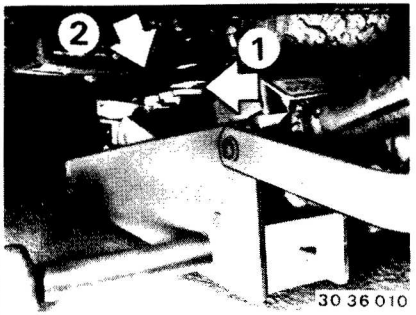
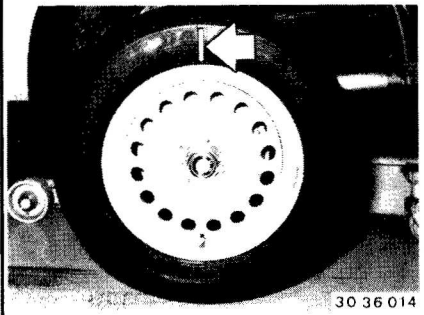
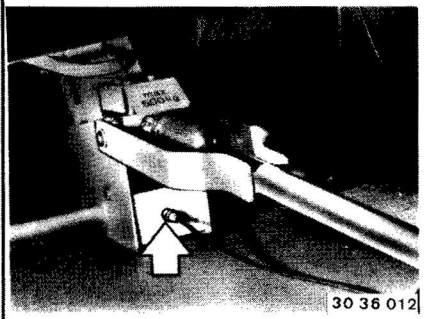
36 Wheels and Tires







36 10 030 BALANCING BOTH FRONT WHEELS ON CAR DYNAMICALLY AND ELECTRONICALLY

Important!
Always first balance the wheels stationary precisely prior to electronic (finish) balancing.
Apply measuring support for balancing on control arm end (1) (up to 5" rims).
Use a suitable holding fork or additional fork (see Service Information or Workshop Equipment Planning Documents).
From 5 1/2" Rims On:
Apply the measuring support without an additional fork on control arm (2).
Lift car with the measuring support.

Paste adhesive tape or make a chalk mark, both 3 to 4 cm (1.181 to 1.575") long, on the outside of the tire being balanced, opposite the valve.

Connect leads for test sender.

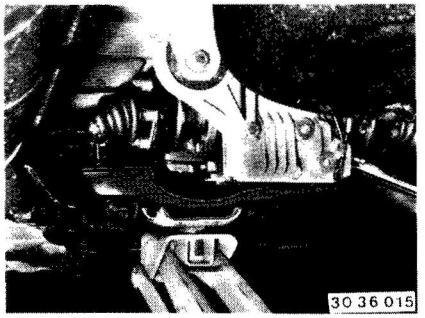
Important!
Balance wheels to operating instructions supplied with pertinent balancing machine.
Balncing must be carried out on firm underground (concrete floor without basement).
Also refer to Service Information of Group 36.

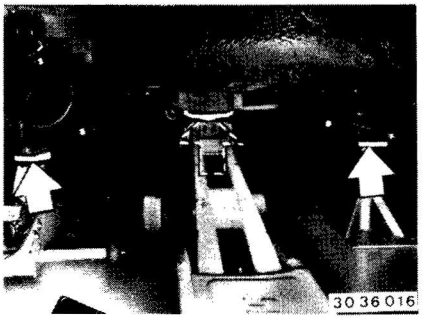
If a value of more than 15 grams is displayed for finish balancing of a wheel, the possible causes (e.g. inaccurate stationary balancing, centering, etc.), also refer to Service Information 36 0 483 (196), must be eliminated prior to finish balancing and before rechecking the finished wheel.

36 10 080 BALANCING BOTH REAR WHEELS ON CAR DYNAMICALLY AND ELECTRONICALLY

Important!
Always first balance the wheels stationary precisely prior to electronic (finish) balancing. Paste a strip of adhesive tape or make a chalk mark, both 3 to 4 cm (0.181 to 1.575") long, on outside of the tire being balanced, opposite the valve.

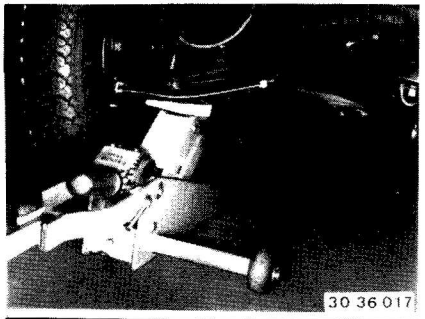
Use wedges on the front wheels.
Apply jack at middle of car on the rear axle carrier and lift the car.



