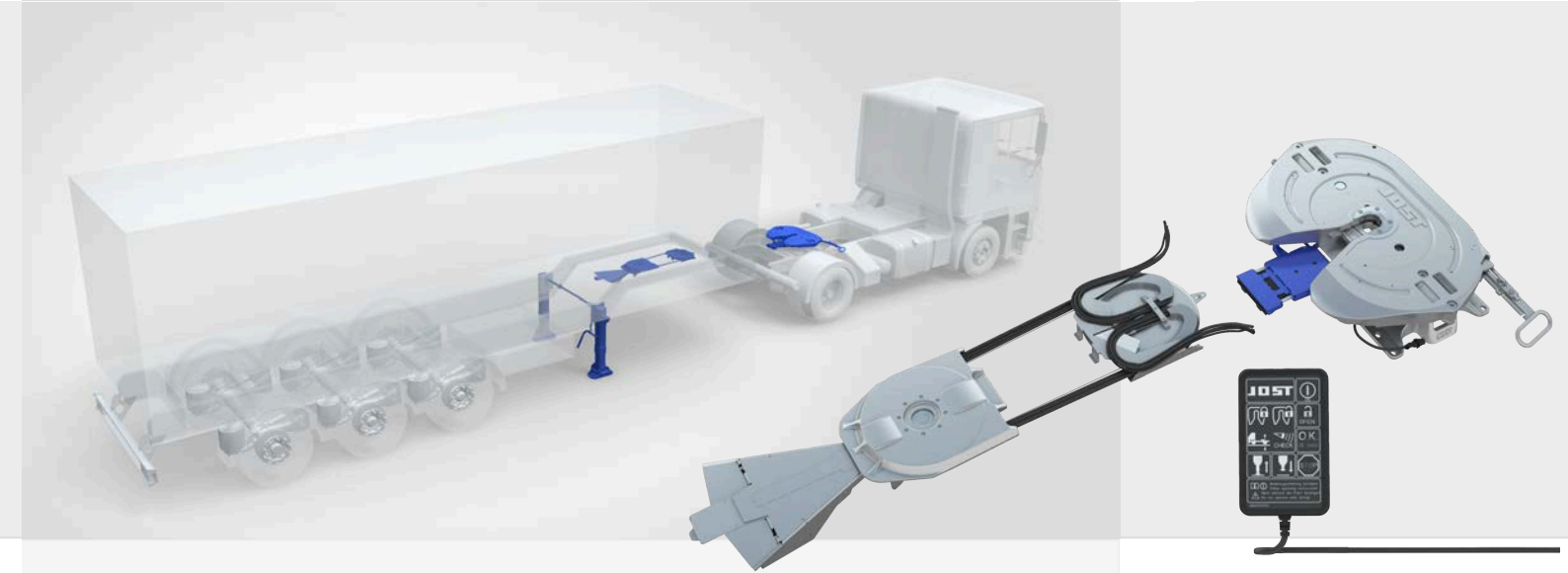

KKS

EN **Installation and operating instructions**

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WARNING!

Means that death, serious physical injury or significant material damage can occur if the relevant safety instructions are not followed.

ATTENTION!

Means that minor physical injury or material damage can occur if the relevant safety instructions are not followed.

IMPORTANT!

Contains additional important information.

ADVICE!

Points out that reading the documentation is an obligation!
Failure to comply with these instructions can result in mishandling by personnel.

With the JOST automatic coupling system, known for short as “KKS”, you have a complete, state-of-the-art vehicle coupling system with safety and convenience standards that satisfy ECE-R55 and ISO 13044 requirements.

Improper handling of the automatic coupling system during installation, repair or operation can result in dangerous situations. Please pay attention to warnings and safety notices in section 3 "Safety instructions" and the instructions in section 4 "Intended use". Please also heed all warnings and safety notices in this installation and operating manual. You will find an explanation of hazard symbols in section 1 "Explanation of symbols".

Modifications of any kind may have an impact on safety and are not permitted. Furthermore, modifications will rule out all warranty claims and invalidate the vehicle operating licence. Do not use the product until you are certain that the tractor unit and semi-trailer on which the JOST KKS is fitted comply with road traffic regulations in your country.

Please refer to the installation and operating manuals of the following products:

- JSK 42 fifth wheel coupling
- Kingpin
- Modul E-Drive landing gears

IMPORTANT!

Before using the KKS for the first time, prepare the pneumatic and electrical connections on the tractor unit, paying attention to the fitting guidelines of the relevant manufacturer.

IMPORTANT!

Technical modifications reserved. You can find the latest information at www.jost-world.com.

2.1 Identification

2.1.1 KKS fifth wheel coupling

The tractor unit system can be identified by the information on the type plate of the JSK 42 KKS fifth wheel coupling.

ATTENTION!

Take care not to damage the type plate. If the type plate is damaged, replace it.

2.1.2 Modul E-Drive

ADVICE!

You can find information on identification in the JOST Modul E-Drive landing gears installation and operating manual at www.jost-world.com.

3.1 Liability

This documentation describes the product's characteristics, but without guaranteeing them.

No liability will be accepted for damage attributable to:

- Any use of the KKS system other than its intended use.
- Failure to comply with the documentation.
- Unapproved modifications to KKS system components.
- Inexpert work on and with KKS system components.
- Operating the KKS system if safety and protective equipment is faulty, incorrectly installed or not functioning.
- Inadequate monitoring of wearing components of the KKS system.
- Incorrectly performed repairs.
- Unapproved, inexpert modification of operating parameters.
- Disasters, the impact of foreign bodies, and force majeure.

The relevant safety regulations in your country (for example Health & Safety at Work) apply to the handling of fifth wheel couplings, tractor units, semi-trailers and the JOST KKS. The safety instructions in the tractor unit and semi-trailer operating manuals continue to apply and must be followed. Adhere to the safety instructions below for the operation, maintenance and installation of the JOST KKS. Safety instructions directly linked to each activity are also included in the relevant section.

3.2 Safety instructions for installation

Install the JOST KKS on the tractor unit and semi-trailer as described in section 7 "Installation".

WARNING!

Have the JOST KKS installed by trained personnel at a suitable workshop. The fitting guidelines of the vehicle manufacturer, the installation instructions, the requirements of ECE R13 and, if applicable, road traffic licensing regulations, such as sections 19, 20 and 21 of the StVZO in Germany, must be adhered to.

ATTENTION!

Pay attention to the following points:

- Make sure that warning signs are not covered or removed when the JOST KKS is installed.
- Connect terminals 15 and 30 to a separate fuse in the fuse box of the tractor unit.
- Connect terminal 31 to an earth post provided by the tractor unit manufacturer.
- Connect the parking brake signal line in accordance with the specifications of the tractor unit manufacturer. The supplied signal must not be digital.
- Only use the electric cables and pneumatic hoses supplied in the installation kit.
- Correctly insulate exposed cable ends, e.g. using end seals or heat-shrink tubing => risk of short circuit!

IMPORTANT!

If installing on a tractor unit used for hazardous goods as per ADR, the technical features of ADR vehicles must be maintained. The JOST KKS does not satisfy the technical requirement for “permanently energised circuits” stipulated by the ADR.

IMPORTANT!

Incorrect installation will invalidate all warranty claims against the manufacturer and supplier of the JOST KKS.

ATTENTION!

Please note the following when installing electric cables and pneumatic hoses:

- Make sure that electric cables and pneumatic hoses are sufficiently long to maintain the freedom of movement of the fifth wheel coupling.
- Route electric cables so that they do not obstruct the tipping of the driver's cab.
- Do not fasten electric cables and pneumatic hoses to brake cables.
- Route electric cables and pneumatic hoses at a sufficient distance from heat sources (e.g. engine, exhaust, etc.) and from moving parts of the vehicle. If necessary, provide electric cables with corrugated heat protection tubing or an anti-chafe guard.
- Lay electric cables and pneumatic hoses in such a way that they do not kink or chafe.
- Secure electric cables and pneumatic hoses using cable ties (e.g. to the vehicle wiring harness).
- Perform work on the pneumatic system only when it is not under pressure. Only install the KKS on tractor units with generators that have an integrated voltage regulator.

ATTENTION!

Please note the following before carrying out any work on the electrical system:

- Read the fault memory of the tractor unit.
- Disconnect the negative pole of the vehicle battery.
- Only reconnect the vehicle battery when the installation work is complete.

3.3 Safety instructions for operation

Before commencing any journey and each time a trailer is coupled, check that the equipment is in good condition and the locking mechanism is secure. Only drive the vehicle with the locking mechanism locked and secured.

WARNING!

If the fifth wheel coupling is not correctly closed and secured, the semi-trailer may become detached. This can cause an accident, injuring you and others. After coupling, always check that the fifth wheel coupling is in good condition and securely locked. Always carry out a pre-departure inspection, even if “Fifth wheel coupling closed” (green) is shown on the display. The JOST KKS is only an assistance function that helps you with the coupling and uncoupling of semi-trailers.

WARNING!

Pay attention to the following points:

- Do not operate the JOST KKS when the vehicle is being driven.
- Only authorised persons may use the JOST KKS.
- The operator must also keep an eye on traffic while operating the JOST KKS – particularly if he/she is working outside of the tractor unit.
- Use the JOST KKS only if it is in perfect technical condition.
- When coupling and uncoupling, make sure no one is in the danger zone, e.g. under the semi-trailer, between the semi-trailer and tractor unit or near the landing gears.
- Always comply with the relevant safety provisions, e.g. Health & Safety at Work regulations.
- Only couple semi-trailers on firm, even ground.
- Do not raise or lower the semi-trailer using the electric landing gear drive.
- Before driving off, the driver must be absolutely certain that the necessary clearances between the tractor unit and semi-trailer are adhered to in all expected driving situations.

ATTENTION!

Pay attention to the following points:

- Before switching off the battery isolator switch (if applicable), first switch off the vehicle ignition for at least 30 seconds. Otherwise there is a risk of damage to electronic KKS components.
- The stipulated pre-departure inspection must continue to be performed in accordance with road traffic regulations, such as the StVO in Germany. This includes checking the condition of the mechanical connection between the tractor unit and semi-trailer, and the correct position of the landing gears.

3.4 Safety instructions for maintenance

WARNING!

Pay attention to the following points:

- Maintenance and repairs may only be performed by trained personnel with knowledge of the product.
- Use only genuine JOST parts for repairs and replacement.
- Use only lubricants approved by JOST.

IMPORTANT!

Some components of the KKS system have their own installation and operating manuals, because the system is partially based on existing JOST products. It is therefore essential to refer to maintenance and repair instructions in other installation and operating manuals.

The following components have a separate installation and operating manual:

JOST products:

- KKS fifth wheel coupling
  Based on the JOST JSK 40/42 fifth wheel coupling
- Modul E-Drive landing gears

You can find the relevant installation and operating manuals at www.jost-world.com.

Third-party manufacturers:

- Line filter (valve unit)

You can find the line filter manufacturer's installation and operating manual at http://inform.wabco-auto.com/intl/de/.

4.1 General information

The JOST KKS is designed to help the driver couple and uncouple semi-trailers.

As with conventional connections between a semi-trailer and tractor unit, the KKS also produces a mechanical connection via the fifth wheel coupling of the tractor unit and the kingpin of the semi-trailer.

However, it differs from the conventional method because as well as the mechanical connection, the tractor unit and semi-trailer are also connected electrically and pneumatically during the coupling process. To achieve this, the system is operated via remote control from the cab of the tractor unit in a predefined sequence.

The electric Modul E-Drive landing gears are also included in the coupling process, and are operated via remote control during coupling and uncoupling.

The driver must perform the following steps manually:

- Remove and insert chocks.
- Engage and release the parking brake.
- Raise and lower the vehicle with the pneumatic suspension.

WARNING!

Before driving off, the driver must perform a safety inspection of the tractor unit and semi-trailer.

The KKS fifth wheel coupling, connection cable and remote control are intended for installation in a tractor unit.

The kingpin with KKS Connector and the cable store with guard plate are intended for installation in a semi-trailer.

IMPORTANT!

The JOST JSK 42 fifth wheel coupling used for this product is produced in accordance with Regulation ECE R55 class 50 and may only be used in combination with class H50 kingpins.

The JOST KKS complete system offers the driver maximum convenience and safety during the coupling process. Moreover, the system enhances road safety by continuously monitoring the condition of the fifth wheel coupling and giving the driver a visual or acoustic warning if the connection is no longer in order.

During the development of the JOST KKS, a key priority was ensuring that the mechanical properties and reliability of the components used met the high standards expected from JOST. The system was designed to enable a conventional semi-trailer to be towed with the JOST KKS fifth wheel coupling, and a KKS semi-trailer to be coupled with a selection of conventional fifth wheel couplings (see section 4.5 "Application limits" for compatible fifth wheel couplings).

Features such as remote control and sensors continue to be supported. The control and all mechanical functions of individual components have been retained.

You can find details in the relevant JOST information brochures (see www.jost-world.com).

4.2 System requirements and properties

The following tractor units are suitable for use with the JOST KKS:

- The tractor unit must have pneumatic suspension at least on the rear axle.
- The system may only be installed in tractor units with a 24 V electrical system and negative vehicle earth.
- The generator (alternator) of the tractor unit must have an integrated voltage regulator.
- The JOST KKS can also be installed in ADR-approved tractor units.
- The tractor unit must supply an analogue parking brake signal. The parking brake signal must supply either earth or +24 V when actuated.

Only semi-trailers that satisfy the following points are suitable for use with the JOST KKS:

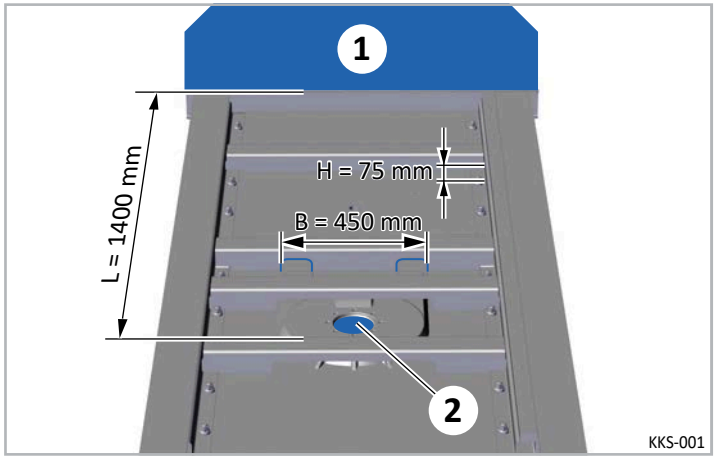


Figure 1: Installation space for KKS on semi-trailer

1 Front wall of semi-trailer **2** Kingpin

- It must be possible to produce the minimum required installation space in the semi-trailer, as shown in Figure 1.
- The trailer plate must be level over its entire length (1400 mm) and entire width (450 mm), or it must be possible to level the plate subsequently (e.g. by removing ribbing).
- It must be possible to cover the KKS installation space with the cargo bed without losing any of the minimum required installation height of ≥75 mm.
- Any crossmembers in the installation space must be moved. Crossmembers in the area of the weld-in plate do not have to be removed if openings (2 x ≥70 mm) for laying cables can be incorporated in them.
- It must be possible to attach the landing gears in the semi-trailer, which must also have sufficient room.
- The semi-trailer must have cable ducts both to the front wall and rear of the semi-trailer. If it does not, it must be possible to bring existing cable ducts into the semi-trailer.
- To enable the electric landing gears to be used to their full extent, the semi-trailer must feature electrical connections suitable for +24 V and 0 V earth.
- The existing structure in the installation location must protect the KKS system from external influences originating both from the cargo area and the road.

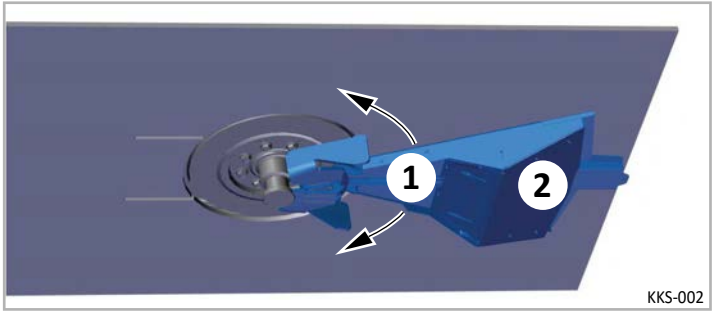


Figure 2: trailer plate – View from below with KKS system

1 Pivot range 0° ± 100° **2** KKS coupling with connector

- Make sure there are no projecting components or stiffeners (e.g. longitudinal members or crossmembers) n the area where the KKS coupling retracts or in the pivot range of the KKS Wedge.
- Check beforehand that the semi-trailer is suitable for installing the KKS system (also see section 6.2 "KKS installation space"). Modifications to the supporting structure are required, and must be performed by a specialist company. Use the weld-in plate specific to the KKS2 for this purpose.

IMPORTANT!

If you are uncertain whether the semi-trailer is suitable for the retrofit, please consult our technical customer support team.

4.3 Target group and existing knowledge

This documentation is intended for the installation, operating and maintenance personnel of the KKS system.
Installation, operating and maintenance personnel must be appointed by the owner.

These persons are subject to the following requirements:

- Basic technical knowledge
- At least 18 years of age
- Have read and understood this installation and operating manual
- The owner must take the following actions to ensure these persons are in possession of the knowledge required to operate the KKS system:
  – Product training
  – Safety induction

WARNING!

Installation and repairs may be performed only by technical specialists with product-specific training.

4.4 Content and purpose of this documentation

This documentation contains the relevant information for installation, operation, maintenance and disposal of the KKS system. It is intended to enable safe work on and with the KKS system.

Compliance with the instructions in this document helps to prevent danger and damage to the KKS system.

4.5 Application limits

A semi-trailer equipped with KKS is compatible with the following JOST fifth wheel couplings:

- JSK 34 H
- JSK 36 D
- JSK 37 C
- JSK 37 CX
- JSK 37 E
- JSK 34 H
- JSK 40
- JSK 42

ATTENTION!

As a rule, a KKS semi-trailer can be used with a tractor unit that is not equipped with a KKS, provided that the tractor unit does not have slider units, lead-on-ramps or other special attachments, and provided that checks have been performed to ensure the KKS Wedge can move freely.
A standard semi-trailer may also be operated with a KKS tractor unit.

IMPORTANT!

Please ask regarding the suitability of fifth wheel couplings from other manufacturers.

4.6 Principle

The KKS system is a state-of-the-art product that conforms to the applicable health and safety regulations.

WARNING!

Nevertheless, the following risks can arise if it is misused or used incorrectly:

- Serious or fatal injury to the user or third parties.
- Damage to the KKS system and other material assets of the owner.
- Inefficient functioning of the KKS system.

5.1 Overview

5.1.1 KKS fifth wheel coupling

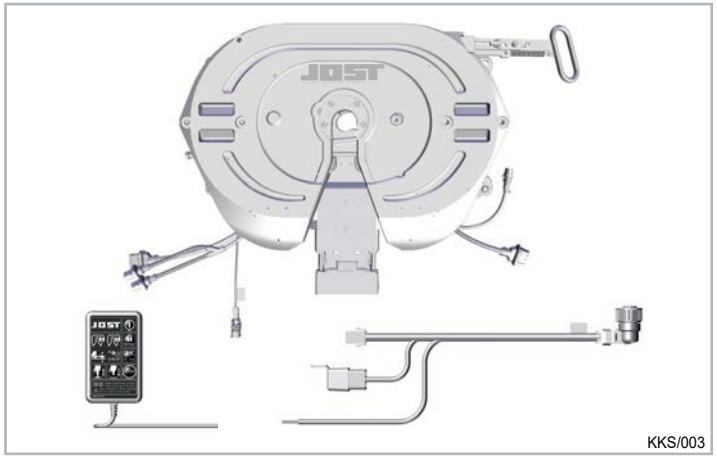


Figure 3: Truck system / CAD model

5.1.2 KKS Connector

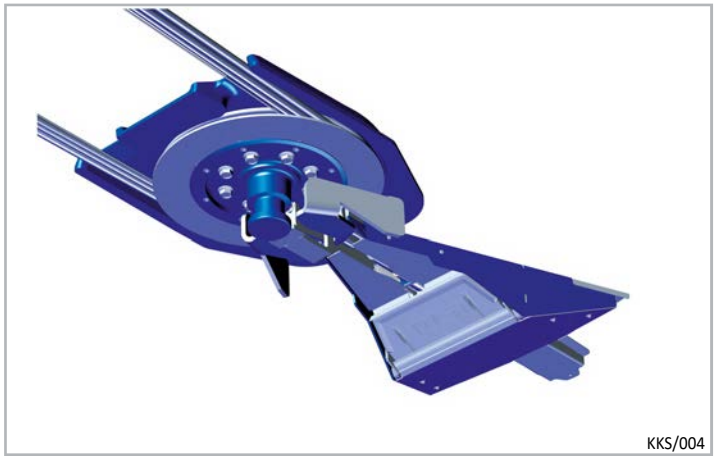


Figure 4: KKS Connector / CAD model

5.1.3 Modul E-Drive landing gears

Figure 5: Modul E-Drive landing gears / CAD model

ADVICE!

