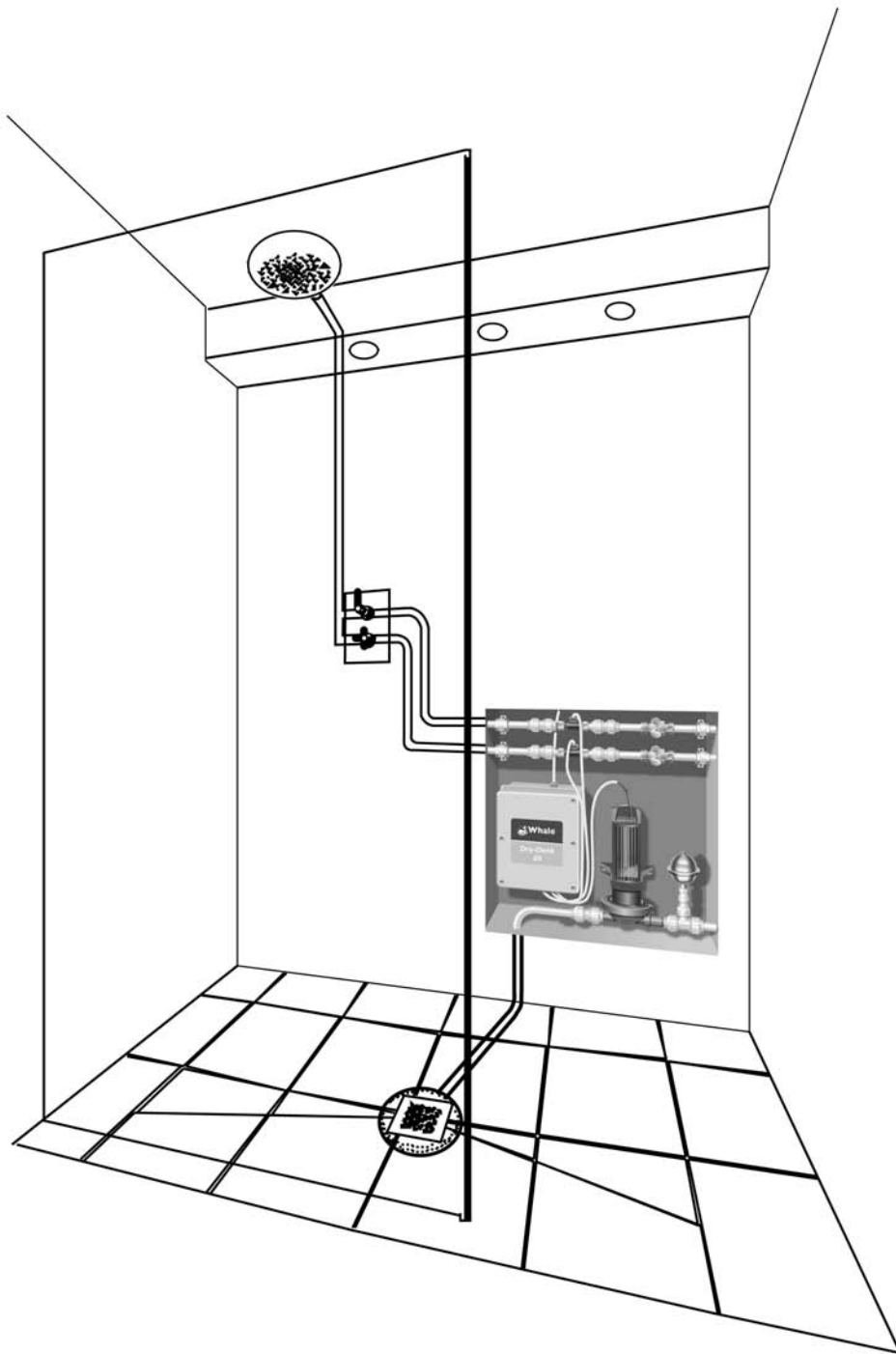


Dry-Deck 20 Installation Instructions



Installation guidelines for

Model Number	SDP073R	Dry Deck 20
---------------------	---------	-------------

2



Thank you for purchasing this Dry-Deck 20 product. Since 1995 Whale have been the leading manufacturer of pump kits for use with shower trays and wet floors. These kits have the reputation of working reliably for many years without requiring maintenance.

The front cover shows the product installation in an apartment with the components in an adjacent airing cupboard. Look at your installation prior to fitting so that the pump, surge damper, control unit and sensors are in accessible positions.

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



Please note: incorrect installation may invalidate the warranty.

WARNING

Principles of Operation

This Dry-Deck 20 control unit uses flow sensors to measure the flow rate of water into the shower. The pump speed is controlled directly by the control unit which uses the signals sent from the flow sensors to adjust the pump speed to match the flow from the shower.

This minimises suction noise at the gully. A simple setup is required to match the pump performance to the characteristics of the installation.

Technical Helpline: 0845 0694 253

Installation

Warnings

Before installation **read the instructions**.

Contact the technical helpline (0845 0694 253) if you are unsure.

- All electrical and mechanical components (control unit, pump and flow sensors) **must be accessible after installation**.
- The maximum flow rate the pump is designed to work with is 20 ltrs/min.
- Do not plumb the pump outlet into the waste piping that other appliances drain into as there is a risk of induced syphoning. Use an antisiphon trap where necessary.
- The shower floor must have a fall to the gulley.
- Plumbing installation must comply to latest WRAS regulations.
- The electrical wiring must conform to EU wiring regulations BS7671:2001 Amdt2: 2004.

User Warning

It is advisable where the property is unattended for an extended period that the water supply to the shower is shut off.

If there is a reduction in pump performance after installation please contact your installer.

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4

Pump Installation

- 1.1** Before mounting the pump refer to the plumbing diagram opposite for maximum pipe runs.

Mount the pump on a solid wall to prevent vibration. Use a back board if this is not possible.

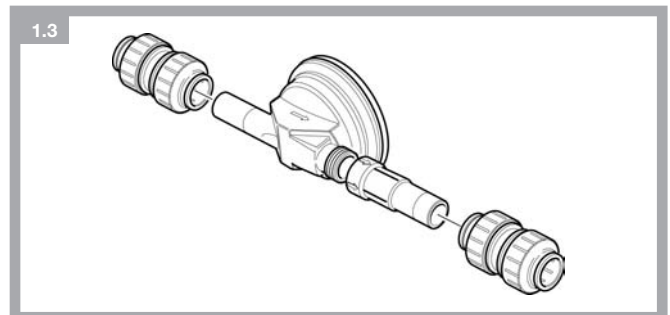
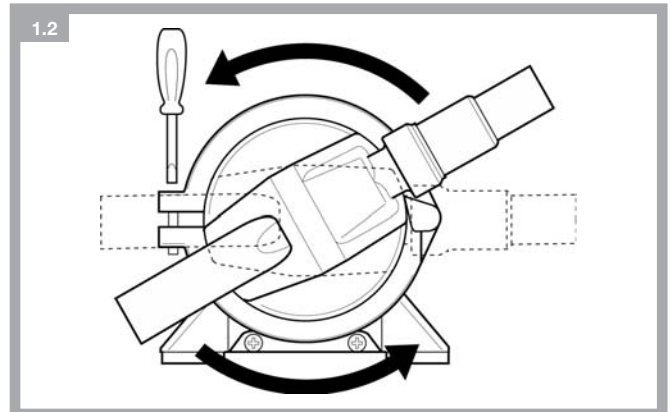
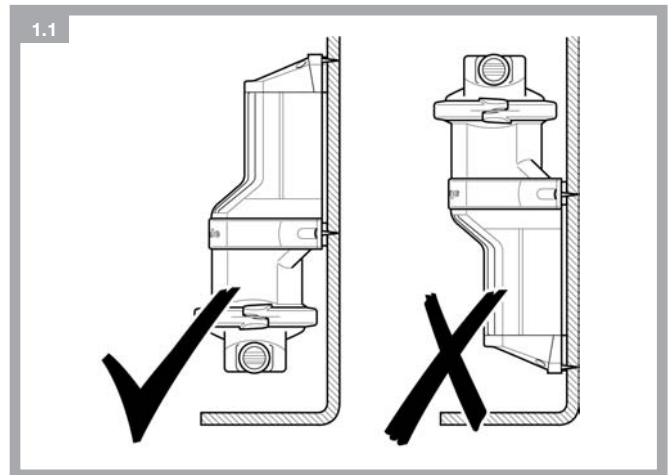
The pump is mounted vertically (see opposite) within 3 m of the gulley.

