AEONPUMP

KRAKEN

USER MANUAL

www.aeonpump.com

Contents

1. Description, General Information

In this manual, the correct use of the Kraken piston pump, which shall be observed during storage, transportation, installation, and operation of the pump unit is described.

Failure to comply with the provisions of the manual may result in damage to the pump unit or premature failures, which may cause damage. Any type of such actions shall invalidate the warranty.

In this publication, all information is based on the latest product information that was available at the time of print approval.

This manual is an integral part of the pump assembly, and, in case of resale, shall accompany the pump unit.

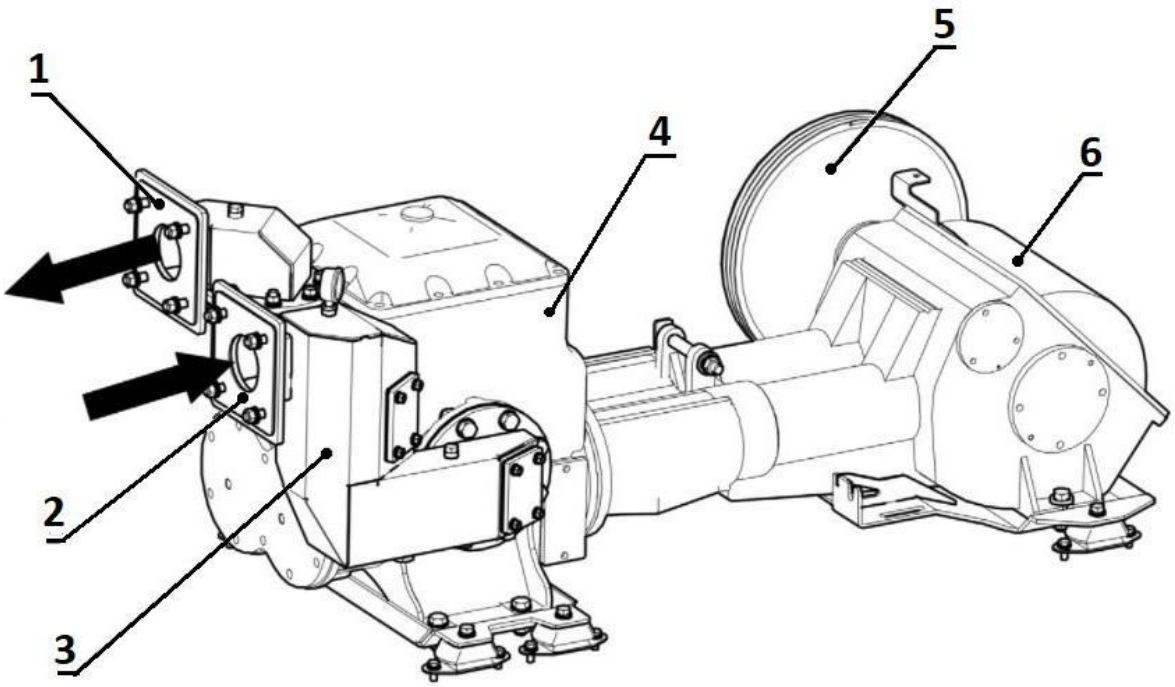
The manufacturer reserves the right to make changes at any time without prior notice and without accepting any obligations.

2. Principle of Operation, Design and Application

2.1. Principle of Operation

The Kraken series piston pumps have been designed for vertical and horizontal dewatering applications. These high efficiency positive displacement pumps are self-priming and suitable for pumping a mix of water and air under any conditions. Furthermore, these pumps can run dry without damage or excessive wear to any part of the unit. The data sheet that accompanies the pump includes all data for the pump unit. Before the pump unit is connected, an assessment shall always be made to determine whether it is suitable for the intended application.

2.2. Design



Main components:

1. Pressure side
2. Suction side
3. Stone catcher
4. Pump housing
5. Drive pulley
6. Gearbox

2.3. Intended Use

- The Kraken series piston pump is ONLY intended for pumping water from filters or drainage hose(s). It is NOT intended for pumping dirty water drawn directly from the suction hose, with or without a strainer.

- Long fibres will cause immediate malfunctions. Contamination results in accelerated wear of the gland packing, gaskets, valve seals, cylinder sleeves and piston cups.

2.4. Unintended Use

- It is not permitted to use the pump unit for the pumping of salt water.
- It is not permitted to use the pump unit for pumping liquids containing large, suspended solids.
- It is not permitted to use the pump unit for the pumping of flammable and/or explosive substances.
- It is not permitted to deploy a standard pump unit in an environment, in which there is a danger of fire and/or explosion.
- It is not permitted to deploy a standard pump unit in the ATEX environment.
- Use the pump unit only for those applications listed on the specification sheet for the pump unit.

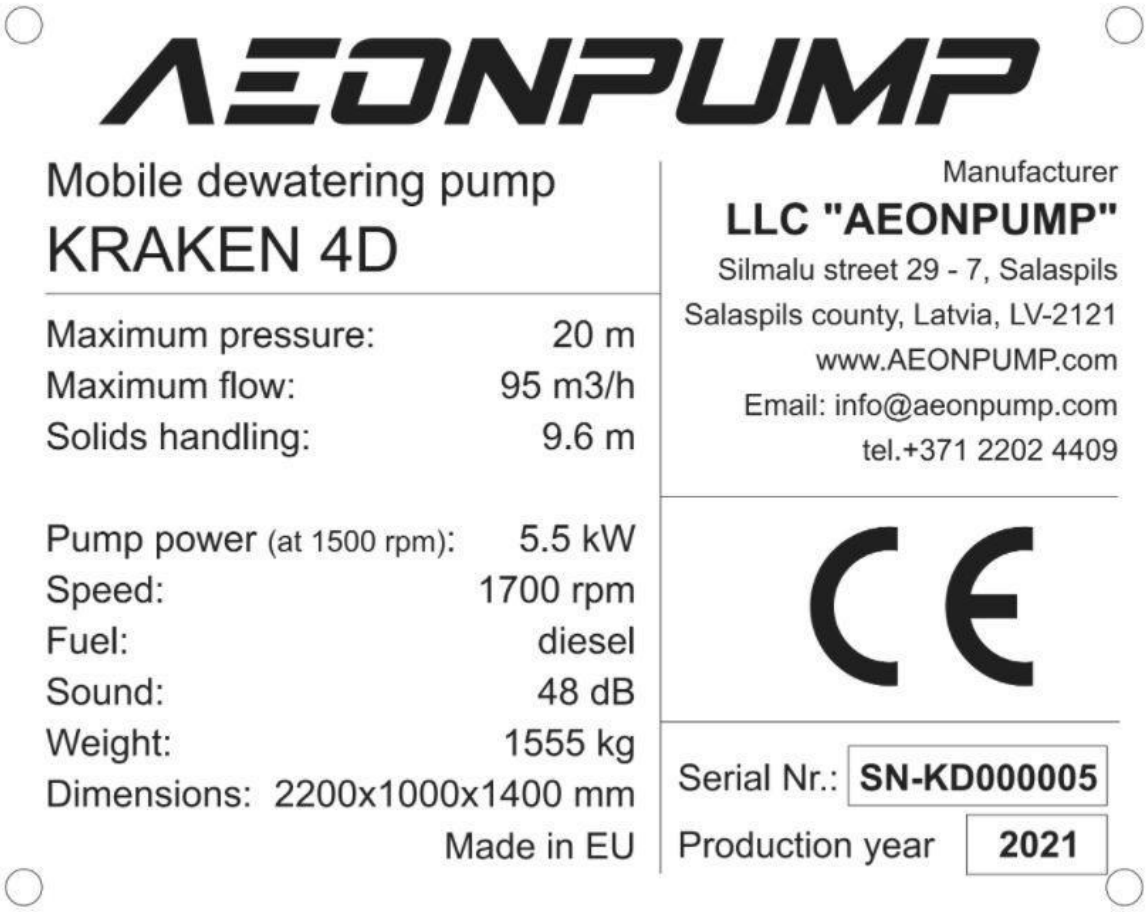
WARNING – Manufacturer is not responsible for the incorrect use and/or application of the pump.

