
MINIPACK SERIES



PRESSURISATION UNIT

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OVERVIEW

The Minipack 'MP' Series pressurisation unit is designed to maintain a minimum set pressure in a sealed heating or chilled water system. Once the system has been initially filled via an RPZ valve or quick filling loop, subject to local regulations, should the pressure fall below the cold fill pressure, the unit operates automatically to restore that pressure. If high or low-pressure conditions should occur the boiler/chiller operation can be interrupted via the volt-free contacts provided. The unit is used in conjunction with a suitably sized expansion vessel from our 'Aquatank' range of replaceable diaphragm vessels. The pressurisation unit provides a type 'AB' air gap to Water Supply Regulations 1999. All packaged equipment is manufactured in accordance with ISO9001 quality assurance procedures.

Standard Features:

- Boiler ratings up to 500kW @ 82°C
- System contents up to 5,000 litres heating and 10,000 litres chilled
- Temperature range up to 90°C
- Cold fill pressure 1.0 bar to 7.0 bar (model dependent)
- Reliable Microprocessor/transducer control
- Boiler / Chiller safety interlock relay
- Audible alarm with mute & reset operates on high & low pressure
- Fluid category 5 (water supply regulations 1999)
- Designed and built in accordance with ISO9001
- PED compliant BSI certificates CE 95657 & 95658

TWO MODELS ARE AVAILABLE, BASIC AND ENHANCED

MINIPACK BASIC SPECIFICATION (MP31-B & MP71-B)

The MP31-B is suitable for cold fill pressures up to 3.0 bar whilst the MP71-B is suitable up to 7.0 bar. Controlled by Aquatech Pressmain MPC micro-processor controller with pressure transducer for long-term reliability, accuracy and non-volatile EPROM memory. Fully packaged unit incorporating; single pressurisation pump, solid state pump drive with thermal overload protection; automatic periodic pump pulsing to prevent pump seizure; combined high/low system pressure cut-out relay volt-free contact; 5 litre mains water break-tank with 15mm float valve having a type 'AB' air gap to Water Supply Regulations 1999; LCD illuminated display.

Automatic cut-out and reset on tank low water level to prevent pump from dry running.

All controls contained within a powder coated sheet steel dust and damp proof enclosure to IP55.

Electrical supply: Single Phase, 240 Volt AC, 50Hz, 5 Amp; Max power: 0.38kW.

MINIPACK ENHANCED SPECIFICATION (MP32-E)

Aquatech Pressmain MP32-E Series, heating or chilled water pressurisation unit. Suitable for cold fill pressures up to 3.0 bar. Controlled by Aquatech Pressmain 2020Plus micro-processor controller with pressure transducer for long-term reliability and accuracy, non-volatile EPROM memory and data logging function. Fully packaged unit incorporating; twin pressurisation pumps, auto change-over to even wear; solid state pump drives with thermal overload protection; automatic periodic pump pulsing to prevent pump seizure; combined high/low system pressure cut-out relay volt-free contact; RS232 or 422/485 serial communications port; 5 litre mains water break-tank with 15mm float valve having a type 'AB' air gap to Water Supply Regulations 1999; fascia controls to provide indicating lights for each pump condition or status, run, hand, off, auto; "user friendly" fascia keypad to enter & set operational parameters, reset alarm & mute; "Plain English" 2 Line LCD illuminated display.

Last 30 faults stored with time and date stamp.

Automatic cut-out and reset on tank low water level to prevent pump from dry running, 8 BMS Volt free relay connections, Fascia lights for pump tripped condition.

All controls contained within a powder coated sheet steel dust and damp proof enclosure to IP55.

Electrical supply: Single Phase, 240 Volt AC, 50Hz, 2 Amp; Max power: 0.07kW.

QUICK SELECTION EXAMPLE

- Example:** 4 storey building with 400 kW boiler power running at a temperature of 80°C Flow and 70°C Return. The plantroom is on the ground floor.
- From chart 1;** 'Superimposed' pressure at 80°C is 0.2 bar.
- From chart 2;** Static height is taken as 4 storeys at 3 metres per floor = 12 metres = 1.2 bar. Plus superimposed pressure of 0.2 bar (from chart 1) equals 1.4 bar, which is our low pressure alarm point. Add 0.2 bar for support pump start, plus 0.2 bar for duty pump start, plus 0.2 bar for duty pump stop. therefore cold fill pressure = 1.2 + 0.2 + 0.2 + 0.2 + 0.2 = 2.0 bar.
- From chart 3;** Cross reference 400 kW boiler power (assuming 10 litres per kW for system content) with 2.0 bar cold fill pressure, gives pressurisation unit model.
- From chart 4;** Cross reference 400 kW with boiler flow temperature of 82°C gives expansion vessel size 500VR.
- Model selected:** Minipack 'MP', complete with 500VR expansion vessel.

