



COLD WATER BOOSTER SETS
WITH ALL PUMPS VARIABLE SPEED



AQUAMATIC 'AMV' 2020PLUS SERIES



Pressure Equipment Directive Compliant

WATER PRESSURE BOOSTER SETS

'AMV' 2020 PLUS CONTROLS WITH ALL PUMPS VARIABLE SPEED

OVERVIEW

The Aquamatic "AMV" range of quality assured cold water pressure booster sets, is designed to increase the pressure of the cold/hot water services within a building where the existing incoming mains or feed tank is not capable of supplying sufficient system pressure. The range incorporates efficient inverter driven variable speed pumps, which continually vary the motor speed to match the changing flow demand pattern, whilst maintaining a constant system duty pressure. This mode of operation, adjusting the pump's motor speed to the building's flow requirements, reduces the power consumption dramatically when compared to fixed speed motor control.

Our 'AMV' 2 & 3 pump sets are manufactured to allow all of the pumps to run together if required. So pumps may be sized for Duty/Standby or Duty/Assist arrangements in the case of two pump units and Duty/Assist/Standby or Duty/Assist/Assist in the case of three pump units. All are programmed to run in staged cascade operation as the flow demand increases and similarly as demand decreases. All pumps are assembled on a common base frame with a Microprocessor, control panel and all necessary valves and fittings to ensure ease of installation and efficient, reliable operation.

Features

- Energy Efficient Variable Speed Blueflux® motors to EuP IE3 grade
- '2020Plus' Microprocessor/Transducer Control for long term reliability and accuracy with 'REPRESS' hydraulic shock system protection
- Automatic Cascade Control for all pumps
- User Friendly Keypad & illuminated 2 line LCD Display for 'Plain English' information for both system status and system pressure
- Electronic Low Water Cut-Out for pump dry running protection, with auto re-start upon water restoration.
- All pumpsets are WRAS approved and are ECA Energy Technology Listed Product.
- BMS Volt Free Enhanced package fitted as standard
- Built to Latest CE Requirements and in accordance with ISO9001
- 304 Stainless steel pipework as standard

SPECIFICATION

Cold Water Pressure Booster Pump Set arranged for operation as duty pump with assist standby pump(s) all under efficient variable speed motor control via AquaTech Pressmain 2020Plus microprocessor control panel requiring single/three phase electrical supply (as appropriate - see below). Complete with interconnecting wiring and all necessary valves and fittings which form the suction and discharge manifolds. All complete on a steel base frame.

Designed, manufactured and tested in accordance with ISO9001 quality assurance procedures, using PED and WRAS approved components suitable for potable water specification. Compliant with all relevant European Community Directives as required by UK law and CE marked.

Automatic variable speed pump motor control by AquaTech Pressmain 2020Plus microcontroller for long term reliability and accurate pressure measurement by 392 transducer. Automatic alternations of all pumps to even run times with adjustable pump running time. Sequential pump starting to avoid overloading electric supply. Hand/off/auto switches for each pump on panel fascia. Motor overload protection. Electronic low water protection, interlocked door isolator, RS232/485 serial communication port. Data logging function, indicators for pumps run, hand, off and auto. "User Friendly" fascia mounted keypad for entering/retrieving data and system parameters, with illuminated 2 line LCD display for pressure, faults and information in plain English.

Also indicating: Power on, System Working Pressure, System status, twin Low and High Water Level in feed tank (where fitted - see page 4), Low System Pressure, High System Pressure, Pump Hours run, Pump Failed, Transducer Failed and service reminder. Our 2020plus enhanced micro software also features the RE-PRESS power restoration electronic safety system, offering the end user a controlled system refill following electrical supply failure, protecting against hydraulic shock.

In addition to the above there is the "BMS Enhanced" package fitted which gives 8 volt free relay outputs, pump tripped lights on panel fascia. The above equipment is complete with all necessary terminals, labels and interconnections, enclosed in a sheet steel, dust and damp proof housing with lockable door to IP55.

Finish

Pump bodies are finished in electrophoresis coating. Panel is powder coated. Stainless steel pipework is left unpainted for effect.

