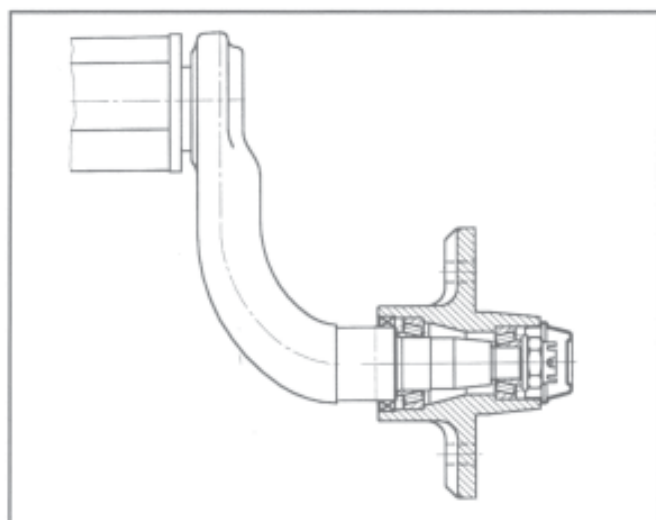
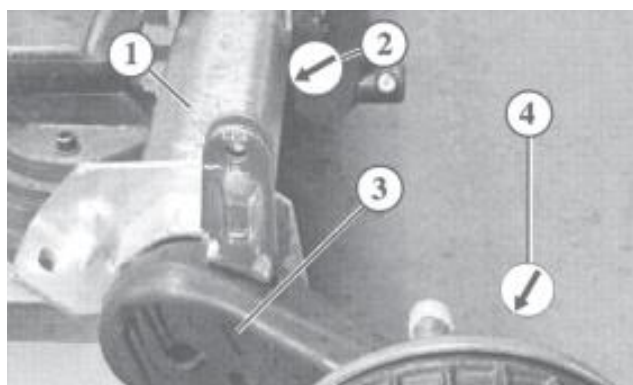
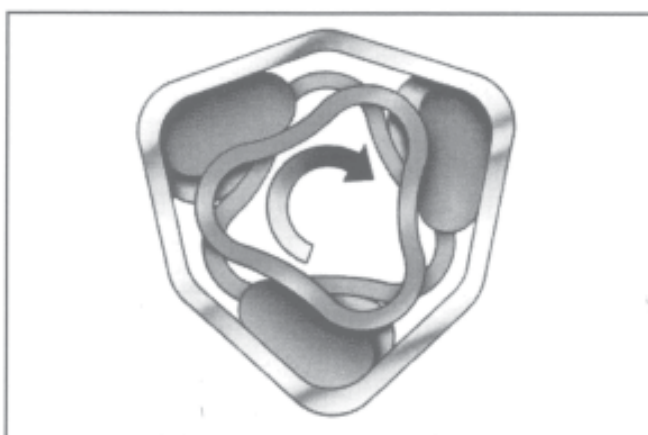
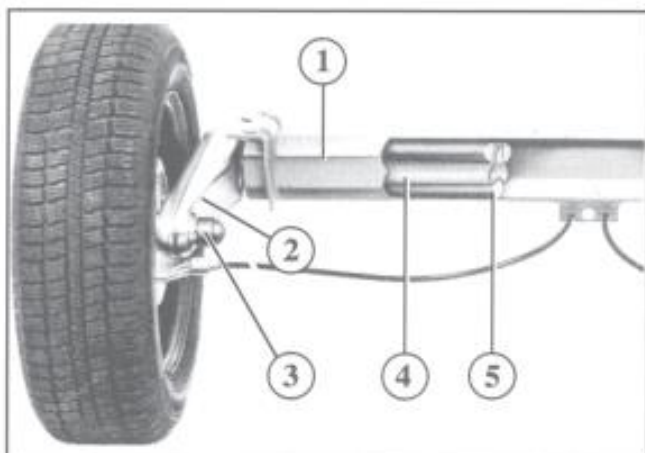


3 Axles and brakes



3.1 Function and construction of the axles

3.1.1 Function

Each wheel has an independent suspension system in the axle body (1), so that individual wheel suspension is provided.

The swinging arms (2) connect the stub axle (3) to the three-sided inner tube (4) in the axle body.

When the vehicle is loaded, the three-sided inner tubes are twisted relative to the six-sided outer tube.

The rubber suspension units (5) are deformed when suspension movement occurs and provide a high degree of self-damping.

Schematic view of the suspension load in the AL-KO six-sided rubber suspension axle.

3.1.2 Construction

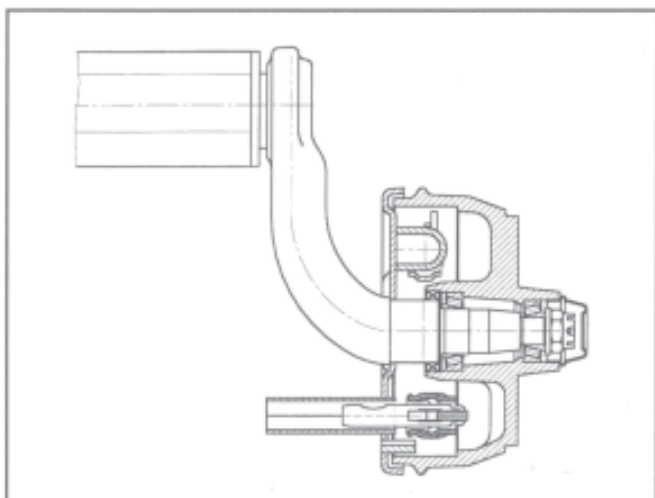
The axle consists of a number of assemblies:

- 1 Six-sided outer axle body
- 2 Three sided inner tube (not visible), individually for each wheel
- 3 Swinging arm
- 4 Axle for mounting the backplate and brake drum

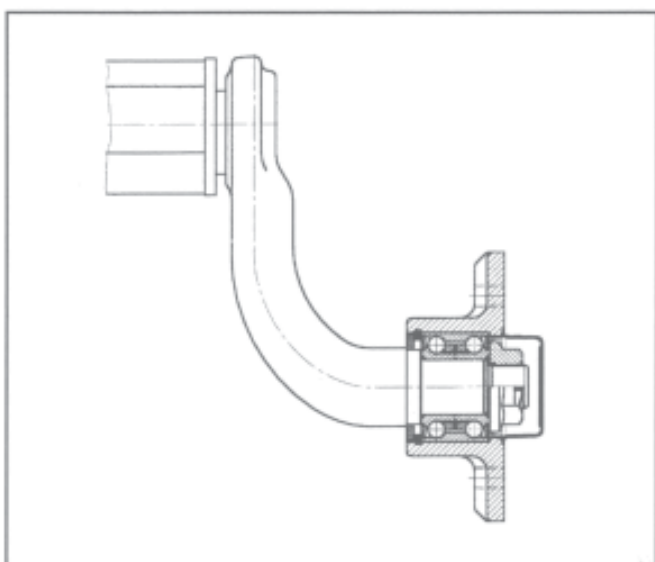
3.1.3 Different types of axle

The AL-KO axle range comprises six different types.

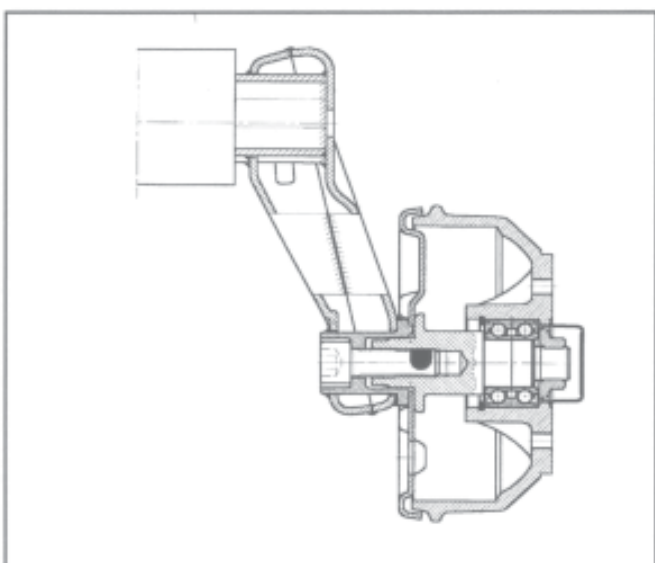
AL-KO standard axle (unbraked)



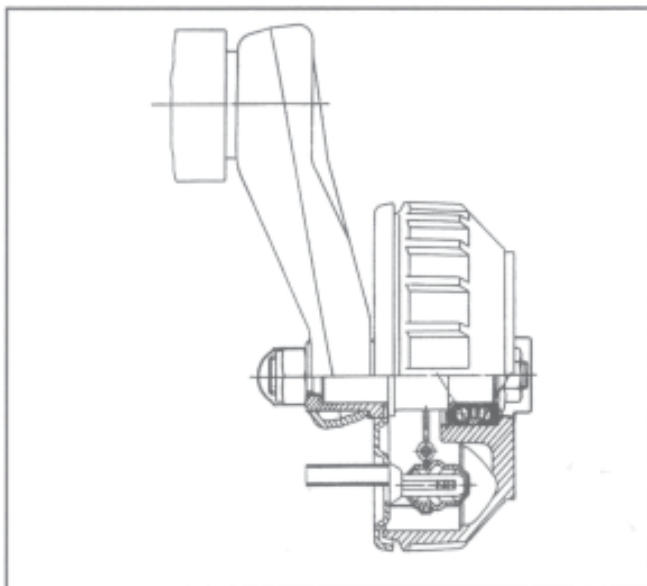
AL-KO standard axle (braked)



AL-KO compact axle (unbraked)

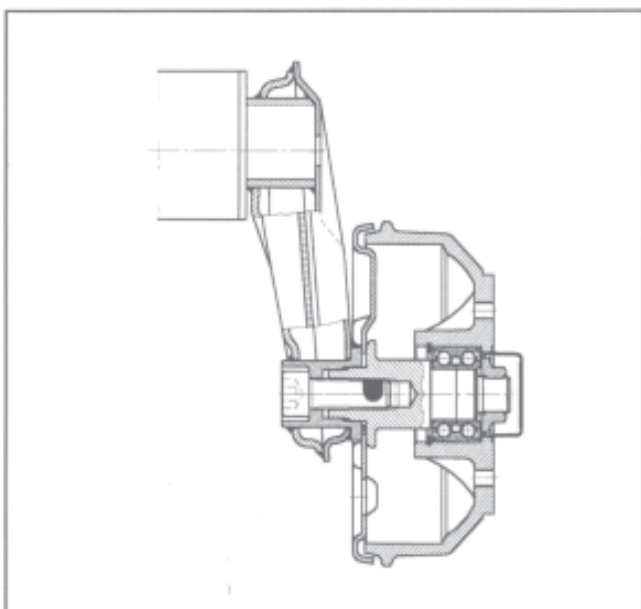


AL-KO compact axle (braked)



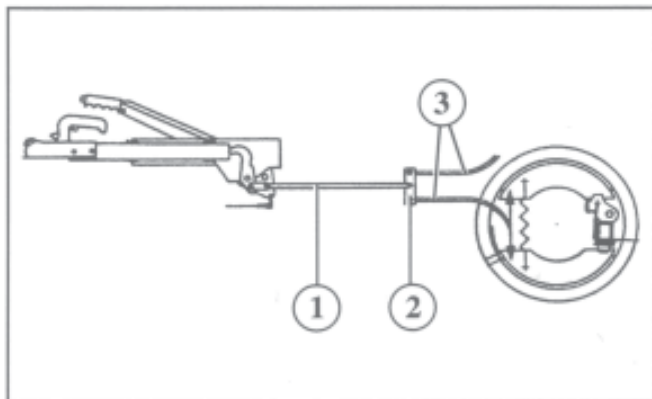
AL-KO Euro-Plus axle (braked)

- Stub axle secured with collar nut



AL-KO Euro-Plus 45° (braked)

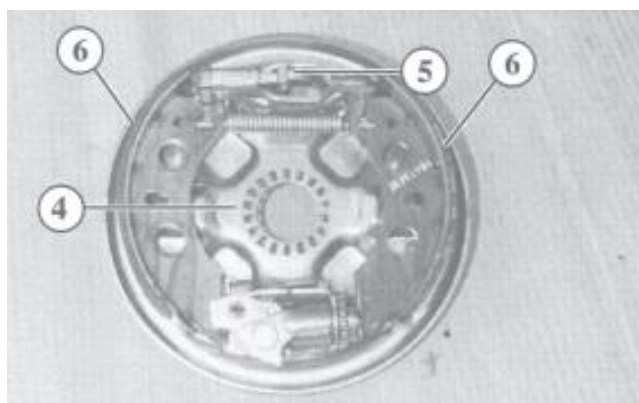
- Stub axle secured with socket head screw



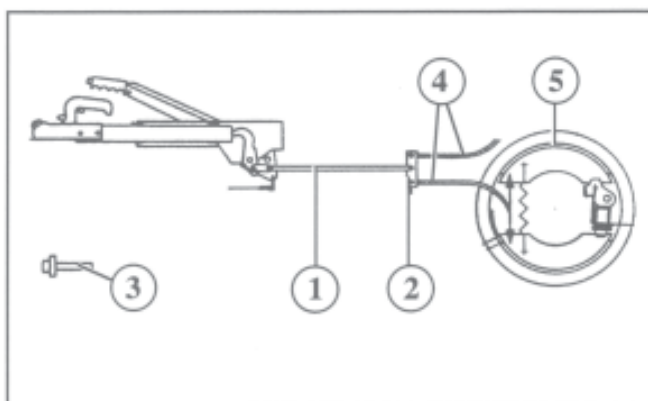
3.2 Function and construction of the wheel brake

3.2.1 Function

The braking of the towing vehicle pulls on the brake rod (1). The equaliser (2) passes on the pulling force to the Bowden cables (3) of the wheel brakes.



The backplate (4) is rigidly fitted or welded to the swinging arm and does not rotate. When the brake is applied via the Bowden cables, the expander (5) presses the brake shoes (6) against the brake drum. The vehicle is braked.