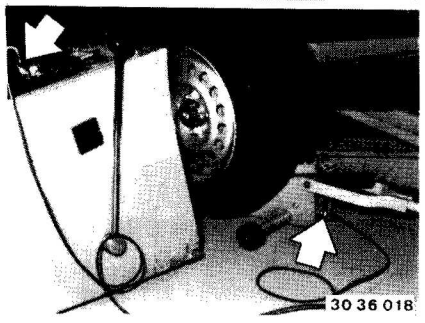


Apply measuring support underneath the trailing arm of the wheel being balanced.
Use an unsprung support on the trailing arm of the running wheel (be careful of brake pipes and hoses), in order to suppress the oscillation from the final drive.
Lower the jack and place it underneath the differential with slight pressure.

Check, whether it is possible to turn the wheels easily.


30 36 017

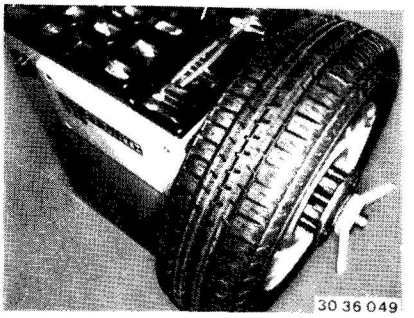
Balancing is performed with engine power in fourth gear at about 100 km/h (60 mph).
The engine must run smoothly without hesitation, doors, engine hood and trunk lid must be closed and the driver should sit in the car as still as possible.
The exhaust extraction hose may not touch the tail panel.


30 36 018

Connect leads for test sender.

Important!
Balance wheels to operating instructions supplied with pertinent balancing machine.
Balancing must be carried out on firm underground (concrete floor without basement).
Also refer to Service Information of Group 36.

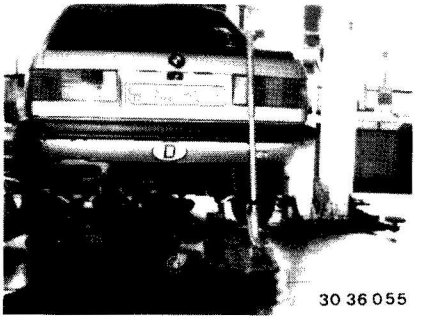
If a value of more than 15 grams is displayed for finish balancing of a wheel, the possible causes (e.g. inaccurate stationary balancing, centering, etc.), also refer to Service Information 36 0 483 (196), must be eliminated prior to finish balancing and before rechecking the finished wheel.


30 36 049

36 10 090 BALANCING FRONT AND REAR WHEELS DYNAMICALLY AND ELECTRONICALLY

BMW 325 iX

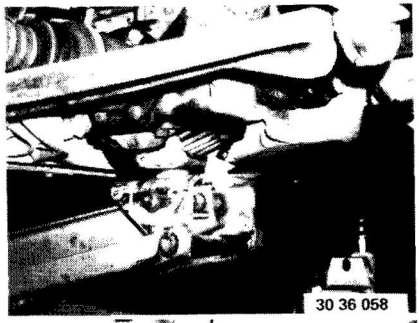
Caution!
This car has four driven wheels so that all four wheels must be able to turn freely and the car must be jacked up safely for finish balancing.
Always first balance all wheels stationary prior to electronic (finish) balancing – see 36 10 508.


30 36 055

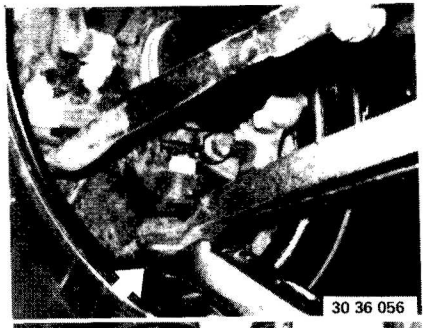
Finish Balancing BMW 325 iX Cars:
Position car on four finish balancing measuring supports.
When only two measuring supports are used, two further identical jacks with lateral movement must be used on the other axle.

Important!
Check the deflection angle of the transmission end joint.

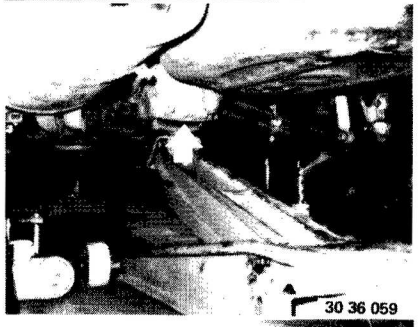
Balancing must be carried out on firm underground (concrete floor without basement).
The car must be level after jacking up and all wheels must turn easily.
Also refer to Service Information of Group 36.



