X-POT 6+®

OPERATION & MAINTENANCE MANUAL

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VEXO®

Table of Contents

WARNING – This equipment must only be used, maintained or serviced by trained competent engineers. If in any doubt please do not touch this equipment. For further advice please contact VEXO International or your reseller for additional information and guidance.

Safe Working Distance Statement

VEXO®

STATEMENT

SAFE WORKING DISTANCE FROM THE X-POT6+ SIDE STREAM FILTRATION UNIT

Range from X-POT6+ (meters)	Micro Tesla (µT)
All magnets enclosed in vessel	
5m	0.005µT
4m	0.009µT
3m	0.009µT
2m	0.009µT
1m	0.018µT
Stood up against vessel	4.67µT

Most health organisations would suggest that anyone fitted with an electro medical device should avoid magnetic field strengths in excess of 5 Gauss (500µT), although the X-POT6+ (containing 6off rare earth magnets) will not cause any risk when stood by the units, VEXO stipulates the following:

IN THE INTEREST OF HEALTH AND SAFETY

PERSONS WHO HAVE ELECTRO MEDICAL DEVICES (E.G. PACEMAKERS ETC.) MUST NOT OPERATE OR HANDLE DIRECTLY THE MAGNETS CONTAINED WITHIN THE X-POT6+ SIDE STREAM FILTER.

For and on behalf of Vexo International (UK) Limited

Darren Wilkinson, Managing Director

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T: 01767 500 150. Registered in England & Wales No: 072 05096

Liability

All technical information, data and information contained herein are correct at time of publication. This information is the sum of our current findings and experience to the best of our knowledge. We reserve the right to make technical changes subject to the future development of the VEXO® product referred to in this publication. Hence no rights may be derived from technical data, descriptions and illustrations. Technical pictures, drawings and graphs do not necessarily correspond to the actual assemblies or parts as delivered. Drawings and pictures are not to scale and may contain symbols for simplification.

Warranty

Active Period: 24 months from the date of commissioning.

This warranty covers manufacturing defects only.

Please note that removal of the identification data labels from the equipment will render the manufacturing warranty null and void.

If the unit is identified with a manufacturing defect then no charge is made for correcting the defect.

The warranty is conditional upon the following clauses:

The equipment must be commissioned by a trained, competent engineer or qualified person, who can verify the integrity of the equipment at that time. The qualified person must confirm in writing that the equipment is undamaged as a result of transportation and installation and is fit to begin the warranty period.

Photographic evidence must be collected at the time of commissioning to verify the condition of the equipment at that time.

The equipment must be serviced at least annually, by a trained competent engineer or qualified person.

This warranty covers the equipment against manufacturing defects, normal wear and tear is not covered by this agreement and should form part of a separate service agreement.

It may be anticipated that some components will become worn and be identified for change during the warranty period, the costs associated with the required parts and associated engineer costs are not covered by this warranty. This will be deemed as preventative maintenance and will not/does not constitute a manufacturing defect.

The equipment must be stored, installed and operated in a frost free area. Damage as a result of adverse temperature or other adverse environmental conditions will not be covered by this agreement.

Any and all non-warranty service visits and non-warranty inspection visits are chargeable and are not covered by this warranty.

If a defect or problem has arisen as a direct result of the connected system, misuse, incorrect handling, incorrect installation or incorrect commissioning, maintenance and/or use of non-manufacturer made parts and/or filters then any service costs are chargeable.

If a defect is identified as a manufacturing defect it will be addressed as described above, additional remedial works as a result of misuse, incorrect handling, incorrect installation or incorrect commissioning remain chargeable.

Copyright

General Safety Instructions

Disregard or lack of attention to the information and measures in this manual may pose a hazard to people, animals, the environment and tangible assets. Failure to observe the safety regulations and the neglect of other safety measures may lead to the lapse of liability for damages in the event of damage or loss.

Definitions:

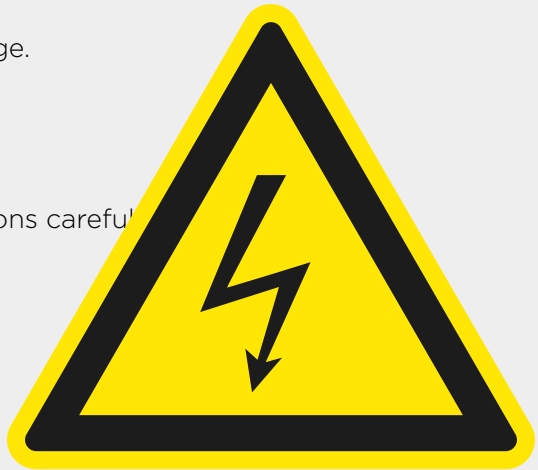
- Operator: Natural person or legal entity, who owns the product, uses it or to whom use of the product is entrusted on the basis of a contractual agreement.
- Principal: Legally and commercially liable client in relation to the system as a whole.
- Responsible Person: The representative appointed to act by the installer or operator.
- Qualified Person (QP): Any person whose professional training, experience and recent professional activity gives them the requisite professional knowledge. This implies that such people have knowledge derived from relevant national and internal safety regulations.

Electrical Warning Symbol

Danger - Electric current

Disregarding these warnings may:

- Endanger health.
- Cause death, fire or other damage.
- Lead to overloading of individual components and to damage.
- Impair the unit's function.



Caution - Warning for mistakes and wrong basic assumptions

Consider the implications of errors and incorrect set-up conditions careful

Disregarding these warnings may lead to:

- Serious personal injury
- Overloading of individual components and damage
- Impair the unit's function

Purpose & Use of this Manual

The following pages list the information, specifications, measures and technical data that allow the relevant personnel to use this product safely and for the intended purpose. Responsible persons or those engaged by them carrying out the required services must read this manual attentively and understand it. Such services include: storage, transportation, installation, electrical installation, commissioning and re-starting, operation, maintenance, inspection, repair and dismantling.

Where the product is to be used in plants/facilities which do not comply with harmonized European regulations and relevant technical rules and guidelines of professional associations for this field of application, the present document is purely for informative and reference purposes. As this unit may be subject to unlimited inspection at all times, this manual must be kept in the immediate vicinity of the installed unit, at least within the confines of the operations room.

Qualifications Required, Assumptions

All personnel must have relevant qualifications to carry out the required services, and be physically and psychologically capable.

Operating instructions are transferred by VEXO® representatives or others assigned by them during delivery negotiations or on demand. Training for the required services, installation, dismantling, commissioning, operation, inspection, maintenance and repair remain the responsibility of VEXO® or their nominated service partners. Such training covers information about on-site requirements rather than performance.

On-site requirements include logistics, manual handling, and the preparation of an installation location with the requisite foundation engineering to accommodate the unit, and the requisite hydraulic and electrical connections, the electrical installation for the power source of the equipment and installation of the BMS signal leads if required.

Appropriate Use

This equipment is designed for use on sealed and un-sealed thermal systems (heating, chilled and condenser water). It is designed to remove particulate debris from the system. The maximum operating limits of this equipment are stated on the data labels affixed to each unit.

Supplied Goods

The items delivered must be compared against the items listed on the shipping note and inspected for conformity. Unpacking, installation and commissioning may be started only once the product has been checked as conforming with the intended use. In particular, exceeding the permissible operating or design parameters may lead to malfunctioning, component damage and personal injury.

If not in line with conformity statement or if the delivery is incorrect in any other way, the product must not be used.

Transportation, Storage & Unpacking

The equipment is delivered in packing units in conformity with contract specifications or specifications required for the distributors method and climate zone.

They meet the requirements of the distributors packaging guidelines as a bare minimum. In conformity with these guidelines, equipment is shipped horizontally, each unit packed on reusable pallets. These pallets are suitable for horizontal transportation with approved fork-lift trucks.

The forks must be set to the widest possible outer dimensions in order to prevent the load from tipping over. When moving the equipment in question, the forks must be in the lowest possible position, with the article at right angles to the forks. If the packages are suitable for lifting gear, they will be marked at the appropriate lifting points.

Important note: Transport the packed goods as close as possible to the envisaged set-up location and make sure there is a vertical, solid surface on which the goods can be mounted / secured.

Caution:
Please take precautions to make sure the equipment, once it has been removed from the pallet and the packaging, does not impact any other equipment or surface, tip over or rock.

Once it has been removed from the pallet and the packaging, the equipment must be transferred in a safe manner. Use methods that prevent uncontrolled falling, sliding or tipping over.

The equipment may also be warehoused in their packaging. Once it has been removed from its packaging, the equipment must be put in position, observing standard safety procedures. Do not stack the equipment. Use only permitted lifting gear and safe tools, and wear the required personal protective equipment.

