REMA TIP TOP

// ONE BRAND // ONE SOURCE // ONE SYSTEM

UP PREMIUM WITH REMASTEM PREMIUM

The pre-cured system for cylindrical punctures in the tread area

Repair instructions

Introduction

- Before starting any repair, always inspect the tyre in a professional way according to appropriate criteria, such as the general state of the tyre, national repair limits etc. before deciding if the tyre is repairable.
  Check the whole tyre for further hidden damage.

- Information given in these repair instructions refers only to the use of original REMA TIP TOP products. We recommend using these products.

- A proper repair requires not only the use of high quality repair materials and tools but also an appropriate working environment: for example:

  - ↗ Good illumination of the workplace
  - ↗ Periodical cleaning of the workplace and the tools (maintenance)
  - ↗ Protection of the repair area against draught and direct sunlight during the repair process
  - ↗ Storage of all products according to the specifications (on the packs)
  - ↗ Well serviced, machines and tools that are in good working order
  - ↗ well trained staff

- We reserve the right to change our products and processes in order to carry out technical improvements.

- The solvents and adhesives listed in the instructions can be used both in a highly flammable, CKW- and aromatics-free version, as well as for the countries without restrictions in one version with trichlorethylene as solvent. In the EU the use of trichlorethylene and trichlorethylene containing products in accordance with REACH annex XIV defined expiration date since 2016-04-21 is prohibited without authorization. For details please see our RTT microsite http://www.rtt-tri-free.eu/en.

- Always observe the applicable REMA TIP TOP repair charts when selecting the appropriate repair materials.

Content

1. General Information

1.1 General safety instructions

Carefully read the operating and application instructions enclosed with the corresponding products/ machines. Always observe the safety instructions.

- Before starting work on large tires, ensure that the tires are secured against turning over, rolling or any other movement. Otherwise, there is a high risk of personal damage with significant injuries.
- When using rotary tools, solvents or any other dangerous tools and substances, always wear safety goggles.
- When working in an environment with a high noise level starting from 85 dB (A) (e.g. near noisy machines or tools), use ear protection according to labour protection regulations. However, an appropriate ear protection is reasonable even at lower figures.
- The use of S1-class safety shoes (toe protection cap, fully closed heel, antistatic and penetration-resistant) is prescribed for the operations described in this manual. These shoes must be equipped with a metal or plastic toe protection cap and a penetration-resistant, antistatic sole.
- When working with sharp-edged tools, aggressive solutions, hot devices or hot materials, always wear suitable safety gloves.
- When skiving out the injury with a rotary tool or during other work with a risk of projection of hot, pointed or sharp-edged drops, chips and sparks, face protection is recommended.

Safety symbols:


Use eye goggles!


Wear ear protection!


Wear safety shoes.!


Wear protective gloves!


Face protection recommended!

When using solvents and vulcanizing cements, observe the safety instructions and symbols on the containers and the Safety Data Sheets.

Safety Data Sheets are available at:
http://www.rema-tiptop.com/products/safety-data-sheets/

Pictogram	Code	Hazard designation
 Exploding bomb	DANGER GHS01	Unstable explosives, mixtures and products containing explosives, self-reactive substances and mixtures, organic peroxides
 Flame	DANGER / ATTENTION GHS02	flammable, self-heating, self-reactive, pyrophoric, water-reactive, organic peroxides
 Flame over circle	DANGER GHS03	oxidizing hazards
 Gas cylinder	ATTENTION GHS04	gases under pressure, compressed, liquefied, frozen, dissolved gases
 Corrosion	DANGER / ATTENTION GHS05	for corrosive damage to metals, as well as skin, eyes
 Skull and Crossbones	DANGER GHS06	acute toxicity
 Exclamation mark	GHS07	div. health hazards
 Health hazard	DANGER / ATTENTION GHS08	div. health hazards
 Environment	ATTENTION / DANGER GHS09	may cause damage to the aquatic environment

Ensure that the concentration of the pollutant is under the occupational limit values. These are country-specific and specified in the safety data sheet, chapter 9 of each country. Not in every country limits have been defined for every chemical substance.
Especially when working with solutions inside the tire it is important to provide adequate ventilations as limit values might be exceeded quickly in closed areas. Flammable solvents can also lead to an explosive atmosphere. Solvent vapors are usually heavier than air and need to be extracted near the floor.

