

ENWA

WATER TREATMENT

EnwaMatic® Specification

Specification clause:

Combined side stream filtration and water treatment for the closed (*MTHW/ LTHW / CHW / Condenser*) system shall be provided by the installation of an EnwaMatic® EM (*model*) water conditioning unit, capable of treating system water volumes to (*volume*) litres.

The unit shall provide:

- Side-stream filtration to less than 5 microns.
- pH control, maintaining a level of 9.0 – 10.5.
- Inhibition of corrosion – maintaining a dissolved iron level of < 1.0 mg/l.
- Regulation of hardness and scaling through calcite / dolomite media filtration.
- Removal of air through integral air separation device.
- Environmental restriction of bacterial growth.

Units shall be constructed from stainless steel (SIS 2343, pressure tested to 15 bar) and shall incorporate all necessary connection points, valves, flow regulator and manometers for normal operation.

Options:

The EnwaMatic® unit shall incorporate full automation of the backwash facility, controlled by a wall mounted, IP 54 enclosed control panel. (BMS option).

Applications:

Closed low and medium temperature heating, chilled water and condenser systems. Other closed processes including injection mould cooling and marine engine cooling.

(ENWA should be informed if design system temperatures exceed 90°C).

Can be used alongside glycol. A glycol retaining backwash system is available.

Can be used as a complementary treatment alongside standard biocides where required.

Filter only applications:

ENWA can supply units operating as side stream filters only. Applications include systems where elevated pH is not suitable (i.e.) aluminium components), open cooling towers or systems where alternative types of water treatment are required.

Unit selection:

Model	System Volume (m ³)	Approx kW @ 12 litres /kW
EM 825	0 – 3	0 – 250
EM 1252	3 – 15	250 – 1250
EM 1260	15 – 40	1250 – 3330
EM 1665	40 – 80	3330 – 6660
EM 1672	80 - 130	6660 – 10,830

- Number of litres per kW will vary dependent on the HVAC system application and its age.

ENWA will provide all necessary information regarding location and installation.

Important notes for New Builds applications:

- **Inline dirt & air separation:** EnwaMatic® is a direct replacement and is simpler and easier to install.
- **Start-up procedure:** See Appendix A.
- **Water Quality Maintenance:** EnwaMatic® is a direct alternative to chemical inhibitors in the long term maintenance of water quality.

Technical data: Refer to Appendix B for dimensions.

	Total install space mm	Total Wt Kg *	Inlet / Outlet	Mains / Waste
EM 825	600 x 600 x 1750	60	22 mm	15 / 22 mm
EM 1252	600 x 600 x 1950	150	22 mm	22 mm
EM 1260	600 x 600 x 2250	180	22 mm	22 mm
EM 1665	800 x 700 x 2350	325	28 mm	22 mm
EM 1672	800 x 700 x 2550	390	40 mm	22 mm

* Total weight when full of media and water. Units are delivered with media in separate containers (< 20 kg).

Retrofit applications:

A condition survey including analysis of water chemistry, solids loading and records of previous chemical treatments should be undertaken by ENWA to ensure suitability of the EnwaMatic® process, identify problem chemical combinations and advise on installation issues.

Based on this survey ENWA will identify the correct course of action, in accordance with standard terms and conditions.

Important notes for retrofit applications:

- **Inline dirt & air separation:** EnwaMatic® is a direct replacement and is simpler and easier to install.
- **Flushing:** Removal of mill scale and grease from new equipment & pipe work is regarded as 'best practice'. Condition survey and water analysis will determine the requirement for, and extent of any flushing requirements.
- **Water Quality Maintenance:** EnwaMatic® provides a stable, non-scouring, self regulating chemistry. It is a direct replacement for dosing of chemical water treatment inhibitors and is more reliable. The condition survey will determine whether a biocide should be dosed for CHW applications.

Topping up of closed loop systems:

It is important that the client is aware of the extent of 'make-up' to their closed loop systems. If a water meter is not already installed ENWA recommend one is fitted at the time of installation, to monitor the water consumption of the entire closed loop.

Connection:

Where the ΔT is greater than 10 °C across the main flow and return, connect the unit on the flow in the highest temperature area.

