

GRUNDFOS®



➤ FITTING YOUR GRUNDFOS DOMESTIC CIRCULATOR

GRUNDFOS SELECTRIC
GRUNDFOS SUPER SELECTRIC



BE ➤ THINK ➤ INNOVATE ➤



BS EN 60335-2-51 and EN 1151
Licence No. 05988



ISO 14001
EMS 34445



ISO 9001-2000
Q 09079

Declaration of Conformity

We GRUNDFOS declare under our sole responsibility that the UPS15-50 and UPS15-60 circulators referenced in these installation instructions to which this declaration relates are in conformity with the:

Machinery (89/392/EEC), EN292
Electromagnetic Compatibility (89/336/EEC), EN50 081-1 & EN50 082-2
Electrical equipment designed for use within certain voltage limits
(73/23/EEC), EN60 335-1 & EN60 335-2-51

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

1st August 1997
Grundfos Pumps Ltd
Leighton Buzzard, Beds



Mr D. S. Cooper, Managing Director

General Data

DELIVERY AND HANDLING



All pump units are supplied from the factory packaged in a cardboard carton suitable for handling by individual persons. Proprietary lifting equipment should be considered where the circulator is to be installed in generally less accessible positions in the system pipework.

INSPECTION

Each pump should be unpacked and inspected. Any damage must be reported to the supplier in writing within seven days.



It is important that these installation and operating instructions are studied carefully before any installation takes place. The installation and operation should be in accordance with local regulations and accepted Codes of Practice.



Under no circumstances should pumps be operated until correctly installed in the system pipework and the terminal box cover secured in the appropriate position.

Motor: Three speed squirrel cage induction wet rotor type, running in water lubricated bearings. The rotor is separated from the stator windings by a stainless steel rotor can.

Winding Insulation: Class H
Motor Enclosure: IP44
Cable Gland: Pg11 compression fitting
Voltage: 230V Single phase 50Hz.
Pump ports: 1/2" BSPM
Oval flange (available for replacement purposes only)

Net Weight: Selectric (UPS15-50): 2.5kg
(Less Fittings) Super Selectric (UPS15-60): 2.5kg

Application

Grundfos Selectric/Super Selectric Domestic Circulators are designed for circulating hot water in both sealed and open-vented central heating systems. They are not designed for cold water boosting and transfer applications.

For domestic hot water applications, the UPS15-50B Selectric Bronze should be used. Grundfos Selectric/Super Selectric Circulators are suitable for a maximum water temperature range of +15°C to +110°C (see table) and maximum operating pressure of 10 bars. The pumps may be used in heating systems containing glycol based anti-freeze with corrosion inhibitors, up to a maximum of 50% solution. However, if the liquid temperature remains lower than the ambient temperature during operation, condensation may form in the stator housing and may short-circuit the motor windings.



Selectric/Super Selectric heating circulators must not be used in an environment which has been classified as hazardous and could therefore cause an explosion if there is a danger of ignition by a flame path.



Grundfos Pumps Ltd do not accept any responsibility for the use of Selectric/Super Selectric heating circulators used to pump liquids which could be constituted as being hazardous to health either by touch, ingestion or inhalation of fumes or gases given off by the liquid.

MAXIMUM OPERATING CONDITIONS

Maximum Operating Temperature:

System water temperature in °C	110	105	100	90	80	60	40	15
Max. ambient temperature in °C	35	55	60	70	80	60	40	15

Water Temperature Range: +15°C to 110°C
 Maximum Operating pressure: 10 Bar



The maximum surface temperature will not exceed 125°C.

The minimum dynamic head for the inlet water should be:

Inlet Pressure in m.w.g	1.3	1.4	11.0
Water Temperature in °C	75	85	110



The minimum dynamic head for the inlet water should be available at the pump inlet during operation to ensure satisfactory bearing life, quiet running and to avoid cavitation.



