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1 INTRODUCTION

Stringent demands are placed on manufacturers to comply with the directives for the product they produce. This product is covered by the Machinery Directive and the CE marking indicates that it meets the requirements of the Directive. On delivery of a product, the dealer is required to provide operating instructions for the product.

Company presentation

AS FORS MW was established in Estonia in 1992. The company develops, manufactures, markets and sells, via dealers, its three market-leading brands. These are BIGAB hook lift trailers and dump trailers, FARMA lumber trailers and cranes, and NIAB tractor processors. The company comprises the parent company AS FORS MW, as well as the subsidiary companies Farma Norden AB (Norrköping, Sweden) and ForsMW/China. You can find out more about the product you have selected and our 20-year journey by visiting our website www.forsmw.com and our blog www.forsmw.blogspot.com

Product presentation

The BIGAB hook lift exchange system includes a range of models, all offering the same high level of versatility. A wide and varied range of accessories is also available. The versatility lies in its ability to handle different kinds of loads on one and the same chassis. You will find your BIGAB indispensable for a wide range of tasks.

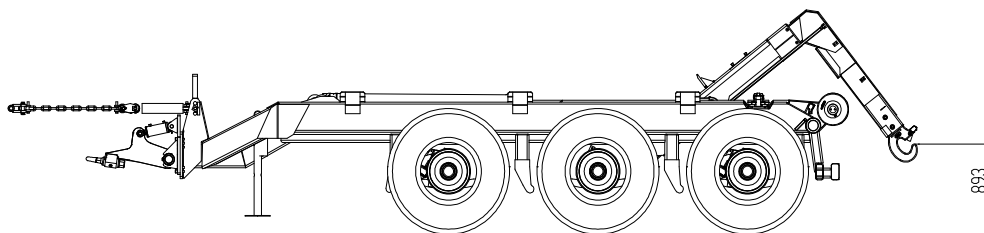
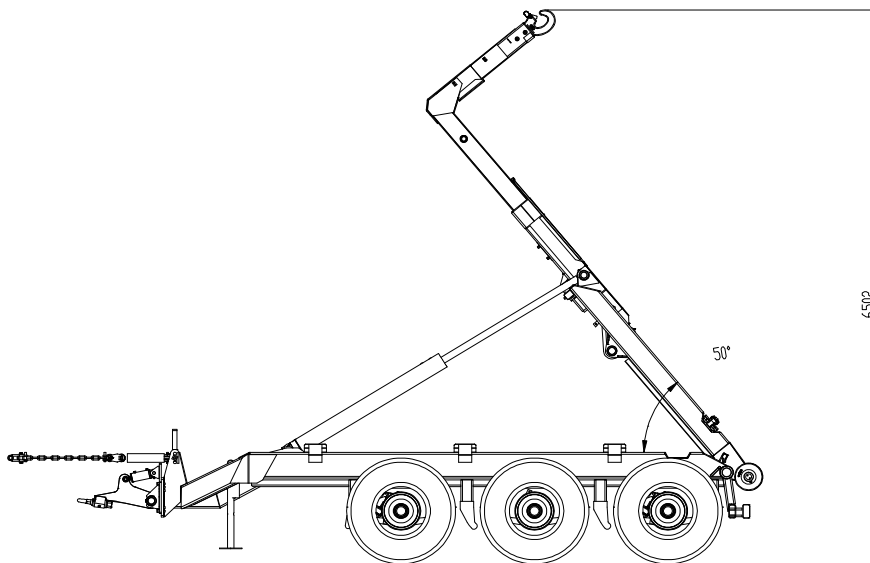
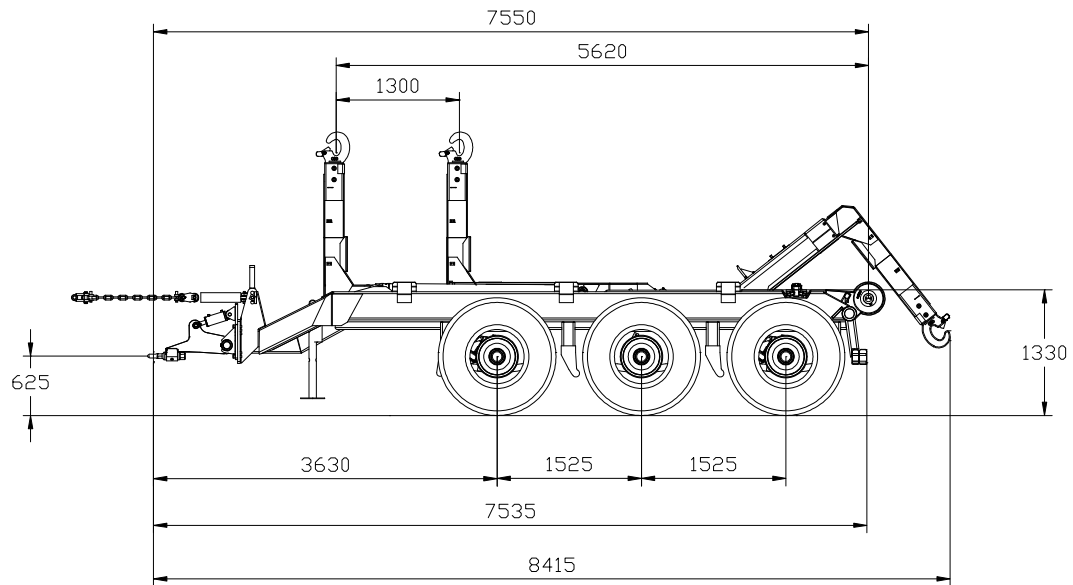
The 22 – 27 is our largest hook lift trailer. Simple, impressive and powerful are all fitting ways to describe the BIGAB 22 – 27. This is the ideal trailer for transporting particularly heavy loads. For your safety, it is extremely important that you follow the instructions in this instruction manual for your BIGAB model.

2 TECHNICAL SPECIFICATIONS

Hook lift trailer	22-27
Frame: Rectangular sections	300*100
Bogie: Parabolic sprung triple axles	Axle distance 1525 mm
Hubs:	130*130, 10 bolts
Tyres:	560/60-22.5
Brakes: Hydraulic drum *Depending on market	406*120 on 6 wheels
Towing eyelet:	For hitch hook
Stabiliser legs: Manual	Yes
Light system: 12 volt	Yes
Tractor hydraulics: *For brakes	Pressure & return, 1 single-action brake/ 1 double-action with floating position
Oil volume: With full system	23 l
Oil volume:	Press 89 l, draw 66 l
Oil flow:	60-120 l/min
Max working pressure:	Max. 22 MPa
Tipping angle:	50 degrees
Chassis weight (±1%): Standard equipped	6600 kg
Chassis length (±50mm):	7550 mm
Distance eyelet to centre tridem (±20mm):	Centered tridem axle 5155 mm
Distance eyelet to ground surface:	Min. 475 mm
Height unloaded:	1330mm excl. load carrier frame
Width across wheels (±30mm):	2590 mm
Bridge length:	5700-6500 mm
Total weight (±1%):	28 600 kg
Max. load incl. bridge: tipping (±1%):	22 000 kg
Max. load incl. bridge: roll on/roll off (±1%):	21 000 kg
Load on towing eyelet: Depending on the position of the trailer bed	2500 – 3500 kg
Max. speed	40 km/h

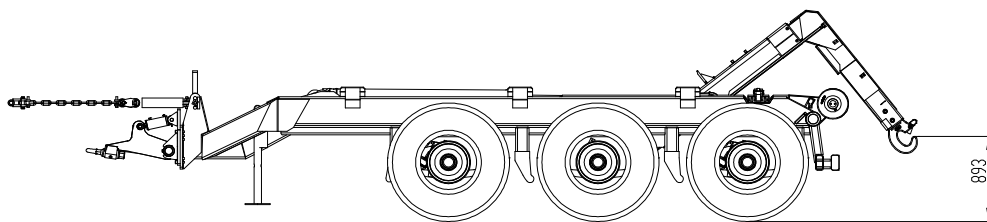
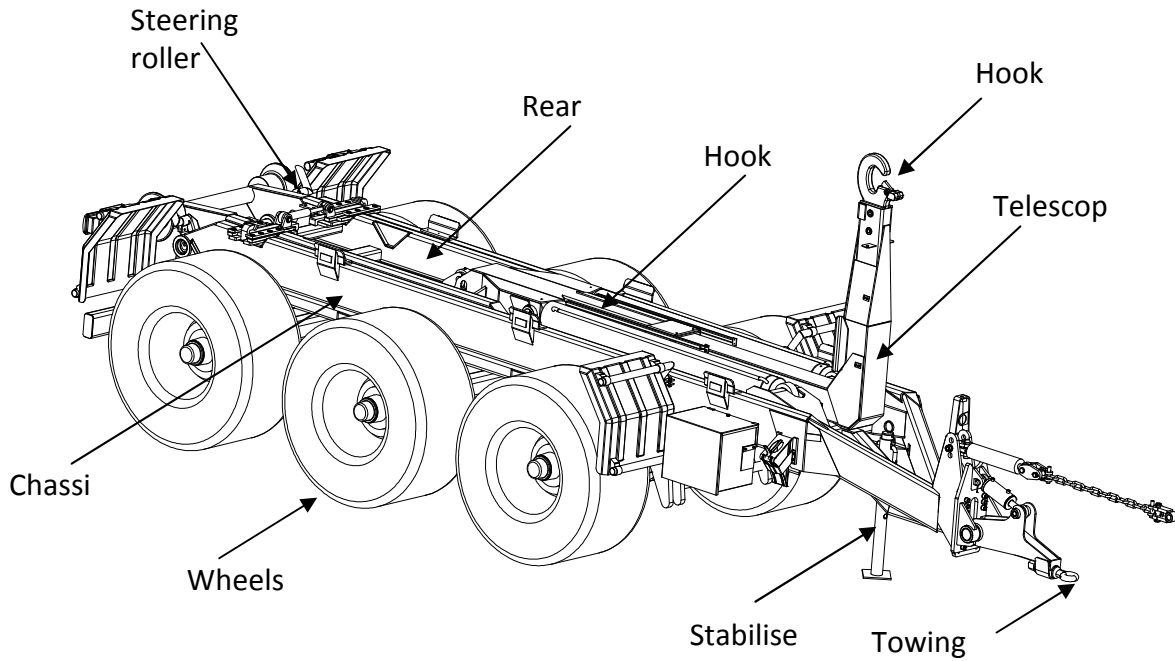
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3 DIMENSIONAL DIAGRAMS

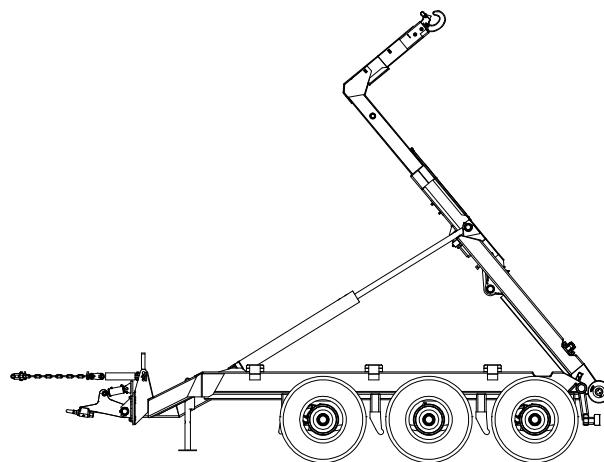


4 GENERAL DESCRIPTION

The trailer is steady when used for both tipping and exchanging. The trailer is equipped with a torsional parabolic spring bogie on three axles with brakes on all wheels.



Exchange

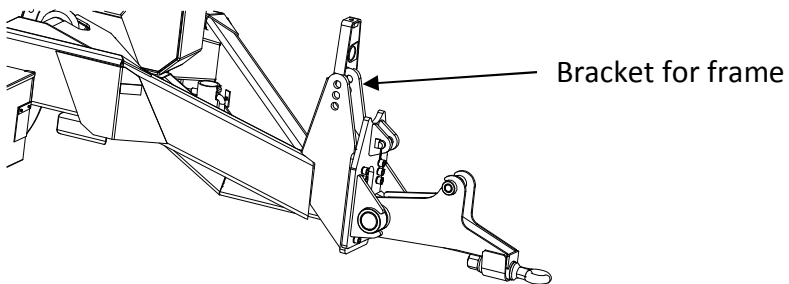
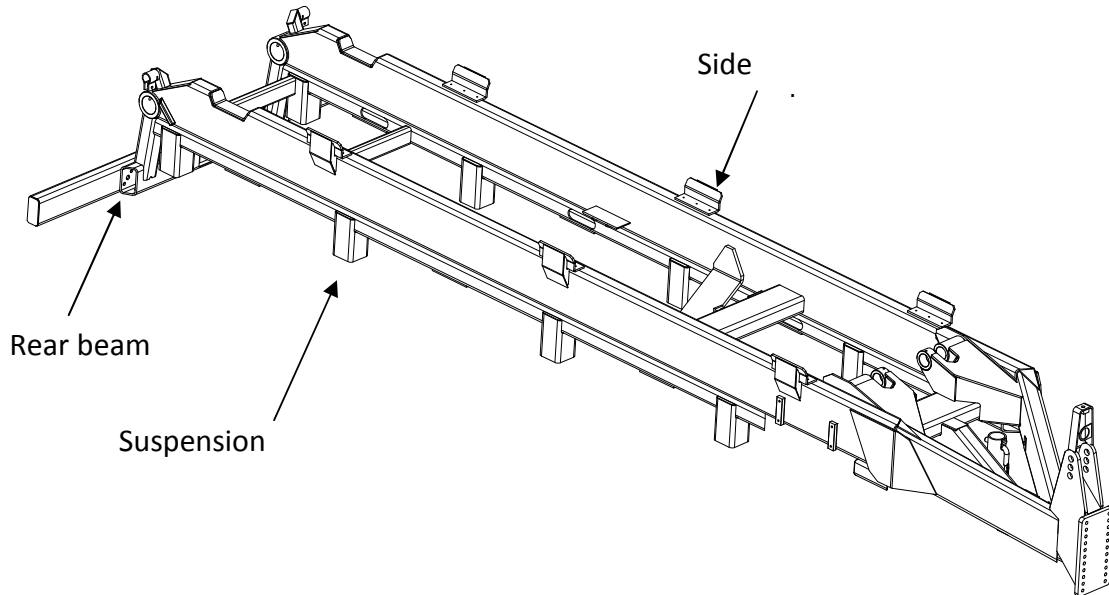


Tipping position

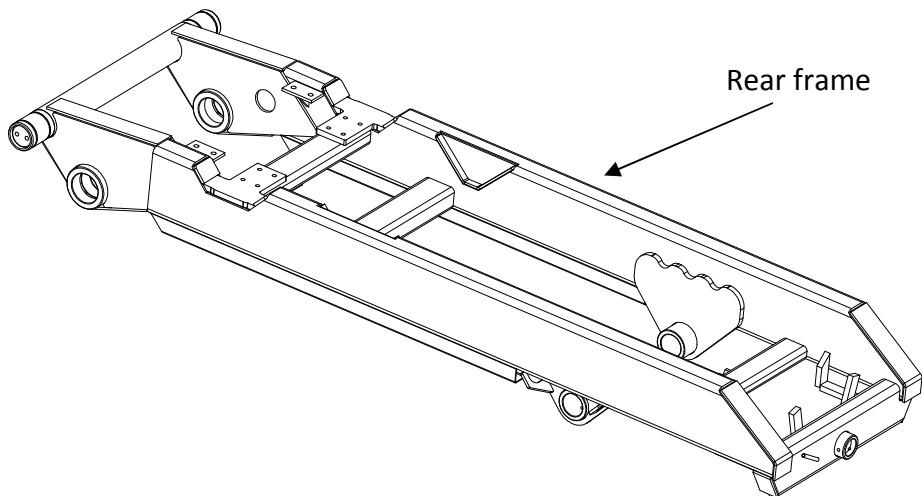
5 MAIN COMPONENTS

The trailer comprises the following principal components and functional devices.

