

SECTION 2B

BUMPERS

NOTICE: All Bumper attaching fasteners are an important part in that they could affect the performance of vital parts and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality of substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

NOTICE: The theft deterrent label found on some major sheet metal, engines, and transmissions must be masked prior to painting, rustproofing, undercoating, etc. The mask **must** be removed following the above operations. Failure to keep the label clean and readable may result in liability for violation of Federal Vehicle Theft Prevention Standard, and subject the vehicle owner to possible suspicion that the part was stolen. For detailed information, see Section 0A.

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MAINTENANCE AND

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GENERAL DESCRIPTION

Buick passenger car bumper systems are designed so that the vehicle can withstand a collision into a fixed barrier (at 5 mph) with only minimal damage. After absorbing the energy of the collision the bumpers restore themselves to their original position.

Two different types of energy absorption systems are used.

On all except J series, the absorbing capability for both front and rear bumper systems is achieved through two energy absorbing devices in each bumper. These units convert the energy of an impact into heat and restoration.

The energy absorbing device consists of two main sub-assemblies; the piston tube assembly and the cylinder tube assembly. The piston tube assembly is filled with an inert gas under pressure and consists of a bumper bracket, piston tube, orifice, seal, piston seal, piston, and stop-ring. The cylinder tube assembly is filled with a hydraulic fluid and consists of a frame bracket, cylinder tube, mounting stud, and metering pin.

Upon impact, as the energy absorber is collapsed, the hydraulic fluid in the cylinder tube is forced into the piston tube through the orifice. The metering pin controls the rate at which this fluid passes from the cylinder tube through the orifice and into the piston tube. This controlled passage of the fluid provides the energy absorbing action.

The hydraulic fluid that is forced from the cylinder tube into the piston tube displaces the floating piston, compressing the gas behind the floating piston. After impact, the pressure of the compressed gas behind the floating piston forces the hydraulic fluid back into the cylinder tube assembly extending the unit to its normal position.

On J series, the front and rear bumpers use a plastic honeycomb pad energy absorber. This energy absorber will compress on impact, and both the energy absorber and the

urethane fascia will return to their original shape. The energy absorber pad has no moving parts.

CAUTION: Heed the following when handling energy absorbing devices or personal injury may result.

1. Do not apply heat to a unit.
2. Do not weld in the area of a unit.
3. Do not attempt to repair a damaged unit. Always replace with a new unit.
4. If unit is bound-up as a result of a collision such that it cannot extend, take precautions to avoid spring-back when bending sheet metal.

Provide a positive restraint, such as a chain or cable to hold the bumper in the position it is in.

Wear safety glasses and drill a small hole in the piston tube near the bumper bracket to relieve gas pressure.

Remove the energy absorber(s) after gas pressure has been relieved.

5. If unit is to be scrapped relieve the gas pressure prior to disposal of a unit. Make an indentation with a center punch in the small cylinder section of the energy absorber. Use a 1/8 inch drill to penetrate the small cylinder wall. Figure 2B-1.

Be safe - Protect your eyes. Wear approved safety glasses.

ON CAR SERVICE

ENERGY ABSORBING UNIT

Testing Front or Rear Energy Absorber Operation

The right and left energy absorbing units are to be diagnosed separately. The following checks are to be made on each unit:

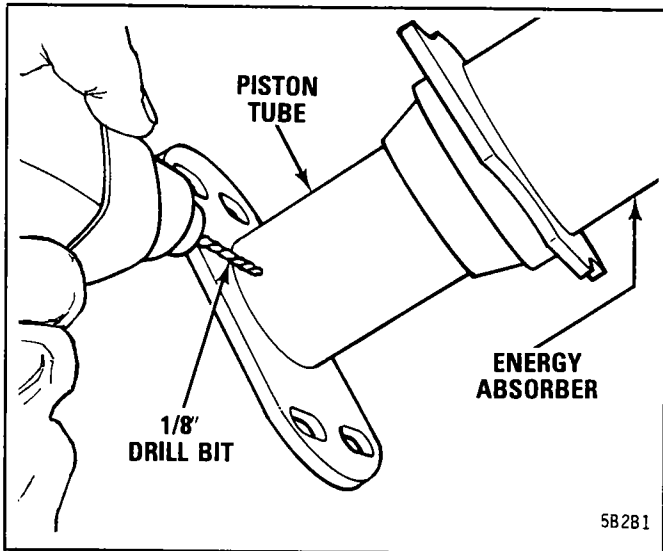


Figure 2B-1 Relieving Pressure Before Scrapping

Leakage

Some oil wetting may be visible due to the grease packed in the crimp recess. Therefore, a stain or trace of oil on the piston tube near the crimp is normal. However, if oil is dripping continuously from the crimp or the stud end of the unit, a leak is indicated and the unit should be replaced.

