



# EnwaMatic<sup>®</sup>

## INSTALLATION MANUAL

- EM / EFO 825
- EM / EFO 1252
- EM / EFO 1260
- EM / EFO 1665
- EM / EFO 1672

## EnwaMatic® EM / EFO 825 , 1252 , 1260 , 1665 , 1672

### Installation Manual

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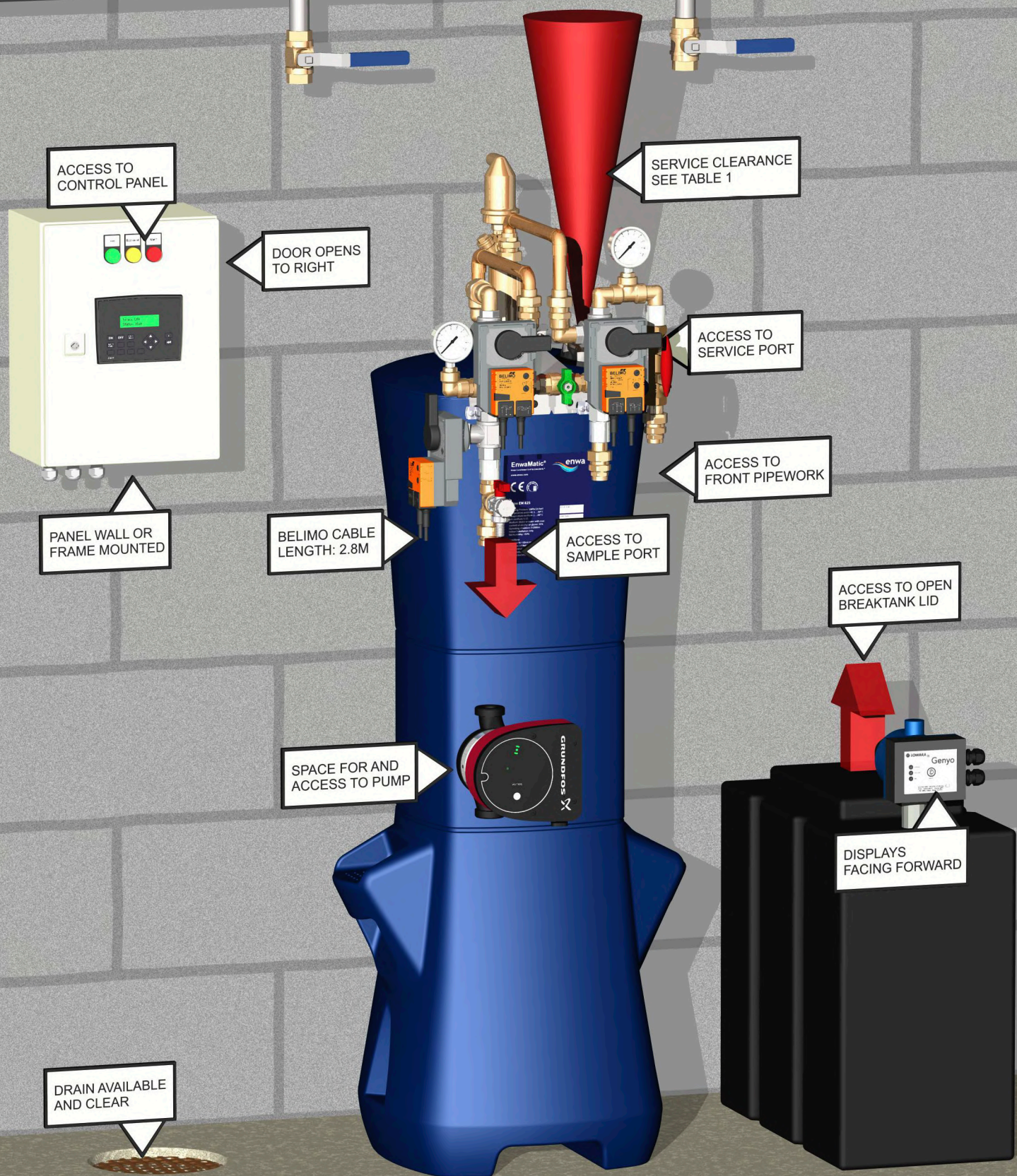
