"Pent-A-Boost®" – Compact Domestic Booster Sets

Model BTAF – Dual Pump Overview – Datasheet

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 centrifugal pumps, anti-vibration rubber feet and flexible stainless braided connection hoses.

Fast filling is achieved by a servo-controlled solenoid valves 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.

Model BTAF3-10S
Dual Pump - Duty Standby.

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	12 Lt
Cistern Capacity	24 Lt
Inlet Size	*See "Inlet Control" table*
Outlet Size	*See "Outlet Pressure Control" table*
Noise	<58 dBa @ 1 m
Temperature	50° max. ambient
Water Regulations Approval	2510707

Materials

Base / fasteners	Stainless steel 304
Pump (wetted parts)	Stainless steel 304
Pipes / fittings	Copper / Brass / Stainless
Cistern 24 Lt	MDPE
Cistern 100 Lt	GRP

5 YEAR WARRANTY

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"Pent-A-Boost®" – Compact Domestic Booster Set

Model BTAF – Dual Pump - Duty Standby – Datasheet

Description – Dual Pump

Dual pump sets are available as Duty Standby or Duty Assist. Both pumps are variable speed and set to provide constant pressure. Remarkably, the foot print is the same as the single pump set yet the duty is up to 2.4 Lt/s. The parallel mounted pumps draw water from the integral ultra-fast filling tank.

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 Codes and Descriptions 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.

Electrical Specification

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

Duty Standby

Only one pump runs at any one time. The pumps alternate on a daily basis to avoid stagnation and ensure even use. A manual override switch "hand" allows either pump to be isolated and run only the healthy pump.

Motor

Voltage	230 V 1 phase
Protection	MCB in control box for each pump motors thermal protection (IEC 34-11: TP 211)

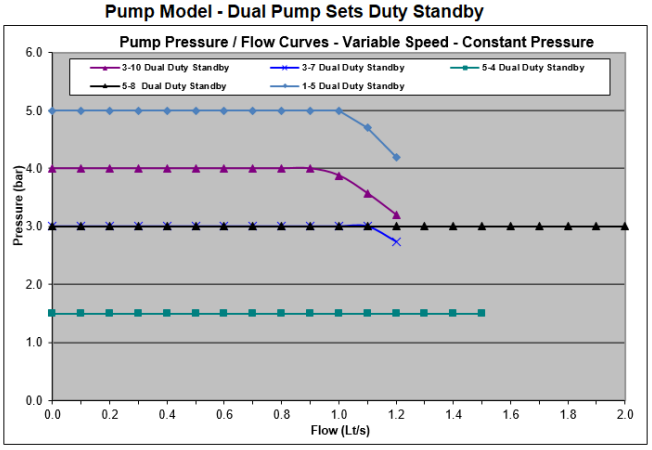
Model	1 phase A (Run)		Input max kW
3-7S	4.7		0.75
3-10S	5.6		1.10
1-5S	5.6		1.10
5-4S	7.5		1.10
5-8S	7.5		1.50

