S. Bleyer GmbH

www.s-bleyer-gmbh.de

User manual for

Hook fixation

Keep for future reference.

Edition V3.4 / as of 09-2022

For your notes:

Contents

List of figures:

1. General

1.1 Purpose of the user manual

The user manual "Hook Fixation" describes the design and function, mounting, dismounting, maintenance and cleaning as well as transport and storage of the hook fixation. The described hook fixation is for fixing the test vehicle by using adapters, bearings, rods and anchors onto a roll or belt dynamometer.

The hook fixation was developed and manufactured by S. Bleyer GmbH.

1.2 Target group

The user manual "Hook fixation" is intended for
operators of dynamometers for automobiles with adequate technical knowledge.

1.3 Version

The footer on each page contains the current version and the date of printing of this document
"User manual for hook fixation".

You can download the latest version of this user manual at any time from www.s-bleyer-gmbh.de.

1.4 Safekeeping

Make sure that you keep the user manual safely!

1.5 Copyright

The content of this edition has been carefully checked for accuracy. Nevertheless, errors cannot be completely excluded.

Subject to change without prior notification.

Layout and texts: S. Bleyer GmbH. All photos and drawings are the property of S. Bleyer GmbH. Photos and drawings need not reflect the current production status as long as the function illustrated is the same.

Printed on 100% recycled paper.

1.6 Language of the user manual

The original version of this user manual has been written in the EU official language of the manufacturer (German).
Translations into other languages are translations of the original version.
The legal stipulations of the Machinery Directive are applicable.

1.7 Address of manufacturer

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1.8 Explanation of the symbols

Levels of danger are identified according to ISO 3864 or ANSI Z535.4.

 **Danger**	The triangular warning symbol with the signal word "Danger" stands for *an imminent danger,* that definitively leads to serious injuries or death.
 **Warning**	The triangular warning symbol with the signal word "Warning" stands for a *potentially hazardous situation*, that could lead to *serious injuries or death*.
 **Caution**	The triangular warning symbol with the signal word "Caution" stands for a *potentially hazardous situation*, that could lead to *minor injuries*. The triangular warning symbol with the signal word "Caution" also stands for a *hazardous situation* in which the product or an object in the vicinity can be damaged (*material damage*).
 **Attention**	The round warning symbol with the signal word "Attention" stands for a *potentially hazardous situation* in which the product or an object in the vicinity could be damaged (*material damage*).
 **Note**	The hand with the signal word "Note" gives advice and hints for use.

2. Description of the hook fixation

2.1 Important notes

2.1.1 General view

Figure 1: Fully fixed vehicle front

[1] Diagonal rod (DST)
[2] Clamping collet (KR)
[3] Sliding anchor
[4] Cross bar (QST)
[5] Alternative ground socket for plug-in anchor
[6] Hook in towing eye

2.2 Intended use

The task of the hook fixation is the fixation of passenger cars fast, safe and without any tension with front wheel, rear wheel or four-wheel drive on various roller or belt dynamometers using the towing eye or trailer coupling as fixation points.

Possible areas of use are:
- single roller dynamometers in uniaxial and biaxial use (e.g. 48-inch roller)
- double roller dynamometers in uniaxial and biaxial use (e.g. 20-inch roller)
- belt dynamometers

Intended use:
Only use the hook fixation to secure vehicles on a roller or belt dynamometer in accordance with the intended use and the Technical Data.

Part of the intended use is also:
- Note and comply with the user manual
- Follow maintenance instructions

 **Danger**	**Danger to life and risk of material damage around the vehicle!** Death, serious injuries or material damage due to improper use of the hook fixation! Follow all instructions for mounting and dismounting, maintenance and cleaning precisely, as well as all safety instructions!

2.2.1 Limits for tractive load for hook fixations and wheel hub fixations

 **Danger**	**Limits of tractive load:** **Range up to max. 10,000N tractive load:** In this case it is usually sufficient to use a hook fixation. **Range up to max. 20,000N tractive load:** A mixed use of hook fixation and wheel hub fixation is allowed, if: ⇨ the powered axle is equipped with a wheel hub fixation and ⇨ the non-powered axle is equipped with a hook or wheel hub fixation. **Range over 20,000N up to max. 35,000N tractive load:** Here it is essential that the wheel hub fixation is used on both axles.

2.2.2 Danger Zone

The following areas are part of the danger zone:

- Area of 1m distance around the side of the fixed vehicle
- Vicinity of the fixation triangles
- In front of and behind the vehicle

 **Danger**	**Danger to life within the danger zone during test operation!** People caught by the vehicle and thereby killed or seriously injured if the vehicle breaks away due to improper fixation or broken towing eye/trailer coupling! Legs cut off or broken from deforming rods or rods breaking away. Remain outside the danger zone during test operation!

2.2.3 Identification marking

The individual components are marked by engraving as follows:

Component	Marking	Location of engraving
Cross bar (QST)	QST03 / number	on rod, at hook
Tractive rod (ZST)	ZST03 / number	on rod, at hook
Rod for trailer coupling (AST)	AST03 / number	on rod, at mounting unit
Diagonal rod (DST)	DST03 / number	on rod, at fork head
Sliding anchor 300mm	SA03 / number	on base plate
Sliding anchor 400mm	SA03L / number	on base plate
Sliding anchor 500mm	SA03LL / number	on base plate
Height adjustable sliding anchor 320–480mm	SA05HM / number	on base plate
Height adjustable sliding anchor 360–520mm	SA05HL / number	on base plate
Sliding anchor console	SAK-SA / number	on base plate
Plug-in anchor 320mm Locking pedal	STA18 / number	on main body
Plug-in anchor 400mm	STA03L / number	on main body
Plug-in anchor 500mm	STA03LL / number	on main body

2.3 Configuration

2.3.1 Scope of Delivery

For each test cell the following components are included within the scope of delivery:

- 2 cross rods (QST)
  or 2 tractive rods (ZST)
  or 2 rods for trailer coupling (AST)
- 2 diagonal rods (DST)
- 4 plug-in
  or 4 sliding anchors (without T-bolts)
- 1 adjusting tool for correctly adjusting the clamping force of the anchors

Note

The system is delivered with 2.5-meter-long rods (QST 2.0m). You can shorten the rods individually to the required length of necessary and desired. The free end of the rod must project at least 10cm out of the clamping collet (KR) in all applications.

2.3.2 Accessories

In addition, the following components can be delivered as accessories:

- **Transport trolley for sliding and/or plug-in anchors**
  (anchors are not included in the scope of delivery)

Figure 3: Sliding anchor cart

Figure 2: Plug-in anchor cart

Suitable for transporting or storing 4 pieces of sliding anchors
or plug-in anchors at a time.
Configurations other than this or special requests are also possible at any time, upon request.

- **Rod holder**
  (rods are not included in the scope of delivery)

Figure 4: Rod holder with fixation bearing mount

Figure 5: Rod holder simple

Fixation rods insert safely and are ready-to-use in holders,
e.g. directly within the test cell beside the test bench.
The rod holders are available in various versions,
depending on the type and number of rods to be stored

Original floor bushings with cover **T-rail**
(anchors are not included in the scope of delivery)

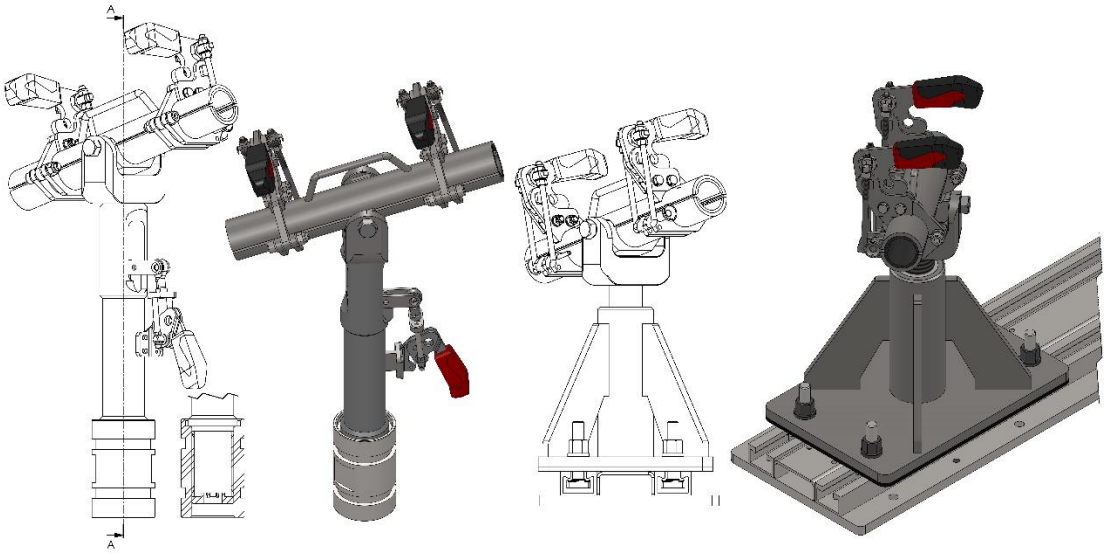


Figure 6: Floor bushings and rails

Are permanently installed in the test bench floor.

Mounted in or on the test bench floor.

- **Wall panels with mounting & safety instructions in short form**

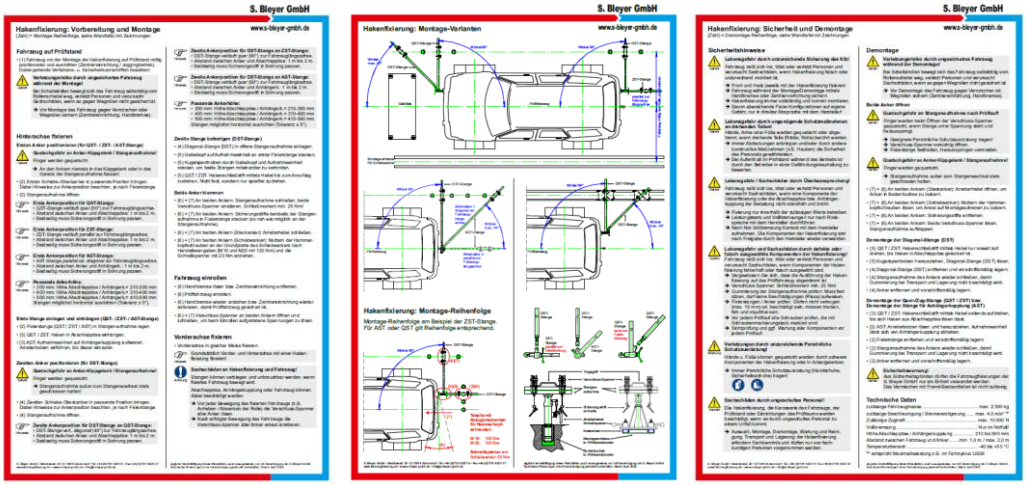


Figure 7: Wall charts

3. Safety instructions

Danger

Danger of life through inadequate fixation of the vehicle!

Vehicle could break away, killing or injuring persons and causing material damage if the hook fixation is mounted incorrectly or inadequately.

- ➔ Secure both the front and the rear of the vehicle with the hook fixation!
- ➔ Secure vehicle with hand brake during mounting/dismounting.
- ➔ Always mount hook fixation completely and correctly.

Alternative fixation configurations are possible and may even make sense but must always be agreed upon with the manufacturer or implemented at own risk!

Always mount vehicle fixation completely.

Danger

Danger to life due to inadequate protective measures on rotating parts!

Hands, arms or feet get crushed or severed if they come into contact with rotating parts (wheels, roller).

- ➔ Always install covers and/or use other structural measures (e.g. hoods) to ensure the safety of personnel.
- ➔ The operator must assess the risk of remaining in the test bench during operation by conducting a risk analysis!

Danger

Danger to life due to component parts flying off!

Component parts can fly off, injure people and cause material damage if bolted connections become loose during test operation.

- ➔ Always tighten all bolted connections with the required tightening torque!
- ➔ In the case of endurance tests check all bolted connections at least every 12 hours and re-tighten if necessary. Any deviating arrangements in individual cases must always be agreed upon in advance with the manufacturer.

Danger

Danger of life and material damage due to overstraining!

Vehicle breaks loose, killing or injuring people and causing material damage if a component of the hook fixation or of the towing eye or trailer coupling is unable to withstand the stress and breaks.

- ➔ Always operate hook fixation only within the permissible values (see chapter 10 “Technical information”).
- ➔ Only perform performance tests and full braking after consulting the manufacturer.

	➔ After emergency braking, contact the manufacturer immediately. Do not reuse the hook fixation components until they have been approved by the manufacturer. Always consider the towing eye as the weakest part of the fixation. According to VO(EU) 1005/2010, the towing hook must withstand at least a tractive force equivalent to the weight force of 0.5× permissible gross weight.

Danger

Danger to life and property damage due to defective or incorrectly selected components of the hook fixation!

Vehicle breaks loose, killing or injuring people and causing material damage if components of hook fixation are faulty or used incorrectly.

- ➔ Make sure that the version of the hook fixation is matched to the vehicle to be tested.
- ➔ Check latch clamp: These must have a closing torque of at least 25Nm, see also p.49!
- ➔ Check rubber coating of clamping collet (KR): must sit tightly and show no damage (cracks, notches).
- ➔ Check fixation rods and anchors: Must not be deformed or damaged, must be dry, free of dirt and grease.
- ➔ Before every test run, visually check all screws that are marked with screw marking lacquer.

