



TCE 4540



BOSCH

de Originalbetriebsanleitung
Reifenmontiermaschine

es Manual original
Máquina para montaje de neumáticos

nl Oorspronkelijke gebruiksaanwijzing
Bandenmonteermachine

cs Původní návod k používání
**Stroj pro montáž a demontáž pneu-
matik**

en Original instructions
Tire changer

it Istruzioni originali
Smontagomme

pt Manual original
Máquina de montagem de pneus

tr Orijinal işletme talimatı
Lastik sökme ve takma makinesi

fr Notice originale
Machine à monter les pneus

sv Bruksanvisning i original
Däckmonteringsmaskin

pl Instrukcja oryginalną
Zmieniacz opon

zh 原始的指南
轮胎装配机

de EG-Konformitätserklärung
en EU Declaration of Conformity
fr Déclaration de conformité "CE"
es Declaración de conformidad CE
it Dichiarazione di conformità CE
sv EG-försäkran om överensstämmelse

TCE 4540

1 694 100 192 & Varianten

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Europäischer Richtlinien überein:
The product described, in the version as made available by us, complies with the regulations contained in the following European directives:

Le produit indiqué est conforme, dans la version mise en circulation, aux dispositions des directives européennes suivantes:

El producto designado coincide, en la ejecución puesta en circulación por nosotros, con las disposiciones de las siguientes directivas europeas:
Il prodotto indicato, nel modello da noi messo in circolazione, è conforme alle norme stabilite dalle seguenti direttive europee:

Den betecknade produkten överensstämmer i det av oss levererade utförandet med bestämmelserna i följande EG-direktiv:

- Maschinenrichtlinie / Machine guidelines / Directive Machines / Directiv de máquinas / Direttiva relativa alle macchine / Maskindirektiv (2006/42/EG)
- Niederspannungsrichtlinie / Low-voltage guidelines / Directive Basse tension / Directiv de baja tensión / Direttiva relative alla bassa tensione / Lågspanningsdirektiv (2006/95/EG)
- EMV-Richtlinie / EMC guidelines / Directive CEM / Directiv de CEM / Direttiva relativa alla CEM / EMC-direktiv (2004/108/EG)
- Druckgeräte-Richtlinie / Pressure Equipment Directive / Directive sur les équipements sous pression / Directiva sobre equipos a presión / Direttiva in materia di attrezzature a pressione / Direktivet om tryckbärande anordningar (97/23/EG)
Benannte Stelle / notified body:
- Richtlinie über Funkanlagen und Telekommunikationsendrichtungen / Radio equipment and telecommunications terminal equipment / Equipements hertziens et équipements terminaux de télécommunications / Directiva sobre equipos radioeléctricos y equipos terminales de telecomunicación / Apparature radio e le apparecchiature terminali di telecomunicazione / Direktivet om radioutrustning och teleterminalutrustning (1999/5/EG)
- EUP Richtlinie Eco-Design / EUP Directive Eco-Design / Directive EUP Eco-Design / Direttiva EUP sobre diseño ecológico / Direttiva EUP eco-design / EUP-direktiv EcoDesign (2005/32/EC)
- EU-Verordnung Standby / EU-Regulation Standby / Règlement UE Standby / Reglamento Europeo para aparatos en espera (standby) / Regulamento UE standby / EU-förordning Standby (1275/2008)
- EU-Verordnung AC-Adapter / EU-Regulation AC-Adapter / Règlement UE Adaptateur CA / Reglamento Europeo Adaptadores CA / Regulamento UE adaptador AC / EU-förordning AC-adaptör (678/2009)

Jahr der erstmaligen CE-Kennzeichnung / Year of the first marking CE /
Année de premier marquage CE / Año de la primera marcación CE /
Anno della prima marcatura CE / År för första CE-märkningen ... 10

1 699 974 952 | 13.01.2010 | AA-DG/EPF3

Die Konformität wird nachgewiesen durch die Einhaltung folgender harmonisierter Normen:
Conformity is documented through adherence to the following harmonized standards:
La conformité est démontrée par le respect des normes harmonisées suivantes:
La conformidad queda demostrada mediante el cumplimiento de las siguientes normas armonizadas:
La conformità viene dimostrata dal rispetto delle seguenti norme armonizzate:
Överensstämmelsen bevisas genom att följande harmoniserade standarder tillämpas:

EN ISO 12100-1/2:2005; EN 14121-1:2007; EN 60204-1:2006; EN 983:1996 + A1:2008

Angewendete nationale Normen und technische Spezifikationen und/oder Angaben zu Baugruppen gemäß Druckergeräterichtlinien:
Applied national standards and technical specifications and/or data on the modules as per the pressure equipment directives:

Normes nationales et spécifications techniques appliquées et/ou indications relatives aux sous-groupes conformément à la PED:
Normas nacionales aplicadas y especificaciones técnicas y/o información relativa a los conjuntos conforme a la directiva PED:
Norme nazionali applicate e caratteristiche tecniche e/o dati su gruppi in conformità alle PED:

Tillämpade nationella standarder och tekniska specifikationer och/eller uppgifter beträffande komponenter enligt direktivet om tryckbärande anordningar:

18. Jan. 2010

Date / Legally binding Signature
i.v. AA-DG/NE Harald Neumann
(Entwicklung, Dokumentationsverantwortlicher)



Robert Bosch GmbH
Automotive Aftermarket -
Diagnostics
Postfach 1129
D 73201 Plochingen

18. Jan. 2010

Date / Legally binding Signature
ppa. AA-DG/FC Ulrich Theise (Fertigung)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusage von Eigenschaften. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

This declaration certifies compliance with the stated directives, but it does not provide any assurance of characteristics. The safety instructions of the product documentation included are to be observed.

La présente déclaration certifie le respect des directives indiquées mais ne constitue pas une garantie de caractéristiques. Observer les consignes de sécurité qui figurent dans la documentation fournie.

Esta declaración certifica la coincidencia con las directivas mencionadas, pero no supone ninguna garantía de propiedades. Deben tenerse en cuenta las indicaciones de seguridad de la documentación del producto suministrada adjunta.

Questa dichiarazione attesta la conformità alle direttive citate, senza tuttavia costituire alcuna certificazione di qualità. Devono essere seguite le avvertenze di sicurezza contenute nelle documentazioni del prodotto allegata.

Denna försäkran intygar överensstämmelsen med de nämnda riktlinjerna, men är inte en försäkran om egenkapiter. Säkerhetsanvisningarna som ingår i den medlevererade produktdokumentationen ska följas.

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nl EG-conformiteitsverklaring
pt Declaração CE de conformidade
cs ES prohlášení o shodě
nl Deklaracja zgodności CE
pt Declaração CE de conformidade
el Δήλωση Συμμόρφωσης ΕΚ

TCE 4540

1 694 100 192 & Varianten

Het aangegeven product voldoet in de door ons in de handel gebrachte uitvoering aan de voorschriften van de volgende Europese richtlijnen:

Na versão colocada por n'ós no mercado, o produto designado está de acordo com as seguintes normas europeias:

Označený produkt v provedení námi uvedeném do provozu je ve shodě s předpisy následujících evropských směrnic:

Wymieniony produkt odpowiada w wersji wprowadzonej przez nas do obrotu przepisom następujących dyrektyw europejskich:

Kuivattu tuote on alkuperäisessä muodossaan seuraavien eurooppalaisten direktiivien asettamien vaatimusten mukainen:

To αναφερόμενο προϊόν, όπως αυτό προσφέρεται στην αγορά από την εταιρεία μας, ανταποκρίνεται στις προδιαγραφές των ακόλουθων Ευρωπαϊκών Οδηγιών.

- Machinerichtlijn / Directiv "Máquinas" / pro strojní zařízení / Dyrektywa maszynowa / Konedirektivi / Οδηγία περί μηχανών (2006/42/EG)
- Laagspanningsrichtlijn / Directiv "Baixa tensão" / Směrnice pro nízké napětí / Dyrektywa niskonapięciowa / Pieńjännitedirektivi / Οδηγία περί χαμηλής τάσης (2006/95/CE)
- EMV-richtlijn / Directiv "Compatibilidad electromagnética" / Směrnice EMV / Dyrektywa EMC / EMC-direktivi / Οδηγία περί ηλεκτρομαγνητικής συμβατότητας (2004/108/CE)
- Richtlijn voor printers / Directiva sobre equipamentos sob pressão / Směrnice pro tlaková zařízení / Dyrektywa o urządzeniach ciśnieniowych / Painealätdirektivi / Οδηγία για συσκευές πίεσης (97/23/CE)
Notified body / Benannte Stelle:
- Radio-installaties en zendapparatuur voor telecommunicatie / Equipamentos de rádio e equipamentos terminais de telecomunicações / Rádiová a koncová telekomunikační zařízení / Urządzenia radiowe i końcowe urządzenia telekomunikacyjne / Radiolaitteet ja telekommunikaatiolaitteet / Εγκαταστάσεις ραδιοεπικοινωνίας και θερματικές εξοπλισμός τηλεοπτικών (1999/5/CE)
- EUP richtlijn eco-design / Direttiva EUP Eco-Design / Směrnice EUP Eco-Design / Dyrektywa EUP Eco-Design / EUP-direktivi eco-design / Οδηγία για τον οικολογικό σχεδιασμό προϊόντων και καταναλωτών ενέργεια (2005/32/EC)
- EU-verordening stand-by / EU-Regulation Standby / Règlement UE Standby / Nařízení EU o pohotovostním režimu / Rozporządzenie UE Standby / EY-asetus lepovirtakuituksesta / Κατευθυντήρια ΕΚ για τον ηλεκτρικό εξοπλισμό κατάστασης αναμονής (1275/2008)
- EU-verordening AC-adaptör / Regulamento CE Adaptador AC / Nařízení EU o napáječích adaptérech / Rozporządzenie UE AC-Adapter / EY-asetus verkkovirtalaitteista (AC-adaptteri) / Κατευθυντήρια ΕΚ για προσαρμογείς ενταλασσόμενου ρεύματος (678/2009)

Jaar van de eerste CE-markering / da primeira marcação CE /
Rok prvnioho označení CE / Rok pierwszego oznaczenia CE /
Ensimmäisen CE-merkinnän myöntämispäiväsi / Έτος της πρώτης σήμανσης ΕΚ ... 10

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De conformiteit wordt bevestigd door het naleven van de volgende geharmoniseerde normen:
A conformidade é comprovada pelo cumprimento das seguintes normas harmonizadas:
Shoda je prokázána dodržením následujících harmonizovaných norm:
Zgodność poświadczona jest zachowaniem następujących norm zharmonizowanych:
Yhtenmukaisuus todistetaan noudattamalla seuraavia yhtenäistettyjä standardeja:
Η συμμόρφωση αποδεικνύεται μέσω τηρήσης των ακόλουθων ευνομιονομένων προτύπων:

