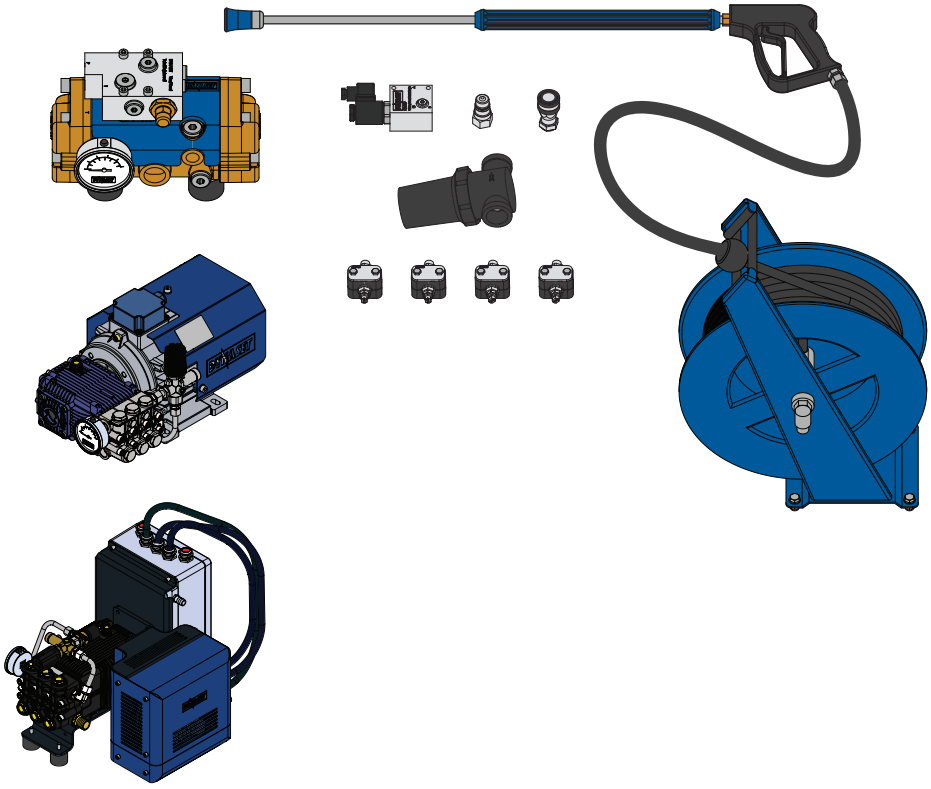
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DYNASET

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USER MANUAL

High Pressure Dust Suppression Systems

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1. GENERAL

This manual contains general information about assembly, installation, operation and maintenance of the DYNASET equipment.



WARNING

Read this user manual before the installation, use or maintenance of the DYNASET product to ensure proper handling, operation and maintenance right from the beginning. Pay attention to warnings and safety instructions, READ CHAPTER "2 Safety".

1.1 PRODUCT INFORMATION

DYNASET High Pressure Dust Suppression System converts the power of an industrial and mobile machine into a high pressure water mist. It is integrated onto the base machine's attachment head or where the dust suppression is needed to get the maximum effect. The system creates an effective high pressure dust control with optimal water consumption. High pressure water uses less water and gives better dust suppression performances with a smaller water drop size than traditional low pressure dust suppression systems.

DYNASET High Pressure Dust Suppression System has different nozzle and pump configurations to fit all vehicles and dust suppression applications. HPW-DUST is a hydraulic system and EPW-DUST is an electric system. EPW-DUST is available in AC and DC models. HPW-DUST can also be equipped with a Double Dust boosting system that multiplies the dust suppression power. It also comes with a power washing pistol for all power washing applications.

1.2 PRODUCT IDENTIFICATION

HPW220 Dust For Crusher - Three Conveyors / Double Dust

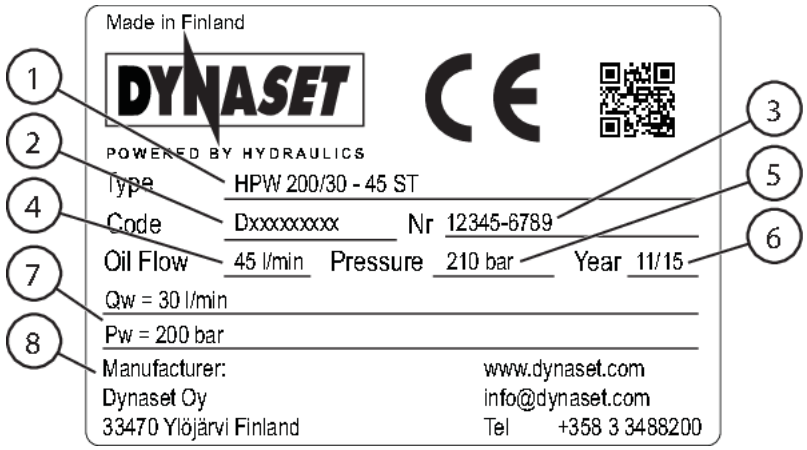
① ② ③ ④ ⑤

1. WATER PUMP (Listed below)
HPW 250
Maximum pressure: 250 bar
Maximum flow: 30 l/min
Hydraulic pressure max: 210 bar
Hydraulic flow max: 40 l/min
HPW 220
Maximum pressure: 220 bar
Maximum flow: 50 l/min
Hydraulic pressure max: 210 bar
Hydraulic flow required: 70 l/min
HPW 160
Maximum pressure: 160 bar
Maximum flow: 18 l/min
Hydraulic pressure max: 210 bar
Hydraulic flow max: 18 l/min
HPW 90
Maximum pressure: 90 bar
Maximum flow: 150 l/min
Hydraulic pressure max: 210 bar
Hydraulic flow max: 85 l/min
EPW 150/15 AC
Maximum pressure: 150 bar
Maximum flow: 15 l/min
Voltage: 400 VAC
EPW 200/30 DC
Maximum pressure: 200 bar
Maximum flow: 30 l/min
Voltage: 400 - 700 VDC
EPW 200/50 DC
Maximum pressure: 200 bar
Maximum flow: 50 l/min
Voltage: 400 - 700 VDC

2. Product category (Dust suppression)
3. Product application
4. Conveyors (For crusher applications)
Amount of conveyors in the crusher. This determines the amount of dust suppression nozzles in the package.
5. DOUBLE DUST (optional)
Provides dual stage power output. Lower stage is typically set to half from high power stage. Lower stage reduces water consumption and high stage gives extra boost for dust suppression when needed.

1.3 TYPE PLATE

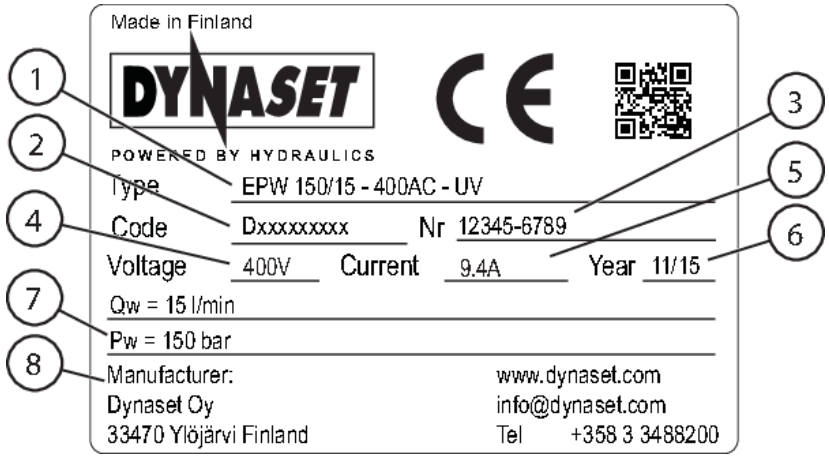
Type plate for HPW-DUST is located on the pump.



Picture 1: Type plate, HPW-DUST

1. Product identification key
2. Product code
3. Serial number
4. Maximum hydraulic flow
5. Maximum hydraulic pressure
6. Production month / year
7. Output water flow rate and pressure.
8. Manufacturer's contact information

Type plate for EPW-DUST is located on the pump.



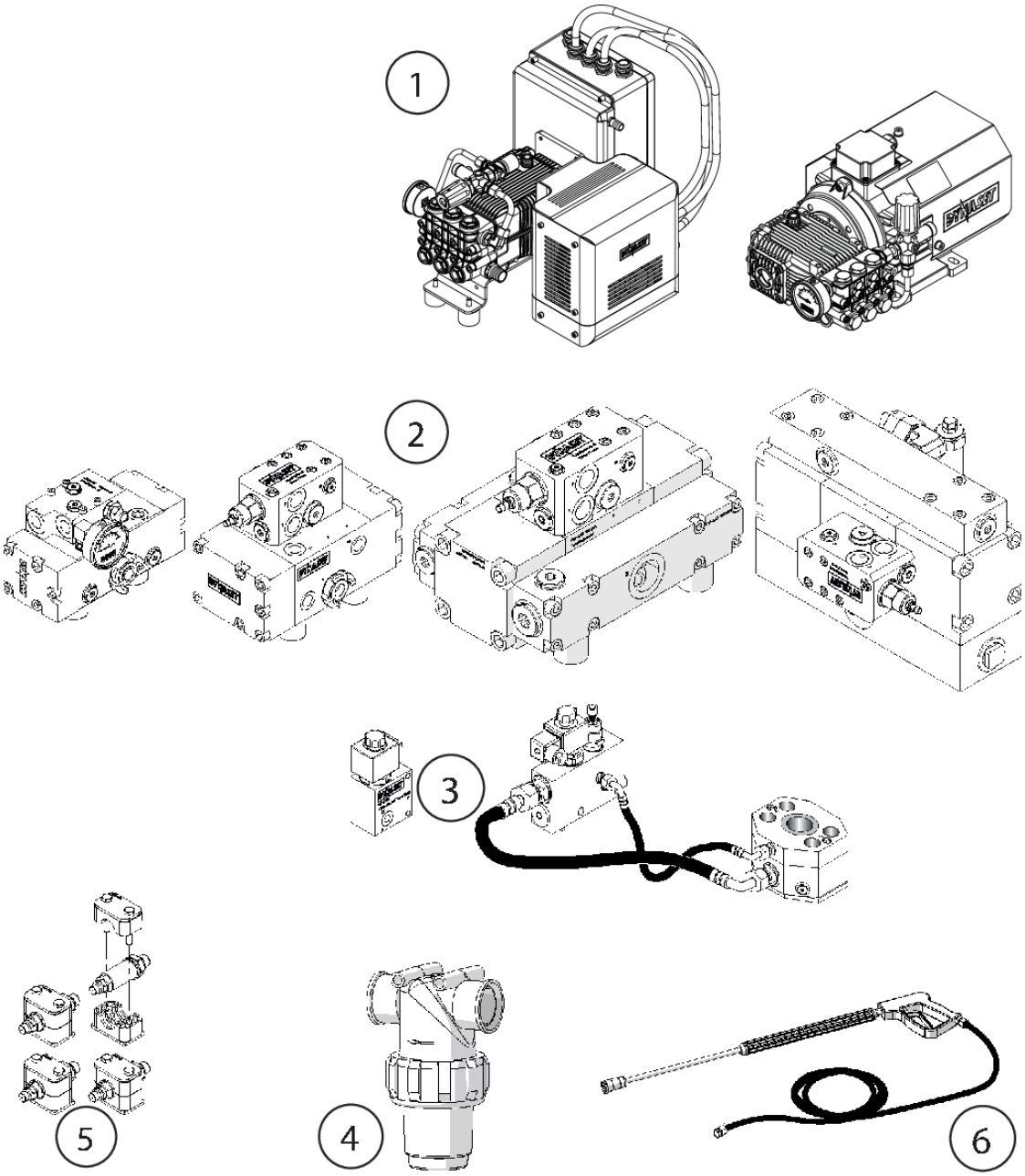
Picture 2: Type Plate, EPW-DUST

1. Product identification key
2. Product code
3. Serial number
4. Connection voltage
5. Maximum current
6. Production month / year
7. Output water flow rate and pressure
8. Manufacturer's contact information

1.4 HPW-DUST SYSTEM LINE-UP

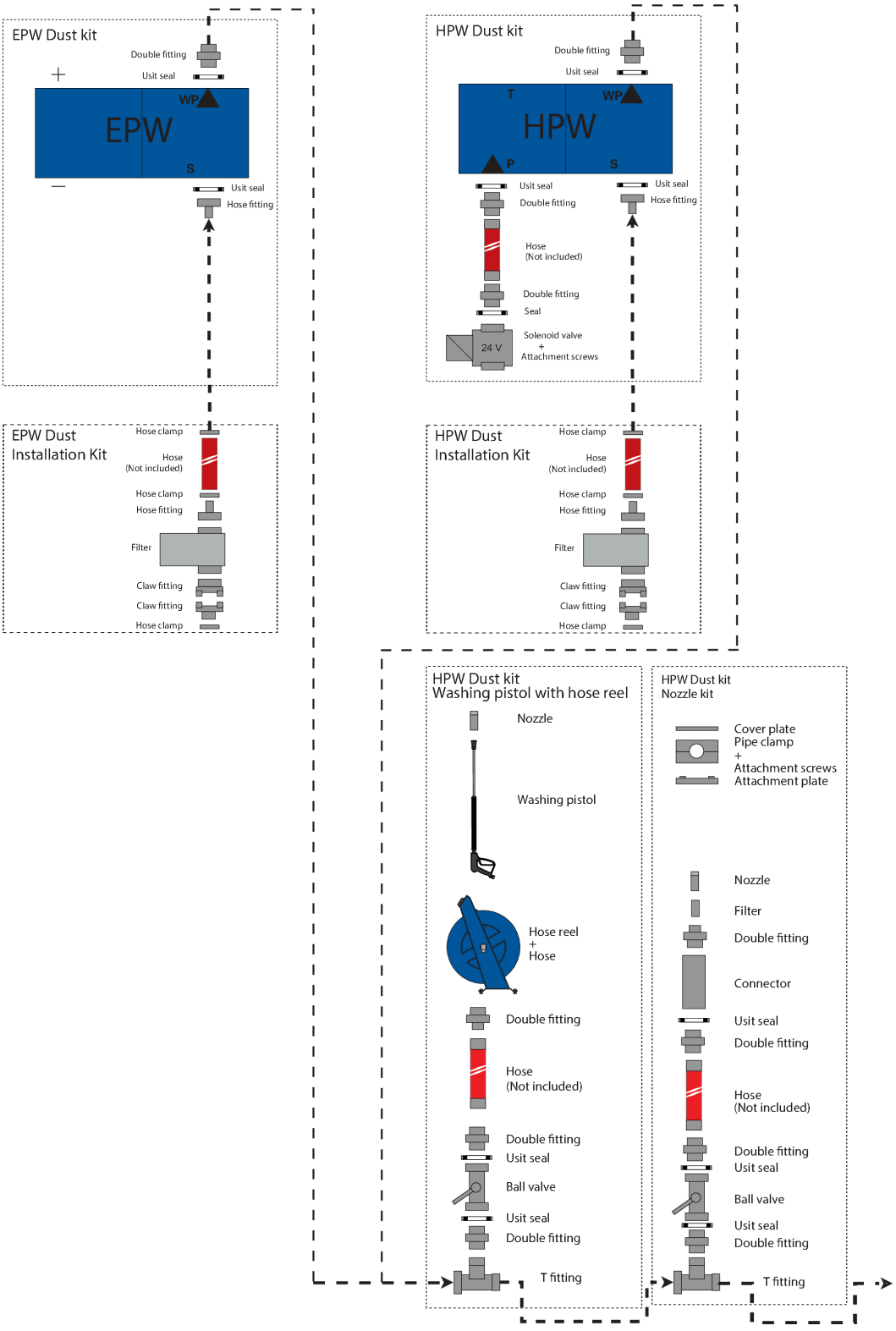
- HPW250 Dust for Crusher - One Conveyor
- HPW220 Dust for Crusher - Two Conveyors
- HPW220 Dust for Crusher - Three Conveyors
- HPW250 Dust For Excavator
- HPW250 Dust For Excavator - Double Dust
- HPW220 Dust For Excavator - Double Dust
- HPW90 Dust For Excavator
- HPW90 Dust For Excavator - Double Dust
- HPW160 Dust For Sweeper
- EPW150 Dust For Crusher - One Conveyor
- EPW200/30-DC For Crusher - One Conveyor
- EPW200/50-DC For Crusher - Two Conveyors

1.5 MAIN COMPONENTS OF THE HIGH PRESSURE DUST SUPPRESSION SYSTEM



1. EPW-DUST Pumps
2. HPW-DUST Pumps
3. Solenoid valve / PV-SAE Priority valve (sold seperately)
4. Water intake filter
5. High pressure water nozzles
6. Spray gun with 20m (66ft) hose and reel

1.6 MAIN COMPONENT KITS OF DUST SUPPRESSION SYSTEM



2. SAFETY

2.1 SAFETY PRECAUTIONS

⚠ WARNING

Operators and maintenance personnel must always comply with local safety regulations and precautions in order to close out the possibility of damages and accidents.

⚠ WARNING

All installation and maintenance of electric equipment must be done by qualified electrician only. Operator and maintenance personnel must act in compliance with the laws, regulations and recommendations issued by the local electricity and work safety authorities.

The pressure in both hydraulic oil and water circuits of HPW-DUST system is considerably high. Also, the water circuit pressure of EPW-DUST system is considerably high. Keep the condition of your equipment and hydraulic system under constant observation.



Couplings, valves and hoses must be tight and clean to avoid possible leakages. Leaks in the hydraulic system must be repaired immediately to avoid injuries caused by high pressure blowouts.

In order to avoid accidents, do not clean or inspect HPW-DUST system when the hydraulic fluid circuit is pressurized. Prior to any cleaning, inspection and service, hydraulic system of your base machine must be stopped, and all hydraulic fluid circuits must be depressurized.

Prevent nozzles, water circuit and pipeline from freezing. Draining and air flushing of the water circuit must be done before the ambient temperature reaches 0°C (32°F) or lower.

WARNING

EPW-DUST AC operates at voltages above 400VAC and EPW-DUST DC above 400VDC. Wait for 4 min after shutting down the unit and opening any covers. If you do not handle it properly, it can cause serious injury or death. Only qualified electricians that are familiar with high voltage systems can install this appliance and do maintenance to it. Do not open any lids or covers, when the unit is turned on or connected to a power source.



WARNING

If the covers of the pump are damaged, obey the following instructions:

- **Shut down the pump**
- **Disconnect the pump from the power source to prevent electric shock**
- **Replace the broken parts**

WARNING

When you use EPW-DUST, do not exceed the 40°C (104°F) temperature of the pumped fluid. Higher temperature will greatly decrease pumps seals life and cause shorter maintenance intervals.

WARNING

Protect all electrical conductors from jets of water.

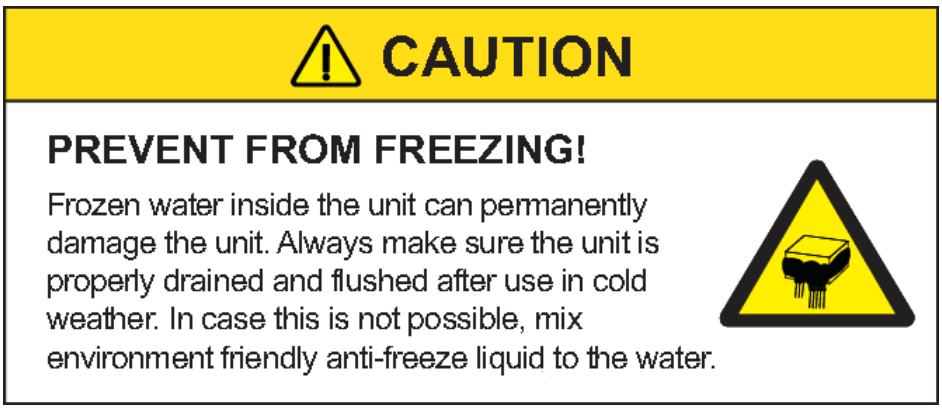
WARNING

The power source, that EPW-DUST is connected to, must be sufficiently grounded.



WARNING

Do not let the water in the pump freeze. Check nozzles and water circuit. Drain and air flush the water circuit before ambient temperature reaches 0°C (32°F) or lower. Especially ensure preparation of the pump before you store the unit.



WARNING

Parts of the unit can get hot in use. Beware hot parts and use personal safety gear to avoid burns.

WARNING

RISK OF BURNS!

Parts of the unit, oil, and oil filler cap can be hotter than 80 °C!

Wear personal safety equipment!



WARNING

Do not override the safety devices or modify the pump unit. Modifying can cause risk of injury for the user or other personnel.

WARNING

When you use EPW-DUST, we recommend that you use a residual current device that cuts off the power supply if the leakage current to earth is more than 30 mA for 3 seconds. Install the residual current device between EPW-DUST and the power source.

WARNING

Do not adjust EPW-DUST when an appliance is connected to it.

WARNING

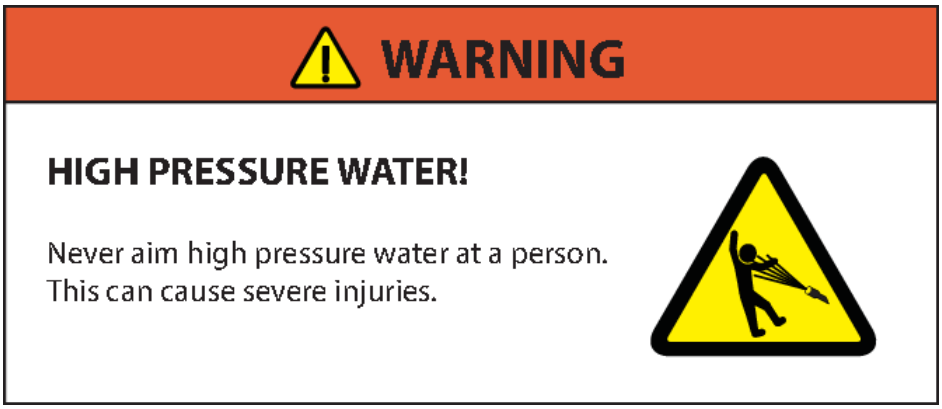
Make sure that the supply polarity (+ and -) in EPW-DUST DC is connected correctly. If it is reversed, unit will be damaged



2.2 OPERATING SAFETY

When you operate the HPW-DUST system, beware of the unit parts warmed by hot hydraulic oil.

