



USER MANUAL

LOW-LOADER SERIES



Index

1. GENERAL INFORMATION AND SAFETY INSTRUCTIONS	
1.1. About the User Manual	7
1.2. Meanings of Symbols Used in User Manual.....	7
1.3. Personal Protective Equipments.....	8
1.4. Terms of Use and Safety Information	9
2. MAIN INFORMATIONS	
2.1. Vehicle Identification Plate	10
2.2. Brake Data Plate.....	10
2.3. VIN (Chassis) Numbers	10
2.4. Warranty and Responsibility	10
3. TRAILER RUNNING GEAR AND USAGE INSTRUCTIONS	
3.1. Brake system	12
3.1.1. Air couplings.....	12
3.1.2. Compressed Air Tanks	15
3.1.3. EBS Socket.....	16
3.1.4. PREV (Park Release Emer-gency Valve)	17
3.1.5. Brake Chambers	18
3.2. Suspension System.....	20
3.2.1. Manuel Control Lever	20
3.2.2. Elektronik Controlled Air Suspension (ECAS).....	21
3.2.3. Dual Level Electronic Level Control System (ECAS)	21
3.2.4. Manometer	21
3.2.5. Smartboard (Info Center)	22
3.3. Electrical System.....	22
3.3.1. 15 Pin Socket.....	22
3.3.2. 2x7 Pin Socket.....	23
3.3.3. Light System	24
3.4. King Pin	26
3.5. Semi-trailer Axle System	26
3.5.1. Hubodometer.....	27
3.6. Hydraulic Steering System.....	27
3.6.1. Commisioning and Operation	27
3.6.2. Mechanical Alignment and Calibration	28
3.6.3. Semi-Automatic Alignment System	34
3.6.4. Fully Automatic Alignment System.....	35
3.6.5. Remote Controller.....	37

3.6.6. Control Panel.....	38
3.7. Tires.....	39
3.8. Spare Wheel Holder.....	39
3.9. Spare Tire Lowering Crane.....	40
3.10. Wheel Chock.....	40
3.10.1. Pin Type Wheel Chock Holder.....	40
3.11. Boxes and Storage Units.....	42
3.11.1. Gooseneck Corner Chamfered Tool Cabinet.....	42
3.11.2. Fire Extinguisher Cabinet.....	43
3.12. Bumper.....	44
3.12.1. Fixed Bumper.....	44
3.13. Wooden Floor.....	44
3.14. Extendable Chassis.....	44
3.14.1. Extending The Chassis.....	44
3.14.2. Shortening The Chassis.....	46
3.14.3. Lengthening and Shortening the Vehicle with Intermediate Platform Attachment and Removal [Option]....	47
3.15. Extension Brackets and Woods.....	49
3.15.1. Side Extension Brackets.....	49
3.15.2. Side Extension Brackets.....	49
3.16. Lubrication System.....	50
3.17. Warning Signs.....	50
3.18. Rotating Warning Lamp.....	50

4. COMPONENTS OF UPPERSTRUCTURE AND USAGE

4.1. Gooseneck Area.....	52
4.1.1. Gooseneck Separating and connecting.....	54
4.1.2. Front Panel.....	59
4.1.3. Side Panel.....	59
4.1.4. Gooseneck Closing Sheet.....	60

5. TRANSPORTATION PROCESS

5.1. Pre-Driving Checks.....	61
5.2. Semi-Trailer and Tractor Coupling.....	61
5.2.1. Connection of Low-Loader to The Truck.....	61
5.2.2. Separating the Low-Loader from the Truck.....	63
5.2.3. Parking of the Low-Loader.....	64
5.3. Loading – Unloading Operations.....	64
5.4. Cautions During the Parking and Stopping.....	64
5.5. Loading.....	64

5.6.	Important Technical Considerations	65
5.6.1.	Fire Extinguisher.....	65
5.6.2.	Wheel Chocks	65
5.6.3.	Modifications on the Trailer.....	65
5.6.4.	Air Leakage.....	65
5.6.5.	Considerations For the Environment	65
5.7.	Cleaning the Vehicle	66
5.8.	Work Lamp.....	67

6. TRANSPORTATION SOLUTION

6.1.	Container Transportation.....	68
6.1.1.	Container Lock.....	68
6.2.	Heavy Machinery Transport.....	68

7. LOADING AND LOAD SECURITY

7.1.	Safety Instructions.....	69
7.1.1.	Load Security	69
7.2.	Load Distribution and Load Limits of Truck-Semi-Trailer Combination.....	70
7.2.1.	Downlink Load Lashing.....	70
7.3.	Lashing Rings.....	72
7.4.	Loading Table.....	72
7.5.	Loading Crane.....	72

8. INSPECTION AND MAINTENANCE

8.1.	General Information	74
8.2.	Disposal of Used Materials	74
8.3.	Conditions of the Place where Service and Maintenance Operations are Made	74
8.4.	Periodic Maintenance and Controls	74
8.5.	General Maintenance Program.....	74
8.6.	Hydraulic and Pneumatic Hoses and Connections.....	76
8.7.	Tightening Torques for ISO Standard Bolts.....	76
8.8.	King Pin	76
8.8.1.	King Pin Assembly Bolt.....	77
8.8.2.	Changement of King Pin.....	77
8.8.3.	King Pin Maintenance.....	78
8.9.	King Pin Steering Center Bearing Control.....	78
8.10.	The Control of Steering Chock	78
8.11.	Maintenance of Filters in Connection Couplings.....	79
8.12.	The Brakes and The Brake System	79

8.12.1. Filter Element Maintenance of Yellow and Red Couplings	79
8.13. Maintenance of Extendable Lowbed Platform.....	80
8.14. Tire Chagement	80
8.14.1. Tightening Torques of Wheel Nuts	81
8.14.2. Nut Tightening Sequence	81
8.14.3. Tire Inflation Pressure	82
8.14.4. Alloy Rim Wheels.....	82
8.15. Hidrolic Oils.....	82
8.15.1. Mixing Hydraulic Oils	83

FOREWORD

First of all, thank you for choosing us for your new vehicle investment.

Your vehicle is manufactured with the latest production technologies to the highest quality standards and equipped with the best safety and efficiency features.

You can find detailed information about the accessories, equipment and hardware that might be in your vehicle in this manual. The defined options in this manual can vary according to the vehicle specs.

Important information on how you can use your vehicle is explained in this user manual, please be sure that you review and understand the content. We suggest keeping this user manual available in your vehicle at all times. This information is specified in the product's user manual. We recommend you read this operating manual thoroughly to get the most out of your vehicle.

** Owing to the developments in product research, the manufacturer reserves the right to make any changes in the product, without any prior notice. The publication rights of this documentation belong to the manufacturer.*

1. GENERAL INFORMATION AND SAFETY INSTRUCTIONS

1.1. About the User Manual

The usage and operation information given in this manual is prepared to make sure the vehicle is used in compliance with its purpose and as desired.

The instructions here contain important recommendations to perform your operations safely, completely, and in the most efficient manner. Complying with these instructions, warnings and recommendations will prevent accidents, decrease down-time & repair costs, and make sure you use your vehicle safely, reliably and problem-free.

Please read the operating instructions in this manual carefully and completely. The manufacturer is not liable for the damages and deficiencies caused by the failure to comply with these instructions. The instructions herein must be supported by local laws, rules and regulations. Please comply with these instructions to prevent accidents and protect your surroundings and the environment.

Any usage of transportation that goes beyond the use in accordance with the rules will be considered improper use.

Transportation of the following is not allowed:

- Carrying people and live animals
- Transportations that need to be carried according to special instructions, e.g., dangerous good transportations
- Transportation of unsecured goods
- Transportation of materials that are dangerous due to their properties or that need to be carried with special equipment
- Exceeding technically and legally permissible weights of the axles or king pin load

- Exceeding of the maximum vehicle speed
- Exceeding the permissible length, width and height
- Unapproved parts like tires, accessories, spare parts and etc. by the manufacturer
- The manufacturer shall not accept any responsibility for the problems and faults that occurs that are not in compliance with the purpose of the vehicle's usage. All the risks of this issue belong to the customer.



It is necessary to keep the user manual available on the vehicle at all times.



The vehicle can be equipped with a lot of different options. The standard or optional features will be explained in the manual. Some options may not be available for your vehicle



Adhere strictly to the operating instructions when using your vehicle. When problems occur which can lead to dangerous consequences, contact the service centre immediately.

1.2. Meanings of Symbols Used in User Manual

Several warnings are available in this manual to ensure maximum safety when using your vehicle. Each warning is indicated by a special symbol. These symbols and their meanings are as follows.



The information specified by this warning symbol is very important for health and human safety. When the given information is ignored, serious damage, injuries and even death may occur.



This symbol specified in this manual indicates that critical accidents may occur when the instructions do not comply.



This symbol is used when additional information is required.



This symbol is used when chemicals and other substances can be disposed of with precautions that will not harm the environment.

1.3. Personal Protective Equipments

Personal protective equipments serves the purpose of preventing injuries and are determined by regional regulations depending on the load carried.

People who will work or perform operations on the vehicle must wear proper and appropriate protective clothing.

- Depending on the load to be carried, the eyes, ears, body, and respiratory tract must be protected with the relevant protective equipment.
- As a rule, gloves and work shoes are always used.



It is obligatory to use appropriate personal protective equipment during the operations.



Long hair is particularly dangerous when working on the vehicle, regardless of whether it is loose or tied up, and it should be protected properly to avoid tangling.



Wearing a tie, necklace and/or dangling jewelry when working on the vehicle is strictly prohibited. They may get caught in moving parts or mechanisms and cause injuries and even death.

Protective Gloves



During the operation, protective gloves must be used. Please make sure you are using the correct type of gloves when you are working with hot parts or chemicals.



Gloves should fit snugly. Otherwise, there is a risk of them getting caught in moving parts or mechanisms.

Protective Cloth



While working on the vehicle, appropriate overalls must be worn.

- Overalls should not have pleats, buttons or external pockets and their closure system should be made in such a way that they can be opened as soon as possible in case of an emergency.
- Interior pockets should have fastenings to close them up. Cuffs should be adjusted to fit the wrist.

Protective Helmets



When working around the vehicle, a lightweight helmet approved by an accredited institution should be worn.

Protective Ear Plugs



A hearing protective device (headsets or ear plugs) should always be used around self-propelled vehicles.

Protective Goggles



Protective goggles should be worn during all maintenance operations.

Protective Mask



Appropriate protective masks should be used when working with substances that are dangerous to breathe or in dusty environments.

1.4. Terms of Use and Safety Information

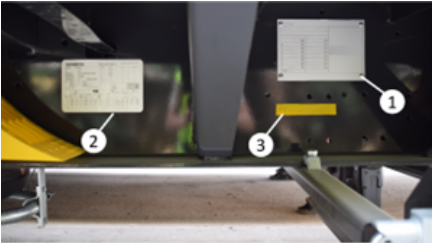
It is necessary to keep the warranty, operating and maintenance manual and other documentation about the vehicle available on the vehicle at all times.

To prevent possible accidents and environmental pollution, follow the operating instructions and binding regulations.

- Pay attention to the safety and warning signs placed on your vehicle.
- Always keep these safety and warning signs completely visible.
- Make sure that the load carrier is secured properly.
- In case of any dangerous condition in the operation of safety, stop your vehicle immediately and inform the authorized people or institutions.
- Do not modify anything on the vehicle without a written manufacturer's approval. Your vehicles guarantee terms do not cover unapproved modifications.
- The spare parts must meet the technical requirements set forth by the manufacturer company. Only the original spare part/parts meet their requirements.

2. MAIN INFORMATIONS

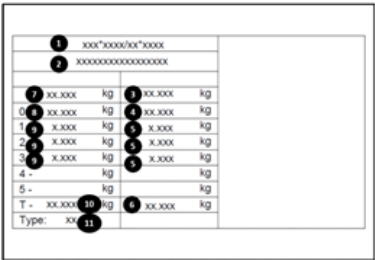
There are vehicle identification stickers on the vehicle.



2.1. Vehicle Identification Plate

Vehicle identification plate (1) is located on the right side of the vehicle.

You may find the following information's on this plate;



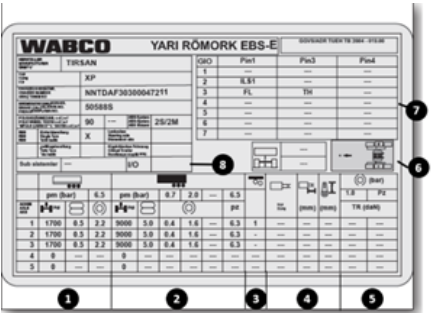
Vehicle Identification Plate

- 1- Type approval number
- 2- VIN number
- 3- Technical total capacity
- 4- Technical king pin capacity
- 5- Technical an axle capacity
- 6- Technical total axle capacity
- 7- Nationally approved total capacity
- 8- Nationally approved king pin capacity
- 9- Nationally approved an axle capacity
- 10- Nationally approved total axle capacity
- 11- Vehicle Type

2.2. Brake Data Plate

There is a brake data plate on the vehicle which is equipped with an EBS system.

You may see this information on this plate.



Vehicle Identification Plate

1	Empty vehicle(without load)
2	Loaded vehicle
3	Axle lifting
4	Brake chamber data's
5	References
6	ABS Sensor Placement
7	Extra functions, Pin / GIO Matrix
8	IN/OUT-Connections

2.3. VIN (Chassis) Numbers

The VIN (chassis) number (3) is located on the right side of the vehicle and marked with a different color than the chassis color.

2.4. Warranty and Responsibility

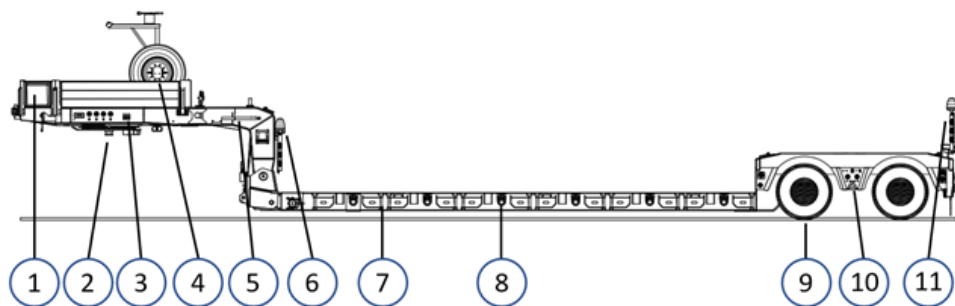
Our trailers, semi-trailers and truck on-board applications are manufactured in

compliance with regulations and our quality standards. It is necessary to perform the maintenance to ensure our products always operate in the most efficient manner in compliance with our latest directives and maintenance programs. The warranty starting date is the date that the vehicle is delivered to the customer.

The performance of maintenance and repair/servicing of the vehicle with the use of original spare parts by authorized service shall assure the client's warranty rights. This warranty is based upon the usage and maintenance conditions described herein and in the warranty book. Thus, it is important to read and understand this operation manual and warranty book.

It is necessary to keep the warranty, always operating and maintenance manual available on the vehicle to allow authorized service performing the servicing to see the warranty conditions and maintenance records. In the repairs made during the warranty period, the authorized service performing the repair will demand this. Purchasing one trailer or semi-trailer is an important investment. For the highest return on your investment, it is necessary to comply with the manufacturer's procedures and recommendations during the operation period of the vehicle. The information provided by the client/driver related to the warranty written in this manual shall be kept within our database.

3. TRAILER RUNNING GEAR AND USAGE INSTRUCTIONS



- 1.Toolbox
- 2.Kingpin
- 3.Control panel
- 4.Wheel holder
- 5.Lock arm
- 6.Rotating beacon, Warning plate
- 7.Extension bracket
- 8.Lashing rings
- 9.Tires
- 10.Manometer
- 11.Rotating beacon, Warning plate

Service Line: It is the pneumatic line where the pneumatic brake signal from the truck is transmitted.

Supply Line: It is the pneumatic line where the compressed air needed by the trailer is transmitted from the truck.

According to the type of vehicle, your vehicle can be equipped with one or two different types of air couplings.

- Standard Couplings (Palm)
- Duomatic Coupling
- C (UK) Couplings

3.1. Brake system

3.1.1. Air couplings

The main connection between the truck and trailers is air couplings.

Generally, 3 different types of air couplings are used in the trailers. These 3 types of air couplings have the same function but with different shapes and connections. There are 2 different air supply lines in the system.

- Brake Line (Yellow)
- Supply Line (Red)



If your vehicle is equipped with 2 different types of couplings, you must use only one type at the same time.



When the couplings are mounting/demounting, the parking brake of the truck and trailer must be engaged.



If the brake parameters are modified, your vehicle's brake calculation might be non-suitable for regulations. Only authorized services must service to the EBS modulator.



Only authorized services and personnel should make service operations for the brake system.

There might be test points on the chassis or above the air couplings. When you remove the test points rubber protection parts and push the points you can check the air pressure on the brake lines.



One of the test points is the service line. As long as there is no brake signal from the truck side, this line will be empty, there will be no air at the test point. The other test point is the brake air tubes line. From this test point, it can be checked whether there is air in the vehicle.



