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		
• Access and disconnect retractable quarter window motor connector E-124. • Using DVOM set to DC volt, connect negative lead to pin A at retractable quarter window motor connector E-124. • Connect positive lead to pin B at retractable quarter window motor connector E-124. • Turn ignition to ON position. 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. • Press hardtop control switch to OPEN position. • Read voltmeter. • **Is system voltage present?**	Yes ▶ No ▶	Replace retractable quarter window motor. Restore vehicle. Retest system. Go to **30-8.**
30-8 CHECK CIRCUITS GC 36 AND GC 37		
• Connector E-124 at retractable quarter window motor disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin B at retractable quarter window connector E-124. • Turn ignition to ON position. 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. • Press hardtop control switch to OPEN position. • Read voltmeter. • **Is system voltage present?**	Yes ▶ No ▶	Repair circuit GC 36. Restore vehicle. Retest system. Repair circuit GC 37. 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 31

TEST STEP	RESULT ▶	ACTION TO TAKE
31-1 CHECK CIRCUIT GC 56 FOR SHORT TO GROUND • Access and disconnect connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 27 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Go to **31-2.** Replace ECU. Restore vehicle. Retest system.
31-2 CHECK CIRCUIT GC 20 FOR VOLTAGE • Connect connector F-124 at ECU. • Access and disconnect retractable quarter window retract limit switch connector E-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **31-3.** Repair circuit GC 20 for open. Repair circuit GC 56 for short to ground. Restore vehicle. Retest system.
31-3 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector E-119 at retractable quarter window retract limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin A at retractable quarter window retract limit switch connector E-119. • Read voltmeter. • **Is 0.7 volt present?**	Yes ▶ No ▶	Go to **31-4.** Repair circuit GC 22 for open. Repair circuit GC 56 for short to ground. Restore vehicle. Retest system.
31-4 CHECK RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH • Connector E-119 at retractable quarter window retract limit switch disconnected. • Using DVOM set on ohm scale, connect one lead to pin A of retractable quarter window retract limit switch. • Connect the second lead to pin B of retractable quarter window retract limit switch. • Check for continuity. • Connect one lead to pin B of retractable quarter window retract limit switch. • Connect second lead to pin C of retractable quarter window retract limit switch. • Check for open. • **Does switch operate properly?**	Yes ▶ No ▶	Repair circuit GC 56 for open and short to ground. Restore vehicle. Retest system. Replace retractable quarter window retract limit switch. Repair circuit GC 56 for short to ground. 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 32

TEST STEP		RESULT ▶	ACTION TO TAKE
32-1	CHECK CIRCUIT GC 56 AT ECU FOR VOLTAGE		
• Access connector F-124 at ECU. • Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 27 at ECU connector F-124. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is there 3.0 volts or more?**		Yes ▶ No ▶	Go to **32-2.** Replace ECU. Restore vehicle. Retest system.
32-2	CHECK CIRCUIT GC 20 AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH FOR VOLTAGE		
• Access and disconnect retractable quarter window retract limit switch E-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 2.1 volts?**		Yes ▶ No ▶	Repair circuit GC 20. Restore vehicle. Retest system. Go to **32-3.**
32-3	CHECK CIRCUIT GC 22 AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH FOR VOLTAGE		
• Connector E-119 at RH retractable quarter window limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 0.7 volts?**		Yes ▶ No ▶	Repair circuit GC 22. Restore vehicle. Retest system. Repair circuit GC 56. 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 33

TEST STEP		RESULT ▶	ACTION TO TAKE
33-1	CHECK CIRCUIT GC 56 FOR VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using a Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect the positive lead to pin 27 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **33-2.**
33-2	CHECK CIRCUIT GC 56 FOR VOLTAGE AT RETRACTABLE QUARTER WINDOW RETRACT LIMIT SWITCH		
• Access retractable quarter window retract limit switch connector E-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Back probe and connect positive lead to pin B at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**		Yes ▶ No ▶	Repair circuit GC 56. Restore vehicle. Retest system. Go to **33-3.**
33-3	CHECK CIRCUIT GC 20 FOR VOLTAGE		
• Disconnect retractable quarter window retract limit switch connector E-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin C at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**		Yes ▶ No ▶	Go to **33-4.** Repair circuit GC 20. Restore vehicle. Retest system.
33-4	CHECK CIRCUIT GC 22 FOR VOLTAGE		
• Connector E-119 at retractable quarter window retract limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at retractable quarter window retract limit switch connector E-119. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**		Yes ▶ No ▶	Replace retractable quarter window retract limit switch. Restore vehicle. Retest system. Repair circuit GC 22. 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 34

TEST STEP		RESULT ▶	ACTION TO TAKE
34-1	CHECK CIRCUIT GC 44 FOR LOW REFERENCE VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect positive lead to pin 25 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volt present?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **34-2.**
34-2	CHECK CIRCUIT GC 44 FOR HIGH REFERENCE VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect positive lead to pin 25 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Are 2.1 volts present?**		Yes ▶ No ▶	Replace LH header position switch. Restore vehicle. Retest system. 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 • Disconnect connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 25 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Go to **35-2.** Replace ECU. Restore vehicle. Retest system.
35-2 CHECK CIRCUIT GC 20 FOR VOLTAGE • Connect connector F-124 at ECU. • Access and disconnect LH header position limit switch connector E-114. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at LH header position limit switch connector E-114. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 present?**	Yes ▶ No ▶	Go to **35-3.** Repair circuit GC 20 for open. Repair circuit GC 44 for short to ground. Restore vehicle. Retest system.
35-3 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector E-114 at LH header position limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin A at LH header position limit switch connector E-114. • Read voltmeter. • **Is 0.7 volt present?**	Yes ▶ No ▶	Go to **35-4.** Repair circuit GC 22 for open. Repair circuit GC 44 for short to ground. Restore vehicle. Retest system.
35-4 CHECK LH HEADER POSITION LIMIT SWITCH • Connector E-114 at LH header latch position limit switch disconnected. • Using DVOM set on ohm scale, connect one lead to pin A of LH header position limit switch. • Connect the second lead to pin B of LH header position limit switch. • Check for continuity. • Connect one lead to pin B of LH header position limit switch. • Connect second lead to pin C of LH header position limit switch. • Check for continuity. • Switch pressed = continuity A and B. • Switch open = continuity B and C. • **Does switch operate properly?**	Yes ▶ No ▶	Repair circuit GC 44 for open and short to ground. Restore vehicle. Retest system. Replace LH header position limit switch. Repair circuit GC 44 for short to ground. 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 36

TEST STEP		RESULT ▶	ACTION TO TAKE
36-1	CHECK CIRCUIT GC 44 AT ECU FOR VOLTAGE		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 25 at ECU connector F-124. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is there 3.0 volts or more?**		Yes ▶ No ▶	Go to **36-2**. Replace ECU. Restore vehicle. Retest system.
36-2	CHECK CIRCUIT GC 22 AT LH HEADER LATCH POSITION SWITCH FOR VOLTAGE		
• Access and disconnect LH header latch position switch connector E-114. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at LH header latch position switch connector E-114. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 0.7 volts?**		Yes ▶ No ▶	Repair circuit GC 22. Restore vehicle. Retest system. Go to **36-3**.
36-3	CHECK CIRCUIT GC 20 AT LH HEADER LATCH POSITION SWITCH FOR VOLTAGE		
• Connector E-114 at LH header latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at LH header latch position switch connector E-114. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 2.1 volts?**		Yes ▶ No ▶	Repair circuit GC 20. Restore vehicle. Retest system. Repair circuit GC 44. 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 37

TEST STEP	RESULT ▶	ACTION TO TAKE
37-1 CHECK CIRCUIT GC 44 FOR VOLTAGE AT ECU • Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect the positive lead to pin 25 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **37-2**.
37-2 CHECK CIRCUIT GC 44 FOR VOLTAGE AT LH HEADER LATCH POSITION SWITCH • Access LH header latch position switch connector E-114. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Back probe and connect positive lead to pin B at LH header latch position switch connector E-114. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Repair circuit GC 44. Restore vehicle. Retest system. Go to **37-3**.
37-3 CHECK CIRCUIT GC 20 FOR VOLTAGE • Disconnect LH header latch position switch connector E-114. • Using a DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin C at LH header latch position switch connector E-114. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **37-4**. Repair circuit GC 20. Restore vehicle. Retest system.
37-4 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector E-114 at LH header latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at LH header latch position switch E-114. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**	Yes ▶ No ▶	Replace LH header latch position switch. Restore vehicle. Retest system. Repair circuit GC 22. 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 38

TEST STEP		RESULT ▶	ACTION TO TAKE
38-1	CHECK CIRCUIT GC 45 FOR LOW REFERENCE VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect positive lead to pin 39 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volt present?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **38-2.**
38-2	CHECK CIRCUIT GC 45 FOR HIGH REFERENCE VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using DVOM set to DC volt, connect negative lead to known good ground. • Back probe and connect positive lead to pin 39 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Are 2.1 volts present?**		Yes ▶ No ▶	Replace RH header position switch. Restore vehicle. Retest system. 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
39-1	CHECK CIRCUIT GC 45 FOR SHORT TO GROUND		
• Disconnect connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect one lead to a known good ground. • Connect the second lead to pin 39 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Go to **39-2**. Replace ECU. Restore vehicle. Retest system.
39-2	CHECK CIRCUIT GC 20 FOR VOLTAGE		
• Connect connector F-124 at ECU. • Access and disconnect RH header position limit switch connector E-111. • Using DVOM set to DC volt, connect one lead to a known good ground. • Connect second lead to pin C at RH header position limit switch connector E-111. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**		Yes ▶ No ▶	Go to **39-3**. Repair circuit GC 20 for open. Repair circuit GC 45 for short to ground. Restore vehicle. Retest system.
39-3	CHECK CIRCUIT GC 22 FOR VOLTAGE		
• Connector E-111 at RH header position limit switch disconnected. • Using DVOM set to DC volt, connect one lead to a known good ground. • Connect the second lead to pin A at RH header position limit switch connector E-111. • Read voltmeter. • **Is 0.7 volt present?**		Yes ▶ No ▶	Go to **39-4**. Repair circuit GC 22 for open. Repair circuit GC 45 for short to ground. Restore vehicle. Retest system.
39-4	CHECK RH HEADER POSITION LIMIT SWITCH		
• Connector E-111 at RH header latch position limit switch disconnected. • Using DVOM set on ohm scale, connect one lead to pin A of RH header position limit switch. • Connect the second lead to pin B of RH header position limit switch. • Check for continuity. • Connect one lead to pin B of RH header position limit switch. • Connect second lead to pin C of RH header position limit switch. • Check for continuity. • Switch pressed = continuity A and B. • Switch open = continuity B and C. • **Does switch operate properly?**		Yes ▶ No ▶	Repair circuit GC 45 for open and short to ground. Restore vehicle. Retest system. Replace RH header position limit switch. Repair circuit GC 45 for short to ground. 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 40

TEST STEP		RESULT ▶	ACTION TO TAKE
40-1	CHECK CIRCUIT GC 45 AT ECU FOR VOLTAGE		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 39 at ECU connector F-124. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is there 3.0 volts or more?**		Yes ▶ No ▶	Go to **40-2.** Replace ECU. Restore vehicle. Retest system.
40-2	CHECK CIRCUIT GC 20 AT RH HEADER LATCH POSITION SWITCH FOR VOLTAGE		
• Access and disconnect RH header latch position switch connector E-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at RH header latch position switch connector E-111. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 2.1 volts?**		Yes ▶ No ▶	Repair circuit GC 20. Restore vehicle. Retest system. Go to **40-3.**
40-3	CHECK CIRCUIT GC 22 AT RH HEADER LATCH POSITION SWITCH FOR VOLTAGE		
• Connector E-111 at RH header latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at RH header latch position switch connector E-111. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 0.7 volts?**		Yes ▶ No ▶	Repair circuit GC 22. Restore vehicle. Retest system. Repair circuit GC 45. 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 41

TEST STEP	RESULT ▶	ACTION TO TAKE
41-1 CHECK CIRCUIT GC 45 FOR VOLTAGE AT ECU • Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect the positive lead to pin 39 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **41-2**.
41-2 CHECK CIRCUIT GC 45 FOR VOLTAGE AT RH HEADER LATCH POSITION SWITCH • Access RH header latch position switch connector E-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Back probe and connect positive lead to pin B at RH header latch position switch connector E-111. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Repair circuit GC 45. Restore vehicle. Retest system. Go to **41-3**.
41-3 CHECK CIRCUIT GC 20 FOR VOLTAGE • Disconnect RH header latch position switch connector E-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin C at RH header latch position switch connector E-111. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **41-4**. Repair circuit GC 20. Restore vehicle. Retest system.
41-4 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector E-111 at RH header latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at RH header latch position switch connector E-111. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**	Yes ▶ No ▶	Replace RH header latch position switch. Restore vehicle. Retest system. Repair circuit GC 22. 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 42

TEST STEP		RESULT ▶	ACTION TO TAKE
42-1	CHECK CIRCUIT GC 20 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH		
• Access LH tonneau latch limit switch. • Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin C at LH tonneau limit switch connector F-119. • Turn ignition to ON position. NOTE: Tonneau latch switch must be open. • Read voltmeter. • **Is 2.1 volts present?**		Yes ▶ No ▶	Go to **42-2.** Repair circuit GC 20. Restore vehicle. Retest system.
42-2	CHECK CIRCUIT GC 22 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH		
• Access LH tonneau latch limit switch. • Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin A at LH tonneau limit switch connector F-119. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**		Yes ▶ No ▶	Go to **42-3.** Repair circuit GC 22. Restore vehicle. Retest system.
42-3	CHECK CIRCUIT GC 24 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH		
• Access LH tonneau latch limit switch connector F-119. • Using DVOM set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin B at LH tonneau limit switch connector F-119. • Turn ignition to ON position. NOTE: 2.1 volts with switch open. 0.7 volts with switch closed. • Read voltmeter. • **Is proper voltage present?**		Yes ▶ No ▶	Go to **42-4.** Replace LH tonneau latch limit switch. Restore vehicle. Retest system.
42-4	CHECK CIRCUIT GC 24 AT ECU		
• Access connector F-124 at ECU. • Using DVOM set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 26 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. NOTE: 2.1 volts with switch open. 0.7 volts with switch closed. • **Is proper voltage present?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Repair circuit GC 24. 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 43

TEST STEP	RESULT ▶	ACTION TO TAKE
43-1 CHECK CIRCUIT GC 24 FOR SHORT TO GROUND		
• Disconnect connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 26 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Go to **43-2.** Replace ECU. Restore vehicle. Retest system.
43-2 CHECK CIRCUIT GC 20 FOR VOLTAGE		
• Connect connector F-124 at ECU. • Access and disconnect LH tonneau latch limit switch connector E-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at LH tonneau latch limit switch connector F-119. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **43-3.** Repair circuit GC 20 for open. Repair circuit GC 24 for short to ground. Restore vehicle. Retest system.
43-3 CHECK CIRCUIT GC 22 FOR VOLTAGE		
• Connector F-119 at LH tonneau latch limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin A at LH tonneau latch limit switch connector F-119. • Read voltmeter. • **Is 0.7 volt present?**	Yes ▶ No ▶	Go to **43-4.** Repair circuit GC 22 for open. Repair circuit GC 24 for short to ground. Restore vehicle. Retest system.
43-4 CHECK LH TONNEAU LATCH LIMIT SWITCH		
• Connector F-119 at LH tonneau latch limit switch disconnected. • Using DVOM set on ohm scale, connect one lead to pin A of LH tonneau latch limit switch. • Connect the second lead to pin B of LH tonneau latch limit switch. • Check for continuity. • Connect one lead to pin B of LH tonneau latch limit switch. • Connect second lead to pin C of LH tonneau latch limit switch. • Check for continuity. • Switch pressed = continuity A and B. • Switch open = continuity B and C. • **Does switch operate properly?**	Yes ▶ No ▶	Repair circuit GC 24 for open and short to ground. Restore vehicle. Retest system. Replace LH tonneau latch limit switch. Repair circuit GC 24 for short to ground. 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 44

TEST STEP		RESULT ▶	ACTION TO TAKE
44-1	CHECK CIRCUIT GC 24 AT ECU FOR VOLTAGE		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 26 at ECU connector F-124. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is there 3.0 volts or more?**		Yes ▶ No ▶	Go to **44-2.** Replace ECU. Restore vehicle. Retest system.
44-2	CHECK CIRCUIT GC 20 AT LH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE		
• Access and disconnect LH tonneau latch limit switch connector F-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at LH tonneau latch limit switch connector F-119. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 2.1 volts?**		Yes ▶ No ▶	Repair circuit GC 20. Restore vehicle. Retest system. Go to **44-3.**
44-3	CHECK CIRCUIT GC 22 AT LH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE		
• Connector F-119 at LH tonneau latch limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at LH tonneau latch limit switch harness connector F-119. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 0.7 volts?**		Yes ▶ No ▶	Repair circuit GC 22. Restore vehicle. Retest system. Repair circuit GC 23. 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 45

TEST STEP	RESULT ▶	ACTION TO TAKE
45-1 CHECK CIRCUIT GC 24 FOR VOLTAGE AT ECU		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect the positive lead to pin 26 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **45-2.**
45-2 CHECK CIRCUIT GC 24 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH		
• Access LH tonneau latch position switch connector F-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Back probe and connect positive lead to pin B at LH tonneau latch limit switch connector F-119. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Repair circuit GC 24. Restore vehicle. Retest system. Go to **45-3.**
45-3 CHECK CIRCUIT GC 20 FOR VOLTAGE		
• Disconnect LH tonneau latch position switch connector F-119. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin C at LH tonneau latch limit switch connector F-119. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **45-4.** Repair circuit GC 20. Restore vehicle. Retest system.
45-4 CHECK CIRCUIT GC 22 FOR VOLTAGE		
• Connector F-119 at LH tonneau latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at LH tonneau latch limit switch connector F-119. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**	Yes ▶ No ▶	Replace LH tonneau latch limit switch. Restore vehicle. Retest system. Repair circuit GC 22. 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 46

TEST STEP		RESULT ▶	ACTION TO TAKE
46-1	CHECK CIRCUIT GC 20 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH		
• Access RH tonneau latch limit switch. • Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin C at RH tonneau limit switch connector F-111. • Turn ignition to ON position. NOTE: Tonneau latch switch must be open. • Read voltmeter. **• Is 2.1 volts present?**		Yes ▶ No ▶	Go to **46-2**. Repair circuit GC 20. Restore vehicle. Retest system.
46-2	CHECK CIRCUIT GC 22 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH		
• Access RH tonneau latch limit switch. • Using Digital Volt/Ohm Meter (DVOM) set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin A at RH tonneau limit switch connector F-111. • Turn ignition to ON position. • Read voltmeter. **• Is 0.7 volts present?**		Yes ▶ No ▶	Go to **46-3**. Repair circuit GC 22. Restore vehicle. Retest system.
46-3	CHECK CIRCUIT GC 25 FOR VOLTAGE AT LH TONNEAU LATCH LIMIT SWITCH		
• Access LH tonneau latch limit switch connector F-111. • Using DVOM set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin B at RH tonneau limit switch connector F-111. • Turn ignition to ON position. NOTE: 2.1 volts with switch open. 0.7 volts with switch closed. • Read voltmeter. **• Is proper voltage present?**		Yes ▶ No ▶	Go to **46-4**. Replace RH tonneau latch limit switch. Restore vehicle. Retest system.
46-4	CHECK CIRCUIT GC 25 AT ECU		
• Access connector F-124 at ECU. • Using DVOM set on DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 40 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. NOTE: 2.1 volts with switch open. 0.7 volts with switch closed. **• Is proper voltage present?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Repair circuit GC 25. 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 47

TEST STEP	RESULT ▶	ACTION TO TAKE
47-1 CHECK CIRCUIT GC 25 FOR SHORT TO GROUND • Disconnect connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 40 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Go to **47-2.** Replace ECU. Restore vehicle. Retest system.
47-2 CHECK CIRCUIT GC 20 FOR VOLTAGE • Connect connector F-124 at ECU. • Access and disconnect RH tonneau latch limit switch connector F-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at RH tonneau latch limit switch connector F-111. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **47-3.** Repair circuit GC 20 for open. Repair circuit GC 25 for short to ground. Restore vehicle. Retest system.
47-3 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector F-111 at RH tonneau latch limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin A at RH tonneau latch limit switch connector F-111. • Read voltmeter. • **Is 0.7 volt present?**	Yes ▶ No ▶	Go to **47-4.** Repair circuit GC 22 for open. Repair circuit GC 25 for short to ground. Restore vehicle. Retest system.
47-4 CHECK RH TONNEAU LATCH LIMIT SWITCH • Connector F-111 at RH tonneau latch limit switch disconnected. • Using DVOM set on ohm scale, connect one lead to pin A of RH tonneau latch limit switch. • Connect the second lead to pin B of RH tonneau latch limit switch. • Check for continuity. • Connect one lead to pin B of RH tonneau latch limit switch. • Connect second lead to pin C of RH tonneau latch limit switch. • Check for continuity. • Switch pressed = continuity A and B. • Switch open = continuity B and C. • **Does switch operate properly?**	Yes ▶ No ▶	Repair circuit GC 25 for open and short to ground. Restore vehicle. Retest system. Replace RH tonneau latch limit switch. Repair circuit GC 25 for short to ground. 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 48

TEST STEP		RESULT ▶	ACTION TO TAKE
48-1	CHECK CIRCUIT GC 25 AT ECU FOR VOLTAGE		
• Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Back probe and connect the positive lead to pin 40 at ECU connector F-124. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is there 3.0 volts or more?**		Yes ▶ No ▶	Go to **48-2.** Replace ECU. Restore vehicle. Retest system.
48-2	CHECK CIRCUIT GC 20 AT RH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE		
• Access and disconnect RH tonneau latch limit switch connector F-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin C at RH tonneau latch limit switch harness connector F-111. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 2.1 volts?**		Yes ▶ No ▶	Repair circuit GC 20. Restore vehicle. Retest system. Go to **48-3.**
48-3	CHECK CIRCUIT GC 22 AT RH TONNEAU LATCH LIMIT SWITCH FOR VOLTAGE		
• Connector F-111 at RH tonneau latch limit switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at RH tonneau latch limit switch harness connector F-111. • Turn ignition to ON position. • Turn on all accessories and lights and operate hardtop system. • Read voltmeter. • **Is voltage over 0.7 volts?**		Yes ▶ No ▶	Repair circuit GC 22. Restore vehicle. Retest system. Repair circuit GC 25. 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 49

TEST STEP	RESULT ▶	ACTION TO TAKE
49-1 CHECK CIRCUIT GC 25 FOR VOLTAGE AT ECU • Access connector F-124 at ECU. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to known good ground. • Back probe and connect the positive lead to pin 40 at ECU connector F-124. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Go to **49-2.**
49-2 CHECK CIRCUIT GC 25 FOR VOLTAGE AT RH TONNEAU LATCH LIMIT SWITCH • Access RH tonneau latch limit switch connector F-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Back probe and connect positive lead to pin B at RH tonneau latch limit switch connector F-111. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 or 2.1 volts present?**	Yes ▶ No ▶	Repair circuit GC 25. Restore vehicle. Retest system. Go to **49-3.**
49-3 CHECK CIRCUIT GC 20 FOR VOLTAGE • Disconnect RH tonneau latch position switch, connector F-111. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin C at RH tonneau latch limit switch connector F-111. • Turn ignition to ON position. • Read voltmeter. • **Is 2.1 volts present?**	Yes ▶ No ▶	Go to **49-4.** Repair circuit GC 20. Restore vehicle. Retest system.
49-4 CHECK CIRCUIT GC 22 FOR VOLTAGE • Connector F-111 at RH tonneau latch position switch disconnected. • Using DVOM set to DC volt, connect negative lead to a known good ground. • Connect positive lead to pin A at RH tonneau latch limit switch connector F-111. • Turn ignition to ON position. • Read voltmeter. • **Is 0.7 volts present?**	Yes ▶ No ▶	Replace RH tonneau latch limit switch. Restore vehicle. Retest system. Repair circuit GC 22. 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 50

TEST STEP		RESULT ▶	ACTION TO TAKE
50-1	CHECK HARDTOP MANUAL OPERATION		
NOTE: Prior to performing this test, connect the diagnostic PC, and operate the hardtop system five cycles. If the hardtop operates satisfactorily, disregard this DTC. If the hardtop does not operate satisfactorily, continue performing the test. A second person will be needed for this operation. • Open hard tonneau. • Access and turn hardtop bypass valve to MANUAL position. • Turn ignition to the ON position. • Press hardtop control switch to the OPEN position to release header latches. Release hardtop control switch. • Turn ignition to OFF position. • Manually operate hardtop to full open and full closed positions. • **Does hardtop operate without binding?**		Yes ▶ No ▶	Go to **50-2**. Check for binding of mechanical and/or hydraulic components. Service as required. Restore vehicle. Retest system.
50-2	CHECK HARDTOP PUMP OPERATION WHILE IN BYPASS		
• Clear DTCs from ECU's memory. • Hardtop bypass valve in MANUAL position. • Turn ignition to ON position. • Press hardtop control switch to OPEN position. • Check for DTCs. • **Did DTC 50 return?**		Yes ▶ No ▶	Go to **50-3**. Replace hardtop pump assembly. Restore vehicle. Retest system.
50-3	CHECK CIRCUIT GC 29 FOR SHORT TO GROUND		
• Disconnect connector F-125 at ECU. • Disconnect hardtop drive motor connector F-120. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin B at hardtop drive motor connector F-120. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuit GC 29. Restore vehicle. Retest system. Go to **50-4**.
50-4	CHECK CIRCUIT GC 30 FOR SHORT TO GROUND		
• Connector F-125 at ECU disconnected. • Connector F-120 at hardtop drive motor disconnected. • Using DVOM set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin A at hardtop drive motor connector F-120. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuit GC 30. Restore vehicle. Retest system. Go to **50-5**.

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		
• Connector F-125 at ECU disconnected. • Connector F-120 at hardtop drive motor disconnected. • Using DVOM set to ohm scale, connect one lead to pin B at hardtop drive motor connector F-120. • Connect the second lead to pin A at hardtop drive motor connector F-120. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuits GC 29 and GC 30. Restore vehicle. Retest system. Replace hardtop drive motor. 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 51

TEST STEP	RESULT ▶	ACTION TO TAKE
51-1 CHECK HARD TONNEAU MANUAL OPERATION		
NOTE: Prior to performing this test, connect the diagnostic PC, and operate the hardtop system five cycles. If the hardtop operates satisfactorily, disregard this DTC. If the hardtop does not operate satisfactorily, continue performing this test. • Release hard tonneau latches. • Access and turn hard tonneau bypass valve to MANUAL position. • Manually operate hard tonneau to full open and full closed positions. • **Does hard tonneau operate without binding?**	Yes ▶ No ▶	Go to **51-2.** 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		
• Clear DTCs from ECUs memory. • Hard tonneau bypass valve in MANUAL position. • Turn ignition to ON position. • Press hard tonneau control switch to OPEN position. • Check for DTCs. • **Did DTC 51 return?**	Yes ▶ No ▶	Go to **51-3.** Replace hard tonneau pump assembly. Restore vehicle. Retest system.
51-3 CHECK CIRCUIT GC 31 FOR SHORT TO GROUND		
• Disconnect connector F-125 at ECU. • Disconnect hard tonneau drive motor connector F-113. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin A at hard tonneau drive motor connector F-113. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Repair circuit GC 31. Restore vehicle. Retest system. Go to **51-4.**
51-4 CHECK CIRCUIT GC 32 FOR SHORT TO GROUND		
• Connector F-125 at ECU disconnected. • Connector F-113 at hard tonneau drive motor disconnected. • Using DVOM set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin B at hard tonneau pump connector F-113. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Repair circuit GC 32. Restore vehicle. Retest system. Go to **51-5.**
51-5 CHECK CIRCUIT GC 31 AND GC 32 FOR SHORT CIRCUIT		
• Connector F-125 at ECU disconnected. • Connector F-113 at hard tonneau pump disconnected. • Using DVOM set to ohm scale, connect one lead to pin A at hard tonneau pump connector F-113. • Connect the second lead to pin B at hard tonneau pump connector F-113. • Read ohmmeter. • **Is there continuity?**	Yes ▶ No ▶	Repair circuits GC 31 and GC 32. Restore vehicle. Retest system. Replace hard tonneau pump assembly. Restore vehicle. Retest system.

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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

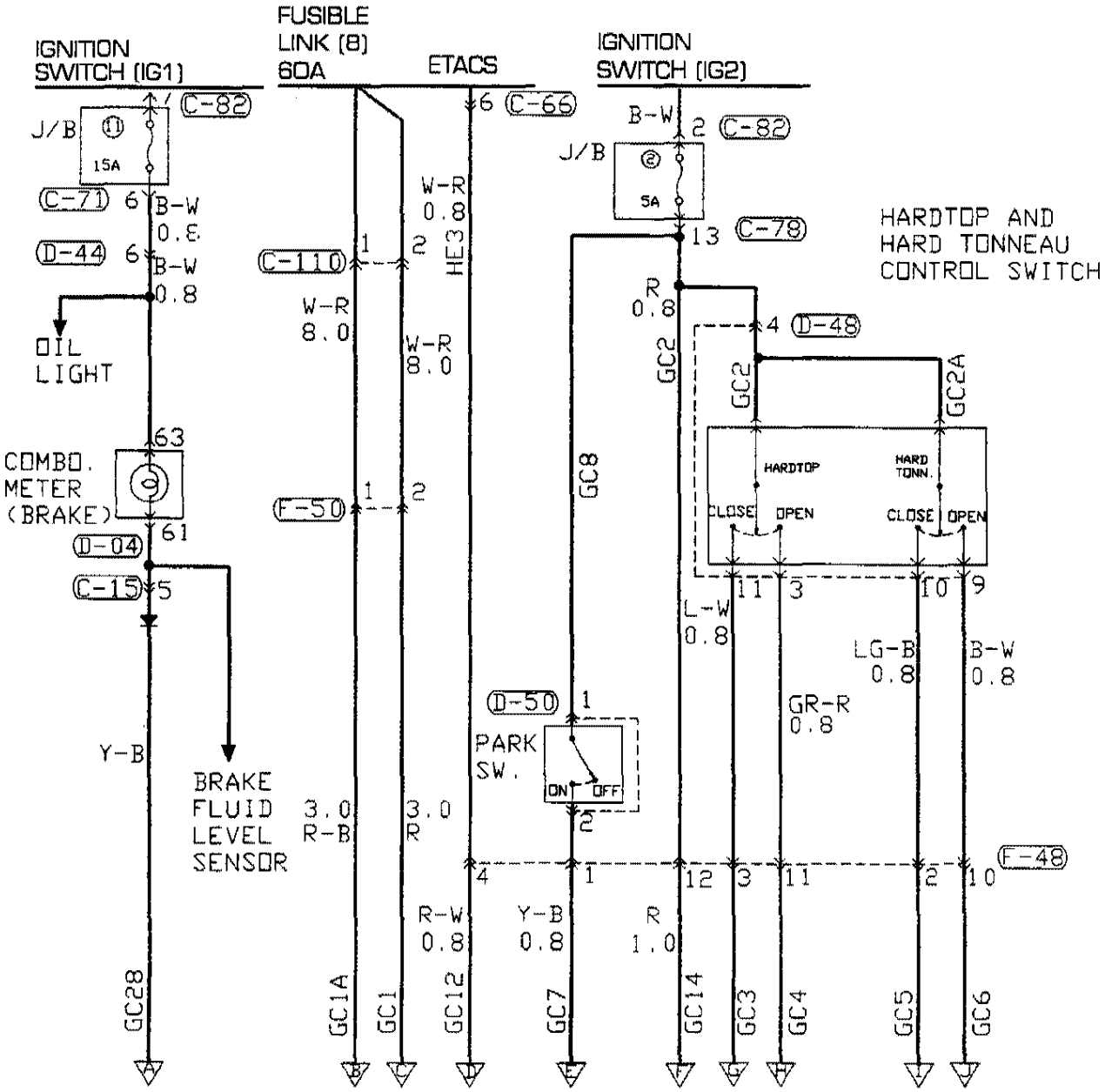
TEST STEP		RESULT ▶	ACTION TO TAKE
56-1	CHECK VOLTAGE AT CIRCUIT GC 47		
• Disconnect object-in-trunk sensor connector F-115. • Using Digital Volt/Ohm Meter (DVOM) set to DC volt, connect negative lead to a known good ground. • Connect the positive lead to pin 2 of connector F-115. • Turn ignition to ON position. • Read voltmeter. • **Is system voltage present?**		Yes ▶ No ▶	Go to **56-2.** Go to **56-5.**
56-2	CHECK CIRCUIT GC 48 FOR GROUND THROUGH ECU		
• Connector F-115 at object-in-trunk sensor disconnected. • Using DVOM set to ohm scale connect negative lead to a known good ground. • Connect the positive lead to pin 1 of connector F-115. • Read ohmmeter. • **Is reading between 265 and 396 ohms?**		Yes ▶ No ▶	Go to **56-3.** Go to **56-4.**
56-3	CHECK CIRCUIT GC 49 FOR GROUND THROUGH ECU		
• Connector F-115 at object-in-trunk sensor disconnected. • Using DVOM set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 3 of connector F-115. • Read ohmmeter. • **Is reading between 265 and 396 ohms?**		Yes ▶ No ▶	Replace object-in-trunk sensor. Restore vehicle. Retest system. Go to **56-6.**
56-4	CHECK CIRCUIT GC 48 FOR SHORT TO GROUND		
• Disconnect connector F-124 at ECU. • Connector F-115 at object-in-trunk sensor disconnected. • Using DVOM set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 3 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuit GC 48. Restore vehicle. Retest system. Go to **56-7.**
56-5	CHECK CIRCUIT GC 47 FOR SHORT TO GROUND		
• Disconnect connector F-124 at ECU. • Connector F-115 at object-in-trunk sensor disconnected. • Using DVOM set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 37 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuit GC 49. Restore vehicle. Retest system. Go to **56-8.**

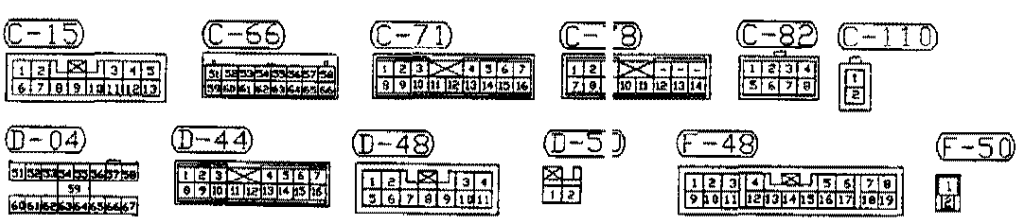
PINPOINT TESTS **REFER TO: PAGES 42-15 THROUGH 42-17 FOR PRECAUTIONS BEFORE SERVICE, NOTES AND DEFINITIONS OF TERMS. PAGES 42-33 THROUGH 42-40 FOR SYMPTOM CHARTS. PAGES 42-41 THROUGH 42-46 FOR TROUBLESHOOTING HINTS.**

DTC 56 (CONTINUED)

TEST STEP		RESULT ▶	ACTION TO TAKE
56-6	CHECK CIRCUIT GC 49 FOR SHORT TO GROUND		
• Disconnect connector F-124 at ECU. • Connector F-115 at object-in-trunk sensor disconnected. • Using Digital Volt/Ohm Meter (DVOM) set to ohm scale, connect negative lead to a known good ground. • Connect the positive lead to pin 4 at ECU connector F-124. • Read ohmmeter. • **Is there continuity?**		Yes ▶ No ▶	Repair circuit GC 47. Restore vehicle. Retest system. Go to **56-9**.
56-7	CHECK CIRCUIT GC 48 FOR OPEN		
• Connector F-115 at object-in-trunk sensor disconnected. • Connector F-124 at ECU disconnected. • Using DVOM set to ohm scale, connect one lead to pin 3 at ECU connector F-124. • Connect the second lead to pin 1 at object-in-trunk sensor connector F-115. • Read ohmmeter. • **Is there 3 ohms or less?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Repair circuit GC 48. Restore vehicle. Retest system.
56-8	CHECK CIRCUIT GC 47 FOR OPEN		
• Connector F-115 at object-in-trunk sensor disconnected. • Connector F-124 at ECU disconnected. • Using DVOM set to ohm scale, connect one lead to pin 37 at ECU connector F-124. • Connect the second lead to pin 2 at object-in-trunk sensor connector F-115. • Read ohmmeter. • **Is there 3 ohms or less?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Repair circuit GC 47. Restore vehicle. Retest system.
56-9	CHECK CIRCUIT GC 49 FOR OPEN		
• Connector F-115 at object-in-trunk sensor disconnected. • Connector F-124 at ECU disconnected. • Using DVOM set to ohm scale, connect one lead to pin 4 at ECU connector F-124. • Connect the second lead to pin 3 at object-in-trunk sensor connector F-115. • Read ohmmeter. • **Is there 3 ohms or less?**		Yes ▶ No ▶	Replace ECU. Restore vehicle. Retest system. Repair circuit GC 49. Restore vehicle. Retest system.

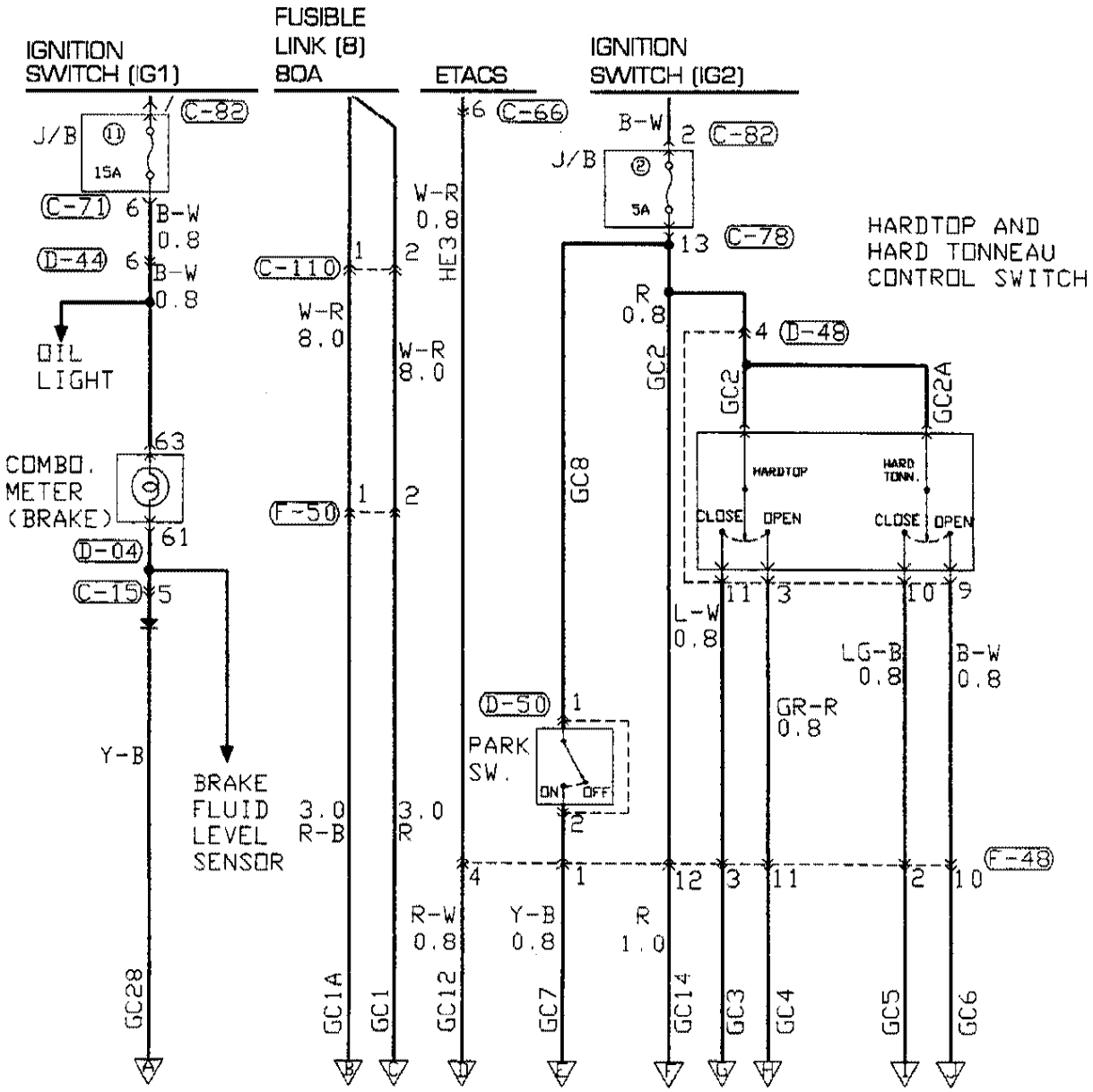
RETRACTABLE HARDTOP ELECTRONIC CONTROL UNIT, (ECU) POWER DISTRIBUTION CIRCUIT DIAGRAM (VEHICLES EQUIPPED WITH 60 A FUSE)

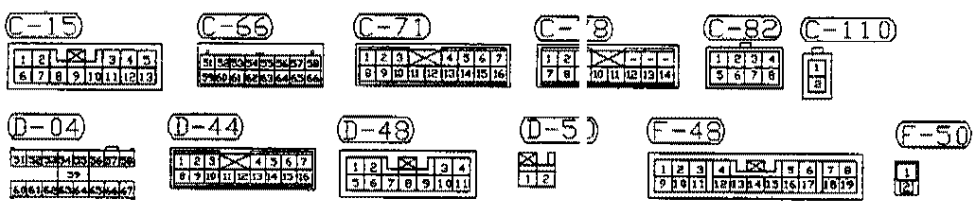




TSB Revision

RETRACTABLE HARDTOP ELECTRONIC CONTROL UNIT, (ECU) POWER DISTRIBUTION CIRCUIT DIAGRAM (VEHICLES EQUIPPED WITH 80 A FUSE)

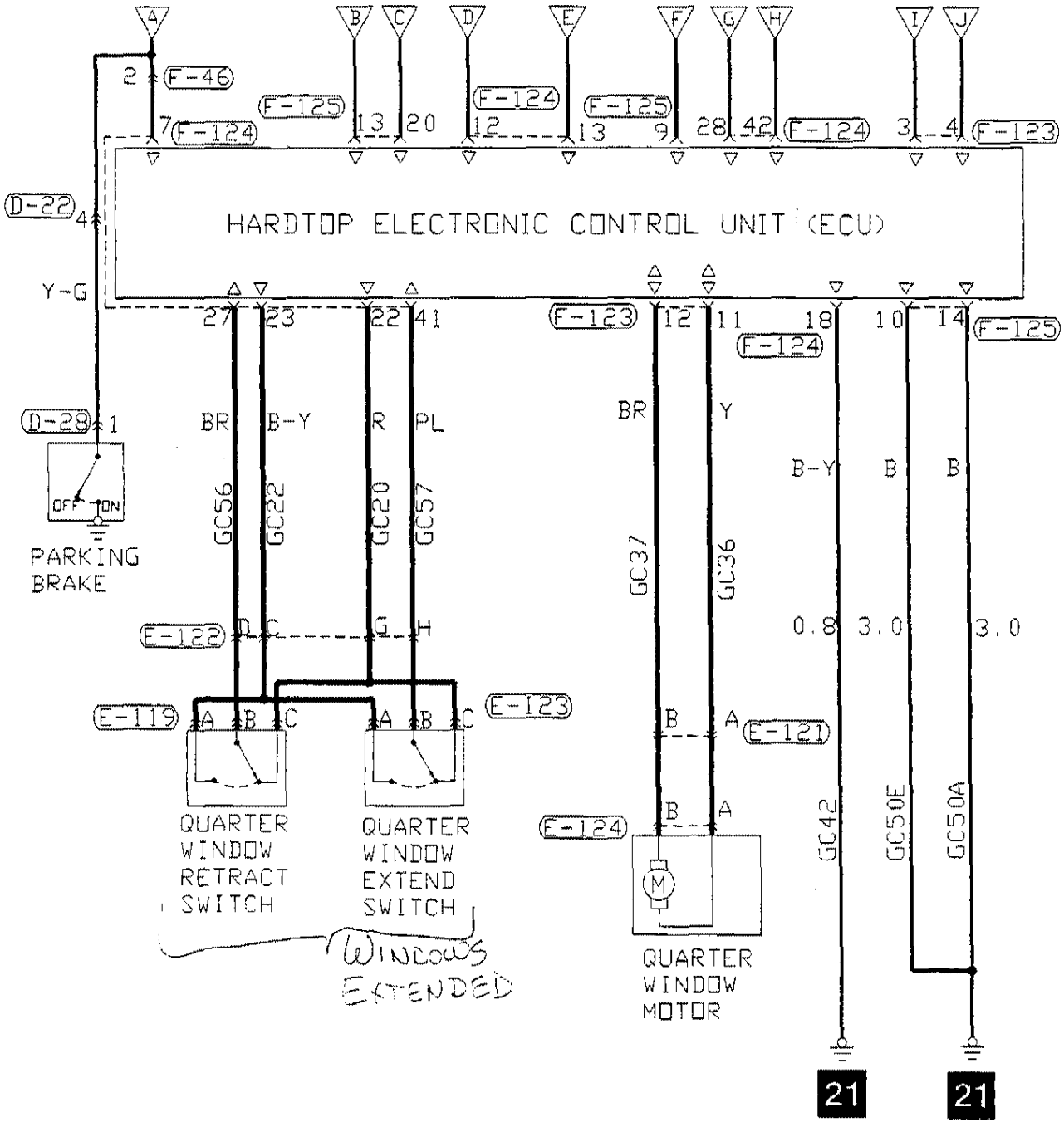


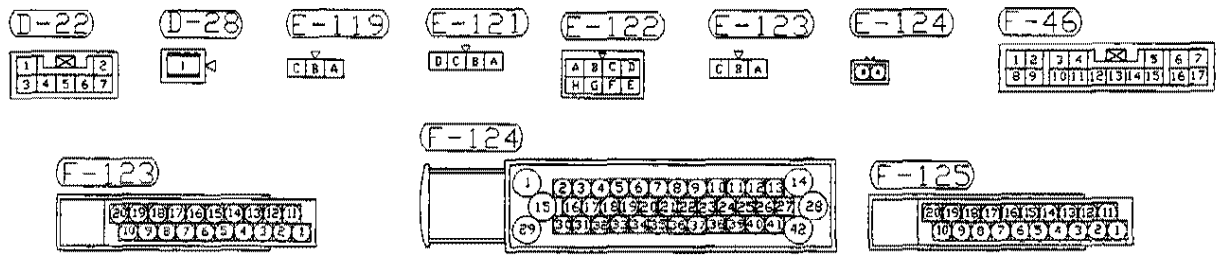


NOTES

POWER QUARTER WINDOW CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





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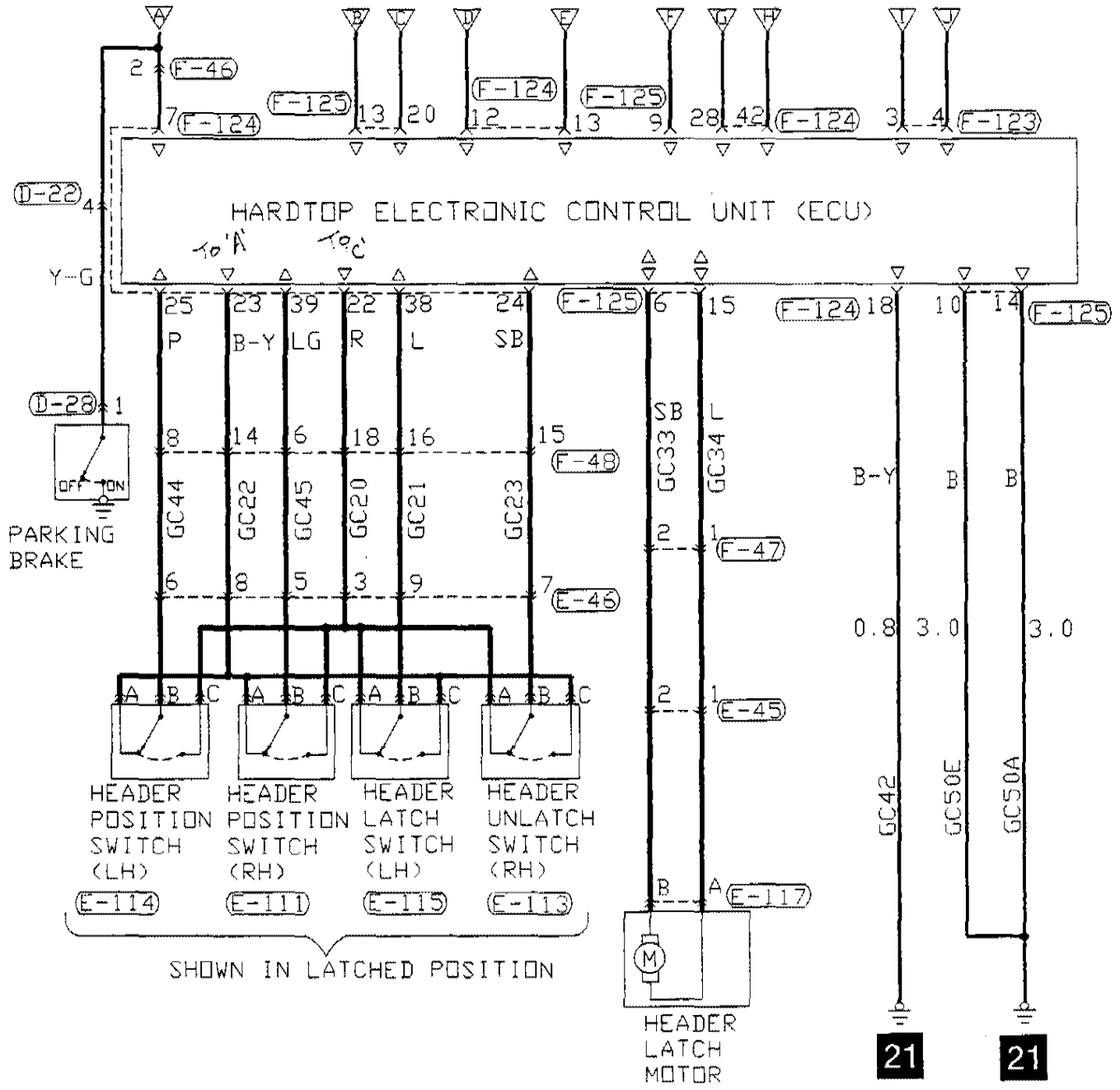
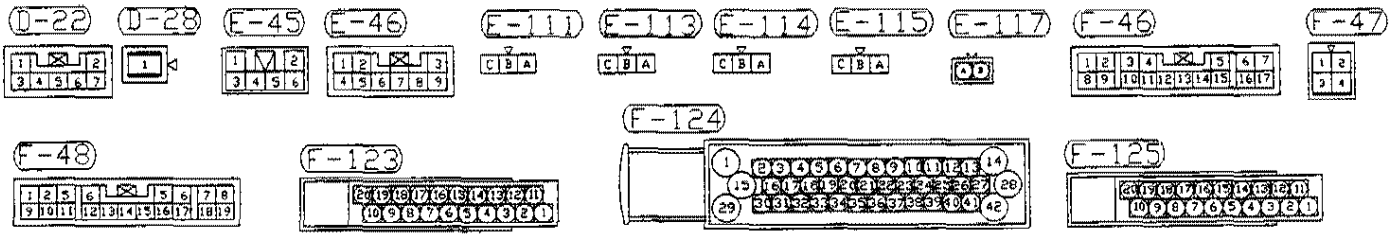
HEADER LATCH SYSTEM CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