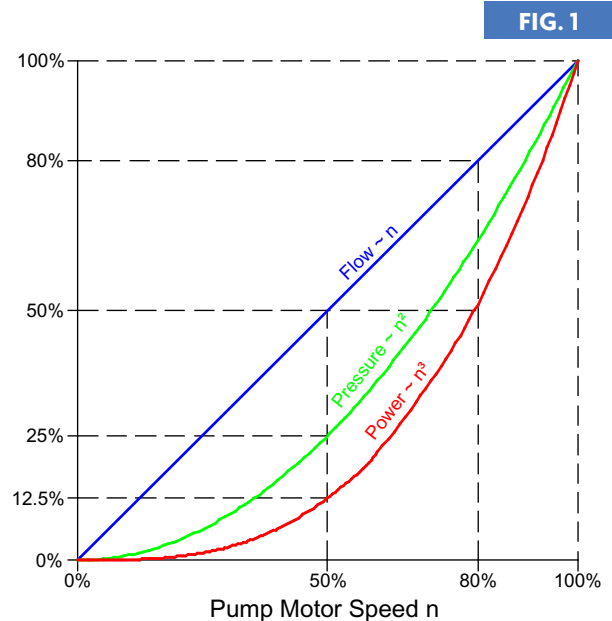
For further information relating to optional features, see data sheet 505.

Please feel free to discuss any special requirements with our sales team.

VARIABLE SPEED PUMPING PRINCIPLE

The basic concept is to alter the pump speed to match exactly the required demand of water to the system, using the principle that flow rate is directly proportional to pump speed. The electricity consumed by the pump motor is proportional to the cube of the pump speed. It can be shown (Fig. 1) that a 20% reduction in flow rate from the peak demand will reduce the power consumed by the motor by 50%. As the flow demand continues to decrease further savings in pump motor power consumption can be achieved.

Not only does this produce a saving in electricity consumption but it also provides other benefits such as reduced strain on the pumpset and system components by excessive pressure and water hammer, smoother and quieter operation through “ramped” acceleration and deceleration of the pump. Also constant pressure output is available where over-pressure could have an adverse effect on the system such as when refurbishing old buildings using the existing pipework or where calorifiers have a limited pressure rating.



AMV OPTIONAL FEATURES & ANCILLARIES

Pipework Material Options

AquaTech Pressmain will supply 304 Stainless steel pipework manifolds as standard, however we can provide Galvanised, ABS, UPVC, 316 Stainless Steel or Copper from the HY-AV & BTE product ranges.

Flexible Connections

Made from EPDM rubber suitable for potable water applications, this spherical bellows type flexible coupling joint will absorb pipe movements, isolate vibration, reduce system noise. Gaskets are not required and the joints are easily and speedily installed.

Anti Vibration Mountings

When fitted this turret type mount will isolate the pump package from the ground or floor-mounting surface. The mounting will arrest and reduce pump rotation starting inertia and associated vibration being transmitted through the ground or floor-mounting surface, which could potentially cause a noise problem.

High & Low Level Feed Tank Alarm Probe: LWP3

Up to two high and two low LWP3 tank probes can be connected to the 2020Plus control panel. This probe is available for side and top mounting and provides a visual warning of tank high level via the control panel fascia. BMS link is also provided via the shared level volt free output.

GRP Weather Proof Enclosure

Where internal plant room space is at a premium or where a unit need to be remotely located this fully encapsulated

25mm pre-insulated GRP enclosure may provide the ideal solution. It is supplied with an internal frost stat, heater, natural vents and access door with Yale lock.

Acoustic Attenuation Enclosure

Although the standard package meets stringent EC noise levels, this enclosure is specifically designed for noise sensitive applications. Typically an insertion loss of approximately 30dB(A) can be achieved in most applications. Enclosures are supplied complete with naturally ventilated acoustic louvres, removable panels for easy pump maintenance and glazed vision panel for viewing pump controls fascia.

Remote Alarm Panel

Suitable for wall mounting where indications of warning and alarm conditions are required remote from the unit's location.

Distribution Manifolds

Prefabricated with our proven in-house copper extrusion method. Can be assembled with any number of individual stabbings and combination of isolating, non-return, double check valve & water meters to suit the building installation requirements.

Control Panel Options

In addition to the standard features listed we can provide and are not limited to the following options; **Emergency Stop Button; Pump run volt free contacts; Individual pump isolators; Anti-Condensation panel heater; Volt meter & switch; 4-20ma pressure output.**

INDIVIDUAL PUMP SELECTION CURVES SERIES 1 & 3

Pump Curve Explanation

QH curve for the individual pump. The bold curves indicate the recommended performance range for best efficiency.