You can find information on installation, operation, maintenance and repair in the JOST Modul E-Drive installation and operating manual or repair manual at www.jost-world.com.

5.2 Tractor unit system components

5.2.1 Fifth wheel coupling

The JOST KKS fifth wheel coupling is an enhanced version of JOST's JSK 40/42 fifth wheel coupling, on which it is based.

ADVICE!

You can find information on installation, operation, maintenance and repair in the JOST JSK 40/42 fifth wheel coupling installation and operating manual or repair manual at www.jost-world.com.

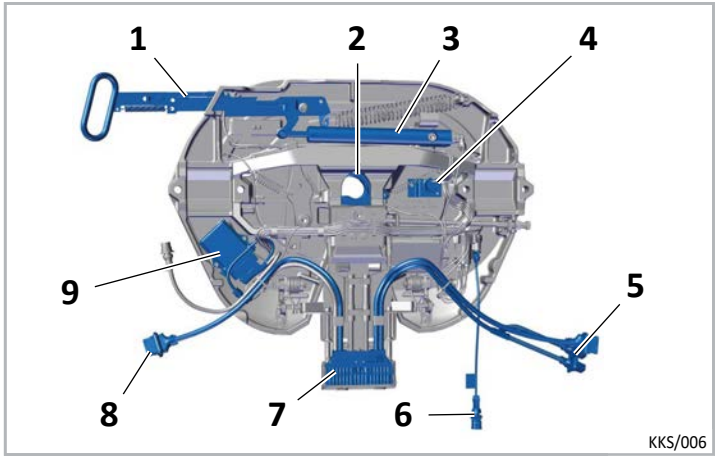


Figure 6: Truck system / Individual components / CAD model

The JSK 42 fifth wheel coupling features the following additional components:

1 Locking sensor with switch magnet
2 Kingpin sensor
3 Pneumatic opener cylinder with valve block
4 trailer plate sensor
5 ABS/EBS connector to ISO 7638
6 LubeTronic *5Point* connection cable (optional)
7 KKS coupling
8 Lighting/CAN connector to ISO 12098
9 Electronic control system

5.2.2 Remote control

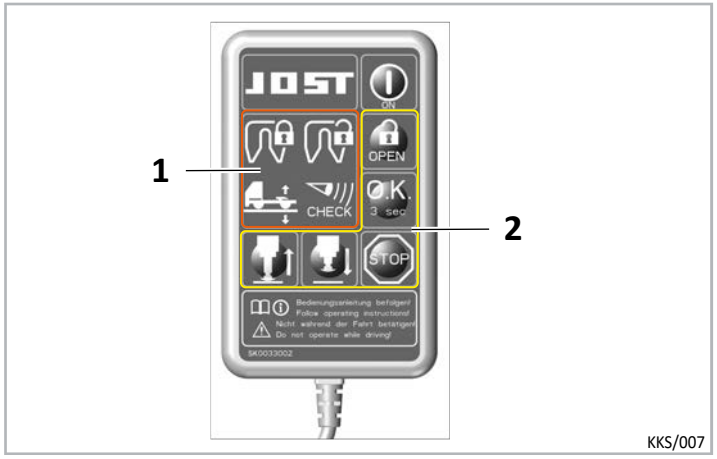


Figure 7: Remote control / CAD model

1 Display panel
2 Keypad

The remote control is divided into the following sections: Display panel and keypad.
The display panel shows all the system displays of the JOST KKS. The JOST KKS is controlled using the keys on the keypad. It is only operated in this manner.

5.2.3 Connection cable

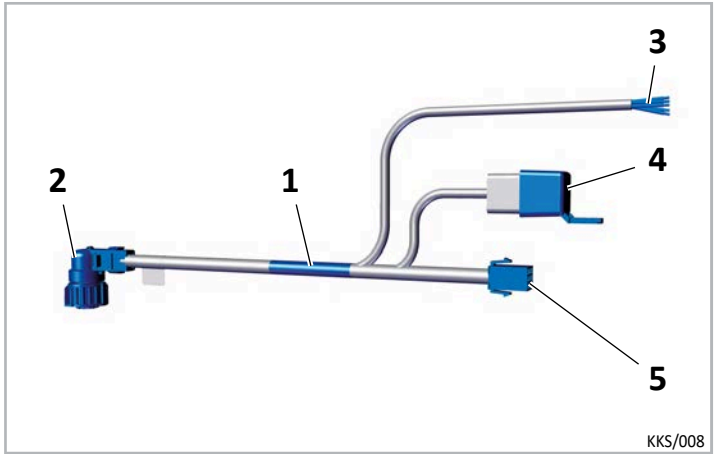


Figure 8: Connection cable / Individual components

1 Connection cable
2 Fifth wheel coupling connector
3 Connection cables on the vehicle
4 Relay
5 Remote control connector

The connection cable electrically connects the remote control, the fifth wheel coupling and the tractor unit's electrical system.

5.3 Semi-trailer system components

5.3.1 Modul E-Drive landing gears

Figure 9: Modul E-Drive landing gears / Components / CAD model

1 Landing gear
2 Electric landing gear drive
3 Connection shaft

The electric landing gears are retracted and extended automatically in the system routine by pressing the keys.

ADVICE!

You can find information on installation, operation, maintenance and repair in the JOST Modul E-Drive landing gears installation and operating manual or repair manual at www.jost-world.com.

5.3.2 KKS Connector with kingpin

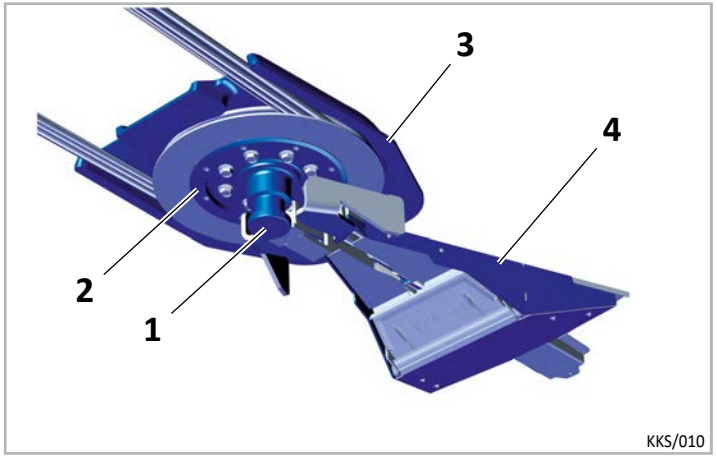


Figure 10: KKS Connector with kingpin / CAD model

1 Kingpin
2 KKS Connector bearing
3 KKS weld-in plate
4 KKS Wedge

The KKS trailer system consists of the KKS weld-in plate (3), the KKS Connector bearing (2) and the KKS Connector(4). The KKS Connector bearing is a slide bearing that allows the KKS Connector to rotate around the central axis of the KKS kingpin when the vehicle corners. During coupling, the locking system of the fifth wheel coupling holds the kingpin and as the KKS Wedge retracts it slides into the coupling jaw. When retracted, the KKS coupling is situated on the fifth wheel coupling opposite the KKS connector (see Figure 6, Item 5). Electric and pneumatic contacts are also made automatically during the coupling process.

5.3.3 Cable store with cables

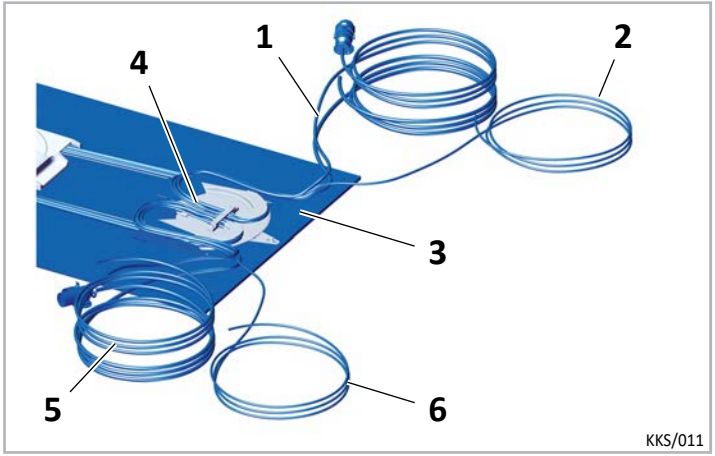


Figure 11: Cable store with cables / CAD model

1 Electric supply cables for lights and auxiliary units
2 Pneumatic brake cable
3 Trailer plate
4 Cable store with guard plate
5 Electric supply cable for Modul E-Drive and ABS
6 Pneumatic supply hose

All electric cables and pneumatic hoses are laid in the cable store, which allows sufficient freedom of movement for cables and hoses when the vehicle is cornering. A wire rope connects the cable store to the weld-in plate with the KKS Wedge. The wire rope is tensioned mechanically by an integrated spring. This tension makes sure the KKS Wedge returns to its central position after uncoupling.

5.4 Exploded view

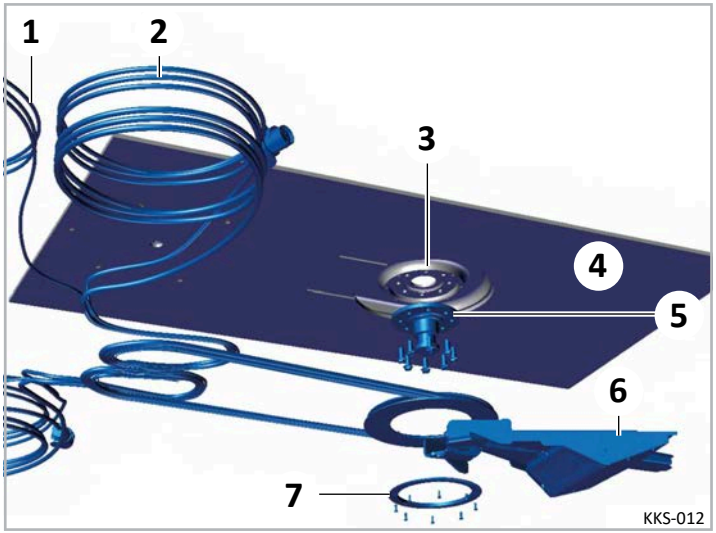


Figure 12: KKS system / Semi-trailer / View from below

1 Pneumatic hoses
2 Electric cables
3 Weld-in plate
4 Trailer plate
5 Kingpin
6 KKS Wedge
7 Retaining ring

6.1 Preparing the semi-trailer

The semi-trailer must be prepared before the KKS system is installed.

ADVICE!

Preparatory work on the semi-trailer must be performed by a vehicle construction firm or company with comparable qualifications. Modifications to the support structure of the semi-trailer are generally required and must be approved by a vehicle licensing organisation (e.g. DVLA).

Procedure:

1.) Remove the kingpin
   - Unscrew and take out the existing kingpin
2.) Cut out the old weld-in plate
3.) Create the required installation space for the KKS
   - See Figure 13
4.) Prepare the trailer plate as per the drawing
   - Cut out a hole underneath the weld-in plate
   - Drill a hole and recess for the centring ring of the cable store
   - Drill a hole and recess for the guard plate
   - To ensure optimum system function, we recommend installing the weld-in plate and cable store on the same level (on a flat, even trailer plate with no irregularities).
5.) Weld the weld-in plate in place
6.) Weld the centring ring for the cable store in place
7.) Reinforce the support structure
8.) Apply corrosion protection

6.2 KKS installation space

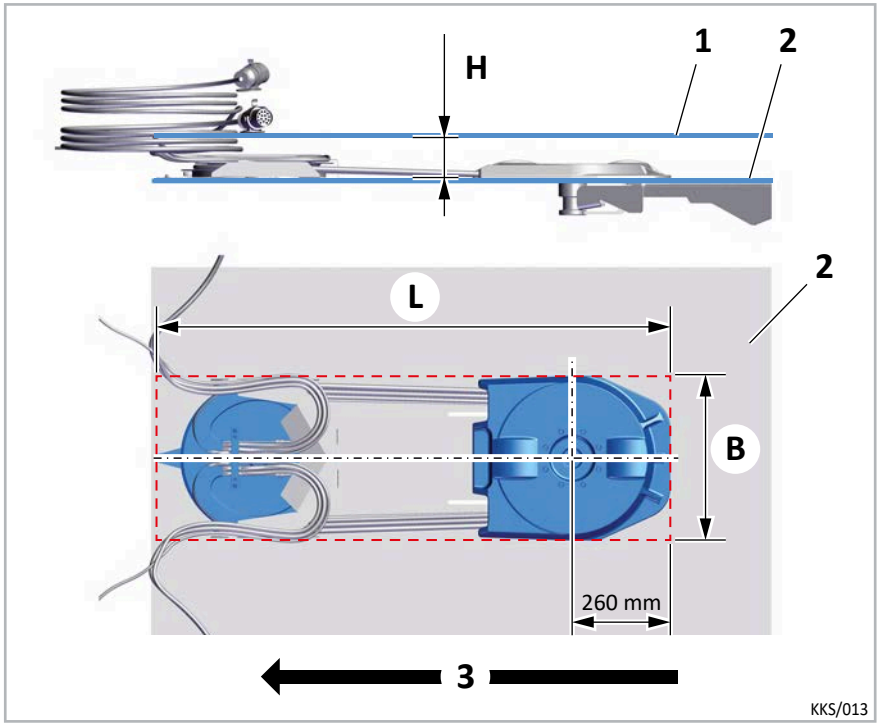


Figure 13: KKS system / Semi-trailer / Installation space / CAD model

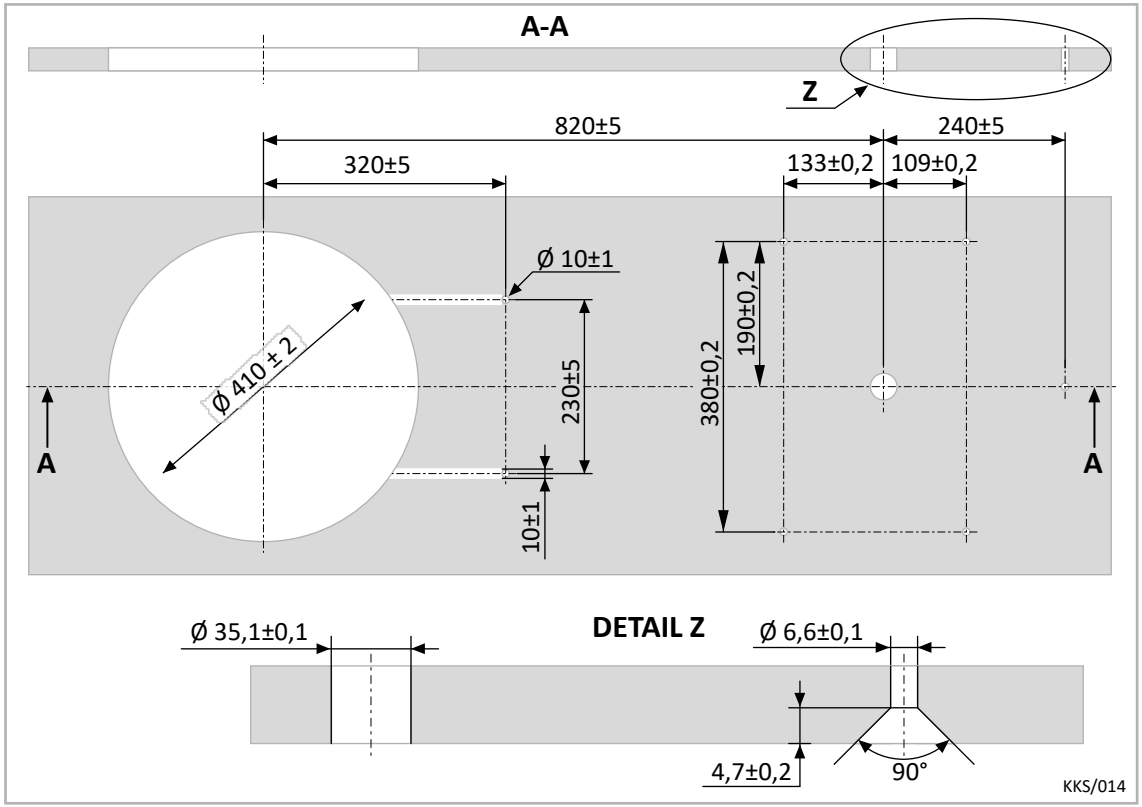
1 Semi-trailer floor panel
2 Trailer plate
3 Direction of travel

H Height: ≥ 75 mm
L Length: ≥ 1400 mm
W Width: ≥ 450 mm

The installation space required for the KKS is shown in Figure 13.

Installation space dimensions:
L x W x H = 1400 mm x 450 mm x 75 mm

6.3 Preparing the trailer plate



View from above

Direction of travel

The recess shown must be produced from below!

Figure 14: Trailer plate / Dimensions for KKS preparation

6.3.1 Welding the weld-in plate in place

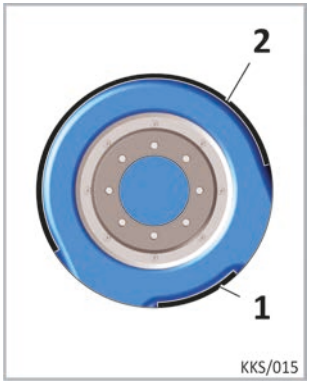


Figure 15: Weld-in plate / View of weld from below

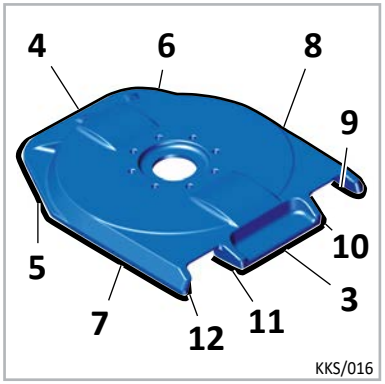


Figure 16: Weld-in plate / View of weld from above

- The weld-in plate must be welded to the trailer plate from both sides. Figures 15 and 16 show the weld seams in black and the sequence in which the seams must be produced.

ADVICE!

You can find the welding parameters in the JOST kingpin installation and operating manual at www.jost-world.com.

6.3.2 Welding the centring ring in place

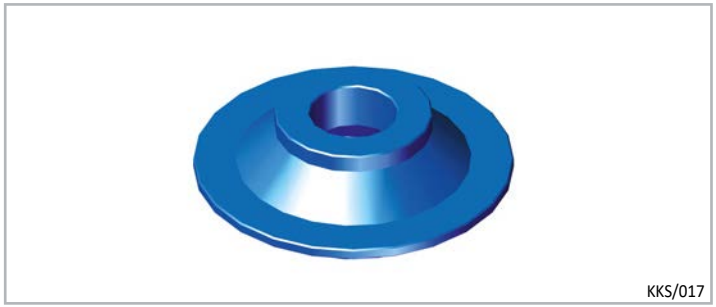


Figure 17: Centring ring

The centring ring is needed as a bearing for the cable store.

Figure 18: Centring ring inserted

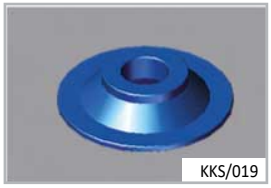


*Figure 19: Centring ring inserted – Detailed view **A***

- Insert the centring ring in the 35.1-mm diameter hole in the trailer plate and weld in place from below.

