

## Control options of E-pumps

Communication with CRE-H, CRNE-H pumps is possible by means of the following interfaces:

- a central management system
- remote control (Grundfos R100) or
- a control panel.

The purpose of controlling an E-pump is to monitor and control the pressure, temperature, flow and liquid level of the system.

### Central management system

Communication with the E-pump is possible even though the operator is not present near the E-pump. Communication is enabled by having the E-pump connected to a central management system allowing the operator to monitor and change control modes and setpoint settings of the E-pump.

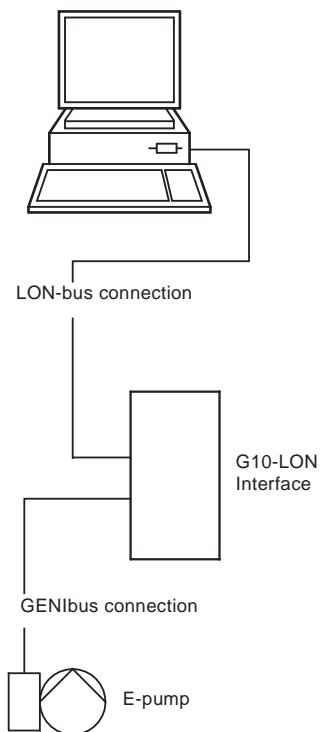


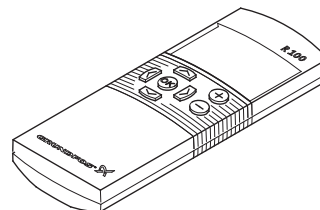
Fig. 5 Structure of a central management system

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### Remote control

The R100 remote control produced by Grundfos is available as an accessory.

The operator communicates with the E-pump by pointing the IR-signal transmitter at the control panel of the E-pump terminal box.



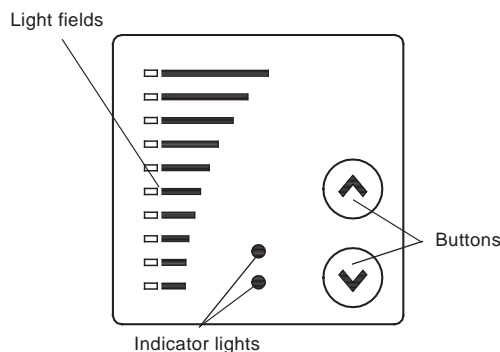
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Fig. 6 R100 remote control

The R100 enables monitoring and changing of control modes and settings of the E-pump.

### Control panel

The control panel of the E-pump terminal box makes it possible to change the setpoint settings manually.



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Fig. 7 Control panel on CRE-H pump

## Control modes for E-pumps

Grundfos offers CRE-H, CRNE-H pumps in two different variants:

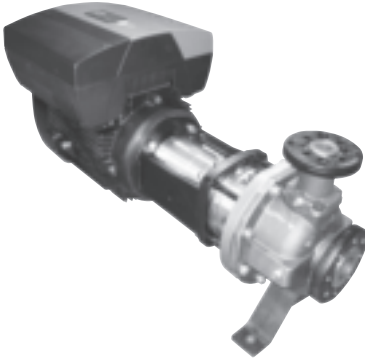
- CRE-H, CRNE-H with integrated pressure sensor
- CRE-H, CRNE-H without sensor.

### CRE-H, CRNE-H with integrated pressure sensor

CRE-H, CRNE-H pumps with integrated pressure sensor are suitable for applications where you want to control the pressure after the pump, irrespective of the flow. See the section *Examples of E-pump applications* on page 10 for further information.

Signals of pressure changes in the piping system are transmitted continuously from the sensor to the pump.

The pump responds to the signals by adjusting its performance up or down to compensate for the pressure difference between the actual and the desired pressure. As this adjustment is a continuous process, a constant pressure is maintained in the piping system.

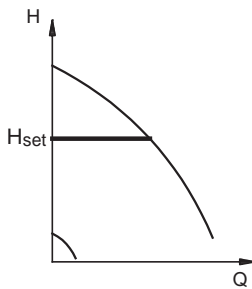


**Fig. 8** CRE-H, CRNE-H pump

A CRE-H, CRNE-H pump with integrated pressure sensor facilitates installation and commissioning. CRE-H, CRNE-H pumps with integrated pressure sensor can be set to:

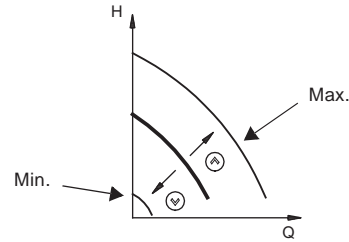
- constant-pressure mode (factory setting) or
- constant-curve mode.

In **constant-pressure** mode, the pump maintains a preset pressure after the pump, irrespective of the flow. See fig. 9.



**Fig. 9** Constant pressure mode

In **constant-curve** mode, the pump is not controlled. It can be set to pump according to a preset pump characteristic within the range from min. curve to max. curve. See fig. 10.



**Fig. 10** Constant curve mode

### CRE-H, CRNE-H without sensor

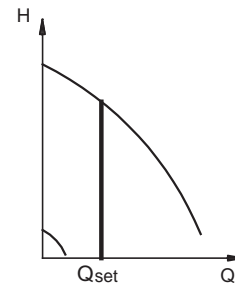
CRE-H, CRNE-H pumps without sensors are suitable for applications where:

- uncontrolled operation is required
- you want to fit another sensor later in order to control the flow, temperature, differential temperature, liquid level, pH value, etc at some arbitrary point in the system.

CRE-H, CRNE-H pumps without sensor can be set to:

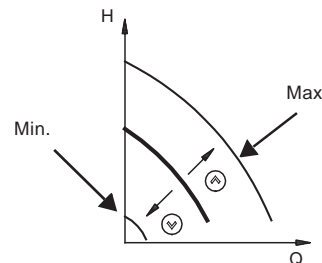
- controlled-operation mode or
- uncontrolled-operation mode (factory-setting).

In **controlled**-operation mode, the pump adjusts its performance to the desired setpoint. See fig. 11.



**Fig. 11** Constant flow mode

In **uncontrolled**-operation mode, the pump operates according to the constant curve set. See fig. 12.



**Fig. 12** Constant curve mode

CRE-H, CRNE-H pumps can be fitted with sensor types listed on page 108.

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