Selection Example

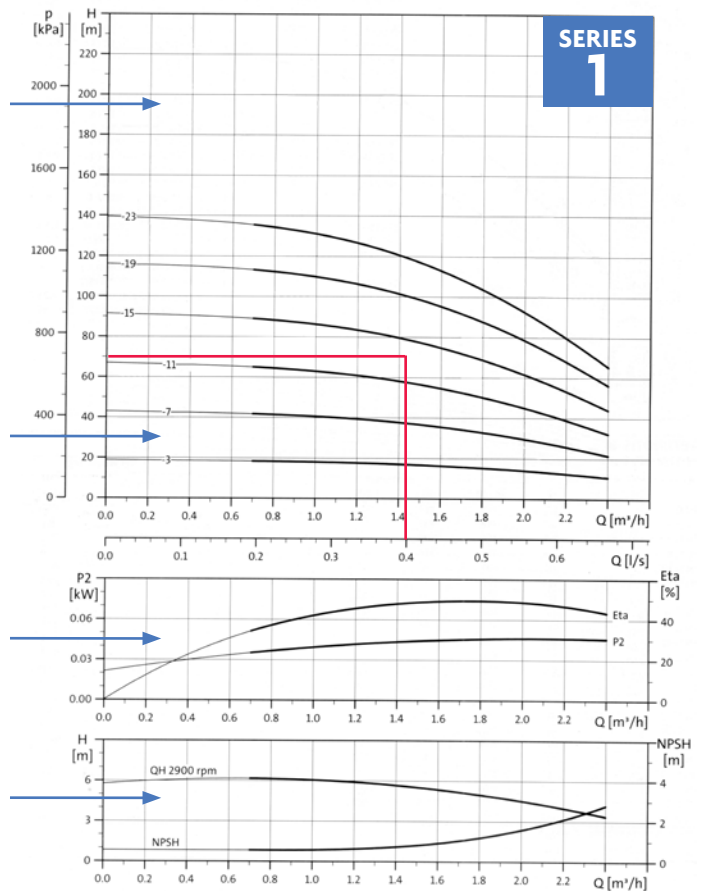
Required duty point flow rate 0.4 l/s at a constant duty pressure of 70 metres (7 bar). Using pump performance curves, cross reference 0.4 l/s at 70 metres, and this gives selected pump 1-15. For a twin pump unit (duty/standby arrangement) select model reference Aquamatic AMV-1-15. See pages 7, 8 & 9 for AMV dimension data.

ETA

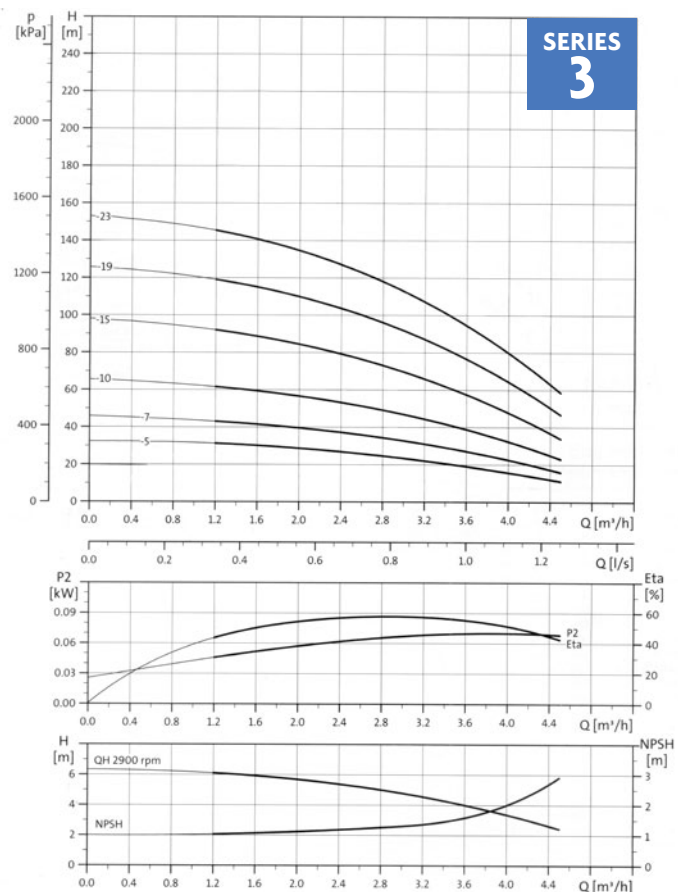
The eta curve shows the efficiency of the pump. This is an average of all the pump types shown in the chart.