Perform visual inspection and, if necessary, maintenance of the components in accordance with chapter "Maintenance and cleaning" before every test run.

Warning

Injuries due to inadequate personal protective equipment!

Hands and feet can get crushed by heavy components of hook fixation or at anchor joints.

- ➔ Always wear personal protective equipment (gloves, safety shoes)!


Caution

Material damage caused by untrained personnel!

The hook fixation, the body of the vehicle, the test bench or equipment of the test cell will be damaged if an accident occurs due to untrained personnel.

Selection, mounting, dismounting, maintenance and cleaning, transportation and storage of the hook fixation requires expert knowledge and must be performed only by trained personnel.

Note

Single roller dynamometers: Position the vehicle exactly on the peak of the crest rollers and align it to the driving direction before mounting the hook fixation. See chapter 5.2.

Note

Only use connecting elements (screws, nuts, latch clamps, locking levers, etc.) that are approved by the manufacturer.

4. Setup and function

4.1 Basics

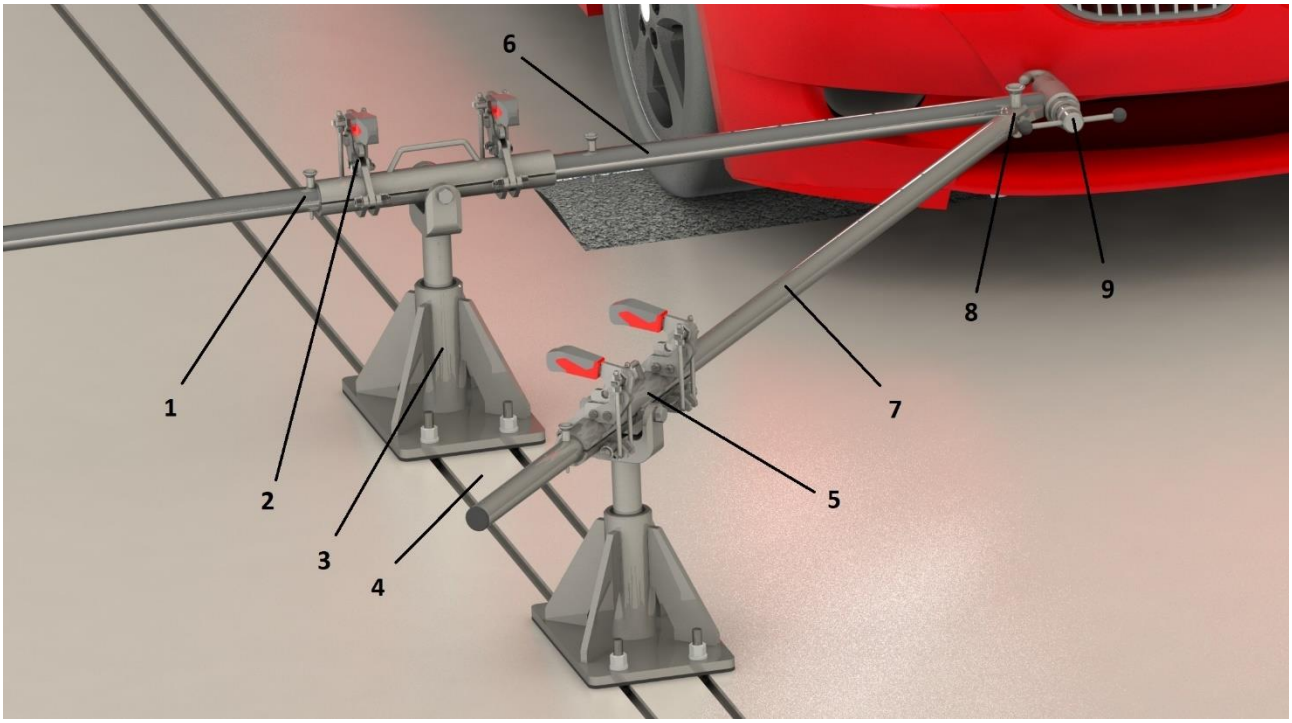


Figure 8: Vehicle front with details

[1] Securing pin
[2] latch clamp (BS)
[3] Sliding anchor
[4] Rail system
[5] Clamping collet (KR) with rubber coating
[6] Cross bar (QST)
[7] Diagonal rod (DST)
[8] Ball lock pin (connects both fixation rods with each other)
[9] Hook with hook fastener

With the hook fixation, the vehicle is fastened to the roller or flat belt dynamometer, quickly and safely and without any pre-tension.

To secure the vehicle, two fixation rods each are attached to the towing eye or to the trailer coupling at the front and rear of the vehicle.
These rods are held by plug-in or sliding anchors by being clamped in the rubberized clamping collet (KR).

The two fixation rods form the fixation triangle.

4.2 Fixation rods

4.2.1 Cross rod (QST)

The cross bar (QST) fixes the vehicle *laterally* to the longitudinal axis of the vehicle. The diagonal rod (DST) additionally stabilizes the vehicle.
Both rods together form the fixation triangle.

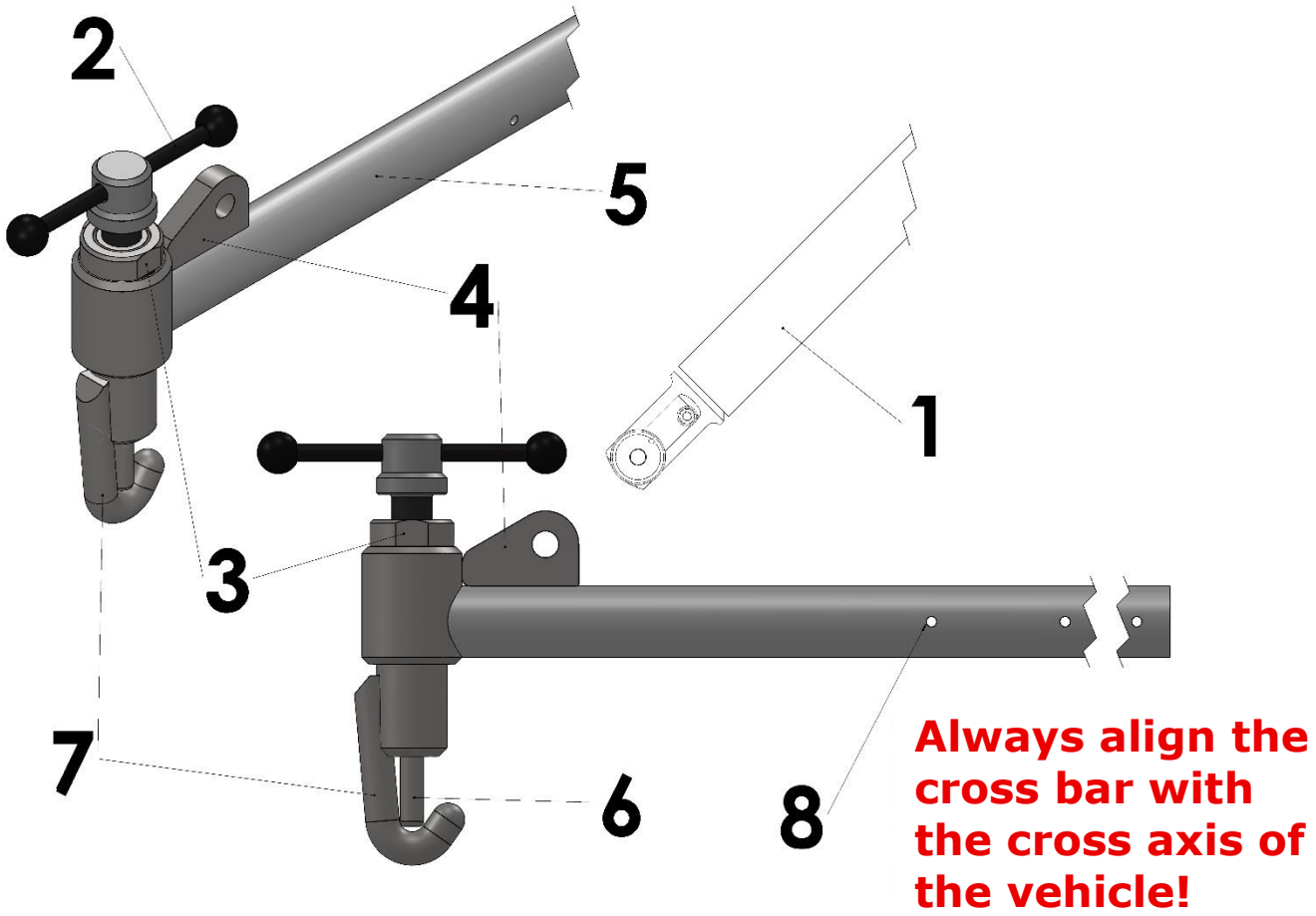


Figure 9: Cross bar (QST)

[1] Diagonal rod (DST)
[2] Lever for hook locking pin
[3] Lock nut with screw-marking lacquer
[4] Docking unit for fork head
[5] Cross bar (QST)
[6] Hook locking pin
[7] Hook for towing eye
[8] Borehole for securing pin

4.2.2 Tractive rod (ZST)

The tractive rod (ZST) fixes the vehicle *parallel* to the longitudinal axis of the vehicle.
The diagonal rod (DST) additionally stabilizes the vehicle. Both rods together form the fixation triangle.

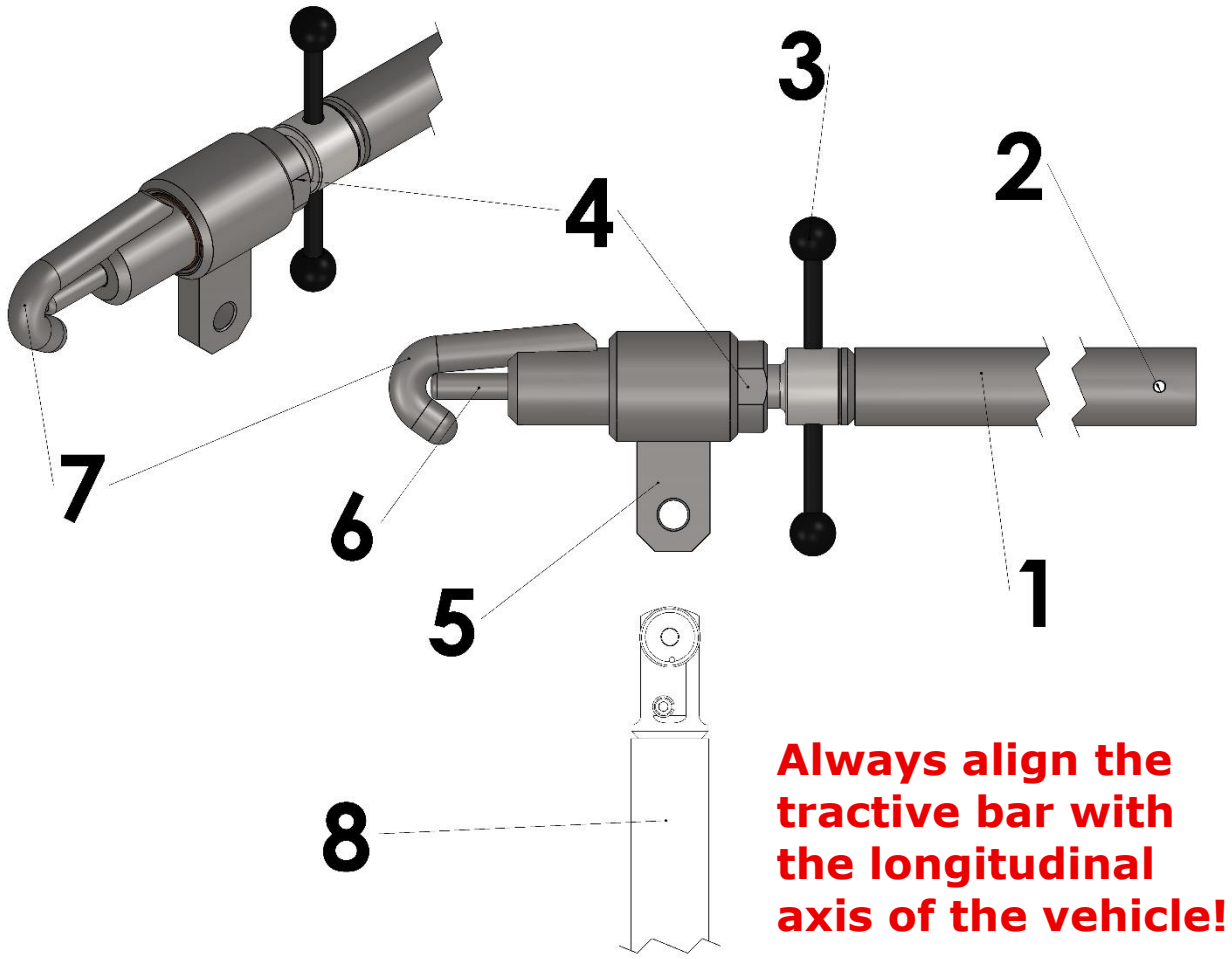


Figure 10: Tractive rod (ZST)

[1] Tractive rod (ZST)
[2] Borehole for securing pin
[3] Lever for hook locking pin
[4] Lock nut with screw-marking lacquer
[5] Docking unit for fork head
[6] Hook locking pin
[7] Hook for towing eye
[8] Diagonal rod (DST)

4.2.3 Rod for trailer coupling (AST)

The rod for trailer coupling (AST) fixes the vehicle *parallel* to the longitudinal axis of the vehicle. The diagonal rod (DST) additionally stabilizes the vehicle.
Both rods together form the fixation triangle.