NOISE LEVEL

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

Terminal Box Position

To ensure easy access to the electrical connections and speed selector switch, the pump head can be turned to any one of four positions. Always try to ensure that the terminal box is not next to hot surfaces, nor in a position where water can enter the terminal box.



If the circulator has already been installed then ensure that the electrical supply to the pump motor has been isolated and cannot be switched on. Before attempting to remove the pump head by unscrewing and removing the four screws. Allow the pump to cool as **hot water is dangerous** and ensure that the system pressure has been removed from the pump by closing the isolating valves either side of the pump. It is recommended that the pump casting is drained of water to prevent water entering the motor windings before removing the pump head. Take care that any escaping water does not cause damage or enter the terminal box of the pump motor.

Close the isolating valves either side of the pump. Remove the four socket screws using a 4mm hexagonal key, rotate the stator and terminal box to the required position, taking care not to damage or displace the gasket between stator and pump housing. Replace the screws, and tighten diagonally in stages to avoid distortion, to a final torque of 7.5 Nm (Max).

Installation

GENERAL INFORMATION

Pumps should only be installed by a qualified heating installer.

Before installing the pump, the system should be flushed out thoroughly to clear all foreign matter such as solder, steel wool, copper filings.

We recommend that the system is cleaned out in accordance with British Standard 5449 Part 1:1990.

The manufacturers guarantee may be affected if the system has not been flushed of all impurities.



Do not remove motor terminal box covers, electrical cables or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated. Do not attempt to supply electricity to the pump without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

SITING OF CIRCULATORS

1. It is preferable to install Grundfos circulators in a vertical pipe pumping upwards. This position ensures that the pump shaft is horizontal, which reduces the thrust bearing load and ensures positive air purging from both the rotor chamber and impeller housing (Fig.1). Pumping downwards in a vertical pipe is not recommended, unless an **effective** air purger and air vent is incorporated in the system, **before** the pump, as this may lead to air locking of the pump, with resultant loss of performance.
2. Where pumps can only be installed in horizontal pipework, it is imperative that the pump shaft is horizontal, or slightly higher at the vent plug end (Fig.2).





The shaft must not fall below the horizontal plane, even by a few degrees, as this causes premature wear of the top bearing and shaft. Pumps should not be installed with the shaft in a vertical plane, as this may lead to dry running of the top bearing, noise and possible pump failure.

Fig.1



Fig.2



3. Arrows on the pump base indicate water flow direction through the pump.
4. To avoid sediment, do not fit the pump in the lowest part of the system.
5. It is advisable to fit isolating valves either side of the pump.
6. To prevent noise avoid sharp bends either side of the pump.
7. Try to position the pump motor away from hot surfaces and allow access to the switch on the terminal box.
8.  The pump must be positioned so that no part of the motor or pump case comes into contact with any wood regardless of type or use.
9. In open-vented systems position the pump so that it neither pumps over into the feed and expansion tank, nor causes air to be drawn down the vent pipe. Generally, this means fitting the cold feed pipe on the return side of the boiler and the vent pipe on the flow side of the boiler. The pump should be mounted in the flow pipe after the point where the vent is connected. Alternatively, a close coupled cold feed and vent may be fitted in the flow pipe, in a horizontal section of pipework, before the pump.
10. In pressurised systems the pump can be fitted in either flow or return pipes as required. However, the source of pressurisation should be connected to the system on the inlet side and as close as possible to the pump, to minimise the possibility of cavitation.
11.  In systems where all the flow can be stopped while the pump is running, e.g. in systems fitted with thermostatic radiator valves, a by-pass should be fitted between flow and return pipes to ensure water flow through the boiler and pump at all times, (approx. 75% of maximum pump capacity).
12. Ensure the pump is not stressed by the pipework and that the pipework is properly supported either side of the pump. If necessary use proprietary mounting brackets.

When connecting pump to pipework or valves, the gasket and union nut should be assembled dry as it is not necessary to use proprietary sealants. Ensure that the gasket is correctly positioned, then tighten union nut firmly. Do not overtighten the union nut, and take care not to displace or distort the gasket. To prevent the pump casting from turning while tightening the union nut, two flats are provided on the pump casting for a 32mm spanner.

