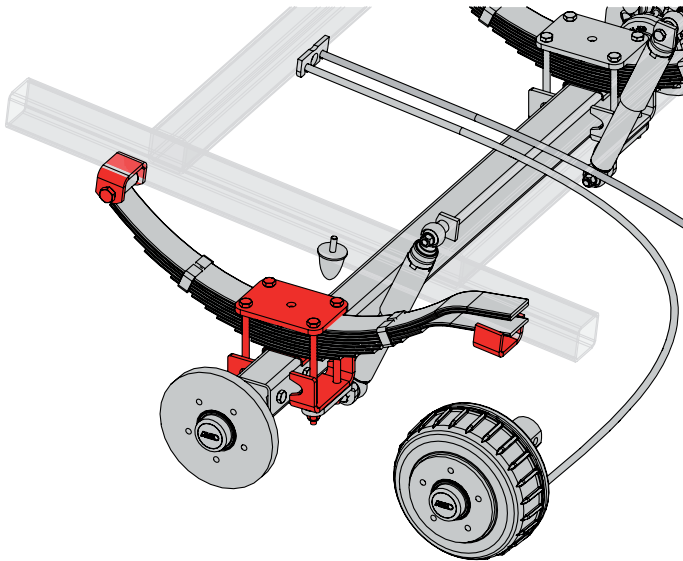


ASSEMBLY INSTRUCTION

AXLE LEAF SPRING SYSTEM

EN

unbraked 750 kg | 1500 kg | 1800 kg
braked 1500 kg | 1800 kg
Tandem 3000 kg | 3500 kg



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About this installation guideline

- Please read this document before installation. This is essential for safe working and trouble-free handling.
- Comply with the safety and warning instructions in this documentation and on the product.
- If you are unsure about anything, please contact AL-KO customer service first before you start work.

The installation guideline only relates to genuine AL-KO components. Dimension tables and installation diagrams are adapted to AL-KO components.

If you use components that are not from AL-KO, you do so under your own responsibility and you will have to calculate the corresponding installation dimensions.


Explanation of symbols

Warning!

This warning note identifies an acute danger with a direct risk of serious physical injury, unless the danger is avoided.

Caution!

This warning note identifies a danger with a low risk of slight physical injury or damage to property, unless the danger is avoided.

 Special instructions for ease of understanding and regarding handling.

Structure of the installation guideline

- Instructions for activities are sequentially numbered. Carry out the working steps in the described sequence.
- All drawings and figures are used for illustration and are given by way of example. As a result, they may differ slightly from the original.
- Unless specified otherwise, all dimensions are given in millimetres [mm].

Spare parts

Spare parts are safety parts. When installing spare parts in our products, we thus recommend using genuine AL-KO parts, or parts which have been expressly approved as suitable for installation.

The reliability, safety and suitability of these spare parts specifically for our products have been established in a special test process.

Contact

www.al-ko.com

Important safety instructions

Comply with the local registration guidelines for vehicles and vehicle conversions which apply to you.

Prerequisites for installation personnel

The installation work is not allowed to be carried out by inexperienced and unqualified personnel. Installation is only allowed to be performed in a company with specialist knowledge.

Warning!

Installation errors on vehicles can have serious health consequences for the installation personnel and third parties.

- Errors in installation can result in breakage of the running gear.
- All working steps in this guideline require knowledge and experience in vehicle construction.
- Some working steps require a special qualification in welding work.

Tools and bolts

The tools and welding equipment normally used in vehicle construction are sufficient for installation.

AL-KO installation kits are supplied with the appropriate bolts and self-locking nuts.

Warning!

Please comply with the following safety instructions. These instructions apply to all the described activities.

- Always renew self-locking nuts after they have been unscrewed.
- Renew damaged bolts.
- The bolt dimensions, bolt qualities and tightening torques prescribed by AL-KO must be complied with.

Bolt tightening torques

Dimension	Strength class	Tightening torque [Nm]
M12	8.8	90
M12	10.9	115
M12 x 1.25	10.9	127

Described axle types

This installation guideline describes installation of the leaf springs and hubs for the following rigid axle types:

Permitted axle loads:

- 750 kg unbraked
- 1500 kg braked and unbraked
- 1800 kg braked and unbraked
- 3000 and 3500 kg tandem axles, braked

The basic installation procedure is the same for all types, so all types are described jointly below.

Any type-specific deviations are described in the installation steps.

Described installation work

This installation guideline describes the following installation work:

- Installation of the hubs and wheel brakes in the axle tube.
- Installation of rubber buffers.
- Installation of leaf springs.
- Installation of the shock absorber.

Overview of installation material

This chapter explains which components you require for installing the leaf springs and the hubs.

Warning!

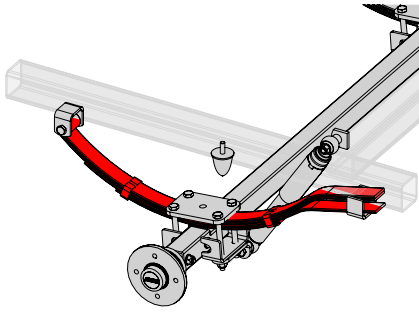
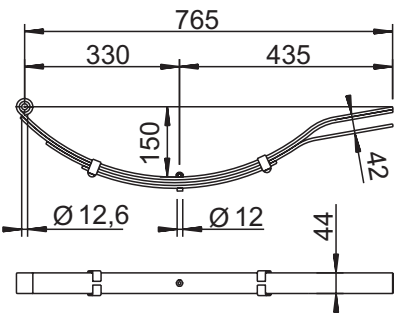
When selecting the components, check which permitted axle load applies to your axle. Installation material with incorrect dimensions may break.

Warning!