Never aim high pressure water at a person.



WARNING

Do not exceed the maximum pressure, temperature or load.

WARNING

When the electric motor is ON, must be equipped with protective circuit.

WARNING

Turn off the power, when you leave the pump unattended.

2.3 MAINTENANCE SAFETY

WARNING

Installation and service of hydraulic equipment must be done by qualified and experienced personnel only.

NOTE!

When you do any maintenance to HPW-DUST or EPW-DUST, keep the components of the system clean. This ensures safe, reliable and long-life operation of your equipment. If unit has worn parts, replace them. Before you do any cleaning, inspection and service, EPW-DUST must be shut off and disconnected from the power source. HPW-DUST must be shut off, hydraulic system of your base machine must be stopped, and all hydraulic circuits must be depressurized.

WARNING

Before any maintenance or repair, make sure that the system is stopped and depressurised, and the electric motor is disconnected from the power source.

WARNING

When you clean the pump, do not use flammable solvents.

Hydraulic system of the base machine must be maintained according to the service program.

2.4 WARNING LABELS

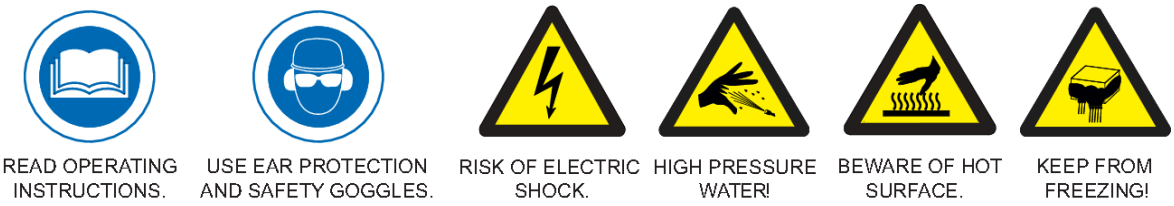
Product recipient is obligated to place warning labels on the DYNASET product.Attach labels to visible and appropriate place onto or close to DYNASET product where it's easily seen.

Attach labels to visible and appropriate place onto or close to DYNASET product where it's easily seen. Clean surface with solvent detergent before attaching labels.

HPW-DUST



EPW-DUST AC



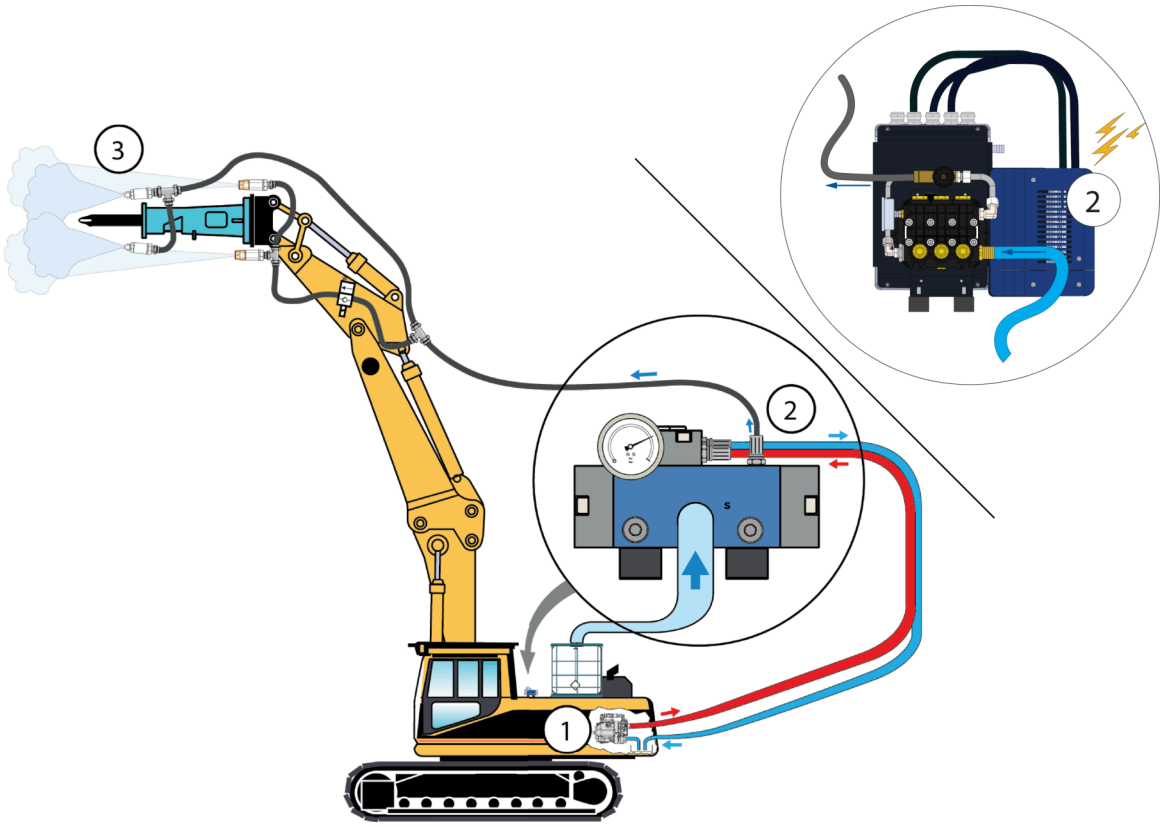
EPW-DUST DC



3. OPERATING PRINCIPLES

3.1 OPERATING DESCRIPTION

1. The DYNASET High Pressure Dust Suppression System uses the power from the base machine's hydraulic system or uses an electric motor.
2. The HPW-DUST patented piston-to-piston pump converts the hydraulic power into high pressure water. The EPW-DUST electric pump uses an electric motor to create high pressure water.
3. High pressure water is pumped to the dust suppression nozzles which create the high pressure water mist. High pressure water mist increases the mass of the dust particles and forces the dust to fall onto the ground.



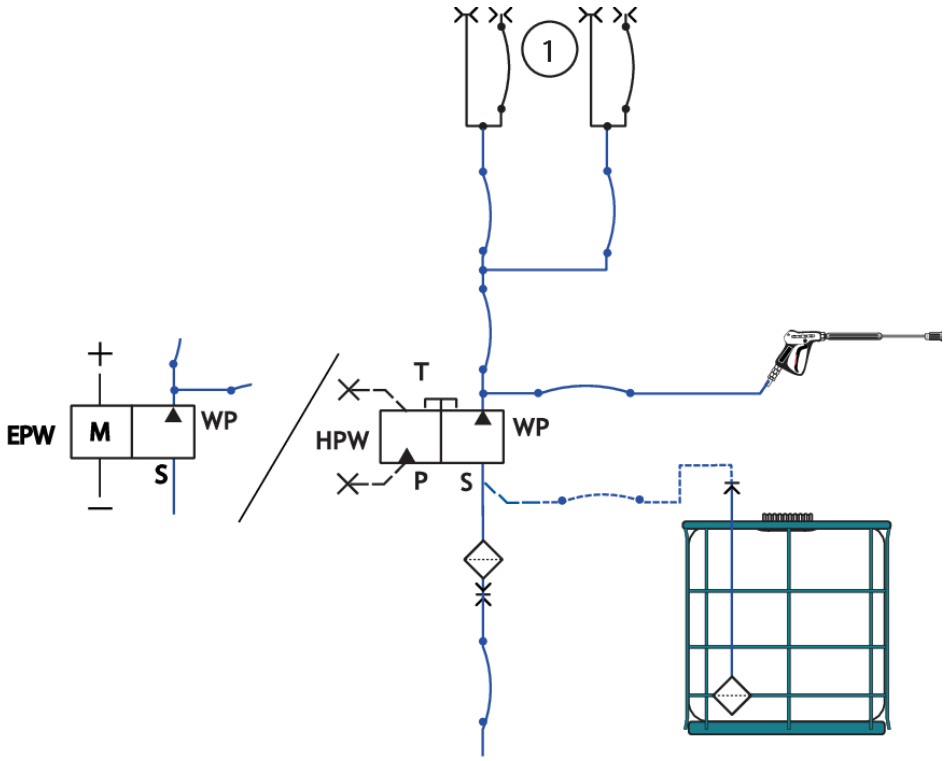
Picture 3: Operating principles

NOTE!

Double Dust Kit is only available for HPW-DUST.

3.2 HPW-DUST

DYNASET High Pressure Dust Suppression System provides continuous dust suppression with a set of nozzles. Dust suppression is controlled with a solenoid valve of the HPW-DUST or electrically with EPW-DUST.



Picture 4: Basic HPW-DUST installation diagram

1. Basic nozzles

NOTE!

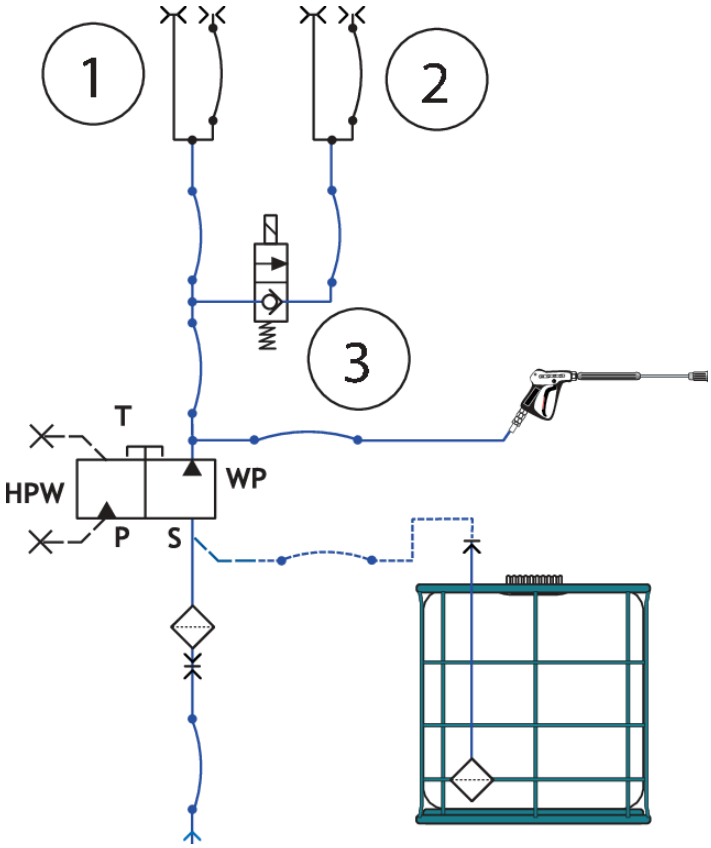
The water supply must be at least at the same level as the EPW-DUST pump. Do not place the pump above the water supply. If you need to place the pump above the water supply, additional feed pump to the unit is required. To see the correct installation to a water line, READ CHAPTER „4.4 INSTALLATION TO A WATER LINE "

3.3 HPW-DUST DOUBLE DUST

DYNASET HPW-DUST Double Dust boosting system multiplies the dust suppression power with a dual water circuit.

3.3.1 DUAL WATER CIRCUIT WITH HPW-DUST (DWC)

Dual Water Circuit comes with basic and high power nozzle pairs. Basic pair of nozzles provides continuous dust suppression. High power pair is controlled by a solenoid valve and can be used when suppression boost is needed.



Picture 5: Dual Water Circuit installation diagram

1. Basic nozzles
2. High power nozzles
3. High power water solenoid valve

4. INSTALLATION OF THE SYSTEM

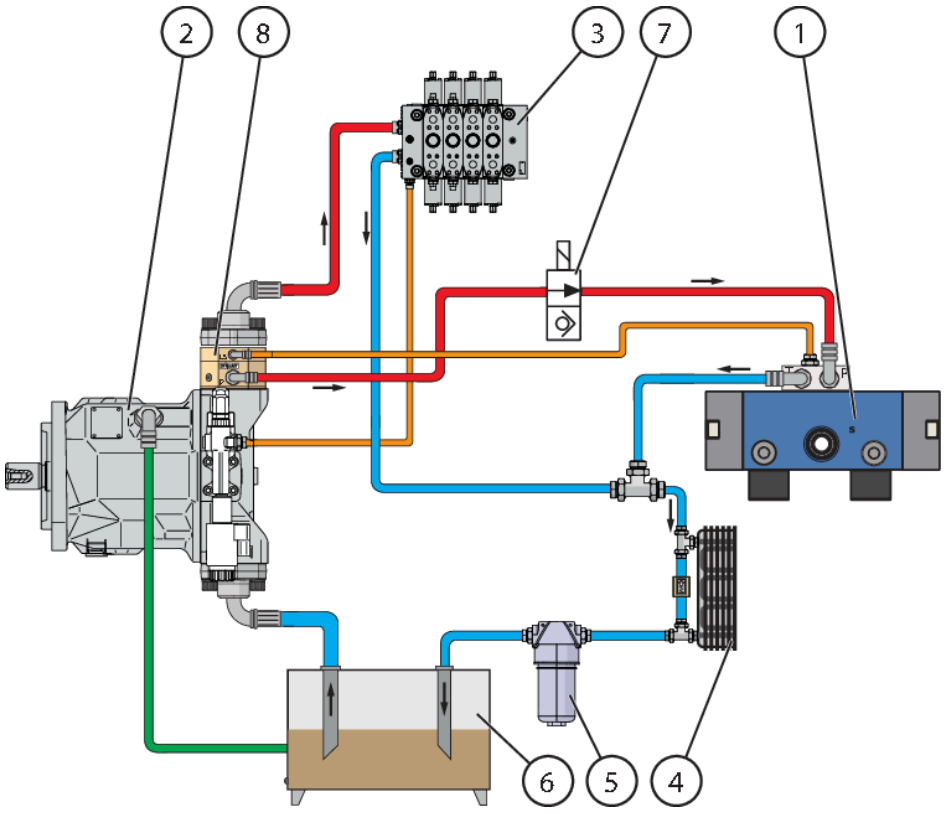
4.1 INSTALLING HPW-DUST TO A HYDRAULIC LINE

NOTE!

To use proper hydraulic fluid, read technical specifications for more information.

The HPW-DUST system is installed into the base machine's existing hydraulic line. It is recommended to use DYNASET HPW-VR-PA -pump in the installation.

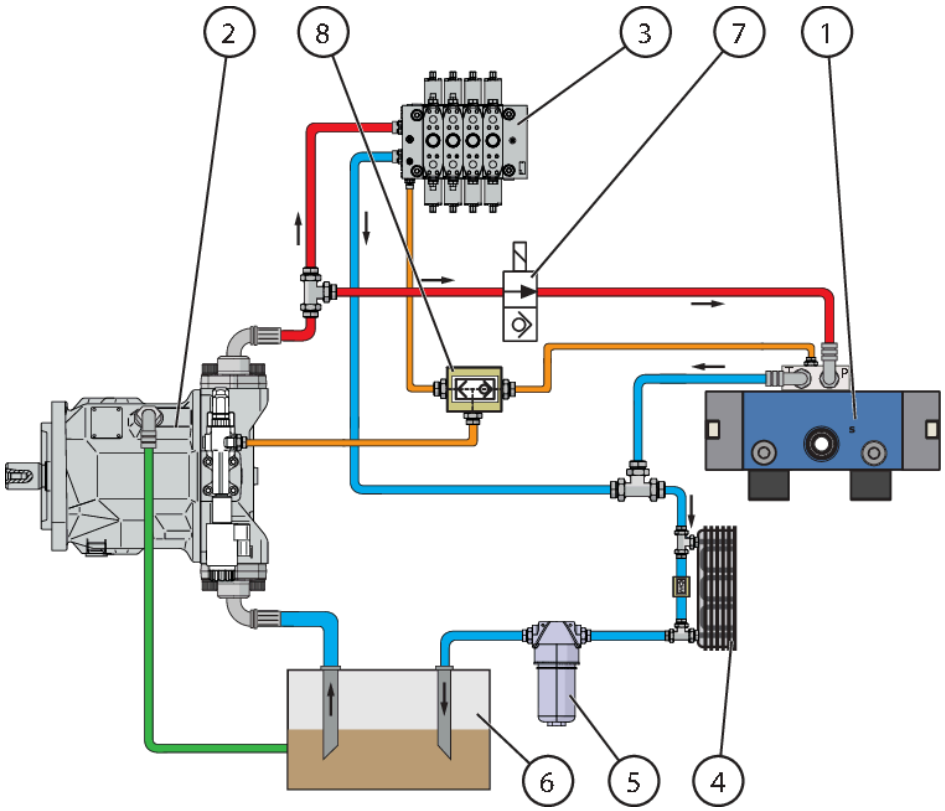
In the following picture is an example of installing the HPW-DUST system into an open center hydraulic line.



Picture 6: Example installation to open center hydraulic system

1. DYNASET HPW-VR-PA -pump
2. Base machine's variable displacement pump
3. Open center directional control valves
4. Oil cooler
5. Oil filter
6. Oil tank
7. Solenoid valve
8. DYNASET PC-SAE pressure compensator

In the following picture is an example of installing the HPW-DUST system into a closed center hydraulic line without PC-SAE.



Picture 7: Example installation to closed center hydraulic system without PC-SAE

1. DYNASET HPW pump
2. Base machine's variable displacement pump
3. Closed center directional control valves
4. Oil cooler
5. Oil filter
6. Oil tank
7. Solenoid valve
8. DYNASET Shuttle valve

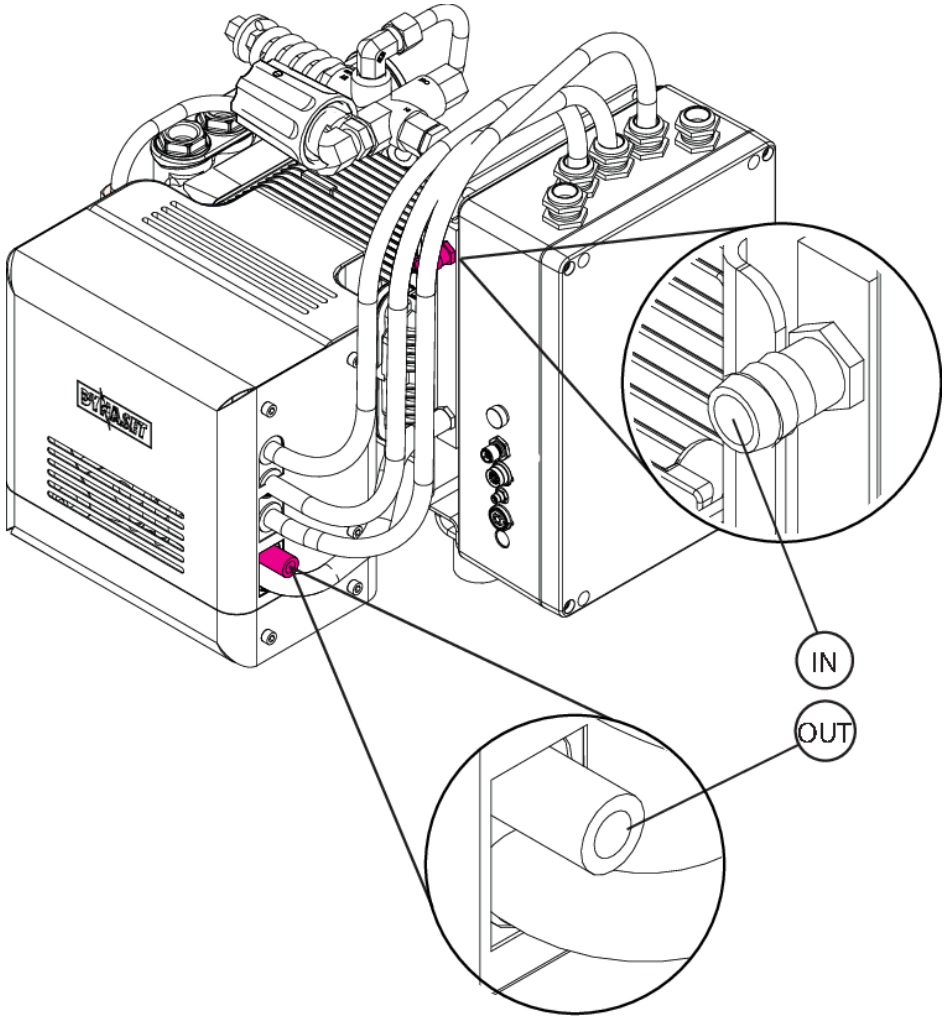
Make sure that the hydraulic flow of the base machine is sufficient to run the HPW-DUST system. At least the nominal hydraulic flow must be available to get the maximum dust suppression power.

⚠ WARNING

Make sure that the filtering degree and cooling capacity of the hydraulic system are sufficient.

4.2 EPW-DUST DC

Connect coolant input (IN) and output (OUT) to their corresponding ports of the DYNASET unit.