Damage

Observe the bumper bracket, piston tube, frame bracket and cylinder tube for evidence of visible distortion. Scuffing of the piston tube will occur when the unit is stroked and is to be considered normal.

If there is obvious damage to the unit, it should be replaced.

CAUTION: Driving into posts, walls, or barriers to perform this test is not recommended because personal injury or property damage could result.

On Bench Testing

1. Position energy absorber lengthwise in arbor press.
2. Using a suitable measuring device, note original position of unit then use press to compress unit at least $\frac{3}{8}$ ".
3. Release pressure and determine whether unit has returned to original position. If not, discard unit.

Inspection After Collision

If the collision was so severe that the bumper did not return to its original position, the energy absorber(s) will require replacing.

1. Stand clear of the bumper.
2. Provide a positive restraint, such as a chain or cable to hold the bumper in the position it is in.
3. Wear safety glasses and drill a small hole in the piston tube near the bumper bracket, Figure 2B-1, to relieve gas pressure.
4. Remove the energy absorber(s) after gas pressure has been relieved.

BUMPER RUB STRIPS

The front and rear bumper rub strips are made of a shiny plastic material. They are attached to the bumper fascias with clips and adhesive. See assembly drawings for rub strip mounting, and Section 2C for rub strip attachment

to the front end fascia on J series. If a rub strip of this type loses its lustre, the original shine can be restored by using GM Plastic Cleaner or equivalent, following label directions.

Remove and Replace

The plastic rub strip has an adhesive tape backing (similar to a body side molding) and studs. In order to properly remove the adhesive tape and avoid paint damage to the fascia use either a release agent or a heat lamp to soften the bond of the adhesive tape to the fascia. In some cases, it will be necessary to replace the rub strip with a new rub strip instead of using the old one.

If the old rub strip is usable remove all tape from the back side of the rub strip as previously described. Wipe strip clean with a wax and adhesive remover. Install new tape (double-coated acrylic foam type) to the back side of the rub strip.

After rub strip is installed, roll along entire surface with a roller in order to insure a good bond.

URETHANE BUMPERS - REPAIR AND REFINISH

Required Materials:

1. Patch Pkg - GM Part No. 1050951 or equivalent.
(Part A - Flexible Resin)
(Part B - Resin Hardener)
2. Surfacer (Filler Putty) - GM No. 1050834 or equivalent.
3. Dexlar (Dupont) Flexible Finish Enamel Color Coat or Equivalent.
4. Dupont 792S Centari Hardener or Equivalent.
5. Dupont 3608S Acrylic Lacquer Thinner or Equivalent.

Equipment Needed:

1. Wooden Spatula (enclosed in Patch Pkg.)
2. Heat lamp(s).
3. #150, #220 and #400-grit sandpapers.
4. DA Sander with 80-grit discs.
5. Suction spray gun (same nozzle and air cap combination as used for acrylic application).

Repair and Refinish Procedure for Cuts or Gouges:

1. CLEAN the repair area, using Naphtha or equivalent solvent, to insure a surface free of contamination.
2. Cut away damaged area of Urethane (Endura) material, using a DA Sander and a clean #80-grit disc. Adjust the sander, using the #80-grit disc, to a feathering action and remove the paint in-and-around the area to be repaired. (This is necessary because the patching compound will adhere only the Urethane material.)
3. Wet-sand the paint film in this area with #200-grit paper, finishing up with #400-grit and feathering edges well. Tapering the edges minimizes the possibility of highlighting the repaired area.
4. Repeat Step No. 1 to remove sanding dust. This step will enhance the adhesion of the patching material to the area being repaired.
5. Mix the patching compound and hardening agent to the prescribed portion, as outlined in the procedure enclosed in GM Repair Patch Kit #1050951 (or equivalent).
6. Let the mixture set for approximately 5 minutes.
7. Place a length of masking tape under each side of the cut-away area, so that when folded back it will cover the area.

