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Installation Instructions / Operating & Maintenance Manual "Pent-A-Boost®" Break Tank & Booster Set Dual Pump, Duty Standby

Model shown BTAF3-10S

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FOREWORD

The “Pent-A-Boost®” is approved for drinking (wholesome) water applications and is designed to boost pressure for tall buildings where mains supply is inadequate e.g. penthouse suites. The unit features an integral Bypass Valve that enables water to be supplied (at mains pressure) during power failure for maintenance.

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.

SUPPORTING LITERATURE

- BTAF “Pent-A-Boost®” Datasheet
- Wiring Diagram AM135*
- Grundfos Handbook

DATASHEET QR

AM135 QR

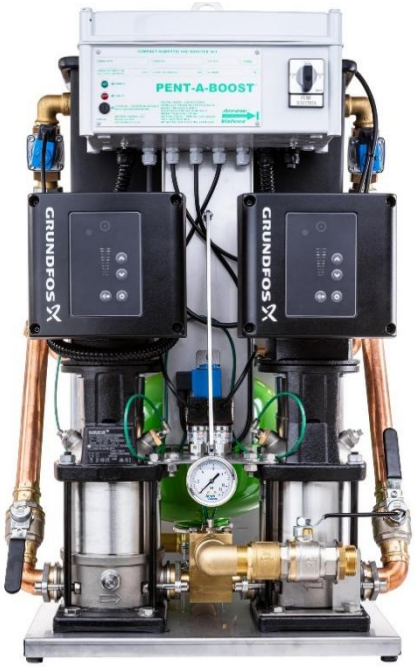
WARNING!

Disconnect electrical power before removing electrical cover, guard or any servicing

WHAT’S IN THE BOX

- 1x Datasheet + 1x O&M Manual
- 1x Commissioning Certificate
- 1x Built BTAF Unit
- 2x Fibre Washer
- 1x Grundfos Handbook
- 1x loose inlet hose (DN32) for BTAF 5-4 to 5-16 and 2-3 to 2-10
- 1x loose outlet hose (DN32) for BTAF 5-4 to 5-16 and 2-3 to 2-10
- 1x inlet + 1x outlet hose connected for other models

Fibre Washer



BTAF Unit

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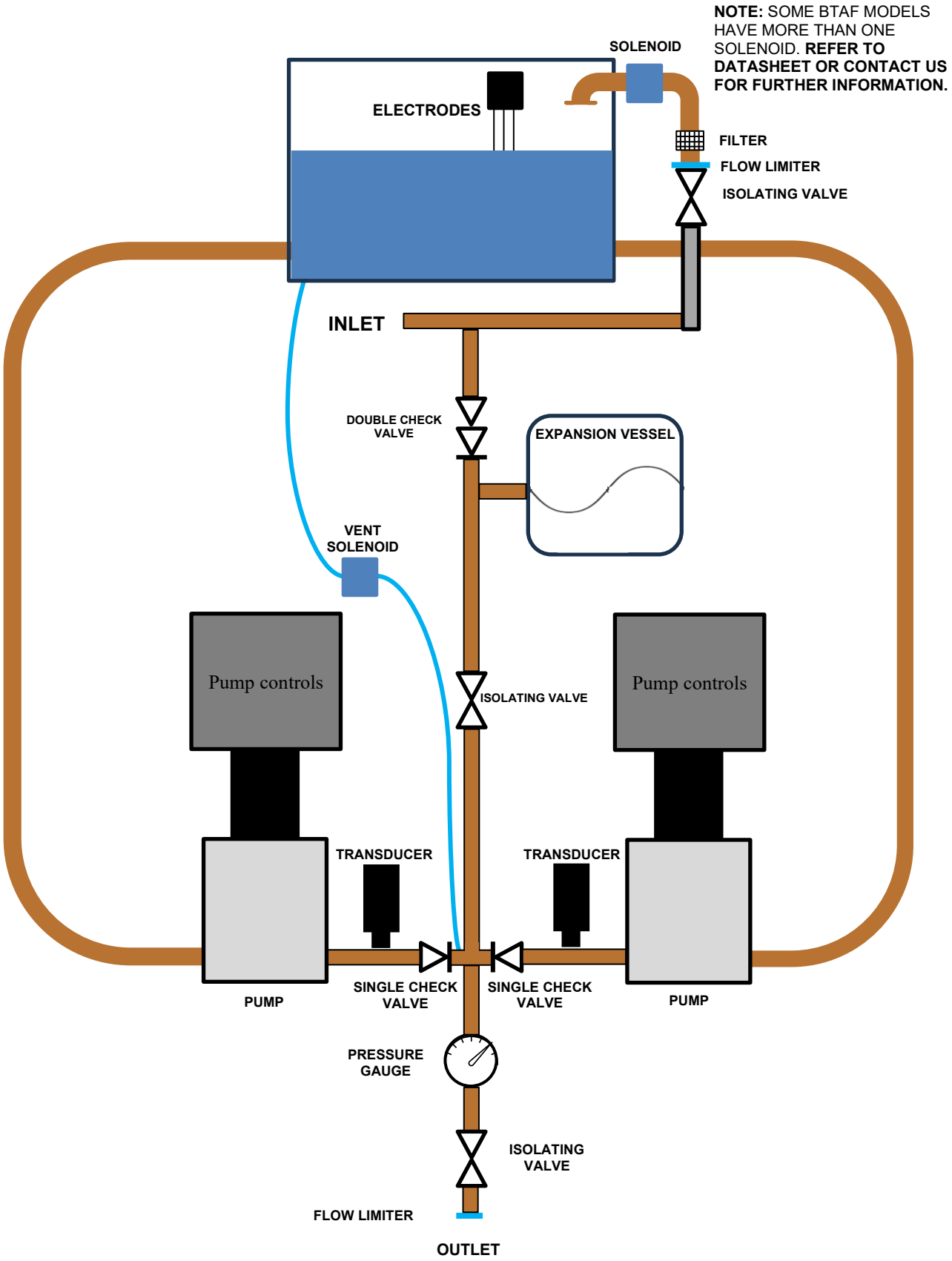
HYDRAULIC SCHEMATIC



