



CIRCULATING



MCE/C 11 - MCE/C 15 - MCE/C 22



MCE/C 30 - MCE/C 55



MCE/C 110 - MCE/C 150

The new **MCE/C** inverters are the latest technological challenge in the DAB inverters universe. They constitute the new generation of inverters for use with circulator pumps and stand out for ease of use, power, and simplicity of installation and management.

MCE/C inverters are designed for use with circulator pumps to enable simple control of differential pressure, thereby adapting pump performance to match effective system requirements.

The solution of mounting on the motor base greatly simplifies installation of the pump with **MCE/C** in minimal times.

Ease of programming is guaranteed by the use of an interface similar to DAB Dialogue and a graphic display.

MCE/C inverters feature dual microprocessor architecture to guarantee maximum efficiency and reliability. Sturdy and reliable construction is combined with modern and innovative styling to complete the product also in terms of aesthetics.

MCE/C inverters protect the pump thanks to integrated safety devices. They are also able to prolong the useful lifetime of the pump thanks to the elimination of water hammer and rotation of the pump at the minimum rpm necessary to meet the requirements of the user.

Last but not least, these inverters save power by keeping pump consumption to the minimum levels strictly necessary to meet user requirements.

Equipped with communication module for the creation of twin pumpsets.

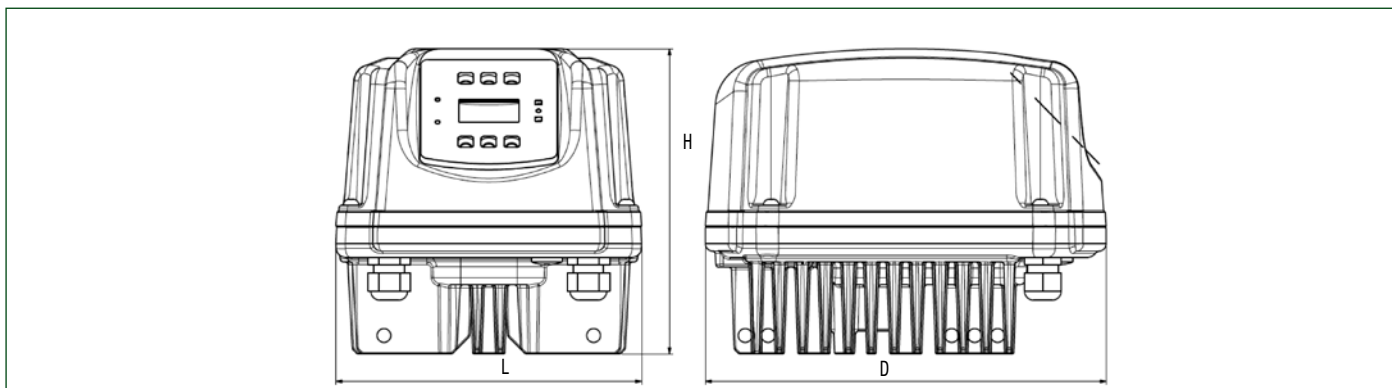
- For three-phase pumps up to 3HP - 2,2kW (MCE/C 11 – MCE/C 15 – MCE/C 22).
For three-phase pumps up to 7,5 HP - 5.5 kW (MCE/C 30 – MCE/C 55).
For three-phase pumps up to 20HP – 15kW (MCE/C 110 – MCE/C 150).
- OLED graphic display.
- Input power supply 1 x 230V 50-60Hz (MCE/C 11 – MCE/C 15 – MCE/C 22).
Input power supply 3 x 400V 50-60Hz (MCE/C 30 – MCE/C 55 MCE/C 110 – MCE/C 150).
- Pump voltage 3 x 230V (MCE/C 11 – MCE/C 15 – MCE/C 22).
Pump voltage 3 x 400V (MCE/C 30 – MCE/C 55 MCE/C 110 – MCE/C 150).
- Electric pump nominal frequency 50-200 Hz.
- Control range in accordance with the sensor utilised, with standard range 1-24 Bar.
- Protections against voltage surges.
- Adjustable overload protection.
- Extended connectivity.
- Protection rating: IP55.
- Short circuit between output phases.
- Overtemperature protection.