Note

Pump is not designed for food processing. The materials used in the selected pump version shall in all cases be checked in advance for their suitability for the concerned foodstuff.

3. Technical Plate Data

Example of a standard technical specification



4. Safety Instructions and Label Locations

Particular attention shall be paid to the sentences preceded by any of the following safety symbols and/or words. They are designed for your safety and to prevent damage to the environment and the pump unit:

DANGER – When the danger symbol with the text 'DANGER' is displayed, it is accompanied by the information that is particularly important for the safety of all those involved. Ignoring the information can result in injury (possibly serious) or even death.

WARNING – When the warning symbol with the text 'WARNING' is displayed, it is accompanied by the information that is particularly important for everyone involved with the pump unit. Failure to observe this information may result in injury or damage to the pump unit (possibly serious).

DANGER ELECTRICITY – When the warning symbol 'DANGER ELECTRICITY' is displayed, it is accompanied by crucial information, in case of non-observance of which the person operating the pumping unit may be compromised by electric shock.

NOTE – Provides useful information

The pump unit conforms to the European Machinery Directive. However, this does not exclude the possibility of accidents, if used incorrectly. Use of the pump for an application and/or deployment of the pump in an environment other than defined at the time of purchase is strictly prohibited and can result in a hazardous situation. This is particularly true for corrosive, toxic, or other hazardous liquids.
The pump unit may only be installed, operated, and maintained by persons who have received appropriate training and are aware of the associated dangers. The installer, operator, and maintenance personnel shall comply with the local safety regulations. The company management is responsible for ensuring that all work is performed by qualified personnel in a safe manner.

It is not permitted to make changes to the pump unit without written permission from Aeonpump SIA. If changes are made to the pump without the written permission of Aeonpump SIA, Aeonpump SIA accepts no responsibility or liability whatsoever.

DANGER – Ensure that hot/cold and rotating parts of the pump are shielded adequately to prevent unintentional contact. It is not permitted to start the pump if such guards are missing or damaged.

The company management shall ensure that everyone who works with/on the pump unit is aware of the type of liquid that is being pumped. These persons shall know what measures are to be taken in the event of leakage. Any liquids that have leaked shall be disposed in a responsible manner. Observe local regulations.

DANGER – Never allow the pump unit to run with a blocked discharge line. The heat build-up could lead to an explosion.

4.1 Safety Measures

DANGER – To prevent accidents and damage to the pump unit or the environment, the following safety measures shall be taken:

- Use personal protective equipment (PPE) during loading, unloading, transportation and installation of the pump set.
- Loading, Unloading, Transportation and Installation of the pump unit shall only be carried out by competent approved persons.
- Provide ample space around the pump unit to allow clear, unrestricted access.
- Always keep the housing doors closed during operation.
- Always stop the pump unit first and ensure all controls are in the OFF position on the panel before repair and maintenance.
- Pump units shall ONLY be lifted using the Lifting eye, which is situated in the centre of the pump set on top of the soundproof housing or by means of a Forklift using the Channels situated on the base of the pump set. Before lifting the pump set ALL suction and discharge hoses SHALL be disconnected. The pump unit shall NEVER be lifted with the engine running.
- Pump units in storage shall not be stacked more than two (one above the other).

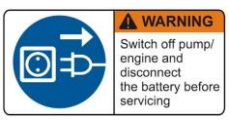
Note

To prevent unauthorised persons from operating or encountering the pump unit, it is advisable to install a barrier or fence.

4.2. Safety Labels Explanation

These labels warn you regarding the possible hazards that may cause serious injury. Read the labels and safety features and warnings described in the manual carefully.

If the label peels off or is difficult to read, contact the pump manufacturer to replace it.

	**DANGER –** ignoring the information can result in injury (possibly serious) or even death.
	**Diesel –** to identify the fill point for diesel fuel.
	**Close doors –** keep the doors closed when the pump is in use.
	**Ear protection –** use hearing protection when the engine is running.
	**DANGER ELECTRICITY –** be aware of electricity.
	**Freezing –** be aware of freezing.
	**Hot surface –** be aware of hot surface.
	**User manual –** see information in the user manual.
	**Contact information –** contact information ***info@aeonpump.com***.
	**Oil –** to identify the engine oil filler cap or fill point.
	**Rotating parts –** rotating parts, keep away.
	**Switch OFF –** switch off the engine and disconnect the battery before the servicing.
	**Water tap –** place to drain the water at.

5. Transportation and Storage

5.1. Lifting with a Lifting Eye

DANGER – Before the commencement of the lifting process, first, the lifting capacity of the lifting gear and the weight of the item to be lifted shall be determined.

DANGER – All persons not involved in the lifting operations shall be removed when lifting loads from the lifting area.

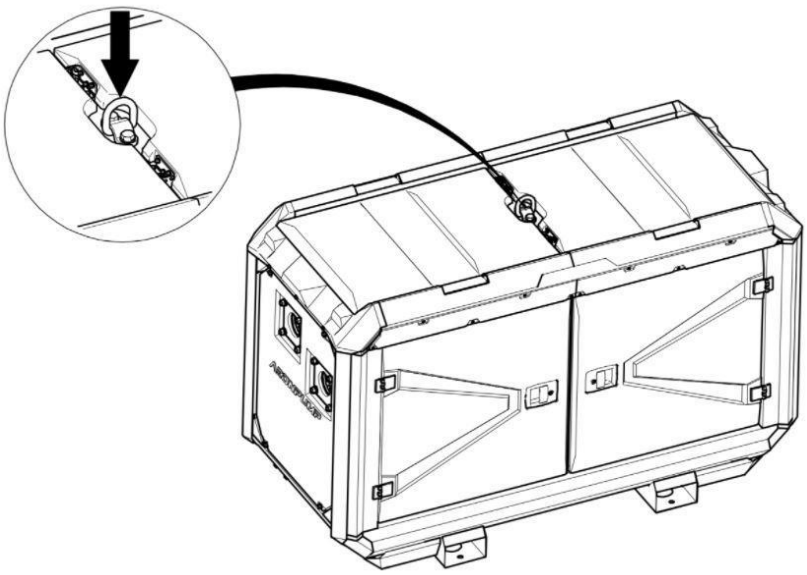
DANGER – Never walk/stand under the lifted load. This can result in a life-threatening situation.