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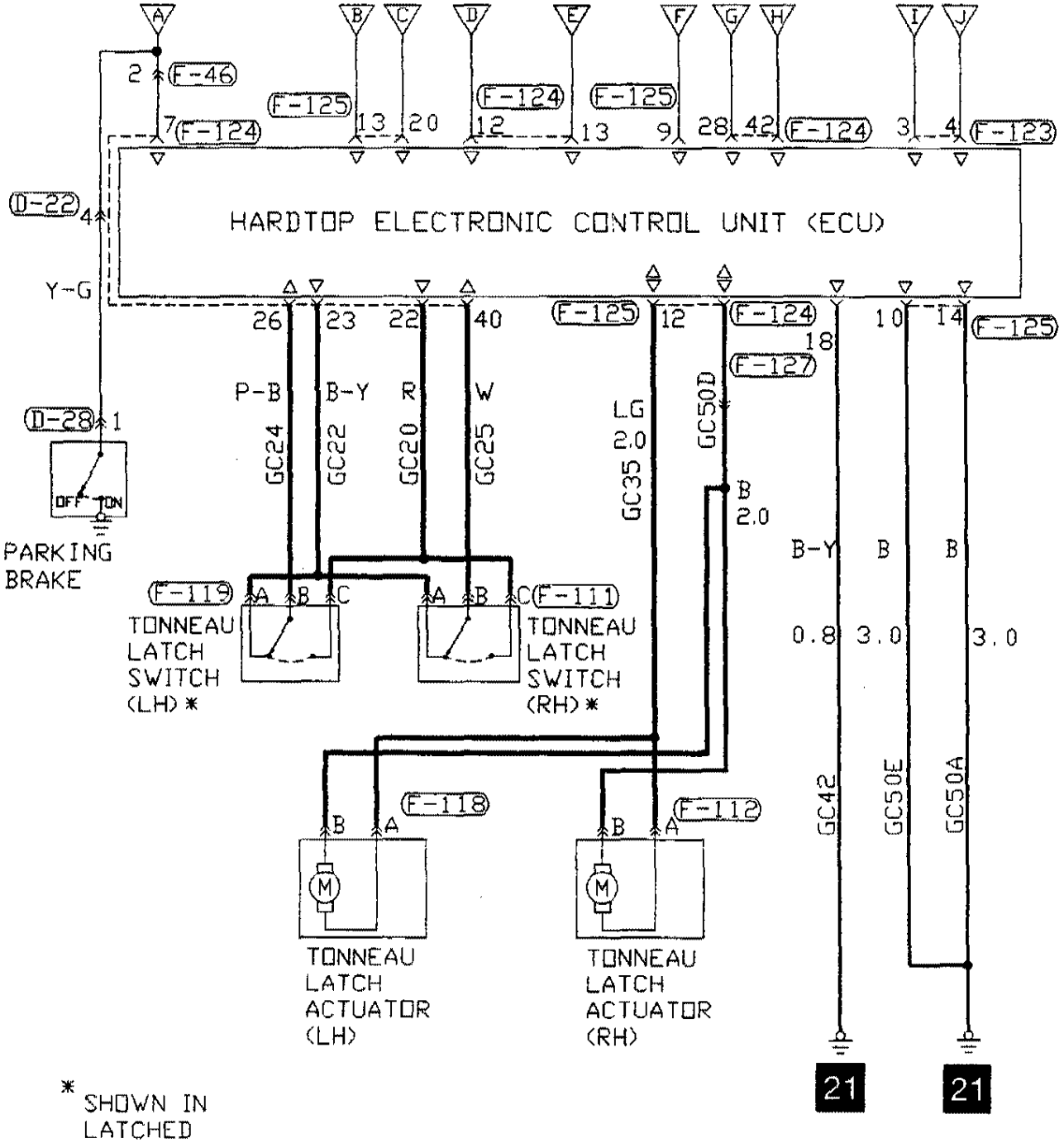
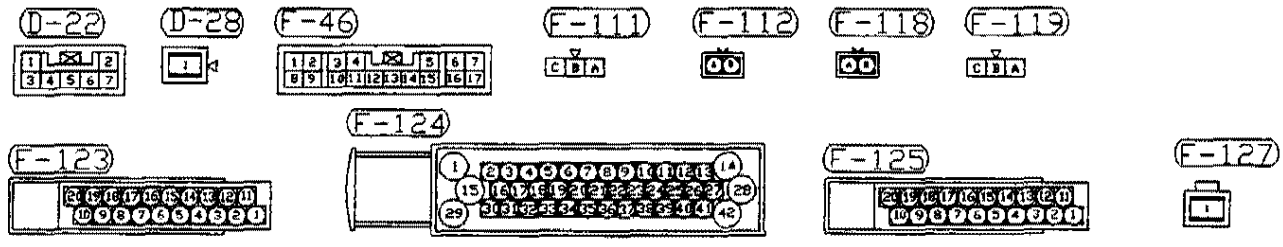
HARD TONNEAU LATCH SYSTEM CIRCUIT DIAGRAM

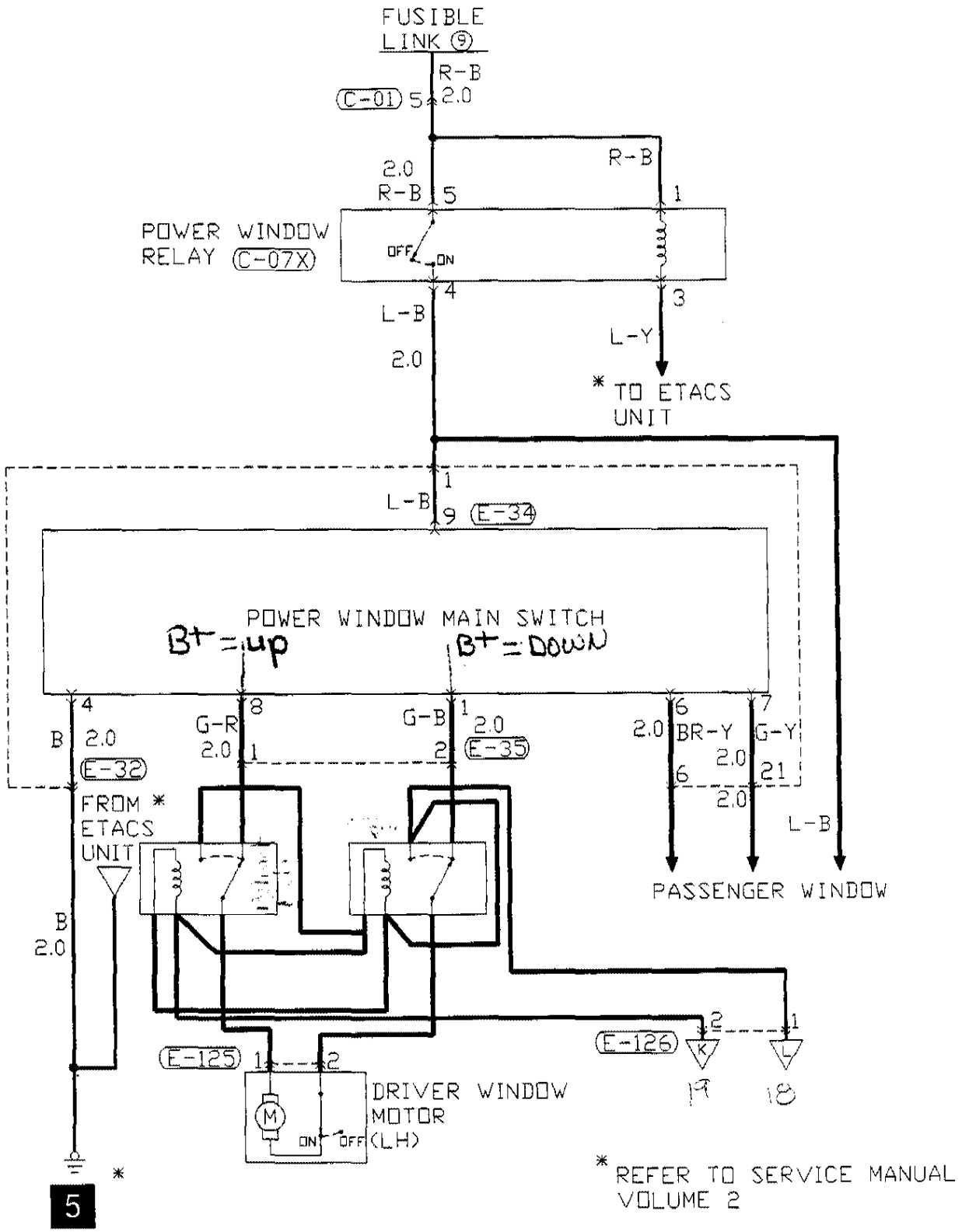
CONTINUED FROM PAGE 134

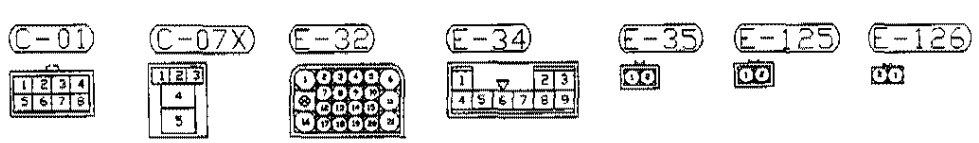


* SHOWN IN LATCHED POSITION



DRIVER'S DOOR POWER WINDOW CIRCUIT DIAGRAM





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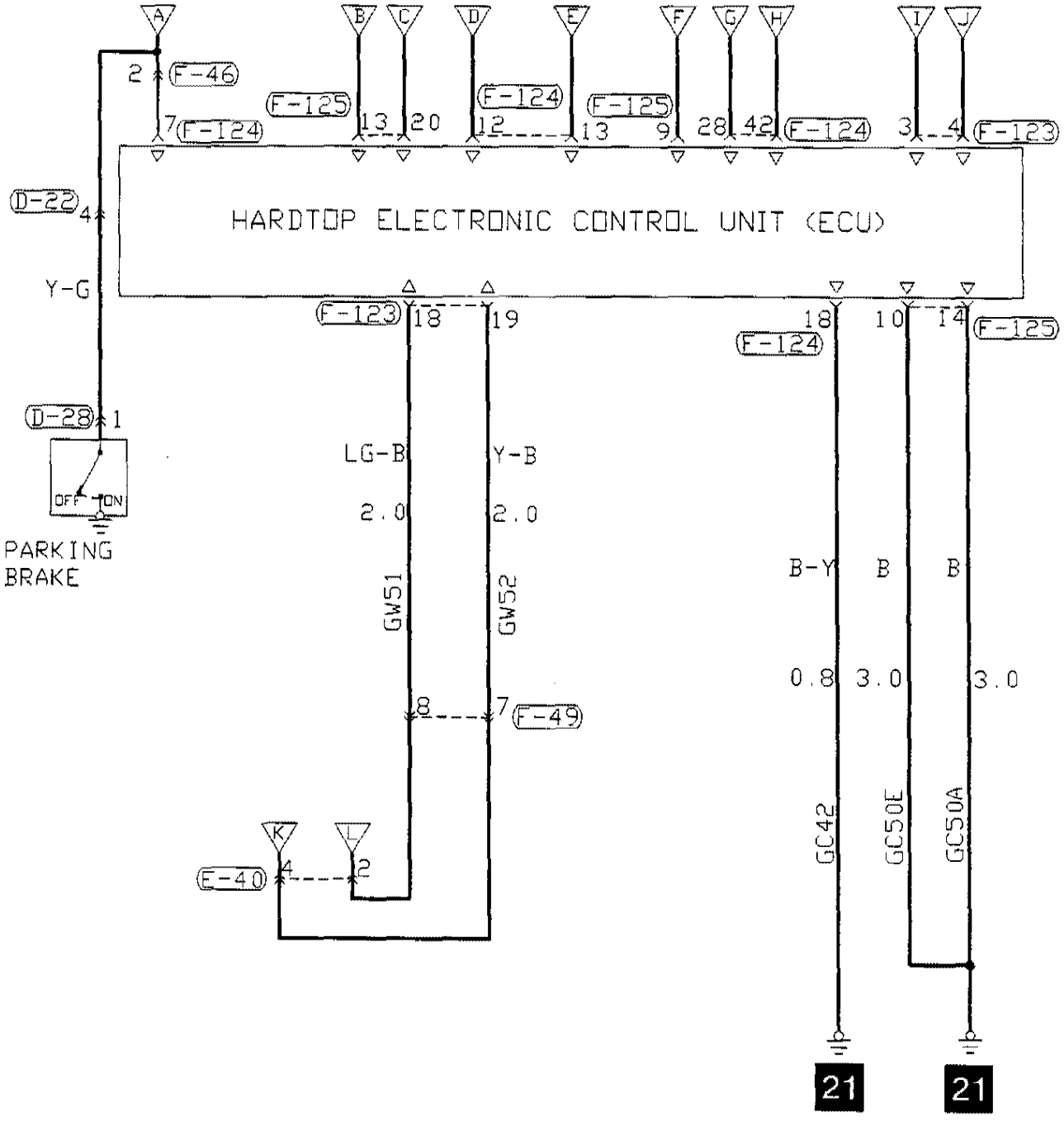
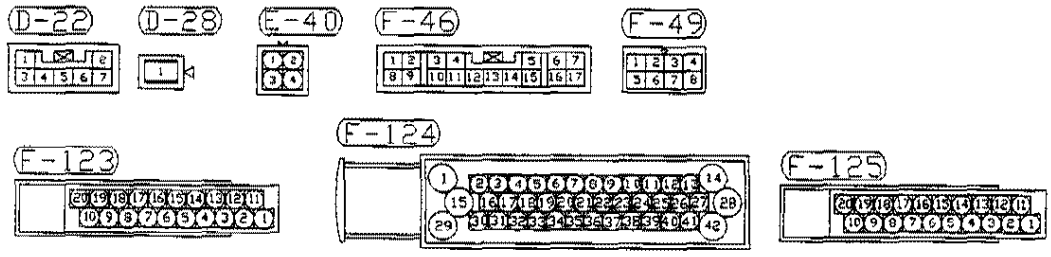
DRIVER'S DOOR POWER WINDOW CIRCUIT DIAGRAM (CONTINUED)

CONTINUED FROM PAGE 134





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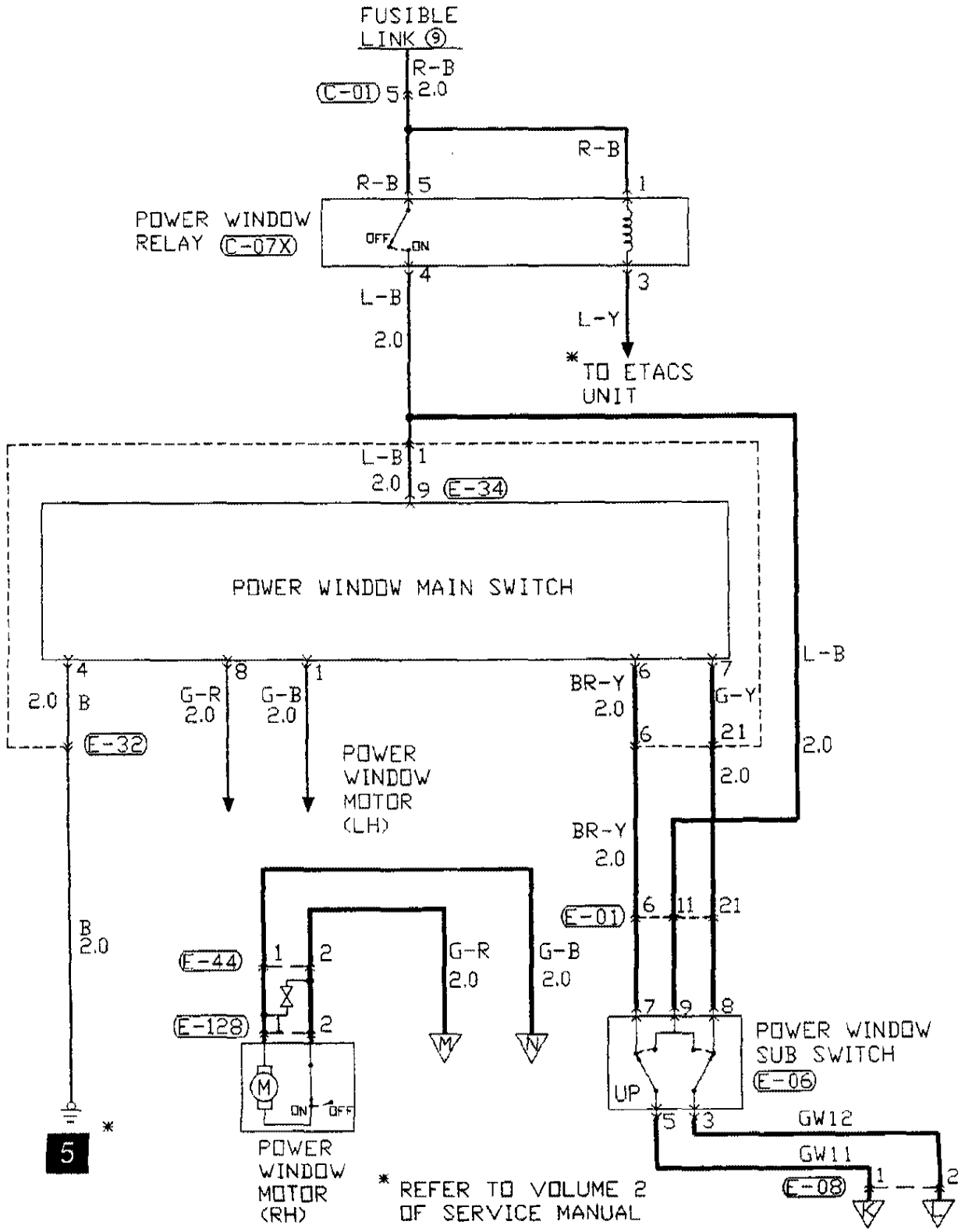
PASSENGER'S DOOR POWER WINDOW CIRCUIT DIAGRAM



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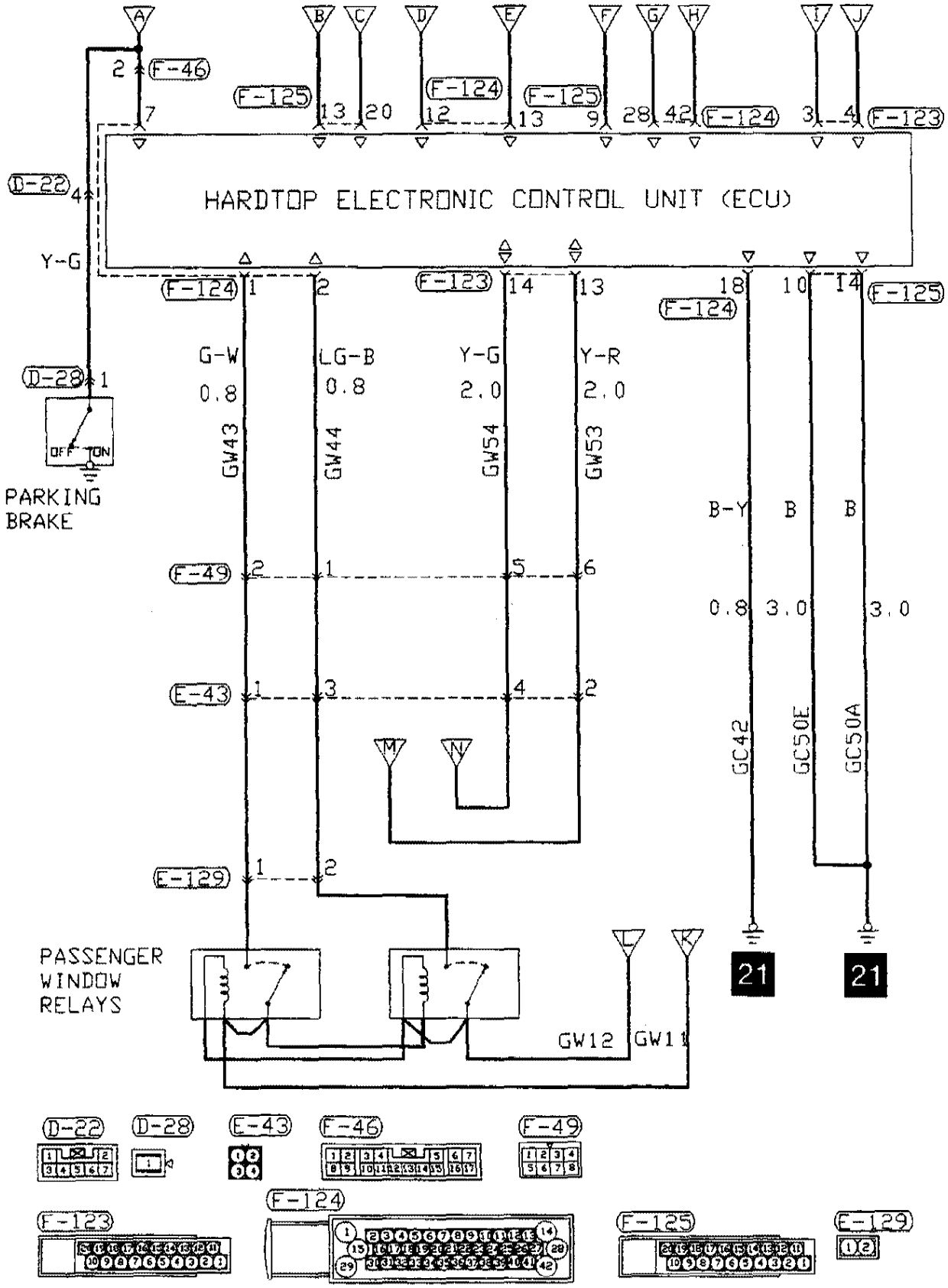
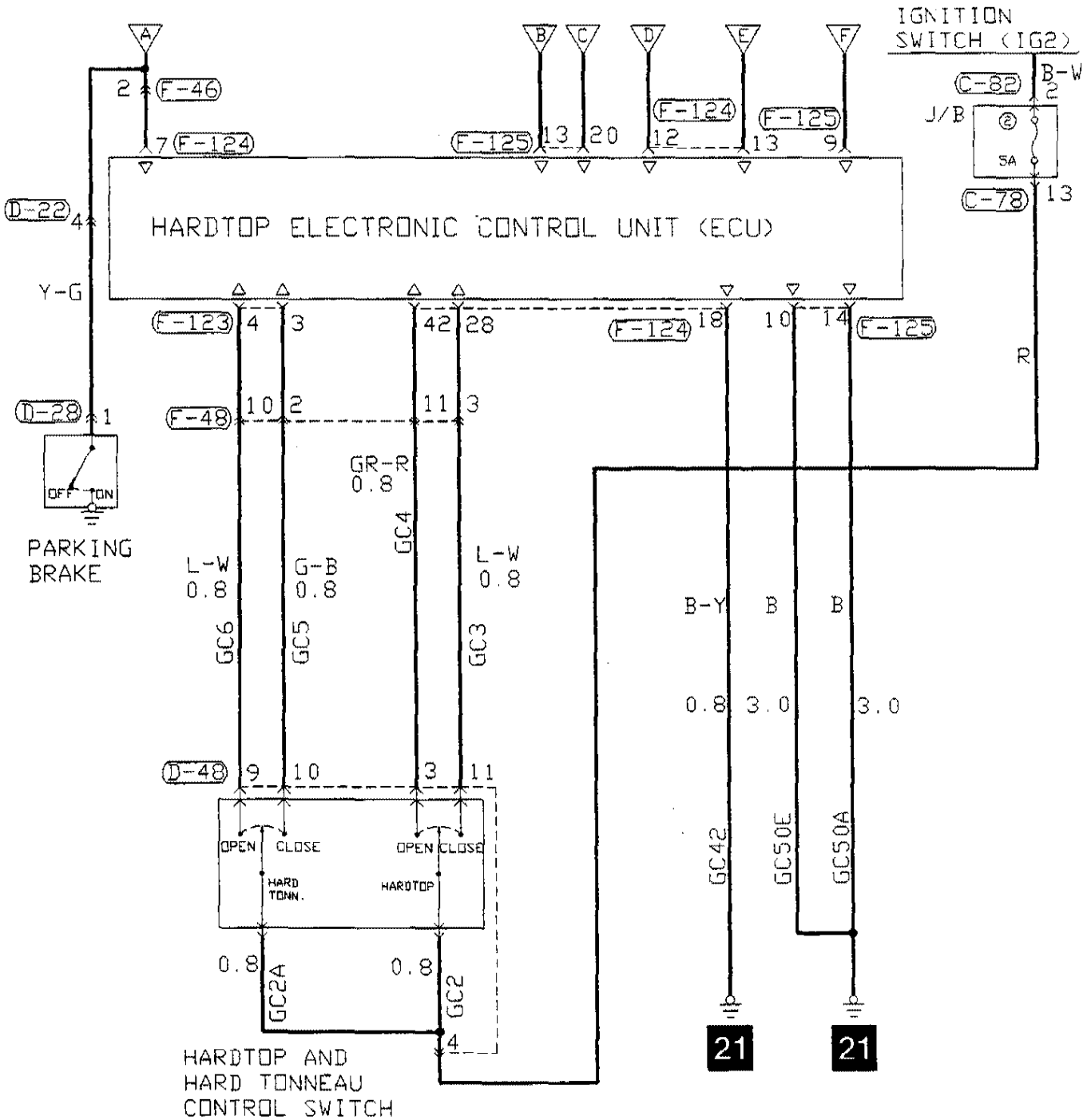
PASSENGER'S DOOR POWER WINDOW CIRCUIT DIAGRAM (CONTINUED)

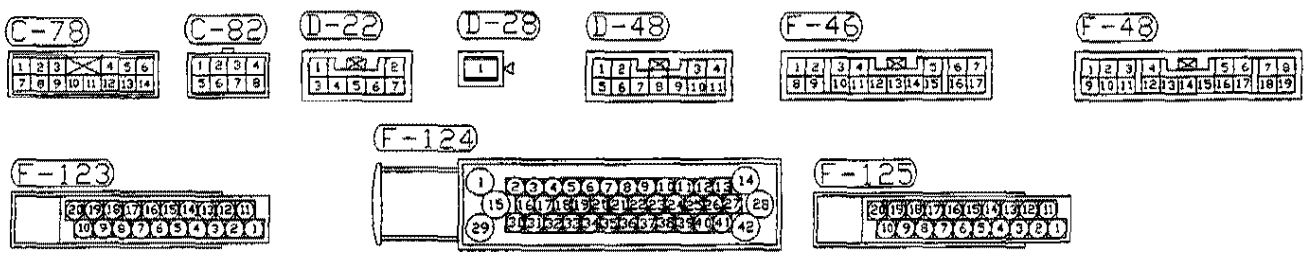
CONTINUED FROM PAGE 134



HARDTOP AND HARD TONNEAU CONTROL SWITCH CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134

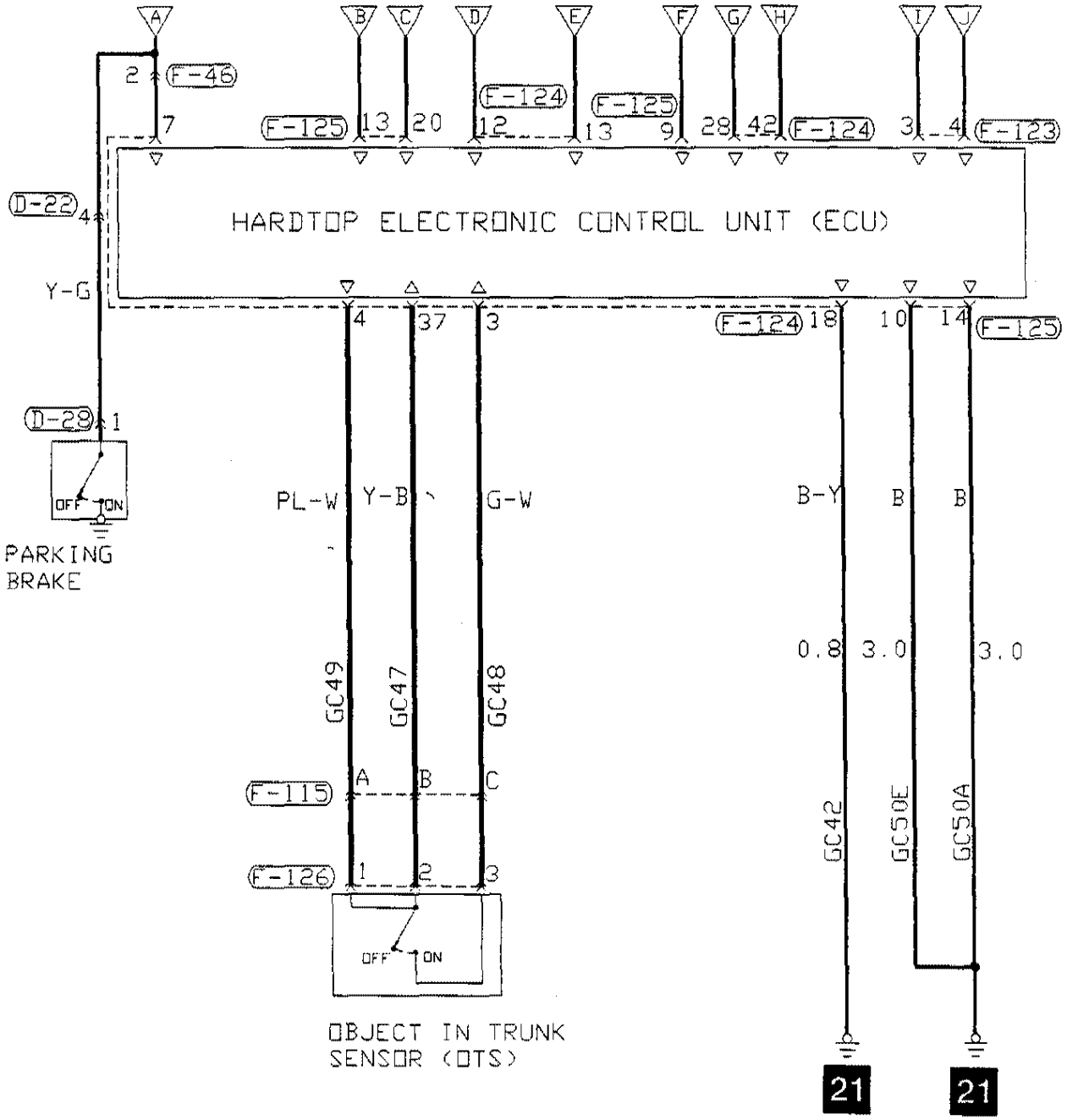


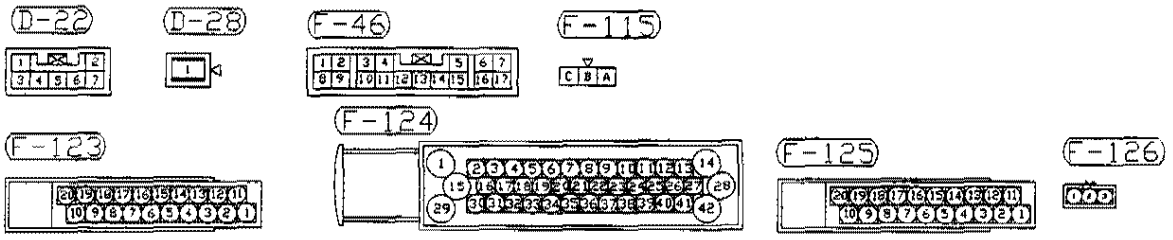


TSB Revision

OBJECT-IN-TRUNK SENSOR CIRCUIT DIAGRAM

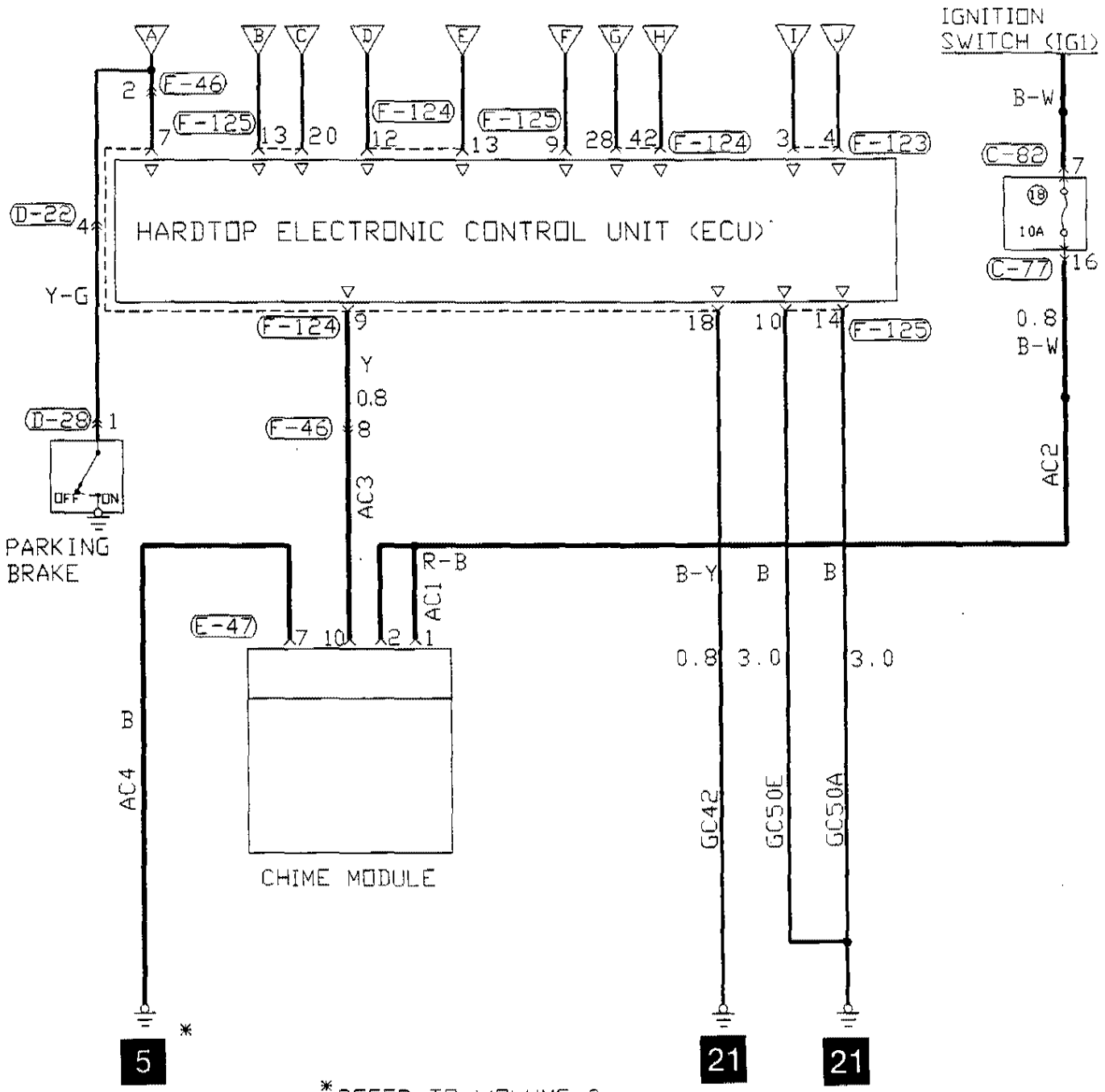
CONTINUED FROM PAGE 134

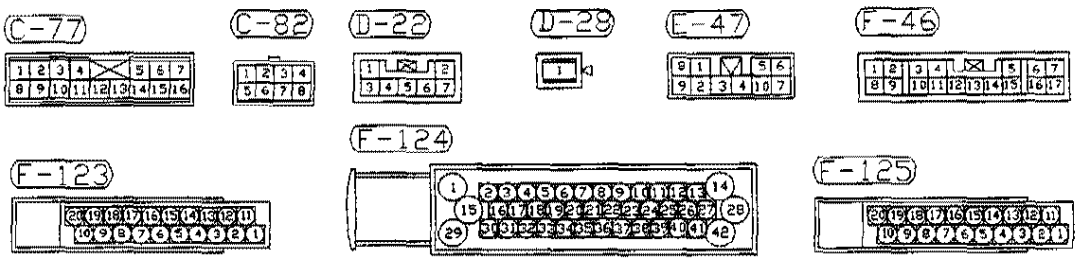




CHIME MODULE CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





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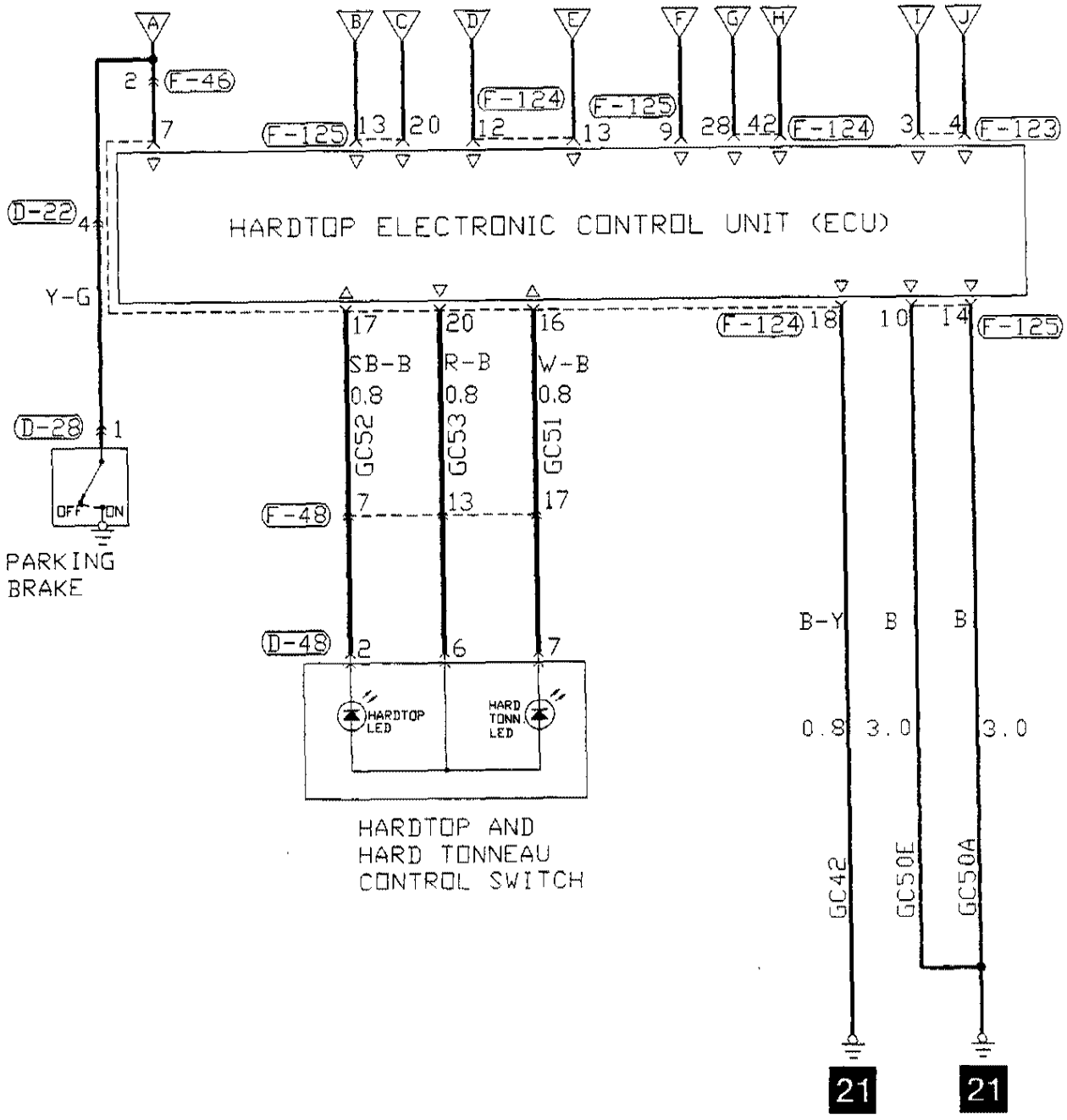
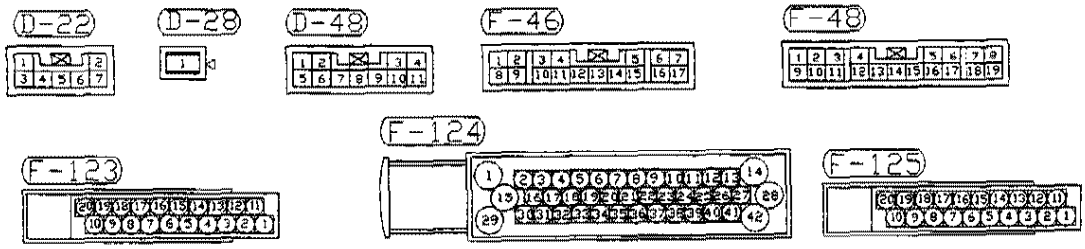
LED's CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





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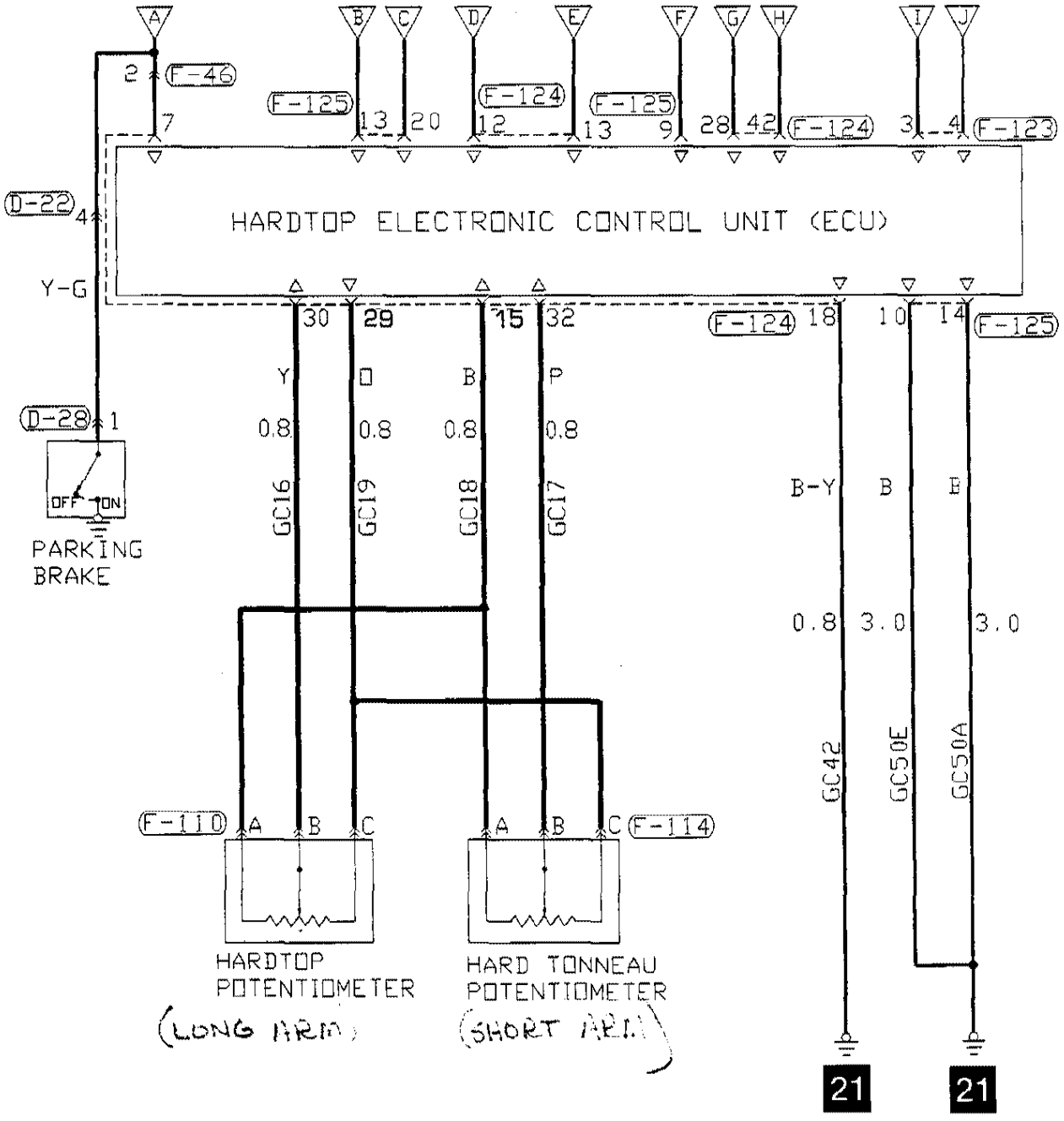
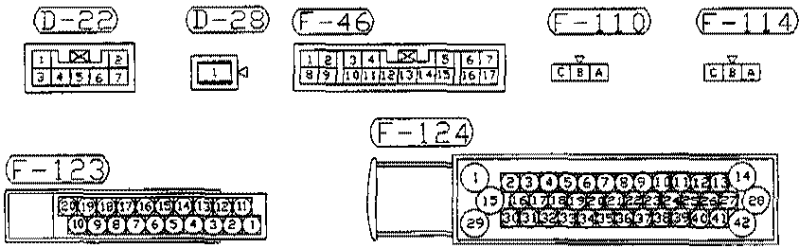
POTENTIOMETERS CIRCUIT DIAGRAM

