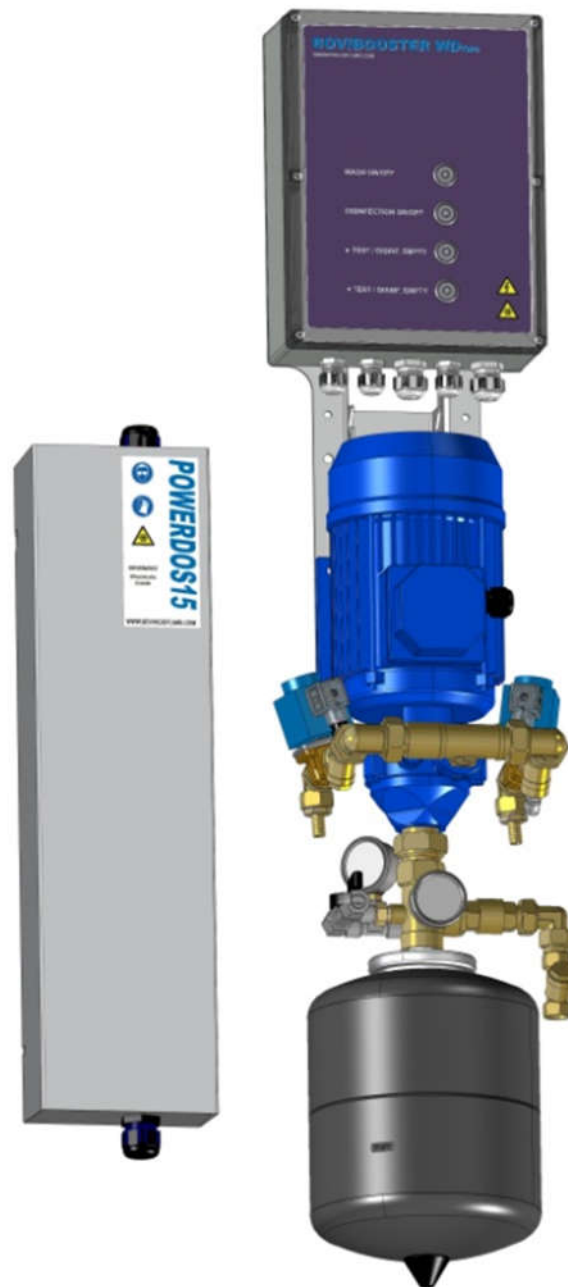**BBWDone**
BBWDtwo
PowerDos15
D2NBAx
D2NBDL

⚠️ **Always wear suitable protective equipment when working on the BOVIBOOSTER**
Always disconnect the electrical supply when working on the system

ℹ️ **Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.**

Contents

Introduction

Safety

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product.

Warning symbols

⚠️	**DANGER:** A hazardous situation which, if not avoided, will result in death or serious injury	🛈	**CAUTION:** Pay extra attention
⚡	**Electrical Hazard:** Risk of electrical shock	😎	**Wear suitable protection glasses:** Risk of exposure to spraying chemicals
❄️	**Frost protection:** Risk of damaging equipment	🧤	**Wear suitable protection gloves:** Risk of exposure to chemicals

General safety rules

- Always keep the work area clean.
- Pay attention to the working risks presented by cows being present in the work area.
- Avoid all electrical dangers. Pay attention to the risks of electric shock.
- Never operate the system, unless the system is connected to an electrical connection which is in appliance with local electrical directives and laws.
- Never work alone.

Product warrenty

Coverage

Bovi Hoof Care undertakes to remedy faults in products from Bovi Hoof Care under these conditions:

- The faults are due to defects in design, materials, or workmanship.
- The product is used only under the conditions described in this manual.
- All service and repair work is done by Bovi Hoof Care-authorized personnel.
- Genuine Bovibooster parts are used.

Limitations

The warranty does not cover faults caused by these situations:

- Insufficient maintenance
- Improper installation
- Modifications or changes to the product and installation made without consulting Bovi Hoof Care
- Incorrectly executed repair work
- Normal wear and tear
- Damage caused by chemical incompatibility

Bovi Hoof Care assumes no liability for these situations:

- Bodily injuries
- Material damages
- Economic losses

Warrenty Claim

Bovi Hoof Care products are high-quality products with expected reliable operation and long life. However, should the need arise for a warranty claim, then contact your Bovi Hoof Care representative.

BOVIBOOSTER | WDone & WDtwo

Transportation and Storage

Inspect the delivery

Inspect the package

1. Inspect the package for damaged or missing items upon delivery.
2. Note any damaged or missing items on the receipt and freight bill.
3. File a claim with the shipping company if anything is out of order. If the product has been picked up at a distributor, make a claim directly to the distributor.

Inspect the units

1. Remove packing materials from the product. Dispose of all packing materials in accordance with local regulations.
2. Inspect the product to determine if any parts have been damaged or are missing.
3. If applicable, unfasten the product by removing any screws, bolts, or straps. For your personal safety, be careful when you handle nails and straps.
4. Contact your sales representative if anything is out of order.

Storage guidelines

Storage requirements

- Store in a covered and dry location.
- Store the unit free from dirt and vibrations.
- Store the unit in a frost-free environment

Product description

WDone and WDtwo

The Bovibooster WDone and WDtwo are automatic dairy cow hoof wash and disinfection systems. The WDone is for one milking robot. The WDtwo is for two milking robots installed close together.

The booster pump can boost the water supply pressure with 7-8 bars for washing, when using a standard Nozzle bar.

When washing the booster pump starts and the high flow wash solenoids open for 2.8 sec.

The booster pump is designed with a stepless washing pressure adjustment system.

The 8L pressure tank on the unit, functions as a water supply buffer tank, which makes sure that there is always enough water for the pump.

- One PowerDos15 disinfection pump and one nozzle bar can be connected to the **WDone** system.
- Two PowerDos15 disinfection pumps and two nozzle bars can be connected to the **WDtwo** system.
- The PowerDos15 disinfection pump is optional, but if the pump is not installed, a separate start signal sensor kit is needed. See accessories.

The systems can be installed to fit various milking robots.

Nameplate

BBWDone-two nameplates are placed on the upper left side of the control box

Type code		Date of production
Serial number		
Electrical supply		Weight
	Rated Watt/Ampere	

PLC Program version

The WDone-two PLC software version can be read, in the upper right corner of the BB menu on the PLC display. Push the **ESC** button on the PLC keypad to go to the BB menu.

Accessories

- WDone separate start signal sensor and interface relay. **Part No.: BBWDoneSS**
- WDtwo separate start signal sensors and interface relays. **Part No.: BBWDtwoSS**
-
- WDone Cleaner **Part No.: BBCL.** The WDone Cleaner is a medium pressure cleaning system. The BB Cleaner must be factory mounted

Technical Data

See nameplate

PowerDos15

The PowerDos15 is a pneumatic cylinder pump, for automatic dairy cow hoof disinfection. The PowerDos15 is not a standalone unit and will only operate if connected to a Bovibooster WDone or WDtwo system.

BOVIBOOSTER | WDone & WDtwo

CONTROL BOX

Push Buttons and Indicators

⚠️ **Changes in settings should only be performed by qualified personnel**

WASH ON/OFF:
Wash ON/OFF
Blue LED lit, indicates ON

DISINFECTION ON/OFF:
Disinfection ON/OFF
Blue LED lit, indicates ON

TEST/DISINF. EMPTY (Right & Left):
Hold "Right" Test button with WASH and DISINFECTION OFF:
Activates Wash solenoid valves (for priming and emptying the water pump)

Test Right

Single push:
Wash Test with 8 sec. On-delay (WASH needs to be ON)
Double push:
Disinfection test with 8 sec. On-delay (DISINFECTION needs to be ON)
Hold for 2 sec.:
Run disinfection pump for priming/emptying
(DISINFECTION needs to be ON)

Test Left (WDtwo only)

Red LED lit indicates disinfection suction line empty
(This LED can be used as indicator when priming or emptying the pump)

Program Function

⚡ Remove the control box cover, to gain access to the PLC controller keypad

Push the **ESC** key to show the BB menu

Hold down the **ALT** key and simultaneously press the
LEFT button to toggle between PROGRAM ON/OFF

```
BBWDone:v102
PROGRAM:OFF.
15:48  11/07
```

```
BBWDone:v102
PROGRAM:ON..
15:53  11/07
```

ℹ️ **The PLC clock must be set correctly, for the PROGRAM times and days to be correct (see ZEN quick guide)**

PROGRAM default settings:
WASH: ON every day from 00:00 – 23:59
Disinfection: ON Tuesday, Thursday and Saturday from 00:00-23:59
The PROGRAM settings can be changed, see PLC instructions

MPCB and Fuses

[-F1]
The MPCB (motor protection circuit breaker) protects the pump motor from overheating. The MPCB will shut off in case a phase is missing, the supply voltage is too low or in case of a short circuit in the motor or motor cable.

[-F2]
The –F2 fuse protects the 230Vac control circuit. The fuse will blow in case of a short circuit in either the –T1, -V1 or –V4 circuits

[-F3]
The –F3 fuse protects the 24Vdc control circuit. The fuse will blow in case of a short circuit in the cable to the control box cover push buttons, the PD15 10x0.75 control cable or a short circuit in the PD15 terminal box. An extra fuse is included in the fuse holder.

[-F3] 500 mA
5x20mm F
250 V

[-F1]
MPCB
400V

[-F2] 3,15A
5x20mm FF
250 V

To replace the –F2 or –F3 fuses you need to open the fuse holder. Push down and out on the tap in the top of the fuse holder at the same time. Always turn off the power supply when working on the control box
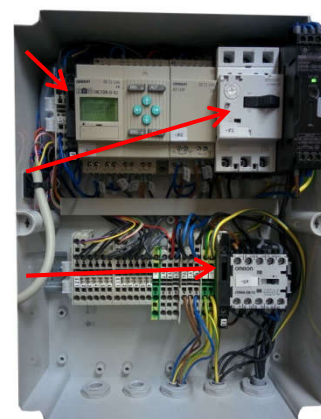
PLC settings

⚠ **Everything described in this guide should only be performed by qualified personnel. Electrical shock may occur. Never touch the terminals while power is being supplied.**

Changing operation mode RUN/STOP

Press the **OK** Button to display the Menu Screen and press the **Down** Button to move the flashing cursor to STOP

Press the **OK** Button to switch from STOP to RUN mode

Press the **ESC** Button to return to the **BB** Menu or Main Screen to observe input/output bit status.