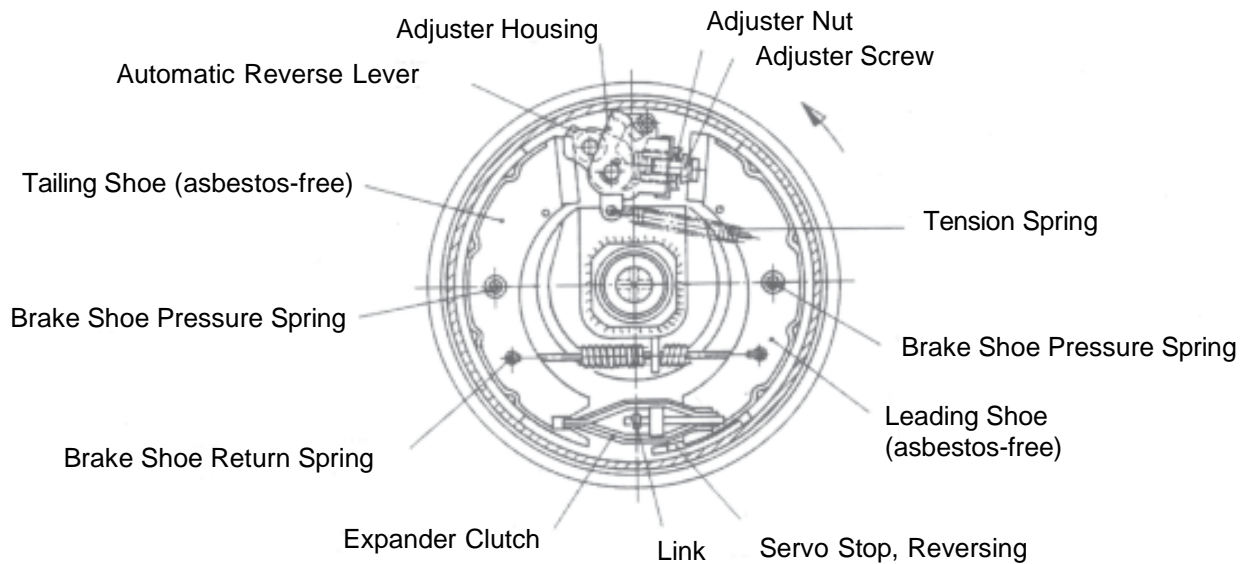
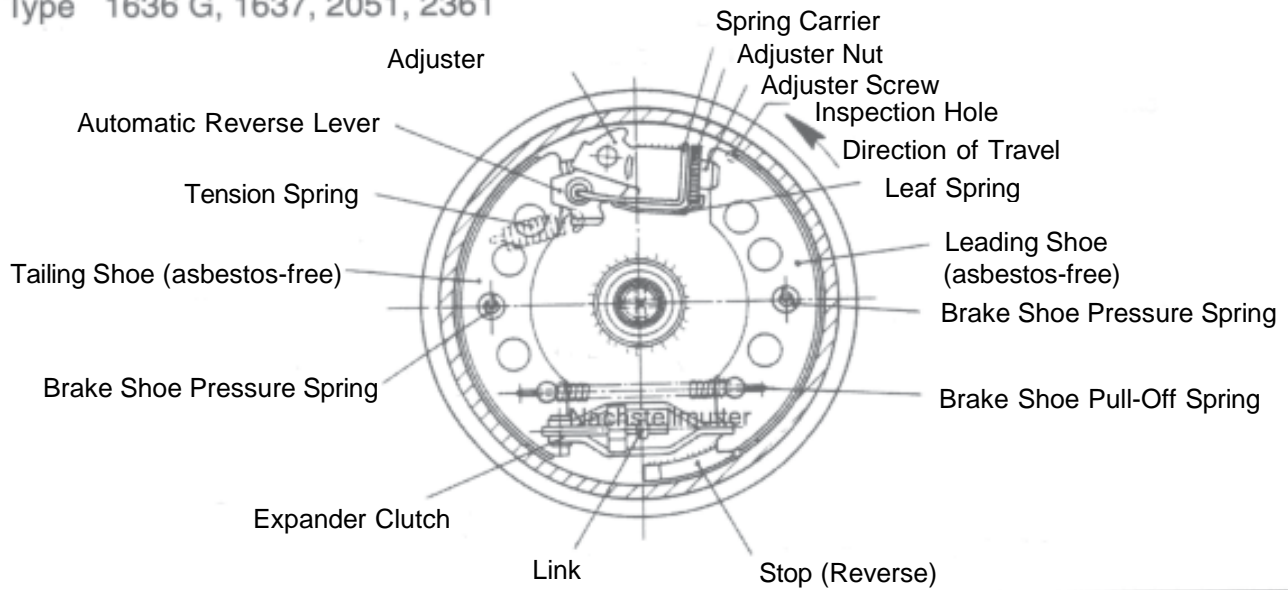


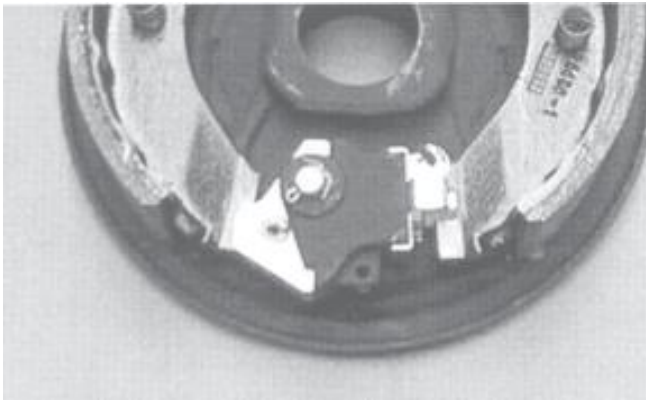
3.2.2 Construction

The wheel brake system consists of a number of assemblies:

- 1 Brake rod
- 2 Equaliser
- 3 Brake rod steady (recommended extra)
- 4 Bowden cable
- 5 Wheel brake

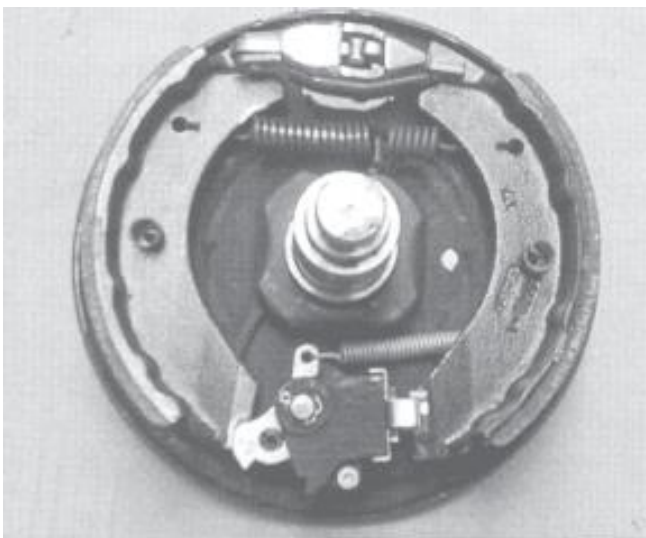
Type 1636 G, 1637, 2051, 2361





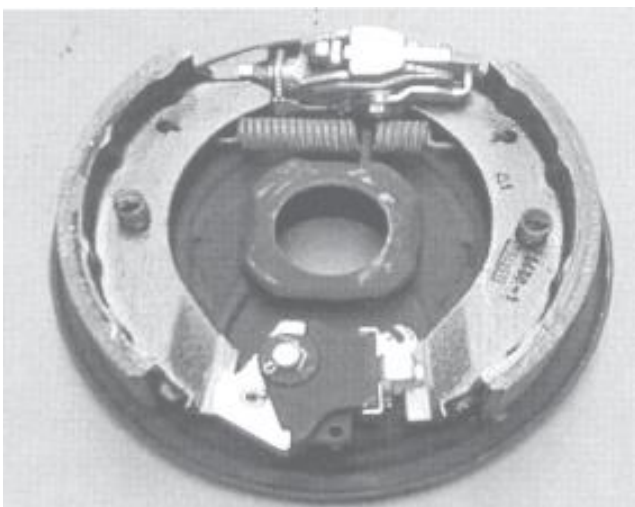
Wheel brake 3081 / 3081 AR

On trailers with stationary or air braking, the reversing function is immobilised.



Dismantling wheel brake 3081

This work is described in the section “Dismantling the wheel brake”.



Dismantling wheel brake 3081 AR

This work is described in the section “Dismantling the wheel brake”.

3.3 Maintenance

3.3.1 Maintenance intervals

Initial inspection after 1500 km or 6 months

- Check braking system adjustments
- If necessary, re-adjust the braking system
- Check end play in the wheel hub bearings on standard axles
- On standard axles, lubricate the bearings



On boat trailers which are driven into the water, re-lubrication must be carried out once a year. This does not apply to waterproof hubs.

Maintenance after 10,000 or 15,000 km or every 12 months

- Adjust the braking system (wheel brakes)
- Check brake lining wear through the inspection hole in the backplate.



Where the pull rod overrun travel is more than 60%, more frequent adjustment is required. This is due to heavy loads (using as a trailer or frequent travel in mountainous country).

Maintenance after 30,000 km or every 24 months

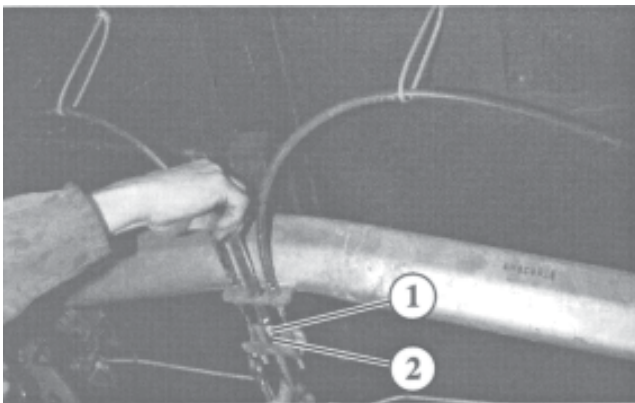
- Release the wheel brake
- Check brake lining wear
- If necessary, replace the brake linings
- Check the internal components of the wheel brake
- If necessary, replace weak return springs
- Grease sliding surfaces of adjuster nuts, automatic reverse lever pivots and expander lever pivots
- Re-adjust the braking system



3.3.2 Maintenance work

Before carrying out maintenance work, always:

- Lift the trailer with a vehicle hoist
- Pull out the drawbar (1) of the overrun device as far as it will go
- Release the handbrake fully (move down wards)



Checking braking system adjustment

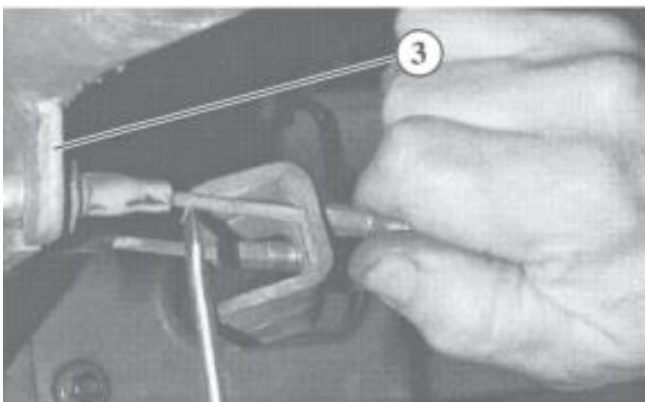
- Lift the trailer
- Pull on the handbrake to the first notch

With the gas strut version, hold the lever at the first notch by hand.

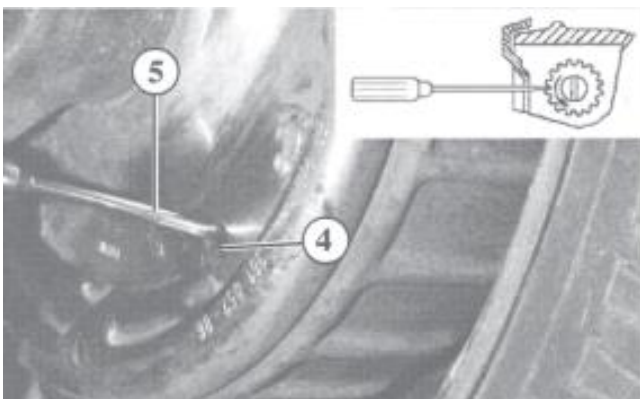
- Turn the wheels in the direction of travel
- Check whether braking resistance is uniform
- If necessary, adjust the braking system

Adjusting the braking system

- Slacken off the brake rod completely at the equaliser
- Loosen the hexagon nut (1)
- Loosen the ball nut (2)
- Check play in the Bowden cable at the axle abutment (3):
 - about 5 mm



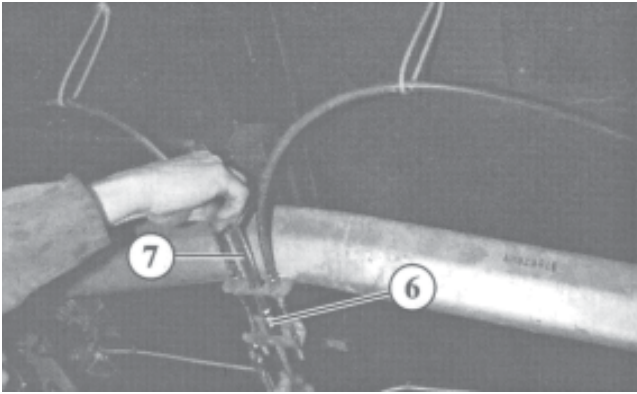
The play in the Bowden cables should as far as possible be equal for brakes on the wheels of an axle.



