

## VERTICAL AXIS MULTISTAGE CENTRIFUGAL PUMPS WITH MCE/P INVERTER

**TECHNICAL DATA****Operating range:**

from 1 to 12 m<sup>3</sup>/h with head up to 110 metres.

**Pumped liquid:** clean, free of solids and abrasives, non-viscous, non-crystallised and chemically neutral, with properties similar to water.

**Liquid temperature range:**

from 0 °C to +35 °C for domestic use  
(EN 60335-2-41 safety standards).

from 0 °C to +40 °C for other uses.

**Maximum ambient temperature:** +40 °C.

**Maximum operating pressure:** 12 bar (1200 kPa).

**Installation:** fixed, vertical position.

**APPLICATIONS**

Vertical multistage centrifugal pump suitable for medium to large user water systems. Recommended for pressurisation units, boiler supply, hot water and cooling water circulation, fire fighting and washing systems, drinking water supply and filling of pressure vessels, sprinkler and watering systems and water purification systems.

**ADVANTAGES OF USE**

Operating pressure stability – **Excellent energy saving** (up to 60 %) – Reduced hammering effects – Reduced space requirements – Less maintenance – Reduced pump wear – Less power factor correction required – Less water consumption – Integrated protections.

**CONSTRUCTION FEATURES OF THE PUMP**

Technopolymer delivery and suction bodies with IN-LINE suction and delivery ports with threaded metal insert.

Impellers, diffuser bodies and diffusers in technopolymer, fully rust-proof.

AISI 304 stainless steel pump liner, adjustment rings and seal disc. Carbon/ceramic mechanical seal, fitted on the AISI 303 stainless-steel drive shaft extension.

**CONSTRUCTION FEATURES OF THE MOTOR**

Shaft with rotor running on permanently lubricated ball bearings, oversized to ensure low noise and durability.

Construction according to CEI 2-3.

Controlled by MCE inverter.

**Protection class:** IP 55

**Insulation class:** F.

**Standard single-phase voltage:** 1x230 V / 50-60 Hz

**Special version on request:** three-phase 3x400 V / 50 Hz, or three-phase 3x460 V / 60 Hz

**Standard three-phase voltage:** 3x400 V / 50 Hz

**Special version on request:** 3x460 V / 60 Hz



### MCE/P INVERTER

#### CONSTRUCTION FEATURES OF THE ELECTRONICS: MCE/P INVERTER

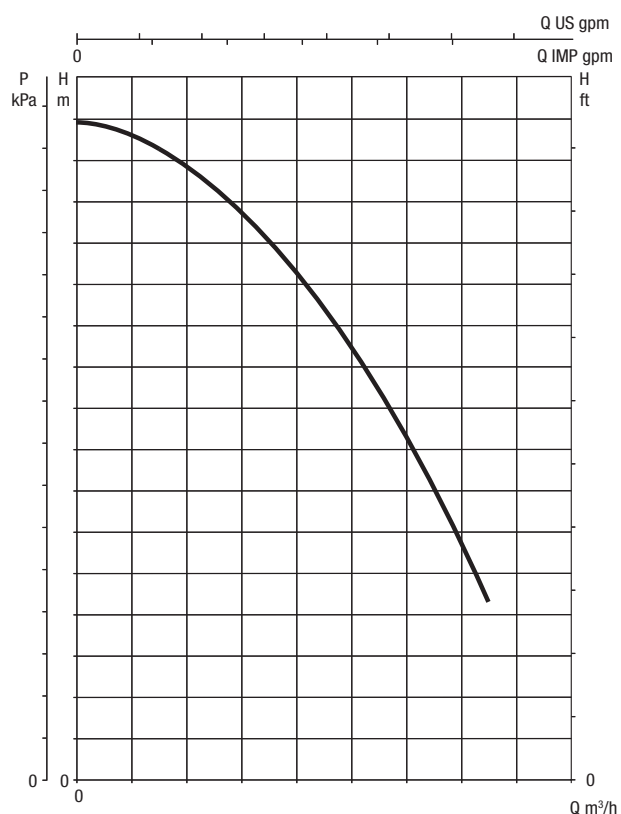
The inverter continuously adjusts the rotation speed of the electric pump, keeping the pressure constant, even when the flow rate varies. The other electric pumps, also with variable speed, are activated in cascade after the first one has reached maximum speed. Through modulation, they compensate the pressure fluctuations of the system.

For every operating cycle, it is possible to switch the restart to a different pump, therefore ensuring even use of all electric pumps.

