Digital Smoothflow
Installation Instructions

Installation guidelines for

| Model Type          | Full Digital Smoothflow Kit |

This booklet should be given to the customer after installation and demonstration
This kit has been designed for the pumping of shower waste water.

• When the shower is turned on the flow sensor(s) measure the flow rate of the water into the shower.
• The pump speed is controlled directly from the control unit which uses the signals sent from the flow sensor to adjust the pump speed to match the flow from the shower.
• This minimises suction noise at the gulley. A simple setup is required to match the pump performance to the characteristics of the installation.
• When the shower is finished the pump will automatically switch on after 15 minutes to remove any water pooled in the showering area.
• The pump has the ability to run dry without causing damage to the pump.
• Before installation please read the instructions.
• Plumbing installation must comply with the plumbing regulation as specified in the latest WRAS leaflet for plumbing systems.
• The electrical wiring must conform to BS7671: 2008 Part 7 (17th Edition).
• Contact the Technical Helpline (0845 0694 253) if you need further assistance.

Incorrect installation may invalidate the warranty.

Principles of Operation

The front cover illustrates the product in typical Healthcare installations (Electric Shower Installation and Mixer Shower Installation).

Assess your installation prior to fitting so as to ensure that the pump, Digital Smoothflow Control Box and flow sensor(s) will be situated in an accessible position.

Typical installations would have these components in an adjacent cupboard i.e. airing cupboard or in a false wall with an access panel.

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List of Parts included in kit

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
<th>Qty</th>
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<tr>
<td>Shower Drain Pump</td>
<td>SDS021T</td>
<td>1</td>
</tr>
<tr>
<td>Pump Cover Base</td>
<td>755.178</td>
<td>1</td>
</tr>
<tr>
<td>Pump Cover</td>
<td>755.177</td>
<td>1</td>
</tr>
<tr>
<td>Digital Smoothflow Control Unit</td>
<td>SDS243T</td>
<td>1</td>
</tr>
<tr>
<td>Venturi Flow Sensor</td>
<td>755.272</td>
<td>1</td>
</tr>
<tr>
<td>½” BSP-15mm Brass Compression Fittings</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Tray Gulley</td>
<td></td>
<td>1</td>
</tr>
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<td>c/w fitting tool and cover</td>
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<td>Wet Floor Gulley</td>
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<tr>
<td>c/w clamping ring and cover</td>
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</tr>
<tr>
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<tr>
<td>Rubber Waste Adaptor</td>
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<td>1</td>
</tr>
<tr>
<td>2 part, 1 22 mm-1½” fitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 mm-22 mm fitting</td>
<td></td>
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</tr>
<tr>
<td>22 mm-15 mm fittings</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Fitting kit</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Additional Parts

These parts are not supplied with the kit and may be ordered from your distributor or stockist:

- 90 mm Gulley
  (O/A dimensions 64 mm h x 111 mm dia) See Fig 1.1
- Top suction fitting John Guest part number PEM221515W (Stem Elbow) See Fig 1.2
  Not recommended for Digital Smoothflow

Spare Parts and Kits

- Diaphragm and Valves Service Kit AK1550
- Venturi Flow Sensor See Fig 1.3 SDS223T
- Shower Drain Pump SDS021T
• Whale pump is IP45 compliant and may be located in accordance with BS7671: 2008 in zones 1, 2 or 3.

• Electric Shower Installation –
  Pipework from the gulley to the pump must be 15mm to give a maximum flow rate of up to 8 ltrs/min.

• Mixer Shower Installations –
  Pipework from the gulley to the pump must be 22mm to give a maximum flow rate of up to 12 ltrs/min.
  Note: For mixer shower installations an additional flow sensor and fittings are required. Order Part No. SDS223T.

• Use slow radius bends where possible. Use formed bends or elbow fittings – not stem elbows.

• Inserts should not be used with plastic waste pipe.

• Ensure pipe edges are burr-free.

