HOLLANDIA SUNROOF

PART 17-12

GENERAL INFORMATION

The Hollandia TVS44 sunroof is available as an option on all EF/EL Falcon Sedans, NF/NL Fairlane and DF/DL LTD vehicles. The sunroof is the same size for all models.

DESCRIPTION

The TVS prefix indicates that the sunroof is capable of tilting, venting and sliding. The roofs are glass and incorporate an internal sunshade. They are electrically operated by a switch installed in the header panel - Fig. 1.

The sunroof is installed in a special steel frame which provides mounting points for the operating mechanism, drain tubes, frame support brackets, drive unit, electrical harness and a wind deflector. A manual overide key actuated mechanism is provided to move the sunroof glass panel in the unlikely event of electrical failure or malfunction.

There is an oval shaped plug in the head lining at the rear of the sunroof which is removed by turning clockwise and withdrawing from the head lining. This permits insertion of an operating key into the manual actuating mechanism.

A safety feature is incorporated into the system which ensures that the sunroof automatically opens in the event the sunroof encounters an obstruction while it is being closed.

A further feature is the interconnection between the sunroof and the vehicle's central door locking system which automatically closes the sunroof from any position when the central door locking system is activated.

The safety obstruction feature is still operational when the sunroof is being closed by activating the central door locking system.

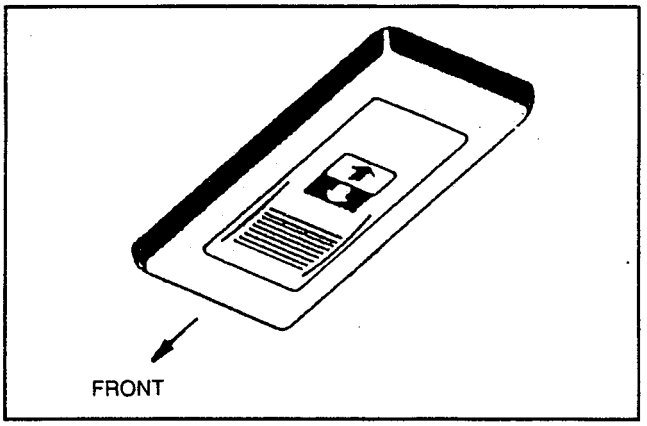


FIG. 1 — Sunroof Operating Switch

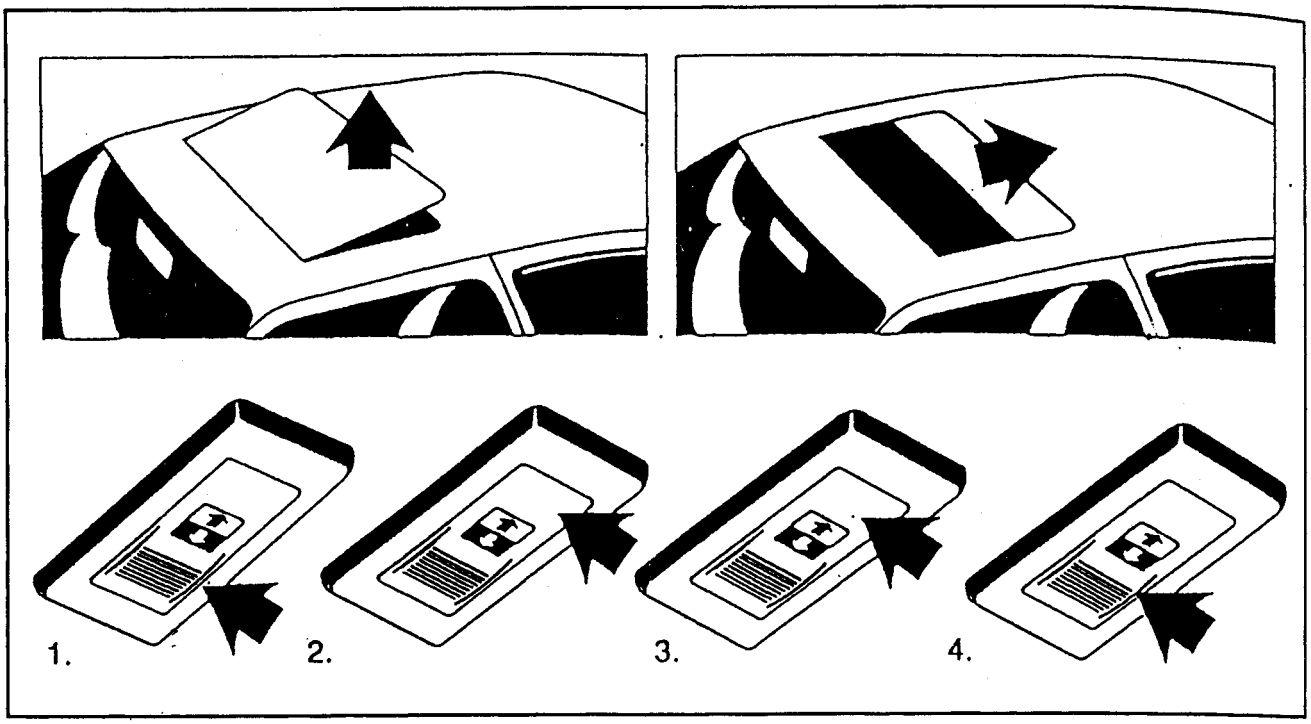


Fig. 2 - Sunroof Switch Operation

OPERATION (Fig. 2)

OPENING TO THE TILT POSITION

1. With the ignition ON - press the front of the switch. The sunroof will continue to open while the switch is depressed until the maximum tilt position is reached.

   Inbuilt controls automatically switch OFF at that point.

   If the interior sunshade was closed it will automatically slide back 5cm when the sunroof is tilted.

   NOTE: The sunshade cannot be completely closed when the sunroof is in the tilt position - it can however be slid further open to any position.

CLOSING FROM THE TILT POSITION

2. With the ignition ON - press the back of the switch. The sunroof will continue to close while the switch is depressed. Movement stops when the switch is released or when the sunroof is completely closed.

OPENING TO THE SLIDING POSITION

3. With the ignition ON - press the back of the switch. The sunroof will continue to slide open while the switch is depressed or until the maximum open position is reached. Switch OFF is automatic at that point.

   The amount of opening can be controlled by releasing the switch when the required amount of opening has been obtained.

WIND DEFLECTOR

When the sunroof is opened the wind deflector will automatically lift into position.

CLOSING FROM THE OPEN POSITION

4. With the ignition ON - press the front of the switch. The sunroof will continue to slide closed while the switch is depressed or until the fully closed position is reached. The amount of closing can be controlled by releasing the switch when the roof has closed to the required amount.

   CAUTION: Automatic jamming protection is not operational while the switch is held in the depressed position.

TOUCH CONTROL

The sunroof can be operated by touch control. i.e. With ignition ON if the switch is momentarily pressed (for a maximum of 0.4 seconds) for the required movement (either open or closed) it will travel to the fully open or fully closed position. Movement can be stopped at any intermediate position by again pressing either side of the operating switch.

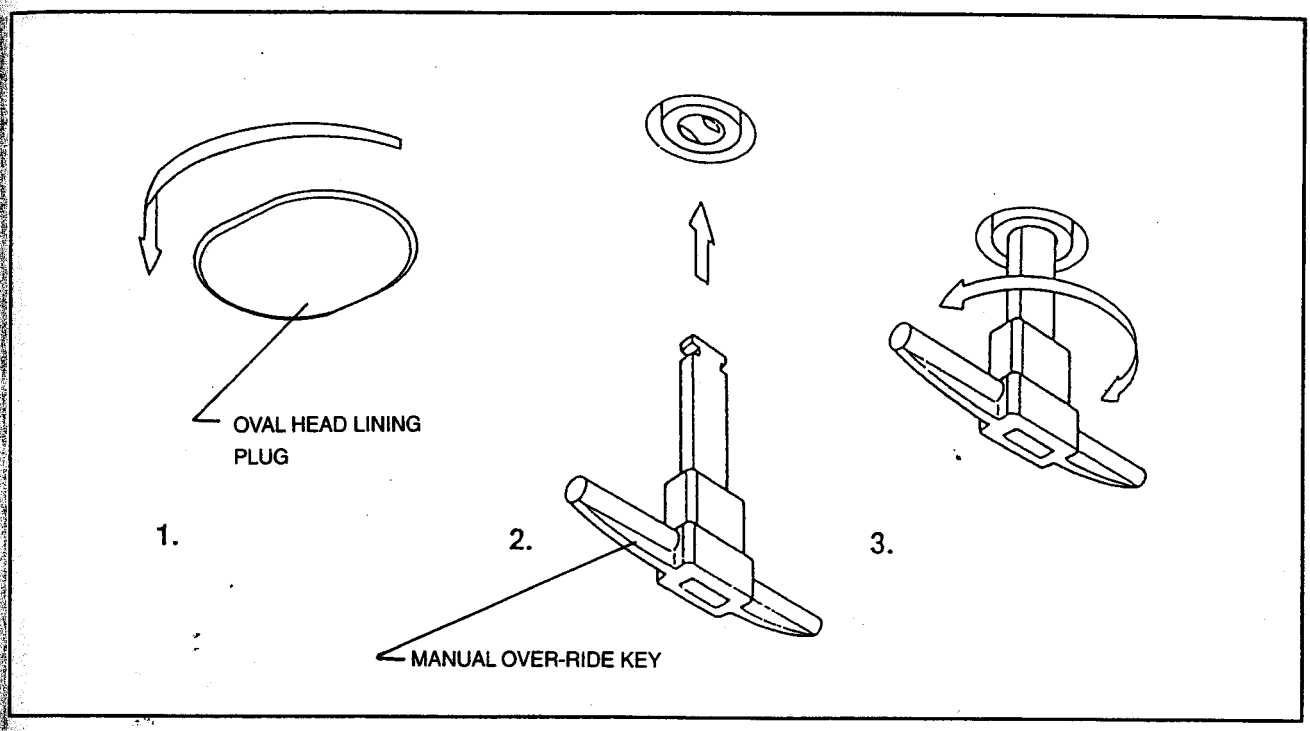


Fig. 3 - Manual Actuation of Sunroof.

SAFETY FEATURE

If the sunroof is actuated by touch control, jamming protection is provided. The sunroof wili automatically re-open if it encounters an obstruction while closing. After reaching the fully open position the sliding (closing) movement automatically recommences. the movement automatically ceases when the sunroof has reached the fully closed position. The movement can be stopped prior to reaching the fully closed position by pressing either side of the switch.

CONNECTION TO CENTRAL DOOR LOCKING

The sunroof wiring is interconnected to the central door locking system and the sunroof is automatically closed from any position when the central door locking system is activated.

When being closed due to central door locking activation the sunroof has jamming protection.

MANUAL ACTUATION OF SUNROOF

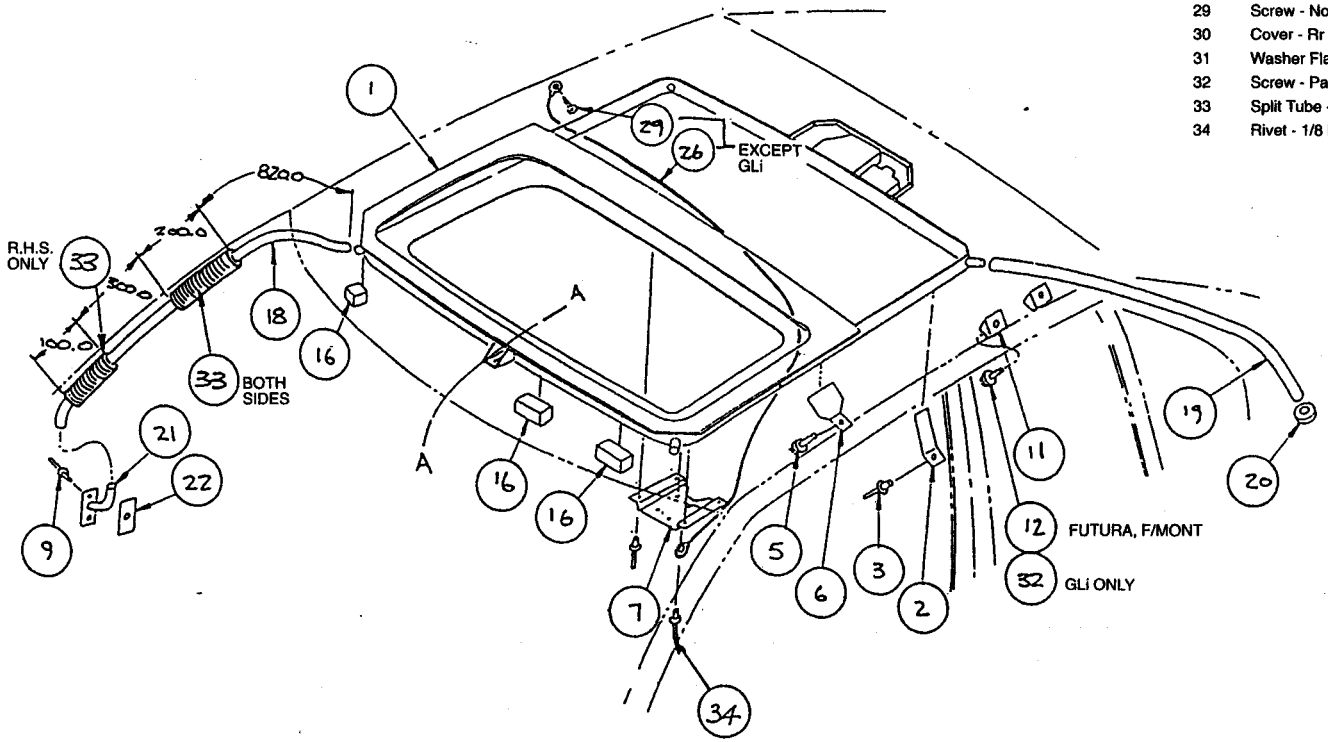
To manually activate the sunroof proceed as follows (Fig. 3).