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INSTALLATION

1.1 The “Pent-A-Boost®” should be installed by a competent person with regard to the relevant requirements of the Health and Safety Regulations, building regulations, IEE Regulations, Water Supply (water fitting) Regulations, Water Bye-Laws (Scotland) and other local Bye-laws.

1.2 Unpack the unit, taking care not to lift on the black tank (lift by the base plate or by using the copper elbow). **Warning!** The units weigh between 95-110 kg dry and 123-135 kg wet, safe lifting practices should be implemented.

1.3 Do not install in a potentially freezing location or above 25+ C (outdoor heated GRP enclosures are available).

1.4 The unit is floor mounted.

1.5 Thoroughly flush the supply pipe before connecting – debris can damage the solenoid valves. An integral strainer is part of the inlet arm before the solenoid.

1.6 Connect the supply pipe to the inlet flexible hoses. Normally the supply is DN20 for models 3-7 and DN25 for models 3-10, 1-5, & 5-4, DN 32 models 3-10, 5-8. A stainless braided hose is supplied. A stainless braided hose is supplied. To avoid kinking or stressing the hose, do not bend it to a radius less than 80 mm (DN20), 100 mm (DN25) or 160 mm (DN32). The supply pressure should be in excess of 1 bar dynamic. It is advisable to connect a servicing valve before the inlet flexible hose and fit with a fibre washer in the joint.

1.7 Connect the pump outlet flexible hose. Ensure the union nut is tight and use fibre washers.

1.8 Use 50 mm plastic or 50 mm copper waste pipe and connect to the overflow provided, ensure there is free flow from this pipe to a suitable gully. Ensure the pipe slops downwards and the discharge is conspicuous and will not cause any damage.

1.9 The overflow should be in accordance with Water Regulations. It is recommended that the overflow is tested to determine if it can cope with an inlet device failure. Lift lid on tank until it overflows. Replace lid to stop water flow.

1.10 Electrical Connection is 230 V single phase. The electrical supply must be via a circuit breaker (see datasheet). Screw terminals are supplied and colour coded according to standards. Connect a minimum 1.5 mm2 three core cable to the control box. Feed through gland and tighten. Strip 10 mm of insulation off each wire and insert into screw terminals fully tighten.

1.11 Ensure the cistern lid is fitted correctly. WARNING! If the lid is not fitted the unit will continually fill, resulting in flooding and the pump will not run.

PRIMING & VENTING

2.1 The units are supplied with the pumps isolated on the RCB’s in the control box (Green for safe). Once the unit has been connected to the water and electrical supply, fit the control box lid to prevent any water entering the controls during venting. Make sure the servicing valves to the solenoids are open, and the outlet valve is closed. Turn on both the water and electrical supply. The unit should commence filling.