DANGER – If there is a slightest suspicion regarding the unsafe state of the load or other personnel at the time of lifting, the operations shall be stopped.

WARNING – Always disconnect all external connections before moving the pump unit.

WARNING – Lifting forces shall be as vertical as possible; the maximum lifting angle is 15°.

There is a lifting eye located on the top of the housing. Lift the unit using ONLY this lifting eye.

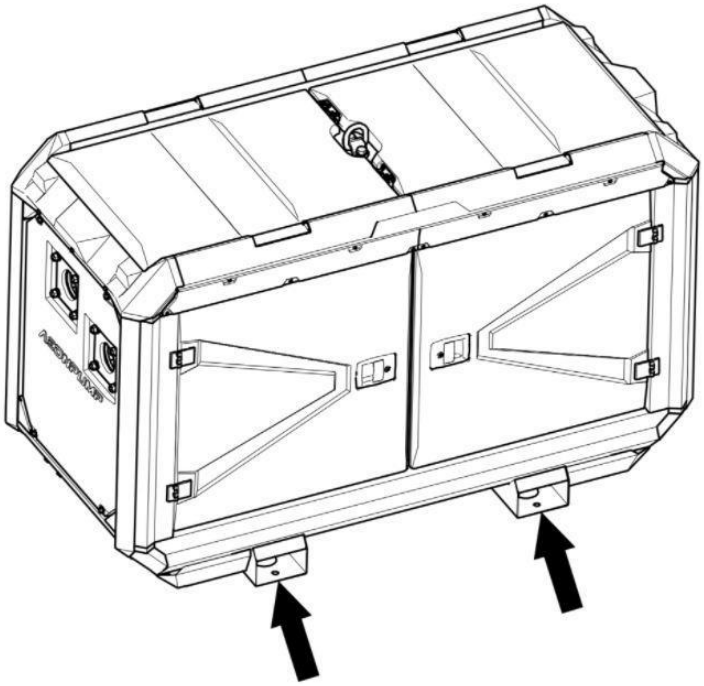


WARNING – If the pumping unit is mounted on a swampy or muddy surface, the equipment may sink into the ground, resulting in a higher lifting force to be applied to pull the unit away from the ground.

DANGER – NEVER move or lift the pumping unit by the corner sections of the housing or other places, which are not intended for lifting.

5.2. Lifting with a Forklift

Forklift pockets can be used for moving the pump unit with a forklift. The forks of the forklift shall be inserted into these pockets to lift the pump unit.



WARNING – Use certified lifting equipment with an adequate lifting capacity and always lift from directly above. Lifting from an angle can lead to dangerous situations. Lifting work may only be performed by appropriately authorised personnel. Since many different versions of the pump unit are available, only general instructions are provided. See the specification sheet for the pump unit regarding the weight and dimensions.

5.3. Long-term Storage

Before you place the pump for storage for a longer period, you shall follow these steps:

- Make sure that there is no excess moisture or dust in the storage area, as well as there are no chemicals that may harm the pumping unit.
- Remove the residue from the inside of the pump if the pump has been used in muddy, sandy, or very dirty water.
- Open the stone catcher inspection covers and fully clean the stone catcher from the obstacles.
- Pump clean water with the pump before switching it off, otherwise restarting it may damage the piston gland packing.
- After rinsing, open the drain valves, drain the water completely, then close the drain valve.
- Dismantle and grease the piston cups and valves.
- Pay attention to the wiring for possible damage.
- Check the oil level and its clarity in the gearbox.
- Inspect the pump visually for any mechanical damage.
- Cover the exhaust and intake nozzles or the whole pump with a cover that will protect against dust deposition in or on the pump.
- Pump units may be stacked on top of each other for a maximum of 2 levels.

