

RCE

Electronically Controlled Inverter Driven Circulation Pump



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Construction

RCE series is high efficiency energy saving variable speed circulation pump driven by a permanent magnet synchronous motor controlled by on board inverter.

Application

- Heating systems (constant and/or variable flow)
- Air-conditioning system
- Industrial circulation system
- Domestic hot water and drinking water supply system
- Floor heating system

Operating Conditions

Liquid temperature from +2 °C to +110 °C
Ambient temperature from 0 °C to +40 °C
Maximum system pressure ≤ 10 bar
Storage: -20 °C / + 70 °C max. relative humidity 95% at 40 °C
Certifications in conformity with CE requirements
Sound pressure ≤ 43 dB(A)
Minimum suction pressure: 0,05 bar < 85 °C
1 bar at 110 °C
Maximum glycol quantity: 40%
EMC according to: EN 55014-1, EN 55014-2 and EN 61000-3-2,
EN61000-3-3
Connections: threaded parts ISO 228: G11/2"
Circulator pump can consume low the power, with the EEI ≤ 0,23
The benchmark for most efficient circulators is EEI ≤ 0,20

Motor

Synchronous motor with permanent magnet
Motor: variable speed
Standard voltage: single phase 230 V (+6%, -10%)
Frequency: 50-60 Hz
Protection: IP42
Insulation Class: H
Class II appliance
Cable: phases and neutral and earth
Constructed in accordance with: EN 60335-1, EN 60335-2-51

Materials

Pump Casing	Cast iron
Impeller	Composite
Shaft	Ceramic
Bearings	Carbon
Thrust Bearing	Ceramic
Rotor	Composite
Winding	Copper wire
Gasket	EPDM

Designation

RCE 25 - 11 / 180

Connection size mm
Max. head in m
DN ports in mm
Series

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Operating Modes / Structural Design of Pump Control



Setting	Pump Characteristics Curve	Functions
AUTO (Initial Setting)	Highest to Lowest Proportional Pressure Curve	AUTO function will automatically control the pump performance within the specified scope. - adjust pump performance based on system scale; - adjust pump performance based on load variance within a period of time; Under the AUTO mode, the pump will be set to proportional pressure control;
BL (1-3)	Proportional Pressure Curve	The operating point of the pump will move up and down on the lowest proportional pressure curve based on the demand of system flow rate. When flow demand decreases, the pressure supply of pump drops; when flow demand increases, the pressure supply of pump rises.
HD (1-3)	Constant Pressure Curve	The operation point of the pump will move around the constant pressure curve based on the demand of system flow rate. The head (pressure) is kept constant, regardless of the flow request.
HS (1-3)	Constant Speed Curve	It runs on the constant curve in a constant velocity. Under the Velocity HS(1-3) mode, the pump is set to work on the highest curve under all working conditions. Set under HS3 mode in a short time, fast venting can be arranged on the pump.
Q (0-100%)	Flow Display	Indicating the flow percentage when pump is running

RCE series circulation pumps have 11 kinds of settings, pressing the button to choose. 5 different light area indicating all the settings;

Lighting area	Description	Graphical representation
AUTO (factory reset)	Autoadaptation	
HS1	Constant speed low speed	
HS2	Constant speed medium speed	
HS3	Constant speed high speed	
BL1	Proportional pressure low speed	
BL2	Proportional pressure medium speed	
BL3	Proportional pressure high speed	
HD1	Constant pressure low speed	
HD2	Constant pressure medium speed	
HD3	Constant pressure high speed	
P	PWM control	

Initial setting= AUTO (Self-adaptive mode)

Recommended and available motor pump setting

Position	System type	Motor Pump Setting	
		Recommended	Options
A	Floor heating system	AUTO	HD (1-3)
B	Dual pipeline heating system	AUTO	BL (1-3)
C	Single pipeline heating system	BL1	B L (1-3)