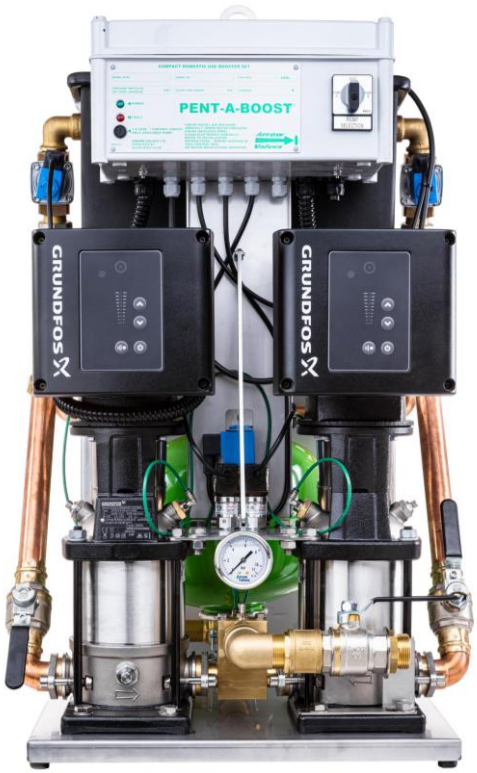
Outlet Pressure Control

Model	Outlet Size	Default Set point	Pressure Switch on (min.)[1]	Pressure Switch off (Max)[1]	Pressure Max[2]	Vessel Air Pressure[3]
3-7S	DN20	3.0 bar	2.7 bar	3.3 bar	4.6 bar	2.1 bar
3-10S	DN25	4.0 bar	3.6 bar	4.4 bar	5.5 bar	2.8 bar
1-5S	DN25	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 bar
5-4S	DN25	1.5 bar	1.4 bar	1.7 bar	2.8 bar	1.1 bar
5-8S	DN32	3.0 bar	2.7 bar	3.3 bar	5.0 bar	2.1 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.

Pump Model - Dual Pump Sets Duty Standby





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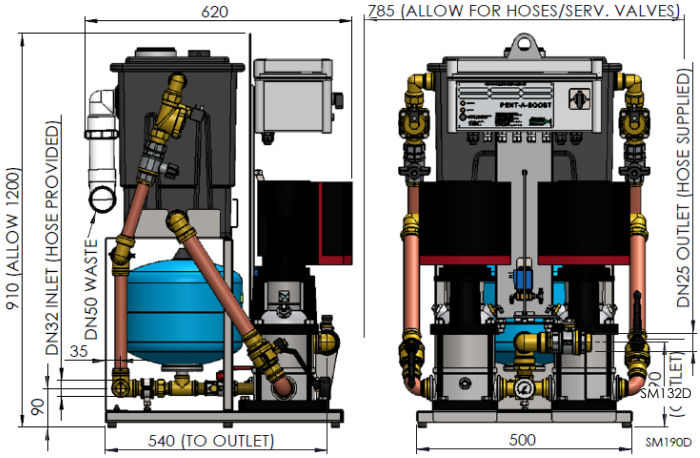

Model BTAF3-10 Duty Standby Shown

Codes and Descriptions – Duty Standby

Inlet Size	Code	Description
DN20	BTAF3-7S	Pent-A-Boost 3-7 Duty Standby Vari 230 V 3.0 bar
DN25	BTAF3-10S	Pent-A-Boost 3-10 Duty Standby Vari 230 V 4.0 bar
DN25	BTAF1-5S	Pent-A-Boost 1-5 Duty Standby Vari 230 V 5.0 bar
DN25	BTAF5-4S	Pent-A-Boost 5-4 Duty Standby Vari 230 V 1.5 bar
DN32	BTAF5-8S	Pent-A-Boost 5-8 Duty Standby Vari 230 V 3.0 bar
Optional extras – see page 6		

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"Pent-A-Boost®" – Compact Domestic Booster Set

Model BTAF – Dual Pump - Duty Assist – Datasheet

Duty Assist

Allows the second pump to automatically switch on when required, thus doubling the output. Alternate starting avoids stagnation and ensures even use. If one pump develops a fault, the controller isolates and continues with the healthy pump (the BMS fault relay activates together with panel lamps). Normal demand is often met with only one small pump running at optimum efficiency, offering substantial energy saving compared to one larger pump. Furthermore smaller pumps are quieter.

Model	Outlet Size	Default Set point	Pressure Switch on (min.)[1]	Pressure Switch off (Max)[1]	Pressure Max[2]	Vessel Air Pressure[3]
3-5A	DN32	2.0 bar	1.8 bar	2.2 bar	2.8 bar	1.4 bar
3-7A	DN32	3.0 bar	2.7 bar	3.3 bar	4.6 bar	2.1 bar
3-10A	DN32	4.0 bar	3.6 bar	4.4 bar	5.5 bar	2.8 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.

