

“Boost-A-Break®” - Break Tank & Booster Sets

Model BTAB® — Dual Pump Overview — Datasheet Page 1 of 7

Overview

Break Tank assembly with Fluid Category 5 protection by virtue of the integral Type AB air gap. The unit is supplied as a complete package on a stainless base ready for installation.

The primary purpose is to provide backflow protection in accordance with the latest Water Regulations. The BTAB unit also boosts the water pressure for elevated areas or where a high flow rate is required – e.g. wash-down.

The cistern has a screened overflow and weir, making it suitable for unorthodox applications, which require a “Hygienic Type AB air gap” – e.g. butchery and vegetable preparation.

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

For domestic boosting use “Pent-A-Boost” model BTAF.

Applications

The following are Fluid Category 5 examples see Water Regulations (Table 6.1e) -

- Waste bin washing
- Hose union taps – non-domestic
- Wash-down – animals or any Fluid Category 5
- Underground or surface irrigation – see HUBG
- Laboratories
- Baths in health care premises
- Showers health care – see Care Shower
- Sinks with hoses
- Bidets
- Bedpan washing
- Vegetable washing
- Butchery & meat equipment / Slaughterhouse
- Clothes washing machines – healthcare premises
- Dish washing machines – healthcare premises
- Applications deemed to be Category 5 by water company



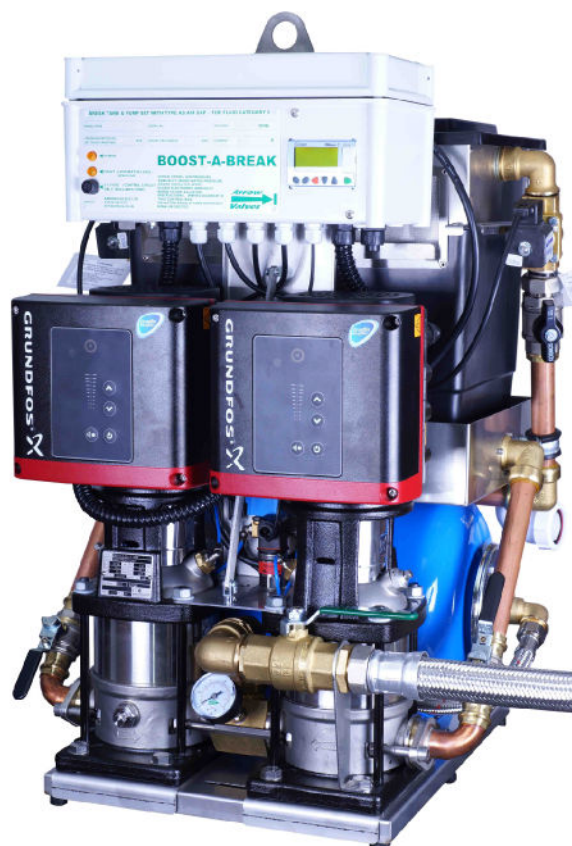
Water Regulations

The assembly is fully Water Regulations approved & complies with the requirements of the Water Regulations when installed and used correctly. A Break Tank with a Type AB air gap provides protection against Fluid Category 5 risks - these risks are the highest level. “Boost-A-Break®” can therefore be used for all applications requiring backflow protection – use “Pent-A-Boost” for drinking water.

The Regulations require point of use protection. For example, it is not permissible to use the same Break Tank to serve a bedpan washer (Fluid Category 5) and a dishwasher. However several appliances of the same type can be served from the same Break Tank unit – e.g. irrigation network.

Specification

Pressure Supply min.	1.0 bar min. maintained (dynamic)
Pressure Supply max.	10 bar
Pressure Outlet	See flow graph – page 2
Pressure Gauge	63 dia. glycerine filled (except dual)
Vessel Capacity	24 Lt
Cistern Capacity	24 Lt – 100 Lt
Inlet Size	See “Inlet Control” table
Outlet Size	See “Outlet Pressure Control” table
Temperature	50° max. ambient
Water Regulations Approval	2003373



Model 3-10A
Dual Pump - Duty Assist.
Pumps alternate daily to prevent stagnation.
Flow output up to 2.4 Lt/s



Registered UK Design 4036012

Materials

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

Arrow Valves Ltd

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“Boost-A-Break®” – Break Tank & Booster Set

