Tire Repairs

Repair Manual
RM-9

CENTECH®
Section Repair Of A Radial Truck Sidewall With Multiple Cable Damage
CENTECH Radial Repairs

CENTECH is the most advanced radial tire repair system ever developed.

Crown, shoulder or sidewall injuries in passenger, truck, agricultural and earthmover tires can now be repaired with Centech center over injury radial repairs. A special compounding and design allow the repair unit to flex and resist heat, assuring a permanent repair.

CENTECH repair units last the life of the tire, saving thousands of dollars per year in new tire purchases.

Before demonstrating the section repair of a radial sidewall with multiple cable damage, we must first define a radial section repair as any injury to the body ply of a truck tire that exceeds 3/8” (10mm) in the crown or any sidewall injury. Any time the body cable is rusted, broken, loose, or if the fret wire is damaged, the damaged cable or cables must be removed (the fret wire is the wrapping wire which tightly holds the body cables together).

Inspect the tire on the inside and outside to determine the repairability and retreadability of the casing.

NOTE: The tire should not be repaired if any of the following conditions or injuries are present:
- The tire shows signs of run flat or under-inflation
- Casing separations are beyond repairable limits
- Bead wires are visible, deformed or broken
- Sidewall or tread is cracking to the cord body
- Weather checking is present which exposes the cord
- Severe sidewall scuffing is present that exposes the cord
- If there are multiple injuries that are directly in line with the same radial cord or cords.

The inspection area should have good lighting inside and outside of the tire.

### CENTECH SECTION REPAIR OF A RADIAL TRUCK SIDEWALL WITH MULTIPLE CABLE DAMAGE

The following is a multiple cable damage sidewall section repair in a steel belted radial truck tire. This repair procedure is what is recommended if the curing system being used is a section mold. With this type of curing system the repair is applied and cured with the skive fill.

CENTECH low temperature centering radial repair units can be used chemically or in a heat cure system such as a section mold or retread process.

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<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Size</th>
<th>Dimensions (inches)</th>
<th>Dimensions (mm)</th>
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<td>75 x 125</td>
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<td>75 x 155</td>
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<td>10</td>
<td>3 x 10</td>
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<td>CT-27</td>
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<td>5 x 6 3/4</td>
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<td>CT-34</td>
<td>9</td>
<td>5 x 12</td>
<td>120 x 320</td>
</tr>
</tbody>
</table>

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1. Inspect the tire on the inside and outside to determine the repairability and retreadability of the casing.
2. The tire should not be repaired if any of the following conditions or injuries are present:
   - The tire shows signs of run flat or under-inflation
   - Casing separations are beyond repairable limits
   - Bead wires are visible, deformed or broken
   - Sidewall or tread is cracking to the cord body
   - Weather checking is present which exposes the cord
   - Severe sidewall scuffing is present that exposes the cord
   - If there are multiple injuries that are directly in line with the same radial cord or cords.
3. The inspection area should have good lighting inside and outside of the tire.
During the inspection process, locate and mark all injuries on the inside and the outside of the tire. If present, remove all injuring objects.

To determine the extent of damage and to check for possible ply separation, probe the injury using a blunt point awl.

Measure the distance between the toe of the bead and the end of the injury on the inside of the tire. The injury must not extend into the A-B non-repairable area.

Refer to the CENTECH Limitations Chart for radial tires to determine the non-repairable area for the tire that you are repairing.

Measure the length and width of the injury. Then refer to the CENTECH Limitations Chart to determine if the injury is repairable. For one or two cable injuries, cables must be removed the full length of the injury.

When determined repairable, pre-clean the innerliner by applying Rub-O-Matic Aerosol #704-A to the repair area.
Use a Tech Skiving Knife \#940 or \#941 to separate the damaged cable or cables. Cut as close to the damage as possible. This will leave as much good rubber as possible surrounding the remaining good cables.

Clean any contaminating substances from the outside of the tire with Rub-O-Matic and clean cloth.

