Tire Repair Procedures - Training Guide

For Passenger, Light Truck and Truck Tires

PREMA™

Taking Care of Your Tires.

PREMA Products, Inc. - Tire Repair Procedures Training Guide For Passenger, Light Truck and Truck Tires

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WARNING: Use of products in this repair guide contrary to specifications and directions may result in personal injury and/or property damage.

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PREMA Kits & Cabinets

Custom Design Passenger Kits, Truck Kits, and Cabinets are available upon request.

PREMA PCAB-2 Cabinet Kit

Everything you need to repair Bias and Radial Passenger and Truck Tires.

PCAB-2 Pre Packed Cabinet Kit

SKU #	Part #	Description
2009120	**PCAB-2**	Pre Packed Cabinet Kit

Contents: 440 Assorted Repairs

2 PT-2 Small Round Tube	1 PCS-2 Wire Lead Stem
1 PT-3 Medium Round Tube	1 PCS-3 Wire Lead Stem
1 PT-4 Large Round Tube	1 PC-2 Wire Lead Combi
2 PR-110 Radial	1 PC-3 Wire Lead Combi
2 PR-112 Radial	1 PC-4 Wire Lead Combi
1 PR-120 Radial	1 CC-6 Cutter
1 PUR-2 Universal Round	1 CC-8 Cutter
1 PUS-3 Universal Square	1 CC-10 Cutter
1 PPC-16 Spray Pre-Buff	1 PREMA Cabinet
1 PLOS-16 Liner Sealant	1 PFC-8 Cement Fast Dry
1 PLD-32 Leak Detector	1 PBS-32 Bead Sealer

PREMA Shop Kit

Everything you need to repair Bias and Radial Passenger Tires.

SKU #	Part #	Description
2009145		PREMA Shop Kit

Contents: 3050-RB Repair Station & 2009140 INDUSTRY STANDARD KIT - PASSENGER

3050-RB REPAIR STATION
- Handles Passenger and Light Truck Tires
- Adjustable Roller Platform
- Wide, Stable Base
- Convenient Tool Shelf

INDUSTRY STANDARD KIT - PASSENGER

PTB	Empty Toolbox	6068	Adapter for CC-6
PC-2	Combi Repair Units (Box-15)	PSCS	Spiral Cement Tool
PUS-2	Universal Square Patch 2 (20)	932	Tire Scraper
PCS-2	Stem w/Guide Wire (20)	6004	Stitcher 1/8"
PFC-8	Ultra Fast Dry (8oz)	6014	Brass Brush
PPC-16	Prebuff Cleaner Spray (16oz)	101000929	Flex Knife
PLOS-16	Innerliner Overbuff (16oz)	62W	White Crayon
CC-6	Carbide Cutter	PREMA Nail Hole Repair Procedures Manual	

Industry Standard Kit - Passenger

Conveniently Packaged **INDUSTRY STANDARD** Repair Kits

SKU #	Part #	Description	Qty
2009140		Industry Standard Kit - Passenger	1

Contents:

PTB	Empty Toolbox	PSCS	Spiral Cement Tool
PC-2	Combi Repair Units (Box-15)	932	Tire Scraper
PUS-2	Universal Square Patch 2 (20)	6004	Stitcher 1/8"
PCS-2	Stem w/Guide Wire (20)	6014	Brass Brush
PFC-8	Ultra Fast Dry (8oz)	101000929	Flex Knife
PPC-16	Prebuff Cleaner Spray (16oz)	62W	White Crayon
PLOS-16	Innerliner Overbuff (16oz)	PREMA Combi Repair Manual	
CC-6	Carbide Cutter	PREMA Nailhole Repair Manual	
6068	Adapter for CC-6	PREMA Combi Wall - Poster	

Industry Standard Kit - Truck

Conveniently Packaged **INDUSTRY STANDARD** Repair Kits

SKU #	Part #	Description	Qty
2009150		Industry Standard Kit - Truck	1

Contents:

PTBX	Empty Toolbox	6068	Adapter for CC-6
PC-2	Combi Repair Units (15)	6069	Adapter for CC-8
PC-3	Combi Repair Units (10)	PSCS	Spiral Cement Tool
PUS-3	Universal Square Patch 3 (20)	932	Tire Scraper
PUS-4	Universal Square Patch 4 (20)	6004	Stitcher 1/8"
PCS-2	Stem w/Guide Wire (20)	6014	Brass Brush
PCS-3	Stem w/Guide Wire (20)	101000929	Flex Knife
PFC-8	Ultra Fast Dry (8oz)	62W	White Crayon
PPC-16	Prebuff Cleaner Spray (16oz)	PREMA Combi Repair Manual	
PLOS-16	Innerliner Overbuff (16oz)	PREMA Nailhole Repair Manual	
CC-6	Carbide Cutter	PREMA Combi Wall - Poster	
CC-8	Carbide Cutter		

TIRE REPAIR MATERIALS

ONE PIECE REPAIR - Filling the Injury Channel & Sealing the Innerliner

Combi Units

PREMA Combi Repairs can be used for crown injuries only. Prepare the injury using the appropriate **PREMA Carbide Cutter**. The **PREMA Combi Repair** features a fully cushion wrapped stem with guide wire. This unit seals the injury and repairs the innerliner all in one easy step. Install with **PREMA Ultra Fast Dry Vulcanizing Cement**.
NOTE: The PREMA Combi may only be used when the angle of the injury is LESS THAN 25°. If the injury angle is GREATER THAN 25°, repair with the appropriate two-piece stem and repair unit.

SKU #	Part #	Description	Cutter to be used	Injury Size (in.)	Injury Size (mm)	Injury Size	Qty/ Box
2006010	**PC-1**	Combi 1	CC-3	1/8	3		40
2006029	**PC-2**	Combi 2	CC-6	1/4	6		15
2006020	**PC-2J**	Combi 2 Jumbo	CC-6	1/4	6		40
2006039	**PC-3**	Combi 3	CC-8	5/16	8		10
2006030	**PC-3J**	Combi 3 Jumbo	CC-8	5/16	8		20
2006040	**PC-4**	Combi 4	CC-10	3/8	10		10

TWO PIECE REPAIR - Filling the Injury Channel

Stems

NOTE: The PREMA Stems should be used when the angle of the injury is GREATER THAN 25°. Repair with the appropriate two-piece stem and repair unit.

