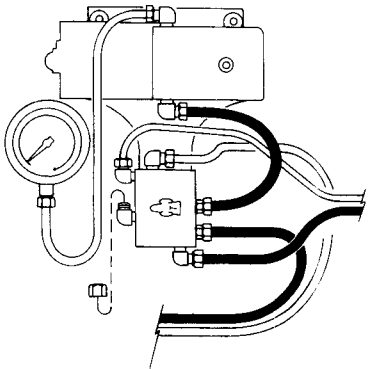


**PINPOINT TESTS**      **REFER TO:** PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE, NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

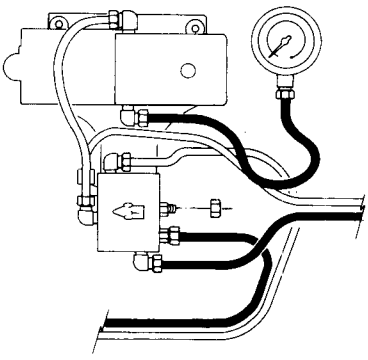
**TEST G (CONTINUED)**  
**HARDTOP HYDRAULIC SYSTEM**

| TEST STEP   |   | RESULT               | ACTION TO TAKE  |
|---|---|----------------------|---|
| <b>G-6</b>  | CHECK HARDTOP HYDRAULIC PUMP OPEN (EXTEND) PRESSURE |                      |   |
| <p>NOTE: BE CAREFUL CONNECTING PRESSURE GAUGE IF HARDTOP IS PARTIALLY OPEN. MOVEMENT OF THE HARDTOP MAY OCCUR.</p> <ul style="list-style-type: none"> <li>• Route pressure gauge and hose through rear seat, in order to stay clear of moving components.</li> <li>• Place transaxle in park (P) automatic, neutral for manual.</li> <li>• Parking brake applied.</li> <li>• Hard tonneau open.</li> <li>• Turn hardtop bypass valve to MANUAL position.</li> <li>• Connect pressure gauge to hardtop hydraulic pump open (extend) side.</li> </ul>  <p>• Cap open fitting on manifold.<br/>       • Manually move hardtop to half open position.<br/>       • Turn ignition to ON position.<br/>       • Operate hardtop control switch to OPEN position.<br/>       • Read pressure gauge.</p> <p>• Is pressure 400 psi or greater?</p> |   | <p>Yes</p> <p>No</p> | <p>▶ Go to <b>G-7</b>.</p> <p>▶ Replace hardtop hydraulic pump. Restore vehicle. Retest system.</p> |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

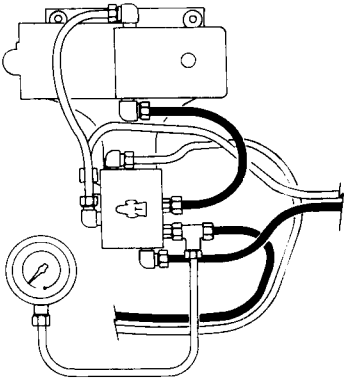
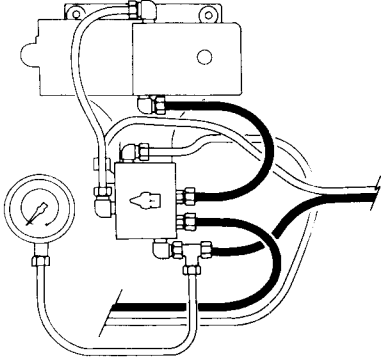
TEST G (CONTINUED)  
 HARDTOP HYDRAULIC SYSTEM

| TEST STEP  |   | RESULT               | ACTION TO TAKE  |
|--|---|----------------------|---|
| <b>G-7</b>   | CHECK HARDTOP HYDRAULIC PUMP CLOSE (RETRACT) PRESSURE |                      |   |
| <p>NOTE: BE CAREFUL CONNECTING PRESSURE GAUGE IF HARDTOP IS PARTIALLY OPEN. MOVEMENT OF THE HARDTOP MAY OCCUR.</p> <ul style="list-style-type: none"> <li>Place transaxle in park (P) automatic, neutral for manual.</li> <li>Parking brake applied.</li> <li>Turn hardtop bypass valve to MANUAL position.</li> <li>Connect pressure gauge to hardtop hydraulic pump close (retract) side.</li> </ul>  <ul style="list-style-type: none"> <li>Cap open fitting on manifold.</li> <li>Manually move hardtop to half open position.</li> <li>Turn ignition to ON position.</li> <li>Operate hardtop control switch to CLOSE position.</li> <li>Read pressure gauge.</li> </ul> <p>• Is pressure 400 psi or greater?</p> |   | <p>Yes</p> <p>No</p> | <p>Go to <b>G-8</b>.</p> <p>Replace hardtop hydraulic pump. Restore vehicle. Retest system.</p> |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST G (CONTINUED)  
HARDTOP HYDRAULIC SYSTEM

| TEST STEP |  | RESULT               | ACTION TO TAKE   |
|-----------|--|----------------------|--|
| G-8       | CHECK HARDTOP HYDRAULIC SYSTEM FLOW PRESSURE   |                      |  |
|           | <ul style="list-style-type: none"> <li>• Operate hard tonneau to OPEN position.</li> <li>• Operate hardtop to CLOSED position.</li> <li>• Turn hardtop bypass valve to MANUAL position.</li> <li>• Connect pressure gauge to LH cylinder retract side.</li> </ul>  <ul style="list-style-type: none"> <li>• Turn hardtop bypass valve to POWER position.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch and operate hardtop to OPEN position.</li> <li>• Press hardtop control switch and operate hardtop to CLOSE position.</li> <li>• Read and record highest pressure indicated.</li> <li>• Restore LH cylinder retract side.</li> <li>• Turn hardtop bypass valve to MANUAL position.</li> <li>• Connect pressure gauge to RH cylinder retract side.</li> </ul>  <ul style="list-style-type: none"> <li>• Turn hardtop bypass valve to POWER position.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch and operate hardtop to OPEN position.</li> <li>• Press hardtop control switch and operate hardtop to CLOSE position.</li> <li>• Read and record highest pressure indicated.</li> </ul> <p>• Are pressure less than 400 psi and within 100 psi of each other?</p> | <p>Yes</p> <p>No</p> | <p>Hydraulic system Okay.<br/>Restore vehicle.<br/>Retest system.</p> <p>Pressure over 400 psi<br/>check for hardtop<br/>binding.<br/>Under 400 psi replace<br/>hydraulic cylinder on<br/>side with the lowest<br/>pressure.<br/>Restore vehicle.<br/>Retest system.</p> |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST H  
 HARDTOP CONTROL SWITCH INOPERATIVE

| TEST STEP |   | RESULT        | ACTION TO TAKE   |
|-----------|---|---------------|--|
| H-1       | CHECK CIRCUIT GC 2 FOR VOLTAGE AT HARDTOP CONTROL SWITCH  |               |  |
|           | <ul style="list-style-type: none"> <li>Access connector D48 at hardtop and hard tonneau control switch.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 4 at hardtop and hard tonneau control switch connector D48.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                                      | Yes<br><br>No | Go to H-2.<br><br>Repair circuit GC 2.<br>Restore vehicle.<br>Retest system.                             |
| H-2       | CHECK CIRCUIT GC 4 AT HARDTOP AND HARD TONNEAU CONTROL SWITCH   |               |  |
|           | <ul style="list-style-type: none"> <li>Access connector D48 at hardtop and hard tonneau control switch.</li> <li>Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 11 at hardtop and hard tonneau control switch connector D48.</li> <li>Turn ignition to ON position.</li> <li>Press hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>      | Yes<br><br>No | Go to H-3.<br><br>Replace hardtop and hard tonneau control switch.<br>Restore vehicle.<br>Retest system. |
| H-3       | CHECK CIRCUIT GC 4 FOR VOLTAGE AT ECU   |               |  |
|           | <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 42 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Press hardtop control switch to the OPEN position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>  | Yes<br><br>No | Go to H-4.<br><br>Repair circuit GC 4.<br>Restore vehicle.<br>Retest system.                             |
| H-4       | CHECK CIRCUIT GC 3 AT HARDTOP AND HARD TONNEAU CONTROL SWITCH   |               |  |
|           | <ul style="list-style-type: none"> <li>Access connector D48 at hardtop and hard tonneau control switch.</li> <li>Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 3 at hardtop and hard tonneau control switch connector D48.</li> <li>Turn ignition to ON position.</li> <li>Press hard tonneau control switch to CLOSE position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br><br>No | Go to H-5.<br><br>Replace hardtop and hard tonneau control switch.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST H (CONTINUED)  
HARDTOP CONTROL SWITCH INOPERATIVE

| TEST STEP  |                                       | RESULT | ACTION TO TAKE   |
|--|---------------------------------------|--------|--|
| H-5  | CHECK CIRCUIT GC 3 FOR VOLTAGE AT ECU |        |  |
| <ul style="list-style-type: none"><li>• Access connector F-124 at ECU.</li><li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt connect, negative lead to a known good ground.</li><li>• Back probe and connect the positive lead to pin 28 at ECU connector F-124.</li><li>• Turn ignition to ON position.</li><li>• Press hard tonneau control switch to the CLOSE position.</li><li>• Read voltmeter.</li></ul> <p>• Is system voltage present?</p> |                                       | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.         |
|  |                                       | No     | Repair circuit GC 3.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST J  
 HARDTOP OPERATES WHEN AUTOMATIC TRANSMISSION IS IN ANY GEAR

| TEST STEP |   | RESULT        | ACTION TO TAKE   |
|-----------|---|---------------|--|
| J-1       | CHECK SYSTEM VOLTAGE AT ECU, PRNDL IN PARK POSITION   |               |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Make sure PRNDL is in PARK position.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 13 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br><br>No | ► Go to J-2.<br><br>► Go to J-3.   |
| J-2       | CHECK SYSTEM VOLTAGE AT ECU, PRNDL IN DRIVE POSITION  |               |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Place PRNDL in DRIVE position.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 13 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                                | Yes<br><br>No | ► Go to J-4.<br><br>► Replace ECU.<br>Restore vehicle.<br>Retest system.   |
| J-3       | CHECK CIRCUIT GC 7 AT PARKING SWITCH  |               |  |
|           | <ul style="list-style-type: none"> <li>• Access parking switch connector D-50.</li> <li>• Place PRNDL in PARK position.</li> <li>• Using a DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 2 at connector D-50.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                                      | Yes<br><br>No | ► Repair circuit GC 7.<br>Restore vehicle.<br>Retest system.<br><br>► Replace park switch or<br>repair circuit GC 8.<br>Restore vehicle.<br>Retest system. |
| J-4       | CHECK CIRCUIT GC 7 FOR SHORT TO VOLTAGE   |               |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect parking switch connector D-50.</li> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Using a DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 13 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                | Yes<br><br>No | ► Repair circuit GC 7.<br>Restore vehicle.<br>Retest system.<br><br>► Replace park switch or<br>repair circuit GC 8.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST K  
 HARDTOP OPERATES WHEN VEHICLE IS MOVING

| TEST STEP  |   | RESULT    | ACTION TO TAKE   |
|--|---|-----------|--|
| K-1  | CHECK CIRCUIT GC 12 AT ECU FOR SYSTEM VOLTAGE |           |  |
| NOTE: Two different conditions must exist for this to occur. This Pinpoint Test should be performed after Pinpoint Test J (for automatic transaxle) and Pinpoint Test L (for manual transaxle) has been performed. <ul style="list-style-type: none"> <li>• Raise vehicle off ground and set stands under vehicle.</li> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 12 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> NOTE: If voltage is initially low, rotate LH front wheel 45 to 90 degrees and read voltmeter. <ul style="list-style-type: none"> <li>• Is voltage 9.0 vdc or more?</li> </ul> |   | Yes<br>No | Go to K-2.<br>Go to K-3.   |
| K-2  | CHECK CIRCUIT GC 12 AT ECU WITH WHEEL TURNING |           |  |
| <ul style="list-style-type: none"> <li>• Vehicle raised off ground and stands under vehicle.</li> <li>• Access connector F-124 at ECU.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 12 at ECU connector F-124.</li> <li>• Start engine.</li> <li>• Place transaxle in gear.</li> <li>• Carefully allow front wheels to rotate over 3 mph.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• Is voltage between 5 and 10 vdc?</li> </ul>   |   | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Refer to Volume 2 of Service Manual for speed sensor input service.          |
| K-3  | CHECK CIRCUIT HE 3 AT ETAC                    |           |  |
| <ul style="list-style-type: none"> <li>• Vehicle raised off ground and stands under vehicle.</li> <li>• Access ETAC connector C-66.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 61 at ETAC connector C-66.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> NOTE: If voltage is initially low, rotate LH front wheel 45 to 90 degrees and read voltmeter. <ul style="list-style-type: none"> <li>• Is voltage 9.0 vdc or more?</li> </ul>   |   | Yes<br>No | Repair circuit GC 12.<br>Restore vehicle.<br>Retest system.<br>Refer to Volume 2 of Service Manual for speed sensor input service. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST L  
 HARDTOP OPERATES WITHOUT PARKING BRAKE APPLIED (MANUAL TRANSMISSION)

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| L-1  | CHECK CIRCUIT GC 28 AT ECU                  |        |   |
| <ul style="list-style-type: none"> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Make sure parking brake is not applied.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 7 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul> |   | Yes    | Go to L-2.  |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.                  |
| L-2  | CHECK CIRCUIT GC 28 AT PARKING BRAKE SWITCH |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected</li> <li>• Access and disconnect parking brake switch connector D28.</li> <li>• Using a DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 7 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>                  |   | Yes    | Repair circuit GC 28.<br>Restore vehicle.<br>Retest system.         |
|  |   | No     | Replace parking brake switch.<br>Restore vehicle.<br>Retest system. |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST M  
LEDs INOPERATIVE OR ON AT ALL TIMES

| TEST STEP  |  | RESULT        | ACTION TO TAKE  |
|------------|--|---------------|---|
| <b>M-1</b> | CHECK CIRCUIT GC 53 FOR VOLTAGE AT HARDTOP AND HARD TONNEAU CONTROL SWITCH   |               |   |
|            | <ul style="list-style-type: none"> <li>• Access and disconnect connector D-48 at hardtop and hard tonneau control switch.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 6 at hardtop and hard tonneau control switch connector D-48.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br><br>No | ► Go to <b>M-2</b> .<br><br>► Go to <b>M-3</b> .  |
| <b>M-2</b> | CHECK CIRCUIT GC 52 FOR SHORT TO GROUND  |               |   |
|            | <ul style="list-style-type: none"> <li>• Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Using a DVOM set to ohm scale, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 17 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>  | Yes<br><br>No | ► Repair circuit GC 52.<br>Restore vehicle.<br>Retest system.<br><br>► Go to <b>M-4</b> . |
| <b>M-3</b> | CHECK CIRCUIT GC 53 FOR SHORT TO GROUND  |               |   |
|            | <ul style="list-style-type: none"> <li>• Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Using a DVOM set to ohm scale, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 20 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>  | Yes<br><br>No | ► Repair circuit GC 53.<br>Restore vehicle.<br>Retest system.<br><br>► Go to <b>M-5</b> . |
| <b>M-4</b> | CHECK CIRCUIT GC 52 FOR OPEN   |               |   |
|            | <ul style="list-style-type: none"> <li>• Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, connect positive lead to pin 17 at ECU connector F-124.</li> <li>• Connect the negative lead to pin 3 at hardtop and hard tonneau control switch connector D-48.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there 3 ohms or less?</p>                   | Yes<br><br>No | ► Go to <b>M-6</b> .<br><br>► Repair circuit GC 52.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST M (CONTINUED)  
 LEDs INOPERATIVE OR ON AT ALL TIMES

| TEST STEP  |   | RESULT | ACTION TO TAKE   |
|--|---|--------|--|
| <b>M-5</b>   | CHECK CIRCUIT GC 53 FOR OPEN            |        |  |
| <ul style="list-style-type: none"> <li>Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, connect positive lead to pin 20 at ECU connector F-124.</li> <li>Connect the negative lead to pin 6 at hardtop and hard tonneau control switch connector D-48.</li> <li>Read ohmmeter.</li> </ul> |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                                     |
| <ul style="list-style-type: none"> <li>Is there 3 ohms or less?</li> </ul>   |   | No     | Repair circuit GC 53.<br>Restore vehicle.<br>Retest system.                            |
| <b>M-6</b>   | CHECK CIRCUIT GC 51 FOR SHORT TO GROUND |        |  |
| <ul style="list-style-type: none"> <li>Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to known good ground.</li> <li>Connect positive lead to pin 16 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul>                          |   | Yes    | Repair circuit GC 51.<br>Restore vehicle.<br>Retest system.                            |
| <ul style="list-style-type: none"> <li>Is there continuity?</li> </ul>   |   | No     | Go to <b>M-7</b> .   |
| <b>M-7</b>   | CHECK CIRCUIT GC 51 FOR OPEN            |        |  |
| <ul style="list-style-type: none"> <li>Connector D-48 at hardtop and hard tonneau control switch disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale connect negative lead to pin 7 at hardtop and hard tonneau control switch connector.</li> <li>Connect positive lead to pin 16 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul>           |   | Yes    | Go to <b>M-8</b> .   |
| <ul style="list-style-type: none"> <li>Is there 3 ohms or less?</li> </ul>   |   | No     | Repair circuit GC 51.<br>Restore vehicle.<br>Retest system.                            |
| <b>M-8</b>   | CHECK LEDs IN SWITCH                    |        |  |
| <ul style="list-style-type: none"> <li>Connect connector F-124 at ECU.</li> <li>Connect a known good hardtop and hard tonneau control switch.</li> <li>Operate system.</li> </ul>  |   | Yes    | Replace hardtop and hard tonneau control switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>Do the LEDs operate properly?</li> </ul>  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.                                     |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST N  
 PASSENGER WINDOW INOPERATIVE WITH PASSENGER WINDOW SWITCH

| TEST STEP |   | RESULT    | ACTION TO TAKE  |
|-----------|---|-----------|---|
| N-1       | CHECK CIRCUIT GW 43 FOR VOLTAGE AT ECU  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 1 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Press passenger window switch to UP position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                       | Yes<br>No | Go to N-2.<br>Go to N-3.  |
| N-2       | CHECK CIRCUIT GW 44 FOR VOLTAGE AT ECU  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 2 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Press passenger window switch to DOWN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>  | Yes<br>No | Go to N-5.<br>Go to N-4.  |
| N-3       | CHECK CIRCUIT GW 43 FOR VOLTAGE AT PASSENGER DOOR SWITCH  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access passenger window switch connector E-06.</li> <li>• Using a DVOM set to DC volt, connected negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin 5 at passenger window switch connector E-06.</li> <li>• Turn ignition to ON position.</li> <li>• Operate the passenger window switch to UP position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   | Yes<br>No | Repair circuit GW 43.<br>Restore vehicle.<br>Retest system.<br>Refer to Vol. 2 of Service Manual. |
| N-4       | CHECK CIRCUIT GW 44 FOR VOLTAGE AT PASSENGER DOOR SWITCH  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access passenger window switch connector E-06.</li> <li>• Using a DVOM set to DC volt, connected negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin 3 at passenger window switch connector E-06.</li> <li>• Turn ignition to ON position.</li> <li>• Operate the passenger window switch to DOWN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br>No | Repair circuit GW 44.<br>Restore vehicle.<br>Retest system.<br>Refer to Vol. 1 of Service Manual. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST N (CONTINUED)  
 PASSENGER WINDOW INOPERATIVE WITH PASSENGER WINDOW SWITCH

| TEST STEP  |  | RESULT    | ACTION TO TAKE  |
|------------|--|-----------|---|
| <b>N-5</b> | CHECK CIRCUIT GW 53 FOR VOLTAGE  |           |   |
|            | <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connected negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 13 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> <li>• Momentarily operate passenger window switch to UP position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br>No | Go to <b>N-6</b> .<br>Replace ECU.<br>Restore vehicle.<br>Retest system.                    |
| <b>N-6</b> | CHECK CIRCUIT GW 54 FOR VOLTAGE  |           |   |
|            | <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using a DVOM set to DC volt, connected negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin 14 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> <li>• Momentarily operate passenger window switch to DOWN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                      | Yes<br>No | Go to <b>N-7</b> .<br>Replace ECU.<br>Restore vehicle.<br>Retest system.                    |
| <b>N-7</b> | CHECK PASSENGER WINDOW MOTOR CIRCUITS FOR OPEN   |           |   |
|            | <ul style="list-style-type: none"> <li>• Disconnect connector F-123 at ECU.</li> <li>• Using a DVOM set to ohm scale connect negative lead to pin 13 at ECU connector F-123.</li> <li>• Connect the positive lead to pin 14 at ECU connector F-123.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there 10 ohms or less?</p>  | Yes<br>No | Replace passenger window motor.<br>Restore vehicle.<br>Retest system.<br>Go to <b>N-8</b> . |
| <b>N-8</b> | CHECK CIRCUIT GW 53 FOR OPEN   |           |   |
|            | <ul style="list-style-type: none"> <li>• Connector F-123 at ECU disconnected.</li> <li>• Access and disconnect passenger window motor connector E-08.</li> <li>• Using a DVOM set to ohm scale, connect positive lead to pin 13 at ECU connector F-123.</li> <li>• Connect the negative lead to pin 2 at passenger window motor harness connector E-08.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there 3 ohms or less?</p>                                     | Yes<br>No | Go to <b>N-9</b> .<br>Repair circuit GW 53.<br>Restore vehicle.<br>Retest system.           |

**PINPOINT TESTS**      **REFER TO:**   **PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,**  
**NOTES AND DEFINITIONS OF TERMS.**  
**PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.**  
**PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

**TEST N (CONTINUED)**  
**PASSENGER WINDOW INOPERATIVE WITH PASSENGER WINDOW SWITCH**

| TEST STEP   |                              | RESULT | ACTION TO TAKE  |
|---|------------------------------|--------|---|
| <b>N-9</b>  | CHECK CIRCUIT GW 54 FOR OPEN |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-123 at ECU disconnected.</li> <li>• Passenger window motor disconnected connector E-08.</li> <li>• Using a DVOM set to ohm scale, connect positive lead to pin 14 at ECU connector F-123.</li> <li>• Connect the negative lead to pin 1 at passenger window motor harness connector E-08.</li> <li>• Read ohmmeter.</li> </ul> |                              | Yes    | Replace passenger window motor.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• <b>Is there 3 ohms or less?</b></li> </ul>   |                              | No     | Repair circuit GW 54.<br>Restore vehicle.<br>Retest system.           |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