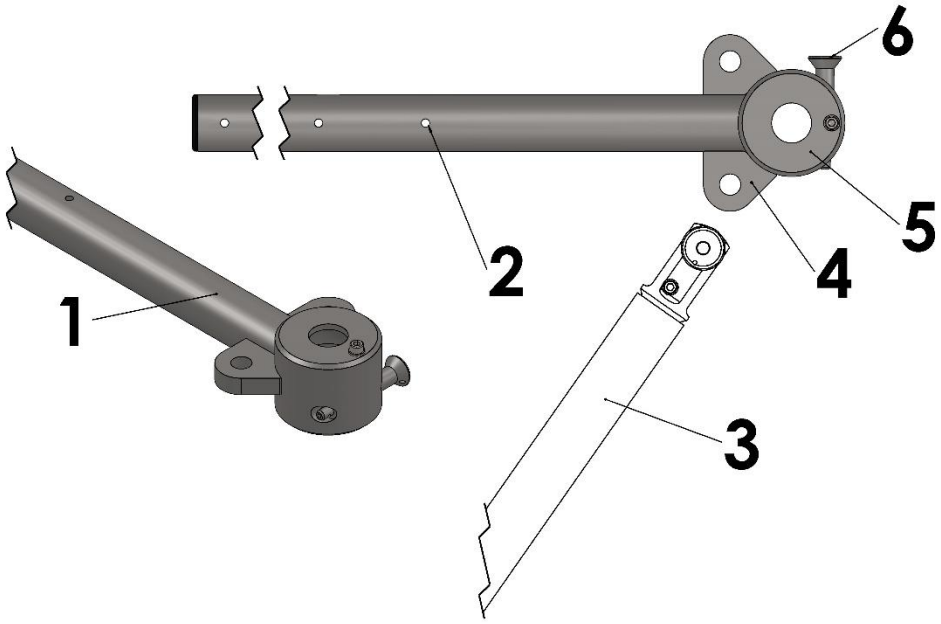


Figure 11: Rod for trailer coupling (AST)

[1] Rod for trailer coupling (AST)
[2] Borehole for securing pin
[3] Diagonal rod (DST)
[4] Docking unit for fork head
[5] Docking unit for trailer coupling
[6] Locking bolt

4.2.4 Diagonal rod (DST)

The diagonal rod (DST) stabilizes the cross bar or the tractive rod (QST/ZST) or the trailer coupling rod (AST). It also prevents the other fixation rod from bending in the fixation triangle.

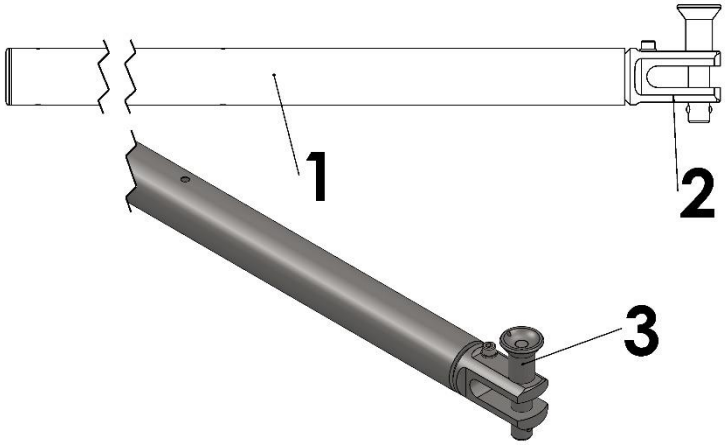


Figure 12: Diagonal rod (DST)

[1] Diagonal rod (DST)
[2] Fork head
[3] Ball lock pin on chain

The ball lock pin secures the fork head of the diagonal rod (DST) in the docking unit of the other fixation rod (QST/ZST/AST).

4.3 Anchor for rod fixation

There are two different types of anchors for the fixation: The plug-in anchor for floor bushings and the sliding anchor for T-rails.

4.3.1 Plug-in anchor

Installation Height = distance between middle of the clamping collet and the floor of the test bench

Caution	**Material damage to extra-long plug-in anchor (STA03LL, 500mm overall height) and to vehicle!** The STA03LL plug-in anchor can break at the bottom if overloaded. ➔ Only use the STA03LL plug-in anchor *parallel or transverse (90°)* to the longitudinal axis of the vehicle! ➔ Never insert the STA03LL plug-in anchor *diagonally (45°)* to the longitudinal axis of the vehicle!

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
320mm	230mm to 410mm
400mm	310mm to 490mm
500mm	410mm to 590mm

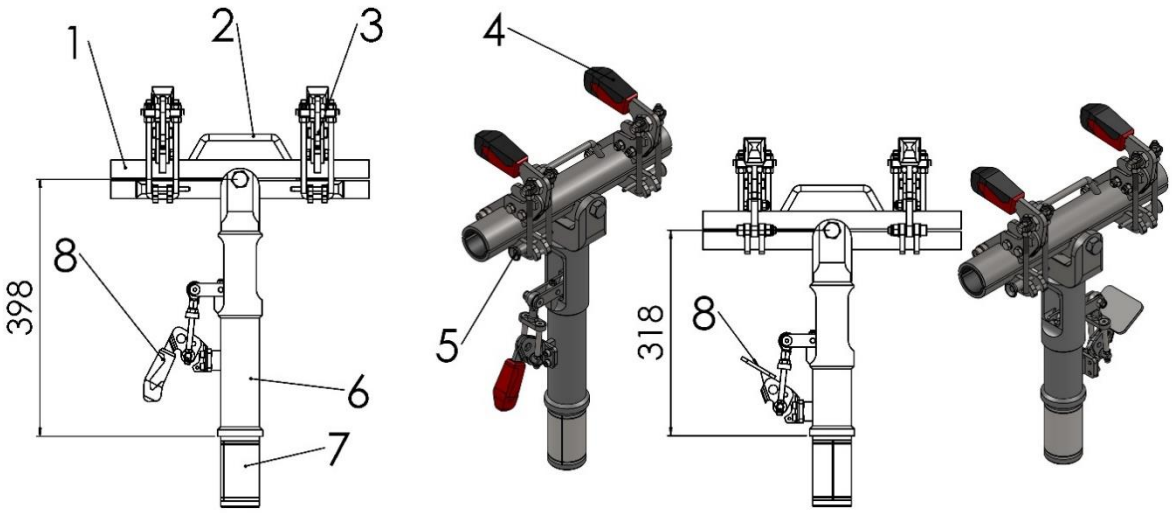


Figure 13: Plug-in anchor

[1] Clamping collet (KR) with rubber coating
[2] Carrying handle
[3] Latch clamp
[4] Latch clamp handle
[5] Securing pin
[6] Main body of plug-in anchor
[7] Clamping sleeve (operated by locking lever)
[8] Locking lever (or locking pedal)

4.3.2 Sliding anchor

The sliding anchor is screwed tightly to the floor T-rails with T-bolts.

Note	**Tightening torque for the T-bolts:** • M16 ➔ 120Nm • M20 ➔ 120Nm

The height is 300mm, 400mm or 500mm. Installation Height = distance between middle of the clamping collet and the floor of test bench

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA03H).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

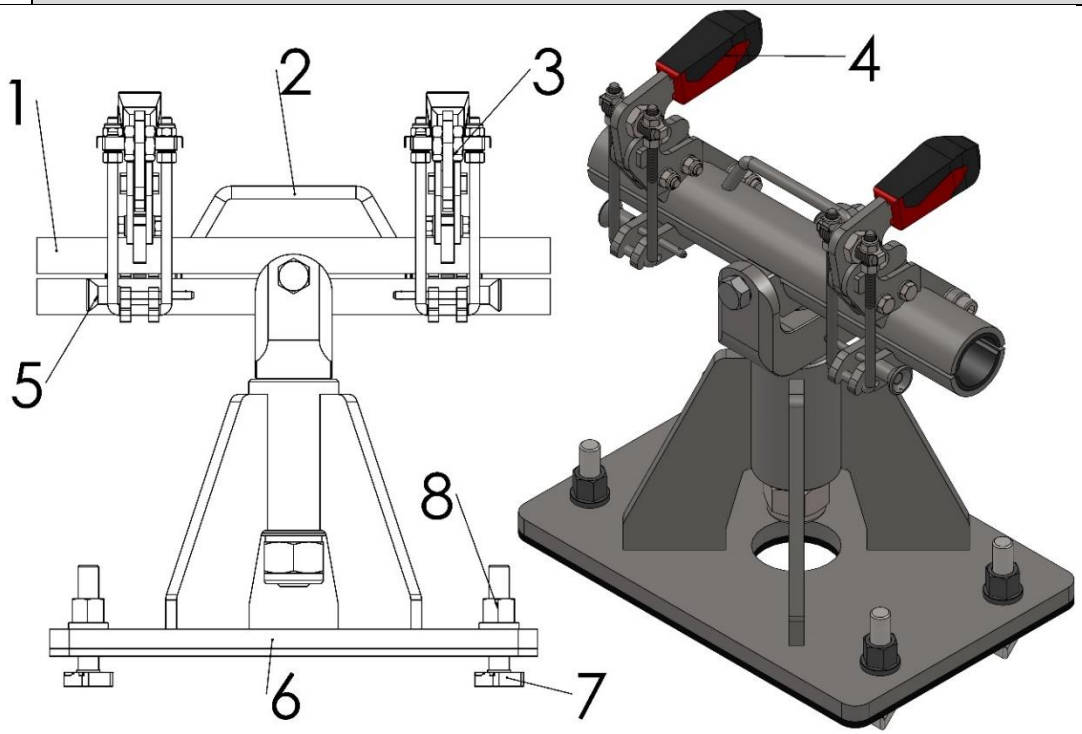


Figure 14: Sliding anchor

[1] Clamping collet (KR) with rubber coating
[2] Carrying handle
[3] Latch clamp
[4] Latch clamp handle
[5] Securing pin
[6] base plate of sliding anchor
[7] t-bolt for T-rail (not within the scope of delivery)
[8] nut for T-bolt (not included in the scope of delivery)

4.3.3 Sliding anchor, height adjustable

The height-adjustable sliding anchor is screwed tightly into the T-rails of the test bench floor using T-bolts.

Note	**Tightening torque for the T-bolts:** • M16 ➔ 120Nm • M20 ➔ 120Nm

It has a variable height from 320mm to 480mm (SA05HM) or from 360mm to 520mm (SA05HL).

Installation Height = distance between middle of the clamping collet and the floor of test bench

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Wheel diameter between
320mm to 480mm	230mm to 570mm
360mm to 520mm	270mm to 610mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: Observe notes on page 23 about plug-in anchors!

The height adjustable sliding anchor can be adjusted in height (5mm elevation difference per rotation) by turning the clamping collet (KR).

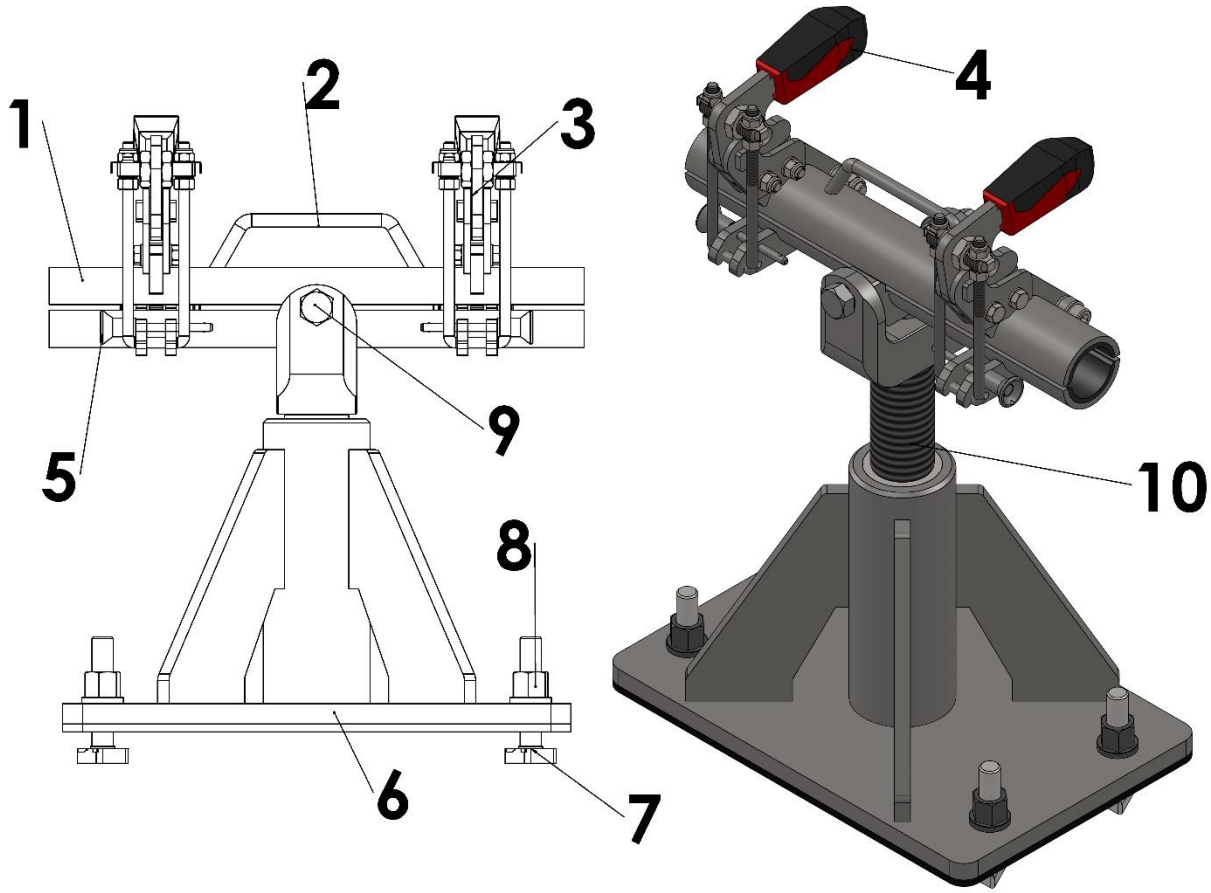


Figure 15: Height adjustable sliding anchor

[1] Clamping collet (KR) with rubber coating
[2] Carrying handle
[3] Latch clamp
[4] Latch clamp handle
[5] Securing pin
[6] base plate of sliding anchor
[7] t-bolt for T-rail (not within the scope of delivery)
[8] nut for T-bolt (not included in the scope of delivery)
[9] connecting screws between clamping device and fork head of anchor
[10] thread in upper position

4.3.4 Sliding anchor with quick clamps

General notice
The sliding anchor with quick clamps can be ordered with fixed height or adjustable height.