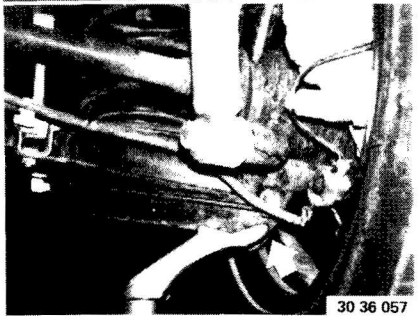
Apply a workshop jack underneath the front axle final drive in the middle and with light pressure, in order to suppress the oscillation of the front axle final drive.



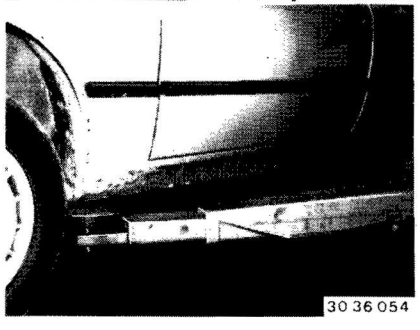
Lift car with a two-pillar hoist if applicable.
Apply measuring supports underneath the front axle on each wheel carrier/ control arm joint, using suitable holding forks or additional forks (see Service Information or Workshop Equipment Planning Documents.



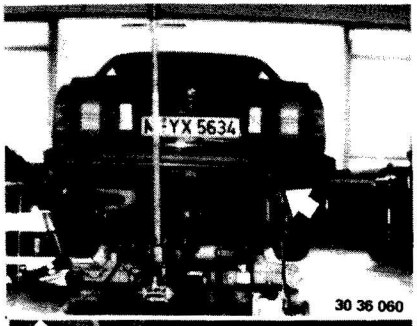
Apply a workshop jack underneath the rear axle final drive in the middle and with light pressure, in order to suppress the oscillation of the rear axle final drive.



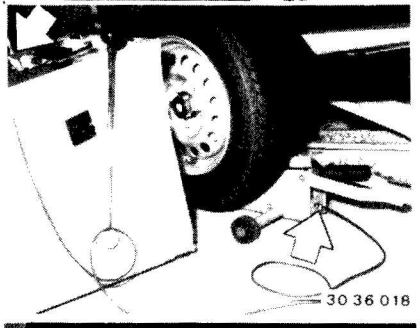
Apply measuring supports underneath the rear axle on each trailing arm as close as possible to the wheel, using suitable holding forks or additional forks (see Service Information or Workshop Equipment Planning Documents).



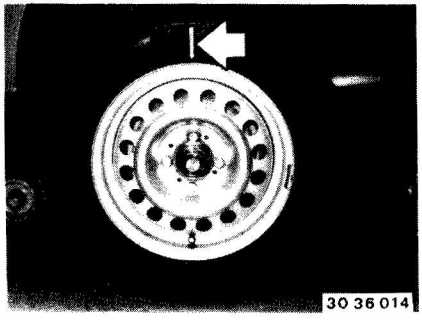
Lower the arms of the hoist until they have just barely cleared, but never touch the body during balancing procedures (resonance oscillation).



Secure the car with a steel cable attached to the rear towing eye.
The cable must not be tight to avoid wrong measuring values.
Balance the wheels on the front axle first.

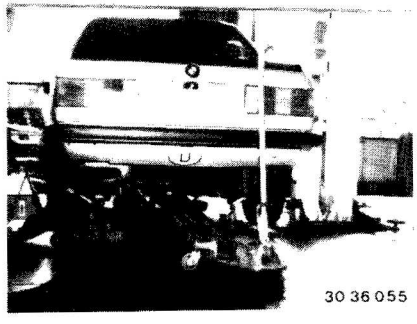


Connect leads for test sender.
Balance wheels to operating instructions supplied with pertinent balancing machine.



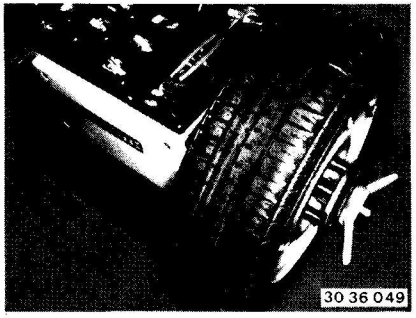
Paste adhesive tape or make a chalk mark, both 3 to 4 cm (1.181 to 1.575") long, on the outside of the tire being balanced, opposite the valve.