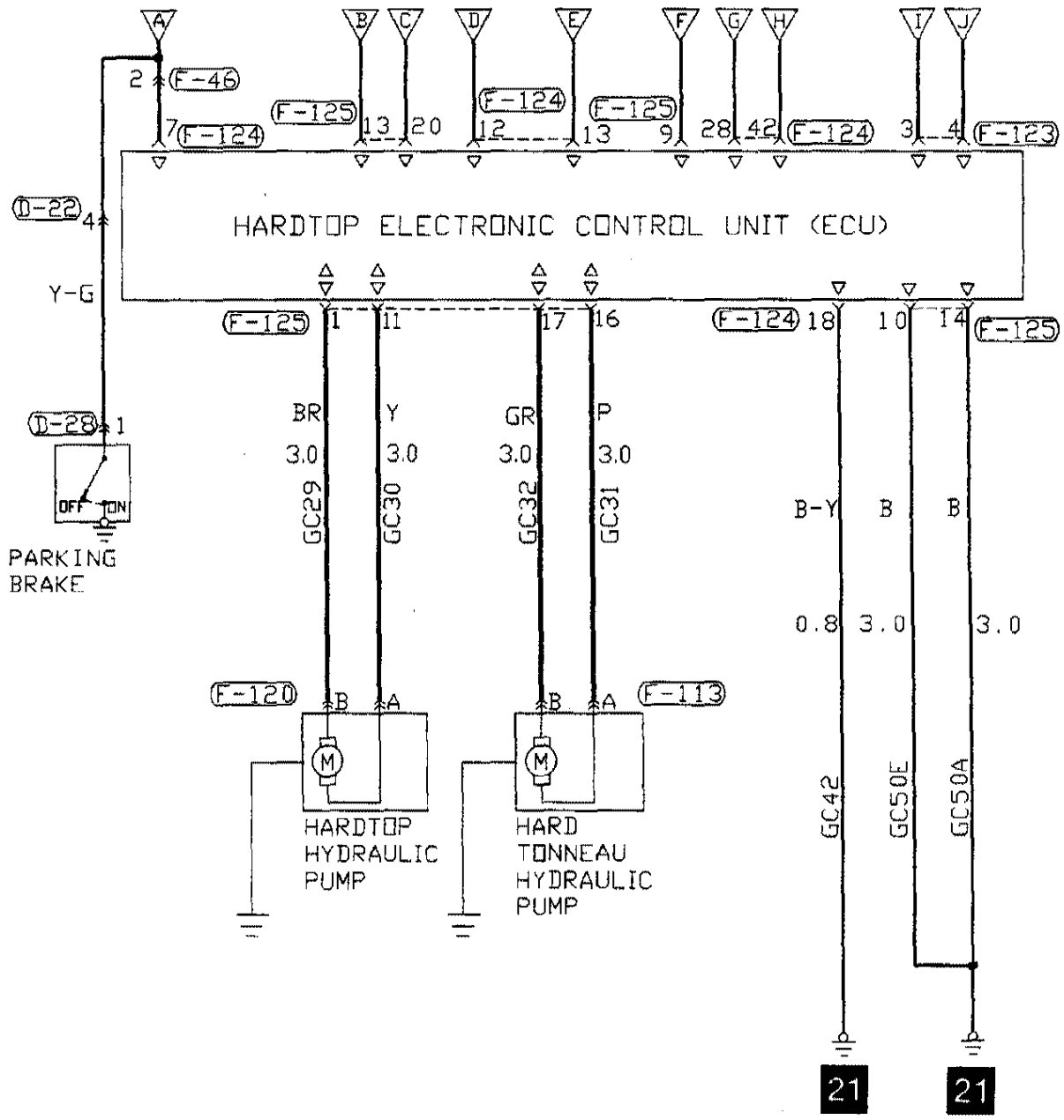
CONTINUED FROM PAGE 134

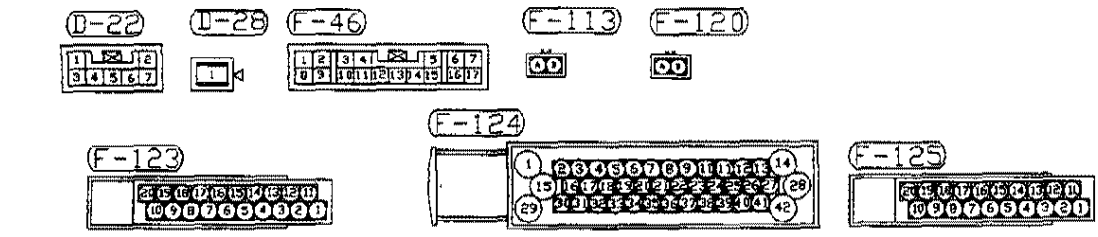




HARDTOP AND HARD TONNEAU HYDRAULIC PUMPS CIRCUIT DIAGRAM

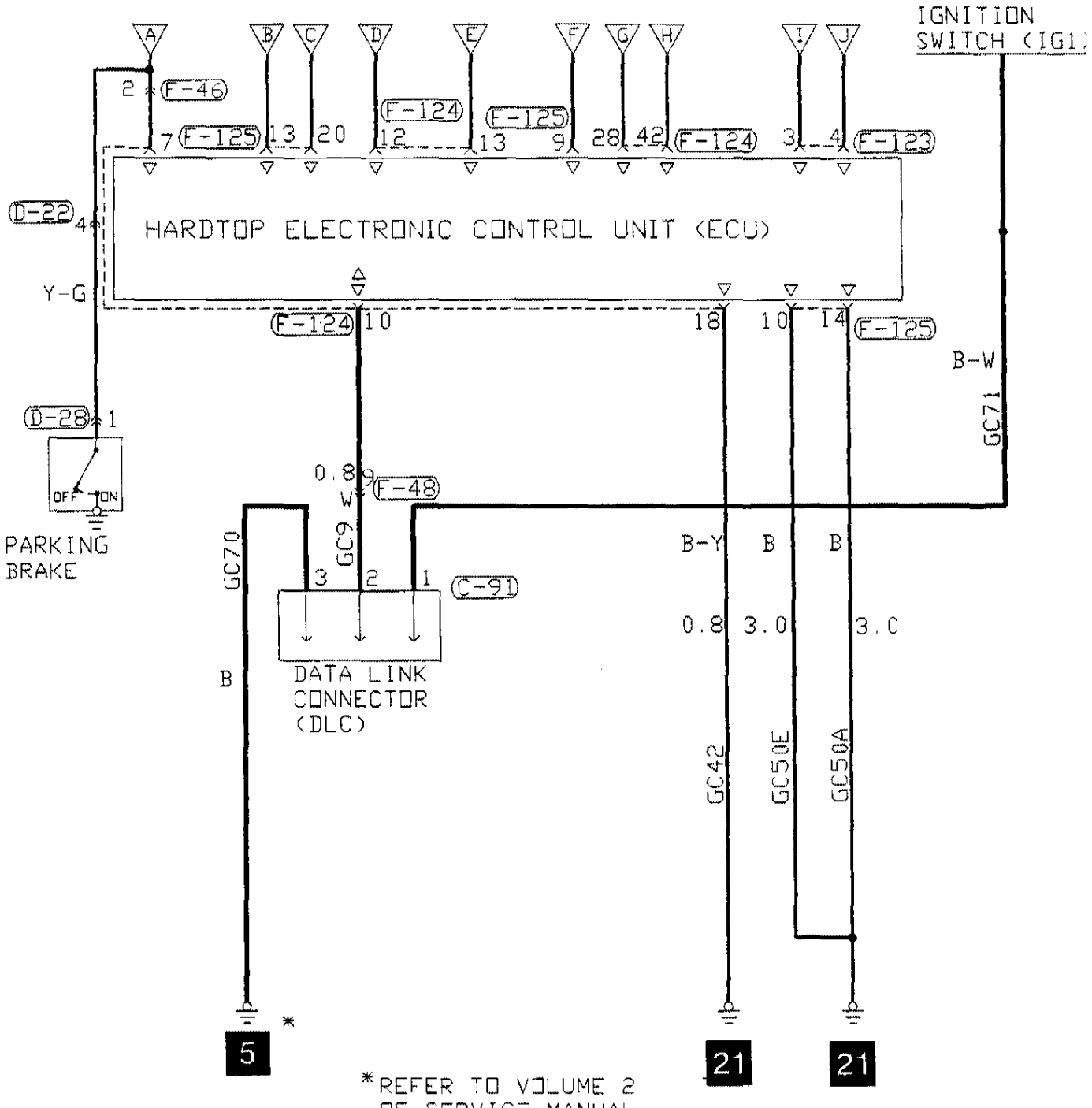
CONTINUED FROM PAGE 134

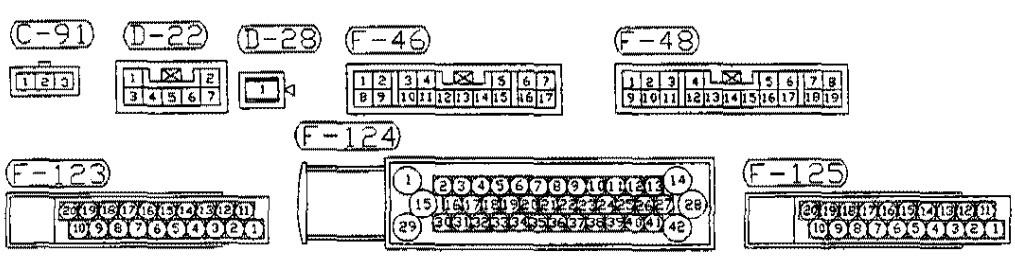




DATA LINK CONNECTOR (DLC) CIRCUIT DIAGRAM

CONTINUED FROM PAGE 134





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SERVICE ADJUSTMENT PROCEDURES

RETRACTABLE HARDTOP ASSEMBLY

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

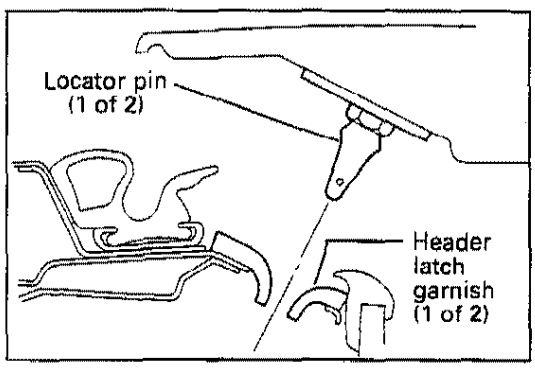
- **ROOF PANELS**
- **UP-STOPS**
- **DOWN STOPS**
- **ROOF CENTER AND REAR HINGES**
- **LOCATOR PINS AND STRIKERS**
- **HEADER LATCH GARNISHES**
- **MAIN PIVOT BRACKETS**
- **BALANCE LINKS**

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.

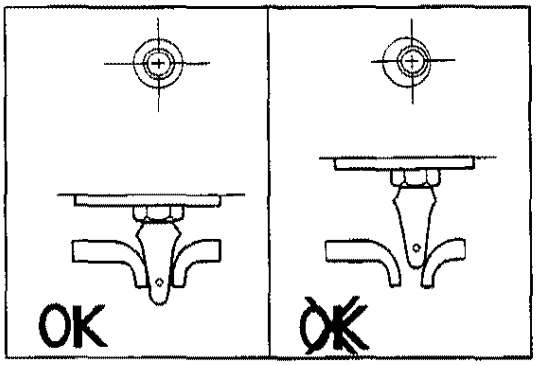
Caution

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.

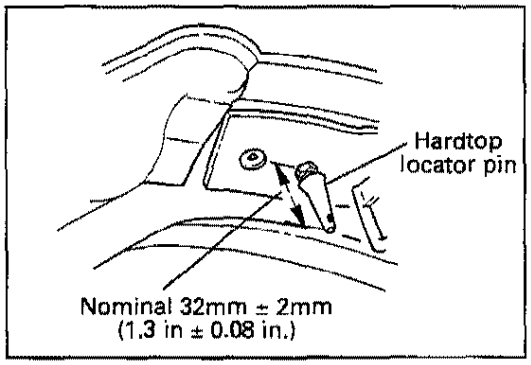


Since the windshield header-to-hardtop location is not adjustable, and the main pivot brackets should not be adjusted, they are the foundation for all hardtop-to-body and tonneau-to-body adjustments.
The interaction between the locator pins and latch garnishes is designed to be smooth and concentric. 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 2 ± mm (1.3 in. ± 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.

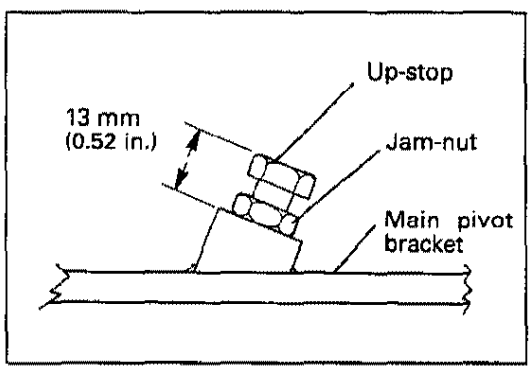
- Replace them if they are worn or damaged. To remove them, remove the attaching bolts and remove the adhesive tape securing the weatherstrip to it.
- If the garnishes are in good condition, go to Step 3.

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

Put Velcro fur on top of bolt (squeak)

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.

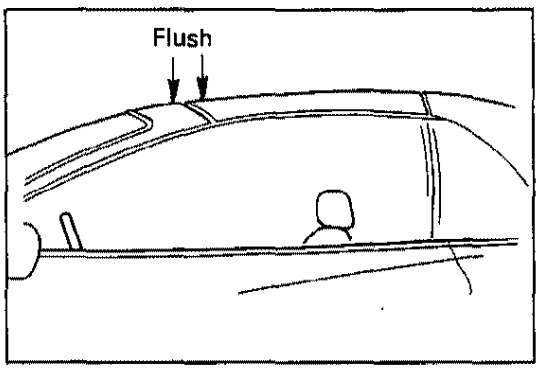
Inspect that the left and right up-stops are at the correct height as shown in the illustration. Adjust as necessary using the following procedure.

(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).

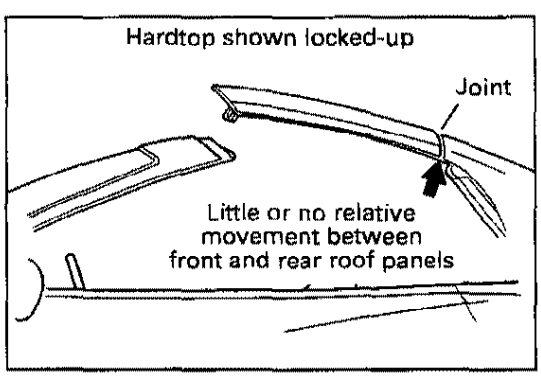
(2) Check for flushness of the hardtop to the windshield header skin.

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

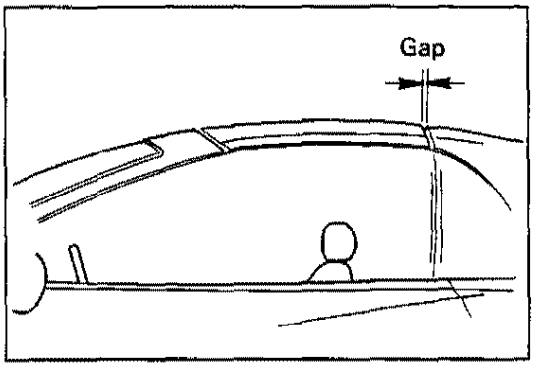
Open, then close, the hardtop several times using the switch. While closing the hardtop observe the front roof panel to be sure it locks-up with the rear roof panel according to the Standard value.

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

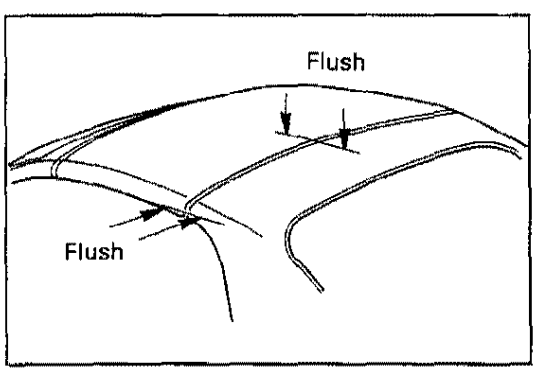
NOTE
When the alignment and/or gap is not correct, this may be attributed to several components such as the balance links are not adjusted properly, the center roof hinges may require shims added or removed, or the center roof hinges are not adjusted or set properly.

Caution
In this particular area of the hardtop, the roof center hinges, balance links, and even the hardtop weatherstrip 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 ± 1.0 mm (0.24 in. ± 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.

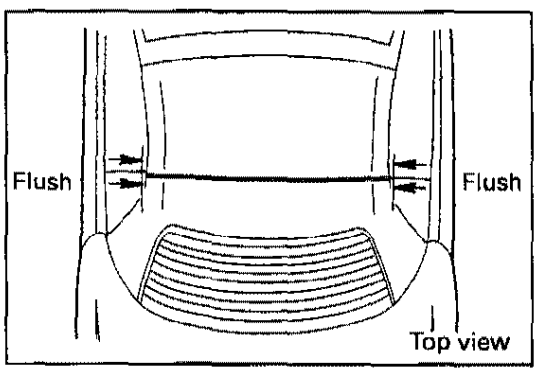


(2) Check the flushness along the gap between the roof panels as shown in the illustration.

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.

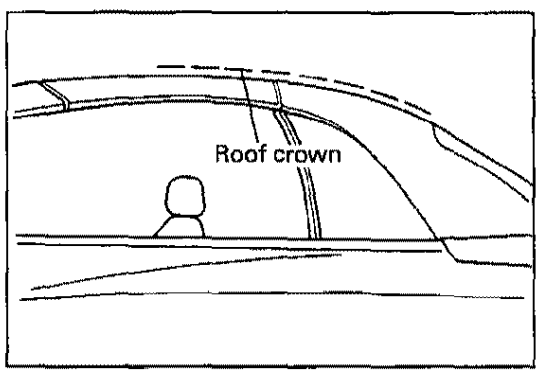


(3) Check the alignment side-to-side of the roof panels to each other along the gap.

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.)

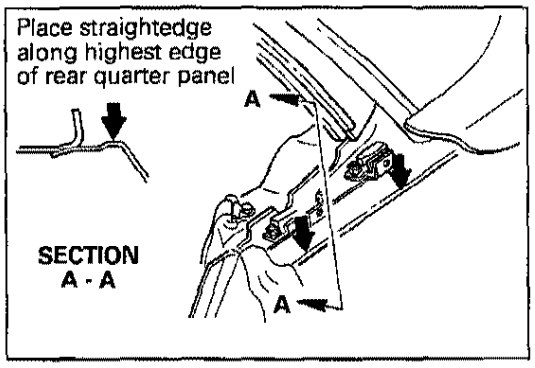
- If the alignment is within the Standard Value, go to Step 10.
- If the alignment is not within the Standard Value, go to Step 11.



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

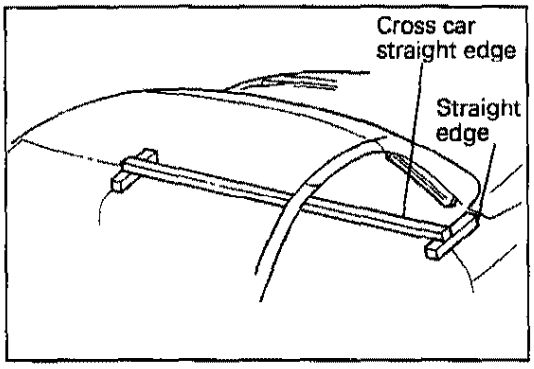
NOTE
1. If the hardtop is improperly crowned it will cause misalignment of the hardtop locator pins to the header latch garnishes, improper sealing of the door windows to the side rail weatherstrips, improper or inconsistent quarter window operation and sealing.
2. An over-crowned roof may be caused 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 mouldings (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.



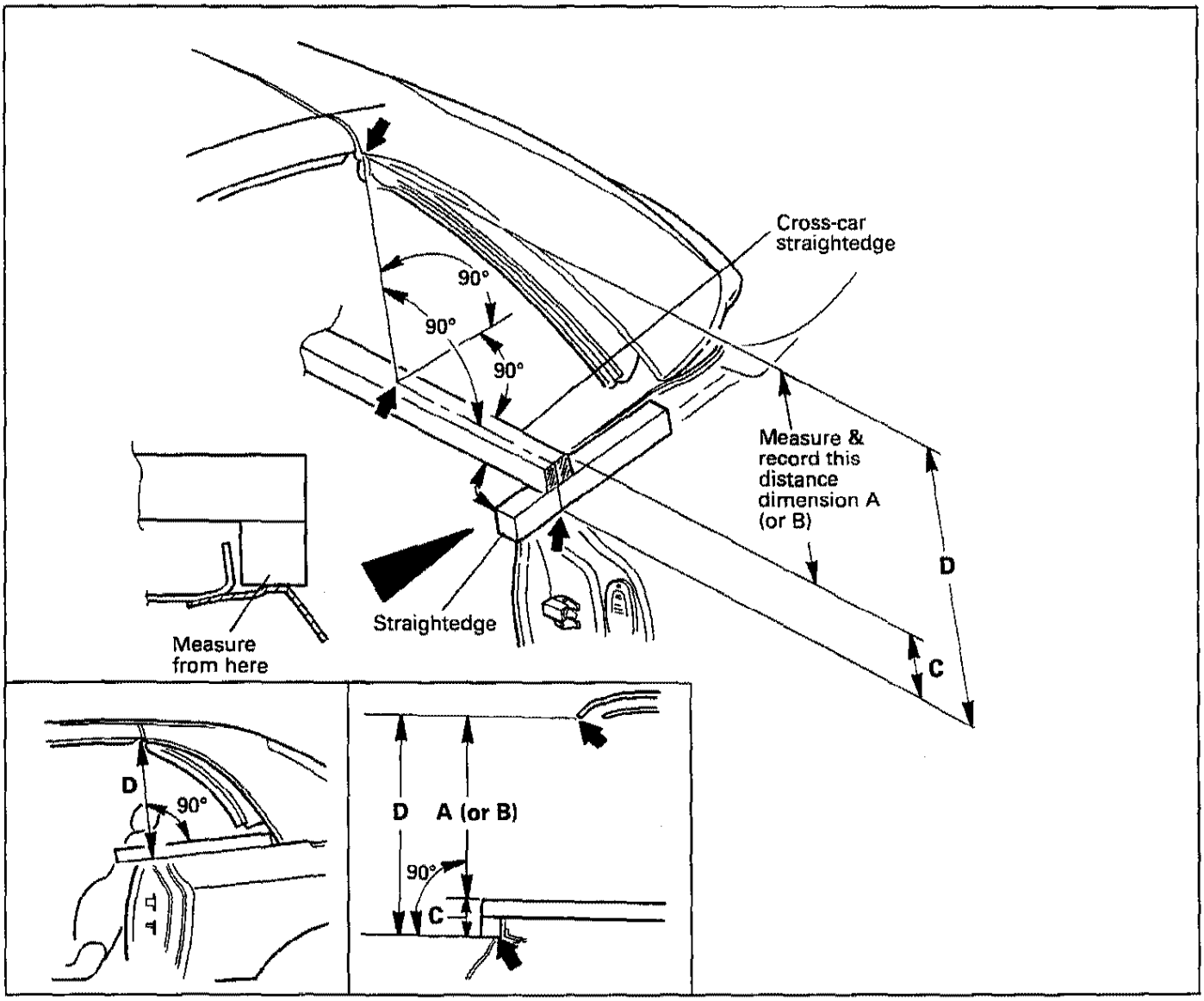
(4) Place a straightedge along the highest point of LH and RH rear fenders as shown in the illustration. The vehicle doors must be open. The straightedge must extend forward past the B-pillar a minimum of 50 mm (2 in.)

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.

Seal can be changed
with ??? for all vac hose
???
???



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).

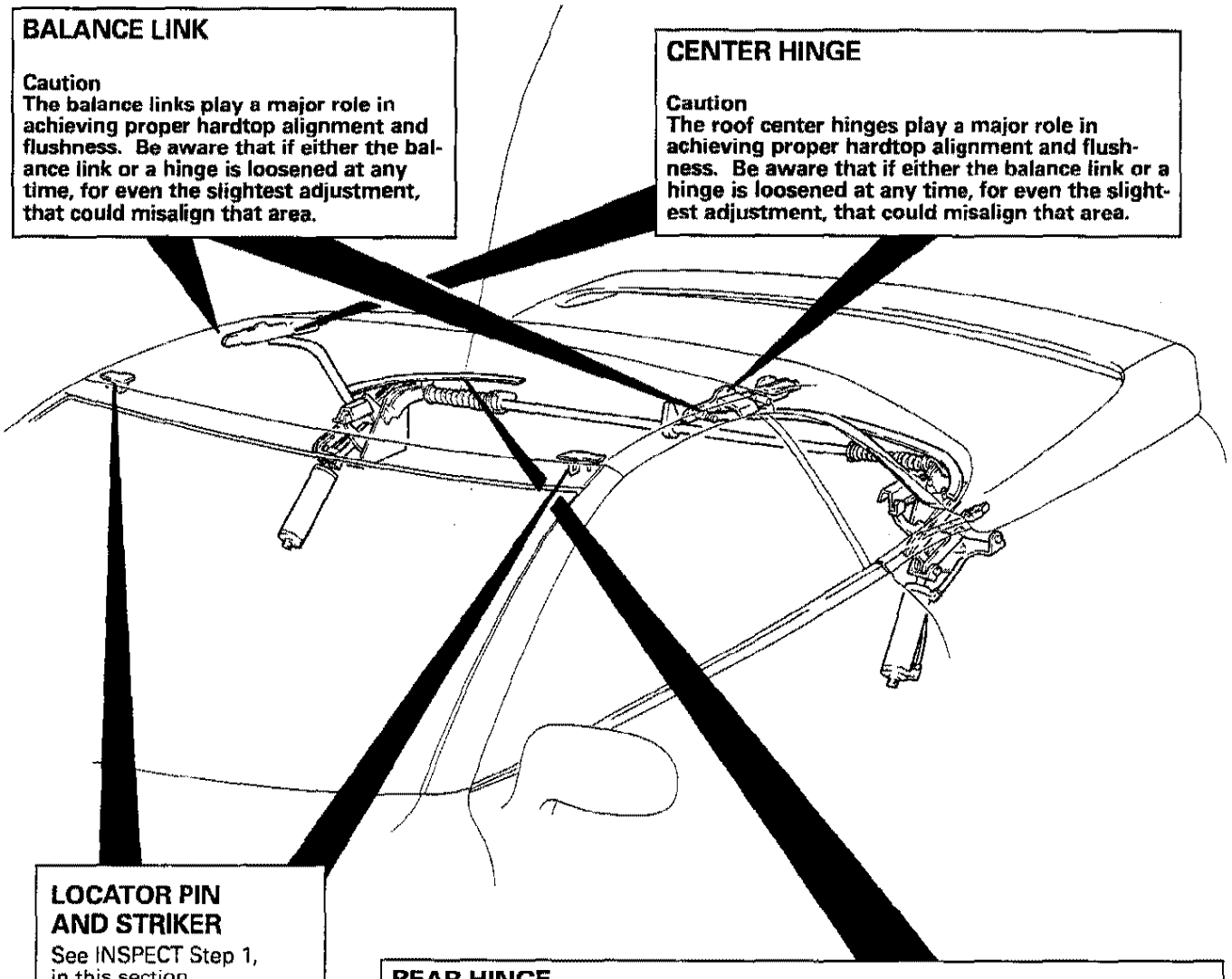
Standard value: 308.43 mm + 2 mm - 1 mm (12.14 in. + 0.08 in. - 0.04 in.)

- 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.

11. Adjust
Adjustment points

lube with white grease
then wipe off if squeaks

Lube with white grease
then wipe off if squeaks



BALANCE LINK

Caution
The balance links 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.

CENTER HINGE

Caution
The roof center hinges 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.

LOCATOR PIN AND STRIKER
See INSPECT Step 1, in this section.

REAR HINGE

Caution
Adjustment should be performed at this location only when all INSPECTION and ADJUSTMENT procedures have proven unsuccessful. If any adjustment is made at this location it will be necessary to INSPECT AND READJUST the entire retractable hardtop system, including the hard tonneau.

If the top is removed both
springs must be unanchored
at half mast or top will bind

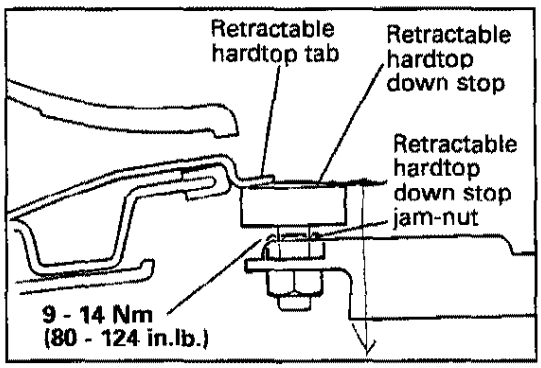
If Top is removed both
springs must be unanchored
at half mast or top will bind

use tri square
or equivalent

RETRACTABLE HARDTOP DOWN STOP

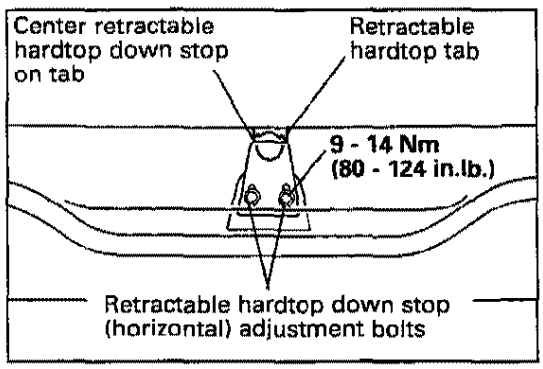
Caution
The hardtop down stop can be adjusted vertically on its two-piece mounting bracket. The bracket can be adjusted horizontally without affecting down stop height.
Mechanical adjustment to, or replacement of, the retractable hardtop system components will require that the hardtop ECU be run through "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.

1. Verify that the retractable hardtop is adjusted properly when in the closed position (refer to RETRACTABLE HARDTOP ASSEMBLY, in this section).
2. Open the hardtop using the hardtop "OPEN" switch. Release the switch before the hard tonneau begins to close.



3. Check alignment of hardtop-mounted tab to hardtop down stop.

   Standard Value: Tab resting on down stop bumper and centered side-to-side forward on bumper. Continue to Step 4.



4. Adjust down stop side-to-side to hardtop tab.
   (1) Loosen bracket bolts and adjust down stop to the Standard Value in Step 3. Tighten bracket bolts.

   Standard Value: 9 - 14 Nm (80 - 124 in.lb.)

5. **DOWNSTOP HEIGHT ADJUSTMENT**
   1. Close and latch the hardtop.
   2. Open the hard tonneau.
   3. Make sure object-in-trunk sensor is properly positioned.
   4. Loosen the hardtop down stop jam-nut.
   5. Measure from the top of the object-in-trunk sensor carpet to the top of the hardtop down stop.
   6. Adjust to 31 mm ± 1 mm (1.21 in. ± .002 in.).
   7. Tighten the hardtop downstop jam-nut.

   Standard value: 9 - 14 Nm (80 - 124 in.lb.)

   8. Check and adjust downstop lock. Refer to DOWNSTOP LOCK ADJUSTMENT in this section.
   9. Run the hardtop ECU through Auto-configuration.

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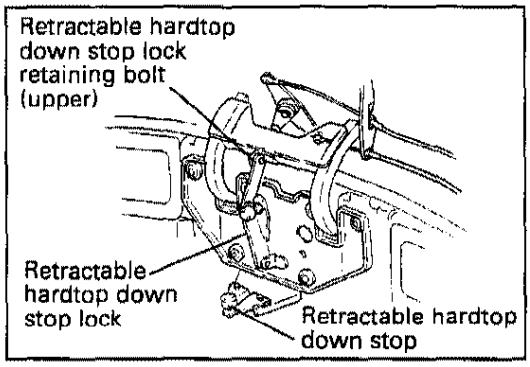
DOWNSTOP LOCK ADJUSTMENT

1. Verify that the hardtop down stop is adjusted properly, refer to Retractable hardtop down stop, in this section.
2. Close the retractable hardtop.
3. Open the hard tonneau.

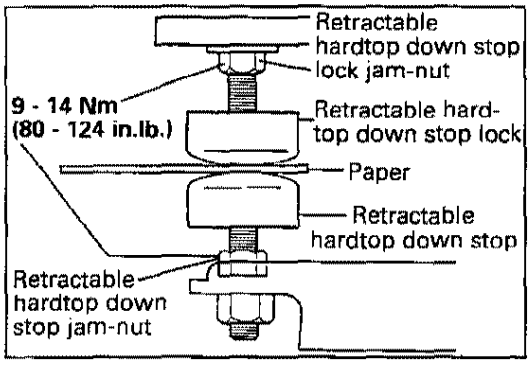


4. Remove the upper hardtop down stop lock retaining bolt.
5. Lower the hardtop down stop lock against the down stop.
6. Loosen the hardtop downstop lock jam-nuts and align the hardtop downstop lock to the hardtop downstop. Tighten jam-nuts and mark the location of the jam-nuts.

   Standard value: 9 - 14 Nm (80 - 124 in.lb.)

7. Install the hardtop downstop lock retaining bolt. Tighten the hardtop downstop lock retaining bolt.

   Standard value: 9 - 14 Nm (80 - 124 in.lb.)



8. Lower both rear seatbacks.
9. Place a sheet of paper on top of the hardtop downstop.
10. Close the hard tonneau.
11. Reaching in through the rear seatback area, pull the paper from between the hardtop down stop and the hardtop down stop lock. There should be a drag on the paper.
12. Adjust hardtop down stop lock as necessary to attain proper gap.
13. Make sure hardtop down stop lock is aligned with the mark, to ensure proper alignment with hardtop down-stop.
14. Run the hardtop ECU through Auto-configuration.

WINDSHIELD HEADER POWER LATCH SYSTEM

Caution
Mechanical adjustment to, or replacement of, the header latch 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.

LATCH ACTUATOR ADJUSTMENT

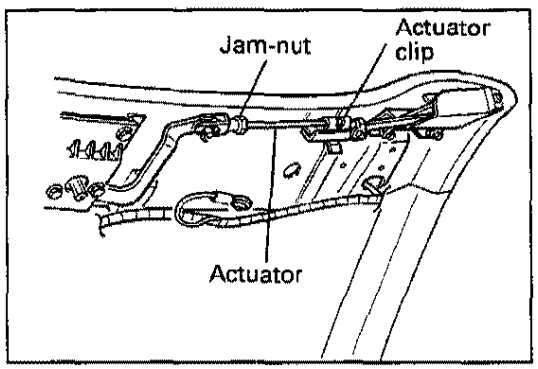
1. Check that the hardtop assembly is adjusted correctly (refer to SERVICE ADJUSTMENT PROCEDURES - RETRACTABLE HARDTOP ASSEMBLY in this section).

   NOTE
   The hardtop locator pins determine the flushness of the hardtop to the windshield header, and must be adjusted correctly before proceeding. (Refer to RETRACTABLE HARDTOP ASSEMBLY - in this section).

2. Open the hardtop using the hardtop control switch.

   NOTE
   If the hardtop cannot be opened using the hardtop control switch, it will be necessary to open the hardtop manually. Refer to Manual Operation - Retractable Hardtop - Opening Retractable Hardtop in GROUP-00 in this manual.

3. Remove the windshield header garnish. (Refer to GROUP 52, in this Manual).
4. Loosen the actuator jam-nuts on LH and RH actuators.
5. Release LH and RH actuator retaining clips and remove both actuators from the latches.
6. Move the latches to the full open (outboard) position.



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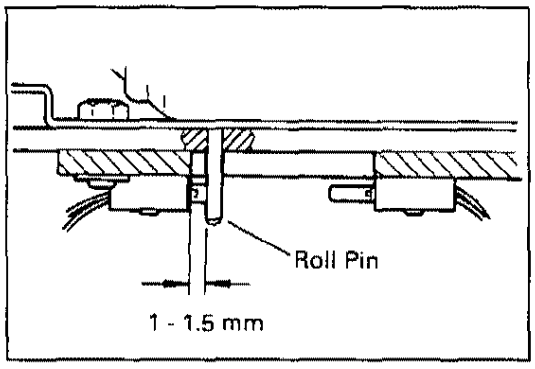


7. Inspect and measure the distance from the side of the limit switch actuator pin to the end of the slot in the plastic rack arm guide.

   Specification: 1 - 1.15 mm from the side of the pin to the end of the slot.

   - If the distance is within specification, go to Step 9.
   - If the distance is not within specification, go to Step 8.

8. Manually drive the header latch, using the header latch manual operation wrench, to achieve the desired specification.

   NOTE
   The pin must actuate the OPEN limit switch at this location.

9. Adjust both actuators a few turns at a time until they line up with the holes in the latches.

   Caution:
   Immediately remove the header latch manual operation wrench. Otherwise, personal injury may result when the header latch is operated.

10. Reconnect the actuators in the latches and secure with clips.
11. Tighten the jam-nuts.

    Standard value: 6 - 8 Nm (54 - 71 in.lb.)

12. Operate the hardtop 2 or 3 cycles to verify proper operation.
13. Reinstall windshield header garnish.
14. Run hardtop ECU through Auto-configuration, refer to Diagnostics and Testing in this section.

NOTES

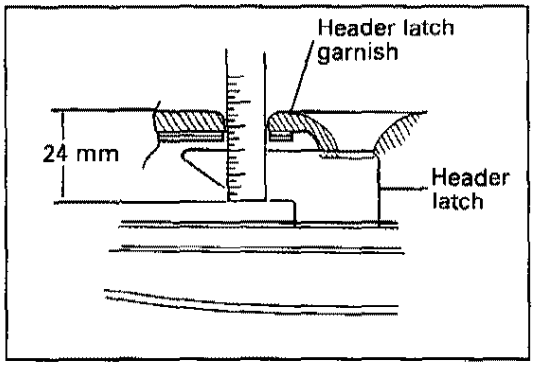
LATCH HEIGHT ADJUSTMENT

1. Check that the hardtop assembly is adjusted correctly. Refer to SERVICE ADJUSTMENT PROCEDURES - RETRACTABLE HARDTOP ASSEMBLY, in this section.
2. Open the hardtop using the hardtop control switch.

NOTE
If the hardtop cannot be opened using the hardtop control switch, it will be necessary to open the hardtop manually. Refer to Manual Operation - Retractable Hardtop - Opening Retractable Hardtop in GROUP-00 in this manual.

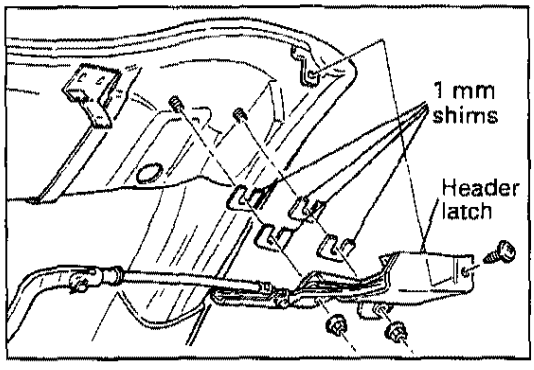
NOTE
The hardtop locator pins determine the flushness of the hardtop to the windshield header, and must be adjusted correctly before proceeding. (Refer to ADJUSTMENT OF THE RETRACTABLE HARDTOP SYSTEM, in this section).

3. Remove the windshield header garnish. (Refer to GROUP 52, in this manual).
4. Manually close the header latches.



5. Measure the distance from the bottom of the latch to the top of the header latch garnish.

Standard value: 24 ± 1mm (.944 ± .04 inch)



6. Install or remove 1mm (.04 inch) shims between the latch and the header structure to achieve desired dimension.

NOTE
If desired dimensions cannot be achieved, inspect latch and header latch garnish and service as required.

POWER QUARTER WINDOW

Caution
Mechanical adjustments to, or replacement of, the quarter window 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.

Caution
Mechanical adjustment to, or replacement of, the quarter window system components will require that the retractable quarter window extend and retract sensors be adjusted.

Description

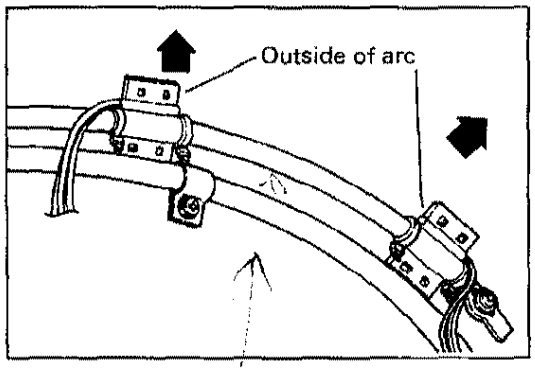
The power quarter windows are housed in the hardtop rear roof section. The quarter windows are driven by a single electric motor that is controlled only by the hardtop system ECU. No switch is provided to operate the quarter windows independently of the hardtop system.

Unlike conventional quarter windows that lower into the body cavity, a pivot at the top of each window allows the glass to retract into the hardtop toward the rear window.

Each window has two plastic guides mounted on the body structure. These guides maintain the proper door glass-to-quarter window sash seal contact. When the hardtop and/or quarter window is not adjusted properly the windows may bind on the guides, causing the hardtop ECU to sense stall current which turns off the motor. The drive motor is also controlled through the ECU by time, or by the position sensors, whichever comes first.

Each window has a spirally wound drive cable that functions as a flexible, rack-like gear. The cable's spiral winding functions similar to teeth on a rigid rack-type gear. The helical gear on the drive motor meshes with the cable's "teeth", driving the cable in or out depending on gear (motor) rotation.

Quarter window opened and closed positions are sensed by two position sensors located on the right-hand quarter window cable return tube. The sensor nearest the drive motor senses the fully-closed (extended) position. The other sensor senses the fully-open (retracted) position. The position sensor consists of an adjustable position, reed-type switch that is saddle-mounted around the cable return tube. The sensors are tripped by a small magnet on the end of the right-hand drive cable. The ECU cannot determine what position the windows are in if they are neither fully open or fully closed.



Magnet
on cable
(back)

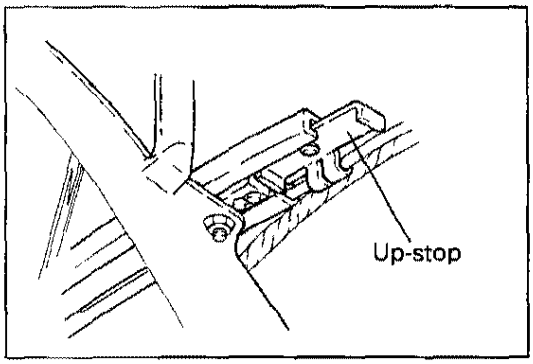
For optimal performance the sensor should be located on the outside arc of the cable return tube. This will ensure the magnet will be in closer proximity to the sensor than if it was on the inside arc of the tube.

Caution
The positions of quarter window position sensors are critical for proper operation of not only the quarter window system but the hardtop system as a whole. Damage can occur to the quarter windows, hardtop, and hard tonneau if the position sensors are not properly adjusted. Personal injury could result.

SYNCHRONIZATION OF QUARTER WINDOW CABLES

NOTE
(1) Whenever one quarter window is serviced, the other should be inspected for alignment, wear, or breakage, especially when the drive cables are suspect.
(2) Whenever the quarter window drive motor is removed and replaced the quarter windows must be synchronized.
(3) Synchronization should only be performed on a quarter window system that is known to be in good working order.

1. Open the retractable hardtop halfway.
2. Remove the headlining from the rear roof section. (Refer to GROUP 52, in this Manual.)
3. Remove the quarter window drive motor.
   (1) Disconnect the harness connector.
   (2) Remove the bolts securing the motor, and remove the motor.



4. Manually push (retract) both quarter windows into the hardtop until they contact the up-stops as shown in the illustration.
5. Reinstall and reconnect the quarter window drive motor.

   Standard value: 2 - 5 Nm (18 - 44 in.lb.)

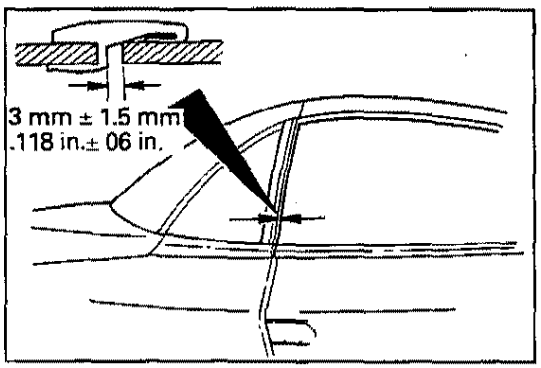
   NOTE
   Do not disturb the cables as the drive gear meshes with them. Otherwise the synchronization will be off by one or more "teeth" on the cable, which will cause the windows not to open or close at their original adjusted position.

6. Re-install the headlining (see GROUP 52, in this Manual).

QUARTER WINDOW ADJUSTMENT

NOTE
In order for the quarter windows to operate properly, the hardtop MUST be properly adjusted to the vehicle body, and the door glass properly adjusted to the hardtop. Otherwise, the quarter windows may bind in the quarter glass guides located on the body. This will cause poor door glass-to-sash seal contact and/or inconsistent or unrepeatable closing of the windows.

Caution
DO NOT attempt to adjust the quarter windows unless you are sure the hardtop is adjusted properly. If the hardtop is not adjusted properly and the quarter windows are adjusted to conform to the maladjusted hardtop, the door glass will not be in the correct position to the A-pillar and hardtop weatherstrips. Damage to the hardtop weatherstrips may occur,water leaks and possibly wind noise may develop.



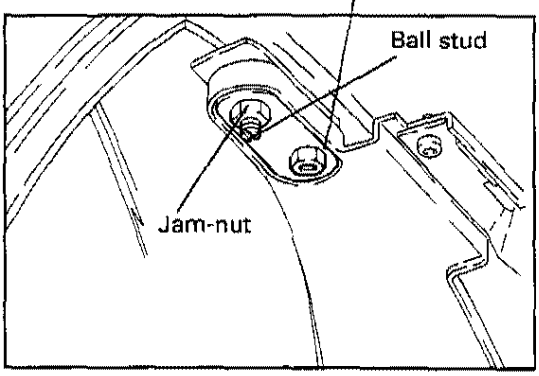
INSPECT

1. Close and latch the hardtop, and close both vehicle doors with the door windows fully up.
2. Inspect the gap between the sash seal and the door glass rear edge.

   Standard value: Constant 3 mm ± 1.5 mm (.118 in. ± 0.6 in.) gap between door glass edge and sash seal

   - If gap is within the standard value, go to Step 5.
   - If gap is not good, go to Step 4.

Will give you slight fore/aft movement



4. Adjust the door glass-to-sash seal gap.

   Top of window:

   (1) Remove the headlining from the rear roof section. Refer to Group 52, in this Manual.
   (2) Use a screwdriver to hold the ball stud (DO NOT rotate stud), and loosen the ball stud jam-nut.
   (3) Loosen the ball stud tapping plate nut.
   (4) Slide the window fore or aft to the Standard value in Step 3.

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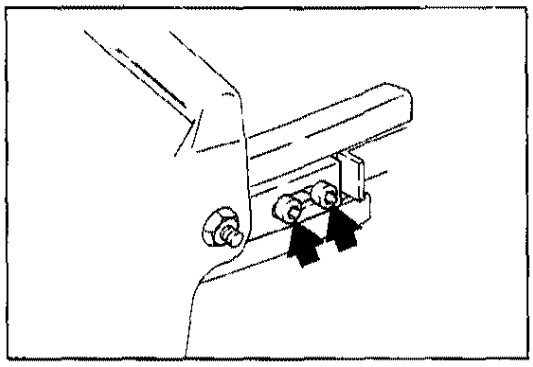
(5) Tighten the nut, and hold the ball stud and tighten the jam-nut.

Standard value: 2.8 - 4.2 Nm (25 - 37 in.lb.)

(6) Close the vehicle doors. Using the hardtop "CLOSE"/"OPEN" switch, open the windows partway, and then fully close them.
(7) Inspect the gap.

- If the gap is within the standard value, go to Step 5.
- If the gap is not OK, go to **Bottom of window**, in this Step 4.



Bottom of window:

NOTE
If there is no more mechanical adjustment available to extend the quarter windows, it may be necessary to adjust the quarter window extend position sensor.

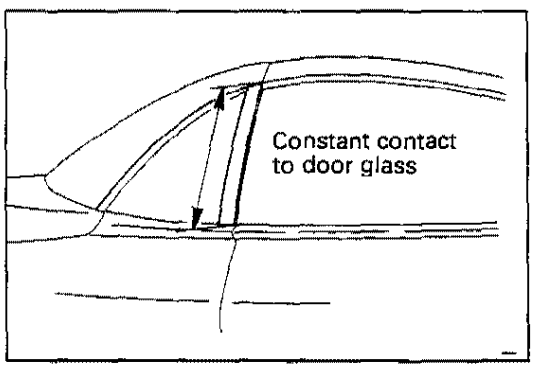
(1) Loosen the bolts holding the swivel to the drive cable.
(2) Manually pull/push the glass closed to achieve the desired gap.
(3) Tighten the bolts.

Standard value: 6 - 8 Nm (53 - 71 in.lb.)

(4) Close the vehicle doors. Using the hardtop "CLOSE"/"OPEN" switch, open the windows partway, and then fully close them.
(5) Inspect the gap.

NOTE
Gap adjustments to one window will usually change the gap of the other window. Always check the other window after making gap adjustments.

- If the adjustments did not yield the desired result, repeat the above.
- If the gap is OK, go to Step 5.