EN ISO 12100-1/2:2005; EN 14121-1:2007; EN 60204-1:2006; EN 983:1996 + A1:2008

Toegepaste nationale normen en technische specificaties en/of gegevens over componenten conform de richtlijnen voor printers:
Normas e especificações técnicas nacionais aplicadas/ou dados sobre módulos, de acordo com as diretivas relativas aos equipamentos sob pressão:

Použití národní normy a technické specifikace anebo údaje o konstrukčních skupinách podle směrnice pro tlaková zařízení:
Zastosowane normy krajowe i specyfikacje techniczne i/lub informacje o podzespołach zgodnie z dyrektywami o urządzeniach ciśnieniowych |

Sovellutut kansalliset standardit ja tekniset eritellyt/ai rakenneohjeet/ai tekniset tiedot painelätdirektiivin mukaan:
Επιρροδοθέντα εθνικά πρότυπα και τεχνικές προδιαγραφές και/η στοιχεία για τις δομικές μονάδες σύμφωνα με τις αρχές συσκευών πίεσης:

18. Jan. 2010

Date / Legally binding Signature
i.v. AA-DG/NE Harald Neumann
(Development, person responsible of documents)



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18. Jan. 2010

Date / Legally binding Signature
ppa. AA-DG/FC Ulrich Theise (Production)

Dze verklaring bevestiget overeenstemming met de genoemde richtlijnen, het is echter geen garantie van eigenschappen. Houid u aan de veiligheidsaanwijzingen van de meegeleverde productdocumentatie.

Esta declaração certifica a conformidade com as normas referidas, mas não garante por si determinadas características. As instruções de segurança da documentação do produto fornecida junto devem ser respeitadas.

Toto prohlášení osvědčuje shodu s uvedenými směrnici, nepředstavuje však žádný výslovný vlastnosti. Je třeba dodržovat bezpečnostní předpisy v dokumentaci k produktu, která je spolu s ním dodána.

Ninjeza deklaracija potvrdziva zgodnosc z wymienionymi dyrektywami, nie stanowi jednak gwarancji wlasciwosci. Należy przestrzegać zasad bezpieczeństwa zawartych w dostarczonej dokumentacji produktu.

Tämä väkustus todistaa mallittujen direktiivien noudattamisen, mutta ei kuitenkaan takaa kaikkia ominaisuuksia. Laitteen mukana toimittettuihin tuetodokumentteihin merkityt turvallisuusohjeet on noudatettava.

Η παρούσα δήλωση πιστοποιεί την ανταπόκριση στις αναφερόμενες Οδηγίες, δεν αποτελεί όμως βεβαίωση ιδιοτήτων. Οι υποδείξεις ασφαλείας της συνημμένης τεκμηρίωσης προϊόντος πρέπει να τηρούνται.

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1. Symbols used

1.1 Documentation

Pictograms linked with the key words Danger, Warning and Caution are warnings and always indicate an immediate or potential hazard to the user.



Danger!

Immediate danger that could cause serious personal injury or death.



Warning!

Potentially dangerous situation that could cause serious personal injury or death.



Caution!

Potentially dangerous situation that could cause personal injury or damage to property.

! *Important* – warns of a potentially hazardous situation in which the TCE 4540, the test sample or other object in the vicinity could be damaged.

In addition to these warnings, the following symbols are also used:

i *Info* – In addition to these warnings, the following symbols are also used.

➤ *Single-step procedure* – instructions for a procedure that can be completed in just one step.

⇒ *Intermediate result* – an intermediate result is displayed during a procedure.

➔ *Final result* – the final result is displayed at the end of the procedure.

1.2 TCE 4540



Disposal

Old electrical and electronic devices, including cables and accessories or batteries must be disposed of separate to household waste.

1.3 Additional adhesive tags



Respect all the safety instructions and danger warnings on the products and keep the related tags in full readable conditions!



Mounting tool

Danger of crushing the fingers between the mounting tool and the rim.



Mains tension

Danger of electrical shock when touching the parts of the electrical system.

2. User information

2.1 Important notes

Important information on copyright, liability and warranty provisions, as well as on equipment users and company obligations, can be found in the separate manual "Important notes on and safety instructions for Bosch Tire Equipment". These instructions must be carefully studied prior to start-up, connection and operation of the TCE 4540 and must always be heeded.

2.2 Safety instructions

All the pertinent safety instructions can be found in the separate manual "Important notes on and safety instructions for Bosch Tire Equipment". These instructions must be carefully studied prior to start-up, connection and operation of the TCE 4540 and must always be heeded.


2.3 Electromagnetic compatibility (EMC)


The TCE 4540 is a class A product as per EN 61 326.

3. Product description

3.1 Designated use

TCE 4540 is a modern tire changer for mounting and demounting of car and truck tires.

 TCE 4540 has to be used exclusively for the specified purpose and only in the functioning scope shown in these instructions. Any other use different from that specified has to be considered improper and therefore not allowed.

 The manufacturer is not liable for any damage caused by improper use.

3.2 Requirements

TCE 4540 has to be installed on an even surface made of concrete or similar materials, and has to be firmly anchored. A pneumatic connection is requested.

3.3 Delivery specification

Denomination	Order code
TCE 4540	
Wheel lift moving part	1 695 104 322
Bead lifting lever	1 695 102 683
Centring cone Ø 70 – 110 mm	1 695 101 023
Centring cone Ø 44 – 80 mm	1 695 101 025
Quick lock nut	1 695 101 057
Tubeless inflation kit	1 695 103 858
Rubber cover for tightening flange	1 695 103 304
Mounting paste brush	1 695 100 123
Translatable drive pin nylon cap	1 695 103 959
Hook shaped protection	1 695 104 278
"S" shaped protection	1 695 104 279
Bayonet rubber holder	1 695 040 325
Adjustable bead pressing arm	1 695 104 376

3.4 Special accessories

Denomination	Order code
Kit PAX	1 695 104 056
Kit for close central hole rims and for reverse rims	1 695 104 055
Locking kit with centering cones Ø 120 – 174 mm	1 695 104 054
Centring cone Ø 89 – 132 mm	1 695 653 449
Nylon adjusting ring for flange lifting	1 695 104 256
Centring cone Ø 42 – 65 mm	1 695 632 500
Video camera	1 695 043 103
Monitor	1 695 043 036

3.5 Description of unit



On the TCE 4540 there are rotating and moving parts that could injure fingers and arms.

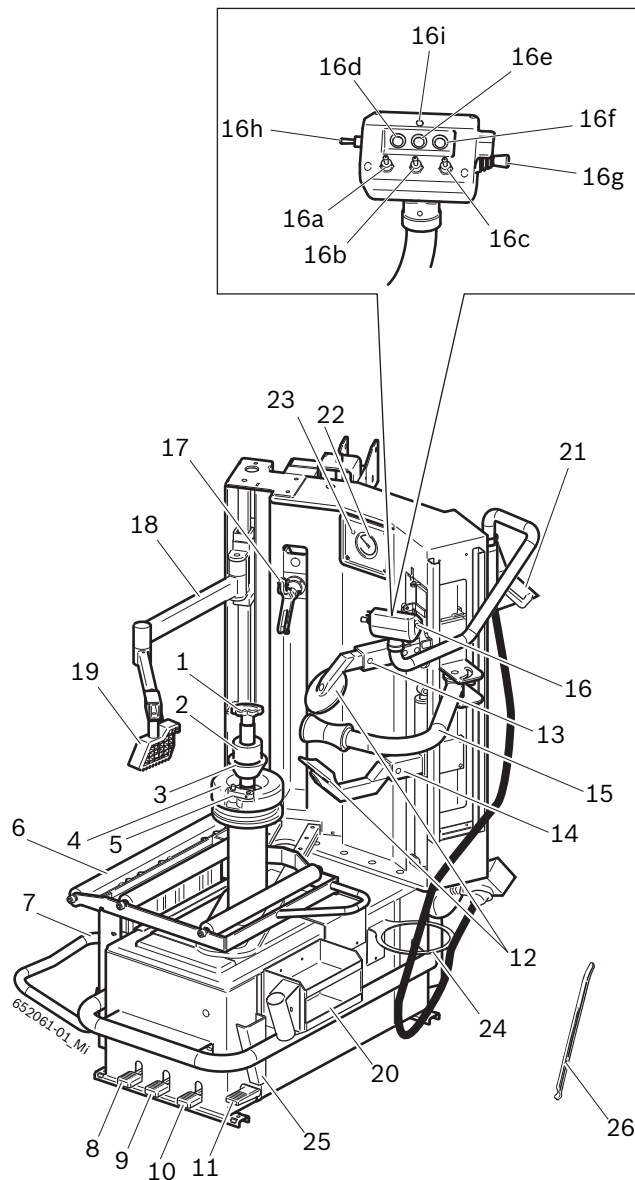


Fig. 1: TCE 4540

Pos.	Name	Function
1	Tightening pin	Blocking of the rim on the tightening flange. It is positioned from above on the centre hole of the rim.
2	Tightening ring nut	Tightening of centring cone on the rim.
3	Centring cone	Centring of rim on tightening flange.
4	Tightening flange	Support and locks the rim safely (by means of the pneumatic system) to make wheel rotation possible.
5	Dragging peg	Rotation of the wheel on the tightening flange. It is centred in one of the holes for the rim bolts.
6	Roller base	Placement of the wheel on the locking flange, after lifting. Once locked, the wheel is lowered.
7	Wheel lifter	Lifting of the wheel from the floor to a safe working height and lowering of the wheel at the end of mounting and demounting operations.

3.6 Description of function

Below are reported the main functions of the listed components of the TCE 4540:


- Pedal box, includes the control pedals of the equipment (tightening flange blocking/releasing pedal, tightening flange rotation pedal, wheel lifting pedal, tyre-inflating pedal).
- Wheel lifter, lifts the wheel from the floor (with the help of the roller base) for positioning on the locking flange.
- Tightening flange, locks (by means of the pneumatic system) and rotates (clockwise and counter-clockwise) the rim.
- Bead breaking hydraulic unit, breaks the bead of the tire from the rim. It can even remove tires which are stuck in their seat in the rim.
- Mounting tool, made of two parts (flat tool and curved tool) used for demounting and mounting of the tire from the rim.
- Bead pressing device, used for mounting of particularly difficult tires. It is driven by an hydraulic pressure cylinder.