Adjust the correct sensitivity on the finish balancer to the supplied operating instruction prior to balancing.
Since the sensitivity degree for balancing a wheel can not be transferred to a different wheel position or different car, it must be determined separately for each wheel.



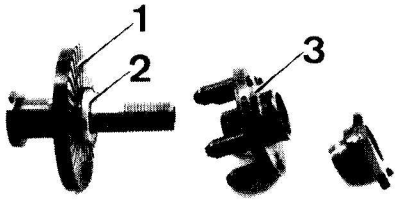
Balancing is performed with engine power in fourth gear at 100 km/h (60 mph).
The engine must run smoothly without hesitation, doors, engine hood and trunk lid must be closed and the driver must sit in the car as still as possible.
The exhaust extraction hose must not touch the tail panel.

Brake the wheels carefully after testing.
Repeat test after installation of balance weights on the displayed positions.
If a value of more than 15 grams is displayed for finish balancing of a wheel, the possible causes (e.g. inaccurate stationary balancing) must be eliminated and the finish balanced wheels rechecked.



36 10 209 CHECKING FRONT OR REAR WHEEL FOR LATERAL AND RADIAL RUNOUT

Remove wheel – see 36 10 300.
Mount wheel on a balancing machine.
The wheel must be mounted on the balancing machine in the same manner as mounted on the car (valve facing down), in order to avoid transmitted tension.

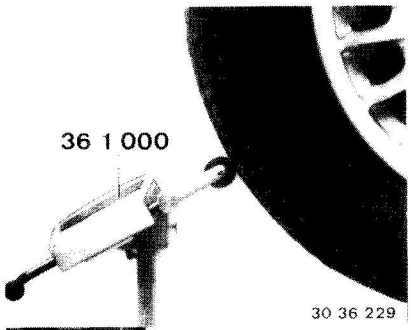


32 36 014

Use suitable center of pertinent balancing machine.

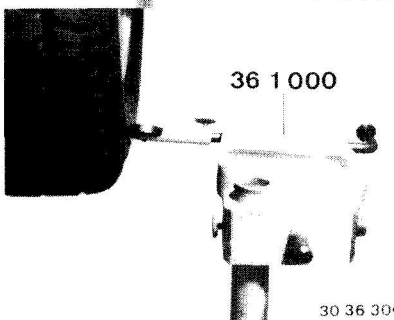
1 Basic flange
2 Center
3 Type flange

Also refer to Workshop Equipment Planning Documents.



Apply Special Tool 36 1 000 on road contact surface of tire.
Turn wheel by hand and measure max. tire radial runout*.

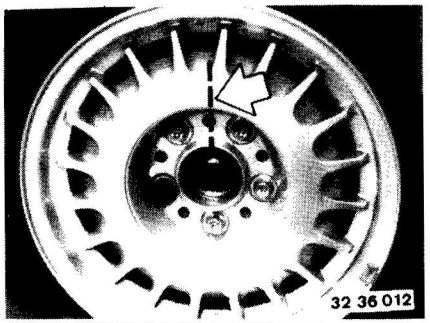
Note:
Special tool must be perpendicular to the tire's road contact surface.

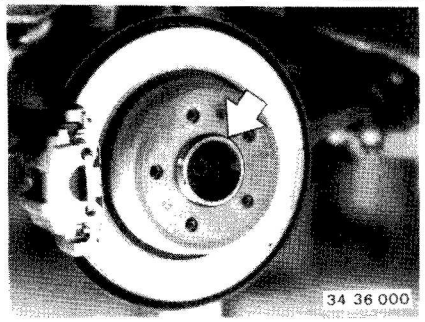


Apply Special Tool 36 1 000 on side surface of tire.
Turn wheel by hand and measure max. tire lateral runout*.

Note:
Special tool must be perpendicular to the tire's side surface.
Don't measure on tire specifications!

* See Specifications



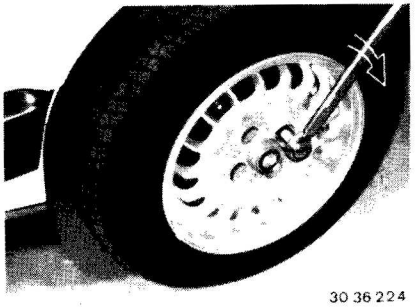


36 10 300 REMOVING AND INSTALLING FRONT OR REAR WHEEL

Loosen wheel bolts.