TEST P  
 PC WILL NOT COMMUNICATE WITH ECU

| TEST STEP  |  | RESULT        | ACTION TO TAKE   |
|--|--|---------------|--|
| <b>P-1</b>   | CHECK CIRCUIT GC 70 FOR VOLTAGE AT DLC |               |  |
| NOTE: Verify that correct Personal Computer (PC) and ECU software are installed before proceeding.<br><br>• Access Data Link Connector (DLC) connector C-91.<br>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.<br>• Connect positive lead to pin 1 at DLC connector C-91.<br>• Turn ignition to ON position.<br>• Read voltmeter.<br><br>• Is system voltage present? |  | Yes<br><br>No | ► Go to <b>P-2</b> .<br><br>► Repair circuit GC 70.<br>Restore vehicle.<br>Retest system.            |
| <b>P-2</b>   | CHECK CIRCUIT GC 71 FOR GROUND AT DLC  |               |  |
| • Access DLC connector C-91.<br>• Using a DVOM set to DC volt, connect negative lead to pin 3 at DLC connector C-91.<br>• Connect the positive lead to pin 1 at DLC connector C-91.<br>• Turn ignition to ON position.<br>• Read voltmeter.<br><br>• Is system voltage present?  |  | Yes<br><br>No | ► Go to <b>P-3</b> .<br><br>► Repair circuit GC 71.<br>Restore vehicle.<br>Retest system.            |
| <b>P-3</b>   | CHECK CIRCUIT GC 9 FOR OPEN            |               |  |
| • Access and disconnect connector F-124 at ECU.<br>• Access DLC connector C-91.<br>• Using a DVOM set to ohm scale, connect one lead to pin 2 at DLC connector C-91.<br>• Connect the second lead to pin 10 at ECU connector F-124.<br>• Read ohmmeter.<br><br>• Is there 3 ohms or less?  |  | Yes<br><br>No | ► Go to <b>P-4</b> .<br><br>► Repair circuit GC 9.<br>Restore vehicle.<br>Retest system.             |
| <b>P-4</b>   | VERIFY PC AND CONVERTER OPERATION      |               |  |
| • Verify PC, Converter and cable operation.<br>• Refer to PC Users Manual.<br><br>• Is test equipment operational?   |  | Yes<br><br>No | ► Replace ECU.<br>Restore vehicle.<br>Retest system.<br><br>► Service as required.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 02-06

| TEST STEP |  | RESULT    | ACTION TO TAKE  |
|-----------|--|-----------|---|
| 2-1       | CHECK CIRCUIT GC 20 FOR SHORT TO GROUND  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 22 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul> | Yes<br>No | Go to 2-4.<br>Go to 2-2.  |
| 2-2       | CHECK CIRCUIT GC 22 FOR SHORT TO GROUND  |           |   |
|           | <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 23 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>   | Yes<br>No | Go to 2-4.<br>Go to 2-3.  |
| 2-3       | CHECK CIRCUIT GC 20 AND GC 22 FOR SHORT  |           |   |
|           | <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 22 at ECU connector F-124.</li> <li>• Connect the second lead to pin 23 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there 3 ohms or less?</b></li> </ul>                            | Yes<br>No | Go to 2-4.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.                        |
| 2-4       | CHECK ROOF HARNESS FOR SHORT   |           |   |
|           | <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set on ohm scale, connect as previous test.</li> <li>• Access and disconnect roof harness to rear harness connector E-122 (8 way) at LH rear roof area.</li> <li>• Read ohmmeter.</li> <li>• <b>Is short still present?</b></li> </ul>               | Yes<br>No | Go to 2-5.<br>Repair roof harness as necessary.<br>Restore vehicle.<br>Retest system.   |
| 2-5       | CHECK HEADER HARNESS FOR SHORT   |           |   |
|           | <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set on ohm scale, connect as previous test.</li> <li>• Access and disconnect header harness to body harness 10 way connector E-46 at LH A-pillar area.</li> <li>• Read ohmmeter.</li> <li>• <b>Is short still present?</b></li> </ul>                | Yes<br>No | Go to 2-6.<br>Repair header harness as necessary.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 02-06 (CONTINUED)

| TEST STEP   |                              | RESULT | ACTION TO TAKE  |
|---|------------------------------|--------|---|
| 2-6   | CHECK REAR HARNESS FOR SHORT |        |   |
| <ul style="list-style-type: none"><li>• Connector F-124 at ECU disconnected.</li><li>• Using a DVOM set on ohm scale, connect as previous test.</li><li>• Access and disconnect rear harness to body harness connector F-48 behind LH quarter trim panel area.</li><li>• Read ohmmeter.</li></ul> |                              | Yes    | Repair rear harness as necessary.<br>Restore vehicle.<br>Retest system. |
| • Is short still present?   |                              | No     | Repair body harness as necessary.<br>Restore vehicle.<br>Retest system. |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 07

| TEST STEP |   | RESULT | ACTION TO TAKE  |
|-----------|---|--------|---|
| 7-1       | CHECK 60 AMP FUSE   |        |   |
|           | <ul style="list-style-type: none"> <li>Access and remove Number 8 60A fusible link in engine compartment fuse panel.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to each terminal of fuse.</li> <li>Read ohmmeter.</li> </ul>   | Yes    | Go to 7-2.  |
|           | <ul style="list-style-type: none"> <li>Is there continuity?</li> </ul>  | No     | Go to 7-5.  |
| 7-2       | CHECK BATTERY SUPPLY TO FUSE  |        |   |
|           | <ul style="list-style-type: none"> <li>Using a DVOM set to DC volt, with fuse removed, connect negative lead to a known good ground.</li> <li>Connect the positive lead to the battery terminal in fuse cavity.</li> <li>Read voltmeter.</li> </ul>   | Yes    | Go to 7-3.  |
|           | <ul style="list-style-type: none"> <li>Is system voltage present?</li> </ul>  | No     | Repair circuit to fuse panel.<br>Restore vehicle.<br>Retest system. |
| 7-3       | CHECK CIRCUIT GW 1 FOR SYSTEM VOLTAGE AT ECU  |        |   |
|           | <ul style="list-style-type: none"> <li>Install 60 amp fuse.</li> <li>Access and disconnect connector F-125 at ECU.</li> <li>Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 13 at ECU connector F-125.</li> <li>Read voltmeter.</li> </ul> | Yes    | Go to 7-4.  |
|           | <ul style="list-style-type: none"> <li>Is system voltage present?</li> </ul>  | No     | Repair circuit GW 1.<br>Restore vehicle.<br>Retest system.          |
| 7-4       | CHECK CIRCUIT GC 1 FOR SYSTEM VOLTAGE   |        |   |
|           | <ul style="list-style-type: none"> <li>Connector F-125 at ECU disconnected.</li> <li>Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 20 at ECU connector F-125.</li> <li>Read voltmeter.</li> </ul>  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                  |
|           | <ul style="list-style-type: none"> <li>Is system voltage present?</li> </ul>  | No     | Repair circuit GC 1.<br>Restore vehicle.<br>Retest system.          |
| 7-5       | CHECK CIRCUIT GC 1 FOR SHORT TO GROUND  |        |   |
|           | <ul style="list-style-type: none"> <li>Access and disconnect connector F-125 at ECU.</li> <li>Fuse still removed.</li> <li>Using a DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin 20 at ECU connector F-125.</li> <li>Read ohmmeter.</li> </ul>     | Yes    | Repair circuit GC 1.<br>Restore vehicle.<br>Retest system.          |
|           | <ul style="list-style-type: none"> <li>Is there continuity?</li> </ul>  | No     | Go to 7-6.  |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 07 (CONTINUED)

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| 7-6  | CHECK CIRCUIT GW 1 FOR SHORT TO GROUND |        |  |
| <ul style="list-style-type: none"><li>• Connector F-125 at ECU disconnected.</li><li>• Fuse removed.</li><li>• Using a DVOM set on ohm scale, connect negative lead to known good ground.</li><li>• Connect the positive lead to pin 13 at ECU connector F-125.</li><li>• Read ohmmeter.</li></ul> |  | Yes    | Repair circuit GW 1.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"><li>• Is there continuity?</li></ul>   |  | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.         |

**PINPOINT TESTS**

**REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE, NOTES AND DEFINITIONS OF TERMS.**  
**PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.**  
**PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

**DTC 08**

| <b>TEST STEP</b>   |   | <b>RESULT</b> | <b>ACTION TO TAKE</b>                              |
|--|---|---------------|--|
| <b>8-1</b>   | <b>CHECK BATTERY VOLTAGE ENGINE OFF</b>     |               |  |
| <ul style="list-style-type: none"> <li>• Access battery.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect positive lead to battery positive terminal.</li> <li>• Connect the negative lead to battery negative terminal.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is battery voltage between 10 and 16 volts?</b></p> |   | Yes           | Go to <b>8-2</b> .                                 |
|  |   | No            | Refer to Vol. 2 of the Service Manual.             |
| <b>8-2</b>   | <b>CHECK BATTERY VOLTAGE ENGINE RUNNING</b> |               |  |
| <ul style="list-style-type: none"> <li>• Access battery.</li> <li>• Using a DVOM set to DC volt connect positive lead to battery positive terminal.</li> <li>• Connect the negative lead to battery negative terminal.</li> <li>• Start engine.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is battery voltage between 10 and 16 volts?</b></p>  |   | Yes           | Replace ECU.<br>Restore vehicle.<br>Retest system. |
|  |   | No            | Refer to Vol. 2 of the Service Manual.             |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 09-11

| TEST STEP |   | RESULT | ACTION TO TAKE   |
|-----------|---|--------|--|
| 9-1       | CHECK HARDTOP POTENTIOMETER AT ECU  |        |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect hard tonneau potentiometer connector F-114.</li> <li>• Access and disconnect connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin 29 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul>                                       | Yes    | Go to 9-2.   |
|           | • Is there 4500 to 6200 ohms?   | No     | Go to 9-3.   |
| 9-2       | CHECK CIRCUIT GC 16 FROM POTENTIOMETER  |        |  |
|           | <ul style="list-style-type: none"> <li>• Connector F-114 at hard tonneau potentiometer disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin 30 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul>   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                   |
|           | • Is there 1000 to 6500 ohms?   | No     | Go to 9-6.   |
| 9-3       | CHECK HARDTOP POTENTIOMETER   |        |  |
|           | <ul style="list-style-type: none"> <li>• Connector F-114 at hard tonneau potentiometer disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, back probe and connect one lead to pin A at hardtop potentiometer connector F-110.</li> <li>• Back probe and connect the second lead to pin C at hardtop potentiometer connector F-110.</li> <li>• Read ohmmeter.</li> </ul>               | Yes    | Go to 9-4.   |
|           | • Is there 4500 to 5500 ohms?   | No     | Replace hardtop potentiometer.<br>Restore vehicle.<br>Retest system. |
| 9-4       | CHECK CIRCUIT GC 18 FOR OPEN  |        |  |
|           | <ul style="list-style-type: none"> <li>• Connector F-114 at hard tonneau potentiometer disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Disconnect hardtop potentiometer connector F-110.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin A at hardtop potentiometer connector F-110.</li> <li>• Read ohmmeter.</li> </ul> | Yes    | Go to 9-5.   |
|           | • Is there 3 ohms or less?  | No     | Repair circuit GC 18.<br>Restore vehicle.<br>Retest system.          |

**PINPOINT TESTS**      **REFER TO:** **PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE, NOTES AND DEFINITIONS OF TERMS.**  
**PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.**  
**PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

## DTC 09-11 (CONTINUED)

| TEST STEP   |  | RESULT | ACTION TO TAKE   |
|---|--|--------|--|
| <b>9-5</b>  | CHECK CIRCUIT GC 19 FOR OPEN                 |        |  |
| <ul style="list-style-type: none"> <li>Connectors F-110 and F-114 at hardtop and hard tonneau potentiometers disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to pin 29 at ECU connector F-124.</li> <li>Connect the second lead to pin C at hardtop potentiometer connector F-110.</li> <li>Read ohmmeter.</li> </ul> <p>• <b>Is there 3 ohms or less?</b></p>                      |  | Yes    | Circuits okay.<br>Restore vehicle.<br>Retest system.                 |
|   |  | No     | Repair circuit GC 19.<br>Restore vehicle.<br>Retest system.          |
| <b>9-6</b>  | CHECK CIRCUIT GC 16 AT HARDTOP POTENTIOMETER |        |  |
| <ul style="list-style-type: none"> <li>Connector F-114 at hard tonneau potentiometer disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, back probe and connect one lead to pin A at hardtop potentiometer connector F-110.</li> <li>Back probe and connect the second lead to pin B at hardtop potentiometer connector F-110.</li> <li>Read ohmmeter.</li> </ul> <p>• <b>Is there 1000 to 6500 ohms?</b></p>                     |  | Yes    | Go to <b>9-7</b> .   |
|   |  | No     | Replace hardtop potentiometer.<br>Restore vehicle.<br>Retest system. |
| <b>9-7</b>  | CHECK CIRCUIT GC 16 FOR OPEN                 |        |  |
| <ul style="list-style-type: none"> <li>Connector F-114 at hard tonneau potentiometer disconnected.</li> <li>Access and disconnect hardtop potentiometer connector F-110.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, connect one lead to pin 30 at ECU connector F-124.</li> <li>Connect the second lead to pin B at hardtop potentiometer connector F-110.</li> <li>Read ohmmeter.</li> </ul> <p>• <b>Is there 3 ohms or less?</b></p> |  | Yes    | Circuits okay.<br>Restore vehicle.<br>Retest system.                 |
|   |  | No     | Repair circuit GC 16.<br>Restore vehicle.<br>Retest system.          |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 12-14

| TEST STEP   |   | RESULT | ACTION TO TAKE  |
|---|---|--------|---|
| 12-1  | CHECK HARD TONNEAU POTENTIOMETER AT ECU |        |   |
| <ul style="list-style-type: none"> <li>Access and disconnect hardtop potentiometer connector F-110.</li> <li>Access and disconnect connector F-124 at ECU.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>Connect the second lead to pin 29 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul>  |   | Yes    | Go to 12-2.   |
| <ul style="list-style-type: none"> <li>Is there 4500 to 6200 ohms?</li> </ul>   |   | No     | Go to 12-3.   |
| 12-2  | CHECK CIRCUIT GC 17 FROM POTENTIOMETER  |        |   |
| <ul style="list-style-type: none"> <li>Connector F-110 at hardtop potentiometer disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>Connect the second lead to pin 32 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul>  |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                        |
| <ul style="list-style-type: none"> <li>Is there 1000 to 6500 ohms?</li> </ul>   |   | No     | Go to 12-6.   |
| 12-3  | CHECK HARD TONNEAU POTENTIOMETER        |        |   |
| <ul style="list-style-type: none"> <li>Connector F-110 at hardtop potentiometer disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, back probe and connect one lead to pin A at hard tonneau potentiometer connector F-114.</li> <li>Back probe and connect the second lead to pin C at hard tonneau potentiometer connector F-114.</li> <li>Read ohmmeter.</li> </ul>                        |   | Yes    | Go to 12-4.   |
| <ul style="list-style-type: none"> <li>Is there 4500 to 5500 ohms?</li> </ul>   |   | No     | Replace hard tonneau potentiometer.<br>Restore vehicle.<br>Retest system. |
| 12-4  | CHECK CIRCUIT GC 18 FOR OPEN            |        |   |
| <ul style="list-style-type: none"> <li>Connector F-110 at hardtop potentiometer disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Access and disconnect hard tonneau potentiometer connector F-114.</li> <li>Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>Connect the second lead to pin A at hard tonneau potentiometer connector F-114.</li> <li>Read ohmmeter.</li> </ul> |   | Yes    | Go to 12-5.   |
| <ul style="list-style-type: none"> <li>Is there 3 ohms or less?</li> </ul>  |   | No     | Repair circuit GC 18.<br>Restore vehicle.<br>Retest system.               |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 12 (CONTINUED)

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 12-5   | CHECK CIRCUIT GC 19 FOR OPEN                      |        |   |
| <ul style="list-style-type: none"> <li>Connectors F-110 and F-114 at hardtop and hard tonneau potentiometers disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to pin 29 at ECU connector F-124.</li> <li>Connect the second lead to pin C at hard tonneau potentiometer connector F-114.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there 3 ohms or less?</p>                         |   | Yes    | Circuits okay.<br>Restore vehicle.<br>Retest system.                      |
|  |   | No     | Repair circuit GC 19.<br>Restore vehicle.<br>Retest system.               |
| 12-6   | CHECK CIRCUIT GC 17 AT HARD TONNEAU POTENTIOMETER |        |   |
| <ul style="list-style-type: none"> <li>Connector F-110 at hardtop potentiometer disconnected.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, back probe and connect one lead to pin A at hard tonneau potentiometer connector F-114.</li> <li>Back probe and connect the second lead to pin B at hard tonneau potentiometer connector F-114.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there 1000 to 6500 ohms?</p>                        |   | Yes    | Go to 12-7.   |
|  |   | No     | Replace hard tonneau potentiometer.<br>Restore vehicle.<br>Retest system. |
| 12-7   | CHECK CIRCUIT GC 17 FOR OPEN                      |        |   |
| <ul style="list-style-type: none"> <li>Connector F-110 at hardtop potentiometer disconnected.</li> <li>Access and disconnect connector F-114 at hard tonneau potentiometer.</li> <li>Connector F-124 at ECU disconnected.</li> <li>Using a DVOM set to ohm scale, connect one lead to pin 32 at ECU connector F-124.</li> <li>Connect the second lead to pin B at hard tonneau potentiometer connector F-114.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there 3 ohms or less?</p> |   | Yes    | Circuits okay.<br>Restore vehicle.<br>Retest system.                      |
|  |   | No     | Repair circuit GC 17.<br>Restore vehicle.<br>Retest system.               |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 15

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 15-1   | CHECK FOR CODE 15 WITH HARDTOP POTENTIOMETER DISCONNECTED |        |   |
| <ul style="list-style-type: none"><li>• Access and disconnect hardtop potentiometer connector F-110.</li><li>• Clear DTCs from ECU memory.</li><li>• Turn ignition to ON position.</li><li>• Check for DTC 15.</li></ul> |   | Yes    | Replace hard tonneau potentiometer.<br>Restore vehicle.<br>Retest system. |
| • Did DTC 15 reoccur?  |   | No     | Replace hardtop potentiometer.<br>Restore vehicle.<br>Retest system.      |



**PINPOINT TESTS**      **REFER TO:** **PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE, NOTES AND DEFINITIONS OF TERMS.**  
**PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.**  
**PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

## DTC 16

| TEST STEP   |  | RESULT    | ACTION TO TAKE   |
|---|--|-----------|--|
| <b>16-1</b>   | CHECK CIRCUIT GC 18 FOR VOLTAGE AT ECU                                       |           |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 15 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is 5.5 or more volts present?</b></p>   |  | Yes<br>No | ► Go to <b>16-2</b> .<br>► Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| <b>16-2</b>   | CHECK ECU VOLTAGE TO CIRCUIT GC 18   |           |  |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> </ul> <p>NOTE: BE CAREFUL WHILE CONNECTING DVOM TO ECU.</p> <ul style="list-style-type: none"> <li>• Connect the positive lead to pin 15 on ECU.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is 4.5 to 5.5 volts present?</b></p> |  | Yes<br>No | ► Go to <b>16-3</b> .<br>► Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| <b>16-3</b>   | CHECK CIRCUIT GC 18 FOR SHORT TO VOLTAGE                                     |           |  |
| <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Connect the positive lead to pin 15 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is there voltage present?</b></p>   |  | Yes<br>No | ► Go to <b>16-4</b> .<br>► Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| <b>16-4</b>   | CHECK CIRCUIT GC 18 FOR VOLTAGE WITH HARD TONNEAU POTENTIOMETER DISCONNECTED |           |  |
| <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Disconnect hard tonneau potentiometer connector F-114.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 15 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is there voltage present?</b></p>               |  | Yes<br>No | ► Go to <b>16-5</b> .<br>► Repair circuit GC 17.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 16 (CONTINUED)

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 16-5   | CHECK CIRCUIT GC 18 FOR VOLTAGE WITH HARDTOP POTENTIOMETER DISCONNECTED |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-124 at ECU disconnected.</li> <li>• Disconnect hardtop potentiometer connector F-110.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 15 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes    | Repair circuit GC 18.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is there voltage present?</li> </ul>  |   | No     | Repair circuit GC 16.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 17

| TEST STEP   |   | RESULT | ACTION TO TAKE  |
|---|---|--------|---|
| 17-1  | CHECK CIRCUIT GC 18 FOR VOLTAGE AT ECU  |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 15 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                           |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                        |
| <ul style="list-style-type: none"> <li>• Is 4.5 to 5.5 volts present?</li> </ul>  |   | No     | Go to 17-2.   |
| 17-2  | CHECK CIRCUIT GC 18 AND GC 19 FOR SHORT |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Disconnect connectors F-114 and F-110 at hard tonneau and hardtop potentiometers.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin 29 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> |   | Yes    | Repair circuits GC 18 and GC 19.<br>Restore vehicle.<br>Retest system.    |
| <ul style="list-style-type: none"> <li>• Is there continuity?</li> </ul>  |   | No     | Go to 17-3.   |
| 17-3  | CHECK CIRCUIT GC 18 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>• Connectors F-114 and F-110 disconnected at hardtop and hard tonneau potentiometers.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using a DVOM set to ohm scale, connect negative lead to known good ground.</li> <li>• Connect the positive lead to pin 15 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul>  |   | Yes    | Repair circuit GC 18.<br>Restore vehicle.<br>Retest system.               |
| <ul style="list-style-type: none"> <li>• Is there continuity?</li> </ul>  |   | No     | Go to 17-4.   |
| 17-4  | CHECK HARDTOP POTENTIOMETER             |        |   |
| <ul style="list-style-type: none"> <li>• Connect hardtop potentiometer connector F-110.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin 29 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul>  |   | Yes    | Go to 17-5.   |
| <ul style="list-style-type: none"> <li>• Is there 4500 to 6200 ohms?</li> </ul>   |   | No     | Replace hardtop potentiometer.<br>Restore vehicle.<br>Retest system.      |
| 17-5  | CHECK HARD TONNEAU POTENTIOMETER        |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect hardtop potentiometer connector F-110.</li> <li>• Connect hard tonneau potentiometer connector F-114.</li> <li>• Using a DVOM set to ohm scale, connect one lead to pin 15 at ECU connector F-124.</li> <li>• Connect the second lead to pin 29 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul>                |   | Yes    | Circuits okay.<br>Restore vehicle.<br>Retest system.                      |
| <ul style="list-style-type: none"> <li>• Is there 4500 to 6200 ohms?</li> </ul>   |   | No     | Replace hard tonneau potentiometer.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 18

| TEST STEP |   | RESULT    | ACTION TO TAKE  |
|-----------|---|-----------|---|
| 18-1      | CHECK HEADER LATCH OPERATION  |           |   |
|           | <ul style="list-style-type: none"> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position until retractable quarter windows open.</li> </ul> <p>Note: Refer to DTC 30 if retractable quarter windows did not retract properly.</p> <ul style="list-style-type: none"> <li>• Press upward on hardtop from inside vehicle at header area.</li> <li>• <b>Did header latches unlatch properly?</b></li> </ul>                                       | Yes<br>No | Go to <b>18-2</b> .<br>Go to <b>18-4</b> .  |
| 18-2      | CHECK CIRCUIT GC 21 FOR LOW REFERENCE VOLTAGE AT ECU  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 38 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> <li>• <b>Is 0.7 volt present?</b></li> </ul>  | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Go to <b>18-3</b> .   |
| 18-3      | CHECK CIRCUIT GC 21 FOR HIGH REFERENCE VOLTAGE AT ECU   |           |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 38 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> <li>• <b>Are 2.1 volts present?</b></li> </ul>   | Yes<br>No | Replace LH header latch limit switch.<br>Restore vehicle.<br>Retest system.<br>Refer to other DTC's that may have occurred. |
| 18-4      | CHECK CIRCUIT GC 34 FOR VOLTAGE AT ECU  |           |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-125 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 15 at ECU connector F-125.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position (make sure quarter windows are retracted).</li> <li>• Read voltmeter.</li> <li>• <b>Is system voltage present?</b></li> </ul> | Yes<br>No | Go to <b>18-5</b> .<br>Replace ECU.<br>Restore vehicle.<br>Retest system.   |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 18 (CONTINUED)

| TEST STEP |  | RESULT    | ACTION TO TAKE   |
|-----------|--|-----------|--|
| 18-5      | CHECK CIRCUIT GC 33 FOR VOLTAGE AT ECU   |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-125 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 6 at ECU connector F-125.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   | Yes<br>No | Go to 18-6.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 18-6      | CHECK VOLTAGE AT HEADER LATCH MOTOR  |           |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect header latch motor connector E-117.</li> <li>• Using DVOM set to DC volt, connect negative lead to pin B at header latch motor connector E-117.</li> <li>• Connect positive lead to pin A at header latch motor connector E-117.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position (make sure quarter windows are retracted).</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br>No | Replace header latch motor.<br>Restore vehicle.<br>Retest system.<br>Go to 18-7.   |
| 18-7      | CHECK CIRCUITS GC 33 AND GC 34   |           |  |
|           | <ul style="list-style-type: none"> <li>• Connector E-117 at header latch motor disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin B at header latch motor connector E-117.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   | Yes<br>No | Repair circuit GC 34.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 33.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 19

| TEST STEP  |   | RESULT | ACTION TO TAKE   |
|--|---|--------|--|
| 19-1   | CHECK CIRCUIT GC 21 FOR SHORT TO GROUND |        |  |
| <ul style="list-style-type: none"> <li>Access and disconnect connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 38 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>  |   | Yes    | Go to 19-2.  |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.   |
| 19-2   | CHECK CIRCUIT GC 20 FOR VOLTAGE         |        |  |
| <ul style="list-style-type: none"> <li>Connect connector F-124 at ECU.</li> <li>Access and disconnect header latch limit switch connector E-115.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin A at header latch limit switch connector E-115.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 2.1 volts present?</p>   |   | Yes    | Go to 19-3.  |
|  |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 21 for short to ground.<br>Restore vehicle.<br>Retest system.        |
| 19-3   | CHECK CIRCUIT GC 22 FOR VOLTAGE         |        |  |
| <ul style="list-style-type: none"> <li>Connector E-115 at LH header latch limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin C at LH header latch limit switch connector E-115.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 volt present?</p>   |   | Yes    | Go to 19-4.  |
|  |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 21 for short to ground.<br>Restore vehicle.<br>Retest system.        |
| 19-4   | CHECK HEADER LATCH LIMIT SWITCH         |        |  |
| <ul style="list-style-type: none"> <li>Connector E-115 at LH header latch limit switch disconnected.</li> <li>Using DVOM set on ohm scale, connect one lead to pin A of LH header latch limit switch.</li> <li>Connect second lead to pin B of LH header latch limit switch.</li> <li>Check for continuity.</li> <li>Connect one lead to pin B of LH header latch limit switch.</li> <li>Connect second lead to pin C of LH header latch limit switch.</li> <li>Check for continuity.</li> </ul> <p>• Switch pressed = continuity between A and B.<br/>         • Switch open = continuity between B and C.</p> <p>• Does switch operate properly?</p> |   | Yes    | Repair circuit GC 21 for open and short to ground.<br>Restore vehicle.<br>Retest system.                                 |
|  |   | No     | Replace LH header latch limit switch.<br>Repair circuit GC 21 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 20

| TEST STEP |   | RESULT        | ACTION TO TAKE   |
|-----------|---|---------------|--|
| 20-1      | CHECK CIRCUIT GC 21 AT ECU FOR VOLTAGE  |               |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 38 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is there 3.0 volts or more?</p>              | Yes<br><br>No | Go to 20-2.<br><br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 20-2      | CHECK CIRCUIT GC 20 AT LH HEADER LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect LH header latch limit switch connector E-115.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at LH header latch limit switch connector E-115.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 2.1 volts?</p>                         | Yes<br><br>No | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br><br>Go to 20-3.   |
| 20-3      | CHECK CIRCUIT GC 22 AT LH HEADER LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|           | <ul style="list-style-type: none"> <li>• Connector E-115 at LH header latch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at LH header latch limit switch connector E-115.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights on and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 0.7 volts?</p> | Yes<br><br>No | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br><br>Repair circuit GC 21.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 21

| TEST STEP  |   | RESULT | ACTION TO TAKE   |
|--|---|--------|--|
| 21-1   | CHECK CIRCUIT GC 21 FOR VOLTAGE AT ECU                          |        |  |
| <ul style="list-style-type: none"> <li>• Unlatch header latches.</li> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect the positive lead to pin 38 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                             |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |   | No     | Go to 21-2.  |
| 21-2   | CHECK CIRCUIT GC 21 FOR VOLTAGE AT LH HEADER LATCH LIMIT SWITCH |        |  |
| <ul style="list-style-type: none"> <li>• Access LH header latch limit switch connector E-115.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at LH header latch limit switch connector E-115.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                 |   | Yes    | Repair circuit GC 21.<br>Restore vehicle.<br>Retest system.                    |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |   | No     | Go to 21-3.  |
| 21-3   | CHECK CIRCUIT GC 20 FOR VOLTAGE                                 |        |  |
| <ul style="list-style-type: none"> <li>• Disconnect LH header latch limit switch connector E-115.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at LH header latch limit switch connector E-115.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                        |   | Yes    | Go to 21-4.  |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |   | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                    |
| 21-4   | CHECK CIRCUIT GC 22 FOR VOLTAGE                                 |        |  |
| <ul style="list-style-type: none"> <li>• Connector E-115 at LH header latch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at LH header latch limit switch connector E-115.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                       |   | Yes    | Replace LH header latch position switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |   | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                    |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 22