Emergency Stop / Emergency Off

In line with directive 2006/42/EC required EMERGENCY-STOP facility is made available by the main power switch on the VEXO® PD-Monitor®, refer to the VEXO® X-POT 6+® Schematic, item 17 on page 10 of this document.

Personal Protective Equipment (PPE)

PPE must be used when carrying out potentially dangerous work and other activities, in order to prevent or minimize the risk of personal injury if other measures cannot be taken.

These must comply with the requirements referred by the main contractor or operator of the plant room or the site in question. If no requirements are set, to operate the equipment minimum requirements are safety goggles, hand protection, well-fitting clothing and sturdy, closed and skid-proof footwear.

Exceeding Permitted Pressure &/Or Temperature Levels

Equipment used in combination with the VEXO® X-POT 6+® must guarantee that the permitted operating temperature and the permitted medium temperature (heat transfer medium) cannot be exceeded. Excess pressure and temperature may lead to component overload, irreparable damage to components, loss of function and, as a result, to severe personal injury and damage to property. Regular checks/inspections of these safeguards must be carried out.

Safeguards

The equipment supplied is equipped with the required safety devices. To test their effectiveness or restore the original set-up conditions, the equipment must first be taken out of service. Taking the system out of service implies that power should be isolated, hydraulics isolated and then vented.

External Forces

Avoid any additional forces (e.g. forces caused by heat expansion, vibration or dead weights on the flow and return lines).

These can lead to damage / leakage in water-bearing pipework, loss of stability of the appliance and potentially failure of pressure bearing components.

Electrical Equipment Inspections

Regardless of the prescriptions of the property insurer / operator it is recommended to inspect demonstrably the electrical equipment of the VEXO® X-POT 6+® together with the heating or chilled installation at least every 12 months.

Maintenance & Repair

These services may only be carried out when the X-POT 6+® is shut down. The VEXO® X-POT 6+® equipment must be taken out of service and guarded against unintentional re-starting until the maintenance work is finished.

The control panel can be interconnected to a MODBUS RS485 (BMS) or alarm system to allow for indication that the filter is ready for change and the magnets are ready for cleaning.

The VEXO® PD-Monitor® is fitted with a combined visual illuminated flashing beacon in low light situations for visual indication and sounder as an indication of filter blockage.

The unit must be inspected on an annual basis, and the electrical and mechanical components verified for operation and integrity **(See inspection table below).**

Task	VEXO® X-POT 6+®
Visual inspection of components	6 Months - Qualified Person
Operational check of hydraulic components	12 Months - Annual Service - Qualified Person
Operational check of electrical components	12 Months - Annual Service - Qualified Person

Obvious Misuse

Operation at incorrect voltage and/or frequency.
Use in inappropriate system designs and environments.
Use of non-permitted or inappropriate installation materials.

Product Description

The VEXO® X-POT 6+® is a sealed system, 2 stage side stream filtration and manual chemical dosing unit.
It is a Patented, fully prefabricated, factory tested wall mounted unit incorporating:

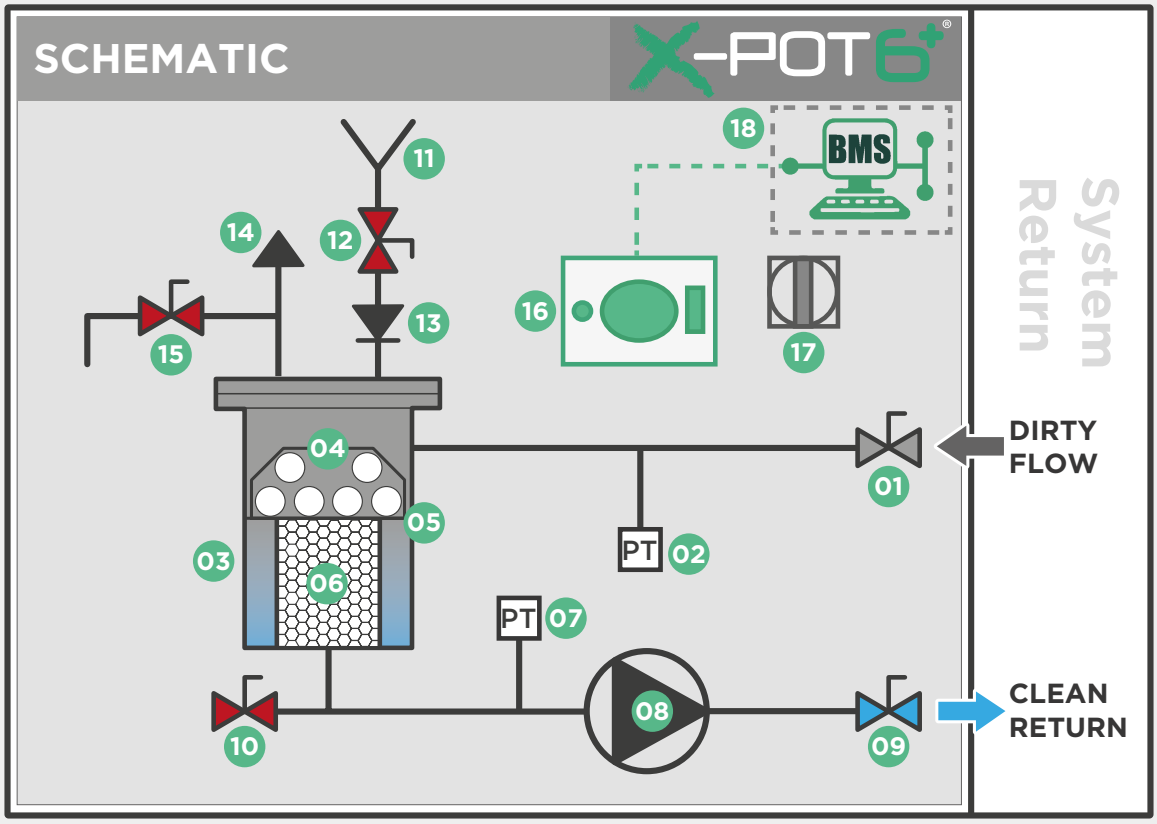
Grundfos 3-Speed Single Speed circulating pump, (Pump to be set at CP2)
VEXO® PD-Monitor® (MODBUS RS485 BMS Connectivity)
Magnetic Filtration
Cartridge Filter Filtration
Air Separation
Dirt Separation
Manual Dosing facility
Working Pressure up to 10Bar
Working temperature from O°C up to 95°C

Technical Data

Unit Model	Flow Rate (l/s)	Maximum System Size (litres)	Dimensions			Dry Weight (KG)	Wet Weight (KG)
			Width (mm)	Depth (mm)	Height (mm)		
VEXO® X-POT 6+	1.0	86,400	850	340	976	46	58

Unit Model	Circulating Pump			
	Grundfos Reference	Motor Rating	Electrical Supply	Current
VEXO® X-POT 6+	Grundfos UPMXL 25-125	180W	230/1/50	~1.42 Amps