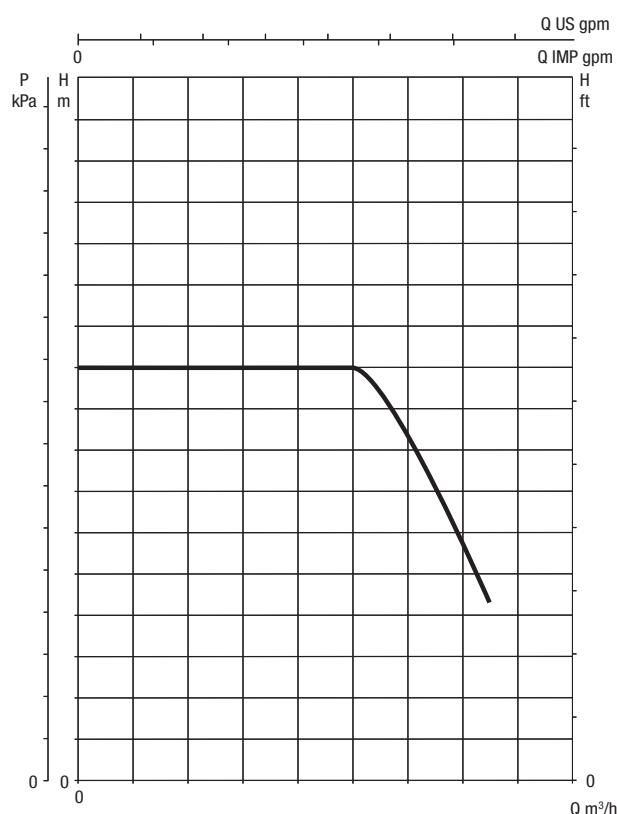
It is possible to set operation times for each individual pump, switching to another pump after such set times.

The "SP" pressure can be adjusted by the user using the "+" and "-" keys found on the MCE/P (as a rule, all the pumps are set to the same pressure value). With the new MCE/P, it is sufficient to set the data on one of the devices, and it will be automatically propagated to the other pumps of the system.

### MODES OF OPERATION



PERFORMANCE CURVES WITHOUT INVERTER



PERFORMANCE CURVES WITH INVERTER

The inverter is capable of maintaining a constant pressure even when the flow rate varies.

The operating pressure can be adjusted by the user.

A good pressure set-point is between 1/3 and 2/3 of the maximum head of the electric pump. In this way, high efficiency of the pump is maintained, together with maximum saving.

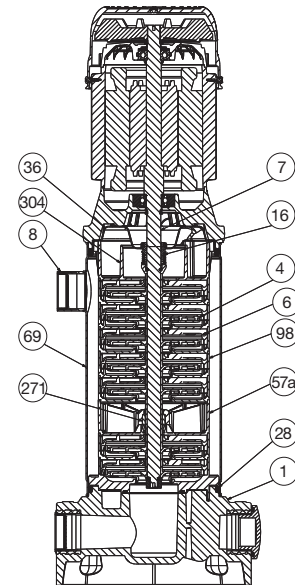
In addition, the MCE/P does not block the pump if the pressure is not reached, but the flow is present. This prevents service interruptions in case of high flows.

**For more information refer to the technical appendix.**

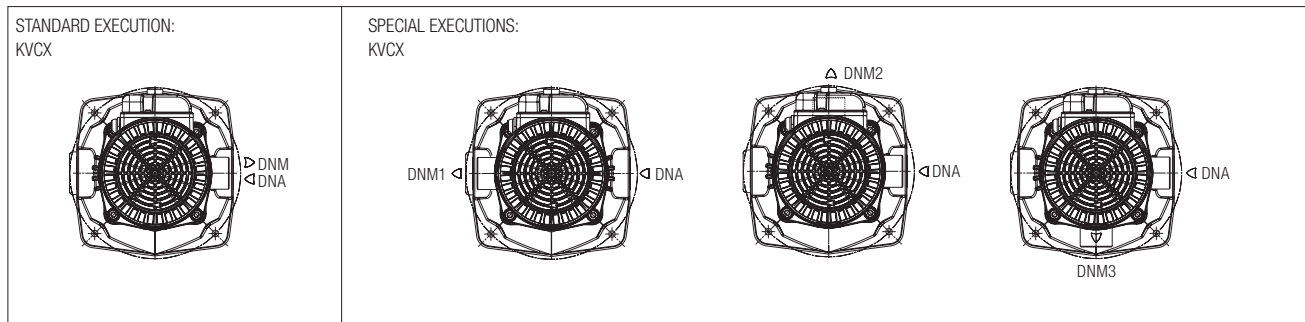
## MATERIALS

| N.  | PARTS*                       | MATERIALS  |
|-----|------------------------------|--|
| 1   | PUMP BODY                    | TECHNOPOLYMER A                                      |
| 4   | IMPELLER                     | TECHNOPOLYMER B                                      |
| 6   | DIFFUSER                     | TECHNOPOLYMER B                                      |
| 7   | SHAFT WITH ROTOR             | AISI 303 STAINLESS STEEL X10 CrNi S 1089 UNI 6900/71 |
| 16  | MECHANICAL SEAL              | SILICON CARBIDE/SILICON                              |
| 28  | OR RING                      | EPDM RUBBER  |
| 36  | SEAL HOLDING DISC            | AISI 304 STAINLESS STEEL X5 CrNi 1810 UNI 6900/71    |
| 57a | INTERMEDIATE STAGE           | TECHNOPOLYMER B                                      |
| 69  | LINER                        | AISI 304 STAINLESS STEEL X5 CrNi 1810 UNI 6900/71    |
| 98  | DIFFUSER BODY                | TECHNOPOLYMER B                                      |
| 271 | CENTERING BUSHING            | BRONZE B14   |
| 304 | CONVEYOR                     | TECHNOPOLYMER B                                      |
| 8   | DNM (standard for KVCE only) |  |

\* In contact with the liquid.