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 22-1   | CHECK HEADER LATCH OPERATION                          |        |   |
| <ul style="list-style-type: none"> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Press upward on hardtop from inside vehicle at header area.</li> </ul>  |   | Yes    | Go to 22-2.   |
| <ul style="list-style-type: none"> <li>• Did header latches latch properly?</li> </ul>   |   | No     | Go to 22-4.   |
| 22-2   | CHECK CIRCUIT GC 23 FOR HIGH REFERENCE VOLTAGE AT ECU |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 24 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>  |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                            |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |   | No     | Go to 22-3.   |
| 22-3   | CHECK CIRCUIT GC 23 FOR LOW REFERENCE VOLTAGE AT ECU  |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 24 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>   |   | Yes    | Replace RH header unlatch limit switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Are 0.7 volts present?</li> </ul>   |   | No     | Refer to other DTCs that may have occurred.                                   |
| 22-4   | CHECK CIRCUIT GC 34 FOR VOLTAGE AT ECU                |        |   |
| <ul style="list-style-type: none"> <li>• Manually latch header latches.</li> <li>• Access connector F-125 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 15 at ECU connector F-125.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes    | Go to 22-5.   |
| <ul style="list-style-type: none"> <li>• Is system voltage present?</li> </ul>   |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.                            |
| 22-5   | CHECK CIRCUIT GC 33 FOR VOLTAGE AT ECU                |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-125 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 6 at ECU connector F-125.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Read voltmeter.</li> </ul>   |   | Yes    | Go to 22-6.   |
| <ul style="list-style-type: none"> <li>• Is system voltage present?</li> </ul>   |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.                            |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 22 (CONTINUED)

| TEST STEP  |                                     | RESULT | ACTION TO TAKE  |
|--|-------------------------------------|--------|---|
| 22-6   | CHECK VOLTAGE AT HEADER LATCH MOTOR |        |   |
| <ul style="list-style-type: none"> <li>• Access and disconnect header latch motor connector E-117.</li> <li>• Using DVOM set to DC volt, connect negative lead to pin B at header latch motor connector E-117.</li> <li>• Connect positive lead to pin A at header latch motor connector E-117.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> |                                     | Yes    | Replace header latch motor.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is system voltage present?</li> </ul>   |                                     | No     | Go to 22-7.   |
| 22-7   | CHECK CIRCUITS GC 33 AND GC 34      |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-117 at header latch motor disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin B at header latch motor connector E-117.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul>                               |                                     | Yes    | Repair circuit GC 34.<br>Restore vehicle.<br>Retest system.       |
| <ul style="list-style-type: none"> <li>• Is system voltage present?</li> </ul>   |                                     | No     | Repair circuit GC 33.<br>Restore vehicle.<br>Retest system.       |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 23

| TEST STEP   |   | RESULT | ACTION TO TAKE  |
|---|---|--------|---|
| 23-1  | CHECK CIRCUIT GC 23 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>Access and disconnect connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 24 at ECU connector F-124.</li> <li>Read ohmmeter.</li> <li>Is there continuity?</li> </ul>   |   | Yes    | Go to 23-2.   |
|   |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 23-2  | CHECK CIRCUIT GC 20 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>Connect connector F-124 at ECU.</li> <li>Access and disconnect header unlatch limit switch connector E-113.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin A at header unlatch limit switch connector E-113.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> <li>Is 2.1 volts present?</li> </ul>  |   | Yes    | Go to 23-3.   |
|   |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 23 for short to ground.<br>Restore vehicle.<br>Retest system.       |
| 23-3  | CHECK CIRCUIT GC 22 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>Connector E-113 at header unlatch limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin C at header unlatch limit switch connector E-113.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> <li>Is 0.7 volt present?</li> </ul>  |   | Yes    | Go to 23-4.   |
|   |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 23 for short to ground.<br>Restore vehicle.<br>Retest system.       |
| 23-4  | CHECK HEADER UNLATCH LIMIT SWITCH       |        |   |
| <ul style="list-style-type: none"> <li>Connector E-115 at header unlatch limit switch disconnected.</li> <li>Using DVOM set on ohm scale, connect one lead to pin A of header unlatch limit switch.</li> <li>Connect second lead to pin B of header unlatch limit switch.</li> <li>Check for continuity.</li> <li>Connect one lead to pin B of header unlatch limit switch.</li> <li>Connect second lead to pin C of header unlatch limit switch.</li> <li>Check for continuity.</li> <li>Switch pressed = continuity between A and B.</li> <li>Switch open = continuity between B and C.</li> <li>Does switch operate properly?</li> </ul> |   | Yes    | Repair circuit GC 23 for open and short to ground.<br>Restore vehicle.<br>Retest system.                                |
|   |   | No     | Replace header unlatch limit switch.<br>Repair circuit GC 23 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 24

| TEST STEP  |   | RESULT        | ACTION TO TAKE   |
|--|---|---------------|--|
| 24-1   | CHECK CIRCUIT GC 23 AT ECU FOR VOLTAGE                            |               |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 24 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is there 3.0 volts or more?</p>                     |   | Yes ►<br>No ► | Go to 24-2.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 24-2   | CHECK CIRCUIT GC 20 AT RH HEADER UNLATCH LIMIT SWITCH FOR VOLTAGE |               |  |
| <ul style="list-style-type: none"> <li>• Access and disconnect RH header unlatch limit switch connector E-113.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at RH header unlatch limit switch connector E-113.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 2.1 volts?</p> |   | Yes ►<br>No ► | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br>Go to 24-3.   |
| 24-3   | CHECK CIRCUIT GC 22 AT RH HEADER UNLATCH LIMIT SWITCH FOR VOLTAGE |               |  |
| <ul style="list-style-type: none"> <li>• Connector E-113 at RH header unlatch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at RH header unlatch limit switch connector E-113.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 0.7 volts?</p>       |   | Yes ►<br>No ► | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 23.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 25

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 25-1   | CHECK CIRCUIT GC 23 FOR VOLTAGE AT ECU                            |        |   |
| <ul style="list-style-type: none"> <li>• Unlatch header latches.</li> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 24 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                            |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |   | No     | Go to 25-2.   |
| 25-2   | CHECK CIRCUIT GC 23 FOR VOLTAGE AT RH HEADER UNLATCH LIMIT SWITCH |        |   |
| <ul style="list-style-type: none"> <li>• Access RH header unlatch limit switch.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at RH header unlatch limit switch connector E-113.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                         |   | Yes    | Repair circuit GC 23.<br>Restore vehicle.<br>Retest system.                   |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |   | No     | Go to 25-3.   |
| 25-3   | CHECK CIRCUIT GC 20 FOR VOLTAGE                                   |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect header unlatch limit switch connector E-113.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at RH header unlatch limit switch connector E-113.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                   |   | Yes    | Go to 25-4.   |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |   | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                   |
| 25-4   | CHECK CIRCUIT GC 22 FOR VOLTAGE                                   |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-113 at RH header unlatch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at RH header unlatch limit switch connector E-113.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>               |   | Yes    | Replace RH header unlatch limit switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |   | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                   |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 26

| TEST STEP |  | RESULT    | ACTION TO TAKE   |
|-----------|--|-----------|--|
| 26-1      | CHECK RETRACTABLE QUARTER WINDOW OPERATION   |           |  |
|           | <ul style="list-style-type: none"> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Observe retractable quarter window operation.</li> </ul> <p>NOTE: Tonneau must latch before quarter windows will extend.</p> <ul style="list-style-type: none"> <li>• <b>Did retractable quarter windows extend properly?</b></li> </ul>  | Yes<br>No | Go to 26-2.<br>Go to 26-5.   |
| 26-2      | CHECK CIRCUIT GC 57 FOR LOW REFERENCE VOLTAGE AT ECU   |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 41 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is 0.7 volt present?</b></li> </ul>  | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Go to 26-3.  |
| 26-3      | CHECK CIRCUIT GC 57 FOR HIGH REFERENCE VOLTAGE AT ECU  |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 41 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Are 2.1 volts present?</b></li> </ul>   | Yes<br>No | Go to 26-4.<br>Refer to other DTCs that may have occurred.   |
| 26-4      | CHECK RETRACTABLE WINDOW EXTEND LIMIT SWITCH ADJUSTMENT  |           |  |
|           | <ul style="list-style-type: none"> <li>• Access retractable quarter window extend limit switch.</li> <li>• Check retractable quarter window extend limit switch adjustment.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is retractable quarter window extend limit switch adjusted properly?</b></li> </ul>   | Yes<br>No | Replace retractable quarter window extend switch.<br>Restore vehicle.<br>Retest system.<br>Adjust retractable quarter window extend switch as necessary.<br>Restore vehicle.<br>Retest system. |
| 26-5      | CHECK CIRCUIT GC 37 FOR VOLTAGE AT ECU   |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 12 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is system voltage present?</b></li> </ul> | Yes<br>No | Go to 26-6.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |

**PINPOINT TESTS**      **REFER TO:** PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 26 (CONTINUED)

| TEST STEP |  | RESULT    | ACTION TO TAKE   |
|-----------|--|-----------|--|
| 26-6      | CHECK CIRCUIT GC 36 FOR VOLTAGE AT ECU   |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 11 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>  | Yes<br>No | Go to 26-7.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 26-7      | CHECK VOLTAGE AT RETRACTABLE QUARTER WINDOW MOTOR  |           |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect retractable quarter window motor connector E-124.</li> <li>• Using DVOM set to DC volt, connect negative lead to pin A at retractable quarter window motor connector E-124.</li> <li>• Connect positive lead to pin B at retractable quarter window motor connector E-124.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes<br>No | Replace retractable quarter window motor.<br>Restore vehicle.<br>Retest system.<br>Go to 26-8.                             |
| 26-8      | CHECK CIRCUITS GC 36 AND GC 37   |           |  |
|           | <ul style="list-style-type: none"> <li>• Connector E-124 at retractable quarter window motor disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin B at retractable quarter window motor connector E-124.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   | Yes<br>No | Repair circuit GC 36.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 37.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 27

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| 27-1   | CHECK CIRCUIT GC 57 FOR SHORT TO GROUND              |        |  |
| <ul style="list-style-type: none"> <li>Access and disconnect connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 41 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>  |  | Yes    | Go to 27-2.  |
|  |  | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.   |
| 27-2   | CHECK CIRCUIT GC 20 FOR VOLTAGE                      |        |  |
| <ul style="list-style-type: none"> <li>Connect connector F-124 at ECU.</li> <li>Access and disconnect retractable quarter window extend limit switch connector E-123.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin C at retractable quarter window extend limit switch connector E-123.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 2.1 volts present?</p>   |  | Yes    | Go to 27-3.  |
|  |  | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 57 for short to ground.<br>Restore vehicle.<br>Retest system.                          |
| 27-3   | CHECK CIRCUIT GC 22 FOR VOLTAGE                      |        |  |
| <ul style="list-style-type: none"> <li>Connector E-123 at retractable quarter window limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin A at retractable quarter window extend limit switch connector E-123.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 volt present?</p>   |  | Yes    | Go to 27-4.  |
|  |  | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 57 for short to ground.<br>Restore vehicle.<br>Retest system.                          |
| 27-4   | CHECK RETRACTABLE QUARTER WINDOW EXTEND LIMIT SWITCH |        |  |
| <ul style="list-style-type: none"> <li>Connector E-123 at retractable quarter window extend limit switch disconnected.</li> <li>Using DVOM set on ohm scale, connect one lead to pin A of retractable quarter window extend limit switch.</li> <li>Connect the second lead to pin B of retractable quarter window extend limit switch.</li> <li>Check for continuity.</li> <li>Connect one lead to pin B of retractable quarter window extend limit switch.</li> <li>Connect second lead to pin C of retractable quarter window extend limit switch.</li> <li>Check for open.</li> </ul> <p>NOTE: Readings are with quarter windows retracted and switch in proper position. If windows are retracted, readings will be opposite.</p> <p>• Does switch operate properly?</p> |  | Yes    | Repair circuit GC 57 for open and short to ground.<br>Restore vehicle.<br>Retest system.   |
|  |  | No     | Replace retractable quarter window extend limit switch.<br>Repair circuit GC 57 for short to ground.<br>Restore vehicle.<br>Retest system. |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 28

| TEST STEP |  | RESULT    | ACTION TO TAKE   |
|-----------|--|-----------|--|
| 28-1      | CHECK CIRCUIT GC 57 AT ECU FOR VOLTAGE   |           |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 41 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is there 3.0 volts or more?</p>   | Yes<br>No | Go to 28-2.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 28-2      | CHECK CIRCUIT GC 20 AT RETRACTABLE QUARTER WINDOW EXTEND LIMIT SWITCH FOR VOLTAGE  |           |  |
|           | <ul style="list-style-type: none"> <li>• Access and disconnect retractable quarter window extend limit switch connector E-123.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at retractable quarter window extend limit switch connector E-123.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 2.1 volts?</p> | Yes<br>No | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br>Go to 28-3.   |
| 28-3      | CHECK CIRCUIT GC 22 AT RETRACTABLE QUARTER WINDOW EXTEND LIMIT SWITCH FOR VOLTAGE  |           |  |
|           | <ul style="list-style-type: none"> <li>• Connector E-123 at retractable quarter window limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at retractable quarter window extend limit switch connector E-123.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 0.7 volts?</p>              | Yes<br>No | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 57.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 29

| TEST STEP |  | RESULT | ACTION TO TAKE  |
|-----------|--|--------|---|
| 29-1      | CHECK CIRCUIT GC 57 FOR VOLTAGE AT ECU   |        |   |
|           | <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>Back probe and connect the positive lead to pin 41 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul>  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                                      |
|           | <ul style="list-style-type: none"> <li>Is 0.7 or 2.1 volts present?</li> </ul>   | No     | Go to 29-2.   |
| 29-2      | CHECK CIRCUIT GC 57 FOR VOLTAGE AT RETRACTABLE QUARTER WINDOW EXTEND LIMIT SWITCH  |        |   |
|           | <ul style="list-style-type: none"> <li>Access retractable quarter window extend limit switch.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect positive lead to pin B at retractable quarter window extend limit switch connector E-123.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul>           | Yes    | Repair circuit GC 57.<br>Restore vehicle.<br>Retest system.                             |
|           | <ul style="list-style-type: none"> <li>Is 0.7 or 2.1 volts present?</li> </ul>   | No     | Go to 29-3.   |
| 29-3      | CHECK CIRCUIT GC 20 FOR VOLTAGE  |        |   |
|           | <ul style="list-style-type: none"> <li>Disconnect retractable quarter window extend limit switch connector E-123.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin C at retractable quarter window extend limit switch connector E-123.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul>  | Yes    | Go to 29-4.   |
|           | <ul style="list-style-type: none"> <li>Is 2.1 volts present?</li> </ul>  | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                             |
| 29-4      | CHECK CIRCUIT GC 22 FOR VOLTAGE  |        |   |
|           | <ul style="list-style-type: none"> <li>Connector E-123 at retractable quarter window extend limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin A at retractable quarter window extend limit switch connector E-123.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> | Yes    | Replace retractable quarter window extend switch.<br>Restore vehicle.<br>Retest system. |
|           | <ul style="list-style-type: none"> <li>Is 0.7 volts present?</li> </ul>  | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                             |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 30

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| 30-1   | CHECK RETRACTABLE QUARTER WINDOW OPERATION               |        |  |
| <ul style="list-style-type: none"> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Observe retractable quarter window operation.</li> </ul> <p>NOTE: Quarter windows and/or quarter window switches must be in a position that will allow the quarter windows to operate to the open position, if the quarter windows are already retracted, the ECU will not try to retract them again.</p> <ul style="list-style-type: none"> <li>• <b>Did retractable quarter windows retract properly?</b></li> </ul> |  | Yes    | Go to 30-2.  |
|  |  | No     | Go to 30-5.  |
| 30-2   | CHECK CIRCUIT GC 56 FOR HIGH REFERENCE VOLTAGE AT ECU    |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 27 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is 2.1 volt present?</b></li> </ul>  |  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.   |
|  |  | No     | Go to 30-3.  |
| 30-3   | CHECK CIRCUIT GC 56 FOR LOW REFERENCE VOLTAGE AT ECU     |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 27 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is 0.7 volts present?</b></li> </ul>   |  | Yes    | Go to 30-4.  |
|  |  | No     | Refer to other DTCs that may have occurred.  |
| 30-4   | CHECK RETRACTABLE WINDOW RETRACT LIMIT SWITCH ADJUSTMENT |        |  |
| <ul style="list-style-type: none"> <li>• Access retractable window retract limit switch.</li> <li>• Check retractable window retract limit switch adjustment.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Is retractable window retract limit switch adjusted properly?</b></li> </ul>  |  | Yes    | Replace retractable window retract limit switch.<br>Restore vehicle.<br>Retest system.             |
|  |  | No     | Adjust retractable window retract limit switch as necessary.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 30 (CONTINUED)

| TEST STEP |   | RESULT               | ACTION TO TAKE   |
|-----------|---|----------------------|--|
| 30-5      | CHECK CIRCUIT GC 37 FOR VOLTAGE AT ECU  |                      |  |
|           | <p>NOTE: A 12 volt test light will be needed for this test. The test light is used ONLY for testing of the motor circuits. DO NOT attempt to test other circuits with a test.</p> <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using 12 volt test light connect one lead to known good ground.</li> <li>• Connect second lead to pin 12 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows and/or quarter window switches must be in a position that will allow the quarter windows to operate to the open position, if the quarter windows are already retracted, the ECU will not try to retract them again. It may be necessary to cycle the hardtop in order to observe the test light.</p> <ul style="list-style-type: none"> <li>• Press hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | <p>Yes</p> <p>No</p> | <p>Go to 30-6.</p> <p>Replace ECU.<br/>Restore vehicle.<br/>Retest system.</p> |
| 30-6      | CHECK CIRCUIT GC 36 FOR VOLTAGE AT ECU  |                      |  |
|           | <ul style="list-style-type: none"> <li>• Access connector F-123 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Connect positive lead to pin 11 at ECU connector F-123.</li> <li>• Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows and/or quarter window switches must be in a position that will allow the quarter windows to operate to the extend position, if the quarter windows are already extended, the ECU will not try to extend them again. It may be necessary to cycle the hardtop in order to observe the test light.</p> <p>NOTE: Hard tonneau must latch before the quarter windows will extend.</p> <ul style="list-style-type: none"> <li>• Press hardtop control switch to CLOSE position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   | <p>Yes</p> <p>No</p> | <p>Go to 30-7.</p> <p>Replace ECU.<br/>Restore vehicle.<br/>Retest system.</p> |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 30 (CONTINUED)

| TEST STEP   |   | RESULT | ACTION TO TAKE  |
|---|---|--------|---|
| 30-7  | CHECK VOLTAGE AT RETRACTABLE QUARTER WINDOW MOTOR |        |   |
| <ul style="list-style-type: none"> <li>Access and disconnect retractable quarter window motor connector E-124.</li> <li>Using DVOM set to DC volt, connect negative lead to pin A at retractable quarter window motor connector E-124.</li> <li>Connect positive lead to pin B at retractable quarter window motor connector E-124.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows and/or quarter window switches must be in a position that will allow the quarter windows to operate to the open position, if the quarter windows are already retracted, the ECU will not try to retract them again. It may be necessary to cycle the hardtop in order to observe the test light.</p> <ul style="list-style-type: none"> <li>Press hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> |   | Yes    | Replace retractable quarter window motor.<br>Restore vehicle.<br>Retest system. |
|   |   | No     | Go to 30-8.   |
| 30-8  | CHECK CIRCUITS GC 36 AND GC 37                    |        |   |
| <ul style="list-style-type: none"> <li>Connector E-124 at retractable quarter window motor disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin B at retractable quarter window connector E-124.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows and/or quarter window switches must be in a position that will allow the quarter windows to operate to the open position, if the quarter windows are already retracted, the ECU will not try to retract them again. It may be necessary to cycle the hardtop in order to observe the test light.</p> <ul style="list-style-type: none"> <li>Press hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>   |   | Yes    | Repair circuit GC 36.<br>Restore vehicle.<br>Retest system.                     |
|   |   | No     | Repair circuit GC 37.<br>Restore vehicle.<br>Retest system.                     |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 31

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 31-1   | CHECK CIRCUIT GC 56 FOR SHORT TO GROUND               |        |   |
| <ul style="list-style-type: none"> <li>Access and disconnect connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin 27 at ECU connector F-124.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>  |   | Yes    | Go to 31-2.   |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 31-2   | CHECK CIRCUIT GC 20 FOR VOLTAGE                       |        |   |
| <ul style="list-style-type: none"> <li>Connect connector F-124 at ECU.</li> <li>Access and disconnect retractable quarter window retract limit switch connector E-119.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin C at retractable quarter window retract limit switch connector E-119.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 2.1 volts present?</p>   |   | Yes    | Go to 31-3.   |
|  |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 56 for short to ground.<br>Restore vehicle.<br>Retest system.                           |
| 31-3   | CHECK CIRCUIT GC 22 FOR VOLTAGE                       |        |   |
| <ul style="list-style-type: none"> <li>Connector E-119 at retractable quarter window retract limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin A at retractable quarter window retract limit switch connector E-119.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 volt present?</p>  |   | Yes    | Go to 31-4.   |
|  |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 56 for short to ground.<br>Restore vehicle.<br>Retest system.                           |
| 31-4   | CHECK RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH |        |   |
| <ul style="list-style-type: none"> <li>Connector E-119 at retractable quarter window retract limit switch disconnected.</li> <li>Using DVOM set on ohm scale, connect one lead to pin A of retractable quarter window retract limit switch.</li> <li>Connect the second lead to pin B of retractable quarter window retract limit switch.</li> <li>Check for continuity.</li> <li>Connect one lead to pin B of retractable quarter window retract limit switch.</li> <li>Connect second lead to pin C of retractable quarter window retract limit switch.</li> <li>Check for open.</li> </ul> <p>• Does switch operate properly?</p> |   | Yes    | Repair circuit GC 56 for open and short to ground.<br>Restore vehicle.<br>Retest system.  |
|  |   | No     | Replace retractable quarter window retract limit switch.<br>Repair circuit GC 56 for short to ground.<br>Restore vehicle.<br>Retest system. |

**PINPOINT TESTS**    **REFER TO:**    **PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,**  
**NOTES AND DEFINITIONS OF TERMS.**  
**PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.**  
**PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

## DTC 32

| TEST STEP   |   | RESULT    | ACTION TO TAKE   |
|---|---|-----------|--|
| <b>32-1</b>   | <b>CHECK CIRCUIT GC 56 AT ECU FOR VOLTAGE</b>   |           |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 27 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is there 3.0 volts or more?</b></p>   |   | Yes<br>No | ► Go to <b>32-2</b> .<br>► Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| <b>32-2</b>   | <b>CHECK CIRCUIT GC 20 AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH FOR VOLTAGE</b> |           |  |
| <ul style="list-style-type: none"> <li>• Access and disconnect retractable quarter window retract limit switch E-119.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at retractable quarter window retract limit switch connector E-119.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is voltage over 2.1 volts?</b></p> |   | Yes<br>No | ► Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br>► Go to <b>32-3</b> .   |
| <b>32-3</b>   | <b>CHECK CIRCUIT GC 22 AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH FOR VOLTAGE</b> |           |  |
| <ul style="list-style-type: none"> <li>• Connector E-119 at RH retractable quarter window limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at retractable quarter window retract limit switch connector E-119.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is voltage over 0.7 volts?</b></p>  |   | Yes<br>No | ► Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br>► Repair circuit GC 56.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 33

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| <b>33-1</b>  | CHECK CIRCUIT GC 56 FOR VOLTAGE AT ECU   |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect the positive lead to pin 27 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>  |  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.   |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>33-2</b> .  |
| <b>33-2</b>  | CHECK CIRCUIT GC 56 FOR VOLTAGE AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH |        |  |
| <ul style="list-style-type: none"> <li>• Access retractable quarter window retract limit switch connector E-119.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at retractable quarter window retract limit switch connector E-119.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 56.<br>Restore vehicle.<br>Retest system.                                    |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>33-3</b> .  |
| <b>33-3</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE  |        |  |
| <ul style="list-style-type: none"> <li>• Disconnect retractable quarter window retract limit switch connector E-119.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin C at retractable quarter window retract limit switch connector E-119.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>        |  | Yes    | Go to <b>33-4</b> .  |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |  | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                                    |
| <b>33-4</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE  |        |  |
| <ul style="list-style-type: none"> <li>• Connector E-119 at retractable quarter window retract limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at retractable quarter window retract limit switch connector E-119.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>       |  | Yes    | Replace retractable quarter window retract limit switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |  | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                                    |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 34

| TEST STEP |   | RESULT        | ACTION TO TAKE  |
|-----------|---|---------------|---|
| 34-1      | CHECK CIRCUIT GC 44 FOR LOW REFERENCE VOLTAGE AT ECU  |               |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 25 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is 0.7 volt present?</p>   | Yes<br><br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br><br>Go to 34-2.   |
| 34-2      | CHECK CIRCUIT GC 44 FOR HIGH REFERENCE VOLTAGE AT ECU   |               |   |
|           | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 25 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Are 2.1 volts present?</p> | Yes<br><br>No | Replace LH header position switch.<br>Restore vehicle.<br>Retest system.<br><br>Refer to other DTCs that may have occurred. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 35

