Grundfos Home Booster
INSTALLATION INSTRUCTIONS

Packaged Booster Pump

GRUNDFOS®

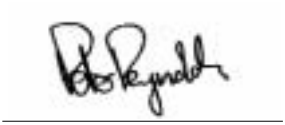
Declaration of Conformity

We Grundfos declare under our sole responsibility that the Home Booster unit referenced in these installation instructions to which this declaration relates are in conformity with the:

Machinery (89/392/EEC), EN292
Electromagnetic Compatibility (89/336/EEC), EN50 081-1 & EN50 082-2
Electrical equipment designed for use within certain voltage limits (73/29/EEC), EN60 335-1 & EN60 335-2-51

If further details are required, please contact one of the Grundfos office listed on the back page of these instructions.

1st June 2008
Grundfos Pumps Ltd.
Grovebury Road
Leighton Buzzard
Beds.
LU7 4TL



Mr. P Reynolds, General Manager

General Data

These installation, operation and maintenance instructions are given as a guide to good practice in the installation, putting into service, operation and maintenance of the Grundfos Home Booster unit. They do not contain full service instructions and procedures for the continual service and operation of the unit. The services of a qualified engineer should be employed to maintain and repair the module. This I.O.M. manual may refer to components/functions not fitted to all units.

DELIVERY AND HANDLING

On arrival, inspect the unit for signs of damage before signing the deliver note and report any damage to the supplier within 7 days. The unit is supplied from the factory in cardboard packaging, it is not suitable for handling by forklift equipment.

The weight and the size of the module may require the use of proprietary lifting equipment in order to be handled safely.

WARRANTY

1. The Grundfos warranty covers all defects within the unit originating from faulty workmanship and/or materials for a period of one year from the date of installation or eighteen months from the date of despatch from the factory, whichever is shorter. The warranty covers the replacement of any faulty parts and our labour cost to replace the faulty parts. It does not cover the cost of removing, returning and refitting the unit or any secondary losses arising from the failure.

2. Under no circumstances should faulty equipment be dismantled. Failure to comply with this instruction could invalidate the warranty.

3. Defects arising from the incorrect installation, water containing debris, or harmful chemicals, inadequate electrical protection, faulty ancillary equipment, lighting or other circumstances beyond our control is not covered by warranty.

SITE STORAGE

It is strongly recommended once the unit has been delivered to site, that it be placed immediately into a dust, moisture and frost-free area that have been secured to prevent unauthorised interference. If this is not possible the unit should be stored in an area that is as near possible to the ideal storage conditions described above.

APPLICATIONS

The Grundfos Home Booster unit has been designed to be compact, reliable, and simple to use and to provide many years of efficient and effective service.

The main application of the unit is:
Cold water pressure boosting in domestic premises.

MAXIMUM OPERATING CONDITIONS

The Grundfos Home Booster unit has been designed for

Liquid temperature range	: 3 to +40°C
Ambient temperature	: up to +40°C
Relative Humidity	: up to 95 %
Maximum operating pressure	: 3.5 Bar
Recommended maximum start-stops per hour	: 20 - 30

NOISE LEVEL

The noise level of the Home Booster unit referenced in these installation instructions is lower than the limiting values stated in the EEC machinery directive.

WRAS APPROVAL

The Home Booster is WRAS approved. Certificate No. 0804082.

Installation

Do not attempt to start the pump even to check the direction of rotation until the system has been filled with water and both the pump and the system have been primed.

All electrical connections should be carried out by a qualified and authorised electrician in accordance with the latest issue of the I.E.E. regulations.

Do not remove motor terminal box covers, electrical cables or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched on.

Do not attempt to supply electricity to the unit without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

Electrical motors will have hot external surfaces during operation and care must be taken to ensure that persons cannot come into contact with the surfaces of the electric motor.

