

# NCE(D) HQ.F

## Energy saving twin circulating pumps with flanges



### Designation

NCE (D) HQ 40 F - 120 / 220

Series \_\_\_\_\_  
 Twin pumps version \_\_\_\_\_  
 Version \_\_\_\_\_  
 DN ports in mm \_\_\_\_\_  
 With flanges \_\_\_\_\_  
 Max. head in dm \_\_\_\_\_  
 connection size mm \_\_\_\_\_

### Features

#### Smart pump

**NCE(D) HQ.F** adapt its functions to the system: the circulator measures the pressure and the flow and adjusts the speed to the selected pressure.

#### Easy use

There are different operating modes selectable from the control panel.

### Construction

Energy saving variable speed circulating pump driven by a permanent magnet synchronous motor (pm) controlled by on board inverter.

- Dry running detection
- Automatic venting function

#### NCE single head digital input and output

- Start / stop input
- Relay output

#### On demand

- Max / Min input
- 0-10V input
- 4-20 mA input
- PWM input
- Modbus (RS485 and TCP / IP)
- Web server
- Bacnet

#### NCED Twin head digital input and output

- Start / stop input
- 2 nos. relay outputs
- Max / Min input
- 0-10V input
- 4-20 mA input
- PWM input
- Modbus (RS485 and TCP / IP)
- Web server
- Bacnet

### Applications

Heating and conditioning systems.

### Operating conditions

- Liquid temperature from -10 °C to +110 °C
- Ambient temperature from 0 °C to +40 °C
- Maximum permissible working pressure: 10 bar
- Storage: -20°C/+70°C max. relative humidity 95% at 40 °C
- Certifications: in conformity with CE requirements
- Sound pressure  $\leq$  40 dB (A).
- Minimum suction pressure: - 0,05 bar at 75 °C  
- 0,28 bar a 90 °C.
- Maximum glycol quantity: 20%.
- EMC according to: EN 55014-1, EN 55014-2  
EN 61000-3-2, EN 61000-3-2.
- Connections: Flanges according to PN 6/10, EN 1092-2, DN 32,40,50,65,80,100.
- The benchmark for most efficient circulators is  $EEL \leq 0,20$ .

### Motor

Synchronous motor with permanent magnet.

- Motor: variable speed
- Standard voltage: single-phase 230 V (-10%;+6%)
- Frequency: 50/60 Hz
- Protection: IP 44
- Insulation class: F
- Overload protection (integrated).
- Cable: phases and neutral.
- Constructed in accordance with: EN 60335-1, EN 60335-2-51.

### Operating modes



#### Automatic mode

(factory setting):

In this mode the pump automatically sets the operating pressure, depending on the hydraulic system. This mode is recommended in most systems.



#### Proportional pressure mode:

The circulator changes the pressure proportionally to the current flow. The pressure value can be adjusted with the + and - buttons.



#### Constant pressure mode:

The circulator maintains the pressure constant when the reference flow changes. The pressure value can be adjusted with the + and - buttons.



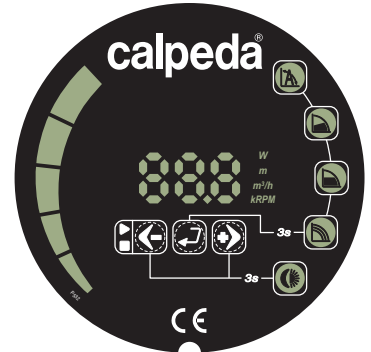
#### Fixed speed mode:

The circulator works with constant curve and the curve could be changed using + e - buttons.



#### Night mode:

When the liquid temperature fall by 15-20°C the pump automatically swiches to night mode, in practice the circulator works at minimum curve. When the temperature rises again the pump comes back to the selected mode. The night mode could be selected with any operating mode.



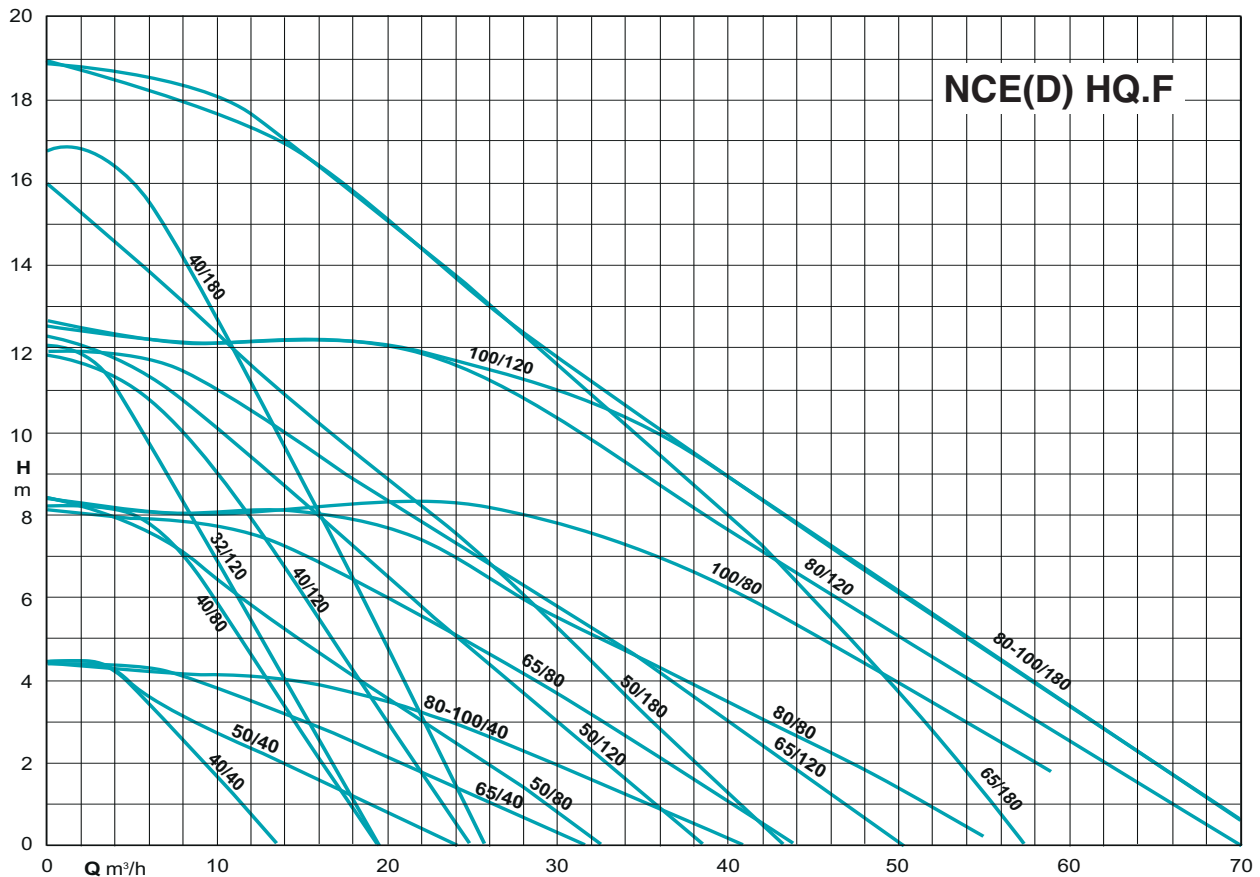
#### Operating mode-control panel

NCE HQ.F could works in:

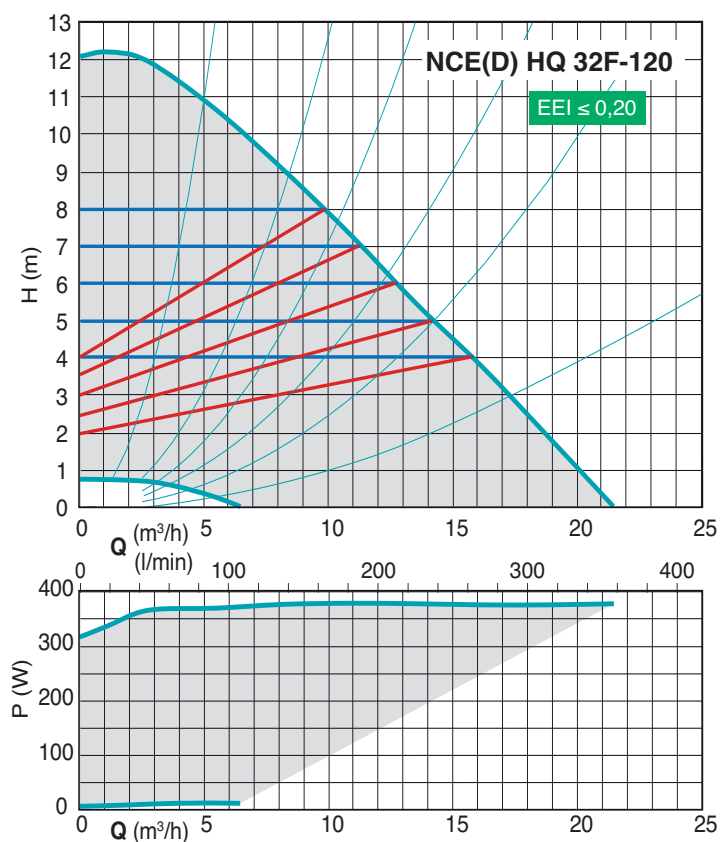
- automatic mode
- proportional pressure mode
- constant pressure mode
- fixed speed mode
- night mode

The night mode could be selected with any operating mode.