8. Fill the damaged area slightly above the area being repaired to allow for sanding. *Cover fill area with tape.* Deep holes should be filled in stages to avoid gassing or air entrapment. The patch will air-dry to a sanding state in approximately one (1) hour. (Curing may be accelerated by careful exposure to heat.)

NOTICE: Too-early removal of tape from filled area could possibly tear the patching material.

9. Wet-sand the cured patch level with adjacent areas. If holes appear in patch area, repeat filling procedure.
10. If pitting occurs, fill pits by rubbing patch surface with Endura Surfacer GM #1050834 or equivalent.
11. Endura Surfacer should be applied in *light, even* coats. Allow to dry 15-20 minutes. Sand, using #400-grit paper (This step may have to be repeated several times to minimize the possibility of highlighting the repaired area.).
12. Wet-sand the entire bumper or panel with #150-grit sandpaper.

Coloring Procedure:

1. **THOROUGHLY CLEAN** the entire surface area, with 3919S Prepsol (Dupont) or equivalent solvent, to insure a surface free of contamination.
2. To promote paint adhesion and insure a smooth surface, a light scuff-sanding with #400-grit sandpaper (wet or dry) is recommended.
3. Repeat cleaning of the surface.

NOTICE: Under no circumstances should acrylic lacquer paint be used in refinishing urethane or P.V.C.

materials. Although the finish may appear satisfactory, it will crack from physical contact.

4. Mask off areas of car not to be painted using masking tape and paper.
5. Thoroughly mix four (4) parts color coat with one (1) part hardener and four (4) parts acrylic lacquer thinner (follow label directions).
Mix only what is needed, noting that pot life is 2-3 hours.
CAUTION: Because of the isocyanates contained in the hardener, it is mandatory that a Willson Paint Spray Respirator or equivalent respirator be worn during the entire painting process. Also, read entire label on hardener container before spraying as persons with respiratory problems or those allergic to isocyanates must not be exposed to the isocyanate vapors or spray mist.
6. Using 35 lbs. of pressure at the gun, spray panel with 2 or 3 coats (depending on the need) allowing 2-3 minutes flash time between each coat.
Use a final mist coat for metallics.
7. Allow paint to cure 2-4 hours before handling.
8. **COMPOUNDING** reduces the gloss. For this reason rubbing compound should be used **only if a reduction of gloss is desired.**

REMOVAL AND INSTALLATION OF BUMPERS

Refer to the following illustrations for removal, installation and alignment of the bumpers and related parts.

For faceplate or impact bar to reinforcement attachment, be sure to use the specially coated fasteners and tape released for service to provide a barrier between aluminum and steel. This will reduce or alleviate galvanic reactions.