## KVCE SUCTION AND DELIVERY PORT ORIENTATION



### SELECTION TABLE - KVCE 30

| MODEL                | Q=m <sup>3</sup> /h | 0    | 0,6  | 1,2  | 1,8  | 2,4  | 3    | 3,3  |
|----------------------|---------------------|------|------|------|------|------|------|------|
|                      | Q=l/min             | 0    | 10   | 20   | 30   | 40   | 50   | 55   |
| KVCE 35-30 M MCE11/P | H<br>(m)            | 45,6 | 43,2 | 39,1 | 34,1 | 28,2 | 20,2 | 15,6 |
| KVCE 45-30 M MCE11/P |                     | 56,6 | 53,5 | 48,4 | 42,0 | 34,6 | 24,5 | 19,0 |
| KVCE 50-30 M MCE11/P |                     | 69,8 | 66,2 | 59,9 | 52,2 | 43,1 | 30,9 | 23,9 |
| KVCE 60-30 M MCE11/P |                     | 82,0 | 77,0 | 70,0 | 61,0 | 49,5 | 35,5 | 27,5 |
| KVCE 70-30 M MCE11/P |                     | 95,0 | 90,0 | 81,5 | 71,0 | 58,7 | 42,0 | 32,5 |

### SELECTION TABLE - KVCE 50

| MODEL                | Q=m <sup>3</sup> /h | 0    | 0,6  | 1,2  | 1,8  | 2,4  | 3    | 3,3  | 3,9  | 4,8  |
|----------------------|---------------------|------|------|------|------|------|------|------|------|------|
|                      | Q=l/min             | 0    | 10   | 20   | 30   | 40   | 50   | 55   | 65   | 80   |
| KVCE 30-50 M MCE11/P | H<br>(m)            | 41,1 | 40,3 | 39,0 | 37,3 | 34,7 | 31,6 | 29,7 | 25,3 | 17,1 |
| KVCE 40-50 M MCE11/P |                     | 54,9 | 53,7 | 52,0 | 49,7 | 46,3 | 42,1 | 39,6 | 33,7 | 22,9 |
| KVCE 55-50 M MCE11/P |                     | 68,6 | 67,1 | 65,0 | 62,1 | 57,9 | 52,7 | 49,5 | 42,1 | 28,6 |
| KVCE 65-50 M MCE15/P |                     | 82,3 | 80,6 | 78,0 | 74,6 | 69,4 | 63,2 | 59,4 | 50,6 | 34,3 |
| KVCE 75-50 M MCE15/P |                     | 96,0 | 94,0 | 91,0 | 87,0 | 81,0 | 73,8 | 69,3 | 59,0 | 40,0 |

