



**BIGAB**

**Z-cranes**

**Z6,6**

**Z8,0**

EN\_V3.0-2017W06

Original instruction

**INSTRUCTION BOOK**

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In this manual we have gathered together all the information regarding a particular procedure under one and the same chapter. As always, safety issues are of the utmost importance and are presented at the start of the instruction manual, along with technical data and dimensional diagrams. The "Installation" chapter contains important information for familiarising yourself with the crane. The chapters on the use of the crane such as handling the crane's different positions with regard to any risk factors must be read before using this product is put into service as well as the safety aspects and its provisions. Be sure to extend the service life of your product by following the information in the "Service/Maintenance" chapter.

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## INTRODUCTION

High demands are placed on manufacturers in respect of conforming to the directives that have been drawn up for the product they produce. This product is covered by the Machinery Directive, and the CE marking indicates that it satisfies the requirements in the Directive. On delivery, it is the incumbent on the dealer to provide operating instructions for the product. Make sure your dealer shows you the warranty certificate and that it is signed if you buy a new product. This must be sent to the manufacturer to ensure that the warranty applies and that all checkpoints are completed before delivery.

### Product presentation

The function and design of the BIGAB Z 6.6 and Z8.0 have been developed specifically for BIGAB hooklift trailers. However, the Z-crane can be used with other trailers with or without an hooklift function. BIGAB Z-crane is a compact and versatile crane suitable for handling bulk materials (gravel, sand) with a grapple bucket and the handling of longer material with a grapple or lifting material with a hook. When the crane is mounted on a BIGAB hooklift trailer it is positioned slightly to the side which extends the range by 50 cm in one direction.

The Z-cranes are designed to be parked in front of the tower in the transport position, so that it does not cause disruption during tipping and exchange. Thanks to an innovative approach in the design of the crane, a great deal of energy has been devoted to increasing visibility from the cab during tipping and exchange. The Z-crane Z6.6 has a reach of 6,6 m with a single telescope of 1,45 m and the Z-crane Z8.8 has a reach of 8.0 m with a single telescope of 2.65 m.

We understand your curiosity and desire to put your BIGAB Z-crane to work, but we ask you to spend a little time reading through this instruction manual before you start using the machine. If not used correctly, the BIGAB Z-crane can cause unwanted operational halts and, in the worst case, it can be dangerous. A little time spent reading this instruction manual could save you both time and money in the future.

For your safety, it is extremely important that you follow the instructions presented in this instruction manual.

Fors MW reserves the right to make changes to equipment and maintenance instructions and to revise its data without prior notice.

*FORS MW products conforms to EC directive 2006/42/EC.*



## 1. SAFETY REGULATIONS

### 1.1 General safety regulations



Carefully read through the instruction manual before using the crane. Important data relating to your particular crane can be found in the crane's technical data. Incorrect usage can result in injuries to you and damage to the crane.

Operating a Z crane requires a high level of expertise, as well as knowledge about the machine you are using. It is important for you to acquire knowledge and to train with regard to the crane's behaviour. Practice the movement pattern and always work with smaller loads until you are completely familiar with the crane.



- If the hydraulic system's overload protection is incorrectly affected or the system's functions are otherwise altered, safety cannot be guaranteed under any circumstances.
- Take care to ensure that nobody is within the safety zone (20 m). The user must have full visual control over the working area.
- It is not permitted to use any form of crane extension without the written consent of the manufacturer. All bodies that can increase the swing/lifting torque are prohibited.

### 1.2 Description of the warning symbols

In the user manual we distinguish between the terms "**DANGER!**", "**WARNING!**", "**NOTE!**" and "**INFORMATION!**". These markings are used to draw the attention of readers to the fact that this is an area that is of particular importance.

**DANGER!** - a description of an imminent hazard that will result in severe injury or death if not avoided and should be limited to the most extreme situations.

**WARNING!** - a very important item of safety information is supplied with this warning symbol. A description of a potentially hazardous situation which if not avoided could result in injury or serious injury or death.

**NOTE!** - the note symbol indicates that the product, process or environment may sustain damage, as well as indicating the risk of minor injuries.

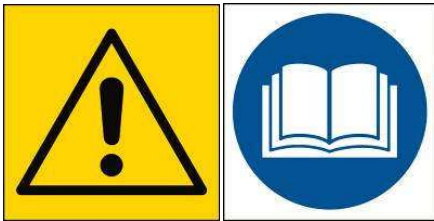
**INFORMATION!** - Important information for use of the product.



Original instruction

### 1.3 Presentation of labels

#### WARNING!



#### Warning triangle and instruction manual label

The crane is supplied with a warning triangle alongside the instruction manual decal in order to reinforce the requirement for the user to read the entire instruction manual carefully before starting to use the crane. Ignoring this can be potentially fatal.

#### INFORMATION!



#### Label for the use of safety equipment

These decals challenge the user to employ appropriate safety equipment in order to avoid injury when using the crane.

#### WARNING!



#### Safety distance 20 metres

This decal shows the importance of taking great care when working within the crane's safety zone. Always keep a close eye on and monitor the crane's safety zone. Carelessness can result in danger to life.

#### WARNING!



#### Warning of suspended load

This decal warns against standing under or in the vicinity of the crane when it is in operation, with or without a load. Carelessness can result in direct danger to life.

#### DANGER!



#### Risk of crushing injuries

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

#### DANGER!



#### Hydraulic fluid under pressure

Hot hydraulic fluid at high pressure levels can occur in the hydraulic system. Take care when connecting, and replace poor quality hoses.



Original instruction

**WARNING!**



**Warning of contact with electrical cable**

Always pay attention when working close to electrical cables. Maintain a safe distance. Bear in mind the risk of unforeseen movements.

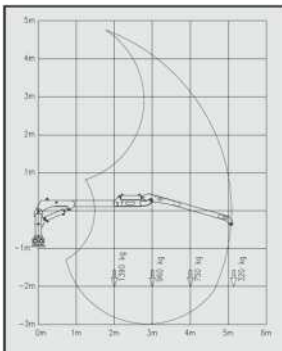
**INFORMATION!**



**Lubrication label**

This label used to show the importance of regular lubrication of the crane. Please also check lubrication intervals from chapter 6. Maintenance.

**INFORMATION!**



**Movement pattern**

Each BIGAB crane is supplied with the crane's movement pattern. Ensure that the crane has this plate and check the data contained on the plate.

**INFORMATION!**



**BIGAB Z-crane ID plate**

ID plate contains crane specific technical data





Original instruction

- Take great care when loading and unloading in the vicinity of power lines. Maintain the safety distance to live cables.
- You must not hand the crane over to an outside individual without first having ensured that this person is familiar with the operating and safety regulations.
- Never stand or walk under suspended loads.
- The crane is not intended for lifting people.

### 1.5 Risk zone

**WARNING!**



It is prohibited for unauthorised parties to be within the crane's risk zone, which is 20 m.

**WARNING!**



Always pay attention when working close to electrical cables. Maintain a safe distance. Bear in mind the risk of unforeseen movements. If the crane should come into contact with a power line for any reason:

- Warn people in the vicinity of the crane not to touch the machine.
- Do not touch any metal parts.
- If possible remove the arm system from live cables.

### 1.6 Instructions for an emergency stop

Risk of overturning

- When there is a risk of overturning, immediately lower the lift arm/outer arm by moving respective control levers to the lowering position.
- Keep hold of the lever until the load is on the ground. Do not interrupt the lowering movement, as the risk of overturning will increase if the load should suddenly stop.
- If the towing vehicle overturns, follow the instructions found in the cab. Do not jump out of the cab. There is a risk that you might end up under the falling load or under the overturning towing vehicle or crane.

**Note:** Even if the support legs have been lowered to the ground, the risk of overturning is always greater when the trailer is empty or only has a small load. You must therefore take particular care as regards stability at such times.





### 1.7 Hose ruptures

In the event of a loss of pressure in the hydraulic fluid or in the event of a rupture in the hydraulic hoses or pipes running between the controls and the crane, you must switch off the towing vehicle's engine and lower the load to the ground immediately. Disconnect the hydraulic flow. Repair the rupture. Take care to clean up any oil that has run down to the ground. Hand in waste to an appropriate waste management facility.

If the rupture is in the main pressure hose from the towing vehicle to the controls, you must stop the oil flow by disconnecting the lever control for the towing vehicle's hydraulic outlet or by switching off the towing vehicle's engine with the stop button. Also take care to clean up any oil that has run down to the ground.

### 1.8 Hydraulic system

**Note:** Always read through the relevant safety instructions when connecting and using the crane's hydraulics. All hydraulic hoses should be considered to be pressurised.



The crane's hydraulic valves are supplied with both main pressure limiters and choke valves to prevent the crane from being overloaded. No changes may be made on the main pressure limiters or choke valves to increase the crane's lifting/ slewing force. Should this happen, they must be handled by authorized service personnel.

Do not start the towing vehicle without having disconnected the hydraulic pressure to the crane.

Pinpoint the fault before carrying out repair work, so that you do not open the hydraulic system unnecessarily. If possible, engage trained service personnel for any work on the machine's hydraulic functions.

### 1.9 Driving on public roads

Follow these instructions to reduce the risk of accidents. The manufacturer and dealer are not responsible for any damage in the event of failure to comply with these instructions. The equipment may only be transported if the crane is in the parked position. See handling crane for more detailed information about the parked position.

Ensure that none of the additional equipment connected to the crane can cause accidents during transport.



Original instruction

### Control is important

You must always maintain control of the unit in all situations.

Before driving, check that nobody is in the vicinity of the machine and that your visibility is unrestricted.

**Note:** Observe the specified safety distance to electrical cables when you are in the vicinity of such cables. Bear in mind the height of the machine when driving under crossings, bridges, viaducts and the like.

### Rules are there to be followed.

#### **WARNING!**



It is important for you to adapt your speed to the driving situation. Drive carefully on sideways inclines. The same applies on slopes. Risk of overturning.

Traffic rules are there to be followed. Comply with the applicable legislation.

A towing vehicle with a trailer has a longer braking distance than other vehicles. Be aware of the risk of skidding, and look out for irregularities in the road surface.

**Note:** Firmly secure the load and other loose goods.



## 2. SAFETY DEVICES

### 2.1 Counter balance valves

BIGAB Z 6.6 and Z 8.0 are equipped with counter balance valves on the four main hydraulic cylinders. The counter balance valves prevent uncontrolled cylinder movements in the event of hose rupture or other type of pressure drop. In the event of such a situation, the crane must be immediately taken out of service and be repaired before operation of the crane is continued.



