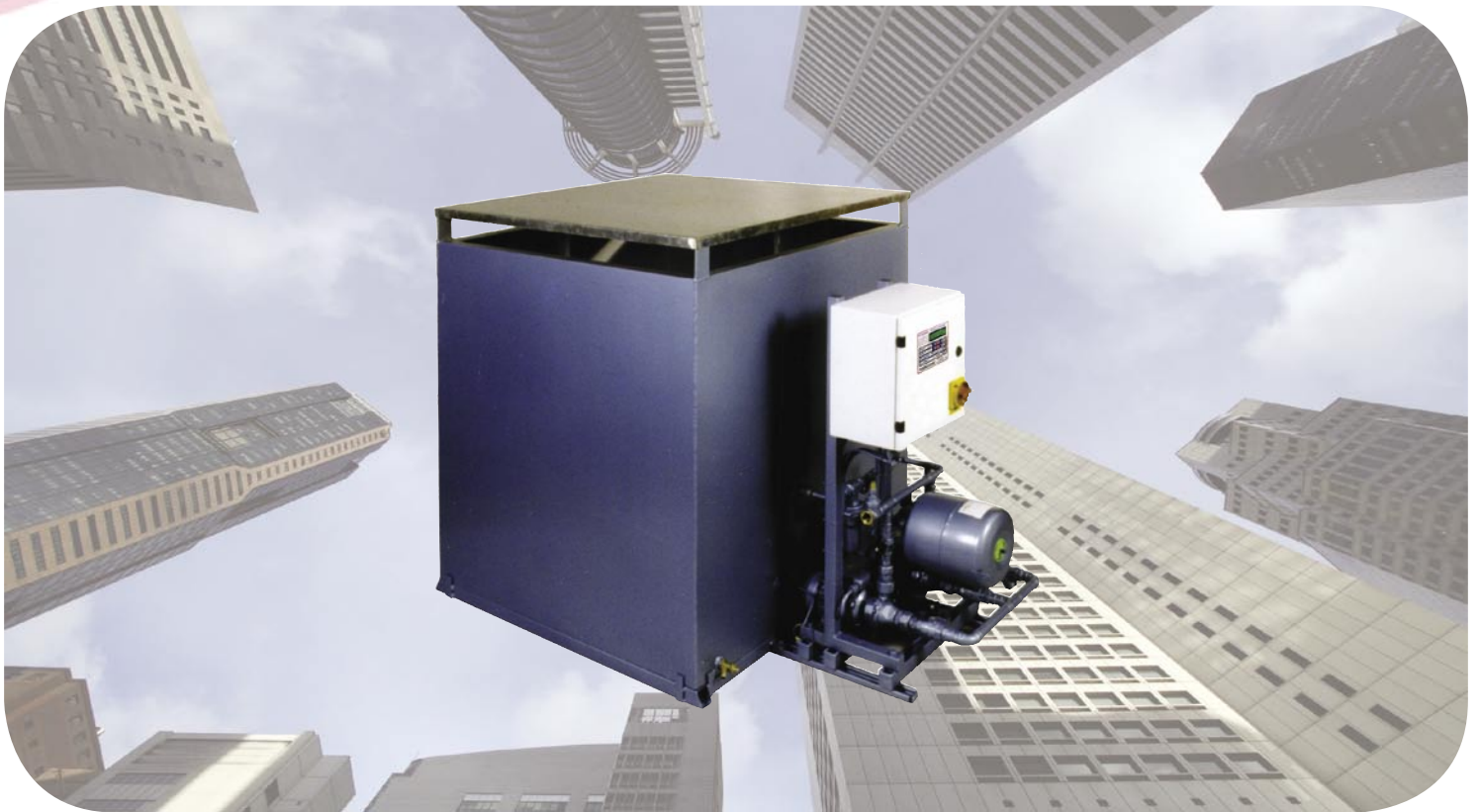




AquaTech Pressmain

HEATING & CHILLED SYSTEM PRESSURISATION UNITS



AQUASPILL 'AS2ET' SERIES

GENERAL

A Modular system offering eight basic pressurisation units and flexible combinations of spill tanks with or without cooling vessels.

The Aquaspill system pressurisation unit automatically maintains pressure in systems which have total expanded volume of water (acceptance) up to 10,000 litres, boiler flow temperatures up to 120 degrees centigrade and cold fill pressures up to 7.0 bar.

Once the system has been initially filled via a quick filling loop (part No. MAF-200001) the "Aquaspill" will take over and maintain optimum system conditions.

On rising system temperature the expanding water is spilled automatically into expansion tank/s, and as the system cools the spilled water is automatically pumped back into the system. Any loss of water from the system will be automatically made-up.

During the above operations the pressure variation does not normally exceed 0.5 bar.

FEATURES

- Maximum expanded volume (acceptance): 10000 litres; maximum system cold fill pressure: 7.0 bar.
- An intermediate cooling vessel is used if boiler flow temperature exceeds 90 degrees centigrade.
- Standard automatic alternation of duty pump.
- Standard anti pump seizure pulsing.
- Ideal for system refurbishment where pressure rise must be minimised, and floor space is at a premium.
- Integral automatic water make-up system.
- Designed, manufactured & tested to ISO9001 Standards.
- Full commissioning and after sales service available nationwide.
- M & E 3 specification with Enhanced package fitted.
- Highly competitive price coupled with quality and reliability.

