ATAG COMMERCIAL

PHR Pressurisation Units

Technical information

Maintaining the pressure in a range

The PHR range

Pressurisation Units from ATAG Commercial are available in wall mounted and floor standing models. They are designed to automatically top up and maintain the minimum pressure requirements of modern low/medium temperature sealed heating, cooling and chilled water systems.

A pumped pressurisation unit also removes the need for cold water header tanks with associated pipe work, or eliminates reliance on mains pressure to provide the system head.

Wall mounted models are single pump only, with the option of electro-mechanical or electronic controls. The floor standing twin (duty/standby) pump model is available with electronic controls only.

All models are suitable for cold fill pressure requirements up to 3.0 bar and are provided as standard with volt free contacts for compatibility with Building Management Systems. The electronic versions have a special feature, which allows a system first 'fill function'. This negates the need to install and maintain a filling point, which must include an RPZ valve when applied to commercial systems (Category 4 fluid). To complement the pressurisation units, a full range of expansion vessels are also available.

Specification

Pressurisation Units are totally enclosed in a robust powder coated steel casing, with a removable cover to provide access to all internal components. Integral, comprehensive safety circuits – to shut down plant in the event of a fault – ensure compliance with safety requirements at all times.

Key features – all models

- 7.6 litre capacity break tank
- Pump non-return valve
- Plant interlock circuit
- Volt free contact for:
  – Low system pressure
  – High system pressure

Benefits:

- Choice of configurations
- Compact design saves space
- Reduces installation costs
- BMS compatible for system integration
- Increases security of heating system
- Easy engineer access for settings

Floor standing model

PHR T

Electronic versions utilise a 16 character back lit LCD display and keypad for viewing operation and system information.

- Class AF air gap and overflow
- Float valve with low level switch in break tank
- Twin pump
- Pump kick function
- Micro-processor control
- 16 character back-lit LCD display
- Simple key pad operation
- Self diagnostic interrogation
- Pressure transducer
- Additional volt free contact

# of applications

Wall mounted models

PHR E

Electronic versions utilise a 16 character back lit LCD display and keypad for viewing operation and system information.

- Class AF air gap and overflow
- Float valve with low level switch in break tank
- Single pump
- Pump kick function
- Micro-processor control
- 16 character back-lit LCD display
- Simple key pad operation
- Self diagnostic interrogation
- Pressure transducer
- Additional volt free contact

PHR M

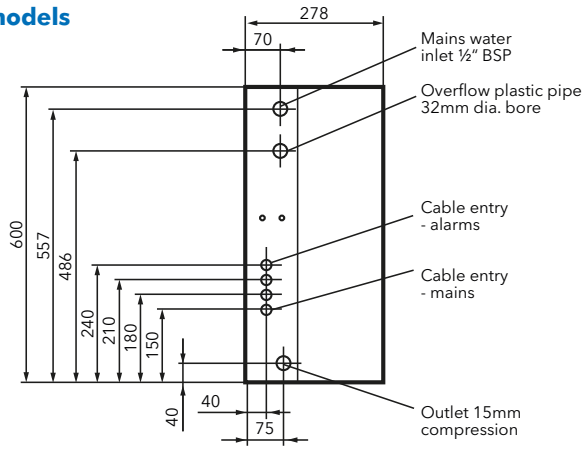
Utilises simple to set pressure switches with scales visible behind the casing cover.

- Class AF air gap and overflow
- Float valve
- Single pump
- System pressure gauge
- Low pressure switch
- High pressure switch
- Pump pressure switch

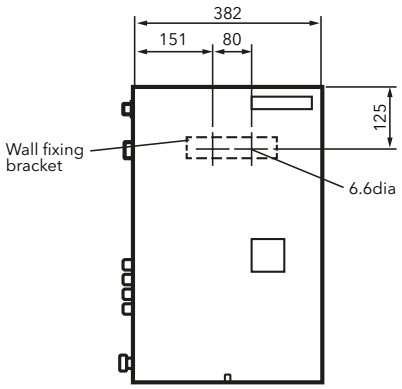
Technical data

Model	M	E	T
Unit type	Wall mounted Single pump Electro-mechanical	Wall mounted Single pump Electronic	Floor Standing Twin pump Electronic
Cold fill pressure range	0.8 - 3.0 bar	0.8 - 3.0 bar	0.8 - 3.0 bar
Power supply	230v 1 Ph 50Hz	230v 1 Ph 50Hz	230v 1 Ph 50Hz
Full load current	2.8A	2.8A	2.8A
Start current	9.0A	9.0A	9.0A
Fuse rating	10.0A	10.0A	10.0A
Noise level	58dBA @ 1 metre	58dBA @ 1 metre	58dBA @ 1 metre
Break tank air gap	Type AF	Type AF	Type AF
Weight empty / full	21 / 28.6 kg	21 / 28.6 kg	29 / 36.6 kg
Water inlet connection	½" BSP male	½" BSP male	½" BSP male
Overflow connection	32mm plastic	32mm plastic	32mm plastic
System connection	15mm compression	15mm compression	15mm compression
Electrical connection	4 x 10mm glands	4 x 10mm glands	4 x 10mm glands

