

## USER MANUAL

### Permanent magnet canned circulation pump



Printed in July 2023

**CEH series**  
**Intelligent variable frequency circulation pump**

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**PREFACE**

Welcome to use the CEH series variable frequency circulation pump produced by our company , thank you for your support and care .

This manual provides users with relevant precautions for installation and debugging, parameter setting, abnormal diagnosis, troubleshooting and daily maintenance. In order to ensure that the pump can be installed and operated correctly, users are requested to read this user manual carefully before installing the pump and keep it in a safe place.

Special attention:

- 1) You should never plug or unplug the wires or try to touch the contacts in the socket while the power is on to prevent electric shock and accidents.
- 2) Never connect the unit to 380V AC, otherwise it will cause serious and irreversible damage to the unit.
- 3) Before use, please ensure that the power PE line is reliably grounded and well connected .
- 4) Please operate in strict accordance with this user manual. Otherwise, our company will not bear any civil or criminal liability for any equipment or personal injury caused.
- 5) This pump has no adjusting parts and user-serviceable parts. Please do not try to disassemble the pump for repairs. If the pump fails, please call our company and we will help troubleshoot the problem as soon as possible.

## 1. Product introduction

### 1.1 Overview

CEH series intelligent variable frequency circulation pump, comply with JB/T 104 8 3-2013 and T/CECS 10003-2017 requirements, this product is an energy-saving circulating pump that adopts shielded structure, permanent magnet synchronous motor, variable frequency drive, and intelligent control. It is used to transport thin, clean, non-corrosive and non-explosive liquids. It is prohibited to be used for flammable liquids such as diesel, gasoline, etc. If the circulation pump is used in high viscosity applications, the performance of the pump will be reduced, so when selecting a pump, the viscosity of the pumped liquid must be considered.

### 1.2 Features

- 1) Ultra-quiet: The rotor is lubricated by pumped liquid, producing extremely low noise.
- 2) No leakage: the shell use gasket seal, no mechanical seal, it effectively preventing liquid leakage.
- 3) High temperature resistance: The impeller and motor are made of high temperature resistant materials and can transport high temperature liquids below 95°C.
- 4) Anti-wear: The motor bearings are made of high-hardness and wear-resistant ceramic bearings, which are wear-resistant and require no maintenance.
- 5) High efficiency: The motor adopts permanent magnet motor with intelligent control, and the impeller adopts centrifugal design, which has high efficiency and significant power saving.
- 6) Long service life: The rotor and stator are isolated by stainless steel shielding sleeves, which can dissipate heat with the help of liquid rushed into the inner cavity to slow down the aging of the insulation and have a long service life.
- 7) Multi-mode: With multiple operating mode options, it can meet the needs of various applications.
- 8) Intelligent: It has self-learning and memory functions, keeps the system in optimal operating condition, and provides a variety of message instructions to facilitate user operation.

### 1.3 Main technical parameters

- 1) Rated voltage / frequency : AC220-230 V, 50Hz or 60Hz
- 2) Energy efficiency index EEI ≤ 0.23
- 3) Working environment temperature: 0°C ~ 40 °C
- 4) Medium temperature: 2°C ~ 95 °C

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- 5) Maximum system pressure: 1.0Mpa
- 6) IP grade : IP44
- 7) Insulation class : H
- 8) In order to avoid noise and vibration due to cavitation, a minimum inlet pressure of 0.03bar needs to be maintained at the pump inlet.