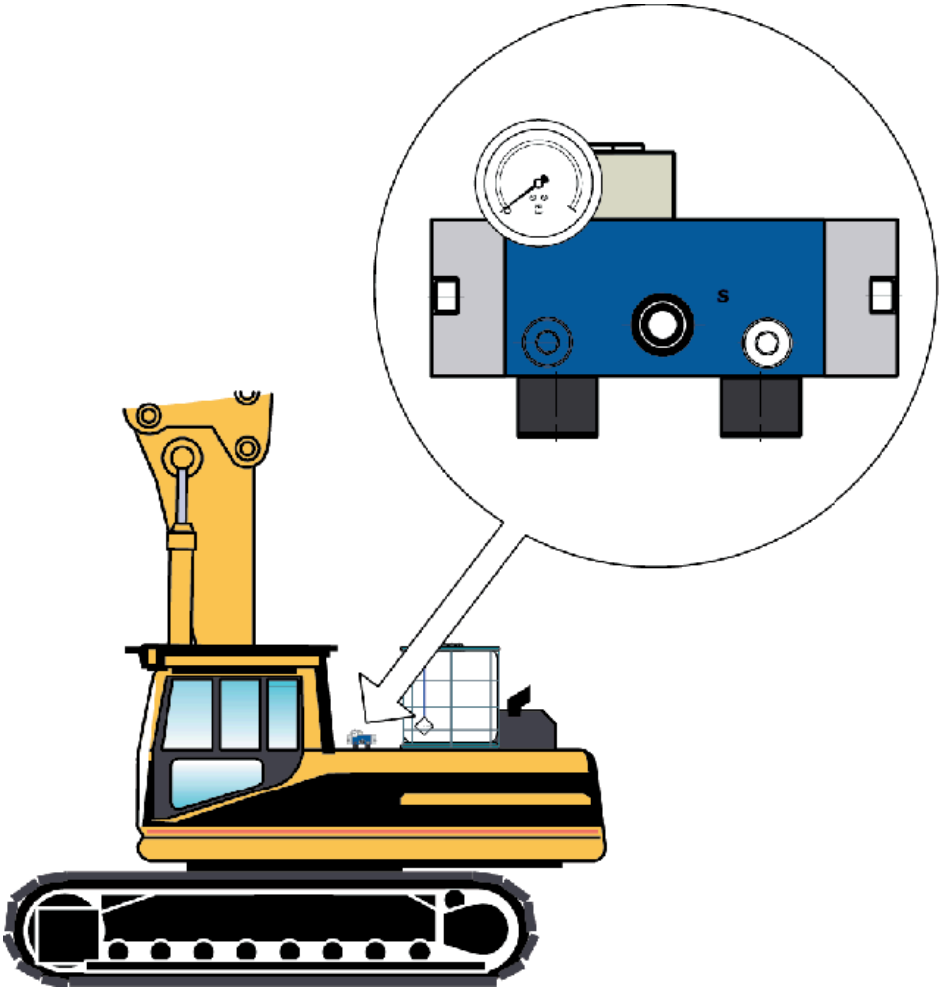


Picture 8: Connecting hoses

4.3 POSITIONING THE COMPONENTS

4.3.1 POSITIONING HPW-DUST

HPW-DUST pump is recommended to install onto the base machine's upper structure. It is recommended to use rubber cushions in installation to reduce vibration and noise.



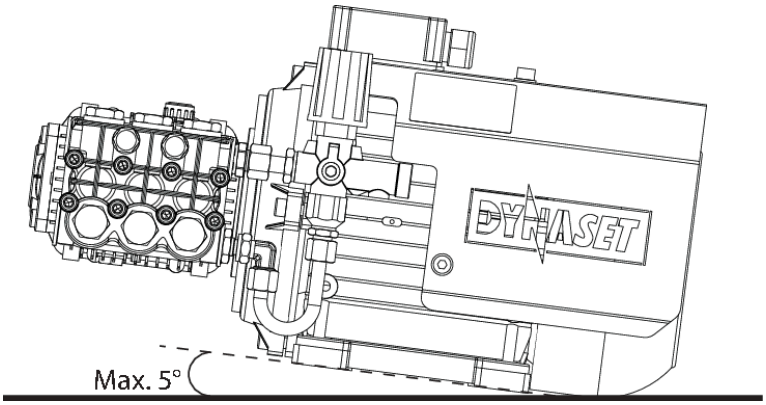
Picture 9: Positioning the HPW-DUST pump

4.3.2 POSITIONING EPW-DUST PUMPS

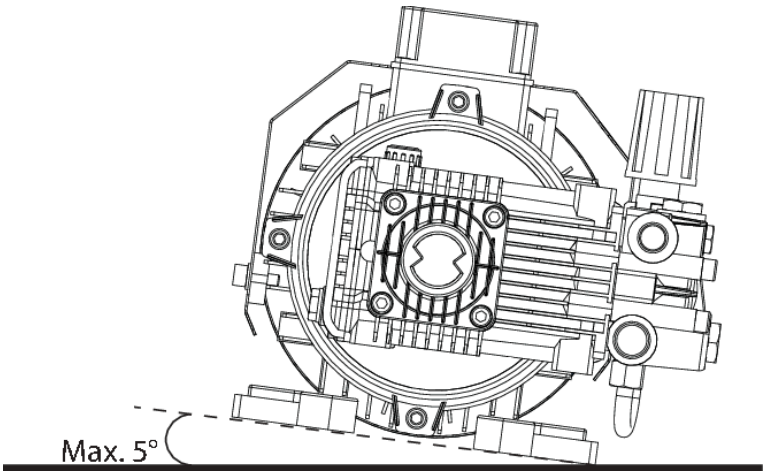
Place EPW-DUST pump on a horizontal surface. Make sure that there are no flexible components between the pump and the surface.

⚠ WARNING

The maximum inclination for EPW-DUST is 5°. Do not exceed it.

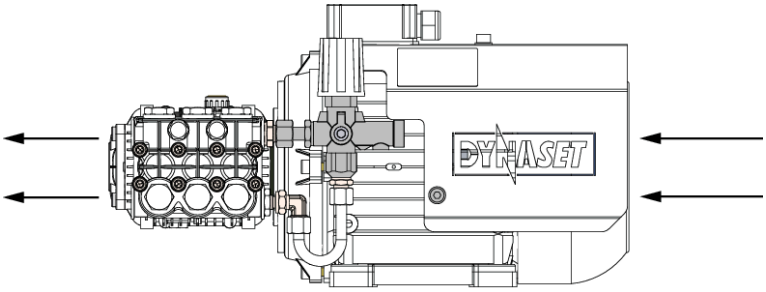


Picture 10: Inclination



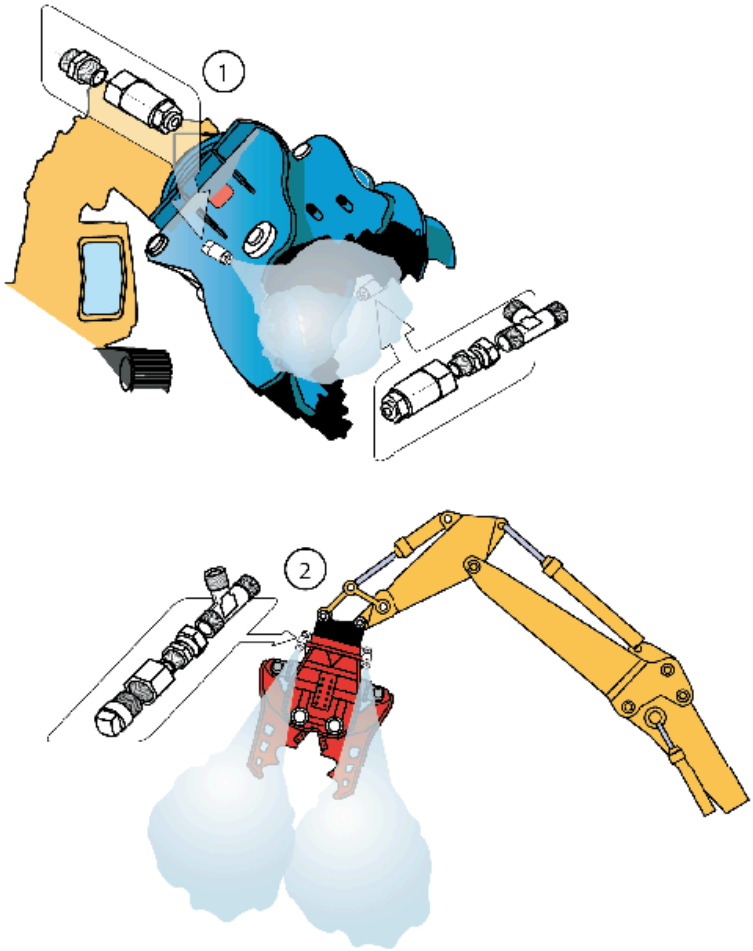
Picture 11: Inclination

Ensure sufficient ventilation for the motor. Make sure that nothing blocks the ventilation.

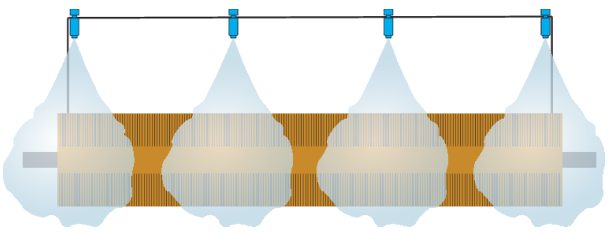


Picture 12: Ventilation

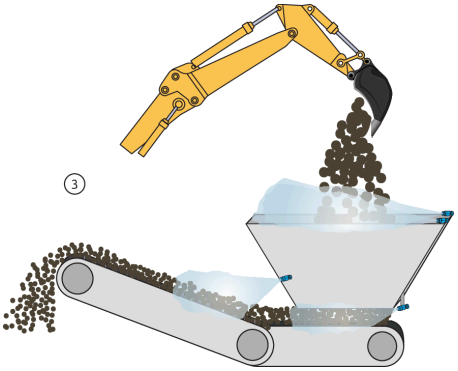
4.3.3 POSITIONING THE DUST SUPPRESSION NOZZLES

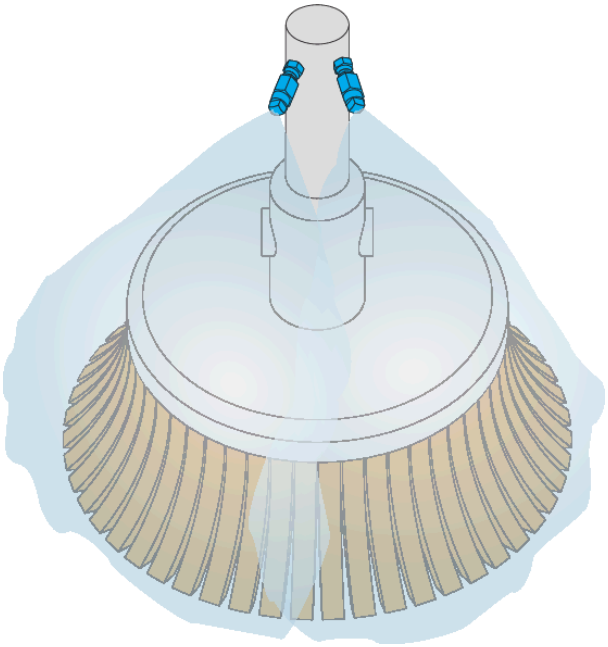


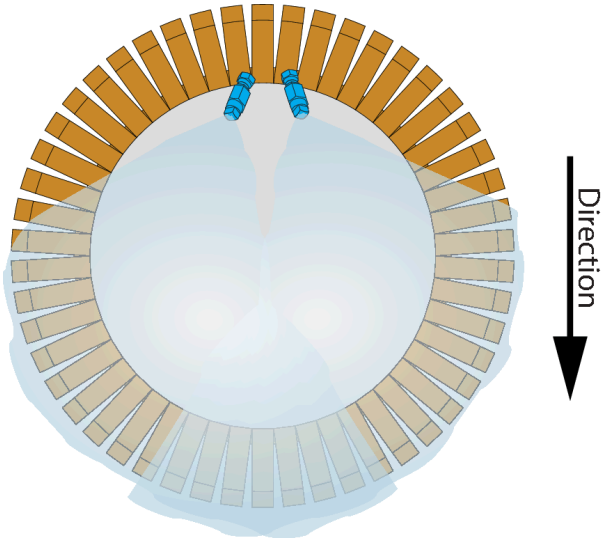
1. Install the basic dust suppression nozzles into the attachment tool. Nozzle position must ensure water jet straight into the processing area, for example between the crusher jaws.
2. Install the high pressure dust suppression nozzles into the attachment tool. Nozzle
3. You can install the dust suppression nozzles straight onto the crusher or bucket frame. Nozzle position must ensure water jet straight into the processing areas.



position must cover as wide of an area as possible.



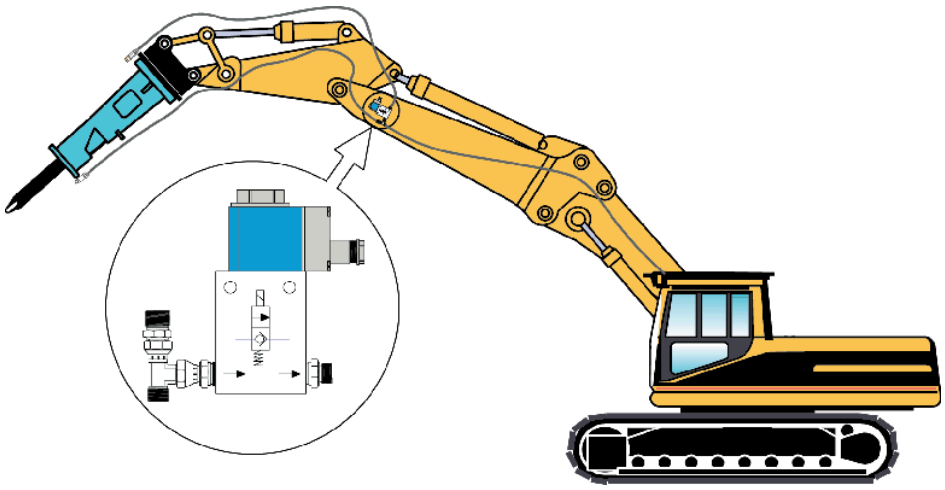




4. Dust suppression nozzles must be installed into a suitable position onto the frame. Nozzle position must ensure water jet straight into the processing areas.

4.3.4 POSITIONING THE WATER SOLENOID VALVE IN DOUBLE DUST SYSTEMS

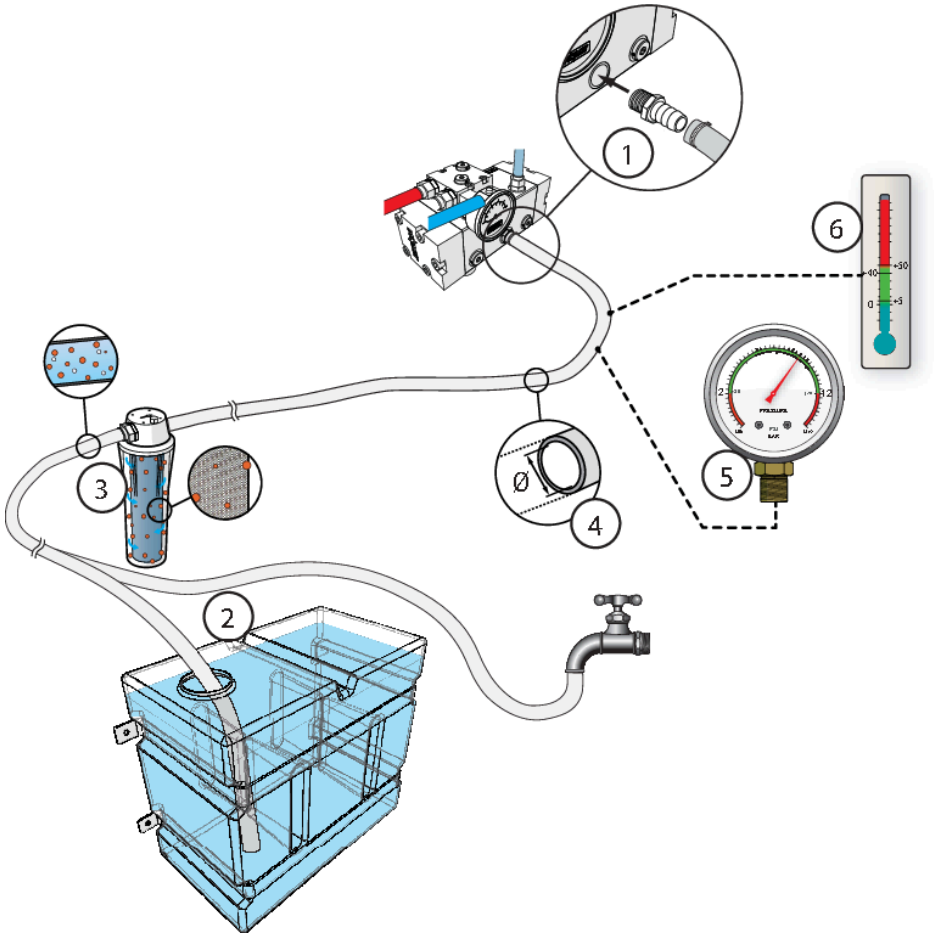
High power dust suppression is controlled by a water solenoid valve, which we recommend installing to a basic boom's end. The place of the valve must be clean and covered against impacts.



Picture 13: Positioning the water solenoid valve

4.4 INSTALLATION TO A WATER LINE

4.4.1 HPW-DUST

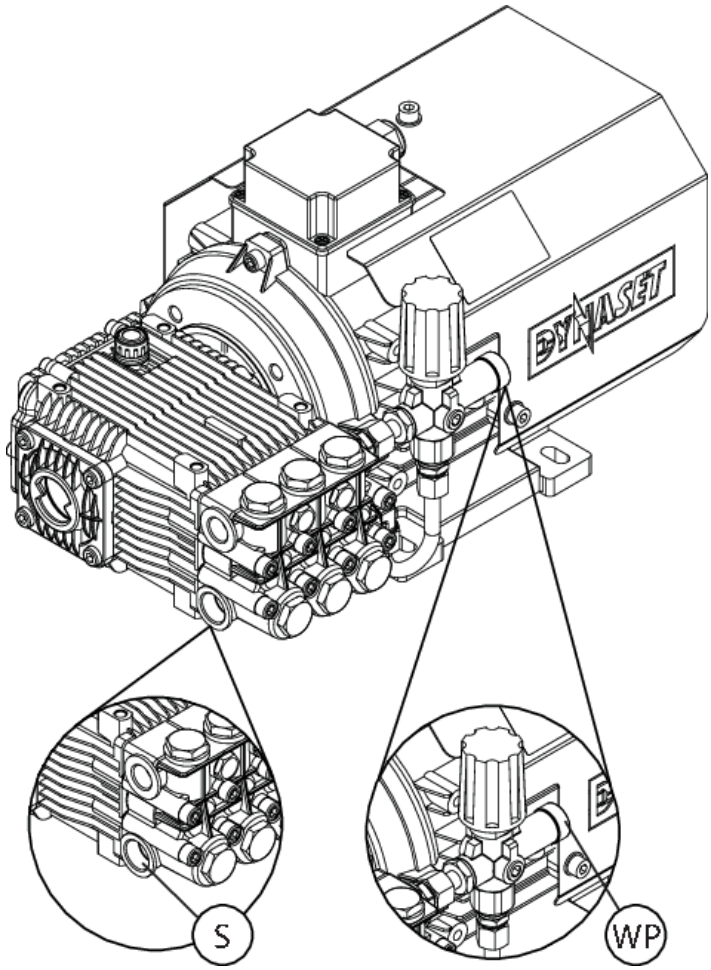


Picture 14: Installation to a water line

1. Connect water intake line into the water intake connection of the HPW-pump.
2. Water can be taken from a tank or a tap.
3. Water filter is required in water intake line.
4. Ensure the correct suction hose diameter.
5. Maximum water suction head is 3m (10ft). Maximum head depends on the length and diameter of the suction line. Correct feed pressure is 3 - 16 bar.
6. Make sure that the water temperature is 5-50°C (41-122°F).

4.4.2 EPW-DUST AC

Connect water input (S) and water output (WP) to their corresponding ports.



Picture 15: Connecting hoses

When you connect EPW-DUST AC to a water source, only use clean and filtered water. We recommend using an 80 MESH filter.

WARNING

EPW-DUST can only pump clean water. Do not pump seawater with it.

NOTE!

The water supply must be at least at the same level as the pump. Do not place the pump above the water supply.

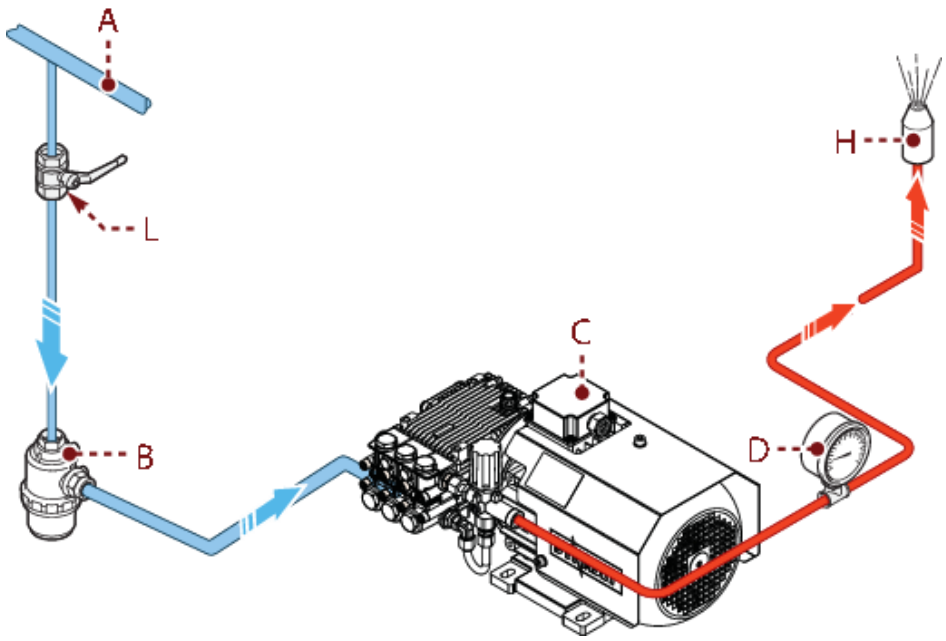
NOTE!

Obey these instructions and notes when you connect EPW-DUST to a water supply:

- **The hose must be crush-proof, and it must have a suitable diameter for the pump's intake connection.**
- **Make sure that there are no kinks in the hose.**
- **Install a filter at the electric pump's intake.**
- **Make sure that the pump does not take in air: all connections between the unions and the intake line must be sealed.**
- **Make sure that the delivery lines and connections are suitable for the operating pressure and the pump flow rate.**
- **Install a safety valve downstream from the pump. Make sure that the valve is suitable for EPW's technical data.**
- **Do not connect the safety valve dump line to the pump intake line.**
- **Install a pressure damper downstream from the pump. This minimizes the water hammer in the delivery line.**

CONNECTING TO A MAIN WATER SUPPLY

Make sure that the flow rate of the main water supply is twice the rated flow rate of the electric pump. Pressure must be 1 - 3 bar.

