

DEFOGGER - REAR WINDOW

1993 Toyota Celica

1993 ACCESSORIES/SAFETY EQUIPMENT
Toyota Rear Window Defoggers

Camry, Celica, Corolla, Land Cruiser, MR2, Paseo, Previa,
Supra, Tercel, 4Runner

DESCRIPTION & OPERATION

NOTE: Some systems use an integrated or multipurpose relay as defogger relay. Some systems use a timer between switch and heating grid, and some use only a switch and heating grid.

Rear window defogger systems use a heating wire grid bonded to the inside of window. Heat is regulated by a control switch and a relay/timer. Most systems have an indicator light to show system is operating.

Power to the control switch is through a fuse in the fuse block. Timer relay will keep power to the grid for 12-18 minutes, or until the ignition is turned off. On 4Runner, relay ground is through rear power window limit switch. Supra models are also available with an outside rearview mirror heater/defogger.

TROUBLE SHOOTING

DEFOGGER DOES NOT WORK

Blown fuse or poor contact. Defogger switch defective. Poor connections. Broken wire. Relay defective.

INDICATOR LIGHT DOES NOT WORK

Bulb burned out. Open wire or poor connection.

TESTING

SYSTEM TESTING

1) Ensure all in-line fuses or circuit breakers are okay. Turn ignition and control switches to ON position. Glass should feel warm after a few minutes.

2) If glass is not warm, use a test light or voltmeter to check for battery voltage at grid feed wire. If voltage is not correct, check wiring harness, control switch and timer/relay.

SWITCH TEST

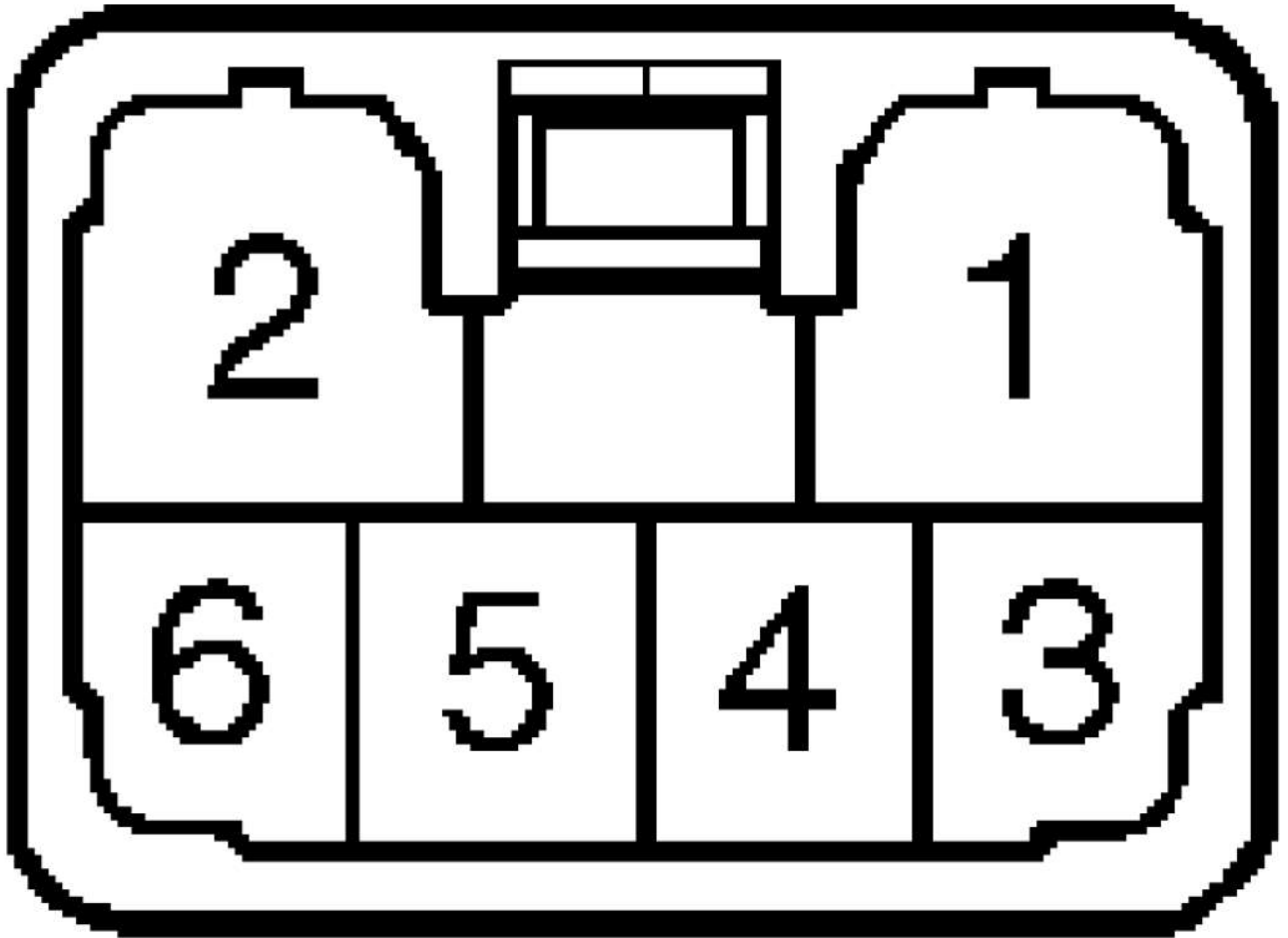
Camry

1) Remove defogger switch. Using an ohmmeter, check for continuity between terminals No. 3 and No. 4 of switch. See Fig. 1. Continuity should exist at all times.

