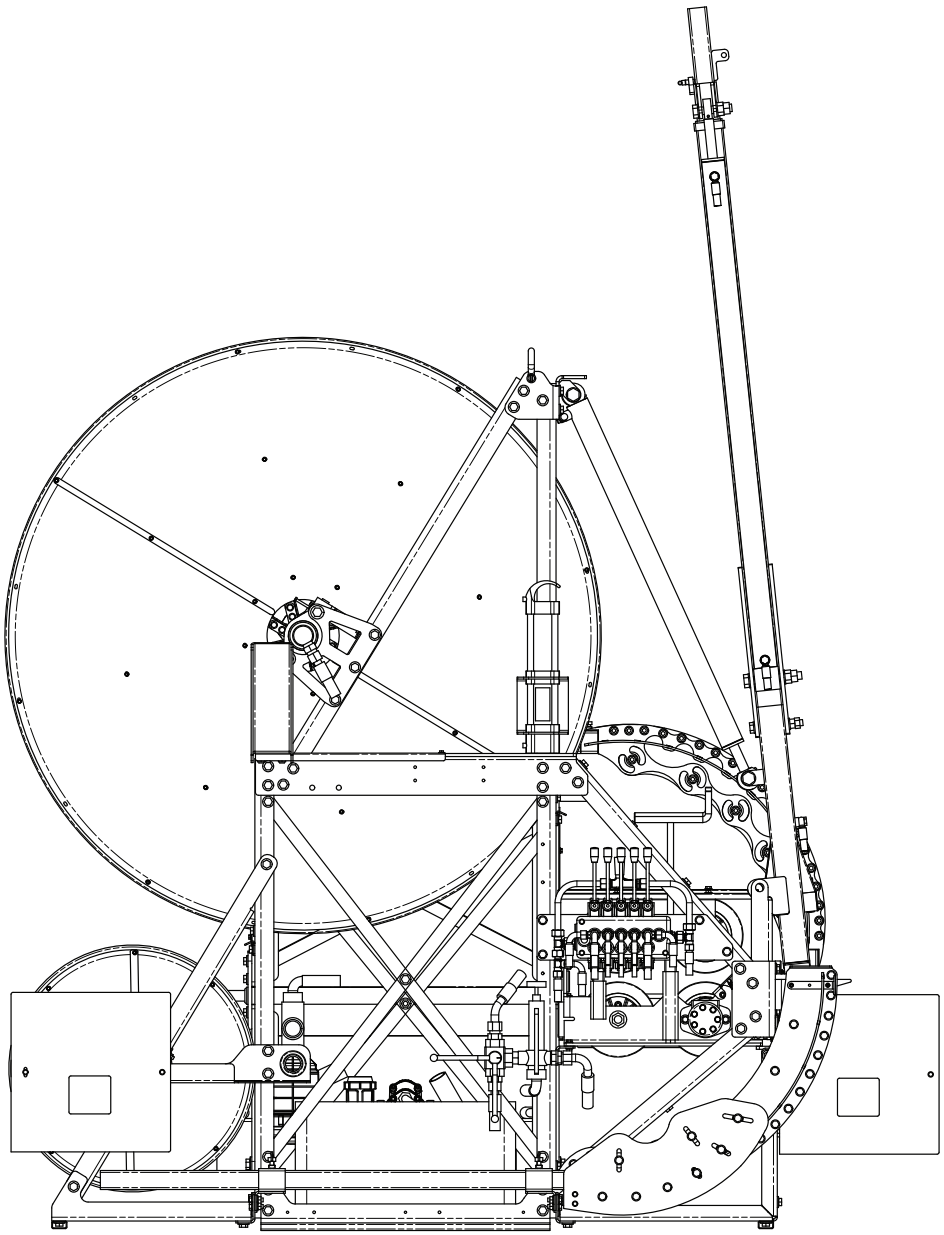
1. MANUAL FOR DRAINAGE WASHER HYDRO-JET300 AND 300+

SIA BALTIC INVEST

2. STANDARD DELIVERY KIT OF A DRAINAGE WASHER

1. Washer wheel with a hydraulic motor
2. Washer pipe of 320 m 27 mm / 5,5 mm
3. A small wheel for the model 300+ with DN20 / 3mm 100 m
4. Roller node for large wheel
   - 4.1 Roller node for small wheel
5. Meter counter for large wheel
   - 5.1 Meter counter for small wheel
6. Washer arm elbow
7. Ditch arm
8. Ditch arm fixer
9. Well arm
10. Hydraulic divider for 4 or 5 sections
11. Pressure regulator with pressure gauge
12. Air tap
13. Cardan
14. Washer nozzle for the 300+ model, then 2 rinse nozzles for nozzles DN35 and DN25
15. Pump
16. Filter
17. Suction tube 12 m with filter
18. CE marking



3. WASHER DIMENSIONS

Length	2,5 m	
Width	1,45 m	
Height	3,2 m	
Weight	Hidro-Jet 300	810 kg
	Hidro-Jet 500	948 kg
	Hidro-Jet 300+	1 040 kg
	Hidro-Jet 500+	1 180 kg

WASHER DIMENSIONS FOR TRANSPORTATION

Length	2,5 m
Width	1,2 m
Height	2,35 m

4. THE DRAINAGE WASHER IS MOUNTED ON A THREE-POINT EQUIPMENT

5. HYDRAULIC CONNECTION

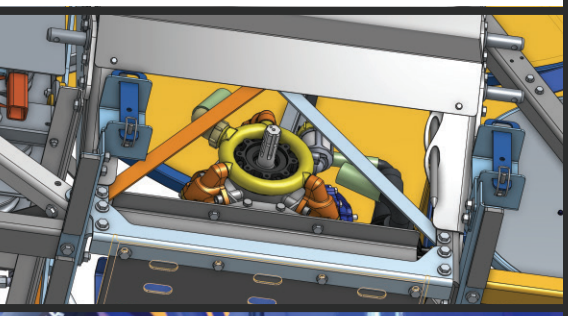
Hydraulic connection, 1 section (inlet, outlet) is required to operate the washer.

INLET – Hydraulic connection pipe with a red rubber cap
OUTLET – Hydraulic connection pipe with a blue rubber cap
Before getting started, make sure that the hydraulic couplings are properly connected to the tractor and that the tractor is switched on to operate the hydraulics. Hydraulics must be in constant flow in order to operate. If there is no constant flow, the washer hydraulics will not work.

HYDRAULIC CONNECTION TO THE ELECTRICAL HYDRAULIC DIVIDER

INLET – Hydraulic pipe with red marking is inlet.
OUTLET – Hydraulic pipe with blue marking and check valve is outlet.

CAUTION! The outlet of the electric hydraulic divider must be connected with the tractor, with free outlet.



6. POWER TAKE-OFF CONNECTION

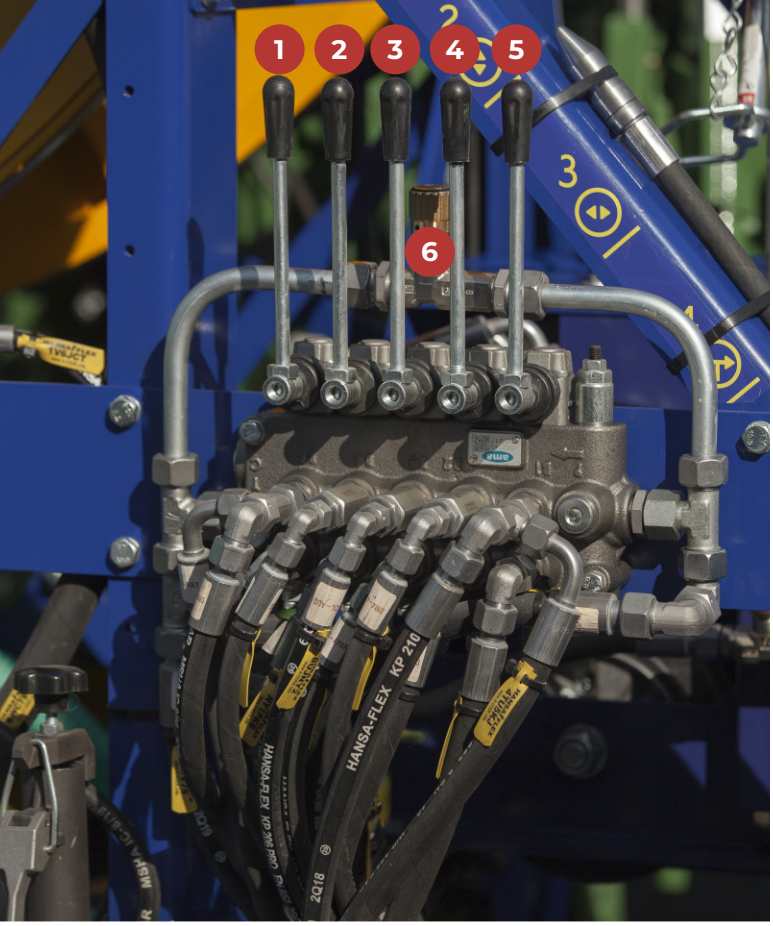
The power take-off (PTO) connection is required to operate the water pump. Required speed 540 rpm. Before connecting the PTO to the tractor, make sure that the PTO is not too long or shortened.

7. ELECTRICAL CONNECTION TO THE REAR LIGHTS OF THE WASHER

Before joining road traffic, make sure that the washer headlights are in synch with the tractor; otherwise, you may pose a risk to traffic safety, as tilling the drainage washer to the tractor, the rear lights of the tractor are not visible.