Pos.	Name	Function
8	Wheel lifter pedal	Wheel placement: <ul style="list-style-type: none"> • Complete lifting/lowering of the wheel lifter: press the pedal shortly and energetically. • Gradual lowering of the wheel lifter: press the pedal continuously and gently. • Wheel lifter stop: release the pedal.
9	Tightening flange blocking pedal	Blocking (pushing the pedal down) and release (pushing the pedal upwards) of the tightening flange.
10	Tire inflation pedal	Wheel inflation.
11	Tightening flange rotation pedal	Rotation of tightening flange: <ul style="list-style-type: none"> • Clockwise (pushing the pedal down); continue to push to increase the speed of the flange rotation. • Anti-clockwise (pushing the pedal upwards).
12	Bead breaking rollers	Bead breaking. Both bead-breaking rollers are fitted on movable supports and are locked with a clutch pin: their symmetrical lay out, together with the possibility of moving the locking plate, allow optimal positioning.
13	Upper bead breaking arm	Makes the introduction of the mounting lever and the bead breaking of the upper tire bead in the semi drop centre easier. At the end of the operations the roller holding arm is tilted upwards when a spring is released or automatically with the displacement of the upper limit stop.
14	Lower bead breaking arm	Bead breaking of the lower tire bead in the semi drop centre and as counter-support for the side of the tire in case of heavy tires (demounting aid). Moved downwards at the end of the operations.
15	Adjustable roller holding arm	Extra aid for bead breaking. This arm is used during mounting to lead safely, for example, the upper bead of the tire in the semi drop centre (e. g. in case of RFT or UHP tires).
16	Hydraulic control unit	Hydraulic control drive: <p>16a. Left lever: lifting/lowering of lower bead breaker arm.</p> <p>16b. Central lever: sliding (forward/backward) of the tightening flange.</p> <p>16c. Right lever: lifting/lowering of upper bead breaker arm.</p> <p>16d. Left button: clockwise rotation of mounting tool.</p> <p>16e. Central button (AUTO): automatic positioning of mounting tool.</p> <p>16f. Right button: anti-clockwise rotation of mounting tool.</p> <p>16g. Side joystick: tool holder arm movement.</p> <p>16h. Side lever: lifting/lowering of bead pressing device arm.</p> <p>16i. Led: machine power supply indication.</p>
17	Mounting tool	Demounting and mounting of the tire. The tool can be positioned by means of hydraulic movements and can be rotated with the pedal in order to use the two parts which compose it: <ul style="list-style-type: none"> • Flat tool: demounting of the 2° bead and mounting of the 1° and 2° tire bead. • Curved tool: demounting of the 1° tire bead.
18	Bead pressing articulated arm	Bead breaking device positioning.
19	Bead pressing device	Mounting of particularly difficult tires. It is driven by an hydraulic pressure cylinder.
20	Object compartment	Holding the centring cones and quick lock nut.
21	Quick inflation device	Inflates tubeless tires. Inflation is achieved through high pressure blowing that positions the tire bead on the rim edge. The air tank (compliant to UE 87/404) has a capacity of 18 litres of compressed air.
22	Pressure manometer	Tire inflation check. The manometer is compliant to CEE 87/217 directive.
23	Deflation button	Tire deflation.
24	Mounting paste holding ring	Support for mounting paste.
25	Bead lifting lever pocket	Holds the bead lifting lever.
26	Bead lifting lever	Used for lifting the tire edge during demounting and mounting phases.


4. Initial commissioning

4.1 Unpacking

1. Remove the tape and the fixing clamps from the pallet and the packaging cardboard.

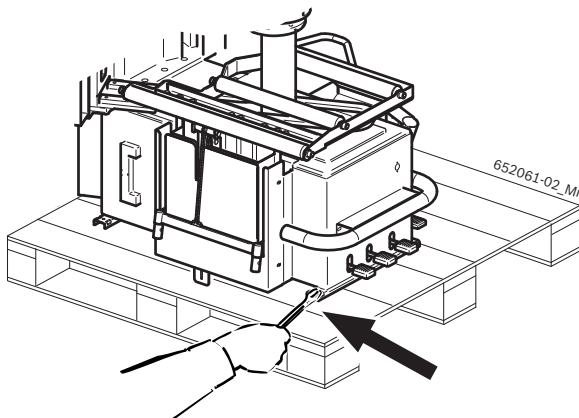
 After unpacking check the integrity of TCE 4540 and check that no components are visibly damaged. In case of doubt do not proceed to start-up and contact a qualified technician and/or your vendor.

2. Take out of the transport crate the standard accessories and the packaging materials.

 Dispose correctly of packaging material, hand it over to the designated collection points.

4.2 Installation

1. Loosen the four screws that fix TCE 4540 to the pallet.

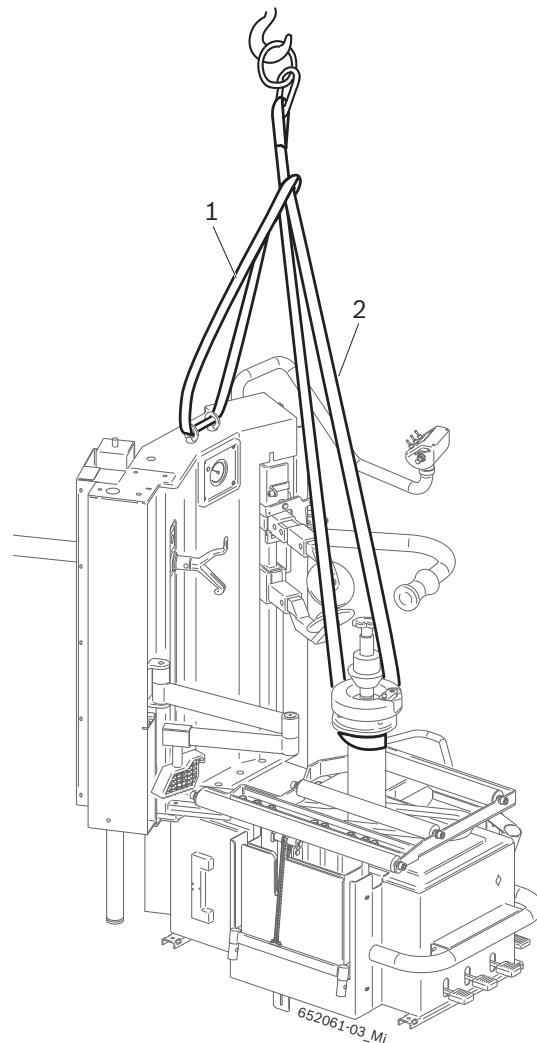


Warning - damage risk!

The lifting belts can crush the flexible supply pipes of the cylinder or damage the applied parts of the TCE 4540.

➤ Insert the lifting belts carefully.

2. Insert the appropriate lifting belts (length belt 1: 1 mt, belt 2: 3 em, with sufficient capacity, as shown).

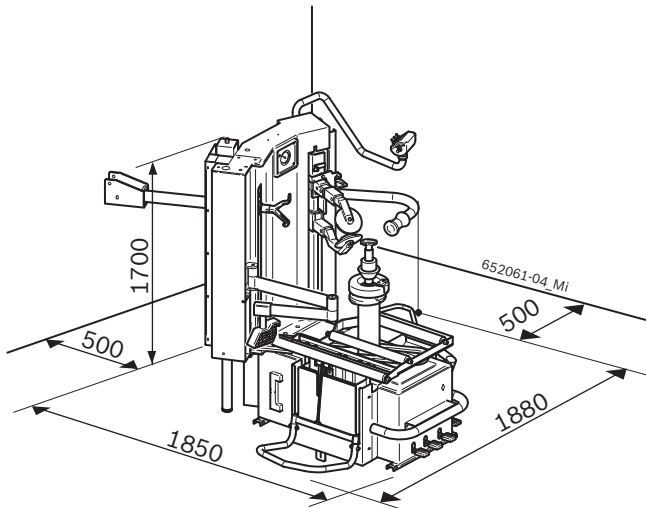


Warning - tilting danger!

The barycentre of the TCE 4540 is not at its centre.

➤ It is essential to lift the machine slowly.

- Lift the TCE 4540 with a lift crane and install it in the designed area respecting minimum distances as shown in the picture.



i For safe and ergonomic use of the TCE 4540 it is recommended to install the equipment at a minimum distance of 500 mm from the surrounding walls.



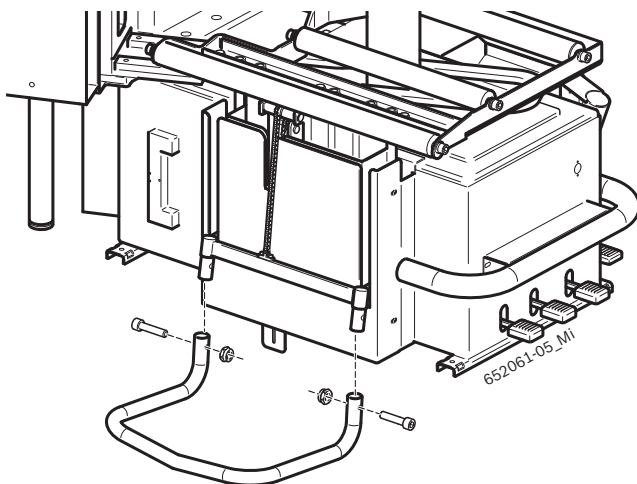
Warning - tilting danger!

During tire inflation considerable forces are exerted.

- The TCE 4540 has to be fixed in at least 3 points on the floor (screw holes see chap. 4.2).

i In each screw hole are placed shock absorbers to permit a vibration free installation .

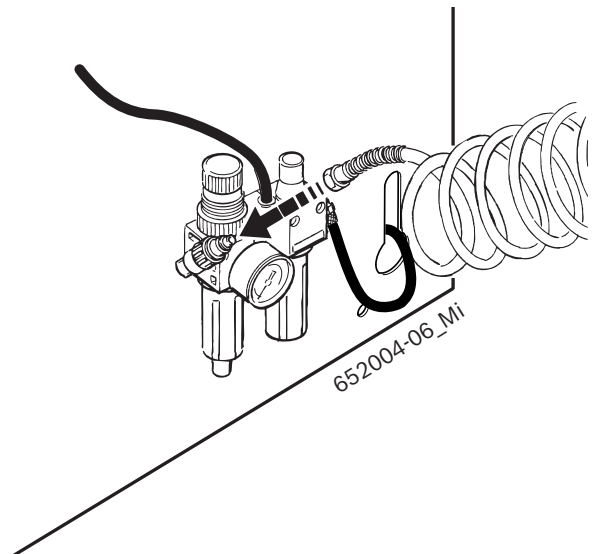
- Mount the wheel support bracket.