Wall mounted models

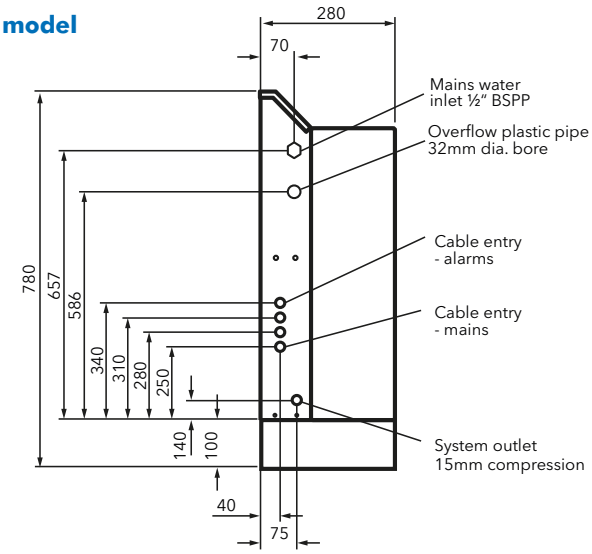


Side view (Left hand side)

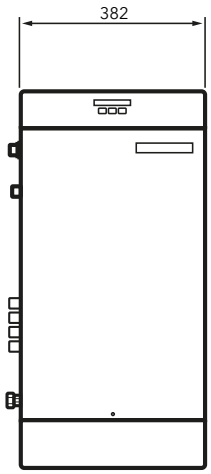


Front view

Floor standing model



Side view (Left hand side)



Front view

Electrical connections

E & T			M		
Low pressure alarm Volt free (MAX 240v 0.5A)	Normally open	1	Mains supply 240v/50Hz 10A	Live	1
	Common	2		Earth	2
	Normally closed	3		Neutral	3
High pressure alarm Volt free (MAX 240v 0.5A)	Normally open	4	Wiring to cold fill pressure Switch /Hours run meter (HRM if fitted)	HRM neutral*	4
	Common	5		Cold fill Switched live/ HRM live*	5
	Normally closed	6		Cold fill Switched live	6
General fault alarm Volt free (MAX 240v 0.5A)	Normally open	7	Low pressure alarm Volt free (MAX 240v 0.5A)	Common	7
	Common	8		Normally open	8
	Normally closed	9		Normally closed	9
Mains supply 240v/50Hz 10A	Live	10	High pressure alarm Volt free (MAX 240v 0.5A)	Common	10
	Earth	11		Normally closed	11
	Neutral	12		Normally open	12

Filling the system

Note: Electronic versions of the pressurisation unitsl have a 'Fill Function', which negates the need for the following requirements.

The initial filling of a sealed heating system and subsequent re-filling, must be by a method that has been approved by the Water Regulation Advisory Service (WRAS) specific to the type of heating system.

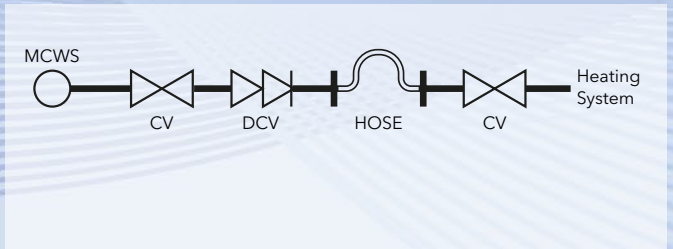
The approved method of filling shall comprise of the following components arranged as shown:

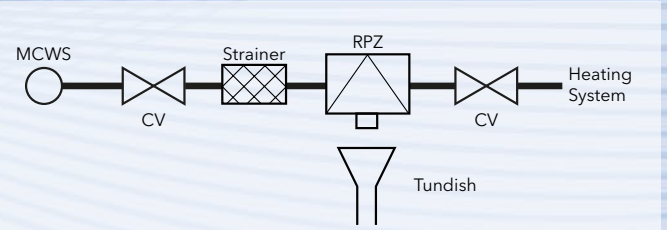
Domestic Fluid Category 3 systems

- Control valve incorporating Double Check Valve on the mains cold water supply
- Temporary connection hose, which shall be disconnected after use
- Control valve on the heating system pipe work

Non Domestic Fluid Category 4 systems

- Control valve on the mains cold water supply
- Strainer
- Verifiable back-flow prevention device with a Reduced Pressure Zone (RPZ) valve incorporating a 'Type BA' air gap
- Tundish
- Control valve on the heating system pipe work





System expansion vessel selection

Expansion vessels are available in capacities from 8 litres to 1000 litres, while models up to 3000 litres are available as special orders. Vessels up to 35 litres are designed for wall mounting, while units above 35 litres are floor standing. All vessels are protected in a stove enamelled powder coating and available in two ranges, 'S' and 'HS'.