Test point



Palm coupling with a test point

3.1.1.1. Mounting of Standard (Palm) Couplings



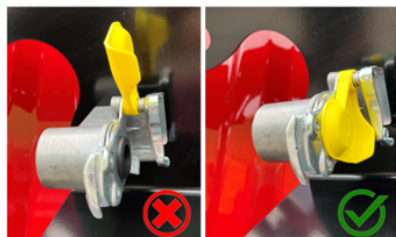
Couplings

- Slightly slide plastic covers to the up-per side. Slide plastic covers to upper side.
- Be sure that sealing surfaces are clean and durable. If necessary, clean/change the air coupling.
- The coupling which comes from the truck should be pushed slightly from the upper side to the lower side and connect the coupling. Be sure that couplings are matched correctly.
- First mount service line yellow (1).
- Mount supply line red (2).

3.1.1.2. Demounting of Standart (Palm) Couplings

- The coupling which comes from the truck should be pushed slightly from the lower side to the upper side and demount the coupling.

- First demount the supply line red (2).
- Demount the service line yellow (1).
- Slightly slide plastic covers to the lower side and close the plastic covers.

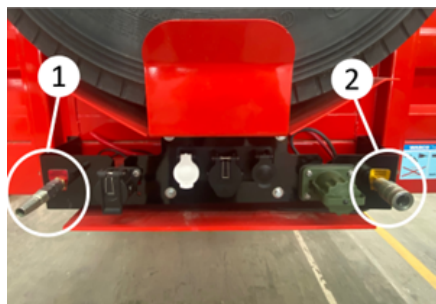


Closing the coupling

Driving with a non-suitable air connection is dangerous and forbidden.

Using damaged air supply parts can cause serious hazards. Torn or damaged compressed air connectors reduce the vehicle's braking performance.

3.1.1.3. Mounting of C (UK) Couplings



C (UK) couplings

- Be sure that sealing surfaces are clean and durable. If necessary, clean/change the air coupling.
- First mount service line yellow (1).

- Mount supply line red (2).
- Be sure that couplings are matched correctly.

3.1.1.4. Demounting of C (UK) Couplings

- Push the latch from front to back side on the C couplings and remove.
- First demount the supply line red (2).
- Demount the service line yellow (1).

The coupling filters have to be clean regularly.

3.1.1.5. Mounting of Duomatic Coupling



Duomatic Coupling Connection

- Be sure that sealing surfaces are clean and durable. If necessary, clean/change the air coupling.
- Push the arm and mount the coupling (1).

The coupling filters must be clean regularly.

3.1.1.6. Demounting of Duomatic Coupling

- Push the arm and mount the coupling (1).
- Pull back the arm slightly and close the coupling cover.

3.1.1.7. The Connections In Vehicles That Gooseneck and Platform Area are Separate




Hydraulic multi quick coupling




EBS connection

For vehicles whose platform area is separated by a gooseneck, the hydraulic quick coupling and all electric sockets must be removed before the separation process.

The hydraulic quick coupling and all electric sockets, which were removed on the vehicle whose loading operation has been completed and whose gooseneck and platform area are matched, must be installed correctly.

 If the gooseneck and platform area is matched, the vehicle will not brake properly if the vehicle is driven without the EBS power cable attached.

 In the vehicle whose gooseneck and platform area are matched, the vehicle cannot be moved without the Duomatic coupling attached, the parking brakes will be activated.

3.1.2. Compressed Air Tanks

Pressured air can be stored in the air tanks.

The quantities and capacities of the air tanks can be changed according to your vehicle specifications.

In cold periods of the year or when the air humidity is high, the moisture in the air can be condensed and collected in the compressed air tank.

The trucks are generally fitted with air driers to prevent condensation in compressed air. The trucks are generally fitted with air driers to prevent condensation in compressed air. Even if the air driers system, the humidity in the air can be condensed. The condensed water must be drained out via the drain valve.

The water in the air tanks should be completely drained out. That's why please push the valve on the air tanks.



Air Tank

1. 1.Compressed Air Tanks

2. 2.Drain valve



The water in the compressed air tank can cause corrosion problems and affect the functionality of the brake system. The frozen water in the pneumatic lines can cause the failure of the brake system.



The water in the pneumatic system should be checked more frequently in cold weather or extremely variable outside temperatures.



When the air tank pressure is lower than 4,5 bars, the EBS warning lamp on the truck turns on and the driver can see this situation.



When the pressure in the service line (in the yellow coupling) is lower than 2,5 bars, the brakes automatically lock.

3.1.3. EBS Socket



EBS Socket

Our trailers and semi-trailers are equipped with an EBS system.

EBS is an electronically controlled brake system, that is fitted with automatic load sensing braking pressure regulation (ALB) and automatic anti-skid systems (ABS/ABV).

To activate the EBS system, your truck and trailer must be equipped with an EBS system. Please mount the EBS cable that will come from the truck to the EBS socket on the trailer.

- Driving with a non-connected EBS connection is illegal.
- Drive only with an approved and well-operating EBS plug connection in accordance with regulations.
- EBS connection must be made between the truck and trailer.
- Verify the EBS plug connection with a system check (the solenoid valves in the EBS modulator are activated and briefly activated and deactivated for 2 seconds after "ignition on").

When the truck engine is activated and during the travel, the EBS system will be checked automatically. If the truck screen is suitable/adjusted, the EBS failures will be shown with the EBS mistake lamp.

The EBS mistake lamp on the truck screen will be turned on when the ignition key is activated. If there is no failure on the EBS system, the lamp will be turned off in appr. 2 seconds.

After 7 km/hours speed, If there is a failure on the EBS system (Sensor mistake and etc.) EBS lamps will be flashed.

If the EBS lamp is activated, please contact with authorized services immediately.



The trailers equipped with a Trailer EBS E braking system may only be used with tractors with:

- ISO 7638-1996 connectors (ABS + CAN) or ISO 7638, 7 pin with CAN data line (EBS Truck)

Even if the truck 7 pin socket (ISO 7638) has a CAN data line, if the spiral cable used between the truck and the trailer is 5-core, it will cause the trailer EBS Modulator to not work properly. For this reason, a 7 core spiral EBS patch cable should always be used.



If you drive without EBS connectors or if there is a problem on the EBS system, the brake system will not be worked properly. This situation may cause an accident.



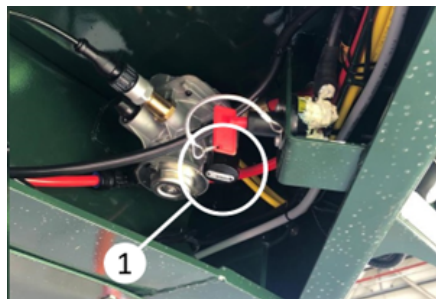
Trailers are equipped with an additional power supply for the EBS system. Thanks to the extra power supply from brake lamps, when the EBS connector is damaged, an extra safety function will be activated. The EBS system will be fed from brake lamps and ALB (automatic load sensing braking pressure) and ABV (anti-skid system) functions will be activated.



3.1.4. PREV (Park Release Emergency Valve)

Generally, brake control systems will be located on the driver's side. It may be different on your vehicle according to the vehicle's construction.

Black button (1): Service brake button.



Black button

The black button is located under the marked area in the image below.



The location of black button

Red button (2): Park brake button

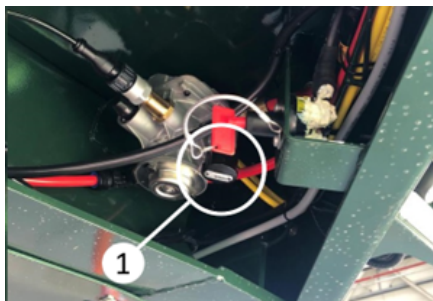


Park red button



When you are driving the trailers, the red button must be pushed position and the black button has to be pulled position.

3.1.4.1. Service Brake



Black button

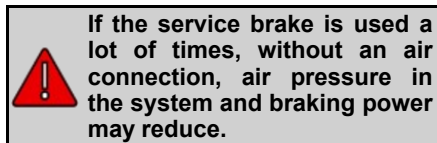
The black button is located under the marked area in the image below.



The location of black button

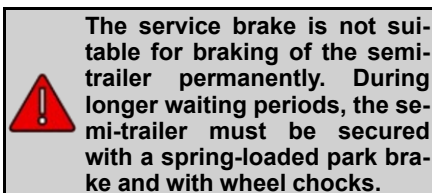
Thanks to the service brake, the trailer can be made maneuvers without air connections. The black button can be used only without semi-trailer air supply (red) connections on the trailer.

When you push the black button, the service brake will be disabled. When you pull the black button, the service brake will be activated.



If the service brake is used a lot of times, without an air connection, air pressure in the system and braking power may reduce.

When the air connections are de-mounted, the service brake will be automatically activated. When the air connections are mounted, the service brake will be automatically disabled.



The service brake is not suitable for braking of the semi-trailer permanently. During longer waiting periods, the semi-trailer must be secured with a spring-loaded park brake and with wheel chocks.

3.1.4.2. Park Brake



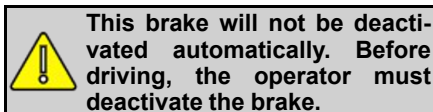
Spring loaded park brake

Spring loaded park brake control button is used for longer parks of semi-trailers with or without truck on plain or inclined lands.

It is a spring force based brake. It does not need air for braking. When the air tube pressures of the trailer fall below 2.5 Bar, it is automatically activated and the brake is activated with the spring force.

When the red button is pulled, spring loaded park brake will be activated. When the operator push the red button, spring loaded park brake is deactivated.

If the trailer air tubes are empty, the brake cannot be disabled even if the button is pressed.



This brake will not be deactivated automatically. Before driving, the operator must deactivate the brake.

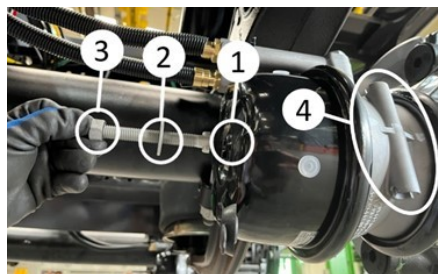
3.1.5. Brake Chambers

Your vehicle may be equipped with disc or drum brake axles according to your choice. For both brake types, the brake chambers are going to use for braking. The brake chambers will be chosen

according to axles type and loading capacity. The maintenance, modification or repair operations must be performed by authorized services.

3.1.5.1. Manually Deactivation of Parking Brake Spring

The Parking brake spring may be deactivated manually in emergency situations.



Deactivation of brake chambers

1. Boreholes

2. Release rod

3. Nut

4. Slot of the release rod

- Remove the release rod (2) from the slot (4).
- Insert the release rod (2) to boreholes (1) and screw till the rod (2) will be fitted completely.
- Completely screw in the nut (3) to the release rod (2).

The brake chambers will be deactivated after this operation. In this case, the brake chamber only works on the service brakes. Even if the trailer air tube pressure drops below 2.5 Bar, the spring brake will not be activated due to this operation.



On some brake chambers used in vehicles, the emergency release screw is located in its socket (1) behind the brake chamber, not in its socket (4) next to it. In order to disable the springs, it is allowed to come out by simply turning it with the appropriate key.

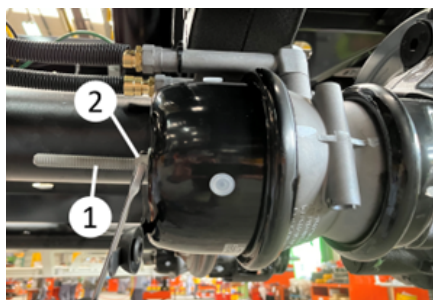


This operation should only be used until the trailer is serviced.

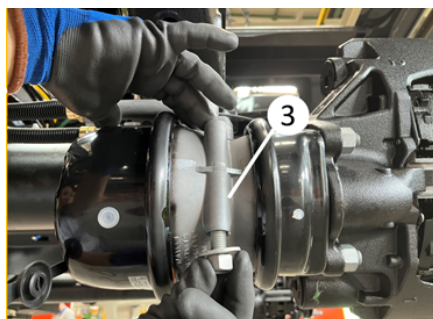


Before this operation, the vehicle must be fixed securely with wheel chocks. Serious injuries may occur.

3.1.5.2. Activation of Brake Chambers



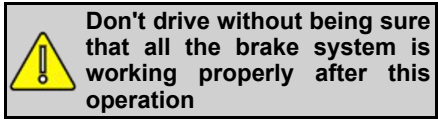
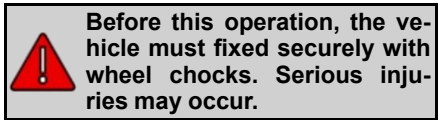
Activation of brake chambers



- Remove the nut (1) from release rod (2) with a spanner.
- Remove the release rod (2).
- Screw the release rod into its place on the brake chambers (3)

- Close the plastic cover on the brake chamber.

Brake chamber will be activated after this operation.



3.2. Suspension System

Your vehicle is equipped with air suspension system.

3.2.1. Manuel Control Lever

Operation:

The lowering / lifting valve (1) on the splash sheet that on the left side of semi-trailer, can lower or raise the rear of the stationary semi-trailer for various purposes, such as carrying out loading operation.



The location of the lowering / lifting valve

The middle position of the lever (1) allows the semi-trailer to reach the driving level regardless of the load.



Manually operated air suspension driving position

You can lift the trailer up by turning the control handle counterclockwise.



Raising of suspension

You can lower the trailer down by turning it clockwise.



Lowering suspension

To fix the suspension height, you may turn the lever 45° or 135° according to the photo in below. Before driving, the lever must be switched to driving position.



If the trailer will be driven at a non-driving height, the vehicle may be damaged, or a height problem may occur.

3.2.2. Elektronik Controlled Air Suspension (ECAS)

Electronic controller air suspension (ECAS) is an optional solution. This system sets the driving height or defined different heights electronically. When the EBS socket is mounted and driving at a speed defined by the producer, the lever will set the driving height automatically.



ECAS control panel

3.2.3. Dual Level Electronic Level Control System (ECAS)

ECAS works more sensitively than the conventional level system. Conventional level control system works in real time, while ECAS works every 60 seconds. This saves fuel. In the conventional level control system, the platform level is controlled with the lift/lower valve, while the platform level is controlled with the up-down button set (1) in ECAS.



Dual Level Electronic Level Control System (ECAS)

The 2 different driving levels of the platform are selected with the Level Switch (button 2). There are two different positions of the level switch and two corresponding platform drive levels. The most suitable platform driving level should be selected according to the truck 5th wheel height.

If the platform height is adjusted manually via the up-down button, the vehicle will automatically come to the driving level when it reaches 15 km/h. In vehicles with a level switch, the platform height will come to the driving level selected with the level switch.

If there is a Smartboard in the vehicle, there is no up-down button box in the vehicle.

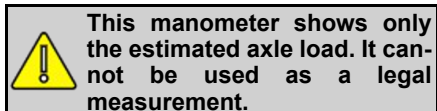
3.2.4. Manometer

It shows the load falling on an axle in tons according to the pressure in the air bags.

When the air bag pressure is bigger, you will see bigger values on the manometers.



Manometer



3.2.5. Smartboard (Info Center)

Thanks to Smartboard, the operator may see failure codes, axle load etc. information and control the axle lifting system.

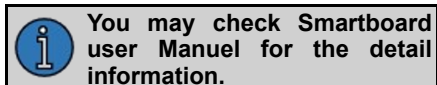


Smartboard

The functions provided by the Smartboard are as follows:

- It can be used as a control panel in vehicles with ECAS (including double level).
- AKS load indicator
- Diagnostic memory
- Lift axle control for vehicles with automatic axle lift

If your Smartboard includes the battery, you may use some control even if the truck is not connected.

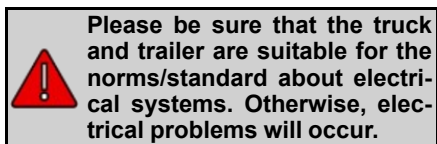
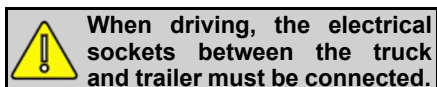


3.3. Electrical System

15-pin socket (ISO 12098) + 2x7-pin socket (ISO 1185 (24N) / ISO 3731 (24S)) are used to supply the lighting system in our vehicles. With the help of a 15-pin socket or a 2x7-pin socket, you can supply electricity from the truck to your vehicle.



Electrical system



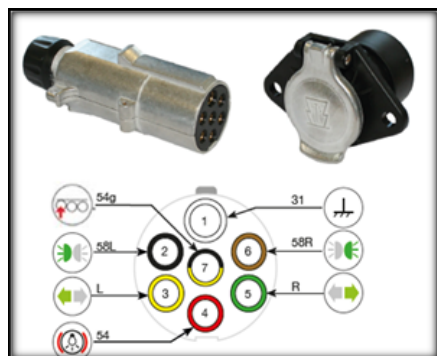
3.3.1. 15 Pin Socket

This system provides electricity for the electrical system on the vehicle like stop lamps, signal lamps etc. 15 pin socket connections are made according to ISO 12098.

Open the protection cover and mount the sockets regularly.

You may find extra information about the pins function in below.