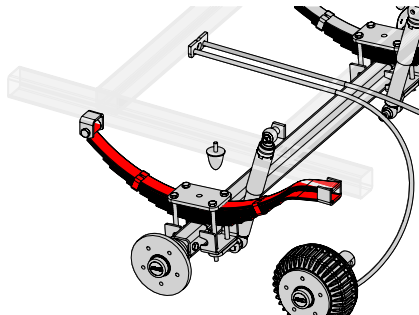
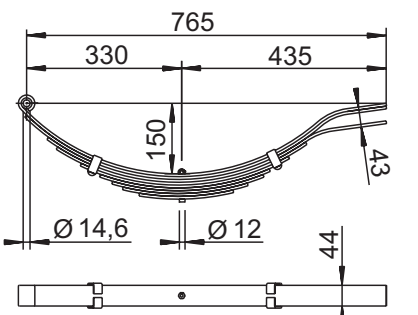
Always use new self-locking nuts and undamaged bolts with the prescribed dimension and strength class. Comply with the prescribed tightening torques.

Leaf spring types

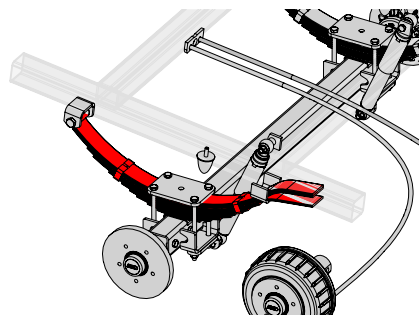
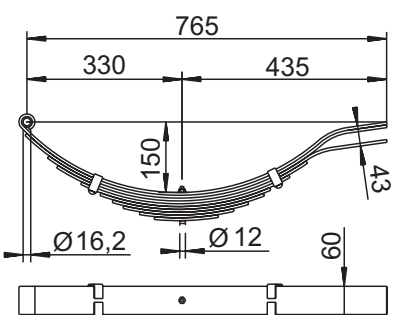
Leaf springs for 750 kg unbraked

		<p>Order no: 1 368 092</p>
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Leaf springs for 1500 kg braked, unbraked

		<p>Order no: 1 368 110</p>
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Leaf springs for 1800 kg braked, unbraked

		<p>Order no: 1 369 701</p>
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Installation material for leaf springs

Installation material leaf springs for 750 kg unbraked

			<p>Order no: 1 225 345</p> <p>Note: Clamping on axle tube, hexagon bolts DIN 931: 2 x M12X120 - 8.8 2 x M12X130 - 8.8</p> <p>Clamping in the welding bracket: one hexagon bolt, DIN 931 M12X75 - 8.8</p>
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Installation material leaf springs for 1500 kg braked, unbraked

			<p>Order no: 1 225 243</p> <p>Note: Clamping on axle tube, hexagon bolts DIN 931: 2 x M12X160 - 8.8 2 x M12X170 - 8.8</p> <p>Clamping in the welding bracket: one hexagon bolt, DIN 931 M14X80 - 8.8</p>
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Installation material leaf springs for 1800 kg braked, unbraked

			<p>Order no: 1 225 600</p> <p>Note: Clamping on axle tube, hexagon bolts DIN 931: 2 x M12X180 - 8.8 2 x M12X190 - 8.8</p> <p>Clamping in the welding bracket: one hexagon bolt, DIN 931 M16X100 - 10.9</p>
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Shock absorber

Shock absorber for 750, 1500, 1800 kg braked, unbraked; tandem 3000 and 3500 kg

		<p>Order no: 283 722</p>
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Installation material for shock absorbers

Installation material shock absorbers for 750 kg unbraked

		<p>Order no: 1 225 210</p> <p>i To bolt on the bracket, use each of the two longer bolts of the installation material for the leaf spring installation.</p>
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Installation material shock absorbers for 1500 kg braked, unbraked

		<p>Order no: 1 225 244</p> <p>i To bolt on the bracket, use each of the two longer bolts of the installation material for the leaf spring installation.</p>
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Installation material shock absorbers for 1800 kg braked, unbraked

		<p>Order no: 1 225 248</p> <p>i To bolt on the bracket, use each of the two longer bolts of the installation material for the leaf spring installation.</p>
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Rubber buffer

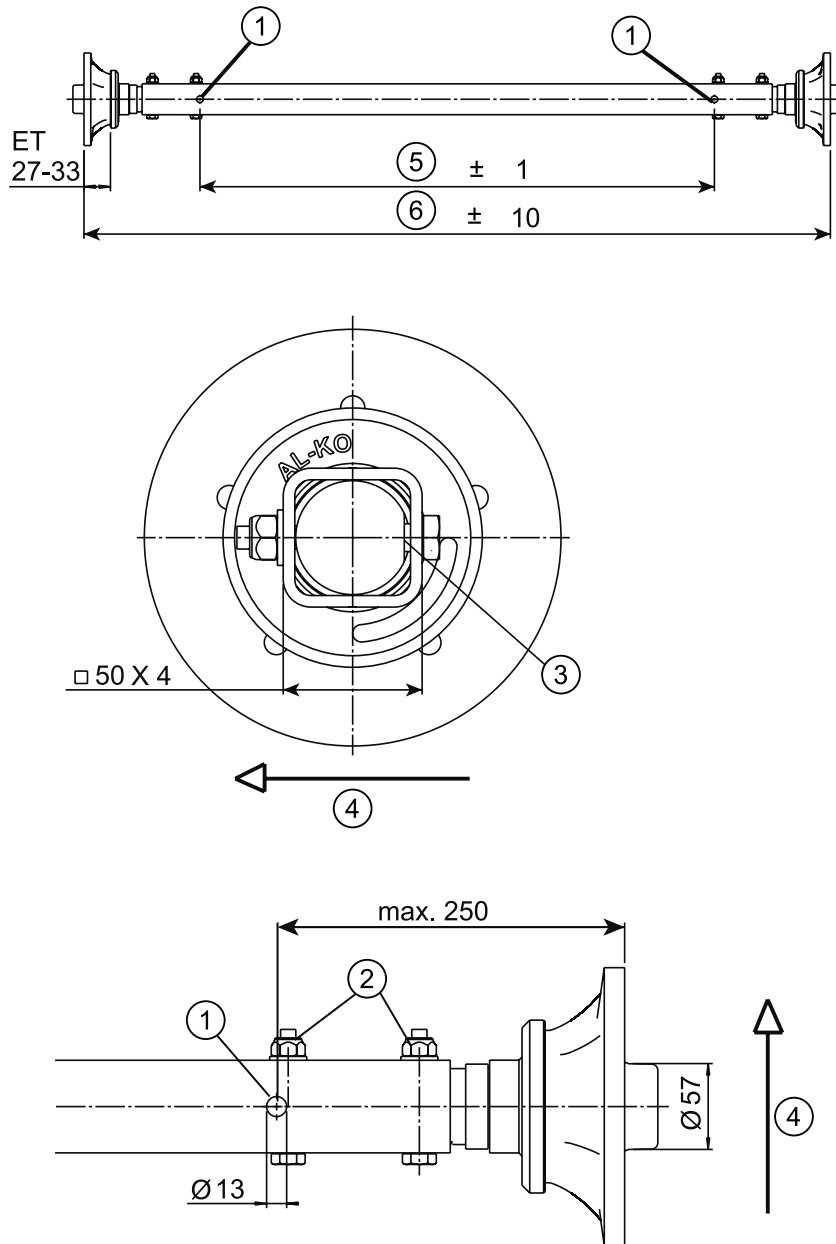
Rubber buffer for 750, 1500, 1800 kg braked, unbraked; tandem 3000 and 3500 kg