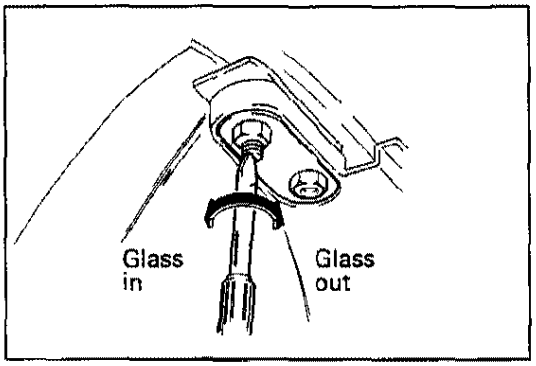


5. Inspect the contact of the sash seal to the door glass.
(1) Close and latch the hardtop, and close both vehicle doors.
(2) Inspect the contact of the sash seal to the door glass.

Standard value: Constant contact of door glass to sash seal

- If contact is good, go to ADJUSTMENT OF QUARTER WINDOW GUIDING SYSTEM (RUDDER), in this section.

- If contact is not good, go to Step 6.



6. Adjust the door glass-to-sash seal contact.

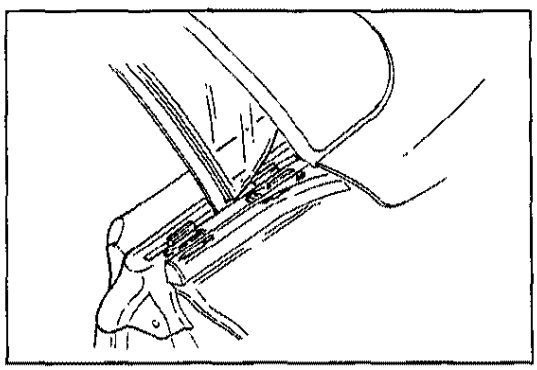
Top of window:

(1) Use a screwdriver to hold the ball stud, loosen the ball stud jam-nut.
(2) Adjust the window to the Standard value in Step 4 by rotating the ball stud.

Standard value: In = Counterclockwise
Out = Clockwise

(3) Close the vehicle doors. Using the hardtop "CLOSE"/"OPEN" switch, open the windows partway, and then fully close them.
(4) Inspect the contact.

- If contact is good, tighten the ball stud jam-nut, go to ADJUSTMENT OF QUARTER WINDOW GUIDING SYSTEM (RUDDER), in this section.
- If contact is not good, go to **Bottom of window** in this Step.



Bottom of window:

(1) Loosen the quarter window guides to adjust the window to the Standard value in Step 4.
(2) Tighten quarter window guide nuts.

Standard value: 2.8 - 4.2 Nm (25 - 37 in.lb.)

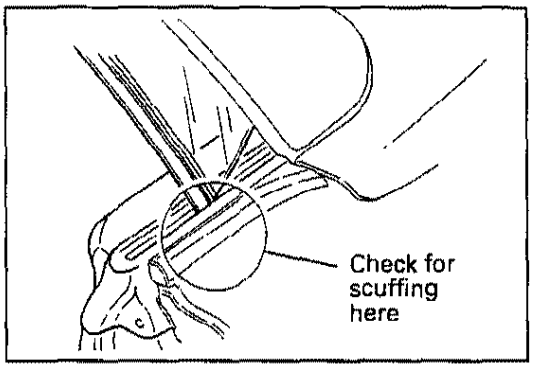
(3) Close the vehicle doors. Using the hardtop "CLOSE"/"OPEN" switch, open the windows partway, and then fully close them.
(4) Inspect the contact.
(5) Go to ADJUSTMENT OF QUARTER WINDOW GUIDING SYSTEM (RUDDER), in this section.

Don't over tighten or plastic breaks

ADJUSTMENT OF QUARTER WINDOW GUIDING SYSTEM (RUDDER)

NOTE
A rudder-like arm attached to the rear of the window steers the window along a slide (cam) while the quarter windows

open and close. The "rudder" steers the window into the quarter window guides, located on the vehicle body, as they close.
When the rudder system is not adjusted properly the window may contact the quarter belt molding causing scuffing or damage.
The rudder does not directly affect adjustment of the quarter window system in general, but will provide optimum operational performance.



INSPECT

NOTE
The quarter window system must be adjusted properly before attempting to adjust the rudder system.

1. Inspect the quarter belt mouldings for scuffing or damage.
   - If damage is noted, go to Step 2.
   - If damage is not noted, go to Step 3.

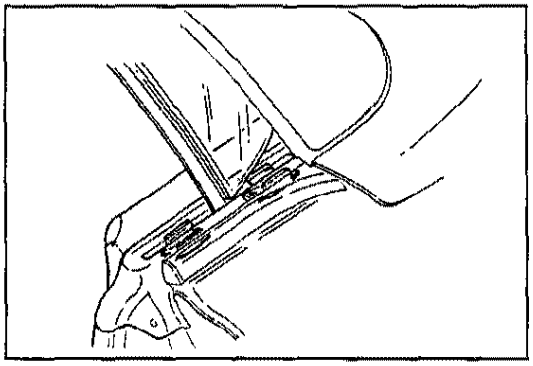


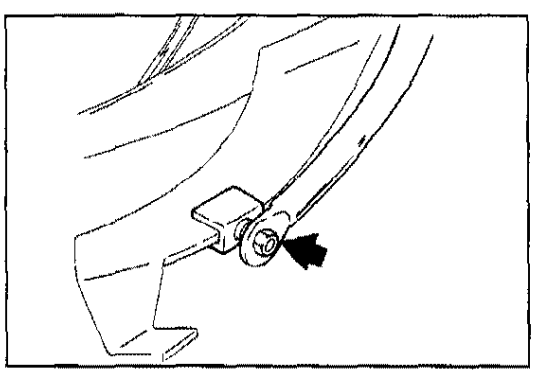
Illustration shown with top ???

Shown upside down

2. Inspect the operation of the window rudder system.
   (1) Close and latch the hardtop.
   (2) Open the vehicle doors. Using the hardtop "CLOSE"/"OPEN" switch, fully open and close the windows several times noting the relationship of motion of the quarter window into the quarter window guides located on the vehicle body.

   Standard value:
   - **Windows do not tend to ride close to the quarter belt mouldings.**
   - **The motion of the windows into the quarter window guides is smooth.**

   - If the motion is acceptable according to the Standard value, the procedure is complete; check other areas of the quarter window system for problems if a problem still exists.
   - If the motion is not OK according to the Standard value, remove all the rear headlining (refer to GROUP 52, in this Manual), and go to Step 3.



3. Adjust the quarter window rudder system.
   (1) Open the windows using the hardtop "OPEN" switch.
   (2) Loosen the nut on the yoke swivel holding the window rudder.

   NOTE:
   Check the jam-nut for tightness which prevents the stud from moving in the yoke.

(3) Close the hardtop. As the quarter windows are closing, release the switch just before they contact the quarter belt moulding and the quarter window guides.
(4) Push the end of the rudder outboard until it stops. This will push the window inboard. Tighten the yoke swivel nut.

Standard value: 2.8 - 4.2 Nm (25 - 37 in.lb.)

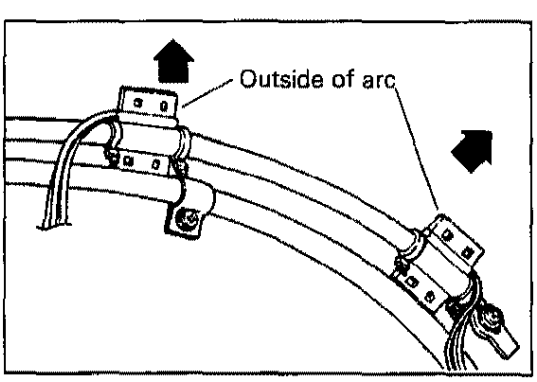
(5) Open and close the windows several times to check for proper operation.
(6) Go to ADJUSTMENT OF QUARTER WINDOW POSITION SENSORS, in this section.

ADJUSTMENT OF QUARTER WINDOW POSITION SENSORS

Caution
Mechanical adjustments to, or replacement of, the quarter window position sensors 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.

Description

Quarter window open and close positions are sensed by two position sensors located on the right-hand quarter window cable return tube (left hand side of the vehicle). The sensor nearest the drive motor senses the fully-closed (extended) position. The other sensor senses the fully-open (retracted) position. The position sensor consists of an adjustable position, reed-type switch that is saddle-mounted around the cable return tube. The sensors are tripped by a small magnet on the end of the right-hand drive cable. The ECU cannot determine what position the windows are in if they are neither fully-open or fully closed.



For optimal performance the sensors should be located on the outside arc of the cable return tube. This will ensure the magnet will be in closer proximity to the sensor than if it was on the inside arc of the tube.

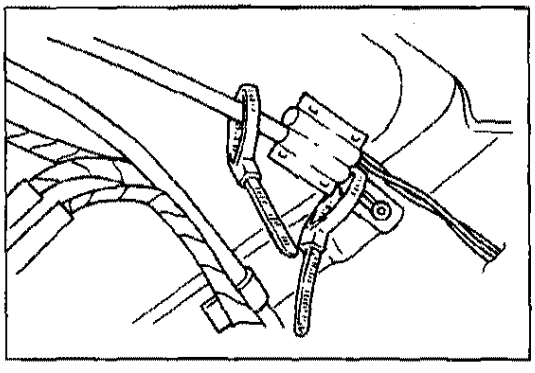
Caution
The positions of quarter window position sensors are critical for proper operation of not only the quarter window system but the hardtop system as a whole. Damage can occur to the quarter windows, hardtop, and hard tonneau if the position sensors are not properly adjusted. Personal injury could result.

TSB Revision

NOTE
This procedure should be performed for both position sensors.

1. Remove rear headlining (refer to GROUP 52, in this Manual).
2. Using the hardtop "OPEN" switch, open the quarter windows.
3. When the windows retract be sure they contact the hard up (retract) stops.
4. Disconnect the retract position sensor harness connector.
5. Remove the existing wire ties next to the sensors.
6. Loosely install new wire ties next to the sensors. They will be tightened later after the sensors are set.
7. Bring the retract position sensor/holder to its end limit on the return tube. Otherwise, accuracy and sensitivity will be compromised.

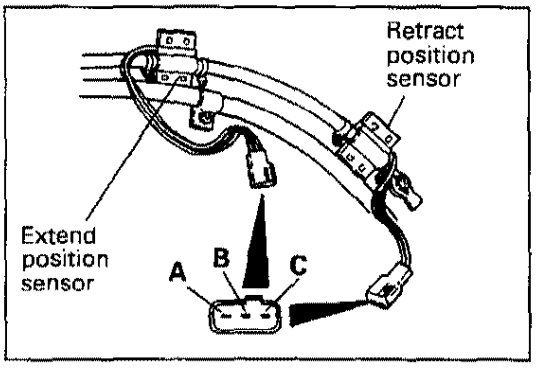
NOTE
The position sensors must face each other; the sensor wires must point away from the adjacent sensor.



8. Check and set the position of the sensor.

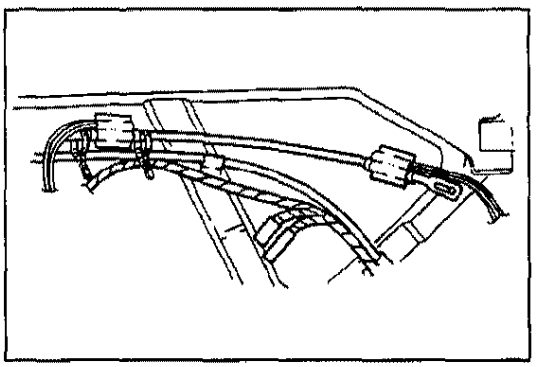
Standard value:

Retract Position Sensor Measured terminal	With quarter window extended (closed)	With quarter window retracted (open)
B and C	No continuity	Continuity
A and B	Continuity	No continuity

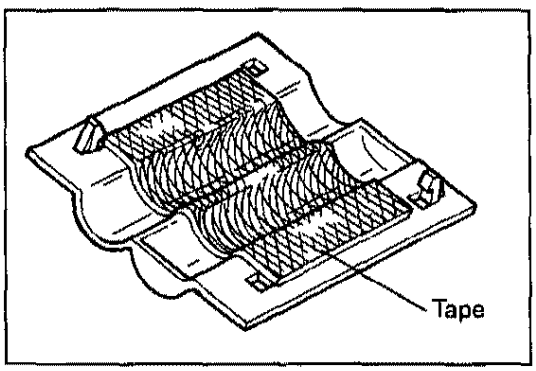


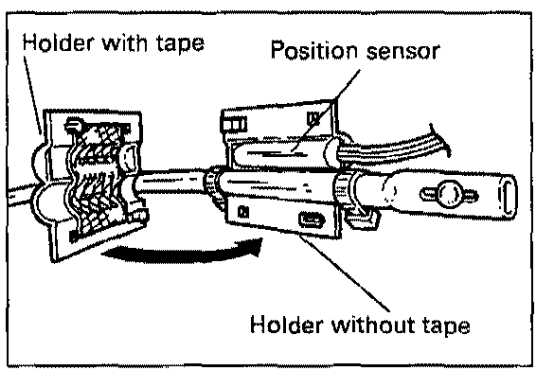
Extend Position Sensor Measured terminal	With quarter window extended (closed)	With quarter window retracted (open)
B and C	Continuity	No continuity
A and B	No continuity	Continuity

9. To set the retract sensor, slowly and in very small increments, move the sensor/holder toward the drive motor. If you go too far past the magnet, start over again with the magnet at its outer limit, and repeat the process. Hold the sensor/holder in position and mark its position. Then measure and mark 2 mm inboard of the holder on the return tube. Move the holder to the new mark and slide the two wire ties next to the holder and tighten firmly, but not so tight as to deform the return tube.

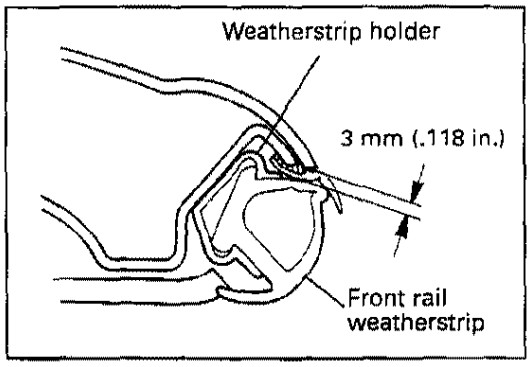


10. Reconnect the retract position sensor.
11. Using the hardtop "CLOSE" switch, close the quarter windows.
12. Disconnect the extend position sensor.
13. Close the windows until they contact the hard down (extend) stops. Bring the extend position sensor/holder to its end limit on the return tube next to the drive motor. Otherwise, accuracy and sensitivity will be compromised.
14. Check and set the position of the sensor.
15. To set the extend position sensor, slowly and in very small increments move the sensor/holder toward the end of the return tube. If you go too far past the magnet, start over again with the magnet at its outer limit, and repeat the process. Hold the sensor/holder in position and mark its position. Then measure and mark 2 mm inboard of the holder on the return tube. Move the holder to the new mark and slide the two wire ties next to the holder and tighten firmly, but not so tight as to deform the return tube.
16. Reconnect the extend position sensor.
17. Check operation of the quarter windows by cycling the hardtop several times.
18. Remove the position sensor holder halves from the return tube.
19. Apply a 1 in. piece of tape (ASC p/n X-00M0-0632-AXXX) to one halve of the holder.





20. Place the position sensor into the groove on the other halve that doesn't have the tape. The sensor must be oriented in such a way that the wires will not be cut when the halves go back together.
21. Reinstall the two halves to the return tube, making sure the sensor has not rotated in the halve, which will cut the wires. Repeat for the other sensor, and be sure the sensors oppose each other. Otherwise, the accuracy and sensitivity will be greatly reduced.
22. Reinstall the headlining (refer to GROUP 52, in this Manual.)



FRONT RAIL WEATHERSTRIP AND HOLDER

1. Open the hardtop halfway.
2. Measure the distance between the weatherstrip holder and the underside of the hardtop as shown in the illustration.

   Standard value: 3 mm (.118 in.) between holder and hardtop

   - If the holder is not at the Standard value:
     (1) Remove the weatherstrip from the holder.
     (2) Loosen the holder attaching screws, adjust the holder to the Standard value and tighten screws.
     (3) Reinstall the weatherstrip.
     (4) Go to Step 3.

   - If the holder is at the Standard value, go to Step 3.

3. Close the hardtop.
4. Adjust the front rail weatherstrip to the windshield header weatherstrip and the hardtop weatherstrip by sliding it in the holder.

   Standard value: Equal compression to the header weatherstrip and hardtop weatherstrip.

5. Open the hardtop halfway, close it, and recheck weatherstrip compression in Step 4.

NOTES

HARD TONNEAU

- TONNEAU HINGE
- TONNEAU LATCH SYSTEM

Caution
Mechanical adjustments to, or replacement of, certain components of the hard tonneau system, including tonneau weatherstrip and/or hardtop replacement and adjustment 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.

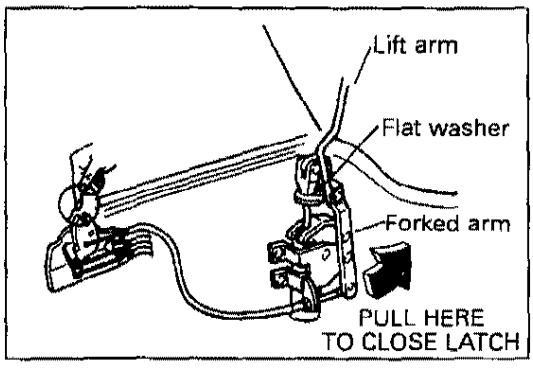
Description

The rearward-opening tonneau is attached to the vehicle body at the rear by a single center hinge assembly. Hydraulic cylinders actuate lifting arms that are hinged at both sides of the vehicle which open and close the hard tonneau. The lifting arms have plastic guides on the end of them that slide in track assemblies mounted to the underside of the tonneau. The tracks are hinged from their mounting brackets at the rear. The purpose of the hinged tracks is two-fold: it allows the tonneau to be driven into the tonneau latches without damaging the latches and tonneau, and provides the additional travel of the hydraulic cylinders after the tonneau is closed to mechanically pull the tonneau latches closed through a system of levers and cables. Each latch is remotely released by an electric actuator controlled by the hardtop ECU.

If the hardtop system latch system becomes inoperable, the tonneau latches can be unlatched manually by pulling the manual release lever located to the left of the driver seat.

When adjusting one component or area of the hard tonneau, all components relating to hardtop operation should be checked, and readjusted, if necessary.

Within a certain tolerance or range, electronically speaking, even the slightest adjustment, or difference in weatherstrip compression, can affect the electronic data to the ECU. This ultimately affects the overall performance of the hardtop and tonneau system.

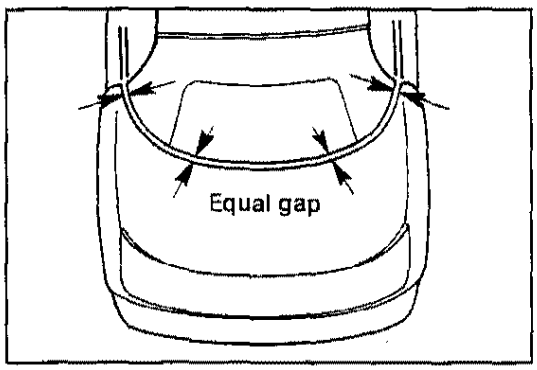


Caution:
DO NOT close the tonneau latch catch by hand at the latch. Closing it by hand will permanently damage the pull down cable. Instead, grasp the forked arm of the lift arm and pull it rearward until the latch closes.

ADJUSTMENT OF HARD TONNEAU AND TONNEAU LATCHES

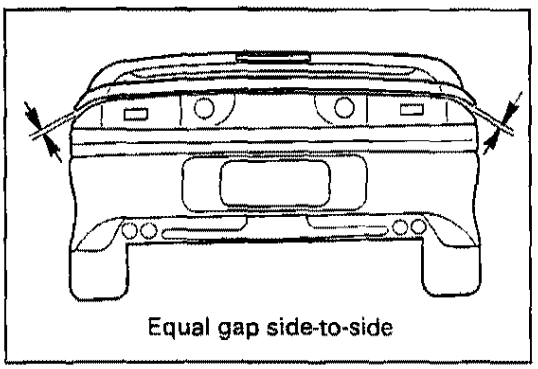
INSPECT

1. Verify that the retractable hardtop is adjusted correctly (refer to SERVICE ADJUSTMENT PROCEDURES in this section). Otherwise, the tonneau may not line up properly with the hardtop in order to achieve the proper gap conditions around the hardtop and the gaps side to side between the tonneau and the rear quarters.
2. Close the tonneau using the hardtop or tonneau switch.
3. Inspect the position of the tonneau relative to the rear quarters and the hardtop.



(1) Inspect the gap between the hardtop and tonneau along the front edge of the tonneau.

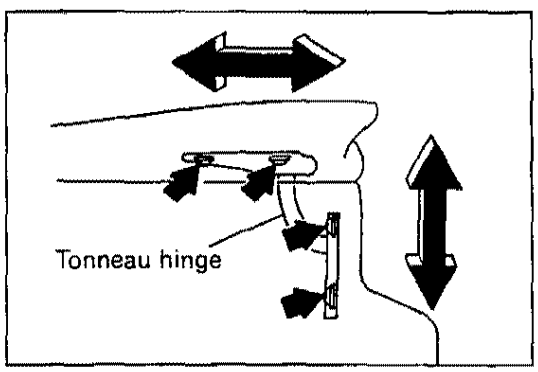
Standard value: Equal gap at forward ends of tonneau and along the rear roof glass



(2) Inspect the tonneau's side-to-side overhang to the rear quarters.

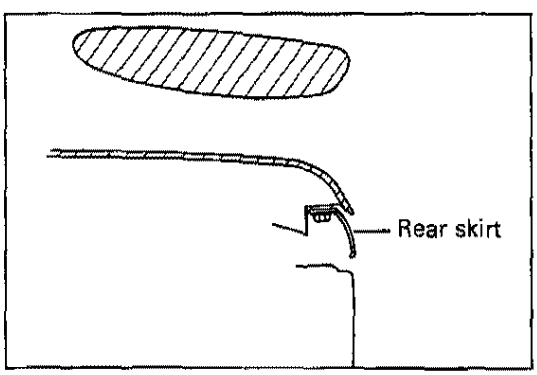
Standard value: Equal overhang of both sides of the tonneau to rear quarters

- If the tonneau position is within the Standard value, go to Step 4 below.

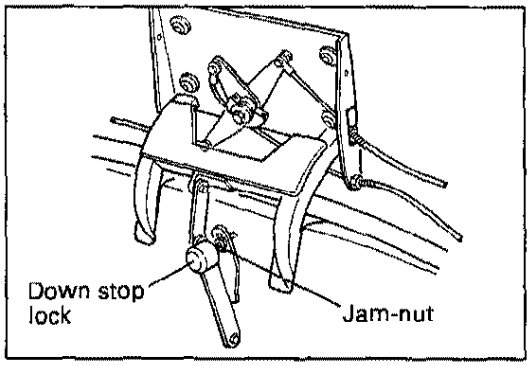


- If the tonneau position is not within the Standard value, adjust the tonneau as shown in the illustration.

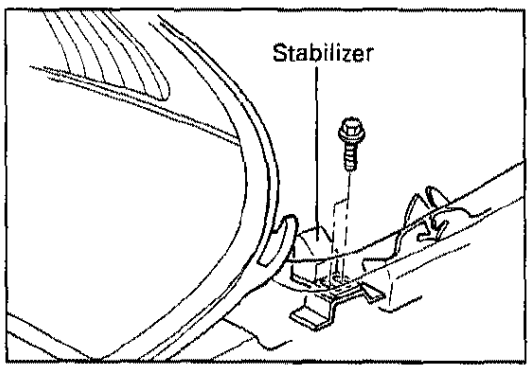
NOTE:
When performing the tonneau adjustments, do not manually open and close the tonneau; use the tonneau or hardtop switches.



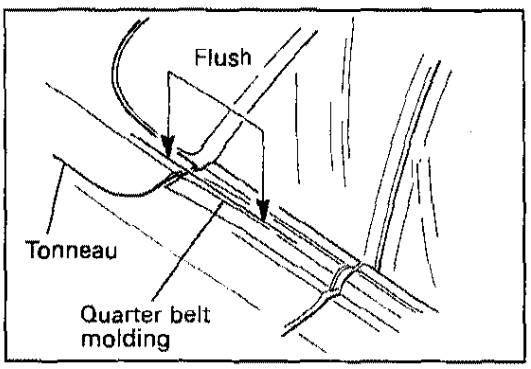
1. Be sure the tonneau rear skirt will not damage the rear combination lights or the upper bumper extensions as the tonneau opens and closes. If it appears the rear skirt will cause damage, loosen the attaching bolts and adjust it out of the way. You will need to adjust the position of the rear skirt after the tonneau has been properly adjusted.



2. With the tonneau open, loosen the hardtop down-stop lock jam-nut, and back off the hardtop down stop lock several turns. Otherwise, the tonneau may not freely move downward. You will have to readjust the down stop lock after adjusting the tonneau (refer to SERVICE ADJUSTMENT PROCEDURES, in this section).



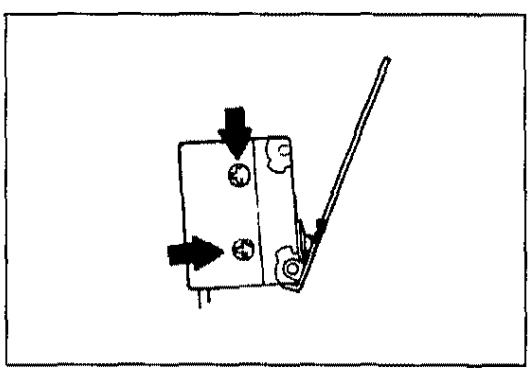
3. Loosen the attaching bolts for the left- and right-hand tonneau stabilizers.



(3) Check the front ends of the tonneau where they meet the quarter belt mouldings.

Standard value: Front ends flush to +3 mm (.118 in.) With quarter belt mouldings

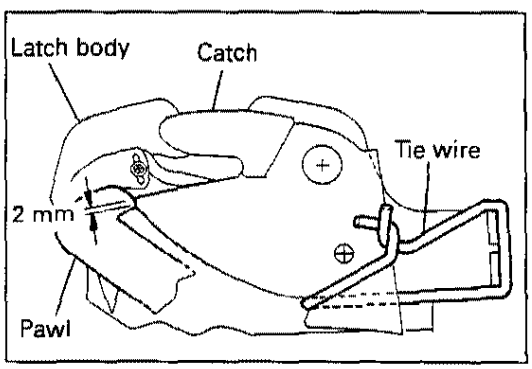
- If the flushness is within specification, go to Step 4 below.
- If the flushness is not within specification, go to Steps 12 through 14. Then, continue with Step 4 below.



4. If the adjustment of the tonneau latch limit switches are known to be good, go to Step 5. If the adjustment of the limit switches are known or suspected to be out of adjustment, perform the following procedure.

(a) Open the tonneau.
(b) Detach or remove the left- and right-hand trunk trim panels.
(c) At one side of the vehicle, inspect the two limit switch attaching screws for tightness.

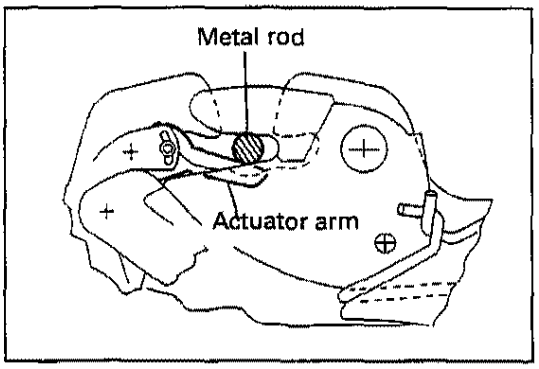
Standard value: .2 Nm (1.8 in.lb.) DO NOT OVER TIGHTEN, damage will result.



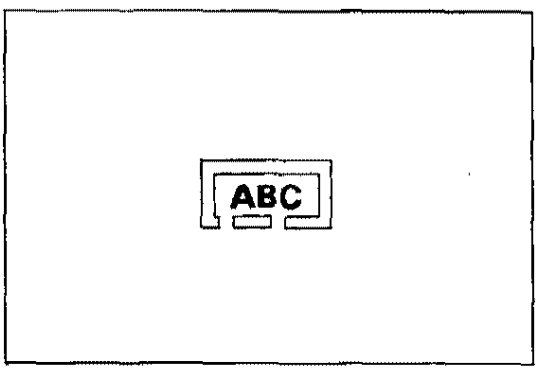
(d) Manually rotate the catch forward and down until the pawl is 2 mm from being fully latched. Be sure the three cables at the latch do not become kinked as the catch rotates forward, as the cables will be permanently damaged. Then, hold the catch and secure it in place with a piece of tie wire. The tie wire can be twisted or untwisted to adjust the catch to the 2 mm dimension.

NOTE
Normally, this method of closing the tonneau latch by hand is to be avoided; for all other instances, close the latch by pulling the forked arm of the tonneau lift arm rearward.

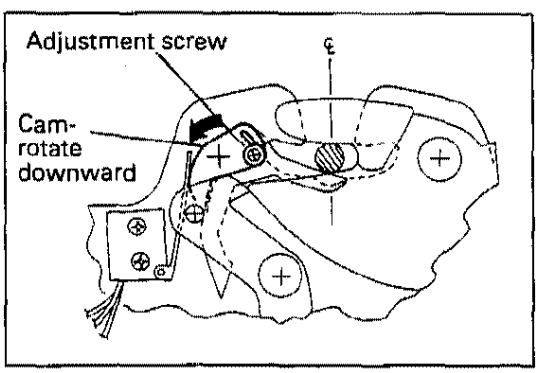
(e) Disconnect the tonneau latch switch electrical connector.
(f) Depress the switch actuator arm and insert a .25 in. metal rod in the catch and through to the latch body, then release the actuator arm. Note that the metal rod must stay level or 90° in all directions to the latch body and the catch.



(g) Connect an Ohmmeter to the A and B terminals of the switch connector.



See Note p 178



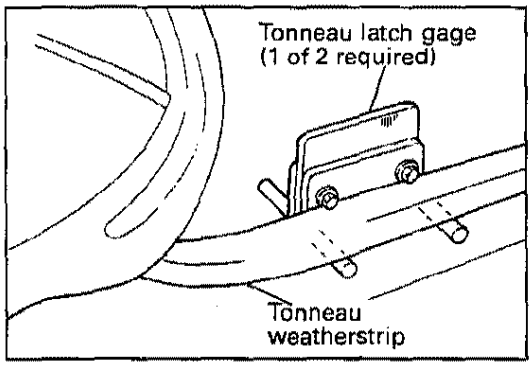
(h) Slightly loosen the switch actuator arm adjusting screw.
(I) Rotate the portion of the switch actuator arm downward which contacts the metal switch lever.
(j) Very slowly rotate the actuator cam upward until the moment the measured value on the Ohmmeter reads continuity.
(k) Tighten the adjustment screw.

Torque: 2 Nm (1.8 in.lb.) Do not over tighten.

(l) Remove the metal rod and the tie wire.
(m) Reconnect the switch electrical connector.
(n) If necessary, repeat for the other tonneau latch.

5. Open the tonneau using the tonneau switch.
6. Detach the tonneau weatherstrip from the quarter panel pinch flange approximately 8 inches either side of both tonneau latches.
7. Slide the gage over the tonneau latch body until it stops. Both dowels protruding from the gage must rest on the pinch flange. Repeat for the other side.

NOTE:
The gage has two sides to it. One side is stamped "FRONT DRIVE SIDE" (Driver Side [left-hand]) or



or "FRONT PASS SIDE" (Passenger Side [right-hand]). The word "FRONT" indicates that end must face toward the front of the vehicle. To be sure you have the correct side, from the outside the vehicle the appropriate label must face you, with the word "FRONT" toward the front of the vehicle. If the wrong side of the gage is used, the tonneau striker will not align with the graduations on the gage.

8. Turn the bypass valve to the "MANUAL" position.
9. Allow the tonneau to fall slowly to the gages. Next, read where the center of the striker falls in relation to the graduations. For proper alignment, the center of the striker should fall at the +3 mark, within the "0" to +3 graduation of the gage. If the striker falls anywhere else, read and record the graduation. Then lift the tonneau, turn the bypass valve to the "POWER" position, loosen the latch attaching bolts and move the latch accordingly. After the latch has been moved, repeat the procedure to check it again. At this time it is not necessary to torque the latch bolts. Repeat for the other latch.
10. Lift the tonneau, and turn the bypass valve to "POWER".
11. Remove both gages.
12. Reattach the tonneau weatherstrip.
13. Close the tonneau using the tonneau switch. The tonneau should fully latch at both sides.
14. Turn the bypass valve to the "MANUAL" position. Pull up and down on the tonneau near both latches and check that tonneau strikers are not loose in the fully latched latches, or that the tonneau latches are not fully latched.

Standard value: Tonneau when pulled up and down to simulate a rattle condition, has almost no detectable looseness in the fully latched tonneau latches.

- If the tonneau is fully latched, but exhibits some looseness, go to Step 15.
- If the tonneau is fully latched, and has no looseness, go to Step 17.
- If the tonneau does not fully latch, go to Step 17.

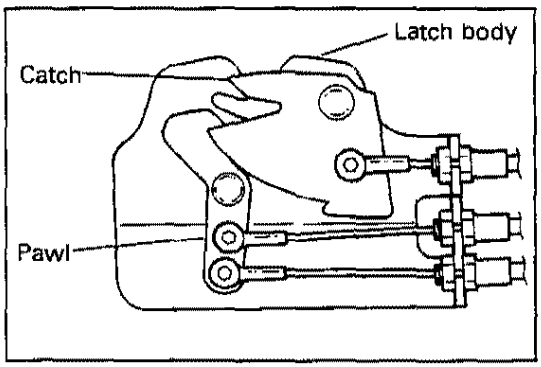
15. Using a pencil, match-mark the tonneau latch to the body structure so that the center location for the striker is not lost when the tonneau latch is loosened from the body.
16. Slightly loosen the latch attaching bolts. In small increments, adjust the tonneau latch up or down, as necessary, to attain no looseness of the striker in the latch. Open and close the tonneau using the switch. Verify the adjustments by repeating Step 14.

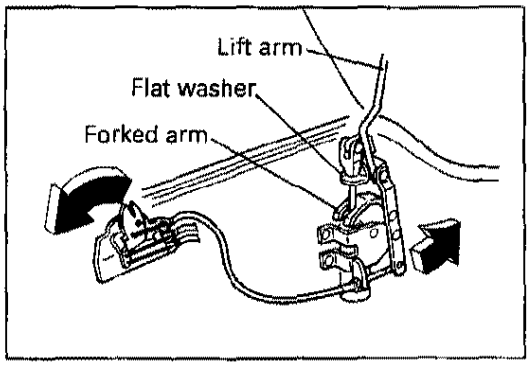
    NOTE
    It is critical that the latch be moved parallel to the match-marks. Otherwise, the latch will significantly tilt forward or backward which will result in improper adjustment.

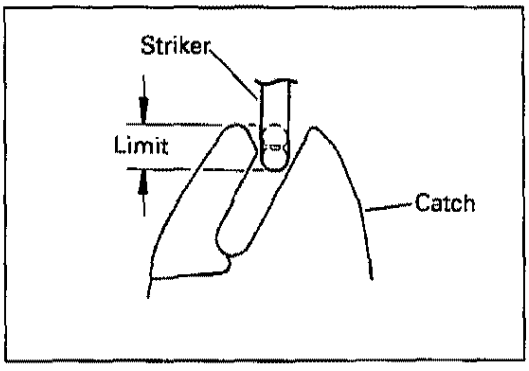
17. Open the tonneau using the tonneau switch, then close it halfway, then back to fully open. This will allow the tonneau latches to be manually closed.
18. Close the latches manually. Do this by pushing the tonneau lift arm rearward while pushing down the catch. As the latch catch rotates forward, be sure all three latch cables do not become kinked.
19 At one latch, remove the screws securing the two cables to the pawl.
20. Be sure the latch pawl is fully engaged to the catch.
21 Inspect the alignment of the actuator cable eyelet to the screw hole in the pawl.

    Standard value: Cable eyelet holes must align within ±0.5 mm (0.02 in.) of the screw holes in the latch pawl.

22. At the latch loosen the jam-nuts and adjust the cable(s) to meet the Standard value. Then, reattach the cable(s) to the pawl.
23. Repeat for the other latch.
24. Inspect the timing relationships of the tonneau striker as the latch catch draws it down to latch it, and inspect for proper latch pawl engagement which will hold the catch closed and release it when required. If the latch pawl does not secure the catch, the tonneau may feel and appear to be closed and latched, but over time the tonneau cylinders will drift up allowing the latch to open and release the tonneau.







NOTE:
For each latch the timing of the closing of the latch catch (opening of the latch is not as critical) is controlled by the forked arm attached to the lift arm of the tonneau mechanism. This forked arm is actuated by flat washer located at the top of the hydraulic cylinder rod.

As the cylinder rods retract when closing the tonneau, the tonneau strikers will enter the latches and begin to close the latch catches. Even though the tonneau has stopped moving, the cylinder rods will have just enough travel to pull the latch catches closed. This is accomplished by the pivoting slide tracks mounted on the tonneau, which allows the cylinders the extra travel they need to have the washers bear down on the forked arms. The forked arms have the mechanical leverage to pull the cables which finally draw the catches to closed position allowing the pawls to engage and secure the catches.

The position of the forked arm on the lift arm can be used to get the rough timing of the catch closing near or within the Standard value. Fine adjustment can be accomplished by adjusting the cables at the latch.

Standard values:

1. **Striker must enter the latch catch within the limit as shown in the illustration.**
2. **Latch catch must be secured by the latch pawl after the catch closes.**

25. Open the tonneau and fold down the rear seat backs.
26. Adjust the left- and right-hand tonneau stabilizers.
    (a) Slightly loosen the left- and right-hand stabilizer attaching bolts, then move both stabilizers fully inboard.
    (b) One person should be outside the vehicle, and the other in the rear of the passenger compartment. With guidance from the outside person, the inside person should reach in over the hardtop ECU, around the tonneau latch to the tonneau stabilizer.

Caution:
Wearing a long sleeve shirt with cuffs buttoned is advisable to reduce the chance of personal injury on sharp edges that may be encountered. Use care when extending your arm into this area.

(c) **Inside person:** Turn the bypass valve to the "MANUAL" position.

(d) **Outside person:** Carefully lower the tonneau to the tonneau latches.

Caution:
Be sure the fingers/hand/arm of the person inside are not harmed by any part of the tonneau mechanism or any part of the vehicle as the tonneau closes and opens. Personal injury may result.

(e) **Outside person:** Using a hand-over-hand method, press down on the tonneau over the latches to latch them. Do not continue to press down on the tonneau.

(f) **Inside person:** Move both stabilizers outboard until they stop. Then return the bypass valve to the "POWER" position and get out of the vehicle.

(g) **Outside person:** Open the tonneau using the switch, and tighten the stabilizer bolts.

Torque: 9 - 14 Nm (80-124 in.lb.)

27. Adjust the hardtop down stop lock. Refer to the SERVICE ADJUSTMENT PROCEDURES - HARDTOP DOWN STOP LOCK, in this section.
28. Adjust the rear skirt.
    (a) Close the tonneau. Inspect the clearances of the rear skirt.

    Standard value: Flush to the upper bumper extensions with equal gap side-to-side

    (b) Slowly and carefully open the tonneau as not to disturb the location of the rear skirt.
    (c) Tighten the attaching bolts.

    Standard value: 2.8 - 4.2 Nm (25 - 37 in.lb.)

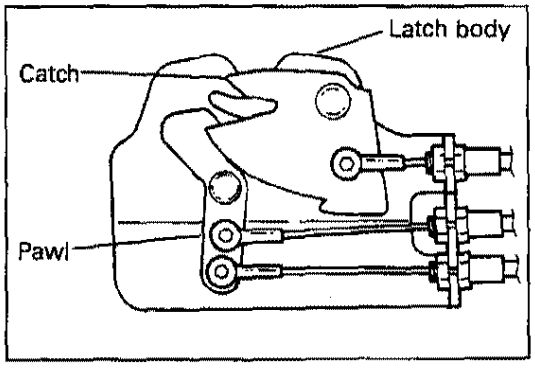
Latch adj - Take off Hyd Pressure off tonneau to see if adj will hold

HARD TONNEAU

• TONNEAU LATCH MANUAL RELEASE SYSTEM

Description

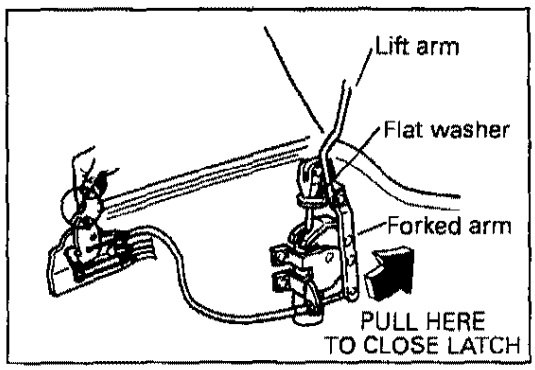
The tonneau latch manual release cable (formerly remote rear hatch release for the coupe) runs from the left side of the drivers seat, through the body structure and across the vehicle to the passenger side. There it connects to a junction box, which splits the pulling force to the two latches by cables.



ADJUSTMENT OF HARD TONNEAU MANUAL RELEASE SYSTEM

INSPECT

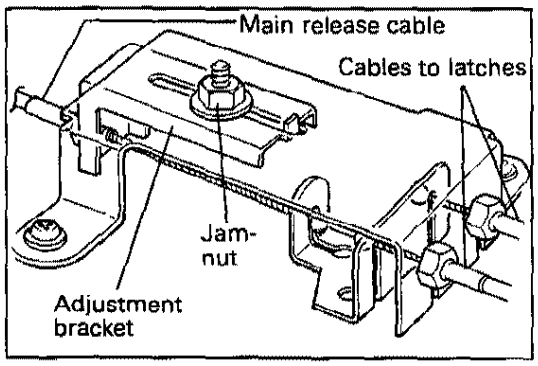
1. Open the tonneau using the switch or manually (refer to GROUP 00, in this Manual).
2. Manually latch the latch pawl for the LH and RH latches.



Caution
DO NOT close the tonneau latch catches by hand at the latch. Closing them by hand will permanently damage the pull down cables. Instead, grasp the forked arm of the lift arm and pull it rearward until the latch closes.

3. Pull the tonneau manual release lever located to the left of the driver seat. When the lever is pulled listen for the latches to release within a fraction of a second of each other.

   - If the latches release within a fraction of a second of each other, the manual release system is working properly.
   - If the latches do not release within a fraction of a second of each other, the manual release system requires adjustment. Go to Step 4.



4. Detach the RH trunk trim panel (refer to GROUP 52, in this manual).
5. Loosen the jam-nut at the manual release cable junction box.
6. Adjust the manual release cables
   (a) Pull the bracket holding the main manual release cable forward and remove any slack at the cables that go to the latches, and tighten the jam-nut.

   Standard value: 2 Nm (18 in.lb.)

   (b) Adjust the manual release cables at the tonneau latches for the correct amount of slack.

   NOTE
   If the cables do not have the correct amount of slack, they will not release the tonneau latches simultaneously.

   Left-hand manual release cable:
   The exposed cable, where it attaches to the latch catch, must be taut. This will compensate for the difference in length compared to the shorter right-hand cable.

   Right-hand manual release cable:
   There must be some slack in the exposed cable where it attaches to the latch catch. How much slack cannot be determined until the latches are re-inspected for the proper release timing is addressed in Step 7, below.

7. Repeat Steps 2 and 3.
   - If the latches still don't release within a fraction of a second of each other, the system can be fine tuned by adjusting the cables at the latches.

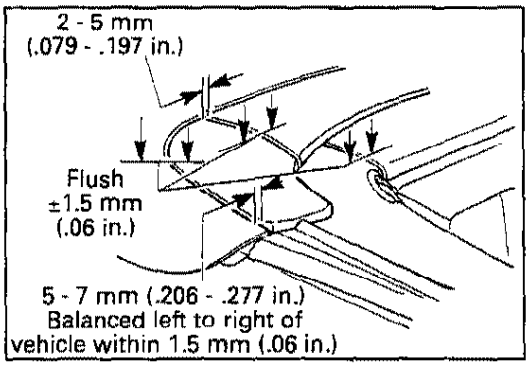
8. Reattach the RH trunk trim panel.

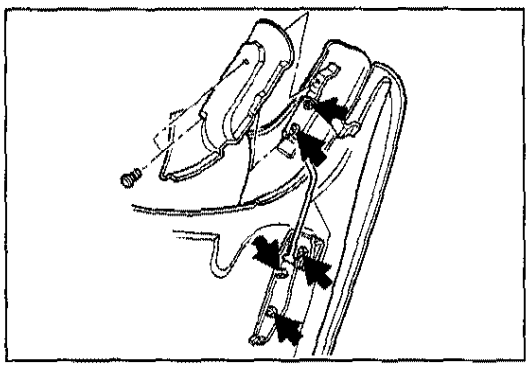
ADJUSTMENT OF HARD TONNEAU FLIPPER DOORS

INSPECT

1. Verify that the retractable hardtop and tonneau are adjusted correctly (refer to SERVICE ADJUSTMENT PROCEDURES in this section).
2. Fully open the hardtop using the switch.
3. Verify that the interior trim is adjusted correctly (refer to SERVICE ADJUSTMENT PROCEDURES, GROUP 52, in this Manual).
4. Close the hard tonneau using the hardtop or tonneau switch.

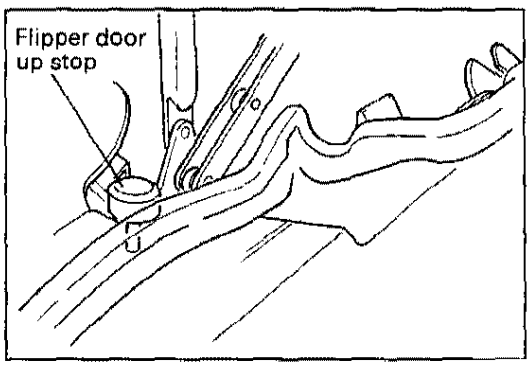
5. Inspect as shown in the illustration:
   (1) The gap between the quarter trim panels and the bottom of the flipper doors.
   (2) The gap between the rear shelf panel and the flipper doors.
   (3) The gap between the flipper doors and the tonneau.





- If adjustment is required, open the tonneau and make the adjustments at the points on the flipper door assembly, and/or the body structure as required, as shown in the illustration.

- If adjustment is not required go to Step 6.



6. Open the tonneau and check that both flipper doors are retracted within the Standard value.

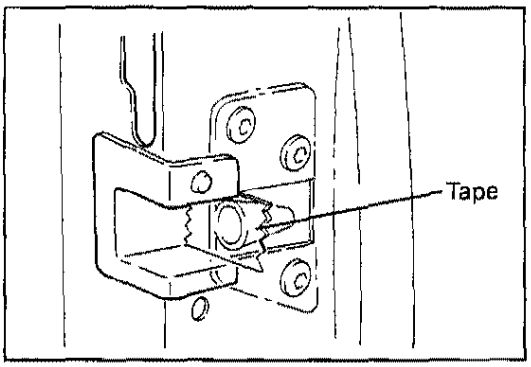
   NOTE
   The hardtop must be closed and latched.

   Standard value: 155 mm ± 3 mm (6.102 in. ± .118 in.) measured from the underside end of the flipper door to the inside surface of the tonneau

   - If the flipper doors are within the Standard value, the flipper doors do not require adjustment.

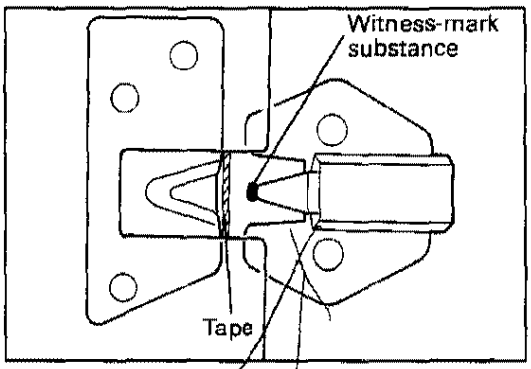
   - If one or both flipper doors are not within the Standard value, adjustment is required. Make adjustments where the cables attach to the flipper door hinge and/or at the tonneau hinge.

   NOTE
   Each time an adjustment is made to the flipper doors, the hardtop (and tonneau) should be cycled which will retract and extend the flipper doors. Opening and closing the tonneau only will not operate the flipper doors.



DOOR LOCATING PIN

1. Check the centering of the pin to the receiver.
   (1) Wipe clean the receiver mouth.
   (2) Apply a piece of masking tape to the receiver mouth.