- Carefully remove the oval plug near the rear edge of the sunroof from the head lining by gripping the edge of the plug with your fingers and rotating clockwise. Fig. 3, Item 1.
- Insert the manual over-ride key into the socket. Fig. 3, Item 2.
- Rotate the key to move the sunroof to the closed position. Fig. 3, Item 3.
- Turn the key in the opposite direction until it clicks and remove it from the socket.
- Replace the oval head lining plug by gently pressing it into the head lining and socket and rotating anti-clockwise.
  NOTE: The manual over ride can be used to return the sunroof to the closed position from any open position.

MAINTENANCE

Keep the sunroof gutter areas and drain openings free of dirt, dust, leaves, etc. Use an air hose twice a year to clean gutter areas and drain tubes. Clean the glass roof panel with a moist chamois or Motorcraft glass cleaner Part No. R1-141. Do not use cleaners containing abrasive materials.

ITEM	DESCRIPTION	REQ'D
1	Kit - Panel Roof Slide	1
2	Brkt - Rear Cassette Support	2
3	Rivet Avdel Monobolt (Gold) 1/4" Rr Brkt.	2
4	Brkt - Rr Cassette Support	2
5	Screw & Washer Asy. M6 x 14 (Rr Cass.)	4
6	Brkt - Front Cassette Support	2
7	Brkt - Interior Dome Lamp	1
8	Brkt - Interior Dome Lamp	1
9	Rivet - Avdel 1/8" Black - Dome Lamp	4
10	Retainer - Roof Headlining	2
11	Spacer - Assist Handle	2 GLi/6 All others
12	Screw - Pan Hd CR #10 x 30 Lg. - Assist Handle	GLi /2 All others - 6
13	Brkt - Reading Lamp	2
14	Screw - Pan Hd CR 4.8 x 13 (Brkt - Read.Lamp)	4
15	Rivet - 4.8mm Dia.	4
16	Filler - Hd Lining Frt. Outer	6
17	Filler - Roof Headlining Rear	2
18	Hose - Flex PVC 0 10.0mm - Front	2.0mt
19	Hose - 10.0mm - Rear	4.0mt
20	Grommet - Rear Drain	2
21	Tube - Roof Sld. Pnl. Drain Front	2
22	Gasket - Sunroof Drain Front	2
23	Wiring Asy - Roof Sld. Pnl. Control Switch	1
24	Harness Asy Ext. Vanity Mirror	1
25	Brkt - Dome Lamp Mtg.	1
26	Harness Asy - Ext. SWB Dome Lamp	1
27	Screw - AB Tap 4.2 x 12.5 CR - (Dome Brkt)	4
28	Screw - Attach. Int. Lamp	3
29	Screw - No. 8 x 0.5 Wshr. Hd. Self Drill.	1
30	Cover - Rr Seat Belt Opng. (Ref. Colour Code)	5
31	Washer Flat - 6 x 20 x 1.5 (Xmas Tree Ret)	3
32	Screw - Pan Hd. 8 x 32 Long	2 GLi ONLY
33	Split Tube - Drain Reinforcement	0.5M
34	Rivet - 1/8 Blind (Att. Dome Lamp Brkt)	4



TORQUE REQUIREMENTS

ITEM 5 - 4~6 Nm
11 - 4~6 Nm
14 - 4~6 Nm

Legend also applies for long wheel base.

Fig. 4 - Hollandia Sunroof Installation - Short Wheel Base.

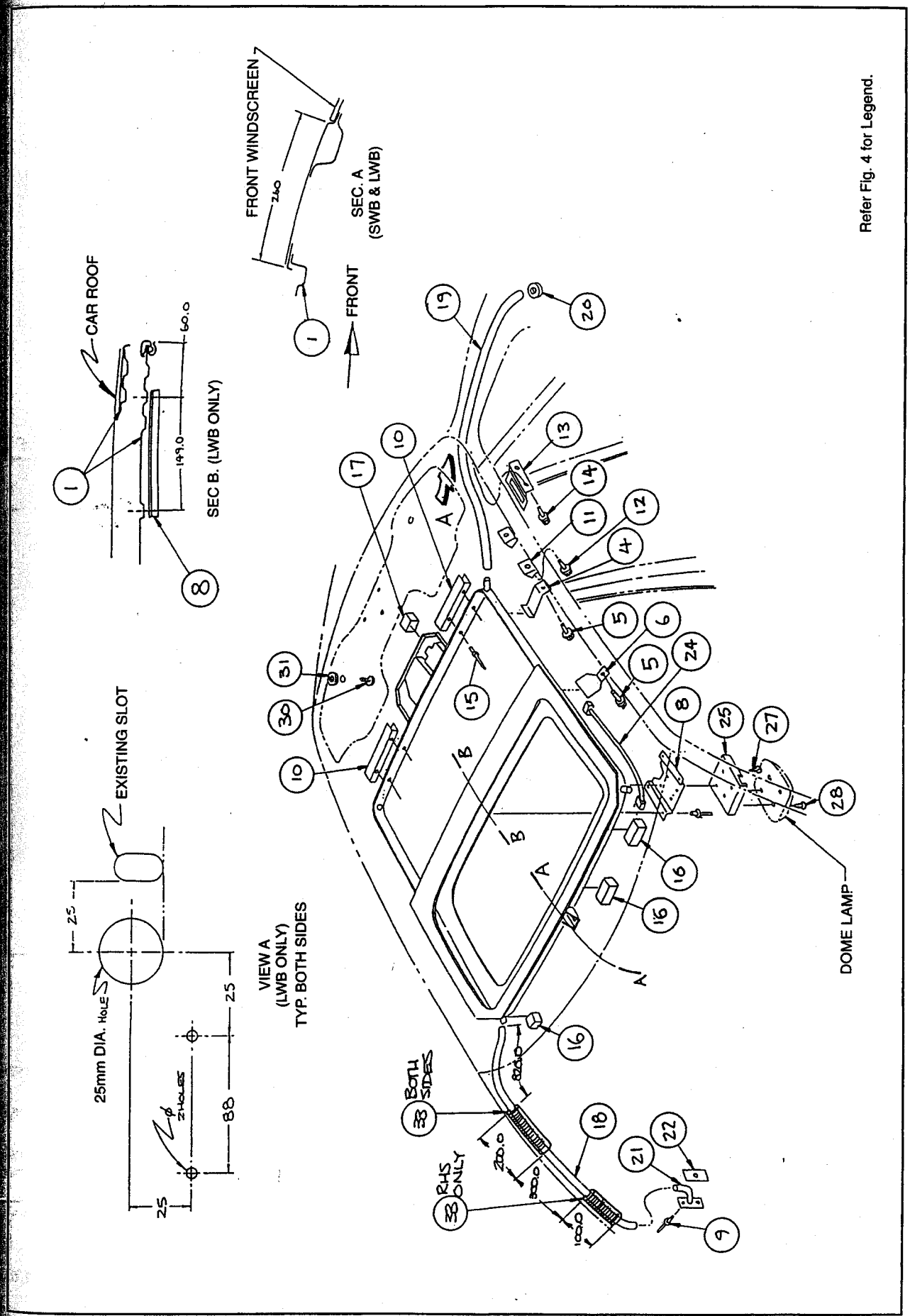


Fig. 5 - Hollandia Sunroof Installation - Long Wheel Base.

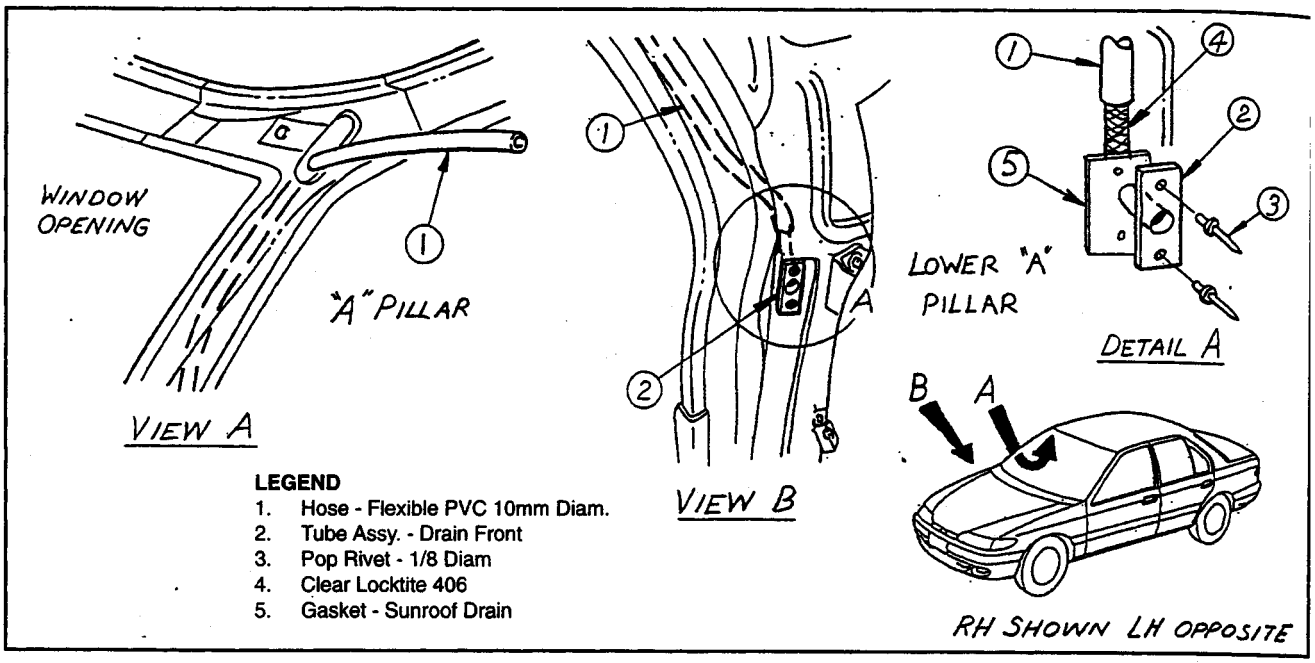


Fig. 6 - Drain Hose Installation - Front.

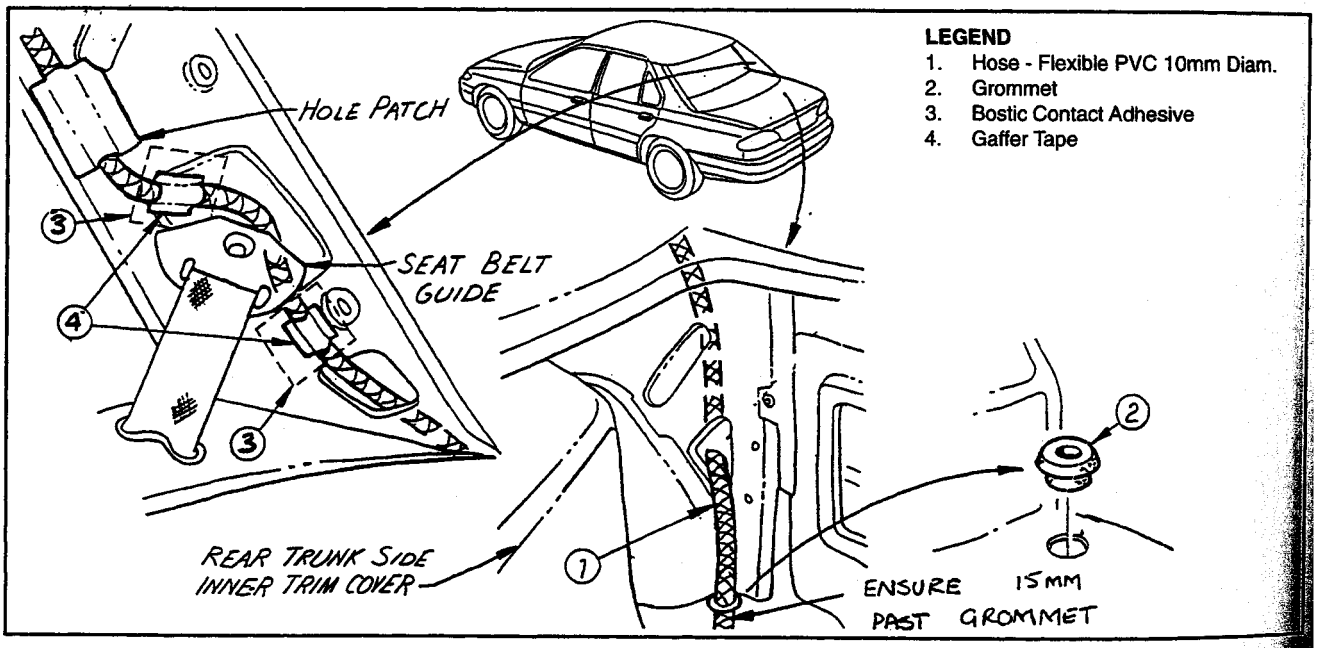


Fig. 7 - Drain Hose Installation Rear

DRAIN HOSE INSTALLATION

Front Fig. 6.

1. Cut drain hose into 1 metre length.
2. Cut end of hose off at 45º angle.
3. Attach tracer to drain tube to assist hose down pillar.
4. Feed hose down pillar, guiding hose through hole.
5. Glue gasket to back face of tube assembly.
6. Fit hose inside of tube assembly, secure with glue.
7. Fit into pillar and secure with pop rivets.

Rear Fig. 7.