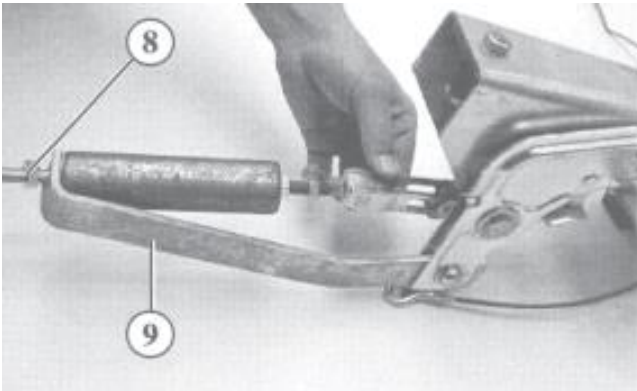
- Remove the blanking plug from the adjustment hole (4)
- Using a screwdriver (5), rotate the adjuster nut



An arrow is stamped on the backplate next to the adjustment hole. Turning in the direction of the arrow adjusts the brake up, turning in the opposite direction slackens the brake off



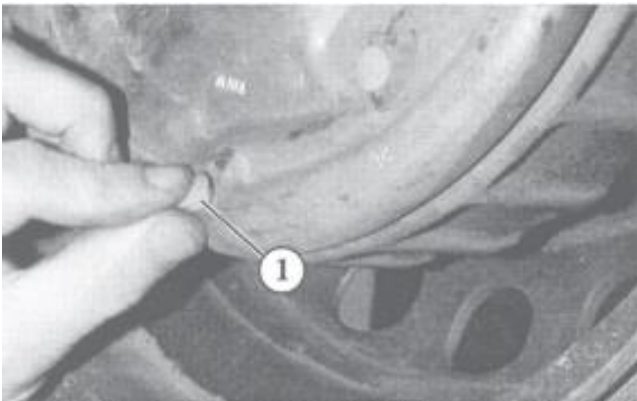
- Grease the seating surface of the ball nut (6)
- Connect up the brake rod on the equaliser with the ball nut, but do not tighten yet
- Apply the handbrake hard a number of times to settle the components of the braking system
- Tighten the ball nut until the Bowden inner cables are pre-tensioned by 1 – 2 mm
- Lock the ball nut with the hexagon nut.



Movement of the brake rod while travelling may cause unwanted application of the brake. To avoid this, the fitting of a brake rod steady (7) is recommended.



On versions with a spring cylinder: tighten the M10 self-locking hexagon nut only far enough to leave about 1 mm clearance for the spring cylinder between the nut (8) and support (9).



Checking brake lining wear through the inspection hole in the backplate

- Remove the blanking plug from the inspection hole (1)
- Check brake lining wear
- If necessary, renew the brake linings



Renew the brake shoes if there is less than 2 mm thickness remaining.

3.3.3 Lubrication

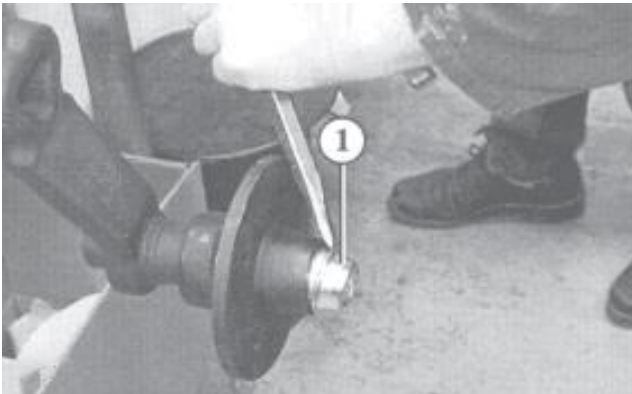
Lubricating the standard axle

The end play on the wheel hub bearings must be checked after 1500 km or 6 months.

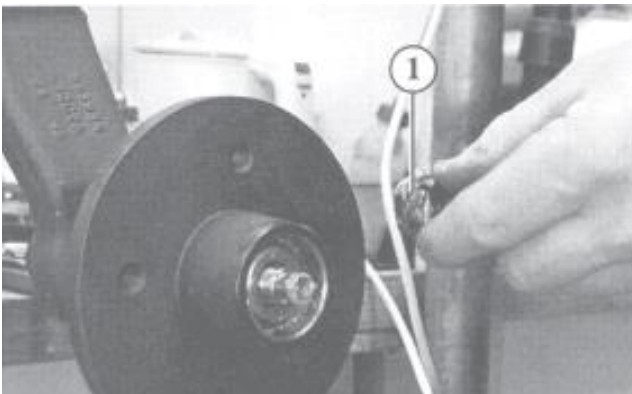


On boat trailers which are driven into the water, re-lubrication must be carried out once a year. This does not apply to water proof hubs.

- Take off the hub cap (1) and bearing cap

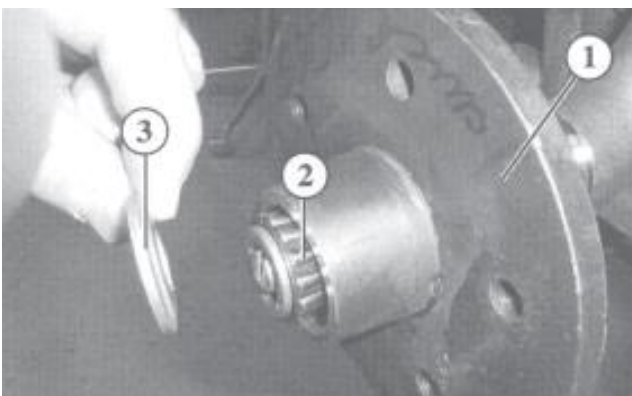


- Remove the split pin from the castellated nut

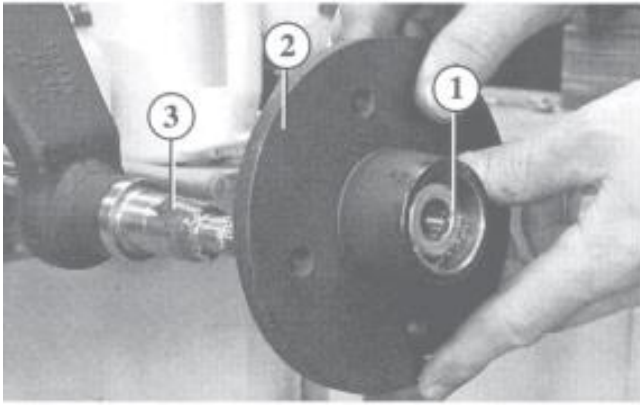


If only the end play is to be adjusted, tighten the castellated nut to 50 Nm (see description below)

- Unscrew and remove the castellated nut (1)



- Pull off the wheel hub together with the taper roller bearing (2) inside it, and also the DIN washer (3)
- Pull out the taper roller bearing and clean

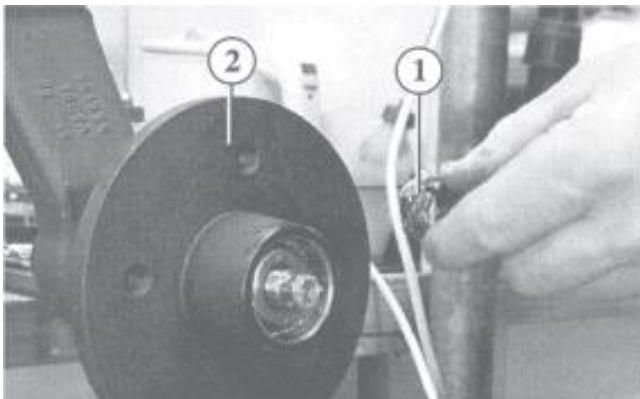


- Insert the greased taper roller bearing (1) and DIN washer into the wheel hub (2).

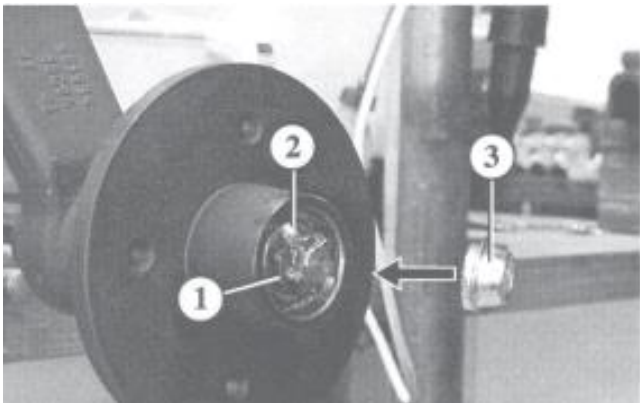


For lubricating the bearing, a multi-purpose grease to DIN 51825 KTA 3K4 is to be used.

- Fit the wheel hub and bearing onto the stub axle (3)



- Fit the castellated nut (1)
- Tighten the castellated nut to 50 Nm, at the same time rotating the hub (2), until resistance can be felt (use a torque wrench)



- Back off the castellated nut (1) by 30 degrees and insert the split pin (2)



End play of 0.05 mm is permitted.



Overtightening the bearings causes bearing damage

- Fit the bearing cap and hub cap (3)

3.3.4 Lubrication

Lubricating the standard axle with collar nut

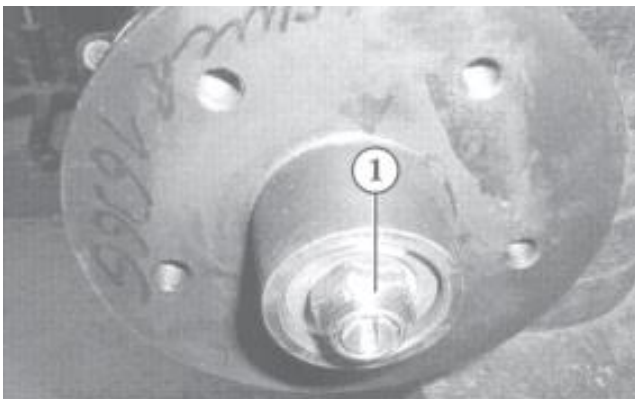
The end play on the wheel hub bearings must be checked after 1500 km or 6 months.




On boat trailers which are driven into the water, re-lubrication must be carried out once a year. This does not apply to waterproof hubs.

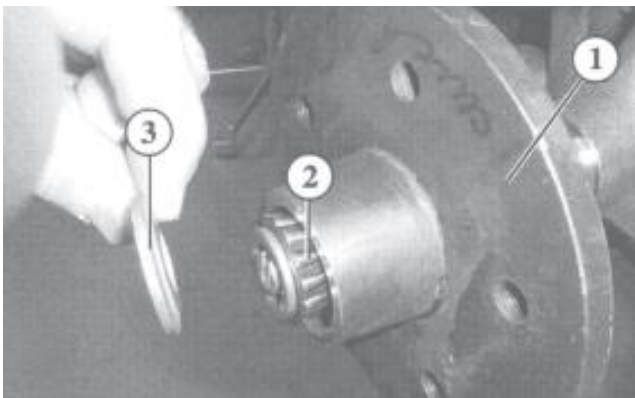


- Take off the hub cap (1) and bearing

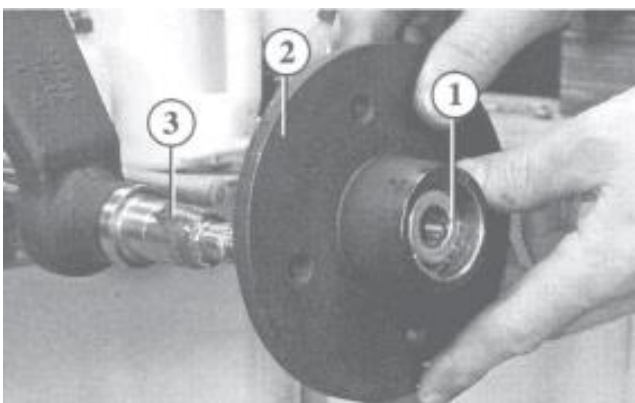


cap  If only the end play is to be adjusted, tighten the castellated nut to 50 Nm (see description below).


- Unscrew and remove the collar nut (1)



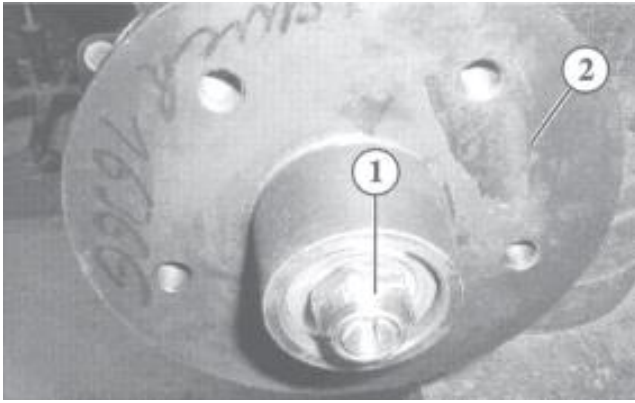
- Pull off the wheel hub together with the taper roller bearing (2) inside it, and also the DIN washer (3)
- Pull out the taper roller bearing and clean



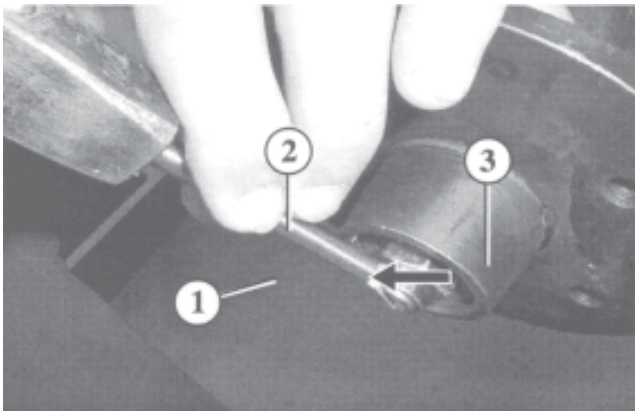
- Insert the greased taper roller bearing (1) and DIN washer into the wheel hub (2).

 For lubricating the bearing, a multi-purpose grease to DIN 51825 KTA 3K4 is to be used.

- Fit the wheel hub and bearing onto the stub axle (3)



- Fit a new collar nut (1)
- Tighten the collar nut to 50 Nm, at the same time rotating the hub (2), until resistance can be felt (use a torque wrench)



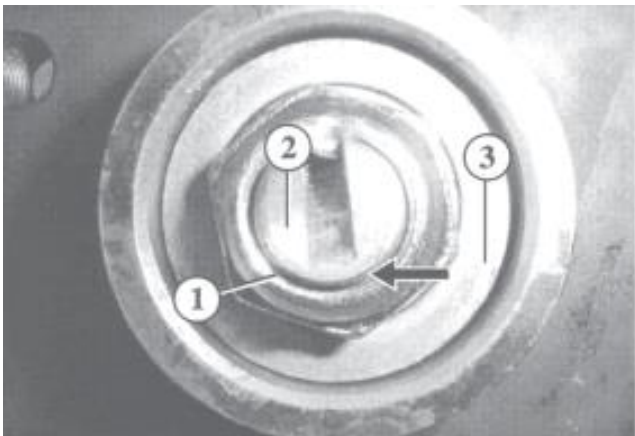
- Back off the collar nut (1) 30 degrees and lock using the special tool (2) (→ see list of tools). Stake the collar of the nut into the groove on the stub axle.



