



# **Kellfri<sup>®</sup>**

## **21-SV60 FORESTRY TRAILER**



**CAREFULLY READ THE OPERATING INSTRUCTIONS BEFORE USING THE PRODUCT!**

**OPERATING INSTRUCTIONS TRANSLATED FROM THE ORIGINAL**

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*Certain details are extracted from the “Kör åt skogen rätt och säkert” publication from the Swedish University of Agricultural Sciences*

## INTRODUCTION

Thank you for choosing a product from Kellfri AB. By following the general safety information and the instruction manual and by using common sense, you will have a great and safety use of your Kellfri product for many years. Kellfri designs and delivers effective, affordable machinery and components for forest, agriculture, construction and gardening in Sweden, other Nordic countries and Europe.

## PRODUCT INFORMATION

Kellfri's forestry trailer enables loading and unloading timber. It is especially suitable for the self working farmer in agriculture. The forestry trailer is intended to be connected to the tractor hitch and towed by an agricultural tractor. The valve is placed, for example, in the tractor's rear window. Different tractors requires different detail solutions for brackets on the valve / tractor. Hoses between the valve and the crane may have to be adjusted in some cases. Kellfri does not stand for these customizations. The trailer is not equipped with a lighting device and intended for use only in daylight. Otherwise equip the forestry trailer with magnetic taillight.

### KELLFRI FORESTRY TRAILER SV60

Maximum load	6 tons
Crane reach	4,7 m
Total length	5,4 m
Total width	2,0 m
Articulated steering with one cylinder	Yes
Wheels	11,5/80-15,3 10 ply
Support foot	Standard
Articulated drawbar	Yes
Number of struts	4
Hydraulic support legs	Standard
Turn cylinder slewing house crane	4
Gripping area	0,18 m <sup>2</sup>
Pendulum brake between the folding arm and rotator	No
Turning rotator	Standard
System pressure	17 Mpa
Valve -2 levers	Standard
Winch	No (Can be ordered as extra equipment)
Brakes	No
Headboard(Height)	1,09 m
Load width bottom	1,10 m
Load width top	1,56 m
Ground clearance	0,52 m
Weight	1600 kg
Recommended power requirement(tractor)	30-60 hp

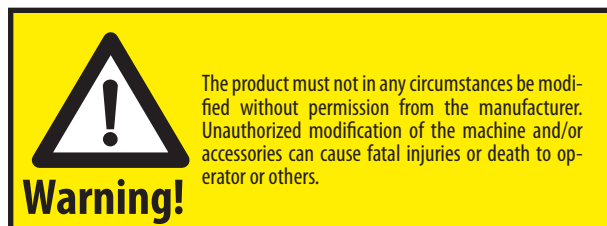
## FOR YOUR SAFETY

Before using the product, please read the safety information and instruction manual and understand its contents for your own and others' safety. Always keep the safety information and instruction manual easily accessible to the user of the product.

Remember that it may be good for your own and others' safety to read the safety information every now and then. If the instructions manual is damaged or otherwise unusable If the instructions manual is damaged or otherwise unusable, please contact your retailer.

For more information visit our website: <https://www.kellfri.co.uk/>

Do not use this equipment if you are feeling sick, tired or in influence of alcohol. Nor if you are under the influence of strong medications or drugs, suffering from strong depression or severe mental illness. Always follow the general traffic rules and regulations and the rules of the Animal Welfare Act. Persons under 15 years old and people with mental illness may not use these product.



## PRODUCT SAFETY INFORMATION

- For safety reasons the forestry trailer can only be used in the manner prescribed in this instruction. The user is responsible for the instructions are read through and followed. Implements connected to the tractor – read the manual of the tractor.
- Always check the performance of the machine combination that will be used with the forestry trailer to ensure safety and performance.
- Never overload the trailer!
- Never leave the driver's seat until the towing vehicle is braked.
- Danger zone 15 meters. No one other than the operator may be present within the danger zone during operation with the forestry trailer.
- The trailer may not be parked with the load unattended!
- When the forestry trailer shall be disconnected, it must be done with unloaded carriage on flat ground and the trailer wheels must be secured with appropriate brake pads.
- To stop the movement of the forestry trailer in emergencies, stop the tractor.
- At interruption of oil supply to the crane, there is a risk of losing suspended load. First lower the lifting arm then the folding arm and unload the grapple claw.
- The tractor should be equipped with fire extinguishers of type ABE2 or 3. Contact your insurance company.
- Forestry trailer is equipped with a 50mm ball coupling. Check the condition of the coupling regularly. Maximum tensile loading on the ball coupling is 9 tons and maximum pressure 3 tons.
- The noise level of the trailer does not exceed 70 dB (A)
- Be careful when working with equipment that has hydraulic hoses because the oil under pressure can penetrate the skin. Seek medical attention immediately if this occurs.
- The trailer is not equipped with a lighting device and it is intended for use only in daylight. Otherwise equip the forestry trailer with magnetic tail light.

**Kelfri disclaim any responsibility for self-made modifications, changes or alterations!**



## **INCASE OF EMERGENCIES**

In case of an emergency please dial 112.

Keep cell phone or emergency phone available specially when working alone. First aid kit and fire extinguishers must be kept easily accesable during all work, maintenance and service.

## **PERSONAL PROTECTION**

Always wear suitable clothing and footwear. Do not wear loose clothing or jewelry when using the machine. Remember to put up long hair when operating rotating machines. Wear protective gloves, to prevent risking burns on contact with hot surfaces such as exhaust system, and to avoid oil and gasoline on the skin. Hearing protection should be used when the engine is running.



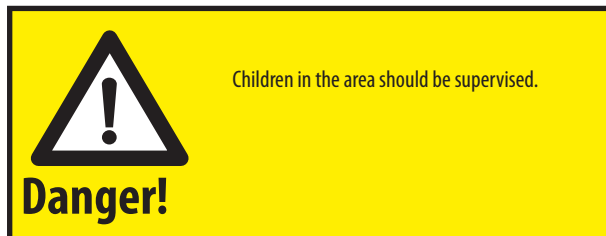
## WARNING DECALS

Make sure warning decals are always visible and clean them when necessary. Do not use a high-pressure washer directly on the warning label. If a decal becomes worn or in any other way unusable, order a new set of decals. An SMV sign must be visible and mounted when travelling on public roads. The trailer is fitted with the following decals:

SYMBOL	EXPLANATION
	<p>Read the instruction manual! Before work begins. Caution Before maintenance, service, connection and disconnection of the machine, the tractor's engine must be switched off and the ignition key removed.</p>
	<p>Danger zone 15 m Respect the equipment danger zone! Warning! Risk of crushing! No one is allowed to stand underneath suspended load.</p>
	<p>Lever function</p>
	<p>Max pressure towing eye (3 tons)</p>
	<p>Lubrication after 10h of operation Always use the support legs when loading / unloading Tighten all screws and connections</p>
	<p>Warning! Electrical lines.</p>
	<p>Max 300 kg grip Warning- oil jet from hydraulic hose Warning- moving parts.</p>
	<p>Warning! Forbidden to stay on the machine! Warning! Risk for child accident! Children are not allowed to be near the machine</p>
	<p>The product is CE marked</p>

## SURROUNDINGS

Make sure your working area is clear from people, children and objects before installing and using the machine. Risk of serious injuries can occur during operation. Take an extra caution when children are in the area where the equipment/ product is being use or stored. Check the area for low hanging electrical wires. Be careful when working on slopes and near ditches. Always work alone with single - purpose tools/products. Never have junk lying in your area. Keep working areas clean. Always respect the risk zone.