Specification & Materials

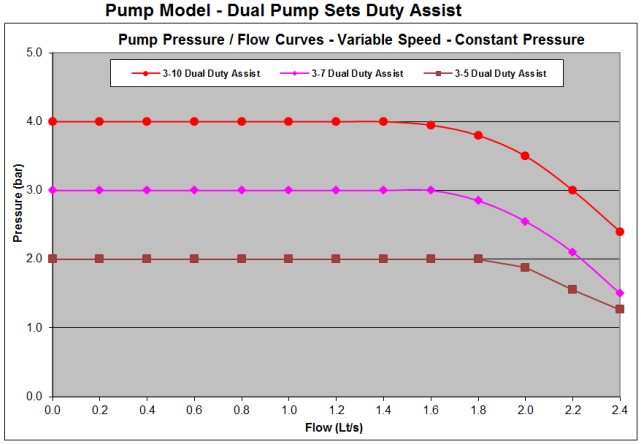
See page 1

Motor

Voltage 230 V 1 phase
Protection MCB in control box for each pump
motors thermal protection (IEC 34-11: TP 211)

Model	1 phase A (Run)		Input max kW
3-5A	7.0		1.10
3-7A	9.4		1.50
3-10A	11.2		2.20

Pump Model - Dual Pump Sets Duty Assist



Digital Controller

The controller includes a digital display with setting buttons and button lock to prevent tampering. Both pumps can be tested and disabled if necessary via the display. Controller features include pump changeover every 24 hours if continuous draw off causes one pump to run and pump pulse every 24 hours to avoid seizure. The user can also view the set pressure and when the pump was last started and stopped via the display.

Vessel Purge

The digital controller also features an automatic vessel purge facility for Legionella control. Every 24 hours the switch-on pressure is dropped below the vessel pre charge pressure, ensuring the entire contents of the vessel is emptied.

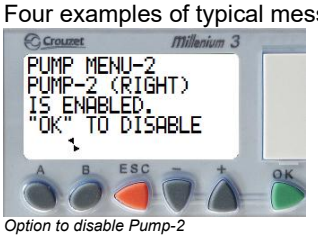
Information display messages include

- Healthy
- Pump-1 running
- Pump-2 running
- Last started
- Last stopped
- Pressure
- Set point pressure

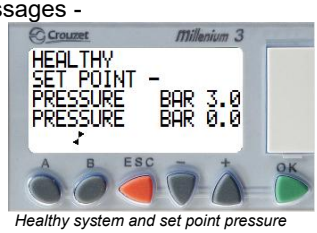
Fault display messages include

- Pump-1 fault
- Pump-2 fault
- Pump-1 disabled
- Pump-2 disabled
- Low-level fault
- High-level fault

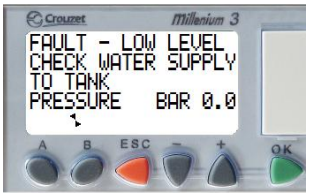
Four examples of typical messages -



Option to disable Pump-2



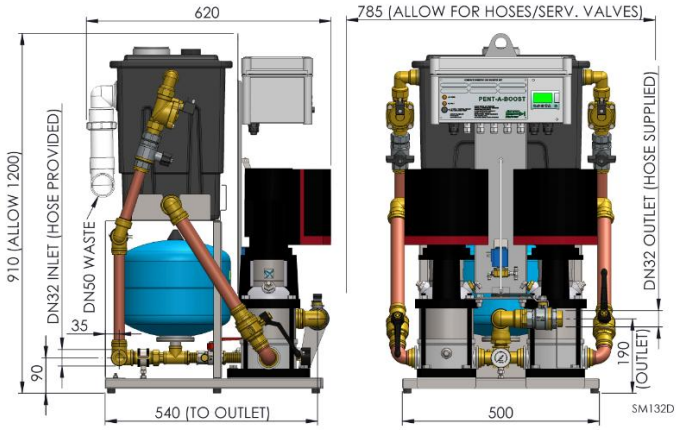
Healthy system and set point pressure



Low level fault

Date when the pump last started

Dimensions



Model BTAF3-10 Duty Assist Shown (Dimensions apply to all Duty Assist Units)