- AUTO (Self Adaptive Mode) mode can adjust the performance of motor pump based on the actual heat demand of the system. As the performance is adjusted gradually, it is suggested, before changing motor pump setting, to maintain AUTO (Automatically Adaptive Mode) mode setting for at least one week.
- If you select to change back to AUTO (Self Adaptive Mode) mode, the RCE series motor pump can memorize its last setting in AUTO mode and continue adjusting the performance automatically.
- It may take several minutes or even hours to reach the optimal operation mode after motor pump setting is changed from the optimal setting (the "Recommended above-mentioned") to other optional setting. If the optimal setting of motor pump fails to enable each room to obtain desired heat distribution, then you should change the motor pump setting to other settings
- Please refer to Section 10.1 for the relations between motor pump setting and performance curve.

When the motor pump is working, the motor pump is controlled according to the principle of "Proportional Pressure Control (BL)" or "Constant Pressure Control (HD)".

In these two control modes, the motor pump performance and corresponding power consumption will be regulated according to the heat demand of the system.

Proportional Pressure Control

In this control mode, the differential pressure of both ends of the motor pump will be controlled by the flow rate. In the Q/H Figure, proportional pressure curve is represented with BL(1-3). Please refer to Section 11.3.

Constant Pressure Control

In this control mode, the differential pressure of both ends of the motor pump remains constant and is irrelevant to the flow rate. In the Q/H Figure, constant pressure curve is a horizontal performance curve represented with HD(1-3). Please refer to Section 11.3.

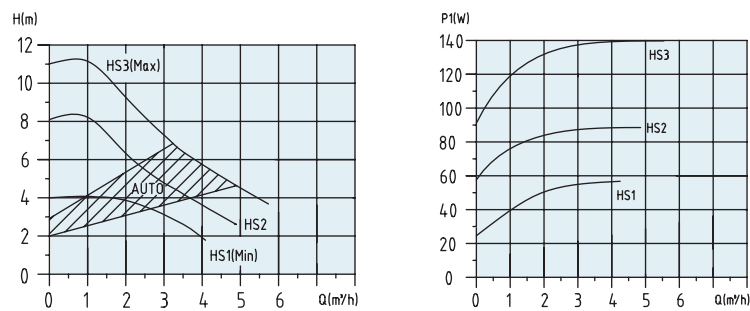
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Characteristic Curves

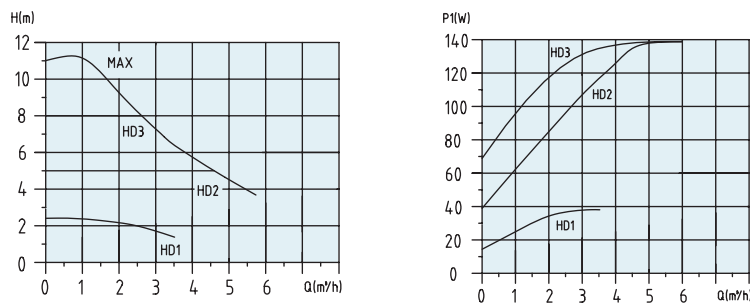
Constant Speed & AUTO Mode Performance Curve

RCE 25-11 Series Performance Chart (Constant Speed+Auto Mode)



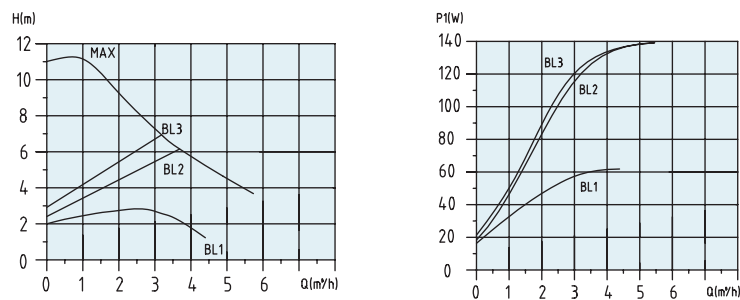
Constant Pressure Mode Performance Curve

RCE 25-11 Series Performance Chart (Constant Pressure)