*Counter balance valve for the telescopic cylinder.*



*Counter balance valve for the outer cylinders.*



*Counter balance valve for the lift cylinder.*



*Counter balance valve for the turning cylinders.*



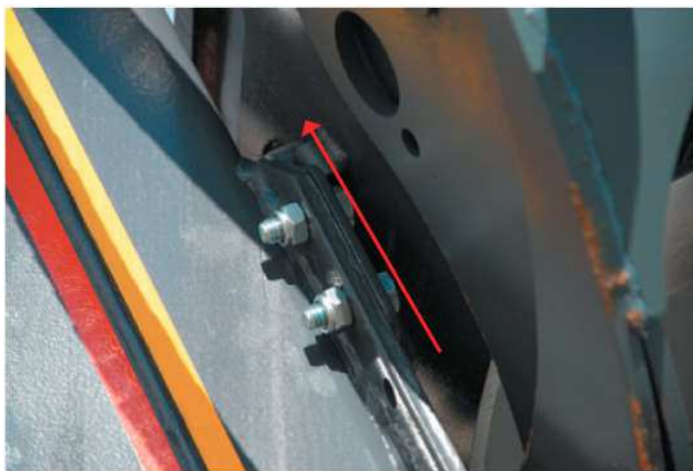
*Counter balance valve for the support leg cylinders.*



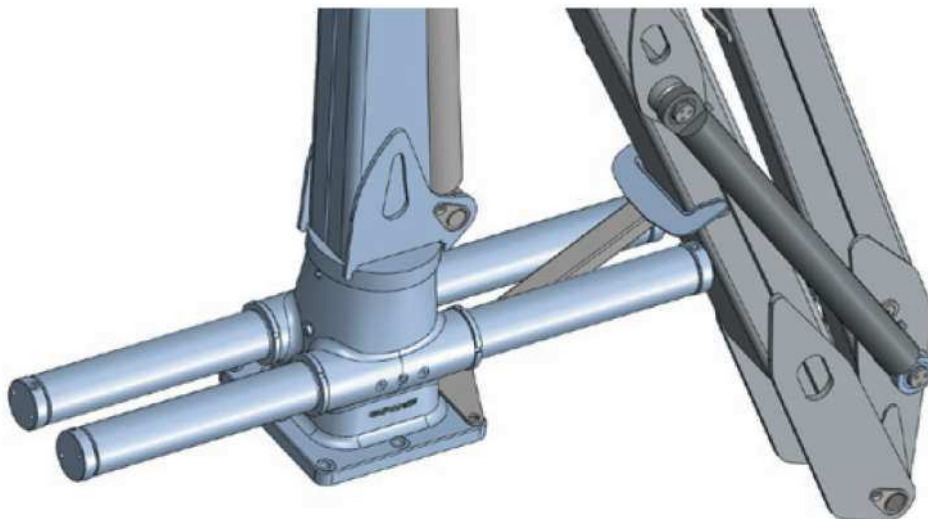
Original instruction



*Make sure that the telescopic arm's locking hooks enter the holder on the lift arm*



*Make sure that the lock for the bucket/grapple engages with the lift arm*



*Make sure that the lift arm is lowered in the cradle*

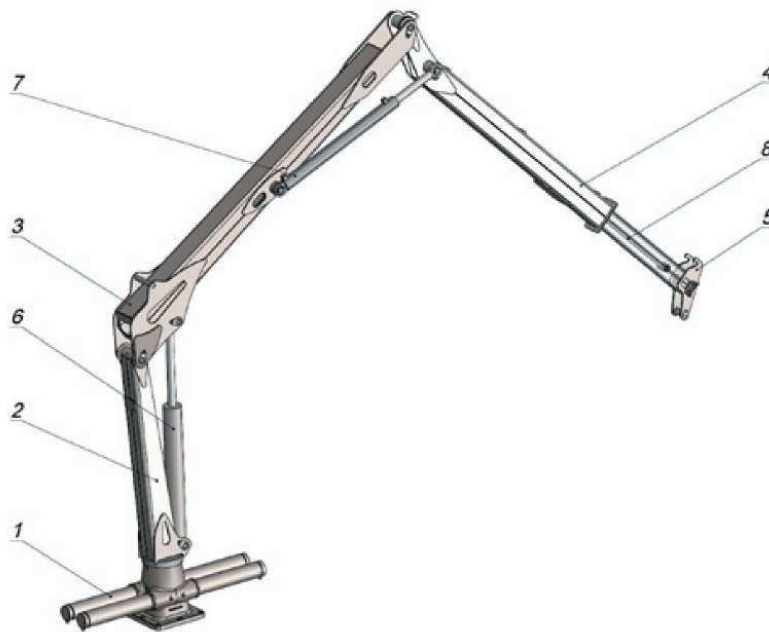


### 3. GENERAL DESCRIPTION

#### 3.1 Principal components and functional devices

The Z crane is designed to handle bulk materials with a grapple bucket and the handling of longer material with a grapple or lifting material with a hook. The crane must not be used with a picker cage or in any other way to lift people. It must not be used to strike or push with. Also it is not designed for equipment that creates vibration (hammers, vibrators, rapidly rotating blades or cutting equipment).

The Z crane comprises the following principal components and functional devices.



No	Component
1	Crane base/Turntable housing
2	Pillar
3	Lift arm
4	Hook arm/Outer arm
5	Extension/Telescope
6	Lift cylinder
7	Hook arm cylinder
8	Telescopic cylinder



### 3.2 Counter balance valves

BIGAB Z 6.6 and Z 8.0 are equipped with counter balance valves on the four main hydraulic cylinders. The counter balance valves prevent uncontrolled cylinder movements in the event of hose rupture or other type of pressure drop. In the event of such a situation, the crane must be immediately taken out of service and be repaired before operation of the crane is continued. For a description and picture of each counter balance valve, see chapter - safety devices.

### 3.3 Technical specification

Technical data	Z6.6	Z8.0
Lift capacity, net (kNm)	48	47
Slewing torque (kNm)	16	16
Slewing angle (degrees)	380	380
Reach (m)	6,6	8,0
Telescopic stroke length (m)	1,45	2,65
Recommended flow (l/min)	50 - 80	50 – 80
Working pressure (bar)	190	190
Weight incl. 0.20 grapple/Weight of crane (kg)	952/820	1000/870
Weight incl. 0.24 grapple/Weight of crane (kg)	990/820	1040/870
Lifting force at full length (kg) (excl. grapple and rotator)	750	590

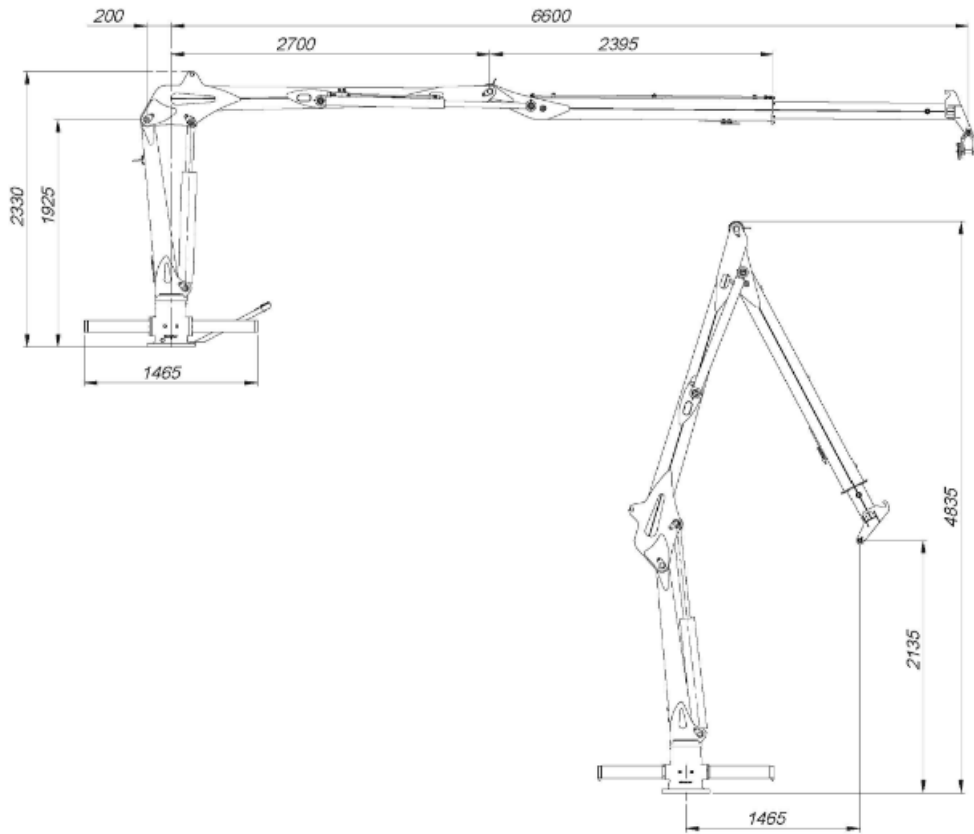
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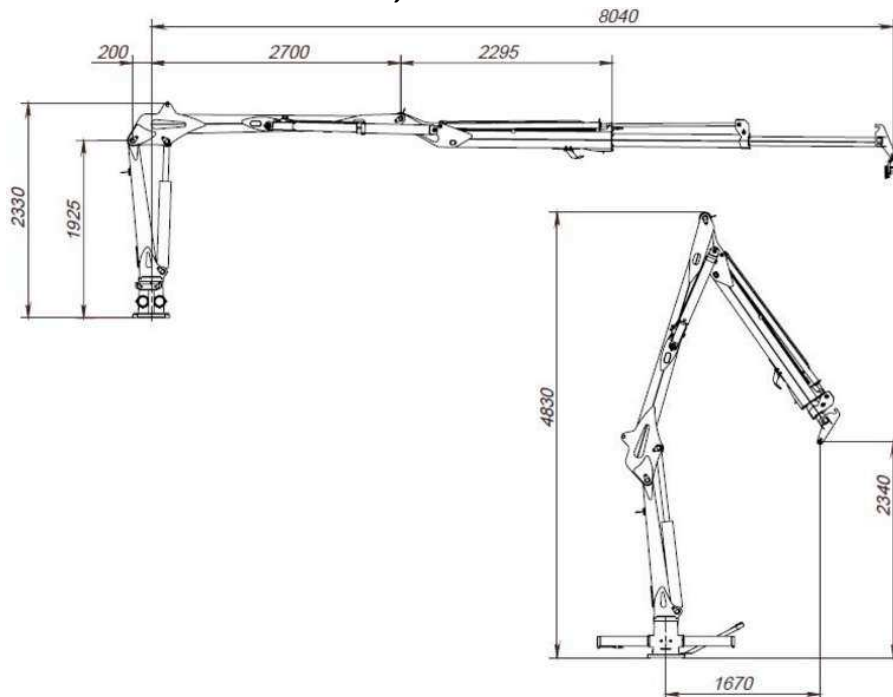
Original instruction