TYPICAL SPECIFICATIONS

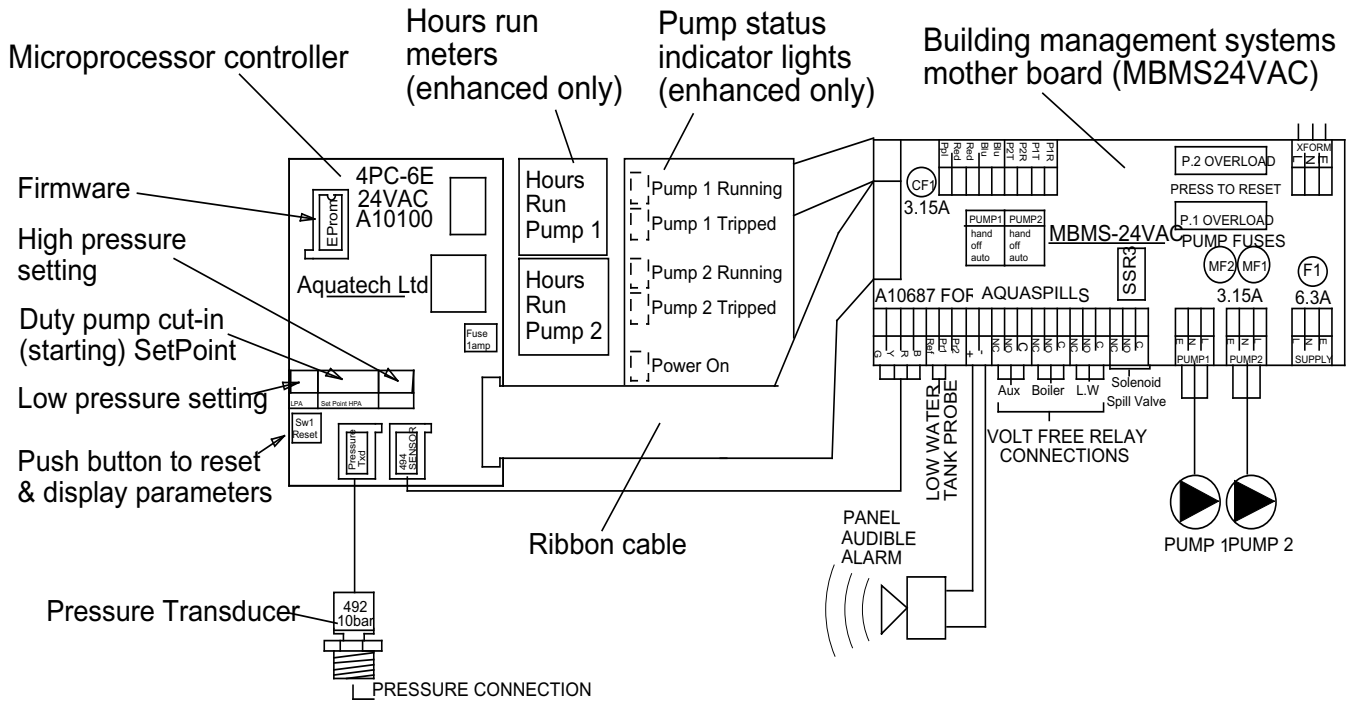
STANDARD MODELS:

Aquaspill type AS2ET-XX-YY-Z suitable for an estimated system volume of AAAAA litres having a cold fill pressure of BB bar, incorporating 2020+ microprocessor and pressure transducer control, with twin regenerative turbine 0.37kW 1 phase (or 1.1kW to 5.5kW 3 phase) bronze pumps having automatic alternation of duty pump & anti seizure pulsing, delayed initiation of high and low system pressure cut outs both linked to single pole volt free relays, hand-Off-Auto switches for each pump, pump Run & Tripped L.E.D.s, hours run meters, interlocked door isolator, low water level sensing in breaktank coupled to volt free relay, alarm buzzer, alarm mute and reset buttons/indicators, digital pressure, fault and parameter indicator. Combined spill and mains water break tank, float valve with type A air gap, overflow connection, and low water level protection, 8514 electromagnetic spillvalve with strainer & isolating valves, IP54 powder coated control cabinet, interconnecting piping to spill tank, all mounted on steel base frame. Set assembled, tested and commissioned In accordance with ISO9001 Standards.

OPTIONAL AQUASPHERE BLANKET

This is a single layer ball blanket which floats on the spill tanks surface, which will significantly reduce moisture & oxygen ingress. Problems associated with absorption from the atmosphere are not exclusively limited to the adsorption of water. The absorption of free oxygen into hot water contained in boiler feed tanks can lead to serious corrosion of pipes, valves and boiler jackets. Tests have shown that a single layer blanket can reduce water absorption from the atmosphere by up to 60% and oxygen absorption by up to a factor of 42. The Aquasphere Blanket system can therefore be seen as a highly effective two way barrier preventing both evaporation from and absorption into a liquid.

DIAGRAMMATIC CONTROL ARRANGEMENTS FOR AQUASPILL



Note: Controls as illustrated above are inclusive of the Enhanced pac

DISPLAY PARAMETERS

(as shown on 3 digit display.)