Electrical Data

UPS15-50 SELECTRIC

230V Single Phase 50Hz

Speed Setting	Speed R.P.M	Input Watts	Full load Current (A)	Locked Rotor Current (A)
III	1900	95	0.42	0.47
II	1200	65	0.28	0.31
I	800	40	0.17	0.18

Capacitor rating 2.0 μ F/400V

UPS15-60 SUPER SELECTRIC

230V Single Phase 50Hz

Speed Setting	Speed R.P.M	Input Watts	Full load Current (A)	Locked Rotor Current (A)
III	1750	95	0.44	0.47
II	1100	65	0.30	0.31
I	750	40	0.17	0.18

Capacitor rating 2.0 μ F/400V

Electrical Connection



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



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



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



The metal body of the pump, motor and switch gear, electrical isolator must all be earthed. It is strongly recommended that an Earth Leakage Circuit Breaker with a tripping current of 30mA or less is fitted on the incoming electrical supply.

1. Contactor overload protection is not required for these pumps. A 3 amp fuse must be fitted in conjunction with a proprietary switch capable of disconnecting the electrical supply to the motor with a minimum 3mm air gap between contacts in all poles.
2. The cable size to be used is 3 core 0.75mm². The cable should be capable of withstanding a minimum temperature of 80°C for the current rating required.
3. Isolate electrical supply and remove the terminal box screw and cover.
4. Thread the cable through the clamp nut and the self sealing gland.

Capacitor Connections
Terminal No. 4 & 8

Rotary Speed Selector Switch
Fully Clockwise = Speed III



WARNING:


This appliance must be earthed.



5. Connect the three leads to terminals L, N and \perp by pushing back the spring loaded arm, inserting the bared wire, and releasing the arm. Ensure the jaw closes on the conductor wire and not the insulation of the wire.
Brown lead to L on terminal block.
Blue lead to N on terminal block.
Green/Yellow lead to earth \perp on terminal block.


Only sufficient insulation must be removed from the end of the wires to allow the terminal to clamp onto the conductor wire, without leaving excess bared conductor exposed.

6. Check that the connections are correct and secure.
7. Tighten the hexagon cable clamp nut to ensure the cable is gripped securely, but do not overtighten.
8. Replace the terminal box cover, and tighten screw. Do not overtighten.


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

Venting & Shaft Rotational Checks

Place a small receptacle under the pump to catch any escaping water, open the isolating valves either side of the pump and remove the vent plug.

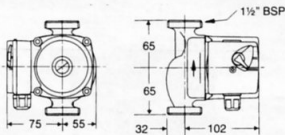
1.  Pay attention to the direction that the vented water will take and take care to ensure that the escaping water does not cause injury to persons or enter and subsequently damage the pump motor/motor terminal box. In hot water applications, special attention should be paid to the risk of injury that could be caused by scalding hot water.
2. Insert a small screwdriver (3mm) into the end of the shaft, push gently, and rotate the shaft several times to ensure it is free. This is particularly important for pumps which have been stored.



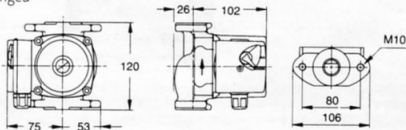
3. Turn the selector switch on the terminal box to Speed III and switch on the electricity supply. Check that the pump shaft is rotating counter-clockwise, as indicated by the arrows on the pump label.
4.  Switch off the electricity and replace the vent plug. Do not overtighten.