- Put an appropriate lubricator in the mounting paste holding device.

4.3 Pneumatic connection

- Connect the TCE 4540 to the compressed air supply unit.



- Adjust to a pressure between 8 and 12 bar.
 - ⇒ Pull the red knurled screw (pressure reducing valve) first upwards and then twist it to adjust operating pressure.
 - ⇒ Check pressure on the manometer.

4.4 Electrical connection

- Check the correspondence of the mains tension and the tension shown on the identification tag.
- Ask a qualified electrician to mount a connection plug for single-phase or (depending on the tension you have ordered) three-phase current (see the electrical connections diagram inside the electrical panel).

i The costs of arranging a mains protection device for the plug are borne by the customer.

- Protect the TCE 4540 according to specific national rules.

4.5 Check rotation direction



Warning - malfunctioning danger!

TCE 4540 turns in counter-clockwise direction.

- Turn off the main switch.
- Check the manual section on functioning anomalies to find the cause (see chap. 5.5)

For a correct functioning of TCE 4540 it is extremely important that, when the locking flange pedal is pressed, the locking plate starts turning clockwise.

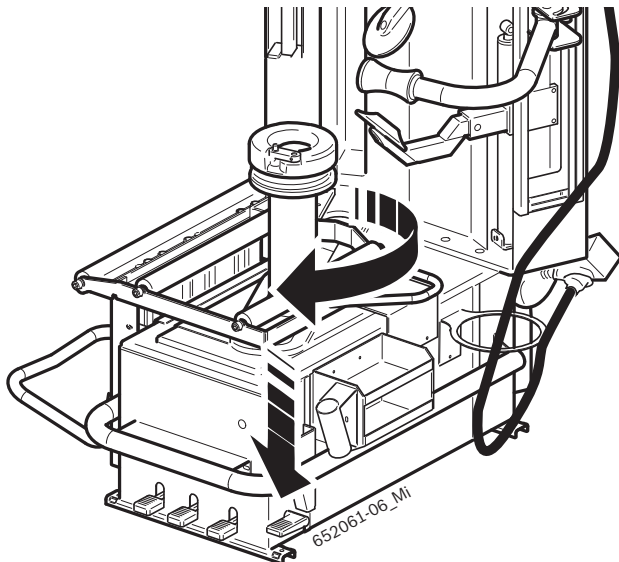
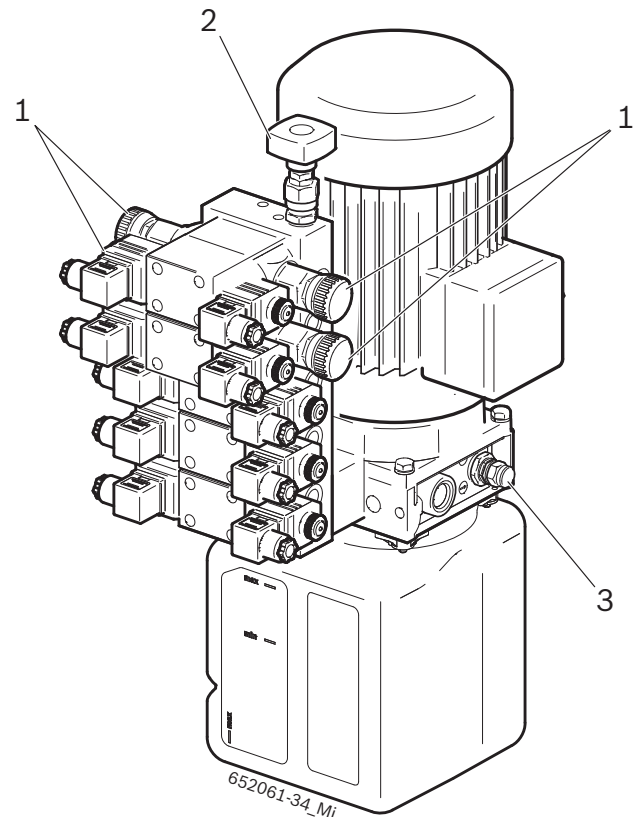


Fig. 2: Check rotation direction.

4.6 Hydraulic control unit adjustment

Before starting to use the TCE 4540 it is necessary to adjust some valves in the hydraulic control unit.

- The capacity adjustment valves (1) with knobs regulate the lifting/lowering and entering/exiting speed of the mounting tool. Initially they are pre-calibrated as open, meaning that they are at maximum speed, and they can be adjusted by the operator.
- The pressure relief valve (2) checks the pulling pressure of the mounting tool on the bead. Initially it is pre-calibrated at a pressure of 80 bar. The operator can adjust it anywhere in the 80 bar to 100 bar range, based on tyre hardness.
- The safety valve (3) is pre-calibrated at a pressure of 100 bar (maximum pressure). This valve is not adjustable.



! The other valves do not need to be adjusted.

5. Use



Warning - tire or rim damage danger!

Excessive pressure can e. g. result in cracks (on the inside/outside) of the tire. The rim can be scratched or deformed.

- Read the Wdk publications available in German and English! (www.wdk.de: mounting/demounting instructions – criteria catalogue)
- Inner temperature of the tire must be at least 15 °C (only in case of RFT/UHP).
- Read the Wdk publications available in German and English! (www.wdk.de: mounting/demounting instructions – tire overheating)
- Adjust pressure to the type of tire.
- Plastic protection on the rim.

! Before demounting or mounting operations it is extremely important to collect all the rim and tire data. In this way it will be possible to know in advance the mounting, the pressure and the required accessories!

i Remove all the balancing weights from the rim.

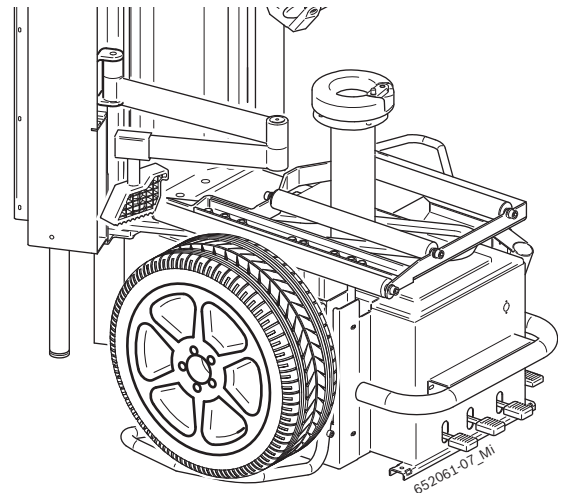
i If the lowered well of the rim is on the lower part, a rubber cover must be applied for the tightening flange (see chap. 3.3) or the device for reversed rims (see chap. 3.4) on the tightening flange, because in this case the rim is turned while resting on the external side.

5.1 Tire demounting

i Read the Wdk publications available in German and English!
(www.wdk.de: mounting/demounting instructions)

5.1.1 Wheel mounting

1. Deflate the tire completely.
2. Lower the wheel lifter with the appropriate pedal.
3. Put the wheel on the wheel support bracket.



4. Lift the wheel with the wheel lifter pedal until the upper limit stop is reached (Fig. 3).
5. Push the wheel on the roller base until the wheel hub hole coincides with that of the locking flange.

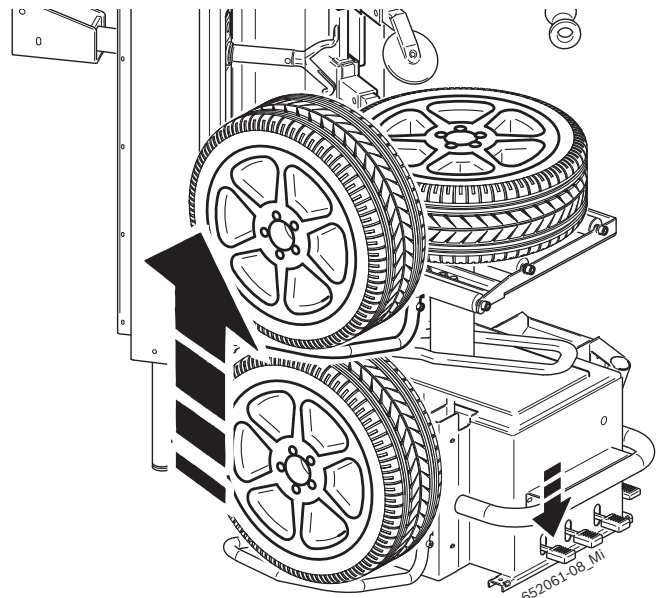


Fig. 3: Wheel lifting and movement towards the right.

6. Introduce the dragging peg in one of the rim's bolt holes.
7. Use a suitable centring cone and insert it into the tightening pin, together with the tightening ring nut.
8. Insert the tightening pin into the hole for the wheel hub, rotate it clockwise 90° (until it clicks which indicates that it is blocked).
9. The tightening ring nut is inserted into the pin until it is almost even with the rim (at distance of 10 mm).
10. Push the tightening flange blocking pedal to block the rim.

! If the tyre is not blocked using the flange block panel
Before starting tyre disassembly operations, there is a risk that the lock-nut will block, which is difficult to release at the end of operations.

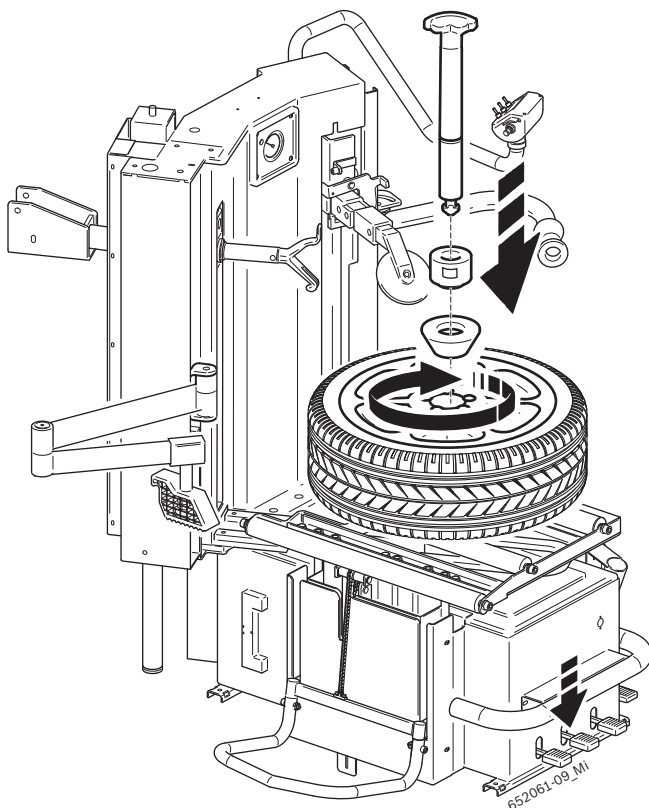


Fig. 4: Blocking of the wheel on the tightening flange.