Stop mode

Run mode

Selecting display language

There is a choice of 6 display languages. The default is English.

Operation to select german

Press the **OK** Button to display the Menu Screen

Press the **DOWN** Button 4 times to move the cursor to "LANGUAGE"

Press the **OK** Button to display the current language ("ENGLISH"). The final "H" will be highlighted and flashing

Press the **OK** Button to make the whole word "ENGLISH" flash. A different language can now be selected

Press the **UP** Button to select **GERMAN.**

Press the **OK** Button to display a confirmation message.

Press **OK** to complete the setting. The display language will change to German.

Press the **ESC** Button to return to the **BB** Menu

Use the **Up/Down** Buttons to select a language.

SPANISH
ITALIAN
FRENCH
GERMAN
JAPANESE
ENGLISH
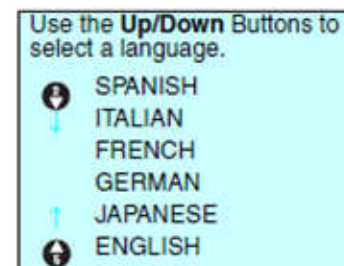
Setting the Date and Time

Press the **OK** Button to display the Menu Screen.

Press the **Down** Button 3 times and then press the
OK Button to enter the **SET CLOCK**

OK	SET CLOCK / SUMMER TIME	Select **SET CLOCK** from the submenu and press **OK**	**Days of the week** SU: Sunday MO: Monday TU: Tuesday WE: Wednesday TH: Thursday FR: Friday SA: Saturday
OK	SET CLOCK yy/mm/dd 00/01/0 00:05(SA)	Press the **OK** Button to change from a highlighted cursor to a flashing cursor and enable data to be changed	
(arrows)	SET CLOCK yy/mm/dd 00/04/01 11:3 (SU)	Set the date and time. Use **Up/Down** Buttons to change setting. Use **Left/Right** Buttons to move the cursor. The day will automatically change when the date is set.	
OK	SET CLOCK SET? OK/ESC 11:35(SU)	Press the **OK** Button to display a confirmation message. Press the **OK** Button to confirm and complete the setting.	
ESC		Press the **ESC** Button to return to the **BB** Menu	

If the power supply is turned OFF for two days or more at 25°C, the date and time will return to default setting

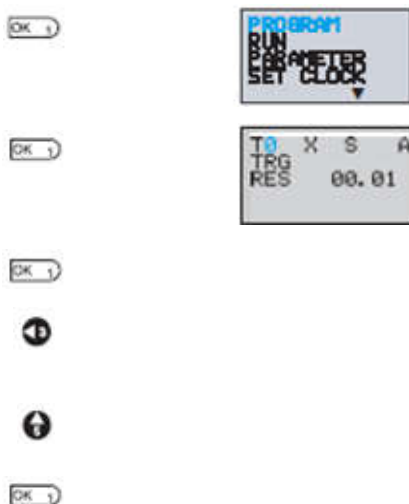## WDone-two PROGRAM parameter adjustments

OK	PROGRAM RUN PARAMETER SET CLOCK	Press the **OK** Button to display the Menu Screen. Select **PARAMETER** on menu screen
OK	T0 X S A TRG RES 00.01	When **PARAMETER** is selected, the bits used by the BB are displayed and can be modified. Press the **OK** Button to change the highlighted cursor to a flashing cursor.
OK		Press the **LEFT** Button to move the flashing cursor to the bit type position.
(left)		
(up)		Press the **UP** Button to select the **@** bit type.
OK		Press the **OK** Button to confirm setting

<u>**A similar screen should appear on the display**</u>
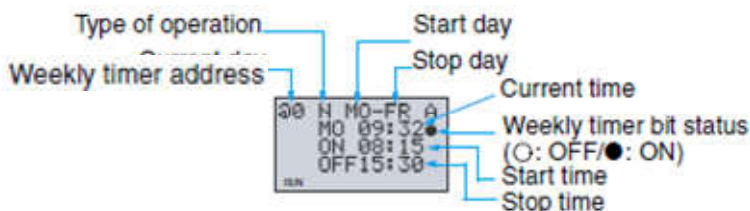
*Use the **LEFT/RIGHT** Buttons to move the flashing cursor, press the **OK** Button to select and confirm an operation and use the **UP/DOWN** Buttons to change parameter values*

See preset configuration and details on next page

WDone-two standard PROGRAM settings

Function	Relay	Set Value
DISINFECTION "PROGR"	@0	Tuesday(TU) Start Time:00:00 End Time:23:59
	@1	Thursday(Th) Start Time:00:00 End Time:23:59
	@2	Saturday(SA) Start Time:00:00 End Time:23:59
WASH "PROGR"	@a	Monday(MO)~Sunday(SU) Start Time:00:00 End Time:23:59

BOVIBOOSTER | WDone & WDtwo

Transferring programs using memory cassette

Memory Cassettes are used to load new programs to ZEN CPU Units and to copy programs and settings from one CPU Unit to other CPU Units.
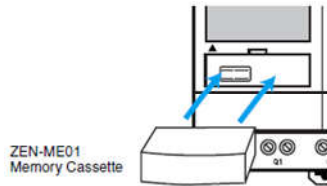
Always turn OFF the power supply to the ZEN before removing or mounting Memory Cassettes
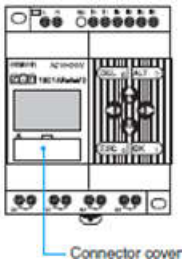
Remove the connector cover on the front of the ZEN

Mount the Memory Cassette

Turn power supply ON. Change the operation mode to STOP, see Section 1.

Mount the Memory Cassette
Turn power supply ON
Change the operation mode to STOP, see Section 1.

Select **CASSETTE**

Use the **UP/DOWN** Buttons to move the flashing cursor and press the **OK** Button to select an operation

Use the **LOAD** operation when uploading a new program from a Memory Cassette (MC) to the ZEN CPU Unit
Remove Memory Cassette when finished loading the program, remember to turn OFF the power supply
Operation mode may have to be changed to RUN.

Example on how to change parameter settings

This is just an example on how to switch between bit types and numbers and how to change parameter values. Do not set the values illustrated in this example in any Bovibooster ZEN

Selecting Parameters to display
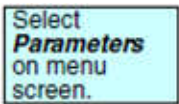
When PARAMETER is selected, the settings for bits that are being used by the program are displayed.

Press the **OK** button to change the highlighted to a flashing cursor

Use the **UP/DOWN** buttons to select another timer [T0]

When multiple parameters of the same type have been selected, use the **UP/DOWN** buttons to scroll through the numbers [T1]

Press the **LEFT** button to switch to another type, move the flashing cursor to the bit type position and use the **UP/DOWN** buttons to select another bit type.

Continued on next page…

Press the **LEFT** button to switch to another type, move the flashing cursor to the bit type position and use the **UP/DOWN** buttons to select another bit type

Setting and changing parameters

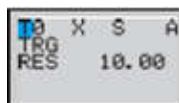Use the **LEFT/RIGHT** buttons to move the highlighted cursor to the parameter to be set

Press the **OK** button to confirm the set position. The cursor will change to a flashing cursor

Use the **UP/DOWN** buttons to set the parameter

Press the **OK** button to confirm the setting

Use the **LEFT/RIGHT** or **UP/DOWN** buttons to move the highlighted cursor to the parameter to be set

Press the **OK** button to confirm the set position. The cursor will change to a flashing cursor
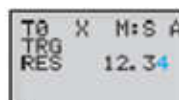
Use the **LEFT/RIGHT** buttons to select the digit to be set. Use the **UP/DOWN** buttons to set the value for each digit

Press the **OK** button to confirm the setting

Press the **ESC** button to complete the setting

If the **ESC** button is pressed while parameter settings are being input, the input to that point will be canceled and the settings will return to the original settings

WDone-two standard parameter settings

All current parameter settings can be checked on a sticker on the inside of the control box cover

Function	Relay	Set value (sec.)		Function (WDtwo only)	Relay	Set value (sec.)
Wash spray timer Right	[T3]	02.80		Wash spray timer Left	[Tb]	02.80
Disinfection spray timer Right	[T7]	00.60		Disinfection spray timer Left	[Tf]	00.60
Wash on-delay timer Right	[T0]	01.00		Wash on-delay timer Left	[T8]	01.00

Nozzle Bars

Always perform a weekly visual inspection of the nozzle bars. Check nozzle spray pattern and direction.

Vertical model

Vertical nozzle bars are designed with two vertical and horizontal adjustable 4020 wash nozzles and two vertical and horizontal adjustable 4006 disinfection nozzles. The spray direction should be parallel with the robot floor towards the "target area", see illustration

Nozzle Adjustment

Remove the three 8 mm cover plate bolts using a 5mm hex key and then remove the cover plate.
Slightly loosen the 8mm bolt as illustrated to the left, adjust the vertical and horizontal angle and then firmly tighten the bolt again.

Nozzle Replacement/Cleaning

Remove the three 8mm cover plate bolts using a 5mm hex key and then remove the cover plate. The disinfection nozzles can easily be removed and reinstalled by hand. Use a 14 mm spanner to remove and install the washing nozzles.

The wash nozzles need to be sealed with 5 rounds of 12 x 0,075 mm PTFE tape.