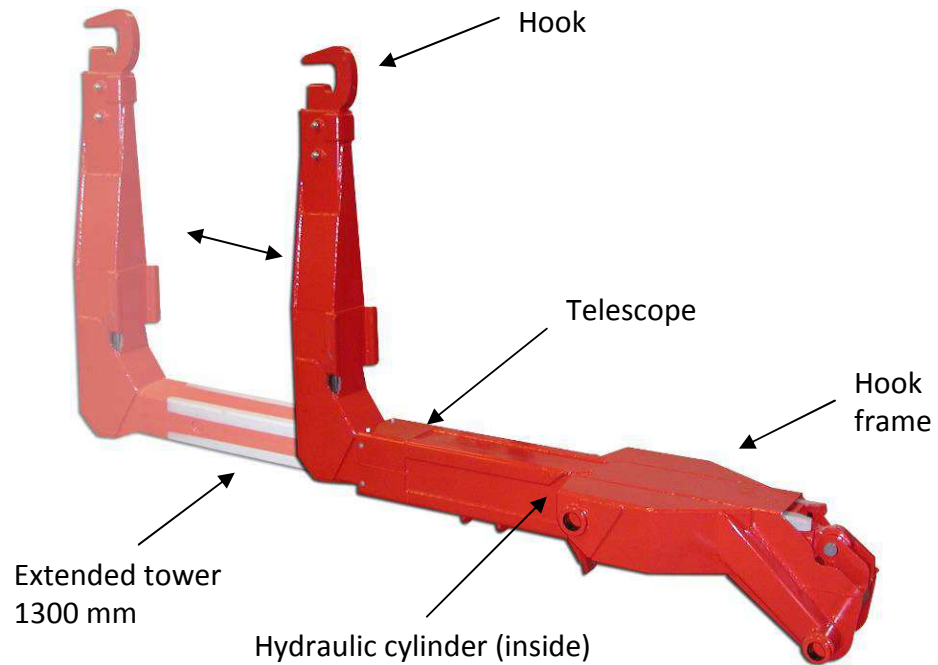
Chassis



Rear frame

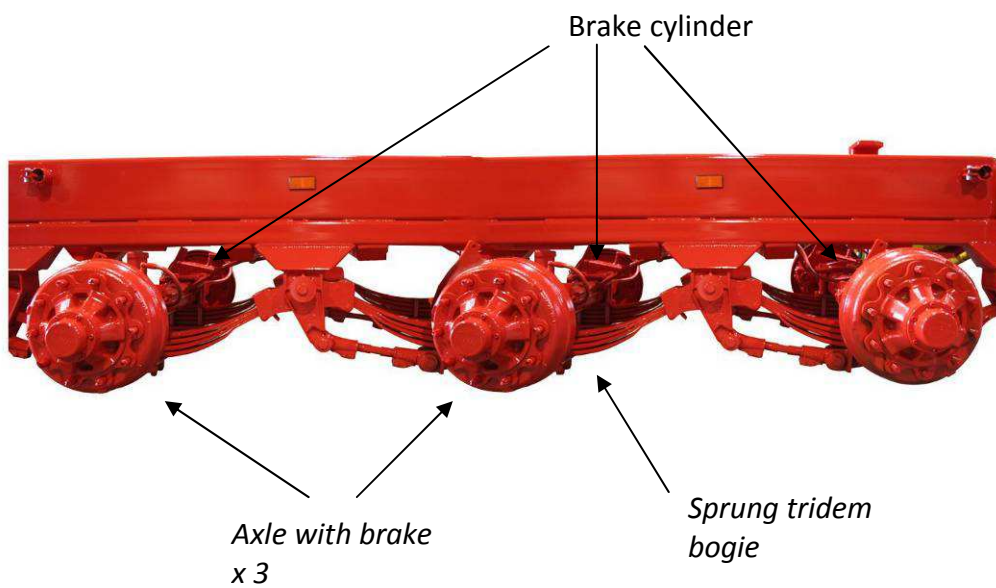


Hook frame



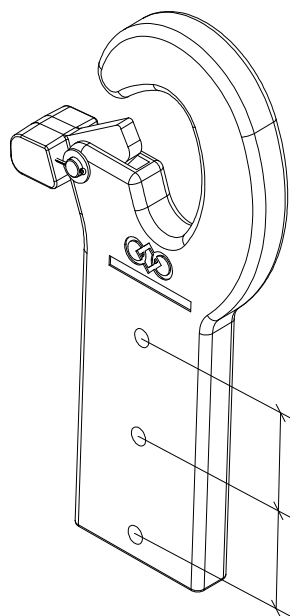
Bogie

The trailer is equipped with a powerful sprung tridem bogie with brakes on all six wheels.



Hook

The trailer is equipped with an adjustable hook for two different heights.

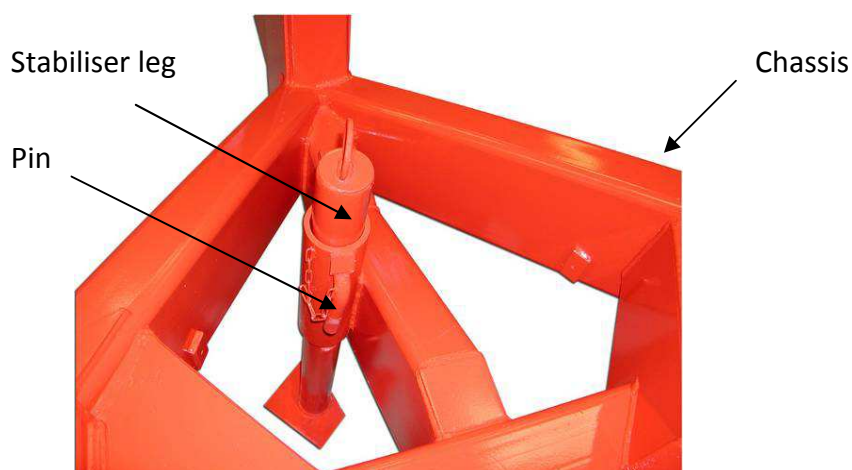


Standard height: 1450

Standard height: 1570

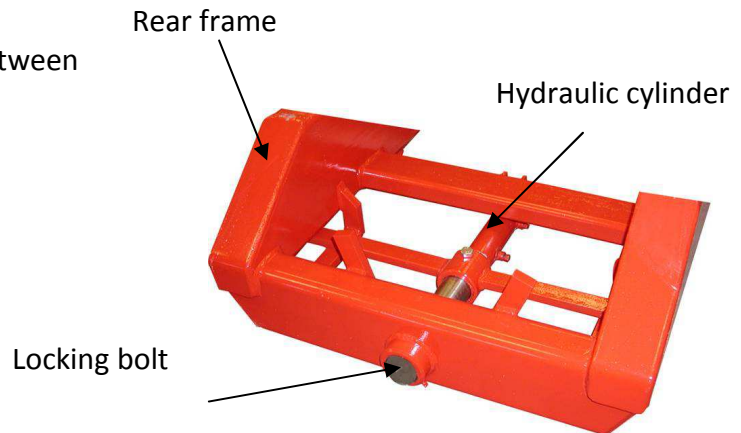
Stabiliser leg

The stabiliser leg is designed to support the trailer when not in use. The stabiliser leg must not be used when the trailer is loaded. The stabiliser leg must be raised and secured in place with the pin before moving off.



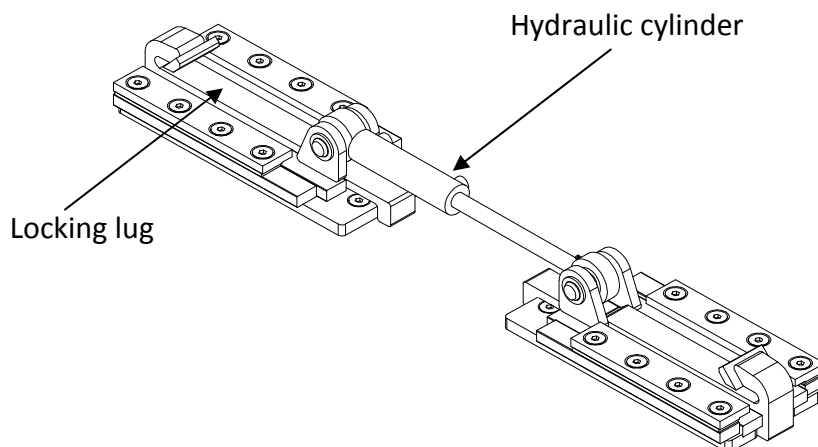
Exchange unit

The unit is designed for the procedure when switching between tipping and exchange. The lever is located in the middle of the rear frame.



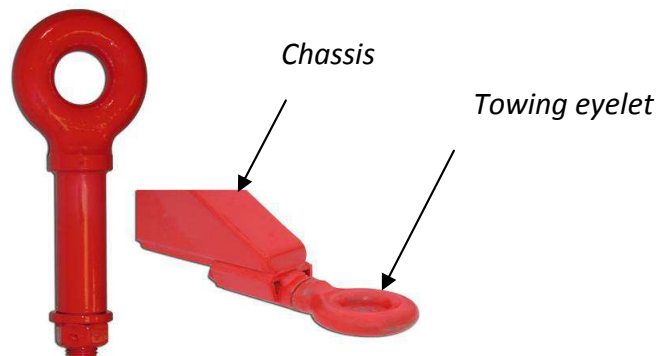
Exchange unit container lock

The trailer is equipped with a hydraulic container lock that secures the container to the frame.



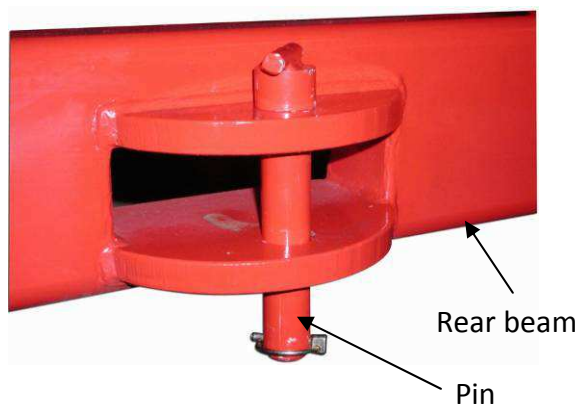
Towing eyelet

The towing eyelet is adapted to the hitch on the towing vehicle. It is extremely important that the towing eyelet is inspected for defects every time the trailer is used.



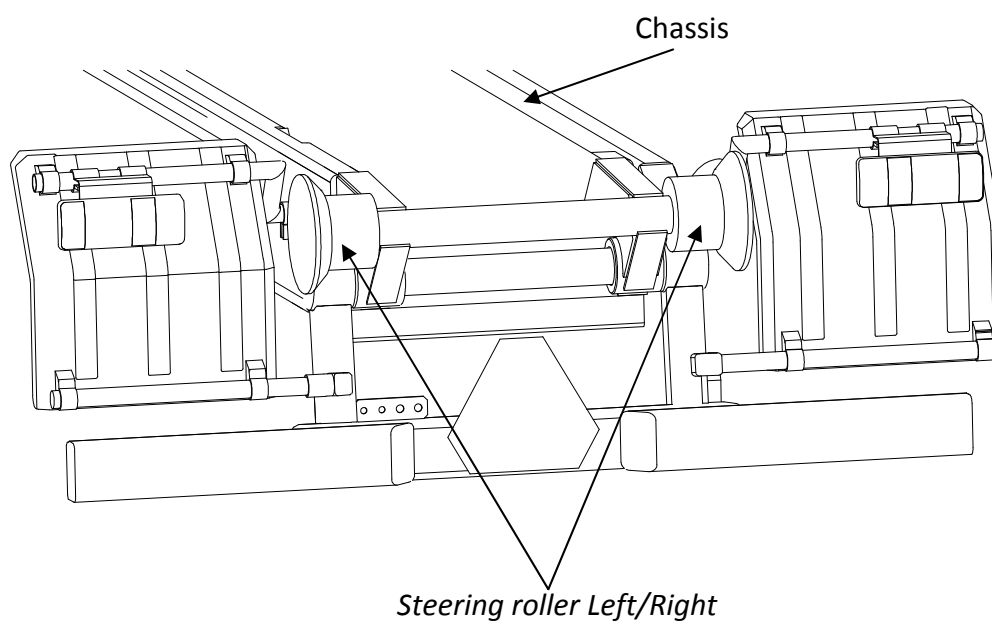
Drawbar

The drawbar is used for coupling other equipment to the trailer. It is also used for attaching the warning triangle. Note! Do not couple excessively heavy loads to the drawbar. The maximum permitted trailer weight is 10 tonnes.



