

Arriving safely

Installation and operating instructions Stabilising coupling head

Model: KS25 / KS30 / KS35

KNOTT)))

Installation and operating instructions for the Stabilising coupling are available to download from our site www.knott.de in multiple languages!

1.Proof of origin:

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Read operating instructions and act accordingly.
Keep the operating instructions for general use.
Observe safety precautions and warnings.



“Caution” indicates work which must be complied with exactly in order to prevent persons being injured or components being damaged.



Special information on improved handling during operation, checking, adjustment and care work.




Safety-relevant component. We recommend installation by a specialist workshop!

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2. Relationship to other equipment:

The B50-X stabilising coupling head is designed to be used on overrun-braked trailers with towing vehicles using class a coupling balls (ball with a 50 mm diameter), meeting the requirements of ISO1103 and ECE R55 respectively. The spring-loaded friction element results in damping of any self-induced oscillating and pitching movements to the trailer, which results in a higher critical speed of the vehicle-trailer combination whilst also meeting the requirements of ISO 11555:1.

 Accordingly, these stabilising coupling heads have been approved for vehicle-trailer use with a maximum permissible speed of 100km/h.

3. Application scope:

The permissible load values of the coupling head – see type plate or technical data – must be at least equal to those of the trailer.

The stabilising coupling heads may only be used with class A coupling balls (ball with a diameter of 50 mm according to ISO 1103) of the ECE R55.

The coupling head can be pivoted $\pm 25^\circ$ laterally and $\pm 20^\circ$ about the transverse axis on the ball.

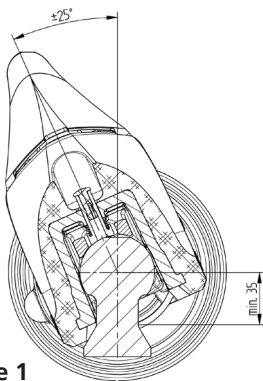


Figure 1

The stabilising coupling heads can only be used with coupling balls according to DIN 74058 / ISO 1103, if the ball neck is free of attachments over the range of 35 mm.
(35 mm instead of 32 mm in DIN 74058 / ISO 1103)

Figure 1: Coupling ball on the towing vehicle – minimum clearance of ball shaft

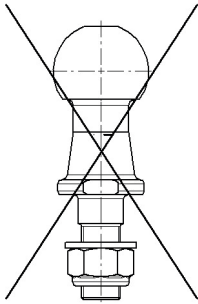


Figure 2

The stabilising coupling heads can only be used on ball pins with screw fastening if these are equipped with an **ADDITIONAL** form-fit locking device against twisting.



While driving, stabilisation must be activated.

The operating lever must move freely and must not collide with the vehicle or any other attachments, even with fully pushed-in drawbar and maximum lateral rotation



We recommend that you consult the manufacturer beforehand if you are planning to use a hitch device with ball or ball neck made of aluminium.

4. Technical data:

	KS25	KS30	KS35
max. gross vehicle weight of the trailer	2500kg	3000 kg	3500 kg
max. permissible DC value of the combination	27 kN	27kN	31 kN
max. permissible vertical load	250kg *	300 kg *	350kg
Possible drawbar connection sizes for overrun device	Ø50/45/40/35		Ø60



* When using M12/M12 bolts to connect the coupling head to the drawbar of the overrun device, the maximum permitted static vertical load is $S = 200 \text{ kg}$

5. Recommendation:

The optimum damping effect with new friction elements is only achieved after a certain running-in period.

If the friction elements become worn out or come into contact with oil or grease, they must be replaced in order to restore the full operational effectiveness of the damping and thus the stabilisation of the trailer.

To further increase driving safety we recommend that you upgrade the trailer with our electronic stabilisation system (ETS plus). When instability is detected in the trailer, the ETS plus brings it back on track through targeted brake intervention. In addition, we also recommend using / retrofitting wheel brakes with automatic adjustment. This is the only way to ensure that the full braking action is always available allowing an electronic stabilisation system to effectively intervene in an emergency.

6. Safe instructions:



CAUTION – Risk of crushing!

Do not reach into the open stabilising coupling head.

