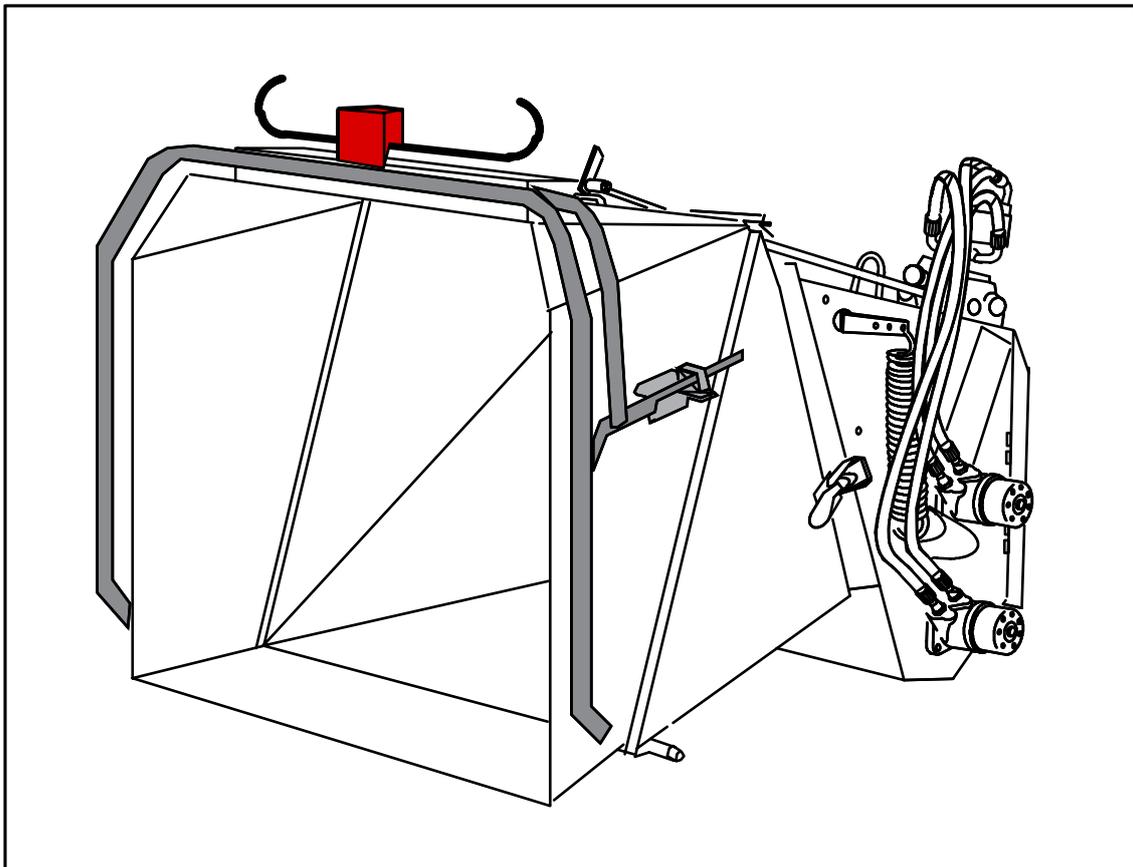


## OPERATION, MAINTENANCE AND SPARE PARTS MANUAL

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# HYDRAULIC FEEDER HF231



**READ THIS OPERATION AND MAINTENANCE MANUAL CAREFULLY  
BEFORE USING THE MACHINE**

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**FARMI**<sup>®</sup>  
FOREST

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## INTRODUCTION

This manual includes the information and maintenance instructions required for operating the machine in the optimal manner.

Although you have experience in using this kind of machinery, read the operation and maintenance instructions carefully since they include information enabling efficient and safe operation. Regular maintenance is the best way to guarantee the efficient and economical performance of the machine.



**Each and every operator must read, understand, and follow all safety instructions and procedures.**

## WARNING SYMBOLS IN THIS MANUAL



- **imminent danger which could cause serious personal injury or death**



- **danger which could cause personal injury**



- **conditions or misuse that could damage equipment or machinery**
- **reminders, such as for performing checks or carrying out maintenance or repair procedures**

## PRODUCT WARRANTY

Farmi provides a 12-months warranty on all Farmi products. Register on our home page ([www.farmiforest.fi](http://www.farmiforest.fi)) under FeedBack ("Product Registration" form) within 30 days after the receipt of the product to get full product warranty and additional information on your product. If it is not possible for you to register via internet, please register as follows: Complete the registration form on the last pages of this manual and return it to us within 30 days after the receipt of the product.

## CUSTOMER FEEDBACK

We are happy to receive your opinions and suggestions for improvements by mail, fax or e-mail. All implemented suggestions for improvements will be rewarded.

# HF231

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When ordering spare parts, please indicate machines type from the machine plate, spare parts order number, description and quantity required.

Example. HF231, 23292105, Upper feed roller, 1 pc

## GENERAL SAFETY INSTRUCTIONS

These safety instructions are meant for the owners of FARMI equipment, as well as those who operate, service or repair it.

The instructions help with:

- using the machine safely, appropriately and effectively.
- identifying, avoiding and preventing potentially dangerous situations.

The manufacturer supplies an instruction manual, which must always be available at the place of operation of the machine. Each user must read the safety, maintenance and operating instructions before operating the machine, and comply with these instructions at all times.



**Ensure that every operator of the machine is familiar with the content of the instruction manual and situation-specific safety instructions, and has been suitably trained before operating the machine.**

The machine complies with technical requirements and applicable safety regulations. However, incorrect use, maintenance or repair of the machine may cause risks.

In addition to the instruction manual, remember to comply with regulations of the local occupational health and safety authorities, and with your country's laws and decrees.

**The manufacturer is not liable for damages caused by:**

- incorrect, negligent or inappropriate use of the product.
- non-original spare parts.
- normal wear and tear.
- misuse caused by an untrained person's improper actions.
- alterations made without the manufacturer's permission.



**Written authorization must be requested from the manufacturer for any alterations to the machine.**

## STARTING

- Familiarize yourself thoroughly with the use, operation and controls of the machine and its equipment before starting.
- Familiarize yourself with the capacities and limitations of the machine and its equipment.
- Do not use the machine unless you are completely familiar with its operation.
- Be aware of the machine's danger zones.
- During operation, prevent bystanders from entering the danger zone.
- Ensure that each operator has the necessary safety equipment, such as a helmet, safety goggles, work safety boots and suitable protective clothing.
- Never wear loose clothing around moving parts. Protect long hair!
- Ensure that work is carried out according to the stipulations of applicable occupational health and safety legislation.
- Before starting up or using the machine, ensure that it cannot cause a risk to other people or property.
- Perform a safety check on the machine before every use. If you observe any faults or deficiencies, repair the machine immediately.
- Before operating the machine, ensure that there are no foreign articles in it.
- Place the machine on a hard, level surface for operation. In the winter avoid working in slippery areas.
- Before mounting and using the machine, check the PTO drive shaft for correct condition and attachment.
- Never use a faulty or deficient machine.

# HF231

## TRANSPORT

- Before driving with the machine, ensure the safe mounting of the machine. Make sure that the journals are seating correctly and that the pins are tight. Check the tension of the lower link stabilizers.
- Before driving with the machine, make sure that the required lamps and reflectors as well as the slow moving vehicle sign are attached correctly. Moreover, the lamps should be checked for correct functioning.
- Before driving with the attached machine, make sure that the hydraulic unit of the machine is depressurized (unless otherwise instructed in the operating instructions).
- When driving on public roads, always observe the valid traffic regulations. The travel speed must be adapted to the specific conditions.
- When driving, please take into consideration the additional mass resulting from the machine's weight. It may affect the reactions, the steerability and the braking function of the tractor.
- Please note that the machine rear sways when turning.
- Pay attention to the machine's height near bridges or other height restricting objects.
- When backing off, the machine may obstruct the rear view. Exercise extreme caution. If necessary, ask a flagman to help you; he can indicate the required distances.
- It is prohibited for other people to ride on the machine.

- Never insert any body part into the machine with the engine running.
- If any faults arise that may jeopardize occupational safety, turn off the machine.
- During operation, the machine's operator is responsible for safety in the whole work area. Work may not be carried out in the presence of any factors that jeopardize occupational safety.
- Exercise extreme caution when hitching / unhitching the machine from a tractor/trailer.



**The machine's operator must have constant, unobstructed visibility of the work area. If this is not possible, the operator must work with an assistant.**

## OPERATION



**Many occupational accidents take place in abnormal circumstances. Therefore it is important to take into account all the possible circumstances that may arise during operation of the machine.**

- Depending on the machine's type, it will have diverse safety devices and protectors. These are meant to protect the machine and its operator, and they must never be removed or altered. Never start up or use the machine without all the safety devices and protectors in place. Also check the universal joint's safety equipment and joints.
- Look out for moving parts when the machine is in operation.
- Secure the machine against unauthorized and accidental operation (e.g. moving when parked) whenever it is left unattended.
- Never leave the machine running unattended.
- Avoid causing fast, stroke-like loading.
- Never exceed the given operating values.
- All safety and warning signs on and in the machine must be legible and intact.
- The machine may not be operated by persons who are unwell or under the influence of drugs or alcohol.

## MAINTENANCE

- The machine may only be serviced and repaired by professionals.
- Electrical and hydraulic faults may only be repaired by authorized professionals.
- In cases requiring welding, contact the manufacturer.
- Turn off the tractor engine and disconnect the universal joint before beginning service or maintenance actions.
- Before any maintenance work, turn the main power switch of the tractor to OFF.
- Ensure that there is no pressure in the hydraulic system.
- Take out the key from the tractor's ignition for the duration of the servicing or maintenance. Check that the power is off from the machine you are working on.

- When servicing the machine, place it on a level surface and ensure that it cannot be moved.
- Observe the service intervals and annual safety inspections.
- All spare parts and equipment must fulfill the manufacturer's requirements. This can be guaranteed by using original parts.
- Put all safety devices back into place immediately once servicing or maintenance is complete.



