

36 Wheels and Tires

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When the wheel is balanced, the runout should be within the limits specified in the table below. If the runout is greater than the specified limits, the wheel should be rebalanced. If the runout is still greater than the specified limits, the wheel should be replaced.

The wheel should be balanced on a balancing machine. The wheel should be balanced on the same machine that it was balanced on when it was first balanced. The wheel should be balanced on the same machine that it was balanced on when it was first balanced.

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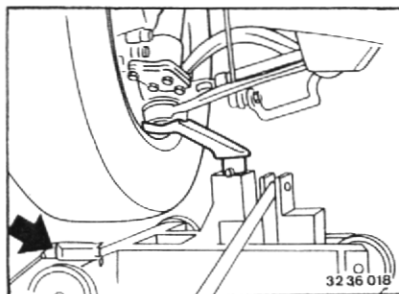
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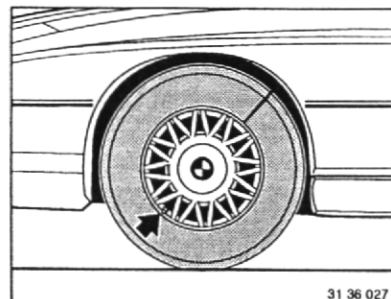


36 10 008 BALANCING LEFT OR RIGHT FRONT WHEEL ELECTRONICALLY (Finish Balancer)

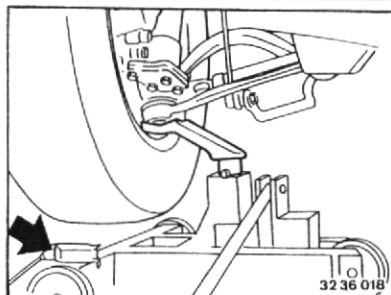
Prior to electronic balancing, always first balance the wheels stationary – see 36 10 508.

Set up gage for balancing on control arm end.
Use a suitable take-up fork or additional fork (see Service Information or Workshop Equipment/Planning).

Set up gage on the control arm as close as possible to the control arm end.



Make a chalk mark on the side of the tire, opposite the valve.



Connect leads for tester.

Important!
Balance wheel according to instructions supplied with pertinent balancing machine.
Balancing must be performed on a solid foundation (concrete floor without cellar).
Also refer to Service Information of Group 36.

If more than 15 grams of imbalance are displayed for one wheel during finish balancing, the possible causes (e.g. Inaccurate stationary balancing, centering, etc.), also refer to Service Information 36 0 483 (196), must be eliminated before finish balancing and a previously finish balanced wheel must be rechecked.

Beim elektronischen Auswuchten des Vorderrades ist die folgende Vorgehensweise zu befolgen:
Vor dem elektronischen Auswuchten des Vorderrades muss das Fahrzeug auf einer ebenen, festen Unterlage (z.B. Betonboden) stehen.
Die Vorderräder müssen korrekt eingestellt sein (Richtungs- und Spurverstellung).
Die Vorderräder müssen korrekt montiert sein (Festziehen der Felgenbolzen).
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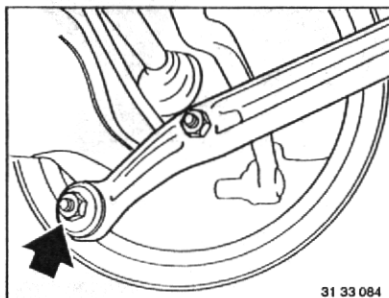
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36 10 008 BALANCING LEFT OR RIGHT FRONT WHEEL ELECTRONICALLY (Finish Balancer)

36-10/2

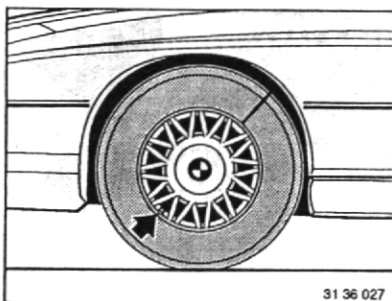
36 10 058 BALANCING LEFT OR RIGHT REAR WHEEL ELECTRONI- CALLY (Finish Balancer)

Prior to electronic balancing, always
first balance the wheels stationary –
see 36 10 508.



Set up gage for balancing on trailing
arm as close as possible to the wheel.
Use a suitable take-up fork or addition-
al fork (see Service Information or
Workshop Equipment/Planning).

