TECH Tire Repairs®

Repair Manual RM-15

TOR Repair Method

TECH Off Road repairs

TECH TORs repair injuries up to 12" (300 mm) in 60 plus ply off-the-road tires. One-piece construction provides easier installation, and eliminates the need for piggyback applications.

Smaller than conventional off-the-road repairs, the compact size of the TECH TOR repair unit saves money, labor and handling time.

Specially designed plies dissipate fabric end stress, and provide maximum flexibility and strength.

Superior compounding throughout the entire construction of the TOR repair resists overcure, even when the tire is returned to service.

To obtain optimum adhesion results with all vulcanizing systems, TORs are available in both uncured and low temperature chemical cure units.

TECH TORs provide permanent repairs for tubeless or tube-type tires, and repair injuries in the shoulder, sidewall or crown.

All low-temperature and cloth-backed TORs have TECH's bead label which allows the repair person to record month, year and other indentification for repair purposes.

Cat. No.	Description	Box Qty.	Dim. (Inches)	Dim. (Mm)
386	TOR-1	10	7 5/16	180
387	TOR-2	10	8 1/8	205
388	TOR-3	5	9 3/8	230
389	TOR-4	5	11 ¼	280
390	TOR-5	5	13 3/8	330
391	TOR-6	5	15 15/16	380
392	TOR-7	1	17 ¼	430
393	TOR-8	1	19 15/16	480
394	TOR-9	1	21 ¼	530
395	TOR-10	1	23 ¼	580
396	TOR-11	1	24 ¾	620
397	TOR-12	1	25 ¾	645

UNCURED

Cat. No.	Description	Box Qty.	Dim. (Inches)	Dim. (Mm)
386U	U-TOR-1	10	6 ¼	155
387U	U-TOR-2	10	7 ¼	180
388U	U-TOR-3	5	8 ¼	205
389U	U-TOR-4	5	10 ¼	255
390U	U-TOR-5	5	12 ¼	305
391U	U-TOR-6	5	14 ¼	355
392U	U-TOR-7	1	16 ¼	405
393U	U-TOR-8	1	18 ¼	455
394U	U-TOR-9	1	20 ¼	505
395U	U-TOR-10	1	22 ¼	555
396U	U-TOR-11	1	23 ¼	580
397U	U-TOR-12	1	24 ¼	605

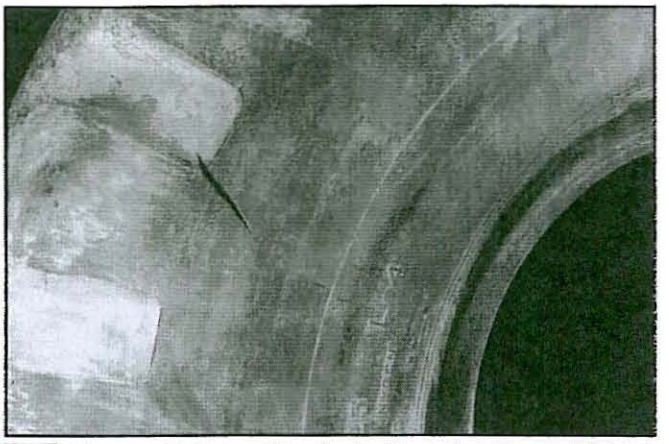
CLOTH-BACKED

Cat. No.	Description	Box Qty.	Dim. (Inches)	Dim. (Mm)
386C	TOR-1 (cloth backed)	10	7 5/16	180
387C	TOR-2 (cloth backed)	10	8 1/8	205
388C	TOR-3 (cloth backed)	5	9 3/8	230
389C	TOR-4 (cloth backed)	5	11 ¼	280
390C	TOR-5 (cloth backed)	5	13 3/8	330
391C	TOR-6 (cloth backed)	5	15 15/16	380
392C	TOR-7 (cloth backed)	1	17 ¼	430
393C	TOR-8 (cloth backed)	1	19 15/16	480
394C	TOR-9 (cloth backed)	1	21 ¼	530
395C	TOR-10 (cloth backed)	1	23 ¼	580
396C	TOR-11 (cloth backed)	1	24 ¼	605
397C	TOR-12 (cloth backed)	1	25 ¼	630

TECH'S TOR REPAIR UNITS ARE THE MOST ADVANCED BIAS OTR REPAIRS EVER DEVELOPED.

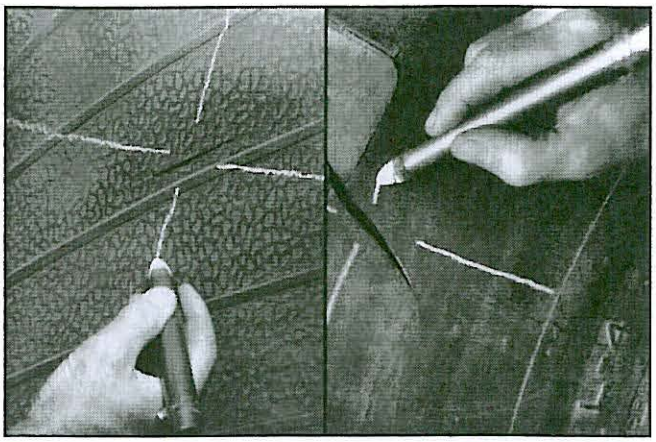
Repair of a Bias off the road tire using a Tech TOR repair.

The following steps demonstrate the proper repair procedures to follow when section repairing a bias OTR tire. The procedures covered in this manual are the recommended steps for spotter, mold and chamber curing systems. The removal of damage is the same for any curing system, the changes are in the application of the repair unit. In a spotter cure the repair unit is applied after curing of the filling material. In mold and chamber cure the repair unit is applied before the skive is filled, the repair and fill material are cured at the same time.

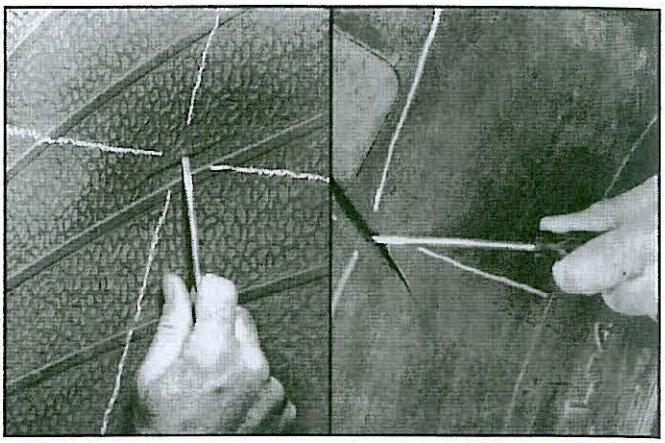


1 Thoroughly inspect the tire inside and out in a well lighted area (200 to 300 foot candles) to determine if the tire is repairable. Tires that have had water or ballast in them must be brought inside and allow to dry out for at least 24 hours. Tires with the following defects should be rejected:

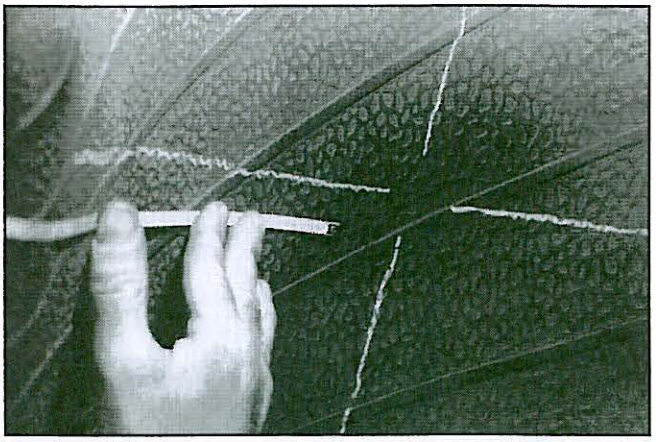
* Damage due to under inflation or being run flat
* Casing separation
* Injuries beyond repairable limits
* Rubber deterioration
* Severe cracking to the cord
* Bead damage that has damaged the cord
* Bent beads
* Burnt beads



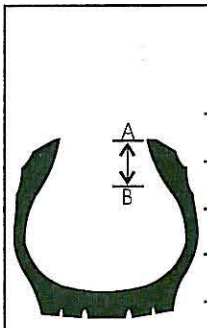
2 During the inspection process locate and mark all injuries on the inside and outside of the tire. When marking the injury use long indexing lines, this will aid in centering the spotter and repair unit later in the procedure.



3 Once the tire has been inspected, use a probe to inspect the injury inside and out, checking for separations and the extent of damage.



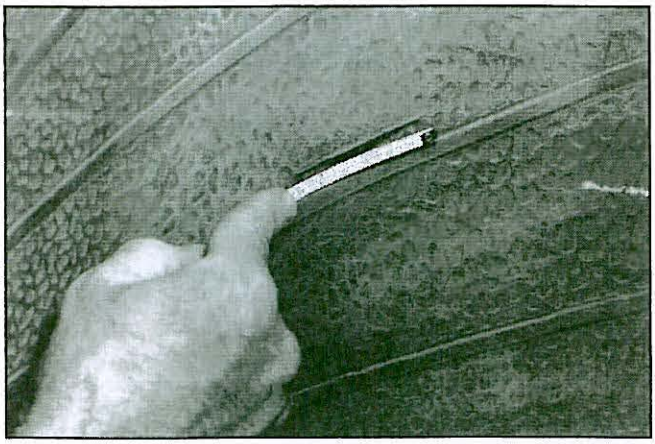
4 When repairing a sidewall injury, measure the distance from the toe of the bead following the contour of the tire to the end of the injury. Then refer to the TOR chart to determine if the injury falls within the A-B non-repairable area.



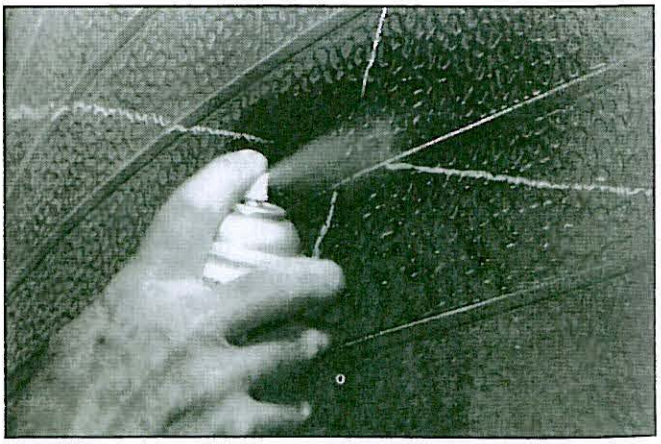
A-B NON-REPAIRABLE AREA	
16.00 thru 18.00 (20.5 thru 23.5)	5" (125mm)
26.00 thru 27.00 (26.5 thru 33.5)	6" (150mm)
30.00 thru 33.00 (37.25 thru 37.5)	7" (175mm)
36.00 and up	8" (200mm)

The above dimensions are guidelines only

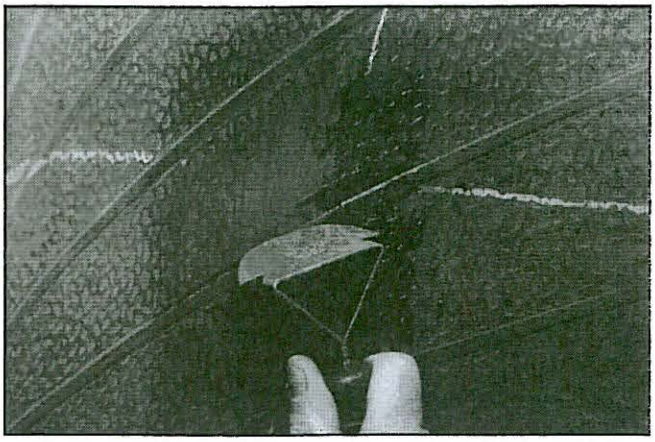
5 Refer to the TOR Repair Limitations chart to determine the non-repairable area of the tire, or use the above limitations for the A-B area which are determined by the cross-section of the tire.



