

“Pent-A-Boost®” – Compact Domestic Booster Sets

Model BTAF – Single Pump Overview – Datasheet Page 1 of 5

Overview

Compact booster pump set designed to boost pressure for tall buildings where the mains supply is inadequate – e.g. penthouse suites.

The unit is supplied as a complete package on a stainless steel base plate ready for installation. The set is approved for drinking (wholesome) water applications since it has a screened overflow and vent.

The primary purpose is to boost the water pressure for elevated areas or where a high flow rate is required – e.g. for showers or baths. The performance / compactness ratio often enables the unit to be installed in a ground floor cupboard rather than a full size plant room. Frequently one unit per luxury apartment is used.

The unit is quiet by virtue of a centrifugal pump, anti-vibration rubber feet and flexible stainless braided connection hoses.

Fast filling is achieved by a servo-controlled solenoid valve with solid-state level probe control. This system has proved to be more reliable and accurate than conventional float valves. The small cistern and high throughput minimises the risk of legionella.

The “Pent-A-Boost®” unit features an integral Bypass Valve that enables mains water to be supplied (at mains pressure) during power failure for maintenance.

For Fluid Category 5 risks use “Boost-A-Break®” model BTAB.

Applications

- Penthouse (3 storey and taller)
- Boosting low water pressure
- “Combi” boilers & showers

Water Regulations

The assembly is fully Water Regulations approved & complies with the requirements of the latest Water Regulations when installed and used correctly. Water supply companies are only obliged to supply a minimum pressure of 1 bar @ 9 Lt/min. This means mains water will only reach 10 m. Since many boilers and showers require 1 bar (or even 1.5 bar) this means boosting is often essential to the third storey and higher.

Specification

Pressure Supply min.	1.0 bar min. maintained (dynamic)
Pressure Supply max.	10 bar
Pressure Outlet	See flow graph
Pressure Gauge	63 dia. glycerine filled (except dual)
Vessel Capacity	24 Lt
Cistern Capacity	24 Lt
Inlet Size	See “Inlet Control” table
Outlet Size	See “Outlet Pressure Control” table
Noise	<58 dBa @ 1 m
Temperature	30° max. ambient
Water Regulations Approval	1812363 (model 5-8 only)

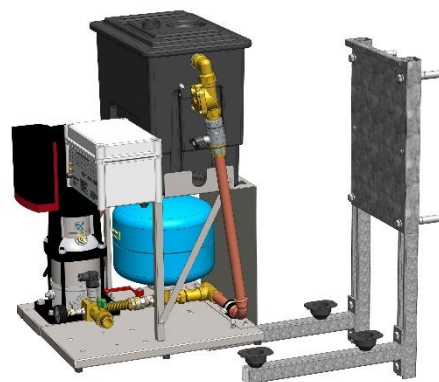


Model 5-8 - Quiet variable speed. Height 765 mm.
High flow pump – single pump range up to
2 Lt/s output



Materials

Base / fasteners	Stainless steel 304
Pump (wetted parts)	Stainless steel 304
Pipes / fittings	Copper / Brass / Stainless
Cistern 24 Lt	MDPE



Optional Wall Brackets
Code - BTBRA.
Second set can be located underneath on floor

Arrow Valves Ltd

Tel: 01442 823123 Fax: 01442 823234

www.arrowvalves.co.uk

Arrow Valves Ltd reserve the right to change specifications, design and materials at any time without notice.
All unit-less dimensions in mm.

© Copyright Arrow Valves Ltd 2001-2020



**Arrow
Valves**

“Pent-A-Boost®” – Compact Domestic Booster Set

Model BTAF – Single Pump 1.0 Lt/s - Datasheet Page 2 of 5

Description – Variable Speed (1.0 Lt/s)

Variable speed pumps provide only the pressure required to meet demand making the unit economical and extending the life of the pump.

There is a choice of 9 variable speed pumps with a 1.0 Lt/s output – see chart below.

The benefits of a variable speed pump include –

- High flow rate – up to 2.0 Lt/s output
- Variable speed – speed changes to meet demand
- Quiet – especially at low demand
- Surge free – inverter pump avoids high current demand
- Constant supply pressure
- Electronically controlled automatic pump venting system

Inlet Control

Fast and accurate level control is achieved with a solenoid valve. Electrodes provide on/off full flow control with 60 mm delayed action. The DN20 inlet is equivalent to ten ½” BS1212 HP float valves. DN25 is fitted as standard to high flow models - see table below – and optional on others – e.g. for low pressure supplies. Providing the following minimum dynamic supply pressure is maintained at the inlet, the cistern will not run dry even with an open outlet.

