

Repairing Mazda 626 Bumper Tabs

One perennial plastic repair problem has been the tabs on the corners of '93 to present **Mazda 626** front and rear bumpers. Mazda **Millennia** and **MX-6** models are also very similar in their design. Mazda has cleverly designed the tabs to fail at the slightest impact, making repair very difficult.

Difficult, that is, until Uni-Weld Ribbon came along! Uni-Weld Ribbon uses heat to its advantage in the repair process, making repairs on thermoplastics that are not possible with traditional two-part adhesives systems.

The technique for repairing Mazda 626 bumper tabs was developed by **Leon Roberts**, a Urethane Supply Company sales rep and bodyman with over 20 years of experience from Athens, Alabama.

The key to repairing these tabs is the Stainless Steel Wire Mesh. Because the Mazda bumpers are made from polypropylene (a thermoplastic), they can be melted. The heat from the Mini-Weld airless plastic welder is used to melt the mesh into the base material.

The mesh physically ties the broken parts together and bridges the tear. Like rebar in concrete, the mesh

adds considerable strength to the repair. After the mesh is melted in, Uni-Weld is melted around it to add stiffness.

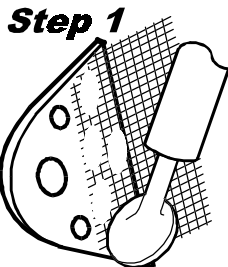
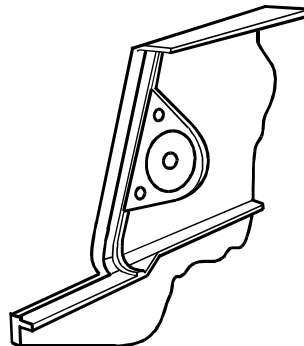
An important point to remember in making the repair is to use the "stitch" method of melting in the wire mesh. Instead of melting in the mesh evenly, in the stitch method you **press it in deeply into the plastic in different areas using the tip of the welder**. We have shown in strength comparison testing that the stitch method is 30% stronger than the standard method of melting in the mesh all over (see next article for details on test results).

The repair sequence shown below details the steps you need to follow to make the repair on the rear bumper tab. The front bumper tab is

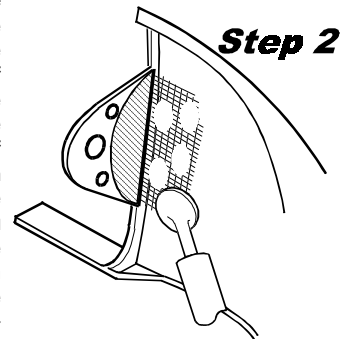
Step-by-Step Repair of Mazda 626 Rear Bumper Tabs

In order to repair the tab on a 626 rear, you must either have the missing tab or cut a reproduction out of a scrap bumper. If the tab is missing, it may still be attached to the quarterpanel.

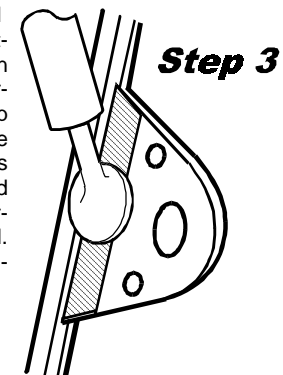
Step 1 - Clean the tab with 1000 Super Clean plastic cleaner. Grind the entire backside and the mounting edge of the frontside with coarse sandpaper in a low speed grinder. Cut a piece of 2045W Stainless Steel Wire Mesh so it extends off the edge of the tab about 1". Melt the mesh into the plastic by pressing with the hot welder tip. Use the "stitch" method; don't melt all the mesh in, just press it in deeply in many areas with the tip of the welder as shown. Melt Uni-Weld Ribbon over the mesh on the tab. After Uni-Weld cools, grind Uni-Weld down to flatten the area so nut-plate can be easily reattached.



Step 2 - Clean and grind the plastic on the bumper where the mesh will be placed. Grind the small lip on the frontside of bumper so that Uni-Weld may be applied. Bend the mesh on the tab so it mates with the side of the bumper. Align the tab with the edge of the adjoining flange and clamp in place while you melt the mesh into the backside of the bumper using the stitch method. Melt Uni-Weld over the mesh and into the corner to complete the repair on the backside.