		<p>Order no: 691 393</p>
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Installing hubs

We recommend using AL-KO complete axles, braked or unbraked. These are cut to length and installed according to the customer's width.

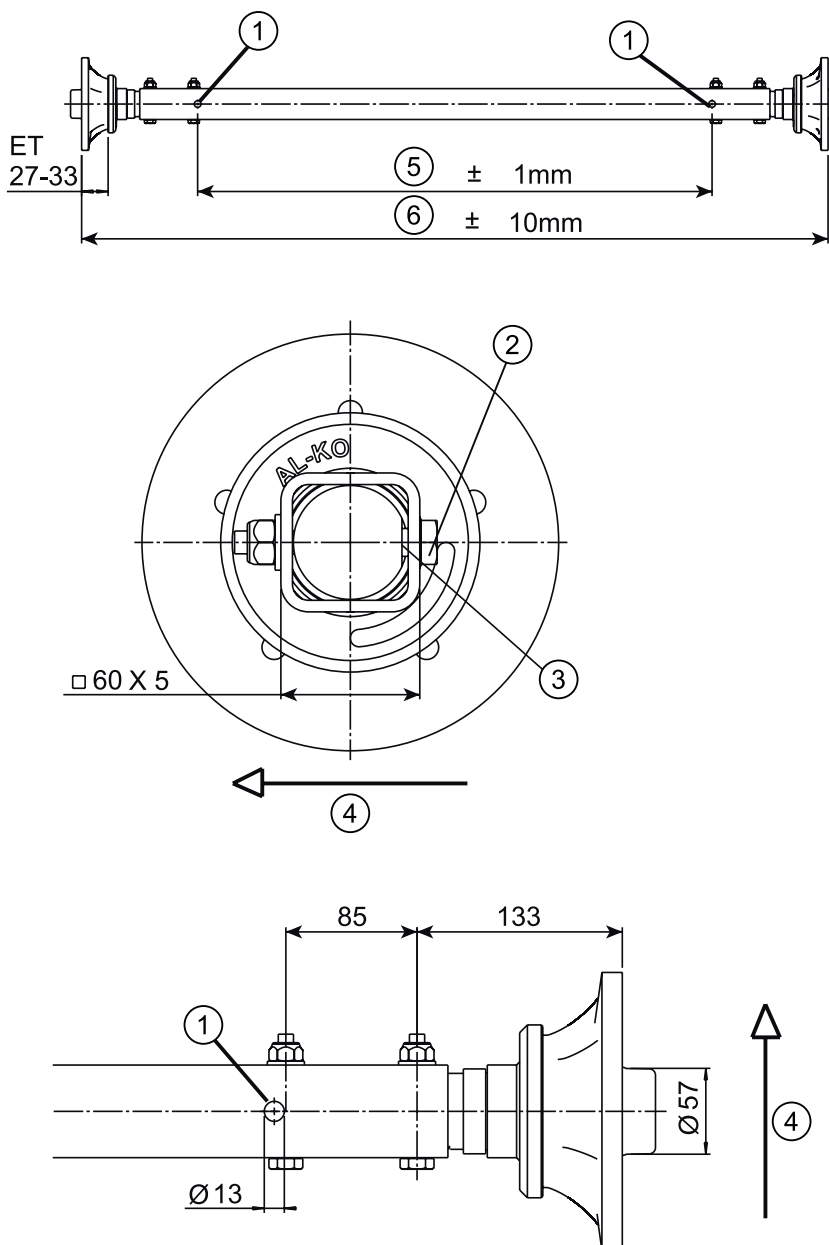
Installing unbraked hub 750 kg



Item	Description
1	The holes for the centre pin are only permitted on the top of the axle tube, for reasons of strength.
2	Comply with tightening torque of bolt M12 X 1.25 X 70 - 10.9 DIN 931.
3	Important: The location of the weld in the square tube must be at the rear in the direction of travel! Make sure that the chamfer in the axle stub is installed facing towards the weld in the tube.
4	Driving direction
5	Support (hole for centre pin)
6	Contact (for rim)

i Comply with the dimensions for the required square axle tube in the drawing.
 Required tube quality: DIN EN 10210-2, S355J0 DIN EN 10025-2