The spring-loaded closing mechanism could trigger, resulting in injury to your fingers.

Do not be tempted to take any safety risks due to the increased safety offered by the KS25, KS30 or KS35. Always adapt your driving speed to the weather, road surface and traffic conditions.

While driving, stabilisation must be activated!

The achievable stabilising effect on the vehicle-trailer combination depends to a great extent upon the effectiveness of the friction linings in the coupling head as well as the condition of the vehicle towball.

Therefore, check the wear level of the friction elements regularly.

The friction elements must be completely free of oil and grease.

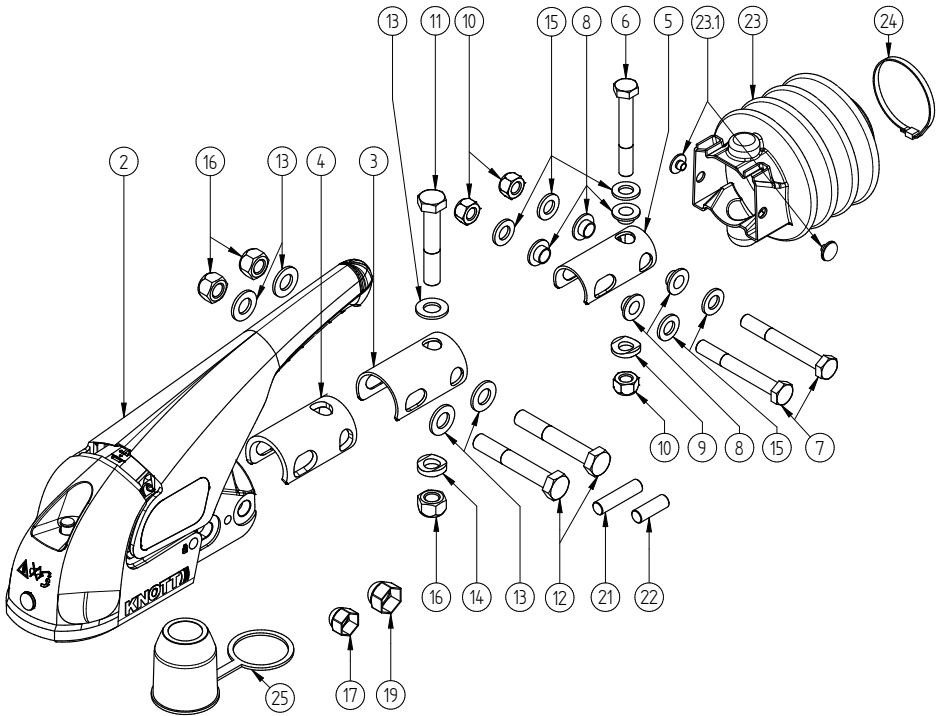
The driving stability of the trailer largely also depends on the load, the tyre pressure and the condition of the tyres.

The physically defined limits are not invalidated by the KS25, KS30 or KS35.

Trailers/caravans with a high centre of gravity can topple over before a notable oscillation arises. This cannot be prevented by the KS25, KS30 or KS35.

No improper modifications may be carried out on the brake system.

KS25 / KS30



In order to be able to depict all screwing variants, some parts are shown more often than they are included in the scope of delivery. Nevertheless, the coupling head can be fully screwed together in any of the variants shown.