**When lifting the machine, check that the lifting/hoisting equipment is in perfect working order. Check the weight of the machine before lifting it. Choose lifting trajectories so that they do not cause any danger.**

Many countries have specific legislation on lifting, hoisting cables and hoists. Always comply with local safety regulations.

## **OILS AND LUBRICATION**

- Always use the oil types recommended by the manufacturer. Other types of oil may cause faults or improper operation of the equipment, which could lead to serious damage to people or property.
- Never mix different liquids or oils.
- Always follow the manufacturer's lubrication instructions.
- Use control equipment carefully until the hydraulic oil has had time to reach its operating temperature.

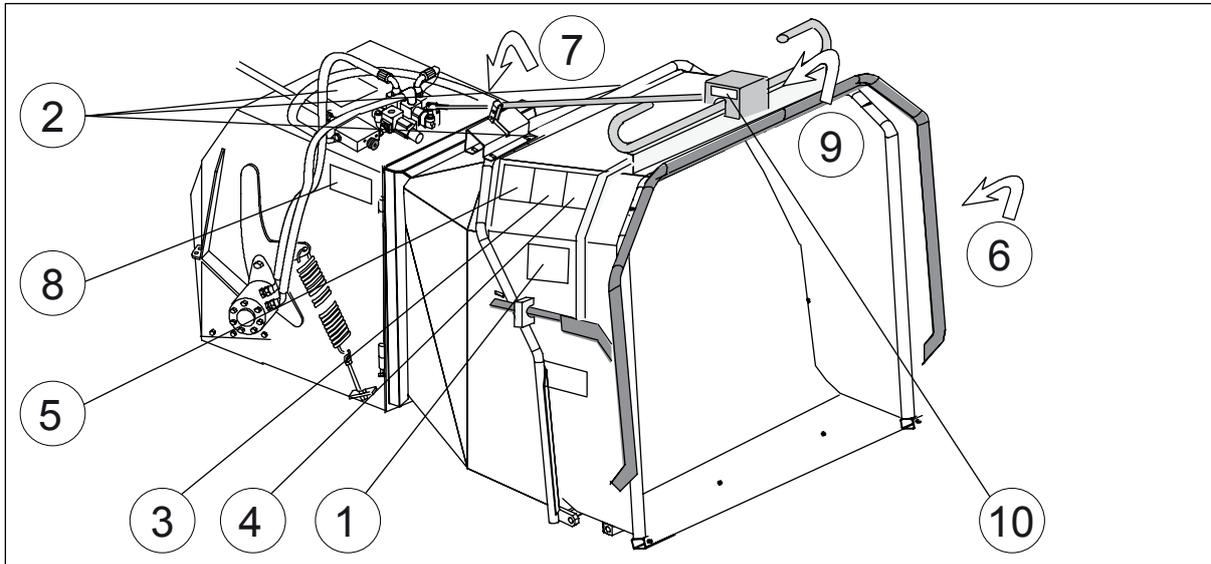
## SAFETY INSTRUCTIONS FOR HYDRAULIC CIRCUITS

1. Work on hydraulic equipment may only be carried out by professional hydraulic engineers.
2. Be cautious when using the equipment in cold conditions.
3. Check the machine for leaks. Do not use the machine if there is a leak from any system. Check all hydraulic hoses – particularly those which are bent during use – and replace any that are in poor condition or have leaks. Ensure that all joints are tight and that the lines are not damaged. Check that all protective caps and filler caps are closed properly. Check the hose sheathing for damage.
4. Check that all hose connectors, lengths and qualities comply with applicable requirements. When replacing or repairing hoses, use original parts or hoses and connectors recommended by the manufacturer. Check particularly that the pressure classes of the hoses and connectors are suitable to the operating pressure levels.
5. Check that all safety devices such as pressure relief valves, etc., are in place and work properly. Familiarize yourself with their use. Safety systems may never be bypassed.
6. Check the main hydraulic parts daily, and always after a fault. Replace any damaged parts immediately.
7. If a component is damaged, clean it before repairing it. Do not use solvents when cleaning parts.
8. Do not attempt to carry out repairs that you are not fully familiar with.
9. Never carry out repairs of the hydraulic circuit when the system is pressurized. When pressurized, the oil spray can penetrate the skin and cause mortal danger.
10. Never work below a device or component that is only being held up by hydraulics. Use separate supports when carrying out maintenance or repairs. Do not disconnect cylinders or their valves until the machine is well supported.
11. Most hydraulic oils do not evaporate easily. Risk factors include hot oil, spills and oil mist (pressurized).
12. If oil gets into your eyes, rinse with plenty of water and contact a doctor.
13. Avoid prolonged or repeated contact with your skin.
14. If sprays or contact with the skin cannot be avoided, use protective gloves, goggles and clothing as necessary. Do not use oily clothing.
15. Avoid discharging hydraulic oil into the environment, as it can pollute waterways and the groundwater. If biodegradable oil is to be used, please contact the manufacturer beforehand and have the suitability of your equipment for the operation with biodegradable oil confirmed by him before such oil is used.
16. Store the oil in sealed containers provided by the manufacturer. Try to transfer the oil directly from its container into the tank.
17. If the oil must be passed through other containers, ensure that they are completely clean. Caps, funnels, sieves and filling holes must also be clean.
18. Never store oil outdoors, as water could condense in it.
19. Always dispose of oil in a suitable container, never into the environment!

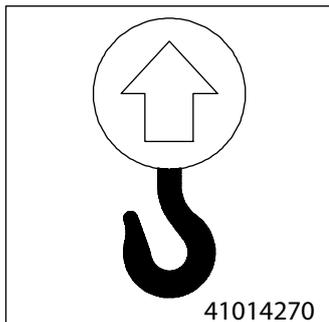
# HF231

## STICKERS AND PLATES

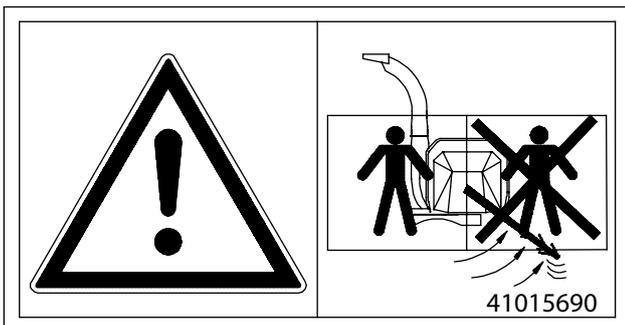
These stickers and plates must be found from feeder. Missing ones must be replaced immediately.



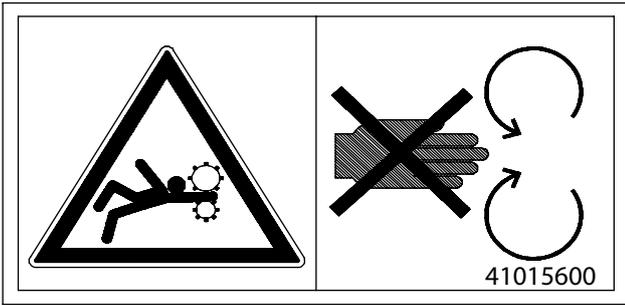
1. Hearing protection (40142080)  
Wear hearing protection.



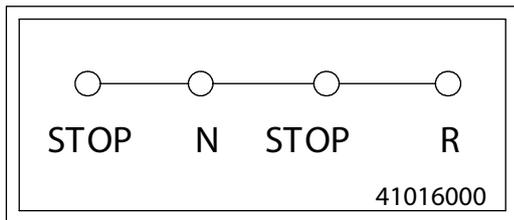
2. Lifting point (41014170)



3. Note! (41015690)  
Stand on the left side of feeder.



4. Stay away from revolving part (41015600)



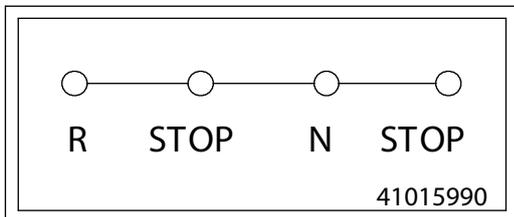
5. Safety handle left (41016000)

This sticker shows the movements of the safety handle.

STOP = stop

N = neutral

R = reverse



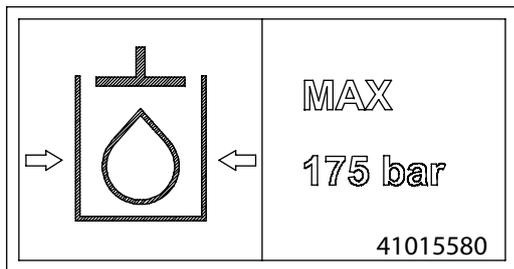
6. Safety handle right (41015990)

This sticker shows the movements of the safety handle.

R = reverse

STOP = stop

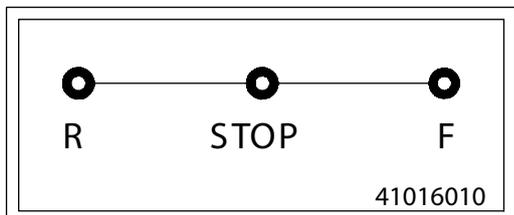
N = neutral



7. Maximum hydraulic pressure 175 bar (41015580).



8. Manufacturer (40605214)



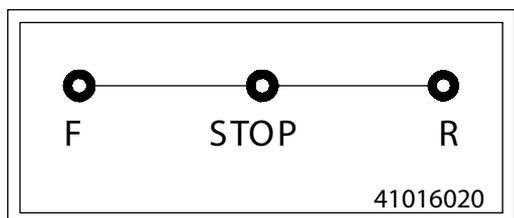
9. Control handle right (41016010)

This sticker shows the movements of the control handle.

R = reverse

STOP = stop

F = feed



10. Control handle left (41016020)

This sticker shows the movements of the control handle.

F = feed

STOP = stop

R = reverse

# HF231

## PRESENTATION

The hydraulic feed chute HF 231 makes feeding difficult material easier and more effective. The chip quality improves due to constant feeding speed and is less dependent on knives sharpness.

The HF231 can be driven by the tractor hydraulics or by the optional independent hydraulic unit HD11.

HF231 is easily mounted to the same attachment as the mechanical feed chute and the drop spout.