Expansion vessel selection for systems <95°C

Cold fill pressure (CFP) bar = $\frac{\text{height of system(m)+3*}}{10}$

Example: height of system=7m CFP=$\frac{7+3}{10}$ = 1bar

* Margin to ensure venting at top of system

Using Chart 1

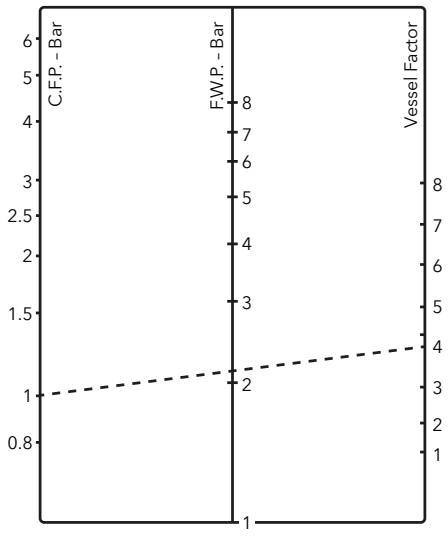
A) With a ruler, strike through CFP and FWP (desired final working pressure) to obtain the vessel factor. Typically FWP is normally 0.5 - 1.5bar above CWP, with the example shown giving a vessel factor 4.

Using the vessel factor

B) Cross reference the obtained vessel factor with the column appropriate to the maximum temperature of the system to obtain the expansion factor – Maximum System Temperature °C.

C) Now multiply the system water content by the expansion factor to obtain the required expansion vessel size.

Chart 1



Maximum System Temperature °C

	30	35	40	45	50	55	60	65	70	75	80	85	90
8	0.01	0.014	0.018	0.023	0.028	0.033	0.038	0.044	0.052	0.058	0.067	0.072	0.08
7	0.012	0.016	0.02	0.026	0.031	0.037	0.042	0.05	0.057	0.064	0.073	0.082	0.09
6	0.014	0.018	0.023	0.029	0.036	0.042	0.05	0.057	0.066	0.074	0.084	0.091	0.103
5	0.015	0.02	0.027	0.034	0.041	0.05	0.057	0.066	0.077	0.085	0.10	0.108	0.117
4	0.019	0.025	0.032	0.04	0.05	0.06	0.068	0.079	0.092	0.105	0.12	0.13	0.143
3	0.023	0.03	0.04	0.05	0.062	0.074	0.085	0.10	0.114	0.13	0.15	0.16	0.18
2	0.03	0.04	0.054	0.069	0.082	0.10	0.115	0.113	0.115	0.17	0.20	0.22	0.24
1	0.045	0.06	0.08	0.1	0.125	0.15	0.175	0.20	0.23	0.26	0.30	0.325	0.3675

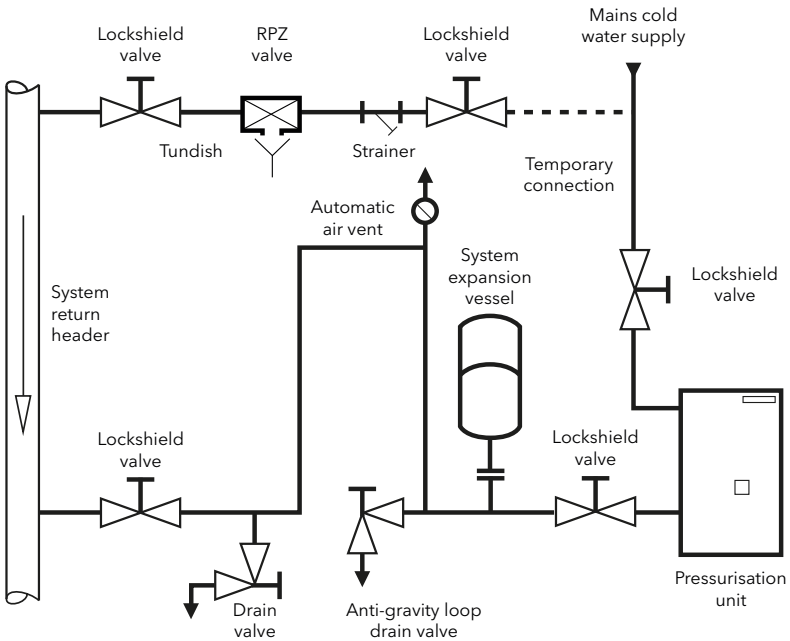
Example:

System content = 1800 litres operating at 85°C (with vessel factor 4) requires a vessel of not less than 234 litres (1800*0.13). So the selection would be the next nearest size - 250 litres.