- When using chemicals or solvents, do not eat, drink or smoke.

- Tire repair equipment and tools have to be in good conditions. They must never be left unattended when in use. Damaged or unserviceable safety equipment such as defective safety switches or similar devices expose the staff working near them to high risks.

- Working under bad illumination is dangerous. Good illumination and a clean work place are essential conditions for safe work. Reflective jackets are recommended in areas where vehicles are handled.

- Always keep dangerous tools, solutions, etc. out of the reach of children and unauthorized persons.

- Always observe the specific regulations for prevention of accidents from the employer's liability insurance association and the general safety regulations which apply in the countries concerned. In principle, a risk assessment for all activities in the respective working environment must be carried out before the start and adjusted in case of changes.

1.2 Tire terms

Tread

Plain or grooved rubber composite which ensures the contact with the road surface. It withstands wear and also protects the body plies together with the belts from cuts, punctures or any other damage resulting from running conditions. The tread includes the belts (protection plies and working stabilizer belts).

Shoulder

The edge area of the tread into the sidewall where the stepped belt edges are possibly located. The term describes a critical repair area, as this area is subject to increased temperatures and irregular movements. This area tends to be a possible area to develop separations.

Sidewall

Area between the bead and the tire shoulder. It determines the flexing behaviour of a tire. It contains the body ply including the extended ply turn-up.

Bead area (NRZ)

The part of the tire which is in contact with the rim. This part anchors the body ply, and seals the tire against the rim.
This part of the tire is described as NRZ (non-repairable zone or area). This term refers to the area between the bead toe and the centring rib.

Body ply

The radial body ply is the reinforcement which enables the tire to resist the tire inflations pressure. At the same time, it transmits the carrying force from the rim to the tread and the working belts.
The specification of the structure is specified according to the US standard for new tires under "sidewall".

The belt plies

The belt plies stabilize the tread and improve the distribution of pressure of the tire footprint. It also fulfills a protective function.
The specification of the structure is specified according to the US standard for new tires under "tread".

Inner liner

An air/ gas-tight rubber layer inside the tire. The inner liner usually consists of butyl rubber.

1. General Information

1.3 Terms regarding tire repair

Hot/ warm vulcanization
Method of vulcanizing rubber fillings and repair patches on repair areas by means of heat and pressure.

Self- vulcanization
Method of vulcanizing repair patches on injuries at room temperature at least +18°C/ 65°F.

Puncture channel
Hole made by a foreign body penetrating into the tire casing/ belt.

Skive filling
Uncured rubber compound for filling the puncture channel before hot/warm vulcanization.

Pre-cured rubber insert (e.g. REMASTEM)
Pre-cured rubber plug for filling the puncture channel. It can only be used for punctures to the tread.

Combi repair unit (e.g. MINICOMBI)
One-piece repair unit which serves as a repair patch and fills the puncture channel at the same time. It can only be used for punctures to the tread.

Repair patch
Flat repair unit whose size and strength are adapted to the individual tire and injury sizes.

Reinforcement
Textile or steel cord which forms the plies of tire and is also used in repair patches from a specific size on.

Drying time/ Test with the back of the finger
The minimum drying time and the maximum permissible drying time have to be observed during the application of vulcanizing solutions and cements. The right moment for the application of a repair patch is, when the coat feels a little sticky when touched with the back of the finger but does not adhere to the finger or leave a wet residue on the finger; the coat should be dry, but still tacky.
This test is always carried out on the edge of the coated surface area.

LS (Low Speed)
Low speed – low speed rotary tool with
2 500 – 7 500 RPM preferred for machining rubber.

HS (High Speed)
High speed – high speed rotary tool with
16 000 – 30 000 RPM, preferred for machining steel.