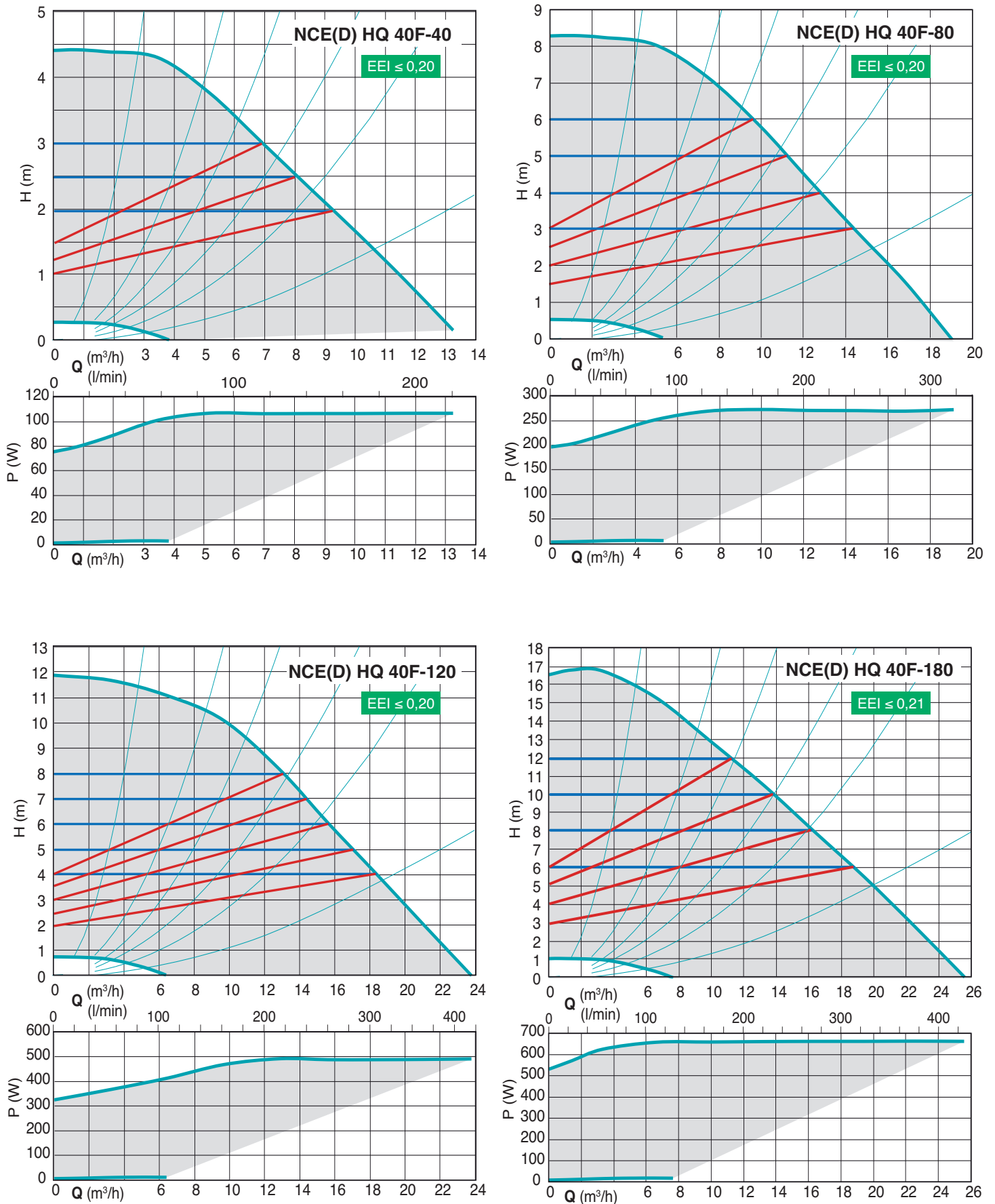
### Coverage chart



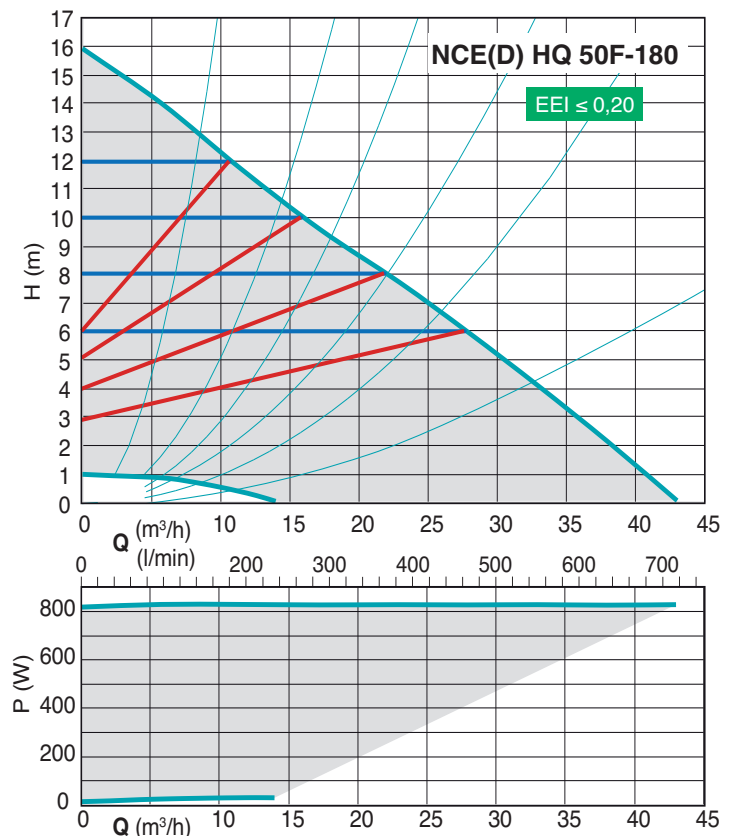
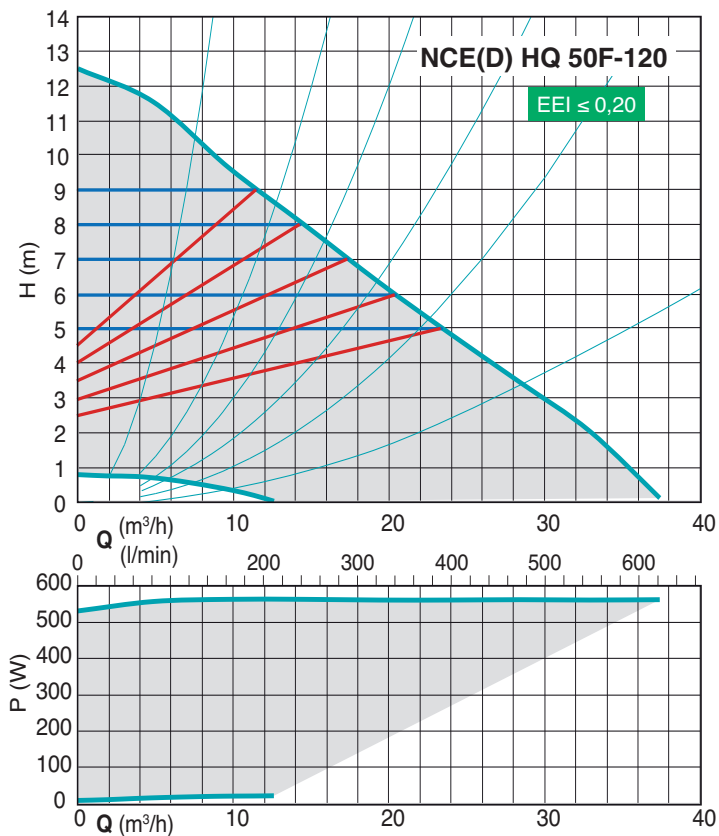
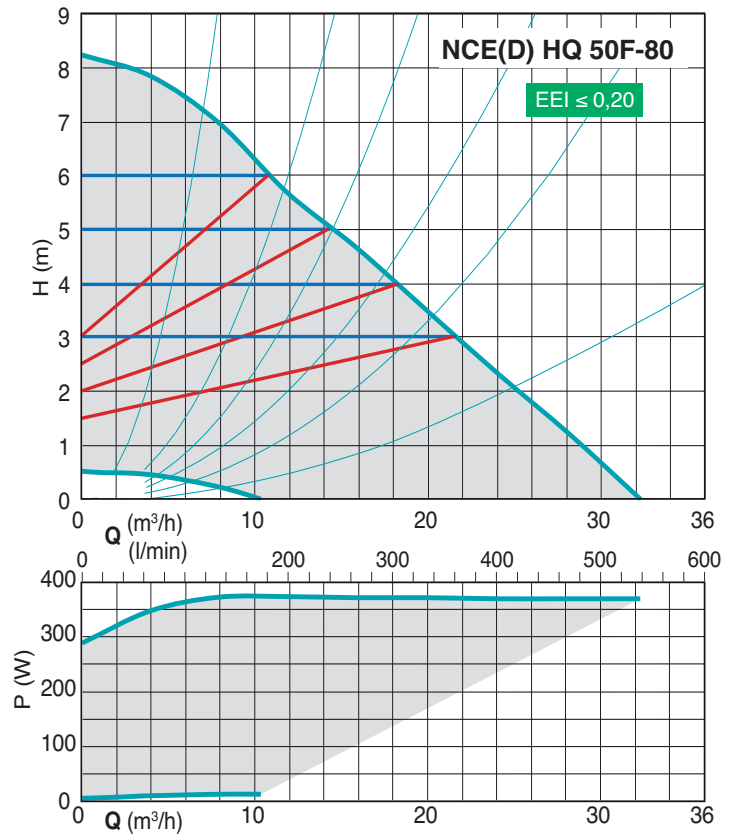
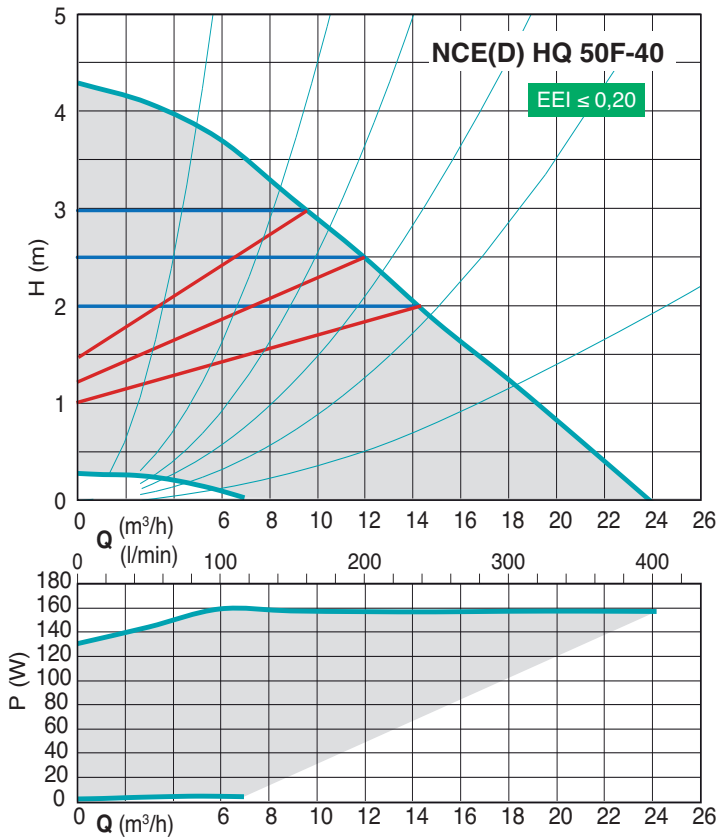