Model	Inlet Size	Minimum Dynamic Pressure	Pipe Velocity m/s
3-5, 3-7	DN20 female union	1.0 bar	3.7
3-10, 1-5, 1-6, 1-7, 1-8, 1-9, 1-10	DN25 female union	1.0 bar	2.8

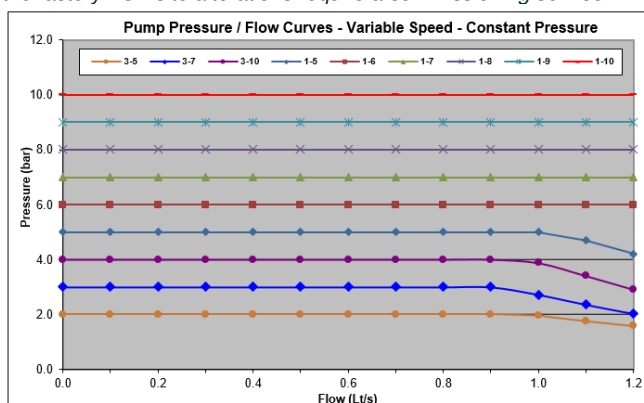
Outlet Pressure Control

The outlet pressure is controlled by a transducer, which is factory set to the “default set point” in the table below and controlled to within a 10% band. The outlet pressure is therefore constant up to the maximum duty of the pump.

Model	Outlet Size	Default Set point	Pressure Switch on (min.) ¹	Pressure Switch off (Max) ¹	Pressure Max ²	Vessel Air Pressure ³
3-5	DN20	2.0 bar	1.8 bar	2.2 bar	2.8 bar	1.4 bar
3-7	DN20	3.0 bar	2.7 bar	3.3 bar	4.6 bar	2.1 bar
3-10	DN25	4.0 bar	3.6 bar	4.4 bar	5.5 bar	2.8 bar
1-5	DN25	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 bar
1-6	DN25	6.0 bar	5.4 bar	6.6 bar	7.0 bar	4.2 bar
1-7	DN25	7.0 bar	6.3 bar	7.7 bar	11.7 bar	4.9 bar
1-8	DN25	8.0 bar	7.2 bar	8.8 bar	11.7 bar	5.6 bar
1-9	DN25	9.0 bar	8.1 bar	9.9 bar	11.7 bar	6.3 bar
1-10	DN25	10.0 bar	9.0 bar	11.0 bar	11.7 bar	7.0 bar

Notes - 1. Differential +/- 10% of set point. 2. If set to full speed. 3. Vessel air pressure with zero water pressure, 0.7 X set point.

The graph below illustrates the benefit of variable speed pumps. The outlet pressure is constant despite varying flow demand. Illustrated using “default set point”. The set point can be altered at the factory. On-site alterations require a commissioning service.



Model
BTAF3-10



Electrical Specification

Motor 2–Pole 50 Hz 230 V 1ph (3-5, 3-7, 3-10, 1-5)
400 V 3ph (1-6, 1-7, 1-8, 1-9, 1-10)

Model	1 phase A (Run)	3 phase A (Run)	Input max kW
3-5	4.2		0.55
3-7	5.5		0.75
3-10	7.5		1.10
1-5	5.0		1.10
1-6		3.7	2.20
1-7, 1-8, 1-9, 1-10		5.0	3.00

Class
BMS

Low level cut out

Protection

Connection

1 phase

3 phase¹

Note – 1. The control circuit is 230 V so a neutral supply is required

Class 1 (requires earth wire)
Volt free SPDT relay general fault –
Pump / inverter / low level alarm
Stops pump via electrodes in tank
(Warning lamp on control box) –
auto reset once tank refilled
IP65 (Enclosure) / IP55 (Pump)

M20 1 phase + neutral + earth
M20 3 phases + neutral + earth

Connection Pipes

Flexible stainless braided hoses are supplied for the inlet and outlet. These have a female swivel nut (union) and a fibre washer. See Inlet Control and Outlet Pressure Control tables for size. A full bore inlet servicing valve – as required by the Regulations (G16.4) - is fitted upstream of the solenoid filling valve. The Overflow is 40 mm plastic with compression nut.