TECHNICAL DATA

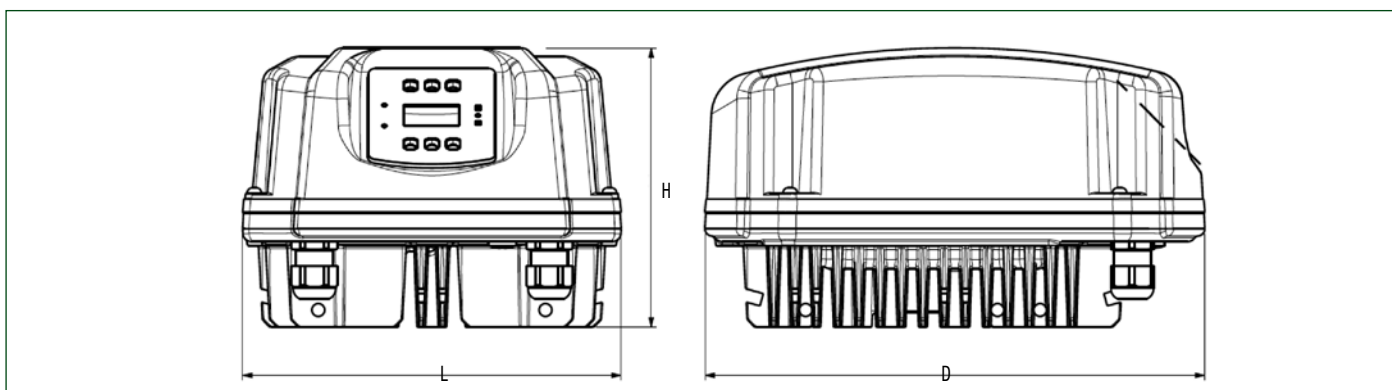
MODEL	CODE	NOMINAL MOTOR POWER KW	MAX NOMINAL MOTOR CURRENT A	MIN NOMINAL MOTOR CURRENT A	VOLTAGE 50 Hz	PUMP VOLTAGE 50 Hz	MOTOR FRAME
MCE/C 11	60144656	1.1	6.5	1.0	Single-phase 1x230	Three-phase 3x230	71 80
MCE/C 15	60144657	1.5	8,0	1.0	Single-phase 1x230	Three-phase 3x230	90
MCE/C 22	60144659	2.2	10.5	1.0	Single-phase 1x230	Three-phase 3x230	90 100
MCE/C 30	60144660	3	7,5	2.0	Three-phase 3x400	Three-phase 3x400	100
MCE/C 55	60144662	5,5	13,5	2.0	Three-phase 3x400	Three-phase 3x400	112 132
MCE/C 110	60144664	11.0	24	2.0	Three-phase 3x400	Three-phase 3x400	132 160
MCE/C 150	60144665	15.0	32	2.0	Three-phase 3x400	Three-phase 3x400	160