2B-4 BUMPERS

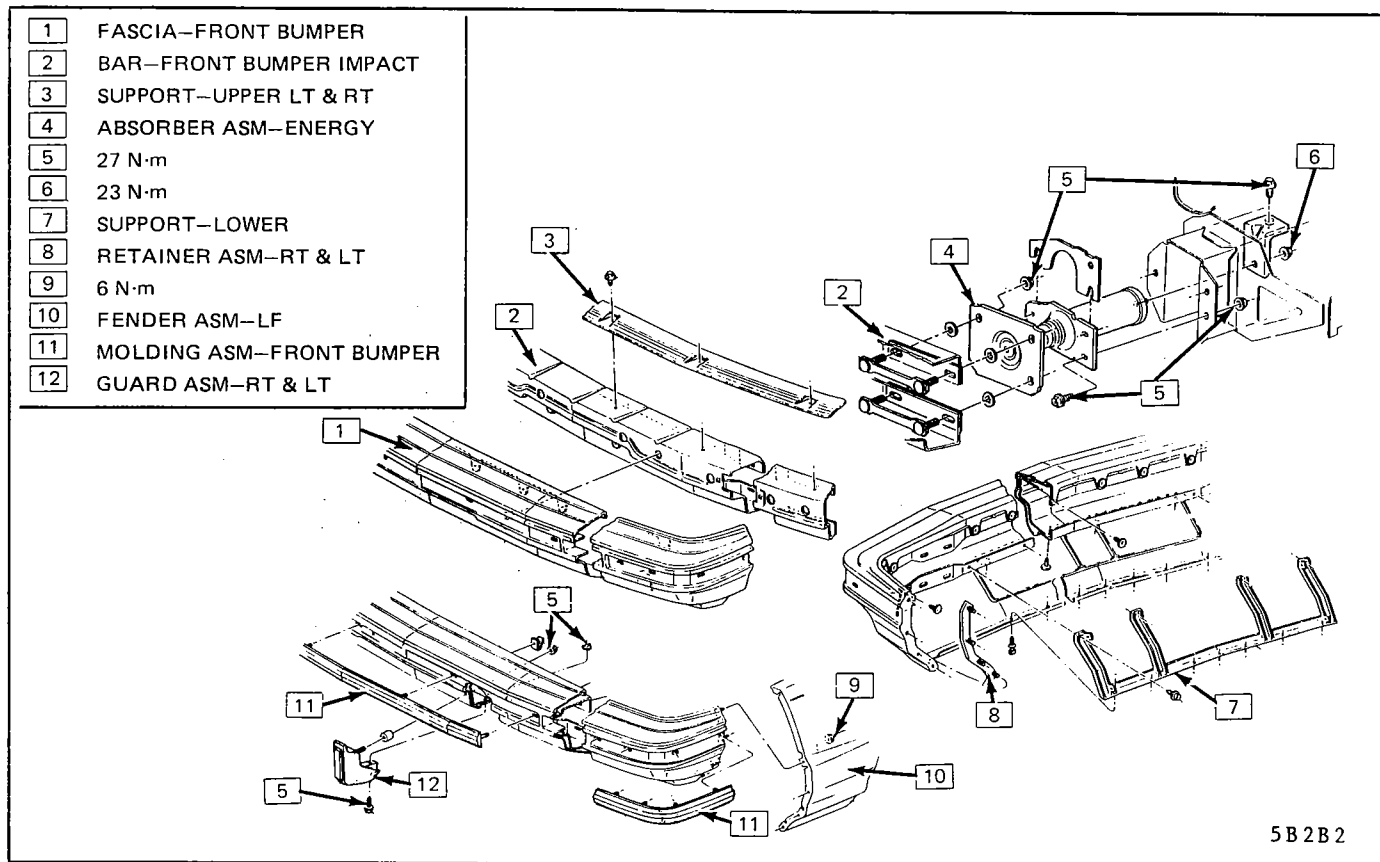


Figure 2B-2 Front Bumper ("A" Car)