Horizontal model

Horizontal nozzle bars are designed with four horizontal adjustable 4010 wash nozzles and two horizontal adjustable 6506 disinfection nozzles. The horizontal model nozzle bar is also fitted with two check valves, one before each disinfection nozzle, to avoid that the nozzle tubing drains in between disinfection sprays. The spray direction should be parallel with the robot floor towards the "target area", see illustration

Nozzle Adjustment

Remove the two 8mm cover plate bolts using a 5mm hex key and then remove the nozzle bar.
Slightly loosen the 21mm nut as illustrated, adjust the horizontal angle and then tighten the nut again.
When reinstalling the nozzle bar, the height can be adjusted by moving the nozzle bar up and down. Make sure the nozzle bar is leveled before tightening the bolts.

Nozzle Replacement/Cleaning

The nozzles can be removed directly from the front. Use a 17mm socket wrench for the wash nozzles and a 11mm socket wrench for the disinfection nozzles. Remove the nozzle from the elbow fitting and then clean or replace the old nozzle.

The nozzles need to be sealed with 5 rounds of 12 x 0,075 mm PTFE tape.
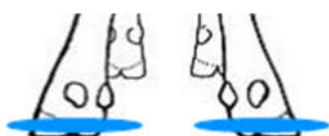
Perfect spray pattern impact

Target area

Check valve flow direction →

Check valve

BOOSTER PUMP UNIT

Description

The booster pump can boost the water supply pressure with 7-8 bars for washing, when using a standard Nozzle bar.

When washing the booster pump starts and the high flow wash solenoids open for 2.8 sec.

The booster pump is designed with a stepless washing pressure adjustment system.

The 8L pressure tank on the unit, functions as a water supply buffer tank, which makes sure that there is always enough water for the pump.

⚠️

Always unsure that the pump is fully primed before operating

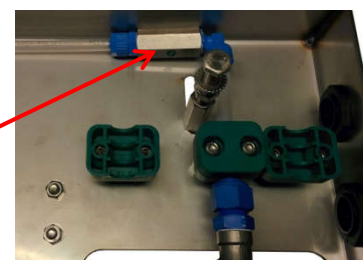**Always empty the pump unit of water during longer periods of standstill (two weeks or longer), to avoid pump corrosion.**

Never add chemicals to the water supply, only use clean water

Booster Pump Unit layout

No.	Description
1	Booster pump
2	Wash solenoid "left" (WDtwo)
3	Wash "left" union coupling
4	Washing pressure manometer
5	Pressure adjustment valve
6	Drain valve
7	Drain tube
8	Wash solenoid "right"
9	Wash "right" union coupling
10	Main union coupling
11	Water supply non-return valve
12	Water supply union coupling
13	Water supply filter
14	Main manometer
15	Water supply pressure vessel
16	Valve filter "left"
17	Valve filter "right"
18	10/8 mm push-on coupling
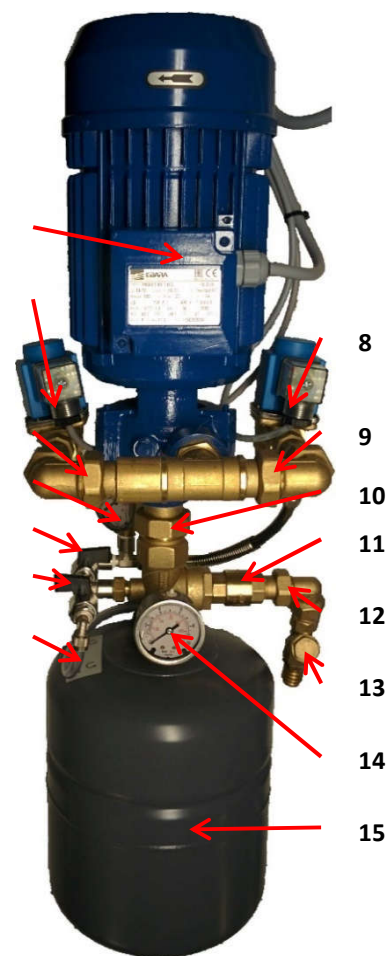
Washing Pressure Adjustment

The washing pressure can be adjusted from about 4.5 – 10 bar by setting the "Pressure adjustment valve", check the washing pressure on the "washing pressure manometer" while washing.

4.5 bar = Valve in open position

7 bar = Valve in middle position

10 bar = Valve in closed position

Washing pressure manometer

Washing pressure adjustment valve

Pressure Tank pre-charge pressure adjustment

The buffer tank is supplied from factory with a pre-charge pressure of 1.9 bars. The pre-charge pressure must be 1 bar lower than the water supply pressure. The water supply pressure can be read on the water supply manometer.

Adjust pre-charge pressure

Shut down the system and close the water supply. Open the drain valve and wait until the pressure is 0 bars. Remove the air valve cap and release or add nitrogen using a suitable tire blow gun, to make the pre-charge pressure about 1 bar lower than the water supply pressure

Drain valve

Water supply manometer

Tire blow gun

⚠️ **There must be performed an annual inspection of the pressure tank**

BOVIBOOSTER | WDone & WDtwo

Frost Protection/Empty System Of Water

⚠️❄️ To protect the system against frost damage, during periods of temperatures below 0 °C, always empty the system completely of water.

Remove the pressure tank

You need a suitable 15" and 8" wrench.

Turn off both "Wash" and "Disinfection", close the water supply and open drain valve[6]. Disconnect the water supply union coupling[12], the 10/8 mm push-on coupling[18] and the main union coupling[10]. Empty the tank and store it in a frost-free environment.

ℹ️ **The tank must be stored in the same upright position as when fitted on the pump, to avoid glycerin leakage from the manometers**

Empty the pump

You need compressed air and a blow gun.

Hold the ► "TEST" button, while blowing air through the 10/8 mm push-on coupling[18], until the system is empty.

PowerDos15 (PD15)

Description

The PowerDos15 pneumatic pump is designed to spray 15 ml hoof product, when the cow is about to leave the robot. The liquid is sucked directly from a container of pre-mixed hoof product. The pump requires a 6.5-8 bar air supply.

PowerDos15 Part Materials and Seals

Pump Plastic Parts	Pump Seals	Check valves	Connection Fittings	Tubes
PVC-U	FKM/FPM	AISI 316	PP	PELD
		AISI 303	POM	PVC

Liquid Compatibility

ℹ️ The liquids used in the pump, must be compatible with all pump parts and seals.

If the liquid is too viscous and the suction tube is long, the pump might not be able to prime properly. Dilute the liquid when water if necessary.

Contact you hoof product supplier for details regarding compatible materials

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PowerDos15 Unit layout

No.	Description
1	Terminal Box
2	Dry-run sensor PVC tube
3	Dry-run sensor
4	Pnematic cylinder
5	Pneumatic control valve
6	Liquid connection coupling
7	Test button
8	Wash start signal pressure switch
9	Disinf. start signal pressure switch
10	Buffer tube
11	Suction check valve
12	Air supply valve
13	Liquid cylinder
14	Suction exhaust regulator
15	Spray check valve
16	Cover fix bolt
17	Cover

BOVIBOOSTER | WDone & WDtwo
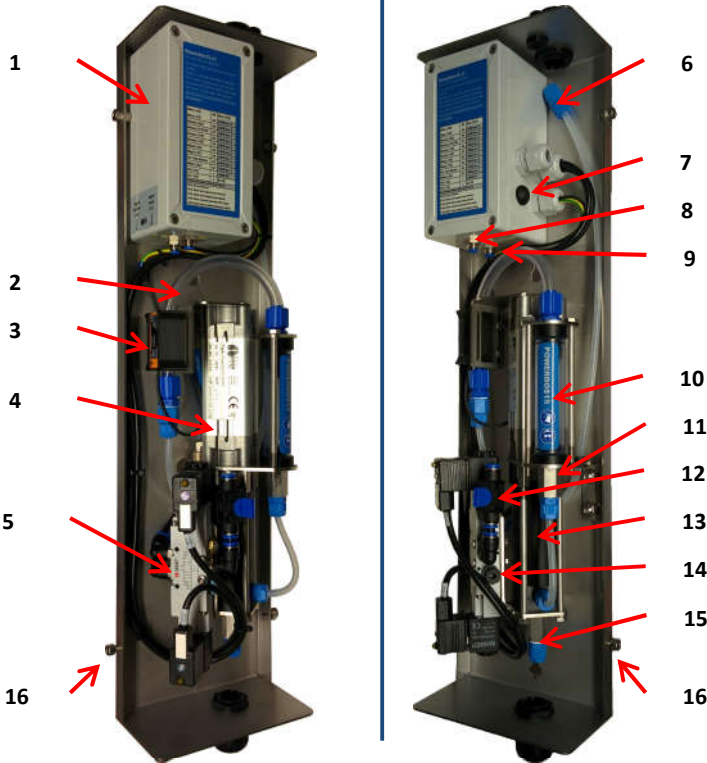
Remove Cover

Loosen the two lower cover fix bolts[15] about 5 mm out using a 5mm hex key. Pull the bottom of the cover out and remove it.

Test Button

The Test button[6] have the same function as the test button on the control box (check page 3). It can with advantage, be used when servicing and installing the PowerDos15 pneumatic pump.

Suction Exhaust Regulator

The suction exhaust regulator[13] is for adjusting the suction speed of the pump. The suction time should be 0.4 sec. A 2,5mm hex key is needed to adjust the regulator. Turn the center screw clockwise to increase the suction time and turn it counter clockwise to decrease the suction time.

Dry-run Sensor

The dry-run sensor[3] activates when the dry-run sensor PVC tube[2] is empty. After five sprays with the sensor activated, the automatic disinfection spray stops.

Start Signal Pressure Switches

The start signal sensor pressure switches[7 and 8] are installed in PD15 terminal box[1]. The switches have a default activation pressure of 3 bars. If necessary, the sensors can be adjusted. Use a small flat head screwdriver. Turn the switch adjustment screw clockwise to increase activation pressure and counter clockwise to decrease activation pressure. Always adjust the sensors in small steps.