Steering rollers

The steering rollers are designed to guide the bed correctly. The bed frame must be inside the steering rollers during exchange operations.

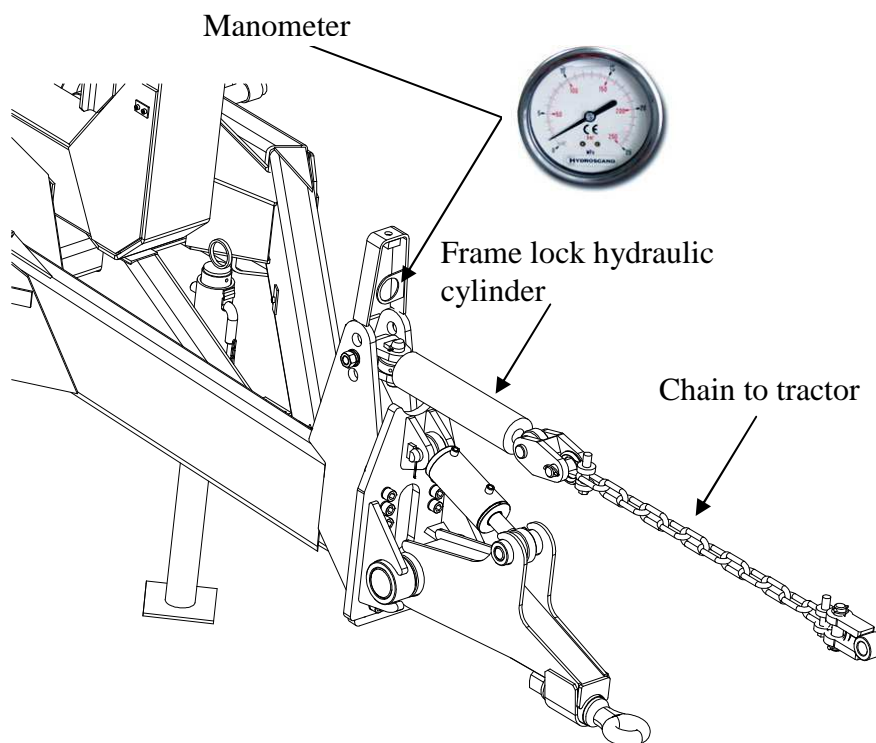


Frame lock

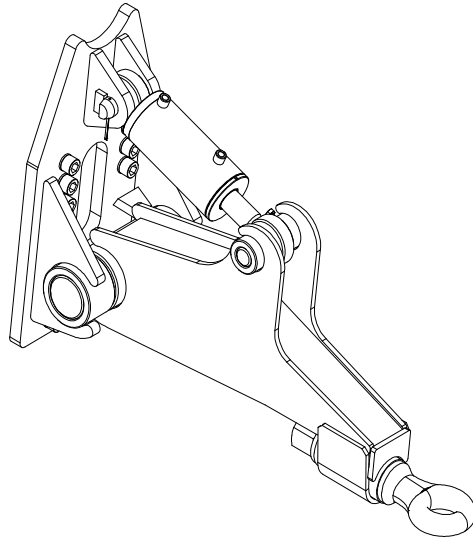
The hydraulic frame lock is used to lock the frame during heavy exchange operations. When mounting the chain on the tractor for the first time, adjust the length of the chain so that it is slack when the cylinder is half extended.

When you then tension the cylinder, the pressure relief valve is set at about 100 bar and it can be adjusted to the size of the tractor.

It is very important to slacken it after exchanging so as not to impede the tractor during transport.



Suspended drawbar



Drawbar functions

The trailer is equipped with an adjustable drawbar that can be used for the following three functions. Use the position switch on the control unit to regulate the drawbar. Select a function and regulate the pressure with the toggle switch.

Suspended drawbar

Set the mode switch to suspension mode and then apply pressure. Watch the manometer to see how much pressure you apply. The valve has a pressure limiter that controls the amount of pressure you can apply. Check at regular intervals during transport that the pressure remains constant.

Fixed drawbar

This function is used to stabilise the trailer when exchanging containers. Set the mode switch to fixed mode and apply pressure to stabilise the drawbar.

Swinging drawbar

Set the mode switch to swinging mode. No pressure is applied to the drawbar.

Tyres

List of standard tyres and alternative tyres that are used for the different trailer models.

Model	Standard tyres	Alternative tyres	Air pressure (bar)	Speed (km/h)
22-27	560/60-22.5		3.6	40
		445/65R-22.5	5-10	40
		650/50R-22.5 TL 10B -70	4.0	40

* The air pressure may vary slightly depending on the make of tyre. Contact the tyre manufacturer for exact air pressures.

Hydraulic system

The trailer is equipped with a hydraulic system for the various work operations. For more information, see the Hydraulics Chart chapter.

Electrical system

The trailer has a 12 volt electrical system. For more information, see the Wiring Diagram chapter.

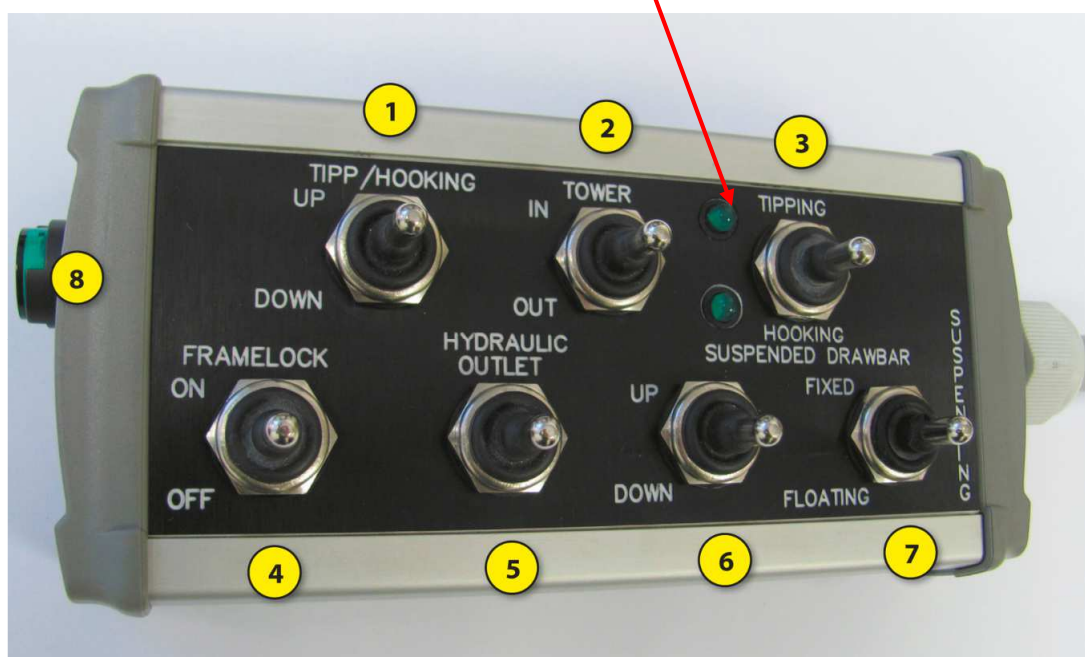
Brake system

The trailer is equipped with a hydraulic brake system. A pneumatic brake system is also available as optional equipment. Note! The hydraulic pressure in the brake lines should not exceed 16 Mpa. Too much hydraulic pressure can cause the brake arm cam to go over-centre and lock the brakes.

Electric on-off control

The trailer is equipped with a hydraulic system that is operated via a control unit. With regard to position 3, it is important to run this function until the signal lights come on. This indicates that the locks have reached their end stop position.

With regard to position 3, it is important to run this function until the signal lights come on. This indicates that the locks have reached their end stop position.



No.	Description
1	Tipping/Exchange
2	Telescope in/out
3	Exchange/tip/container lock
4	Frame lock
5	Hydraulic outlet
6	Suspended drawbar up-down
7	Suspended drawbar locked-sprung-floating
8	On-Off

6 SAFETY FEATURES

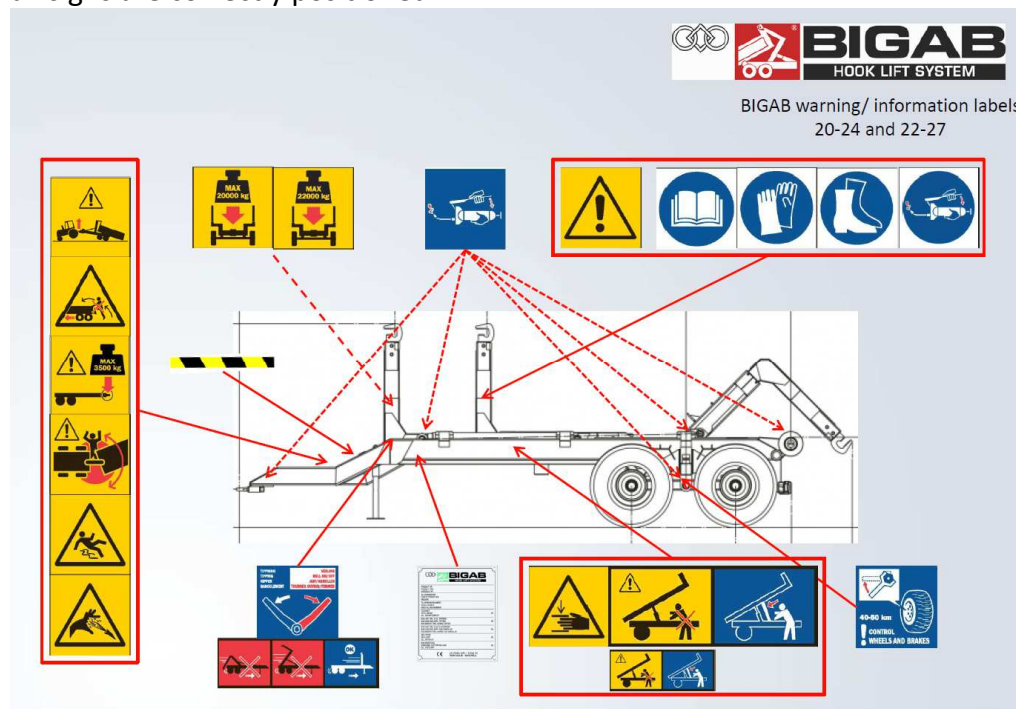
Safety support

Always use the safety support when carrying out service work when the trailer bed is raised. The safety support must not, under any circumstances, be used when the trailer bed is loaded.



Location of the decals on the trailer

The trailer is marked with various signs relating to safety and information. Check that all signs are correctly positioned.



Presentation of decals

WARNING!



Warning triangle and instruction manual decal.

The trailer has a warning triangle next to the instruction manual decal to emphasize the importance of reading the entire instruction manual carefully before using the trailer. Failure to observe this may result in serious or fatal injury.

INFORMATION!



Decal for the use of safety equipment.

These decals encourage the use of appropriate safety equipment in order to avoid injury when using the trailer.

DANGER!



Risk of crushing injuries

There is a risk of trapping and crushing injuries during work and maintenance.

WARNING!



Hazardous area

Standing between the trailer and the towing vehicle when the trailer is being driven, moved with frame steering or when other functions are activated between the trailer and towing vehicle, can be potentially fatal. As the driver, you must always ensure that no one is in the area around the machinery.

WARNING!



Warning - It is a hazardous movement if the rear end of the tractor lifts

Note! This warning label is included in the delivery of your trailer. It must be attached in a conspicuous position in the tractor cab. If you would like more of these labels, they are available to order, free of charge, from our after sales department. Contact details are printed on the first page in the instruction manual.

WARNING!



It is absolutely forbidden to board the trailer when it is moving
Anyone doing so may be at risk of serious or fatal injury.

WARNING!



Risk of slipping

There is a risk of slipping as the surfaces of the trailer can be slippery due to a combination of precipitation and oil and/or clay on the surface. The ground around the trailer can also become slippery, as the tyres can tear up the surface and expose clay and soil.

DANGER!



Hydraulic fluid under pressure

Hot hydraulic fluid at high pressure levels can occur in the hydraulic system. Take care when connecting. Replace worn or damaged hoses.

INFORMATION!



Using the exchange unit

Do not operate the exchange unit unless the frame is folded down. During transport with the trailer, the hook must be folded down in the parking position.

WARNING!



Use the safety support during all service operations

It is absolutely forbidden to lean under a raised frame unless it is secured with the safety support. Under no circumstances may the trailer be carrying a load or container when the safety support is being used.

WARNING!



Maximum load

It is absolutely prohibited to load more than the amount your model of trailer is designed to handle. This can be dangerous for you and your surroundings.

WARNING!



Max. pressure on towing eyelet

Do not load so much that the pressure on the towing eyelet exceeds the permitted laws and regulations. The trailer is designed for a maximum pressure of 3000 kg on the towing eyelet. The pressure is largely determined by the way the load is distributed on the container bridge, and it is the user's responsibility to ensure that this is not exceeded.

INFORMATION!



Tyre inspection

The tyres must be tightened and the brakes must be inspected regularly.

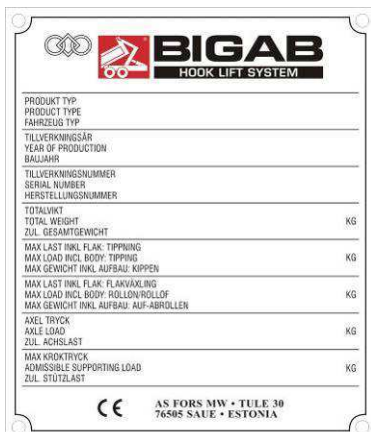
INFORMATION!



Lubrication

This decal is used to show the importance of regular lubrication of the trailer.

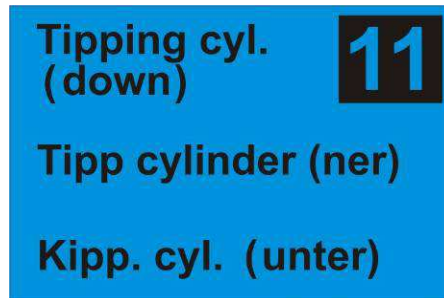
INFORMATION!