Codes and Descriptions – Duty Assist

Inlet Size	Code	Description
DN32	BTAF3-5A	Pent-A-Boost 3-5 Duty Assist Vari 230 V 2.0 bar
DN32	BTAF3-7A	Pent-A-Boost 3-7 Duty Assist Vari 230 V 3.0 bar
DN32	BTAF3-10A	Pent-A-Boost 3-10 Duty Assist Vari 230 V 4.0 bar
Optional extras – see page 6		

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"Pent-A-Boost®" – Compact Domestic Booster Set

Model BTAF – Dual Pump – 5-8 Duty Assist – Datasheet

5-8 Duty Assist

Remarkably high duty (up to 3.7 Lt/s) for the foot print of the unit, ideal for installing in locations where floor space is at a premium – often the case in domestic premises. The skid mounted base occupies less than 0.5m² of floor space and allows the unit to be easily and securely transported. The integral 100 litre GRP break tank is rapidly filled by a triple solenoid valve arrangement. Model 5-8A includes all of the benefits of other Variable Speed Duty Assist units – see pages 2 and 3.

Connection Pipes

DN40 flexible stainless braided hoses are supplied for the inlet and outlet. These have a female swivel nut (union) and a fibre washer. The DN40 inlet connection is reversible, allowing for left or right hand side configurations. A full bore inlet servicing valve – as required by the Regulations (G16.4) - is fitted upstream of each of the three solenoid filling valves. The Overflow is 50 mm plastic with compression nut.

Motor

Voltage 230 V 1 phase
Protection MCB in control box for each pump motors thermal protection (IEC 34-11: TP 211)

	1 phase		Input max
Model	A (Run)		kW
5-8A	15.0		3.00

Inlet Control

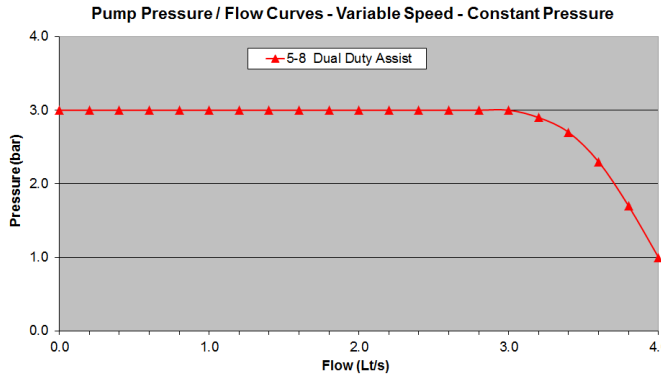
Fast and accurate level control is achieved with three solenoid valves. Level electrodes provide on/off full flow control with 60 mm delayed action.

Outlet Pressure Control

The outlet pressure is controlled by a transducer, which is factory set to 3 bar (the "default set point") and controlled to within a 10% band – see table below. The outlet pressure is therefore constant up to the maximum duty of the pumps. The set point can be altered at the factory, on-site alterations require a commissioning service.

Model	Outlet Size	Default Set point	Pressure Switch on (min.)[1]	Pressure Switch off (Max)[1]	Pressure Max[2]	Vessel Air Pressure[3]
5-8A	DN40	3.0 bar	2.7 bar	3.3 bar	5.0 bar	2.1 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.



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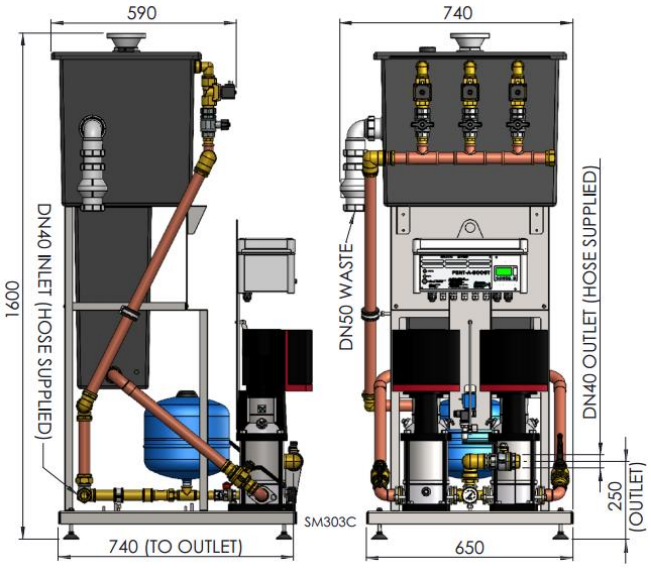