### Characteristic curves



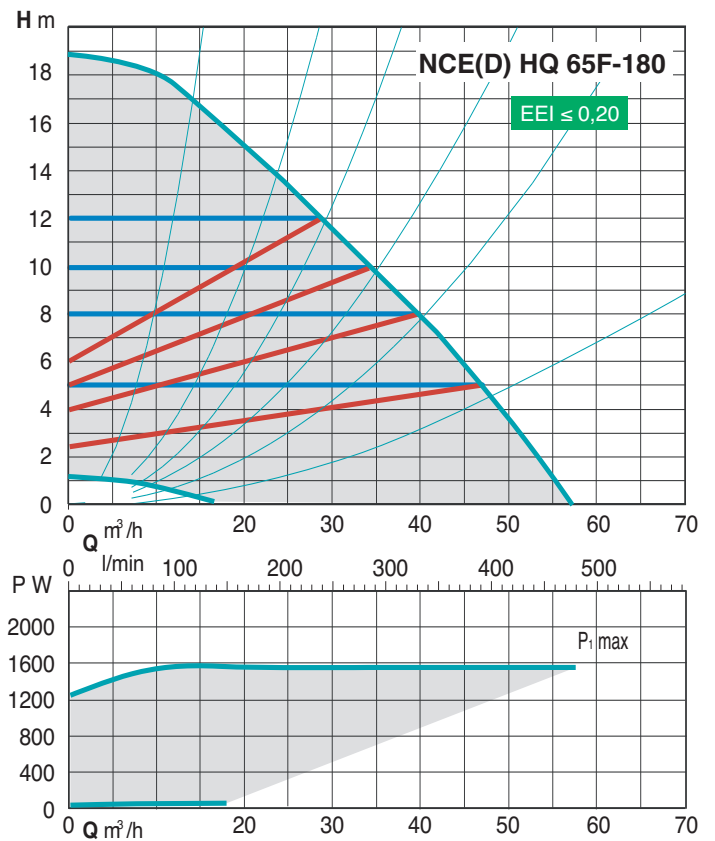
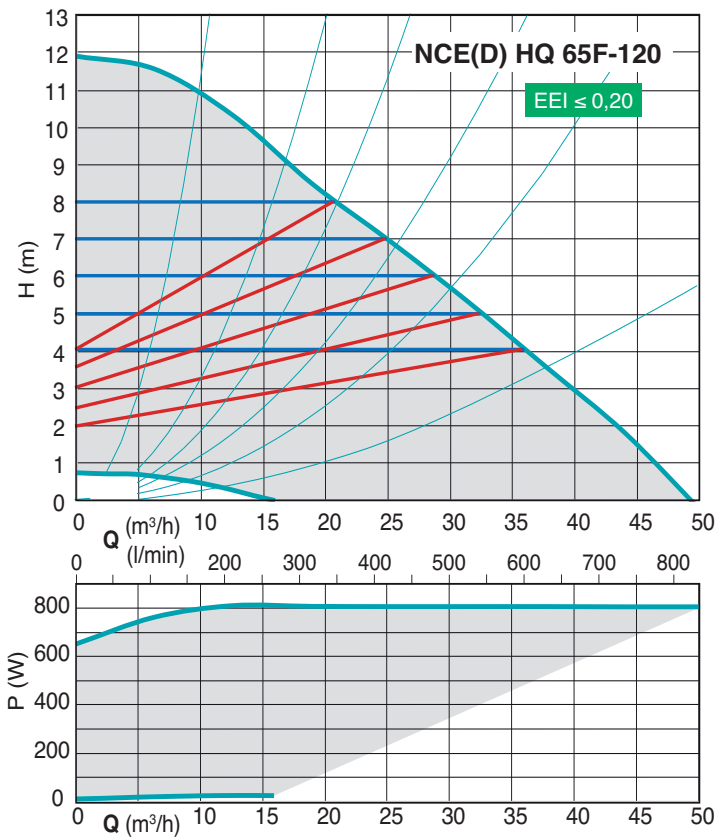
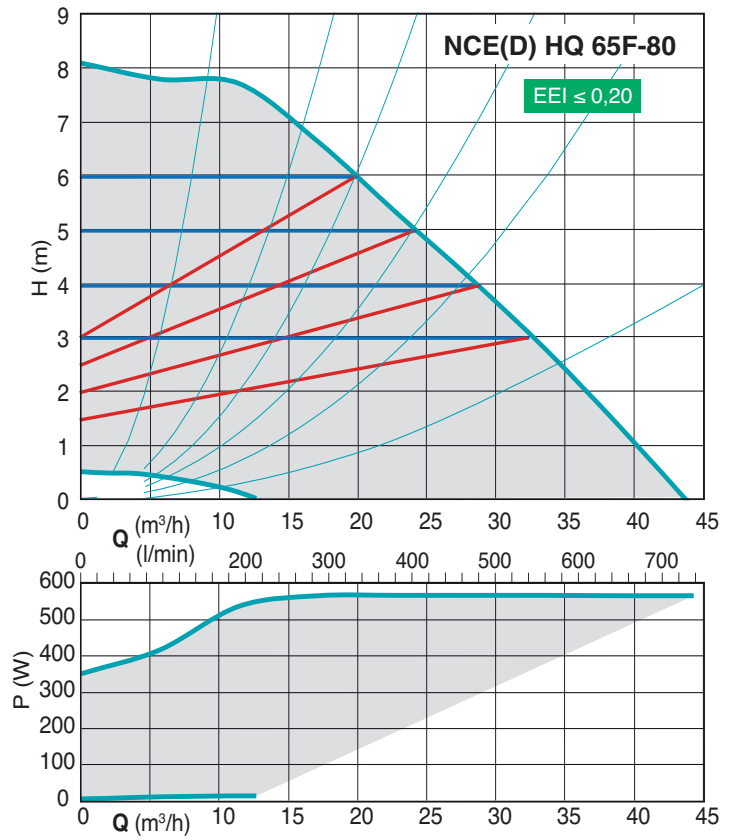
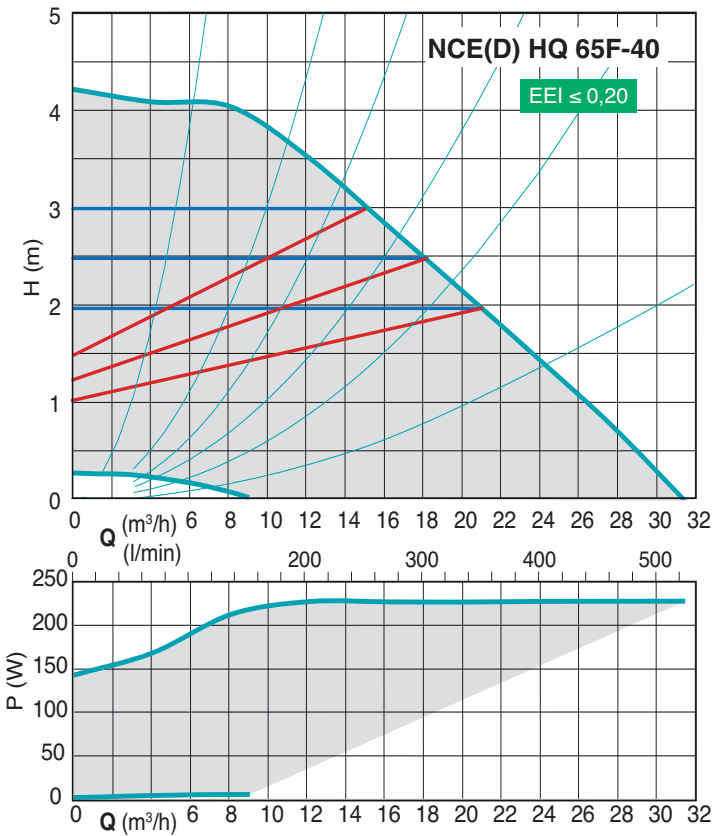
### Characteristic curves