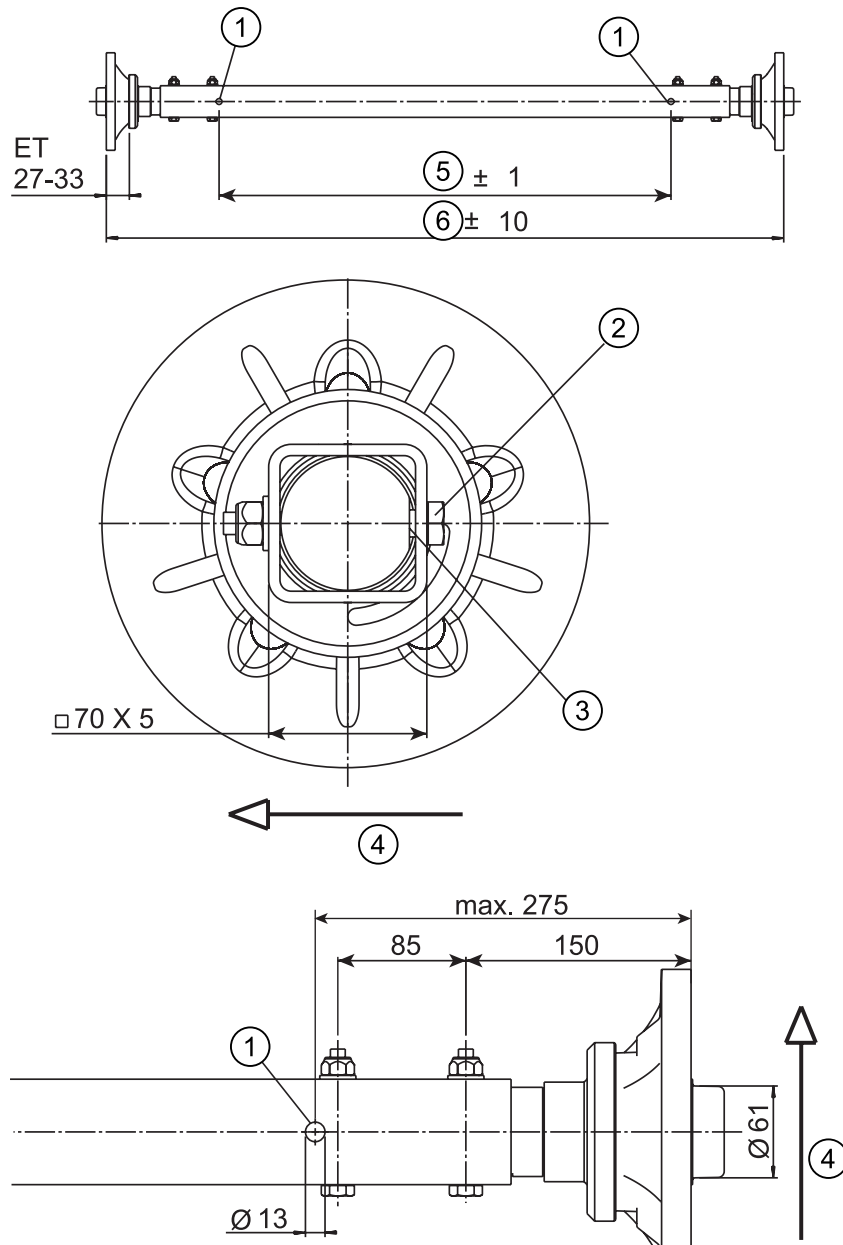
Installing unbraked hub 1500 kg



Item	Description
1	The holes for the centre pin are only permitted on the top of the axle tube, for reasons of strength.
2	Comply with tightening torque of bolt M12 X 80 - 10.9 DIN 931.
3	Important: The location of the weld in the square tube must be at the rear in the direction of travel! Make sure that the chamfer in the axle stub is installed facing towards the weld in the tube.
4	Driving direction
5	Support (hole for centre pin)
6	Contact (for rim)

i Comply with the dimensions for the required square axle tube in the drawing.
 Required tube quality: DIN EN 10210-2, S355J0 DIN EN 10025-2

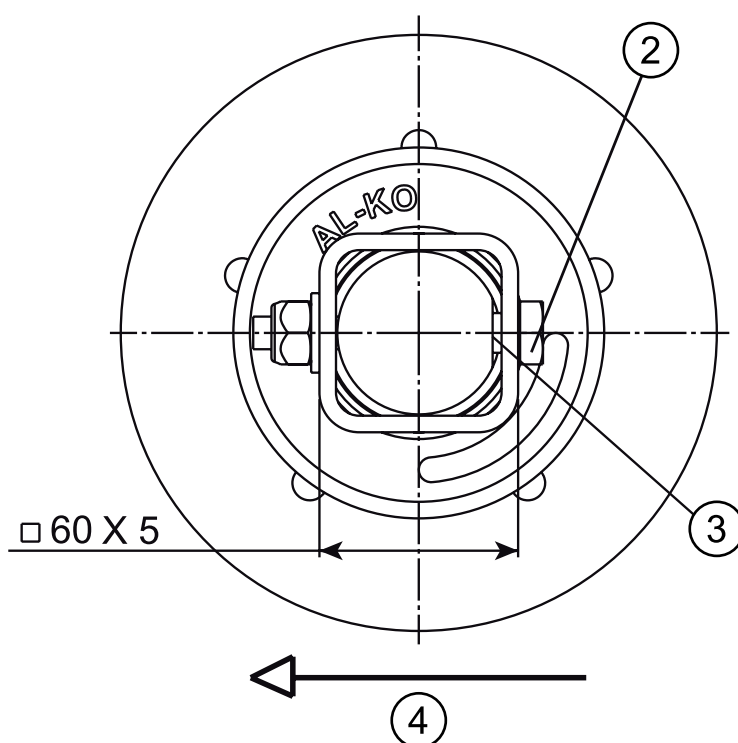
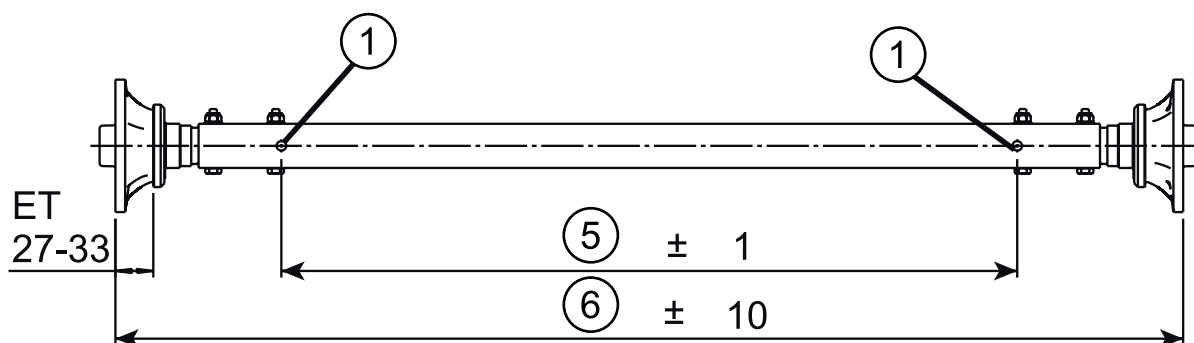
Installing unbraked hub 1800 kg