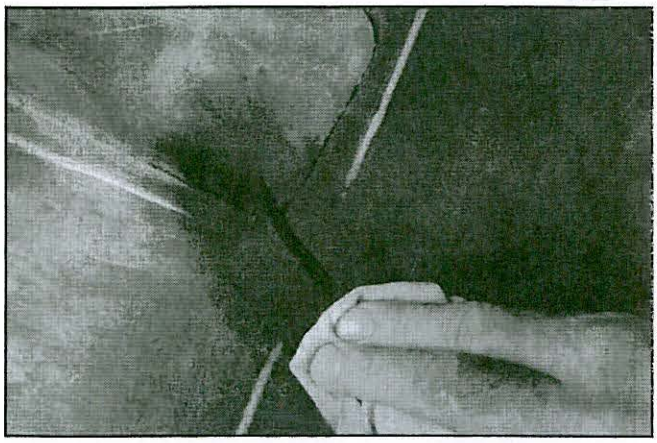
6 Measure the length of the injury and refer to the Tech TOR Repair chart to determine if the injury is repairable. Also an industry recommendation that should be taken into consideration is that for Bias OTR tires the injury dimension should not exceed 1/3 of the cross-section of the tire in any direction.



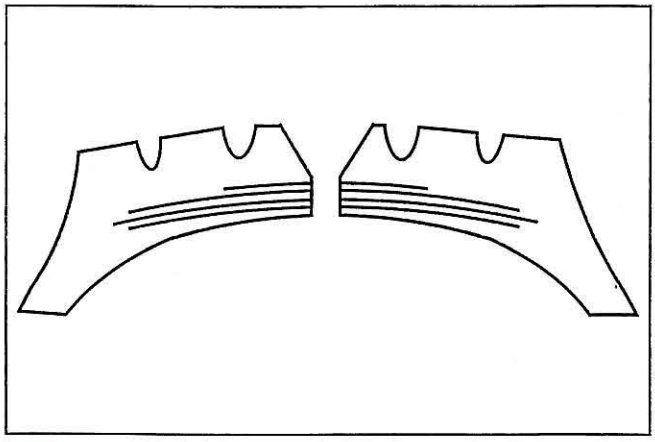
7 Pre-clean a large area of the inner liner by applying Tech Rub-O-Matic aerosol #704-A. Be sure to clean an area at least 4"(100mm) larger than the injury on all sides.
Note: Be sure that all cleaning procedures are done in a well ventilated area.



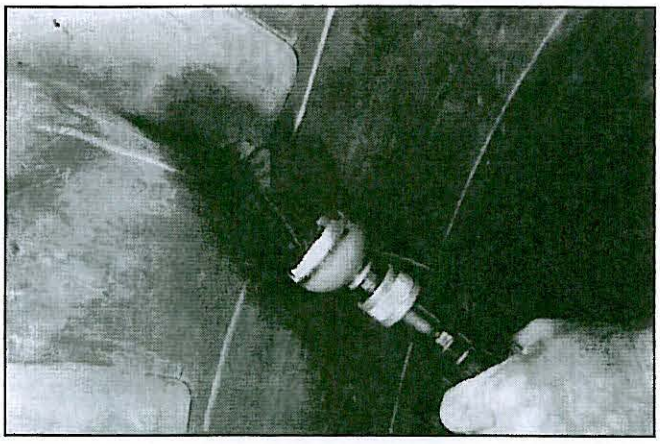
8 While the area is still moist, remove contamination such as silicone mold lubricants with a Tech scraper #933. This process should be repeated two or three times to assure that all contamination has been removed. Note: A clean cloth and Rub-O-Matic is another method that can also be used for pre- cleaning the inner liner.



9 With a clean cloth and Rub-O-Matic, clean an area 4"(75mm) larger than the injury on the outside of the tire.

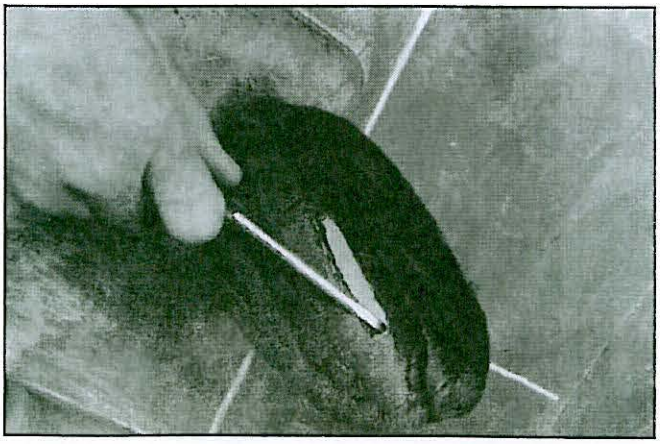


10 The exterior rubber should be at approximately a 45-degree angle for sidewall injuries and a 60-degree angle for tread and shoulder injuries. The fabric plies are removed at a 90-degree angle to keep the injury as small as possible.

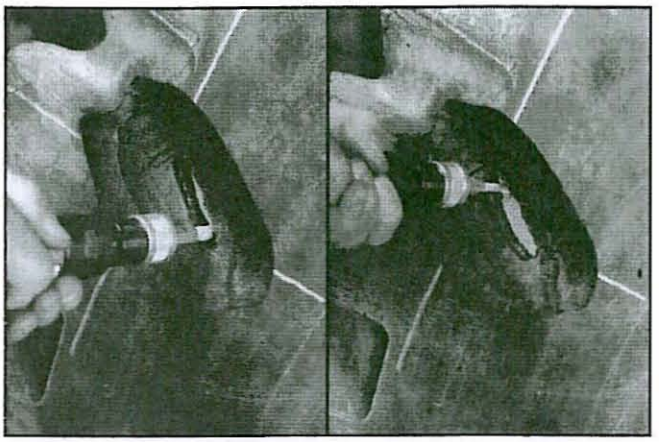


11 Remove exterior rubber with a rotary gouge or a rough grit rasp on a low r.p.m. buffer (maximum 5,000 r.p.m.). Avoid contact with the fabric plies during this process. Note: Always wear eye protection during any buffing procedure.

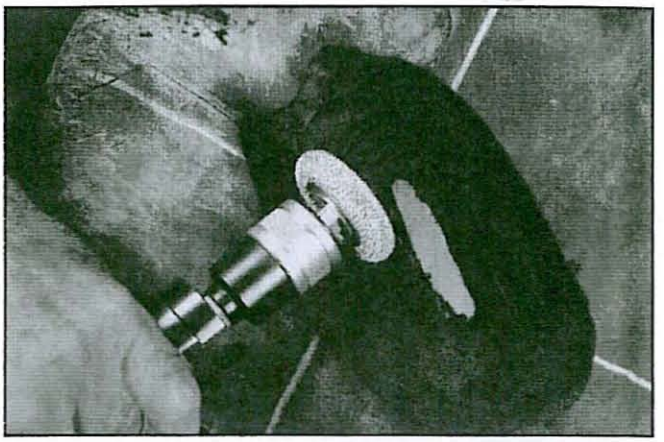
12 Remove all damaged cord body and cuts with a sharp skiving knife such as the Tech #940 or #941. Cord body should be removed at a 90 degree angle whenever possible. Be sure to round out the ends of the injury to prevent further growth.



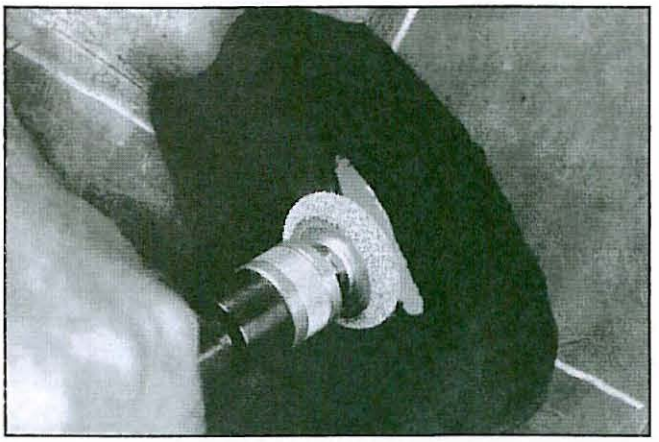
13 Probe the perimeter of the skive to determine that all damaged cord body and separation have been removed. If further damage is found, use a knife to remove all damaged material.



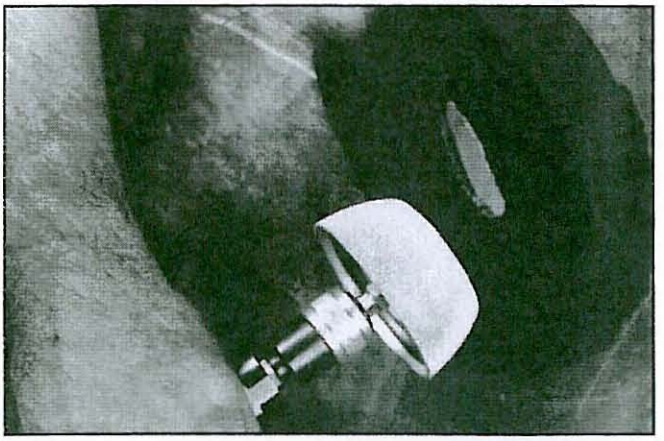
14 To remove irregularities and knife cuts, buff the fabric plies with a coarse grit rasp (16 grit or equivalent), then follow up with a medium grit rasp (36 grit or equivalent) on a low r.p.m. buffer to create a proper texture to the rubber between the plies.



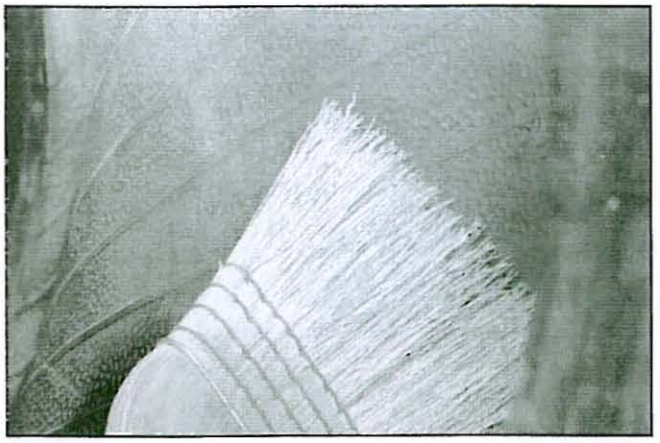
15 Use a low r.p.m. buffer and a coarse grit rasp to remove all scorched rubber, irregularities and to achieve a 45 degree angle to the rubber only. When repairing crown or shoulder injuries, try to achieve a 60 degree angle to the rubber.



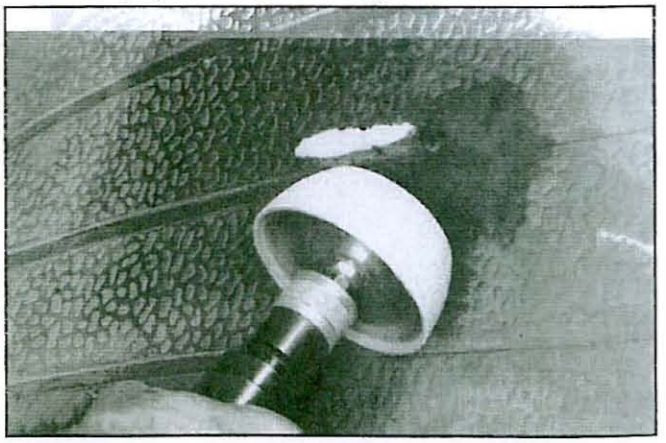
16 To achieve a R.M.A. #3 final buffed texture, it will be necessary to buff the skive with a medium grit rasp on a low r.p.m. buffer. If using a Rubberhog rough grit rasp for step #15, this buffing procedure may not be necessary.