ID- plate

Marking of hydraulics

All of the hydraulic hoses are marked with coloured labels. See the table below for more detailed information. The functions depend on the configuration of the hydraulic system.



Hydraulic hose label (example tipping cylinder)

Hose label colors:

- **Red** - Oil from pump
- **Blue** - Oil to tank
- **Yellow** - Brake

Marking of the hydraulic hoses

No.	Colour	Function
1	Yellow	Brakes
26	Red	Steering (p)
27	Blue	Steering (t)

7 COUPLING/UNCOUPLING THE TRAILER

Safety aspects when coupling/uncoupling



The following must be checked each time before use;

Inspect the trailer carefully.

Check the air pressure in the tyres. The tyres must always have at least the recommended air pressure. See maintenance/service for more detailed information.

Check that all couplings are correctly connected.

Check that the trailer is locked to the towing vehicle.

Check the towing eyelet and the coupling device on the tractor.

Check the lights.

Check the brakes by testing them a few times without a load.

Check that hydraulic hoses and couplings are intact and not cracked.

Check that all hydraulic functions are working.

It is absolutely forbidden to use the trailer for any other purpose than as a hook lift trailer.

Make absolutely sure that no unauthorized persons are in the working area of the trailer.

Respect the safety distance. The hazard zone is 30 metres.

Never stand by the drawbar when coupling or uncoupling or when functions between the towing vehicle and trailer are activated.

Do not exceed the maximum loading limit for the model of trailer. See Technical Data for more detailed information.

Make sure that the trailer's SMV sign is in place and is clean.

Always examine the towing vehicle's parking system before loading. If necessary, secure the wheels by placing chocks or obstacles in front of the wheels.

Study the safety regulations carefully.



WARNING! If the trailer is coupled behind another trailer, the load capacity of the first trailer must be reduced. The load capacity must be reduced by a load equal at least to the second trailer's ball coupling pressure on the first trailer.

COUPLING TO TRACTOR

When the tractor is connected and the drawbar is locked, always engage the tractor's parking brake before connecting hydraulic hoses and/or electrical cables.

Connect the trailer's brake line to the tractor's brake outlet.

Then connect the thick return line with the female coupling to the tractor's free return outlet. Free return is important to ensure optimal operation and performance.

Connect the thick pressure hose with the male coupling to the tractor's pressure outlet.

Finally, connect both the lines that are to the steering axles to a double-action hydraulic outlet with floating position.

Plug the 7-pole electrical connector into the tractor's electrical outlet.

Connect the control unit to an electrical outlet rated at 16 amps or higher to obtain sufficient power to the electromagnets on the manifold.

Connect the chain on the load transfer cylinder to the tractor's top link bracket. Adjust the chain so that when about 60% of the cylinder has been extended, the chain is slack, and when the cylinder is retracted the chain is tensioned.

Disengage the parking brake **NOTE!** It is important that the parking brake is engaged when the trailer is separated from the tractor.

8 DRIVING THE TRAILER



READ THE ENTIRE INSTRUCTION MANUAL BEFORE USING THE TRAILER. CONSULT THE MANUAL IF YOU ENCOUNTER ANY PROBLEMS. THE TRAILER HAS A MANUFACTURING PLATE. BEFORE USING THE TRAILER, MAKE SURE THAT THE FACTORY SETTINGS HAVE NOT BEEN CHANGED AND THAT NO PARTS HAVE COME LOOSE DURING TRANSIT. MAKE SURE THAT ALL SAFETY FEATURES AND SIGNS ARE IN PLACE.

Safety aspects when driving



It is the responsibility of the user to ensure that a sufficiently powerful and heavy towing vehicle is coupled to the trailer in all situations. The use of a towing vehicle that is too small and insufficiently powerful can pose a risk of serious or fatal injury for the user, be hazardous for the surrounding environment and cause damage to the vehicle and trailer.

The load in the trailer must be evenly distributed. Loose items and loads that protrude over the back or sides must be secured.

Remember that the weight of the trailer can adversely affect the tractor making it more difficult to maneuver.

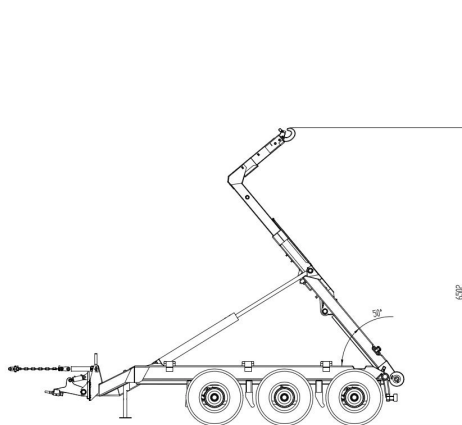
Do not forget to raise the stabilizer leg before moving off.

Never make tight turns at high speeds.

Do not exceed the maximum loading limit for the model of trailer.

Adapt your driving to the load, road conditions and your level of experience. The trailer is designed for driving at a maximum speed of 40 km/h.

Remember that with a long trailer bed and large overhang, the trailer needs more room to maneuver and turn.



WARNING!

The trailer may only be driven in transport position. It must never be driven with a raised bed. If you drive with a raised bed, there is a risk of driving into bridges, electrical power lines and other obstacles.



WARNING!

The manufacturer accepts no responsibility for damage that arises as a result of overloading or, in the event of failure of the drawbar, that arises if the trailer becomes detached from the vehicle. Maximum load is shown in the Technical Data section.



It is absolutely forbidden to board the trailer when it is moving. Anyone doing so may be at risk of serious or fatal injury.

ROAD DRIVING INSTRUCTIONS



The steered axles are controlled by the tractor's double-action outlet with floating position. When driving forward, the lever is placed in floating mode so that the trailer automatically follows the tractor. NOTE: Be very careful if a road has sharp bends or is heavily cambered. Be extremely careful when roads are slippery.

When reversing the trailer, apply slight pressure in both directions using the double-action outlet. This will remove any accumulated air from the system.

Then watch the wheels and steer them in the intended direction. Do not steer at too sharp an angle as this can make it difficult for the tractor to follow the trailer.

NOTE: Reset to floating mode before driving the trailer forward.



When steering with steerable axles with a double – active valve with float position from tractor which is standard on 22 – 27, it is imperative to stand still with the trailer when you switch between blocking force controlled axles and floating position on the axles.

When driving on normal road the axles should always be unlocked, by having the tractor lever in the float position. It is absolutely forbidden to change the statuses of the axles from floating to the locked position when driving. If you lock or unlock them while driving, there may be tension and pressure on the axles that make them stand in improper angles, and then you can lose control of the trailer.

When you start to roll after putting the axles into floating position, caution should be taken since the axles need to align themselves in the direction after being locked in a different angle. This must be done at low speed. Even at sharp turns and bumpy roads the speed needs to be adapted so that the trailer follows the tractor. Remember that in cold weather, the oil is thick and that it then takes longer time for the axles to come in the right position.

Axles locked = Axles standing still and straight after the trailer. To be used when reversing and when you hook on the bridge this so that the trailer rolls underneath the container when hooking.

Axles unlocked = Axles move freely and follow the trailer. The tractor lever is in the float position. Note! The conversation to unlocked axles may only be done when standing still.

Forced axles with double – active jack should only be used when reversing and when you need to control the trailer to a given direction at very low speed.

Load on towing eyelet and coupling

Always adapt your driving to the load, road conditions and your level of experience. Do not exceed the maximum speed specified for the trailer. Make sure that you have the correct pressure on the tow hook when you are driving. Do not exceed the intended upward and downward pressures on the trailer's towing eyelet and the coupling to the hitch. The given ideal conditions and theoretical calculations indicate the following maximum load values, and it is recommended that the user observes these load values.

Table of weights at different loads

Load* (excl. the container's dead weight)					
Load	Kg/m ³	Full container 7 m ³	14 m ³	21 m ³	27 m ³
Peas, Wheat, water content 15%	800	5,600 kg	11 200	16 800	21 600
Rye, water content 15%	750	5,250 kg	10 500	15 750	20 250
Barley, water content 15%	680	4,760 kg	9 520	14 280	18 360
Oats, water content 15%	560	3,920 kg	7 840	11 760	15 120
Silage, newly harvested	850	5,950 kg	11 900	17 850	22 950
Tarmac	1 400	9,800 kg	19 600	29 400	37 800
Gravel	1 550	10,850 kg	21 700	32 550	41 850
Clay	1 800	12,600 kg	25 200	37 800	48 600
Wood chips (50% moisture content)	350	2,450 kg	4 900	7 350	9 450

* The higher the moisture content of the material, the heavier the load. The user must take this into consideration. This table is only an approximate estimate of the weights that can occur, and it is the responsibility of the user to ensure that the vehicle's limits and the applicable legislation are not exceeded. The specified values are not exact but are only given as examples.

The above table provides information and examples of how many different loads can weigh. This table should only be used as a general guide. The manufacturer cannot be held responsible for measurements or volumes stated in the table. The information in the table is intended only as a recommendation.



WARNING!

An incorrectly distributed load can adversely affect the steering of the tractor and trailer making them difficult to maneuver.

Working under extreme conditions

The recommended working temperature for a BIGAB dump trailer is -20°C to +40°C. When working in temperatures below the recommended temperature, the trailer should not be loaded as heavily. When working in low temperatures, always allow the oil to circulate freely through the system for a few minutes before starting work. In very hot conditions, you should be aware that the hydraulic oil heats up drastically. At temperatures above +80°C, the oil evaporates and the seals in the system will be damaged.

IF A DANGEROUS SITUATION ARISES

If the trailer comes into contact with high voltage electric wires, you should do the following:

IF YOU ARE OUTSIDE THE TRAILER

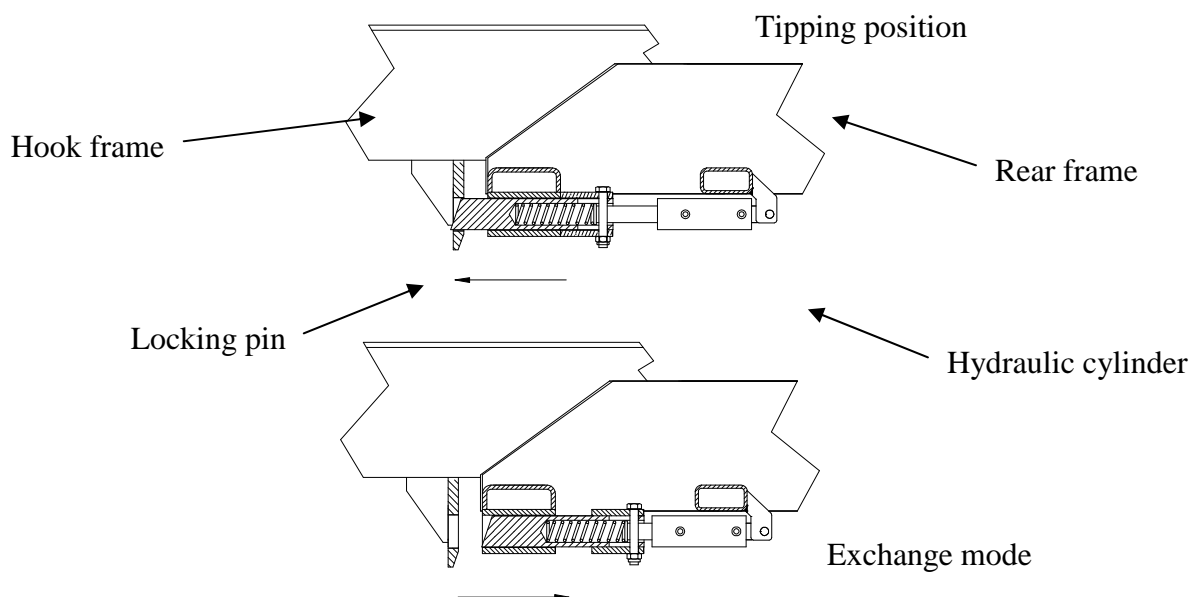
Do not attempt to get into or close to the trailer. Keep everybody well away from the trailer. Do not touch any part of the trailer.

IF YOU ARE INSIDE THE TOWING VEHICLE

Get out of the vehicle by jumping. Avoid touching any part of the vehicle. Avoid making your body into a channel through which the electricity can flow. Get out of the vehicle by jumping but make sure that your feet do not touch the ground at the same time. An electric field at ground level can cause fatal voltage between the legs. You should be safe at a distance of about 20 meters from the vehicle, but this naturally depends on circumstances such as the voltage in the overhead power lines, ground conditions, etc.

EXCHANGE MECHANISM

The illustrations below show a hydraulic frame lock which controls the handling of the exchange mechanism and the hydraulic container lock. The exchange mechanism is located in the middle of the rear frame.



9 EXCHANGE OPERATION

Safety aspects during exchange operation



The hook lift trailer must only be operated by one person in order to avoid injury when working with the trailer. There should be no one inside the hazard zone, which is 25 meters around the trailer.

Unauthorized persons must keep well away from the trailer when it is being used or repaired. It is strictly forbidden for anyone under the influence of alcohol or drugs to work with the trailer.

Exchange and tipping must be operated from the towing vehicle!

Make sure that the frame lock is activated. Make sure that the hook is properly locked on to the container eyelet.



WARNING!

It is hazardous if the rear end of the tractor lifts

Do not, under any circumstances, reverse the towing vehicle or use it to push the trailer when exchanging. This poses an immediate risk of damaging the trailer or towing vehicle and can lead to serious or fatal injury.

Exchange procedure

The trailer must be aligned straight in front of

Make sure that the hydraulic mode switch for exchanging or tipping is in exchange mode and not in tipping mode. Make sure that the container lock is in its open position.