Item	Description
1	The holes for the centre pin are only permitted on the top of the axle tube, for reasons of strength.
2	Comply with tightening torque of bolt M12 X 90 - 10.9 DIN 931
3	Important: The location of the weld in the square tube must be at the rear in the direction of travel! Make sure that the chamfer in the axle stub is installed facing towards the weld in the tube.
4	Driving direction
5	Support (hole for centre pin)
6	Contact (for rim)

i Comply with the dimensions for the required square axle tube in the drawing.
Required tube quality: DIN EN 10210-2, S355J0 DIN EN 10025-2

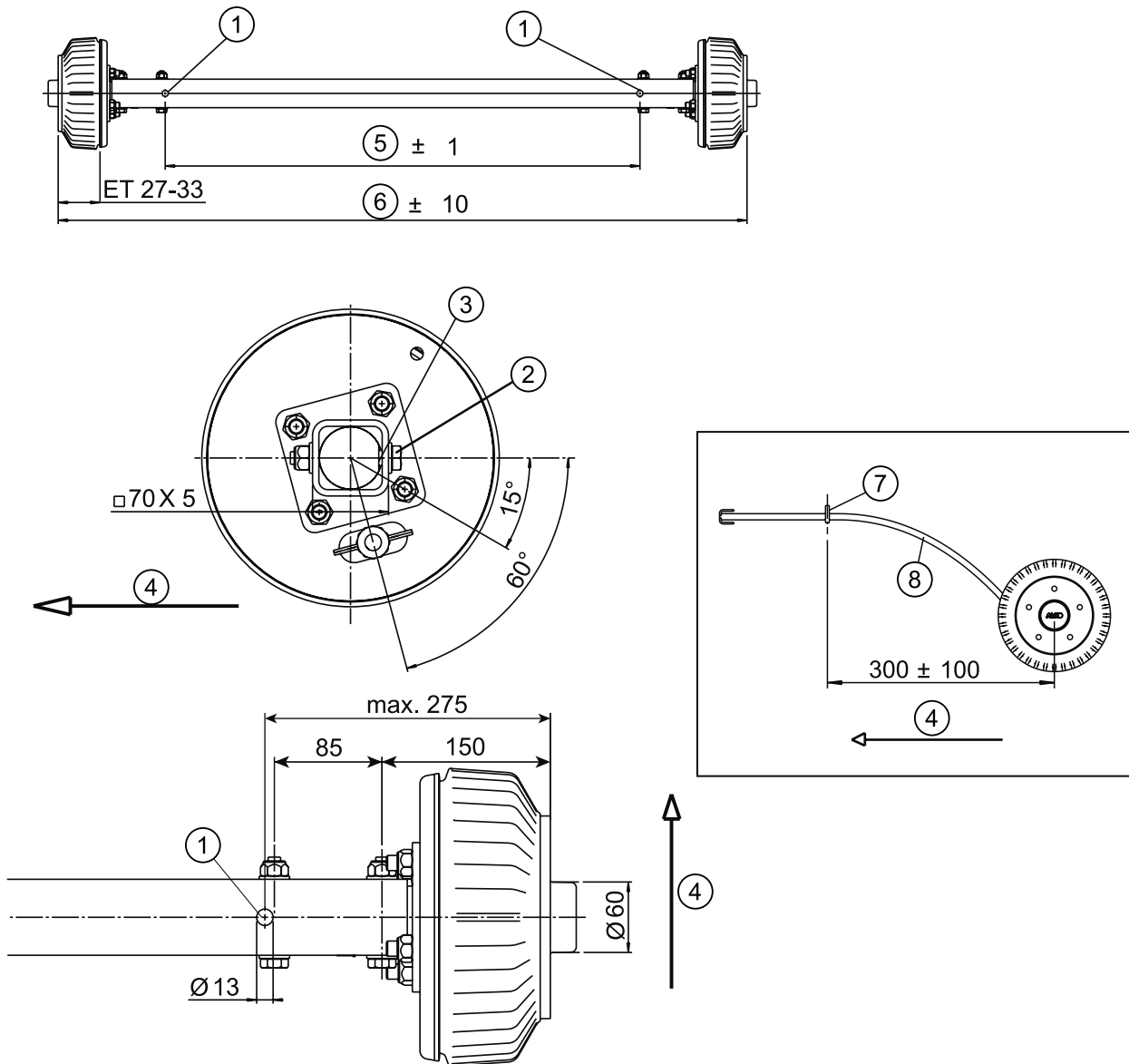
Installing wheel brake 1500 kg



Item	Description
1	The holes for the centre pin are only permitted on the top of the axle tube, for reasons of strength.
2	Comply with tightening torque of bolt M12 X 80 - 10.9 DIN 931
3	Important: The location of the weld in the square tube must be at the rear in the direction of travel! Make sure that the chamfer in the axle stub is installed facing towards the weld in the tube.
4	Driving direction
5	Support (hole for centre pin)
6	Contact (for rim)
7	The thrust bearing must be welded onto the vehicle brake by the vehicle manufacturer.
8	Bowden cable Important: Route the Bowden cables so they cannot be damaged (e.g. by kinking or chafing points).

i Comply with the dimensions for the required square axle tube in the drawing.
Required tube quality: DIN EN 10210-2, S355J0 DIN EN 10025-2

Installing wheel brake 1800 kg



Item	Description
1	The holes for the centre pin are only permitted on the top of the axle tube, for reasons of strength.
2	Comply with tightening torque of bolt M12 X 90 - 10.9 DIN 931
3	Important: The location of the weld in the square tube must be at the rear in the direction of travel! Make sure that the chamfer in the axle stub is installed facing towards the weld in the tube.
4	Driving direction
5	Support (hole for centre pin)
6	Contact (for rim)
7	The thrust bearing must be welded onto the vehicle brake by the vehicle manufacturer.
8	Bowden cable Important: Route the Bowden cables so they cannot be damaged (e.g. by kinking or chafing points).