2) With defogger switch on, check for continuity between terminals No. 1 and No. 5 of switch. Continuity should exist between terminals. With defogger switch off, no continuity should exist. If switch continuity is not as specified, replace switch.

3) To check switch indicator light operation, connect battery positive lead to terminal No. 3 of switch, and battery negative lead to terminal No. 4. Ensure defogger switch indicator light is on. If

switch indicator light is not on, replace switch.



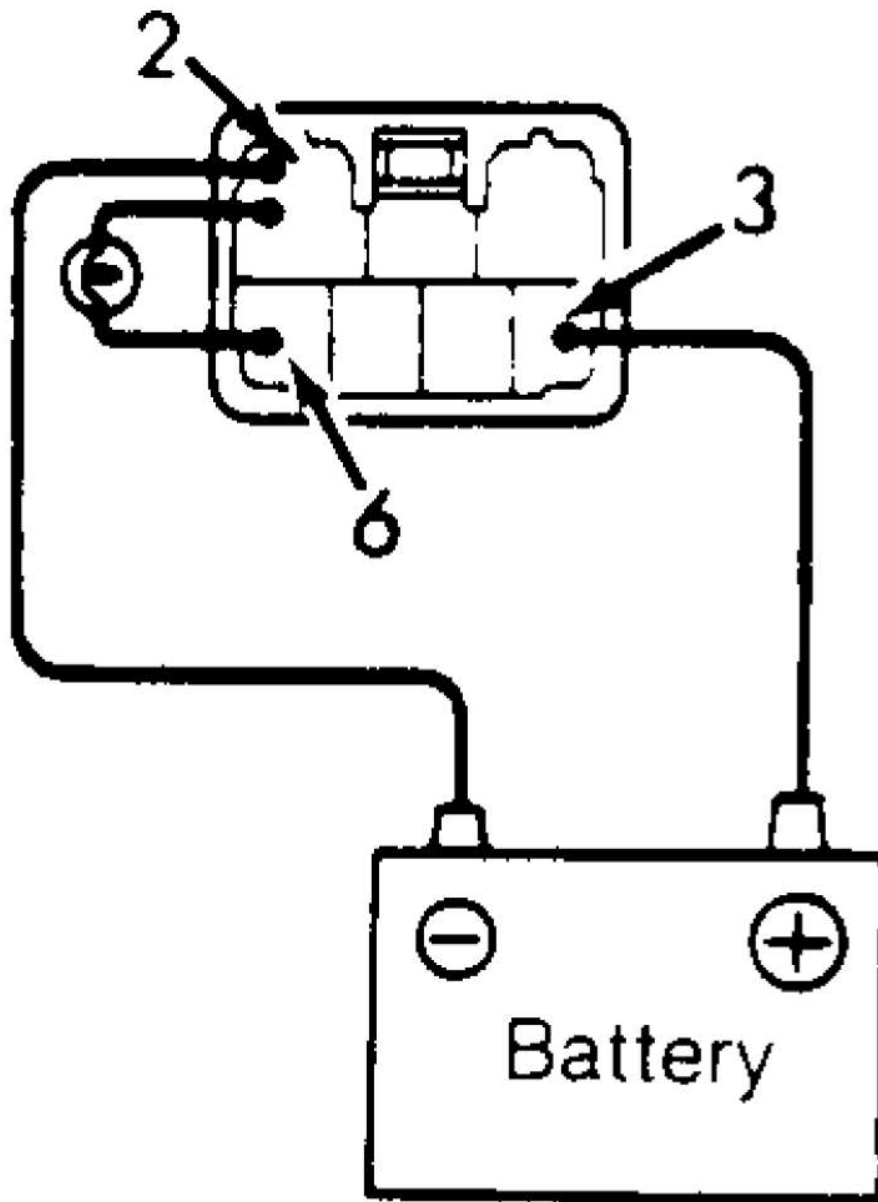
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Fig. 1: Defogger Switch Terminal ID (Except MR2 & Supra)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Celica

1) To test defogger switch without timer, ensure continuity exists between terminals No. 2, No. 3, and No. 6 with switch on. See Fig. 1. With switch off, continuity should not exist between terminals No. 2, No. 3, and No. 6. Check for continuity between terminals No. 4 and No. 5 (light bulb). Continuity should exist at all times. If continuity is not as specified, replace switch.

2) To test defogger switch with timer, connect battery positive lead to terminal No. 3, and battery negative lead to terminal No. 2. See Fig. 2. Connect 3.4-watt test light between terminals No. 2 and No. 6. Push defogger switch. Ensure test light lights for 12-18 minutes and then goes out. If switch does not operate as specified, replace switch.