SKU #	Part #	Description	Cutter to be used	Injury Size (in.)	Injury Size (mm)	Injury Size	Qty/ Box
2006520	**PCS-2**	Stem 2 with Guide Wire	CC-6	1/4	6		20
2006530	**PCS-3**	Stem 3 with Guide Wire	CC-8	5/16	8		20
2006540	**PCS-4**	Stem 4 with Guide Wire	CC-10	3/8	10		20

TIRE REPAIR MATERIALS

TWO PIECE REPAIR - Sealing the Innerliner

Universal Bias/ Radial Repairs

PREMA Universal Tire Repairs are designed for repairing NAILHOLE injuries in tubeless Bias & Radial tires in the CROWN area only. These repairs are available in either round or square versions. Install with **PREMA Ultra Fast Dry Vulcanizing Cement**. Always fill the injury channel with the appropriate PREMA repair material.

SKU #	Part #	Description	L (in.)	W (in.)	L (mm)	W (mm)	Diameter (in.)	Diameter (mm)	Qty/ Unit
2005010	**PUR-1**	Universal Rd. 1	---	---	---	---	1¼	32	100
2005020	**PUR-2**	Universal Rd. 2	---	---	---	---	2	55	50
2005030	**PUR-3**	Universal Rd. 3	---	---	---	---	3	75	50
2005520	**PUS-2**	Universal Sq. 2	1¾	1¾	45	45	---	---	100
2005530	**PUS-3**	Universal Sq. 3	2¼	2¼	60	60	---	---	100
2005536	**PUS-3 Bulk**	Universal Sq. 3	2¼	2¼	60	60	---	---	1000
102005540	**PUS-4**	Universal Sq. 4	3	3	76	76	---	---	50

Radial Repairs - Passenger and Truck

PREMA Center-Over-Injury Repairs are designed for use in the Crown, Shoulder and Sidewall area of radial tires. They can be installed by either Chemical (COLD) vulcanization or Heat & Pressure (HOT) methods. For COLD application, install using **PREMA Ultra Fast Dry Vulcanizing Cement**.

SKU #	Part #	Desc.	L (in.)	W (in.)	L (mm)	W (mm)	# PLIES	Qty/ Box
2002090	**PR-109**	Radial	3	2	77	50	1	20
2002095	**PR-109T**	Radial	3	2	77	50	1	80
2002100	**PR-110**	Radial	3¼	2¼	83	57	1	20
2002106	**PR-110 Bulk**	Radial	3¼	2¼	83	57	1	1000
2002105	**PR-110T**	Radial	3¼	2¼	83	57	1	80
2002150	**PR-115**	Radial	3¼	3	95	76	1	10
2002200	**PR-120**	Radial	5	3¼	127	83	2	10
2002206	**PR-120 Bulk**	Radial	5	3¼	127	83	2	500

Bias Repairs - Passenger and Truck

PREMA Bias Repairs are designed with large ply construction for repairing all bias ply tube type, and tubeless tires. These repairs can be used for repairing Crown, Shoulder and Sidewall injuries. Install with **PREMA Ultra Fast Dry Vulcanizing Cement**.

SKU #	Part #	Desc.	L (in.)	W (in.)	L (mm)	W (mm)	# PLIES	Qty/ Box
2003010	**PB-1**	Bias	2¼	-----	57	-----	1	25
2003020	**PB-2**	Bias	3¼	-----	83	-----	2	10
2003030	**PB-3**	Bias	3¾	3¾	96	96	2	10
2003050	**PB-5**	Bias	4¾	4¾	121	121	4	10

TIRE REPAIR CHEMICALS

Vulcanizing Cements & Chemicals

Ultra Fast Dry Vulcanizing Cement

PREMA Ultra Fast Dry Vulcanizing Cement is formulated to provide outstanding performance when used in conjunction with **PREMATACK** Materials. Contains no ozone depleting chemicals.

SKU #	Part #	Description	Size fl. oz	Size ml	Qty/ Box
2205020	**PFC-8**	Ultra Fast Dry Vulcanizing Cement (Flammable)	8	237	10
2205030	**PFC-32**	Ultra Fast Dry Vulcanizing Cement (Flammable)	32	946	10

Pre-Buff Cleaner

PREMA Pre-Buff Cleaner is formulated to remove contaminants (such as silicone and mold lubricants) from the innerliner of the tire prior to buffing. Available in either liquid or aerosol. Contains no ozone depleting chemicals.

SKU #	Part #	Description	Size fl. oz	Size ml	Qty/ Box
2207010	**PPC-16**	Pre-Buff Cleaner "Aerosol" (Flammable)	16	473	12
2207030	**PPC-32**	Pre-Buff Cleaner (Flammable)	32	946	10

Innerliner Overbuff Sealant

PREMA Innerliner Overbuff Sealant is designed to restore air retention qualities to the buffed innerliner around the repair after installations. It can be used in both COLD and HOT vulcanizing systems. Contains no ozone depleting chemicals.

SKU #	Part #	Description	Size fl. oz	Size ml	Qty/ Box
2209150	**PLOS-16**	Innerliner Overbuff Sealant (Flammable)	16	473	10

Bead Sealer

PREMA Bead Sealer provides a seal between the bead area of the tire and rim, assisting in the prevention of leaks caused by minor surface imperfections.

SKU #	Part #	Description	Size fl. oz	Size ml	Qty/ Box
2209800	**PBS-32**	Bead Sealer - Regular (Flammable)	32	946	10
102209801	**PBSO-32**	Bead Sealer - Thick (Flammable)	32	946	10

Vulc Compound

PREMA A & B Compound is simple and easy to prepare. It is a two part rubber compound that cures at room temperature. When used as an injury filler in conjunction with a **PREMA reinforced Repair Unit (Radial or Bias)** it produces a permanent and durable repair. It is also extremely useful for repair of minor appearance blemishes around the bead area of the tire. Install with **PREMA Ultra Fast Dry Vulcanizing Cement**.