• Pipework must be secured.

• Push home pipe into push-fit fittings and ‘Twist Lock’. Do not stress pipe at connection.

• Mount pump, head down, as shown. See Fig 1.4

• Mount the pump on a solid wall to prevent vibration.

• The shower floor must have a fall of at least 1:40.

• Pump, flow sensor and control box must be accessible after installation.

• Use a maximum of one vertical lift to the pump and one vertical rise from the pump. See Fig 1.3

• The pump inlet should point towards the gulley and the gulley outlet should point towards the pump to keep connecting pipework as straight as possible.

• Rotate the pump head if necessary to connect the gulley to the pump by the most direct route. Loosen clamping ring screw, rotate and retighten as shown. See Fig 1.5 and 1.6

• Do not combine pump discharge with other appliances as there is a risk of induced syphoning. Use an anti-syphon trap where necessary.

• Before running water through the system ensure that the shower area and gulley are completely free of debris.

• For pump mounting instructions. See Fig 2.3, Page 7
Plumbing Gulley

Orientate gulley so that it exits towards the pump inlet to avoid unnecessary bends.

- When fitting in solid floors if copper pipe is used, it must be sheathed to prevent corrosion.

**Tray Gulley**

- The tray gulley has a 35 mm profile to enable the shower drain to fit into a screed floor without penetrating the damp-proof membrane. *See Fig 1.7*
- Use silicone on top of the seal to ensure proper sealing beneath tray.
- Use the hand tool provided to tighten the locking flange. *See Fig 1.8*
- Fit the gulley cover into the sockets and push down to secure. *See Fig 1.9*

**Top Tip:** Leave the hand tool in place to prevent building debris, grout etc. falling into the gulley. Only remove the hand tool and fit the gulley cover when the installation is complete and the shower area has been thoroughly cleaned.

**Wetfloor Gulley**

- The wet floor gulley has a 40 mm profile to enable it to fit into a screed floor without penetrating the damp-proof membrane. *See Fig 2.0*
- Where no tray former is used the gulley has two lugs either side of the discharge pipe to enable the gulley to be fixed to the floor whilst screed is laid around the gulley.
- Where a tray former is used these lugs can be broken off easily and the gulley mounted into the 160 mm gulley opening.
- The gulley has a conventional clamping ring to accommodate vinyl flooring.
- The gulley cap clicks into place and may be easily removed for cleaning if required.
The outlet of the pump may be connected into the waste pipe, e.g. former bath waste. Black rubber fittings are provided for this.

In confined bathrooms pump discharge may go into the sink waste pipe using suitable adaptors. See Fig 2.1 for McAlpine examples and their catalogue for other variants.

Use with a Macerator Pump

• Discharge from the Whale pump must go into the top of the macerator box. Do not use the bottom entries. See Fig 2.2

• It is preferable to have two separate discharge lines to waste as any failure of the macerator will not be detected by the Whale pump.
Pump Mounting Instructions

Place backplate in as a template to mark pump mounting holes through it.

Use a 7mm bit to drill holes at marked points and insert No 8 wall plugs.

Use pliers to open up desired cable entry point on backplate.

Fix pump to wall using No 8 screws. Use crimps supplied to terminate 24v cable from transformer, connect to pump and feed cable through entry point. Hold cable in place using adjacent cable bracket.

To fit cover, first locate bottom lug into backplate and pivot cover forward until top clips click into place.

To remove cover use two hands to push backplate clips together. As clips disengage, the cover will fall forward and may be lifted away.