7.1 ELECTRICAL CONNECTION TO THE REAR LIGHTS OF THE WASHER

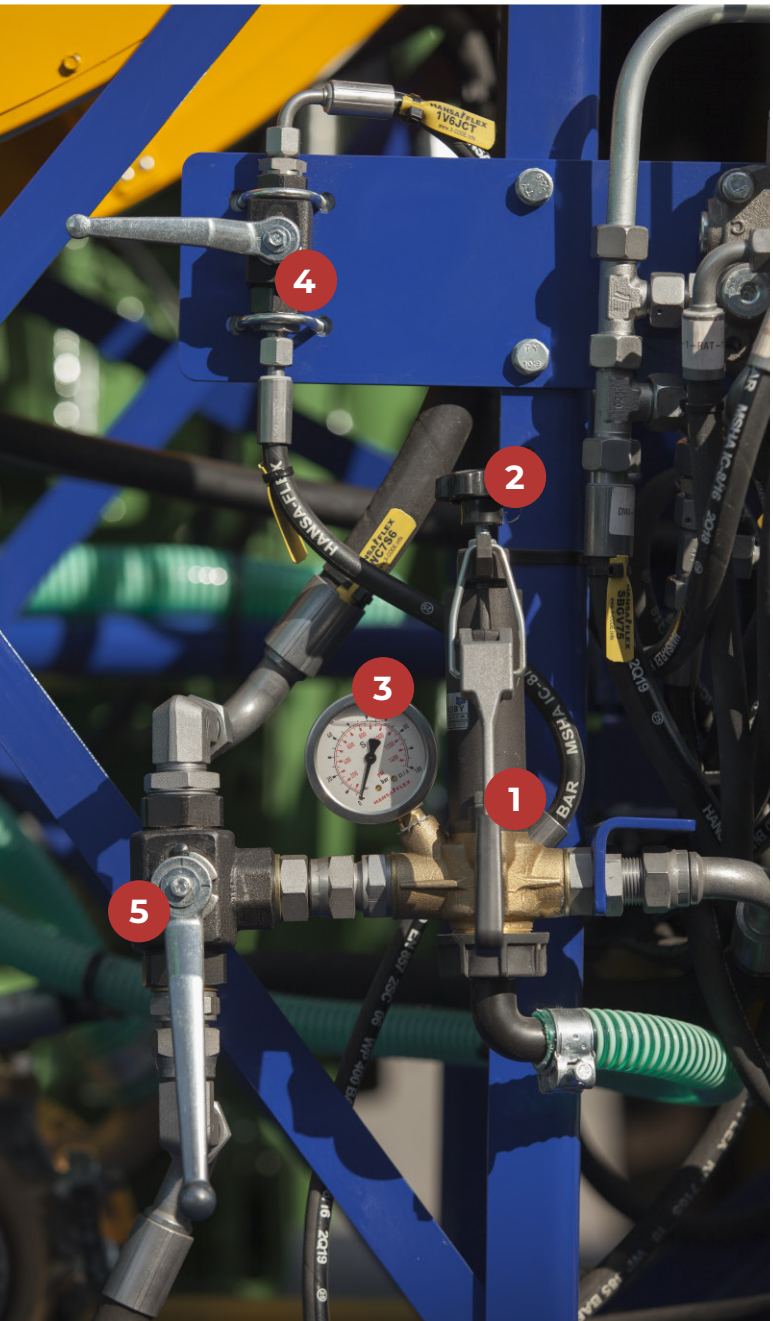
Nodrošina 12 V pieslēgumu lai darbotos hidrauliskais dalītājs ar signāla uztvērēju.



8. HYDRAULIC DIVIDER

For the drainage washer Hydro-Jet 300, it is 4-section divider. For the drainage washer Hydro-Jet 300+, it is 5-section divider.

1. Pushing and pulling the drain pipe in the drainage pipe.
2. Vertical movement of arms, up and down.
3. The arm – closer, farther.
4. Horizontal movement of the arm to the right, to the left.
5. Pushing/pulling the Hydro-Jet 300+ small wheel pipe.
6. Hydraulic throttle to adjust the washer working speed.



9. WATER PRESSURE CONTROL VALVE WITH PRESSURE GAUGE

1. Lever is lowered, water pressure turned on. Lever is raised, water pressure off.
2. Pressure regulation is done by the screwed lever. The lever is screwed in, the pressure rises, when the lever is screwed up, the pressure decreases.
3. The pressure gauge shows how much pressure you are applying. We recommend using from 25-35 atmospheres with nozzles DN25 and 35, up to 50 atmospheres with the nozzle DN50.
4. Air valve.

   When the flusher starts, there is air in the system and this air must be removed from the system.

   When the system needs to be vented by turning the lever up, air is expelled from the system with water. When the air is removed from the system, by turning the lever to the side, all overflow water goes back to the system, which saves water consumption.
   But if you plan to install the drainage washer on the barrel, this venting is not relevant as it is better to conduct the drain pipe to the barrel and the excess water goes back to the barrel.
5. Water shift valve only for the Hydro-Jet 300+ model in order to switch water from DN27 mm to DN20 mm.

10. ROLLER NODE

It consists of 4 rubber wheels interconnected to form a 4x4 drive (Figure 10.2). The wheels are driven by 2 throttle-controlled hydraulic motors (Figure 10.4) and a meter counter showing how far the drain pipe is pushed into the drain (Figure 10.1). Each pair of rubber wheels is driven by a hydraulic motor interconnected by a chain and forms its own drive for each pair of rollers.

1 hydraulic motor for Hydro-Jet 300+ DN20 mm.

2 traction rubber wheels, 2 pushing wheels.

2 hydraulic motors of a roller node (Figure 10.3), as well as the wheel hydraulic motor (Figure 1.1.1) are connected in a single circuit and the synchronous rotation of all three motors is controlled by a throttle (Figure 10.4).

Synchronous operation of the Hydro-Jet 300+ small wheel and roller node is regulated in the same way.

Hydraulic throttle for Hydro-Jet300 and Hydro-Jet300 + is designed to adjust synchronous rotation of the roller node and wheel (Figure 10.2).

Reducing throttle throughput, the rotating speed of the wheel will increase, increasing throttle throughput, the rotating speed of the roller node will increase.

When the washer pipe is pushed out, only the roller node performs this function and the wheel rotates freely. When the washer pipe is pulled out, the throttle must be adjusted so that the wheel rotates slightly faster than the roller node. When the roller node is braking, the pipe will tension and roll onto the wheel densely, without hanging.

Adjusting, compression, release of rubber wheels (Figure 10, spare part No. 3)

Turn the knob counterclockwise to compress the roller node.

You do not need to cover the roller node, because then the roller node will not work effectively.

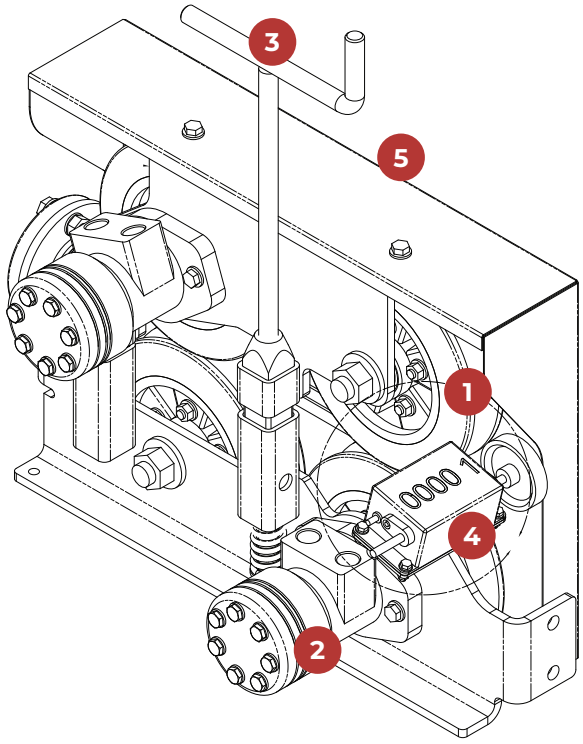
CAUTION!

If the washer pipe does not move forward, but the roller node rotates, you can damage the washer pipe by fusing it, as the rubber wheels rotating against the plastic tube, heat the plastic tube, and the washer pipe melts. Therefore, the roller node does not move, the roller node must be stopped.

For drainage washers equipped with electric hydraulic dividers, this is not a problem because of the automatic stoppage system. If the washer pipe does not move forward, the roller node with a wheel will stop automatically after 7 seconds. Meter counter (Figure 10.1).

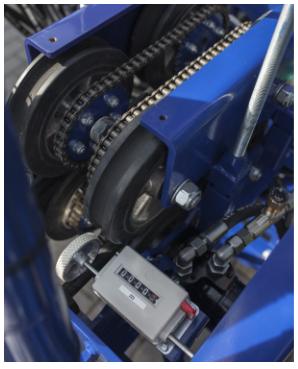
The meter counter counts running meters back and forth (Figure 10.1).

To determine how many meters the drain pipe has entered into the drainage pipe, you need to use the meter counter. To obtain an accurate result when the end of the washing pipe is at the beginning of the drainage outlet, the meter counter is set to 000000 with the help of the red lever, the meter counter starts counting meters, when the pipe moves.