Replace/Refill Hoof Product

After replacing or refilling the hoof product container, the system needs to be primed. Hold the Test button until the red light on the control box turns off. The buffer tube[9] should always be at least half full after finished priming.

Always make sure the suction filter is clean and installed on the suction tube.

Frost Protection/Empty the Pump of Liquid

⚠️ To protect the pump against frost damage, during periods of temperatures below 0 °C, always empty the pump completely of chemicals.

You need a bucket of clean water.

1. Remove the suction lance from the chemical container and put it in bucket of clean water.
2. Hold the test button until the water has passed through the entire system
3. Remove the suction lance from the bucket, make sure that the suction filter lies free in the air
4. Hold the test button until the entire PD15 system is emptied of water

Replace the PD15 pump unit

If the PD15 pump malfunctions or breaks, the pump unit needs to be renovated or replaced with a refurbished unit. Contact your local dealer for further information.

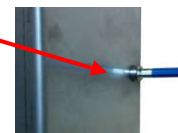## Maintenance

Weekly Visual Inspection

- Check the entire system for leakages or damages. Do both a wash and disinfection test and check nozzle spray pattern.

Annually

- Check pressure tank pre-charge pressure.
- Replace both wash and disinfection nozzles if necessary.
- Replace dry-run sensor PVC tube

Spare Parts

See www.bovibooster.com

PD15 Pump unit

BOVIBOOSTER | WDone & WDtwo

Troubleshooting

BBWDone-two	Page	PowerDos15	Page
Washing pressure is too low	Page	**Spray pressure is to low**	Page
Check washing pressure regulator	5	Check if there is liquid in the buffer tube, it	
Check pump direction of rotation		should be at least half full	
Check water supply filter	5	Check if there is air in the system, hold test	
Check water supply		button, until the spray pressure is normal	3
Check nozzles for deposition or dirt	4	Check nozzles for deposition or dirt	4
System is washing, but the pump is not running		Check the PD15 air supply, pressure should be	
Check [-F1] MPCB	3	between 6,5 and 8 bars	
ON/OFF Led's won't turn ON		Check spray tube for leakages	
Check fuse [-F3]	3	**The liquid moves very slowly in the suction line**	
Check electrical supply		**when priming**	
Wash and Disinfection is not starting		Check liquid viscosity, if the liquid is too thick	
Check Wash and Disinfection ON/OFF push		and the suction line is long, the pump can't prime	
buttons	3	properly. Try to make a test using clean water	
Check electrical supply		Check the suction filter	
Check Start signal pressure switches,		Check suction line for sharp bends and damages	
activate the switches manually using		Place the liquid container closer to the pump	
compressed air	7	**Air build-up in the suction line**	
Check fuse [-F3]	3	Check the suction line installation, maximum	
Check if the PLC [-K1] is on		allowed tube length in downward installation	
PLC display is black		in flow direction is 135 cm. If the tube is longer,	
Check if the power supply [-T1] is on (green led)		a loop "air trap" of the tube needs to be made for	
Check fuse [-F2]	3	every 120 cm	
Check electrical supply		Check the pump and suction line for leakages	
Water keeps running after a wash		Tighten all push-on fittings	
Disassemle and clean wash solenoid valve		Check the suction filter	
Disinfection is ON, but not working		**Liquid piston moves too slow when sucking**	
Check if the PROGRAM function is activated	3	Check suction exhaust regulator	7
Check Start signal pressure switches	7	**Automatic disinf. does not work after priming**	
Check the PD15 pump		Hold the test button again. A spray with the	
Disinfection PROGRAM function is not working		dry-run led off, needs to be made, to reset	7
Check the PLC time and date settings			

BOVIBOOSTER | WDone & WDtwo

Installation

General information

1. Do not attempt to start the pump until the storage tank has been filled with water and the pump is fully primed.

2. ⚠️ All electrical connections should be carried out by a qualified and authorised electrician in accordance with local regulations. The Bovibooster must be earthed. It is strongly recommended that an Earth Leakage Circuit Breaker (ELCB) is fitted on the incoming electrical supply.

3. ⚠️ Do not remove pump motor terminal box or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched on.

4. ⚠️ Do not attempt to supply electricity to the Bovibooster and run the pump without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

5. The water supply installation for the Bovibooster should be in accordance with local water authority regulations.

6. All units, hoses and tubes subject to freezing conditions must be adequately protected.

7. Ensure that the Bovibooster is positioned to allow access for examination and service.

8. The Bovibooster system must be mounted on a solid foundation capable of supporting the weight of the units.

What do you need

Tools needed for installation

SDS rotary hammer drill **Power drill**   **6/8/10mm hammer drill bit**   **Spirit level**

3/8" Metric ratchet set   **13mm spanner**   **Metric hex key set**   **8 inch adjustable wrench** **15 inch adjustable wrench**   **Hose cutter tool**

Side cutting pliers   **Ferrule crimp tool**   **Small flat head screwdriver**   **7mm socket screw driver**   **Tx20 bit**

Multimeter   **Tyre inflator gun**   **Air compressor**   **Ladder**

BOVIBOOSTER | WDone & WDtwo

Materials needed for installation

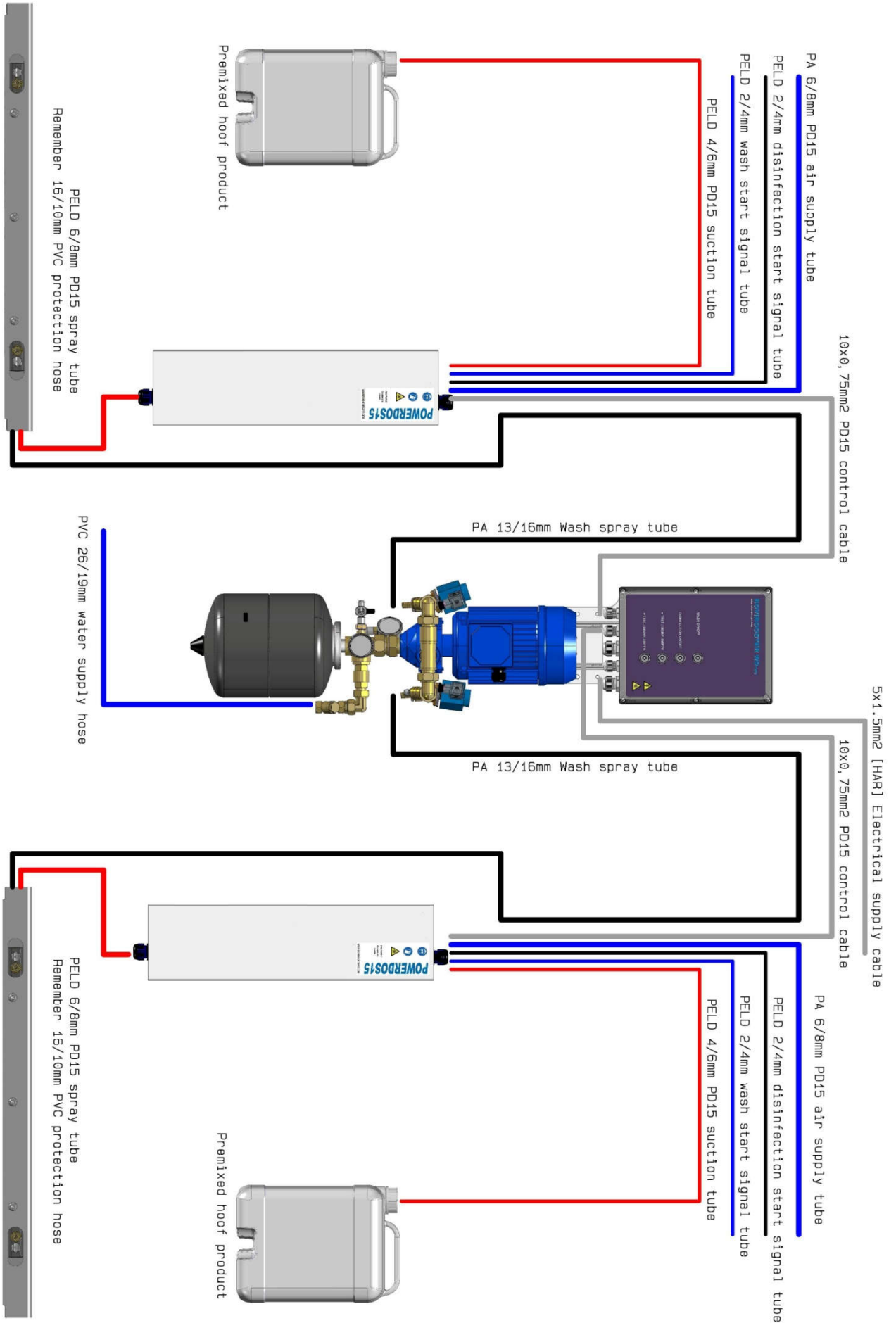| Function	Description	Part No.
Wash spray tube	PA 16/13 mm Tube black 14 bar	See www.bovibooster.com
Wash spray tube protection hose/water supply hose	PVC hose 26/19mm clear 15 bar	See www.bovibooster.com
Disinfection spray tube	PELD 8/6 mm tube clear 9 bar	See www.bovibooster.com
Disinfection spray tube protection hose	PVC hose 10/16 mm clear 15 bar	See www.bovibooster.com
Disinfection suction tube	PELD 6/4 mm tube clear 13 bar	See www.bovibooster.com
PowerDos15 air supply tube	PA 8/6 mm tube blue 19 bar	See www.bovibooster.com
Wash start signal tube	PELD 4/2 mm tube blue 21 bar	See www.bovibooster.com
Disinfection start signal tube	PELD 4/2 mm tube black 21 bar	See www.bovibooster.com
PD15 air supply push-in tee 8/8/8mm	Push-in Tee 8 mm	See www.bovibooster.com
PD15 air supply push-in tee 10/8/10mm	Push-in Tee 10-8-10 mm	See www.bovibooster.com
PowerDos15 control cable	10x0.75mm2 numbered control cable	See www.bovibooster.com
Ferrules for control cable	Crimp Bootlace Ferrule 0.75mm2	
Cable strips for fixation	Cable strips	
PVC installation guide tube	Ø50mm PN10 PVC pipe	
Ø50 PVC pipe clip	Ø50 PVC pipe clip	

WDone-two Installation requirements

- ⚠ Always install the system in frost-free environment.
- Never install the system in places where it can be exposed to direct sunlight.
- The length of the wash spray tube and the PD15 control cable must not exceed 25 meter. For easier installation, it is recommended to install the unit as close to the robot as possible.
- Never install the spray tube/pump in places where a leakage can cause risk of damage to people, animals or other material.
- Always install the system in a prober height, see installation dimensions' diagram.
- The water supply pressure must be between 1 and 4 bars of pressure and must be able to deliver at least 15 l/min.