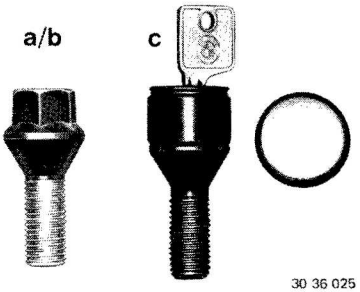
Important!
Mark position of wheel to wheel hub before removing, in order to avoid clamping errors.
Mount in same position with valve facing down.

Installation:
Check wheel bolt threads and tapers for wear, replacing wheel bolts if necessary.
Clean the wheel hub centering collar and bearing surface of a disc wheel to remove dirt and old grease and coat the center with Plastilube** prior to mounting a wheel.
Give wheel bolt threads a light coat of grease, the taper however must remain free of grease.
Mount a M 3 car wheel carefully.
Check clearance on the brake caliper (pad spring holder in the brake caliper could be damaged or displaced).



30 36 224

Tighten bolts of wheel rims crosswise.
Tightening torque*.
If new wheel rims are mounted for the first time, recheck the tightening torque* after 1,000 km (600 miles).
Provide pertinent information on a label or tag in view of the driver.



30 36 025

Wheel bolts can be used for either steel or aluminum wheel rims since 9.82.

a) Wheel bolt - galvanized
b) Wheel bolt - black chrome plated
c) Wheel bolt - black chrome plated and lockable (optional extra)

** Source of Supply: HWB

* See Specifications

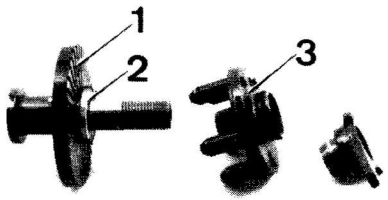
36 10 508 BALANCING WHEEL DYNAMICALLY – Wheel Removed –

Remove old balance weights, stones in treads and large pieces of dirt.
Check tire inflation pressure, condition of tire (damage, cuts, flat spots caused by not using car with hot tires for a long time).
If necessary. check wheel and tire for radial and lateral runout – see 36 10 209.

Use a suitable center of pertinent balancing machine.

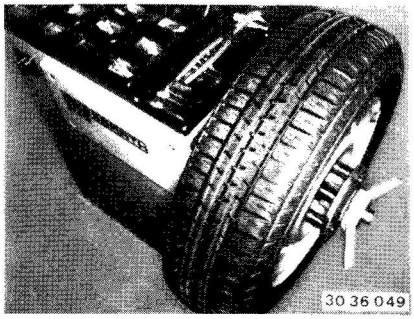
1 Basic flange
2 Center
3 Type flange

Also refer to Workshop Equipment Planning Documents.



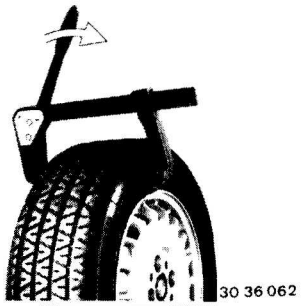
32 36 014

Important!
To avoid clamping errors, the wheel must be mounted on the balancing machine in the same manner (e.g. valve facing down) as mounted afterwards on the car.



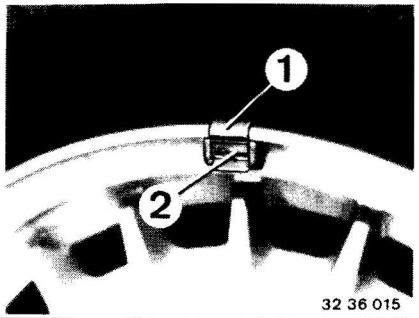
30 36 049

Balance wheel to operating instructions of pertinent balancing machine.



30 36 062

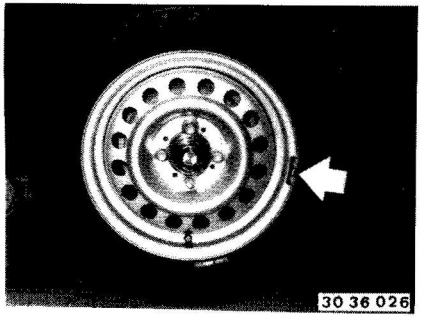
Aluminum Wheel Rims:
Press the side of the tire away from the rim flange slightly at an appropriate point with a tire clamp** and insert a holder.
Remove the tire clamp and push a balance weight underneath the holder until it engages.