End play of 0.05 mm is permitted.

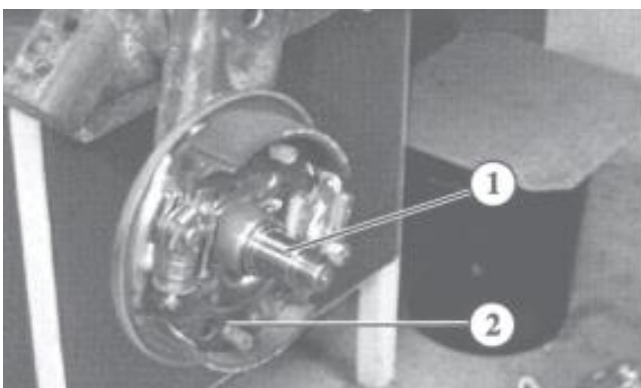
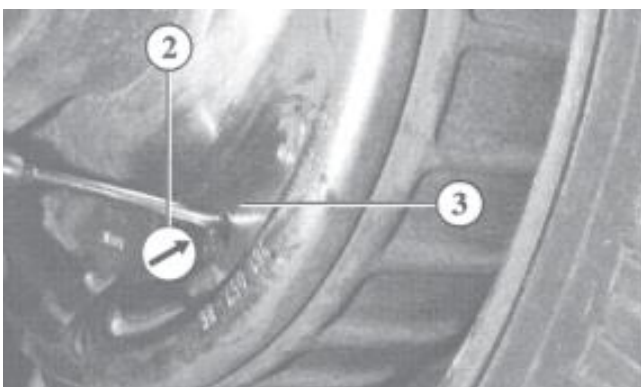
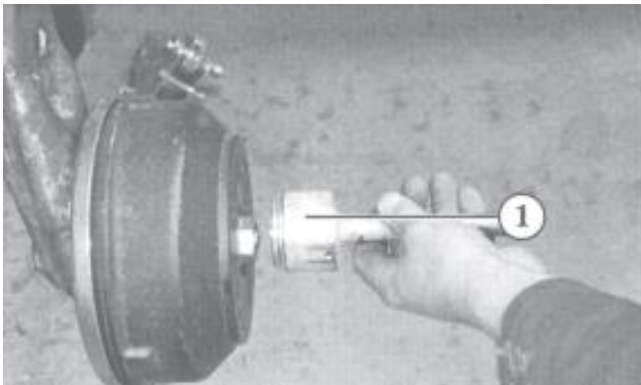


The collar of the nut must not be sheared.



Overtightening the bearings causes bearing damage.

- Fit the bearing cap and hub cap (3)



3.4 Repair

3.4.1 Removing the brake drum

- Lift the trailer with a vehicle hoist
- Unbolt the wheel
- Remove the dust cap using the shaped tool (1, see list of tools)



For safety reasons (danger of injury) and to avoid component damage, we recommend the use of the special tool.

- Unscrew the flange nut
- Turn the brake drum slightly by hand and pull off



If the brake drum will not pull off, turn the brake shoe adjuster screw (2) in the opposite direction to the arrow. An arrow (3) is stamped on the backplate next to the adjustment hole.

- Renew worn brake drums with scoring or severe corrosion.



Brake drums must not be skimmed.

3.4.2 Installing the brake drum

- Renew worn brake drums with scoring or severe corrosion

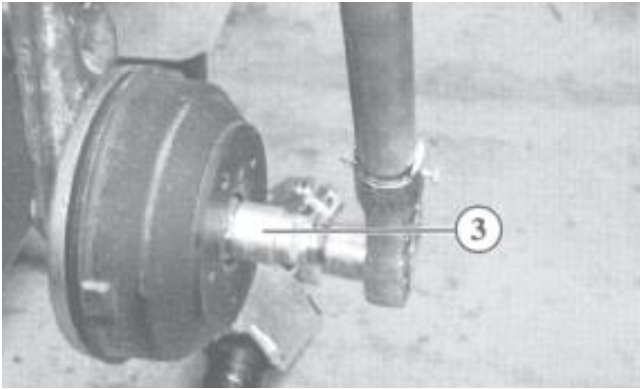


Brake drums must not be skimmed.

- Fit the brake drum onto the stub axle (1) and wheel brake (2)



There must be no load on the axle when tightening the flange nut.



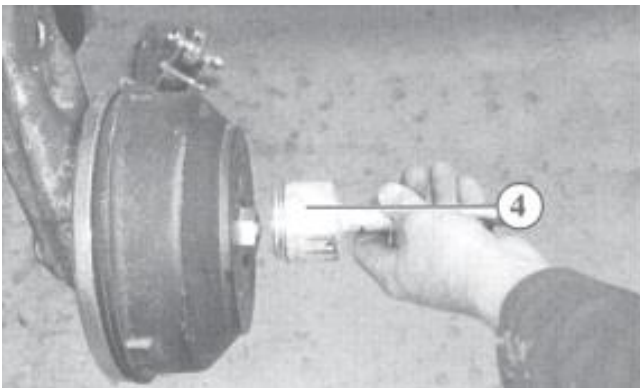
- Tighten the new flange nut to a torque of 280 - 300 Nm (3)



Do not re-use self-locking nuts.



Use new nuts.



- Drive on the dust cap using the shaped tool (4, see list of tools)
- Bolt on the wheel
- Re-adjust the braking system

NOTE: SECTIONS 3.4.3 AND 3.4.4 ARE FOR INFORMATION ONLY - THESE PROCEDURES MUST ONLY BE CARRIED OUT AT THE AL-KO FACTORY.

3.4.3 Removing the stub axle

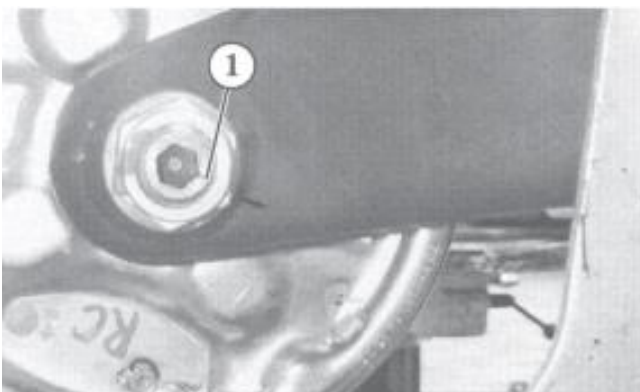
- Remove the brake drum
- Remove the protective cap on the swinging arm side using a suitable tool.



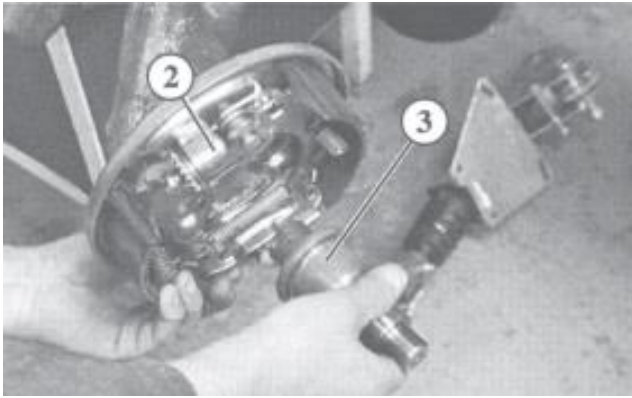
When re-fitting the stub axle, the position of the stub axle indicated by the mark (1) must be kept exactly the same, as otherwise the toe-in will have to be re-adjusted.



When replacing the stub axle, it is recommended that the toe-in should be checked.



- Transfer the mark on the stub axle to the swinging arm, using a suitable marker.
- Where the stub axle is secured with a collar nut:
- The mark (1) is located on the swinging arm side
- On the Euro-Plus axle with socket head screw:
- The mark is located on the brake drum side and must be carefully transferred to the swinging arm side



- Unscrew the nut or socket head screw
 - Where the stub axle is secured with a collar nut:
 - Unscrew the nut, preventing the stub axle from turning using a shortened Allen key (see AL-KO list of tools)
 - On the Euro-Plus axle with socket head screw:
 - Unscrew the socket head screw

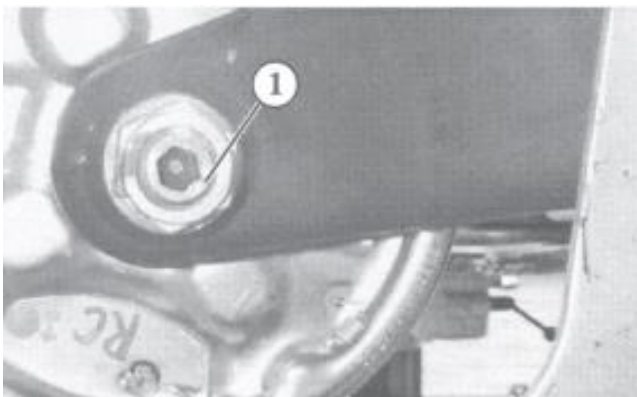


Dismantling releases the backplate (2) and stub axle (3).

3.4.4 Installing the stub axle



When re-fitting the stub axle, the position of the stub axle indicated by the mark (1) must be kept exactly the same, as otherwise the toe-in will have to be re-adjusted.



When replacing the stub axle, it is recommended that the toe-in should be checked.



There must be no load on the axle when tightening the flange nut.

- Secure the stub axle:
 - Where the stub axle is secured with a collar nut:
 - Tighten a new collar nut to the specified torque:
 - On the 1637/2051: 500 – 550 Nm
 - On the 2361: 700 – 750 Nm

Prevent the stub axle from turning using a shortened Allen key (see AL-KO list of tools).

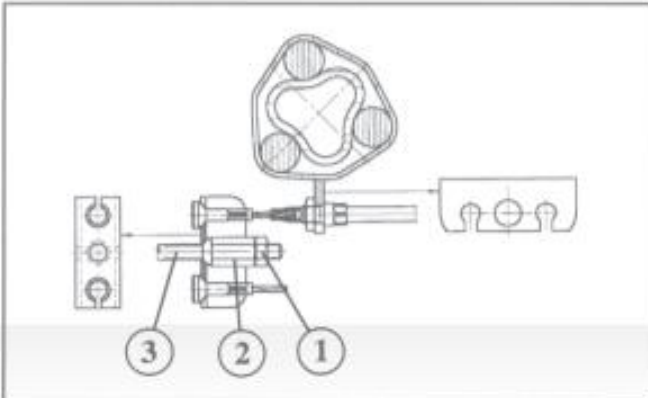
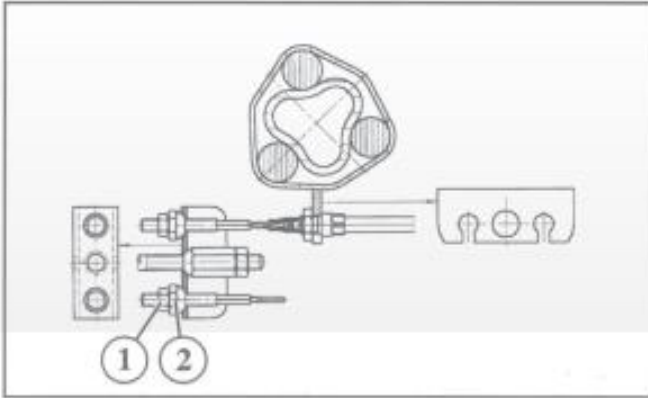


Do not re-use self-locking nuts.



If the stub axle is rotated when tightening the nut, the toe-in must be re-adjusted.

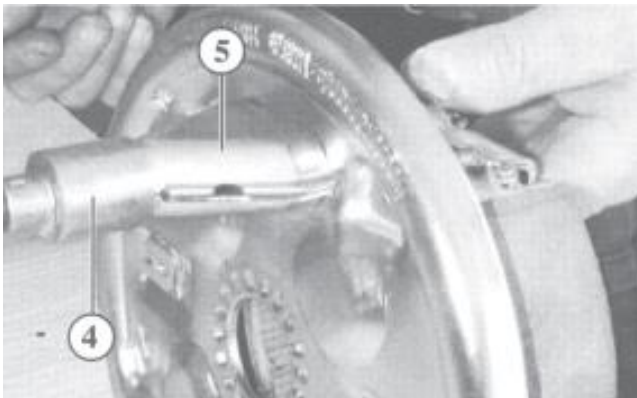
- On the Euro-Plus axle with socket head screw:
 - Tighten the socket head screw to a torque of 360 – 380 Nm
 - After tightening, apply fresh locking paint
 - Fit the protective cap on the swinging arm side



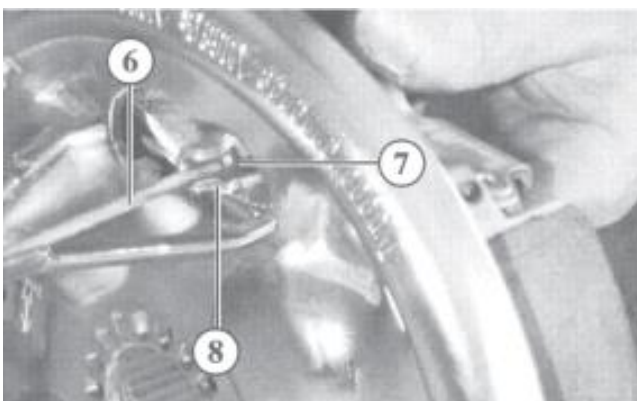
3.4.5 Removing the Euro wheel brake assembly (not on standard axles)

- Remove brake drum (see 3.4.1)
- Remove stub axle (see 3.4.3)
- Normal Bowden cable:
 - If necessary, slacken the hexagon nuts (1) and ball nut (2) on the Bowden cable

- Quick-fitting Bowden cable:
 - Unhook the Bowden cables from the equaliser
 - Slacken the hexagon nut (1) and ball nut (2) on the brake rod



- Push back the Bowden cable end bush (4)
- Lift off upper part (5) of the Bowden cable abutment
- Take the upper part out of the opening in the backplate



- Push the Bowden cable (6) into the backplate so that the nipple (7) can be released from the attachment eye (8)
- Pull out the Bowden cable




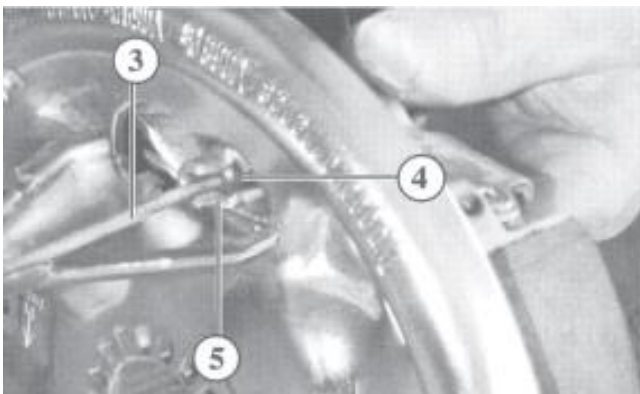
3.4.6 Installing the Euro wheel brake

- If necessary, fit the individual parts to the backplate (for instructions see “Fitting the wheel brake”, 3.4.6).