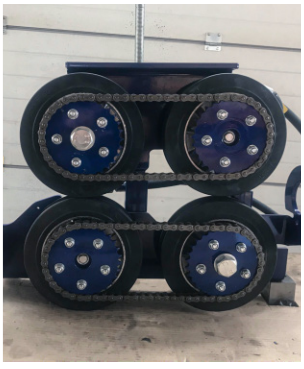


(Figure 10)

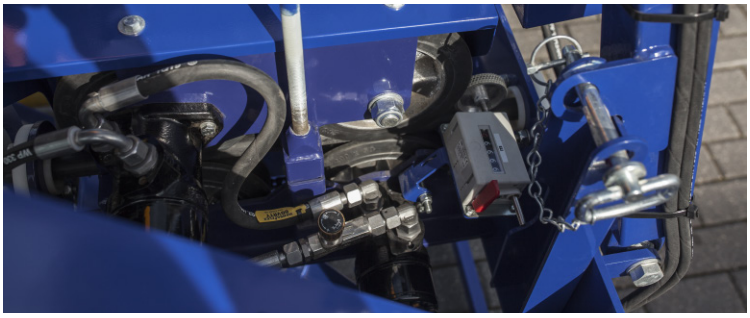
1. Rubber wheel
2. Hydromotor
3. Adjustment lever
4. Meter counter
5. Protective cover



(Figure 10.1)



(Figure 10.2)



(Figure 10.3)

(Figure 10.4)

(Figure 11)

11. DRAINAGE WASHER ARM

1. The horizontal arm movement of the drainage washer is provided by the hydraulic cylinder (Figure 11).

CAUTION! Make sure that the transport safety pin is removed before operating the washer arm (Figure 11.1).

The DN300+ drainage washer arm has an additional opening for the DN20mm pipe, through which the DN20 pipe is moved (Figure 11.2).

A guide (Figure 11.3) is provided to guide the DN20 pipe from the roller node to the hand.

2.1 The length can be adjusted hydraulically (Figure 11).

2.2 If necessary, the arm length can be extended manually by releasing the mount, but the square pipe can be pulled out and secured (Figure 11).

CAUTION! IT IS STRICTLY PROHIBITED TO MOVE WITH A HYDRAULICALLY AND MANUALLY MAXIMUM EXTENDED ARM!

2.3 The horizontal movement of the arm to the right and to the left is provided by the hydraulic cylinder.
It is required when working in the field to place the washer arm exactly against the outlet.

(Figure 11.2)

(Figure 11.3)

(Figure 11.1)

12. THE WASHER ARM ELBOW

(Figure 12)

(Figure 12.1)

The elbow of the washer arm is connected to the washer arm forming a 90° bend (Figure 12.1). When connecting the arm to the elbow, secure it with a cotter pin.

(Figure 12.2)

The washer arm elbow can be rotated 360° (Figure 12.2).

(Figure 12.4)

(Figure 12.3)

The elbow of the washer arm joins with the ditch arm and the well arm (Figures 12.3, 12.4).

13. TRACKING SYSTEM OF DRAINAGE WASHERS

(Figure 13)

vScan signal receiver (Figure 13)

1. USB connection. It is designed for software updating, as all new versions of the software can be obtained from the manufacturer's homepage for free.

2. AA type batteries 6 pcs.

3. Sound signal transmitter.

4. Strength indicator of the signal detection. Here you see how strong the detection signal is.

The strength of the detection signal is adjusted by turning the rotary selector (8) clockwise (increasing) and counterclockwise (decreasing).

When the indicator is empty, no signal is detected; when a black level appears in the signal, which means that the signal starts to appear, the maximum signal level is visible when the indicator is full. We recommend it, when practically working in the field.

Then when you walk down the drain pipe transmitting the signal, you can use the max signal, but when the signal disappears by taking a step back where the signal is max again, gradually reduce the signal to the minimum and where the signal is still received, there is an end of the washer pipe.

An additional tracking system is offered for the Hydro-Jet models. Our tracking system is designed so that the washer pipe is like one big sensor. This means that you receive a signal from the start to the end of the washer pipe.

5. The compass indicating which direction the arrows are black, if you are deviating, the arrows are blank.

6. Display. The display shows all the information you need:

- Signal strength
- Compass
- Battery level
- Your selected frequency. We are working only with Tx 33, when working with the washer.

7. Buttons (turn on/off button, info button). By pressing the Info button, you get how deep the pipe is and you can go to the MENU.

8. Rotating button. Use this button to adjust the signal strength.

9. The button to change the detection frequency.

1. Power cable will only show where the voltage is.
2. Power cable, but intended to search within the area that transmits the frequency.
3. Receives frequencies of 33 kHz and 131 kHz. We only use 33 kHz when working with the washer.
4. The sensor transmitting frequency. This system is used when the finder is at the end of the washer nozzle.
5. Metal detector up to 20 cm deep detects metal.

CAUTION! We recommend that if you change the detected frequency, for example, from Tx 33, you need a power cable. After changing the frequency, we recommend turning the receiver off and then on, as we had problems with the system hang. As a result, tracking system works completely wrong.

Watt transmitter

10. ON/OFF button

11. Signal strength of 50 %, 100 %. We recommend working at 100 %.

12. Lighting to see which signal strength you have selected.

13. Sound signal. Press the button to reduce noise.

14. Button for interrupted and continuous signal change. We work with a continuous signal.

15. Batteries. 4 pcs. D type batteries.

For the WATT transmitter to work successfully, you need to use only high quality normal or rechargeable “D” type batteries. If the sound signal operates with regular disruptions when you turn on the WATT transmitter, check the condition of the batteries and replace them if necessary.

14. HOW WE ARE WORKING WITH A TRACKING SYSTEM

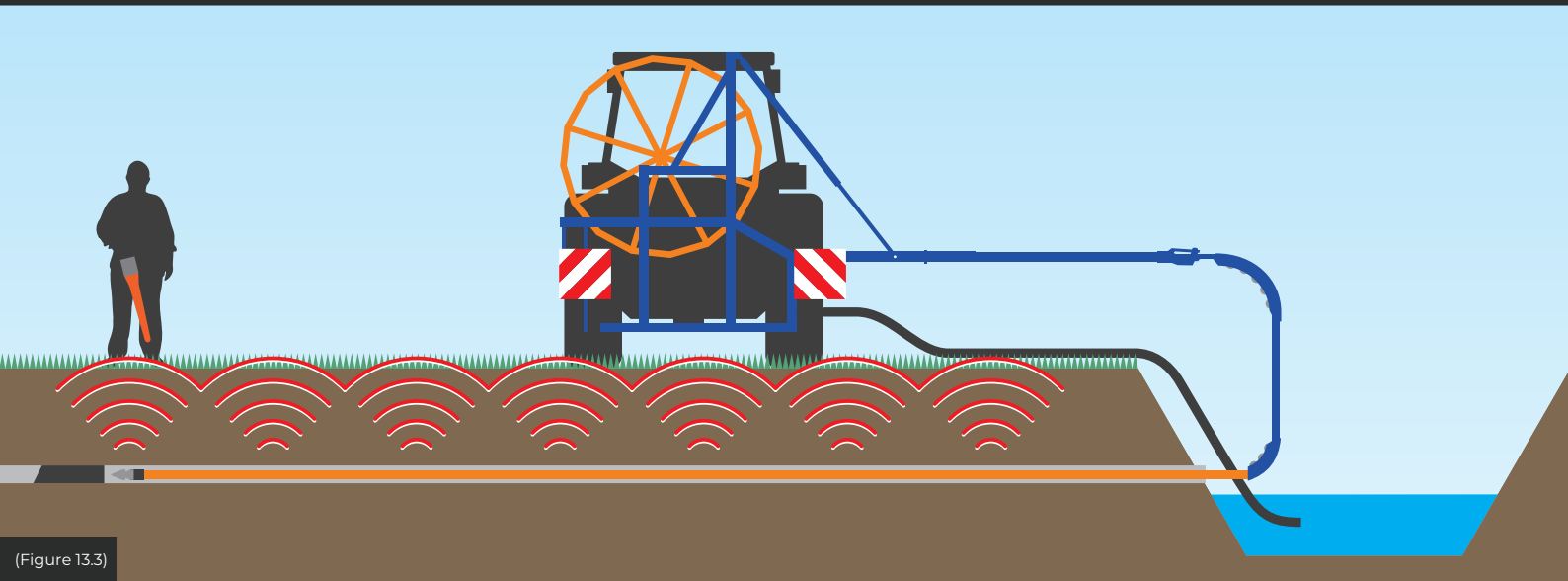
1. Place the Watt transmitter in its designated place on the washer (Figure 13.1).
2. Connect the wire to the Watt transmitter (red "+", black "-").
3. The red wire connects to the signal transducer (Figure 13.4).
   The signal transducer is connected to the wire in the washer pipe. So, the Watt transmitter connects to the signal transducer, which transmits the signal. The signal is transmitted to and from the transducer to the washer pipe. Black wire is grounded; remember that signal quality will depend on grounding.
4. Turn on the Watt transmitter (Figure 13.10).
5. Set the signal strength to 100% (Figure 13.11).
6. Turn on the vScan receiver (Figure 13.7).
7. Set 33kHz with the button (Figure 13.9).

CAUTION! When we start working with the vScan tracking system, we recommend stopping your tractor, as new tractors have so much electronics that they can suppress the signal being transmitted by the Watt transmitter and turn off the electric hydraulic divider.

(Figure 13.1)

(Figure 13.2)

(Figure 13.4)



(Figure 13.3)

REPLACEMENT OF THE WASHER PIPE WITH METAL WIRE

(Figure 14)

1. To replace the flush pipe, you need the following tools (Figure 14):
   - 1 Wrenches 32 mm, 2 pcs.
   - 2 Knife
   - 3 Pliers
   - 4 Melting muff
   - 5 Construction dryer
   - 6 Insulating tape
   - 7 Plastic zip ties
2. To get started, completely unwind the washer pipe from the washer wheel and remove the wheel cover on one side.
3. To disconnect the pipe and wire connection, cut the melting muff (Figure 2), which is welded on the washer pipe and a cordless pipe joint.
4. Disconnect the cable with the insulation from the signal transducer

   (Figure 3) and without the insulation from the washer pipe (Figure 4).