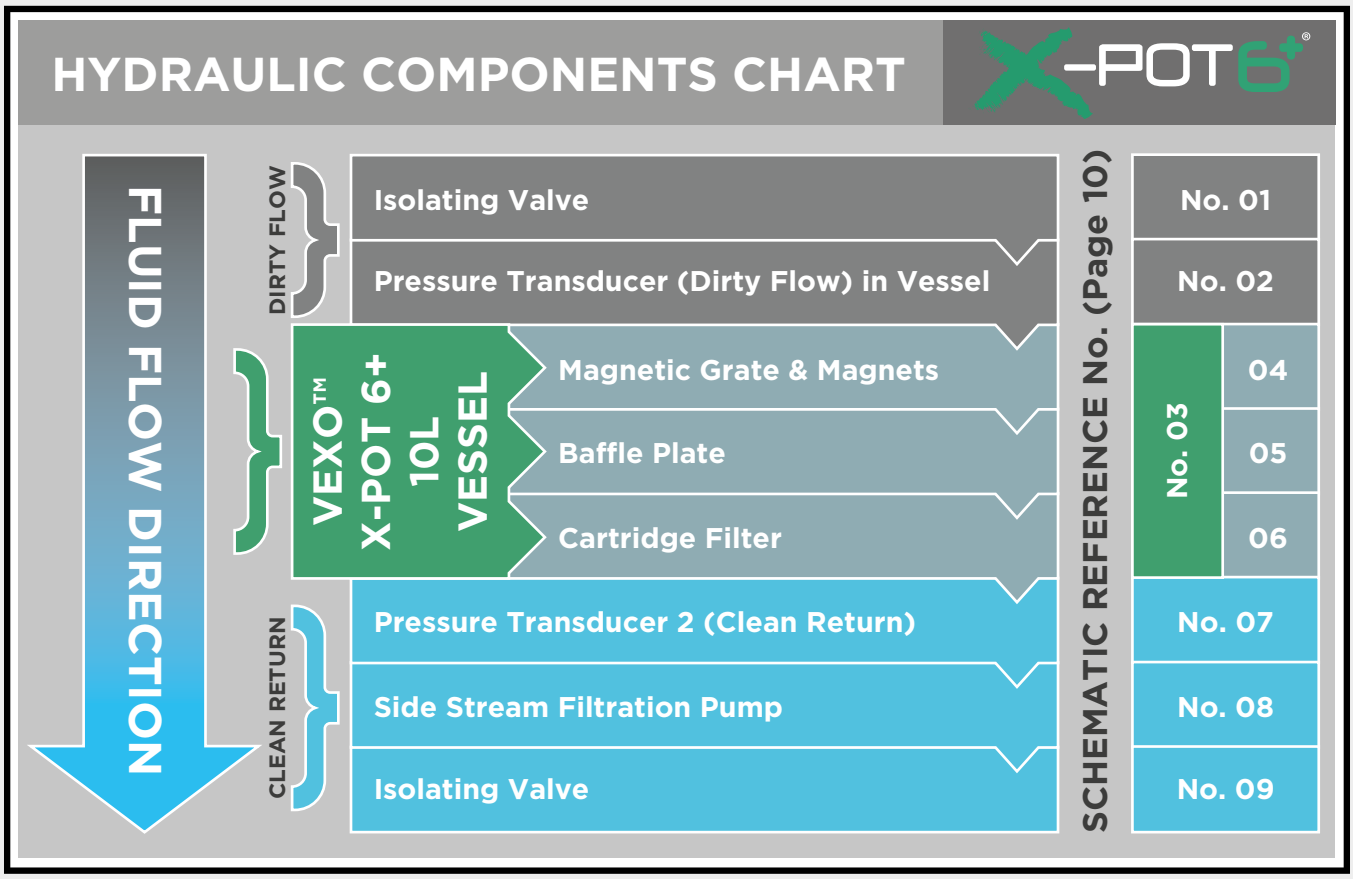
Schematics & Component List



01	ISOLATING VALVE	10	DRAIN VALVE
02	PRESSURE TRANSDUCER 1 (DIRTY FLOW)	11	CHEMICAL FILL TUNDISH
03	VEXO® X-POT 6+® VESSEL BODY	12	ISOLATING VALVE
04	MAGNET GRATE (INTERNAL) CONTAINING 6 MAGNETS	13	SWING CHECK VALVE
05	BAFFLE PLATE (INTERNAL)	14	AUTOMATIC AIR VENT
06	CARTRIDGE FILTER (INTERNAL)	15	MANUAL VENT ISOLATION VALVE
07	PRESSURE TRANSDUCER 2 (CLEAN RETURN)	16	PD-MONITOR®
08	GRUNDFOS UPMXL 25-125	17	MAINS ON/OFF POWER SWITCH
09	ISOLATING VALVE	18	MODBUS RS485 BMS

Operating Principles

The VEXO® X-POT 6+® is designed to be a self-contained filtration equipment, with a dedicated inlet and outlet connection to a sealed and open vented system. The system fluid passes through the hydraulic components in the flow sequence below:



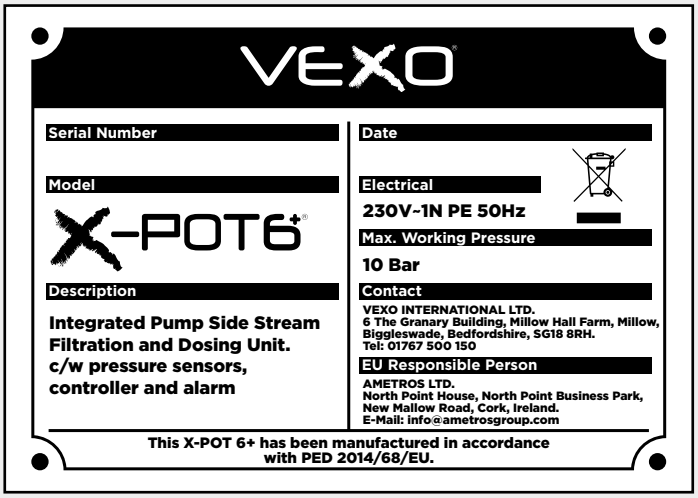
The system fluid is drawn from the main system return and into the VEXO® X-POT 6+® vessel. The fluid is drawn through a twin stage filtration system, in the first chamber, ferrous particulates are captured by the rare earth magnets contained in the magnet grate, the fluid then passes through the Baffle Plate and into the second chamber, where non-ferrous particulates are captured by the cartridge filter before the sampled water exits the VEXO® X-POT 6+® vessel, it then passes through the Side Stream Filtration Pump and back to the main system return.

The VEXO® X-POT 6+® is provided with a manual dosing facility comprising of a tundish, isolation valve and swing check valve arrangement. The equipment is also provided with an automatic air vent for the release of free air within the VEXO® X-POT 6+® assembly.

The equipment is provided with a proprietary VEXO® PD-Monitor®, with VEXO® control methodology, that monitors the pressure drop across the VEXO® X-POT 6+® 'Filters' to determine the status of the filter media and to trigger the on-site cleaning and replacement of the filter media as appropriate.

Product Markings

THE FOLLOWING MARKINGS AND WARNINGS ARE INSTALLED ON THE X-POT 6+ UNIT

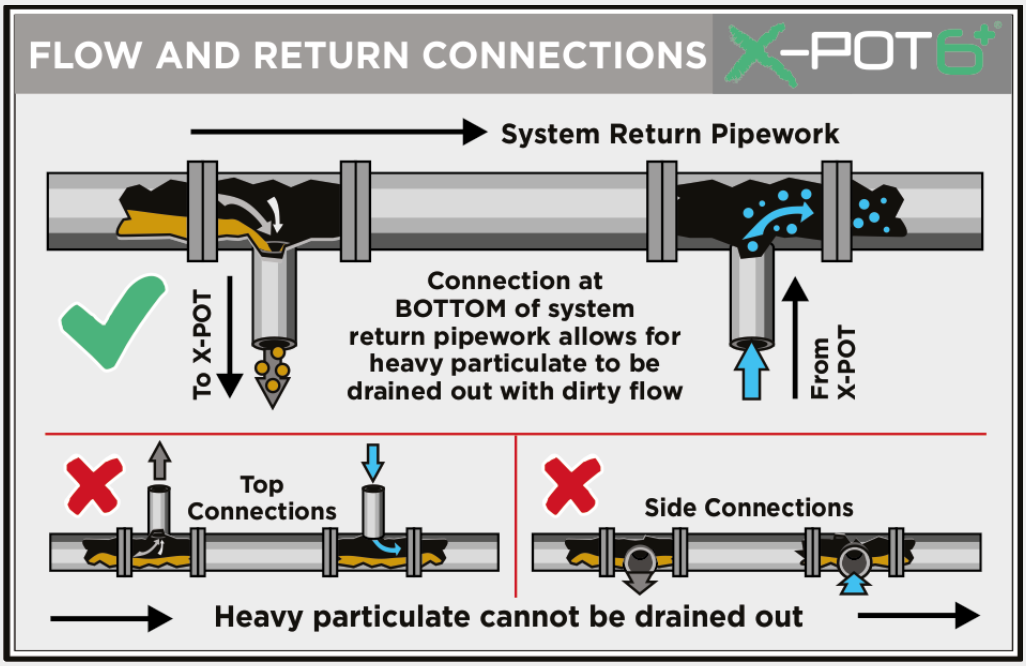


Installation

Basic Installation Instructions

The equipment is to be connected from/to the return header pipework of the appropriate sealed system. The maximum pipe run length from the system pipework to the VEXO® X-POT 6+® is to be 10m.The 2 connections, from/to the return pipework, for the VEXO® X-POT 6+® is to be made at the bottom / underside of the return pipework to allow for any dense particulate solids to be drawn into the VEXO® X-POT 6+® for active removal from the system. A 1" drain with isolation valve is supplied at the bottom of the vessel. Extend this drain to a local floor gully with a minimum fall of 1:100.