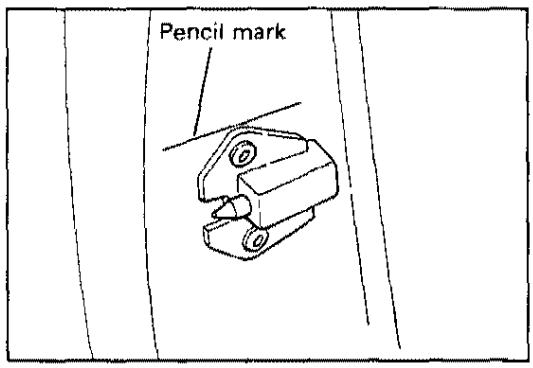
   (3) Apply a small dab of grease, paint, or other substance to the tip of the locating pin. This will leave a witness-mark on the tape.
   (4) Carefully close the door until the pin slightly contacts the tape, leaving a witness-mark. Do not puncture, or push the tape into the receiver.

   - If the witness-mark is in the center of the receiver mouth, in-line adjustment is good. Go to Step 4.
   - If the witness-mark is off-center, go to Step 2.

2. Adjust the locating pin to center it to the receiver. Use shims (available as a service part) to adjust the pin assembly forward (toward the front of the vehicle) and/or by moving the locating pin assembly up or down.

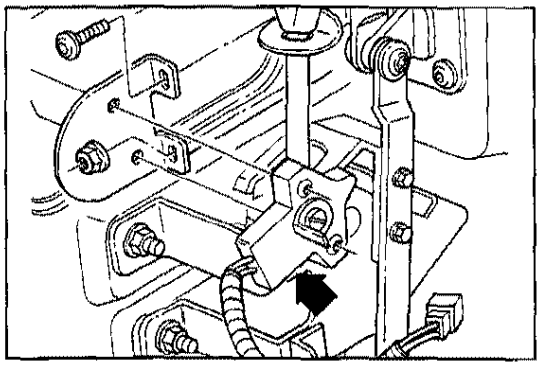
   Standard value: Locating pin centered to, and in-line with, the receiver mouth

3. Repeat Steps 1 and 2 until alignment is at the standard value. Remove the tape from receiver.



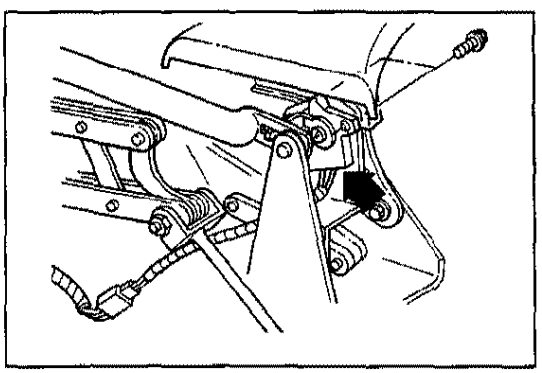
4. Adjust the locating pin inboard or outboard.
   (1) Using a sharp pencil, mark the horizontal location of the locating pin assembly on the vehicle body.
   (2) Loosen the locating pin attaching bolts enough to allow the assembly to be pushed inboard when the door closes (the locating pin is spring-loaded and will "give" somewhat). Move the pin assembly to the outboard-most location, while maintaining horizontal alignment with the pencil marks.
   (3) Gently close the door, allowing the locating pin assembly to move inboard. Open the door and check that the locating pin is still aligned horizontally.
   (4) Move the receiver outboard 3 mm ± 1 mm (.118 in. ± .04 in.).
   (5) Tighten the locating pin attaching bolts.

   Standard Value: 9 - 12 Nm (80 - 106 in.lb.)



HARD TONNEAU POSITION SENSOR (POTENTIOMETER)

1. Caution
   This part is not adjustable mechanically. It must not be disturbed at any time whether or not the hardtop or hard tonneau is in operation. Any rotational movement of ± 1 mm (.04 in.) may upset hardtop operation. If the sensor is disturbed, you must run the hardtop ECU through Auto-configuration using the latest version of the ASC INCORPORATED diagnostic system (refer to Diagnostics and Testing in this section).



RETRACTABLE HARDTOP POSITION SENSOR (POTENTIOMETER)

1. Caution
   This part is not adjustable mechanically. It must not be disturbed at any time whether or not the hardtop or hard tonneau is in operation. Any rotational movement of ± 1 mm (.04 in.) may upset hardtop operation. If the sensor is disturbed, you must run the hardtop ECU through Auto-configuration using the latest version of the ASC INCORPORATED diagnostic system (refer to Diagnostics and Testing in this section).

HARD TONNEAU

REMOVAL AND INSTALLATION

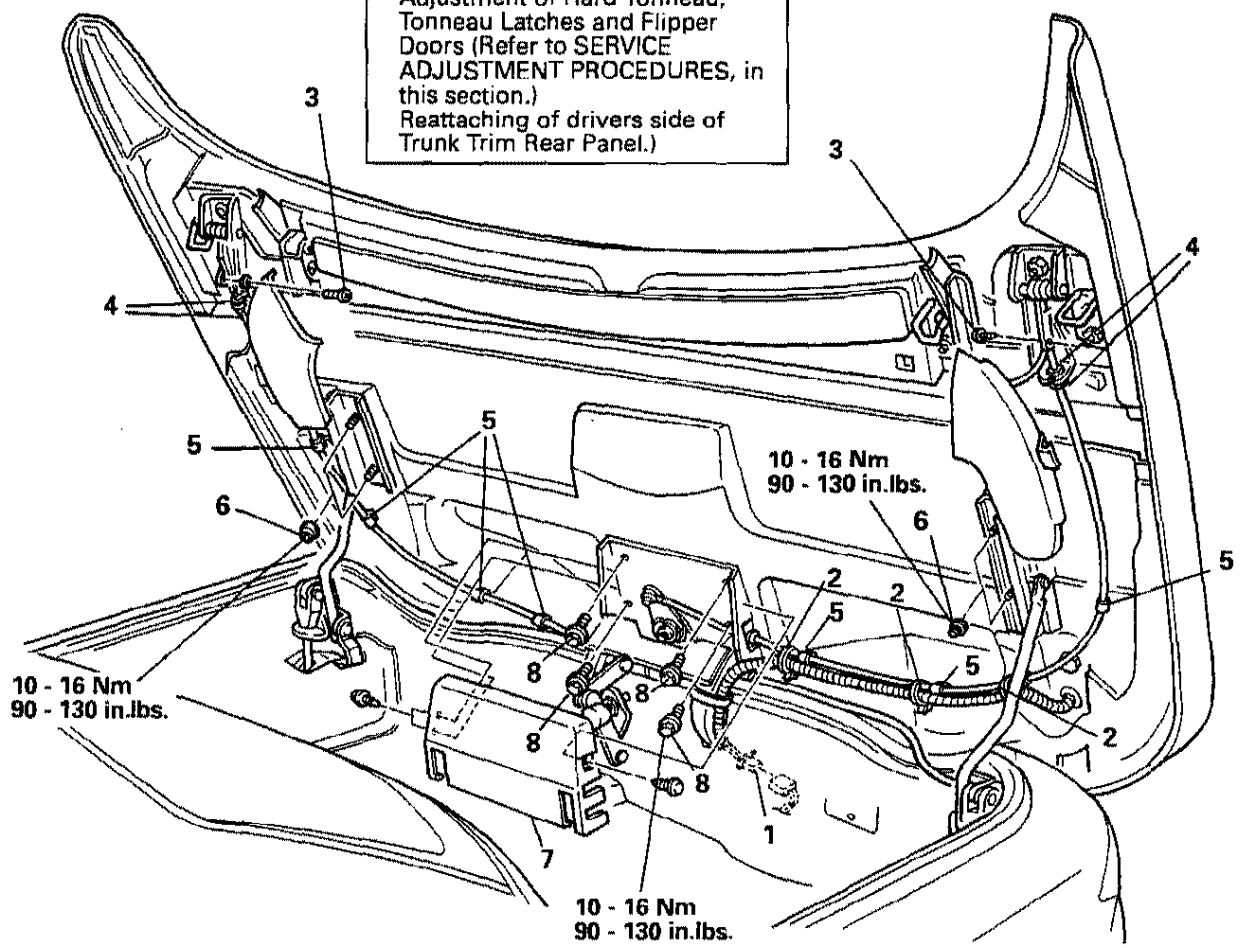
CAUTION:
Adjustment or replacement of this component requires that the hard-top ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

NOTE
Open the hardtop halfway to allow slack in the flipper door drive cable

CAUTION:
This procedure requires two individuals.

Pre-removal Operation
Detaching of drivers side of Trunk Trim Rear Panel to access wire harness (Refer to GROUP 52, in this Manual.)

Post-installation Operation
Adjustment of Hard Tonneau, Tonneau Latches and Flipper Doors (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
Reattaching of drivers side of Trunk Trim Rear Panel.)



Hard tonneau removal steps

1. High mount stop light electrical connector
2. Wire tie
3. Screw
4. Jam-nut
5. Cable retainer
◆◆ ►◄ 6. Nut
7. Cover
8. Bolt

SERVICE POINT OF REMOVAL

6. REMOVAL OF SLIDE TRACK ATTACHING NUTS

After removing the slide track attaching nuts be sure secure the slide tracks to the lift arms with tape or wire. This will prevent the slide tracks from falling onto the vehicle finish.

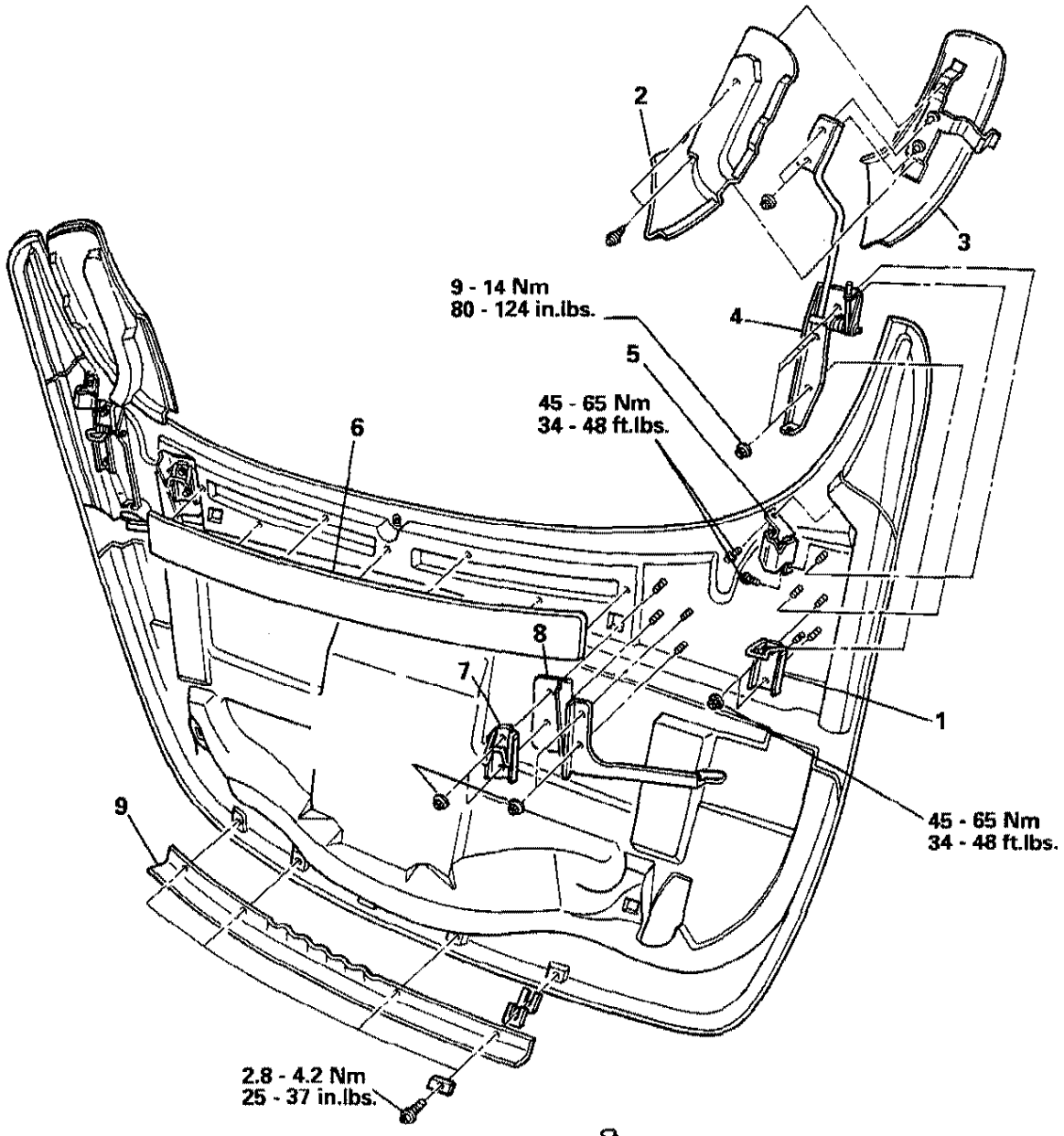
SERVICE POINT OF INSTALLATION

6. INSTALLATION OF SLIDE TRACK ATTACHING NUTS

Once the tonneau is in place, remove the tape or wire securing the slide tracks.

HARD TONNEAU

DISASSEMBLY AND REASSEMBLY



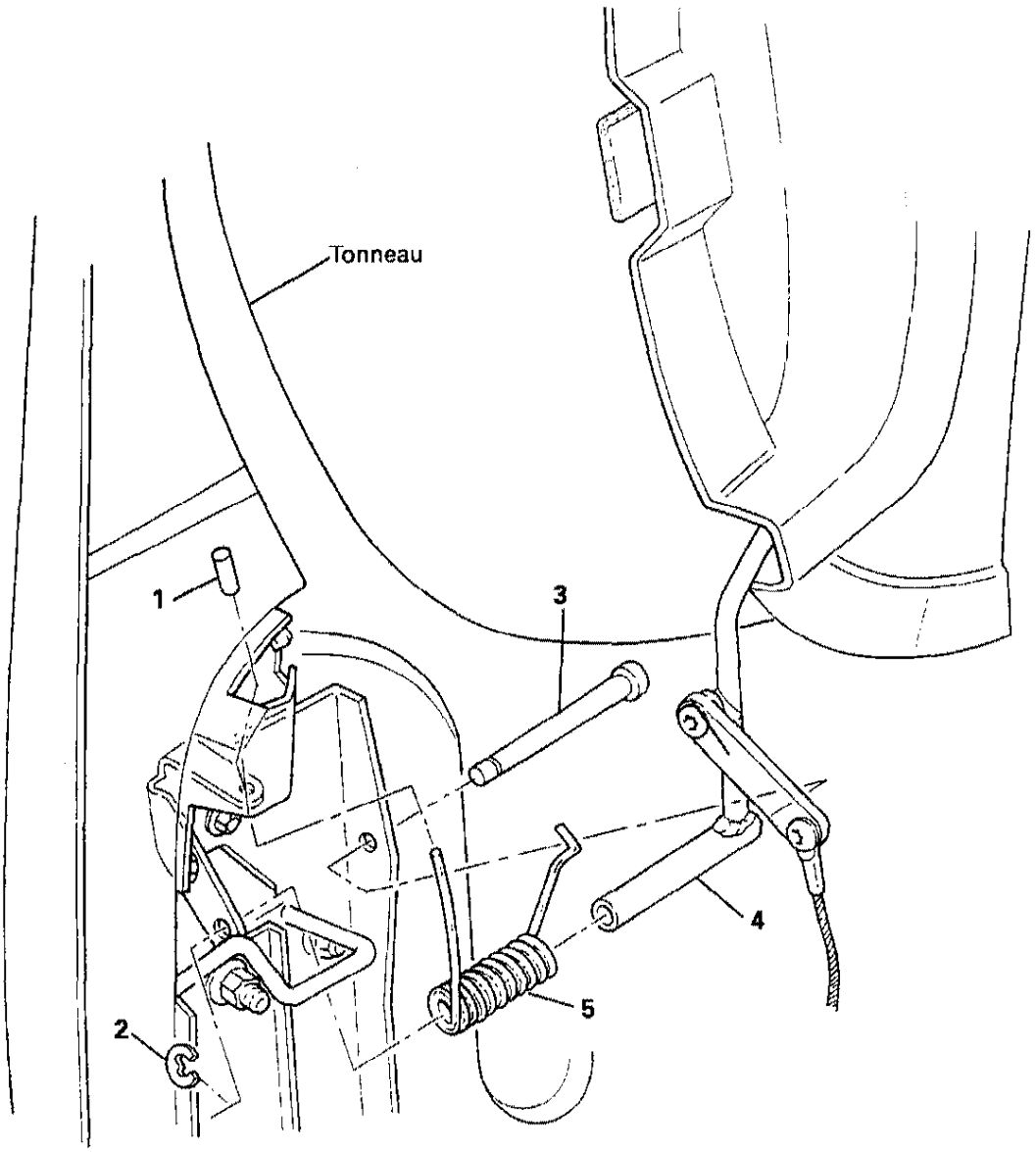
Disassembly steps

1. Striker (outboard)
2. Flipper door cover
3. Flipper door
4. Flipper door hinge
5. Stabilizer bracket
6. Tonneau pad
7. Striker (inboard)
8. Retainer
9. Rear skirt
10. Stabilizer

NOTE
Matchmark components before removal.

HARD TONNEAU
FLIPPER DOOR SPRING

REMOVAL AND INSTALLATION



NOTE
1. Tonneau must be open with the hardtop closed. Otherwise, with the hardtop open the flipper door will be under tension.
2. Flipper door should be in the extended or up position.

CAUTION:
Flipper door spring is under tension.

Spring removal steps

1. Spring cover
2. E-Clip
3. Pivot pin
4. Flipper door
5. Spring

TSB Revision

HARD TONNEAU MECHANISM

REMOVAL AND INSTALLATION

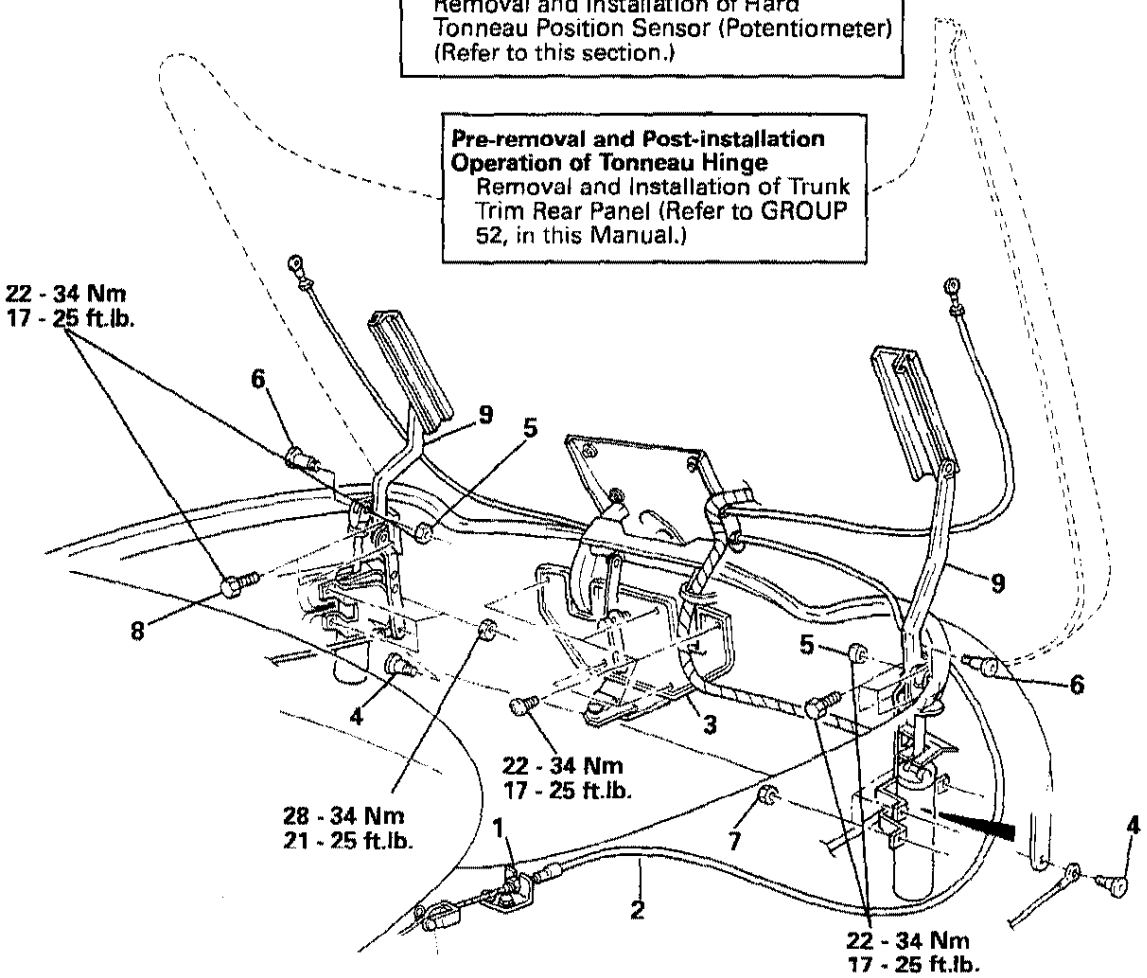
NOTE
When removing a tonneau mechanism it is not necessary to remove the tonneau. Suitably support the tonneau.

NOTE
Matchmark components before removal.

CAUTION:
Adjustment or replacement of these components may require that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Pre-removal and Post-installation Operation of RH Tonneau Mechanism
Removal and Installation of RH Trunk Trim Panel (Refer to GROUP 52, in this Manual.)
Removal and Installation of Hard Tonneau Position Sensor (Potentiometer) (Refer to this section.)

Pre-removal and Post-installation Operation of Tonneau Hinge
Removal and Installation of Trunk Trim Rear Panel (Refer to GROUP 52, in this Manual.)



Tonneau hinge removal steps

1. Jam nut
2. Flipper door drive cable
3. Tonneau hinge

Tonneau mechanism removal steps

4. Screw
5. Nut
6. Bolt
7. Nut
8. Bolt
9. Tonneau mechanism lift arm

Pre-removal and Post-installation Operation of LH Tonneau Mechanism
Removal and Installation of LH Trunk Trim Panel (Refer to GROUP 52, in this Manual.)

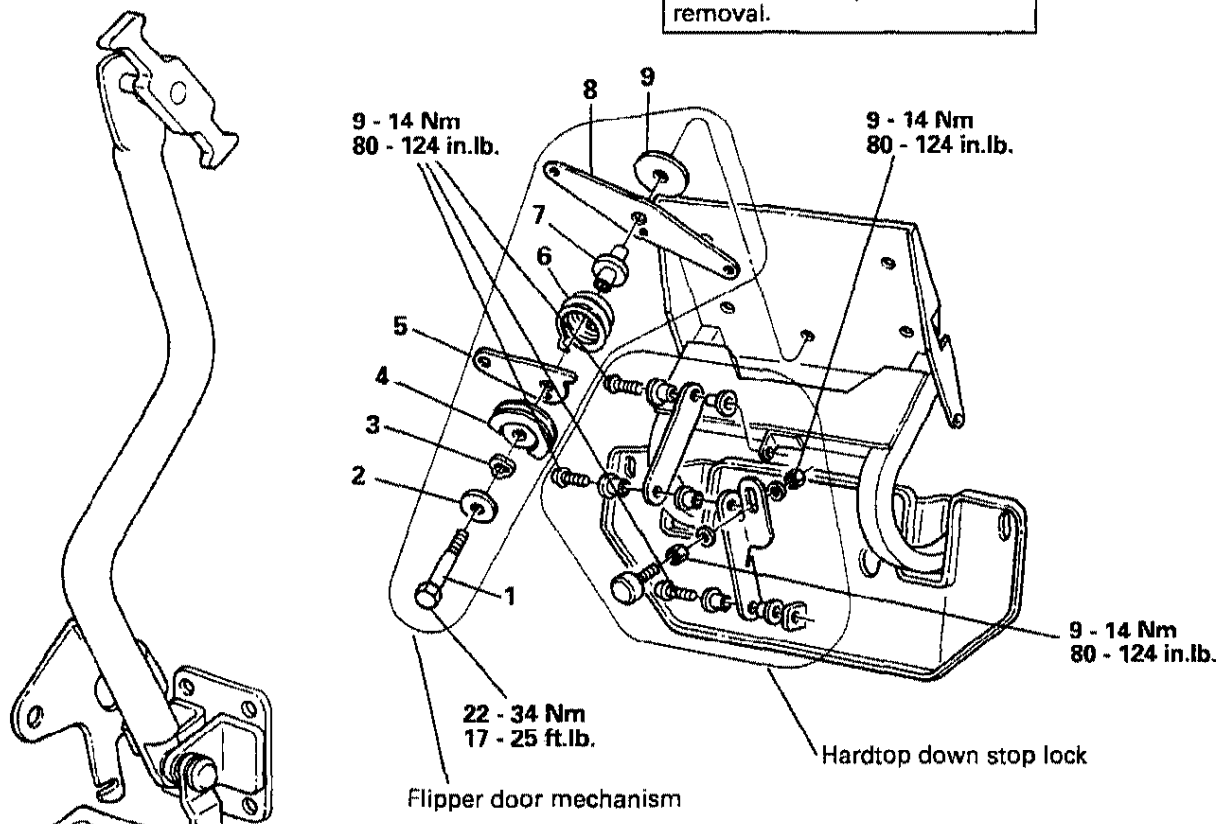
NOTES

HARD TONNEAU MECHANISM

DISASSEMBLY AND REASSEMBLY

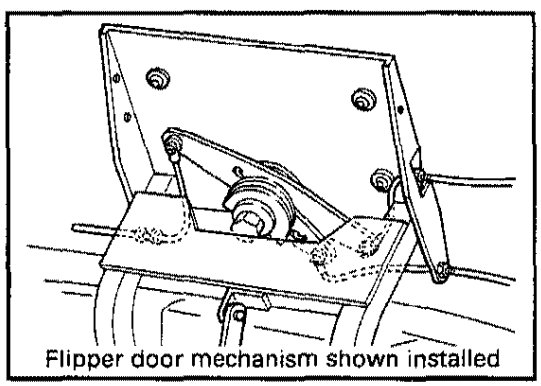
<Lift arm>

NOTE
Matchmark components before removal.



<Flipper door mechanism>

<Hardtop down stop lock>



Tonneau mechanism disassembly

1. Bolt

Tonneau hinge disassembly steps

1. Bolt
2. Washer
3. Spring washer
4. Pulley
5. Idler
6. Spring
7. Bushing
8. Crank
9. Washer

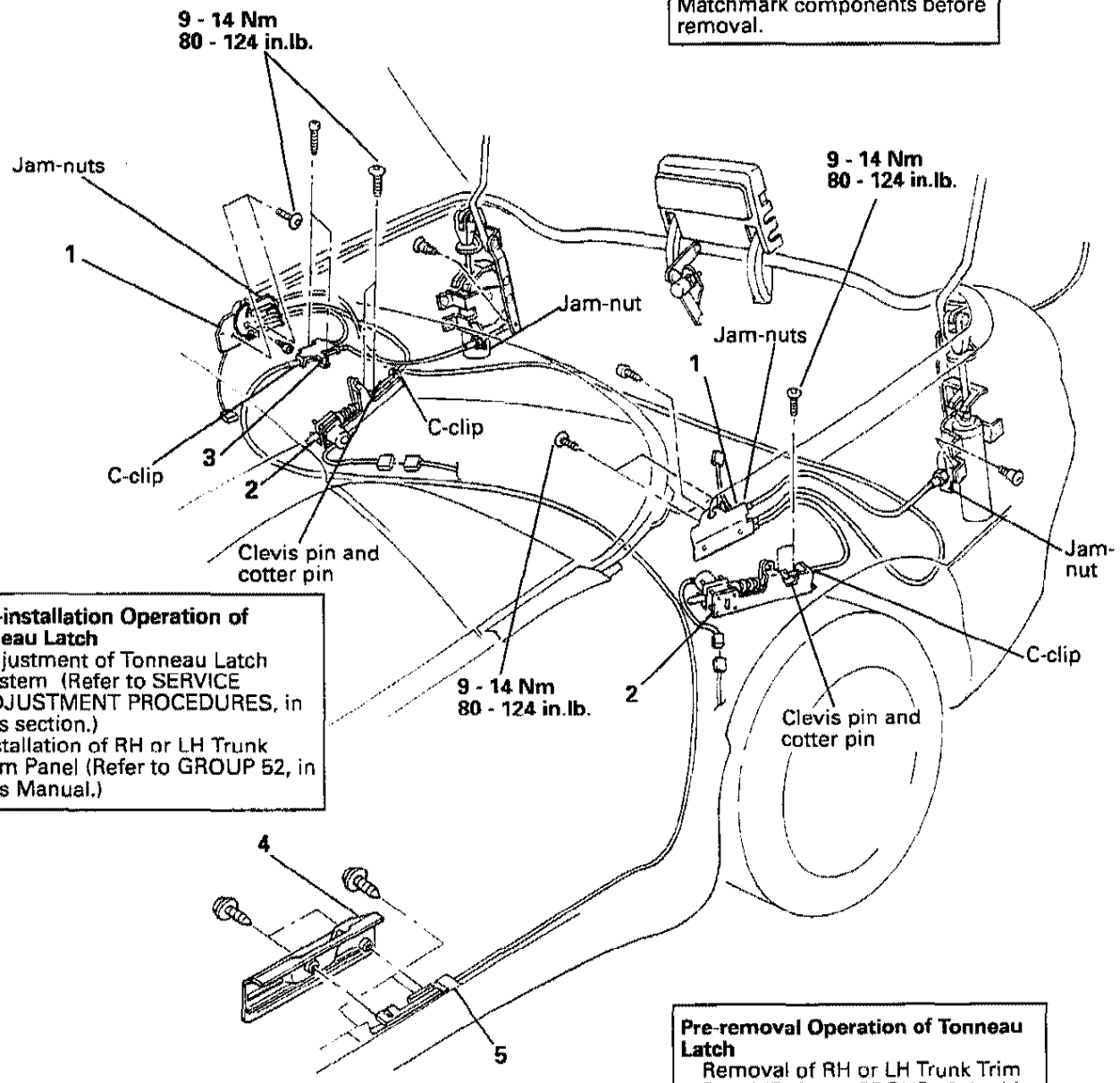
HARD TONNEAU LATCH SYSTEM

REMOVAL AND INSTALLATION

CAUTION:
Adjustment or replacement of this component requires that the hard-top ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Pre-removal and Post-installation of Manual Release Cable
Removal and Installation of LH Quarter Trim Panel (Refer to Group 52, in this Manual.)
Removal and Installation of LH Trunk Trim Panel, Trunk Center Front Panel and Hydraulic Line Cover (Refer to Group 52, in this Manual.)

NOTE
Matchmark components before removal.



Post-installation Operation of Tonneau Latch
Adjustment of Tonneau Latch System (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
Installation of RH or LH Trunk Trim Panel (Refer to GROUP 52, in this Manual.)

Pre-removal Operation of Tonneau Latch
Removal of RH or LH Trunk Trim Panel (Refer to GROUP 52, in this Manual.)

Pre-removal and Post-installation Operation of Tonneau Latch Actuator
Removal and Installation of LH or RH Luggage Compartment Floor Box (Refer to GROUP 52, in this Manual.)

Removal steps

1. Tonneau latch
2. Latch actuator
3. Manual release junction
4. Cover
5. Manual release lever and cable

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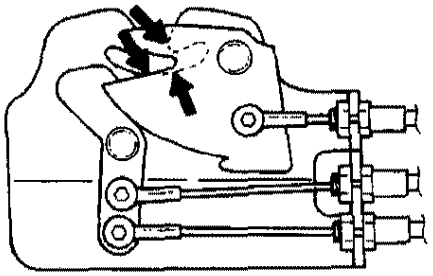


Side view of latch

INSPECTION

HARD TONNEAU LATCH

Inspect the tonneau latches for wear on the body of the latch and the pawl.

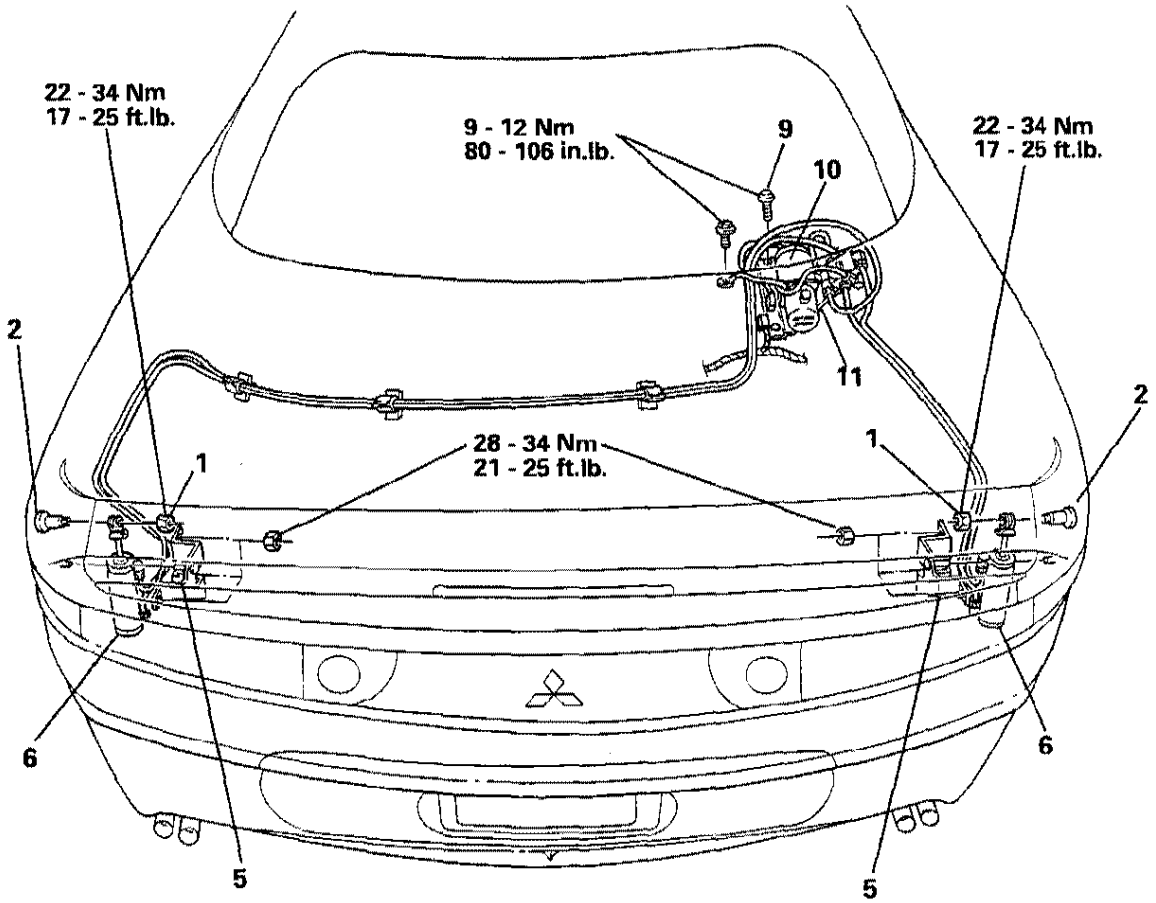
NOTE:
Wear is an indication of improperly adjusted latches, or excessive side-to-side motion of the hard tonneau due to improperly adjusted tonneau isolators.

Standard value: No wear on the latch body or pawls

HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR AND CYLINDERS

REMOVAL AND INSTALLATION

CAUTION:
Adjustment or replacement of these components require that the hard-top ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).



CAUTION:
When removing and installing any component of the hard tonneau hydraulic system, always suitably support the hard tonneau. Otherwise, injury could result.

Pre-removal and Post-installation Operation
Removal of LH, RH and Front Trunk Trim (Refer to GROUP 52, in this Manual.)

Cylinder removal steps

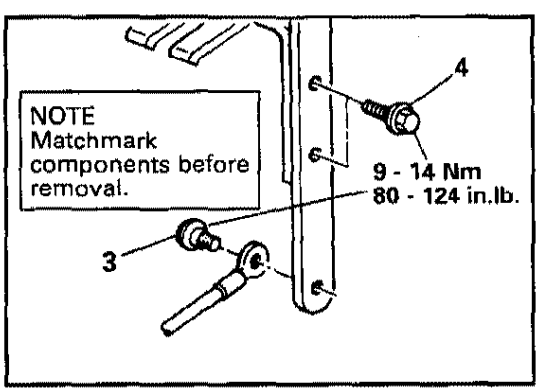
1. Nut
2. Bolt
3. Screw
4. Bolt
5. Cylinder mounting bracket

◆◆ ◆◆ 6. Cylinder

Pump/motor assembly removal steps

7. Harness connector
8. Ground strap
9. Bolt

◆◆ ◆◆ 10. Pump/motor assembly
11. Bracket



TSB Revision

SERVICE POINTS OF REMOVAL

6. REMOVAL OF HARD TONNEAU HYDRAULIC CYLINDER FROM HYDRAULIC LINES, IF REQUIRED

(1) Place clean rags around the cylinder to prevent dripping of the hydraulic fluid.
(2) Remove the hydraulic hoses from the hydraulic cylinder. Plug or cap the hoses and cylinder fittings to prevent leakage.

Caution
Mismatched hoses will cause damage to the hard tonneau, mechanisms, and hinge. To avoid system damage and ease reassembly, be sure to label the correct position of each hose as they are removed.

10. REMOVAL OF HYDRAULIC PUMP/MOTOR ASSEMBLY

(1) • For removal of the hydraulic pump/motor assembly with hoses still attached, go to Step (2).

• For removal of the hydraulic pump/motor assembly only, follow the procedure below.

1. Place clean rags around the pump manifold to prevent dripping of the hydraulic fluid.
2. Remove the hydraulic hoses from the manifold. Plug or cap the hoses and manifold fittings to prevent leakage.

Caution
Mismatched hoses will cause damage to the hard tonneau, mechanisms, and hinge. To avoid system damage and ease reassembly, be sure to label the correct position of each hose as they are removed.

3. Go to Step (2).

(2) Lift the pump/motor to separate the bracket grommets from the body and to disengage the dual-lock fastener from the body.

SERVICE POINTS OF INSTALLATION

10. INSTALLATION OF HYDRAULIC PUMP/MOTOR ASSEMBLY

(1) Place the pump/motor in position, align the bracket grommets to the holes, and press them in.
(2) Install the bolt to hold the pump/motor bracket in place.
(3) Press the manifold-end of the assembly to engage the dual-lock fasteners.
(4) Reconnect the hydraulic hoses if they have been disconnected using the following procedure.
   1. Place clean rags around the pump manifold to prevent dripping of the hydraulic fluid.
   2. Remove the caps or plugs from the pump manifold and hydraulic hoses.
   3. Reconnect the hoses in the correct positions.

Caution
Mismatched hoses will cause damage to the hard tonneau, mechanisms, and hinge. To avoid system damage and ease reassembly, be sure to observe the hose position labels.

6. INSTALLATION OF HARD TONNEAU HYDRAULIC CYLINDER TO HYDRAULIC LINES, IF REQUIRED

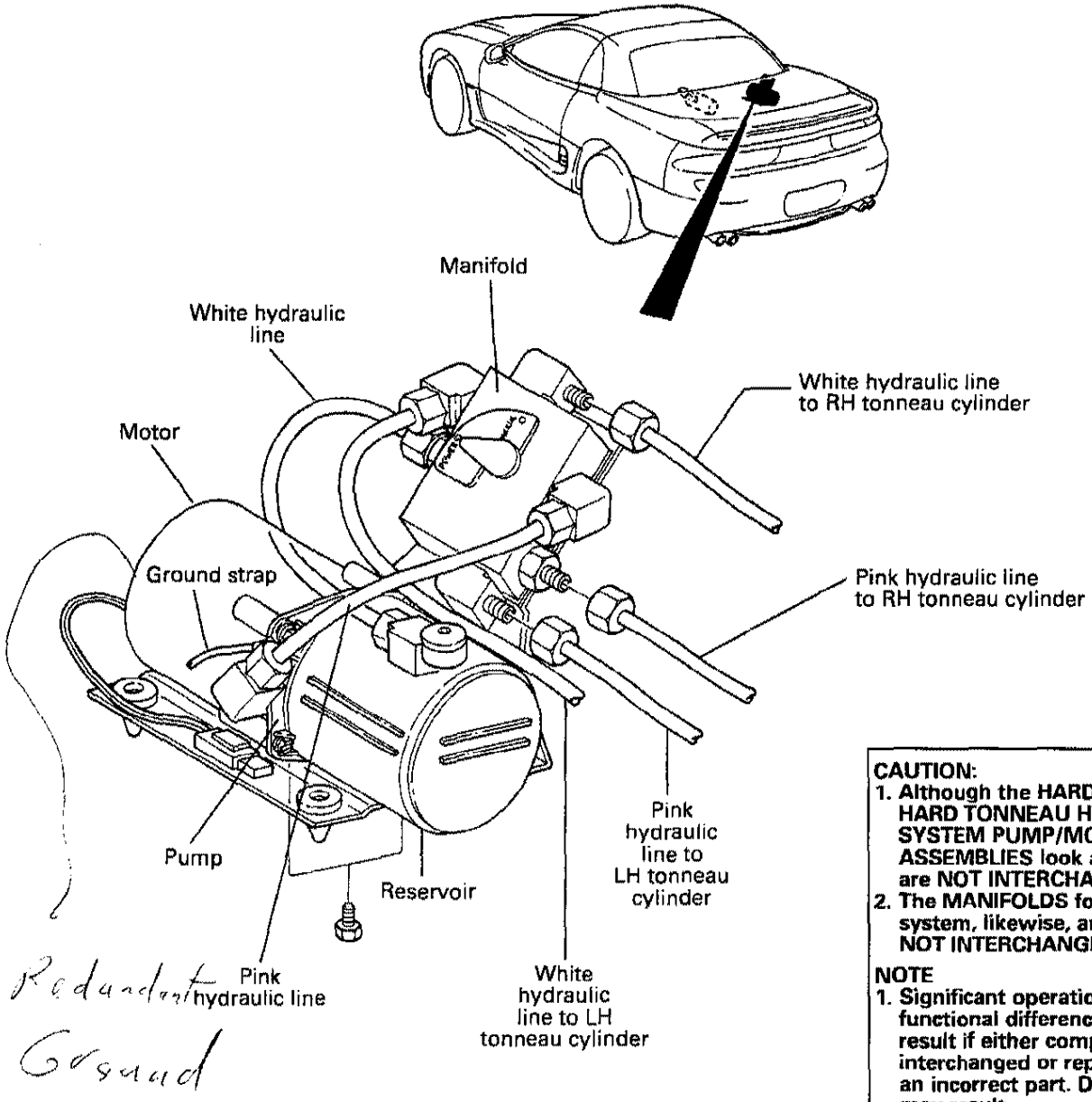
(1) Place clean rags around the cylinder to prevent dripping of the hydraulic fluid.
(2) Remove the caps or plugs from the hoses and hydraulic cylinder.
(3) Reconnect the hoses in the correct positions.

Caution
Mismatched hoses will cause damage to the hard tonneau, mechanisms, and hinge. To avoid system damage and ease reassembly, be sure to observe the hose position labels.

HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLY

DISASSEMBLY AND REASSEMBLY

<Some 1995 and 1996 models>



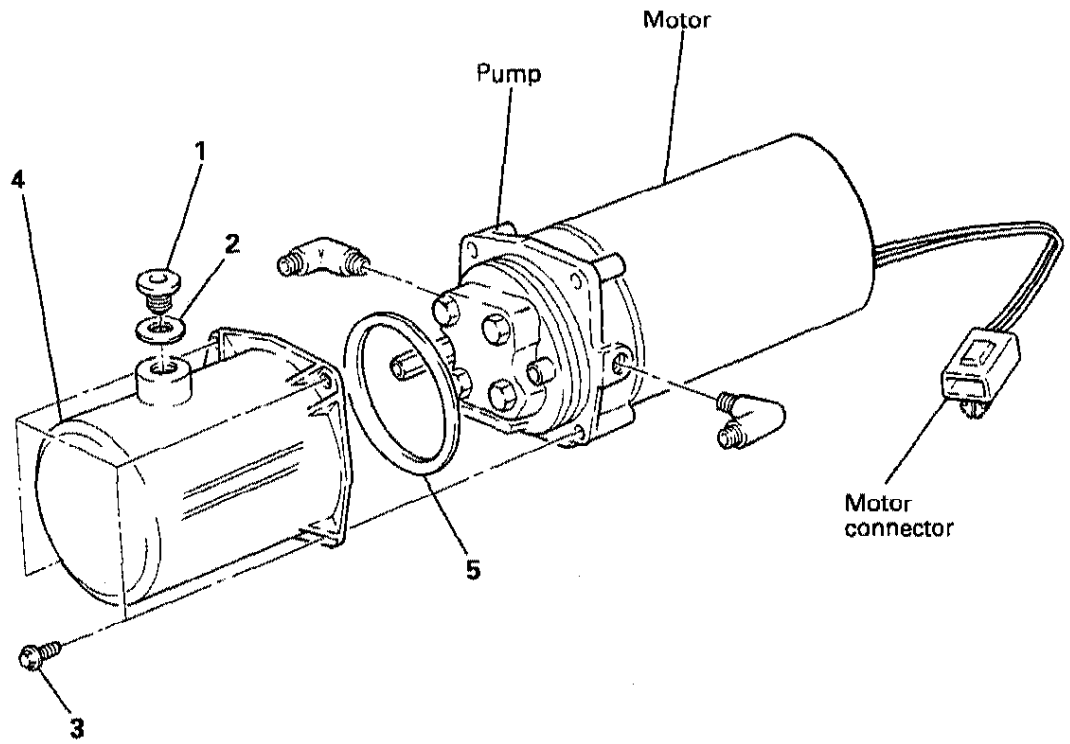
CAUTION:
1. **Although the HARDTOP and HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLIES look alike, they are NOT INTERCHANGEABLE.**
2. **The MANIFOLDS for either system, likewise, are also NOT INTERCHANGEABLE.**

NOTE
1. **Significant operational and functional differences will result if either component is interchanged or replaced with an incorrect part. Damage may result.**
2. **Individual parts do not bear distinguishing marks or identification.**

Redundant ground

HARD TONNEAU HYDRAULIC PUMP/MOTOR

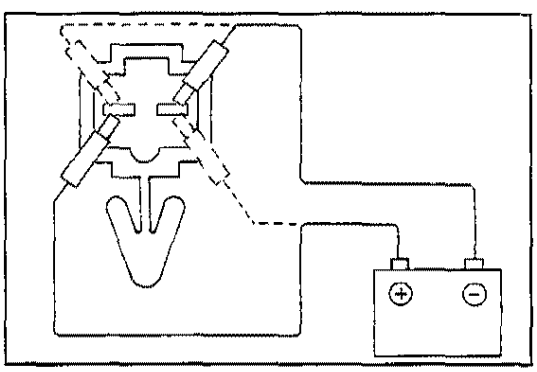
DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Plug
2. Seal
3. Screw
4. Reservoir
5. Seal

Reservoir



INSPECTION

HYDRAULIC PUMP MOTOR

1. Connect the battery directly to the motor connector and check that the motor spins freely.
2. Reverse the polarity and check that the motor spins freely in the opposite direction.

NOTE
If the motor does not spin freely, replace the pump/motor. **DO NOT repair or rebuild motor.**

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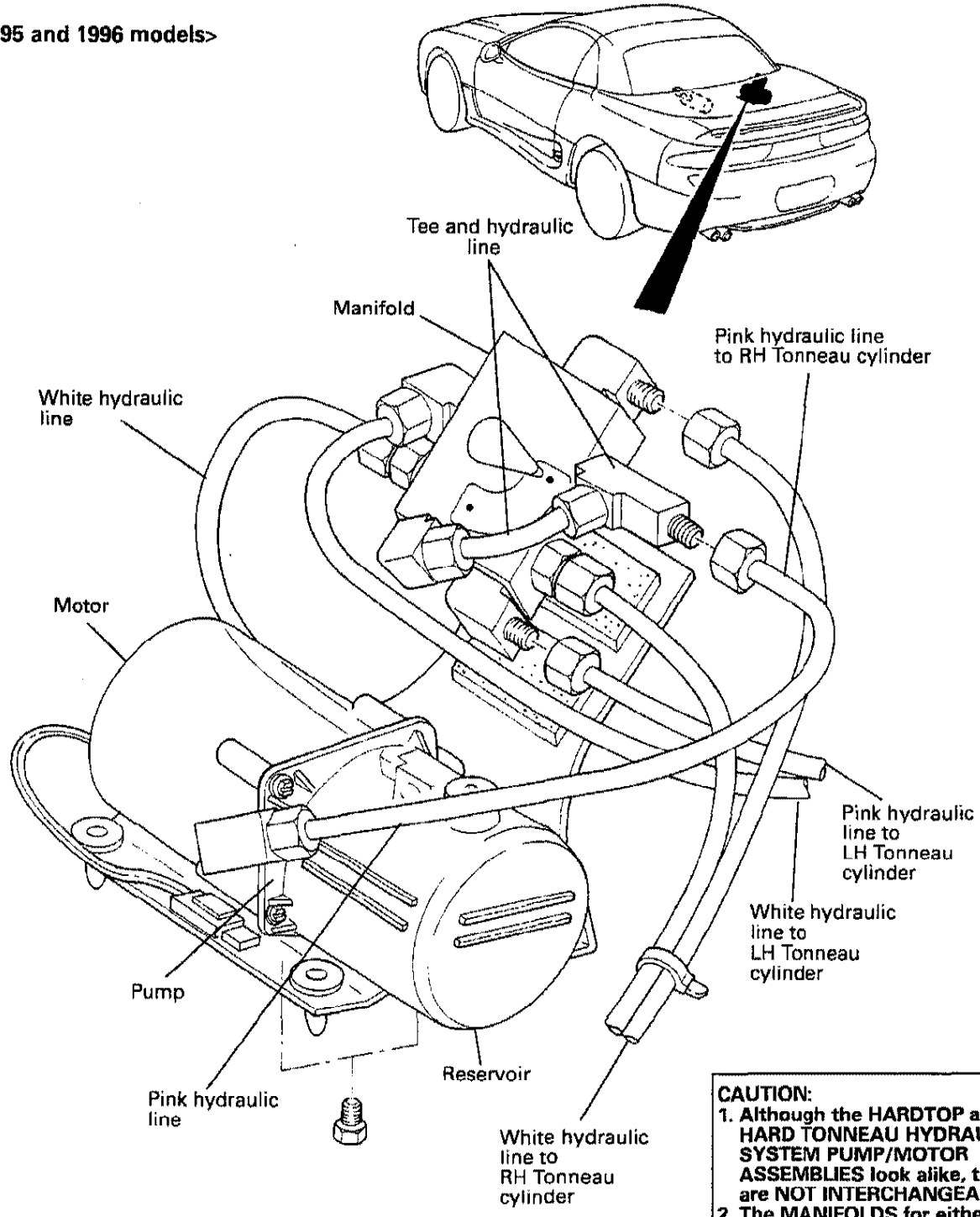
HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLY

DISASSEMBLY AND REASSEMBLY

<Some 1995 and 1996 models>



CAUTION:
1. **Although the HARDTOP and HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLIES look alike, they are NOT INTERCHANGEABLE.**
2. **The MANIFOLDS for either system, likewise, are also NOT INTERCHANGEABLE.**

NOTE
Significant operational and functional differences will result if either component is interchanged or replaced with an incorrect part. Damage may result.

