

Shower pump

Ⓞ GB Installation and operating instructions

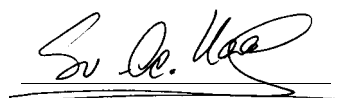


Declaration of Conformity

We **Grundfos** declare under our sole responsibility that the products **SSL, STL, STC, SSR, STR, SSP, STP, SSN** and **STN**, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EC Member States relating to

- Machinery (98/37/EC).
- Electrical equipment designed for use within certain voltage limits (2006/95/EC).
Standards used: EN 60335-1: 2002 and EN 60335-2-41: 2003.
- Electromagnetic compatibility (2004/108/EC).

Bjerringbro, 20th December 2007



Svend Aage Kaae
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Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. Symbols used in this document



Warning

If these safety instructions are not observed, it may result in personal injury!

Caution

If these safety instructions are not observed, it may result in malfunction or damage to the equipment!

Note

Notes or instructions that make the job easier and ensure safe operation.

2. General

These installation and operating instructions apply to the Grundfos Shower Pumps, types **STL**, **SSL**, **STC**, **STR**, **SSR**, **STP**, **SSP**, **STN** and **SSN**.

For supplementary instructions regarding negative-head pumps, see section 10. *Negative-head pumps*.

Your shower pump has been designed, manufactured and carefully tested in England.

If correctly installed and not misused, it will give many years of reliable service.

A shower pump installation requires a cold-water storage tank and a hot-water cylinder. See fig. 2, page 12.

Low-voltage shower pumps

All transformers are fitted with auto-resetting thermal cut-outs. If the transformer overheats for any reason, the thermal cut-out will switch the pump off. The cut-out will automatically switch the pump on again when the transformer has cooled down.

For the STL 2.0 CN pumps, also read the instructions in section 10. *Negative-head pumps*.

Note

Please dispose of any packaging supplied with this pump in an environmentally friendly and legal manner.

2.1 Type key

Example	S	T	P	2.0	B
S: Shower pump range					
T: Twin impeller					
S: Single impeller					
P: Positive head					
N: Negative head					
L: Low voltage					
C: Centrifugal					
R: Regenerative					
Maximum head [bar]					
Material:					
B: Brass					
C: Composite					
CN: Composite, negative head					

3. Important instructions

Do not connect the pump directly to the water mains supply.

Caution

The pump cannot normally be used with combination boilers.

Make sure that no foreign particles (such as solder, dust, etc.) are allowed to enter the pump.

Note

The pump cannot operate if the level of the water in the cold-water storage tank is below the level of the pump.

- **A supply head of at least 2 metres is recommended.**
- **Non-return valves**
Do not fit non-return valves in the suction line to the pump. Make sure that the pump can vent back to the supply tank.
- **STC, STR, SSR, STL and SSL pumps**
The strainers supplied with the pump must be used on suction connections. See fig. 1, page 4.
- **Push-fit connections (SSN, SSP, STN and STP pumps)**
The pump suction and discharge ports are fitted with push-fit connections. The flexible hoses supplied with the pump **must** be used.
Make sure that each hose connection is fully inserted to a minimum depth of 33 mm.
The hot-water supply to the pump suction port should be connected from the first outlet from the hot-water cylinder expansion pipe, i.e. use a Surrey flange.
- **Disconnecting hose**
To disconnect the "push-fit" hose, firmly push down the white or grey retaining ring, while pulling out the hose.
- **No solder flux**
Do not allow any solder flux to come into contact with any of the plastic parts of the pump.
- **Do not let the pump run dry**
Purge with water thoroughly for 5 minutes before running the pump.
- **Test the system**
After completing installation, the whole system must be thoroughly tested – operating both hot and cold water at maximum flow.
Maximum hot-water temperature setting must not exceed 60 °C (140 °F) in accordance with BS 6700: 2006.
Finally check that each connection is watertight and not leaking.

4. Positioning the pump

Note *Select a position for installing the pump which affords easy access for subsequent servicing and maintenance.*

Minimum inlet pressure: 2 metres (recommended).

Keep the pump as close as possible to the source of hot and cold water.

For optimum performance, ensure

- a good water flow to the pump
- sufficient head
- unrestrictive pipework
- provision to prevent air locks.

Place the pump in a well-ventilated location, e.g. on the floor of the airing cupboard.

Caution *Do not cover the pump, otherwise the motor will overheat.*

Caution *The pump must be placed in a frost-free location.*

The pump must be mounted horizontally with discharge ports vertically upwards to ensure correct operation of the flow switches.

To reduce noise, we recommend the pump be mounted on a small concrete foundation of approximately 225 x 225 mm and 40-50 mm thick.

Connect the pump and shower system as shown in fig. 2, page 12.

To achieve 0.5 l/min. to turn the flow switches on, there must be a minimum height between the water level in the cold-water storage tank and the shower outlet of approximately 250 mm. See fig. 2, page 12.

The pump must be installed in accordance with the Water Supply (Water Fittings) Regulations 1999.