Fig. 1

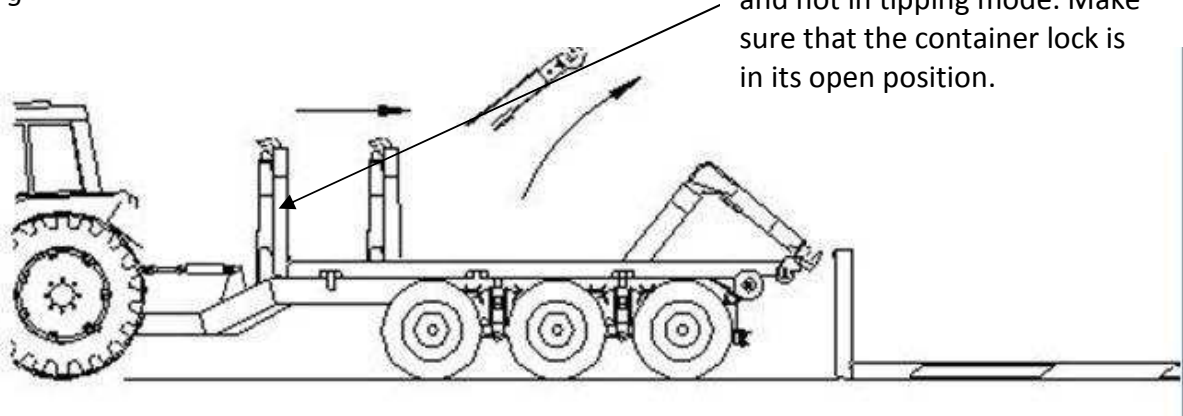
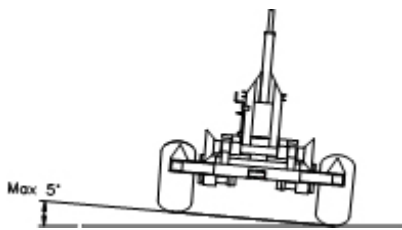


Fig. 2

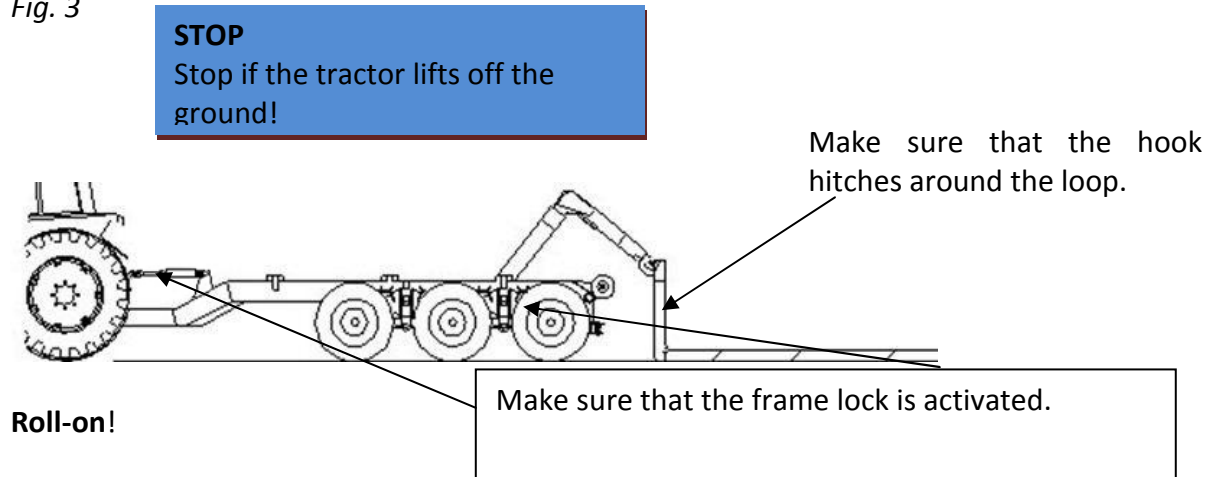


Park the hook lift trailer on a flat surface. It must not be leaning sideways by an angle of more than 5 degrees.

Failure to read this instruction manual may lead to serious or fatal injury.

Do not, under any circumstances, reverse the towing vehicle or use it to push the trailer when exchanging. This poses an immediate risk of damaging the trailer or towing vehicle and can lead to serious or fatal injury. The load must be pulled on and the trailer and towing vehicle must roll in under the freely suspended load.

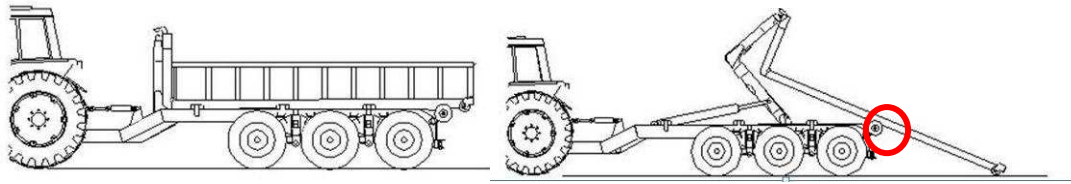
Fig. 3



- Make sure that the load carrier is inside the steering rollers. Release the brakes on both the towing vehicle and the trailer to make it easier to roll on the load. Check the position of the tower during roll-on so that the container bridge frame does not catch on the rollers from behind.
- The tower must be fully retracted when rolling on the container bridge in order to increase the lifting power and reduce the strain on the towing eyelet. Ensure that the container frame does not catch in the rollers at the back of the trailer. Adjust the tower upwards continually during exchange in order to move past the rollers. If the tower is not adjusted upwards during roll-on, there is a considerable risk of the exchange's lock being damaged if the container frame catches in the rollers.

IMPORTANT! Follow the movement with the retractable tower so that the front of the hook lift trailer's frame does not catch on the rollers. When you have passed the rollers, always keep the hook lift trailer's frame close

Fig. 4



Roll-off!

Release the brakes on both the towing vehicle and the trailer to make it easier to roll off the load. Check the position of the tower during roll-off so that the container bridge frame does not catch on the rollers from above.

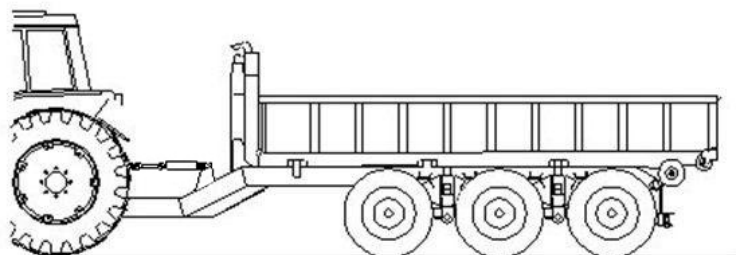
Lock the frame and activate bogie blocking between the towing vehicle and trailer.

1. Raise the hook lift frame slightly so that the container bridge does not scrape against the frame when it is pushed backwards.
2. Then retract the tower so that the locking rails/wings on the container bridge frame move freely and cannot be damaged.
3. Adjust the tower upwards continually so that the container frame does not catch on the rollers at the back of the trailer during roll-off.
4. If the tower is not adjusted during roll-off, there is a considerable risk of the exchange's lock being damaged if the container frame catches in the rollers.

10 TIPPING OPERATION

Note! The maximum container bridge length for models in this instruction manual is 6.5 metres during tipping. Make sure that the towing vehicle and trailer are securely coupled before tipping.

Fig. 5

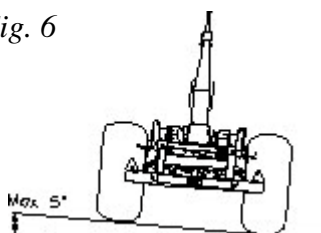


Note! With maximum load, the telescope must be retracted 40 cm (400 mm) to enable tipping.

Make sure that the frame lock is in the correct position.

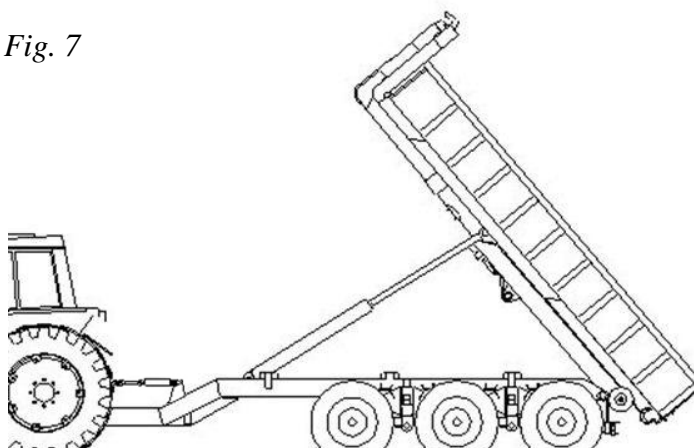
Park the hook lift trailer on as flat a surface as possible. It must not be leaning sideways by an angle of more than 5 degrees.

Fig. 6



At maximum tipping, drive slowly forwards until the container bridge is empty. Lower the bridge before driving off. Important! Make sure that the bridge is locked in the correct position before driving off.

Fig. 7



IMPORTANT!

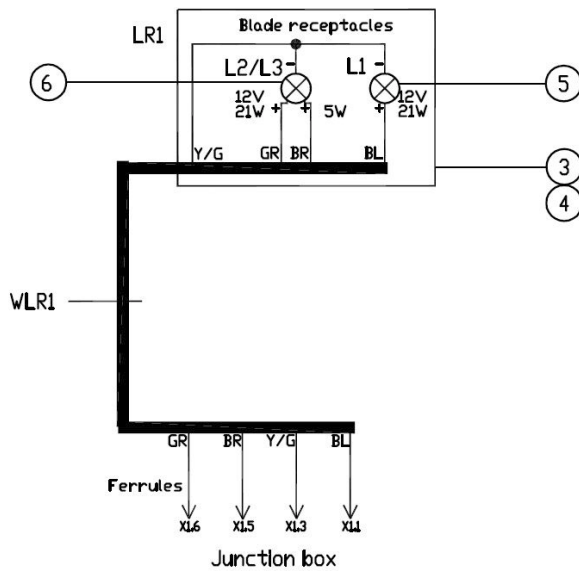
Apply the brakes when tipping so that the tractor and trailer do not roll away when the load is being emptied.

Make sure that the frame lock is activated before tipping.

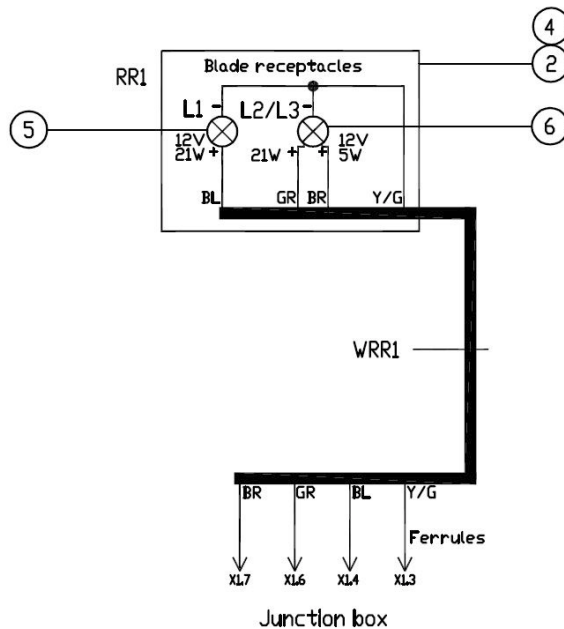
11 WIRING DIAGRAM

The trailer has a 12 volt electrical system.