1. Partly remove rear trunk side inner trim.
2. Fit grommet (item 2).
3. Remove hole patch from quarter panel inner.
4. Insert drain tube through hole and feed dow quarter panel inner.
5. Pull drain tube through hole in rear quarter pan and insert tube through grommet.
6. Apply glue (item 3) and fit gaffer tape (item 4) a retain hose to quarter panel inner - Ensure ho extends 15mm beyond grommet.
7. Route drain tube behind rear seat belt guide in r quarter panel.
8. Retain in swage with hole patch.
9. Apply contact adhesive to hose and sail pan aid tape retention.
10. Secure hose with tape in two places.

SUNROOF PARTS IDENTIFICATION LEGEND

ITEM	QTY.	DESCRIPTION
1	1	KIT GLASS PANEL
2	1	KIT WIND DEFLECTOR
3	1	KIT DRAIN CHANNEL
4	1	KIT SUNSHADE
5	1	HANDLE SUNSHADE
6	1	GUIDE SLIDE BLOCKS
7	1	KIT SLIDE REPAIR LH
8	1	KIT SLIDE REPAIR RH
9	1	KIT REPAIR LOCATOR
10	1	KIT REPAIR RETRACTOR
11	1	KIT REPAIR BLOCKING
12	1	KIT DRIVE CABLES
13	1	KIT BRACKET GLS. ADJ. LH
14	1	KIT BRACKET GLS. ADJ. RH
15	1	COVER MECH. SET RH/LH
16	1	SWITCH SLIDING ROOF
17	1	TRIM FINISHER
18	1	KIT MOTOR SET
19	1	CONTROL UNIT
20	1	PLUG
21	1	SEAL ROOF GLASS
22	1	RING FINISHING
23	1	KIT MECH. MOUNT SET
24	1	KIT MOTOR MOUNTING
25	1	HANDLE ROOF SLIDING
26	1	CAP SLIDE SET
27	1	WIRING ROOF SWITCH
28	1	CIRCUIT BREAKER (GLi ONLY)

Parts Identification Listing.

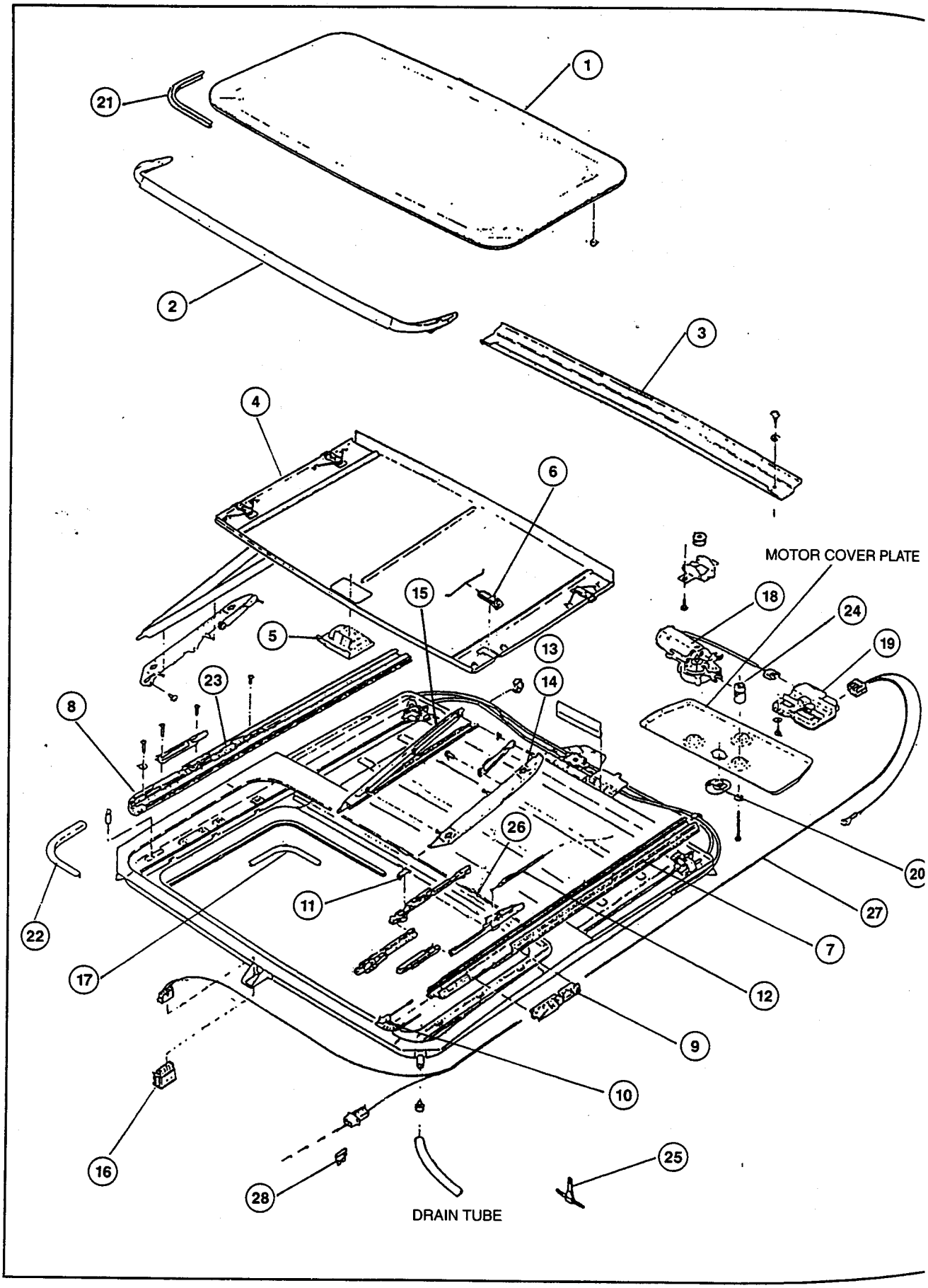


Fig. 8 - Exploded View - Hollandia Sunroof

DIAGNOSIS AND TROUBLE SHOOTING - MECHANICAL

CONDITION	POSSIBLE CAUSE	ACTION
While cycling the panel from tilt to close it begins sliding rearward.	Blocking catch is broken.	Replace blocking catch.
While cycling fully open panel forward, it begins tilting under roofskin.	Blocking catch is broken.	Replace blocking catch.
Panel is misaligned side to side.	Timing to drive cables incorrect.	Retime drive cables.
Panel sliding too slowly (with 13.5V power supply panel should not take more than 7 sec. to cycle from full retraction to closure).	Weak battery.	Charge or replace.
	Misaligned panel creating drag or friction.	Retime drive cables.
	Weak motor. Test as indicated in electrical trouble shooting section.	Replace motor.
	Dirty mechanism.	Clean and grease mechanism or replace if necessary.
Blocking of mechanism, glass panel stopping prematurely.	Sunroof control unit adjusted improperly, panel stopping prior to cycle.	Synchronize sunroof control unit.
	Obstacle in mechanism or guide track.	Find object and remove.
Rattles:		
Rear of panel rattling in any position.	One or two rear panel nuts not tightened properly.	Tighten panel nuts. Refer Final Assembly and Adjustments section.
	Sliding cap (plastic) on long lever not in place or functioning improperly.	Inspect for proper alignment or replace.
Drain channel rattles.	Inspect for insulator tape between drain channel and mechanism.	Add insulator tape.
Squeaking sunshade.	Plastic to metal movement between sunshade and slides.	Grease contact spots.
Sunshade handle rattling on trim finisher.	Curvature of front sunshade incorrect.	Correct curvature, manual adjustment.
Rattling in motor area.	Cover plate on motor has loose screws.	Tighten coverplate screws.

DIAGNOSIS AND TROUBLE SHOOTING - MECHANICAL (CONT.)

CONDITION	POSSIBLE CAUSE	ACTION
Wind noise:		
Panel closed, excessive wind noise.	Glass panel seal not tight to trim ring.	Correct glass panel adjustment. Refer Final Assembly and Adjustment section
	Blocking catch broken.	Replace blocking catch.
Panel vented emitting whistling sound.	Vinyl headlining material wrapped around sunshade too thin, creating large wind channel between rail and side of sunshade.	Place insulating tape along either outboard edge of sunshade to close channel.
Water leakage:		
Water coming through panel opening area.	Blocked drain tubes.	Inspect drain tubes clean opening, blow out tubes.
	Misaligned or kinked drain tubes.	Correct routing of drain tubes.
	Housing frame distorted, seal to rail disconnected.	Correct frame curvature if necessary reseal rail to frame.
	Rear rail bracket has broken seal.	Reseal at rear rail seal point. Refer Trimming Repair section.
Headlining wet in front.	Frame seam has improper seal.	Reseal at seam.

EMOVAL/INSTALLATION/ADJUSTMENTS
OTOR REPLACEMENT

Remove or drop rear of headlining to access motor cover.
Remove cover, motor will drop down.
Disconnect the motor wire from the sunroof control unit.
Connect a new motor to sunroof control unit.
Inspect motor for proper operation in both directions.
Utilizing the access plug for proper positioning, remount motor and cover, insert plug, replace screws.
Inspect the unit for proper electrical and mechanical functioning.
Readjust headlining and replace access plug.

UNROOF CONTROL UNIT
EPLACEMENT (S.C.U.)

Remove or drop rear of headlining to access motor cover.
Using the manual crank, vent the panel completely.
Remove LH mechanism cover.
Using the manual crank, close the glass panel (1.5 revolutions) access the 2.5mm brass hole with a pin. Venting the panel, turn crank 0.25 revolution forward. The pin will stop the mechanism at the desired location (Fig. 9).

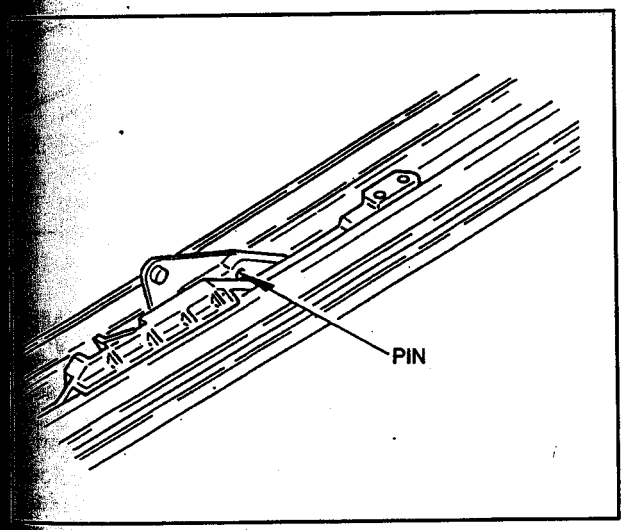


Fig. 9 - Pin Locating Mechanism.

Remove cover, motor will drop down.
Disconnect the motor wire from the S.C.U.
Disconnect the wire harness from the S.C.U.
Remove the S.C.U. screw and lower the front, slide back.
Inspect the new S.C.U. for proper alignment of spots on gear wheel Fig. 10.
Dropping the front of the S.C.U. low enough for cable clearance slide forward, engage lip of cable plate in S.C.U. slot. Straighten S.C.U. horizontally and tighten screw.

NOTE: if the spots are not aligned turn the top mount cable gear until each appears aligned over one another in the view finders.

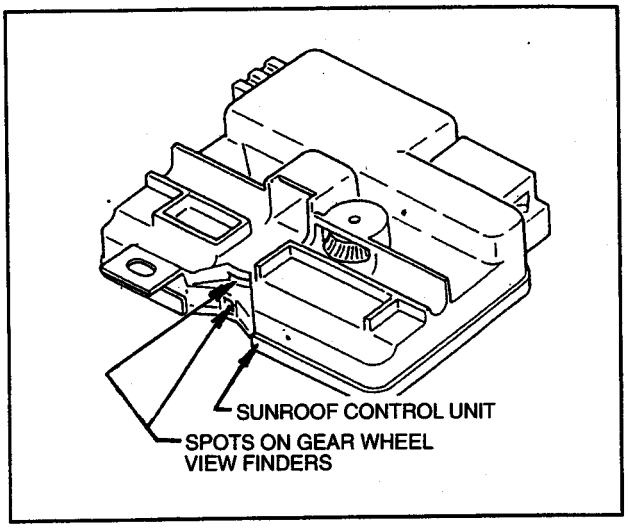


Fig. 10 - Checking alignment of Spots on Gear Wheel.

10. Reconnect both wire connectors to the S.C.U.
11. Reinstall motor and cover. (Use the access plug for proper positioning).
    Tighten screws. Inspect TVS for proper functioning. Install headlining, access plug and LH mechanism cover.

SYNCHRONIZATION OF THE SUNROOF CONTROL UNIT (S.C.U.)

1. Remove or drop rear of headlining to access motor cover.
2. Using the manual crank, vent the panel completely.
3. Remove LH mechanism cover.
4. Using the manual crank, close the glass panel (1.5 revolutions) access the 2.5mm brass hole with a pin. Venting the panel, turn crank 0.25 revolution forward. The pin will stop the mechanism at the desired location (Fig. 9).
5. Remove cover, motor will drop down.
6. disconnect the motor wire from the S.C.U.
7. Disconnect the wire harness from the S.C.U.
8. Remove the S.C.U. with screw, drop the front, slide back.
9. To align the two spots in the view finders, turn the exposed black cable gear mounted in top centre of the S.C.U. When each spot appears directly in line with the other, top to bottom, stop (fig. 10).
10. Remount S.C.U. Dropping the front of the S.C.U. low enough for cable clearance, slide forward, engage lip of cable plate in S.C.U. slot. Straighten S.C.U. horizontally and tighten screw.
11. Reconnect both wire connectors to the S.C.U.
12. Remount motor and cover. Use the access plug for proper positioning.
    Tighten screws. Inspect TVS for proper functioning, remount headlining, access plug and LH mechanism cover.

