

**21-SV20.101, 21-SV20.200**  
**21-SV20.300, 21-SV20.500**  
**21-SV20.900, 21-SV20.1000**  
**FORESTRY TRAILER WITH 3,6m**



**Kellfri**

Read this manual carefully  
before using the product!  
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. Compliance with the general safety instructions, instruction manual and sound common sense will guarantee many years of enjoyment using the product. Kellfri's equipment and products are aimed at self-employed farmers who have stringent performance demands.

## PRODUCT INFORMATION

Powerful forestry trailer with 9 hp petrol motor for ATVs or smaller tractors. Kellfri's forestry trailer allows you to load and unload timber. It is particularly suited for use by self-employed farmers working in the agricultural sector. The forestry trailer is designed to be connected to a tractor hitch and pulled behind a farm tractor.

The valve block can be positioned by the rear window of the tractor. Different tractors require different valve block mounting solutions. In certain cases, the hoses between the valve block and the crane may also need to be adjusted. Kellfri cannot be held liable for any such customisation work.

The trailer is not equipped with lights and is only intended to be used during the day. Otherwise, fit the Forestry Trailer with a magnetic rear light.

TECHNICAL DATA	21-SV20/GL36	21-SV20BD/GL36	21-SV20RSBD/GL36
Central beam	Front 80x80 / Rear 90x90 mm	Front 80x80 / Rear 90x90 mm	Front 80x80 / Rear 90x90 mm
Drive	-	Hydraulic motors, 2 x 160 cc	Hydraulic motors, 2 x 160 cc
Ground clearance	Central beam, 400 mm	Central beam, 400 mm	Central beam, 400 mm
Front gate	Height 720 mm, Width 1100 mm	Height 720 mm, Width 1100 mm	Height 720 mm, Width 1100 mm
Grapple area	0,08 m <sup>2</sup>	0,08 m <sup>2</sup>	0,08 m <sup>2</sup>
Grapple claws	690 mm	690 mm	690 mm
Tyres	23 x 10 x 12	Off road tread 22 x 11 x 10	Off road tread 22 x 11 x 10
Loading width	Inside measurement 600 mm (bottom), 1100 mm (top)	Inside measurement 600 mm (bottom), 1100 mm (top)	Inside measurement 600 mm (bottom), 1100 mm (top)
Lifting capacity	Vid 3 m: 175 kg	At 3m: max 175 kg	At 3m: max 175 kg
Max loading capacity	2000 kg	2000 kg	2000 kg
Engine for the hydraulic	9 hp	9 hp	9 hp
Max reach - crane	3600 mm	3600 mm	3600 mm
Bolsters	4 st, height 800 mm	4 st, height 800 mm	4 st, height 800 mm
Kerb Weight	405 kg	445 kg	510 kg
Total width	1350 mm	1350 mm	1350 mm
Weight of the TRAILER	242 kg	242 kg	242 kg
Valve package	Specma, 5-lever + 2 outrigger	Specma, 5-lever + 2 outrigger	Specma, 5-lever + 2 outrigger
Tyre pressure (Do not exceed max pressure!)	Check info on the side of the tyre	Check info on the side of the tyre	Check info on the side of the tyre

## SAFETY INSTRUCTIONS

Before using the equipment or product, and for the safety of yourself and others, you must read the safety instructions and the instruction manual and understand its contents. Always keep the safety instructions and instruction manual handy for users of the equipment or product. For the safety of both yourself and others, it may be a good idea to read through the safety instructions every now and then. If the safety instructions or instruction manual gets damaged or in any other way cannot be used, new copies may be ordered from:

Kellfri AB, Storsvängen 2, 532 38 SKARA

Sweden. Tel.: +46 (0)511 242 50 (Please contact the retailer)

Do not use the equipment or product if you feel ill, tired or are under the influence of alcohol. Do not use the equipment or product if you are taking prescribed medication or drugs. Always comply with general rules of the road and applicable rules stipulated by the Swedish Protection of Animals Act. People under the age of 15 are not allowed to use the equipment.



### Warning!

The original design of the trailer must not, under any circumstances, be modified without the approval of the manufacturer. Unauthorised modifications and/or accessories may cause life-threatening injuries or death for users and others.

## PRODUCT SAFETY INFORMATION

- Compliance with the safety instructions requires that the timber trailer is only used as described in these instructions. It is the user's responsibility to read through the instructions and comply with them. For equipment connected to tractors, read the tractor's operating manual.
- Always check that the performance of the machine combination to be used with the trailer guarantees safety and functionality.
- Never overload the trailer! The trailer must not be loaded above the height of the head-board!
- Never leave the driver's seat until the brakes on the towing vehicle have been applied.
- Danger zone 15 meters. Only the operator is allowed to be within the risk area while the trailer is in use.
- Do not leave a loaded trailer parked unsupervised. When unhitching the trailer, it must be empty and on a level surface with the trailer wheels secured using suitable brake blocks.
- To stop trailer movements in the event of an emergency, stop the tractor.
- There is a risk of suspended loads being dropped if the oil supply to the crane is disrupted. First lower the lifting arm, followed by the articulated boom and then unload the grapple.
- The tractor should be fitted with an ABE2 or ABE3 fire extinguisher. Contact your insurance provider.
- The trailer is equipped with 50mm ball coupling. Regularly check the coupling for wear and tear. Maximum traction load on the ball coupling is 9 tons and maximum pressure 3 tons.
- The trailer's noise level does not exceed 70 dB (A).
- Exercise caution when working with equipment with hydraulic hoses as the oil under pressure can penetrate skin. Immediately seek medical attention if this should occur.
- The trailer is not equipped with lights and is only intended to be used during the day. If necessary, the trailer can be fitted with a magnetic rear light.





## Warning!

Never use equipment or products that have defective safety components.

Kellfri is not liable for any modifications, changes or rebuilds carried out by customers.

### INSTRUCTIONS FOR EMERGENCY SITUATIONS

In case of emergency, call 112.

Always have a mobile phone or emergency phone available when working alone. A first aid kit and fire extinguisher must be kept in an easily accessible location when carrying out any work, maintenance and service. To perform an emergency stop, turn off the tractor.

### PERSONAL PROTECTION










Always use suitable protection equipment. Do not wear loose clothing or jewellery while working with the equipment. Long hair should be tied up when working equipment that has moving parts. Use protective gloves as there is a risk of burns if any hot surfaces are touched such as exhaust pipes, and avoid getting oil and petrol on skin. Ear defenders must be worn whilst the engine is running. Helmets with ear defenders must be used while working to prevent knocks from the cabin sides and suchlike in uneven terrain. Wear protective boots with anti-slip soles.



# 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:

- An SMV sign must be attached when travelling on public roads.
- EU regulations stipulate how fast a tractor with a non-brake trailer is allowed to go.

Symbol	Explanation
	<p>Read the operating manual before carrying out work! Warning! Before maintenance, servicing, connecting and disconnecting the machine, the tractor must be turned off and the ignition key removed.</p>
	<p>Risk zone 15 m Respect the equipment's risk zone! Warning! Risk of crushing! Do not permit anyone to stand under suspended loads.</p>
	<p>Lever functions</p>
	<p>Max trailer towbar eye load 3/1.5 tonnes</p>
 <p>Smörjning efter 10 tim. i drift</p> <p>Använd alltid STODBEN</p> <p>Efterdrag samtliga skruvar och kopplingar</p>	<p>Greasing after 10 hours of operation Always use stabilisers—loading/unloading Retighten all bolts and connections</p>
	<p>Warning for power lines!</p>
	<p>Max. 200 kg grip Warning—oil jet from hydraulic hoses Warning—moving parts.</p>
	<p>Warning! Keep off the machine! Warning! Accident risk for children! Children are not allowed in the vicinity of the machine</p>
	<p>The product is CE marked</p>

## SURROUNDINGS

Check that the work area is free from bystanders, children and objects before hitching or using the trailer. There is a risk of serious bodily harm. Be extra careful if there are children in the vicinity of the area where the equipment or product is used or stored.

Check that there are no low-hanging electrical cables within the work area. Exercise caution when working on slopes and close to ditches. Always work alone with equipment or products that are made for working alone. Remove all rubbish from your work area. Keep work areas clean. Always respect the equipment risk zone.



### **Danger!**

Children must not be left unsupervised in the area.

## STEPS TO TAKE BEFORE USE

Carefully read the safety instructions and the operating instructions. Make sure that you understand the safety instructions, operating instructions and warning decals. Use common sense when using the product and suitable personal protective equipment. Always check the performance of the machine combination to be used. It is important that these are in harmony and work satisfactorily. This is done to ensure the equipment or product work as expected, and to guarantee the safety of yourself and others.