Wiring diagram tail lights

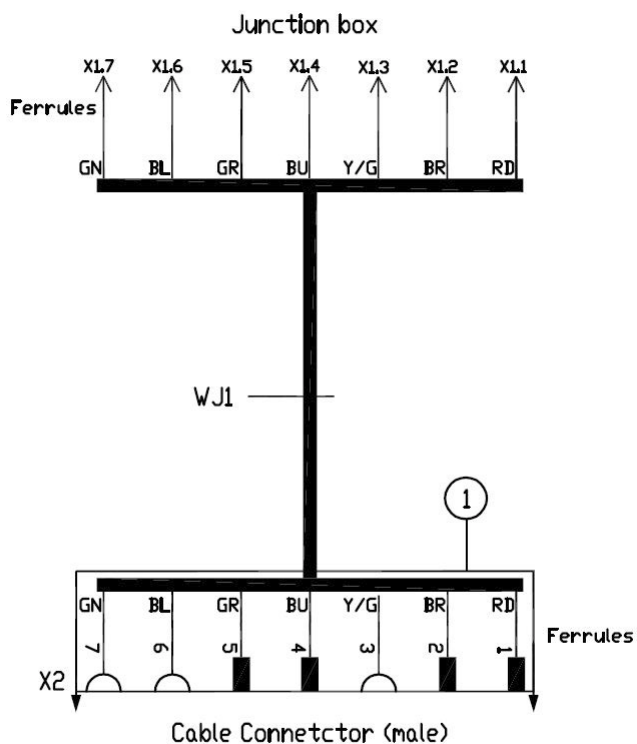


Left rear lights



Rigth rear lights

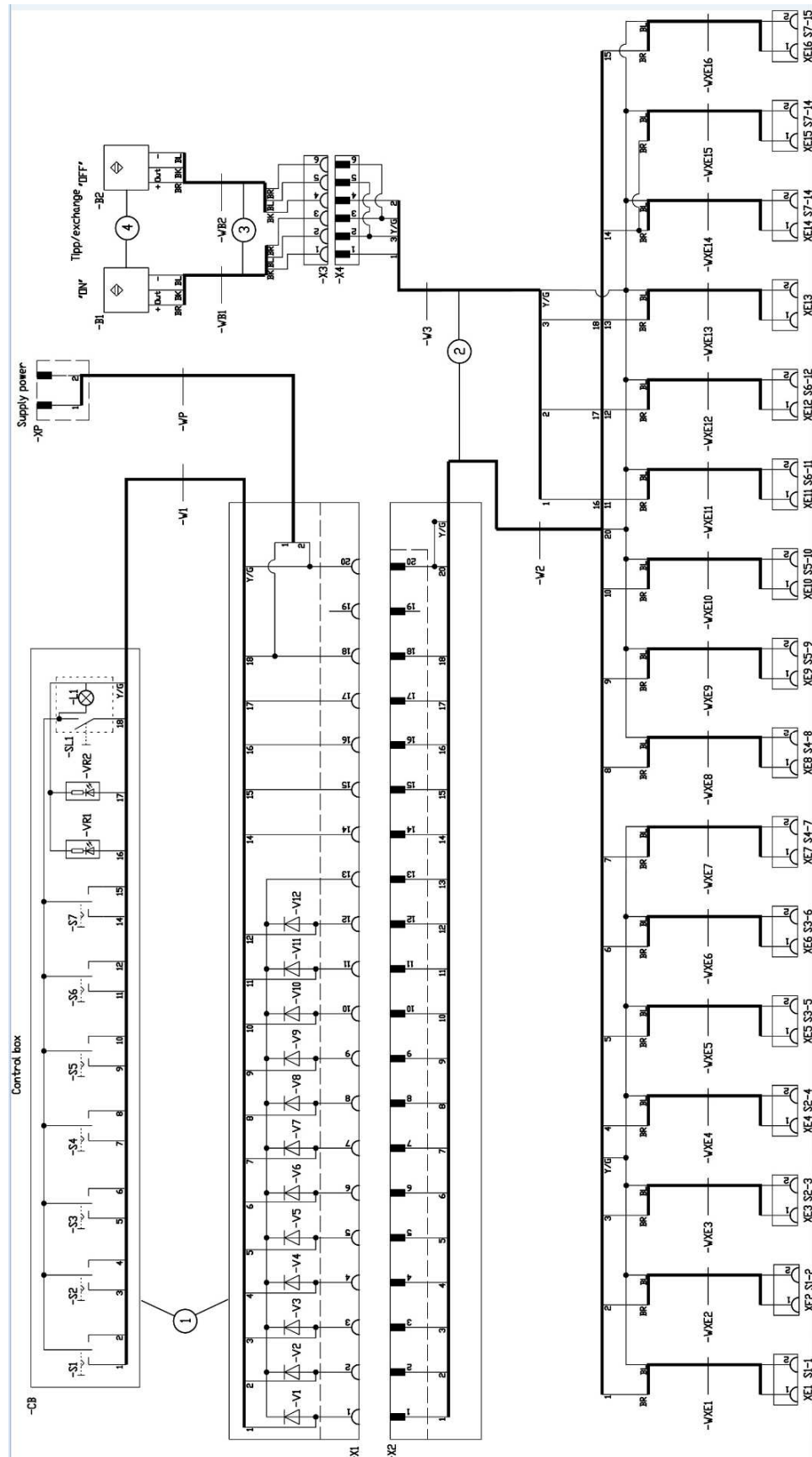
FMWE20001-01



Cable set with plug

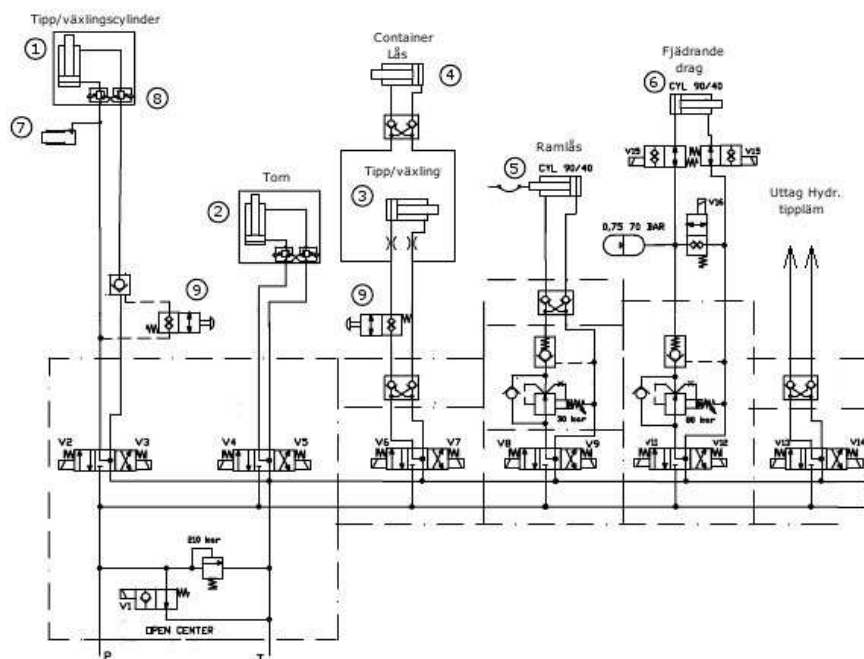
No.	Item number	Name	Quantity
1	920695	7-pole junction box (male)	1
2	920764R	Tail lights BIGAB 3 pole, right-hand side	1
3	920764L	Tail lights BIGAB 3 pole, left-hand side	1
4	920764G	Glass cover tail light	2
5	920745	Bulb 12V, 21W	2
6	920768	Bulb 12V, 21W p21/5W	2

Electrical on-off system



12 HYDRAULICS CHART

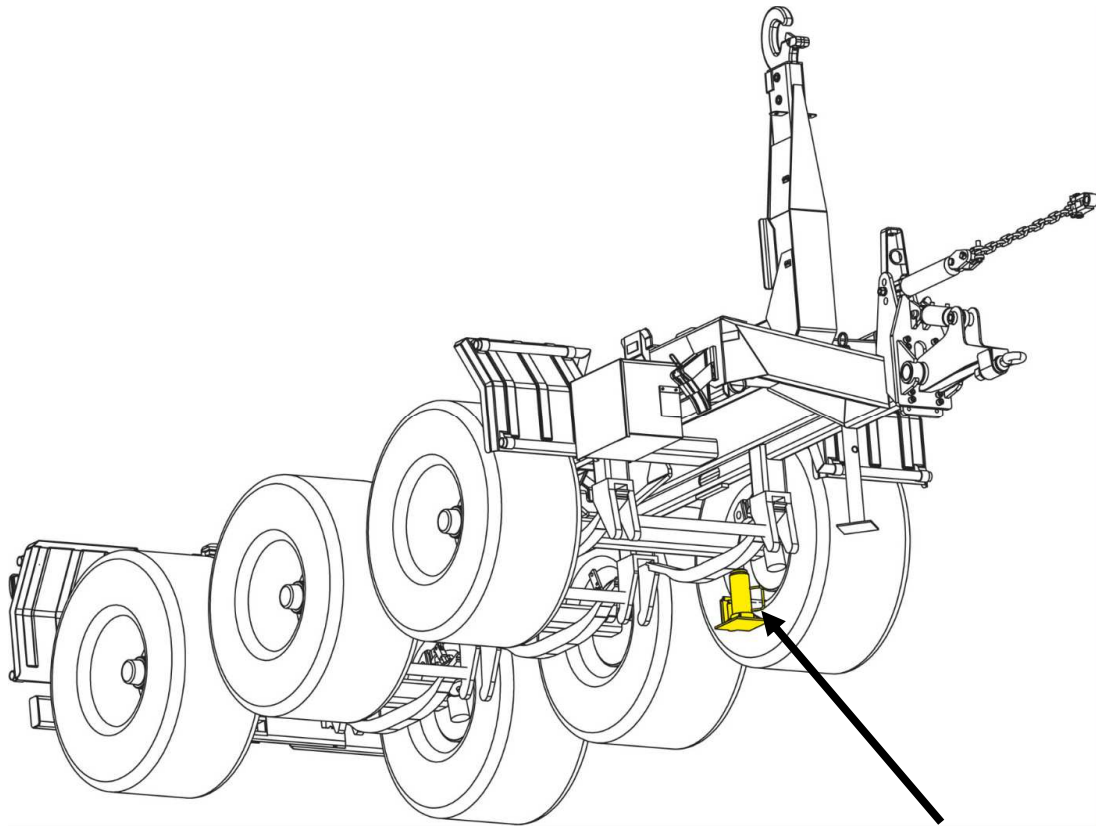
The hydraulic system is filled with oil and tested before delivery. The hydraulic system consists of a number of different components illustrated below. Technical data and configuration depend on the trailer model (see table 1). The hydraulic system is filled with either VMGZ or SAE100R16 hydraulic oil. It is applied as a working fluid for the hydraulic system for continuous operation outdoors at temperatures from -50°C up to +60°C.



Spare parts list Hydraulic components

Pos.	Item No.	Name
1	913261L	Tipping/exchange cylinder
1	913262R	Tipping/exchange cylinder
2	913245	Telescopic cylinder with pilot operated valve
3	913230	Exchange cylinder
4	313116	Cylinder container lock
5	313134	Cylinder frame lock
6	313140	Cylinder suspended drawbar
7	913235	Start cylinder
8	913630	Pilot operated check valve
9	913640	End of stroke valve

13 CARRYING OUT SERVICE/MAINTENANCE



Place the jack as illustrated when carrying out service and maintenance work, if a jack is required.



To ensure the safe use of the product and trouble-free operation and for the warranty to be valid, maintenance must be carried out as described in this chapter.

Clean the trailer thoroughly before carrying out repair work or storage.

The trailer must be standing on a flat surface during maintenance and service work.

Make sure that the trailer cannot move.

When servicing the trailer, turn off the vehicle engine.

Make sure that the trailer cannot move when using a jack or similar equipment - it is essential that the trailer is supported securely when raised.

Always use the safety support when carrying out service work when the trailer bed is raised. There must be no load or container bridge on the trailer when carrying out service work on the trailer in raised position. See illustration below.

Never attempt to carry out any maintenance work on the hydraulic system until you are absolutely certain that there is no hydraulic pressure.

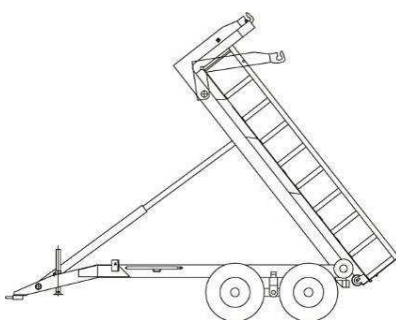
Do not attempt to seal or repair leaking hydraulic couplings while the system is still pressurized.

Never attempt to locate a leakage from hoses or couplings with your hands. The high-pressure oil in the system can penetrate the skin and cause serious injuries, such as burns and blood poisoning. High pressure oil is highly flammable.

Avoid getting oil in your eyes. Wear safety goggles and safety gloves. If you do get oil in your eyes, flush them immediately with cold water and seek medical help at once.



It is absolutely forbidden to lean under a raised frame unless it is secured.



Raised bed

WARNING!

The trailer may only be driven in transport position. It must never be driven with a raised bed. If you drive with a raised bed, there is a risk of driving into bridges, electrical power lines and other obstacles.



14 MAINTENANCE/SERVICE

General information:

- Service and maintenance must be carried out regularly in order to guarantee your safety and problem-free use.
- Maintenance work can be carried out without any specialist tools. Most of the maintenance operations can be performed by the user.
- Locate the problem as well as you can to avoid having to open the system, unless this is absolutely necessary.
- Any parts that are dismantled must not come into contact with dirt.
- Keep spare parts in their packaging until they are required.
- We recommend that adjustment and repair of valves is carried out by trained service personnel.

Daily maintenance:

- Visually inspect the load equipment. Note any defects that might affect your safety. Repair any defects. Carefully inspect the towing eyelet.
- Check the hydraulic system for leaks and hoses for damage.
- Inspect each feature carefully.
- Check oil level.

Weekly maintenance:

- Regularly wash the trailer with a sponge or soft brush and mild soap solution. Never wash the trailer with hot water and high pressure. This dissolves the grease at the bearing points.
- Inspect the operation of the trailer.
- Check the hydraulic pressure.
- Check that the brakes are working properly.
- Tighten all wheel nuts after a few hours and check them regularly. Refer to the list of tightening torques in the chapter on safety devices.
- Check the direction indicators, lamp glass covers, reflectors and lighting.

Monthly maintenance:

- Check the air pressure in all tyres.
- Make sure there is sufficient lubrication on the sliding surfaces.
- Clean the hydraulic cylinders and lubricate their bearings.
- Inspect the hydraulic hoses for damage.

For recommended lubricating greases, see Requirements and test methods SS 15 54 70 <http://www.sp.se/km/grease>

Surface cleaning

Remove accumulated dirt and dust. Painted external surfaces should be cleaned regularly with a sponge or soft brush and soap. When cleaning, never use warm water in a high-pressure washer. This dissolves the grease at the bearing points.

Maintenance of the hydraulic units

See the hydraulics chart chapter for information about the hydraulic system.

- Clean the hydraulic cylinder piston rod.
- Inspect the hydraulic valves. If a leak is detected, replace the damaged valve.
- Inspect the hydraulic hoses:
- Visually inspect the hydraulic hoses and coupling pipe. If a leak or rupture is detected, replace the hose.
- Check the oil level. If necessary, top up with oil or change the oil.
- Check the operation of the device.

Always use original parts when replacing hydraulic components such as hoses, seals, etc. This ensures safe and reliable operation. Be sure to remove all dirt before starting any work on hydraulic components.

Note! Never operate the hydraulic system if the oil level falls below the lowest mark.

Changing seals

Replacement of seals should be carried out by an authorised workshop.

Maintenance of the pneumatic units (optional equipment)

- Clean and lubricate the piston rods on the pneumatic cylinders.
- Empty the water trap:
- Condensed water must be removed from the air tank located at the side of the trailer.
- Check the pneumatic valves:
- Check the pneumatic valves by listening to them when they are working. If a leak is detected, replace the damaged valve.
- Check the pneumatic hoses:
- Visually inspect the pneumatic hoses and coupling pipe. If a leak or rupture is detected, replace the hose.
- Check the operation of the device.

Maintenance of the brake system

This trailer has a hydraulic brake system. Air brake system with negative or positive action is optional.

The brake system must be inspected regularly. Test the brakes at least once a week when the trailer is being used.

Make sure that no grease, lubricant or oil enters the brakes. If any type of oil enters the brakes, there is a risk of it lubricating the brake discs and thereby reducing the friction. This adversely affects brake performance.

Should this happen, remove the brake drums and change the brake discs.

Always check the play after removing the brake drum and adjust if necessary.

To adjust the brakes, lift the bogie frame off the ground and adjust the brakes by spinning the wheel while adjusting. The brakes are correctly adjusted when the wheel spins freely without any scraping noises. The brakes must always be tested after adjustment.

If brake performance is uneven, apply the brakes, tow the trailer slowly for a couple of hundred meters, then test the brakes again by braking the tractor and trailer at normal speed. Repeat if necessary until the brakes work properly. If necessary, contact our service department!