Codes and Descriptions – Variable Speed (1.0 Lt/s)

Inlet Size	Code	Description
DN20	BTAF3-5	Pent-A-Boost Compact 3-5 Variable 230 V 2.0 bar
DN20	BTAF3-7	Pent-A-Boost Compact 3-7 Variable 230 V 3.0 bar
DN25	BTAF3-10	Pent-A-Boost Compact 3-10 Variable 230 V 4.0 bar
DN25	BTAF1-5	Pent-A-Boost Compact 1-5 Variable 230 V 5.0 bar
DN25	BTAF1-6	Pent-A-Boost Compact 1-6 Variable 400 V 6.0 bar
DN25	BTAF1-7	Pent-A-Boost Compact 1-7 Variable 400 V 7.0 bar
DN25	BTAF1-8	Pent-A-Boost Compact 1-8 Variable 400 V 8.0 bar
DN25	BTAF1-9	Pent-A-Boost Compact 1-9 Variable 400 V 9.0 bar
DN25	BTAF1-10	Pent-A-Boost Compact 1-10 Variable 400 V 10.0 bar

Optional extras – see page 4 and 5

Arrow Valves Ltd

Tel: 01442 823123

Fax: 01442 823234

www.arrowvalves.co.uk

Arrow Valves Ltd reserve the right to change specifications, design and materials at any time without notice.

All unit-less dimensions in mm.

© Copyright Arrow Valves Ltd 2001-2020



**Arrow
Valves**

“Pent-A-Boost®” – Compact Domestic Booster Set

Model BTAF – Variable Speed 2.0 Lt/s - Datasheet Page 3 of 5

Description – Variable Speed

There is a choice of 7 variable speed pumps with a 2.0 Lt/s outlet – see chart below.

The higher flow units are suitable for supplying multiple outlets or applications where a greater flow rate is required.

Inlet Control

Fast and accurate level control is achieved with two 1” filling solenoid valves (except model 5-4 which has a single solenoid). Level electrodes provide on/off full control with 60 mm delayed action.

Model	Inlet Size	Minimum Dynamic Pressure	Pipe Velocity m/s
5-4	DN25 female union	1.0 bar	2.8
5-8, 5-10, 2-5, 5-16, 2-7, 2-8	DN32 female union	1.0 bar	2.4

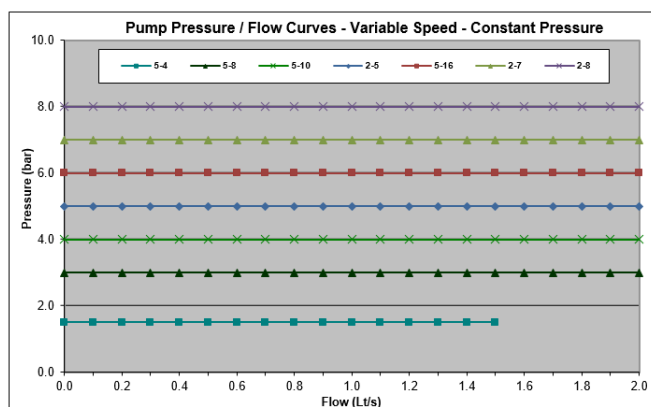
Outlet Pressure Control

The outlet pressure is controlled by a transducer, which is factory set to the “default set point” in the table below and controlled to within a 10% band. The outlet pressure is therefore constant up to the maximum duty of the pump.

Model	Outlet Size	Default Set point	Pressure Switch on (min.) ¹	Pressure Switch off (Max) ¹	Pressure Max ²	Vessel Air Pressure ³
5-4	DN25	1.5 bar	1.4 bar	1.7 bar	2.8 bar	1.1 bar
5-8	DN32	3.0 bar	2.7 bar	3.3 bar	5.0 bar	2.1 bar
5-10	DN32	4.0 bar	3.6 bar	4.4 bar	7.0 bar	2.8 bar
2-5	DN32	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 bar
5-16	DN32	6.0 bar	5.4 bar	6.6 bar	11.7 bar	4.2 bar
2-7	DN32	7.0 bar	6.3 bar	7.7 bar	11.7 bar	4.9 bar
2-8	DN32	8.0 bar	7.2 bar	8.8 bar	11.7 bar	5.6 bar

Notes - 1. Differential +/- 10% of set point. 2. If set to full speed. 3. Vessel air pressure with zero water pressure, 0.7 X set point.