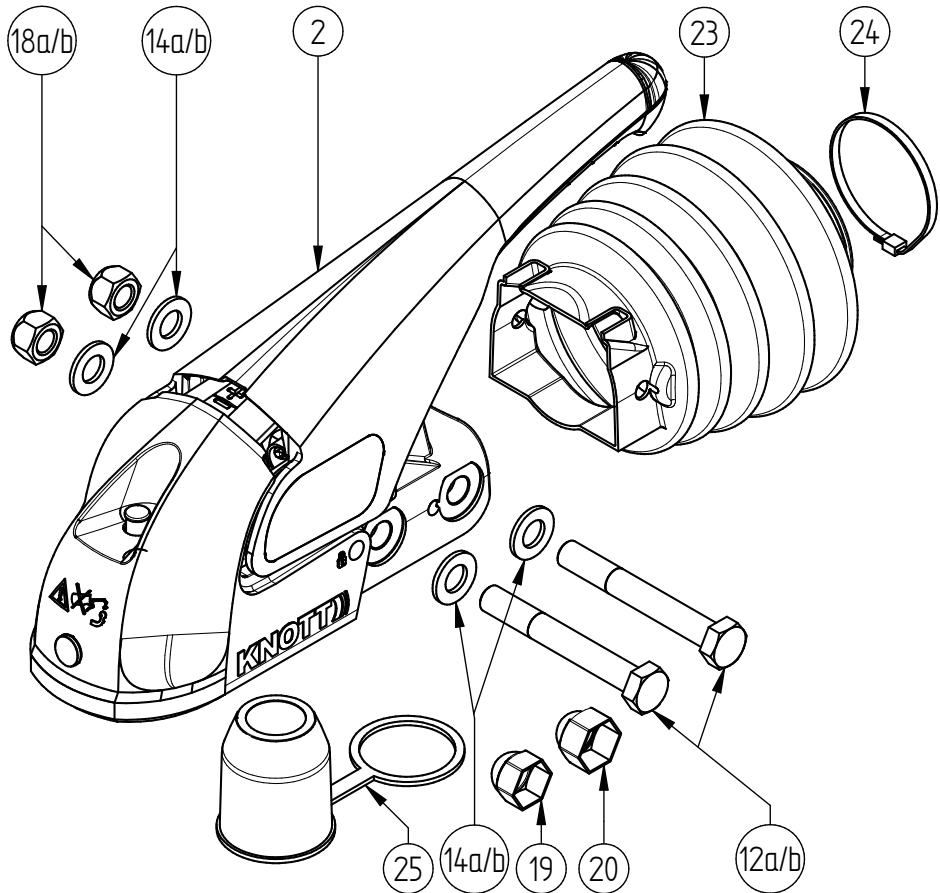
7. Scope of delivery:

7.1 KNOTT KS25 or KS30

Item.	Quantity / Variant			Designation
	M12/12	M14/14 M14/12	universal	
1	1	1	1	Operating and installation instructions
2	1	1	1	Stabilising coupling head
3	1	-	1	Adapter plate Ø50/45
4	1	-	1	Adapter plate Ø50/40
5	1	-	1	Adapter plate Ø40/35
6	1	1	1	Hexagonal screw M12-10.9
7	2	-	2	Hexagonal screw M12-10.9
8	-	1	4	Collar bushing
9	1	1	1	Saddle washer dia.13
10	2	1	2	Lock nut M12-10
11	-	1	1	Hexagonal screw M14-10.9
12	-	2	2	Hexagonal screw M14-10.9
13	-	4	4	Washer A15
14	-	1	1	Saddle washer dia.15
15	4	1	4	Washer A13
16	-	2	2	Lock nut M14-10
17	2	1	2	Protection cap M12
19	-	2	2	Protection cap M14
21	-	-	1	Bolt dia.12x49*
22	-	-	1	Bolt dia.12x34*
23	1	1	1	Bellows
23.1	2	2	2	Closing plug
24	1	1	1	Cable tape
25	1	1	1	Ball cap

* Assembly aid for other makes

KS35



When fitting the coupling head on the overrun device or drawbar, the supplied mounting material or mounting material in accordance with the installation and operating instructions for the coupling head must be used. It is essential that the information regarding dimensions, material quality and surface treatment is adhered to, as well as the specified tightening torques.

7.2 KNOTT KS35

Item.	Stück / Variant		Designation
	M14/14	M16/M16	
1	1	1	Operating and installation instructions
2	1	1	Stabilising coupling head
12a)	2	-	Sechskantschraube M14x105-10.9
12b)	-	2	Sechskantschraube M16x110-8.8
14a)	4	-	Washer A15
14b)	-	4	Washer A17
18a)	2	-	Hexagonal screw M14-10
18b)	-	2	Hexagonal screw M16-8
19	2	-	Protection cap M14
20	-	2	Protection cap M16
23	1	1	Bellows
24	1	1	Cable tape
25	1	1	Ball cap

8. Installation:

Coupling heads are safety-critical components!