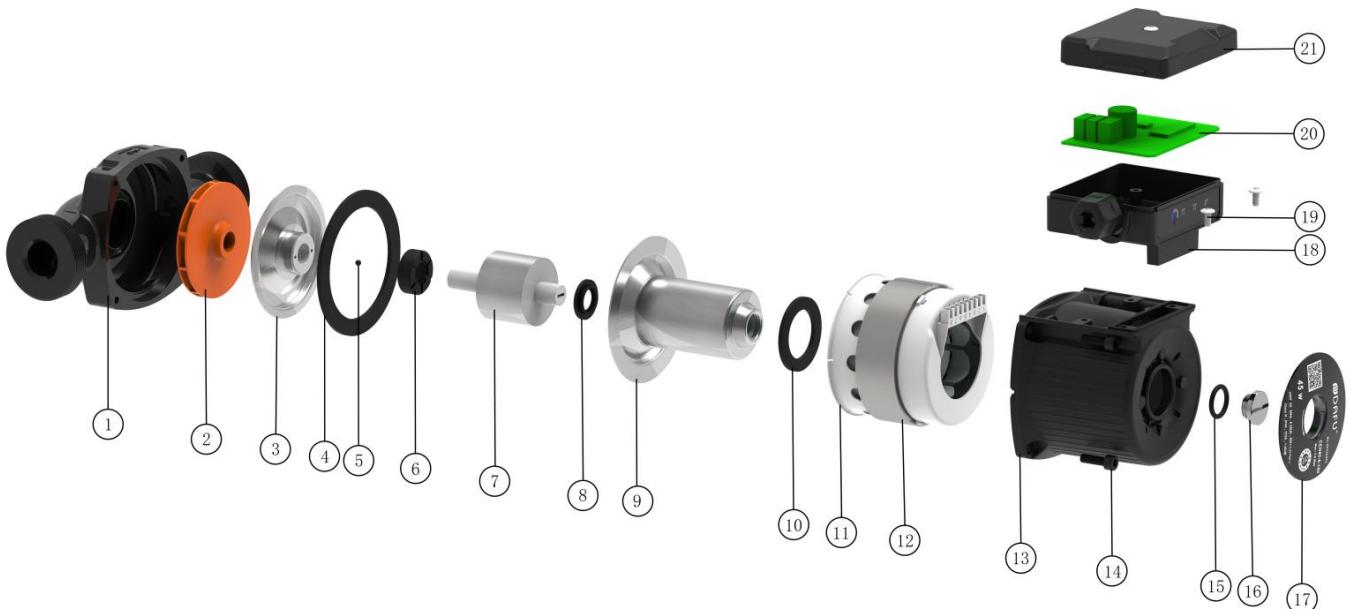
### 1.4 Product application

This series of products can be used in geothermal, solar, and air energy heating circulation systems, as well as boiler, wall-mounted boiler heating systems, and various HVAC applications. They provide liquid circulation power in these systems, such as: air disc type , floor heating, radiant and other hot water circulation systems. It can also be used for liquid pressurization and constant pressure, such as bathing water pressure stabilization, etc.

### 1.5 Conveying medium

- 1) Heating water
- 2) Ethylene glycol solution with solubility  $\leq 50\%$
- 3) The pH value of the medium is between 6.5 and 8.5
- 4) The medium does not contain solid impurities with a volume ratio exceeding 0.01% and a particle size not greater than 0.1mm.
- 5) The mesh number of the filter mesh shall not be less than 55 meshes

## 2. Product explosion diagram



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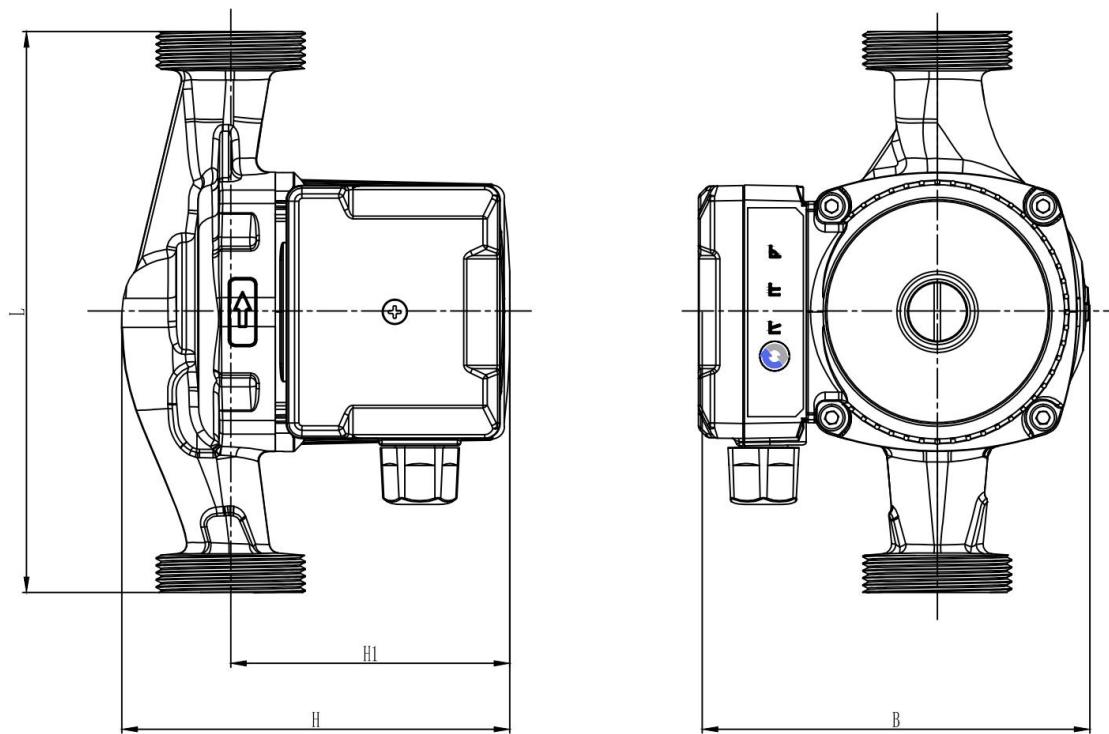
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**Parts List**