Use a low r.p.m. Air Buffer (Max. 5,000 r.p.m.) such as the Tech \#S-1032 or \#S-1036 Buffer and a \#S-2045 or \#S-2046 Rotary Gouge to remove the outer rubber around the perimeter of the injury.*

*Another method of quickly removing rubber is to use a \#390 SSG Rubberhog Rasp on a low r.p.m. Air Buffer.

While the area is still moist, use a Scraper \#933 to remove contaminating substances.

Always wear eye protection when buffing.

With a low r.p.m. Air Buffer and an Encapsulated Brush \#S-890 or \#S-897, buff away the remaining surface rubber to expose only the cables believed to be damaged the full length of the injury.

Note: An Encapsulated Brush helps to prevent any further damage to the body cables or fret wire.

Inspect the cables for damage, such as broken fret wires, broken body cables, loose cables, or rusted cables. If any of these are present, then the damaged cable or cables must be removed. The fret wire is the wrapping wire that holds the body cable together.

Use a Tech Skiving Knife \#940 or \#941 to separate the damaged cable or cables. Cut as close to the damaged cable as possible. This will leave as much good rubber as possible surrounding the remaining good cables.
When removing multiple cables, use a #283 Mini Carbide Router or a high r.p.m. (min. 20,000 r.p.m.) Air Tool to remove damaged cables. Precisely cut off each end of the cables, back into good solid rubber at a 90 degree angle. **

For single cable removal, use the Tech Mini Carbide Burr #280 on a high r.p.m. Air Tool.

Because of the scorching that occurs when using a high r.p.m. Tool and the lack of texture along the injury, it is necessary to use a low r.p.m. Air Buffer and a Skive Brush #896 to texturize the ends of the injury and the knife cut edges.

Using the same Rasp or the #RH-106 Innterliner Wheel on an Air Buffer, buff a perimeter approximately 1" to 1 1/2" (25mm to 40mm) around the exterior of the skive on the outside of the tire.

In a multiple cable removal it will be necessary to dress the cut ends of the cables with an Aluminum Oxide Stone #S-872 on a high r.p.m. (20,000 r.p.m.) Air Tool.

Use a low r.p.m. Air Buffer and a Rubberhog #230 SSG or a 36 grit Rasp to lightly buff a 45 degree angle to the exterior of the skive achieving an R.M.A. #2 or #3 texture. Avoid contact with the body cables with the buffing wheel. This would cause further damage to the cables.

Measure the length and width of the injury to determine the correct CENTECH Repair unit for the injury.
Center the predetermined CENTECH Repair unit over the skive and mark a perimeter approximately 1" (25mm) from the edge of the repair unit completely around the repair unit. This serves as a quick guide for mechanical buffing.

Next, refer to the sidewall of the tire and locate the cross section of the tire. For easy chart reading, note whether the tire is tubeless or tube type.

This "illustration" shows how to correctly measure the injury. The length of the injury is measured in the bead to bead direction, and the width is measured in the running direction of the tire.

Then refer to the CENTECH Radial Limitations Chart for radial truck tires and determine the correct size repair unit for the size of injury in the size of tire you are repairing. Then make note of the size of repair unit required.

When using a Spotter or Section Mold, you will need to know the thickness of the rubber to be cured. Measure the section depth at the thickest part of the skive. Write the measurement on the outside of the tire for future reference.

Draw crayon index lines at right angles from the skive on the inside of the tire to aid in centering the repair unit.
Pre-clean within the marked area by applying Rub-O-Matic Aerosol #704-A.

Buff within the clean marked area with a Tech low r.p.m. Air Buffer and a Rubberhog Innerliner Buffing Wheel #RH-106 to achieve an R.M.A. #1 or #2 buffed texture. Remove any vent ribs and/or embossed surfaces for proper adhesion.

Remove any vent ribs and/or embossed surfaces for proper adhesion.