To aid servicing the head of the pump must be above the floor by at least 150 mm (maximum height of 500 mm).

Fix the pump in position through the feet with the screws and washers provided.

- 1.2** Rotate the pump head if necessary to give a straight run of pipe to the waste. Loosen the clamping ring on the pump head and rotate the head before retightening clamping ring.

Note: Do not remove the pump head.



Plumbing

- 1.3** Push fit fittings are provided to connect the pump to inlet and discharge pipework.

All pipework in and out of the pump must be in 22 mm.

Ensure fittings are locked after the pipe has been pushed home.

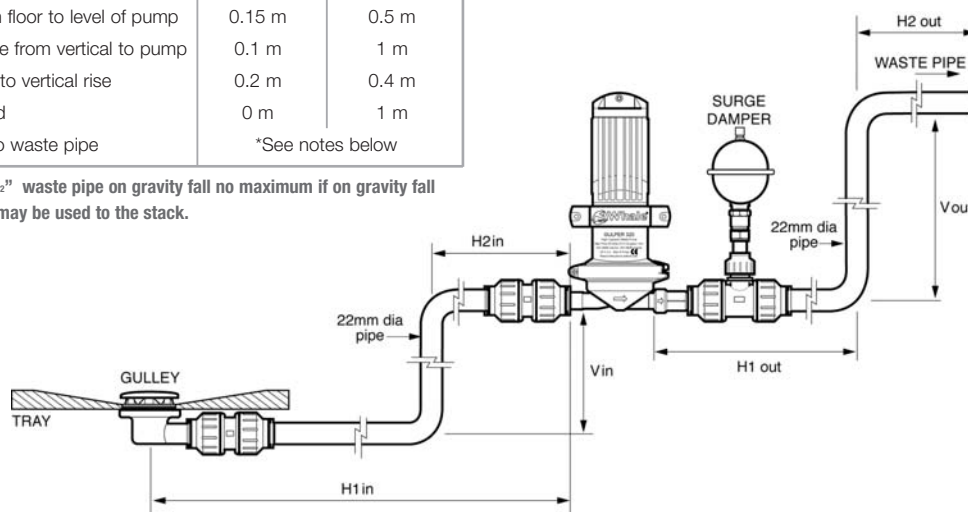
Plumbing of Waste pipe

1.4

Maximum and minimum pipe length

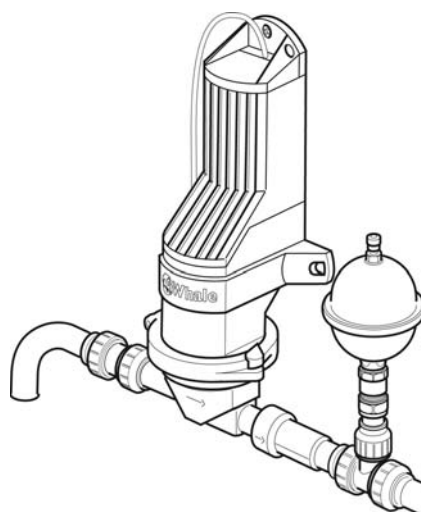
Key	Description	Minimum	Maximum
H1 in	From gully to vertical lift	0.1 m	2 m
V in	Vertical from floor to level of pump	0.15 m	0.5 m
H2 in	Inlet distance from vertical to pump	0.1 m	1 m
H1 out	From outlet to vertical rise	0.2 m	0.4 m
V out	Vertical head	0 m	1 m
H2 out	Horizontal to waste pipe	*See notes below	

*If > 1 meter use 1 1/4" or 1 1/2" waste pipe on gravity fall no maximum if on gravity fall
If < 1 m then 22 mm copper may be used to the stack.



- 1.4**
- Only one vertical lift on the inlet to the pump and the discharge from the pump is allowed.
 - When laying the pipe under the floor use only slow radius bends.
 - Use slow radius bends above the floor if possible to ease the flow of water and reduce loading on the pump.
 - Use of copper pipe is recommended to reduce risk of air leaks at connections.
 - Ensure edges are burr-free. Burrs may cause a build up of hair etc. that will reduce flow.
 - Pipework **must** be secured to prevent any vibration and noise.
 - Twist lock the securing ring on the push fit fittings (If semi rigid pipe is being used follow the manufacturers instructions to prevent air leaks).

1.5



The surge damper prevents water hammer

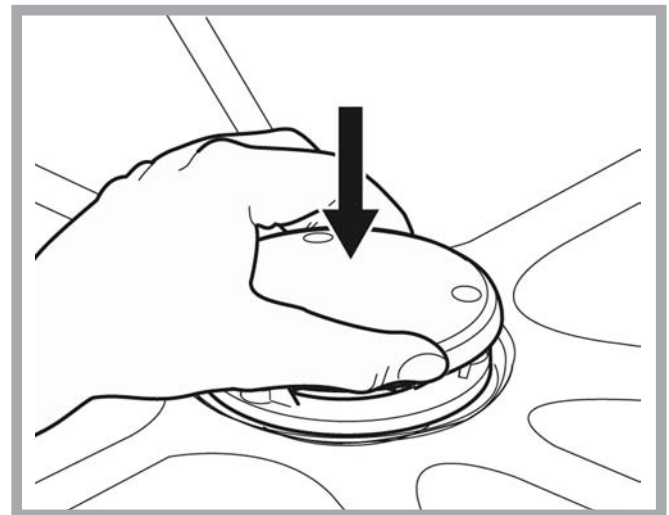
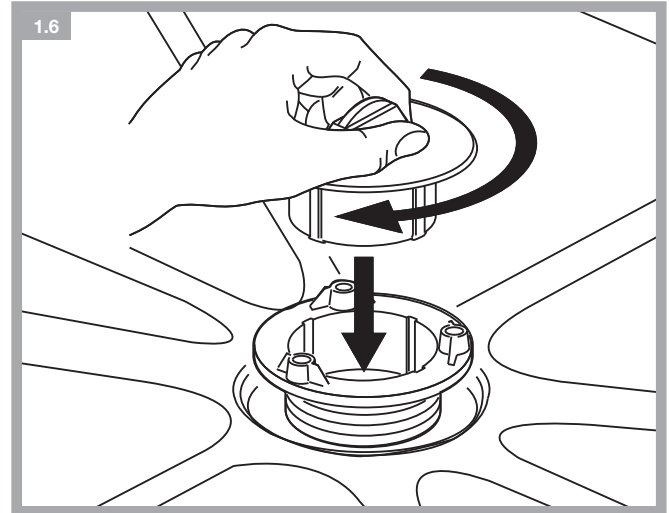
6

1.5 Standard Plumbing Gulley: Use silicone on top of the seal to ensure proper sealing beneath the tray. Using the hand tool provided to tighten the locking flange, fit the gulley cover into the sockets and push down with the palm of your hand to secure.

When fitting in solid floors, remove enough concrete for the installation of the waste water pipe and gulley. Where copper pipe runs under the concrete it must be lined to protect it and prevent corrosion.

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.