Number	Name	Remark
1	Pump body	Cast iron
2	Impeller	PSF
3	Shield cover	S.S 304
4	Gasket	EPDM
5	Small ball	EDPM
6	thrust bearing	Graphite+EDPM
7	Rotor	Permanent magnet
8	Locating ring	PA66
9	S.S shield	S.S 304
10	gasket	EPDM
11	Protective cover	PA66
12	Stator winding	silicon steel sheet+copper
13	Motor housing	Aluminum
14	Fastening screw	S.S 304
15	O-ring	EPDM
16	Venting screw	Brass
17	Nameplate	PA6
18	Control box base	ABS Alloy
19	screws	Galvanized screw
20	MCU circuit board	PCB
21	Control box cover	ABS Alloy

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**3. Product model and performance parameter curve chart**

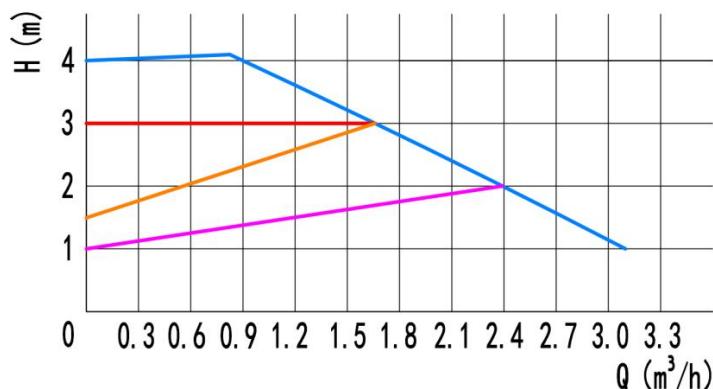


**CEH series product model**

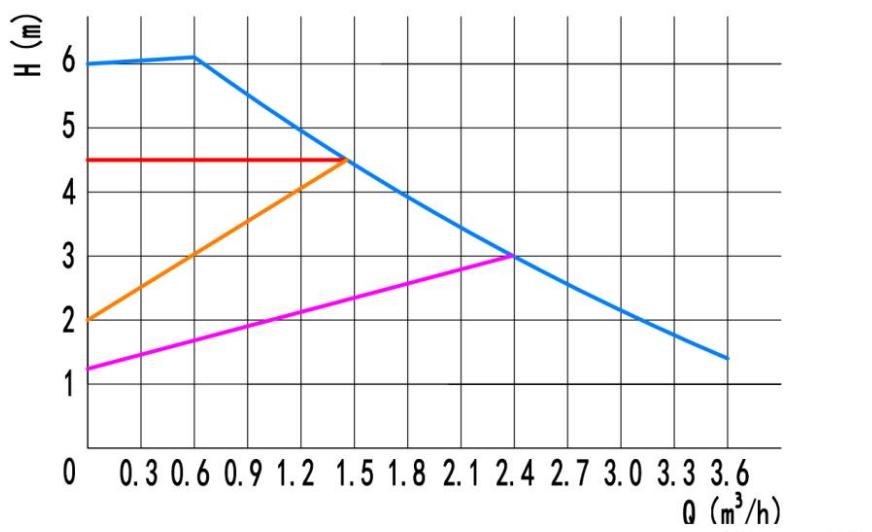
Number	Model	Power	Flow max	Head max	Thread size	L (mm)	B (mm)	H (mm)	H1 (mm)
		(W)	(m³/h)	(m)	(inch)				
1	CEH15-4-130	28	2.2	4	G1"	130	126	126	98
2	CEH20-4-130		2.6		G1 1/4"		126	126	98
3	CEH25-4-130		3.0		G1 1/2"		126	126	98
4	CEH25-4-180		3.0	6	G1 1/2"	180	126	126	90
5	CEH32-4-180		3.2		G2"		126	126	90
6	CEH15-6-130	45	2.8	6	G1"	130	126	126	98
7	CEH20-6-130		3.2		G1 1/4"		126	126	98
8	CEH25-6-130		3.6		G1 1/2"		126	126	98
9	CEH25-6-180		3.6		G1 1/2"	180	126	126	90
10	CEH32-6-180		3.8		G2"		126	126	90
11	CEH15-8-130	65	3.2	8	G1"	130	126	126	98
12	CEH20-8-130		3.6		G1 1/4"		126	126	98
13	CEH25-8-130		4.0		G1 1/2"		126	126	98
14	CEH25-8-180		4.0		G1 1/2"	180	126	126	90
15	CEH32-8-180		4.2		G2"		126	126	90