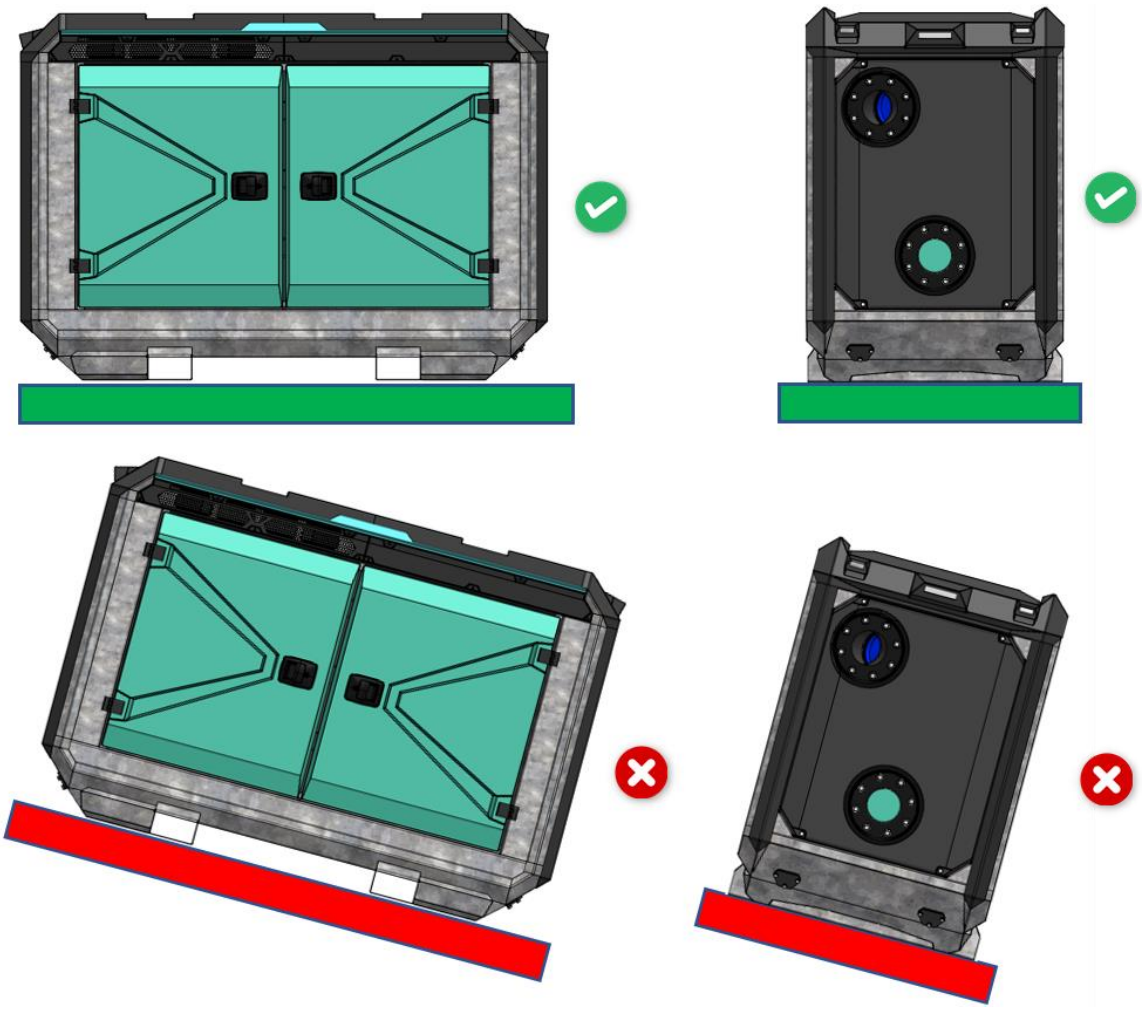
6. Pump Installation

WARNING – Failure to follow the guidelines for the placement and installation of the pump unit can result in danger to the user and/or severe damage to the pump or pump unit.

DANGER – The pump shall be placed in such a way that it does not have the opportunity to slide, tip over, fall, or otherwise endanger the user or other personnel.

***AEONPUMP SIA* is not responsible for accidents and damage that result from failure to follow the guidelines in the manual. Such use results in forfeiture of the right to assert any warranty or damage compensation claims.**

• Place the pump on a horizontal surface capable of supporting the load.



- Make sure the pump unit is placed in such a manner that it is not subjected to any distorting forces.
- Make sure there is sufficient space around the pump unit for the operation and maintenance activities. The recommended free access distance is 2 meters.
- Make sure that the sides of the pumping unit are not covered or are not close to the wall. This is important as the pump cools directly from the ventilation spaces specially created on the sides.
- Install shields to prevent contact with hot surfaces > 70 °C (158 °F). Affix warning symbols where necessary.
- When pumping hot liquids, ensure that there is sufficient air circulation to prevent bearings and lubricants from overheating.

7. Use of the Pump Indoors and Outdoors

7.1. Outdoor Use

The pump unit is suitable for outdoor use. In addition to the general instructions, the following additional requirements shall be met:

- Ensure that there is sufficient free space around the air intake, so the engine can draw as much air as it needs.
- Avoid dusty conditions and locations where corrosion or erosion can occur.
- Do not place the pumping unit on an unstable surface.
- Ensure that there is sufficient free space around the hot air outlets, and they are not blocked. A free distance of at least 2 meters is recommended.
- Make sure that all electrical installations are safe and professionally installed.
- Make sure that the exhaust gases do not create a dangerous situation for the environment.

7.2. Indoor Use

The pump unit is suitable for indoor use. In addition to the general instructions, the following additional requirements shall be met:

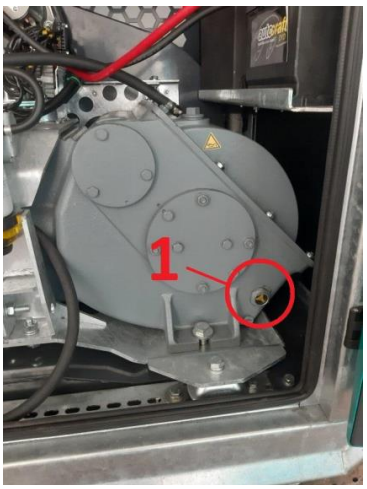
- Make sure that ventilation is suitable in the pumping area, as the pump emits toxic CO2 gas while the pump is running.
- Ensure that there is sufficient free space around the air intake, so the engine can draw as much air as it needs.
- Prevent high ambient temperature and humidity. Avoid dusty conditions and locations where corrosion or erosion can occur.
- Ensure that there is sufficient free space around the hot air outlets, and they are not blocked. A free distance of at least 2 meters is recommended.
- Do not place the pumping unit on an unstable surface.
- Make sure that all electrical installations are safe and professionally installed.

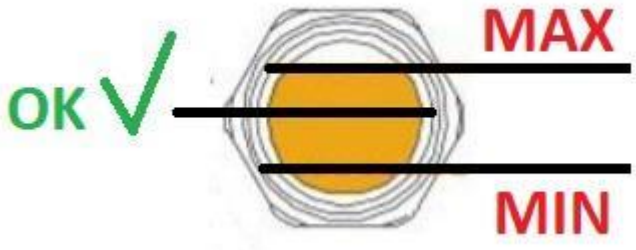
8. Test before each Use

8.1. Pump with Electric Drive

WARNING –Testing the pump before each use is a particularly important procedure when operating the pump, since it is possible to notice or eliminate any deficiencies in a timely manner, thus, protecting the user or other personnel from dangerous situations.

• Check the oil level in the gearbox via sight glass (1) in the sidewall of the gearbox. Oil shall be clear and **up to a half of the oil sight glass**. If the oil is not clear but white, it means that the oil contains water. Drain this mixture, check the piston rod gaskets, and fill the gearbox chamber with fresh oil.





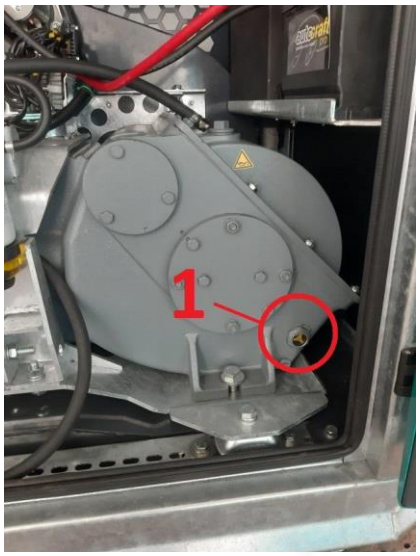
• Check that all guards and panels are installed and not damaged.
• Check whether all connections of suction and delivery lines are tightened and connected securely.
• Check whether all the drain valves are closed.
• Check that the pump is positioned correctly, in accordance with Chapter 6 ‘Pump Installation’.
• Check that electrical installations are not damaged and are safe.
• Check that electrical installations are installed correctly in accordance with all local regulations.

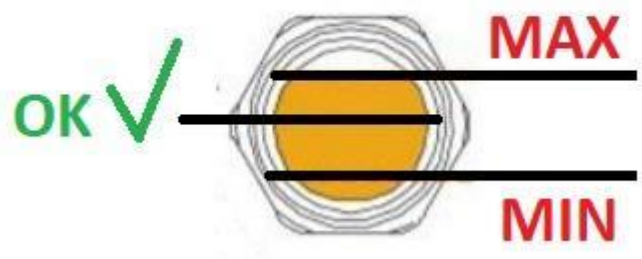
DANGER ELECTRICITY – The pump shall be disconnected from the mains before the inspection of the wiring.