Figure 17: Quick clamps right (red)

Figure 16: Quick clamps left (blue)

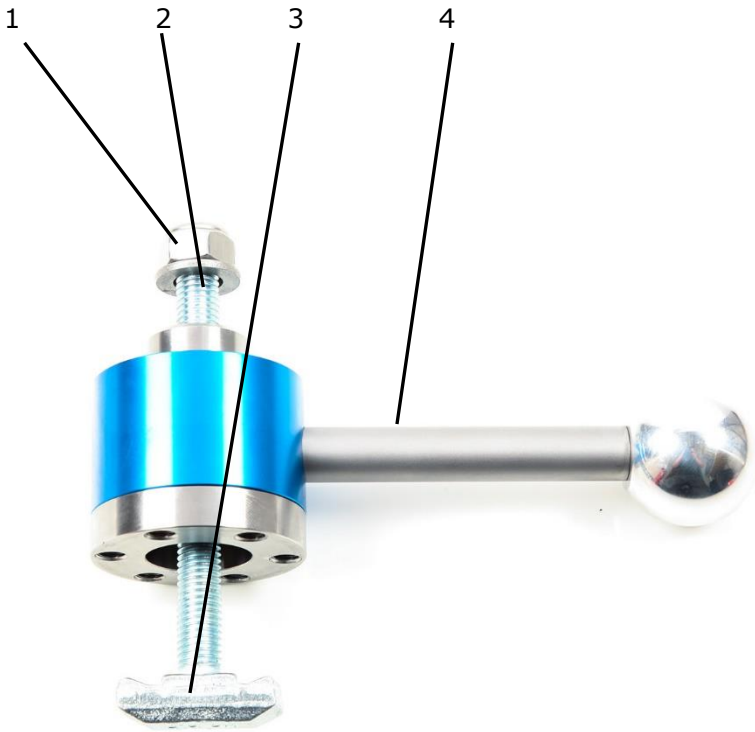


Figure 18: Quick clamp with slide block

[1] stop nut
[2] screw
[3] slide block
[4] quick clamp lever

First installation

1. Insert the sliding anchor into the T-rail.
2. Turn the sliding block at each quick clamp in the T-rail by 90°. The sliding block is in the correct position
   when it can no longer be lifted out of the T-rail.
3. Position the levers of all 4 quick clamps at right angles to the T-rail.
4. Screw the stop nut on each of the 4 quick clamps and tighten
   with a torque of 20Nm.

 **Note**	**The tightening torque for the stop nut is 20Nm.**

 **Note**	**A clean and intact T-rail is the prerequisite for the proper functioning of the quick release!** Notches and other damage in the T-rail lead, for example, to the fact that pre-tensioning force of the quick-release clamps is not reliably and reproducibly achieved and thus the necessary holding force of the system may not be guaranteed. **Regularly check the condition of the rail and the tightening torque of the** **stop nut!**

 **Danger**	**Danger to life and damage to property in the case of improper tightening of the stop nut!** If the stop nuts have not been properly tightened with the right torque at the first installation, the car can break free from the fixation. It is possible that personnel could be killed or injured and property could be damaged.

Release of the sliding anchor

Turn all 4 quick clamp levers by 90° so that they are parallel to the T-rails.
See Figure.

Then the sliding anchor can be pushed to the new position on the T-rails or lifted out of the T-rails.

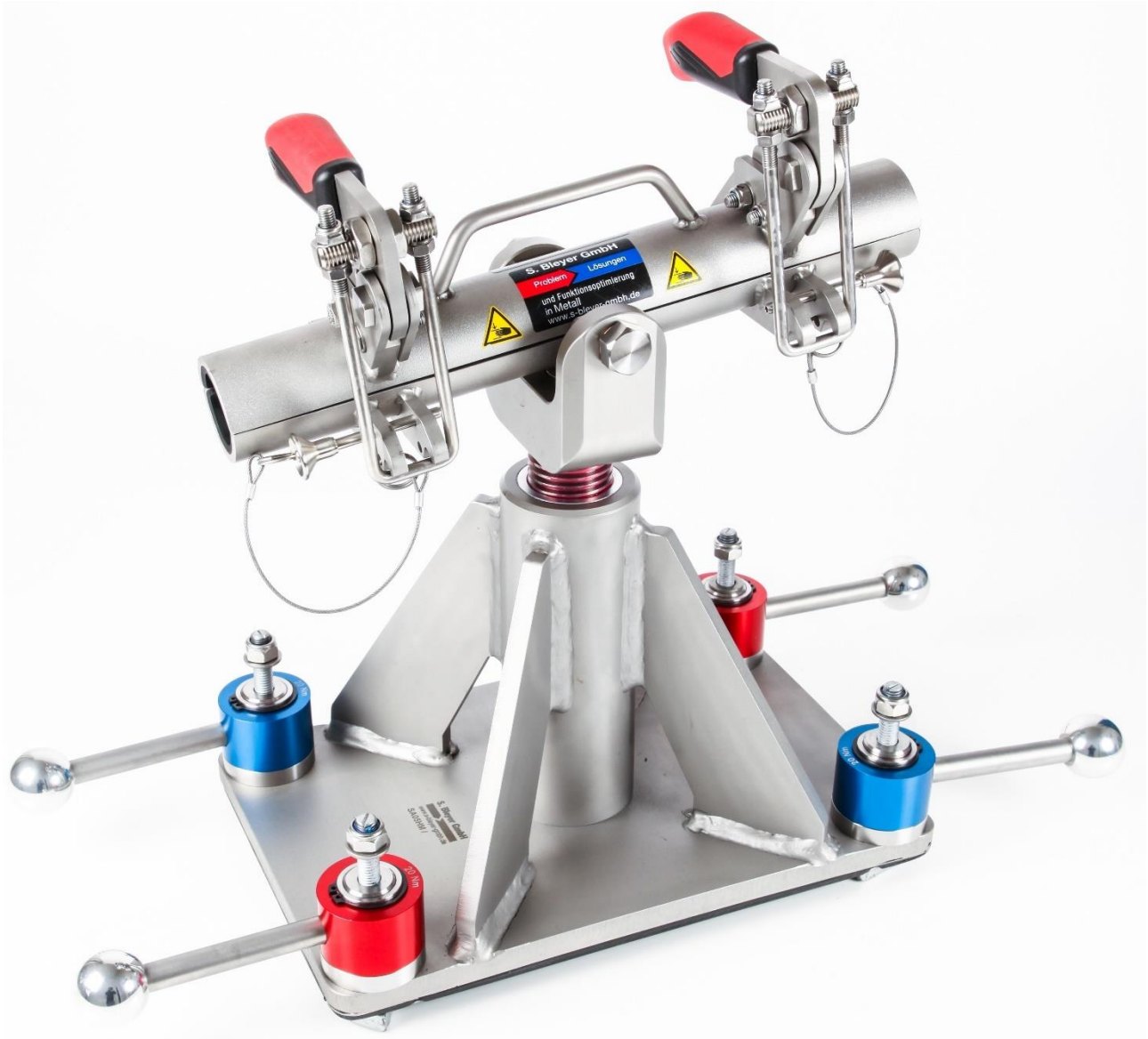


Figure 19: Sliding anchor with quick clamps

Fastening the sliding anchor
Turn all 4 quick clamp levers by 90° so that they are at right angles to the T-rail direction.

Danger	**Danger to life and damage to property in the case of improper tightening of the quick clamps!** If the quick clamps have not been closed to the stipulated end position at 90° to the T-rails, the car can break free from the fixation. It is possible that personnel could be killed or injured and property could be damaged.

4.3.5 Sliding anchor console

Figure 20: Sliding anchor console

The sliding anchor console is used to raise existing sliding anchors.

Installation Height = 100–200mm

Note	The sliding anchor consoles are used to raise existing sliding anchors. The hole pattern of the consoles must therefore correspond to the hole pattern of the sliding anchors to be placed on top. The consoles must not exceed a maximum height of 200mm, otherwise the forces on the T-rails below will become too great. The strength of the T-rails must be ensured on site. The consoles are ideally fastened with long hammerhead screws together with the sliding anchors standing on them. It is not recommended to use the quick-release clamps in combination with consoles. The height of the consoles can be chosen between 100 and 200mm.

4.3.6 Plug-in anchor 320mm with locking pedal

The plug-in anchors 320mm with locking pedal are the lowest standard plug-in anchors available. They are used, for example, in combination with wheel hub fixations or also for connection to the vehicle via hook fixations in the case of deep-seated towing eyes or other connection points.

Overall height = 320mm with locking pedal

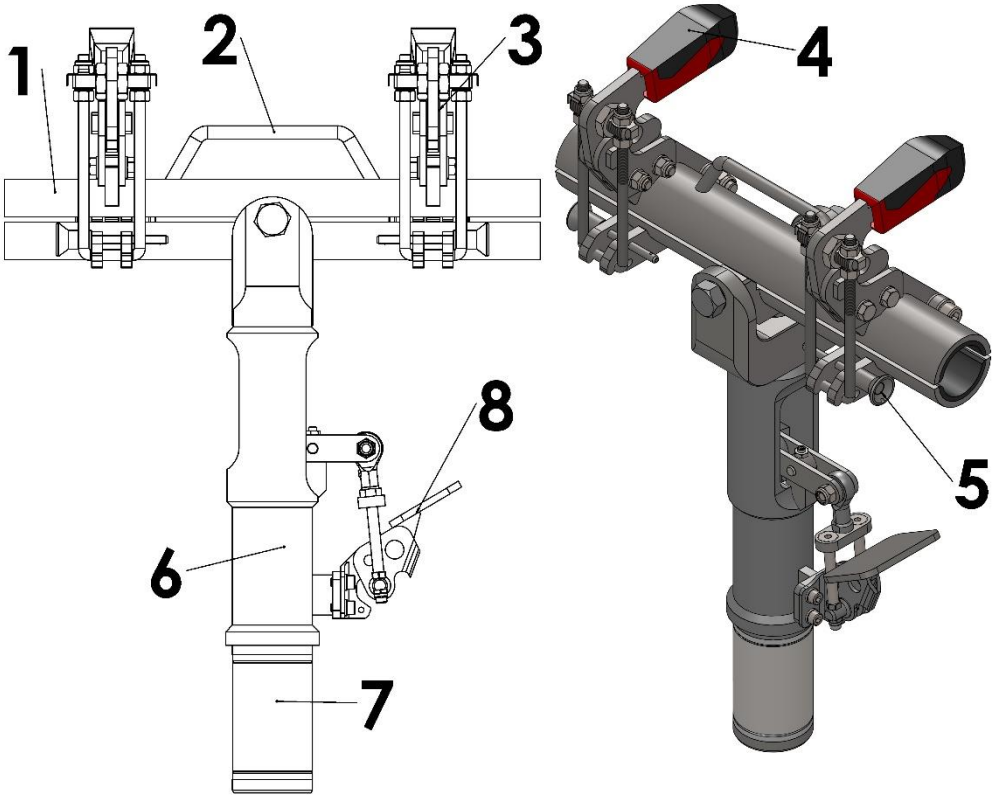


Figure 21: Plug-in anchor with locking pedal

[1] Clamping collet (KR) with rubber coating
[2] Carrying handle
[3] Latch clamp
[4] Latch clamp handle
[5] Securing pin
[6] Main body of plug-in anchor
[7] Clamping sleeve
[8] Locking pedal

5. Mounting of the hook fixation

The hook fixation is mounted on the front and rear of the vehicle when the respective axle is powered by the vehicle or the test bench.

5.1 Vehicle on test bench

 **Note**	Before mounting the hook fixation, position the vehicle on the test bench and align it (e.g. with centering device and jogging mode). In doing so, observe the applicable procedural and safety regulations!