Carry out a visual inspection of the equipment or product before use. Repair or replace damaged or worn parts to reduce the risk of injury.

Grease moving parts and check that all nuts and bolts are tightened. Correct if necessary. Learn and remember the correct working method. Beginners must work slowly until they have learned how the machine or product works. Users/customers are responsible for ensuring users can handle the situation. If users feel that the machine is dangerous to use, it should not be used.

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

## HITCHING THE TRAILER

- Read through the operating manual in its entirety.
- Check the ball coupling on the trailer. Then hitch on the forestry trailer to the tractor.
- Operate and carefully check movements of the equipment. Hoses must not be stretched or rub against sharp edges, etc. Correct if necessary. Tighten leaking connections if there are any leaks. Do not overtighten the connections. They may break if overtightened.
- Check the air pressure in the tyres. Max. air pressure 2.5 bar.



### **Warning!**

Compliance with the safety instructions requires that the product is only used as described in these instructions. It is the user's responsibility to read through the instructions and comply with them.

## USE

Only those who understand the safety instructions and the operating instructions may use the equipment or product. Exercise caution and care when working with the equipment and only use it in the way described in the operating instructions. There is a risk of crushing when working with equipment that has moving parts. Exercise caution when working with equipment with hydraulic hoses as oil under pressure can penetrate the skin. Immediately seek medical attention if this should occur. Always work alone with equipment that is made for working alone. Never overload the equipment and respect its risk zone.

### Connecting equipment

- It is recommended that the control is positioned close to the tractor. Hydraulic hoses must not be attached inside the cabin.
- Connect the grapple loader valve block pressure and return hoses. Make sure the pressure and return hoses are connected correctly. The valve block may be damaged if the hoses are connected incorrectly.
- The controls shall be placed on the towing vehicle (Tractor/ATV)

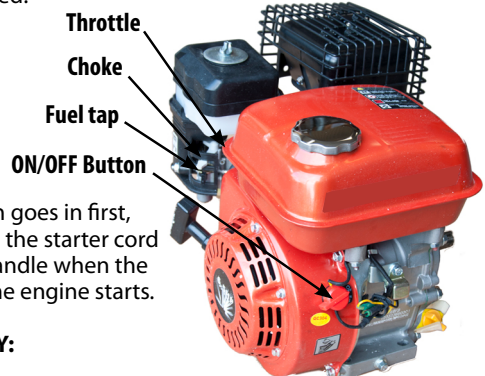


## USE AND CARE INSTRUCTIONS

- Check that the equipment is undamaged before connecting it to the vehicle.
- Connect the equipment and lock it in place.
- There is usually air in the system at the start. Carefully extend all cylinders fully a few of times to purge any air from the system.
- Calmly and methodically practise the movement pattern used for loading and unloading timber on the trailer. There is less stability when starting to load. Exercise caution.
- Keep the crane low down when in transit.
- Both stabilisers must be lowered when loading and unloading timber. Timber must not be pulled with the crane when driving the tractor. The tractor must be stationary when using the crane.
- The articulating arm shouldn't be fold out fully and use to press down timber. The crane is only designed to lift timber. Maximum towing speed of the trailer is 30 km/h.
- Loads must be spread evenly across the trailer.
- Loads sticking out must be well anchored.

### STARTING THE ENGINE

1. Fill the tank with fuel and engine oil
2. Turn the key to "ON"
3. Open the choke and fuel valve.  
When the machine is cold, the choke may need to be used.
4. Pull the starter handle slowly to the switch goes in first, then firmly pull on the handle. Do not pull the starter cord completely out and do not let go of the handle when the rope is pulled out. Repeat this step until the engine starts.



### SWITCHING OFF THE ENGINE CORRECTLY:

1. Set the throttle to the slowest speed.
2. Turn the ignition switch to the OFF position.
3. Turn off the fuel valve.

## AFTER USE

Wash down and relube the forestry trailer if necessary.

## TRANSPORTATION AND STORAGE

Check that the work area is free from bystanders, children and objects before driving off. Always observe additional caution during transport and moving. Ensure that the equipment or product is well anchored and existing transport lashings are fitted. Always position the load as low as possible. Respect the risk zone even during transport and moving. Do not permit anyone to walk under suspended loads when carrying out lifts. Trailers used for transport should have brakes that work. Always keep the equipment or product on a dry surface, preferably under a roof when not in use. Ensure that the equipment or product is stable and cannot fall over. Never permit children to play at the storage site. Be aware of the tipping risk! NEVER allow anyone to travel on the trailer whilst it is in motion!

## MAINTENANCE AND SERVICE

Make sure the trailer is stable and cannot tip over when carrying out maintenance and service work. Replace damaged or worn parts to reduce the risk of injuries. Carry out maintenance, service and checks in line with recommendations. Only use spare parts with equal performance to reduce the risk of injuries and breakdowns. All repair work and electrical connections must be carried out by a qualified technician.

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. 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 (1 L) or similar in the slewing housing. All grease points must be lubricated every 25 hours.

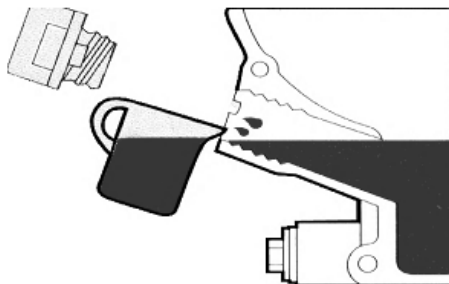
Retighten all nuts and bolts after 10 hours of operation. Tighten leaking connections if there are any leaks. Do not overtighten the connections. They may break if they are tightened too much.

SERVICE	INTERVAL	MEASUREMENT
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

## Changing Oil

When changing oil, be sure to use an approved container for oil. Old oil must be disposed of properly recycling center. Contact your local authority for more information.

- Ensure that the machine can not tip over.
- Pull out the dipstick.
- Place an oilpan under the engine and remove the oil plug.
- Drain the oil pan, reinstall the drain plug and tighten the oil filler.
- Fill with fresh oil and check the level.  
Use engine oil **SAE 10W-30 (1,1 liter)**



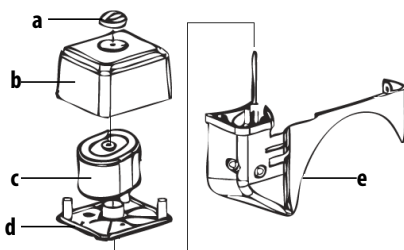
CAUTION: Do not overfill the engine.

## Cleaning the air filter

It is important to always check and clean the air filter to prevent damage to the engine. Clean the air filter regularly prolongs the lifetime of the engine.

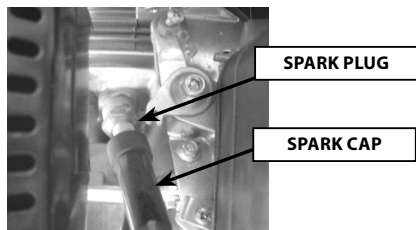
1. Loosen the wing nut and remove the filter cover.
2. Clean the filter, use oil solubilizing chemicals with high flash point such as methylated spirits.
3. Clean all parts and let them dry.
4. Dip the filter in motoroil, squeeze the oil out of the filter.
5. Reinstall all parts.

- a. Wingnut
- b. Filter cover
- c. Filter
- d. Filter mount
- e. Filter housing



## CHECKING AND CLEANING THE SPARK PLUGS

1. Pull the spark plug cap and remove the spark plug, use a spark plug wrench.
2. Clean the spark plug and measure the distance between the spark gap (distance between electrodes). The distance is between 0.7mm-0.8mm



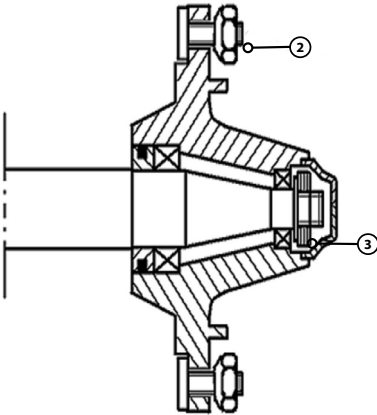
3. Reinstall the spark plug.

When installing a new spark plug, tighten by hand without ratchet + 1/2 turn extra.

When reinstalling the old spark plug, tighten by hand without ratchet + 1 / 8-1 / 4 extra.