NPSH

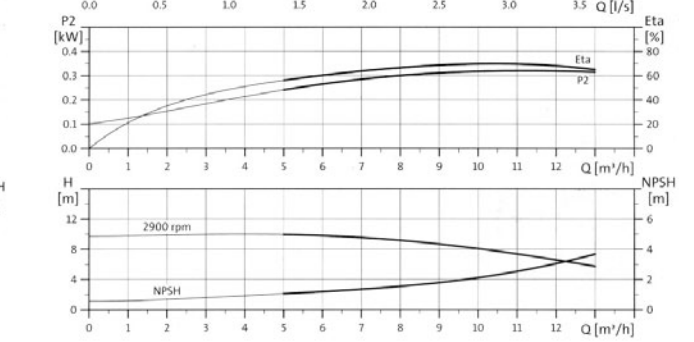
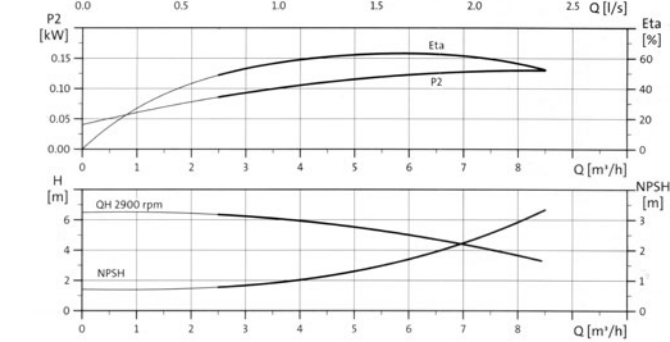
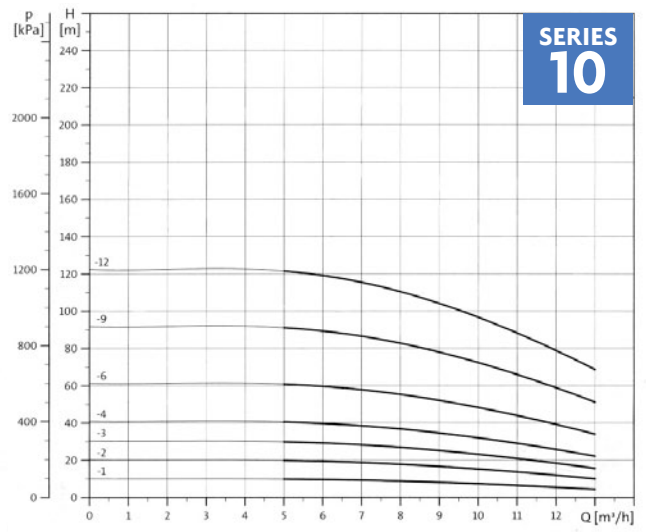
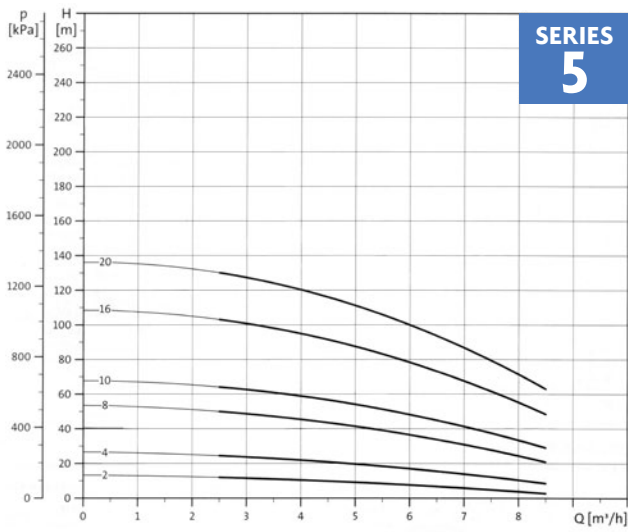
The NPSH curve is an average curve for all the variants shown. When sizing pumps add a safety margin of at least 0.5m.



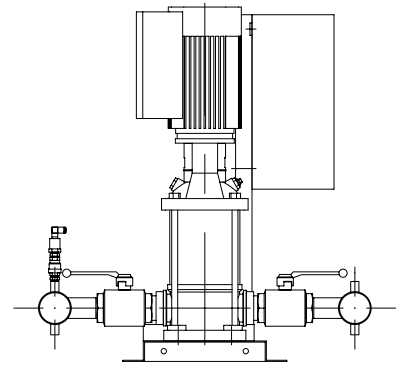
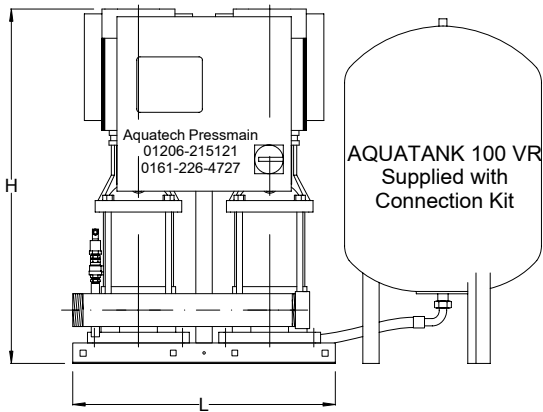
AquaTech Pressmain sales team would be happy to assist with pump selections, please contact the sales office.