SKU #	Part #	Description	Thickness	Width (in.)	Approx. Weight (lb)	Weight (g)	Qty/ Box
2205701	**PAB-F**	Vulc Compound A & B Flammable			2 x 0.66 lb	2 x 300	1

Tire Mounting Products

TIRE MOUNTING COMPOUNDS

PREMA Tire Mounting Compounds contain rust inhibitors and will not separate or liquefy.

UNIVERSAL MOUNTING PASTE

- Excellent Lubrication • Superior "Tack" • Reduces tire/rim slippage
- TPMS compatible • Great for low profile and run flat tires
- Will not discolor/harm alloy & polished wheels

SKU #	Part #	Description	Size lbs.	Size kg	Qty/ Box
2201100	**PEP-8**	Universal Mounting Paste	7.7 lbs	3.5 kg	4
2201150	**PEP-8N**	Universal Mounting Paste - Low Profile Pail	7.7 lbs	3.5 kg	4
2201130	**PEP-BK**	Bracket for PEP-8 Universal Mounting Paste			1
2201180	**PEP-BKN**	Bracket for PEP-8N Low Profile Pail			1

TIRE MOUNTING LIQUID LUBE - LIQUID LUBE BLUE (Ready To Use)

- Excellent Lubrication • Superior "Tack" and Bead Seating qualities
- Reduces tire/rim slippage • Near neutral pH factor

SKU #	Part #	Description	Size US gal.	Size liter	Qty/ Box
2201010	**PTL-1G**	Tire Lube - Pre-Mix	1	3.8	4

Tire Talc

Use when repairing or changing tube type tires. Helps prevent tubes from sticking, chaffing and pinching.

SKU #	Part #	Description	Size oz	Size gm	Qty/ Box
2209020	**PTT-1**	Tire Talc	16	454	12

Leak Detector

PREMA Leak Detector can be used on tires, tubes, valves, and rims. It is available in a ready-to-use spray bottle, or a concentrate.

SKU #	Part #	Description	Size fl. oz	Size ml	Qty/ Box
2209170	**PLD-32**	Leak Detector (Ready to use)	32	946	4
2209180	**PLD-32C**	Leak Detector (Concentrate)	32	946	4

Tire Repair Tools

Buffers

Part #	Description	Qty/Box
CP-873K	Low Speed Buffer (~2,500rpm)	1
CP-871	High Speed Buffer (~20,000rpm)	1

Aluminum Oxide Stones

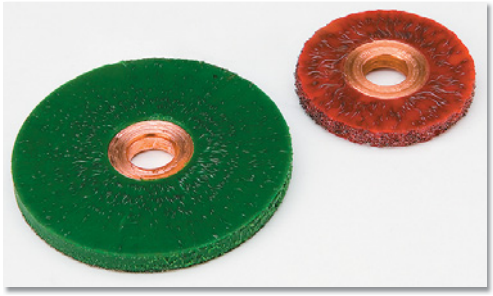
Part #	Description	Qty/Pack
744	White Pencil Grinding Stone	20
746	White Conical Grinding Stone	20
742	Small Mushroom Grinding Stone	20
745	Large Mushroom Grinding Stone	20

Rubberhog

Part #	Description	Diameter (in.)	Height (in.)	Grit	Qty/Pack
RH100	Buffing Cone 3/8" Arbor	¾	1¾	SSG 170	1
RH102	Buffing Cone 3/8" Arbor	¾	1¾	SSG 230	1
RH107	Buffing Cone 3/8" Arbor	2½	1	SSG 170	1
RH109	Buffing Cone 3/8" Arbor	2½	1	SSG 230	1
RH302	Buzzout Wheel 3/8" Arbor	2	¼	SSG 390	1
RH150	Polyplug	1¾			1
RH152	Polyplug	2½			1

Brushes

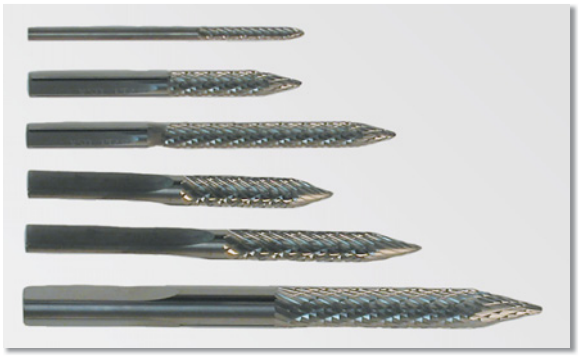
Part #	Description	Qty/Pack
6055	2" Encapsulated Wire Wheel	1
6056	3" Encapsulated Wire Wheel	1



Tire Repair Tools

Carbide Cutters

Part #	Description	Length (in.) Overall	Length (mm) Overall	Diameter (in.) Cut	Diameter (mm) Cut	Qty/Pack
CC-3	Carbide Cutter 1	2	50	1/8	3	1
CC-6	Carbide Cutter 2	3	75	1/4	6	1
PCC-2P	Carbide Cutter 2P	2	50	1/4	6	1
CC-8	Carbide Cutter 3	4	100	5/16	8	1
PCC-3P	Carbide Cutter 3P	3	75	5/16	8	1
CC-10	Carbide Cutter 4	4	100	3/8	10	1



Tire Repair Tools

Part #	Description	Qty/Pack
932	Tire Scraper	1
6014	Brass Brush	1
6004	1/8" Stitcher	1
30-GN	Gooseneck stitcher, 1-1⁄2" x 1⁄8"	1
6005-GN	Gooseneck stitcher, 2" x 1⁄4"	1
101000929	Flex Knife	1
6020	Cement Dispenser W/Brush Lid	1

Tire Spreader

Part #	Description	Qty/Box
3050-RB	Repair Station	1

6551 Economy Tire Spreader

The Air Powered 6551 Economy Tire Spreader is designed for servicing and repairing passenger, light truck, medium/heavy truck and small agricultural and OTR tires up to 20.5-25" in size.

FEATURES:

- Extremely low eight-inch working platform, lifting power up to 500lbs.
- Adjustable spreading jaws that are shorter on the operator's side for improved access and safety.
- Integrated lifting device with a lifting height of 17-½"
- Working Height: 30"
- Integrated lighting, a ramp that automatically retracts as tire is lifted.
- Dimensions: 45" x 30-½" x 35"
- Weight: 310 lbs.

