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	<ul style="list-style-type: none">• WELD BONDING PROCEDURE
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FORD:	2005 Crown Victoria, Five Hundred, Focus, Ford GT, Freestyle, Mustang, Taurus, Thunderbird, E-Series, Escape, Expedition, Explorer Sport Trac, Explorer, F-150, F-Super Duty, Freestar, Ranger
LINCOLN:	2005 LS, Town Car, Aviator, Navigator
MERCURY:	2005 Montego, Sable, Monterey, Mountaineer

ISSUE:

The following Weld Bonding Procedure should be used on all Ford, Lincoln and Mercury vehicles, when replacement of any OEM weld bonded component (structural and non-structural) becomes necessary, unless specifically directed otherwise by a Ford Technical Publication specific to a particular vehicle.

Technicians performing repairs must use approved Squeeze-Type Resistance Spot Welding machines (STRSW machines). MIG-welding should only be performed when areas to be welded cannot be accessed using squeeze-type resistance spot welding machinery. Refer to TSB 04-26-17 for MIG-Weld Bonding information.

ACTION:

Inspect collision damaged sheet metal and repair using the following Service Procedure.

SERVICE PROCEDURE

WHAT IS WELD BONDING

Weld bonding is a method used for joining metals. It involves the use of STRSW machines in combination with a structural adhesive.

MATERIALS AND EQUIPMENT

Motorcraft Metal Bonding Adhesive (TA-1 50 ml) or (TA-1-B 225 ml) is the only adhesive approved by Ford Motor Company for weld bonding.

The following resistance welders are currently the only welding equipment approved by Ford Motor Company for weld bonding:

- Pro Spot PR 10 and PR-2000
- Saitek SK-5 and SK-5W
- Elektron M-100
- Techna 3650
- Compuspot 700

No other welder units have been approved based on testing.

NOTE: BECAUSE DOOR SHELLS ARE MANUFACTURED WITH ADHESIVES ONLY, WELD BONDING DOOR SKINS IS NOT RECOMMENDED. ONLY MOTORCRAFT METAL BONDING ADHESIVE (TA-1 50 ML) OR (TA-1-B 225 ML) SHOULD BE USED.

WELD BONDING PROCEDURE

1. Straighten the vehicle on a frame machine if appropriate.
2. Once the damaged vehicle has been straightened dimensionally, 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. Support the vehicle evenly at normal suspension points.
4. Using a "Spottel" or "Blair" spot-weld cutter, drill out the spot welds and remove the remaining weld flanges of the panel to be replaced.
5. Prepare any damaged flanges on the vehicle. Straighten flanges using a hammer and a dolly.
6. Grind the mating surface of the original flanges (not greater than 1" (25 mm)), where Motorcraft Metal Bonding Adhesive will be applied. If the metal has a pewter look all of the galvanizing has not been removed, the metal should be shiny in appearance. Be careful not to damage the corners or thin the metal. 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 any edges to less than 10 degrees on the new panel where a finished section joint is needed.
8. Dry-fit and clamp all service part(s) to ensure proper alignment. Then remove the service part(s).

NOTE: CLAMPS SHOULD HAVE TAPE OVER THE ENDS FOR INSULATION WHEN WELDING IS PERFORMED.

9. Set-Up the Welder. Be sure to review all pertinent manufacturer information about the use of the squeeze type resistance spot welder before beginning.
10. Prepare adhesive. Dispense a small amount of Motorcraft Metal Bonding Adhesive from the cartridge to ensure an even flow of both components. Attach the mixing tip and dispense a mixer's length of adhesive.

NOTE: YOU WILL HAVE APPROXIMATELY 40-50 MINUTES OF WORKING TIME AT 70° F (21° C) TO APPLY THE ADHESIVE AND ASSEMBLE THE SERVICE PARTS. FOR EVERY 20° F ABOVE 70° F, CUT THE WORKING TIME IN HALF. FOR EVERY 20° F BELOW 70° F, DOUBLE THE WORKING AND CURE TIME.