17 Using a low r.p.m. buffer and a contour wheel, buff a perimeter approximately 2"(50mm) around the injury on the outside of the tire. This process removes light oxidation and gives a prepared surface for adhesion of rubber. Any deep cuts or deep oxidation should be removed and buffed to a proper texture before filling with rubber.

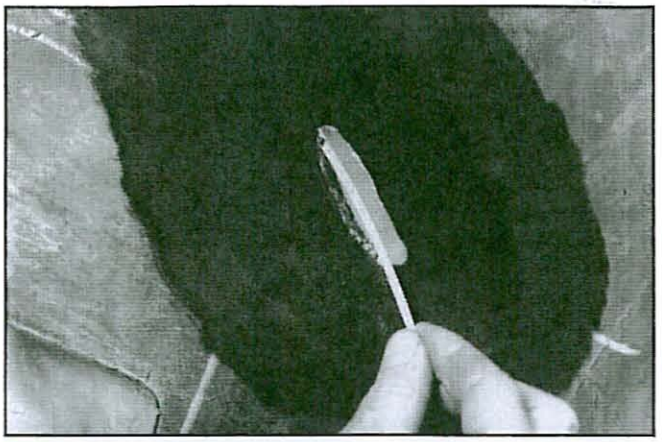


18 Before buffing the inner liner, sweep out the inside of the tire to remove loose dirt. This will assure that the buffed area is not contaminated after it is cleaned.



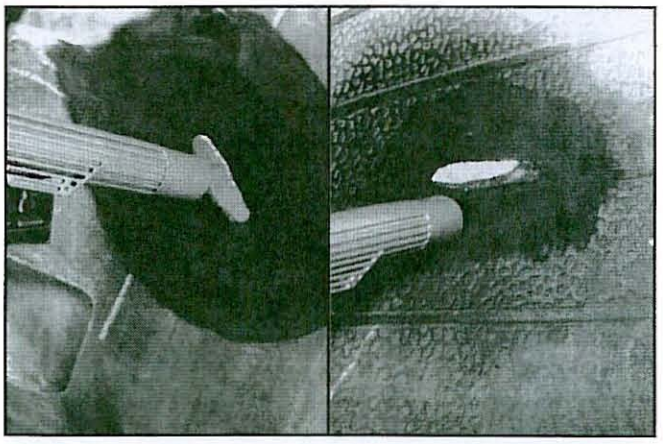
19 If using a spotter, buff a 2"(50mm) area around the injury on the inner liner with a Rubberhog contour wheel #RH-118. If using a section mold or chamber for curing go to step #60, for inner liner preparation.

20 Measure the depth of the injury at its deepest point for cure time calculation when using a spotter or section mold. The total calculation can not be made until the injury has been filled, write the depth on the outside of the tire for future reference.

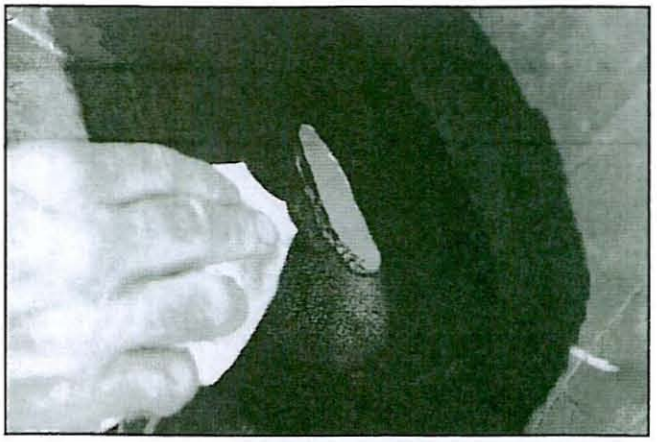


21 Measure the largest area of cord damage to determine the size of repair.

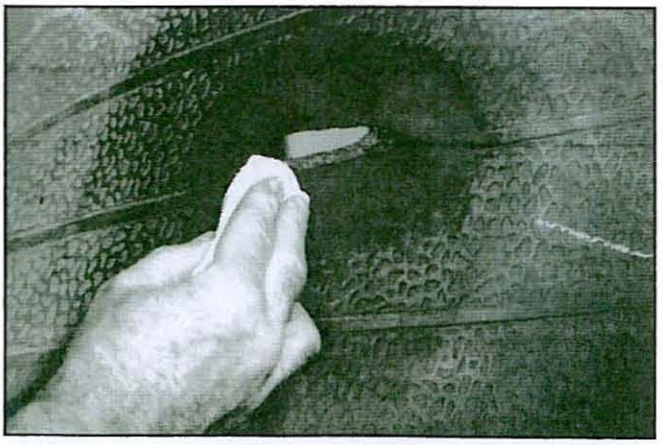
22 Determine the ply rating of the tire, then refer to the Tech T.O.R chart using the injury size and ply rating of the tire to select the proper repair unit. Make note of the selected repair unit.



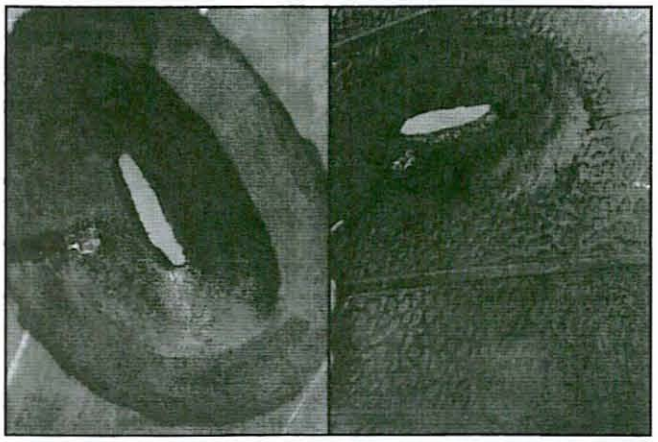
23 Vacuum the complete skive area and inner liner. Do not use an air line, air lines contain oil and moisture that will contaminate the buffed surface. (If using a wire brush to clean, vacuum after brushing.)



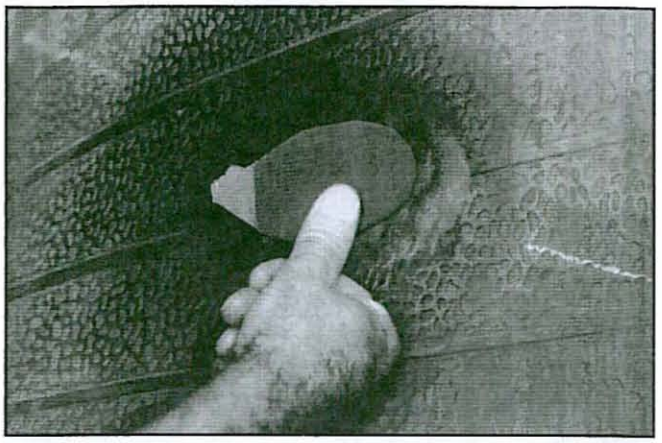
24 Or clean with Tech rub-o-matic #704 and a clean, lint free cloth. If using #704 allow the area to dry 3 to 5 minutes.



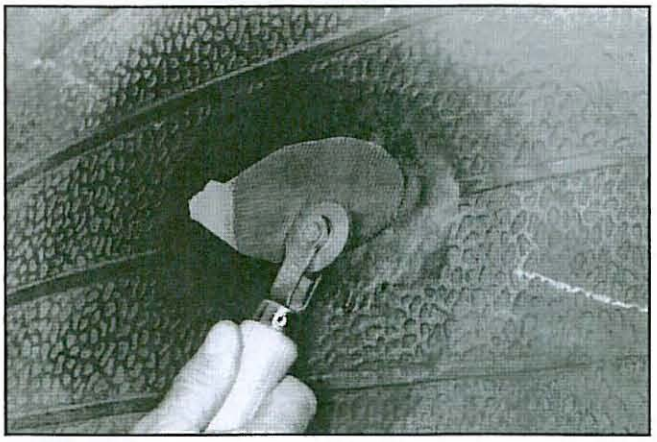
25 Clean the inner liner using either the brush or Rub-O-Matic and a clean, lint free cloth. Again, if using solvent allow 3 to 5 minutes for drying time, allow more drying time in humid or cold climates. Also double the drying time if cords are exposed.



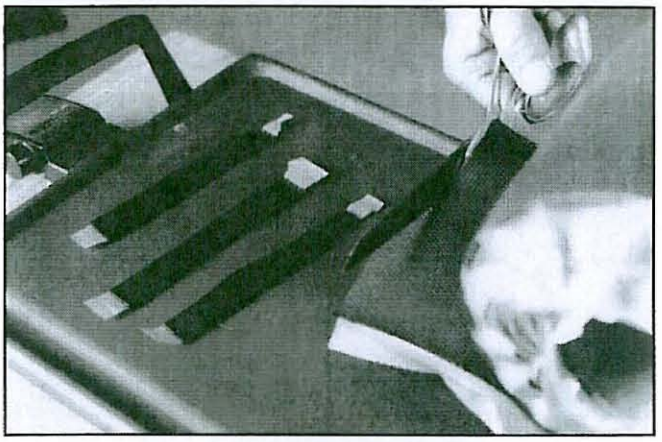
26 Apply a thin even coat of Temvulc #1082 to the entire skive area and the buffed inner liner surface. Allow 15 minutes drying time, extend the drying time in humid or cold climates and double the drying time if applying to exposed cord.



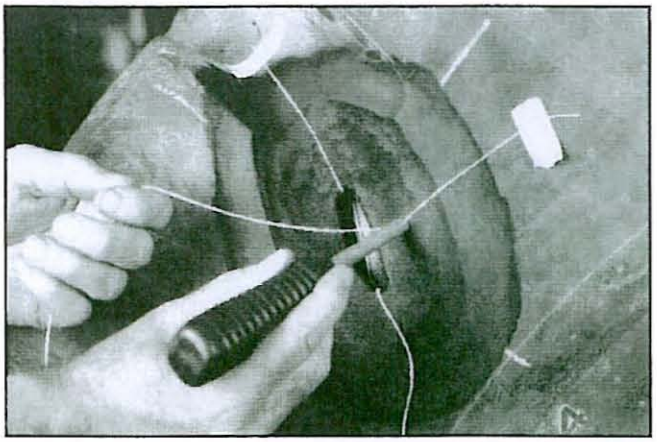
27 Cut a piece of 1/8"(3mm) thick Vul-Gum approximately 1"(25mm) larger than the injury. This is used as a platform and is placed on the inner liner.



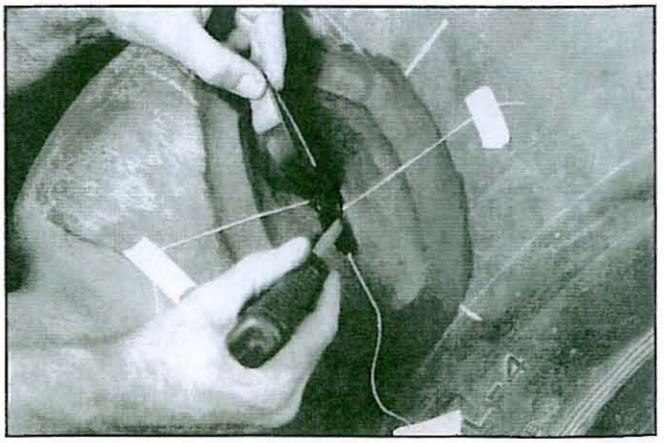
28 Stitch down the platform thoroughly from the center outward.