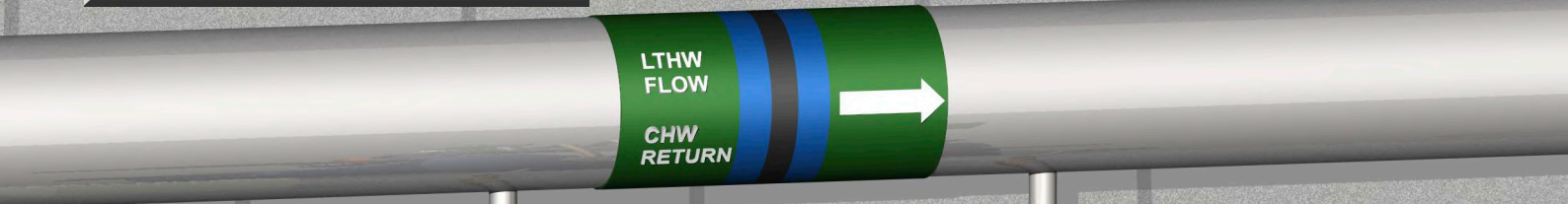
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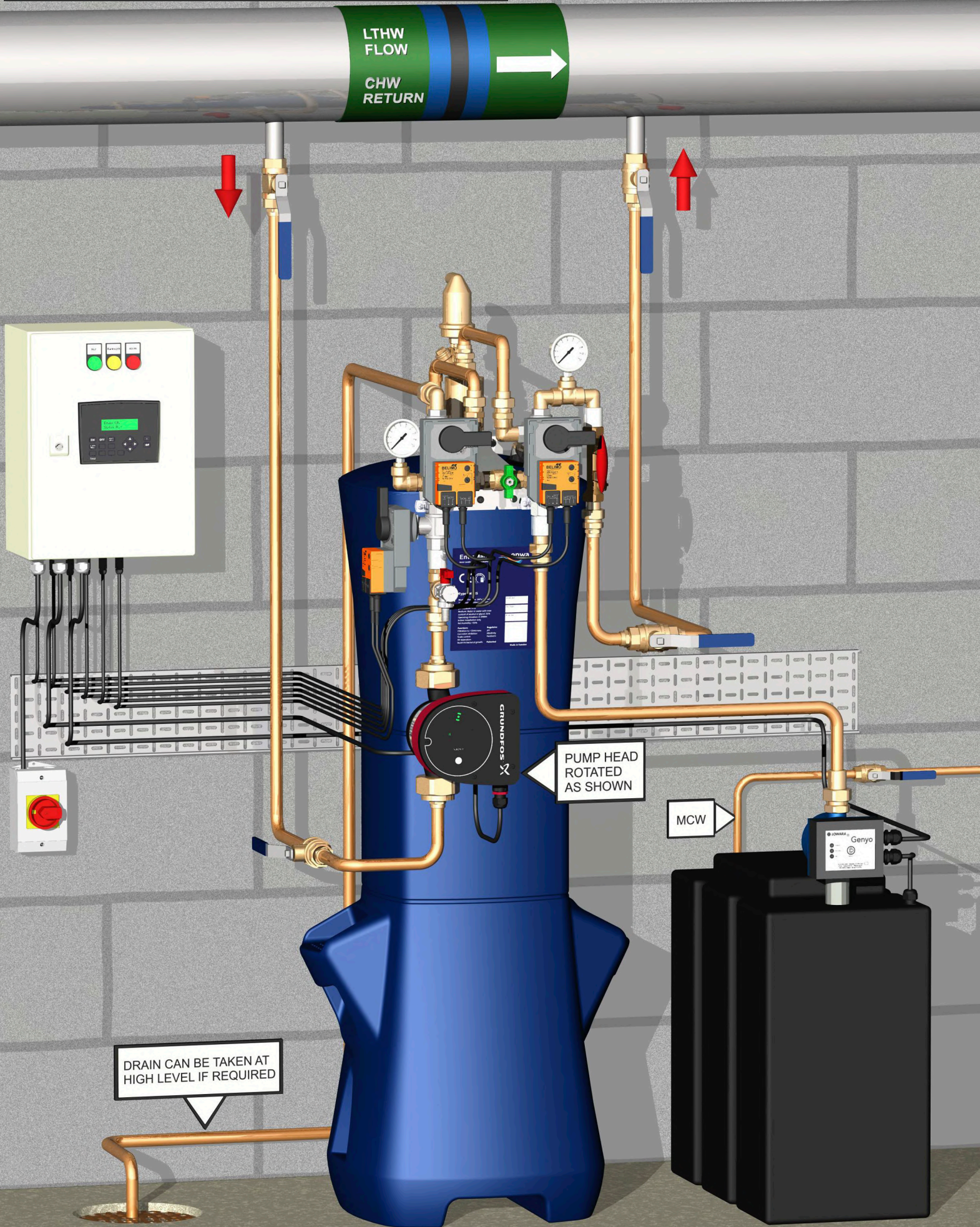
**Service & Aftersales:** Angela Wood , Grace Walker, [ukservice@enwa.com](mailto:ukservice@enwa.com)