## CEH series performance curve chart

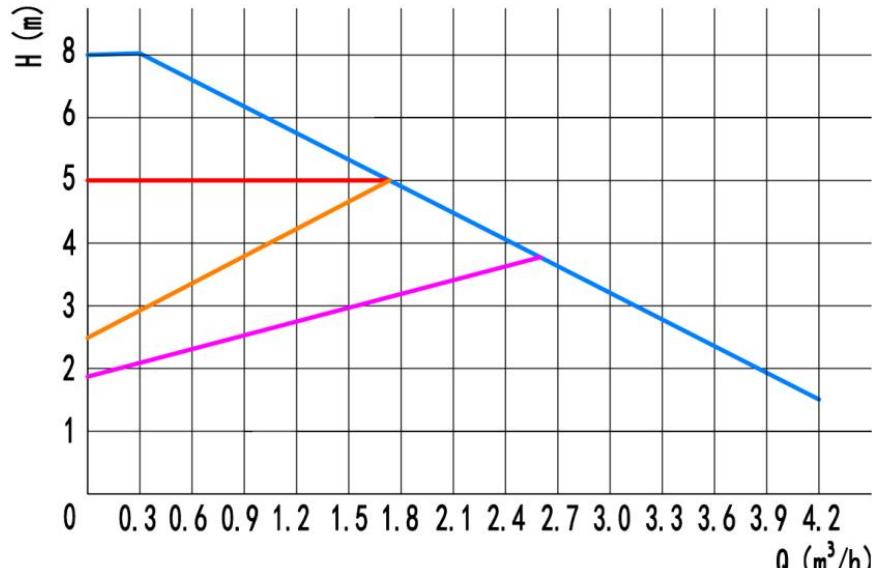
➡ ➡ CEHxx-4-xxx



➡ ➡ CEHxx-6-xxx



➡ ➡ CEHxx-8-xxx



## 4. Product functions

The operating modes are :

- 1、Constant speed , (  ): 1、According to the preset speed of the pump, constant speed operation;
- 2、Proportion,PP mode (  ) : The water pump pressure and flow into a positive power proportional operation;;
- 3、Constant pressure ,CP mode(  ): The water pump operates under constant pressure;
- 4、ECO mode (  ): specifically used to test EEI performance .

## 5. Operation instructions

### 5.1 Settings and display panel



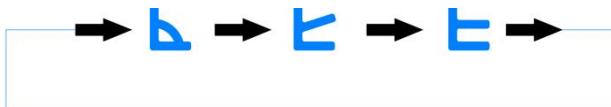
### 5.2 Functional mode

- 1 ) Constant speed mode: 
- 2 ) Proportional, PP mode: 
- 3 ) Constant Pressure,CP mode: 
- 4) ECO mode :  (three LED are all light)

## 5.3 Mode switching

The button  are used to switch modes and functions. Each time you press the button ,

the functions will be cycled in the following order:



Press and hold the button  to enter  the dedicated EEI test mode.