Apply a workshop jack underneath the
final drive with light pressure to dead-
en the final drive's own oscillation.



Make a chalk mark on the side of the
tire, opposite the valve.
Check whether the rear wheels can be
turned easily.

Connect leads for tester.

Important!

Balance wheel according to Instruc-
tions supplied with pertinent balancing
machine.

Balancing must be performed on a
solid foundation (concrete floor with-
out cellar).

Also refer to Service Information of
Group 36.

Important!

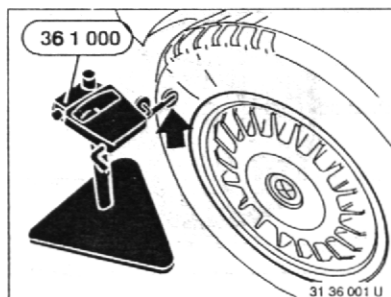
Switch off ASC+T before finish balanc-
ing.

Balancing is performed with engine
force at approx. 100 km/h (60 mph).
This requires that the engine run
smoothly and without misfire, doors,
engine hood and trunk lid be closed
and driver be seated in car as quietly
as possible.

Exhaust extraction hoses must not
touch the car's tail panel.

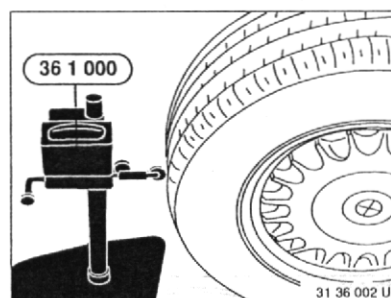
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tion 36 0 483 (196), must be eliminated
before finish balancing and a previous-
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checked.

36-10/3

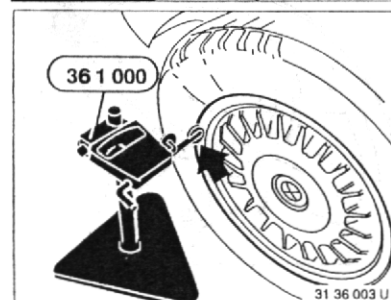


36 10 209 CHECKING WHEEL FOR LATERAL AND RADIAL RUNOUT

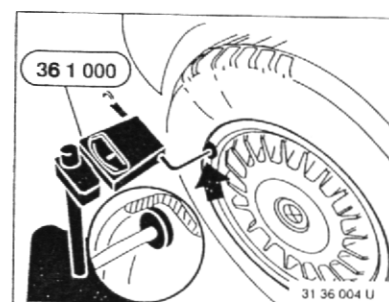
Wheel bearings must be in perfect condition.
Lift car.
Check wheel for lateral runout* with Special Tool 36 1 000.



Check wheel for radial runout* with Special Tool 36 1 000.



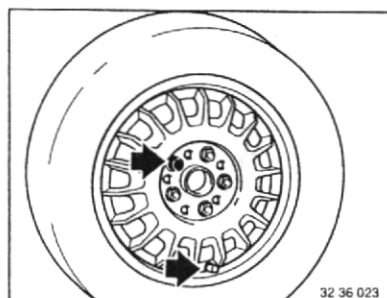
If necessary, remove balance weights.
Check lateral runout* of rim with Special Tool 36 1 100.



Check radial runout* of rim with Special Tool 36 1 000.

* See Specifications

** See Specifications

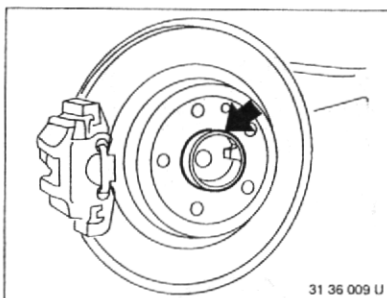


36 10 300 REMOVING AND INSTALLING FRONT OR REAR WHEEL

Important!

Wheel is balanced electronically. Procedures to prevent clamping-over errors and imbalance:

- Loosen wheel bolts.
- Position wheel with valve facing down, install in same position.
- If several wheels are removed at the same time, mark location of wheels on the tires (e.g. with chalk).
- Mark position of wheel to wheel hub (avoid clamping-over errors).
- Mark position of wheel lock to wheel (avoid imbalance).
- Unscrew wheel bolts.

