TIRE REPAIRS

TRUSTTECH



Repair Manual RM-5

Two-Piece Nail Hole Repair Method for Passenger, Light Truck and Truck Tires

RM-5

Radial Truck Repair Kit



896 Radial Truck Nail Hole Repair Kit

- Contains enough repair materials to properly repair 40 radial nail holes without restocking
- Comes fully assembled and ready to use
- Sturdy lockable case for security and convenience
- Transportable for ease of use while doing field repairs

THE 896 KIT CONTAINS:

TOOLS AND ACCESSORIES

- 1 – 896BOX Tool Storage Box
- 1 – 911 Allen Wrench for Quick Change Adaptors
- 1 – 912 Allen Wrench for Air Tool
- 1 – 913 8” (200mm) Slip Joint Pliers
- 1 – TRT105 Injury Measuring Tool
- 1 – 915 Spiral Cement Tool
- 1 – 919 Pointed Awl
- 1 – 933 Rubber Scraper
- 1 – 936 1/8” (3mm) Stitcher
- 1 – 940 X2T Taper Point Skiver Knife
- 1 – 951 Hex White Paint Sticks (12 count)
- 1 – S1032 Air Buffer 2,600 RPM
- 1 – S1035 Air Drill 500 RPM
- 1 – S892 Texture Brush 3” (75mm)
- 1 – RH102 Rubberhog Flared Buffing Wheel
- 1 – S923 Safety Glasses
- 1 – 170TM Repair Template
- 1 – RM-5 Repair Manual
- 1 – MSDS Sheets

REPAIRS

- 1 Box – 170 (CT-20) Radial Repairs
- 1 Box – 166 (CT-12HD) Radial Repairs
- 1 Box – ULS8 (251-1UL) 8mm (5/16”) Uni-Seal Stems
- 1 Box – ULS10 (291-1UL) 10mm (3/8”) Uni-Seal Stems

CHEMICALS

- 1 – 704A Rub-O-Matic
- 1 – 738 Security Coat
- 1 – 760 Chemical Vulcanizing Fluid

CUTTERS & ADAPTORS

- 1 – CC8 (271) 8mm (5/16”) Carbide Cutter
- 1 – CC10 (271/38) 10mm (3/8”) Carbide Cutter
- 1 – S1041 Quick Change Adaptor
- 1 – S1041/38 Quick Change Adaptor
- 2 – S1046 Quick Change Adaptor



The Tech Two-Piece Repair System is designed to provide safe, simple, fast tire repairs that permanently repair all types of passenger, light truck, and medium truck tires in the market today. Two-Piece Repairs consist of a vulcanizing rubber stem or insert, which permanently fills and seals the injury, and a separate repair unit which reinforces the tire and seals the inner liner. This repair system meets tire industry recommendations for tire repair and fulfills tire manufacturers' warranty requirements.

Using the Tech Two-Piece Repair System allows the injury to be precisely measured, prepared and filled with a Uni-Seal Ultra Stem such as a ULS6 (250-1UL) for 6mm (1/4"), ULS8 (251-1UL) for 8mm (5/16"), or ULS10 (291-1UL) for 10mm (3/8") injuries. Injuries may also be filled with Tech Permacure or Flow-Seal inserts.

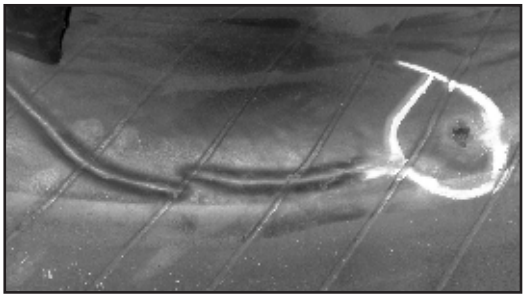
The second portion of the Tech Two-Piece Repair System utilizes an appropriate size repair unit to reinforce the injured area of the tire and seal the inner liner. The repair must be designed to flex in the same direction as the tire. Tech manufactures Centech radial repair units, BP bias ply repair units, and Tech All Purpose or Multi Purpose (MP) repair units for both types of tires.

Tech Uni-Seal Ultra Stems and Repair Units provide maximum adhesion in hot or cold applications when used with Tech 760 Chemical Vulcanizing Fluid.

This repair manual has been created to instruct each customer in the proper installation procedures of Tech's Two-Piece repair system, ensuring a safe, permanently repaired tire is returned to service every time.