   The washer pipe is connected with a cordless hydraulic pipe that connects to the water connection of the washer wheel. The cordless pipe is required so that the signal from the transmitter does not go to the frame, but through the washer pipe.

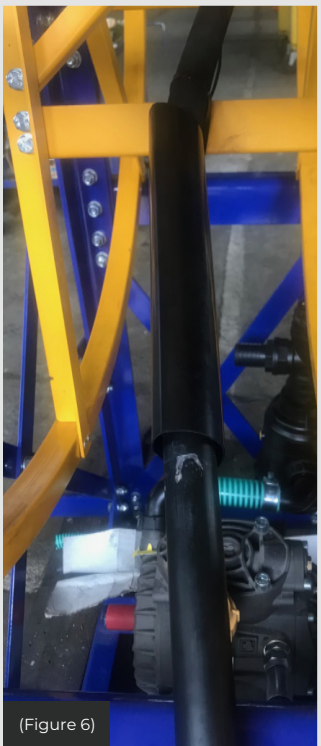
   Disconnect the washer pipe from the cordless pipe.
5. Push the melting muff on the new washer pipe (Figure 1.4).
6. Connect the new washer pipe to the cordless pipe connected to the washer wheel.
7. Connect the wires by connecting the wire from the signal transducer to the washer pipe wire.
8. Secure the wire connection and isolate it. We make a fastening on the cordless pipe (Figure 5).
9. Put the melting muff (Figure 6).
10. Seal the muff to ensure that there is no moisture anywhere near the wire connection.
11. Attach the washer pipe to the washer wheel.


(Figure 2)

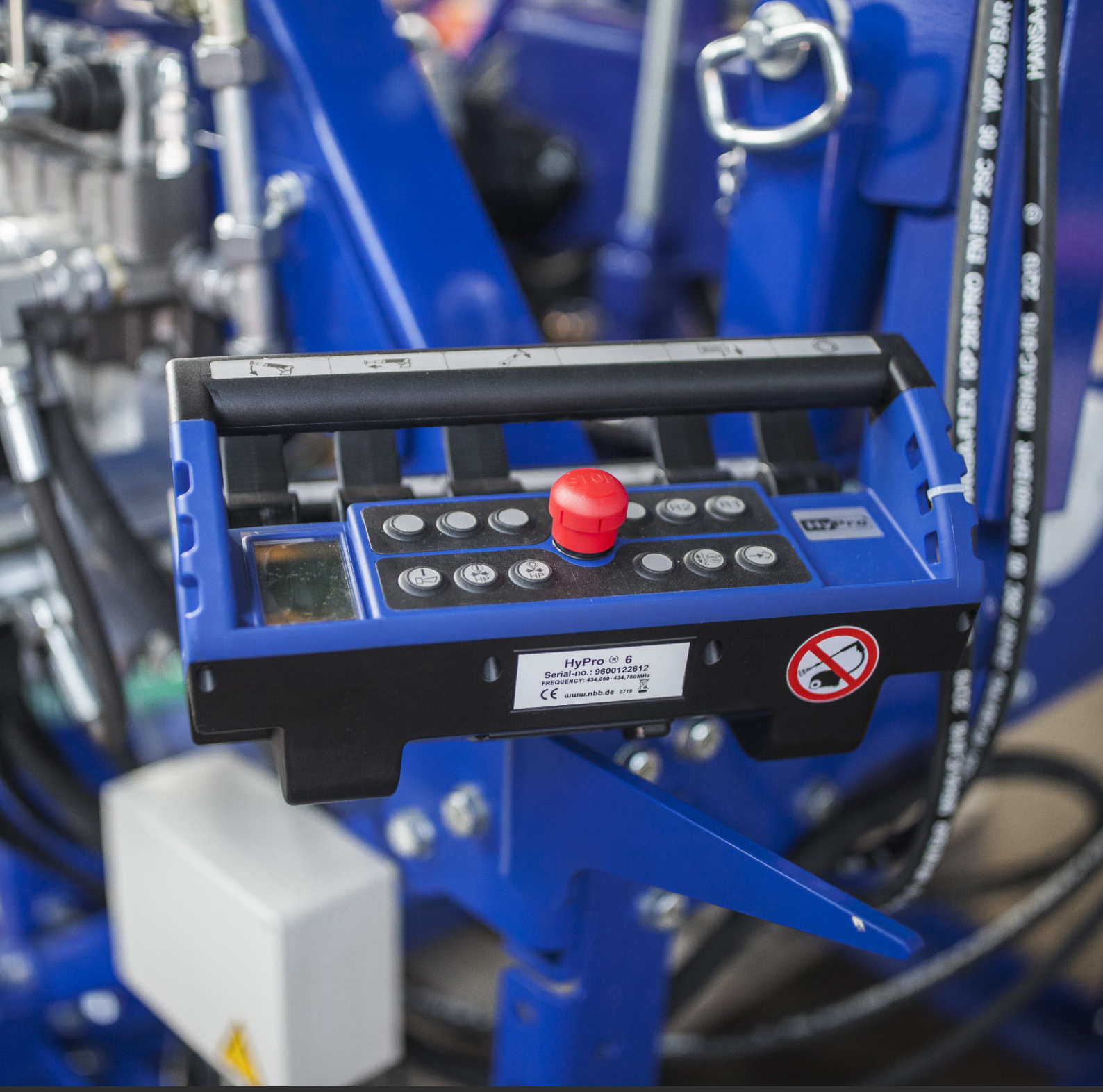

(Figure 3)


(Figure 4)


(Figure 5)


(Figure 6)


(Attēls 1.4)



REMOTE SYSTEM MANUAL OF HYDRO-JET BI-300/300+

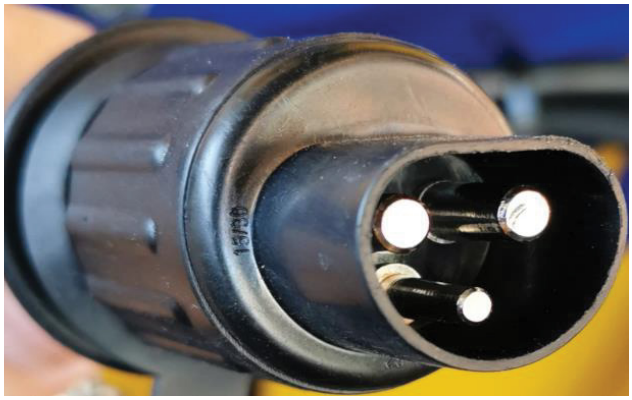
SIA BALTIC INVEST

TABLE OF CONTENTS

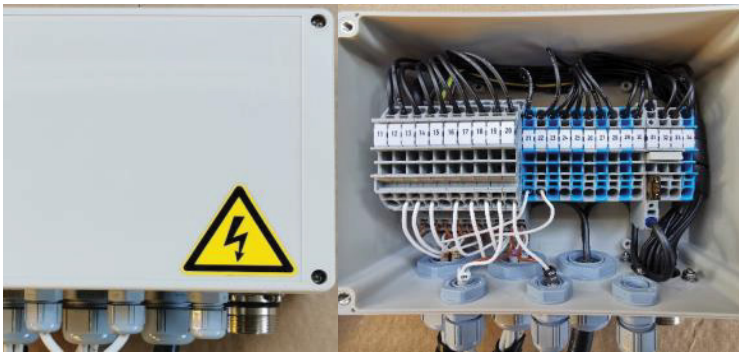
1. OVERVIEW OF CONTROL SYSTEM COMPONENTS, GETTING STARTED, FAILURES

1.1 CONTROL SYSTEM COMPONENTS

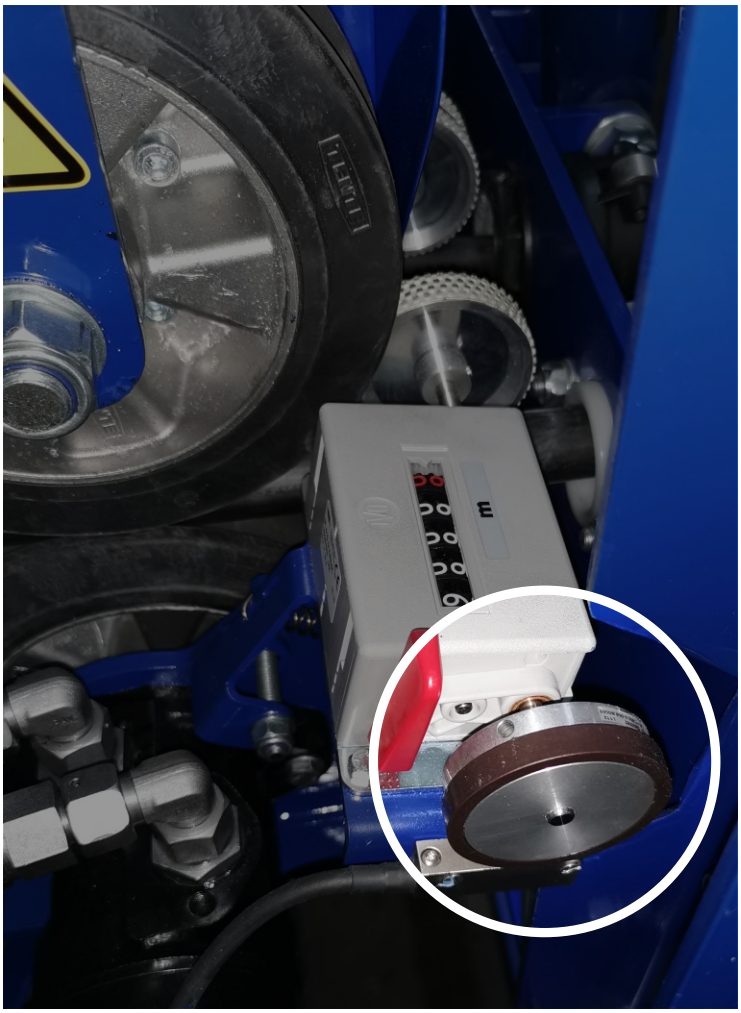
Splitting box. Control board, hydraulic valves and tachometer sensor wires are connected in this splitting box.