### SELECTION TABLE - KVCE 80

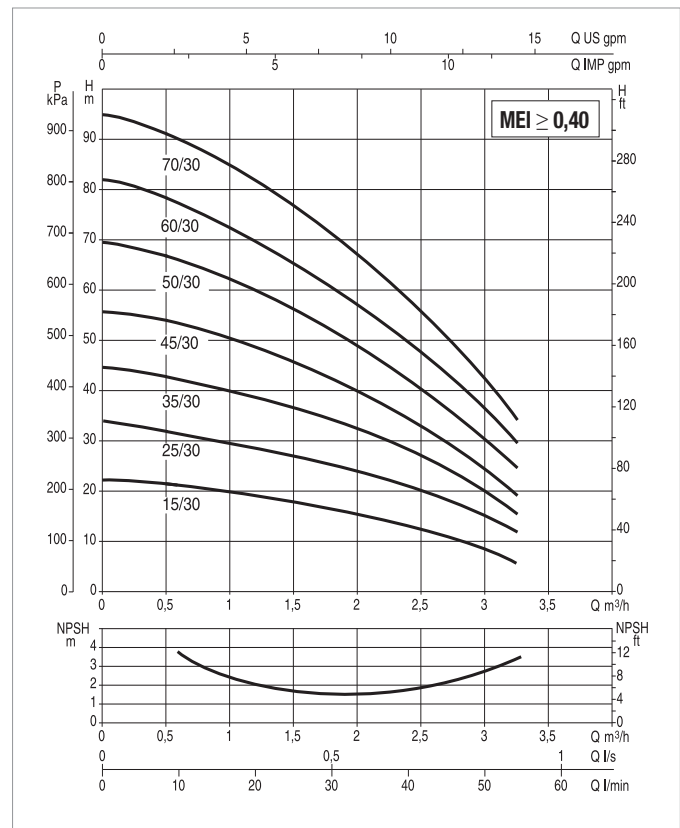
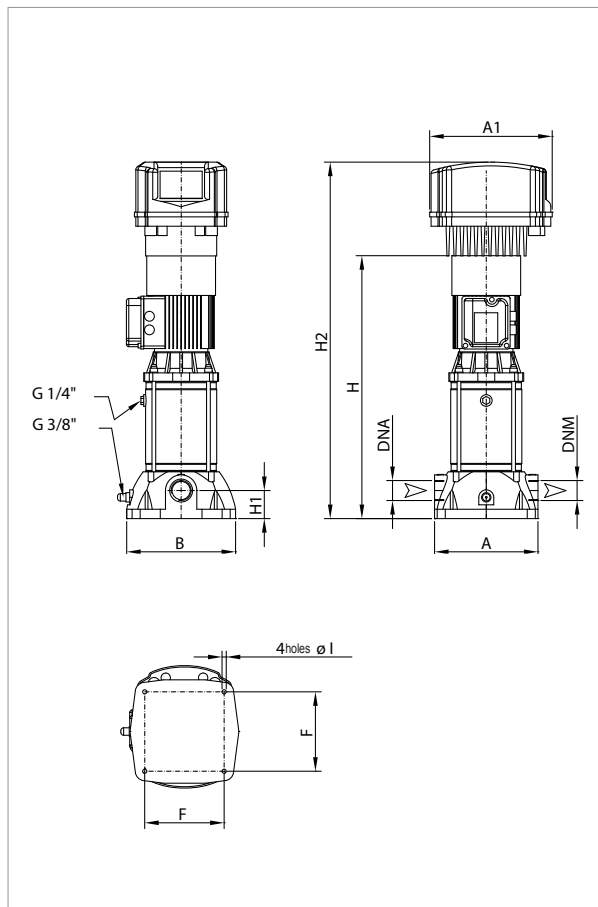
| MODEL                | Q=m <sup>3</sup> /h | 0    | 0,6  | 1,2  | 1,8  | 2,4  | 3    | 3,3  | 3,9  | 4,8  | 5,4  | 6    | 7,2  |
|----------------------|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|                      | Q=l/min             | 0    | 10   | 20   | 30   | 40   | 50   | 55   | 65   | 80   | 90   | 100  | 120  |
| KVCE 30-80 M MCE11/P | H<br>(m)            | 46,6 | 45,8 | 44,6 | 43,4 | 41,8 | 39,5 | 38,0 | 35,2 | 29,8 | 25,5 | 21,0 | 11,0 |
| KVCE 40-80 M MCE11/P |                     | 58,8 | 57,9 | 56,5 | 55,0 | 53,1 | 50,3 | 48,5 | 45,0 | 38,4 | 33,1 | 27,6 | 15,1 |
| KVCE 45-80 M MCE15/P |                     | 71,3 | 70,2 | 68,7 | 66,9 | 64,7 | 61,4 | 59,4 | 55,3 | 47,5 | 41,4 | 34,9 | 19,9 |
| KVCE 55-80 M MCE15/P |                     | 84,0 | 82,8 | 81,2 | 79,2 | 76,6 | 72,9 | 70,7 | 66,0 | 57,1 | 50,3 | 42,8 | 25,5 |
| KVCE 65-80 M MCE22/P |                     | 97,0 | 95,7 | 94,0 | 91,8 | 88,9 | 84,7 | 82,5 | 77,2 | 67,3 | 59,9 | 51,5 | 32,0 |

### SELECTION TABLE - KVCE 120

| MODEL                 | Q=m <sup>3</sup> /h | 0     | 0,6   | 1,2   | 1,8   | 2,4   | 3     | 3,3   | 3,9   | 4,8  | 5,4  | 6    | 7,2  | 8,4  | 9,6  | 10,8 | 12   |
|-----------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
|                       | Q=l/min             | 0     | 10    | 20    | 30    | 40    | 50    | 55    | 65    | 80   | 90   | 100  | 120  | 140  | 160  | 180  | 200  |
| KVCE 35-120 M MCE15/P | H<br>(m)            | 46,2  | 46,1  | 45,7  | 45,3  | 44,8  | 44,0  | 43,7  | 42,7  | 40,9 | 39,3 | 37,4 | 33,7 | 29,4 | 24,2 | 18,0 | 11,0 |
| KVCE 45-120 M MCE22/P |                     | 62,4  | 62,0  | 61,4  | 60,8  | 60,1  | 59,1  | 58,6  | 57,5  | 55,3 | 53,4 | 51,4 | 46,2 | 40,6 | 34,0 | 26,3 | 17,0 |
| KVCE 60-120 T MCE30/P |                     | 78,0  | 77,5  | 76,7  | 75,9  | 75,1  | 73,9  | 73,3  | 71,5  | 68,3 | 65,9 | 63,2 | 58,0 | 51,0 | 43,4 | 35,0 | 24,5 |
| KVCE 70-120 T MCE30/P |                     | 95,0  | 94,3  | 93,4  | 92,5  | 91,4  | 89,8  | 88,9  | 86,8  | 83,2 | 80,5 | 77,9 | 71,7 | 63,9 | 54,7 | 44,0 | 31,0 |
| KVCE 85-120 T MCE30/P |                     | 112,7 | 111,6 | 110,3 | 109,0 | 107,6 | 105,7 | 104,5 | 101,9 | 97,5 | 94,1 | 89,9 | 81,6 | 72,1 | 61,2 | 48,9 | 34,0 |

# KVCE 30 - VERTICAL AXIS MULTISTAGE CENTRIFUGAL PUMPS WITH MCE/P INVERTER FOR PRESSURISATION SYSTEMS

Pumped liquid temperature range: from 0 °C to +35 °C for domestic use - from 0 °C to +40 °C for the other uses



See hydraulic efficiency details on page 241.