Note
- The front cover may not fit properly if uneven walls or tiling distorts the flexible back-plate. Loosen the pump fixing point causing the distortion so that back-plate is flat and cover fits. Fill any gap between wall and back-plate with mastic or similar.
- If the pump is misaligned on the back-plate or pump head not parallel with back-plate the push-fit connectors may prevent the front cover from fitting properly. Adjust pump, pump head or connecting pipework to achieve a good fit.
1.6 Location of Control Unit:
- Locate the control unit outside the showing area in accordance with BS7671: 2008 Part 7 (17th Edition).
  See Fig 2.4
- The control unit is IP45 compliant.
- Tighten all cable entry grommets, even unused ones, to seal the Control Unit.
- Connect Control Unit to 240V a.c. supply via an unswitched 5 amp fused spur.
Note: Mixer Valve Shower installation illustrated. Only one flow sensor is required in an Electric Shower installation.
Flow Sensor Plumbing Connections

- Fit the Flow Sensors with the arrow in the direction of flow to the shower, downstream of any other connections to the water supply.
- Ensure flow sensor is accessible.
- The flow sensors must be mounted in a straight length of unstressed pipe.
- For the Venturi sensor a filter is not required. See Fig 2.6

Note: For a mixer shower installation place the flow sensors in the hot and cold supply as described above. (The Digital Smoothflow is supplied with one flow sensor, for additional flow sensor please order Part No. SDS223T).

Commissioning Checklist

- Ensure all pipes are pushed home into the push fit fittings and are locked.
- Check all plumbing for leaks whilst the pump is running.
- Ensure flow sensor is fitted in a length of unstressed pipe.

After completing the set up turn on the shower and check for correct operation and that noise has been minimised.

Note:

- Mixer valve installations require two sensors. The sensors must be identical.
Flow Sensor Electrical Connections

- Switch off the power to the control unit before making connections.
- Feed wires through cable grommets prior to connection to the control unit.
- Strip wires 10 mm and twist prior to inserting into spring loaded contacts. Do not use tinned wire.
- Push contact arm back with a finger or small screwdriver before inserting wire fully and then release.
- Check for a good connection by giving a gentle tug on the wires.
- Tighten cable grommets after connection.

Wiring Connections:

1) Flow Sensor to Digital Smoothflow Control Box -
Connect the flow sensor(s) as shown
(For cold supply use FS A and for hot supply use FS B):

Venturi Sensor(s) See Fig 2.8
- Brown wire to Power (PWR)
- White to Signal (SIG)
- Green to Ground (GND)

Gems Sensor(s) See Fig 2.9
- Red wire to Power (PWR)
- Brown to Signal (SIG)
- Black to Ground (GND)

2) Pump to Digital Smoothflow Control Box –
Connect pump supply wires as shown:
- Black wire to PUMP BLACK
- Red wire to PUMP RED

Avoid fouling the insulation when crimping to the pump supply wire or making connections to the mains supply.
A simple setup is all that is required for trouble-free efficient performance of the Digital Smoothflow system.

To adjust Settings:

- These buttons switch between menu options, indicated by the LCD message.
- These buttons adjust the value.

The OK or Enter key (middle button) press to select and store value.

Press OK ‘‘ to enter configuration screens.

Follow the sequence of screens and set values as required to complete setup.

### System Type and Software level

- Press OK ‘‘ to select.

### Settings

1. **Language:** English is the default language. For other options use or arrows.

Press OK ‘‘ to select.

2. **Pipe size:** Select 15mm for electric showers or press to select 22mm for mixer valve installations.

(To Page 15 for Mixer Set-up)

Press OK ‘‘ to select.

3. **Sensor type:** Select sensor from Venturi or press or to select Gems as marked on sensor packaging.

Press OK ‘‘ to select.

4. **Pump speed:** This enables the speed of the pump to match the shower flow rate.

Before making adjustments turn the shower on and wait until the pump runs. Set the shower flow rate in the range 4-7 ltrs/min as indicated on the display. The rate should remain unchanged during set-up. Use or to set the speed of the pump to match the flow rate.

Watch the level of water within the shower using the gulley cover as a guide. If the water level is falling reduce the speed of the pump by pressing . If the water level rises increase the speed of the pump by using the button.

**NOTE:** After making a change wait about 15 seconds, as the system needs to stabilise. Watch the water level until you see if the water is rising or falling before making the next adjustment.