DIMENSIONS AND WEIGHTS

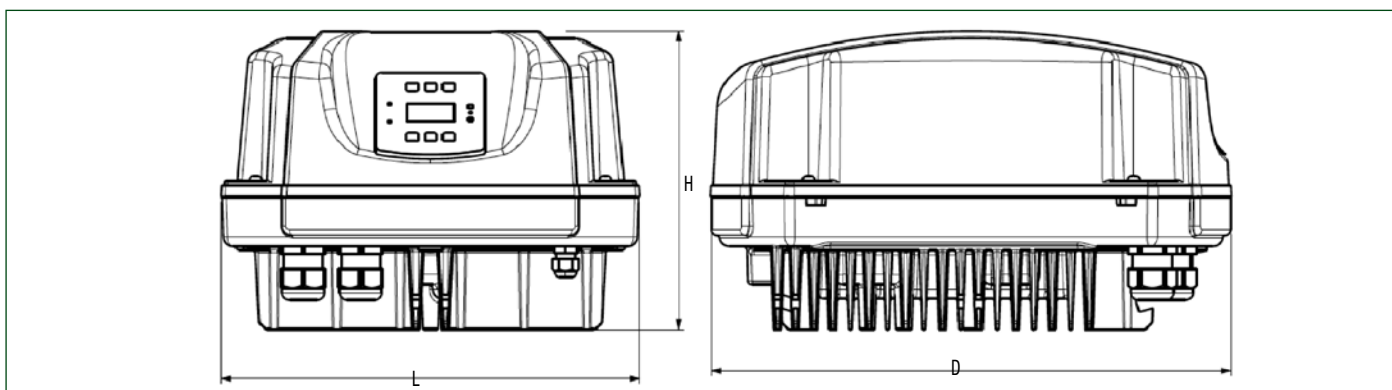
MCE/C 11 - MCE/C 15 - MCE/C 22



MCE/C 30 - MCE/C 55



MCE/C 110 - MCE/C 150



MODEL	L	H	D	PACKAGING DIMENSIONS			WEIGHT KG	Q.TY X PALLET
				L/D	L/L	H		
MCE/C 11	200	199	262	265	235	215	5	24
MCE/C 15	200	199	262	265	235	215	5	24
MCE/C 22	200	199	262	265	235	215	5	24
MCE/C 30	267	196	352	360	280	200	7,6	32
MCE/C 55	267	196	352	360	280	200	7,6	32
MCE/C 110	343	244	425	435	345	265	12	12
MCE/C 150	343	244	425	435	345	265	12	12

ENERGY SAVING

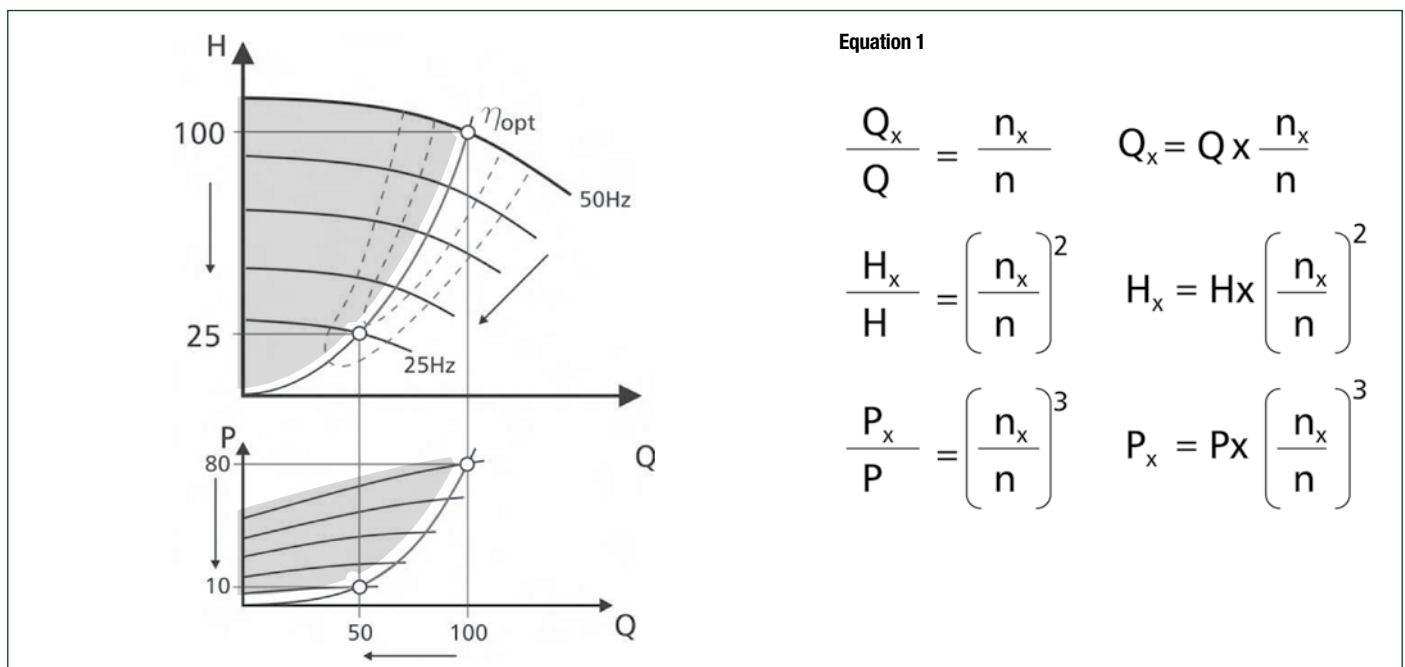
Reducing motor speed, even marginally, can lead to an appreciable reduction in power consumption because the absorbed power of an electric motor is proportional to the rpm cubed. For example, a pump powered by the mains that runs at approximately 2950 rpm, will run approximately 20% slower (i.e. at 2360 rpm) when fed with a 40 Hz supply, leading to a saving of 40% in terms of absorbed power. The motor speed reduction increases pump life significantly, thanks to the reduction of mechanical stress.