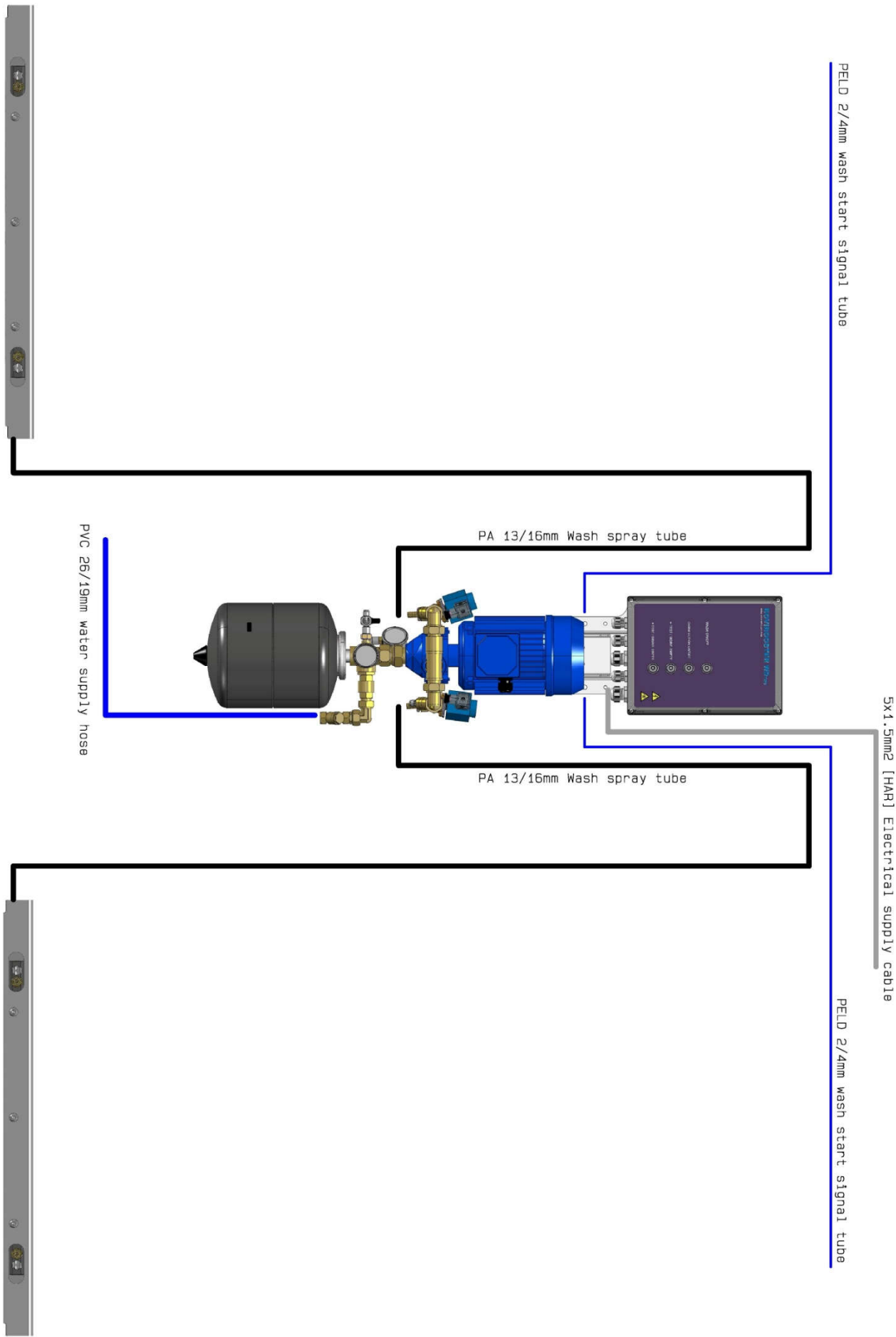## PowerDos15 Installation requirements

- The PD15 spray tube length must not exceed 6 meter. For easier installation, place the PowerDos15 pump as close to nozzle bar as possible.
- ⚠ Always install the PD15 spray tube protection hose.
  Never install the spray tube/pump in places where a leakage can cause risk of damage to people, animals or other material.
- Always install the pump in a prober height, see installation dimensions' diagram.
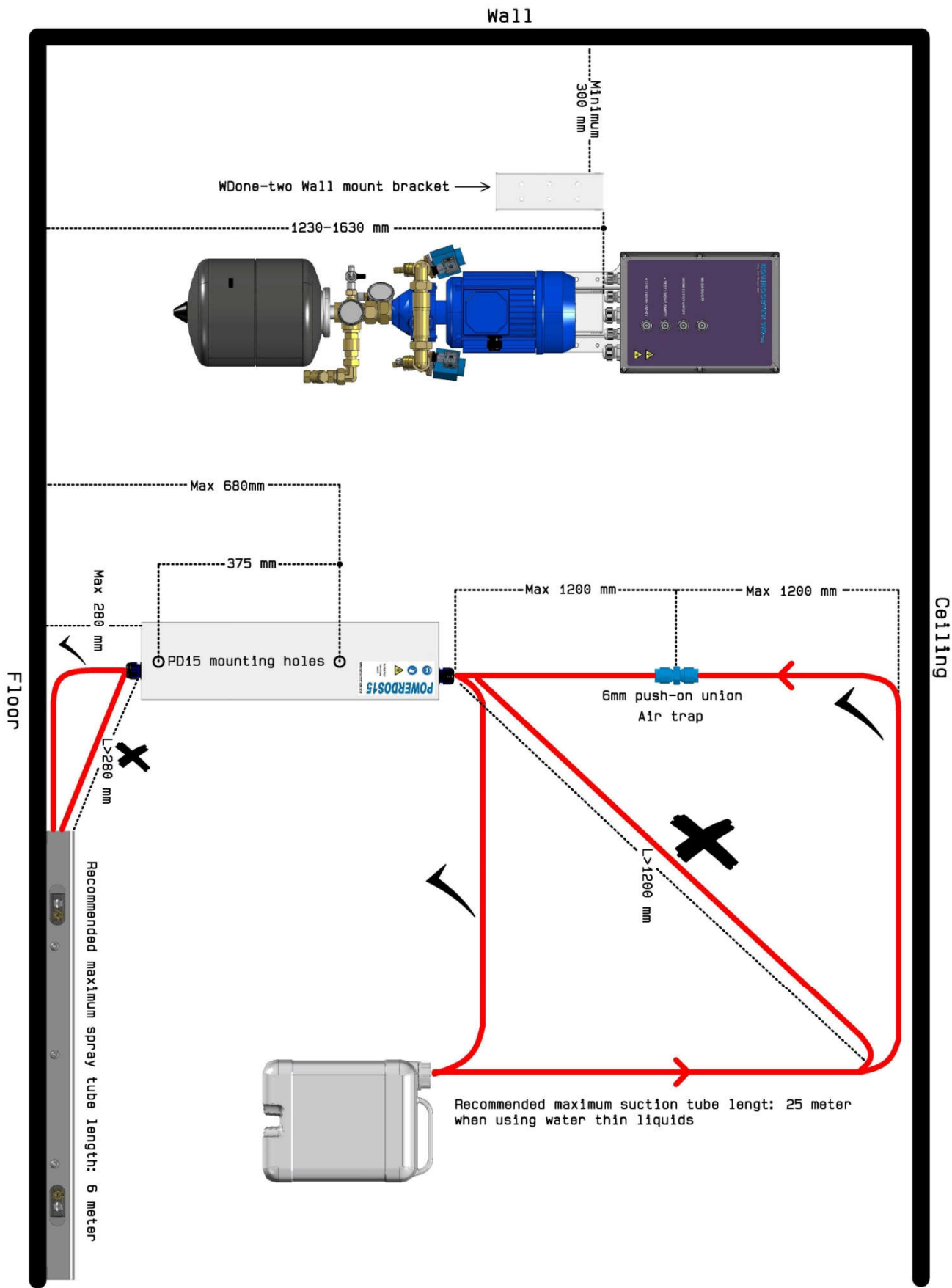- The PD15 air supply pressure must be constant and be between 6,5 and 8 bars of pressure.