### 3.4 Dimensional diagram

#### *Z6,6 dimensions*



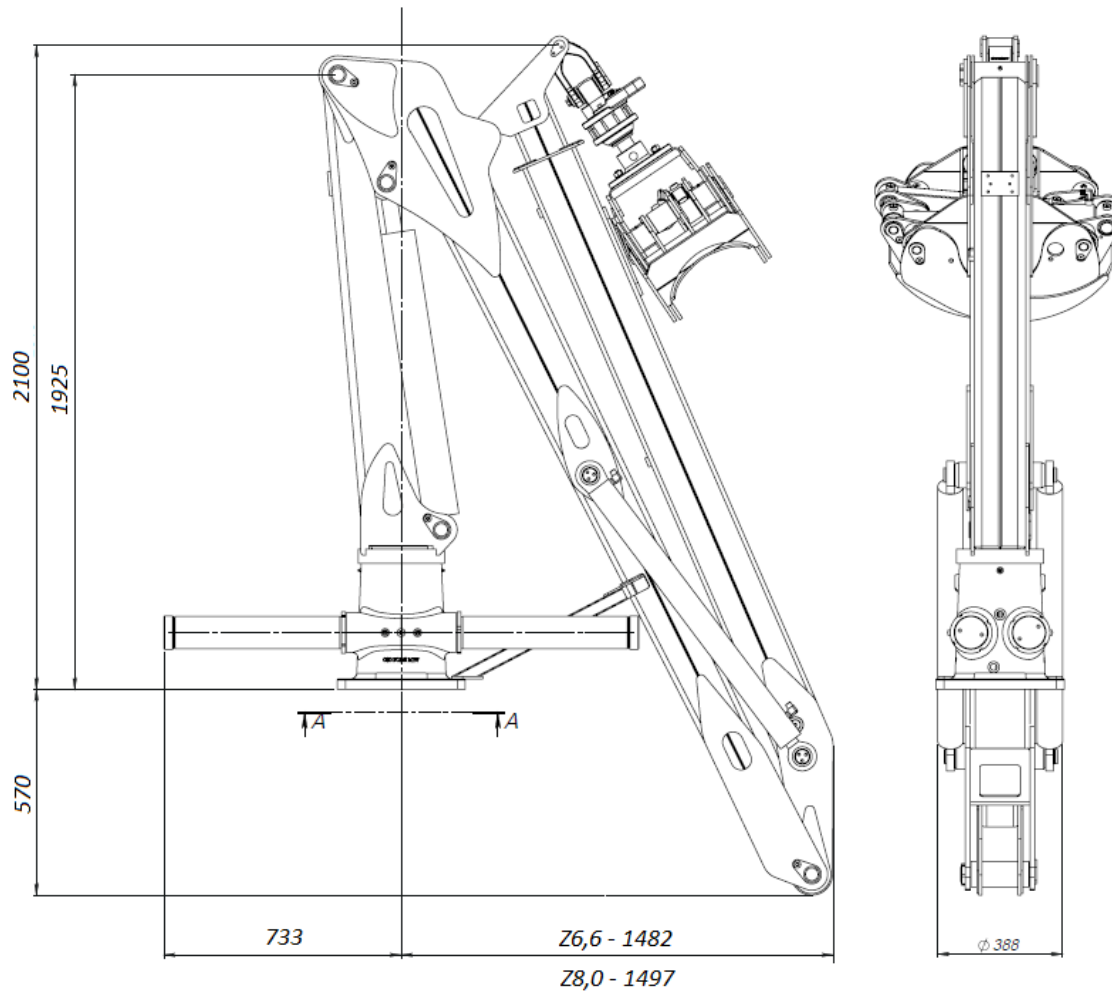
#### *Z8,0 dimensions*



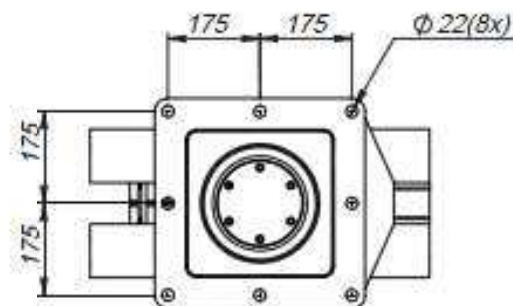


Original instruction

### 3.5 Crane transport position



#### SECTION A-A

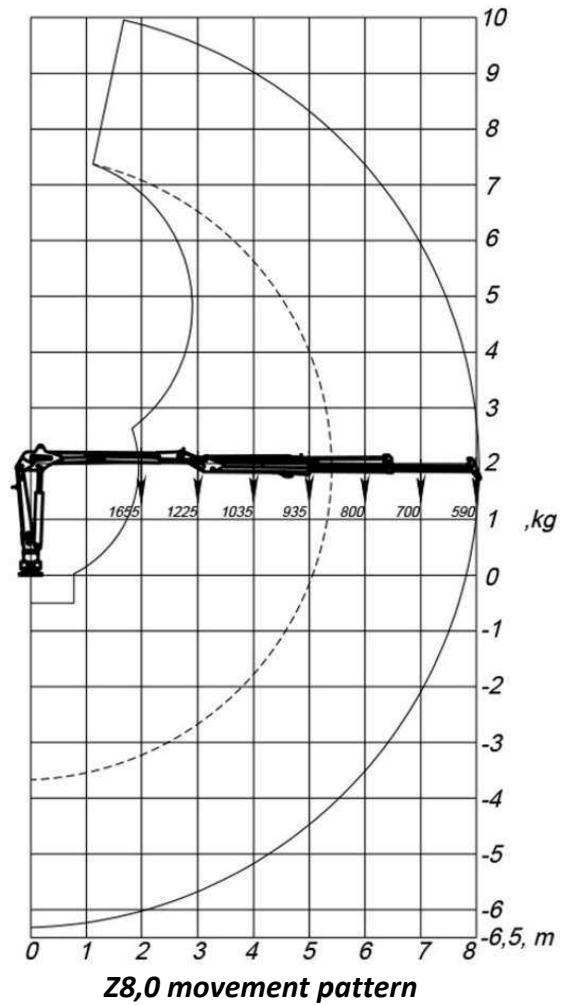
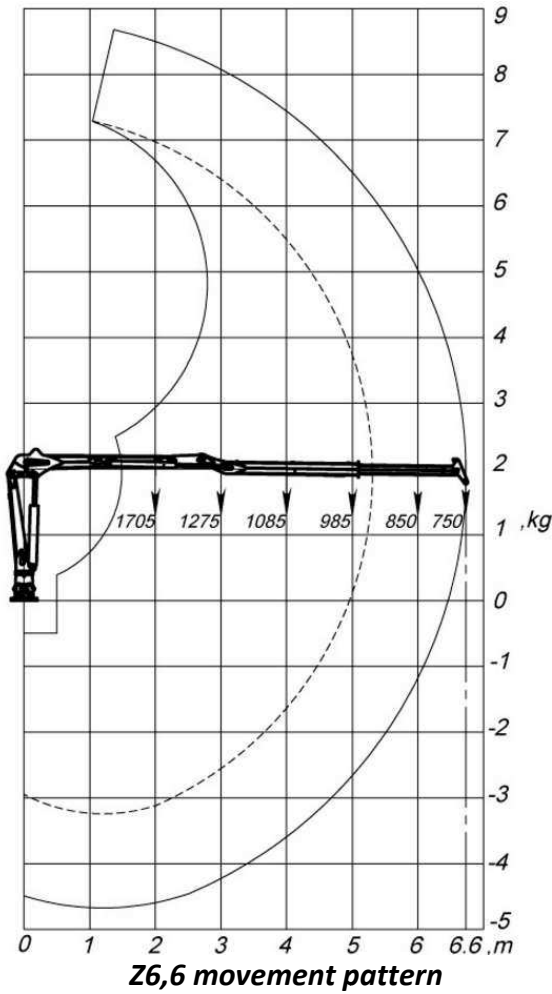






Original instruction

**3.6 Movement pattern**





## 4. INSTALLATION



It is the responsibility of the user to inform himself regarding the use of the produkt and to follow the instructions carefully.

It is also the responsibility of the user to ensure that attachments and connections to the vehicle are designed and adapted in such a way that they satisfy the crane's technical data.