SKU #	Part #	Description	Qty/Box
	6551	Economy Tire Spreader	1

Extruder

SKU #	Part #	Description	Qty/ Box
2602300	**PE-110**	Standard Mini Extruder 110V	1
2602310	**PE-220**	Standard Mini Extruder 220V	1

IMPORTANT!

WARNING!

ALWAYS demount the tire from the wheel and complete a **thorough tire and wheel inspection** prior to returning the components to service.

PRECAUTIONS

- Repair products and materials used should be from the **same manufacturer** to ensure compatibility in the curing process. **NEVER mix products** from different repair material manufacturers.
- Repairs are limited to the **crown area only**. DO NOT repair sidewall or shoulder injuries.
- Regardless of the type of repair used, the **repair must fill the injury and seal the innerliner**. This is achieved with either a two piece repair (stem and patch) or a one piece repair (patch/stem combination repair unit).
- **NEVER use only a rubber stem or plug**; or **NEVER USE only a patch**. Both materials must be used for a proper tire repair.
- Specific repair limits should be based on recommendations or repair policy of the tire manufacturer and/or the type of tire service.
- Some "run-flat technology" tires cannot be repaired. Consult tire manufacturer for their repair policy and, if applicable, for their recommended repair procedures.
- Never use any rim that is bent, corroded, cracked or worn.
- For speed rated tires, the tire manufacturer must be contacted for its individual repair policy – some manufacturers will void the tire speed rating if the tire has been repaired. Check whether the speed rating is retained after repair.

GENERAL SAFETY INSTRUCTIONS

- Always read the operating and application instructions enclosed with the corresponding products, tools and machines and **follow the Safety, Handling and Disposal guidelines**.
- Always observe the safety instructions and symbols on the product packaging and refer to the manufacturer's **Safety Data Sheet (SDS)**.
- When working with solutions, rotary tools, sharp-edged tools, hot devices and hot materials, always take the necessary precautions and **wear appropriate gloves, adequate eye protection (safety glasses or face shields), ear protection and observe maximum RPM** while repairing tires.
- Always keep dangerous tools, solutions etc. out of the reach of children and unauthorized persons.

These Repair Charts reflect International Repair Standards, determined on the basis of practical experience, bench checks, and laboratory tests. THEY NEITHER INCORPORATE NOR ARE INTENDED AS A REFERENCE TO LOCAL, STATE, OR NATIONAL STANDARDS THAT MAY EXIST IN YOUR COMMUNITY. Stay within the limitation for repairable injuries indicated by the charts. When repairing a tire, it is imperative that a complete inspection be conducted to ensure that the tire is fit to be repaired and safely returned to service. Always follow proper repair procedures as illustrated in the appropriate PREMA Products Tire Repair Manual(s). No tire can be safely repaired without demounting it from the rim, giving it a complete inspection, and properly repairing the injury with the appropriate inside repair unit and filler material. Always consult the tire manufacturer for the repair limits.

DO NOT REPAIR A TIRE WITH:

DO NOT REPAIR A TIRE WITH THESE TIRE INJURIES:

- Greater than 1/4-inch (6mm) in diameter for passenger and LT, 3/8-inch (10mm) for medium truck
- In the shoulder or sidewall areas
- In a position that would overlap an existing repair

DO NOT REPAIR A TIRE WITH THESE TIRE CONDITIONS:

- Any conditions shown in the Non-Repairable Tire Conditions box
- 2/32-inch (3mm) or less remaining in tread depth
- Bead rubber torn down to steel
- Run flat conditions
- Broken or kinked beads
- Loose or broken radial body cables on inside shoulder
- Weather checking beyond 2/32-inch (3mm) deep
- Soft, mushy rubber on inside shoulder
- Broken or separated belts or tire with exposed fabric
- Liner separations too large for repair

DO NOT REPAIR A TIRE WITH THESE PREVIOUS REPAIRS:

- An existing improper repair
- Repairs that are outside of the repairable areas
- Where 3 previous repairs already exist
- An existing Non-Industry Standard Repair such as an "On the Wheel Repair / Outside In"
- Repair where a "Tire Sealant" has been used.

WARNING: TIRES MUST ALWAYS BE PROPERLY REPAIRED AS DESCRIBED IN THIS CHART. Improperly repaired tires can fail while in service, such as by tread-belt separation and/or detachment, which may result in an accident causing serious personal injury or death.

ONLY PROPERLY TRAINED TIRE REPAIR TECHNICIANS SHOULD PERFORM THESE REPAIRS

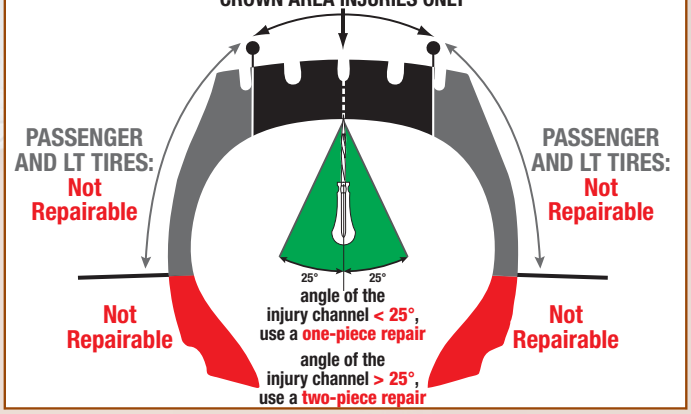
MAXIMUM ALLOWABLE INJURY SIZE:

Passenger & Light Truck Tires	maximum injury size ◗ 1/4" (6mm)
Medium & Heavy Truck Tires	maximum injury size ◗ 3/8" (10mm)

Any injury exceeding the Maximum Allowable Injury Size, as stated above, will require a section repair to be performed at a Full Service Repair Facility.

NAIL HOLE REPAIR LIMIT

CROWN AREA INJURIES ONLY



Training Videos, SDS, Technical Bulletins, Technical Data Sheets, Section Repair Charts, Product Catalogs, Product Brochures are available at www.premaproducts.com.