Model BTAB® – 1 Phase Dual Pump - Duty Standby – Datasheet Page 2 of 7

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 4.0 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	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

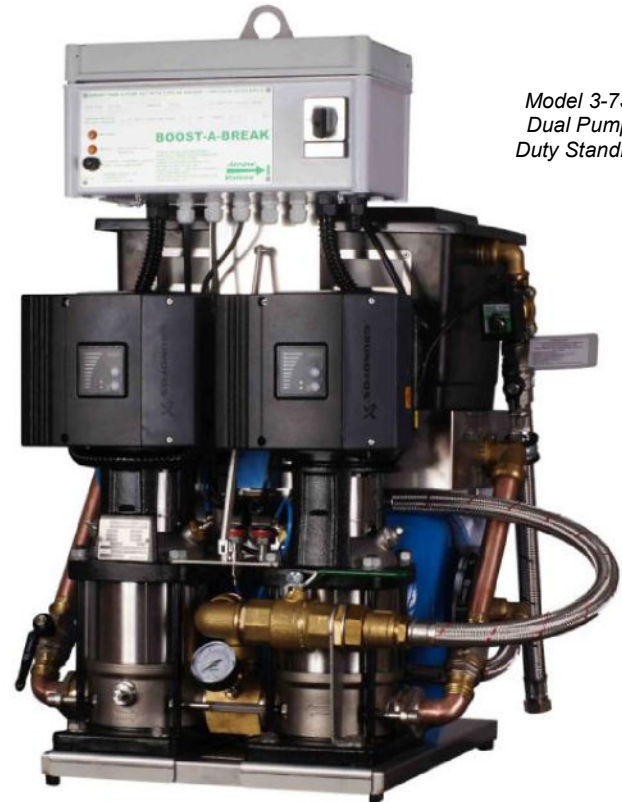
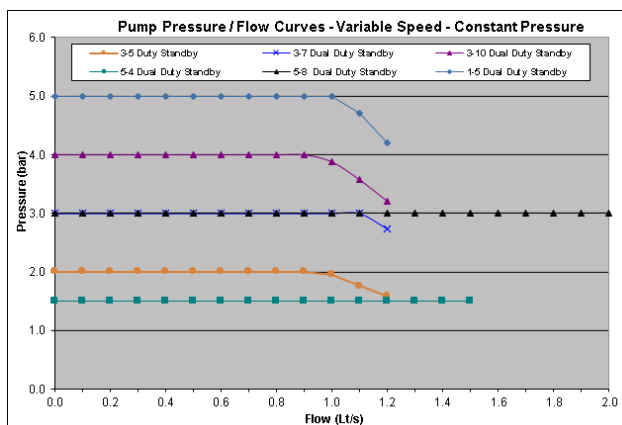
Voltage	230 V 1 phase
Protection	MCB in control box for each pump
	motors thermal protection (IEC 34-11: TP 211)

Model	1 phase A (Run)	Input max kW
3-5S	4.2	0.55
3-7S	5.5	0.75
3-10S	7.5	1.10
1-5S	5.0	1.10
5-4S	7.5	1.10
5-8S	7.5	1.50

Outlet Pressure Control

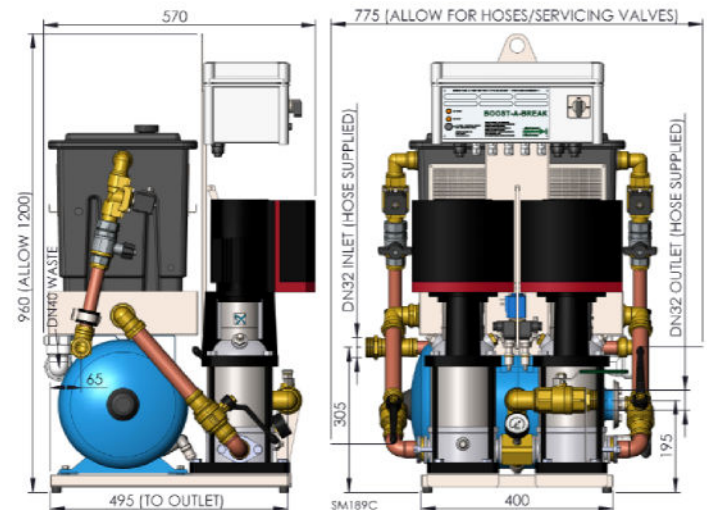
Model	Outlet Size	Default Set point	Pressure Switch on (min.) ¹	Pressure Switch off (Max) ¹	Pressure Max ²	Vessel Air Pressure ³
3-5S	DN20	2.0 bar	1.8 bar	2.2 bar	2.8 bar	1.4 bar
3-7S	DN20	3.0 bar	2.7 bar	3.3 bar	4.6 bar	2.1 bar
3-10S	DN25	4.0 bar	3.6 bar	4.4 bar	5.5 bar	2.8 bar
1-5S	DN25	5.0 bar	4.5 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.