With the BIGAB 22-27, brake cylinder play is adjusted by slackening or tightening the adjustment screw on the brake.

Maintenance of wheels

Before the trailer is used, check the wheels by making sure the bolt connections are secure and that they are regularly checked and tightened.

- Inspect the bolt connections.
- Check the air pressure.

For information about wheels, see the table in the chapter on main components.

For information about tightening torques, see the chapter on safety devices.

Maintenance of the hook lift trailer's bogie system

Daily inspections

Inspect all spring brackets, springs with links and wheel axles.

Inspect wheel equipment, tires and rims.

Defects must be corrected before the trailer is used.

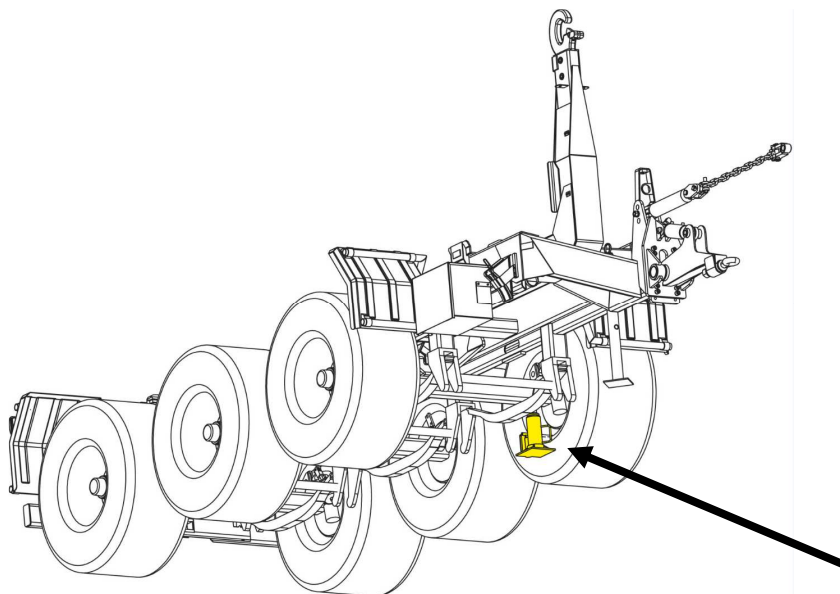
Weekly inspections

It is essential to lubricate the trailer's grease nipples once a week, or after 20 hours of use. Refer to the lubrication schedule. You need to get under the trailer for best results when lubricating the grease nipples. This is easiest if the trailer is unloaded.



Changing tyres

When changing tyres, the jack must be placed as illustrated below.



Storage

Long term storage in cold and/or damp conditions is not advisable.

Repair welding

If repairs or modifications require welding work, first contact your dealer for necessary instructions. Incorrect welding or lack of knowledge when welding can result in sudden breaks in the structure.

Recycling

All metal parts can be recycled and must be taken to a recycling facility at the end of the trailer's useful life.

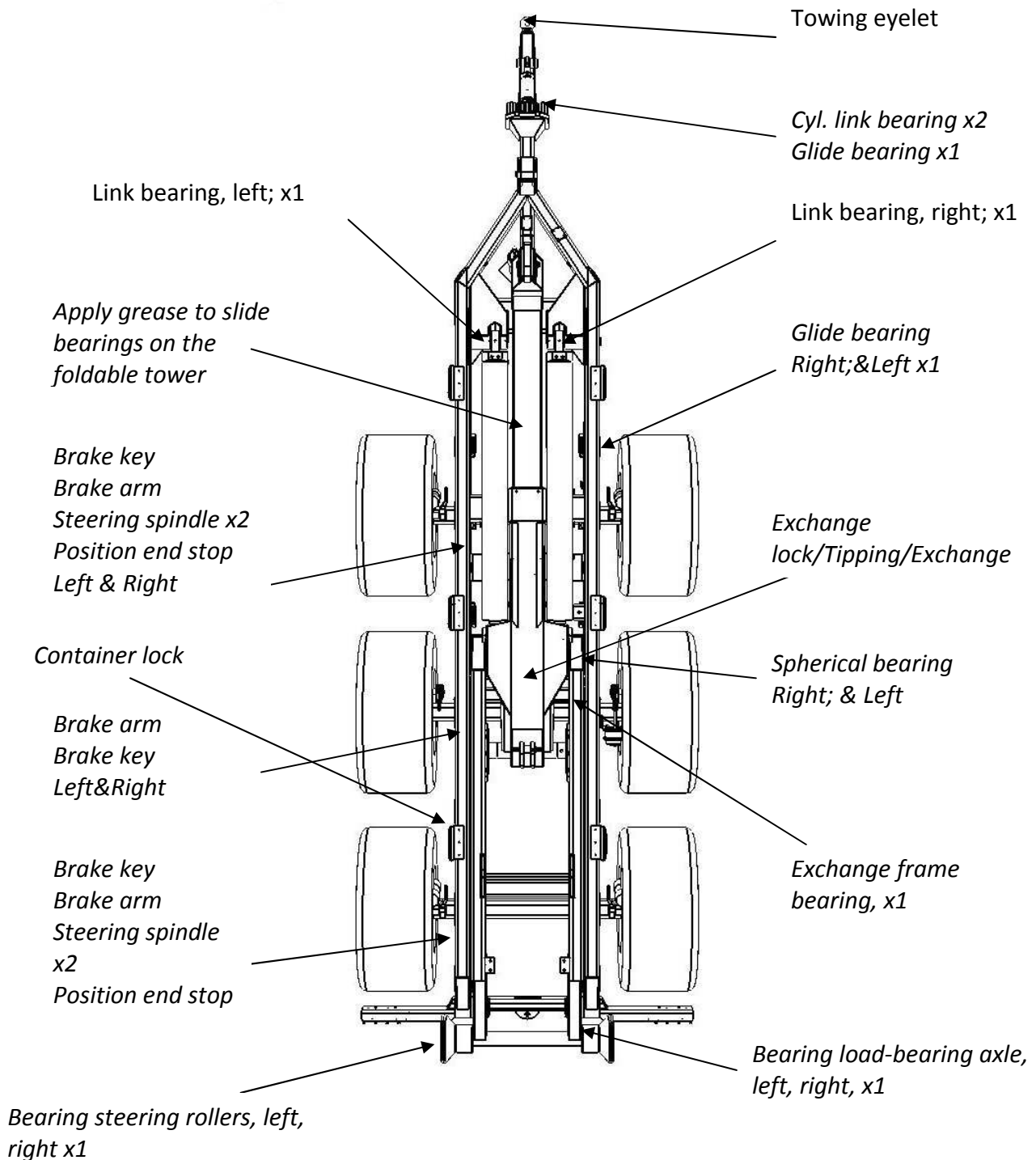
Scrapping instructions

If the machine or its components are to be scrapped, the materials must be dismantled, sorted and handed in for recycling or destruction at a location designated for this purpose by the municipality.

Lubrication

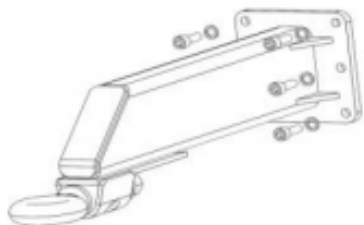
Recommended lubrication is once a week or every 20 hours of operation. A grease gun is recommended for lubrication of grease nipples.

- Follow the lubrication schedule to ensure correct and regular lubrication of your trailer.
- Keep flammable material away from heat, sparks and naked flames.
- Do not let oil run out onto the ground. Oil pollutes the environment.



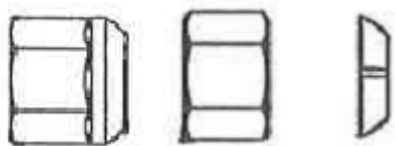
Tightening torque

- Tightening torque - Drawbar bolts



<i>Thread</i>	<i>Bolt strenght</i>	<i>Tightening torque, Nm</i>
M16x2	12.9	333
M20x2	12.9	649

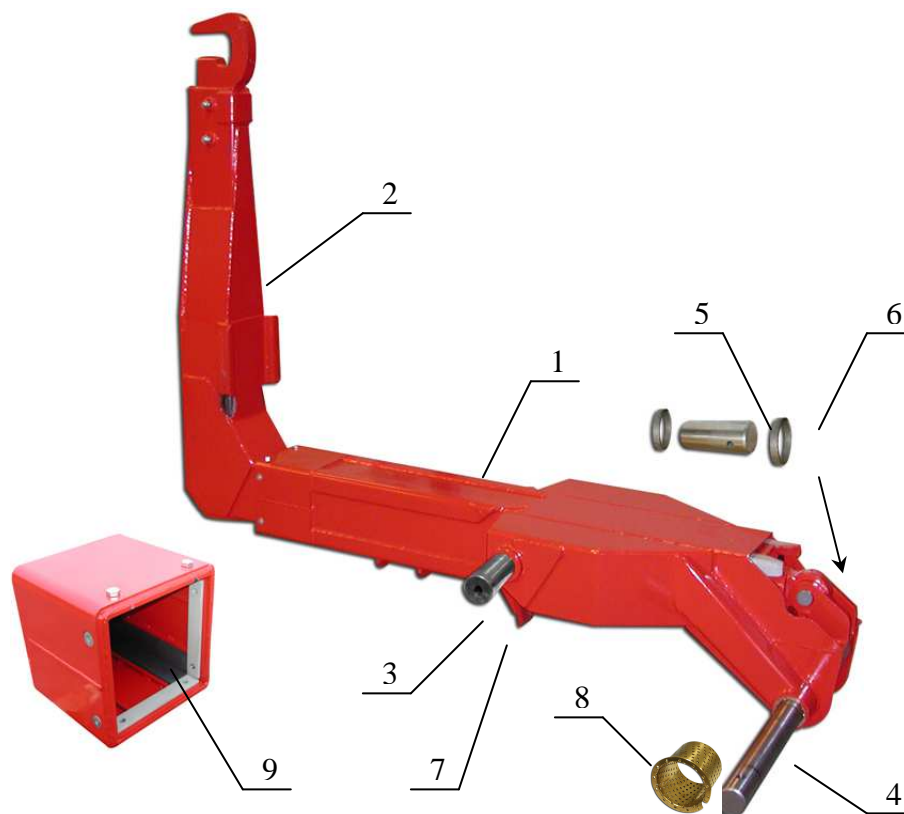
- Tightening torque - Wheel nuts



<i>Thread</i>	<i>Nut strenght</i>	<i>Tightening torque, Nm</i>
M18x1,5	10	270 +20 +0
M20x1,5	10	350 +30 +0
M22x1,5	10	450 +60 +0

15 SPARE PARTS

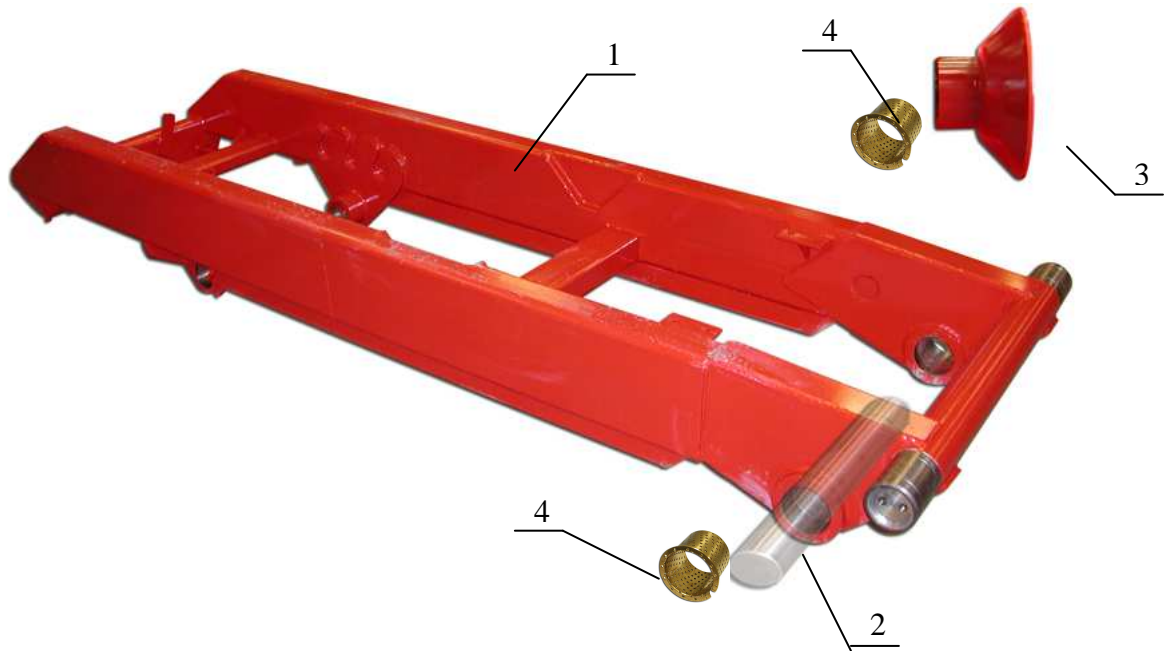
Hook frame



Hook frame spare parts

Pos.	Item No.	Name
		Hook frame assembly
1	37221269	Telescopic linkage frame
2	37221079	Hook frame/extension
3	37221112	Axle
4	37221110	Axle
5	37221115	Axle
6	37211180	Distance ring
7	37203115	Distance ring
8	909125	Glide bearing
9	37221140	Direction plate