<b>Table 1 – Installation data</b>					
<b>Model EM / EFO</b>	<b>825</b>	<b>1252</b>	<b>1260</b>	<b>1665</b>	<b>1672</b>
Total height (mm)	1440	1640	1940	2054	2254
Width (mm)	597	597	597	697	697
Height to service port (mm)	1164	1364	1664	1769	1969
Minimum Clearance (mm)	500	700	700	800	800
Minimum Ceiling Height (mm)	1664	2064	2364	2569	2769
Weight empty (kg)	47	56	62	79	90
Max weight in service (kg)	60	150	180	325	390
Flow rate (l/min)	8	15	30	70	90
Backwash flow rate (l/min)	25	35	35	45	45
Pressure differential (kPa)	50	80	100	120	150

# ACCESS & CLEARANCE



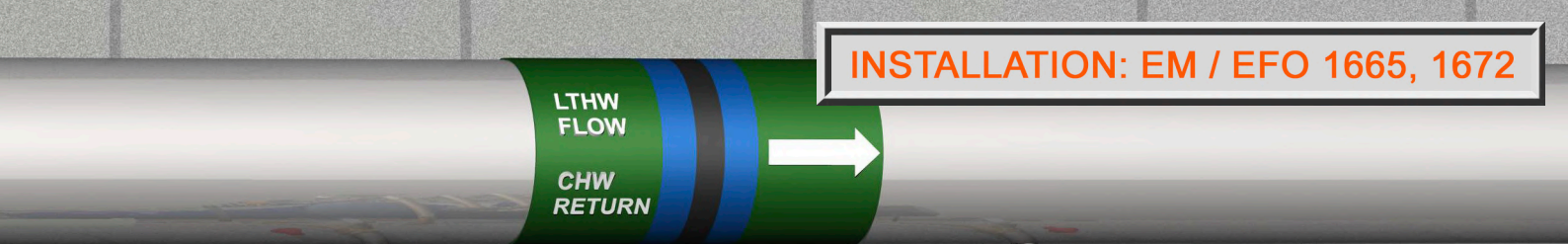
INSTALLATION: EM / EFO 825, 1252, 1260



DRAIN CAN BE TAKEN AT HIGH LEVEL IF REQUIRED

PUMP HEAD ROTATED AS SHOWN

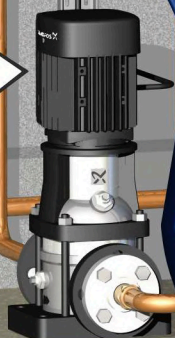
MCW



DRAIN CAN BE TAKEN AT HIGH LEVEL IF REQUIRED

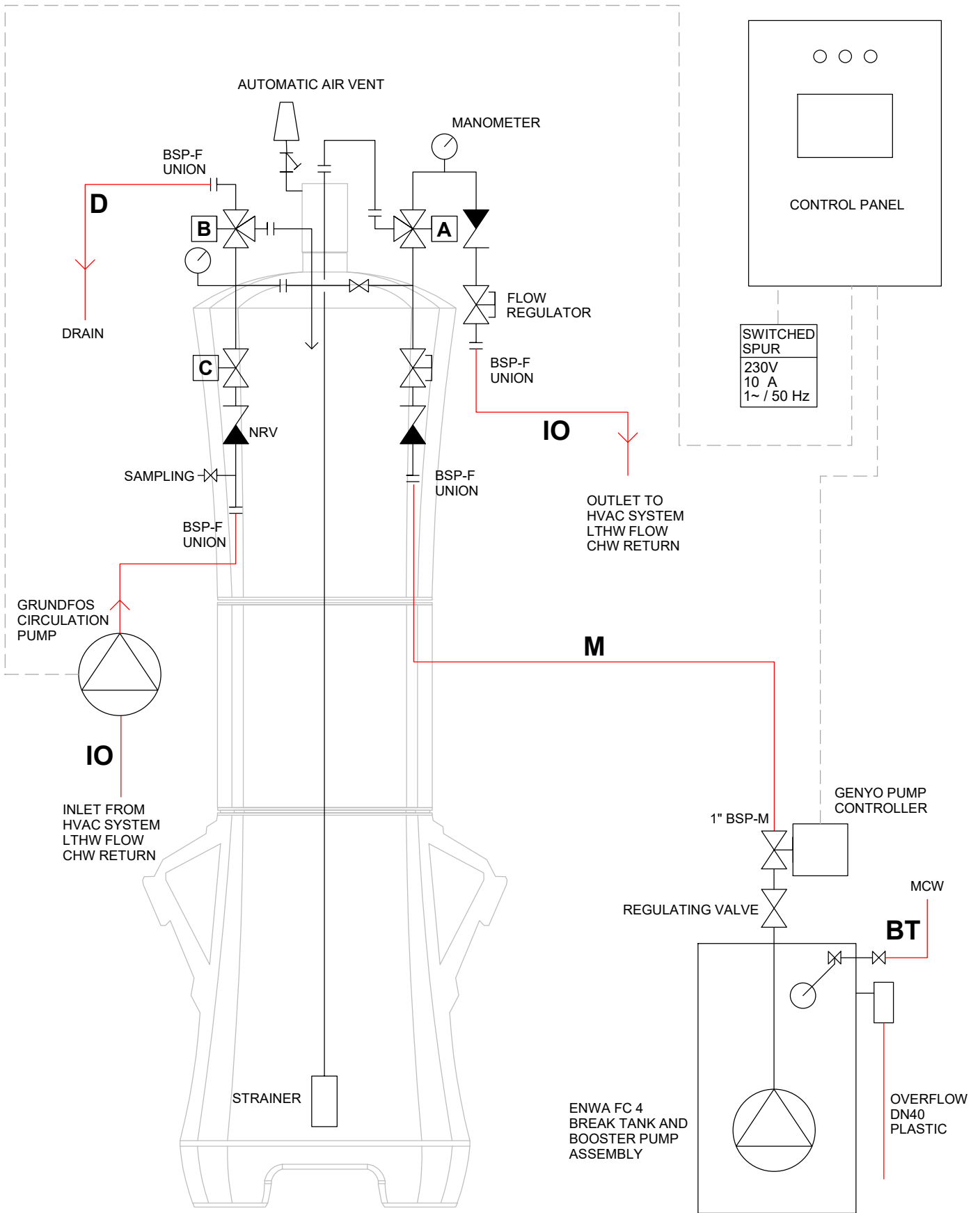


ACCESS TO PUMP WIRING

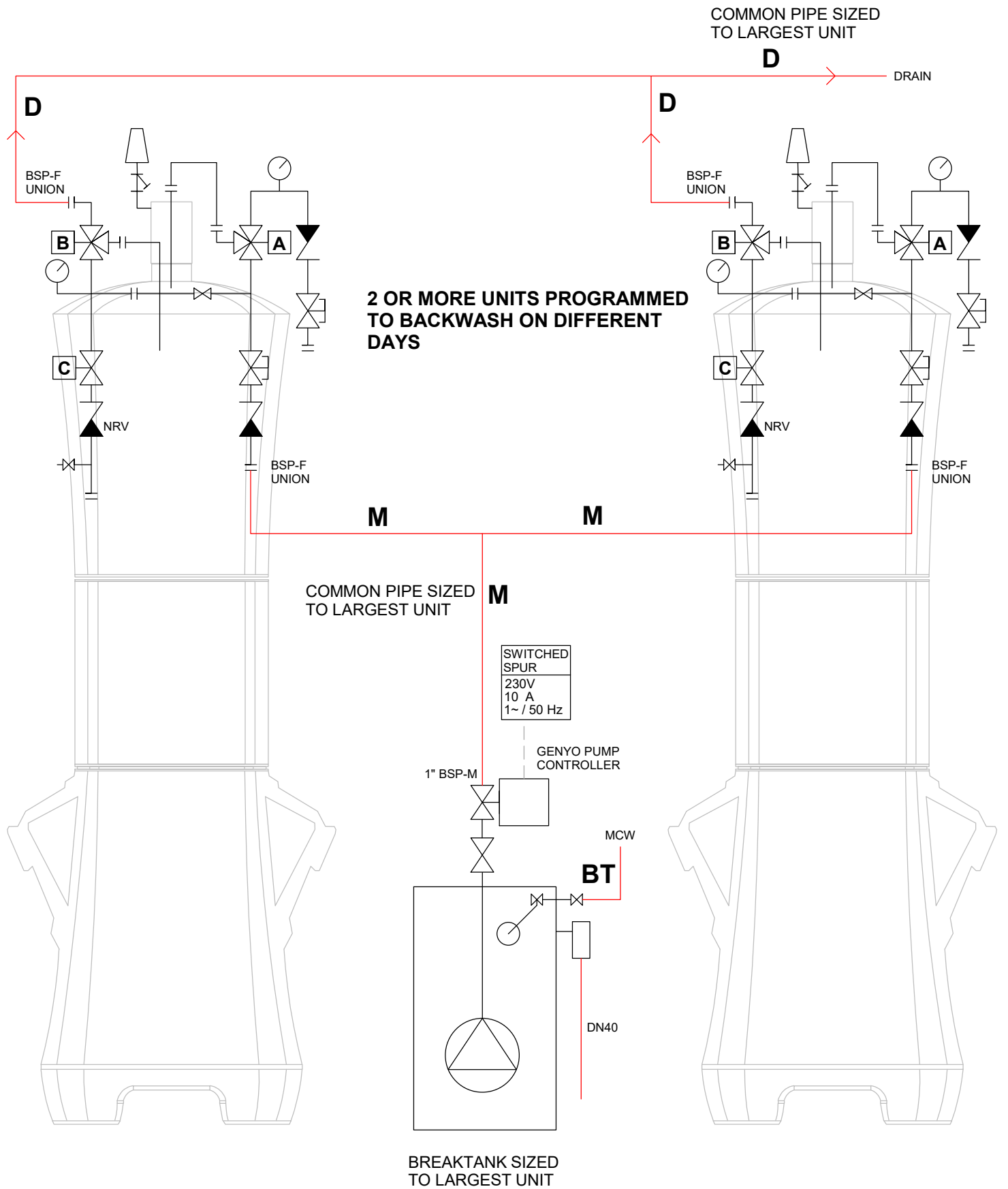


MCW





UNIT	PUMP	BREAKTANK		IO	M	D	BT	
EM 825	Alpha1 15-50/60	65 L	DN	20	20	20	15	PIPEWORK BY INSTALLER
EM 1252	Magna1 25-80	65 L	DN	20	20	20	15	
EM 1260	Magna1 25-120	227 L	DN	20	20	20	15	230V BY INSTALLER
EM 1665	CRI 5-3	227 L	DN	25	25	25	15	
EM 1672	CRI 5-5	227 L	DN	40	25	25	15	



UNIT	PUMP	BREAKTANK		M	D	BT	
<b>EM 825</b>	Alpha1 15-50/60	65 L	<b>DN</b>	20	20	15	<u>PIPEWORK BY INSTALLER</u>
<b>EM 1252</b>	Magna1 25-80	65 L	<b>DN</b>	20	20	15	
<b>EM 1260</b>	Magna1 25-120	227 L	<b>DN</b>	20	20	15	