Model 3-7S
Dual Pump
Duty Standby

Dimensions



Registered UK Design 4036011
 Model BTAB5-8 Duty Standby Shown

Codes and Descriptions – Duty Standby

Inlet Size	Code	Description
DN20	BTAB3-5S	Boost-A-Break® 3-5 Duty Standby Vari 230 V 2.0 bar
DN20	BTAB3-7S	Boost-A-Break® 3-7 Duty Standby Vari 230 V 3.0 bar
DN25	BTAB3-10S	Boost-A-Break® 3-10 Duty Standby Vari 230 V 4.0 bar
DN25	BTAB1-5S	Boost-A-Break® 1-5 Duty Standby Vari 230 V 5.0 bar
DN25	BTAB5-4S	Boost-A-Break® 5-4 Duty Standby Vari 230 V 1.5 bar
DN32	BTAB5-8S	Boost-A-Break® 5-8 Duty Standby Vari 230 V 3.0 bar

Optional extras – see page 7

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“Boost-A-Break®” – Break Tank & Booster Set

Model BTAB® - 3 Phase Dual Pump - Duty Standby – Datasheet Page 3 of 7

Description

A Duty Standby configuration denotes that 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.

The benefit of using three phase pumps is that much higher pressures can be achieved. Arrow Valves’ dual pump range can now boost up to 10 bar pressure.

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.

Inlet Control

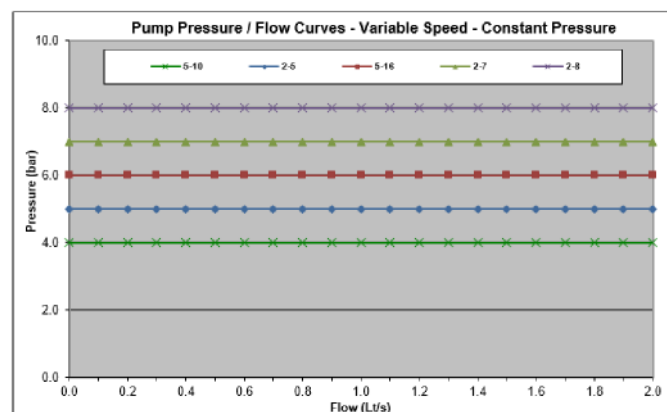
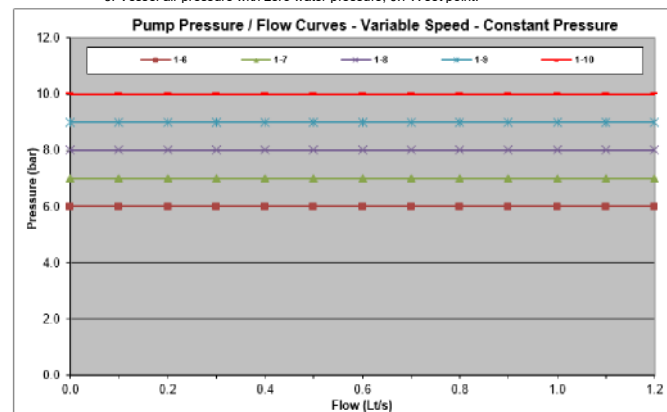
Fast and accurate level control is achieved with three 1” filling solenoid valves. Level electrodes provide on/off full flow control with 60 mm delayed action.