## MAIN COMPONENTS

1. CONTROL HANDLE
2. DIRECTIONAL VALVE
3. FLOW REGULATOR
4. HYDRAULIC MOTORS
5. FEED ROLLERS
6. FRAME
7. FEED CHUTE
8. SAFETY HANDLE

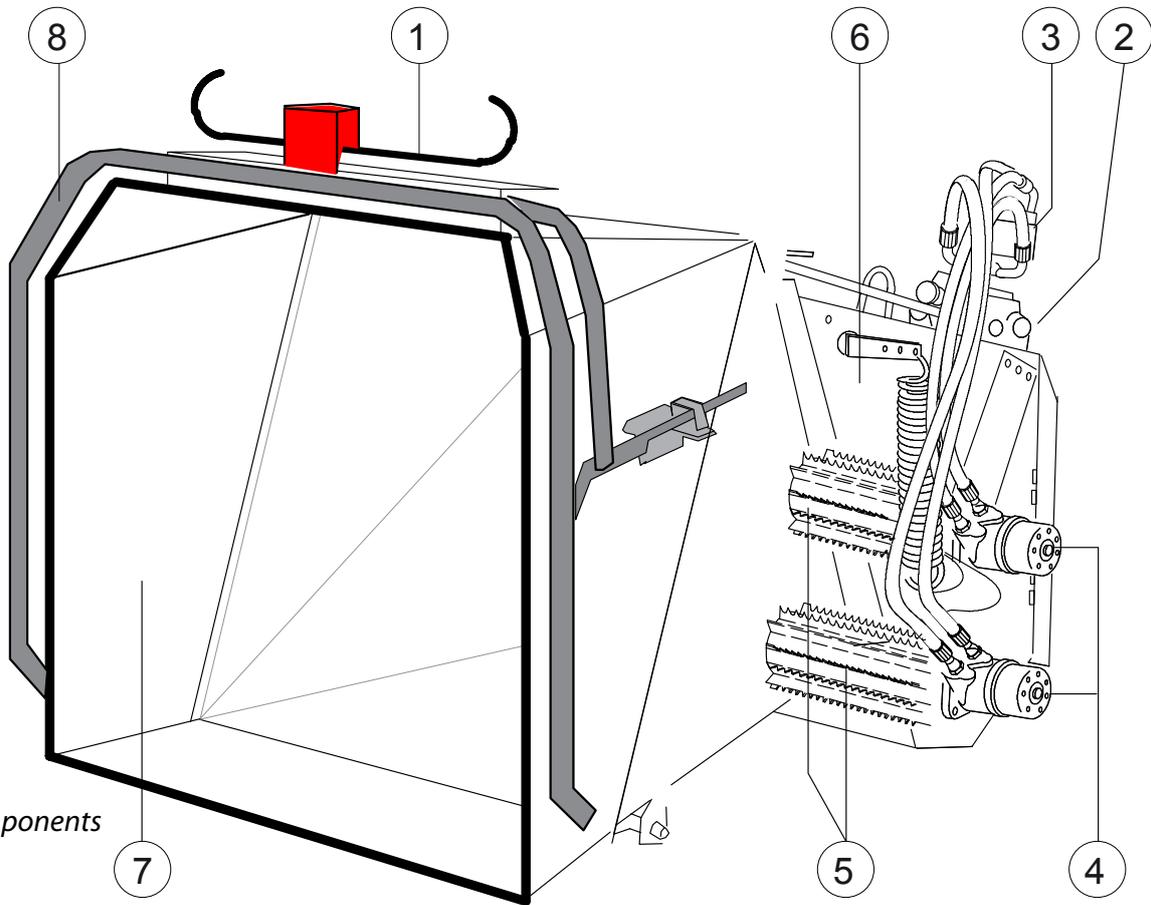


Fig 1.  
Main components

TECHNICAL DATA	HF231
Feed roller	2 kpl, $\varnothing 208$ mm
Max. tree diameter	$\varnothing 260$ mm
Hydraulic motors	400 cm <sup>3</sup>
Oil demand, P.T.O speed	
chip 20 mm, 540 rpm	30 l/min
chip 20 mm, 1000 rpm	52 l/min
Max. working pressure	175 bar
Feed chute opening size	820 x 787 mm
Dimensions	1090 x 871 x 1820 mm
Weight	210 kg

## MOUNTING

1. The hydraulic feeder and mechanical feeders include fitting blocks that are installed between the chipper and feeder. The fitting blocks are installed so that the two guide pins located at the bottom section of the feed opening go through the holes in the fitting block and secure the block. See Fig. 2.

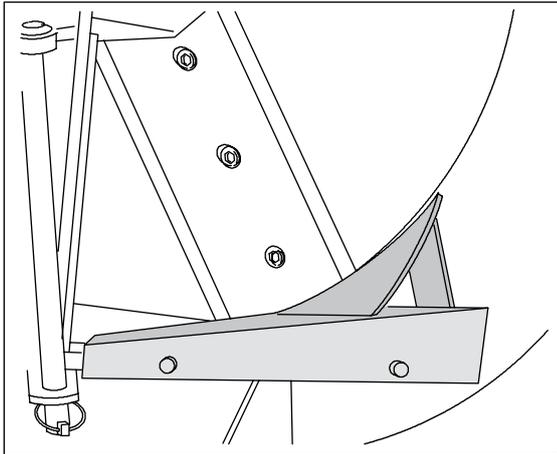


Fig. 2. Installing the fitting block

2. Attach the feeder frame to the chipper pins and lock bolts. Fig. 3.

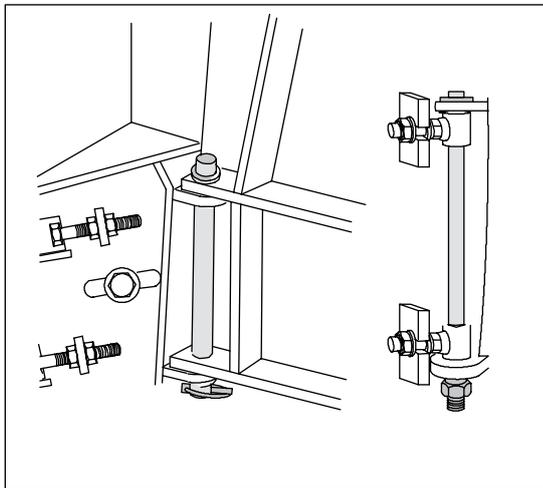


Fig. 3. Mounting the feeder on the chipper

3. Attach the feed chute to the frame with two M10x110 bolts and lock nuts. Fig. 4.
4. Lock the chute in the operating position.
5. Connect the hydraulic hoses. Connect the pressure hose (P on the valve) to the pressure connector of the tractor's hydraulic system. The maximum operating pressure is 175 bar. Connect the return hose (T) to the return connector of the double-acting valve, or preferably directly to the tank. Fig. 5.

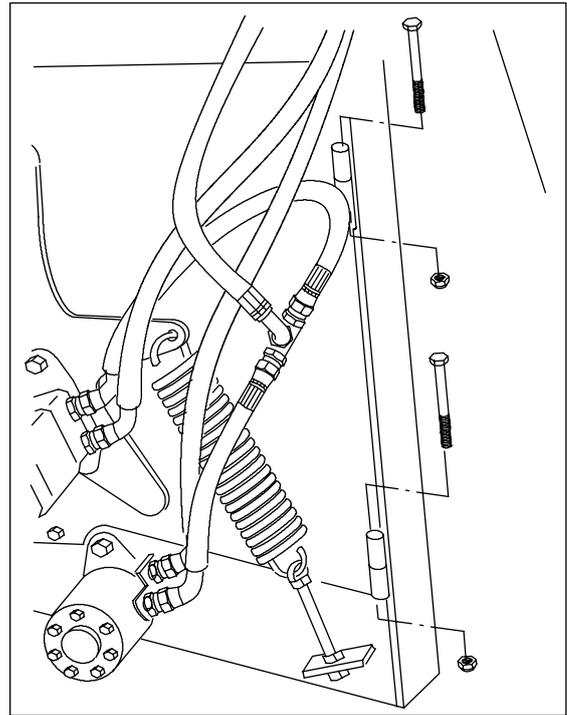


Fig. 4. Installing the hinge bolts

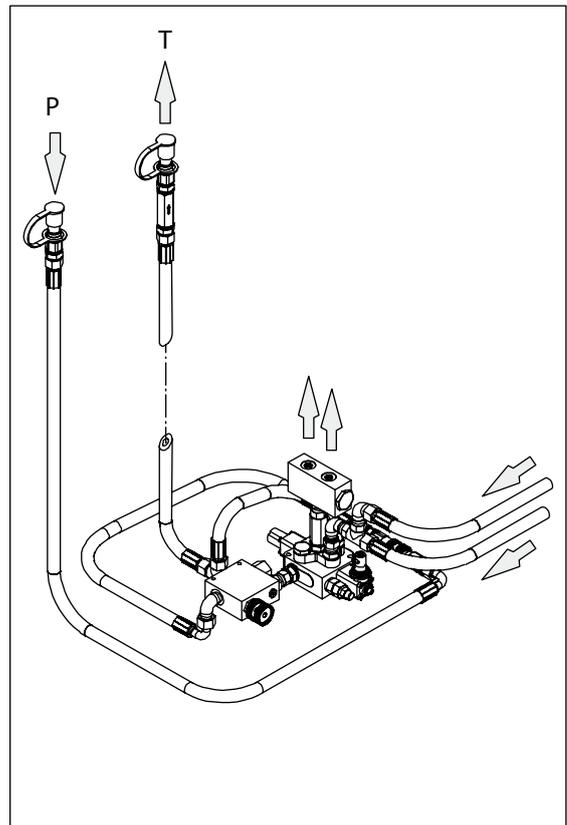


Fig. 5. Connecting the hydraulics, feed

# HF231

## OPERATION

### CONTROL HANDLE

The HF231 is operated with a control handle, which has 3 positions:

1. FEED FORWARD F  
The feeder reel spins inwards and wood can be fed into the chipper. The handle locks in this position.
2. STOP  
The feeder reel ceases to spin and the feeding stops. The handle locks in this position.
3. REVERSE R  
The feeder reel spins outward and wood comes out of the feeder.