<b>EM 1665</b>	CRI 5-3	227 L	<b>DN</b>	25	25	15	- - - - - 230V BY INSTALLER - - - - -
<b>EM 1672</b>	CRI 5-5	227 L	<b>DN</b>	25	25	15	

## Installation Notes

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Units should be installed inside or in suitable insulated enclosures with adequate freeze protection for pipework, panel, MCW supply and breaktank. Please contact ENWA for enclosure details.

Standard units can be installed on systems up to 10 bar and 95 °C. **The installer must take appropriate safety measures for their specific system pressure and temperature.**

Confirm if boiler heat exchangers or other components contain aluminium. EM units elevate pH >9.0 and are not compatible with aluminium. EFO units provide filtration only and are suitable for these applications.

For systems containing glycol, the alternative 'BAF' glycol retaining automated backwash should be specified. This is covered in a separate manual – please confirm with ENWA correct equipment has been selected.

### **Refer to access requirements drawing:**

Sufficient clearance above the service port must be provided. (Red cone on access drawing). Do not run pipes over this area. Table 1 should be used as a guide – please contact ENWA if sufficient clearance is not available.

The unit, breaktank and CRI pumps should be installed on a flat, level surface of sufficient load bearing capacity. In most cases the plant room floor will suffice. Plinths can be used, but are not required by ENWA.