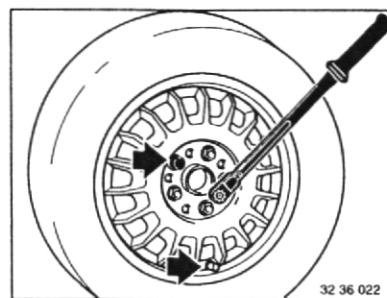


Installation:

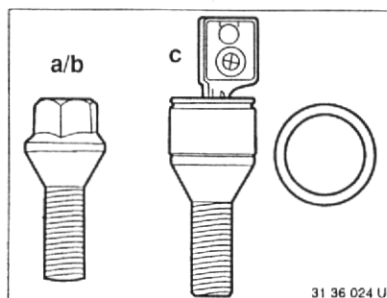
Before installing a wheel, always clean the centering collar of the wheel hub and bearing surface of the wheel rim to remove dirt and old grease, and coat the center with Plastilube**.

Check wheel bolt threads and tapers for wear, replacing wheel bolts if necessary.

Lubricate wheel bolt threads lightly with grease, but keep grease off of the tapers for installation.



Tighten wheel rim bolts crosswise. Tightening torque*. Recheck tightening torque* after 1,000 km (600 miles), if new wheel rims are installed for the first time. Place a label or tag in the car to remind the driver of this.

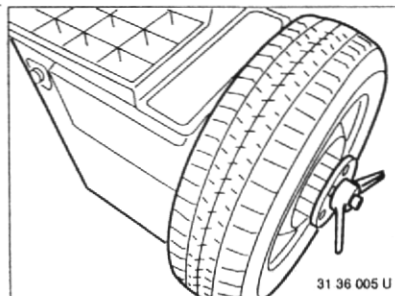


- a) Wheel bolt - galvanized
- b) Wheel bolt - black chrome plated
- c) Wheel bolt - black chrome plated and lockable

** See Operating Fluids

* See Specifications

36-10/5

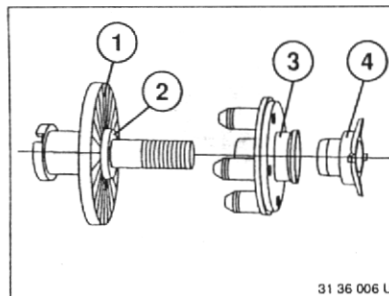


31 36 005 U

36 10 508 BALANCING WHEEL DYNAMICALLY (Wheel Removed)

Remove old balancing weights, stones in treads and large pieces of dirt. Check tire pressure, condition of tires, tires for damage or flat spots (caused by long parking of car with hot tires). If necessary, check wheel for radial and lateral runout – see 36 10 209.

Use suitable center of pertinent balancing machine supplier.



31 36 006 U

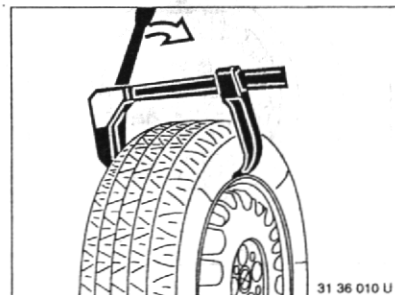
- 1 = Basic flange
- 2 = Center
- 3 = Type flange
- 4 = Clamping nut

Also refer to Workshop Equipment and Planning.

Important!

It is necessary to mount the wheel on the balancing machine in the same manner as it will be mounted on the car afterwards (e.g. valve facing down), in order to avoid clamping-over errors.

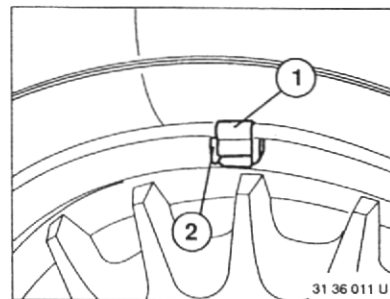
Balance wheel according to instructions supplied with the pertinent balancing machine.



31 36 010 U

Pry the tire wall away from the rim flange slightly with a tire pliers** at a suitable point and insert a retainer in the case of light alloy rims. Remove the tire pliers and slide a balance weight underneath the retainer and let it engage.