Pump performance in relation to variations in rpm

Pump rpm n has a very significant influence on pump performance.

In the absence of cavitation phenomena the law of similarity is applicable, as shown in equation 1.

- Flow rate changes in a linear manner with changes in speed.
- Pressure changes in a squared relationship with changes in rpm.
- Power changes in a cubed relationship with changes in rpm.
- A small change in rpm produces a very large change in power.



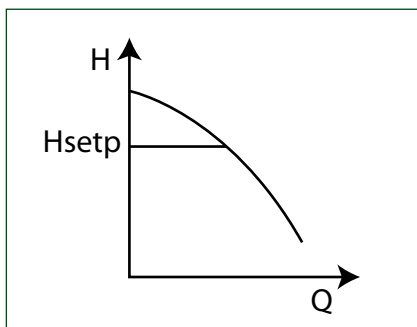
- a lowering of the flow acc. to the linear function.
- a reduction of the head according to a quadratic function.
- a reduction of the power consumption acc. to a cubic function!

OPERATING MODES

All the functions listed below can be consulted by all users (even the least skilled) by just scrolling through the MCE/C menu. Calibration and parameter modification are protected functions, permitted only to skilled users.

Constant differential pressure control mode ΔP -c

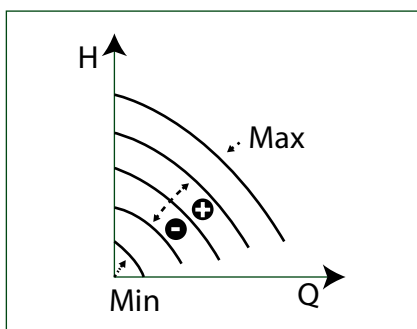
ΔP -c control mode keeps the system's differential pressure constant at the H value set (setp) as the flow rate varies. This is the standard control mode, for normal use. It can be set directly from the MCE/C's control panel. The inverter maintains the differential pressure (H setp) constant as the flow rate varies.



This control mode is particularly useful in the following types of installations

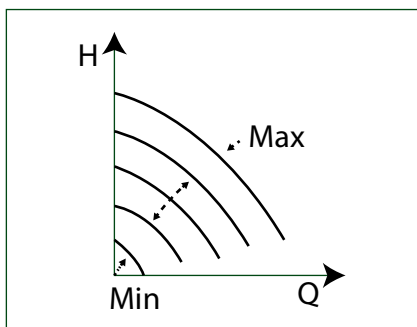
- A Two-pipe central heating systems with thermostatic valves.
- B Under-floor central heating systems with thermostatic valves.
- C Single-pipe central heating systems with thermostatic and calibration valves.
- D Installations having primary circuit pumps.

CONSTANT CURVE CONTROL MODE



Constant curve control

The rotation speed is kept at a constant rpm. The rotation speed can be set between a minimum value and the rated frequency of the circulation pump (e.g. between 15 Hz and 50 Hz). This mode can be set using the control panel on the cover of the MCE.

