

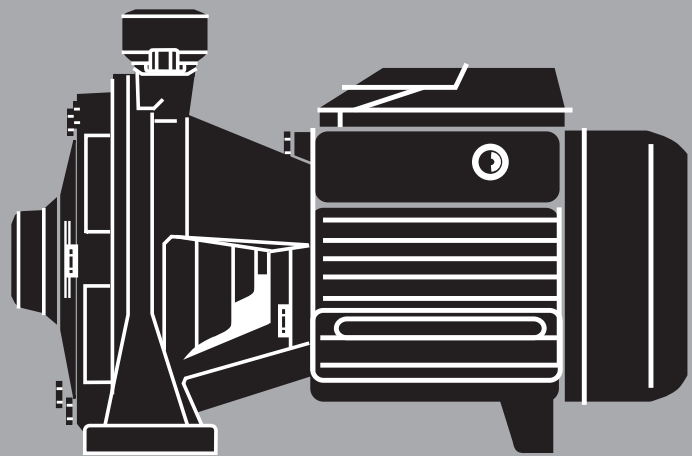
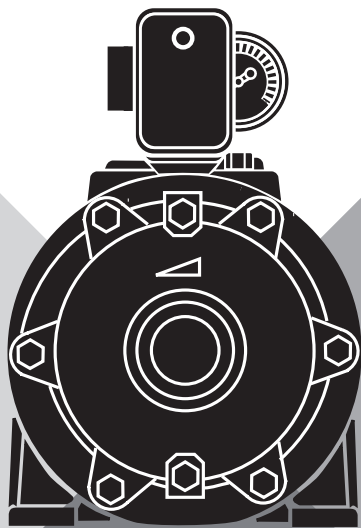


**PENTAIR**

**SOUTHERN CROSS**

# **SPN SERIES PRESSURE PUMPS & TRANSFER PUMPS**

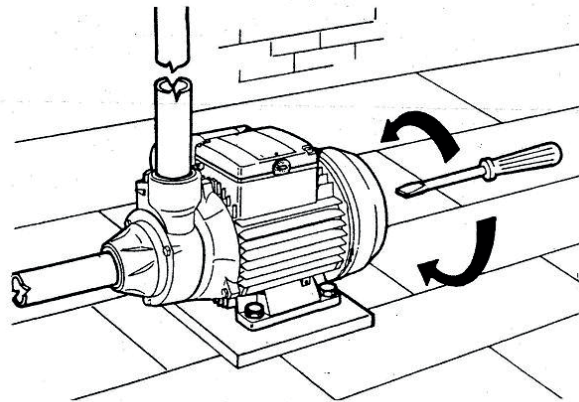
OPERATING INSTRUCTIONS



***These instructions act as a guide only and do not cover every aspect. People not familiar with pumping equipment should seek advice from someone experienced with Southern Cross equipment and pump installation.***

The range of Pentair Southern Cross Pressure Pumps and the “Multi-Flow” transfer pumps are designed for the pumping of non-aggressive water, or water not containing solid particles. Never install the pump in areas where the ambient temperature exceeds 40° C. The temperature of the pumped liquid should be within the range of 0°C to 80°C.

Before installing the pump ensure the rotating parts turn freely. To do so, insert a screwdriver in the fan blade of the motor shaft (at the ventilation side of the motor) and turn to check the pump/motor (as shown in diagram).

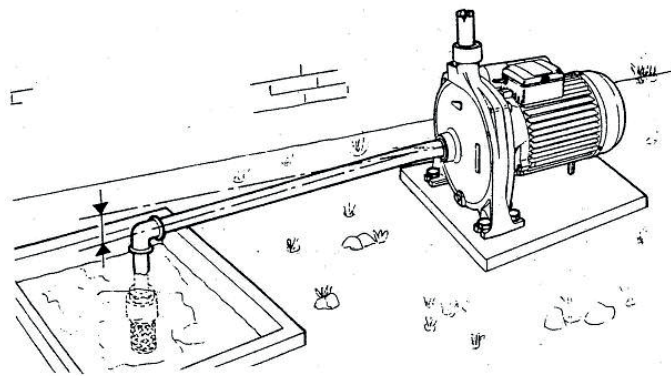


### **Installation**

The pump should be installed as close as possible to the liquid source, and covered by a weather-proof housing, well ventilated to allow motor heat to escape. The pump foundation should be rigid enough to absorb any vibration from the motor, and the pump should be securely bolted to the foundation.