Step 3 - Melt some Uni-Weld onto the corner area on the frontside to reconstruct the profile in that area. Be careful not to over-build the Uni-Weld as the gap with the quarterpanel may be affected. After the Uni-Weld has cooled, grind the Uni-Weld and trim the tab with the 6121 Tear-drop cutter bit in a Dremel tool. Drill out the bolt holes if necessary.



repaired in a similar fashion but it is easier since the tab is attached on the top and side instead of just on the side.

Uni-Weld Ribbon and mesh can be used to repair a wide variety of torn mounting holes and tabs on polypropylene and TPO bumpers. For more information, check out the Fall 1996 back issue of Plastic Pointers on our web site. If you don't have

internet access, call us and we can send a copy to you.

Uni-Weld Ribbon Repair is Over Twice as Strong as Standard TPO Weld

The Uni-Weld Ribbon has been growing in popularity as a repair material for all types of bumpers, but especially on the "problem plastics"

like polypropylene and TPO. Uni-Weld's bond onto TPO is very strong, resulting in a fine featheredge without the need for an adhesion promoter.

Some people have expressed skepticism about the strength of a Uni-Weld repair since it is an adhesive repair instead of a true weld. To allay these fears, we had Plastics Technology Laboratories of Pittsfield, Mass. do some destructive testing to

Tale of the Allstate Windstar Bumper

In late August, I had the privilege of putting on a plastic repair demonstration in Dayton, Ohio for **Paul Christian**, PRO Shop Field Manager for Allstate Insurance Company.

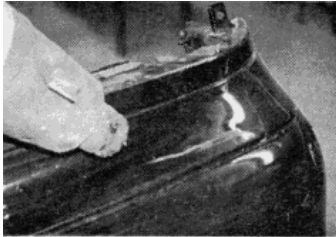
Paul brought in a few bumpers that Allstate bought recently for us to talk about and repair. One bumper was a Ford Windstar front cover which retails for \$320.

The bumper was perfect except for a three inch long crease next to the grille opening. I asked "who in their right mind would not have tried to repair this bumper?", to which Paul replied "that's why we asked you to come up here and put on this seminar for us!"

Read along if you want to see step-by-step how to make a simple, **real-world repair** with the Uni-Weld Ribbon.
-Kurt Lammon, Sales Mgr.

Step 1 - Clean both sides of the damaged area with soap and water and Super Clean plastic cleaner.

Step 2 - Remove any high spots in the damaged area by heating the plastic with a heat gun then pressing the plastic down. Once you've got the plastic pressed down, quench it with a wet rag.



Step 3 - Grind the backside of the damage with 36 grit sandpaper at low speed. Cut a piece of 2045 Stainless Steel Reinforcing Mesh about one inch wide and melt it in using the "stitch method" described elsewhere in this issue. Let the melted plastic cool, then rough it up by hand with a piece of 80 grit.



Step 4 - Melt Uni-Weld Ribbon onto the backside over the mesh. **Don't try to melt the base material together with the rod...** Just melt the Uni-Weld on top

of the plastic and spread it around. Uni-Weld works more like a braze than a true weld. Let the Uni-Weld cool or force cool it with some water.



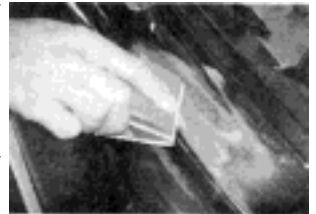
Step 5 - On the frontside, hog out some plastic about 1/2" on either side of the damaged area to prepare a broad v-groove. The 6122 Carbide Burr works great for this. Then take a 36 grit Roloc disc and rough up the plastic in the v-groove. Radius the v-groove out to the painted surface. Remove some paint and put some finer scratches into the v-groove with 80 grit in a DA.