8.2. Pump with Diesel Engine

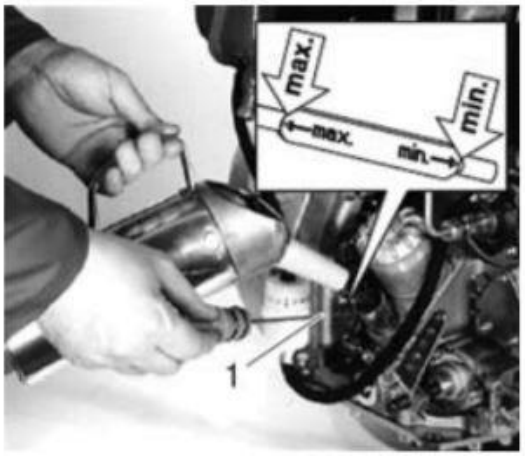
WARNING –Testing the pump before each use is a particularly important procedure when operating the pump, since it is possible to notice or eliminate any deficiencies in a timely manner, thus, protecting the user or other personnel from dangerous situations.

• Check the oil level in the gearbox via sight glass (1) in the sidewall of the gearbox. Oil shall be clear and **up to a half of the oil sight glass**. If the oil is not clear but white, it means that the oil contains water. Drain this mixture, check the piston rod gaskets, and fill the gearbox chamber with fresh oil.





• Check the oil level of the engine, pull out the oil level dipstick, the oil level shall be between MIN and MAX; if the oil is not enough then top up with fresh oil, the specification of the oil can be found in the *engine manufacturer's instructions*.

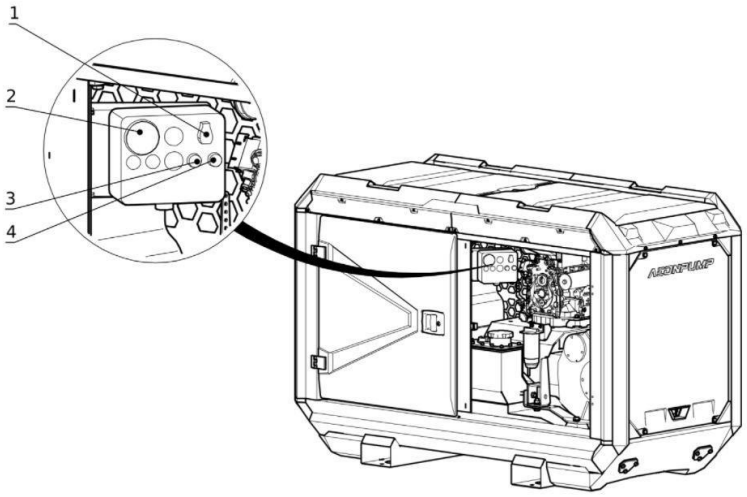


• Check if there is sufficient fuel in the fuel tank.
• Bleed the fuel system, if necessary. *(See diesel engine manual).*

• Check that all guards and panels are installed and not damaged.
• Check that the pump is positioned correctly, in accordance with Chapter 6 'Pump Installation'.
• Check whether all the drain valves are closed.
• Check whether all connections of suction and delivery lines are tightened and connected securely.

9. Control Panels

9.1. Diesel Pump



1. Start-Stop switch
2. Hour counter
3. Oil pressure lamp
4. Battery charging lamp

NOTE - The hour counter indicates how long the pump has been in service. The hour reading is also important for determining when the pump unit requires maintenance.

The selection switch has three positions:

1. Pump unit is switched off

2. Pump unit ignition is on

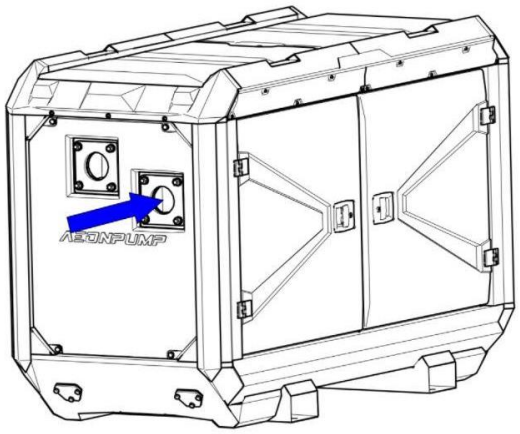
3. Starting pump unit

9.2. Electrical Pump

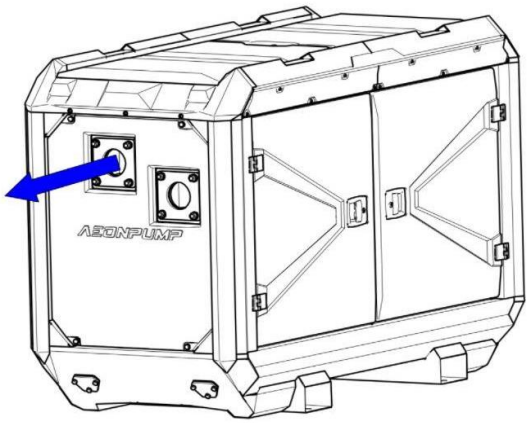
Electric Kraken pump is supplied with a star-delta switch, it has three positions: Neutral (1), Star (2) and Delta (3)

10. Filling of the Pump Housing with Water

- Fill the stone catcher through suction side connector with water in full; it is easier to do it by connecting 90-degree coupling facing up or by using the garden hose.



- Switch on the pump unit and keep filling the stone catcher with water until water starts to come out through the pressure side.



11. Starting

DANGER – If there are any problems during the operation of the pump, the pump shall be switched off immediately, the cause shall be rectified, however, if it is not possible to rectify the cause, it is imperative to contact the manufacturer.

DANGER – The pump shall never pump against a closed shut-off valve! If it is done so, there is a danger of explosion in the pump or the piping system.

DANGER – Dewatering activities will have an impact on the surrounding area, in which water is being extracted from the ground. Settling of the ground occurs during groundwater extraction. This can result in grains of sand moving closer together, which will have an impact on the ground. This can cause cracks in buildings and pipes. It can also result in rotting of wooden foundation piles if the groundwater is kept at a low level for an extended period. Before starting a dewatering system, make sure a sound dewatering plan has been prepared and that the impact on the surrounding area is clear.

11.1. Starting the Electric Drive Pump

- Follow the requirements of the Chapter 6 ‘Pump Installation’
- Follow the requirements of the Chapter 7 ‘Use of the Pump Indoors and Outdoors’
- Follow the requirements of the Chapter 8.1 ‘Pump with Electric Drive’
- Follow the requirements of the Chapter 10 ‘Filling of the Pump Housing with Water’
- Connect the supply cable to the pump outlet and get supply cable through the special channel.
- To start the pump, make sure that the main switch is on “0” position (1) the switch shall first be turned to the star (2) position, and then turned to the delta (3) position within one second

- Switch shall first be turned to the star (2) position for about one (1) second.

- And then turned to the delta (3) position within one (1) second.

WARNING – Turning the switch too slowly will cause the thermal protection of the engine to trip. Return the switch to the neutral position and switch it on again.