Repair of Run Flat Tires

Run Flat tires must be removed from the wheel and inspected. These tires have been engineered to support the load of the vehicle with little to no air pressure for a specified amount of time by the tire manufacturer. Distance traveled, driving speed and vehicle maneuvering at low pressure may affect the tire's integrity and repairability. These tires are susceptible to inner liner separations when run flat for extended periods of time.



This photo shows innerliner separation in a run flat tire. The tire should not be repaired if this condition is present.

Once the tire has been removed from the wheel, thoroughly inspected, and determined to be repairable, it may be repaired using either a Tech Uni-Seal® Ultra or Two-Piece Repair System. Punctures must be limited to the crown area as shown in Figure A. The maximum size injury is 6mm (1/4"). One injury per tire may be repaired.

Consult the tire manufacturer's warranty for specific information regarding repair of Run Flat tires. Tech's recommendations for repair of Run Flat tires are not to supersede any recommendations of new tire manufacturers. Tech's recommendations are based on tests conducted at Tech's test facility and at an independent lab. Tech is continuously testing new Run Flat technologies as they enter the market.

Repair of Performance Tires

Performance tires H, V, W, Y, and Z rated can be repaired using Tech's Two-Piece Repair System in the crown (T-T) area as shown in Figure A. One injury per tire up to 6mm (1/4") in diameter may be repaired. Test results in Tech's test facility and at an independent lab have shown the tire's speed rating is maintained. Additional repairs or repairs outside the crown area can be made, however the tire's speed rating is reduced below an "H". Tech's recommendations for repair of performance tires are not to supersede any recommendations of new tire manufacturers.

Repair of Standard Passenger Tires

Passenger tires T rated and below can be repaired using Tech's Two-Piece Repair System in the crown area as shown in Figure A. Tech places no limitations on the number of nail holes repaired in a tire as long as no two injuries are in the same radial cord and the repair units do not overlap. Tech's recommendations are based on tests conducted at Tech's test facility and at an independent lab. Tech's recommendations for repair of standard passenger tires are not to supersede any recommendations of new tire manufacturers.

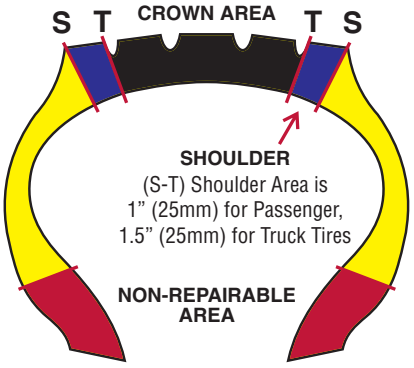
Repair of Light, Medium & Heavy Truck Tires

Steel body cord light, medium and heavy truck tires T rated and below can be repaired using Tech's Two-Piece Repair System in the crown and shoulder areas as shown in Figure A. Tech places no limitations on the number of nail holes repaired in a tire as long as no two injuries are in the same radial cord and the repair units do not overlap. Tech's recommendations are based on tests conducted at Tech's test facility and at an independent lab. Tech's recommendations for repair of light and medium truck tires are not to supersede any recommendations of new tire manufacturers.

WARNING

Failure to properly repair tire could cause SUDDEN TIRE FAILURE, RESULTING IN SERIOUS INJURY OR DEATH. Carefully read and follow these instructions.

Tire Repair Limitations (Figure A.)



All injuries larger than those defined in the chart, or outside the specified S-S area, must be treated as a section repair.

Type of Tire		Prepared Crown Injury Size Ø	Prepared Shoulder Injury Size Ø	Uni-Seal Ultra Stem	Carbide Cutter	Crown Area Repair Unit	Shoulder Area Repair Unit
	T Rated or Below	6mm (1/4")	6mm (1/4")	ULS6 (250-1UL)	CC6 (270)	CT-10 or 111	–
	H, V, W, Y, or Z Rated Performance Tires	6mm (1/4") **1 Per Tire**		ULS6 (250-1UL)	CC6 (270)	CT-10 or 111	–
	Run Flat Tires	6mm (1/4") **1 Per Tire**		ULS6 (250-1UL)	CC6 (270)	CT-10 or 111	–
	Light Truck Tires Through Load Range E	6mm (1/4")	6mm (1/4")	ULS6 (250-1UL)	CC6 (270)	CT-10 or 111	CT-22
		8mm (5/16")	8mm (5/16")	ULS8 (251-1UL)	CC8 (271)	CT-12 or 111	CT-22
		10mm (3/8")		ULS10 (291-1UL)	CC10 (271/38)	CT-20 or 112	–
	Truck Tires	6mm (1/4")	6mm (1/4")	ULS6 (250-1UL)	CC6 (270)	CT-10HD or 111	CT-24
		8mm (5/16")	8mm (5/16")	ULS8 (251-1UL)	CC8 (271)	CT-12HD or 111	CT-24
		10mm (3/8")	10mm (3/8")	ULS10 (291-1UL)	CC10 (271/38)	CT-20 or 112	CT-26

Please Read Before Performing Any Tire Repair:

Protective eyewear must be worn while repairing tires.