For alternative gulley options see page 22.



Use with a Macerator Pump

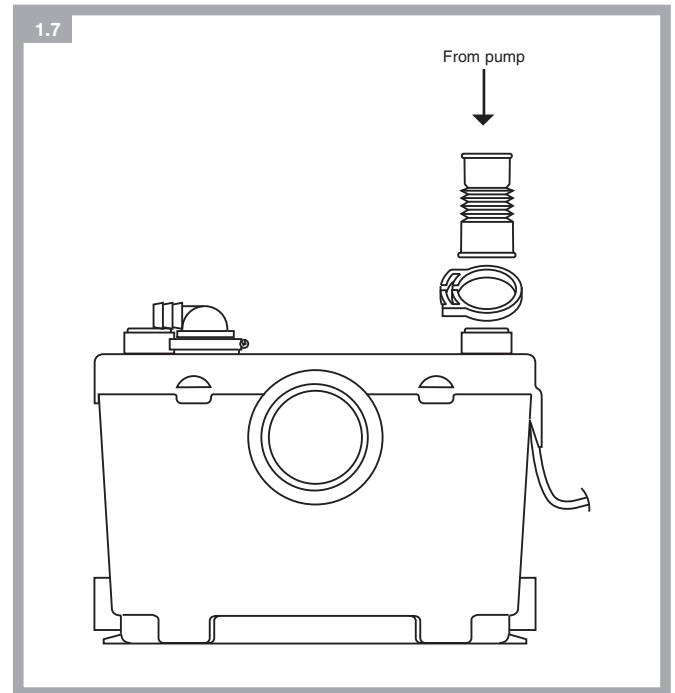
- 1.6** Where the situation demands or if the pipe run is greater than that specified for the Whale pump a macerator pump may be used. Contact the technical helpline (0845 0694 253) for assistance.

The discharge from the pump must go into the top of the macerator box and not into lower side entries.

DO NOT USE the bottom entries.

It is preferable to have two separate discharge lines to waste and drainage when used in the same room as a macerator pump.

Warning: Any failure of the macerator will not be detected by the Whale pump.



8

Connect Flow Sensor to Hot and Cold Supply of Shower

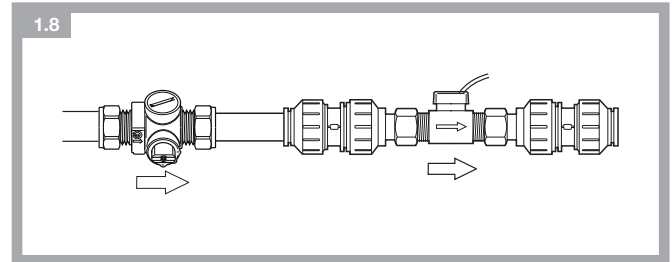
- 1.7** Fit the Flow Sensors with the arrow in the direction of flow to the shower, downstream of any other connections to the water supply. Each sensor must be protected by a filter which is supplied in the kit.

The flow sensors must be mounted in a straight length of unstressed pipe.



WARNING

Note: Do not remove, tighten, tamper with this device, failure to do so will invalidate warranty.



Control Unit

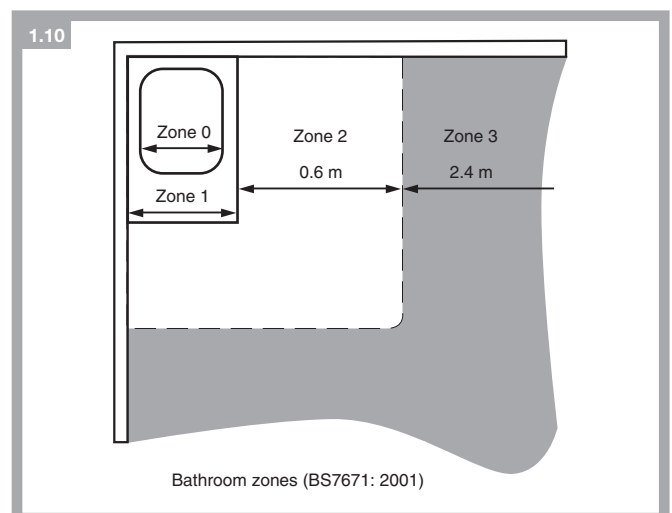
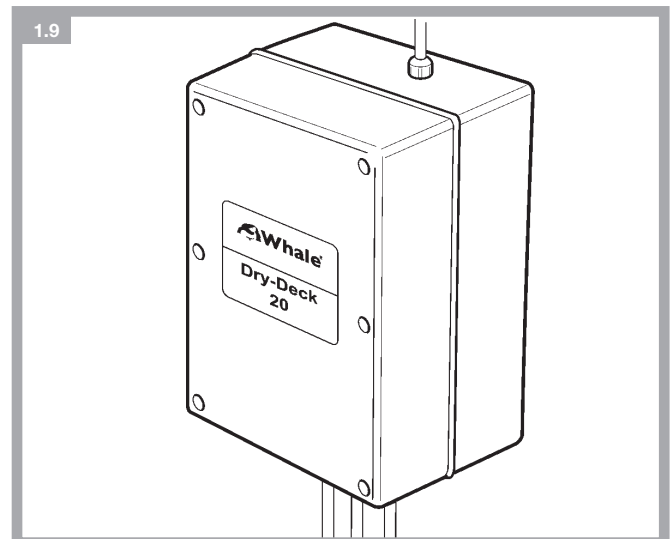
1.8 Location of Control Unit:

Locate the control unit outside the showering area (as per BS7671: 2001 in zone 2 or 3, refer to the drawing).

The control unit meets IP45.

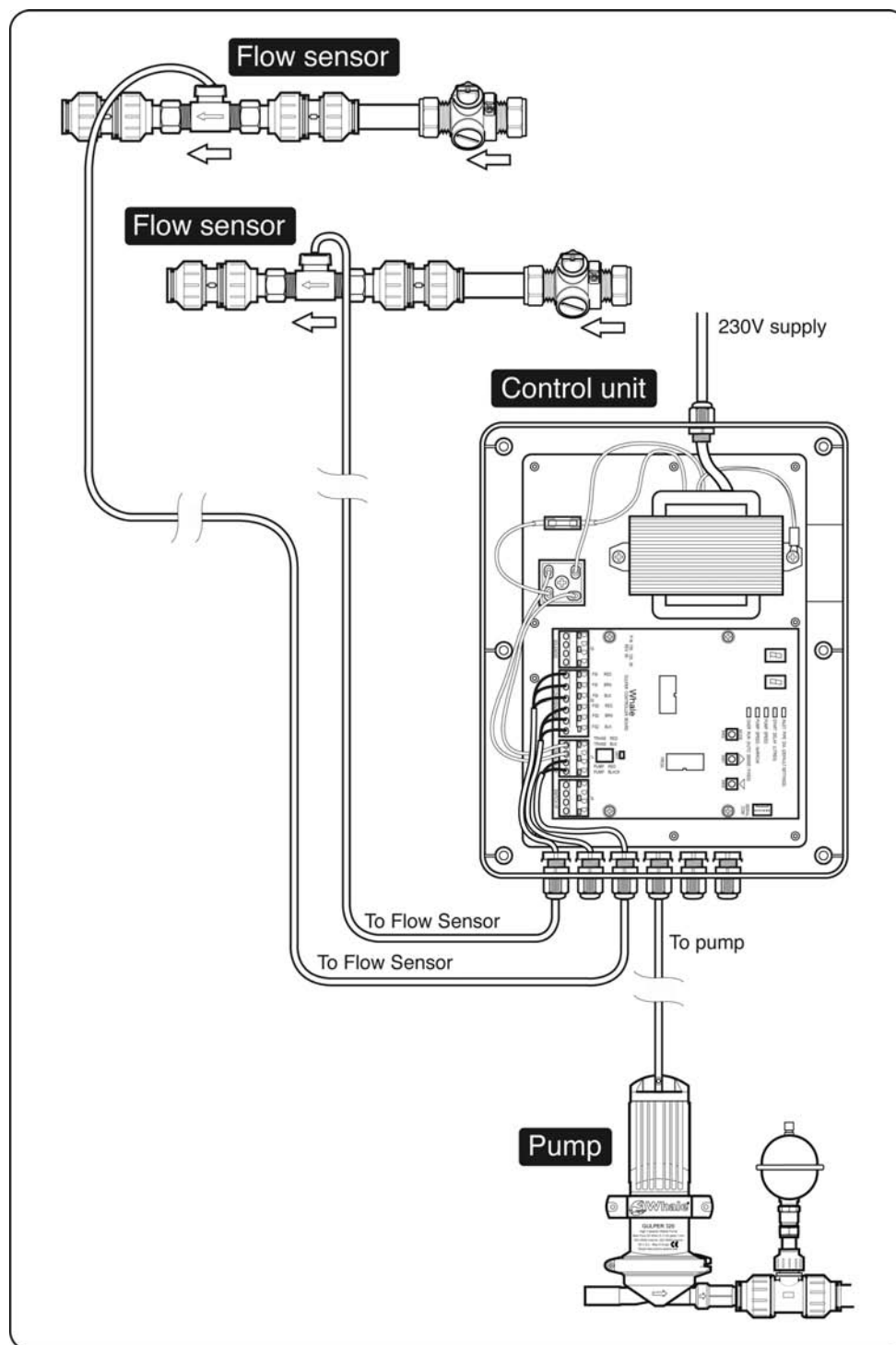
Tighten all cable entry grommets, even unused ones, to seal the Control Unit.