Therefore, the following points must be observed during installation:

Before the start of installation, the parking brake must be engaged on the trailer and the wheels must be secured with wheel chocks.

To prevent the trailer from tipping up during installation, it should also be secured by the outriggers / with supports at the front and rear on the frame.



Before the start of installation, check whether the installation space provided on the overrun device is free from any third-party parts (such as the handbrake lever or other attachments). No part of the stabiliser coupling head should make contact with any other part, even if the drawbar is fully pushed in! See also point 9 in this regard

If the wall thickness of the drawbar tube is less than 5 mm, spacer sleeves are mandatory.

The stabilising coupling head is attached to the drawbar with the following bolts and self-locking nuts:

Model	KS25 / KS30	KS35
Screw connection	2x M12-10.9	2x M14-10.9
	ww. 1x M14-10.9 / 1x M12-10.9	2x M16-8.8
	ww. 2x M14-10.9	
Tightening torque	M12-10.9 115 +10 Nm	M14 - 10.9 125 +10Nm
	M14-10.9 125 +10 Nm	M16 - 8.8 145 +10Nm



When selecting the bolt sizes, always select the largest possible bolts according to the through holes in the drawbar of the overrun device.

When doing so, always ensure that the drawbar onto which the coupling head is being installed is not deformed. Spacer sleeves may be required.

The nuts used must be strength class 10 and be self-locking. These may only be used once.

The design of the bolted connection must allow for the possibility of retightening all the bolts.

The connection dimension of the drawbar must not deviate by more than ± 0.5 mm from the nominal connection diameter of the coupling head. Otherwise, a different version of the coupling head must be selected or the corresponding adaptor plate must be used.

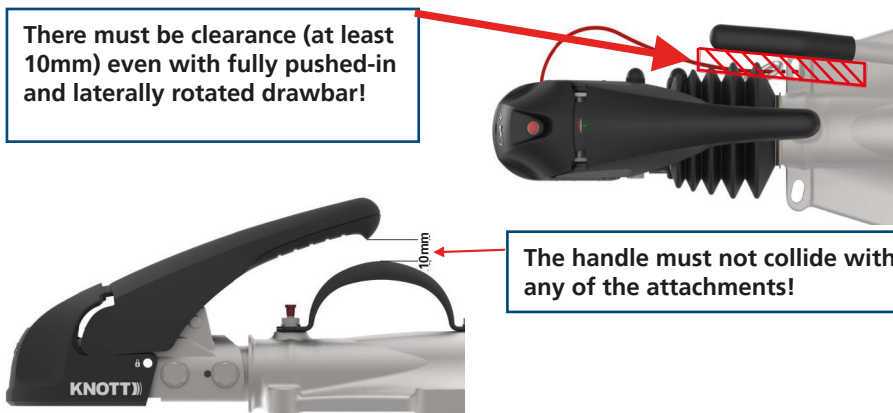
The coupling head must be mounted in accordance with ECE R55, Annex 7. With the trailer horizontal and carrying the maximum permitted axle load, the coupling head shall be fitted so that the coupling point is 430 ± 35 mm above the horizontal plane on which the wheels of the trailer rest. Any deviations must be taken into account during the type approval for the trailer.

The image below shows how the bolts, washers, saddle washers and nuts are to be fitted during the installation of the various screwing variants.

9. Operation:

For safe coupling and uncoupling of the trailer, make sure:

-To check the clearance around the coupling ball as well as for possible obstructions caused by the spare wheel, frame or superstructures. Also check the maximum possible overrun travel of the overrun device and the possible rotation of the drawbar on both sides.



-The trailer must be loaded uniformly without exceeding the permissible axle load or vertical load (S) (indicated on the rating plates).

-For the purpose of checking the secure attachment of the coupling head, always check the position of the wear indicator as well as the clearance between the coupling head and the coupling ball.

