AQUABOOST

MAB & MARB Variable Speed Booster Sets

Installation, Operation & Maintenance Instructions

Please leave this instruction booklet with the owner as it contains important warranty, maintenance and safety information.

Read this manual carefully before commencing installation.

This manual covers the following products:

MAB Variable Speed Booster Sets

MARB Variable Speed Booster Sets

Please note images are representative only and may not portray your model

2 YEAR WARRANTY

WRAS APPROVED PRODUCT

UK CA CE

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1 PRODUCT OVERVIEW

1.1 Product Description

The Booster sets are designed and built to ensure a constant pressure, specifically suitable for domestic applications and small or medium systems for civil, agricultural or industrial uses. Booster sets strengths and benefit: constant pressure, low noise operation, low running costs, low water consumption, protection against dry running. It's recommended to use the sets with pressure vessel.

1.2 Application

Cold water pressure and flow boosting in a range of domestic, commercial and industrial applications.

1.3 Storage

If this product is not to be installed immediately on receipt, ensure that it is stored in a dry, frost and vibration free location in its original packaging.

1.4 Environment Protection

Your appliance contains valuable materials which can be recovered or recycled.

At the end of the products' useful life, please leave it at an appropriate local civic waste collection point.

2 WARNINGS

- **This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.**
    - Children shall not play with the appliance.
    - Cleaning and user maintenance shall not be made by children without supervision.
    - The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.

- **The electrical installation must be carried out in accordance with the current national electrical regulations.**
- **The electrical installation must be installed by a qualified person.**
    - Do not run the pump dry.
    - System pressure must not exceed 10 bar.
    - Before starting work on the electrical supply ensure power supply is isolated.
    - DO NOT allow the supply cord to contact hot surfaces, inluding the motor shell, pump body or pupework. The cord should be safely routed and secured by cable clips.
    - This appliance must be earthed via the supply cord, whih must be correctly connected to the earth point loacted in the terminal box

Please read installation details carefully as they are intended to ensure this product provides long, trouble free service. Failure to install the unit in accordance with the installation instructions will lead to invalidation of the warranty.

2.1 SPECIAL WARNING REGARDING FREQUENCY CONVERTER

The FREQUENCY CONVERTER should NEVER be opened or tampered with and guards that come with it should never be removed.

The frequency converter must be installed, adjusted and maintained by qualified personnel who understand the risks involved.

The booster set is designed to start automatically. Make hydraulic connections and to prime the pumps before making any electrical connections.

The connection of the control panels must be performed by a qualified electrician in accordance with the present electrical standards.

The booster set and control panels must be connected to an efficient earthing system in accordance with the electrical standards of the country in which it is installed.

The connection of the earth must be performed first.

The connection of the alarms can distribute power even when the frequency converter is turned off. Ensure that there is no residual voltage on the terminals of the alarms. All the power terminals and other terminals must be inaccessible after installation is completed.

The maximum output frequency must not exceed the design frequency of the pump being controlled. Operating at a frequency higher than the allowable frequency can cause higher current absorption and damage to the device.

If it is necessary to remove the frequency converter, remove only the covers required in order to disconnect the electrical cables. Take care not to damage the electronic cards.

Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but also invalidates every right to assistance under warranty.

3 PUMPED MEDIUM

Pump medium can be pure water or a mixture of pure water and glycol, which is appropriate for central heating system. Water must meet water quality standard VDI 2035.

The medium must be free from aggressive or explosive additives, free from mixtures of mineral oils and solid or fibrous particles.

The pump should not be used for pumping flammable, explosive media and in an explosive atmosphere.

Permanent magnet rotor inside the pump is prone to accumulating magnetic particles on its surface, which can lead to abrasion of bearings and rotor can or even blocking the rotor. Although the pump is built in a way that the effect of magnetic particles is minimal, failures of bearings, rotor cans and blocked rotors are not a subject of claims.

To improve pump resistance to magnetite we recommend the use of magnetite filter.

Operation outside recommended conditions may shorten pump life and will void the warranty.

4 ELECTRICAL

4.1 Warning!

The drive controller contains dangerous voltages and controls potentially dangerous rotating mechanical parts. The installation, commissioning and maintenance of this equipment should be performed only by qualified personnel who are familiar with the operation. The installation, commissioning and maintenance of this equipment should be performed only by qualified personnel who are familiar with the operation.

Do you have particular caution if the automatic restart is activated? To avoid injury by possibly unintentional restart of the drive controller after a power failure, turn off the automatic restart in case of doubt. When repairing or servicing this equipment, make sure that the system cannot be switched on by others again! The frequency controller has DC link capacitors, which carry hazardous voltage even after the mains supply is switched off.