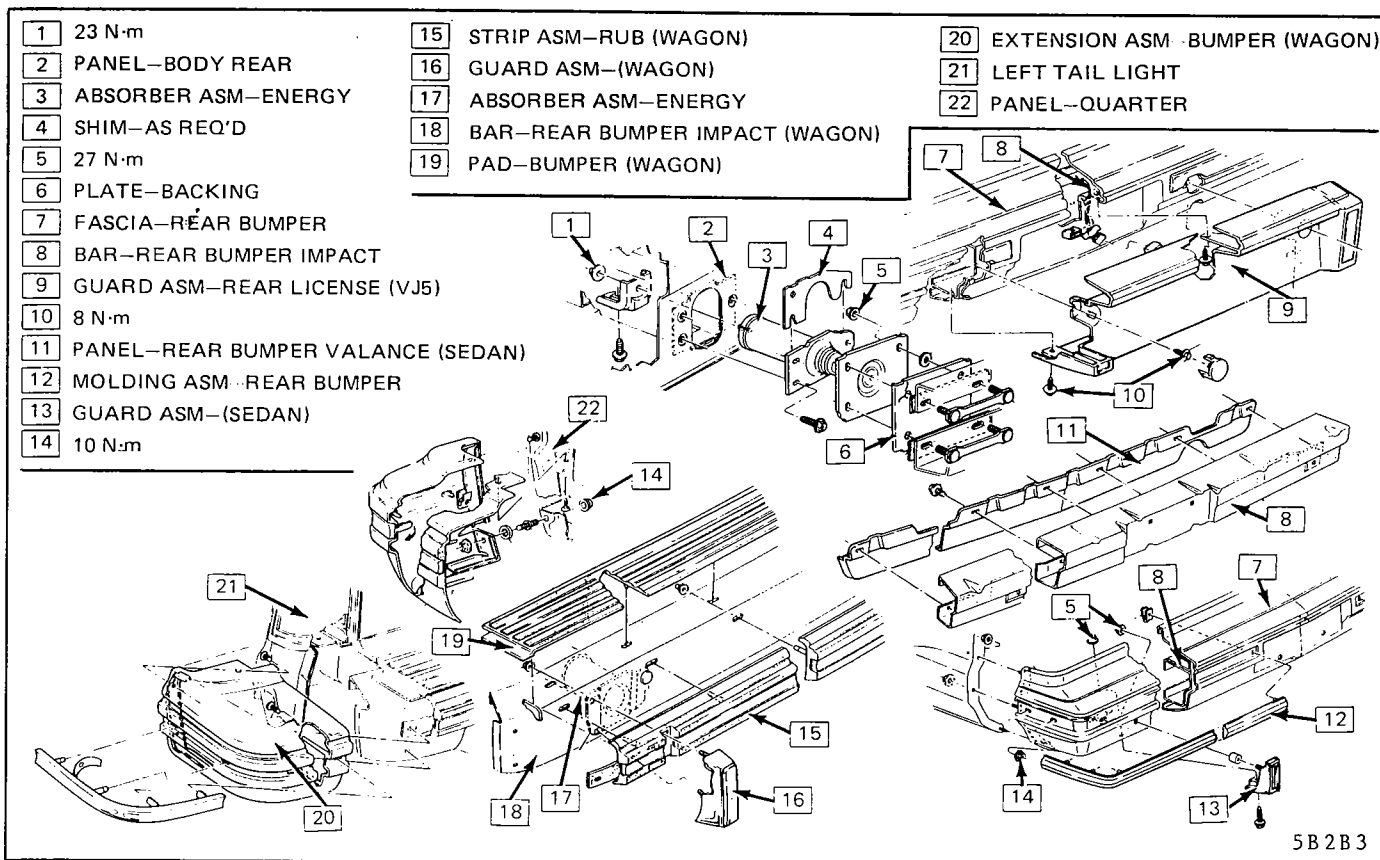


Figure 2B-3 Rear Bumper ("A" Car)