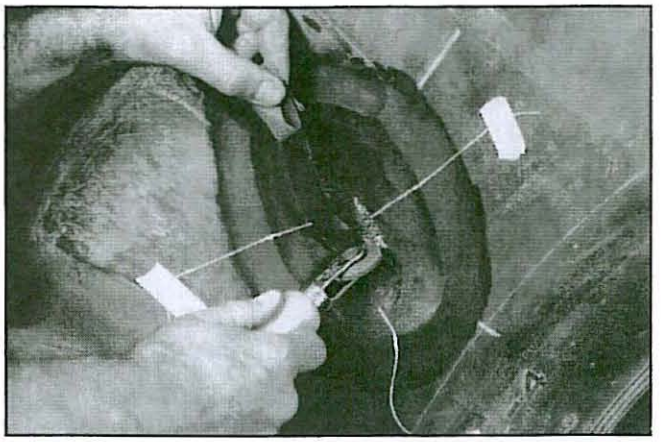
29 Cut enough strips of Vul-Gum to fill the injury and place on a warming tray set at a temperature of 120 to 130 degrees F.(50C to 55C). Warming of the filler rubber reduces the chance of trapping air. Use 1/8"(3mm) rubber at the base and up the walls of the skive and 1/4"(6mm) rubber to finish the filling process.



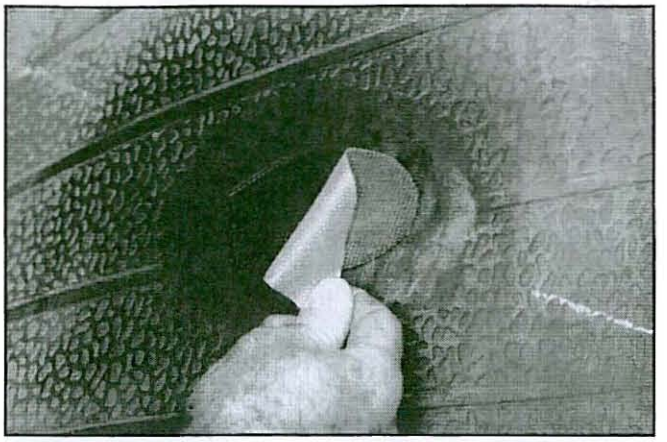
30 Before filling the skive, places small diameter cotton cords approximately 1½"(35mm) apart. The vent cords should extend 2"(50mm) beyond the skive, then run along the skive, then across the platform and up the other side extending beyond the other side of the skive. These vent cords release air (intra ply pressure) within the cord body of the tire during the curing process.



31 Using the preheated strips of 1/8"(3mm) rubber begin filling the tire, use a #986 or 987 skive packing tool to assure that no air is trapped during the filling process.



32 Once filled to a point where a stitcher can be used, finish the filling process using a stitcher until the skive is completely filled 1/8"(3mm) to 1/4"(6mm) above the tire surface.
When preparing a tread or shoulder injury that falls within a tread groove, it is necessary to dam the tread groove to prevent rubber from flowing out of the skive. The dams can be made from regrooved rubber, buffing dust, contour bags, aluminum foil or plaster of paris.

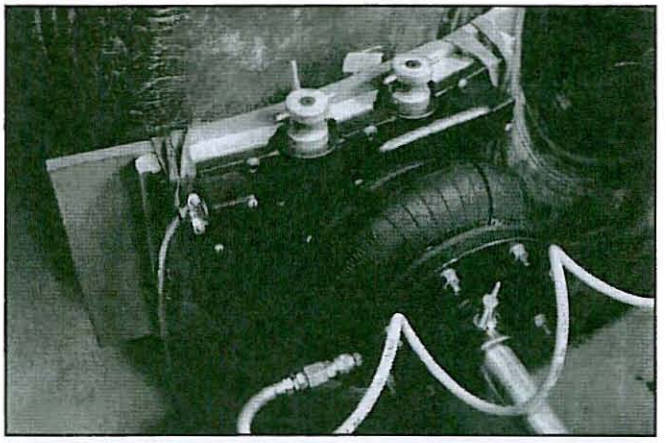


33 Remove the protective poly from the platform.

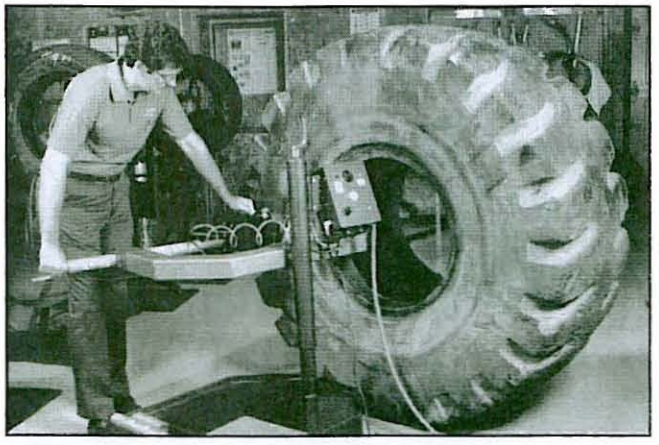
Platform	- 1/8"(3mm)
Section Depth	- 1 1/2"(35mm)
Overbuild	- 1/4"(6mm)
Total	- 1 7/8"=15/8"(44mm)

15 x 10 = 150 minutes of cure time at 300 degrees F (149 degrees C)

34 To calculate the cure time use a formulation of 10 minutes per every 1/8"(3mm) of thickness at 300 degrees F. (149 degrees C). Also add the spotter manufacturer's recommended warm up time to the curing time when the spotter is applied cold. An example of a cure time calculation is above.

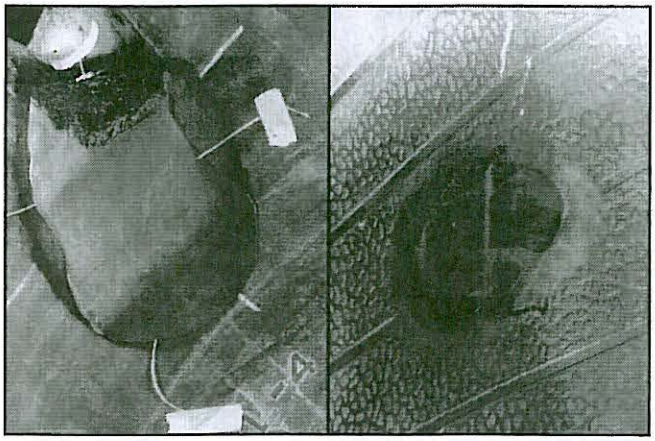


35 Before applying the spotter, make sure that the inside and outside plates properly contour to the tire.

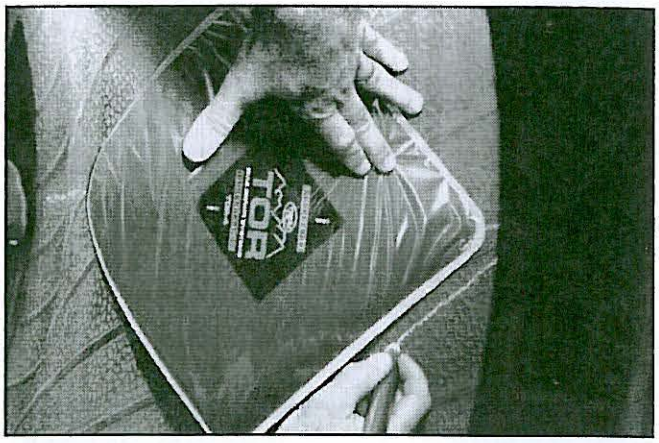


36 Using the index lines, center the spotter over the injury. Tighten the spotter onto the tire according to the spotter manufacturer's recommendations.

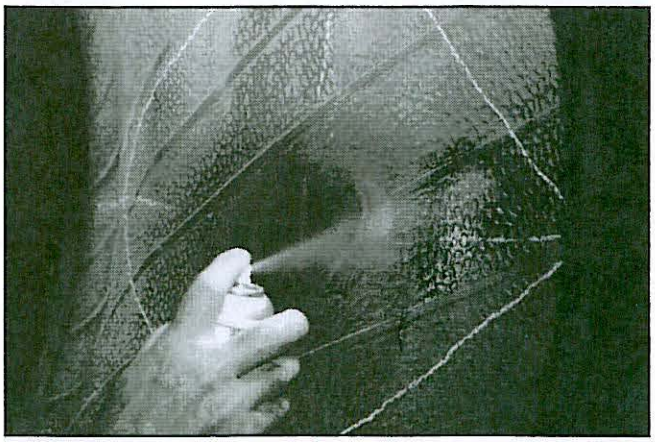
37 Apply curing pressure to the spotter and turn the timer to the allotted cure time. Do not leave the curing system unattended.



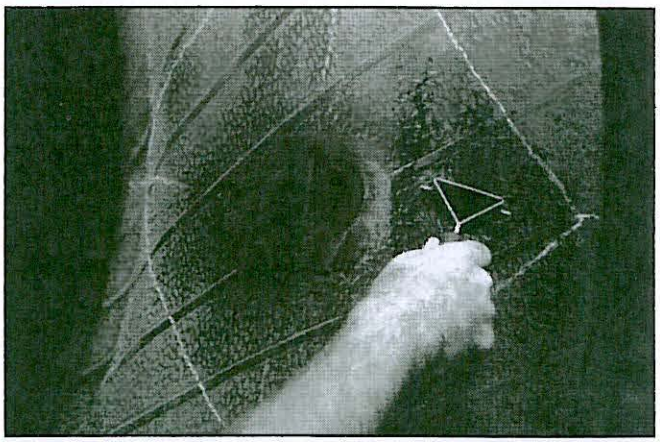
38 Once the allotted cure time is complete, remove the spotter and allow the tire to cool to room temperature. Do a thorough inspection of the cured plug for complete vulcanization.



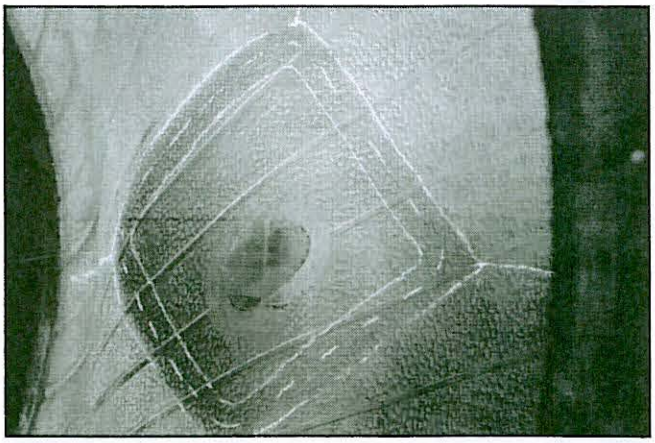
39 Using the index lines, center the repair unit over the injury and mark a perimeter 1"(25mm) larger than the repair. This serves as a guide for buffing.



40 Preclean within the outlined area by applying Rub-O-Matic #704-A to the inner liner.



41 While the area is still moist use a #933 scraper to remove all contamination from the inner liner surface. This process should be repeated two or three times to assure a clean surface.



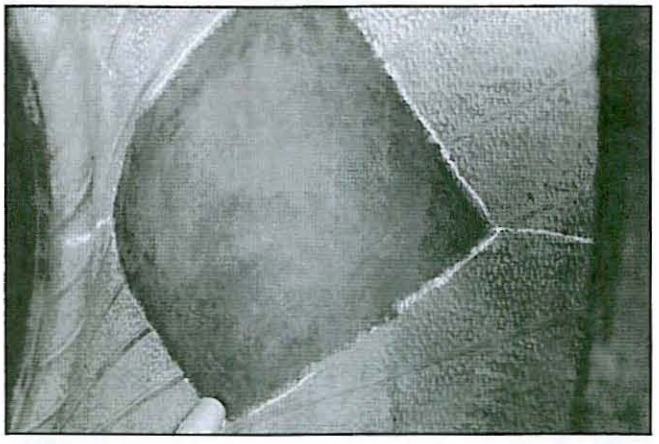
42 Removal of the gray colored butyl inner liner is recommended on tires with a ply rating greater than 20. The removal of the inner liner is recommended for improved adhesion. Above is an illustration of how to mark the inner liner for removal.