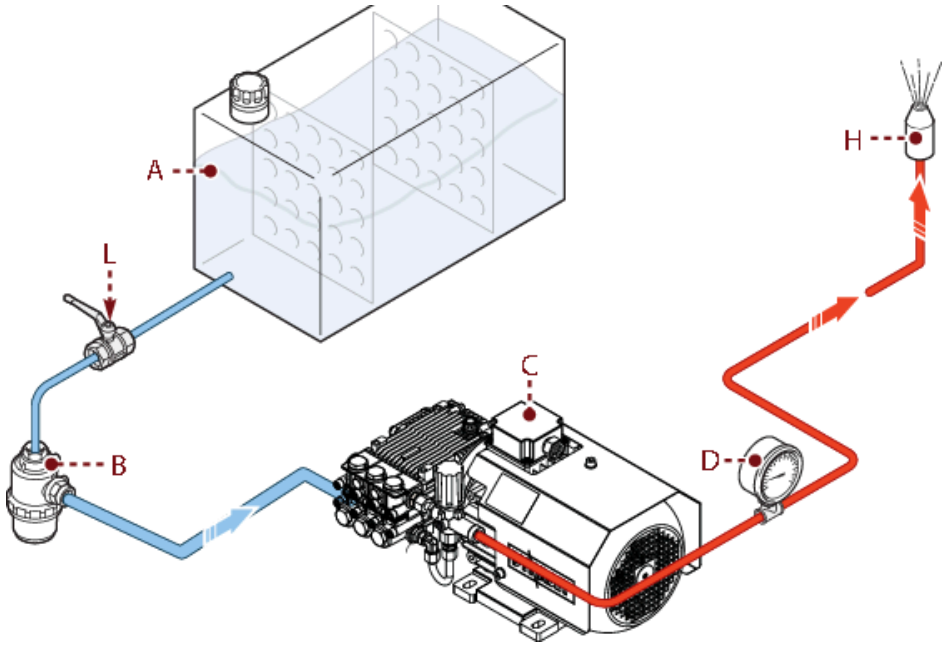


Picture 16: Connecting to a main water supply

A	Main water supply
B	Intake filter
C	Electric pump
D	Pressure gauge
H	Nozzle
L	ON/OFF valve

CONNECTING TO A TANK

Make sure that the capacity of the tank is at least 10 times bigger than the rated flow rate of the electric pump. There must be baffles inside the tank to prevent water splashes. The tank must be above the pump.



Picture 17: Connecting to a tank

A	Tank
B	Intake filter
C	Electric pump
D	Pressure gauge
H	Nozzle
L	ON/OFF valve

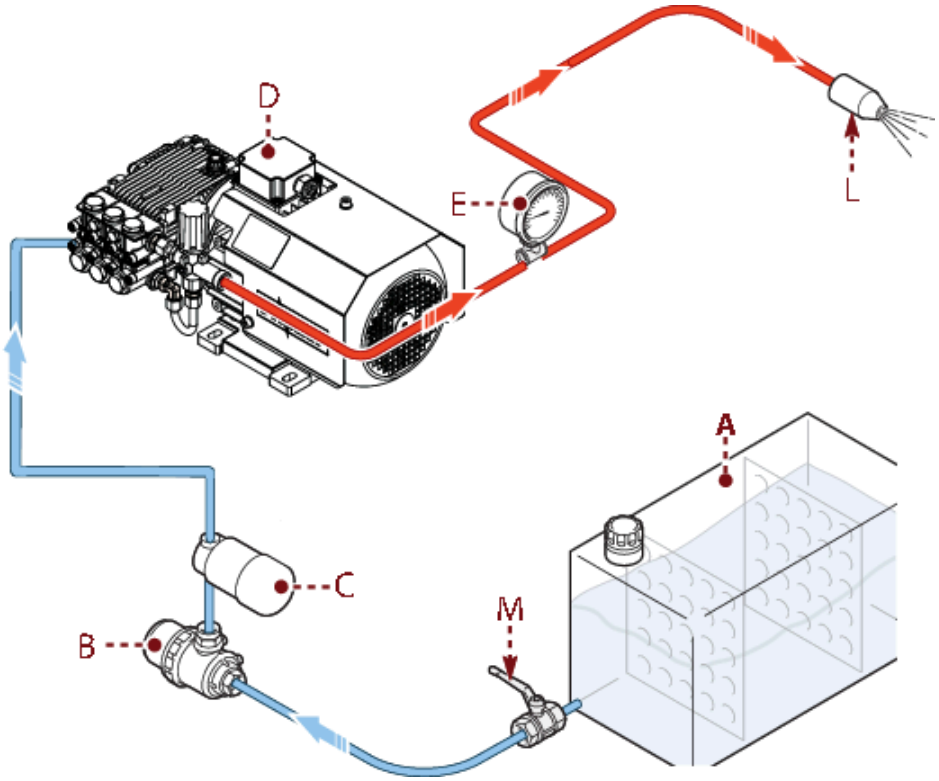
WARNING

Water temperature must be under 40°C (104°F).

When you measure the vacuum directly at the pump's intake port, make sure that is does not exceed -0.1 bar.

CONNECTING TO AN AUXILIARY PUMP (FORCE-FEED)

Make sure that the flow rate of the auxiliary pump is twice the rated flow rate of the electric pump. Operating pressure must be 1 - 3 bar.



Picture 18: Connecting to an auxiliary pump

A	Tank
B	Intake filter
C	Auxiliary pump
D	Electric pump
E	Pressure gauge
L	Nozzle
M	ON/OFF valve

4.4.3 EPW-DUST DC

When you connect EPW-DUST DC to a water source, only use clean and filtered fresh water. We recommend using an 80 MESH filter.

WARNING

EPW-DUST can only pump filtered fresh water. Do not pump seawater with it.

NOTE!

The water supply must be at least at the same level as the pump. Do not place the pump above the water supply. If you need to place the pump above the water supply, additional feed pump to the unit is required.

NOTE!

Obey these instructions and notes when you connect EPW-DUST to a water supply:

- **The hose must be crush-proof, and it must have a suitable diameter for the pump's intake connection.**
- **Make sure that there are no kinks in the hose.**
- **Install a filter at the electric pump's intake.**
- **Make sure that the pump does not take in air: all connections between the unions and the intake line must be sealed.**
- **Make sure that the delivery lines and connections are suitable for the operating pressure and the pump flow rate.**
- **Install a safety valve downstream from the pump. Make sure that the valve is suitable for EPW's technical data.**
- **Do not connect the safety valve dump line to the pump intake line.**
- **Install a pressure damper downstream from the pump. This minimizes the water hammer in the delivery line.**

WARNING

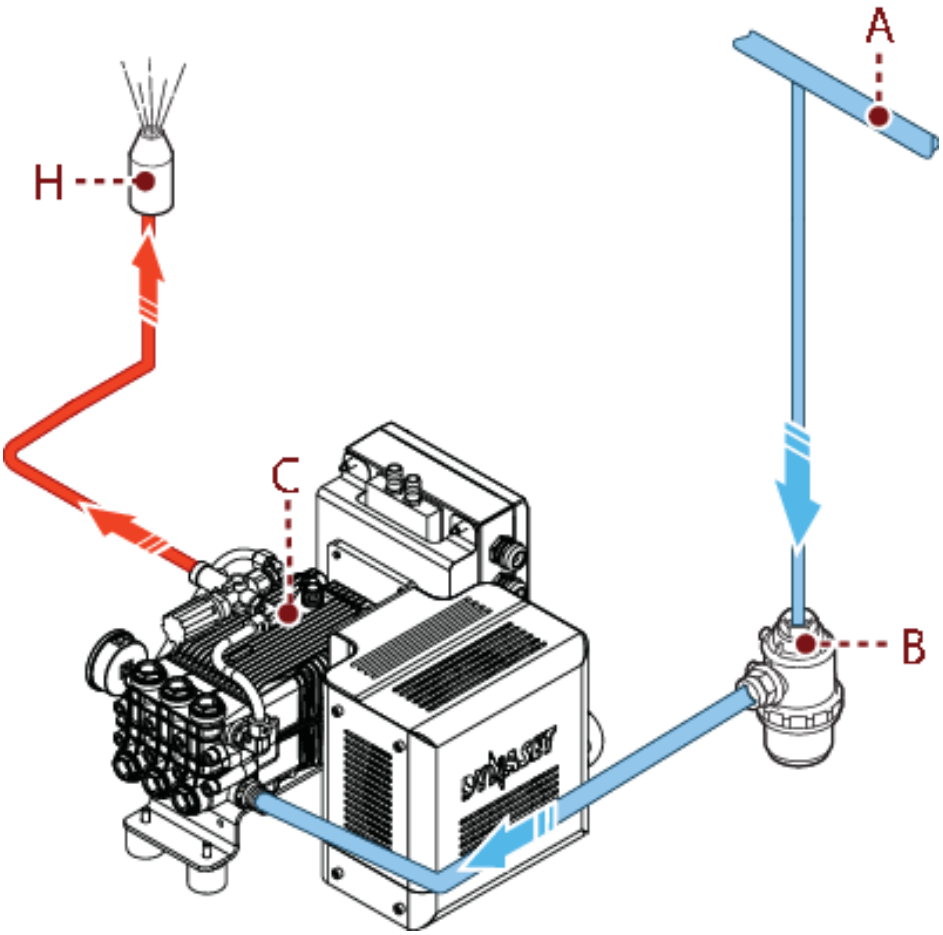
Water temperature must be under 40°C (104°F).

WARNING

When you measure the vacuum directly at the pump's intake port, make sure that is does not exceed -0.1 bar.

CONNECTING TO A MAIN WATER SUPPLY

Make sure that the flow rate of the main water supply is twice the rated flow rate of the electric pump. Pressure must be 1 - 3 bar.

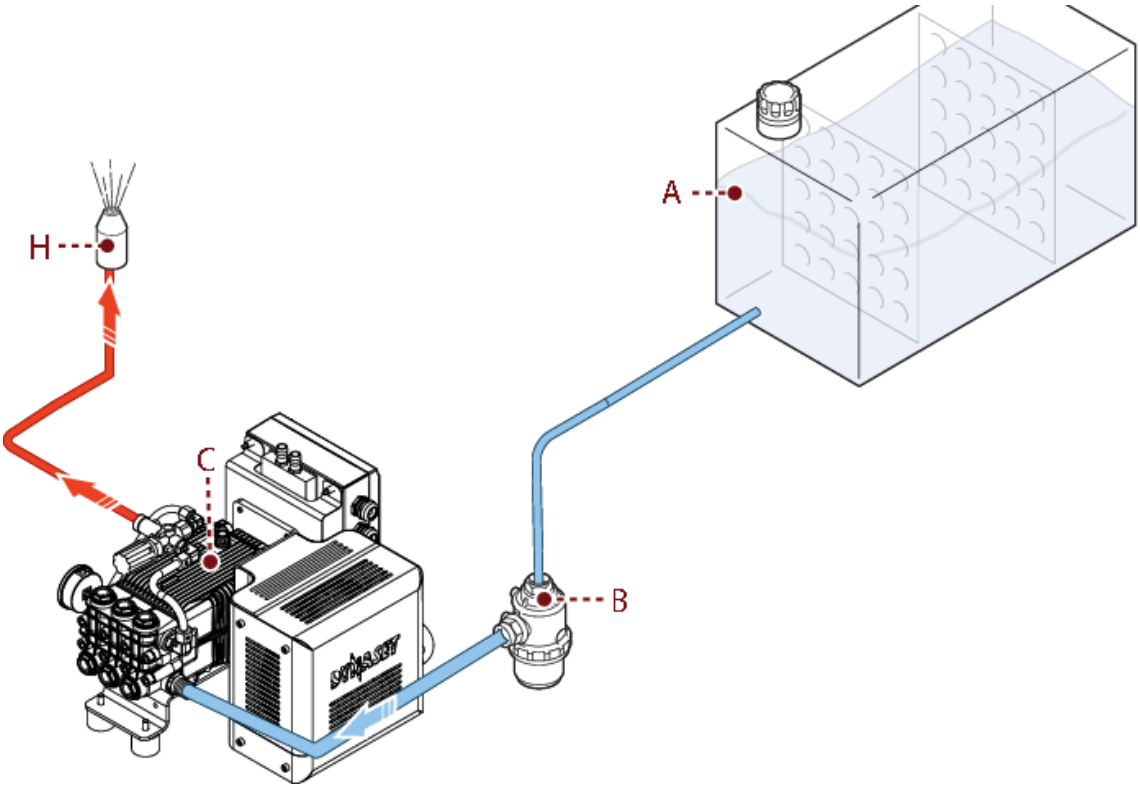


Picture 19: Connecting to a main water supply

A Main water supply
B Intake filter
C Electric pump
H Nozzle

CONNECTING TO A TANK

Make sure that the capacity of the tank is at least 10 times bigger than the rated flow rate of the electric pump. There must be baffles inside the tank to prevent water splashes. The tank must be above the pump or additional feed pump is required.

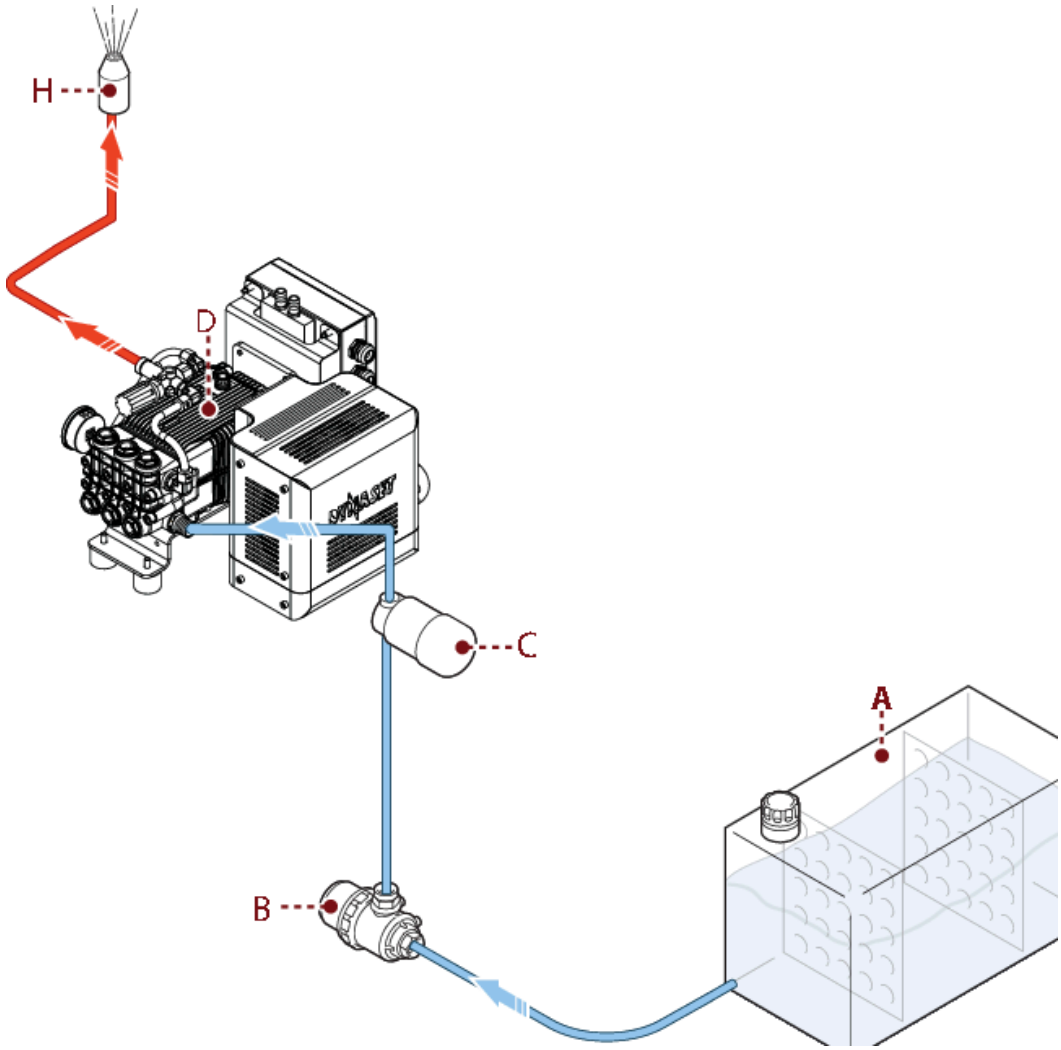


Picture 20: Connecting to a tank

A	Tank
B	Intake filter
C	Electric pump
H	Nozzle

CONNECTING TO AN AUXILIARY PUMP (FORCE-FEED)

Make sure that the flow rate of the auxiliary pump is twice the rated flow rate of the electric pump. Operating pressure must be 1 - 3 bar.



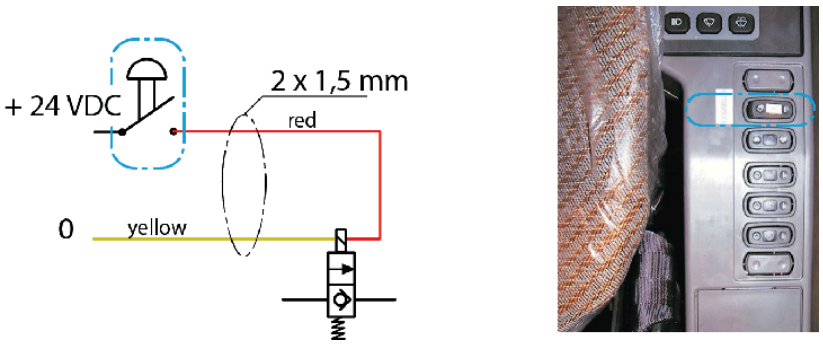
Picture 21: Connecting to an auxiliary pump

A	Tank	H	Nozzle
B	Intake filter		
C	Auxiliary pump		
D	Electric pump		

4.5 CONTROL WIRING WITH HPW-DUST

4.5.1 HPW-PUMP/DUST SUPPRESSION ON-OFF SWITCH

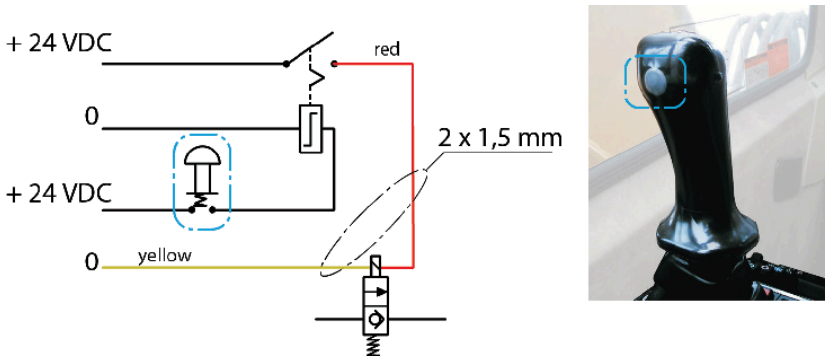
HPW-pump is switched on by activating the hydraulic solenoid valve. We recommend installing the HPW-pump's on-off switch in the aux panel of the base machine's cabin.



Picture 22: HPW-pump's on-off switch

4.5.2 HIGH POWER WATER SOLENOID VALVE PUSH-BUTTON

In the dual water circuit, the high pressure dust suppression mode is switched on by activating the water solenoid valve. The water solenoid valve is controlled by push-button and impulse relay. We recommend installing the dust suppression push-button into a boom's control stick.



Picture 23: High power water solenoid valve push-button

4.6 ELECTRICAL CONNECTIONS

4.6.1 EPW-DUST AC

WARNING

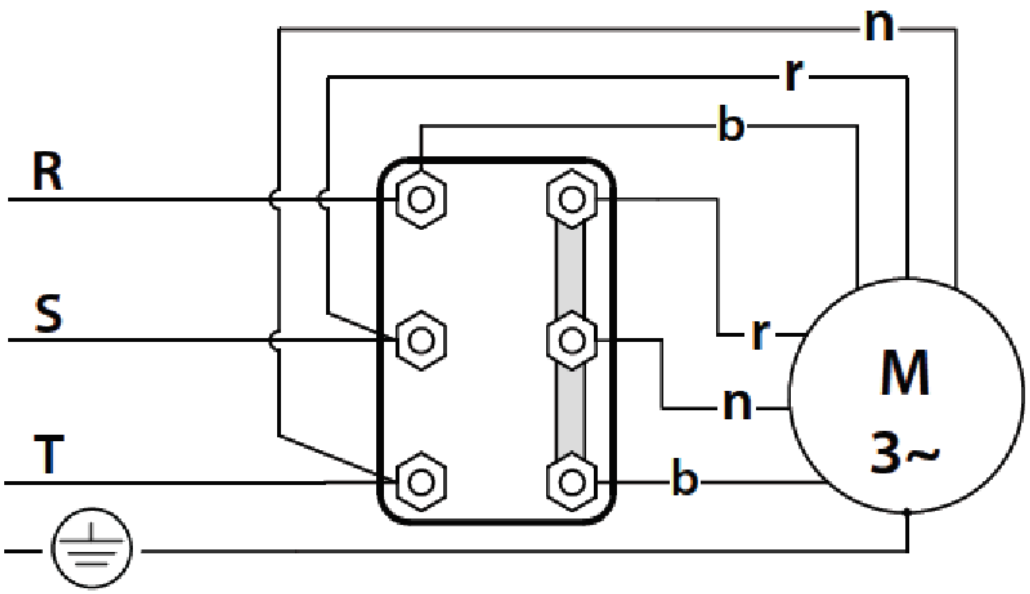
We recommend that you use a residual current device that cuts off the power supply if the leakage current to earth is more than 30 mA for 3 seconds. Install the residual current device between EPW-DUST and the power source.

WARNING

Make sure that the line voltage and current correspond to those on the type plate.

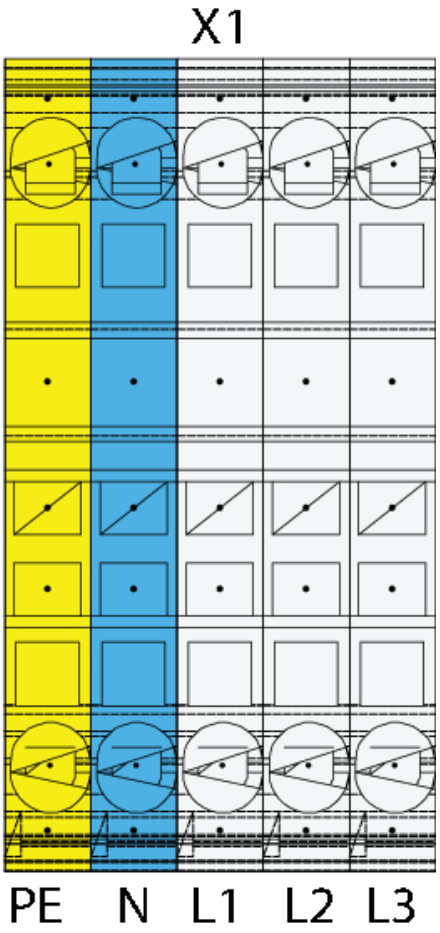
WARNING

Protect all electrical conductors from jets of water.