Codes and Descriptions

Inlet Size	Code	Description
DN40	BTAF5-8A	Pent-A-Boost 5-8 Duty Assist Vari 230 V 3.0 bar
Optional extras – see page 6		

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"Pent-A-Boost®" – Compact Domestic Booster Set

Model BTAF – 3 Phase Dual Pump – Duty Assist – Datasheet

Description

A Duty Assist configuration allows the pumps to alternate on a daily basis to avoid stagnation and ensure even use, the second pump will assist the first if there is a high demand. The Duty Assist range can achieve high flow rates of up to 4.0 litres per second. In the event of a pump failure, the working pump will take over.

Connection Pipes

DN40 flexible stainless braided hoses are supplied for the inlet and outlet. These have a female swivel nut (union) and a fibre washer. The DN40 inlet connection is reversible, allowing for left or right hand side configurations. A full bore inlet servicing valve – as required by the Regulations (G16.4) – is fitted upstream of each of the three solenoid filling valves. The Overflow is 50 mm plastic with compression nut.

Specification

Pressure Supply min.	1.0 bar min. maintained (dynamic)
Pressure Supply max.	10 bar
Vessel Capacity	24 Lt
Cistern Capacity	100 Lt
Inlet Size	DN40
Outlet Size	DN40
Temperature	30° max. ambient

Inlet Control

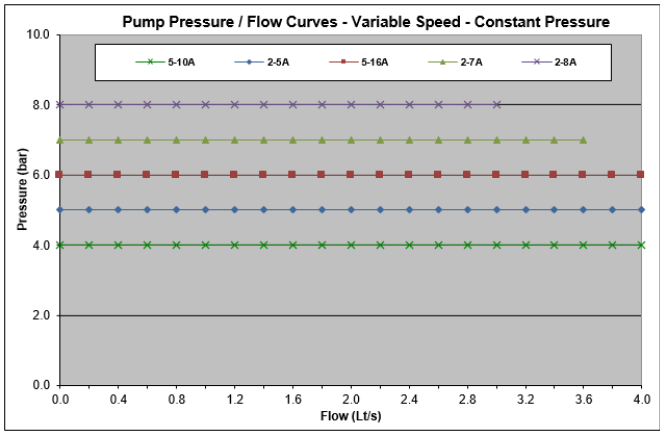
Fast and accurate level control is achieved with three 1" filling solenoid valves. Level electrodes provide on/off full flow control with 60 mm delayed action.