A minimum ΔP of 1 bar is required between the units inlet and return connections to generate the side-stream flow. If there is insufficient ΔP , a small 'booster' pump should be added to the side stream loop.

Limitations:

- Specifying consultants should contact ENWA prior to specification of the EnwaMatic® for HVAC systems that are known to contain **Aluminium components**.
- No application for standard EnwaMatic units with open systems, cooling towers or steam raising plant.

Water Regulations:

EnwaMatic® units require connection to a mains supply to allow backwashing without the loss of system water. This will require the use of an approved Fluid Category 4 backflow prevention device. ENWA design and supply a purpose built break tank with integral pump, which also assists where mains water pressure is low. (*See schematic attached*). One break tank can serve multiple units if located together.

'Services' supplies utilising a break tank or reduced pressure zone (RPZ) valve and feeding only plant areas of an equivalent category are suitable, provided 2 bar head exists at point of use.

For more information on any aspect, please contact ENWA:

ENWA UK,
Unit A
Scotlands Industrial Estate
Coalville
Leicestershire

Tel: 01530 830 354

Fax: 01530 835 725

email: tech@enwa.co.uk

www.enwa.co.uk

Appendix A – Start-up Strategy

Pre-commissioning cleaning / initial dosing strategies:

New build systems should be chemically cleaned in the normal manner to remove construction residues and provide clean internal surfaces. These cleaned surfaces require rapid protection from corrosion (passivation) from the initiation of flushing onwards.

Pre-flush passivation:

The requirement to provide initial passivation to protect the system during flushing will be at the discretion of the chemical cleaning company. Consideration should be given to the volume of the system, the estimated time to flush and the likelihood of any interruptions.

EnwaMatic start-up:

EnwaMatic units are driven by the main system pumps and require time to elevate system pH and establish the desired chemistry. The time period required will depend primarily on volumes, maximum flow rates achieved and initial fill water quality. In addition, many projects will experience restrictions on the continuous operation of system pumps during the initial 48 hour period.

ENWA therefore recommend an initial dose of 100 ppm Synergised Nitrite is added immediately post flushing at the same time as the EnwaMatic unit is activated. This will ensure adequate protection during the initial hours of operation, without a significant residue remaining once established. All future inhibition requirements will be met by the EnwaMatic unit.

Where system pumps cannot be operated continually for the first 48 hours, an elevated dose of 200 ppm Synergised Nitrite should be employed.

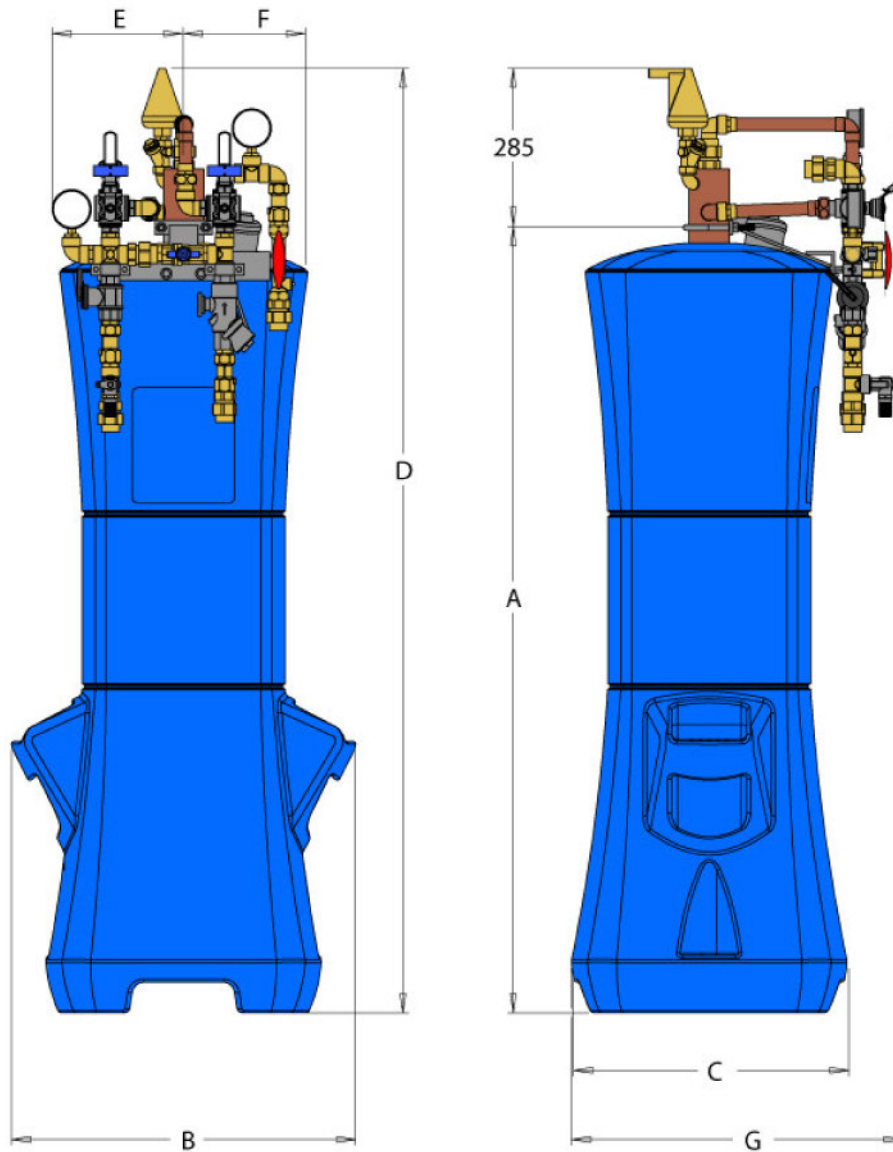
Biocide dosing:

ENWA recommend an initial biocide wash for chilled and condenser systems. A strategy for the monitoring and control of bacterial levels compliant with current BSRIA standards should be initiated.

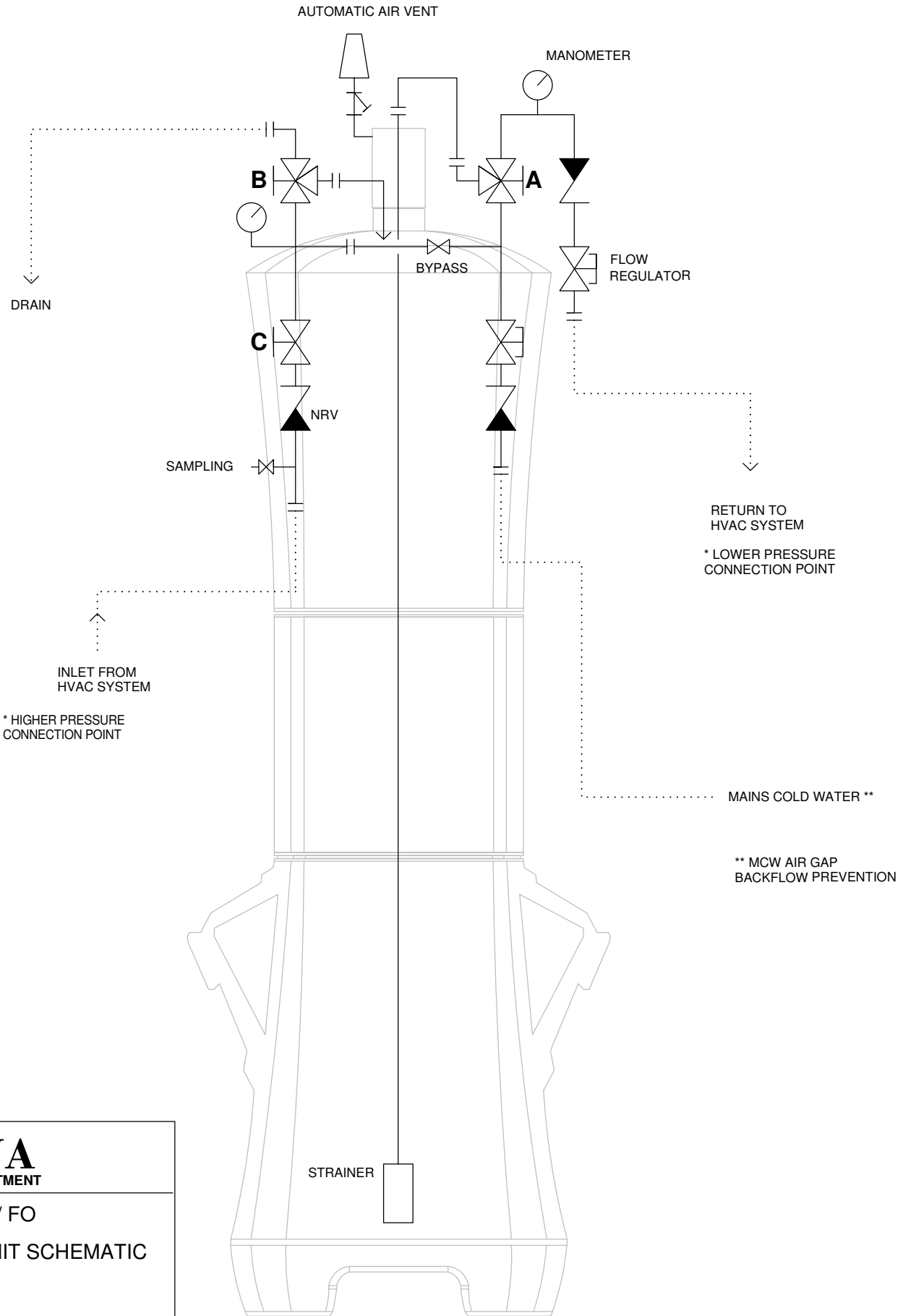
Site specific requirements:

ENWA will endeavour to work closely with the mechanical contractor, commissioning manager and water treatment specialist to determine the optimum start-up strategy for each project.

APPENDIX B: UNIT DIMENSIONS

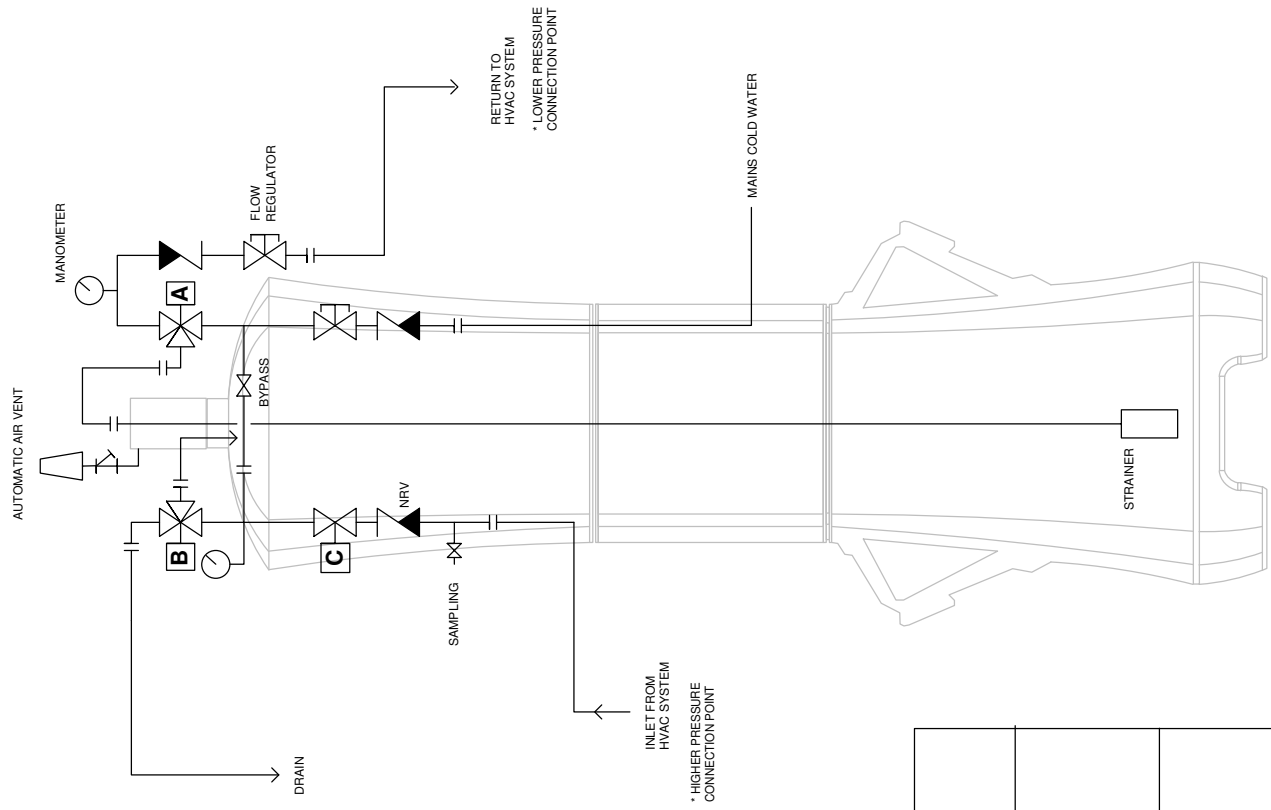


Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	Weight kg (without content)
EM 825	1164	597	477	1440	227	213	575	47
EM 1225	1364	597	477	1640	227	213	575	56
EM 1260	1664	597	477	1940	227	213	575	62
EM 1665	1769	697	577	2054	323	276	731	79
EM 1672	1969	697	577	2254	286	295	756	90