Article numbers listed here are PREMA brand products. This chart complies with industry standards for chemical repair methods as determined by the tire industry, and include the recommendations of TIA, TRMG & TRIB.

This NAIL HOLE REPAIR PROCEDURES Wall Chart is meant for educational purposes only and is not meant to substitute for proper tire repair training.

866-657-7362 (Toll Free)
www.premaproducts.com

PREMA Bias & Radial Nail Hole Repair Chart (Crown Area Only)

Bias Radial Nail Hole Repair Chart Crown Area Only				1-PIECE REPAIR (Injury Angle < 25 degrees)	2-PIECE REPAIR (Injury Angle > 25 degrees)			
					STEM	PATCH		
TIRE TYPE	INJURY SIZE	INJURY SIZE	CARBIDE CUTTER	COMBI WITH PILOT WIRE (RADIAL/BIAS)	STEM UNIT WITH PILOT WIRE	UNIVERSAL REPAIR (RADIAL/BIAS)	RADIAL REPAIR	BIAS REPAIR
PASSENGER	1/8" (3mm)	●	CC-3	PC-1	-	PUR-1	PR-109	PB-1
	1/4" (6mm)	●	CC-6/ PCC-2P	PC-2	PCS-2	PUR-2/ PUS-2	PR-109	PB-1
LIGHT TRUCK	1/4" (6mm)	●	CC-6	PC-2	PCS-2	PUR-2/ PUS-2	PR-109/ PR-110	PB-2
	5/16" (8mm) **	●	CC-8/ PCC-3P	PC-3	PCS-3	PUR-3/ PUS-3	PR-110/ PR-115	PB-3
HEAVY DUTY TRUCK	3/8" (10mm)	●	CC-10	PC-4	PCS-4	PUR-3/ PUS-4	PR-120	PB-5

** Light Truck Tires Only (Injury Size: 5/16") - 6 or 8 Ply Rating (Load Range C & D).

Maximum Injury Size: 1/4" (6mm)

Passenger & Light Truck Tires

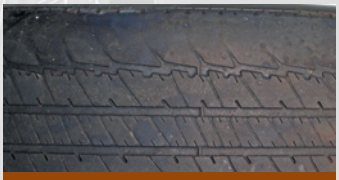
Maximum Injury Size: 3/8" (10mm)

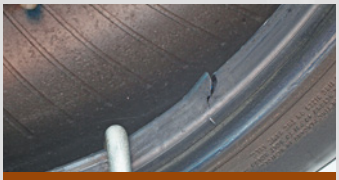
Medium & Heavy Truck Tires

Any injury exceeding the Maximum Allowable Injury Size, as stated above, will require a section repair to be performed at a Full Service Repair Facility.

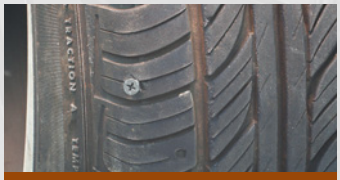
NON-REPAIRABLE TIRE CONDITIONS

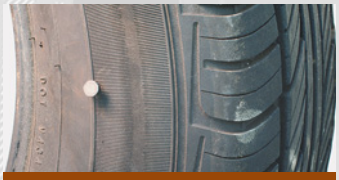

EXPOSED BELT PACKAGE

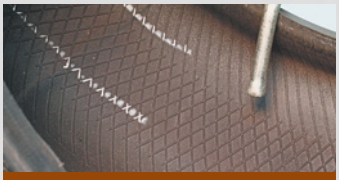

WORN TREAD DEPTH


BEAD DAMAGE


WEATHER CRACKING


INJURY IN SHOULDER AREA


INJURY IN SIDEWALL


RUN FLAT CONDITION


RESULTS OF AN IMPROPER TIRE REPAIR

STEP 1 INSPECT

1.1 Inspect the Tire ON THE OUTSIDE

Check tire surface and the valve for the source of the leak(s) by using a leak detector. Mark the injury with a tire crayon.

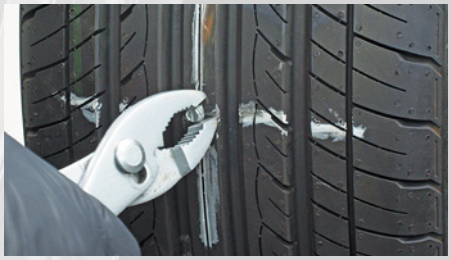
1.2 Deflate the tire and remove from the wheel

Deflate the tire before demounting, by safely removing the valve core. Safely remove the tire from the rim with the proper tire demounting tools and safety procedures, avoiding damage to the bead area.

1.3 Place on tire spreader

Place tire on a well lighted tire spreader and spread the beads. Never invert radial tires – and avoid excessive spreading of the tire or tire beads.

1.4 Locate and remove the penetrating object



Locate and remove the penetrating object from the tire, noting the direction of penetration.

1.5 Mark the injury on the inside

Identify the injury on the inside of the tire and mark the area with a tire crayon.

1.6 Inspect the Injury

Inspect the injury with an awl, probing the injury to determine the extent of the damage and determine the inclination angle of the injury channel.

Inspect the tire for any other damage. (See "IMPORTANT!" and "NON-REPAIRABLE TIRE CONDITIONS" section above).

1.7 Repair Unit Selection

If the angle of the injury channel is greater than 25 degrees, a two-piece repair system must be used.

If the angle of the injury channel is less than 25 degrees, a one-piece repair system should be used.

Determine the injury size and refer to the NAIL HOLE REPAIR CHART above to select the appropriate repair unit.

The selection of the proper repair unit is dependent on several factors including injury size and angle, type of tire construction (radial or bias) and size of the tire to be repaired.

PASSENGER AND LIGHT TRUCK TIRES

For passenger and light truck tires, the maximum injury size that can be repaired is 1/4 inch (6mm) in diameter. Injuries should be in the crown area only. Shoulder and sidewall repairs in passenger tires are not recommended by the tire industry. Injuries exceeding 1/4 inch must be referred to an authorized full service repair facility.

TRUCK TIRES

For truck tires, the maximum injury size that can be repaired is 3/8 inch (10mm) in diameter. Injuries should be in the crown area only. Injuries exceeding 3/8 inch or any injury in the shoulder, or sidewall must be referred to an authorized full service repair facility.