### **Refer to installation drawings & schematics: (Manual & Automated Backwash)**

EnwaMatic units must be connected on the hottest part of the system: ie) LTHW Flow, CHW Return.

The inlet should come from the underside of the pipework where possible. Isolation valves of line size or larger should be installed at the connection points. Where these valves are at high level, or some distance from the installation, additional isolation valves close to the unit should be fitted.

Flow through the vessel is driven by a dedicated circulation pump on the unit's inlet side. Do not install strainers on the inlet pipework. All unit connection points have a female BSP union.

Inlet, outlet, MCW and drain pipe sizes (DN) are provided with the standard installation schematic. Increased pipe size should be considered for pipe runs > 15m. Inlet & Outlet are piped in standard materials, as per the main system. MCW and drain pipework should be in copper. Plastic pipe can be used for drains on chilled or lower temperature (< 60 °C) systems only.

A boosted mains water supply is used to backwash the filter media. A 15mm isolating valve is provided on the break tank inlet. This feeds a 65 or 227 litre break tank via a float equilibrium valve. For longer pipe runs from the MCW supply, or where supply pressure is < 1.5 bar, 22mm pipework is recommended.

The tank is fitted with a screened circular overflow to provide Fluid Category 4 backflow prevention. (Supplied inside the tank). 40mm plastic pipe.