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 35-1   | CHECK CIRCUIT GC 44 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 25 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> <p>• <b>Is there continuity?</b></p>  |   | Yes    | Go to <b>35-2</b> .   |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 35-2   | CHECK CIRCUIT GC 20 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connect connector F-124 at ECU.</li> <li>• Access and disconnect LH header position limit switch connector E-114.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at LH header position limit switch connector E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is 2.1 present?</b></p>  |   | Yes    | Go to <b>35-3</b> .   |
|  |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 44 for short to ground.<br>Restore vehicle.<br>Retest system.           |
| 35-3   | CHECK CIRCUIT GC 22 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-114 at LH header position limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at LH header position limit switch connector E-114.</li> <li>• Read voltmeter.</li> </ul> <p>• <b>Is 0.7 volt present?</b></p>   |   | Yes    | Go to <b>35-4</b> .   |
|  |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 44 for short to ground.<br>Restore vehicle.<br>Retest system.           |
| 35-4   | CHECK LH HEADER POSITION LIMIT SWITCH   |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-114 at LH header latch position limit switch disconnected.</li> <li>• Using DVOM set on ohm scale, connect one lead to pin A of LH header position limit switch.</li> <li>• Connect the second lead to pin B of LH header position limit switch.</li> <li>• Check for continuity.</li> <li>• Connect one lead to pin B of LH header position limit switch.</li> <li>• Connect second lead to pin C of LH header position limit switch.</li> <li>• Check for continuity.</li> </ul> <p>• Switch pressed = continuity A and B.<br/>         • Switch open = continuity B and C.</p> <p>• <b>Does switch operate properly?</b></p> |   | Yes    | Repair circuit GC 44 for open and short to ground.<br>Restore vehicle.<br>Retest system.                                    |
|  |   | No     | Replace LH header position limit switch.<br>Repair circuit GC 44 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 36

| TEST STEP  |  | RESULT | ACTION TO TAKE  |
|--|--|--------|---|
| <b>36-1</b>  | CHECK CIRCUIT GC 44 AT ECU FOR VOLTAGE                             |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 25 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul>                        |  | Yes    | Go to <b>36-2</b> .   |
| <ul style="list-style-type: none"> <li>• Is there 3.0 volts or more?</li> </ul>  |  | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| <b>36-2</b>  | CHECK CIRCUIT GC 22 AT LH HEADER LATCH POSITION SWITCH FOR VOLTAGE |        |   |
| <ul style="list-style-type: none"> <li>• Access and disconnect LH header latch position switch connector E-114.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at LH header latch position switch connector E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is voltage over 0.7 volts?</li> </ul>   |  | No     | Go to <b>36-3</b> .   |
| <b>36-3</b>  | CHECK CIRCUIT GC 20 AT LH HEADER LATCH POSITION SWITCH FOR VOLTAGE |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-114 at LH header latch position switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at LH header latch position switch connector E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul>       |  | Yes    | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is voltage over 2.1 volts?</li> </ul>   |  | No     | Repair circuit GC 44.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 37

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| 37-1   | CHECK CIRCUIT GC 44 FOR VOLTAGE AT ECU                             |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect the positive lead to pin 25 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                          |  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                             |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to 37-2.  |
| 37-2   | CHECK CIRCUIT GC 44 FOR VOLTAGE AT LH HEADER LATCH POSITION SWITCH |        |  |
| <ul style="list-style-type: none"> <li>• Access LH header latch position switch connector E-114.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at LH header latch position switch connector E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 44.<br>Restore vehicle.<br>Retest system.                    |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to 37-3.  |
| 37-3   | CHECK CIRCUIT GC 20 FOR VOLTAGE                                    |        |  |
| <ul style="list-style-type: none"> <li>• Disconnect LH header latch position switch connector E-114.</li> <li>• Using a DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin C at LH header latch position switch connector E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>      |  | Yes    | Go to 37-4.  |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |  | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                    |
| 37-4   | CHECK CIRCUIT GC 22 FOR VOLTAGE                                    |        |  |
| <ul style="list-style-type: none"> <li>• Connector E-114 at LH header latch position switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at LH header latch position switch E-114.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                 |  | Yes    | Replace LH header latch position switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |  | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                    |

**PINPOINT TESTS**      **REFER TO:** PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

**DTC 38**

| <b>TEST STEP</b>  |   | <b>RESULT</b> | <b>ACTION TO TAKE</b>  |
|---|---|---------------|--|
| <b>38-1</b>   | CHECK CIRCUIT GC 45 FOR LOW REFERENCE VOLTAGE AT ECU  |               |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 39 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes           | Replace ECU.<br>Restore vehicle.<br>Retest system.                       |
| <ul style="list-style-type: none"> <li>• Is 0.7 volt present?</li> </ul>  |   | No            | Go to <b>38-2</b> .  |
| <b>38-2</b>   | CHECK CIRCUIT GC 45 FOR HIGH REFERENCE VOLTAGE AT ECU |               |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using DVOM set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect positive lead to pin 39 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                          |   | Yes           | Replace RH header position switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Are 2.1 volts present?</li> </ul>  |   | No            | Refer to other DTCs that may have occurred.                              |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 39

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| <b>39-1</b>  | CHECK CIRCUIT GC 45 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to a known good ground.</li> <li>• Connect the second lead to pin 39 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>   |   | Yes    | Go to <b>39-2</b> .   |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| <b>39-2</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connect connector F-124 at ECU.</li> <li>• Access and disconnect RH header position limit switch connector E-111.</li> <li>• Using DVOM set to DC volt, connect one lead to a known good ground.</li> <li>• Connect second lead to pin C at RH header position limit switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> <li>• <b>Is 2.1 volts present?</b></li> </ul>   |   | Yes    | Go to <b>39-3</b> .   |
|  |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 45 for short to ground.<br>Restore vehicle.<br>Retest system.           |
| <b>39-3</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-111 at RH header position limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect one lead to a known good ground.</li> <li>• Connect the second lead to pin A at RH header position limit switch connector E-111.</li> <li>• Read voltmeter.</li> <li>• <b>Is 0.7 volt present?</b></li> </ul>  |   | Yes    | Go to <b>39-4</b> .   |
|  |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 45 for short to ground.<br>Restore vehicle.<br>Retest system.           |
| <b>39-4</b>  | CHECK RH HEADER POSITION LIMIT SWITCH   |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-111 at RH header latch position limit switch disconnected.</li> <li>• Using DVOM set on ohm scale, connect one lead to pin A of RH header position limit switch.</li> <li>• Connect the second lead to pin B of RH header position limit switch.</li> <li>• Check for continuity.</li> <li>• Connect one lead to pin B of RH header position limit switch.</li> <li>• Connect second lead to pin C of RH header position limit switch.</li> <li>• Check for continuity.</li> <li>• Switch pressed = continuity A and B.</li> <li>• Switch open = continuity B and C.</li> <li>• <b>Does switch operate properly?</b></li> </ul> |   | Yes    | Repair circuit GC 45 for open and short to ground.<br>Restore vehicle.<br>Retest system.                                    |
|  |   | No     | Replace RH header position limit switch.<br>Repair circuit GC 45 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 40

| TEST STEP  |  | RESULT | ACTION TO TAKE  |
|--|--|--------|---|
| <b>40-1</b>  | CHECK CIRCUIT GC 45 AT ECU FOR VOLTAGE                             |        |   |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 39 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul>                        |  | Yes    | Go to <b>40-2</b> .   |
| <ul style="list-style-type: none"> <li>• Is there 3.0 volts or more?</li> </ul>  |  | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| <b>40-2</b>  | CHECK CIRCUIT GC 20 AT RH HEADER LATCH POSITION SWITCH FOR VOLTAGE |        |   |
| <ul style="list-style-type: none"> <li>• Access and disconnect RH header latch position switch connector E-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at RH header latch position switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is voltage over 2.1 volts?</li> </ul>   |  | No     | Go to <b>40-3</b> .   |
| <b>40-3</b>  | CHECK CIRCUIT GC 22 AT RH HEADER LATCH POSITION SWITCH FOR VOLTAGE |        |   |
| <ul style="list-style-type: none"> <li>• Connector E-111 at RH header latch position switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at RH header latch position switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul>       |  | Yes    | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is voltage over 0.7 volts?</li> </ul>   |  | No     | Repair circuit GC 45.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 41

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| <b>41-1</b>  | CHECK CIRCUIT GC 45 FOR VOLTAGE AT ECU                             |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect the positive lead to pin 39 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                          |  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                             |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>41-2</b> .  |
| <b>41-2</b>  | CHECK CIRCUIT GC 45 FOR VOLTAGE AT RH HEADER LATCH POSITION SWITCH |        |  |
| <ul style="list-style-type: none"> <li>• Access RH header latch position switch connector E-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at RH header latch position switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 45.<br>Restore vehicle.<br>Retest system.                    |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>41-3</b> .  |
| <b>41-3</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE                                    |        |  |
| <ul style="list-style-type: none"> <li>• Disconnect RH header latch position switch connector E-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin C at RH header latch position switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>        |  | Yes    | Go to <b>41-4</b> .  |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |  | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                    |
| <b>41-4</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE                                    |        |  |
| <ul style="list-style-type: none"> <li>• Connector E-111 at RH header latch position switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at RH header latch position switch connector E-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>       |  | Yes    | Replace RH header latch position switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |  | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                    |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 42

| TEST STEP  |  | RESULT    | ACTION TO TAKE  |
|--|--|-----------|---|
| <b>42-1</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access LH tonneau latch limit switch.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin C at LH tonneau limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Tonneau latch switch must be open.</p> <ul style="list-style-type: none"> <li>Read voltmeter.</li> <li><b>Is 2.1 volts present?</b></li> </ul> |  | Yes<br>No | Go to <b>42-2</b> .<br>Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                                |
| <b>42-2</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access LH tonneau latch limit switch.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin A at LH tonneau limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> </ul> <p>Read voltmeter.</p> <p><b>Is 0.7 volts present?</b></p>  |  | Yes<br>No | Go to <b>42-3</b> .<br>Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                                |
| <b>42-3</b>  | CHECK CIRCUIT GC 24 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access LH tonneau latch limit switch connector F-119.</li> <li>Using DVOM set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin B at LH tonneau limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: 2.1 volts with switch open.<br/>0.7 volts with switch closed.</p> <p>Read voltmeter.</p> <p><b>Is proper voltage present?</b></p>                       |  | Yes<br>No | Go to <b>42-4</b> .<br>Replace LH tonneau latch limit switch.<br>Restore vehicle.<br>Retest system.               |
| <b>42-4</b>  | CHECK CIRCUIT GC 24 AT ECU                                       |           |   |
| <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using DVOM set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 26 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>NOTE: 2.1 volts with switch open.<br/>0.7 volts with switch closed.</p> <p><b>Is proper voltage present?</b></p>   |  | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 24.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 43

| TEST STEP  |   | RESULT    | ACTION TO TAKE  |
|--|---|-----------|---|
| <b>43-1</b>  | CHECK CIRCUIT GC 24 FOR SHORT TO GROUND |           |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 26 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>  |   | Yes<br>No | Go to <b>43-2</b> .<br>Replace ECU.<br>Restore vehicle.<br>Retest system.   |
| <b>43-2</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE         |           |   |
| <ul style="list-style-type: none"> <li>• Connect connector F-124 at ECU.</li> <li>• Access and disconnect LH tonneau latch limit switch connector E-119.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at LH tonneau latch limit switch connector F-119.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> <li>• <b>Is 2.1 volts present?</b></li> </ul>  |   | Yes<br>No | Go to <b>43-3</b> .<br>Repair circuit GC 20 for open.<br>Repair circuit GC 24 for short to ground.<br>Restore vehicle.<br>Retest system.  |
| <b>43-3</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE         |           |   |
| <ul style="list-style-type: none"> <li>• Connector F-119 at LH tonneau latch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at LH tonneau latch limit switch connector F-119.</li> <li>• Read voltmeter.</li> <li>• <b>Is 0.7 volt present?</b></li> </ul>   |   | Yes<br>No | Go to <b>43-4</b> .<br>Repair circuit GC 22 for open.<br>Repair circuit GC 24 for short to ground.<br>Restore vehicle.<br>Retest system.  |
| <b>43-4</b>  | CHECK LH TONNEAU LATCH LIMIT SWITCH     |           |   |
| <ul style="list-style-type: none"> <li>• Connector F-119 at LH tonneau latch limit switch disconnected.</li> <li>• Using DVOM set on ohm scale, connect one lead to pin A of LH tonneau latch limit switch.</li> <li>• Connect the second lead to pin B of LH tonneau latch limit switch.</li> <li>• Check for continuity.</li> <li>• Connect one lead to pin B of LH tonneau latch limit switch.</li> <li>• Connect second lead to pin C of LH tonneau latch limit switch.</li> <li>• Check for continuity.</li> <li>• Switch pressed = continuity A and B.</li> <li>• Switch open = continuity B and C.</li> <li>• <b>Does switch operate properly?</b></li> </ul> |   | Yes<br>No | Repair circuit GC 24 for open and short to ground.<br>Restore vehicle.<br>Retest system.<br>Replace LH tonneau latch limit switch.<br>Repair circuit GC 24 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 44

| TEST STEP   |  | RESULT        | ACTION TO TAKE   |
|-------------|--|---------------|--|
| <b>44-1</b> | CHECK CIRCUIT GC 24 AT ECU FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 26 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Turn on all accessories and lights and operate hardtop system.</li> <li>Read voltmeter.</li> </ul> <p>• Is there 3.0 volts or more?</p>                     | Yes<br><br>No | Go to <b>44-2</b> .<br><br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| <b>44-2</b> | CHECK CIRCUIT GC 20 AT LH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>Access and disconnect LH tonneau latch limit switch connector F-119.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin C at LH tonneau latch limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> <li>Turn on all accessories and lights and operate hardtop system.</li> <li>Read voltmeter.</li> </ul> <p>• Is voltage over 2.1 volts?</p>   | Yes<br><br>No | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br><br>Go to <b>44-3</b> .   |
| <b>44-3</b> | CHECK CIRCUIT GC 22 AT LH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>Connector F-119 at LH tonneau latch limit switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin A at LH tonneau latch limit switch harness connector F-119.</li> <li>Turn ignition to ON position.</li> <li>Turn on all accessories and lights and operate hardtop system.</li> <li>Read voltmeter.</li> </ul> <p>• Is voltage over 0.7 volts?</p> | Yes<br><br>No | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br><br>Repair circuit GC 23.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 45

| TEST STEP |   | RESULT    | ACTION TO TAKE  |
|-----------|---|-----------|---|
| 45-1      | CHECK CIRCUIT GC 24 FOR VOLTAGE AT ECU  |           |   |
|           | <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>Back probe and connect the positive lead to pin 26 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 or 2.1 volts present?</p>                         | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Go to 45-2.   |
| 45-2      | CHECK CIRCUIT GC 24 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH  |           |   |
|           | <ul style="list-style-type: none"> <li>Access LH tonneau latch position switch connector F-119.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect positive lead to pin B at LH tonneau latch limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 or 2.1 volts present?</p> | Yes<br>No | Repair circuit GC 24.<br>Restore vehicle.<br>Retest system.<br>Go to 45-3.  |
| 45-3      | CHECK CIRCUIT GC 20 FOR VOLTAGE   |           |   |
|           | <ul style="list-style-type: none"> <li>Disconnect LH tonneau latch position switch connector F-119.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin C at LH tonneau latch limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 2.1 volts present?</p>               | Yes<br>No | Go to 45-4.<br>Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.  |
| 45-4      | CHECK CIRCUIT GC 22 FOR VOLTAGE   |           |   |
|           | <ul style="list-style-type: none"> <li>Connector F-119 at LH tonneau latch position switch disconnected.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Connect positive lead to pin A at LH tonneau latch limit switch connector F-119.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>• Is 0.7 volts present?</p>              | Yes<br>No | Replace LH tonneau latch limit switch.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 22.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 46

| TEST STEP  |  | RESULT    | ACTION TO TAKE  |
|--|--|-----------|---|
| 46-1   | CHECK CIRCUIT GC 20 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access RH tonneau latch limit switch.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin C at RH tonneau limit switch connector F-111.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Tonneau latch switch must be open.</p> <ul style="list-style-type: none"> <li>Read voltmeter.</li> <li>Is 2.1 volts present?</li> </ul>                        |  | Yes<br>No | Go to 46-2.<br>Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.  |
| 46-2   | CHECK CIRCUIT GC 22 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access RH tonneau latch limit switch.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin A at RH tonneau limit switch connector F-111.</li> <li>Turn ignition to ON position.</li> </ul> <p>Read voltmeter.</p> <ul style="list-style-type: none"> <li>Is 0.7 volts present?</li> </ul>  |  | Yes<br>No | Go to 46-3.<br>Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.  |
| 46-3   | CHECK CIRCUIT GC 25 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH |           |   |
| <ul style="list-style-type: none"> <li>Access LH tonneau latch limit switch connector F-111.</li> <li>Using DVOM set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin B at RH tonneau limit switch connector F-111.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: 2.1 volts with switch open.<br/>0.7 volts with switch closed.</p> <ul style="list-style-type: none"> <li>Read voltmeter.</li> <li>Is proper voltage present?</li> </ul> |  | Yes<br>No | Go to 46-4.<br>Replace RH tonneau latch limit switch.<br>Restore vehicle.<br>Retest system.                       |
| 46-4   | CHECK CIRCUIT GC 25 AT ECU                                       |           |   |
| <ul style="list-style-type: none"> <li>Access connector F-124 at ECU.</li> <li>Using DVOM set on DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect the positive lead to pin 40 at ECU connector F-124.</li> <li>Turn ignition to ON position.</li> <li>Read voltmeter.</li> </ul> <p>NOTE: 2.1 volts with switch open.<br/>0.7 volts with switch closed.</p> <ul style="list-style-type: none"> <li>Is proper voltage present?</li> </ul>   |  | Yes<br>No | Replace ECU.<br>Restore vehicle.<br>Retest system.<br>Repair circuit GC 25.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 47

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| 47-1   | CHECK CIRCUIT GC 25 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 40 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>  |   | Yes    | Go to 47-2.   |
|  |   | No     | Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| 47-2   | CHECK CIRCUIT GC 20 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connect connector F-124 at ECU.</li> <li>• Access and disconnect RH tonneau latch limit switch connector F-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at RH tonneau latch limit switch connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> <li>• <b>Is 2.1 volts present?</b></li> </ul>  |   | Yes    | Go to 47-3.   |
|  |   | No     | Repair circuit GC 20 for open.<br>Repair circuit GC 25 for short to ground.<br>Restore vehicle.<br>Retest system.         |
| 47-3   | CHECK CIRCUIT GC 22 FOR VOLTAGE         |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-111 at RH tonneau latch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at RH tonneau latch limit switch connector F-111.</li> <li>• Read voltmeter.</li> <li>• <b>Is 0.7 volt present?</b></li> </ul>   |   | Yes    | Go to 47-4.   |
|  |   | No     | Repair circuit GC 22 for open.<br>Repair circuit GC 25 for short to ground.<br>Restore vehicle.<br>Retest system.         |
| 47-4   | CHECK RH TONNEAU LATCH LIMIT SWITCH     |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-111 at RH tonneau latch limit switch disconnected.</li> <li>• Using DVOM set on ohm scale, connect one lead to pin A of RH tonneau latch limit switch.</li> <li>• Connect the second lead to pin B of RH tonneau latch limit switch.</li> <li>• Check for continuity.</li> <li>• Connect one lead to pin B of RH tonneau latch limit switch.</li> <li>• Connect second lead to pin C of RH tonneau latch limit switch.</li> <li>• Check for continuity.</li> <li>• Switch pressed = continuity A and B.</li> <li>• Switch open = continuity B and C.</li> <li>• <b>Does switch operate properly?</b></li> </ul> |   | Yes    | Repair circuit GC 25 for open and short to ground.<br>Restore vehicle.<br>Retest system.                                  |
|  |   | No     | Replace RH tonneau latch limit switch.<br>Repair circuit GC 25 for short to ground.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 48

| TEST STEP   |  | RESULT        | ACTION TO TAKE   |
|-------------|--|---------------|--|
| <b>48-1</b> | CHECK CIRCUIT GC 25 AT ECU FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect the positive lead to pin 40 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is there 3.0 volts or more?</p>                           | Yes<br><br>No | Go to <b>48-2</b> .<br><br>Replace ECU.<br>Restore vehicle.<br>Retest system.  |
| <b>48-2</b> | CHECK CIRCUIT GC 20 AT RH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>• Access and disconnect RH tonneau latch limit switch connector F-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin C at RH tonneau latch limit switch harness connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 2.1 volts?</p> | Yes<br><br>No | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.<br><br>Go to <b>48-3</b> .   |
| <b>48-3</b> | CHECK CIRCUIT GC 22 AT RH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE   |               |  |
|             | <ul style="list-style-type: none"> <li>• Connector F-111 at RH tonneau latch limit switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at RH tonneau latch limit switch harness connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Turn on all accessories and lights and operate hardtop system.</li> <li>• Read voltmeter.</li> </ul> <p>• Is voltage over 0.7 volts?</p>       | Yes<br><br>No | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.<br><br>Repair circuit GC 25.<br>Restore vehicle.<br>Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 49

| TEST STEP  |  | RESULT | ACTION TO TAKE   |
|--|--|--------|--|
| <b>49-1</b>  | CHECK CIRCUIT GC 25 FOR VOLTAGE AT ECU                           |        |  |
| <ul style="list-style-type: none"> <li>• Access connector F-124 at ECU.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground.</li> <li>• Back probe and connect the positive lead to pin 40 at ECU connector F-124.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>                      |  | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.                           |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>49-2</b> .  |
| <b>49-2</b>  | CHECK CIRCUIT GC 25 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH |        |  |
| <ul style="list-style-type: none"> <li>• Access RH tonneau latch limit switch connector F-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Back probe and connect positive lead to pin B at RH tonneau latch limit switch connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> |  | Yes    | Repair circuit GC 25.<br>Restore vehicle.<br>Retest system.                  |
| <ul style="list-style-type: none"> <li>• Is 0.7 or 2.1 volts present?</li> </ul>   |  | No     | Go to <b>49-3</b> .  |
| <b>49-3</b>  | CHECK CIRCUIT GC 20 FOR VOLTAGE                                  |        |  |
| <ul style="list-style-type: none"> <li>• Disconnect RH tonneau latch position switch, connector F-111.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin C at RH tonneau latch limit switch connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>    |  | Yes    | Go to <b>49-4</b> .  |
| <ul style="list-style-type: none"> <li>• Is 2.1 volts present?</li> </ul>  |  | No     | Repair circuit GC 20.<br>Restore vehicle.<br>Retest system.                  |
| <b>49-4</b>  | CHECK CIRCUIT GC 22 FOR VOLTAGE                                  |        |  |
| <ul style="list-style-type: none"> <li>• Connector F-111 at RH tonneau latch position switch disconnected.</li> <li>• Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect positive lead to pin A at RH tonneau latch limit switch connector F-111.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul>    |  | Yes    | Replace RH tonneau latch limit switch.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is 0.7 volts present?</li> </ul>  |  | No     | Repair circuit GC 22.<br>Restore vehicle.<br>Retest system.                  |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 50

| TEST STEP   |  | RESULT        | ACTION TO TAKE   |
|---|--|---------------|--|
| <b>50-1</b>   | CHECK HARDTOP MANUAL OPERATION               |               |  |
| NOTE: A second person will be needed for this operation.<br><br><ul style="list-style-type: none"> <li>• Open hard tonneau.</li> <li>• Access and turn hardtop bypass valve to MANUAL position.</li> <li>• Turn ignition to the ON position.</li> <li>• Press hardtop control switch to the OPEN position to release header latches. Release hardtop control switch.</li> <li>• Turn ignition to OFF position.</li> <li>• Manually operate hardtop to full open and full closed positions.</li> </ul> <ul style="list-style-type: none"> <li>• Does hardtop operate without binding?</li> </ul> |  | Yes<br><br>No | Go to <b>50-2</b> .<br><br>Check for binding of mechanical and/or hydraulic components. Service as required. Restore vehicle. Retest system. |
| <b>50-2</b>   | CHECK HARDTOP PUMP OPERATION WHILE IN BYPASS |               |  |
| <ul style="list-style-type: none"> <li>• Clear DTCs from ECUs memory.</li> <li>• Hardtop bypass valve in MANUAL position.</li> <li>• Turn ignition to ON position.</li> <li>• Press hardtop control switch to OPEN position.</li> <li>• Check for DTCs.</li> </ul> <ul style="list-style-type: none"> <li>• Did DTC 50 return?</li> </ul>   |  | Yes<br><br>No | Go to <b>50-3</b> .<br><br>Replace hardtop pump assembly. Restore vehicle. Retest system.  |
| <b>50-3</b>   | CHECK CIRCUIT GC 29 FOR SHORT TO GROUND      |               |  |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-125 at ECU.</li> <li>• Disconnect hardtop drive motor connector F-120.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin B at hardtop drive motor connector F-120.</li> <li>• Read ohmmeter.</li> </ul> <ul style="list-style-type: none"> <li>• Is there continuity?</li> </ul>   |  | Yes<br><br>No | Repair circuit GC 29. Restore vehicle. Retest system.<br><br>Go to <b>50-4</b> .   |
| <b>50-4</b>   | CHECK CIRCUIT GC 30 FOR SHORT TO GROUND      |               |  |
| <ul style="list-style-type: none"> <li>• Connector F-125 at ECU disconnected.</li> <li>• Connector F-120 at hardtop drive motor disconnected.</li> <li>• Using DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin A at hardtop drive motor connector F-120.</li> <li>• Read ohmmeter.</li> </ul> <ul style="list-style-type: none"> <li>• Is there continuity?</li> </ul>   |  | Yes<br><br>No | Repair circuit GC 30. Restore vehicle. Retest system.<br><br>Go to <b>50-5</b> .   |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 50 (CONTINUED)

| TEST STEP  |   | RESULT | ACTION TO TAKE   |
|--|---|--------|--|
| 50-5   | CHECK CIRCUIT GC 29 AND GC 30 FOR SHORT CIRCUIT |        |  |
| <ul style="list-style-type: none"> <li>• Connector F-125 at ECU disconnected.</li> <li>• Connector F-120 at hardtop drive motor disconnected.</li> <li>• Using DVOM set to ohm scale, connect one lead to pin B at hardtop drive motor connector F-120.</li> <li>• Connect the second lead to pin A at hardtop drive motor connector F-120.</li> <li>• Read ohmmeter.</li> </ul> |   | Yes    | Repair circuits GC 29 and GC 30.<br>Restore vehicle.<br>Retest system. |
| <ul style="list-style-type: none"> <li>• Is there continuity?</li> </ul>   |   | No     | Replace hardtop drive motor.<br>Restore vehicle.<br>Retest system.     |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 51