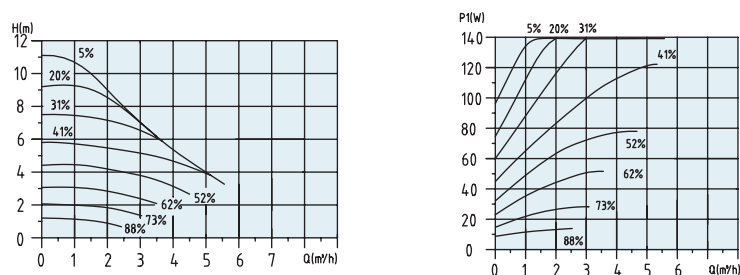
Proportional Pressure Performance Curve

RCE 25-11 Series Performance Chart (BL Mode)



PWM Mode Performance Curve

RCE 25-11 Series Performance Chart (PWM)

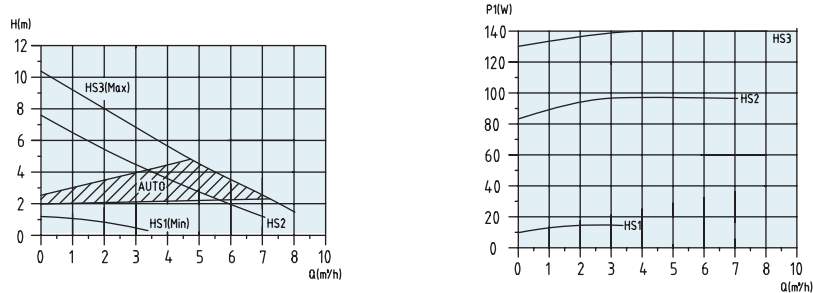


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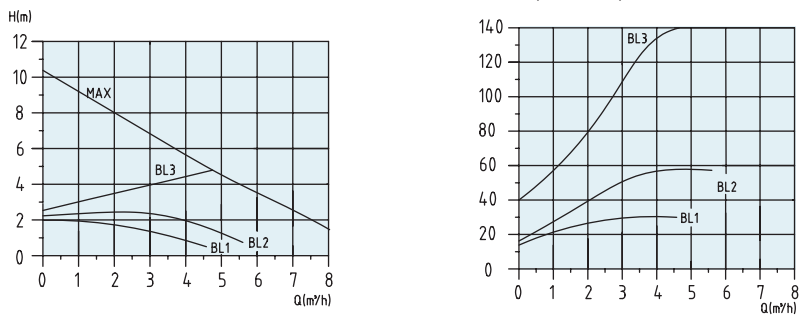
Constant Speed & AUTO Mode Performance Curve

RCE 32-11 Series Performance Chart (Constant Speed+Auto Mode)



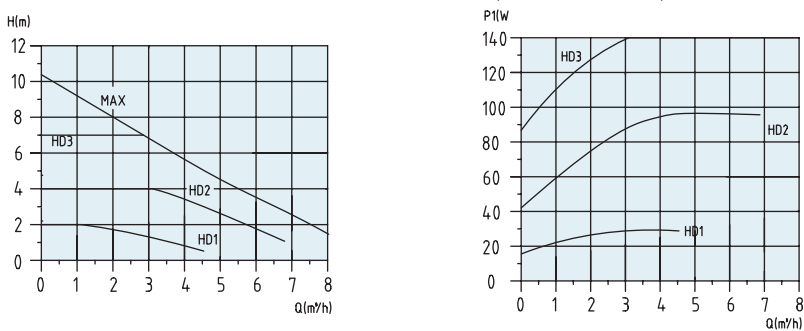
Proportional Pressure Performance Curve

RCE 32-11 Series Performance Chart (BL Mode)