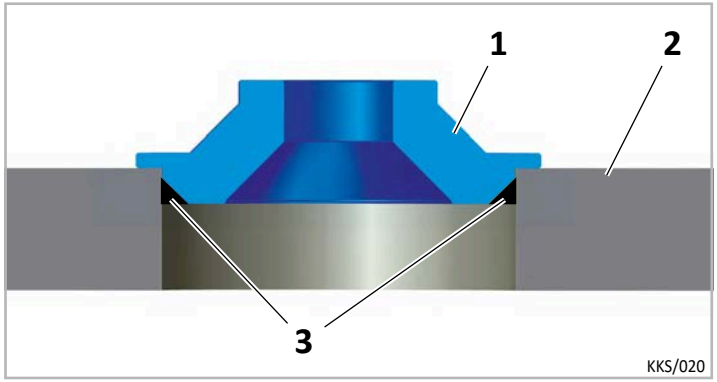


Figure 20: Sectional view of welded centring ring

1 Centring ring
2 Trailer plate
3 Weld seam (around the edge)

6.4 Reinforcing the support structure

To restore the load bearing capacity of the semi-trailer floor, stiffeners such as longitudinal members and crossmembers must be produced. Perform the work as suitable for your semi-trailer.

IMPORTANT!

This reinforcement must be carried out by a vehicle construction firm and ideally approved by a vehicle licensing organisation (e.g. DVLA) beforehand.

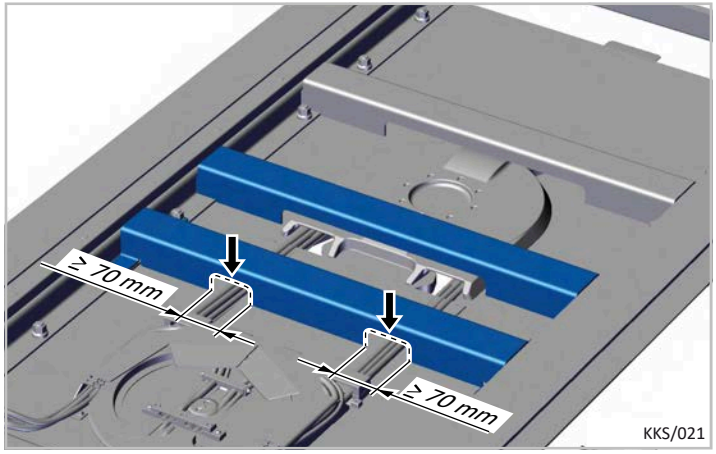


Figure 21: Stiffeners with cutouts

If crossmembers between the weld-in plate and cable store are required to reinforce the floor of the semi-trailer, cutouts for electric cables and pneumatic hoses need to be produced in them (see Figure 21). Ensure sufficient clearance (min. 30 mm from each side), so that cables and hoses are not in contact during operation (see Figure 21)
. When welding and grinding work is complete, apply suitable rust protection coatings to protect components from corrosion.

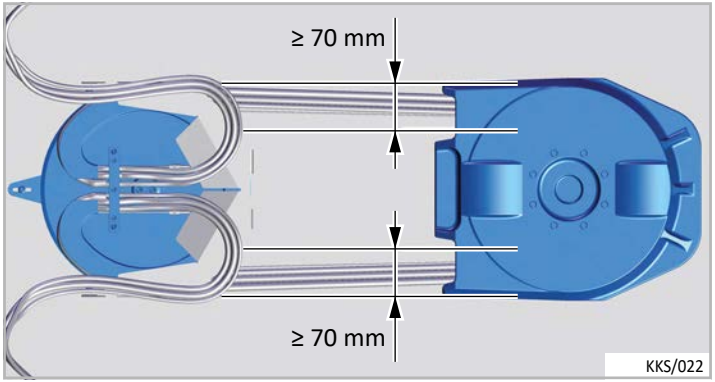


Figure 22: Minimum clearance for electric cables and pneumatic hoses

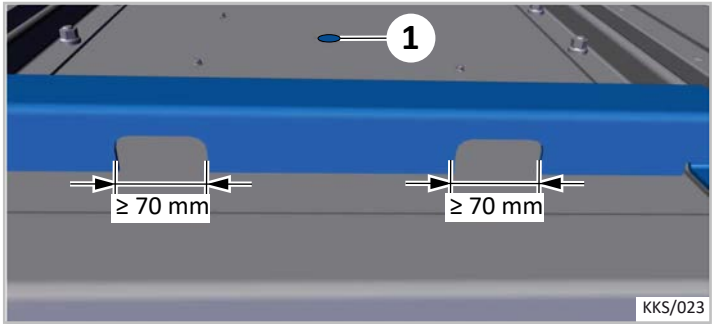


Figure 23: Cable/hose cutout with burr-free edges

1 Centring ring

7.1 Tractor unit

WARNING!

- Installation must be performed exclusively by appropriately qualified personnel.
- Route electric cables and pneumatic hoses so they cannot chafe and connect them at the intended connection points.
- Electric cables and pneumatic hoses must not be damaged or squashed when the fifth wheel coupling is at its maximum tipping angle.
- The manufacturer will not accept any warranty claims if installation is carried out incorrectly.

ATTENTION!

When raising the fifth wheel coupling, take care not to damage the components on the underside!

IMPORTANT!

The KKS fifth wheel coupling is an enhanced version of JOST's JSK 40/42 fifth wheel coupling and must therefore be installed on the tractor unit in accordance with the installation and operating manual of the JSK 40/42 fifth wheel coupling. You can find this installation and operating manual at www.jost-world.com.

IMPORTANT!

If the KKS fifth wheel coupling has a JOST LubeTronic *5Point*, produce the required electrical connection as described in the LubeTronic *5Point* installation and operating manual. You can find this installation and operating manual at www.jost-world.com.

ADVICE!

If the KKS fifth wheel coupling has a JOST LubeTronic *5Point*, you must have read and understood the JOST LubeTronic *5Point* installation and operating manual before you proceed.

ADVICE!

You must have read and understood the JSK 40/42 installation and operating manual before you proceed.

ATTENTION!

In particular, please make sure that the fifth wheel coupling has sufficient forward and backward motion once installed! The legal requirements are 6° forwards and 7° backwards. The installer is responsible for compliance with these legal requirements. These values are normally achieved if the pedestals are screwed into a surface that is constantly level. If a mounting plate is used, suitable tilt limit stops must be fitted to protect the KKS system components.

Make sure the following work is complete before you proceed with the next step:

- The fifth wheel coupling must be installed on the tractor unit as described in the installation and operating manual.
- If the fifth wheel coupling has a JOST LubeTronic *5Point*, the electrical connection on the KKS fifth wheel coupling must be available.

7.1.1 Routing and connecting the connection cable

IMPORTANT!

Follow the safety instructions in section 3 "Safety instructions" to prevent damage to the vehicle's electrical system. Pay attention to the specifications of the tractor unit manufacturer (e.g. fitting guidelines), especially where tapping the power supply is concerned.

Depending on the vehicle type, there may not be enough space to route the relay socket into the driver's cab. Therefore, the contacts can be pressed out of the relay socket for installation if necessary. Use a suitable tool to press the contacts out of the relay socket. Inspect the contacts for damage before re-installing them. After installation, check that the contacts are correctly locked in place in the relay socket holder. You should also check that the contacts in the relay socket holder are correctly assigned (see Figure 25 for relay socket holder assignment).

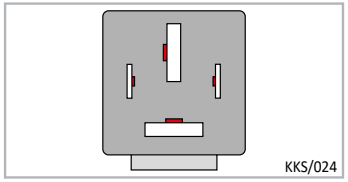


Figure 24: Relay / Pin detents

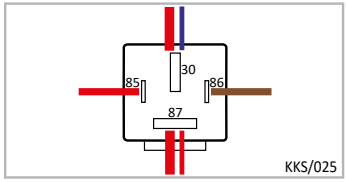


Figure 25: KKS relay assignment

Install the connection cable as follows:

- Insert the relay in the relay socket of the connection cable and secure the relay at a suitable location in the fuse box (see Figure 25 for relay assignment).
- Connect the electric cables in the fuse box according to the assignment diagram (see Figure 26).

IMPORTANT!

Pay attention to and follow the fitting guidelines of the tractor unit manufacturer during this process.

- Route the connection cable from the fuse box in the driver's cab to the fifth wheel coupling.
- Connect the connection cable in the fuse box or to the earth post.

IMPORTANT!

Provide a disconnection plug in the vicinity of the fuse box, to simplify any future replacement of the driver's cab. To do this, cut the cable and fit a plug. Bear the expected amperages in kind when selecting contacts. Pay attention to the fitting guidelines of the tractor unit manufacturer.

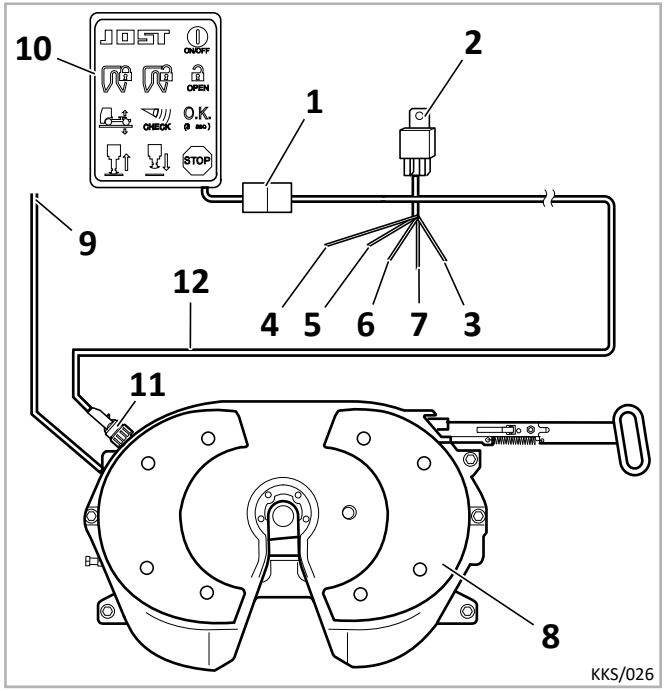


Figure 26: KKS fifth wheel coupling / Electrical assignment diagram

1 Remote control connector
2 Relay
3 Ignition positive (terminal 15, 1.5 mm², black, 3 A fuse*)
4 Continuous positive electronics UE (terminal 30, 1.5 mm², red), 3 A fuse*)
5 Continuous positive power UB (terminal 30, 2.5 mm², red, 30 A* fuse*)
6 Vehicle earth GND (terminal 31, 2 x 2.5 mm² + 2 x 1.5 mm², brown)
7 Parking brake signal from vehicle (1.5 mm², white)
8 Fifth wheel coupling
9 Pneumatic cylinder supply hose 6 x 1
10 Remote control
11 Connector (fifth wheel coupling connection)
12 Connection cable

* Use a blade-type fuse

7.1.2 Making the parking brake signal available

The parking brake signal (Figure 26, Item 7) is vital for operating the KKS. For this, the tractor unit manufacturer must provide a signal between Low/0 V and High/+24 V when the parking brake is engaged or released.

The connection can be made using a 24 V commercial vehicle relay, in accordance with the fitting guidelines of the tractor unit manufacturer.

7.1.3 Installing the KKS remote control

The remote control (Figure 26, Item 10) is used to control the system.

- Install the remote control in the cab in the driver's field of vision, using the supplied fastening components.
- If you use the adhesive pad for installation, make sure the surface is clean, dry and free from grease.

ATTENTION!

The installed remote control must not obstruct the driver's all-round view.

IMPORTANT!

Lay the electric cable for the remote control under the dashboard, making sure it cannot kink or chafe, and connect with the connector (Figure 26, Item 1).

7.1.4 Routing and connecting the pneumatic cylinder compressed air supply

WARNING!

- Follow the safety instructions in section 3 "Safety instructions" to ensure safe operation of the compressed air supply.
- Always pay attention to the manufacturer's instructions (e.g. fitting guidelines) during preparatory and installation work on the tractor unit, especially where tapping the compressed air supply is concerned.
  - Produce the compressed air connection as per the vehicle manufacturer's instructions.
  - Test the pneumatic hoses to ensure they are not leaking.

IMPORTANT!

The minimum requirements for compressed air quality must be complied with.

Main air	maximum	12 bar
	minimum	6 bar

Compressed air quality to (PNEUROP 6611 quality classes

Solids	(particle size/ density)	4 ≙ ≤ 40 µm
Water	(dewpoint)	1 ≙ - 40° C
Oil	(mg/m³)	3 ≙ ≤ 1.0 mg/m³

Non-compliance carries a risk of malfunction.

Figure 27: Connection / Pneumatic hose / Ancillary consumer circuit

Figure 28: Connection / Pneumatic hose / Pneumatic cylinder

1 Connect the 6 x 1 mm pneumatic hose to the pneumatic circuit specified by the tractor unit manufacturer. Generally speaking, the ancillary consumer circuit is used and the pneumatic hose is connected as shown in Figure 27. Additional components not included with your product may be required, depending on the vehicle design.

2 Route a 6 x 1 mm pneumatic supply hose to the pneumatic cylinder of the KKS fifth wheel coupling. Using the supplied connector, connect the pneumatic hose to the pneumatic cylinder of the KKS fifth wheel coupling, as shown in Figure 28.

ATTENTION!

Remove the protective cap from the pneumatic cylinder air connection only when the pneumatic hose is connected to the connection piece.

7.1.5 Routing and connecting electric cables and pneumatic hoses

IMPORTANT!

JOST recommends the use of protective material such as corrugated tubing or edge protection when laying cables and hoses.

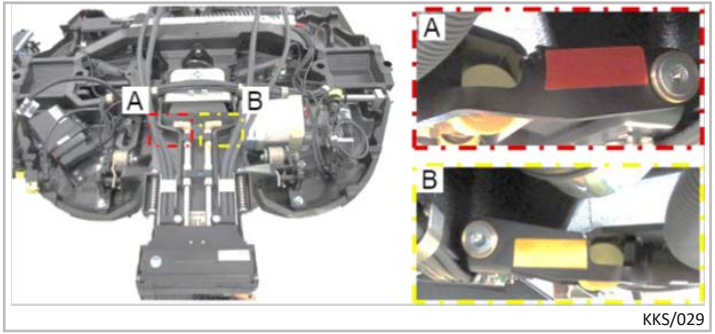


Figure 29: KKS fifth wheel coupling / Compressed air connections / Coloured marking

- Insert the supplied 12 x 1 mm pneumatic hoses in the compressed air connections of the connector assembly on the KKS fifth wheel coupling. You will see a coloured marking next to the compressed air connection, which indicates the correct pneumatic circuit for the pneumatic hose (see connections in Figure 29).
- Mark the connected pneumatic hoses in the colour used next to the compressed air connection, and route them to the rear wall of the cab.

ATTENTION!

In general:

Left-hand connection in the direction of travel	= brake circuit (yellow)
Right-hand connection in the direction of travel	= supply circuit (red)

Figure 30: KKS fifth wheel coupling / Hose routing / Connection of pneumatic hoses

- Connect the pneumatic hoses to the correct pneumatic circuit (brake (yellow) and supply (red) of the tractor unit using the supplied T connectors. Ideally, you should insert the T connectors in the pneumatic hoses that are routed to the coupling heads (red, yellow) or to the Duo-Matic.

ATTENTION!

Make absolutely sure the pneumatic hoses are correctly connected! You have marked these previously as an aid. The hose marked yellow must be connected to the pneumatic hose of the brake circuit, which is routed to the yellow coupling head or Duo-Matic. The hose marked red must be connected to the pneumatic hose of the supply circuit, which is routed leads to the red coupling head or Duo-Matic.

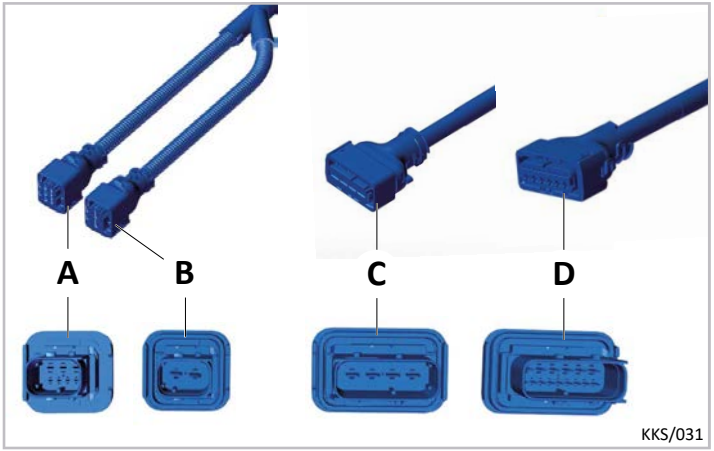


Figure 31: KKS fifth wheel coupling / Electric cables / Diagram of connectors

- Lay the 7-pin (A and B), 4-pin (C) and 15-pin (D) electric cables in the vehicle chassis. Choose a location that is easily accessible, so that a connection can be produced with the adapter cable, and also disconnected.

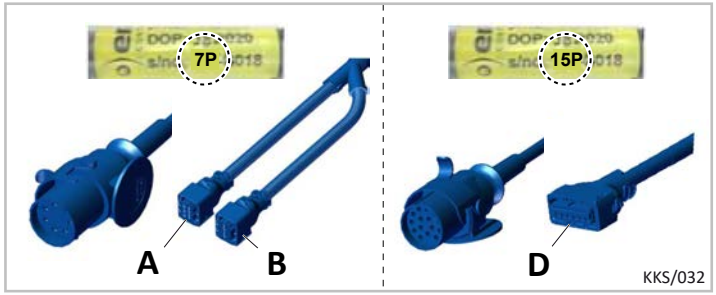


Figure 32: KKS fifth wheel coupling / Adapter cables with 7-pin/15-pin connector

- Connect the supplied adapter cables with 7-pin and 15-pin connectors to the mating connectors of the cable that you previously routed from the fifth wheel coupling (see connection illustrations in Figures 31 and 32).

Figure 33: KKS fifth wheel coupling / 4-pin adapter power cable

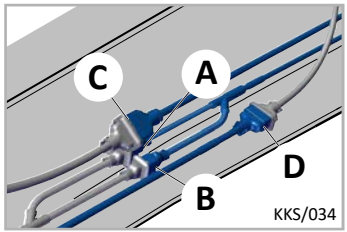


Figure 34: KKS fifth wheel coupling / Cable routing / Adapter cable connection

- As an option, you can connect the supplied 4-pin power cable to the mating connector of the cable that you previously routed from the fifth wheel coupling (see connection illustrations in Figures 31 and 33). This additional cable can be used for supplying power to additional consumers in the semi-trailer. Pay attention to the fitting guidelines of the relevant manufacturer.

Pin connector	Cable colour	Cross-sectional area	Pin to ISO13044	Function to ISO13044
1	Brown/ Black	6.0 mm²	L8	Earth for pin L10
2	Brown/ White	6.0 mm²	L9	Earth for pin L11
3	Red/Black	6.0 mm²	L10	Power supply for optional equipment 1
4	Red/ White	6.0 mm²	L11	Power supply for optional equipment 2

IMPORTANT!

The adapter cables cannot be connected the wrong way round, because different connector sizes with different geometric pin configurations have been used. If you do not use the 4-core power cable, seal the connector (of the KKS coupling) with the supplied protective cap (pre-assembled).

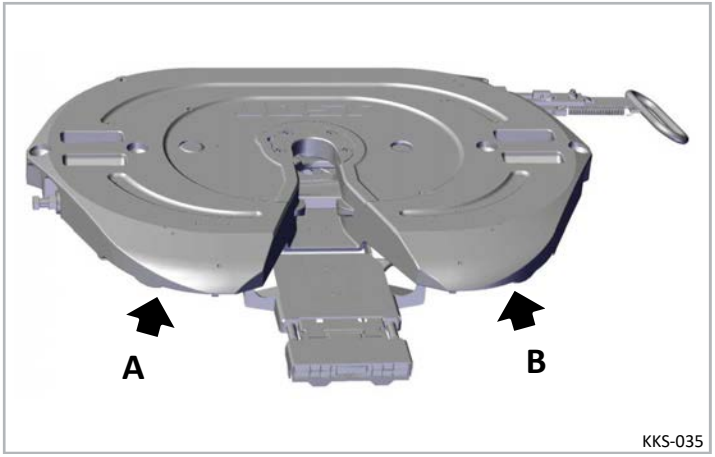


Figure 35: KKS fifth wheel coupling / Locations of electrical connections

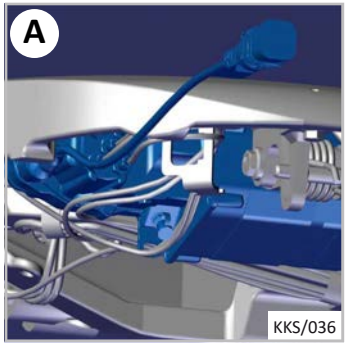


Figure 36: KKS fifth wheel coupling / Location of LubeTronic 5Point connection

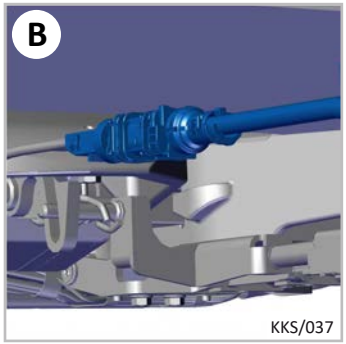


Figure 37: KKS fifth wheel coupling / Cable connection

- If you have the JOST LubeTronic *5Point*, connect to it the electric cable that you routed to the fifth wheel coupling at the beginning of section 7.1 (for the location of the LubeTronic *5Point*, see zone A in Figures 35 and 36).
- Connect the KKS connection cable, which you routed in section 7.1.1, to the KKS fifth wheel coupling (for the location of the connection, see zone B in Figures 35 and 37).