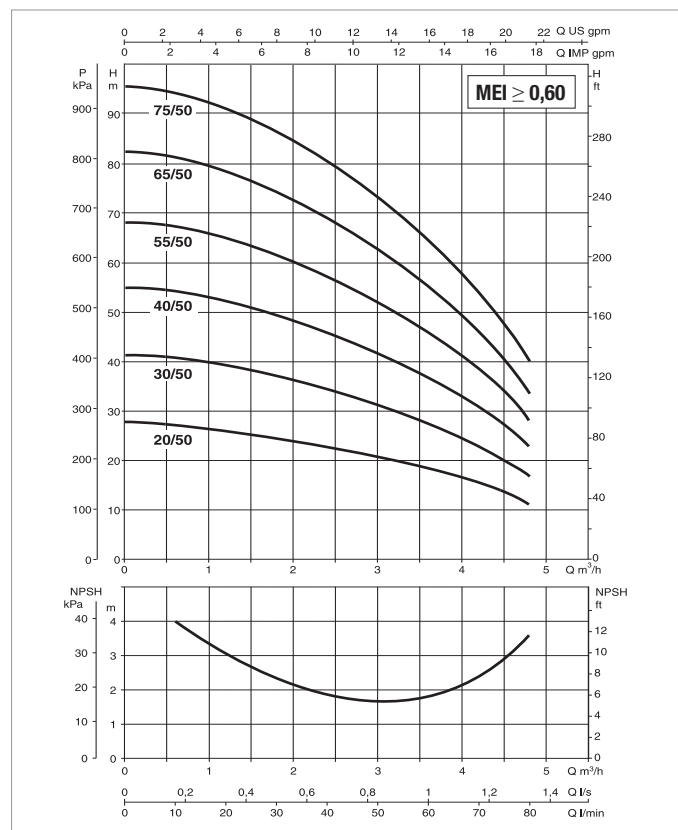
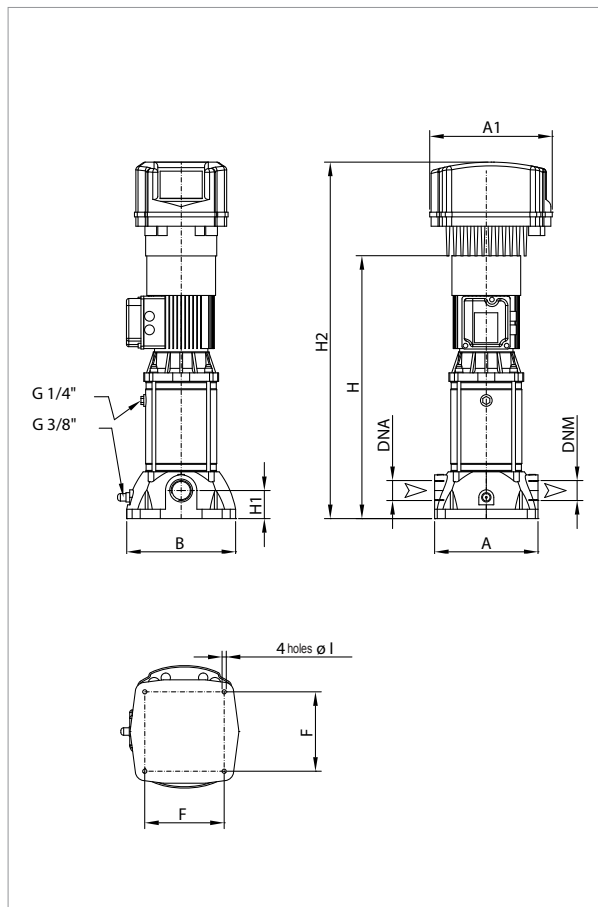
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

| MODEL                | ELECTRICAL DATA |                   |            |      |      |        |
|----------------------|-----------------|-------------------|------------|------|------|--------|
|                      | N. IMPELLERS    | POWER INPUT 50 Hz | P2 NOMINAL |      | In A | r.p.m. |
|                      |                 |                   | kw         | HP   |      |        |
| KVCE 35-30 M MCE11/P | 4               | 1 x 230 V         | 0,45       | 0,6  | 6,63 | 2822   |
| KVCE 45-30 M MCE11/P | 5               | 1 x 230 V         | 0,55       | 0,75 | 7,71 | 2788   |
| KVCE 50-30 M MCE11/P | 6               | 1 x 230 V         | 0,75       | 1,0  | 8,36 | 2858   |
| KVCE 60-30 M MCE11/P | 7               | 1 x 230 V         | 0,8        | 1,1  | 9,19 | 2842   |
| KVCE 70-30 M MCE11/P | 8               | 1 x 230 V         | 1,0        | 1,36 | 10,2 | 2850   |

| MODEL                | A   | B   | F   | H   | H1 | H2  | ØI | DNA GAS | DNM GAS | PACKING DIMENSIONS |     |     | VOLUME (m <sup>3</sup> ) | WEIGHT kg |
|----------------------|-----|-----|-----|-----|----|-----|----|---------|---------|--------------------|-----|-----|--------------------------|-----------|
|                      |     |     |     |     |    |     |    |         |         | L/A                | L/B | H   |                          |           |
| KVCE 35-30 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 19,6      |
| KVCE 45-30 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 19,6      |
| KVCE 50-30 M MCE11/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 20,9      |
| KVCE 60-30 M MCE11/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 20,9      |
| KVCE 70-30 M MCE11/P | 221 | 235 | 170 | 682 | 60 | 882 | 9  | 1"¼     | 1"¼     | 300                | 360 | 976 | 0,105                    | 22,7      |