Inserting the Bowden cable

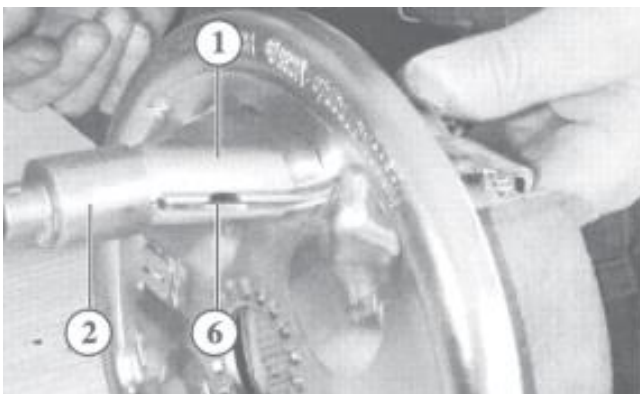
- Take off the top part of the Bowden cable abutment

 Make sure that the Bowden cable end sleeve is fitted the right way round.




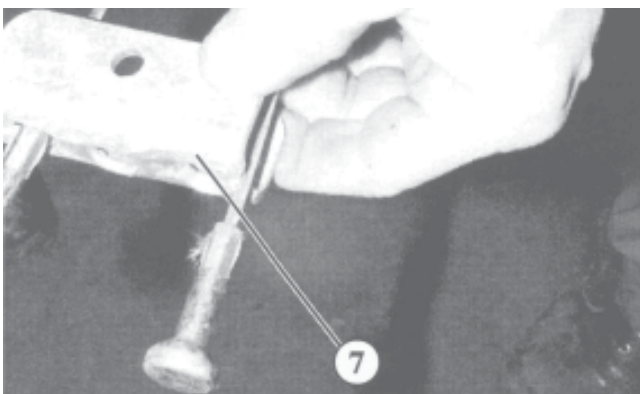
- Hook the nipple (4) of a genuine AL-KO Bowden cable (3, with stamped AL-KO marking) into the attachment eye (5) of the expander.
- Pull back the Bowden cable so that the nipple slides into the correct position.

 Bowden cables with excess cable length must not be fitted into this attachment eye. Removal of the excess cable is not permitted.

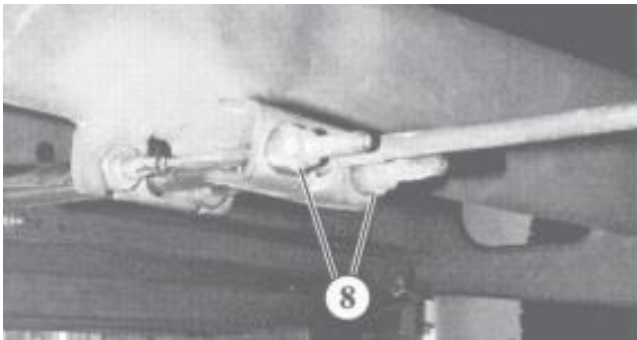


- Check visually that the Bowden cable has seated correctly in the attachment eye.
- Push the upper part (1) of the Bowden cable abutment into the opening in the backplate
- Place the upper part to fit exactly over the welded-on lower part (6)

 After fitting the Bowden cable end sleeve, check again that the Bowden cable end fitting is correctly seated in the attachment eye.



- Hook the Bowden cables with the ball nipple (quick-fitting Bowden cables) onto the equaliser (7)
- Tighten the hexagon nut and ball nut on the brake rod
- Screw the equaliser tight on the abutment



- Adjust the ball nuts (8) and lock with the hexagon nuts
- Screw the equaliser tight on the abutment



- Fit the backplate (9) to the swinging arm (10)

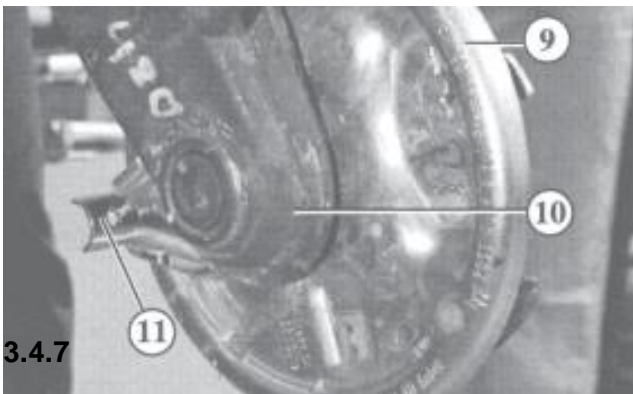


Fit the backplate so that the Bowden cable abutment is positioned as close as possible to the swinging arm.

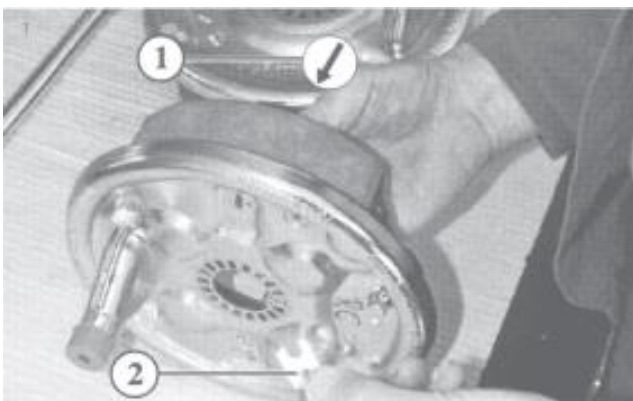
- Install the stub axle



Check where the Bowden cable comes out. Is the cable on top or underneath?



3.4.7

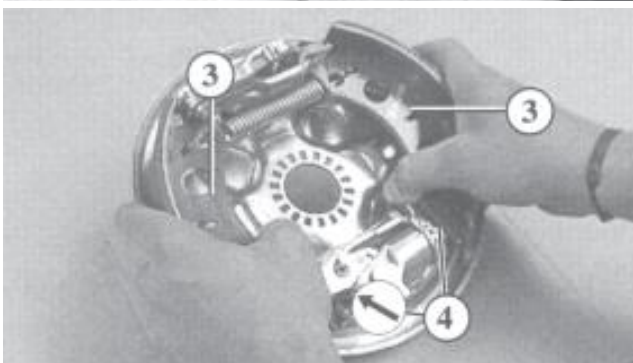


3.4.7 Dismantling the wheel brake

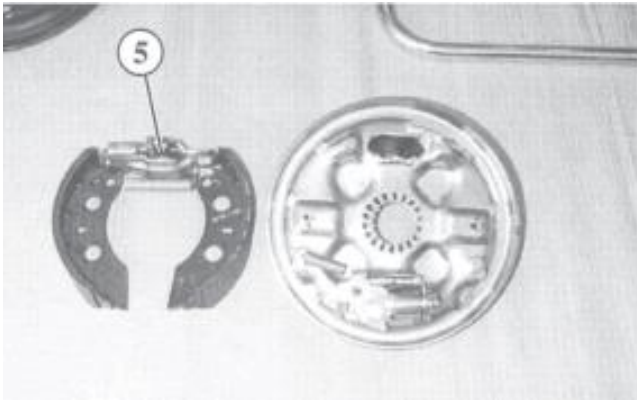
- Press the brake shoe steady spring (1) towards the backplate.

The pressure on the brake shoe steady spring releases the cover plate (2) on the outside of the backplate.

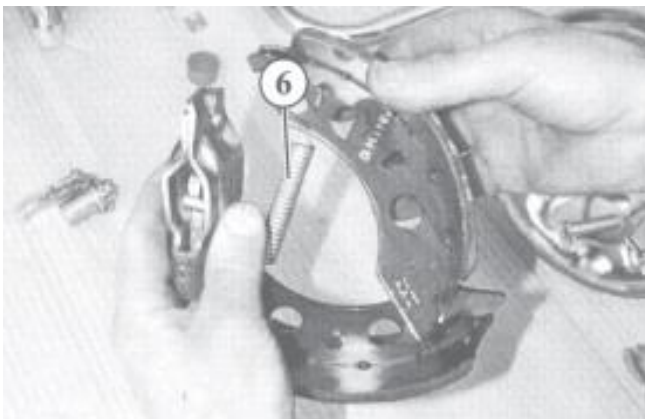
- Remove the cover plate
Repeat the procedure on the second brake shoe



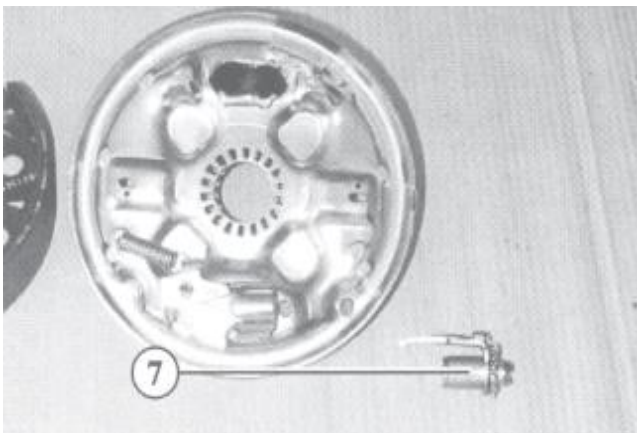
- Spread both brake shoes (3) outwards at the adjuster housing, and disengage from the slots (4)



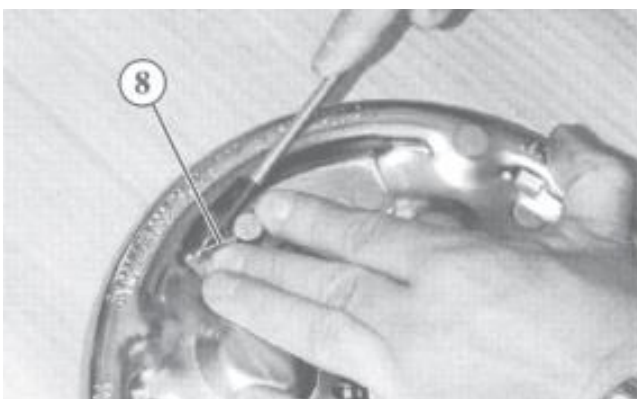
- Take off the brake shoes with expander lever and return spring (5)



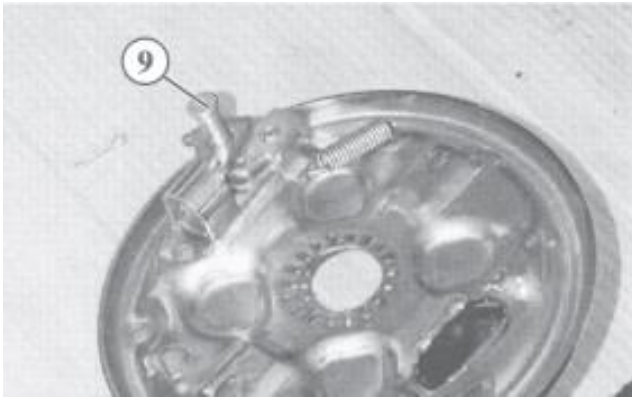
- Separate the brake shoes by unhooking the tension spring (6) and expander lever



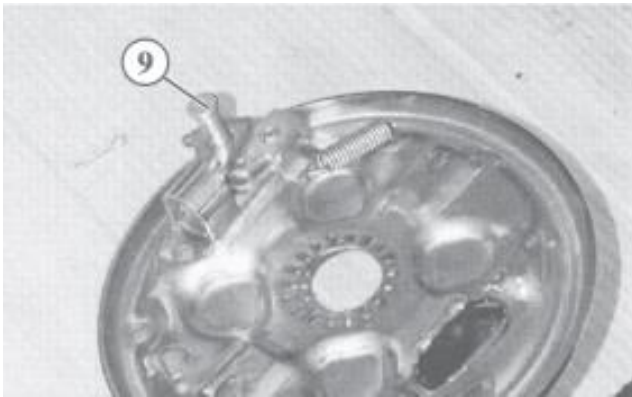
- Take the adjuster (7) out of the adjuster housing



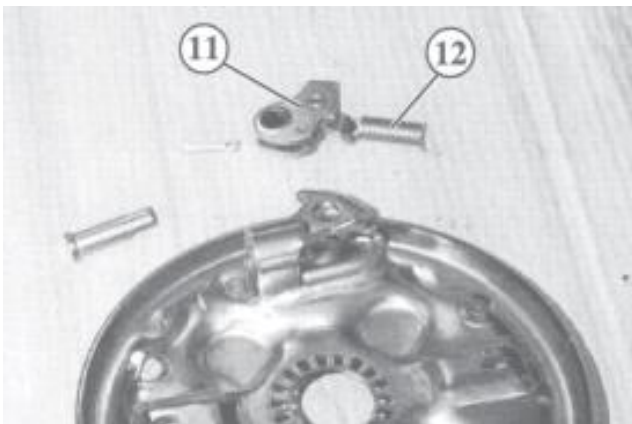
- Press together and remove the split pin (8) on the automatic reverse lever pivot bolt on the outside of the backplate