** See Workshop Equipment/Planning



31 36 011 U

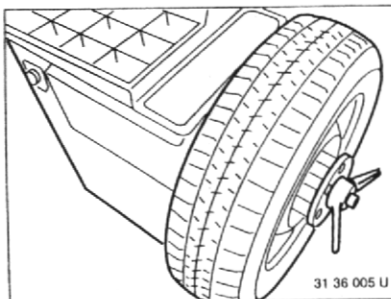
Arrangement of Balance Weights for Cast Light Alloy Wheel Rims:

- 1 = Spring clip
- 2 = Balance weight

Max. imbalance per wheel and side*.

* See Specifications

36-10/6



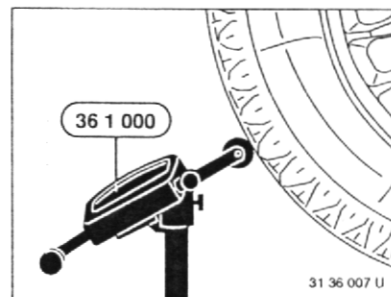
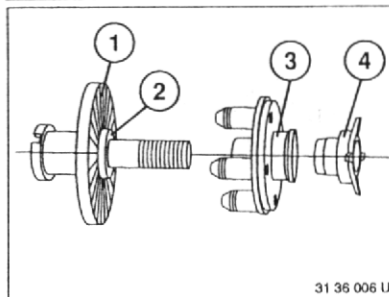
36 10 713 CHECKING ONE ROAD WHEEL FOR RADIAL AND LATERAL RUNOUT ON BALANCING MACHINE (Wheel Removed)

Remove wheel – see 36 10 300. Mount wheel on balancing machine. Wheel must be mounted on the balancing machine as it is mounted on the car (valve facing down) to avoid clamping-over errors.

Use suitable center of pertinent balancing machine supplier.

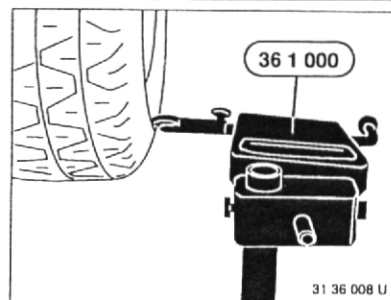
- 1 = Basic flange
- 2 = Center
- 3 = Type flange
- 4 = Clamping nut

Also refer to Workshop Equipment and Planning.



Set up Special Tool 36 1 000 on tire tread surface. Turn wheel by hand and read maximum tire radial runout*.

Note:
Special tool must be perpendicular to the tire tread surface.



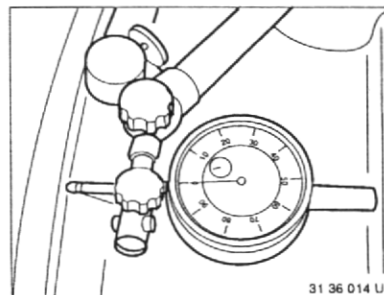
Set up Special Tool 36 1 000 on side surface of tire. Turn wheel by hand and read maximum tire lateral runout*.

Note:
Special tool must be perpendicular to side surface of tire. Never measure on tire data surface! If necessary, check radial and lateral runout of wheel rim – see 36 10 715.

See Specifications

36 10 715 CHECKING WHEEL RIM FOR RADIAL AND LATERAL RUNOUT

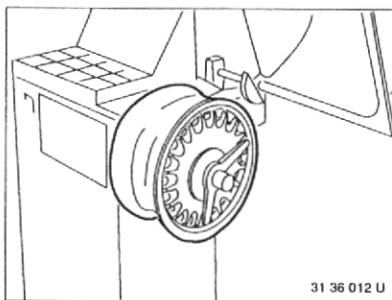
Remove wheel – see 36 10 300.
Check front or rear wheel for radial and lateral runout – see 36 10 209.
Take tire off of wheel rim.
Remove old balancing weights.
Remove dirt on rim well and rim flange.



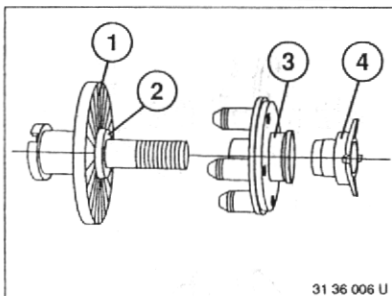
Apply dial gage on rim flange.
Turn wheel by hand and measure the maximum lateral runout*.
Measure on both rim flanges.

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

Important!
Avoid clamping-over errors when mounting afterwards – also refer to 36 10 508.