7.1.6 Programming the remote control and parking brake signal

Before starting the system for the first time, it needs to be programmed to recognise the parking brake signal.

Step 1: Get into programming mode

Figure 38: Remote control / Programming the parking brake / Step 1

Start programming as follows:

- Press and hold key (3) as shown in Figure 38.
- Switch on the ignition.

Step 2: Program the parking brake signal

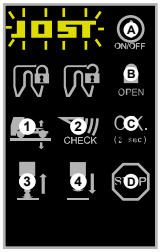


Figure 39: Remote control / Programming the parking brake / Step 2

- When the “JOST” symbol on the remote control flashes yellow, release key (3).
- Engage the parking brake and press and hold the “OK” key (C) until you hear a beep. Release the “OK” key (C).

The system now recognises the “Parking brake engaged” state and changes to normal operating mode.

IMPORTANT!

The remote control may initiate programming automatically. Programming the remote control is essential when starting the system for the first time! Parking brake signal programming may be repeated if necessary. If the system does not recognise that the “OK” key is pressed, this generally indicates that the parking brake signal is not sufficiently stable, probably because it is an unusable data bus signal!

7.2 Semi-trailer

WARNING!

- Installation must be performed exclusively by appropriately qualified personnel.
- During installation, make sure that the KKS Wedge can move clockwise and anticlockwise in the direction of travel easily and without jamming. In addition, cables and hoses must not get trapped when the KKS Wedge is turning.
- Route electric cables and pneumatic hoses so they cannot chafe and connect them at the intended connection points.
- Properly insulate exposed cable ends.
- Produce the connection to the 7-pin socket using an ISO 7638-1 connector.
- Produce the connection to the 15-pin socket using an ISO 12098 connector.
- The manufacturer will not accept any warranty claims if installation is carried out incorrectly.

WARNING!

Support the semi-trailer with appropriate equipment before commencing work underneath it. The vehicle construction firm/workshop is responsible for safely supporting the semi-trailer.

ATTENTION!

Do not kink pneumatic hoses during installation!

ATTENTION!

Before installing the system, make sure that the work area of the system is free from sharp edges and soiling, such as weld spatter and metal shavings. Remove all traces of masking material.

IMPORTANT!

To enable the KKS system to be used to its full extent, the vehicle must be equipped with JOST Modul E-Drive landing gears. If the vehicle does not have JOST Modul E-Drive landing gears, they must be retrofitted. For installation, refer to the JOST Modul E-Drive landing gears installation and operating manual at www.jost-world.com

Make sure the following work is complete before you proceed with the next steps:

- The JOST Modul-E-Drive landing gears must be installed on the semi-trailer as described in the installation and operating manual.
- The semi-trailer must be prepared appropriately as described in section 6 "Preparatory work on the semi-trailer".

7.2.1 Installing the valve unit

The valve unit consists of the components shown in Figure 40. It is needed to perform the following functions:

- Connecting the KKS pneumatic hoses to the pneumatic system of the semi-trailer.
- Enabling compressed air to be supplied to the semi-trailer via the KKS system or via conventional spiral hoses.

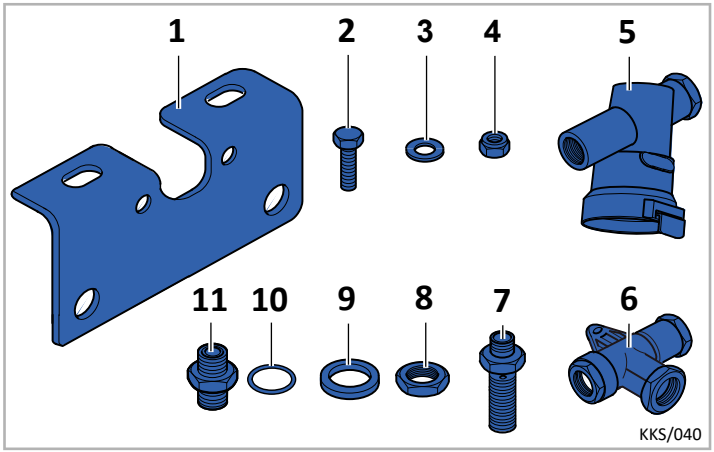


Figure 40: Overview of valve unit components

1 Holder
2 Screw M8 x 35 mm (2x)
3 Shim (4x)
4 Flange nut M8 (2x)
5 Line filter (2x)
6 2-way valve (2x)
7 Screw-in connector (2x)
8 Hex nut (4x)
9 Thrust collar (4x)
10 Washer (4x)
11 8 or 10 mm connector (6x)

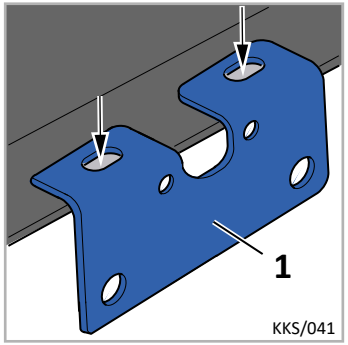


Figure 41: Valve unit holder / Marking the holder location

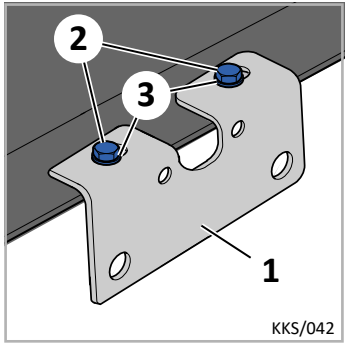


Figure 42: Valve unit holder / Screwed onto semi-trailer

- Select a suitable location on the semi-trailer for fitting the holder (1). It may be secured to any of the semi-trailer's longitudinal members.

IMPORTANT!

Install the holder (1) beyond the pivot range of the tractor unit.

- In your chosen location, mark the position of the holes for the holder (1), as shown in Figure 41. Drill two holes with a diameter of 8.5 mm.
- Secure the holder (1) using the screws (2), shims (3) and lock nuts (4), as shown in Figure 42.

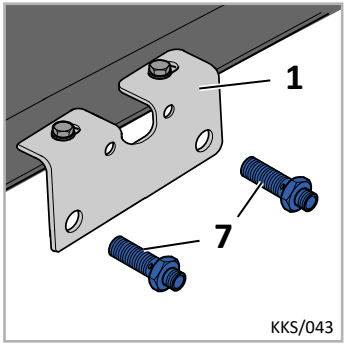


Figure 43: Valve unit holder / screw-in connector inserted / View 1

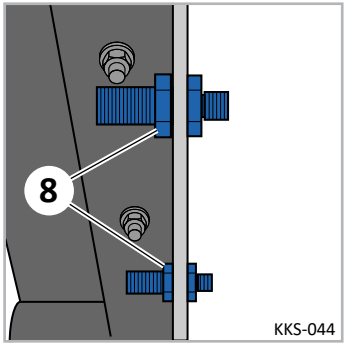


Figure 44: Valve unit holder / screw-in connector inserted / View 2

- Insert the screw-in connector (7) in the holder (1), making sure that the shorter threads are on the same side, as shown in Figure 43.
- Fit the hex nut (8) to the long thread and turn by hand until it is nearly in contact with the holder, as shown in Figure 44.

ADVICE!

See Figure 40 for an overview of components.

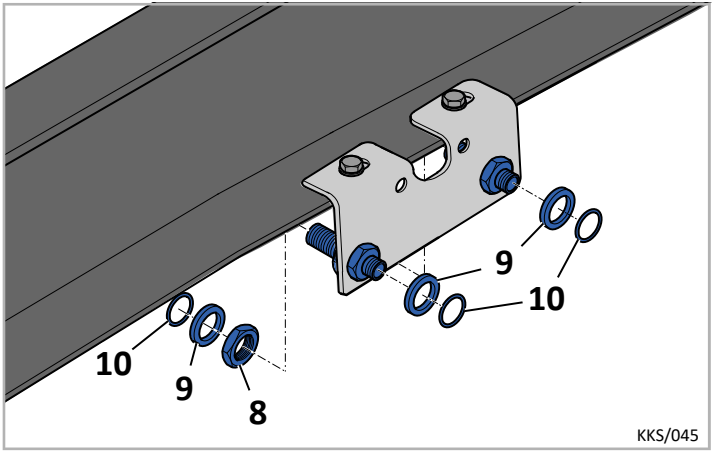


Figure 45: Valve unit holder / Fitting the seals

- Fit another hex nut (8) to the long thread and turn by hand. Push one thrust collar (9) and washer (10) onto the long thread, and do the same on the short thread (see Figure 45).

ATTENTION!

Take care not to damage washers and thrust collars. Make sure that the flat side of the thrust collar is in contact with the hex nut (8) and the other side is in contact with the hexagon of the screw-in connector (7).

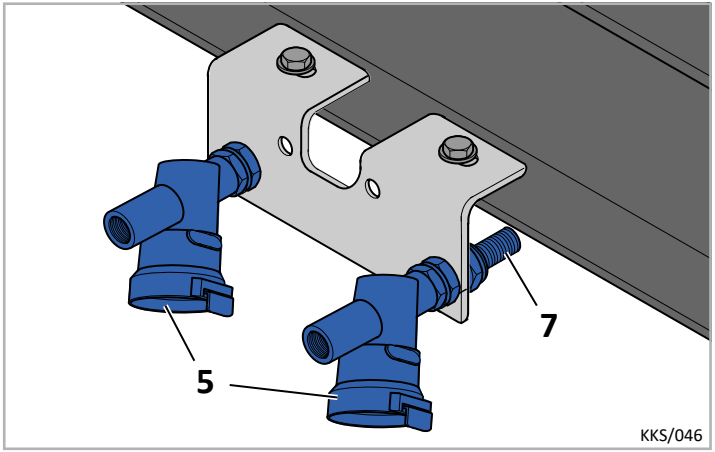


Figure 46: Valve unit holder / Installing the line filters

- Fit the line filters (5) to the connection side of the holder (1), which is facing the front in the direction of travel and therefore has the smallest distance from the KKS system. Use connection 2 of the line filters and fit them to the screw-in connectors (7). Securely tighten the line filters (see Figure 46).

IMPORTANT!

After installation, the opening of the line filters must face downwards.

ADVICE!

See Figure 40 for an overview of components.

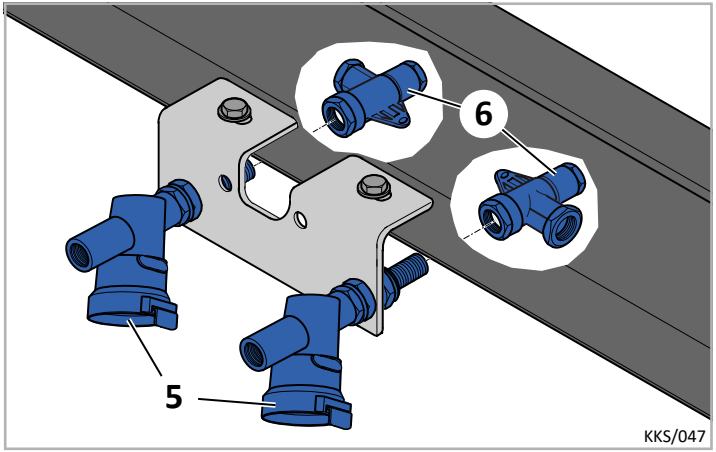


Figure 47: Valve unit holder / Installing the 2-way valve

- Connect the 2-way valves (6) to the unused connection side of the screw-in connectors (7). Use port 1.1 of the 2-way valves (6) to do this. Align the 2-way valves so that port 2 is horizontal and facing the semi-trailer chassis (see Figure 47).

ATTENTION!

Do not connect ports 1.2 and 2 of the 2-way valve to the screw-in connector (7).

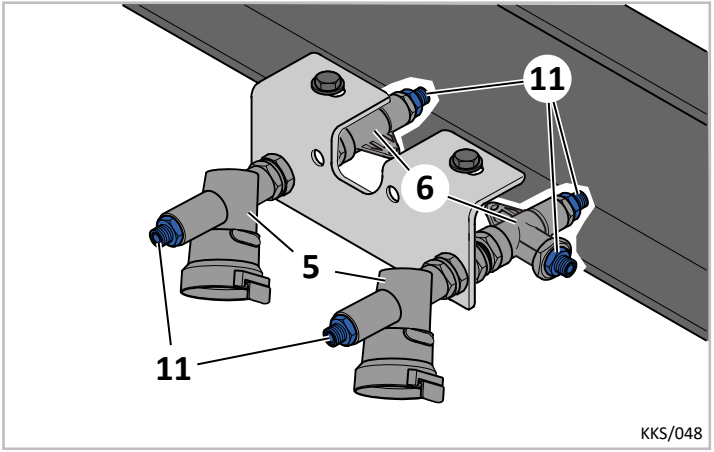


Figure 48: Valve unit holder / Installing the connection pieces

- Screw the vehicle-specific connection pieces (11) into the open connections of the line filters (5) and 2-way valves (6), as shown in Figure 48.

IMPORTANT!

Choose connection pieces that match the cross-sectional area of the semi-trailer's pneumatic hoses. The supplied connection pieces are intended for hoses with a cross-sectional area of 8 x 1 mm. If your hoses have a different cross-sectional area, you will need to purchase the connection pieces separately.

ADVICE!

See Figure 40 for an overview of components.

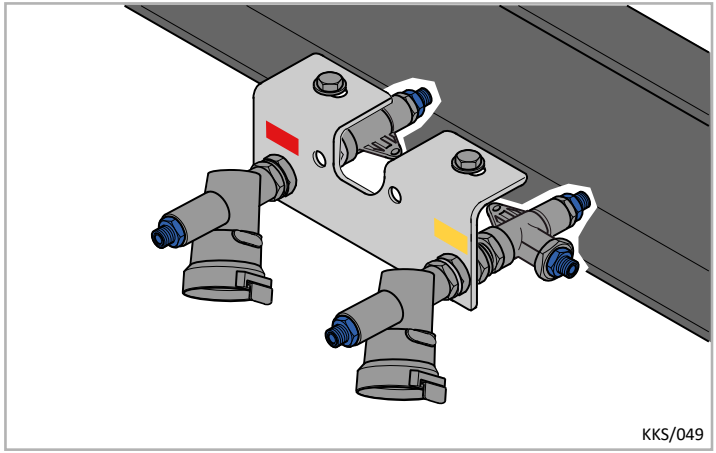


Figure 49: Valve unit holder / Coloured marking

WARNING!

Do not connect the hoses of the brake and supply circuits to the same valve circuit. This is the responsibility of the installer.

ATTENTION!

Make colour markings on the valve unit or label it, so that the valve circuits will be connected to the correct pneumatic circuit during installation. This will prevent potential incorrect installation. We recommend positioning the valve circuit for the pneumatic supply circuit on the right in the direction of travel, and the valve circuit for the pneumatic brake circuit on the left in the direction of travel (see e.g. Figure 49).

7.2.2 Routing and connecting the pneumatic hoses to the valve unit

ATTENTION!

Take care not to confuse the pneumatic hoses of the brake and supply circuits during routing and connection. Confusing the hoses will almost certainly lead to malfunctions and must be avoided!

ADVICE!

Before routing the pneumatic hoses, make colour markings on them so that they will be connected to the correct pneumatic circuit.

Figure 50: Front of semi-trailer with Duo-Matic

Figure 51: Front of semi-trailer with coupling heads

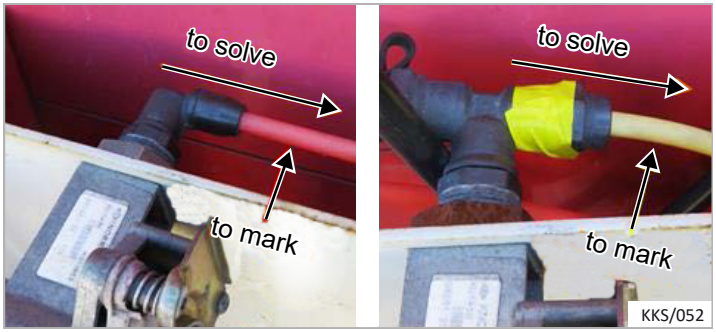


Figure 52: Coupling heads / Detaching the hoses

- Detach the hoses from the Duo-Matic or the coupling heads, as shown e.g. in Figure 52. Make a colour marking on the detached hose (supply circuit = red, brake circuit = yellow) and place them to one side for later installation.
- Connect a new hose to each coupling head (yellow, red) or to the Duo-Matic. Make a colour marking on the new hose (supply circuit = red, brake circuit = yellow) and route it to port 1.2 of the 2-way valves (6) on the valve unit.

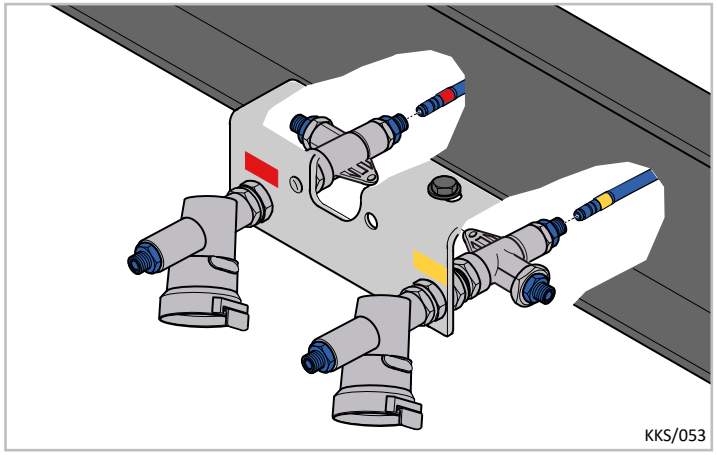


Figure 53: Valve unit / Connecting hoses from front of semi-trailer

- Connect port 1.2 of the appropriate 2-way valve (6) to the air hose that you just routed from the front of the semi-trailer (see Figure 53).

ATTENTION!

Make absolutely sure the pneumatic hoses are correctly connected!
The pneumatic hose marked yellow (brake circuit) is connected to the valve circuit marked yellow, and the pneumatic hose marked red (supply circuit) is connected to the valve circuit marked red.

ADVICE!

See Figure 40 for an overview of components.

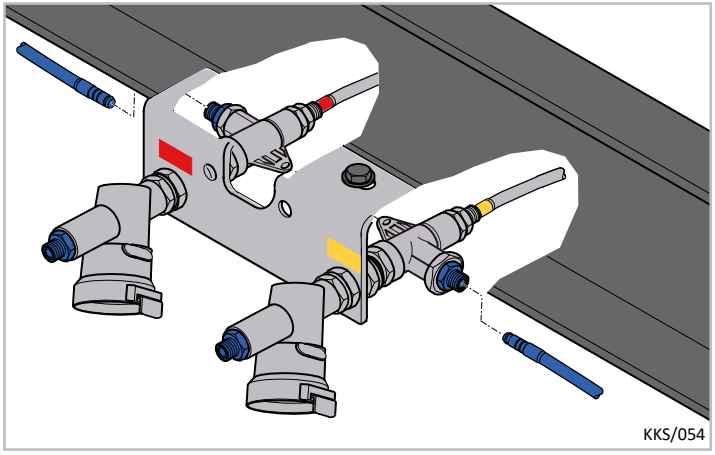


Figure 54: Valve unit / Connecting hoses from rear of semi-trailer

- Route the pneumatic hoses that you previously detached from the Duo-Matic or coupling heads on the front of the semi-trailer to the appropriate 2-way valve (6).
- Connect the pneumatic hoses to port 2 of the 2-way valve (6), as shown in Figure 54.
- Connection 1 of the line filters is intended for installing the pneumatic hoses of the KKS system and must not be connected at this point.