CHART 1
EXPANSION & SAFETY PARAMETERS FOR HEATING PRESSURISATION UNITS

	FLOW TEMPERATURE °C	EXPANSION PERCENTAGE %	SUPERIMPOSED PRESSURE BAR
LTHW	40	0.78	0.2
	50	1.21	0.2
	60	1.71	0.2
	70	2.28	0.2
	80	2.91	0.2
MTHW <i>*see note below</i>	100	4.35	0.3
	105	4.77	0.6
	110	5.15	0.9
	115	5.62	1.3
	120	6.01	1.7

**Must use intermediate cooling vessel. Consult with Aquatech Pressmain Sales Office.*

CHART 2
PRESSURE SETTINGS CHART FOR HEATING SYSTEM PRESSURISATION EQUIPMENT

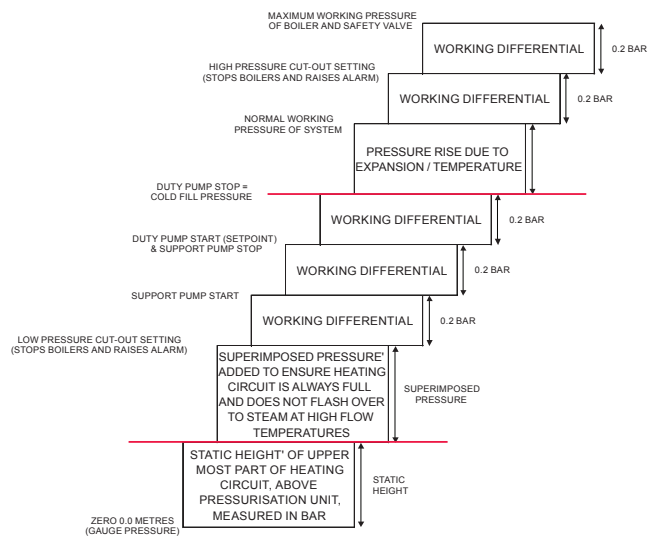


CHART 3
PRESSURISATION UNIT SELECTION

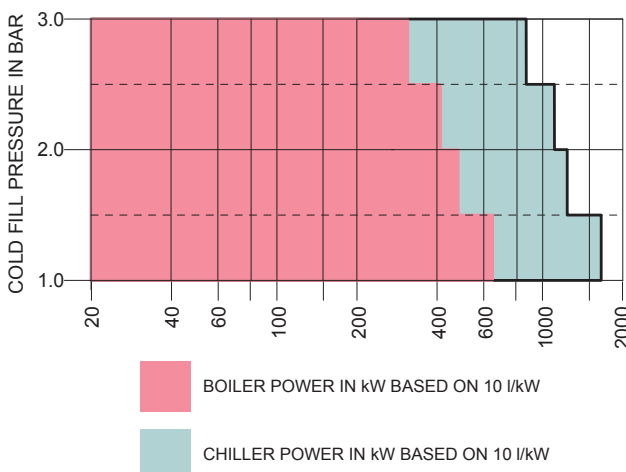
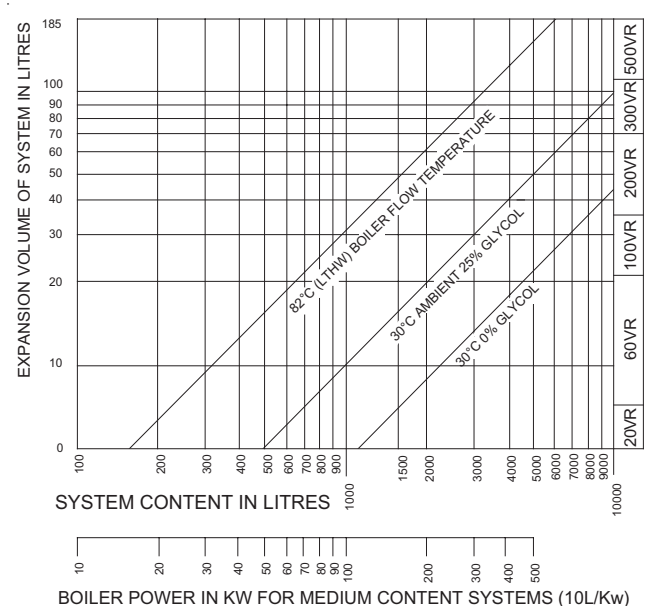
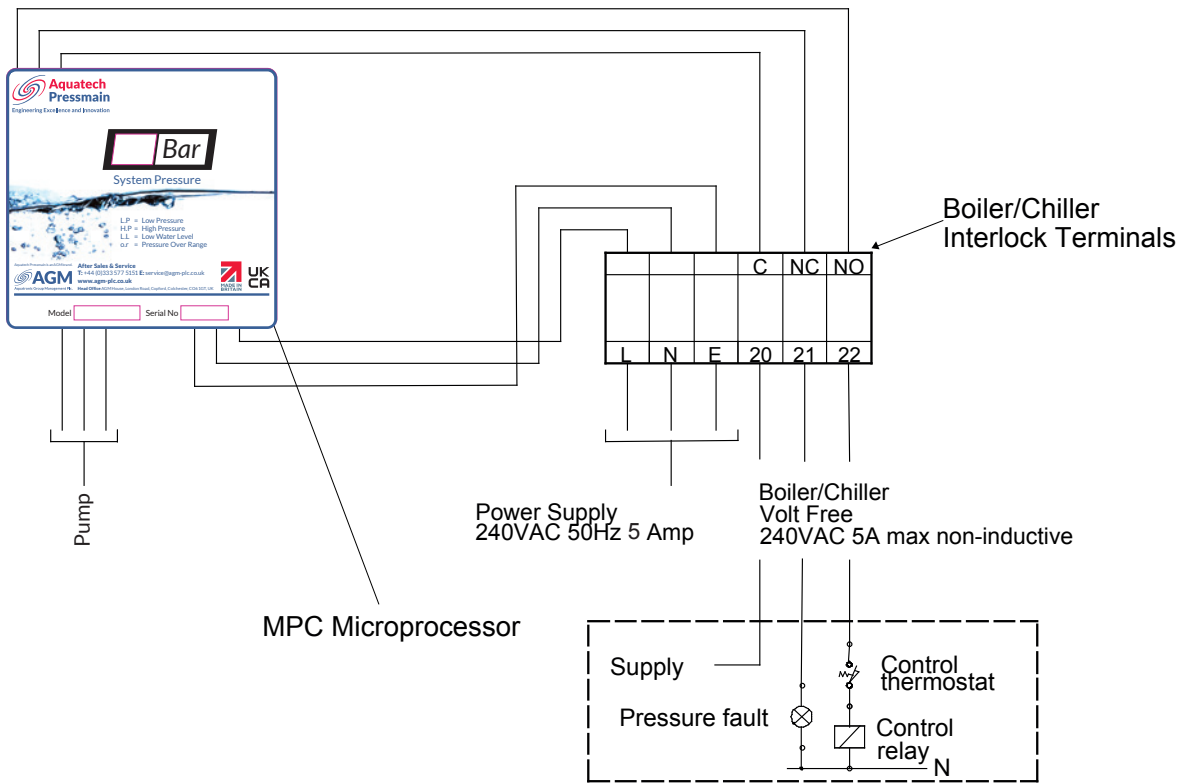


CHART 4
EXPANSION VESSEL SELECTION



BASIC ELECTRICAL CONNECTIONS



TYPICAL BOILER/CHILLER INTERRUPT CIRCUIT

CONNECTION NOTES

Safety Interrupt Volt free terminals 20/22 change state when either High or Low pressure is sensed on the system. The control relay de-energises in a fault condition.

SPECIFICATION FOR STANDARD MINIPACK (MP31-B)

Single pump pressurisation unit suitable for a cold fill pressures of up to 3.0 bar, complete with MPC microprocessor and 392 pressure transducer incorporating: combined high/low system pressure cut out single pole relay with "volt-free" contacts; digital pressure and fault display; solid state drive for pressurisation pumps with thermal overload; automatic cut-out and reset on low water level in breaktank.

5 litre mains water breaktank with 15mm float valve having type 'AB' air gap to Water Regulations 1999.

All contained within powder coated sheet steel enclosure, with interconnecting piping and wiring.