Electrical connection plug-in for control unit. This plug-in is for connection to the tractor power supply. If the control unit is not connected to power, the remote control system will not operate. The control unit needs to be supplied with 12 V.



Remote control board. This board receives and processes the remote control signal and supplies further power supply to the hydraulics.



Tachometer. This sensor is connected to the meter counter and, when rotated, gives a signal to the control board about the movement of the rinsing pipe. If the sensor is damaged or loose, the pipe feed system will malfunction, and the pipe feed auto-pilot function will not work.

1.2 GETTING STARTED, LED INDICATOR COMBINATIONS AND THEIR EXPLANATION

Connect the electricity plug-in to the tractor.
When the control board is powered on, two LED indicators (1) and (2) will light up on the board display. Below is an explanation:

WHEN THE CONTROL UNIT IS POWERED, BUT THE REMOTE CONTROL IS OFF:

1. Green, illuminated continuously
2. Red/orange, illuminated with disruptions

Explanation: The control board is trying to connect to the remote control. The console is off or damaged.

WHEN THE CONTROL UNIT IS POWERED AND CONNECTED TO THE REMOTE CONTROL:

1. Green, illuminated continuously;
2. Red/orange, illuminated with disruptions

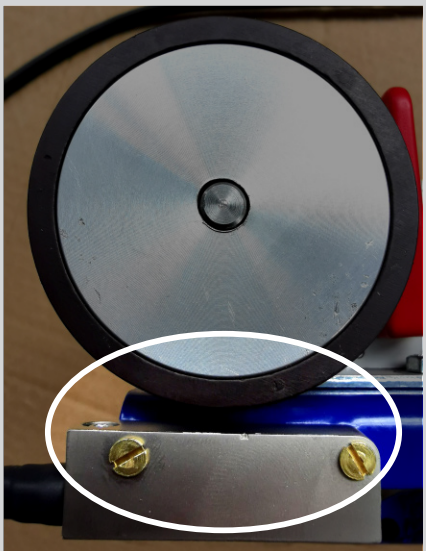
Explanation: The system operates optimally, without technical failures.

1. Green, illuminated with irregular disruptions
2. Red/orange, illuminated with irregular disruptions

Explanation: System malfunction.

1.3. TECHNICAL MALFUNCTIONS

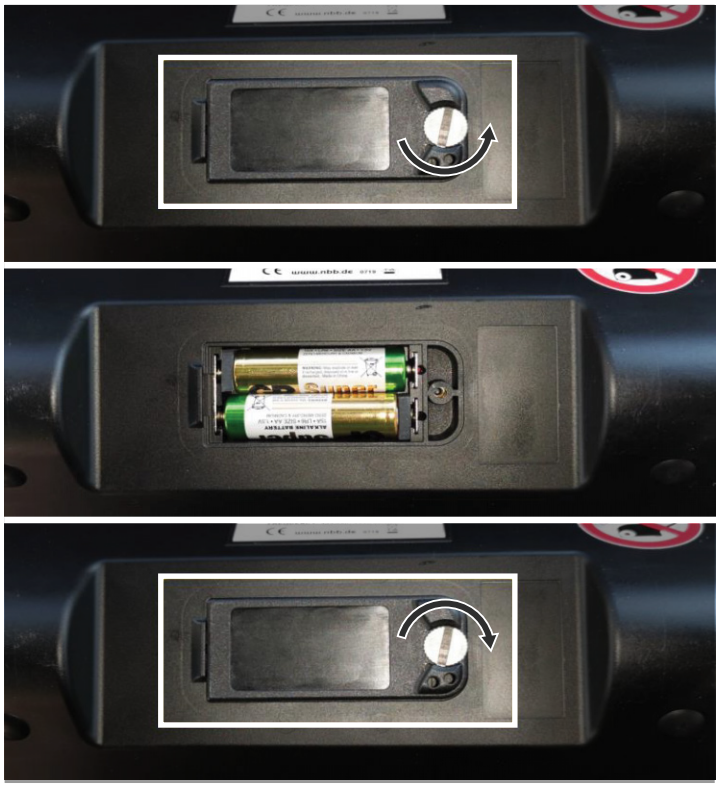
If none of the LED indicators (1) and (2) is not lit when powering the control unit. Check for power from the tractor, check the condition of the plug-in, as well check the position of the fuse in the splitting box (3). If the fuse is damaged, it must be replaced with a new fuse of 7,5 A.



If the auto-pilot feed function of the rinsing pipe is not working or is malfunctioning, check the condition of the tachometer. The lower sensor of the tachometer must be screwed as close as possible to the moving part mounted on the meter counter axis. If the distance between them is too long or any part of the sensor is moving, the sensor operation will be interfered, and the pipe feed function will not work.

2. SETTING UP THE CONSOLE, VISUAL OVERVIEW, BUTTON LAYOUT

2.1 BATTERY INSTALLATION AND REPLACEMENT

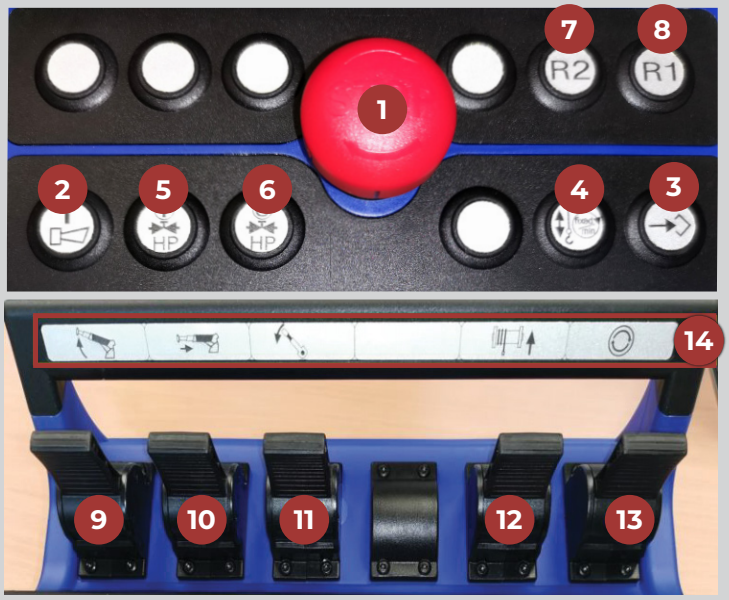


To insert or replace batteries in the console, the protective cover on the back of the console must be removed. To do this, you need to unscrew the locking screw by turning it counterclockwise.

Once the cover is removed, the batteries can be inserted and replaced. The remote control needs two "AA" size 1,2 V or 1,5 V batteries.

After inserting or replacing the new batteries, replace the protective cover and secure by tightening the screw. You can do this by turning the screw clockwise. After installing the batteries, the remote control can be turned on and used.

2.2. LAYOUT AND EXPLANATION OF BUTTONS/SWITCHES

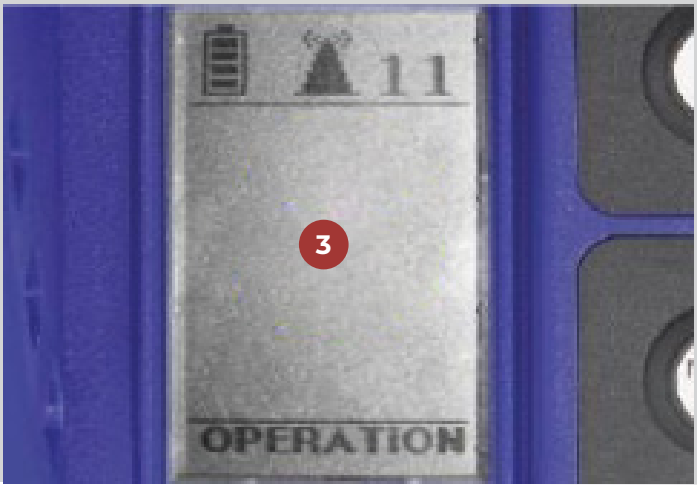


1. On/Off/Emergency button
2. System unlocking button
3. Frequency switch button
4. Rinsing pipe winding auto-pilot function
5. Water supply valve on button
6. Water supply valve off button
7. Backup button (currently unused)
8. Backup button (currently unused)
9. Manual hydraulic control "Up-Down"
10. Manual hydraulic control " Telescope Out-In"
11. Manual hydraulic control "Right - Left"
12. Hydraulic control of the DN25 pipe "Out-In"
13. Hydraulic control of the DN35 pipe "Out-In"
14. Graphic symbols for switches

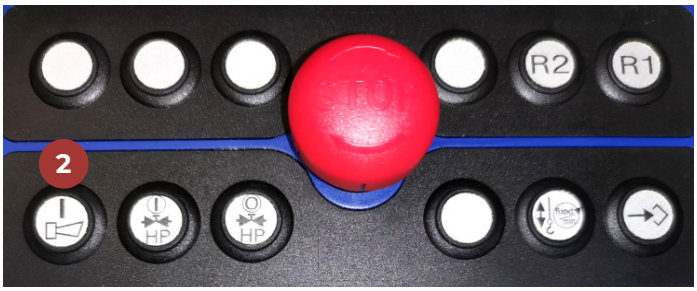
2.3 SWITCHING ON THE CONSOLE, GETTING STARTED, BUTTON AND SWITCH FUNCTIONS

To turn on the remote control, turn the red ON/emergency button clockwise (1).