## 9. SAFETY MEASURES BEFORE USE

Read the safety information and instruction manual carefully. Be sure you understand the safety measures, instruction manual and warning labels. Use common sense when operating the machine and use appropriate personal protective equipment. Always check the performance and the machine combination that are used. It's highly important these matches in a satisfactory manner. This is to ensure the product or the function and most important yours and others safety. Do visual inspection of equipment or product before use. Fix or replace damaged or worn parts immediately to reduce the risk of injury. Lubricate moving parts and check that all screw-nuts and bolts are tightened. Learn and remember the correct working methods. Beginners should always keep a low speed, use extreme caution before routine and product knowledge is achieved. The user/customer is responsible to handle the situation correctly. The product should not be taken into use unless it can be done in a safe way for the user.

**Warning! Risk of crushing due to moving parts!**

## 10. CONNECTING THE TRAILER

- Read the instructions in full.
- Check ball hitch on the trailer. Then hook the forestry trailer on the tractor.
- Connect hydraulic hoses to the tractor's hydraulic system. (See: Connecting the valve package)
- Drive and check the equipments movement carefully. No hoses must be stretched too tight or rub against sharp edges, etc. At any leaks retighten leaking couplings. Do not tighten the couplings more than needed, over tightening the coupling can lead to a breakage.





## **OPERATING THE MACHINE**

Only people who understand the safety information and instructions in this manual may operate the equipment. Be alert and careful when working with the machine and only use the tool or product in the manner described in this manual. When working with equipment that has moving parts, there is always the risk of injury. Be careful when working with equipment equipped with hydraulic hoses, oil under pressure can penetrate the skin. Seek medical attention immediately if this occurs. Always work alone with the tools that are defined as single purpose tools. Respect the equipment's danger zone.

### **Connecting equipment.**

- The hydraulic valve is best placed on the tractor. Hydraulic pressure hoses must not be brought inside the cab.
- Connect the crane valve pressure and return hose. Make sure that pressure and return hose are not connected incorrectly. The valve can be destroyed if the hoses are connected incorrectly. Mark hoses with decals to better identify PRESSURE and RETURN.
- Connect hoses to articulated steering. Double acting hydraulic sockets are required on the tractor.

### **USE AND CARE**

- Check that the equipment is not damaged before connecting it to the vehicle.
- Connect the equipment and lock it in place.
- Air frequently occurs in the system in the beginning, carefully drive all cylinders in their end positions several times to remove air in the system.
- Practice the movement pattern calmly and methodically for loading and unloading timber in the trailer.
- Hold the crane low during all transportation.
- The stability is worse in the beginning when loading, be careful!
- Both support legs must be lowered when loading on and off the timber. It is prohibited to drag timber with the crane when the tractor is running. The tractor must be stationary during use of the crane.
- It is forbidden to fold the folding arm to maximum and then press down the lift arm. The crane is designed to lift the timber, not pressing timber. Maximum speed when driving is 30km / h.
- The load should be distributed evenly over the cart.
- All cargo that sticks out should be anchored well.

### **INSTRUCTIONS FOR USING THE WINCH ON THE CRANE'S LIFT ARM.**

- The winch is not approved for lifting. Load the trailer with the crane.
- The winch is operated either with the hydraulic valve at the crane base or optional with radio-controlled electric valve. At the electrical installation check that the voltage is 12V.
- Align the lifting arm towards the timber to be winched. Place the grapple claw into the ground. Use the support legs on the trailer.
- Decouple the winch drum.
- Pull the wire gently and make it stick to the timber. Grease the wire if it wants to pinch the wire drum.
- When winching in, watch out for the risk of crushing!

## AFTER USE

Rinse the trailer when needed.

## TRANSPORT AND STORING

Make sure there are no people, children and foreign objects around the area before transporting the machine. Always take an extra caution during the transport. Ensure that the product is well secured and that transport brackets are mounted. Always place the load as low as possible. Respect the danger zone even during transport. When lifting the equipment, never go underneath suspended loads. Trailer used for transport should have working brakes. Always store the machine in a dry place preferably underneath a cover when not in use. Ensure that the product is stable and not likely to tip over. Never let children play where the machine is being stored. Always keep in mind the risk of tipping!

## MAINTENANCE AND SERVICE

Ensure that the unit is stable and cannot tip over during maintenance and service. Replace damaged or worn parts immediately to reduce the risk of abrasion. Always perform maintenance, service and inspection, as recommended. Use only original replacement parts or spare parts with equivalent performance to reduce the risk of damage. All repairs and connections with electricity must be performed by a qualified person. Check all nuts and bolts are tightened after performing maintenance and service.

Always test the machine before using it.

- Regularly check the condition of the equipment to prevent breakdowns. If cracks, twists, bends, gaps or fatigue is discovered, stop using the equipment and rectify the fault. Worn parts must be replaced. Grease moving parts regularly.
- Never repair hydraulics before first ensuring that there is no pressure in the system.
- Never work under a suspended load.
- Make sure all connections are tightened after carrying out maintenance and service work. Always test the machine before starting work.
- Check all parts for wear and retighten bolts, connections and hoses if necessary.
- Immediately replace hydraulic hoses if cracks or wear are detected.
- Check that the hoses are not rubbing against sharp edges, Rectify if necessary.
- Tighten leaking connections if there are any leaks. Do not overtighten the connections. They may break if they are tightened too much.
- Turn off the tractor and move the hydraulic levers back and forth to release any pressure that may still be in the oil hoses and pipes before starting any work on them or the hydraulic cylinders.
- It is recommended to use an oil filter with 20 µm filtration.
- Check the system oil flow and pressure on a regular basis.
- Never perform welding on the towbar eye as this may change its durability.

The hydraulic system must only be operated using the appropriate hydraulic oil. (*Oil change intervals: see the tractor's operating manual*). Use gearbox oil SAE 80 (2.5 L) or similar in the slewing housing. All grease points must be lubricated every 25 hours. Retighten all nuts and bolts after several hours of operation and at the end of a day's work.



**Danger!**

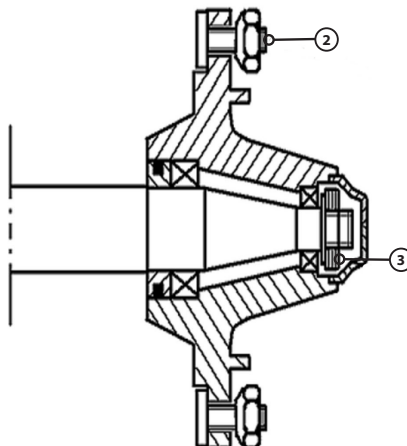
**WARNING:** Pressurised oil and fuel leaks can penetrate skin and cause serious injuries. Do not use your hands to locate leaks. Use a piece of paper or cardboard to look for leaks.