4	Supply line
5	Empty
6	Empty
7	Fog lamp



ISO 1185 Socket

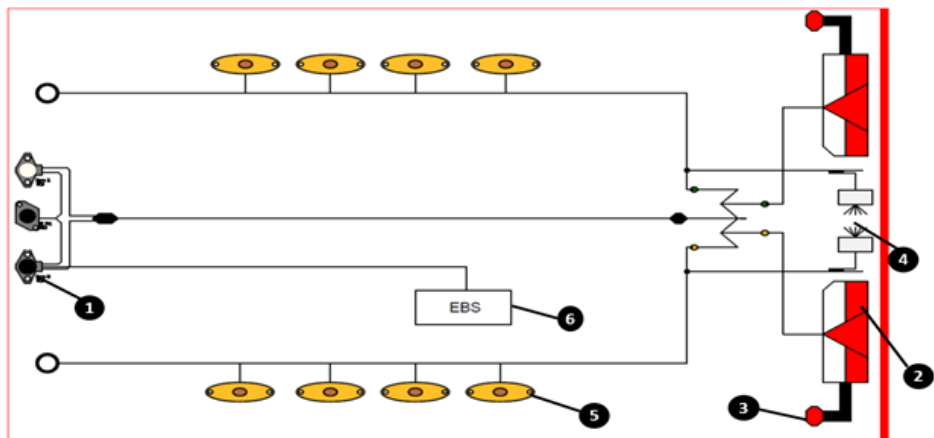
Pin	Explanation
1	Ground

2	Left taillight
3	Left indicator
4	Brake light
5	Right indicator
6	Right taillight
7	Axle lifting

Please be careful with the color of the sockets. The black socket is suitable for ISO 1185 and the white socket is suitable for ISO 3731. If the vehicles are suitable for norms, the black socket on the truck will be connected to the black socket on the trailer and the white socket on the truck will be connected to the white socket on the trailer

3.3.3. Light System

The vehicle is equipped with a light system which is suitable for the regulations.



1	Electrical Sockets
2	Stop Lamps
3	End Outline Markers
4	License Plate Lamps
5	Side Position Lamp
6	Modulator

When needed, you can obtain the electrical diagram of your vehicle from the manufacturer.

The lamps must be checked regularly. If there is any problem with the electrical system, it must be repaired immediately. In a repair operations, only original and approved sockets or parts must be used.



If you add or remove any lamps on the vehicle, your vehicle may be non-suitable for regulations.



Vehicles with LED electrical systems consume very low energy. For this reason, although there is no problem in the system, it may cause the failure lamp to come on in old tractors.



Repairing operations of the electrical system have to be made by only authorized services. Otherwise, electrical problems may occur or your vehicle may be out of warranty.

3.4. King Pin

King pin is a shaft which connects truck and trailer together. Your vehicle may be equipped with 2" or 3.5" diameter pins. Please check the king pin diameter before connecting the truck.



If you match the truck and trailer with a different diameter king pin, injuries may occur.

The flanged king pin is used on the vehicle. That's why king pin can be replaced easily.



King Pin



If the wearing on the king pin is bigger than 2 mm, the king pin must be replaced.

3.5. Semi-trailer Axle System

Axle with disc or drum type brake mechanism are used in your vehicles.

Semi-trailer axles may only be loaded with the maximum legally permissible axle load indicated on the vehicle identification plate. The user is responsible for use of the trailer in accordance with its purpose and capacity and for its maintenance.

The healthy operation the brake system of the semi-trailer depends on the use of the semi-trailer with the same system and/or compatible tractor. For this reason, its obligatory for the buyer to market the brake adjustment at the authorized service of the tractor company with which these semi-trailer / trailers will be matched. In case your vehicle is paired and used with tow tractors that are not or cannot be adjusted, malfunctions and damages that may occur in the brake system or in the entire tractor and semi-trailer are outside the responsibility in this regard belongs to the buyer.



For more detailed information about your axles, please refer to manufacturer's manual given to you at the time of delivery.



If the axles are used other than the conditions specified in the manufacturer's manual or if their maintenance is interrupted, your vehicle may be out of warranty.



If the vehicle is equipped with the emergency brake bellows, apply the parking brake after checking the brake drum temperatures. Never apply the parking brake when the drums are very hot.

3.5.1. Hubodometer

Hubodometers show the distance traveled by the vehicle in kilometers or miles.

The unit of the hubodometer is written on the hubodometer. It is adjusted according to the tire diameter.



Analog Hubodometer



Digital Hubodometer

3.6. Hydraulic Steering System

3.6.1. Commisioning and Operation

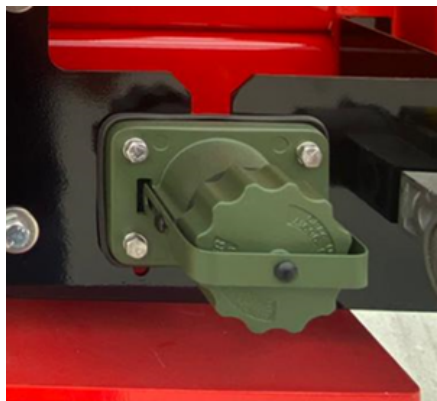
In order for the trailer to work properly, all air couplings and electrical sockets between the tractor and the trailer must be connected to the relevant couplings and sockets on the trailer. In order for the Steering System and the pump to work, the following connections must be made.

- The lighting sockets 24N (ISO 1185), 24S (ISO 3731) or 15 Pin ADR (ISO 12098) located between the tractor and the trailer must be connected to the relevant sockets on the trailer.



Elektrical sockets

- The battery supply socket (NATO / REMA) on the trailer must be connected to the truck's battery supply.



NATO socket

- The battery switch located inside the left front of the gooseneck must be opened.



Battery switch



The location of battery switch



In an emergency, the power can be cut off by turning off the battery switch.

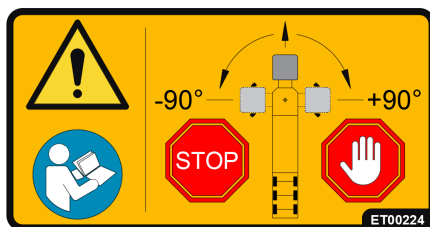
- Parking lights must be turned on from the truck cabin. In order for the steering system to work, the right parking electric line of the truck must be working. (24N (ISO 1185) Pin 6 / 15 Pin ADR (ISO 12098) Pin 6).



After the above operations are completed, the trailer brakes must be released for the steering system to work properly when the trailer is unloaded and not in motion. Operating the steering system when the vehicle is loaded and not in motion may damage the vehicle's steering system mechanisms.



As stated on the warning label below, do not force the vehicle to maneuver more than 90 degrees to the right and left. After the 90 degree maneuver, the vehicle completes the turn mechanically due to its structure. Any further forcing will damage the system.



Steering Limit

3.6.2. Mechanical Alignment and Calibration

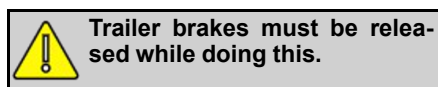
In order for the automatic alignment process to work correctly, the mechanical alignment and sensor calibrations must be done correctly.

3.6.2.1. Mechanical Alignment

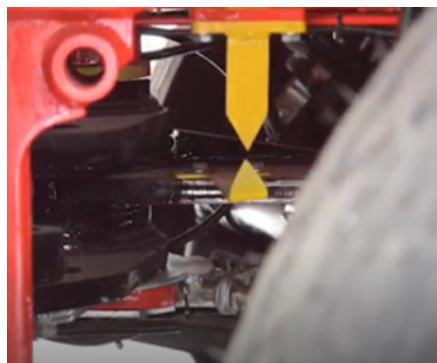
Mechanical alignment is done to ensure that the fifth wheel and hydraulic steering wheels are at the correct angle to each other. Once done, there is no need to do it again except for oil change and malfunction.

3.6.2.1.1. 1.Method – Truck

It is the method in which the steering center is brought to the reference point (where the yellow alignment arrows match) by the truck. Alignment can be achieved by following the steps below.

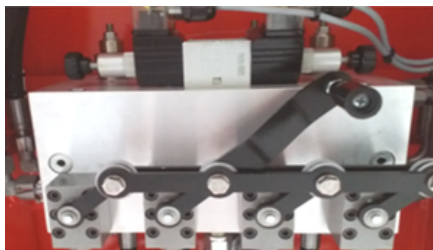


1. In order to align the wheels of the trailer, steering should be made with the truck until the reference alignment arrows on the rear of the vehicle match, making use of the left or right maneuvering movements of the truck.



Matching reference alignment arrows

2. Then, the hydraulic line of the axle area and the gooseneck area should be separated from each other with the help of the arm in the picture in the gooseneck area. Valves must be placed in the manual alignment position. In this way, even if the truck moves, there will be no oil flow to the axle area and the axles will not be steered.



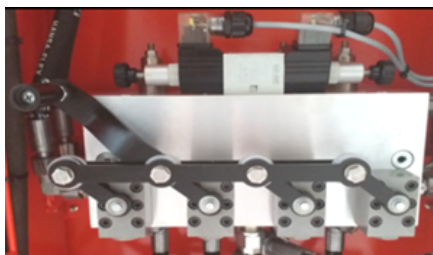
Manual alignment position of valves

3. After the axle area line is separated, the gooseneck area should be aligned with the help of the truck.



Alignment of the gooseneck area

4. The position of the valve handle on the hydraulic steering valve block should be in the driving position.



Normal driving position of valves

3.6.2.1.2. 2. Method – Remote Control / Control Panel

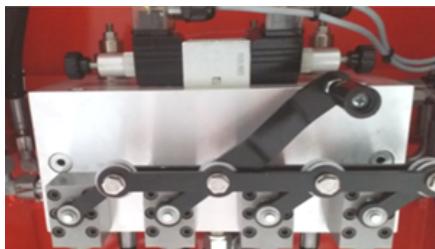
It is the method in which the steering center is brought to the reference point (where the yellow alignment arrows match) via the remote control or control panel. It is used in places where the area where the truck can maneuver is narrow. By following the steps below, alignment can be achieved with the help of the control.

1. First, the gooseneck area should be aligned with the help of a truck, and it should be seen that the reference arrow and the zero line on the table are aligned as in the picture below.



Alignment of the gooseneck area

2. Lever position on hydraulic valve block must be set to manual alignment position.



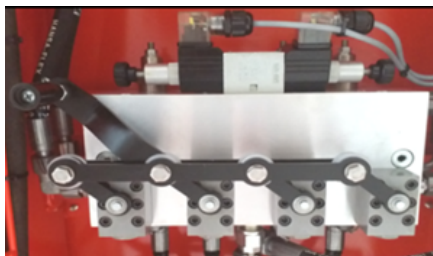
Location of the manual alignment of valves

3. The yellow alignment arrows on the steering hub should be matched by steering right or left via the remote control or control panel as in the picture below.



Yellow alignment arrows

4. The position of the valve levers on the hydraulic valve block must be taken to the driving position.



Normal driving position of valves

3.6.2.2. Sensor Calibration

In order for the automatic alignment function to work correctly in the steering system, sensor calibrations must be made.

This operation should definitely be done after the faults in the steering system are eliminated.

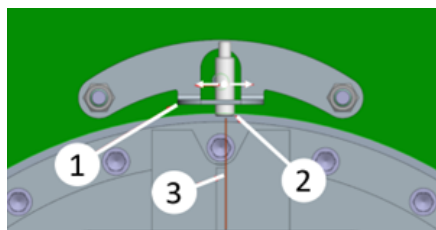
3.6.2.2.1. Semi-Automatic Alignment System Proximity Sensor Calibration

In order for the Sensor Calibration to be correct, the Mechanical Alignment process must first be performed.

In the semi-automatic alignment system, there are 3 proximity sensors in total, 1 on the gooseneck and 2 on the axle area.

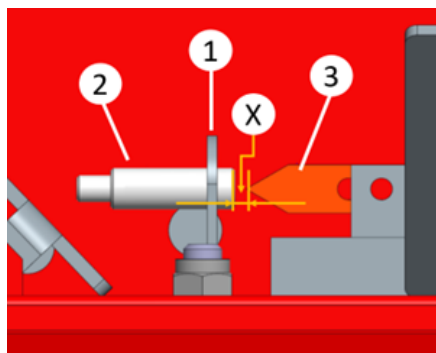
For gooseneck sensor calibration:

Gooseneck alignment arrows must be matched before starting the calibration process. The sensor, which is indicated by 2 in the gooseneck region, is connected to the connection piece in the structure with the number 1 slot. The sensor moves left and right in the slot as seen in the picture. The position where the sensor sees the 3 bar is defined as its aligned position. Accordingly, the sensor is positioned at the appropriate place in the slot, centering the rod.



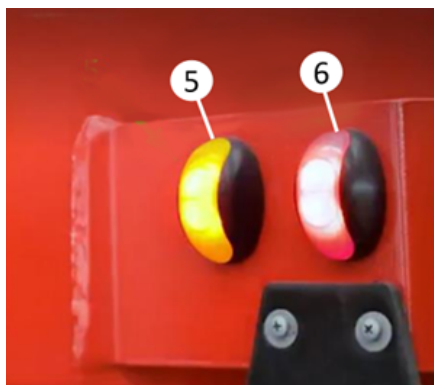
Gooseneck sensor calibration

Sensor number 2 can be positioned in-out as shown in the picture below. The sensitivity of the system depends on the distance x between the sensor and the 3 reference bar. As the x distance increases, the system works more sensitively. For this reason, x distance should be adjusted to a position where the sensor will become passive (the lamp on the sensor turns off) if the fifth wheel moves a little to the right or left.



Positioning the sensor in-out

After the alignment in the gooseneck area is completed, the yellow lamp number 5, located on the left front of the gooseneck, should light up according to the driving direction. This light should go out with a small movement of the truck to the right or left. In this way, the gooseneck region sensor calibration will be completed.



Lamps

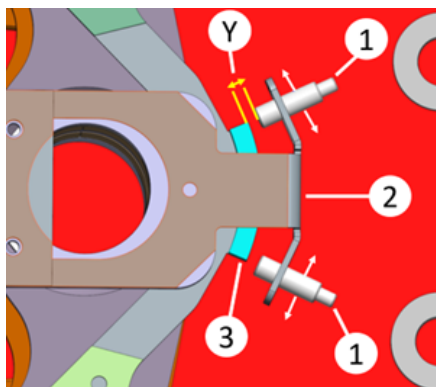
For sensor calibration of axle area:

The steering hub alignment arrows should line up before starting the calibration process. In the axle area, the sensors number 1 are connected to the bracket number 2. The bracket is slotted as in the gooseneck region. The sensors should be calibrated so that they only read the number 3 metal part on the steering hub at one point at a time.

The sensors should be moved from the outside to the inside (towards the center of the 2nd bracket) and should be fixed as soon as they see the metal part. After the sensors are fixed, one of the sensors should switch to passive position when the axles are steered slightly to the right or slightly to the left. At the same time, the red lamp number 6 on the gooseneck should go out. Otherwise, the sensor positions must be revised again.

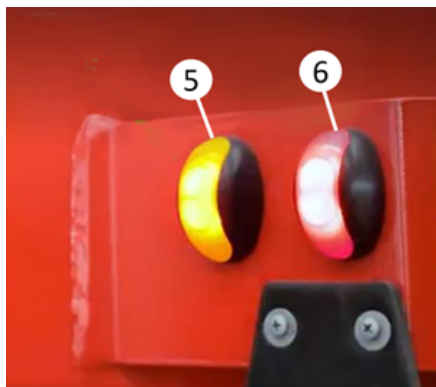
Passive state: The lamp on the sensor goes out

Active state: The lamp on the sensor lights up



Sensors


After the sensor calibration, the red lamp number 6 should turn on, indicating that the axle area is aligned.




Lamps

3.6.2.2.2. Fully Automatic Alignment System Angle Sensor Calibration

In the fully automatic alignment system, there are angle sensors in the fifth wheel and steering hub centers. In order for the steering system to work correctly, the steering angles and the sensor angles must be matched.

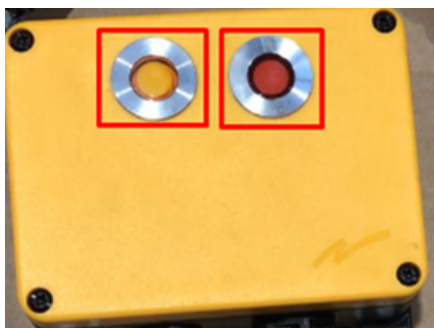
 This process should be done again after sensor replacement and steering system faults are eliminated.

 In order for the angle sensor calibration to be correct, the Mechanical Alignment process must first be performed. Then the following steps should be done in order.

1. The yellow alignment arrows on the fifth wheel and steering hub must be matched.



2. Press and hold the Set (5) button of the Remote Control for 3 seconds. When the calibration function starts, the Yellow and Red Steering Warning Lamps start to flash slowly (1 Hz) at the same time.



Receiver



Remote control

3. Make sure that the yellow alignment arrows on the fifth wheel and steering hub are matched and press the Auto (2) button of the remote control once. Thus, the angle values of the straight positions of the fifth wheel and steering hub are recorded. When the recording is taken, the yellow lamp lights continuously while the red lamp continues to flash slowly (1 Hz).

4. Truck rotates 90 degrees to the right or left.

5. Press the right (3) or left (1) button of the remote control once. By pressing the button, the right and left limit values of the fifth wheel and steering hub are recorded. When the recording is received, the yellow and red lamps start to light continuously.



Remote control

6. All values saved up to this step are temporary. In order to save these values

permanently, the Auto (2) and Set (5) buttons of the remote control are pressed simultaneously for 3 seconds. All temporarily saved values are saved permanently. In this case, the yellow and red lamps will flash 3 times fast (2 Hz) simultaneously and the Angle Sensor Calibration function will be automatically exited.



Remote Control

7. At any step of the Angle Sensor Calibration process, press and hold the Set (5) button of the Remote Control for 3 seconds to cancel and terminate the calibration process. Keeping the Set button pressed will delete all temporary records and automatically exit the Angle Sensor Calibration function. In this case, while the red lamp lights continuously, the yellow lamp flashes 3 times fast (2 Hz).