Picture 24: Electrical connection for the basic model

The following picture shows electrical connection inside the electrical connection box on top of EPW-DUST pump.



Picture 25: Electrical connection for the Start-Stop Model

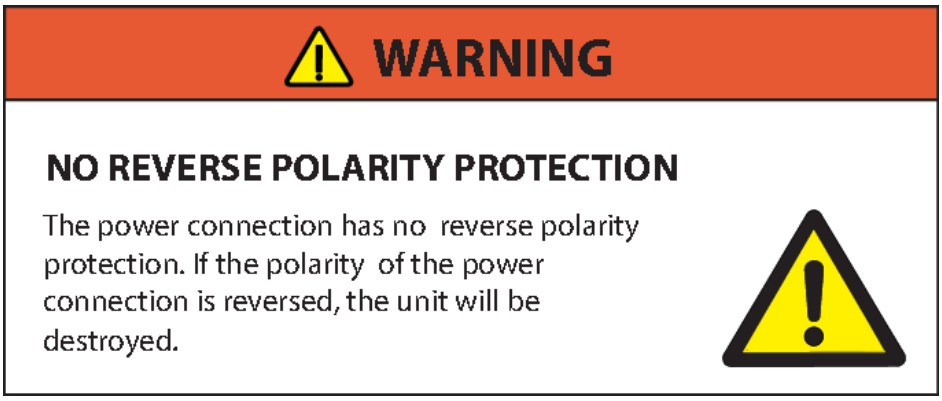
4.6.2 EPW-DUST DC

WARNING

Supply conductors must be protected against interference. Interference suppressors must be earthed to the control unit's frame.

WARNING

Make sure that the supply polarity (+ and -) is connected correctly. If it is reversed, unit will be damaged



WARNING

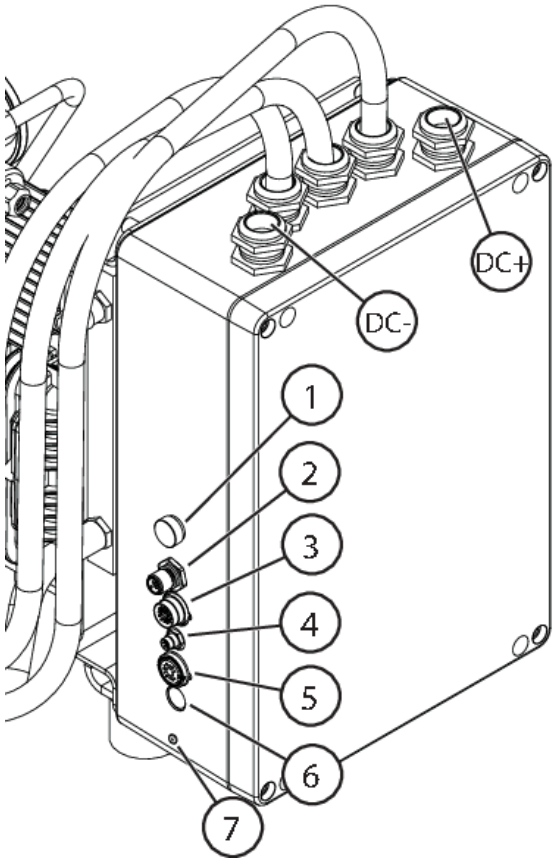
Make sure that the battery voltage (DC) and current correspond to those on the type plate.

WARNING

Protect all electrical conductors from jets of water.

4.6.2.1 Connection Box of EPW-DUST DC

Customer needs to connect DC+ and DC-, and interface connector (cable included). Connections are described in the following chapters.



Picture 26: Connection Box

DC + / DC -	Supply connections	5	Feedback Encoder
1	Pressure equalisation valve	6	Display (Warning/error)
2	Not in use	7	Grounding Point
3	Customer Interface		
4	Parametrizing interface		

4.6.2.2 Supply Connections of EPW-DUST DC

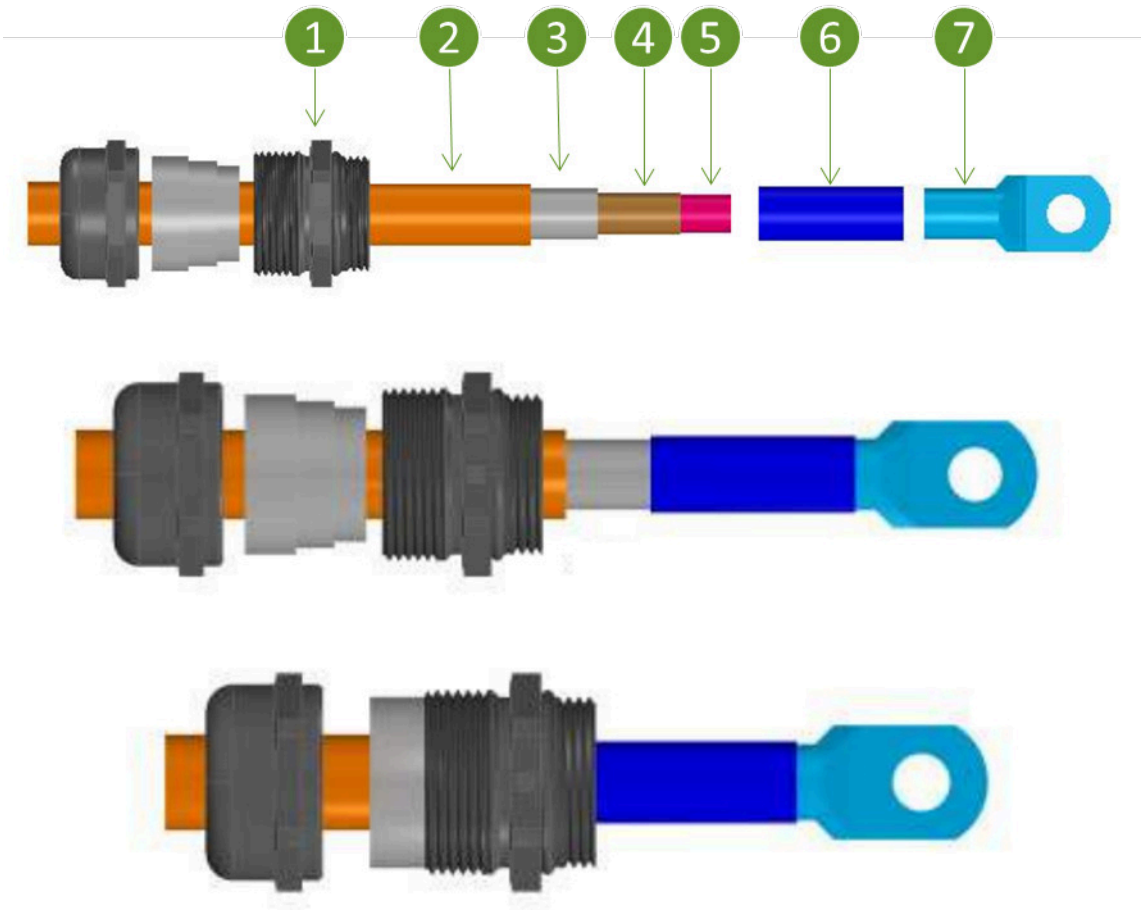
⚠ WARNING

Connections are made inside the connection box to the corresponding terminals - and +. Only qualified and certified electrician is alowed to make the supply connections.

1. Make sure the power is disconnected from the source.
2. Open the connection box lid by opening the cover screws.
3. Install the cables to their corresponding terminals - and +. Use proper terminal connection and tighten the connection to 20 Nm.
4. Screw the cover back in
5. Connect grounding from base machine to controller grounding point. Check grounding point location in previous chapter.

To make the supply wire connections use proper wiring size according the table below.

Model	Supply Cable Connector	Supply Cable, mm^2
EPW-DUST DC 200-30 For Crusher - One Conveyor	M10	25
EPW-DUST DC 200-50 For Crusher - Two Conveyors	M10	25



NOTE!

Attach the cable lug accordingly to the cable providing proper shielding to the wire itself to avoid interference.

Supply cable construction

1. Sleeve with shield contact
2. Outside isolation
3. Shield
4. Inside insulation
5. Copper braid
6. Shrink tube
7. Terminal connector (Cable lug)

4.6.2.3 Customer Interface of EPW-DUST DC

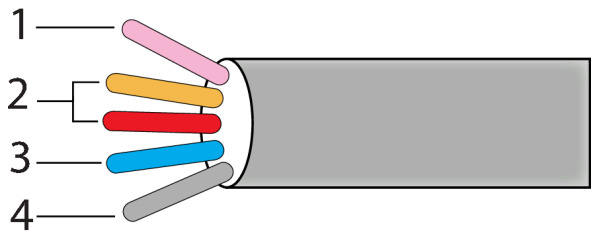
Customer is required to make the interface connection to their own system. The Interface connector is provided with the unit as follows:

- Cable, length 5 m
- Includes assembled connector to controller end
- Other end with bare wires (open end)

The interface enables Start / Stop function. It requires auxiliary supply voltage 12…24 VDC from customers system.

Make the connections according to the picture below.

1. Pink = Supply voltage, (12....24 VDC)
2. Yellow and red = Ground (Common GND)
3. Blue = Rotating Feed Enable (RFE, NC, 12....24 VDC, push button, momentary)
4. Grey = Run (NO, 12....24 VDC, push button, momentary)

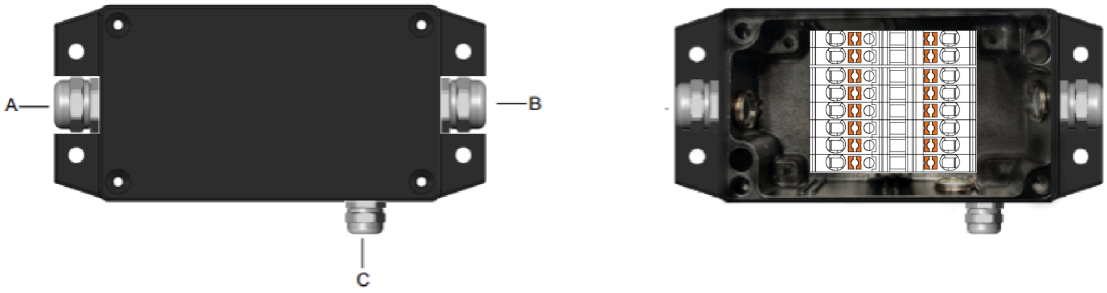


Picture 27: Customer Interface

4.6.2.4 Junction Box

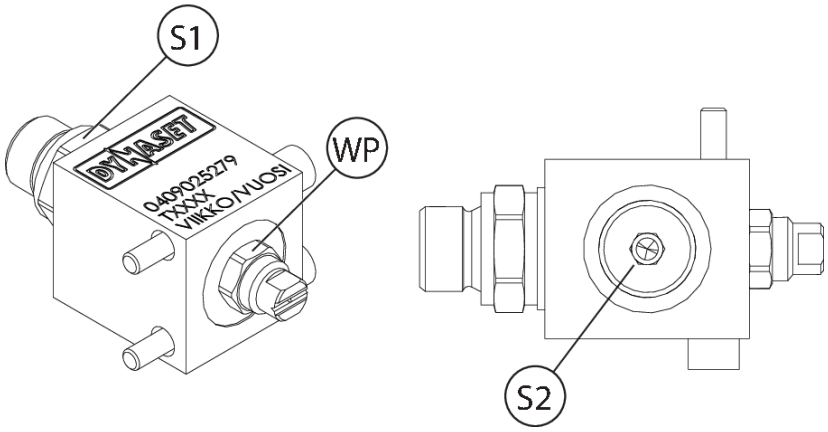
Attach a cable to the port A. B is a connection to the control unit. C is a connection to the unloader valve (only available in model 200/30). B and C are already connected or plugged.

READ CHAPTER „11. SCHEMATICS “



Picture 28: Junction Box

4.7 FASTENING BLOCK

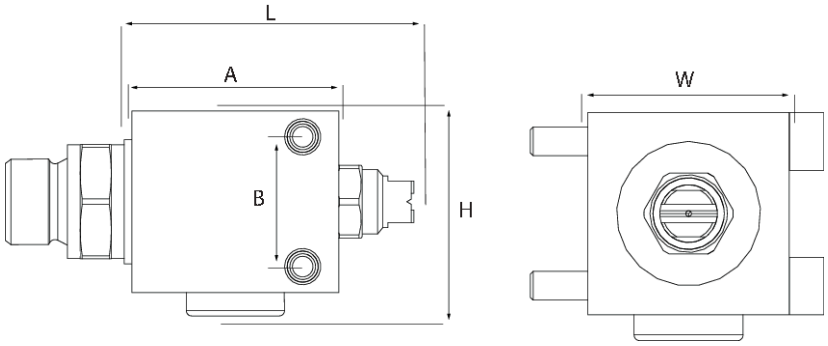


Picture 29: Fastening Block, connections

Attach water input to S1 or S2. WP port is equipped with a nozzle. The nozzle is replaceable.

When you do maintenance or want to change the nozzle, first detach the fitting.

Model	Water Connections		
	Water Output, WP	Water Input, S1	Side Port, S2
Fastening Block	BSPP 1/4	BSPP 3/8	BSPP 1/4



Picture 30: Fastening Block, dimensions

Model	Dimensions, mm (in)				
	L	W	H	A	B
Fastening Block	56 (2.2)	35 (1.4)	40 (1.6)	40 (1.6)	25 (1.0)

5. OPERATION

When you have ensured the proper mechanical and hydraulic installation of the HPW-DUST system, it is ready for use.

EPW-DUST can only pump fresh water.

WARNING

Do not pump seawater with EPW-DUST systems.

WARNING

Do not run EPW-DUST systems dry.

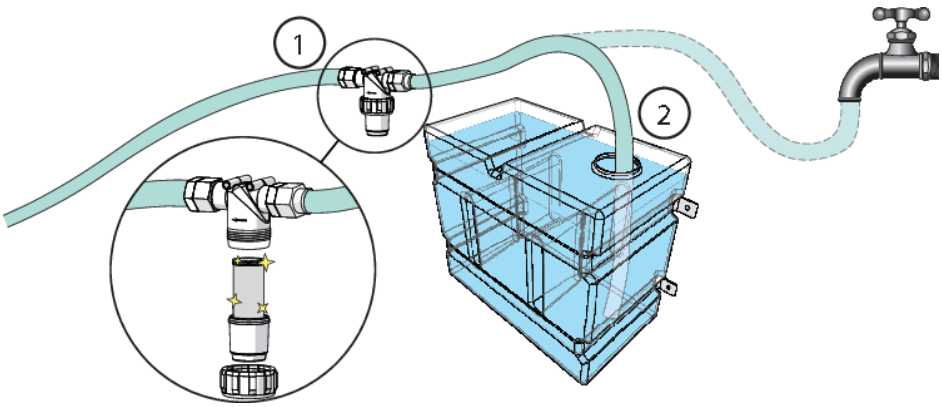
NOTE!

You can run HPW-DUST dry.

NOTE!

Maximum pumping fluid temperature for EPW-DUST systems is 40°C (104°F). Do not exceed the maximum temperature.

5.1 BEFORE OPERATING THE HPW-DUST SYSTEM



Picture 31: Before operating the HPW-DUST system

1. Make sure that the water filter is clean and in place.
2. Fill the water tank with clean water or ensure water line connection from a tap.

NOTE!

Maximum feed pressure to the HPW-pump is 16 bar.

NOTE!

Maximum feed pressure to the EPW-DUST AC is 1 - 3 bar.

NOTE!

Maximum feed pressure to the EPW-DUST DC is 2 - 3 bar.

5.2 STARTING AND STOPPING THE SYSTEM

WARNING

Do not run EPW-DUST pump dry.

WARNING

Before you use the product, do a safety check. Check all hoses and couplings in pumping fluid circuit before use to ensure there are no leaks or damages.

WARNING

Never put your hand, fingers or body directly in front of the spray nozzle!

NOTE!

Make sure that there is pumping fluid available in the intake line.

NOTE!

After shutting off the pump, make sure that there is no pressure left in the system. You can do it, for example, by pressing the handle of the pressure washer until the pressure is released.

NOTE!

Clean the pump completely after work, if special pumping fluid is used!

Correct size of the spray nozzle of water outlet is a very important step for ensuring the optimal water power or hydro-demolition power in each application. If you want to change the spray nozzles, contact Dynaset for choosing suitable nozzles.

5.2.1 HPW-DUST

HPW-DUST system is started and stopped by activating/deactivating hydraulic flow to the HPW-pump. On/off switch is typically installed into cabin's aux panel.

5.2.2 EPW-DUST AC

Basic model:

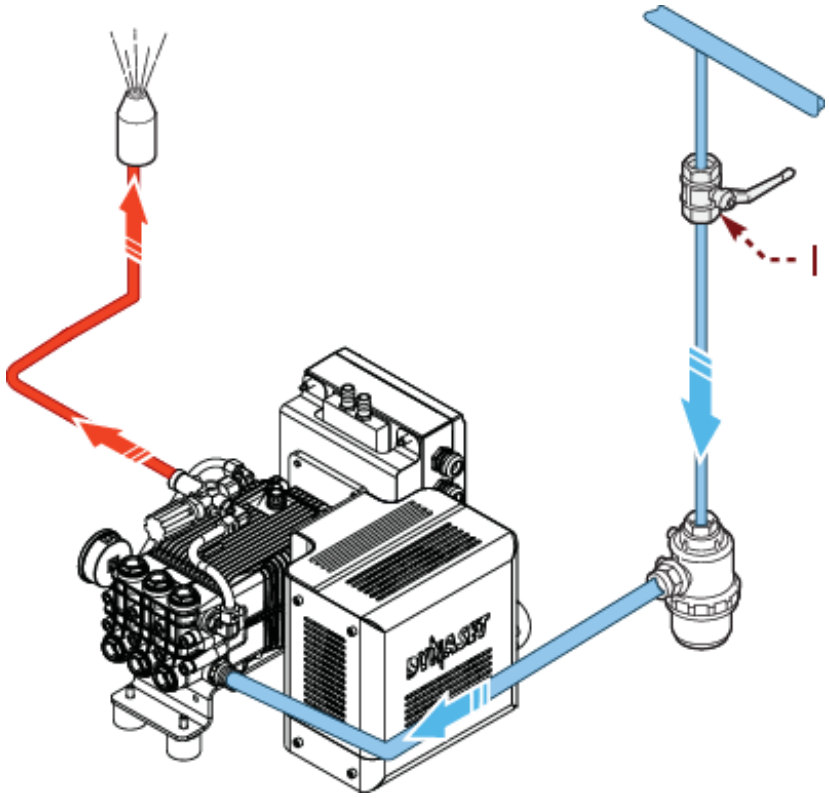
1. To start: connect EPW to a power supply. It starts as electricity is connected to it.
2. To stop: disconnect EPW from the power supply.

Start-Stop Model:

1. To start: connect EPW to a power supply and then push the Start button. The button is on the box that is located on top of the pump.
2. To stop: push the Start button.