# SERVICE SV60

Service	Interval	Measure
Tyres	Before each use	Check the air pressure in the tyres. It must always at least be the recommended pressure (see tyres).
Cables and hoses	Before each use	Check that all cables and hoses are intact.
Wheel nuts	Perform an initial check after 2-3 hours of operation, and subsequently 2-3 times a year.	Retighten all the wheel nuts, 250 Nm
Trailer parts	Regularly, at least 3 times a year	Check by performing a visual inspection of any brakes, lights, SMV signs, towbar eyes, axles, bogie eyes, hinges and turntable bearings (if installed). Replace worn and damaged parts.
Trailer	After each use	Wash down with clean water if necessary.
Hydraulic oil	Regularly	Always check the quality of the oil in the tractor's hydraulic system. Dirty oil must not be used and must be changed before connecting the trailer to the tractor. Recommended oil flow: 20-40 l/min

## CARE INSTRUCTIONS

1. Do not overload the tractor and trailer!
2. After wheel replacement, check that the wheel nuts are tightened and repeat after a stable period of operation. The tightening torque must not exceed 45 kpm. Use a torque wrench if possible.
3. Check that the bearing setting is correct to prevent bearing play and abnormal bearing wear. The bearing setting should preferably be too loose than too tight.



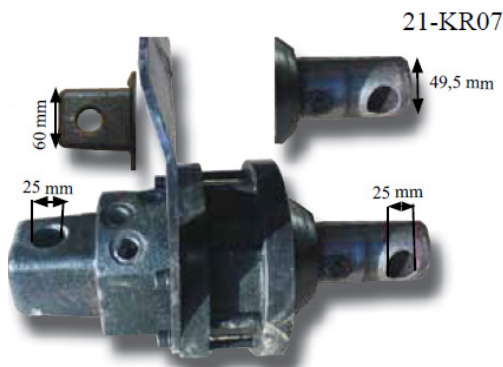
## ROTATOR

### USAGE RESTRICTIONS (Safety instructions when working)

- Check the rotator's maximum permitted load and the load weight.
- Do not overload the rotator!
- Make sure the hydraulics have reached working temperature.
- Check movement speeds and directions as well as control lever function.
- Lift the load before moving and rotating it.
- Never leave a load unsupervised during lifting.
- When there is no pressure in the rotator, there is no braking torque and the load may rotate due to factors such as wind or imbalance. A counter movement has to be used if this rotation is to be stopped.
- Check that the hydraulic hoses do not touch any obstacles. A broken hose or nipple can cause the load to fall or rotation to continue.
- When in transit or in storage, position the crane so that it is not supported by the rotator. For example, the crane boom must not be allowed to rest against the rotator.

### WORKING CONDITIONS

The hydraulic turning device, or rotator, is designed for use on a hydraulic lifting crane, e.g. cranes that handle timber or single items. The rotator axle is fitted to lifting equipment, e.g. a grapple, which grips the load. The load can be rotated horizontally using the rotator. The hydraulics are connected to the lifting equipment through the rotator axle. The maximum permissible load on the lifting equipment must not exceed the corresponding value for the rotator. When the rotator is in use, the hydraulic oil must be at the correct working temperature and satisfy standard viscosity values.



### INSTALLATION INSTRUCTIONS

- Rotator connection to the crane
- The rotator must be connected to the end of the crane boom using a link.
- The rotator must always be suspended freely and vertically in the direction of the axle. The link pins must be locked in place using clip pins.
- The rotator is connected to a bushing on the lifting equipment using a pin that is locked in place with clip pins.

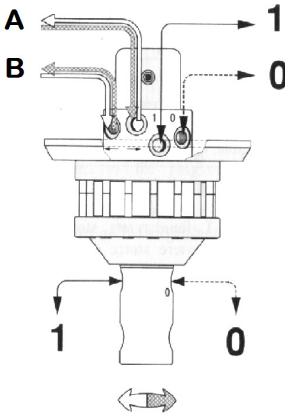
### CONNECTING THE ROTATOR TO THE CRANE HYDRAULIC SYSTEM

Turning the rotator: The system should be thoroughly cleaned. Once the hydraulic system has reached working temperature, the oil should be circulated to channel any impurities to the filter. The hoses for the rotator's turning unit are connected together using intermediary nipples before the rotator. Oil can circulate in this line for at least 5 minutes. The rotator is connected to the crane's control valve via suitable hoses and pipes. The crane must be equipped with pressure-limiting valves that limit the pressure going to the rotator to a maximum of 200 bar. If a higher pressure is possible, pressure-limiting valves should be installed on the rotator's hydraulic line. The oil flow for rotator rotation is regulated using control nipples. The rotational direction of the rotator and grapple movement must correspond to the markings on the control levers. If rotation is too slow, the rotator's movement speed must be checked. Control nipple openings have been factory-set to a diameter of 1.5 mm. They can be enlarged in 0.1 mm increments.

### ROTATOR LEAD-THROUGH

When connecting the hydraulics, it should be noted that the maximum pressure in the pressure duct is 200 bar and that the marked duct in the rotator's upper cover (upper duct) and the axle must be linked to the opening side of the cylinder on the lifting equipment, e.g. a grapple. When the grapple opens, it should be noted that the cylinder movement does not extend fully to keep the duct under pressure as this pressure is an unnecessary load on the rotator. The crane and equipment must be compliant with the Machinery Directive.

A,B= Rotation  
1=Grapple closed  
0= Grapple opened



TECHNICAL DATA	KR07
Turning angle	Unlimited
Max. operating pressure	200 bar
Rec. l/min.	20L/m
Torque (200 bar)	655 Nm
Max. axial force	20 kN
Max. permissible load	1 900 kg
Weight	17 kg
Attachment point	ø 60 mm upper ø 49,5 mm lower
Lock pin	ø 25 mm upper ø 25 mm lower

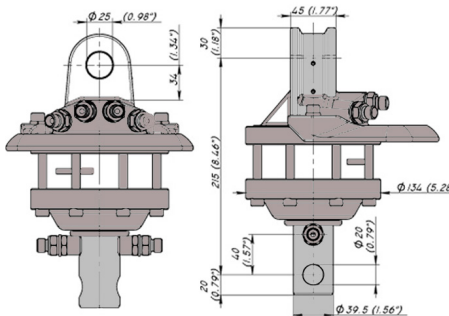
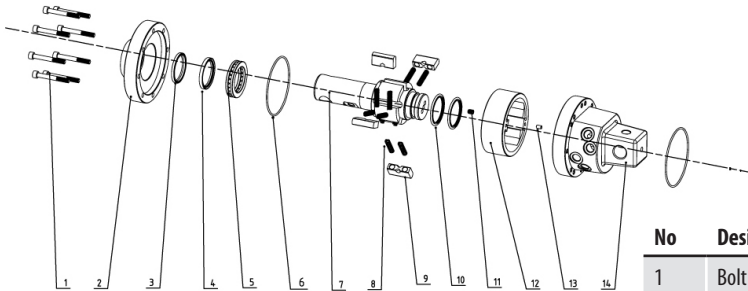
## OPERATING INSTRUCTIONS

Exercise caution when using the crane and rotator and act in accordance with the crane's safety instructions. Lateral loads on the rotator axle should be avoided. For example, prior to lifting, loads must not be pulled using the crane or the crane's base vehicle. A broken hose or nipple can cause the load to fall or rotational movement to continue. Damage to hoses or devices can cause the release of a high-pressure liquid jet.