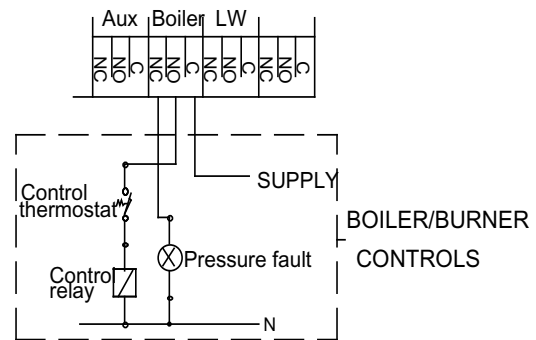
Display Parameters	Display
Solenoid Spill valve open	Sli
Solenoid Spill valve closed	Slo
Duty pump cut-in	DP.I
Duty pump cut-out	DP.o
Support pump cut-in	SP.I
Support pump cut-out	SP.o
High pressure cut-in	HP.I
High pressure cut-out	HP.o
Low pressure cut-in	LP.I
Low pressure cut-out	LP.o

OPERATING FUNCTIONS

(as shown on 3 digit display.)

Operating functions	Display
High pressure	Hi.P
Low pressure	Lo.P
Low water level	Lo.L

TYPICAL BOILER INTERRUPT CIRCUIT



CONNECTION NOTES

- 'Aux'** Used internally for special specifications only.
- 'LW'** Volt free terminals which change state when Low Water level is sensed in the feed water break tank
- 'Boiler'** Volt-free terminals which change state when either high or low pressure is sensed on the system. Note: the relay will de-energise in a fault condition.

ON SITE INSTALLATION

- Bolt base/s to plinth.
- Connect an appropriate size mains water supply to float valve.
- Connect system connection lockshield isolating valve to heating system making sure that it is made to the underside of the main Return header.
- Provide and fit overflow pipe from Spilltank to a suitable drain.
- Wire a fused single or three phase supply (as appropriate) onto terminals provided. Connect boiler/chiller thermostat control circuits onto volt free relay connections provided within the control panel.
- Ensure all work is carried out in accordance with Aquaspill installation instructions provided with the unit.

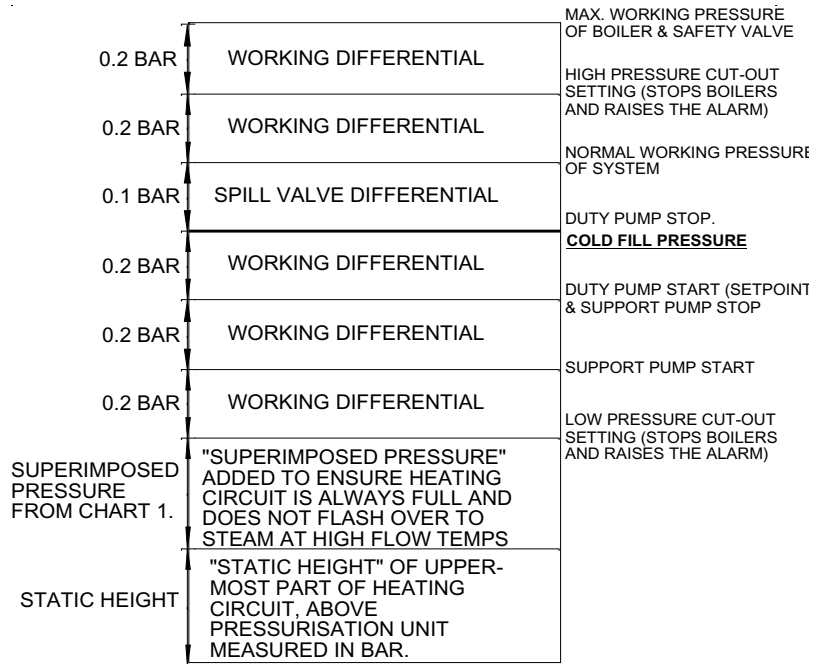
AQUASPILL QUICK SELECTION PROCEDURES

EXPANSION & SAFETY PARAMETERS CHART 1.