2.2 Once the break tank is full, open the vent on top of each pump to expel all of the air in the pump housing, note the break tank should refill during this process.

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2.3 When the water runs clear, tighten the vent screws.
2.4 Isolate the unit electrically, remove the control box lid, switch the RCD's on and replace the control box lid.
2.5 Switch the unit on electrically.
2.6 Select pump A on the rotary switch, the pump should spin up and the pressure should rise.
2.7 Open the outlet valve and an outlet connected to the unit, once the water runs free from air isolate the outlet and check the pump switches off at the set-point stamped on the label.
2.8 Isolate the outlet valve on the pump set, and turn the pump selection switch to pump B. repeat the process 2.7
2.9 Once the pumps have stabilized, turn the selector to "Auto" (this may cause one of the pumps to run for a while, this is normal).
2.10 In the event of the pumps not clearing the air in the system, repeat the above process but undo the needle valve on the bottom of the pumps (this does not undo completely). Open the outlet as before, the tone of the pump will change. Once the pressure begins to rise close the needle valve.

BOOSTER SET OPERATION

3.1 When electrically powered and all water points are closed, the pump should be off. When a tap is opened the pump should start automatically.
3.2 When all taps are closed, the pump should automatically stop.
3.3 If water flow does not occur, as a result of a power cut and the bypass taking over, the pumps may need venting. The vent screw for the left pump is located on the front of the pump, in the centre, approximately 60 mm from the base. The vent screw for the right pump is located at the rear.

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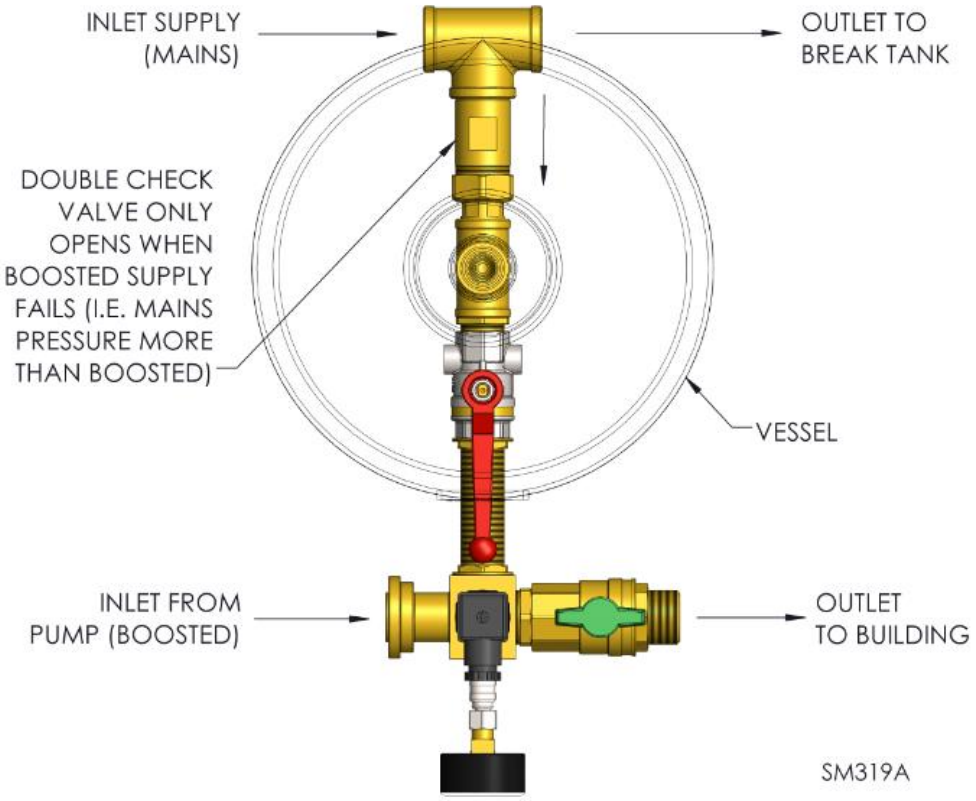
BYPASS VALVE OPERATION

4.1 Under normal operation, the mains water entering the BTAF unit will go straight to the break tank, exiting into the outlet once it has passed through the pump.

4.2 The 'boosted' cold water will be of a higher pressure than the entering water thus forcing the Bypass Valve to remain closed.

4.3 If the mains pressure is high, consider a PRV on the inlet to ensure the pump runs.

4.4 If the pump fails and the mains water is of a higher pressure than the boosted water, the water flows through the Check Valve straight into the outlet valve.