Connect Control Unit to 240V a.c. supply via an unswitched 5 amp fused spur.



Schematic of Dry-Deck Components

1.11



10

Electrical Connections

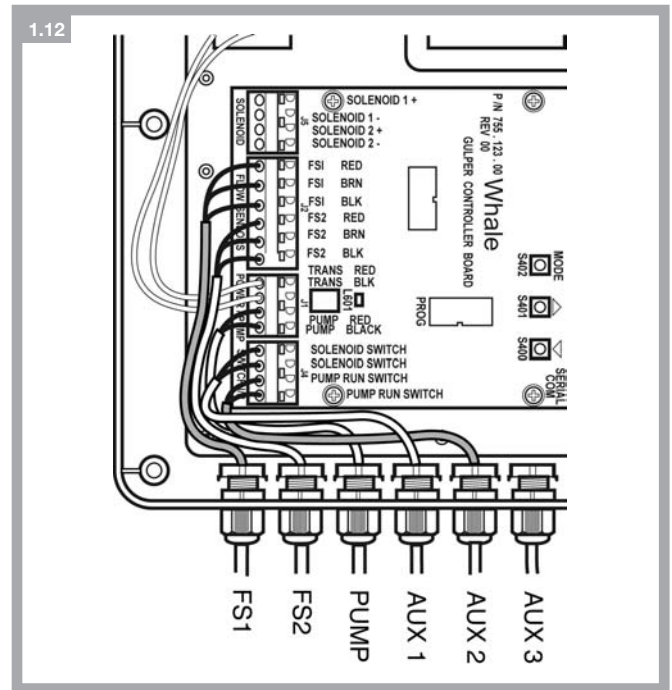
- 1.10** Switch off the power to the control unit while making connections.

Mount the control unit in a position where it is not easily accessible to the user. The enclosure is IP45 rated and may be mounted in zone 2 of the bathroom. Strip wires 10 mm and twist prior to inserting into spring loaded contacts. Push contact arm back with a finger or small screwdriver before inserting wire and then release.

Check for good connection using gentle tug on wire.

1. Connect pump supply wires to Pump Red and Pump Black connections.
2. Connect flow sensor to sensor connections using the colours as indicated on the controller board.

For cold supply use FS1 and for hot use FS2 connections - see diagram.



Auxiliary Functions

1.11a LED Display:

When not in programming mode the display shows '- -'

Water flowing through the flow sensor is indicated by alternately flashing 'flow rate' for flow sensor 1 and 'flow rate' for flow sensor 2. When no water is flowing the display flashes '- -'. Flow rate is displayed in 0.1 litre increments up to 10 ltrs and then in 1 ltr increments.

1.11b Flow Rate Display:

When the system is not in status display mode or configuration mode, it will display the flow rate on the 7 segment LEDs

With no water flowing the system will display '- -' momentarily every few seconds

With water flowing the system will display the following:

Sensor 1 flow rate, Sensor 2 flow rate, Combined flow rate ... repeating

Flow rates up to 9.9 ltrs/min will be displayed to 1 decimal place.

Flow rates of 10 ltrs/min and above will display the rate as the nearest whole number.

For example:

3.4 ltrs/min on inlet 1

LED show "3.4"

7.5 ltrs/min on inlet 2

LED shows "7.5"

Then total flow is displayed

LED shows "11"

1.11c Solenoid Switch:

See diagrams 1.13 and 1.14.

Aux 1 is for connection to a momentary contact switch. When the user closes the switch Solenoid 1 and Solenoid 2 are energized for 30 minutes. This allows water to flow through the shower. If the switch is closed again the 30 minute timer starts again.

Connect solenoids to contacts marked Solenoid 1-, Solenoid 1+ and Solenoid 2-, Solenoid 2+ as shown on circuit board.

Use solenoids as per specification below:
Technical specification of solenoids.

Voltage: 24V a.c.

Power Draw: 6VA

Pressure Range: 0.2 - 10 bar

Approvals: EN60730-2-8, WRAC

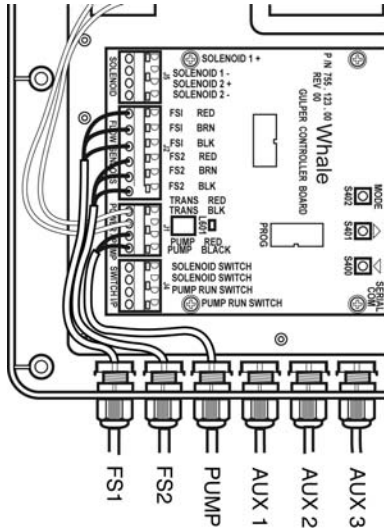
1.11d Pump Run Switch:

See diagram 1.13.

