Composite Plastic Body Panel Installation and Sectioning Procedure using LORD Fusor® Plastic Repair Systems

Materials Needed:

- LORD Fusor 703 Plastic & Rubber Cleaner
- LORD Fusor 120/T20/T21 SMC Repair Adhesive (Slow)
- LORD Fusor 127EZ/128EZ Plastic Bonding Adhesive (Slow)
- LORD Fusor 100EZ/101EZ Plastic Panel Repair Adhesive (Heat Set)
- LORD Fusor 702 Fiberglass Cloth
- LORD Fusor 704 Saturation Roller
- LORD Fusor 300 or 301 Manual Dispensing Gun
- LORD Fusor 303 or 304 Pneumatic Dispensing Gun

Composite plastics include substrates such as fiberglass, SMC, carbon fiber, FRP, RTM, Metton®, GTX, etc.

Body Panel Installation

1. Panels to be repaired should be brought into the body shop in advance so that they are dry and at room temperature, 65-75°F (18-24°C), before anything is done to them.
2. Remove the damaged panel by applying heat with a heat gun to separate the seams. Generally, the adhesive needs to be heated to approximately 400°F (204°C) to be pried apart. Panels may need to be held apart to prevent them from adhering together again.
3. Once the old panel is removed, grind all of the adhesive from the bond surface of the panel reinforcement or structure on the vehicle using an angle grinder or DA sander, or by hand using 80-grit sandpaper.
4. Pre-fit the new panel to the vehicle to ensure a good fit. Make sure that you have enough clamps to hold the panel in place while the adhesive cures. If not able to clamp, pre-drill holes for screws.
5. Use plastic & rubber cleaner to clean the area of the new panel where it will be bonded. Scuff the new body panel with 80-grit sandpaper in the areas where it will be bonded.
6. Blow away all dust with an air hose to ensure a clean bond surface. Be sure that the air does not have any oil or water in it.
7. Two adhesive systems are offered for the installation of composite body panels:
   a. LORD Fusor® SMC Repair Adhesive (Stock #120/T20/T21),
   b. LORD Fusor Plastic Bonding Adhesive (Stock #127EZ/128EZ).

   Choosing which adhesive to use depends on the make of the vehicle. GM specifies LORD Fusor 120/T20/T21 SMC repair adhesive for the Corvette and Lumina/Sillhouette vans. All other composite panels can be installed using LORD Fusor plastic bonding adhesive.
8. Insert the LORD Fusor adhesive cartridge into the appropriate dispensing gun. Squeeze a small amount of product from each side of the cartridge to level the plungers. Attach a mixing tip and dispense a small amount of adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.
9. Apply a 1/8-1/4 inch (3.18-6.35 mm) bead of adhesive to the vehicle reinforcement flanges. Attach the new body panel, clamp and allow to cure. If LORD Fusor SMC repair adhesive is used, cure the adhesive with a heat lamp for 60 minutes at 180°F (82°C) or until the adhesive is solid. If LORD Fusor plastic bonding adhesive is used, cure the adhesive for 4 hours at 70°F (21°C) or use a heat lamp for 30 minutes at 140°F (60°C).
10. After the adhesive cures, remove the clamps and grind all excess adhesive. Prime and paint per manufacturer's recommendations.

Sectioning of Body Panels

Sectioning of panels is sometimes required, especially when replacing portions of large panels on minivans such as the Chevrolet Lumina or Pontiac Silhouette.

Removal of Damaged Panel

1. You will likely need to cut the damaged panel at the point where sectioning will occur. Remove or repair any mill and drill pads as needed. Remove the panel by applying heat with a heat gun to separate the seams. Generally, the adhesive needs to be heated to approximately 400°F (204°C) to be pried apart. Panels may need to be held apart to prevent them from adhering together again.
2. Once the damaged panel is removed, grind all of the adhesive from the bond surface of the panel reinforcement or structure on the vehicle using an angle grinder or DA sander, or by hand using 80-grit sandpaper. Epoxy prime any bare metal.