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
1-6S	DN25	6.0 bar	5.4 bar	6.6 bar	7.0 bar	4.2 bar
1-7S	DN25	7.0 bar	6.3 bar	7.7 bar	11.7 bar	4.9 bar
1-8S	DN25	8.0 bar	7.2 bar	8.8 bar	11.7 bar	5.6 bar
1-9S	DN25	9.0 bar	8.1 bar	9.9 bar	11.7 bar	6.3 bar
1-10S	DN25	10.0 bar	9.0 bar	11.0 bar	11.7 bar	7.0 bar
5-10S	DN32	4.0 bar	3.6 bar	4.4 bar	7.0 bar	2.8 bar
2-5S	DN32	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 bar
5-16S	DN32	6.0 bar	5.4 bar	6.6 bar	11.7 bar	4.2 bar
2-7S	DN32	7.0 bar	6.3 bar	7.7 bar	11.7 bar	4.9 bar
2-8S	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.



Motor

Voltage 400 V 3 phase

Model	3 phase A (Run)	Input max kW
5-10S, 2-5S, 1-6S	3.7	2.20
1-7S, 1-8S, 1-9S, 1-10S, 5-16S, 2-7S, 2-8S	5.0	3.00

Class BMS

Low level cut out

Protection

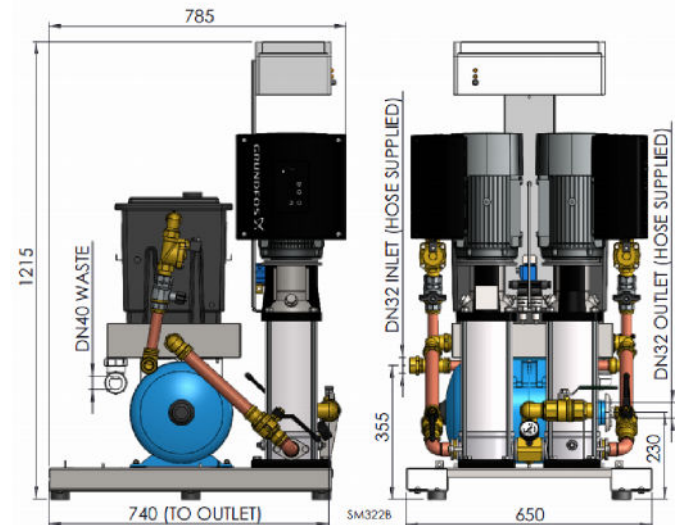
Specification

Pressure Supply min.	1.0 bar min. maintained (dynamic)
Pressure Supply max.	10 bar
Vessel Capacity	24 Lt
Cistern Capacity	24 Lt
Inlet / Outlet Size	DN40

Materials

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

Dimensions



Model BTAB5-16 Duty Standby Shown

Codes and Descriptions

Inlet Size	Code	Description
DN25	BTAB1-6S	Boost-A-Break® 1-6 Duty Standby Vari 400 V 6.0 bar
DN25	BTAB1-7S	Boost-A-Break® 1-7 Duty Standby Vari 400 V 7.0 bar
DN25	BTAB1-8S	Boost-A-Break® 1-8 Duty Standby Vari 400 V 8.0 bar
DN25	BTAB1-9S	Boost-A-Break® 1-9 Duty Standby Vari 400 V 9.0 bar
DN25	BTAB1-10S	Boost-A-Break® 1-10 Duty Standby Vari 400 V 10.0 bar
DN32	BTAB5-10S	Boost-A-Break® 5-10 Duty Standby Vari 400 V 4.0 bar
DN32	BTAB2-5S	Boost-A-Break® 2-5 Duty Standby Vari 400 V 5.0 bar
DN32	BTAB5-16S	Boost-A-Break® 5-16 Duty Standby Vari 400 V 6.0 bar
DN32	BTAB2-7S	Boost-A-Break® 2-7 Duty Standby Vari 400 V 7.0 bar
DN32	BTAB2-8S	Boost-A-Break® 2-8 Duty Standby Vari 400 V 8.0 bar

Optional extras – see page 7

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“Boost-A-Break®” – Break Tank & Booster Set

Model BTAB® – 1 Phase Dual Pump - Duty Assist – Datasheet Page 4 of 7

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
1-5A	DN32	5.0 bar	4.5 bar	5.5 bar	7.0 bar	3.5 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.