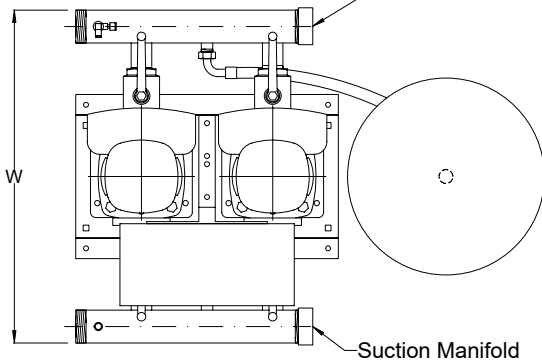
INDIVIDUAL PUMP SELECTION CURVES SERIES 5, 10, 15 & 20



TWO PUMP MODEL 'AMV2' DIMENSIONS



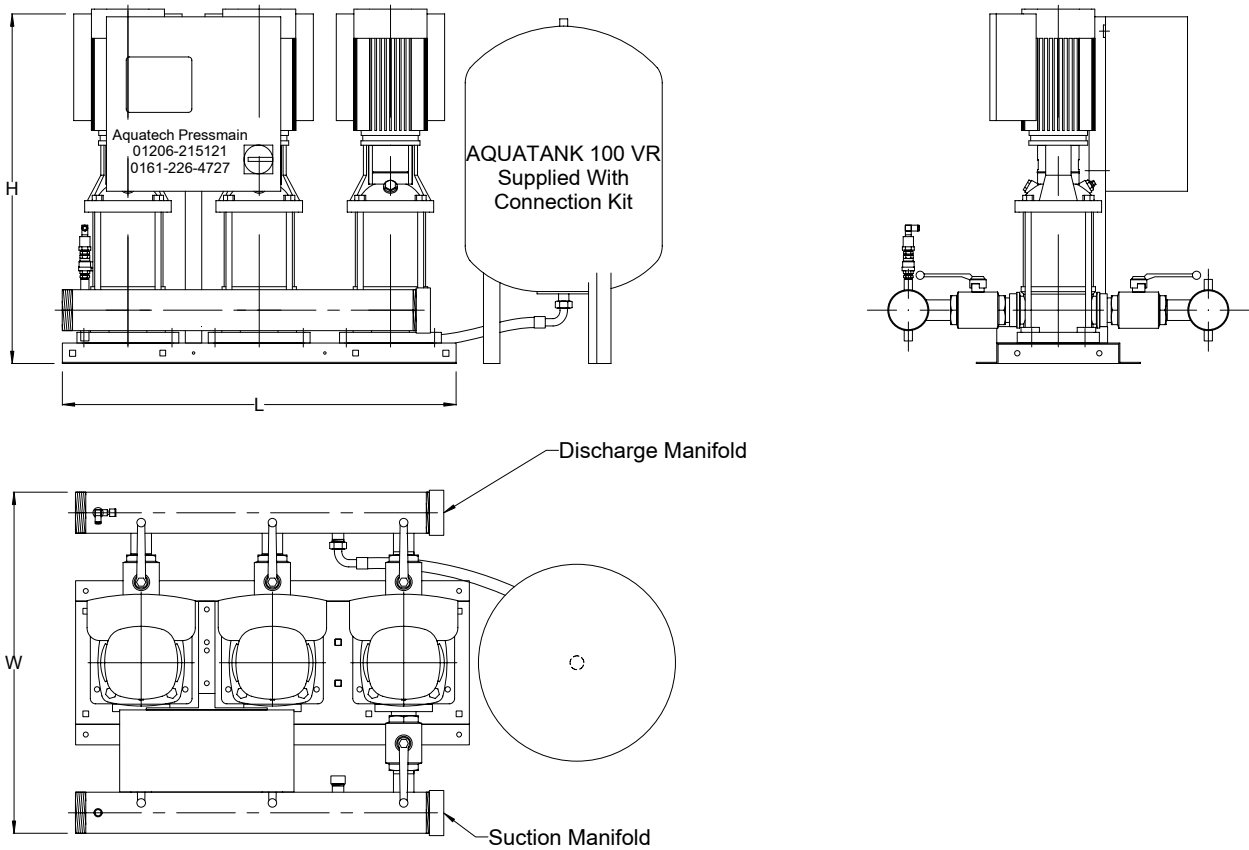
Discharge Manifold



Suction Manifold

AQUAMATIC AMV2 VARIABLE SPEED						ALL DIMENSIONS IN MM UNLESS STATED OTHERWISE								
PUMP MODEL	KW PER PUMP	FULL LOAD CURRENT PER PUMP 1Ph 240V AMPS	FULL LOAD CURRENT PER PUMP 3Ph 415V AMPS	DRY WEIGHT KG	SOUND LEVEL IF GREATER THAN 70db(A)	BOOSTER SET DIMENSIONS			STANDARD THREADED CONNECTION SIZE	FLANGE SIZE WITH FLEXIBLE COUPLING OPTION	VESSEL DIMENSIONS		1 PH 240V STOCKCODE	3 PH 415V STOCKCODE
						L	W	H			HEIGHT	DIAMETER		
1-3	0.37	2.7	N/A	82	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220103	
1-7	0.37	2.7	N/A	86	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220107	
1-11	0.55	3.9	N/A	90	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220111	
1-15	0.75	5.1	N/A	98	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220115	
1-19	1.1	7.4	N/A	104	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220119	
1-23	1.1	7.4	N/A	108	-	640	740	904	2" BSP	DN50 PN16	840	480	BWS-220123	
3-5	0.37	2.7	N/A	84	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220305	
3-7	0.55	3.9	N/A	86	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220307	
3-10	0.75	5.1	N/A	94	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220310	
3-15	1.1	7.4	N/A	102	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220315	
3-19	1.5	N/A	3.3	126	-	640	740	898	2" BSP	DN50 PN16	840	480		BWS-240319
3-23	2.2	N/A	4.6	138	-	640	740	1010	2" BSP	DN50 PN16	840	480		BWS-240323
5-2	0.37	2.7	N/A	82	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220502	