For installation within a bathroom, locate the pump in accordance with the IEE Wiring Regulations seventeenth edition (BS 7671: 2008) Part 6 Section 601 for a shower pump with an IPX2 enclosure. The pump must be positioned at least 0.6 metres horizontally or 3 metres vertically away from any bath, shower tray or basin.



Warning
The pump may be fitted under a bath, providing this space is only accessible through the use of a tool. If in doubt, consult the Wiring Regulations.

4.1 Negative head

If the water level in the cold-water storage tank is below the level of the shower outlet, this is called a negative-head system. To enable the pump to operate, a negative-head pump must be used. See section 2.1 *Type key*.

Note *If the pump is positioned above the outlet of the hot-water storage cylinder, ensure that the pipework to the pump from the cylinder has a downward loop. This will help prevent air locks.*

5. Hot-water cylinder connections

Caution *Do not use any jointing compounds.*

The use of a Surrey flange (see fig. 2, page 12) is recommended to ensure a free-flowing supply of air-free hot water.

The hot-water supply may be taken directly from the top of the hot-water cylinder, but entrapped air may cause problems.

22 mm copper pipe should be used to ensure an adequate flow to the pump. Where high flows are expected, 28 mm is recommended.

6. Cold-water supply

Caution *Do not connect the pump directly to the water mains supply. Do not use any jointing compounds or tape.*

The cold-water supply to the pump must be connected using 22 mm pipe to the cold-water storage tank. See fig. 2, page 12. The tank connector should be positioned at least 25 mm (1") lower than the cold-water supply to the hot-water cylinder to prevent the supply of hot water only.

7. Connecting the pump

Caution *Do not use any jointing compounds or tape.*

For ease of installation, subsequent servicing and cleaning of strainers, full-bore isolating gate valves should be fitted in the pump suction and discharge ports.

Note *Isolating valves greatly assist draining down, strainer cleaning and refilling, which will result in much lower service costs.*

The flexible hoses supplied with the pump must be used for connecting the pump to the pipework. Use of these hoses will ensure strain- and vibration-free watertight connections. The maximum bend angle should not exceed 45°.

After initial installation, run the pump for a few minutes, switch off, drain down and clean the suction strainers.

For SSN, SSP, STN and STP pumps, remove the suction hose from the pump, and the strainer basket can be removed by hand or with long-nosed pliers.

Line up pipework, and fit hoses to the pump before connecting to pipes. Position pipework accurately so that the pump is not subject to mechanical strain.

Plastic nuts should be finger-tight plus 1/4 turn. The nuts should be retightened after hot water has been pumped for the first time.

Note *Do not bend hoses as this will cause restriction of flow.*

7.1 STC, STR, SSR, STL and SSL pumps

The strainers supplied with the pump must be fitted to the pump suction connections only with the wire dome towards the pump. See fig. 1.

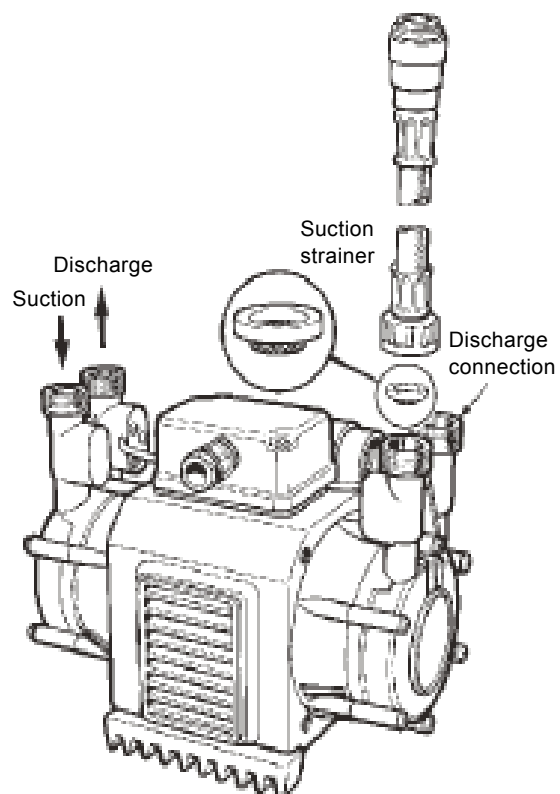


Fig. 1 Fitting the strainer

8. Electrical connections

Warning

The pump must be earthed.

The pump must be connected to an external mains switch with a contact separation gap of at least 3 mm in each pole.

The pump must be connected to a 230 V, 50 Hz, supply with a switched spur fused at 5 A (10 A on models STP 4.0 B and STN 4.0 B).

Metal pipes must be earthed by the use of earthing clamps to BS 951 and 4 mm earthing wire.



Complete all pipework before making electrical connections.

Caution

Do not allow any water to enter into the electric terminal box.

If in doubt, consult a qualified electrician or call your local electricity board engineer.

8.1 Electrical connection, 1 x 230 V, 50 Hz

Observe colour coding as follows:

- Brown to terminal L.
- Yellow/green to terminal E (PE).
Ensure that the earth lead is at least as long as the other two leads.
- Blue to terminal N (neutral).