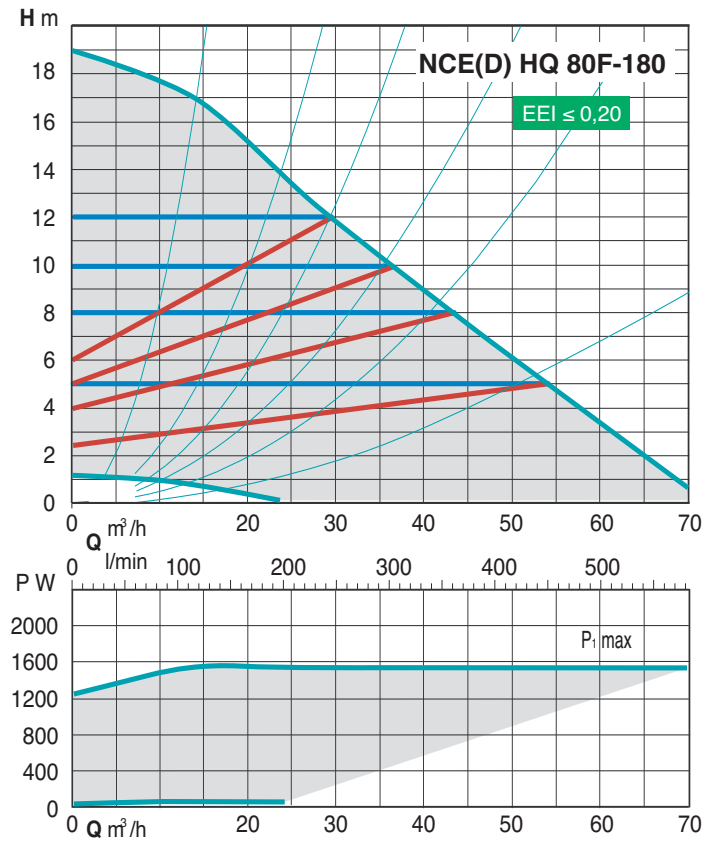
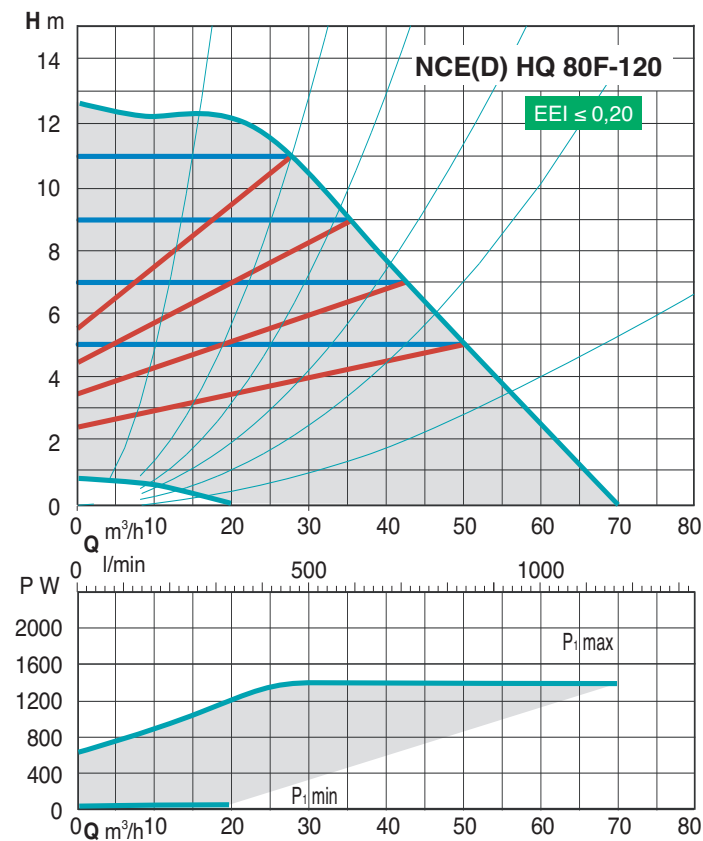
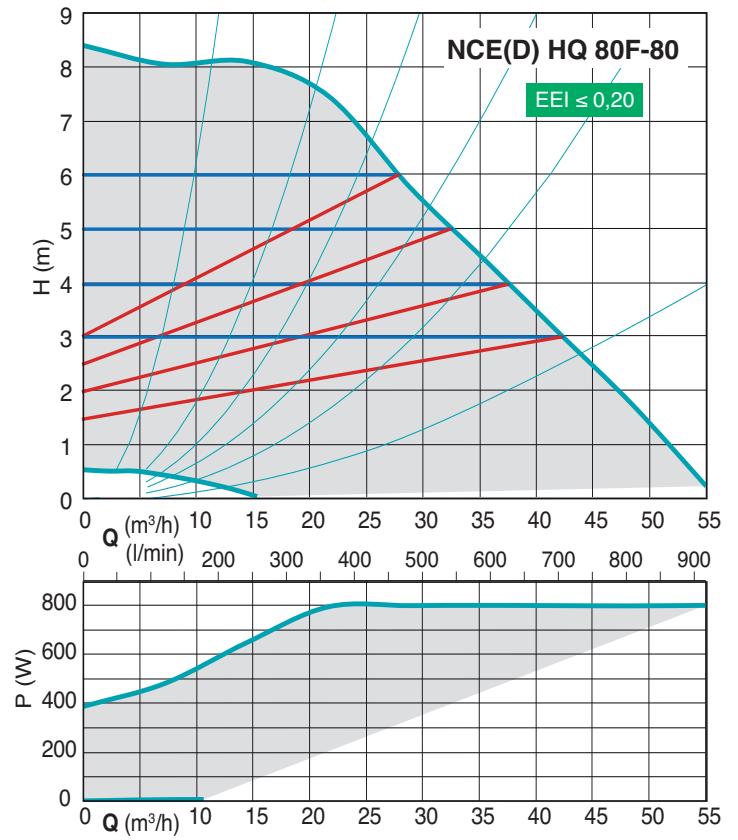
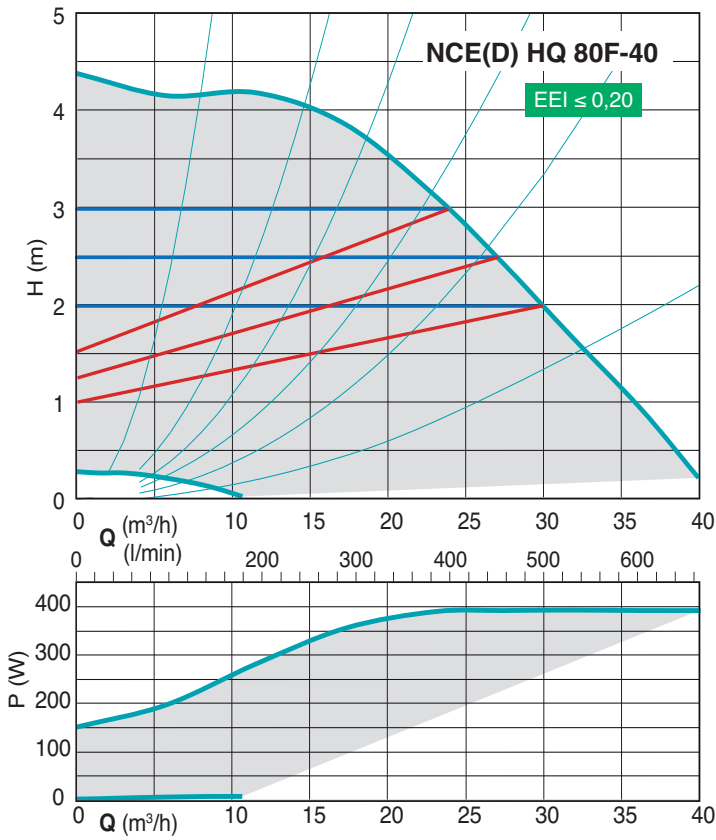
### Characteristic curves