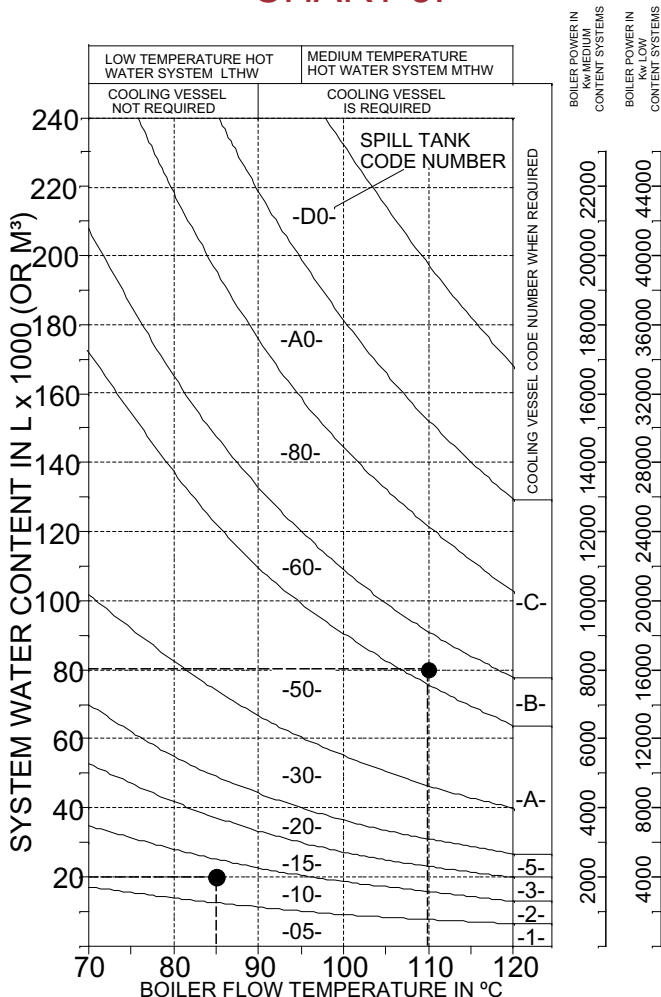
FLOW TEMPERATURE ° C	SUPERIMPOSED PRESSURE BAR	EXPANSION PERCENTAGE %
40	0.2	0.78
50	0.2	1.21
60	0.2	1.71
70	0.2	2.28
80	0.2	2.91
90	0.2	3.6
100	0.3	4.35
105	0.6	4.77
110	0.9	5.15
115	1.3	5.62
120	1.7	6.01

Note: For boiler flow temperatures in excess of 120°C (HTHW) please refer to our "Nitropack" range of heating pressurisation units, DataSheet 216.

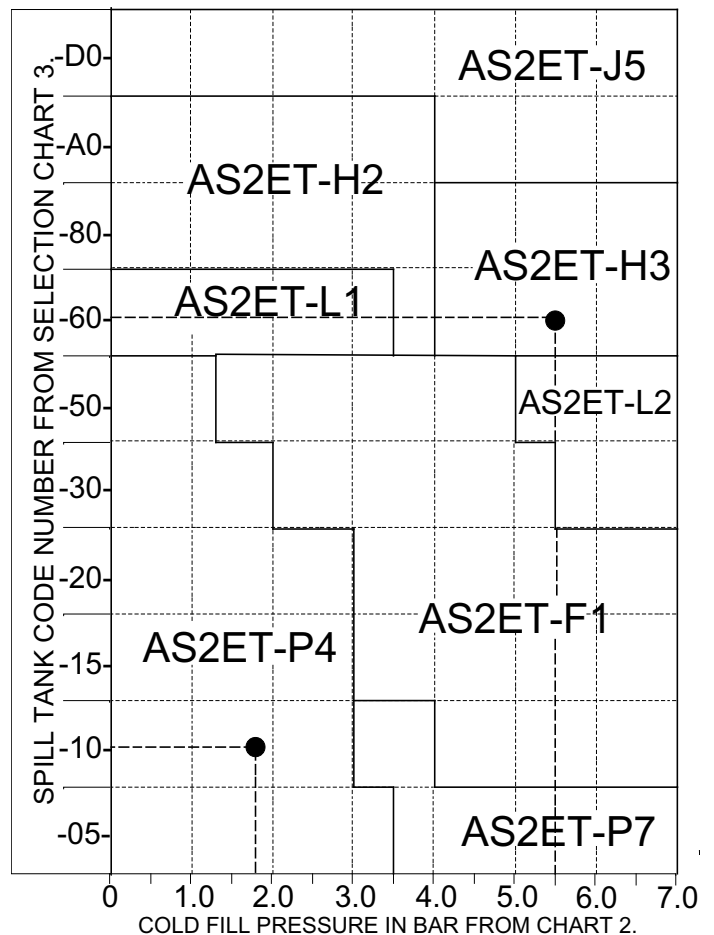
PRESSURE SETTINGS CHART 2.



SPILL TANK SELECTION CHART 3.



AQUASPILL SELECTION CHART 4.



EXAMPLES OF AQUASPILL SELECTION

Note: AquaTech Pressmain Ltd spill tank(s) must be used at all times. Cooling vessel(s) when required must be sized at least 20% of spill tank total capacity (refer to AquaTech Pressmain Ltd for help with pressurisation unit)

Example No. 1 site conditions

Total Boiler rating with Medium water content system 2,000kW; Estimated system water content 20,000 litres; System flow temperature 85°C; Static height of uppermost part of heating system above Aquaspill = 10m (1.0 bar)