Insert the lead fully into the terminal connector and tighten the screw firmly. Ensure that the connection is secure. Be sure to tighten the cable restraint.

Ensure compliance with IEE Regulations. In the interests of safety, it is recommended that a residual current device (RCD) be installed in the supply circuit.



Warning

Do not operate the pump without terminal box cover in place.

The pump switch should be left "on" at all times for normal operation of the system.

8.2 Electrical connection, low-voltage pumps (STL, SSL and STL 2.0 CN)

Use the transformer supplied.

Caution

Do not connect the pump directly to 240 V. Electrical hazard will result and the motor will be irreparably damaged.

The low-voltage pump has added electrical protection via a safety isolating transformer. See fig. 3, page 13, or fig. 4, page 14. For installations where the pump has to be placed in the bathroom (for example under the bath), we recommend that the safety isolating transformer is placed outside the bathroom or shower area.



Warning

Do not locate 230-240 V connections, plugs or switches within the "wet" area in accordance with IEE Regulations.

The low-voltage leads from the transformer must be connected to the two terminals marked "T" in the terminal box. As the supply is AC, the leads can be connected to either terminal on the pump.

The low-voltage pump installation kits are supplied with 3 metres of connecting lead. The connecting leads between the pump and the isolating transformer can be extended up to about 15 metres. Use 1.0 mm cable.

The safety isolating transformer must be connected to a 230-240 V, 50 Hz, supply voltage with a switched spur fused at 5 A. The switch must have a double-pole disconnection with a separation gap of at least 3 mm. See fig. 3, switched spur.

Ensure compliance with IEE Regulations.

Observe colour coding as follows:

- Brown to terminal L.
- Blue to terminal N.

For normal operation of the shower, the transformer can be left permanently switched on – very little power is used when the pump is not running.

Copper pipes should have supplementary earth bonding. Where the earth continuity has been broken, the pump suction and discharge pipework should be connected with earthing clamps to BS 951 and 4 mm earthing wire.

9. Before using the pump

Warning

Do not let the pump run dry.

Purge water thoroughly through the system before switching on the electricity supply to the pump.

Do not switch on the electricity supply.



1. Turn on the water supply. Allow the system to fill.
2. Immediately inspect for any leaks.
3. With pump not running, allow maximum water flow, for example remove handset from shower hose, letting the shower hose hang into the shower tray or bath. Operate maximum hot and cold flow for at least 2 minutes, to flush out all debris and ensure air is thoroughly purged from the system.
4. Switch on the electricity supply to the pump. Again operate the pump in both full hot and cold modes for about 2 minutes.
5. With the pump operating, carefully inspect again for any leaks from all connections on both hot- and cold-feed pipes to the pump and to the system.
After hot water has been run for several minutes, check all hot-water connections and make sure that there are no leaks.
6. The first few times the pump is used, the insulating varnish used on the pump motor may give off an odour. This is perfectly normal and will diminish with use.

10. Negative-head pumps

Pump types: STN, SSN and STL 2.0 CN.

10.1 General

Automatic negative-head shower pumps are designed to operate automatically in installations where the pumped system outlets are above the stored water level.

Shower pumps, types STN and SSN, feature independent pressure and flow controls, with built-in non-return valves and stainless-steel expansion tanks in each pump end. This system ensures complete hot- and cold-water system isolation with stable control over a very wide flow range.

The pump is fitted with dry-running protection. Should the water supply fail, the pump will stop to prevent damage to the shaft seals.

10.2 Dry-running protection

STN, SSN and STL 2.0 CN negative-head pumps feature dry-running protection to avoid damage to seals caused by water starvation. This condition is possible if there is insufficient stored water or the pump strainers are blocked.

If the pump runs for 60 seconds with an insufficient water supply, the pump will stop and "lock out".

Resetting the "lock out"

To reset the pump, switch the electricity supply off for 10 seconds.

When the electricity supply is switched on again, the pump will run for a few seconds to recharge the tanks. If it continues to run and there is no demand, this would indicate that one of the following is still present:

- No water in the system.
- Blocked strainer.
- Air which has not yet cleared.

Caution

Continued dry running will lead to overheating of the shaft seals and eventually to a water leak.

10.3 Connecting the pump

Caution

Do not connect the pump directly to the water mains supply.

For the pump to work correctly, it must have:

- Air-free supply of hot water – the use of Surrey flanges is recommended.
- 22 mm (minimum) feed pipes, gate valves and flexible hoses.
- Minimum head of water to supply the pump 2 metres (6'6"). However, the STN and SSN pumps will function with a supply head as low as 600 mm (2 ft), providing the water make-up system has unrestrictive pipework, and provision is made to avoid air locks.
- Maximum hot-water temperature of 60 °C conforming to BS 6700: 2006.
- Maximum static head of 8 m, i.e. the highest point of the system must be less than 8 m above the pump. See fig. 4, page 14.