ATTENTION!

Make absolutely sure the pneumatic hoses are correctly connected! The pneumatic hose marked yellow (brake circuit) is connected to the valve circuit marked yellow, and the pneumatic hose marked red (supply circuit) is connected to the valve circuit marked red.

7.2.3 Installing the cable store

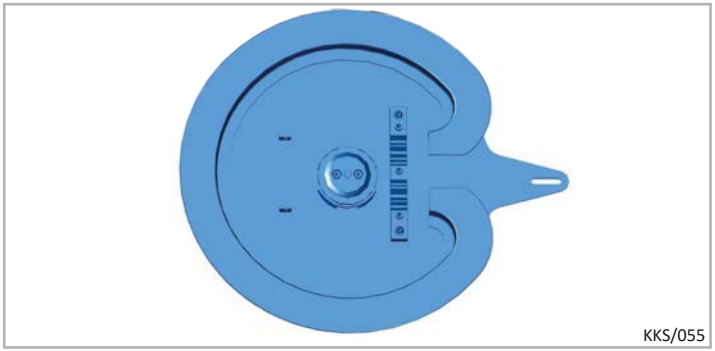


Figure 55: Cable store

The cable store shown in Figure 55 performs two important functions:

- Returning the KKS Wedge to the straight-ahead position when the semi-trailer is uncoupled.
- Feeding electric cables and pneumatic hoses in and out when cornering.

Correct and careful installation of the cable store greatly helps to ensure the optimum function of the system as a whole.

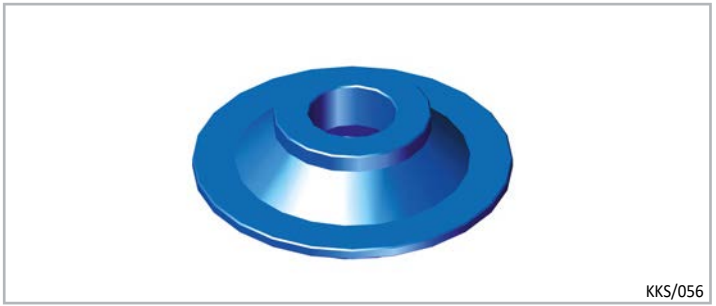


Figure 56: Centring ring

- Before you start installing the cable store, first remove all paint residues and weld spatter from the cable store centring ring (see Figure 56).

ATTENTION!

Take care not to damage the centring ring when cleaning it.

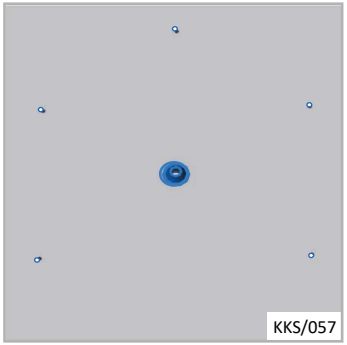


Figure 57: Installing the cable store / trailer plate drilling pattern

Figure 58: Installing the cable store / Before screwing in place

- Position the cable store on the centring ring, ensuring the cable store is correctly seated (see Figure 58).

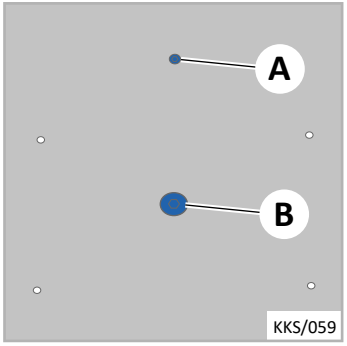


Figure 59: Installing the cable store / View of trailer plate from below

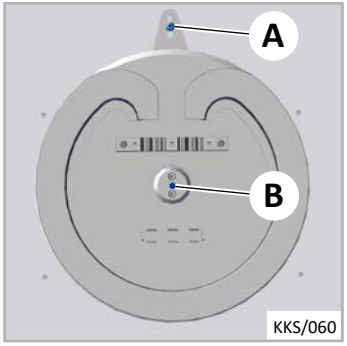


Figure 60: Installing the cable store / After screwing in place

- Insert the M6 x 20 countersunk screw in the countersink (see Item **A** in Figures 59 and 60) from below and secure with the M6 lock nut. Tighten the M6 lock nut to a torque of 7 Nm ±1.
- Insert the M10 x 30 screw in the countersink (see Item **B** in Figures 59 and 60) from below and tighten to a torque of 30 Nm ±1.

7.2.4 Installing the kingpin

Figure 61: Kingpin with screws

Figure 62: Kingpin after installation

- Take the kingpin and screws out of the packaging and have them ready to hand for installation.
- Install the kingpin using the supplied screws. Tighten the screws to the correct torque. This can be found in the data sheet that is included with the kingpin.
- After installation, grease the surface of the kingpin in the area of the support surface KKS (bracket).

ADVICE!

For kingpin information and tightening torques, see the installation and operating manual at www.jost-world.com.

7.2.5 Installing the KKS Connector

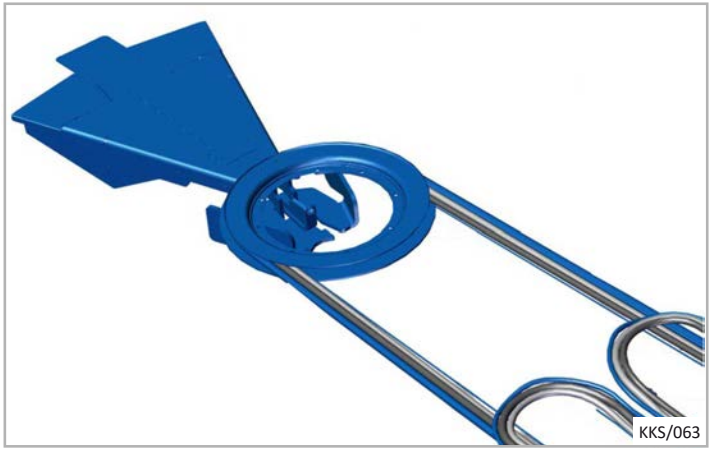


Figure 63: KKS Connector with electric cables, pneumatic hoses and retaining ring

The KKS Connector consists of the components shown in Figure 63. The principle functions of the KKS Connector are as follows:

- Producing the electrical and pneumatic connections between the tractor unit and semi-trailer.
- Feeding electric cables and pneumatic hoses in and out when cornering.

ATTENTION!

Incorrect installation jeopardises the safety of the articulated vehicle as a whole.

Figure 64: KKS Connector / Under the semi-trailer

Figure 65: KKS Connector / Under the kingpin

- Place the KKS Connector under the semi-trailer so that it is located centrally below the kingpin, as shown in Figure 65.

ADVICE!

JOST recommends using lifting gear for this step.

Figure 66: KKS Connector / Retaining ring

Figure 67: KKS Connector / Retaining ring positioned and inserted

- Have the retaining ring and M6 x 20 screws ready to hand.
- Grease the retaining ring as shown in Figure 66.

IMPORTANT!

Use the supplied lubricating grease for this purpose. If you use a different lubricant, this may adversely affect function or cause severe malfunction.

- Place the retaining ring on the guide wedge of the KKS Connector, as shown in Figure 67.

ADVICE!

Once the KKS Connector is raised, it will no longer be possible to insert the retaining ring.

Figure 68: KKS Connector / Arrangement of cables/hoses / Before installation

- Remove all transport material from electric cables and pneumatic hoses. Unwind the cables and hoses and arrange them as shown in Figure 68. Their position is determined by the KKS Connector.
- Take special care with the pneumatic hoses, as they must not be kinked.

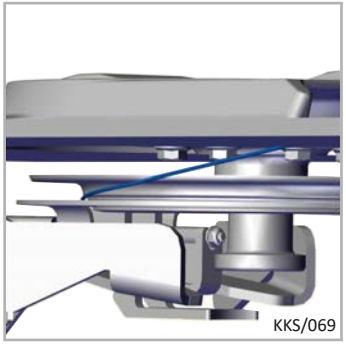


Figure 69: KKS Connector / Routing the wire rope to the semi-trailer interior (cables and hoses are not shown)

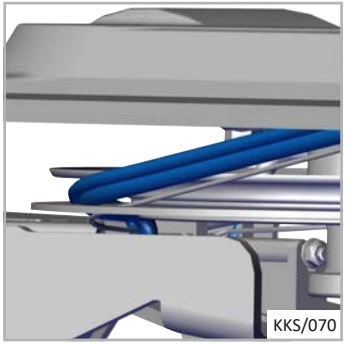


Figure 70: KKS Connector / Routing electric cables to the semi-trailer interior (pneumatic hoses are not shown)

Figure 71: KKS Connector / Fitting the protective tubing / Pneumatic hose

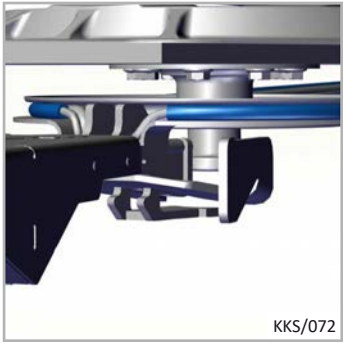


Figure 72: KKS Connector / Protective tubing fitted / Final position

- Lift the KKS Connector so that the wire ropes, electric cables and pneumatic hoses can still be inserted in the interior.
- First guide the wire ropes on both sides through the hole in the weld-in plate into the interior of the semi-trailer.
- Guide the electric cables on both sides through the hole in the weld-in plate into the interior.
- Make sure that cables and hoses are in the position determined by the KKS Connector after they have been routed into the interior of the semi-trailer (see Figure 68). Avoid laying cables/hoses on top of each other.
- Fit the supplied protective tubing to the pneumatic hoses, as shown in Figure 71.
- Make sure the protective tubing reaches the point where the hoses go through into the plate of the KKS Connector.

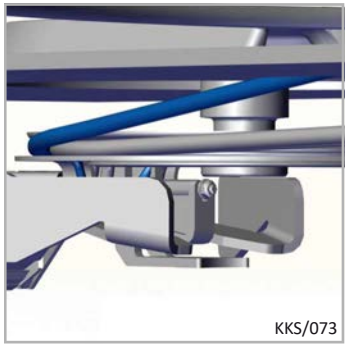


Figure 73: KKS Connector / Routing pneumatic hoses to the semi-trailer interior

Figure 74: KKS Connector / Routing hoses / Plate

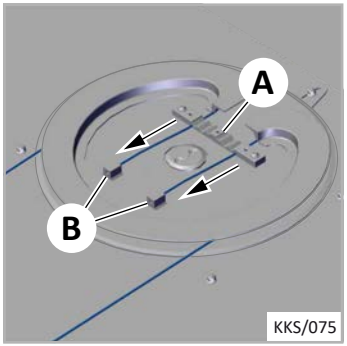


Figure 75: Cable store / Routing / Wire ropes

Figure 76: Cable store / Temporary routing

- Route the pneumatic hoses with fitted protective tubing through the opening in the weld-in plate into the interior. Make sure that the hoses are in the position determined by the KKS Connector, as mentioned above.

ATTENTION!

Press the cables/hoses into the plate of the KKS Connector, so that the outermost one (pneumatic hose with protective tubing) is flush with the outer radius of the plate (see Figure 74).

- Enter the interior of the semi-trailer. First route the wire ropes around the radius of the cable store and guide them through the hole in cable clamp **A** and the hole in clamping block **B**, as shown in Figure 75.
- Guide the electric cables on both sides around the radius of the cable store and route to the side, as shown in Figure 76.

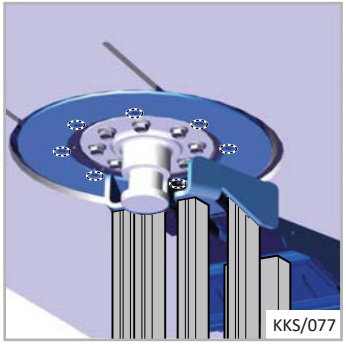


Figure 77: KKS Connector / Raised on mounting trolley / Retaining ring not shown

Figure 78: KKS Connector / Installing the retaining ring

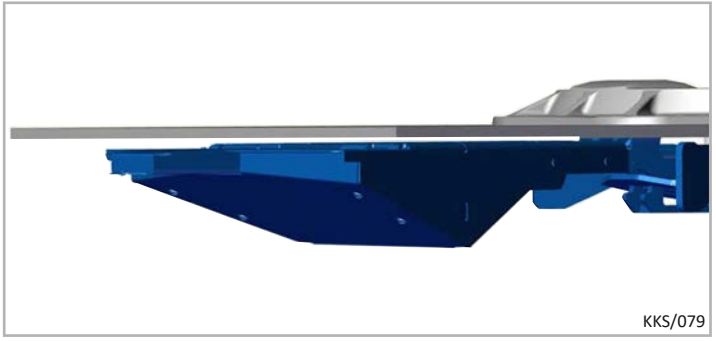


Figure 79: KKS Connector / After installation / Distance from trailer plate

- Raise the KKS Connector so that it is in contact with the weld-in plate, as shown in Figure 77. Take care not to trap or damage wire ropes, electric cables or pneumatic hoses during this process.
- When the KKS Connector is raised, the threaded holes of the weld-in plate for securing the retaining ring must be fully visible.
- Fasten the retaining ring with the M6 x 20 screws as follows (see Figure 78 for screw positions):
  - Insert screws (1–6) and tighten uniformly
  - Turn the KKS Wedge clockwise in the direction of travel and tighten screw 7
  - Turn the KKS Wedge anticlockwise in the direction of travel and tighten screw 8
  - Tighten screws (1–8) uniformly to a torque of 7 Nm ± 1
- Check that there is clearance between the trailer plate and the KKS Wedge.
- Turn the KKS Connector frame clockwise and anticlockwise to check it can move freely.
- When moving the KKS Wedge, make sure that cables/hoses in the interior do not cause trapping or get damaged.

Figure 80: KKS Connector / Positioning centrally

Figure 81: KKS Wedge / Fixing centrally

- Position the KKS Connector straight ahead (0°) and fix it in this position.

7.2.6 Installing the wire rope tensioner

The wire rope tensioner consists of the components shown in Figure 82. The principle functions of the wire rope tensioner are as follows:

- Enabling the KKS Wedge to return to its original position
- Enabling cables to feed in and out of the cable store when cornering

ATTENTION!

Correct and careful installation of wire rope tensioners is important for the overall function of the KKS system.

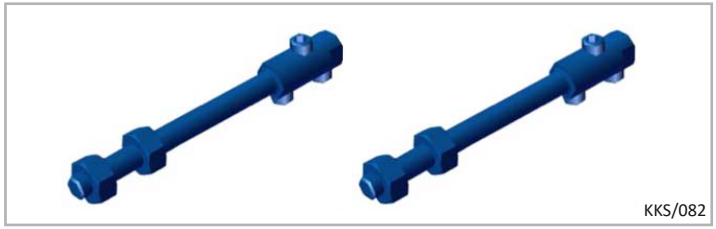


Figure 82: Wire rope tensioners

- Take the wire rope tensioners out of the packaging and have them ready to hand for fitting to the cable store.

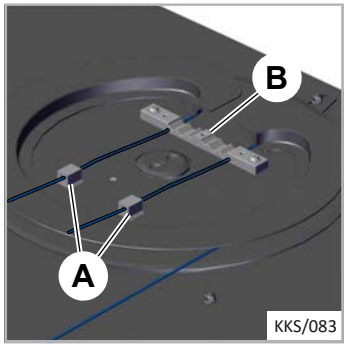


Figure 83: Wire ropes / Tensioned by hand

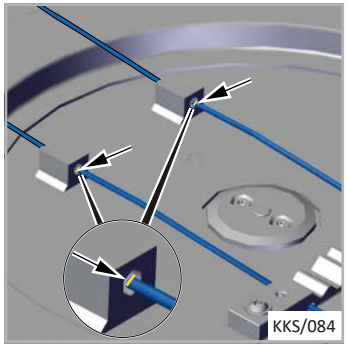


Figure 84: Wire ropes / Marked

A Clamping block

B Cable clamp

- Guide the wire ropes through the appropriate clamping block. Tension both wire ropes by hand so they are slightly taut, as shown in Figure 83. Make sure that the wire ropes are inside the radius of the cable store and are not mixed up with electric cables or pneumatic hoses. For this reason, we recommend laying the electric cables and pneumatic hoses to one side beforehand.
- Keep the wire ropes under tension and mark them at the edge of the clamping blocks, as shown in Figure 84.

ATTENTION!

Do not cross wire ropes over. Furthermore, make sure that the wire ropes are inside the radius of the cable store.

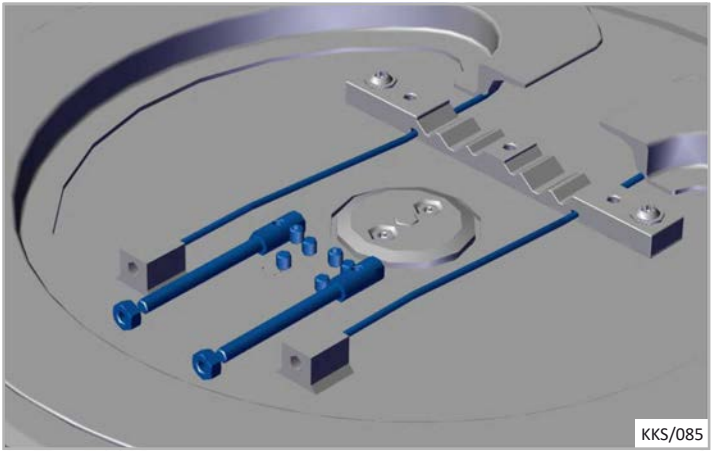


Figure 85: Wire rope / Shortened with wire rope tensioner

- Shorten the wire ropes at the marking you made earlier. Use a suitable tool to do this, to prevent the wire ropes from fraying (see Figure 85).
- Undo the grub screws of each wire rope tensioner and place to one side.

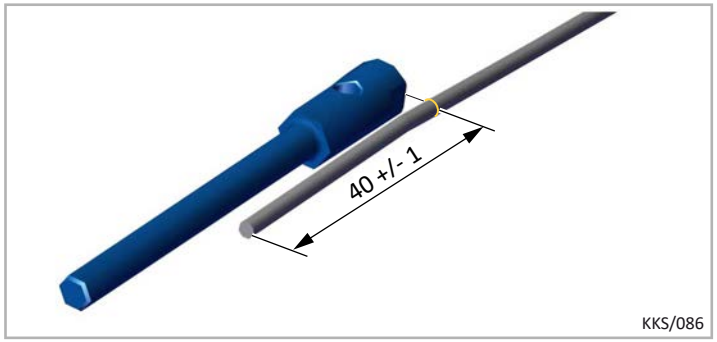


Figure 86: Wire rope / Installation in wire rope tensioner

- Insert the wire ropes in the tensioners as far as they will go, and mark the wire ropes where they enter the tensioners. The wire ropes must be inserted in the tensioners by approx. 40 mm (see Figure 86).
- Pull the wire ropes out of the tensioners and measure the distance from the marking you made to the end of the rope. If the measurement is approx. 40 mm, the markings can be used as an aid to installation.
- Insert the wire rope in the tensioner as far as the marking. Apply threadlocker to the grub screws and screw them into the wire rope tensioners. Tighten the grub screws to a torque of 4.5 Nm.

IMPORTANT!

Use medium-strength liquid threadlocker when fitting the grub screws.

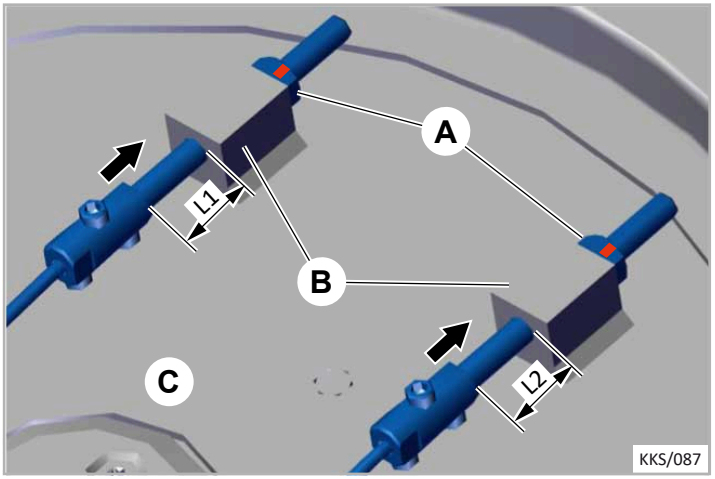


Figure 87: Installing tensioners with wire ropes

A Clamping nut
B Clamping block
C Cable store

Install the wire rope tensioners as follows:

1. Guide the wire rope tensioners through the clamping blocks.
2. Fit the clamping nuts **A** and screw them in by hand on both sides alternately as far as possible, to give the wire ropes a basic initial tension.
3. Check whether both sides have uniform hand-tight tension by measuring L1 and L2. L1 and L2 must be identical before you can commence step 4.
4. Mark the clamping nuts **A**.