5.2.3 EPW-DUST DC

5.2.3.1 When supplied by the main water supply



Picture 32: Main water supply

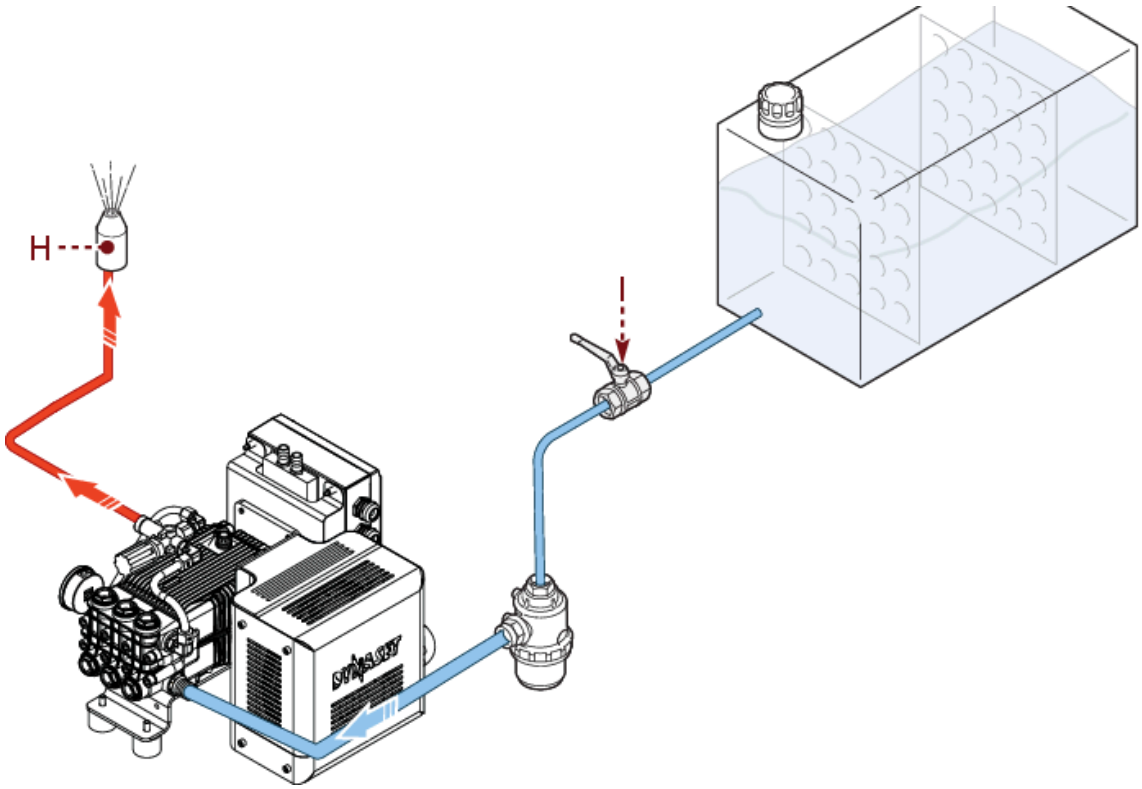
To start the pump:

1. Open the ON/OFF valve (I).
2. Turn the electric pump on.
3. Let the pump run for a few minutes without pressure.

To stop the pump:

1. Turn off the pump.
2. Close the ON/OFF valve (I).

5.2.3.2 Gravity-fed pump



Picture 33: Gravity-fed pump

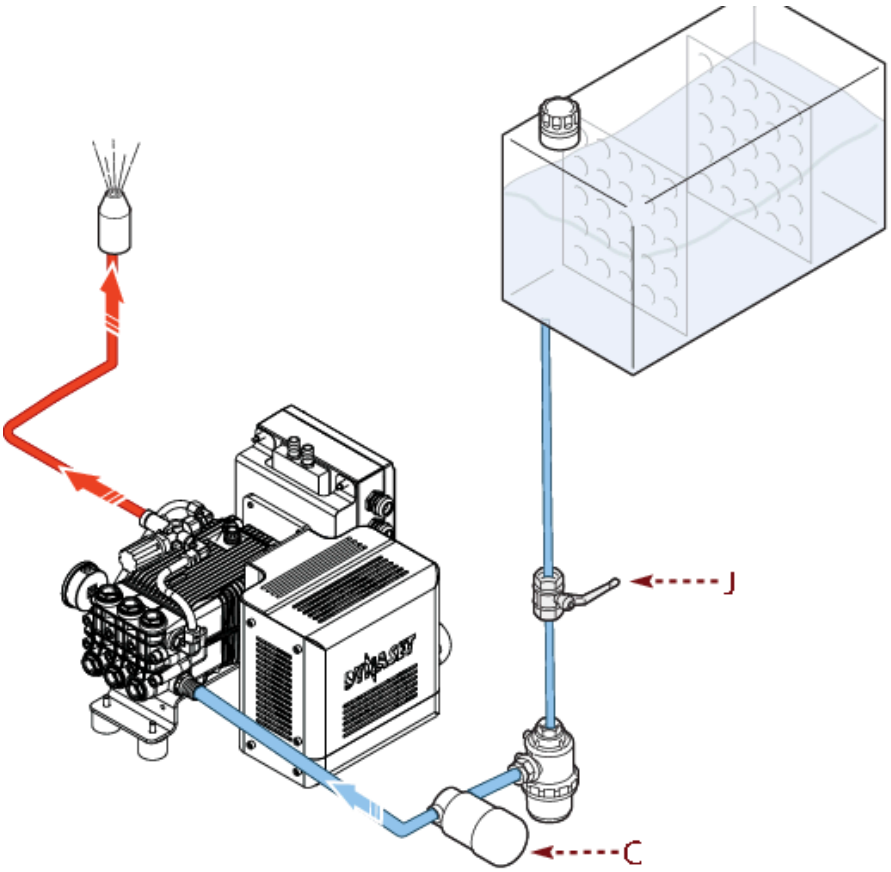
To start the pump:

1. Open the ON/OFF valve (I).
2. Turn the electric pump on.
3. Let the pump run for a few minutes without pressure.

To stop the pump:

1. Turn off the pump.
2. Close the ON/OFF valve (I).

5.2.3.3 Electric pump with an auxiliary pump



Picture 34: Auxiliary pump

To start the pump:

1. Open the ON/OFF valve (J).
2. Turn the auxiliary pump on (C).
3. Turn the electric pump on.
4. Let the pump run for a few minutes without pressure.

To stop the pump:

1. Turn off the electric pump.
2. Turn off the auxiliary pump (C).
3. Close the ON/OFF valve (J).

5.3 HIGH POWER DUST SUPPRESSION (DOUBLE DUST)

HPW-DUST Double Dust model is only available for HPW pumps.

In double dust systems the high power dust suppression mode is activated with push-button that is installed into the boom's joystick. Pushing the button once activates the mode and pushing the button again disables it.

The high power dust suppression is intended for discontinuous use, but if the water pipeline is available, the high power mode can be used on continuous basis when necessary.

5.4 WORKING IN COLD TEMPERATURES AND STORAGE

To prevent pipes and the system from freezing and corroding, the pump, water lines and water tank must be dewatered after a working shift or before long-term storage. Open the drain plug of the water tank and drain out the water. When the tank is empty, run the HPW-DUST pump dry for a while until all water is removed from the water circuit.

WARNING

Do not let the system freeze or corrode in long-term storage!

NOTE!

When you store EPW-DUST pumps, take the following things into consideration:

- **Dewater and air flush the pump and pumping fluid output line to prevent EWP from rusting**
- **Detach the intake hose from EPW and run it dry with pressured air for a while, until all water is removed from water circuit**
- **Clean EPW**
- **Remove all calcareous deposit**
- **Wrap EPW in a protective cover**
- **Store the pump in a clean and dry place**

To prevent pipes and EPW pump from freezing in cold season, dewater pump and pumping fluid output line after a working shift. Detach the intake hose from EPW pump and run it dry for a while until all water is removed from water circuit.

EPW-DUST AC

The ambient temperature to use the pump is between 10°C (50°F) and 40°C (104°F). Relative humidity must be under 90 %.

EPW-DUST DC

The ambient temperature to use the pump is between 10°C (50°F) and 35°C (95°F). Relative humidity must be under 80 %.

6. MAINTENANCE

6.1 GENERAL

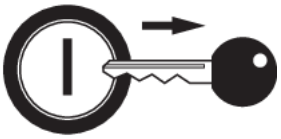
WARNING

All installations and maintenance must be done according to this manual. All electric installations and maintenance should only be done by a qualified electrician depending on the jobs requirements.

WARNING

Before you do any maintenance or repair, always make sure that the pump is turned off and depressurized. Make sure that the system does not turn on while doing maintenance.





6.2 MAINTENANCE INTERVAL

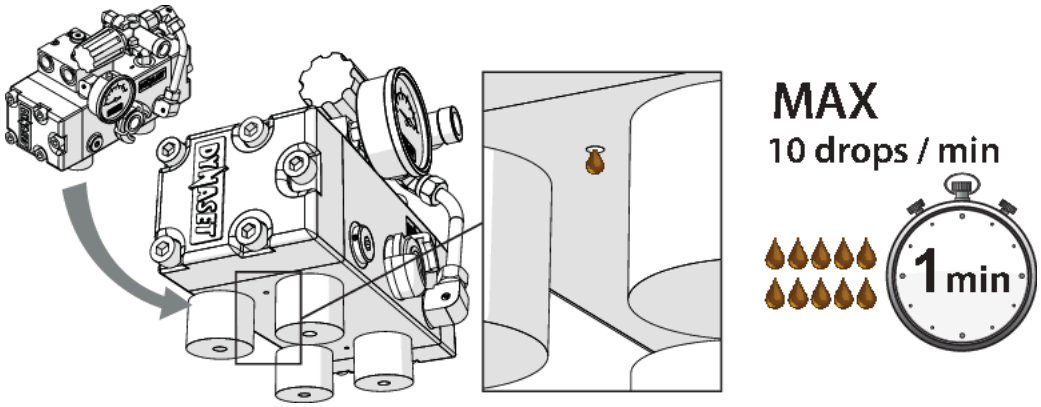
All maintenance must be done as they are scheduled in this manual.

Check points	Daily	Weekly	50h*	100h	500h	800h	1000h	1500h**
Observe HPW-DUST pump's leakage detectors	x							
Clean HPW-DUST system	x							
Clean water intake filter		x						
Change water intake filter								x
Check the condition of the filter cartridge in the pump	x							
Check the oil level	x							
Check the water filter	x							
Observe leakage detectors	x							
Clean the EPW-DUST pump	x							
Make sure that the mounting bolts are tight			x					
Check the lines and connections			x					
Make sure that the insulating parts of the electric motor are in good condition				x				
Make sure that all the cable clips and terminals are tight				x				
Make sure that the terminal boxes and cable guides are sealed				x				
Change the oil of the EPW-DUST					x			
Replace the intake and delivery valves						x		
Clean the air passages of the fan cover and blades						x		
Change sealings							x	

* = Every working hours

** = If necessary

Check constantly whether the fluid dropping from pump's leakage detectors is growing. Replace the sealing in proper time to exclude intermixing of hydraulic oil and pumping fluid. Replace instructions are in the HPW User Manual.



Picture 35: Location of leakage detectors in HPW

NOTE!

Do maintenance of the HPW-pump according to HPW User Manual!

6.3 HYDRAULIC FLUIDS

A wide range of standard hydraulic fluids can be used with the DYNASET hydraulic
é. Depending on the operating temperature, the following mineral hydraulic oils are recommended:

Mineral hydraulic oil	Operation temperature up to
ISO VG 32S	60°C (140°F)
ISO VG 46S	70°C (158°F)
ISO VG 68S	80°C (176°F)

WARNING

Recommended oil viscosity is between 10 and 35 cSt when operating at normal operating temperature.

Synthetic and bio-oils can also be used if their viscosity characteristics and lubricating efficiency are similar to mineral oils. Automatic transmission fluids and even engine oils can be used, provided that they are allowed to be used in hydraulic system of your base machine.

For the hydraulic fluid change interval, obey the base machine's maintenance instructions.

To use special hydraulic fluids with DYNASET equipment, contact the nearest DYNASET representative for more information.

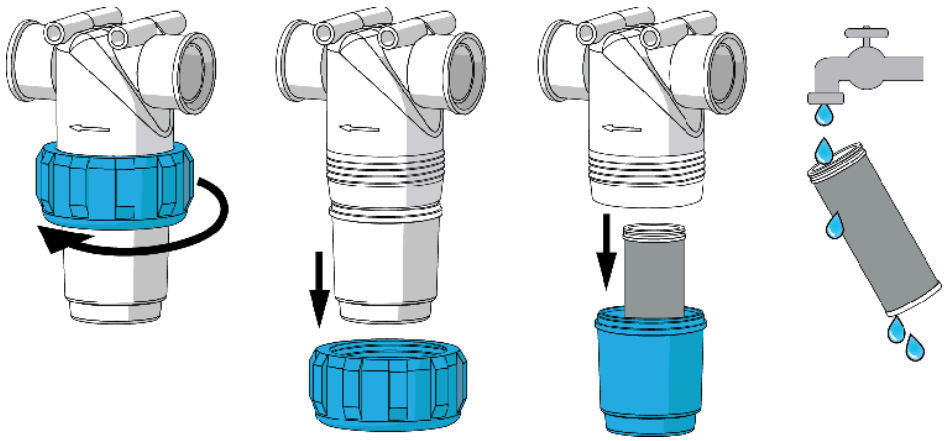
6.4 CLEAN THE HPW-DUST SYSTEM

WARNING

Keep the HPW-DUST system clean to enable its safe and longlife operation. Check and clean your HPW-DUST system after every work shift.

6.5 CLEAN WATER FILTER

Check and clean water filter weekly.



Picture 36: Clean water filter

Remove the water filter. Wash the filter under clean water to remove all soil and dirt from it. Renew the filter if necessary.

6.6 TROUBLESHOOTING

Performing the maintenance tasks requires a qualified hydraulic mechanic. Please, contact DYNASET authorized workshop or dealer for more maintenance information.

FAILURE	REASON	CORRECTIVE ACTION
HPW-DUST system does not work.	Hydraulic flow is not sufficient or no hydraulic flow at all.	Enable or adjust the hydraulic flow.
	Hydraulic pressure is too low.	Adjust the hydraulic pressure.
	Hydraulic flow reversed.	Check and reconnect hydraulic hoses. Pressure hose must be connected to P-port and return hose to T-port.

FAILURE	REASON	CORRECTIVE ACTION
HPW-DUST system does not deliver water	No water in tanks.	Check and fill the water tank.
	Intake hose detached or hose breathes.	Check and fix the hose and connectors.
	Water supply line is clogged.	Check the water filter and clean thoroughly.
	Nozzle is clogged	Check and clean the nozzle filter.

Troubleshooting for HPW pump is in the HPW User Manual.

Troubleshootings for EPW pumps are in the EPW User Manuals.

6.6.1 EPW-DUST AC

FAILURE	REASON	CORRECTIVE ACTION
Pressure gauge fluctuates.	Valves are worn out, or blocked.	Clean the valves or replace them.
	Seal is worn.	Replace the seal.
	Temperature of the pumped fluid is too high.	Decrease the temperature of the pumped fluid.
Water leakages from the bottom of the pump	Piston seal is worn.	Replace the piston seal.
Water leakages from the head	Head o-ring is worn.	Replace the o-ring.
Oil leakages from the bottom of the pump	Oil seals are worn.	Replace the oil seals.
There is too much pressure when the gun is closed.	There is a leakage in the unloader valve and an incorrect setting.	Adjust the unloader valve and set a new pressure level.
The electric motor does not start.	The power supply is incorrect.	Make sure that the power supply and the load factor correspond to the values indicated on the motor's data plate.
	Electrical connection between the motor and the power supply line is damaged.	Make sure that the connection corresponds to the wiring diagram.
	Rotor bearings are damaged.	Replace the bearings.
The electric motor overheats.	Ventilation for the motor is not sufficient.	Make sure that the air flow is not obstructed.
	The electric motor is overloaded.	Reduce the load.

FAILURE	REASON	CORRECTIVE ACTION
EPW does not reach the specified pressures.	Intake flow rate is not sufficient.	Increase the sizes of the intake lines. Make sure that there are no kinks in the lines. Increase the filter capacity or clean the filter cartridge. Increase the rpm to the rated speed.
	The pump takes in air.	Restore the seal on the intake line.
	The delivery valves and intake valves are worn.	Replace the valves.
	The pressure regulating valve is damaged.	Replace the pressure regulating valve.
	The pressure regulating valve is adjusted incorrectly.	Adjust it correctly.
	Gaskets are worn.	Replace the gaskets.
	Nozzles are worn or not suitable for the EPW.	Replace the nozzles.
	Valve seat is worn out.	Replace the valve seat.
	Safety valve seat is worn.	Replace the valve
There are irregular variations in pressure	The delivery valves and intake valves are worn.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Air is sucked into the system.	Restore the seal of the intake line connections.
	Gaskets are worn	Replace the gaskets.
There are vibrations on lines	Valves are jammed.	Replace the valves.
	There is a malfunction in the safety valve.	Replace the safety valve.
	There is a malfunction in the pressure regulating valve.	Replace the pressure regulating valve.
	The safety valve dump line is too small.	Increase the size of the safety valve dump line.

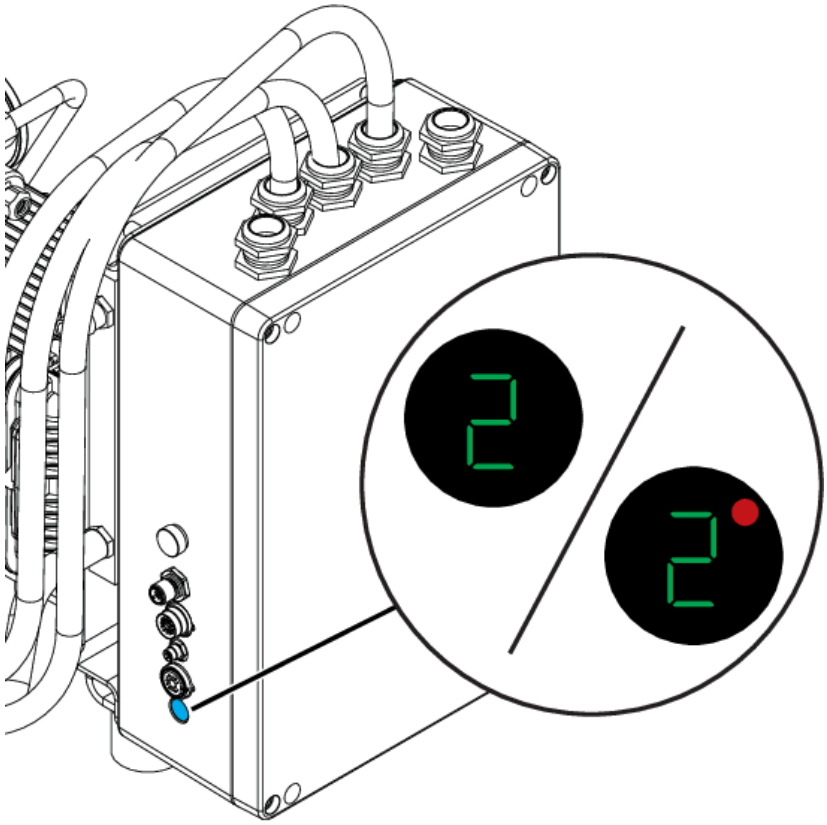
FAILURE	REASON	CORRECTIVE ACTION
	The pump takes in air.	Restore the seal on the intake line.
Pressure decreases	Nozzle is worn.	Replace the nozzle.
	The delivery valves or intake valves are worn.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Safety valve seat is worn.	Replace the valve.
	Gaskets are worn.	Replace the gaskets.
The pump makes noise	The pump takes in air.	Restore the seal of the intake line connections. Check suction manifold.
	Intake valve springs or delivery valve springs are broken or collapsed.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Bearings are worn.	Replace the bearings.
	Temperature of the intake fluid is too high	Reduce the fluid temperature.
The pump is overheating	The operating pressure of the pump is too high.	Decrease the pressure.
There is water in the oil	Guide piston oil gaskets are worn.	Replace the gaskets.
	Humidity percent in the air is high.	Change the oil twice as often.
	Gaskets are worn.	Replace the gaskets.
Fluid leaks from the drain lines that are located underneath the pump	Gaskets are worn.	Replace the gaskets.
	Pistons are worn.	Replace the pistons.
Oil leaks from the drain lines underneath the pump	Guide piston oil gaskets are worn.	Replace the gaskets.

6.6.2 EPW-DUST DC

EPW is provided with display that shows warnings and error codes that are listed below. There is also a troubleshooting section after the listings. If the troubleshooting doesn't provide solutions, contact Dynaset support.

When there is only a number on the display, it shows the warning code

When there is a number with the red LED on the display, it shows the error code.



Picture 37: Connection Box: Display

NOTE!

If you don't find description to your problem or solution to the problem in the troubleshoot section, contact Dynaset support.

WARNING CODES



Picture 38: Status Information: warning

CODE	FAILURE	CORRECTIVE ACTION
0	Communication error	Contact Dynaset Aftersales.
1	No RUN Signal	Check Cables from the control unit. If cables are broken or worn, replace them. Otherwise, contact Dynaset Aftersales.
2	RFE signal missing	Check Cables from the control unit. If cables are broken or worn, replace them. Otherwise, contact Dynaset Aftersales.
6	Motor temperature too high	Let the unit run on idle until the warning disappears. Ensure the cooling is appropriate.
7	Controller temperature too high	Let the unit run on idle until the warning disappears. Ensure the cooling is appropriate.
8	Controller voltage output too high	Contact Dynaset Aftersales
9	Overcurrent	Unit draws over current due to ambient temperatures being too low for the compressor oils. Use proper synthetic compressor oils.
A	Overspeed	Contact Dynaset Aftersales

ERROR CODES



Picture 39: Status information: error

CODE	FAILURE	CORRECTIVE ACTION
0	Parameter error	Contact Dynaset Aftersales
1	Hardware error	Contact Dynaset Aftersales
2	Safety circuit faulty	Check safety circuit if any switches have activated and rectify. Check Cables from the control unit. If cables are broken or worn, replace them. If problem re-occurs contact Dynaset Aftersales.
3	CAN error	Contact Dynaset Aftersales
4	Encoder signal error	Contact Dynaset Aftersales
5	No supply voltage	Check input and cables to the control unit. If cables are broken or worn, replace them. Otherwise, contact Dynaset Aftersales.
6	Motor temperature too high	Let the unit run on idle until the error disappears. If unit stops completely, wait for it to cooldown before starting it again. Ensure the cooling is appropriate.
7	Controller temperature too high	Let the unit run on idle until the error disappears. If unit stops completely, wait for it to cooldown before starting it again. Ensure the cooling is appropriate.
8	Controller voltage output too high	Contact Dynaset Aftersales
9	Overcurrent	Unit draws over current due to ambient temperatures being too low for the compressor oils.
B	Internal error	Contact Dynaset Aftersales
E	Measurement error / current	Contact Dynaset Aftersales

TROUBLESHOOT

FAILURE	REASON	CORRECTIVE ACTION
Pressure gauge fluctuates.	Valves are worn out, or blocked.	Clean the valves or replace them.
	Seal is worn.	Replace the seal.
	Temperature of the pumped fluid is too high.	Decrease the temperature of the pumped fluid.
Water leakages from the bottom of the pump	Piston seal is worn.	Replace the piston seal.
Water leakages from the head	Head o-ring is worn.	Replace the o-ring.
Oil leakages from the bottom of the pump	Oil seals are worn.	Replace the oil seals.
There is too much pressure when the gun is closed.	There is a leakage in the unloader valve and an incorrect setting.	Adjust the unloader valve and set a new pressure level.
The electric motor does not start.	The power supply is incorrect.	Make sure that the power supply and the load factor correspond to the values indicated on the motor's data plate.
	Electrical connection between the motor and the power supply line is damaged.	Make sure that the connection corresponds to the wiring diagram.
	Rotor bearings are damaged.	Replace the bearings.
The electric motor overheats.	Ventilation for the motor is not sufficient.	Make sure that the air flow is not obstructed.
	The electric motor is overloaded.	Reduce the load.

FAILURE	REASON	CORRECTIVE ACTION
EPW does not reach the specified pressures.	Intake flow rate is not sufficient.	Increase the sizes of the intake lines. Make sure that there are no kinks in the lines. Increase the filter capacity or clean the filter cartridge. Increase the rpm to the rated speed.
	The pump takes in air.	Restore the seal on the intake line.
	The delivery valves and intake valves are worn.	Replace the valves.
	The pressure regulating valve is damaged.	Replace the pressure regulating valve.
	The pressure regulating valve is adjusted incorrectly.	Adjust it correctly.
	Gaskets are worn.	Replace the gaskets.
	Nozzles are worn or not suitable for the EPW.	Replace the nozzles.
	Valve seat is worn out.	Replace the valve seat.
	Safety valve seat is worn.	Replace the valve
There are irregular variations in pressure	The delivery valves and intake valves are worn.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Air is sucked into the system.	Restore the seal of the intake line connections.
	Gaskets are worn	Replace the gaskets.
There are vibrations on lines	Valves are jammed.	Replace the valves.
	There is a malfunction in the safety valve.	Replace the safety valve.
	There is a malfunction in the pressure regulating valve.	Replace the pressure regulating valve.
	The safety valve dump line is too small.	Increase the size of the safety valve dump line.