ENWA
WATER TREATMENT

Enwa EM / FO
BASIC UNIT SCHEMATIC



CONTROL PANEL

24V CABLES
TO ACTUATORS

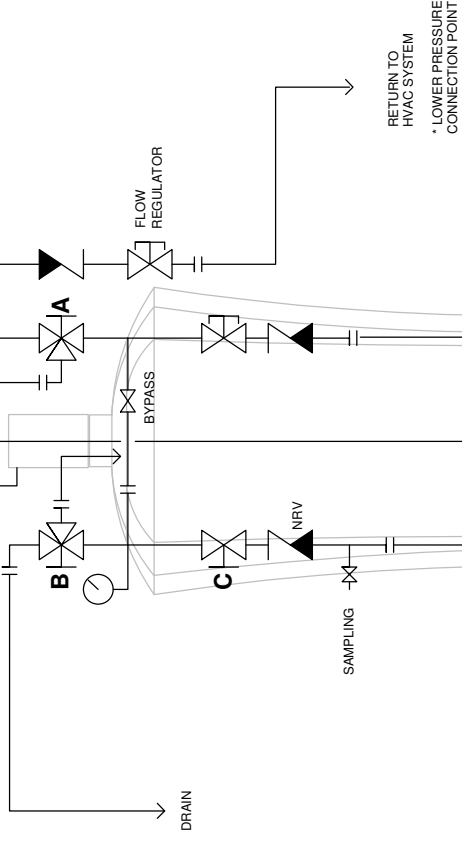
230V
5 A

SWITCHED SPUR

	Enwa EM / FO
	AUTOMATED BACKWASH

AUTOMATIC AIR VENT

MANOMETER



RETURN TO HVAC SYSTEM * LOWER PRESSURE CONNECTION POINT

SWITCHED SPUR

230V
13 A

PUMP CONTROLLER

MAINS COLD WATER

BREAK TANK & PUMP SET

OVERFLOW TO DRAIN

STRAINER

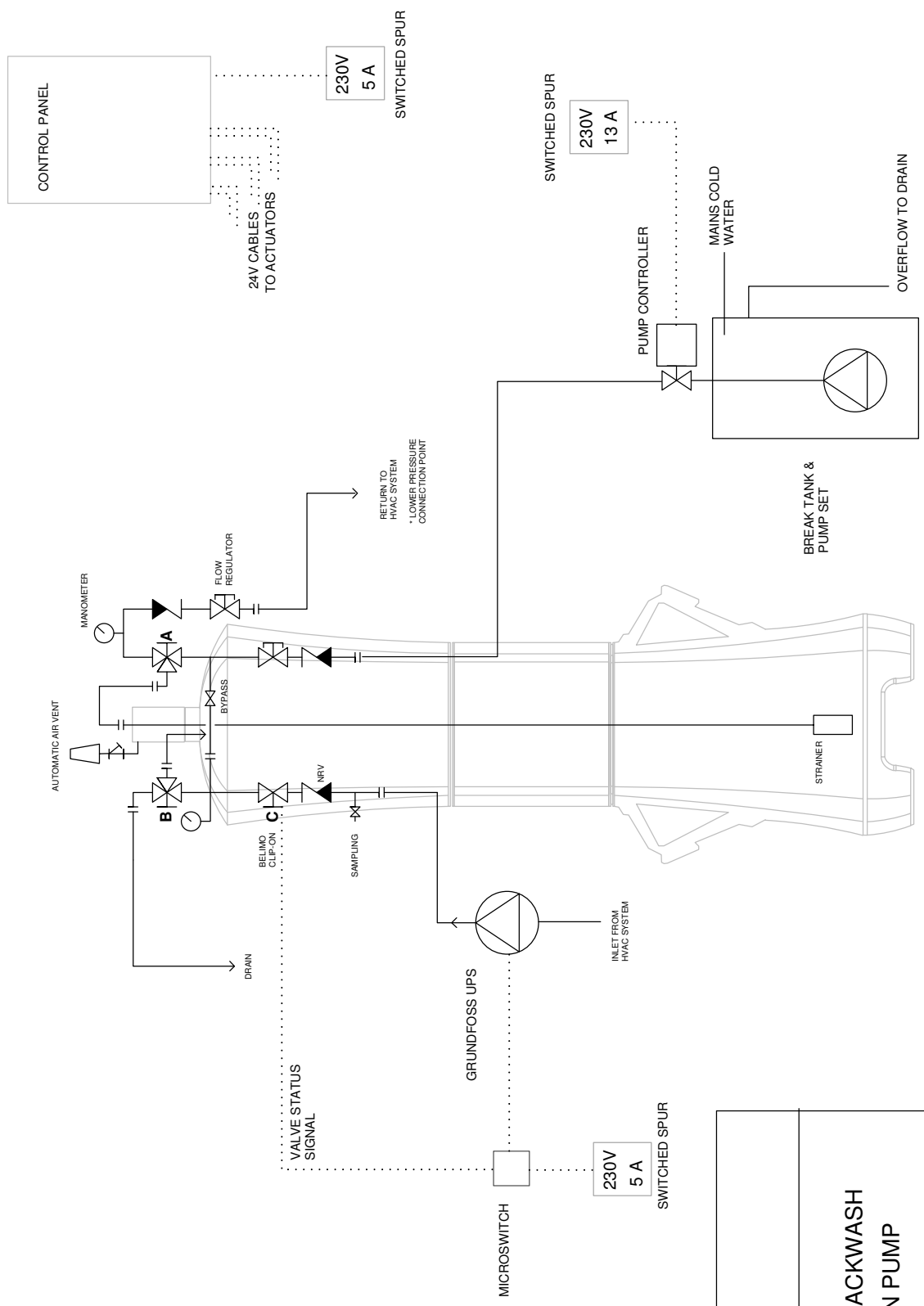
INLET FROM HVAC SYSTEM * HIGHER PRESSURE CONNECTION POINT

DRAIN

ENWA
WATER TREATMENT

Enwa EM / FO

+ BREAKTANK



ENWA
WATER TREATMENT

Enwa EM / FO
AUTOMATED BACKWASH
+ CIRCULATION PUMP
+ BREAK TANK

TO UNIT 'MAKE-UP'

1" BSP

Pump controller

185

550

305

70

Mains Cold Water
15 mm compression

Screened overflow

Submersible pump with float switch
36 m lift

615

 ENWA WATER TREATMENT
ENWA 68 litre Break Tank with pump and controller Auto restart , dry run protection.
JT



For chilled water systems with glycol anti-freeze.

Backwash process:

- 1: Inlet closes. Glycol / water mix remaining in filter vessel is pumped into the main system. Sufficient temporary expansion capacity for this volume (20 - 60 litres) is required.
- 2: Unit backwashes using mains cold water.
- 3: Mains water is pumped to drain. Vessel is refilled from the main system.
- 4: Unit is returned to service.



ENWA UK
Unit A
Scotlands Industrial Estate
Coalville
Leicestershire
LE67 3JJ

info@enwa.co.uk
www.enwa.co.uk

Tel: (+44) 01530 830 354
Fax: (+44) 01530 835 725