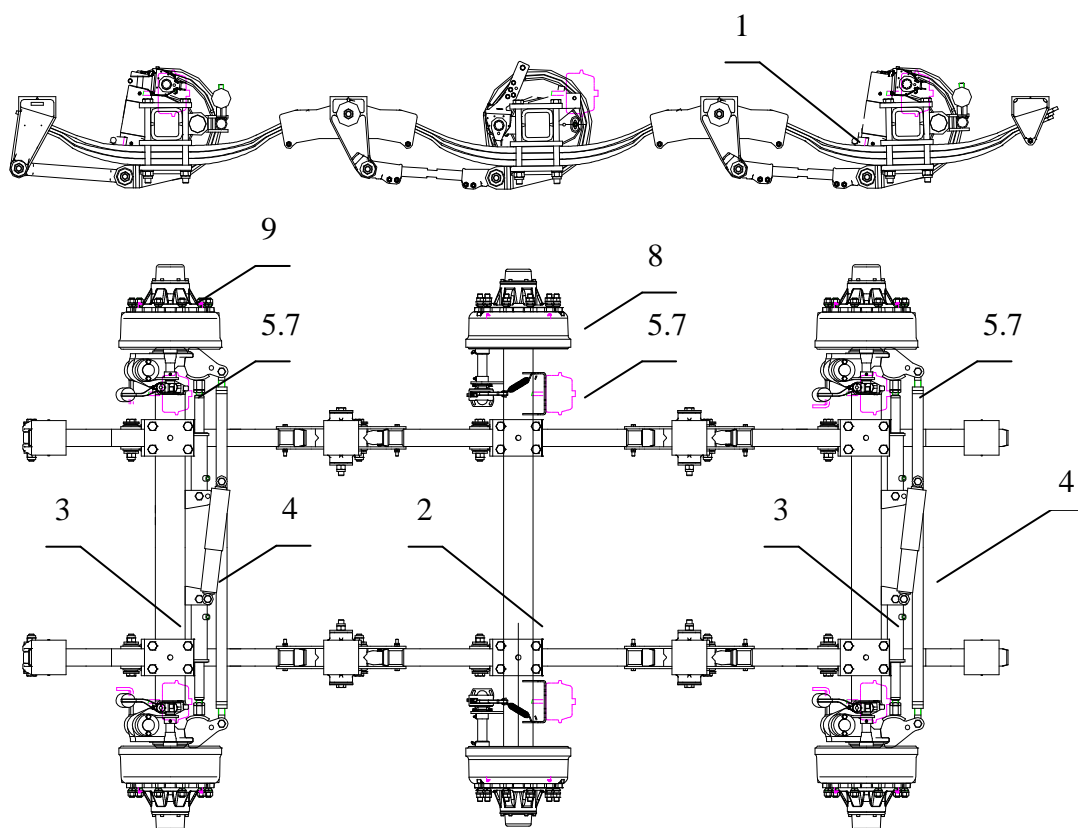
Rear frame



Rear frame spare parts

Pos.	Item No.	Name
1	37221500	Frame
2	372320370	Axle
3	320350	Steering roller
4	909115	Slide bearing \varnothing 100

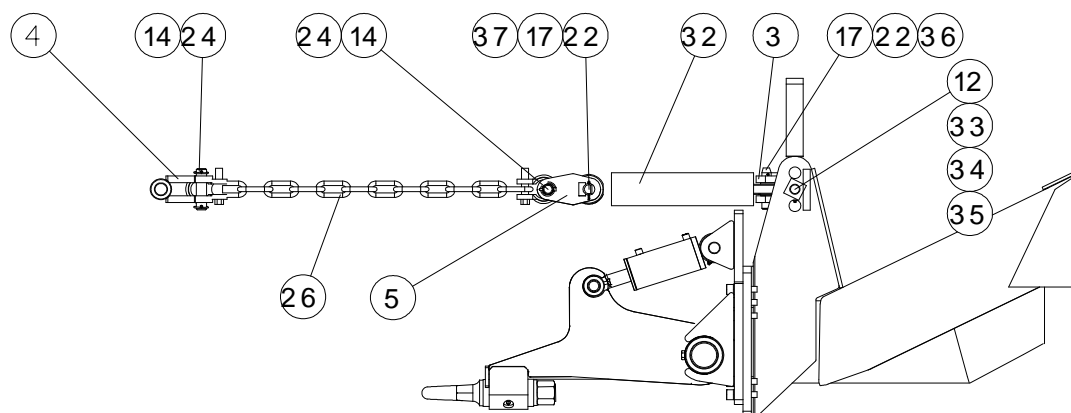
Bogie



Bogie spare parts

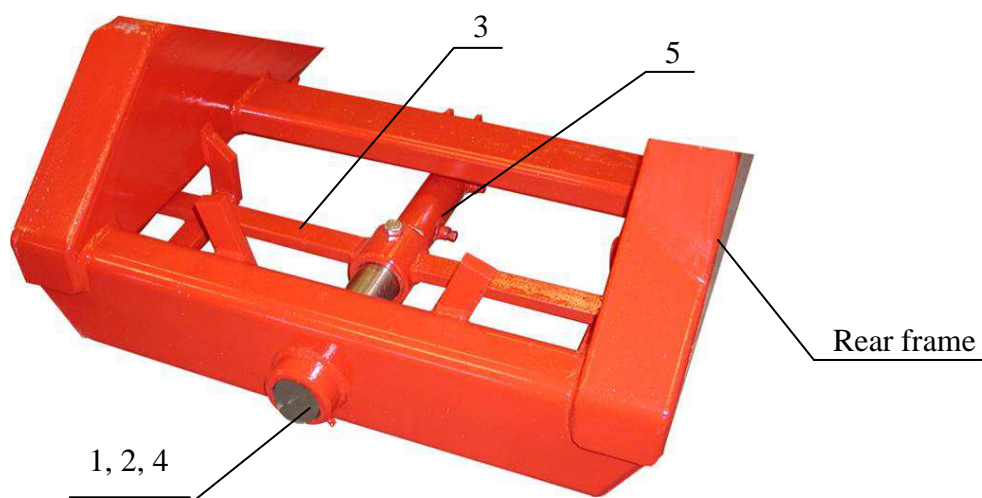
Pos.	Item No.	Description	Mechanical	Pneumatic
1	917220	Sprung Tridem Parabolic 30 tonnes	*	*
2	917171	Fixed axle 130x2000	*	
2	917181-PN	Fixed axle 130x2100		*
3	917172	Self-steering axle 130x2000	*	
3	917182-PN	Self-steering axle 130x2100		*
4	913231	Hydr. cyl. 80/50x249 Steering	*	*
4	FMWA20009-01	Steering cylinder assembly kit	*	*
5	920845	Air brake cylinder 20" M16		*
6	917160-SP1	Brake cylinder 30/37 Fixed axle	*	
7	917160-SP2	Brake cylinder 25/30 Steering axle	*	
8	916498ADR	Brake shoe set 406x120	*	*
9	916480	Wheel nut M22x1.5	*	*

Frame lock



Frame lock spare parts

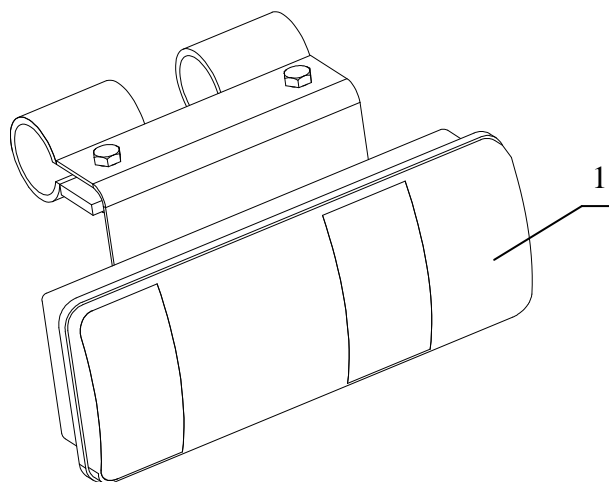
Pos.	Item No.	Description
3	2024-000011.000	Linkage frame cylinder
4	2024-000027.000	Link frame lock chain - tractor 15-19-22-27
5	2024-000013.000	Link cylinder frame lock chain
12	2024-000015.000	Pin
14	2024-000010.001-01	Pin
17	FMWP00001-030	Pin
22	908110	Split pin
24	920230	Ring pin
26	920222	Chain for frame lock
32	313135	Hydraulic cylinder
33	908640	Spring washer
34	907255	Nut
35	908275	Flat washer
36	FMWP00083	Ring
37	FMWP00083-01	Ring

Exchange unit

Exchange unit spare parts

Pos.	Item No.	Name	Note:
		Exchange unit assembly	
1	37221120	Pin	
2	920515	Spring	
3	37221220	Sliding plate	
4	37221210	Sealing ring	
5	913230	Exchange cylinder	

Electrical system

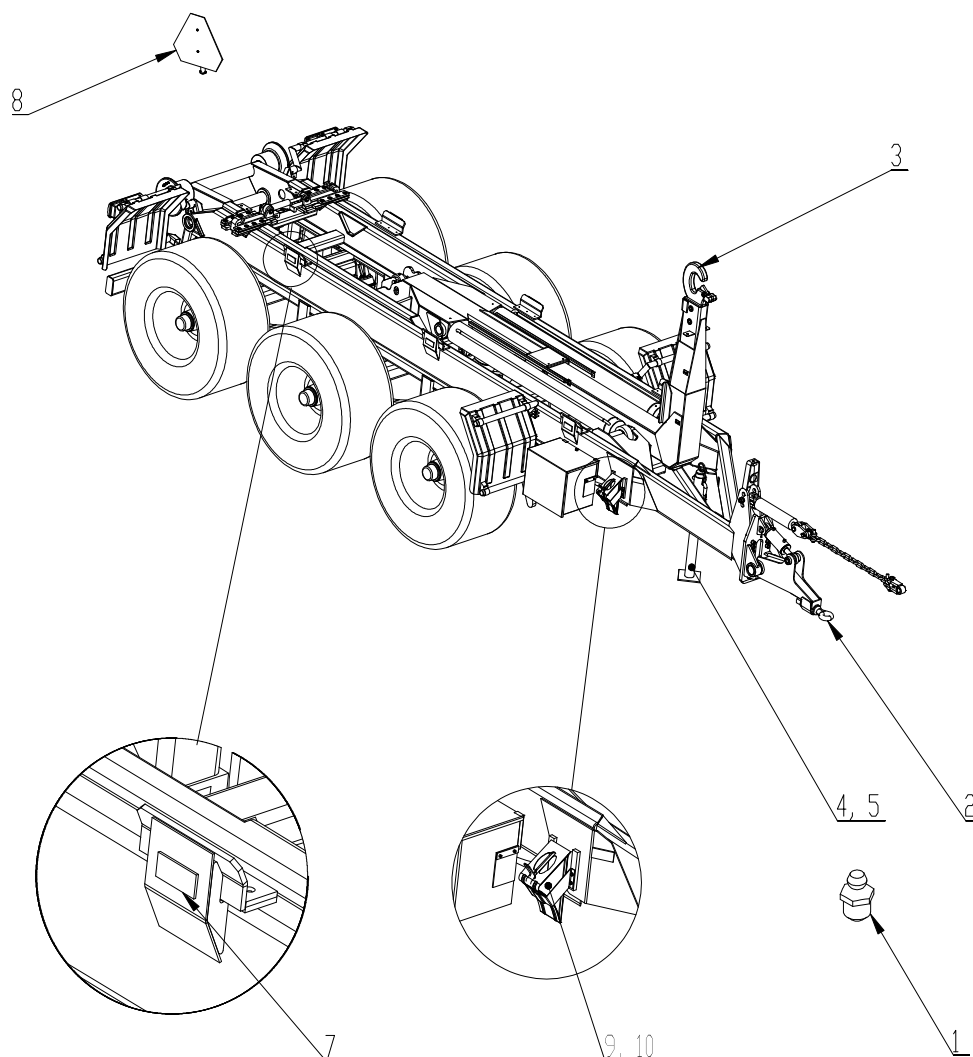
For information about the electrical system, see the wiring diagram chapter.



Electrical spare parts

Pos.	Item No.	Description
1	920764R	Rear lamp Right
1	920764L	Rear lamp Left
2	920770	Side marker lights 111x40 (orange) - optional
3	920715	Cable terminal
4	920695	Cable connector 7 pole (male)
5	920180	Cable connector 7 pole (female) special
6	920768	Bulb 12V 21W p21/5W
7	920745	Bulb 12V, 21W

Other parts



Other spare parts

Pos.	Item No.	Description	Note
1	930105	Lubricating nipple	
2	920120	Towing eyelet	
3	37221002	Hook	
4	37211068	Stabiliser leg	
5	37203067	Stabiliser leg pin	
6	37203085	Safety support	
7	920160	Reflector 94*44 (orange)	
8	920150	SMV sign	
9	920630	Parking chock	Optional
10	920631	Parking chock holder	Optional

16 TROUBLESHOOTING

These troubleshooting instructions are intended to help you determine the cause of a malfunction.

Problems with the electrical equipment

Fault symptoms	Reason and action
Problem with lights	Bulb not working. Replace the bulb.
	Check and clean the electrical connectors.
Wire damaged or broken.	Check and repair the wire.

Problems with the hydraulic equipment

Fault symptoms	Reason and action
Too slow movement or the cylinder does not return from extended position to neutral.	The valve has stuck. Clean the valve parts. The valve should be able to move freely.
Air in the hydraulic system	Locate the leak and eliminate the fault. Check the oil level. Check the quick release couplings between the tractor and trailer
Low oil pressure.	Adjust the oil level.
Hydraulic cylinder piston seal leaking.	Replace the gasket.
Noise coming from the hydraulic system.	Air has entered the system. Locate where the air is entering and eliminate the fault.
Oil leak	Replace ruptured hose. Adjust the hose connections

Problem with brake system

Fault symptoms	Reason and action
Poor brake operation.	Replace the brake shoes
Oil on brake linings or worn brake pads.	Check the play in the brake arm and adjust if necessary.

17 EC DECLARATION (sample) **FORS MW*****EC Declaration of Conformity of the Machinery***

Manufacturer:
Fors MW AS
Tule 30
76505 Saue
Estonia

The technical file is compiled by **Peter Kastberg**;
I hereby confirm that this **complete trailer BIGAB**

Trade mark: **BIGAB**
Function: **complete hook lift trailer**
Model:-.....
Type: **BH** variant:-.....
VIN: **V60BH.....D01.....**
Trade name: **BIGAB**
Manufacture year: **2013**

is manufactured accordingly to demands in **directive 2006/42/EC** and therefore can be used mounted together with other equipment to provide a complete machine.

The equipment can't be used before the machine or the formation that it will take place in, is accordingly to the demands of the EC Machinery directive.

For the guarantee and safety, it is of uttermost significance that the instruction book is read before the machine is put into service.

Saue, Estonia 2013-09-11


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