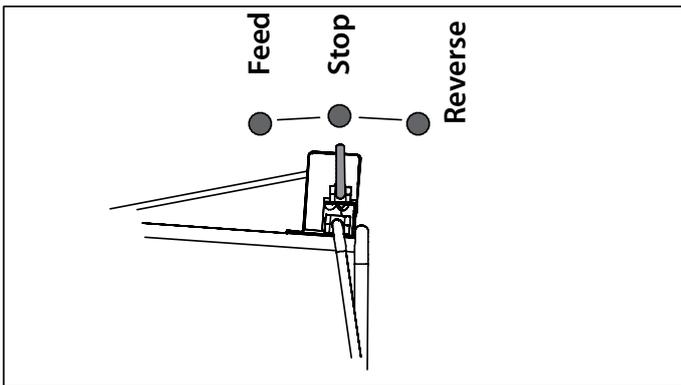


Fig 6. Control handle

### SAFETY HANDLE

The HF231 has been equipped with a safety handle, which operates as a safety appliance and as the emergency stop control. The safety handle has 4 positions:

1. STOP  
The feeder reel ceases to spin and the feeding stops.
2. NEUTRAL N  
The chipper controls are done through the control handle.
3. STOP  
The feeder reel ceases to spin and the feeding stops.
4. REVERSE R  
The feeder reel spins outward.

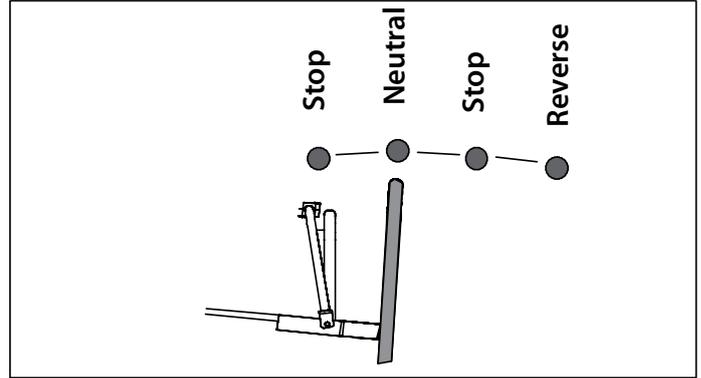


Fig 7. Safety handle

### OPERATION

1. Ensure that the feed funnel is empty. Turn on the tractor hydraulics or connect an external power source (OEM).
2. Before feeding the material, ensure that nails, stones etc will not get into the chipper amongst the material to be chipped.
3. If necessary, set the revolving speed of the feeder reel to correspond to the revolving speed of a grinding wheel. The speed is suitable when the wood does not push against the grinding wheel or the feeder reel spikes do not slow down the feeding of wood. See paragraph Setting the feeder speed.
4. Set the control handle in the FEED F position. The feeder reel will begin to roll when the air has left the hydraulic circuit.
5. Feed the wood into the feed chute. Let go of the wood immediately after the feeder reel begins to pull it.



**Do not work in front of the feeder if not necessary! Feeder reels can wrench the wood up or to the right.**



**Make sure that your clothes or hair do not get tangled in the revolving parts of the appliance when it is turned on. Feeding rope or barbed wire into the chipper is dangerous, because the rope can get caught on the operator and pull him / her with it to the feed funnel. Never push limbs into the feed chute when the appliance is turned on.**

- When chipping a large tree with a low capacity tractor, the tractor's revolutions will endeavour to fall especially towards the end of a long tree. Stop the feeding occasionally by switching the control handle to STOP -position. When the revolutions have increased sufficiently, continue feeding by switching the control handle to FEED F -position.
- If you need to remove the tree from the feed funnel in the middle of chipping, switch the control handle to REVERSE R -position and hold it there until the feeder reel releases the tree.
- If the tree does not stop, although the handle is in the STOP position and the feed rollers are not rotating, tighten the pressing spring of the feed roller.

## SETTING THE FEEDER SPEED



**Do not set the feeder speed when the feeder reels are revolving. This damage the valve. Stop the feeder reels for the duration of the setting and try the speed afterwards.**

- Using the flow control valve, set the revolution speed of the feeder reel to correspond with the cutting speed of the blades. By turning the knob anticlockwise, the revolution speed of the feeder reel grows, correspondingly by turning it clockwise, the revolution speed will diminish. See Fig 8.



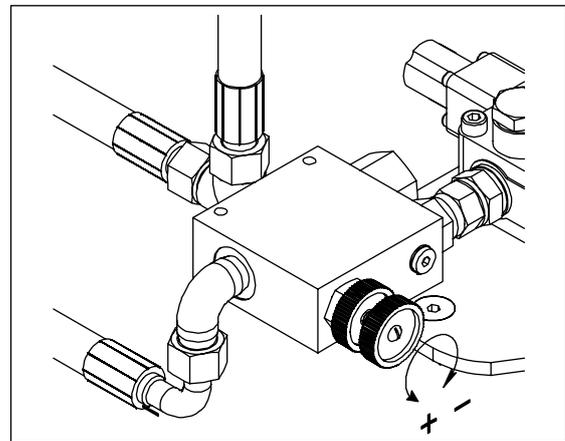
**Oil will heat when travelling through the hydraulic pump, hydraulic motor and the valves. The heating can be considerable if the tractor has a small hydraulic tank. Check the oil**

**temperatures twice an hour to prevent the oil from overheating. If the oil overheats, let it cool down by stopping the chipping.**



**Observe the revolutions of the feeder reels. If the feeder reel stops, switch the control handle to REVERSE R position. If the feeder reels are stopped when the control handle is in FEED FOR-**

**WARD F position, the oil flows through the pressure limit valves and heats very quickly.**



*Fig 8. Feeder reel speed settings*

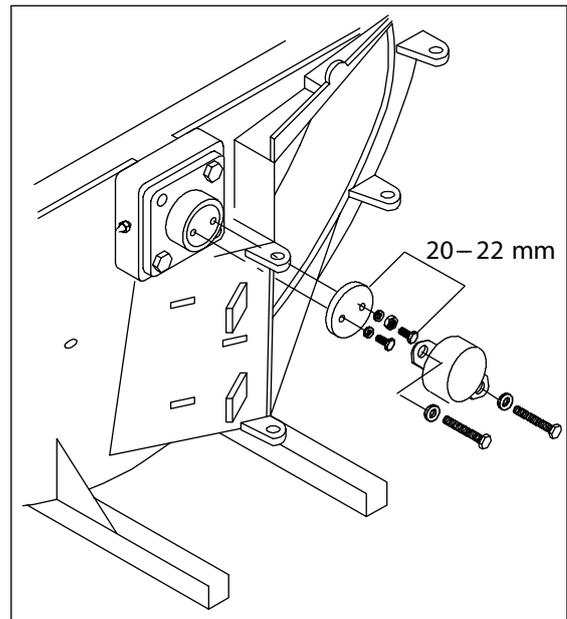
- The speed is suitable when the wood does not push against the grinding wheel or the feeder reel spikes do not slow down the feeding of wood.
- Make sure that you are using clean oil in the hydraulic system. Dirt in the oil will damage valves and hydraulic motors.

## INSTALLATION OF THE "NO STRESS" DEVICE

The No Stress feed rate controller which monitors the chipping machine wheel's speed and stops the feed rolls, if the wheel speed drops below the set limit value, is available as an option. The feed rolls continue feed timber, when the wheel speed increases max 80 rpm over the set value. Thus the feed rate is adjusted in relation to speed of the wheel, giving homogenous wood chips, and the operator can concentrate on feeding the timber.

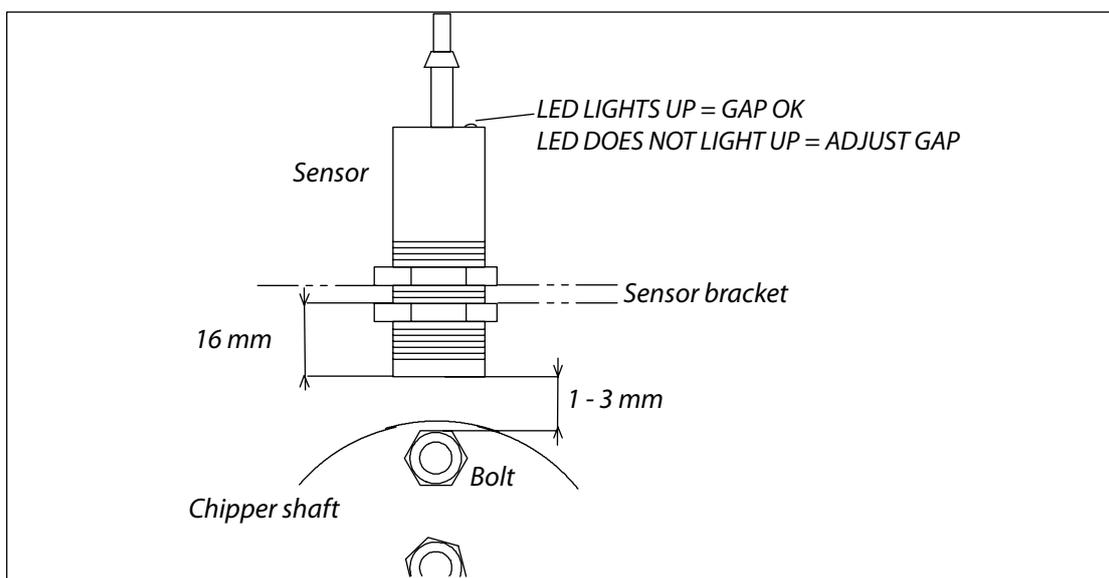
To install the "No Stress" speed control device:

1. Fit the sensor in the bracket so that the black tip is approximately 16 mm from the bottom the bracket. Lock the nuts.
2. Undo the 2 chipper bearing cover fastening screws M16 and remove the shaft protective cap.
3. Insert two screws M6 from inside the shaft protective cup out, locate the bracket and lock it with two nuts M6. The protective cup and sensor bracket can be installed on the chipping machine. See figure Installation of No Stress.
4. Finally reinstall the protective cup and check through cover slot that the gap between the screw head and the sensor tip is approximately 3 mm. The LED will light up, when the head is at the sensor and the gap is suitable. If the LED does not light up, adjust the sensor somewhat closer. See figure Adjustment of No Stress.