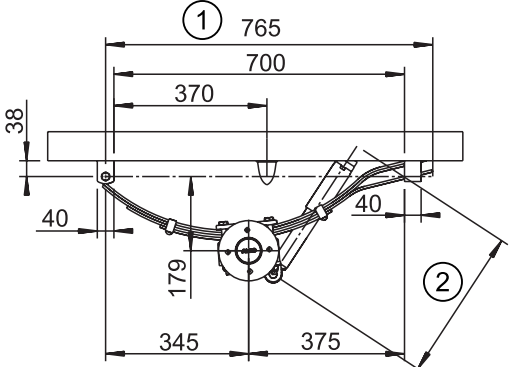
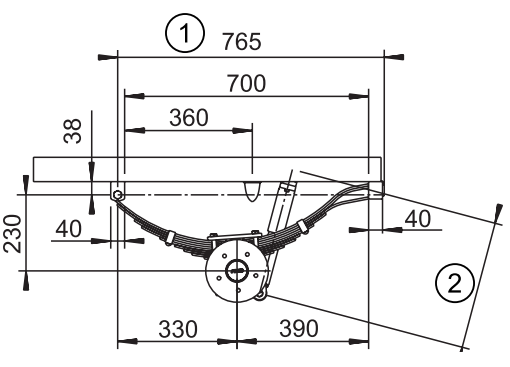
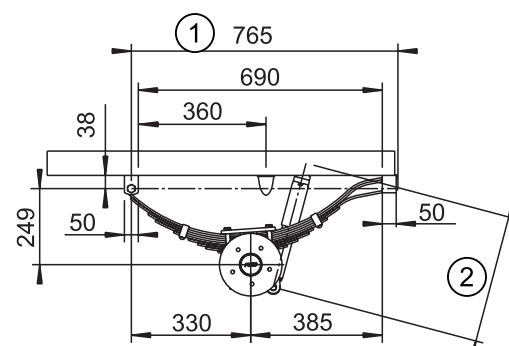
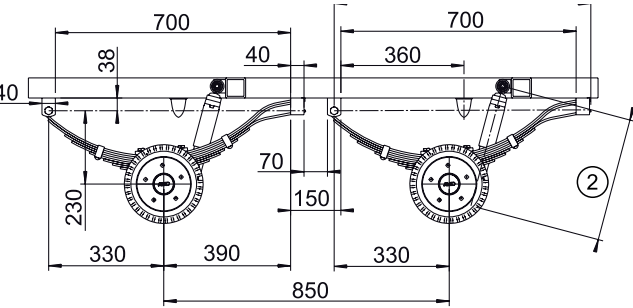
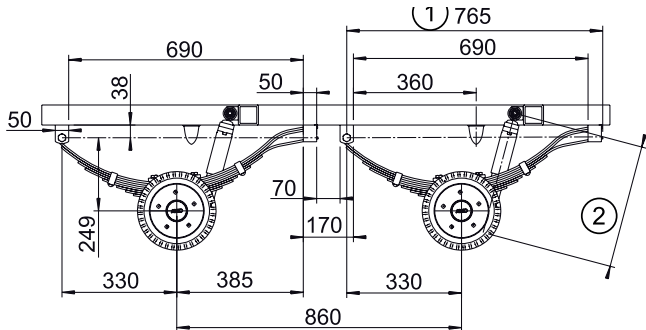
i Comply with the dimensions for the required square axle tube in the drawing.
Required tube quality: DIN EN 10210-2, S355J0 DIN EN 10025-2

Dimension tables

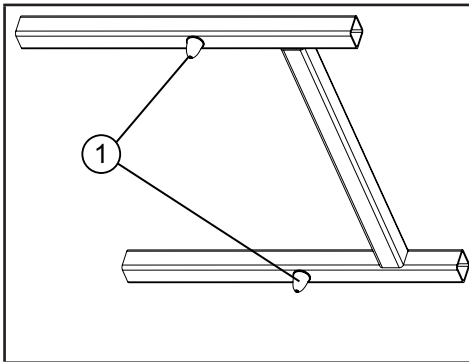
The following dimension tables are required for correct positioning of the components.

⚠ Caution!

The dimension tables are only appropriate for original AL-KO components.
The vehicle manufacturer is responsible for configuring the vehicle frame.

<p>750 kg unbraked</p> 	<p>1500 kg braked, unbraked</p> 
<p>1800 kg braked, unbraked</p> 	<p>Tandem 3000 kg</p> 
<p>Tandem 3500 kg</p> 	<p>Legend:</p> <ul style="list-style-type: none"> ■ Position 1: Leaf spring length ■ Position 2: Installation dimension shock absorber approx. 375 mm in unladen condition.

Installing rubber buffers



Recommendation: Before installation of the leaf springs, it is necessary for rubber buffers (1) to be installed; this is because the fastening thread cannot be attached when the leaf springs are installed, depending on the frame shape.

The position depends on the axle type and can be found with reference to “Dimension tables” on page 12.

⚠ Caution!
The rubber buffer is used as an end stop, which means coordination with the shock absorber is essential.

Installation steps

1. Measure the position of the rubber buffer according to the “Dimension tables” on page 12 and identify the position.
2. Cut an M10 thread in the frame for each buffer.
3. Screw the buffer into the thread using a strong bolt locking adhesive.

⚠ Caution!
Pay attention to the stop for the rubber buffer. Check the following dimension between the leaf spring and rubber buffer.