RMA = Retreader Manufacturer Association

1.4 General rules for tire inspection and repair

- Before starting any repair, check whether it is technically safe and economically viable to repair the tire. Also check the whole tire for further hidden damage. Always examine the tire taking into account its general state outside the repair area.
- If a small injury is difficult to locate, slowly inflate the tire step by step to the operating pressure, permanently checking the whole tire for any noticeable defects.
- Always demount the tire from the rim in order to check whether repairs are technically safe and economically viable, and to carry out the repair.
- After preparing the injury, select the appropriate repair materials depending on the size and position of the injury.
- The injury area has to be prepared correctly by means of the appropriate tools. Further damage arising from the injury, which may be found during this operation, also has to be included in the evaluation of the tire's reparability.
- Always observe the country-specific regulations on the repair of tires.

2. Tread Area

2.1 General repair instructions

2.1.1 Patch centre

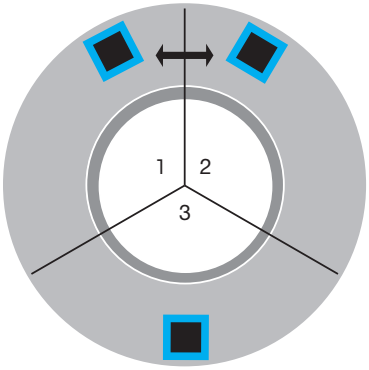
- The centre of the patch is identical to the centre of the injury.

2.1.2 Maximum number of injuries

- Only 1 repair is allowed for each ply cord

Car and van tyres with a load index up to 121:

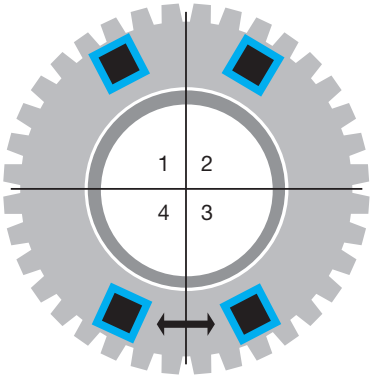
- In a tyre divided into 3 thirds, there has to be only one UP PREMIUM in each segment. (fig. 2.1.1.)



2.1.1

Truck tyre with a load index of 122 to 177:

- In a tyre divided into 4 quarters, there has to be only 1 UP PREMIUM in every quarter. (fig. 2.1.2)



2.1.2

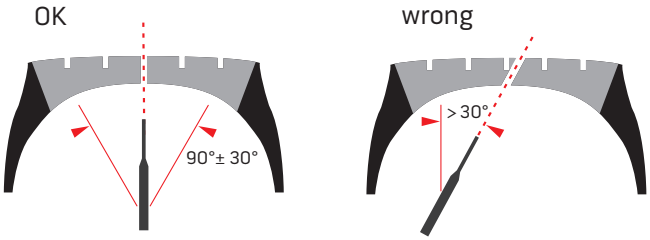
2.1.3 Check the distance between the injuries

The distance between two injuries (in the axial direction) must be at least 15 cm / 6". (fig. 2.1.3)

2.1.3

2.1.4 Check the direction of the puncture channel

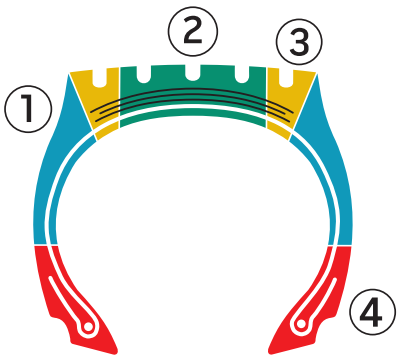
Determine the inclination angle of the puncture channel by inserting a tyre probe / awl or by checking the inclination angle of the foreign body in the puncture. The inclination angle must not exceed 30° (fig. 2.1.4).



2.1.4

2.1.5 The tyre consists of 4 areas (fig. 2.1.5)

1) sidewall
2) tread
3) shoulder
4) bead (non repairable area)



2.1.5

2. Tread Area

2.2 Preparation of the tyre

- Note and record all tyre data.
- Locate and mark the damaged spot on the tyre. (fig. 2.2.1)
- Demount the tyre correctly.
- Remove the foreign body without causing any further damage to the tyre. (fig. 2.2.2)
  Screws should be screwed out of the tyre.
- Inspect the tyre on the inside and outside.
- Always check in a professional way according to appropriate criteria, such as the general state of the tyre, national repair limits etc. whether the tyre can be repaired. Also check the whole tyre, including existing repairs, for further hidden damage.