 **Warning**	**Risk of injury due to unsecured vehicle during mounting!** In case of single rollers, the vehicle could roll off the crest of the roll, injuring people and causing material damage if it is not secured against slipping or rolling away during mounting. Before mounting the hook fixation, secure vehicle to prevent it slipping or rolling away (handbrake, centering device).
 **Danger**	**Danger to life and property damage due to defective or incorrectly selected components of the hook fixation!** Vehicle breaks loose, killing or injuring people and causing material damage if components of hook fixation are faulty or used incorrectly. ➔ Make sure that the hook fixation is matched to the vehicle to be tested. (speed, weight, tractive forces). ➔ Check latch clamp: these must have a closing torque of at least 25Nm, see also p.49. ➔ Check rubber coating of clamping collet (KR): Must sit tightly and show no damage (cracks, notches). ➔ Check fixation rods and anchors: must not be deformed or damaged, must be dry, free of dirt and grease. ➔ Before every test run, visually check all screws that are marked with screw marking lacquer. ➔ Carry out maintenance of components in accordance with chapter: Maintenance and cleaning before each test run.

5.1.1 Positioning the first anchor (for QST/ZST/AST)

Danger	**Danger of injuries at anchor pivoted joint and at clamping collet (KR)!** Fingers could be crushed. Never reach into the pivoted joint or the joint of the clamping collet (KR) at the anchors!

1. Slide the first sliding anchor into the appropriate position on the T-rail or insert the first plug-in anchor into appropriate floor bushing.

   When doing so, observe notes on the first anchor position, depending on the fixation rod used.

2. Open clamping collet.

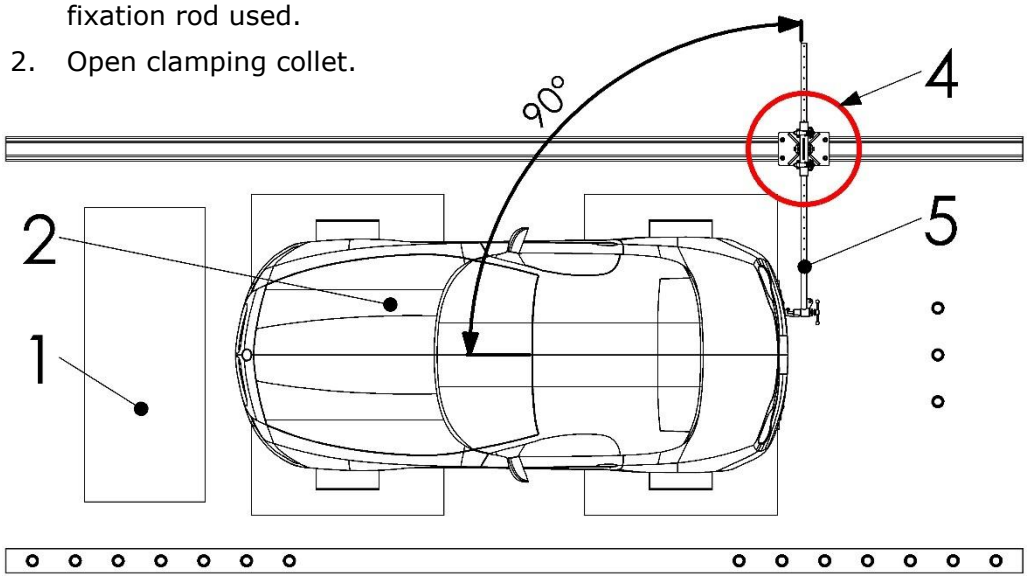


Figure 22: First anchor position for cross bar (QST)

[1] Driving wind blower
[2] Vehicle on test bench
[3] Angle 90° to the longitudinal axis of the vehicle
[4] Position for first anchor
[5] Cross bar (QST)

Note	**Conditions for the position of first anchor for QST:** • Cross bar (QST) runs *transversely* (90°) to the longitudinal axis of the vehicle. • Distance between anchor and towing eye: between 1m and 2m. • On both sides of the clamping collet (KR), the securing pin must fit into the hole of the cross bar (QST).
Note	Maximum allowed inclination of fixation rod (see Figure 24): 5° (9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

Anchor for tractive rod (ZST)

Note	**Conditions for the position of first anchor for ZST.** • Tractive rod (ZST) is *parallel* to the longitudinal axis of the vehicle. • Distance between anchor and towing eye: between 1m and 2m. • On both sides of the clamping collet (KR), the securing pin must fit into the hole of the tractive rod (ZST).

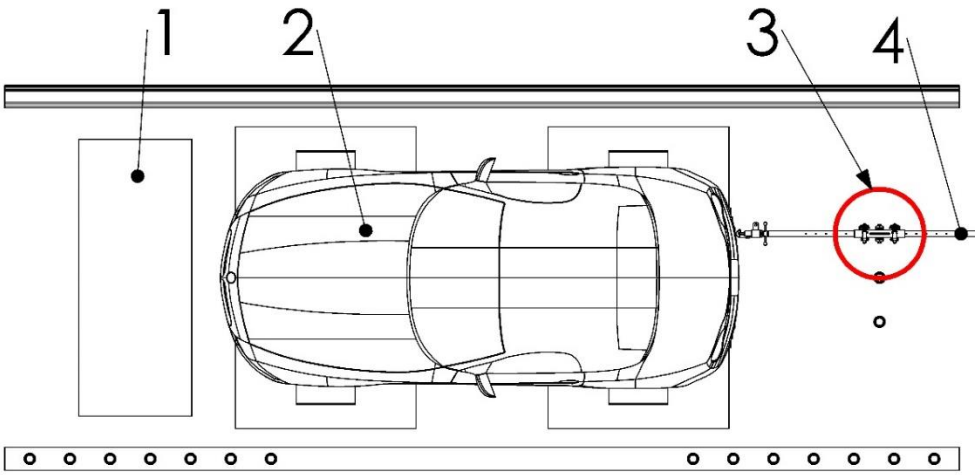


Figure 23: First anchor position for tractive rod (ZST)

[1] Driving wind blower
[2] Vehicle on test bench
[3] Position for first anchor
[4] Tractive rod (ZST)

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

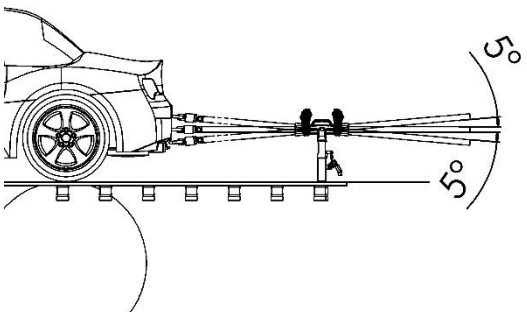


Figure 24: Maximum allowed inclination of the fixation rods

Anchor for trailer coupling rod (AST)

Note

Conditions for position of first anchor for AST:

- Rod for trailer coupling (AST) runs *parallel or diagonally (max. 45°)* to the longitudinal axis of the vehicle.
- Distance between anchor and trailer coupling: between 1m and 2m.
- On both sides of the clamping collet (KR), the securing pin must fit into the hole of the rod for trailer coupling (AST).

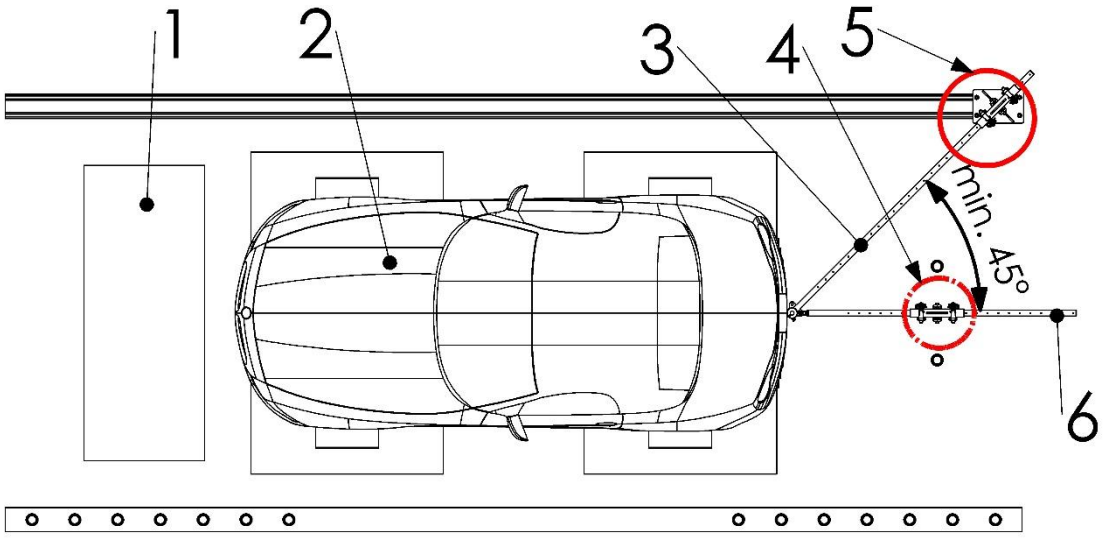


Figure 25: First anchor position for rod for trailer coupling (AST)

[1] Driving wind blower
[2] Vehicle on test bench
[3] Rod for trailer coupling (AST)
[4] Position for first anchor with parallel course
[5] Position for first anchor at angle 45°
[6] Angle max. 45°

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

5.1.2 Insert and hang up first rod

 **Note**	First eliminate moisture and dirt (dust, oil, grease) from the rubber coating or Fixation rod using a soft cloth and a pH-neutral degreasing agent (all-purpose cleaner) if necessary!

1. Insert fixation rod (QST/ZST/AST) into the open clamping collet (KR).
2. Cross bar (QST) or tractive rod (ZST): Attach the hook to the towing eye, do not close the hook locking pin yet.

   Rod for trailer coupling (AST): Place the docking unit on the trailer coupling. Insert the locking bolt until it engages to secure the docking unit on the trailer coupling.

5.1.3 Positioning the second anchor (for DST)

 **Danger**	**Danger of injuries at anchor pivoted joint and at clamping collet (KR)!** Fingers could be crushed. On the anchors, never reach into the pivoted joint or into the joint of the clamping collet!

1. Slide second sliding anchor into appropriate position on the T-rails or insert the second plug-in anchor into appropriate floor bushing.

   When doing so, observe notes on the second anchor position, depending on the fixation rod used.
2. Open clamping collet (KR).

Anchor for diagonal rod (DST) to cross bar (QST)

Note

Conditions for the position of second anchor for DST to QST:

- Diagonal rod (DST) runs *diagonally* (max. 45°) to the longitudinal axis of the vehicle.
- Distance between anchor and towing eye: between 1m and 2m.
- On both sides of the clamping collet (KR), the securing pin must fit into the hole of the diagonal rod (DST).

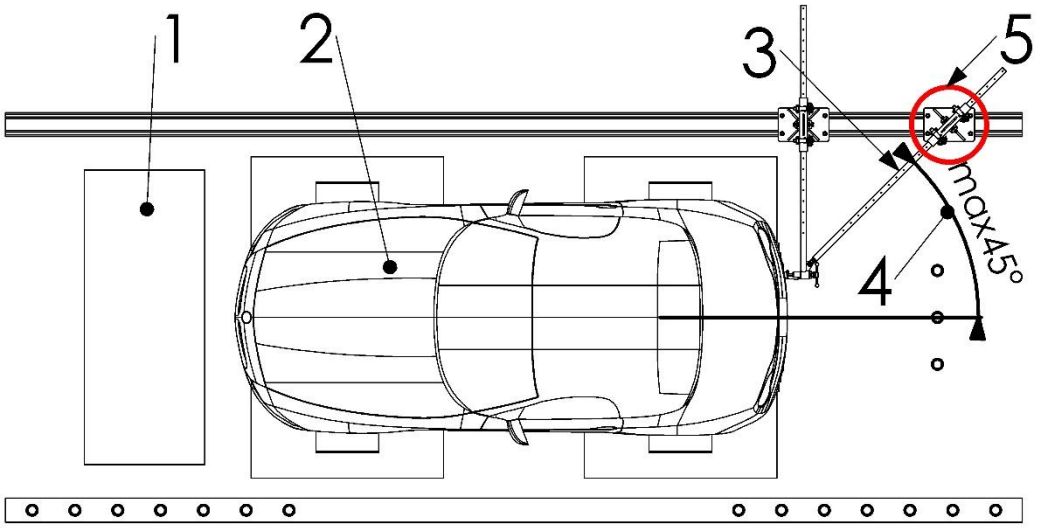


Figure: Second anchor position for diagonal rod (DST) to QST

[1] Driving wind blower
[2] Vehicle on test bench
[3] Diagonal rod (DST)
[4] Angle max. 45° to the longitudinal axis of the vehicle
[5] Position for second anchor

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

Anchor for diagonal rod (DST) to tractive rod (ZST)

Note	**Conditions for the position of second anchor for DST to ZST:** • Diagonal rod (DST) runs *transversely* (90°) to the longitudinal axis of the vehicle. • Distance between anchor and towing eye: between 1m and 2m. • On both sides of the clamping collet (KR), the securing pin must fit into the hole of the diagonal rod (DST).

