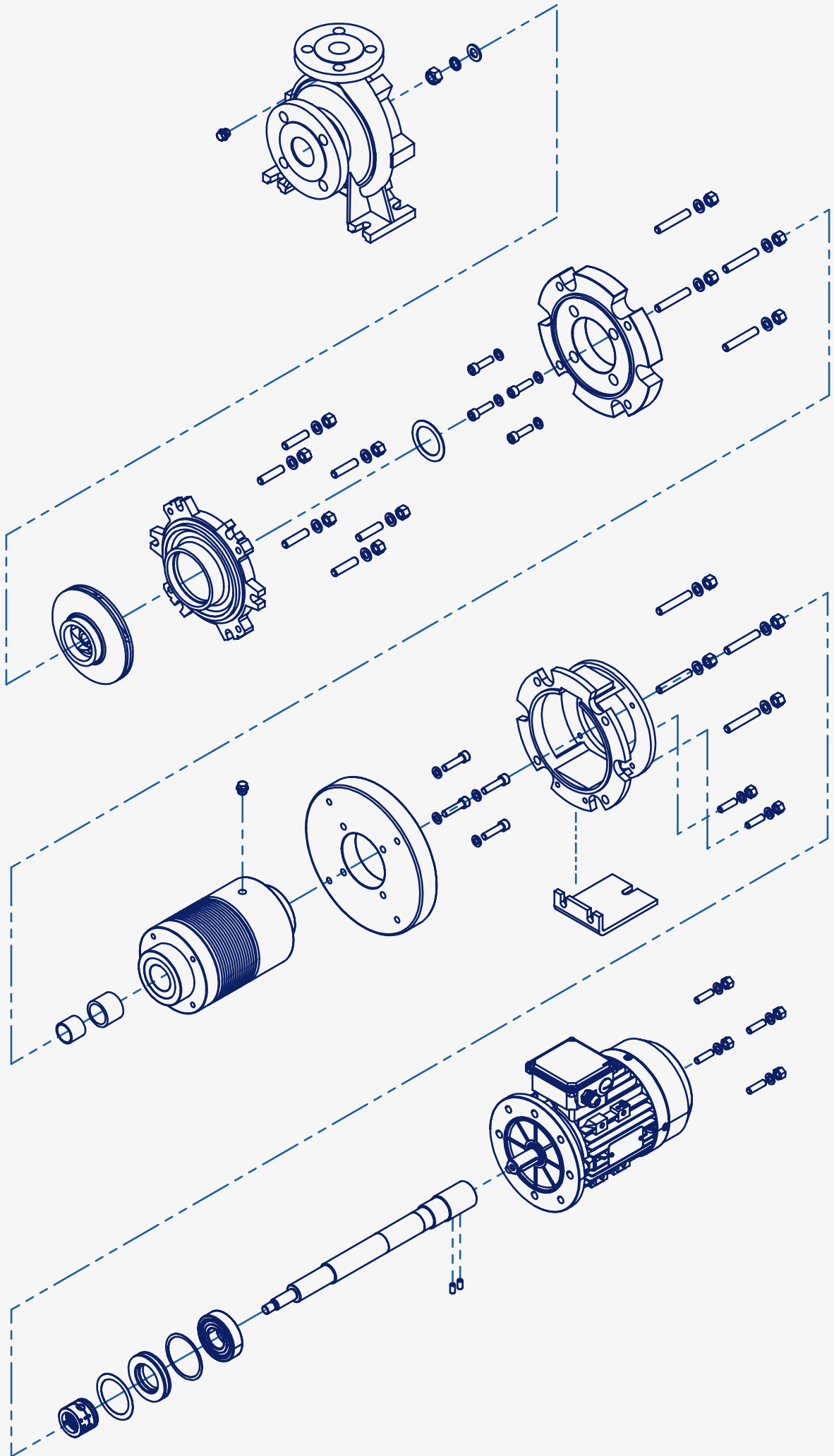


# FT M Series

*Centrifugal pump - Heat transfer fluid*





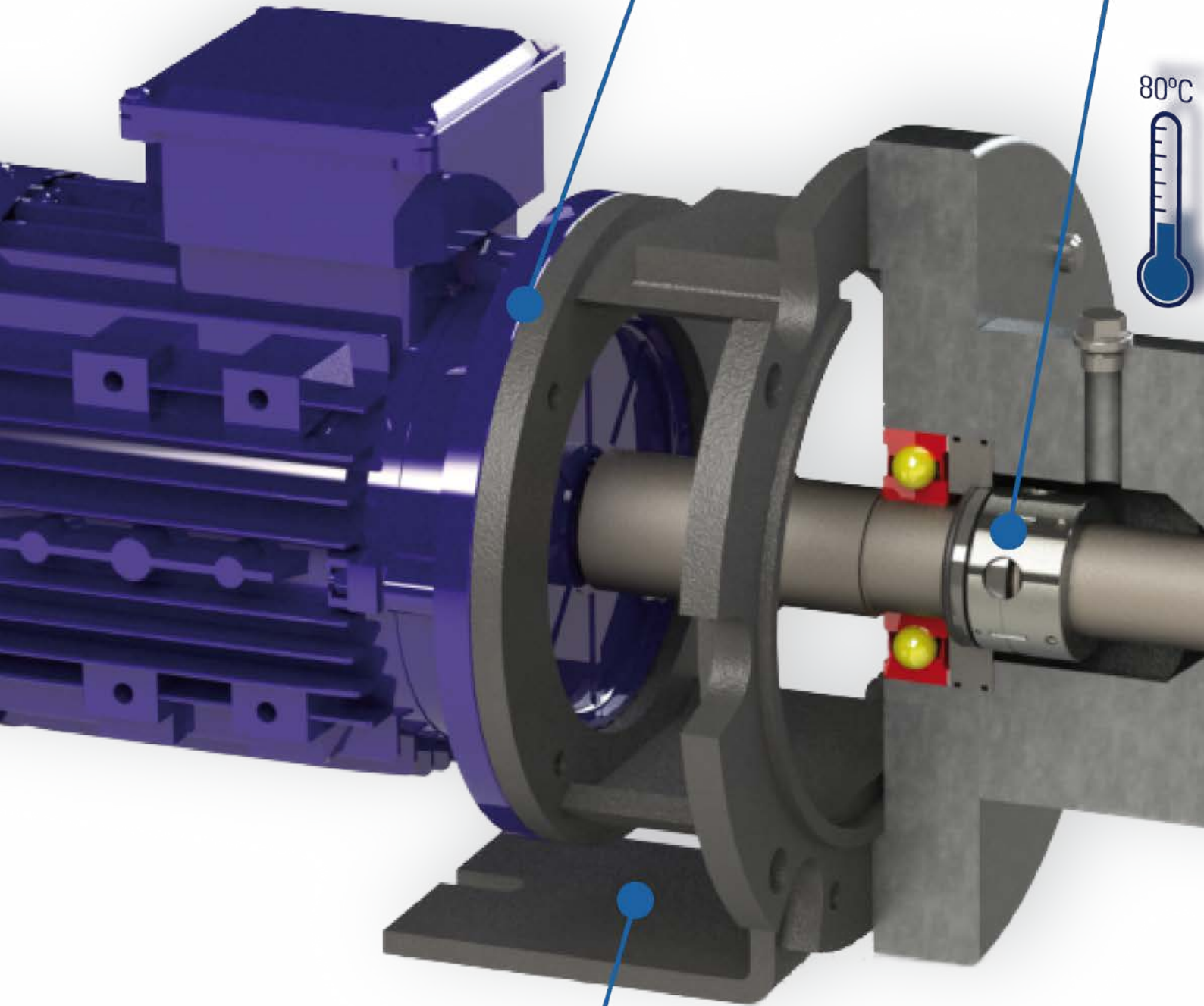
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Equipment in monoblock version,  
with the motor firmly coupled to  
the pump