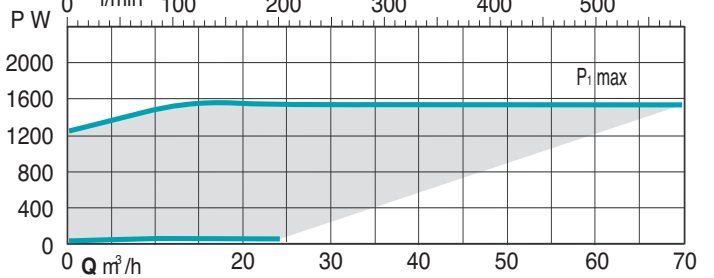
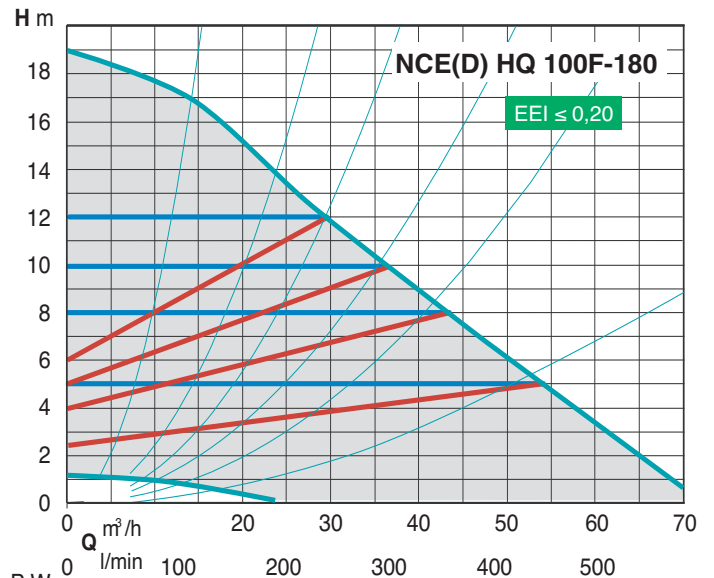
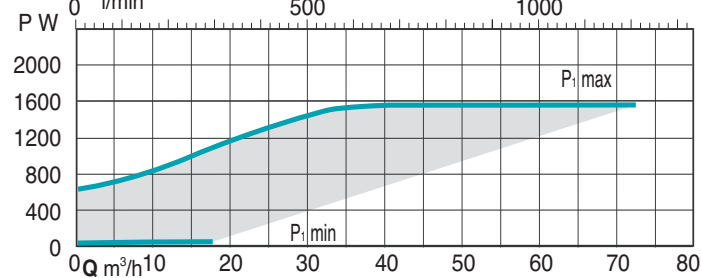
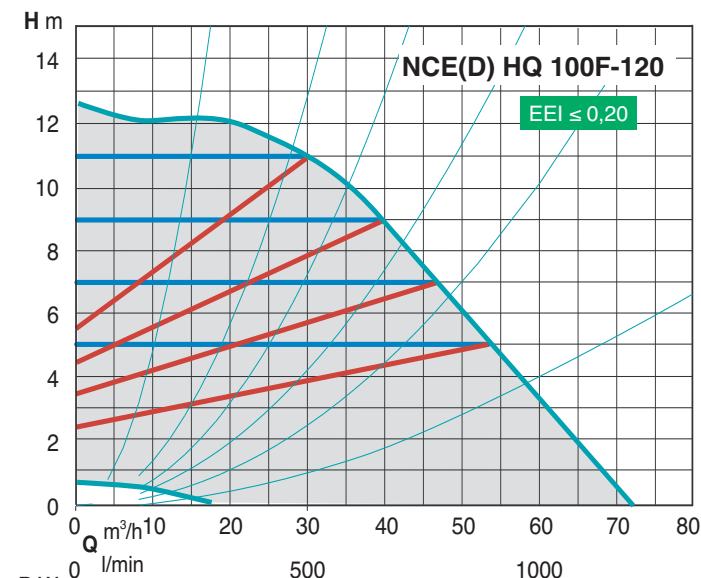
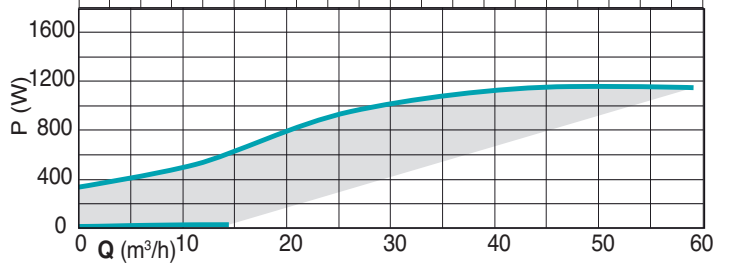
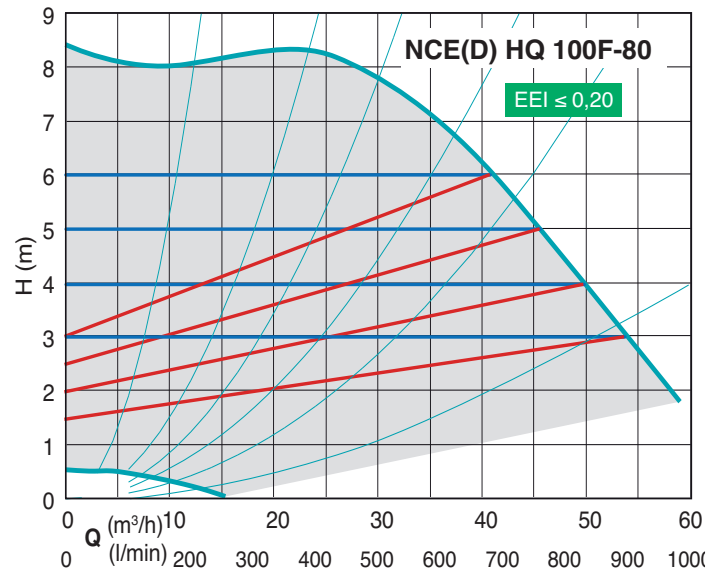
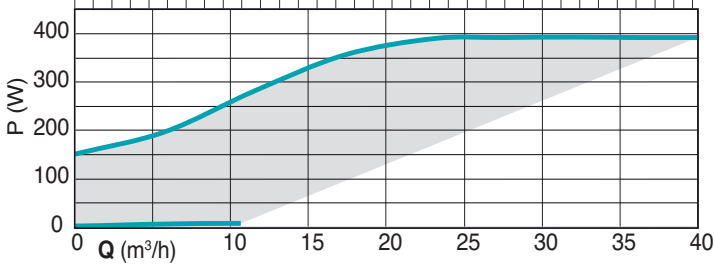
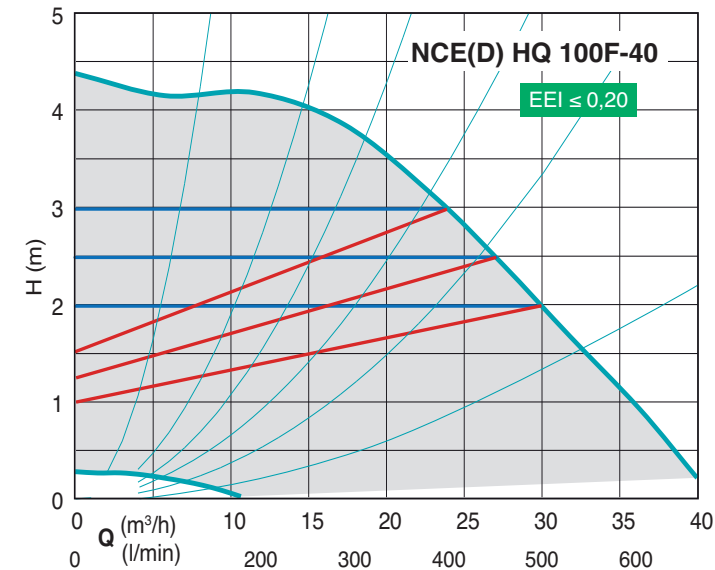
### Characteristic curves