## 20. SERVICE AND MAINTENANCE INSTRUCTIONS

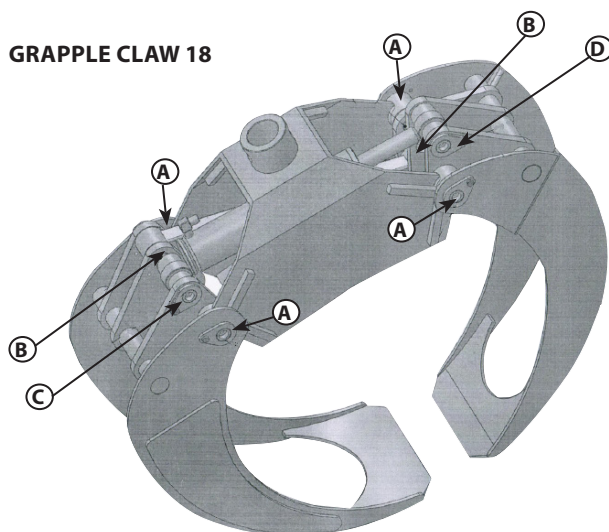
If the rotation of the rotator becomes uneven and sometimes stops, the equipment should be checked. The pins in the upper housing of the rotator should be greased regularly. The rotator's upper housing, axle, hoses and nipples should be checked every week due to the risk of cracking. Any damage or oil leaks must be rectified immediately. Leaks in the lead-through seals manifest themselves, e.g. by weakening the grapple's closing force or causing the grapple to open. When carrying out the annual crane inspection, the bolt fasteners should be checked to ensure that they are correctly tightened. Under no circumstances must the rotator be repaired by welding. Replacement of the rotator's seals and other components must be done in good conditions. Contact your local sales representative for more information.

## EXPLODED DIAGRAM ROTATOR

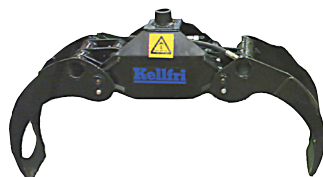


No	Designation	Total
1	Bolt	8
2	Lower bearing housing	1
3	Axle seal	1
4	Seal	1
5	Bearing	1
6	O-ring	2
7	Axle diam. 40	1
8	Spring	10
9	Wing	5
10	Seal	2
11	Plug	1
12	Spacer	1
13	Plug	1
14	Upper housing	1

## GRAPPLE CLAW 18



COTTER MARKING	length (mm)	DIAMETER (mm)	TOTAL
A	60	25	4
B	65	25	2
C	80	25	1
D	95	25	1



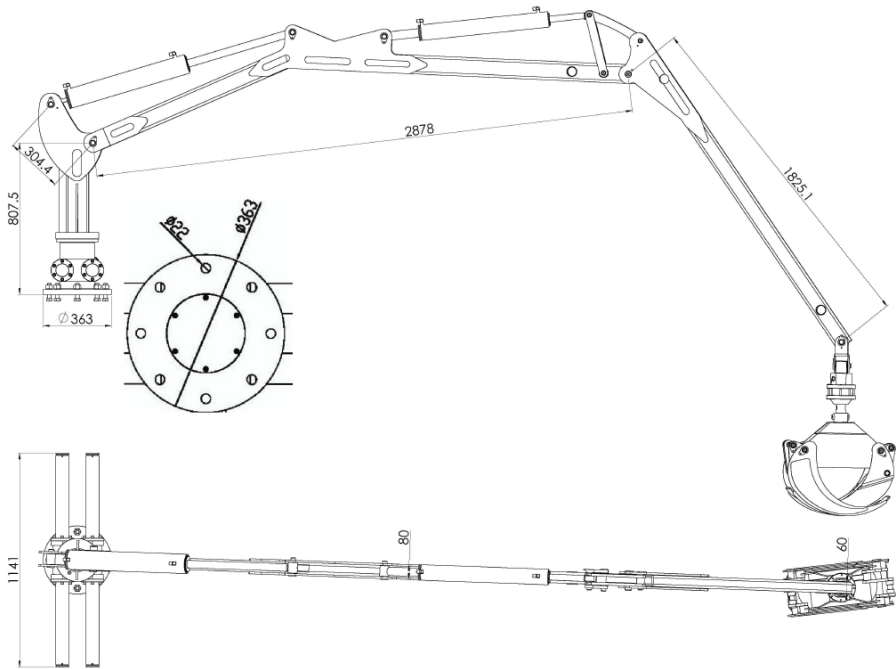
### NOTE !!!