STEP 2 PRE-CLEAN

2.1 Apply Pre-Buff Cleaner

2.2 Scrape Away Contaminants

Apply PREMA PPC-16 Pre-Buff Cleaner around the injury area. Using an innerliner scraper, scrape the area to be buffed removing the contaminates such as dirt, tire lubes, and mold release lubricants. The area cleaned should be slightly larger than the selected repair unit. Scrape the innerliner while the Pre-Buff Cleaner is still wet. Repeat 2-3 times until the surface is clean.

STEP 3 DRILL

3.1 Drill the Injury Channel

Determine the correct size Carbide Cutter from the NAIL HOLE REPAIR CHART above. Use a low speed tool (not to exceed 1200 rpm) to drill the injury from the inside out three times first and then from the outside in three times. Use full strokes with the carbide cutter, completely removing the cutter from the tire with each stroke.

STEP 4 FILL THE INJURY CHANNEL

4.1 Cement the injury Channel

TWO PIECE REPAIR ONLY

Apply PREMA PFC-8 Ultra Fast Dry Vulcanizing Cement to the injury channel using a PREMA Spiral Cementing Tool (PSCS).

4.2 Insert the stem

TWO PIECE REPAIR ONLY

Remove the protective poly film from the PREMA Repair Stem. Apply a small amount of PREMA PFC-8 Ultra Fast Dry Vulcanizing Cement to the tip of the black tapered portion on the PREMA Repair Stem. (NOTE: Take care not to touch the Gray Bonding Gum on the repair unit. Contamination of the gum can result in repair failure!)

Feed the lead wire into the injury channel from the inside of the tire. Pull the stem into place using pliers to grasp the rubber stem (not the Guide Wire) and pull the PREMA Repair Stem from the outside of the tire. Leave at least 1/8" of the stem protruding from the inside of the tire.

4.3 Cut the Stem

TWO PIECE REPAIR ONLY

Cut the stem off leaving approximately 1/8" (3 mm) remaining on the inside of the tire. The remainder of the stem will be removed during the buffing process to provide a smooth surface.

STEP 5 BUFF

5.1 Mark around the repair unit

Center the repair unit over the injury and outline an area larger than the unit, so buffing will not remove the crayon marks.

If the repair unit has bead arrows, make sure the arrows are pointing to the bead.

5.2 Buff the repair area

Lightly buff the repair area using a low speed (< 5,000 RPM) air or electric buffing tool with a clean buffing rasp, 18 to 36 grit and remove all vent lines until you get a completely smooth surface. Continue lightly buffing the repair area to a smooth velvety finish (RMA Buff Texture 1 or 2) by putting slight pressure on the buffing tool and keeping it in constant movement.

NOTE: If during the buffing procedure the Radial Plies (or Body Plies) are damaged or exposed, the tire should be replaced.

STEP 6 POST-CLEAN

6.1 Brush

Clean the buffed area with a Brass Brush by brushing the area several times in one direction. Avoid brushing the non-buffed areas where there are contaminants that could be pulled onto the freshly buffed area. Use a brush that is designated only for tire repair and not used for anything else. This will help avoid contaminants in the buffed area.

6.2 Vacuum

Use a vacuum to remove all debris from the inside of the tire. Do not touch the buffed area with the tip of the vacuum cleaner to avoid contamination. Always remove buffing dust with the use of a brass brush and vacuum. Never use compressed air. Do not use a Buffing Solution on the buffed texture after you have buffed to avoid leaving residues which reduce adhesion.

STEP 7 INSTALL

7.1 CEMENT THE INJURY CHANNEL

ONE PIECE REPAIR ONLY

Apply PREMA PFC-8 Ultra Fast Dry Vulcanizing Cement to the injury channel from the inside of the tire using a PREMA Spiral Cementing Tool (PSCS). Turn the tool in a clockwise direction. Repeat this step 2-3 times. Leave the spiral tool in the injury channel with the base of the handle 1" above the liner. This will maintain the lubrication of the injury channel prior to pulling the repair stem into place.

Ultra Fast Dry Vulcanizing Cement provides the necessary lubrication for the insertion of the repair unit, and bonds it reliably to the tire.

7.2 CEMENT THE BUFFED AREA

Apply a thin, even coat of PREMA PFC-8 Ultra Fast Dry Vulcanizing Cement to the buffed area of the tire innerliner using a clean brush.

Use a swirling motion to apply the cement, as this will aid in the drying process as well as assure a thin, even coat. Completely cover the buffed area with cement to assure a good bond between the tire and the Repair Unit. Continue brushing and working the cement into the buffed area until the cement appears dry. Do not go outside the buffed area (Contaminates the brush).

Rotate the tire so that the cemented area is located between the 10 o'clock and 2 o'clock position. This will allow the solvent vapors, which are heavier than air, to "fall" away from the cemented innerliner.

Check the cement for dryness by touching the edge of the cemented area with the back of your finger. If the cement feels tacky, then it is dry. If it is not tacky, allow more drying time. Drying time depends on atmospheric conditions like heat and humidity. Hot temperature and high humidity require longer drying time of the cement. If the cement is not completely dry, the repair unit will lift off or blister and cause repair failure. Never use compressed air, hair dryers, heat guns, etc to aid in the drying of the cement.

Avoid any contamination on the bonding layer or the coat applied.

7.3 RELAX THE TIRE BEADS

Relax the beads of the tire from the spreader. During the repair unit application the tire beads must be in a relaxed position.

7.4 INSTALL THE PREMA Combi Repair Unit

ONE PIECE REPAIR ONLY

Remove the protective poly film from the Prema Repair Unit. NOTE: Take care not to touch the Gray Bonding Gum on the patch or stem of the repair unit. Contamination of the gum can result in repair failure!

Apply a small amount of PREMA Ultra Fast Dry Vulcanizing Cement to the tip of the black tapered portion on the Prema Repair Unit.

When installing a PREMA Combi Repair Unit, insert the guide pin and stem through the cemented injury channel, from the inside outwards. Using a pair of pliers pull the guide pin from the outside until it is through the tire and you can see the rubber part of the Combi Repair Unit. Re-grasp on the rubber portion of the stem and continue pulling the stem until the Combi Repair Unit base, on the inside of the tire, is flush with the tire and seats firmly against the inner liner. Make sure not to dimple the PREMA Repair Unit head.

