

Composite Plastic Body Panel Repair Procedure using LORD Fusor® Plastic Repair Systems

Materials Needed:

- LORD Fusor 703 Plastic & Rubber Cleaner
- LORD Fusor 702 Fiberglass Cloth
- LORD Fusor 100EZ/101EZ Plastic Panel Repair Adhesive (Heat Set)
- LORD Fusor 704 Saturation Roller
- LORD Fusor 300 or 301 Manual Dispensing Gun, or LORD Fusor 304 Pneumatic Dispensing Gun

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

Surface Preparation

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. Both sides of the panel must be thoroughly cleaned before sanding or grinding the repair area.
3. Cover the damaged area in the composite panel (front and back) with masking tape. This protects the damaged area from absorbing the plastic & rubber cleaner and eliminates wicking of the cleaner through the fibers into the composite. Wicking can cause poor adhesion.
4. Use plastic & rubber cleaner to remove all waxes, silicones, dirt and road oils from the area surrounding both sides of the damaged area.

Repairing the Back Side of the Damaged Area

1. Remove the tape and sand the back of the repair area with an angle grinder or a DA sander, or by hand using 80-grit sandpaper. Blow away all dust with an air hose. Be sure that the air does not have any oil or water in it.

2. The reinforcing patch on the back side of the repair can be made with either a matching piece of composite material or formed from LORD Fusor® fiberglass cloth (Stock #702). Composite plastic can be used when you have a piece that conforms well to the back of the damaged area. The LORD Fusor fiberglass cloth can be used on any composite repair.
3. Reinforcing Patch formed with LORD Fusor Fiberglass Cloth (Stock # 702)
 - a. Separate the cloth from its plastic film backing and cut a section large enough to cover the repair plus 1 inch (25.4 mm) around the repair.
 - b. Cut a section of the plastic film backing about 1 inch (25.4 mm) larger than the cloth. Lay the plastic film backing on a smooth, clean and flat surface where it will be used in Step #3d.
 - c. 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 adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.
 - d. Apply enough adhesive to the plastic film backing so that after smoothing with a plastic spreader, it is about 1/16 inch (1.59 mm) thick. Spread the adhesive evenly from the center toward the sides of the film backing. The area covered with the adhesive should be about the same size as the fiberglass cloth.
 - e. Place the pre-cut fiberglass cloth on the adhesive-coated film backing. Cover the cloth with a coat of adhesive, spreading evenly and completely with a plastic spreader to a thickness of approximately 1/16 inch (1.59 mm).

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- f. Do not separate the prepared patch from the film backing. Apply the prepared patch to the backside of the repair and compress it using the LORD Fusor saturation roller (Stock #704).
- g. Heat set the reinforcement patch using a heat gun or heat lamp for about 5-10 minutes at 180°F (82°C) or until the adhesive sets. Remove the plastic film backing after the repair cools. Sand, if appropriate, to remove roughness.
4. Composite Plastic Reinforcing Patch
 - a. Cut a piece of composite plastic that extends past the repair area by about 1-2 inches (25.4-50.8 mm) on all sides. Make sure that it conforms well to the back side of the panel you are repairing.
 - b. By grinding or sanding, shape the surface of the composite plastic reinforcing patch so that it will mate with the panel being repaired. Make sure that the composite panel has been sanded wherever adhesive will be applied in the repair area.
 - c. 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 adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.
 - d. Apply a coating of adhesive to the sanded composite plastic reinforcing patch, smoothing it out with a plastic spreader. Also apply a coating of adhesive to the back of the composite panel

that is being repaired, smoothing it with a plastic spreader. Make sure that you have applied enough adhesive so there will be 100% contact between the adhesive and both composite panels.

- e. Apply the prepared patch to the backside of the repair. Lightly clamp the two pieces together, assuring that there is complete and even contact of the adhesive to both surfaces, but not so much pressure that all of the adhesive is squeezed out.
- f. Heat set the composite plastic reinforcing patch using a heat gun or heat lamp for about 10-15 minutes at 180°F (82°C) or until the adhesive sets.

Repairing the Face/Cosmetic Side of the Damaged Area

1. Remove the masking tape from the front side of the damaged area and grind down to the backing patch. Use an angle grinder with a 36- or 40-grit wheel. Make a gradual taper in the repair area rather than a V-groove (**see Illustrations A and B**). This will prevent “bull’s-eyes” or “readthrough” in the finished repair.
2. Sand the prepared area with a DA sander or by hand using 80-grit sandpaper.
3. Build a “pyramid patch” using LORD Fusor fiberglass cloth (Stock #702) and LORD Fusor plastic panel repair Adhesive (Stock #100EZ/101EZ) (**see Illustration C**). This will be prepared on a portion of the plastic film backing.

Illustration A: V-groove – DO NOT USE!

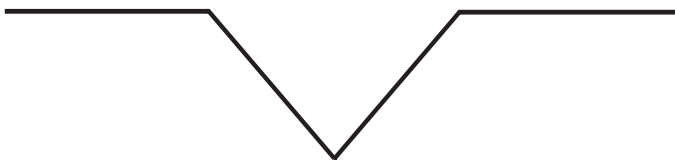
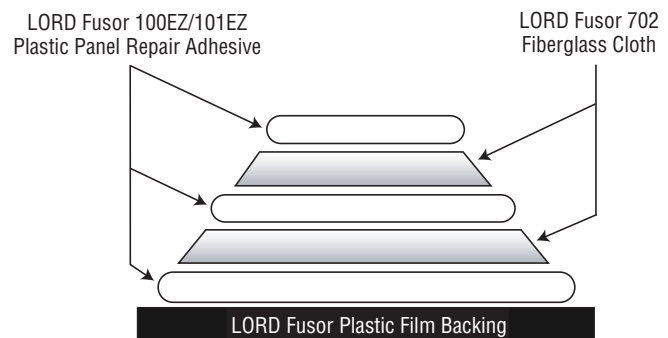


Illustration B: Taper/cove – USE!



Illustration C: Pyramid Patch



NOTE: Not drawn to scale.

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. Start by removing the LORD Fusor fiberglass cloth from the plastic film backing. Cut a piece of plastic film backing larger than the repair area. Cut a first layer of LORD Fusor fiberglass cloth slightly smaller than the perimeter of the tapered area. Cut three or more 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 adhesive, which is about the length and width of the mixer. Dispense until the product is evenly mixed and the color is consistent.
6. Lay the plastic film backing on a smooth, clean and flat surface. Apply the adhesive to the plastic film backing and smooth using a plastic spreader. Spread the adhesive evenly from the center toward the sides of the plastic film backing. The adhesive should have a thickness of approximately 1/16 inch (1.59 mm). Place the largest piece of fiberglass cloth onto the adhesive-coated film backing. Apply a coat of the LORD Fusor plastic panel repair adhesive to this layer of fiberglass cloth. Smooth with a plastic spreader. Continue to apply at least three subsequent layers of cloth and adhesive (1/16 inch [1.59 mm] thick). Center each on the piece below, with each layer being slightly smaller than the previous one.
7. This multi-layer patch should now form a pyramid shape **(see Illustration C)**. Place the pyramid patch into the prepared repair area. 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 plastic finished surface. This will allow for application of a thin, smooth coat of adhesive.
10. Apply the finish coat of LORD Fusor plastic panel repair adhesive. 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 up 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 until cured. Finish-sand again. Prime and paint per manufacturer's recommendations.

Note: For cosmetic repairs of composite plastics, refer to Fusor Repair Procedure - *Composite Plastic Cosmetic Body Panel Repair Procedure using LORD Fusor Plastic Repair Systems*.

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