Installation of Reinforcement Strip

1. A reinforcement strip must now be bonded to the existing panel. If possible, the reinforcement strip should be cut from the panel that is being replaced in order to achieve well-matched contours. The width of the reinforcement strip should be 2 inches (50.8 mm) (1 inch [25.4 mm] will overlap with the original body panel and 1 inch [25.4 mm] with the new panel) **(see Illustrations A and B)**.
2. Pre-fit the reinforcement strip to ensure a reasonable mating. Clean with plastic & rubber cleaner.
3. Scuff the back of the original body panel with 80-grit sandpaper in the area where it will be bonded. Sand the complete bond-side of the reinforcement strip.
4. Blow away all dust with an air hose to ensure a clean bond surface. Be sure that the air does not have any oil or water in it.
5. Make sure that you have enough clamps to hold the panel in place while the adhesive cures. If not able to clamp, pre-drill holes for screws.
6. Two adhesive systems are offered for the installation of composite body panels:
   a. LORD Fusor SMC Repair Adhesive (Stock #120/T20/T21),
   b. LORD Fusor Plastic Bonding Adhesive (Stock #127EZ/128EZ).

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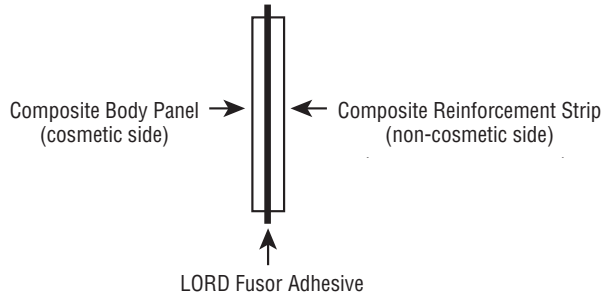
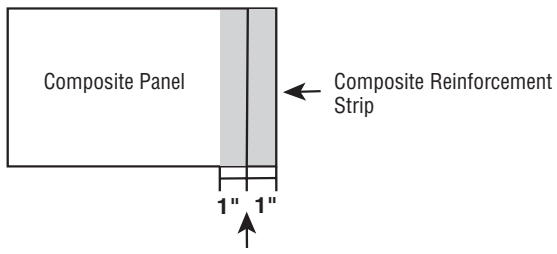
7. Insert the LORD Fusor adhesive cartridge into the appropriate dispensing gun. Squeeze a small amount of product from each side of the cartridge to level the plungers. Attach a mixing tip and dispense a small amount of adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.

Illustration A: *Side View of Original Body Panel and Reinforcement Strip*



NOTE: Not drawn to scale.

Illustration B: *Front View of Composite Body Panel and Reinforcement Strip*



NOTE: Not drawn to scale.

Composite Reinforcement Strip must overlap original panel by 1 inch (25.4 mm) and have 1 inch (25.4 mm) sticking out for attachment to new body panel.

8. Apply a 1/8-1/4 inch (3.18-6.35 mm) bead of adhesive to the reinforcement strip on the area where it will mate with the original body panel. Attach the reinforcement strip to the original body panel, clamp and allow it to cure. Clamp so that the adhesive bead will spread over the intended bond area, but not so tightly clamped that all of the adhesive is squeezed from the bondline. Remove any excess adhesive with a shop rag or paint stick. If LORD Fusor 120/T20/T21 SMC repair adhesive is used, cure the adhesive with a heat lamp for 15-20 minutes at 180°F (82°C) or until the adhesive is solid. If LORD Fusor 127EZ/128EZ plastic bonding adhesive is used, cure it for 4 hours at 70°F (21°C) or use a heat lamp for 30 minutes at 140°F (60°C).
9. After the adhesive cures, remove the clamps and grind all excess adhesive. Prime and paint per manufacturer's recommendations.

Installation of New Body Panel

Follow the directions given in the first section of this repair procedure, titled "Body Panel Installation." Be sure to leave a 1/4-inch (6.35-mm) gap between the two panels. Once the new body panel is installed, return to the next section for directions on applying the pyramid patch.

Applying the Pyramid Patch to the Sectioned Joint

1. Grind down to the reinforcement strip where the two body panels come together. Use an angle grinder with a 36- or 40-grit wheel. Make a gradual taper in the repair area (about 2 inches [50.8 mm] wide) rather than a V-groove **(see Illustrations C and D)**. This will prevent "bull's-eyes" or "readthrough" in the finished repair, as well as allow the panels to expand and contract in varying temperatures.
2. Sand the prepared area with a DA sander or by hand using 80-grit sandpaper to smooth out the taper.
3. Build a "pyramid patch" using LORD Fusor fiberglass Cloth (Stock #702) and LORD Fusor plastic panel repair adhesive (Stock #100EZ/101EZ) **(see Illustration E)**.

Note: The use of the fiberglass cloth is critical to control the expansion and contraction in hot and cold weather. This will control visible "bull's-eyes" and "readthrough" in the finished repair, and provide a high-quality repair with maximum strength characteristics.

4. Remove the LORD Fusor fiberglass cloth from the plastic film backing. Cut a first layer of fiberglass cloth slightly smaller than the perimeter of the tapered area. Cut two or three additional layers of fiberglass cloth, each being slightly smaller than the previous one.