**Never leave the cab until:**

**- You have secured and unloaded the grapple loader and you have stopped the tractor.**

**NOTE! The stability of the trailer is less at the start of loading.**

## CRANE 21- GL47



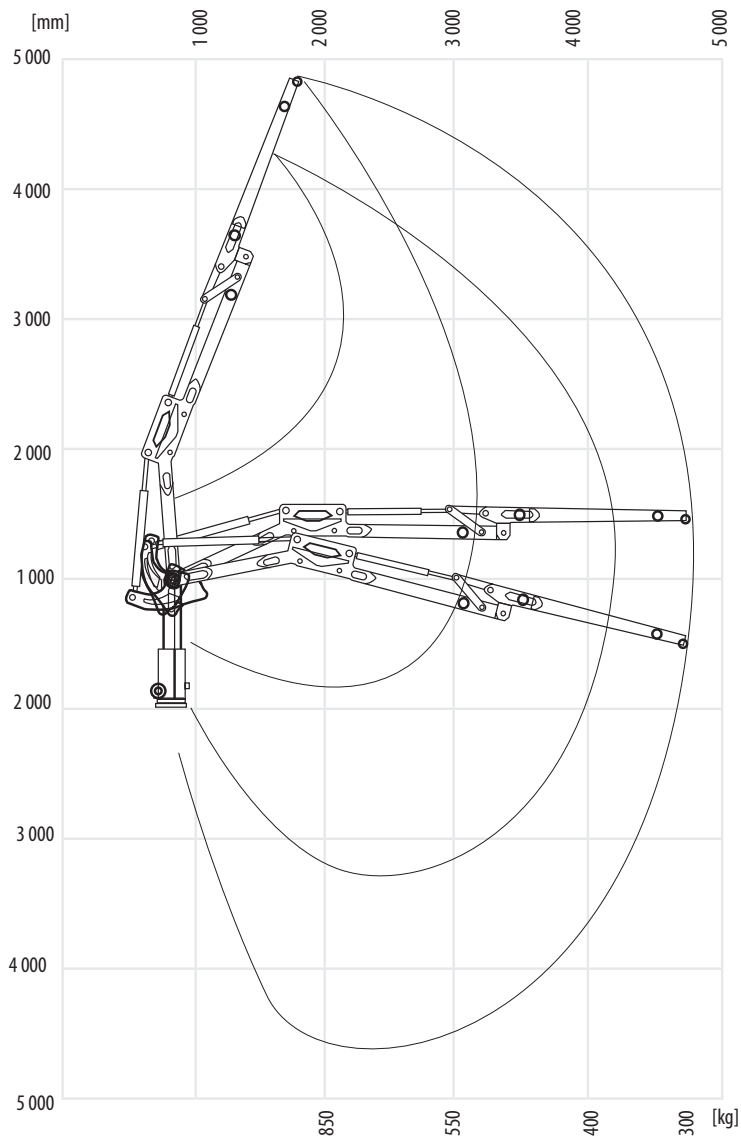
### TECHNICAL DATA

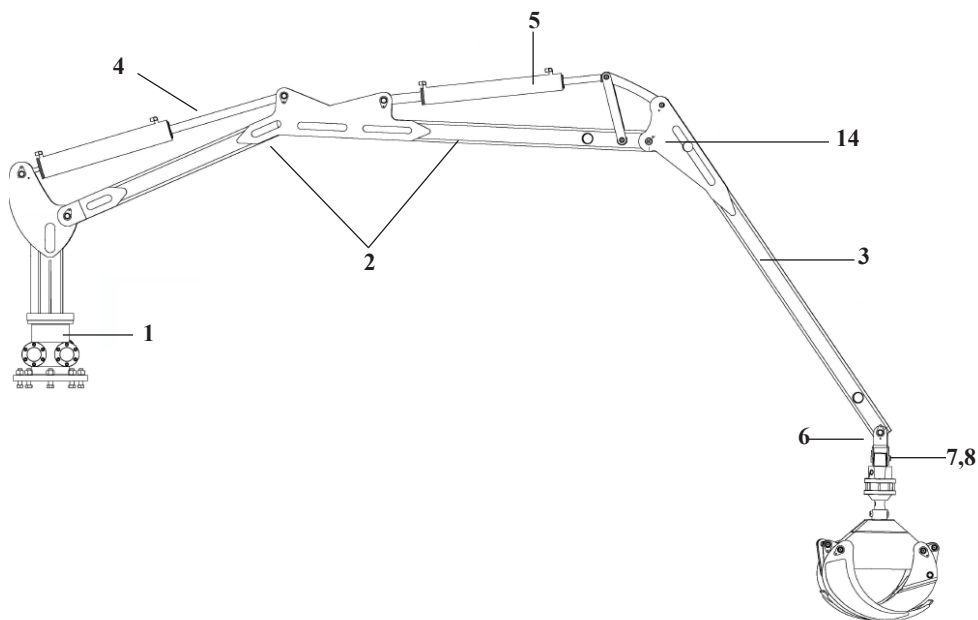
### 21-GL47

Crane reach [mm]	4700
Grapple (width) [mm]	1000
Gripping area [m <sup>2</sup> ]	0,18
Rotator weight [kg]	13
Torque [kNm]	3,5
System pressure [Mpa]	17
Recommended pump capacity [l/min]	20-45
Oil volume - slewing house [l]	1
Crane weight incl. grapple and rotator [kg]	600

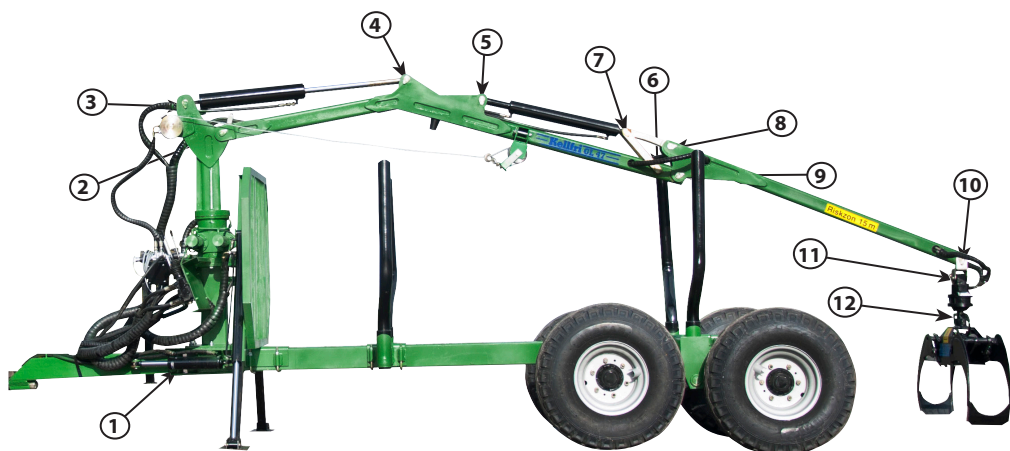


## LIFTING GRAPH 21- GL47





NO	SPARE PARTS ART.NR. 21-GL47	DESIGNATION
1	R21-SV60.005	Slewing house body
2	R21-SV60.006	Boom
3	R21-GL47.030	Folding arm
4	R21-GL47.001	Boom cylinder
5	R21-GL47.002	Fold cylinder
6	R21-GL47.010	Rotator holder
7	R21-GL47.011	Cotter between the rotator – rotator holder GL47
8	R21-GL47.012	Bolt between rotator and grapple claw GL47
9	R21-GL47.004	valve Package
10	R21-GL47.013	P-SATS cylinder boom GL47
11	R21-GL47.014	P-SATS cylinder - fold/stick GL47
12	R21-GL47.015	P-SATS cylinder-grapple claw
13	R21-GL47.016	P-SATS cylinder - rotate
14	R21-GL47.031	Folding point complete



### SPARE PARTS: COTTERS

NO	ART.NO.	Length (mm)	Diameter (mm)
1	R21-SV60.009	250	50
2	R21-GL47.018	130	40
3	R21-GL47.028	93	30
4	R21-GL47.027	95	25
5	R21-GL47.026	95	25
6	R21-GL47.025	105	25
7	R21-GL47.024	105	25
8	R21-GL47.022	90	25
9	R21-GL47.023	100	35
10	R21-GL47.021	90	25
11	R21-GL47.011	95	25
12	R21-GL47.012	85	25

**IMPORTANT! COUPLINGS SHOULD BE CHECKED AFTER LEAKS AND SHOULD BE RETIGHTENED REGULARLY!**

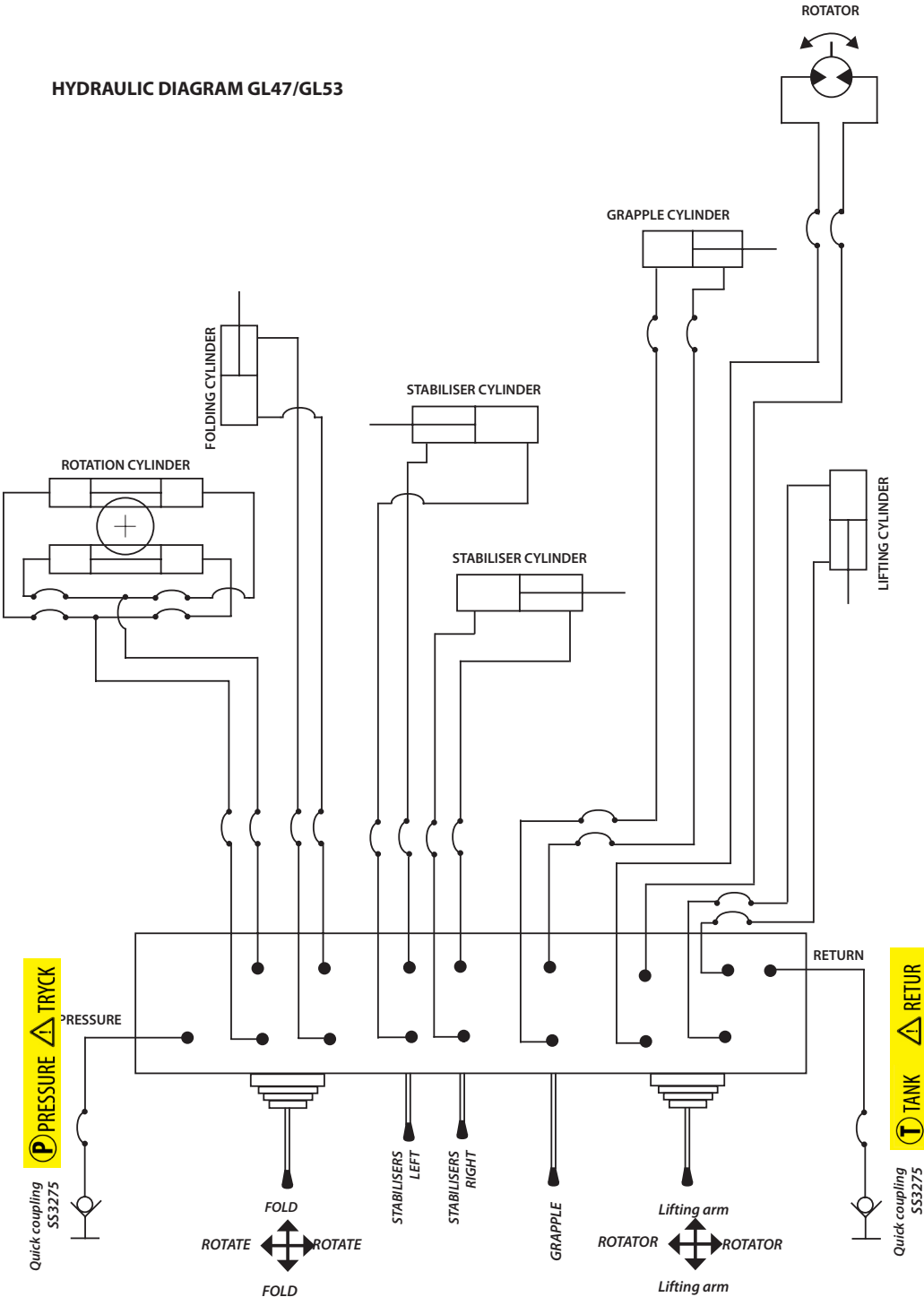
**NOTE! DO NOT TIGHTEN THE COUPLINGS MORE THAN NEEDED, IF OVERLOADED, THEY CAN BREAK.**