### Characteristic curves



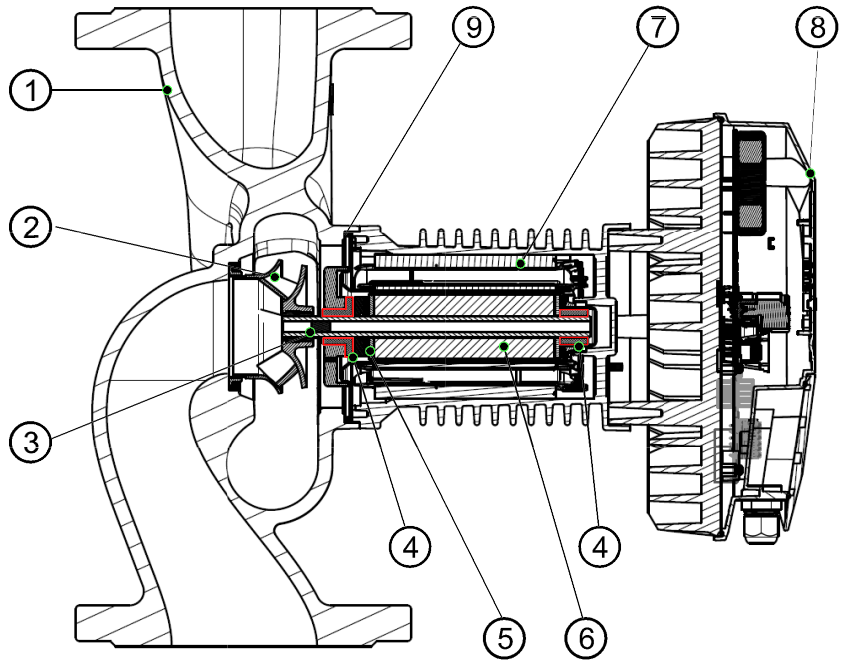
### Characteristic curves



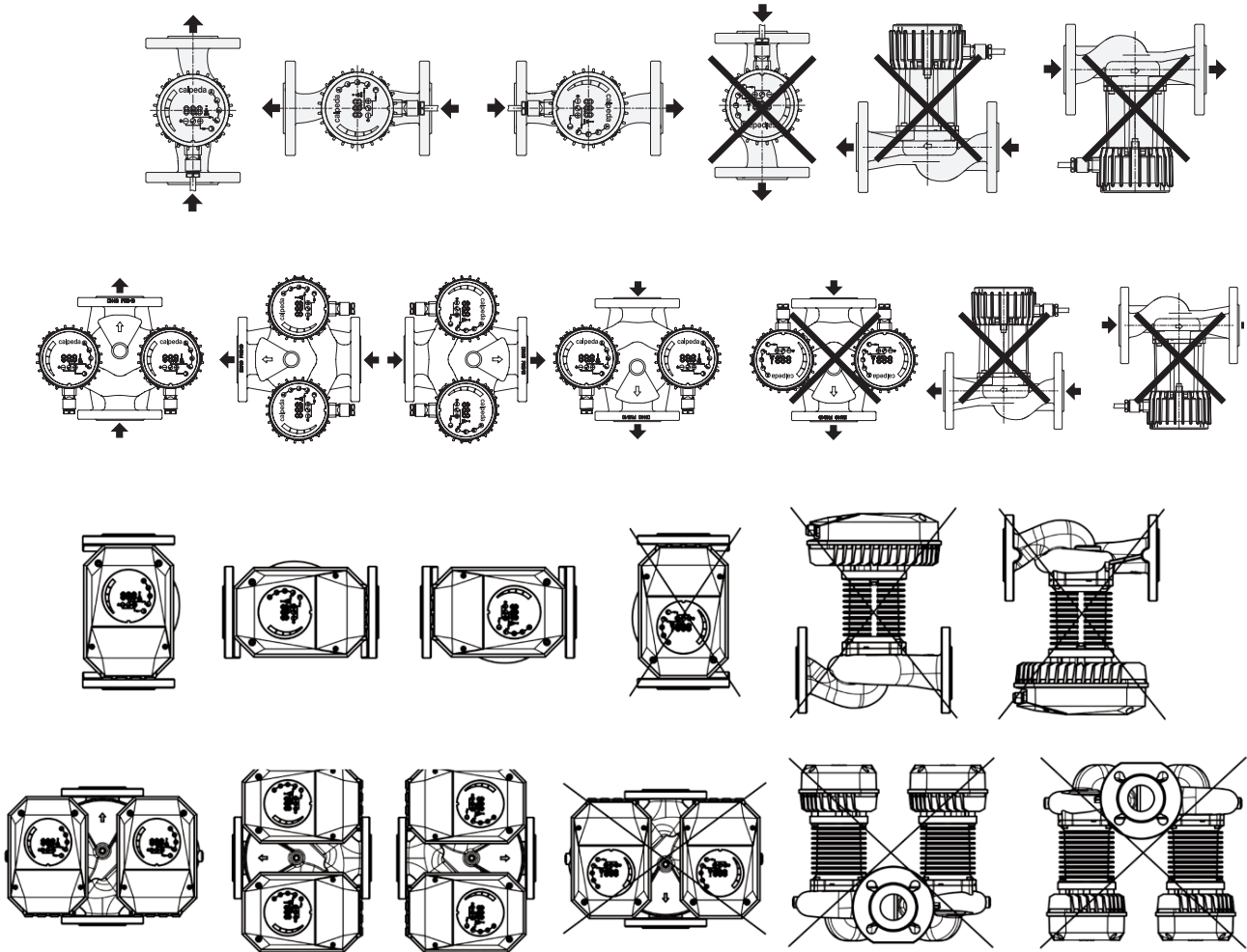


### Materials

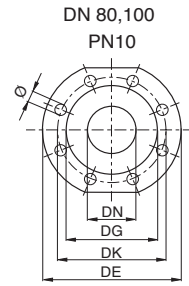
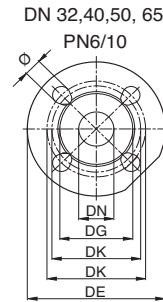
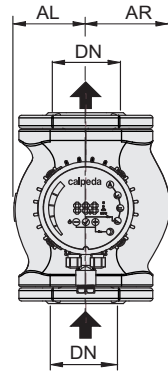
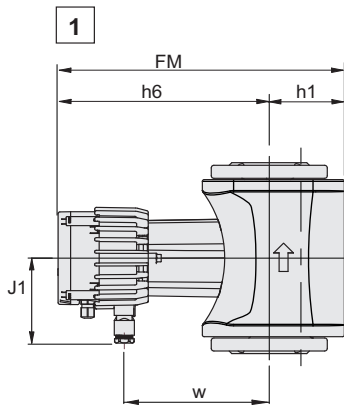
| Component       | Pos. | Material                  |
|-----------------|------|---------------------------|
| Pump casing     | 1    | Cast iron GJL 200 EN 1561 |
| Impeller        | 2    | Composite                 |
| Shaft           | 3    | Stainless steel           |
| Bearings        | 4    | Carbon                    |
| Thrust bearing  | 5    | Ceramic                   |
| Rotor           | 6    | Stainless steel jacket    |
| Winding         | 7    | Copper wire               |
| Electronic card | 8    | PA6 GF15 (Polyamide)      |
| Gasket          | 9    | EPDM                      |



