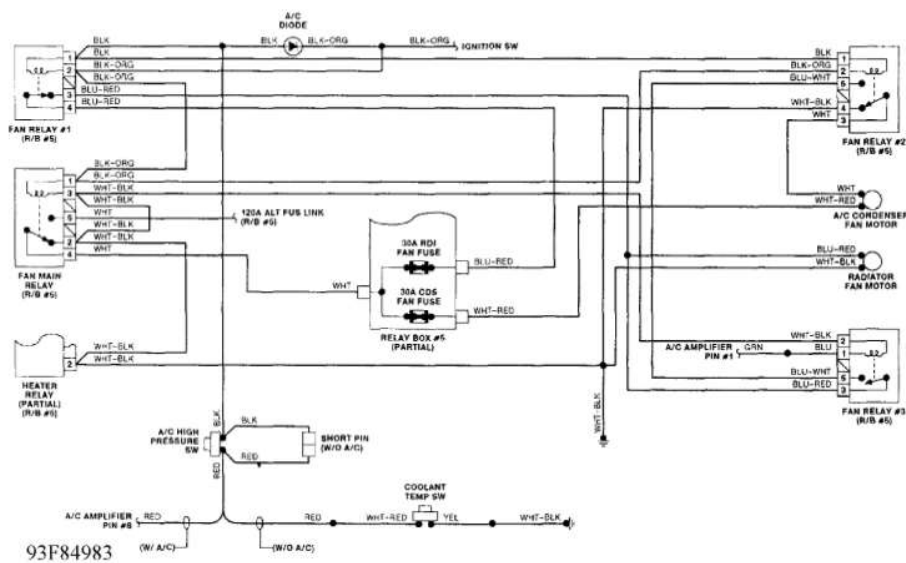


Fig. 4: Electric Cooling Fan Wiring Diagram