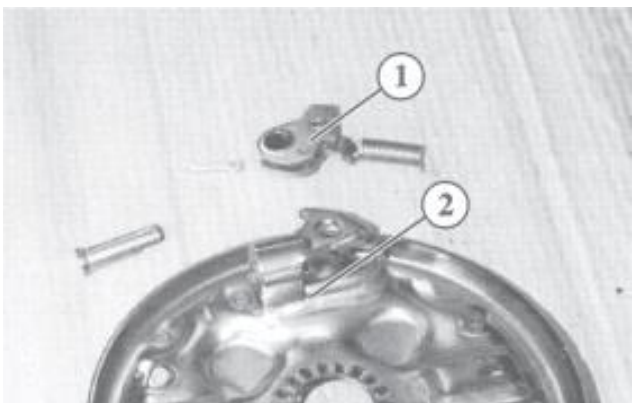
- Take out the pivot bolt (9) of the automatic reverse lever towards the inside



- On the 1636 G wheel brake, the pivot bolt for the automatic reverse lever is riveted
- Drive the pivot bolt (10) inwards with a punch



- Take out the automatic reverse lever (11) and tension spring (12)

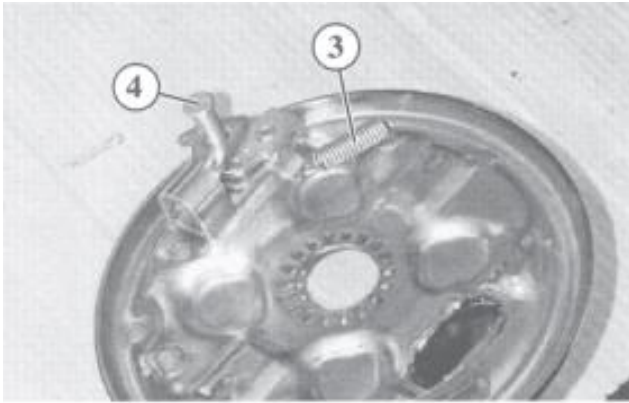


3.4.8 Fitting the wheel brake

- Assemble the parts for the wheel brake



The automatic reverse lever (1) and backplate (2) are different for left and right wheel brakes



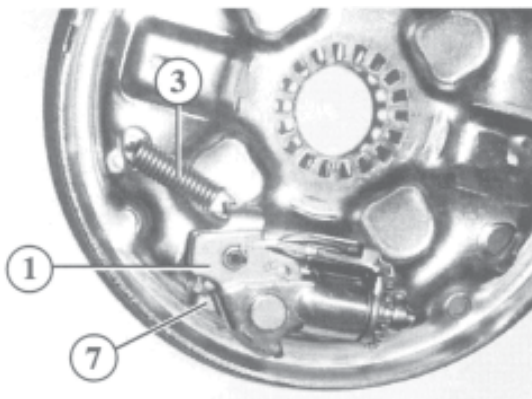
- Hook a new tension spring (3) into the backplate by the square end of the spring
- Check that the automatic reverse lever moves freely
- If the automatic reverse lever is stiff, lubricate the pivot
- Replace corroded automatic reverse levers together with the pivot bolt
- Hook the automatic reverse lever into the hooked eye on the spring
- Insert the pivot bolt (4)



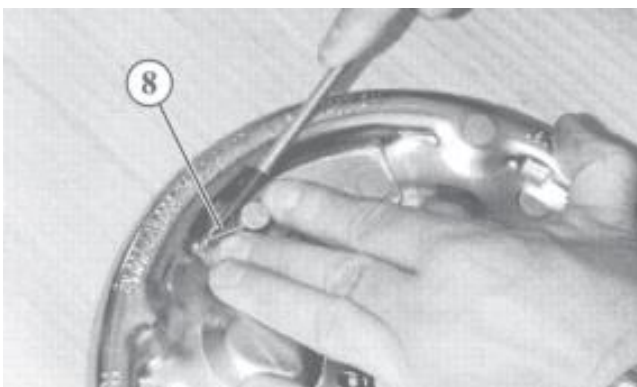
The automatic reverse lever is under tension between the tension spring and pivot bolt.



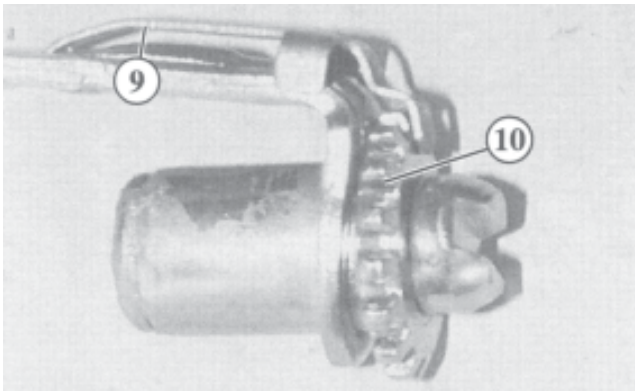
When fitting the 1636 G wheel brake, the riveted pivot bolt (5) of the automatic reverse lever is replaced with the standard pivot bolt (6).



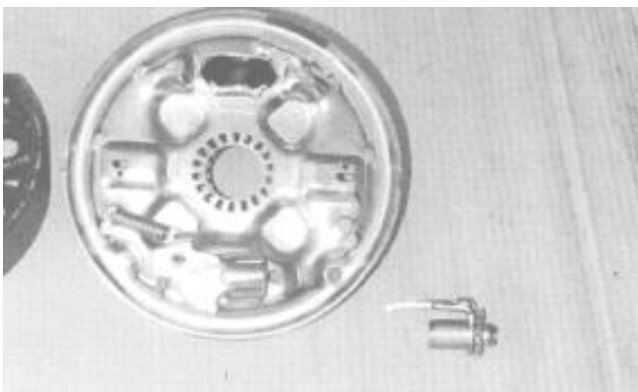
- The automatic reverse lever (1) must be against the stop of the adjuster housing (7)
- If the automatic reverse lever is not against the stop of the adjuster housing, the tension spring (3) must be renewed.



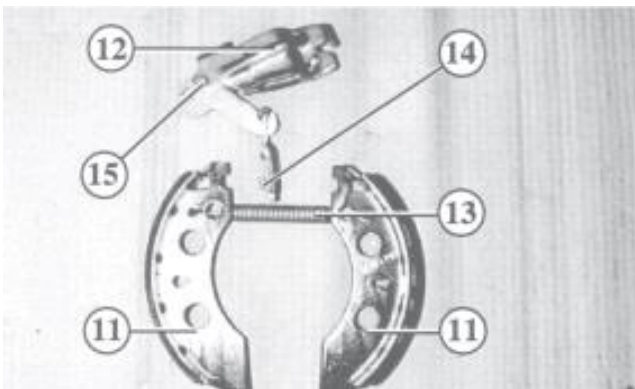
- Insert and bend over the split pin (8) securing the pivot bolt



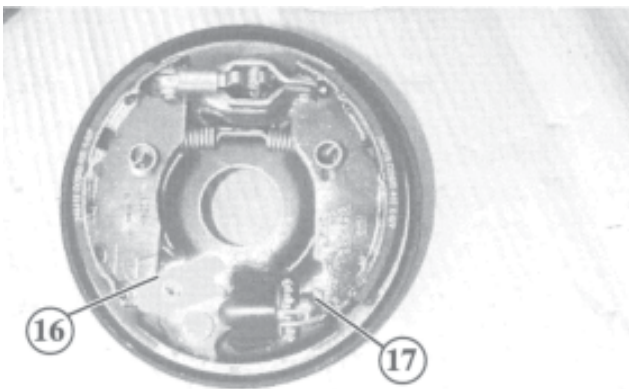
- Check the leaf spring (9) on the adjuster device for tension
- Check that the leaf spring engages sufficiently in the adjuster nut (10)
- Replace weak leaf springs
- Check that the adjuster nut turns freely
- Lubricate stiff adjuster nuts
- Replace rusted up adjuster screws together with the adjuster nuts



- Grease the adjuster nuts and adjuster device
- Fit the adjuster device into the adjuster housing



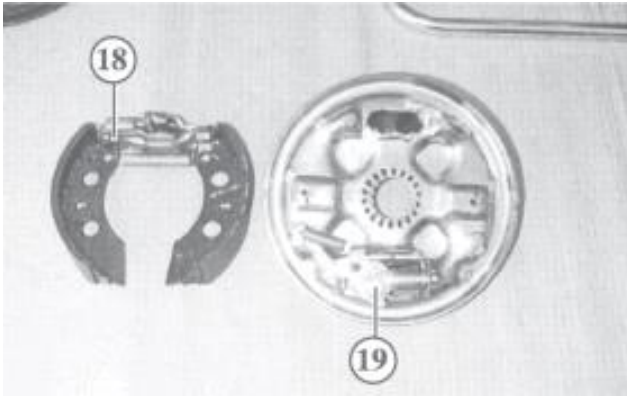
- Assemble the appropriate brake shoes (11), expander (12) and new tension spring (13)
 - Before installing the expander lever:
 - Check that the expander moves freely
 - Lubricate stiff expander lever pivots
 - Replace expanders with rusted up pivots
 - Installation position for the expander lever:
 - The open side of the attachment eye (14) for the Bowden cable must face towards the pivoting point (15) of the expander lever
 - Installation position of the tension spring:
 - The eyes of the tension spring must face outwards in the installed position



On type 1637, the brake shoes are different on the left and right sides. Note the stamped markings (16, 17) when fitting.



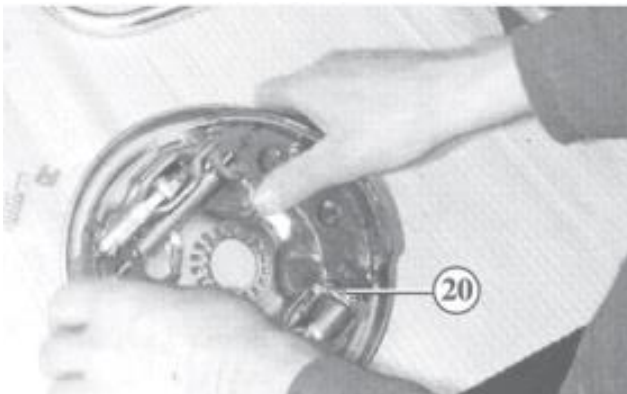
If the brake shoes are fitted on the wrong side on this type, the brake will not operate.



- Ensure that the expander lever and automatic reverse lever are correctly positioned: the pivoting point of the expander lever (18) must be fitted on the same side as the pivot bolt of the automatic reverse lever (19)



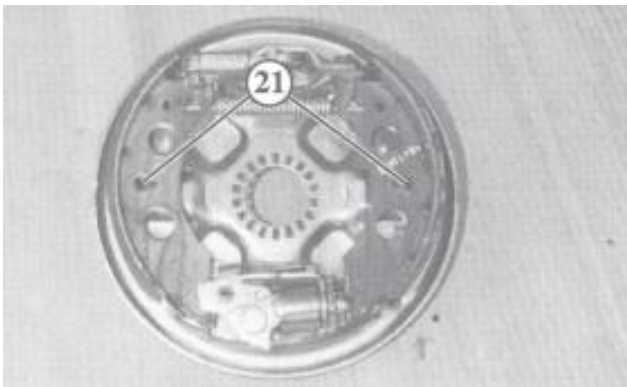
Failure to comply with this alters the brake shoe travel and impairs braking action.



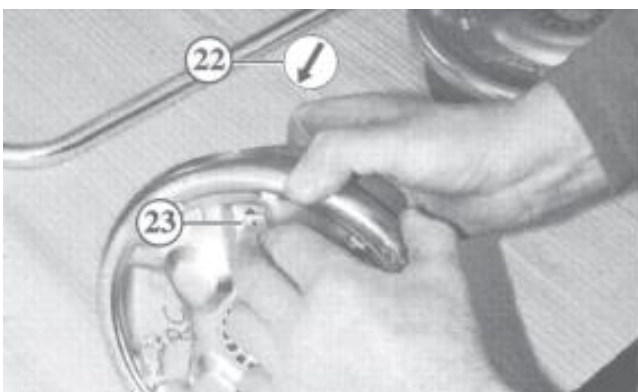
- Place the assembly of brake shoes, expander and tension spring onto the backplate.



Spread the brake shoes outwards and engage in the slots (20) on the automatic reverse lever.



- Pass the brake shoe steady spring clips through the openings (21) in the brake shoes



- To secure, press the brake shoe steady spring (22) towards the backplate
- Push in a new cover plate (23) (the plate may be omitted in the compact axle service)
- Repeat the procedure on the second brake shoe

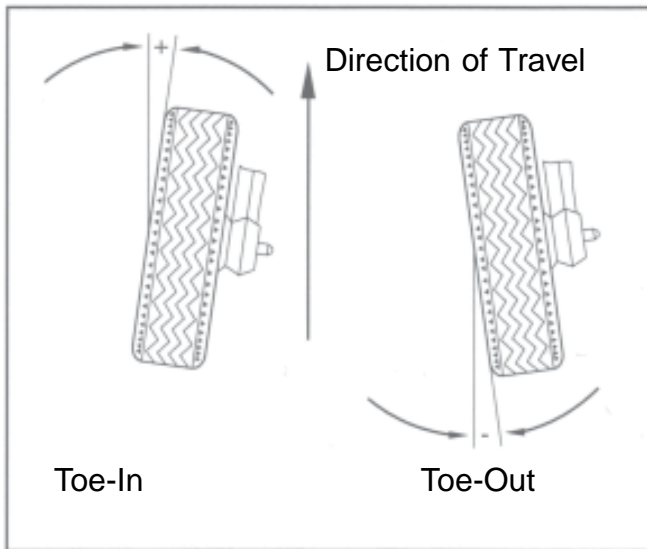
IMPORTANT NOTE: SECTION 3.4.9 IS FOR INFORMATION ONLY. ALTERATION TO THE AXLE GEOMETRY MUST ONLY BE COMPLETED AT THE AL-KO FACTORY.

3.4.9 Measuring and adjusting toe-in

Definition

Schematic view of toe-in:

The toe-in setting gives the axles tyre wear values comparable with those of passenger cars. The axles must therefore be installed with toe-in.



Standard factory toe-in setting $30' \pm 10'$

Range of adjustment

The range of toe-in adjustment is $30'$ (0.5°) on either side.

No adjustment is possible on the:

- standard axle
- compact axle



If the toe-in is out of tolerance on the standard or compact axle, the axle, swinging arm or stub axle are damaged and must be repaired at the manufacturer's works.