CONTROL OR MAINTENANCE	After 10 hours of driving	After 50 hours of driving	After 200 hours of driving or every two years
Lubrication of all joints.	●	●	●
Lubrication of slewing housing.	●	●	
Check the oil level in the hydraulic system.	●		
Check the oil level in the engine.	●	●	
Check hoses/hose protection. Damaged hoses/hose protectors are replaced immediately.	●	●	●
Change the oil in the slewing housing.		●	●
Change engine oil.			●
Change the oil in the hydraulic unit.		●	●
Check for any play. If necessary, reapply.	●		●

**Think of! Depending on how often the cart is used and in what weather conditions, extra lubrication may be needed.**

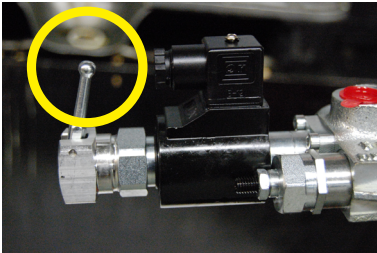


### Maintenance Instruction

**1.** Do not overload the tractor and trailer!  
Overloading severely shortens the products lifespan.

**2.** After wheel replacement, check that the wheel nuts are tightened and repeat after a stable period of operation. Use copper paste or similar paste on the threads to avoid hassle of future maintenance. The tightening torque must not exceed 45 kpm. Use a torque wrench if possible.

**3.** Check that the bearing setting is correct to prevent abnormal bearing wear. Tighten the nut for the wheelhub until no play is felt, then back off 1/8 - 1/4 turn. Secure the nut with the cotter pin.



Emergency use of electric valve without using the levers. When the vehicle has not been in use for a longer while, the radio control can start to feel harsh or stop working. The electric valve is equipped with mechanical levers on each side that can be used in emergency situations.



## Warning!

**Never** start the engine when the hydraulic hoses are not connected (circled in picture) to grapple and loader. The pressure relief valve is on the control block not the engine and the oil has nowhere to go, in which the pump will sustain terminal damage!



## **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.

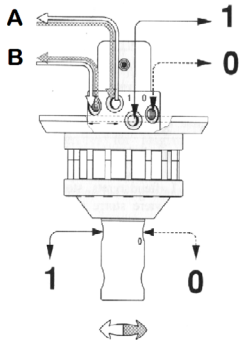
The rotator is connected to the crane's control valve via suitable hoses and pipes. The crane must be equipped with pressure-limiting valves that limit the pressure going to the rotator to a maximum of 200 bar. If a higher pressure is possible, pressure-limiting valves should be installed on the rotator's 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 pipe is 200 bar and that the marked pipe in the rotator's upper cover (upper pipe) 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 pipe under pressure as this pressure is an unnecessary load on the rotator. The crane and equipment must be maintained with the EU Machinery Directive.

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



Technical data	FR3
Turning angle	Unlimited
Max.operatingpressure	200 bar
Rec. l/min.	10
Torque (150 bar)	270 Nm
Max. axial force	20 kN
Max.Permissibleload	970 kg
Weight	13 kg

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.

SERVICE AND MAINTENANCE INSTRUCTIONS

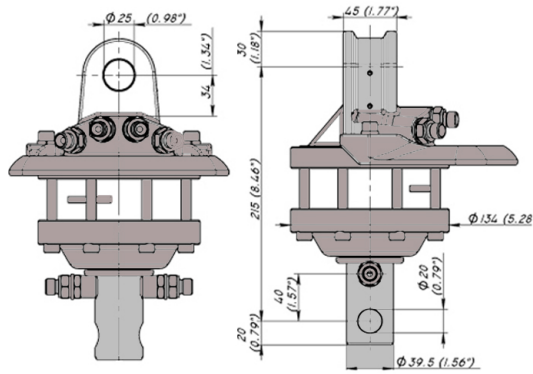
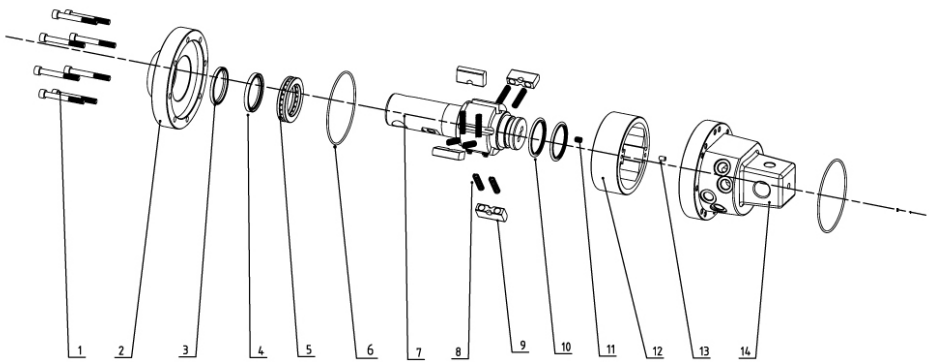
If the rotation of the rotator becomes uneven and sometimes stops, the equipment should be checked. The pins in the upper housing of the rotator should be greased regularly.

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.



**IMPORTANT! Retighten all bolts, nuts and couplings after a couple of hours usage!**

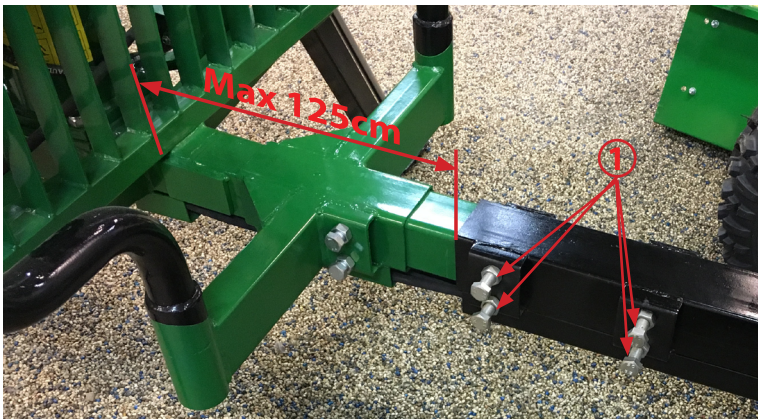
ROTATOR EXPLODED DIAGRAM



No.	Designation	Amount
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

**LENGTH ADJUSTMENT, BOGIE, WITH DRIVE**

The positionen of the bogie can be adjusted to a maxlength between the front gate and the end of the bogie to 125cm, see picture below. Make sure that the four bolts (1) with locking nuts is well tightened when remounting.

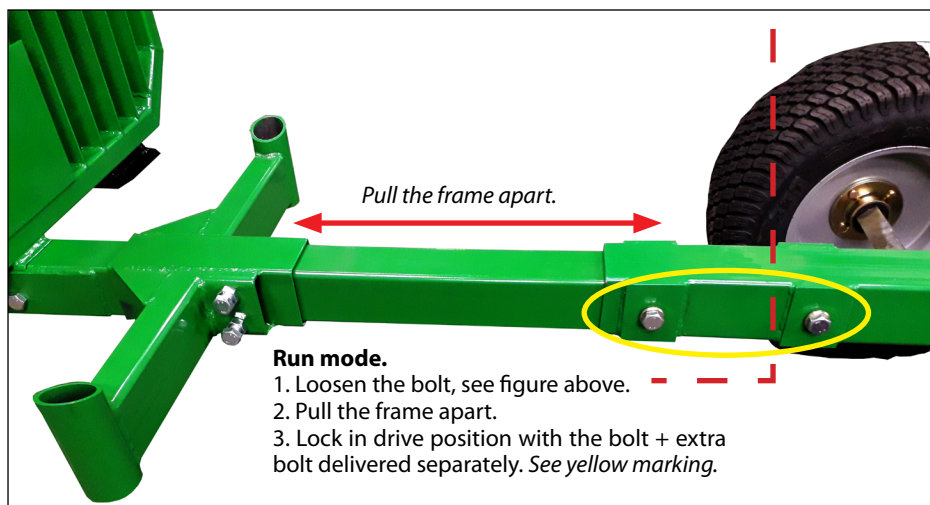
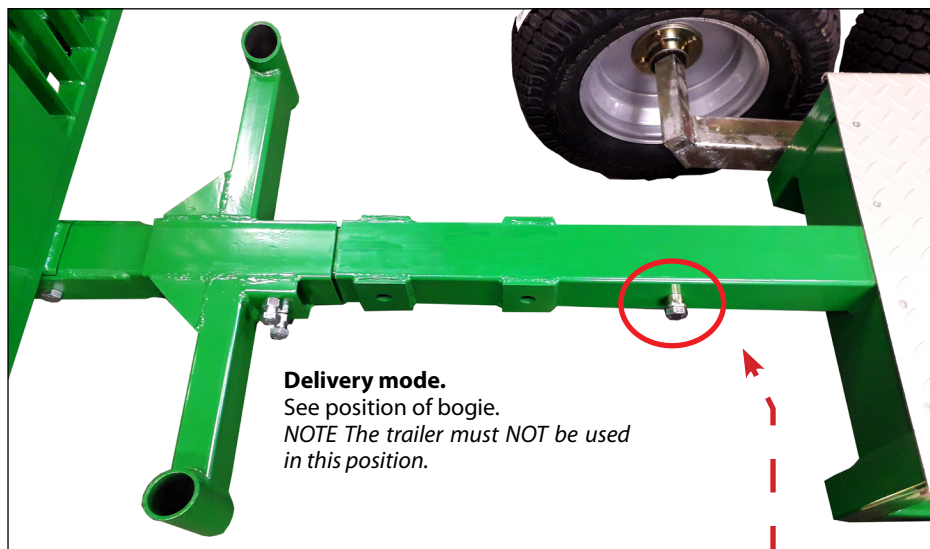