DRIVE CABLES REPLACEMENT

1. Remove covers, panel, drain channel, wind deflector and sunshade.
2. Place mechanism in closed position.
3. Remove rear of headlining to access motor cover.
4. Remove cover, motor will now drop down.
5. Disconnect the motor wire from the sunroof control unit.
6. Remove the S.C.U., drop the front, and slide back.
7. Remove the gear wheel housing by removing the two screws.
8. Remove gear wheel by inserting a screwdriver, push forward, until it drops down (fig. 11).

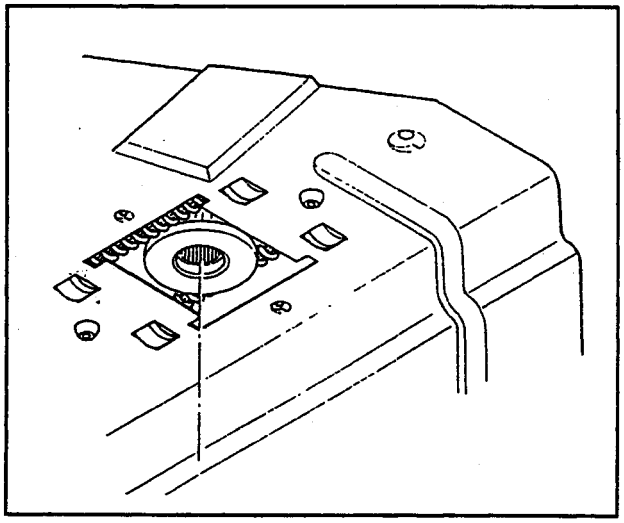


Fig. 11 - Removing Gear Wheel.

9. Place a screwdriver in the mechanism as indicated in Fig. 12. Push this mechanism rearward into the slide position. Continue pushing backwards by placing a hand on the front of the mechanism. Three locator screws will become accessible.

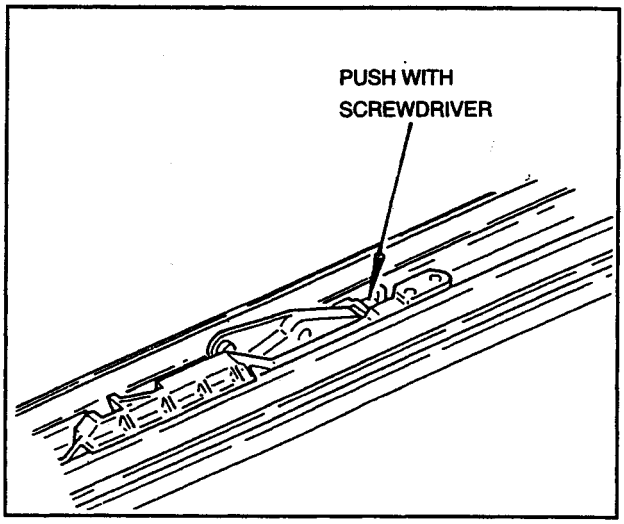


Fig. 12 - Pushing Mechanism Rearward.

10. Remove the locator being careful to remember the positioning of screws.
11. Pull mechanism all the way forward.
12. Push the mechanism into tilt position.
    Be sure not to inadvertently dislodge the mechanism. Keep the front of the mechanism down.
13. Remove the front screw and slide the retraction forward. Do not take out.
14. Slide mechanism in tilt position further forward.
15. Remove the torx screw which connected the curve on panel to the glass adjustment bracket. Take the aluminium curve on panel from the long lever, make sure the cap remains on the pin of the long lever. Pivot the glass adjustment bracket forward.
16. The cable will now be visible. Lift out cable and pull forward out of the guide rail track.
17. Inspect for proper length of new cable, grease and slide into rail. Make sure the oval shaped copper head of the cable seats firmly and diagonally across the guide channel (Fig. 13).

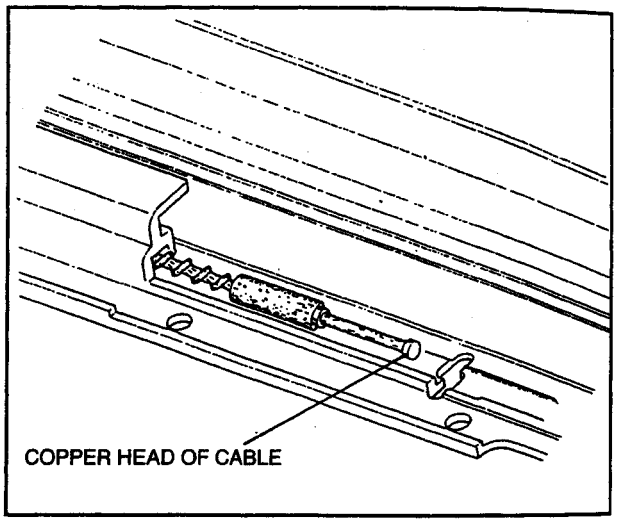


Fig. 13. Cable Positioned in Rail.

18. To check that cable is positioned properly grasp long lever in tilt position with one hand, the pivoting glass adjustment bracket in the other hand and slide backwards, it should slide into place (if blocked turn cable slightly to reseat copper oval head properly).
19. Pivot arm of glass adjustment bracket back down into place. Slide the curve on panel back into place over cap on long lever and remount the torx screw.
20. Push mechanism into slide position as in point 9 (hold bracket stable while doing so).
    If mechanism blocks approximately 4"/100mm negating a full rearward positioning you failed to hold bracket stable, repeat number 20.

DRIVE CABLES REPLACEMENT (CONT.)

21. Slide whole mechanism rearwards to allow remounting of locator.
22. Slide the retraction rearwards, remount screw and locator.
23. Repeat points 10 thru 22 to replace other cable.
24. Slide both LH/RH mechanisms to the front position.
25. Push mechanisms LH/RH to closed position. Access each 2.5mm brass hole with a pin (pointed object). Slide mechanism forward until pin stops the mechanisms movement at the desired location (Fig. 9).
26. Mount the new gear wheel. Being sure to centre it evenly between the walls of the hole in the motor bracket. Note that the core or centre of the gear has splines (teeth). The splines do not extend completely to one side of the gears inner core. This is the down (bottom) side for mounting (Fig. 11).
27. Mount the new gear wheel housing.
28. Mount the sunroof control unit. Inspect to be sure the two timing spots are aligned in the view finders (top to bottom). Dropping the front of the S.C.U. low enough for cable clearance slide forward, engage lip of cable plate in S.C.U. slot. Straighten S.C.U. horizontally and tighten screw.

    NOTE: If the timing spots are not aligned, turn the top mount cable gear until each appears aligned over one another in the view finders (Fig. 11).
29. Connect the motor to the sunroof control unit (wire one way connector).
30. Use the access plug for proper positioning. Remount motor and cover, insert plug, replace screws.
31. Inspect the sunroof for proper electrical and mechanical functioning.
32. Remount headlining.
33. Remount sunshade, drain channel, panel, wind deflector and mechanism covers according to the Final Assembly and Adjustments section.

TIMING OF THE DRIVE CABLES

1. Fully tilt panel.
2. Remove LH/RH mechanism covers.
3. Fully close panel.
4. Drop rear of headlining to access motor cover plate.
5. Remove cover, motor will drop down.
6. Disconnect sunroof control unit wires.
7. Dismount sunroof control unit by removing screw. Lower the front and slide back.
8. Remove the gear wheel housing by removing the two screws.
9. Remove gear wheel by inserting screwdriver, push forward, until it drops down (Fig. 11).
10. Push mechanisms LH/RH to closed position. Access each 2.5mm brass hole with a pin (pointed object).

    Slide mechanism forward until pin stops the mechanisms movement at the desired location. (Fig. 13).
11. Mount the new gear wheel. Being sure to centre it evenly between the walls of the hole in the motor bracket. Note that the core or centre of the gear has splines (teeth). The splines do not extend completely to one side of the gears inner core. This is the down (bottom) side for mounting. (Fig. 11).
12. Mount the new gear wheel housing.
13. Mount the sunroof control unit. Inspect to be sure the two white timing spots are aligned in the view finder (top to bottom). Dropping the front of the S.C.U. low enough for cable clearance slide forward, engage lip of cable plate in S.C.U. slot. Straighten S.C.U. horizontally and tighten screw.

    NOTE: If the white timing spots are not aligned, turn the top mount cable gear until each appears aligned over one another in the view finders (fig. 11).
14. Connect the motor to the sunroof control unit. (wire one way connector).
15. Using the access plug for proper positioning. Remount motor and cover, insert plug, replace screws.
16. Inspect the sunroof for proper electrical and mechanical functioning.
17. Remount headlining.
18. Remount LH/RH mechanism covers.
19. Final inspection of unit.

ADJUSTMENT BRACKET REPLACEMENT

1. Fully tilt panel.
2. Remove LH/RH cover mechanism and panel (refer Final Assembly and Adjustments section).
3. Remove adjustment bracket by removing front circlip and torx screw.

    Move the adjustment bracket sideways from the long lever in rear and mechanism in front. Be sure the black nylon slide cap remains mounted on the long lever.
4. Remove the curve on panel by taking off circlip. Mount curve on panel to new adjustment bracket.
5. Reverse above sequences to reinstall the adjustment bracket.
6. Remount panel and LH/RH mechanism covers (refer Final Assembly and Adjustments section).
7. Inspect sunroof electrical and mechanical functioning.

GLASS PANEL SEAL REPLACEMENT

1. Dismount LH/RH mechanism covers and panel (refer Final Assembly and Adjustments section).
2. Remove seal from panel.
3. Remove all foreign debris from around glass frame.
4. Apply bead of silicone in retaining channel all around glass frame perimeter.
5. Install new seal, beginning at centre rear glass frame retaining channel.
6. Using your thumbs, insert seal with enough pressure to be sure of flushness (tight to frame).
7. The seal needs pressure to maintain proper alignment, when there is excess, leave approximately 0.25"/6mm extra then work it into retaining channel.
8. Use super glue to close seam neatly.
9. Cut in the extra lip at the bottom of the rubber seal. Use scissors (fig. 14).

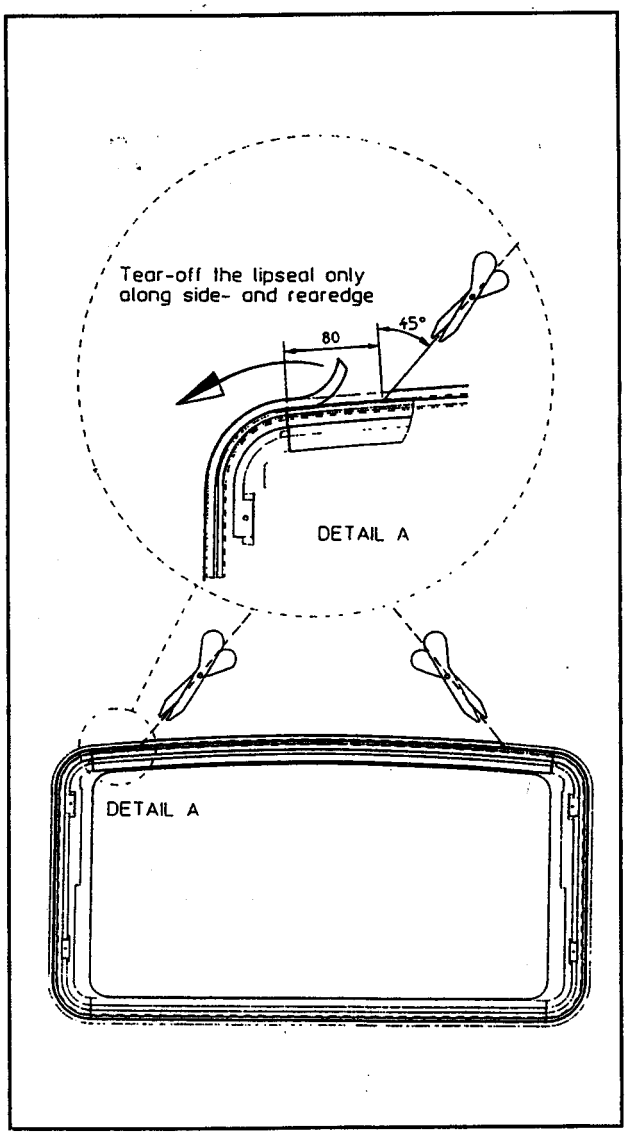


Fig. 14 - Cutting and Fitting Rubber Seal.

10. Tear off the lip seal carefully along the rear and the sides. Ensure that the lip seal remains fixed along the front of the glass panel.
11. Remove the remaining mastic and let the glass panel dry for two hours minimum.
12. Remount the panel and LH/RH mechanism covers. (Refer Final Assembly and Adjustments section).

RETRACTION MECHANISM REPLACEMENT

1. Retract panel completely.
2. Remove the wind deflector.
3. Move retraction mechanism forwards out of rail.
4. Install new retraction mechanism in rail.
5. Remount the wind deflector.
6. Inspect the proper functioning.

GUIDE RAIL MECHANISM REPLACEMENT

1. Remove LH/RH mechanism covers, panel, drain channel, wind deflector and sunshade. (Refer Final Assembly and Adjustments section).
2. Tilt mechanism completely.
3. Remove adjustment bracket b removing front circlip and torx screw. Move the adjustment bracket sideways from the long lever in rear and mechanism in front. Be sure the black nylon slide cap remains mounted on the long lever.
4. Fully retract mechanism.
5. Remove the locator, retraction mechanism and rail screw.
6. Remove wind deflector mounting nuts.
7. Slide rail sideways to unlock, then lift front up.
8. With rail front up grasp retractor mechanism and remove.
9. Fully close mechanism.
10. Lift and pull rail forward over mechanism slowly, as soon as the front of drive cable appears at end of guide, lift out cable, then pull mechanism carefully forward and lift out.