ADJUSTMENTS

5.1 The unit is factory commissioned and there are no user adjustments required.

5.2 Contact Arrow Valves to arrange for an on-site commissioning if required. (Please note this would be chargeable).

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MAINTENANCE

6.1 It is recommended the electrodes are annually cleaned with 'Scotch-Brite' and the vessel pressure checked.

6.2 To check the vessel pressure, follow the steps below:

- 6.2.1 Isolate the unit from the supply by disconnecting the inlet hose.
- 6.2.2 Drain the remaining water from the unit through the device connected to the outlet hose (e.g. turning on a tap).
- 6.2.3 Wait for the red fault light (LED) to illuminate (this indicates that all water has been drained) and the gauge pressure reading to drop to zero.
- 6.2.4 If the pressure does not drop to zero, disconnect the hose from the vessel and drain it accordingly.
- 6.2.5 Remove the black cap covering the Schrader valve (unscrews by hand). Using a standard car tyre pressure gauge, measure the vessel charge pressure. Compare this with the vessel pre-charge value shown on the unit's label.
- 6.2.6 If the pressure is different from the pre-charge value, adjust accordingly through the Schrader valve.

ANNUAL TANK INSPECTION & DISINFECTION

7.1 Tank inspection, cleaning and chlorination of the tank is recommended on an annual basis and when there is visible evidence of any of the following:

- Sediment
- Stagnant water
- Biofilm
- Corrosion
- Flora growth
- Animal Contamination

7.2 It is also recommended:

- 7.2.1 If the system or part of it has been substantially altered or entered for maintenance or remedial purposes in a manner that may lead to contamination.
- 7.2.2 During or following an outbreak or suspected outbreak of Legionellossis.

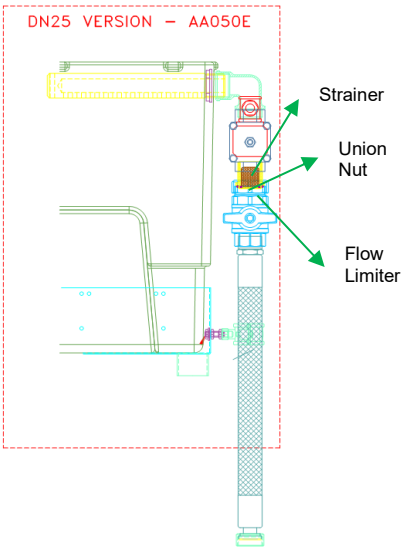
FILLING ARM INFORMATION

8.1 The filling arm is the inlet to the unit. Its main components are a solenoid valve, a strainer, a flow limiter, a ball valve and a hose.

8.2 In the case of low flow (i.e. low pressure) the flow limiter can be taken out. To do so, first unscrew the union nut .

8.3 Then, disconnect the ball valve from the solenoid. The flow limiter can then be removed from the valve.

8.4 The strainer basket can also be removed for servicing.



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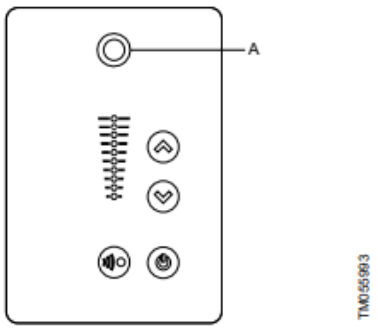
PUMP DETAILS

Disconnect electrical power before any servicing operation and make sure the pump cannot be accidentally switched on.

6.5 Grundfos Eye

The operating condition of the pump is indicated by the Grundfos Eye on the operating panel.



Grundfos Eye indicator light (A)

Indicator light	Indication	Description
	No lights are on.	**Power off** The motor is not running.
	Two opposite green indicator lights are rotating.	**Power on** The motor is running. The indicator lights are rotating in the direction of rotation of the motor when seen from the non-drive end.
	Two opposite green indicator lights are permanently on.	**Power on** The motor is not running.
	One yellow indicator light is rotating.	**Warning** The motor is running. The indicator light is rotating in the direction of rotation of the motor when seen from the non-drive end.
	One yellow indicator light is permanently on.	**Warning** The motor has stopped.
	Two opposite red indicator lights are flashing simultaneously.	**Alarm** The motor has stopped.