| TEST STEP |  | RESULT        | ACTION TO TAKE  |
|-----------|--|---------------|---|
| 51-1      | CHECK HARD TONNEAU MANUAL OPERATION  |               |   |
|           | <ul style="list-style-type: none"> <li>Release hard tonneau latches.</li> <li>Access and turn hard tonneau bypass valve to MANUAL position.</li> <li>Manually operate hard tonneau to full open and full closed positions.</li> </ul> <p>• Does hard tonneau operate without binding?</p>  | Yes<br><br>No | Go to 51-2.<br><br>Check for binding of mechanical and/or hydraulic components. Service as required. Restore vehicle. Retest system.        |
| 51-2      | CHECK HARD TONNEAU PUMP OPERATION WHILE IN BYPASS  |               |   |
|           | <ul style="list-style-type: none"> <li>Clear DTCs from ECUs memory.</li> <li>Hard tonneau bypass valve in MANUAL position.</li> <li>Turn ignition to ON position.</li> <li>Press hard tonneau control switch to OPEN position.</li> <li>Check for DTCs.</li> </ul> <p>• Did DTC 51 return?</p>   | Yes<br><br>No | Go to 51-3.<br><br>Replace hard tonneau pump assembly. Restore vehicle. Retest system.  |
| 51-3      | CHECK CIRCUIT GC 31 FOR SHORT TO GROUND  |               |   |
|           | <ul style="list-style-type: none"> <li>Disconnect connector F-125 at ECU.</li> <li>Disconnect hard tonneau drive motor connector F-113.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin A at hard tonneau drive motor connector F-113.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p> | Yes<br><br>No | Repair circuit GC 31. Restore vehicle. Retest system.<br><br>Go to 51-4.  |
| 51-4      | CHECK CIRCUIT GC 32 FOR SHORT TO GROUND  |               |   |
|           | <ul style="list-style-type: none"> <li>Connector F-125 at ECU disconnected.</li> <li>Connector F-113 at hard tonneau drive motor disconnected.</li> <li>Using DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>Connect the positive lead to pin B at hard tonneau pump connector F-113.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>                          | Yes<br><br>No | Repair circuit GC 32. Restore vehicle. Retest system.<br><br>Go to 51-5.  |
| 51-5      | CHECK CIRCUIT GC 31 AND GC 32 FOR SHORT CIRCUIT  |               |   |
|           | <ul style="list-style-type: none"> <li>Connector F-125 at ECU disconnected.</li> <li>Connector F-113 at hard tonneau pump disconnected.</li> <li>Using DVOM set to ohm scale, connect one lead to pin A at hard tonneau pump connector F-113.</li> <li>Connect the second lead to pin B at hard tonneau pump connector F-113.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>                 | Yes<br><br>No | Repair circuits GC 31 and GC 32. Restore vehicle. Retest system.<br><br>Replace hard tonneau pump assembly. Restore vehicle. Retest system. |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 52

| TEST STEP   |   | RESULT    | ACTION TO TAKE   |
|---|---|-----------|--|
| 52-1  | CHECK CIRCUIT GW 52 FOR VOLTAGE AT ECU                      |           |  |
| <ul style="list-style-type: none"> <li>Access connector F-123 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to DC volt, back probe and connect negative lead to pin 19 at ECU connector F-123.</li> <li>Back probe and connect positive lead to pin 18 at ECU connector F-123.</li> <li>Turn ignition to ON position.</li> <li>Press hardtop control switch to CLOSED position.</li> </ul> <p>NOTE: Tonneau and header must latch.</p> <ul style="list-style-type: none"> <li>Read voltmeter.</li> <li>Is system voltage present?</li> </ul> |   | Yes<br>No | Go to 52-2.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| 52-2  | CHECK CIRCUIT GW 51 FOR VOLTAGE AT ECU                      |           |  |
| <ul style="list-style-type: none"> <li>Access connector F-123 at ECU.</li> <li>Using DVOM set to DC volt, back probe and connect negative lead to pin 18 at ECU connector F-123.</li> <li>Back probe and connect positive lead to pin 19 at ECU connector F-123.</li> <li>Turn ignition to ON position.</li> <li>Press hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> <li>Is system voltage present?</li> </ul>   |   | Yes<br>No | Go to 52-3.<br>Replace ECU.<br>Restore vehicle.<br>Retest system.          |
| 52-3  | CHECK CIRCUIT GW 51 AND 52 FOR VOLTAGE AT DRIVER DOOR RELAY |           |  |
| <ul style="list-style-type: none"> <li>Access and disconnect driver window relay controller connector E-126.</li> <li>Using DVOM set to DC volt, connect negative lead to pin 1 at driver window relay controller connector E-126.</li> <li>Connect positive lead to pin 2 at driver window relay controller connector E-126.</li> <li>Turn ignition to ON position.</li> <li>Operate hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> <li>Is system voltage present?</li> </ul> <p>NOTE: Quarter windows must be extended.</p>   |   | Yes<br>No | Go to 52-6.<br>Go to 52-4.   |
| 52-4  | CHECK CIRCUIT GW 51 FOR OPEN                                |           |  |
| <ul style="list-style-type: none"> <li>Disconnect connector F-123 at ECU.</li> <li>Connector E-126 at driver window relay disconnected.</li> <li>Using DVOM set to ohm scale, connect negative lead to pin 1 at window relay controller connector E-126.</li> <li>Connect positive lead to pin 18 at ECU connector F-123.</li> <li>Read ohmmeter.</li> <li>Is there 3 ohms or less?</li> </ul>  |   | Yes<br>No | Go to 52-5.<br>Repair circuit GW 51.<br>Restore vehicle.<br>Retest system. |

**PINPOINT TESTS**

**REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

**DTC 52 (CONTINUED)**

| <b>TEST STEP</b>   |   | <b>RESULT</b> | <b>ACTION TO TAKE</b>  |
|--|---|---------------|--|
| <b>52-5</b>  | <b>CHECK CIRCUIT GW 52 FOR OPEN</b>         |               |  |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-123 at ECU.</li> <li>• Connector E-126 at driver window relay disconnected.</li> <li>• Using DVOM set to ohm scale, connect negative lead to pin 2 at window relay controller connector E-126.</li> <li>• Connect positive lead to pin 19 at ECU connector F-123.</li> <li>• Read ohmmeter.</li> </ul>   |   | Yes           | <ul style="list-style-type: none"> <li>▶ Circuits check okay. Restore vehicle. Retest system.</li> </ul>         |
| <ul style="list-style-type: none"> <li>• Is there 3 ohms or less?</li> </ul>   |   | No            | <ul style="list-style-type: none"> <li>▶ Repair circuit GW 52. Restore vehicle. Retest system.</li> </ul>        |
| <b>52-6</b>  | <b>CHECK VOLTAGE TO DRIVER WINDOW MOTOR</b> |               |  |
| <ul style="list-style-type: none"> <li>• Connect driver relay controller connector E-126.</li> <li>• Disconnect driver window relay window motor connector E-125.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to pin 2 at driver window relay window motor connector.</li> <li>• Connector positive lead to pin 1 at driver window relay window motor connector E-125.</li> <li>• Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows must be extended.</p> <ul style="list-style-type: none"> <li>• Operate hardtop control switch to OPEN position.</li> <li>• Read voltmeter.</li> </ul> |   | Yes           | <ul style="list-style-type: none"> <li>▶ Replace driver window motor. Restore vehicle. Retest system.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Is system voltage present?</li> </ul>   |   | No            | <ul style="list-style-type: none"> <li>▶ Replace driver window relay assembly.</li> </ul>                        |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 53

| TEST STEP  |  | RESULT    | ACTION TO TAKE  |
|--|--|-----------|---|
| 53-1   | CHECK CIRCUIT GW 53 FOR VOLTAGE                |           |   |
| <ul style="list-style-type: none"> <li>Access connector F-123 at ECU.</li> <li>Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect positive lead to pin 13 at ECU connector F-123.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows must be retracted.</p> <ul style="list-style-type: none"> <li>Momentarily operate hardtop control switch to CLOSED position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> |  | Yes<br>No | <p>Go to 53-2.</p> <p>Replace ECU.<br/>Restore vehicle.<br/>Retest system.</p>                    |
| 53-2   | CHECK CIRCUIT GW 54 FOR VOLTAGE                |           |   |
| <ul style="list-style-type: none"> <li>Access connector F-123 at ECU.</li> <li>Using DVOM set to DC volt, connect negative lead to a known good ground.</li> <li>Back probe and connect positive lead to pin 14 at ECU connector F-123.</li> <li>Turn ignition to ON position.</li> </ul> <p>NOTE: Quarter windows must be extended.</p> <ul style="list-style-type: none"> <li>Momentarily operate hardtop control switch to OPEN position.</li> <li>Read voltmeter.</li> </ul> <p>• Is system voltage present?</p>                             |  | Yes<br>No | <p>Go to 53-3.</p> <p>Replace ECU.<br/>Restore vehicle.<br/>Retest system.</p>                    |
| 53-3   | CHECK PASSENGER WINDOW MOTOR CIRCUITS FOR OPEN |           |   |
| <ul style="list-style-type: none"> <li>Disconnect connector F-123 at ECU.</li> <li>Using DVOM set to ohm scale, connect negative lead to pin 13 at ECU connector F-123.</li> <li>Connect the positive lead to pin 14 at ECU connector F-123.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there 10 ohms or less?</p>   |  | Yes<br>No | <p>Replace passenger window motor.<br/>Restore vehicle.<br/>Retest system.</p> <p>Go to 53-4.</p> |
| 53-4   | CHECK CIRCUIT GW 53 FOR OPEN                   |           |   |
| <ul style="list-style-type: none"> <li>Connector F-123 at ECU disconnected.</li> <li>Access and disconnect passenger window motor E-08.</li> <li>Using DVOM set to ohm scale, connect positive lead to pin 13 at ECU connector F-123.</li> <li>Connect the negative lead to pin 2 at passenger window motor connector E-08.</li> <li>Read ohmmeter.</li> </ul> <p>• Is there 3 ohms or less?</p>   |  | Yes<br>No | <p>Go to 53-5.</p> <p>Repair circuit GW 53.<br/>Restore vehicle.<br/>Retest system.</p>           |

**PINPOINT TESTS**      **REFER TO:** PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
NOTES AND DEFINITIONS OF TERMS.  
PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 53 (CONTINUED)

| TEST STEP  |                              | RESULT | ACTION TO TAKE  |
|--|------------------------------|--------|---|
| 53-5   | CHECK CIRCUIT GW 54 FOR OPEN |        |   |
| <ul style="list-style-type: none"><li>• Connector F-123 at ECU disconnected.</li><li>• Connector E-08 at passenger window motor disconnected.</li><li>• Using DVOM set to ohm scale, connect positive lead to pin 14 at ECU connector F-123.</li><li>• Connect the negative lead to pin 1 at passenger window motor connector E-08.</li><li>• Read ohmmeter.</li></ul> <p>• Is there 3 ohms or less?</p> |                              | Yes    | Replace passenger window motor.<br>Restore vehicle.<br>Retest system. |
|  |                              | No     | Repair circuit GW 54.<br>Restore vehicle.<br>Retest system.           |

## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 56

| TEST STEP |   | RESULT        | ACTION TO TAKE   |
|-----------|---|---------------|--|
| 56-1      | CHECK VOLTAGE AT CIRCUIT GC 47  |               |  |
|           | <ul style="list-style-type: none"> <li>• Disconnect object-in-trunk sensor connector F-115.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 2 of connector F-115.</li> <li>• Turn ignition to ON position.</li> <li>• Read voltmeter.</li> </ul> <p>• Is system voltage present?</p> | Yes ►<br>No ► | Go to 56-2.<br>Go to 56-5.   |
| 56-2      | CHECK CIRCUIT GC 48 FOR GROUND THROUGH ECU  |               |  |
|           | <ul style="list-style-type: none"> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Using DVOM set to ohm scale connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 1 of connector F-115.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is reading between 265 and 396 ohms?</p>  | Yes ►<br>No ► | Go to 56-3.<br>Go to 56-4.   |
| 56-3      | CHECK CIRCUIT GC 49 FOR GROUND THROUGH ECU  |               |  |
|           | <ul style="list-style-type: none"> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Using DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 3 of connector F-115.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is reading between 265 and 396 ohms?</p>   | Yes ►<br>No ► | Replace object-in-trunk sensor.<br>Restore vehicle.<br>Retest system.<br>Go to 56-6. |
| 56-4      | CHECK CIRCUIT GC 48 FOR SHORT TO GROUND   |               |  |
|           | <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Using DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 3 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>                 | Yes ►<br>No ► | Repair circuit GC 48.<br>Restore vehicle.<br>Retest system.<br>Go to 56-7.           |
| 56-5      | CHECK CIRCUIT GC 47 FOR SHORT TO GROUND   |               |  |
|           | <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Using DVOM set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 37 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> </ul> <p>• Is there continuity?</p>                | Yes ►<br>No ► | Repair circuit GC 49.<br>Restore vehicle.<br>Retest system.<br>Go to 56-8.           |



## PINPOINT TESTS

REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE,  
 NOTES AND DEFINITIONS OF TERMS.  
 PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS.  
 PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.

## DTC 56 (CONTINUED)

| TEST STEP  |   | RESULT | ACTION TO TAKE  |
|--|---|--------|---|
| <b>56-6</b>  | CHECK CIRCUIT GC 49 FOR SHORT TO GROUND |        |   |
| <ul style="list-style-type: none"> <li>• Disconnect connector F-124 at ECU.</li> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground.</li> <li>• Connect the positive lead to pin 4 at ECU connector F-124.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there continuity?</b></li> </ul>    |   | Yes    | Repair circuit GC 47.<br>Restore vehicle.<br>Retest system. |
|  |   | No     | Go to <b>56-9</b> .   |
| <b>56-7</b>  | CHECK CIRCUIT GC 48 FOR OPEN            |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using DVOM set to ohm scale, connect one lead to pin 3 at ECU connector F-124.</li> <li>• Connect the second lead to pin 1 at object-in-trunk sensor connector F-115.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there 3 ohms or less?</b></li> </ul>  |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.          |
|  |   | No     | Repair circuit GC 48.<br>Restore vehicle.<br>Retest system. |
| <b>56-8</b>  | CHECK CIRCUIT GC 47 FOR OPEN            |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using DVOM set to ohm scale, connect one lead to pin 37 at ECU connector F-124.</li> <li>• Connect the second lead to pin 2 at object-in-trunk sensor connector F-115.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there 3 ohms or less?</b></li> </ul> |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.          |
|  |   | No     | Repair circuit GC 47.<br>Restore vehicle.<br>Retest system. |
| <b>56-9</b>  | CHECK CIRCUIT GC 49 FOR OPEN            |        |   |
| <ul style="list-style-type: none"> <li>• Connector F-115 at object-in-trunk sensor disconnected.</li> <li>• Connector F-124 at ECU disconnected.</li> <li>• Using DVOM set to ohm scale, connect one lead to pin 4 at ECU connector F-124.</li> <li>• Connect the second lead to pin 3 at object-in-trunk sensor connector F-115.</li> <li>• Read ohmmeter.</li> <li>• <b>Is there 3 ohms or less?</b></li> </ul>  |   | Yes    | Replace ECU.<br>Restore vehicle.<br>Retest system.          |
|  |   | No     | Repair circuit GC 49.<br>Restore vehicle.<br>Retest system. |

**IGNITION SWITCH (IG1)**

**FUSIBLE LINK (8) 60A**

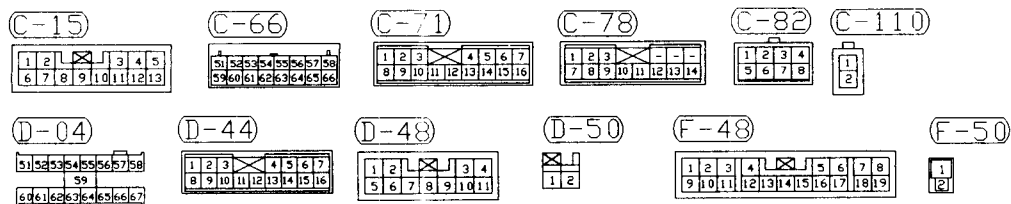
**ETACS**

**IGNITION SWITCH (IG2)**

**HARDTOP AND HARD TONNEAU CONTROL SWITCH**

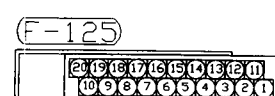
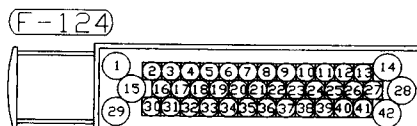
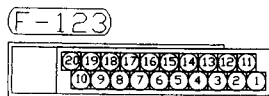
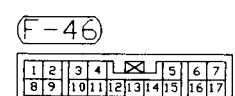
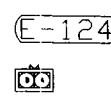
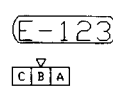
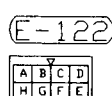
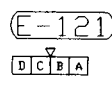
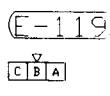
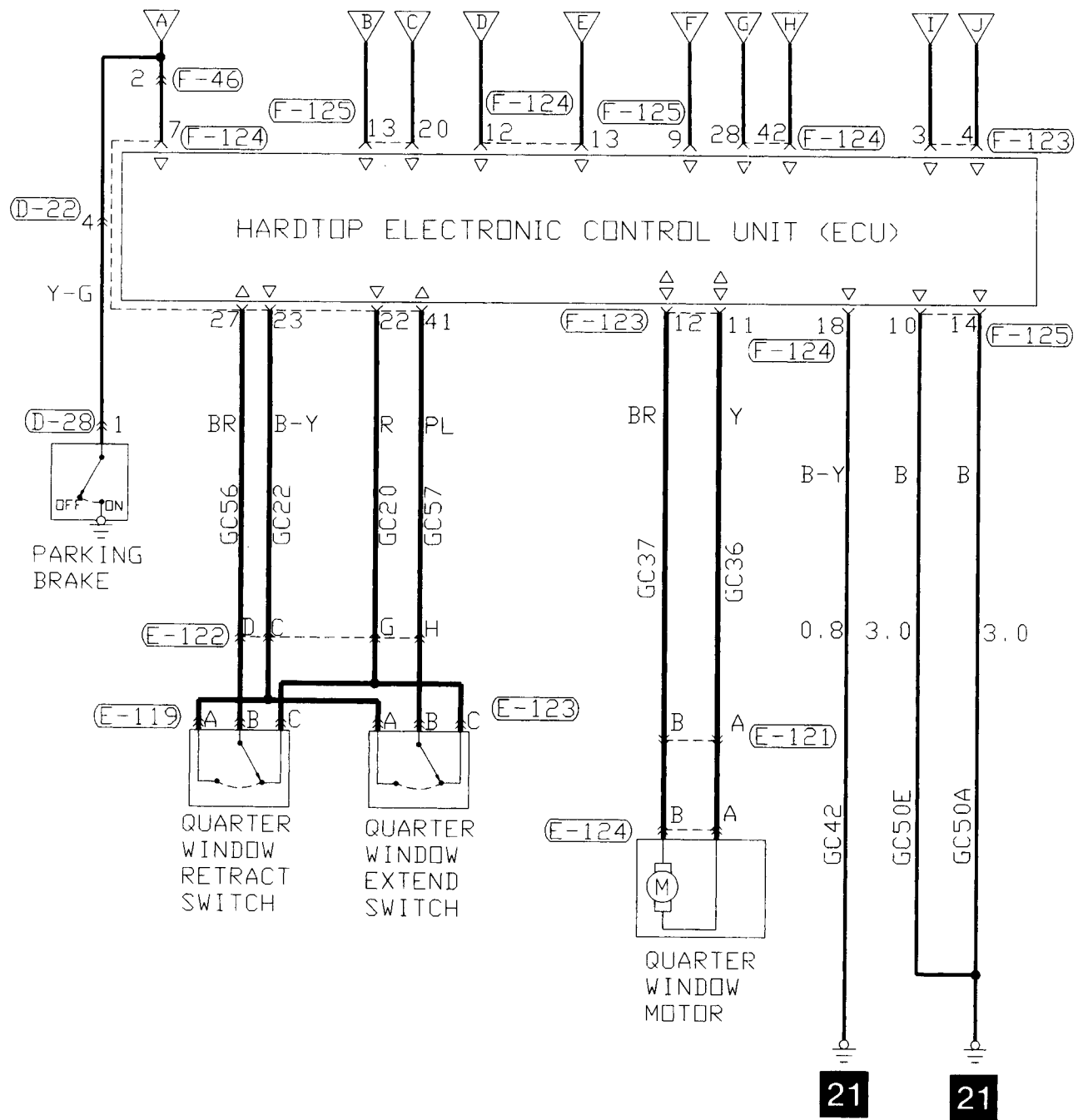
**Wiring Details:**

- IGNITION SWITCH (IG1):**
  - Terminal 7 (C-82) connects to terminal 6 (C-71) of the 15A J/B.
  - Terminal 6 (C-71) connects to terminal 6 (D-44) of the 15A J/B.
  - Terminal 6 (D-44) connects to the OIL LIGHT.
  - Terminal 63 connects to the COMBO. METER (BRAKE).
  - Terminal 61 (D-04) connects to terminal 5 (C-15).
  - Terminal 5 (C-15) connects to the BRAKE FLUID LEVEL SENSOR.
  - Terminal Y-B connects to the BRAKE FLUID LEVEL SENSOR.
  - Terminal GC28 connects to the ground.
- FUSIBLE LINK (8) 60A:**
  - Terminal 1 (C-110) connects to terminal 1 (F-50).
  - Terminal 2 (C-110) connects to terminal 2 (F-50).
  - Terminal R-B 5.0 connects to terminal 1 (F-50).
  - Terminal R 5.0 connects to terminal 2 (F-50).
  - Terminal W-R 0.8 connects to terminal 1 (F-50).
  - Terminal HE3 connects to terminal 2 (F-50).
  - Terminal GC1A connects to the ground.
  - Terminal GC1 connects to the ground.
  - Terminal GC12 connects to the ground.
  - Terminal R-W 0.8 connects to terminal 4 (F-50).
  - Terminal Y-B 0.8 connects to terminal 1 (F-50).
  - Terminal R 1.0 connects to terminal 1 (F-50).
  - Terminal GC7 connects to the ground.
  - Terminal GC14 connects to the ground.
  - Terminal GC3 connects to the ground.
  - Terminal GC4 connects to the ground.
  - Terminal GC5 connects to the ground.
  - Terminal GC6 connects to the ground.
- ETACS:**
  - Terminal 6 (C-66) connects to terminal 2 (C-82) of the 5A J/B.
  - Terminal 2 (C-82) connects to terminal 13 (C-78) of the 5A J/B.
  - Terminal 13 (C-78) connects to terminal 4 (D-48) of the 5A J/B.
  - Terminal 4 (D-48) connects to terminal 11 (L-W 0.8) of the 5A J/B.
  - Terminal 11 (L-W 0.8) connects to terminal 3 (LG-B 0.8) of the 5A J/B.
  - Terminal 3 (LG-B 0.8) connects to terminal 10 (B-W 0.8) of the 5A J/B.
  - Terminal 10 (B-W 0.8) connects to terminal 9 (GR-R 0.8) of the 5A J/B.
  - Terminal 9 (GR-R 0.8) connects to terminal 10 (F-48) of the 5A J/B.
  - Terminal 10 (F-48) connects to terminal 2 (GC5) of the 5A J/B.
  - Terminal 2 (GC5) connects to terminal 10 (GC6) of the 5A J/B.
  - Terminal 10 (GC6) connects to the ground.
- IGNITION SWITCH (IG2):**
  - Terminal 2 (C-82) connects to terminal 13 (C-78) of the 5A J/B.
  - Terminal 13 (C-78) connects to terminal 4 (D-48) of the 5A J/B.
  - Terminal 4 (D-48) connects to terminal 11 (L-W 0.8) of the 5A J/B.
  - Terminal 11 (L-W 0.8) connects to terminal 3 (LG-B 0.8) of the 5A J/B.
  - Terminal 3 (LG-B 0.8) connects to terminal 10 (B-W 0.8) of the 5A J/B.
  - Terminal 10 (B-W 0.8) connects to terminal 9 (GR-R 0.8) of the 5A J/B.
  - Terminal 9 (GR-R 0.8) connects to terminal 10 (F-48) of the 5A J/B.
  - Terminal 10 (F-48) connects to terminal 2 (GC5) of the 5A J/B.
  - Terminal 2 (GC5) connects to terminal 10 (GC6) of the 5A J/B.
  - Terminal 10 (GC6) connects to the ground.
- HARDTOP AND HARD TONNEAU CONTROL SWITCH:**
  - Terminal 4 (D-48) connects to terminal 11 (L-W 0.8) of the 5A J/B.
  - Terminal 11 (L-W 0.8) connects to terminal 3 (LG-B 0.8) of the 5A J/B.
  - Terminal 3 (LG-B 0.8) connects to terminal 10 (B-W 0.8) of the 5A J/B.
  - Terminal 10 (B-W 0.8) connects to terminal 9 (GR-R 0.8) of the 5A J/B.
  - Terminal 9 (GR-R 0.8) connects to terminal 10 (F-48) of the 5A J/B.
  - Terminal 10 (F-48) connects to terminal 2 (GC5) of the 5A J/B.
  - Terminal 2 (GC5) connects to terminal 10 (GC6) of the 5A J/B.
  - Terminal 10 (GC6) connects to the ground.