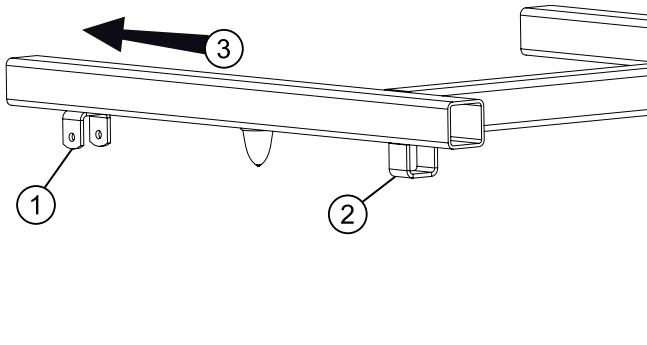
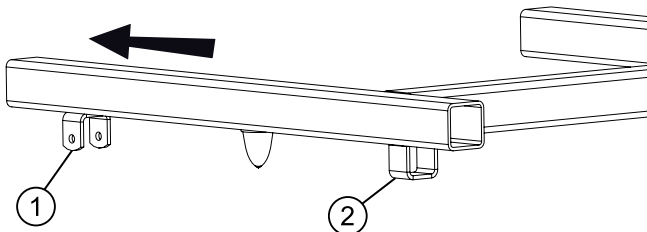
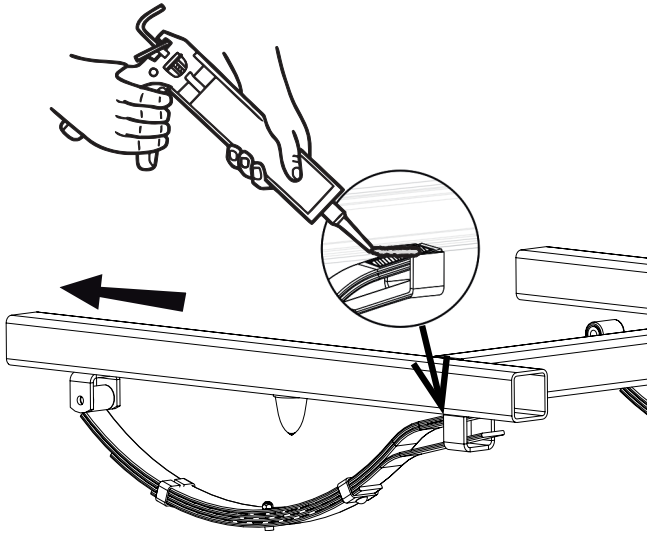
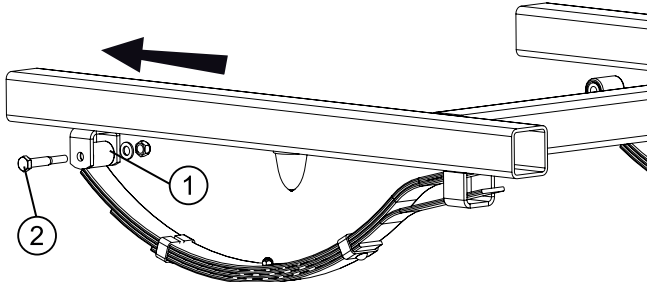
Type	Recommendation for dimension X (unladen)	Spring travel nominal load	Remaining spring travel until stop
750 kg	approx. 90 mm	approx. 35 mm	approx. 44 mm
1500 kg	approx. 90 mm	approx. 42 mm	approx. 48 mm
1800 kg	approx. 90 mm	approx. 40 mm	approx. 50 mm
Tandem 3000 kg	approx. 90 mm	approx. 42 mm	approx. 48 mm
Tandem 3500 kg	approx. 90 mm	approx. 40 mm	approx. 50 mm

Installing leaf springs and shock absorber

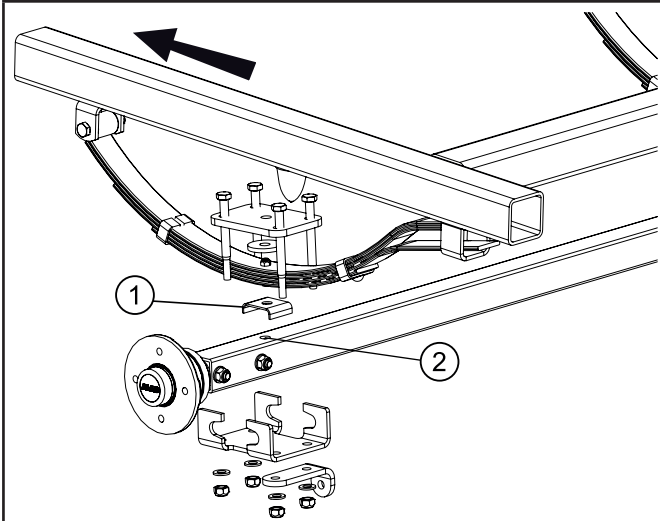
i Pay attention to the following chapters for the following installation description:

- Bolt tightening torques
- Installation material for leaf springs (bolt dimensions)
- Dimension tables (installation positions)

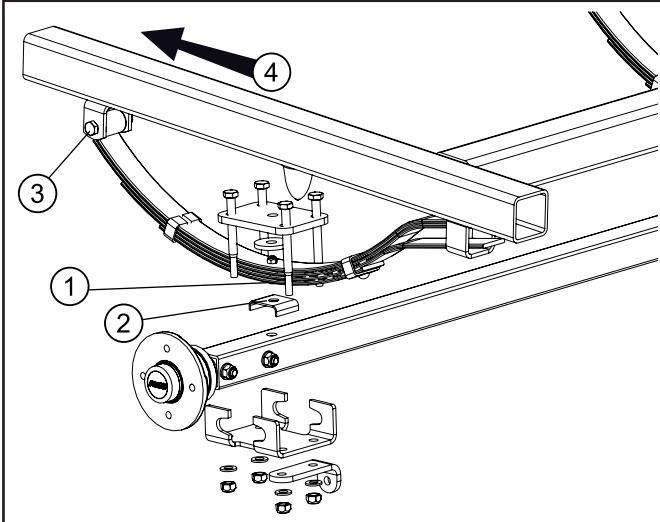
The following descriptions apply to both sides of the vehicle and, in tandem axles, to both axles.

	<p>1. Position the two leaf spring supports (1 and 2) on both sides of the vehicle frame according to the dimensions in the dimension tables.</p> <p>i Important: The open support (1) is installed at the front in the direction of travel (3). In all the following installation descriptions, the arrow (3) represents the direction of travel.</p>
<p>⚠ Warning! Welding is only allowed to be performed by specialists.</p>	
	<p>2. Weld the leaf spring supports (1 and 2) firmly onto the frame.</p> <p>3. Make sure to apply corrosion protection proficiently after welding.</p>
	<p>4. Apply grease between the top of the leaf spring and the vehicle frame.</p>
	<p>5. Insert the leaf spring into the open welding bracket (1). To attach the leaf spring, use bearing bolt (2) with the self-locking nut.</p> <p>i Tighten the bearing bolt (1), but not so firmly that the leaf spring can no longer be moved in the welding bracket.</p>

i For the following leaf spring installation, use the appropriate AL-KO installation kit (see "Installation material for leaf springs").