10.4 Installation instructions

- The hot-water cylinder must have an expansion pipe or be fitted with a vent pipe connected to the pump hot-water supply, to allow air from the hot-water cylinder to escape.
Excessive air entering the pump will cause faulty operation and damage to the pump seals which will cause serious water leaks.
- Feed pipes, hot and cold, must be minimum 22 mm with 22 mm service isolating gate valves. The flexible hoses supplied **must** be used. The hoses must be connected without kinks which will restrict water flow. The maximum bend angle is 45 °.

- Ensure an adequate head of water and non-restrictive make-up pipework.
Inadequate feed head will cause pump cavitation, unstable water temperature, noise and ultimately pump and seal damage.
- All air must be thoroughly purged from the system. If air is present in the pump, it will be unable to generate sufficient pressure to operate the pressure switch. This will cause the pump to run or pulse continuously.
- **Lavatory cisterns**
If the pump is to supply a lavatory cistern, certain precautions should be taken to avoid frequent starting and stopping of the pump due to low flow rates.
If possible, best practice is to supply the cistern from the mains water supply. Failing this, a "Torbeck" or equilibrium valve is recommended. If either of these are not possible, the following instructions should be followed:
 - **A:** The pump is supplied with two expansion or pressure tanks. They have capacities of 500 ml and 160 ml.
The larger tank must be used on the cold side of the pump.
 - **B:** The cistern filling pipework must be as free-flowing as possible with all flow restrictors removed.
It is possible to change the tanks from one side of the pump to the other. When doing so, take care to ensure that none of the fibre washers are lost.
- **Washer dryers**
Only brass pumps must be used for these applications.

10.5 Pressure and flow control

Shower pumps for negative-head applications are controlled by both water pressure and water flow.

Twin-impeller pumps incorporate two separate pressure and flow control systems, one on each pump end, ensuring complete isolation of hot- and cold-water systems and consistent operation over a wide range of unbalanced flow rates.

The control system manifold includes an integral non-return valve to maintain system pressure when water is not flowing.

Operation

The pressure switches start the pump on falling pressure. The switch point is factory-set.

Note

It is important that the total head on the pump is less than 8 metres. Otherwise the pressure switch can never operate and hence the pump will fail to start.

Once the pump has been started by the pressure switches, the flow switches maintain the pump running, providing the flow rate is above 0.4 l/min. When the flow rate drops below 0.4 l/min. or the demand is turned off, the pump will stop after first running on for 3 seconds to recharge the pressure tanks.

10.6 Operating instructions

Taps and valves used on the "pressure system" must be fully turned off when not in use.

10.7 Maintenance

Washers and seals must be replaced when necessary to prevent leaks or drips.

Any leak or drip will cause the pump to operate periodically, the frequency dependent on the rate of the leak.

Tank air-pressure setting

The pressures are factory-set. In the event of a leak, they should be set as follows:

The smaller tank (160 ml) should be set at a pressure between 0.9 and 1.0 bar. The larger tank (500 ml) should be set at a pressure between 0.5 and 0.6 bar.

Note

In certain applications, e.g. steam cabinets, it may be necessary to increase the pressure. Consult the appliance manufacturer.

For further information regarding general maintenance and service, see section 13. *Service*.

11. Fault finding chart



Before starting work on the pump, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

Fault	Possible cause	Remedy
1. The pump fails to start.	a) The electricity supply is switched off.	Switch on the electricity supply.
	b) The fuses are blown.	Replace the blown fuses. If the new ones blow too, the electric installation should be checked.
	c) The built-in thermal protection has switched off the motor.	The thermal protection resets automatically within 1 to 2 hours.
	d) Isolating valves are closed.	Open the isolating valves.
	e) Strainers are blocked.	Close the service isolating gate valves, clean the strainers and re-open the service isolating gate valves.
	f) Pump installed with non-vertical discharge ports (flow switches).	The pump must be installed with vertical discharge ports (flow switches).
	g) Insufficient water flow, below 0.5 l/min.	Increase the water flow to at least 0.5 l/min.
2. The flow from the shower drops.	a) Blocked strainers.	Clean the pump strainers.
3. The pump runs continuously.	a) A tap or outlet is turned on.	Ensure there are no leaks and that all taps and appliances are off.
	b) Flow switch or reed switch faulty or incorrectly set.	Adjust or replace as appropriate.
	c) Air in the system.	Vent the system.
	d) The float in the flow switch is stuck in the up (on) position.	Make sure that the flow switch can operate correctly and there is no debris in the flow switch.
4. The pump pulses.	a) The use of other taps in the house may cause the pump to start momentarily.	Contact your installer.
5. Unstable water temperature/noisy pump.	a) Air entering the pump, most commonly from the hot-water cylinder.	Fit a Surrey flange and study the pipework layout. There should be no high points where air can collect.
	b) Too high water temperature.	Reduce hot-water temperature. The maximum recommended hot-water temperature setting is 60 °C (140 °F).
	c) Debris caught in the impeller casing.	Remove debris.