11. Test Sample: Using two pieces of scrap metal, build a test sample. Prepare the metal and adhesive as described. Set-up the welder per the manufacturer's recommended settings for weld bonding, apply a 1/4" to 3/8" bead of adhesive and weld the sample. Place the welded sample in vice and perform destructive weld tests by peeling the scrap metal apart using large channel lock pliers. Measure the weld nugget to determine that the nugget meets the Ford weld nugget requirements. See Weld Nugget chart at the end of this TSB. Once the proper nugget is achieved, the service part can be weld bonded.
12. Apply adhesive to service part(s) and mating surfaces. Apply a 1/4" to 3/8" bead of adhesive to the bare metal mating surfaces.

13. Properly position the service part(s) on the vehicle. Once positioned, do not pull the part away from the vehicle. If repositioning is necessary, slide the service part(s). This maintains proper contact between the components and adhesive.
14. Clamp evenly and tightly. The glass beads in the adhesive will prevent over-clamping the part.

NOTE: WELDING CAN BE PERFORMED ANYTIME WHILE THE ADHESIVE CURES, OR AFTER THE ADHESIVE IS FULLY CURED. WELDER SETTINGS WILL VARY WHEN WELDING THROUGH WET ADHESIVE - VS- WELDING THROUGH CURED ADHESIVE. USE THE WELDER MANUFACTURERS RECOMMENDED SETTINGS FOR WELDING THROUGH CURED ADHESIVE. IT IS BEST TO PLACE A SHUNT WELD (IN AN AREA WITH NO ADHESIVE) AS THE FIRST WELD TO INSURE CONDUCTIVITY, PARTICULARLY WHEN WELDING THROUGH CURED ADHESIVE.

NOTE: IF WELDING WILL NOT BE PERFORMED IMMEDIATELY, ALLOW 1-1/2 TO 2 HOURS OF ADHESIVE CURE TIME AT 70° F (21° C) BEFORE REMOVING CLAMPS. CLAMPS MAY BE REMOVED IMMEDIATELY AFTER THE PANEL IS WELDED.

16. Where possible, wipe excess adhesive from the panel before it cures.
17. When welding, maintain the original spot-weld spacing. Welds should be placed as close as possible to the original spot weld location. Do not place a new spot weld directly over an original weld location.
18. Finish any cosmetic section seams with fiber-filled body filler and complete the repair with conventional body filler. Rough sand the filler, after the adhesive cures, block-sand the area.
19. Prime any bare metal areas with Motorcraft Low Temperature Anti-corrosion Coating (PM-12-A). Apply 2-3 coats letting it flash between coats.
20. Mix and apply primer surfacer per manufacturer's label instructions.
21. Mix and apply basecoat material per manufacturer's label instructions.
22. Mix and apply clearcoat per manufacturer's label instructions. Bake at 140° F (60° C) metal temperature.
23. Use Motorcraft Urethane Seam Sealer (TA-2) wherever a cosmetic seam sealer is required.

WELD NUGGET CHART	
Test Thickness of Metal (in millimeters)	Nugget Size (mm)
0.7 + 0.7	4.30
0.7 + 0.7 + 0.7	4.30
0.9 + 0.9	4.70
0.9 + 0.9 + 0.9	4.70
1.0 + 1.0	5.20
1.0 + 1.0 + 1.0	5.20
2.0 + 2.0	7.10
2.0 + 2.0 + 2.0	7.10
3.0 + 3.0	8.70
3.0 + 3.0 + 3.0	8.70
3.0 + 0.7	4.30

0.7 + 3.0 + 1.0	5.20
2.0 + 2.0 + 0.7	4.30
0.9 + 0.9 + 2.0	4.70
2.0 + 0.9 + 1.0	5.20
1.0 + 3.0 + 1.0	5.20
3.0 + 1.0 + 2.0	7.10
0.9 + 0.7 + 0.9	4.30

24.

PART NUMBER	PART NAME
TA-1	Motorcraft Metal Bonding Adhesive (50 ml)
TA-1-B	Motorcraft Metal Bonding Adhesive (225 ml)
PM-12-A	Motorcraft Low Temperature Anti-corrosion Coating
TA-2	Motorcraft Urethane Seam Sealer

OTHER APPLICABLE ARTICLES:

[04-26-17](#)

WARRANTY STATUS:

Information Only

NOTE: The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford, Lincoln, or Mercury dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supercede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.

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