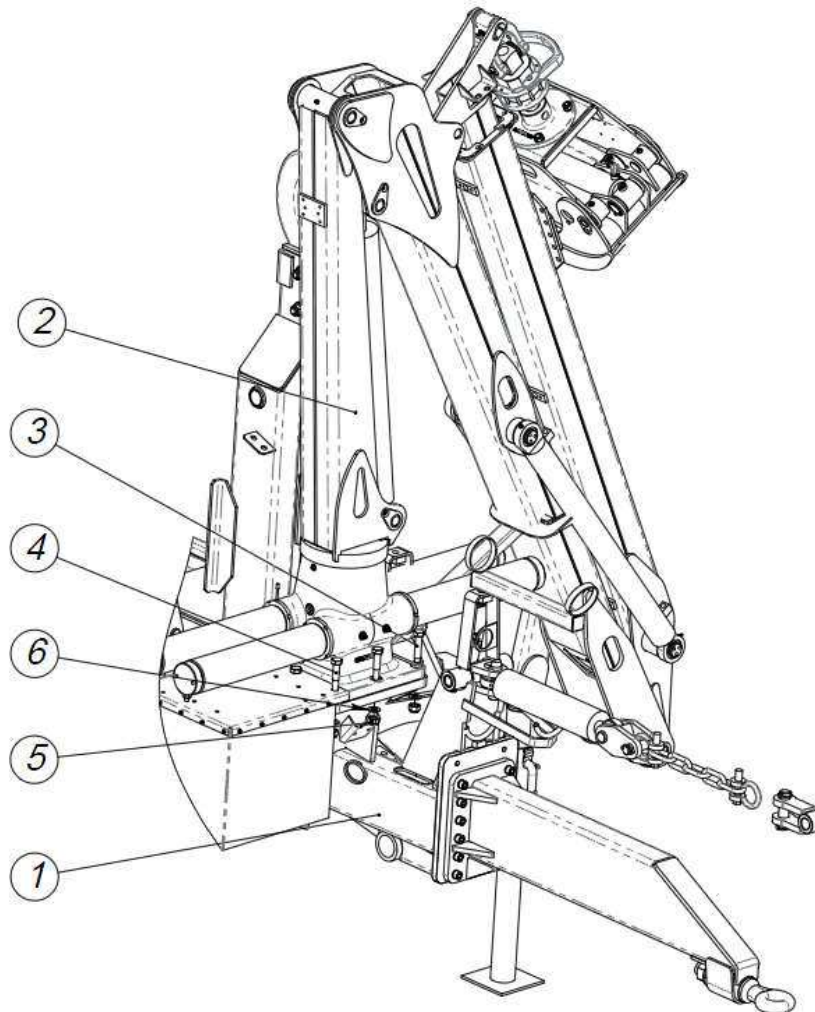
It is the user's responsibility to inform themselves about the height and width of the equipment that the Z crane is mounted on. As this can vary from one set of equipment to another it is the responsibility of the user.

It is the responsibility of the user, for example when installing a loose crane on equipment other than a BIGAB trailer, to ensure that the vehicle has the necessary capacity to cope with the lifting and slewing torques and the stability that the crane is designed to handle.

### 4.1 Installing the crane on a trailer

The crane is assembled on the mounting plate as per the instructions. Lubricate the bolts a little and tighten them in stages. Tightening takes place according to the tightening torques in the maintenance/service chapter. Check that the machine's hydraulic valve is correctly equipped with regard to main pressure limiters and choke valves. See the hydraulics chart. The hydraulic system must be equipped with a return filter and in some instances even a pressure filter. Check that the hydraulic system is of the circulation pumping type and that it has sufficient capacity. The standard valve located on BIGAB cranes is designed for a circulation pumping system. Finally check the oil level in the turntable housing with the aid of the filling plug. For the location see the maintenance/service chapter.

(1) Lower the crane (2) onto the trailer's mounting plate make sure the mounting plate is clean. Bolt the crane with 5 bolts grade M20 (4), 3 bolts M 20 (3) and 8 x M20 Nylock lock nuts (5).



## 4.2 Storage

It is not advisable to keep the crane in a cold and/or humid environment for a longer period. If the crane is not going to be used for an extended period of time, it is important to clean it carefully. Note that high-pressure washing is not recommended. After washing, all the lubricating points must immediately be lubricated. When lubricating with new grease, it forces the water away from the surfaces and thereby counteracts corrosion and wear.

Store the crane under a roof. If this is not possible, the crane must be covered with a tarpaulin.

Set the crane in transport mode.

During storage, the crane's angle of incline must not exceed 25° in order to prevent oil running into the turntable housing.

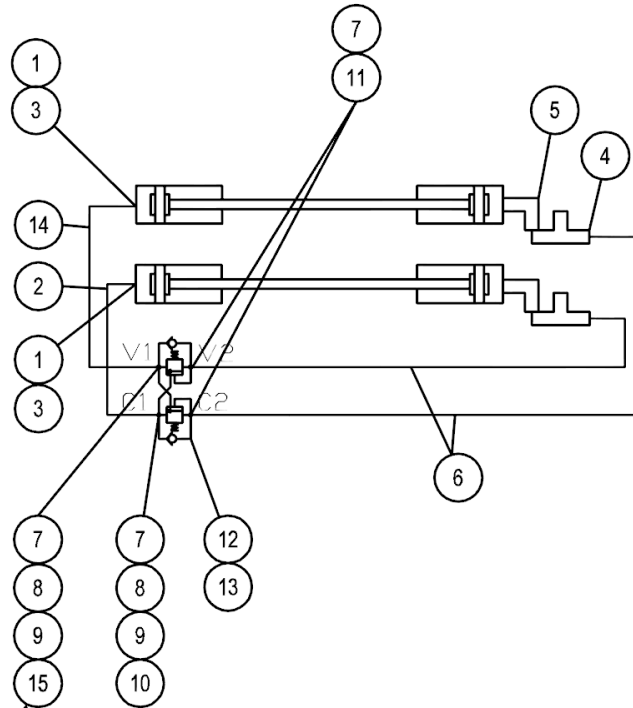
Support the crane to ensure it will not overturn during storage.

**Note: A crane in storage is not a play area for children.**



### 4.3 Hydraulic schemes

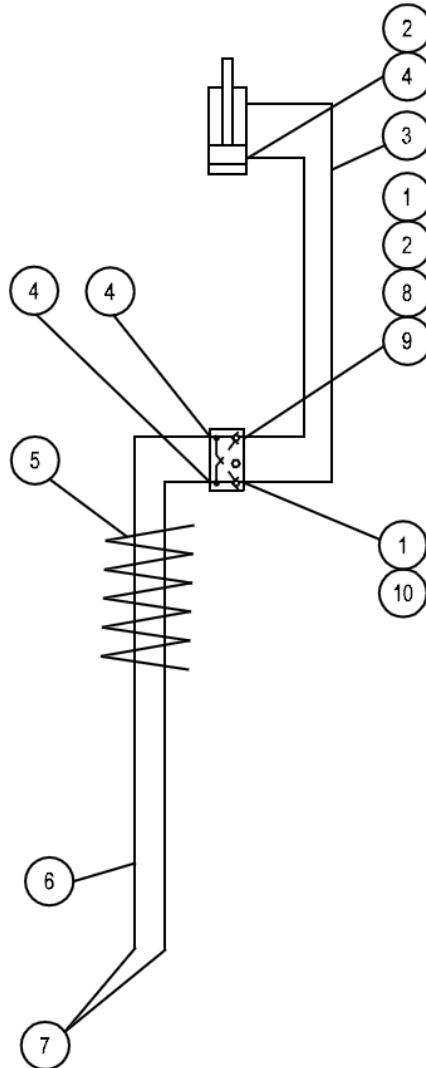
#### Hydraulic scheme of Turnhouse for Z6,6 and Z8,0 (FMWH00008-01)



No.	Description	Qty.
1	Rubber seal	12
2	Banjo pipe	1
3	Banjo bolt	2
4	T-nipple	2
5	Angle nipple	2
6	H-hose	2
7	Rubber seal	4
8	Nut	2
9	Cutting ring	2
10	Straight fitting	1
11	Straight nipple	2
12	Valve body - Counterbalance double	1
13	Counterbalance valve size 10	2
14	Banjo pipe	1
15	Nipple machining	1



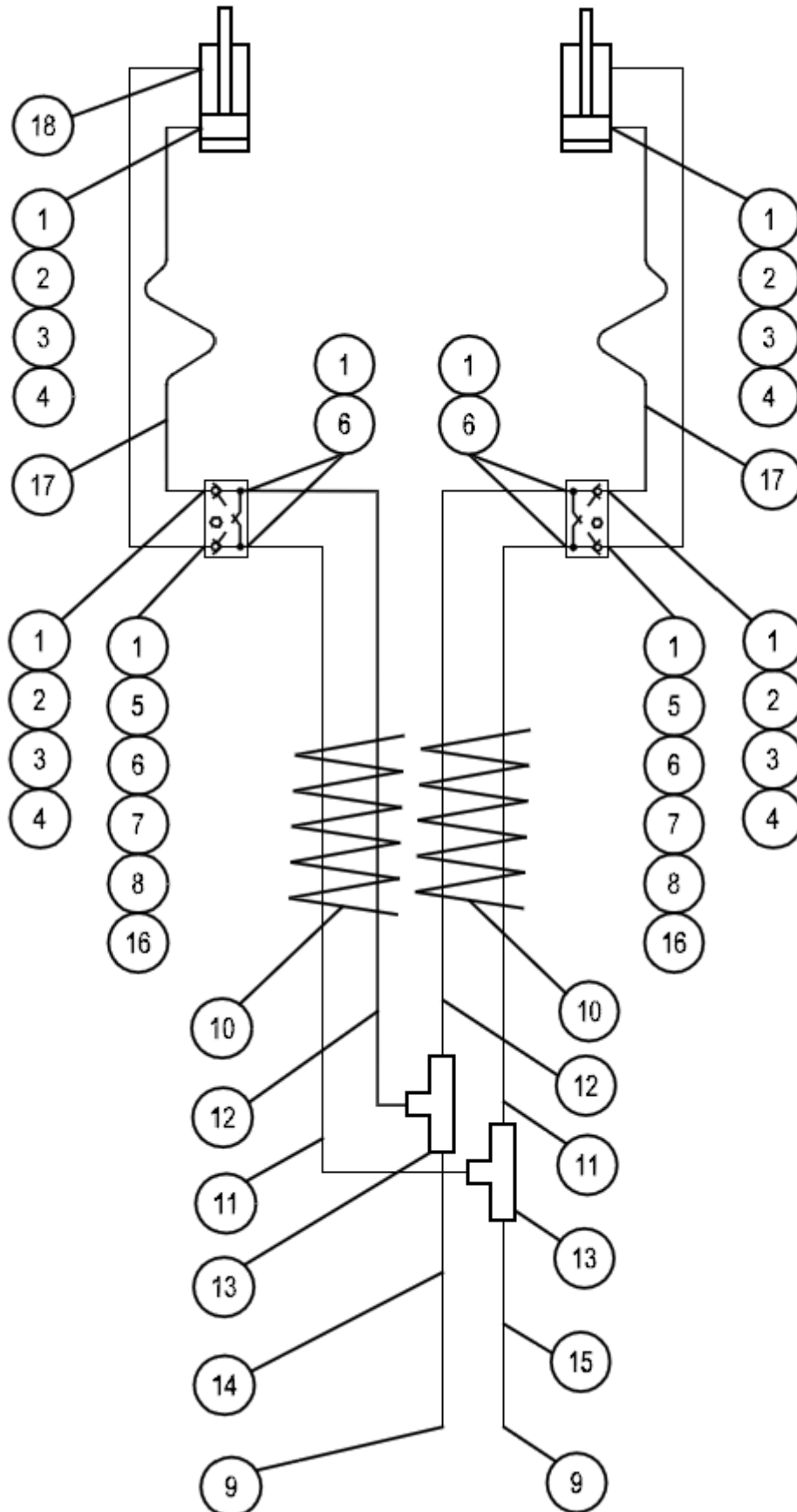
**Hydraulic scheme of Lift arm for Z6,6 and Z8,0 (FMWH00008-02)**