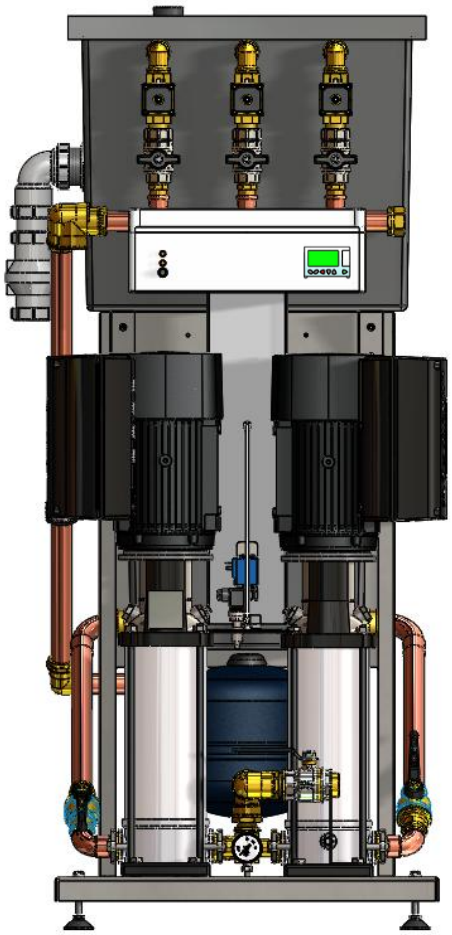
Outlet Pressure Control

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]
5-10A	DN40	4.0 bar	3.6 bar	4.4 bar	7.0 bar	2.8 bar
2-5A	DN40	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 bar
5-16A	DN40	6.0 bar	5.4 bar	6.6 bar	11.7 bar	4.2 bar
2-7A	DN40	7.0 bar	6.3 bar	7.7 bar	11.7 bar	4.9 bar
2-8A	DN40	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.





Motor

Voltage 400 V 3 phase

Model	3 phase A (Run)		Input max kW
5-10A, 2-5A	7.4		4.40
5-16A, 2-7A, 2-8A	10.0		6.00

Class	Class 1 (requires earth wire)
BMS	Volt free SPDT relay general fault-pump / inverter / low level alarm
Low level cut out	Stops pump running via electrodes in tank (warning lamp on control Box) – auto reset once tank filled
Protection	IP65 (Enclosure) / IP55 (Pump)

Codes and Descriptions

Inlet Size	Code	Description
DN40	BTAF5-10A	Pent-A-Boost 5-10 Duty Assist Vari 400 V 4.0 bar
DN40	BTAF2-5A	Pen-A-Boost 2-5 Duty Assist Vari 400 V 5.0 bar
DN40	BTAF5-16A	Pent-A-Boost 5-16 Duty Assist Vari 400 V 6.0 bar
DN40	BTAF2-7A	Pent-A-Boost 2-7 Duty Assist Vari 400 V 7.0 bar
DN40	BTAF2-8A	Pent-A-Boost 2-8 Duty Assist Vari 400 V 8.0 bar
Optional extras – see page 6		

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"Pent-A-Boost®" – Compact Domestic Booster Set

Model BTAF – Options – Datasheet Page 6 of 6

Options

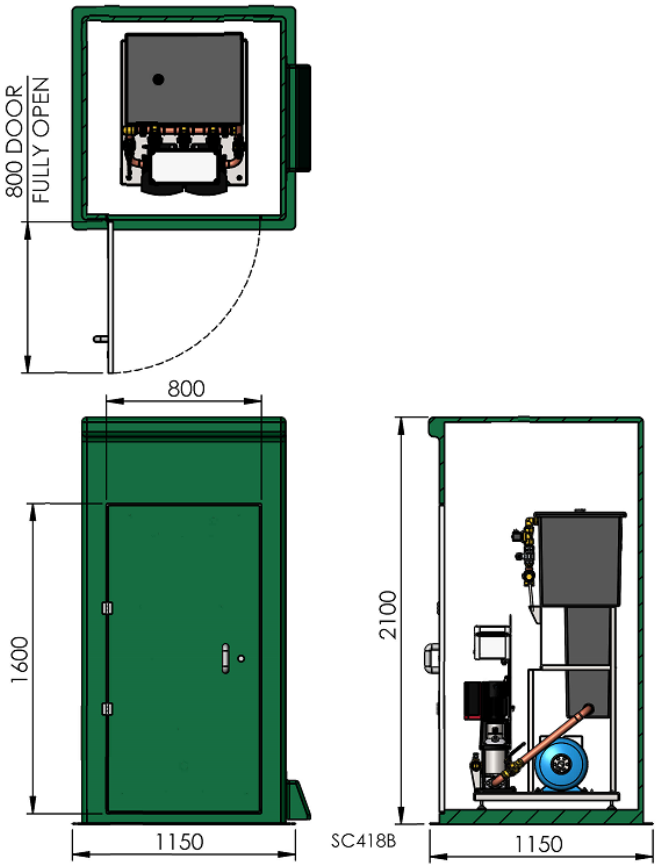
- High level alarm relay (volt free) - recommended to minimise the risk of water damage
- GRP Enclosures – for exterior use
- GRP Drip Tray