Initially make changes in pump speed setting in increments and decrements of 5 to quickly get to an approximate pump speed that matches the flow rate. Once this is achieved make finer adjustments, up or down, until the water level is slightly over pumping. Store the speed setting by pressing OK ‘‘. The pump will stop whilst the setting is stored, and start again at the set speed.
5. **Pump shut down: Over Run (Auto-Sense) is the preferred option.** Auto-Sense stores the pump no-load current when air is drawn by the pump after water is removed from the tray. Once set, when this value is reached the pump will go into its shut down sequence.

*Time Delay is the default setting. To set Auto Sense press ▼ then press OK ‘ ‘ to select.*

5. **5. Pump shut down:**

Over-Run

Type: TIME-DELAY

Time Delay is the default setting. To set Auto Sense press ▼ then press OK ‘ ‘ to select.

6. **Start volume:** This selects the initial amount of water (litres) in the tray before pumping starts. To minimise noise the water should be above the level of the gulley.

*Factory default is 0.6 ltrs, minimum setting. Pressing ▲ increases the amount of water from 0.6 ltrs to 4 ltrs. Typical value between 0.8 and 2 ltrs. Press OK ‘ ‘ to select.*

6. **6. Start volume:**

Pump Curr rent

Limit: OK

Turn off the shower. When the pump has removed the water remaining in the tray the pump current will decrease. When it has reached the lowest value (by observing when the value stops falling) press OK ‘ ‘.

Pump will run on for a few seconds before stopping

**Over Run (Time-Delay)**

This sets a fixed Over Run time that the pump continues to run after the shower has been turned off.

7. **Purge Cycle:** When ON is selected the pump restarts 15 minutes after showering is completed. This happens automatically to remove water that gathers as it drains into the gulley. The pump runs at a low speed for less than 30 seconds.

*Press OK ‘ ‘ to select. If desired the Purge Cycle may be disabled by pressing ▼ and OK ‘ ‘ to select OFF.*

7. **7. Purge Cycle:**

Off Delay

Time: 10 sec

Use ▲ or ▼ to select value of time delay (in seconds) and press OK ‘ ‘ to store.

Factory Default Settings

If part way through set-up and you wish to start again, turn the unit off until the display fades, and then back on again. The screen will display:-

**System Type and Software level**

Press OK ‘ ‘ to begin again. The screen will start at language options. See page 12.
After completing the set up turn on the shower and check for correct operation and that noise has been minimised.

Digital Smoothflow Review Screens

The following are the status displays that may be scrolled through by pressing ▶ when the pump is off. Note: To adjust any of the pump settings press OK ‘✓’

System Type and Software level

<table>
<thead>
<tr>
<th>Smoothflow</th>
<th>V1.4</th>
<th>Review</th>
<th>Adjust</th>
</tr>
</thead>
</table>

Running time of pump

<table>
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<tr>
<th>On Time</th>
<th>6hrs 23min</th>
<th>next ▶</th>
</tr>
</thead>
</table>

Standby time of pump

<table>
<thead>
<tr>
<th>Standby</th>
<th>456hrs 23min</th>
<th>next ▶</th>
</tr>
</thead>
</table>

Inlet Pipe diameter

- 15mm for electric showers
- 22mm for mixer valve installations

Flow Sensor Type

Match to the type of sensor used.

<table>
<thead>
<tr>
<th>Flow Sensor</th>
<th>Type VENTURI</th>
<th>exit ▶</th>
</tr>
</thead>
</table>

Factory Default Settings

To return the unit to Factory Default settings start at the System Type and Software level Screen.

Press ‘✓’ then ▶ five times to get to factory default prompt. Press ▲ to select ‘YES’ and OK ‘✓’ to confirm. The message ‘Are You Sure?’ will appear. Press ▲ to select ‘YES’ and OK ‘✓’ to confirm. The unit will then be reset to default settings.
A simple setup is required for trouble-free efficient performance of the Digital Smoothflow System.

