

Wirtschaftsverband der deutschen Kautschukindustrie e.V.

Mounting- and demounting commercial vehicle tires

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Steuerungsgremium Reifenmontage

wdk – Wirtschaftsverband der deutschen Kautschukindustrie e. V.

Goal and Intention of this procedure

This procedure is aimed to ensure a secure and faultless changing of current commercial vehicle (CV) tyres. This procedure describes the method with the least handling effort.

This does not mean that it is the easiest approach, depending on the machine and the tyres. Any current CV tyre can be mounted without damages when following to this procedure.

This procedure does not claim to be exhaustive. Every step is described, but this does not relieve the mounting personnel from acting independently and responsibly.

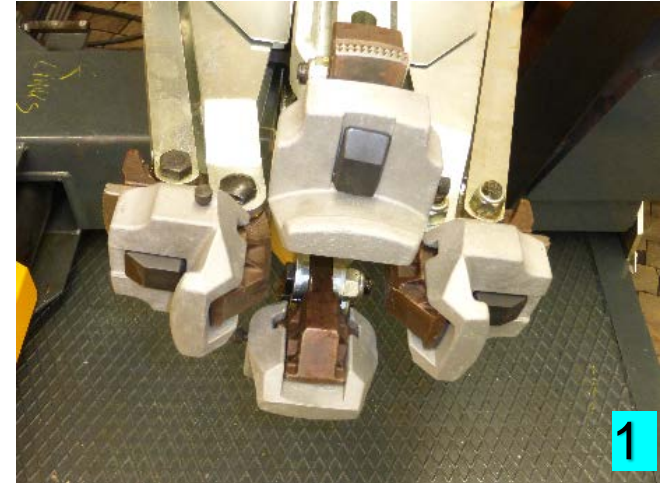
In general the appropriate personal protective equipment is to be worn and all requirements for occupational safety and health (BGI, UVV, etc.) are to be respected.

Preparatory tasks

Usability of the machine and used accessories, particularly the mounting head and mounting finger must be checked for sharp edges and damage.

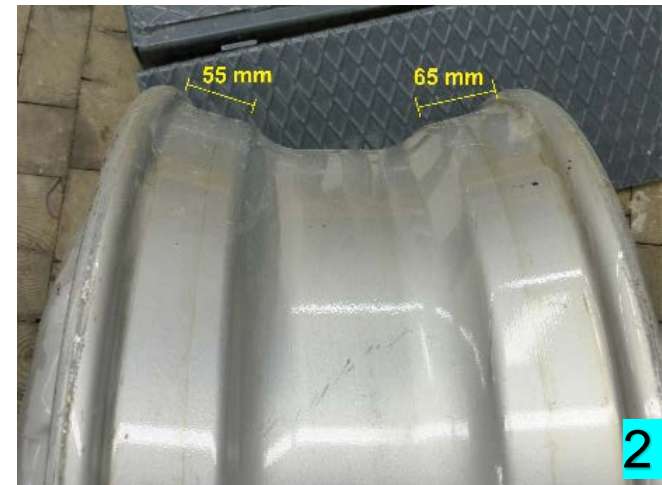
Prepare all necessary equipment:

- Protective jaws/ - rings for Alloy-rims (Fig. 1)
- Clamps (with protective jaws for Alloy-rims) (Fig. 2)
- tyre lubricant / brush / mounting lever
- Other required tools



Identification of parts

Position of the short rim shoulder must be on machine-far side of the mounting machine (Fig. 1), if necessary, identify the short rim shoulder by measuring both shoulders (Fig. 2).



Checking & basic cleaning of the rim and tyre

Check the tyre conditions, also for safety-relevant damages, particular the bead area (in- and outside).

Check the rims for damages (cracks), corrosion and wear, particular the

- Valve hole
- Bolt hole
- Rim flange
- Contact surfaces

For Alloy-rims: Check the rim flange with a flange gauge (Fig. 1).

If necessary, remove burr on the rim flange as well as corrosion.