# KVCE 50 - VERTICAL AXIS MULTISTAGE CENTRIFUGAL PUMPS WITH MCE/P INVERTER FOR PRESSURISATION SYSTEMS

Pumped liquid temperature range: from 0 °C to +35 °C for domestic use - from 0 °C to +40 °C for the other uses



See hydraulic efficiency details on page 241.

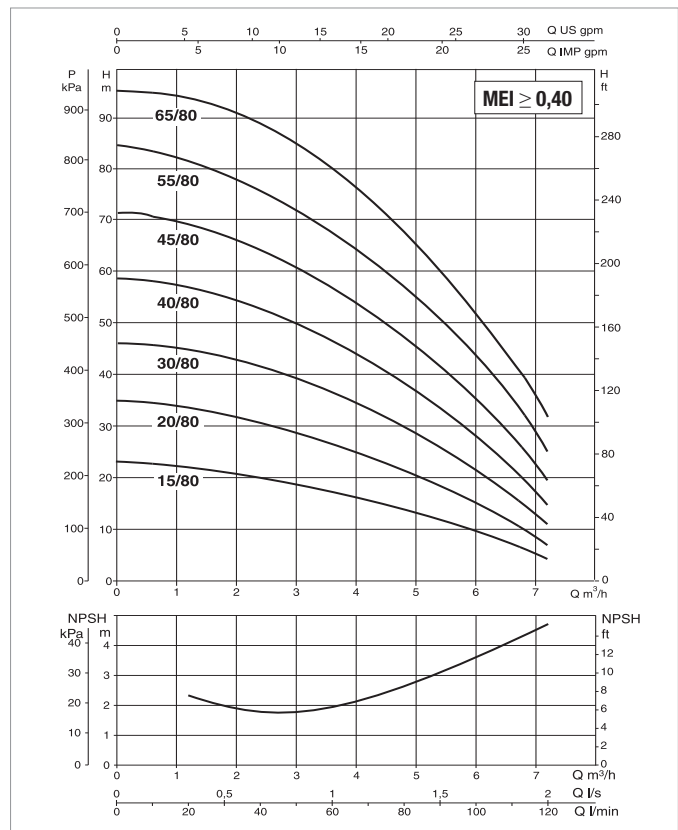
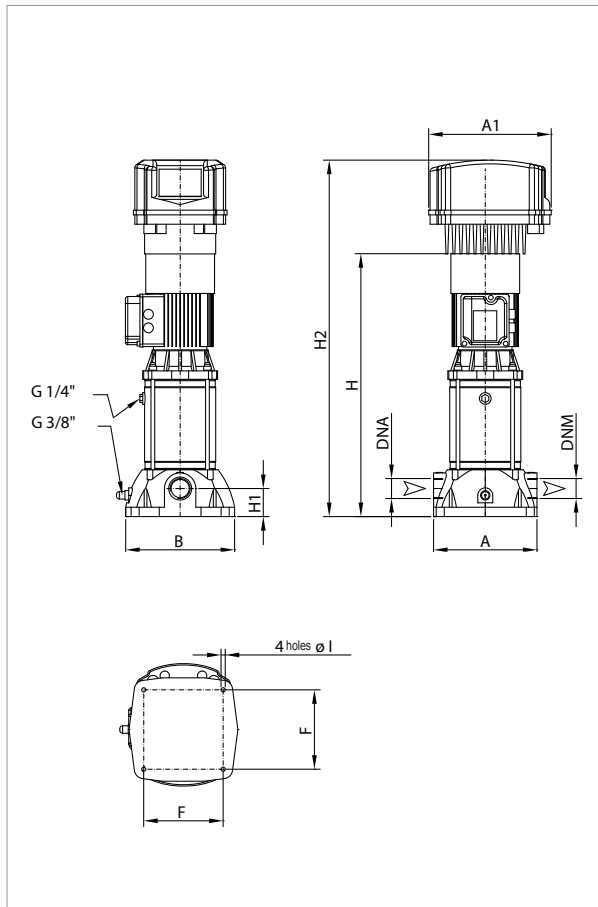
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

| MODEL                | ELECTRICAL DATA |                   |            |      |      |        |
|----------------------|-----------------|-------------------|------------|------|------|--------|
|                      | N. IMPELLERS    | POWER INPUT 50 Hz | P2 NOMINAL |      | In A | r.p.m. |
|                      |                 |                   | kW         | HP   |      |        |
| KVCE 30-50 M MCE11/P | 3               | 1 x 230 V         | 0,55       | 0,75 | 8,51 | 2714   |
| KVCE 40-50 M MCE11/P | 4               | 1 x 230 V         | 0,8        | 1,1  | 10,2 | 2816   |
| KVCE 55-50 M MCE11/P | 5               | 1 x 230 V         | 1,0        | 1,4  | 12   | 2795   |
| KVCE 65-50 M MCE15/P | 6               | 1 x 230 V         | 1,1        | 1,5  | 14,6 | 2870   |
| KVCE 75-50 M MCE15/P | 7               | 1 x 230 V         | 1,5        | 2,0  | 16,6 | 2847   |