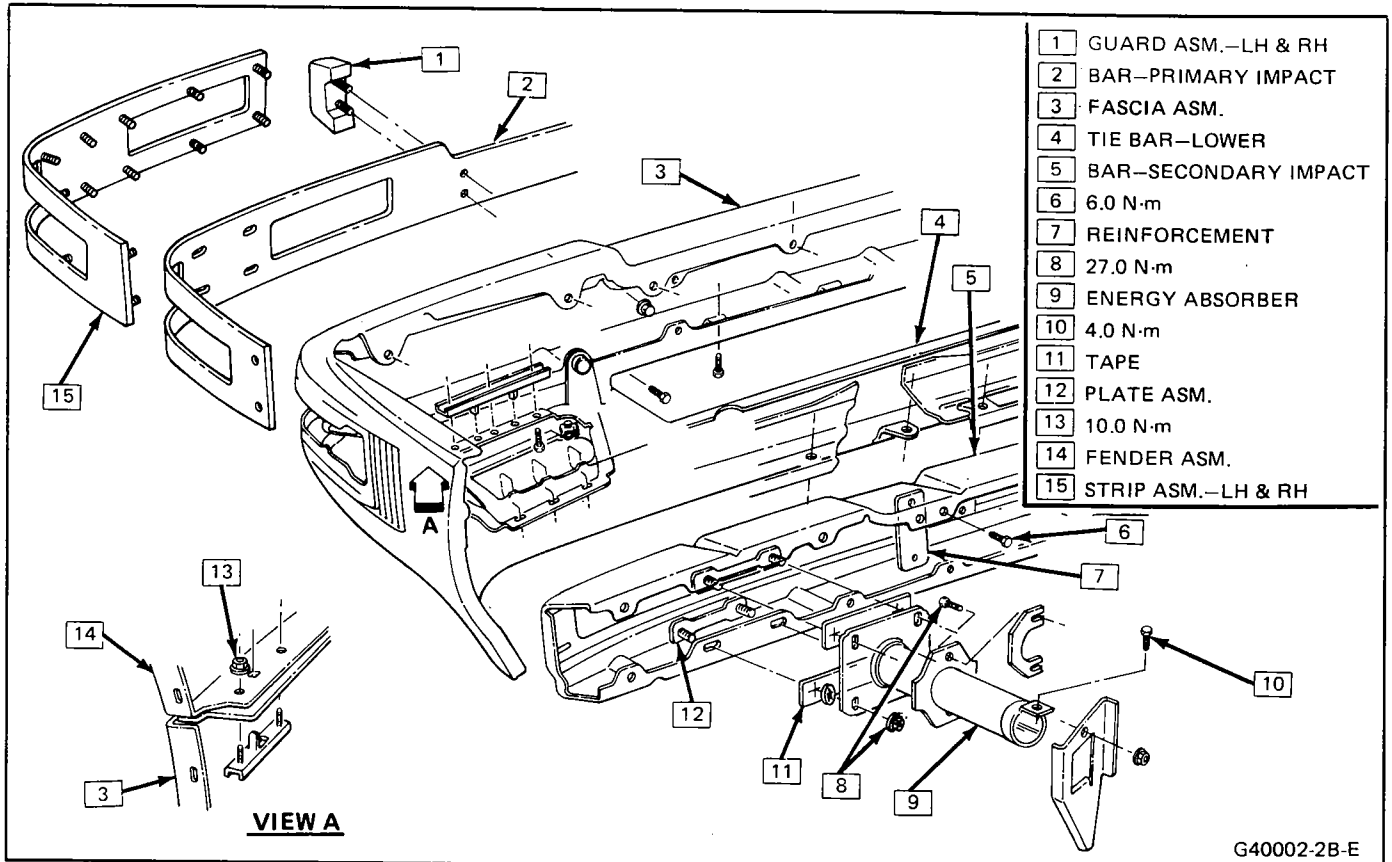


Figure 2B-8 Front Bumper ("E" Car)