**TRAILER WITH DRIVE 21-SV36BDN**

A simple and reliable drive trailer. Built on an reliable and proven technology. The drive rollers are designed to fit into the tread. The 9HP engine gives you extra power when operating in harsh soil conditions and which can be helpful when loading and unloading! The size and agility on the rig makes it really come to the fore when thinning and management of pulpwood. Operating geometry of the crane allows you to upgrade and handle full-sized logs.

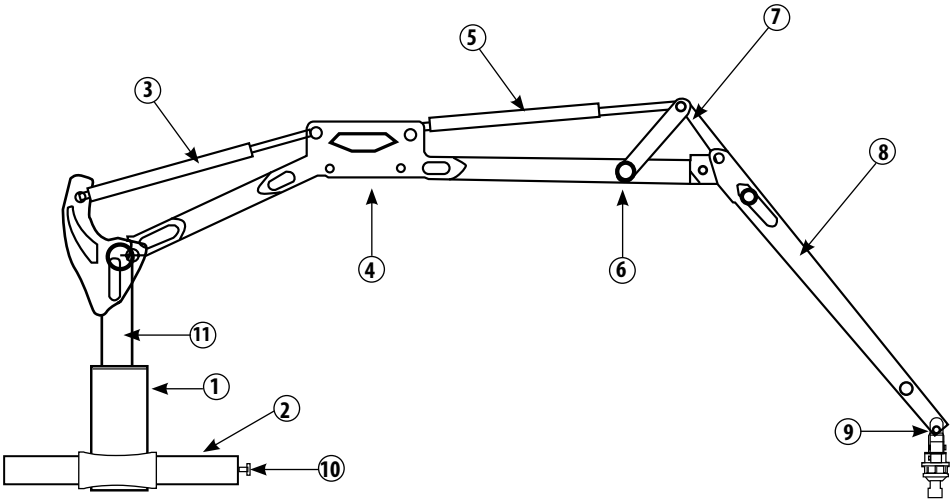
TRAILER	
Width:	1350 mm
Central tube:	90x90/80x80
Tyres:	23x10x12
Props:	4 st
CRANE	
Reach:	3,6 m
Lifting force at 3 m:	175 kg
Grapple, gripping area:	0,08 m <sup>2</sup>
Outriggers	Hydraulic
POWER PACK	
Motor	9 hp
Valve Package lever	Multiple

## LENGTH ADJUSTMENT BOGIE WITHOUT DRIVE (from August 2021)



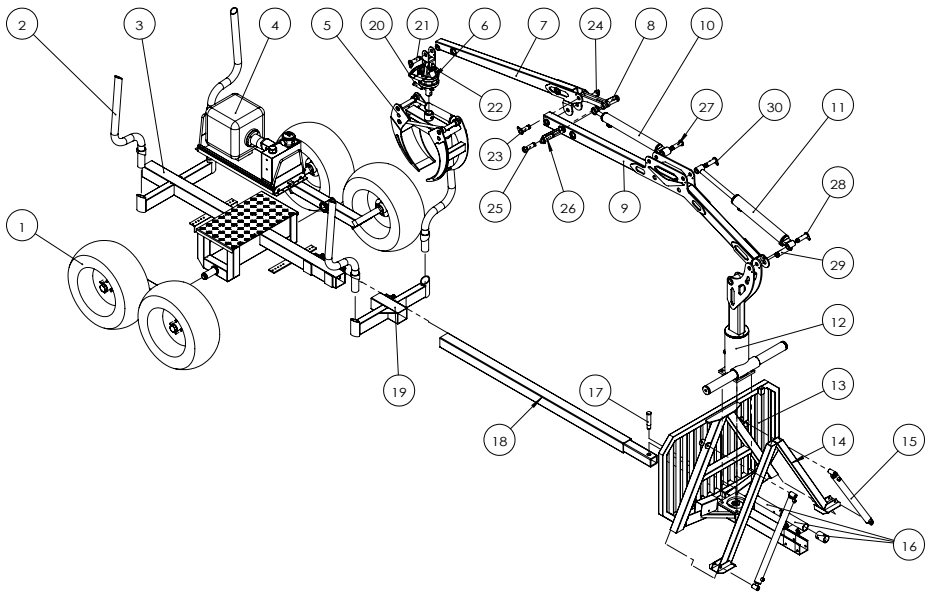
**NOTE** The bolts can only be mounted from the left side of the trailer.  
See different hole sizes.

**EXPLODED VIEW - CRANE**  
**PICTURE 1**



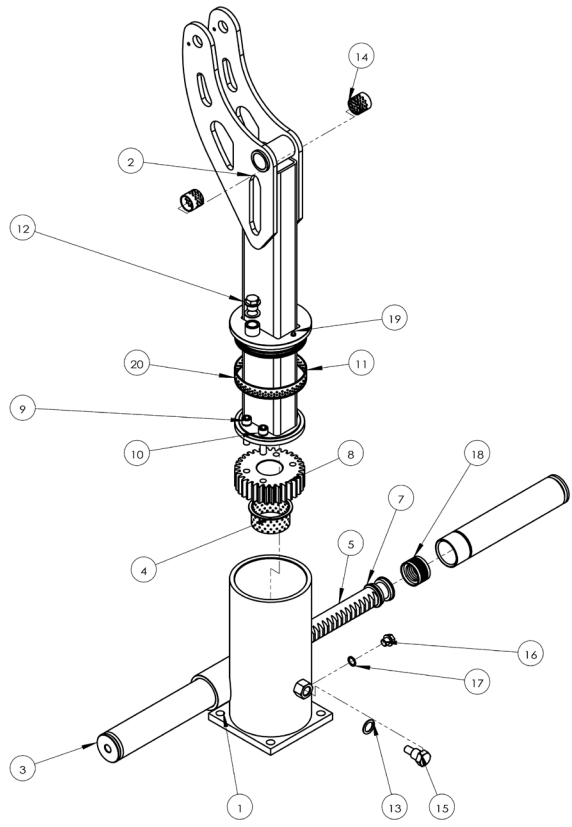
No.	ART.No.	DESIGNATION
1	R21-SV34.024	The slewing mechanism
2	R21-SV34.038	Turn Cylinder
3	R21-SV34.013	Lift cylinder
4	R21-SV36.021	Lift arm
5	R21-SV34.001	Cylinder - stick
6	R21-SV34.008	Folding joint - the middle part
7	R21-SV34.008	Folding hinge - Gable
8	R21-SV36.020	Folding arm
9	R21-SV34.026	Rotator holder
10	R21-SV34.009	Banjo Screw
11	R21-SV34.029	Tower - complete

**EXPLODED VIEW - CART**  
**PICTURE 2**



NO.	ART.NO	DESIGNATION
15	R21-SV34.004	Cylinder - Outriggers
13	R21-SV34.005	Front gate and pull
14	R21-SV34.003	Outriggers
-	R21-SV34.031	Hydraulic hose from the valve packages to engine
2	R21-SV34.007	Support
18	R21-SV34.061	Slots banke front
4		Motor (9hk)
-	R21-SV34.059	Pump with tank (9hk)
26	R21-SV34.017	Bogie - Right
27	R21-SV34.018	Bogie - Left