*Connection of the break tank overflow to drain is optional. This can be used as a 'warning pipe', such that drips from a poorly seated float valve can be identified. However, adequate drainage of the surrounding area must be in place, such that any leaks flow directly to drain and do not cause local flooding.*



## Installation Notes

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The unit drain (backwash outlet) should discharge to a suitable floor drain or sump – ideally such that the flow is visible to the operator. This drain must be capable of receiving the backwash flow rates detailed in **Table 1** without splashing or backing up. It is critical that this drain is not blocked or impaired in any way. Do not install check valves or any similar restrictions in drain pipework.

*The drain pipe can be taken above head height if necessary to avoid crossing floor areas. Backwash flow is driven by the breaktank booster pump, not by gravity.*

### **Installation across system pumps (differential pressure connection)**

In some applications differential pressure connection is acceptable as an alternative to the dedicated circulation pump. System pumps must be located in the hottest area, operate continuously with limited variation and meet the minimum pressure differential outlined in Table 1.

Please contact ENWA for further assistance on specific configurations.

**Do not add the filter media – this will prevent commissioning.**

### **Insulation:**

The main vessel is insulated within the plastic outer casing. External pipework requires insulation by the installer, with reference to the operating temperatures and project requirements.

### **Electrical: (Automated backwash)**

The main power supply required is single phase, 230V, 10 A, 50 Hz.

The control panel should be mounted sufficiently close to the unit to allow connection of the actuator cables. Cable length is 2.8 m. Mounting brackets are included within the cabinet.

If cable extension is required, please inform ENWA prior to commissioning. The installer may extend actuator cables (24 VDC / Signal) using a suitable 3 core cable, 0.75mm<sup>2</sup>.

Circulation and breaktank pumps are powered from the control panel.

All 230V wiring should be completed by the electrical installer, as indicated on the installation schematic. 24 VDC actuator plug connections can be completed by the installer or by ENWA's commissioning engineer.

It is recommended that suitable cable tray is provided to allow a tidy run of actuator / power cabling back to the control panel.

A local isolator switch on the incoming supply should be installed close to the control panel.

The control panel has three volt free contacts for connection to a BMS system: 'Run', 'Backwash' and 'Alarm' - status output.

An optional Modbus RS485 module can be fitted – please request the ENWA Modbus Manual.

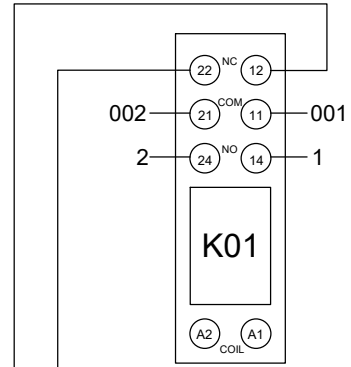
### **Electrical: (Manual backwash)**

Local isolating switches should be provided for the circulation pump (5A) and breaktank (10A)

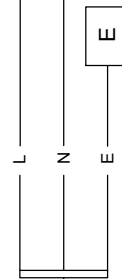
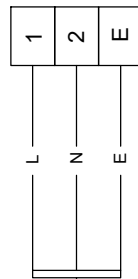
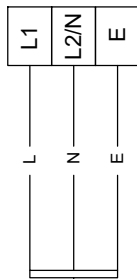
# 230V WIRING BY INSTALLER

FC4 BREAKTANK L / N CONNECTS TO RELAY K01, NORMALLY CLOSED NC TERMINALS

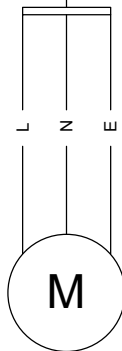
ALTERNATIVELY, LEAVE A 600mm TAIL INSIDE PANEL FOR ENWA COMMISSIONING ENGINEER TO CONNECT