Clean the buffed area on the innerliner and the skive area with Rub-O-Matic #704 and a clean, lint-free cloth. Allow 3 to 5 minutes for drying time. Note: The tire should be rotated to a 3 o'clock or 9 o'clock position. This facilitates drying and helps to prevent contamination of the repair area.

Apply a thin, even coat of cement to the exterior skive with either Tech Temvulc #1082 or Tech Chemical Vulcanizing Fluid #760 and allow to dry thoroughly.*

- A. Tech Temvulc #1082 — When applying Temvulc black vulcanizing fluid, allow 15 to 20 minutes drying time (longer in humid climates).
- B. Tech Chemical Vulcanizing Fluid #760 — Allow Tech Chemical Vulcanizing Fluid to dry approximately 3 to 5 minutes (longer for humid climates).

While the area is still moist, remove contaminating substances using a Rubber Scraper #933.

Vacuum the complete buffed areas on the innerliner as well as the skive area to remove buffing debris from the tire. Another cleaning method is to use a soft wire brush on a low r.p.m. buffer and vacuum.
Remove the blue poly backing and finish stitching repair unit into place.

After the repair unit and the tire have thoroughly dried, center the repair unit over the injury making sure that the bead arrow is aligned with either bead of the tire. Press down the center of the repair unit. Note: Make sure that the beads of the tire are in a relaxed position.

Apply a thin even coat of Chemical Vulcanizing Fluid to the back of the repair unit to assure proper adhesion of the filler rubber to the back of the repair unit. Allow 3 to 5 minutes drying time.

Apply a thin even coat of Tech Chemical Vulcanizing Fluid #760 to the innerliner and allow 3 to 5 minutes drying time.

Break the perforation of the blue poly and peel halfway back. Caution: Avoid touching the gray cushion gum of the repair unit as this leads to contamination of the repair.

After the repair unit and the tire have thoroughly dried, center the repair unit over the injury making sure that the bead arrow is aligned with either bead of the tire. Press down the center of the repair unit. Note: Make sure that the beads of the tire are in a relaxed position.

Stitch the repair unit into place from the center outward. Exert firm pressure on the stitcher during this process to promote increased adhesion and remove trapped air.

Remove the blue poly backing and finish stitching the repair unit into place.
Using Tech Vul-Gum, cut enough strips to fill the skive and preheat to approximately 120 to 130 degrees F (49 to 55 degrees C).

Remove the clear poly protective cover.

Using a clean, blunt object such as a Tech Packing Tool #985 or #986, press the Vul-Gum strips into the skive as compactly as possible.

Once filled to a point that a Stitcher can be used, finish filling the skive using a Tech Stitcher.

The skive should be filled to a height that is 1/8" to 1/4" (3mm to 6mm) above the tire's surface. The highest point should be in the middle of the skive fill and should taper to the fire.

When using a Section Mold, it will be necessary to calculate a cure time so as not to under cure or over cure the rubber. When using Tech Vul-Gum the cure rate is 10 minutes for every 1/8" or 3mm at 300°F (149°C). To calculate the cure time, you need to add the total thickness of the platform or repair unit, the section depth, and the over-build as we did in the example shown above.

<table>
<thead>
<tr>
<th>Platform</th>
<th>1/4&quot; or 6mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>3/8&quot; or 10mm</td>
</tr>
<tr>
<td>Overbuild</td>
<td>1/4&quot; or 6mm</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7/8&quot; or 22mm</td>
</tr>
</tbody>
</table>

7 x 10 = 70 minutes
After the allotted cure time, remove the tire from the section mold and allow the tire to cool. Then inspect the finished repair.

Dress the skive back to the original contour of the tire using a low r.p.m. Tech Air Buffer and a Fine Grit Buffing Wheel for cosmetic appearance. For best results, be sure that the buffing wheel is turning away from the center of the skive fill.

The tire is now ready to be returned to service. If all of the repair procedures have been followed properly the repair will last the lifetime of the tire even if the tire receives several retreads.
If you have any questions regarding this repair process, call Tech's repair hotline 1-800-433-TECH or 1-800-336-TECH