WITH TIMER
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Fig. 2: Testing Defogger Sw. W/ Timer (Celica Shown; Tercel Similiar)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Corolla

1) With defogger switch on, ensure continuity exists between

terminals No. 4 (White/Black wire) and No. 6 (Black/Blue wire). See Fig. 1. With switch off, continuity should not exist between terminals No. 4 and No. 6. Check for continuity between terminals No. 1 and No. 3 (light bulb). Continuity should exist at all times. If continuity is not as specified, replace switch.

2) To test defogger switch timer, connect battery positive lead to terminal No. 5 (Red/Blue wire) and battery negative lead to terminal No. 6 (Black/Blue wire). See Fig. 1. Connect 3.4-watt test light between terminals No. 4 (White/Black wire) and battery voltage. Push defogger switch to ON position. Ensure test light and indicator light, lights for 12-18 minutes and then goes out. If switch does not operate as specified, replace switch.

3) To test defogger timer circuit on harness side, disconnect defogger switch 6-pin connector. Ensure continuity between terminal No. 4 (Black/Blue wire) and ground all the time. Measure voltage between terminal No. 5 (Red/Blue wire) and ground and between terminal No. 6 (Black/Blue wire) and ground. Ensure battery voltage with ignition in ON position and zero voltage with ignition in OFF position. Using a jumper wire, connect connector terminals No. 4 and No. 6. With normal operation, defogger will come on. If results are as specified, replace defogger switch and retest system.

Land Cruiser, Previa & 4Runner

1) Remove rear defogger switch. Terminals No. 1 and No. 4 are for bulb illumination. Using an ohmmeter, check for continuity between terminals No. 1 and No. 4 of switch. See Fig. 1. Continuity should exist at all times.

2) With defogger switch on, check for continuity between terminals No. 2, No. 3, and No. 6 of switch. Continuity should exist between terminals. With defogger switch off, continuity should not exist between terminals No. 2, No. 3 and No. 6. If switch continuity is not as specified, replace switch.

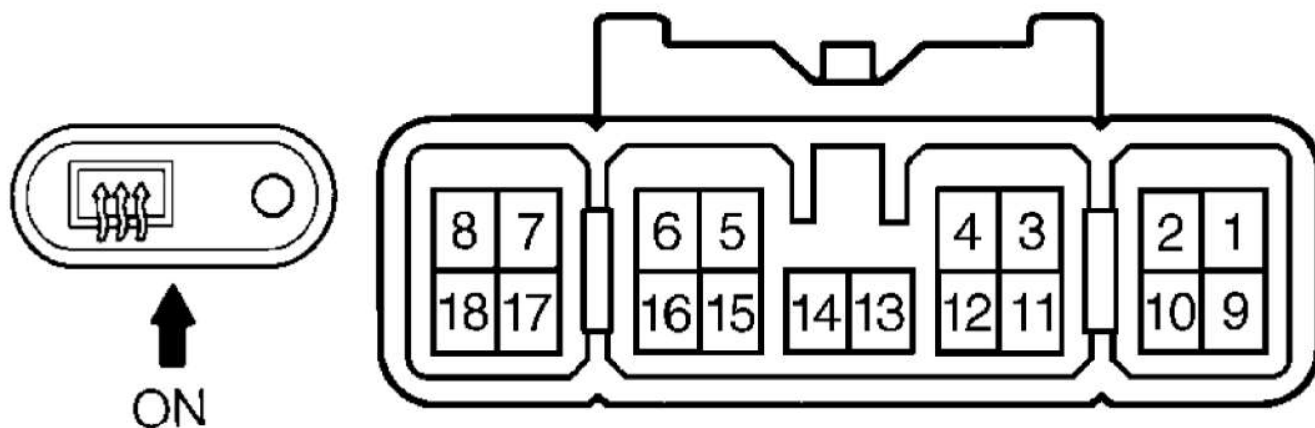
DEFOGGER SWITCH WIRE COLORS TABLE

Terminal No.	Wire Color
Land Cruiser	
2	Yellow
3	White/Black
6	Blue/Orange
Previa	
2	Red/Blue
3	White/Black
6	Blue
4Runner	
2	Black/Orange
3	Blue/Black
6	Black/Yellow

MR2

1) On MR2, defogger switch is located in A/C control assembly. With defogger switch on, ensure continuity exists between terminals No. 10 (Red/Blue wire) and No. 11 (Red/Yellow wire) of switch. See Fig. 3. With switch off, continuity should not exist between terminals No. 10 and No. 11.

2) To check switch indicator light operation, connect battery positive lead to terminal No. 10 of switch, and battery negative lead to terminal No. 15 (White/Black wire). See Fig. 3. Ensure defogger switch indicator light is on. If switch indicator light is not on, replace switch.