Note: It is important to work as much fiberglass cloth into the repair as possible while attaining a thickness similar to the original panel.

5. Insert the LORD Fusor plastic panel repair adhesive cartridge (Stock #100EZ/101EZ) into the appropriate dispensing gun. Squeeze a small amount of product from each side of the cartridge to level the plungers. Attach a mixing tip and dispense a small amount of

Illustration C: *V-groove – DO NOT USE!*

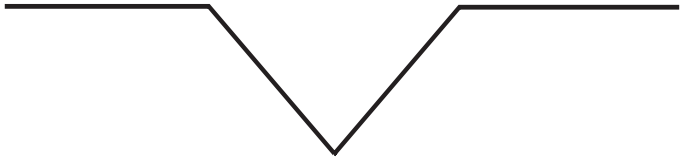
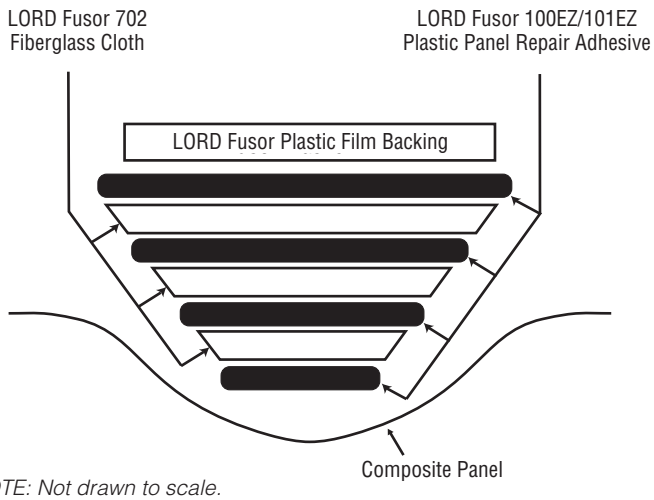


Illustration D: *Taper/cove – USE!*

Illustration E: *Pyramid Patch*



NOTE: Not drawn to scale.

adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.

6. Unlike the normal pyramid patch procedure for composite structural repairs, start by applying the LORD Fusor plastic panel repair adhesive (Stock #100EZ/101EZ) to the section joint on the vehicle. Smooth this out with a plastic spreader to a thickness of 1/16 inch (1.59 mm). Place the smallest piece of fiberglass cloth onto the adhesive-coated composite panel. Apply a coat of adhesive to this layer of fiberglass cloth. Smooth with a plastic spreader. Continue to apply at least two to three additional layers of cloth and adhesive (1/16 inch [1.59 mm]). Center each over the piece below, with each layer being slightly larger than the previous one. Make sure that adhesive is placed on top of the last layer of fiberglass cloth. Apply the plastic film backing over the completed pyramid patch.
7. Work the adhesive into the repair by rolling with the LORD Fusor saturation roller (Stock #704). Initially, roll from the center toward the sides to eliminate air pockets and pin holes, and improve overall adhesion.
8. Heat the pyramid patch repair with a heat gun or heat lamp for 5-10 minutes at 180°F (82°C) or until the material sets.
9. After the repair cools, remove the plastic film backing and rough-grind to remove all excess adhesive. Sand the repair with 80-grit sandpaper, making sure to cut slightly below the composite panel surface. This will allow for application of a thin, smooth final coat of adhesive.
10. Apply the finish coat of LORD Fusor plastic panel repair adhesive (Stock #100EZ/101EZ). Rough-spread the adhesive. Then, to help force trapped air bubbles to the surface, slightly warm this final coat of adhesive with a heat gun. The heat allows for even pull with limited drag on the plastic spreader.

Note: Be careful not to overheat or heat too long as this will cure the adhesive before final smoothing.

11. To ensure a high-quality repair, heat cure the entire repair for one hour at 180°F (82°C) using a heat lamp.

Note: This final heat cure will bring the plastic and adhesive to the maximum temperature generally experienced in a bake oven or under unusual weather conditions. This step ensures total shrinkage with no "bull's-eyes."

12. Cool the repair to room temperature. Feather- and contour-sand the repair with 80-grit sandpaper. Finish-sand using 180-grit sandpaper. In the event that pin holes exist, apply more adhesive. Work it into the pin holes with a plastic spreader and heat with a heat gun or lamp for 5-10 minutes at 180°F (82°C) or until the material sets. Finish-sand again. Prime and paint per manufacturer's recommendations.

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