**EXPLODED VIEW - PIVOT HOUSING**

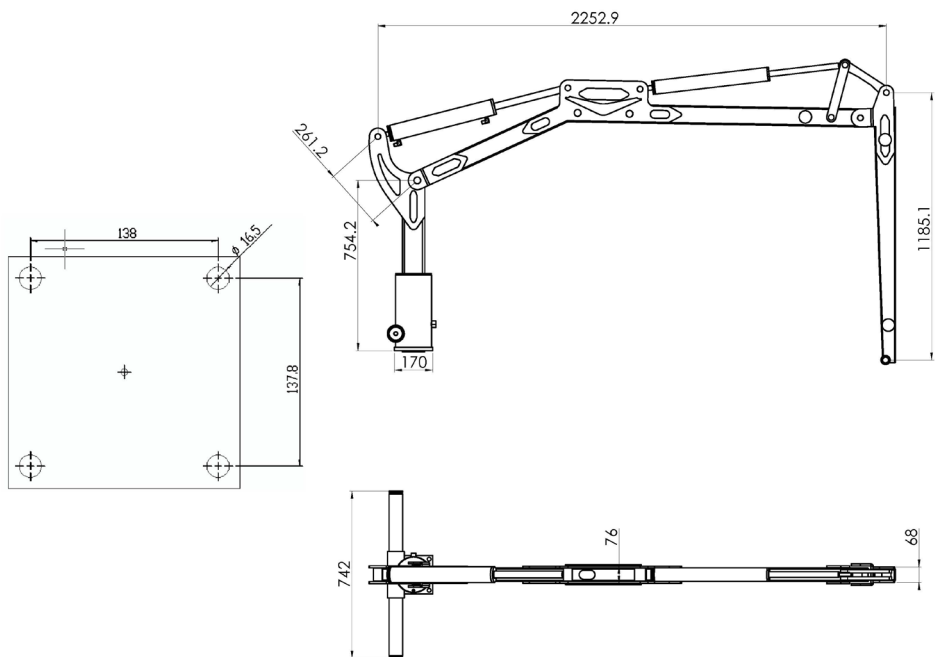


No.	DESIGNATION	QTY
1	housing	1
2	tower	1
3	turn cylinder	2
4	bushing	1
5	gear	1
6	bushing for the gear	2
7	piston	2
8	cogwheel	1
9	Hex bolt M12x55	4
10	spring washer M12	4

No.	DESIGNATION	QTY
11	copper sleeve upper	1
12	lubricating bolt	1
13	washer M20	2
14	copper sleeve 30x34x30	2
15	bolt	1
16	banjo bolt	1
17	washer	1
18	seal	2
19	lubricating point M6	2
20	O-Ring 140x2,5 mm	1