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Indicator light	Indication	Description
	The green indicator light in the middle flashes quickly four times.	The Grundfos Eye flashes four times when you press the Grundfos Eye symbol next to the motor name in the Grundfos GO.
	The green indicator light in the middle is flashing continuously.	You have selected the motor in the Grundfos GO, and the motor is ready to be connected.
	The green indicator light in the middle flashes quickly for a few seconds.	The motor is controlled by the Grundfos GO or exchanging data with the Grundfos GO.
	The green indicator light in the middle is permanently on.	The motor is connected to the Grundfos GO.

ATTENTION - See Grundfos Operation Manual for additional information

8.1 Maintenance - If the pump remains inactive for long periods, it must be emptied completely and, preferably, dried.

8.2 For good measure, as in the case of temporary operation with dirty liquids, run the pump briefly with clean water to remove deposits. In any case, when the pump remains inactive it must be emptied completely if there is a risk of freezing. Before restarting the unit, check that the shaft is not jammed.

8.3 A wiring diagram is provided on the inside of the cover to the electrical box.

LEVEL CONTROLLER

9.1 **There are 2 level controllers in a BTAF unit. One for the pump (on the left) and one for the solenoid (on the right).** Each controller can be identified by the selector switch, which is set to either “Pump” or “Sol”, as shown in the picture.

9.2 Principle of Operation - Relies on the conductivity properties of liquids to complete an electrical circuit between electrodes. A low voltage A.C. signal is used on the electrodes to avoid electrolysis.

9.3 Relay Output – Double pole changeover voltage free contacts rated 8A @ 250V AC resistive.

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OPTIONS

Code	Option
BTBMS2	BT High Alarm BMS - Variable Speed
BTCAB6	BT Kiosk With Door 1500h Heated Green
BTDUALCAB	BT Dual Kiosk With Door 2100h Heated Green
BTDT-MEDIUM	Break Tank Drip Tray 710x710x75mm

BT High Alarm BMS – High level alarm relay (volt free), recommended to minimise the risk of water damage.

GRP Heated Enclosure with Kiosk Door – The housing has an integrated bar heater, complete with thermostat. The exterior colour of the enclosure is RAL6005. For external use of the BTAB/BTAF unit.

Drip Tray – To capture any leak if an overflow pipe is not feasible. When the Drip Tray fills with water, the float switch is activated and isolates the water supply, stopping the pump.

SPARES

The table below shows part numbers, codes and descriptions for spares, which may be required for the Break Tank, contact Arrow Valves on 01442 823123 or online at www.arrowvalves.co.uk.

Code	Size	Description
ELLCBTCC		Conta Clip Level Controller for BreakTanks High/Low Control
BTSOL25		Replacement Solenoid & Fittings for 1" filling
BTSOL25T		Replacement Solenoid & Fittings for 1" filling (Sol 2)
A232	DN20	BT Outlet Hose DN20 A232A
A230	DN20	BT Inlet Hose DN20 A230A
A231	DN25	BT Inlet Hose DN25 A231A
A238	DN32	BT Inlet Hose DN32 A238B
A249	DN32	BT Outlet Hose DN32 A249B
PMP96455086		Grundfos CRIE Seal Kit