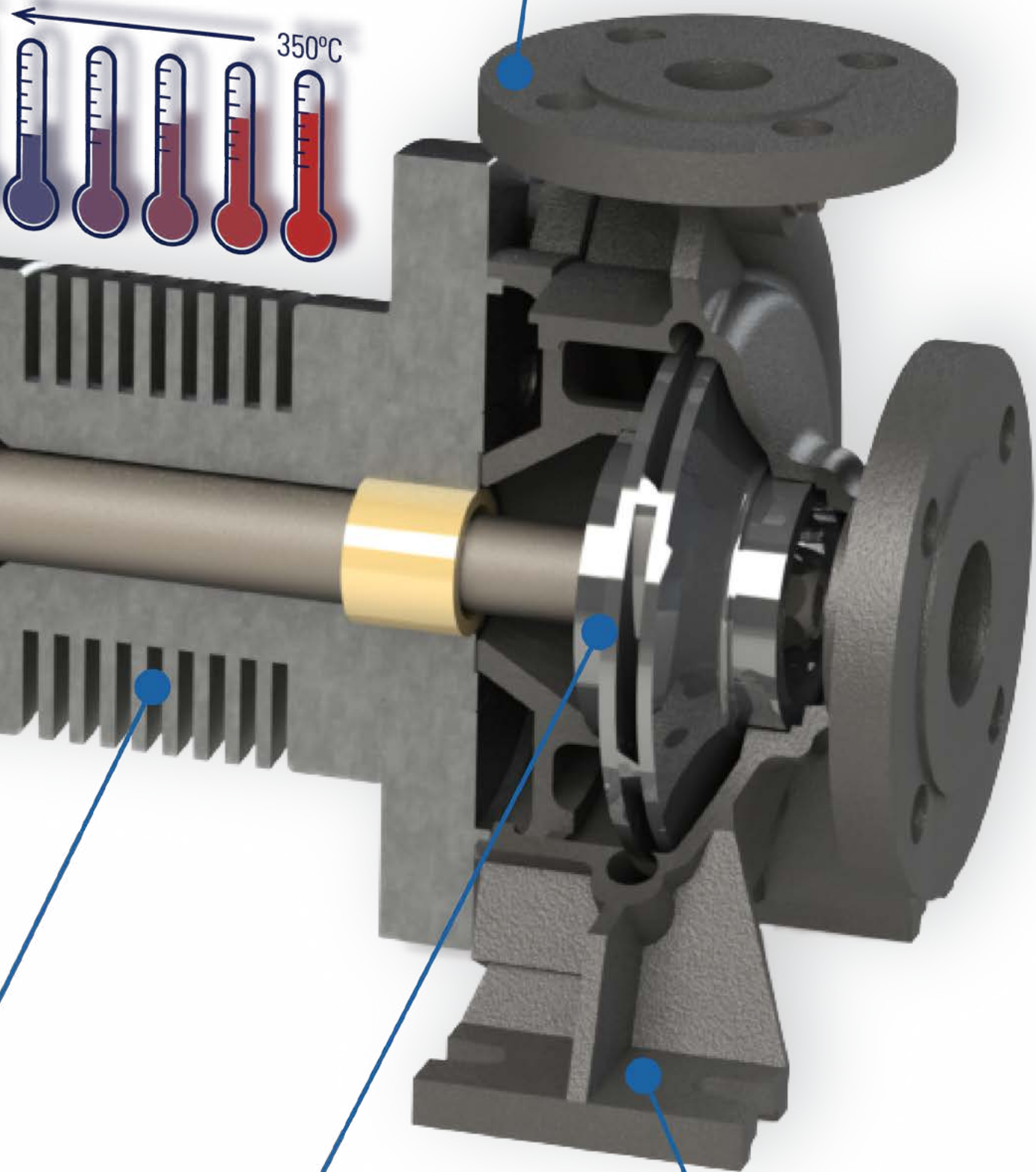
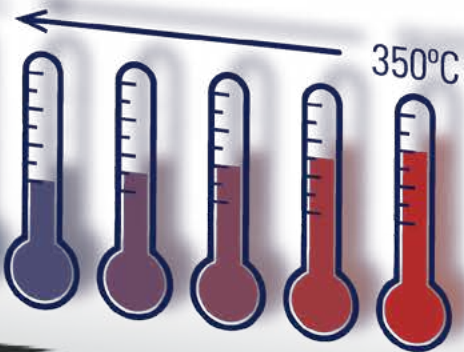


Support with anchoring system that  
holds part of the weight of the equip-  
ment and the pipes of the installation

Fins of the heat sink

Reversible mechanical seal  
away from the racking area  
and properly lubricated