**To adjust Settings:**

- or These buttons switch between menu options, indicated by the LCD message.
- or These buttons adjust the value.

The OK or Enter key (middle button) press to select and store value.

Press OK ‘✓’ to enter configuration screens. Follow the sequence of screens and set values as required to complete setup.

### System Type and Software level

**Settings**

1. **Language:** English is the default language. For other options use or arrows.

Press OK ‘✓’ to select.

2. **Pipe size:** Select 15mm for electric showers or press ▲ to select 22mm for mixer valve installations.

Press OK ‘✓’ to select.

3. **Sensor type:** Select sensor from Venturi or press ▲ or ▼ to select Gems as marked on sensor packaging.

Press OK ‘✓’ to select.

4. **Pump speed:** This enables the speed of the pump to match the shower flow rate.

Before making adjustments turn the shower on and wait until the pump runs. Set the shower flow rate in the range 7-9 ltrs/min as indicated on the display. The rate should remain unchanged during set-up. Use ▲ or ▼ to set the speed of the pump to match the flow rate.

Watch the level of water within the shower using the gulley cover as a guide. If the water level is falling reduce the speed of the pump by pressing ▼. If the water level rises increase the speed of the pump by using the ▲ button.

**NOTE:** After making a change wait about 15 seconds, as the system needs to stabilize. Watch the water level until you see if the water is rising or falling before making the next adjustment.

Initially make changes in pump speed setting in increments and decrements of 5 to quickly get to an approximate pump speed that matches the flow rate. Once this is achieved make finer adjustments, up or down, until the water level is slightly over pumping.

Store the speed setting by pressing OK ‘✓’. The pump will stop whilst the setting is stored, and start again at the set speed.
4. Pump speed - Fine setting:

This setting may be required to fine tune the speed at flow rates other than that used to set the main flow rate. The Fine Speed adjustment corrects the flow rate over a band 1 ltr/min either side of the flow rate that is being calibrated.

Increase the flow from the shower to its maximum value (less than 12 ltrs/min) in 2 ltrs steps. Watch the water level around the shower gulley. If this is rising or falling over time make adjustments until a constant level is observed then press OK ‘ ’. The pump will not stop but the adjustment displayed will return to ‘0’.

Now reduce the flow rate to minimum (approx 3 ltrs/min). Again adjust as required to keep the water level around the gulley constant or just falling slightly. Once this adjustment is made press OK ‘ ’ to select.

Adjustments to more finely matched flow rates or special features of the shower, i.e. Boost settings, can be made if required.

Once complete press > to exit and move onto the next stage.
5. Pump shut down: Over Run (Auto-Sense) is the preferred option. Auto-Sense stores the pump no-load current when air is drawn by the pump after water is removed from the tray. Once set, when this value is reached the pump will go into its shut down sequence.

Time Delay is the default setting. To set Auto Sense press ▼ then press OK ‘ ‘ to select.

Turn off the shower. When the pump has removed the water remaining in the tray the pump current will decrease. When it has reached the lowest value (by observing when the value stops falling) press OK ‘ ‘.

Pump will run on for a few seconds before stopping

Over Run (Time-Delay)

This sets a fixed Over Run time that the pump continues to run after the shower has been turned off.

Use ▲ or ▼ to select value of time delay (in seconds) and press OK ‘ ‘ to store.

6. Start volume: This selects the initial amount of water (litres) in the tray before pumping starts. To minimise noise the water should be above the level of the gulley.

Start Delay OK
Volumetl 0.6 Ltrs

(Factory default is 0.6 ltrs, minimum setting). Pressing ▲ increases the amount of water from 0.6 ltrs to 4 ltrs. Typical value between 0.8 and 2 ltrs. Press OK ‘ ‘ to select.