To turn off the remote control, turn the red ON/emergency button (2). The red ON/emergency button also serves as an emergency safety switch that automatically stops the system when pressed.



When the console is turned on, two beeps will be heard and the antenna, battery and frequency symbols (3) will appear on the display.

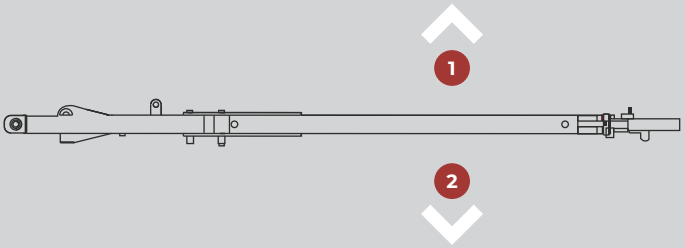


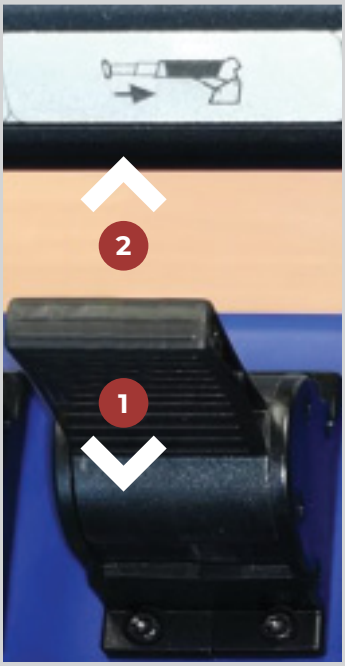
2.4 ACTIVATING THE CONSOLE FUNCTIONS WHEN GETTING STARTED

When the remote control is turned on, all buttons and switches are locked for safety reasons. Each time you turn it on, press the System unlock button (2) to getting started and activating all buttons and switches. When done, all buttons and switches are activated, you can perform all necessary actions.

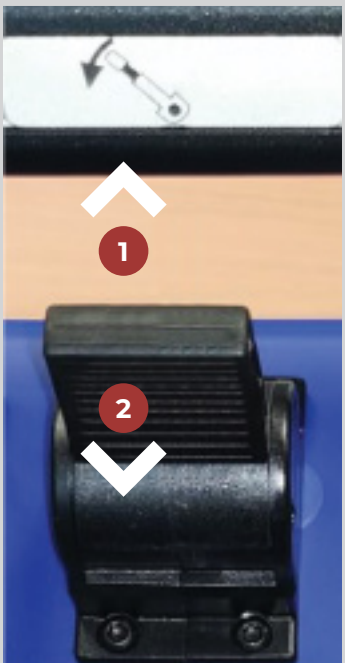
2.5 USING BASIC ARM HYDRAULIC CONTROL SWITCHES

1. Lifting the basic arm of the washer up
2. Pulling the basic arm of the washer down

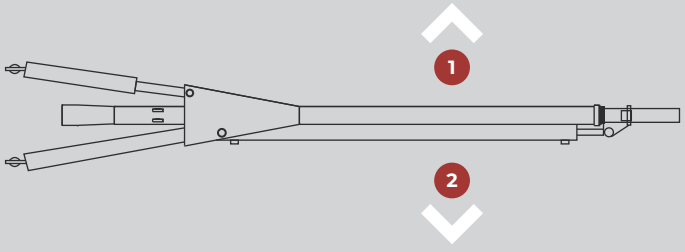




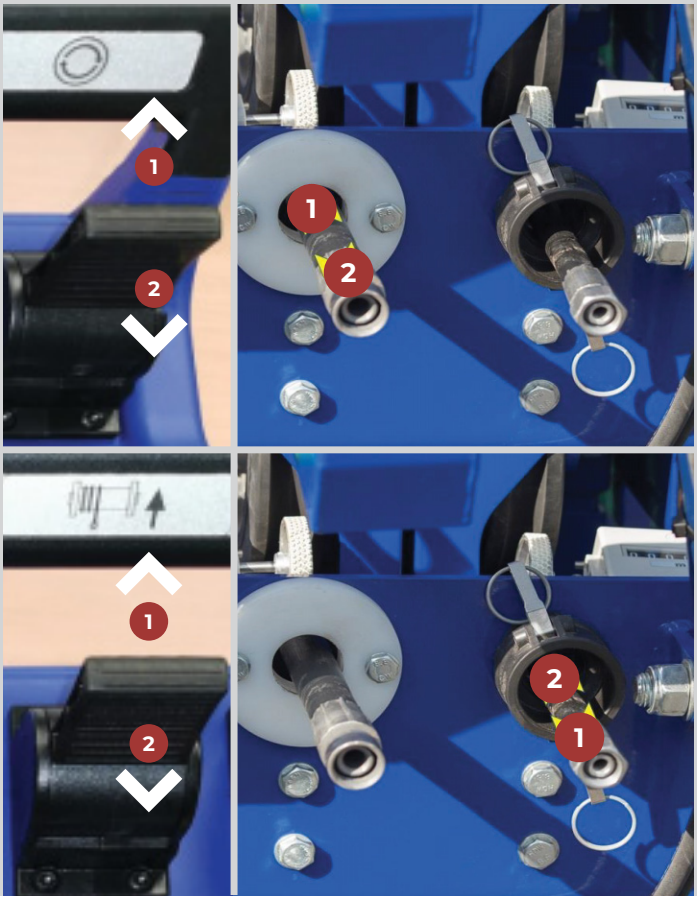
1. The extension telescope of the basic arm of the washer inside
2. The extension telescope of the basic arm of the washer out



1. The basic arm of the washer to the left
2. The basic arm of the washer to the right



2.6 USING THE WASHER PIPE CONTROL SWITCHES



1. Washer pipe DN 35 – to pull out of the drain pipe
2. Washer pipe DN 35 – to push inside the drain pipe

1. Washer pipe DN 20 – to pull out of the drain pipe
2. Washer pipe DN 20 – to push inside the drain pipe

2.7 WATER SUPPLY TURNING ON AND OFF BUTTONS

1. Turn on the water supply to the washer pipe
2. Turn off the water supply to the washer pipe

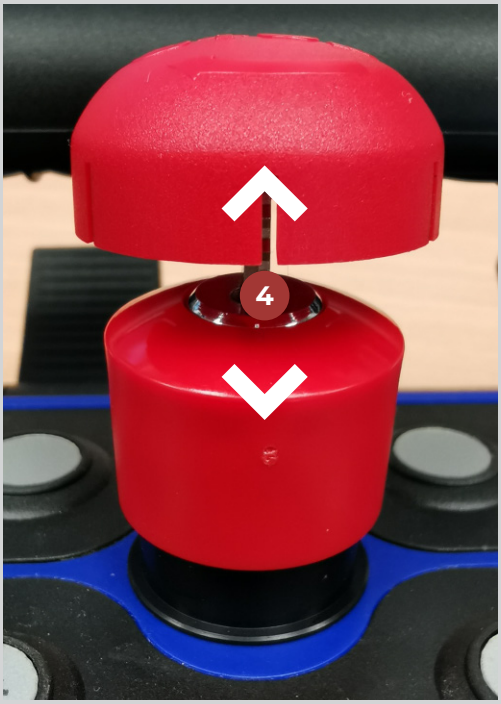
3. OTHER USEFUL INFORMATION

3.1 CHANGING THE REMOTE CONTROL OPERATING FREQUENCY

Sometimes, the transmission and reception of the remote system may be interfered by surrounding electrical equipment or other transmitters, so the remote system must switch to a different detection frequency in order to function properly. This can be done as follows:

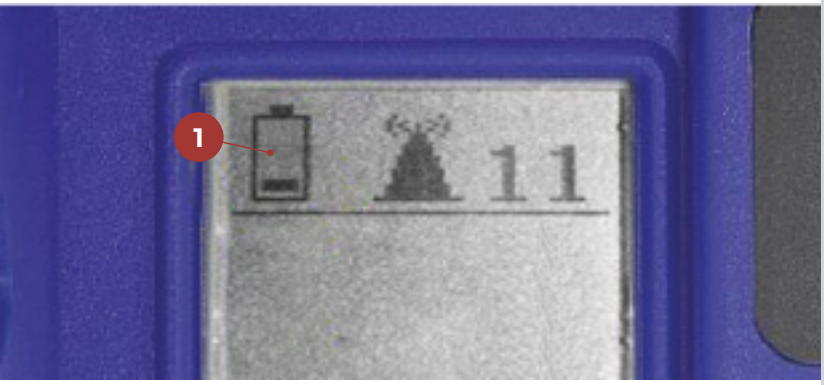
Hold down the system unlocking button (2) and change the frequency with the frequency change button to change the frequency of the remote control (3).

If the frequency change is successful, the frequency number will change in the display of the remote control.



3.2 LOCKING THE REMOTE CONTROL

Press the button and remove the protective cover (4) from it. The protective cover is fitted with a key without which the remote control cannot be started (5). Also, the remote control comes with a separate key that can be used to turn the remote control on and off (6).