The Power supply to the VEXO® X-POT 6+® is to be provided from the main system pump electrical supply. Therefore, the VEXO® X-POT 6+® will only be activated when the main system pump is running and active. **Ensure the power supply is 230V ~ 1N PE 50Hz via a suitable Fused Spur and Isolator.**



Critical Installation Requirements

The equipment must be sited:

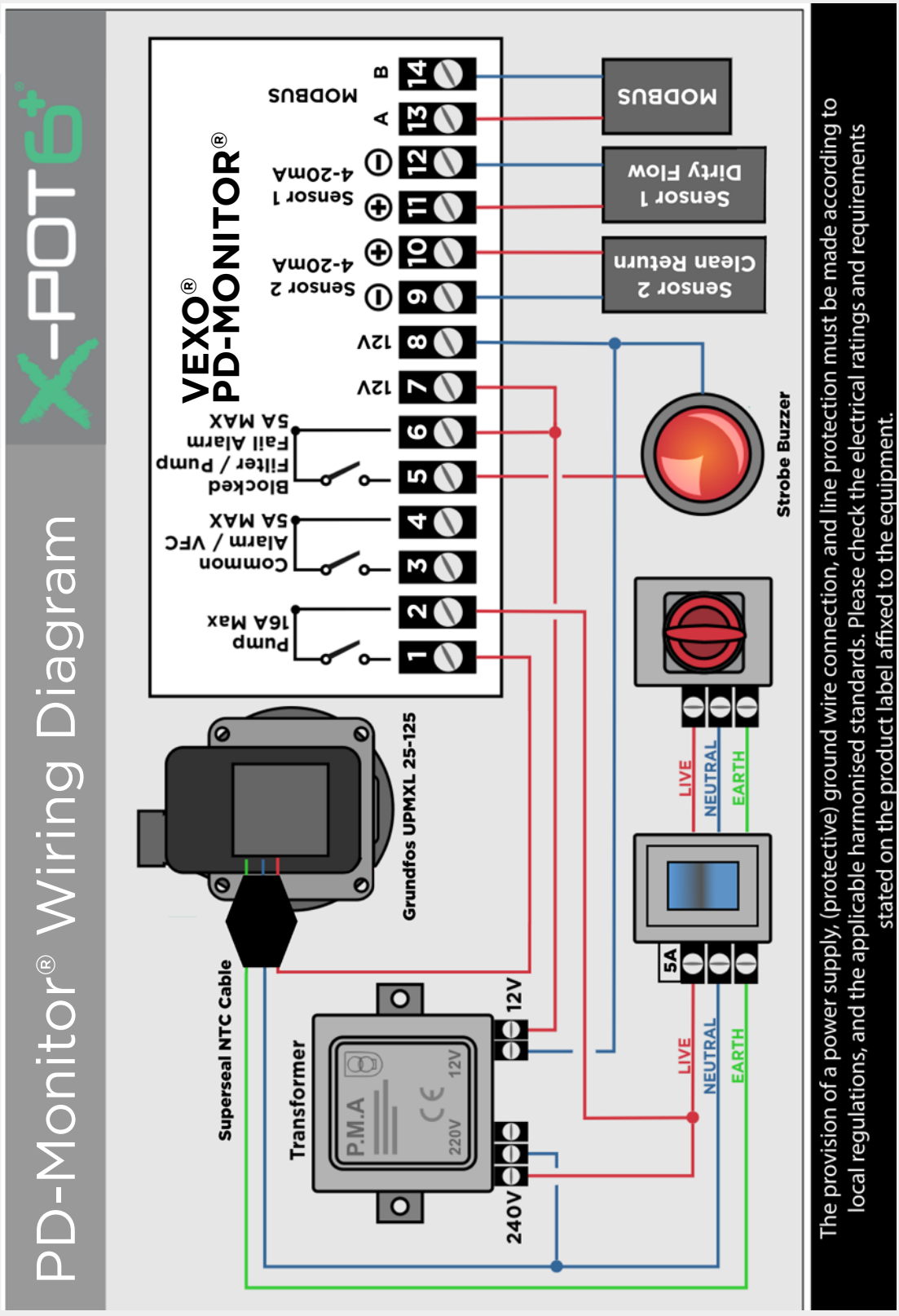
- In a frost free area (> 5°C) and must also be protected from adverse environmental conditions.
- In a well-lit area to allow for safe changing of the filter media and chemical dosing.
- On a flat, vertical, level, solid wall with access to the electrical panel, pump and VEXO® X-POT 6+® vessel itself.

Care must be taken when handling this equipment. Appropriate safety measures must be in place in respect of use, handling and application of:

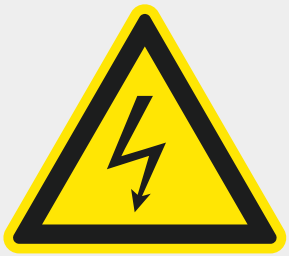
- Electrical equipment
- Pressure vessels
- Sealed system water
- Powerful rare earth magnets
- Filter media
- Hydraulic equipment
- Manual handling
- Chemical inhibitors and additives
- Particulate debris

It is essential to ensure the environment that this equipment is installed in is safe to work and is free from trip hazards.

Electrical Connections & Wiring Diagram



Commissioning



WARNING
This equipment must only be used, maintained or serviced by trained competent engineers. If in any doubt please do not touch this equipment.

For further advice please contact VEXO International (UK) Ltd or your reseller for additional information and guidance.

WARNING
This equipment uses Rare Earth Magnets with a strong magnetic field.

You should not use, service or work in the close vicinity (30cm / 1ft) of this equipment if you are fitted with a pacemaker or other electromechanical medical devices.

1. General

The VEXO® X-POT 6+® is a 'Plug and Play' unit. It is supplied factory set with the Grundfos UPMXL 25-125 Pump set to **'CP2'** and the Differential Pressure across the Filter Vessel set to **0.4 Bar**.

The operator should read this section prior to hand-over of the equipment from the installation operative to be confident on the operation of the VEXO® PD-Monitor® and the VEXO® X-POT 6+® unit as a whole.

The Control System is based around a VEXO® PD-Monitor® complete with |/O modules.

A Display Panel is fitted to the VEXO® PD-Monitor® to allow interrogation and adjustment of the parameters.

In the event of a power failure, the VEXO® PD-Monitor® will return to its factory set operating mode once power has been restored.

The Power supply to the VEXO® X-POT 6+® is provided from the main system pump electrical supply. Therefore, the VEXO® X-POT 6+® will only be activated when the main system pumps are running and active.

Ensure the power supply to the VEXO® X-POT 6+® is 230V ~ 1N PE 5OHz via a suitable Fused Spur.

The power supply is then connected to the main VEXO® X-POT 6+® Mains Isolation Switch, refer to the unit schematic, item 17 on page 10 (Schematic) of this document.

The power is then distributed throughout the VEXO® X-POT 6+® via an internal wiring loom.

2. Enable Filtering

It is important to visually inspect the electrical connections, components and conduit serving the VEXO® X-POT 6+® unit before commencement of the operation of the unit. It is important to visually inspect the VEXO® X-POT 6+® unit hydronic connections before commencement of the operation of the unit to confirm the following;

- The integrity of all fittings and pipework connecting the heating/chilled system to the VEXO® X-POT 6+® - Ensure there are not leaks.
- The closure lid of the VEXO® X-POT 6+® is closed and sealed tight in accordance with the 'Bolt Tightening' method (page 29) of this document.
- All isolating valves 'as supplied' used to drain the VEXO® X-POT 6+® are closed with the valve handles at 90° to the pipework they are connected to. Refer to page 10 for the VEXO® X-POT 6+® Schematic, valve references 10 & 15.
- All isolating valves 'as supplied' which connect the VEXO® X-POT 6+® to the main heating / chilled system should be in the 'open' position. Rotate the valve handles to be in-line with the pipework it is connected to. Refer to page 10 for the VEXO® X-POT 6+® Schematic, valve references 1 & 9.
- When the VEXO® X-POT 6+® has been filled with system water and pressurised, check the hydronic integrity of all fittings and pipework within the VEXO® X-POT 6+® unit - Ensure there are no leaks. To confirm the VEXO® X-POT 6+® has been filled, check the PD-Monitor® is displaying a pressure reading.
- Any system air will be drawn out through the Automatic Air Vent, item (14). This is a normal procedure.

2.1. Circulation Pump

The Circulation Pump (item 08) installed onto this VEXO® X-POT 6+® is a 'Grundfos UPMXL 25-125'. The pump needs to be set at CP2 for the VEXO® X-POT 6+® to operate correctly.

2.2. Activation

The VEXO® X-POT 6+® can be activated by turning the Isolator Switch from the 'Off' position to the 'On' position. The VEXO® PD-Monitor® will now scroll the following...