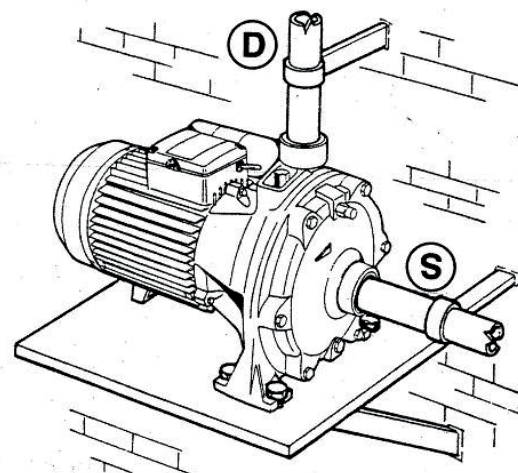
### **Piping**

The suction line should be as short and straight as possible, with a minimum of bends. The internal diameter of the suction pipe must be equal to, or greater than the ports of the pump. The connection between the suction line and pump must be airtight, and the suction pipe must be positioned so it has an upward slope to the pump (thus avoiding the formation of air pockets) as shown in the diagram, and **must** be fitted with a reliable checkvalve or footvalve for correct operation. When the suction pipe is used on a suction lift a footvalve should be positioned on the suction line, below the liquid level.



A strainer must be fitted to all suction lines thus ensuring any solids in the water do not enter the pump internals. If hose is used as the suction pipe, it must be non-collapsible. To minimize pressure drop the discharge pipe should be at least the same size as the discharge port (D) of the pump.

For long suction pipes or high suction lifts over four metres, the suction pipe should be of greater diameter than the suction port (S). All piping should be independently supported and in no way apply any strain to the pump casing with all pipe joints securely tightened using a jointing compound.



# SPN SERIES PRESSURE PUMPS & TRANSFER PUMPS

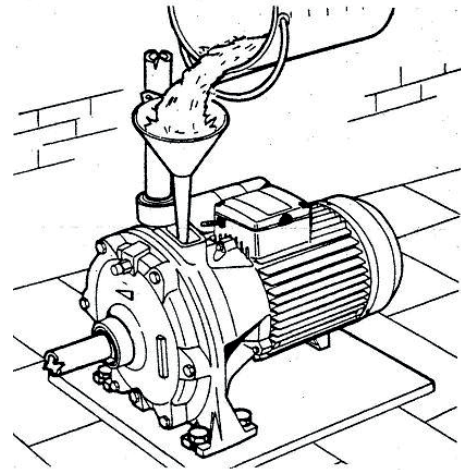
## Electrical Connections

### **WARNING: All wiring should be carried out by a fully qualified electrician.**

Ensure the mains voltage is the same as the value shown on the motor plate and that the pump is safely connected to ground/earth. All single phase (240 V) motors are supplied with a 3 pin plug and lead and can be connected directly to the mains supply. Three phase motors must be wired with a correctly rated thermal overload by a licensed electrical contractor. Wiring connections should be made as shown on the inside of the terminal box cover. All single phase pumps/motors are fitted with a thermal overload switch. To reset the overload switch on the 1.1kW and 1.5kW motors, push the red button located on the motor terminal box. The 0.50kW, 0.60kW and 0.75kW motors have a thermal overload switch that automatically resets when the motor has cooled. Do not start the pump until it has been primed. The direction of rotation is indicated by the arrow on the pump casing (ie. clockwise when viewed from the motor end). Three Phase Motors - To reverse the direction of rotation, switch off the electricity supply and interchange any two of the three incoming power wires (not the earth or neutral wire).

## Starting

Before starting, the pump must be primed. This is done by removing the priming plug (located next to the discharge port) and completely filling the pump and suction line with clean water (as shown in diagram). Ensure the priming plug is tightened in place once pump has been primed. The pump should undergo this operation each time it has been off for long periods, or in the presence of airpockets in the system. It is imperative to fill the pump with liquid before operation as dry running causes irreparable damage to the mechanical seal.