Therefore, always wait after switching off the mains voltage for at least 5 minutes before working on the machine or turn on the unit again. It is important to ensure that no live parts are touched when power is applied or the intermediate circuit capacitors are charged.

Do not work on the wiring and check any signals when power is applied. The Inverter - Regulator has a leakage current. Ground the frequency controller on the connections provided.

4.2 Caution!

All frequency controllers are tested for dielectric strength and insulation resistance. Before the insulation measurement in the pump station, for example within the scope of the inspection frequency controller must be disconnected! It is strongly recommended that all electrical equipment conforms to the National Electrical Codes and local regulations.

Factors such as high temperatures, high humidity as well as dust, dirt and corrosive gases.

The installation should be a well-ventilated, not exposed to direct sunlight place. Put them no mains voltage to the transducer terminals or to the control terminals. Enter the operating signals Hand/0/Auto via the selector switch on or about the driving of external contacts and not by switching on and off of a line or motor contactor. Only qualified personnel should perform installation, alignment and maintenance.

The manufacturer reserves the right to alter the technical data in order to make improvements or update information.

The manufacturer cannot release you from the obligation to comply with the latest safety standards the user.

4.3 Notice!

The technical data and descriptions in this guide are correct to the best knowledge and belief. Technical improvements have been continuously carried out - that's why the manufacturer reserves the right, without prior notice to carry out such changes. The manufacturer cannot be held liable for errors in the manual. Warranty is within the incorporated statutory warranty period and applies only to the product itself and not for any consequential loss or damage or costs associated with the occurrence of a Warranty claim arise at other plants or plant parts. The operator shall, in each case to ensure that a failure or defect in the product cannot lead to further damage.

4.4 Caution Danger to life!

Incorrect installation and incorrect electrical connection can be life-threatening. Electricity hazards must be ruled out.

- Installation and electrical connection may only be performed by qualified personnel and in accordance with the applicable regulations (e.g. IEC, VDE, etc.)!
- The type of current and voltage must comply with the data on the rating plate.
- Comply with the regulations of the local power supply company!
- Comply with the accident prevention regulations!
- Never pull on the power cord
- Do not bend the cord
- Do not place any objects on the cord
- When the pump is used in systems with temperatures above 90°C, a connection cable that is suitably resistant to high temperature must be used
- There is a risk of sharp and jaged edges during assembly.
- Never transport by holding the power cord.
- There is a risk of injury from dropping the pump.

When requesting information or spare parts from our Sales Department, quote the exact identification code of the model together with the manufacture number.

This manual, along with any other manuals and other documents which are delivered with the booster set, is an integral part of the operating instructions. This manual aims to provide information and instructions essential to adequately perform all activities related to the use of the product purchased. This manual, and documentation, are intended to be viewed by all persons involved in the life cycle of the booster set and therefore must be accessible to the user.

Compliance with all safety requirements is an obligation of the customer.

The following instructions and requirements relate to the standard operations; for instructions, situations and events that are not covered in the present manual or sales documents, contact our assistance service.

The installation must be designed and carried out only by qualified technicians; Errors in the installation or use can cause serious damage to the equipment, the user system and the people involved.

Do not make any action, maintenance, repairs or modifications that you do not have specific knowledge or received detailed instructions. If doubts remain, after consultation with the following paragraphs, surveyed Fluid Water Solutions Ltd. All operations must be carried out while respecting the safety rules.

Remember that you respect the regulations in force in the country of installation: if different rules are in force on the same topic, you should always consider the more stringent requirements.

Our products have been manufactured in accordance with the applicable safety standards in force for which it is recommended the use of all devices or notices in order that the use does not cause injury to persons or damage to belongings.

Our products were designed for the specific use intended, **THEREFORE ANY OTHER USE THAT IS DIFFERENT AND NOT IN ACCORDANCE WITH WHAT INDICATED, EXEMPTS STRUART TURNER LTD FROM RISKS** that may occur.

The modification of both mechanical and electrical parts of the machine is strictly prohibited. The non-compliance exempts Stuart Turner Ltd from any responsibility. The responsibility of any operation that has not been authorised in writing shall fall upon the executor, inasmuch that they become the manufacturer.

READ THE INSTRUCTION MANUALS OF EVERY PUMPS, MOTORS, CONTROL PANELS AND OTHERWISE OF ALL COMPONENTS. FOLLOW THE PROVISIONS OF THE SAFETY AND PERFORM THE PLANNED MAINTENANCE RECOMMENDED IN THE INSTRUCTION MANUALS!