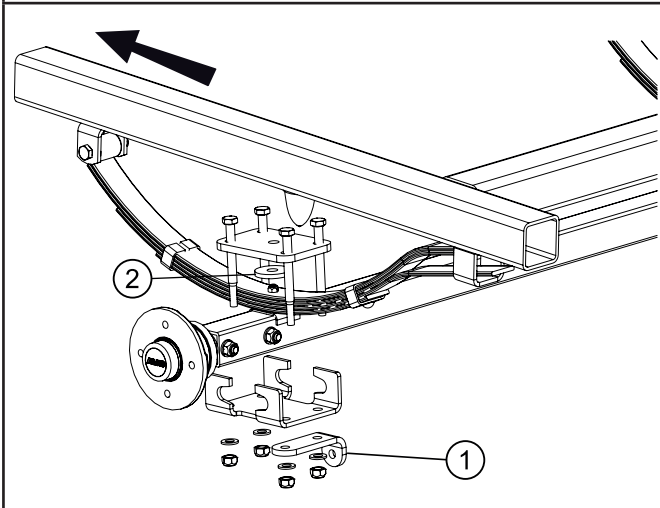


6. Insert the bar (1) from the installation kit between the axle body and leaf spring, with the hole over the centre pin hole (2).



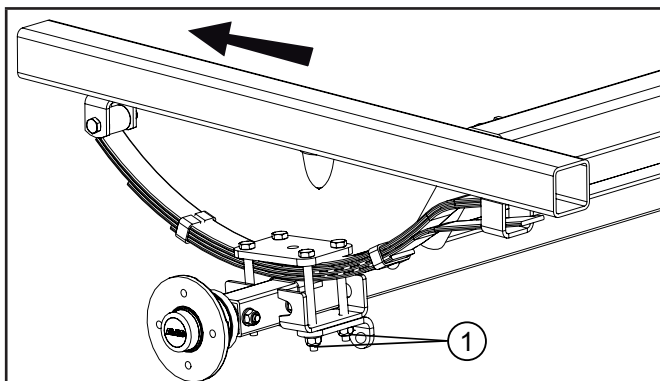
7. Place the installed leaf spring with the centre pin (1) on the bar (2) and into the centre pin hole of the finished installed axle.

i Pay attention to the direction of travel (4). The open leaf spring support (3) points forward in the direction of travel.



8. Insert the spacer washer (2) and the installation bracket (1) for the shock absorber.

i In particular, pay attention to correctly inserting the installation bracket (1) for the shock absorber (at the rear in the direction of travel and pointing inward, downward).

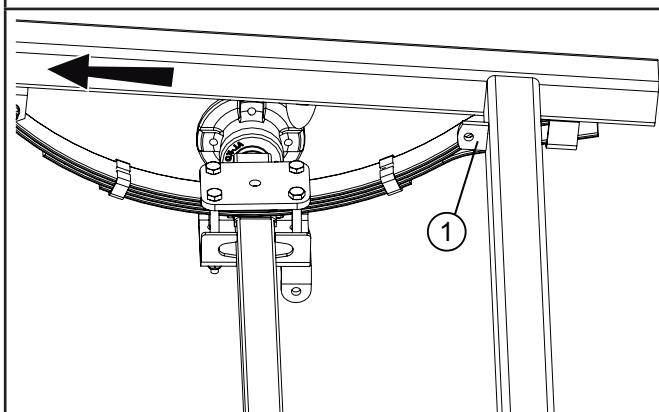


9. Use the genuine bolts from the installation kit for screwing on firmly. Use the two long bolts (1) on the side of the installation bracket for the shock absorber.

10. Tighten the fastening bolts to the prescribed tightening torque.

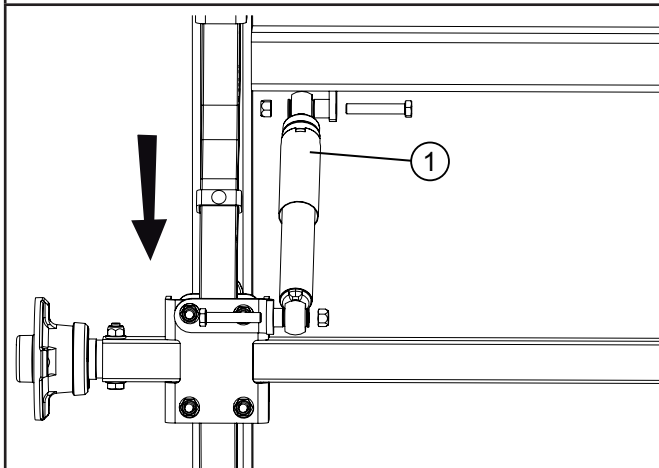
Warning!

Welding is only allowed to be performed by specialists.



11. Weld the fastening bracket (1) for the shock absorber onto the vehicle frame (see "Installation material for shock absorbers"). Comply with the dimension tables for positioning.

12. Make sure to apply corrosion protection proficiently after welding.



13. Install the shock absorber. The side with the guard tube (1) points upwards.

14. Tighten the fastening bolts to the prescribed tightening torque.

i In wheel brakes: Route the Bowden cables so they cannot be damaged (e.g. by kinking or chafing points).

Warning!

Comply with the local registration guidelines for vehicles and vehicle conversions which apply to you. Do not use the vehicle until you have received the approval to do so.

Notes

Notes

Notes

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AT	AL-KO Technology Austria GmbH	(+43) 5282 / 3360-700	vertrieb.fzt@al-ko.at
AU	AL-KO International Pty. Ltd.	(+61) / 3-9767-3700	info@al-ko.au
BG	AL-KO TRAILCO (Pty.) Ltd.	(+27) 16421 - 4791	infocpt@al-ko.co.za
BR	AL-KO Brasil Participacoes Ltda.	(+55) (11)2305 / 1053	brasil@al-ko.com
CN	AL-KO (Yantai) Machinery Co. Ltd.	(+86) 535672 - 7751	info@al-ko.cn
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