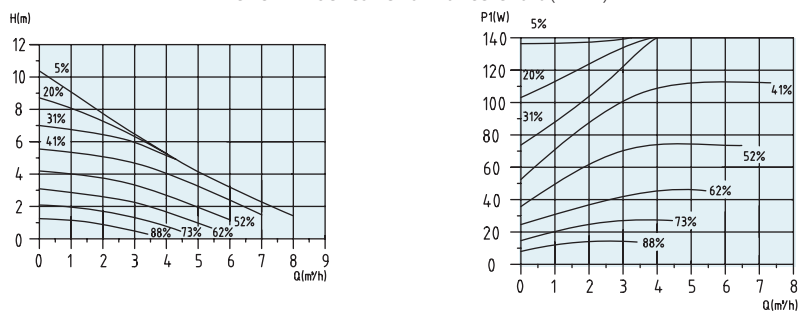
Constant Pressure Mode Performance Curve

RCE 32-11 Series Performance Chart (Constant Pressure)



PWM Mode Performance Curve

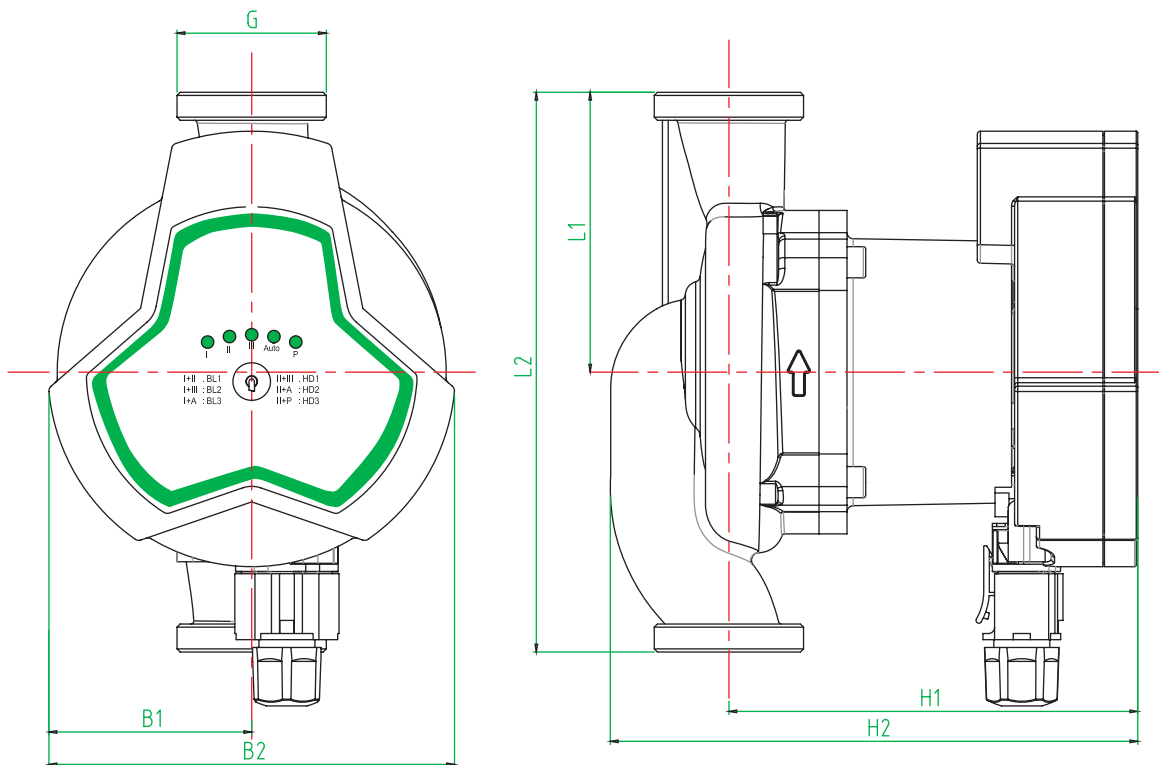
RCE 32-11 Series Performance Chart (PWM)



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Overall Dimensions



Model	Power (W)	Material of Pump Body			Dimension (mm)						
		Cast Iron	Stainless Steel	Copper	L1	L2	B1	B2	H1	H2	G
RCE 25-11/180	140	●			90	180	66	132	132	170	1½"
RCE 32-11/180	140	●			90	180	66	132	132	170	1"