3. Enable Filtering

The Differential Pressure is factory set to 0.4 Bar. To reset the parameters (for example, the pressure differential) the following sequence needs to be followed on the VEXO® PD-Monitor®. See list of parameters on previous page:

- Press and hold “Set” button 4 to access parameters
- Enter code “815” and then while holding set press the up or down button to access required parameter.
- Change the parameter setting using up or down
- Press and hold set to save required setting, the controller will scroll “Saving” and return to main screen.

4. Fault Messages

If a fault is detected, the VEXO® PD-Monitor® display will scroll a Fault Message as below. The VEXO® PD-Monitor® will also initiate the visual strobe and sounder to draw attention to the user.

Fault Message	X-POT 6+® Operation	Solution
Blocked Filter	Shutdown	Isolate the X-POT 6+® & change filters to allow the X-POT 6+ to operate
Sensor 1 Fail	Shutdown	Call Engineer to check connections and replacement of the Pressure Transducer
Sensor 2 Fail	Shutdown	Call Engineer to check connections and replacement of the Pressure Transducer
Pump Fail	Shutdown	Call Engineer to check connections and replacement of the Pump

VEXO® PD-Monitor® Monitoring

Volt free contacts are provided for the following conditions. The contacts are rated 5 amp, 230v maximum.

Filter On - In Normal Operation, the VEXO® PD-Monitor® will scroll "**Filter Pump Run**".

The display rolls: <FILTER PUMP RUN>

In the event the filter is blocked, the VEXO® PD-Monitor® will scroll "**Blocked Filter**"

- Filter Blocked, Clean Magnet Grate / Replace Filters.

The display rolls: <BLOCKED FILTER>

In the event of a Dirty Flow Pressure Transducer failure, the VEXO® PD-Monitor® will scroll **"Sensor 1 Fail**".

- Pressure Transducer Dirty Flow Failure.

The display rolls: <SENSOR 1 FAIL>

In the event of a Clean Return Pressure Transducer failure, the VEXO® PD-Monitor® will scroll "**Sensor 2 Fail**".

- Pressure Transducer Clean Return Failure.

The display rolls: <SENSOR 2 FAIL>

In the event the X-POT 6+® Circulating Pump fails to operate, the VEXO® PD-Monitor® will scroll "**Pump Fail**".

- Flow Pump Failure.

The display rolls: <PUMP FAIL>

VEXO® PD-Monitor® Parameters			
Number	**Parameter**	**Default Value**	**Range**
0	Pressure Differential	0.4 Bar	0.0 - 1.0 Bar
1	Alarm Relay Contacts	0	0 = N/C 1 = N/C
2	Sensor Minimum Pressure	0 Bar	0.0 - 10.0 Bar
3	Sensor Maximum Pressure	30 Bar	0.0 - 10.0 Bar
4	Current Sense	N	Y/N
5	Bar - PSI	Bar	Bar/PSI
6	Buzzer Enable	Y	Y/N

VEXO® PD-Monitor® Parameters			
Number	**Parameter**	**Default Value**	**Range**
7	Pressure Differential Message	1	1. Blocked Filter 2. PHX High DP - Service now 3. High DP on Coil - Service Now 4. High DP on Strainer - Service Now 5. High DP - Service Now
8	ID Numbers	0	0 = N/C 1 = N/C
9	Pump Hours	-	-
10	Alarm Count	-	-

MODBUS Address List

Preliminary Settings	
Baud Rate	9600
Word Length	8
Parity	NO
Stop Bits	1

Continues on following page...

X Variable Address	Denomination	Type	X Variable Format	Description
40001	Pressure Sensor 1	Read	Word	Value of Sensor 1
40002	Pressure Sensor 2	Read	Word	Value of Sensor 2
40003	Current	Read	Word	Value of current through pump
40006	Pump Relay	Read	Word	Status of Pump Relay
40007	Filter Pump Alarm Relay	Read	Word	Status of Pump Relay
40008	General Alarm Relay	Read	Word	Status of General Alarm Relay
40009	Buzzer	Read	Word	Status of Buzzer
40013	Filter Blocked Alarm	Read	Word	Status of Filter Blocked Alarm
40014	Pump Failure Alarm	Read	Word	Status of Pump Failure Alarm
40015	Sensor 1 Alarm	Read	Word	Status of Sensor 1 Alarm
40016	Sensor 2 Alarm	Read	Word	Status of Sensor 2 Alarm
40023	Par. Pressure Diff	Read/Write	Word	Value of Parameter
40024	Par. Alarm Relay Contact	Read/Write	Word	Value of Parameter
40025	Par. Minimum Pressure	Read/Write	Word	Value of Parameter
40026	Par. Maximum Pressure	Read/Write	Word	Value of Parameter
40027	Par. Current Sense	Read/Write	Word	Value of Parameter
40028	Par. Bar/PSI Unit	Read/Write	Word	Value of Parameter
40029	Par. Buzzer Enable	Read/Write	Word	Value of Parameter
40030	Par. Pressure Diff. Message	Read/Write	Word	Value of Parameter
40031	Par. ID Number	Read/Write	Word	Value of Parameter
40032	Par. Pump Hours	Read/Write	Word	Value of Parameter
40033	Par. Alarm Counter	Read/Write	Word	Value of Parameter

Continues on following page...

X Variable Address	Data Conversion	X Variable Format	Description
40001	Pressure Sensor 1	Decimal of Bar/PSI	
40002	Pressure Sensor 2	Decimal of Bar/PSI	
40003	Current	mA	
		Preliminary Settings	
40006	Pump Relay	Baud Rate	9600
40007	Filter Pump Alarm Relay	Word Length	8
40008	General Alarm Relay	Parity	NO
40009	Buzzer	Stop Bits	1
40013	Filter Blocked Alarm	Read	
40014	Pump Failure Alarm	Read	
40015	Sensor 1 Alarm	Read	
40016	Sensor 2 Alarm	Read	
40023		Read/Write	1 -> 70
40024	Par. Alarm Relay Contact		0 -> 1
40025		Read/Write	0 -> Par. Maximum Pressure
40026		Read/Write	Par. Minimum Pressure -> 30
40027	Par. Current Sense		4 -> 5
40028	Par. Bar/PSI Unit		2 -> 3
40029	Par. Buzzer Enable		4 -> 5
40030	Par. Pressure Diff. Message		1 -> 5
40031			0 -> 99
40032		Hours	1 -> 9999
40033			0 -> 1000

Filter Maintenance

1. Disassembly For Filter Replacement

The filter replacement may only be carried out when the X-POT 6+® is shut down and the VEXO® X-POT 6+® has been hydraulically isolated from the main system water pressure and also electrically isolated from the main system power supply.

The X-POT 6+® equipment must be taken out of service and guarded against un-intentional re-starting until the maintenance work is finished.

NOTE:

- **The safety circuits and data transmissions (if applicable) made or broken while shutting down could trigger the BMS Alarms or lead to false failure information.**
- **Operating instructions for relevant system heating or cooling units must be observed. To make the hydraulic components safe, isolate the relevant sections and vents using the relevant drain valves and relieve the pressure.**
- **The equipment is to be worked on only when in a safe and cool condition.**
- **Do not attempt to work on this equipment at elevated temperatures.**
- **Use of eye/face/hand protectors is required as the eyes or face could be injured by spraying fluids if the isolating valves have not been closed properly.**

WARNING
This equipment must only be used, maintained or serviced by trained competent engineers. If in any doubt please do not touch this equipment.

For further advice please contact VEXO International (UK) Ltd or your reseller for additional information and guidance.

WARNING
This equipment uses Rare Earth Magnets with a strong magnetic field.

You should not use, service or work in the close vicinity (30cm / 1ft) of this equipment if you are fitted with a pacemaker or other electromechanical medical devices.

2. To Replace the Filters

1. The operative must wear protective gloves and eye wear for this operation.
2. Use of the main VEXO® X-POT 6+® Schematic (Page 10) is required to follow the main part numbers.
3. Turn the power off to the VEXO® X-POT 6+® unit by turning the Mains ON/OFF Power Switch (17) through 90°.
4. Check to see the power is off, the power to the VEXO® PD-Monitor® (16). The screen should be blank and off and the pump will not run.
5. Manually close the 1" Isolating Valve (1) on the Dirty Flow into the VEXO® X-POT 6+®.
6. Manually close the 1" Isolating Valves (9) on the Clean Return from the VEXO® X-POT 6+®.
7. Manually open the 1" Isolating Valve (10). This will open the VEXO® X-POT 6+® Vessel (3) to drain.
8. Remove the 1/2" plug and manually open the 1/2" Manual Vent Isolating Valve (15). This will open the VEXO® X-POT 6+® Vessel (3) to atmosphere and will help the VEXO® X-POT 6+® Vessel (3) drain quicker.