Remote control

3.6.3. Semi-Automatic Alignment System

The most distinctive feature of the Semi-Automatic Alignment system is that it automatically performs the alignment for only one angle value. For this reason, the Automatic Alignment function only works when the angle between the truck and the trailer is 0°. It is controlled by the yellow position lamp that the angle between the truck and the trailer is 0°. The yellow position lamp illuminates only when the angle between the truck and the trailer is 0°. In cases where the yellow position lamp is not lit, the Auto Alignment function will not work even if the “Auto” button of the Remote Control is pressed. To activate the Auto Align function, it is necessary to press the Auto button of the Remote Control by placing the truck in a level position with respect to the trailer.

3.6.3.1. Signaling of Steering Warning Lights

There are two lamps on the left front of the gooseneck, on the remote control receiver unit, and on the control panel on the left side of the gooseneck. These lamps are yellow and red colored LED lamps. The yellow lamp flashes according to the fifth wheel movements and the red lamp flashes according to the steering axle movements.

Tasks of lamp signaling:

YELLOW	RED	EXPLANATION
Not working	2 Hz x2	Occurs when the system is first powered on. Indicates that the vehicle has a Semi-Automatic Alignment system.
Constantly working	(*)	It is the position where the truck is level with respect to the trailer.(0°)
(*)	Constantly working	Means the steering axle wheels are straight.
Constantly working	Constantly working	The vehicle is level. It is steered by the truck and the axle wheels are aligned with each other. This happens only at 0°.
2 Hz x2	2 Hz x2	Indicates that the Auto Align function is complete.
2 Hz (><)	2 Hz (><)	Indicates that the emergency stop button has been pressed.
Not working	Not working	Indicates that the vehicle speed has exceeded the 15 km/h limit. In this case, the user is prevented from interfering with the steering system. The blocking is removed when the vehicle speed drops below the 15 km/h limit.

(*) Lamp can be in any state (Continuous on / on intermittently / not on).

(><) The lamps flash in sequence relative to each other.

While the yellow lamp is on, the red lamp is not lit.

While the red lamp is on, the yellow lamp is not lit.

3.6.4. Fully Automatic Alignment System

The most distinctive feature of the Fully Automatic Alignment system is that the fifth wheel automatically performs the alignment for all angle values. In this case, there is no need to put the truck in any position for the Auto Alignment function to work. Automatic Alignment function can be operated at all angle values between truck and trailer.

3.6.4.1. Steering Warning Lights

There are two lamps on the left front of the gooseneck, on the remote control receiver unit and on the control panel on the left side of the gooseneck. These lamps are yellow and red colored LED lamps.

The task of lamp signals:

YELLOW	RED	EXPLANATION
2 Hz x2	Not working	Occurs when the system is first powered on. Indicates that the vehicle has a Fully Automatic Alignment system.
1 Hz	Constantly working	Indicates that the steered axle wheels are located to the right of the required angle to align.
Constantly working	1 Hz	Indicates that the steered axle wheels are located to the left of the angle required to align.
Constantly working	Constantly working	The vehicle is level. It is steered by the tractor and the axle wheels are aligned with each other. This situation can be experienced at all angle values.
2 Hz x2	2 Hz x2	Indicates that the Auto Align function is complete.
2 Hz (><)	2 Hz (><)	Indicates that the emergency stop button has been pressed.
Not working	Not working	Indicates that the vehicle speed has exceeded the 15 km/h limit. In this case, the user is prevented from

		interfering with the steering system. The blocking is removed when the vehicle speed drops below the 15 km/h limit.
2 Hz	2 Hz	Appears when entering the Angle Sensor Calibration process. Continues until the vehicle's straight angle values are saved.
Constantly working	2 Hz	Appears when the flat angle values of the vehicle are recorded in the Angle Sensor Calibration process. Limit angle values continue until saved.
Constantly working	Constantly working	It is seen when the limit angle values of the vehicle are recorded in the Angle Sensor Calibration process. Temporary recordings continue until they are permanently saved or the Angle Sensor Calibration process is cancelled.
2 Hz x3	2 Hz x3	Appears when temporary records are saved permanently in the Angle Sensor Calibration process. It also indicates successful completion of Angle Sensor Calibration.
2 Hz x3	Constantly working	Appears when the calibration process is canceled at any step of the Angle Sensor Calibration process. In this case, if there are temporary records, they are deleted and the Angle Sensor Calibration process is automatically terminated.
2 Hz (<>)	2 Hz (<>)	Appears when the fifth wheel angle value or the steering hub angle value falls outside the limit values recorded in the Angle Sensor Calibration. This indicates that the Angle Sensor Calibration was performed incorrectly.

2 Hz	*	Indicates that the angle sensor on the fifth wheel is faulty. Continues until the fault is fixed.
*	2 Hz	Indicates that the angle sensor in the steering hub is faulty. Continues until the fault is fixed.

(*)(*)Lamp can be in any state (Continuous on / on intermittently / not on).

(><)The lamps flash in sequence relative to each other.

While the yellow lamp is on, the red lamp is not lit.

While the red lamp is on, the yellow lamp is not lit.

(<>)Lamps flash synchronously at the same time.

3.6.5. Remote Controller

It is the remote control of the steering function of the trailer with the help of a wireless controller. Wireless control; It consists of 1 Receiver unit and wireless controller.



Wireless controller and receiver

By connecting the wireless control receiver unit to the 13-pin steering sockets on the front and rear of the trailer, the steering function is controlled with the wireless remote control.



Remote controller

Button 1 and 3 – Left/Right Turn:

The left button turns the wheels to the right, and the right button turns the wheels to the left. This is because the wheels rotate in the opposite direction of the truck's rotation.

Button 2 – Auto Alignment:

By pressing this button the Trailer is automatically aligned.

Button 4 – “ON” Start Button:

By pressing this button, the wireless control on / off operation is performed.

Button 5 – “SET” Button:

This button is used for the Angle Sensor Calibration function on vehicles with Auto-Alignment System.

3.6.6. Control Panel

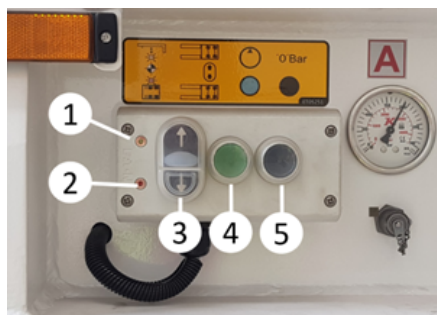
The steering system control panel is located on the left front of the vehicle according to the driving direction. There are Yellow and Red steering warning lights on the control panel, buttons that direct the axles to the right/left, a Pump Operation Button to pressurize the hydraulic system and a Pressure Relief Button to reduce the hydraulic system pressure when necessary.



The location of the control panel



Control panel



Control buttons

Yellow Lamp (1):

It flashes at the same time with the yellow lamp on the left front of the gooseneck. The operating principle of the vehicle according to the steering type is explained in the section on the alignment systems.

Red Lamp (2):

It flashes at the same time with the red lamp on the left front of the gooseneck. The operating principle of the vehicle according to the steering type is explained in the section on the alignment systems.

Right / Left Steering Button (Button with Direction Arrow) (3):

By pressing these buttons, the steering axles of the vehicle are moved towards the desired direction.

The operator must also press the "Pump Operation Button (Green)" at the same time to perform the right or left steering operation via the control panel.

Pump Start Button (Green) (4):

By pressing this button, the hydraulic system is pressurized.

Hydraulic control must be operated by pressing the Pump Start button.



Hydraulic lever controls

Pressure Relief Button (Black) (5):

By pressing this button, the hydraulic system pressure is reduced to 0 bar.

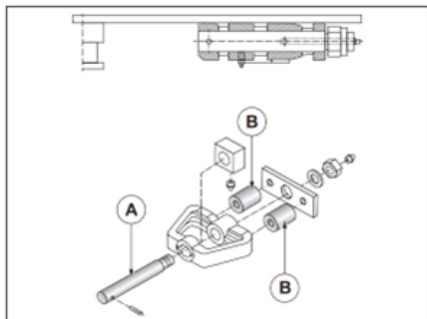
It is used for vehicle maintenance, easy separation of multiple couplings during gooseneck disconnection, and for reducing the system pressure for different reasons.

3.6.6.1. The Control of Steering Chock

Check the steering chock integrity, pin A, weld and play condition of parts daily. Excessive play will cause the vehicle to not steer properly. We recommend replacing the rubber washers marked B once a year or whenever you have problems with the vehicle's alignment.



As a result of a possible breakage of the chock, the steering of the trailer is uncontrollable and can cause serious damage, injury or even death.



The Steering Chocks



The vehicle cannot be driven with a damaged steering chock, otherwise it may cause serious damage, injury or even death.

3.7. Tires

When you are choosing tires, the first criteria are the load capacity index. Be sure that the load capacity index is suitable for your vehicle.

Tire manufacturers produce different types of tires according to the purposes of their use such as highway use, off-road or mixed-use. Please choose the correct type of tires according to the road conditions that you will use the vehicle. Choose the low decibel as soon as possible version. Tires as possible as having to Class A fuel efficiency level and braking on wet surfaces according to EU tire label stickers.



You can see the EU tire labels of the tires which were used in your vehicle on our website.

In dual/twin line wheeled vehicles, the tires must be matched properly according to their diameters. The tread depths on the adjacent tires shall not be different more than 5 mm. Furthermore, the

newly coated tires and partially worn tires shall not be used side-by-side in relation to the structure and type of the vehicle. Otherwise, driving safety will be disrupted. In such tires, though the tread depths are seen, it must be deduced that the tire diameters are different and the tires exceeding the radius differences by 10 mm must not be used side-by-side.

Wrong matching will lead to excess shape deformation of the larger tire by carrying more load than necessary. In such a case, the wearing will accelerate and reveal the risk of early wearing of the tire. This case must be considered whenever radial and transverse layered tires are used side-by-side.



In some countries, M+S (Mud and Snow) or 3PMSF (3 Peak Snowflake) labelled stickers can be mandatory according to season. Please observe the regulations and rules.



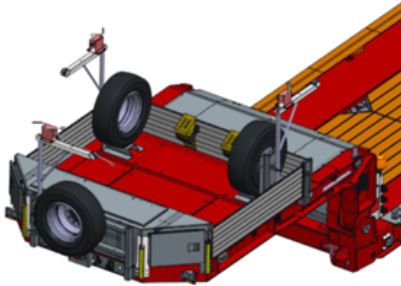
M+S and 3PMSF Symbol



Very serious accidents may occur if unsuitable or worn tires are used.

3.8. Spare Wheel Holder

SLL vehicles can be supplied with a single, double or triple spare wheel carrier according to the customer's request.



Spare holder



Make sure that you put the necessary warning signs and take the safety precautions during the tire change.



Driving with insufficiently secured spare tire(s) can cause traffic accidents.



Since tires are heavy parts, pay attention to ergonomics and occupational health and safety rules during tire replacement. There is a risk of pinching, falling, and cutting.



For whatever tire the spare tire carrier is designed for, carry only that type of tire in the carrier. Follow the rules and regulations when removing/installing or maintaining the spare tire or regarding the spare tire carrier.

3.9. Spare Tire Lowering Crane

The crane system is used to lower the spare tire and is supplied upon request by the customer

- Attach the carabiner at the end of the crane rope to the rim of the spare tire.
- Wind the rope by turning the mechanism handle on the crane. The raised tire will come out of its slot.
- Turn the crane arm until the tire is out of the vehicle.

- Open the rope by turning the mechanism handle on the crane. The tire will go down.
- Remove the carabiner at the end of the rope from the rim.
- Collect the rope by wrapping it on the crane again. Attach the carabiner to the fixing pin on the rear of the spare wheel.



Spare tire lowering crane

3.10. Wheel Chock

There are two units wheel chocks and holders in the vehicle.



The vehicle must be secured with wheel chocks when parked on a slope area, during the loading and unloading operations or when parked without a tractor.



Only place wheel chocks on wheels on fixed axles, never on idle/steer axles.



When the wheel chocks is fixed inside the holder, be sure that the pins will be mounted properly.

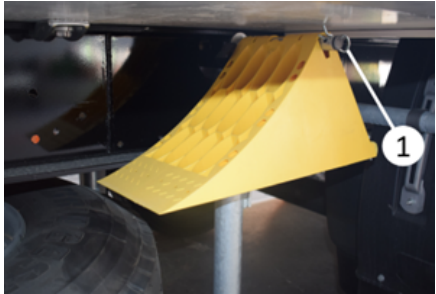


After driving operations, place the wheel chocks properly.

3.10.1. Pin Type Wheel Chock Holder

Removing the wheel chock from holders: Pull out the cotter pin (1) located at the end of the wheel chock holder. Then

take the wheel chock from its slot by pulling it sideways from the wheel chock holder.



Placing the wheel chock from its holder: Place the wheel chocks on the holders and mount the cotter pin (1) to pin.

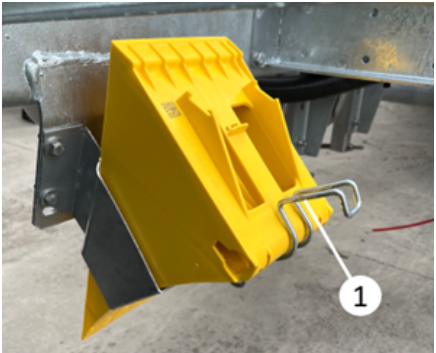
3.10.1.1. Pin Type Wheel Chock Holder

Removing the wheel chock from holders: Pull out the cotter pin (1) located at the end of the wheel chock holder. Then take the wheel chock from its slot by pulling it sideways from the wheel chock holder.



Placing the wheel chock from its holder: Place the wheel chocks on the holders and mount the cotter pin (1) to pin.

3.10.1.2. Pocket Type Wheel Chock Holder




Removing the wheel chock from holders: Remove the wheel chocks by pushing the handle (1) which is located at the end of the chock's holder from the wheel chock to the other side.




Removing the wheel chock from holders:

Placing the wheel chock from its holder: Insert the wheel chock by pulling the handle (1) which is located at the end of the wheel chock's holder.

3.11. Boxes and Storage Units



Be sure that the boxes and storage units are properly closed and that the materials inside of these storage units are fixed properly before driving. Otherwise, the accident may occur.



Be sure that the necessary safety measurements are taken while using the cabinets and storage units.

3.11.1. Gooseneck Corner Chamfered Tool Cabinet

If the gooseneck of the vehicle is chamfered, a 3-door tool cabinet can be provided according to the customer's request.



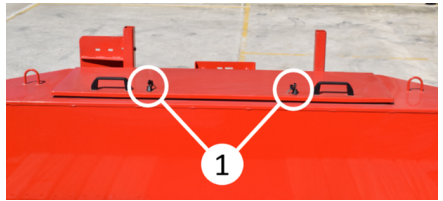
Gooseneck Corner Chamfered Tool Cabinet



Cabinet side doors

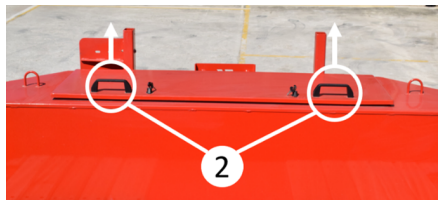
3.11.1.1. Opening The Top Of The Cabinet

- To open the top door of the cabinet, the locks (1) shown in the picture are unlocked by turning them clockwise.



Installing The keys of The top cover

- By turning the lock latch, the locks of the cabinets are opened.
- To open the cover, handles (2) are held and lifted upwards. The cabinet door is opened.



The position of the levers on the cover and the direction of lifting



Opened cabinet door

3.11.1.2. Opening The Cabinet Side Doors



Side Door



Side cover lock and latch(1)

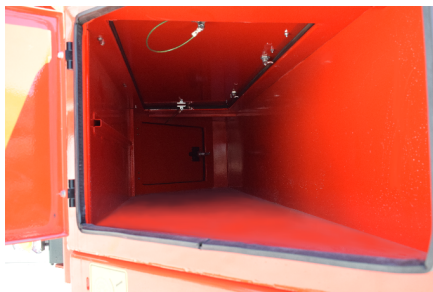
- Pull the latch (1) on the side cover lock and remove it.
- Turn the removed latch clockwise (2). The cover has been opened.



Removing and turning the latch



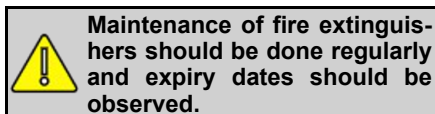
Opening the corner door



Inside of The cabinet

3.11.2. Fire Extinguisher Cabinet

Fire extinguisher cabinets are used to protect fire extinguishers from the external environment.



Latches of fire extinguisher cabinet

Opening door

- Open the two plastic latches (1) holding the cover.
- Lift the latch up and back and unlatch the cover to open it.
- Open the Velcro that fastening the fire extinguisher and take the fire extinguisher.

Closing door

- Place the fire extinguisher and fix it with Velcro.

- First, close the lid and close the latch on the lid.
- Lock the latch to tighten the cover.

3.12. Bumper

Kaessbohrer Low-bed vehicles have one type bumper, that is fixed bumper.

On the bumper, there are reflectors, labels, spotlight, headlight assembly and horn lamps connected to the headlight assembly, parts necessary for ramp use and a mat attached to the bumper.