No.	Description	Qty.
1	Rubber seal	2
2	Straight nipple	1
3	H-hose	1
4	Angle nipple	2
5	Spiro pipe	1,3
6	H-hose	2
7	Cartridge nipple	2
8	Valve body - Counterbalance single	1
9	Counterbalance valve size 10	1
10	Straight nipple	1



Hydraulic scheme of Outer arm for Z6,6 and Z8,0 (FMWH00008-03)



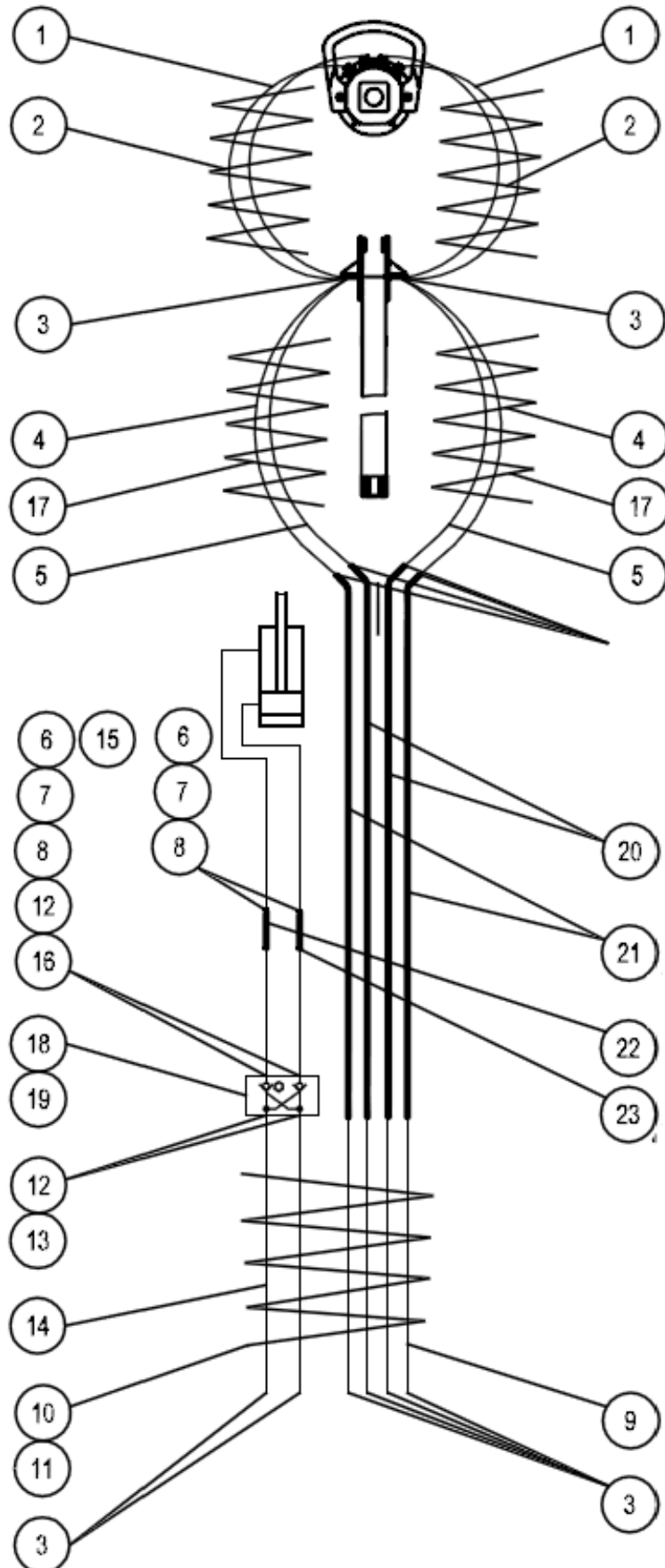


Original instruction

No.	Description	Qty.
1	Rubber seal	12
2	Straight fitting	2
3	Cutting ring	4
4	Nut	4
5	Insert plug	2
6	Straight nipple	6
7	Straight nipple	2
8	Valve body - Counterbalance double	2
9	Cartridge nipple	2
10	Spiro pipe	0,8
11	H-hose	2
12	H-hose	2
13	T-nipple	2
14	H-hose	1
15	H-hose	1
16	Counterbalance valve size 08	4
17	Hydraulic pipe	2
18	Nipple machining	2



Hydraulic scheme of Extension for Z6,6 (FMWH00008-04)





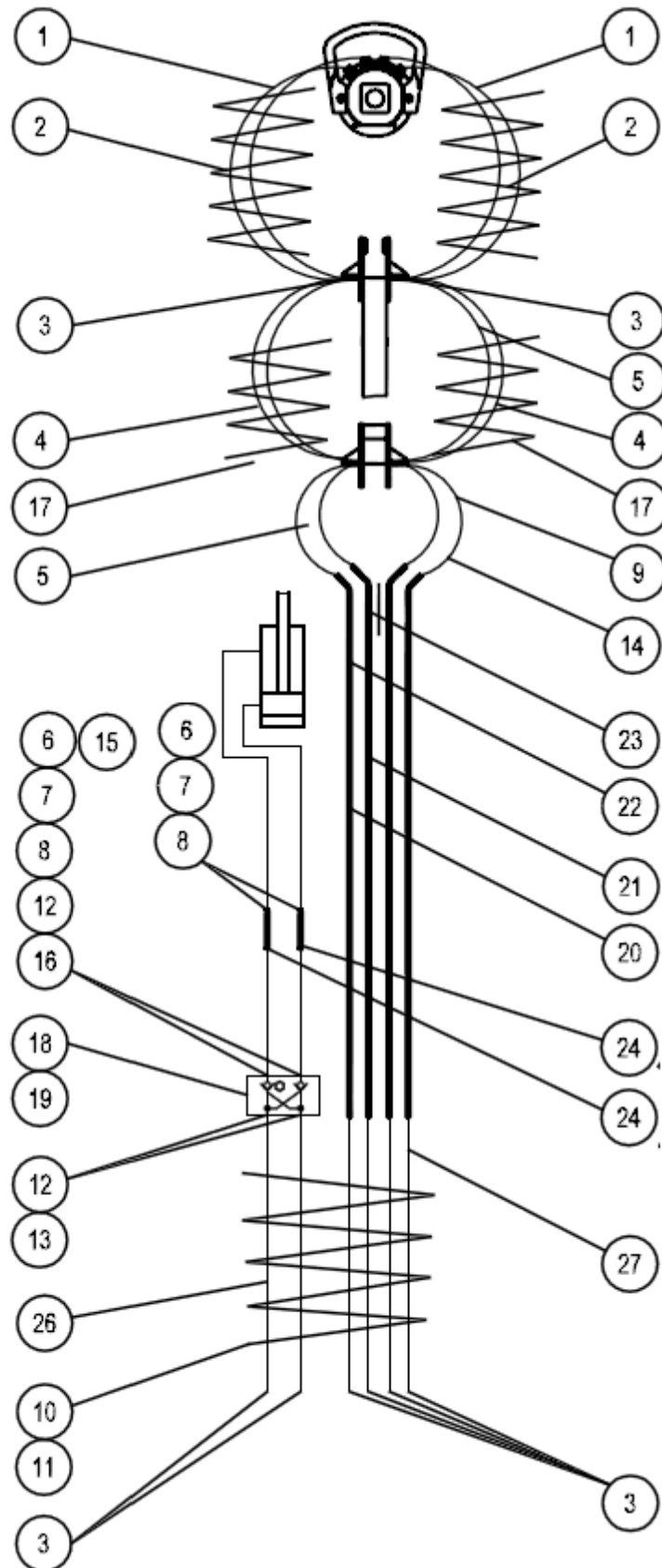


Original instruction

No.	Description	Qty.
1	H-hose	4
2	Spiro pipe	1,9
3	Cartridge nipple	10
4	H-hose	2
5	H-hose	2
6	Straight fitting	3
7	Cutting ring	4
8	Nut	4
9	H-hose	4
10	Spiro pipe	1,2
11	Textile hose protection	1,4
12	Rubber seal	4
13	Straight nipple	2
14	H-hose	2
15	Nipple machining	1
16	Straight nipple	2
17	Spiro pipe	3,1
18	Valve body - Counterbalance double	1
19	Counterbalance valve size 08	2
20	Hydraulic pipe	2
21	Hydraulic pipe	2
22	Telescopic hydraulic pipe	1
23	Telescopic hydraulic pipe	1



Hydraulic scheme of Extension for Z8,0 (FMWH00008-05)





Original instruction

No.	Description	Qty.
1	H-hose	4
2	Spiro pipe	1,9
3	Cartridge nipple	8
4	H-hose	2
5	H-hose	2
6	Straight fitting	3
7	Cutting ring	4
8	Nut	4
9	H-hose	2
10	Spiro pipe	1,2
11	Textile hose protection	1,4
12	Rubber seal	4
13	Straight nipple	2
14	H-hose	2
15	Nipple machining	1
16	Straight nipple	2
17	Spiro pipe	6
18	Valve body - Counterbalance double	1
19	Counterbalance valve size 08	2
20	Hydraulic pipe	1
21	Hydraulic pipe	1
22	Telescopic hydraulic pipe	1
23	Hydraulic pipe	1
24	Telescopic hydraulic pipe	1
25	Telescopic hydraulic pipe	1
26	H-hose	2
27	H-hose	4



## 5. OPERATION



Carefully read through the instruction manual before using the crane. Important data relating to your particular crane can be found in the crane's technical data. Incorrect usage can result in injuries to you and damage to the crane.

### 5.1 Safety aspects



**WARNING!** It is prohibited for unauthorised parties to be within the machine's risk zone, which is 20 m.

Note: Remember that the stability of the machinery is impaired when operating on sloping or soft ground.