## POWER QUARTER WINDOW CIRCUIT DIAGRAM

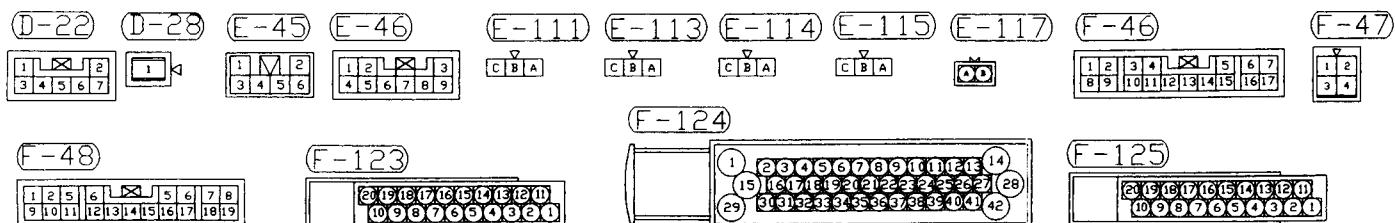
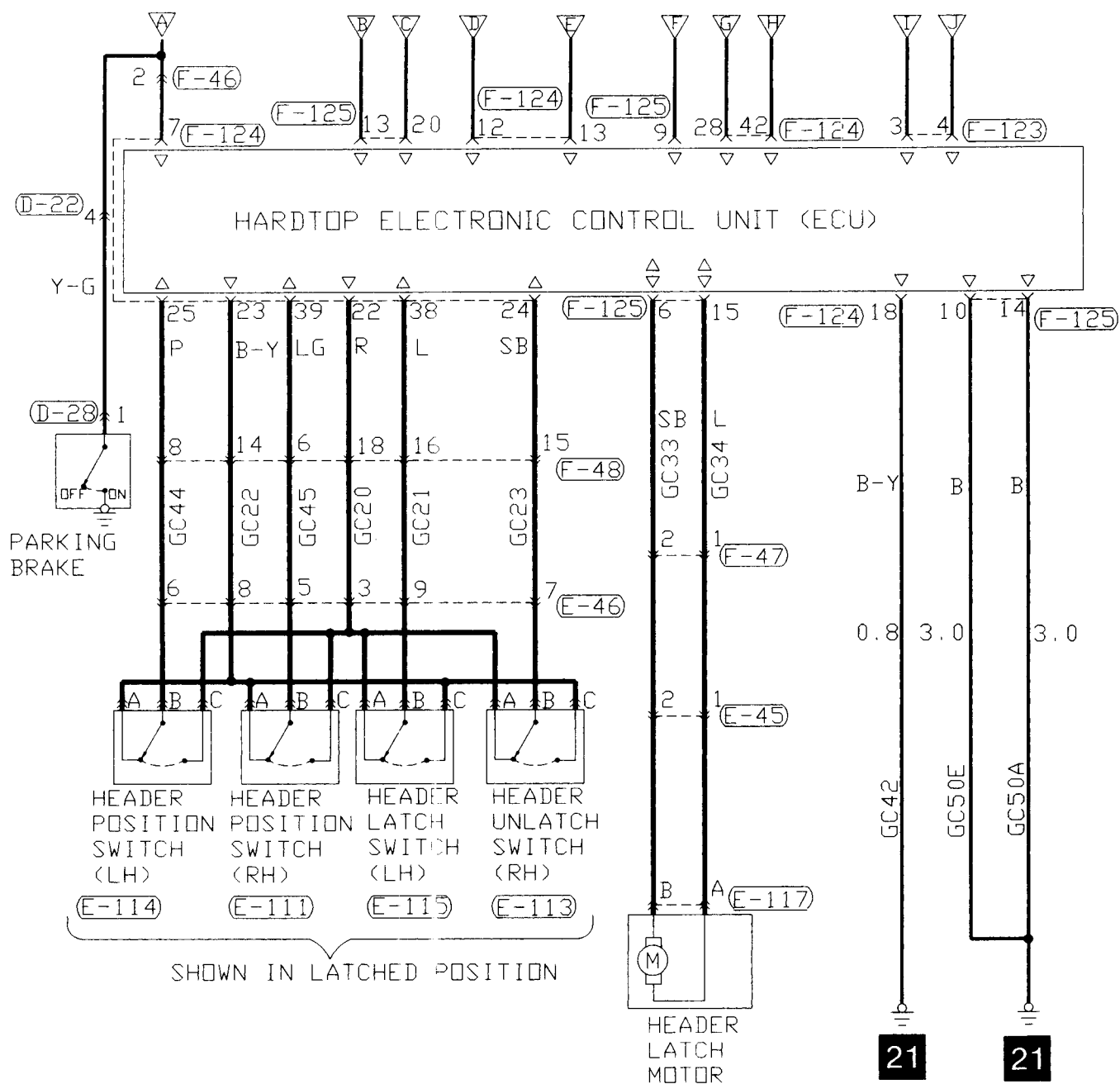
CONTINUED FROM PAGE 134



TSB Revision

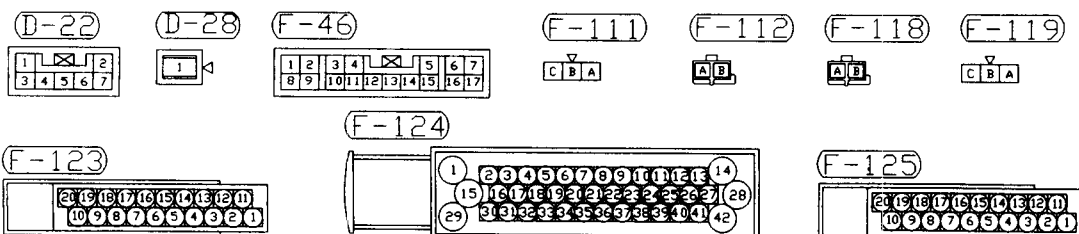
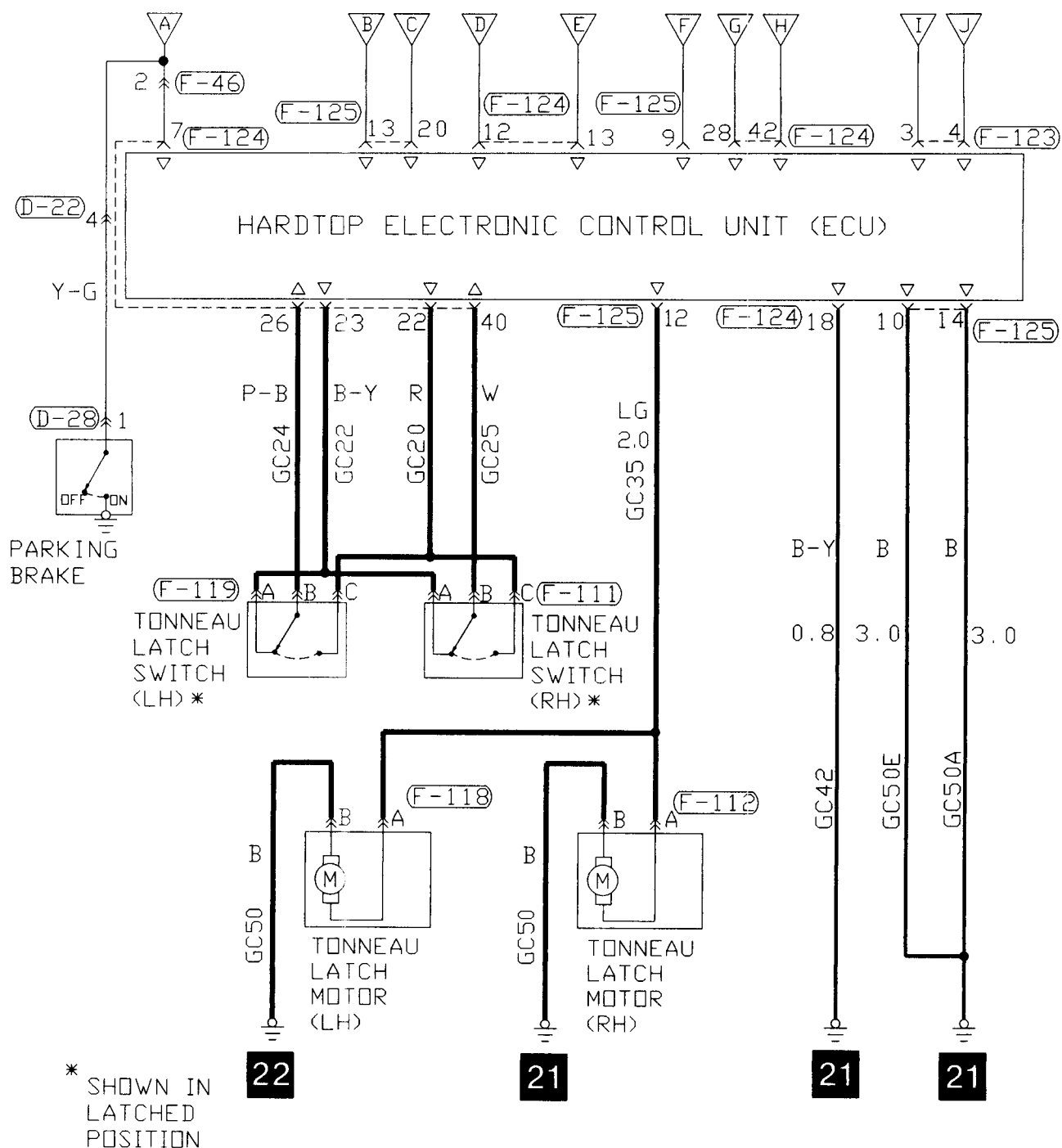
## HEADER LATCH SYSTEM CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



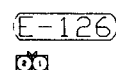
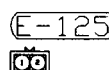
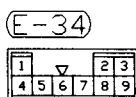
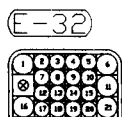
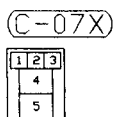
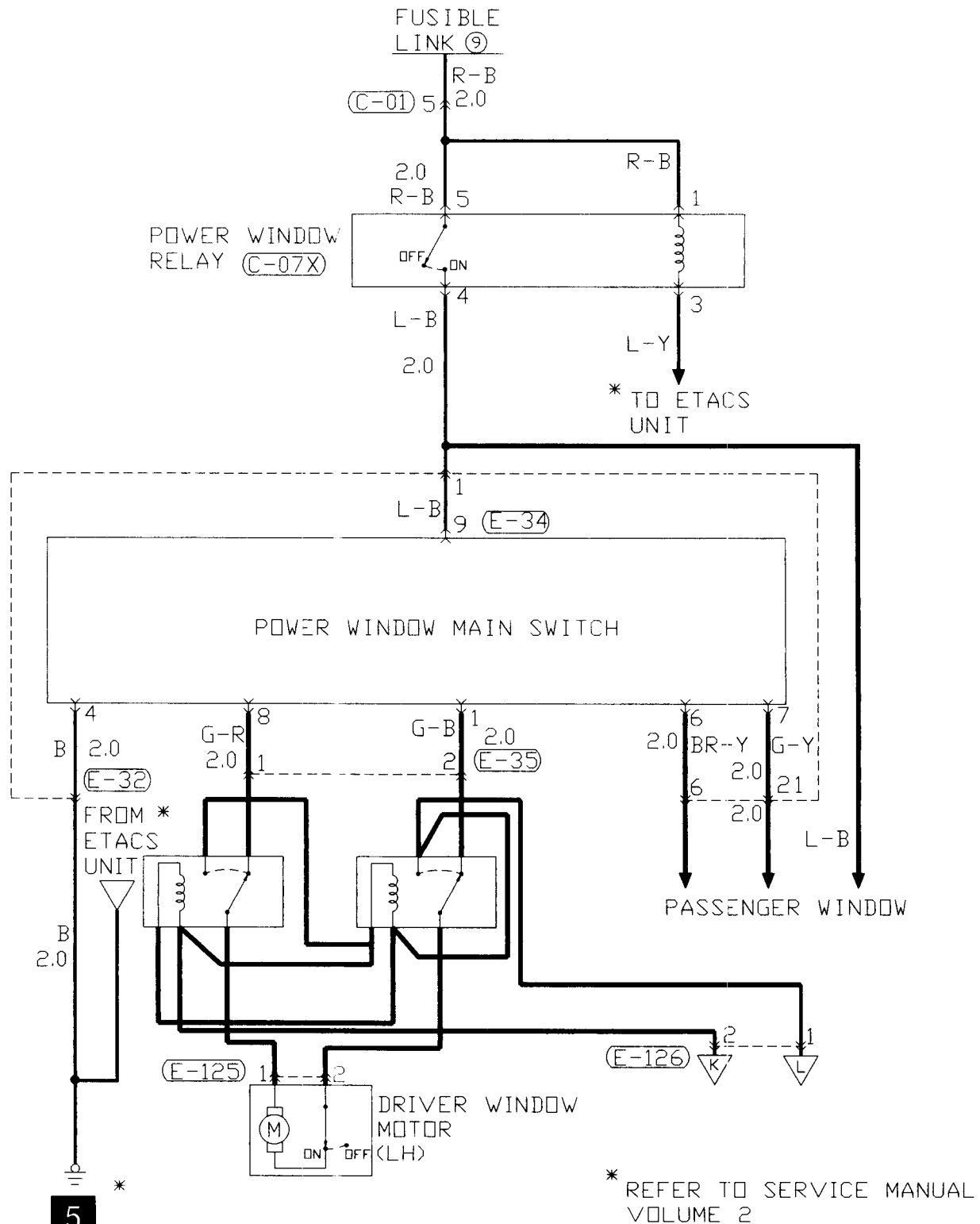
## HARD TONNEAU LATCH SYSTEM CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



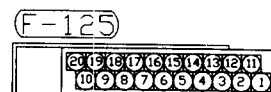
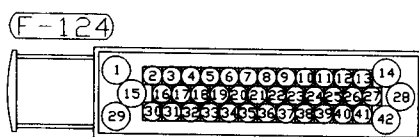
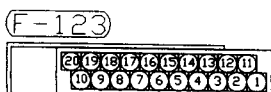
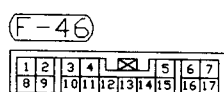
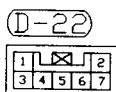
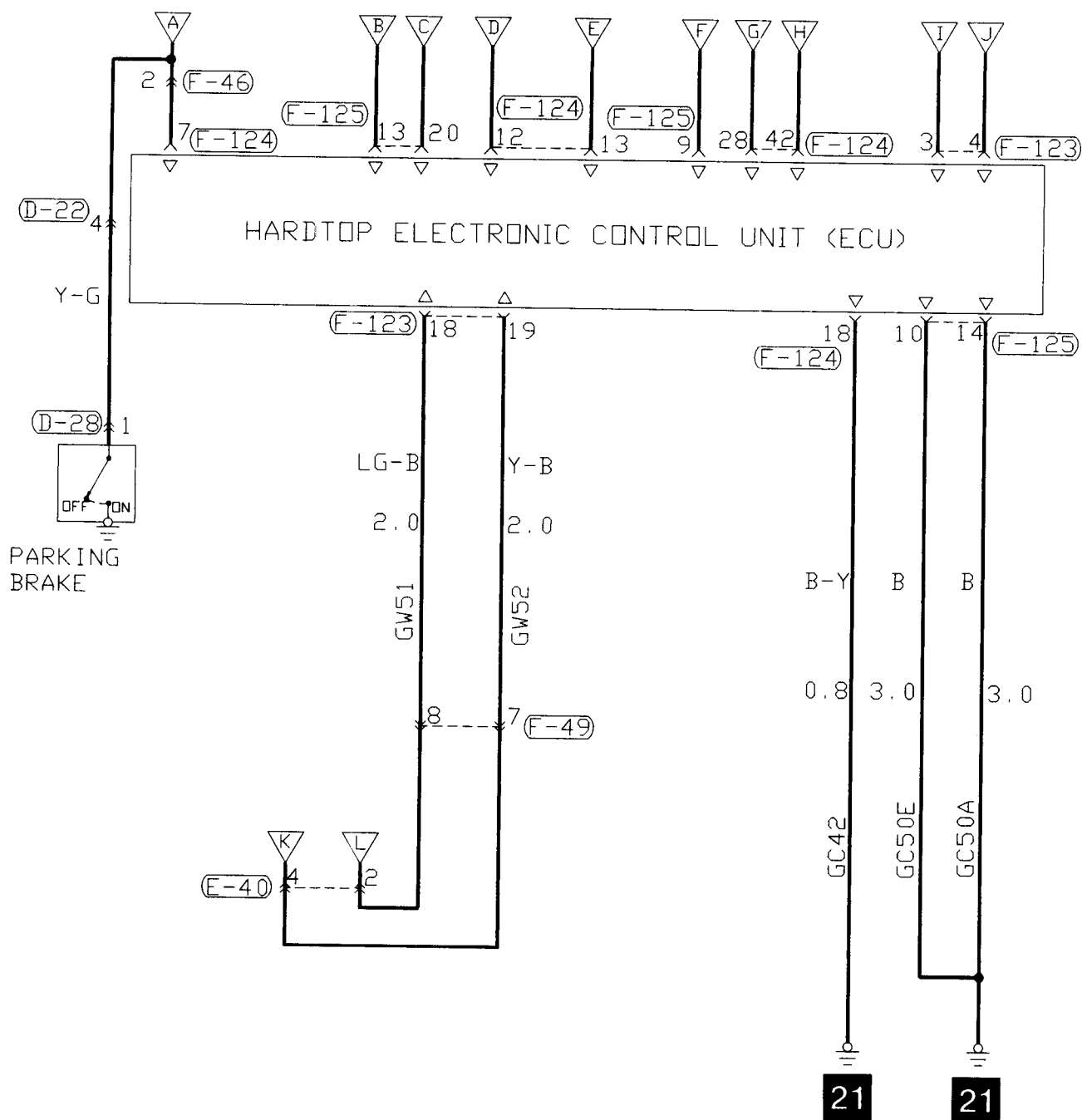
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## DRIVER'S DOOR POWER WINDOW CIRCUIT DIAGRAM



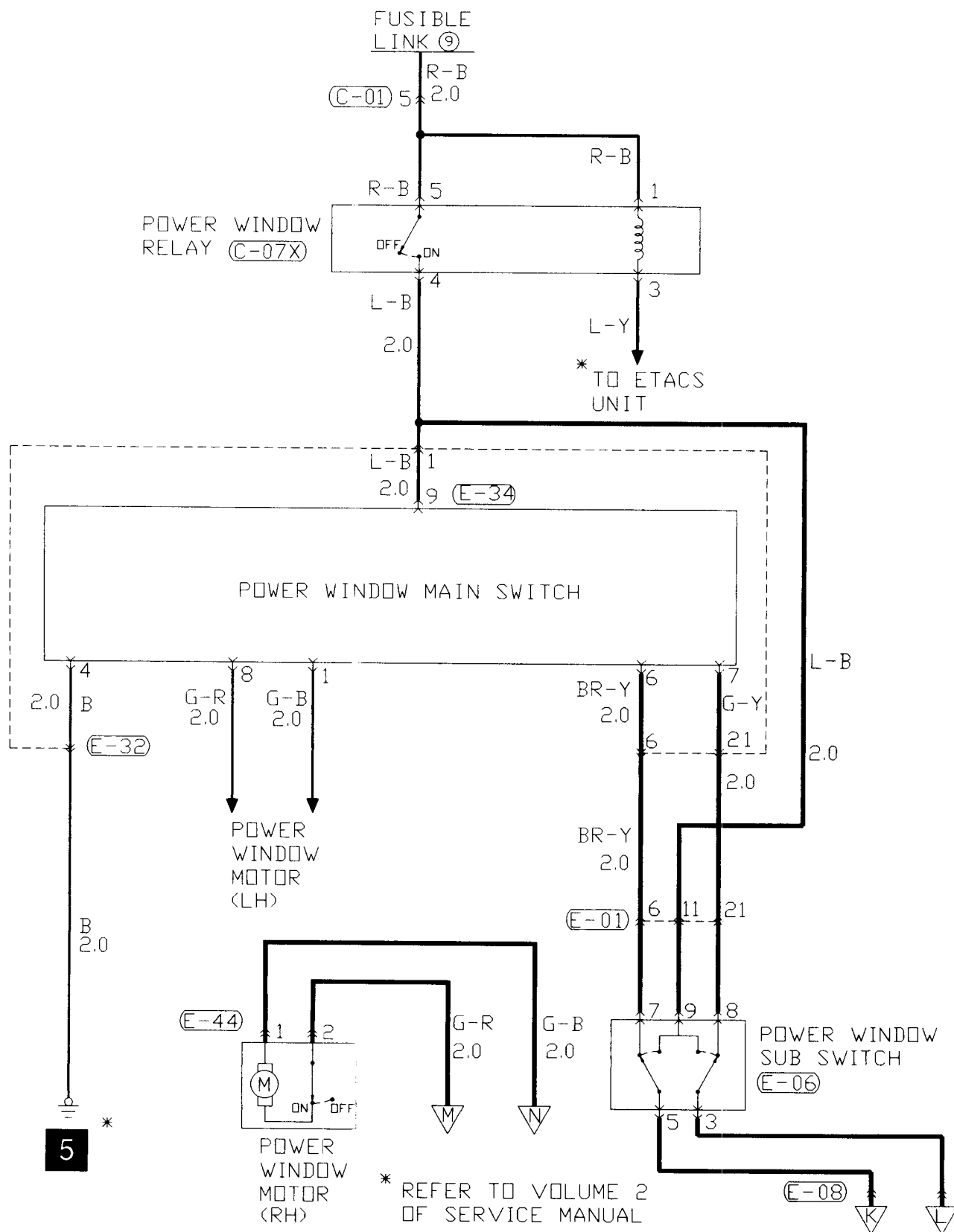
# DRIVER'S DOOR POWER WINDOW CIRCUIT DIAGRAM (CONTINUED)

CONTINUED FROM PAGE 134



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## PASSENGER'S DOOR POWER WINDOW CIRCUIT DIAGRAM



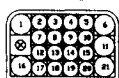
C-01



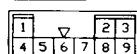
C-07X



E-01



E-06



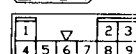
E-08



E-32



E-34



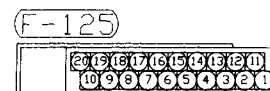
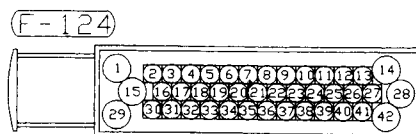
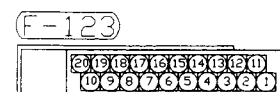
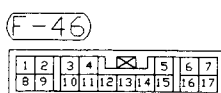
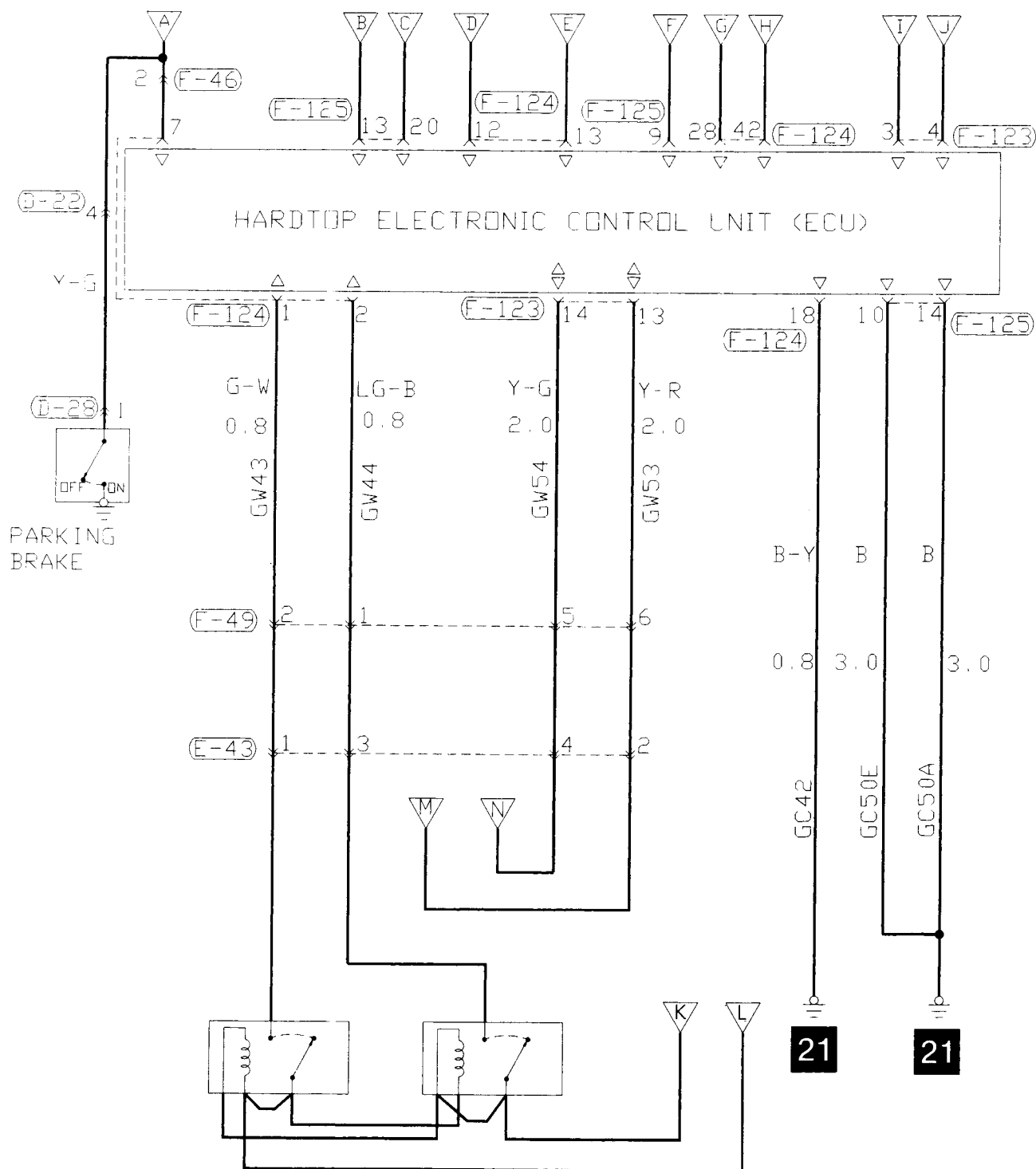
E-44