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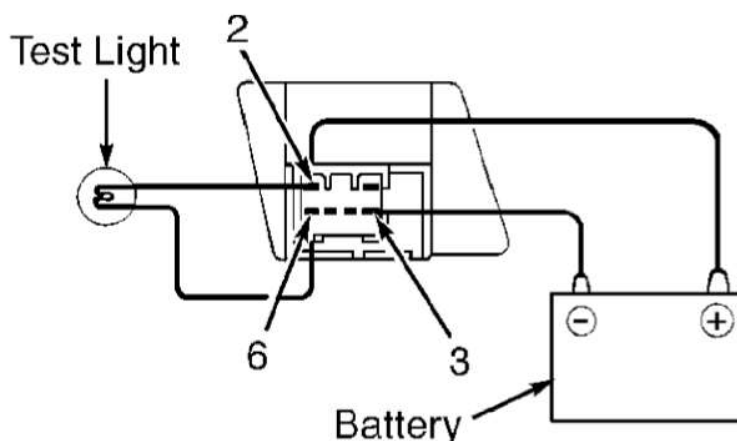
Fig. 3: Defogger Switch Terminal ID (MR2)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Paseo

1) To test defogger switch with timer, remove defogger switch. Using an ohmmeter, check for continuity between terminals No. 1 and No. 4. See Fig. 1. If continuity does not exist, replace switch. Connect battery positive lead to terminal No. 2, and battery negative lead to terminal No. 3. See Fig. 4.

2) Connect 3.4-watt test light between terminals No. 2 and No. 6. Turn defogger on. Ensure test light lights for 12-18 minutes and then goes out. If switch does not operate as specified, replace switch.

3) To test defogger switch without timer, remove defogger switch. With switch on, ensure continuity exists between terminals No. 2, No. 4, and No. 6. See Fig. 1. With switch off, continuity should not exist between terminals No. 2, No. 4, and No. 6. Check for continuity between terminals No. 1 and No. 3 (light bulb). Continuity should exist at all times. If continuity is not as specified, replace switch.



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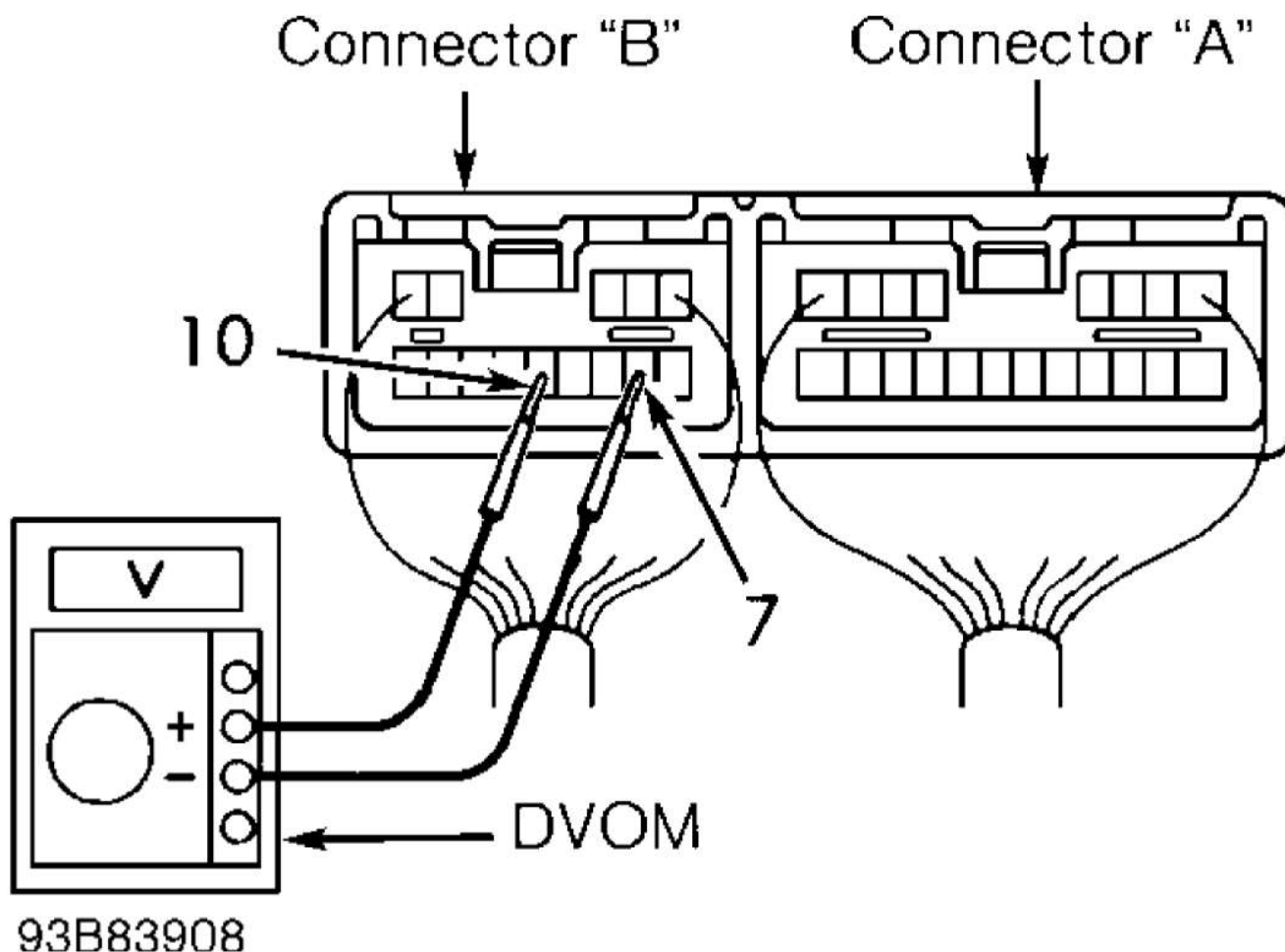
Fig. 4: Testing Defogger Switch (Paseo)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Supra