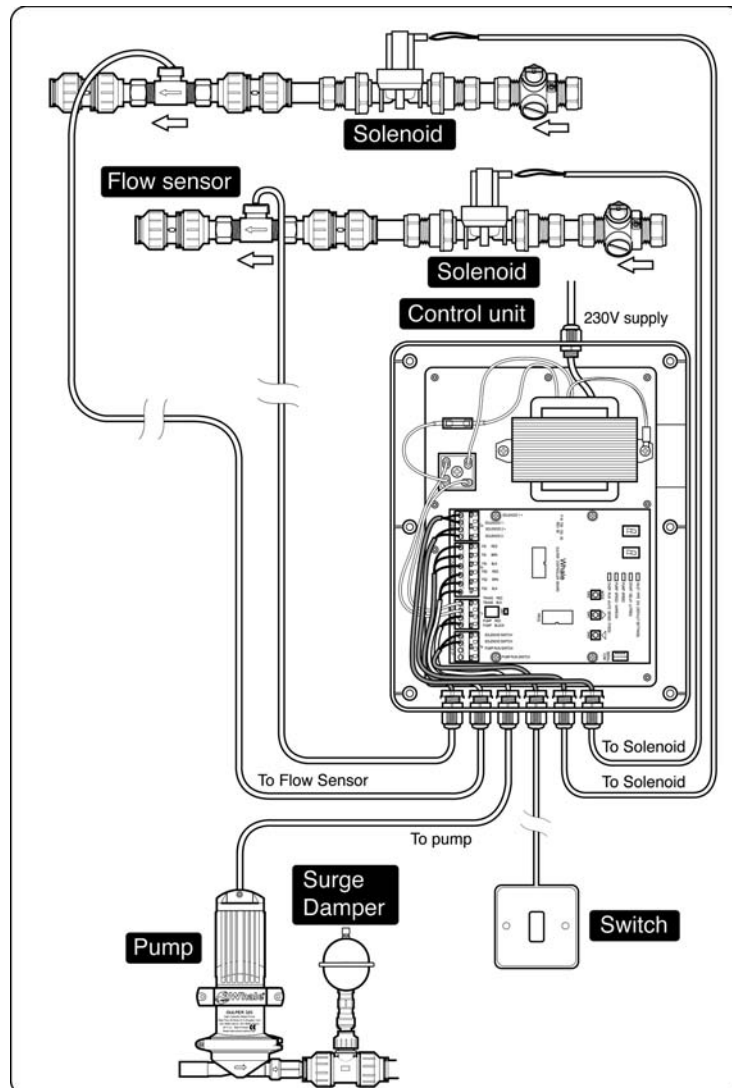
Aux 2 is for connection to a momentary contact switch. When pressed the pump runs for 2 minutes and enters the over run cycle. This may be used where the wet room is washed down and water needs to be pumped away.

12

1.13



1.14



Principles of Operation

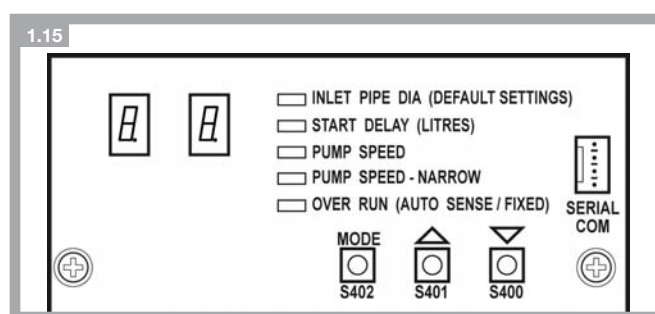
1.12a Four stages of controller operation:

1. **Pump start:** The pump controller measures the volume of water released into the shower tray. The installer sets this volume so that there is water in the gully before the pump starts thus preventing any start up sucking noise.
2. **Pumping flow rate:** With the shower running at a mid flow (8 ltrs/min) setting the installer adjusts pump speed to match the flow of water into the tray. This is done by watching the level of water at the gully and adjusting the speed up or down as required until the water is being pumped away slightly faster than the flow from the shower.
3. The pump speed-narrow setting is used to set the pump speed at 2 ltr/min increments above 8 ltrs/min up to the maximum flow from the shower. This is necessary as flow characteristics from the pump change at higher rates.
4. **Pump shut down:** After the pump speed is set the shower is turned off. When the water is drained from the tray a gurgling noise is heard. The electric current loading on the pump is then stored for subsequent use in automatically turning off the pump.

How to adjust Settings:

- a. Pressing the Mode button will switch between the various mode settings, indicated by small LEDs.
- b. The Up and Down arrows are used to adjust the value.
- c. Press down the Mode button firmly until the LED flashes which indicates that the selected value has been stored.

- 1.12b Switch power on to the control unit - the LEDs will blink alternately. A simple setup is all that is required for trouble-free efficient performance of the Dry-Deck 20 system.



Setup

See flow chart on page 15

1.13

1. **Inlet pipe size:** Programme in the size of pipe work from the gully to the pump. Select 22 mm. Ignore the 15 mm setting as this is not used for this application. With '22' illuminated on LEDs hold the Mode button down firmly until the LED blinks.
Note: This will also reset all the factory default settings including the pump speed.
2. **Pump start up: Start delay (ltrs)**

This selects the initial amount of water in the tray before pumping starts. This should come above the level of the gully. (Factory default is the minimum setting of 0.4 ltrs). Pressing the up arrow will increase the amount of water from 0.4 ltrs to 5 ltrs passing through the shower head before the pump starts.

Make adjustment to this setting during final commissioning.

3. Pumping flow rate:

Pump speed settings

Prior to making adjustments **turn the shower on** and wait till the pump runs. Set the shower flow rate to 8 ltrs/min.

Watch the level of water within the shower using the gulley cover as a guide. If the water level is lowering then reduce the speed of the pump by pressing the Down arrow. Use initial increments of 5 until fine tuning is required. When the water level is rising then increase the speed of the pump by using the Up arrow.

After making a change watch the water level. Wait at least 30 seconds, as the system needs to stabilise, until you see if the water is rising or falling. When the water level is slightly over pumping, program in the speed setting by pressing the Mode button firmly until the LED blinks

4. Pump speed – Narrow setting

This setting is required for higher flow rates.

- a. 'Pump speed' must be set first as per above using a mid-range flow setting.
- b. Increase the flow from the shower in increments of 2 litres and 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 programme in the setting.
- c. This process is repeated in 2 ltr increments. The narrow adjustment corrects the flow rate over a band 1 ltr/min either side of the flow rate that is being calibrated.

5. Pump shut down:-

Over Run (Auto Sense) preferred option

To set Auto Sense Over Run (indicated by 'AS' on the LED) you must turn off the shower when you have selected this mode. When the pump is drawing air there will be a gurgling noise at the gulley, press down the Mode button so the controller stores the loading on the pump at this point.

Over Run (Fixed)

Alternatively to set a fixed Over Run delay use the Up and Down arrows. Each digit represents a delay of 5 seconds (i.e. 2 =10 seconds over run). Hold the Mode button down to program.