2.2.1

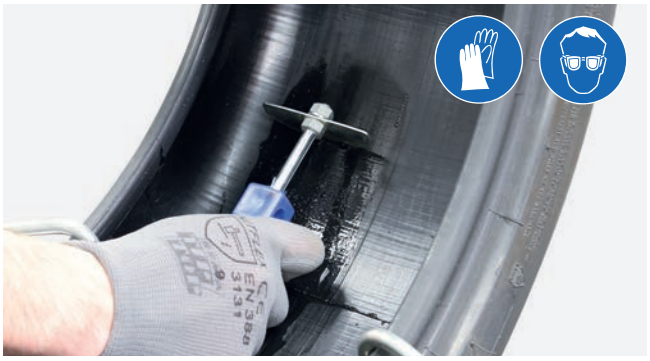
2.2.2

- Determine the injury size by measuring the foreign body removed. (fig. 2.2.3)
- If no foreign body can be found, measure the injury size on the tyre inside and outside.
- For information about the correspondences between injury sizes and repair areas, refer to the application instructions included in the respective packs.
- Determine the direction of the puncture channel using a probe.

2.2.3

- Using LIQUID BUFFER, remove mould release agents and debris from the repair area inside the tyre. (fig. 2.2.4)
  Apply a generous amount of LIQUID BUFFER to an area twice as large as that of the UP PREMIUM, then clean this area using a liner scraper.

Note: REMA TIP TOP offers an extensive range of repair patches and vulcanizing machines for repairs to major injuries or injuries located outside the tread area.



2.2.4

2.3 Repair preparation

- Select the appropriate mill cutter for the REMASTEM PREMIUM selected.
- Place the tyre on a tyre spreader and spread the beads.
- Carefully prepare the puncture channel with the appropriate mill cutter, first from the tyre inside outwards, then from the outside to the inside of the tyre, observing the direction of the puncture channel. (fig. 2.3.1 to 2.3.2)

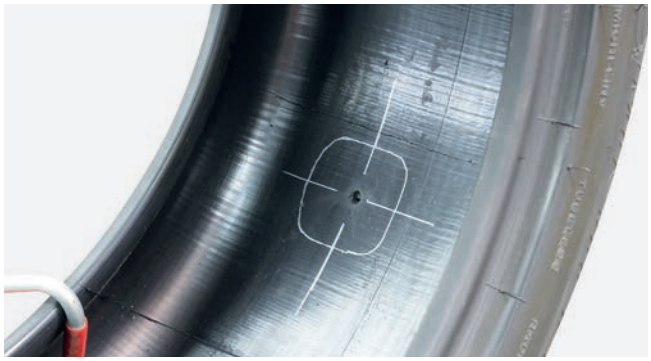
  REPEAT THIS OPERATION ONCE OR TWICE.

  Recommended speed of mill cutter: max. 2500 R.P.M. During this operation, completely remove any material which may adversely affect the casing/ belts (rust etc.). If necessary, repeat this operation using the next larger mill cutter, always observing the maximum repairable injury sizes. Be sure to use the correct REMASTEM PREMIUM repair unit.
- Select the appropriate UP PREMIUM, refer to the valid repair charts.
- Mark the centre of the damage inside the tyre.
- Mark the centre of UP PREMIUM.
- Using a silver pen or marker, draw the patch outline approx. 5 mm larger than the UP PREMIUM to be used. (fig. 2.3.3)

Note: A self-made patch template makes it easier to position the repair patch to be applied and keep it clean.

2.3.1

2.3.2



2.3.3

2.4 Application of REMASTEM PREMIUM

- Turn the tyre so that the injury is in the 7 or 8 o'clock position.

- Place the tube of FAST DRY CEMENT BL at the opening of the puncture channel inside the tyre, and squeeze FAST DRY CEMENT BL into the puncture channel. (fig. 2.4.1)
  FAST DRY CEMENT BL provides the necessary lubrication for insertion of the repair unit, and bonds it reliably to the tyre.

2.4.1

Note: SPECIAL CEMENT BL can be used as an alternative to coat the repair area.

