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REPAIR AND RESTORATION OF MECHANICAL ENGINEERING DETAILS BASED ON THE STANDARD

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Annotation: This article provides information on the technological process of repair methods to increase the operating resource of pneumatic tires in vehicles, technical equipment and tools used in restoration, procedures for their use, quality indicators of repaired tires.
Key words: Transport, machine, aggregate, tire, process, pneumatic, repair, restoration, resource, tread, pattern, camera, damage, rubber, rubber, patch.

In vehicles from the conducted research and observations, it was found that the pneumatic tires of the wheel are damaged in various ways during movement. These include:

- puncture, fracture and cutting of tires and chambers;
- tread pattern bending and separation;
- separation of side walls from the frame;
- sides wire core cracking and opening;
- thread cracking and frame delamination;
- damage to side surfaces, etc.

In addition, in pneumatic tires, rubber under the influence of sunlight and external high temperature the casting process takes place, it becomes harder and more brittle, covered with small cracks. When petroleum products fall into tires or chambers, the rubber swells and loses its mechanical properties, with prolonged exposure to moisture, the cord threads rot and reserve in aggregates the absence of tires causes a decrease in performance and performance.

Camera punctures and tearing are usually corrected by applying patches. Vulcanized rubber from patch rubber rubber or waste chambers is used as repair materials, which does not corrode by signs of fatigue or petroleum products. It is recommended to cover holes and tears up to 30 mm with rubber patches and more than 30 mm with vulcanized rubber patches. In cracks, sharp corners are rounded with scissors, they are given an oval shape, the surface of the chamber around the damage is cleaned with abrasive shiny stones on the bench or with a rasp by hand, 10-15 mm edges are cut around the damage [1].

The technological process of tire repair consists of: repair, washing, defecting, cutting, drying of damaged areas, closing of damage and vulcanization (that is, melting and gluing at high temperature). For car tires, it is recommended to repair tires with a damage of less than 10 % of the nominal value.

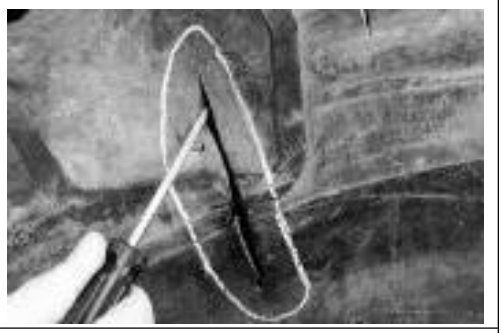
Large injuries (rectangles with a diameter of more than 25 mm or larger than 25x50 mm) are cut. The injury is usually cut by an "external" cone and takes the form of an "internal" cone damaged on the outside and a large and damaged "opposite" cone on the inside when permanently damaged. Tires prepared for repair are dried in a drying chamber at a temperature of 70-80 °C for 8-18 hours.

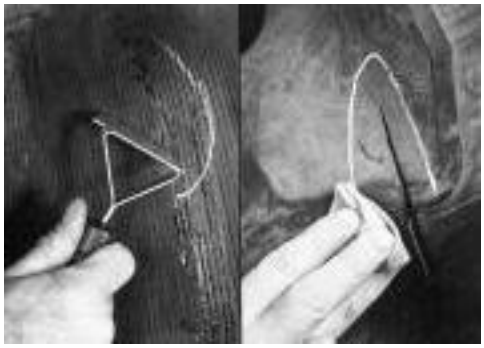
Quality and reliable tire repair is necessary to ensure high safety and accuracy. Diagonal VR patches are recommended to be used for camera-free and camera tire repair, as they are very flexible, durable and safe [2].

VR diagonal patches have a layer of rubber between the cord and a gray layer of self-vulcanizing rubber that absorbs shocks. The patch structure allows it to be installed near the edge of the wheel, eliminating the need to install a separate patch on the side wall of the tire. Below on repair of pneumatic tires using the method using a vulcanizer instructions are available (Table 1).

Table 1

Instructions for the tire repair and restoration process

	Naming of processes	Types of injuries and handling
	Careful inspection of the exterior and interior of the tire, determining whether it can be repaired find damaged areas for. In this case, the inspection area must be well lit.	
	Remove all foreign objects from the tire, if any. Determining the size and possible stratification of cord layers with 910 blunt ends on the inside and outside of the tire.	
	After determining whether the tire needs repair, clean the inside of the tire № 704E cleaner (Rub-O-Matic) 975 application to the designated area of the tire with actions.	

	Remove dirt with № 933 scraper even if the destination is wet. Apply the cleaning liquid to a fluffy cloth and clean the damaged area. To dry completely, leave the cleaning liquid for 3-5 minutes.	
	S1036 the model is mounted on a low-speed drill Removal of the top layer of rubber along the dimensions of the damage with the S2045 cover cutter.	
	With a low-speed drill, the process of rounding the ends so that the base of the damage does not increase after processing and repair.	
	4000 damaged area ob/min it will be necessary to clean with a speed drill and an S892 wire brush and vacuum cleaner	

apply the № 704 E cleaner (Rub-O-Matic) 975 to the designated area of the tire with a bottle of requirements. Designated although the location is still wet, remove with a № 933 (Rubber Scraper) scraper.

Carefully turning the patch from center to edges with a № 936 (Stitcher) roll ensures that there is no air left between the patch and the tire [3].

Application of № 738 (Security Coat) substance along the dimensions of the patch and on the remaining treated surface during repair of the tire without a camera. If the camera tire is being repaired, № 706-1 talc (Tire Talk) is sprayed on the repaired area. This prevents the gray layer from overlapping on the edges of the patch and chamber.

After all cleaning, vulcanization and repair processes are carried out in accordance with these instructions, the tires are considered restored and submitted for reuse.

Conclusion: In the process of using vehicles, effective use of wheel pneumatic tires, i.e. repairing tires and bringing them back to work, is one of the main factors of increasing tire resources.

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