- The set must be fitted in a well ventilated place, protected from unfavourable weather conditions.
- When handling the set, lift it by the base.
- Do not lift the set by the delivery manifold: risk of damage to the glued pipe work which may cause leaks when installed.
- Position the set in such a way that any maintenance jobs can be carried out without difficulty.
- Ensure that the system pipes are independently supported and do not weigh down on the set manifolds so as to avoid deformation or breaking of any of its components.

It is also advisable to insert vibration-damping couplings on the system manifolds. Make the intake section following all the precautions necessary to keep load losses to a minimum and to avoid the formation of air pockets, for example:

- Position the set as close as possible to the power supply source.
- Consider a suction pipe diameter never smaller than that of the manifold.
- Lay the suction pipe horizontally or sloping slightly upwards towards the set.
- Avoid using elbows or couplings that cause sudden changes in direction. If necessary, use bends with a wide radius.

Installation must be performed by skilled and authorised installers. During installation, apply all safety behaviours issued by the competent bodies and suggested by common sense. Install the unit in a dry well-ventilated place. Rest the unit on a flat, regular and solid surface (rubber feet) or disassemble the rubber feet and fix the unit to the base using the relevant screws. Vibrations must not occur during functioning. The unit can only be installed in the horizontal position. In the applications with positive suction head, the suction pipe must not be smaller than that of the intake manifold. In the applications with negative suction head, in particular cases there may be the necessity to replace the intake manifold with an individual supply for each pump, in order to prevent preferential flows to one or several pumps. Generally, in negative suction head applications, the intake pipes must be as short and straight as possible, they must have a diameter greater than or equal to the diameter of the pump intake (or the manifold if present). They

must also be supplied with foot-valve and have a slight slope to the pumps, to prevent the formation of air pockets. Functioning with leaks in intake can damage the unit pumps. Fix carefully the piping in order not to transmit stress of any type to the pump. Fasten the piping to the respective manifolds, without excessive force so as not to cause damage. Booster sets can be shifted in different ways depending on the configuration of the machine and equipment available to the installer.

The units are delivered ready for power supply connection, which must be carried out by a skilled, authorised installer, in compliance with the Standards in force in the country of installation. During installation, apply all safety behaviours suggested by law and common sense. Make sure that the electric power supply network is protected by ground connections in compliance with Standards. Check the correspondence between the plate data and line nominal values. Before making the connections, make sure that the ends of the line wires are not live. Make the connection when you are sure of the existence of an efficient ground circuit. The ground wire must be longer than the phase wires and must be the first to be connected during assembly and the last to be disconnected during disassembly. The installation of a differential switch is recommended.

Before removing the inverter cover or starting interventions on it, the system must be disconnected from the mains electricity and you must wait 5 mins until the intermediate circuit condensers, which can reach voltages up to 800V, have the time to discharge via the built-in discharge resistors.

EMERGENCY STOP

An emergency stop can be performed while the inverter is running, by turning the Hand/off/Auto switches to "0" or turning the panel isolator off.

Before starting up, please read carefully this Manual and the instructions of MAB & MARB Variable speed control panels.

6 PRIMING

A pumping system must never be started dry for any reason. Dry running of the pumps, even for very brief periods, can cause irreversible damage to mechanical sealing and internal rotating couplings. All pumps must be primed before starting the system by unscrewing the filler cap and filling the pump body with water (and the intake piping connected to it). When the operation has been completed, tighten the cap and start the pump, with the cut-off valve in flow almost completely closed, with the system in manual functioning mode (TEST).

If, after a few tens of seconds, the pump is not primed, switch it off, check that the intake is free, that there are no air pockets upstream from the inlet, that the body is full of water and then repeat the operation. In the units, priming is performed for each individual pump, turning off the other pumps and performing the operations described above for each pump. To make priming of each pump simpler, E-SERIES suspends the SLAVE operation if the MASTER is off (that is, the inverter returns to being completely independent) so that each inverter can be manoeuvred independently during the priming or test phase. Once all of the pumps are primed, the operative parameters can be set on the MASTER inverter. These are automatically sent to the SLAVE inverters when they are turned on.

6.1 Pressure Vessel

A 24 ltr Pressure Wave vessel is normally fitted during production. A vessel should always be fitted on the discharge manifold close to the transducer to stabilize the pressure signal. Unlike conventional fixed speed systems a large vessel reservoir is not required. The vessel air charge should be maintained at 0.5 bar below the systems nominal operating pressure.

e.g.