LOCATION

1. The unit should be sited in a dry, well ventilated, cool but frost-free position so as to maintain the water temperature below 20°C. in order to prevent bacteria growth.
   The water stored within the unit should be flushed to waste, if it has remained unused for a period of time. The time period depends on circumstances affecting the growth rate of bacteria, such as warmth.
   As with any stored water arrangement, it is recommended that the integral storage tank is cleaned and disinfected annually. Cleaning is important in order to remove accumulated debris which could provide a habitat for bacteria, including legionella.
   Water within the unit should be periodically sampled to check bacteria levels. Generally between two and four times a year is recommended.
2. The environment should be non-aggressive and the atmosphere non-explosive.
3. Ensure that there is sufficient clearance, ie. 150mm, around the unit to allow maintenance operations to take place with out obstruction
4. To enable maintenance and service of the unit to be carried out satisfactorily the area should have adequate lighting for this work to be carried out safely.
5. The pipe work installation of the unit should be in accordance with local water authority regulations.
6. Ensure there is a bypass facility incorporated into the installation, to maintain water supply in the event of an interruption to the power supply.
7. It is **not** recommended to fit the HOMEBOOSTER unit in any loft or attic space.

FOUNDATION

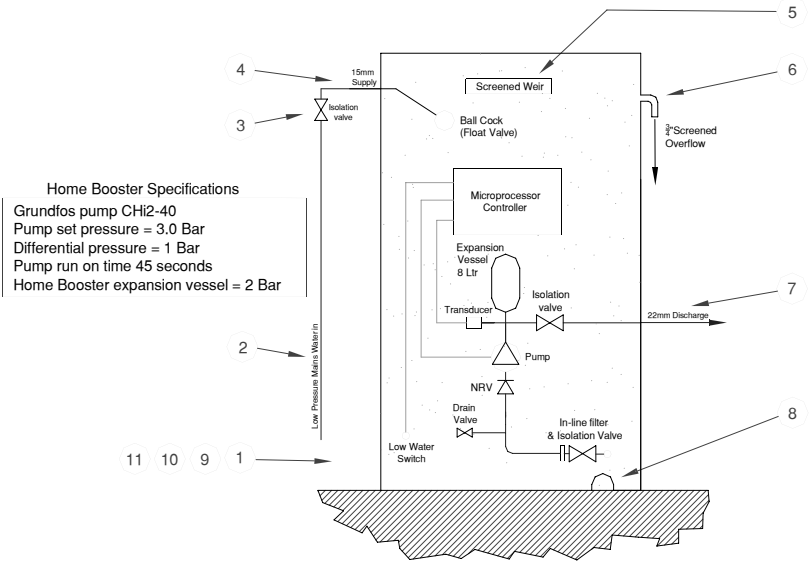
The Home Booster unit should be installed on a secure base such as wood or concrete, which is both horizontal and flat to avoid distortion of the base. It should be capable of bearing the weight of the unit when filled with water, approximately 220 Kg.
Please allow adequate access to the unit should service work be required.

Recommended Installations

Not To Scale

Electrical connection
Water connection

Home Booster
Recommended Installation Details



Home Booster Specifications

Grundfos pump CHi2-40
Pump set pressure = 3.0 Bar
Differential pressure = 1 Bar
Pump run on time 45 seconds
Home Booster expansion vessel = 2 Bar

It is very important that your Home Booster is installed correctly and is fully compliant with Water Byelaw Regulations as this could affect your warranty.

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1. The Home Booster when filled weighs 220 kg, please ensure the supporting base structure is capable of carrying this load. The recommended location for the Home Booster is on a solid concrete base at ground level. A roof space is not a recommended location.
2. The connection point for the mains water supply pipe to the Home Booster should be made as close as possible to point where the rising mains water supply pipe enters the building, and preferably taken before any other take offs. This will help to ensure adequate refilling of the Home Booster storage tank.
3. The 15mm mains water supply pipe to the Home Booster should be fitted with a 15mm isolating valve.
4. The Home Booster storage tank is filled via an internal 15mm ball valve. The ball valve should not be changed to for a larger type, as this would contravene the Water Byelaws Regulations.
5. A stainless steel insect mesh is fitted to the weir opening, the mesh must not be removed, and should be maintained in a clean condition.
6. The Home Booster has a ¾" overflow connection, this must be piped to drain, and must not be blocked off or restricted in anyway.
7. The discharge pipework for connecting to the Home Booster should be 22mm or larger, in order not to restrict the outlet flow rate.
8. A channel in the base of the Home Booster allows for the discharge pipe to be routed to the back of the unit to suit the installation arrangement.
9. A space of 150mm should be left around the unit for access and maintenance purposes.
10. The Home Booster uses mechanical seals which can wear over a period of time, causing small water losses. Suitable precautions should be therefore taken to avoid damage to the surrounding area.
11. The Home Booster control panel is accessed via a user password, which is 0000 (four zeros).