*Refer to steps 64 and 65 for outlining procedure.

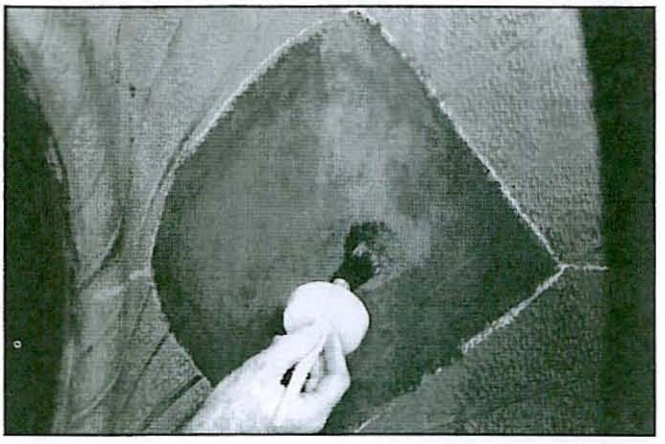
43 Using a rough grit contour wheel #RH-122 on a low r.p.m. buffer, remove the liner within the smallest area marked on the tire. The wheel should always be turning towards the area being removed, this prevents lifting the liner. Buff only until the calendering rubber beneath the inner liner is lightly exposed. You will notice a color change when the calendering rubber is exposed.

44 Switch to a medium or fine grit contour wheel #RH-118 or #RH-120 on a low r.p.m. buffer, and texturize the calendering rubber to an **even velvet texture.** Also from this area, the inner liner is beveled towards the original repair outline. The surface of the inner liner beyond the repair unit is then lightly buffed.

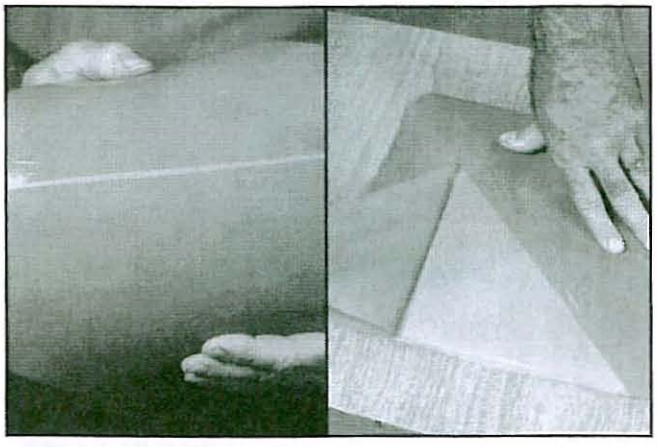
45 Use a wire brush to loosen all buffing dust from the inner liner.
*See note at the end of this manual.



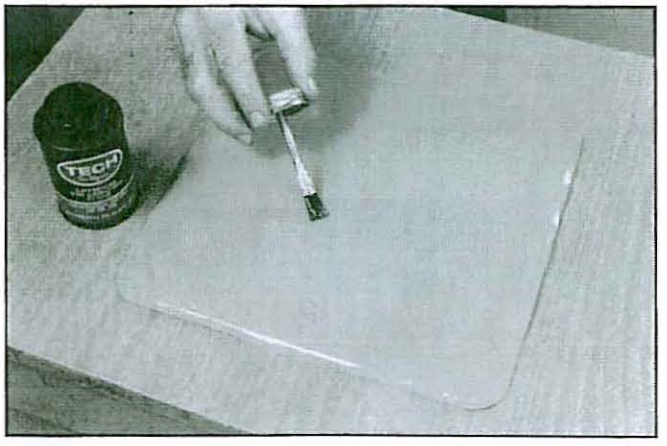
46 Vacuum all buffing debris from the skive area and inner liner.
Another option for cleaning the inner liner is to use Rub-O-Matic and a clean lint free cloth to remove buffing dust after vacuuming. If this procedure is used, allow three to five minutes drying time after cleaning, longer if cold or humid. (Also double the drying time if there is any exposed cord).



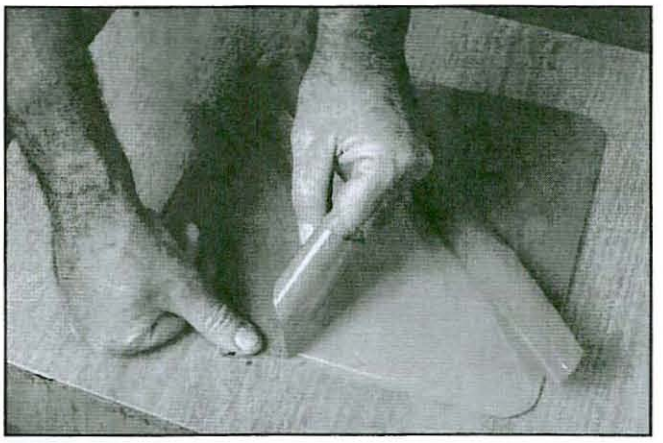
47 Cement the entire cleaned area with Tech Chemical Vulcanizing Fluid #760, and allow three to five minutes drying time. If there is any exposed fabric a second coat of #760 should be applied and double the drying time.



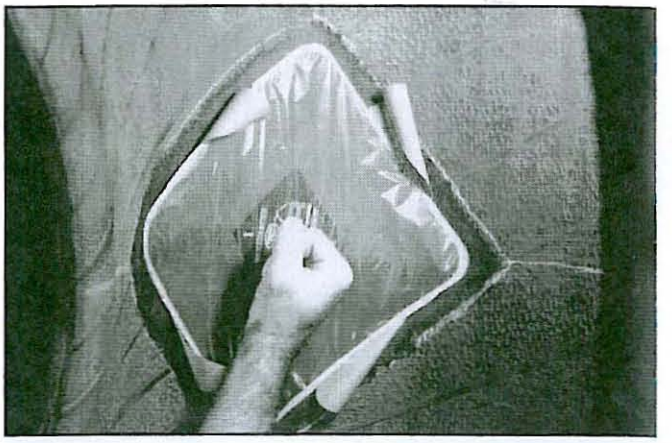
48 Break the perforation in the protective poly and remove the poly from the repair.
Caution: Do not touch the grey cushion gum. This will lead to contamination of the cushion gum.



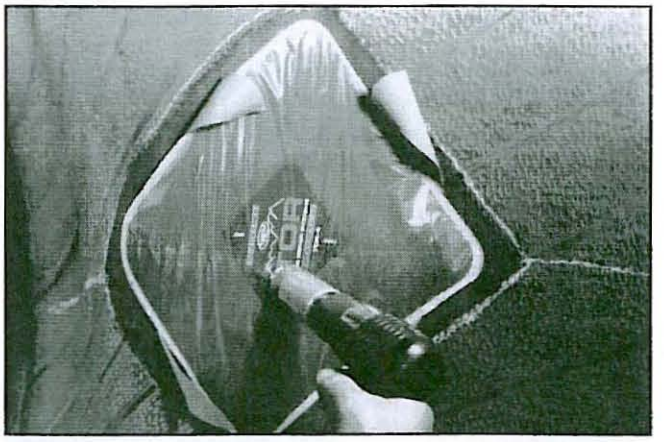
49 Apply a coat of vulcanizing fluid to the back of repair and allow to dry. This is done to maximize adhesion of the repair unit to the tire.



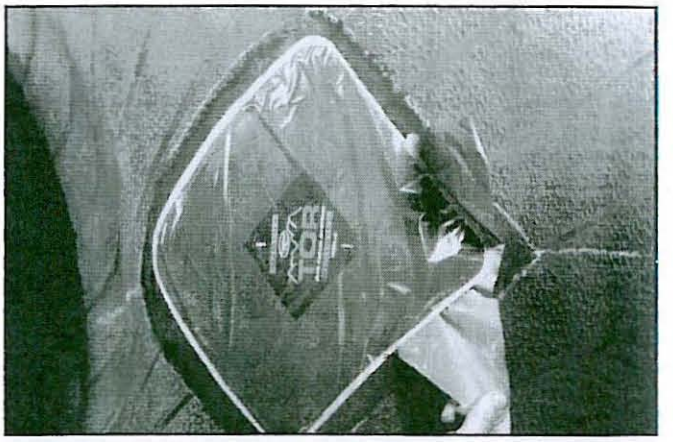
50 When the vulcanizing fluid is dry, reapply the blue poly to the back of the repair. Expose the center 3" (75mm) to 4" (100mm) of gray cushion gum for application of the repair.



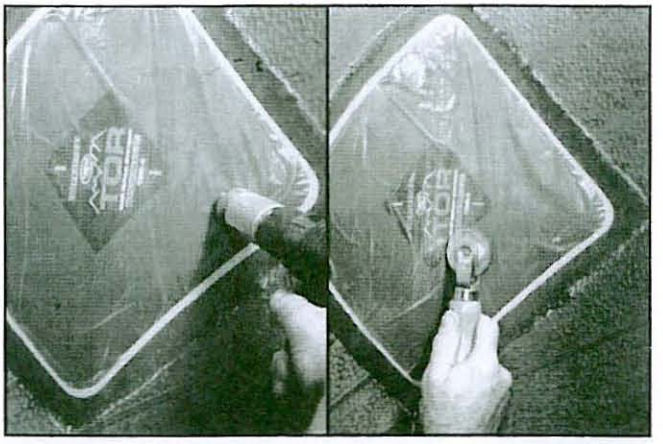
51 With the tire in a relaxed position and the repair area away from the footprint of the tire, center the repair over the injury with the bead arrow pointed towards the bead of the tire. Use the previously marked index lines to aid in centering.



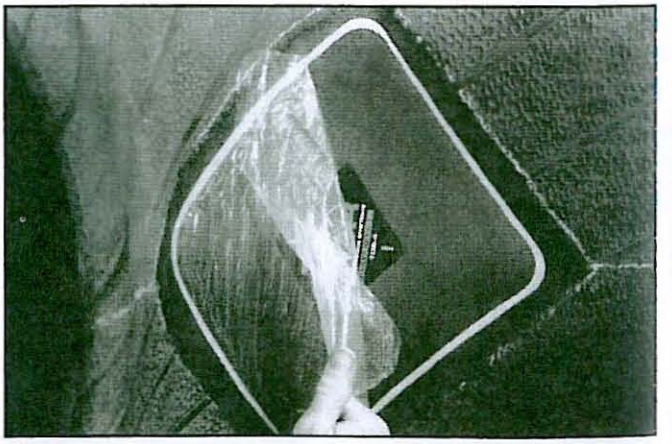
52 Use a mallet or air hammer to force the repair onto the buffed surface from the center outward.
Note: The tire must be free of all debris prior to using an air hammer.



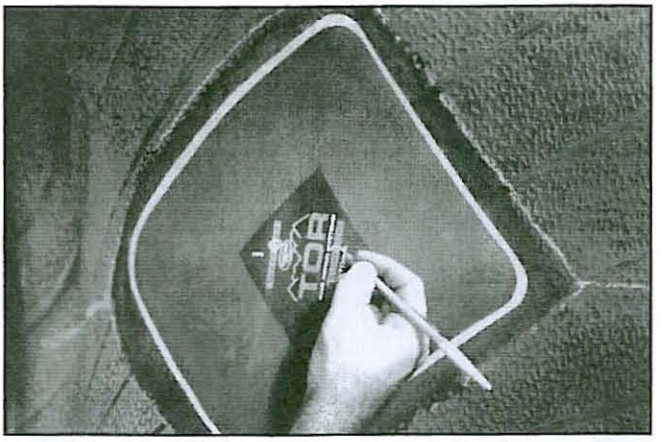
53 Remove approximately 2"(50mm) of poly at a time. Removing 2"(50mm) at a time helps to prevent trapped air.