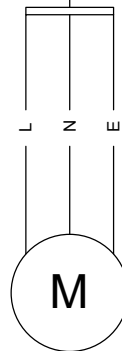
**X01**



POWER SUPPLY  
230V / 1~ / 50 Hz  
10A



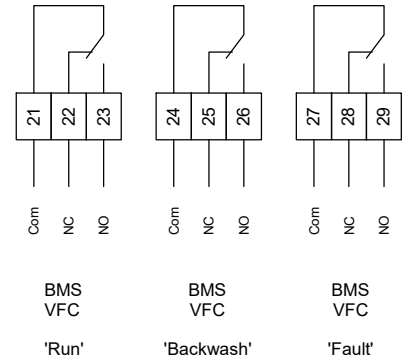
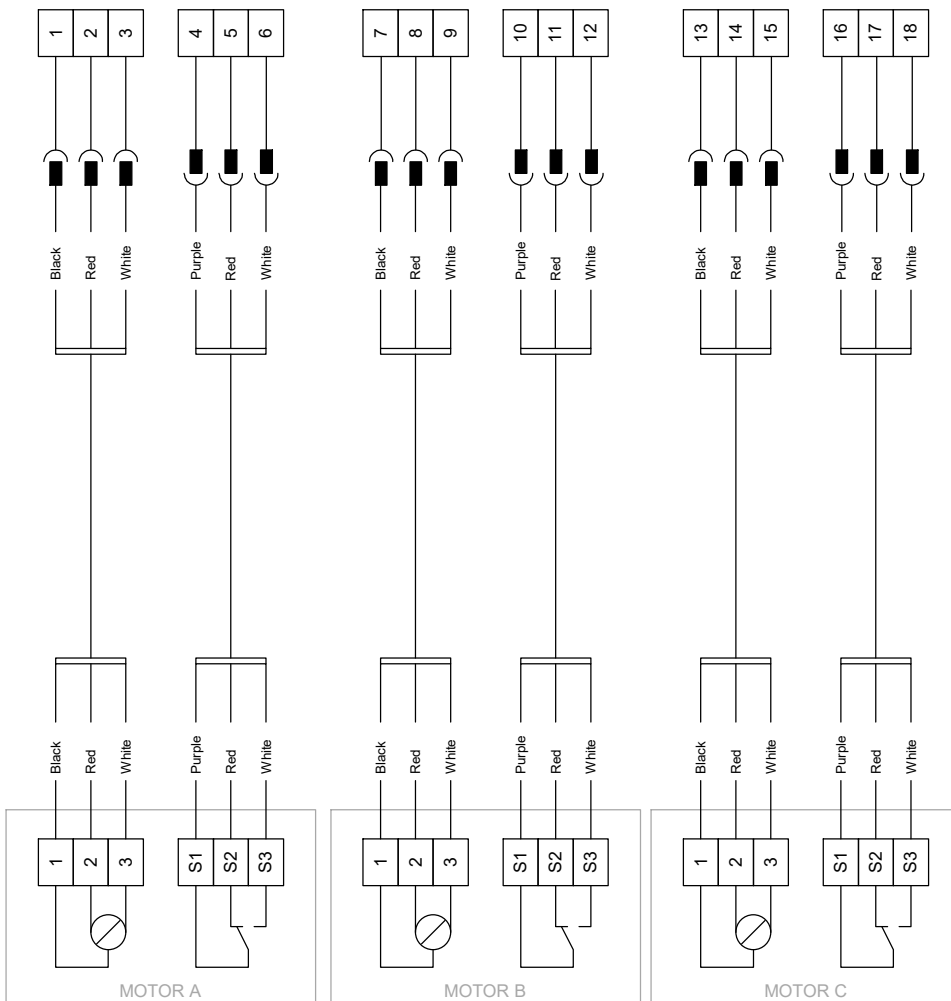
CIRCULATION PUMP



FC4 BREAKTANK  
(NOT SHARED)

# BMS

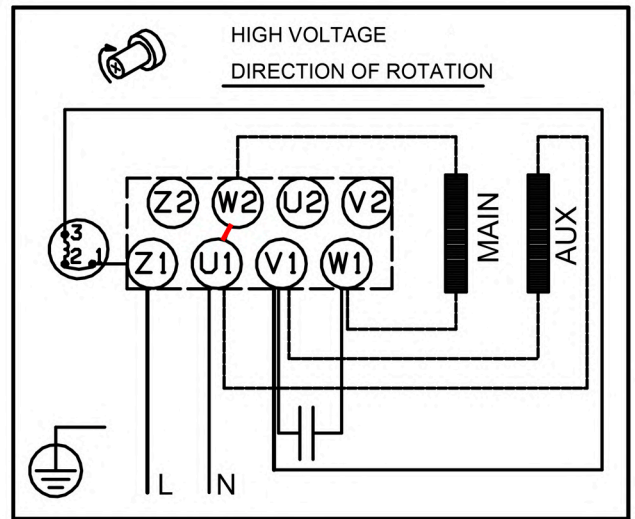
## MALE / FEMALE PLUG CONNECTORS: A , B , C



# GRUNDFOS ALPHA / MAGNA WIRING

# GRUNDFOS CRI WIRING

Step	Action	Illustration
1	Fit the cable gland and plug cover to the cable. Strip the cable conductors as illustrated.	
2	Connect the cable conductors to the power supply plug.	
3	Bend the cable with the cable conductors pointing upwards.	
4	Pull out the conductor guide plate and throw it away.	
5	Click the plug cover onto the power supply plug.	
6	Screw the cable gland onto the power supply plug.	



**NOTE:**  
 LINK WIRE: U1 > W2  
 CAPACITOR: V1 / W1  
 THERMAL SWITCH: Z1 / V1

Ensure sufficient access to the wiring box when locating the pump. The motor can be rotated to a suitable position.