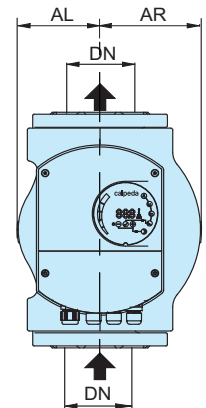
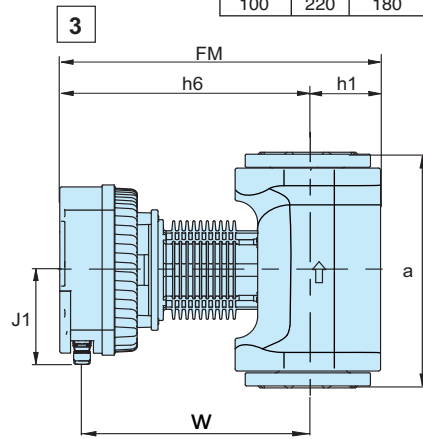
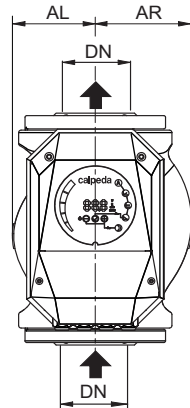
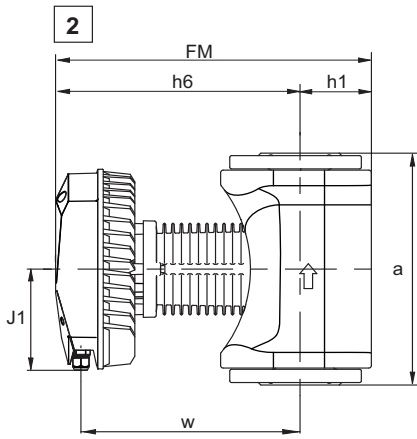
### Examples of installations



### Dimensions and weights

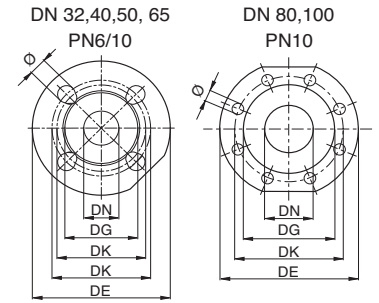
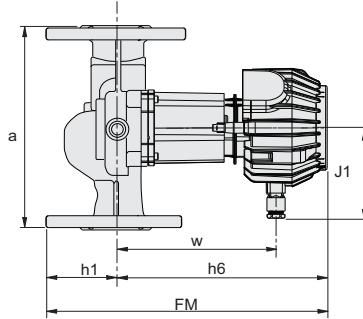
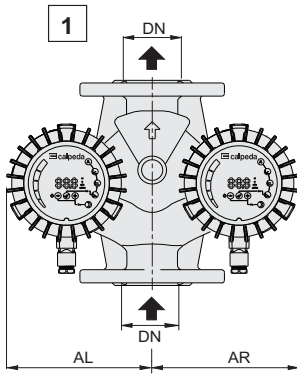


| DN  | DE  | DK      | DG  | holes |       |
|-----|-----|---------|-----|-------|-------|
|     |     |         |     | N.    | Ø     |
| 32  | 140 | 90/100  | 74  | 4     | 14/19 |
| 40  | 150 | 100/110 | 80  | 4     | 14/19 |
| 50  | 165 | 110/125 | 90  | 4     | 14/19 |
| 65  | 185 | 130/145 | 110 | 4     | 14/19 |
| 80  | 200 | 160     | 148 | 8     | 19    |
| 100 | 220 | 180     | 166 | 8     | 19    |

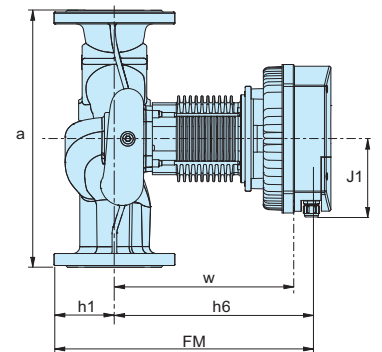
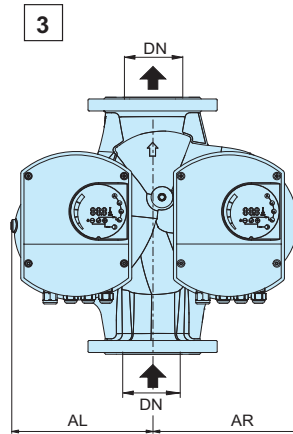
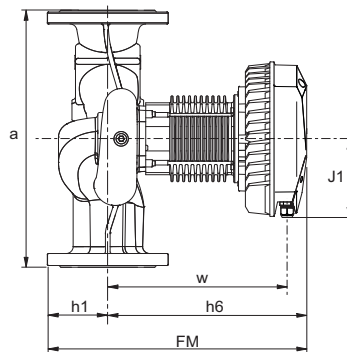
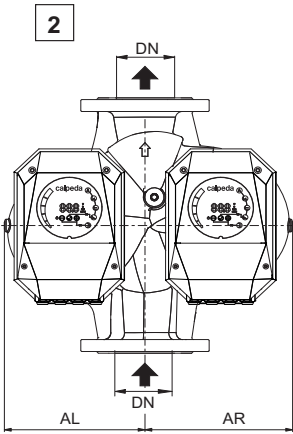