IMPORTANT!

Uniformly tensioned wire ropes are essential for the overall function of the KKS system.

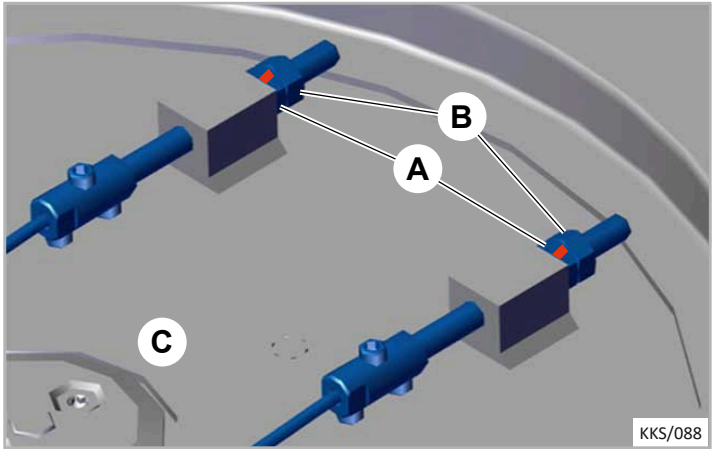


Figure 88: Wire rope tensioner / Adjusting the wire rope tension

A Clamping nut
B Lock nut
C Cable store

Tension the wire ropes as follows:

1. Turn each clamping nut **A** 180°, using a size 10 open-end spanner to turn nut **A** while simultaneously holding the wire rope tensioner with a size 8 open-end spanner. The wire ropes must not sag after tensioning. Check that tensioning is uniform on both sides by measuring L1 and L2, as shown in Figure 87.
2. Fit lock nut **B** and tighten it without turning clamping nut **A**.

7.2.7 Installing the cable clamp

The principle functions of the cable clamp shown in Figure 89 are as follows:

- Clamping electric cables and pneumatic hoses to maintain their basic tension.
- Enabling cables to feed in and out of the cable store when cornering.

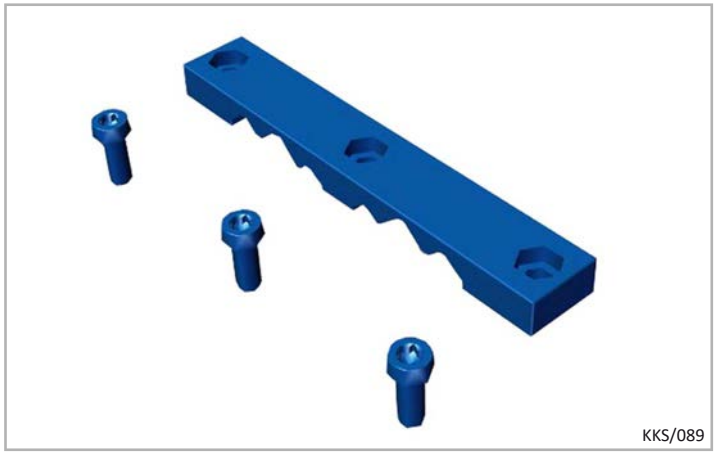


Figure 89: Cable clamp

ATTENTION!

Correct and careful installation is fundamental to the overall function of the KKS system. The cable clamp is a vital component that enables the feeding of cables when cornering. Incorrect installation jeopardises the safety of the articulated vehicle as a whole.

- Take the cable clamp out of the packaging and have it and the screws ready for installation.

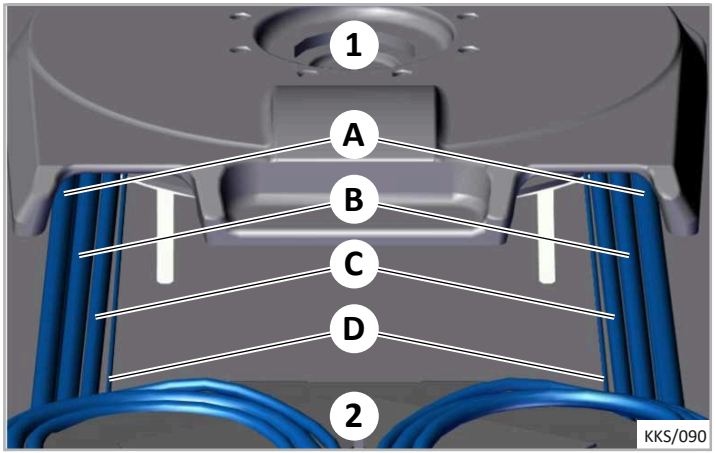


Figure 90: Semi-trailer interior / Routing wire ropes, electric cables and pneumatic hoses

A Pneumatic hoses
B Electric cables with large Ø
1 Weld-in plate
C Electric cables with small Ø
D Wire ropes
2 Cable store

- Arrange the wire ropes, electric cables and pneumatic hoses coming out of the weld-in plate as shown in Figure 90.

Figure 91: Cable store / Tensioned electric cables and pneumatic hoses

- Lay the cables/hoses around the cable store and route them over the lower part of the cable clamp. Tension the cables/hoses to the required tension. Maintain the tension, then tighten the cable clamp uniformly to a torque of 7 Nm ± 1.
- Once tensioned, cables/hoses should not be lying on the trailer plate.
- Mark the cables/hoses on both sides on the cable clamp.

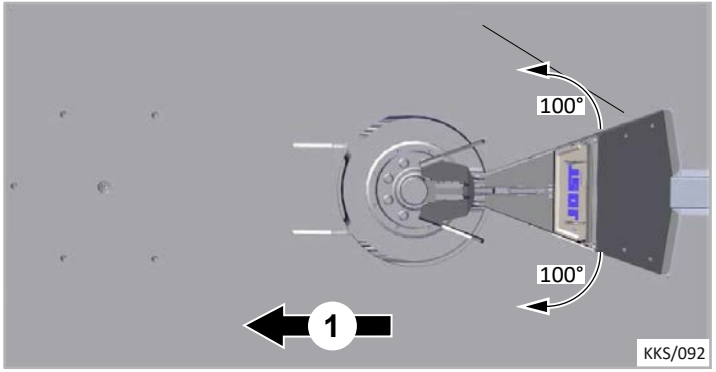


Figure 92: KKS Wedge return / View of underside of trailer plate

1 Direction of travel

Check the KKS Wedge return as follows:

- Lay the electric cables and pneumatic hoses to one side in the semi-trailer interior, so that they do not hamper the movement of the cable store.
- Go underneath the semi-trailer and rotate the KKS Wedge 100° anticlockwise and clockwise in the direction of travel. The KKS Wedge must return to the straight-ahead position (0° ± 30°) of its own accord from the maximum steering angles.

WARNING!

The KKS Wedge is spring-loaded and returns independently. Make sure that no persons or objects are in the pivot range of the KKS Wedge during this check. Risk of injury!

Functioning correctly:
- Check that wire ropes are not sagging.
- Check that electric cables and pneumatic hoses are not sagging.
- Check the routing of cables and hoses from the weld-in plate to the cable store over the full lock-to-lock steering angle to the left and right in the direction of travel.
  The full lock-to-lock angle to the left and right in the direction of travel (approx. 100°) must be achieved without any cables/hoses getting trapped. Check this several times and re-tension any cables/hoses if necessary.
- Proceed with section 7.2.8.

Functioning only partially or not at all:
- Fix the KKS Wedge in its straight-ahead position once more, as shown in Figure 81.
- Tension the wire rope as described above by tightening the clamping nuts **A** a further 180°.
- Repeat this procedure until the KKS Wedge returns to the correct position.
- The clamping nut **A** may be rotated a maximum of three turns (3 x 360°).

ADVICE!

If the KKS Wedge still does not return to the correct position, contact our technical customer support team.

7.2.8 Installing the guard plate

The principle functions of the guard plate shown in Figure 93 are as follows:

- Guiding electric cables and pneumatic hoses to the cable store.
- Electric cables and pneumatic hoses are securely fastened.

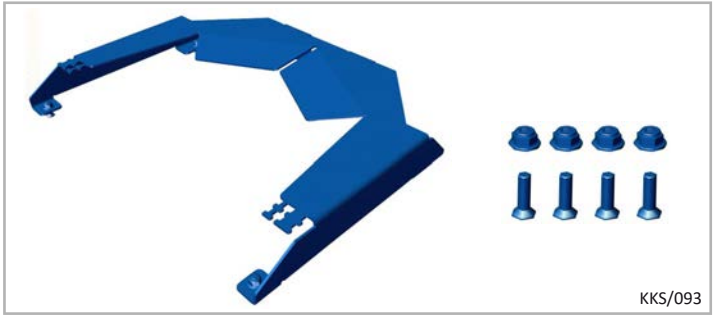


Figure 93: Guard plate with nuts and bolts

ATTENTION!

Correct and careful installation of the guard plate is important for the overall function of the KKS system. The guard plate guides cables, hoses and wire ropes to the cable store and protects them from damage. In addition, the guard plate features several fastening points for cables and hoses, ensuring they are neatly and properly secured.

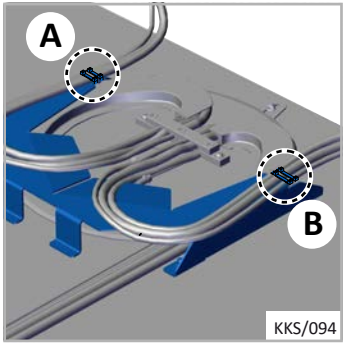


Figure 94: Cable store / Cables and hoses routed on guard plate

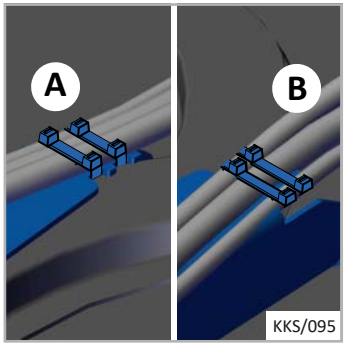


Figure 95: Cable store / Securing cables and hoses

- Fit the guard plate over the cable store as shown in Figure 94.
- Secure the guard plate to the trailer plate by inserting the M6 bolts (not pre-coated) in the trailer plate and screwing them into the guard plate with the M6 nuts.
- Tighten the nuts to a torque of 7 Nm ± 1.
- Lay the cables on the guard plate in a loop, as shown in figure 94, and secure them to the fastening points with cable ties, as shown in Figure 95.

7.2.9 Laying cables and hoses in the cable store

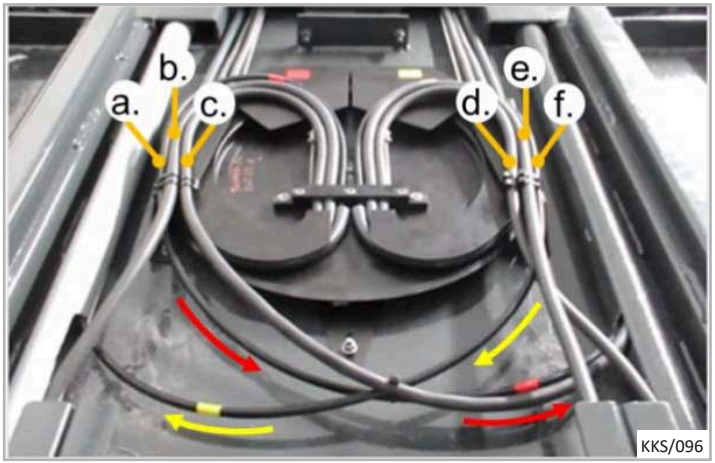


Figure 96: Cable store / General routing of cables and hoses

a Pneumatic hose (supply circuit, marked red)
b 15-pin electric cable
c Electric supply cable for landing gears
d 7-pin electric cable
e Electric auxiliary supply cable
f Pneumatic hose (brake circuit, marked yellow)

- Cross pneumatic hoses **a** and **f** over and route them towards the rear of the semi-trailer to the valve unit.
- Route electric cables **b** and **d** on the front wall of the semi-trailer.
- Route electric cable **c** towards the rear of the semi-trailer so that it can be connected to the landing gear cable later on.
- The auxiliary supply cable **e** is only required if needed to supply power to additional units, such as a tail lift, for example. If it is not needed, properly insulate the cable and secure it in the chassis.

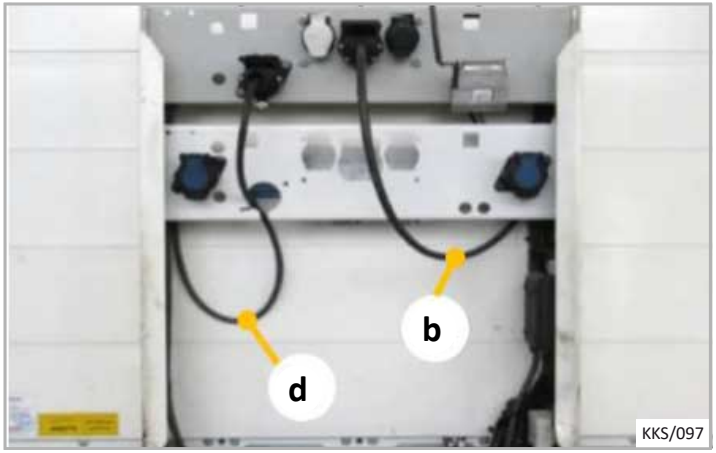


Figure 97: Routing and connecting the 7-pin and 15-pin electric cables

- Connect the supplied 15-pin connector to electric cable **b** and route the cable in a loop, so that it can be plugged into the socket and the parking socket.
- Connect the supplied 7-pin connector to electric cable **d** and route the cable in a loop, so that it can be plugged into the socket and the parking socket.

Figure 98: 15-pin connector

Figure 99: 7-pin connector

- Install the 15-pin and 7-pin connectors in the correct sequence, making sure they are connected correctly according to the colour coding in the connector, see Figures 98 and 99.

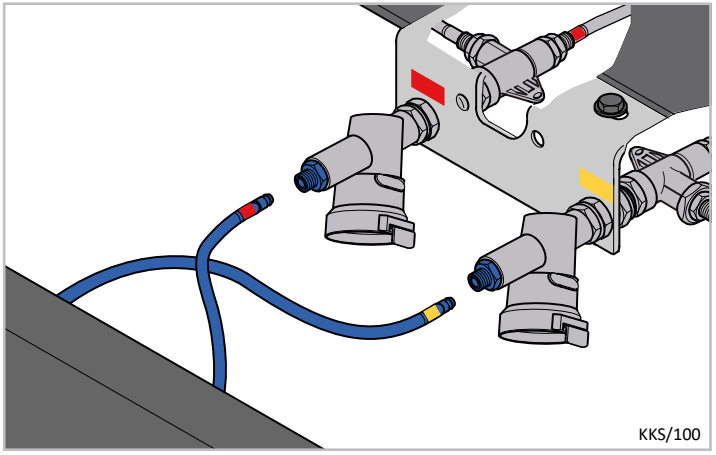


Figure 100: Valve unit / Connecting KKS pneumatic hoses

- Connect the cables that you routed from the KKS cable store to the correct line filter. If pneumatic hoses **a** and **f** were laid crosswise on the cable store, they must also be laid crosswise up to the valve unit.

ATTENTION!

Make absolutely sure the pneumatic hoses are correctly connected!

The pneumatic hose marked yellow (brake circuit) is connected to the valve circuit marked yellow, and the pneumatic hose marked red (supply circuit) is connected to the valve circuit marked red.

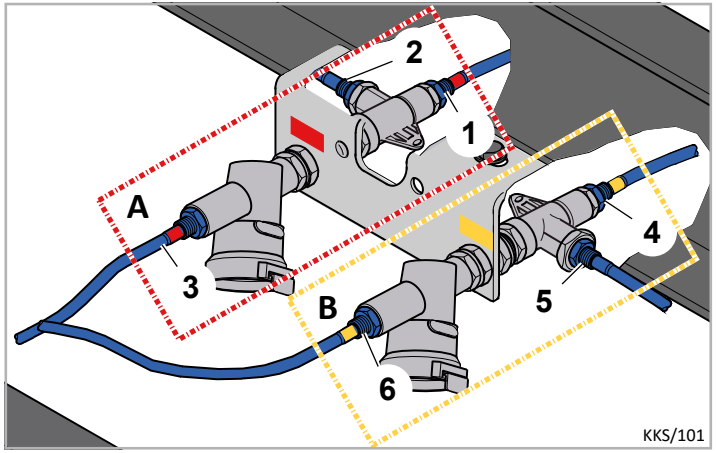


Figure 101: Valve unit / Fully connected

A Supply valve unit (red)
1 Coupling head or Duo-Matic supply hose
2 Semi-trailer supply hose
3 KKS supply hose
B Brake valve unit (yellow)
4 Coupling head or Duo-Matic brake hose
5 Semi-trailer brake hose
6 KKS brake hose

- To prevent malfunctions, check that all pneumatic hoses are correctly connected to the valve unit (see Figure 101).

IMPORTANT!

When installation is complete, check that the valve unit is tight using leak detector spray.

7.3 Connecting the Modul E-Drive landing gears

7.3.1 Procedure for semi-trailers without Modul E-Drive landing gears

- Install Modul E-Drive landing gears as described in the product-specific installation and operating manual.

ADVICE!

You can find the Modul E-Drive landing gears installation and operating manual at www.jost-world.com.

- The Modul E-Drive landing gears are already equipped with the KKS connection cable, so you can proceed with cable laying from Figure 109.

7.3.2 Procedure for semi-trailers with Modul E-Drive landing gears

Figure 102: Modul E-Drive / KKS adapter cable

- Take the KKS connection cable out of the packaging and have it ready to hand for installation.

Figure 103: Modul E-Drive / Motor housing

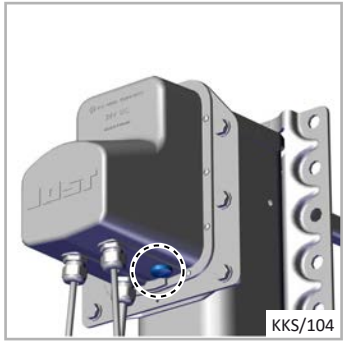


Figure 104: Modul E-Drive / Blind plug / Motor housing

- Remove the plug that is marked in Figure 104.

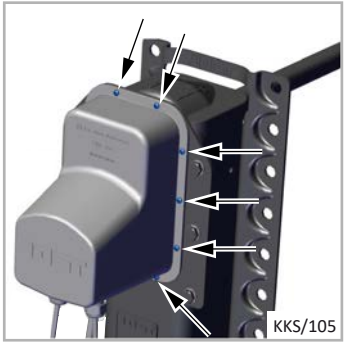


Figure 105: Modul E-Drive / Motor housing / Location of screws

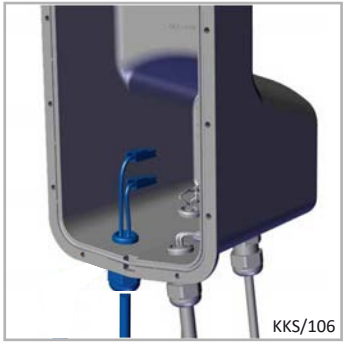


Figure 106: Modul E-Drive / KKS adapter cable / Installed in motor housing

- Undo the housing screws (10 x T20) from the motor (see Figure 105).

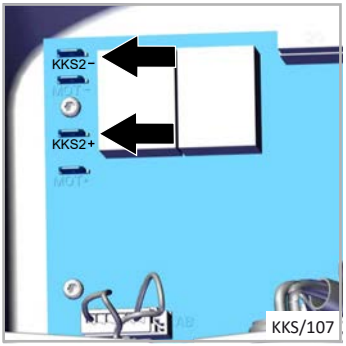


Figure 107: Modul E-Drive / Circuit board / KKS adapter cable connections

Figure 108: Modul E-Drive / Circuit board / Connected KKS adapter cable

- Remove the cover, making sure that the cover seal does not come off.
- Guide the connection cable through the hole in the E-Drive motor housing, as shown in Figure 106. Tighten the PEG screw plugs.
- Depending on the design, connect the blue or white cable on the circuit board to KKS (+) and the brown or black cable on the circuit board to KKS (-) (see Figures 107 and 108).