   NOTE: If the system water is hot, leave enough time for the water to cool sufficiently before working on this vessel.
9. Untie and remove the top insulation cover and store in a clean and dry place.
10. Once you are content that all of the liquid within the vessel has been drained out;
11. Carefully loosen the 8off nuts which hold the lid in place. Please ensure the nuts are loosened in an opposite order, for example, front then back, then left to right and diagonals etc.
12. Once all of the nuts have been loosened sufficiently, undo the nut to the end of the bolt and swing the arms of the bolts down to the side of the Vessel.
13. The lid of the vessel can now be carefully removed and placed on a clean dry surface.
14. Remove the 6 Magnet Grate (4) by the handle and place the Magnet Grate (4) onto a flat surface so the grate can be worked on.
15. Remove the Baffle Plate (5) by the lifting ring and place it onto a flat surface for cleaning.
16. Remove the dirty Cartridge Filter (6) and dispose of in an approved manner.
17. Replace the Cartridge Filter (6) with an approved new clean Cartridge Filter (6) and lower it into the Vessel Body (3) ensuring the spigot at the bottom of the Cartridge Filter (6) seats into the bottom connection out of Vessel Body (3).
18. Clean the Baffle Plate (5) with a clean damp cloth and then place it into the Vessel Body (3). Ensure the 4off pins on the underside of the Baffle Plate locate into the 4off holes in the top of the new Cartridge Filter (6), press down gently to lock the Baffle Plate (6) into the Cartridge Filter (6).
19. To clean the Magnet Grate (4), unscrew and remove the 6off end caps with a flat headed screw driver and remove each magnet bar contained within using a pair of grips on the end of the magnet bar screw.
20. As each magnet bar is removed from the grate, dirt and debris will start to fall off the grate.

Continues on following page...

21. Once all of the magnet bars have been removed, carefully clean the bars with a dry cloth and store in a safe place. Maintain adequate separation between the magnet bars to avoid a potential pinching hazard.

22. When the Magnet Grate (4) has had all of the magnet bars removed, rinse the Magnet Grate under a tap or swill around in a bucket of water to remove any remaining dirt and debris.

23. Clean and dry the Magnet Grate (4) with a dry cloth, carefully replace all of the magnet bars with the screw facing outwards and then screw the caps back on with a flat screw driver.

24. Replace the now cleaned Magnet Grate (4) back into the Vessel Body (3) on top of the Baffle Plate (5).

25. Now repeat the operations of 11 to 13, in reverse by following the Bolt tightening sequence on page 29.

26. Ensure the nuts on the lid have been tightened to a torque of 40Nm.

27. Manually close the 1/2" Manual Vent Isolating Valve (15) and replace the 1/2" plug to prevent accidental opening of the Manual Vent Valve (15).

28. Manually close the 1" Isolating Valve (10). This will close the VEXO® X-POT 6+® Vessel (3) to drain.

29. Slowly manually open the 1" Isolating Valves (1) on the Dirty Flow into the VEXO® X-POT 6+®. This will now let system water into the VEXO® X-POT 6+® Vessel.

30. At the start of the filling procedure, air will escape through the Automatic Air Vent. This will be signalled by a 'hissing'. When the air is fully omitted from the vessel...

31. Slowly manually open the 1" Isolating Valves (9) on the Clean Return from the VEXO® X-POT 6+®.

32. Replace the top cover of the Insulation Jacket and tie.

33. Turn the power on to the VEXO® X-POT 6+® unit by turning the Mains ON/OFF Power Switch (17) through 90°.

34. Check to see if the power is on. The power to the VEXO® PD-Monitor® (16) will activate it. The screen should now scroll 'Filter Pump Run' and the pump will be operational.

The VEXO® X-POT 6+® filters have been cleaned and changed. The VEXO® X-POT 6+® is now active and is running in automatic mode and in-line with the controls philosophy.

Dosing & Water Treatment Additives

To manually dose the system, it may only be carried when the system is shut down and the VEXO® X-POT 6+® has been hydraulically isolated from the main system water pressure and also electrically isolated from the main system power supply.

The X-POT 6+ equipment must be taken out of service and guarded against unintentional re-starting until the Water Treatment Additives are dosed into the X-POT 6+ Vessel (3).

Dosing of Water Treatment Additives can only be achieved when the main System Pumps are operational, make sure they are working and the system is running.

VEXO International (UK) Ltd recommend the 'X-PO' Range of Water Treatment Additives for use in Commercial Heating and Cooling Systems.

VEXO International (UK) Ltd recommends the 'X-PO' Range of Water Treatment Additives for use in Commercial Heating and Cooling Systems.

X-PO10
Commercial Inhibitor

X-PO20
De-Scaling Agent

X-PO35
Non-Flush Cleanser

X-PO40
Heavy Duty De-Sludger

X-PO45
New System Cleaner

X-PO50
Monopropylene
Ready Mixed

X-PO55
Monopropylene
Concentrate

X-PO80
Non-Potable Biocide

Note: The safety circuits and data transmissions (if applicable) made or broken while shutting down could trigger the BMS Alarms or lead to false failure information.

- Operating instructions for relevant system heating or cooling units must be observed. To make the hydraulic components safe, isolate the relevant sections and vents using the relevant drain valves and relieve the pressure.
- The equipment is to be worked on only when in a safe and cool condition.
- Do not attempt to work on this equipment at elevated temperatures.
- Use of eye/face/hand protectors is required as the eyes or face could be injured by spraying fluids if the isolating valves have not been closed properly.

3. Manually dosing the system with treatment additives

WARNING
This equipment must only be used, maintained or serviced by trained competent engineers. If in any doubt please do not touch this equipment.

For further advice please contact VEXO International (UK) Ltd or your reseller for additional information and guidance.

WARNING
This equipment uses Rare Earth Magnets with a strong magnetic field.

You should not use, service or work in the close vicinity (30cm / 1ft) of this equipment if you are fitted with a pacemaker or other electromechanical medical devices.

1. The operative must wear protective gloves and eye wear for this operation.
2. Use of the main VEXO® X-POT 6+® Schematic (page 10) is required to follow the main item Numbers.
3. Turn the power off to the VEXO® X-POT 6+® unit by turning the Mains ON/OFF Power Switch (17) through 90°.
4. Check to see the power is off, the power to the VEXO® PD-Monitor® (16). The screen should be blank and off and the pump will not run.
5. Manually close the 1" Isolating Valves (1) on the Dirty Flow to the VEXO® X-POT 6+®.
6. Manually close the 1" Isolating Valves (9) on the Clean Return from the VEXO® X-POT 6+®.
7. Manually open the 1" Isolating Valve (10). This will open the VEXO® X-POT 6+® Vessel (3) to drain.
8. Remove the 1/2" plug and manually open the 1/2" Manual Vent Isolating Valve (15). This will open the VEXO® X-POT 6+® Vessel (3) to atmosphere and will help the VEXO® X-POT 6+® Vessel (3) drain quicker.

   NOTE: If the system water is hot, leave enough time for the water to cool sufficiently before working on this vessel.
9. Untie and remove the top insulation cover and store in a clean and dry place.
10. Once you are content that all of the liquid within the vessel has been drained out;
11. Carefully loosen the 8off nuts which hold the lid in place. Please ensure the nuts are loosened in an opposite order, for example, front then back, then left to right and diagonals etc.
12. Once all of the nuts have been loosened sufficiently, undo the nut to the end of the bolt and swing the arms of the bolts down to the side of the Vessel.
13. The lid of the vessel can now be carefully removed and placed on a clean dry surface.
14. Remove the 6 Magnet Grate (4) by the handle and place the Magnet Grate (4) onto a flat surface.

Continues on following page...

15. Remove the Baffle Plate (5) by the lifting ring and place it onto a flat surface.

16. Remove the Cartridge Filter (6) and place it onto a flat surface.

17. Now repeat the operations of 11 to 13, in reverse by following the bolt tightening sequence on page 29.

18. Ensure the nuts on the lid have been tightened to a torque of 40Nm.

19. Manually close the 1" Isolating Valve (10). This will close the VEXO® X-POT 6+® Vessel (3) to drain.

20. Manually open the 1" Isolating Valve (12) below the Chemical Fill Tundish (11).

21. Decant your water treatment additives from the larger drums into an easily manageable container.

22. Pour the Water Treatment Additives into the Tundish (11) and therefore into the Vessel Body (3) itself.

23. The vessel will hold 10L of Water Treatment Additives in total, when you have filled the VEXO® X-POT 6+® Vessel Body (3), a small amount of Water Treatment Additives will exit through the spout of the Manual Vent. This over-spill will eventually lead to drain.