5.1.2 Preparations for demounting

! Avoid valve damage!

1. Lubricate with mounting paste the side of the tire till the edge of the rim.
2. Tilt downwards the upper bead breaking roller and move it downwards with the right control lever switch on the hydraulic control unit (Fig. 5).

i The fine positioning (close up to just 5mm distance from the rim edge) is done with the right and central control lever switches of the hydraulic control unit.

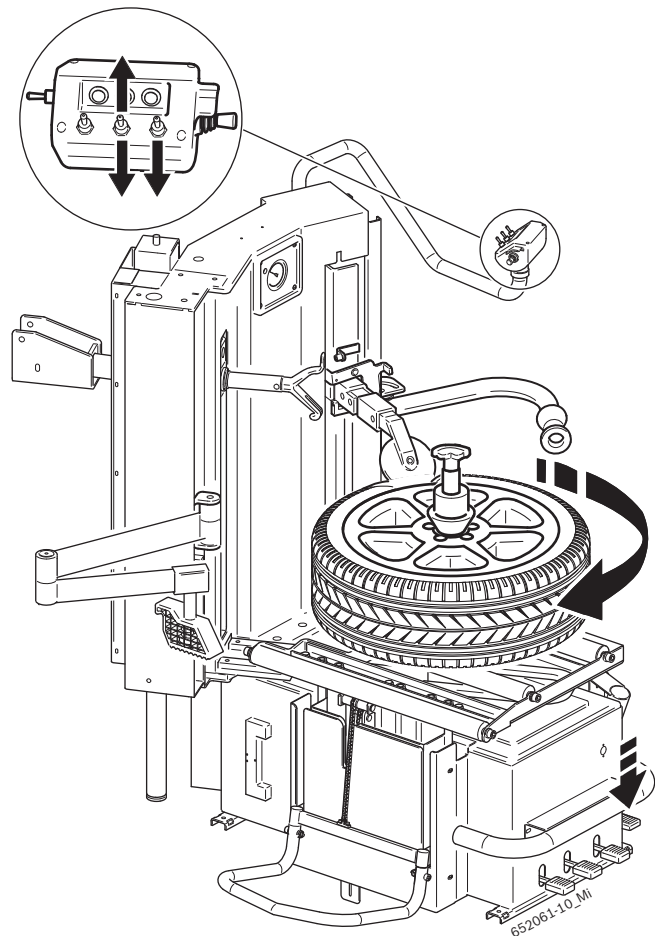


Fig. 5: Positioning of the upper bead breaking roller on the rim edge.



Warning – damage risk for RFT or UHP tires!

FCracks might occur in case of operation on cold tire. Tire explosion in case of high speed.

- Inner temperature of the tire must be at least 15 °C.
- Read the Wdk publications available in German and English! (www.wdk.de: mounting/demounting instructions – tire overheating)
- Before mounting put the tire in a temperate room.

3. Move upwards the lower bead breaking roller with the left control lever switch on the hydraulic control unit (Fig. 6).

i The fine positioning (close up to just 5mm distance from rim edge) is made with the left and central control lever switches of the hydraulic control unit.

i To control the lower bead breaker roller or the operations carried out on the lower part of the rim, a mirror mounted on the sheet steel or the video camera and monitor (accessories) can be used.

5.1.3 Demounting



Warning – hand injury danger!

Risk of crush injuries during tightening flange rotation.

- Do not insert the fingers between the tire and the rim.

1. Operate the locking flange pedal to rotate the tightening flange (Fig. 5), press the bead of the tire with both bead breaking rollers towards the rim shoulder (Fig. 6).

2. Lubricate with mouting paste both rim shoulders.

i Only when both tire beads are in the semi drop centre the operation is finished.

i If the rim moves inside the tire during this operation break as soon as possible the bead first on the upper side and then on the lower side.

i In case of beads stuck on the rim (e.g. in case of winter tires, off-road or high-profile tires) the bead breaking rollers have to be positioned behind the edge of the rim and then they have to be put as close as possible to the rim shoulder.

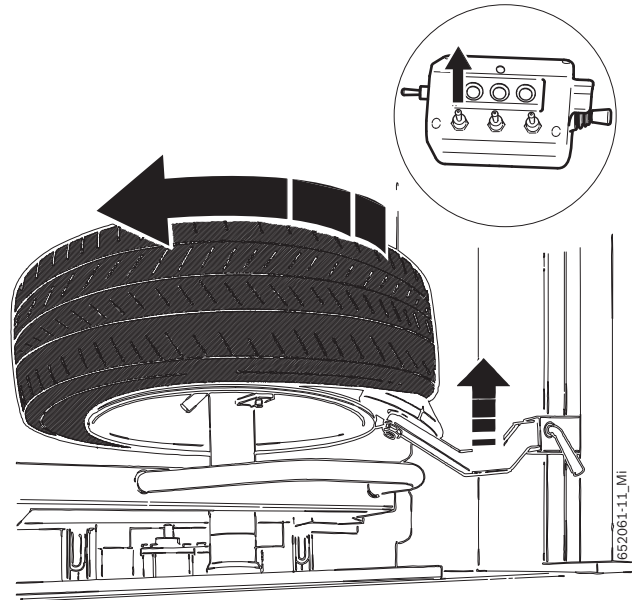


Fig. 6: Demounting with lower bead breaking arm.

! Once the bead breaking operations are finished adjust the distance between the bead breaking rollers and the rim at 5 mm, so that when the central button (AUTO) of the hydraulic control unit is pressed the tool arrives to the same distance. Check again the distance every time that a translation of the locking flange is performed.

**Warning - damage risk!**

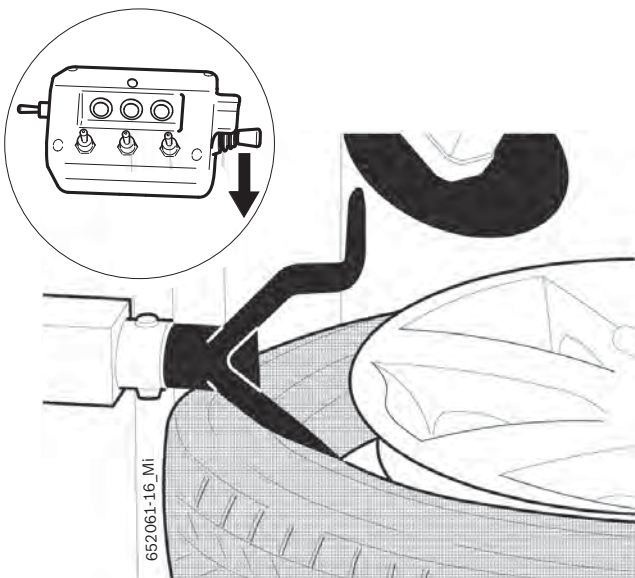
During extraction with the hydraulic system control unit the rim and the bead breaking rollers can both be damaged.

- The bead breaking rollers have to be pulled out exactly in the same way that they have been put inside the edge/in the shoulder of the rim.

3. With the hydraulic control unit central lever, move the tightening flange in order to space the tire from the bead breaking rollers (between 2 and 4 mm).
4. Using the hydraulic control unit right and left levers to bring both bead breaking rollers in the correspondent starting positions.

! Before positioning the mounting tool on the rim, the tire pressure control sensor has to be brought to position 1 o'clock hour (consider that the mounting tool is placed at 11 hour)!

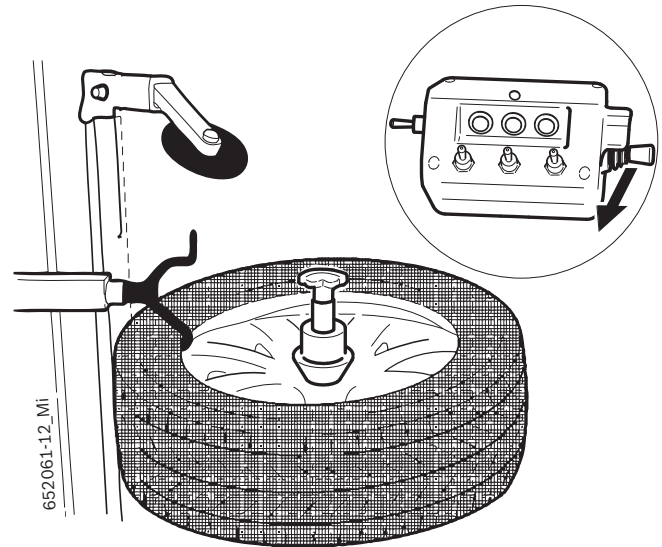
5. Using the joystick of the hydraulic control unit to lower the curved part of the tool and position it on the tire shoulder, being careful not to touch the rim.
6. Using the joystick of the hydraulic control unit, lower the tool. Stepping on the tightening flange pedal, rotate the tightening flange to grip the tyre bead and use the lower roller to extract the bead completely.



7. Using the joystick of the hydraulic control unit lift the tool in order to hoist the heel up to the upper edge of the rim. Hoist the thrust block over the hump using the lower roller to help extract the tyre, and rotate the fastening flange by activating the pedal of the same.

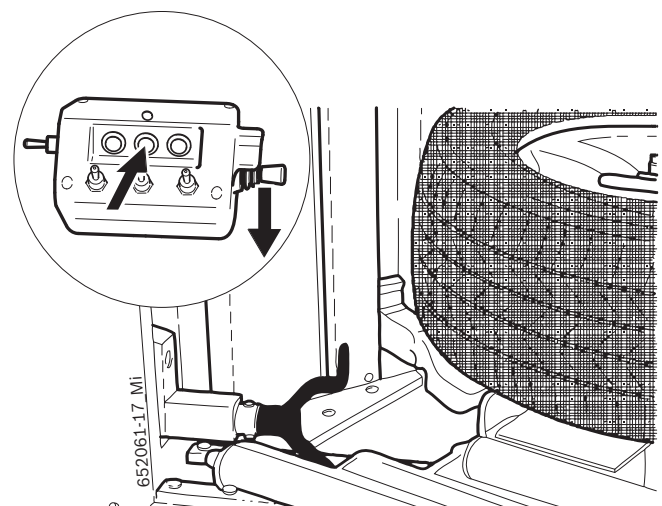
i Only when you are sure that the mounting tool has been positioned correctly and that the tire bead comes out of the rim easily it is possible to activate the fast rotation speed (by means of the tightening flange pedal).