The guide pin is only used to get the Combi Repair Unit through the tire. Once it is through the tire, re-grasp on the rubber portion of the Combi Repair Unit. If you pull on the guide pin only, it will pull out of the Combi Repair Unit.

7.5 INSTALL THE REPAIR UNIT

TWO PIECE REPAIR ONLY

Remove the poly or foil from the back of the repair unit. Without touching the bonding layer, center the repair unit over the injury and apply carefully pushing down on the repair unit with your thumb or fingers.

If using a directional repair unit, make sure to align the arrows in the correct direction.

If using a non-directional or Universal Repair Unit, it does not matter in which direction the repair unit is installed.

7.6 Stitch

After the repair unit is applied, stitch thoroughly from the center outwards. Always start stitching from the center outward to remove any trapped air that may be under the repair unit. Continue several times in different directions over the whole surface of the repair unit to make sure that it is completely stitched to the innerliner and that it adheres securely to the buffed surface area.

Remove the poly from the repair unit.

STEP 8 FINISH

8.1 APPLY Liner Sealer

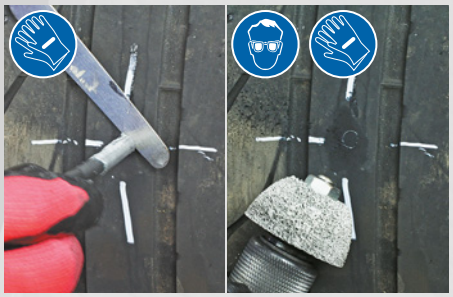
Check the repair area for defects. The finished repair should show no peeling or lifting at the edges, and should neatly cover the repair area.

Apply a generous application of PREMA PLOS-16 Innerliner Overbuff Sealant to the entire over-buffed area and the edge of the repair unit. If a Combi Repair Unit has been used, apply the Innerliner Overbuff Sealant to the base of the Combi Repair Unit and any still exposed buffed areas.

8.2 RE-MOUNT & INFLATE

Safely mount the tire on the rim and inflate to the recommended tire pressure.

8.3 CUT THE STEM & BUFF



Cut the excess stem off or buff flush with the tread of the tire. DO NOT PULL ON THE STEM WHEN CUTTING IT OFF.

8.4 CHECK FOR LEAKS

Check both beads, the repair and the valve with PREMA Leak Detector. If the tire continues to leak, it must be dismounted and re-inspected for other damage, and repaired correctly. If the damage is beyond repair limits, the tire should be scrapped.

8.5 BALANCE THE TIRE

Balance the tire. After the final inspection is done, the tire can immediately be put back into operation. The vulcanization between the repair unit and the tire is automatically completed under normal running conditions.

PRODUCTS USED

REPAIR UNITS:
Listed in the NAIL HOLE REPAIR CHART (page 11)

CHEMICALS:
PREMA Pre-Buff Cleaner PPC-16, PPC-32
PREMA Ultra Fast Dry Vulcanizing Cement ...PFC-8, PFC-32
PREMA Innerliner Overbuff Sealant.....PLOS-16

ACCESSORIES:

Low Speed Air Buffer (PLSB)
Air Vacuum w/Bag
Carbide Cutter 1, 1/8" (CC-3)
Carbide Cutter 2, 1/4" (CC-6)
Carbide Cutter 2P, 1/4" (PCC-2P)
Carbide Cutter 3, 5/16" (CC-8)
Carbide Cutter 3P, 5/16" (PCC-3P)
Carbide Cutter 4, 3/8" (CC-10)
Buffing Rasp, 2" (TCW-210-80)
QR Adapter (6068-125: CC-3)
QR Adapter (6068: CC-6)
QR Arbor (6067)
Spiral cementing tool (PSCS)
Ball Bearing Stitcher (6004)
Brass Bristle Cleaning Brush (6014)
Innerliner Scraper (932)
Marking Crayon (62W, 62Y)
Skiving Knife (101000929)
Pair of Pliers
Repair Station (Tire Spreader) (3050-RB)
GREASE BULLY Nitrile gloves
StrongHold Gloves
Safety Glasses
A good light source

Prema Products, Inc. (PREMA) was founded in the United States in 2003 to serve the tire repair industry worldwide with state-of-the-art soft gum tire repairs.

PREMA products are tested under extreme conditions in laboratories and field tests to assure consistent quality at the highest possible levels and are produced in modern facilities according to **Prema Products, Inc.** formulations and specifications.

The **PREMA** repair process development began when it became evident that there is a great need for leading edge design and technology. The result is the **PREMATACK Tire Repair System** - a process that combines a unique, soft, high-tack bonding gum with Ultra Fast Dry Vulcanizing Cement. Repairs can be completed faster in both hot and cold cure applications, saving **PREMA** customers money!

**PREMATACK Tire Repair System -
the new standard of performance.**

SAFETY ICONS

Adequate eye protection (safety glasses or face shields) should always be worn to protect eyes from damage.

Always use ear protection if high noise levels occur.

Always use protective gloves when handling sharp tools or when using chemicals.

Always use both eye and ear protection.

PREMA Products, Inc.
TIRE REPAIR PROCEDURES - Quiz

Name: ..... Company: ..... Date: .....

1. If buffing a passenger tire and you expose and, or damage the radial ply cords, you should:
   A. Continue repairing the tire as if nothing happened.
   B. Remove the damaged cords and then install the patch (repair unit)
   C. Section repair the tire
   D. Do not attempt to repair the tire

2. Inspection of the tire should include
   A. Tread Area
   B. Sidewall Area
   C. The entire area of the tire
   D. All of the above

3. What is the largest injury that can be repaired in the crown of a medium truck tire?
   A. 1/8 inch
   B. 1/4 inch
   C. 3/8 inch
   D. No repair

4. What is the maximum repair allowed in the sidewall by most tire manufacturers?
   A. 1/8 inch
   B. 1/4 inch
   C. 3/8 inch
   D. No repair

5. Define a proper Tire repair.
   A. Install a plug and send the customer on their way.
   B. Install a repair unit (patch) on the inside of the tire and send the customer on their way.
   C. Install a patch plug combination or a two-piece -patch and stem combination into the tire.
   D. Insert a screw in the tire to fill and seal the injury.