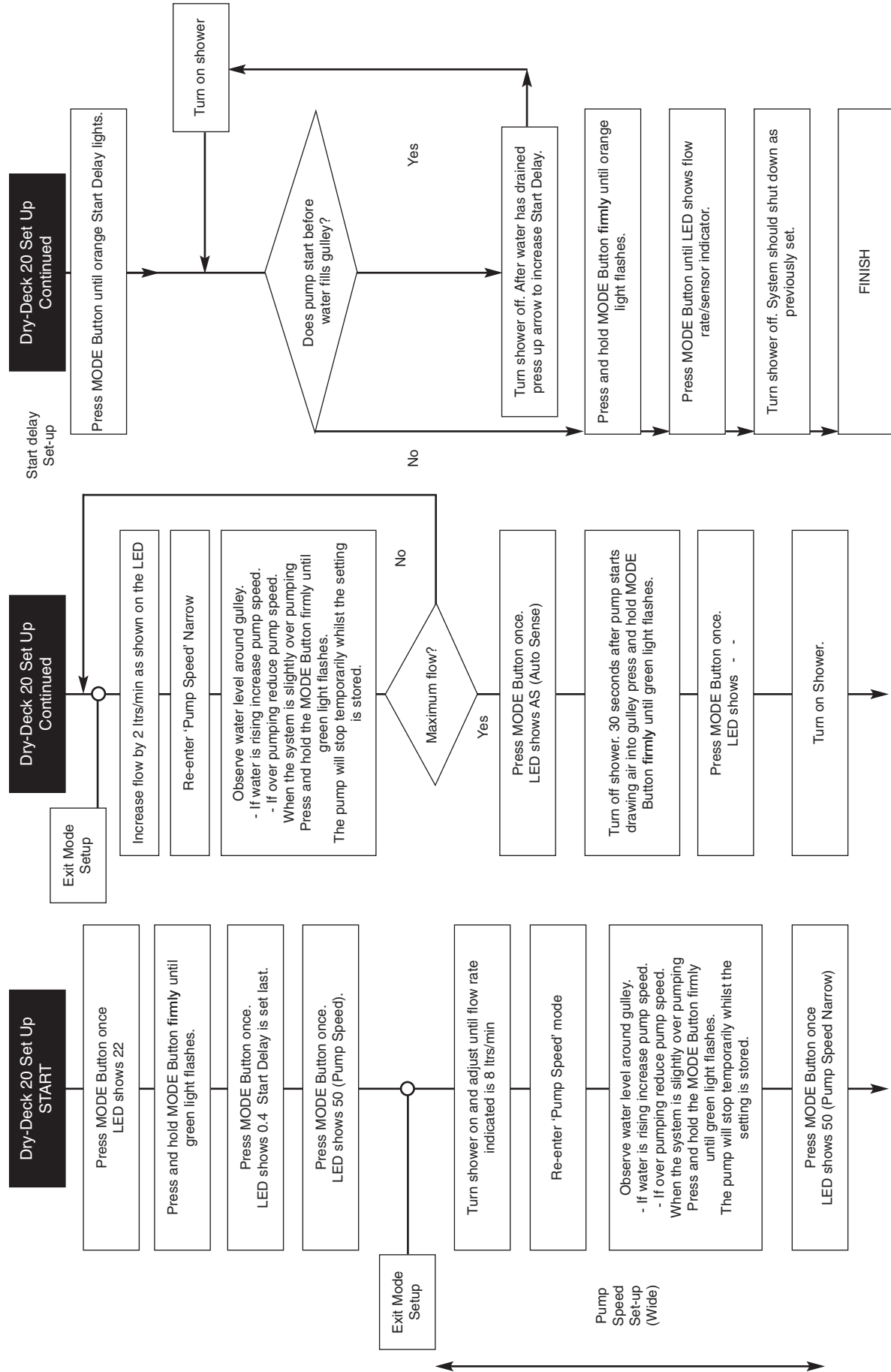
Commissioning Checklist

- a. All push fit fittings must have the twist lock in the locked position.
- b. Check all plumbing for leaks.
- c. Check waste water plumbing for leaks while pump is running.
- d. Ensure flow sensor is unstressed.

After programming all the settings, turn the shower on and check for correct operation. Make final adjustment to the Start Delay if required.

Note: 15 minutes after showering is finished, the pump will switch on for a brief period in order to remove any water that may have pooled.

Dry Deck 20 Set Up Flow Chart



To Exit Mode Setup: Press and release MODE Button until MODE indicator LEDs are all blank

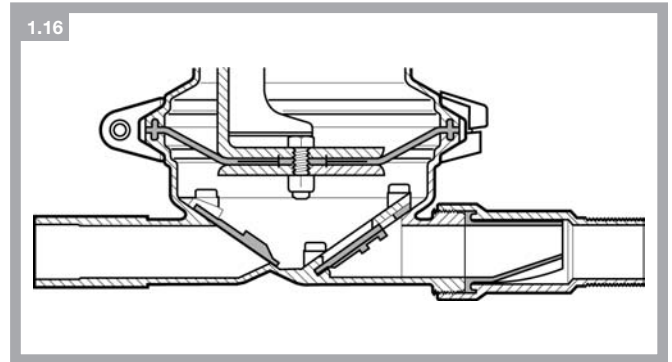
16

Pump Operation

1.14 The Whale Gulper pump uses a single membrane to pump the water away. On the suction stroke, water and debris are drawn in through the inlet valve. With a chamber full of water the pump discharges the water through the two non-return valves on the outlet. The two outlet valves protect the pump against losing prime. The aggressive flushing keeps the pump valves clear of debris resulting in a pump which does not require regular maintenance.

Unlike other pumps, the Whale Gulper has the ability to run dry without causing damage to the pump.

An additional advantage of the three nonreturn valves in the pump head, is that no smells can be passed back from the waste stack into the shower area.



Warranty

The Dry-Deck 20 product is guaranteed for **two years** from date of purchase against defects in materials and workmanship. If the system proves faulty, return it to your distributor with proof of purchase and purchase date. The manufacturer cannot be held responsible for claims arising from incorrect installation, unauthorised modification or misuse of the product. Incorrect installation may invalidate the warranty.

For full warranty statement please see website.

Description of Equipment: Dry-Deck 20

Shower Drain System

Standards applied

EN 60335-1:2002/A11:2004 Safety of household and similar electrical appliances

EN 60335-2-41:2003 Particular requirements for pumps

EN 55014-1:2000 Electromagnetic compatibility.

Requirements for household appliances, electric tools and similar apparatus. Emission

EN 55014-2:1997 Electromagnetic compatibility.

Requirements for household appliances, electric tools and similar apparatus. Immunity.

Signed (Authorised Person)

**Please contact the Whale Technical Helpline
0845 0694 253 for help with any queries**

EU Declaration of Conformity

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
89/336/EEC, amended by 92/31/EEC and
93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Low Voltage Directive 73/23/EEC amended by
93/68/EEC on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

CE mark affixed: 03/06/05

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.



Signed

Stanley McFarland

Engineering Director

Munster Simms Engineering Ltd.

277-279 Old Belfast Road

Bangor, Co. Down, BT19 1LTN

Dry-Deck 20 Status Information

The Dry-Deck 20 stores information on the software version and on the usage of the pump.

This information may be accessed by pressing the up arrow while not in any Set Up mode.

The fields are displayed on the 7-segment LEDs as follows:

00	- Not currently used
14	- Software version / software revision
ER	- (field separator) 'Error'
01	- Error code (Object location)
02	- Error code (Object ID)
PP	- (field separator) 'Pump Powered' time
01	- Hours powered 100,000's, 10,000's
02	- Hours powered 1000's, 100's
07	- Hours powered 10's, 1's
22	- Minutes powered 0 - 60
PO	- (field separator) 'Pump On' time
02	- Hours pumping 1000's, 100's
07	- Hours pumping 10's, 1's
22	- Minutes pumping 0-60
PC	- (field separator) 'Pump Cycles'
12	- Pump cycles (1000's, 100's)
10	- Pump cycles (10's, 1's)
--	- (field separator)

returns to normal display

Status display mode will be exited if the keys are inactive for a period greater than 10 minutes (same as configuration mode).

Status display will be exited if either the mode or decrement key is pressed.

Status display will be exited when all the fields have been scrolled through.

Last Error Code

Two bytes representing the last recorded is automatically erased after it has been viewed once.

Duration Powered

This is a record for the length of time the system has had power applied to it. It consists of hours and minutes (see opposite).