1) Defogger switch is part of heater control switch. Locate

A/C Heater Control switch Orange 14-pin "B" connector and ensure it is connected. See Fig. 5. Using voltmeter positive lead, backprobe connector terminal No. 7 (Pink/Black wire). Using voltmeter negative lead, backprobe "B" connector terminal No. 10 (Red/White wire). Ensure battery voltage with defogger switch in OFF position. Put switch to ON position, ensure indicator light is on and less than one volt between connector terminals No. 7 and No. 10. After 15 minutes, ensure defogger switch is off and battery voltage is again present. If voltage is not as specified, go to next step.

2) Disconnect A/C Heater Control switch Orange 14-pin connector. Put defogger switch to ON position. Ensure continuity between switch terminals No. 7 and No. 10. If continuity is not present, repair or replace A/C Heater Control switch.



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Fig. 5: Testing Defogger Switch (Supra)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Tercel

1) To test defogger switch without timer, remove defogger switch. Ensure continuity exists between switch connector terminals No. 2 (White/Black wire), No. 4 (Blue wire), and No. 6 (Black wire) with switch on. See Fig. 1. Check for continuity between switch connector terminals No. 2 and No. 6 (indicator bulb). Continuity should exist at all times. If continuity is not as specified, check switch indicator bulb and/or replace switch. With switch off, continuity should exist between switch connector terminals No. 1 and

No. 3. If continuity is not present, check illumination bulb.

2) To test defogger switch with timer, remove defogger switch. Ensure continuity between switch connector terminals No. 1 and No. 4. See Fig. 1. If continuity does not exist, replace illumination bulb.

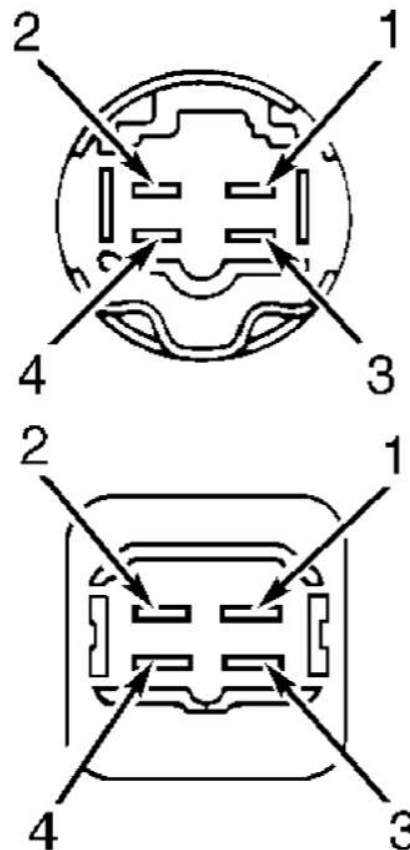
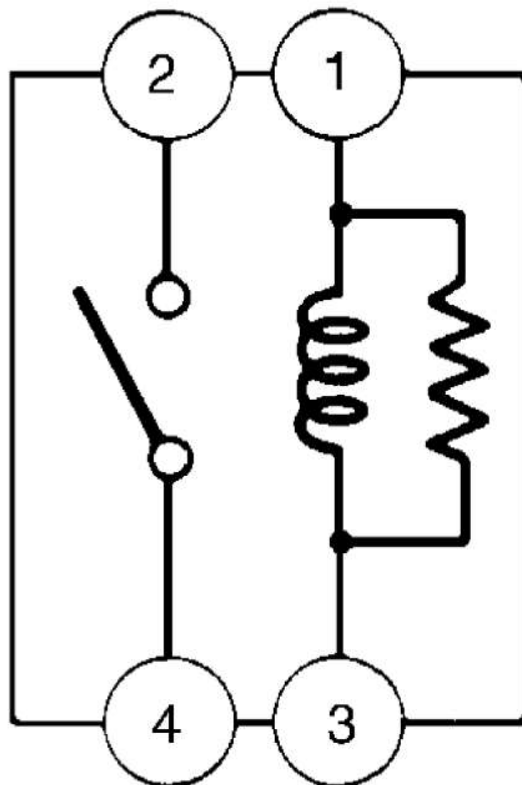
3) Connect battery positive lead to terminal No. 2 (Red/Blue wire), and battery negative lead to terminal No. 3 (White/Black wire). See Fig. 2. Connect 3.4-watt test light between terminals No. 2 and No. 6 (Green/White wire). Turn defogger on. Ensure indicator light and test light comes on for 12-18 minutes and then goes out. If defogger switch with timer, does not operate as specified, replace switch.

RELAY TEST

Except Camry, MR2 & Tercel

1) Using an ohmmeter, ensure continuity exists between terminals No. 1 and No. 3. See Fig. 6. Continuity should not exist between terminals No. 2 and No. 4 and terminals No. 3 and No. 4. If continuity is not as specified, replace relay.