Electrical supply: 240v. 1 Phase, 50 Hz, 5 Amp;
Max Power: 0.38 Kw

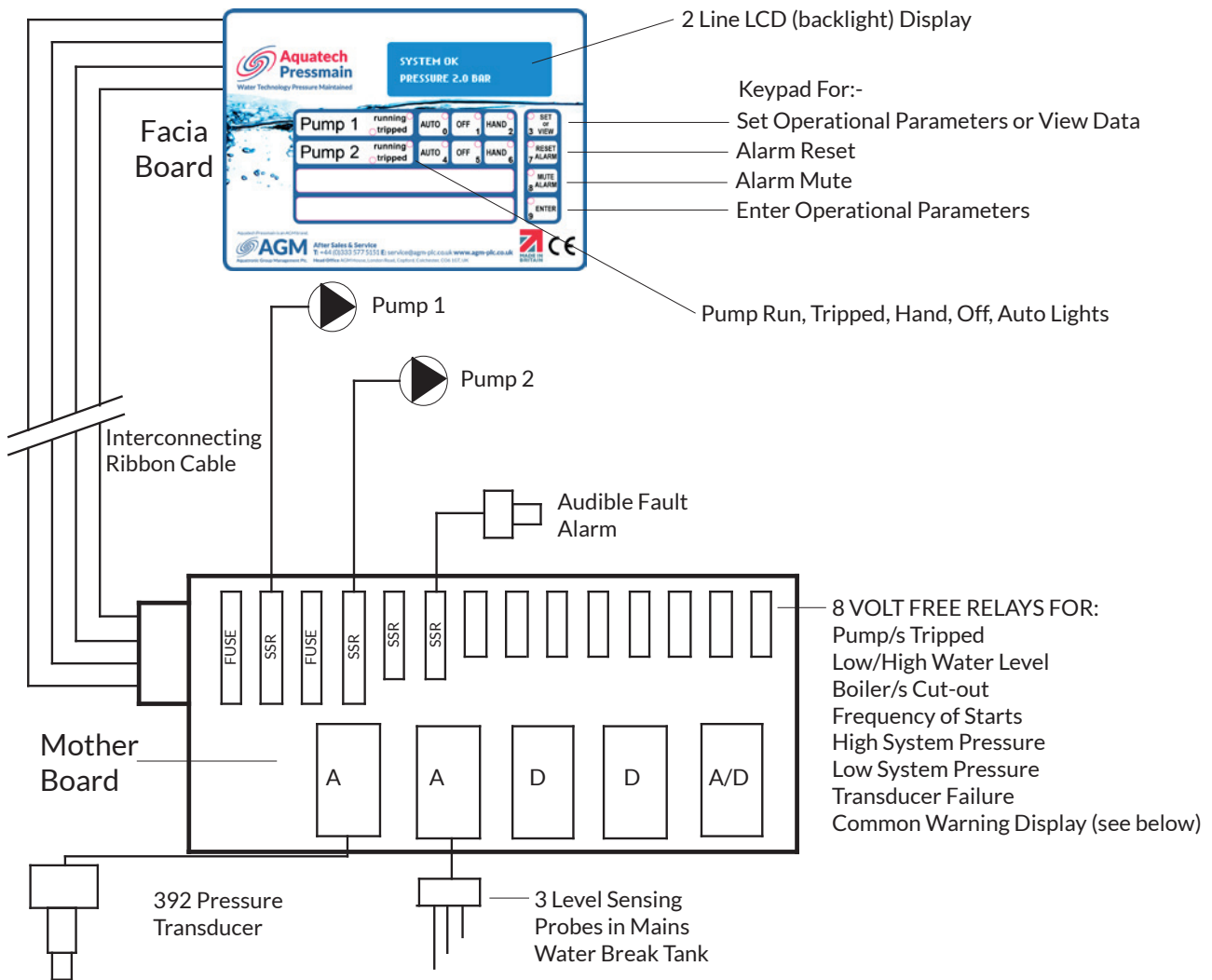
OPERATIONAL/WARNING DISPLAY

"L.P" = Low System Pressure
(Scrolls with pressure reading)

"H.P" = High System Pressure
(Scrolls with pressure reading)

"L.L" = Low Water Level in Mains Water Break Tank

ENHANCED ELECTRICAL CONNECTIONS



AS STANDARD SPECIFICATION WITH ADDITIONS:

- Twin pump
- 2020Plus microprocessor control, two thermal overload protected pump motors,
- Fascia controls to provide 5 indicating lights for each pump condition or status:- run, tripped, hand, off auto.
- Fascia keypad to enter & set operational parameters, reset alarm & mute.