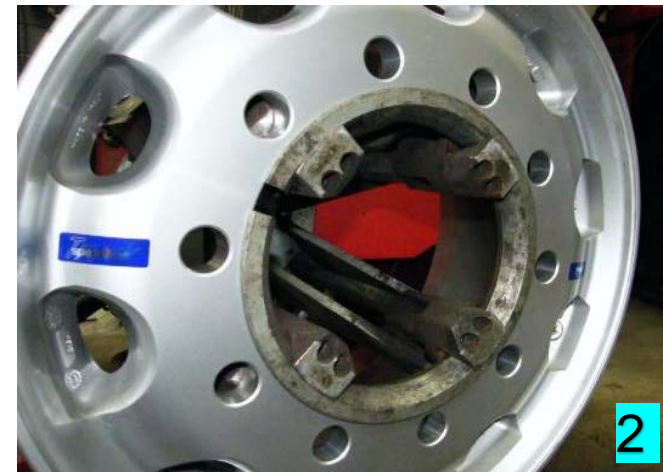


Rim clamping

Clamp the rim with the short shoulder on machine-far side of the mounting machine.

Ensure that the rim is firmly fixed and in a flat and plane manner on the clamping device (Fig. 1).
Ensure correct clamping without jamming.

For Alloy Rims, use special clamping claws or protective rings (Fig. 2) to avoid damage on the centering of the rim.



Install the valve and seal

Before tyre mounting, check if TPMS sensors are present in the rims or tyres!

Check the valve seat (for example, deformation, corrosion, etc.), if necessary, clean the sealing surfaces, remove rust and re-coat according to the manufacturer's specifications.

Install valves according to manufacturer's instructions - refer to wdk 92, check the valve seal. Do not squeeze rubber seals. Observe the allowed tightening torques.

Install TPMS Unit

Always observe manufacturer's instructions!
Check function after installation.
Do not lubricate sensor.

Maintenance or replacement acc. to Manufacturer's specifications
(Service Kit, etc.).

Observe tightening torques for screwed sensors.
When using filler material (balancing granulate), observe the
vehicle-, tyre and valve manufacturer specifications.

Apply lubricant

Check lubricant for dirt and foreign material, do not use a contaminated lubricant.

Use only suitable lubricants for commercial tyres do not use a disassembly fluid.

Do not apply lubricant to valve and sensor.

Apply mounting lubricant:

- On the rim: From rim flange to rim flange (Fig. 1)
- On tyre: In the bead area on both sides up to the height of the centering line (inside and outside) (Fig. 2 & 3)



Apply the tyre / „fishing“

Set the traction point by fastening the clamp, Check the clamp for a safe fixation.

Starting positions: Clamp at 12 o'clock, Valve 3 o'clock (Fig. 1). For tyre „fishing“ (Fig. 2) rotate so that the Clamp stops at 3 o'clock (Valve 6 o'clock). Place tyre over clamp.

Then move the machine axle upwards - the wheel turns counterclockwise - at the same time until the clamp is at about 12 o'clock (Fig. 3). While moving the machine axle upwards, press the tyre bead against the drop centre of the rim.

Make sure that the tyre bead does not touch / hurt the (TPMS) sensor during lifting. Keep tyre bead away from sensor.



Positioning rim with tyre to mounting tool

Lubricate the mounting finger of the mounting machine on both sides. Do not use the dead breaker roll.

Move the mounting finger on the machine-far side below the rim and position at the height of the rim flange between bead and rim flange (Fig. 1 & 2).

Observe the correct distance between the mounting finger and the rim flange: Do not touch the rim, at the same time, do not create too much tension in the tyre (Fig. 3).



Install the first bead over the rim flange

Turn the wheel clockwise until the first bead is stepwise guided gradually over the wheel flange. Avoid high tension, if necessary adjust the mounting finger.

Mount step-by-step and remove the tension of the mounting head, move the mounting finger back and forth.

Bead must remain on the opposite the mounting head rim side in drop centre of the rim.