NOTES

HARD TONNEAU POSITION SENSOR (POTENTIOMETER)

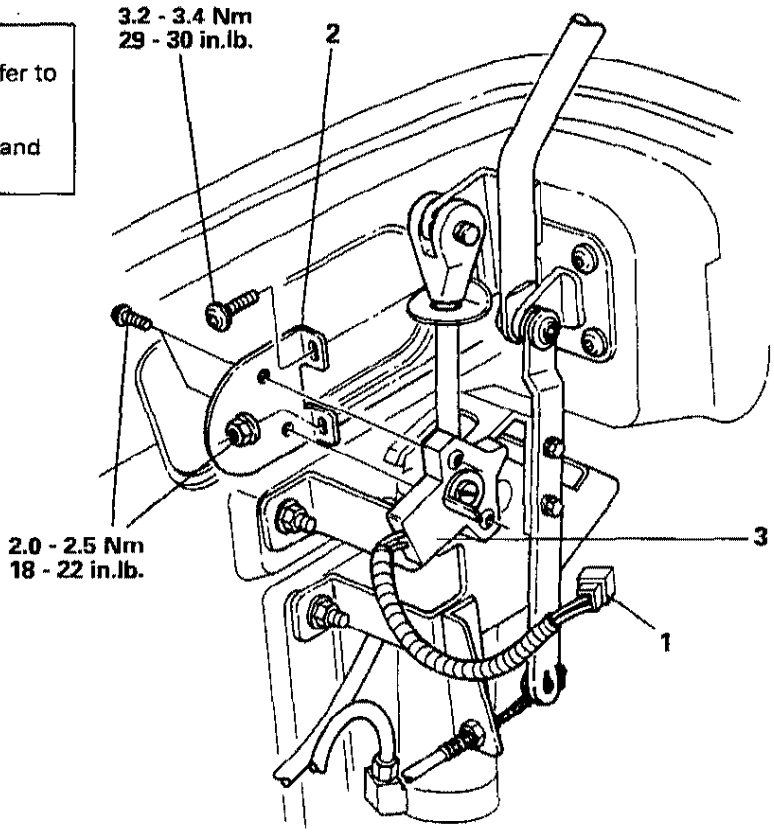
REMOVAL AND INSTALLATION

Both Potentiometers on Pass. Side

Pre-removal Operation
Open the hard tonneau halfway to access the sensor's mounting bracket upper attaching bolt
Removal of RH Trunk Trim Panel (Refer to GROUP 52, in this Manual.)

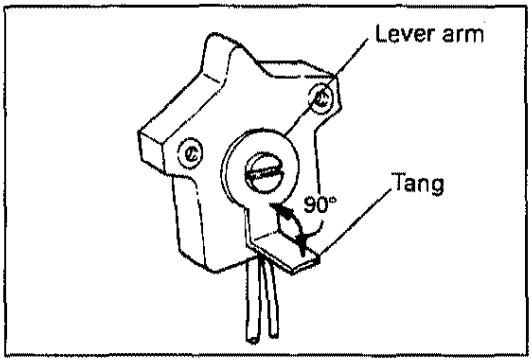
Post-installation Operation
Installation of RH Trunk Trim Panel (Refer to GROUP 52 - Trims, in this Manual.)
Run the Hardtop ECU Through Auto-configuration (Refer to DIAGNOSTICS and TESTING, in this section.)

Both potentiometers on pass side



Removal steps

1. Electrical connector
2. Sensor bracket
- ◆◆ 3. Sensor (potentiometer)



INSPECTION

INSPECTION OF HARD TONNEAU POSITION SENSOR

1. ON- AND OFF-CAR VISUAL INSPECTION

(1) Check that the sensor's lever arm and tang are not bent.

Standard value: Tang 90° to lever arm

(2) Check the lever arm shaft for radial play and mechanical operation.

Standard value: No play and smooth, quiet operation

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NOTE:
If the sensor is removed for inspection, you must run the hardtop ECU through Auto-configuration using the latest version of the ASC INCORPORATED diagnostic system.

2. **ON-CAR ONLY ELECTRONIC INSPECTION**

   Refer to Diagnostics and Testing, in this section.

SERVICE POINT OF INSTALLATION

3. **INSTALLATION OF HARD TONNEAU POSITION SENSOR**

   Be sure the sensor's lever arm tang is in the slot in the lift arm.

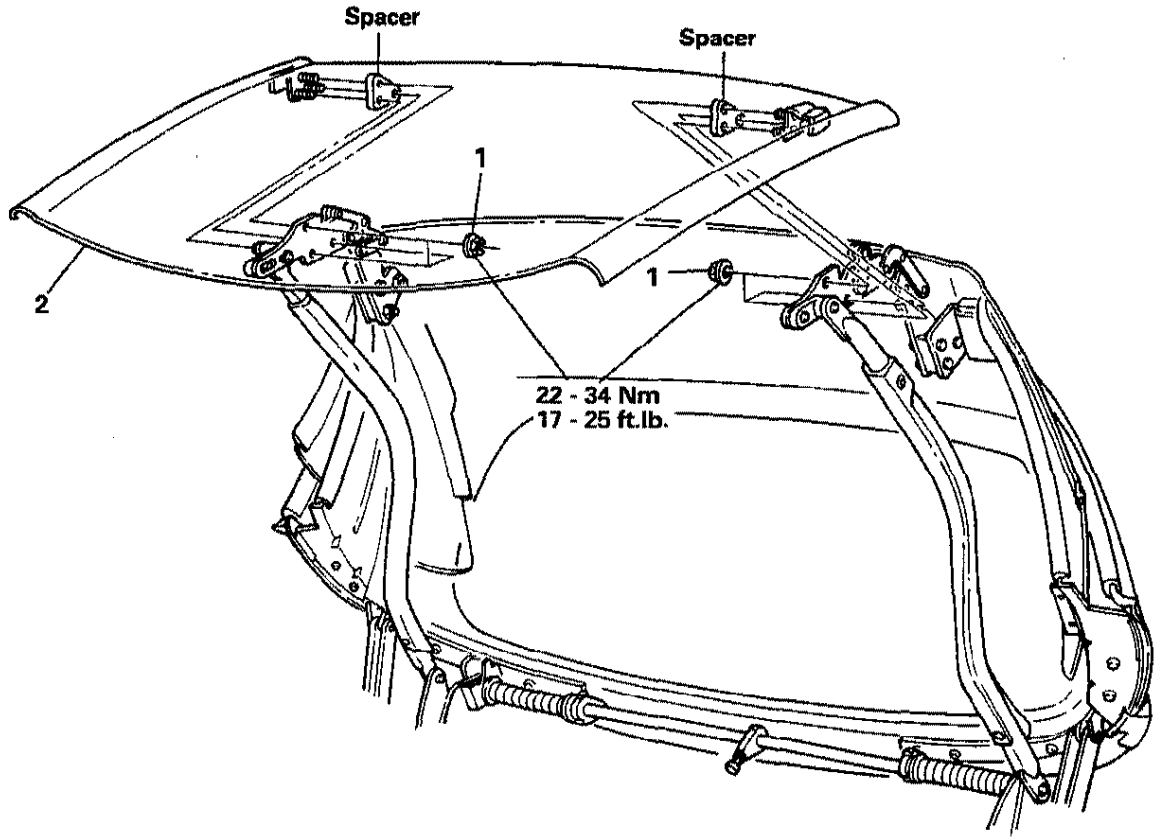
RETRACTABLE HARDTOP FRONT ROOF PANEL

REMOVAL AND INSTALLATION

Pre-removal Operation
Removal of Front Headlining (Refer to GROUP 52, in this Manual.)

Post-installation Operation
Installation Front Headlining (Refer to GROUP 52, in this Manual.)
Adjustment of Hardtop (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)

CAUTION:
This procedure requires two individuals to safely remove and install front roof panel.

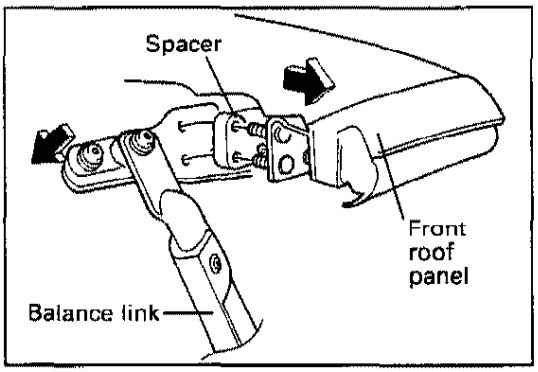


NOTE
Matchmark components before removal.

CAUTION:
Adjustment or replacement of this component requires that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Removal steps

1. Nut
2. Roof panel



SERVICE POINT OF REMOVAL

2. REMOVAL OF FRONT ROOF PANEL

(1) From one side of the vehicle have the assistant hold the front roof panel steady.
(2) From the other side of the vehicle push inboard on the balance link to disengage the roof from the roof hinge.
(3) Repeat for the other side.

SERVICE POINT OF INSTALLATION

2. INSTALLATION OF FRONT ROOF PANEL

(1) Install LH and RH spacers to roof panel brackets.
(2) From one side of the vehicle engage the roof panel into the roof hinge.
(3) At the other side of the vehicle push inboard on the balance link and engage the roof panel into the hinge.

Remove front headliner

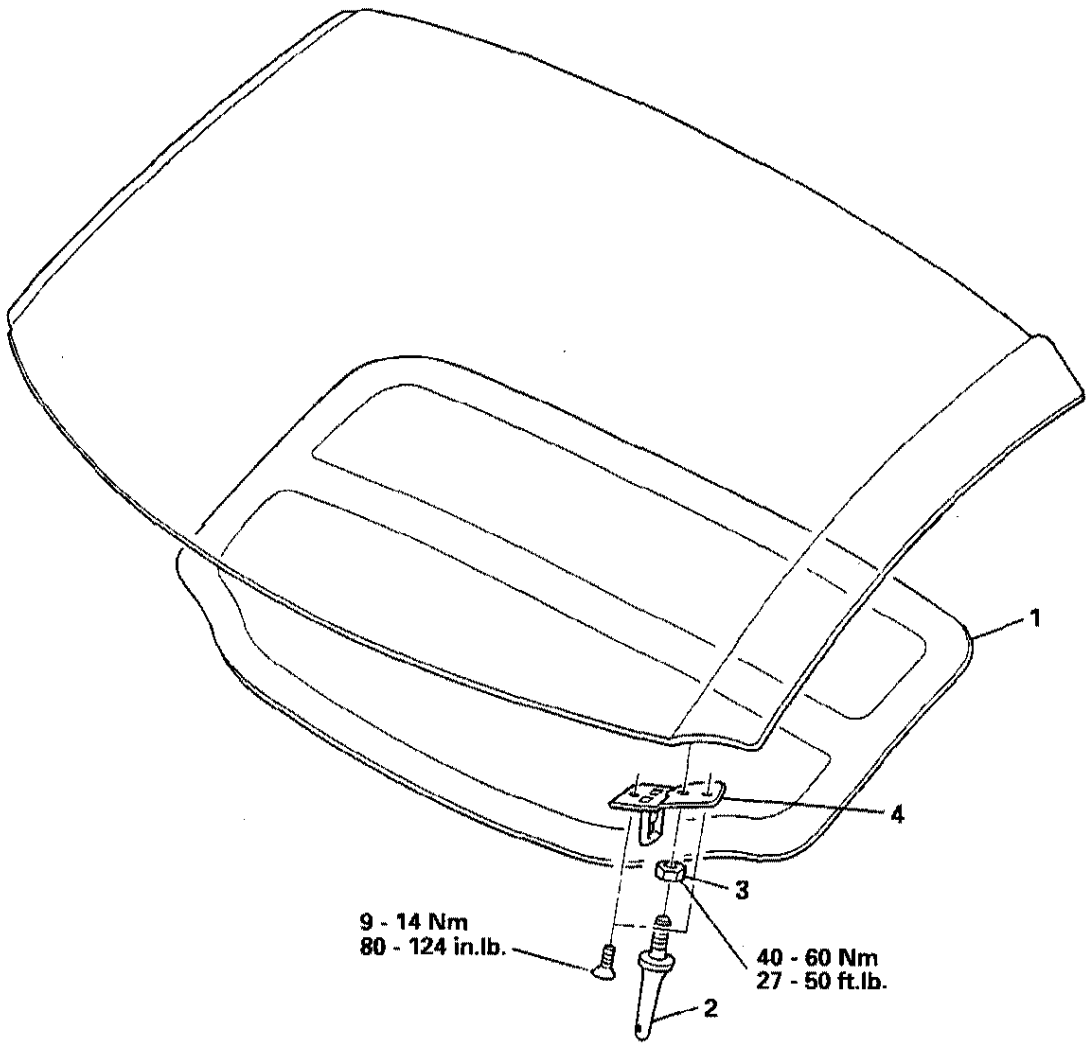
RETRACTABLE HARDTOP FRONT ROOF PANEL

DISASSEMBLY AND REASSEMBLY

Post-reassembly Operation
Adjustment of Hardtop Locator Pins (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)

NOTE
Matchmark components before disassembly.

NOTE
When installing a new roof panel, be sure to use new dual lock (available as a service part). Do not re-use the old dual lock. Transfer the old dual lock locations from the old hardtop to the new, and be sure they align with the headlining.



Disassembly steps

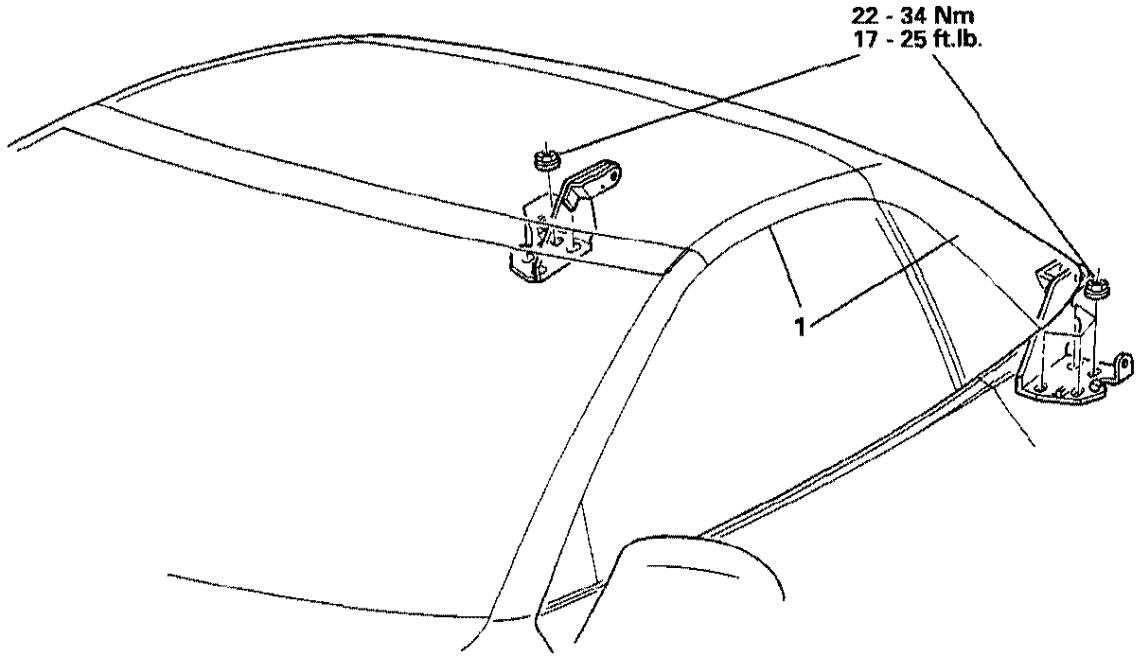
1. Sound deadener
2. Locator pin
3. Jam-nut
4. Striker

RETRACTABLE HARDTOP ASSEMBLY

REMOVAL AND INSTALLATION

CAUTION:
This procedure requires at least two individuals to safely remove and install the hardtop assembly.

Pre-removal and Post-installation Operation
Removal and Installation of Trunk Center Front Panel, Hydraulic Line Cover, Center Closeout Panel, and LH and RH Quarter Trim Panels (Refer to GROUP 52, in this Manual.)



CAUTION:
Adjustment or replacement of this component requires that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Removal step
◀▶ ▶◀ 1. Hardtop assembly

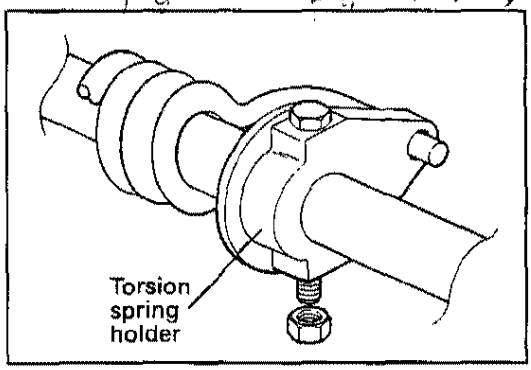
Very important to untension for top removal

Very important to untension for top removal

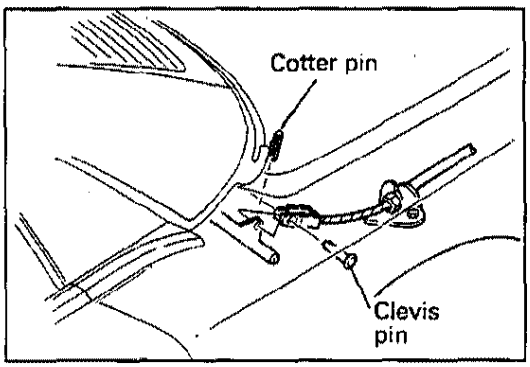
SERVICE POINT OF REMOVAL

1. REMOVAL OF HARDTOP ASSEMBLY

(1) Open the hardtop until the LH and RH torsion springs are unsprung and can be moved easily on the torque tube.
(2) Matchmark the torsion springs to the main pivot brackets and to the torsion spring holders on the torque tube.
(3) Matchmark the torsion spring holders to the torque tube.



(4) Remove the bolts attaching the torsion spring holders to the torque tube.
(5) Disconnect the roof wiring harness.



(6) Disconnect the flipper door drive cable from the hardtop mechanism.
(7) Fully open the hardtop.

Caution
Since the torsion springs have been disconnected from the hardtop mechanism the hardtop will not have spring resistance when opening or closing. This will cause accelerated opening or closing.

(8) Remove the nut and bolt attaching the LH and RH hardtop hydraulic cylinders to the hardtop mechanism.
(9) Close the hardtop manually.
(10) Retract both hydraulic cylinders using the hardtop "CLOSE" switch.
(11) Disconnect the hardtop position sensor (potentiometer) harness connector.
(12) Open the hardtop manually.
(13) There are four main pivot attaching nuts at both main pivot brackets. At each main pivot bracket remove both forward nuts and one of the rearward nuts. Loosen only the remaining fourth nuts so that they will prevent the hardtop assembly from prematurely separating from the vehicle.
(14) Carefully close or raise the hardtop.
(15) Remove the remaining main pivot attaching nuts.
(16) Carefully separate the hardtop assembly from the vehicle.

Caution
As the hardtop assembly is being raised and separated from the vehicle it will tend to fold into itself. Therefore keep fingers and other body parts out of moving parts.

SERVICE POINT OF INSTALLATION

2. INSTALLATION OF FRONT ROOF PANEL

(1) Carefully install the hardtop assembly to the vehicle.

Caution
As the hardtop assembly is being installed in the vehicle it will tend to fold into itself. Therefore keep fingers and other body parts out of moving parts.

(2) Make sure the locator pin on each main pivot bracket is in the locator hole in the body structure.
(3) Close the hardtop.
(3) Install the two rearward main pivot attaching nuts at each main pivot bracket.
(4) Carefully open the hardtop.

Caution
Since the torsion springs have been disconnected from the hardtop mechanism the hardtop will not have spring resistance when opening or closing. This will cause accelerated opening or closing.

(5) Install the remaining main pivot attaching nuts at both main pivot brackets.
(6) Reconnect the hardtop position sensor (potentiometer) harness connector.
(7) Reconnect the roof wiring harness.
(8) Extend both hydraulic cylinders using the hardtop "OPEN" switch.
(9) Reattach the LH and RH hardtop hydraulic cylinders to the hardtop mechanism with the nuts and bolts.

NOTE
The hardtop "OPEN"/"CLOSE" switch can be used to incrementally position the cylinder rods to the hardtop mechanisms.

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

(10) Open the hardtop halfway.
(11) Reconnect the flipper door drive cable to the hardtop mechanism.
(12) Engage the LH and RH torsion springs into the main pivot brackets.
(13) Slide the torsion spring holders over to the torsion springs and engage the coil spring into them.
(14) Open or close the hardtop as necessary to align the bolt holes in the torque tube and install the attaching bolts and nuts.

Standard value: 45 - 65 Nm (34 - 48 ft.lb.)

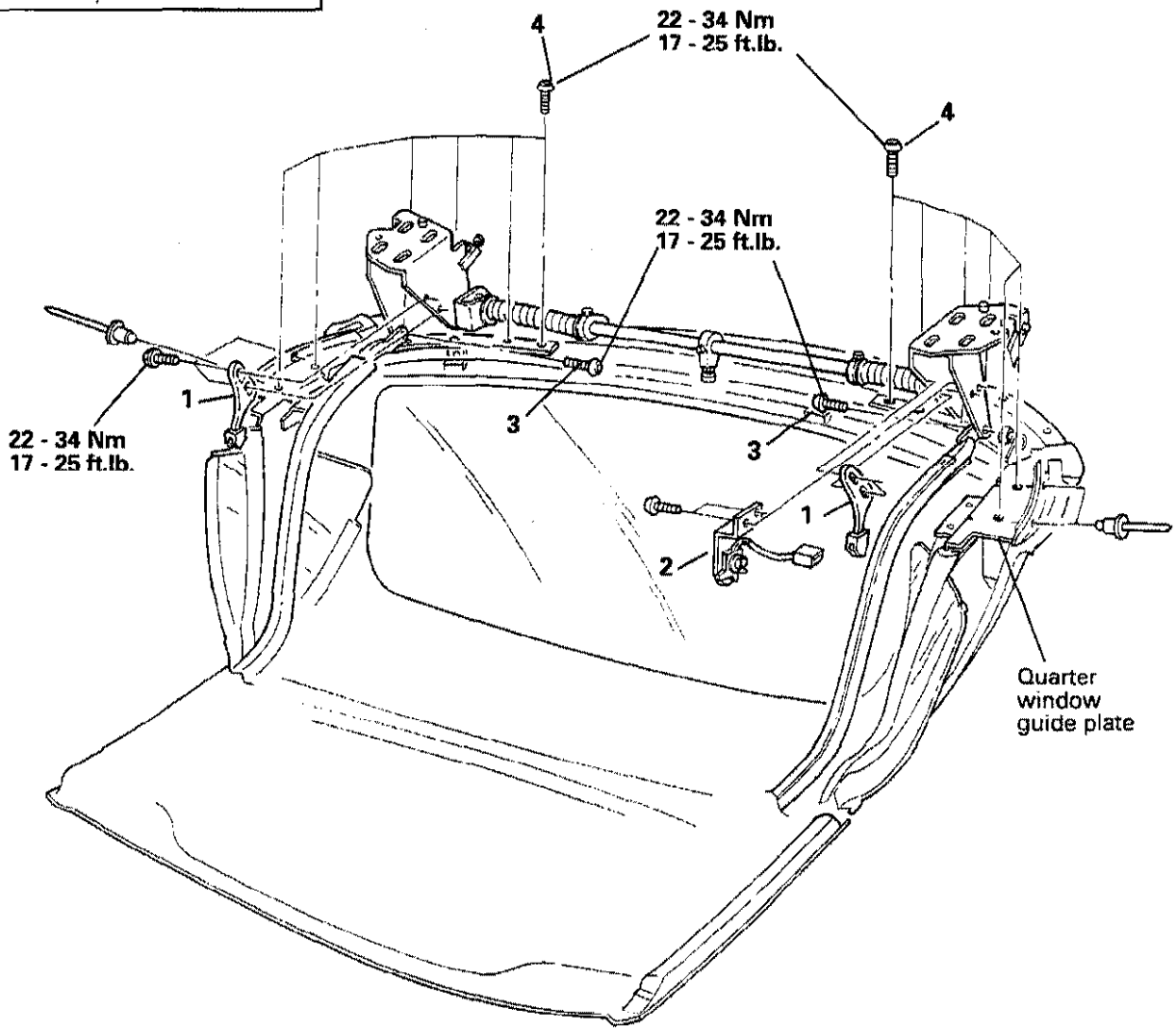
RETRACTABLE HARDTOP ASSEMBLY

DISASSEMBLY AND REASSEMBLY

<Mechanism>

NOTE
When installing a new roof panel, be sure to use new dual lock (available as a service part). Do not re-use the old dual lock. Transfer the old dual lock locations from the old hardtop to the new, and be sure they align with the headlining.

NOTE
Matchmark components before disassembly.



Pre-removal and Post-installation Operation
Removal and Installation of Two Front Rivets attaching Hardtop Weatherstrip (Refer to Weatherstrip in this section.)

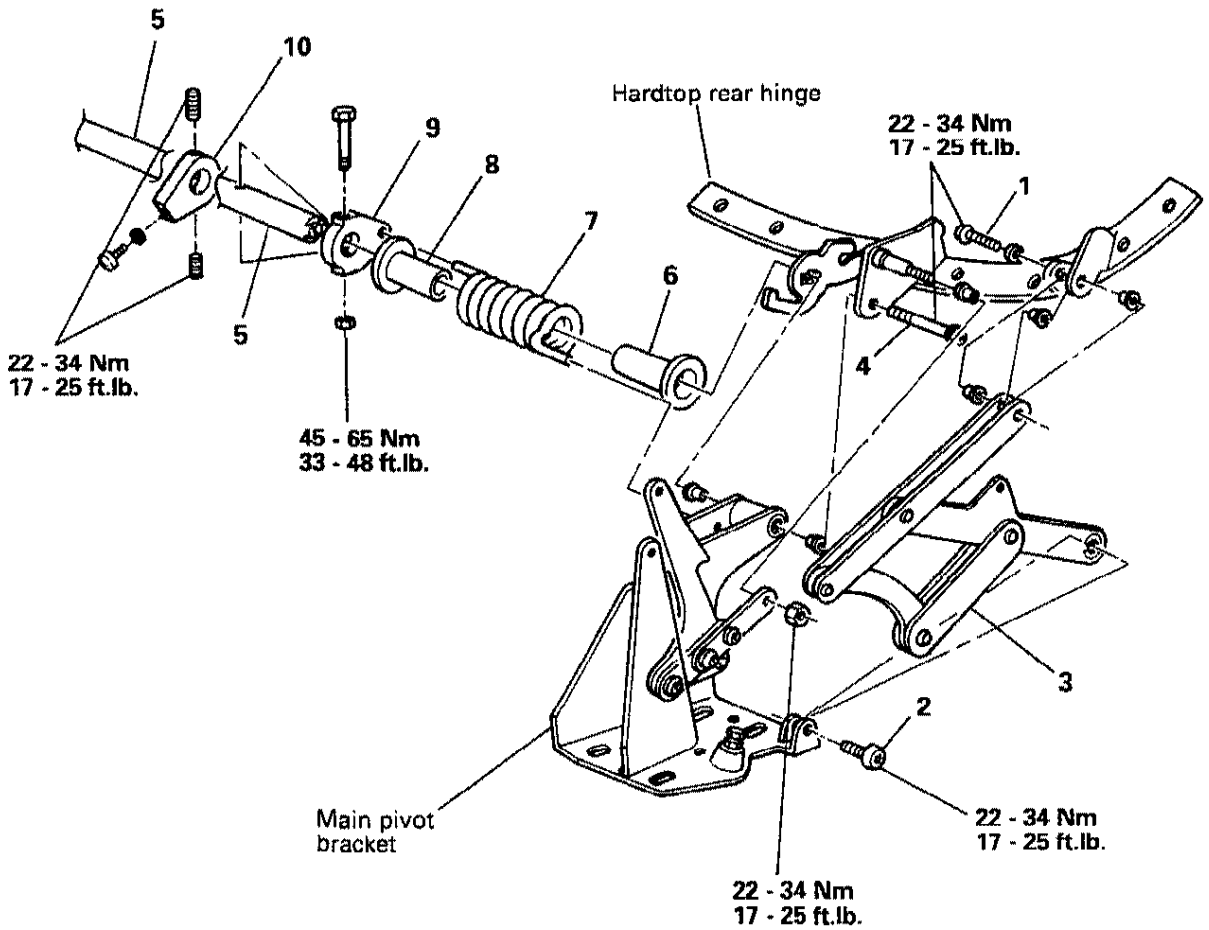
Disassembly steps

1. Center closeout guide assembly
2. Hardtop position sensor bracket
3. Bolt
4. Bolt

RETRACTABLE HARDTOP ASSEMBLY

DISASSEMBLY AND REASSEMBLY

<Mechanism>



Disassembly steps

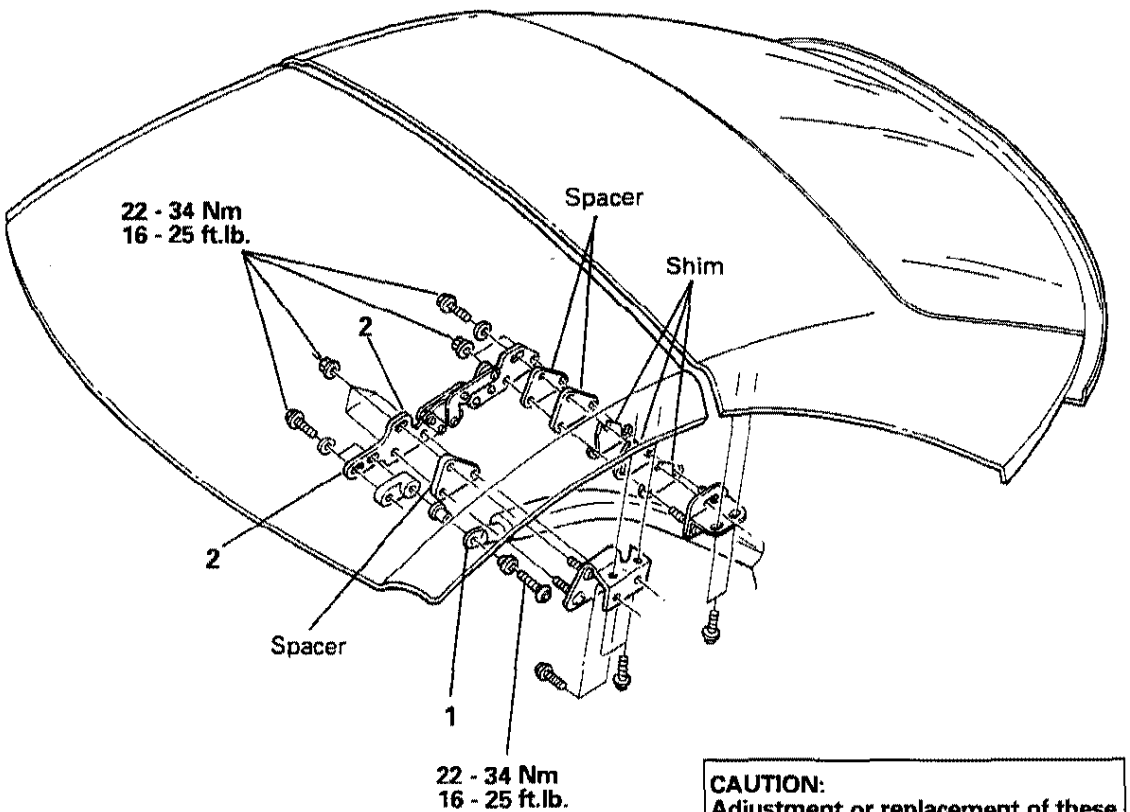
1. Bolt
2. Bolt
3. Drive link assembly
4. Bolt
5. Torque tube
6. Torsion spring spacer
7. Torsion spring
8. Torsion spring spacer
9. Torsion spring holder
10. Center closeout down stop

RETRACTABLE HARDTOP ASSEMBLY

DISASSEMBLY AND REASSEMBLY

<Mechanism>

NOTE
Matchmark components before disassembly.

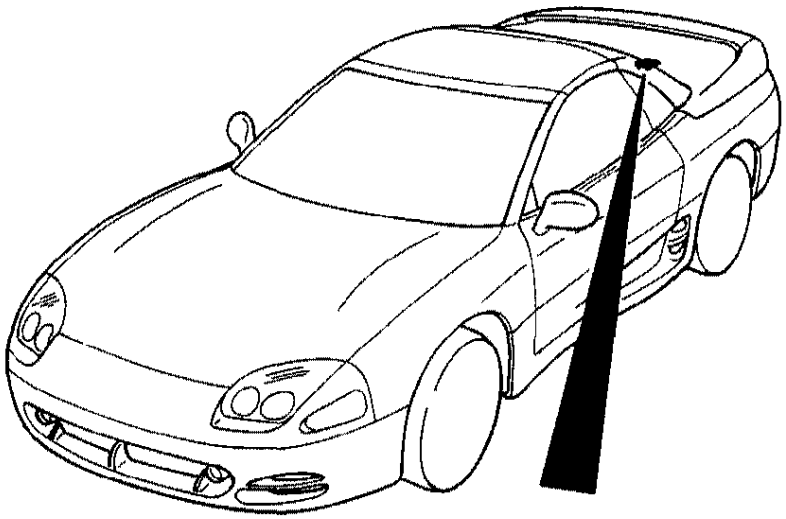


CAUTION:
Adjustment or replacement of these components require that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Disassembly steps

1. Balance link
2. Roof center hinge

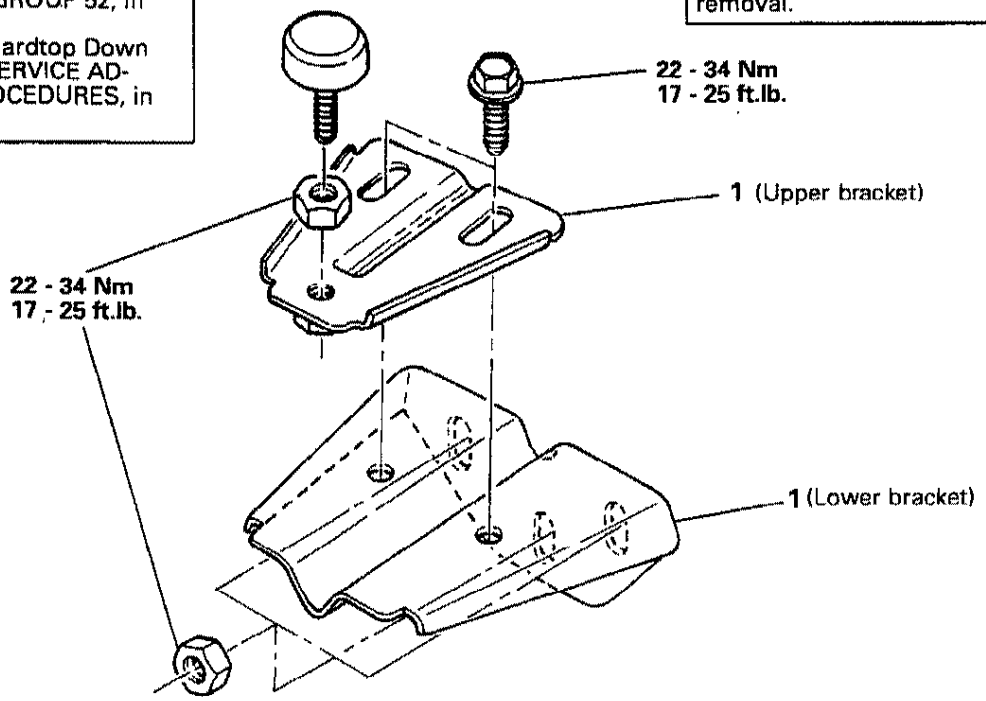
<Hardtop down stop>



Pre-removal Operation
Removal of Trunk Trim Rear Panel (Refer to GROUP 52, in this Manual.)

Post-installation Operation
Installation of Trunk Trim Rear Panel (Refer to GROUP 52, in this Manual.)
Adjustment of Hardtop Down Stop (Refer to SERVICE ADJUSTMENT PROCEDURES, in this Manual.)

NOTE
Matchmark components before removal.



CAUTION:
Adjustment or replacement of this component requires that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Removal step

1. Hardtop down stop

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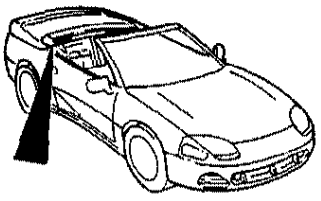
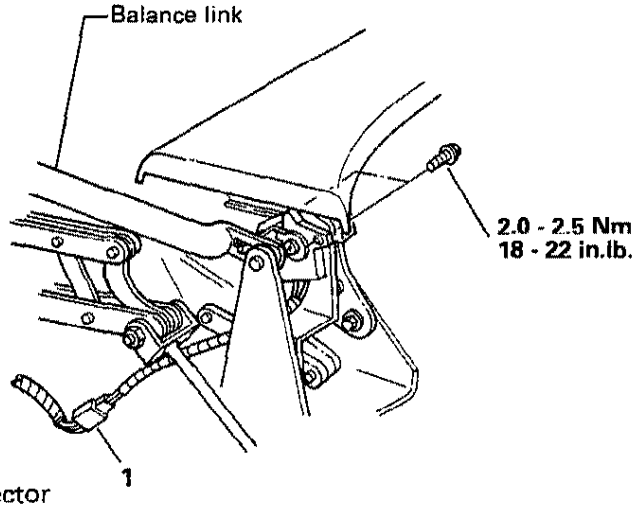
RETRACTABLE HARDTOP POSITION SENSOR (POTENTIOMETER)

REMOVAL AND INSTALLATION

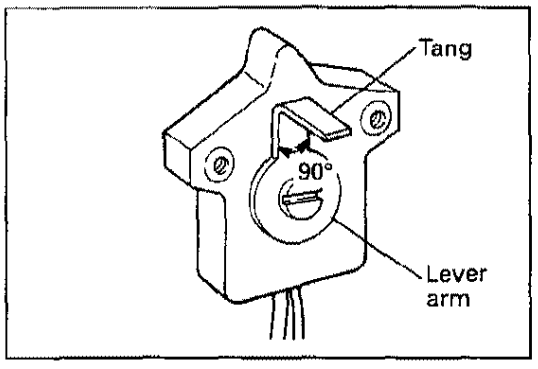
Pre-removal Operation
Fully open the hardtop, but do not close tonneau.

Post-installation Operation
Run the Hardtop ECU through Auto-configuration (Refer to DIAGNOSTICS and TESTING in this section.)





Removal steps
1. Electrical connector
◆◆ 2. Sensor



INSPECTION

INSPECTION OF RETRACTABLE HARDTOP POSITION SENSOR

1. ON- AND OFF-CAR VISUAL INSPECTION

(1) Check that the sensor's lever arm and tang are not bent.

Standard value: Tang 90° to lever arm

(2) Check the lever arm shaft for radial play and mechanical operation.

Standard value: No play and smooth, quiet operation

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NOTE:
If the sensor is removed for inspection, you must run the hardtop ECU through Auto-configuration using the latest version of the ASC INCORPORATED diagnostic system.

2. **ON-CAR ONLY ELECTRONIC INSPECTION**

   Refer to Diagnostics and Testing, in this section.

SERVICE POINT OF INSTALLATION

2. **INSTALLATION OF RETRACTABLE HARDTOP POSITION SENSOR**

   Be sure the sensor's lever arm tang is in the balance link.

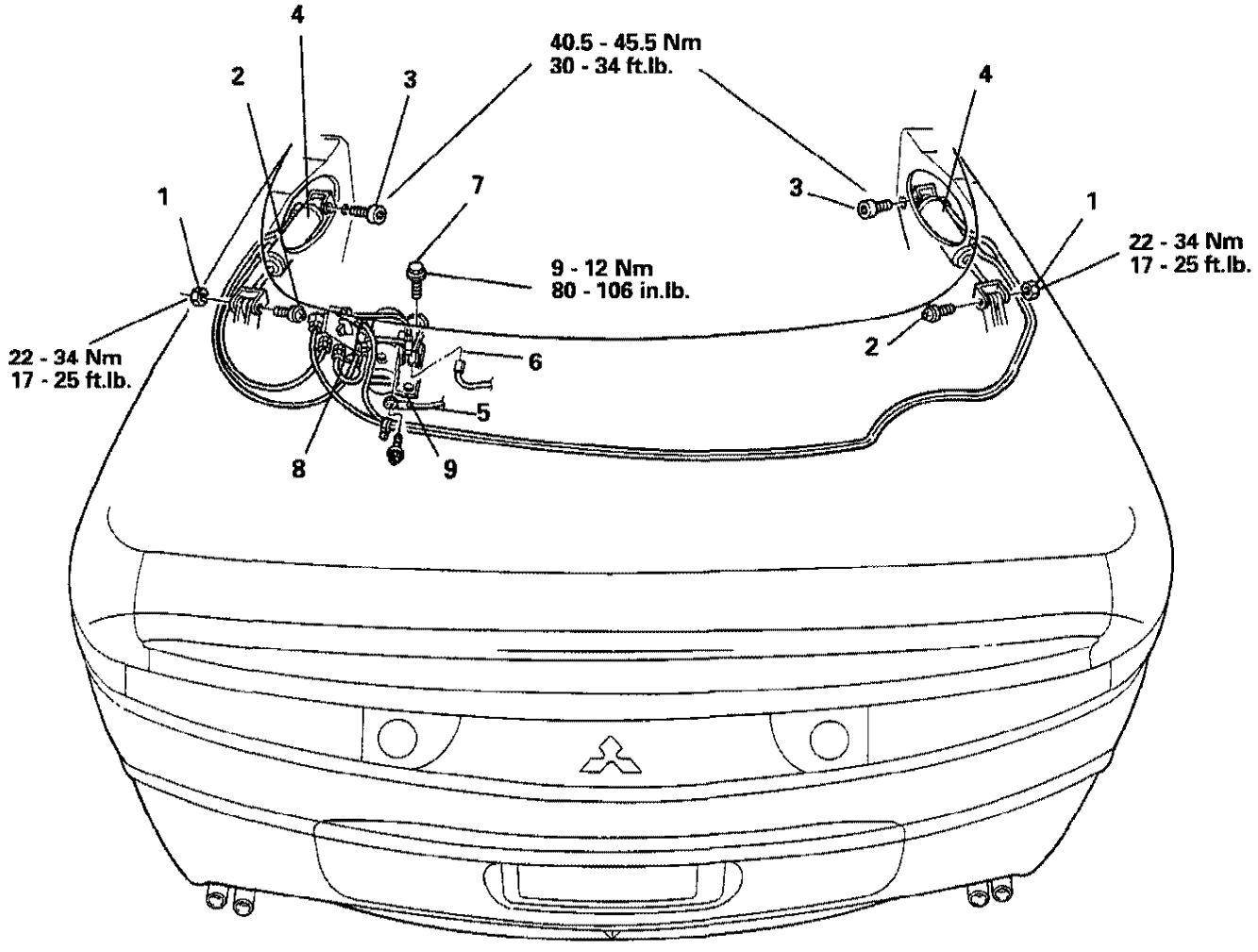
RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR AND CYLINDERS

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation of Hardtop Hydraulic Cylinders
- Removal and Installation of LH and/or RH Quarter Trim Panels (Refer to GROUP 52, in this Manual.)
- Removal and Installation of LH and/or RH Speaker (Refer to GROUP 54, in this Manual.)

NOTE
Hardtop must be open to remove hydraulic cylinders.

CAUTION:
Adjustment or replacement of these components require that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).



Hardtop hydraulic cylinder removal steps

1. Nut
2. Bolt
3. Bolt
4. Hydraulic cylinder

Hardtop hydraulic pump/motor removal steps

5. Ground strap
6. Electrical connector
7. Bolt
8. Pump/motor assembly
9. Bracket

Pre-removal and Post-installation Operation of Hardtop Hydraulic Pump/Motor
- Removal and Installation of Trunk Center Front Panel and Hydraulic Line Cover (Refer to GROUP 52, in this Manual.)

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SERVICE POINTS OF REMOVAL

4. REMOVAL OF HARDTOP HYDRAULIC CYLINDER FROM HYDRAULIC LINES, IF REQUIRED

(1) Place clean rags around the cylinder to prevent dripping of the hydraulic fluid.
(2) Remove the hydraulic hoses from the hydraulic cylinder. Plug or cap the hoses and cylinder fittings to prevent leakage.

Caution
Mismatched hoses will cause damage to the hardtop and mechanisms. To avoid system damage and ease reassembly, be sure to label the correct position of each hose as they are removed.

8. REMOVAL OF HYDRAULIC PUMP/MOTOR ASSEMBLY

(1) • For removal of the hydraulic pump/motor assembly with hoses still attached, go to Step (2).
• For removal the hydraulic pump/motor assembly only, follow the procedure below.
1. Place clean rags around the pump manifold to prevent dripping of the hydraulic fluid.
2. Remove the hydraulic hoses from the manifold. Plug or cap the hoses and manifold fittings to prevent leakage.

Caution
Mismatched hoses will cause damage to the hardtop and mechanisms. To avoid system damage and ease reassembly, be sure to label the correct position of each hose as they are removed.

3. Go to Step (2).

(2) Lift the pump/motor to separate the bracket grommets from the body and to disengage the dual-lock fastener from the body.

SERVICE POINTS OF INSTALLATION

8. INSTALLATION OF HYDRAULIC PUMP/MOTOR ASSEMBLY

(1) Place the pump/motor in position, align the bracket grommets to the holes, and press them in.
(2) Install the bolt to hold the pump/motor bracket in place.
(3) Press the manifold-end of the assembly to engage the dual-lock fasteners.
(4) Reconnect the hydraulic hoses if they have been disconnected using the following procedure.
1. Place clean rags around the pump manifold to prevent dripping of the hydraulic fluid.
2. Remove the caps or plugs from the pump manifold and hydraulic hoses.
3. Reconnect the hoses in the correct positions.

Caution
Mismatched hoses will cause damage to the hardtop and mechanisms. To avoid system damage and ease reassembly, be sure to observe the hose position labels.