Installation of No Stress

5. Start the tractor's PTO and adjust the engine working speed with the manual throttle. Press the black button on the electrical box for 5 seconds. **After this, increase the tractor's revs by 50-100.** The No stress sensor has now identified the speed. When the speed drops approximately 10 %, the feed rolls stop rotating and feeding is interrupted. The feed rolls start rotating again, as the speed returns to the set level. This instruction is applicable to all speeds.



Adjustment of No Stress

## EMPTYING THE CHIPPER AFTER USE

Before stopping the chipper, chip about  $\varnothing$  80-100 mm wood. Let the blades cut a few centimetres, after which reverse the feed direction to clean the blades. Leave the tree into the feeder to remind you that the chipper has been emptied. This way you will avoid a possible jam when you turn on the chipper next time.



**When you stop the chipper, wait for all movement to stop. The grinding wheel will continue to revolve like a flywheel once the power outlet has been switched off.**

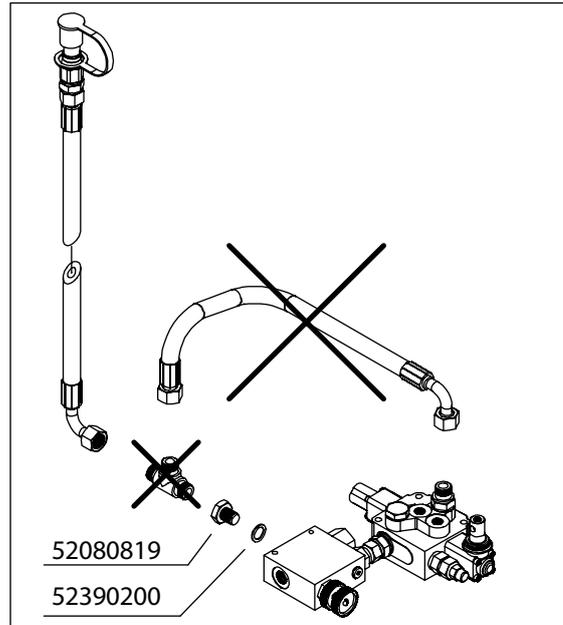


Fig 10. Removing the hose and T-nipple and inserting the plug in the end of the flow regulator valve

## CHANGING THE HYDRAULIC UNIT FOR USE WITH CONSTANT PRESSURE PUMPS

The chipper valve is built for fixed displacement pumps. If your tractor has a constant pressure pump, the hydraulic feeder unit should be modified as follows:

- Insert a plug in the directional control valve - see Fig 9.
- Remove the hose and T-nipple and insert a plug in the end of the flow regulator valve - see Fig 10.
- Connect the tank hose directly to the directional control valve - see Fig 11.
- Instructions for connecting the hydraulics when using the optional hydraulic unit can be found in hydraulic units mounting instructions.

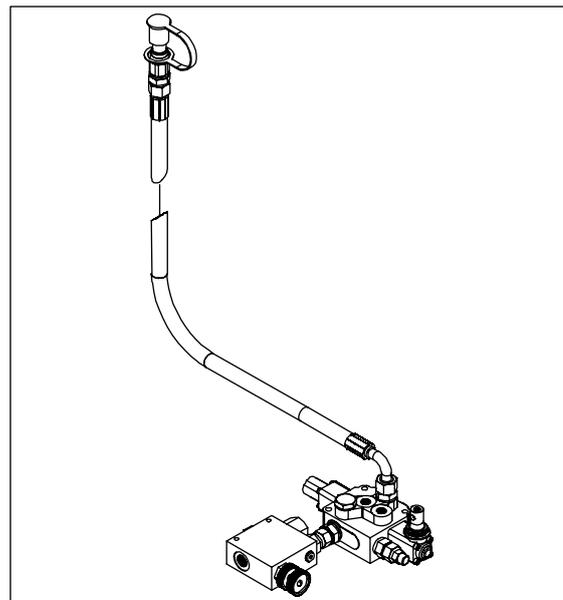


Fig 11. Connecting the tank hose

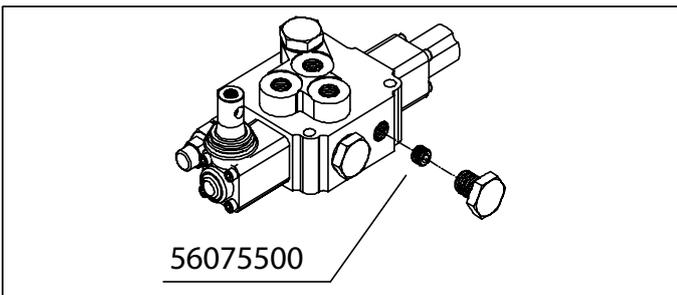


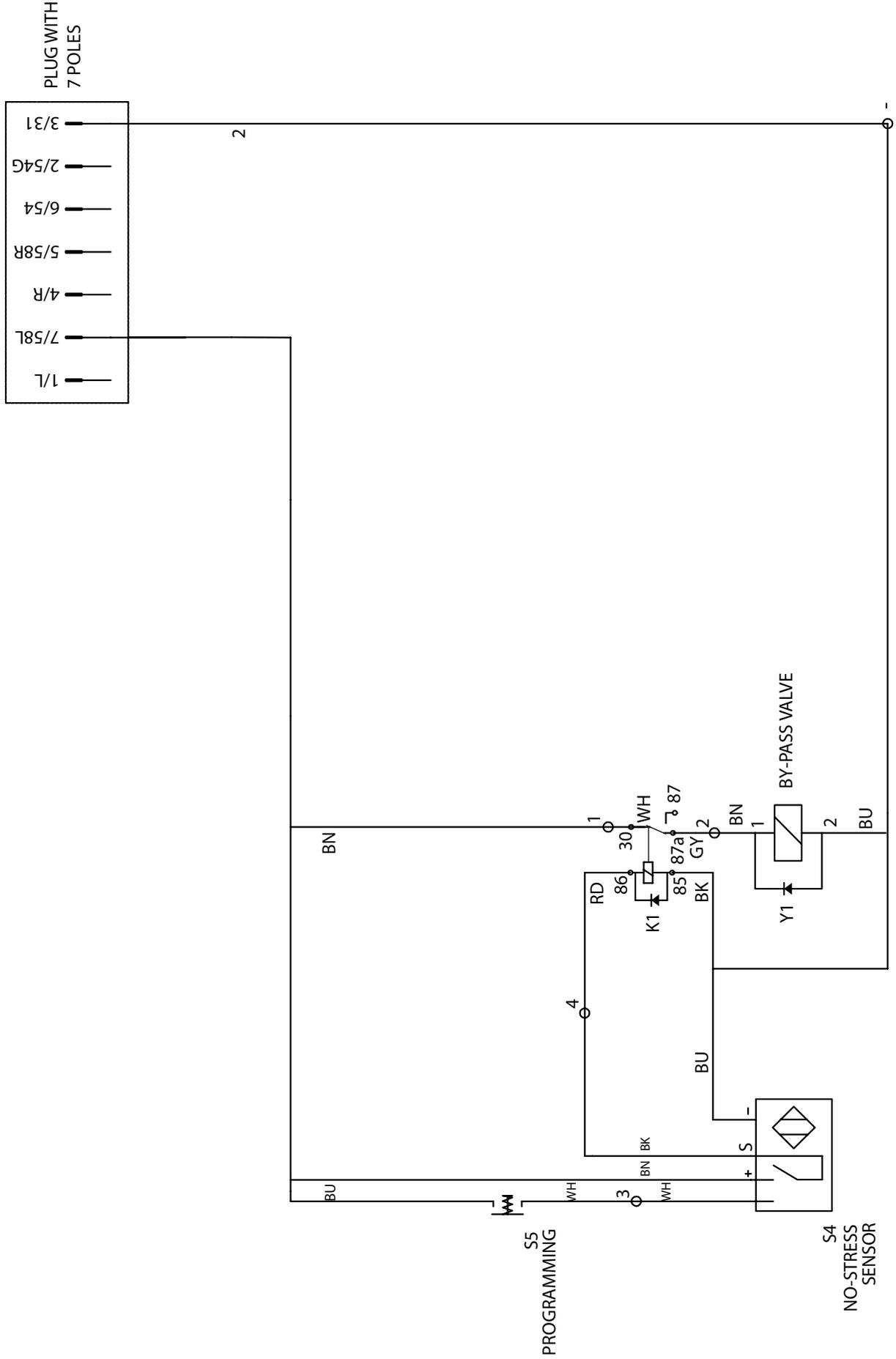
Fig 9. Inserting the plug

## MAINTENANCE

- The feed roller bearings are sealed and do not require periodic maintenance.
- Lubricate the roller bracket shaft slide bearings after every 20 operating hours.
- Check and tighten loose bolts at regular intervals.
- Check the condition of the hydraulic hoses and regularly inspect the connections for leaks.
- Be sure to use only clean oil in the hydraulic system. The presence of impurities in oil damages the valves and hydraulic motors.