## ROTATE PUMP HEAD TO THE POSITION SHOWN

7	Insert the power supply plug into the male plug in the pump control box.	
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## **Pre-Commissioning Water Treatment**

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### **Retro-fit installation of Enwamatic units to existing systems:**

In most cases, Enwamatic EM / EFO units can be commissioned directly on existing systems without prior water treatment, cleaning or flushing. Dynamic flushing can be employed on heavily contaminated systems to help clear larger debris, blocked components and low flow areas. System strainers should be checked and cleared to ensure effective flow rates in all areas.

Please inform ENWA before undertaking any chemical dosing and provide data sheets for comment.

### **Refurbishment projects:**

Where new plant such as boilers, chillers or heat exchangers are added to an existing system, it is beneficial to commission the EnwaMatic unit first, allowing time to clean the system and establish a protective water chemistry. Where this is not possible, commission the EnwaMatic unit as soon as possible and consider bypassing key plant if the initial water quality is poor.

Where extensive new pipework has been installed, or chemical cleaning employed, the 'New Build' strategy should be observed.

### **New build projects:**

In general, new build systems will be filled, cleaned and flushed in accordance with BSRIA guidelines. There is therefore a requirement to provide immediate corrosion protection (passivation) prior to the ENWA unit being commissioned and established.

ENWA advise a 'start-up' passivating dose of a Synergised Nitrite or similar Nitrite based inhibitor. Alternative products that also provide an initial pH rise to > 9.0 may also be considered. Molybdate based inhibitors designed for neutral pH are less effective for initial passivation and less suitable for pre-treatment. **Products that actively buffer against pH increase should not be used.**

ENWA recommend an initial biocide wash for chilled water and condenser systems. A strategy for the monitoring and control of bacteria levels compliant with current BSRIA guidelines should be implemented. This should include anti-stagnation controls to ensure regular turnover of all areas of the system.

Please forward data sheets for all proposed dosing to ENWA for comment.

### **Enwa Filter Only EFO applications:**

These units provide side stream filtration and air separation only and are typically employed on systems with aluminium components or where pH elevation is not suitable. Corrosion inhibitors suitable for the system metals and required pH range must be employed.

## Pre-Commissioning Checklist

- Any cleaning / flushing works must be completed. System filled and pressurised. System should be circulating and heat on, if possible.
- All 230 VAC power to the units is live and connections complete: Control panel, circulation pump and break tank.
- Electrical cables should be run in a suitably sized and supported conduit. If actuator cables need to be extended use black flex, 3 core, 0.75 mm<sup>2</sup>.
- The EnwaMatic® units INLET must be connected to the **highest temperature area** of the system: **LTHW flow / CHW return**. Where flow through the unit is generated by differential pressure, ensure that the pressure side of the pump goes to unit inlet, and suction side to the unit's outlet.
- Air break backflow prevention device FC4/FC5 break tank or suitably sized RPZ is installed on MCW supply.
- Ensure that the drain and mains cold water supply are both plumbed and complete. Check that the drain can take the backwash flow without backing up or flooding the plant room.  
**Drains must be able to take the discharge flow rates outlined in Table 1**
- All piped connections should be pressure tested to 1.5 times system operating pressure.
- All buckets of media should be onsite and stacked next to the unit they were delivered with. If the **media is not stacked** with the unit when the engineer arrives on site, any additional time taken to locate media or any loss of media will be chargeable.
- The 'Service port' sticker states '**Do Not fill**'.

**Do not pour the media into the unit**, our commissioning engineer will do this once he has carried out all the relevant checks. Filling the unit prior to an ENWA engineer attending site will incur additional costs for emptying the filter and a replacement media bed.

- If the unit has been supplied as a Sidestream Filter Only (EFO - No pH elevating media supplied), due to the presence of aluminium in the system, the system should be dosed with an inhibitor suitable for aluminium with a pH < 8.5.
- If everything is completed contact ENWA to schedule the site visit.
- If there is an issue with the installation when the ENWA engineer arrives on site, the engineer will ask whether the client can fix the issue. If this is not immediately possible a return visit will need to be scheduled and will be chargeable.
- If applicable please send material data sheets informing us of any chemical dosing. e.g. inhibitors, glycol, biocide.

**Cancellation / rescheduling:** Once commissioning has been scheduled you must give ENWA a minimum of **three (3) working days notice** to cancel and reschedule the works. Failure to provide sufficient notice will result in being charged for an additional visit on a pro-forma basis.

**Site facilities and conditions:** If the environment in which the work is to be conducted is not safe or it increases the risk to ENWA staff then the engineer will ask whether the client can fix the issue. If this is not possible a return visit will need to be scheduled and will be chargeable. Suitable welfare facilities must be available, as a minimum toilets and hand washing facilities.