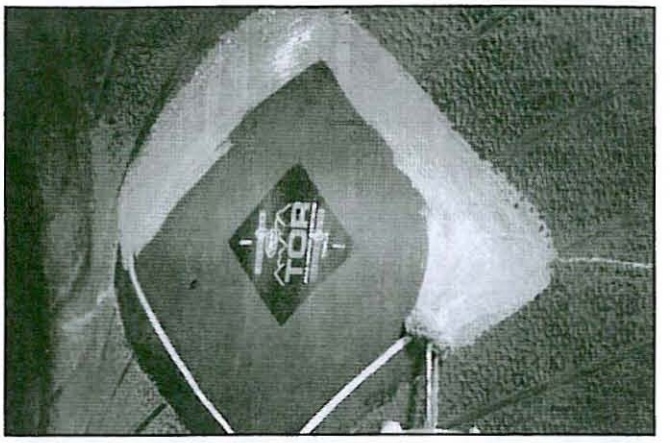
54 Hammer and stitch approximately 2"(50mm) of the repair at a time to prevent air trappage. Do this until the entire repair is completely hammered/stitched to the inner liner.



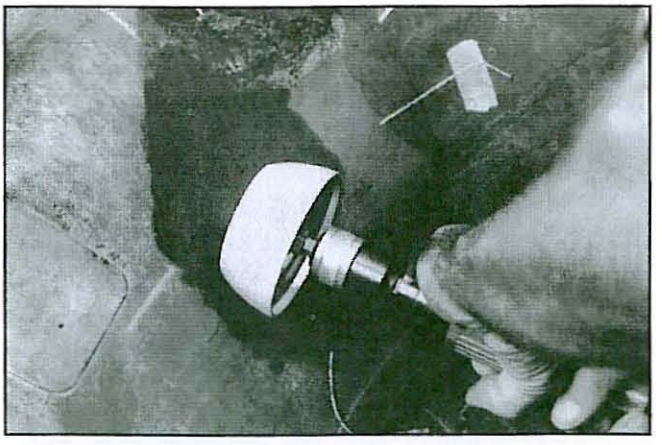
55 Remove the protective clear poly from the top of the repair unit. Inspect the repair unit for air pockets, if present restitch to remove air.



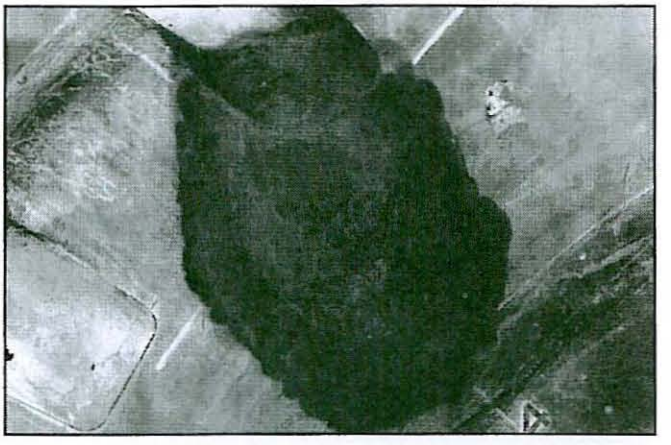
56 Record the date when the repair was completed and it is also recommended to record shop name or D.O.T. number.



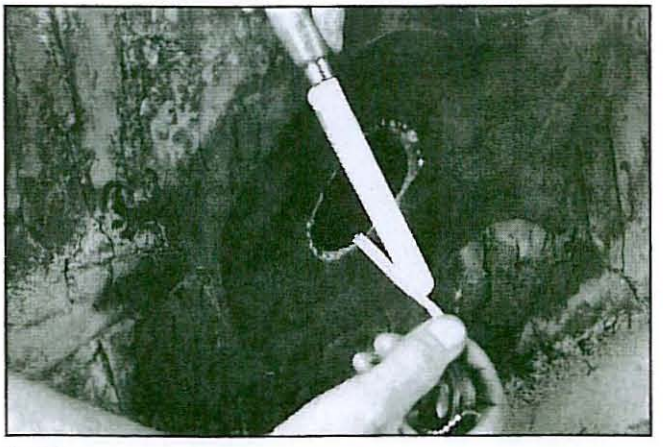
57 When repairing a tubeless tire, apply security coat #738 to the edge of the repair and to any over buffed area. This is done to assure proper air retention after the repair is complete.



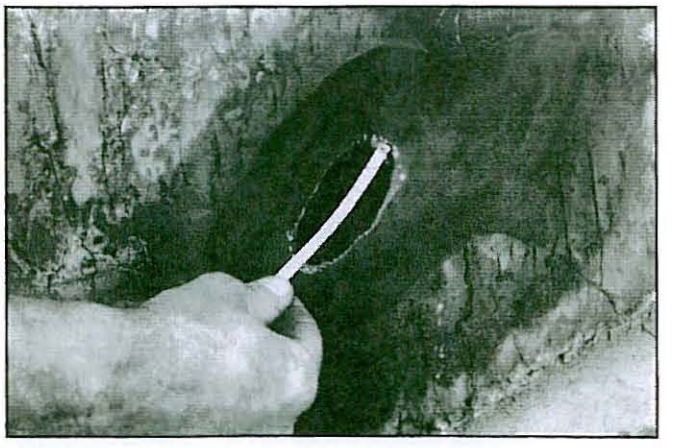
58 Mechanically buff the section on the outside of the tire with the buffing wheel turning from the center of the section towards the outside, buff down even with original tire' s surface. Make sure that the section is completely buffed smooth to the tire' s outer surface. This will allow the section to flex with the tire properly and not develop a hot spot.



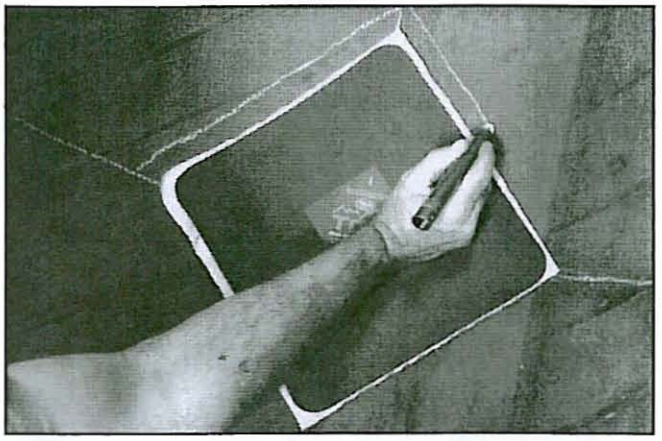
59 Mounting the tire on a rim and inflating to 50 P.S.I. for 24 hours is a recommended step to increase adhesion. After 24 hours, the tire is ready to be returned to service.



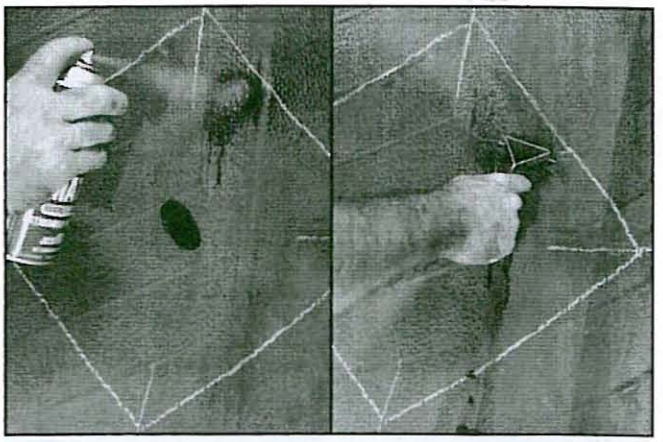
60 **Mold and Chamber Cure**
If using a section mold or chamber, measure the depth of the skive at its deepest point to determine cure time. The calculation of the cure time can not be completed until after the skive has been filled, make note of the depth for future reference.



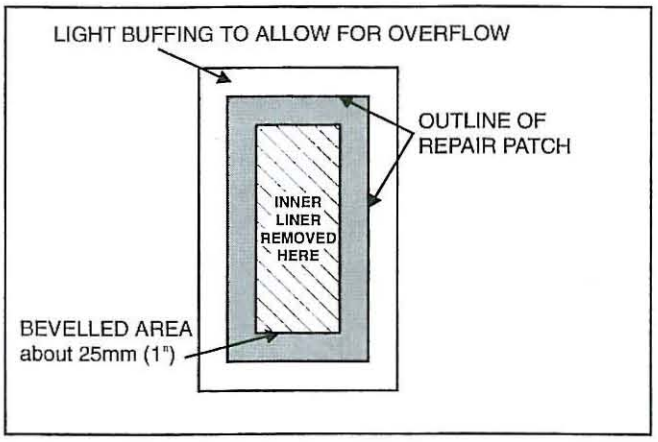
61 Measure the largest area of cord damage to determine injury size. Determine the ply rating of the tire and refer to the Tech T.O.R. repair chart using the size of injury and ply rating to select the proper repair unit.



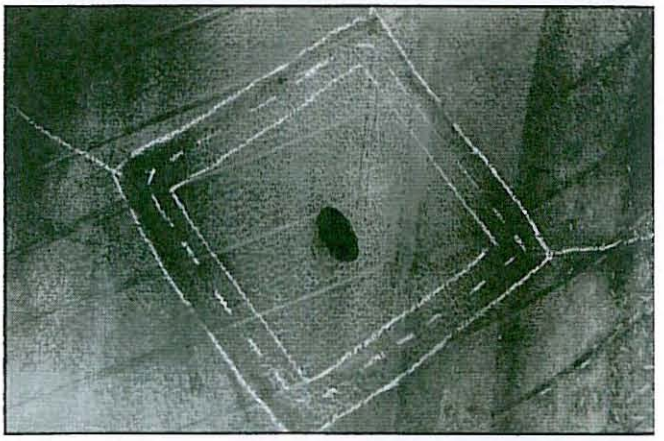
62 Center the predetermined T.O.R. repair over the skive and draw a perimeter approximately 1"(25mm) from the edge of the repair. This serves as a guide for cleaning and buffing.



63 Pre-clean within the marked area by applying Rub-O-Matic aerosol #704-A. While the area is still moist remove contaminating substances using a Tech #933 scraper. Repeat this process 2-3 times to assure that all contaminates are removed or clean with Rub-O-Matic #704 and a clean cloth.

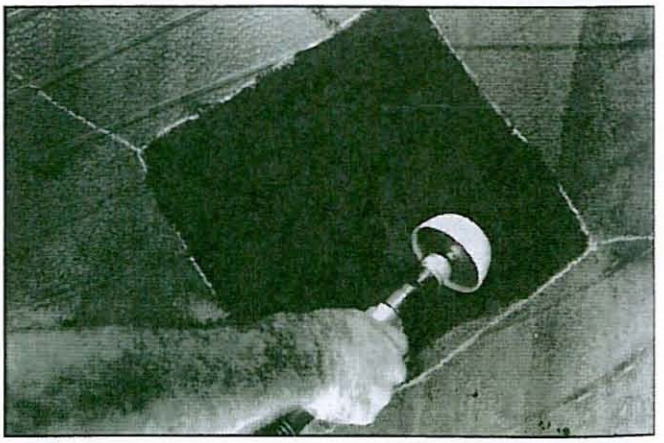


64 Removal of the gray butyl inner liner is recommended on tires with a ply rating greater than 20. This is done to achieve maximum adhesion of the repair unit to the tire. Above is a diagram of how to outline the repair area for inner liner removal.