8. Once the bead is extracted, using the joystick of the hydraulic control unit, move the tool towards the inside of the rim (in order to remove pressure on the bead) and rotate the tightening flange stepping on the tightening flange pedal.

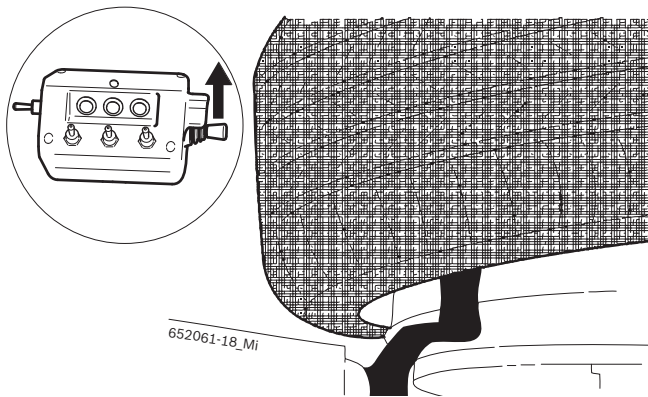


9. Extract the tube (not necessary in case of tubeless tires).

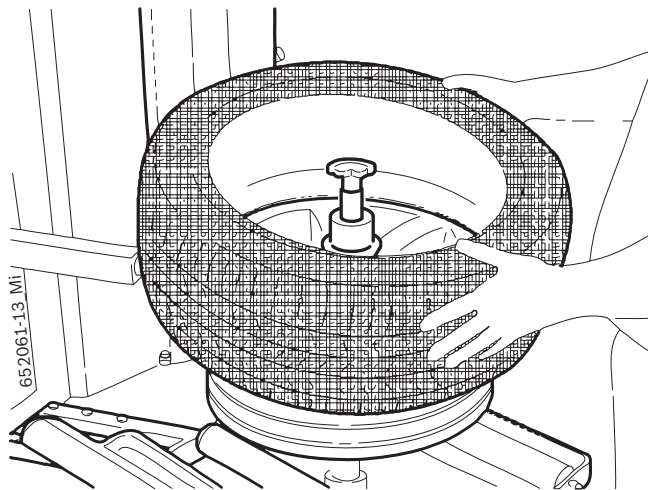
10. Using the hydraulic control unit joystick to move the tool in the lower part of the tire; use the central button (AUTO) of the hydraulic control unit to place it exactly on the edge of the rim.



11. To move the lower tire bead close to the mounting tool, place the lower bead breaking roller on the edge of the rim and move it upwards with the left lever of the control unit.
12. Using the hydraulic control unit joystick to insert the flat part of the tool between the rim and the tire.



13. Lubricate the lifted part of the bead with mounting paste.
14. Press the locking flange pedal and Rotate the tightening flange until the wheel is above the rim; if needed, use the lower bead breaking roller.



15. Using the hydraulic control unit joystick to lift the mounting arm and bring it to rest position.
16. Now the tire can be lifted.

5.2 Tire mounting



Danger! Damaged rims or tires can cause car accidents!

- Dangerous or even lethal situations may occur during driving if the tire or the rim have been damaged during mounting operations.
- The operator has to be specifically trained.
 - Do not exert excessive forces on the tire or the rim. Adjust the slow rotation speed.
 - Use a sufficient quantity of mounting paste.
 - In case of anomalies, e.g. suspicious noises, stop mounting immediately.
 - For mounting of critical rim/tire combinations, read the Wdk publications available in German and English! (www.wdk.de:mounting/demounting-instructions-criteria-catalogue).

5.2.1 Mounting preparations



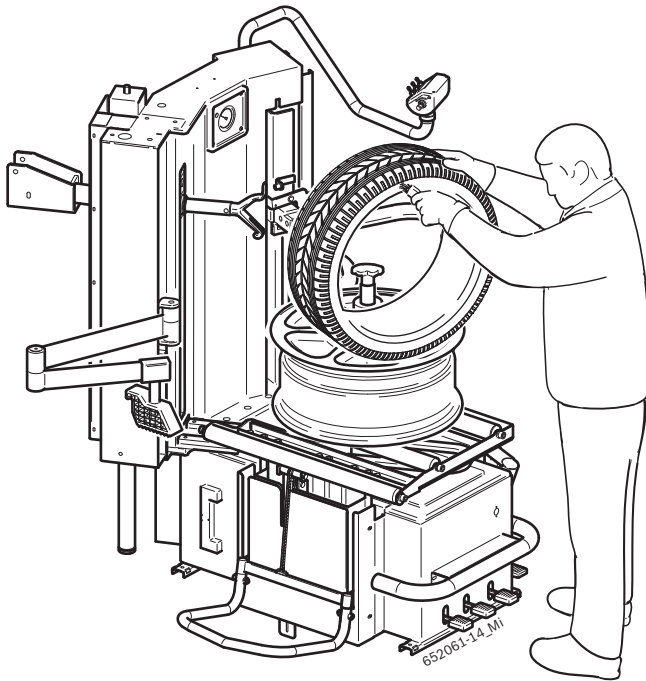
Warning – damage risk for RFT or UHP tires!

- Cracks might occur in case of operation on cold tire. Tire explosion in case of high speed.
- Inner temperature of the tire must be at least 15 °C.
 - Read the Wdk publications available in German and English! (www.wdk.de:mounting/demounting-instructions-tire-overheating)
 - Before mounting put the tire in a temperate room.

1. Lubricate the inside of the rim in correspondence of the edge and of the shoulder of the rim and of the semi drop centre.

! Before positioning the mounting tool on the rim, the tire pressure control sensor has to be brought in position 1 o'clock hour !

- Lubricate the side of the tire (RFT/UHP) and the tire bead (inside/outside) with the mounting paste (as shown in the picture).



- Put the tire sideways on the rim.

5.2.2 Mounting of non critical rim/tire combinations

i In case of non critical wheels for bead fitting only the mounting tool and the the tightening flange are used.

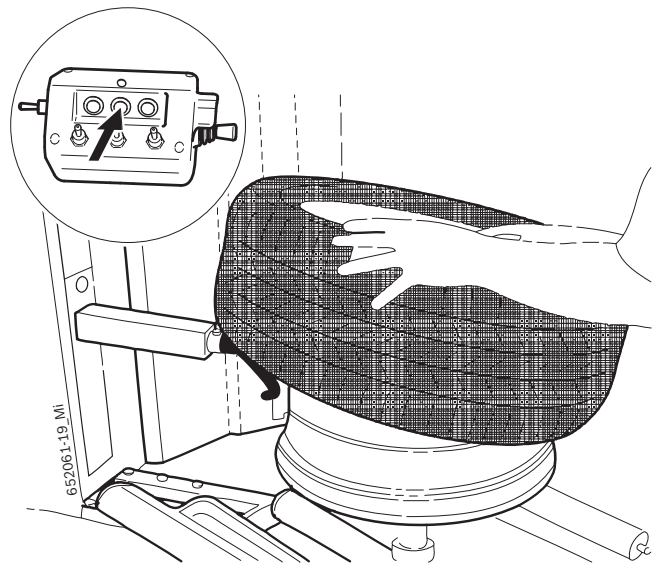


Warning – hand injury danger!

Risk of crush injuries during tightening flange rotation.

- Do not insert the fingers between the tire and the rim.

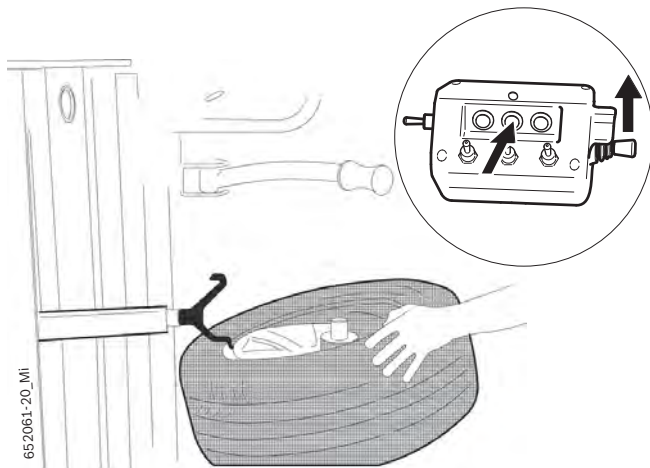
- Position the flat part of the tool on the edge of the rim by means of the central button (AUTO) of the hydraulic control unit. Rotate the tightening flange stepping on its pedal, being careful that the bead does not enter into the lowered well of the rim, in order to eliminate yielding of the bead.



i Be sure that the lower tire bead slides in the semi drop centre passing close to the edge of the rim. To make this operation easier it is advisable to assist it by exerting with the hands a light pressure on the tire.

- In case of tires with tube bring the valve of the tire in position hour 3 and insert a new tube.

- By means of the hydraulic control unit joystick, lift the tool, rotate it and position it on the upper edge of the rim, using the central button (AUTO) of the hydraulic control unit.



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! The curved part of the tool has to match the rim.

- While operating the locking flange pedal, keep rotating the tightening flange until the upper tire bead has passed close to the mounting tool and it has gone underneath the rim edge.

i Ensure that the upper heel of the tyre slides in the semi drop centre passing near the rim edge. To facilitate this operation we recommend aiding the manoeuvre by lightly pressing on the tyre with the hands.

- While operating the bead pressing device keep the bead low in the semi drop centre of the tire and start rotating the tightening flange (operate the locking flange pedal) to mount completely the tire.

i If the bead does not fit correctly in the semi drop centre, use the pressure of the upper bead breaking roller and of the adjustable roller holding arm.

5.2.3 Mounting of critical rim/tire combinations

- Position the flat part of the tool on the edge of the rim by means of the central button (AUTO) of the hydraulic control unit. Rotate the tightening flange stepping on its pedal, until the bead enters the centre groove of the rim, in order to eliminate yielding of the bead.

- Rotate the tightening flange stepping on its pedal until the bead is completely mounted.

i Be sure that the lower tire bead slides in the semi drop centre passing close to the rim edge.

- Release the adjustable roller holding arm from the handle with screws and bring it in position.
- Tilt downwards the upper bead breaking roller and move it downwards with the right control lever switch on the hydraulic control unit.

i The fine positioning (close up to just 5mm distance from the edge of the rim) is done with the right and central control lever switches of the hydraulic control unit.

- Check the positioning of the adjustable roller holding arm and lock it by means of the handle with screws.

i Distance: 5 mm from the rim edge.