Always use the towing vehicle's parking brake when loading/unloading. In some cases it may also be necessary to add chocks in front/behind the wheels.

Always use the support legs. Before loading/unloading, you must ensure that the machinery is on solid ground.

Do not use the support legs to lift the trailer. Only use the support legs to stabilise.

Avoid loading on slopes, although if you are forced to do so, take great care. On sloping terrain, take on smaller loads than normal.

Take a firm grip of the load and ensure that this grip is always as close as possible to the centre of gravity. Take particular care when swinging a heavy load.

Do not lift higher than is necessary in order to be able to move the load freely in and out.

Make sure you have sufficient lighting when working.



## 5.2 Test operating the crane

When taking the crane into use for the first time or after it has been standing for an extended period, it is important to go through this checklist.

The turning cylinders must be checked on delivery or after an extended period of downtime for the crane. If the turning cylinders have not been topped up with oil, the crane arm can swing out of control, for example when the machine is on an incline.

The crane must always be lubricated according to the schedule in the maintenance section.

Bolts must always be checked and if necessary tightened. See the tightening torques in the service/maintenance chapter.

The crane must always be inspected with regard to any cracks or damage to the pillar, arm and cylinders.

Before connecting the hydraulic system, check that the control levers are in neutral. Check that the pressure/return hoses are correctly connected.

If necessary, top up with hydraulic fluid to the correct level.



### **IMPORTANT!**

The hydraulic system must be bled before using the crane after a long period of downtime and/or after work on the hydraulic system or before the crane is to be used for the first time.

Run each cylinder slowly twice to their end positions and hold the valve in its end position for a few seconds. You can hear how the air is cleared from the pressure limiting valve. This is important as the piston's seals may otherwise be destroyed if the cylinder is used at full force.

## 5.3 Description of functions

**Note:** Effective, safe operation presupposes good knowledge of cranes and extensive practical experience. Each crane model has its own specific movements, speeds and properties. For this reason, even an experienced crane operator should acquaint himself with the properties of a new crane before starting work.

The cranes in BIGAB's range are hydraulically operated, which means that all their functions and movements are performed by hydraulic components, such as cylinders and rotators. The hydraulic system is an open system. This means that the oil is drawn up by a hydraulic pump from a tank and then routed under high pressure out to the relevant consumer, e.g. a rotator. Oil is then returned to the tank.



Original instruction

All the functions that are regulated by hydraulic valves are actuated by the user via levers. Using the controls, the user governs the extent of the flow reaching a particular cylinder in order to achieve the desired movement. Hydraulic pressure is supplied either via the towing vehicle's hydraulic outlet or from a separate pump connected to the towing vehicle's power take-off.

When using the hydraulic functions, you should use them gently. Do not operate them at full speed from one position to the next. This can otherwise cause damage to hydraulic seals. Ensure that you always keep an eye on the load.

#### 5.4 Working in extreme conditions

The recommended ambient working temperature for this machine is  $-20^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ . Note that when working in low or high temperatures, the level of wear and stress on seals and hoses increases. The durability of the steel is also impaired, and cracks can occur.

When working under extreme conditions, work with smaller loads than normal in order to prevent damage. When working in cold conditions, always allow the hydraulic fluid to circulate freely for a number of minutes. Then operate each function a number of times to allow seals and hoses to soften up before applying full pressure. During extremely warm periods, take care with the temperature of the oil. Temperatures of above  $80^{\circ}\text{C}$  destroy the oil's properties and damage seals and hoses.





Original instruction

The two support legs must always be lowered down onto solid ground before the crane is used. If the ground is wet or soft, additional material must be placed under the legs to ensure stability and avoid the risk of the legs sinking into the ground and causing a risk of the crane and trailer leaning.

It is important to check the support legs and adjust the level once the crane has been operated a few times to see so that they have not dropped or moved during the operation of the crane. The weight of the trailer must not be supported only by the support legs. Adjust the support legs as the load increases on the trailer.

A tractor or other towing vehicle must be connected to the trailer to ensure the best possible stability. Use the parking brake on the towing vehicle so that the equipment does not move when using the crane.

A container on the trailer also gives more mass and weight on the trailer when operating the crane. The pictures in this manual do not show a tractor/towing vehicle. This is only for demonstration purposes as it enables a better picture of the handling of the crane.

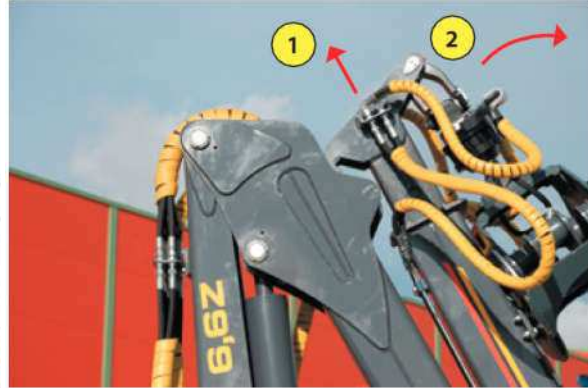
When the crane is extended from its parking position (transport position) exercise care to make sure there is nothing that can obstruct the crane movement.



Original instruction

Step 1

The first movement means that you should start by releasing the telescopic arm from the lift arm. The extension/telescope must be raised at least 10-15 cm so that you can see the hooks are free from the axle they are suspended on.



Step 2

The second movement means that you release the grapple/bucket from the outer arm. Raise the extension/telescope 10-15 cm so that you can see that the grapple/bucket has been disengaged from the holder on the outer arm.



Step 3

The third movement, and a very critical one, is to move over the outer arm from the parking side to the operational side. This must be done in a controlled and careful manner so as not to damage the two outer cylinders on the lift arm. The handling is the same for all Z cranes on the market regardless of brand.

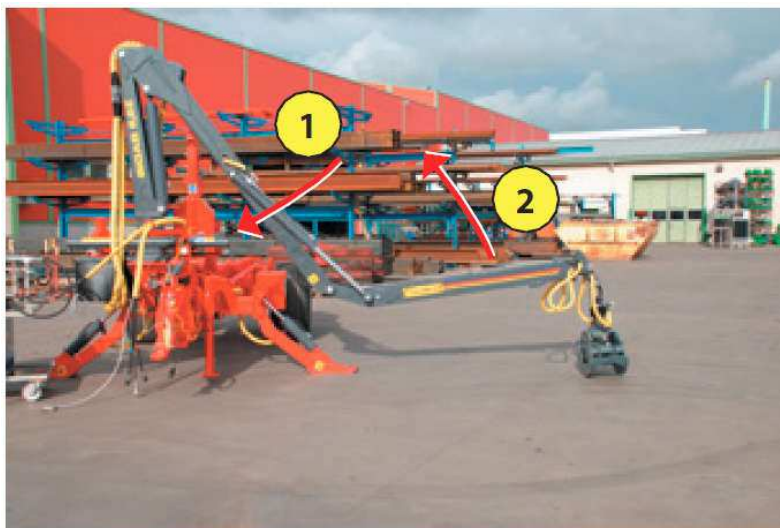




Original instruction

*This is the way to move forward:*

**IMPORTANT!** Raise the lift arm to move it from the parking position, approximately 60-90 cm. Fold down the outer arm carefully so that the grapple/bucket rests on the ground without the outer cylinders passing the zero point.



When the grapple/bucket rests firmly on the ground, lift the lift arm upwards at the same time as you run out the outer cylinders so that these pass the zero point. If necessary, adjust the lift arm a little to relieve the pressure on the joint between the main boom and the lift arm.

When the outer arm is “hanging” the Z crane is then ready for use. When the crane needs to be parked in the parking position, the perform the movements in the reverse order.

If, during this operation, the outer arm does not return to its location in the parking position, lower the outer arm (1) so that it is further away from the zero point and to increase the torque and then raise the outer arm (2).

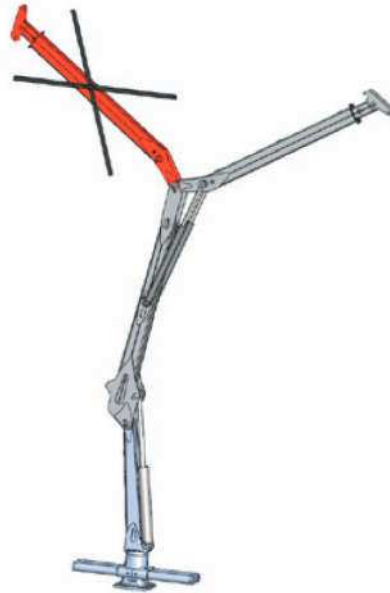
**WARNING!**



The outer arm must always be moved to point zero before any work or service/ lubrication is performed. To move the crane as the red outer arm shows are highly dangerous and forbidden.



Original instruction



**WARNING!**



Failure to comply with these instructions may damage both the outer cylinders. This is because the safety valves are not capable of handling the sudden load and the torque generated when the outer arm slews in an uncontrolled manner over the zero point without any support beneath it. To turn the outer arm from the position shown without the support of the lift arm may damage the cylinders and is misuse of the equipment.