## Precautions

The pump should be shut down and the trouble corrected if the pump is running at speed and found to have any of the following problems:

- No liquid delivered
- Not enough liquid delivered
- Excessive vibration
- Motor runs hot

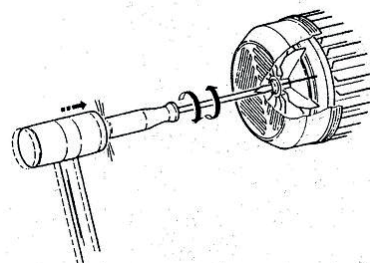
Do not allow the pump unit to continually start and stop (short-cycle) as this will reduce the motor life. Short-cycling can occur on pressure units when the pressure tank pre-charge drops.

## Operation and Maintenance

Under normal operating conditions, the pump does not require any maintenance as long as the following points are observed:

- if the pump is to remain inactive at temperatures of less than 0 °C, the pump body must be completely emptied through the drain plug (the priming operation must be carried out before the next start).
- periodically check the condition of the footvalve/checkvalve and strainer (if used).
- if the pump is to be inactive for long periods, the pump should be rinsed thoroughly with clean water, then drained and stored in a dry place.
- if the pump sticks after periods of inactivity, a slot is provided on the motor shaft to free up the pump/motor.

To do so insert a screwdriver in the slot in the motor shaft (at the ventilation end of the motor) and turn to free the pump/motor while gently tapping with a hammer (as shown in diagram). If this does not remedy the problem, the unit will need dismantling.



# SPN SERIES PRESSURE PUMPS & TRANSFER PUMPS OPERATING INSTRUCTIONS

## Fault Finding

Fault	Possible Cause
Pump Won't Prime/ No Liquid Delivered	<ul style="list-style-type: none"> <li>- Footvalve may be leaking.</li> <li>- Suction lift too high.</li> <li>- Air leak or blockage in suction line.</li> <li>- Footvalve not installed below lowest water level.</li> <li>- Footvalve/checkvalve installed in the wrong direction.</li> <li>- Voltage or wiring of motor incorrect.</li> <li>- Strainer blocked.</li> <li>- Pump speed too low .</li> <li>- Pump impeller/ejector jet blocked.</li> </ul>
Pump Runs at Reduced Capacity	<ul style="list-style-type: none"> <li>- Wrong direction of rotation (three phase).</li> <li>- Suction lift too high.</li> <li>- Suction or discharge line blocked.</li> <li>- Pump impeller/ejector jet partly blocked by impurities.</li> <li>- Footvalve/checkvalve or strainer partly blocked.</li> <li>- Air leak in suction line.</li> <li>- Pump speed too low - check voltage.</li> <li>- Damaged impeller or casing.</li> <li>- Discharge pressure too high.</li> </ul>
Pump Does Not Start	<ul style="list-style-type: none"> <li>- Power supply failure.</li> <li>- Defective motor.</li> <li>- Impeller jammed.</li> <li>- Incorrect voltage.</li> <li>- Thermal overload tripped.</li> </ul>
Pump Switching On and Off When No Water is Being Used	<ul style="list-style-type: none"> <li>- Pressure switch setting incorrect.</li> <li>- Pressure tank pre-charge incorrect.</li> <li>- Footvalve/checkvalve leaking.</li> <li>- Discharge or suction line leaking.</li> </ul>
Pump Stops During Operation	<ul style="list-style-type: none"> <li>- Motor thermal overload tripping.</li> <li>- Voltage too low.</li> <li>- Blocked/damaged impeller causing it to rub.</li> <li>- Motor continually starting/stopping resulting in thermal overload tripping.</li> </ul>
Pump Not Switching Off or Taking Too Long to Switch Off	<ul style="list-style-type: none"> <li>- Voltage too low.</li> <li>- Drop in suction water level.</li> <li>- Leak in discharge line.</li> <li>- Pump impeller/ejector jet blocked.</li> </ul>
Pump Loses Suction	<ul style="list-style-type: none"> <li>- Suction line leaking.</li> <li>- Air in the pumping liquid.</li> <li>- Air leaks in suction line.</li> <li>- Suction lift too high.</li> </ul>



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