**MARK THE HOSES WITH LABELS TO MAKE IT EASIER TO RECOGNISE THE PRESSURE AND RETURN HOSES.**

Hydraulic hoses from the valve package to the cylinder.

<b>NO</b>	<b>DESCRIPTION</b>	<b>length [mm]</b>	<b>Coupling Valve package ["]</b>	<b>TYPE</b>	<b>Angle [°]</b>	<b>Coupling Cylinder["]</b>	<b>TYPE</b>	<b>Angle[°]</b>
<b>T</b>	Pressure in	2500	1/2	Female	Straight	1/2	Male	Straight
<b>R</b>	Return	2500	1/2	Female	Straight	1/2	Male	Straight
<b>1A</b>	Boom	3550	3/8	Female	Straight	3/8	Fe- male	Straight
<b>1B</b>	Boom	4100	3/8	Female	Straight	3/8	Fe- male	Straight
<b>2A</b>	Grapple claw	8200	3/8	Female	Straight	1/4	Male	Straight
<b>2B</b>	Grapple claw	8200	3/8	Female	Straight	1/4	Male	Straight
<b>3A</b>	Rotator	8200	3/8	Female	Straight	1/4	Male	Straight
<b>3B</b>	Rotator	8200	3/8	Female	Straight	1/4	Male	Straight
<b>4A</b>	Support leg (right)	2850	3/8	Female	Straight	3/8	Fe- male	90
<b>4B</b>	Support leg (right)	2850	3/8	Female	Straight	3/8	Fe- male	90
<b>5A</b>	Support leg (left)	3350	3/8	Female	Straight	3/8	Fe- male	90
<b>5B</b>	Support leg (left)	3350	3/8	Female	Straight	3/8	Fe- male	90
<b>6A</b>	Turn cylinder	3600	3/8	Female	Straight	3/8	Fe- male	90
<b>6B</b>	Turn cylinder	3400	3/8	Female	Straight	3/8	Fe- male	90
<b>7A</b>	Stick	4960	3/8	Female	Straight	3/8	Fe- male	Straight
<b>7B</b>	Stick	5580	3/8	Female	Straight	3/8	Fe- male	Straight

HYDRAULIC DIAGRAM GL47/GL53

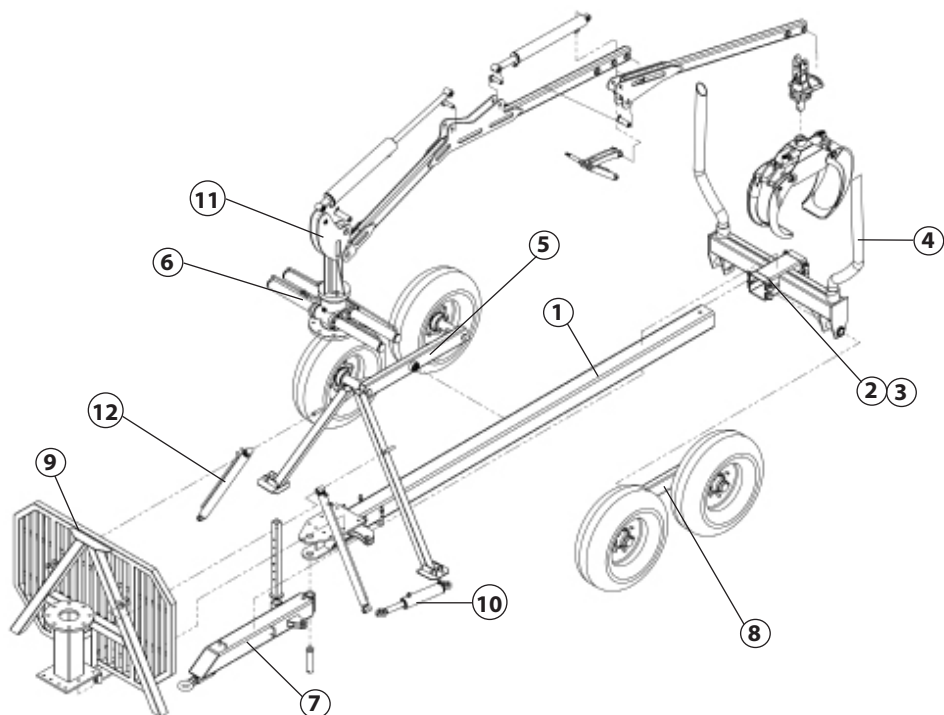


**P** PRESSURE **TRYCK**

Quick coupling  
SS3275

**T** TANK **RETUR**

Quick coupling  
SS3275



NO	25. Spare part list 21-SV60	DESIGNATON
1	R21-SV60.001	Center pipe 140x 140 mm
2	R21-SV60.002	Bogie cross beam SV60
3	R21-SV60.003	Cross beam
4	R21-SV60.004	Prop
5	R21-SV60.005	Bogie left
6	R21-SV60.006	Turn housing complete, 4 cylinder without tower
7	R21-SV60.007	Pull complete with towing eye and pin
8	R21-SV60.011	Bogie right
9	R21-SV60.015	Front gate with support legs
10	R21-SV60.016	Cylinder for articulation steering
11	R21-SV60.018	Tower complete
12	R21-SV60.020	Cylinder support leg
14	R21-SV60.030	Gasket kit support leg cylinder

## PRODUCT SAFETY INSTRUCTIONS

- Read the operating manual carefully before installing and using the product
- Only qualified staff are allowed to install the product
- Turn off the power to the receiver before connecting the equipment
- Check that you have connected the correct terminal block
- Use undamaged cables. Make sure the cables do not hang loose.
- Avoid installing in areas that are exposed to extensive vibrations.
- Place the receiver so that it is well protected from the elements. Cable glands and ventilation plugs must be turned downwards to prevent water getting into them.
- Check that the user is old enough to use the equipment, not under the influence of drugs, alcohol or medication, and that the transmitter is not left unsupervised.
- Only qualified staff may have access to the transmitter and can control the equipment
- Make sure that the user always turns off the transmitter when it is not in use
- Make sure the user has a good view of the work area
- Write down the receiver and transmitter serial numbers/ID codes in the settings document
- Avoid pairing the transmitter with the receiver when it is not in use