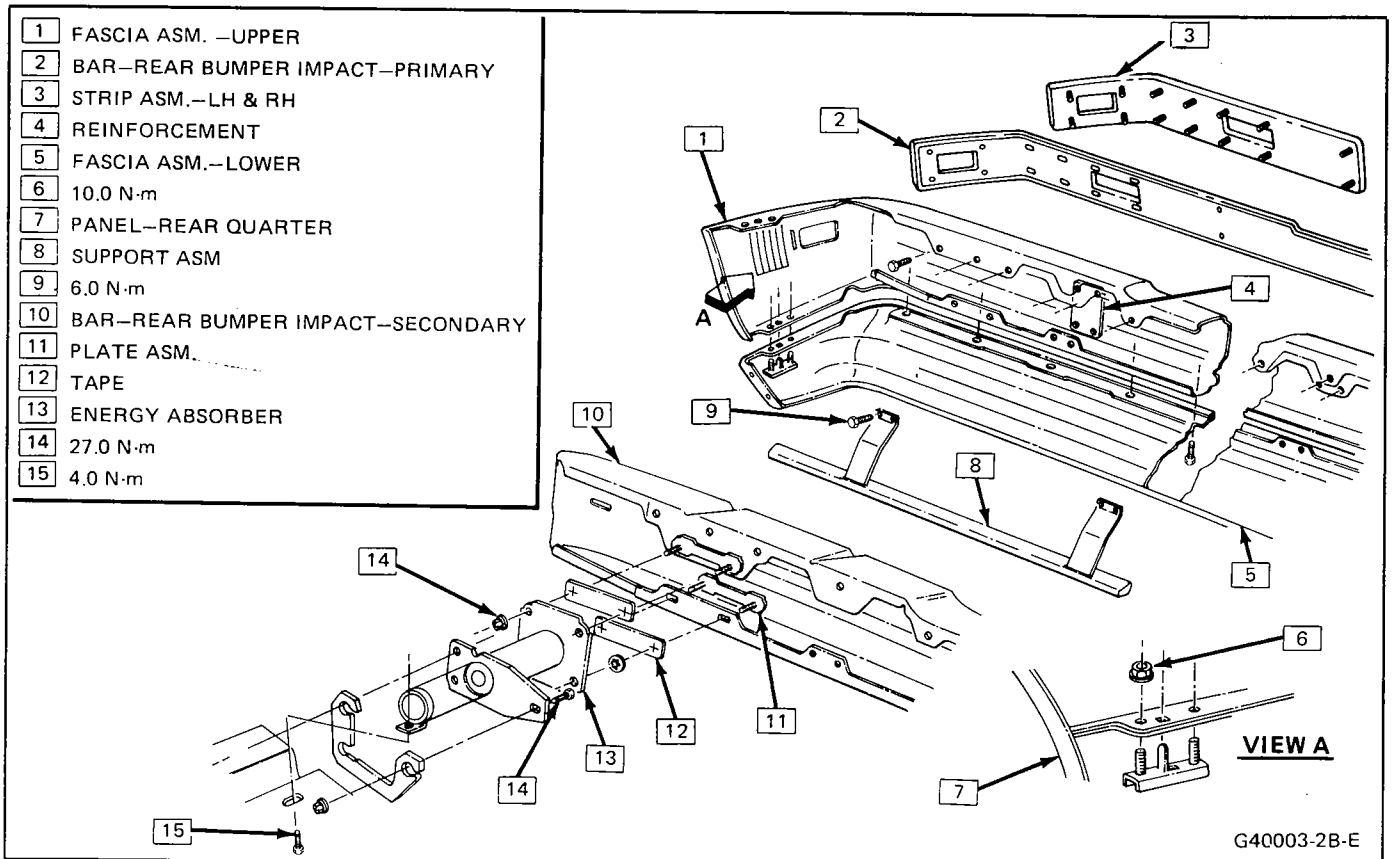


Figure 2B-9 Rear Bumper ("E" Car)

2B-8 BUMPERS

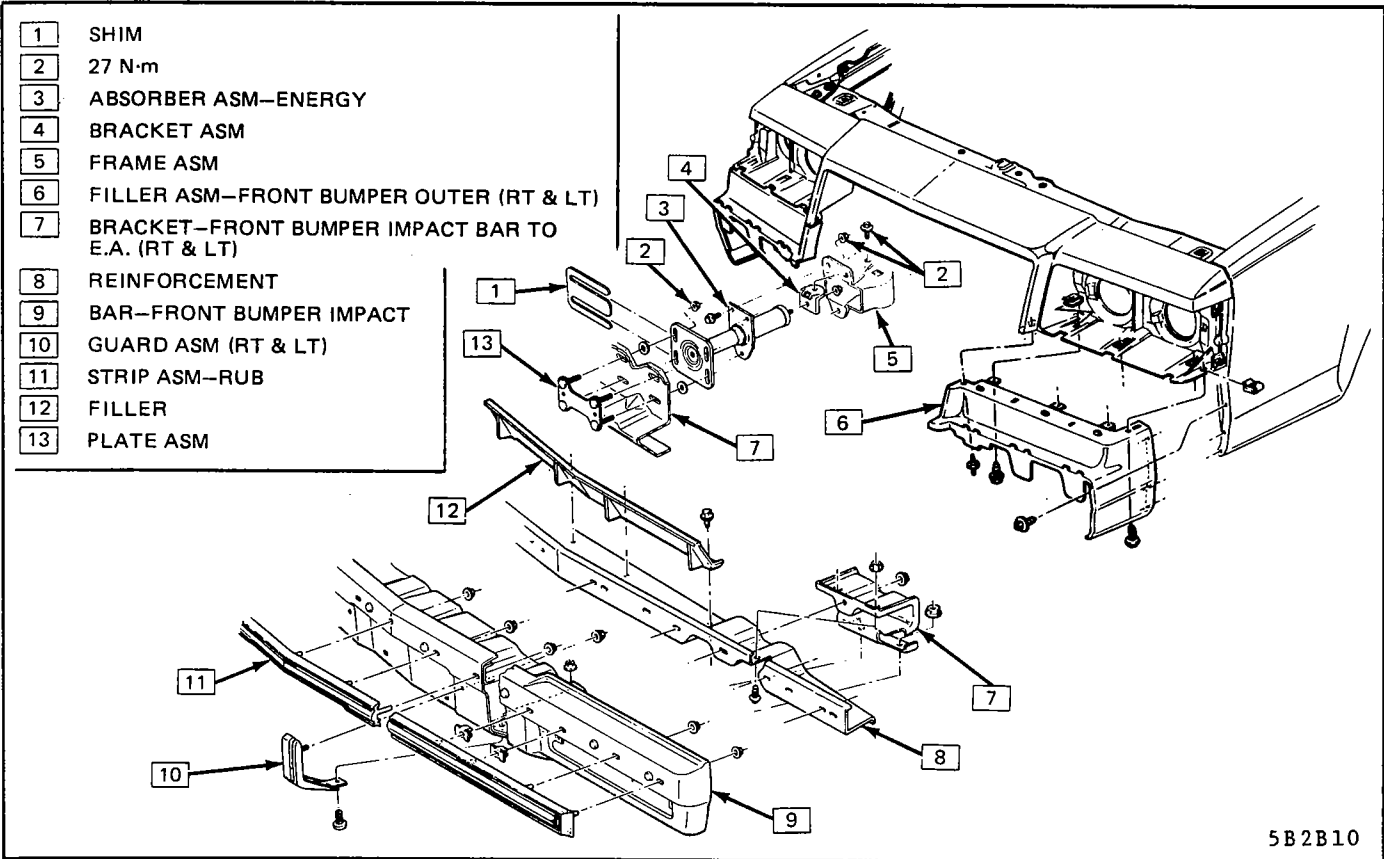


Figure 2B-10 Front Bumper ("G" Car)