Total Pump Run Time

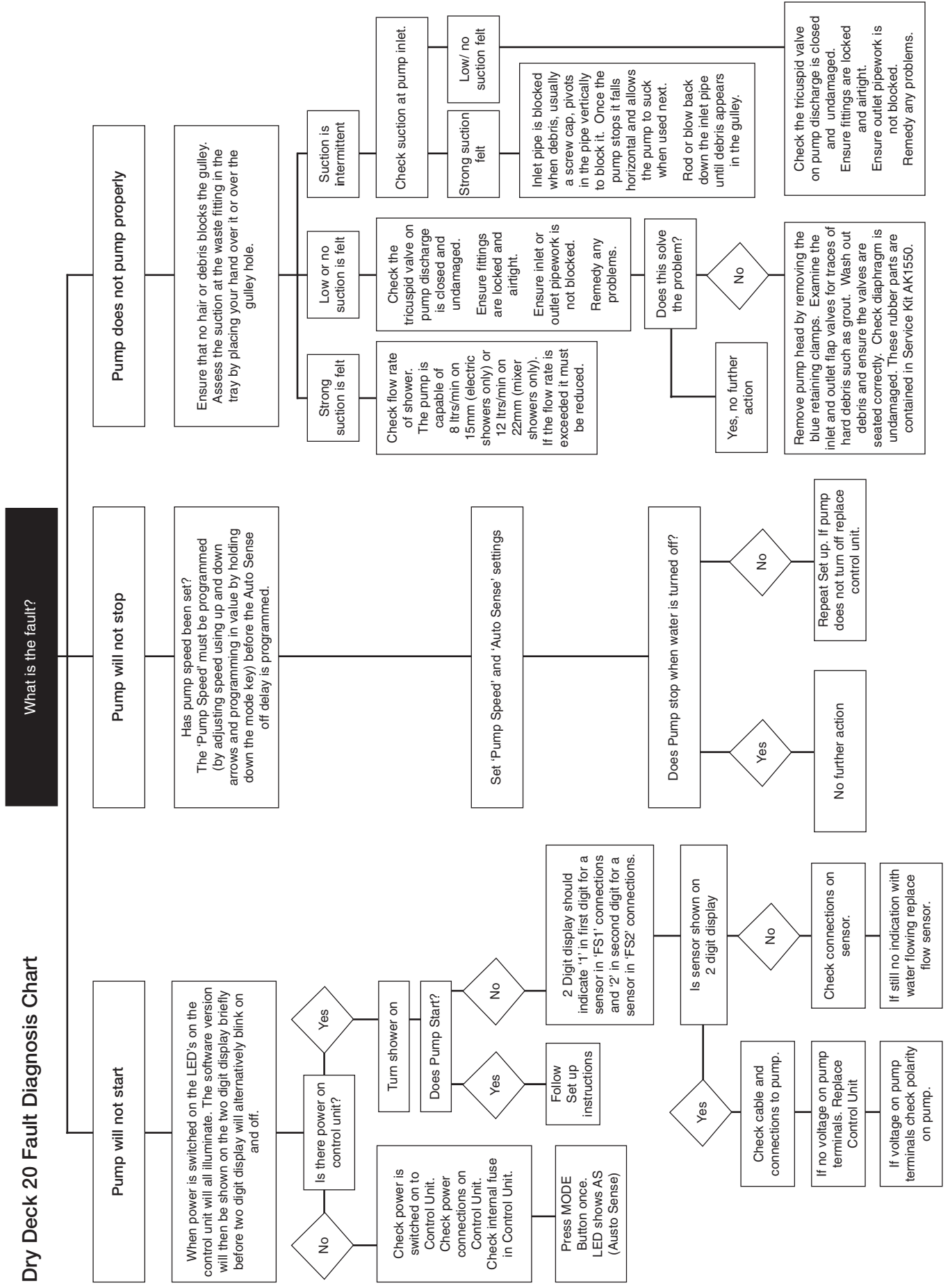
This is a record for the length of time the pump has been running. It consists of hours and minutes (see opposite).

Total Pump Cycles

This is the total number of times the pump has been activated (0-9999).

Currently this is set to increment every time the pump is turned on following an off state so a purge cycle will also trigger the count. (The software could discriminate if required).

Dry Deck 20 Fault Diagnosis Chart



What is the fault?

Pump will not start

When power is switched on the LED's on the control unit will all illuminate. The software version will then be shown on the two digit display briefly before two digit display will alternatively blink on and off.

Is there power on control unit?

Yes

Turn shower on

Does Pump Start?

Yes

Follow Set up instructions

No

2 Digit display should indicate '1' in first digit for a sensor in 'FS1' connections and '2' in second digit for a sensor in 'FS2' connections.

Is sensor shown on 2 digit 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.

Pump will not stop

Has pump speed been set? The 'Pump Speed' must be programmed (by adjusting speed using up and down arrows and programming in value by holding down the mode key) before the Auto Sense off delay is programmed.

Set 'Pump Speed' and 'Auto Sense' settings

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 gully. Assess the suction at the waste fitting in the tray by placing your hand over it or over the gully hole.

Strong suction is felt

Check flow rate of shower. The pump is capable of 8 ltrs/min on 15mm (electric showers only) or 12 ltrs/min on 22mm (mixer showers only). If the flow rate is exceeded it must be reduced.

Low or no suction is felt

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. Remedy any problems.

Suction is intermittent

Check suction at pump inlet.

Strong suction felt

Inlet pipe is blocked when debris, usually a screw cap, pivots in the pipe vertically to block it. Once the pump stops it falls horizontal and allows the pump to suck when used next. Rod or blow back down the inlet pipe until debris appears in the gully.

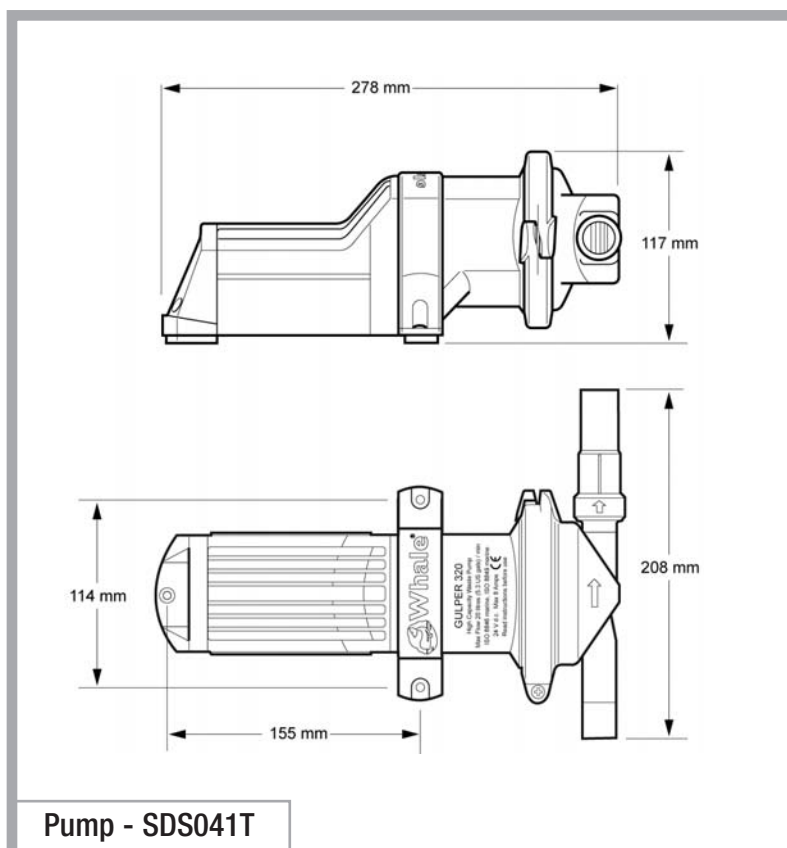
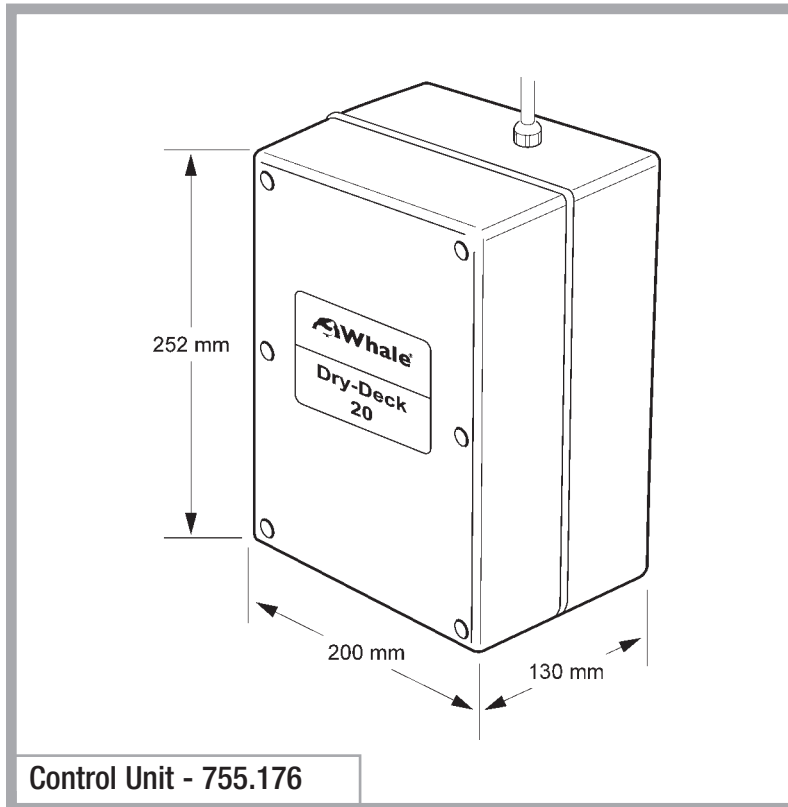
Check the tricuspid valve on pump discharge is closed and undamaged. Ensure fittings are locked and airtight. Ensure outlet pipework is not blocked. Remedy any problems.