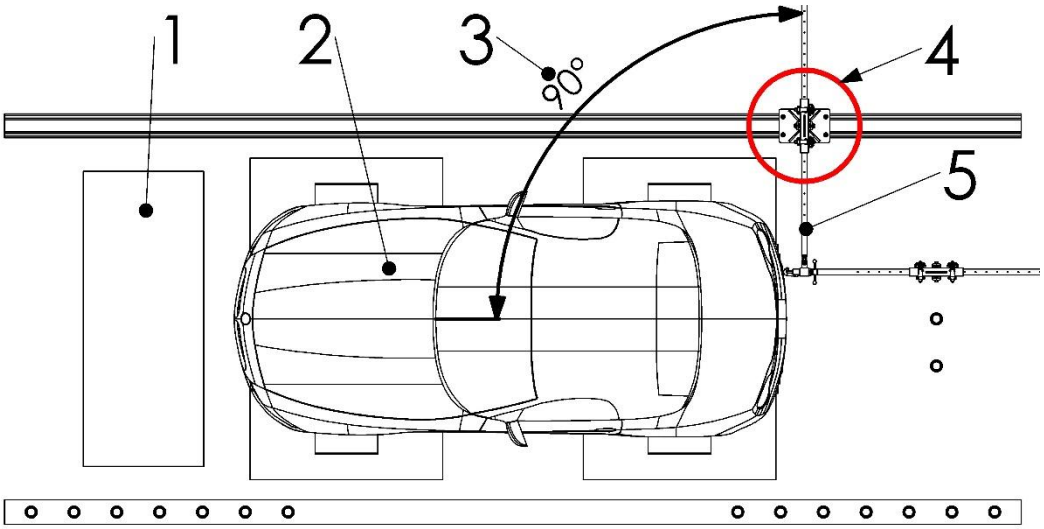


Figure: Second anchor position for diagonal rod (DST) to ZST

[1] Driving wind blower
[2] Vehicle on test bench
[3] Angle 90° to the longitudinal axis of the vehicle
[4] Position for second anchor
[5] Diagonal rod (DST)

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9 cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

Anchor for diagonal rod (DST) to trailer coupling rod (AST)

Note

Conditions for the position of second anchor for DST to AST:

- Diagonal rod (DST) runs *transversely* (90°) to the longitudinal axis of the vehicle.
- Distance between anchor and trailer coupling: between 1m and 2m.
- On both sides of the clamping collet (KR), the securing pin must fit into the hole of the diagonal rod (DST).

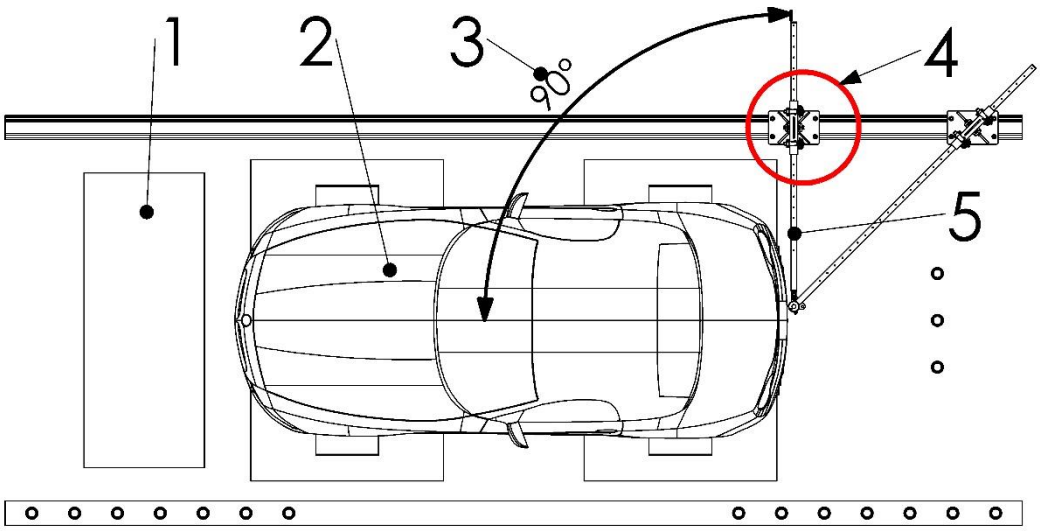


Figure 26: Second anchor position for diagonal rod (DST) to AST

[1] Driving wind blower
[2] Vehicle on test bench
[3] Angle 90° to the longitudinal axis of the vehicle
[4] Position for second anchor
[5] Diagonal rod (DST)

Note

Maximum allowed inclination of fixation rod (see Figure 24): 5°
(9cm height difference within 1m horizontal distance between anchor and vehicle).

Anchor installation height	Height towing eye or trailer coupling
300mm	210mm to 390mm
400mm	310mm to 490mm

For an accurate horizontal alignment of the fixation rod, use the height adjustable sliding anchor (SA05HM).

When using plug-in anchors: observe notes on page 23 about plug-in anchors!

5.1.4 Fasten second rod

Note	First eliminate moisture and dirt (dust, oil, grease) from the rubber coating or Fixation rod using a soft cloth and a pH-neutral degreasing agent (all-purpose cleaner) if necessary!

1. Insert diagonal rod (DST) into open clamping collet (KR).
2. Place the fork head on the docking unit on the first fixation rod.
3. Insert ball lock pin through the fork head and docking unit to connect both rods.
4. Cross bar (QST) or tractive rod (ZST): Close the hook locking pin by means of the lever as far as it can go to secure the hook in the towing eye.
   Attention: Do not "tighten" the hook closing pin with the towing eye, but only close it "without play".

Figure 27: Correctly mounted ball lock pin

5.1.5 Clamping both anchors

1. At both anchors: Close the clamping collet (KR) and lock both locking clamps.

   The closing torque must be at least 25Nm (see p.49).

2. At both anchors: On both sides insert a securing pin through drill-hole in the fixation rod directly beside clamping collet (KR). Securing pins must be as close as possible to clamping collet (KR).

3. At both anchors (plug-in anchors): Close locking lever to fix anchor in floor bushing by clamping.

   At both anchors (sliding anchor): Tighten all nuts of T-bolts at the base plate of the sliding anchor, as per manufacturer's instructions, to fix anchor onto the T-rails.

The first wheel is now completely fixed.
The vehicle must now be rolled in/aligned and only after that are the remaining wheels to be fixed. Exception: The vehicle has already been aligned with the help of a centering device, for example.

5.2 Rolling in/aligning the test vehicle

1. Release hand brake.
2. Roll in/align the test vehicle.
3. Reapply the handbrake so that the test vehicle is secured.
4. Open latch clamps on both anchors and close them again.
   This allows any tension that may have arisen when rolling in/aligning to be released.

 **Caution**	When running the vehicle on the roller care should also be taken to ensure that the vehicle does not tend to run to one side or the other after the run-in process is completed. The hook fixation allows steering movements of the vehicle. This prevents undesired tensioning of the vehicle steering during the course of the test but requires an explicit fixation of the steering on the part of the operator.

5.3 Fixing of the front axle

Fix the front axle in the same way.

 **Note**	Always secure the front and rear of the vehicle with a fixation triangle!

After mounting the two fixation triangles, the vehicle is fixed in its position and cannot be further aligned.

 **Attention**	**Material damage at hook fixation and vehicle!** Rods can bend and become unusable when fixed vehicle is moved. The towing eye, trailer coupling or vehicle can be damaged in the process. ➔ Before every movement of the fixed vehicle (e.g. raising or lowering of the roller) loosen the latch clamps of all anchors. ➔ After moving the vehicle, re-lock the latch clamps of all anchors.

5.4 Running the driving cycle

Caution

Material damage at hook fixation and vehicle!

The towing eyes bend or are torn out if the acceleration or the braking deceleration or the tractive force exceeds the permitted maximum (see (EU) Regulation 1005/2010).

Anchors and rods bend and break when acceleration or braking deceleration or the tractive force exceeds the permitted maximum (see chapter "Technical information").

- ➔ Always ensure that the hook fixation is used exclusively within permissible values!
- ➔ Before each drive cycle, check the maximum acceleration and braking deceleration or tractive force expected to occur in the drive cycle description.
- ➔ If necessary, secure the vehicle additionally or fix the vehicle with the wheel hub fixation instead of the hook fixation.

6. Dismantling the hook fixation

6.1 Preparation for dismantling

Danger

Risk of injury due to unsecured vehicle during disassembly!

In case of single rollers, the vehicle could roll off the crest of the roll, injuring people and causing material damage if it is not secured against slipping or rolling away during dismantling.

Before removing the hook fixation, secure the vehicle against slipping or rolling away (centering device, handbrake).

Disassembly of hook fixation in reverse order of mounting.

6.2 Open both anchors

Danger

Danger of injuries at clamping collet (KR) after test run!

Fingers could be crushed during opening of latch clamp if rod is under mechanical tension after test run and jumps off.

➔ Use appropriate personal protective equipment (gloves).
➔ Open latch clamp carefully.
➔ Hold fixation rod tight so it cannot jump off.

1. At both anchors (plug-in anchors): Open locking lever to release anchor from the floor bushing.
2. At both anchors (sliding anchor): Loosen all nuts of T-bolts at the base plate of sliding anchor to loosen anchor on T-rails.
3. At both anchors: Remove securing pin from the fixation rod.

Danger

Danger of injuries at clamping collet (KR)!

Fingers could be crushed.

➔ Never reach into the joint of the clamping collet (KR) at the anchors!

4. At both anchors: Loosen both locking clamps and open the clamping collet (KR).

6.3 Dismantling of the diagonal rod (DST)

1. Cross bar (QST) or tractive rod (ZST): Open the hook locking pin by means of the lever only until the hook is loosened in the towing eye.
2. Withdraw ball lock pin from docking unit, loosen the diagonal rod (DST).
3. Remove the diagonal rod (DST) and store it in accordance with instructions.

 **Danger**	**Danger of injuries at pivoted joint!** Fingers could be crushed. Never reach into the pivoted joint at the anchors!

4. Close clamping collet (KR) again so that rubber coating is not damaged during transportation or storage.
5. Remove anchor and store it in accordance with instructions.

6.4 dismounting of the cross bar/tractive rod (QST/ZST) or Disassembly of the rod for trailer coupling (AST)

1. Cross bar (QST) or tractive rod (ZST): Fully unscrew the hook locking pin using the lever until the hook can be released from the towing eye.
2. Rod for trailer coupling (AST): Loosen the locking bolt and pull it out so that the docking unit can be lifted off the trailer coupling.
3. Remove the fixation rod and store it according to the instructions.

 **Danger**	**Danger of injuries at pivoted joint!** Fingers could be crushed. Never reach into the pivoted joint at the anchors!

4. Close clamping collet (KR) again so that rubber coating is not damaged during transportation or storage.
5. Remove anchor and store it in accordance with instructions.

7. Maintenance and cleaning

7.1 General maintenance notes

Perform the inspections and, if necessary, the maintenance work described here on all components of the hook fixation, regularly before each mounting.

In this chapter are described only inspection, maintenance and cleaning works, that can be performed individually by the operator of the test bench. Further maintenance jobs must be carried out by specially trained service personnel or by the manufacturer.

Always keep all components of the hook fixation clean and dry and free of grease for mounting and during storage. Always use fixation rods and rubber-coated clamping collets in clean, dry and grease-free condition. Check the height adjustment of the anchor regularly for proper operation; clean & re-grease if necessary.

Screw and nut connections secured with screw marking lacquer must not be adjusted or re-tightened by the operator.

If the screw marking lacquer is damaged return the whole anchor to the manufacturer for checking and re-adjustment.