# HF231

## ELECTRIC CIRCUIT DIAGRAM





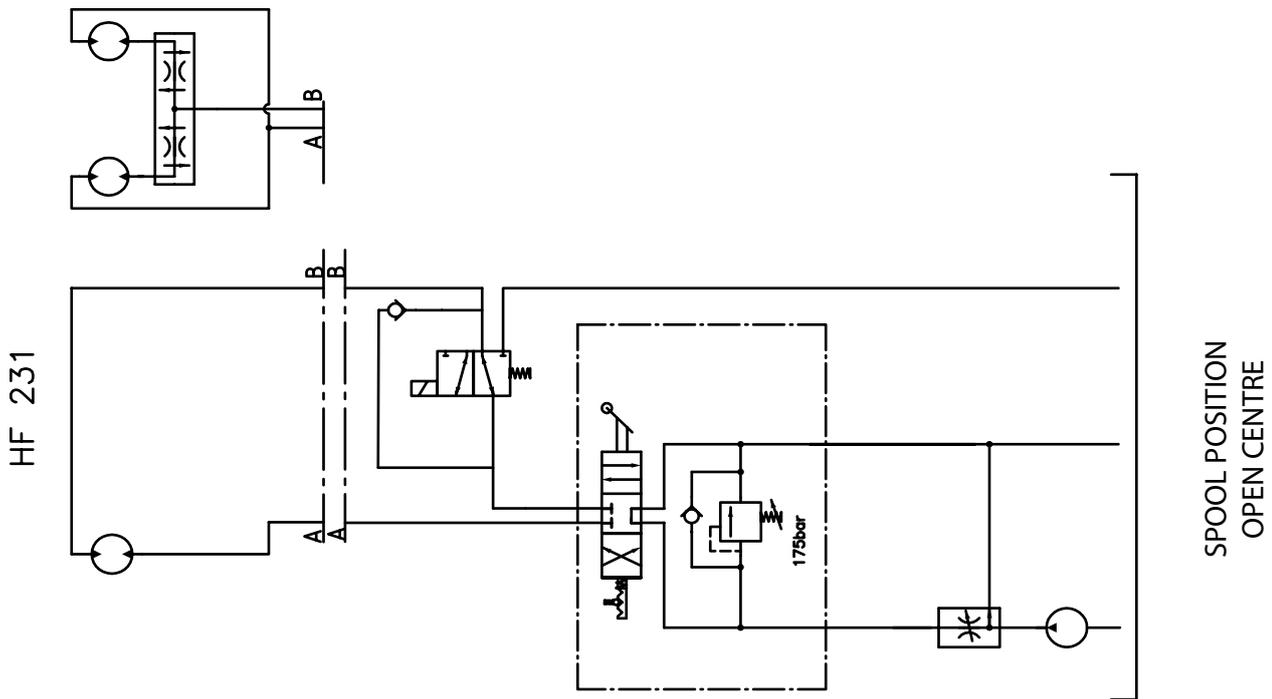
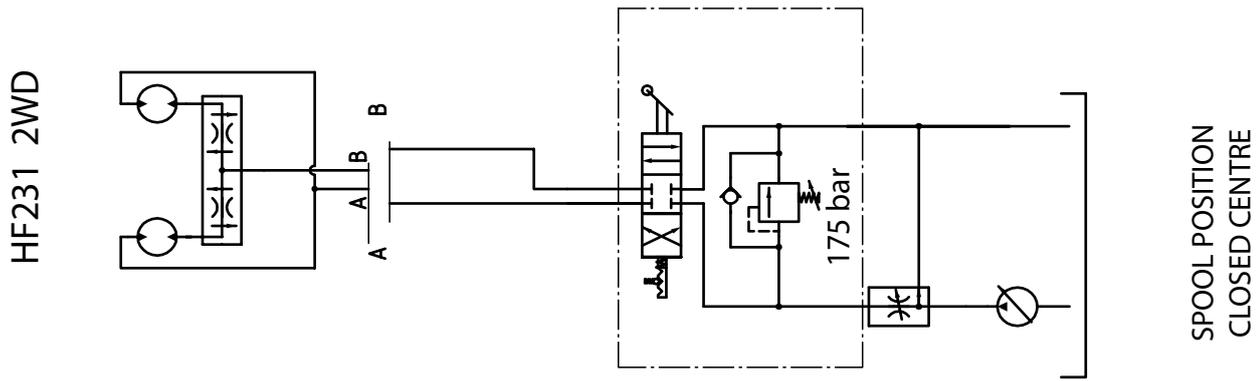
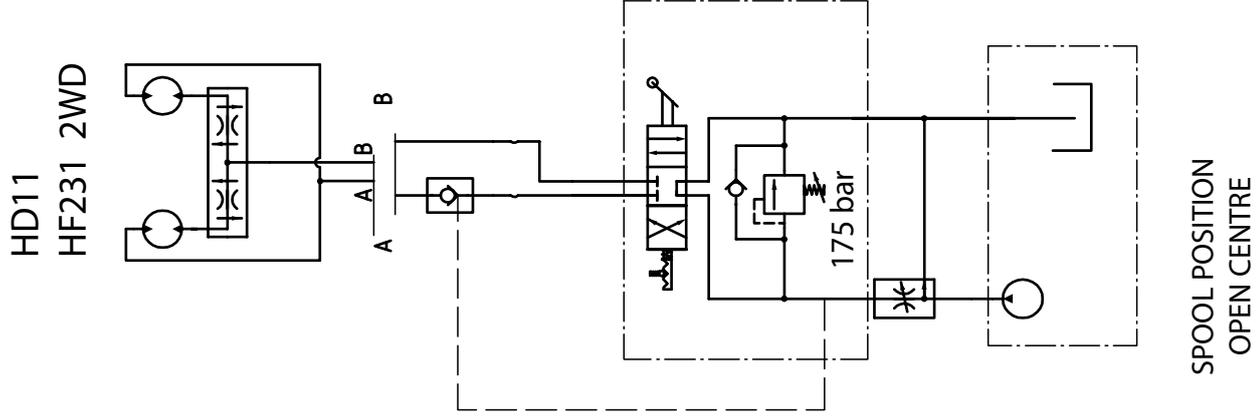
# HF231

## NSH ELECTRICS

Part	Order no	Description	Remarks	Qty
1	03489360	Control box		1
1.1	55129019	Box		1
1.2	43483180	Plate		1
1.3	55128011	Plug	with 7 poles	1
1.4	54946380	Cabel	6,0 m, 2x2,5	1
1.5	55119070	Hirschmann angle adapter with diode		1
1.6	55144780	Seal		2
1.7	54946397	Cabel	1,0 m, 3x1,5	1
2	55121420	Inductive detector	10%	1
3	55119572	Relay		1
4	55119275	Relay socket		1
5	55140602	Connector		4
6	55119804	Terminal block		1
7	55126429	Cabel	blue, 0,5 m	1
8	55126387	Cabel	grey, 0,5 m	1
9	55126403	Cabel	white, 0,5 m	1
10	55126346	Cabel	red, 0,5 m	1
11	55128630	Press switch	black	1
12	33296290	Splined shaft cover		1
13	52062148	Screw	M16X70 DIN931 88ZN	4
14	52200078	Washer	M16 DIN125 58ZN	4
15	52211042	Spring washer	M10 DIN127 ZN	2
16	52110046	Nut	M10 DIN934 8ZN	1
17	52060340	Screw	M10X50 DIN933 88ZN	1
18	52060258	Screw	M10X40 DIN933 88ZN	1

# HF231

## HYDRAULICS CIRCUIT DIAGRAM



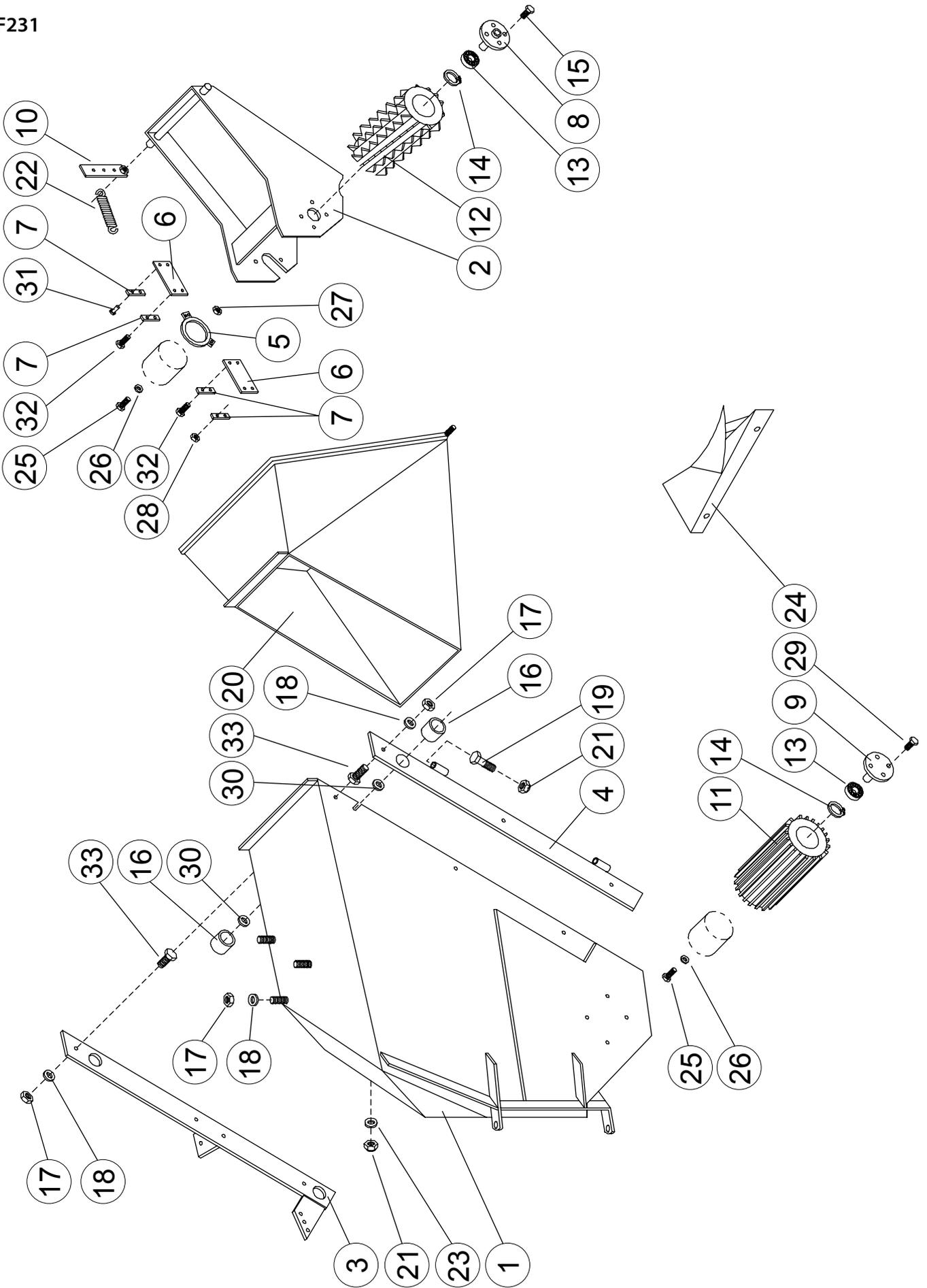
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## NO STRESS NSH