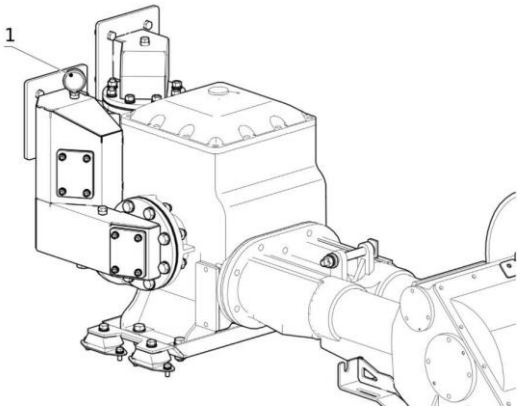
11.2. Starting the Diesel engine Pump

- Follow the requirements of the Chapter 6 ‘Pump Installation’
- Follow the requirements of the Chapter 7 ‘Use of the Pump Indoors and Outdoors’
- Follow the requirements of the Chapter 8.2 ‘Pump with Diesel Engine’
- Follow the requirements of the Chapter 10 ‘Filling of the Pump Housing with Water’
- Close the earth switch if present
- To start the pump, make shore Start-Stop switch is on “0”

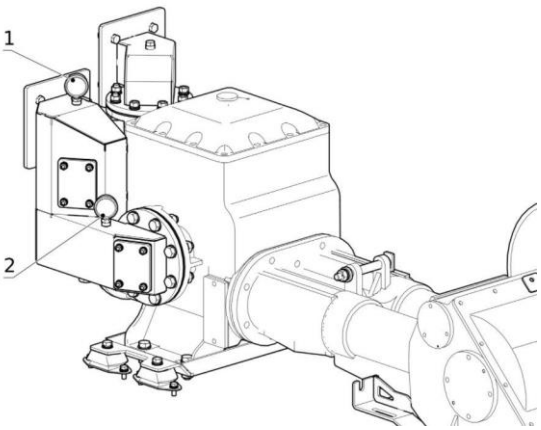
- Turn the switch on the control panel to position 1. The oil pressure and battery charging lamp shall light on.

- Turn the switch on START to position 2, when the engine is started, release the switch. switch springs back to the position 1 itself. Oil pressure and battery charging indicators shall extinguish

- If the pump is equipped with 1 vacuum gauge (1), read the reading after starting the pump, if reading is low, it is possible that the stone catcher filter is dirty, clean it. See Chapter 16.8 ‘Cleaning of Stone Catcher Filter’.

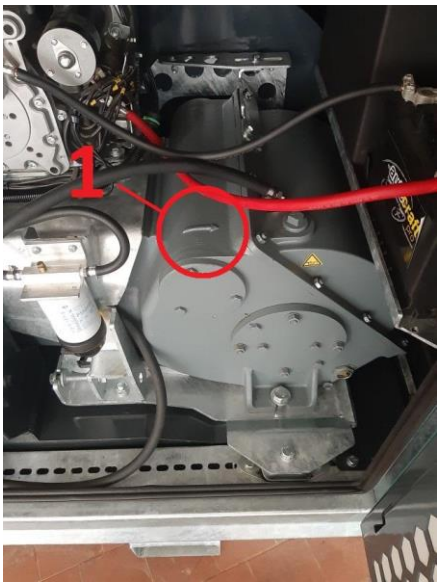


If pump is equipped with 2 vacuum gauges on the stone catcher, both readings shall be the same. If the readings are different, the stone catcher needs to be cleaned. See Chapter 16.8 ‘Cleaning of Stone Catcher Filter’.



12. Checking the Direction of Rotation and how to Change it

- **To check the direction of rotation, the engine shall be switched on briefly. The engine shall not be allowed to reach the normal operating speed. Rotating is shown by an arrow (1) on the pump gearbox housing.**



- **If the direction of rotation is incorrect, the connection on the terminal board shall be changed or, if a phase reversal plug is present, the pins of the plug shall be reversed.**

13. Stopping

13.1. Stopping Electrical Pump

- To stop the engine, the switch shall first be turned from Delta position (3) to the Star (2) position, and then turned to the neutral position (1) within one second.

- When you suspect that the liquid is beginning to freeze, drain the pump while the medium is still in the liquid state.

13.2. Stopping Diesel Pump

- Turn the Start-Stop switch on the control panel to position “0”. Engine shall stop.

- When you suspect that the liquid is beginning to freeze, drain the pump while the medium is still in the liquid state.
- Switch off earth switch, if present.

14. Monitoring During Operation

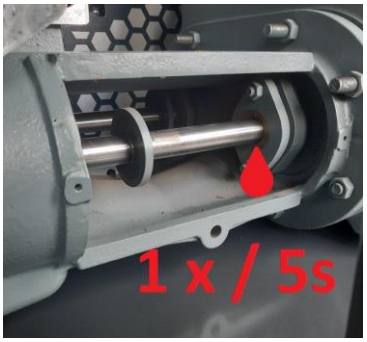
DANGER – During the operation of the pump, NO activities related to its maintenance, modifications to the pump or supply, output system, or electronics, and other activities are allowed.

DANGER – The pump shall not be moved during operation.

DANGER – The pump shall be switched off before carrying out any work on the pump system.

When the pump is in operation, it is imperative to pay attention to the following:

- During operation of the pump, attention shall be paid to the stability of its operation, there shall be no unnecessary sounds, noise, and vibrations.
- Check for water leaks.
- Check the dripping of the gland packing on the piston rod; it shall not exceed one drop per every five seconds. It may be necessary to readjust the gland packing at greater lifting heights.



- For pumps fitted with diesel engines, engine oil leakage, fuel leakage and opacity shall be checked.
- If the pump has been pumped for a long time without moving water, the pump housing shall be filled with water, because the cups shrink after having run dry for a long time. Once the pump housing is filled with water, the cups will slowly swell again so they are in contact with the cylinder.
- Check that it does not rotate without the liquid to be pumped, which may result in damage to the mechanical seal.
- Check the vacuum gauge whether the pump develops vacuum.

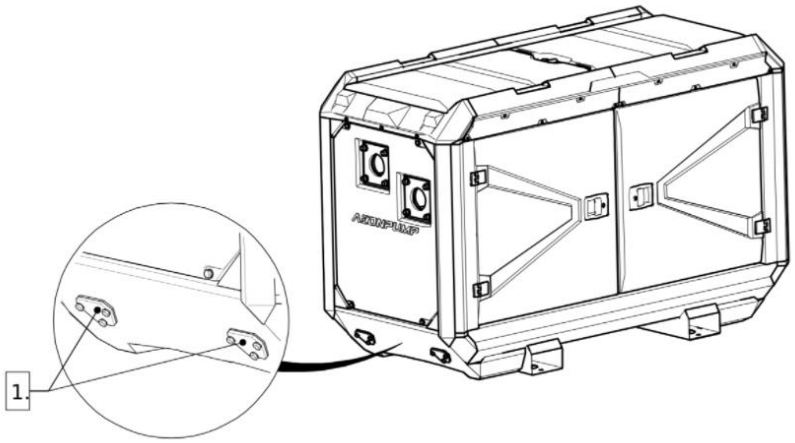
DANGER – If there are any problems during the operation of the pump, the pump shall be switched off immediately, the cause shall be rectified, however, if it is not possible to rectify the cause, it is imperative to contact the manufacturer.