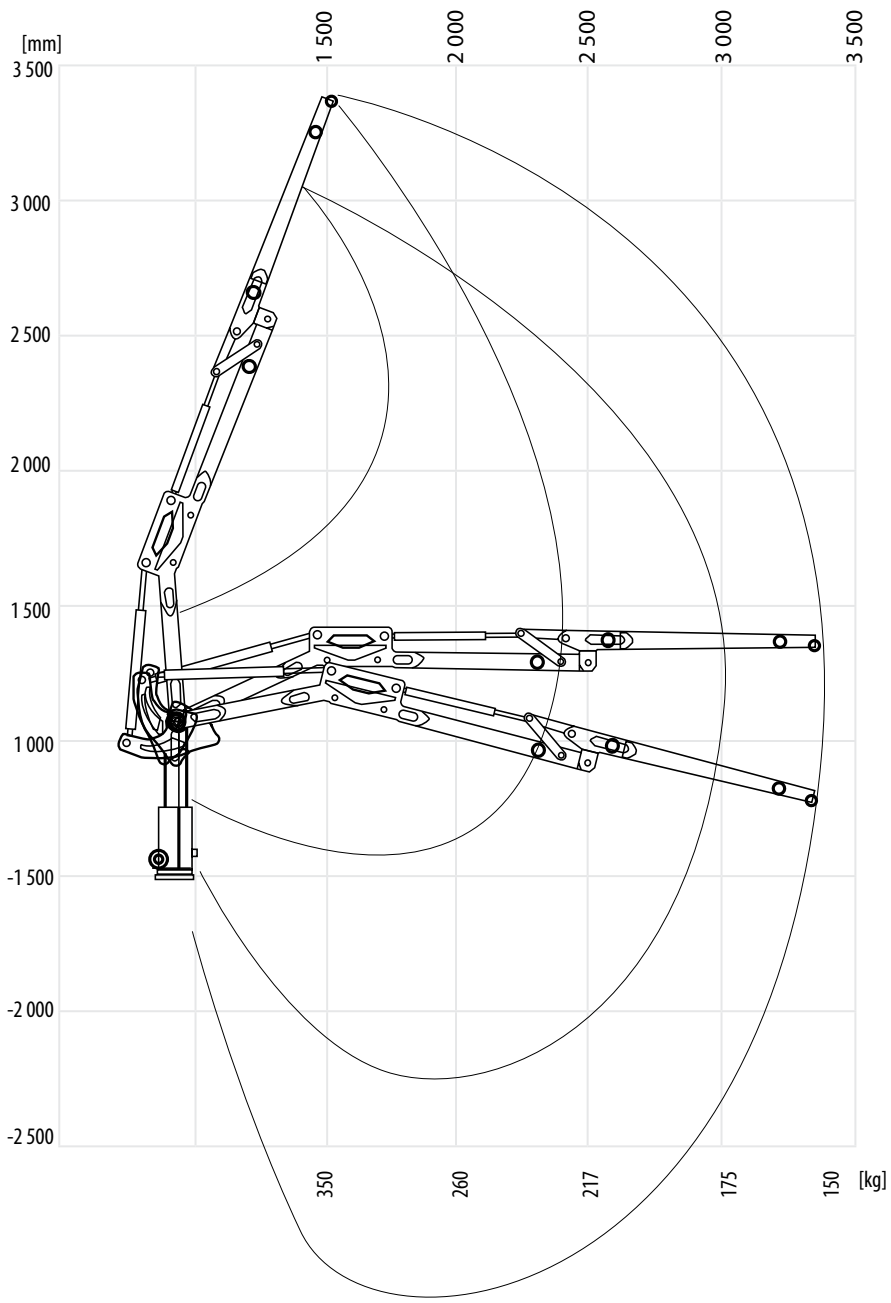


CRANES 21-GL36

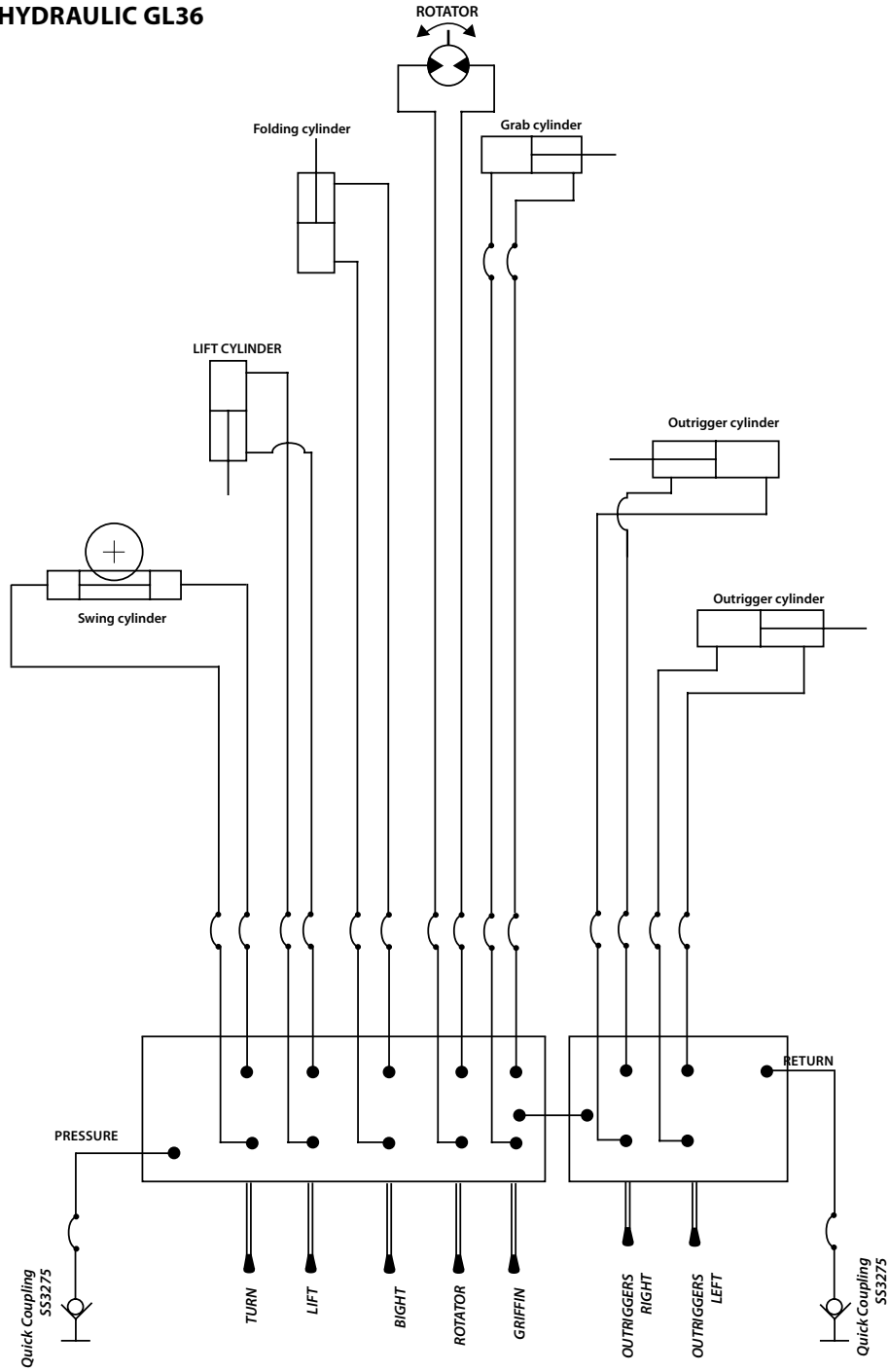


TECHNICAL DATA	21-GL36
Reach crane [mm]	3600
Clamping claw (width) [mm]	700
Grapple area[m <sup>2</sup> ]	0,08
Rotator weight between the crane arm and rotator [kg]	13
Torque [kNm]	7
System pressure [Mpa]	16
Oil volume-turret [L]	1
Weight of crane incl. grapple and rotator [kg]	245

LIFTING CAPACITY 21-GL36



HYDRAULIC GL36



# HYDRAULIC HOSES VALVE PACKAGE GL36

Hydraulic hoses are marked to identify which hose goes to which section of the valve package. See the mark on the hoses and picture below during switching.

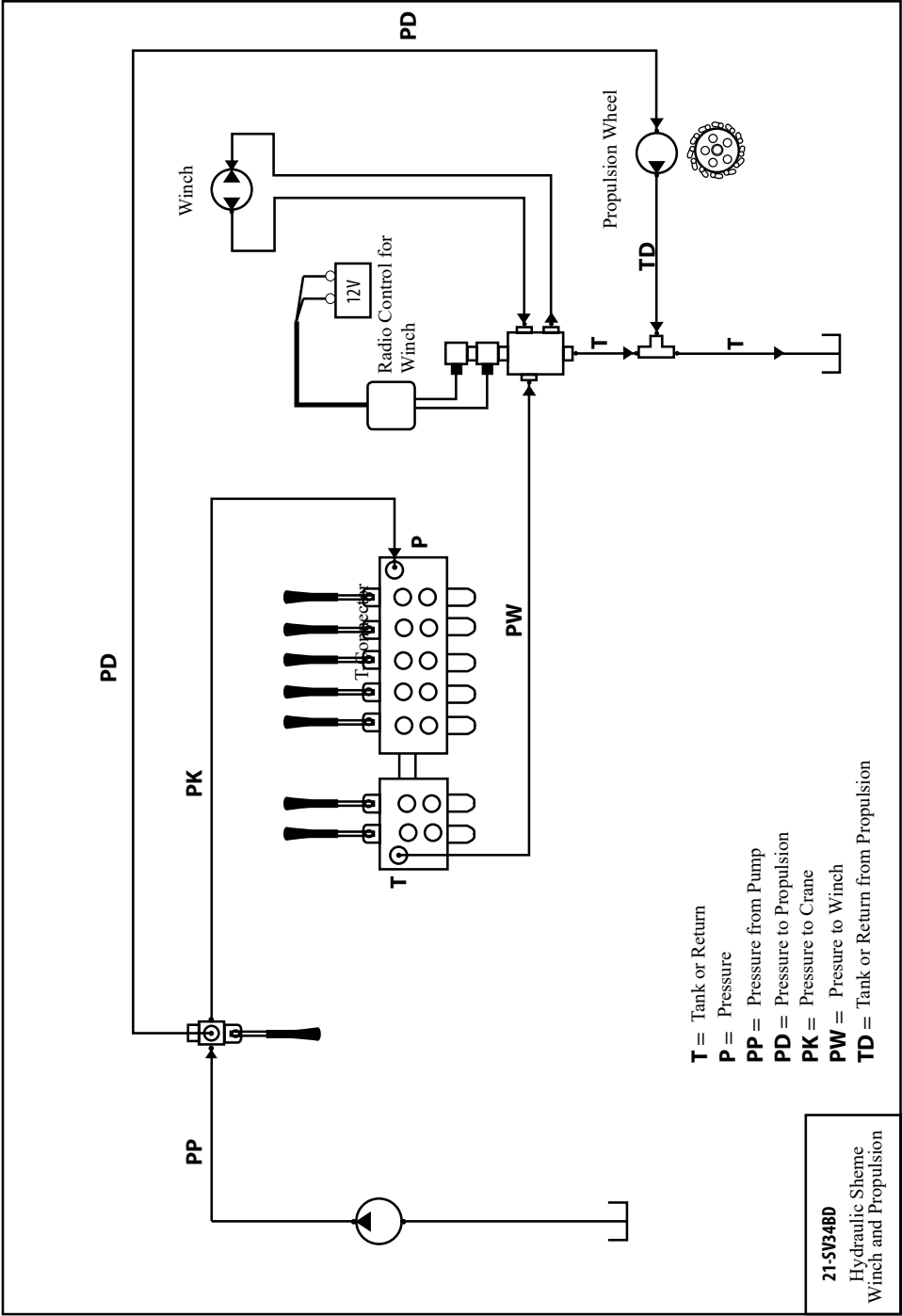
## HYDRAULIC HOSES AND COUPLINGS.

Hydraulic hoses from valve assembly to the cylinder/motor.

No.	DESCRIPTION	L Ä N G D [mm]	NO.	CLUTCH Valvepackage [“]	TYPE	ANGLE [°]	KOPPLING Cylinder[“]	TYPE	A N G L E [°]
T	Press	3 650	1	3/8	Female	Straight	1/2	Male	Straight
R	Return	3 650	1	3/8	Female	Straight	1/2	Male	Straight
1AB	Turncylinder	1 900	2	1/4	Female	Straight	3/8	Banjo	Straight
2A	Bom	2 300	1	1/4	Female	Straight	3/8	Female	Straight
2B	Bom	1 900	1	1/4	Female	Straight	3/8	Female	Straight
3A	knit	3 200	1	1/4	Female	Straight	3/8	Female	Straight
3B	knit	3 500	1	1/4	Female	Straight	3/8	Female	Straight
4AB	Grip	5 500	2	1/4	Female	Straight	1/4	Male	Straight
5AB	Rotator	5 500	2	1/4	Female	Straight	1/4	Male	Straight
6AB	Outtrigger-L	1 680	2	1/4	Female	Straight	1/4	Banjo	Straight
7AB	Outtrigger-R	1 870	2	1/4	Female	Straight	1/4	Banjo	Straight

## ROTATOR/GRIP Hydraulic hoses - Extension of valve packages to the rotator

NO.	DESCRIPTION	Length [mm]	CLUTCH Valvepackage [“]	TYPE	ANGLE [°]	CLUTCHCyl- inder[“]	TYPE	ANGLE [°]
2	Gripping	700	1/4	Female	Straight	1/4	Female	45
2	Rotator	700	1/4	Female	Straight	1/4	Female	45
2	Grip cylinder	680	1/4	Female	Straight	1/4	Female	90