Note: If the system capacity is unknown, assume a volume of 12 litres per kW of installed boiler or chiller power.

For chilled water systems use 30°C as the system temperature as the variation in expansion factor diminishes below this temperature.

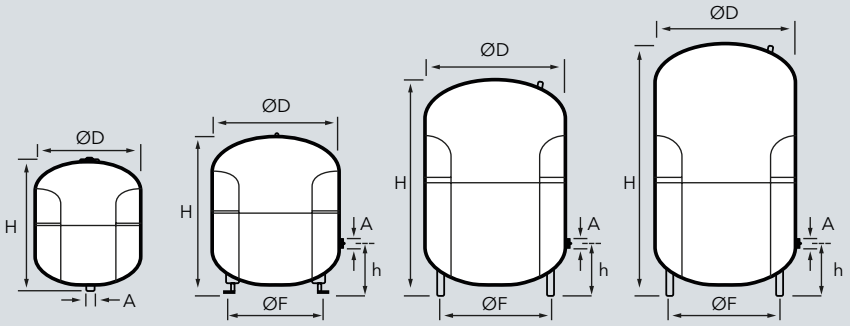
For system temperatures >95°C contact ATAG Commercial.



Expansion vessels

S Range

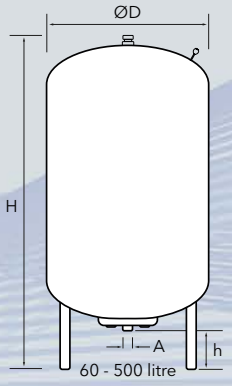
- For heating and chilled water applications
- Threaded connections
- Maximum operating range 6 bar – 120°C
- Compliant with CE norms for pressure vessels 97/23/EC
- Non-replaceable membrane
- Factory pre-set pressure, site adjustable
- Colour blue, powder coated finish



S RANGE	Capacity litres	D mm	H mm	h mm	C connection	Weight kg
VESS-008A	8	272	235	-	R¾″	1.7
VESS-0012A	12	272	315	-	R¾″	2.3
VESS-0025A	25	308	485	-	R¾″	3.5
VESS-0035A	35	376	465	130	R¾″	5.7
VESS-0050A	50	441	495	175	R¾″	7.5
VESS-0080A	80	512	570	175	R1″	9.9
VESS-00100A	100	512	680	175	R1″	11.2
VESS-00140A	140	512	895	175	R1″	14.5
VESS-00200A	200	634	758	205	R1″	37
VESS-00250A	250	634	890	205	R1″	45
VESS-00300A	300	634	1090	235	R1″	52
VESS-00500A	500	740	1290	245	R1″	79
VESS-00600A	600	740	1530	245	R1″	85
VESS-00800A	800	740	1995	245	R1″	103
VESS-001000A	1000	740	2430	245	R1″	120

HS Range

- For heating, chilled and potable water applications
- Heavy gauge steel construction RST 37-2
- Maximum operating range 10 bar – 95°C
- Compliant with CE norms for pressure vessels 97/23/EC
- Replaceable diaphragm
- Factory pre-set pressure, site adjustable
- Colour blue, powder coated finish
- All vessel parts in contact with water are corrosion resistant



HS RANGE	Capacity litres	D mm	H mm	h mm	C connection	Weight kg
VESS-HS-060LIT	60	409	640	152	G1″	14
VESS-HS-080LIT	80	480	730	152	G1″	16
VESS-HS-100LIT	100	480	835	152	G1″	19
VESS-HS-140LIT	140	480	1015	145	R1	29
VESS-HS-200LIT	200	634	970	145	G1¼″	40
VESS-HS-300LIT	300	634	1270	145	G1¼″	54
VESS-HS-400LIT	400	740	1245	135	G1¼″	70
VESS-HS-500LIT	500	740	1475	135	G1½″	79
VESS-HS-600LIT	600	740	1860	265	G1½″	103
VESS-HS-800LIT	800	740	2325	265	G1½″	195
VESS-HS-1000LIT	1000	740	2604	265	G1½″	228

www.atagcommercial.co.uk

ATAG Heating UK Limited
3 Juniper West, Fenton Way, Southfields Business Park,
Basildon, Essex, SS15 6SJ

Tel: 01268 546700
Email: enquiries@atagcommercial.co.uk
Web: www.atagcommercial.co.uk

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