24. Manually close the 1" Isolating Valve (12) below the Tundish.

25. Replace the 1/2" plug and manually close the 1/2" Manual Vent Isolating Valve (15). This will close the VEXO® X-POT 6+® Vessel (3) to atmosphere.

26. Slowly manually open the 1" Isolating Valves (1) on the Dirty Flow into the VEXO® X-POT 6+®. This will now let system water into the VEXO® X-POT 6+® Vessel.

27. At the start of the filling procedure, air will escape through the Automatic Air Vent. This will be signalled by a 'hissing'. When the air is fully omitted from the vessel...

28. Slowly manually open the 1" Isolating Valves (9) on the Clean Return from the VEXO® X-POT 6+®.

29. Turn the power on to the VEXO® X-POT 6+® unit by turning the Mains ON/OFF Power Switch (17) through 90°.

30. Check to see if the power is on. The power to the VEXO® PD-Monitor® (16) will activate it. The screen should now scroll 'System Pump Run' and the pump will be operational.

31. The Water Treatment Additives are now dosed into the main system.

32. Repeat instructions 1 to 8, 10 to 13.

33. Replace the Cartridge Filter (6) and lower it into the Vessel Body (3) ensuring the spigot at the bottom of the Cartridge Filter (6) seats into the bottom connection out of Vessel Body (3).

To carry on with further dosing of water treatment additives, follow instructions: 1 - 8, 10 - 13 & 19 - 31 as above.

Continues on following page...

34. Replace the Baffle Plate (5) and then place it into the Vessel Body (3). Ensure the 4off pins on the underside of the Baffle Plate locate into the 4off holes in the top of the Cartridge Filter (6), press down gently to lock the Baffle Plate (5) into the Cartridge Filter (6).

35. Replace the Magnet Grate (4) back into the Vessel Body (3) on top off the Baffle Plate (5).

36. Now repeat the operations of 11 to 13, in reverse by following the 'Reassembly After Inspection' below.

37. Ensure the nuts on the lid have been tightened to a torque of 40Nm.

38. Manually close the 1/2" Manual Vent Isolating Valve (15) and replace the 1/2" plug to prevent accidental opening of the Manual Vent Valve (15).

39. Manually close the 1" Isolating Valve (10). This will close the VEXO® X-POT 6+® Vessel (3) to drain.

40. Slowly manually open the 1" Isolating Valves (1) on the Dirty Flow into the VEXO® X-POT 6+®. This will now let system water into the VEXO® X-POT 6+® Vessel.

41. At the start of the filling procedure, air will escape through the Automatic Air Vent. This will be signalled by a 'hissing'. When the air is fully omitted from the vessel...

42. Slowly manually open the 1" Isolating Valves (9) on the Clean Return from the VEXO® X-POT 6+®.

43. Replace the top cover of the Insulation Jacket and tie.

44. Turn the power on to the VEXO® X-POT 6+® unit by turning the Mains ON/OFF Power Switch (17) through 90°.

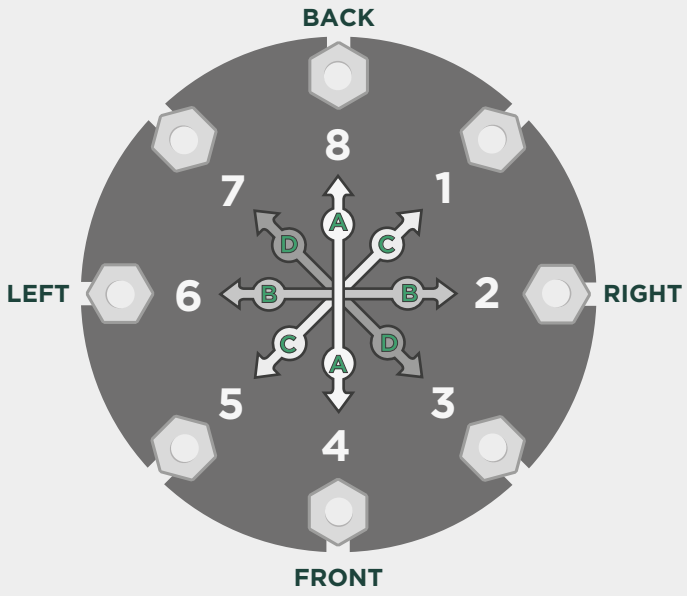
45. Check to see if the power is on. The power to the VEXO® PD-Monitor® (16) will activate it. The screen should now scroll 'System Pump Run' and the pump will be operational.

    The VEXO® X-POT 6+® has now been used to dose Water Treatment Additives, it is back in operational mode for Side Stream Filtration, it is now active and running in automatic mode and in-line with the controls philosophy.

Bolt Tightening

4. Bolt tightening notes

Important Note: The 8 off captive nuts, of the top flange plate, **must be tightened to a torque setting of 40 Nm**. The bolts must be tightened in the following sequence when standing in front of the vessel looking down.

Bolt Tightening Sequence (All nuts must be tightened to 40Nm torque)		
	Sequence A	Bolt 8
		Then Bolt 4
	Sequence B	Bolt 2
		Then Bolt 6
	Sequence C	Bolt 1
		Then Bolt 5
	Sequence D	Bolt 3
		Then Bolt 7

When the VEXO® X-POT 6+® top flange plate is replaced, ensuring the seal faces are clean and unobstructed.

The tightening sequence must be repeated 3 times to guarantee that all the nuts are to the required torque (40Nm).

A proprietary torque wrench must be used to perform this operation, failure to tighten the nuts to the correct torque may result in leakage, failure of the equipment, damage to the equipment and potential consequential damage.

Electrical Checks & Inspection

To stop electrical equipment (control unit, pumps, valves, peripheral equipment), cut power to the control unit by turning the Mains ON/OFF Power Switch (17) through 90° to the OFF position. The power supply must remain off for the period of the work.

It is forbidden to alter or use non-original components or replacement parts without written authorisation. Such acts may result in serious personal injury and endanger operational safety. They will also render any claim for damages against product liability void.

Decommissioning & Dismantling

WARNING
This equipment must only be used, maintained or serviced by trained competent engineers. If in any doubt please do not touch this equipment.

For further advice please contact VEXO International (UK) Ltd or your reseller for additional information and guidance.

WARNING
This equipment uses Rare Earth Magnets with a strong magnetic field.

You should not use, service or work in the close vicinity (30cm / 1ft) of this equipment if you are fitted with a pacemaker or other electromechanical medical devices.

At the end of the lifespan or at the planned decommissioning of the equipment please make sure that:

- The control panel is separated from the power supply.
- The hydraulic system connections and top-up connections should be closed off.

  Caution: Water areas should first be vented and then emptied. This water may be conditioned, contain anti-freeze or other substances and as such must be disposed of in accordance with the local legislative requirements.

  The destination of and further processing of the construction components should be carried out in agreement with the relevant waste management service provider.

  The steel can be recycled, while the pump and PD-Monitor® subject to WEEE regulations.