    Inspect the new replacement mechanism for cleanliness and completeness.
11. Slide the mechanism rearward out of rail for cable installation access.
12. Install cable then push mechanism forward on rail (maintain access to rear rail area).
13. Apply a bead of liquid butyl (Fig. 15).

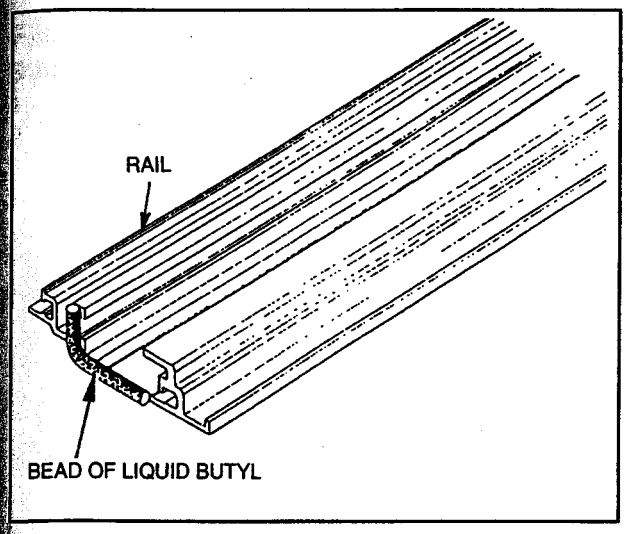


Fig. 15 - Application of Liquid Butyl.

14. Slide rail rearward over mechanism and drive cable while holding the front of the mechanism in place.
    As soon as the rail is fully extended rearward, drop the front to frame and push rail rearward into rail stop.
    Line up the screw holes for proper positioning.
15. Retract mechanism completely.
16. Lift front of rail to reinstall retractor mechanism.
17. Drop rail down, push inboard until it "locks" in place.
18. Remount all new rail screws starting at front for proper positioning of original screws by size.
19. Replace wind deflector mounting nuts loosely.
20. Tilt mechanism completely.
21. Remount adjustment bracket over mechanism with screws and circlip at the front.
22. Inspect for proper mechanical functioning of mechanism.
23. Remount sunshade, drain channel, panel and wind deflector. (Refer Final Assembly and Adjustments section).
24. Inspect functioning of sunroof, reinstall LH/RH mechanism covers. (Refer Final Assembly and Adjustments section).

BLOCKING CATCH REPLACEMENT

1. Remove LH/RH mechanism covers and panel. (Refer Final Assembly and Adjustments section).
2. Fully retract mechanism.
3. Remove locator.
4. Fully tilt mechanism.
5. Remove blocking catch by lifting out.
6. Locate and clean out broken blocking catch debris.
7. Install new blocking catch in mechanism, insert circular eye stud into mechanism making sure second smaller stud falls cleanly into mechanism slot.
8. Fully retract mechanism.
9. Remount locator.
10. Inspect for proper mechanical functioning.
11. Remount panel, LH/RH mechanism covers. (Refer Final Assembly and Adjustments section).

GLASS PANEL SEAL ADJUSTMENT

The proper positioning of the glass panel should find the seal firmly in touch with either the EPDM trim ring or flanged metal circumference of the sunroof opening. If the panel fits properly yet a gap remains between seal and trim ring it can be corrected as follows:

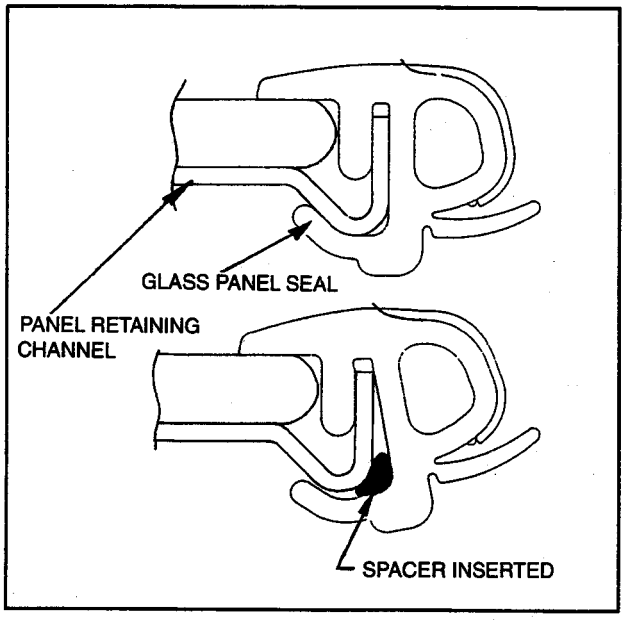


Fig. 16 - Inserting Spacer In Glass Seal.

1. Readjust panel refer Final Assembly and Adjustments section.
2. With a grease pencil mark the boundries of insufficient contact on the panel.
3. Remove panel.
4. In the areas marked insert a spacer between panel retaining channel and rubber seal. (Fig. 16).
5. Remount panel and adjust.

TRIM RING REPAIR SECTION

1. Remove stabilizer bar.
2. Scrape away excess bonding material and lightly sandpaper the edge of roof opening.
3. Clean the edge with degreasing fluid. Apply an antirust primer to the cut edge of the roofskin.
4. When antirust primer has dried, remove paper masking tape from the car roof.
5. Start fitting the trim ring at the middle of the rear opening edge. The hook type bottom of the trim ring clips on to the small flange under the roof opening edge.

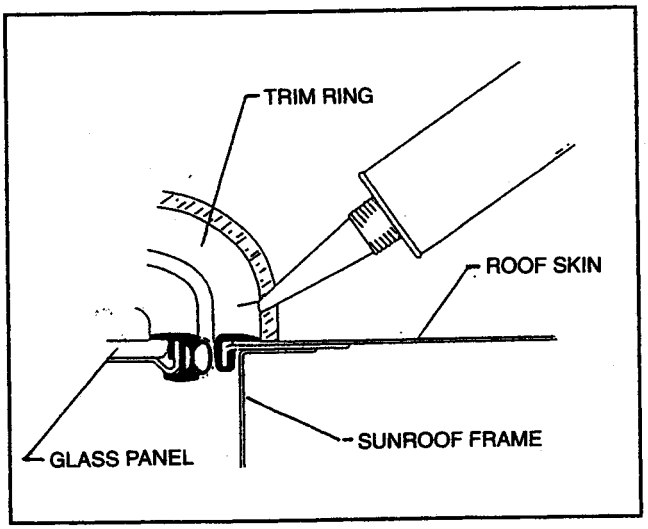


Fig. 17 - Inserting Adhesive Under Trim Ring.

6. Ensure the trim ring fits with contact all around opening.
7. Insert glass panel in glass adjustment brackets without fastening and put glass panel in closed position.
8. Correct the length of the trim ring so that it will fit close to the seal of the panel.
9. Apply insulation tape along the trim ring.
10. Inject a first class polyurethane adhesive under the trim ring in a good and even quantity (Fig. 17).
    Adhesive serves two purposes:
    1. Bonding
    2. Protection against corrosion
11. Press the trim ring lightly to spread the adhesive for even contact all around.
12. Scrape away excessive adhesive. Remove insulation tape when adhesive has dried.
13. Let the adhesive dry with the glass panel in closed position.

FINAL ASSEMBLY AND ADJUSTMENTS

SUNSHADE

1. Slide mechanism full backwards.
2. Push sunshade retraction mechanism, on both sides, completely forwards with a small screwdriver (fig. 18).

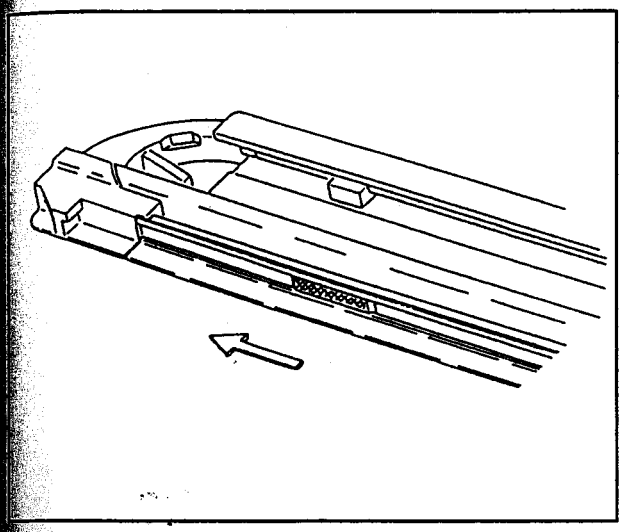


Fig. 18 - Sunshade Positioning.

3. Check sunshade for curvature, headlining, for dirt, damage, etc.
4. Push slide blocks on one side into locked position.
5. Place sunshade in position between slide rails, unlock slide blocks.
6. Check for proper functioning.

DRAIN CHANNEL

1. Slide mechanism to tilt position.
2. Slide sunshade to half open position.
3. Mount drain channel on mechanism with screws and washers (torque 0.8 Nm). High side at the rear.
4. Check function of mechanism.

GLASS PANEL

1. Slide mechanism to tilt position.
2. Inspect rubber seal and glass panel for scratches.
3. Place vertical front lips on panel between mechanism, glass bolts with nuts through slotted holes and slide panel forwards.
4. Mount 4 torx screws loose in front and centre.
5. Place glass panel in closed position.
6. Place glass adjustment tools left and right in position. To simplify the adjustment of the glass panel and secure a good fit between roof edge and glass seal, the glass adjustment tools have to be used during the final installation of the panel (Fig. 19).

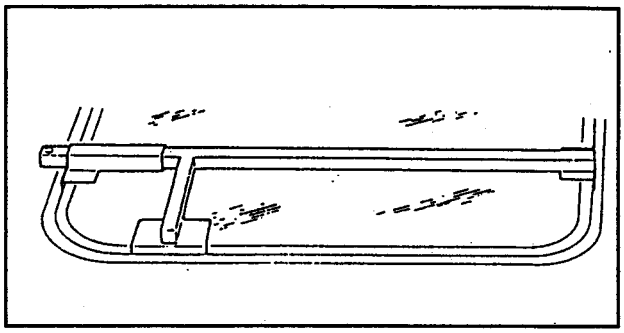


Fig. 19 - Glass Adjusting Tool.

7. Adjust height at the front and tighten front screws.
8. Tighten both centre screws.
9. Remove glass adjustment tools.
10. Adjust height at the rear by loosening rear torx screws. Place top of glass in level with roof skin, tighten screws - Fig. 21.

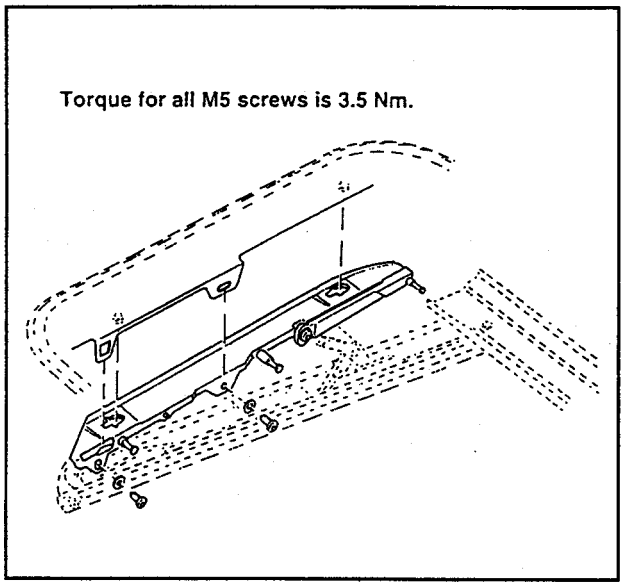


Fig. 21 - Locating and Adjusting Glass height at Rear.

11. Tighten two nuts M4 at rear of the panel.
12. Check functioning of mechanism and adjustments.

WIND DEFLECTOR

1. Slide panel backwards.
2. Bring deflector in position.
3. Adjust deflector to 4mm between trim profile and deflector.
4. Tighten two capnuts (2 Nm).
5. Check operation of deflector.

FINAL ASSEMBLY AND ADJUSTMENTS (CONT.)

MECHANISM COVERS

1. Before mounting mechanism covers, check functioning of completed roof on sunshade, mechanism, wind deflector and adjustments of glass panel. Correct if necessary.
2. Put mechanism in tilt position.
3. Place cover top part over 3 pins on side adjustment brackets and lower part in rail under drain channel. (Fig. 22).