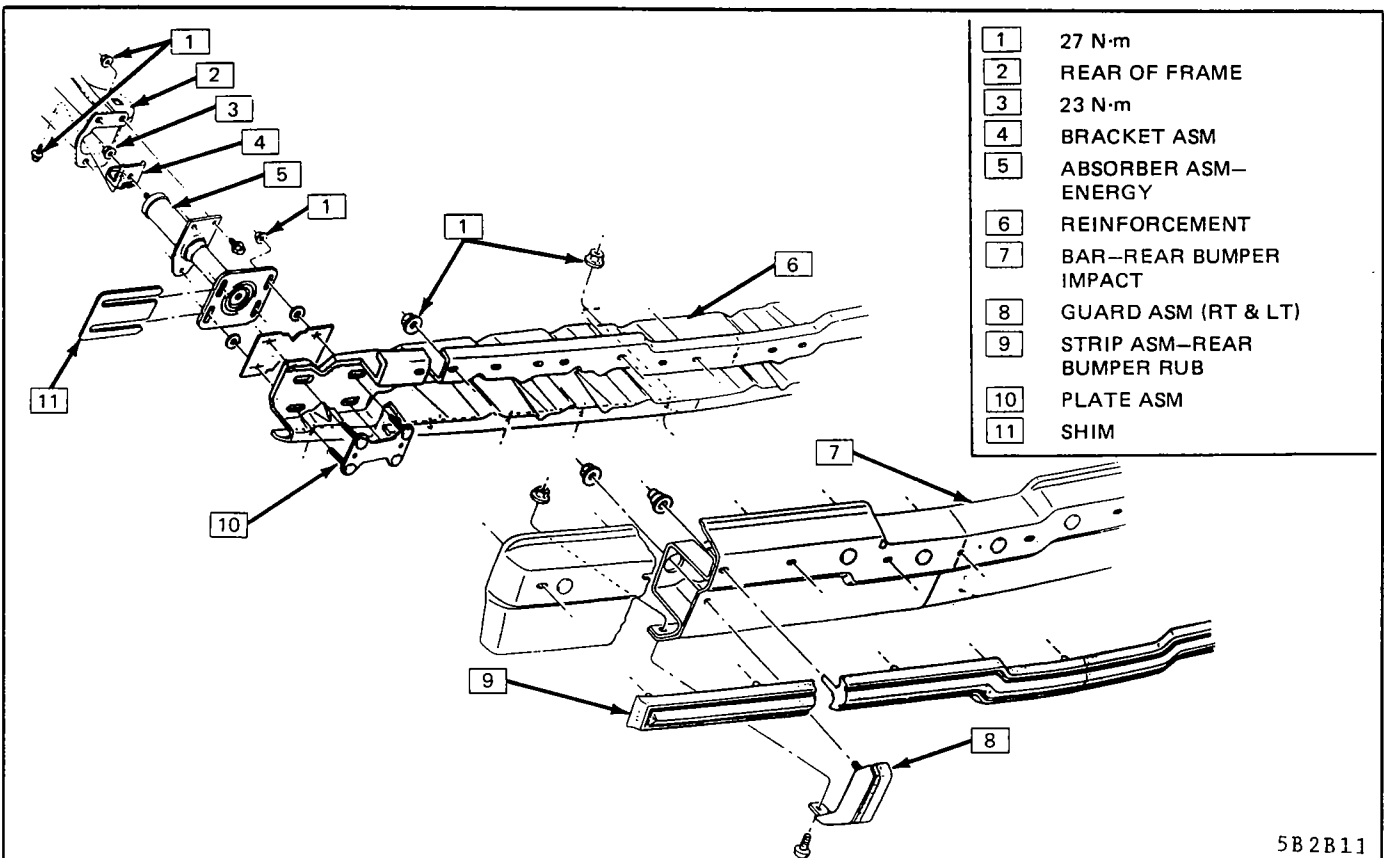


Figure 2B-11 Rear Bumper ("G" Car)