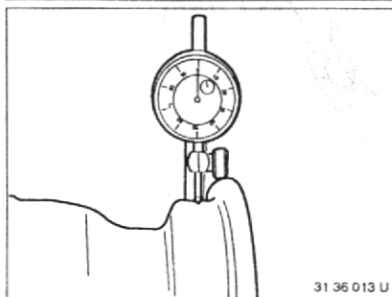
Mount wheel rim on balancing machine.



Use suitable center of pertinent balancing machine supplier.

- 1 = Basic flange
- 2 = Center
- 3 = Type flange
- 4 = Clamping nut

Also refer to Workshop Equipment and Planning.

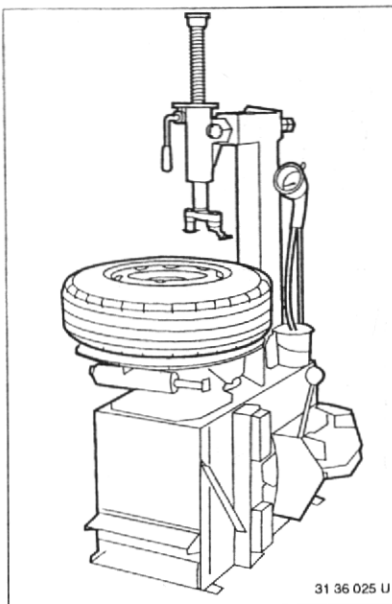


Apply dial gage on rim well.
Turn wheel by hand and measure the maximum radial runout*.
Measure on both sides of rim well.

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

* See Specifications

* See Specifications



36 12 001 REPLACING TIRE FOR FRONT, REAR OR SPARE WHEEL

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 Removing / Mounting Instructions

Removing:

Begin removal of a tire 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 tire.
The valve and valve insert must be replaced each time a tubeless tire is removed and installed.

Important!

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 tire.
Should it be difficult to press off the tire, pry the tire away from the rim flange as far as possible with the pressing-off horn and then apply tire mounting paste between the tire and rim flange.
Repeat this step around the complete periphery of the tire.
Then press off the tire completely.

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.
Mount tire with as little as possible stress on the beads, since otherwise there would be danger of damaging the tire.
First of all let the tire bead – coming from the well – jump over the hump of the rim shoulder.
Inflate the tire in steps while observing continuously.
Maximum "jump-over 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 until the tire "settles" only when the beads bear on the rim shoulders correctly.
Maximum "settling 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.

** See Operating Fluids

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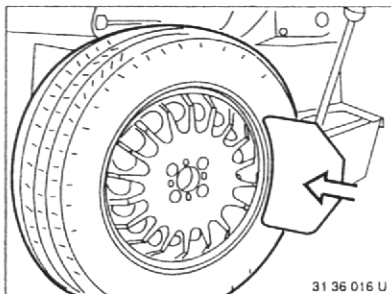
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Mounting Tires with Mounting Machine

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.

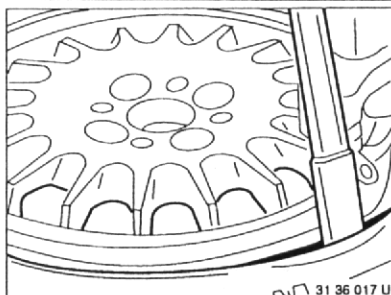
Push both tire beads into rim well completely until they are loose.

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.



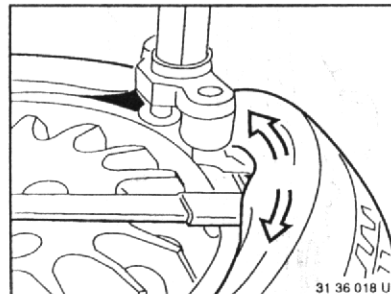
Swing mounting pillar into position or tilt and let it engage.

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 partially shrink-fit hose covered tire irons for aluminum rims.

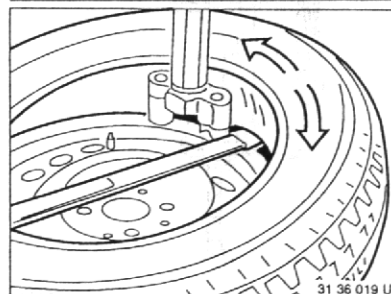


Let mounting machine run back a short distance (anticlockwise) so that the tire bead can slide fully on to the mounting finger.

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.