FAILURE	REASON	CORRECTIVE ACTION
	The pump takes in air.	Restore the seal on the intake line.
Pressure decreases	Nozzle is worn.	Replace the nozzle.
	The delivery valves or intake valves are worn.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Safety valve seat is worn.	Replace the valve.
	Gaskets are worn.	Replace the gaskets.
The pump makes noise	The pump takes in air.	Restore the seal of the intake line connections. Check suction manifold.
	Intake valve springs or delivery valve springs are broken or collapsed.	Replace the valves.
	Valves are blocked by e.g. dirt.	Clean the valves.
	Bearings are worn.	Replace the bearings.
	Temperature of the intake fluid is too high	Reduce the fluid temperature.
The pump is overheating	The operating pressure of the pump is too high.	Decrease the pressure.
There is water in the oil	Guide piston oil gaskets are worn.	Replace the gaskets.
	Humidity percent in the air is high.	Change the oil twice as often.
	Gaskets are worn.	Replace the gaskets.
Fluid leaks from the drain lines that are located underneath the pump	Gaskets are worn.	Replace the gaskets.
	Pistons are worn.	Replace the pistons.
Oil leaks from the drain lines underneath the pump	Guide piston oil gaskets are worn.	Replace the gaskets.

7. MANUFACTURER'S LIMITED WARRANTY

7.1 WARRANTY COVERAGE

All accessories manufactured by DYNASET OY are subject to the terms and conditions of this limited warranty. Products are warranted to the original purchaser to be free from defects in materials or workmanship. Exclusions from warranty are explained in item Exclusions from warranty.

7.2 BEGINNING OF WARRANTY PERIOD

Warranty period begins from the delivery date of the product. Delivery is considered to be done on the date when installation has been accomplished or purchaser has taken the product in use. Product is considered as taken in use at the date when DYNASET OY has delivered the product to purchaser, unless separately agreed otherwise by written agreement.

7.3 WARRANTY PERIOD

Warranty period is twenty-four (24) months based on maximum of 2000 hours usage during this time period. In cases where the system is provided complete with certain special components (e.g. drive unit), those components are considered as a subject to their manufacturer's warranty.

7.4 WARRANTY PROCEDURES

Immediately upon identifying a problem which purchaser believes to be a failure subject to the product's limited warranty, purchaser must contact primary to the seller of the product. Contact must be made as soon as possible, the latest thirty (30) days after the problem was identified. Seller and/or manufacturer technical staff determines the nature of the problem primarily by phone or e-mail. Purchaser commits to give necessary information and to perform routine diagnostic procedures in order to determine the nature of the problem and necessary procedures.

7.5 WARRANTY REPAIRS

If the product is found to be defective during the warranty period, DYNASET OY will, at its option, either repair the product, author it to be repaired at its authorized workshop or exchange the defective product. If the product must be repaired elsewhere than premises of DYNASET OY or authorized workshop, all costs excluded from this warranty (travelling and waiting hours, daily allowance, travelling expenses and uninstallation/ reinstallation costs) will be charged from the purchaser. If the problem is not covered by this limited warranty, DYNASET OY has the right to charge purchaser of troubleshooting and repairing.

7.6 DELIVERY TERMS OF WARRANTY REPAIR

If the product is found possible to be defective under this limited warranty, and it needs to be repaired, DYNASET OY gives Warranty Return Number (WRN). Items being returned must be shipped, at the purchaser's cost, adequately packed for shipment, to the DYNASET OY or to other location authored by DYNASET OY.

Shipment documents must contain:

- Purchaser's name and contact information
- Receipt of original purchase
- WRN code
- Problem description

7.7 WARRANTY OF REPAIRED PRODUCT

Warranty period of the product repaired under this limited warranty continues to the end of original warranty period.

7.8 EXCLUSIONS FROM WARRANTY

This warranty shall not apply to:

- Failures due to normal wear and tear, improper installation, misuse, abuse, negligence, purchaser selection of improper product to intended use, accident, improper filtration of hydraulic oil or intake water or lack of maintenance.
- Cost of maintenance, adjustments, installation or startup.
- Coating, hydraulic oil, quick couplings and interconnection hoses (internal or external to system assemblies).
- Products altered or modified in a manner not authorized by DYNASET OY in writing.
- Products which have been repaired during warranty period by others than DYNASET OY or its authorized workshop.
- Costs of any other damage or loss, whether direct, indirect, incidental, special or consequential, arising out of the use of, or the inability to use, the product.
- Telephone or other communications expense.
- Product that is used in exceptional conditions, considered to cause excessive wear and tear.
- Faults caused by nature phenomenon like flood, thunder, etc.

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8. DYNASET PRODUCT AND ENVIRONMENT

8.1 GENERAL INFORMATION

This chapter contains an environmental impact assessment for DYNASET hydraulic and electrical products. The assessment considers the recyclability of the products, the reuse of materials, as well as possible environmental impacts.

8.1.1 ENVIRONMENTAL DESIGN

Material Selection and Composition:

DYNASET takes great care in minimizing the environmental impact of both hydraulic and electrical products throughout their lifecycle, from design and material selection to manufacturing and end-of-life management. This commitment is reflected in several key areas:

- **Environmentally Friendly Materials:** We prioritize the use of environmentally friendly materials and substances in both hydraulic and electrical product lines. This includes exploring and implementing alternatives to hazardous materials wherever feasible. For hydraulic systems, this may involve investigating and recommending the use of bio-based or readily biodegradable hydraulic fluids. For electrical products, this means carefully selecting components with minimal environmental impact.
- **Compliance with Regulations:** All products, both hydraulic and electrical, are designed and manufactured to comply with relevant environmental regulations, including RoHS (Restriction of Hazardous Substances), REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and other applicable international and local regulations. We maintain up-to-date knowledge of regulatory changes and proactively adapt our processes and materials to ensure ongoing compliance.
- **Recyclability and Reusability:** We consider material recyclability and reusability as a key factor in material selection. Designs are optimized to facilitate disassembly and separation of materials for efficient recycling streams. For hydraulic products, this includes using readily recyclable metals in the construction of housings and components. For electrical products, this involves selecting components with known recycling pathways and minimizing the use of composite materials that can be difficult to recycle. We strive to use materials that can be easily recovered and reused or recycled at the end of the product's life.

Energy Efficiency:

Beyond material selection and composition, the manufacturer also prioritizes energy efficiency in the design and manufacturing of both hydraulic and electrical products to minimize their operational environmental impact. This focus is implemented through the following strategies:

- **Design for Energy Efficiency:** For both hydraulic and electrical product lines, we strive to minimize power consumption during manufacturing and in their use. This involves careful component selection, optimized system design, and the integration of energy-saving technologies. For exmple in our manufacturing we recycle the water used in test processes and use automated test processes to minimize human error and maximize efficiency. Also our manufacturing facilities are partly powered by renewable energysources.
- **Optimization of Hydraulic Components and Systems:** For hydraulic products, we employ advanced engineering techniques to optimize the performance of components such as pumps, valves, and actuators. This includes minimizing friction losses, optimizing flow characteristics, and employing efficient hydraulic circuits. We also consider the overall system design to reduce energy losses and improve efficiency. This may involve incorporating features like load-sensing hydraulics or regenerative braking systems where appropriate.
- **Integration of Energy-Saving Technologies:** Both hydraulic and electrical products benefit from the integration of energy-saving technologies. For electrical products, this may involve using highly efficient electronic components, implementing power management systems, and incorporating features like automatic shut-off functions. For hydraulic systems, this could include the use of variable displacement pumps, electro-hydraulic servo valves for precise control, or the implementation of hybrid power systems that combine hydraulic power with electric drives. We continuously explore and evaluate new technologies that can further improve the energy efficiency of our products.

8.1.2 PACKAGING AND TRANSPORTATION

Beyond material selection, energy efficiency, and regulatory compliance, DYNASET also prioritizes minimizing the environmental impact of product packaging. This commitment is demonstrated through the following practices:

- **Recyclable and Reusable Packaging Materials:** We are committed to using recyclable and reusable packaging materials whenever possible for our products. This includes exploring alternatives to traditional packaging materials, such as using recycled cardboard, biodegradable packing peanuts, and reusable containers. We prioritize materials that can be easily recycled through existing infrastructure. Where reusable packaging is feasible, we encourage its return and reuse through partnerships or incentives.

- **Optimization of Packaging Size and Weight:** We continuously optimize packaging size and weight to minimize material usage and reduce transportation impacts. This involves careful consideration of product dimensions and fragility to design packaging that provides adequate protection while minimizing waste. The focus on packaging optimization not only reduces material consumption but also contributes to lower shipping costs and reduced fuel consumption during transportation. We strive to balance product protection with minimal environmental impact.

8.1.3 END-OF-LIFE MANAGEMENT

Beyond material selection, energy efficiency, packaging, and regulatory compliance, DYNASET prioritizes responsible end-of-life management for its products, including disposal, recycling, reuse, and refurbishment. This commitment is reflected in the following practices:

Disposal and Recycling:

- **Information on Proper Disposal and Recycling:** We provide information to end-users on proper disposal and recycling methods for both hydraulic and electrical products. This information is typically included in in this manual and on our website. We strive to make it easy for customers to understand how to handle end-of-life products responsibly.
- **Compliance with Waste Management Regulations:** We request users to follow and adhere to all relevant waste management regulations concerning the disposal and recycling of our products. This includes compliance with local, national, and international regulations regarding hazardous waste disposal and electronic waste recycling.

Reuse and Refurbishment:

- **Encouragement of Reuse and Refurbishment:** We actively encourage reuse and refurbishment options to extend the lifespan of our products. This includes designing products for durability and ease of repair, as well as promoting the benefits of refurbishment over replacement.
- **Support for Repair and Maintenance Services:** We support repair and maintenance services to facilitate product longevity. This includes providing spare parts, offering repair training, and also establishing authorized service centers. We strive to make it easy for customers to access repair services and keep their products functioning optimally for as long as possible. We believe that extending product life through reuse and refurbishment is a key component of minimizing environmental impact.

8.1.4 HYDRAULIC PRODUCTS

Hydraulic products mainly consist of metal components, which are generally highly recyclable. However, the oils and other fluids used in the manufacture of products can cause environmental harm if they leak. The fluids of decommissioned hydraulic products must always be handled properly so that they do not end up in nature.

The life cycle of hydraulic products can be long if they are properly maintained. The environmental impact of the products depends mainly on their use and possible leaks.

8.1.5 ELECTRICAL PRODUCTS

Electrical products contain electronics, which may contain harmful substances such as heavy metals. Recycling products is important so that these substances do not end up in the environment. Electrical products should always be delivered to an appropriate recycling point.

The life cycle of electrical products is usually shorter than that of hydraulic products. The environmental impact of the products depends on their manufacture, use and recycling.

8.1.6 PRODUCTS CONTAINING BATTERIES

Products containing batteries and other energy sources may contain substances harmful to the environment, such as heavy metals and acids. Recycling these products is particularly important so that they do not cause environmental damage. Batteries and other energy sources should always be removed from the products and delivered to a separate recycling point.

The life cycle of products containing batteries and other energy sources can be short, especially if the batteries are not properly maintained and charged. The environmental impact of the products depends on their manufacture, use and recycling.

9. DECLARATION OF CONFORMITY

We hereby declare that the design and manufacture of the product stated below are in conformity with the provisions of the European Parliament and Councils on the harmonization of the laws of Member States on the safety of machines.

Machine directive 2006/42/EC

LVD directive 2014/35/EU

EMC directive 2014/30/EU

RoHS directive 2015/863

Applied conformity standards:

EN ISO 4413:2010 Hydraulic fluid power - General rules and safety requirements for systems and their components.

EN60204-1:2018 Safety of machinery – Electrical equipment of machines.

Manufacturer:	DYNASET Oy Menotie 3, FI-33470 Ylöjärvi, Finland
Product group:	HIGH PRESSURE DUST SUPPRESSION SYSTEMS
Product:	High Pressure Dust Suppression Systems

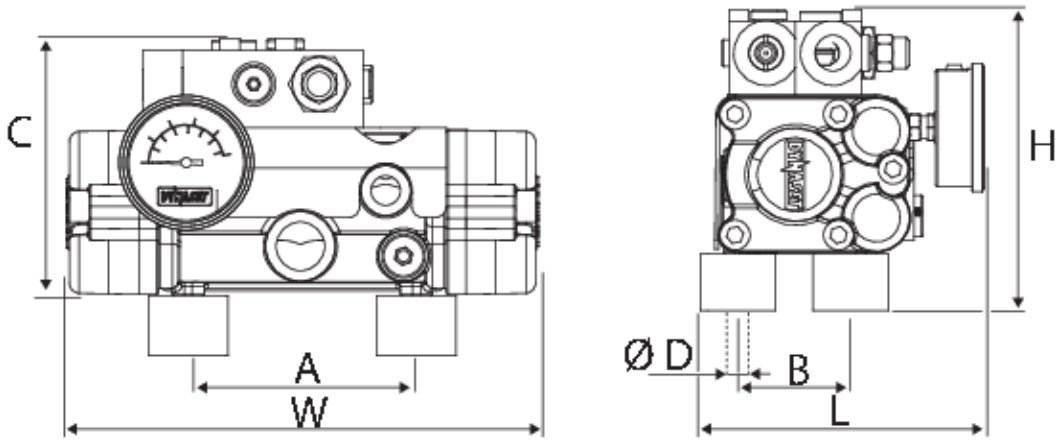
If the device has been modified by someone other than the manufacturer or without the manufacturer's permission, this declaration is not valid.



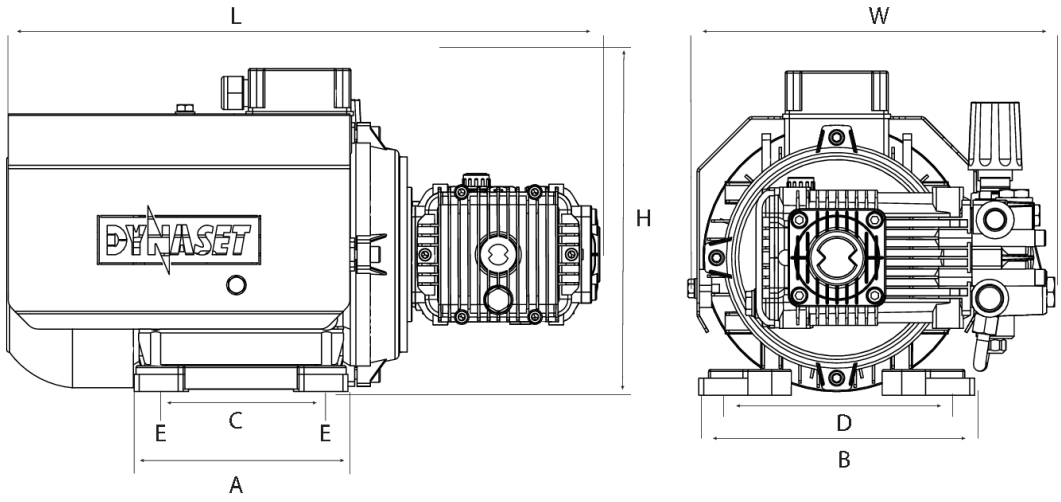
Pasi Yli-Kätkä
R&D Director
Menotie 3, 33470
Ylöjärvi, Finland 02.01.2025

10. TECHNICAL SPECIFICATIONS

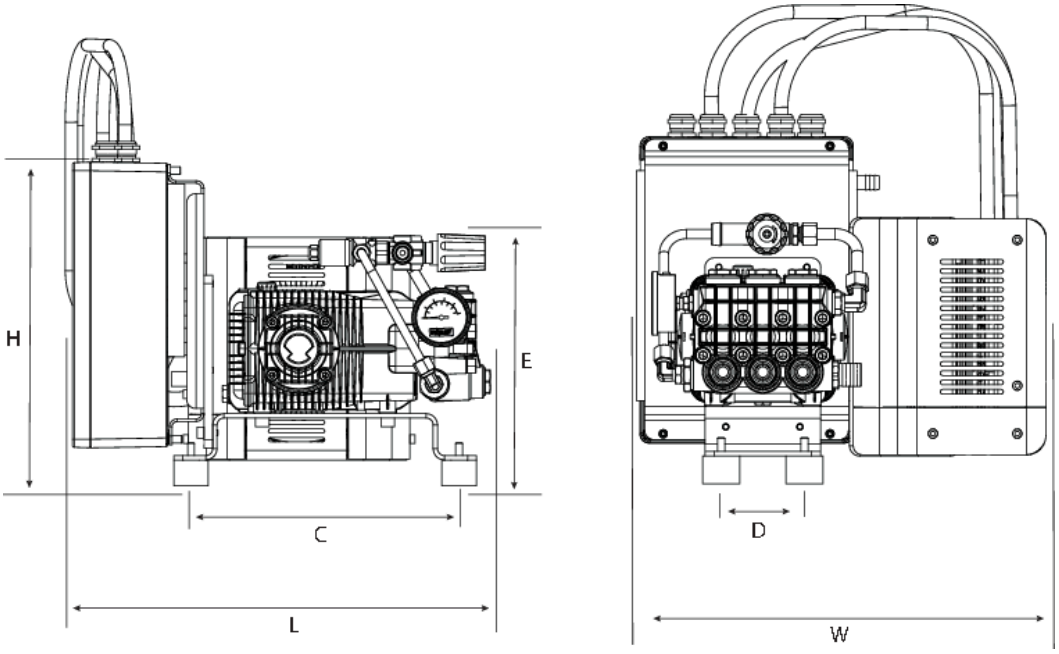
10.1 DIMENSIONS



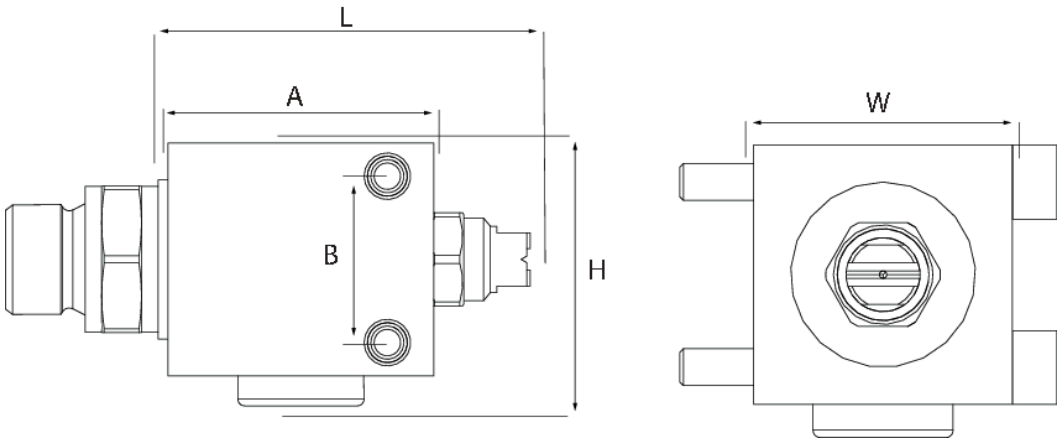
Picture 40: HPW-DUST



Picture 41: EPW-DUST AC



Picture 42: EPW-DUST DC

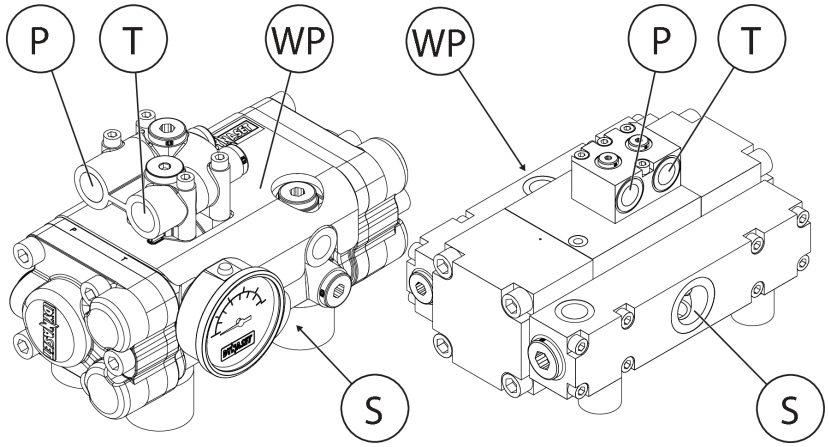


Picture 43: Fastening Block

Model	Dimensions, mm (in)								Weight
	L	W	H	A	B	C	D	E	kg (lbs)
HPW-DUST 250 Dust For Crusher - One Conveyor	167 (6.6)	238 (9.4)	160 (6.3)	115 (4.5)	60 (2.4)	129 (5.1)	8 (0.3)	( )	11 (24)
HPW-DUST 220 Dust For Crusher - Two Conveyors	151 (5.9)	280 (11.0)	224 (8.8)	126 (5.0)	106 (4.2)	194 (7.6)	8 (0.3)	( )	18 (40)
HPW-DUST 220 Dust For Crusher - Three Conveyors	151 (5.9)	280 (11.0)	224 (8.8)	126 (5.0)	106 (4.2)	194 (7.6)	8 (0.3)	( )	18 (40)
HPW-DUST 250 Dust For Excavator	167 (6.6)	238 (9.4)	160 (6.3)	115 (4.5)	60 (2.4)	129 (5.1)	8 (0.3)	( )	11 (24)
HPW-DUST 250 Dust For Excavator - Double Dust	167 (6.6)	238 (9.4)	160 (6.3)	115 (4.5)	60 (2.4)	129 (5.1)	8 (0.3)	( )	11 (24)
HPW-DUST 220 Dust for Excavator - Double Dust	151 (5.9)	280 (11.0)	224 (8.8)	126 (5.0)	106 (4.2)	194 (7.6)	8 (0.3)	( )	18 (40)
HPW-DUST 90Dust for Excavator	175 (6.9)	345 (13.6)	250 (9.8)	252 (9.9)	95 (3.7)	250 (9.8)	10 (0.4)	( )	31 (68)
HPW-DUST 90Dust for Excavator - Double Dust	175 (6.9)	345 (13.6)	250 (9.8)	252 (9.9)	95 (3.7)	250 (9.8)	10 (0.4)	( )	31 (68)
HPW-DUST 160 Dust for Sweeper	210 (8.3)	100 (3.9)	110 (4.3)	74 (2.9)	64 (2.5)	100 (3.9)	6 (0.2)	( )	6.2 (14)
EPW-DUST AC 150-15 For Crusher - One Conveyor	535 (21.1)	313 (12.3)	264 (10.4)	175 (6.9)	225 (8.9)	190 (7.5)	140 (5.5)	11 (0.4)	38 (84)
EPW-DUST DC 200-30 For Crusher - One Conveyor	492 (19.4)	442 (17.4)	373 (14.7)	( )	( )	310 (12.2)	90 (3.5)	287 (11.3)	57 (126)
EPW-DUST DC 200-50 For Crusher - Two Conveyors	507 (20.0)	458 (18.0)	373 (14.7)	( )	( )	310 (12.2)	90 (3.5)	287 (11.3)	59 (130)
Fastening Block	56 (2.2)	35 (1.4)	40 (1.6)	40 (1.6)	25 (1.0)	( )	( )	( )	( )