RMA and tire industry recommendations state all injuries must be filled with a rubber stem or suitable vulcanizing material and a repair unit applied to the inner liner.

Failure to follow industry recommendations may result in premature tire failure.

Tire manufacturers' warranties and policies on repair of radial passenger, performance, or run flat tires may differ. These policies supersede those of Tech International.

Although a tire may be rated for high speed, Tech does not endorse the operation of a motor vehicle in an unsafe or unlawful manner.

Chemicals used during the repair process are extremely flammable. Do not use near sources of ignition.

Failure to follow the procedures shown in this manual may result in premature tire failure. This could result in serious injury or death.

Failure to follow procedures in this manual will void Tech's product warranty. Tech will not be responsible for any damages or losses, direct or indirect, related to or associated with the failure to follow the instructions contained in this manual.

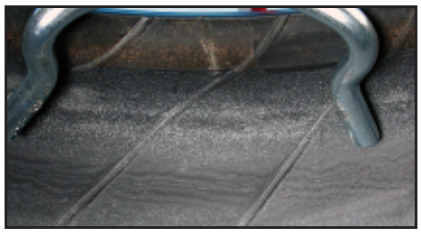
Tire Inspection & Pre-Cleaning

The tire inspection process is critical in determining if the tire can safely be repaired and returned to service. The inspection should be done with the tire removed from the wheel and placed on a tire spreader using adequate lighting. The technician must be able to examine the tire beads, interior and exterior sidewalls, and the tread area.

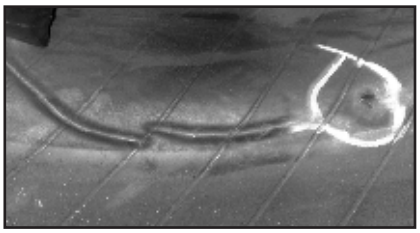
Non-Repairable Conditions



1. Injury no greater than 6mm (1/4") for passenger tires. Injury no greater than 10mm (3/8") for light truck/truck tires.



2. Run flat or under-inflated



3. Inner liner separation



4. Casing separation



5. Excessive tread wear



6. Exposed plies/cables



7. Deformed bead, exposed fabric or steel



8. If injury angle exceeds 25 degrees, a 2-piece repair must be used.



9. Ozone cracking



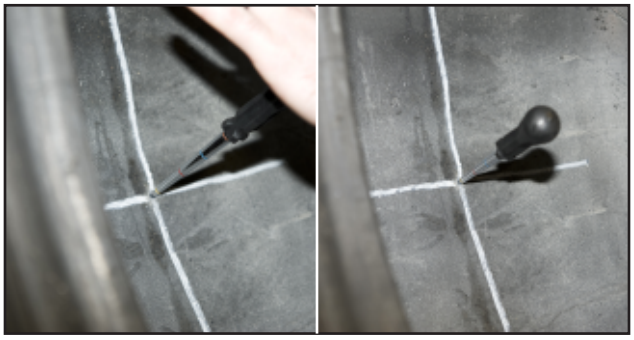
10. Tire damage from impacts

WARNING

All Passenger, Light Truck, Medium Truck and Heavy Truck Tires must be removed from the rim and inspected before any repair is made!