11.1 Fault finding, negative-head pumps (STN, SSN and STL 2.0 CN)



Before starting work on the pump, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

Fault	Possible cause	Remedy
1. The pump fails to start.	a) The electricity supply is switched off.	Switch on the electricity supply.
	b) The fuses are blown.	Replace the blown fuses. If the new ones blow too, the electric installation should be checked.
	c) The built-in thermal protection has switched off the motor.	The thermal protection resets automatically within 1 to 2 hours.
	d) Isolating valves are closed.	Open the isolating valves.
	e) Strainers are blocked.	Close the service isolating gate valves, clean the strainers and re-open the service isolating gate valves.
	f) Pump installed with non-vertical discharge ports (flow switches).	The pump must be installed with vertical discharge ports (flow switches).
	g) Dry-running protection operated.	Switch off the electricity supply for 10 seconds to reset.
2. The flow from the shower drops.	a) Blocked strainers.	Clean the pump strainers.
3. The pump runs continuously.	a) A flow demand still exists.	Check the installation for leaks.
	b) Flow switch or reed switch faulty or incorrectly set.	Adjust or replace as appropriate.
	c) Faulty pressure switch.	Check the pressure switch.
	d) The float in the flow switch is stuck in the up (on) position.	Make sure that the flow switch can operate correctly and there is no debris in the flow switch.
4. The pump pulses.	a) The use of other taps in the house may cause the pump to start momentarily.	Contact your installer.
	b) Leaks in the system.	Check the system for leaks.
	c) Faulty non-return valve.	Check the non-return valves and replace, if necessary.
5. Pump stops when there is a demand.	a) Flow demand below 0.4 l/min.	Increase the flow demand.
	b) Flow switch or reed switch faulty.	Replace the flow switch or reed switch.
6. Pump hunts when shutting down.	a) Incorrect tank air-pressure setting.	Adjust the tank air-pressure setting.
	b) Insufficient run-on time.	Replace the printed-circuit board (PCB).
7. Pump hunts when starting up.	a) Flow rate below 0.4 l/min.	Increase the flow rate.
	b) Flow switch or reed switch faulty or incorrectly set.	Adjust or replace as appropriate.

12. Technical data

Data	Pump type						
	SSP 2.0 B	SSP 3.0 B	STP 1.0 B	STP 1.5 B	STP 2.0 B	STP 3.0 B	STP 4.0 B
Supply voltage	1 x 230 V, 50 Hz						
Power consumption	400 W	435 W	370 W	525 W	640 W	850 W	920 W
Rated current	1.7 A	1.9 A	1.6 A	2.3 A	2.8 A	4.0 A	4.3 A
Rating*	Continuous operation						
Enclosure class **	IPX2						
Motor	2-pole induction						
Inlet head (min. - max.)	1 to 20 m						
Maximum developed pump head	23 m	31 m	13 m	18 m	24 m	34 m	41 m
Maximum operating pressure	6 bar						
Minimum starting flow rate	0.5 l/min.						
Length	178 mm	178 mm	230 mm	245 mm	243 mm	266 mm	296 mm
Width	135 mm	135 mm	135 mm	135 mm	135 mm	135 mm	135 mm
Height	225 mm	225 mm	225 mm	225 mm	225 mm	225 mm	225 mm
Weight	7.1 kg	7.1 kg	7.4 kg	8.4kg	9.9 kg	12.0 kg	14.5 kg
Sound pressure level (1 m)	< 70 dB(A)						

* Recommended minimum flow rate: 5 l/min.

** When mounted on a flat horizontal surface.

Data	Pump type	
	STC 1.5 C	STC 2.0 C
Supply voltage	1 x 230 V, 50 Hz	
Power consumption	270 W	350 W
Rated current	1.5 A	1.8 A
Rating*	20 min. on / 40 min. off	
Enclosure class**	IPX2	
Motor	Universal	
Inlet head (min. - max.)	2 to 10 m	
Maximum developed pump head	15 m	20 m
Maximum operating pressure	3.0 bar	
Minimum starting flow rate	0.5 l/min.	
Length	300 mm	305 mm
Width	120 mm	120 mm
Height	185 mm	185 mm
Weight	2.9 kg	3.3 kg
Sound pressure level (1 m)	< 70 dB(A)	

* At flow rates between 5 and 20 l/min.

** When mounted on a flat horizontal surface.

Data	Pump type				
	STL 1.0 C	STL 1.5 C	SSL 1.4 C	STL 2.0 C	STL 2.0 CN
Supply voltage (transformer)	1 x 230 V, 50 Hz				
Transformer output	29 VDC	37 VDC	38 VDC	39 VDC	39 VDC
Power consumption	170 W	270 W	160 W	380 W	380 W
Rated current	5.4 A	7.0 A	4.0 A	10 A	10 A
Rating*	20 min. on / 40 min. off		30 min. on / 30 min. off		
Enclosure class**	IPX2				IPX2
Motor	Permanent magnet, low voltage, DC				
Inlet head (min. - max.)	2 to 10 m				2 to 8 m
Maximum developed pump head	9.5 m	15 m	14 m	19.5 m	19.5 m
Maximum operating pressure	3 bar				
Minimum starting flow rate	0.5 l/min.				
Length [mm]	275 mm	275 mm	225 mm	285 mm	285 mm
Width [mm]	120 mm	120 mm	120 mm	120 mm	215 mm
Height [mm]	185 mm	185 mm	185 mm	185 mm	256 mm
Weight [kg]	4.6 kg	5.8 kg	4.0 kg	6.9 kg	8.3 kg
Sound pressure level (1 m)	< 70 dB(A)				

* At flow rates between 5 and 20 l/min.