The graph below illustrates the benefit of variable speed pumps. The outlet pressure is constant despite varying flow demand. Illustrated using “default set point”. The set point can be altered at the factory. On-site alterations require a commissioning service. 5-16 limited to 10 bar.



Electrical Specification

Motor 2-Pole 60 Hz 230 V 1 ph (5-4, 5-8)
400 V 3 ph (5-10, 2-5, 5-16, 2-7, 2-8)

Model	1 phase A (Run)	3 phase A (Run)	Input max kW
5-4	7.5		1.10
5-8	7.5		1.50
5-10, 2-5		3.7	2.20
5-16, 2-7, 2-8		5.0	3.00

Class BMS

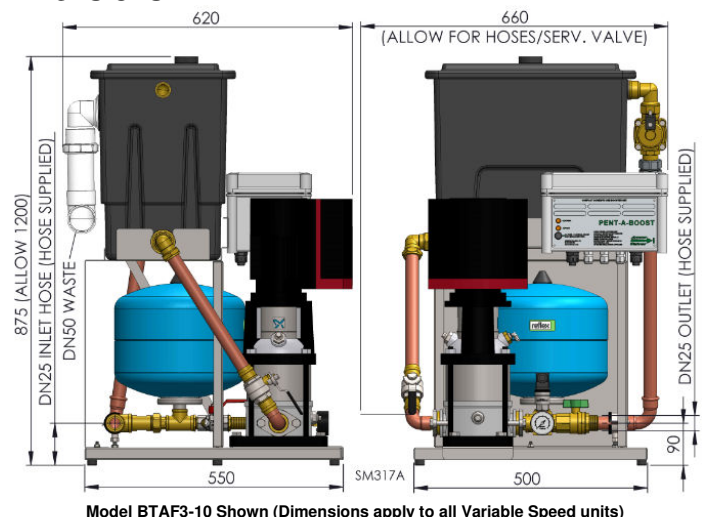
Low level cut out

Protection Connection
1 phase
3 phase¹

Class 1 (requires earth wire)
Volt free SPDT relay general fault - pump / inverter / low level alarm
Stops pump via electrodes in tank (Warning lamp on control box) – auto reset once tank refilled
IP65 (Enclosure) / IP55 (Pump)
M20 1 phase + neutral + earth
M20 3 phases + neutral + earth

Note – 1. The control circuit is 230 V so a neutral supply is required

Dimensions



Connection Pipes

Flexible stainless braided hoses are supplied for the inlet and outlet. These have a female swivel nut (union) and a fibre washer. See Inlet Control and Outlet Pressure Control tables for size. A full bore inlet servicing valve – as required by the Regulations (G16.4) - is fitted upstream of the solenoid filling valve. The Overflow is 40 mm plastic with compression nut.

Codes and Descriptions – Variable Speed

Inlet Size	Code	Description
DN25	BTAF5-4	Pent-A-Boost Compact 5-4 Variable 230 V 1.5 bar
DN32	BTAF5-8	Pent-A-Boost Compact 5-8 Variable 230 V 3.0 bar
DN32	BTAF5-10	Pent-A-Boost Compact 5-10 Variable 400 V 4.0 bar
DN32	BTAF2-5	Pent-A-Boost Compact 2-5 Variable 400 V 5.0 bar
DN32	BTAF5-16	Pent-A-Boost Compact 5-16 Variable 400 V 6.0 bar
DN32	BTAF2-7	Pent-A-Boost Compact 2-7 Variable 400 V 7.0 bar
DN32	BTAF2-8	Pent-A-Boost Compact 2-8 Variable 400 V 8.0 bar

Optional extras – see pages 4 and 5

Arrow Valves Ltd

Tel: 01442 823123

Fax: 01442 823234

www.arrowvalves.co.uk

Arrow Valves Ltd reserve the right to change specifications, design and materials at any time without notice.

All unit-less dimensions in mm.

