The following “how to” photos and captions show and explain accepted industry procedures for repairing tire puncture injuries. Additional information is available on RMA’s website – rma.org – and by requesting its Puncture Repair Procedures information, or by requesting information about TIA’s Basic Automotive Tire Service training series, which includes a module dedicated to puncture repair.

**WHEN NOT TO REPAIR A TIRE**

- There is 2/32-inch or less of tread on any two adjacent tread grooves. The tire is not legal on U.S. highways.
- There is any evidence of a separation in the tread area or the sidewall of the tire. Maximum puncture injury in the tread is present, bulges or blisters, or other interior damage. If any damage other than a ¼-inch crack, open splices, exposed tire cord or steel belts, broken beads or bead wires, bruises or blisters, or other interior damage. If any damage other than a ¼-inch maximum puncture injury in the tread is present, do not repair.

**WHEN ‘ALWAYS’ IS RIGHT**

- Inflate the tire to maximum allowed pressure. Do not overinflate.
- Check the surface and the valve for the source of the leak(s) by using water, soap solution or leak detector.
- Locate the injury and circle it with a crayon.
- Remove the valve core to deflate the tire.
- Locate the injury and circle with a tire crayon. Do NOT INVERT RADIAL TIRES.
- Probe the injury with an awl to determine the angle of penetration.

**Step-by-Step Basics**

1. Consult information about repairability of tires.
2. Locate the injury and circle with a tire crayon. DO NOT INVERT RADIAL TIRES.
3. Remove the foreign puncturing object and probe the injury with an awl to determine the angle of penetration.
4. Clean the area around the injury with cleaner fluid and a scraper.
5. Using a low-speed drill (max. 500-700 rpm) and a 3/16-inch tapered carbide cutter, ream the injury following the angle of penetration from the inside of the tire. Use proper eye protection.
6. Remove the poly from the plug stem. Push the stem into the wire puller. Coat the entire plug with self-vulcanizing cement. Note: With one-piece repair units the patch section must be coated, as well.
7. While the cement is still wet, push the wire puller through the injury from the inside of the tire. Grasp the wire, use a steady pull until ½-inch of the gray rubber on the plug is exposed outside the tire.
8. Using a flexible knife, cut the plug on the inside of the tire 1/8-inch above the innerliner. Be careful not to stretch the plug when cutting.
9. Making sure the bead arrows of the repair unit are pointing to the beads, center the proper size repair unit over the injury. Use a tire crayon and outline an area ½-inch larger than the repair unit.
10. Use a low-speed buffer (max. 5,000 rpm) and a buffing rag to buff the plug and the out-lined innerliner area. BE CAREFUL NOT TO BUFF THROUGH THE INNERLINER.
11. Use a vacuum to completely remove the buffing dust.
12. Apply a light coat of cleaner fluid to the buffed area, scrape clean and allow to dry.
13. Apply an even coat of self-vulcanizing cement to the entire buffed area. Allow cement to dry until tacky. Never use blow dryers, can pressed air or heat lamps to facilitate drying. Drying time is affected by temperature and humidity.
14. When cement is dry, partially remove the poly backing from the repair unit, leaving just enough to hold the unit. Press the unit into place while removing the rest of the backing.
15. Stitch the repair unit vigorously from the center working outwardly. Use as much hand pressure as possible. Remove top cover film.
16. Apply repair sealer on the overbuff area, and over the edge of the repair unit.
17. Apply bead sealer to the bead of the tire to prevent air loss around the bead. (NOT NECESSARY FOR TRUCK TIRES.)
18. After inflating, cut the plug stem flush with the outside tread area. The tire is now ready to be returned to service.