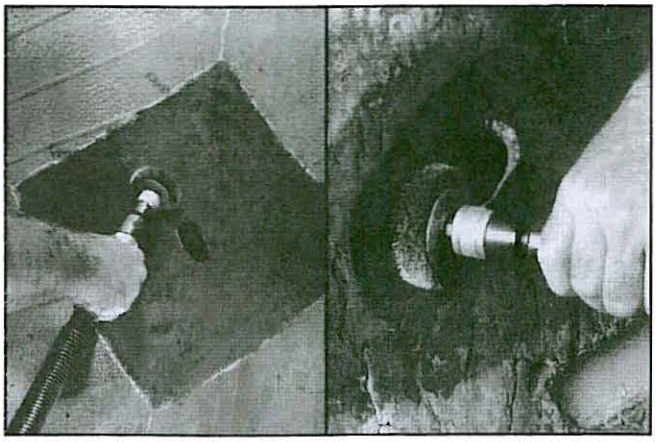


65 Place the repair over the skive and outline the perimeter of the repair. Remove the repair unit and trace a smaller line 1"(25mm) inside the outline of the repair unit.

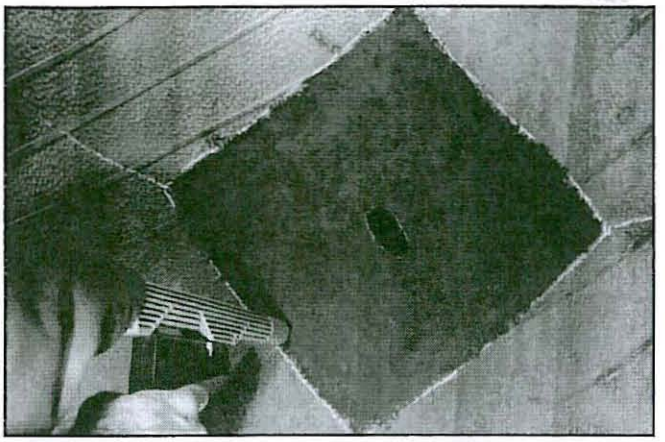
66 Using a rough grit contour wheel #RH-122 on a low r.p.m. buffer, remove the inner liner within the smallest marked area. Be sure that the wheel is always turning towards the area being removed, this prevents lifting of the inner liner. Buff only until the calendering rubber beneath the inner liner is lightly exposed. You will notice a color change in the rubber when calendering rubber is exposed.



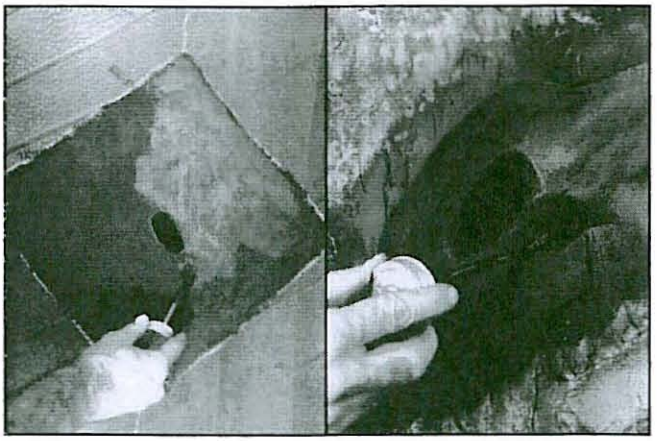
67 Switch to a medium grit or fine grit contour wheel #RH-118 on a low r.p.m. buffer and texturize the calendering rubber to an **even velvet texture.** Also, from this area, the inner liner is beveled towards the original repair unit outline. The surface of the inner liner beyond the repair unit is then lightly texturized .



68 After buffing, clean the buffed surface on the inner liner and the skive area with a wire brush. Cleaning with Rub-O-Matic and a clean cloth after vacuuming is also a way of cleaning the tire. If Rub-O-Matic is used allow 3- to 5 minutes for drying time, if there are any exposed cords, double the drying time.

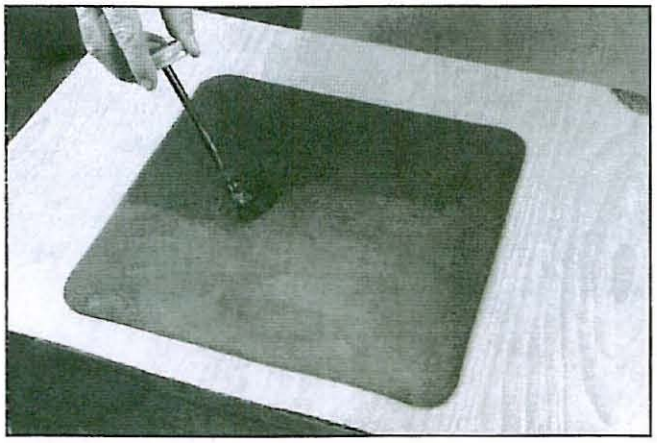


69 Vacuum the skive area and the inner liner to remove buffing debris. Do not use an air line for this process, air lines contain oil and moisture that will contaminate the buffed surface.

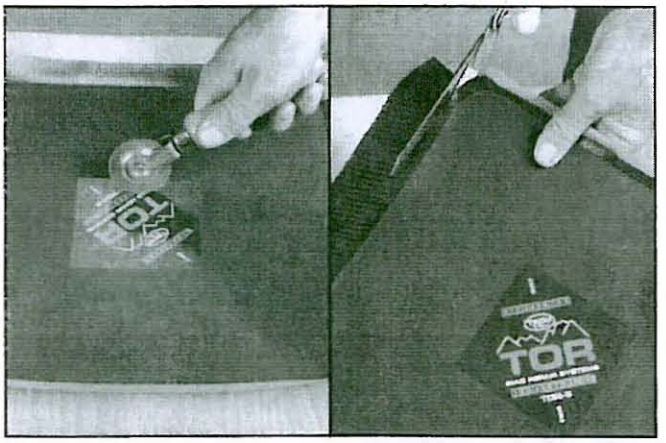


70 Apply Temvulc #1082 to the entire buffed inner liner and the skive area on the outside of the tire and allow to dry for 15 minutes, longer in humid or cold climates. Also double the drying time when applied to exposed cords. If using a chemical repair use #760 chemical vulcanizing fluid and allow 3 to 5 minutes for drying time (#760 requires two coats to the exposed cords).

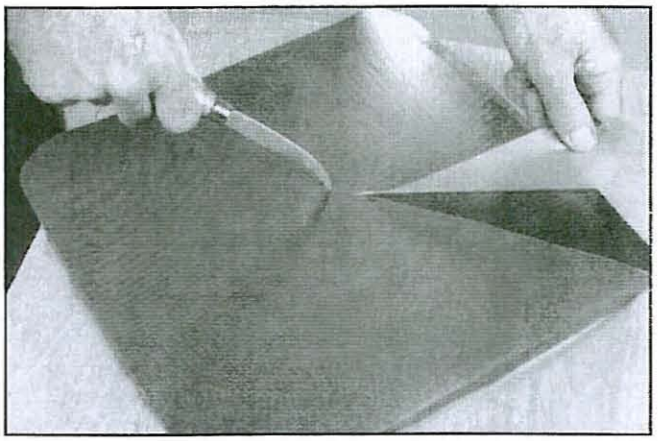
71 Remove the cloth from the cloth back repair, be sure not to touch the back of the repair, this will contaminate the repair's bonding surface.



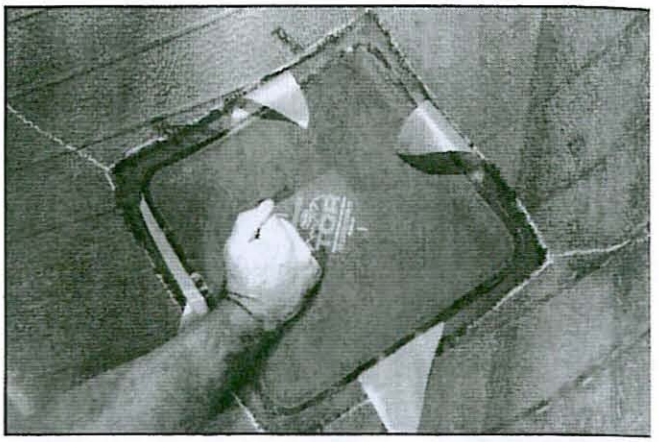
72 Apply Temvulc to the back of the repair unit and allow to dry for 15 minutes, longer in humid or cold climates. After drying, reapply the cloth to the repair.



73 Place the repair onto approximately 1/16"(1.5mm) or 1/8"(3mm) Vul-Gum and stitch from the center out. When thoroughly stitched, cut Vul-Gum approximately 1/4"(6mm) from the edge of the repair unit.

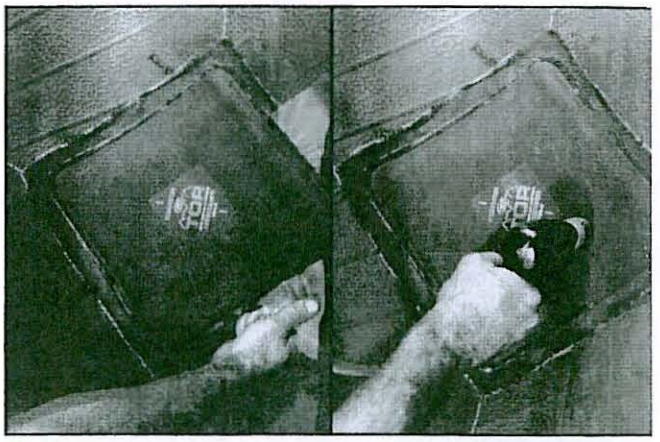


74 Bend the repair slightly and slit the protective poly in the opposite direction of the bead arrows. Remove the poly to expose 3"(75mm) to 4"(100mm) of the Vul-Gum. If using a chemical repair, break the perforation in the blue poly and expose 3"(75mm) to 4"(100mm) of the gray cushion gum.



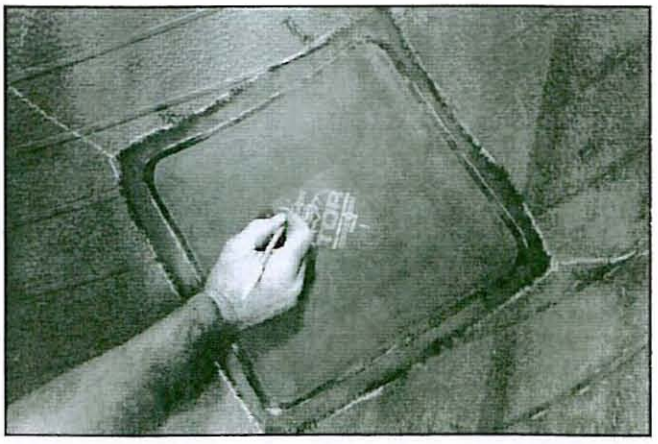
75 With the tire's beads in a relaxed position, and the tire's weight off of the repair area, center the repair over the injury with the bead arrow pointing towards the bead of the tire. Use the indexing lines to aid in centering the repair.

76 Use a mallet or air hammer to pound the repair into place, follow up the hammering by stitching the repair unit from the center out.

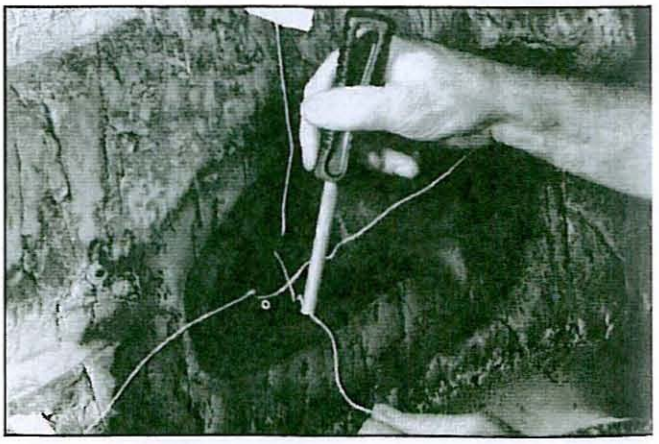


77 Remove approximately 2"(50mm) of blue poly at one time and hammer/stitch until all of the repair is stitched into place. If using a chemical repair, remove the clear poly protective covering, if using an uncured repair remove the white poly protective cover at this point.