| MODEL                | A   | B   | F   | H   | H1 | H2  | ØI | DNA GAS | DNM GAS | PACKING DIMENSIONS |     |     | VOLUME (m <sup>3</sup> ) | WEIGHT kg |
|----------------------|-----|-----|-----|-----|----|-----|----|---------|---------|--------------------|-----|-----|--------------------------|-----------|
|                      |     |     |     |     |    |     |    |         |         | L/A                | L/B | H   |                          |           |
| KVCE 30-50 M MCE11/P | 221 | 235 | 170 | 506 | 60 | 706 | 9  | 1"¼     | 1"¼     | 300                | 360 | 800 | 0,086                    | 19,1      |
| KVCE 40-50 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 22,4      |
| KVCE 55-50 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 22,4      |
| KVCE 65-50 M MCE15/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 26,4      |
| KVCE 75-50 M MCE15/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 26,4      |

# KVCE 80 - VERTICAL AXIS MULTISTAGE CENTRIFUGAL PUMPS WITH MCE/P INVERTER FOR PRESSURISATION SYSTEMS

Pumped liquid temperature range: from 0 °C to +35 °C for domestic use - from 0 °C to +40 °C for the other uses



See hydraulic efficiency details on page 241.

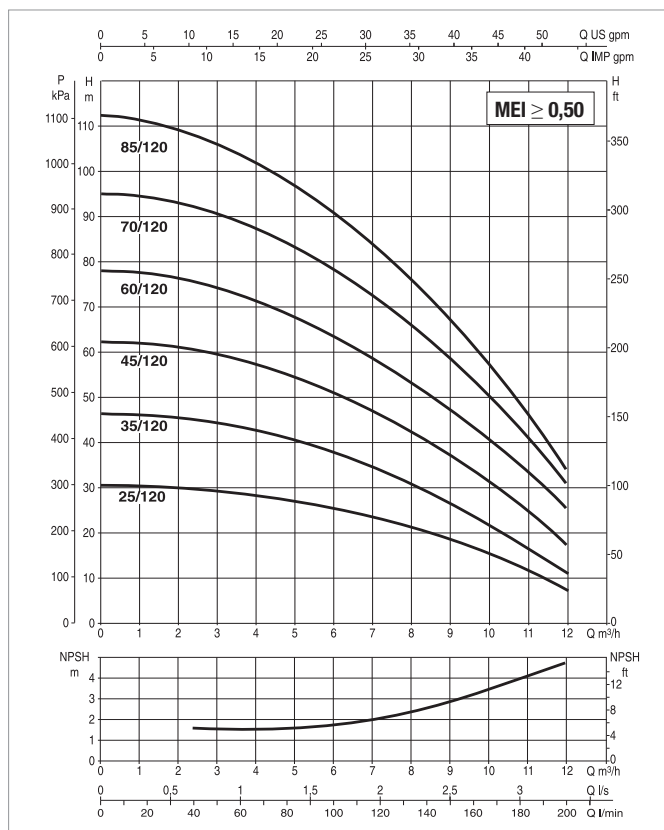
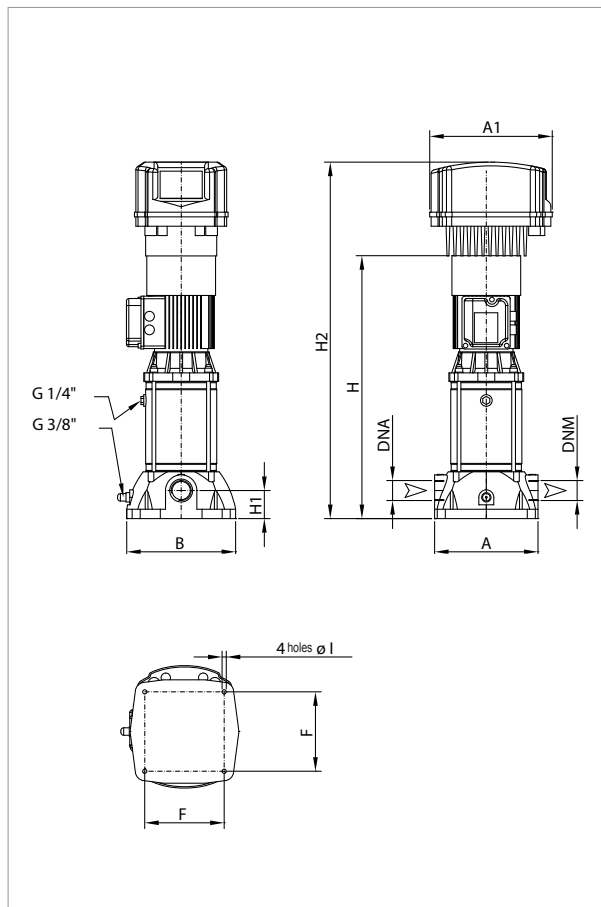
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