-If there is play between the coupling ball and coupling head, which is noticeable during operation, e.g. through any knocking, then this means that the coupling head/coupling ball are worn out and must be replaced immediately with new ones. The minimum diameter of the coupling ball, measured at its smallest point, is 49 mm. If the smallest measured diameter is less than this it must be replaced.

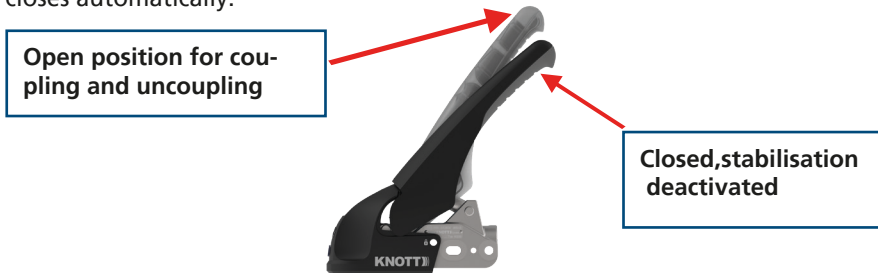
In the event of damage or deformation to the coupling head it must be replaced immediately.

Coupling heads are safety-critical components, therefore no changes to the coupling heads are allowed!

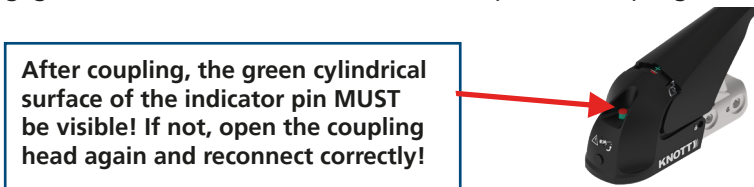
9.1 Coupling:

-Check the coupling ball on the towing vehicle, clean if necessary

-Place the opened coupling head onto the coupling ball of the towing vehicle. Due to the vertical load plus any additional load on the drawbar, the coupling head closes automatically.



If a coupling ball is within the coupling head, the green indicator pin of the engagement indicator will be visible on the top of the coupling head.



Hook the breakaway cable of the overrun device into the appropriate eyelet on the coupling ball or hitch device

Check the light plug for dirt or damage; clean or repair if necessary

Plug the light plug into the socket of the towing vehicle and check that the lights function correctly

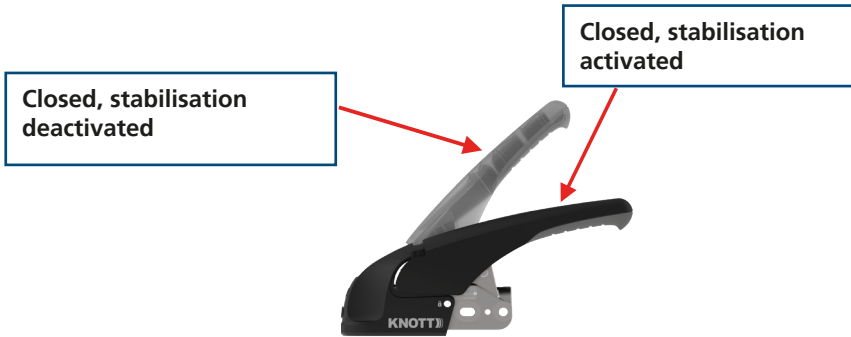
Remove any wheel chocks from the wheels and store them safely

Raise the jockey wheel / supports, pull up if necessary and secure against automatic release or dropping down.

While driving, stabilisation must be activated!

9.2 Activating the stabilising device

To activate the stabilising device, push the handle all the way down to the stop. A certain amount of force is required:



When the hand lever is pressed down, tension is applied to a spring assembly; this applies pressure onto the ball via the control lever on the spherical cap with the friction elements.

The hand lever is in a tensioned condition approximately parallel to the drawbar:

i Note: The effort required to activate the stabilising device can be considerably reduced if a force is first applied in direction 1 and then the actual clamping force is also applied in direction 2.