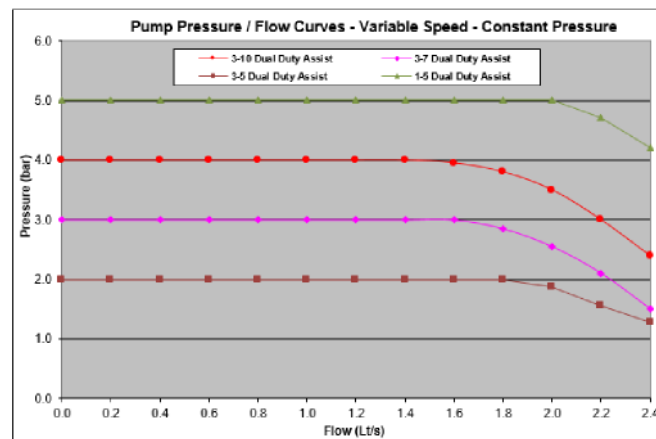
Specification & Materials

See page 1 and 4

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
3-5A	8.4		1.10
3-7A	11.0		1.50
3-10A	15.0		2.20
1-5A	10.0		2.20



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.

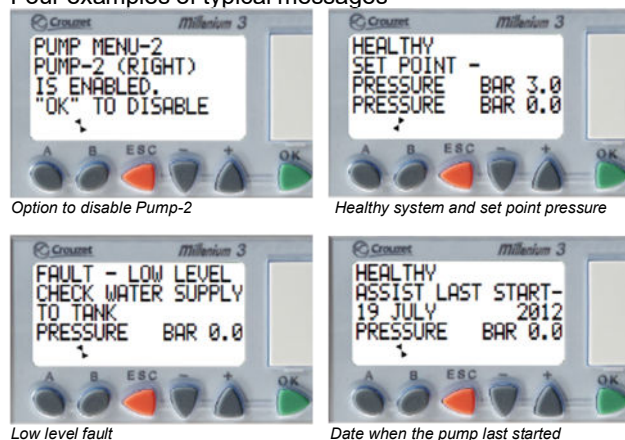
Information display messages include

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

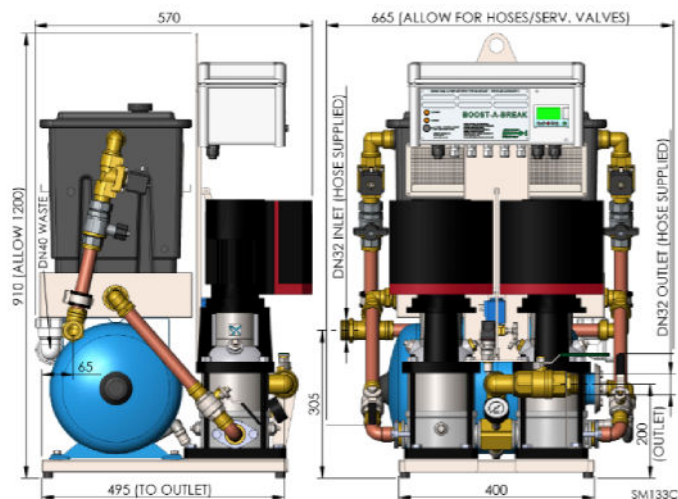
Fault display messages include

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

Four examples of typical messages -



Dimensions



Registered UK Design 4036012
Model BTAB3-10 Duty Assist Shown (Dimensions apply to all Duty Assist Units)

Codes and Descriptions – Duty Assist

Inlet Size	Code	Description
DN32	BTAB3-5A	Boost-A-Break® 3-5 Duty Assist Vari 230 V 2.0 bar
DN32	BTAB3-7A	Boost-A-Break® 3-7 Duty Assist Vari 230 V 3.0 bar
DN32	BTAB3-10A	Boost-A-Break® 3-10 Duty Assist Vari 230 V 4.0 bar
DN32	BTAB1-5A	Boost-A-Break® 1-5 Duty Assist Vari 230 V 5.0 bar

Optional extras – see page 7

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“Boost-A-Break®” – Break Tank & Booster Set

Model BTAB® – Dual Pump – 5-8 Duty Assist – Datasheet Page 5 of 7

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. 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 4 and 5.