15. Draining the Pump at Risk of Freezing

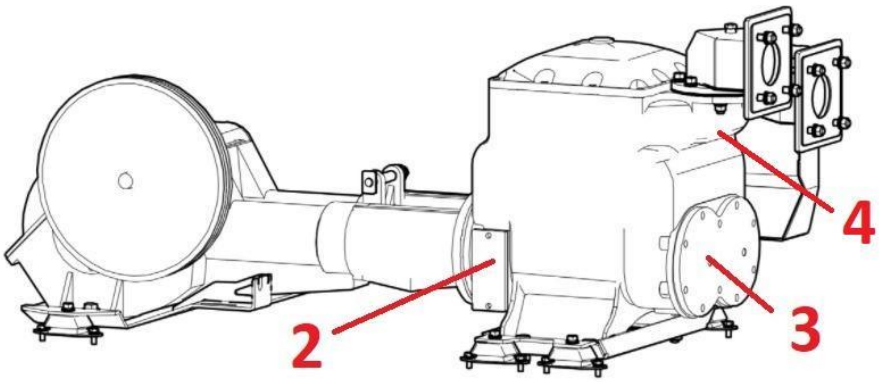
WARNING – If after complete shutdown of the pump, the air temperature starts to drop to or below 2 ^{0}C, it is mandatory to drain the pumped liquid from the pump housing. Otherwise, the water contained in the pump housing will freeze and cause serious defects and material damage. If the above-mentioned action is not performed, the warranty shall be considered or declared null and void.

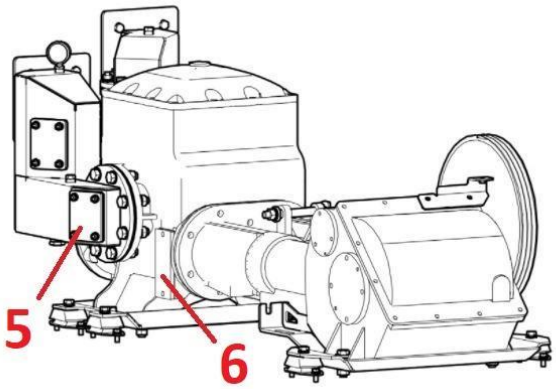
To completely drain the water from the pump, it is necessary to perform the following actions:

1. Turn off the engine and open canopy draining ports (covers/plugs) (1). Make sure that the canopy draining ports covers are not clogged with solids, clean them if clogged.



3. Open valves (covers/plugs) (2,3,4,5,6), make sure that they are not clogged, clean them, if they are clogged.





4. Switch the pump on for about 5 (five) minutes to purge the water in the suction and pressure valves.

5. Turn off the engine and close all valves (ports/covers/plugs) after complete water drainage.

16. Maintenance

16.1. General

When maintenance is insufficient, incorrect and/or not performed regularly this can lead to malfunction of the pump or pump unit, danger to the user, high repair costs and lengthy breakdowns. Manufacturer is not responsible for accidents and damage that result from failure to follow the instructions.
Read the supplied manual carefully and follow the procedures and safety instructions.

DANGER – The engine shall be stopped before any maintenance work is started. Comply with legal requirements when handling and disposing of old oil, filters, and cleaning materials.

WARNING – Keep the starting key of the engine out of reach of unauthorised persons.

WARNING – To immobilize engines with an electric starter, disconnect the negative battery terminal.

WARNING – At the end of the maintenance work, check that all tools have been removed from the engine and all safety guards, covers etc. placed back in their correct positions.

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WARNING – Before starting the engine, make sure that nobody is in the danger area.

WARNING – Leakage of oil can be extremely harmful to the environment. Do everything necessary to prevent oil leakage.

16.2. Maintenance Instructions

WARNING – Before each maintenance, see the instructions of specific model of pump or engine.

- Clean the pump before beginning the work. Make sure the work area is clean.
- Use the correct tools and make sure they are in good condition. Use them in the proper manner.
- Replace damaged bolts, nuts and/or parts with damaged threads with new parts of the same fastener class.
- Replace used seals or tape. Only replace the flat and filled seals under the plugs with original seals from the pump manufacturer.

16.3. Daily Maintenance of the Pump

- Check the oil level of the engine, if it is a diesel engine pump, and pump gearbox.

Note

If the oil in the pump drive has become whitish in colour, replace the oil. The whitish colour may indicate the presence of excessive condensation water in the oil.

- Check for possible leaks in the oil and fuel hoses.
- Check the dripping of the gland packing on the piston rod; this shall not exceed one drop per every five seconds. It may be necessary to readjust the gland packing at greater lifting heights.
- Check that the dripping water can drain away from the gland packing. The channel shall not be clogged on the outside by dirt and sand that have splashed onto the enclosure.
- Check whether the equipment is still placed properly on the ground on which it stands and in accordance with the instructions. It is important as the situation can change because of a build-up of sand/soil around the pump unit.

16.4. One-Time Maintenance after 50 Hours of Operation

- Change the oil and oil filter of the diesel engine *(see user manual for Diesel engine)*
- Check the clarity of oil in gearbox *(see user manual for Piston pump)*

16.5. Pump Maintenance every 12 Months or 2,000 Hours

- Change the oil and oil filter of the diesel engine *(see user manual for Diesel engine)*
- Change the oil in the gearbox *(see user manual for Piston pump)*
- Clean the pump from dust and dirt

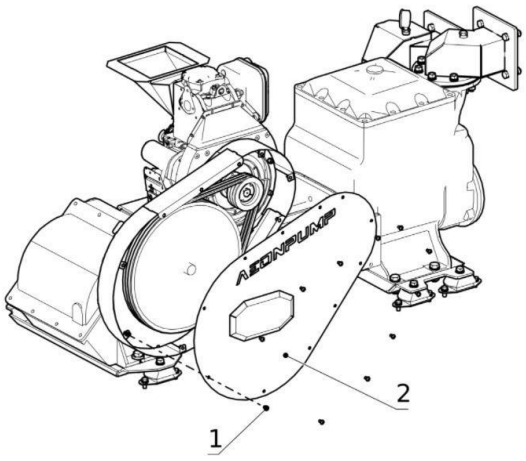
16.6. Lubricants

The quantities named are maximum quantities after the systems have been completely emptied.