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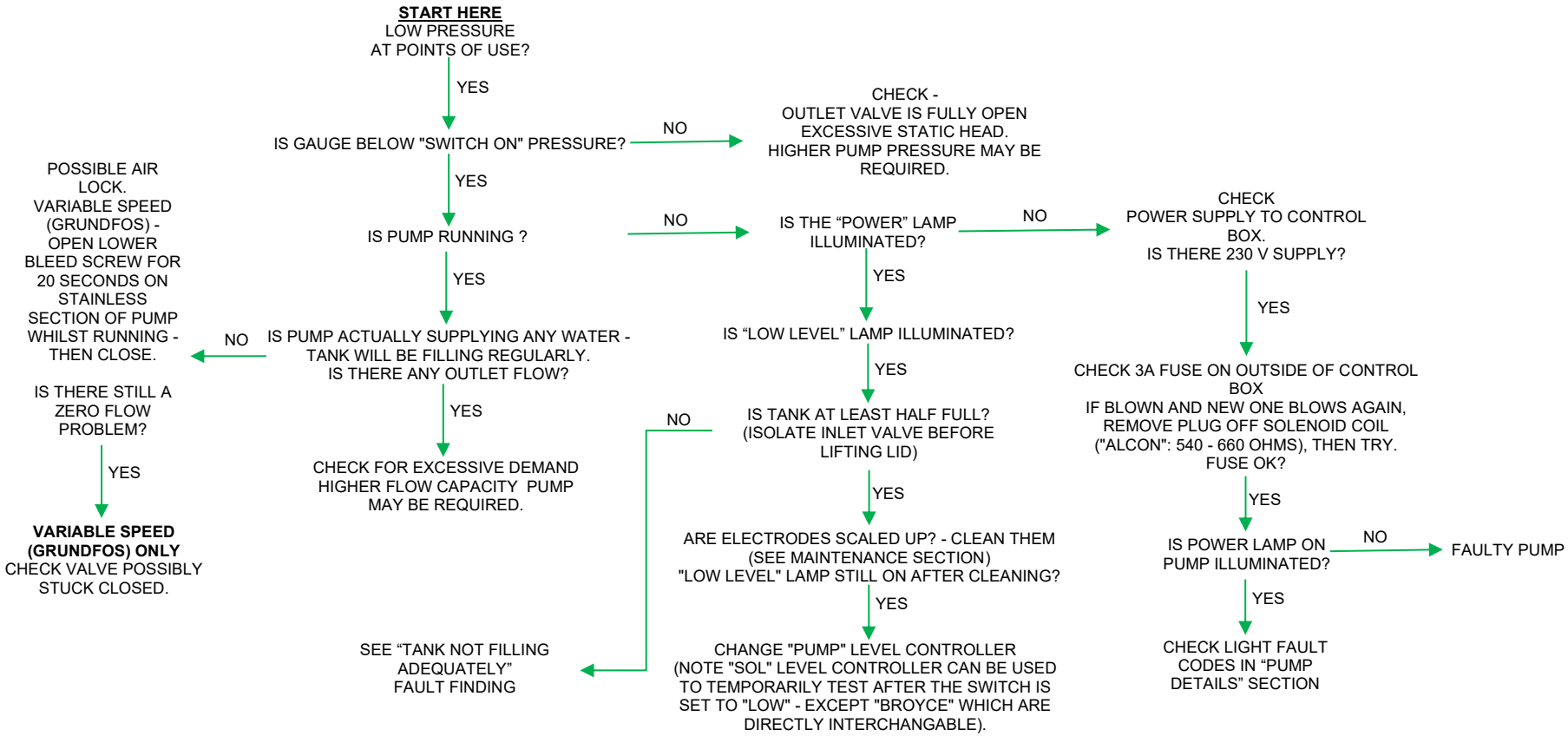
FAULT FINDING – LOW PRESSURE



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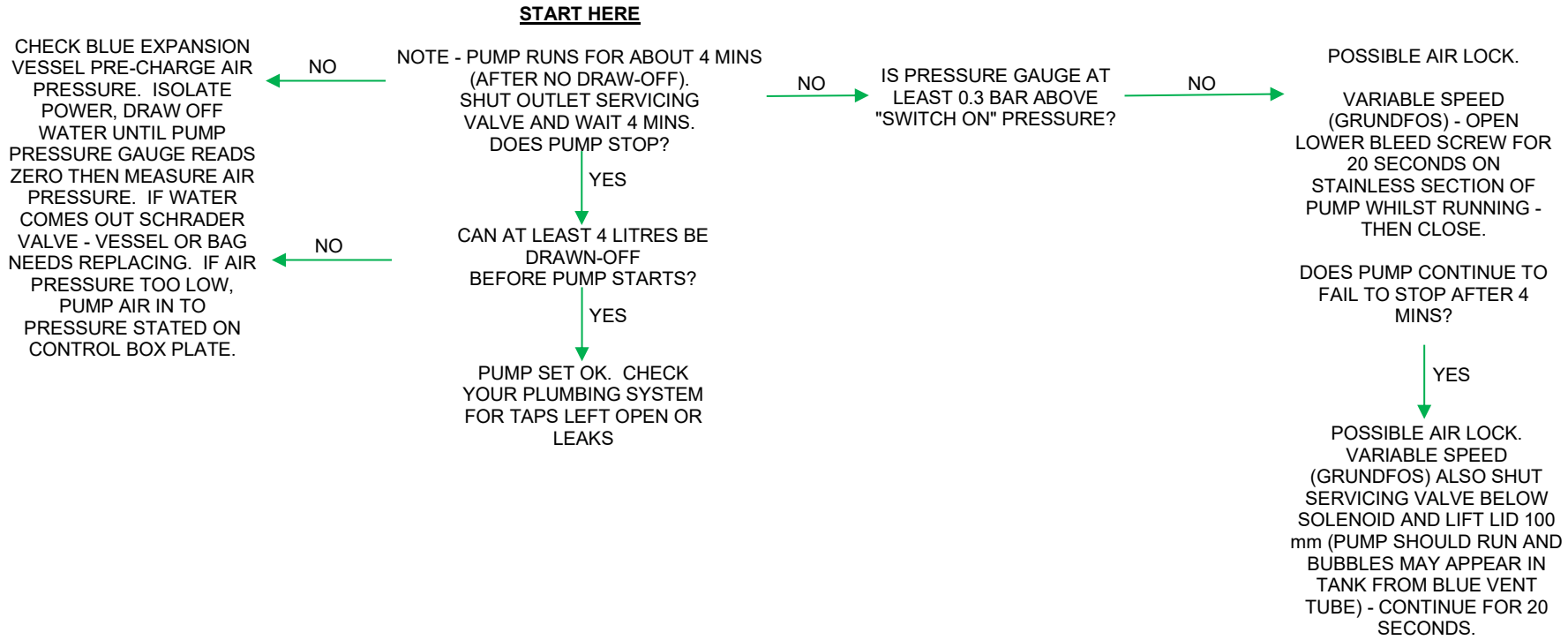
FAULT FINDING – PUMP NOT STOPPING / STARTING TOO FREQUENTLY