7. Purge Cycle: When ON is selected the pump restarts 15 minutes after showering is completed.

Purge Cycle OK
15 min Cycle: ON

This happens automatically to remove water that gathers as it drains into the gulley. The pump runs at a low speed for less than 30 seconds.

Press OK ‘ ‘ to select.

If desired the Purge Cycle may be disabled by pressing ▼ and OK ‘ ‘ to select OFF.

Factory Default Settings

If part way through set-up and you wish to start again, turn the unit off until the display fades, and then back on again. The screen will display:-

System Type and Software level

Press OK ‘ ‘ to begin again. The screen will start at language options. See page 12.
Digital Smoothflow Review Screens

The following are the status displays that may be scrolled through by pressing ↑ when the pump is off. Note: To adjust any of the pump settings press OK.

System Type and Software level

Running time of pump

Standby time of pump

Inlet Pipe diameter 15mm for electric showers, 22mm for mixer valve installations

Flow Sensor Type

Match to the type of sensor used.

Factory Default Settings

To return the unit to Factory Default settings start at the System Type and Software level Screen.

Press ⬆ then ↑ six times to get to factory default. Press ▲ to select ‘YES’ and ▼ to confirm. The unit will then be reset to default settings prompt. Press ▲ to select ‘YES’ and OK ⬆ to confirm. The message ‘Are You Sure?’ will appear. Press ▲ to select ‘YES’ and OK ⬆ to confirm. The unit will then be reset to default settings.

Earth Tag Connection

This is only required when a flow rate is indicated on the LCD display (when no water is flowing through the shower). The circuit board earth must be at the same potential as the water. Connect earth tag (as shown in the diagram) to copper pipe or local earthing point.
Safety Warning

• The Digital Smoothflow is designed for indoor use only.
• The Digital Smoothflow control box contains no user serviceable parts.
• Do not connect mains to the pump as this will cause permanent damage and result in an electrical hazard.

Aftercare

The pump is maintenance free and does not normally require any attention. If the pumping performance reduces over time the following action may be taken:

• Clear inlet pipe of any debris or restriction caused by soap or other matter adhering to the internal bore by blowing, rodding or purging the pipe from the pump end toward the gulley.
• Replace the tricuspid valve if it has become inflexible or damaged.
• Remove, rinse out and replace pump head.
• The diaphragm and internal valves do not normally require replacement. However, if they become damaged they may be replaced using the service kit AK1550

Specification

Pump
Model: SDS021T
Dry running current: 1.2 amp
Maximum Head: 1.0 m
Maximum Lift: 500 mm
Maximum Head & Lift: 1.5 m

Digital Smoothflow
Model: 755.241(Circuit Board 755.219)
Power rating 137VA
Double insulated
Mains cable 3.0m
3 core 0.75mm²; 6A
6.3 amp fast blow fuse

Whale’s policy is one of continuous improvement and we reserve the right to change specifications without prior notice.

Warranty

For warranty details, please refer to the enclosed copy of Whale’s Statement of Limited Warranty.

EU Declaration of Conformity

Description of Equipment: Shower Drain System

Manufacturer’s Declaration

We hereby declare, under our sole responsibility, that the above equipment complies with the provisions of the following EC Directives, Electromagnetic Compatibility Directive 2004/108/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility. Low Voltage Directive 2006/95/EC on the harmonisation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

CE mark first affixed: 01/01/96

Basis on which conformity is declared

The above equipment complies with the protection requirements of the EMC Directive and the principal elements of the safety objectives of the Low Voltage Directive.