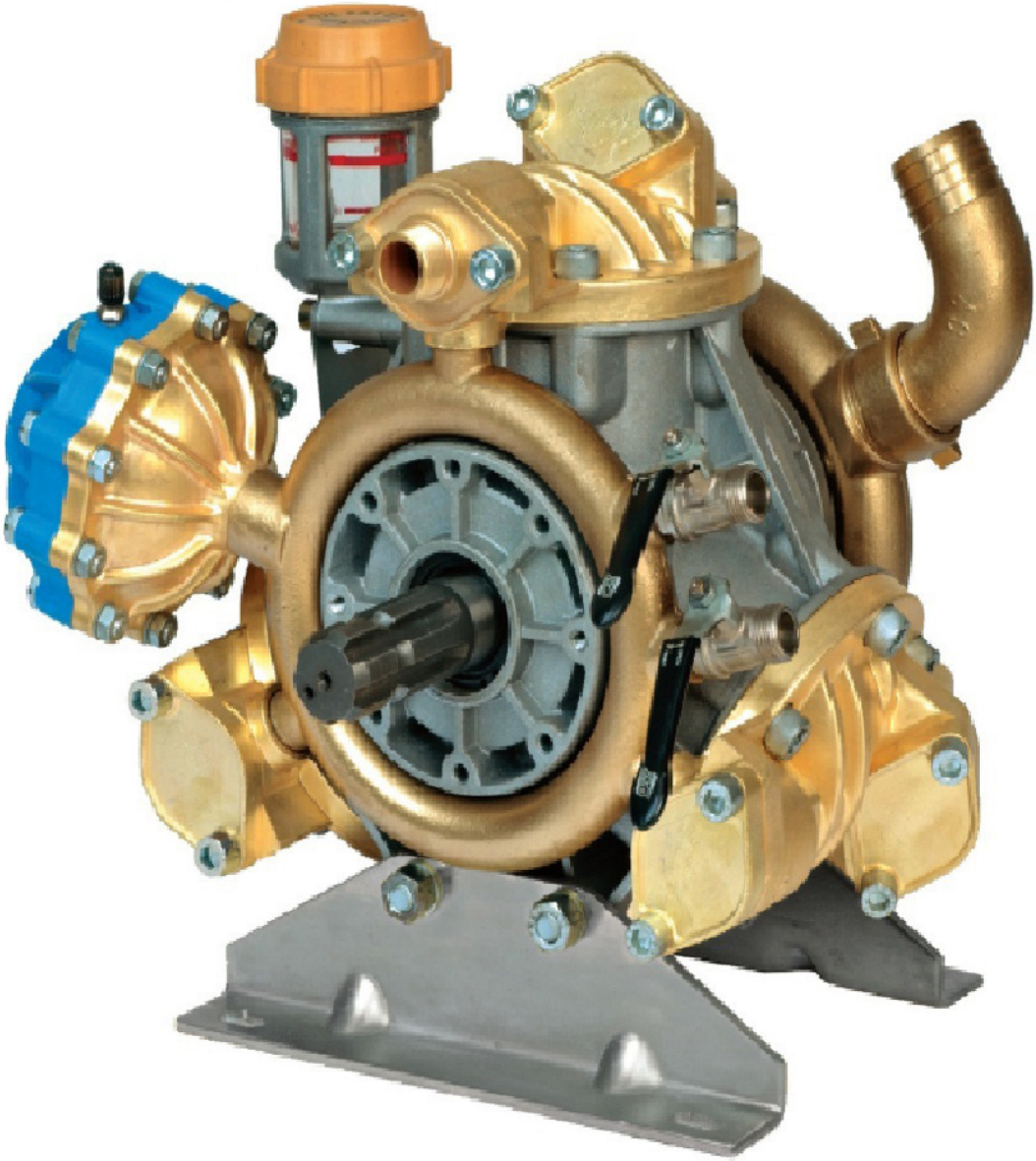


3.3 BATTERY LEVEL CHARGING WARNING

When the battery charge indicator starts to show only 1 section, this means that the remote control can be operated for another 20 to 30 minutes. During this time, we recommend that you complete the operation by returning all hydraulic functions to the transport position or, if spare batteries are provided, replace them by following the instructions in section 1.1. For convenience, we recommend that you purchase two sets of rechargeable batteries and bring them with you so that they can be replaced operatively when needed, so the work process does not stop.

3.4 HOLDING THE REMOTE CONTROL DURING OPERATION

To ensure a safe and comfortable use of the remote control, we recommend attaching the remote control using a waist belt or a neck strap, so that the remote control does not need to be held in hand. If the remote control is not secured, the remote control may fall out during operation and it may be cumbersome to perform all functions of the remote control.

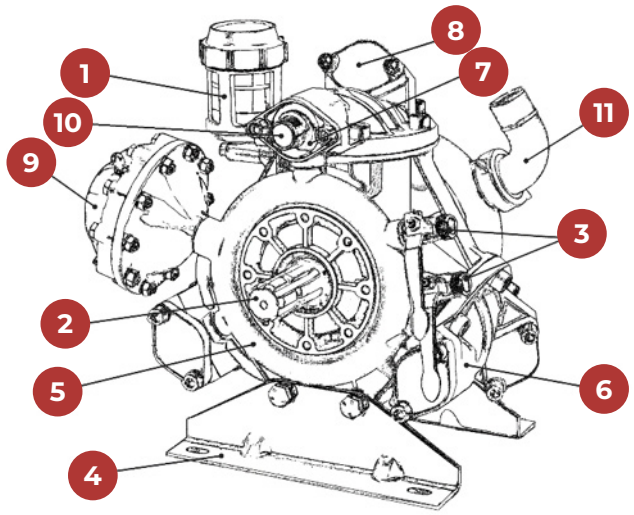


PUMP MANUAL

SIA BALTIC INVEST

IDENTIFICATION OF SPARE PARTS

If in doubt, it will be helpful to identify the finely designed pump spare parts using the charts and tables below.



IDB 1100 – IDB 1100S – IDB 1250
(three membranes)

1. Oil tank with minimum and maximum level
2. Pump shaft
3. Taps for various application functions
4. Blocking feet
5. Supply side collector
6. Head
7. Supply side valve cover
8. Suction valve cover
9. Pressure battery (flow regulator)
10. Supply side connection
11. Suction connection

USE

CHECKS BEFORE THE USE

– **Check** that the suction hose is not bent and is firmly attached to the connection and to the filter. In any case, restrictions on air pockets and suction that can jeopardize the proper operation of the pump must be avoided.

– **During each use:** clean the suction and delivery side filters. This simple operation will help maintain pump efficiency and **provide the best possible spraying.**

– **Close all supply side hoses** connected to the equipment operation function. Opening the connection to the device may cause significant damage to nearby people, animals or property.

– **Check** the condition of the hoses each time the pump is used. In addition, check that all connections are tight and secure.

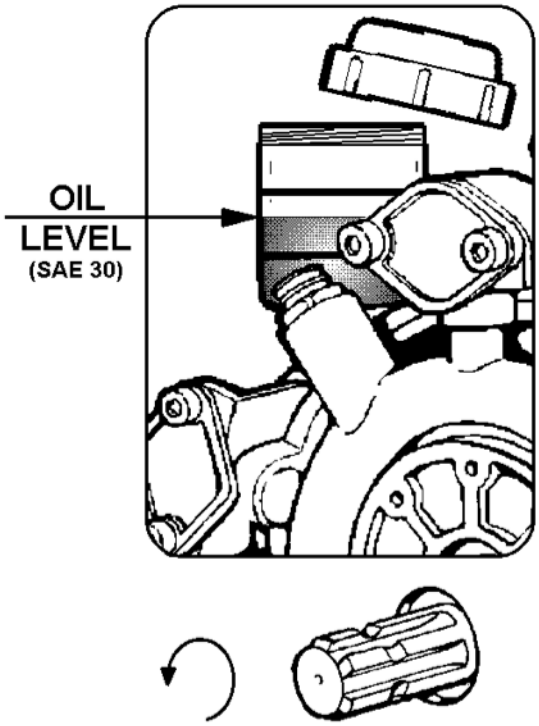
– Check the pump and its parts periodically. Normal maintenance of the pump will allow it to be used for a long time.

– The loading valve lever must be kept in the bypass position both when the suction connection is made via **water-pipe or pressure system and when there is pressure decrease connection** when starting the pump.

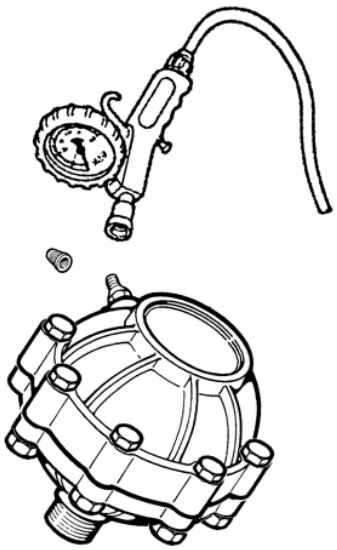
– While the pump is operating at its operating pressure, **check** that the oil is at the level indicated between the MINIMUM AND MAXIMUM level in the charge tank. If the level is too low, add the oil carefully so that you do not exceed the maximum level indicated.

WARNING! Excess oil causes pressure inside the pump. This can lead to leakage, oil sealing displacement or membrane rupture. Only use **SAE 30 engine oil** every time you fill or change the oil.

IDB PUMP OIL LEVEL



BATTERY CALIBRATION SAMPLE



Battery

The pressure accumulator in the pump (if any) or supply side (pressure side) is automatically set to a pressure of 6-8 bar, which is used for the maximum operating pressure of the pump. For any other operating pressure, the battery pressure must be recalibrated as shown in the following table.