** When mounted on a flat horizontal surface.

Data	Pump type		
	STR 1.2 C	STR 1.5 C	SSR 1.5 C
Supply voltage	1 x 230 V, 50 Hz		
Power consumption	350 W	390 W	270 W
Rated current	1.5 A	1.7 A	1.2 A
Rating*	20 min. on / 40 min. off	20 min. on / 40 min. off	20 min. on / 40 min. off
Enclosure class**	IPX2		
Motor	4 pole, induction		
Inlet head (min. - max.)	1 to 10 m		
Maximum developed pump head	12 m	15 m	16 m
Maximum working pressure	3 bar		
Minimum starting flow rate	0.5 l/min.		
Length	250 mm	250 mm	230 mm
Width	140 mm	140 mm	140 mm
Height	190 mm	190 mm	190 mm
Weight	5.8 kg	5.8 kg	5.4 kg
Sound pressure level (1 m)	< 70 dB(A)		

* Recommended minimum flow rate: 5 l/min.

** When mounted on a flat horizontal surface

Data	Pump type					
	SSN 2.0 B	SSN 3.0 B	STN 1.5 B	STN 2.0 B	STN 3.0 B	STN 4.0 B
Supply voltage (transformer)	1 x 230 V, 50 Hz					
Power consumption	400 W	435 W	525 W	640 W	850 W	920
Rated current	1.7 A	1.9 A	2.3 A	2.8 A	4.0 A	4.3
Rating*	Continuous operation					
Enclosure class**	IPX2					
Motor	2-pole induction					
Inlet head (min. - max.)	1 to 8 m					
Maximum developed pump head	23 m	31 m	21 m	24 m	34 m	41 m
Maximum operating pressure	6 bar					
Minimum starting flow rate	0.5 l/min.					
Length [mm]	178 mm	178 mm	245 mm	243 mm	266 mm	296 mm
Width [mm]	225 mm	225 mm	225 mm	225 mm	225 mm	225 mm
Height [mm]	283 mm	283 mm	283 mm	283 mm	283 mm	283 mm
Weight [kg]	7.6 kg	7.6 kg	9.7 kg	11.3 kg	13.3 kg	15.8 kg
Sound pressure level (1 m)	< 70 dB(A)					

* Recommended minimum flow rate: 5 l/min.

** When mounted on a flat horizontal surface

13. Service

- The flexible pump hoses, dependent on water temperature and mechanical stress, can deteriorate with age. We recommend that all flexible hoses and connections are inspected at least every 6 months. Replace as necessary to prevent leaks.
- If the flow from the shower drops below its normal performance, it may be necessary to clean the pump strainers. Blocked strainers are common on initial installation of pumps, or in new buildings where the use of jointing compounds, tapes, flux and other debris can be flushed through the system.
In this event, close the service valves, remove and clean the strainers. See section 7. *Connecting the pump*.
- A common cause of poor shower performance is a clogged shower head/handset, so regular cleaning and descaling is important – this applies particularly to hard-water areas.

14. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

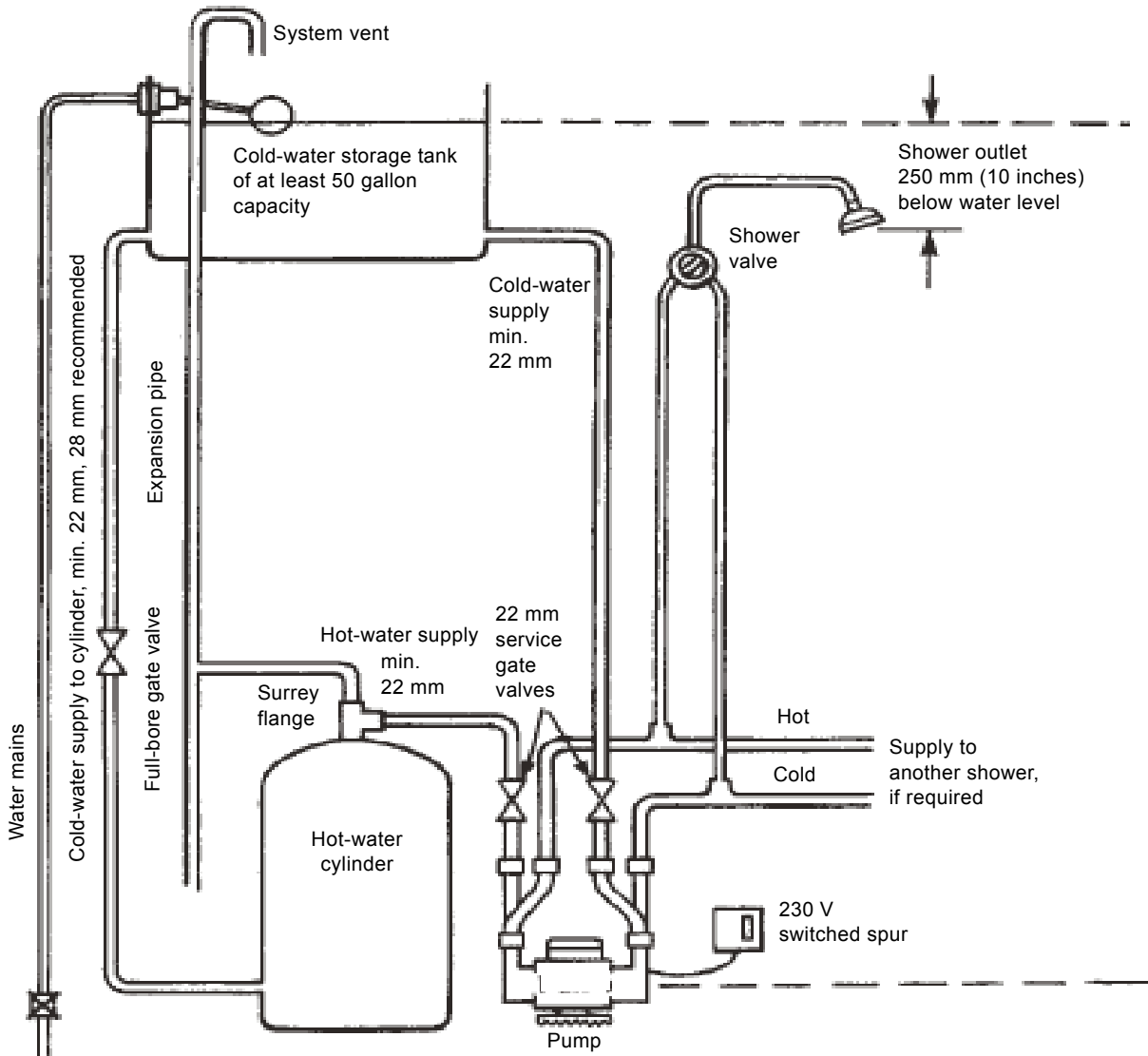


Fig. 2 Installation of STP, SSP, STC and STR pumps

TM04 0201 5107

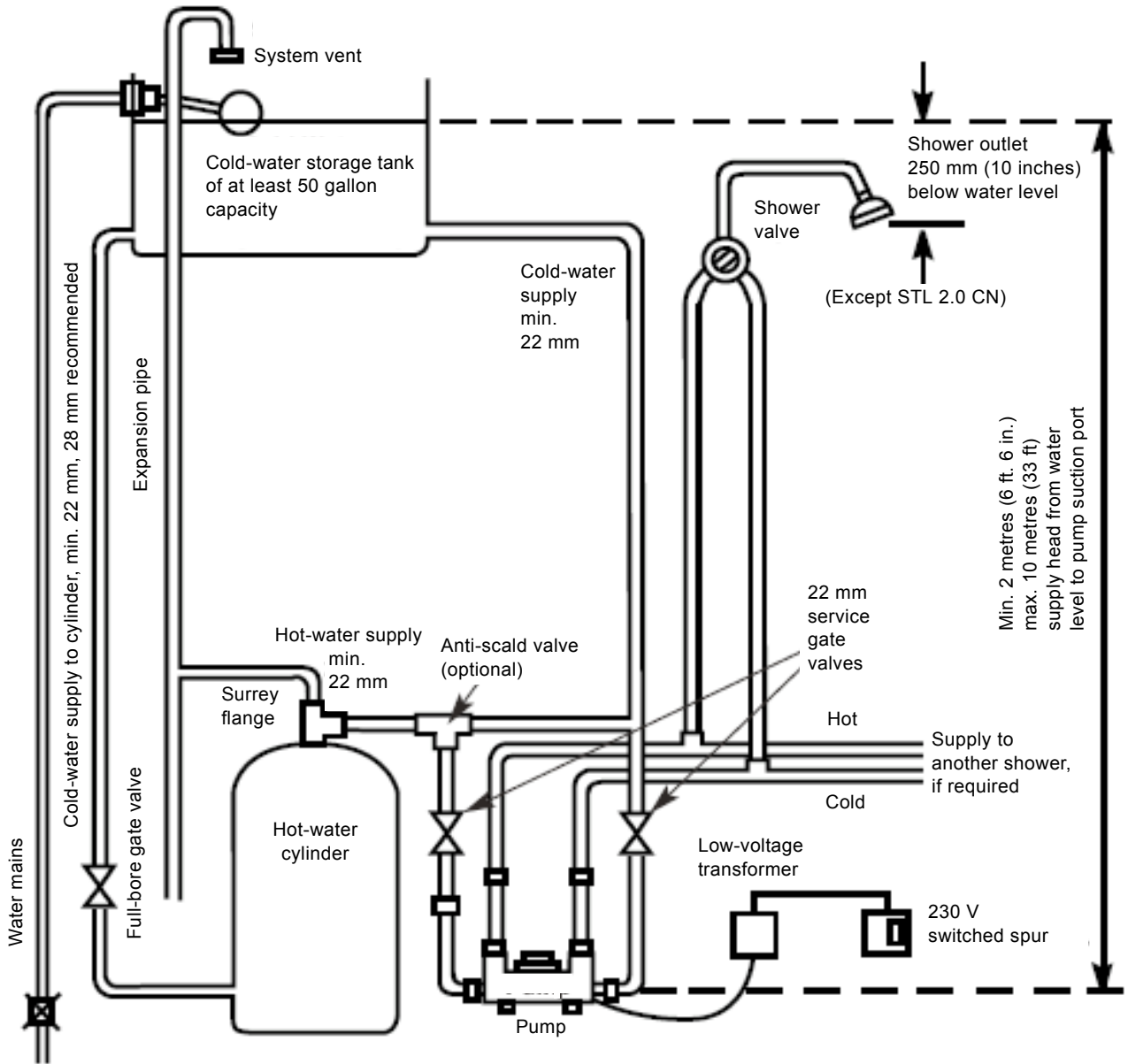