Step 6 - No mesh is needed on the frontside, so just melt the Uni-Weld Ribbon into the v-groove and spread it around. Again, this is not a true weld, so don't try to melt the base material together with the plastic! (How many times do I have to tell you?!) Overfill the v-groove slightly to minimize the need for filler.



Step 7 - After allowing the Uni-Weld to cool thoroughly, knock it down with 80 grit in a DA. Block it once you get down close to the finished profile.

Step 8 - Fill in any minor low spots with 2000 Flex-Filler 2 epoxy filler. Make sure you brush on some 1060 Filler Prep adhesion promoter and allow the epoxy to cure for as long as possible before you sand it for best featheredging. Block sand the area with 320 grit, apply 1050 Plastic Magic to any raw plastic areas, then apply 3000 Flexible Primer Surfer to prep the area for refinish. That's all, Folks!



compare the strength of several types of repairs.

All samples were prepared identically, with a two inch long tear to the edge of a 6" x 4" x 1/8" thick rectangular sample of Himont RTA 3223, a TPO alloy used on some domestic bumper applications. Five samples of each repair type were tested.

The results show that the Uni-Weld repair using the "stitch" method of mesh melt-in was **114% stronger than the standard TPO weld**. Furthermore, the Uni-Weld bent a lot further before it broke, and it broke through the base material at the edge of the mesh rather than at the original tear. The standard TPO weld tore again at the original tear.

Repair Method	Average Strength (lbs)	Standard Deviation (lbs)
Uni-Weld Stitch	105	34
Epoxy	89	10
Uni-Weld Standard	80	17
Standard TPO rod weld	49	8

The epoxy repair was 15% less strong than the Uni-Weld Stitch method, and it displayed cracking and delamination at small deflection levels. Its failure mode was loss of adhesion across the v-groove, causing the plastic to open up over the original tear.

The Uni-Weld thermoplastic method using the standard mesh melt-in technique was 23% less strong than the stitch method. Samples tore through the base material at the edge of the mesh as they had with the stitch method, but the difference in ultimate strength seems to lie in how the wire mesh reacted to the load.

With the stitch method, the wire was allowed to stretch further, increasing the total load required to break the part. However, under normal loading and within reasonable bounds for flexibility, there should be no difference in how the standard

melt-in and stitch melt-in methods behave.

The bottom line is that the Uni-Weld is twice as strong as a true TPO weld and as strong or stronger than an epoxy repair. This strength, combined with its ease of application and sanding makes **Uni-Weld Ribbon the best method for repairing problem plastics**.

"El Libro de Reparos Plásticos Automotrices" Now Available

Due to popular demand, "The Book" of Automotive Plastic Repair has been translated into Spanish. The industry's most authoritative manual on the techniques of automotive plastic repair is now available to our Spanish-speaking friends both at home and abroad.

"El Libro" is available free on the Internet in Adobe Acrobat format at our website. If you would like a hard copy, please call our toll free number. There is a \$1.00 charge for each hardcopy ordered.



Stop By and See Us at NACE!

It seems like December's still a long way off, but this will be our last issue of Plastic Pointers before the show. Therefore, we cordially invite you to stop by **Booth #1333** and see our latest products. The show will be held in Las Vegas starting Friday December 5th through Sunday the 7th.

Need More Info? Download It From the Web for Free!

In our never-ending quest to provide YOU with the information and tools you need to perform quality automotive plastic repairs, we have posted even more material on our web site. Now you can **download MSDS's**, The Book of Plastic Repair, and old copies of the Plastic Pointers newsletters from our site.

All documents are available in Adobe Acrobat format so they'll print out exactly the way we intended them to look. With a computer and internet access, a whole world of plastic repair information is at your fingertips!

Only Urethane Supply Company provides you with such extensive resources and information in the field of plastic repair. Other companies may want you to buy their products, but WE want you to buy our products *and* know how to use them too!

One More Tip on Mazda 626 Bumpers

Before we leave the subject of Mazda 626 bumpers, often the lower supports will break at the ends. As long as the support is not broken all the way along the curved surface, you can fix them easily by melting in the 2045W Stainless Steel Wire Mesh, then melting Uni-Weld Ribbon over the mesh as shown.