5-4	0.55	3.9	N/A	86	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220504	
5-8	1.1	7.4	N/A	90	-	640	740	845	2" BSP	DN50 PN16	840	480	BWS-220508	
5-10	1.5	N/A	3.3	98	-	640	740	845	2" BSP	DN50 PN16	840	480		BWS-240510
5-16	2.2	N/A	4.6	122	-	640	740	1028	2" BSP	DN50 PN16	840	480		BWS-240516
5-20	3	N/A	6.2	138	-	640	740	1155	2" BSP	DN50 PN16	840	480		BWS-240520
10-1	0.37	2.7	N/A	112	-	640	825	845	3" BSP	DN80 PN16	840	480	BWS-221001	
10-2	0.75	5.1	N/A	116	-	640	825	845	3" BSP	DN80 PN16	840	480	BWS-221002	
10-3	1.1	7.4	N/A	124	-	640	825	845	3" BSP	DN80 PN16	840	480	BWS-221003	
10-4	1.5	N/A	3.3	148	-	640	825	845	3" BSP	DN80 PN16	840	480		BWS-241004
10-6	2.2	N/A	4.6	160	-	640	825	864	3" BSP	DN80 PN16	840	480		BWS-241006
10-9	3	N/A	6.2	176	-	640	825	963	3" BSP	DN80 PN16	840	480		BWS-241009
10-12	4	N/A	8.1	204	-	640	825	1100	3" BSP	DN80 PN16	840	480		BWS-241012
15-1	1.1	7.4	N/A	124	-	640	825	845	3" BSP	DN80 PN16	840	480	BWS-221501	
15-2	2.2	N/A	4.6	156	-	640	825	845	3" BSP	DN80 PN16	840	480		BWS-241502
15-3	3	N/A	6.2	166	-	640	825	848	3" BSP	DN80 PN16	840	480		BWS-241503
15-5	4	N/A	8.1	194	-	640	825	975	3" BSP	DN80 PN16	840	480		BWS-241505
15-7	5.5	N/A	11.0	234	76	640	825	1116	3" BSP	DN80 PN16	840	480		BWS-241507
15-9	7.5	N/A	14.8	270	76	640	825	1194	3" BSP	DN80 PN16	840	480		BWS-241509
20-1	1.1	7.4	N/A	124	-	640	825	678	3" BSP	DN80 PN16	840	480	BWS-222001	
20-2	2.2	N/A	4.6	156	-	640	825	845	3" BSP	DN80 PN16	840	480		BWS-242002
20-3	4	N/A	8.1	188	-	640	825	885	3" BSP	DN80 PN16	840	480		BWS-242003
20-5	5.5	N/A	11.0	228	76	640	825	1026	3" BSP	DN80 PN16	840	480		BWS-242005
20-7	7.5	N/A	14.8	264	76	640	825	1104	3" BSP	DN80 PN16	840	480		BWS-242007