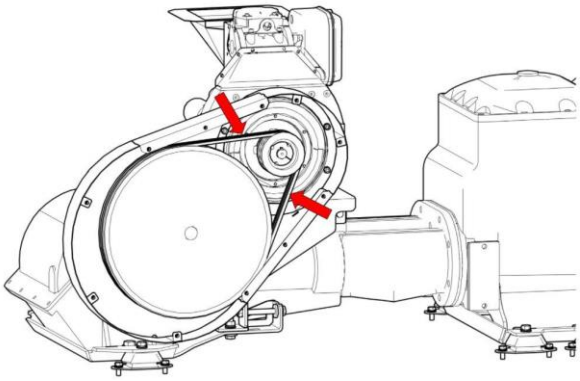
Point to be lubricated	Lubricant to be used	Quantity
Diesel Engine	**See user manual for the Diesel engine**	
Gearbox oil	**See user manual of the Piston pump**	

16.7. Check the Drive Belt Tension

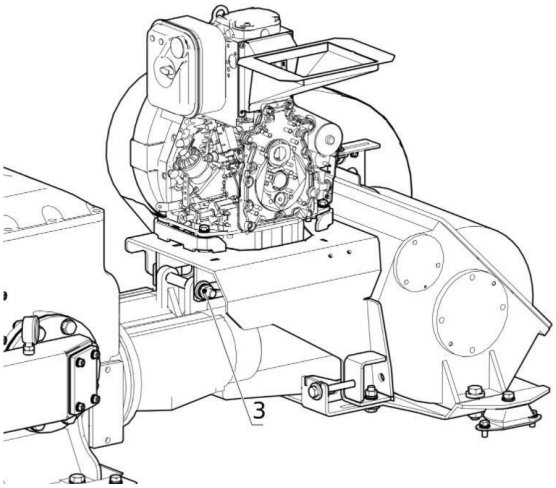
- Open the safety guard cover (2) by untightening all bolts (1).



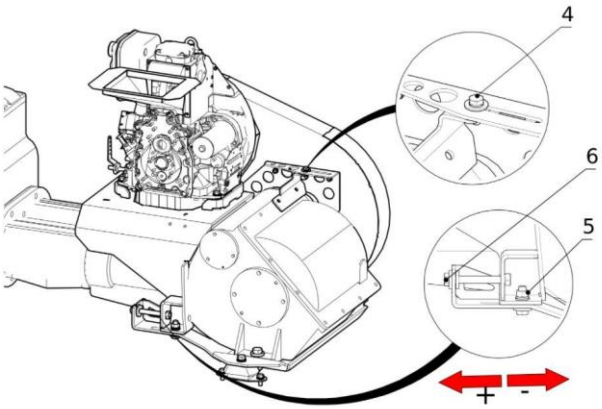
- Measure the distance the belt can be depressed in the middle of the span. The distance shall be approximately 7mm if it is less or more then apply the following steps.

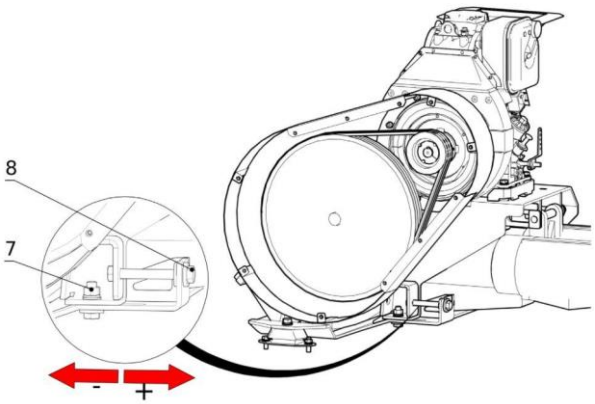


- Untighten the bolt (3)



- Untighten the bolts 4, 5 and 7. Untighten the counter bolts 6 and 8 and regulate both in +/- the same distance. After couple of turns, check the belt depressing in the middle of the span distance when it is approximately 7 mm.

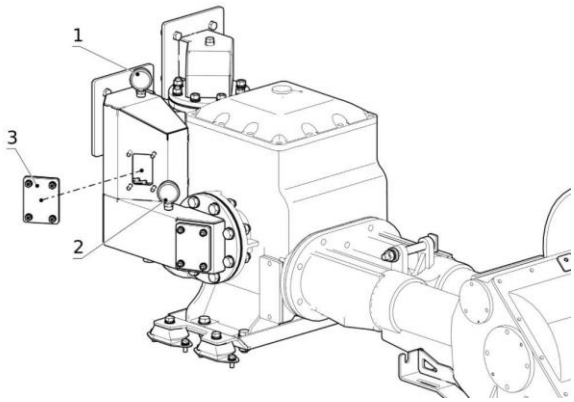




- Tighten the bolts 3, 4, 5, 6, 7, 8 and tighten the safety guard.

16.8. Cleaning of Stone Catcher Filter

- Open the stone catcher inspection cover (3) and clean all obstacles.



- Close the inspection cover.

17. Problem/Solution

Problem	Possible cause	Solution
No flow while the pump and drive are running.	Wellpoint system is not properly installed or is leaking.	Check the wellpoint system and eliminate the leaks.
	The leather piston cups are dry and have shrunk.	Fill the pump housing with water.
	The leather piston cups are totally worn out.	Replace the leather piston cups.
	Too much iron or lime deposit in the pump housing/ in the stone catcher.	Clean the pump and/or stone catcher.
	Ice build-up in the pump housing/stone catcher (normally the engine will not start running)	Defrost the pump.
	Vacuum regulator valve on the stone catcher is not set or is malfunctioning (if equipped).	Adjust the valve to max. 8.5 metres on the vacuum gauge. Or replace the valve.
Insufficient flow while the pump and drive are running.	Wellpoint system is not properly installed or is leaking.	Check the wellpoint system and eliminate the leaks.
	The leather piston cups are worn out.	Replace the leather piston cups.
	Too much air leaking along the gland packing (stuffing box).	Tighten the gland follower so that one (1) drop of water leaks every five (5) seconds.
	Too much iron or lime deposit in the pump housing/ in the stone catcher.	Clean the pump and/or stone catcher properly.
	Vacuum regulator valve on the stone catcher is not set (if equipped).	Adjust valve to max. 8.5 metres on the vacuum gauge.

	Pump speed is too low.	Increase diesel engine RPM or engine speed (VFD).
	Incorrect direction of rotation (only electric drive pumps).	Reverse direction of rotation (only electric drive pumps).
Pump is demanding abnormal amount of power (drive is overloaded).	Pump speed is too high.	Decrease diesel engine RPM or engine speed (VFD).
	Incorrect direction of rotation (only electric drive pumps).	Reverse direction of rotation (only electric drive pumps).
Diesel engine stops immediately after starting (cold start).	Back pressure in the discharge line.	Disconnect the suction and discharge lines. Start the diesel engine and let it warm up for five (5) minutes. Then try again.
Diesel engine will not start.	No fuel is reaching the engine.	First, check the fuel level in the tank. In addition, check the fuel connections/filters.
	Self-priming fuel pump is not working.	Check the in-line fuse or replace the fuel pump.
	Mechanical engine oil pressure protection is off (due to running out of fuel or low engine oil pressure).	Activate the mechanical oil pressure shutdown device (red lever) and start the engine.
	Insufficiently charged battery.	Check the battery or contact the service department if necessary.

DANGER – If some pump defect appears and you cannot find fault immediately, you shall contact the manufacturer.