Standards applied
EN 60335-1:2001/A2:2006 Safety of household and similar electrical appliances
EN 60335-2-41:2003/A1:2004 Particular requirements for pumps
EN 55014-1:2000/A2:2002 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission

Signed

Stanley McFarland, Engineering Director
**Digital Smoothflow Fault Diagnosis**

**What is the fault?**

- **Pump will not start**
  - When power is switched on the control unit the display will turn on. The model and software version will then be shown.
  - **Is there power on control unit?**
    - **Yes**
      - Check power is switched on to Control Unit. Check power connections on Control Unit. Check internal fuse in Control Unit. Follow Set up instructions.
    - **No**
      - Turn shower on. Does Pump start?
        - **Yes**
          - Is flow rate for each sensor shown on display?
            - **Yes**
              - Check cable and connections to pump.
              - If no voltage on pump terminals. Replace Control Unit.
              - If voltage on pump terminals check polarity on pump.
              - If still no indication with water flowing replace flow sensor.
            - **No**
              - Does Pump stop when water is turned off?
                - **Yes**
                  - **No further action**
                - **No**
                  - Repeat Set up. If pump does not turn off replace control unit.
        - **No**
          - **No further action**
  - **Pump will not stop**
    - Is a flow rate shown on display when there is no flow through the shower?
      - **Yes**
        - Connect ground of water supply to earth tag on control unit base plate. (Only for Venturi Sensor)
        - Set ‘Pump Speed’ and ‘Auto Sense’ settings.
      - **No**
        - Does Pump stop when water is turned off?
          - **Yes**
            - **No further action**
          - **No**
            - **Repeat Set up. If pump does not turn off replace control unit.**
  - **Pump does not pump properly**
    - Ensure that no hair or debris blocks the gulley. Assess the suction at the waste fitting in the tray by placing your hand over it or over the gulley hole.
    - Strong suction is felt
      - Check flow rate of shower. The pump is capable of 12 ltrs/min in 22 mm or 8 ltrs/min in 15 mm inlet pipework. If the flow rate is exceeded it must be reduced.
      - Check the tricuspid valve on pump discharge is closed and undamaged.
      - Ensure fittings are locked and airtight.
      - Ensure inlet or outlet pipework is not blocked.
      - Remedies any problems.
    - Low or no suction is felt
      - Check suction at pump inlet.
      - Inlet pipe is blocked
        - Rod or blow back down the inlet pipe until debris appears in the gulley or sucking air through joints or damaged pipework. Check connections and condition of pipe.
      - Suction is intermittent
        - Does this solve the problem?
          - **Yes**
            - **No further action**
          - **No**
            - Remedies any problems.

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**Technical Helpline:** 0845 0694 253

Ref: 180.127 V3 03.011
STATEMENT OF LIMITED WARRANTY

The products manufactured and supplied by the Company ("Products"), are warranted to be free from material defects in design, workmanship and material under normal use ("Defects") for (unless otherwise extended in advance in writing by the Company) a period of 3 years from date of purchase, save that this warranty shall not apply where the Defect is attributable to defective materials supplied by third parties. In such event, the only remedy of the buyer of the Products ("Buyer") will be against that third party.

This warranty applies only to Products that are properly installed and used in accordance with all oral and written maintenance and operation instructions provided by the Company. The Company shall not be liable for a breach of any of the warranties in this Statement of Limited Warranty if the Buyer makes any further use of the Products after giving the Company notice of any Defect or the Buyer alters or repairs such Products without the written consent of the Company. Products that have been disassembled or modified (without prior written approval of the Company), are not covered by this warranty.

All Products are covered by a 3 year limited warranty (detailed below) from (unless otherwise extended in advance in writing by the Company) date of purchase ("Standard Warranty"). In addition to the Standard Warranty, these Products will be covered by a further warranty of 2 years but only when the registration form is completed and returned ("Additional Warranty"). The period of such Additional Warranty shall commence automatically the date the Standard Warranty expires.

In the event that any of the warranties offered by the Company are breached, the Company shall (at its discretion) repair, replace or issue a spares kit for the defective Product subject to prior examination at Company premises. If the Company complies with this paragraph, it shall have no further liability for a breach of the warranties in respect of such Products. Adjustment or replacement of defective parts made under this warranty will not extend the warranty period applicable either under the Standard Warranty and/or the Additional Warranty.