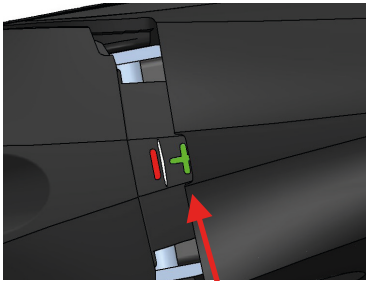


9.3 Checking the stabilisation unit

After coupling and activating the stabilising device, the condition of the friction elements can be checked.

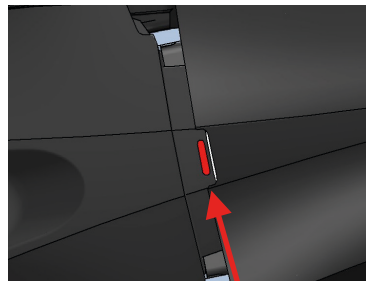
A wear indicator located on the upper side of the handle is provided for this purpose.

The condition of the friction elements must be checked according to the following instructions:



OK

Control edge in the area of the marking „+“.
The friction elements are in a good state of wear.



not OK

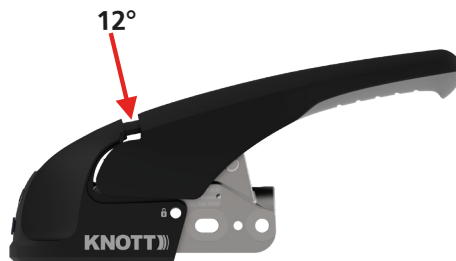
White hyphen congruent with control edge or in the „-“ area.
The friction linings must be replaced.



If the „+“ marking is completely covered, the friction linings must be replaced immediately.



For correct reading, look RIGHT at the area with the -/+ mark.



The condition of the coupling ball on the towing vehicle must also be checked. Driving with the trailer must not be attempted until the friction linings have been replaced.

A spare parts kit is available for the replacement of the friction elements, under article number 209698.001, which contains detailed instructions for the replacement of the friction elements.

9.4 Deactivating the stabilising device

Pull the hand lever upwards, past dead centre, until it automatically moves into the "closed, stabilisation deactivated" position.

9.5 Decoupling:

In order to avoid possible damage to the towing vehicle, please observe the following:

If the overrun device is not fully extended (bellows not stretched), it is still under preload.

After uncoupling from the coupling ball, the coupling head may move forward and could damage the towing vehicle.

Therefore, check the condition of the overrun device (bellows) and pull the trailer forward by a few centimetres if necessary.

Apply the parking brake and secure the trailer with wheel chocks

Remove the lighting plug from the towing vehicle and store safely.

We recommend that the plug is safely stored in a parking outlet on the trailer to prevent damage or contamination of the contacts.

Detach the breakaway cable

Support the drawbar with supports or jockey wheel

Step 1: Pull the handle back and upwards to unlock the second form-fit locking of the stabilising coupling head

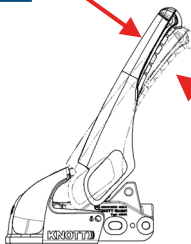
Closed,
stabilisation deactivated



Stabilising
coupling head
unlocked

Step 2: Pull the handle up, to the stop

Stabilising coupling head
fully opened



Stabilising
coupling head
unlocked

Hold the handle and raise the trailer drawbar using the jockey wheel in order to raise the stabilising coupling head from the towball of the towing vehicle.

When not in use for a longer period of time, the coupling head should be closed. To do this, insert the KSB50 (SafetyBall KSB50 is available separately) safety ball into the coupling head and push upwards until the stabilising coupling head closes automatically. Then push the hand lever downwards.



CAUTION – Risk of crushing:

Do not reach into the open stabilising coupling head with your fingers. The spring-loaded closing mechanism could trigger, resulting in injury to your fingers

DO NOT use the hand lever of the stabilising coupling head to manoeuvre the trailer.

9.6 Theft protector:

To prevent theft of the stabilising coupling head or the entire trailer, special theft protectors are available for the coupling heads KS25, KS30 and KS35. Before locking, in both cases, the coupling head must be brought into the close position by inserting the KSB50 SafetyBall (included in the scope of supply of the theft protectors listed below) and then the hand lever must be pressed completely down.