THREE PUMP MODEL 'AMV3' DIMENSIONS



AQUAMATIC AMV3 VARIABLE SPEED						ALL DIMENSIONS IN MM UNLESS STATED OTHERWISE								
PUMP MODEL	KW PER PUMP	FULL LOAD CURRENT PER PUMP 1Ph 240V AMPS	FULL LOAD CURRENT PER PUMP 3Ph 415V AMPS	DRY WEIGHT KG	SOUND LEVEL IF GREATER THAN 70db(A)	BOOSTER SET DIMENSIONS			STANDARD THREADED CONNECTION SIZE	FLANGE SIZE WITH FLEXIBLE COUPLING OPTION	VESSEL DIMENSIONS		1 PH 240V STOCKCODE	3 PH 415V STOCKCODE
						L	W	H			HEIGHT	DIAMETER		
1-3	0.37	2.7	N/A	113	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320103	
1-7	0.37	2.7	N/A	119	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320107	
1-11	0.55	3.9	N/A	125	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320111	
1-15	0.75	5.1	N/A	137	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320115	
1-19	1.1	7.4	N/A	146	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320119	
1-23	1.1	7.4	N/A	152	-	960	740	904	2" BSP	DN50 PN16	840	480	BWS-320123	
3-5	0.37	2.7	N/A	116	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320305	
3-7	0.55	3.9	N/A	119	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320307	
3-10	0.75	5.1	N/A	131	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320310	
3-15	1.1	7.4	N/A	143	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320315	
3-19	1.5	N/A	3.3	179	-	960	740	898	2" BSP	DN50 PN16	840	480		BWS-340319
3-23	2.2	N/A	4.6	197	-	960	740	1010	2" BSP	DN50 PN16	840	480		BWS-340323
5-2	0.37	2.7	N/A	113	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320502	
5-4	0.55	3.9	N/A	119	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320504	
5-8	1.1	7.4	N/A	125	-	960	740	845	2" BSP	DN50 PN16	840	480	BWS-320508	
5-10	1.5	N/A	3.3	137	-	960	740	845	2" BSP	DN50 PN16	840	480		BWS-340510
5-16	2.2	N/A	4.6	173	-	960	740	1028	2" BSP	DN50 PN16	840	480		BWS-340516
5-20	3	N/A	6.2	197	-	960	740	1155	2" BSP	DN50 PN16	840	480		BWS-340520
10-1	0.37	2.7	N/A	157	-	960	845	845	4" BSP	DN100 PN16	840	480	BWS-321001	
10-2	0.75	5.1	N/A	163	-	960	845	845	4" BSP	DN100 PN16	840	480	BWS-321002	
10-3	1.1	7.4	N/A	175	-	960	845	845	4" BSP	DN100 PN16	840	480	BWS-321003	
10-4	1.5	N/A	3.3	211	-	960	845	845	4" BSP	DN100 PN16	840	480		BWS-341004
10-6	2.2	N/A	4.6	229	-	960	845	864	4" BSP	DN100 PN16	840	480		BWS-341006
10-9	3	N/A	6.2	253	-	960	845	963	4" BSP	DN100 PN16	840	480		BWS-341009
10-12	4	N/A	8.1	295	71	960	845	1100	4" BSP	DN100 PN16	840	480		BWS-341012
15-1	1.1	7.4	N/A	175	-	960	845	845	4" BSP	DN100 PN16	840	480	BWS-321501	
15-2	2.2	N/A	4.6	223	-	960	845	845	4" BSP	DN100 PN16	840	480		BWS-341502
15-3	3	N/A	6.2	238	-	960	845	848	4" BSP	DN100 PN16	840	480		BWS-341503
15-5	4	N/A	8.1	280	71	960	845	975	4" BSP	DN100 PN16	840	480		BWS-341505
15-7	5.5	N/A	11.0	340	78	960	845	1116	4" BSP	DN100 PN16	840	480		BWS-341507
15-9	7.5	N/A	14.8	394	78	960	845	1194	4" BSP	DN100 PN16	840	480		BWS-341509
20-1	1.1	7.4	N/A	175	-	960	845	845	4" BSP	DN100 PN16	840	480	BWS-322001	
20-2	2.2	N/A	4.6	223	-	960	845	845	4" BSP	DN100 PN16	840	480		BWS-342002
20-3	4	N/A	8.1	271	71	960	845	885	4" BSP	DN100 PN16	840	480		BWS-342003
20-5	5.5	N/A	11.0	331	78	960	845	1026	4" BSP	DN100 PN16	840	480		BWS-342005
20-7	7.5	N/A	14.8	385	78	960	845	1104	4" BSP	DN100 PN16	840	480		BWS-342007