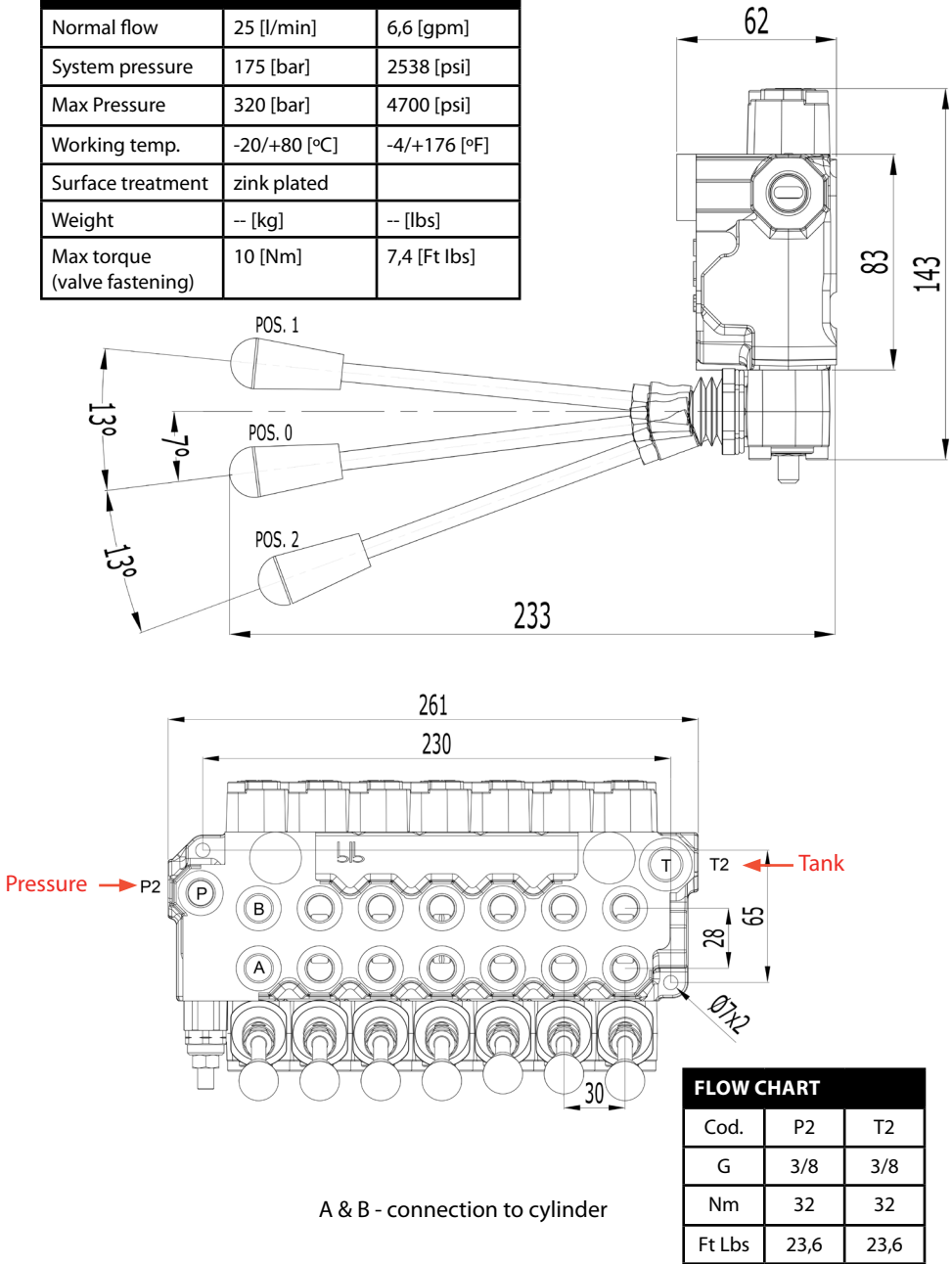
This diagram illustrates the assembly of a LEGO Technic robot chassis. The components are shown in an exploded view, with dashed lines indicating their alignment. The main parts include:

- Motor and Gear Assembly:** A blue motor is connected to a black and white checkered gear. This gear is part of a drive system that includes a smaller black and white checkered gear and a blue gear.
- Wheels and Axles:** Four black and white checkered wheels are shown, mounted on axles. The axles are connected to the motor and gear assembly.
- Chassis Frame:** The chassis is constructed from green Technic beams and connectors. It includes a central blue connector and a blue gear.
- Assembly Instructions:** The diagram includes several dimension labels for the beams and connectors used in the assembly:
  - $25 \times 28 \times 15$
  - $25 \times 28 \times 20$
  - $25 \times 28 \times 15$
  - $25 \times 28 \times 15$
  - $34 \times 30 \times 30$
  - $25 \times 28 \times 15$

VALVE PACKAGE 21-VP7-25-FS

Fits to Kellfri's product range

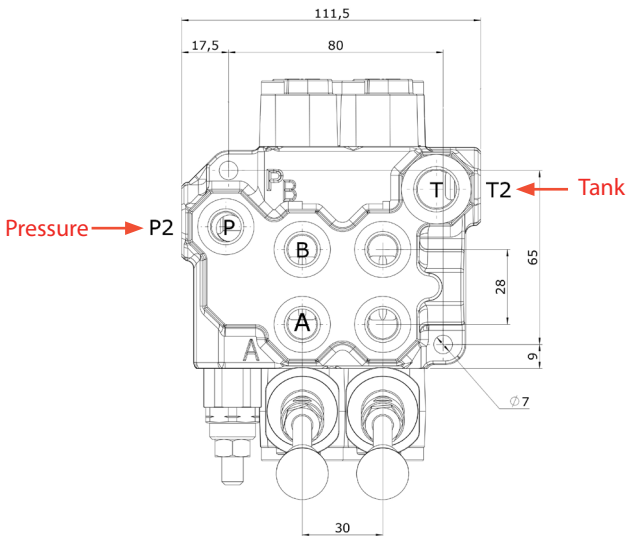
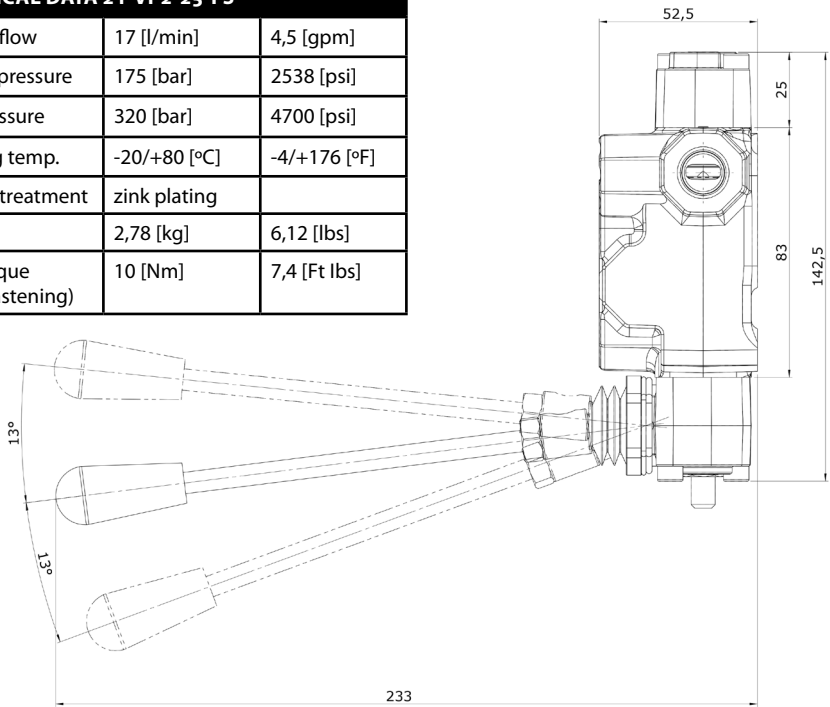
TECHNICAL DATA 21-VP7-25-FS		
Normal flow	25 [l/min]	6,6 [gpm]
System pressure	175 [bar]	2538 [psi]
Max Pressure	320 [bar]	4700 [psi]
Working temp.	-20/+80 [°C]	-4/+176 [°F]
Surface treatment	zink plated	
Weight	-- [kg]	-- [lbs]
Max torque (valve fastening)	10 [Nm]	7,4 [Ft lbs]



VALVE PACKAGE 21-VP2-25-FS

Fits to Kellfri's product range

TECHNICAL DATA 21-VP2-25-FS		
Normal flow	17 [l/min]	4,5 [gpm]
System pressure	175 [bar]	2538 [psi]
Max Pressure	320 [bar]	4700 [psi]
Working temp.	-20/+80 [°C]	-4/+176 [°F]
Surface treatment	zink plating	
Weight	2,78 [kg]	6,12 [lbs]
Max torque (valve fastening)	10 [Nm]	7,4 [Ft lbs]