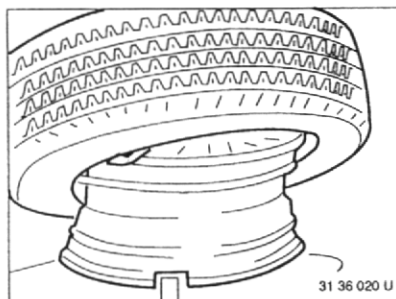
Stop the machine and let it run back slightly, if the bead clamps.



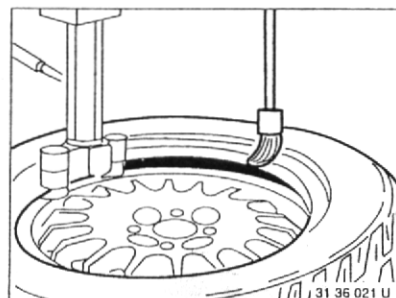
Now also lift the bottom bead over the mounting finger with a tire iron.

Let the machine run back a short distance again and then forward (clockwise) briefly, until there is complete separation of the tire from the rim.

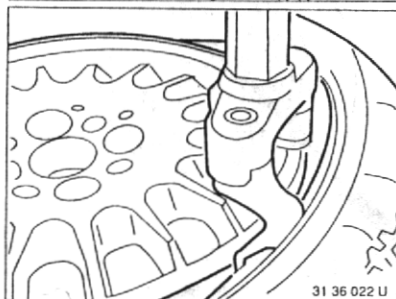
** See Operating Fluids



Release lock and tilt back or swing away the mounting pillar.
 Unc clamp 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.



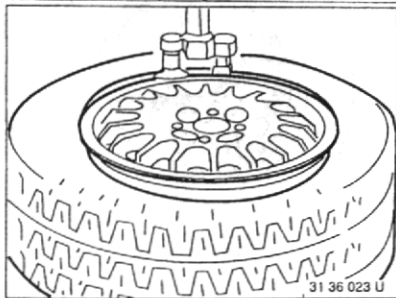
Swing or tilt the mounting pillar into position and lock.
 Check adjustment of the mounting finger, readjusting if necessary and clamp.
 Press the tire underneath the mounting finger by hand.
 Tire bead should seat in the roller next to the mounting finger.
 Let the mounting machine run forward (clockwise)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

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).

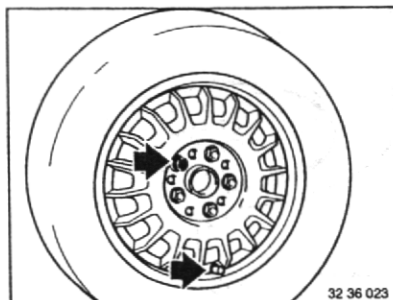
Increase pressure to 3.3 bar (47 psi) in steps.

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 beads pressed off, then coat the rim flange with mounting paste again and inflate the tire again with 3.3 bar (4.7 psi) pressure.

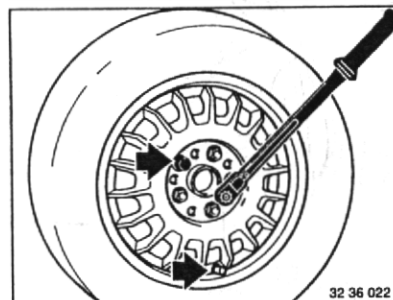
If tire beads bear on rim shoulders correctly, increase the inflation pressure to maximum 4.0 bar (57 psi) to have the tire "settle".

Screw in the valve and correct the tire inflation pressure.

** See Operating Fluids



32 36 023



32 36 022

36 13 ... SERVICE INSTALLING ONE WHEEL BOLT LOCK

- Loosen wheel bolts.
- Lift car so that wheel can be turned easily.
- Loosen wheel bolts enough that wheel can be turned easily on the wheel hub.
- Position wheel with its valve facing down.
- Remove top wheel bolt and install wheel bolt lock.

Imbalance could be produced by play in the center and the wheel's own weight. This imbalance is reduced to a minimum by installing a slightly heavier wheel bolt lock in the top wheel bolt position.

- Tighten wheel bolts crosswise hand tight in this position (wheel bolt lock at top, valve at bottom).
 - Lower car and tighten wheel bolts crosswise.
- Tightening torque*.

If a customer complains about wheel imbalance after installation of the wheel bolt lock to these instructions, the wheels must be finish balanced.