Turn the machine clockwise and ensure that the top bead slides into the drop center of the rim (Fig. 1 & 2).



Preparation for mounting of the second bead

Position the valve in the area of the mounting finger (8 o'clock) (Fig. 1), then retrieve the mounting finger from the bead area and remove the clamp.

Place the bead shovel on the machine-facing side. Position the mounting finger at the level of the machine far side rim flange (Fig. 2).



Position of second bead and install accessory parts

The valve position is still at 8 o'clock. The clamp is located in the direction of rotation behind the valve (Fig. 1).

Lubricate the clamp (Fig. 2). Set distance from valve to clamp depending on the valve position in the rim, to ensure that the first bead does not touch the valve during the mounting process.

Ensure a sufficient distance between the mounting finger and the rim, if necessary, correct during mounting.



Mount the second bead over the rim flange I

Turn the rim with tyre clockwise, observe that the second bead slides into the drop center (for tyres with low section absolutely necessary!) - (Fig. 1 & 2).
Observe valve- / sensor position in order to avoid damage!

Tighten the clamp.

Ensure a correct distance of the mounting finger to the rim flange: Do not touch the rim and at the same time, do not create too much tension in the tyre.



Mount the second bead over the rim flange II

With the mounting finger, slightly lift the second bead from rim flange, so that the bead toe is relieved and tearing is avoided. (Fig. 1)

The angle between the clamp and the mounting finger should be less than 90 °.

If the strains are too high: abort mounting process and start again. In addition, lubricate and use additional tools. (Fig. 2)

In the last third : Mounting stepwise, pausing briefly, reduce strains (Fig. 3). Make sure that the bead does not bend or roll in.



Remove all mounting tools

Remove the clamps.

Remove the mounting finger slowly and carefully (Fig. 1). If necessary use the mounting lever.

Do not remove the tool under tension.
Remove the complete mounted wheel from the mounting machine.



Inflate the tyre

„Pre-“inflation (to max. 400 kPa / 4 bar): respect safety rules.

Do never face the sidewall of the tyre when inflating!

Do not inflate tyres on the mounting machine above 400 kPa (4 bar).
Bead centering line must be parallel to the rim flange.

If the bead centering line is irregular, deflate the tyres, press both beads from the rim flanges, use lubricate again, remount the tyre and reinflate it.

GENERALLY: Keep a safety distance from the tyre (2,5 m);
insert the valve insert.

Inflate the tyre

Remove the wheel from the mounting machine and move it to the inflation cage.

Inflate to operating pressure :

Do not exceed the maximum inflation pressure for truck tyres - 1000 kPa (10 bar) / light truck tyres (Lkw) 600 kPa (6 bar). Always inflate the wheel in the safety cage (Fig. 1), alternative with a rim guard and a side safety distance of 2,5 m.

Check valve for leaks! (Fig. 2)



Final tasks

Install and check valve extensions and / or fastening parts.

Check the valve extensions for leaks and usability.

Add the valve cap.

Ensure that the lubricant is properly dried.

Check the fitted wheel visually (bulges, cracks, deformation, leaks, etc.).

Preparatory tasks I

Usability of the machine and used accessories, particularly the mounting head and mounting finger must be checked for sharp edges and damage.

Basic cleaning of the fitted wheel for the identification and inspection of the parts / components.

Preparatory tasks II

- Check whether a TPMS is present, if so, identify the system and observe manufacturer's specifications regarding the mandatory parts to be exchanged.
- Check the functional capability by handheld or with the vehicle's electronics.
- Remove the valve extension if necessary.
- Unscrew valve insert / Drain air completely.
- Remove balancing weights if necessary.

Clamping the Wheel

Clamping the wheel to the mounting machine. The rim with short shoulder must be clamped at machine far side.

Use protection for Alloy-rims (Avoid damage to the centering)

Ensure that the rim is firmly fixed on the clamping device.