WDone-two and PowerDos15 connection diagram

Premixed hoof product

PA 6/8mm PD15 air supply tube

PELD 2/4mm disinfection start signal tube

PELD 2/4mm wash start signal tube

PELD 4/6mm PD15 suction tube

10x0,75mm2 PD15 control cable

PELD 6/8mm PD15 spray tube
Remember 16/10mm PVC protection hose

PA 13/16mm Wash spray tube

PVC 26/19mm water supply hose

PA 13/16mm Wash spray tube

5x1.5mm2 [HAR] Electrical supply cable

10x0,75mm2 PD15 control cable

POWERDOS15

PELD 4/6mm PD15 suction tube

PELD 2/4mm wash start signal tube

PELD 2/4mm disinfection start signal tube

PA 6/8mm PD15 air supply tube

PELD 6/8mm PD15 spray tube
Remember 16/10mm PVC protection hose

Premixed hoof product

WDone-two without PowerDos15 connection diagram

PELD 2/4mm wash start signal tube

PVC 26/19mm water supply hose

PA 13/16mm Wash spray tube

PA 13/16mm Wash spray tube

5x1.5mm2 [HAR] Electrical supply cable

PELD 2/4mm wash start signal tube

Wall

Minimum 300 mm

WDone-two Wall mount bracket →

1230-1630 mm

Max 680mm

375 mm

Max 1200 mm   Max 1200 mm

Ceiling

Max 280 mm

PD15 mounting holes

POWERDOS15

6mm push-on union
Air trap

Floor

L>280 mm

L>1200 mm

Recommended maximum spray tube length: 6 meter

Recommended maximum suction tube lengt: 25 meter
when using water thin liquids

Tubes and cables installation

- When installing the hose, it is important that you avoid sharp edges, which can damage the hose.
- It is important that you avoid any sharp bends when installing the hose, see bending radius.
- Use a lubricant, when connecting the hose to the hose barbs.
- It is very important that the tube keeps its round shape, all the way through the installation, **do not break the tube.**
- It is recommended to install a 40 or 50mm PVC guide tube for all tube and cable installations, to make the installation easier and safer.
- **Never install the tubes in places where a leakage can cause damage to animals, people or other equipment.**

165 mm

330 mm
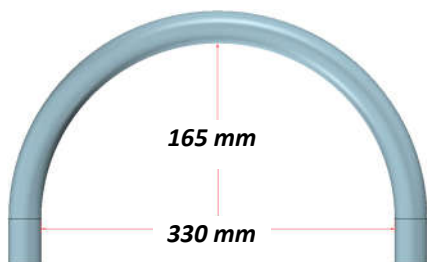
PVC pipe
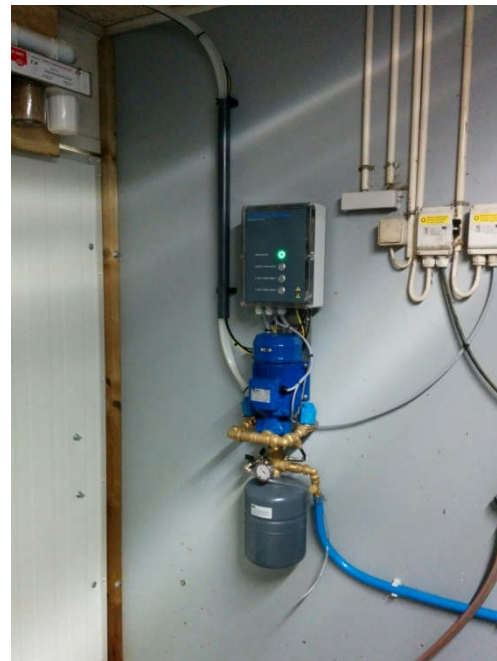
Installation step by step

WDone-two

Mount the wall mount bracket on a suitable wall. Use the included 10mm wall plugs and 8x60mm screws.

For installation dimensions, see installation dimensions diagram

Mount the pump unit on the wall mount bracket and the install the included 8x100mm bolt and lock nut.
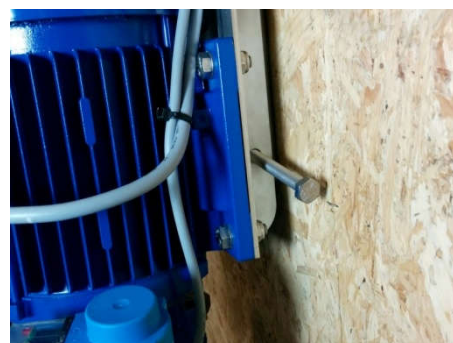
Install the pressure tank unit on the pump unit and tighten the union coupling firmly with a suitable wrench.

Cut off the tip of the rubber cap on the two manometers with a side cutting plier.

Install the 10/8mm black tube on the push-on coupling and tighten the coupling nut with a 14mm spanner.
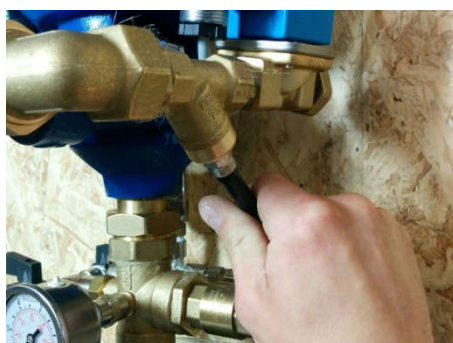
Install the water supply hose and the included 20/32mm hose clamp on the 19mm hose barb, use a 7mm socket screw driver to tighten the hose clamp.

Tighten the water supply union coupling with a suitable wrench.

Mount the wash spray tube(s) on the 12mm hose barb, use the included 12/20mm hose clamp. Finish by tightening the union coupling with a suitable wrench.


Connect the PD15 control cable:
Remove the control box cover with a suitable screwdriver, install the 10x0,75 cable through the cable gland and connect the wires to the correct terminals.
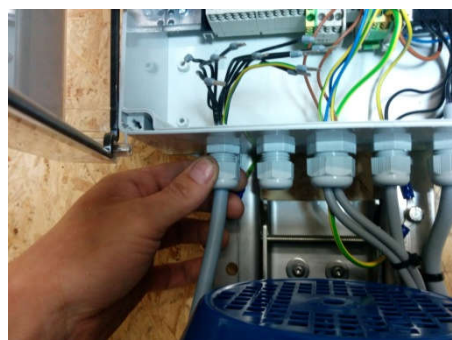
Use a small flat head screwdriver to open the spring terminal.
Look to the terminal block connection diagram on the inside of the control box cover, to see where to insert the wires.
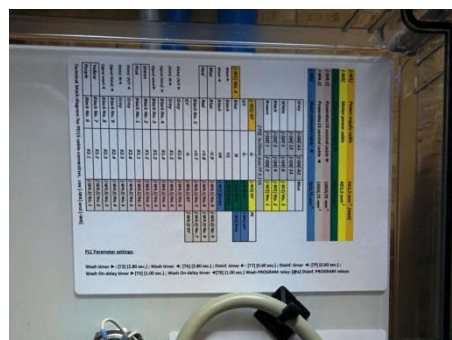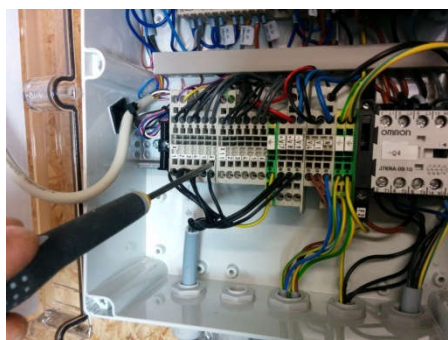
ⓘ Pay extra attention when installing wire numbers 6 and 9

WDone-two start signal connection (without the PowerDos15)

Connect the 4/2mm PELD start signal to the 4mm push-in connector.
On a WDtwo the "left" side start signal is placed on the left side of the pump and the "right" side start signal is placed on the right side of the pump.

PowerDos 15

Loosen the two bottom 6mm bolts with a 5mmm hex key and remove the cover.

Install the two included 6x60mm screws and the two PVC spacers. **For dimensions see installation dimensions' diagram.**

Install the pump on the wall and tighten the two screws.

Install the disinfection suction tube.

Install the tube through the M12 cable gland.

Make sure to install the included 6/4mm push-on union coupling if you have a drop over 120 cm in flow direction (see installation dimensions diagram).

Install the tube through the M25 cable gland.

Connect the 8/6mm PA air supply tube to the exhaust valve. Make sure tube is pushed to the bottom of the fitting.

Open the exhaust valve.

The air supply must be constant and must be minimum 6,5 bar.

Connect the 8/6mm PELD spray tube to the spray check valve push-on fitting. **Remember to install the 10/16mm PVC protection hose.** Use tape to fix the spray tube in the protection hose, for easier installation. **Remember to gently tighten the M25 cable gland.**

Connect the PD15 control cable:

Remove the control box cover with a suitable screwdriver, install the 10x0,75 cable through the cable gland and connect the wires to the correct terminals.

Install the cable through the M25 cable gland.
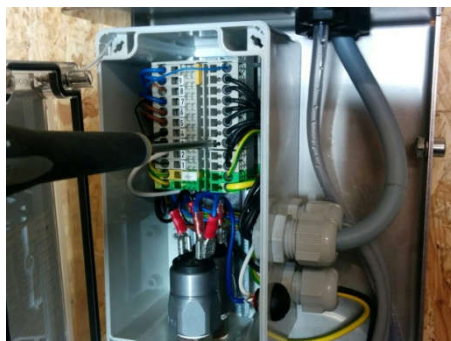
BOVIBOOSTER | WDone & WDtwo

Use a small flat head screwdriver to open the spring terminal.

Look to the terminal block connection diagram on the front of the terminal box cover, to see where to insert the wires.

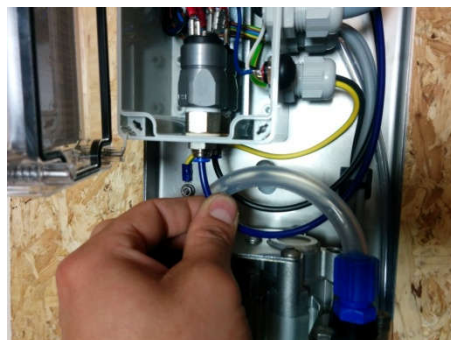ⓘ **Pay extra attention when installing wire numbers 6 and 9**

PowerDos 15 start signal connection

Connect the blue 4/2mm PELD tube to the wash start signal pressure sensor.

Connect the Black 4/2mm PELD tube to the disinfect start signal pressure sensor.

See the sticker in the bottom left corner, of the terminal box.

Install the tubes through the M25 cable gland.

PD15 Suction lance connection

Install the included suction filter and pvc suction lance. Drill a 20mm in cap in the container cap.