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

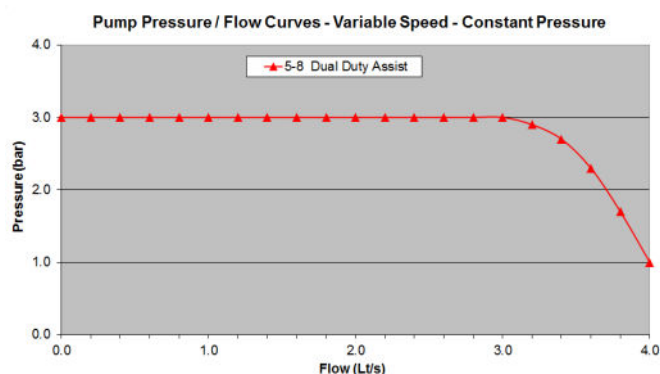
Fast and accurate level control is achieved with three solenoid valves. Level electrodes provide on/off full flow control with 60 mm delayed action.

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.

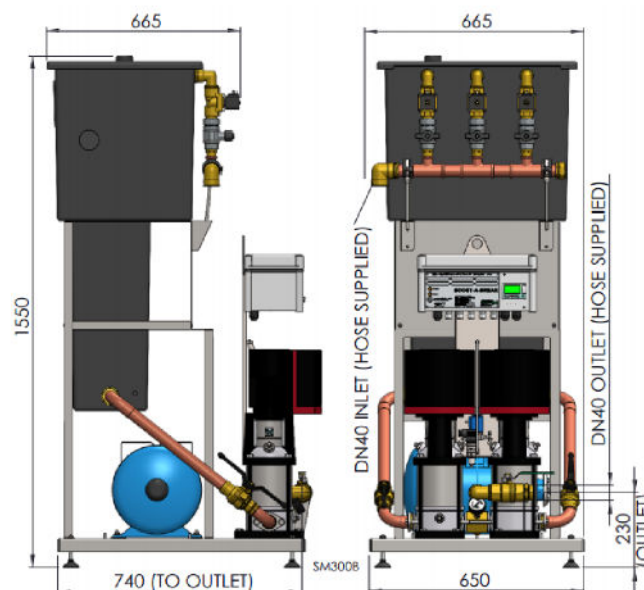
Model	Outlet Size	Default Set point	Pressure Switch on (min.) ¹	Pressure Switch off (Max) ¹	Pressure Max ²	Vessel Air Pressure ³
5-8A	DN40	3.0 bar	2.7 bar	3.3 bar	5.0 bar	2.1 bar

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.



Screened Weir Overflow in the rear of the Cistern provides Type AB Air Gap

Dimensions



Registered UK Design 4036009

Codes and Descriptions

Inlet Size	Code	Description
DN40	BTAB5-8A	Boost-A-Break® 5-8 Duty Assist Vari 230 V 3.0 bar
Optional extras – see page 7		

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“Boost-A-Break®” – Break Tank & Booster Set

Model BTAB® - 3 Phase Dual Pump - Duty Assist – Datasheet Page 6 of 7

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.

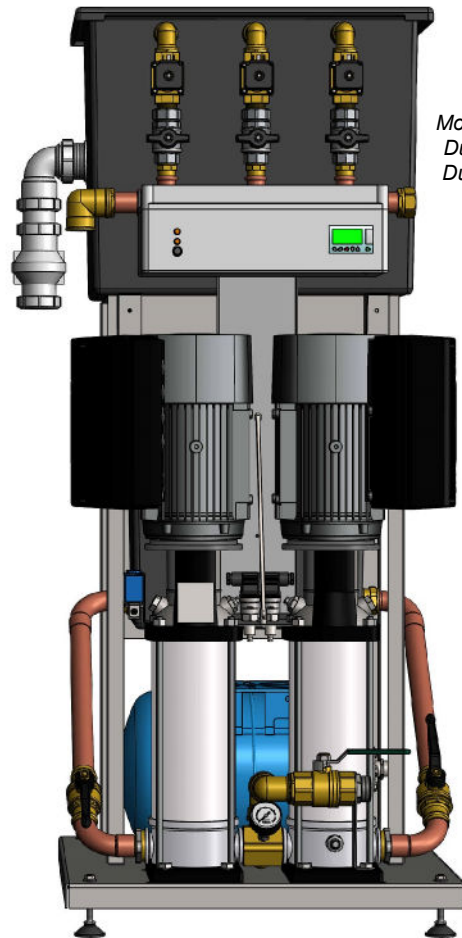
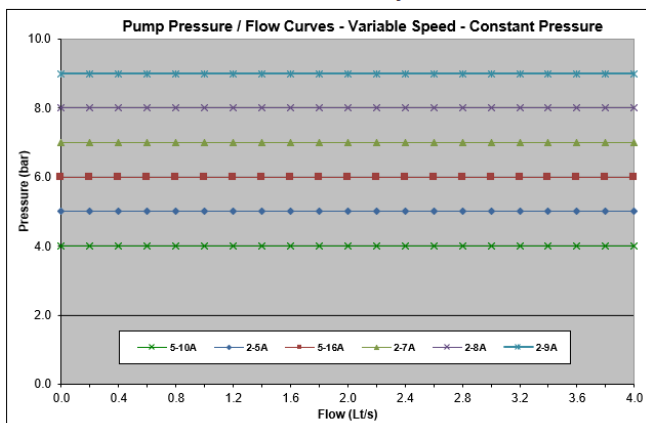
Outlet Pressure Control