Figure 109: Modul E-Drive / Routing the KKS adapter cable on the housing

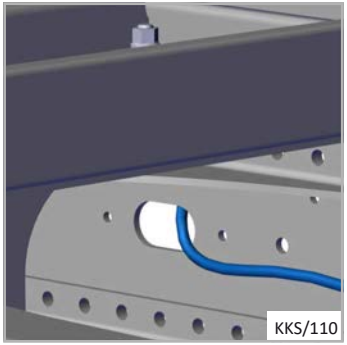


Figure 110: Modul E-Drive / Routing the KKS adapter cable to the semi-trailer chassis

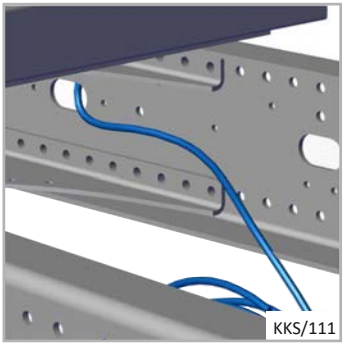


Figure 111: KKS adapter cable / Routing the cable in the semi-trailer chassis

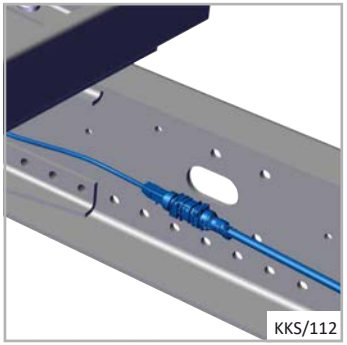


Figure 112: KKS adapter cable / Connection with KKS system supply cable

- Install the motor housing with the screws (10 x T20), uniformly tightening the screws to 2.7 – 3.3 Nm. Make sure that the seal does not slip out of place when fitting the housing.
- Lay the cable towards the chassis in a slight curve. Choose a suitable location for routing the cable in the chassis interior (see Figures 109 and 110).
- Connect the electrical supply cable of the Modul E-Drive landing gears, which you routed from the cable store, to the KKS adapter cable, which you connected to the Modul E-Drive landing gears.

7.3.3 Warning stickers

Attach the following warning stickers to the KKS semi-trailer so that they can easily be seen:

- Affix this sticker prominently on the front of the semi-trailer in the vicinity of spiral hose connections.

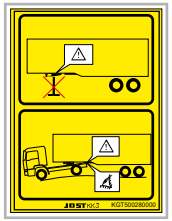


Figure 113: Warning sticker for front of semi-trailer

ATTENTION!

Meaning of warning sticker:

- Components near the kingpin. Do not damage!
- Watch out for parts or objects that may move along with the rotary movement of the tractor unit and semi-trailer.

- Affix these stickers prominently in the vicinity of the landing gears.

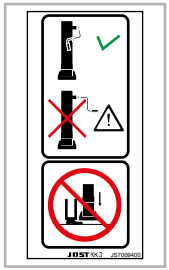


Figure 114: Warning sticker near landing gears

ATTENTION!

Meaning of warning sticker:

- Put the crank handle in neutral position after use!
- Do not place your feet under the landing gear!

7.4 Before starting up

WARNING!

The JOST KKS may only be started up if:

- A system check of the tractor unit has been performed as instructed in section 7.4.1 "Checking the KKS system on the tractor unit".
- A system check of the semi-trailer has been performed as instructed in section 7.4.2 "Checking the KKS system on the semi-trailer".
- The supplied warning stickers have been attached as instructed in section 7.3.3 "Warning stickers".

Use on public roads is only permitted if:

- The installed system on the tractor unit and semi-trailer has been approved by a vehicle licensing organisation (e.g. DVLA).
- The system has been entered in the vehicle documents.

WARNING!

The system check may only be performed by authorised, trained personnel at a truck/commercial vehicle workshop.

7.4.1 Checking the KKS system on the tractor unit

The following points must be checked:

- The KKS fifth wheel coupling is securely mounted and tightened to the correct torques.

ADVICE!

You can find further information in the JOST 40/42 fifth wheel coupling installation and operating manual at www.jost-world.com.

- Electric cables and pneumatic hoses are securely fastened.
- Pneumatic hoses do not leak at maximum system pressure.

IMPORTANT!

To check for leaks, use a leak detector spray approved for use in automotive pneumatic systems.

- Electric cables and pneumatic hoses have no kinks or chafing points.
- Check that electrical connections are connected correctly and have the correct fuses. In particular, check that the supplied relay has been correctly inserted in the relay socket of the connection cable without damaging the contacts.
- Pneumatic hoses and electric cables have sufficient distance from components that radiate a lot of heat, such as the tractor unit's exhaust system.
- The full tipping range of the fifth wheel coupling can be used without squashing, kinking or tensioning pneumatic hoses or electric cables.
- The driver's cab can be fully tipped without squashing, kinking or tensioning pneumatic hoses or electric cables.
- Check that installation of the remote control has not obstructed the driver's range of vision.

7.4.2 Checking the KKS system on the semi-trailer

The following points must be checked:

- The kingpin, cable store and guard plate are securely mounted and tightened to the correct torque.
- Installation conforms to the dimensions in Figure 13.
- The full pivot range of the KKS Wedge can be utilised to ± 100° without trapping or getting caught, or squashing the supply cable.

WARNING!

Risk of injury when the KKS Wedge swings back!

- Check that the KKS Wedge returns to the straight-ahead position 0° ± 30° of its own accord from both directions.
- Electric cables and pneumatic hoses are fed in and out of the cable store as the KKS Wedge pivots. Cables and hoses must not cause the KKS Wedge to jam. Cables and hoses must not be laid on top of one another, causing them to get trapped as the KKS Wedge pivots.
- The electrical supply cable from the KKS cable store to the landing gears is securely fastened and correctly routed.
- The landing gears are securely mounted and tightened to the correct torque.
- The landing gears have the correct direction of rotation.
- The landing gear crank is correctly installed and functioning.
- Check that the landing gear crank runs freely when the landing gears are moved by the electric drive.

ADVICE!

You can find further information in the JOST Modul E-Drive landing gears installation and operating manual at www.jost-world.com.

- Pneumatic hoses are correctly connected to the valve unit (see Figure 101).
- The 7-pin and 15-pin connectors are correctly connected to the appropriate KKS wiring harness.
- Electric cables and pneumatic hoses have no kinks or chafing points.
- Move the KKS Wedge from lock to lock at least 15 times. While doing this, check the routing of wire ropes, electric cables and pneumatic hoses from the weld-in plate to the cable store.

ATTENTION!

Cables and hoses must not sag or lie on top of one another. Some minor sagging or overlaying can be deemed OK if the cables or hoses in question are not trapped as the KKS Wedge pivots, and if the return of the KKS Wedge is not obstructed.

- Check that electric cables and pneumatic hoses have not become detached from the cable clamp. Pay particular attention to pneumatic hoses, as they have the smallest outside diameter.

8.1 Status displays

System check on “Ignition on”:

Figure 115: Remote control status display / System check

The displays and keys shown here flash.

The current operating status is then displayed.

The landing gear check can optionally be performed at the end of the system check. A time window of approx. 10 s is available (“OK” flashes) for the landing gear check.

Coupled:

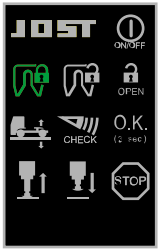


Figure 116: Remote control status display / Coupled

The display panel goes dark after approx. 30 s.

Uncoupled:

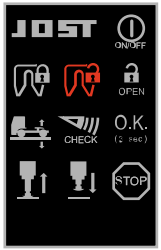


Figure 117: Remote control status display / Uncoupled

The display panel switches off after approx. 10 s.

Switched off:

Figure 118: Remote control status display / Switched off

All displays and keys are off.

8.2 Coupling with the JOST KKS

For coupling with the KKS, the various displays on the remote control guide the operator through the coupling process. Section 8 "Operation" provides a detailed explanation of the coupling and uncoupling process and the various possible displays on the remote control.

WARNING!

The driver must note the following when using the system:

- Keep an eye on the area surrounding the vehicle when manoeuvring, to prevent injury to persons and damage to property.
- Only park the semi-trailer on a suitable surface.
- Make sure the semi-trailer is properly secured.
- Comply with the safety instructions of the vehicle manufacturer.
- System operators must familiarise themselves with its use beforehand and be in possession of the necessary driving licence for the vehicle.
- Only operate the remote control when the vehicle is stationary.
- The crank handle must be in neutral position.

IMPORTANT!

Only use the KKS system if:

- The semi-trailer and tractor unit are equipped with the KKS system.
- The ancillary consumer circuit of the tractor unit's pneumatic system is at operating pressure.

IMPORTANT!

At low temperatures, we recommend running the vehicle's engine, because the electric landing gears use more power at low temperatures and there is a risk of discharging the battery.

General information

- **Flashing keys:**
  This means the operator must press the flashing key to confirm. This initiates the next action by the system or confirms the previous action. A beep acknowledges that a key has been pressed. If a flashing key is not pressed promptly during a process, a beep sounds after a certain time.
- **Continuously lit key:**
  This indicates the action currently taking place.

IMPORTANT!

Pressing “STOP” discontinues the current action immediately. An action can also be aborted by switching off the ignition. You can restore the JOST KKS to its initial state, “Coupled and landing gears retracted”, at any time by switching the ignition off and on again, provided that the semi-trailer is coupled.

ATTENTION!

Check that the fifth wheel coupling is locked and check the status of the landing gears before starting the system up again.

8.2.1 Coupling

WARNING!

The driver must check that the semi-trailer has been coupled correctly. The trailer plate must rest on the fifth wheel coupling without a gap. The fifth wheel coupling must be closed, see the JSK 40/42 installation and operating manual.

WARNING!

Pay attention to the following before coupling:

- The general safety instructions at the beginning of section 8.2 "Coupling with the JOST KKS".

Step 1: System is switched off

Figure 119: Remote control display / Step 1 / Coupling

- The vehicle is uncoupled and has no contact with the semi-trailer. The system is switched off.

IMPORTANT!

The system can only be switched on if the fifth wheel coupling is in contact with the trailer plate.

Step 2: System is switched on

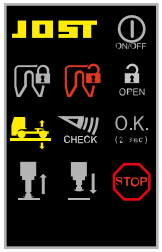


Figure 120: Remote control display / Step 2 / Coupling

- Drive the tractor unit under the semi-trailer.
- Raise the vehicle with the pneumatic suspension until the fifth wheel coupling is in full contact with the trailer plate and the feet of the landing gears have no contact with the ground.

ATTENTION!

Ensure sufficient clearance above the semi-trailer.

- The remote control display switches on automatically when the fifth wheel coupling is in contact with the trailer plate. After it has switched on, the remote control display indicates the status, as shown in Figure 120.

Step 3: Coupling the vehicle

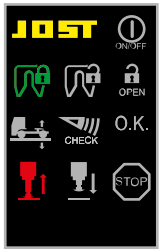


Figure 121: Remote control display / Step 3 / Coupling

- Reverse the tractor unit until the fifth wheel coupling closes and the “Fifth wheel coupling closed” symbol on the remote control display lights up green (see Figure 121).
- If the fifth wheel coupling is closed correctly, the “Landing gears up” symbol on the remote control display lights up red and a beep sounds (see symbol in Figure 121).
- Engage the parking brake.
- Proceed with step 4.

IMPORTANT!

If the parking brake is not engaged after coupling, after 2 minutes the system sets an error (see section 10 "Troubleshooting" for how to proceed).

Step 4: Taking the weight off the landing gears

Figure 122: Remote control display / Step 4 / Coupling

- Raise the tractor unit with the pneumatic suspension until the weight is taken off the landing gears.

IMPORTANT!

The weight is off the landing gears when the feet are not in contact with the ground. If you proceed without taking the weight off the landing gears, there will be an error message (see section 10 "Troubleshooting" for how to proceed).

- Once the weight has been taken off the landing gears, press and hold the flashing “OK” key on the remote control display for 3 seconds until you hear a beep (see Figure 122).
- Proceed with step 5.

Step 5: The landing gears retract

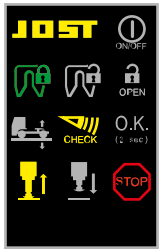


Figure 123: Remote control display / Step 5 / Coupling

- The landing gears retract. This process takes approx. 1 to 2 minutes. The “Retract landing gears” symbol lights up on the remote control display (see Figure 123). Once the landing gears are fully retracted, they switch off automatically.
- The “Check” symbol lights up on the remote control display (see Figure 123). This means that you must get the articulated vehicle ready to drive and carry out a safety inspection.
- Once the landing gears are retracted, the articulated vehicle is ready to drive and you have completed the pre-departure inspection, proceed with step 6.

WARNING!

Make sure that there are no persons or objects within range of the retracting landing gears during this manoeuvre.
Do not operate the pneumatic suspension while the landing gears are retracting.

IMPORTANT!

You may get the articulated vehicle ready to drive and perform the pre-departure inspection while the landing gears are retracting.
Pay attention to the relevant safety regulations, particularly Health & Safety at Work.

IMPORTANT!

You can stop landing gear retraction at any time by pressing “STOP” on the remote control display or by switching off the ignition. To restart the landing gears, switch on the ignition and press “OK” on the display panel.

Step 6: Adjusting the vehicle level

Figure 124: Remote control display / Step 6 / Coupling

- The “Adjust fifth wheel height” symbol lights up on the remote control display panel (see Figure 124). This means that you must adjust the pneumatic suspension of the tractor unit in line with the vehicle level.
- The “Check” symbol lights up on the remote control display panel (see Figure 124). This means that you must now check that coupling has taken place correctly. To do this, check that:
  - The trailer plate is resting on the fifth wheel coupling without a gap.
  - The fifth wheel coupling is closed and locked.
  - The landing gears are in the uppermost position.

ADVICE!

You can find further information in the JOST 40/42 fifth wheel coupling installation and operating manual at www.jost-world.com.

- Once you have adjusted the vehicle level and checked the coupling process, press and hold the flashing “OK” key on the remote control display panel for 3 seconds until you hear a beep (see Figure 124).
- Proceed with step 7.

Step 7: Coupling complete

Figure 125: Remote control display / Step 7 / Coupling

- The “Fifth wheel coupling closed” symbol lights up green on the remote control display panel (see Figure 125). This indicates that the coupling process is complete.
- After approx. 30 seconds, the remote control display panel goes dark.

8.2.2 Uncoupling

WARNING!

Pay attention to the following before uncoupling:
- The general safety instructions at the beginning of section 8.2 "Coupling with the JOST KKS".

Step 1: Switching on the system

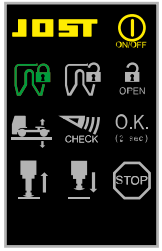


Figure 126: Remote control display / Step 1 / Uncoupling

- Manoeuvre the semi-trailer into the desired position.
- Engage the parking brake. When the parking brake is engaged, the remote control display panel lights up for approx. 30 seconds (see Figure 126).
- When you wish to start the uncoupling process, press the yellow lit “ON/OFF” key on the remote control display panel within 30 seconds (see Figure 126).

IMPORTANT!

If you do not start the uncoupling process within 30 seconds, the remote control display panel switches off. To start uncoupling, disengage and then re-engage the parking brake. The remote control display panel switches itself on again for approx. 30 seconds and you can start the uncoupling process.

WARNING!

Never not use the system when the vehicle is moving!
If the system switches on when the vehicle is moving, go to a workshop immediately and do not use the system!

- Proceed with step 2.

Step 2: Adjusting the uncoupling height / Extending the landing gears

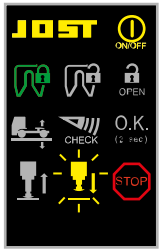


Figure 127: Remote control display 1 / Step 2 / Uncoupling

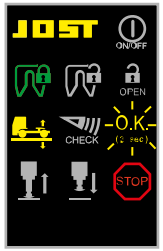


Figure 128: Remote control display 2 / Step 2 / Uncoupling

- The “Fifth wheel coupling closed” symbol continues to light up green on the remote control display panel (see Figures 127 and 128). This indicates that the fifth wheel coupling is closed.
- Press the flashing “Extend landing gears” symbol on the remote control display panel (see Figure 127).
- When you have pressed this key, the “Adjust fifth wheel height” symbol lights up on the remote control display panel (see Figure 128).
- Adjust the uncoupling height and press and hold “OK” on the remote control display panel for 3 seconds until you hear a beep. The landing gears now extend.

IMPORTANT!

Adjust the fifth wheel height so that uncoupling can take place without problem, but the weight can also be taken off the landing gears using the pneumatic suspension when coupling.

- Proceed with step 3.

Step 3: The landing gears extend

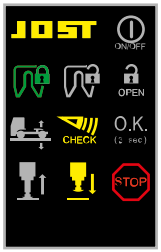


Figure 129: Remote control display / Step 3 / Uncoupling

- The “Fifth wheel coupling closed” symbol continues to light up green on the remote control display panel (see Figure 129). This indicates that the fifth wheel coupling is closed.
- The landing gears extend. This process takes approx. 1 to 2 minutes. The “Extend landing gears” symbol lights up on the remote control display (see Figure 129). Once the landing gears are fully extended and in contact with the ground, they switch off automatically.
- The “Check” symbol on the remote control display panel lights up while the landing gears are extending (see Figure 129). This means that you now have to prepare the semi-trailer for parking in accordance with the relevant safety regulations.

IMPORTANT!

When parking the semi-trailer, pay attention to the applicable safety regulations, particularly Health & Safety at Work.

WARNING!

Make sure that there are no persons or objects within range of the extending landing gears during this manoeuvre.
Do not operate the pneumatic suspension while the landing gears are extending.

IMPORTANT!

You can stop landing gear extension at any time by pressing “STOP” on the remote control display panel or by switching off the ignition. To restart the landing gears, switch on the ignition and press “OK” on the display panel.

- Once the landing gears are extended and the vehicle has been prepared for parking in accordance with the applicable safety regulations, you can proceed with step 4.

Step 4: Initiating opening of the fifth wheel coupling

Figure 130: Remote control display 1 / Step 4 / Uncoupling

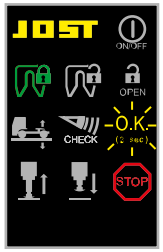


Figure 131: Remote control display 2 / Step 4 / Uncoupling

- The “Fifth wheel coupling closed” symbol continues to light up green on the remote control display panel (see Figure 130). This indicates that the fifth wheel coupling is closed.

IMPORTANT!

Make sure that the feet of the landing gears are in contact with the ground before pressing the “OPEN” key on the remote control display panel.

- Press the flashing “OPEN” key on the remote control display panel to initiate opening of the fifth wheel coupling (see Figure 130).
- Press and hold the flashing “OK” key on the remote control display panel for approx. 3 seconds to initiate opening of the fifth wheel coupling (see Figure 131).
- Proceed with step 5.

Step 5: Fifth wheel coupling opens

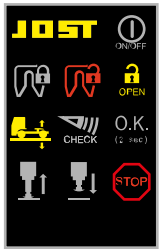


Figure 132: Remote control display / Step 5 / Uncoupling

- The “Fifth wheel coupling open” symbol lights up red on the display panel. The “OPEN” key on the remote control display panel lights up while the fifth wheel coupling is being opened with the remote control (see Figure 132).
- Release the parking brake and drive the tractor unit away from the semi-trailer. As you do this, lower the pneumatic suspension of the tractor unit. When the pneumatic suspension has been lowered so far that the fifth wheel coupling is no longer in contact with the trailer plate, the “Adjust fifth wheel height” symbol on the remote control display panel goes out.

IMPORTANT!

The semi-trailer can only be uncoupled when the “OPEN” key on the remote control display panel is lit. Once the “OPEN” key lights up, you must drive the tractor unit away from the semi-trailer within 5 seconds. If the fifth wheel coupling does not open, coupling and uncoupling must be repeated.
Re-coupling is not possible while the “OPEN” key on the remote control display panel is lit.

- Proceed with step 6.

Step 6: Uncoupling complete

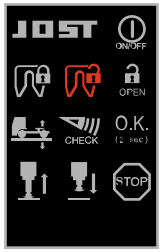


Figure 133: Remote control display / Step 6 / Uncoupling

- The “Fifth wheel coupling open” symbol continues to light up on the remote control display panel (see Figure 133). This indicates that the uncoupling process has been completed correctly.
- The display and key lighting goes out approx. 10 seconds after uncoupling has been completed and the fifth wheel coupling plate is not in contact with the trailer plate.