AQUAMATIC 'AMV' SERIES INSTALLATION GUIDANCE NOTES

ELECTRICAL

Units are designed for a 240 volt AC 1Phase 50Hz electrical supply for motors up to 1.1 kW and 415 volt AC 3phase 50 Hz electrical supply for motors above 1.1 kW. Electrical design and equipment conforms to BSEN 60204-1-1993 regulations, it is important that all subsequent wiring and protection equipment reflects this.

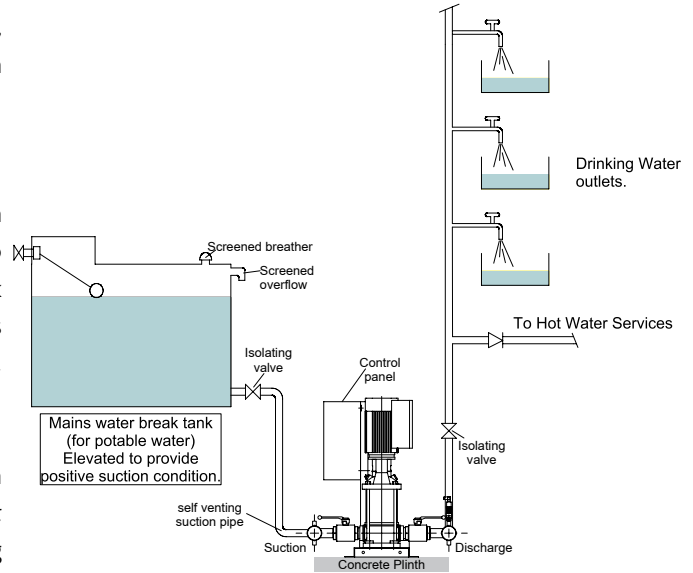
HYDRAULIC

The design of this unit enables it to be located in any position in a plant room with the minimum of inconvenience to pipework layout. Installer to fit isolating valves on break tank supply and riser to system. Note: Additional check valve/s should not be fitted on the suction or discharge pipework.

MECHANICAL

The unit should be mounted on a flat, slightly raised plinth and bolted down. AquaTech Pressmain recommend that when the unit is installed adequate room for servicing access is left around the unit. A gap of around 500mm is preferable. The selected pumps are designed for quiet operation and are virtually vibration free. Where silent operation is essential the possibility of using a combination of some of the optional extras may be considered.

Typical pipework arrangement using variable speed cold water pressure booster set feeding hot & cold water services.



COMMISSIONING

Following electrical, hydraulic and mechanical installations as above, all units should be commissioned by AquaTech Pressmain.

CONSTRUCTION STANDARDS FOR AMV PRESSURE BOOSTER SETS

COMPONENT	MODEL/SERIES	STANDARDS/CLASS	REMARKS
Pumps	1 to 90	Vertical Multi-stage	WRAS Approved
Mechanical Seal	Carbon / Ceramic	DIN 24960	WRAS Approved
Motor for Pumps	TEFC	IP55, Class F Insulation	Continuous Rated
Isolating & Non Return Valves	Ball Valve	PTFE Ball Seat	WRAS Approved
Suction & Discharge Manifolds	Stainless Steel EN1057	Entire unit WRAS Approved	Approval Number 0710086
Control Panels	2020Plus Series	IP54, BSEN 60204 part1:1998 89/3366/eec	CE Marked
Microprocessor	2020Plus	93/68/EEC	Designed In House
Hydraulic Accumulators	60-500VR	DIN 4087 BS6144:1990	WRAS Approved
Quality System	ISO 9001	BSI Registered	CERT No. FM33090

The information in this specification is correct at time of issue; as AquaTech Pressmain design and development programmes are continuous, we reserve the right to make any changes to this specification without prior notice.



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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.