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
2-9A	DN40	9.0 bar	8.1 bar	9.9 bar	11.7 bar	6.3 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.

Three Phase Duty Assist



Model 5-16A
Dual Pump
Duty Assist

Motor Voltage

400 V 3 phase

	3 phase	Input max
Model	A (Run)	kW
5-10A, 2-5A	7.4	4.40
5-16A, 2-7A, 2-8A, 2-9A	10.0	6.00

Class BMS

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

Low level cut out

Protection

Codes and Descriptions

Inlet Size	Code	Description
DN40	BTAB5-10A	Boost-A-Break® 5-10 Duty Assist Vari 400 V 4.0 bar
DN40	BTAB2-5A	Boost-A-Break® 2-5 Duty Assist Vari 400 V 5.0 bar
DN40	BTAB5-16A	Boost-A-Break® 5-16 Duty Assist Vari 400 V 6.0 bar
DN40	BTAB2-7A	Boost-A-Break® 2-7 Duty Assist Vari 400 V 7.0 bar
DN40	BTAB2-8A	Boost-A-Break® 2-8 Duty Assist Vari 400 V 8.0 bar
DN40	BTAB2-9A	Boost-A-Break® 2-8 Duty Assist Vari 400 V 9.0 bar

Optional extras – see page 7



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Model BTAB® – Dual Pump Options – Datasheet Page 7 of 7

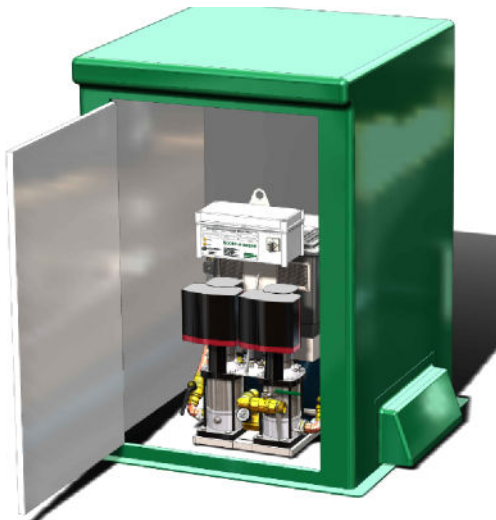
Options

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

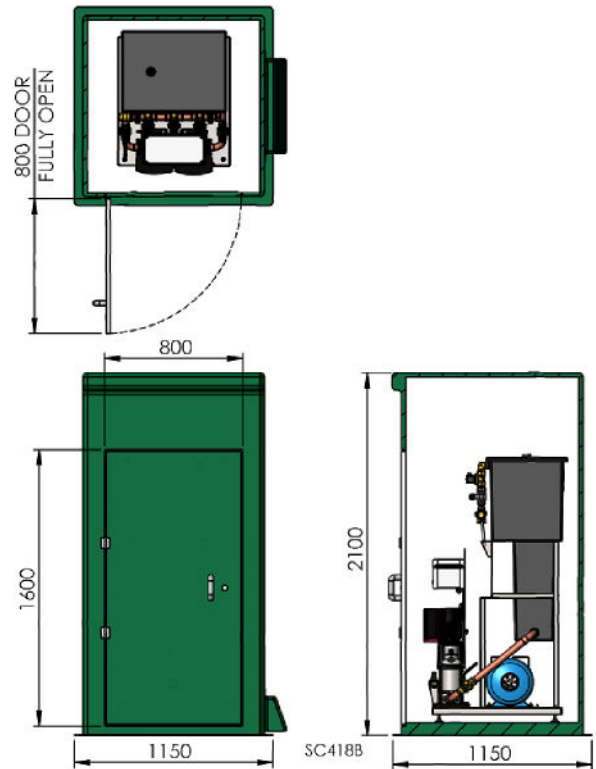
Suitability	Code	Description
Up to 3-10A	BTCAB6	Enc. 1150x1150x1500 GRP c/w Heating
5-8A and 3 Phase	BTDUALCAB	Enc. 1150x1150x2100 GRP c/w Heating
All	BTBMS2	BT High alarm BMS – Variable speed pumps
Up to 5-8S and 3-10A	BTDT-SMALL V	GRP Drip Tray c/w Float Switch Small Variable BT
Dual Pump 3 Phase	BTDT-LARGE	GRP Drip Tray c/w Float Switch Large 3PH