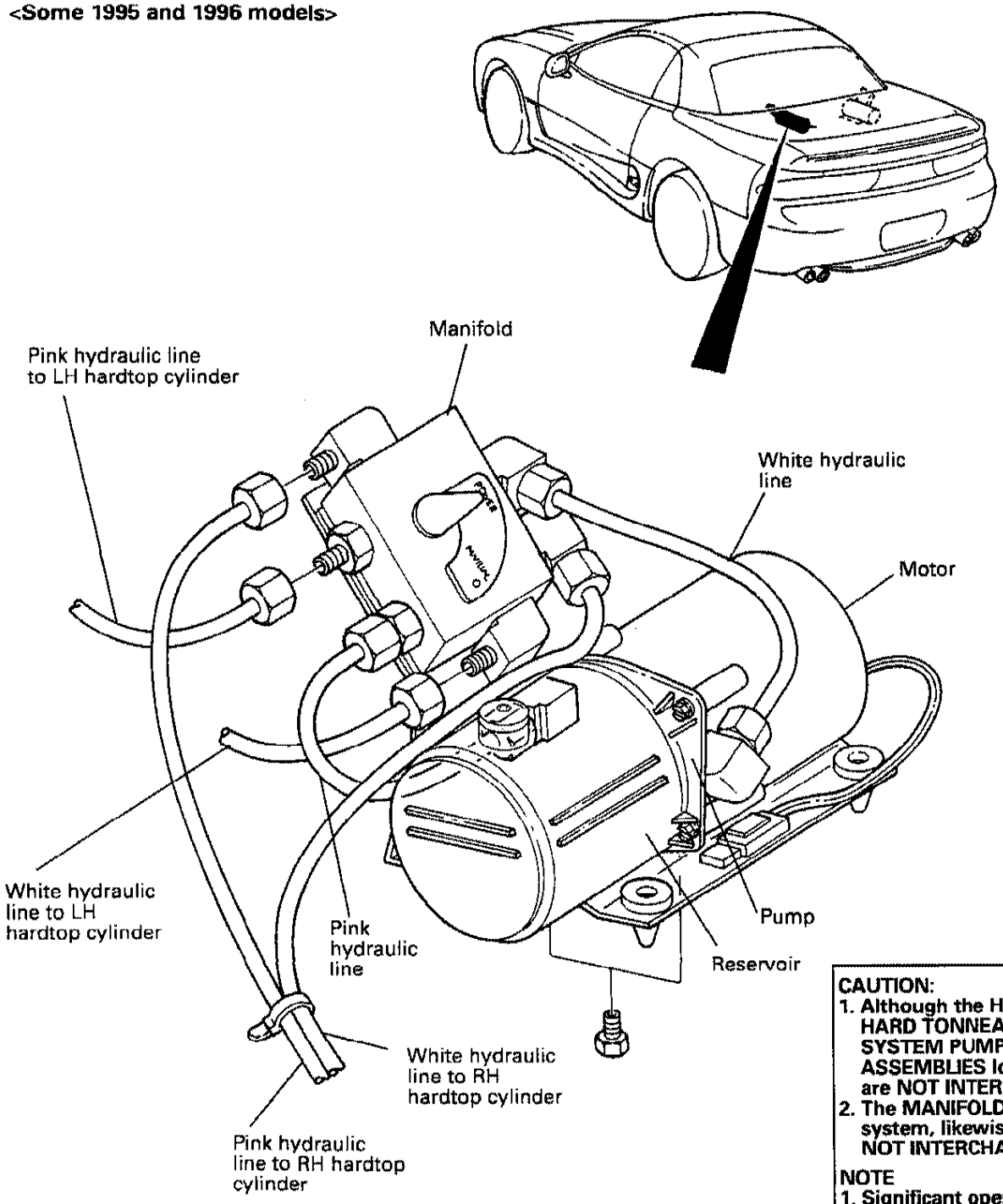
4. **INSTALLATION OF HARD TONNEAU HYDRAULIC CYLINDER FROM HYDRAULIC LINES, IF REQUIRED**
   (1) Place clean rags around the cylinder to prevent dripping of the hydraulic fluid.
   (2) Remove the caps or plugs from the hoses and hydraulic cylinder.
   (3) Reconnect the hoses in the correct positions.

Caution
Mismatched hoses will cause damage to the hardtop and mechanisms. To avoid system damage and ease reassembly, be sure to observe the hose position labels.

RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLY

DISASSEMBLY AND ASSEMBLY

<Some 1995 and 1996 models>



CAUTION:
1. **Although the HARDTOP and HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLIES look alike, they are NOT INTERCHANGEABLE.**
2. **The MANIFOLDS for either system, likewise, are also NOT INTERCHANGEABLE.**

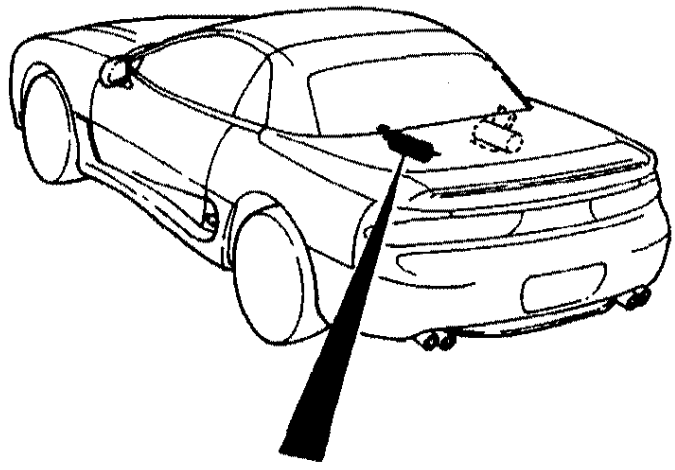
NOTE
1. **Significant operational and functional differences will result if either component is interchanged or replaced with an incorrect part. Damage may result.**
2. **Individual parts do not bear distinguishing marks or identification, only the entire assembly itself.**

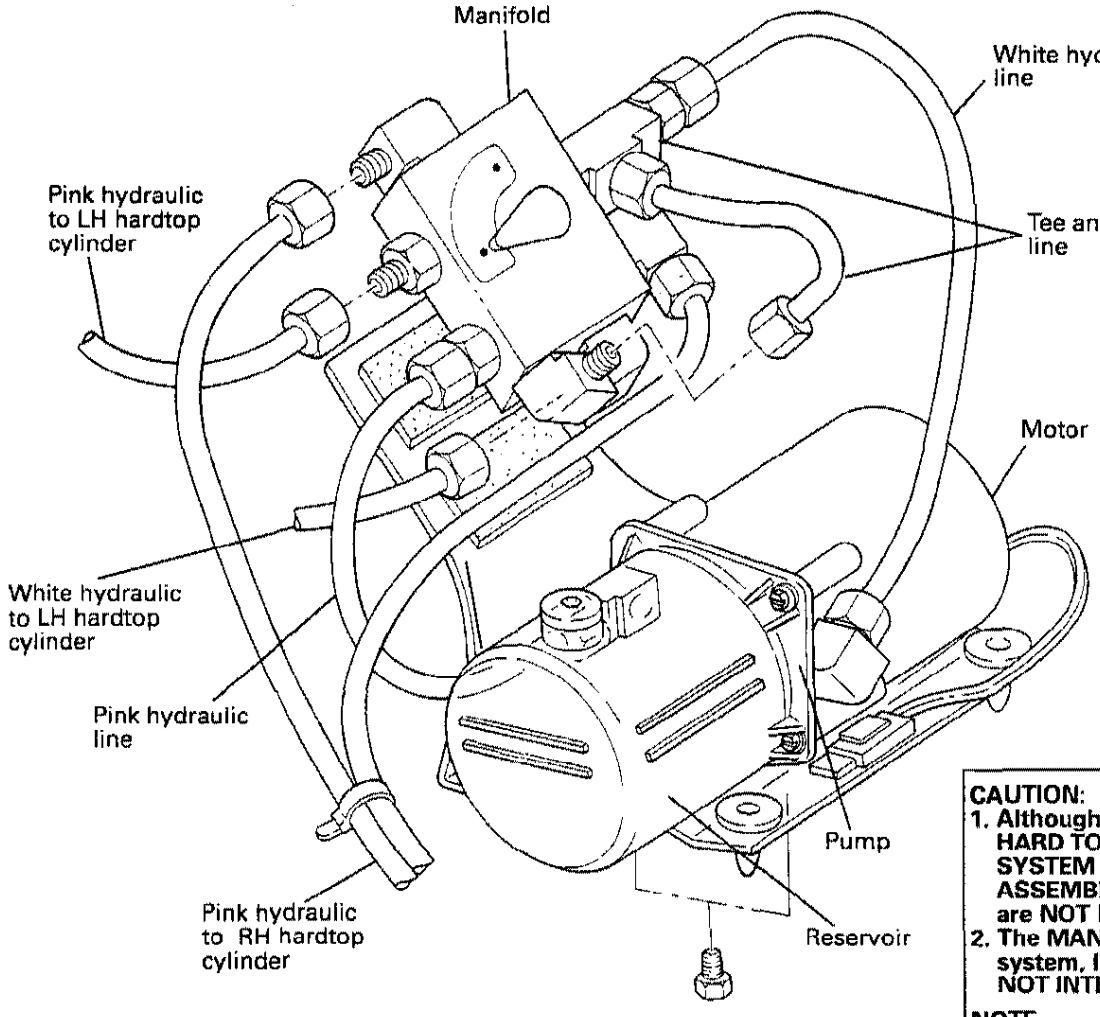
TSB Revision

RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLY

DISASSEMBLY AND ASSEMBLY

<Some 1995 and 1996 models>





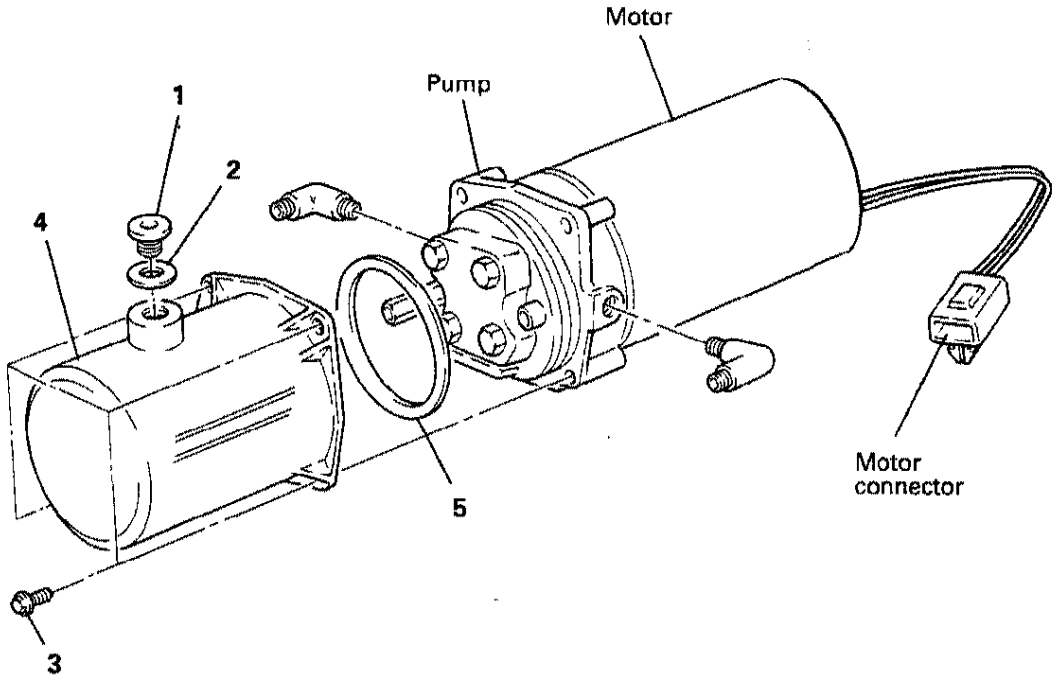
CAUTION:
1. **Although the HARDTOP and HARD TONNEAU HYDRAULIC SYSTEM PUMP/MOTOR ASSEMBLIES look alike, they are NOT INTERCHANGEABLE.**
2. **The MANIFOLDS for either system, likewise, are also NOT INTERCHANGEABLE.**

NOTE
Significant operational and functional differences will result if either component is interchanged or replaced with an incorrect part. Damage may result.

NOTES

RETRACTABLE HARDTOP HYDRAULIC PUMP/MOTOR

DISASSEMBLY AND REASSEMBLY

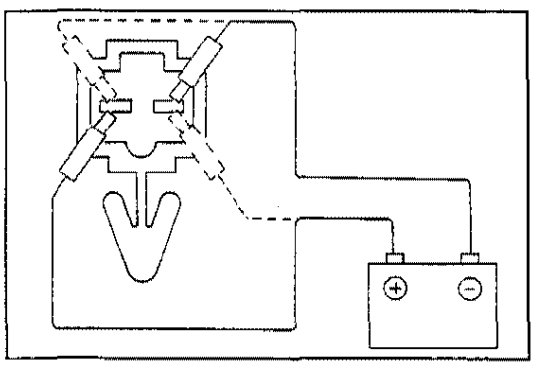


Disassembly steps

1. Plug
2. Seal

Reservoir

3. Screw
4. Reservoir
5. Seal



INSPECTION

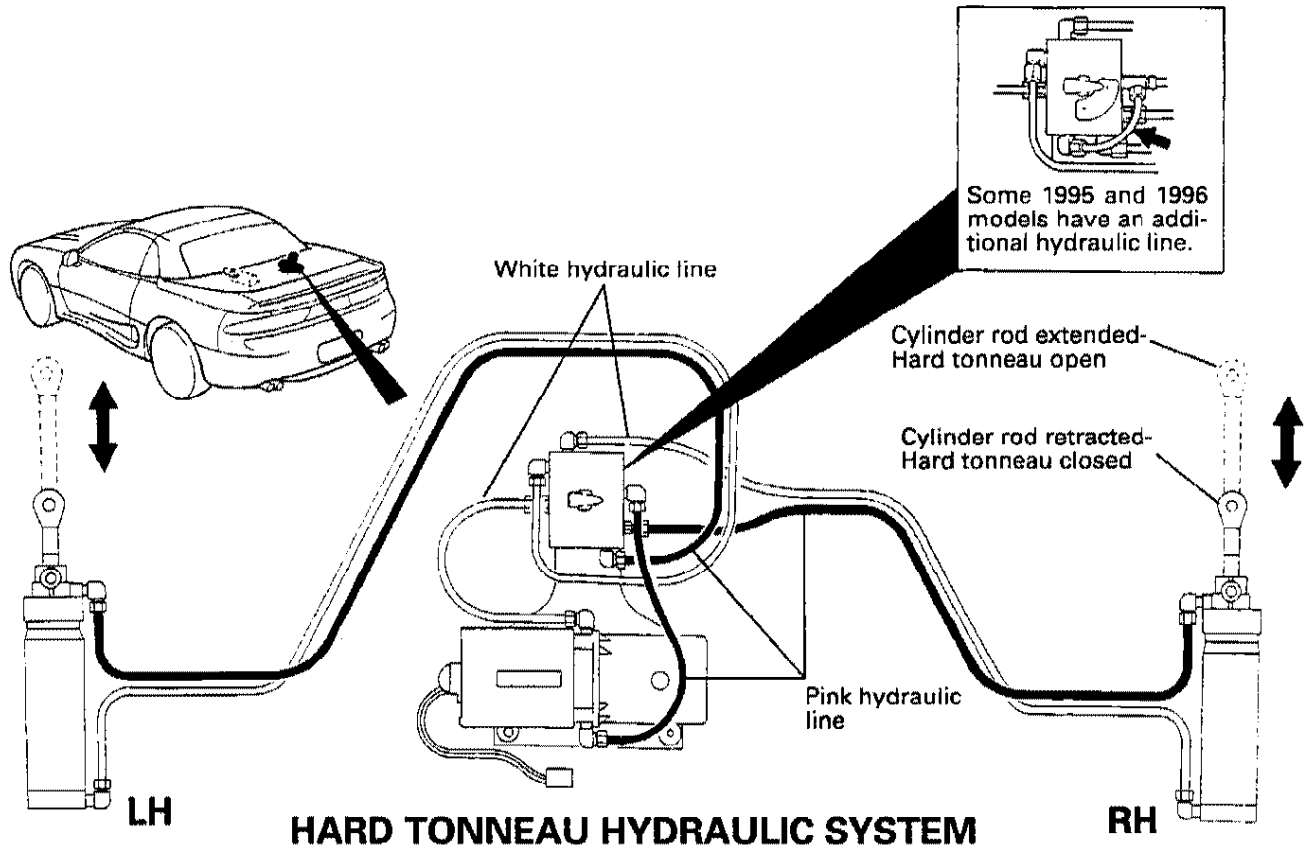
HYDRAULIC PUMP MOTOR

1. Connect the battery directly to the motor connector and check that the motor spins freely.
2. Reverse the polarity and check that the motor spins freely in the opposite direction.

NOTE
If the motor does not spin freely, replace the pump/motor. DO NOT repair or rebuild motor.

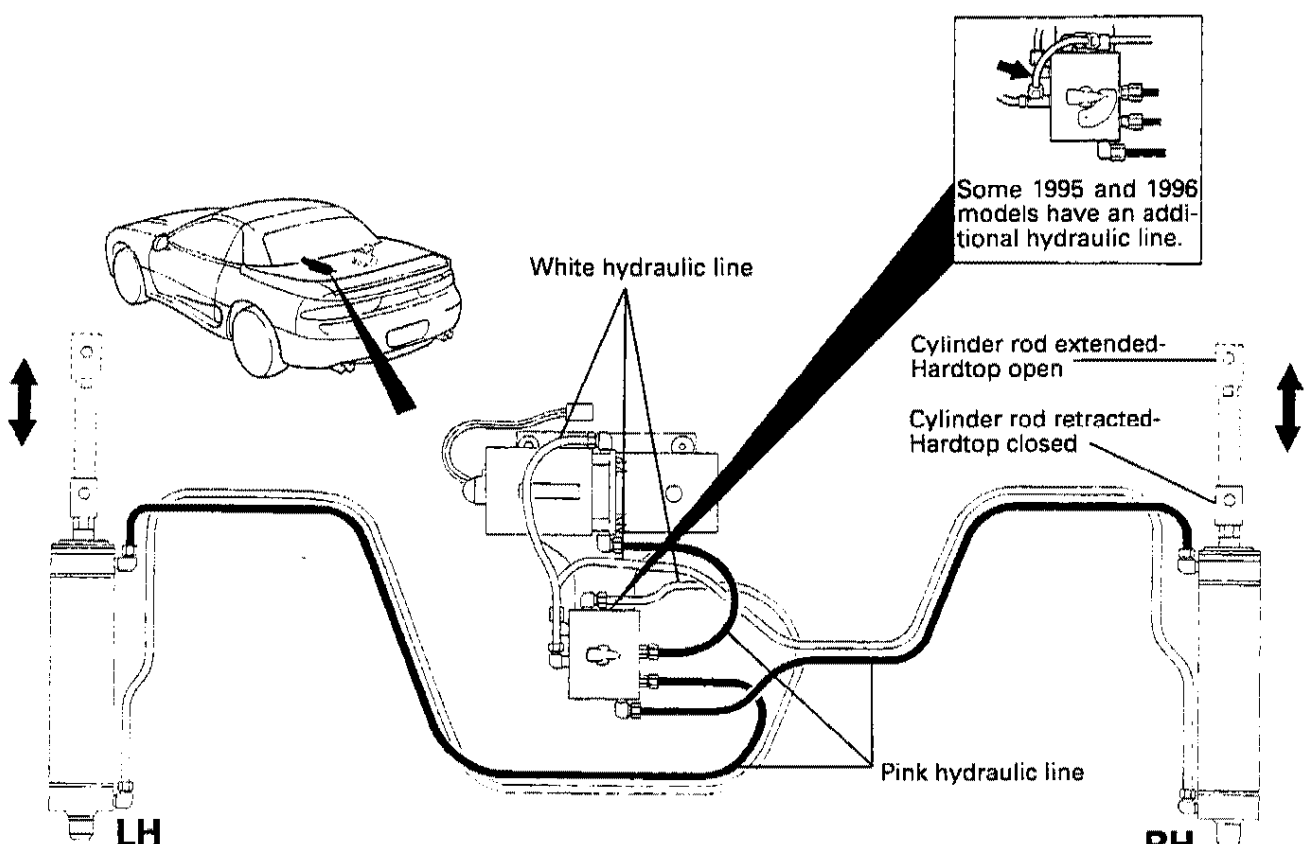
TSB Revision

HYDRAULIC SYSTEM DIAGRAMS



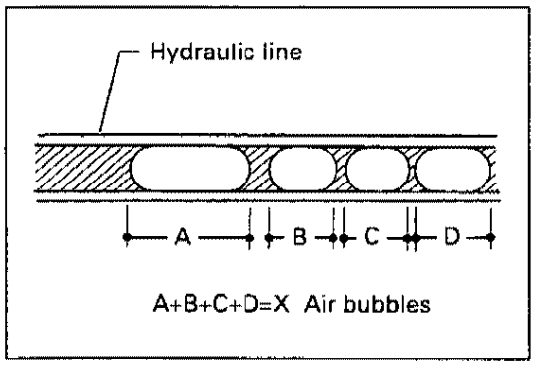
HARD TONNEAU HYDRAULIC SYSTEM

NOT TO SCALE



RETRACTABLE HARDTOP HYDRAULIC SYSTEM

NOT TO SCALE

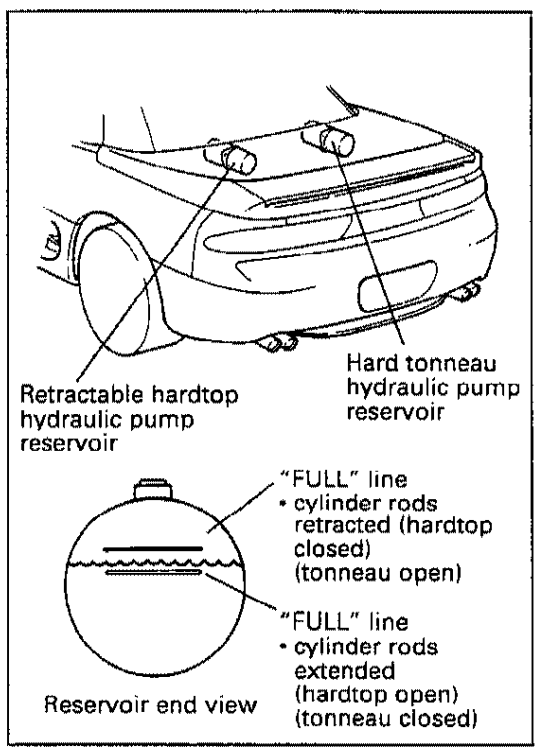


HYDRAULIC SYSTEM BLEEDING

ACCEPTABLE LEVELS OF TRAPPED AIR BUBBLES

The hard tonneau and retractable hardtop hydraulic systems are each designed to operate with 101.6 linear mm ± 50.8 linear mm (4 linear in. ± 2 in.) (cumulative) of visible trapped air bubbles in each of the hydraulic lines. Bubbles can be viewed through the translucent plastic lines after the protective black tubing is removed. This does not include air trapped elsewhere in the system such as in the pump cavity; in fittings; in the manifold assembly; and under or above each hydraulic cylinder piston.

Above 152.4 linear mm (6 linear in.), operation may be sluggish, accompanied by an intermittently noisy pump/motor. The noise is created by the air bubbles being forced through the pump. A noisy pump is a good indicator of excessive air in the system. To bleed the system, use the following appropriate procedure.



PRE-BLEEDING NOTES

(1) Remove the appropriate trunk trim to access the hydraulic system components.
(2) Make sure the hydraulic reservoir is filled.
(3) Do not allow the hydraulic oil to become aerated or foamy, which may occur with constant operation. If this occurs, discontinue operation and allow the air bubbles to rise in the reservoir. Bleed the system only when the oil in the reservoir becomes clear and aeration-free.
(4) Inspect all components for breaks or looseness that could cause air to enter the system or fluid leaks.
(5) Before bleeding, remove the reservoir filler plug to vent off trapped air, and place clean absorbent rags around the pump/motor to catch any spills.
(6) A hydraulic system with 152.4 linear mm (6 linear in.) or less of air in each line can sometimes be sufficiently bled by cycling the affected system 6-8 times.
(7) When cycling is not effective in reducing air bubbles to an acceptable level, the system must be bled.

HARD TONNEAU SYSTEM BLEEDING

Under most circumstances the hard tonneau hydraulic system can be effectively bled simply by cycling the hard tonneau 6-8 times using the tonneau "OPEN"/"CLOSE" switch.

If cycling the tonneau 6-8 times proves unsuccessful, bleed the system using the following procedure. This will allow the cylinder rods to fully extend and retract, forcing out most of the air.

1. Open the tonneau and suitably support the tonneau.
2. Disconnect the LH and RH tonneau cylinders from the lift arms by removing the clips and the clevis pins.
3. Using the tonneau switch, fully extend and retract the tonneau cylinders until they are within the Standard value for having air in the lines.

   NOTE
   If the tonneau cylinders do not react to the switch, it may be necessary to lower the tonneau slightly because the tonneau position sensor may be reading a full-open position.

   Caution
   Be sure that when the cylinders are cycling that they do not contact the vehicle or the lift arms, or cause personal injury.

4. Reattach the cylinders with the clevis pins and clips. Remove the suitable support.
5. Reattach the trunk trim.

RETRACTABLE HARDTOP SYSTEM BLEEDING

Under most circumstances the hardtop hydraulic system can be effectively bled simply by cycling the hardtop 6-8 times using the hardtop "OPEN"/"CLOSE" switch.

If cycling the hardtop 6-8 times proves unsuccessful, bleed the system using the following procedure. This will allow the cylinder rods to fully extend and retract, forcing out most of the air.

1. Disconnect the LH and RH hardtop cylinders from the hardtop (refer to **RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR AND CYLINDERS,** in this section).
2. Install and connect the object in trunk sensor, if it is not already installed.
3. Raise and suitably support the hardtop 101.6 mm (4 in.) off the hardtop down stop. Otherwise, the hardtop position sensor may read a full-open position.
4. Using the hardtop switch, fully extend and retract the hardtop cylinders until they are within the Standard value for having air in the lines.

Caution
Be sure that when the cylinders are cycling that they do not contact the vehicle or hardtop mechanisms, or cause personal injury.

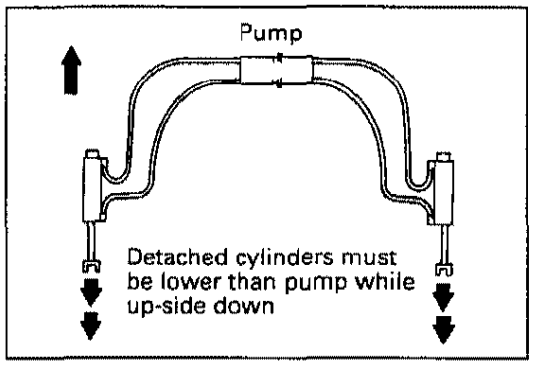
- If the bleeding procedure was successful, go to Step 5, then the procedure will be complete.
- If the bleeding procedure was unsuccessful, go to Step 8.

5. Reattach the cylinders (refer to **RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR AND CYLINDERS,** in this section).
6. Remove the suitable support from the hardtop down stop.
7. Reattach the trunk trim.
8. Remove both hardtop hydraulic cylinders from the vehicle with hydraulic lines still connected (refer to **RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR AND CYLINDERS,** in this section).

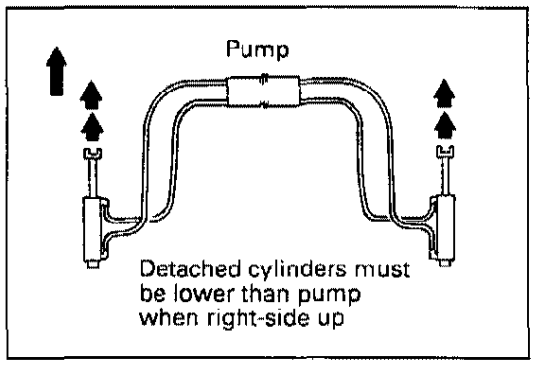
NOTE
This procedure is best performed with both cylinders held in the cargo/hardtop stowage area.

Caution
To prevent injury or damage when operating the hydraulic cylinders, keep the hydraulic cylinders clear of your body and the vehicle.

9. Close the hardtop until it is approximately 152.4 mm (6.0 in.) from the header and suitably support it there.



10. Press the hardtop "OPEN" switch to fully extend the hydraulic cylinder piston rods.
11. Instruct two helpers to turn the cylinders up-side down and hold them lower than the pump for approximately 3-4 minutes. This allows air bubbles in the cylinders to rise so they will be forced out when the hardtop "CLOSE" switch is pressed.



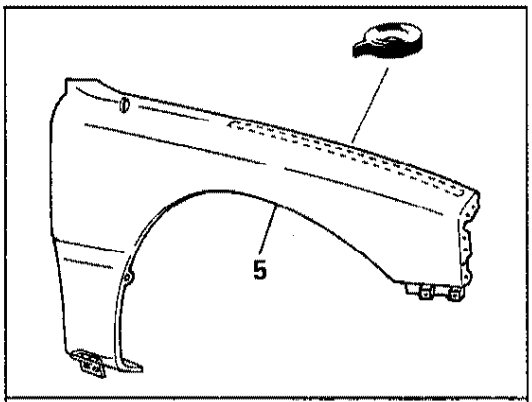
12. Press the hardtop "CLOSE" switch to fully retract both cylinders.
13. Instruct the helpers to turn the cylinders right-side-up and hold them lower than the pump for approximately 3-4 minutes.
14. Press the hardtop "OPEN" switch to fully extend both cylinders.
15. Check the hydraulic lines for air bubbles.
    - If the air in each line is within the Standard value, reinstall the hydraulic cylinders (refer to **RETRACTABLE HARDTOP HYDRAULIC SYSTEM PUMP/MOTOR AND**

CYLINDERS, in this section).
- If the air in the lines is more than the Standard value, repeat Steps 9 through 15.

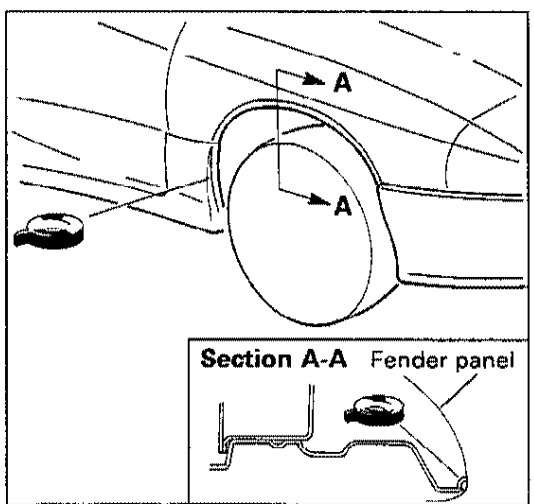
FRONT FENDER

REMOVAL AND INSTALLATION

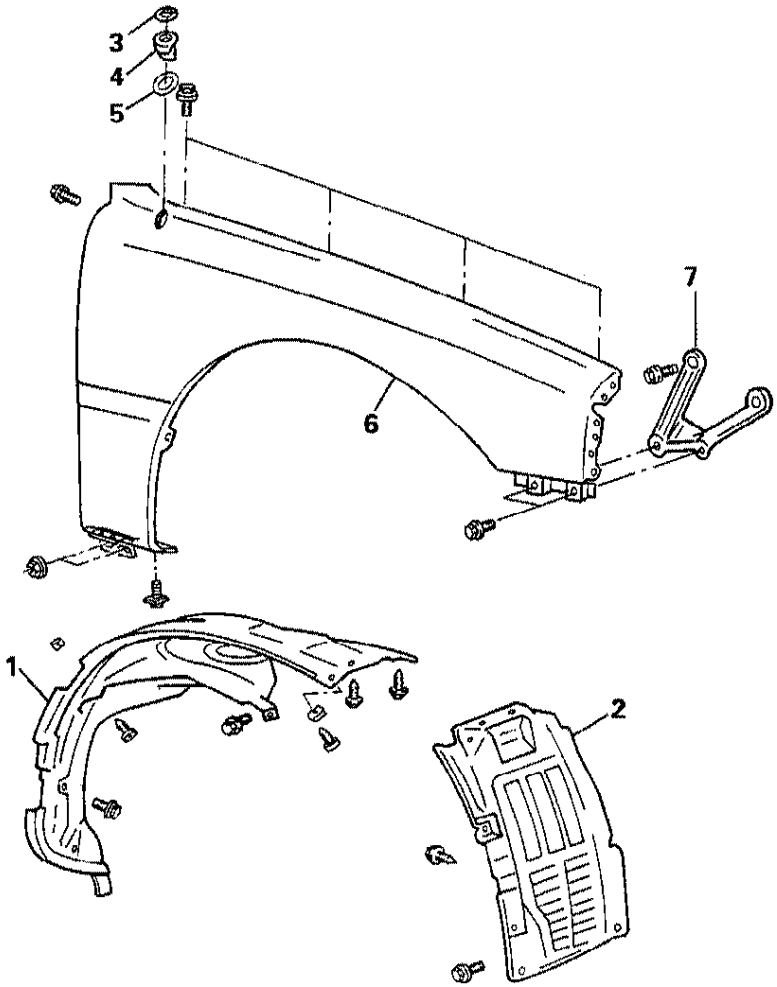
CAUTION: SRS
When removing and installing the front fender panel, do not allow any impact or shock to the front impact sensor.



Sealant:
3M ATD Part No. 8625, or equivalent

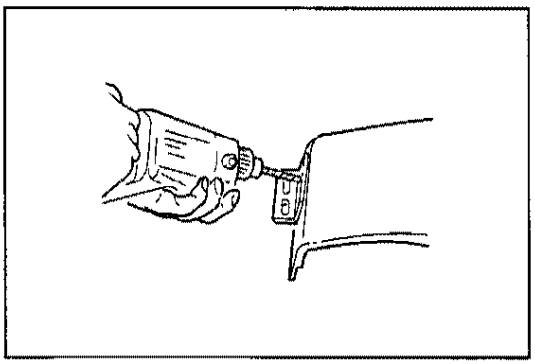


Sealant:
3M ATD Part No. 8625, or equivalent



Removal steps

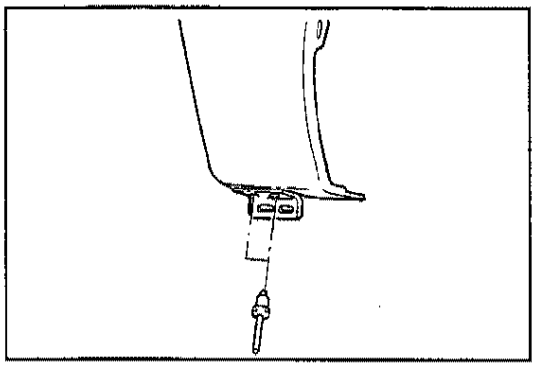
1. Front splash shield
   Side airdam
   (Refer to GROUP 51 - Aero Parts, in the Volume 1 Service Manual.)
2. Front splash shield
   Front bumper
   (Refer to GROUP 51 - Front Bumper, in the Volume 1 Service Manual.)
3. Motor antenna ring nut
   (RH fender only)
4. Motor antenna outer garnish
   (RH fender only)
5. Gasket
6. Front fender panel
7. Front fender bracket



DISASSEMBLY OF LOWER FENDER BRACKET

NOTE
The lower fender bracket can be removed and installed on- or off-car.

1. Remove the two rivets using a drill with a 3/16 in. bit.
2. Apply zinc-rich primer to the rivet holes in the fender, and let dry.



REASSEMBLY OF LOWER FENDER BRACKET

1. Attach the lower fender bracket using two rivets.

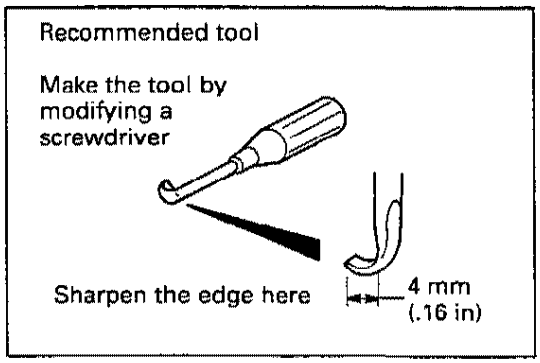
   Rivet: 3/16 in. x .125 Flange head

ROOF GLASS

GENERAL

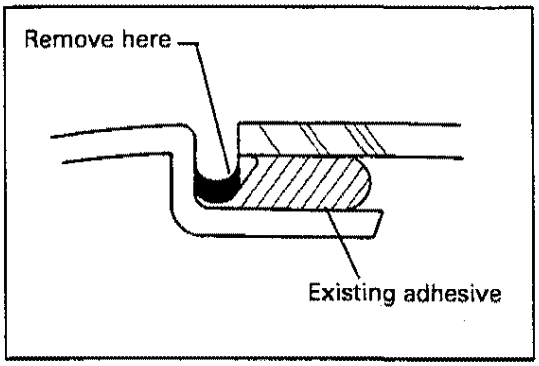
GLASS WIPE, PRIMERS, ADHESIVE AND GLASS INSTALLATION ITEMS

Glass Wipe, Primers, Adhesive and Glass Installation Items	Applications	Quantity
Glass Wipe (Clear) ESSEX SPECIALTY PRODUCTS, INC. brand BETASEAL 43518 glass primer		As required
Glass Primer (Black) ESSEX SPECIALTY PRODUCTS, INC. brand BETASEAL 43520A glass primer		As required
Roof Primer (Black) ESSEX SPECIALTY PRODUCTS, INC. brand BETASEAL 43533 body primer		As required
Glass Moulding Primer ESSEX SPECIALTY PRODUCTS, INC. brand BETASEAL 43555 PVC primer	for installing new moulding, but not glass	As required
Adhesive ESSEX SPECIALTY PRODUCTS, INC. brand BETASEAL 57502 urethane adhesive		Two cartridges
Clean Up - Body and Glass ESSEX SPECIALTY PRODUCTS, INC. brand URETHANE SEALANT CLEANER		As required
Clean Up - Hands ESSEX SPECIALTY PRODUCTS, INC. brand URETHANE E INDUSTRIAL HAND CLEANER		As required
Paint brushes	for glass wipe and primer application	Three
Adhesive gun	for adhesive application	One
Wiping rags	for cleaning jointing surfaces	As required
Glass holder		Two
Roof glass moulding (Service Part)		One
Glass spacers (Service Part)		Four



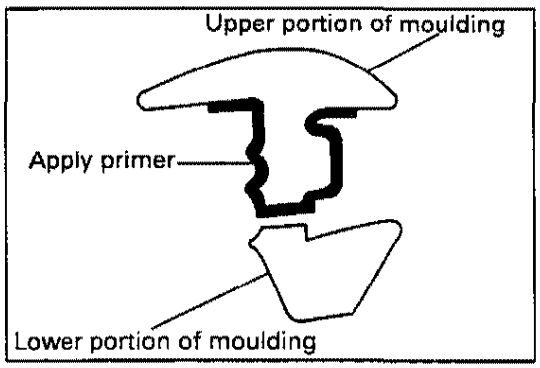
REPLACEMENT OF MOULDING (BONDING TYPE)

1. Remove the moulding by cutting.
2. To cut the existing adhesive, make a tool such as the one shown in the illustration.



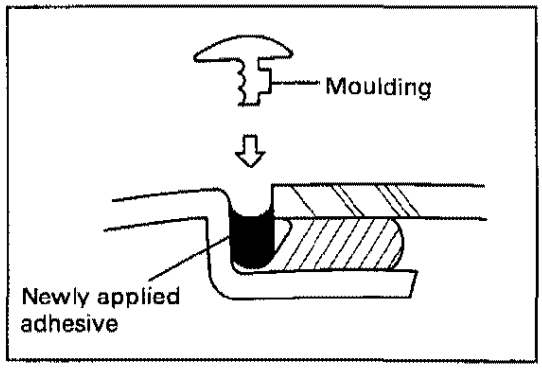
3. Using the tool, scoop out the existing adhesive.

   Caution
   (1) Do not remove existing adhesive more than necessary.
   (2) Use care not to damage the coated surface.
   (3) If the coated surface is damaged, apply paint.



4. Cut off the lower portion of the new moulding and install the moulding temporarily to check that it is seated securely.
5. Wipe the entire moulding with a clean, lint free cloth, dampened with naphtha or BETASEAL Urethane E Sealant Cleaner. **Do not use isopropyl alcohol.**
6. Wipe the groove where the moulding will go with a clean, lint free cloth, dampened with naphtha or BETASEAL Urethane E Sealant Cleaner. **Do not use isopropyl alcohol.**
7. Using a small brush, or suitable applicator, apply BETASEAL 43555 PVC primer to the moulding as shown in the illustration.

   Caution
   Never touch the primer coated surface.



8. Apply BETASEAL 57502 adhesive to the illustrated area and install the moulding before it hardens.
9. Carefully scrape away excess sealant forced out during installation of the moulding from the glass or roof and wipe the surfaces clean with BETASEAL Urethane E Sealant Cleaner.

   NOTE
   It may be necessary to hold the moulding in place with adhesive tape while the adhesive hardens.

Caution
Be sure that adhesive tape will not react with or harm the roof finish due to sunlight or heat. And it can be easily removed without harming the roof finish.

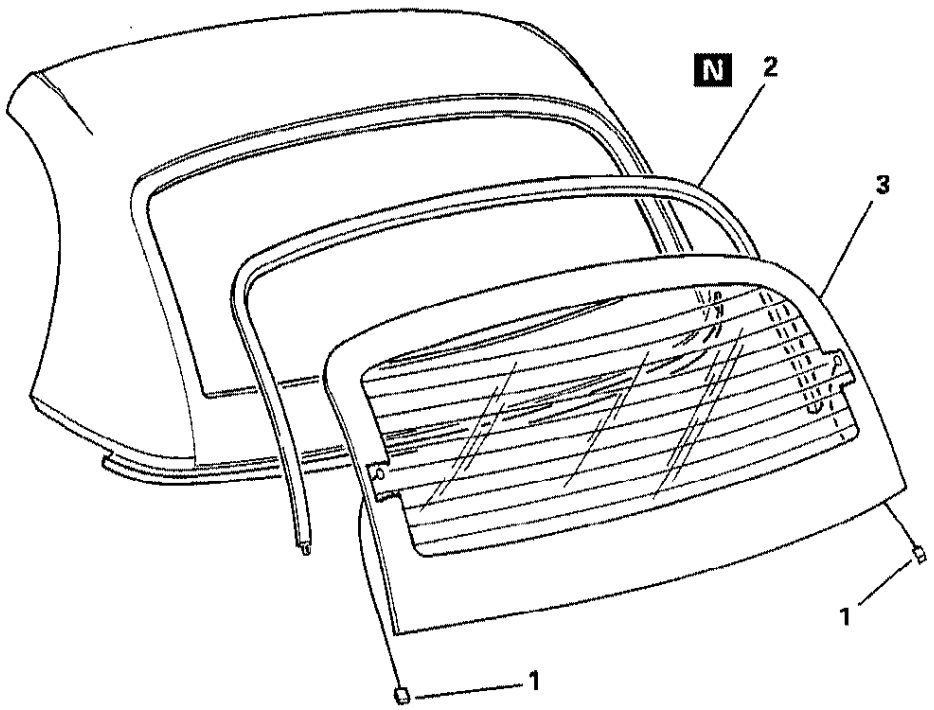
10. Do not move the vehicle for 6-8 hours until the adhesive hardens.

NOTE
(1) The adhesive relies on moisture in the air to cure it.
(2) Inducing curing by wetting the adhesive with water is not recommended, as the moulding creates a seal between the glass and roof.
(3) DO NOT use a heat source to cure the adhesive.

ROOF GLASS

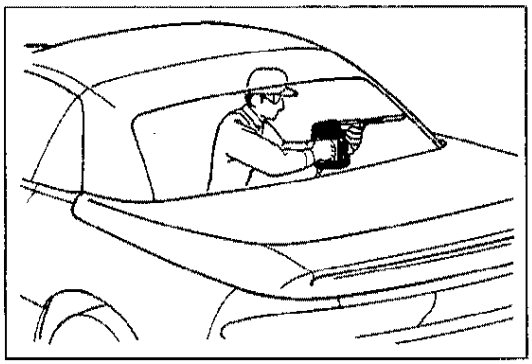
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Removal and Installation of all Rear Roof Panel Headlining (Refer to GROUP 52 - Trims, in this Manual.)
- Removal and Installation of rear portion of Hardtop Weatherstrip (Refer to GROUP 42, in this Manual.)



Removal steps

1. Defogger connector
2. Roof glass moulding
3. Roof glass



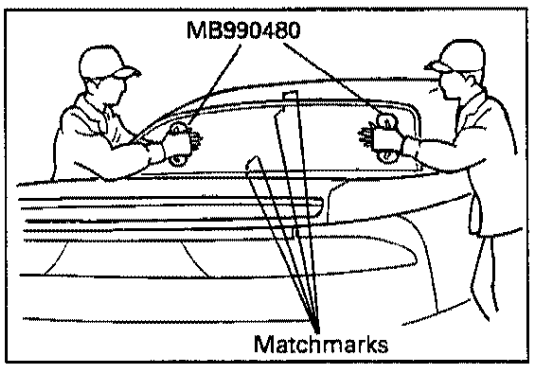
SERVICE POINT OF REMOVAL

3. REMOVAL OF ROOF GLASS

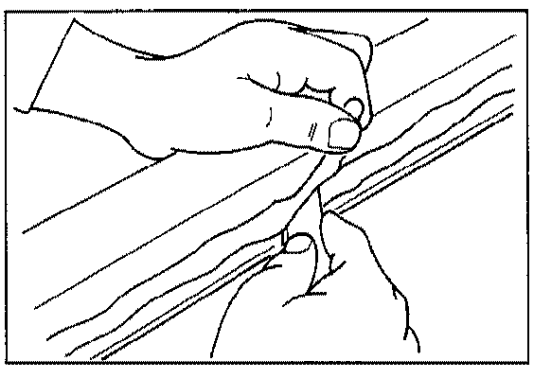
(1) For protection of the body paint, apply cloth tape around the roof glass opening.
(2) Use a pneumatic or electric cold knife (reciprocating blade type) designed for cutting windshields from vehicles.

NOTE
A short blade is recommended for cutting the top and sides, and a longer blade is recommended for the bottom. There are two lines of adhesive along the bottom of the glass.

Caution
1. **Use care not to nick or scratch the blackout on the inside of the roof glass.**
2. **Using the wire cutting method to remove the roof glass is not recommended.**



(3) When reusing the glass, put matchmarks on the roof and the glass.
(4) Using the special tool (MB990480, or equivalent), remove the roof glass.



(5) Using a sharp knife, scoop out existing adhesive from the roof flange to 2 mm (.08 in.), all around the roof glass opening.
(6) Finish smooth the flange surfaces.

Caution
1. **Do not remove the adhesive more than necessary.**
2. **Use care not to damage the coated surface of the roof with the knife. If it is damaged, apply touch-up paint.**

(7) If the glass will be reused, scoop out existing adhesive completely from the glass.

Caution
Do not penetrate the adhesive. When the adhesive is penetrated, it is necessary to cover the exposed glass surface with BETASEAL 43520A glass primer. Otherwise, the adhesive will not adhere to the glass.

(8) Clean the glass adhesive surfaces using a clean, lint free cloth dampened with naphtha or BETASEAL Urethane E Sealant Cleaner. **Do not use isopropyl alcohol.**

(9) Clean the roof the same way.

Caution
After cleaning, allow three minutes or more to dry before next work. Do not touch the cleaned surface.

SERVICE POINTS OF INSTALLATION

PREPARATION

When installing or reinstalling the roof glass, refer to the installation headings below.

- **PREPARATION - REINSTALLATION OF ROOF GLASS TO ITS ORIGINAL ROOF, refer to 42-226, in this manual.**
- **PREPARATION - INSTALLATION OF A NEW ROOF GLASS TO A NEW ROOF, refer to 42-227, in this manual.**
- **PREPARATION - INSTALLATION OF A NEW ROOF GLASS TO A REUSED ROOF, refer to 42-228, in this manual.**
- **PREPARATION - INSTALLATION OF A REUSED ROOF GLASS TO A NEW ROOF, refer to 42-229, in this manual.**

Caution
It is strongly advised that when installing a new, or reused roof glass to a new, or reused roof that ONLY BETASEAL chemicals and adhesives as indicated be used. Do not use any other chemicals or adhesives. Always follow the manufacturer's directions. The use of other brands has not been tested for use with, or as a replacement for, BETASEAL products used for the Spyder, and is not recommended.

The BETASEAL adhesive is a moisture-curing type. It relies on moisture in the air to cure the adhesive.

SERVICE POINTS OF INSTALLATION

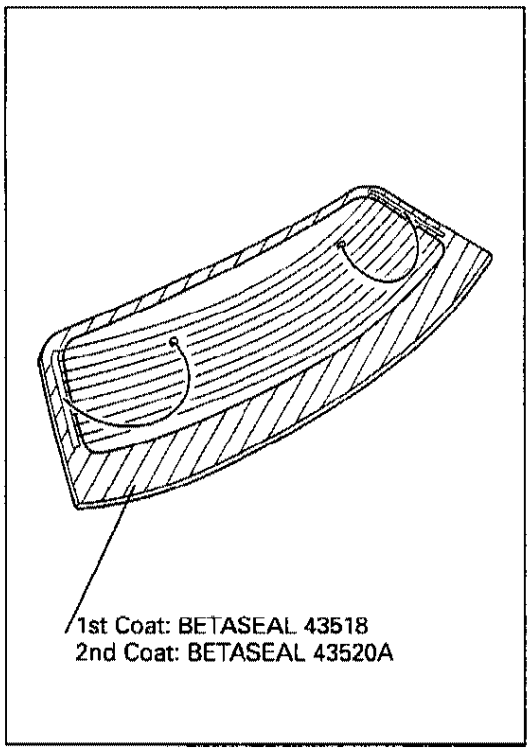
3. PREPARATION - REINSTALLATION OF ROOF GLASS TO ITS ORIGINAL ROOF

NOTE

(1) Roof glass that has been removed from its original roof, can be reinstalled to the same roof using new BETASEAL 57502 adhesive, without using primers, provided the adhesive on the glass and roof is not dirty or contaminated, and will be reinstalled within 72 hours from when it was originally removed. If the adhesive is dirty or contaminated, it MUST be cleaned with Urethane E Sealant Cleaner. Otherwise, the adhesive will not adhere. Then, reinstall the glass as described below.