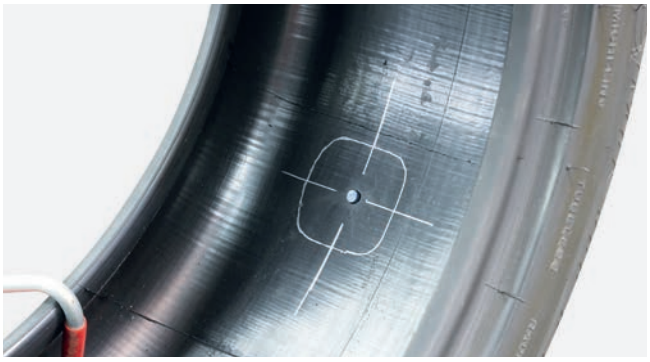
- Insert the REMASTEM PREMIUM by about 10-15 mm into the eyelet opening of the inserting probe, and secure it there. (fig. 2.4.2)
  Avoid touching the blue bonding layer when handling the REMASTEM PREMIUM.

2.4.2

- Then push the inserting probe through the puncture channel from the tyre inside outwards, seize it with flat pliers and pull out the repair plug. (fig. 2.4.3)

2.4.3

- Take hold of the stem of the REMASTEM PREMIUM repair plug and pull it until approx. 5 mm of the repair plug is protruding from the tyre inside. (fig. 2.4.4)



2.4.4

2.5 Prepare the tyre inside

- Buff the REMASTEM PREMIUM flush with the inner liner.
- Buff the inner liner using a dome rasp or a wire brush. **(fig. 2.5.1)** During this operation, remove all vent lines until you get a completely smooth surface. Continue buffing to a smooth velvety finish (RMA 3 buff texture), putting slight pressure on the buffing tool and keeping it in constant movement to avoid excessive buffing of the inner liner.
- Clean the buffed surface using a brass brush, then completely remove the buffing dust with a vacuum. **(fig. 2.5.2 and 2.5.3)** Always remove buffing dust with the use of a vacuum and brass brush. Never use compressed air to this end.

Note: The buffed surface should be coated immediately after buffing in order to protect it from oxidation.

2.5.1

2.5.2

2.5.3

- Apply FAST DRY CEMENT BL to the correctly prepared repair area. Apply a thick and even coat of FAST DRY CEMENT BL to the repair area inside the tyre. Turn the tyre so that the repair area is in the 3 or 9 o´clock position. Observe the drying time before further processing. Drying time knuckle test (5-15 minutes). **(fig. 2.5.4)**

Note: Do not speed up the drying process of the cement by any artificial means. SPECIAL CEMENT BL can be used as an alternative to coat the repair area. The drying time knuckle test of Special Cement BL is 10-45 minutes.
Avoid any contamination on the bonding layer or the coat applied.

2.5.4

2. Tread Area

2.6 Patch application

- Relax the tyre beads before applying the patch. Turn injury area into the 6 o´clock position.
- Test dryness of cement. Use knuckle test – make sure the cement or solution is dry but still tacky.
- Remove the lining from the back of the repair unit and centre the UP PREMIUM over the injury area. (fig. 2.6.1) Avoid touching and contaminating the blue bonding layer.
- After applying the UP PREMIUM, stitch thoroughly from the centre outwards. Stitch over the whole surface of the repair unit. (fig. 2.6.2)
- Remove the upper protection film.

2.6.1

2.6.2

2.7 Finishing the repair

- Finally, 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.
- Seal the edge of the UP PREMIUM and any still exposed buffed surface areas with INNERLINER SEALER. (fig. 2.7.1)
- Mount the tyre, and inflate it to the operating pressure.
- Cut the protruding stem flush, using an offset knife. (fig. 2.7.2) Do not stretch the stem while cutting it.
- Check the tyre for leaks.
- Balance the wheel.
- Fit the wheel on the vehicle.
- Set the inflation pressures of all tyres on the vehicle to the appropriate values.
- After the repair has been completed, the tyre can immediately be put back into operation. The vulcanization between the REMASTEM PREMIUM and UP PREMIUM repair unit and the tyre is automatically completed under normal running conditions.

2.7.1

2.7.2

Your local contact

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