Continuous adjustment is possible on the:

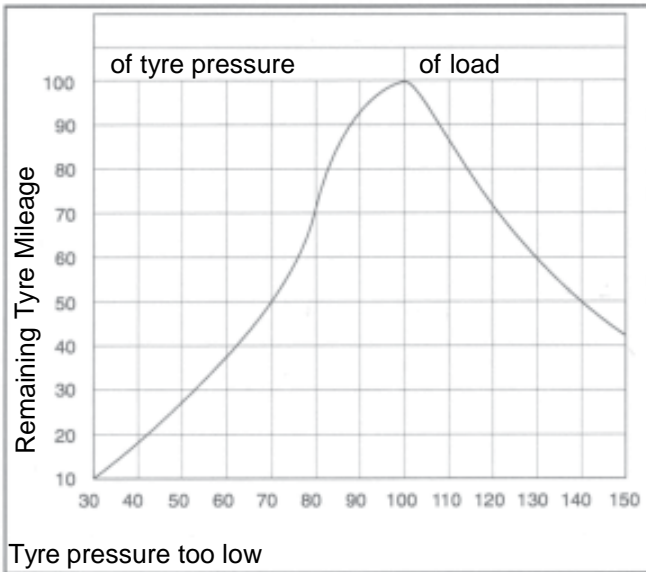
- Euro-Plus axle (stub axle secured with a collar nut)

Adjustments in steps is possible on the:

- Euro-Plus- 45° axle (stub axle secured with a socket head screw)



If the range of adjustment of $30'$ is not sufficient, the axle, swinging arm or stub axle are damaged and must be repaired at the manufacturer's works. In this case, the complete axle must be removed and sent to the manufacturer. It will be completely repaired at AL-KO.

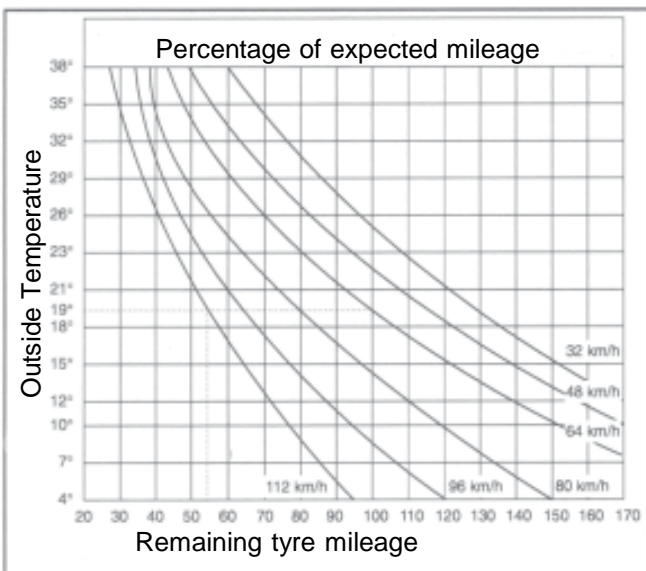


Reasons for increased tyre wear

If the toe-in setting is not as specified, increased tyre wear may occur.

Low tyre pressure or overloading of the trailer are the most frequent reasons for increased tyre wear.

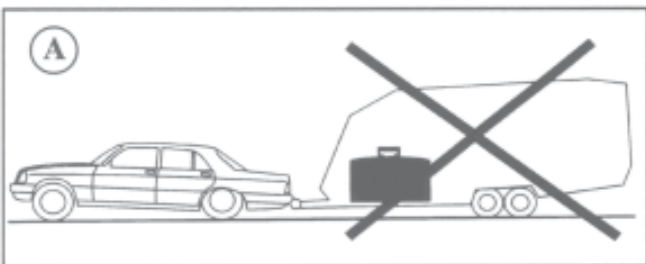
The figure shows the remaining mileage, the highest value being reached at optimum tyre pressure (100%). If overloading of the vehicle is avoided, optimum tyre mileage may also be



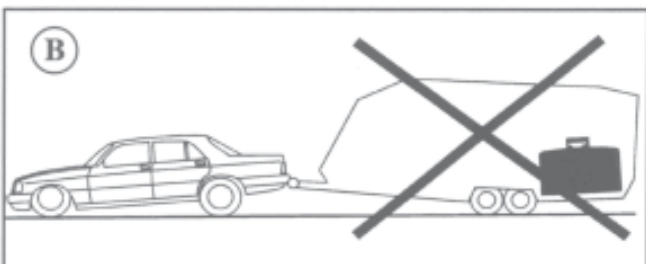
Excessive speed and high temperature also contribute to increased tyre wear.



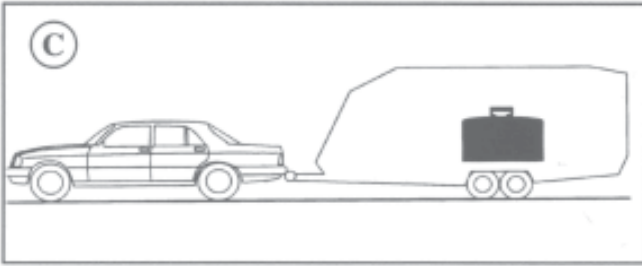
The point of normal tyre wear (100%) is specified at an average speed of 64 km/h and an average temperature of 19° C.



Increased tyre wear also occurs with incorrect loading. An increased drawbar load is incorrect (figure A).



Tail-heavy loading of the trailer with negative drawbar load (figure B) also generates increased tyre wear.



The correct condition is to load the trailer centrally as far as possible, making full use of the permissible drawbar load (figure C).

Preparations for measuring toe-in

- Determine the axle type and permitted axle load from the type plate on the axle
- Establish the permitted total weight of the vehicle
- Weigh the vehicle



Vehicle weight must not exceed the permitted total weight.

- Adjust the tyre pressures to the specified values
- Move the vehicle 2-3 m forwards or simulate the movement on a rolling road
- Measure the toe-in



For measuring the toe-in, the wheels of the vehicle must be loaded.

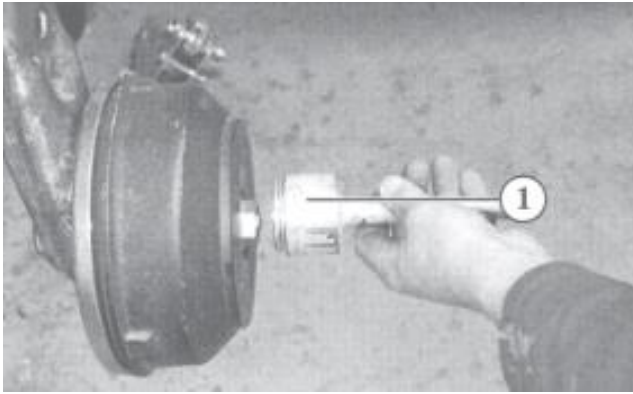
- On straight axles, toe-in should be 10' – 30' independent of axle load.
- On delta axles, calculate the toe-in settings from the table on the next page.
- Calculate the numerical value for %GA using the formula opposite
- Read off the correct toe-in value for delta axles from the table opposite
- If the measured toe-in differs from the toe-in to be set, the toe-in must be re-adjusted

$$\%G_A = \frac{\text{Vehicle Weight (Kg - Weighed)}}{\text{Permitted Axle Load as per type plate}} \times 100$$

%GA	Toe-In [] = '
70	0 - 15
80	0 - 15
90	0 - 20
100	5 - 25



On axles manufactured before 1993, the toe-in is 30' ± 15'.

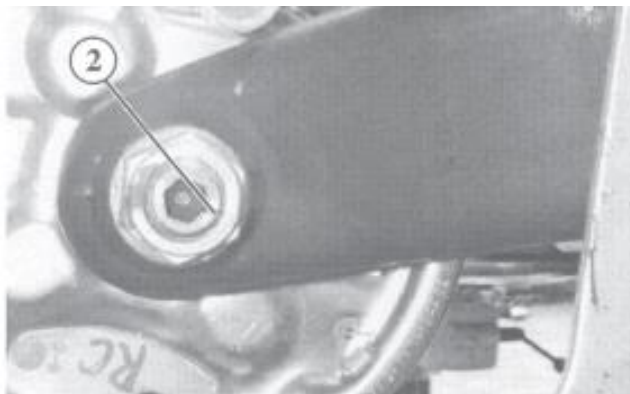


Preparations for adjusting toe-in

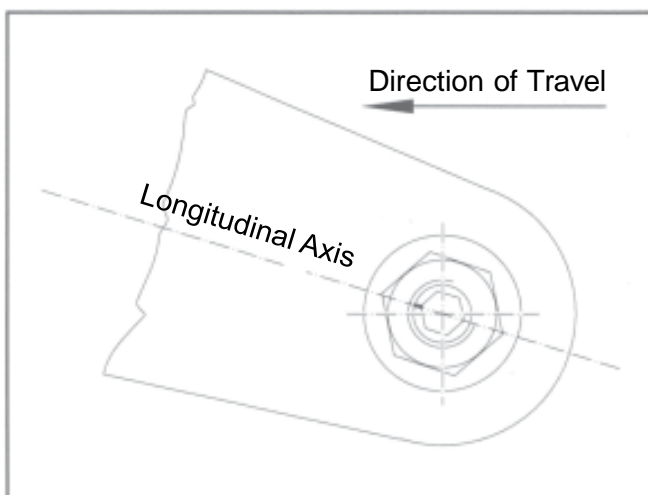
- Lift the trailer with a vehicle hoist
- Unbolt the wheel
- Remove the dust cap with the shaped tool (1, see list of tools)



For safety reasons (danger of injury) and to avoid component damage, we recommend the use of the special tool.



- If corroded, clean up the threaded pin and end face
- Establish the position of the notch on the stub axle
 - Where the stub axle is secured with a collar nut:
- The notch (2) is located on the swinging arm side
- On the Euro-Plus axle with socket head screw:
 - The notch is located on the brake drum side and must be carefully transferred to the swinging arm side.
 - On the basis of the notch position, estimate whether the possible adjustment available is enough to set the required toe-in



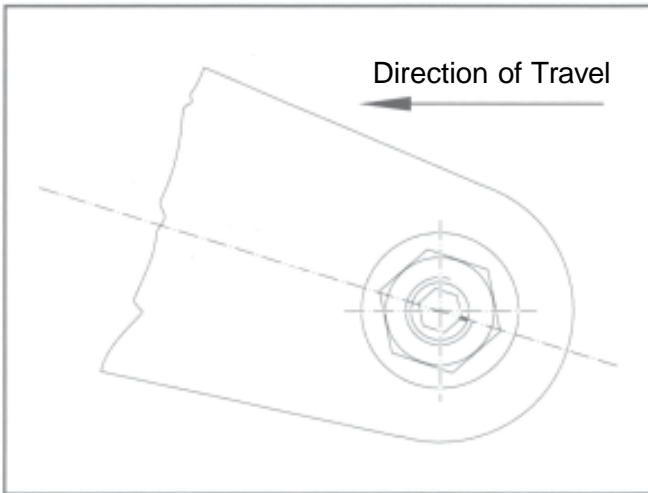
Possible adjustment available



If the range of adjustment is not enough to set the required toe-in, repair can be carried out at the manufacturer's works

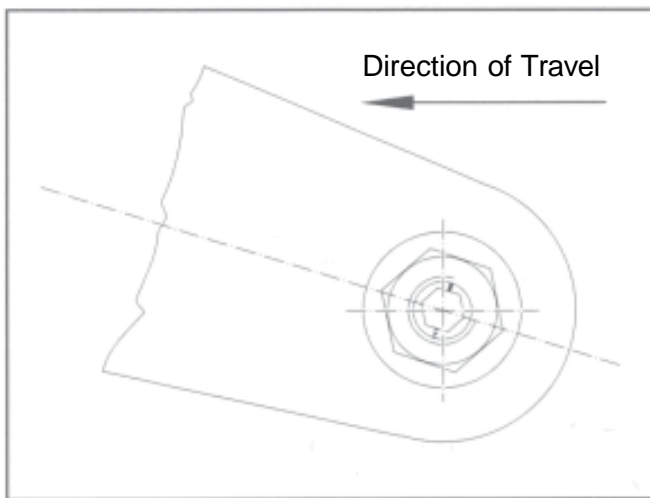
Notch on the swinging arm centreline, front

The toe-in is already at its maximum possible value. It can only be adjusted by a maximum of 1° in a negative direction. Further adjustment in the direction of positive tracking is not possible.



Notch on the swinging arm centreline, rear

The toe-in is already at its minimum possible value (possibly even toe-out). It can only be adjusted by a maximum of 1° in a positive direction. Further adjustment in the direction of negative tracking is not possible.



Notch at right angles to the swinging arm centreline

The toe-in can be adjusted by not more than $30'$ (corresponding to 0.5°) in either direction. With different notch positions, there are corresponding differences in the range of adjustment.

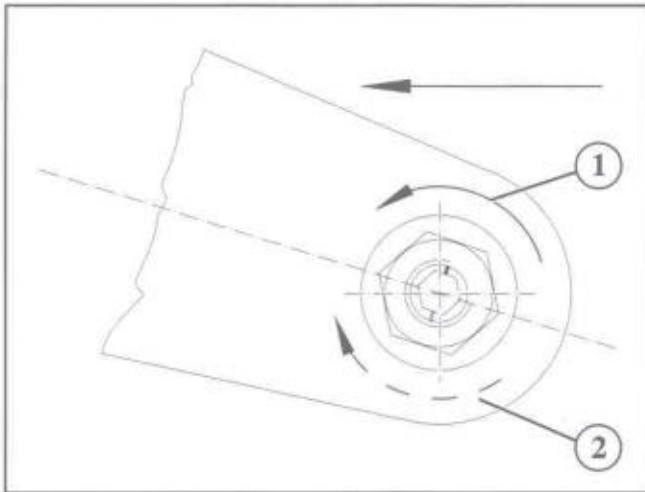
Loosening the stub axle fastening

- Where the stub axle is secured with a collar nut:
 - Unscrew the flange nut, preventing the stub axle from turning using a shortened Allen key (see AL-KO list of tools)
 - Screw on a new flange nut (do not tighten)



Do not re-use self-locking nuts.