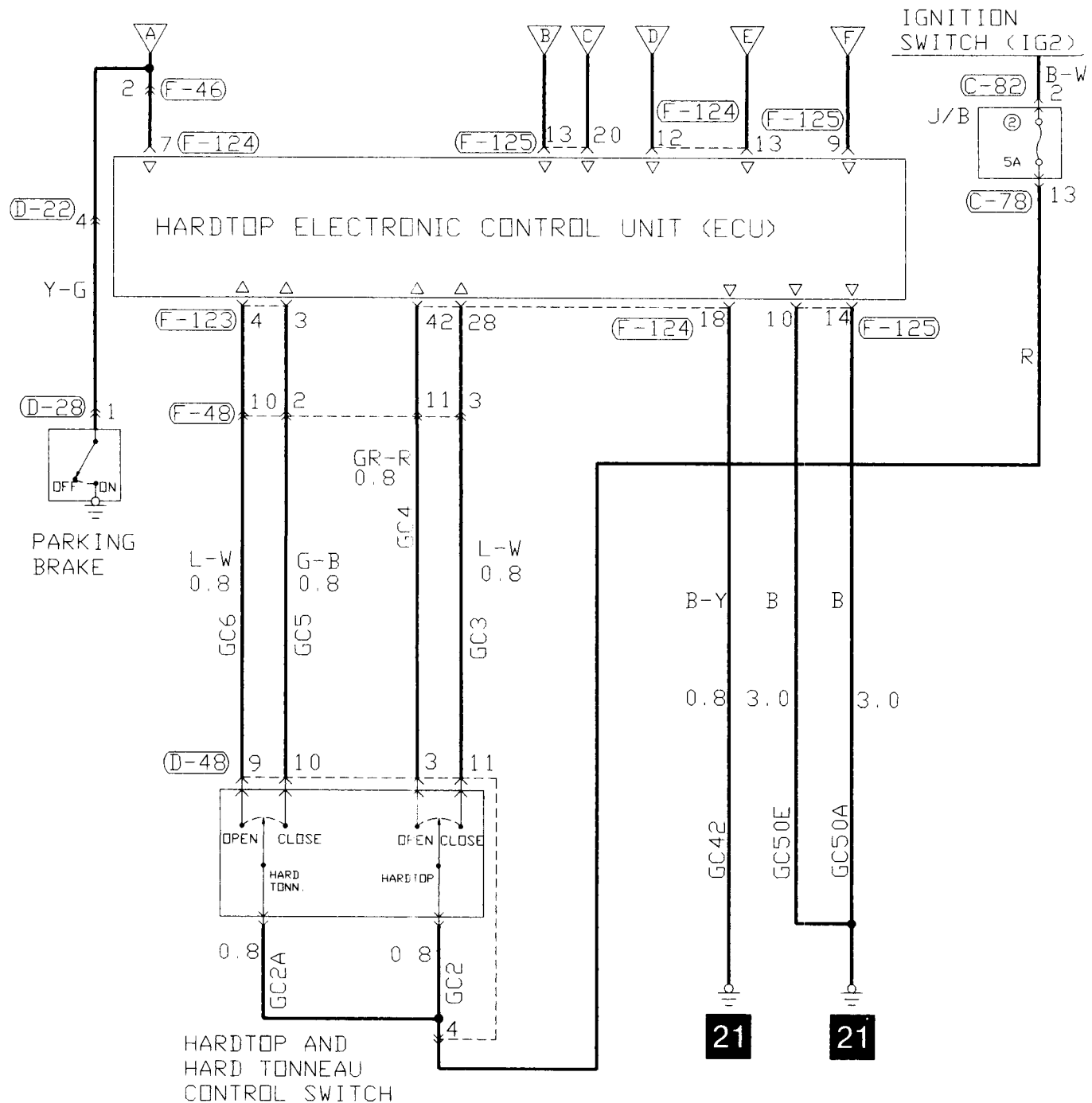
# PASSENGER'S DOOR POWER WINDOW CIRCUIT DIAGRAM (CONTINUED)

CONTINUED FROM PAGE 134



## HARDTOP AND HARD TONNEAU CONTROL SWITCH CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



C-78

|    |    |   |    |    |    |
|----|----|---|----|----|----|
| 1  | 2  | 3 | 4  | 5  | 6  |
| 7  | 8  | 9 | 10 | 11 | 12 |
| 13 | 14 |   |    |    |    |

C-82

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |

D-22

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |

D-28

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

D-48

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

F-46

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|

F-48

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|

F-123

|   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

F-124

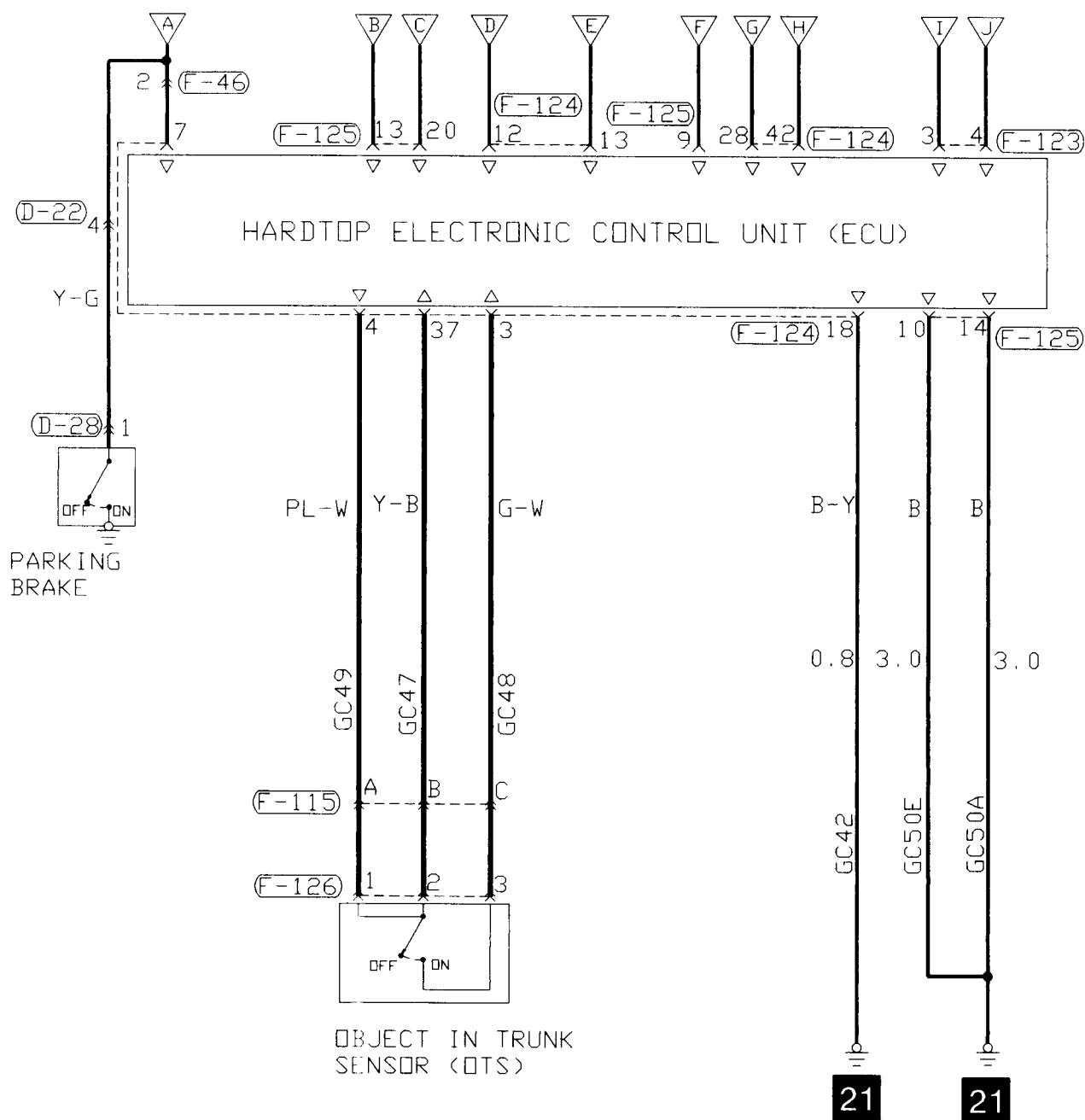
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

F-125

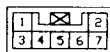
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|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

## OBJECT-IN-TRUNK SENSOR CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



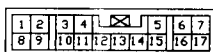
D-22



D-28



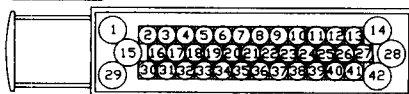
F-46



F-115



F-124



F-125



F-126

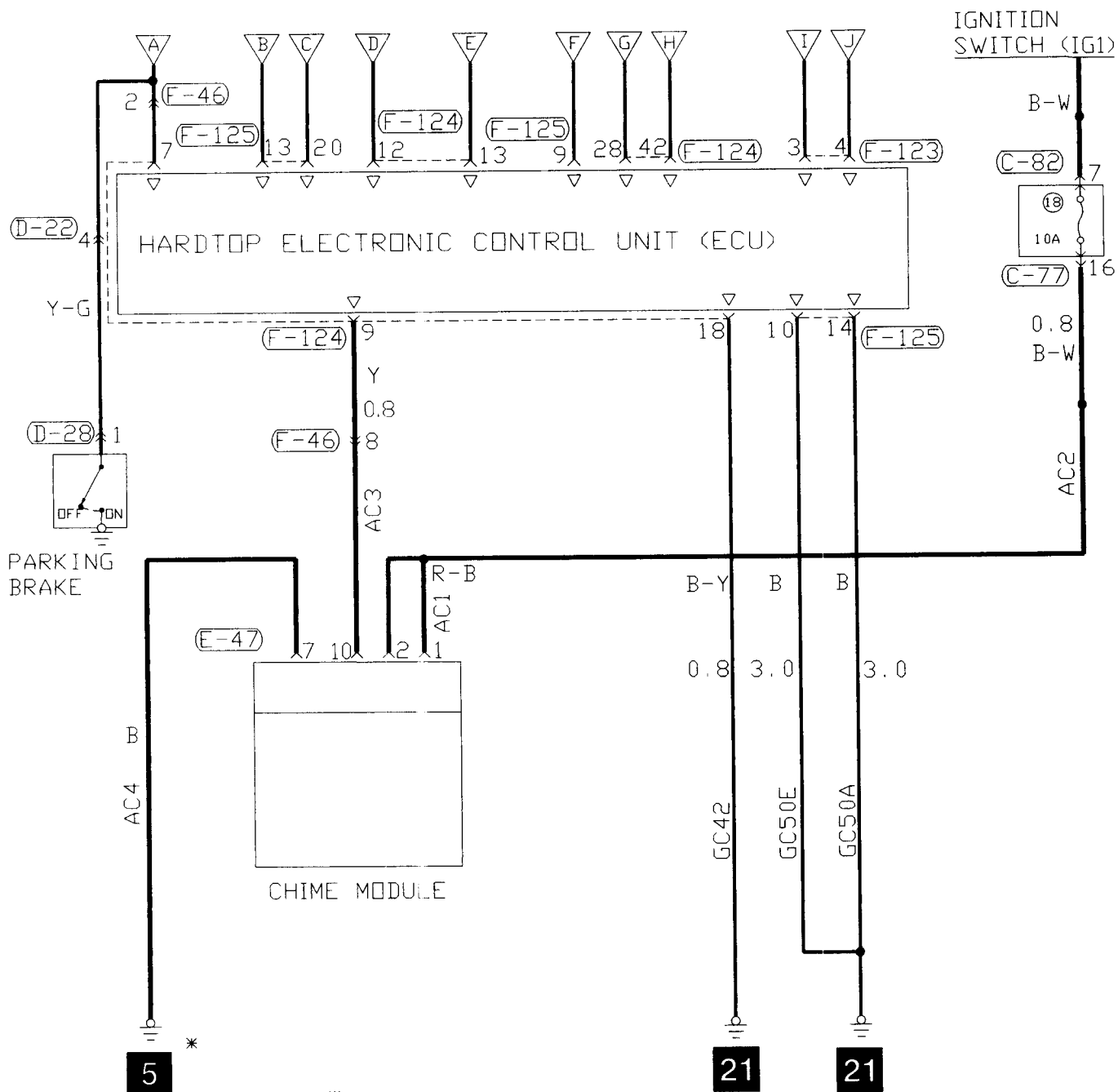


F-123



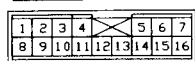
## CHIME MODULE CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



\* REFER TO VOLUME 2  
OF SERVICE MANUAL

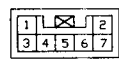
C-77



C-82



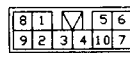
D-22



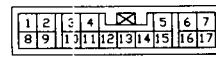
D-28



E-47



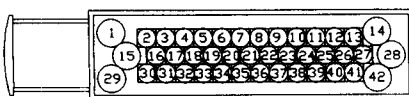
F-46



F-123



F-124

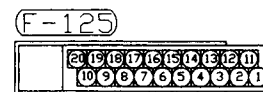
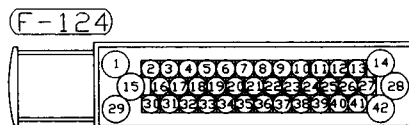
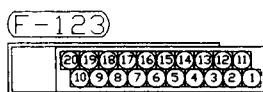
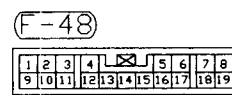
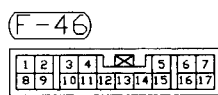
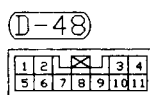
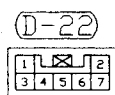
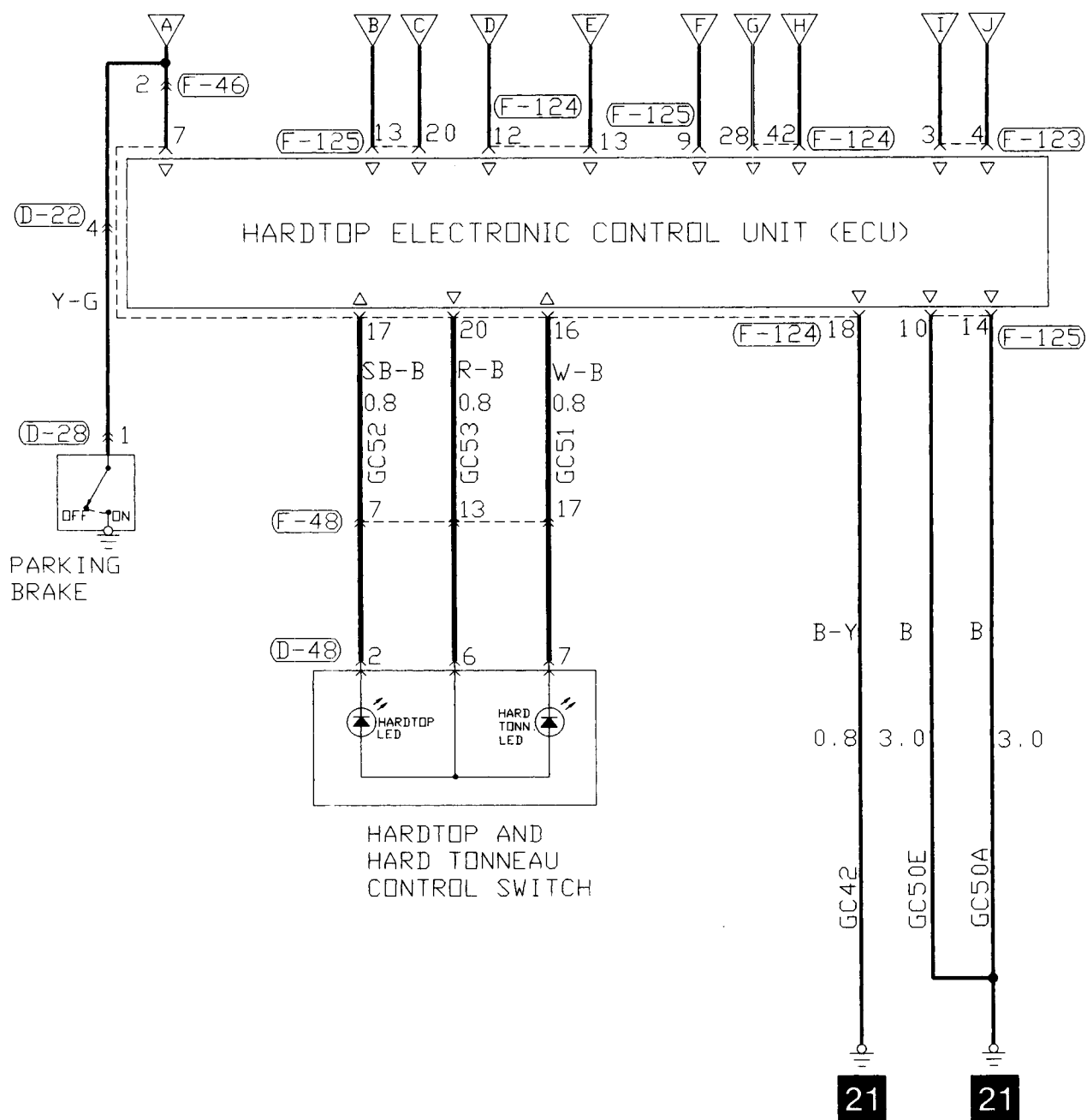


F-125



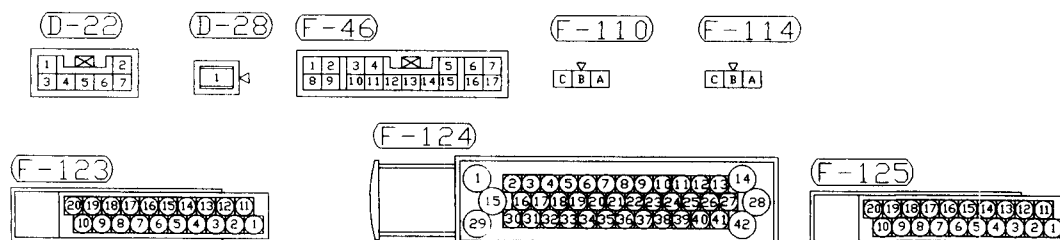
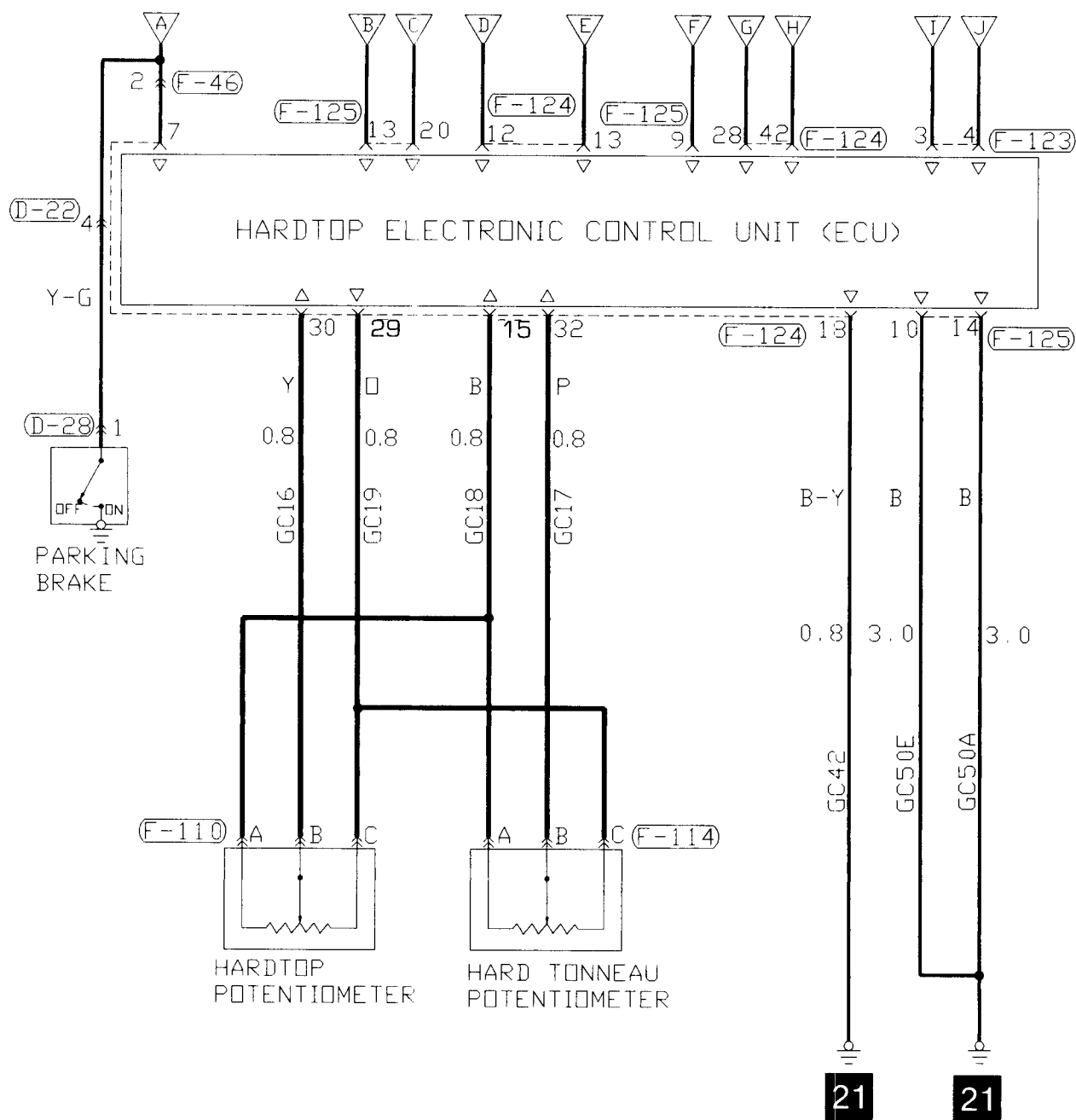
## LED's CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



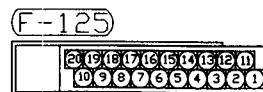
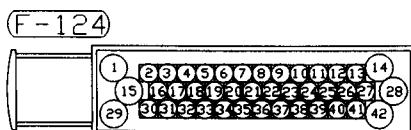
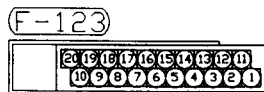
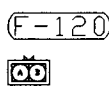
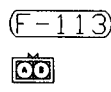
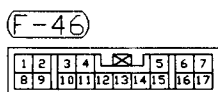
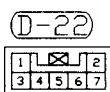
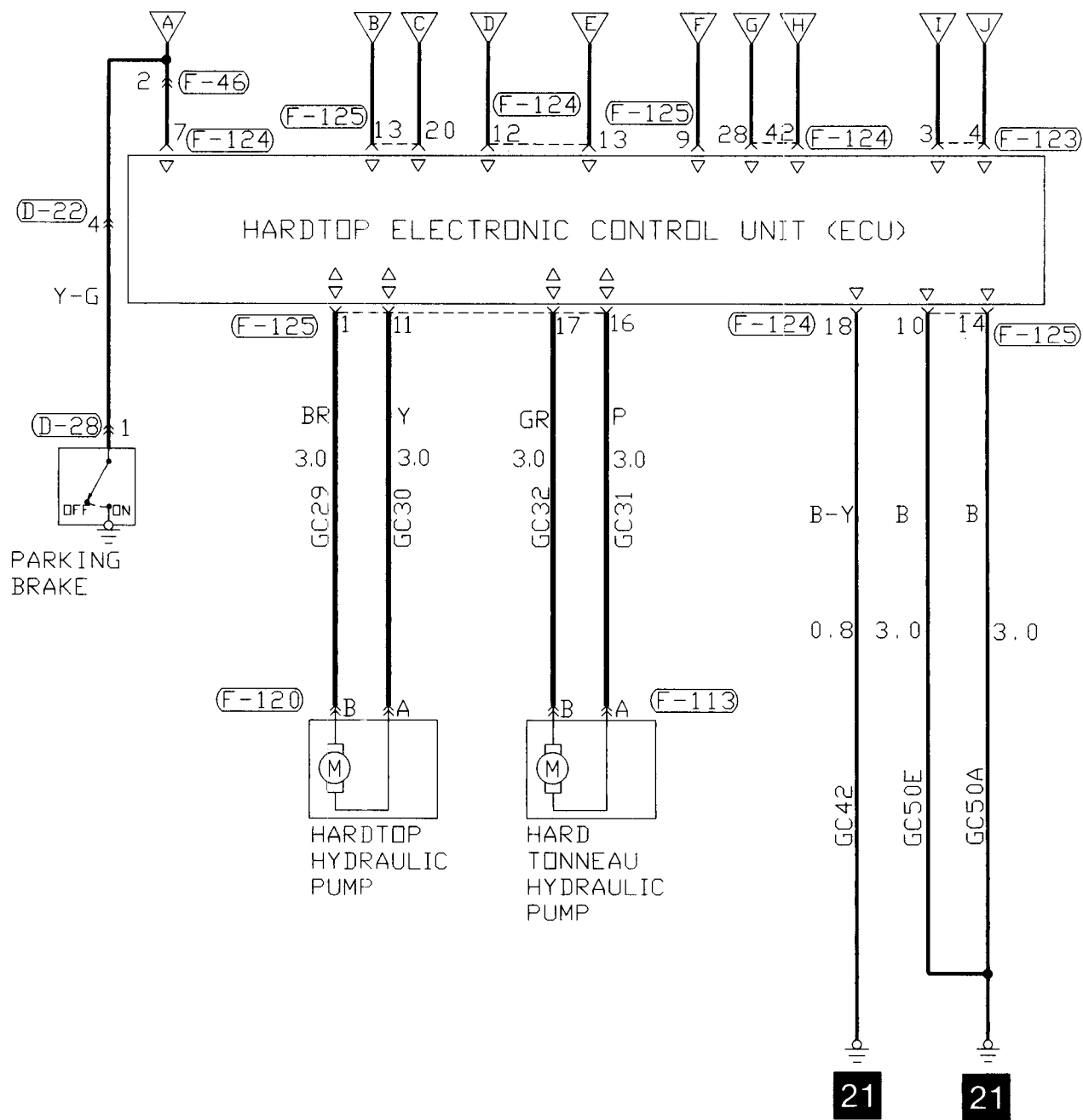
## POTENTIOMETERS CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134