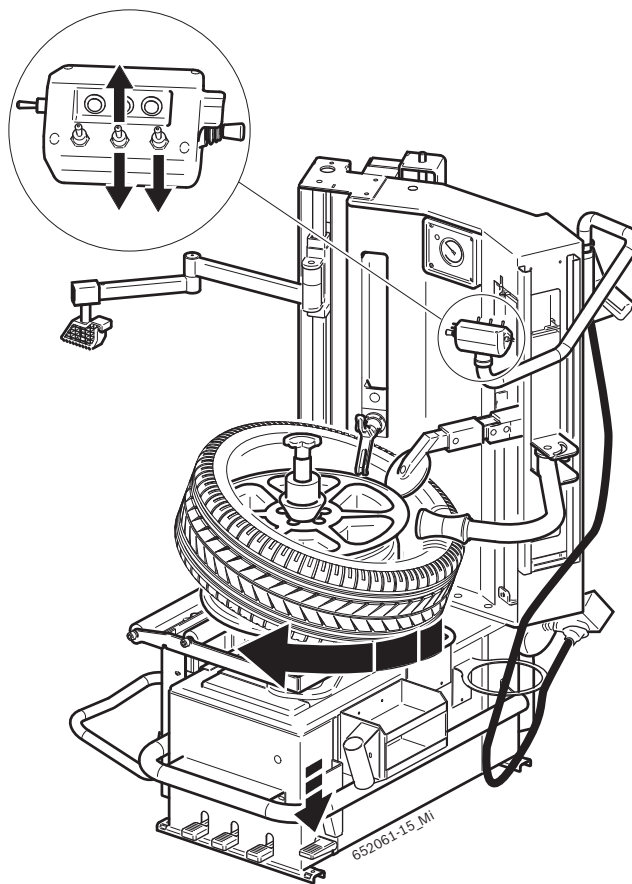


Fig. 7: Positioning of the bead breaking rollers and of the adjustable roller holding arm.

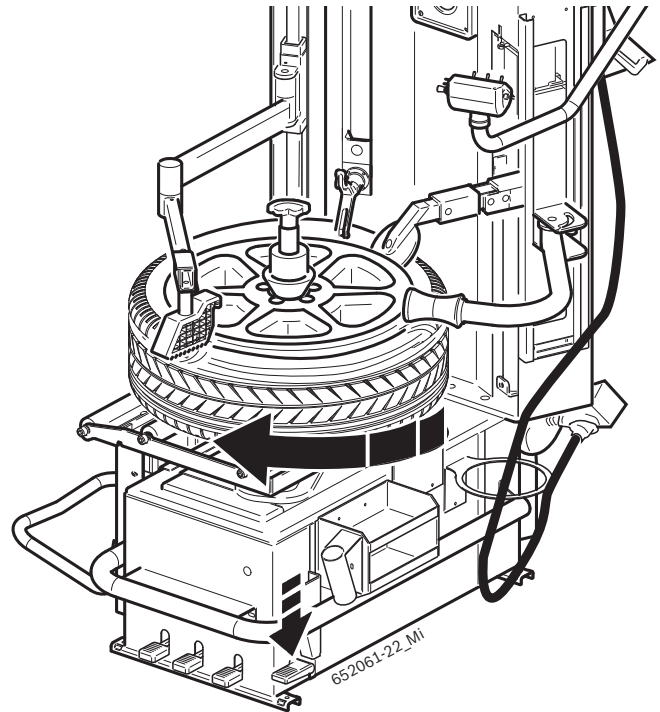
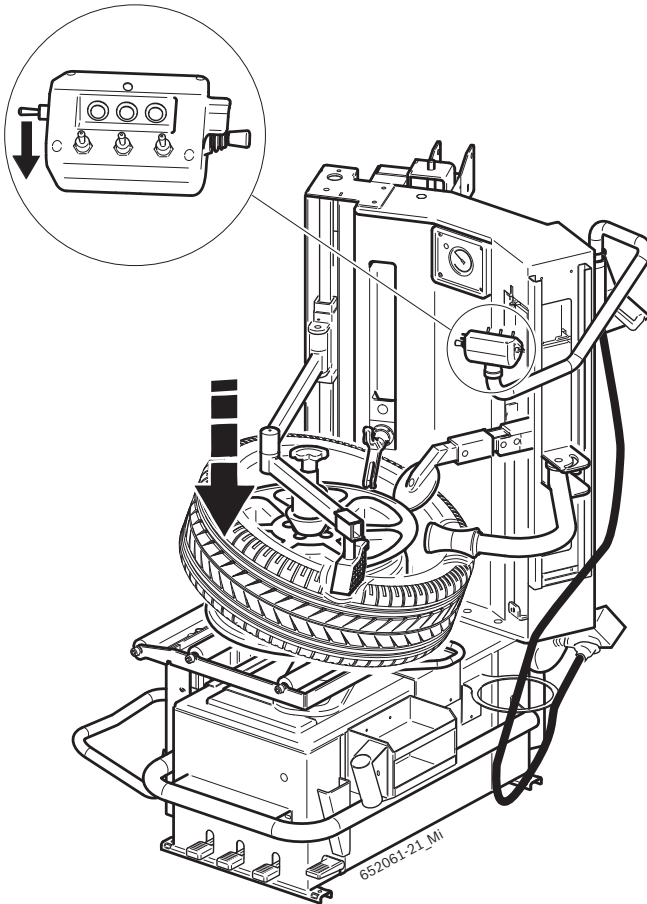


Warning – hand injury danger!

Risk of crush injuries when holding the pneumatic bead pressing device.

- After positioning release the pneumatic bead pressing device.
- Do not catch it from the pneumatic cylinder.

6. Place the bead pressing device on the tire and use the side lever of the hydraulic control unit to move it downwards placing it directly close to the adjustable roller holding arm.



- ii Mounting is complete when the bead pressing device arrives close to the mounting tool thus releasing it completely from the bead.

- ii Be careful that the lower tire bead does not come out (excessive pressure).

7. Lubricate the mounting tool and the adjacent part of the bead with mounting paste.

8. Operate the locking flange pedal to rotate the tightening flange.

- ii During rotation, the pneumatic bead pressing device pushes the tire bead inside the semi drop centre.

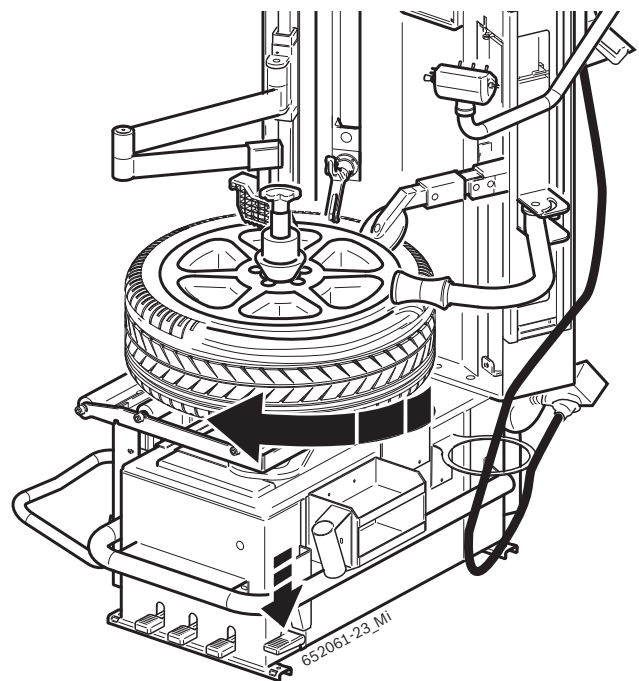


Fig. 8: *Bead fitting concluded.*

9. Move away from the tire or rotate them towards the outside the pneumatic bead pressing device, the lower and upper roller holding arm, the adjustable roller holding arm and the mounting arm.


5.3 Inflation



Inflation can generate potentially dangerous situations. The operator has to carry out the necessary precautions in order to guarantee operational safety.

! Safety device:

To protect the operator from eventual dangers that can occur during tire inflating on the tightening flange the TCE 4540 has been equipped with a **valve that limits operational pressure to 3,5 bar and with a further valve limiting maximum pressure to 3,8 bar!**

 To allow quick tire inflation with the tire inflating device a special pulsing inflation valve is used.

5.3.1 Inflation of tires with tube

1. Screw the valve element.
2. Connect the tire inflater to the tire valve.
3. Use the wheel inflation pedal to inflate the tire until reaching nominal pressure.

5.3.2 Inflation of tires without tube

1. Screw the valve element.
2. Connect the tire inflater to the tire valve.
3. Lift the tire with both hands so that the air between the rim and the tire can not come out again.
4. Operate the tire inflation pedal to inflate the tire until the bead is clearly seated in its groove.

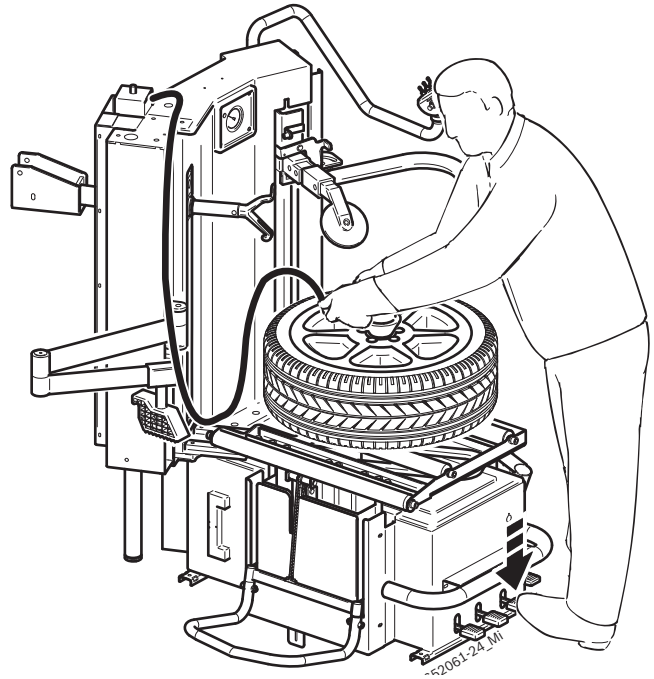



Fig. 9: Inflation with tire inflater.

 Use the quick inflation device if you are unable to inflate the tire. This happens frequently when handling tires with wide sections, because the tire beads in these cases do not adhere correctly to the hump.



Warning - risk of recoil and loud noises!

Quick inflation can be dangerous.

➤ Hold firmly the tire quick inflation device.

➤ Wear protection headset.