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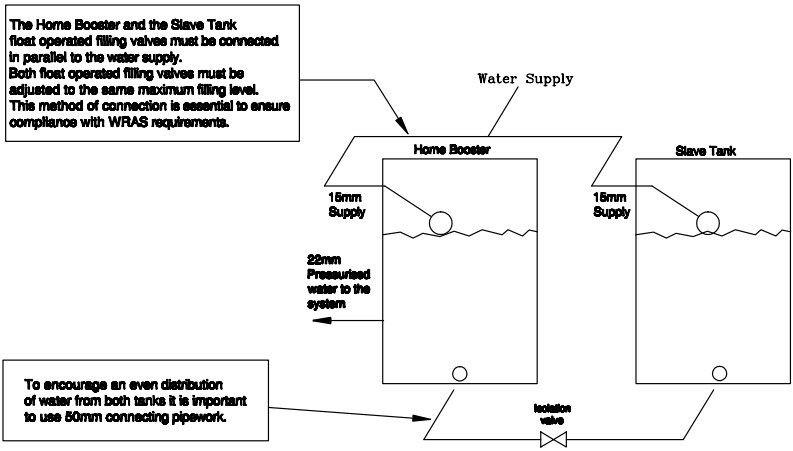
Recommended Installations

Not To Scale

Home Booster - Slave Tank
Recommended Installation Details



It is very important that your Home Booster and Slave Tank are installed correctly and are fully compliant with Water Byelaw Regulations as this could affect your warranty.

How to connect the Slave Tank to your Home Booster

1. Your Slave tank comes with the following items:- Tank, front cover, ½" ball cock, weir, protective stainless steel mesh, packaging and instructions.
2. The Slave Tank is an accessory to the Home Booster, providing addition storage capacity. The Slave Tank should be located along side and meet be on the same level as the Home Booster (as shown in the above sketch).
3. The combined weight of the Home Booster and Slave Tank when filled weighs 440 kg, please ensure the supporting base structure is capable of carrying this load. The recommended location for the Home Booster is on a solid concrete base at ground level. A roof space is not a recommended location.
4. Before attempting any installation work, ensure that both the Home Booster and the Slave Tank are completely empty of water and disconnected from the electrical supply.
5. To connect the two tanks together, first locate, at the base and rear of each tank there is a 2" BSP threaded connection. Remove the white warning sign within this threaded connection taking note of what it says. Then using a 50mm tank cutter cut out the plastic material from the base of the threaded connection, taking care not to damage the threaded insert. Ensure that all plastic debris has been removed from the inside both tanks, as this could cause a blockage.
6. The two tanks must be connected together using 2" pipework and an isolation valve fitted. Smaller pipework than 2" pipework is not recommended, as this will restrict flow from the Slave Tank.
7. A stainless steel insect mesh is fitted to the weir opening, the mesh must not be removed, and should be maintained in a clean condition.
8. To ensure correct water circulation within both tanks, it is important that the water inlet supply is connected in parallel to the Home Booster tank and Slave Tanks ball cocks. This is a requirement of the Water Regulatory Authorities.
10. There is no need for overflow pipework if it is already installed on your Home Booster