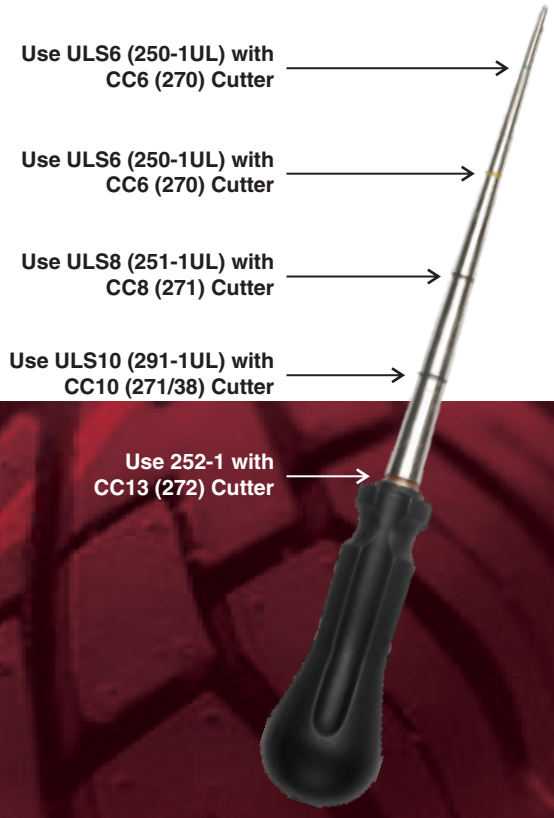
1. Locate and mark all damage on the inside and outside of the tire while checking for separation.



2. Determine the size and angle of the injury using the TRT105 injury measuring tool.



3. Pre-clean the inner liner with Rub-O-Matic rubber cleaner and a scraper 2 to 3 times to remove contaminants.



TECH TIPS:

Insert the **TRT105** measuring tool into the injury from the inside of the tire. Apply firm pressure to the handle while rotating the tool in a circular motion. When the tool meets resistance, find the closest visible line to the inner liner. Refer to the illustration (right) to determine the injury size.

Injury Preparation & Filling



4. Damaged rubber and steel should be removed from the injury using a carbide cutter on a low speed air/electric drill, maximum 1,200 rpm. Drill the injury from the inside of the tire, following the angle of the injury. Repeat this procedure 3 to 5 times, completely removing the cutter from the injury after each pass. Repeat this process from the outside of the tire.



5. The injury should be inspected after drilling is complete by flexing the tire and probing the injury with a pointed awl to make sure all splits and loose material have been removed.



6. Using the spiral cement tool in a clockwise direction, apply 760 Chemical Vulcanizing Fluid into the injury 3 to 5 times.



7. Remove the protective poly from the stem.

Tech Uni-Seal Stems are slightly larger than the prepared injury, resulting in a compression fit with excellent adhesion. Placing a small amount of vulcanizing fluid on the stem just before inserting it into the tire injury provides lubrication for easier installation.



8. Apply a small amount of 760 Chemical Vulcanizing Fluid to the black tapered portion of the stem.



9. Insert the lead wire through the injury. Grasp the wire on the outside of the tire with pliers. Pull the stem through the tire until approximately 1/8" (3mm) of the stem remains above the inner liner.

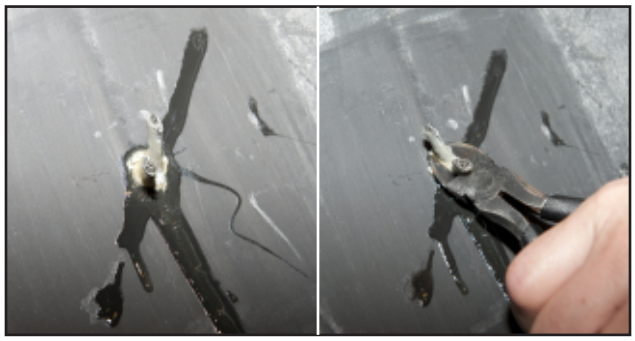
Permacure or Flow Seal Installation

Tech's Permacure reinforced inserts or Flow Seal inserts can be used as permanent injury filler material. After the damage has been removed with the appropriate carbide cutter, the prepared injury can be filled as shown below.

Permacure



P1. Install the Permacure insert in the injury using the 925 tool.



P2. Remove the 925 tool by pulling straight out of the tire. Cut off the insert 1/8" (3mm) above the inner liner.



P3. Buff the Permacure flush with the inner liner using a low rpm buffer and inner liner buffing wheel.

Flow Seal



F1. Install the Flow Seal insert using the 920 Insert-O-Matic tool and the 203 Insert-O-Mate tip to protect the insert from exposed steel. Release the handle and rotate the 920 tool 90°.



F2. Remove the 920 tool. Cut the Flow Seal to 1/8" (3mm) above the inner liner.



F3. Buff the Flow Seal flush with the inner liner using a low rpm buffer and inner liner buffing wheel.