GRP Enclosures

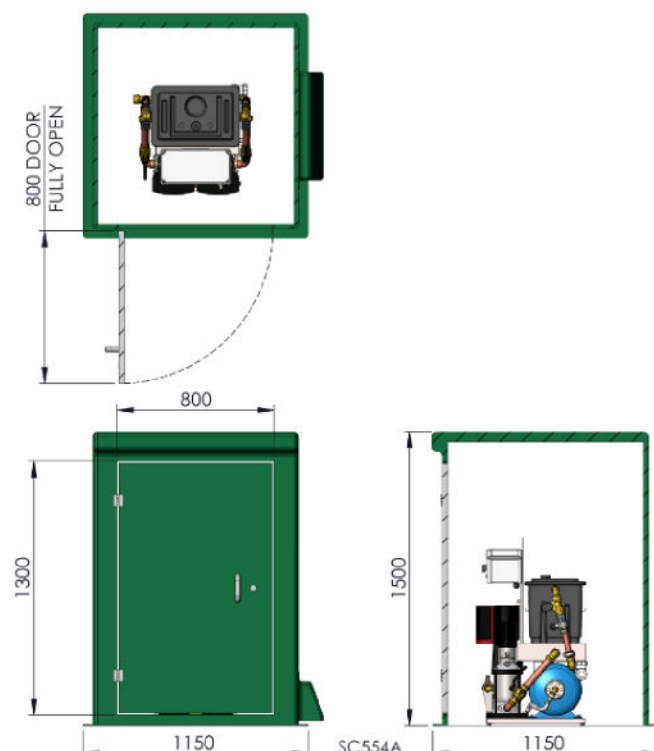
BTCAB6 – GRP Heated Enclosure with Kiosk Door, for external use of all dual pump Boost-A-Break® units with 24 litre break tank. The housing has an integrated bar heater, complete with thermostat. The exterior colour of the enclosure is RAL6005.



BTDUALCAB – GRP Heated Enclosure with Kiosk Door, for external use with the BTAB5-8A and 3 phase units. Taller version of the BTCAB1 with integrated bar heater, complete with thermostat.

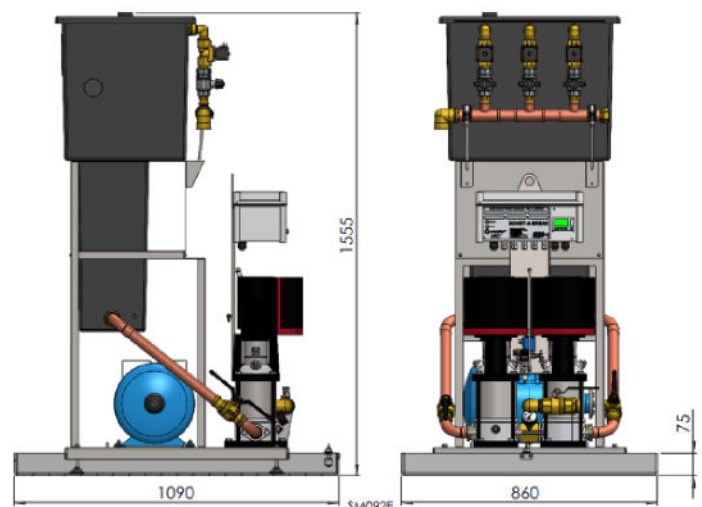


Dimensions



GRP Drip Tray

BTDT-LARGE – GRP Drip Tray for use with Dual Pump 3 phase Boost-A-Break® 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 BTAB models – use Drip Tray BTDT-SMALL V.



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

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