PD15 LELY A4 profile mount bracket (optional)

Install the bracket as illustrated, use the included bolts and nuts.

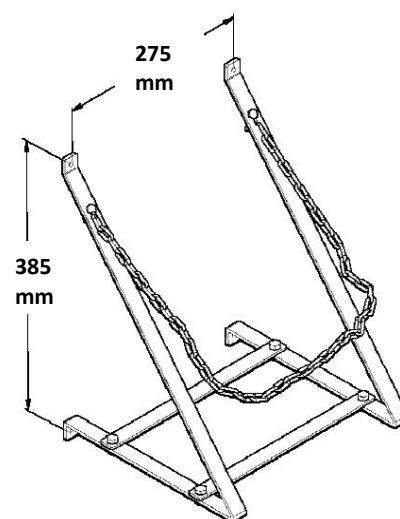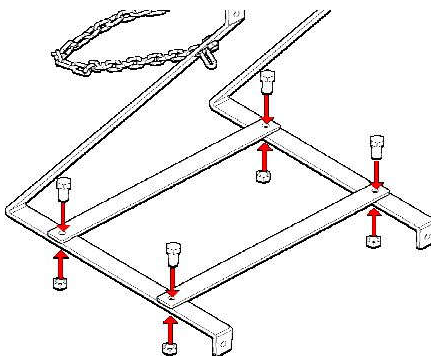Mount the pump on the bracket and tighten the two M6x25mm bolts.
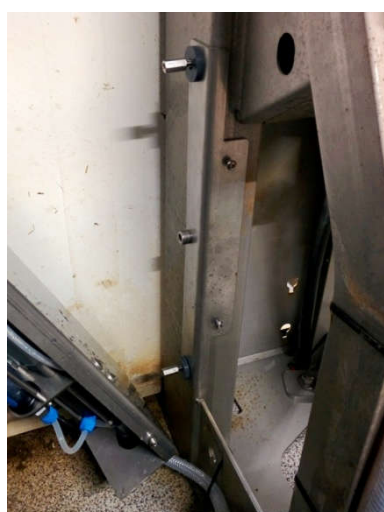
WS25 installation (optional)

Mount the 25kg container wall mount bracket as close to PD15 disinfection pump as possible.

Assemble the bracket as illustrated.

Mount the bracket on a suitable wall, using the included screws and wall plugs.

275 mm

385 mm

Vertical Nozzle Bar installation (D2NBA3)

- ⓘ Make sure the robot floor is clean before starting installation.
- Drill a 30mm hole into the robot cabinet for the wash spray tube and protection hose.
- Drill a 20mm hole into the robot cabinet for the disinfection spray tube and protection hose.
- ⓘ The holes must be centered with the holes in the nozzle bar cover plate.
- Install the nozzle bar mounting bracket on to the robot grate.
- Start by mounting the two plastic clamps on the mounting bracket with the two M8x100mm bolts.
- Make sure they fit between the outer bars of the grate on each side.
- ⓘ The nozzle bar should be installed as far back in the robot as possible.
- Tighten the two plastic clamps up against the grate bars.
- Connect the clear 8/6mm disinfection spray tube to the 8/6mm push-on tee, tighten the blue nut firmly by hand.
- Connect the black 16/13mm wash spray tube to the 12mm hose barb, use the included 8-16mm hose clamp. Use the 19/26mm protection hose where it is necessary.
- ⚠ Remember to install the 10/16mm PVC protection hose
- Mount the nozzle bar cover plate. If necessary, adjust the nozzles (see Nozzle adjustment).

Example Lely A3

BOVIBOOSTER | WDone & WDtwo
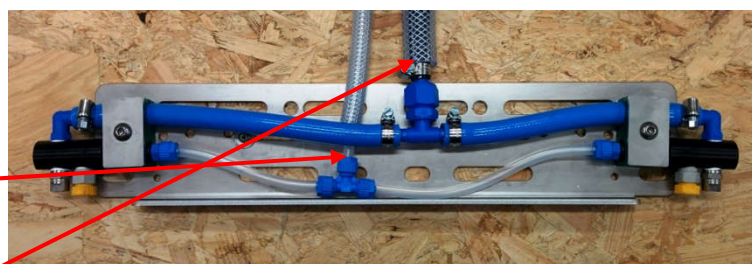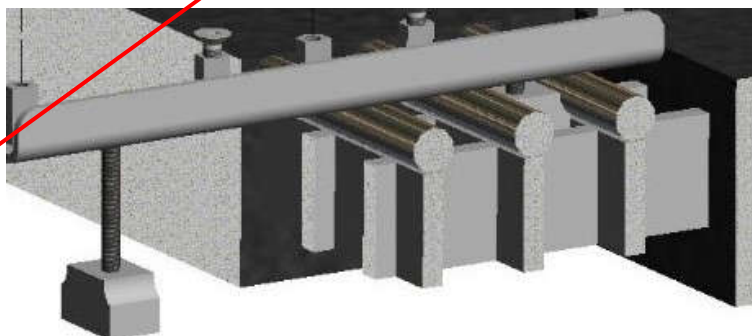
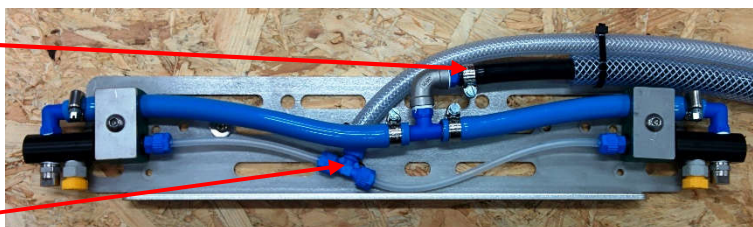## Vertical Nozzle Bar installation (D2NBA4)

- The D2NBA4 nozzle bar is delivered as a right hand model as standard.
- The nozzle bar can be changed to a left hand model by tightening the 12mm hose barb elbow 180°.
- 🛈 Make sure the robot floor is clean before starting installation.
- Start by mounting the two plastic clamps on the mounting bracket with the two M8x100mm bolts.
- Make sure they fit between the outer bars of the grate on each side.
- Install the nozzle bar mounting bracket on to the robot grate.
- 🛈 The nozzle bar should be installed as far back in the robot as possible.
- Tighten the two plastic clamps up against the grate bars.
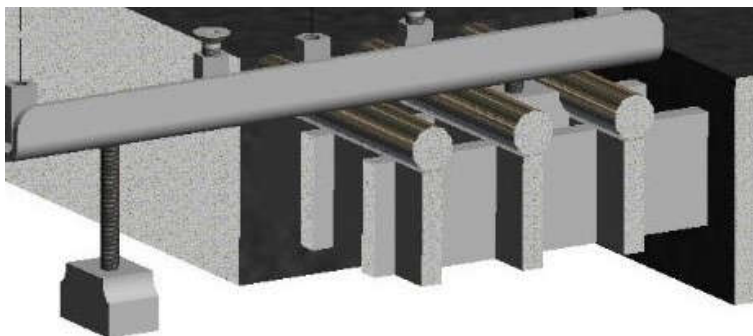
- Connect the black 16/13mm wash spray tube to the 12mm hose barb, use the included 8-16mm hose clamp. Use the 19/26mm protection hose where it is necessary.
- Connect the clear 8/6mm disinfection spray tube to the 8/6mm push-on tee, tighten the blue nut firmly by hand.
- ⚠️ Remember to install the 10/16mm PVC protection hose and 19/26mm PVC protection tube

- If necessary, adjust the nozzles (see Nozzle adjustment)

- Install the nozzle bar cover, with the three included M8x10mm bolts and 8mm washers

Horizontal Nozzle bar installation (D2NBDL)

- The D2NBDL nozzle bar is delivered as a right hand model as standard.
- The nozzle bar can be changed to a left hand model by tightening the 12mm hose barb elbow 180°.
- Cut the two membranes with a suitable plier on the side towards the robot room and lubricate the membranes with silicone.
- **Always make sure the robot floor is clean before starting installation.**
- Install the 10/16 mm blue PVC adapter hose through the grommet and on to the 10 mm hose barb, use the included 8-16mm hose clamp.
- Attach the nozzle bar mounting bolt kit in existing holes on the robot back plate as illustrated. The existing bolt must be removed first.
- Connect the clear 8/6mm disinfection spray tube to the 8/6mm push-on tee Tighten the blue nut firmly by hand.

- Install the two M6x10mm bolts in the remaining two holes

- ⚠ Remember to install the 10/16mm PVC protection hose and the green pipe holders to fix the protection hose.

- ⓘ It is important that the nozzle bar is leveled.

- Connect the black 16/13 mm PA tube to the 12mm hose stud, use the supplied 8-16 mm hose clamp.