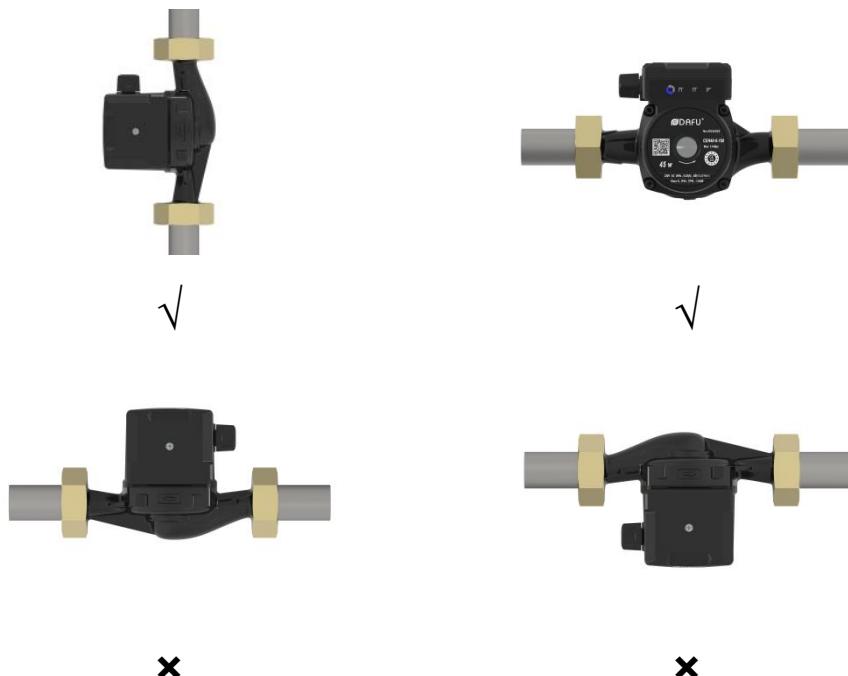
## 5.4 Display of fault codes

**Error Code**

Error code	Fault category	Cause of issue	Solution
 (Blinking)	Over-voltage protection	The input AC power voltage is higher than 265V.	Turn off the power supply, check the power input, and the fault alarm will be lifted when the voltage returns to the normal range.
	Low-voltage protection	The input AC power voltage is lower than 170 V.	
 (Blinking)	Over-current protection	Blocked rotor or Pump overload.	Turn off the power supply and manually check for blocked rotor or other causes of excessive load. After the fault is rectified, power on again. The fault alarm is cleared.
 (Blinking)	Blocked protection		
 (Blinking)	Light load protection	No water in the pipeline and the rotor speed is lower than the minimum allowable speed	Turn off the power and manually check whether there is no water in the pipeline. If the fault is rectified and powered on again, the fault alarm is cleared

## 6. Installation and precautions

### 6.1 Installation



PIC 1

### 6.2 Precautions

- 1) The inlet and outlet of the pump are pipe threaded connections, and the diameter of the mating union should be consistent with its diameter and connected securely.
- 2) During installation, the motor shaft must be kept level with the ground plane, as shown in PIC 1.
- 3) The PE wire (ground wire) of the power socket should be connected reliably.

### 6.3 Debugging method

- 1) The debugging of this pump should be carried out after the mechanical installation and power supply layout are checked and correct.
- 2) Before commissioning, first close the water outlet valve and open the water inlet valve.
- 3) Insert the power plug into the power plug through the dedicated power cord of the pump. There should be a display on the controller panel and the motor should be running.
- 4) After the motor starts and runs normally, open the outlet valve.
- 5) Carefully observe whether there are any abnormalities in the operation of the pump. If there are any abnormalities, please find the fault according to the diagnostic message content in Table 5 and eliminate it in time.

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### 6.4 Care and maintenance

- 1 ) Avoid running the water pump without water .
- 2) When the pump is out of service, the inlet and outlet valves should be closed in order and the power supply should be cut off .
- 3) After the pump is out of service and then resumed use, the inlet and outlet valves should be opened in order, and then powered on.
- 4) If you need to switch the operating mode , refer to 5.3 .
- 5) If the pump fails, please ask professionals to repair it.

## 7. Instructions for use

- 1) Before installing the electric pump, check whether the pipeline system is connected reliably, and ensure that impurities, welding slag, dirt, etc. in the pipeline have been removed;
- 2) The electric pump should be installed in a dry and ventilated place to prevent short circuit due to moisture or water splash, and should be installed in a location convenient for future maintenance and replacement;
- 3) When the electric pump is installed in the open air, a protective cover should be added. When installed indoors, it should be protected from splashing water to avoid electric shock. Do not install it in the bathroom to prevent water vapor or water from entering the junction box and causing leakage;
- 4) In order to facilitate the maintenance of the electric pump in the future, it is recommended to install independent valves at the water inlet and outlet of the electric pump;
- 5) When the electric pump supplies water to the supporting heating system, do not touch the electric pump and its pipelines with your hands to avoid burns;
- 6) The power plug should be strictly grounded, and the ground pin of the plug should be reliably connected to the ground hole of the power socket. The ground plug of the power supply should not be changed without authorization;
- 7) When the electric pump is working, if you want to adjust the position of the electric pump or touch the electric pump, you must first cut off the power supply to prevent accidents;
- 8) In winter, when the ambient temperature is below 0°C, if the electric pump stops running, the water in the pipeline system should be drained to prevent the pump body from freezing and cracking.