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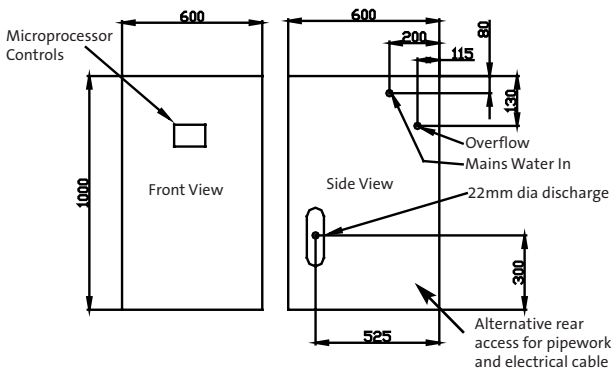
Dimensions & Weights



PIPEWORK CONNECTIONS

Water supply connection :½" BSP Male
Overflow pipe :¾" BSP Male
Discharge connection :22mm Compression

WEIGHTS

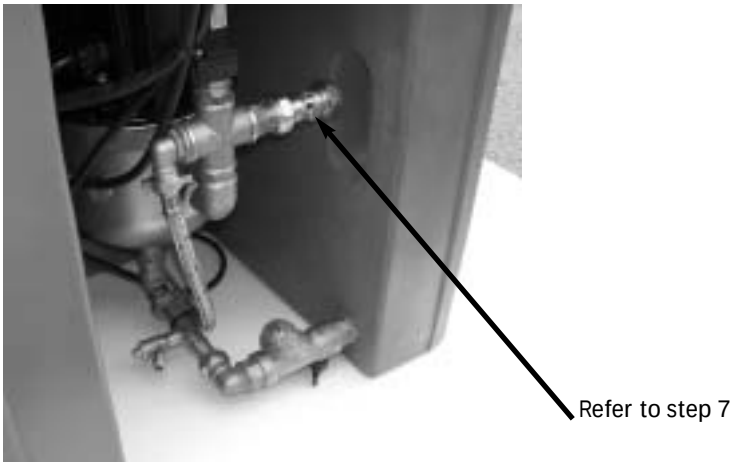
58 Kg Dry
220 Kgs Full

Quick Guide - Start Up

1) Make sure the pipe work and electrical connections are correctly connected and secure.
2) Turn on the water supply and allow water to fill the storage tank, check that the ball valve closes off before the overflow pipe is reached.
3) Providing there are no leaks, switch on the electrical supply to the unit.
4) After a few seconds the display screen will light up, with the words "Home Booster".
5) Pump will start up, you will hear an audible alarm and see a red light indication, this is normal.
6) The pump pressure will start to build up, after a short time the alarm should stop and the indicator light turn to green. The pump will stop once the pressure reaches the factory set pressure.
7) Open the discharge isolating valve (refer to picture), this will allow the system to be pressurised. Leave the valve fully open.

PLEASE NOTE THAT YOUR USER PASSWORD IS "0000".
YOU WILL NEED THIS TO MAKE ANY CONTROL ADJUSTMENTS SUCH AS THE PRESSURE SETTING.

To change the working pressure and differential pressure refer to page 9.



SERVICE CONNECTIONS

Do not open electrical panel enclosures, panel components, motor terminal box covers or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched on.

Do not attempt to supply electricity to the control panel and run the pump electric motors without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

REMOVAL OF CABINET COVER

The front cover can be removed from the Home Booster to allow access for making pipe work connections.

ADDITIONAL WATER TANK

An additional water tank can be obtained from Grundfos and connected via the 2"BSP connection at the rear of the Home Booster. Care should be taken to ensure the water level on both tanks remains the same.

PIPEWORK CONNECTIONS

The service connections to the Home Booster unit should be made as follows.

1. Connect the mains cold water supply to the ball valve ½" BSP male connection on the side of the Home Booster unit.
2. An isolating valve must be fitted to the mains cold water supply pipework supplying the Home Booster unit.
3. Connect the discharge pipe (22mm compression) from the Home Booster unit to the cold water service connection. This connection may also be routed in a cut out beneath the unit.
4. Connect the over flow pipe (¾" bsp male) from the Home Booster unit break tank to a suitable drain.
5. The electrical supply connections to the Home Booster unit should be made in accordance with the wiring diagrams supplied and in accordance with the I.E.E regs.
6. Ensure the Home Booster unit is not stressed by the pipework connections and that the pipework is properly supported.