*The radio system may only be used for functions such as starting and stopping an application. The radio system must not be a safety-related part of a system.*

## BATTERY WARNINGS

- There is a risk of explosion if the battery is replaced with an incorrect battery.
- Do not dismantle, deform or heat up the battery. Do not short-circuit the battery
- Never attempt to charge a clearly damaged or frozen battery
- Keep out of view from small children. If a child should swallow a battery, seek medical attention immediately.
- Avoid soldering directly on the battery
- Store in a cool place Avoid high temperatures and humidity
- Do not destroy batteries fire

## USED BATTERIES AND ELECTRONICS

Incorrectly discarded batteries and electronics damage both the environment and people's health. Batteries and electronic waste may contain toxic heavy metals. If they are disposed of in a rubbish bin, these toxic substances may leak into the ground and pollute seas, lakes and watercourses. Always contact your dealer or local authority for more information about how to recycle electrical products in your area in a responsible manner.

In accordance with the Machinery Directive 2006/42/EC, we recommend that you review the need for a wired emergency stop and other personal injury protection systems.



#### TRANSMITTER

#### TX1-A

Frequency (MHz)	433.087- 434.662
Channels	64
Fixed individual code	-
Functions	2
Inbuilt antenna	-
Operating voltage	3 AA (LR03)
Power consumption	~20 mA
IP class	IP65

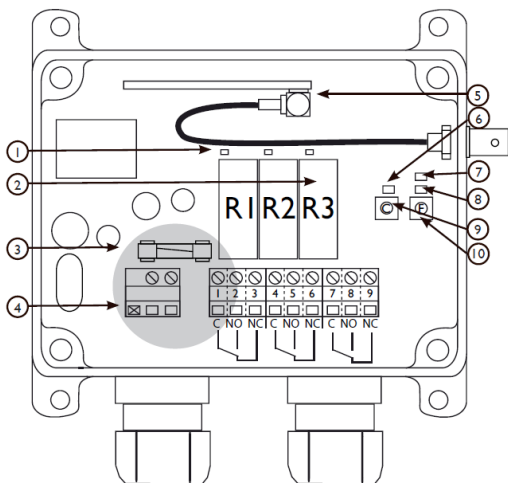


#### RECEIVER

#### RX1

Frequency (MHz)	433.087- 434.662
Channels	64
Scans individual codes	-
Winch	depending on model
Relay outlets	3
Antenna	External BNC
Operating voltage	6-26 V AC/DC
Power consumption	20-100 mA
IP class	IP65





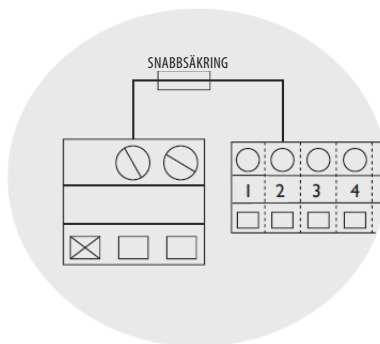
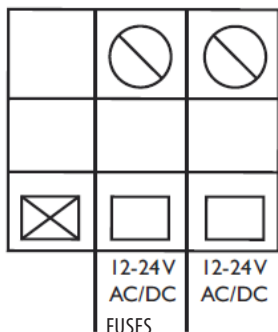
## Receiver RX1

1. Relay LED 1-3
2. Function relay 1-3
3. Quick fuse 10 A
4. Terminal block for voltage
5. Antenna contact
6. Code storage LED (red)
7. Power supply (yellow)
8. Function button
9. Coding button
10. Select button

### 3. Options: Quick fuse

NOTE: With a 10 A fuse fitted and the receiver connected, the operating voltage from the terminal block (12-24 V AC/CD) in the centre is supplied with current from fuse number 1 (terminal block no. 2)

### 4. Terminal block



Operating voltage	MIN. Power consumption	MAX. Power consumption
12V DC	25 mA	100 mA
24V DC	15 mA	50 mA
24V AC	15 mA	50 mA

## CHANGING FREQUENCY BANK

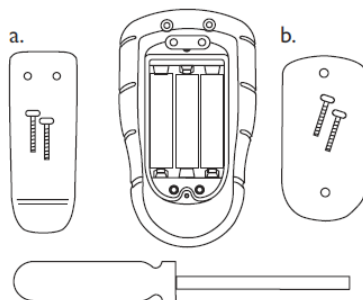
The transmitter is preset in Channel 1 Bank 1

The frequency bank is changed in the transmitter before it is paired with the receiver. If a receiver has already been paired with the transmitter, the receiver must be deleted and the frequency bank changed before the transmitter can be paired again.

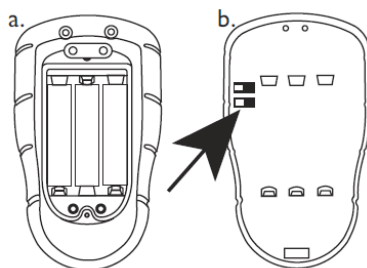
**IMPORTANT!** The transmitter must be off when switching between banks.

Switch 1=OFF	Switch 2=OFF	➡	Freq.bank 1
Switch 1=ON	Switch 2=OFF	➡	Freq.bank 2
Switch 1=OFF	Switch 2=ON	➡	Freq.bank 3
Switch 1=ON	Switch 2=ON	➡	Freq.bank 4

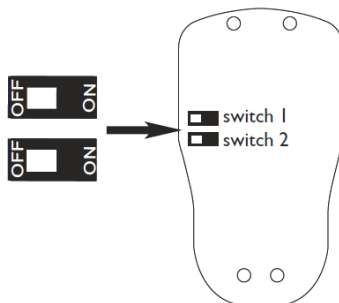
1. a.) Remove the lock belt clip
- b.) Remove the battery cover



2. a.) Take out the batteries (3) and dismantle the battery casing.
- b.) The frequency buttons are located to the left of the circuit board.



3. Check the frequency table and select the frequency bank you wish to use. Set the buttons (see figure) in the correct position in line with the frequency button table above.



4. Then reassemble all the parts.

**CHANGING FREQUENCY**

- 1. Start the transmitter
- 2. Press the OFF button and keep it pressed
- 3. Within 3 seconds: Press the ON button: Keep both buttons pressed
- 4. Release both buttons
- 5. Within 5 seconds:
  - a. Press the transmitter's IN button to move up a row in the frequency table (see the frequency table)
  - b.) Press the transmitter's OUT button to move down a row in the frequency table (see the frequency table)
- 6. The red LED light flashes three times when the frequency has changed. The transmitter is turned off automatically.

**NOTE:** If you want to move up or down more than one step in the frequency table: re-start the transmitter and carry out the previous steps one or more times.

