

Procedure for Weld Bonding with LORD Fusor[®] Adhesives

Materials Needed:

- LORD Fusor 108B/109B Metal Bonding Adhesive (Medium) or LORD Fusor 112B/113B Metal Bonding Adhesive (Slow)
- LORD Fusor 123/126 Non-Sag Seam Sealer (Fast), or LORD Fusor 123EZ/126EZ Non-Sag Seam Sealer (Medium), or LORD Fusor 800EZ/801EZ/803EZ Factory Match Urethane Sealer/Adhesive
- LORD Fusor 300 or 301 Manual Dispensing Gun, or LORD Fusor 304 or 304X Pneumatic Dispensing Gun

Weld bonding is defined as a method of joining metals which involves Squeeze Type Resistance Spot Welding (STRSW) used in conjunction/combination with a structural adhesive.

Although LORD Fusor[®] Automotive Repair Systems recommends fully bonded secondary, non-structural panels, this repair procedure is written as a guideline for weld bonding repairs or replacements of quarter panels, rear body panels, decklids, hoods and roof panels. This repair procedure was developed in conjunction with Ford Motor Company and is an accepted aftermarket repair procedure for all Ford vehicles. Ford Motor Company has a Technical Service Bulletin outlining their specific repair procedures.

Refer to DaimlerChrysler's Welding and Weld Bonding publication #81-170-03005 for specific information on weld bonding DaimlerChrysler vehicles using LORD Fusor 112B/113B metal bonding adhesive.

This procedure may also be used to replace all OEM structural weld bonded applications on Ford and other car manufacturers' vehicles in all reachable areas. Mig-welding and seam sealing from the outside does not replicate the original manufacturing process if the vehicle was assembled with weld bonding.

Since door hem flanges are generally manufactured with adhesives only, LORD Fusor Repair Systems does not recommend weld bonding for door skin replacement (refer to Fusor Repair Procedure - *Door Skin Installation Procedure using LORD Fusor Metal Bonding Adhesives*).

Both LORD Fusor 108B/109B and 112B/113B metal bonding adhesives are recommended for quarter panel, roof panel and rear body panel replacement, depending on temperature and work time needed. For this repair procedure, LORD Fusor 108B/109B metal bonding adhesive will be used.

Surface Preparation

1. If appropriate, straighten the uni-body on a frame machine to manufacturer's specifications.
2. Once the damaged vehicle has been straightened, remove the damaged panels with an air saw or air chisel. Remove only the large portions, making sure not to cut into the mating flanges or adjacent parts.
3. Using a spot-weld cutter, drill out the spot welds and remove the remaining weld flanges of the panel to be replaced.
4. Pay special attention to preparing any damaged flanges on the vehicle. Straighten these flanges using a hammer and a dolly.
5. Grind the mating surface of the original flanges (not greater than 1 inch [25.4 mm]), being sure to remove any adhesive, e-coating, corrosion protection or galvanized coating. If the metal has a pewter appearance, then all of the galvanized coating has not been removed. The metal should be shiny in appearance. Be careful not to damage the corners or thin the metal.

Note: For additional information, you may want to review *Fusor Repair Procedure - Procedure for Sectioning Joints with Backer Plate using LORD Fusor Adhesives*, or *Fusor Repair Procedure - Procedure for Sectioning Joints with Overlap Technique using LORD Fusor Adhesives*.

6. Carefully grind the entire outer edges of the new panel to which LORD Fusor metal bonding adhesive (Stock #108B/109B) will be applied, making sure to remove any e-coat, paint or galvanized coating as described in Step #5. The e-coat should also be removed on the opposite side of the flange only where the spot welds will be placed.
7. Pre-bevel to <10 degrees any edges of the new panel where a finished section joint is needed.
8. Ensure that the vehicle is evenly supported at normal suspension points.
9. Pre-fit all parts to ensure proper alignment.

Welder Set-up

Be sure to review all pertinent information about the use of the Squeeze Type Resistance Spot Welder before you begin. Consult the welder manufacturer for the approximate recommended settings for weld bonding.

Adhesive Preparation

1. Insert the LORD Fusor metal bonding adhesive cartridge (Stock #108B/109B) into the appropriate dispensing gun. Squeeze a small amount of product from each side of the cartridge to level the plungers.
2. 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.

Note: From this point you will have about 40-50 minutes at 70°F (21°C) to apply the adhesive and assemble the components.

Panel Installation

1. Use two pieces of scrap metal from the damaged part and build a test sample. To ensure welder conductivity, place a shunt weld in an area with no adhesive as the first weld or use shunt pliers during the welding process. Prepare the material as indicated above and follow the adhesive preparation instructions prior to applying adhesive to your sample. Program the welder with the manufacturer's recommended settings for weld bonding and then weld the sample. Place the sample in bench vice and perform a destructive weld test. Measure weld nugget to determine that it meets OEM weld nugget size requirements for the metal thickness that you are working with. For example, some OEM manufacturers recommend that the weld nugget size should be at least 0.185 inch (4.7 mm) or greater when welding two 0.04 inch (1.0 mm) metal panels.
2. Apply a 3/8 to 1/2 inch (9.5 to 12.7 mm) bead of LORD Fusor metal bonding adhesive to the bare metal mating surfaces.
3. Properly position the new panel. Once the panel has been positioned, do not pull it away from the vehicle. If repositioning is necessary, slide the panel. This maintains proper contact between the two panels.
4. Clamp evenly and tightly with insulated clamps. The glass beads in the adhesive will prevent you from over clamping the bondline. Apply screws in hard-to-clamp areas. Where possible, wipe excess adhesive from panel before it cures. This will save you time later.
5. Allow the adhesive to cure for 1-1/2 to 2 hours at 70°F (21°C) before removing clamps unless welding will take place within this time frame. Clamps may be removed immediately after the panel is welded. Expect the adhesive to be a little "tacky" on the surface as this is a normal property of the adhesive.

6. Remove all excess adhesive from the cosmetic repair areas.
7. You may begin welding immediately, any time during the adhesive cure process and/or when the adhesive is fully cured. Welder settings will vary when welding through wet vs. cured adhesive. If a test sample through cured adhesive was not made, use the welder manufacturer's recommended settings for welding through cured adhesive. It is best to place a shunt weld (weld with no adhesive) as the first weld or use shunt pliers to ensure conductivity, particularly when welding through cured adhesive. Once the shunt weld is made, continue welding, maintaining the original spot-weld spacing. Welds should be placed as close as possible to the original spot weld location without overlapping the original weld site. Do not place a new spot weld directly over the original weld location.
8. Finish with fiber-filled body filler on the section seam, then complete the repair with conventional body filler. Rough-sand the filler. After the adhesive cures, block-sand. Prime and paint per the paint manufacturer's recommendations.
9. Use LORD Fusor non-sag seam sealer (Stock #123/126 or #123EZ/126EZ), LORD Fusor controlled flow seam sealer (Stock #129) or LORD Fusor factory match urethane sealer/adhesive (Stock #800EZ/801EZ/803EZ) wherever a cosmetic seam sealer is required.

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