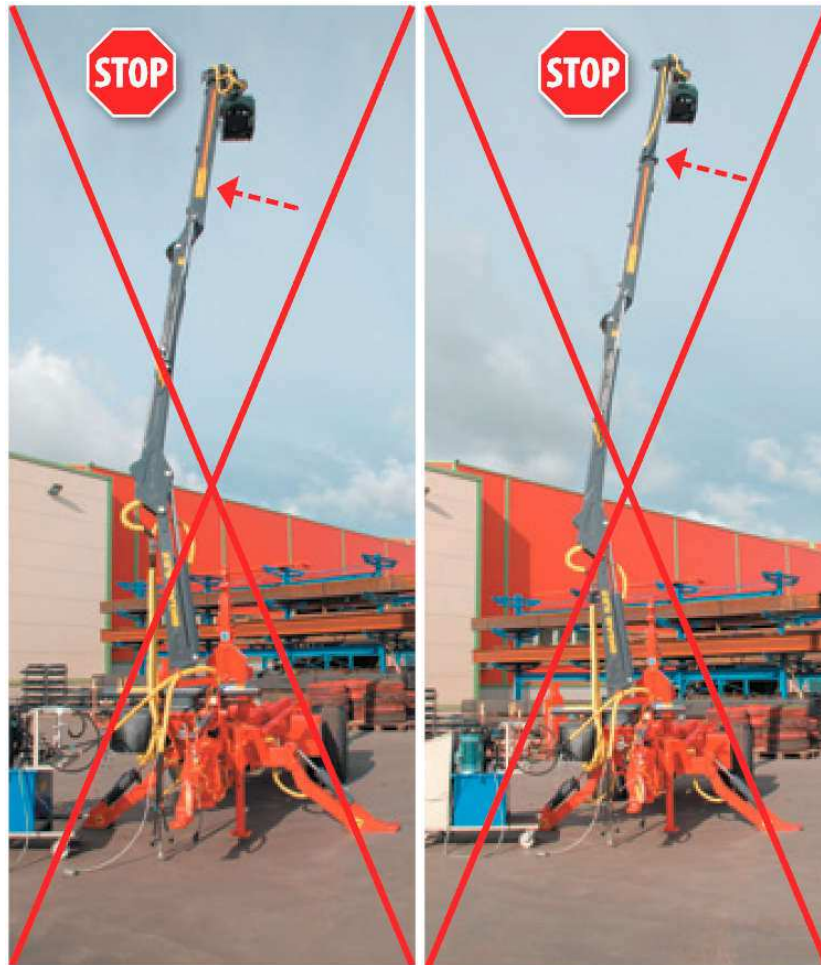
The movement pattern of the crane and its geometry make it possible to operate the crane at very high heights. It is a critical moment in the handling of the crane, to raise the lift arm to the maximum height and simultaneously raise the outer arm to its highest position by fully running out the outer cylinders (to the zero point) see the pictures below.

**WARNING!**



Under no circumstances is it permitted to operate the crane in this position as the outer arm/telescopic arm can risk moving beyond the zero point resulting in a shift in the balance of the crane and trailer. Furthermore, the cylinders on the lift arm may be damaged due to the decline of the lift arm over the zero position to the parking position.

Never pass the zero point if you do not have support under the lift arm/grapple/bucket on the ground to prevent uncontrolled operation of the crane.



### 5.5 Running-in lever movements

**Note:** The warranty is invalidated if a fault arises due to incorrect operation.

If the crane is supplied with radio control, refer to the enclosed instructions for the radio control.

Practice the control lever panel's movements. Run through each function without a load.

The valves are proportionally controlled, which means that the speed of the function's movement is directly in proportion to the lever movement. The exceptions to this are the operation of the grapple and support legs on the joystick control, which have electrical on/off-type thumb buttons.

Practice operating several functions at the same time. Note that the movements become slower when several functions are operated simultaneously.

Avoid sudden movements by moving the levers gently and steadily.

Adapt the oil flow by reducing the tractor's revs. This action helps to avoid excessively violent movements and prevents unnecessary strains, thereby providing the user with better control over the work.



Original instruction

When you feel that you have mastered the crane and its functions, you can increase the rate of work. However, remember that rapid movements and excessive loads increase damage to the machine.

## 5.6 Start/stop instructions

### Start

Connect the hydraulic system. In cold weather, wait for 5-10 minutes until the oil has reached the correct working temperature.

Run through all the crane's functions.

### Stop

Park the crane in the parking position. Disconnect the hydraulic system.

## 5.7 Controls

### Radio control

For more information about radio control see the enclosed instructions from the manufacturer.



Original instruction

### 5.8 Control lever panel movements



Support legs  
down left



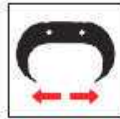
Grapple close



Slew  
left



Support legs  
down right



Grapple open



Slew  
right



Support legs up  
right



Rotator  
anti-clockwise



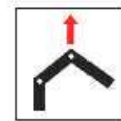
Lift arm down



Support legs up  
left



Rotator  
clockwise



Lift arm up



Telescope out



Outer arm down  
(in)

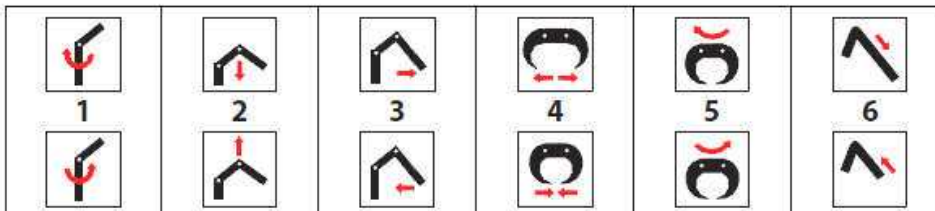


Telescope in

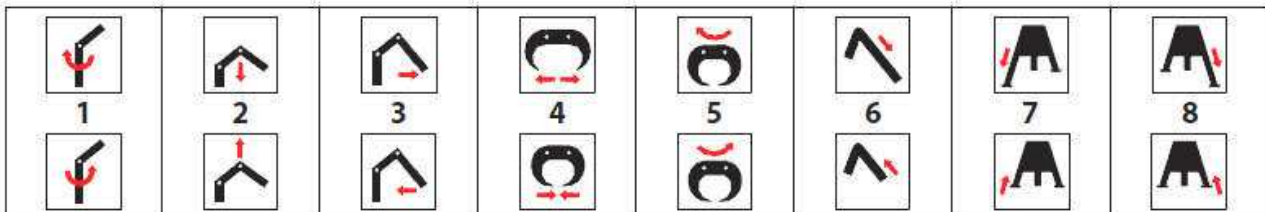


Outer arm up  
(out)

### 6 lever std.



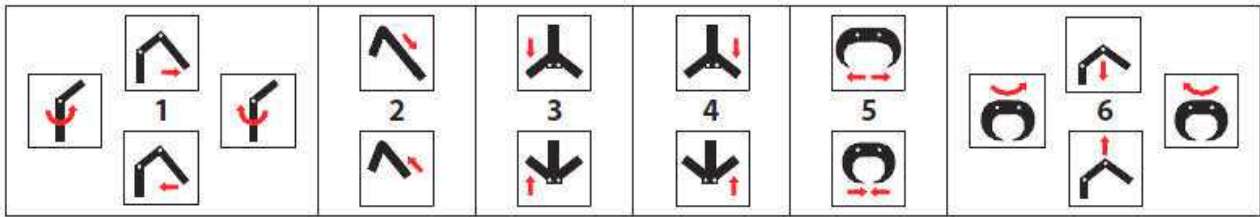
### 8 lever std.



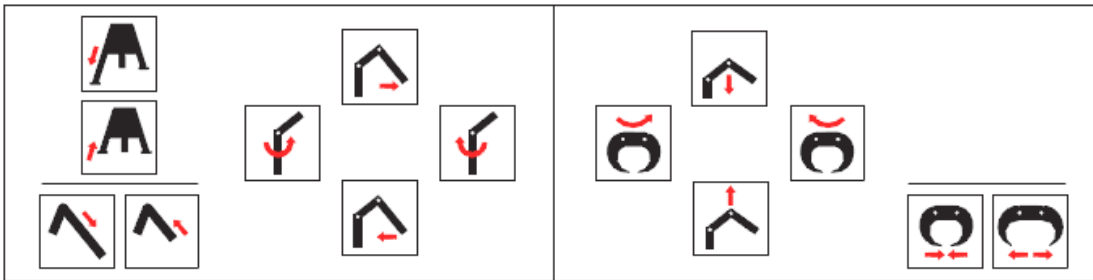


Original instruction

**2+4 mech. 2-lever**



**2+4 Electrical ON-OFF**





## 6. MAINTENANCE

### 6.1 Maintenance procedures

**IMPORTANT!**

Read the instructions before starting to service the machine. Do not attempt to carry out work on or to service the machine until you are completely familiar with and understand the instructions. Read and follow the instructions before each service. Adhere to the recommended service and lubrication intervals.

Service and maintenance must be carried out regularly in order to guarantee problem-free, economical use. After each repair the crane must be inspected and tested.

**Note:** Failure to comply with the Fors WM instruction manual invalidates all the machine's warranties.

Regular, correct maintenance is a precondition for the warranty to apply.

### 6.2 For your safety during service/maintenance

- Only genuine spare parts may be used during repair and maintenance work.
- Always use tools adapted to the purpose.
- Always wear protective clothing and protective goggles.
- Switch off the towing vehicle's engine and remove the key from the ignition. Ensure that the pressure on the crane is relieved by moving the control lever on the valve assembly back and forth a few times.
- If it is necessary for the towing vehicle's engine to be running during certain elements of the service, take care to keep parts of your body away from moving machine parts.
- During service work, the crane should be lowered to the ground so that no parts are dependent on the hydraulic cylinder.

**WARNING!**

The outer arm must always be moved to point zero before any work or service/lubrication is performed. To move the crane as the red outer arm shows are highly dangerous and forbidden.



Take great care with oil that is under pressure. Oil under high pressure can easily penetrate the skin. Consult a doctor immediately in the event of an accident. Hot oil can cause burn injuries. Inhalation of hot oil mist can cause breathing difficulties.

Getting oil on your skin in the event of a hose explosion is not dangerous, although you should avoid contact with your eyes and nose. In the event of exposure to oil in your respiratory tract or your eyes, contact a doctor immediately.

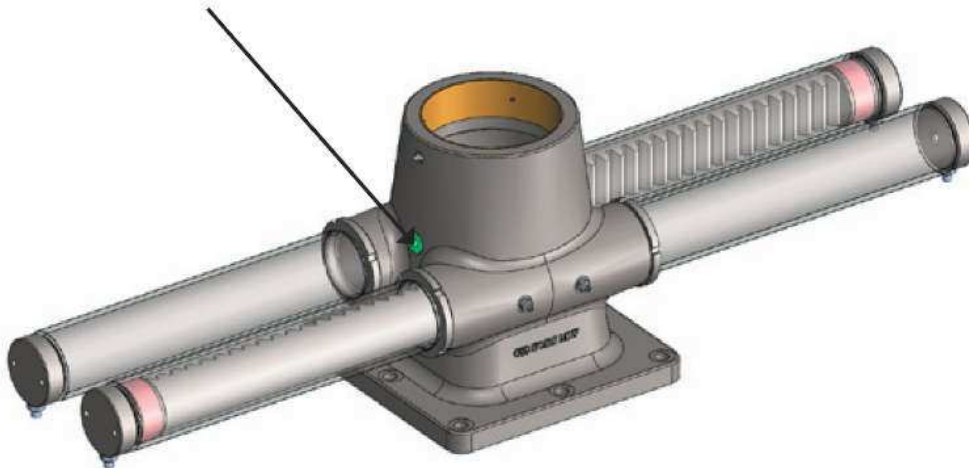
Store explosive and flammable liquids at a safe distance from sparks or open flames.