3.12.1. Fixed Bumper

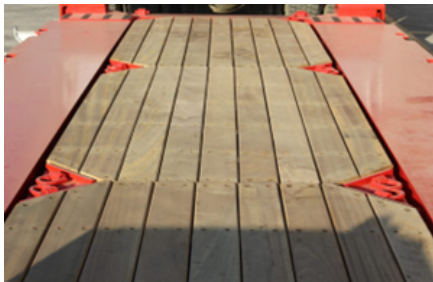
The bumper is welded to the chassis and provides ease in the use of ramps and the transition between ramp types, as it has an omega shape structure.



Fixed Bumper


3.13. Wooden Floor

Hard wood flooring is used on the base. It is fixed to the chassis by applying a base screw to the wooden floor.



Hard wood flooring

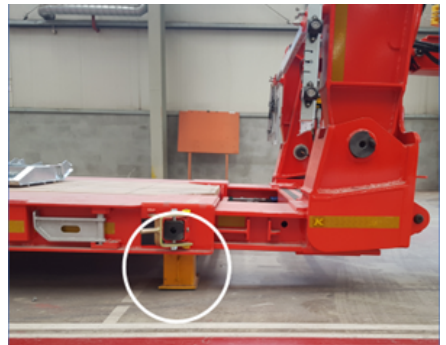
3.14. Extendable Chassis



The maneuvers mentioned below must be done on absolutely flat ground with a tow truck suitable for Low-Loader. The trailer must be mechanically aligned. Otherwise, the pool chassis and hydraulic equipment may be damaged.

3.14.1. Extending The Chassis

1) Raise the bottom of the pool by placing a support under the pool.



Placing a support under the pool

2) Make electrical connections.



Electrical connections

3) Place the pool on the supports by lowering the vehicle from the gooseneck. In order to lower the gooseneck, keep the pump start button pressed and at the same time lower the 3 lever. Lowering the chassis too far may cause the chassis to contract, causing the vehicle to not extend. With the lever number 3, make the chassis relax with small up and down movements.



Pump start button



The location of screw lever



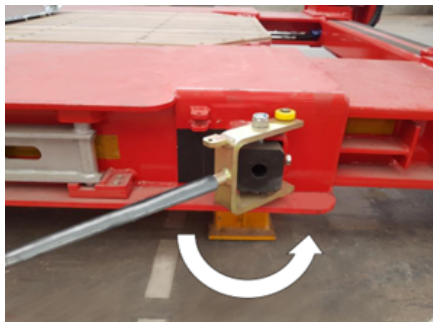
Hydraulic control levers

4) Engage the vehicle's parking brake



Red park button

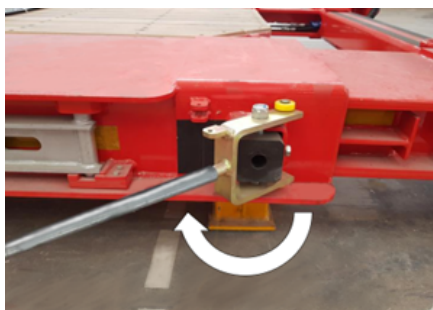
5) Remove the safety pin, unlock with the screw lever on the gooseneck. If it is difficult to unlock, move the vehicle to the right or left.



Opening the lock

6) Extend the vehicle past the slot in front of the desired extension.

7) Close the lock.



Closing the lock

8) Make sure that the lever is closed by pushing the lever of the open lock with your foot. When the locks come into the slot, the locks will fit into the slot. If one of the locks is closed and the other is not, move the vehicle to the right or left with the tractor to ensure that the lock is seated and insert the safety pin.



Closing the lock

Disengage the parking brake of the vehicle.

3.14.2. Shortening The Chassis

1) Raise the bottom of the pool by placing a support under the pool.



Placing the supports under the pool

2) Make the electrical connections



The location of the electrical connections

3) Place the pool on the supports by lowering the vehicle from the gooseneck. To lower the gooseneck, keep the pump start button pressed and at the same

time lower the lever 3. Lowering the chassis too far may cause the chassis to contract, causing the vehicle to not shorten. Take the twitch of the chassis by making small up and down movements with the number 3 lever.



Pump start button



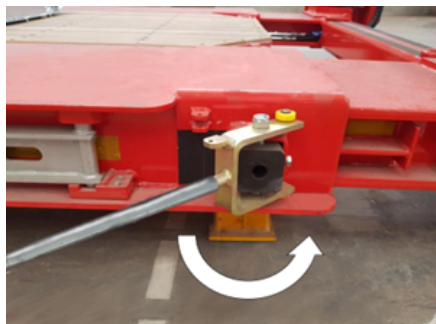
Hydraulic control levers

4) Engage the vehicle's parking brake.



Red park brake

5) Remove the safety pin, unlock with the screw lever on the gooseneck. If it is difficult to unlock, move the vehicle to the right or left.



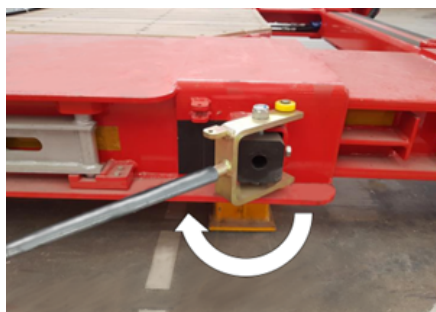
Opening the lock



Position of the screw lever

6) Shorten the tool until it passes the slot one back of the desired length.

7) Close the lock.



Closing the lock

8) Make sure that the lever is closed by pushing the lever of the open lock with your foot. When the locks come into the slot, the locks will fit into the slot. If one of the locks is closed and the other is not, move the vehicle to the right or left with the truck to ensure that the lock is seated and insert the safety pin.



Closing the lock

9) Disengage the parking brake of the vehicle.

3.14.3. Lengthening and Shortening the Vehicle with Intermediate Platform Attachment and Removal [Option]

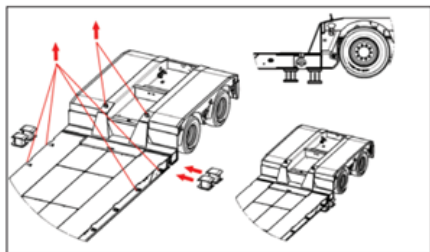
- Depending on the option on the vehicle, raise the axle area to the highest level with the lowering/lifting button or the lowering/lifting valve.



Lifting/Lowering axle buttons

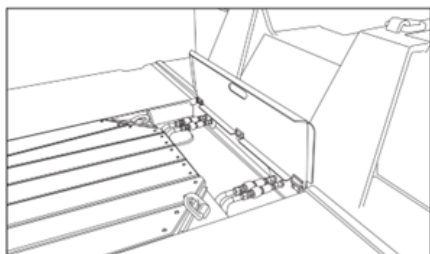
Do not disconnect any electrical or hydraulic connections before lowering/lifting operation. Otherwise, the pool chassis and hydraulic equipment may be damaged.

- Place the aluminum supports under the platform by connecting the platform from the marked places in the picture and lifting it with a crane.




Marked areas

- Lift the aluminum cover and disconnect all pneumatic, hydraulic and electrical connections.



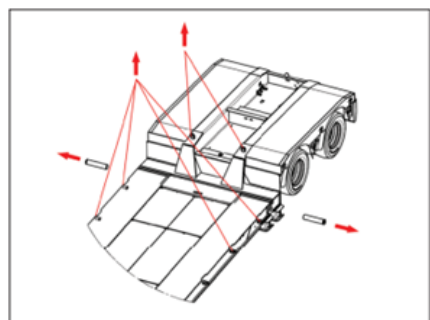
Removing the aluminum cover

- Remove the force on the pins in the connection area by lifting the axle area in a controlled manner.



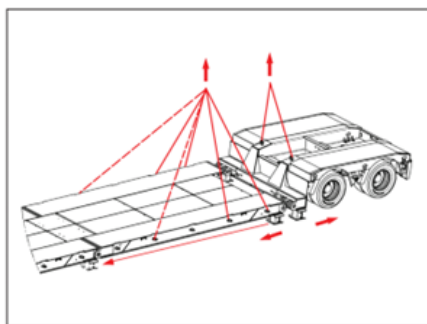
As long as the connections under the aluminum cover are not installed, the lowering/lifting operation cannot be performed.

- Remove the pin fixing brackets.



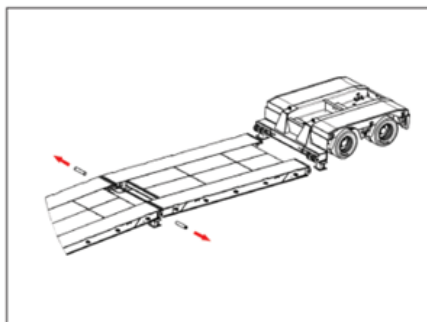
Removing the pin fixing brackets

- Carefully remove the pins from their sockets.
- Carefully separate the axle area from the platform with the help of a crane and place the aluminum supports under the axle area in their new position.
- Place the aluminum supports under the front platform by changing the connection points of the intermediate platform as shown in the picture.



Placing the aluminum supports

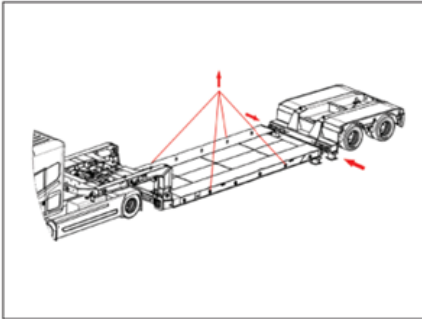
- Remove the force on the pins in the connection area by lifting the intermediate platform in a controlled manner.
- Remove the pin fixing brackets.



Removing the pin fixing brackets

- Carefully remove the pins from their sockets.

- Trailer is brought back with the help of truck and crane and the pin area on the platform is matched with the pin area on the axle area.



Matching pin regions

- Carefully insert the pins into their sockets.
- Connect the pin fixing brackets. Make all the pneumatic, hydraulic and electrical connections under the aluminum cover and close the cover.
- Remove the aluminum supports.
- Remove the crane connections.
- Move the axle area of the vehicle to the road position with the lowering/lifting button or lowering/lifting valve depending on the option on the vehicle.

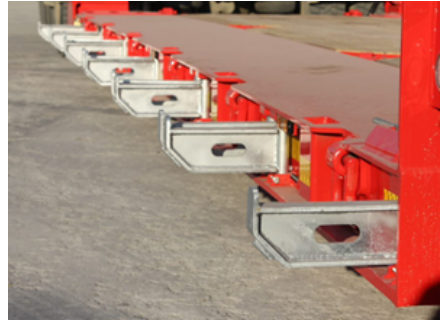
3.15. Extension Brackets and Woods

3.15.1. Side Extension Brackets

Optionally, side expansion brackets are provided according to the customer's request.

In cases where loads larger than 2550 mm need to be transported in the pool area of the vehicle, the expansion brackets are opened and the expansion boards are placed on top of the vehicle and the vehicle is brought to a width of 3000 mm.

To open the brackets, hold the slot in the middle, lift them up slightly and turn them.

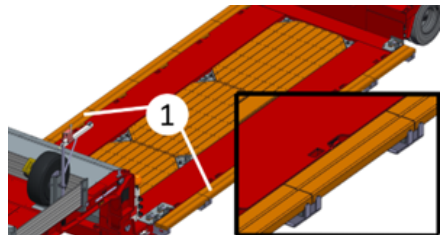


Side extension brackets

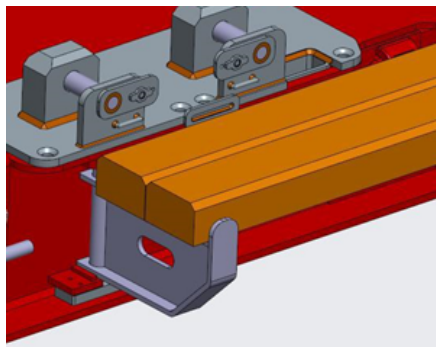
3.15.2. Side Extension Brackets

Side expansion woods (1) are optionally provided according to the customer's request.

In cases where loads wider than 2550 mm need to be carried in the pool area of the vehicle, expansion brackets are opened and expansion woods are placed on top of them. There are two-character codes such as A1, B3 on the expansion boards. This code specifies which board to put where. The left of the vehicle is described as A and the right as B. Starting from the front of the vehicle, the first place to put the board continues as 1, then 2, 3.



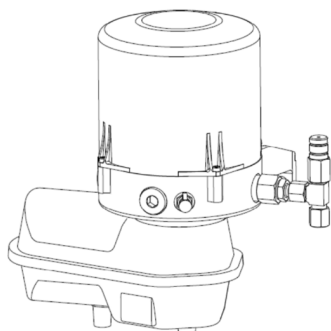
Side extension woods



Side extension woods

3.16. Lubrication System

Your vehicle may have an automatic lubrication system that allows the axles, steering system and/or tail lift to be steered. For more detailed information about the lubrication system, see the manufacturer's manual.



Lubrication Pump

3.17. Warning Signs

It is used to warn other drivers when the transported loads are wider than the trailer. To use the expansion labels, loosen the 2 thumbscrews on the brackets. Extend the expansion label as long as you want, then slide the expansion label until the holes on the expansion label profile and the fixing bracket match up. When the holes match each other, tighten the wing bolt that meets this hole. Then tighten the contra nut on this bolt for safety. In this way, you fix the expansion label. Then tighten the other wing bolt and tighten the lock nut on it. Thus,

you reduce the vibration by taking the space in the expansion label.



Warning signs

3.18. Rotating Warning Lamp

A warning lamp is used to warn other drivers while the vehicle is loaded in traffic. When the parking lights are turned on from the truck, the rotating warning lamp also comes on. There are a total of 4 rotating warning lamp sockets on the vehicle warning signs.

Rotating warning lamp can be supplied as bulb or LED according to customer request.



Bulb rotating warning lamp



Led rotating warning lamp

4. COMPONENTS OF UPPERSTRUCTURE AND USAGE

4.1. Gooseneck Area

There is a control panel on the left side of the gooseneck to control the hydraulic components of the vehicle.



Location of the control panel

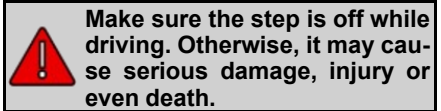


Pump start button



Hydraulic control levers

There is 1 step on the left side of the gooseneck to make it easier to climb on the gooseneck. To open the step, grasp the upper part of the step and pull slightly upwards. Then turn it on as in the picture. Fold and close the step after use.



Step

There is a tool cabinet on the left front of the gooseneck. In this tool cabinet;

- 1 x 3.5" king pin (option),
- 1 minimess measuring hose,
- 1 steering system indicator lamps assembly,
- 1 remote control system assembly,
- 3 meter interconnection cable: with NATO socket (when NATO or Rema socket option is selected),
- There is a rotating warning lamp (option).



Toolbox

There is a screw lever on the left side of the gooseneck. The main uses of this lever are as follows;

- As a handle when climbing a gooseneck (1))
- As a pump handle (2) when using the emergency hand pump
- As unlock lever for manual unlocking while extending the vehicle (3)



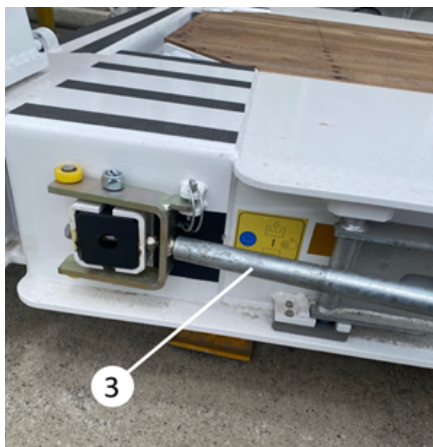
Location of the screw lever



As a handle when climbing a gooseneck (1)

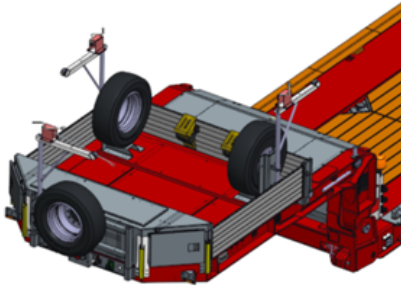


As a pump handle (2) when using the emergency hand pump




As unlock lever for manual unlocking while extending the vehicle (3)


There is a spare wheel holder and spare tire on the upper right part of the gooseneck as standard. When the 2nd spare wheel option is selected, there is a spare wheel holder and spare wheel at the top left.



Spare wheel holders

 **Possible squeezing, pinching or cutting etc. when dealing with the spare tire. There is a risk of accident due to the operation! The spare tire could fall and injure the driver. Be extremely careful when dealing with the spare tire!**

 **Driving with insufficiently secured spare tire(s) may cause traffic accidents.**

 **For which tire the spare tire holder is designed, only carry that type of tire in the holder.**

When the option is selected, the spare wheel crane can be attached to the spare wheel holder, which is located on the top right of the gooseneck as standard. Thanks to this crane, it is easier to remove and lower the spare wheel on the gooseneck.

4.1.1. Gooseneck Separating and connecting

4.1.1.1. Moving The Gooseneck


There are 2 hydraulic cylinders on the back of the gooseneck. Thanks to these cylinders, the gooseneck can be moved up and down. Thus, when the platform approaches the ground with the deflection formed in the pool when the vehicle is loaded, the gooseneck is moved and the pool is lifted up.



Hydraulic Cylinders

4.1.1.2. Gooseneck Separating and connecting

4.1.1.2.1. Gooseneck Separating

 **The maneuvers mentioned below must be done on absolutely flat ground with a tow truck suitable for Low-Loader. The trailer must be mechanically aligned.**

1) Make electrical connections.