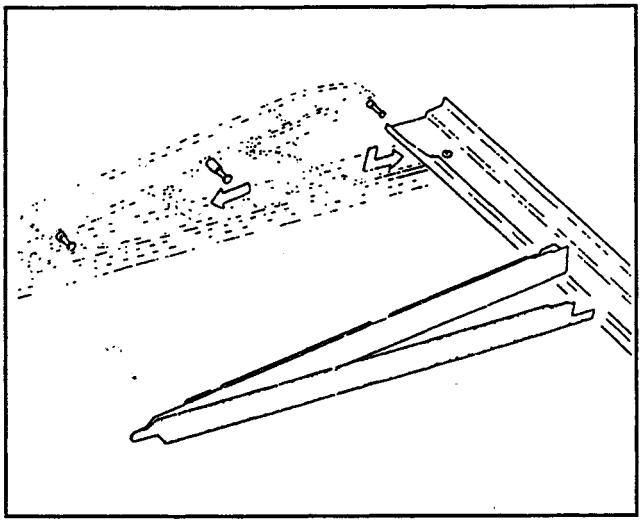
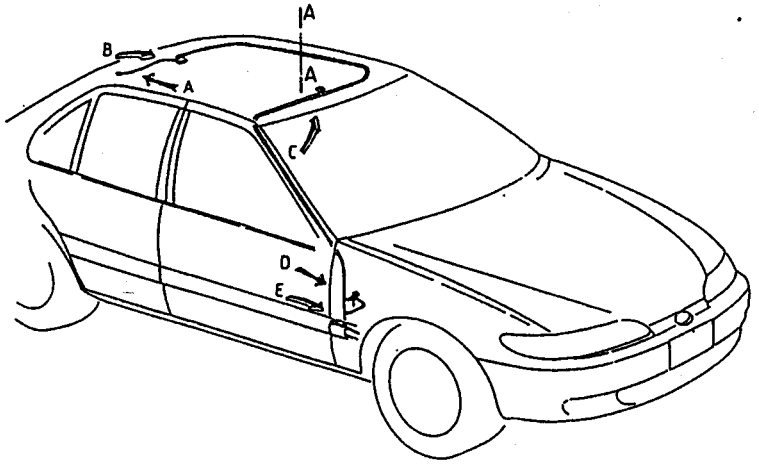
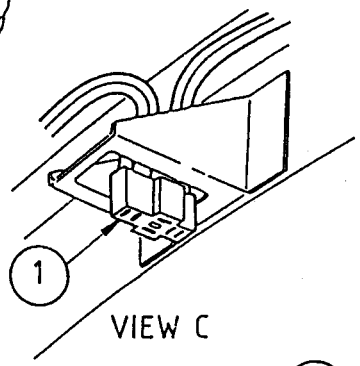


Fig. 22 - Pins and side Adjustment Brackets.

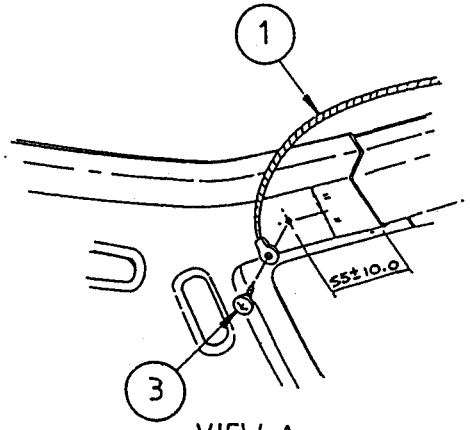
4. Check functioning.



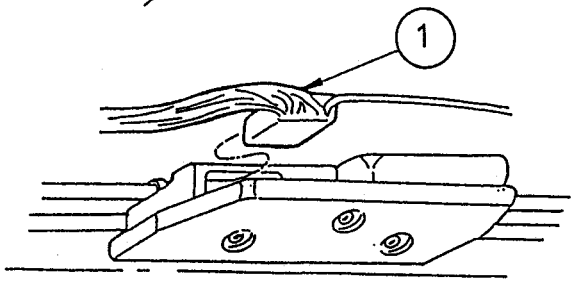
ITEM	DESCRIPTION	REQ'D
1	WIRING ASY. - ROOF SLIDE PANEL CONTROL SWITCH	1
2	CIRCUIT BREAKER (GLi ONLY) (5A BRITAX PART)	1(GLi ONLY)
3	SCREW - ATTACH EARTH	1



VIEW C



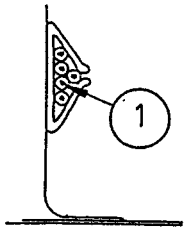
VIEW A



VIEW B

TORQUE REQUIREMENTS:-

ITEM 3 0.8 - 1.9 Nm



SEC A (TYP.)

Cont'd. Next Page

Fig. 23 - Wiring Routing and Connectors.

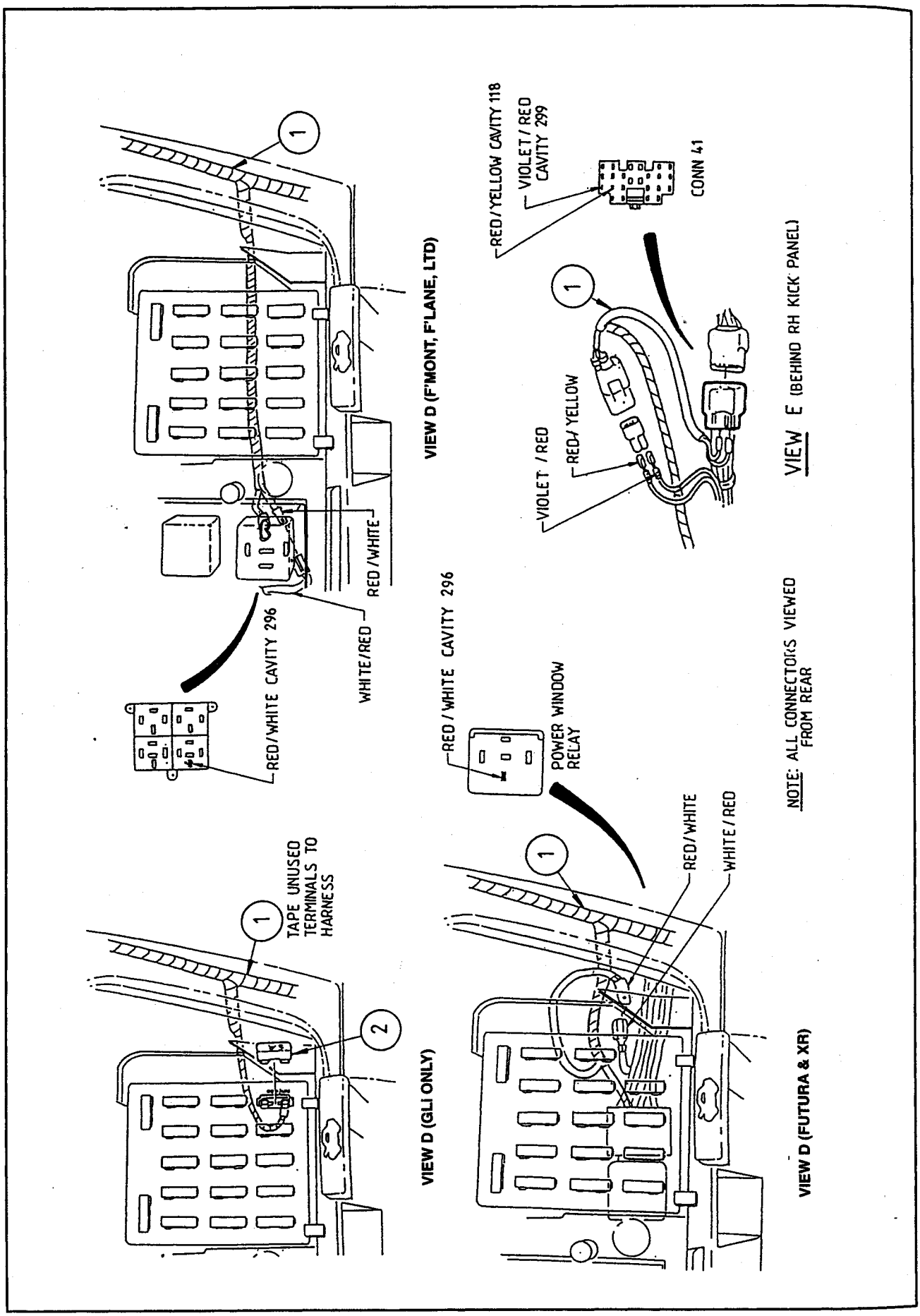
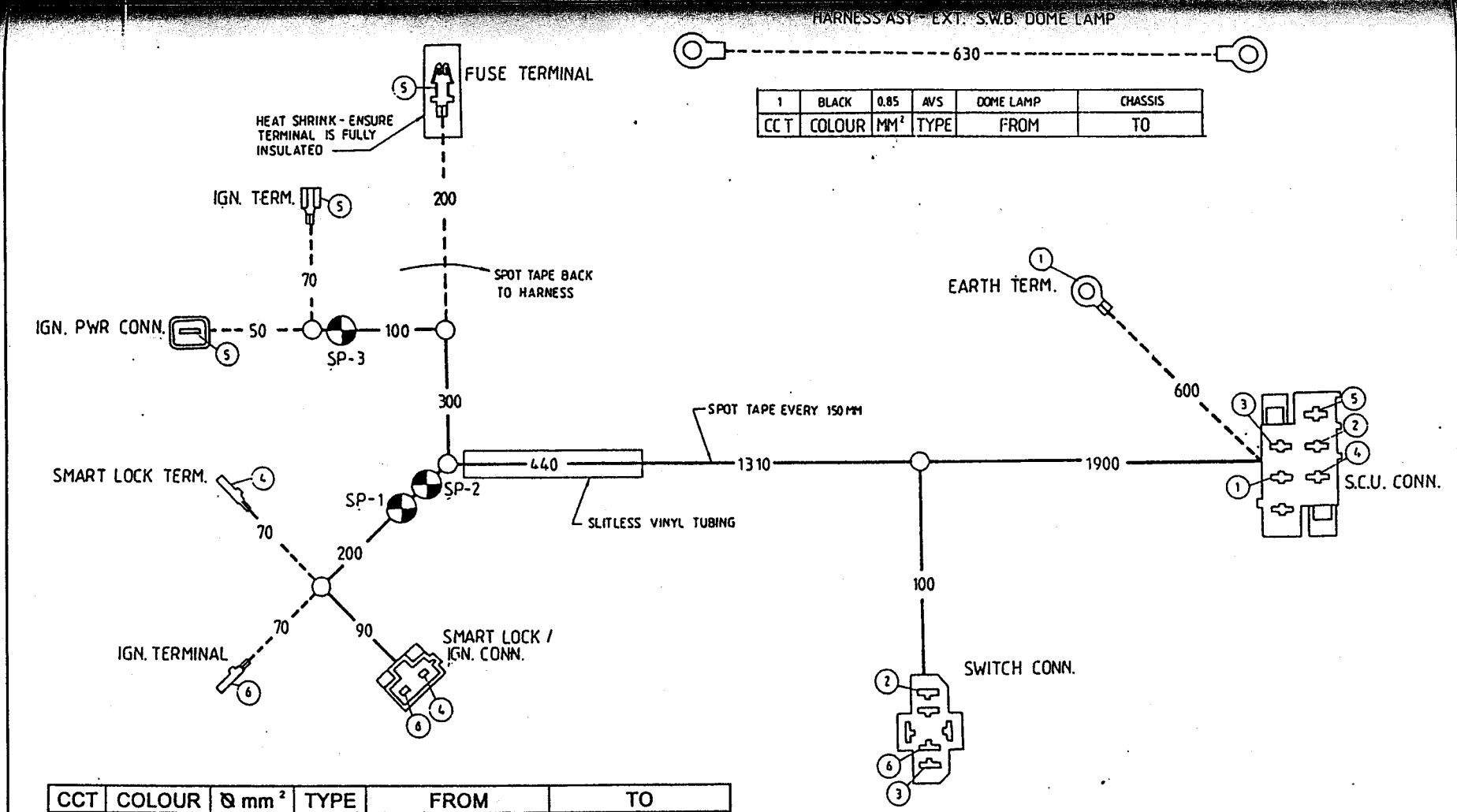


FIG. 23 — Wiring Routing and Connectors — EF shown



CCT	COLOUR	⌀ mm²	TYPE	FROM	TO
1	G	0.85	A.V.S	S.C.U. CONN	EARTH TERM
2	BR	0.85	A.V.S	S.C.U. CONN	SWITCH CONN.
3	B	0.85	A.V.S.	S.C.U. CONN	SWITCH CONN.
4	R-Y	0.5	A.V.S	S.C.U. CONN	SMART / IGN. CONN
4	R-Y	0.5	A.V.S	SP - 1	SMART LOCK TERM
5	R/W	0.85	A.V.S.	S.C.U. CONN	IGN. PWR. CONN.
5	R/W	0.85	A.V.S.	IGN. TERM	FUSE TERM
6	V/R	0.5	A.V.S.	SWITCH CONN.	SMART / IGN. CONN
6	V/R	0.5	A.V.S.	SP - 2	IGN. TERM.

WIRE COLOUR CODES:

B	BLACK	G	GREEN
BLU	BLUE	GY	GREY
BR	BROWN	O	ORANGE
R	RED	Y	YELLOW
P	PINK	V	VIOLET
W	WHITE		

FIG. 24 — Wiring Harness — EF shown

ELECTRICAL TROUBLE SHOOTING

Refer to electrical trouble shooting flow chart (Fig. 25) to locate electric failures or related problems.

Refer to Fig. 26 for electrical schematic.

Testing Electrical Components

Ensure that during the test of electrical components the TVS unit is connected to a 12 to 14V power source. If the unit is installed, the battery needs to be connected and operable. During testing the ignition/accessory switch should be on. This test can be accomplished with a test light/votage meter. Cable harness and motor inspection requires the removal of the headlining.

Fuse

Visually inspect the fuse for damage.

Powerline

Disconnect the powerline from the TVS unit at the left front corner. Using test light, inspect for correct power supply from the vehicle.

Switch

Inspect for correct power supply to the TVS operating switch, by using a test light on the connector at the switch bracket, engage switch connector to check movement in front and rear sliding positions.

Wire Harness

Inspect for broken/damaged wires. Inspect for proper connection to the sunroof control unit. (Refer to Wiring Harness Fig. 24).

Motor

Disconect the 2-way motor connector housing the green and black wire from the sunroof control unit. (You do not have to remove the motor). Using a double wire of sufficient length, connect directly to battery, check the motor for proper operation in both directions. This is accomplished by reversing the connection of the double wire. The motor has an inbuilt thermic cut-out device that automatically switches the motor off during periods of overload. After a cooling down period the motor should function properly.