© Copyright Arrow Valves Ltd 2001-2020



Arrow Valves

“Pent-A-Boost®” – Compact Domestic Booster Set

Model BTAF – Options – Datasheet Page 4 of 5

Options

- High level alarm relay (volt free) - recommended to minimise the risk of water damage
- Wall Brackets – *suitable for units up to 5-10*
- GRP Wall Covers – *use wall brackets*
- GRP Enclosures – for exterior use
- Pulse timer – prevents pump sticking if infrequently used
- Duty Standby Controls – for use with two single pump BTAF units where a loss of the water supply would be critical – *e.g. hospitals*

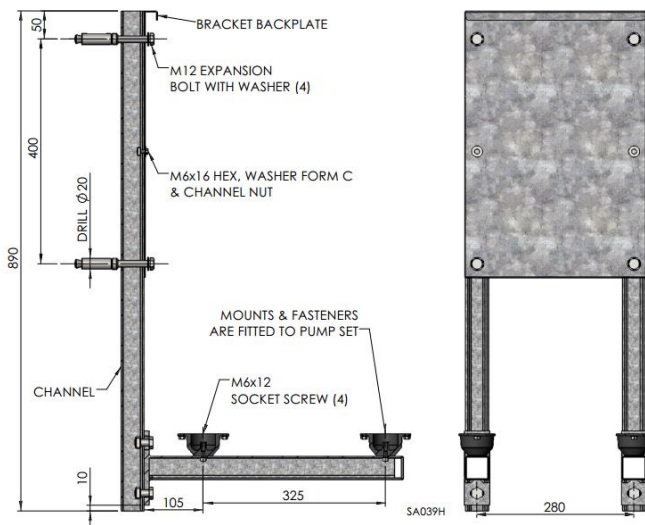
Suitability	Code	Description
Up to 5-10	BTBRA	Wall Bracket for Break Tanks AV Mounts
All except dual	BTPT	Pulse Timer - Infrequent Use/Anti Seize
All DN20	BT20-25	Upgrade from DN20 to DN25 Solenoid
All	BTCAB1	Enc. 1150x1150x1050 GRP c/w Heating
Up to 5-4	BTCAB2	Enc. 750x750x975 GRP c/w Frost Protection
Up to 5-10	BTCAB3	BT Wall Cover 1150hx720Wx750D
All except BTCAB1	BTFPS	BT Frost Protection System
All	BTBMS2	BT High alarm BMS – Variable speed pumps
2 x Single pump variable speed	ELCBTPCO	Duty Standby Controls – Electrical control box twin pump changeover

Wall Brackets

BTBRA - Galvanised Steel Wall Mounting Brackets with Anti Vibration mounts. For use with single pump Pent-A-Boost® units, up to model BTAF5-10.

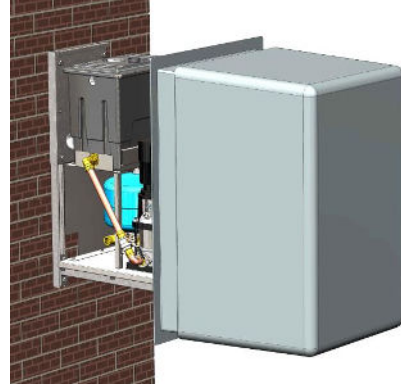


Dimensions

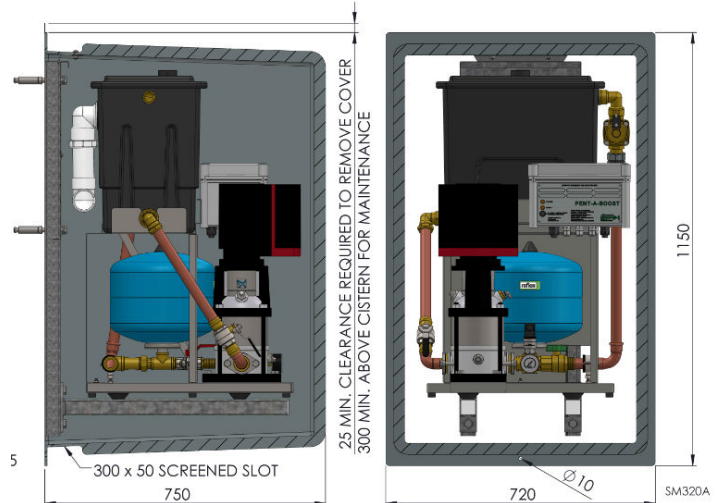


GRP Wall Cover

BTCAB3 – Insulated GRP Wall Cover, for use with the BTBRA Wall Mounting Brackets. The GRP colour is BS 00-A-05 (RAL equivalent is 7038). Integrated Frost Protection System (BTFPS – see BTCAB2 section below) can be added to the Wall Cover. Not suitable for single pump units larger than 5-10.