Answers from charts 1 to 4

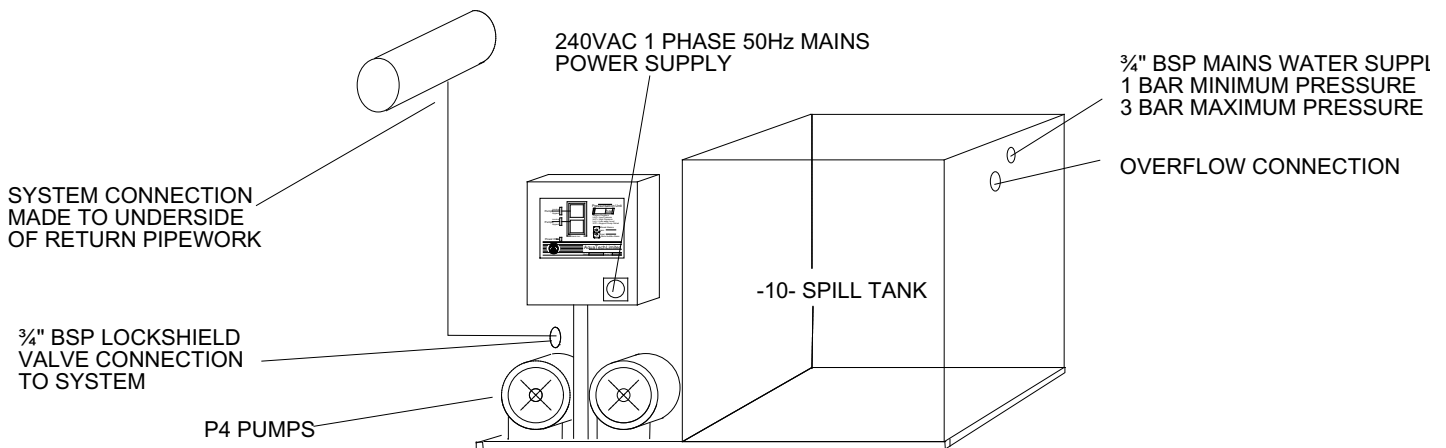
Superimposed pressure from chart 1, = **0.2 bar**

Cold fill pressure from chart 2, = static height + superimposed + working differentials (3 off)
= 1.0 + 0.2 + 0.2 + 0.2 + 0.2 = **1.8 bar**

Spill tank selection from chart 3, = cross reference of 20,000L & 85°C = Spill tank code "**-10-**": Cooling vessel not required **-0**

Aquaspill selection from chart 4, = cross reference 1.8 bar & spill tank code 10 = Aquaspill model **AS2ET-P4-**

Aquaspill package selected = **AS2ET-P4-10-0** (twin pump Aquaspill with P4 pumps, size 10 spill tank and no cooling vessel).



Example No. 2 site conditions

Total Boiler rating with low water content system 16000kW; Estimated system water content 80000 litres; System flow temperature 110°C; Static height of uppermost part of heating system above Aquaspill = 40m (4.0 bar)

Answers from charts 1 to 4

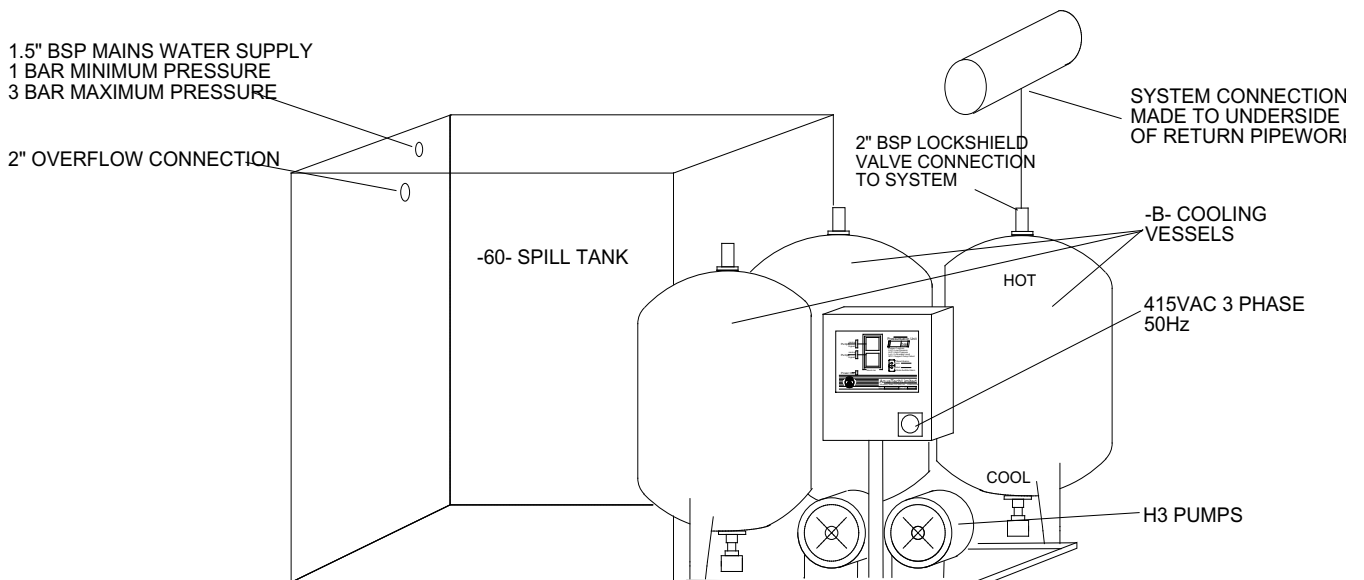
Superimposed pressure from chart 1, = **0.9 bar**

Cold fill pressure from chart 2, = static height + superimposed + working differentials (3 off)
= 4.0 + 0.9 + 0.2 + 0.2 + 0.2 = **5.5 bar**

Spill tank selection from chart 3, = cross reference of 80,000L & 110°C = Spill tank code "**-60-**": Cooling vessel is required **-B**