2) Connect battery positive lead to terminal No. 1 and battery negative lead to terminal No. 3. Continuity should exist between terminals No. 2 and No. 4. If operation is not as specified, replace relay.



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Fig. 6: Testing Defogger Relay (Except Camry, MR2 & Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Camry, MR2 & Tercel

1) Using an ohmmeter, ensure continuity exists between

terminals No. 1 and No. 2. See Fig. 7. Continuity should not exist between terminals No. 3 and No. 5. If continuity is not as specified, replace relay.

2) Connect battery positive lead to terminal No. 1 and battery negative lead to terminal No. 2. Continuity should exist between terminals No. 3 and No. 5. If operation is not as specified, replace relay.

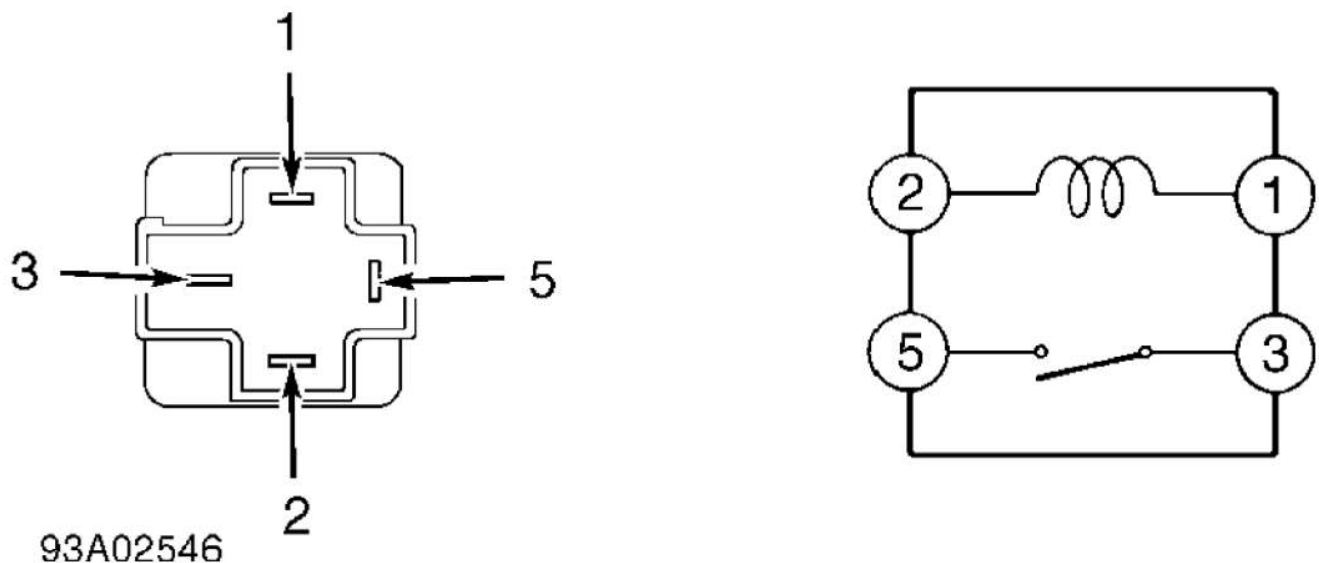


Fig. 7: Testing Defogger Relay (Camry, MR2 & Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

OUTSIDE REARVIEW MIRROR DEFOGGER TEST

Rearview Mirror Defogger Operation (Supra)

Locate and disconnect outside rearview mirror 5-pin connector. Connect battery positive lead to terminal No. 2 (Blue/Red wire), and battery negative lead to terminal No. 1 (White/Black wire). After a short time, ensure mirror becomes warm. If mirror does not become warm, replace mirror assembly.

Rearview Mirror Defogger Circuit (Supra)