7.2 Maintenance of anchors

7.2.1 Plug-in anchor

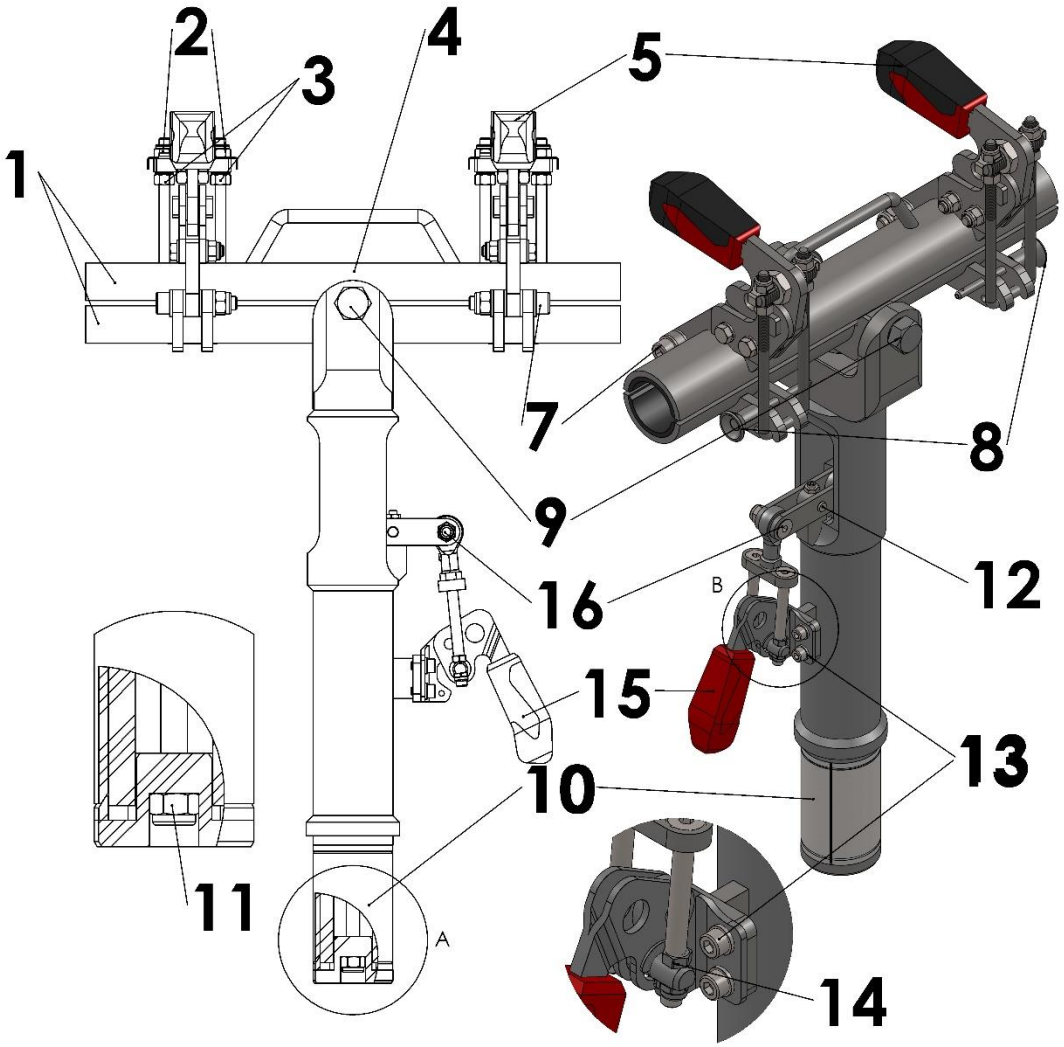


Figure 28: Plug-in anchor maintenance

[1] Clamping collet (KR)
[2] Stop nuts
[3] Nuts
[4] Warning sticker "danger of injuries"
[5] Latch clamp handle
[6] Fastening screws (4×)
[7] Joint screw
[8] Securing pin
[9] Shoulder screw on pivoted joint
[10] Clamping sleeve for floor bushing
[11] Stop nuts for clamping sleeve
[12] Cylindrical pin and screw
[13] Fastening screws (4×)
[14] Nuts and stop nuts (2 pcs.)
[15] Locking lever
[16] Screw for locking lever

Note	The following screw connections are marked with screw marking lacquer: [12], [13], [14] and [16]. Before mounting always check screw marking lacquer for damage. Do not turn the screws or move the nuts out of position!

7.2.2 Sliding anchor

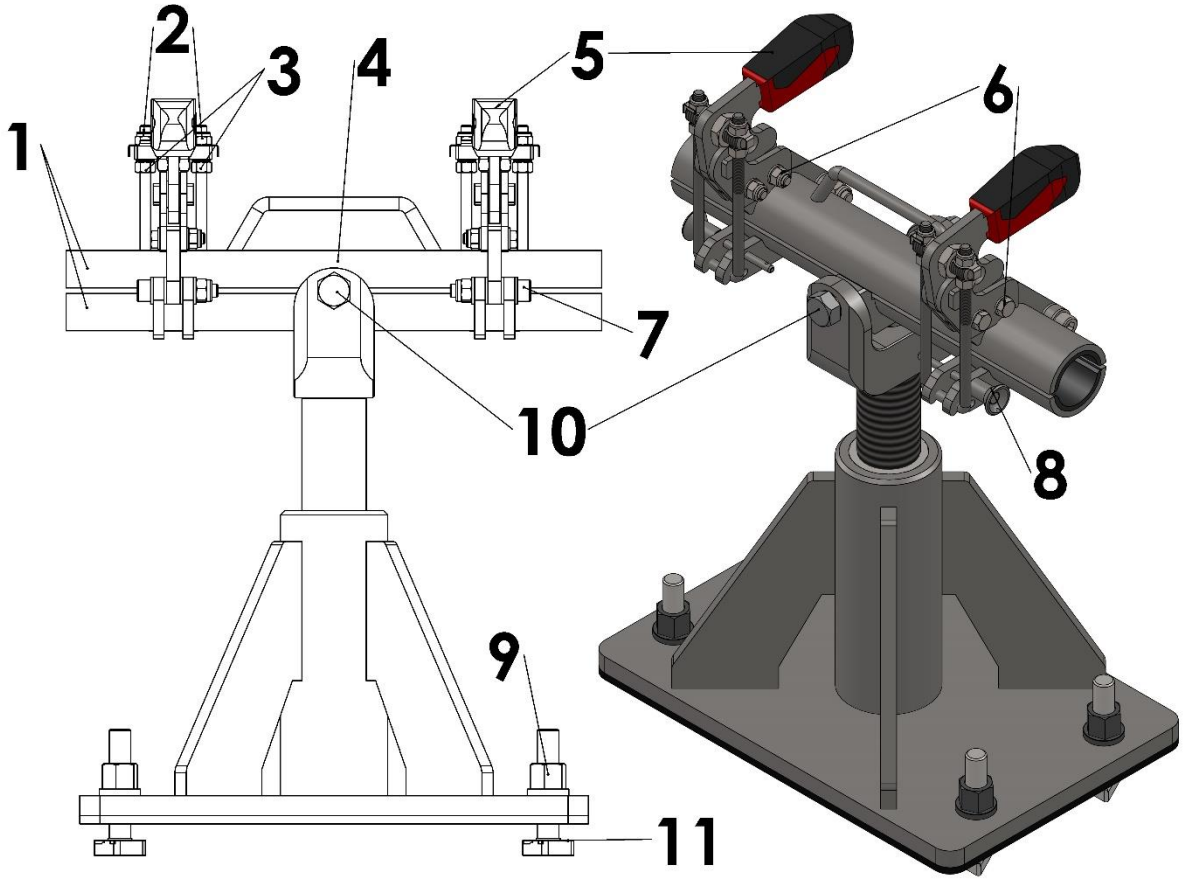


Figure 29: Sliding anchor maintenance

[1] Clamping collet (KR)
[2] Stop nuts
[3] Nuts
[4] Warning sticker "danger of injuries"
[5] Latch clamp handle
[6] Fastening screws (4×)
[7] Joint screw
[8] Securing pin
[9] Nuts for T-bolts (not in the scope of delivery)
[10] Shoulder screw on pivoted joint
[11] t-bolt for T-rail (not within the scope of delivery)

7.2.3 Maintenance of individual anchor components

The majority of the components of the plug-in anchors and sliding anchors should be serviced in the same manner. This is described hereafter.

7.2.3.1 Clamping force of the latch clamps

Note	The latch clamps of the anchors must have a closing torque of at least 25Nm to ensure the correct clamping force. This is adjusted via the latch fasteners using nuts and stop nuts. Nuts and stop nuts are secured with screw marking lacquer. Required for adjusting the closing torque: Special adjusting tool (included in the scope of delivery), torque wrench, size 19 attachment. If the operator cannot adjust the clamping force on their own, return the anchor to the manufacturer for maintenance.

1. Set the torque wrench to 25Nm and fit with 19mm.
2. Open latch clamp.
3. Insert adjusting tool.
4. Apply torque wrench and check closing torque. Make sure, a fixation rod is properly positioned inside the clamping collet during this adjustment process!
5. Adjust nuts and stop nuts until the closing torque is at least 25Nm.

   → Compare Figure 30
6. Replace tab washers and stop nuts with new ones if their functionality can no longer be guaranteed (if they are worn out).

Note	**Ensure that when adjusting a latch clamp that the other is open. This ensures that each latch clamp transfers the correct clamping force.**

Figure 30: Adjusting tool for setting the clamping force

7.2.3.2 Screw and nut connections with screw marking lacquer

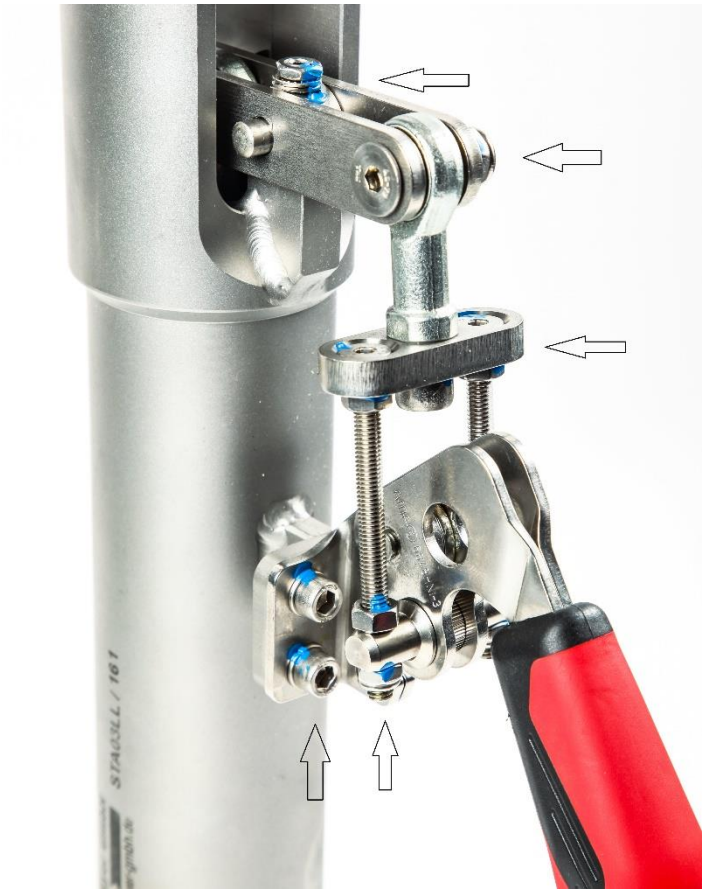


Figure 31: Screw marking lacquer at locking lever

7.2.3.3 Screw marking lacquer

Inspection (defect described)	Maintenance work
Check if screw marking lacquer is damaged at one or more nuts or the marking is no longer aligned (also see Figure 31).	Replace the whole anchor.

7.2.3.4 Clamping collet (KR)

Inspection (defect described)	Maintenance work
Check if rubber coating is damaged.	Replace the clamping collet or the whole anchor.
Check if rubber coating is dirty, greasy or moist.	Clean and dry rubber coating. Do not use steam jet cleaning machines or aggressive agents, only water and pH-neutral all-purpose cleaner.
Regularly check rubber hardness	The rubber coating must have a Shore hardness of 62–73. If the rubber hardness becomes too high over time, the clamping force adjustment loses precision and there is a risk of functional failure. The rubber coating must then be renewed by the manufacturer.
Check for damage.	Replace the clamping collet or the whole anchor.
Check if warning sticker “danger of injuries” is damaged or missing.	Replace warning sticker “danger of injuries”.

7.2.3.5 Securing pins

Inspection (defect described)	Maintenance work
Check if securing pins are missing or damaged.	Replace securing pins.

7.2.3.6 Cylinder pin with securing ring DIN 471 at pivoted joint

Inspection (defect described)	Maintenance work
Check if cylinder pin is missing or incorrectly seated.	Replace the whole anchor.

7.2.3.7 Clamping sleeve for floor bushing

Inspection (defect described)	Maintenance work
Check if clamping sleeve is firmly seated despite locking lever being released.	Replace the whole anchor.

Check if screw marking lacquer on stop nut is damaged.	Replace the whole anchor.

7.2.3.8 Locking lever

Inspection (defect described)	**Maintenance work**
Check if locking lever is hard to move or does not snap into locking position.	Replace the locking lever, clamping collet, or the whole anchor.
Check if rubber-coated grip plate is missing or loose.	Replace grip plate.

7.2.3.9 T-bolts and nuts for T-rails (not included in the scope of delivery)

Inspection (defect described)	**Maintenance work**
Check if T-bolts incl. nuts are missing or damaged.	Replace T-bolts incl. nuts.

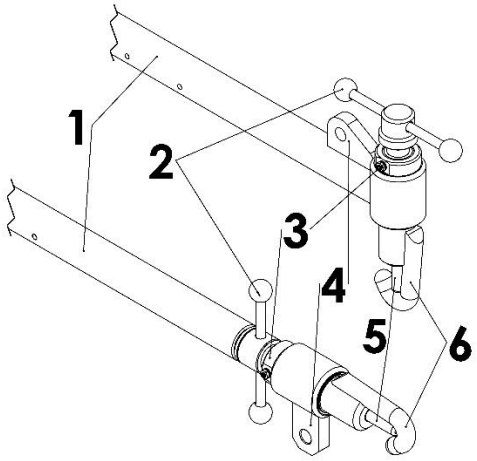
7.2.3.10 Height adjustment sliding anchor

Inspection (defect described)	**Maintenance work**
Check if height adjustment is damaged, stiff or no longer adjustable.	If the height adjustment is difficult to move, clean and re-grease the thread. To do this, unscrew the height adjustment to max. height, clean, re-grease (e.g. Mobilith SHC 100 or comparable grease), then screw it all the way in (min. height) and then set to working height again. If necessary, repeat the procedure until smooth running again. If the height adjustment is defective or stuck, replace the anchor and send the defective one to the manufacturer for repair of the height adjustment.