Sunroof Control Unit (S.C.U.)

Testing is covered in the electric trouble shooting Flow Chart (Fig. 25). Using an additional 12V connection to the red/yellow wire, will close the roof regardless of the position and stops.

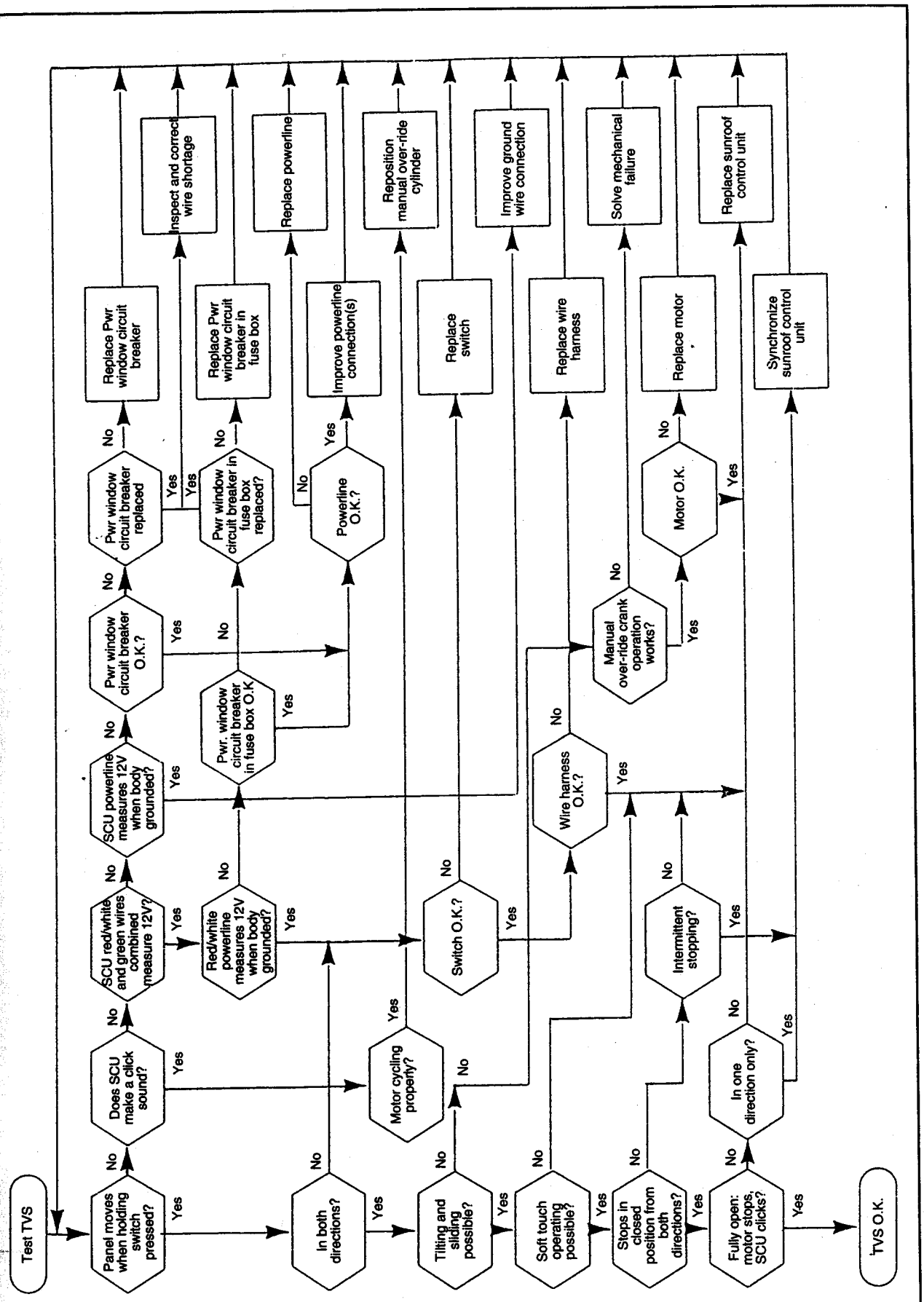


Fig. 25 - Electrical Trouble Shooting Flow Chart.

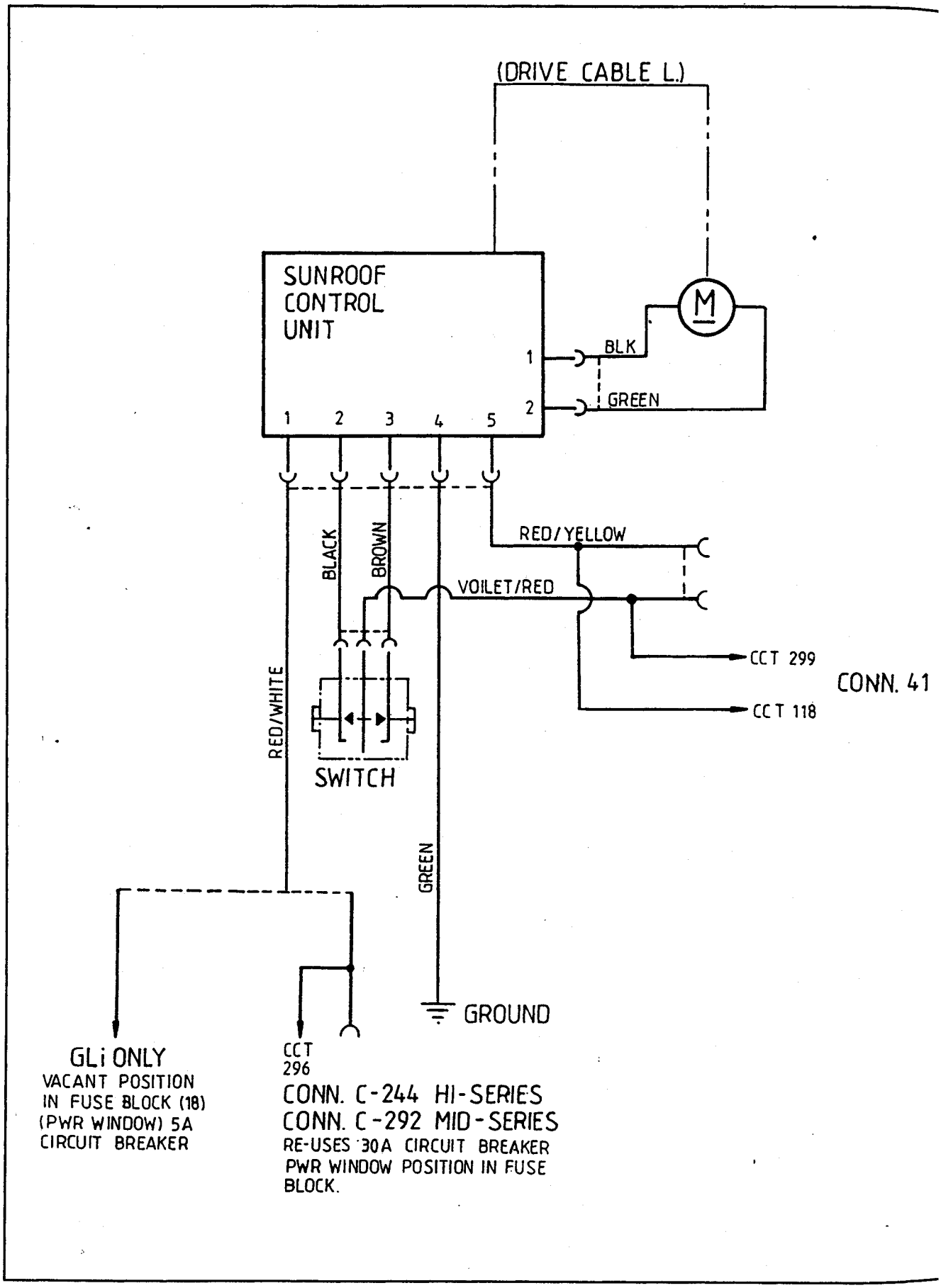


FIG. 26 — Schematic — Sunroof Circuits — EF shown

SUNROOF CIRCUIT (GLi ONLY)