Fig. 3 Installation of STL and SSL pumps

TM04 0202 5107

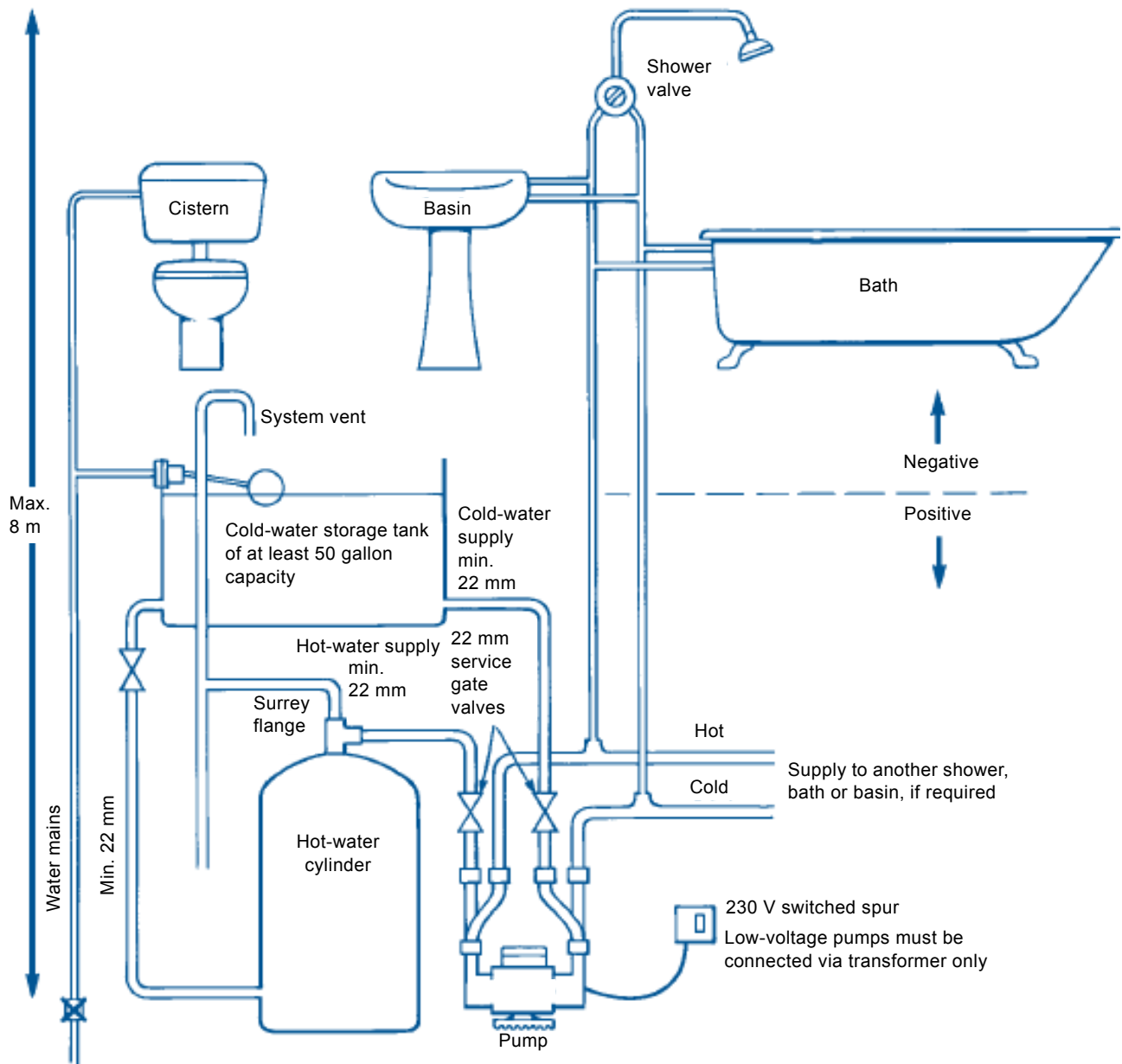


Fig. 4 Installation of STN, SSN and STL 2.0 CN pumps

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