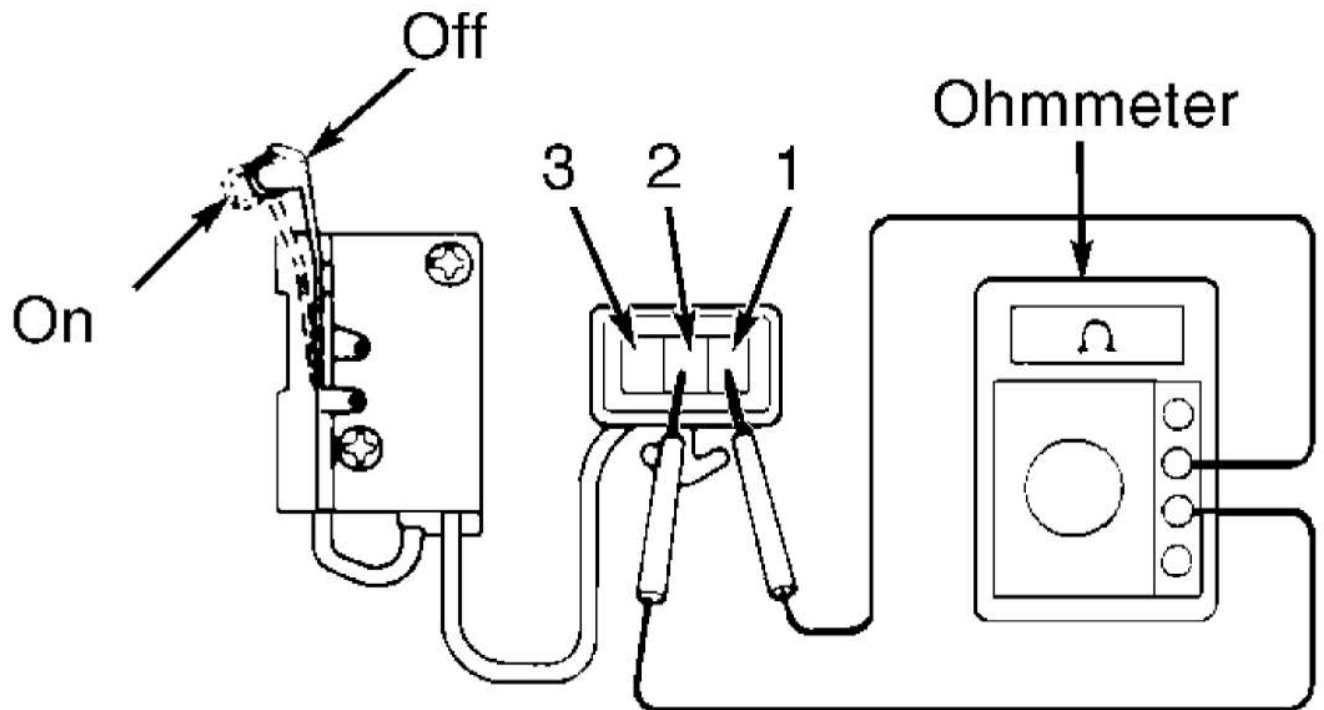
1) Locate and disconnect outside rearview mirror 5-pin connector. Ensure continuity between ground and 5-pin harness side connector terminal No. 1 (White/Black wire). If continuity is present, go to next step.

2) Turn ignition on and defogger switch off. Ensure no voltage between ground and 5-pin harness side connector terminal No. 2 (Blue/Red wire). Turn ignition switch on and defogger switch on. Ensure battery voltage between ground and 5-pin harness side connector terminal No. 2 (Blue/Red wire). If harness side circuit is not as specified, inspect other related components and/or harnesses.

POWER WINDOW LIMIT SWITCH

4Runner

Power window limit switch is located behind trim panel and bottom of rear door. Using an ohmmeter, ensure continuity exists between terminals No. 1 (Red/Blue wire) and No. 2 (White/Black wire) when switch is turned to ON position. See Fig. 8. Continuity should not exist between any terminals when switch is pushed to OFF position. If continuity is not as specified, replace relay.



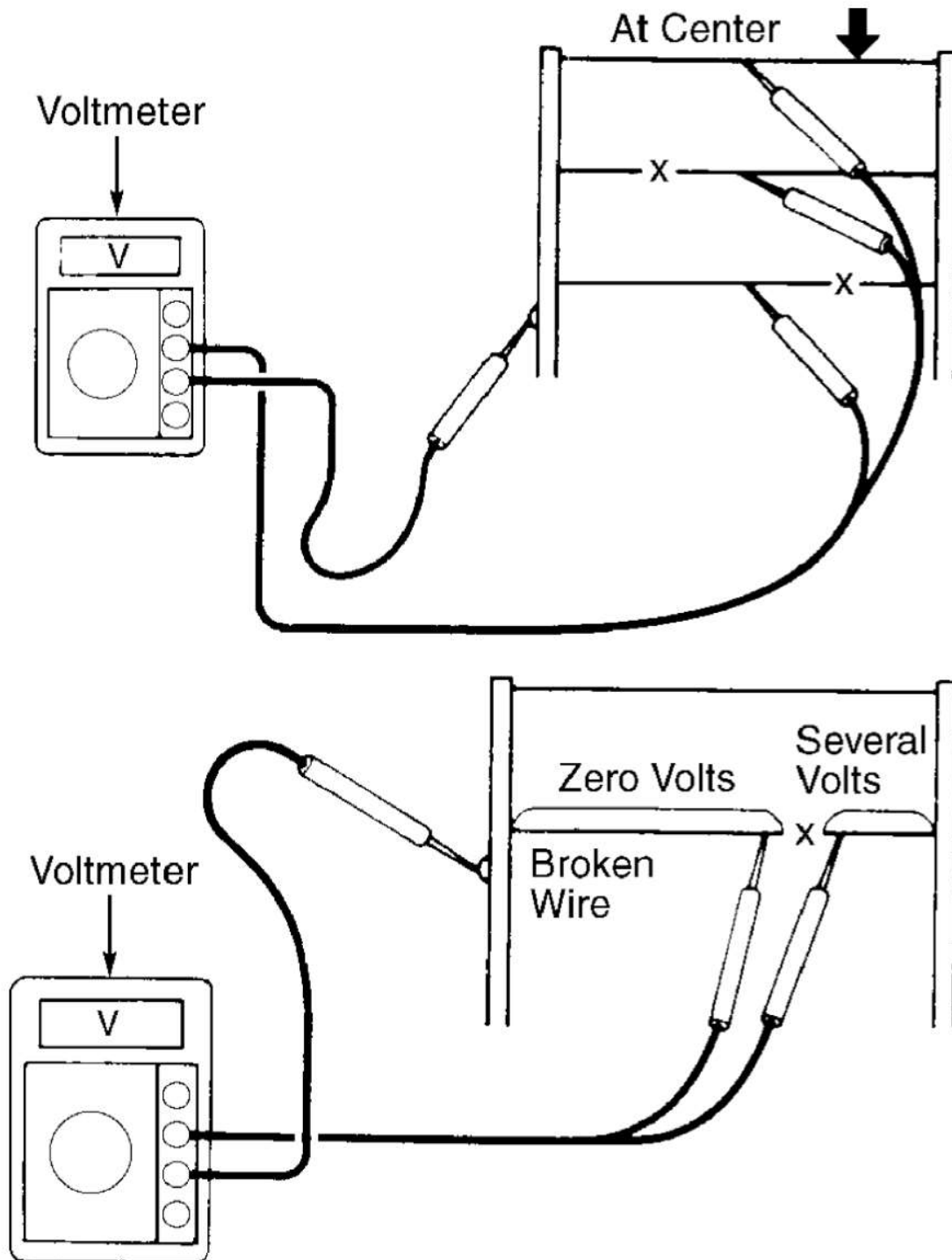
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Fig. 8: Testing Power Window Limit Switch (4Runner)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