The locations of the electrical connections

2) By lowering the vehicle from the gooseneck, set the pool on the supports or on the ground. In order to lower the gooseneck, hold down the pump start button as in the picture, at the same time bring the lever 3 down.



Pump start button



The pressure relief button



Hydraulic control levers

3) Engage the vehicle's parking brake.
(The red button should be pulled.)



Red button

4) Release the pressure of the steering system by pressing the pressure relief button located on the left side of the gooseneck so that the Multi Quick coupling connection in the gooseneck area can be easily removed.

5) Separate the hydraulic, electrical and pneumatic connections between the gooseneck and the pool shown in the pictures.



Hydraulic multi quick coupling




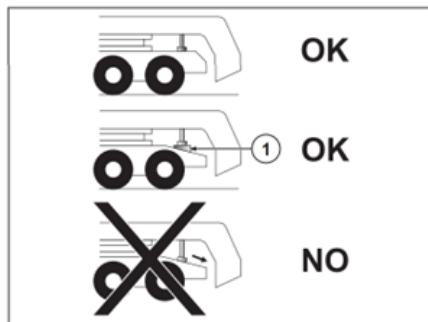
Electrical connections

6) While holding down the pump start button, lower the gooseneck separation console from the 1 and 2 levers.




Lowering the gooseneck separation console

 **The gooseneck separation console must press on a flat surface on the truck. If the ground on the tractor is not flat, place a support (1) under the console so that it presses flat.**



Pressing the separation console on a flat surface

 **If the cylinder stroke of the gooseneck release console is short, place a support under the console to ensure that the cylinders operate comfortably.**

7) Remove the safety pin and the gooseneck pin shown in the picture. If there is difficulty in removing the pin, the gooseneck is moved up and down to release the pin.



Pulling the safety pin

8) In order to bring the pool and gooseneck of the vehicle to the separation position, bring the gooseneck hydraulic cylinders to the fully closed position by lowering the pump start button and the number 3 lever.



Pump start button



Hydraulic control lever



The rotation of the console holding the hook



Cylinders

9) While holding down the pump start button, lower the gooseneck release console / pressure console from the 1 and 2 levers.

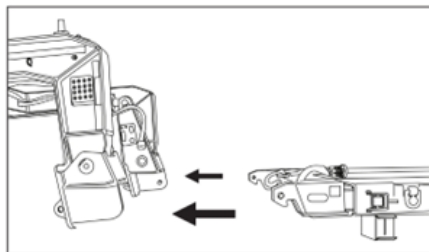


Pump start button



Hydraulic control levers

10) When the turning process is completed and the tip of the hook in front of the pool is freed from the console, move forward with the truck and separate the pool from the gooseneck.



Separating the gooseneck from the pool

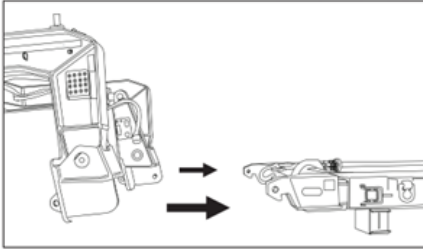
After the gooseneck separation process has been performed, do not move the gooseneck pressure cylinders, which carry the gooseneck assembly on the truck and keep it in balance, in any way (control levers 1 and 2 should not be used). Otherwise, the gooseneck assembly may fall off from the truck, and serious damage may occur to the gooseneck or truck.



Hydraulic control levers

4.1.1.2.2. Gooseneck Connecting

1) Approach to the trailer with the truck.



Approaching to the trailer with the truck.

2) If necessary, keep the pump start button pressed and adjust the height of the gooseneck with the number 3 lever.



Pump start button



Hydraulic control levers

3) When the hook is on the console, keep the pump start button pressed and center the hole in the gooseneck and the hole in the hook with the lever number 3 as seen in the picture.



Centering the holes

4) Attach the safety pin and the gooseneck pin shown in the picture.



Attaching the safety pin

5) Keeping the pump start button pressed, lift the gooseneck separation console from the levers 1 and 2.



Hydraulic command levers

6) Keeping the pump start button pressed, lift the gooseneck from the lever number 3 and take the supports under the pool.



Pump start button

7) Connect the hydraulic, pneumatic and electrical connections



Hydraulic multi quick coupling



Electrical connections

8) Disengage the parking brake. (Press the red button.)



Red button

4.1.2. Front Panel



Front area of gooseneck

Couplings, electrical sockets, spare wheel holder, corner bevel tool cabinet are located in the front area of gooseneck.

Spare wheel and spare wheel crane can be supplied according to customer's request.

4.1.3. Side Panel

4.1.3.1. Side Panel Covers

The Gooseneck area is surrounded by covers made of aluminum profiles. These covers and the pillars on which the covers are placed can be removed from the vehicle when necessary.

Lengths, widths and heights may vary according to customer request.

- Pull the aluminum covers upwards and remove them from the slide.

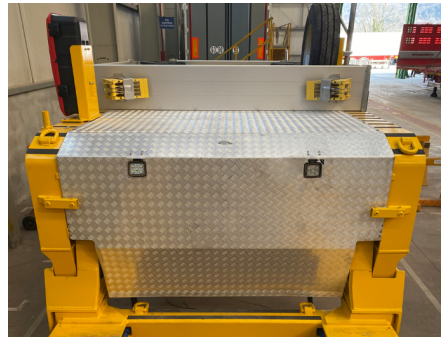
- Remove the pillars by pulling them upwards from their sockets.



Side aluminium covers

4.1.4. Gooseneck Closing Sheet

Gooseneck Closing Sheet is given according to customer request.



Gooseneck closing sheet

5. TRANSPORTATION PROCESS

5.1. Pre-Driving Checks

- Make sure that all necessary documentation is available at the vehicle
- Make sure all necessary adjustments and loading condition are properly made
- The vehicle is coupled and secured with the tractor properly and safely
- Make sure that all pneumatic and electrical connections between the tractor and the vehicle are properly made and that the EBS system is operational
- All structural hardware (wheel chocks, side underrun guards, ladder and etc.) are in their place and locked or secured properly
- The load is distributed evenly to prevent any displacement during driving.
- The weight of the load is within the permissible limits,
- Comply with the regulations of the country you are in,
- Make sure that the lighting and signal system is fully operational,
- The tire air pressures are at the required level
- The parking brake of the semi-trailer is released.

5.2. Semi-Trailer and Tractor Coupling

5.2.1. Connection of Low-Loader to The Truck

Follow the steps below to connect the low-loader to the truck:

- Check that the top link plate and connections of the semi-trailer are in good condition, and that there is no

tear, deformation or roughness on the metal surfaces.

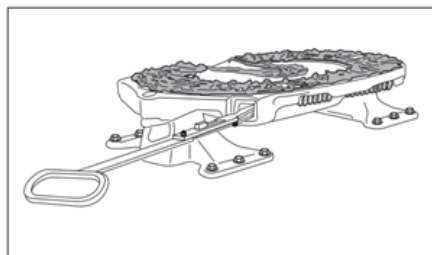
- Check the correctness of the 5th wheel height. The 5th wheel should be 0-2 cm lower than the upper link plate of the Low-loader. If it is not in the desired size, adjust the air bellows of the truck. If the truck has this feature, refer to the truck's user manual or adjust the height using the gooseneck lowering-lifting lever control (1), number 3, located on the low-loader's gooseneck. During this process, the electro-pump power cable connection between the truck and the semi-trailer must be made during the gooseneck lowering-lifting, and the electro-pump power button (2) must be pressed during the process.



Pump start button

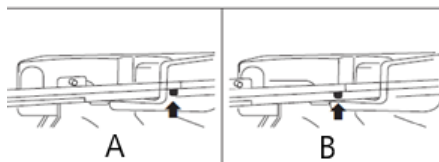
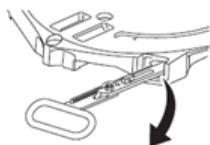


Hydraulic control levers



5th Wheel

- Check that the King pin and connections are healthy. On the 5th wheel, top connecting plate and king pin; make sure that there is a sufficient amount of grease to ensure undamaged bonding, free of dust and dirt.
- Switch the 5th wheel lock system to the "On" position.



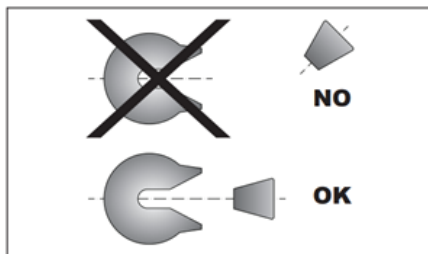
Fifth wheel locking system

A- Locked

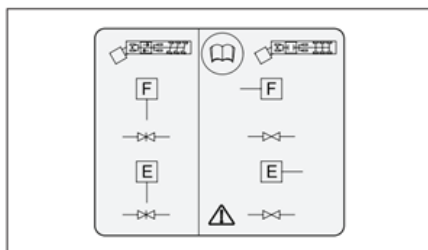
B- Unlocked

- Make sure that the parking brake is pulled and that the semi-trailer is secured against slip by means of wheel mounts and that the semi-trailer is in the driving position.
- Gently move the tractor backwards closer to the semi-trailer so that the 5th wheel of the truck aligns the Low-loader king pin and steering wedge. The 5th wheel will slide smoothly under the top coupling plate, enter between the lugs of the king pin and lock itself by the force

of the impact/joint. Make sure that the helping wedge is neatly settled.



Proper placement of the kingpin



- After the truck and semi-trailer pairing process, automatic alignment and system pressurization should be performed.
- Unplug the electro pump power cord.
- Remove the aluminium supports and wheel chocks from under the Low-loader.
- Release the parking brake of the low-loader.



Parking brake control panel

5.2.2. Separating the Low-Loader from the Truck

Follow these steps to separate the low-loader from the truck:

- Dock the truck and Low-loader in the parking area straight and aligned.
- Pull the parking brake and secure the vehicle with wheel chocks against slipping.
- Place the aluminium supports under the Low-loader as shown in the picture.



Placing the aluminium supports

- By adjusting the air bellows of the truck (if the truck has this feature, refer to the truck's user manual) or by using the gooseneck lowering-lifting lever control (1) located on the Low-loader's gooseneck, ensure that the Low-loader is seated on the aluminium supports. (During gooseneck lowering and lifting, the electropump power cable connection between the tractor and the semi-trailer must be made and the electropump power button (2) must be pressed during the process.)

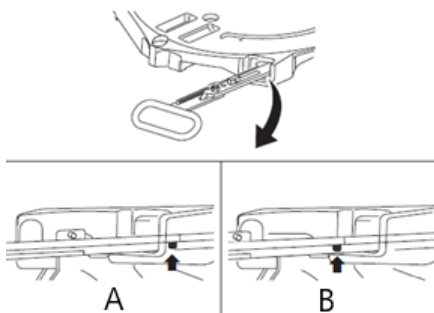


Pump start button



Hydraulic control levers

- Disconnect all electrical, hydraulic and pneumatic connections between the truck and the Low-loader.
- Turn the 5th wheel lock system to the "On" position.



Fifth wheel locking system

A- Locked

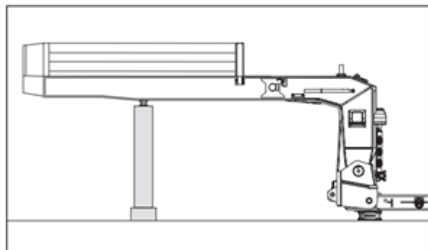
B- Unlocked

- Separate 500 mm from the Low-loader by slowly moving the truck forward. Lower the level of the

suspension bellows of the truck and separate it from the Low-loader.

5.2.3. Parking of the Low-Loader

In case you will park your Low-Loader, which is not connected to the truck, for a long time, place the aluminium support under the gooseneck and loading platform, as shown in the picture on the side, and park it with minimum pressure on the gooseneck lowering-lifting cylinders and airbags.



Parked Low-Loader

5.3. Loading – Unloading Operations

Safety Reminder

- During the loading/unloading operations, the parking brake must be activated, and the vehicle must be fixed with Wheel chocks.
- To prevent slipping, tipping or sinking of the vehicle, the vehicle must be parked on a flat and firm surface.
- Ensure that you made a proper load distribution in compliance with all laws, rules and regulations.
- The suspension of the vehicle may be raised during the loading/ unloading process. Because of this reason, the vehicle height may be bigger than the permitted height limits. Always set the trailer in the driving position after loading and unloading. Always check height limits when entering tunnels and passages.

- Make sure that the weight or dimensions of the load do not exceed the technical and legal limits.
- Note that vehicle stability may be affected by the load distribution, the braking distance may be longer and a larger turning radius may be required.
- During loading, consider the laws of the countries you are going to and passing through, as well as the laws.
- Give attention to the maximum axle weight and total weight.
- Comply all national/international laws, rules, and regulations about loading and occupational safety.

5.4. Cautions During the Parking and Stopping

- Involuntary trailer movements, unstable posture and insufficient safety at night may occur serious accidents and injuries.
- Use the parking brake and wheel chocks while stopping.
- If you are going to park the vehicle in a public traffic area, you must use the necessary marking plate in accordance with legal regulations.

5.5. Loading

- The load must be fixed so that it does not move while the vehicle is in motion or during sudden stops.
- Distribute any load as low as possible on the loading floor. The load's center of gravity must always be above the vehicle's centerline.
- After the loading / unloading operation is completed, all the final side structures are securely in place.

- If a roof lift or sliding roof system is used, make sure that the system is made suitable for driving.
- Make the tensioning by making the Canvas / Curtain connections safely.
- Removal of side walls, partitions, headboard, etc. Keep in mind that they are not usually manufactured to withstand high forces.
- Secure the load with braces and load holders and make sure it is secure.

5.6. Important Technical Considerations

5.6.1. Fire Extinguisher

Please check fire extinguishers periodically every year and fill them up if necessary. In case of any usage of the fire extinguishers, fill it up immediately.

Precautions to be taken in case of fire:

Some sealing materials let out gas when burned and these gases may become abrasive acid in contact with water. Thus never touch the fire extinguisher liquid accumulations without wearing protective gloves.



Fire Extinguisher Box

5.6.2. Wheel Chocks

Keep the wheel chocks in their place and place them under the wheels during

parking. Do not forget to remove the wheel chocks before setting off.



Wheel Chocks

5.6.3. Modifications on the Trailer

Repairing and modification operations must be made by only authorized services. Otherwise, your vehicle may be out of warranty.

5.6.4. Air Leakage

In case the air pressure in the air tubes drops instantly with the engine stop, this means that there is a leakage in the pneumatic system. Contact the nearest authorized service in such a case. The air leakage not only affects the safety of the braking system but also negatively affects the load lifting capacity of airbags.

5.6.5. Considerations For the Environment

Pollution in all its forms poses a threat to the environment. To keep the pollution at a minimum, collect the waste materials carefully and dispose of them in accordance with the regulations of your country.

ENVIRONMENT - Disposal of the battery in an inappropriate place may harm the environment and human health. If you need to dispose of the battery, follow local regulations. If you do not know how to dispose of it, take it to the most appropriate service point. The symbol on the battery indicates that this product should not be disposed of.



Health and Safety

- Keep sparks and fire away from the battery. The battery emits explosive gas that can cause an explosion.
- Wear eye protection and rubber gloves while working on the battery, otherwise the battery hand-control may cause burn and serious damage including blindness in your eyes.
- Under no circumstances allow children to handle the battery. Make sure that anyone dealing with the battery is familiar with the proper use of the battery and its hazards.
- Pay close attention to the battery electrolyte as it contains diluted sulfuric acid. Contact with your skin and eyes may cause burns or loss of eyesight.
- Carefully read and understand this manual before working on the battery. Failure to follow instructions may result in injury and vehicle damage.
- Do not use the battery if the electrolyte level is at or below the recommended level. Using the battery with a low electrolyte level can cause explosion and serious injury.

If there are wasted oil and wasted oil contact materials in your vehicle, pay attention to the following warnings.

When disposing of products/wastes such as used oil, hydraulic oil, do not discharge into channels, sewers, landfills, or soil. This is against the legislation of all countries.

This rule also applies to empty containers in contact with oil, chemical materials, and waste of cleaning cloths. Take these wastes to the relevant authorities or the most appropriate service point for disposal.

If your vehicle tire has expired;

The end-of-life tire must be disposed of in accordance with the regulations. For this, take your expired tire to the relevant authorities or appropriate service points.

If you carry dangerous chemicals in your vehicle;

In case of an accident or emergency that may occur during transportation, act in accordance with the Written Instructions of the ADR Legislation.

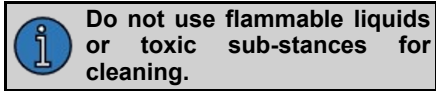
From the trailer's life-cycle perspective, it is important to recycle the end-of-life vehicle in an environmentally friendly manner. A large part of the trailer consists of recyclable materials. Contact the approved company and appropriate service for the recycling of the trailer that has expired.

5.7. Cleaning the Vehicle

Before starting to clean the vehicle, check the hub and axle lifter for leaks. These may not be visible after the cleaning process is complete. Pay special attention to the following when washing with pressurized water:

- Do not hold the hose nozzle directly to the felts while washing with pressurized water.
- Do not hold pressurized water to the electrical components and connections of the vehicle.
- The vehicle should be washed by holding a maximum 240 bar pressure washer at a minimum distance of 1 m and at a maximum angle of 45 degrees in order not to damage the vehicle logo and paint.

- After cleaning the vehicle, carefully lubricate the greasing points with a grease gun. This is important to prevent dirt and moisture from entering various parts of the vehicle.
- Clean the interior and exterior of the vehicle every time you return.