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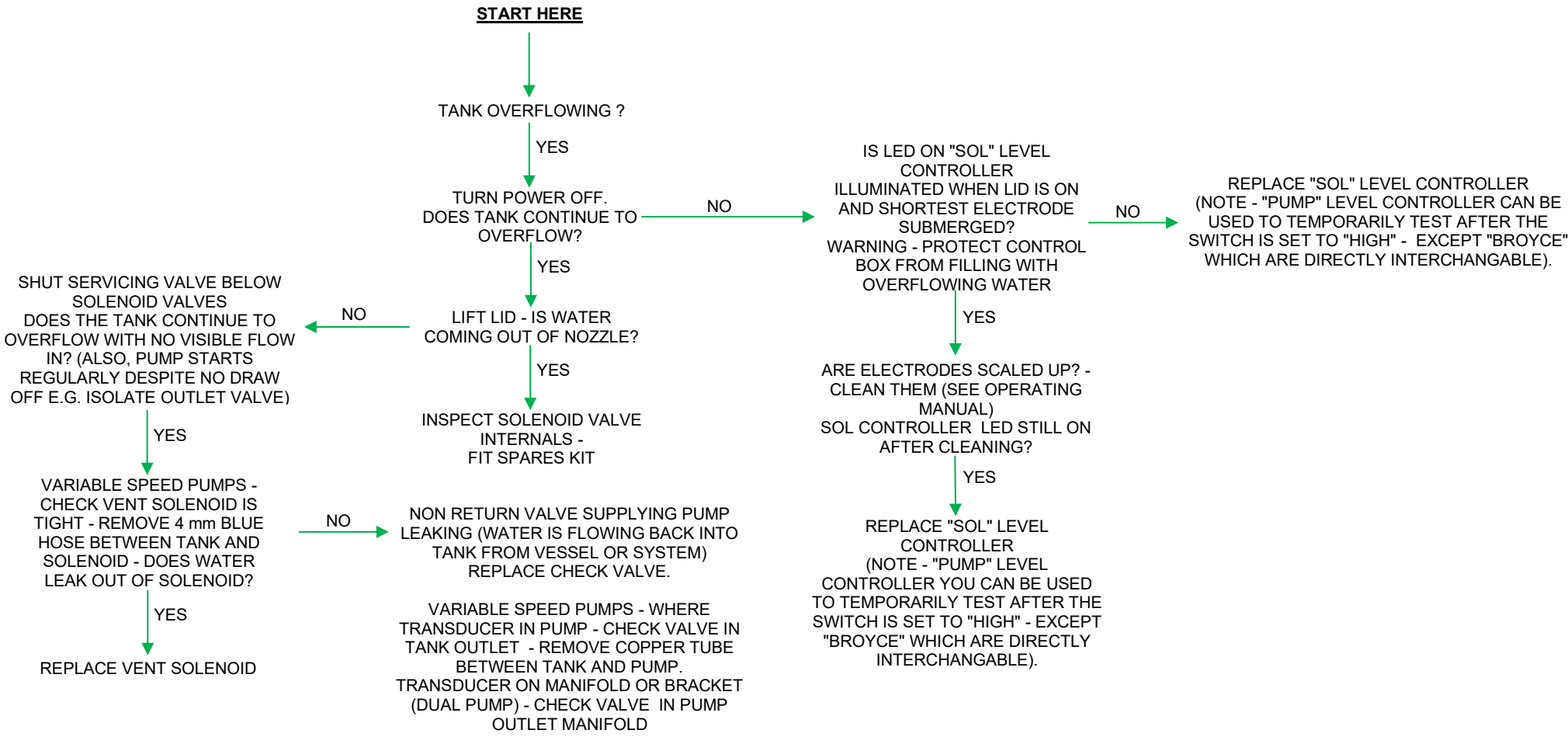
FAULT FINDING – TANK OVERFLOWING