Electrical

ELECTRICAL CONNECTIONS

In the interest of electrical safety a local means of isolating the electrical supply should be located as close as practically possible to the unit.

The electrical supply should be connected to a 240 volt single phase 5 amp supply only.

All cables must be of an adequate size to prevent excessive voltage drop in the supply to the unit. The electrical installation should be in accordance with the latest issue I.E.E. regulations.

ELECTRICAL SUPPLY

The Home Booster is supplied with approximately 5m mains supply cable for connection into a local isolator switch adjacent to the unit.

VOLT FREE CONTACTS CONNECTIONS

If a connection to the volt free contact (VFC) is required, it is necessary to remove the cover from the control box within the cabinet as follows.
After removal of the cabinet cover, remove the four screws from the control box front cover. The display is connected to the back circuit board by a cable. If required, the display can be detached by unplugging from the cable from the main circuit board. Push back the locking tabs at each end of the connector and remove the connector, do not pull on the cable. Do not attempt to detached from the display board on the front cover.

The VOLT FREE Contacts are marked C=Common, NC=Normally Closed, NO=Normally Open.

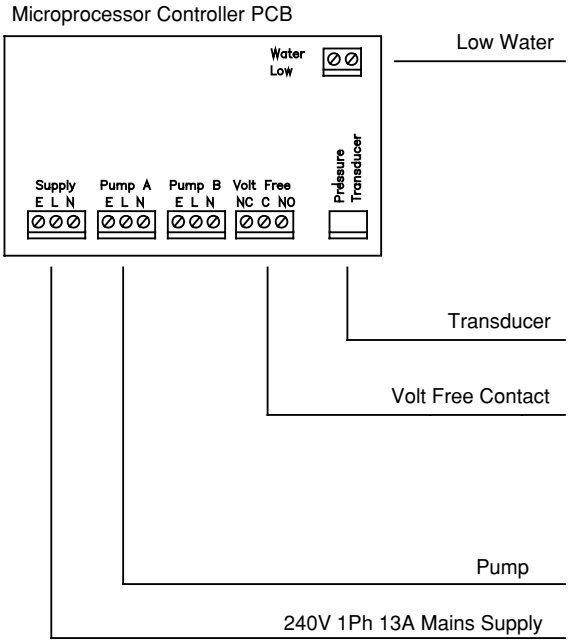
These are switching circuits only. Maximum contact rating 240V - 10 Amp Resistive.

CABLE CONNECTION

The mains and fault signal electrical cables can be routed through an opening in the back of the unit.

The VOLT FREE Contacts are marked C=Common, NC=Normally Closed, NO=Normally Open.
The maximum contact rating is 240V AC 10A (Resistive).

Electrical Connections



COMMISSIONING GUIDE

Do not attempt to start the pump even to check the direction of rotation until the system has been filled with water and both the pump and the system have been primed.

The Home Booster has been designed for easy installation and does not necessarily require commissioning by a service engineer. However, if one is required then please contact GRUNDFOS EUROPUMP on 08450 508100 where arrangements can be made for an engineer to commission the units.

FILLING

Turn on the water supply and ensure the storage tank fills properly and the ball valve shuts off. Ensure there are no leaks.

OPERATION

Do not attempt to supply electricity to the control panel and run the pump electric motor without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

The pump electric motor will have hot external surfaces during operation and care must be taken to ensure that persons cannot come into contact with the surfaces of the electric motor.

When all electrical covers are in place, the pump has been vented and the cabinet cover replaced, the electrical supply can be switched on to the unit.

The Home Booster will start approximately two seconds after electrical supply has been applied.

Control

THE PANEL BUTTONS & INDICATORS

Digital Display

The Liquid Crystal Display (LCD) shows the current operational status along with any error conditions.

DOWN Button

When in Set-Up/Menu Mode, this button is used to decrease (where permitted) any displayed value.