Aquaspill selection from chart 4, = cross reference 5.5 bar & spill tank code 60 = Aquaspill model **AS2ET-H3-**

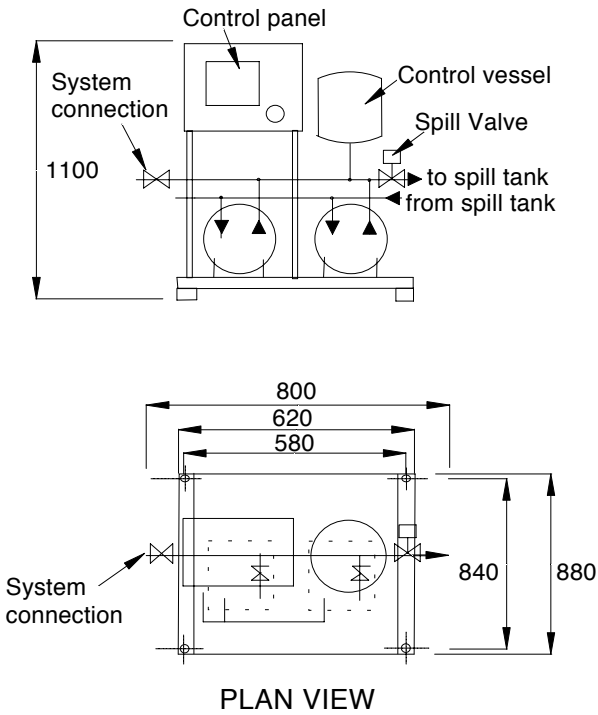
Aquaspill package selected = **AS2ET-H3-60-B** (twin pump Aquaspill with H3 pumps, size 60 spill tank and size B cooling vessel).



AQUASPILL DIMENSIONS (in mm unless otherwise stated)

AS2ET- (no cooling vessel)

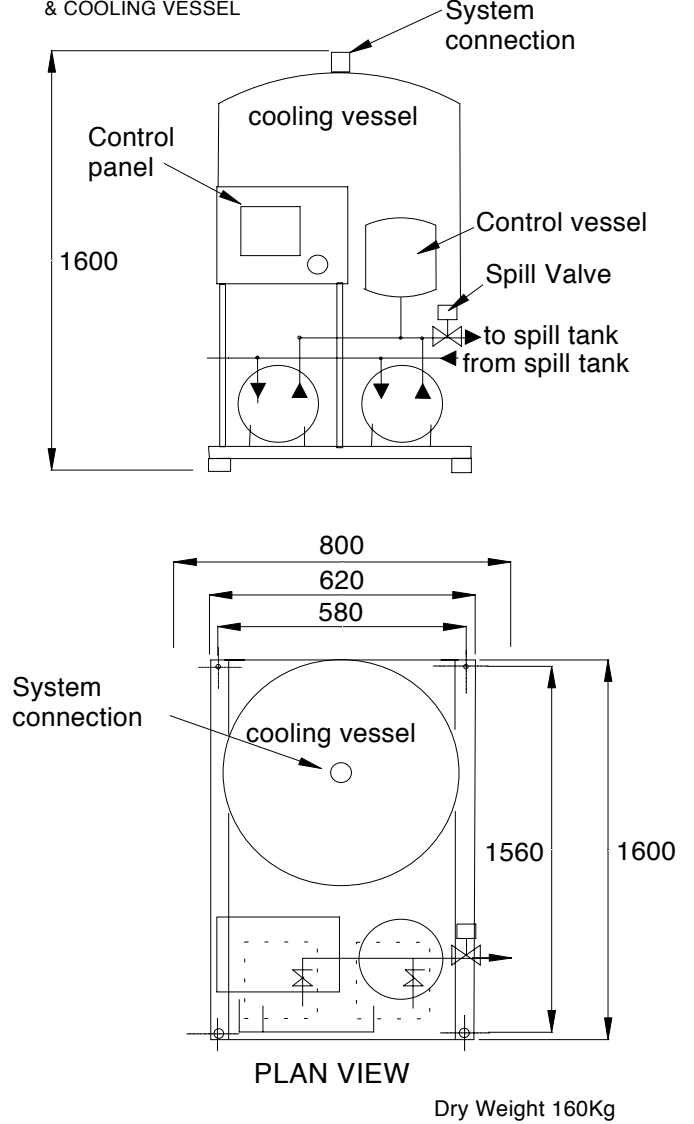
PRESSURISATION UNIT ONLY



Dry Weight 80Kg

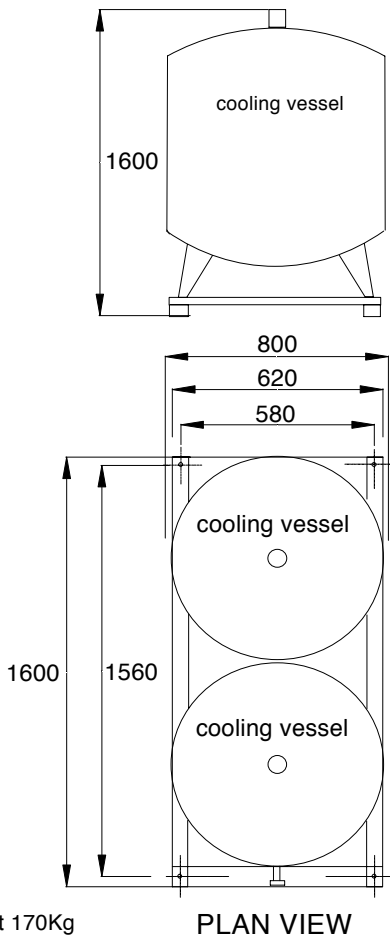
AS2ET- (with cooling vessel)