GRID FILAMENT TESTING

NOTE: When testing grid wires with voltmeter, wrap aluminum foil around end of test probe, then press foil to grid wire. This will prevent probe from damaging grid wire

1) To locate breaks in grid wire filaments, attach a voltmeter to middle portion of each filament. Attach other meter probe to vertical section of window grid. See Fig. 9.



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Fig. 9: Testing Grid Filament

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

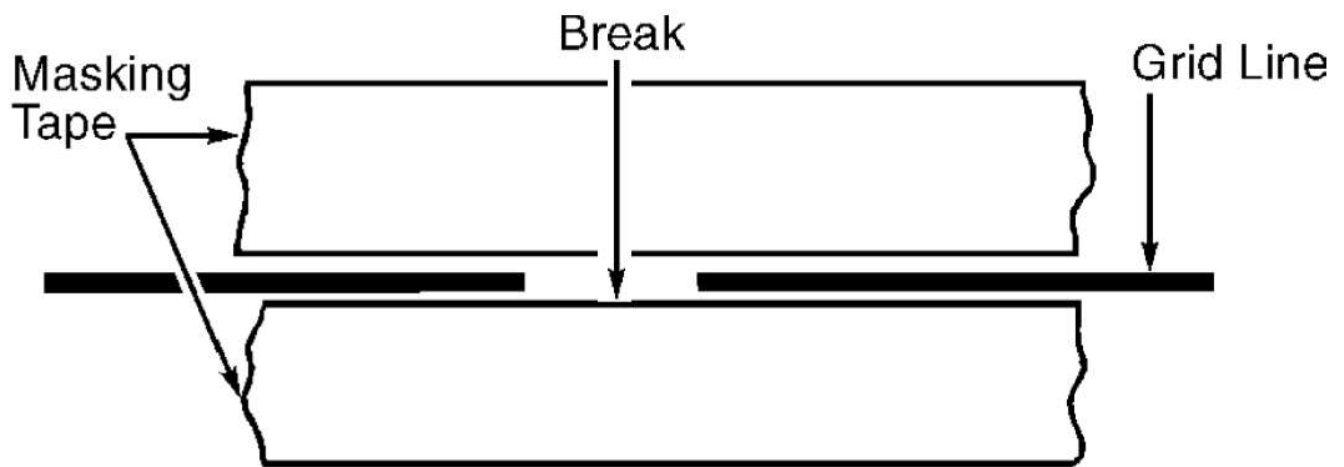
2) If a grid is broken, meter will register zero volts or about 10 volts, depending on if grid is broken between or outside test

leads. If wire is unbroken, meter will register about 5 volts. To locate break, move probe along wire until voltage changes abruptly.

ON-VEHICLE SERVICE

GRID FILAMENT REPAIR

Clean broken wire tips thoroughly. Place masking tape along both sides of broken wire. See Fig. 10. Apply Repair Paste (DuPont 4817) to broken section of grid. Remove masking tape after paste has dried. Wait 24 hours before using defogger.



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Fig. 10: Repairing Rear Defogger Grid Filament
Courtesy of Toyota Motor Sales, U.S.A., Inc.

WIRING DIAGRAMS

Proceed to appropriate WIRING DIAGRAMS article listed below in WIRING DIAGRAMS section.

- * WIRING DIAGRAMS (for Camry).
- * WIRING DIAGRAMS (for Celica).
- * WIRING DIAGRAMS (for Corolla).
- * WIRING DIAGRAMS (for Land Cruiser).
- * WIRING DIAGRAMS (for MR2).
- * WIRING DIAGRAMS (for Paseo).
- * WIRING DIAGRAMS (for Previa).
- * WIRING DIAGRAMS (for Supra).
- * WIRING DIAGRAMS (for Tercel).
- * WIRING DIAGRAMS (for 4Runner).