32 36 015

Arrangement Of Balance Weights for Cast Aluminum Rims:
1 Spring holder
2 Balance weight

Max. imbalance per wheel and side*.



30 36 026

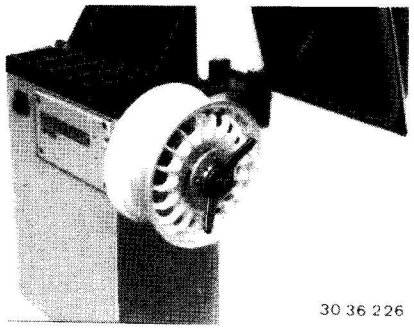
Arrangement of Balance Weights for Steel Rims:

Max. imbalance per wheel and side*.

* See Specifications
** See Workshop Equipment Planning Documents

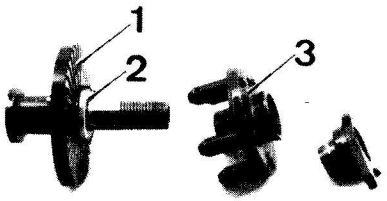
36 10 715 CHECKING WHEEL RIM FOR RADIAL AND LATERAL RUNOUT

Remove wheel – see 36 10 300.
Take tire off of wheel rim.
Remove old balance weights.
Remove dirt on rim well and rim flange.



30 36 226

Mount wheel rim on balancing machine.

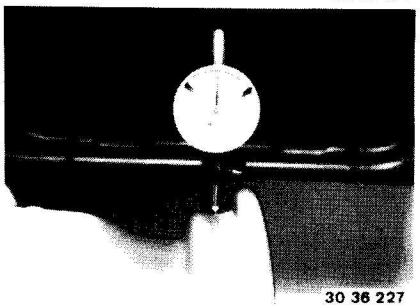


32 36 014

Use a suitable center of pertinent balancing machine.

1 Basic flange
2 Center
3 Type flange

Also refer to Workshop Equipment Planning Documents.

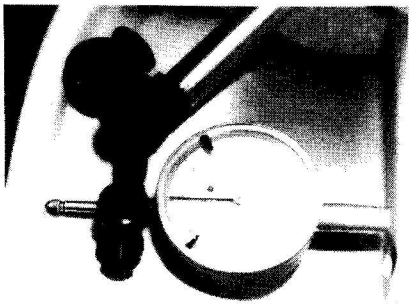


30 36 227

Apply dial gage tip on rim well.
Turn wheel by hand and measure max. radial runout*.
Measure on both sides of rim well.

Note:
Dial gage must be perpendicular to the rim well.

* See Specifications



30 36 228

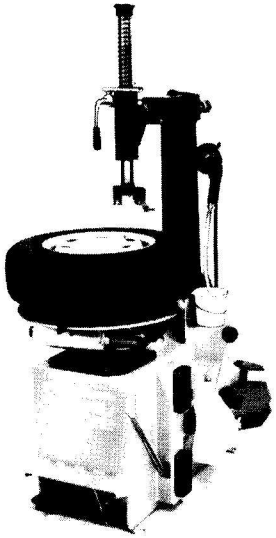
Apply dial gage tip on rim flange.
Turn wheel by hand and measure max. lateral runout*.
Measure on both rim flanges.

Note:
Dial gage must be perpendicular to the rim flange.

Important!
Avoid clamping errors when mounting wheel afterwards – see 36 10 508.

* See Specifications

REPLACING TIRE:



28 36 023

Refer to operating instructions supplied with pertinent tire mounting machine for correct mounting of tires.
However, also make sure that the machine is in perfect condition and that the wheel rim and tire are not damaged.

General Tire Mounting Instructions:

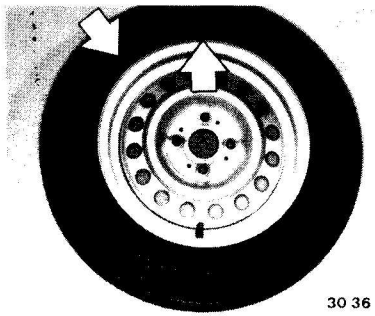
Removing:

Removal of tire begins at the valve.
After pressing the tire off of the rim flange, remove balance weights, press tire bead into well and coat thoroughly with tire mounting paste**.
Clean wheel rim thoroughly and inspect rim for damage before mounting the tire.
The valve and valve insert must be replaced each time a tubeless tire is removed and installed.