**HARDTOP AND HARD TONNEAU HYDRAULIC PUMPS CIRCUIT DIAGRAM**

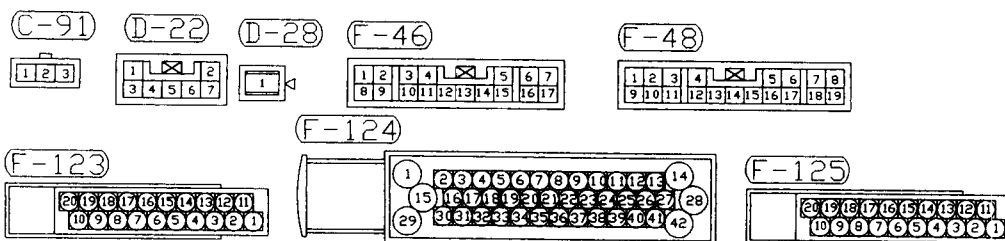
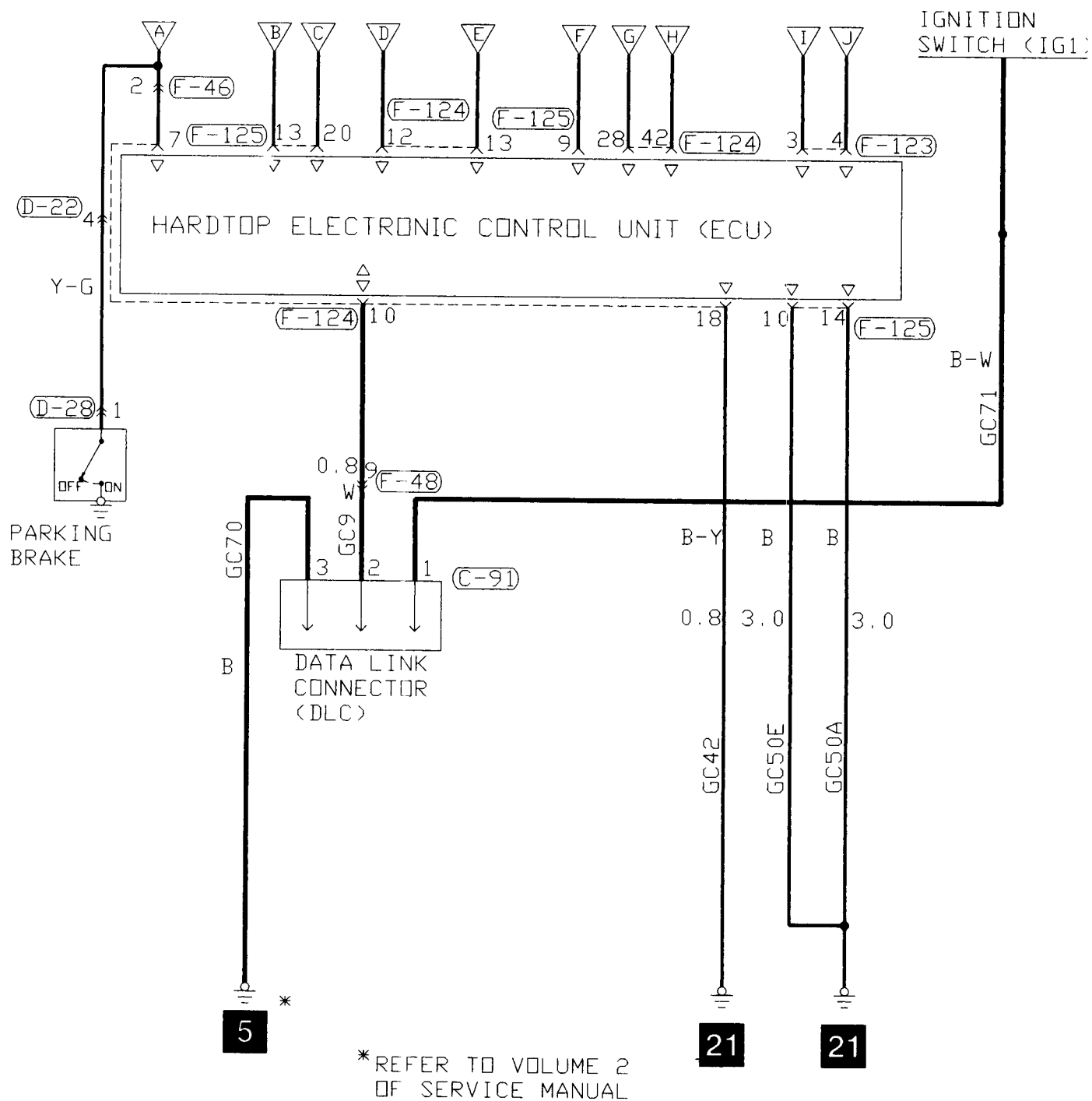
CONTINUED FROM PAGE 134



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## DATA LINK CONNECTOR (DLC) CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





## SERVICE ADJUSTMENT PROCEDURES

### RETRACTABLE HARDTOP ASSEMBLY

The topics below are addressed individually, but they **MUST** be considered as one when adjusting the hardtop.

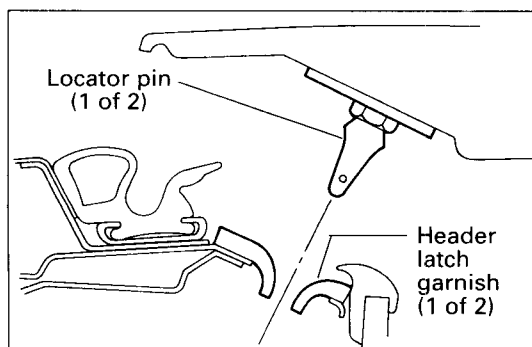
- ROOF PANELS
- UP-STOPS
- DOWN STOPS
- ROOF CENTER AND REAR HINGES
- LOCATOR PINS AND STRIKERS
- HEADER LATCH GARNISHES
- MAIN PIVOT BRACKETS
- BALANCE LINKS

#### Description

The hardtop is attached to the vehicle by two main pivot brackets attached to the Spyder-unique body structure over the rear wheels. Locating pins (roll pins) precisely locate the main pivots to the body structure. Service part main pivot brackets are pre-drilled to accept the roll pins. This facilitates overall hardtop-to-vehicle alignment with minimal adjustment.

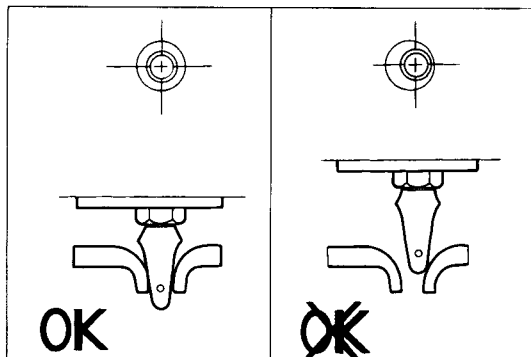
#### Caution

1. The location of the main pivot brackets to the body structure is extremely critical for the hardtop system to operate properly and consistently.
2. Using the roll pins to align the main pivots to the body structure should only be used on a vehicle that has been proven to be dimensionally at factory specifications, i.e. you must determine by measuring that the vehicle body (regular coupe body structure, and the Spyder-unique body structure) has not sustained structural damage, or had structural parts replaced or repaired. In cases where the vehicle has sustained damage or had structural parts replaced not to specification, **DO NOT** attempt to use shims between the hardtop and the rear hinge assembly.
3. The only recommended way to use a vehicle that has been damaged or had structural parts replaced, is to rebuild the affected area, or parts, to bring it back into specification.



The front of the hardtop locates to the windshield header latch garnishes by tapered locator pins. The parts next to the pins are strikers for the latches. The strikers are not adjustable.

The locator pins can only be adjusted up and down for flushness of the hardtop roof to the windshield header. No side-to-side or front-to-back adjustment is available at the header.



Since the windshield header-to-hardtop location is not adjustable, and the main pivot brackets should not be adjusted, they are the foundation for all hardtop-to-body and tonneau-to-body adjustments.

The interaction between the locator pins and latch garnishes is designed to be smooth and concentric. A binding action or misalignment of the pin to the hole indicates improper adjustment of one or more components of the hardtop system, particularly the balance links. In some cases, binding locator pins may be an indication of damaged body structure at the header or other area of the vehicle.

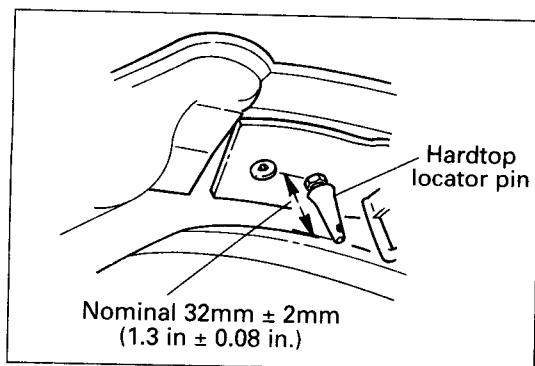
#### Caution

**Mechanical adjustment to, or replacement of, the retractable hardtop system components will require that the hardtop ECU be run through "auto-configuration" using the ASC INCORPORATED computerized diagnostic system. DO NOT perform any adjustment or replacement without having the latest version of the ASC INCORPORATED diagnostic system.**

When adjusting one component or area of the hardtop, all components relating to hardtop operation should be checked, and readjusted, if necessary. Adjustments or difference in weatherstrip compression or hardness, can affect inputs to the ECU. This ultimately affects the overall performance of the hardtop system.

When the hardtop is not adjusted properly nearly all areas of the hardtop are affected. Assuming that the body structure, main pivots, locator pins, and hinges are to specification and properly adjusted, typically adjustment problems can be attributed to the balance links and their adjustment to the center roof hinges. Problems that can be balance link-related can be the following:

- hardtop side rail weatherstrip sealing to the door window glass;
- header latch latching and unlatching;
- lock-up of hardtop roof panels before closing;
- hardtop locator pin alignment to the header latch garnishes;
- over-crowning of the hardtop panels (as seen from the side of the vehicle);
- power quarter window system operation and adjustment;
- rear hardtop roof section to front section sealing and the gap between the two roof sections.



## ADJUSTMENT OF THE RETRACTABLE HARDTOP SYSTEM

### INSPECT

#### 1. HARDTOP LOCATOR PINS

- (1) Using the hardtop "OPEN" switch, open the hardtop halfway.
- (2) Inspect both hardtop locator pins for damage.
  - If the pins are in good condition, go to Step 2.
  - If the pins are damaged, replace them using the following procedure.
    1. Loosen the locator pin's jam-nut and remove the locator pin.
    2. Install the pin with the jam-nut to the bracket. Attain 32 mm  $\pm$  mm (1.3 in.  $\pm$  0.08 in.) as shown in the illustration.
    3. Tighten jam-nut.

**Standard value: 22 - 34 Nm (17 - 25 ft.lb.)**

Check for roof to header flushness. Adjust as necessary. Refer to Step 5.

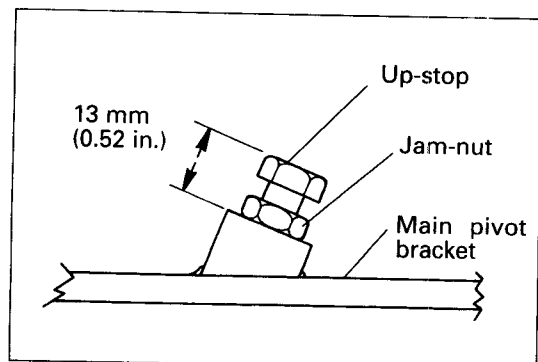
#### 2. HEADER LATCH GARNISHES

- Inspect both header latch garnishes for wear or damage.
- Replace them if they are worn or damaged. To remove them, remove the attaching bolts and remove the adhesive tape securing the weatherstrip to it.
  - If the garnishes are in good condition, go to Step 3.

**Standard value: LH tapered hole should be round, and both the RH slot and LH hole should show no sign of galling.**

#### 3. ALL HARDTOP RELATED WEATHERSTRIPS

Inspect all hardtop related weatherstrips. Replace them if necessary. Refer to WEATHERSTRIPS, in this section for removal and installation instructions. Go to Step 4.



#### 4. HARDTOP UP-STOPS

##### NOTE

Although these are referred to as up-stops, more accurately they perform the function of down-limiters for the hardtop cylinders. They do not control the "up" position of the hardtop.

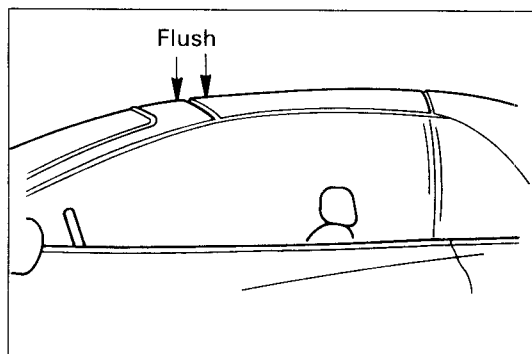
Inspect that the left and right up-stops are at the correct height as shown in the illustration. Adjust as necessary using the following procedure.

- (1) Open the hardtop halfway.
- (2) Loosen the jam-nut.
- (3) Adjust the up-stop to the Standard value.

**Standard value: 13 mm (0.52 in.)**

- (4) Tighten the jam-nut.

**Standard value: 22 - 34 Nm (17 - 25 ft.lb.)**



## 5. HARDTOP FLUSHNESS TO WINDSHIELD HEADER

- (1) Close the hardtop.

### NOTE

If you are not sure the header latches are adjusted properly, remove the header garnish and latch the hardtop using manual operation (refer to **MANUAL OPERATION - HEADER LATCHES** in Group 00).

- (2) Check for flushness of the hardtop to the windshield header skin.

### NOTE

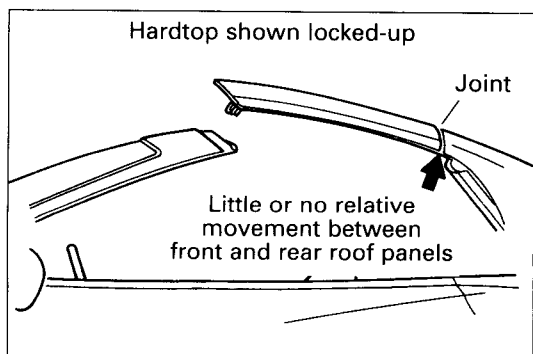
The front roof panel may be flush to 3 mm (0.12 in.) below header.

**Standard Value: -2 mm +2 mm -1 mm (-0.08 in. +0.08 in. -0.04 in.)**

### NOTE

Flushness is a function of the pull force of the header latches combined with the height of the hardtop locator pins to the header latch garnishes. Both systems **MUST** be working together in order to achieve proper flushness with proper latching effort.

- If the flushness is not acceptable, the header latch system may not be correctly adjusted (refer to **HEADER LATCH SYSTEM** adjustment, in this section), and/or the hardtop locator pins may need adjustment (refer to **HARDTOP LOCATOR PINS** in this section).
- If the flushness is OK go to next step.



## 6. HARDTOP ROOF LOCK-UP BEFORE CLOSING

Open, then close, the hardtop several times using the switch. While closing the hardtop observe the front roof panel to be sure it locks-up with the rear roof panel according to the Standard value.

### NOTE

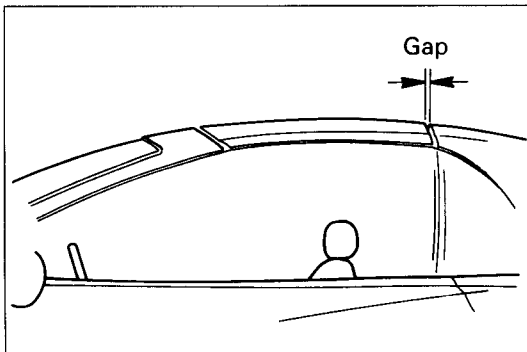
The hardtop **MUST** lock-up in order for the hardtop locator pins to properly drop into the header latch garnishes. Otherwise, galling of the latch garnishes will

occur, or the locator pins may not align with the garnishes.

**Standard value: Hardtop locks-up approximately 51.4 - 102.8 mm (2 - 4 in.) before it completely closes.**

**NOTE**

If hardtop lock-up is not at the Standard value, most likely the balance links require adjustment. Go to Steps 7. 8. 9.



**7. 8. 9. GAP BETWEEN FRONT AND REAR ROOF PANELS / FLUSHNESS OF FRONT ROOF PANEL-TO-REAR ROOF PANEL / SIDE-TO-SIDE ALIGNMENT OF FRONT ROOF PANEL TO REAR ROOF PANEL**

**NOTE**

When the alignment and/or gap is not correct, this may be attributed to several components such as the balance links are not adjusted properly, the center roof hinges may require shims added or removed, or the center roof hinges are not adjusted or set properly.

**Caution**

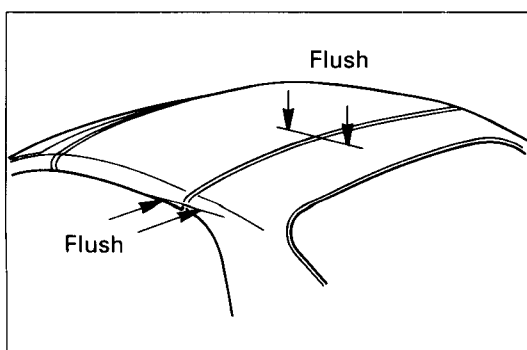
In this particular area of the hardtop, the roof center hinges, balance links, and even the hardtop weather-strip play a major role in achieving proper hardtop alignment and flushness.

Be aware that if either the balance link or a hinge is loosened at any time, for even the slightest adjustment, that could misalign that area.

- (1) Check the gap between the front and rear roof panels at the left and right corners and in the center as shown in the illustration.

**Standard value: 6 mm  $\pm$  1.0 mm (0.24 in.  $\pm$  0.04 in.) gap**

- If the gap is within the Standard value, go to Step 2 of this Step.
- If the gap is not OK, go to Step 10.



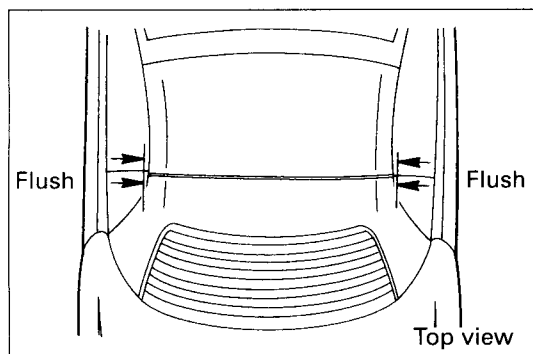
- (2) Check the flushness along the gap between the roof panels as shown in the illustration.

**NOTE**

The rear roof panel may be flush to 2 mm (0.08 in.) lower than front panel.

**Standard value: Flush at the sides and top 0 - 2 mm (0 in. - 0.08 in.)**

- If the roof panels are within the Standard Value, continue.
- If the roof panel alignment is not within the Standard Value, go to Step 11.



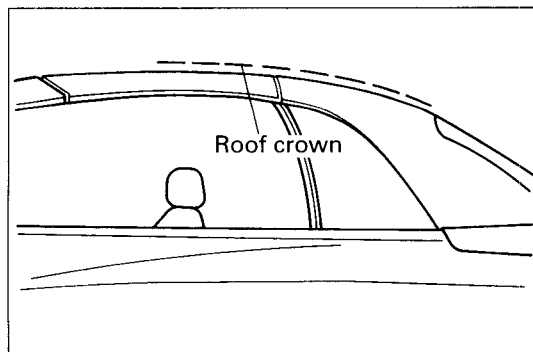
- (3) Check the alignment side-to-side of the roof panels to each other along the gap.

#### NOTE

The rear roof panel may be flush to 2 mm (0.08 in.) inward from front panel.

**Standard value: Flush at the sides and top 0 - 2 mm (0 in. - 0.08 in.)**

- If the alignment is within the Standard Value, go to Step 10.
- If the alignment is not within the Standard Value, go to Step 11.

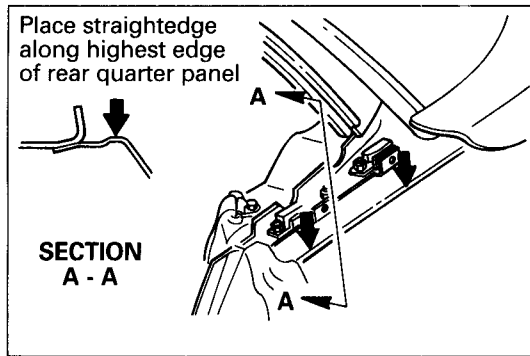


### 10. HARDTOP ROOF CROWN (AS SEEN FROM THE SIDE OF THE VEHICLE)

#### NOTE

1. If the hardtop is improperly crowned it will cause misalignment of the hardtop locator pins to the header latch garnishes, improper sealing of the door windows to the side rail weatherstrips, improper or inconsistent quarter window operation and sealing.
2. An over-crowned roof may be caused by an improperly adjusted balance link and/or center roof hinge.

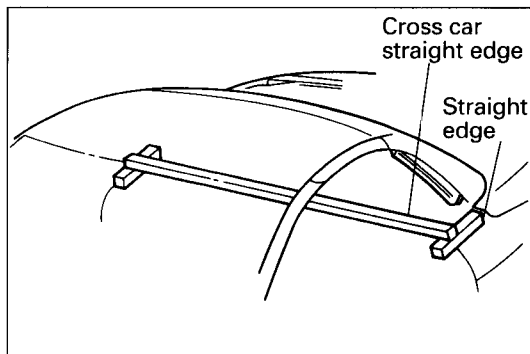
- (1) Remove the LH and RH quarter trim panels.
- (2) Remove the left and right quarter window moldings (see GROUP 51, in this Manual).
- (3) Open the vehicle doors, and close and latch the hardtop. Remove rear roof headlining and using a 5mm Allen wrench retract the quarter windows by turning the motor clockwise.



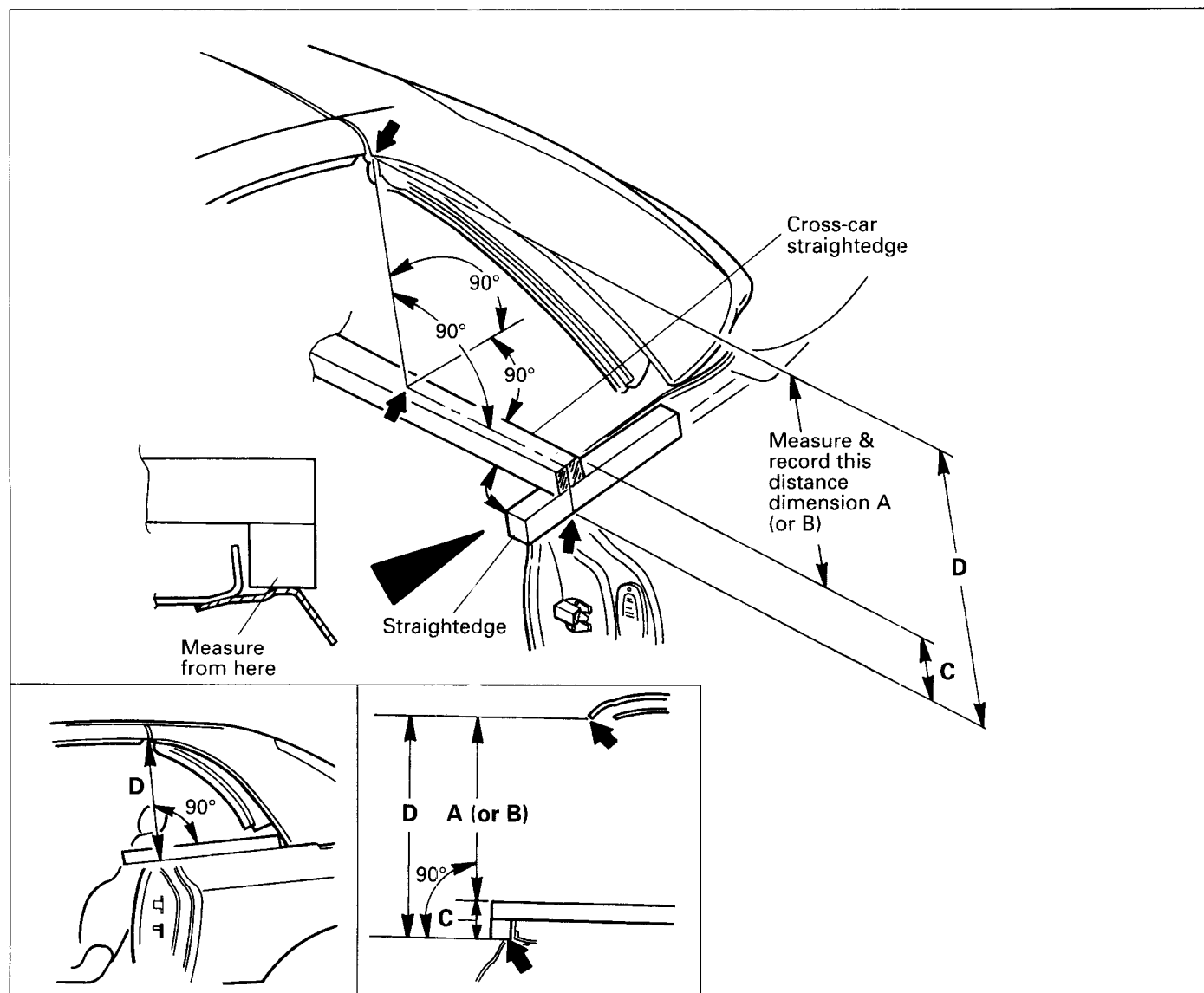
- (4) Place a straightedge along the highest point of LH and RH rear fenders as shown in the illustration. The vehicle doors must be open. The straightedge must extend forward past the B-pillar a minimum of 50 mm (2 in.)

**NOTE**

Seek assistance and/or use clamps, adhesive tape, or similar holding devices to hold the straightedges in place.



- (5) Place another straight edge across the two straight edges as shown in the illustration.



## NOTE

Set the measuring instrument perpendicular (90°) to the bottom edge of the straight edges resting on the body.

- (6) As shown in the illustration, measure down from the front corner of the rear roof section to the top of the cross-car straight edge (Dimension A), record measurement. Repeat for other side (Dimension B).
- (7) Measure the height of both straight edges, (Dimension C), add Dimension C to Dimension A and then B (Dimension D).

**Standard value: 308.43 mm + 2 mm - 1 mm (12.14 in. + 0.08 in. - 0.04 in.)**

- If A + C and B + C dimensions are within the Standard value (Dimension D), the hardtop does not require adjustment.
- If A + C and B + C dimensions are not within the Standard value (Dimension D), go to Step 11.