

# LCCP Light Commercial Circulation Pump

# **Installation and Operational Manual**



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## Notes

- 1. Read the installation manual carefully before installation and use.
- **2.** The manufacturer will not be liable for any personal injury, pump damage or any property damage due to failure to comply with contents specified in the safety warning.
- 3. The installers and operators must comply with local safety regulations.
- 4. This product must only be installed and maintained by a qualified professional.
- 5. The pump should not be installed in a damp environment.
- **6.** To provide convenient access for maintenance, isolating valves should be installed on both sides of the pump.
- 7. The power supply of the pump should be isolated before installation and maintenance.
- **8.** In hard water areas heat supply pipelines should be adequately protected to avoid a build up of lime scale in the circulating water which may block the impeller.
- 9. Do not run the pump without liquid.
- 10. This model is **not** suitable for drinking water.
- **11.** The liquid circulating through the pump may be at high temperature and high pressure therefore, the system must be completely drained down or the isolating valves on both sides of the pump closed before removal and maintenance is carried out.
- **12.** Adequate ventilation must be ensured in high ambient temperature periods to avoid condensation that could cause electrical malfunctions.
- **13.** If the ambient temperature drops below 0°C the pump system will not operate. Under these conditions the liquid in the system should be completely drained to avoid damage of the pump body.
- **14.** If the pump is left unused for an extended period of time, the isolating valves should be closed on both sides of the pump and the power supply disconnected.
- **15.** If the power supply cable is damaged, it must be replaced by a qualified professional.
- **16.** If the pump overheats, the isolating valves must be closed off on both sides and the power supply to the pump cut off immediately.
- **17.** This product should be stored in a dry, well-ventilated location under room temperature.

The LCCP series circulation pump is intended for use in light commercial & heating systems only.

This pump is equipped with a permanent magnet motor and differential pressure controller, capable of automatically & continuously adjusting motor performance to meet the actual needs of the system. It is equipped with a control panel on the front for easy operation by the user.



### **Advantages**

Easy installation and start-up.

Provided with self adaptive mode AUTO (Initial setting). In most cases, the pump needs no adjustment and can be readily started and automatically adjusted to meet the actual needs of the system.

High degree of comfort.

Low operational noise of the pump.

### Warning



Before installation, please carefully read the installation and operation manual. Installation and use of the equipment must comply with local regulation and applicable operation standards.

### Signs



#### Warning

Failure to comply with this safety instruction may lead to personal injury!

#### CAUTION Caution

Failure to comply with this safety instruction may lead to equipment malfunction or damage!

LCCP
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Operating Conditions			
Ambient Temperature	0~+ 40°C		
Relative Humidity (RH)	Max. Humidity 95%		
Medium (Liquid Delivery) Temperature *	+2°C - 110°C		
System Pressure	Maximum Pressure 1.0 mPa (10 bar)		
Degree of Protection	IP44		

\* To avoid condensation in the control box and the stator, the temperature of liquid being pumped must always be higher than the ambient temperature.

Liquid Temperature	<85°C	90°C	110°C	
Inlet Pressure	0.05 bar	0.28 bar	1 bar	
	0.5m head	2.8m head	10m head	

## **Pumping Liquid**

The pumping liquid must include only thin, clean, non-corrosive and non-explosive liquid which shall not contain any solid particles, fibre or mineral oil, and the pump must not be used to pump flammable liquids such as rapeseed oil and petrol.



When installing the LCCP circulation pump, the arrow on the pump case indicates the direction of flow of the liquid through the pump. When installing the circulation pump, the two supplied gaskets must be installed on the inlet and outlet. During the installation, the motor shaft of the pump must be fitted in a horizontal position.



# Positioning of the Junction Box



# **Changing Position of the Junction Box**

The junction box can be rotated in a step of 90°. The procedures for changing the position of junction box are as follows.

 Close the isolation valves at the inlet and outlet and release the pressure.
Unscrew and remove the four socket head screws that fasten the pump body.
Rotate the motor to the expected position and align the four screw holes.
Install the four socket head screws again and fasten them clockwise.
Open the isolation valves at the inlet and outlet.





Pumping liquid may be high temperature and high pressure, therefore the liquid in the system must be completely drained or the valves on both sides of the pump must be closed off before removing the socket head screws.







To limit heat loss the pump body and pipeline should be thermally insulated.

CAUTION

Do not isolate or cover the junction box and control panel.



All electrical connections must be carried out by a qualified professional in accordance with local regulations.



The pump must be earthed  $\oplus$ .

The pump must be connected to an external power switch, and the minimum space between all the electrodes is 3mm.

The LCCP circulation pump needs no secondary protection.