6. Why is it necessary to use some form of pre-buff cleaner on the innerliner?
   A. To remove all the mold release lubricants.
   B. To assure a good bond between the repair unit (patch) and the innerliner.
   C. To prevent a repair failure.
   D. All of the above.

7. To aid in the drying of chemical cement you should:
   A. Use an air blower from the air compressor
   B. Blow on it with your mouth
   C. Set it in the sun
   D. Rotate the cemented area of the tire to the 2:00 o'clock or the 10:00 o'clock position

8. When stitching a patch (repair unit), where should you begin the stitching procedure?
   A. Always start in the middle stitching out to remove any trapped air
   B. Start at the edge, moving across the patch (repair unit) to remove any trapped air
   C. It does not really matter as long as you stitch the patch (repair unit)
   D. None of the above

9. What is the industry's definition of a slow speed buffer?
   A. Less than 20,000 RPM
   B. Less than 10,000 RPM
   C. Less than 15,000 RPM
   D. Less than 5,000 RPM

Name: ..... Date: .....

10. The maximum speed for a power tool to drill the nail hole injury is
    A. 10.000 RPM
    B. 5,000 RPM
    C. 2,500 RPM
    D. 1,200 RPM

11. If using a directional repair unit (patch) the arrows point to:
    A. The bead
    B. The running direction of the tire
    C. The inner fender of the vehicle
    D. None of the above

12. What is the largest crown injury that can be repaired?
    A. 1/8 inch
    B. 1/4 inch
    C. 3/8 inch
    D. No repair

13. What buff texture should be achieved on a passenger tire to achieve a good bond?
    A. RMA 1
    B. RMA 1-2
    C. RMA 3
    D. RMA 4

14. Plugging a tire (on the wheel repair), is a repair that is acceptable by industry standards, the tire manufacturers, and the repair material manufacturers?
    A. TRUE
    B. FALSE

15. It is necessary to mechanically buff the innerliner before installing the repair unit (patch)?
    A. TRUE
    B. FALSE

16. It is recommended to use a high-speed buffer for buffing the inner liner?
    A. TRUE
    B. FALSE

17. A passenger car tire can be repaired on the wheel?
    A. TRUE
    B. FALSE

18. Nail hole injuries in the shoulder area of a passenger car tire can be repaired?
    A. TRUE
    B. FALSE

19. Before applying the repair unit (patch) a thick heavy application of the cement is required.
    A. TRUE
    B. FALSE

20. Failure to properly clean the innerliner can reduce repair unit's adhesion and even cause repairs to fail.
    A. TRUE
    B. FALSE

21. Always drill the injury from the outside first.
    A. TRUE
    B. FALSE

22. Always inspect the injury before repairing to see if it should be repaired.
    A. TRUE
    B. FALSE

23. When installing a one-piece repair unit you should apply cement to the base of the stem to assure good adhesion and to add lubrication to the stem during the installation process.
    A. TRUE
    B. FALSE

24. Repair materials are all the same. No attention should be paid to the manufacturers recommendations.
    A. TURE
    B. FALSE

25. It is acceptable to use a bias patch in a radial tire.
    A. TRUE
    B. FALSE

26. You can use a one-piece repair (Combi Unit) in the sidewall of a passenger tire?
    A. TRUE
    B. FALSE

Trainer Name: ..... Trainer Signature: .....

Date: ..... Quiz Score: .....

PREMA Tire Repair Products Shelf Life

PREMA Products, Inc. warrants each product from the Date of Manufacture as follows:

PREMA Grey, High-Tack Bonding Gum Repair Units, Cements & Chemicals – 24 months, except **PLOS-16 Innerliner Overbuff Sealant** – 12 months.

PREMA Heat Cure Repair Units – 24 months.

PREMA Heat Cure Cements & Liner Sealer – 12 months.

Shelf Life Specifications are based on storage in dry, dark, cool (-15C to +25C; 5F-77F) in unopened original packaging.

This warranty is conditional, dependent on storage of all materials in a proper manner.
All **PREMA Tire Repairs Materials** (Repair Units & Chemicals) must be stored in a cool, dry place. They should never be exposed to direct sunlight.
NEVER store products near heat sources and/or open flames (i.e. – in a closet near a hot water heater, next to a shop heater, etc.)
If any questions arise concerning the proper storage or usability of any **PREMA** products, please contact your **PREMA** representative or **PREMA** Customer Service at the following numbers: **USA** – 800-657-7362 (Toll Free)

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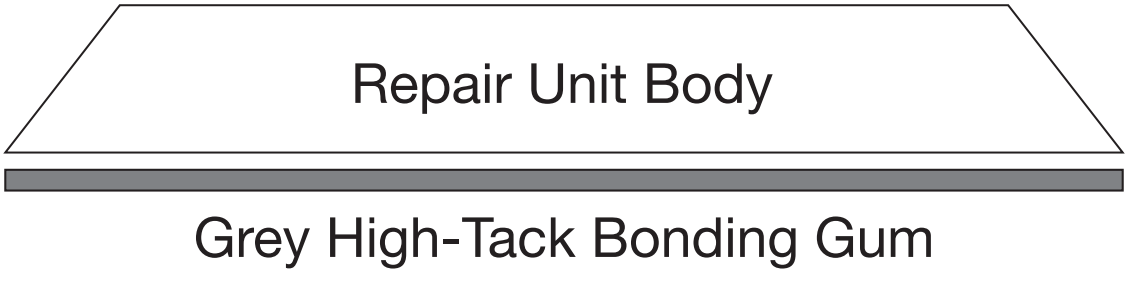
PREMATACK Tire Repair System -
the new standard of performance.

Soft Gum Repair – Two Piece Construction
PREMATACK Tire Repair System

During the manufacturing process, the Grey, High-Tack Bonding Gum is laminated to the Repair Unit Body. This Soft Gum Repair is manufactured to **REMA TIP TOP**'s specifications, branded under their **PREMA** label tire repair products.



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