It will be necessary to loosen the tire on the inside and outside by applying the pressing-off horn on the bead periphery at several points before pressing off the bead.

Pressing-off force for "TD tires" will have to be somewhat greater because of the tight fit of the bead toe.
It will be necessary to loosen the tire on the inside and outside by applying the pressing-off horn on the bead periphery at several points before pressing off the bead.

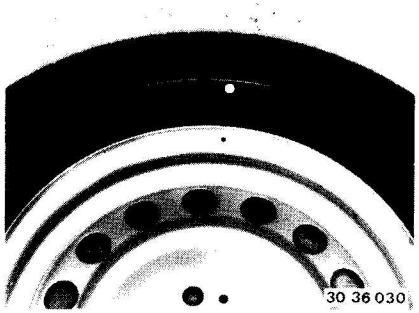
Caution!
The TD bead toe could spring out of the Denloc groove suddenly, which in turn causes the pressing-off horn to jump inward!



30 36 029

Mounting:

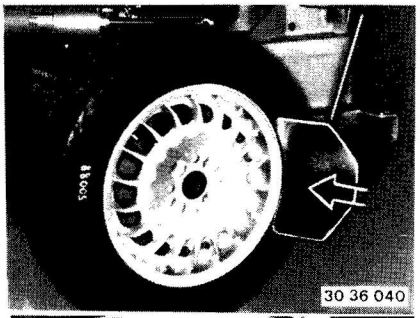
Coat tire bead with tire mounting paste**.
Make sure tire is mounted on correct side, especially in case of asymmetric tires.
The "outside" of these tires is marked.
In addition, the green dot on the tire must be aligned with the punch mark in the rim flange.
Mount tire with as little as possible stress on the beads, since otherwise there would be danger of damaging the tire, or TD bead toe in case of TD tires.
Let the tire bead jump over the hump of the rim shoulder first – coming from the rim well.
Inflate tire in steps while observing constantly.
Maximum "spring pressure" = 3.3 bar (47 psi).
If the tire is not seated on the rim correctly, increasing the inflation pressure will not improve the tire seating!
Instead it will be necessary to press off both tire beads, apply another coat of tire mounting paste and to inflate the tire again.
Increase the inflation pressure slowly to have the tire "settle" only when beads seat correctly on the rim flanges.
Maximum "settle pressure" = 4.0 bar (57 psi).
Refer to Service Information of Group 36 for approved tires, tire sizes and wheel rims as well as special equipment.



30 36 030

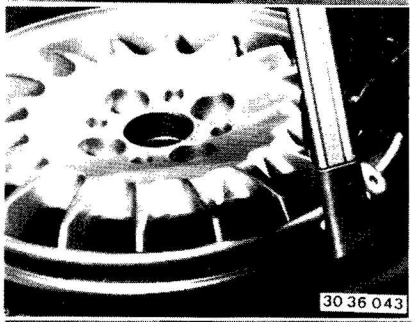
It is important to remember, that TD tires may only be mounted on TD rims!
Installing TD tires on wrong types of rims (including TRI) could cause tire damage, which could lead to tire blowouts while driving.
This tire could no longer be used, not even on a TD rim!

** Source of Supply: HWB

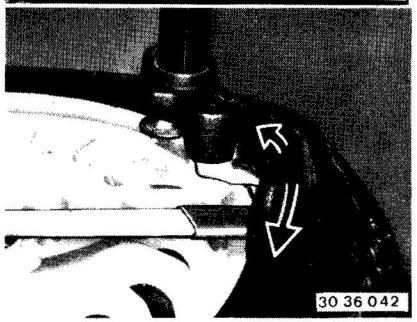


Mounting Tires with a Modern Mounting Machine

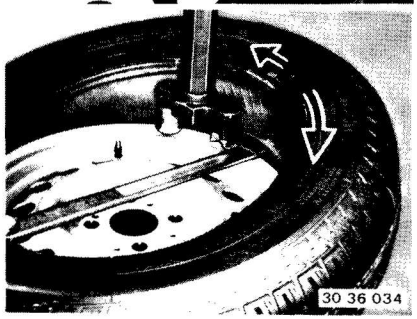
Unscrew valve and deflate the tire.
Press off tire bead from rim flange all around on outside and inside with pressing-off horn of the machine.
If tire beads fit too tight, first only loosen tire from flange at several points with the pressing-off horn prior to the actual pressing-off.
Push both tire beads into rim well completely until they are loose.
Pull off balance weights on rim and clean rim to remove large pieces of dirt.
Coat tire beads with mounting paste.
Clamp wheel on mounting machine.
Narrow rim shoulder always faces up.