Target System Pressure = 5.0 bar

Vessel Air Pressure = 4.5 bar

6.2 Inverter Settings:

See attached MAB & MARB operating & maintenance manual.

6.3 Pump Details:

See attached operating & maintenance manual.

7 MAINTAINANCE & SERVICE

Before carrying out maintenance, cleaning and repair work, disconnect the system from the power supply and secure it against being switched on again by unauthorized persons.

At high water temperatures and system pressures, wait for the pump to cool down beforehand. There is a risk of burns!

7.1 Malfunctions, causes and elimination

Maintenance work or repair attempts may only be performed by qualified personnel. Before carrying out maintenance, cleaning and repair work, disconnect the system from the power supply and secure it against being switched on again by unauthorized persons. At high water temperatures and system pressures, wait for the pump to cool down beforehand. There is a risk of burns!

7.2 Dry running protection

If the system has been stopped due to lack of water, either by an external float switch or the automatic pressure deviation system then the inverter makes automatic and predefined times to re-attempt starting.

In case of use under inverter and with membrane tanks, is necessary a total volume of the tank (expressed in litres) not lower than the 10% of the maximum single pump flow rate. The pump sets are supplied complete with installation maintenance instructions and wiring diagram.

The present manual is aimed at giving the necessary information regarding the installation, use and maintenance of booster sets with variable speed controls consisting of various pumps.

It is vital that the user reads this manual prior to using the system. Improper use may cause damage to the machine as well as the lapse of the guarantee.

8 PRODUCT WARRANTY TERMS & CONDITIONS

Congratulations on purchasing a Stuart Turner product

We are confident this product will provide many years of trouble free service as all our products are manufactured to the very highest standard.

All MAB booster sets are warranted to be free from defects in materials or workmanship for up to 2 years from the date of purchase.

Within the warranty period we will repair, free of charge, any defects in the product resulting from faults in material or workmanship, repairing or exchanging the whole unit as we may reasonably decide.

Warranty Exclusions

Not covered by this warranty: Damage arising from incorrect installation, improper use, unauthorized repair, normal wear and tear and defects which have a negligible effect on the value or operation of the pump.

This warranty is in addition to your statutory rights as a consumer. If you are in any doubt as to these rights, please contact your local Trading Standards Department.

Warranty Claim Procedure

In the event of a claim please telephone 'TechAssist' on **+44 (0) 1977 801 911**

or email us at **aquaboost@stuart-turner.co.uk**

In the event of a claim within the terms of this warranty policy, your receipt or 'proof of purchase' provided during registration will be reviewed.

You should obtain appropriate insurance cover for any loss or damage which is not covered by Stuart Turner Ltd in this provision.

Please make a note for your own reference:

PRODUCT MODEL	SERIAL NO.	DATE PURCHASED

DECLARATION OF CONFORMITY

Supply of Machinery Regulations - 2008

EN ISO 12100:2010, EN 809:1998+A1:2009/AC:2010

Electrical Equipment Regulations - 2016

EN 60335-1:2012/A2:2019, EN 60335-2-41:2003/A2:2010

EMC Regulations - 2016

EN 55014-1:2017/A11:2020, EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013

EMF Regulations - 2016

EN 62233:2008

RoHS Regulations - 2012

EN IEC 63000:2018

Machinery Directive - 2006/42/EC

EN ISO 12100:2010, EN 809:1998+A1:2009/AC:2010

Low Voltage Directive - 2014/35/EC

EN 60335-1:2012/A2:2019, EN 60335-2-41:2003/A2:2010

EMC Directive - 2014/30/EU

EN 55014-1:2017/A11:2020, EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013

EMF Directive - 1999/519/EC

EN 62233:2008

RoHS Directive - 2011/65/EU

EN IEC 63000:2018

WEEE Directive - 2012/19/EU

IT IS HEREBY CERTIFIED THAT THE STUART ELECTRIC MOTOR DRIVEN PUMP AS SERIAL NUMBER BELOW, COMPLIES WITH THE ESSENTIAL REQUIREMENTS OF THE ABOVE STATUTORY REGULATIONS & E.U. DIRECTIVES.

STUART TURNER LIMITED
HENLEY-ON-THAMES, OXFORDSHIRE
RG9 2AD, ENGLAND.

RESPONSIBLE PERSON AND MANUFACTURER

EU AUTHORISED REPRESENTATIVE

ARC (AUTHORISED REP COMPLIANCE)
GND FLOOR, 71 LOWER BAGGOT STREET, DUBLIN,
D02 P593, IRELAND.

Signed.....

Stuart Turner are an approved company to BS EN ISO 9001:2015

STUART TURNER

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