- Adjust the toe-in by rotating the stub axle
- On the Euro-Plus axle with socket head screw:
 - Loosen the socket head screw and unscrew about 10-15 mm. Pull out the stub axle past the spanner face on the toothed bush
 - Adjust the toe-in by rotating the stub axle. On the Euro-Plus axle with socket head screw, this can only be done in 60° steps
 - Re-use the old socket head screw while setting the toe-in



Rotating the stub axle

Where toe-in is too little:

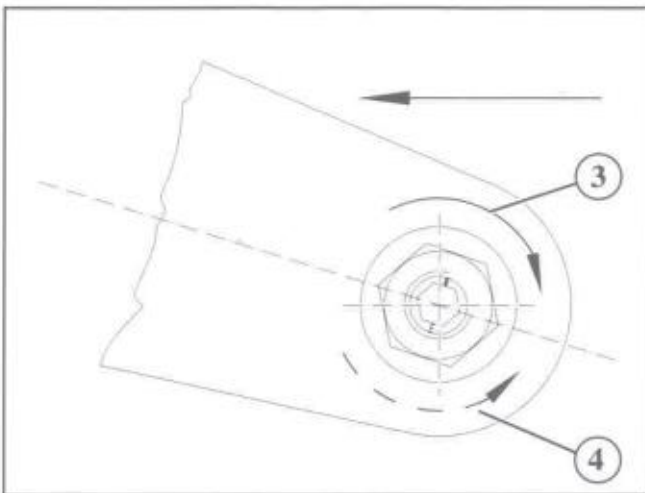
- Turn the stub axle notch in the direction of the axle body



If the notch is above the lengthwise axis of the swinging arm, rotate in the direction of the continuous arrow (1). If the notch is below, rotate in the direction of the dashed arrow (2).



Regardless of the direction of rotation of the stub axle, the notch must not go beyond the lengthwise axis of the swinging arm, as this could cause undesirable changes in camber.



Where toe-in is too much:

- Turn the stub axle notch in the direction of the end of the swinging arm



If the notch is above the lengthwise axis of the swinging arm, rotate in the direction of the continuous arrow (3). If the notch is below, rotate in the direction of the dashed arrow (4).



Regardless of the direction of rotation of the stub axle, the notch must not go beyond the lengthwise axis of the swinging arm, as this could cause undesirable changes in camber.

- Check that the toe-in setting is correct

Securing the stub axle after adjusting toe-in



Install the stub axle rotated to the correct position.



For tightening the nut or socket head screw, there must be no load on the axle.

- Where the stub axle is secured with a collar nut:

Tighten the new flange nut to a torque of 600 – 650 Nm, preventing the stub axle from turning using a shortened Allen key (see ALKO list of tools)



If the stub axle is rotated when tightening the nut, toe-in adjustment must be repeated.

- On the Euro-Plus axle with socket head screw:
 - After checking that the toe-in setting is correct, loosen the old socket head screw
 - To secure the stub axle, use a new socket head screw with plastic locking device
 - Tighten the new socket head screw to a torque of 360 - 380 Nm

3.4.10 Fitting dampers

- Select dampers to suit the appropriate weight class (see table)

Weight range for AL-KO Octagon axle dampers

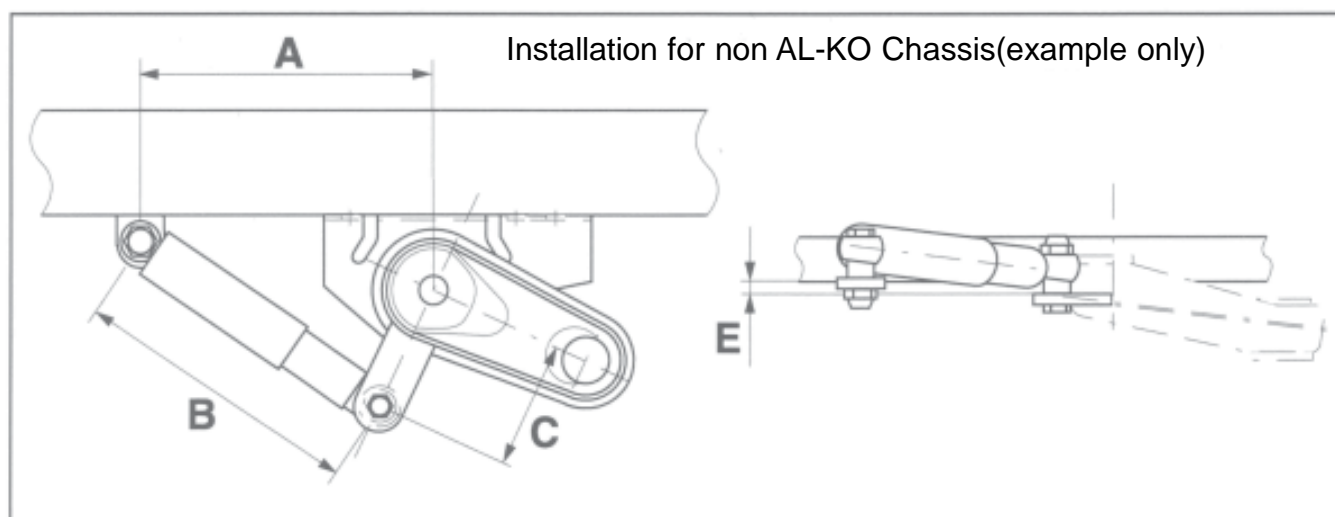
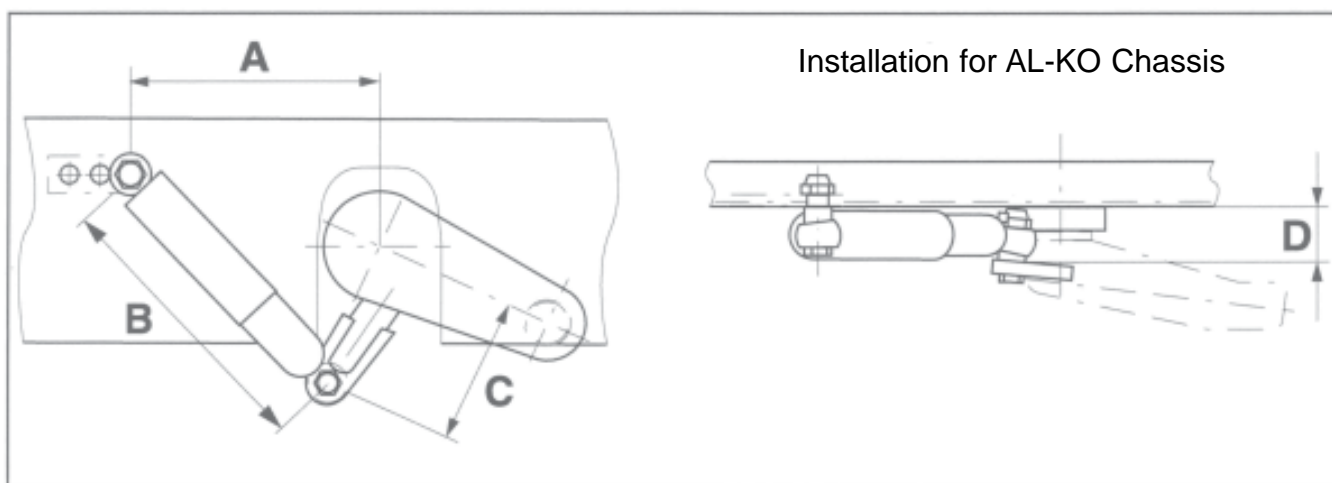
Total weight				
Order no.	Colour	Single axle	Tandem axle	Hinge fitting eyes
244 084	green	up to 900	up to 1600	yes
244 085	blue	900 to 1300	1600 to 2500	yes
244 086	red	1300 to 1800	2500 to 3500	yes
244 087	black	1800 to 4000	3500 to 7500	no
282 259	black	up to 1500	up to 3000	yes

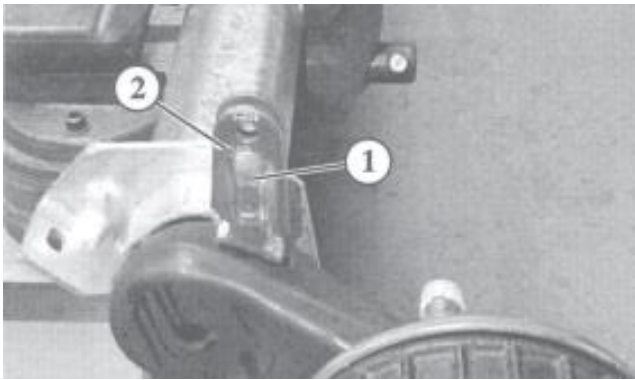
- Look up suitable damper mountings and retainers to suit weight class and frame design (see table)

Suitable for types			Euro axle system: damper mounting, plug-in, swing arm	Damper mounted in welded version per swing arm	Non AL-KO chassis: mounting for welding to frame
Single axle	Tandem axle	Colour	Order no.	Order no.	Order no.
up to 900	up to 1600	green	244 088	—	208.631.02.02
900 to 1300	1600 to 2500	blue	244 088	-	208.631.02.02
1300 to 1800	2500 to 3500	red	-	258.631.02.02	208.631.02.02
1800 to 4000	3500 to 7500	black	-	258.631.02.02	208.631.02.02

- Determine installation dimensions according to the table
- The installation dimensions refer to the following drawings.

Installation dimensions for types			Installation dimensions with no load on axle				
Single axle	Tandem axle	Colour	A	B	C	D	E
up to 900	up to 1600	green	265/270	min. 255	125	52 to 75	25 to 50
900 to 1300	1600 to 2500	blue	235	min. 255	125	52 to 77	25 to 50
1300 to 1800	2500 to 3500	red	265	min. 255	125	52 to 75	25 to 50
1800 to 4000	3500 to 7500	black	265	min. 255	125	52 to 75	25 to 50
up to 1500	up to 3000	black	235/265	min. 255	125	52 to 75	25 to 50





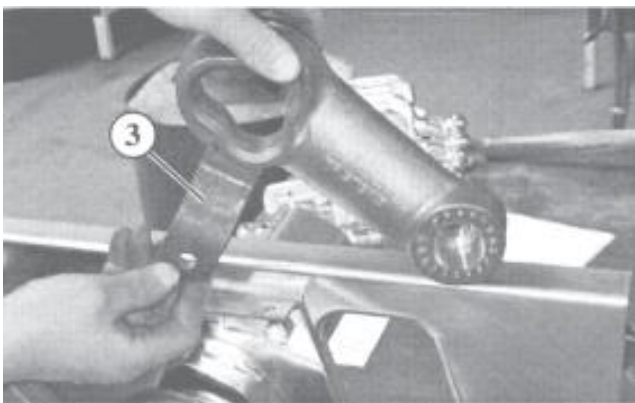
- Remove square plugs from the swinging arm using a suitable tool
- Insert the damper mounting (1) into the slotted hole on the swinging arm



Fit the damper mounting so that the arrow marking (2) faces in the direction of travel.



Incorrect fitting will destroy the damper mountings and dampers.





- Press the half-shells of the damper mounting (1) together. If necessary, use pliers
- On forged swinging arms:
- Weld the damper mounting lugs (3) to the swinging arm



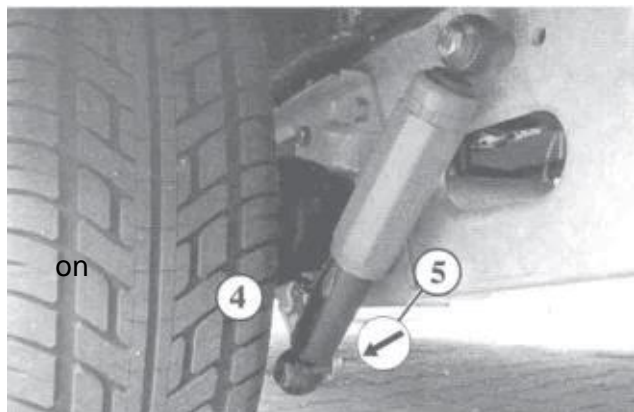
Depending on the frame design, the damper screw is fitted on the outside or inside of the damper mounting. Check with table opposite.



Caution. The distance between the tyres and damper components must not be less than 16 mm. Failure to observe this may cause accidents.

Axle Type	Attachment
Straight	inside
Delta Delta SI-N 10/12 Chassis with  section	outside
Delta Delta SI 850 Delta SI-N 10/12 Delta SI 14 Chassis with  section	outside ¹

¹ Note: Maximum permissible wheel size is
6J x 14 ET 38 with 185/70 R14 tyres or
6J x 15 ET 30 with 206/65 R15 tyres



- Fit the damper screw (4) on the correct side (shown here: inside fitting) of the damper mounting
- Loosely screw on the self-locking nut (5).



Correct installation position for dampers: Cylinder tube at the bottom the damper mounting, coloured shroud tube at the top on the frame.



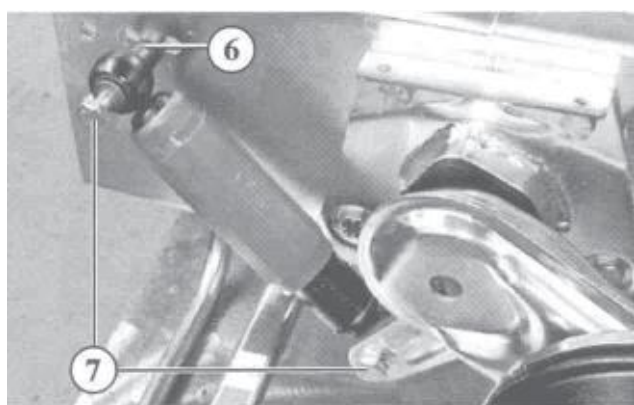
Incorrect fitting will destroy the damper mountings and dampers.



The screw head must always be fitted on the tyre side.



Safety distance between the attachment screw and tyre: 15 mm minimum.



Fitting the damper to the vehicle frame

- Compress the damper completely
- Extend the damper again by 20 mm
- Offer up the damper screw to the frame (6) and pass through the nearest hole
- Fit the chassis reinforcement
 - On the AL-KO system chassis:
- Use the reinforcing plate
 - On non-AL-KO chassis:
- Weld on mounting plates to suit specified installation dimensions
- Loosely screw on the self-locking nut, do not tighten yet
- Align the damper and damper mounting
- Tighten the self-locking nuts

on the frame and damper
mounting to 86 Nm

- In each case, use the
screw head (7) to prevent it
rotating