**Note:** When changing oil, collect the oil in a safe manner. Never release oil onto the ground. This is prohibited by law. Oil and grease must by law also be disposed of at an authorised location.

### 6.3 Daily maintenance

- It is important to inspect the equipment daily.
- If you see any defects, you must rectify them immediately.
- Worn bolts and screws can entail a risk of breakages when under load.
- The oil level in the tank must be checked.
- If cracks are discovered in the crane, operations must be halted immediately.
- Damaged hoses must be replaced immediately.
- Check for leaks. Leaking hydraulic fluid entails a risk of accidents and can result in serious environmental damage.
- **Note:** Check all bolted joints and tighten all loose bolts.
- Operate the crane's complete movement pattern to ensure that all functions are intact.
- If necessary, lubricate and check the oil level in the turntable housing.
- Avoid high-pressure washing when cleaning. First clean simply with warm water. If necessary, use an environmentally friendly detergent. Lubricate the crane after cleaning.
- The oil level must be checked regularly. The oil level must be 1 cm below the filling plug. For the location of the plug, see the arrow below.





- Carefully read through the warning information on the oil and grease products you are using, and follow their instructions accurately.
- For recommended lubricating greases, see Requirements and test methods SS 15 54 70 (<http://www.sp.se/km/grease>)

#### 6.4 Oil change

An oil change is performed when the oil is changed in the towing vehicle. For oil change intervals, refer to the towing vehicle's owner's manual.

#### 6.5 Surface cleaning

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

#### 6.6 Maintenance of the hydraulic units

**Note:** Always read through the relevant safety instructions when connecting and using the crane's hydraulics. All hydraulic hoses should be considered to be pressurised.

For disruption-free operation, oil must be changed and filters replaced at the specified intervals. When replacing hydraulic components, this should be carried out in such a way that no dirt enters the system. Use a lint-free cloth or rag when cleaning.

**Note:** It is prohibited to release oil onto the ground or into watercourses. Never mix oils of different types or makes in the system.



Original instruction

### **WARNING!**

The crane's hydraulic valves are supplied with both main pressure limiters and choke valves to prevent the crane from being overloaded. No modifications of any type may be carried out.

Do not start the towing vehicle without having disconnected the hydraulic pressure to the crane. For maintenance work support the crane, if necessary, so that the hydraulic cylinders are unloaded.

Pinpoint the fault before carrying out repair work, so that you do not open the hydraulic system unnecessarily. If possible, engage trained service personnel for any work on the machine's hydraulic functions.

The crane's hydraulic hoses and pipes must always be kept in good condition. Replace the relevant components in the event of any defects. Defects in hoses, for example, can result in a high-pressure jet of oil that can penetrate skin on contact and cause a serious infection. If this occurs, consult a doctor immediately.

**Note:** When the hydraulic system is brought back into use following repair work, be extremely carefully. Air in the system can result in unforeseen crane movements. You should therefore bleed the system by operating all the cylinders to their limit positions a few times.

**Note:** When using the hydraulic functions, you should use them gently. Do not operate them at full speed from one position to the next. This can cause damage to hydraulic seals and other parts.

## **6.7 Replacing hydraulic functions**

Always use genuine parts when it comes to hoses, seals, bolts, etc. Using genuine parts guarantees usage that is as fault-free as possible.

### Replacing seals

Contact an authorised workshop.

### **High pressure filter**

If your crane is equipped with a proportional valve or radio it is equipped with a high pressure filter. The filter protects the valve package and the hydraulic cylinders from dirt that may enter from the pump and tank. These particles can affect the performance and significantly reduce the time between service intervals on the valves and seals.

It is therefore important that the filter set is replaced at regular intervals to optimise performance:

- First change after 50 hours.
- Other changes take place after approx. 500 hours of work, but at least twice a year.
- At each oil change.



Original instruction

**Return filter**

If your crane is equipped with a pump and tank, the crane will have both return filter as well as a breather filter. The oil tank has a return filter that serves to clean the return oil. The return filter can also be used to clean the new oil with an oil change, before the oil reaches the tank. The filter must however be changed before this happens.

The return filter must be replaced 2 times per year and also in combination with an oil change.

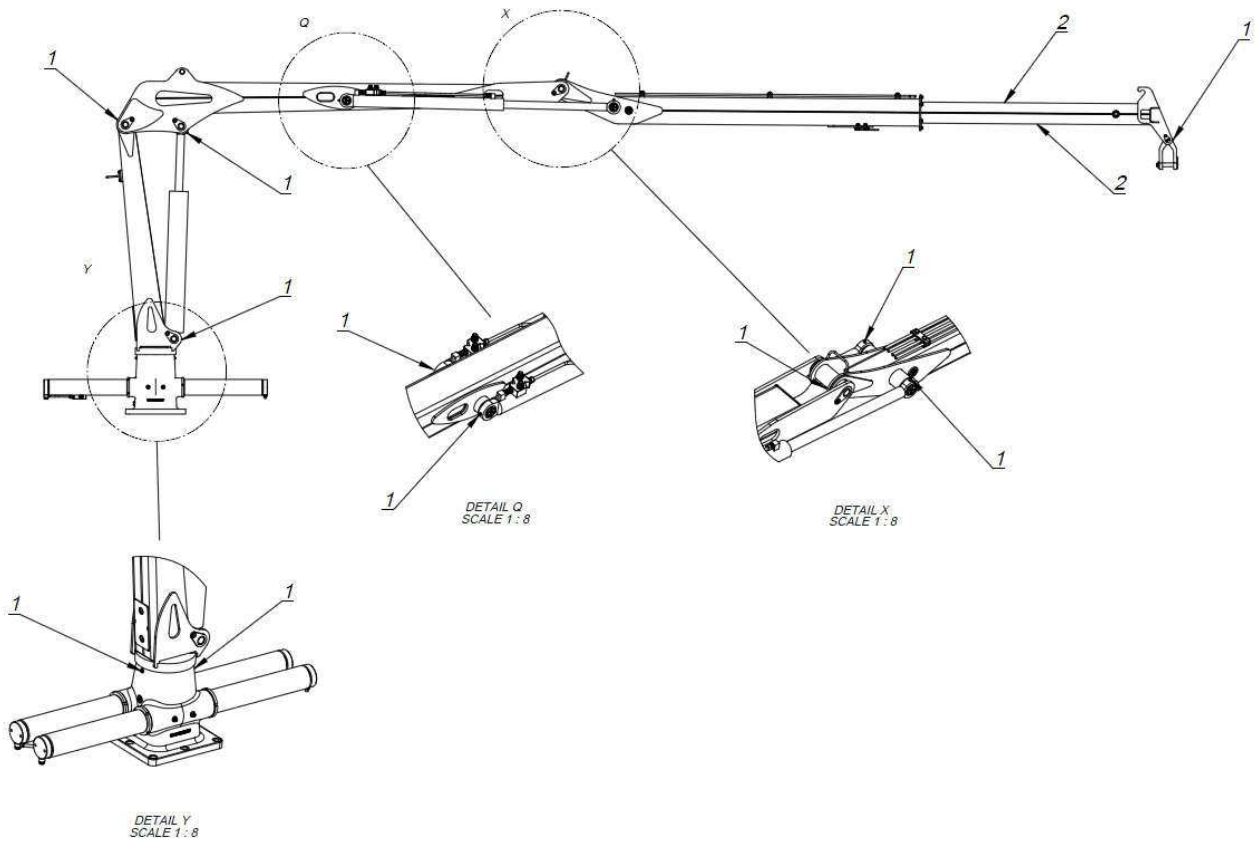
**Breather filter**

If your crane is equipped with a pump and tank, the crane will have both return filter as well as a breather filter. Inspect the breather filter in your oil tank regularly, clean it if necessary. A dirty filter can make it difficult to create an air exchange between the tank and the outside environment. This must be avoided to prevent a negative or positive pressure building up in the tank.



### 6.8 Lubrication schedule

Lubricating point	Qty.	Lubricant	Interval, hours (work hours)
Turntable housing	1	SAE 80/90 GL5	1 time/year
Turntable housing bearing	1	Lubricating grease	20 h
Articulated joints	2	Lubricating grease	50 h
Spherical bearing	6	Lubricating grease	50 h
Extension's wearing surfaces	2	Lubricating grease	50 h





## 6.9 Tightening torques

The tightening torque (Mv) in Nm for untreated, oiled steel screw joints when using a torque wrench or screwdriver/wrench with torque control. Torque distribution max.  $\pm 5\%$ . Metric coarse threads. All bolts must be tightened after 10 hours of operation.

Thread	Property class according to SS-ISO 898/1		
	8.8	10.9	12.9
M5	5,7	8,1	9,7
M6	9,8	14	17
M8	24	33	40
M10	47	65	79
M12	81	114	136
M14	128	181	217
M16	197	277	333
M18	275	386	463
M20	385	541	649
M22	518	728	874
M24	665	935	1120

## 6.10 Repair welding

If repairs or modifications require welding work, you must first contact your dealer, who will provide you with the necessary welding instructions. Incorrect welding or ignorance during welding can result in sudden breaks in the structure.

## 6.11 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.

## 6.12 Missing or damaged warning labels

Contact your dealer or Fors MW aftersales service, see the table of contents for contact information, to obtain new decals if the old ones become illegible, damaged or completely missing.



## 7. EC DECLARATION OF CONFORMITY

### *EC Declaration of Conformity of the Machinery*

Manufacturer:

**Fors MW AS**

Tule 30

76505 Saue

Estonia

The technical file is compiled by **Priit Raud**;

I hereby confirm that this **equipment, BIGAB crane Z6,6/Z8,0:**

Trade mark: **BIGAB**

Function: **Z-crane**

Model: **Z6,6/Z8,0**

Type: **BL** variant: **Z6,6/Z8,0**

Serial No.: **BLZ066xx1xxxxx/BLZ080xx1xxxxx....**

Trade name: **BIGAB Z6,6/BIGAB Z8,0**

Manufacture year: **xxxx**

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

2017-12-28

Priit Raud

CEO