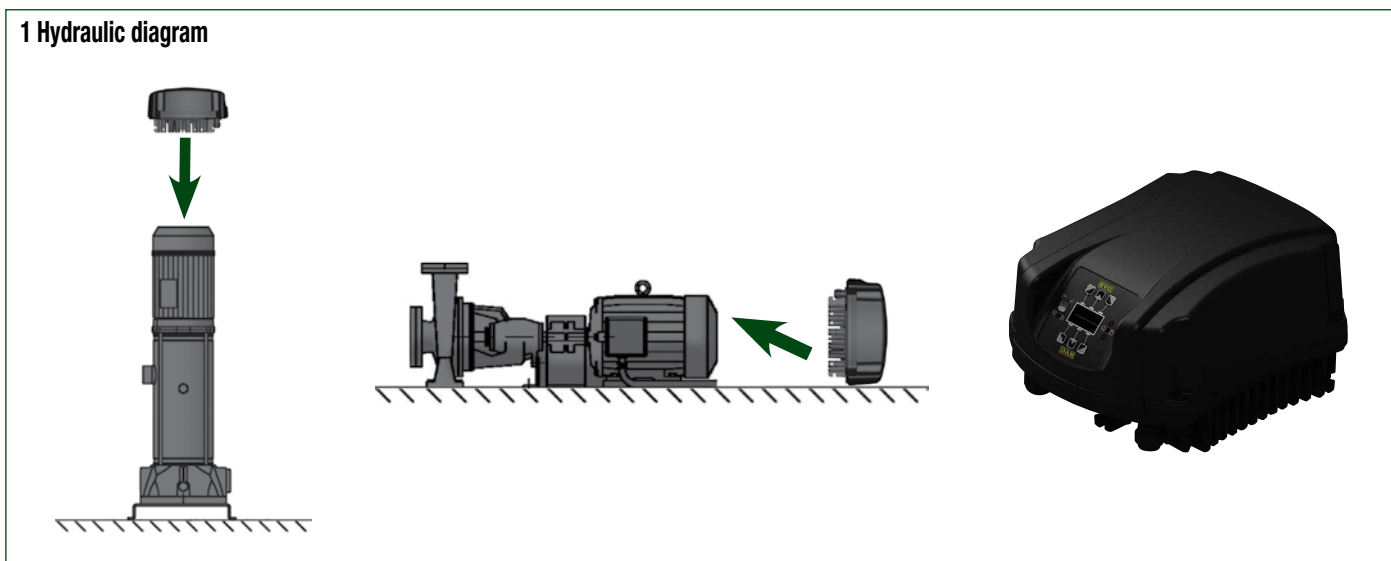


Constant Curve Control with Remote Analogue Signal

The rotation speed is kept at a constant number of rpm proportional to the voltage of the remote analogue signal. The rotation speed varies on a linear scale between the rated frequency of the pump when $V_{in} = 10V$ and the minimum frequency when $V_{in} = 0V$. This mode can be set using the control panel on the cover of the MCE.

CONNECTIONS ON MOTOR

1 Hydraulic diagram



The MCE is installed on the motor base.

The inverter can operate both vertically and horizontally.

2 kits are available for assembly on the motor:

Tie-rods:

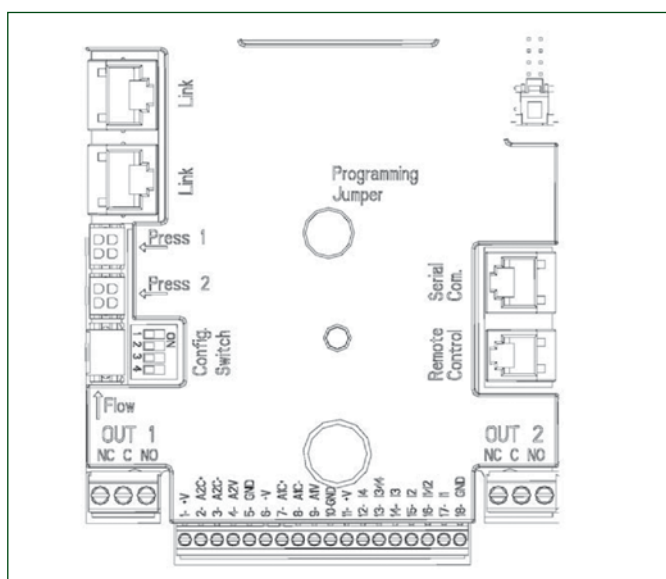
These are connected to the MCE dissipator and fan cover.

They require a solid fan cover able to withstand the weight of the inverter, i.e. secured by means of bolts or screws.

Fan cover kit:

The fan cover kit is used in all situations where the fan cover is not sufficiently solid or strong enough to withstand the weight of the inverter.

TWIN OPERATION



Groups of up to 2 pumps can be created. To do this, the pumps must be hydraulically connected to the same output and inlet manifolds (naturally, this is not necessary for twin circulation pumps).

The 2 MCE/C inverters also have to be connected using the special interconnection cable, connecting both inverters to one of the 2 connectors marked Link.

For the twin system to operate correctly, all the external connections of the input terminal board must be parallel connected between the 2 MCE/C units, with the numbers of the individual pins corresponding (e.g. pin 17 of MCE- 22/C-1 to pin 17 of MCE-22/C-2 and so on).