PRESSURISATION UNIT & COOLING VESSEL



TWIN COOLING VESSELS

2 VESSELS ONLY

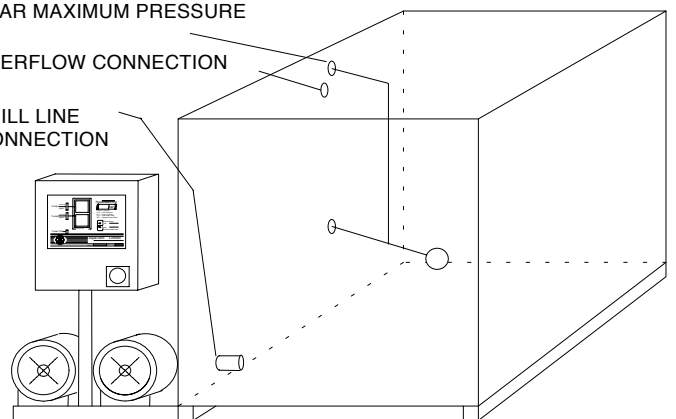


SPILL TANK

MAINS WATER SUPPLY
1 BAR MINIMUM PRESSURE
3 BAR MAXIMUM PRESSURE

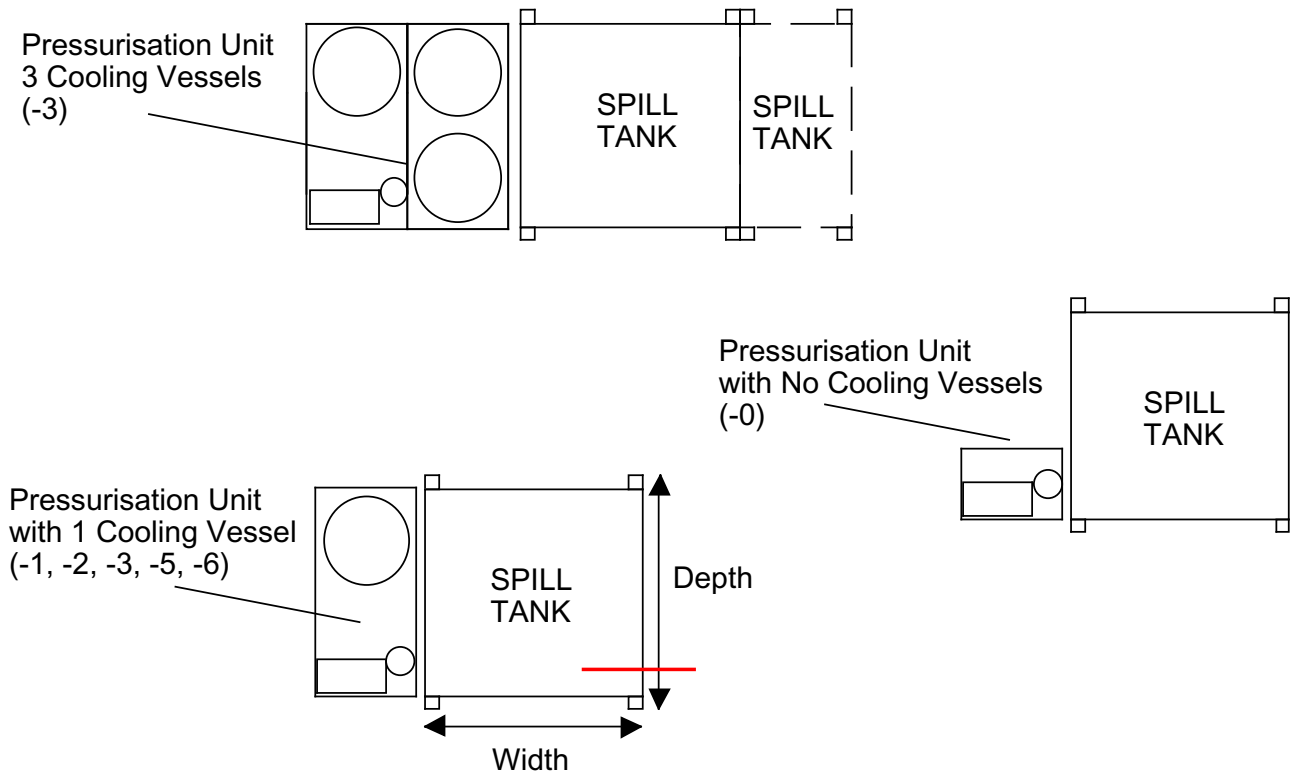
OVERFLOW CONNECTION

SPILL LINE CONNECTION



AQUASPILL DIMENSIONS

Typical configurations (plan view):-



Spill Tanks	Gross Capacity (Ltr)	Spill Capacity (Ltr)	Max. Overall			Weight KG	Overflow BSP	Float Valve Size
			Width	Depth	Height			
- 05 -	500	400	500	1200	1200	100	1.25"	1.0"
- 10 -	1000	800	1000	1200	1200	140	1.25"	1.0"
- 15 -	1500	1200	1000	1200	1700	250	1.25"	1.0"
- 20 -	2000	1600	1000	1200	2200	320	1.25"	1.0"
- 30 -	3000	2400	1000	1700	2200	410	1.5"	1.25"
- 50 -	5000	4000	1250	2200	2200	610	1.5"	1.25"
- 60 -	6000	4800	1500	2200	2200	660	2"	1.5"
- 80 -	8000	6400	2000	2200	2200	870	2"	1.5"

AQUASPILL MODEL NUMBERS

AS2ET	-XX	-YY	-Z	-E
AQUASPILL	PUMP TYPE CODE:	SPILL TANK CODE:	COOLING VESSEL CODE:	ENHANCED CONTROL PACKAGE
Sealed system pressurisation unit. Twin pump model with ET Micro-processor controller.	-P4 = 0.37kW 1Ph. -P7 = 0.38kW 1Ph. -F1 = 1.1kW 3Ph. -L1 = 1.5kW 3Ph. -L2 = 2.2kW 3Ph. -H2 = 2.2kW 3Ph. -H3 = 3.0kW 3Ph. -J5 = 5.5kW 3Ph.	-05, -10, -15, -20 -30, -50, -60, -80 -A0, -D0.	-0 = no cooling vessel -1, -2, -3, -5 & -6 = single vessel -A = twin vessels -B = triple vessels -C = quadruple vessels	suffix "-E" added when Enhanced controls package is fitted to unit.
	See selection chart 4.	See selection chart 3.	See selection chart 3.	See specification on last page.

SPECIFICATION & STANDARDS, AQUAPSPILL

Basic Design	Remarks	Specifications
Power Supply	-P4 & -P7 pumps	220/240 volts, 1 phase, 50 Hz
Power Supply	-F1, -L1, -L2, -H2, -H3 & -J5 pumps	380/415 volts, 3 phase, 50 Hz
Control Cabinet	Sheet steel dust & damp proof	IP54
Non Return Valves	One per pump with strainer	
Water Input floatvalve	$\frac{3}{4}$ " with $\frac{1}{2}$ " orifice, 1 to 3 bar supply	Type "A" Airgap to BS6281 : Part 1 & BS1212 : Part 1
Twin Pumps	Duty & Support	
Standard Controls		
Microprocessor	Model 4PC/6E	
Transducer	Model 492	0 to 10.0 bar
Visual Display	3 Digit Light Emitting Diode	See Display Parameter Table
Fault parameters displayed	11	See Display Parameter Table