Note: If the tire is to be cured in a chamber, strip the outer edge of the repair and over buffed area with 1/16"(1.5mm) Vul-Gum. 2" to 3" wide material should be used depending on the size of the repair and amount of over buff.

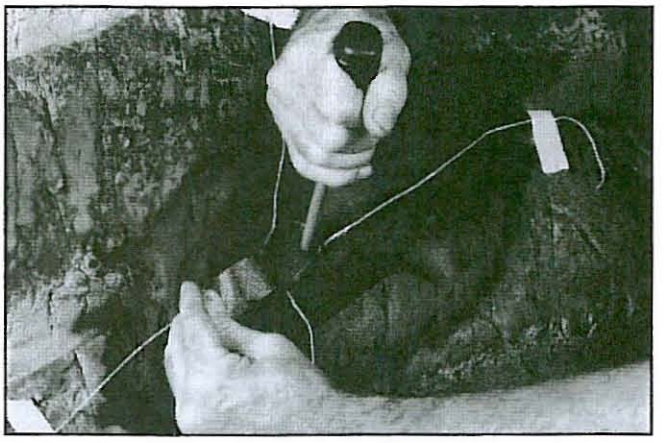


78 Record the date when the repair was performed on the T.O.R. bead logo. It is recommended to also record the name of the shop or D.O.T. Number on the repair for proper record keeping.

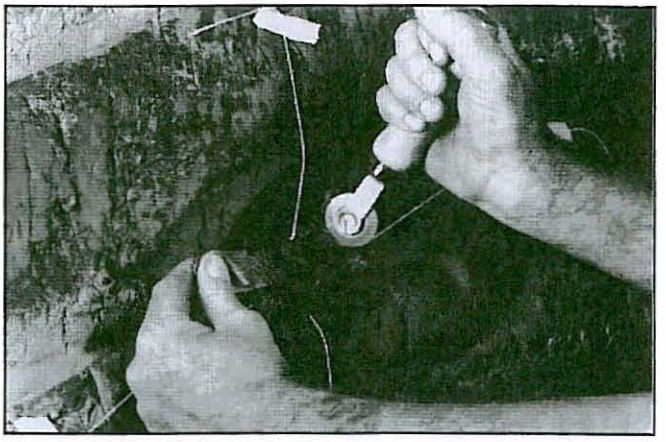


79 Before filling the skive, place small diameter cotton cords approximately 1 ½" (40mm) apart. The vent cords should extend 2"(50mm) beyond the skive, run along the skive, then across the platform and extend out beyond the skive on the other side. The vent cords are used to release intra-ply pressure or air within the cord body of the tire.

Note: Venting is also recommended in open steam chamber applications.



80 Using a blunt object such as Tech #986 or #987 packing tool, begin the filling process using preheated strips (120 to 130 degrees F, 50 to 55 degrees C) of 1/8" (3mm) Vul-Gum. Fill the 90 degree area and up the walls of the skive with the 1/8" (3mm) Vul-Gum.



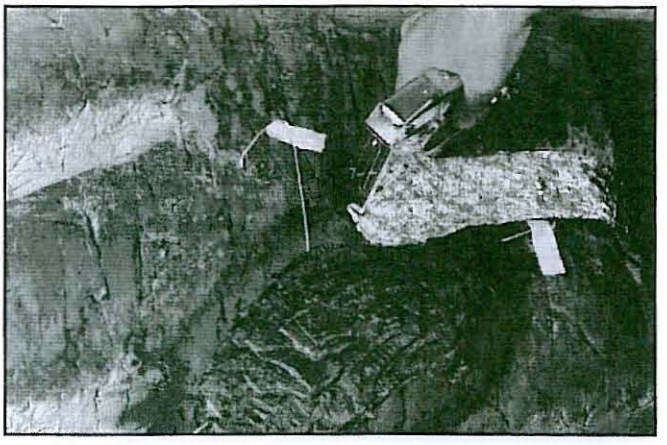
81 Finish the filling process with a stitcher and 1/4"(6mm) Vul-Gum. The skive should be built up 1/8"(3mm) to 1/4"(6mm) above the tire' s outer surface so that even pressure can be applied to the skive fill.

Caution: Do not contaminate the buffed surface or fill rubber.

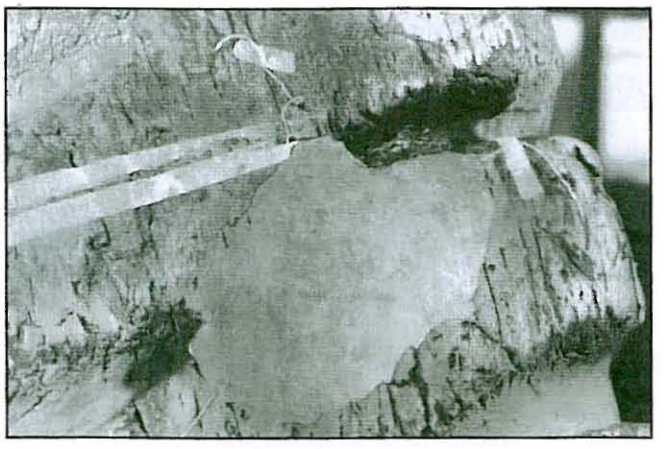
Repair Unit	--	¼" (6mm)
Section Depth	--	2" (50mm)
Overbuild	--	¼" (6mm)
Total	--	2 ½" (62mm)=20/8"

20 x 10 = 200 minutes at 360 degrees F (149 degrees C)

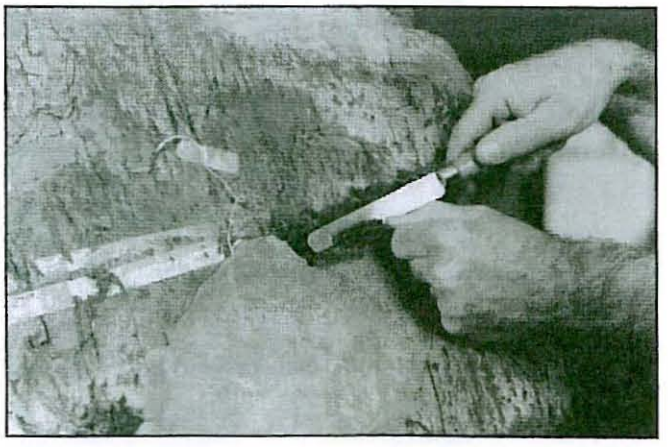
82 The length of cure for mold and chamber cure is based on the depth of the injury and thickness of the repair and the overbuild. The cure rate for Tech Vul-Gum is 10 minutes per 1/8"(3mm) of thickness at 360 degrees F (149 degrees C). An example of cure time calculation is above.



83 When repairing tread and shoulder injuries, it will be necessary to dam off the tread grooves to stop the flow of rubber during curing. The tire is ready to place into the mold or chamber following manufacturer' s operating instructions.

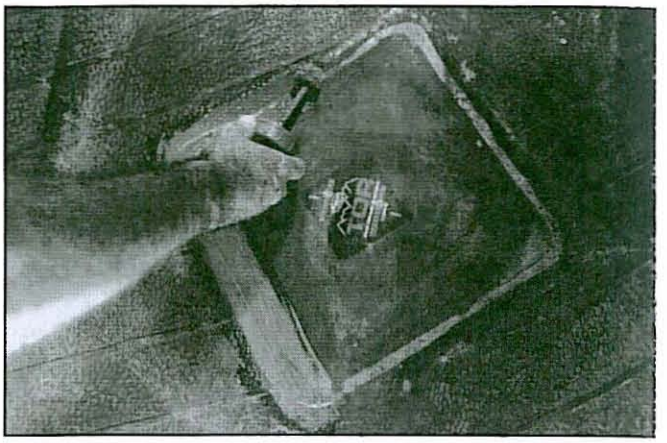


84 After curing, allow the tire to cool down to room temperature before buffing the exterior skive. Inspect the repair unit to make sure that it has cured properly, with no air trapage or loss of pressure during the process.

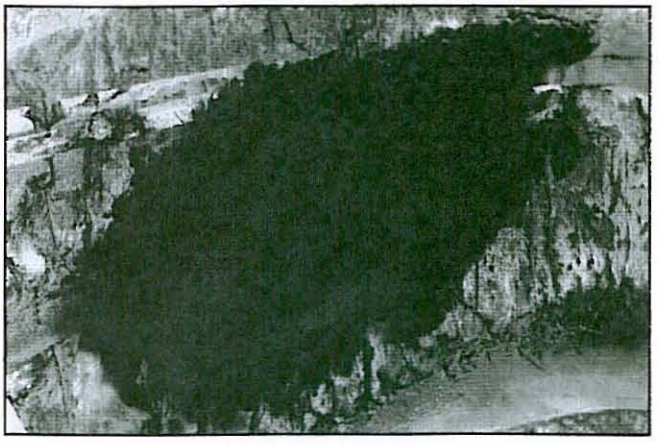


85 Cut away any loose and/or semicured overflow from the exterior skive area.

86 Buff the exterior skive back to the same contour as the tire. It is best to use an inner liner wheel on a low r.p.m. buffer. Make sure that the wheel is turning away from the center of the skive. When the wheel is turning away from the center it prevents the wheel from attacking the edges of the skive fill.



87 Coat the repairs edge and any over-buffed areas outside the repair with Security Coat #738 to assure proper air retention. Security Coat is made from the same type of rubber as the inner liner to maximize air retention.



***NOTE: IT IS RECOMMENDED ON HAULAGE TIRES WITH A PLY RATING OF 20 PLY RATED AND HIGHER TO EXPOSE A SMALL AREA OF CORD AFTER REMOVING THE INNER LINER. CHECK THE CORD BODY WITH A PROBE FOR DETERIORATION, IF DETERIORATED, REMOVE THE FIRST PLY OF CORD UNDER THE REPAIR. THEN EXPOSE A SMALL AREA OF CORD ON THE NEXT PLY, IF IT IS DETERIORATED, REMOVE THE SECOND PLY. IT IS NOT RECOMMENDED TO REMOVE MORE THAN TWO PLIES.**

88 The tire is now ready to be returned to service.

T.O.R. (Off-The-Road) Bias Repair Chart

Injury Size In Inches/ mm	PLY RATING										
	6 - 8	10 - 12	14 - 16	18 - 20	22 - 24	26 - 28	30 - 36	38 - 44	46 - 50	52 - 58	60+
½ / 15	1	1	1	2	2	2	2	2	2	2	2
1 / 25	2	2	2	2	2	2	2	2	3	3	4
1½ / 40	2	2	2	2	2	3	3	3	4	4	5
2 / 50	2	2	3	3	3	3	3	3	4	4	5
2½ / 65	2	2	3	3	3	4	4	4	5	5	6
3 / 75	3	3	4	4	4	5	5	6	6	6	7
4 / 100		4	4	4	5	5	6	6	7	7	8
5 / 125			4	5	5	6	6	7	8	8	8
6 / 150			5	5	6	7	7	8	8	8	9
7 / 175				6	7	7	8	8	9	10	10
8 / 200					7	8	9	9	10	10	11
9 / 225					8	8	9	9	10	11	11
10 / 250						9	9	10	11	11	11

TREAD INJURIES ONLY

11 / 275						9	10	10	11	12	12
12 / 300						10	10	10	12	12	12

HOW TO USE THIS CHART: For proper repair selection, determine the size of the injury in the tire by measuring the largest cord area removed. Locate the correct injury size along the left vertical column of this chart. Now locate the tire's ply-rating along the top horizontal column of the same chart. The unit number in the square where these two columns intersect is the proper repair to use.

Notes:

If you have any questions regarding this repair process, call Tech's repair hotline 1-800-433-TECH or 1-800-336-TECH.

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