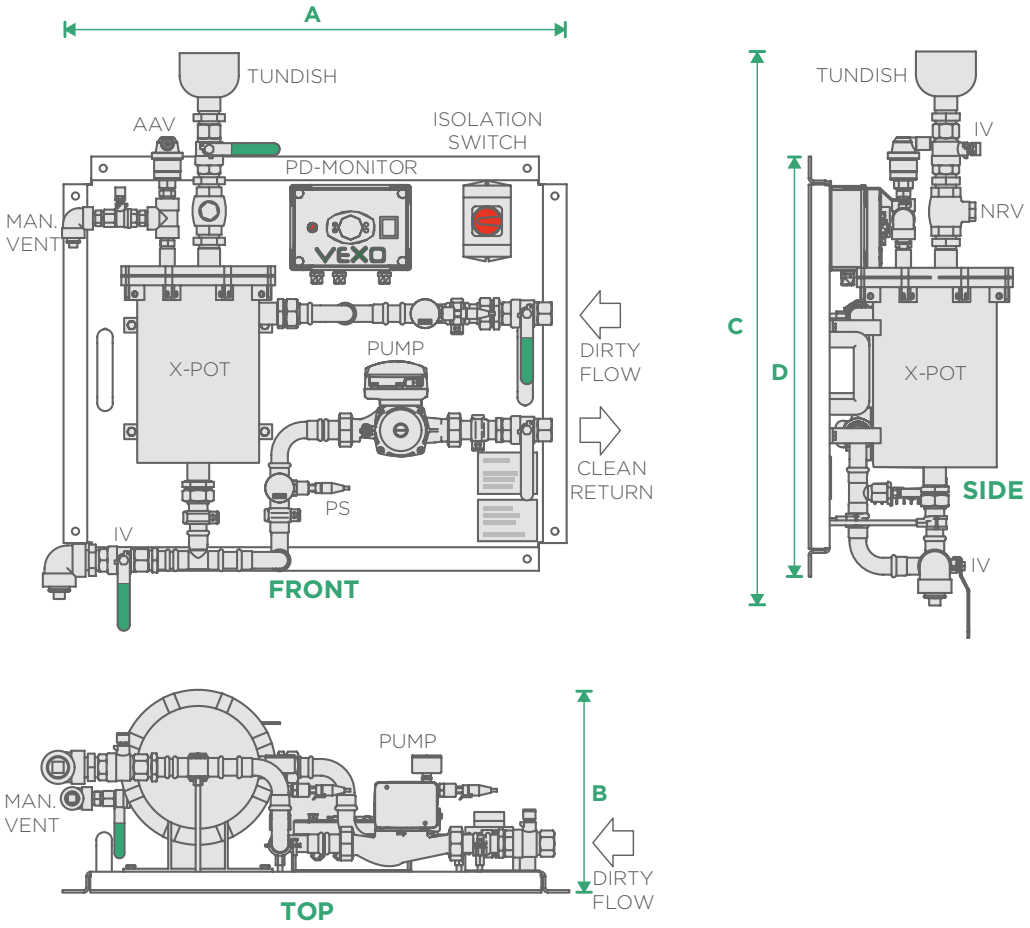
General Assembly Drawing (VEXO X-POT 6+)

VEXO X-POT6+

GENERAL ASSEMBLY

WARNING! WEAR APPROPRIATE PPE WHEN OPERATING THE VEXO® X-POT 6+®

INSTALLATION BY QUALIFIED/EXPERIENCE TECHNICIANS ONLY



Dimensions Refer to corresponding letter in drawing above		
A	Total unit width (with mounts)	850mm
B	Furthest distance extruded from wall	415mm
C	Total unit height (with tundish)	976mm
D	Mounting board height (with mounts)	700mm

Electrical	
Pump rating	180W
Connection	230/1/50

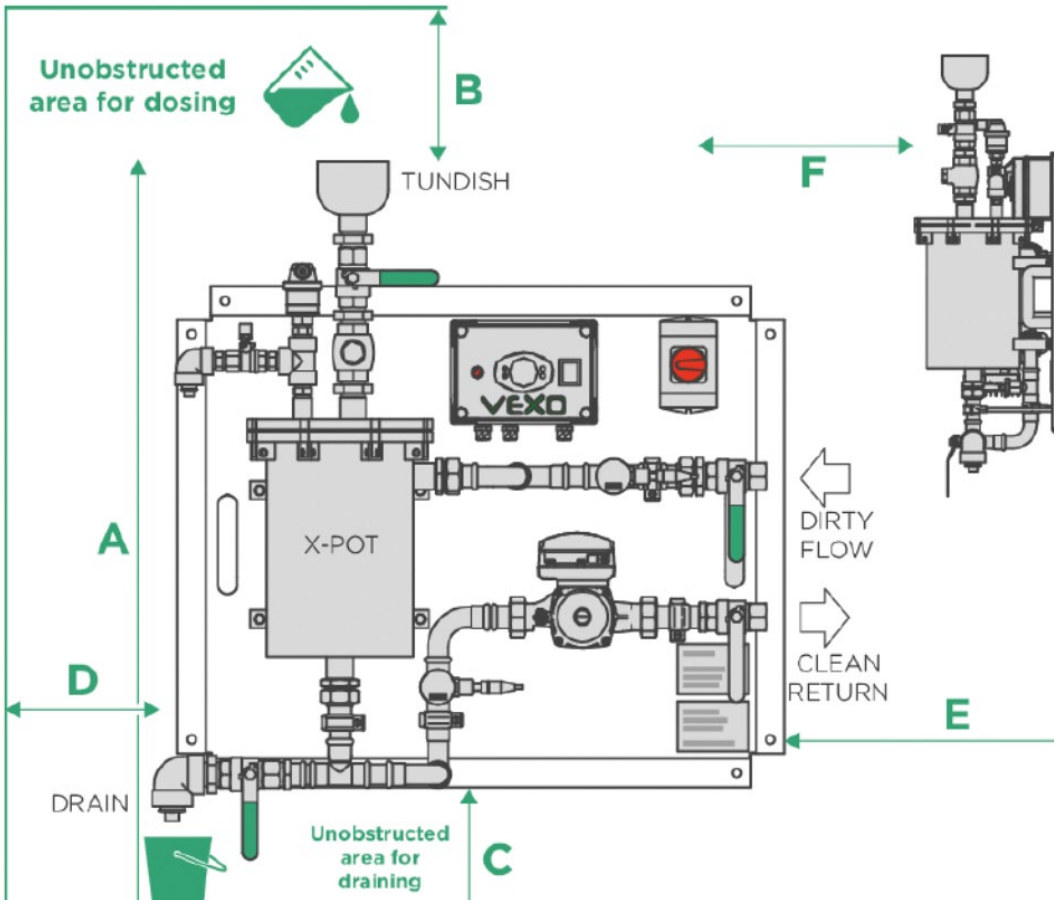
Specifications	
Connection Size	1" BSP
Weight when empty	46kg
Weight when full	58kg
Max. test pressure	15 Bar
Max. working pressure	10 Bar
Max. flow rate	1L/Second
Max. system size	86,400L
Working temperature	0°C - 95°C

General Access Drawing (VEXO X-POT 6+)

VEXO X-POT6+ **GENERAL ACCESS**

WARNING! **WEAR APPROPRIATE PPE WHEN OPERATING THE VEXO® X-POT 6+®**

INSTALLATION BY QUALIFIED/EXPERIENCE TECHNICIANS ONLY



Recommended General Access Measurements Refer to corresponding letter in drawing above		
A	Maximum height of the tundish above ground	1300mm
B	Minimum unobstructed space required above tundish for dosing chemicals	400mm
C	Minimum unobstructed space required beneath unit for draining	400mm
D	Minimum unobstructed space required to the left of the unit for servicing	250mm
E	Minimum unobstructed space required to the right of the unit for install and service flow and return connections to the system	500mm
F	Minimum unobstructed space required to the front of unit for servicing	1000mm

Declaration of Conformity

VEXO | X-POT6+

DECLARATION OF CONFORMITY

MANUFACTURER	DISTRIBUTOR
VEXO International (UK) Ltd.	PLEASE STAMP OR FILL OUT
6 The Granary Building, Millow Hall Farm Millow (Dunton), Biggleswade, Bedfordshire, SG18 8RH, United Kingdom	

Range Name
X-POT 6+ **(Up to 60 l/min)**

Operating Conditions (Working Pressure Range)
X-POT 6+ **(0 Bar - 10 Bar)**

Operating Conditions (Working Temperature)
X-POT 6+ **(0°F - 95°F)**

Addition Information
All appropriate components CE/UKCA marked prior to assembly, and are bound by their individual applicable directives including but not limited to:
Pressure Equipment Directive: PED 2014/68/EU – Sound Engineering Practice "SEP" – Group 1 Liquids
Low Voltage Directive: 2014/35/EU
Electromagnetic Compatibility Directive: 2004/108/EC
Machinery Directive: 2006/42/EC

VEXO

For and on behalf of
VEXO International (UK) Limited

Darren Wilkinson, Managing Director

6 The Granary Building, Millow Hall Farm
Millow (Dunton), Biggleswade
Bedfordshire, SG18 8RH

+1 (800) 917-6735

Service History

VEXO® X-POT 6+® SERVICE HISTORY

WARNING! WEAR APPROPRIATE PPE WHEN OPERATING THE VEXO® X-POT 6+®

INSTALLATION BY QUALIFIED/EXPERIENCE TECHNICIANS ONLY

INSTALLED BY: _____ **DATE:** Y Y • M M • D D **NOTES:** _____	**SERVICED BY:** _____ **DATE:** Y Y • M M • D D **NOTES:** _____
SERVICED BY: _____ **DATE:** Y Y • M M • D D **NOTES:** _____	**SERVICED BY:** _____ **DATE:** Y Y • M M • D D **NOTES:** _____
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