The Company shall not bear any costs of removal, installation, transportation, or other charges that may arise in connection with a warranty claim by the Buyer. Such costs shall be the Buyer’s sole responsibility.

No claim in respect of defective Products will be valid unless the alleged defective Products are returned at the Buyer’s expense to the Company for inspection, together with proof of purchase.

Non-stock/ special order items are non-returnable by the Buyer in any circumstances, and this warranty does not apply to prototype models.

EXCLUSIONS:

The Company shall not be liable for any indirect loss or for any special, incidental, punitive or consequential damages suffered by the Buyer and/or any third party, whether this loss arises from breach of a duty in contract or tort or breach of a statutory duty or in any other way, including, without limitation, loss arising from the negligence, default, breach of duty, non-delivery, delay in delivery or defects or errors in the work undertaken by the Company pursuant to the terms of this Statement of Limited Warranty or in connection with any other claim arising in connection with manufacture and/or supply of the Products.

In particular, the Company shall not be liable (without limitation) for:

• Loss of profits, increased production costs or other economic injury or loss;
• Loss of contracts or opportunity; and/or
• (insofar as is permitted by applicable law) damage to property of the Buyer or any third party.

The Company shall under no circumstances be liable for any breach of its obligations hereunder and/or under any contract governing sale and purchase of the Products ("Contract") resulting from causes beyond its control including but not limited to fires, strikes, lockouts, insurrection or riots, terrorism or civil disorder, embargoes, wrecks or delays in transportation, requirements or regulations of any governmental authority, tempest, earthquake or other natural disaster, flood, bursting or overflowing of water tanks, failure or shortage of power, fuel or other utilities, or loss of data and/or communications due to causes such as those referred to in this paragraph.
This statement sets out the Company's entire liability in respect of the Products and the Company's liability under this statement shall be in lieu of all other warranties, conditions, terms and liabilities, express or implied, statutory or otherwise howsoever except any implied by law which cannot be excluded.

All warranties, conditions and other terms implied by statute or common law (save for the conditions implied by section 12 of the Sale of Goods Act 1979) are, to the fullest extent permitted by law, excluded from the Contract.

Subject to the remaining provisions of this Statement of Limited Warranty, the Company's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the performance or contemplated performance of the Contract and supply of the Products shall be limited to the Contract price.

Nothing in this Statement of Limited Warranty shall operate so as to exclude or restrict the Company's liability for death or personal injury caused by its negligence.

The Company shall NOT be liable for any condition, warranty or representation made by a distributor or other person acting on behalf of the Company unless expressly confirmed by the Company in writing.

This Statement of Limited Warranty shall be governed and construed in accordance with Northern Irish law and all disputes arising in connection hereto shall be submitted to the exclusive jurisdiction of the Northern Irish Courts.

DISCLAIMER
All Products are rated and appropriate for use with water unless otherwise specified by the Company. Compatibility and suitability for other liquids should be verified in writing by the Company prior to such use. All specification information on Products included in Product literature is based on tests using clean cold water unless otherwise specified. Any performance / specification figures shown have been calculated using standard testing procedures. Where maximum output is stated, such maximum output refers to pumps acting at zero lift and zero head. Actual performance may vary depending on the application, installation and environmental factors. Neither the accuracy nor completeness of the information contained in any Product brochure is guaranteed by the Company and may be subject to change at its sole discretion. The Company may, at its sole discretion, change the technical performance, dimensions or appearance of any of its Products without prior notification to purchasers. The Company shall not be liable to a purchaser for any indirect or consequential loss or damage (whether for loss of profit, loss of business, depletion of goodwill or otherwise), costs, expenses or other claims for consequential compensation whatsoever (howsoever caused) which arise out of or in connection with the use of a Product. Where dimensions are stated, such dimensions are for guidance only. Inch measurements are conversions from millimetre dimensions and are shown to the nearest 1/16". US gallons volumes are conversions from litres and are also shown for guidance purposes only to the nearest 1/16. Please contact the Company directly if precise measurements are required.