Dimensions

UPS15-50 & UPS15-60 1/2" BSPM



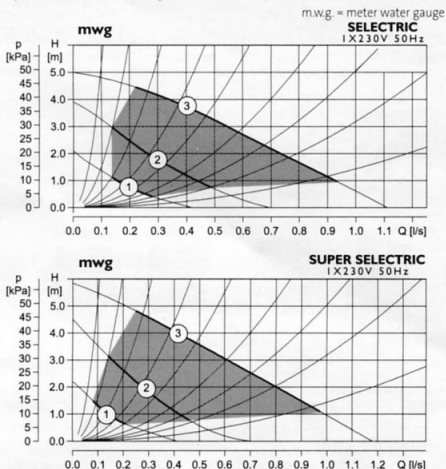
UPS15-50 Flanged



Flanged pumps are supplied with gaskets only. Counter flanges are not available, the existing pipework counter flanges should be used.

Performance Selection

The performance of the Selectric and Super Selectric circulators is varied by the rotary Speed selector switch on the terminal box, Speed I giving the lowest output and Speed III the highest. The best speed setting is the lowest setting which gives adequate circulation around the system with the correct flow/return differential temperatures, as specified by the boiler manufacturer. Uneven heat distribution may indicate that balancing of the flow is required to each radiator



1. Set the speed selector switch to maximum (Speed III) and switch on the electricity supply and start the heating system.
2. Turn the switch to minimum (Speed I) and if after a suitable time all the radiators are not hot, increase the speed of the pump by switching to Speed II. Repeat this process until adequate circulation is achieved.

Remember, if the speed setting is too high, noise may be caused in the system and the power consumption will be unnecessarily high.



On modern high efficiency (condensing) boilers it is imperative to achieve a minimum flowrate through the boiler in accordance with the boiler makers specification. The pump speed should be set in accordance with the respective minimum flowrate based on the actual system resistance and a practical test.

Maintenance

Selectric/Super Selectric circulators do not require any maintenance during service life, since pump bearings are water lubricated.

It is recommended that the pump be switched on for a few minutes each week whenever the system is not in use, to prevent sediment build-up in the pump.

If the pump has been inoperative for a long period, i.e., during Summer season, it is advisable to check the pump shaft for free rotation before switching on. Close isolating valves and unscrew and remove the vent plug. Locate a small screwdriver 3mm into the end of the shaft, push gently and rotate several times in each direction. Replace vent plug and retighten.

A clean system will add to the life of its components.

Do not attempt to remove or refit the pump head without first ensuring that the base casting is completely drained. Failure will cause water to enter the windings and terminal box and cause damage.

Trouble Shooting

PUMP FAILS TO START

- 1) Check that electrical connections are tight.
- 2) Check electrical supply fuse.
- 3) Check shaft for free rotation (see above).

INADEQUATE CIRCULATION

- 1) Check that connecting pipework and entire system has been vented.
- 2) Check pump venting of shaft (see above).
- 3) Check isolating valves are open (if fitted).

WATER NOT CIRCULATING

- 1) Check pump setting (see 'Performance Selection' section).
- 2) Check system balancing.
- 3) Check pump siting relative to cold feed and vent pipe.

NOISE

- 1) Check venting (see above)
- 2) Check pump setting not too high.
- 3) Check pump mounting and attitude (see 'Siting of Circulators')
- 4) Check inlet pressure.
- 5) Check pump siting relative to cold feed and vent pipe.

Quality Assurance

The UPS15-50 and UPS15-60 circulators are licensed to carry the British Standard Kite Mark relating to BS EN 60335-2-51 and EN 1151 and are produced in a manufacturing environment operating to a registered quality system of ISO 9001-2000.

Grundfos operates an environmental management system which complies with the requirements of ISO 14001.



BS EN 60335-2-51 and EN 1151
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ISO 14001
EMS 34445



ISO 9001-2000
Q 09079

It is the continuing policy to develop and improve our products, and we reserve the right to alter prices and specification without prior notice.

GRUNDFOS

FOR TECHNICAL ENQUIRIES ON THESE PRODUCTS:

If you are an **INSTALLER**, please telephone
Domestic Building Services on 01525 775402

If you are a **HOUSEHOLDER**, please telephone our
Consumer Helpline on 01525 775325

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