|   | TYPE                 | DN  | H<br>m | Q<br>m <sup>3</sup> /h | 1~ 230 V |       | P <sub>1</sub> |       | mm  |     |     |     |     |     |     |     | kg   |
|---|----------------------|-----|--------|------------------------|----------|-------|----------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|------|
|   |                      |     |        |                        | A min    | A max | W min          | W max | a   | J1  | FM  | h1  | h6  | w   | AL  | AR  |      |
| 2 | NCE HQ 32F-120/220/A | 32  | 12     | 19                     | 0,2      | 1.8   | 25             | 370   | 220 | 122 | 379 | 83  | 296 | 266 | 82  | 97  | 11,7 |
| 1 | NCE HQ 40F-40/250/A  | 40  | 4      | 13                     | 0,1      | 1     | 10             | 110   | 250 | 98  | 321 | 84  | 237 | 162 | 81  | 96  | 9,5  |
| 2 | NCE HQ 40F-80/250/A  | 40  | 8      | 19                     | 0,2      | 1.3   | 25             | 270   | 250 | 122 | 380 | 84  | 296 | 266 | 82  | 97  | 11,8 |
| 2 | NCE HQ 40F-120/250/A | 40  | 12     | 24                     | 0,2      | 2.3   | 25             | 480   | 250 | 122 | 380 | 83  | 297 | 266 | 82  | 97  | 13,4 |
| 2 | NCE HQ 40F-180/250/A | 40  | 18     | 25                     | 0,2      | 3.4   | 25             | 680   | 250 | 115 | 390 | 83  | 307 | 276 | 82  | 97  | 13,4 |
| 1 | NCE HQ 50F-40/280/A  | 50  | 4      | 23                     | 0,2      | 1.3   | 25             | 160   | 280 | 98  | 345 | 87  | 258 | 199 | 98  | 114 | 11   |
| 2 | NCE HQ 50F-80/280/A  | 50  | 8      | 32                     | 0,2      | 1.7   | 25             | 370   | 280 | 122 | 371 | 84  | 287 | 157 | 96  | 114 | 14,5 |
| 2 | NCE HQ 50F-120/280/A | 50  | 12     | 36                     | 0,2      | 2.5   | 25             | 560   | 280 | 122 | 371 | 84  | 287 | 157 | 96  | 114 | 14,5 |
| 2 | NCE HQ 50F-180/280/A | 50  | 18     | 42                     | 0,2      | 3.6   | 25             | 830   | 280 | 122 | 381 | 84  | 297 | 167 | 96  | 114 | 14,5 |
| 2 | NCE HQ 65F-40/340/A  | 65  | 4      | 31                     | 0,2      | 1.1   | 25             | 230   | 340 | 122 | 402 | 95  | 307 | 226 | 96  | 118 | 17,9 |
| 2 | NCE HQ 65F-80/340/A  | 65  | 8      | 43                     | 0,2      | 2.6   | 25             | 560   | 340 | 122 | 402 | 95  | 307 | 226 | 96  | 118 | 17,9 |
| 2 | NCE HQ 65F-120/340/A | 65  | 12     | 50                     | 0,2      | 3.5   | 25             | 810   | 340 | 122 | 412 | 95  | 317 | 236 | 96  | 118 | 18,4 |
| 3 | NCE HQ 65F-180/340   | 65  | 18     | 57                     | 0,2      | 7,4   | 25             | 1550  | 340 | 137 | 454 | 96  | 358 | 325 | 95  | 120 | 23,8 |
| 2 | NCE HQ 80F-40/360/A  | 80  | 4      | 40                     | 0,2      | 1.8   | 25             | 390   | 360 | 122 | 415 | 108 | 307 | 278 | 123 | 150 | 24,8 |
| 2 | NCE HQ 80F-80/360/A  | 80  | 8      | 53                     | 0,2      | 3.5   | 25             | 800   | 360 | 122 | 425 | 108 | 317 | 288 | 123 | 150 | 24,8 |
| 3 | NCE HQ 80F-120/360   | 80  | 12     | 69                     | 0,2      | 6,2   | 25             | 1400  | 360 | 144 | 476 | 108 | 368 | 335 | 124 | 150 | 30   |
| 3 | NCE HQ 80F-180/360   | 80  | 18     | 72                     | 0,2      | 7,4   | 25             | 1550  | 360 | 144 | 476 | 108 | 368 | 335 | 124 | 150 | 30   |
| 2 | NCE HQ 100F-40/450/A | 100 | 4      | 40                     | 0,2      | 2.4   | 25             | 550   | 450 | 144 | 415 | 108 | 307 | 278 | 123 | 150 | 28,9 |
| 3 | NCE HQ 100F-80/450   | 100 | 8      | 59                     | 0,2      | 5     | 25             | 1150  | 450 | 144 | 476 | 108 | 368 | 335 | 124 | 150 | 35,1 |
| 3 | NCE HQ 100F-120/450  | 100 | 12     | 72                     | 0,2      | 7,4   | 25             | 1550  | 450 | 144 | 476 | 108 | 368 | 335 | 124 | 150 | 35,1 |
| 3 | NCE HQ 100F-180/450  | 100 | 18     | 72                     | 0,2      | 7,4   | 25             | 1550  | 450 | 144 | 476 | 108 | 368 | 335 | 124 | 150 | 35,1 |

### Dimensions and weights



| DN  | DE  | DK      | DG  | holes |       |
|-----|-----|---------|-----|-------|-------|
|     |     |         |     | N.    | Ø     |
| 32  | 140 | 90/100  | 74  | 4     | 14/19 |
| 40  | 150 | 100/110 | 80  | 4     | 14/19 |
| 50  | 165 | 110/125 | 90  | 4     | 14/19 |
| 65  | 185 | 130/145 | 110 | 4     | 14/19 |
| 80  | 200 | 160     | 148 | 8     | 19    |
| 100 | 220 | 180     | 166 | 8     | 19    |



|   | TYPE                  | DN  | H<br>m | Q<br>m <sup>3</sup> /h | 1~ 230 V |       | P <sub>1</sub> |       | mm  |     |     |     |     |     |     |     | kg    |
|---|-----------------------|-----|--------|------------------------|----------|-------|----------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-------|
|   |                       |     |        |                        | A min    | A max | W min          | W max | a   | J1  | FM  | h1  | h6  | w   | AL  | AR  |       |
| 2 | NCED HQ 32F-120/220/A | 32  | 12     | 19                     | 0,2      | 1.8   | 25             | 370   | 220 | 122 | 361 | 65  | 296 | 266 | 191 | 191 | 21,5  |
| 1 | NCED HQ 40F-40/250/A  | 40  | 4      | 13                     | 0,1      | 1     | 10             | 110   | 250 | 98  | 302 | 65  | 237 | 162 | 181 | 186 | 17,2  |
| 2 | NCED HQ 40F-80/250/A  | 40  | 8      | 19                     | 0,2      | 1.3   | 25             | 270   | 250 | 122 | 361 | 65  | 296 | 266 | 191 | 191 | 22,2  |
| 2 | NCED HQ 40F-120/250/A | 40  | 12     | 24                     | 0,2      | 2.3   | 25             | 480   | 250 | 122 | 361 | 65  | 296 | 266 | 191 | 191 | 23,5  |
| 2 | NCED HQ 40F-180/250/A | 40  | 18     | 25                     | 0,2      | 3.4   | 25             | 680   | 250 | 115 | 371 | 65  | 306 | 276 | 191 | 191 | 23,6  |
| 1 | NCED HQ 50F-40/280/A  | 50  | 4      | 23                     | 0,2      | 1.3   | 25             | 160   | 280 | 98  | 345 | 72  | 273 | 199 | 198 | 201 | 26    |
| 2 | NCED HQ 50F-80/280/A  | 50  | 8      | 32                     | 0,2      | 1.7   | 25             | 370   | 280 | 122 | 359 | 72  | 287 | 157 | 195 | 202 | 27,5  |
| 2 | NCED HQ 50F-120/280/A | 50  | 12     | 36                     | 0,2      | 2.5   | 25             | 560   | 280 | 122 | 359 | 72  | 287 | 157 | 195 | 202 | 27,5  |
| 2 | NCED HQ 50F-180/280/A | 50  | 18     | 42                     | 0,2      | 3.6   | 25             | 830   | 280 | 122 | 369 | 72  | 297 | 167 | 195 | 202 | 27,5  |
| 2 | NCED HQ 65F-40/340/A  | 65  | 4      | 31                     | 0,2      | 1.1   | 25             | 230   | 340 | 122 | 370 | 75  | 295 | 226 | 215 | 225 | 35,9  |
| 2 | NCED HQ 65F-80/340/A  | 65  | 8      | 43                     | 0,2      | 2.6   | 25             | 560   | 340 | 122 | 370 | 75  | 295 | 226 | 215 | 225 | 35,9  |
| 2 | NCED HQ 65F-120/340/A | 65  | 12     | 50                     | 0,2      | 3.5   | 25             | 810   | 340 | 122 | 380 | 55  | 305 | 236 | 215 | 225 | 35,45 |
| 3 | NCED HQ 65F-180/340   | 65  | 18     | 57                     | 0,2      | 7,4   | 25             | 1550  | 340 | 137 | 454 | 96  | 358 | 325 | 216 | 226 | 47,5  |
| 2 | NCED HQ 80F-40/360/A  | 80  | 4      | 40                     | 0,2      | 1.8   | 25             | 390   | 360 | 122 | 400 | 93  | 307 | 278 | 240 | 252 | 45,6  |
| 2 | NCED HQ 80F-80/360/A  | 80  | 8      | 53                     | 0,2      | 3.5   | 25             | 800   | 360 | 122 | 410 | 93  | 317 | 288 | 240 | 252 | 45,9  |
| 3 | NCED HQ 80F-120/360   | 80  | 12     | 69                     | 0,2      | 6,2   | 25             | 1400  | 360 | 144 | 476 | 108 | 368 | 335 | 241 | 253 | 56,5  |
| 3 | NCED HQ 80F-180/360   | 80  | 18     | 72                     | 0,2      | 7,4   | 25             | 1550  | 360 | 144 | 476 | 108 | 368 | 335 | 241 | 253 | 56,5  |
| 2 | NCED HQ 100F-40/450/A | 100 | 4      | 40                     | 0,2      | 2.4   | 25             | 550   | 450 | 144 | 410 | 104 | 306 | 278 | 240 | 252 | 50,6  |
| 3 | NCED HQ 100F-80/450   | 100 | 8      | 59                     | 0,2      | 5     | 25             | 1150  | 450 | 144 | 476 | 108 | 368 | 335 | 241 | 253 | 59    |
| 3 | NCED HQ 100F-120/450  | 100 | 12     | 72                     | 0,2      | 7,4   | 25             | 1550  | 450 | 144 | 476 | 108 | 368 | 335 | 241 | 253 | 59    |
| 3 | NCED HQ 100F-180/450  | 100 | 18     | 72                     | 0,2      | 7,4   | 25             | 1550  | 450 | 144 | 476 | 108 | 368 | 335 | 241 | 253 | 59    |