CAUTION – Risk of crushing:

Do not reach into the open stabilising coupling head with your fingers. The spring-loaded closing mechanism could trigger, resulting in injury to your fingers.

Variant a) Lock 210174.001



Variant b) Lock 210741.001



This variant also prevents unauthorised removal of the coupling head from the trailer. Therefore this variant also satisfies enhanced security requirements



IMPORTANT:

It is essential that you write down the number of the key in a secure place. If the key is lost, a spare key can only be ordered with this number!

10. Maintenance and cleaning:

With proper maintenance, simple operation and faultless function are guaranteed for a long time.

10.1 Coupling ball

Diameter Ø50 mm on the towing vehicle

The coupling ball must be dimensionally accurate, clean and free of grease. In the case of Dacromet-coated balls (matt silver anti-corrosion coating) and painted coupling balls, the coating must be completely removed using sandpaper (200 – 240 grit) before towing for the first time and then cleaned with, for example, nitro thinner or ethyl alcohol so that the coating does not build up on the surface of the friction elements.

The surface of the coupling ball must be “bare metal”.

A damaged or unclean coupling ball surface leads to increased wear of the friction elements, whilst a greased coupling ball greatly reduces the stabilising effect.

Nitro thinner or ethyl alcohol is suitable for cleaning, for example.

The coupling ball must be checked and measured regularly; the diameter must not fall below 49 mm at the smallest point.

If necessary the coupling ball must be replaced

10.2 Coupling head

The inside of the ball chamber where the friction elements are located must be kept clean and grease free at all times. In case of dirty friction linings, the surface can be cleaned with sandpaper, 200 – 240 grit. Then clean the surface with benzine or

ethyl alcohol. All movable bearing points and bolts are to be lightly oiled. Regular maintenance and care will increase the service life, function and safety of your stabilising coupling head.

Also check that the movement of the indicator pin in the ball chamber of the coupling head is unimpeded. The indicator pin must retract automatically when the coupling is uncoupled. The green indicator section of the pin must then no longer be visible.

10.3 Mobility of the safety indicator

When the ball is removed, the safety indicator (if available) must retract automatically so that only the red indicator (no ball in) is visible.

If this is not the case, the coupling head must be cleaned and lightly lubricated. If the safety indicator (if available) does not work automatically after taking these measures, then the coupling head must be replaced.

10.4 Cleaning the coupling head

Clean any large pieces of dirt off the coupling head and check for damage or heavy corrosion.

The coupling head must be smooth-running and close and lock automatically on a dia. 50 ball. It must be replaced if it is permanently stiff or if there is damage, pronounced wear or heavy corrosion.

10.5 Replacing friction elements

The friction elements can be replaced in case of wear or contact with oil or grease. The spare parts kit 209698.001 contains 2 friction elements for replacing the front and rear friction elements.



Use only original KNOTT friction elements.

These are an exact match for the KS30 / KS35 stabilising coupling head. Using third-party linings can result in either no stabilising effect or the ball neck being damaged. For the replacement itself, please refer to the instructions enclosed with the kit.

Art. Nr. 209698.001
friction elements for KS25/30/35



11. Driving/creaking noises:

During driving or manoeuvring, friction between the friction elements and the coupling ball may cause noise; this affects neither the function nor the stabilising effect of the coupling head.

11.1 Possible causes of this noise are:

- The towing vehicle coupling ball being painted, Dacromet-coated or galvanised
- The towing vehicle coupling ball being dirty, rusty or damaged
- The friction elements of the stabilising ball coupling being dirty or worn out
- See 10.1 or 10.2 for a solution. Noise may also be generated by:

11.2 Dry running of the drawbar in the guide bushing of the overrun device

-Solution:Lubricate the bushing via the greasing nipples, remove the bellows and grease the exposed drawbar.

-Detachable coupling ball on the towing vehicle

-Solution:Clean and regrease the detachable coupling ball on the locking mechanism (see operating instructions for detachable coupling ball)



Refer to the requirements of Section 13 of the German Vehicle Registration Ordinance – FZV with regard to the data in the registration certificate in relation to the permissible trailer load (No 0.1 and 0.2) and the permissible vertical load (No.13).

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