UP (Mute) Button

When in Normal (Operational) Mode, pressing this button will cause the controller to toggle the Alarm Beeper On or Off. When in Set-Up/Menu Mode, this button increases (where permitted) any displayed value.

STATUS LED

This indicator will display GREEN when all systems are operating within normal parameters, and will flash RED if an Alarm Condition exists.

SET (Set-Up/Menu) Button

When in Normal (Operational) Mode, pressing this button will cause the controller to jump into the Set-Up (Menu) Mode. When in Set-Up Mode, this button will cause any displayed value to be saved, and will progress to the next item.

SET-UP/MENU MODE

To enter the Set-Up/Menu Mode, press the SET Button whilst the unit is in its Normal (Operational) Mode. The Display will change prompting the user with Enter PIN: You now need to enter a valid PIN. The Factory PIN is 0000 (4 Zero's).


Use the UP and DOWN Buttons to scroll through selecting the individual character for each of the four possible characters making up the PIN.

Press SET to advance from one character to the next. For security, the previously entered character changes to a star '*' , press set again after the forth character.

Access is gained to the Set-Up menu, after a correct PIN entry (0000). An incorrect PIN entry will cause "INVALID PIN" to be displayed. If you need to reset the PIN (to all blanks), press and hold the set button, whilst powering up the booster unit.
This Button must be held for at least FIVE seconds.

SET UP MENU

Set Pressure:
Enter the required discharge cut-out pressure, the cut in pressure is set under differential, below.
Setting range 0.5 to 7 bars, default setting is 3.5 bar.

Pump A/B Control:
Select between OFF - Pump is disabled), Auto - Pump is available for operation, or ON - Pump is switched manual ON). Manual ON, causes the pump to run for approximately 30 Seconds. Use the UP or DOWN Keys to switch pump off before the 30 seconds has elapsed, returning back to auto. Default setting: Auto

Pump Lettering. Pump A is designated as the first (or only) pump in the unit. Pump B is the second pump not fitted. Some Set-Up/Menu options are repeated for a multiple-pump installation. These options will not appear if a single pump installation is enabled.

Differential
This is the amount of pressure at which a pump switches on at below the Set Pressure. The pump will switch off when the Set Pressure is reached. Setting range 0 to 7 bars, default setting is 1 bar. Note, the setting for Differential B can be ignored.

Pump Test
This feature prevents pumps seizing through inactivity, by briefly running a pump if it has not been run after a set number of hours. Setting range 0 to 250 hours, if set to 0, the feature is disabled. Not recommended for small systems, as it can gradually raise the system pressure of a period of time, if there are no leaks.

P- Low Alarm On, and P- Low Alarm Off
The pressures at which the low pressure alarm comes on and goes off at. Setting range 0 to 25 bar, default setting: On = 0.6 bar, Off = 1.2 bar.

P-High Alarm On, and P- High Alarm Off
The pressures at which the high pressure alarm comes on and goes off at. Setting range 0 to 25 bar, default setting: On = 10 bar, Off = 9 bar.

Water- Low Alarm
This should be set to Alarm on Make.

Water- Low Reset
The time until the pumps can operate again following a Water-Low Alarm. Setting range 0-255 seconds, default 120 seconds. This prevents pumps from continually switching on and off of the tank float switch.

Hold- Off
Factory setting 0 bar, user adjustment not required.

Run- On
Factory setting 45 seconds+, user adjustment not required.

Leak Alarm

An alarm is caused if pumps have run for equal to or more than the total cumulative preset time in any hour (excludes Manual-On). If set to 0 seconds this feature is disabled. Setting range 0 to 59 minutes, default setting: 0 seconds.

Volt Free Relay

Sets all the conditions that operate the volt free relay. The Failsafe option reverses the operation of the relay, i.e. it is de-energized on fault. Failsafe allows for the provision of an Alarm on Power-Failure to be programmed. The operation of the NC/NO contacts are reversed if the Failsafe setting option is used.

Beeper / Alarm LED

Sets all the conditions that will enable the audible Beeper and Alarm LED.
The Beeper Key Press setting enables or disables the audible 'bleep' every time a panel control button is pressed.