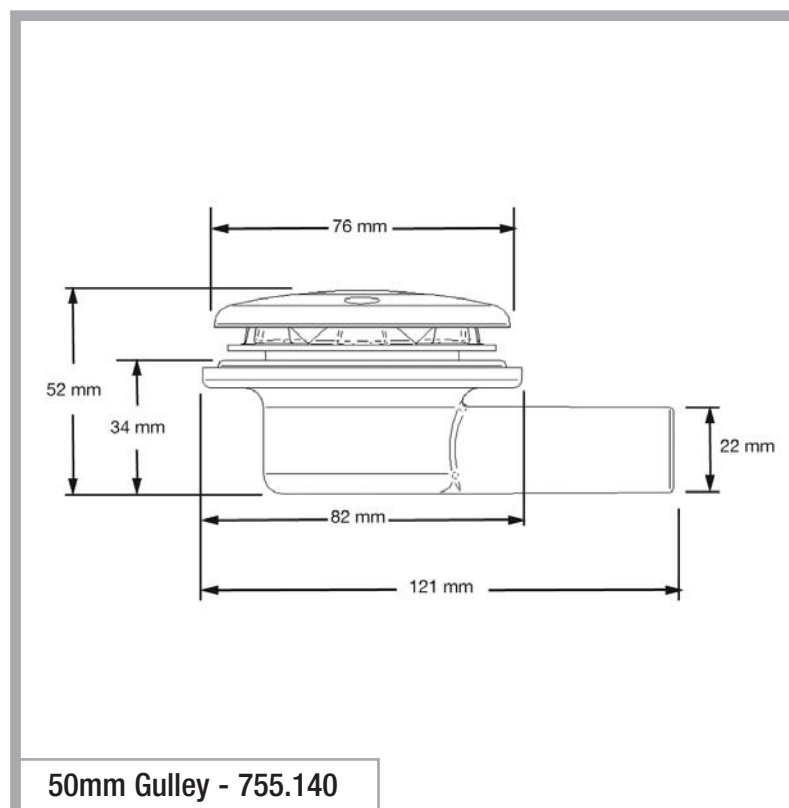
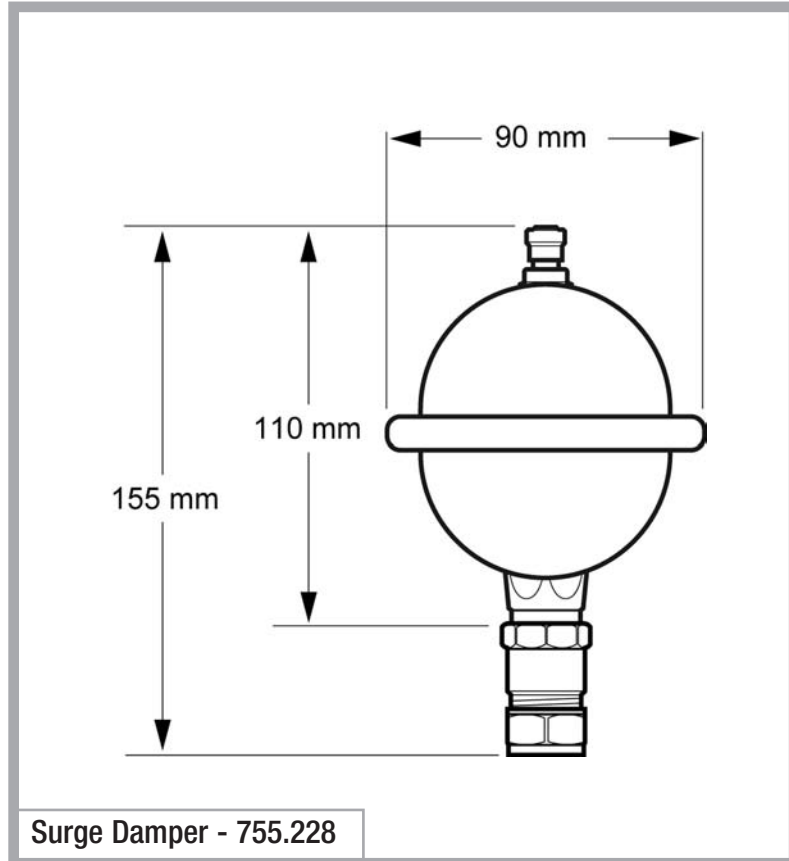
Does this solve the problem?

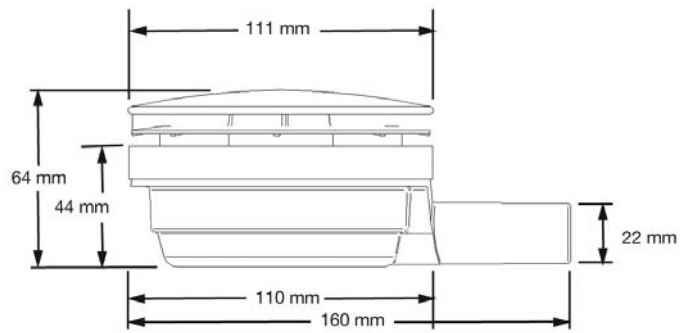
Yes, no further action

No

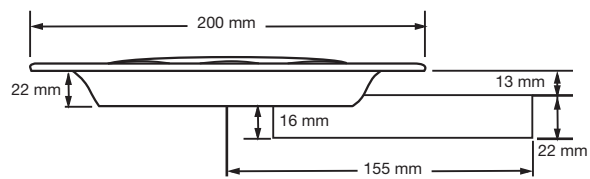
Remove pump head by removing the blue retaining clamps. Examine the inlet and outlet flap valves for traces of hard debris such as grout. Wash out debris and ensure the valves are seated correctly. Check diaphragm is undamaged. These rubber parts are contained in Service Kit AK1550.



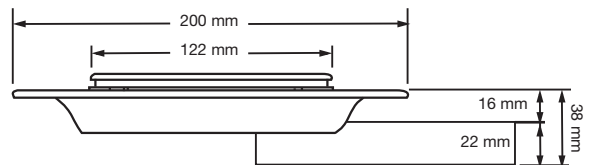




90mm Gulley - AK1695



Vinyl Floor Gulley - AK1610



Tiled Floor Gulley - AK1615

Dry-Deck Spares

Pump Only	SDS041T
Flow Sensor	SDS051T
Diaphragm Service Kit	SDS061T
Pump Head Replacement	SDS071T

Contact Details

Whale

Old Belfast Road, Bangor BT19 1LT, N. Ireland.

Technical Helpline: 0845 0694 253

whalepumps.com

dry-deck@whalepumps.com

tel: +44 (0)28 9127 0531

fax: +44 (0)28 9146 6421