Unseat the first bead

Mark the valve position on both sides of the tyre.
Break upper bead using bead breaker roll, begin with the side of the short rim shoulder. (Fig. 1 & 2)

Observe the TPMS sensor if necessary during the bead unseating operation.

Observe that the bead does not slide into the drop center
=> so that any existing sensor will not be damaged.

Apply the lubricant during the unseating process between the tyre and the rim (Fig. 3).

Only use suitable lubricants for commercial vehicles.



Unseat the second bead

Unseat the 2nd bead using the bead breaker roll, continue on **machine-facing** side.

Apply the lubricant during the pressing process between the tyre and the rim (Fig. 1 & 2).

Observe the possibly existing sensor if necessary! (Fig. 3)

Do not allow that the bead slide / push into the drop center => so that any existing sensor will not be damaged.

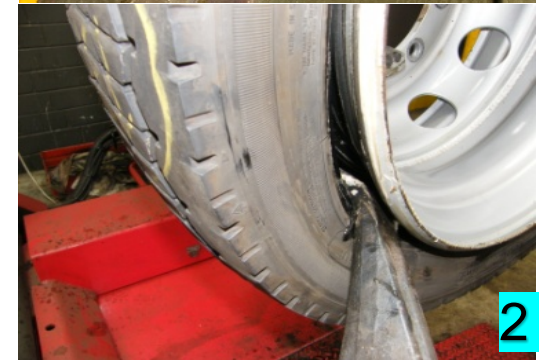


Demounting process

Lubricate the mounting finger of the mounting machine on both sides (Fig. 1) and move in from machine-far side, tension free at the level of the valve (Fig. 2), without damaging the valve or the existing sensor (Fig. 3).

During insertion of the mounting finger, rotate the tyre 90° back and forth.

Tyres with a low cross section (height to width ratio):
Before starting the demounting process, rotate the wheel half a turn, so that the valve is opposite of the mounting finger.



Demount the first bead

Insert the mounting lever in the direction of rotation before / In front of the mounting finger and behind the valve (Fig. 1 & 2). Valve at 12 o'clock

Always demount the tyre clockwise with mounting- finger and lever (Fig. 3).



Demount the first bead

With the mounting finger pull the first bead finger over the rim flange and fasten with the mounting lever (Fig. 1).

Turn the machine clockwise until the first bead is detached from the rim.

The first bead must remain in the drop center, on the rim side facing the mounting head (Fig. 2),

adjust if necessary by wheel rotation.
Additionally lubricate the bead during the demounting process.



Demount the first bead

Demount the first bead by slightly pulling with the mounting finger and return the wheel back to the initial position.

Use the lever from the mounting machine manufacturer.

When demounting **wide base tyres**, relieve tension on mounting finger stepwise.

Demount the second bead

Turn the valve to 8 o'clock. (Fig. 1)

Starting at the valve, move in the mounting finger from the machine-facing side (Fig. 2).

Unseat the bead stepwise over the outer rim flange.

Relieve tension of the bead (machine-facing side) by readjusting the mounting finger distance to rim



Demount the second bead

Secure with the mounting lever above the mounting finger on the machine far side and turn clockwise (Fig. 1 & 2).

Let the tyre slide off the rim in a controlled manner (Fig. 3).

Important: The area in front of the mounting machine must be kept free (Fig. 3).



Final tasks

Remove all mounting tools

Clean the rim

Store tyre for further usage (re-mounting / retreading).

The following have participated in establishing this Procedure:

Tyre Industry: Apollo-Vredestein, Bridgestone, Continental, Goodyear-Dunlop, Michelin, Pirelli

Wheel Industry: MEFRO-Wheels

Workshop Outfitter: Snap-On, Corghi, Butler

Vehicle Manufacturer: Daimler

Associations/

Independent Experts: ASA, BRV, Stahlgruber Stiftung, DEKRA, Herr Michael Immler

Roadside assistance: Vergölst, Euromaster, Pneuuhage

wdk wishes to thank all participants for their valuable contribution.



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