10.2 CONNECTIONS

HPW-DUST

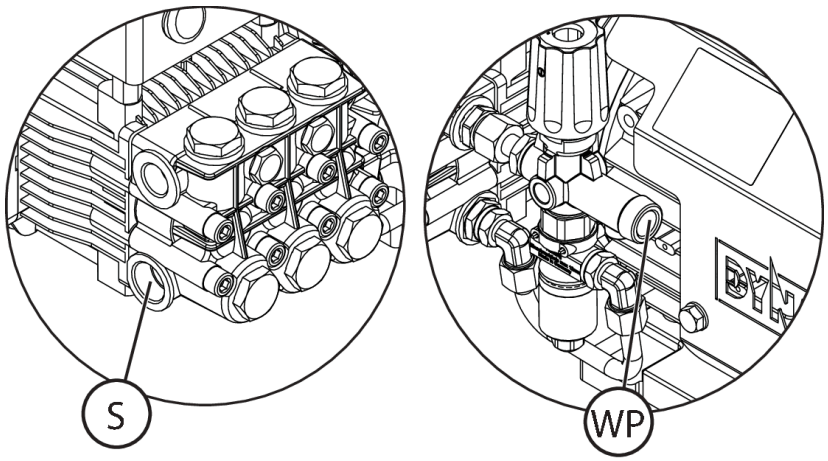


Picture 44: HPW-DUST

Model	Hydraulic Connections		Electric Connections
	P, Pressure line (female)	T, Return line (male)	Electric connector (solenoid valve)
HPW-DUST 250 Dust For Crusher - One Conveyor	BSPP 1/2	BSPP 1/2	DIN 43650-A
HPW-DUST 220 Dust For Crusher - Two Conveyors	BSPP 3/4	BSPP 3/4	DIN 43650-A
HPW-DUST 220 Dust For Crusher - Three Conveyors	BSPP 3/4	BSPP 3/4	DIN 43650-A
HPW-DUST 250 Dust For Excavator	BSPP 1/2	BSPP 1/2	DIN 43650-A
HPW-DUST 250 Dust For Excavator - Double Dust	BSPP 1/2	BSPP 1/2	DIN 43650-A
HPW-DUST 220 Dust for Excavator - Double Dust	BSPP 3/4	BSPP 3/4	DIN 43650-A
HPW-DUST 90Dust for Excavator	BSPP 3/4	BSPP 3/4	DIN 43650-A
HPW-DUST 90Dust for Excavator - Double Dust	BSPP 3/4	BSPP 3/4	DIN 43650-A
HPW-DUST 160 Dust for Sweeper	BSPP 3/8	BSPP 3/8	DIN 43650-A

Model	Water Connections	
	Water Output, WP	Water Input, S
HPW-DUST 250 Dust For Crusher - One Conveyor	BSPP 3/8	BSPP3/4
HPW-DUST 220 Dust For Crusher - Two Conveyors	BSPP 1/2	BSPP 1
HPW-DUST 220 Dust For Crusher - Three Conveyors	BSPP 1/2	BSPP 1
HPW-DUST 250 Dust For Excavator	BSPP 3/8	BSPP3/4
HPW-DUST 250 Dust For Excavator - Double Dust	BSPP 3/8	BSPP3/4
HPW-DUST 220 Dust for Excavator - Double Dust	BSPP 1/2	BSPP 1
HPW-DUST 90Dust for Excavator	BSPP 1	BSPP 2
HPW-DUST 90Dust for Excavator - Double Dust	BSPP 1	BSPP 2
HPW-DUST 160 Dust for Sweeper	BSPP 3/8	BSPP3/4

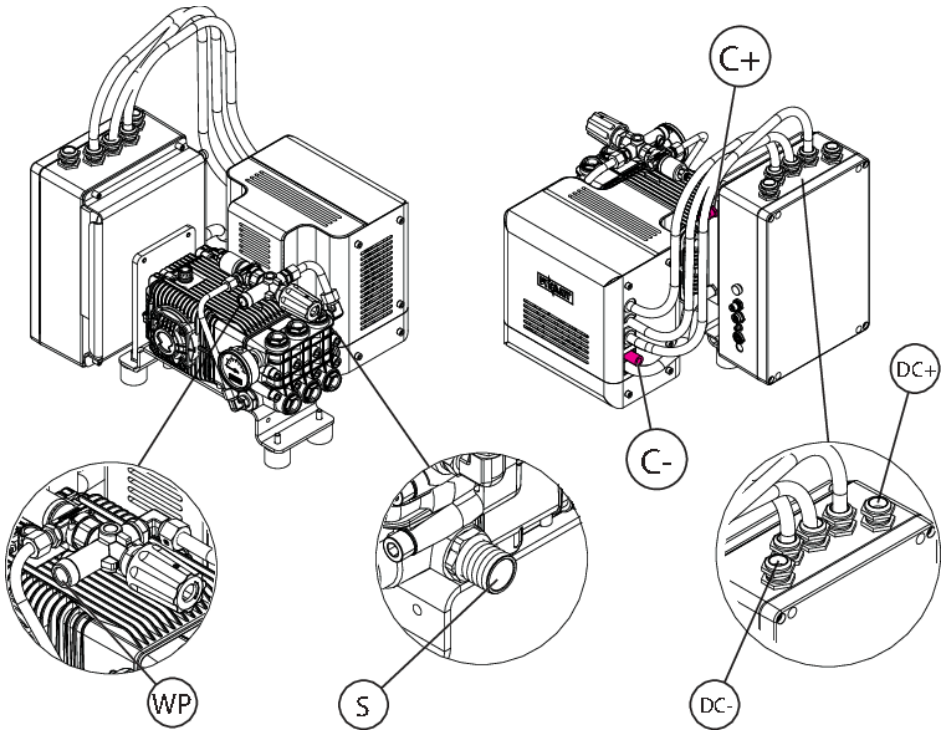
EPW-DUST AC



Picture 45: EPW-DUST AC

Model	Water Connections	
	Water Output, WP	Water Input, S
EPW-DUST AC 150-15 For Crusher - One Conveyor	BSPP 3/8	BSPP 1/2

EPW-DUST DC



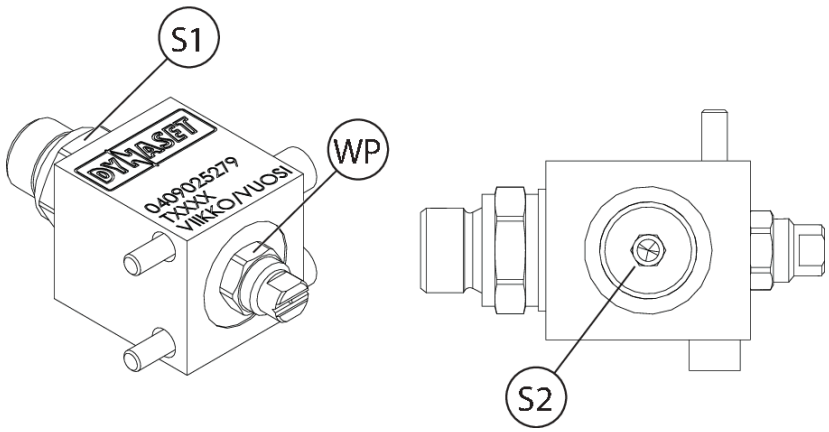
Picture 46: EPW-DUST DC

Model	Water Connections	
	Water Output, WP	Water Input, S
EPW-DUST DC 200-30 For Crusher - One Conveyor	BSPP 3/8	BSPP3/4
EPW-DUST DC 200-50 For Crusher - Two Conveyors	BSPP 3/8	BSPP 3/4

Model	Electric Connections					
	Supply Voltage, DC +/-	Wire size, DC, mm^2	1	2	3	4
EPW-DUST DC 200-30 For Crusher - One Conveyor	M10	25	Option	Main Interface	Dynaset Harness	Display
EPW-DUST DC 200-50 For Crusher - Two Conveyors	M10	25	Option	Main Interface	Dynaset Harness	Display

Model	Coolant Connections		Coolant Hose Size	
	Coolant In, C+ , mm (in)	Coolant Out, C- , mm (in)	Coolant In, C+ , mm (in)	Coolant Out, C- , mm (in)
EPW-DUST DC 200-30 For Crusher - One Conveyor	BSPP 1/4	BSPP 1/4	Ø 10 (0.4)	Ø 10 (0.4)
EPW-DUST DC 200-50 For Crusher - Two Conveyors	BSPP 1/4	BSPP 1/4	Ø 10 (0.4)	Ø 10 (0.4)

FASTENING BLOCK



Picture 47: Fastening Block

Model	Water Connections		
	Water Output, WP	Water Input, S1	Side Port, S2
Fastening Block	BSPP 1/4	BSPP 3/8	BSPP 1/4

10.3 TECHNICAL SPECIFICATIONS

HPW-DUST

		HPW-DUST 250 Dust For Crusher - One Conveyor	HPW-DUST 220 Dust For Crusher - Two Conveyors	HPW-DUST 220 Dust For Crusher - Three Conveyors
WATER POWER				
Basic flow @ recommended pressure	**l/min (gpm)**	26.6 (7.03)	34.6 (9.14)	42.6 (11.25)
High Power flow @ recommended pressure	**l/min (gpm)**	( )	( )	( )
Pressure recommended	**bar (psi)**	140 (2'031)	140 (2'031)	140 (2'031)
Pressure max	**bar (psi)**	250 (3'626)	220 (3'191)	220 (3'191)
Pump max. flow	**l/min (gpm)**	30 (7.93)	50 (13.21)	50 (13.21)
Nozzles (basic)	**pcs**	4	5	6
High power nozzles	**pcs**	-	-	-
WATER INTAKE REQUIREMENTS				
Recommended suction hose size	**in**	3/4	1	1
Suction filter flow min	**l/min (gpm)**	50 (13.21)	80 (21.14)	80 (21.14)
Recommended filter mesh	**mesh**	25	25	25
Suction head max	**m (ft)**	m (ft)	m (ft)	m (ft)
Feed pressure	**bar (psi)**	-3 (-44) - 16 (232)	-0.3 (-4) - 16 (232)	-0.3 (-4) - 16 (232)
HYDRAULIC POWER REQUIREMENTS				
Flow max.	**l/min (gpm)**	40 (10.57)	70 (18.49)	70 (18.49)
Pressure max.	**bar (psi)**	210 (3'046)	210 (3'046)	210 (3'046)
HYDRAULIC FLUID REQUIREMENTS				
Viscosity	**cSt**	10 200 / optimum 25 35	10 200 / optimum 25 35	10 200 / optimum 25 35
Temperature max.	**°C(°F)**	70 (158)	70 (158)	70 (158)
Filter ratio	**µm**	25	25	25
Cooling capacity requirement	**kW**	2.5	3	3

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		HPW-DUST 250 Dust For Excavator	HPW-DUST 250 Dust For Excavator - Double Dust	HPW-DUST 220 Dust for Excavator - Double Dust
WATER POWER				
Basic flow @ recommended pressure	**l/min (gpm)**	21.2 (5.60)	10.6 (2.80)	21.2 (5.60)
High Power flow @ recommended pressure	**l/min (gpm)**	( )	21.2 (5.60)	42.4 (11.20)
Pressure recommended	**bar (psi)**	140 (2'031)	140 (2'031)	140 (2'031)
Pressure max	**bar (psi)**	250 (3'626)	250 (3'626)	220 (3'191)
Pump max. flow	**l/min (gpm)**	30 (7.93)	30 (7.93)	50 (13.21)
Nozzles (basic)	**pcs**	4	2	2
High power nozzles	**pcs**	-	2	2
WATER INTAKE REQUIREMENTS				
Recommended suction hose size	**in**	3/4	3/4	1
Suction filter flow min	**l/min (gpm)**	50 (13.21)	50 (13.21)	80 (21.14)
Recommended filter mesh	**mesh**	25	25	25
Suction head max	**m (ft)**	m (ft)	m (ft)	m (ft)
Feed pressure	**bar (psi)**	-0.3 (-4) - 16 (232)	-0.3 (-4) - 16 (232)	-0.3 (-4) - 16 (232)
HYDRAULIC POWER REQUIREMENTS				
Flow max.	**l/min (gpm)**	40 (10.57)	40 (10.57)	70 (18.49)
Pressure max.	**bar (psi)**	210 (3'046)	210 (3'046)	210 (3'046)
HYDRAULIC FLUID REQUIREMENTS				
Viscosity	**cSt**	10 200 / optimum 25 35	10 200 / optimum 25 35	10 200 / optimum 25 35
Temperature max.	**°C(°F)**	70 (158)	70 (158)	70 (158)
Filter ratio	**µm**	25	25	25
Cooling capacity requirement	**kW**	3	2.5	3

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		HPW-DUST 90Dust for Excavator	HPW-DUST 90Dust for Excavator - Double Dust	HPW-DUST 160 Dust for Sweeper
WATER POWER				
Basic flow @ recommended pressure	**l/min (gpm)**	85 (22.46)	42.5 (11.23)	11.9 (3.14)
High Power flow @ recommended pressure	**l/min (gpm)**	( )	85 (22.46)	( )
Pressure recommended	**bar (psi)**	90 (1'305)	90 (1'305)	140 (2'031)
Pressure max	**bar (psi)**	90 (1'305)	90 (1'305)	160 (2'321)
Pump max. flow	**l/min (gpm)**	150 (39.63)	150 (39.63)	18 (4.76)
Nozzles (basic)	**pcs**	4	2	9
High power nozzles	**pcs**	-	2	-
WATER INTAKE REQUIREMENTS				
Recommended suction hose size	**in**	1	1	1/2
Suction filter flow min	**l/min (gpm)**	80 (21.14)	80 (21.14)	80 (21.14)
Recommended filter mesh	**mesh**	25	25	25
Suction head max	**m (ft)**	m (ft)	m (ft)	m (ft)
Feed pressure	**bar (psi)**	-0.3 (-4) - 16 (232)	-0.3 (-4) - 16 (232)	-0.3 (-4) - 16 (232)
HYDRAULIC POWER REQUIREMENTS				
Flow max.	**l/min (gpm)**	85 (22.46)	85 (22.46)	18 (4.76)
Pressure max.	**bar (psi)**	210 (3'046)	210 (3'046)	210 (3'046)
HYDRAULIC FLUID REQUIREMENTS				
Viscosity	**cSt**	10 200 / optimum 25 35	10 200 / optimum 25 35	10 200 / optimum 25 35
Temperature max.	**°C(°F)**	70 (158)	70 (158)	70 (158)
Filter ratio	**µm**	25	25	25
Cooling capacity requirement	**kW**	4	4	1

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EPW-DUST AC

		EPW-DUST AC 150-15 For Crusher - One Conveyor
WATER POWER		
Flow, max	**l/min (gpm)**	15 (3.96)
Pressure max	**bar (psi)**	150 (2'176)
Nozzles (basic)	**pcs**	4
WATER INTAKE REQUIREMENTS		
Suction head max	**m (ft)**	( )
Feed pressure	**bar (psi)**	1 (15) - 3 (44)
Recommended filter mesh	**mesh**	80
ELECTRIC MOTOR SPECIFICATIONS		
Power max.	**kW**	4
Voltage	**VAC**	400
Current max.	**A**	9.4
Motor RPM		1400
IP		55

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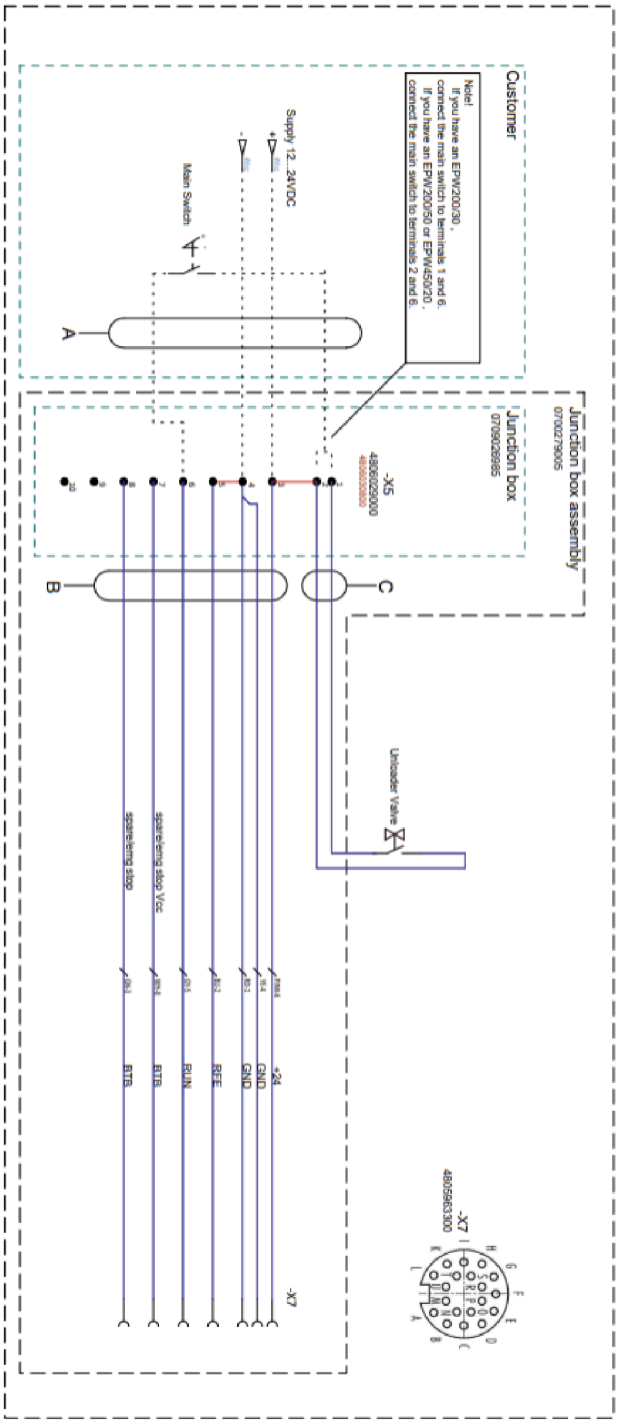
EPW-DUST DC

		EPW-DUST DC 200-30 For Crusher - One Conveyor	EPW-DUST DC 200-50 For Crusher - Two Conveyors
WATER POWER			
Flow, max	**l/min (gpm)**	30 (7.93)	50 (13.21)
Pressure max	**bar (psi)**	200 (2'901)	200 (2'901)
Nozzles (basic)	**pcs**	4	5
WATER INTAKE REQUIREMENTS			
Suction head max	**m (ft)**	m (ft)	m (ft)
Feed pressure	**bar (psi)**	2 (29) - 3 (44)	2 (29) - 3 (44)
Recommended filter mesh	**mesh**	80	80
ELECTRIC MOTOR SPECIFICATIONS			
Voltage, nominal	**VDC**	400	400
Voltage range	**VDC**	400-700	400-700
Current, max.	**A**	45	45
Control voltage	**VDC**	12-24	12-24
Control current (inrush current)	**A**	2 (4)	2 (4)
IP (Classification for electric components)		65	65
COOLING REQUIREMENTS			
Coolant Fluid	**Water / Glycol**	50% / 50%	50% / 50%
Coolant Flow, required	**l/min (gpm)**	5 (1.32)	5 (1.32)
Coolant System Pressure, max	**bar (psi)**	2 (29)	2 (29)
Coolant Temperature, max	**°C (°F)**	50 (122)	50 (122)
Coolant Capacity Requirement*	**kW**	2.8	4.3

*NTP environment

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11. SCHEMATICS



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ELECTRICITY

HG Hydraulic Generator
HGV POWER BOX Variable Hydraulic Generator System
HGV Variable Hydraulic Generator System
HWG Hydraulic Welding Generator
HGG Hydraulic Ground Power Generator

HIGH PRESSURE WATER

HPW Hydraulic High Pressure Water Pump
HPW Hydraulic Power Washer
KPL High Pressure Street Washing Unit
KPL-WEED Weed Killing Unit
SCU Surface Cleaning Unit
HPW-DUST High Pressure Dust Suppression System
PPL High Pressure Pipe Cleaning Unit
HPW-FIRE High Pressure Firefighting System
FP Fire Fighting Piercing Kit
HDF Hydraulic Drilling Fluid Pump
JPL High Pressure Bin Washing System
HSP Hydraulic Submersible Pump

COMPRESSED AIR

HK Hydraulic Piston Compressor
HKL Hydraulic Rotary Vane Compressor
HKR Hydraulic Screw Compressor

MAGNET POWER

HMG PRO Hydraulic Magnet Generator
MAG Lift Magnet
HMAG PRO Hydraulic Magnet

VIBRATION

HVB Hydraulic Vibration Pump
HVD Hydraulic Directional Vibra
HRC Hydraulic Reversal Cylinder

POWER BOOSTING

HPI Hydraulic Pressure Intensifier
HPI-C Hydraulic Pressure Intensifier for Cylinder

VACUUM

HCF Hydraulic Centrifugal Fan
HRVB Hydraulic Recycling Vacuum Bucket

KNOW-HOW

Hydraulic Power Take-off (PTO)
Hydraulic Power Unit Technology
HEU Hydraulic Expansion Unit
HRU Hydraulic Rescue Unis
De-Icing Technology
Installation Valves
HHK Hydraulic Grinder
HV/HVY Hydraulic Winch / Winch Unit

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