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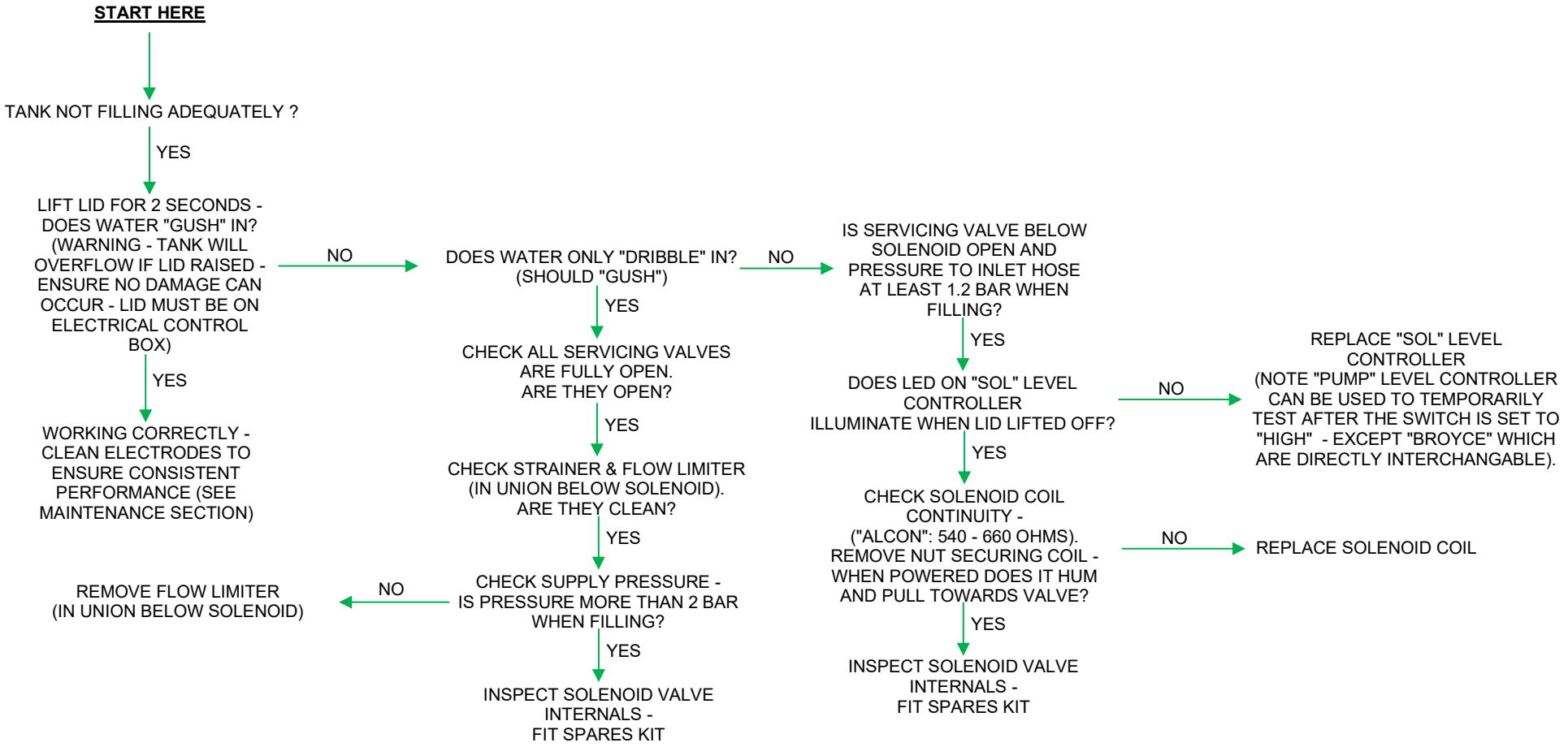
FAULT FINDING – TANK NOT FILLING ADEQUATELY



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