Check if the supply voltage and frequency are the same as the parameters indicated on the nameplate of the pump. Connect the pump power supply with the electrical gland adaptor supplied together with the pump. After power is supplied, the indicator lamp on the control panel is ON.

# **Control Panel**

# LCCP

Site	Descriptions
1	AUTO
2	Min - Continuous variable speed set to minimum level
3	Operating indicator light
4	Max - Continuous variable speed set to maximum level



# Pump Settings Based On System

- Auto mode, automatically adjusts the pumps performance according to the heat demand of the system
- Due to the gradual performance adjustments of the pump, its recommended that the pump should be set to AUTO for at least one week before adjusting the settings
- The LCCP can be manually adjusted from AUTO to other settings
- The heating system is a slow operating system. If it cannot achieve the operating temperature in several minutes, the pump settings shoud be changed



Suctor	Pump Setting			
System	Recommended	Alternative Options		
A) Floor heating system	AUTO	Mix - Max		
B) Dual pipeline heating system	AUTO	Mix - Max		
C) Single pipeline heating system	AUTO	Mix - Max		



Setting	Function
AUTO	AUTO mode, will automatically adjust the pump performance based on the system requirements, and will adjust the pump as required
Min	Minimum, the pump will operate on the minimum power settings
Max	Maximum, the pump will operate on the maximum power settings

Every setting of the pump has a corresponding performance curve (Q/H curve). However AUTO (self-adaptive mode) covers just one performance scope.

The input power curve (P1 curve) belongs to every Q/H curve. Power curve represents the power consumption of the pump in given Q/H curve with the unit of measure in Watts.

# **Curve Conditions**

The following are applicable to the performance curve specified below;

Test liquid: air-free water

- Applicable density of curve  $\rho$  = 983.2 kg/m<sup>3</sup>, and liquid temperature +60°C
- All curves represent an averaged value, and shall not be used as a guarantee curve

If a specific performance is needed, then separate measuring should be conducted.

- Velocity Max, Min curves have all been marked
- The applicable Kinetic viscosity of the curve  $u = 0.474 \text{ mm}^2/\text{s} (0.474 \text{ CcST})$

# **Performance Curve**

#### Model - LCCP 25-80/180





# **Data Plate Information**



No.	Descriptions
1	Manufacturer Name
2	Product Model
3	Serial Number
4	Power Rating (P1)
5	Current (Amp)
6	Maximum System Pressure (mPa)
7	Authentication marks
8	Direction of rotation
9	Temperature Class
10	Degree of protection
11	Insulation Class
12	Energy Efficiency Index (EEI Rating)
13	Frequency (Hz)
14	Voltage (V)

Power Supply Voltage	1x230V+6%/-10%,50/60Hz,PE			
Motor Protection	The pump needs no external protection			
Degree of Protection	IP44			
Insulation Class	н			
Relative Humidity (RH)	Max. 95%			
System Load Bearing	1.0 MPa			
	Liquid Temperature	Minimum Inlet Pressure		
Custian Dart Drassure	≤+85°C	0.005 MPa		
Suction Port Pressure	≤+90°C	0.028 MPa		
	≤+110°C	0.100 MPa		
EMC Standard	EN61000-6-1 and EN61000-6-3			
Sound Pressure Class	The sound pressure level of pump is lower than 43dB (A)			
Ambient Temperature	0 ~ +40°C			
Temperature Grade	TF110			
Surface Temperature	The maximum surface temperature is not higher than +125°C			
Liquid Temperature	2~+110°C			

To avoid condensation in the control box and the stator, the temperature of liquid being pumped must always be higher than the ambient temperature.

Ambient Temperature (°C)	Liquid Temperature			
Ambient Temperature (*C)	Min. (°C)	Max. (°C)		
0	2	110		
10	10	110		
20	20	110		
30	30	110		
35	35	90		
40	40	70		

For domestic heating, it is suggested that water temperature should remain below 65°C to reduce scaling.





Product Model	Dimension (mm)						
	L1	L2	B1	B2	H1	H2	G
LCCP	90	180	82	130	103	130	1 1/2"



Before conducting any maintenance and repair of the pump, ensure that the power supply has been disconnected.

Symptom	Cause	Corrective Action
	Stuck bearing	Run the pump at its highest speed for a short period of time (10 mins minimum). Loosen the rotor at the end of the shaft
Noisy	Air trapped in the system	Vent the system. Install an automatic air vent if one not present
Pump   Air in the pump   Allow the pump     Air in the pump   Allow the pump     Inlet pressure is too low   Increase the inlet increase the pressure is too low	Allow the pump to run, it will vent itself over time	
	Inlet pressure is too low	Increase the inlet pressure until the noise stops (do not increase the pressure more than the recommended maximum)

# str~da<sup>®</sup>



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