Audible alarm (On Panel)	Included	
Manual mute of alarm	Pushbutton on fascia	
Manual reset of alarm	Pushbutton on fascia	
Alternate duty pump start	Included	
Auto anti-seize pump timer	Included	
Auto delay for high & low Press.	To ensure stable circulating pressure	
Common Fault Alarm	For high & low system pressure	Volt free relay (max.240VAC 5A AC1)
Control Circuit	24 Volts AC	
Low Water cut-out.	Probe/float mounted in breaktank	Auto pump restart on rising level
Motor rated fuses	1 per pump inside control cabinet	single phase units.
Motor contactor & overload	1 per pump inside panel.	three phase units.
Interlocked Door Isolator	(Can be padlocked in off position)	three phase units.
Pump: hand/off/auto switches	1 per pump inside control cabinet	
Enhanced Controls (Fitted in addition to Standard Controls)		
Interlocked Door Isolator	(Can be padlocked in off position)	single phase units.
Pump hours run counter(s)	1 per pump on panel fascia	
Motor overload	1 per pump inside control cabinet	single phase units.
Low Water Level Alarm	Volt free relay	(max. 240VAC 5A AC1)
Power On L.E.D	1 on panel fascia	
Pump Run & Tripped L.E.D's	1 Set per pump on panel fascia	
British Standards & European Community Regulations		
Quality Systems	Design, Built & Tested	BS EN ISO 9001 : 1994
Control Vessels (when used)	(Using Internal Diaphragm)	BS 6144 : 1990
Type "A" Airgap	Prevention of contamination	BS 6281 Part 1 : 1992
Application of expansion vessels		BS7074 Parts 1, 2 & 3 : 1989
EMD	European Machinery Directive	89/392/EEC: & 91/368 EEC : 1994
Safety of Machinery		BS 5304 : 1988
Safety of Electrical Machines		BS EN 60204-1 :1993
EMCD	Electromagnetic Compatibility Directive	89/336/EEC : 1992
IEE Wiring Regulations	16th Edition 1991	BS7671: 1992
CE Marking	Fully Complies.	

AquaTech Pressmain design and development programmes are continuous; we reserve the right to make any changes to this specification without prior notice.



AquaTech

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Leaders in the design, manufacture and assembly of packaged fluid pumping equipment and control systems.
Applications: Cold Water Supply; Fire Fighting; Heating & Chilled System Pressurisation; Tank Level Monitoring.