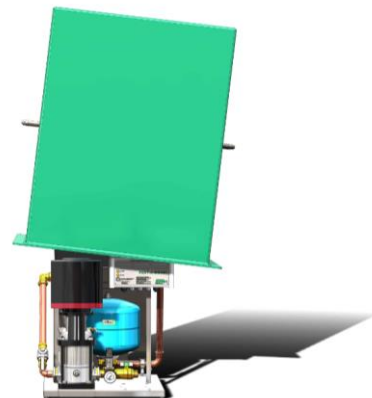


Dimensions



GRP Enclosures

BTCAB2 – Lift Off GRP Enclosure for exterior use, supplied with a Padlock and Integrated Frost Protection System. A thermostat attached to the control box will cause the pump to run against a closed head to generate heat. The colour of the enclosure is RAL 6005, it is not suitable for single pumps larger than the BTAF5-4.



Arrow Valves Ltd

Tel: 01442 823123

Fax: 01442 823234

www.arrowvalves.co.uk

Arrow Valves Ltd reserve the right to change specifications, design and materials at any time without notice.

All unit-less dimensions in mm.

© Copyright Arrow Valves Ltd 2001-2020

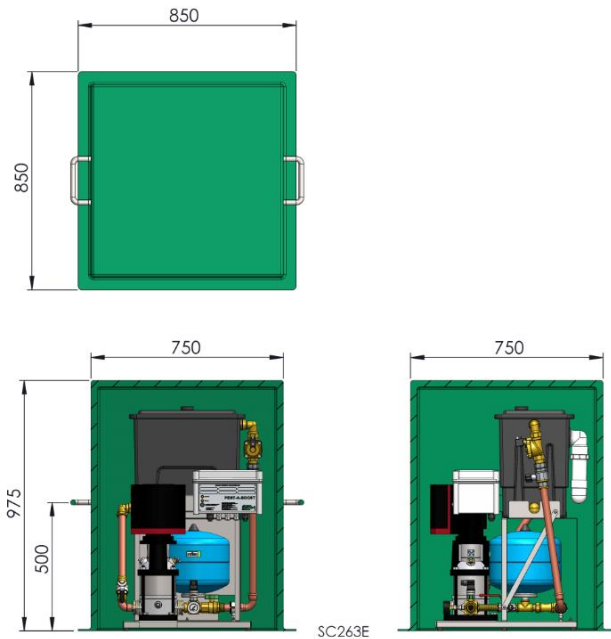


**Arrow
Valves**

“Pent-A-Boost®” – Compact Domestic Booster Set

Model BTAF – Options (Continued) – Datasheet Page 5 of 5

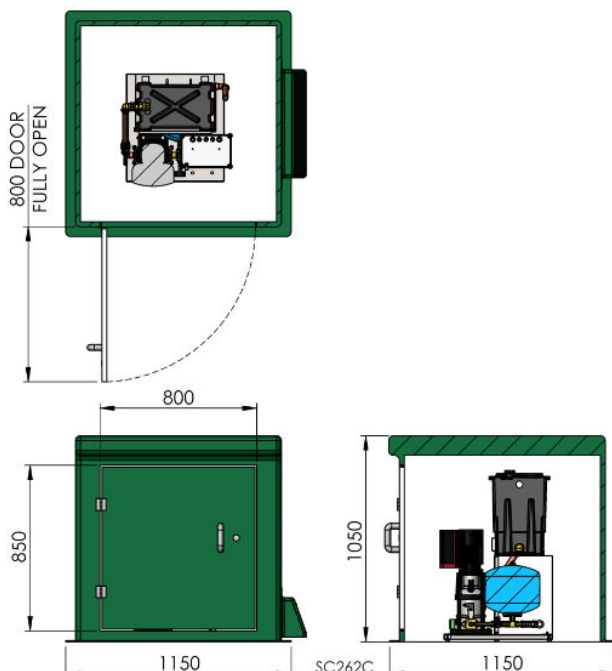
BTCAB2 Dimensions



BTCAB1 – GRP Heated Enclosure with Kiosk Door, for external use of the Pent-A-Boost® unit. The housing has an integrated bar heater, complete with thermostat. The exterior colour of the enclosure is RAL6005.



Dimensions



Arrow Valves Ltd

Tel: 01442 823123 Fax: 01442 823234

www.arrowvalves.co.uk

Arrow Valves Ltd reserve the right to change specifications, design and materials at any time without notice.

All unit-less dimensions in mm.

© Copyright Arrow Valves Ltd 2001-2020



**Arrow
Valves**