Suitability	Code	Description
Up to 3-10A	BTCAB6	Enc. 1150x1150x1500 GRP c/w Heating
5-8A	BTDUALCAB	Enc. 1150x1150x2100 GRP c/w Heating
Variable Speed	BTBMS2	BT High alarm BMS – Variable speed pumps
Dual Pump 1 Phase	BTDT-MEDIUM	Grp Drip Tray c/w Float Switch BTAF 1PH
Dual Pump 3 Phase	BTDT-LARGE	GRP Drip Tray c/w Float Switch Large 3PH

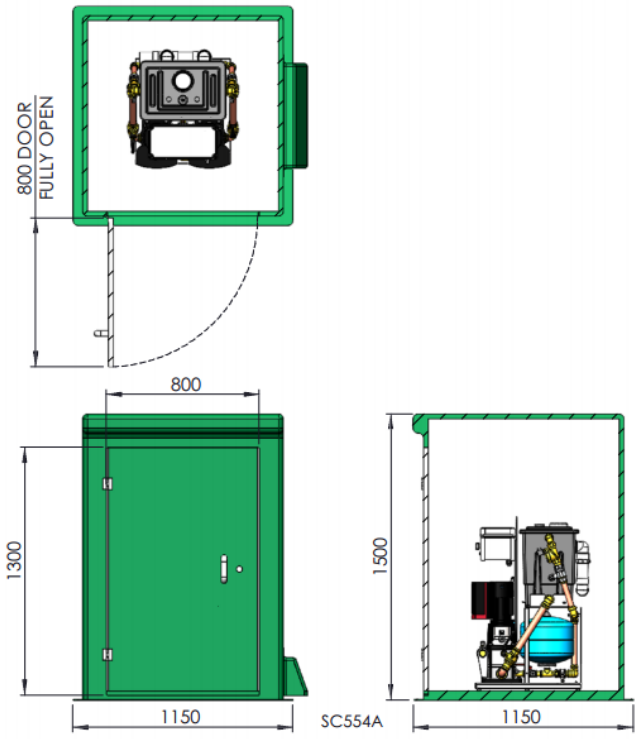
GRP Enclosures

BTCAB6 – GRP Heated Enclosure with Kiosk Door, for external use of all Pent-A-Boost® units with 24 litre break tank. The housing has an integrated bar heater, complete with thermostat. The exterior colour of the enclosure is RAL6005.

BTDUALCAB – GRP Heated Enclosure with Kiosk Door, for external use with the BTAF5-8A. Taller version of the BTCAB1 with integrated bar heater, complete with thermostat.

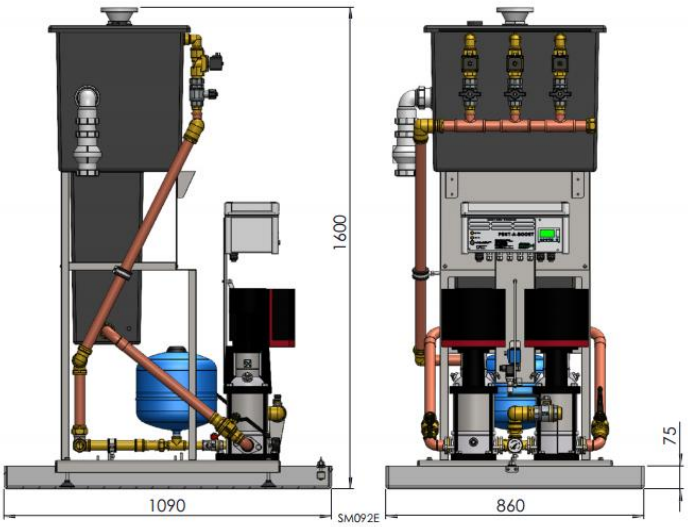


Dimensions



GRP Drip Tray

BTDT-LARGE – GRP Drip Tray for use with all Dual Pump 3 phase Pent-A-Boost® units. When the Drip Tray fills with water, the float switch is activated and isolates the water supply, stopping the pump. *For smaller Dual pump BTAF models – use Drip Tray BTDT-MEDIUM.*



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