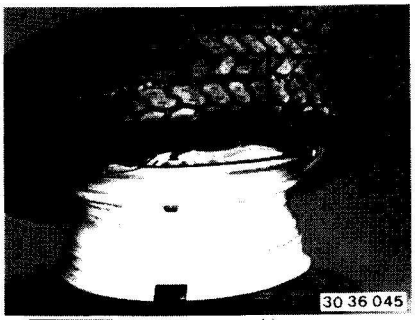
Swing mounting pillar into position or fold and let it engage.
Adjust mounting head, whereby it must be pressed on the rim edge fully and turn down the lever for the clamp; normally the distance of the mounting head will set in automatically.
Valve should be about 10 cm (4") to the right of the mounting head.
Lift tire bead over mounting finger with tire irons.
Use coated or shrink-fit hose covered tire irons for aluminum rims.



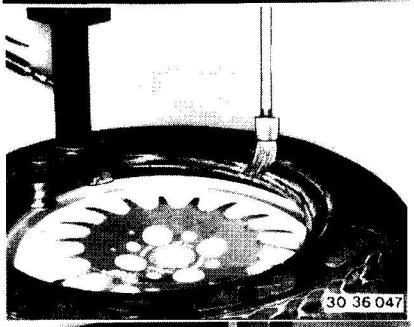
Let mounting machine run back a short distance (counterclockwise) so that the tire bead can slide fully on to the mounting finger.
Then let mounting machine run forward (clockwise) a short distance.
In so doing always check, whether the bottom bead is fully in the well and the tire is given enough time to move.
Stop the machine and let it run back slightly, if the bead clamps.



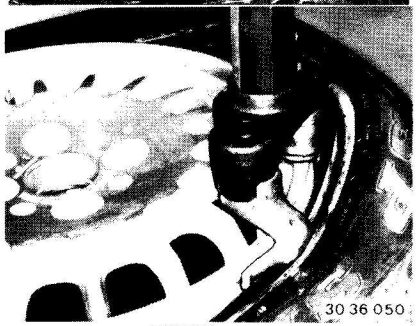
Now also lift the bottom bead over the mounting finger with the tire iron, if the upper bead is pulled off of the rim.
Let machine run back a short distance again and then forward (clockwise) briefly, until there is complete separation of the tire from the rim.



Release lock and tilt back or swing away the mounting pillar.
Unclamp and clean the rim.
Replace the valve.
Coat the rim flange and tire beads with mounting paste.
Clamp the rim on the mounting machine.
Slide on the tire with the lower bead over the rim flange partially.
Valve is 10 cm (4") to the right of the mounting head.



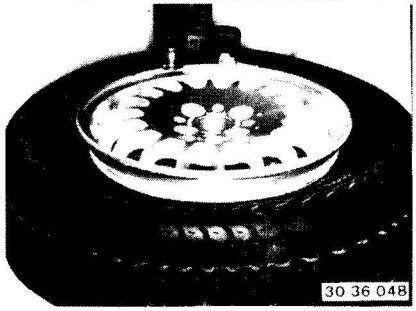
Swing or tilt the mounting pillar into position and lock.
Check adjustment of the mounting finger, readjusting if necessary and clamp.
Press the tire underneath the mounting finger by hand.
Tire bead should seat in the roller next to the mounting finger.
Let the mounting machine run forward (clockwise) a short distance.
The lower tire bead will drop into the well.



Press the upper tire bead underneath the mounting finger.
Tire bead should seat in rollers next to the mounting finger.

Important!
Don't pinch or damage the bead.

Run the mounting machine forward (clockwise) a short distance, while checking that the lower tire bead remains in the well.



After mounting, first release the clamps and then inflate the tire (without valve insert).
Increase the pressure in steps to 3.3 bar (47 psi) (spring pressure).
If the tire bead does not slide on to the rim edge all around, do not increase the pressure.
Instead the tire must be deflated and the tire bead pressed off, then coat the tire bead and rim flange with mounting paste again and inflate again to 3.3 bar (47 psi) pressure.
If tire beads seat on rim flange correctly, increase the inflation pressure to max. 4.0 bar (57 psi) to have the tire "settle".
Screw in the valve insert and correct the tire inflation pressure.