5.8. Work Lamp

There is a waterproof LED lamp to be used in low-light environments or in the dark. The work lights in the bumper area are activated by the truck's reverse gear signal.



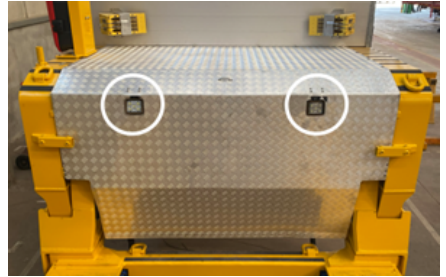
Work lamp



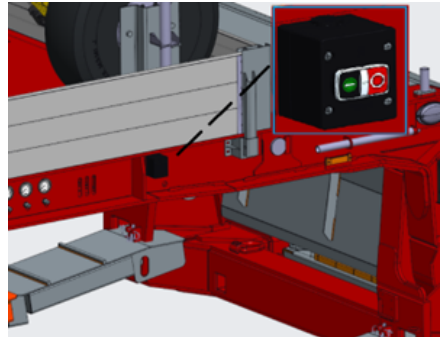
Work Lamp

In the gooseneck area of the vehicle, 1 or 2 LED lamps are given as an option.

By activating the fog line of the truck, the working lamps are controlled with the button box located in the gooseneck area.



Gooseneck Work Lamps



Button box

6. TRANSPORTATION SOLUTION

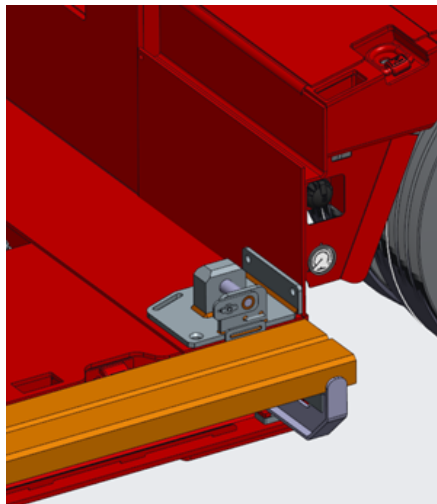
6.1. Container Transportation

6.1.1. Container Lock

The vehicle may have a container lock as an option. These locks are positioned on the platform for container transport on the semi-trailer.

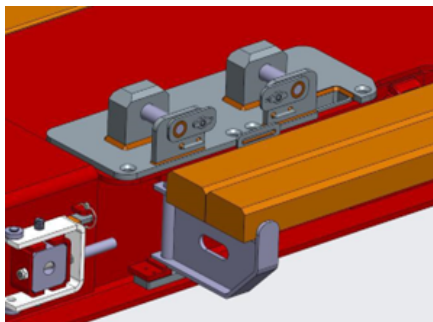
Locks are unlocked by turning the star under the container lock. Container slots are placed on the locks. After the container is seated, the star under the lock is pushed upwards, turned and locked.

Container locks may vary according to the country options of the vehicles.

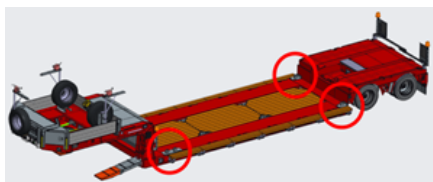


Container lock

On the middle, double container lock can be provided to carry 2x20 ft container, according to customer request.



Double container lock



Location of the container locks

6.2. Heavy Machinery Transport



It should be noted whether the heavy machinery to be transported is suitable for the trailer.



Make sure that the center of gravity of the heavy machinery is correctly loaded on the trailer.



Make sure that the heavy machinery is attached to the trailer with the correct lashing rings.



Example of carrying heavy machinery

7. LOADING AND LOAD SECURITY

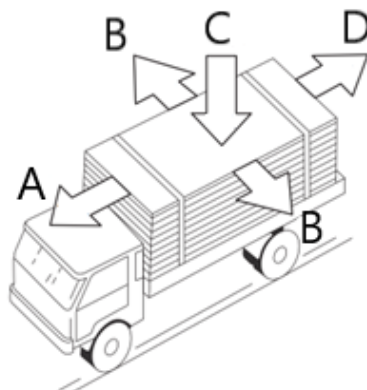
7.1. Safety Instructions



Accident hazards arising from loading and unloading and load securing process performed not professionally.

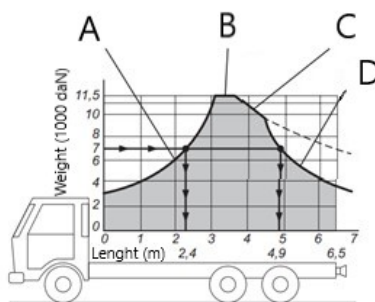
- Make sure that the cargo is properly distributed and in accordance with all laws, rules, and regulations. Check the loading limits, total weight, and axle load capacities. Do not exceed the weight limits which are defined in the user manual and identification plate. Comply with all national/international laws, rules and regulations about loading and occupational safety.
- Place the Cargo as close as possible to the loading area's floor. The center of gravity of the load must always be on the center line of the vehicle. Be all the regulations and laws about load security.
- While all vehicles are being designed, except for specific ones, it is assumed that the load will be distributed evenly on the load carriage surface and the calculations are done accordingly. Thus, the load up to the maximum carrying capacity of your vehicle must be distributed to ensure that equal weights are at the unit areas over the utilized carriage area. When the point loads are to be carried, a rigid distribution platform must be placed under the load that will place the load up to the unit area capacity of the semi-trailer.
- While loading by crane or forklift, make sure that there is no one under and around the load.
- During the loading operation, do not exceed the permissible maximum height. A loading performed within the specified loading limit will ensure that you keep away from traffic accidents.

- It is dangerous and prohibited to fix the load to the vehicle surface via a tool apart from the permissible equipment.



Forces may affect the vehicle

- A- Brake Force
- B- Centrifugal Force
- C- Static Weight Force
- D- Ramp / Hill Force



Load distribution

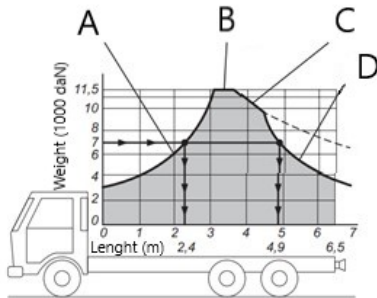
- A- Permissible front axle weight
- B- Permissible maximum weight
- C- Permissible rear axle weight
- D- Driving characteristic change limit

7.1.1. Load Security

The international Highways Regulations specify the maximum loading capacities

of tractors, trucks, trailers, semi-trailers along with how and how much of the tonnage and dimensions of these loads are to be secured.

For instance, here, the distribution of the load amount that can be carried by a 6x2 truck per its axle, to the vehicle's weight center according to its horizontal and vertical distance.



Load Distribution

- A- Permissible front axle weight
- B- Permissible maximum weight
- C- Permissible rear axle weight
- D- Driving characteristic change limit

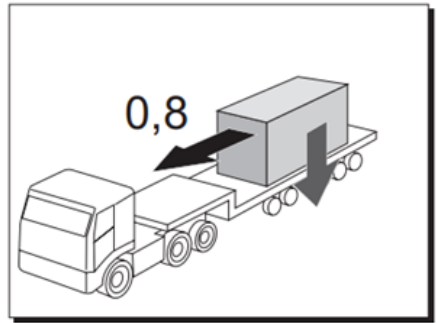
7.2. Load Distribution and Load Limits of Truck-Semi-Trailer Combination

In order to determine the characteristics of the load lashing device required for daily use, the maximum lashing forces have been defined, taking into account the tensile forces encountered during normal driving, emergency braking and sudden steering manoeuvres.

The following two clamping force requirements, expressed as a ratio of the load weight force, shall apply.

Forward lashing (for sudden braking) 0.8 or 80% of the load weight force.

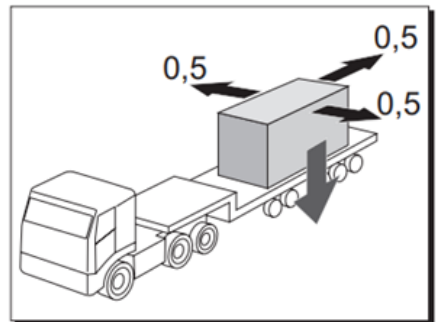
A load with a weight force of 1000 daN must be secured against forward slipping with at least 800 daN.



Fastening forward

Backward and lateral fastening (obstacle avoidance/standstill acceleration) 0.5% or 50%.

A load with a weight force of 1000 daN must be fastened with at least 500 daN against shear in these three directions.



Backward and lateral lashing

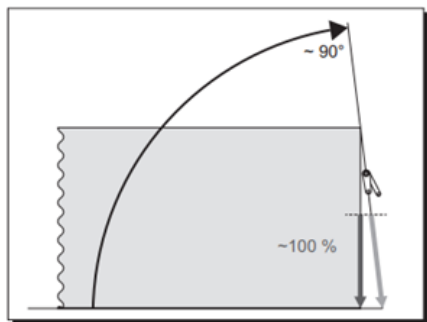
7.2.1. Downlink Load Lashing

The basic principle of downward lashing is based on applying an additional horizontal connecting force to increase the inertia force to reach the maximum allowable horizontal lashing force (0.8 of the weight force for forward lashing).

7.2.1.1. Lashing the Tie Straps

Lashing angle ~90°

Attachment straps should be as perpendicular as possible to ensure that the tension force applied using the ratchet tensioner presses down on the load as much as possible.

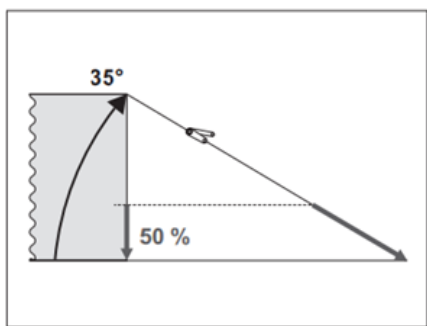


Lashing angle ~90°

Lashing angle ~35°

At 35°, the effective downward force is only 50% of the applied stress.

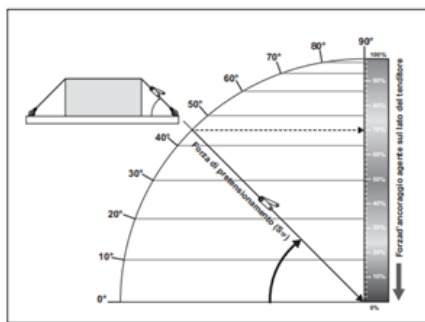
Angles below 35° are not effective for lashing.



Lashing angle ~35°

A protractor (miter) is used, as illustrated, to determine the optimal angle.

The downward force decreases in direct proportion to the angle.



Measuring the angle with a miter

7.2.1.2. Using the Lashing System

When attaching the lashing systems, try to apply the highest possible tension force. The higher the tensile strength, the less lashing systems will be needed.



Always use at least two lashing systems. This will ensure that the load is secured more evenly.



For chain selection, see the values on the plates.

Kässbohrer accepts no responsibility for connecting equipment.

Make sure that you make a proper load distribution in accordance with all laws, rules and regulations.

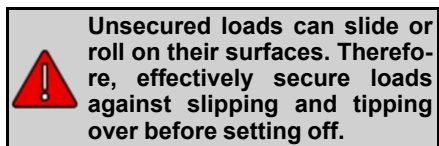
In the loading process, consider the loading limits, the total weight and the load capacities of the axles.

Make sure that you load in accordance with the rules and laws of all countries where you will use the vehicle. Loading diagrams vary according to vehicle type and customer demands. You can request the loading diagram suitable for your own vehicle from our company.

The axle loads* of the tractor/semi-trailer combination can vary over a wide range depending on the different loading conditions. Observe the permissible axle loads specified in the user manual or the axle manufacturer's manual.

In case of doubt, have your axle loads checked at a suitable weighing station.

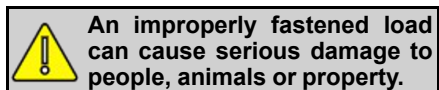
***Axle load:** It is the load transmitted to the road by an axle or an axle group.



7.3. Lashing Rings

There are lashing rings on the platform and on the side to secure load. These rings can be hidden by embedding.

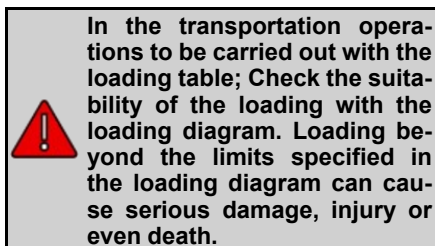
The load capacities of the rings vary according to the configuration of the selected vehicle.



Lashing Rings

7.4. Loading Table

In cases where it is desired to carry loads longer than the length of the pool in the trailer, a carrier stand that can be attached to the pool is used to load the axle area. The coffee table has a load capacity of 15 tons by itself.



The loading table

7.5. Loading Crane

Loading crane is given as a customer request.

It is preferred for pulling wheeled loads on the platform.

Capacities vary according to customer request.

For detailed usage, please refer to the user manual of the relevant crane manufacturer.



Loading crane

In order to receive electrical energy to the crane, the rema socket connection in the buffer zone must be made.



Loading crane Rema socket connection

8. INSPECTION AND MAINTENANCE

8.1. General Information

All instructions apply to standard vehicle maintenance, lubrication, inspection and standard settings.



To identify the parts, refer to the " SPARE PARTS" manual.

8.2. Disposal of Used Materials

During maintenance operations, in case of replacement of parts or oil, old materials (oils, filters, etc.) must be disposed of in accordance with environmental regulations.



Used oil and oil filters contain substances harmful to the environment. After replacing polluting parts, contact an authorized waste recycling center to dispose of used oil filters and oils in accordance with environmental and current laws.

8.3. Conditions of the Place where Service and Maintenance Operations are Made



All operations described in this section should only be performed by trained personnel.

- You must properly support the vehicle when performing maintenance on the hydraulic lift system.
 - You should always use KÄSS-BOHRER spare parts.
 - For maintenance work, use greases and oils with viscosity values suitable for the relevant ambient temperature and recommended by KÄSSBOHRER.
 - Always use clean oil and grease, also make sure the oil containers are clean.
 - Always check the oil in a suitable place and change it as necessary. Make sure that no dirt is mixed with the oil.
 - It is recommended to wash the vehicle before any periodic maintenance.
- ### 8.4. Periodic Maintenance and Controls
- For periodic maintenance and checks, see the warranty and maintenance manual.
- ### 8.5. General Maintenance Program New Semi-Trailer
- Tightness of wheel nuts;
- After delivery,
 - After 50 km,
 - After 200 km,
 - It should be checked after 1600 km.
- After reaching this mileage, it is necessary to check the tightness of the suspension nuts, axle nuts and wheel hub space.
- ### Semi-Trailers in Normal Use
- Special maintenance intervals should be determined according to experience and actual usage conditions. The following
- It is strictly forbidden to have unauthorized persons other than maintenance personnel near the vehicle during maintenance operations.
 - Because of exhaust gas is dangerous, make sure there is adequate ventilation when the power unit or engine is running in a confined space.
 - Unless otherwise stated, maintenance operations must be performed with the power unit turned off.

maintenance schedule is valid under reasonable vehicle use and normal operating conditions.

Weekly Maintenance Work

- Check the steering chock.
- Check the fifth wheel pin.
- Check if the brake system is working properly.
- Check tire pressures.
- Check the wheel nuts tightness.
- Bleed the air from the tanks.
- Lubricate the vehicle (for vehicles without a central lubrication system).
- Check that grease reaches the points lubricated by the central lubrication system, that the system is working correctly, and that the pump tank is filled with grease (for vehicles equipped with a centralized lubrication system).
- Check the hydraulic oil level in the tank.
- Check the antifreeze valve (if present).

Monthly Maintenance Work

- The oil of the hydraulic system should be changed after the first one or two months of use of the semi-trailer. The hydraulic oil, which is changed after the first two months of use, can be reused if carefully filtered.
- Check the wear of the brake pads.
- Adjust the brakes.
- Check the alignment of the axles.
- Check the pressure values provided by the braking control.

One Time in Three Months Maintenance Work

- Clean the filter element of the Yellow and Red coupling heads.
- Check the suspension system for wear, oil leaks and damage.
- Check the camshaft clearance.
- Check for leaks in the brake system (with the service brake active).
- Check for air leaks in the air suspension.
- Check the air pillows for damage.
- Check for contamination on the roller surface, clean if necessary.
- Check for wear, scratches and corrosion on parabolic springs.
- Check tire wear.

One Time in Six Months Maintenance Work

- Check the axles.
- Check the bearing clearances.
- Check the pneumatic system components.
- Check hydraulic system components.

Annual Maintenance Work

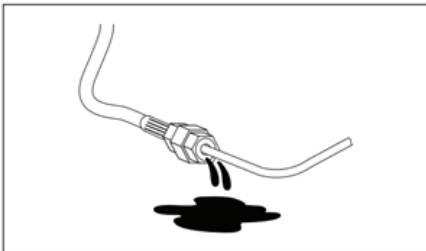
- Check their suspension (gap adjustment).
- Check the brake chambers.
- Change the hydraulic oil used in the system once a year. (In cases where contamination is observed at earlier periods in hydraulic system oil controls, a 1-year period for hydraulic oil change is should not waited.)

- Lubricate the drum grease points on the axles with grease nipples at every brake pad change or every 12 months.
- Change the hydraulic system filter.