(2) When the reused roof glass is reinstalled 72 hours, or more after removal, the adhesive surfaces of the glass and roof panel MUST be cleaned with Urethane E Sealant Cleaner, and BETASEAL 43533 body primer applied to the adhesive surfaces of the roof and glass. Otherwise, the adhesive will not adhere. Then, reinstall the glass as described below.

1. Install the glass to the roof (refer to **GENERAL ROOF GLASS INSTALLATION** 42-230, in this manual).



3. **PREPARATION - INSTALLATION OF A NEW ROOF GLASS TO A NEW ROOF**

(1) Place the new roof glass on a clean, protected work surface. Using a brush or other suitable applicator, prime the roof glass with BETASEAL 43518 glass primer (clear) as shown in the illustration. Immediately after the primer application, wipe the primer from the glass with a clean, lint free cloth. Be sure to leave no streaks or visible residue to assure the thinnest possible coat. Allow to dry for 10 minutes.

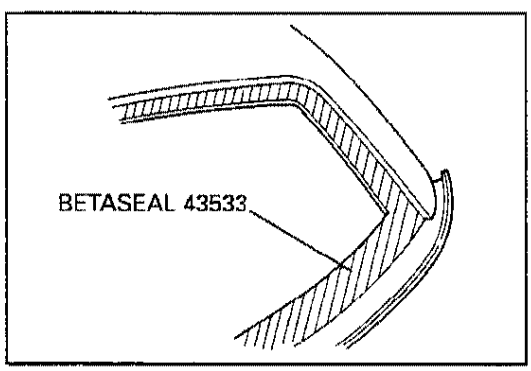
NOTE
If the BETASEAL 43520A glass primer (black) is not applied within 30 minutes, the BETASEAL 43518 glass primer (clear) MUST be reapplied and wiped.

(2) Using a brush or suitable applicator, apply BETASEAL 43520A glass primer (black) over the glass primer. Apply the primer 3-5 mils thick to achieve the necessary 1 mil dry thickness. Allow the primer to air-dry to a tack-free condition

NOTE
Provided the primer surface is kept clean, adhesive can be applied within 96 hours.

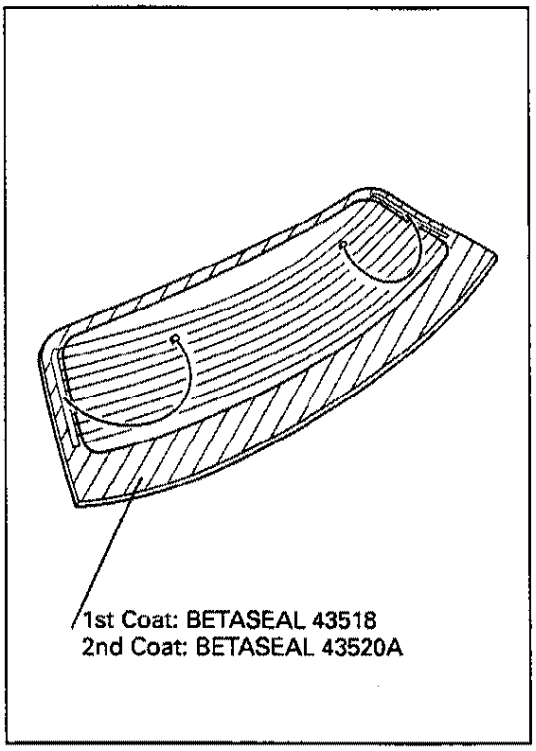
Urathane used is the Same as on Corvette

Urethane used is the same as on Corvette



(3) Using a brush or suitable applicator, apply BETASEAL 43533 body primer to the roof glass opening, as shown in the illustration. Apply the primer 3-5 mils thick to achieve the necessary 1 mil dry thickness. Allow the primer to air-dry for at least 15 minutes prior to applying adhesive.

(4) Install the glass to the roof (refer to **GENERAL ROOF GLASS INSTALLATION** 42-230, in this manual).



3. PREPARATION - INSTALLATION OF A NEW ROOF GLASS TO A REUSED ROOF

(1) Place the new roof glass on a clean, protected work surface. Using a brush or other suitable applicator, prime the roof glass with BETASEAL 43518 glass primer (clear) as shown in the illustration. Immediately after the primer application, wipe the primer from the glass with a clean, lint free cloth. Be sure to leave no streaks or visible residue to assure the thinnest possible coat. Allow to dry for 10 minutes.

NOTE
If the BETASEAL 43520A glass primer (black) is not applied within 30 minutes, the BETASEAL 43518 glass primer (clear) MUST be reapplied and wiped.

(2) Using a brush or suitable applicator, apply BETASEAL 43520A glass primer (black) over the glass primer. Apply the primer 3-5 mils thick to achieve the necessary 1 mil dry thickness. Allow the primer to air-dry to a tack-free condition.

NOTE
Provided the primer surface is kept clean, adhesive can be applied with 96 hours.

(3) Prepare the reused roof for the roof glass.

NOTE
1. The roof does not require preparation, provided the adhesive on the roof is not dirty or contaminated, and the glass will be reinstalled within 72 hours from when it was removed. If the adhesive is dirty or contaminated, it MUST be cleaned with Urethane E Sealant Cleaner. Otherwise, the adhesive will not adhere. Then, install the glass as described below.
(2) When the new roof glass is installed 72 hours, or more after removal from the reused roof, the adhesive surfaces of the roof MUST be cleaned with Urethane E Sealant Cleaner, and BETASEAL 43533 body primer applied to the adhesive surfaces of the roof. Otherwise, the adhesive will not adhere. Then, install the glass as described below.

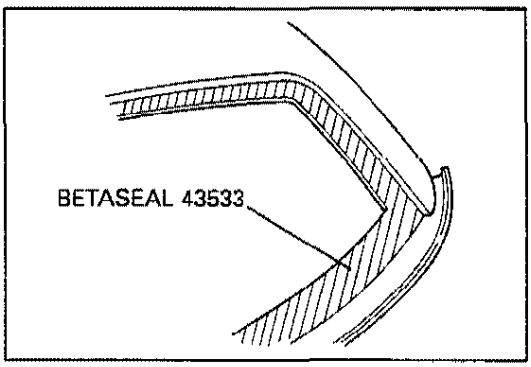
(4) Install the glass to the roof (refer to **GENERAL ROOF GLASS INSTALLATION** 42-230, in this manual).

3. **PREPARATION - INSTALLATION OF A REUSED ROOF GLASS TO A NEW ROOF**

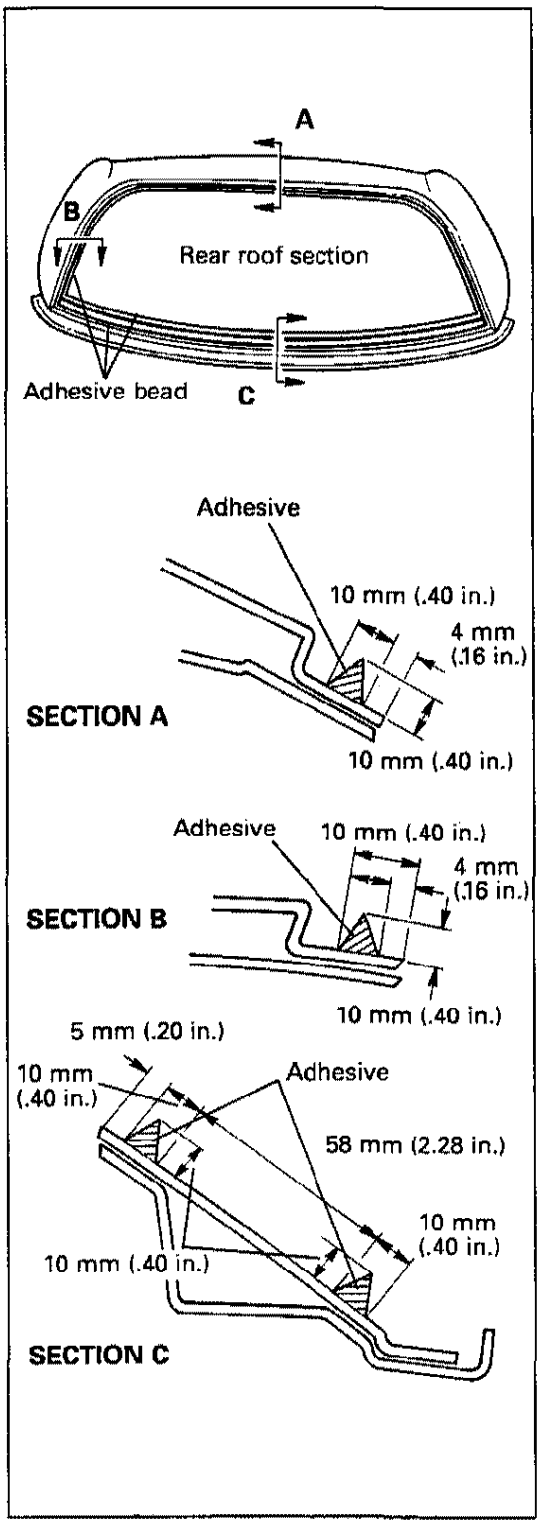
NOTE

(1) Roof glass that has been removed from another roof, can be reinstalled to a new roof using new BETASEAL 57502 adhesive, without using primers on the glass only, provided the adhesive on the glass is not dirty or contaminated, and will be reinstalled within 72 hours from when it was originally removed. If the adhesive is dirty or contaminated, it MUST be cleaned with Urethane E Sealant Cleaner. Otherwise, the adhesive will not adhere. Then, reinstall the glass as described below.

(2) When the reused roof glass is reinstalled 72 hours, or more after it was originally removed, the adhesive surfaces of the glass MUST be cleaned with Urethane E Sealant Cleaner, and BETASEAL 43533 body primer applied to the adhesive surfaces of the roof glass. Otherwise, the adhesive will not adhere. Then, reinstall the glass as described below.



1. Using a brush or suitable applicator, apply BETASEAL 43533 body primer to the roof glass opening, as shown in the illustration. Apply the primer 3-5 mils thick to achieve the necessary 1 mil dry thickness. Allow the primer to air-dry for at least 15 minutes prior to applying adhesive. Then, install the glass as described below.
2. Install the glass to the roof (refer to **GENERAL ROOF GLASS INSTALLATION** 42-230, in this manual).



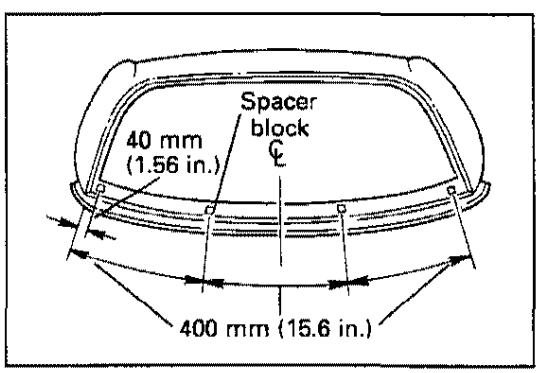
GENERAL ROOF GLASS INSTALLATION

NOTE
Before installing the roof glass, be sure the roof glass and/or the roof have been correctly prepared. Refer to the appropriate heading under **SERVICE POINTS OF INSTALLATION - PREPARATION,** page 42-226, in this manual.

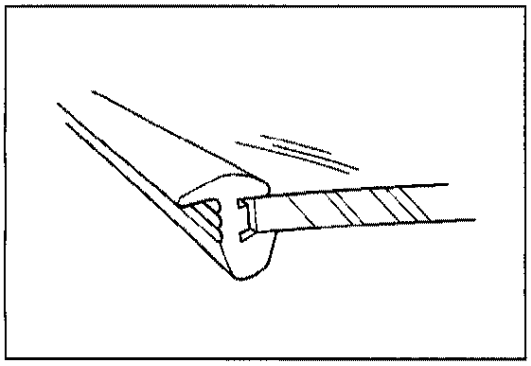
1. Apply a uniform, continuous bead of BETASEAL 57502 adhesive to the roof as shown in the illustration. Start applying the adhesive at lower corner of the roof's valance, go up one side, across the top, down the side, and across the bottom. Connect the sides with a second bead along the top of the valance as shown in the illustration.

Push Glass to the top so Molding fits

Push glass
to the top so Molding fits

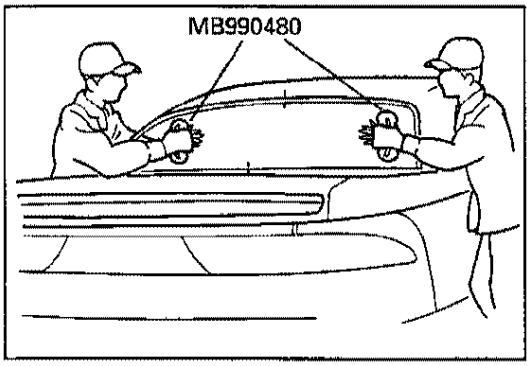


2. Place the four (4) spacer blocks along the bottom line of adhesive as shown in the illustration.



3. Wrap the left, top, and right side of the glass with the new moulding.

   NOTE
   (1) The moulding is easier to work with when it is warmed.
   (2) Do not stretch the moulding around the corners.
   (3) Do not trim the ends of the moulding at this time.

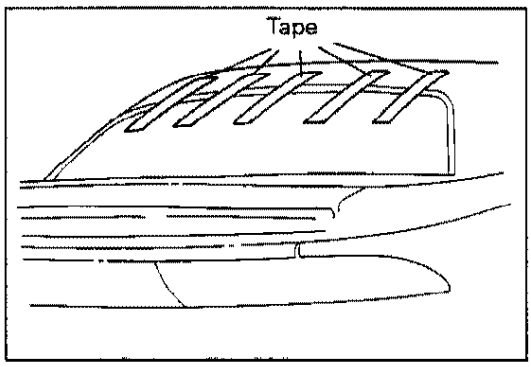


4. Using the special tool (MB990480, or equivalent), install the glass to the roof.
   (1) Align the roof glass to the roof opening at the sides and top. Hinge the glass from the top while keeping constant pressure at the top of the glass, and press the glass into place.
   (2) Check that the glass is flush to the sides and top of the roof, and moulding is not curled outward or deformed.
5. Clean any excess adhesive off the glass, moulding, and roof with Urethane E Sealant Cleaner, and wipe dry.
6. Prepare five 2" wide x 12" long pieces of very strong masking tape, having low-stretch characteristics.

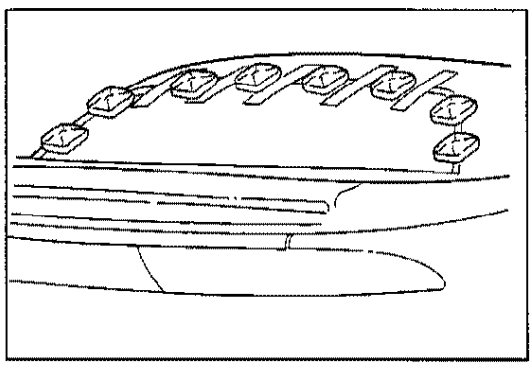
   Caution
   Be sure the masking tape will not react with or harm the roof finish due to sunlight or heat. And it should be removed easily without harming the roof finish. The tape will be left on for 24 hours while the adhesive hardens.

Same urethane
as corvette

Same urethane as Corvette



7. Affix the lower half of one piece of tape to the top center of the glass, pull it taut, and secure it to the roof. Affix the remaining pieces equally spaced to the left and right of center the same way.
8. Trim the ends of the moulding 6.5 mm (.25 in.) from the bottom of the glass.
9. Reinstall the hardtop weatherstrip.
10. Close the hard tonneau.



11. Using weighted bags (45.36 Kg [100 lbs.] maximum total), lay them on the moulding to hold the glass and moulding in place, as shown in the illustration. Be sure the weight of the bags do not cause the glass to slide down, or press the glass in. And be sure the moulding is laying flat along the glass and the roof.

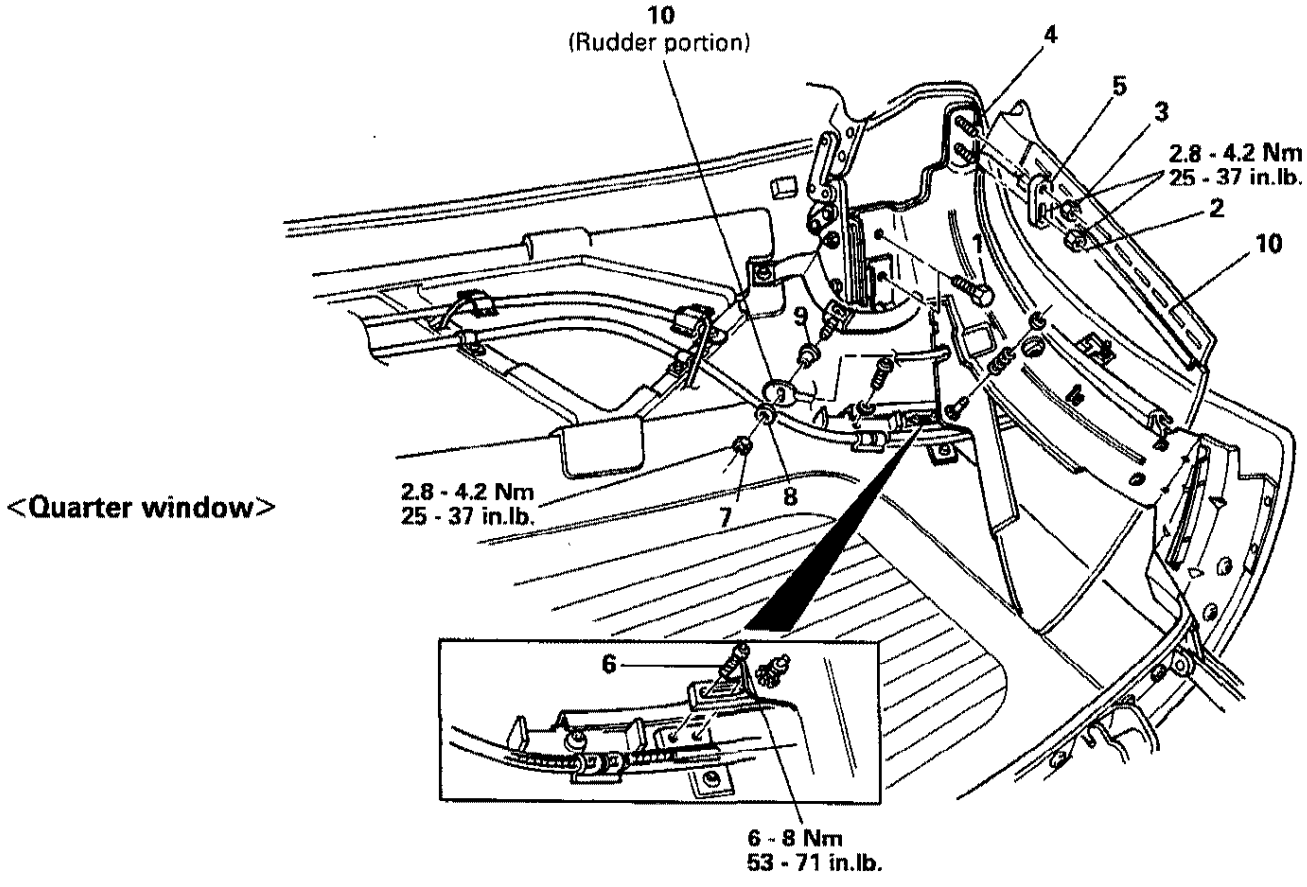
12. After installing the roof glass, allow the vehicle to stand at room temperature for 24 hours until the adhesive hardens. DO NOT open the hardtop until the adhesive hardens.

    Caution
    (1) If the vehicle is to be moved, do so gently.
    (2) The adhesive relies on moisture in the air to cure.
    (3) Inducing curing by wetting the adhesive with water is not recommended, as the moulding creates seal between the glass and roof.
    (4) DO NOT use a heat source to cure the adhesive

13. Trim the moulding flush to the bottom edge of the glass.

QUARTER WINDOW

REMOVAL AND INSTALLATION



<Quarter window>

Pre-removal Operation
Removal of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)

Post-installation Operation
Adjustment of Quarter Window
Installation of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)

CAUTION:
Adjustment or replacement of this component requires that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section).

Quarter window removal steps

1. Bolt
2. Nut
3. Nut
4. Pivot stud
5. Pivot adjustment bracket
6. Bolt
7. Nut
8. Washer
9. Bushing
10. Quarter window

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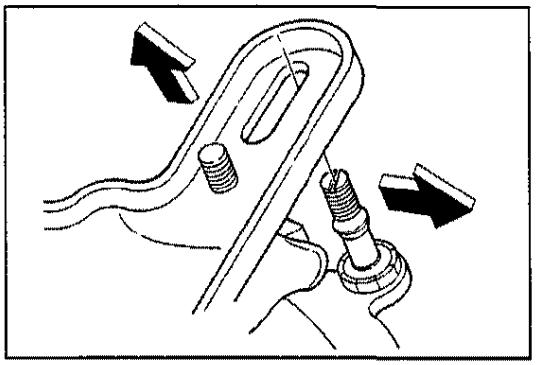
SERVICE POINTS OF REMOVAL

4. REMOVAL OF PIVOT STUD

Using a screwdriver, screw in the stud into the guide plate.



10. REMOVAL OF QUARTER WINDOW

Pull the guide plate away from the roof to remove the quarter window.

SERVICE POINTS OF INSTALLATION

10. INSTALLATION OF QUARTER WINDOW

Pull the guide plate away from the roof to install the quarter window.

4. INSTALLATION OF PIVOT STUD

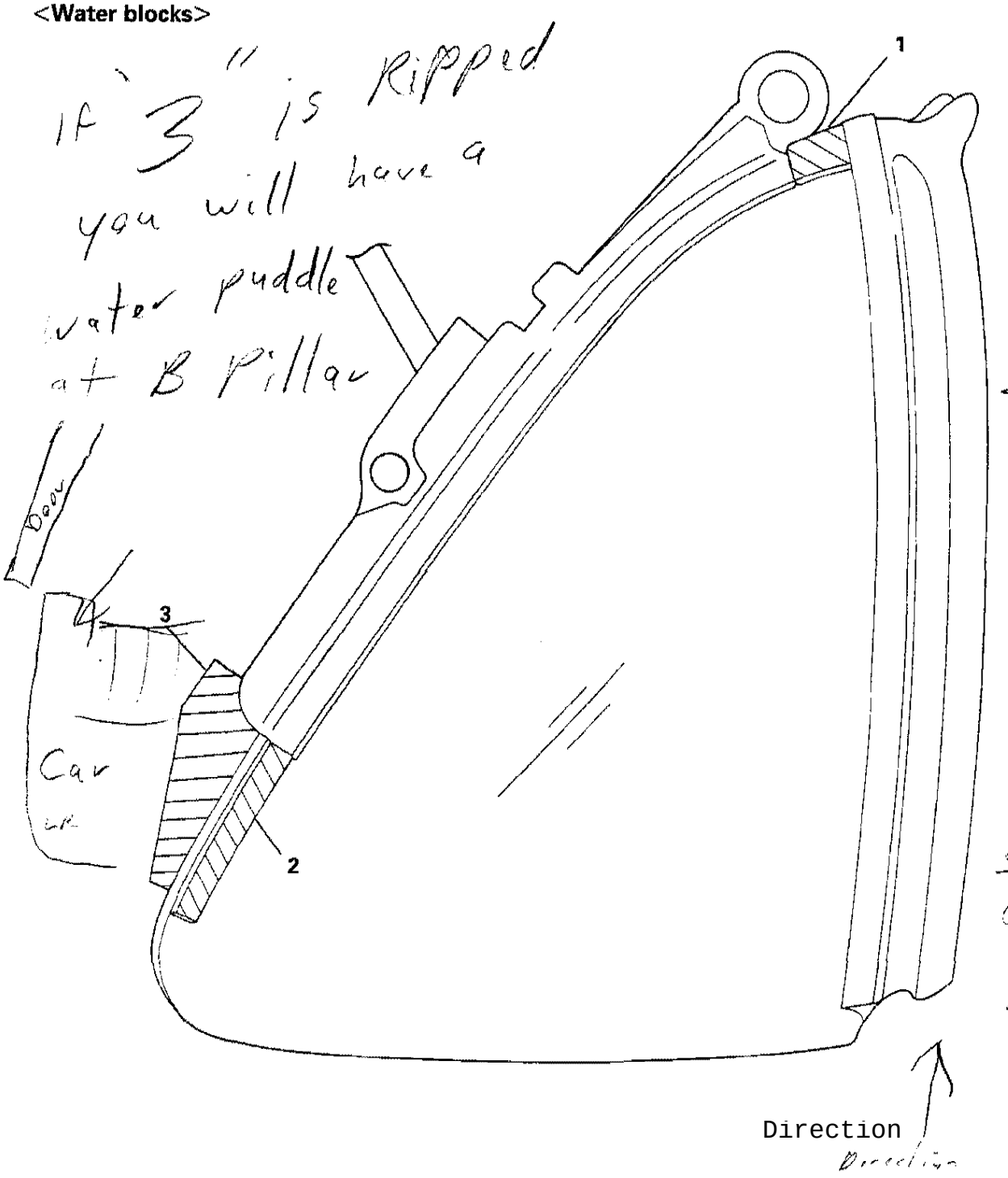
(1) Using a screwdriver, screw in the stud into the guide plate.
(2) Temporarily install the pivot stud's jam-nut

QUARTER WINDOW

DISASSEMBLY AND REASSEMBLY

Needlenose vise grips

<Water blocks>



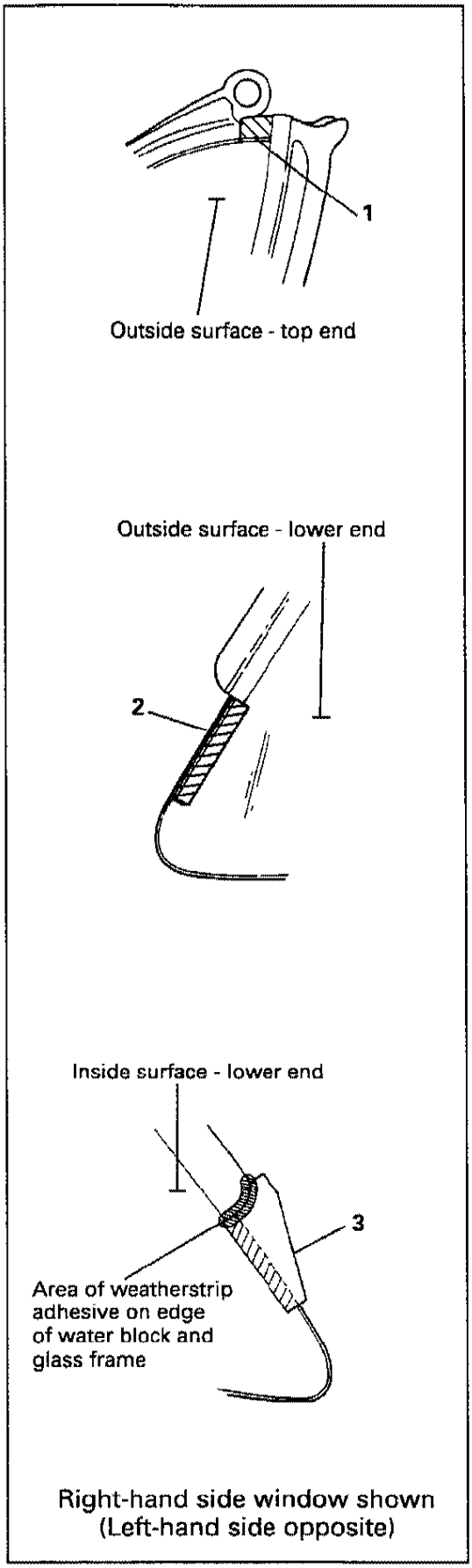
Right-hand window shown (Left-hand opposite)

Disassembly steps

- ◆◆ 1. Water block
- ◆◆ 2. Water block
- ◆◆ 3. Water block

Hit with hammer

to reinst shoot glass cleaner on bolt parts and install



Right-hand side window shown
(Left-hand side opposite)

SERVICE POINTS OF REASSEMBLY

3. 2. 1. REASSEMBLY OF WATER BLOCK

(1) Using a new and unused single edged razor blade, remove all adhesive residue, if any, from the glass.
(2) Clean the mounting surface of the glass for the water block with a clean, lint-free cloth dampened with isopropyl alcohol, and let dry. Do not touch the area.
(3) Using a clean, lint-free cloth dampened with glass wipe (ASC p/n X-00M0-0026-AXXX, Essex p/n U-401, or equivalent) apply a thin coat on the glass slightly larger than the area of the water block.
(4) Using a clean brush and black primer (ASC p/n X-00M0-0025-AXXX, Essex p/n U-402, or equivalent), apply a thin and consistent coat to the glass slightly larger than the water block.
(5) Let the primer dry for at least 30 minutes at room temperature to allow the solvents to evaporate. Do not touch the primer.
(6) Lift the appropriate piece of water block from the protective paper backing. Use care not to touch the adhesive backing. Handle the piece by its edge only.
(7) Position and align the water block to the glass, as shown in the illustration. Press it firmly to the glass.
(8) For Water Block 3 only:
Apply a thin coat of black weatherstrip adhesive (3M p/n 051135-08008, or equivalent) to the curved edge of the metal glass frame and to the mating edge of the water block, as shown in the illustration. Wait for the adhesive to "skin" on both parts, then reapply a thin coat to both, and immediately join. Let dry for at least 30 minutes at room temperature before reinstalling the quarter window.

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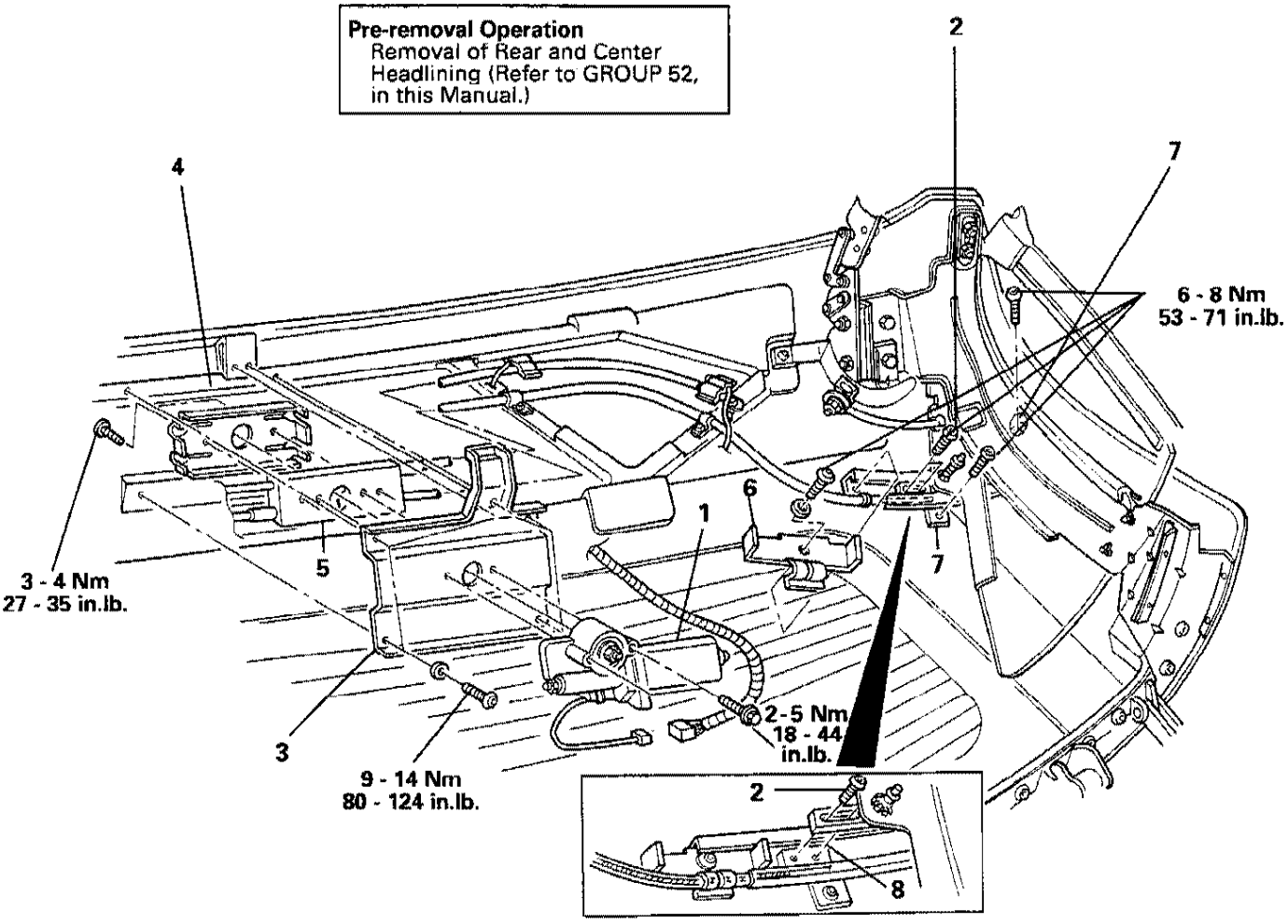
QUARTER WINDOW

REMOVAL AND INSTALLATION

<Drive cable>

Pre-removal Operation
Removal of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)



CAUTION:
Adjustment or replacement of this component requires that the hardtop ECU be run through Auto-configuration (Refer to Diagnostics and Testing, in this section.)

Quarter window drive cable removal steps

- ◆◆ 1. Drive motor
- 2. Bolt
- 3. Motor mounting bracket
- ◆◆ ◆◆ 4. Cable guide cover
- 5. Cable guide retainer
- 6. Up stop
- 7. Drive track
- 8. Drive cable

Post-installation Operation
- Synchronization of Quarter Window Cables (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
- Adjustment of Quarter Window (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
- Adjustment of Quarter Window Position Sensors (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
- Installation of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)

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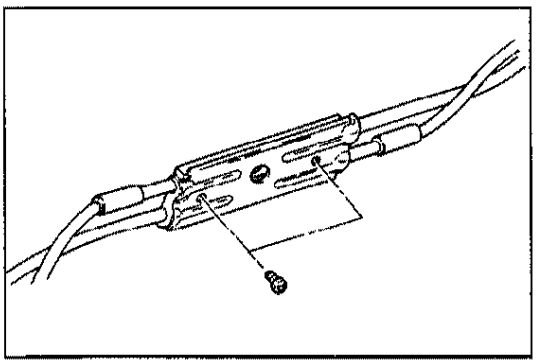


SERVICE POINT OF REMOVAL

4. REMOVAL OF CABLE GUIDE COVER

Twist the cable guide retainer assembly about the cable tubes to access the cable guide cover. Then, remove the cable guide cover.

SERVICE POINTS OF INSTALLATION

4. INSTALLATION OF CABLE GUIDE COVER

Install the cable guide cover, then twist the cable guide retainer assembly to its original position.

1. INSTALLATION OF DRIVE MOTOR

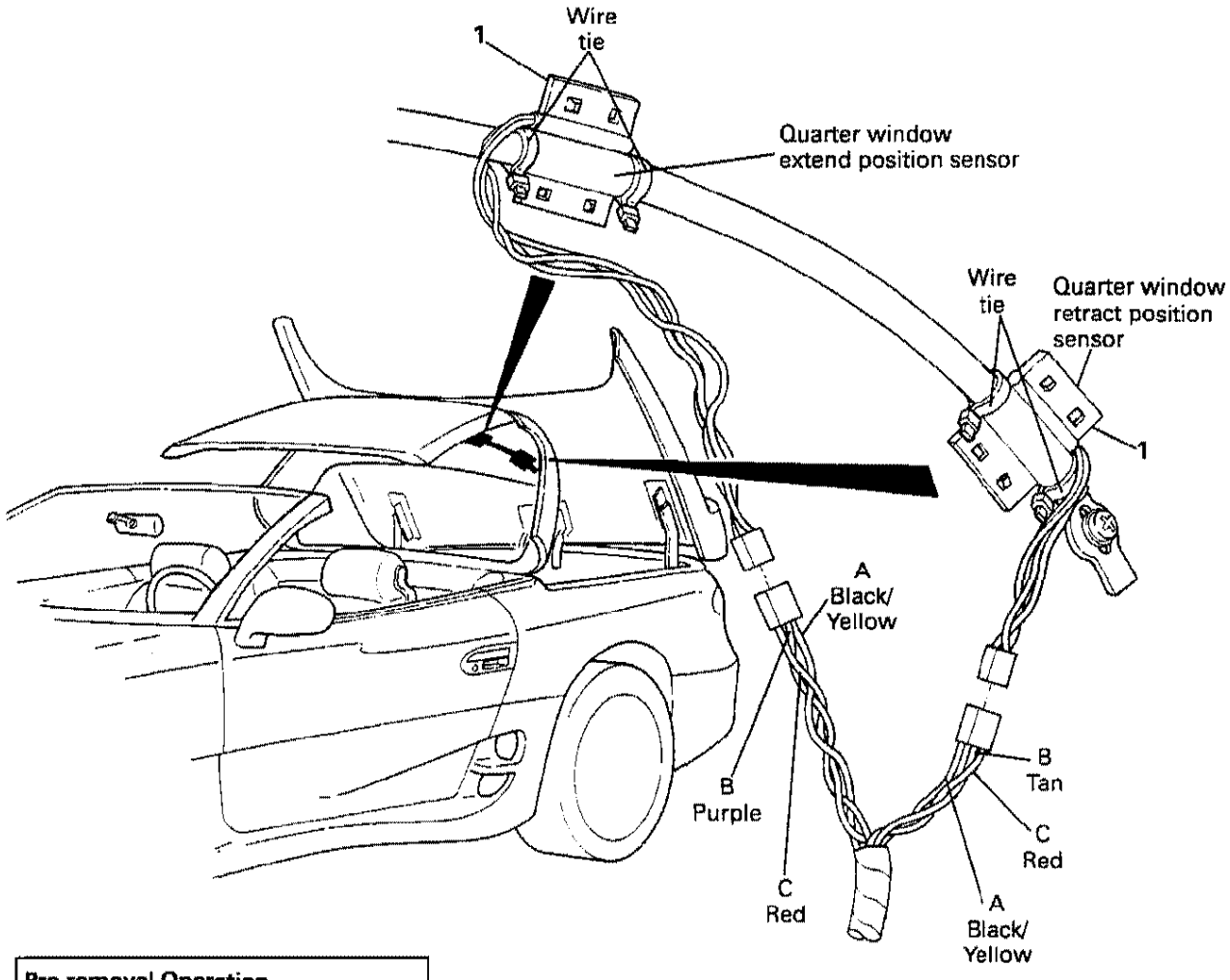
Do not install drive motor at this time. Refer to **SERVICE ADJUSTMENT PROCEDURES - POWER QUARTER WINDOW - SYNCHRONIZATION OF QUARTER WINDOW CABLES**, in this section.

QUARTER WINDOW

REMOVAL AND INSTALLATION

NOTE
Wire ties next to both position sensors must be sufficiently tight to prevent the position sensor from moving longitudinally about the return tube.

<Position sensors>



Pre-removal Operation
Removal of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)

Post-installation Operation
Adjustment of Quarter Window Position Sensors (Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)
Installation of Rear and Center Headlining (Refer to GROUP 52, in this Manual.)

NOTE
1. Label position sensor connectors if the connector positions are known to be correct.
2. If the connectors are not correctly connected the hardtop will not function properly.

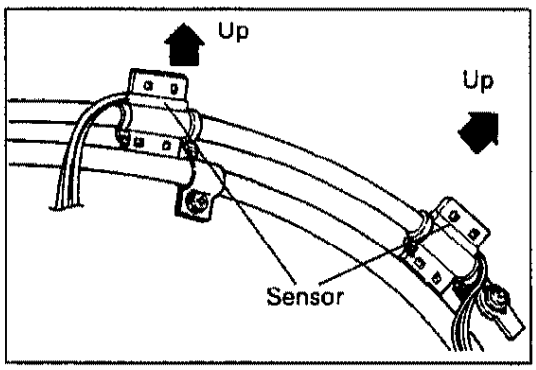
Quarter window position sensor removal step

◆◆ ◆◆ 1. Position sensor

SERVICE POINT OF REMOVAL

1. REMOVAL OF POSITION SENSOR

(1) Disconnect the harness connector.
(2) Separate the sensor holder by unsnapping it and remove the sensor.



SERVICE POINT OF INSTALLATION

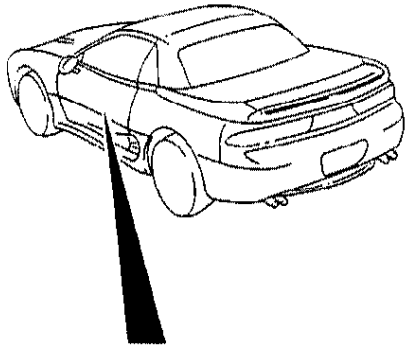
1. INSTALLATION OF POSITION SENSOR

(1) When the position sensor is installed on the return tube it must face up (when the hardtop is halfway open) or forward (when the hardtop is closed).
(2) Adjust the sensor (see **SERVICE ADJUSTMENT PROCEDURES,** in this section).

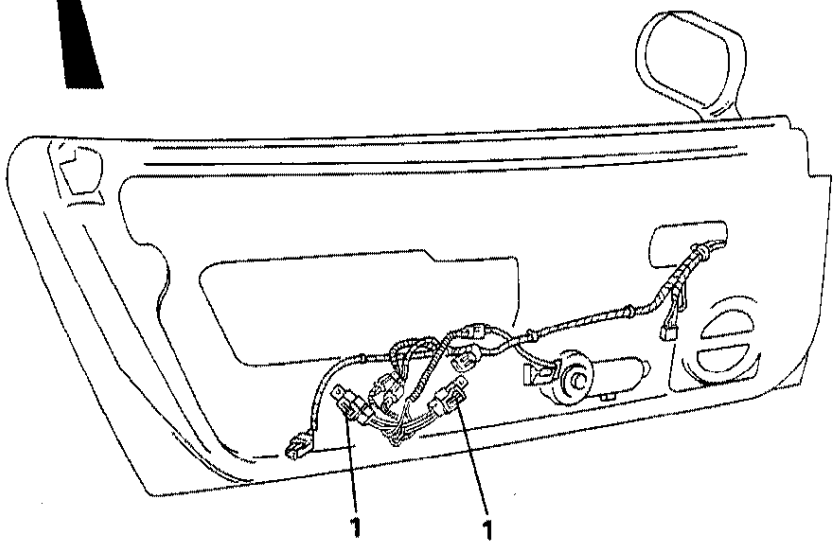
Caution
The hardtop will not operate properly when the position sensors are incorrectly connected to the harness connectors.

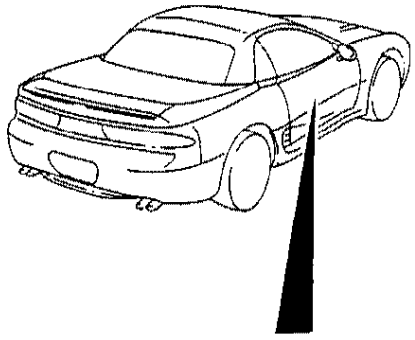
DOOR WINDOW RELAYS

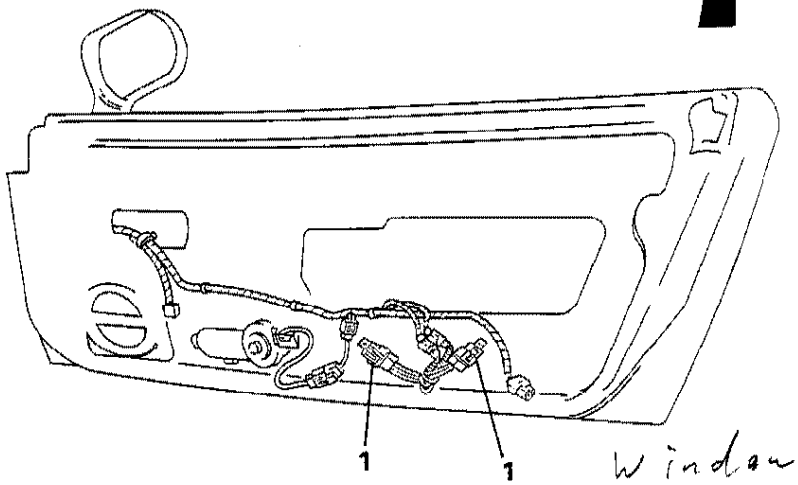
REMOVAL AND INSTALLATION



Pre-removal and Post-installation Operation
Removal and installation of Drivers Side Door Trim Panel (Refer to GROUP 42, in Volume 1.)







Removal step

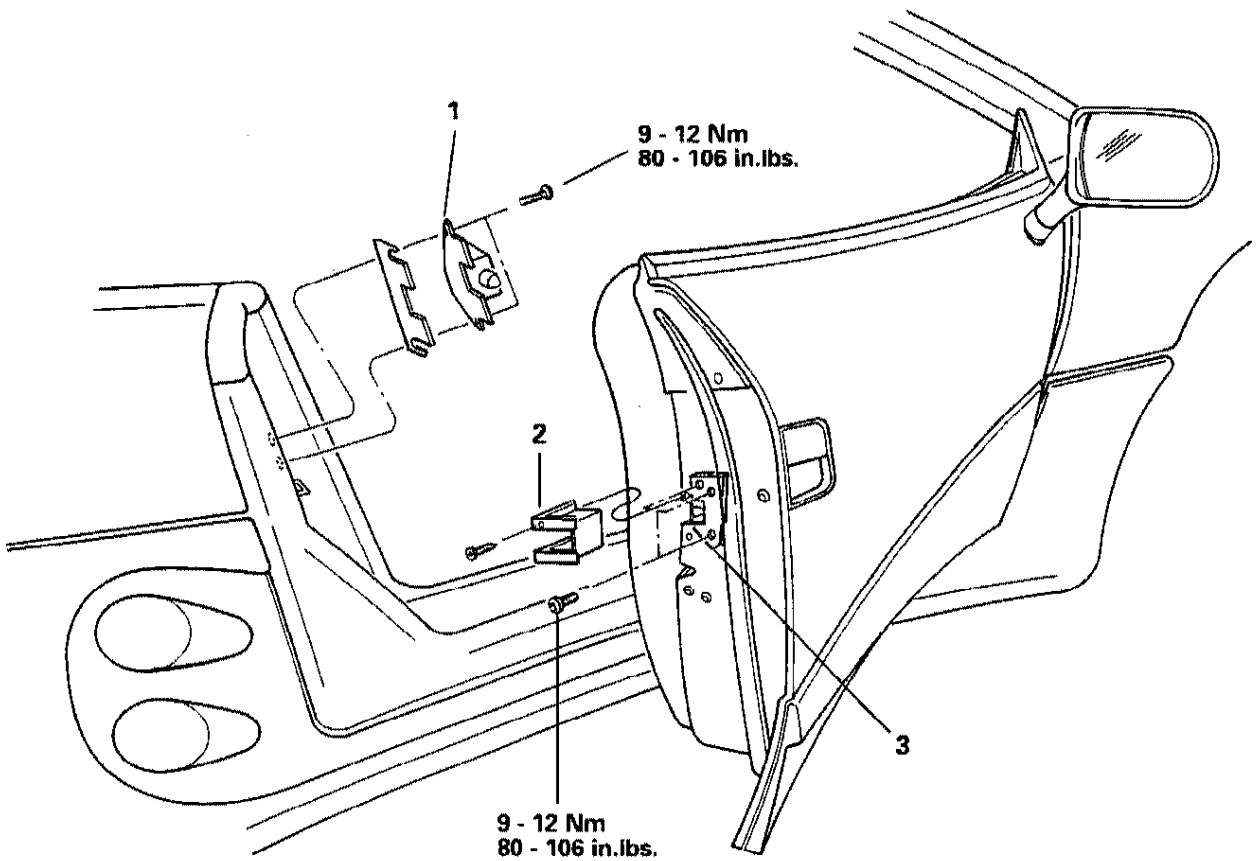
1. Relays

Window Lock out Feature on Both Sides

DOOR LOCATING PIN AND RECEIVER

REMOVAL AND INSTALLATION

Adjustment
Door Locating Pin Adjustment
(Refer to SERVICE ADJUSTMENT PROCEDURES, in this section.)



Door locating pin removal steps

◆■ ■◆ 1. Locating pin

Door locating pin receiver removal steps

◆■ ■◆ 2. Cover
3. Locating pin receiver

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