IMPORTANT!

Before re-coupling, the uncoupling process must have been fully completed and the tractor unit must have been driven away from the semi-trailer.

8.3 Error displays

Error display 1:

Figure 134: Remote control error display 1

The fifth wheel coupling was locked during coupling, but the kingpin was not detected:

- Check whether the fifth wheel coupling is coupled.
- If it did not lock correctly, open the fifth wheel coupling manually and repeat the coupling process.

Error display 2 / Coupled:

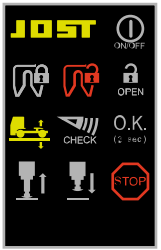


Figure 135: Remote control error display 2 / Coupled

The kingpin was detected during coupling, but the fifth wheel coupling did not lock:

- Check whether the fifth wheel coupling is properly closed and locked. If it is not, separate the tractor unit and semi-trailer and inspect the fifth wheel coupling for mechanical damage or foreign bodies.

Error display 2 / Uncoupled:

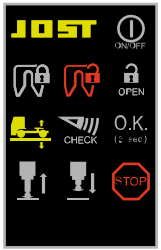


Figure 136: Remote control error display 2 / Uncoupled

The tractor unit is uncoupled, but a non-existent kingpin or semi-trailer has been detected:

- Using a cloth, clean any grease that may contain metal from the contact surface of the kingpin sensor or semi-trailer sensor.
- If this does not fix the error, go to a workshop.

Error display 3:

Figure 137: Remote control error display 3

The landing gears cannot be electrically retracted:

- Check whether the semi-trailer is fitted with the KKS system.
- Check that weight has been taken off the landing gears.
- If the landing gears still do not function, operate them manually and press “OK” to confirm.
- Have the system checked at a workshop.

Error display 4:

Figure 138: Remote control error display 4

The landing gears cannot be electrically extended:

- Check whether the semi-trailer is fitted with the KKS system.
- If the landing gears still do not function, operate them manually and press “OK” to confirm.
- Have the system checked at a workshop.

8.4 Manual operation

The fifth wheel coupling and landing gears can generally be operated manually. To do this, follow the instructions in the product-specific installation and operating manual.

WARNING!

If you wish to operate the fifth wheel coupling or landing gears manually, do not initiate the system routine on the remote control. If you initiate the system routine and still operate the above-mentioned components manually, this may lead to serious system errors that can only be read and deleted by a specialist workshop.

ADVICE!

Before you can manually operate the fifth wheel coupling, you must have read and understood the JOST JSK 40/42 installation and operating manual. You can find this at www.jost-world.com.

ADVICE!

Before you can manually operate the JOST Modul E-Drive landing gears, you must have read and understood the JOST Modul E-landing gears operating and installation manual. You can find this at www.jost-world.com.

8.5 Fifth wheel coupling anti-theft and misuse protection

Like the JSK 42, the JSK 42 KKS can also be locked with a padlock.

ADVICE!

You can find further information in the JOST 40/42 fifth wheel coupling installation and operating manual at www.jost-world.com.

IMPORTANT!

If you open the fifth wheel coupling using the JOST KKS remote control without having removed the lock, you must switch off the ignition of the tractor unit. This disables the remote control so that you can remove the lock safely.
When the ignition is switched on again, the landing gears are raised once more. You can now start the uncoupling process again.

9.1 General information

WARNING!

Pay attention to the following points:

- Use only genuine JOST parts for repairs and replacement.
- Repair work must be carried out by qualified, trained personnel.

IMPORTANT!

Service interval:

- Maximum 50,000 km (approx. 31,250 miles) or every 6 months.

Check the following components in respect of function, wear, corrosion, damage and cracks:

- Fifth wheel coupling
- Kingpin with KKS Connector
- Modul E-Drive landing gears
- Cable store
- Fastenings of electric cables and pneumatic hoses
- Valve unit

IMPORTANT!

For the fifth wheel coupling, kingpin, valve unit line filter and Modul E-Drive landing gears, please also refer to the product-specific installation and operating manuals. Follow the instructions in the product-specific installation and operating manuals to ensure safe operation of the system.

Immediately replace faulty components that endanger the safety of the entire system with genuine JOST parts.

9.2 KKS fifth wheel coupling

For the fifth wheel coupling, refer to the instructions in the JOST JSK 40 and JSK 42 installation and operating manual.

ADVICE!

You can find further information in the JOST 40/42 fifth wheel coupling installation and operating manual at www.jost-world.com.

9.3 Modul E-Drive landing gears

For the Modul E-Drive landing gears, refer to the instructions in JOST's product-specific installation and operating manuals.

ADVICE!

You can find further information in the JOST Modul E-Drive landing gears installation and operating manual at www.jost-world.com.

9.4 KKS Connector

Check the following points regularly and service if necessary:

- Grease the guide rail of the KKS Connector on the kingpin regularly and check that it moves easily.
- Regularly check that the KKS Wedge moves easily.
- Check the KKS Wedge for damage (e.g. a bent side edge or displaced cable/hose), as this can obstruct the coupling process and cause further damage to the JOST KKS.

IMPORTANT!

The KKS Wedge must be able to move through its full range from 0° ± 100° without jamming, getting caught or kinking or squashing electric cables or pneumatic hoses. The KKS Wedge must return to the straight-ahead position 0° ± 30° of its own accord from all positions.

WARNING!

Risk of injury when the KKS Wedge swings back!

9.5 Kingpin

ADVICE!

You can find information in the JOST kingpin installation and operating manual at www.jost-world.com.

9.6 Valve unit

Check the valve unit regularly for leaks. Service the line filter in accordance with the manufacturer's instructions (see note).

ADVICE!

You can find further information in the line filter manufacturer's installation and operating manual at http://inform.wabco-auto.com/intl/de/.

9.7 Cable store

- The cable store is maintenance-free.

Function test:
To do this, swing the KKS Wedge out to its full extent (minimum 100°) and slowly release it. The cable store must reel in the supply cable without it catching.

WARNING!

Risk of injury when the KKS Wedge swings back!

9.8 Electrical components

Check electrical components regularly for damage.

On the semi-trailer:
Swing the KKS Wedge out to its full extent (minimum 100°) and inspect unwound wire ropes, electric cables and pneumatic hoses for damage.

On the tractor unit:
Check the cables and hoses from the fifth wheel coupling to the connection on the rear wall of the tractor unit for damage.

10.1 Remote control

This section only describes corrective action that can be performed using normal workshop equipment. This applies in particular to electrical components.

Table 1: Remote control problems / Causes / Corrective actions

Problem	Cause	Remedy
The remote control does not work after starting (ignition “ON”).	▸ JOST KKS incorrectly connected. ▸ Faulty blade-type fuses.	▸ Check electrical connections (see section 7 "Installation"). ▸ Check blade-type fuses in the driver’s cab and replace if necessary.
The remote control indicates that fifth wheel coupling is open after coupling (red LED).	▸ Fifth wheel coupling is not correctly locked.	▸ Open the fifth wheel coupling manually, drive the tractor unit away and repeat coupling.
The remote control indicates that fifth wheel coupling is closed (red LED).	▸ The fifth wheel coupling was closed manually, e.g. for maintenance.	▸ Open the fifth wheel coupling manually.
The remote control indicates that fifth wheel coupling is unlocked although uncoupling is complete.	▸ The kingpin sensor and semi-trailer sensor are badly soiled with grease residues containing metal.	▸ Remove grease residues from the kingpin sensor and semi-trailer sensor.
The remote control will not start.	▸ The safety time for opening the fifth wheel coupling has elapsed. ▸ The connection cable is not connected correctly.	▸ Disengage and re-engage the parking brake. ▸ Check electrical connections, terminal 15 (ignition) and brake connection (see section 7 "Installation").
The remote control only displays the JOST symbol (after ignition “ON”).	▸ The connection cable to the fifth wheel coupling is faulty or not connected.	▸ Connect the connection cable or replace if necessary.

10.2 Fifth wheel coupling

Table 2: Fifth wheel coupling problems / Causes / Corrective actions

Problem	Cause	Remedy
The fifth wheel coupling does not open automatically.	▸ The compressed air supply is not at full level. ▸ Faulty pneumatic hose. ▸ The articulated vehicle is under tension. ▸ The mechanism is jammed. ▸ The coupling process was not fully completed with the remote control.	▸ Fill the compressed air tank on the tractor unit and restart the process. ▸ Check the pneumatic hose to the JOST KKS and replace if necessary. ▸ Release the parking brake and move the tractor unit back slightly if necessary. ▸ See JSK 40/42 installation and operating manual at www.jost-world.com. ▸ Repeat the coupling process, as described in section 8.2 "Coupling with the JOST KKS".

10.3 Modul E-Drive landing gears

Table 3: Modul E-Drive problems / Causes / Corrective actions

Problem	Cause	Remedy
The landing gears do not EXTEND/ RETRACT.	▸ The weight has not been taken off the landing gears before moving them electrically. ▸ No power supply to landing gears from the KKS wiring harness. ▸ No KKS system installed in the tractor unit. You can find further information in the Modul E-Drive landing gears installation and operating manual at www.jost-world.com.	▸ Before moving the landing gears, raise them off the ground using the tractor unit's pneumatic suspension and start the process again. ▸ Check the blade-type fuse of the system in the cab of the tractor unit. Check the wiring harness of the KKS landing gears for damage. Check the power supply and replace the wiring harness if necessary. ▸ Check whether the tractor unit is fitted with the KKS fifth wheel coupling. Use a tractor unit with KKS system or move the landing gears by hand.
The landing gears cannot be moved manually.	You can find information in the Modul E-Drive landing gears installation and operating manual at www.jost-world.com.	

10.4 KKS Connector and cable store

Table 4: KKS Connector and cable store problems / Causes / Corrective actions

Problem	Cause	Remedy
The KKS Wedge does not return to centre from both sides.	▸ The cable store and weld-in plate are not on the same level.	▸ Check the angle of the trailer plate(s). If necessary, realign or refit the trailer plate(s).
	▸ Electric cables and pneumatic hoses are touching wire ropes.	▸ Check the routing of cables, hoses and wire ropes to the cable store. Relay them if necessary. Check the tension of wire ropes, cables and hoses and adjust if necessary.
	▸ Wire rope tension is too high or too low.	▸ Check wire rope tension, reduce or increase if necessary (see section 7.2.6 "Installing the wire rope tensioner").
	▸ Excessive difference in wire rope tension on the left and right sides.	▸ Check wire rope tension, adjust if necessary (see section 7.2.6 "Installing the wire rope tensioner").
	▸ Irregularities in the trailer plate cause the KKS Wedge to slip.	▸ Check the trailer plate for irregularities and correct if necessary.
	▸ The retaining ring is not in contact with the KKS Wedge all the way round.	▸ Check that the retaining ring is fully in contact with the KKS Wedge, and re-install if necessary. If screwing the retaining ring in again, apply medium-strength thread-locker to the existing screws.
	▸ The retaining ring was greased insuffi-ciently.	▸ Check the retaining ring lubrication. You may need to remove the retaining ring. When re-installing, use medium-strength threadlocker.
Automatic KKS Wedge return to centre only works on one side.	▸ Differently tensioned wire ropes.	▸ Check wire rope tension, adjust if necessary (see section 7.2.6 "Installing the wire rope tensioner").
	▸ Pulling to one side in the trailer plate.	▸ Check the trailer plate for irregularities and correct if necessary.
	▸ Lines are jammed on one side.	▸ Check the routing of cables, hoses and wire ropes to the cable store. Relay them if necessary. Check the tension of wire ropes, cables and hoses and adjust if necessary.

10.5 System error

10.5.1 General information

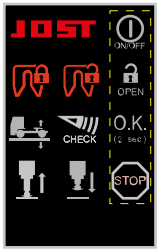


Figure 139: Remote control display / System error

- The remote control displays and keys shown in Figure 139 light up. Please go to a workshop.

IMPORTANT!

The errors can be evaluated using the displays and keys on the right (shown in Figure 139 with a yellow border).

IMPORTANT!

There are two types of error:

- Minor error: An error that can be reset by switching the ignition off and on again.
- Major error: An error that cannot be reset by switching the ignition off and on again.

An error always causes a safe shutdown of the KKS.

ATTENTION!

Major errors can affect driving safety. Therefore, go to a workshop immediately. Only move the vehicle following consultation with the workshop or JOST's technical customer support team.

10.5.2 Troubleshooting and resetting errors

Figure 140: Remote control display / Troubleshooting

1 “Truck” lights up: see section 10.5.3 "Error detected by display", table 5
2 “CHECK” lights up: see section 10.5.4 "Error detected by control unit", table 6
3 “Landing gear Up” lights up: go to next error
4 “Landing gear Down” lights up: go to previous error (see Figure 140)

WARNING!

Major errors may only be reset by authorised, trained personnel at a truck/commercial vehicle workshop.

The entire KKS system must be checked for damage before any major error is reset. The error must first be located and remedied.

Resetting minor errors:

- Switch the vehicle ignition off for 30 seconds.
- After 30 seconds, switch the ignition back on.
  - If the error is no longer present, you can continue to use the system, but have the system checked by a workshop at the next opportunity.
  - If the error persists, you cannot use the system and should go to a workshop immediately.

Resetting major errors:

- These errors can only be reset at the workshop using a defined key combination. If the error was not reset at the workshop, it will be displayed again each time the ignition is switched on.

IMPORTANT!

If you would like further information about troubleshooting and resetting errors, please get in touch with the JOST technical customer support team.

10.5.3 Error detected by display

If the display detects the system error, key 1 “Small truck” on the remote control display panel lights up (see meaning of keys in Figure 140). You can find an explanation of error codes and their descriptions in table 5 below.

Table 5: Error list / “Small truck” lights up on the remote control display panel

A	B	C	D	No.	Error description	Notes on corrective action
				1.	Parking brake continuously not engaged	▸ Faulty signal from vehicle ▸ The parking brake was not engaged within 120 s of coupling
				2.	Parking brake continuously engaged	▸ Faulty parking brake signal from tractor unit ▸ Coupling was closed manually while the ignition was on and the parking brake was engaged (e.g. with test kingpin) ▸ Parking brake signal programmed incorrectly (see section 7.1.6 "Programming the remote control and parking brake signal") ▸ Handle difficult to move, engages too slowly: clean and grease handle
				3.	Parking brake signal varies greatly	▸ Faulty signal from vehicle
				4.	Error: power outside limit value Ubmin, Ubmax	▸ Faulty or missing relay, socket contacts pressed out, faulty or missing 30 A fuse ▸ Faulty extension cable/wiring harness
				5.	Error: KKS analogue signal after ignition on ≥ 2 mA	▸ Faulty control unit/display ▸ Strong electromagnetic field or conducted interference ▸ Faulty wiring harness/extension cable
				6.	Error: KKS analogue signal 5 mA	▸ Faulty control unit/display ▸ Strong electromagnetic field or conducted interference ▸ Faulty wiring harness/extension cable

Table 5: Error list / "Small truck" lights up on the remote control display panel (continued)

A	B	C	D	No.	Error description	Notes on corrective action
				7.	Error: CAN alive message not received	▸ Faulty control unit/display/extension cable ▸ Loose contact in wiring harness ▸ Strong electromagnetic field ▸ On-board system voltage too low/collapsed
				8.	Error: faulty CAN remote message	▸ Faulty control unit/display/extension cable ▸ Loose contact in wiring harness ▸ Strong electromagnetic field ▸ On-board system voltage too low/collapsed
				9.	Error: CAN data message not received	▸ Faulty control unit/display/extension cable ▸ Loose contact in wiring harness ▸ Strong electromagnetic field ▸ On-board system voltage too low/collapsed
				10.	Error: CAN remote message not received	▸ Faulty control unit/display/extension cable ▸ Loose contact in wiring harness ▸ Strong electromagnetic field ▸ On-board system voltage too low/collapsed
				11.	Error: KKS draws excessive current > 100 mA	▸ Faulty control unit/display ▸ Faulty wiring harness/extension cable
				12.	Error: power after safety relay outside (above) tolerance	▸ Faulty or missing relay ▸ Socket contacts pressed out ▸ Faulty or missing 30 A fuse ▸ Faulty wiring harness/extension cable

10.5.4 Error detected by control unit

If the control unit detects the system error, key 2 “Check” on the remote control display panel lights up (see meaning of keys in Figure 140). You can find an explanation of error codes and their descriptions in table 6 below.

Table 6: Error list / “Check” lights up on the remote control display panel

A	B	C	D	No.	Error description	Notes on corrective action
				0.	Process control error (unknown soft-ware error)	▸ Faulty display
				1.	Kingpin sensor error	▸ Faulty kingpin sensor ▸ Loose contact in wiring harness ▸ Control unit: faulty connector
				2.	Locking sensor error	▸ Faulty locking sensor ▸ Faulty magnetic strip on handle ▸ Loose contact in wiring harness ▸ Control unit: faulty connector
				3.	Error in valve 1 pneumatic cylinder (fifth wheel coupling)	▸ Faulty valve/control unit ▸ Faulty wiring harness or loose contact in connector ▸ Truck on-board system voltage too low/too high
				4.	Semi-trailer sensor error	▸ Faulty semi-trailer sensor ▸ Loose contact in wiring harness ▸ Control unit: faulty connector
				5.	Error connecting valve socket	▸ Faulty valve/control unit ▸ Faulty wiring harness or loose contact in connector ▸ Truck on-board system voltage too low/too high

Table 6: Error list / “Check” lights up on the remote control display panel (continued 1)

A	B	C	D	No.	Error description	Notes on corrective action
				6.	Error in valve 2 pneumatic cylinder (fifth wheel coupling)	▸ Faulty valve/control unit ▸ Faulty wiring harness or loose contact in connector ▸ Truck on-board system voltage too low/too high
				7.	Error disconnecting valve socket	▸ Faulty valve/control unit ▸ Faulty wiring harness or loose contact in connector ▸ Truck on-board system voltage too low/too high
				8.	System error (EEPROM, electrical supply, no Ue, voltage difference)	▸ Error in extension cable ▸ Loose contact in connector ▸ Faulty display – pin 6 of display connector 24V at ignition on? => display OK => faulty control unit ▸ Truck on-board system voltage too low/too high ▸ Temperature < –50 °C, > 100 °C
				9.	Engine voltage error (no voltage or external voltage)	▸ Damage to fifth wheel coupling wiring harness
				10.	Error: engine power cutout	▸ Faulty control unit
				11.	Error: socket cannot be disconnected (contact with engine)	▸ Faulty socket actuating cylinder (check side spring!) ▸ Faulty socket (insulation on side of cable broken or severe metallic soiling), faulty wiring harness/control unit

Table 6: Error list / “Check” lights up on the remote control display panel (continued 2)

A	B	C	D	No.	Error description	Notes on corrective action
				12.	CAN error (alive, remote, data, send messages)	▸ Faulty display/control unit ▸ Faulty extension cable ▸ Loose contact in wiring harness ▸ Strong electromagnetic field ▸ On-board system voltage too low/collapsed
				13.	Error in AD conversion	▸ Faulty control unit
				14.	Error: +UB inadvertently detected	▸ Faulty or missing relay, socket contacts pressed out, faulty or missing 30 A fuse ▸ Faulty extension cable/wiring harness
				15.	Valve check error (1 s per valve)	▸ Faulty valve opener cylinder ▸ Opener cylinder was raised manually during the self-check

10.6 Miscellaneous errors

No.	Description	Cause
1.	Display: Only JOST lights up yellow, no communication between display and control unit	▸ Broken connection to fifth wheel coupling ▸ Faulty extension cable ▸ Faulty wiring harness ▸ Faulty control unit ▸ Faulty display
2.	Landing gears are continuously not found despite KKS semi-trailer	▸ Faulty semi-trailer ▸ Faulty socket (open circuit OR contact resistance between cables) ▸ Faulty socket cylinder ▸ Faulty wiring harness ▸ Faulty control unit
3.	The pneumatic cylinder of the fifth wheel coupling is continuously under pressure after uncoupling OR After uncoupling, the display starts beeping and indicates a semi-trailer although none is present.	▸ Soiled kingpin, clean ▸ Soiled semi-trailer sensor, clean ▸ Faulty kingpin ▸ Faulty semi-trailer sensor

Table 7: Error list / Miscellaneous errors

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