7.3 Maintenance of fixation rods

Note	**Detecting deformed fixation rods:** • Place the fixation rod on a flat surface, e.g. calibration table/surface plate. • Roll fixation rod on the surface, rod head projects beyond table edge. • Look out for any differences from the longitudinal axis (deformation). • If largest deviation from the longitudinal axis is more than 10mm, then the fixation rod is deformed beyond its tolerance (danger of buckling). **Do not use deformed fixation rods for safety reasons!**

7.3.1 Cross bar (QST) or tractive rod (ZST)

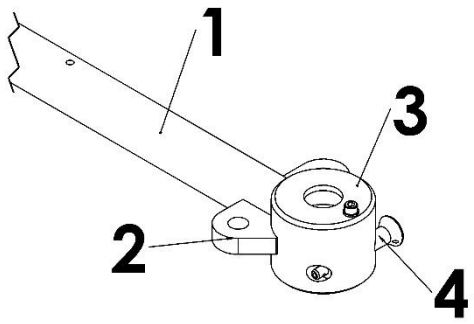


[1] Cross bar (QST, top) or tractive rod (ZST, bottom)
[2] Lever for hook locking pin
[3] Lock nut with screw marking lacquer
[4] Docking unit for fork head
[5] Hook locking pin
[6] Hook

Figure 32: Maintenance cross bar (QST) or tractive rod (ZST)

Inspection (defect described)	Maintenance work
Check if rod is dirty, greasy or moist.	Clean and dry rod. Do not use steam jet cleaning machines or aggressive agents, only water and all-purpose cleaner.
Check if rod is damaged or deformed by more than 10mm.	Replace the whole rod.
Check if hook is bent.	Replace the whole rod.
Check whether hook locking pin is bent.	Replace the whole rod.
Check whether lever for hook locking pin is damaged or bent.	Replace the whole rod.
Check whether the fork head mounting unit is damaged or bent.	Replace the whole rod.
Check whether screw marking lacquer on lock nut is damaged.	Replace the whole rod.

7.3.2 Rod for trailer coupling (AST)

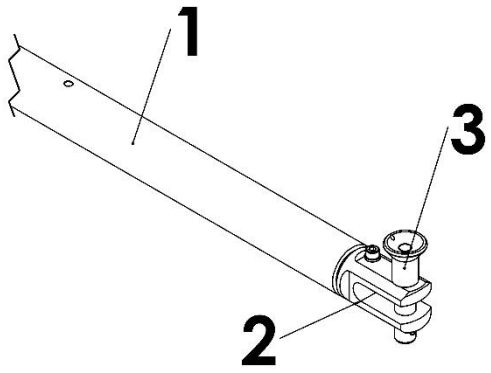


[1] Rod for trailer coupling (AST)
[2] Docking unit for fork head
[3] Mounting unit for trailer coupling
[4] Locking bolt

Figure 33: Maintenance of the rod for trailer coupling (AST)

Inspection (defect described)	Maintenance work
Check if rod is dirty, greasy or moist.	Clean and dry rod. Do not use steam jet cleaning machines or aggressive agents, only water and pH-neutral all-purpose cleaner.
eck if rod is damaged or deformed by re than 10mm.	Replace the whole rod.
Check whether the fork head mounting unit is damaged or bent.	Replace the whole rod.
Check whether the mounting unit for the trailer coupling is damaged or bent.	Replace the whole rod.
Check whether the locking bolt is inoperative or missing.	Replace locking bolt.

7.3.3 Diagonal rod (DST)



[1] Diagonal rod (DST)
[2] Fork head
[3] Ball lock pin

Figure 34: Maintenance of diagonal rod (DST)

Inspection (defect described)	Maintenance work
Check if rod is dirty, greasy or moist.	Clean and dry rod. Do not use steam jet cleaning machines or aggressive agents, only water and pH-neutral all-purpose cleaner.
Check if rod is damaged or deformed by more than 10mm.	Replace the whole rod.
Check if fork head is damaged or bent.	Replace the whole rod.
Check if ball lock pin is missing or bent.	Replace ball lock pin.

7.4 Cleaning

Always keep the hook fixation clean and dry. This guarantees operational safety and fault-free long-term functional capability of the hook fixation as well as of the test bench.

Note	Wipe the hook fixation periodically with a soft, lint-free cleaning cloth. Only use water and all-purpose cleaner. After cleaning, wipe off remaining moisture thoroughly or allow to dry. *Do not* use steam jet cleaning machines, high-pressure cleaning equipment or chemically aggressive agents to clean the components of the hook fixation!

8. Transportation and storage

Danger

Danger of injuries at anchor pivoted joint and at clamping collet (KR)!

Fingers could be crushed.

➔ Never reach into the pivoted joint or the joint of the clamping collet (KR) at the anchors!

Caution

Material damage caused by untrained personnel!

The hook fixation, the body of the vehicle, the test bench or equipment of the test cell will be damaged if an accident occurs due to untrained personnel.

➔ Selection, mounting, dismounting, maintenance and cleaning, transportation and storage of the hook fixation requires expert knowledge and must be performed only by trained personnel.

➔ Transportation only with suitable transport equipment.

Caution

Risk of injury and material damage due to falling rods!

People can suffer head or limb injuries from falling rods. Material damage can occur.

➔ Secure the rods to prevent them from falling if stored upright.

Note

Avoid impacts and shocks during transportation and storage!

In particular, the rubber coating of the clamping collet (KR) must not be damaged! Therefore, only transport the anchors with the clamping collet (KR) closed.

Store the hook fixation in weather-protected, clean and dry rooms! Ensure low fluctuation of temperature because otherwise the components are prone to accelerated aging.

The packaging is only intended for shipping and not for storage!

9. Replacement parts and accessories

Replacement part/accessory part	Order number
Tractive rod	300 007 ZST03
Cross bar	300 008 QST03
Rod for trailer coupling	300 009 AST03
Diagonal-rod incl. ball lock pin	300 006 DST03
User manual for hook fixation	SBHF17-82
Wall panel set hook fixation	SBHF17-83
Circular spirit level 5°	700-DL
Height adjustable sliding anchor, lifting height 360–520mm	300 019 SA05HL
Height adjustable sliding anchor with quick clamps, Lifting height 360–520mm	300 019 SA05HL+S
Height adjustable standard sliding anchor, Lifting height 320–480mm	300 039 SA05HM
Height adjustable standard sliding anchor with quick clamps, lifting height 320–480mm	300 039 SA05HM+S
Fork wrench for height-adjustable sliding anchor	SBHF17-92
Sliding anchor, fixed height 300mm	300 003 SA03
Sliding anchor with quick clamps, fixed height 300mm	300 003 SA03+S
Sliding anchor long, fixed height 400mm	300 018 SA03L
Sliding anchor with quick clamps, fixed height 400mm	300 018 SA03L+S
Sliding anchor extra long, fixed height 500mm	300 041 SA03LL
Plug-in anchor, fixed height 320mm with locking pedal	300 000 STA03
Plug-in anchor long, fixed height 400mm	300 002 STA03L
Plug-in anchor extra long, fixed height 500mm	300 025 STA03LL
Transport trolley for sliding/plug-in anchors	700 120
T-socket wrench SW 24mm	700-T-S
Floor bushing for plug-in anchor	300 015 BB03
Hammer head bolts + High nuts	300 050 HS + HM
Hammer head bolts + High nuts for sliding anchor console	700-SAK-HS+HM
Sliding anchor console	700-SAK-SA
Rod holder for 2 rods	700 102
Rod holder for 3 rods	700 103
Rod holder for 4 rods	700 110
Rod holder for 5 rods	700 104
U-bolt tensioner on clamping collet (KR12)	SBHF17-04
Locking lever on the plug-in anchor	SBHF17-05
Handle shell replacement for U-bolt tensioner on clamping collet (KR12)	SBHF17-06

Replacement part/accessory part	Order number
Handle shell replacement for locking lever	SBHF17-07
U-bolt replacement on the U-bolt tensioner	SBHF17-08
Retaining rope with fastening ring and screw-on eyelet	SBHF17-15
Retaining rope with 2 key rings	SBHF17-16
Securing pin	SBHF17-18
Locking bolt	SBHF17-19
Ball lock pin	SBHF17-20
Cylindrical pin for clamping collet KR12	SBHF17-26
Cylindrical pin for base body of plug-in anchors	SBHF17-27
Lever for hook locking pin to QST03/ZST03	SBHF17-30
Plastic ball head, black	SBHF17-31
Hook locking pin	SBHF17-33
Hook base body with curved hook	SBHF17-34
Hook fastener QST03	SBHF17-35
Fixation bearing on hook (ZST03) with ear	SBHF17-36
Hook fastener ZST03	SBHF17-37
Tube end caps for vehicle fixation rod	SBHF17-38
Clamping collet KR03 or KR12 (with all components)	SBHF17-46
Clamping collet KR03 or KR12 without mounting parts	SBHF17-48
Renewal of rubber coating on clamping collet KR03/KR12	SBHF17-50
Warning sticker “danger of injuries”	SBHF17-02
Threaded spindle M48	SBHF17-52
Fork head	SBHF17-53
Stop plate	SBHF17-58
Hammerhead screw for quick release M12	SBHF17-65
Quick clamps right (red)	SBHF17-69
Quick clamps left (blue)	SBHF17-70
Locking pedal for plug-in anchor	SBHF17-71
Torque wrench 25Nm	SBHF17-91
Adjustment tool for clamping force 25Nm	SBHF17-96

Danger

Safety warning!

For safety reasons, the vehicle fixation devices from S. Bleyer GmbH may only be used as a complete unit.

Mixing with components from other manufacturers is not permitted.

10. Technical information

10.1 Vehicle and testing parameters

Permissible vehicle mass	max. 2,500kg
Permissible acceleration Permissible braking deceleration	max. 4.0m/s² (*)
Permissible tractive force	max. 10,000N
Kick-down	See Permissible acceleration!
Full braking	Just in case of an emergency! **Contact S. Bleyer GmbH afterwards!**
Anchor height	300mm to 500mm
Height of towing eye or trailer coupling via test bench floor	210mm to 590mm
Distance between vehicle and plug-in anchor or sliding anchor	min. 1.0m max. 2.0m
Towing eye	Must resist tractive force! See VO(EU) 1005/2010.
Temperature range	-40°C to +60°C

(*) corresponds, for example, to the maximum load in the US06 driving cycle

10.2 Fixation rods

10.2.1 Cross bar (QST03)

Length of rod without hook	2,000mm
Length of hook (fixing point to beginning of rod)	35mm
Mass	Approx. 11kg

10.2.2 Tractive rod (ZST03)

Length of rod without hook	2,500mm
Length of hook (fixing point to beginning of rod)	233mm
Mass	Approx. 13kg

10.2.3 Rod for trailer coupling (AST03)

Length of rod without mounting unit	2,500mm
Length of mounting unit (fixing point to beginning of rod)	34mm
Mass	Approx. 11kg

10.2.4 Diagonal rod (DST03)

Length of rod without fork head	2,500mm
Length fork head (fixing point to beginning of rod)	79mm
Mass	Approx. 10kg

10.3 Anchor

Installation Height = distance between middle of the clamping collet and the floor of the test bench

Length of clamping collet (KR) (same for all anchors)	400mm

10.3.1 Plug-in anchor

Plug-in anchor with locking pedal (STA18)	
Overall height with locking pedal	320mm
Mass	Approx. 15kg

Long plug-in anchor (STA03L)	
Installation Height	400mm
Mass	Approx. 16kg

Extra long plug-in anchor (STA03LL)	
Installation Height	500mm
Mass	Approx. 17kg

10.3.2 Sliding anchor

Dimensions of base plate	250mm × 380mm or per customer's wishes
Axis dimension of holes for T-rails	120mm or per customer's wishes
Diameter of drill holes for T-rails	for M16 hammer-head screw or as desired

Sliding anchor (SA03)	
Installation Height	300mm
Mass	Approx. 18kg

Long sliding anchor (SA03L)	
Installation Height	400mm
Mass	Approx. 20kg

Extra long sliding anchor (SA03LL)	
Installation Height	500mm
Mass	Approx. 22kg

Height adjustable standard sliding anchor (SA05HM)	
Installation Height	320–480mm
Height difference per rotation	5mm
Mass	Approx. 31kg

Height adjustable sliding anchor (SA05HL)	
Installation Height	360–520mm
Height difference per rotation	5mm
Mass	Approx. 32kg

10.3.3 Sliding anchor console (700-SAK-SA)

Installation Height	100–200mm
Mass	15kg

11. Declaration of conformity

S. Bleyer GmbH

www.s-bleyer-gmbh.de

Declaration of Conformity

according to the European Machine Directive 2006/42/EC, Annex II A

We,

S. Bleyer GmbH
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Tel.: +49 (0)7181 9327-0
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herewith declare

that the equipment manufactured by us

- ***Hook Fixation / Wheel Hub Fixation***
- *Function: Vehicle fixation on Chassis Dynamometers*

complies with the requirements of the EC Machinery Directive 2006/42/EC.

Note: the equipment will be delivered with a user manual that contains important instructions for the intended use, possible limitations of use, assembly, mounting, operation and maintenance as well as important safety instructions that must strictly be followed!

Name of person or organization which is authorized at **S. Bleyer GmbH** to compile and make available the technical file:

- Stefan Bleyer / Managing Director

Schorndorf, 27.04.17
Place, Date

Signature

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Bitte beachten Sie unsere rückseitigen allgemeinen Geschäftsbedingungen