FLOW CHART		
Cod.	P2	T2
G	3/8	3/8
Nm	32	32
Ft Lbs	23,6	23,6

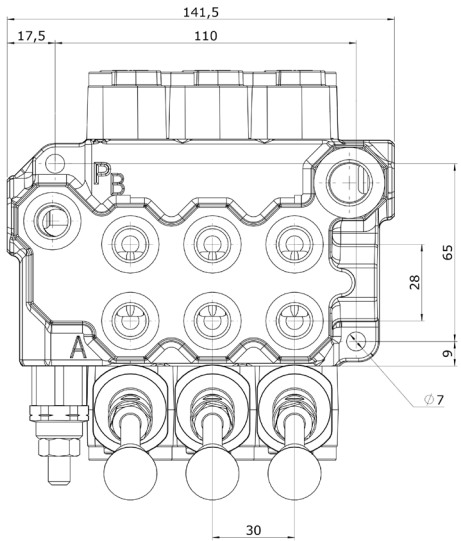
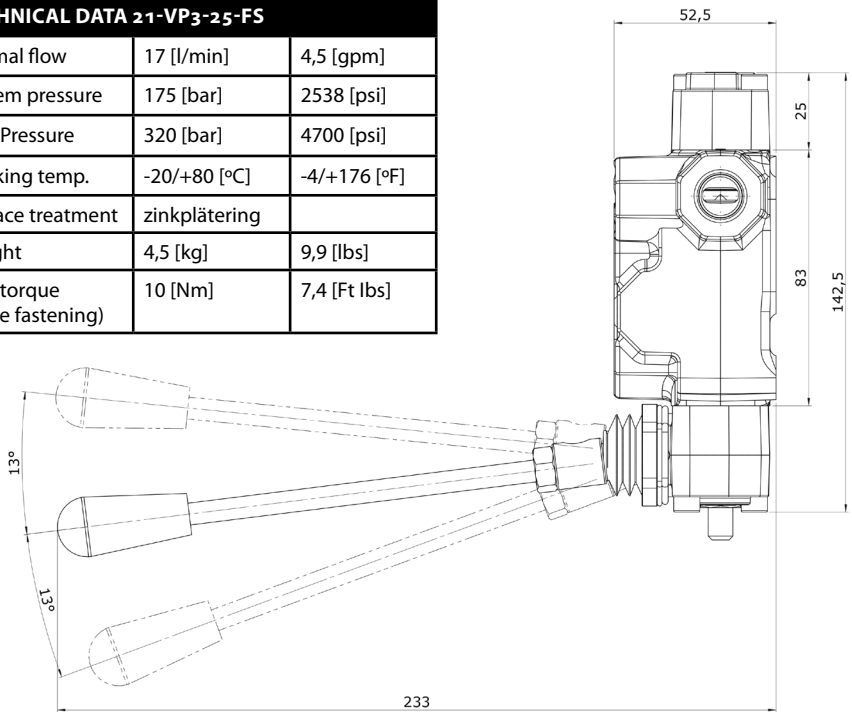
A & B - connection to cylinder



**VALVE PACKAGE 21-VP3-25-FS**

Fits to Kellfri's product range

TECHNICAL DATA 21-VP3-25-FS		
Normal flow	17 [l/min]	4,5 [gpm]
System pressure	175 [bar]	2538 [psi]
Max Pressure	320 [bar]	4700 [psi]
Working temp.	-20/+80 [°C]	-4/+176 [°F]
Surface treatment	zinkplättering	
Weight	4,5 [kg]	9,9 [lbs]
Max torque (valve fastening)	10 [Nm]	7,4 [Ft lbs]



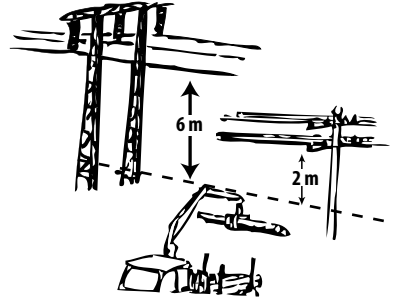
FLOW CHART		
Cod.	P2	T2
G	3/8	3/8
Nm	32	32
Ft Lbs	23,6	23,6

A & B - connection to cylinder

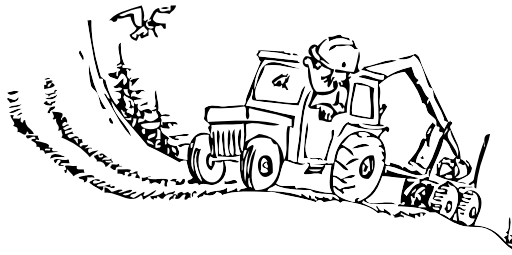
**OPERATION** - "*Kör åt skogen rätt och säkert* [Correct and safe forest operations]" published by the Swedish University of Agricultural Sciences"

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.

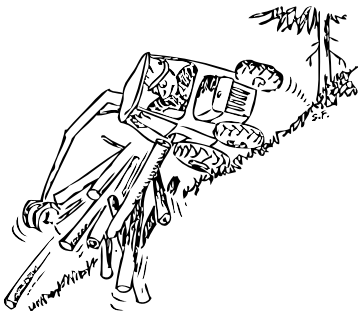
- Important advice to reduce the risk of accidents:  
Keep a safe distance when driving under power lines.  
No part of the crane may be closer than: In the case of high-voltage power lines 6 metres, and in the case of low-voltage power lines 2 metres



- 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!

## LOADING WORK

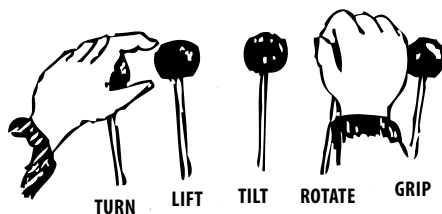
### Basic movements

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 positions at full speed.



#### 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.

#### NOTE!!!

Do not leave the cabin until:

- The grapple loader is attached and unloaded and the tractor brakes are engaged.

NOTE: The trailer is always less stable when starting to load.

## This image shows a full page of primary-ruled paper. It features approximately 20 horizontal dotted lines spaced evenly down the page, providing a guide for handwriting practice. The paper is otherwise blank, with no margins, text, or other markings.

**NOTES:**

[illegible]

## DEVIATION FORM

We are grateful for your help in pointing out any defects in the product supplied to you by Kellfri. Before making a claim, read Kellfri's general purchase terms and conditions in our catalogue or on our website [www.kellfri.co.uk](http://www.kellfri.co.uk), and in the operating manual if supplied. The manual can also be downloaded from [manual.kellfri.co.uk](http://manual.kellfri.co.uk)

Please fill in the details below and attach photos as documentation so that we can process your case optimally. In order for us to obtain as good an understanding as possible of any faults, please take at least four photos of the defective parts of the machine/equipment; two of the entire equipment from two different angles and two close-ups of the actual damage from two different angles. (Feel free to attach photos on the next page.)

If the product was purchased from a dealer, please contact the dealer in the first instance.

Purchaser**:	Customer number**:
Address**:	Invoice number:
Email**:	Daytime telephone**:

When was the product supplied?	When was the product put into operation?	Was the product working on delivery? YES      NO
--------------------------------	--	---

Product name/article number**:
Serial number:

CAUSE	YES
(11) Transport damage*	
(09) Product complaint*	
(04) Wrong goods delivered	
(03) Wrong quantity	

CAUSE	YES
(05) Wrong price	
(02) Ordered by mistake/ Charge-back	
(99) Other reason*	

\* Fill in form below  
Required fields\*\*

Description of fault\*\*:

Describe the course of events:

Miscellaneous:

Customer's signature:	Date:
-----------------------	-------

To be filled in by dealer

Dealer:	Invoice number.:
---------	------------------

Signature:	Date:
------------	-------

# Kellfri

## WARRANTY TERMS AND CONDITIONS

Validity of the warranty	- Kellfri'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	<ul style="list-style-type: none"><li>• Labour costs</li><li>• Travel expenses</li><li>• Any modification that the buyer himself has/had made.</li><li>• Any consequential damages that occurred due to damage to the machine.</li><li>• Damage due to normal deterioration of the machine, inadequate: service, user inexperience or use of spare parts which are not original.</li><li>• Wear parts such as hoses, seals, oils, and mechanical belts</li></ul>

## EC-DECLARATION OF CONFORMITY, ORIGINAL



According to 2006/42/EC, Annex 2A  
Kellfri AB  
Storsvången 2  
532 38 Skara, Sweden

Declares that the machine

Name: 21-SV20.101, 21-SV20.200, 21-SV20.300,  
21-SV20.500, 21-SV20.900, 21-SV20.1000

Type: Forestry trailer with 3m crane

Complies with all applicable provisions of the Machinery Directive 2006/42/EC.  
Other equipment must meet the hardware requirements of the Directive.

Kjell Johansson  
Product Development Manager

## CUSTOMER SERVICE

*You are always welcome to give your feedbacks, reviews or ask us about our equipment and products.  
Kellfri AB is constantly working on further developing their products and therefore reserves the right to modify, among other things the design and appearance without further notice.*

# Kellfri

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Last updated 2024.07.15