Part	Order no	Description	Remarks	Qty
1	33296290	Splined shaft cover		1
2	52062148	Screw	M16X70 DIN931 88ZN	4
3	52200078	Washer	M16 DIN125 58ZN	4
4	56049850	Cartridge valve	complet	1
4.1	56049860	Cartridge with solenoid spool		1
4.2	56049870	Valve cage		1
5	43489600	NSH electrics		1
6	56620693	Coupling	X1 1/2 L45	1
7	52432051	Double fitting	R1/2	4
8	52435773	Swivel fitting	R1/2	2
9	56526031	Hose assy	K1/2"S L=0,4 m	1
10	56526015	Hose assy	K1/2"S L=0,3 m	2
11	52435140	Fitting	R1/2" SK-SK	2

# HF231

HF231



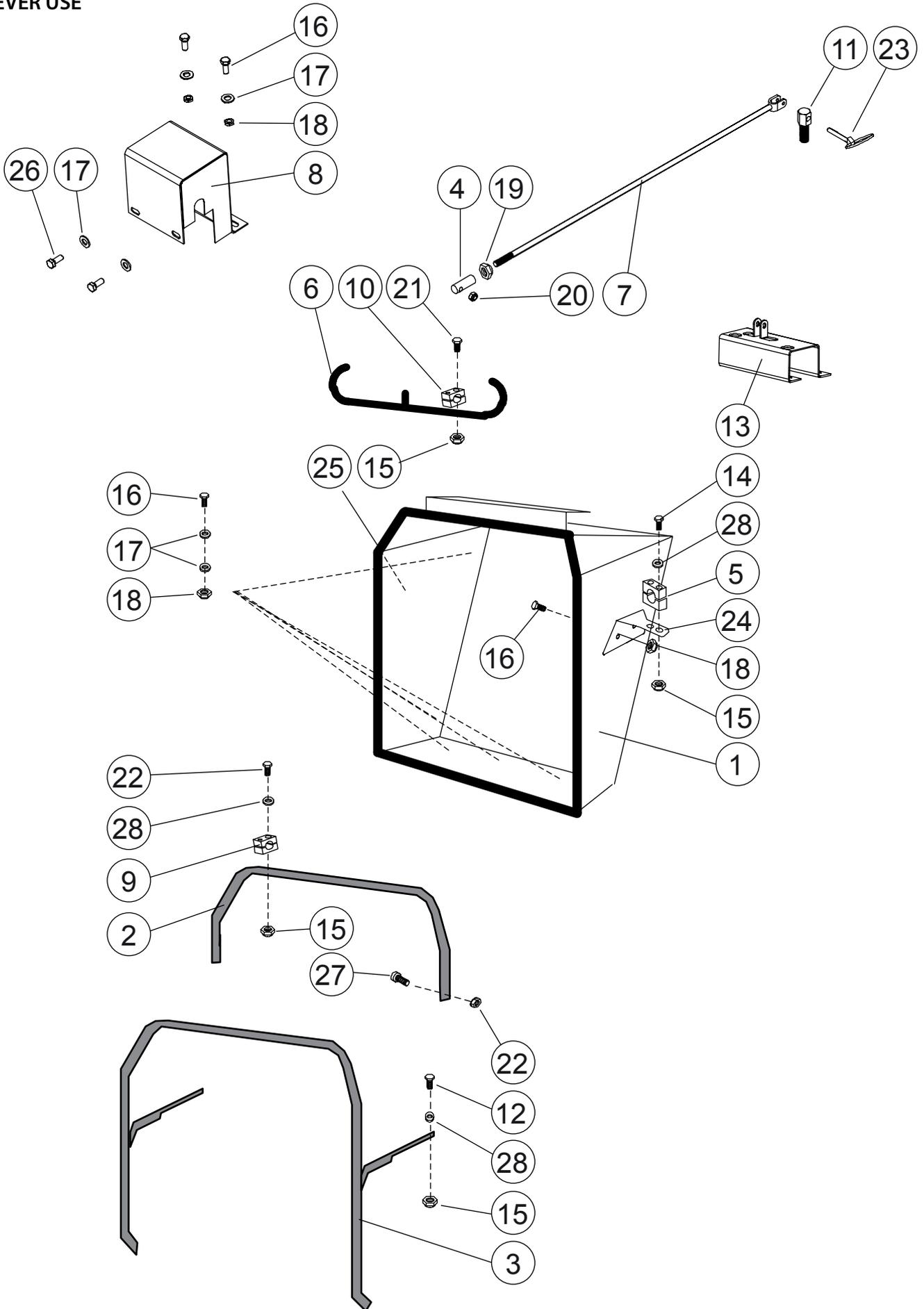
# HF231

## HF231

Part	Order no	Description	Remarks	Qty
1	13291562	Frame		1
2	13291802	Fastening flange		1
3	33291873	Fastener	right	1
4	43293786	Fastener	left	1
5	33291931	Motor mounting flange		1
6	43291962	Protective rubber		2
7	43291970	Protective rubber fastener		4
8	43291988	Upper roller support		1
9	43292002	Lower roller support		1
10	43291996	Spring lever		1
11	23292048	Lower feed roller		1
12	33291000	Upper feed roller		1
13	54511431	Slotted sealed ball bearing		2
14	52230034	Circlip	20X1,2 DIN471	2
15	52090438	Hexagonal socket head screw	M10x20 DIN7991 ZN	4
16	54561022	Slide bearing		2
17	52110046	Nut	M10 DIN934 8ZN	9
18	52211042	Spring washer	M10 DIN127 ZN	6
19	52060332	Screw	M10X110 DIN931 88ZN	2
20	23295678	Feed chute		1
21	52117108	Lock nut	M10 DIN985 8ZN	1
22	94617073	Tension spring	DU68 L245	1
23	52200045	Washer	M10 DIN126 58ZN	4
24	33297380	Adaptor piece		1
25	52062023	Screw	M12X30 DIN933 88ZN	4
26	52211059	Spring washer	M12 DIN127 ZN	4
27	52110053	Nut	M12 DIN934 8ZN	2
28	52110020	Nut	M6 DIN934 8ZN	9
29	52060225	Screw	M10X25 DIN933 88ZN	4
30	43292325	Spacer ring		2
31	52832102	Rivet	4,8X15	3
32	52060381	Screw	M6X12 DIN933 88ZN	5
33	52004272	Screw	M10x35 DIN7991 10.9ZN	6