5. Take the tire inflation device from its support to perform positioning inflation (Fig. 1, pos. 21).
6. Insert the inflation gun between the edge of the rim and the upper bead of the tire (Fig. 10).
7. Press both buttons and remove the gun immediately.

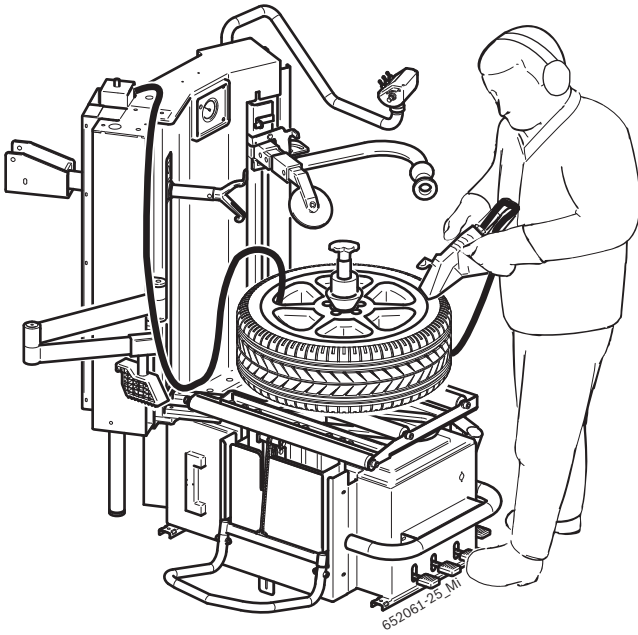




Fig. 10: Inflation with tire inflator and tire quick inflation device.

8. Once tire bead is seated in the rim, proceed with inflation by bringing the tire inflation pedal in central position and holding this position until nominal pressure is reached for the correspondent tire type.

 If the pressure is too high it is possible to lower it with the button beside to the manometer.

5.4 Mounted wheel removal

 Place no object in the area of the wheel supporting bracket!


1. To release the rim from the locking flange unscrew the tightening pin, remove the tightening ring nut and the centring cone.
2. Place the centring cone, the tightening ring nut and pin in the object compartment.
3. Lift the wheel by means of the wheel lifting pedal.
4. Push the wheel from the roller base to the wheel holding bracket.
5. Operate the wheel lifter pedal to put the wheel down on the floor.
6. Remove the wheel.


5.5 Functioning anomalies

In the following table all the possible anomalies and their correspondent remedies are listed.

Other supposable functioning anomalies are mainly of technical nature and have to be verified and resolved by qualified technicians.

In any case contact the assistance service of the authorized vendor of Bosch equipment.

 To speed up intervention it is important to tell during the phone call the data reported on the identification plate (tag on the back of the TCE 4540) and the type of malfunction.

 Any intervention on the electrical, hydraulic or pneumatic system, has to be carried out exclusively by qualified technicians which are properly trained.

Anomalies	Causes	Remedies
The locking plate does not turn in any of the two directions.	<ol style="list-style-type: none"> 1. The network plug is not connected. 2. The network plug is not correctly connected. 3. The tension does not correspond to the prescribed value. 	<ol style="list-style-type: none"> 1. - 2. Check if the network plug is correctly inserted in the socket and check connection. 3. Check the tension of the tension.
When the locking flange pedal is pressed down, the locking plate turns clockwise.	<ol style="list-style-type: none"> 1. Phases inversion during plug connection. 2. The pedal is pulled up with the foot. 	<ol style="list-style-type: none"> 1. Invert the 2 phases in the network plug (qualified electrician is required). 2. Press down the pedal.
The locking plate transmits insufficient torque (low force).	<ol style="list-style-type: none"> 1. Wrong network tension. 2. Loosen transmission belt. 	<ol style="list-style-type: none"> 1. Check the correspondence of the network tension and the tension shown on the identification plate. 2. Pull the transmission belt.
The locking plate does not lock the rim correctly.	<ol style="list-style-type: none"> 1. The pneumatic system is not connected to the TCE 4540. 2. Insufficient pressure in the pneumatic system. 3. The pressure reducing valve is closed or wrongly adjusted (only valid for the versions fitted with this kind of device). 	<ol style="list-style-type: none"> 1. Connect the pneumatic system. 2. Adjust pneumatic pressure to the correct value. 3. Open or adjust correctly the pressure reducing valve.
TCE 4540 makes no hydraulic motion.	<ol style="list-style-type: none"> 1. The engine does not turn in the right direction. 2. The thermal protection switch is not connected. 3. A 24 V fuse has blown up. 4. Excessive pressure is exerted. 	<ol style="list-style-type: none"> 1. Invert the 2 phases in the network plug (qualified electrician is required). 2. Connect the protection thermal switch. 3. Replace the fuse. 4. Check if there is a situation of excessive stress.

6. Maintenance

6.1 Suggested lubricants

Component	Lubricant	Standard
Gearbox	ESSO Spartan EP460	ISO 460 DIN 51502-CLP ISO 34-98-CC
Hydraulic pump	ESSO NUTO H 46	ISO 46 DIN 51502-HLP DIN 51524 PART.2- HLP ISO 67-43-HM
Pneumatic system (conditioning assembly)	ESSO FEBIS K 32	ISO VG 32

Tab. 1: Lubricants table.

! The manufacturer is not liable for any damage caused by use of lubricants different from those shown in the table.

6.2 Cleaning and servicing



Before any cleaning or maintenance intervention use the main switch to disconnect the TCE 4540 and take off the network plug.

To guarantee full efficiency of the TCE 4540 and to ensure functioning without anomalies it is essential to clean the machine regularly and carry out periodical maintenance.

Maintenance has to be carried out by the operator in accordance with the manufacturer's prescriptions shown here below.

6.2.1 Service intervals

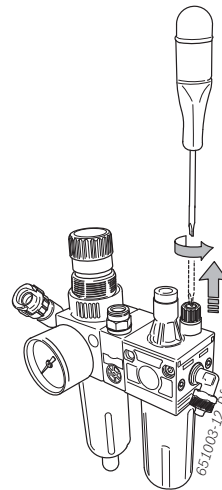
Maintenance	weekly	annual
Clean the mechanical moving parts, spray them with nebulized oil or kerosene and lube with motor oil or appropriate grease.	x	
Remove condensate.	x	
Check oil level in the oil nebulizer.	x	
Check transmission belt tensioning in order to avoid its sliding.	x	
Check the oil level in the gearbox and keep it always between minimum and maximum level.	x	
Change oil in the oil nebulizer.		x
Change oil in the gearbox.		x

6.2.2 Condensate removal

1. Turn left the red button placed in the lower part of the water separator.
2. Remove the accumulated condensate by pressing the same button.
3. Turn back in previous position the red button placed in the lower part of the water separator.

6.2.3 Nebulizer oil refill

1. Disconnect pneumatic connection.
2. Unscrew the tank cap on the oil nebulizer.
3. Top up oil (see lubricant table).



6.2.4 Change oil in the oil nebulizer

1. Disconnect pneumatic connection.
2. Unscrew the tank cap on the oil nebulizer.
3. Discharge oil and dispose it (see chap. 7.3).
4. Top up with new oil (see lubricant table).

6.2.5 Gearbox oil change

1. Put a collecting tank underneath the gearbox.
2. Unscrew the oil discharge screw.
3. Discharge oil in the gearbox and dispose it (see chap. 7.3).
4. Screw the oil discharge screw.
5. Top up with new gearbox oil (see lubricant table).

6.3 Spare parts and parts subject to wear


Denomination	Order code
Complete mounting tool	1 695 104 740
Anti-slip support	1 695 103 979
Air shock absorber	1 695 042 545
Air filter	1 695 100 850
Tool protections set (6 pieces)	1 695 104 910

7. Decommissioning

7.1 Place change

Procedure:

1. Disconnect electrical connection.
2. Disconnect pneumatic connection.
3. Take off the wheel holding bracket (see chap. 4.2) and put it aside.
4. Follow what shown for first start up (see chap. 4.2).
5. Fix again the TCE 4540 with its four screws on the pallet (see chap. 4.2).

 In case of sale or transfer of TCE 4540, all the documents included in the consignment volume has to be integrally handed over together with the equipment.

7.2 Temporary decommissioning

If the TCE 4540 is going to be stopped for a limited period of time or if the equipment is not being used for other reasons, always disconnect the network plug from its socket!

It is suggested to clean accurately the TCE 4540, also its tools and accessories, and carry out a protection treatment (e.g. spraying of a thin oil film).

7.3 Disposal

- Disconnect the TCE 4540 from the mains tension and take off the power supply cable.
- Oil are water pollution risk fluids and have to be disposed of in accordance with the rules in force.
- Disassemble the TCE 4540, order the materials according to the category it belongs to and dispose of them according to the rules in force.



TCE 4540 complies to the rules of the European directive 2002/96/CE (directive on the disposal of electrical and electronic waste).

Electric and electronic devices which are out of order, together with their cables, accessories, accumulators and batteries, have to be disposed of separately from household waste.

- For disposal of such products, use the available return and collection systems.
- The correct disposal of the TCE 4540 makes it possible to avoid environmental damage and to put at no risk the life of people.

8. Technical data

8.1 TCE 4540

Function	Specifications
Translation length of the tightening flange in longitudinal direction	285 mm
Maximum noise level.	75 dB
Force of the hydraulic bead breaking rollers	14000 N (1,4 t)
Hydraulic pressure	100 bar (10000 kPA)
Compressed air supply	8 – 12 bar
Power supply tension	depending on the chosen tension (see identification plate)

8.2 Dimensions and weights

Function	Specifications
TCE 4540 (H x W x D)	1700 x 1880 x 1850 mm
Net weight	500 kg
Gross weight	542 kg

8.3 Reach

Function	min / max
Tire width	3"– 22"
Maximum tire diameter	1250 mm
Rim diameter	10"– 30"

9. Glossary

Rim, structure and names

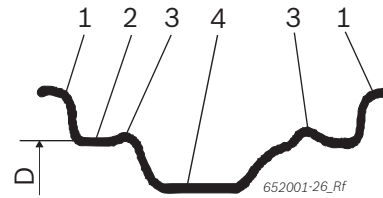


Fig. 11: Rim

- 1 Rim edge
- 2 Rim shoulder
- 3 Hump (lifted edge)
- 4 Semi drop centre
- D Rim diameter

RFT

Run Flat Tyre, tire with emergency functioning features, normal wheel and spare wheel at the same time.

TCE

Tyre Change Equipment, abbreviation for tire changer.

UHP

UltraHighPerformance tires, name of the brand of a tire for high speeds.

wdk

German rubber industry association (registered association).