*There may be a slight delay for the transmitter to connect to the receiver when the frequency is changed.*

**FREQUENCY TABLE**

Channel	Frequency Bank 1 MHz	Channel	Frequency Bank 2 MHz	Channel	Frequency Bank 3 MHz	Channel	Frequency Bank 4 MHz
1	433.075	1	433.100	1	433.125	1	433.250
2	433.175	2	433.200	2	433.225	2	433.350
3	433.275	3	433.300	3	433.325	3	433.450
4	433.375	4	433.400	4	433.425	4	433.550
5	433.475	5	433.500	5	433.525	5	433.650
6	433.575	6	433.600	6	433.625	6	433.750
7	433.675	7	433.700	7	433.725	7	433.850
8	433.775	8	433.800	8	433.825	8	433.950
9	433.875	9	433.900	9	433.925	9	434.050
10	433.975	10	434.000	10	434.025	10	434.050
11	434.075	11	434.100	11	434.125	11	434.150
12	434.175	12	434.200	12	434.225	12	434.250
13	434.275	13	434.300	13	434.325	13	434.350
14	434.375	14	434.400	14	434.425	14	434.450
15	434.475	15	434.500	15	434.525	15	434.550
16	434.575	16	434.600	16	434.625	16	434.650

## INTERLOCKING

When interlocking is activated, only one relay can be activated at a time. If interlocking is not activated, all relays can be activated at the same time. STANDARD: Interlocking deactivated (receiver Function LED = turned off)

## TURNING OFF INTERLOCKING

1. Start the transmitter and receiver
2. Press the receiver function button
3. The transmitter function LED lights up green when interlocking is activated. Deactivate interlocking by pressing the receiver function button until the LED goes out.

### INSTALLATION DOCUMENT

#### TRANSMITTER SETTINGS

Serial number: \_\_\_\_\_

Frequency bank/frequency: \_\_\_\_\_

#### RECEIVER SETTINGS

Serial number: \_\_\_\_\_

**INTERLOCKING**

ON

☐

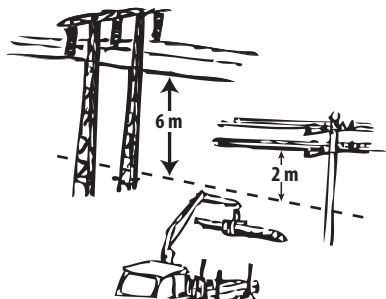
OFF

☐

## 22. OPERATION "Kör åt skogen rätt och säkert [Correct and safe forest operations]" published by the Swedish University of Agricultural Sciences"

Most accidents occur due to toppling over or if the tractor turns over. The worse the terrain is or the greater the load, the greater the risk of an accident.

- Important advice to reduce the risk of accidents: Keep a safe distance when driving under power lines. No part of the crane may be closer than: In the case of high-voltage power lines 6 metres, and in the case of low-voltage power lines 2 metres



Drive straight up or down hilly terrain. Do not drive up slopes that are too steep to drive up. As the tractor and trailer's centre of gravity is displaced backwards on a slope, there is a risk that the tractor may tip up. Use additional load weights if necessary. The same gear must be used driving down a slope as used when driving up it. Do not put the tractor into neutral when driving down a slope..



- Minimise the amount of driving across slopes. The more the tractor and trailer tilt, the more the weight is displaced to the point where they can turn over.



**REMEMBER!** It is harder to control a large load than a small one, so do not load the trailer with too much timber!

## 23. LOADING WORK

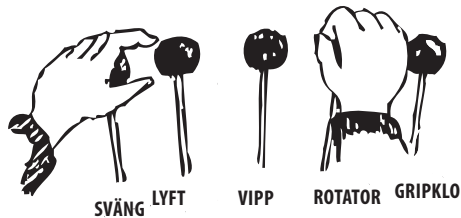
### Basic movements

If you are not accustomed to using a grapple, you should first practice basic crane movements. Exercises that shorten the learning time are set out below. The timber trailer's stabilisers must be used during all loading and unloading work. The ground under the stabilisers must be level and stable as there is a risk of overturning when working on slopes. Therefore, it is very important that the trailer is loaded and unloaded on a level surface.

### PRACTISE STEPS

#### 1. One lever at a time

Begin with one function at a time. Operate the crane using a low and even engine speed. Check which crane movements are suitable for the tractor. The operator must feel completely comfortable with the grapple's movement pattern. Practice starting and stopping each movement smoothly to ensure the grapple does not sway when in operation. Do not run grapple loader functions to their end po



#### 2. PARALLEL DISPLACEMENT

Once you have mastered the first exercise, the next one is to place the grapple about 0.5 metres above the ground as far from the trailer as possible with the grapple loader turned 90 degrees to the trailer. Move the grapple back and forth toward the trailer parallel to the ground. The stop and start movements should also be smooth.

#### 3. LOADING AND UNLOADING

Set up a reasonably high pile of logs. Grip the pile and place the gripping point so that the lowest point of the timber tilts toward the headboard. Lift the timber in towards the trailer before using any rotating or lifting movements. You are in full control once grapple movements are smooth and there is no swaying. Complying with these instructions means you will not have to retighten the hose connections in the rotator that often. By working calmly and methodically, you learn a movement pattern, which is good in terms of safety. The crane operating techniques take a few weeks/months to learn before you can work at full capacity.

The risk of accidents is greater than normal during the learning phase. Pulling the wrong lever to let the timber slide off the grapple when you least expect it can happen easily during this process. Therefore, you should leave a good amount of space around you when practicing.

We are grateful for your help pointing out any inaccuracies in the Kellfri product delivered to you. Before making a complaint read Kellfris general warranty and sales conditions in our catalog as well as the enclosed User's manual that comes with the machine.

Please fill in the details below and attach photo and other information in order to process your request.

<b>Buyer:</b>		<b>Customer number:</b>
<b>Address:</b>		<b>Invoice number:</b>
<b>E-mail:</b>		<b>Phone nr:</b>
<b>When was the product delivered?</b>	<b>When was the product taken into operation?</b>	<b>Did the product functioned as it should upon the first operation?</b>
<b>Defect product / part:</b>		
<b>Problem description:</b>		
<b>Describe the sequence of events:</b>		
<b>Other:</b>		

Submit Complaint form and photo to:  
Kellfri AB  
Division of Services : Contact Kellfri retailer

Or e-mail [service.info@kellfri.se](mailto:service.info@kellfri.se)

### WEB

[www.kellfri.co.uk](http://www.kellfri.co.uk)

## WARRANTY TERMS AND CONDITIONS

Validity of the warranty - Kelfri's Warranty is valid 12 months from the date of purchase.

This warranty replaces - Compensation for spare parts after acknowledgment that the fault lies on the material or manufacturing defects.

This guarantee do not cover

- Labour costs
- Travel expenses
- Any modification that the buyer himself has/had made.
- Any consequential damages that occurred out of damage to the machine.
- Damage due to normal deterioration of the machine, inadequate: service, user inexperience or use of spare parts which are not original.
- Wear parts such as hoses, seals, oils, and mechanical belts

## EG-FÖRSÄKRAN OM MASKINENS ÖVERENSTÄMMELSE, ORIGINAL

EC-DECLARATION OF CONFORMITY

According to 2006/42/EC, Annex 2A

Kelfri AB

Munkatorpsgratan 6

532 37 Skara, Sweden

Declares that the machine

Name: 21-SV80, 21-Sv90, 21-GI53/GL63/GLP57

Type: Timber trailer with crane

Complies with all applicable provisions of the Machinery Directive 2006/42/EC.

Other equipment must meet the hardware requirements of the Directive.

Tina Baudtler, VD

*Kelfri AB is constantly working on further developing their products and therefore reserves the right to modify, among other things the design and appearance without notice.*

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## CUSTOMER SERVICE

You are always welcome to give your feedbacks, reviews or ask us about our tools and products.

Kelfri AB

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