FASCIA 2 LINE LCD ILLUMINATED DISPLAY TO PROVIDE:

Operational Data Display:

- System Pressure
- System Status Including Warnings
- Alarms With Type of Fault
- Pump/s Tripped
- Transducer Fault
- Boiler/s Cut-out

Information Displays:

- Hours Run for Each Pump
- Hours Elapsed Since Last Service
- Parameter Settings Display

- Last 30 faults with time and date stamp
- High Pressure Cut-out Setting
- Duty Pressure (Cold Fill Pressure)
- Low Pressure Cut-out Setting
- Support Pump Delay Time

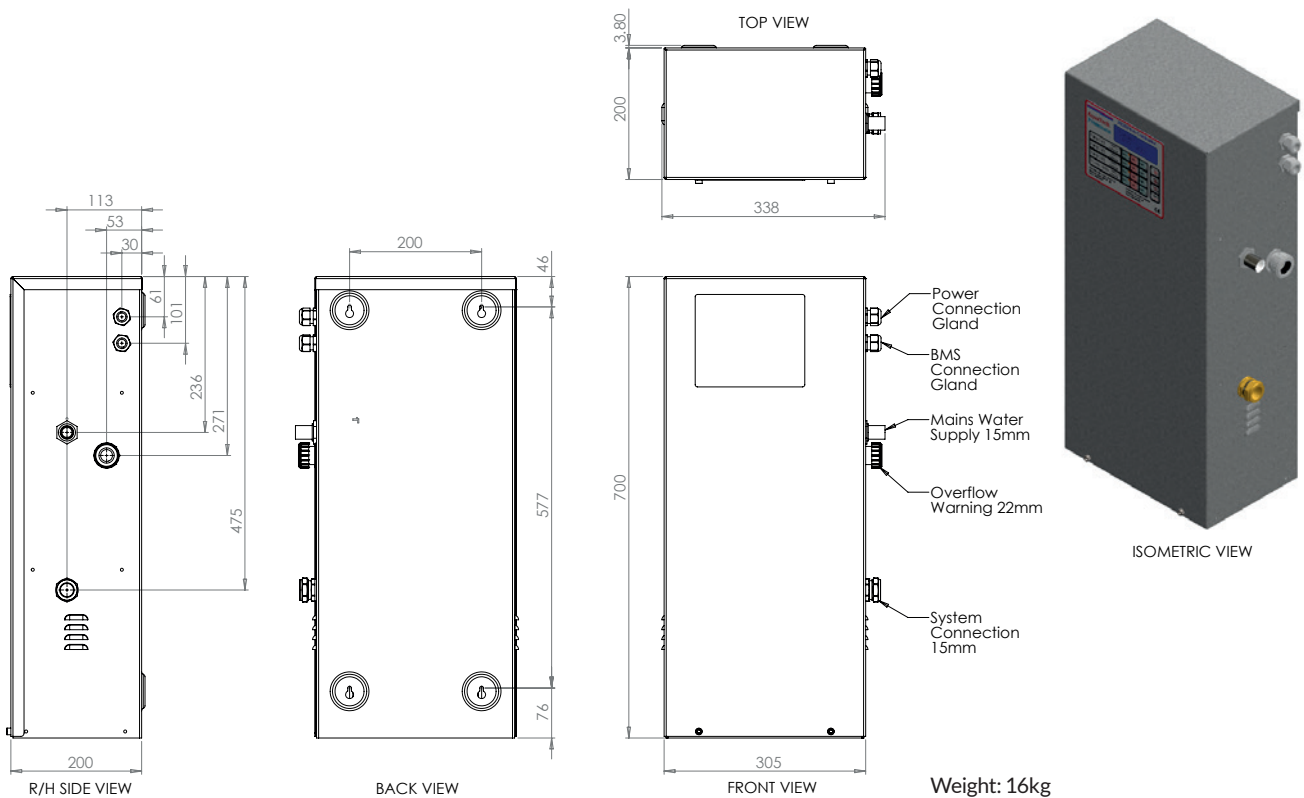
BMS Volt Free Relay Connections:

- High System Pressure
- Low System Pressure
- Low/High Water Level
- Excessive Frequency of Start/Demand
- Pump Tripped/Failed
- Transducer Fault
- Common Warning Signal for all Warning Displays*
- Boiler/Chiller Cut-out

* Warning Displays:

- High Pressure Approach
- Low Pressure Approach
- Low Water Level Approach
- Servicing Reminder
- Electrical Supply 240v
- 1 Phase, 50Hz, 2 Amp, 0.07 Kw

DIMENSIONS

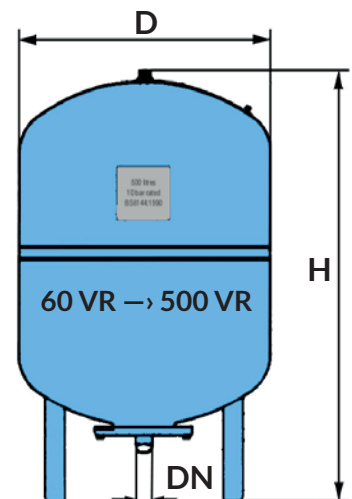
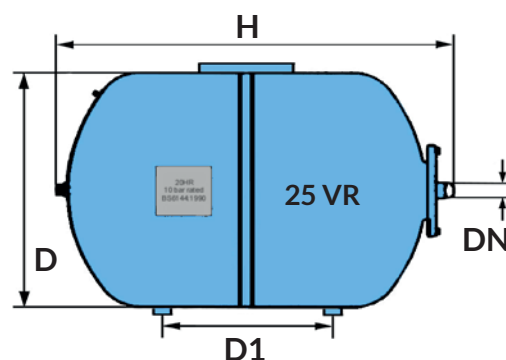


PRESSURE VESSEL DIMENSIONS (SUPPLIED LOOSE)

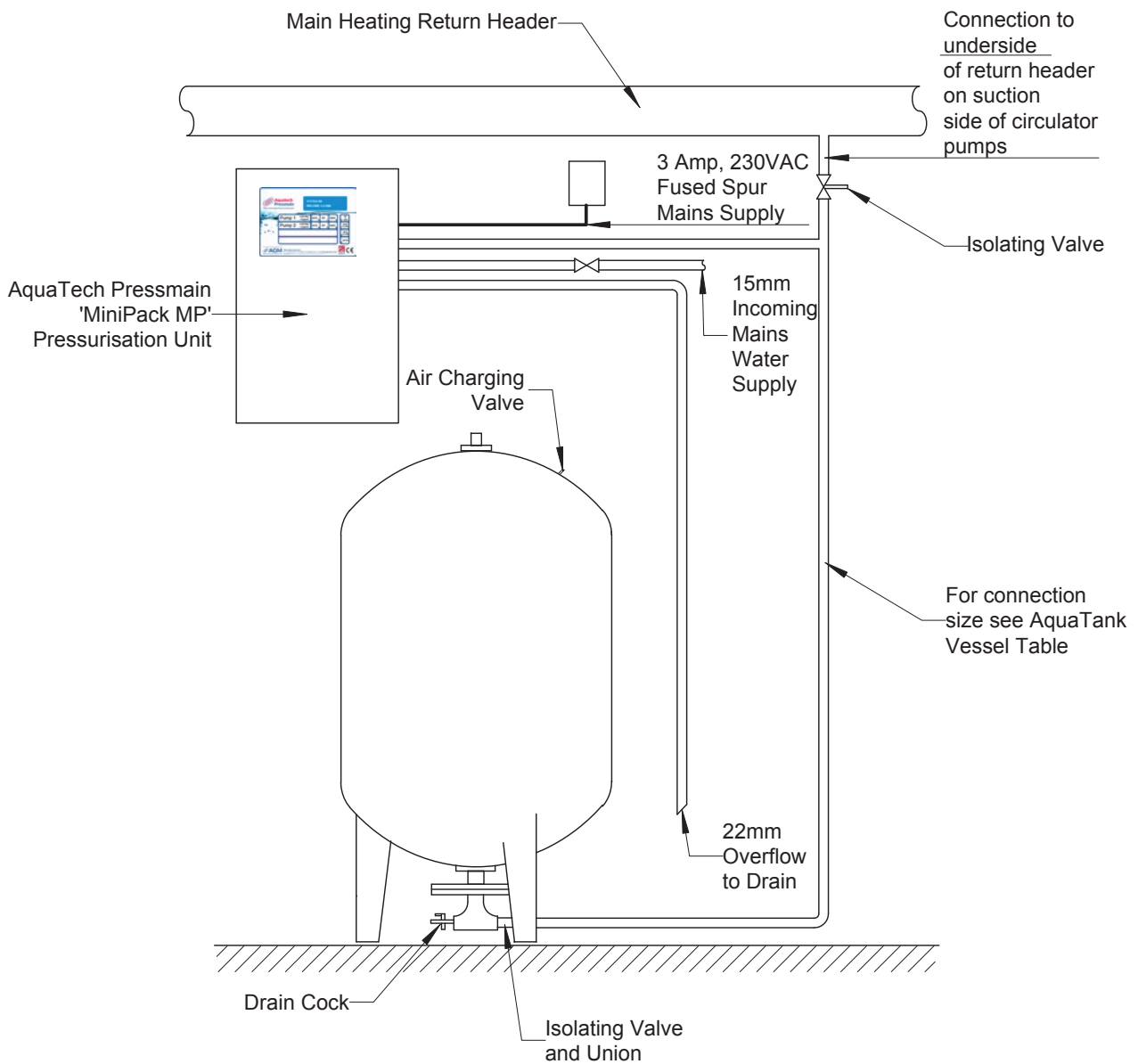
Meets or exceeds EC norms for pressure vessels 97/23/EC; Max working pressure: 10 bar; Vessel Material: Steel RSt 37-2.; All vessel parts in contact with water are coated against corrosion; Diaphragm:

Made of special high quality rubber material; Filling Valve: Schraeder-valve-type; Surface Treatment: Blue, durable powder coating finish.

TYPE	25 VR	60 VR	100 VR	200 VR	300 VR	500 VR
Nominal Content - litres	25	60	100	200	300	500
D mm	280	409	480	634	634	740
D1 mm	228	-	-	-	-	-
H mm	484	740	835	975	1270	1475
Water Connection DN BSP	1"	1"	1"	1 1/4"	1 1/4"	1 1/4"
Dry Weight Kg	5.6	14	19	47	53	79
Max. working Pressure-bar	10	10	10	10	10	10



TYPICAL INSTALLATION



WORK REQUIRED ON SITE

- Bolt unit to plinth or wall.
- Connect ½" BSP (15mm) mains water supply.
- Provide and fit ¾" BSP (22mm) overflow pipe from break tank to suitable drain.
- Wire single phase control supply onto terminals provided and boiler/chiller thermostat control circuits onto boiler/chiller relay within the control panel.
- Connect MINIPACK unit to system as installation instructions.

CONSTRUCTION STANDARDS FOR MINIPACK SERIES

COMPONENT	MODEL/SERIES	STANDARDS/CLASS	REMARKS
Quality System	Manufacturing	ISO 9001:1994	Cert. No. FM33090
Wiring Standards		BSEN 60204: Part 1:1998	
Electro Magnetic Compatability		European Directive 89/336/EEC:1992	
		European Directive 89/336/EEC:1994	
Mains Water Breaktank	5 Litres Nominal Capacity		
Mains Float Valve	Equilibrium	WRAS 1201001	Type 'AB' Air Gap
Pipework	Polyurethane Type TU		
Pipe Fittings		TUV 9205-8323-501	
Pumps	Cm34 Basic or ET 508 Enhanced	IMQ & VDE Standards	
Pump Motors	T.E. Encapsulated	IP55, Class F Insulation	Thermal Overload Protected
Control Cabinet	AQ-HM-S	IP55	
Microprocessor Enhanced	MPC Basic or 2020Plus Enhanced		
Transducer Control	392	SS/Ceramic	8 Bar Max. Test Pressure

OTHER PRODUCT RANGES AVAILABLE



AQUAPACK 'AP' SERIES

Applications

Heating and Chilled Water system pressurisation

Temperature

3°C to 90°C (120°C with buffer)

Fill Pressure

Up to 7.0 bar

System content

Up to 50,000 litres

Twin pump, floor or wall mounted.

BMS Enhanced package included.

Dual system option available.

Max Pressure

10 bar

Data Sheet 207



SPILLBACK 'SB' SERIES

Applications

Heating and Chilled Water system pressurisation

Temperature

3°C to 99°C

Fill Pressure

Up to 7.0 bar

System content

Up to 50,000 litres

Twin pump, floor mounted.

BMS Enhanced package included.

Max Pressure

8 bar

Data Sheet 225



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