# HF231

## 2 LEVER USE



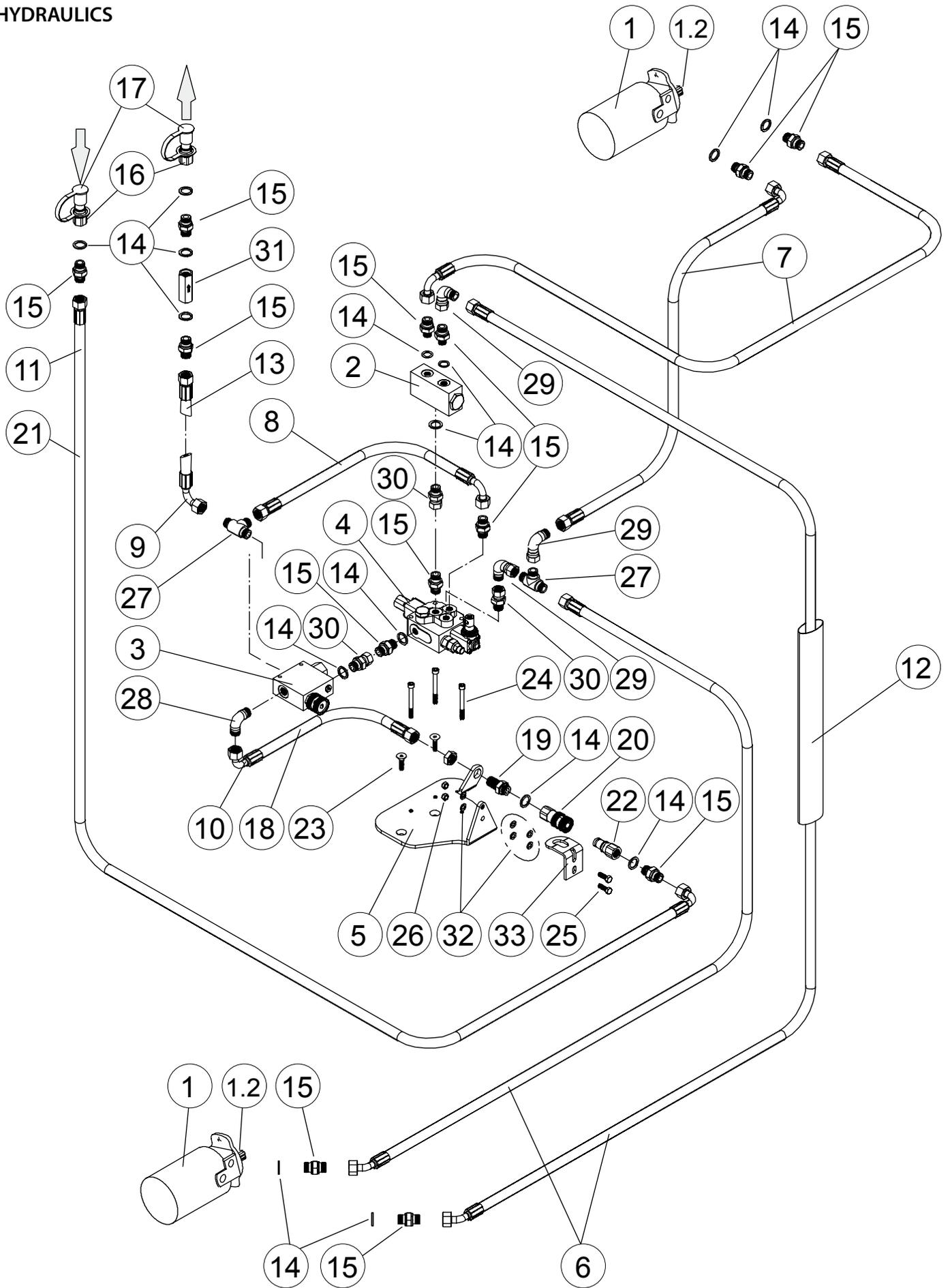
# HF231

## 2 LEVER USE

Part	Order no	Description	Remarks	Qty
1	43299610	Additional visor		1
2	43486320	Swing's rod		1
3	43486400	Safety handle		1
4	43486370	Connector		1
5	43486240	Plastic collar		2
6	43486300	Control handle		1
7	43299850	Control rod		1
8	43486230	Cover		1
9	54916085	Pipe connector		6
10	54916044	Pipe connector		6
11	43486450	Connector	M10	1
12	52060050	Screw	M6X40 DIN933 88ZN	2
13	43299660	Protective gutter		1
14	52060068	Screw	M6X50 DIN933 88ZN	4
15	52117066	Lock nut	M6 DIN985 8ZN	12
16	52060696	Screw	M8X22 DIN933 88ZN	13
17	52200334	Washer	M8 DIN440 ZN	26
18	52110038	Nut	M8 DIN934 88ZN	13
19	52111051	Nut	M12 DIN936 8ZN	1
20	52117108	Lock nut	M10 DIN985 8ZN	3
21	52070125	Hexagonal socket head screw	M6x40 DIN912 88ZN	6
22	52001548	Hexagonal socket head screw	M6X25 DIN912 88ZN	6
23	52842168	Ring cotter	6,5X40	1
24	43299480	Slip bearer	right	1
25	43299490	Slip bearer	Left	1
26	52070620	Screw	M8x16 DIN 7500 D	2
27	52060233	Screw	M10X30 DIN933 88ZN	2
28	52200029	Washer	M6 DIN126 58ZN	12

# HF231

## HYDRAULICS



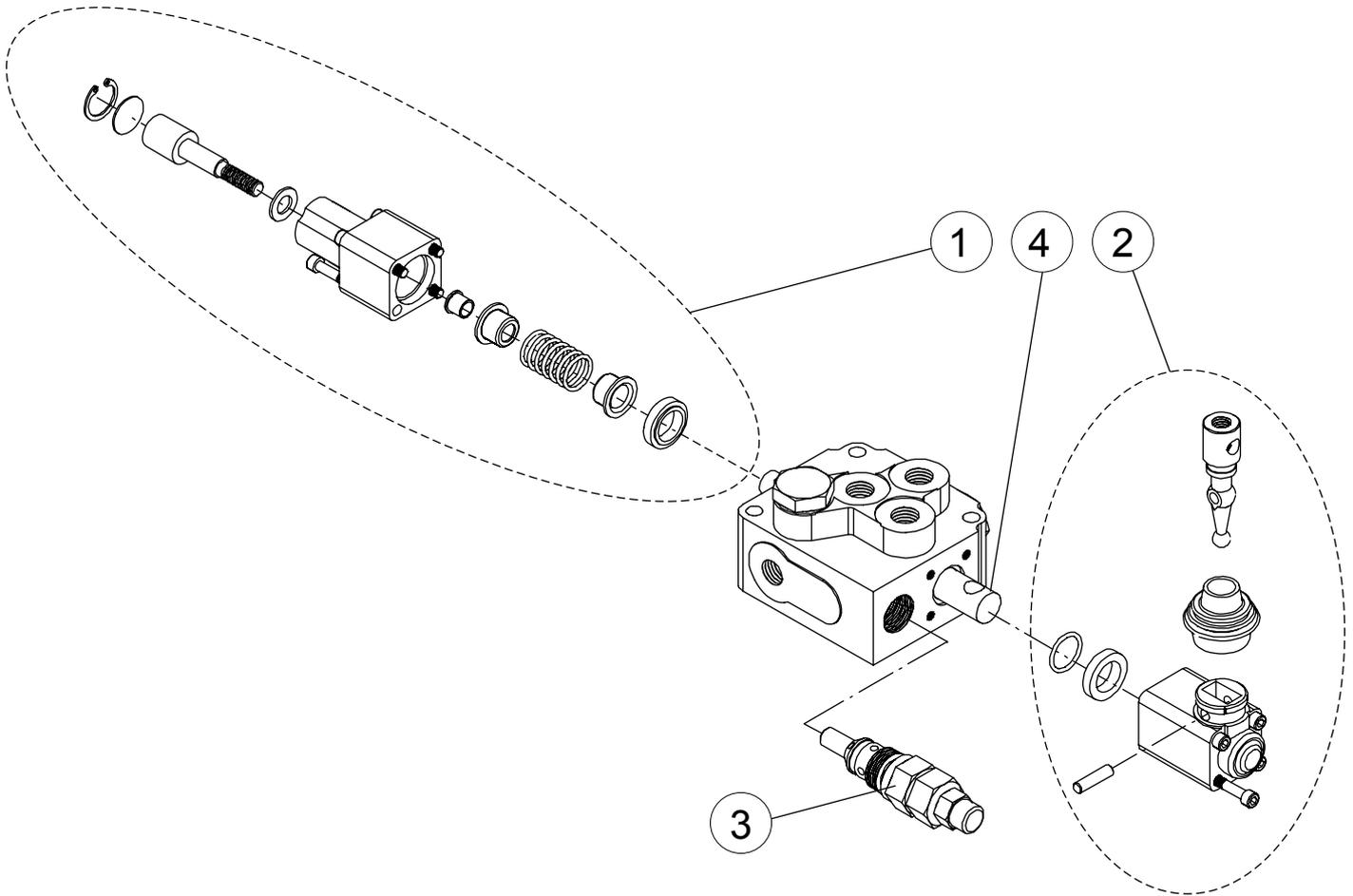
# HF231

## HYDRAULICS

Part	Order no	Description	Remarks	Qty
1	56001951	Hydraulic motor		2
1.1	58217746	Seal kit	for M+S Hydraulic motor	1
	OR			
1.1	52357589	Seal kit	for Danfoss motor	1
1.2	57609125	Key	for Danfoss motor	1
2	56075252	Flow divider valve		1
3	56070832	Flow regulator valve		1
3.1	58213596	Cartridge valve		1
	56075270	Seal for cartridge valve		1
4	56075260	Directional control valve		1
5	43486490	Valve base plate		1
6	56525157	Hose assy	V1/2" S L=1,0 m	2
7	56526130	Hose assy	K1/2" S L=0,9 m	2
8	56526015	Hose assy	K1/2" S L=0,3 m	1
9	03485290	Hose assy	parts: 13, 14, 15, 16, 17	1
10	03485360	Hose assy	parts: 14, 18, 19, 20	1
11	03484320	Hose assy	parts: 15, 16, 17, 21, 22	1
12	54921473	Water drainage pipe		1
13	56526288	Hose assy	K1/2" S L=2,3 m	1
14	52390200	Usit-ring	U21,54X28,58X2,49	13
15	52432051	Double fitting	R1/2"	8
16	52449022	Quick fitting	1/2" SK	2
17	54922141	Cap	1/2"	2
18	56526049	Hose assy	K1/2" S L=0,45 m	1
19	52435336	Bulkhead fitting	1/2"	1
20	52449758	Quick fitting coupling	1/2"	1
21	56526353	Hose assy	K1/2" S L=3,0 m	1
22	52449766	Quick fitting	1/2" flat	1
23	52090438	Hexagonal socket head screw	M10x20 DIN7991 ZN	2
24	52070414	Hexagonal socket head screw	M8X60 DIN912 88ZN	3
25	52060175	Screw	M8X25 DIN933 88ZN	12
26	52110038	Nut	M8 DIN934 88ZN	2
27	52443686	T-nipple	R1/2"	2
28	52442175	Angle nipple	R1/2"	1
29	52442365	Angle nipple	RK1/2-R1/2	3
30	52435773	Swivel fitting	R1/2"	3
31	56013246	Back pressure valve		1
32	52200037	Washer	M8 DIN126 58ZN	2
33	43487680	Limiter		1

# HF231

## 200000997 DIRECTIONAL CONTROL VALVE



Part	Order no	Description	Remarks	Qty
1	200001015	Rear case		1
2	200001012	Lever case		1
3	200001013	Pressure relief valve	175 bar	1
4	200001016	Spindle		1

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## WARRANTY

Farmi Forest Oy grants a 12-month warranty on all of its products, covering material and manufacturing faults. The warranty comes into effect on the product's delivery date.

The manufacturer is not liable for damages caused by:

- misuse of the product
- alterations or repairs made without the manufacturer's permission
- insufficient maintenance
- non-original parts

The warranty does not cover wearing parts.

Send faulty parts, carriage paid, to the manufacturer for inspection. Repairs will be conducted by Farmi Forest Oy or an authorized expert. The warranty is valid only if the bottom part of this page is filled in and returned to the manufacturer within 30 days of receipt of the product.

By returning the warranty certificate, you confirm that you have read and understood the instruction manual that came with the product.



Farmi Forest Corporation  
Ahmolantie 6  
FIN-74510 IISALMI  
FINLAND



**PRODUCT REGISTRATION FORM**

Date of delivery: \_\_\_\_/\_\_\_\_ 20\_\_\_\_

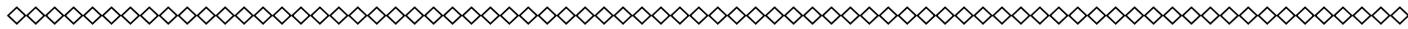
Dealer: \_\_\_\_\_

Dealer's address: \_\_\_\_\_

Dealer's tel: \_\_\_\_\_

Product and type: \_\_\_\_\_

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



Return to the manufacturer



Date of delivery: \_\_\_\_/\_\_\_\_ 20\_\_\_\_

Dealer: \_\_\_\_\_

Dealer's address: \_\_\_\_\_

Dealer's tel: \_\_\_\_\_

Customer: \_\_\_\_\_

Customer's address: \_\_\_\_\_

Customer's tel: \_\_\_\_\_

E-mail: \_\_\_\_\_

Product and type: \_\_\_\_\_

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







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