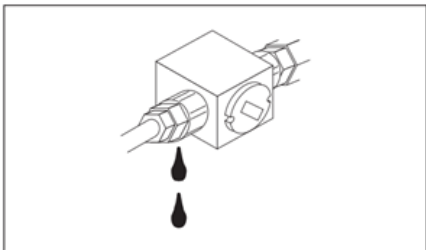
Take your lowbed to the service center for a grease change of the wheel hub bearing after 300,000 km or 36 months of use.

8.6. Hydraulic and Pneumatic Hoses and Connections

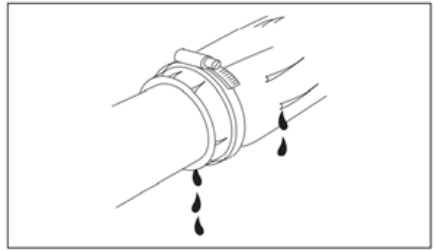
- After the first month, check all the unions.
- Check the unions again after 6 months.
- These operations should be repeated every time oil or air leaks from the unions.



Oil leakage in hydraulic and pneumatic connections



Oil leakage in hydraulic and pneumatic connections



Oil leakage in hydraulic and pneumatic connections

! If oil leakage is detected at the connections, the tank levels should be checked.

! Replace hoses every three years to ensure maximum machine safety.

8.7. Tightening Torques for ISO Standard Bolts

Bolts should be tightened using a torque wrench set to the appropriate value. The tightening torque value is used to prevent the bolts from breaking due to tension. The following tables show the tightening torque values (M) for various metric threaded bolt outer diameters. These are approximate values for new and lubricated bolts.

! The values in the table will be used unless special requirements are shown in the diagrams in the "SPARE PARTS" manual.

8.8. King Pin


King pin is a shaft which connects truck and trailer together. Your vehicle may be equipped with 2" or 3.5" diameter pins. Please check the king pin diameter before connecting the truck.

! If you match the truck and trailer with a different diameter king pin, injuries may occur.

The flanged king pin is used on the vehicle. That's why king pin can be replaced easily.



King Pin



If the wearing on the king pin is bigger than 2 mm, the king pin must be replaced.

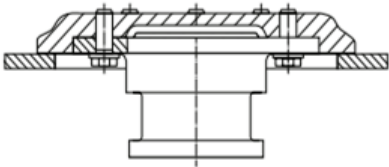
8.8.1. King Pin Assembly Bolt

King Pin	Screw	Tightening Torque
2'	KZ 1516 M20X50	500 +- 10 Nm
3 1/2'	KZ 1016 M20X50	500 +- 10 Nm

8.8.2. Changement of King Pin

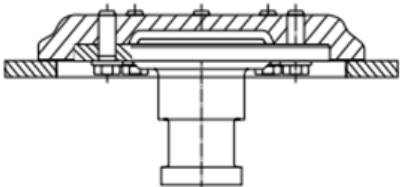
The King Pin's slot on the gooseneck is suitable for mounting the following pins (alternatively):

3" ½ King Pin

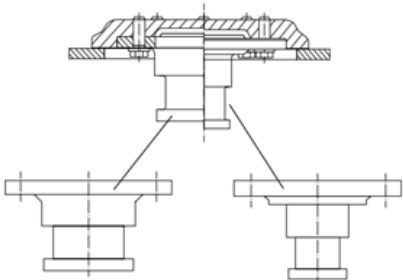


3.5 inch king pin

2" King Pin



2 inch king pin



3" ½

2"

Comparison of 2 inch and 3.5 inch king pins



King Pin

Changing the King Pin can be done simply by removing the 8 bolts on it.



After installing the new king pin, apply Loctite 270 to the bolts and tighten to the tightening torque listed in the table above.



Loctite 270

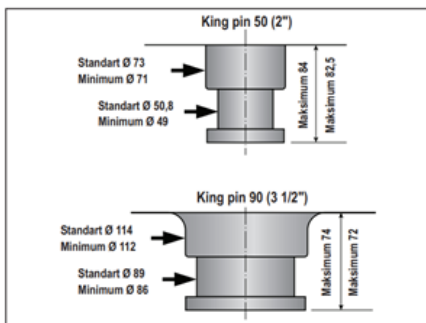
8.8.3. King Pin Maintenance

Separate the Semi-Trailer from the truck at short intervals, in any case, it should be applied at most every 5,000 km. Clean the 5th wheel plate and counter plate of the semi-trailer. Lubricate the 5th wheel pin, the counterplate, the closing mechanism and the 5th wheel plate generously with high-pressure grease.



Especially in the first operation of the semi-trailer, abundant lubrication of the 5th wheel pin and 5th wheel is vital for long durability.

The 5th wheel pin is subject to natural wear. When the wear measurement limit is exceeded, the 5th wheel pin must be replaced with an original spare part.



King Pin sizes

8.9. King Pin Steering Center Bearing Control

Maximum allowable clearance on King Pin steering center bearing:

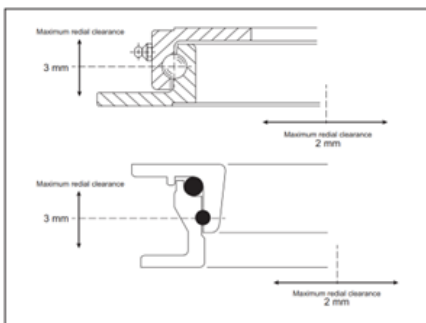
- 2 mm in radial (horizontal) direction
- 3 mm in the axial (vertical) direction



If the vehicle is new, the maximum clearance in both directions is 1.5 mm.



When the gap exceeds the values shown, replace the turntable.

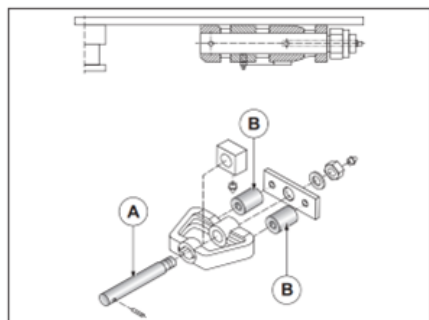
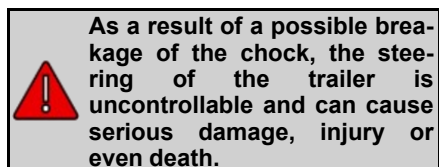


Control of bearing

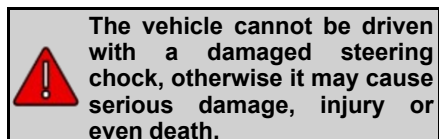
8.10. The Control of Steering Chock

Check the steering chock integrity, pin A, weld and play condition of parts daily. Excessive play will cause the vehicle to not steer properly. We recommend replacing the rubber washers marked B

once a year or whenever you have problems with the vehicle's alignment.



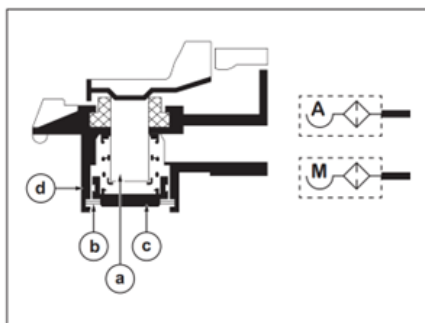
The Steering Chocks



8.11. Maintenance of Filters in Connection Couplings

Depending on the operating conditions, the filter element (a) should be cleaned at least once a month and, if possible, washed with gasoline. If it is excessively dirty, it must be replaced.

To replace the filter element, make sure that the connecting caps are not under pressure, unscrew the Seeger ring (b) and remove the cap (c), paying attention to the preload of the spring. When reassembling the components, in particular, check whether the Seeger ring is installed correctly and that the head is sealed with the sealing ring (d). You can get support from your technical service in this regard.



Filter of connection coupling

8.12. The Brakes and The Brake System

8.12.1. Filter Element Maintenance of Yellow and Red Couplings

The filter element (a) should be cleaned frequently, depending on the operating conditions. If it is excessively dirty, it must be replaced with a new one. You can get support from your technical service in this regard.

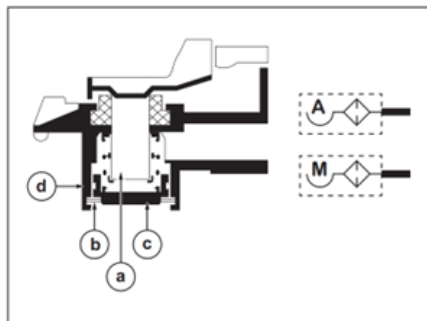
Checking the wheel brakes and associated braking system includes a visual check and careful verification of the integrity and effectiveness of all components.

You should check the wear condition of the brake pads and replace the pads with new ones if the thickness is less than 5 mm.

It is recommended to use only original brake pads, this is vital for safety and the life of the braking system.

The braking surfaces of the drums, when inspected, should be free of any burning or other signs of wear. Such defects should be rectified at the services.

The wear of the control levers, associated return springs and support bushings should be checked regularly and, if necessary, replaced with original Kässbohrer spare parts. After replacement, carefully clean the parts and lubricate the joint and sliding points in the brakes using grease.



Filter Element Maintenance of Yellow and Red Couplings

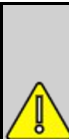


Carefully avoid contaminating the brake pads in any way.

The brake system must be removed when air leaks are detected. You can get support from technical service in this regard.

If any work on the brake system is required, use only original Kässbohrer spare parts.

Adding or removing parts and no changes in the diameter or route of the pipes should be made. Any changes or modifications will alter the brake response times and brake force, thus damaging the vehicle's original stability during braking.



Air tubes should be dried daily with water discharge valves. Water accumulating in the system may cause malfunctions in the brake system. The pin (2) that under the air tank (1) is pressed to release water that collected in the air tank.



Air tank

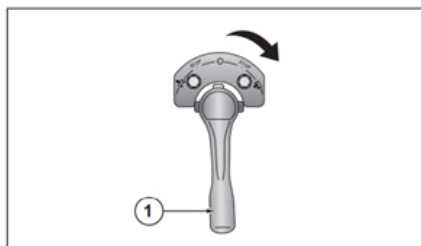
8.13. Maintenance of Extendable Lowbed Platform

The telescopic frame should be checked once a week with at least a full extension. Telescopic parts should always be kept clean and oiled, and it should be ensured that there is no dust or dirt when closing the telescopic frame. Dust and dirt will settle in the chassis grooves and cause friction and damage to related parts. The male chassis should be lubricated every 15 days.

8.14. Tire Changement

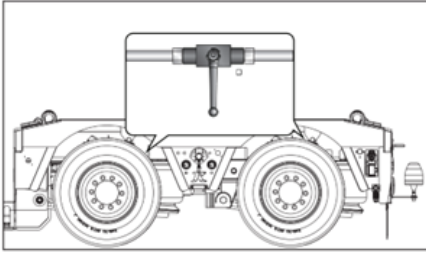
The following procedure should be followed when changing a tire:

1) Fully lower the semi-trailer using the lowering lift valve (1).

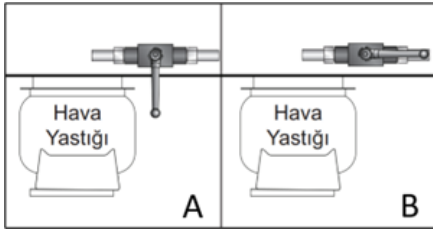


Lifting-Lowering valve

2) To close air connection of air bags, close the valves.



Air bags air isolating valves



Close (A) and Open (B) valve positions


3) Attach the axle to the chassis with a chain (not included) using the eyebolt/ hook.


4) Lift the semi-trailer using the lifting-lowering valve until the tire is off the ground.

5) Change the tire.

6) Lower the semi-trailer using the lifting-lowering valve and remove the chain.

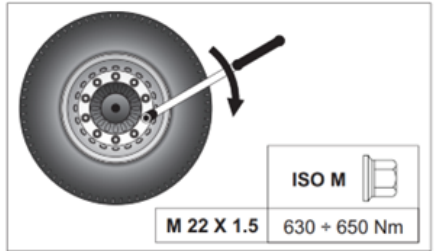
7) After lowering the vehicle, open the tap to bring the vehicle to its normal ground clearance.

 **Driving the vehicle with a isolating cock closed can seriously damage the suspension assembly.**

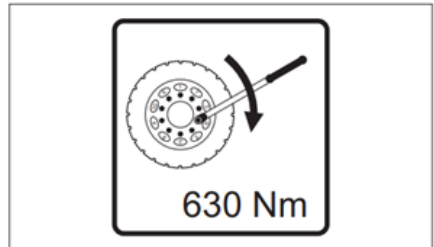
 **Using tires with different wear levels will cause abnormal wear.**

8.14.1. Tightening Torques of Wheel Nuts

 **Check the tightening torque of the bolts after 50 and 200 km.**



Tightening the bolts



Tightening the bolts

8.14.2. Nut Tightening Sequence

After replacing a wheel or installing a new wheel, tighten the respective nuts in the **THREE STAGES** and sequence described below.

- 1) Tighten the nuts on the wheel so that the wheel is flat against the axle.
- 2) Tighten the wheel nuts to half the required tightening torque.
- 3) Then tighten all the nuts in the order shown from 1 to 10 until the

required torque values (630 ÷ 650 Nm) are reached.

8.14.3. Tire Inflation Pressure

Tires		
Tire Size	Index	Pressure
245/70 R 17.5	143/141J	8.5 Bar



Lastik basıncı araç birkaç saat park halinde bekledikten sonra lastikler “soğukken” kontrol edilmelidir.



Bir lastiğin havasını asla sıcakken indirmeyiniz.



Takılı iki lastik arasındaki yetersiz basınç anormal lastik aşınmasına ve temas halindeki kısımların aşırı ısınmasına neden olur. Normal lastik aşınması için lastik hava değerleri düzenli olarak kontrol edilmeli ve basınç değerleri tüm lastiklerde eşit olmalıdır.

8.14.4. Alloy Rim Wheels

The tightening torque specified by the valve manufacturer must be between the values below.

9 - 14 Nm (0.91 – 1,41 kgm)

Only in this way can the correct compression of the O-ring seal be achieved. Over-tightening the valve can deform the O-ring and damage the valve seat, causing air leakage.


8.15. Hidrolic Oils


Hydraulic Oil Operating Temperature:


The minimum operating temperature is -20°C and the maximum operating temperature is 80°C. The ideal operating temperature of the oil in the system is 35°C – 55°C.

- Mineral based hydraulic oil should be used in the system.
- The quality, cleanliness and operating fluidity of hydraulic oil are very important for its economy and service life.
- The viscosity of the hydraulic oil in the system should be between 12–100 cSt (mm²/s). Ideal viscosity is between 20–40 cSt.
- Low-viscosity hydraulic oils should be preferred in cold weather and high-viscosity hydraulic oils in hot weather.


Oils					
	Temperature Range	-57 C° to +25 C°	-25 C° to +35 C°	-10 C° to +50 C°	>+50 C°
Hydraulic Oils	Total	EQUVIS XLT 15	EQUVIS ZS 22	EQUVIS ZS 32	EQUVIS ZS 46
	ESSO / MOBIL	UNIVIS HVI-13	UNIVIS N 22	UNIVIS N 32	UNIVIS N 46
	SHELL	-	TELLUS S2 V 22	TELLUS S2 V 32	TELLUS S2 V 46
	BP	ENERGOL SHF-LT15	BARTAN HV 22	BARTAN HV 32	BARTAN HV 46
	ELF	-	HYDRELF DS 22	HYDRELF DS 32	HYDRELF DS 46
	UNIL	-	HVB 22	HVB 32	HVB 46
	Q8	Q8 HINDEMITH 15	HANDEL 22	HANDEL 32	HANDEL 46
Grease	MULTIS EP2	BEACON EP2	ALVANIA EP2	MULTIFAK EP2	THESIA EP GREASE 2


 **For trouble-free operation of the hydraulic system, an oil with a viscosity suitable for the climate / seasonal conditions in where the vehicle is used should be used.**


 **Failure to use hydraulic oil with a viscosity suitable for climate / seasonal conditions in the hydraulic system will cause temporary or permanent damages and functional working problems.**

 **In cases where the type of hydraulic oil used in the vehicle needs to be changed, the system must be cleaned carefully.**

or of various types are mixed, sludge and sludge formation can be encountered. These can cause malfunction and damage to the hydraulic system. Therefore, there is no guarantee for the use of mixed oils. The relevant mineral oil manufacturer should be consulted regarding the miscibility of hydraulic oils.

 **Before using other oil types, make sure that these oils have the same characteristics as the oils given in the Table. Otherwise, wash the system carefully.**

 **The use of incompatible oils will void all warranties on hydraulic system components.**

 **The use of incompatible oils can cause the steering and lift cylinders to be suddenly damaged and lose their function.**

8.15.1. Mixing Hydraulic Oils

Hydraulic oils cannot be mixed, or can be mixed with each other only conditionally. When oils of various manufacturers



Kässbohrer Sales GmbH

Ulm | Im Katzenwinkel 5, 88480 Achstetten, Deutschland | **T** +49 (0) 7392 96797-0 | **F** +49 (0) 7392 96797-67

Goch | Siemensstraße 74, 47574 Deutschland | **T** +49 (0) 2823 9721-0 | **F** +49 (0) 2823 9721-21 | **E** info@kaessbohrer.com | www.kaessbohrer.com
info@kaessbohrer.com | spareparts@kaessbohrer.com | aftersales@kaessbohrer.com

Kässbohrer

Enginuity, since 1893