| MODEL                | ELECTRICAL DATA |                   |            |      |      |        |
|----------------------|-----------------|-------------------|------------|------|------|--------|
|                      | N. IMPELLERS    | POWER INPUT 50 Hz | P2 NOMINAL |      | In A | r.p.m. |
|                      |                 |                   | kW         | HP   |      |        |
| KVCE 30-80 M MCE11/P | 4               | 1 x 230 V         | 0,8        | 1,1  | 9,99 | 2827   |
| KVCE 40-80 M MCE11/P | 5               | 1 x 230 V         | 1,0        | 1,36 | 11,7 | 2805   |
| KVCE 45-80 M MCE15/P | 6               | 1 x 230 V         | 1,1        | 1,5  | 14,2 | 2880   |
| KVCE 55-80 M MCE15/P | 7               | 1 x 230 V         | 1,5        | 2,0  | 16   | 2851   |
| KVCE 65-80 M MCE22/P | 8               | 1 x 230 V         | 2,2        | 3,0  | 18   | 2852   |

| MODEL                | A   | B   | F   | H   | H1 | H2  | ØI | DNA GAS | DNM GAS | PACKING DIMENSIONS |     |     | VOLUME (m <sup>3</sup> ) | WEIGHT kg |
|----------------------|-----|-----|-----|-----|----|-----|----|---------|---------|--------------------|-----|-----|--------------------------|-----------|
|                      |     |     |     |     |    |     |    |         |         | L/A                | L/B | H   |                          |           |
| KVCE 30-80 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 22,4      |
| KVCE 40-80 M MCE11/P | 221 | 235 | 170 | 562 | 60 | 762 | 9  | 1"¼     | 1"¼     | 300                | 360 | 856 | 0,092                    | 22,4      |
| KVCE 45-80 M MCE15/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 26,4      |
| KVCE 55-80 M MCE15/P | 221 | 235 | 170 | 655 | 60 | 855 | 9  | 1"¼     | 1"¼     | 300                | 360 | 935 | 0,101                    | 26,4      |
| KVCE 65-80 M MCE22/P | 221 | 235 | 170 | 680 | 60 | 880 | 9  | 1"¼     | 1"¼     | 300                | 360 | 960 | 0,104                    | 27,4      |

# KVCE 120 - VERTICAL AXIS MULTISTAGE CENTRIFUGAL PUMPS WITH MCE/P INVERTER FOR PRESSURISATION SYSTEMS

Pumped liquid temperature range: from 0 °C to +35 °C for domestic use - from 0 °C to +40 °C for the other uses



See hydraulic efficiency details on page 241.

The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

| MODEL                 | ELECTRICAL DATA |                   |            |     |      |        |
|-----------------------|-----------------|-------------------|------------|-----|------|--------|
|                       | N. IMPELLERS    | POWER INPUT 50 Hz | P2 NOMINAL |     | In A | r.p.m. |
|                       |                 |                   | kW         | HP  |      |        |
| KVCE 35-120 M MCE15/P | 3               | 1 x 230 V         | 1,1        | 1,5 | 16   | 2857   |
| KVCE 45-120 M MCE22/P | 4               | 1 x 230 V         | 1,84       | 2,5 | 19,5 | 2835   |
| KVCE 60-120 T MCE30/P | 5               | 3 x 400 V         | 2,2        | 3,0 | 6,91 | 2765   |
| KVCE 70-120 T MCE30/P | 6               | 3 x 400 V         | 2,2        | 3,0 | 8,26 | 2794   |
| KVCE 85-120 T MCE30/P | 7               | 3 x 400 V         | 2,2        | 3,0 | 9,18 | 2755   |

| MODEL                 | A   | B   | F   | H   | H1 | H2  | ØI | DNA GAS | DNM GAS | PACKING DIMENSIONS |     |      | VOLUME (m³) | WEIGHT kg |
|-----------------------|-----|-----|-----|-----|----|-----|----|---------|---------|--------------------|-----|------|-------------|-----------|
|                       |     |     |     |     |    |     |    |         |         | L/A                | L/B | H    |             |           |
| KVCE 35-120 M MCE15/P | 221 | 235 | 170 | 505 | 60 | 705 | 9  | 1 1/4   | 1 1/4   | 300                | 360 | 785  | 0,085       | 23,8      |
| KVCE 45-120 M MCE22/P | 221 | 235 | 170 | 635 | 60 | 835 | 9  | 1 1/4   | 1 1/4   | 300                | 360 | 915  | 0,099       | 29,0      |
| KVCE 60-120 T MCE30/P | 221 | 235 | 170 | 635 | 60 | 835 | 9  | 1 1/4   | 1 1/4   | 300                | 360 | 915  | 0,099       | 27,1      |
| KVCE 70-120 T MCE30/P | 221 | 235 | 170 | 730 | 60 | 930 | 9  | 1 1/4   | 1 1/4   | 300                | 360 | 1010 | 0,109       | 30,8      |
| KVCE 85-120 T MCE30/P | 221 | 235 | 170 | 730 | 60 | 930 | 9  | 1 1/4   | 1 1/4   | 300                | 360 | 1010 | 0,109       | 30,8      |