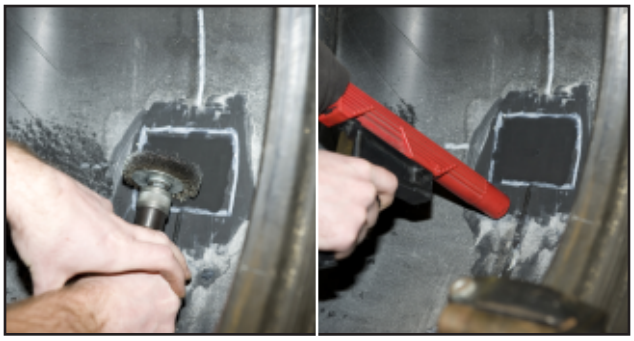
RMA puncture repair guidelines state that the inner liner should be buffed to an RMA #1 or #2 buffed texture using a low speed air tool, maximum 5,000 rpm. An even velvet texture minimizes the chance of trapped air while maximizing adhesion.



10. Outline the area to be buffed 1/2" (13mm) larger than the repair being used, or use the appropriate repair template.



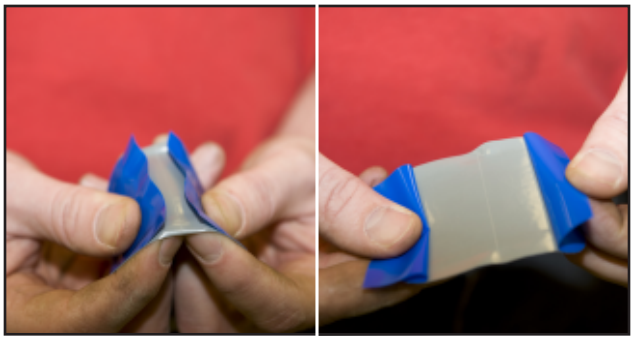
11. Using a low speed buffer (maximum 5,000 rpm) and an appropriate inner liner wheel, buff the stem flush to the inner liner. Buff the entire outlined area on the inner liner to an RMA #1 or #2 texture.



12. Use a soft wire brush on a low speed buffer to remove buffing dust and debris from the buffed area. Remove the debris from the tire using a vacuum.



13. Apply a thin even coat of 760 Chemical Vulcanizing Fluid to the buffed surface. Allow 3 to 5 minutes drying time. Additional drying time may be required in adverse weather conditions.



14. Bend the repair back and push up on the edges of the repair with your fingers to break the perforation on the protective poly on the back of the repair. Partially remove the poly, exposing the middle portion of the repair.



15. Relax the beads of the tire. Center the repair unit over the filled injury. Press down the center of the repair unit with your thumb. (If the repair is a Centech or BP repair unit, be sure to align the bead arrows with the beads of the tire.)

TECH TIPS:

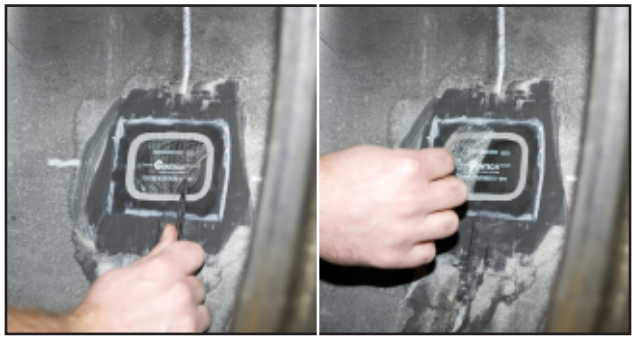
- Do not use a compressed air line to clean the buffed area, as contamination from moisture and oil will occur.
- When cleaning the tire, care should be taken to not let anything touch the buffed surface.
- Rub-O-Matic rubber cleaner can be used to remove buffing dust and debris if it is applied using a clean, lint-free cloth. 3 to 5 minutes of drying time should be allowed before applying chemical vulcanizing fluid.



16. With the blue poly still positioned under the repair unit, stitch the repair unit from the center out, using firm pressure.



17. Remove the poly from under the repair unit, press down the edges of the repair and continue stitching toward the edges of the repair.



18. Remove the clear protective poly from the top of the repair.



19. Seal the edge of the repair and the over buffed area of the inner liner with Tech Security Coat #738.



20. With the stem relaxed, cut off the excess, leaving 1/8" (3mm) remaining above the tread surface.



21. The tire is now ready to return to service.

TECH TIP: **Tech Security Coat #738** should be applied to the buffed area around the repair to restore the air retention of the butyl inner liner.

For questions regarding this repair process:
In North America, call
1-800-433-8324 or 1-800-336-8324
In Europe, call
(011-321) 442-3103
Or, visit us on the web:
www.tech-international.com

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