- If necessary, adjust the nozzles (see Nozzle adjustment). The nozzles are adjusted as a left hand model as standard.
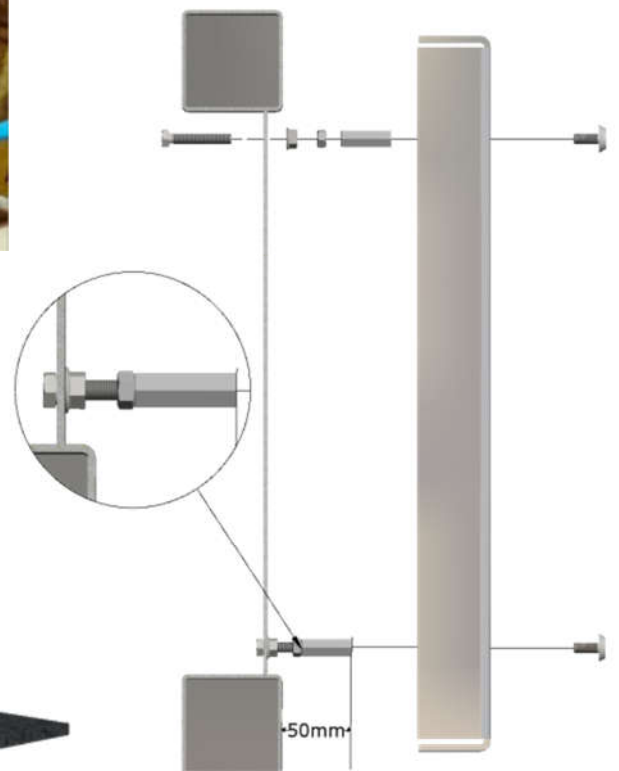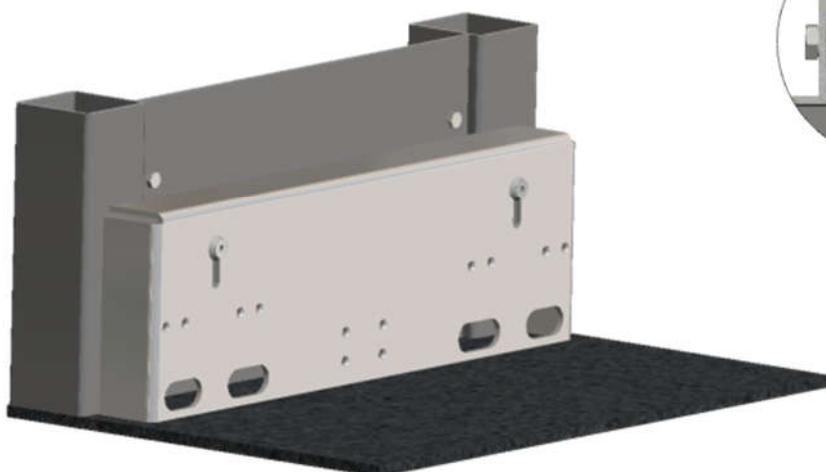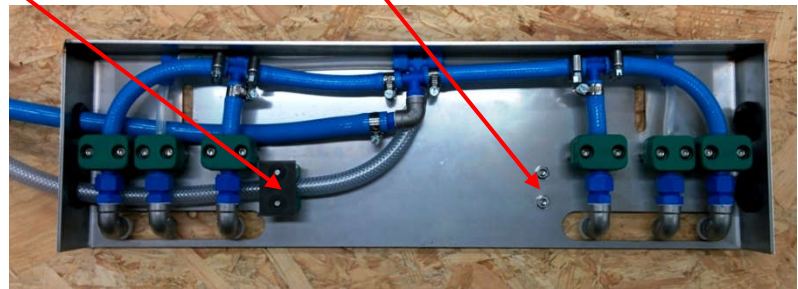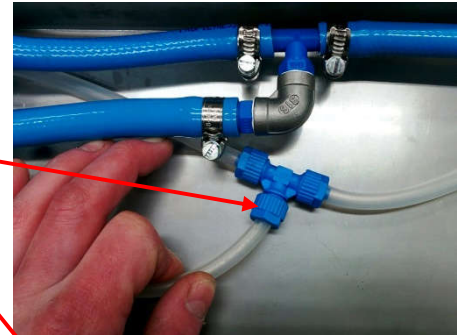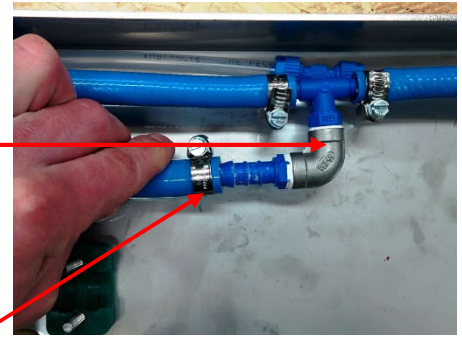
Start signal Installation

Description

The start signals need to be compressed air signals of minimum 3 bars of pressure. The system needs a separate wash and disinfection start signal. The wash signal must activate before milking, and the disinfection signal after milking.

Both signals must be installed, for the system to function.

The wash start signal, must be a signal which is only gets activated just before a milking, and not by cow rejections. When the wash start signal is activated, it allows the system to do a disinfection treatment. The wash start signal has as standard a 1 sec. on-delay (**-T0** wash right **-T8** wash left).

The disinfection start signal activates the disinfection treatment immediately, and resets the system so it is ready for a new wash.

For a WDone-two installation without the PowerDos15, the system only needs one start signal for wash.

⚠️ It is important that the disinfection start signal sensor is activated after finished milking to avoid milk contamination.

Wash start signal (wash only), for Lely milking robots

The wash start signal must be connected to the brush-arm cylinder tube, where there is pressure, when the brush arm is active.

Wash start signal for Lely milking robots

The wash start signal must be connected to the brush-arm cylinder tube, where there is pressure, when the brush arm is active.

Disinfection start signal for Lely milking robots

The disinfection start signal must be connected to the exit gate cylinder tube, where there is pressure, when the exit gate is open.

Wash start signal (wash only), for DeLaval milking robots

The wash start signal must be connected to the teat spray tube, where there is pressure, when the teat spray is active.

Wash start signal for DeLaval milking robots

The wash start signal must be connected to the rear plate cylinder tube, where there is pressure, when the rear plate is active.

🛈 The start signal block valve, must be installed on the DeLaval robot, to avoid wash spray just after the disinfection spray. And the Wash on delay timers [-T0 & -T8(WDtwo only)] must be set to **approx. 8 sec.** See PLC instructions.
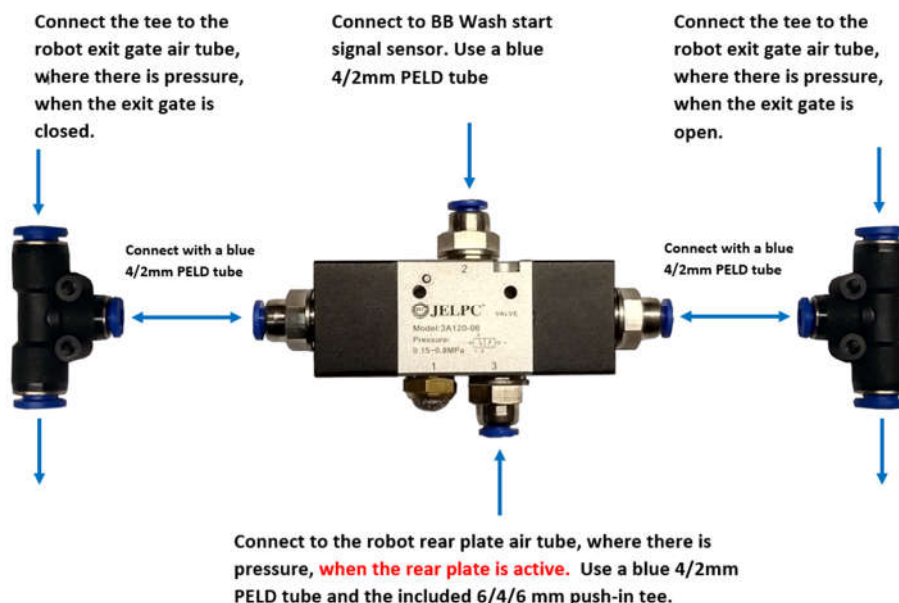
Disinfection start signal for DeLaval milking robots

The disinfection start signal must be connected to be connected to the teat spray tube, where there is pressure, when the teat spray is active.

Delaval start signal block valve installation

The DeLaval start signal block valve must be connected as illustrated.

The valve is installed to prevent the BB to receive a wash signal when the rear plate active after milking.

The valve blocks the wash signal when the exit gate is open.

Connect the tee to the robot exit gate air tube, where there is pressure, when the exit gate is closed.

Connect to BB Wash start signal sensor. Use a blue 4/2mm PELD tube

Connect the tee to the robot exit gate air tube, where there is pressure, when the exit gate is open.

Connect with a blue 4/2mm PELD tube

Connect with a blue 4/2mm PELD tube

Connect to the robot rear plate air tube, where there is pressure, when the rear plate is active. Use a blue 4/2mm PELD tube and the included 6/4/6 mm push-in tee.

Commissioning/Start-up

It might be a good idea, to reduce the wash pressure during the first 7 days of operation, to minimize stress to the cows.

WDone-two priming

- Make sure water supply and electrical supply is connected.
- Hold the TEST Right button with both wash and disinfection turned off, until the water reaches the nozzles.
- Turn ON wash.
- Make a wash test. And check the washing pressure, the pressure should be around 10 bar.
- If there is no wash pressure, you need to change the pumps direction of rotation. To invert the direction of rotation you must swap the motor cable wires L2(T2) and L3(T3) on the motor contactor, in the control box.
- ⚠️ Make sure the electrical supply is disconnected before working in the control box.
- Do another wash test and check if the nozzle spray pattern is as desired.
- Adjust the nozzles if necessary. See nozzle Nozzle adjustment.

PowerDos15 Priming

- Make sure the air supply is connected.
- Make sure the suction line is connected to the hoof liquid container and that the suction filter is installed.
- 🛈 It is important that the hoof product is mixed with water, to avoid that the liquid is too viscous. Make sure it is mixed very well, especially in the bottom of the container.
- Make sure the red dry-run LED (right or left) is lit, and the Disinfection is turned ON.
- Hold the TEST button (right or left), to prime, until the red dry-run LED turns off.
- 🛈 It is important, that you keep holding the test button for two seconds after the red dry-run LED turns off, to reset the dry-run function.
- Make a disinfection test, and check the nozzle spray pattern.

Start signals

- Turn wash and disinfection ON
- Wait until a cow enters the robot.
- The wash should start according the wash on-delay settings, before the milking has started.
- The disinfection treatment should start when either the exit gate starts to open (Lely), or when teat spray is activated (DeLaval).
- The disinfection start signal resets wash cycle and allows for another wash, when the next cow enters the robot. The disinfection does not have to be turned ON to reset the wash cycle.
- The wash and disinfection can operate independently.

Installation examples