At pressure below 15 bar, it is recommended to check that the battery pressure is at least 1/3 of the working pressure to better control the pulsating effect.

The pressure test must be carried out when the pump is stopped with air under pressure as shown in the figure.

To avoid rupture of the membrane, it is recommended that the internal pressure of the battery be checked frequently. This should be done using the appropriate equipment that can be found at any tire center or at specialist dealers.

Operating pressure (bar)	Battery pressure (bar)
20 ~ 50	6 ÷ 8
10 ~ 20	5 ÷ 6
5 ~10	2 ÷ 5

(1 bar = 14,5 psi)

SUCTION SPREAD

It is not recommended to use a pump to empty the tank. A hydro pusher with a nozzle of suitable diameter will perform this task with better functionality over time.

When necessary or optional, it is advisable to avoid a pressure decrease greater than 3 meters by using hoses of suitable length and profile without sharp bends. It is also advisable to pre-fill them (i.e., to fill them with water already).

In such circumstances, it should be borne in mind that prolonged use can cause pump components to malfunction, in which case the associated warranties will no longer apply.

OPERATING THE PUMP

– Start the pump with the loader valve lever in the bypass position. Leave it running until it is fully charged (that is, the pump runs regularly). Move the loader valve lever to the "Push" position and adjust the operating pressure with the button. Turning the knob clockwise increases the pressure and decreases by turning it counterclockwise.

– If the rotation speed is greater than the maximum border specified on the pump plate, it will not improve its performance characteristics. This causes unnecessary damage and voids the warranty.

– Check, when the pump is running, so that the oil level does not exceed the level indicated on the tank (maximum level) or half of the tank under pressure (for more information, see Section 6.1).

AFTER THE USE

– It is important to wash the pump after use to avoid damage to the pump. This can be done by running the pump under pressure of clean water for a few minutes. It should then be emptied by lowering the pressure to "0" and leaving to dry for a few minutes.

– If there is a risk of freezing, it is necessary to drain any remaining water. A good precaution is to mix antifreeze (one used in cars) with cleaning water. This will protect the pump even from the liquid remaining in it.

– The pump and system components (hoses, clamps, couplings, etc.) should be checked periodically (at the end of each working season). Replace any parts showing signs of wear. Changing the membranes and all rubber parts at the end of each working season (every year) will keep the pump and minimize the cost of unexpected damage next season; thus, avoiding time and money wastage.

WARNING!

It is very important that the oil is not drained into the sewerage or drain or into the soil.

MAINTENANCE PROGRAM

	Maintenance interval		
Operation	**Daily**	**Once a week**	**Annually**
Checking the oil level and condition	✓		
Checking the battery pressure		✓	
Inspection of equipment (hoses and fittings)	✓		
Inspection and cleaning of filters	✓		
Checking the pump fastenings		✓	
Membrane checking and possible replacement			S
Oil change			S (500 hours)
Checking of suction and delivery side valves			S
Checking the pump locking screws			S

BUTTONS:

O = the operation is performed by the operator
S = the operation performed by specialist (technician)

* P.S. the intervals are based on normal use, calculated on the basis of an 8-hour working day

CONSTRUCTION APPLICATIONS OF THE EQUIPMENT

USE IN AGRICULTURAL MACHINERY

1. Check that the machine's PTO does not exceed the permitted pump rotation speed.
2. If the PTO is synchronized with the gear, check the manufacturer's manual to determine the gear ratio and engine rotation speed at the permitted pump rotation speed.
3. Disconnect the PTO for expansion when the pump is not running.
4. Disconnect the power supply at each change of direction making a slope greater than the type of the propeller shaft used.

PROTECTION OF THE PROPELLER SHAFT

WARNING!

Information on personal safety.
READ CAREFULLY!

The choice of the engine propeller shaft safety cones for Bertolini pumps depends on two main factors:

1. **In accordance with CE safety regulations, the overlap between the pump safety cone and the propeller shaft must be "S" ≥ 50 mm;**
2. It is important to know the characteristics of the propeller shaft used.

There are many different types of propeller shafts on the market with conventional and wide-angle yokes, torsional moment limiters and freely rotating wheels.

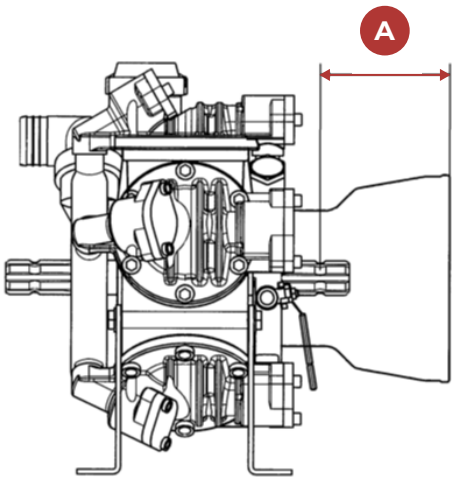
As they are not standardized, the associated protection elements brought forward are extremely variable. This complicates the process by selecting safety cones that are suitable for the pump to maintain the required overlap for safety purposes.

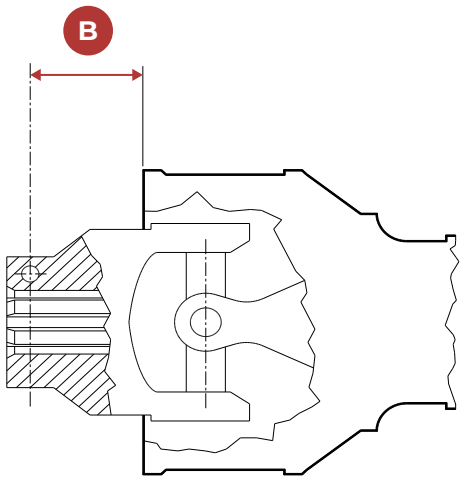
DETERMINATION OF THE "A" QUOTA

In order to obtain the **"B"** quota value, it is necessary to refer to the propeller shaft used in the manufacturer's catalogue.

The choice of the most suitable safety cone shall be made on the basis that **"S"** (overlap) **= A ÷ B (≥ 50 mm)**.

If two safety cones are available for the same pump model, both of which guarantee a minimum overlap value, a shorter version is desirable as it facilitates installation of the propeller shaft.





“A ÷ B” QUOTA

Safety cone protrusion for valve protection (mm)				
PUMPS	FRONT (DELIVERY SIDE)		BACK (SUCTION SIDE)	
	Code	Quota A	Code	Quota B
IDB 1100 – IDB 1100 S	31.1468.32.2	87,5	31.1468.32.2	84,5
	31.1482.32.2	132,5	31.1482.32.2	129,5
IDB 1400 – 1600 – 1800	31.1468.32.2	88	31.1468.32.2	84,5
	31.1482.32.2	133	31.1482.32.2	129,5

APPLICATION OF HEAT AND/OR ELECTRIC MOTORS

To use the pulleys, check the centering of both pulleys.

Maximum transmission: $\frac{n'motor}{n'pump}$ = K ratio

Once K is determined, it is possible to determine the diameter of the pulley motor or pump.

Diameter of the pulley motor cylinder: $\varnothing pm. = \frac{\varnothing.p.pulley}{K}$

Diameter of the pulley pump cylinder: $\varnothing pp = \varnothing p\ pulley\ motor\ xK$

P.S.

For any special installation or use, refer to the Bertolini Technical Support Service to avoid problems.

WARNING!

The designer of the equipment is responsible for installing sufficient protection for all moving parts, such as the shaft, pulleys, additional parts, etc.;

WARNING!

All electrical connections must be performed by specialized technicians.

WARNING!

Do not operate the pump or the electric pump with wet hands in wet conditions or on wet surfaces.

SPECIAL SAFETY INSTRUCTIONS

- **Do not work** in areas where the pump is running unless you are protected by suitable clothing and goggles;
- **Do not operate** the pump without disconnecting the power supply (without stopping the pump);
- **Fit** appropriate protection for all moving parts such as shaft, pulleys, joints, etc.;
- **Do not remove** the attached protection for moving parts;
- **Do not change** the installation conditions of the pump, in particular the hydraulic coupling;
- **Do not switch** on the taps installed on the pump unless they are connected to a function to prevent accidental discharge of the pumped liquid;
- **Be sure to have** a suitable capacity safety valve in the supply side chain in addition to the loading valve;
- Before use, **make sure** that the hoses are properly secured by checking all connections;
- **Carry out the checks** specified in Section 5 before use;
- **Protect** the pump from freezing in winter;
- Never **leave** the pump with the liquid pumped in when not in use. Continued contact of the liquid with the internal parts of the pump when it is not needed results in rapid pump wear;
- **Do not operate** the machine at a maximum speed greater than that specified on the plate attached to the pump;
- **Stop** the pump and release the pressure in the circuit before performing any maintenance or inspection;
- **Keep** children and animals away from the pump;
- **Do not use** liquids above 62°C/145°F or below 5°C/40°F;
- **Do not remove** the pressure accumulator before draining the pressurized air using a suitable valve;
- **Do not pump:**
  - Water solutions of higher density and viscosity than water;
  - Flammable liquids or liquefied gases;
  - Chemical solutions if you are not sure about the compatibility of the pump with the materials used;
  - Drinking water;
  - All kinds of paints;
  - All kinds of paint solvents and thinners;
  - All types of fuels and lubricants;
  - Liquids containing granules or solid particles in suspension.

Protect the environment from the liquid in the pump.
Collect liquid and dispose properly. Do not allow any liquid to enter the sewerage or drain or into the soil.