LED Contrast : LCD Backlight

Changes the LCD display contrast ratio, setting range 0 to 6, default setting 2.
LCD backlight level adjust to suit lighting conditions, setting range 0 to 5, default setting 2.

Standby Mode

When set to 'Yes', causes the unit to enter Standby Mode following Power-On. The SET button will need to be pressed for at least five seconds to start the pressurisation unit. When set to 'NO' causes the unit to operate as soon as power is applied.

User PIN

Sets the PIN (Password) to enter the Set-Up mode. The default setting is 0000 Passwords: Four characters need to be entered. The PIN is case sensitive, so 'abcd' is NOT the same as 'ABCD'. A setting of 'all spaces' (blanks), disables the PIN. Whilst it is recommended that a PIN be always set to prevent unauthorised tampering, the User Set-Up Menu is factory shipped without a PIN to facilitate initial configuration. Please record any PIN code that you set.

Factory Control Settings

The microprocessor control unit has the following factory settings:-

Stand by mode	**- No**
Set Pressure	**- 3.5 bar**
Pump A Control	- **Auto**
Pump A Differential	**- at 1.0 bar**
Hold Off	**- 0 bar**
Run on	**- 45 seconds**
Pump Low Alarm	**- on 0.6 bar**
Pump Low Alarm	**- off 1.2 bar**
Pump High Alarm	**- on 10 bar**
Pump High Alarm	**- at 9 bar**

MAINTENANCE

IMPORTANT: There are NO User Serviceable parts inside this equipment. Please Refer Servicing to Qualified Personnel. !

The Grundfos Home Booster has been designed for the minimum of maintenance. However it is imperative that it should be inspected on a regular basis, as failure of the unit could potentially cause damage.
It is therefore recommended that a Grundfos maintenance contract be taken out to cover maintenance of the unit. Please contact GRUNDFOS EUROPUMP on 08450 508100 for further details.

It is the customer's responsibility to inspect the unit in addition to any maintenance contract to ensure the safety and correct operation of the unit during the interim periods between service visits.
It is recommended that the following checks be carried out at regular intervals.

1. Check there are no leaks on pipe work both in and around the unit.
2. Check the unit is switched on, the unit must be switched on all the time.
3. Check for any corrosion.
4. Check unit operates quietly and smoothly.
5. Check that the electrical mains lead to unit is not damaged.
6. From time to time the pressure vessel pre-charge pressure should be checked.

Fault Finding

PRESSURE HIGH	The system pressure has exceeded the Pressure-High Alarm. The pumps will STOP until the pressure drops below the Pressure-High Alarm OFF Level. Check that the Pressure-High Alarm setting has not been set too low. Check that the capacity of the expansion tanks is adequate for the system. Check that the pre-charge pressure has been set correctly.
PRESSURE LOW	The system pressure has dropped below the Pressure-Low Alarm setting. This will NOT stop the pumps from running unless the Water Leak alarm has come in.
PUMP A FAULT	Check the pump for failure. Fuse could also have blown.
PUMP TEST FAILURE PUMP A FAULT	Displayed along with a respective indication of which pump has failed the pump test. Check whether the pump shaft is free to turn. Check that the pumps are vented.
SENSOR ERROR	Pressure sensor fault. Check the cables to the pressure sensor.
SERVICE DUE	The unit has reached the SERVICE DUE interval. Call Grundfos for advice if this happens.
SYSTEM LOCK	Indicates the System has been Locked from operating.
WATER LEAK	The pumps have exceeded the maximum time they are allowed to run in any given hour. Reset this alarm by Powering -OFF and back on again.
WATER LOW	Sensor (Float Switch), low water level in break tank. Check water level. Check ball valve, if level is low. Check wiring to float switch if level is OK.
WATER LOW WATER REFILLING	This not a fault condition, but is for information, and indicating that the water has now satisfied the Sensor/Float , but the controller is allowing the tank to refill before operating the pump again. See the Water Low Reset user Set-Up option, for the reset time.

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