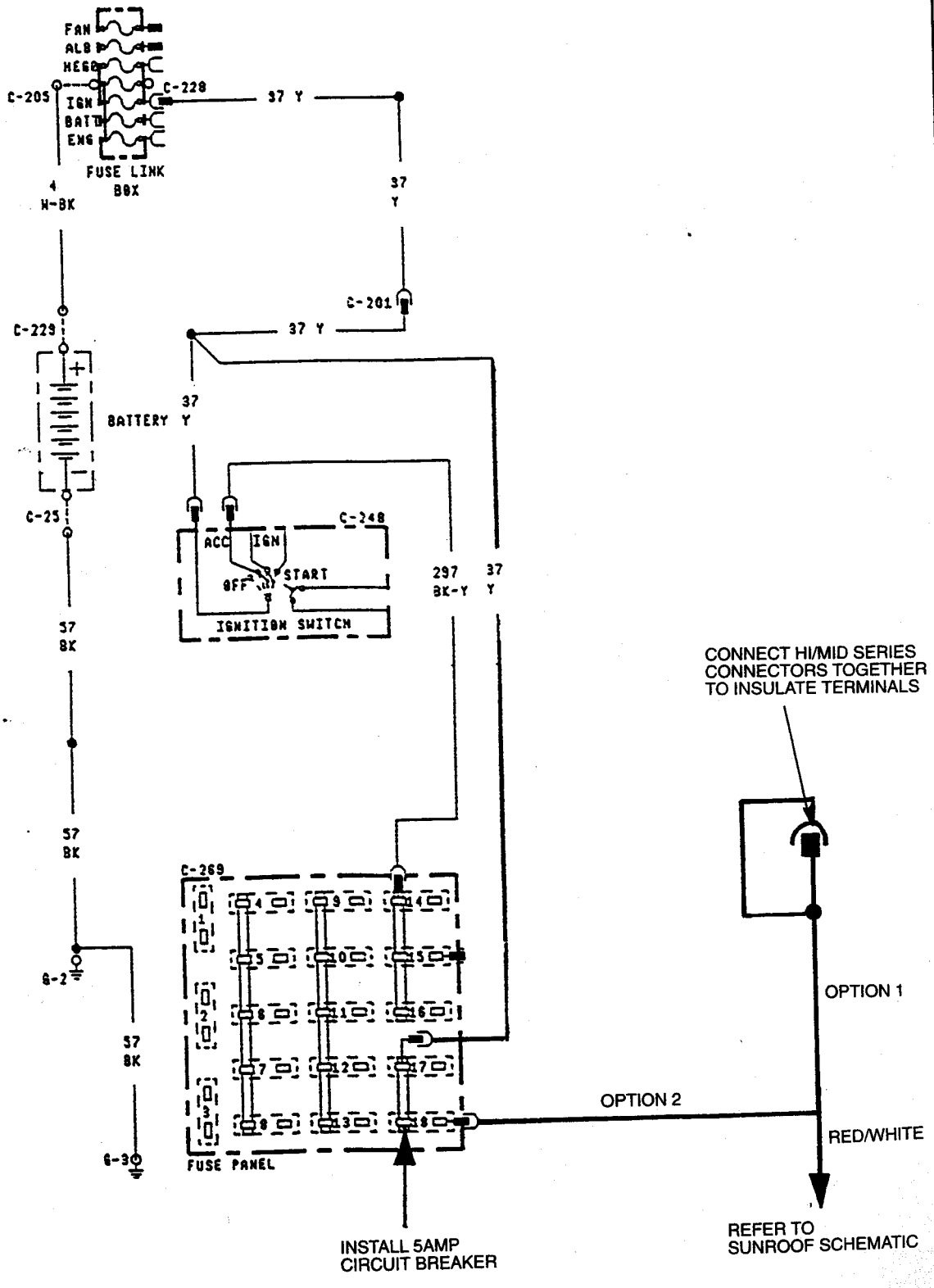


FIG. 27 — Sunroof Circuit — GLi Only — EF shown

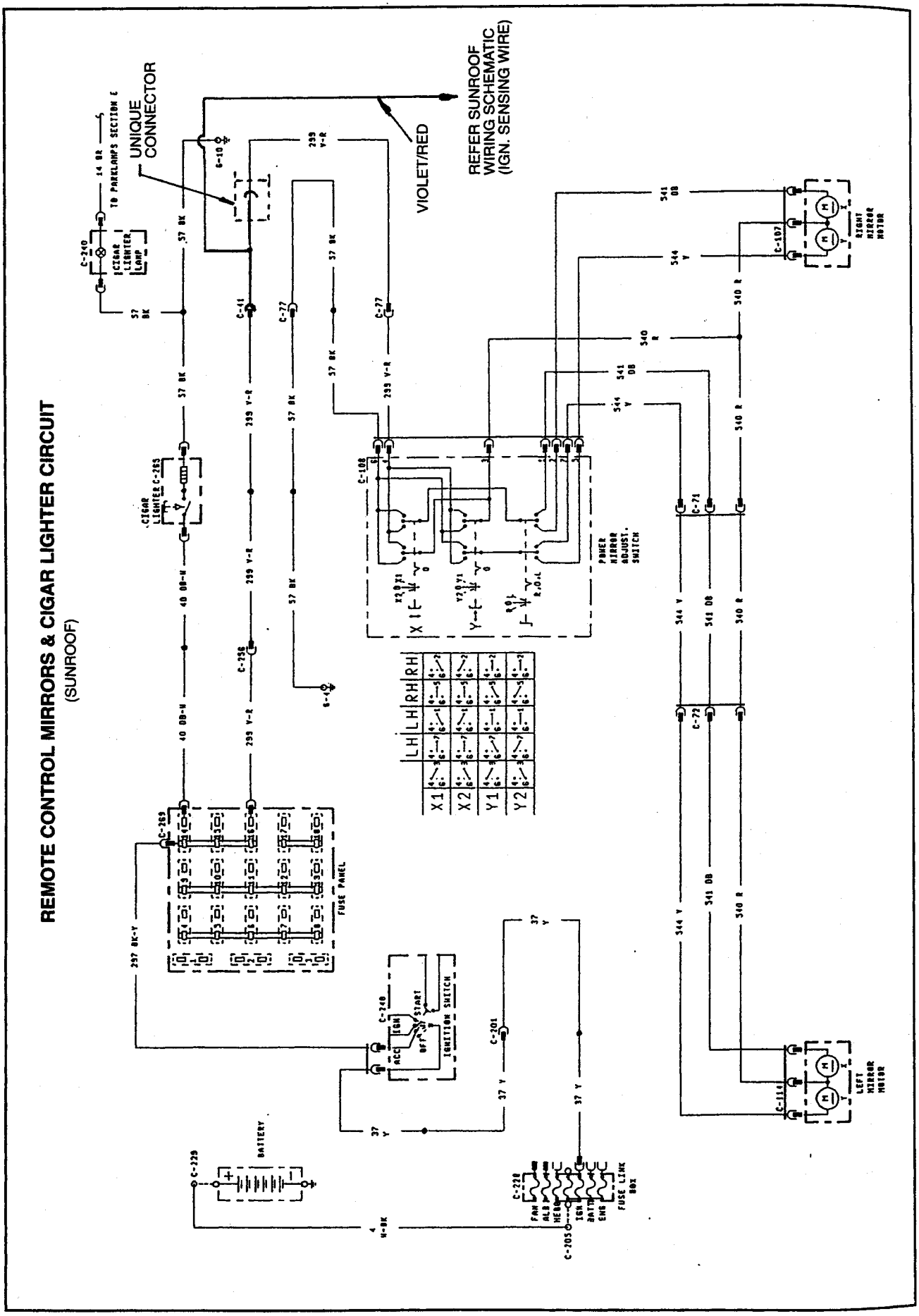


FIG. 28 — Sunroof Circuit to Power Mirrors — EF shown

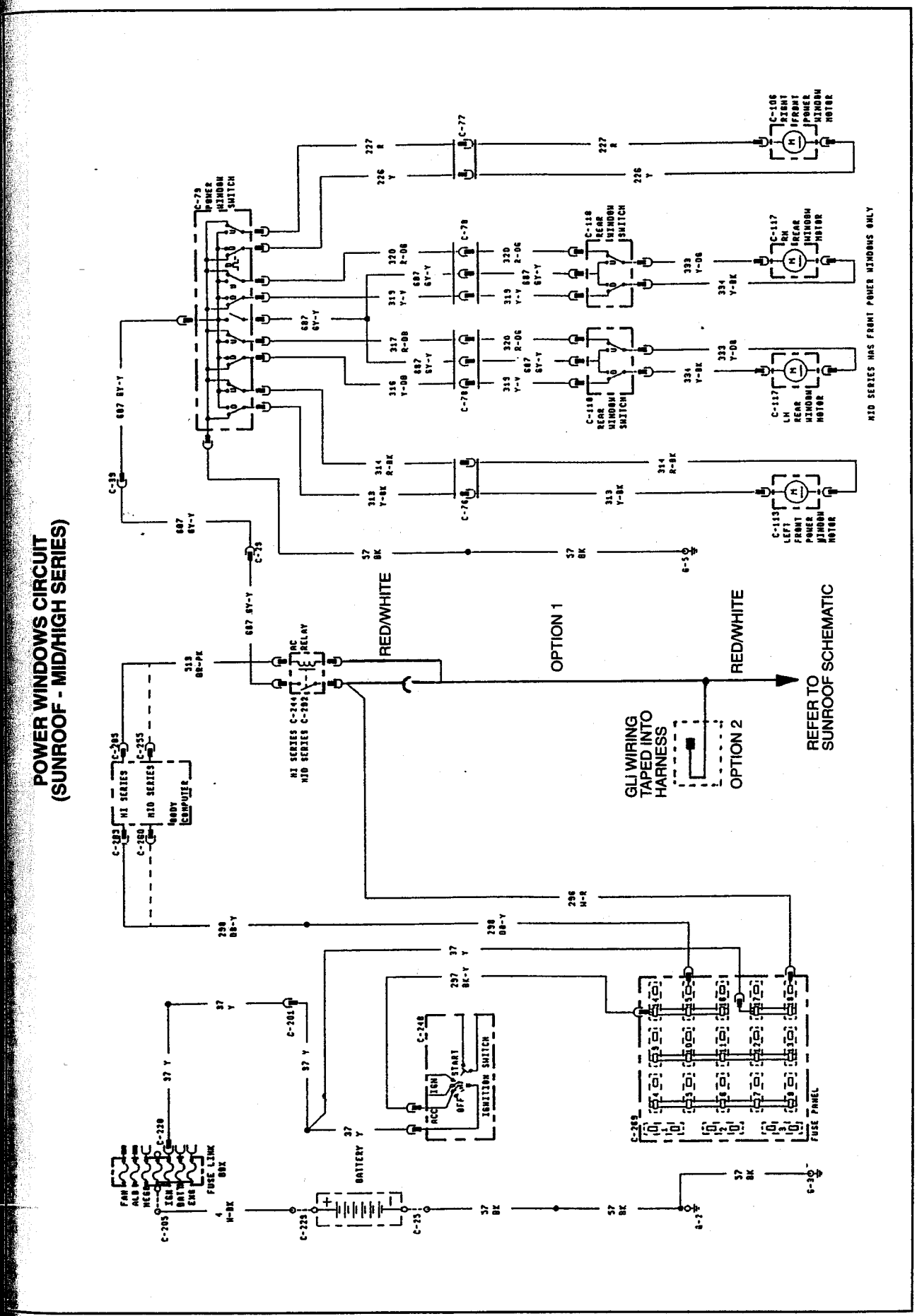


FIG. 29 — Sunroof Circuit — Power Windows — Mid/High Series Only — EF shown

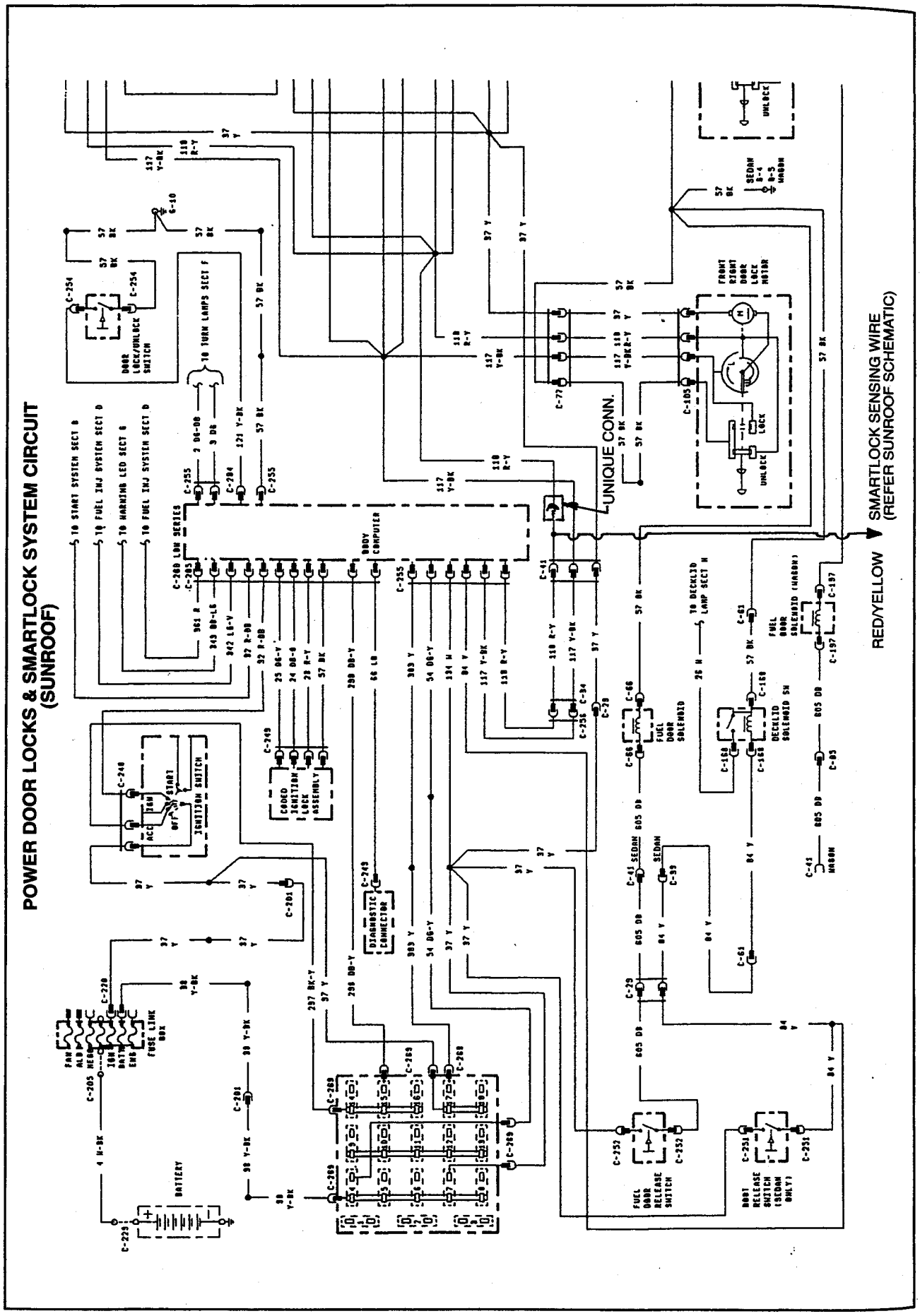


FIG. 30 — Sunroof Circuit to Power Door Locks — EF shown

SPECIAL TOOLS

A special glass adjusting tool is required when replacing the glass panel. This is a two part gauging tool. i.e. LH and RH.

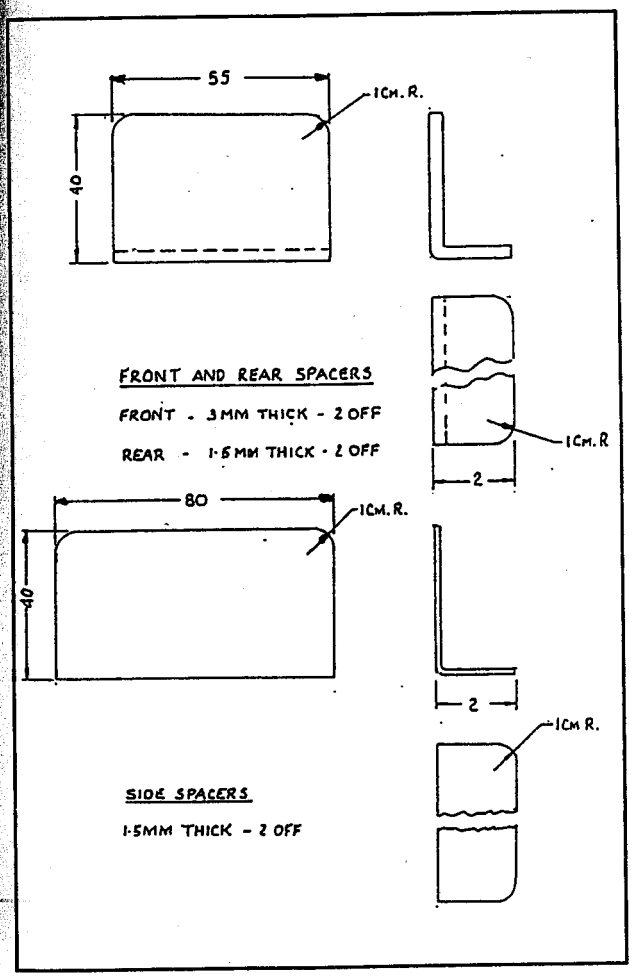
The tools can be ordered directly through Hollandia. Address.

HOLLANDIA SUNROOFS
15/1A COULSON ST
ERSKINEVILLE N.S.W.
2043
PHONE: (02) 557 2811
FAX: (02) 557 5299

The tool numbers are:
Glass Adjustment tool RH - Part No 5129
Glass Adjustment tool LH - Part No 5127
Hollandia advise that the need for the tool would be minimal in the extreme and suggest that glass replacement could be arranged through your nearest Hollandia Installer.

ALTERNATIVE

Spacers/Gauges can be made in the shop in accordance with the detail shown in the sketch below.



Glass Adjusting Spacers

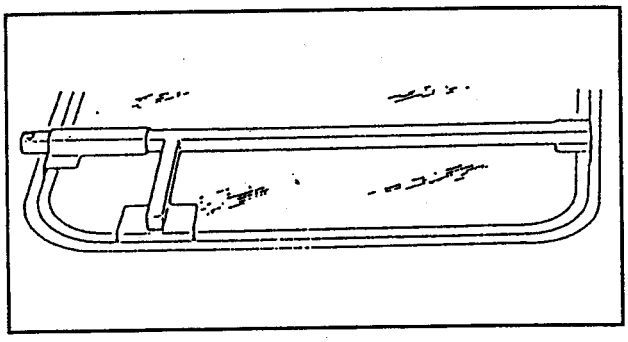
METHOD OF USING SPACERS

The front (thicker) and rear spacers should be located approx. 70mm inboard of the corners.

The side spacers should be located approx 90mm from the front.

This placement will simulate the gauging obtained by using tools P/N 5127 & 5129

Refer sketch below.



Glass Gauging tools. Part No 5127 & 5129.