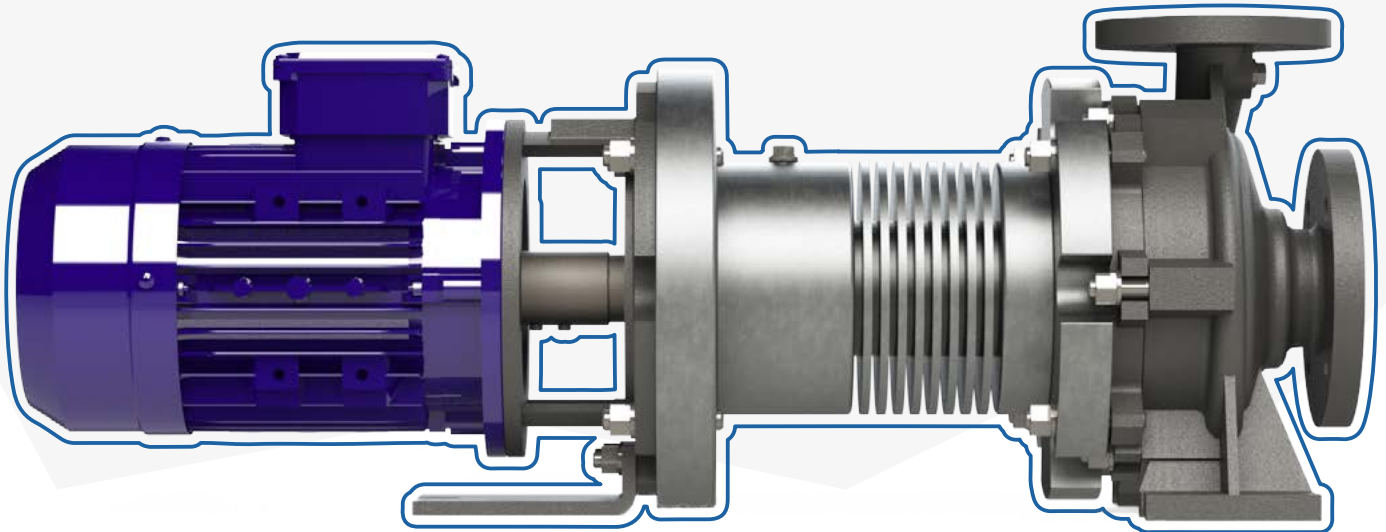
GGG-40 pump casing. Hydraulics  
design according to EN733  
(DIN24255) standards. Maximum  
temperature of 350°C



GG-20 Turbine

The feet are integrated in the  
pump casing to ensure stability  
against pipe loading





## FT M Series: A high temperature pump

The FT M series is a set of monoblock centrifugal electric pumps with axial suction and radial discharge that follows the EN733 (DIN 24255) standards. It is specially designed to work in applications of high racking temperatures (up to 350°C).

### Specifications

#### Materials

<b>Pump casing</b>	GGG-40 Nodular cast iron
<b>Impeller</b>	GG-20 Cast iron
<b>Pump shaft</b>	F-114 or AISI 316
<b>Heat sink</b>	Perlitic cast iron
<b>Mechanical seal</b>	According to application
<b>Lantern</b>	GG-20 Cast iron

#### Technical data

<b>Motor</b>	Triphasic according to IEC 60034-30 standards
<b>Efficiency</b>	- IE2 or IE3 for powers > 1CV - IE1 if the power < 1CV - It can be supplied up to IE5
<b>Tension</b>	- Three-phase 230/400 V ± 10% up to 5,5 CV - Three-phase 400/600 V ± 10% from 7,5 CV
<b>Poles</b>	4 and 6
<b>Degree of protection</b>	IP55
<b>Insulation</b>	Class F inslutaion

#### Usage limits

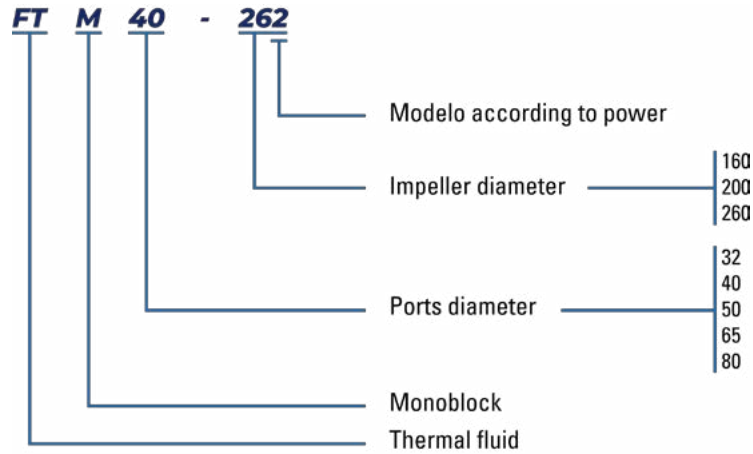
<b>Range of flow rates</b>	From 2 to 200 m <sup>3</sup> /h
<b>Range of pressures</b>	From 4 to 14 bar
<b>Max. working pressure</b>	16 bar
<b>Max. working temperature</b>	350°C

#### Connections

<b>DNA</b>	32-160/200	DN50 Flange
	40-160/200/260	DN65 Flange
	50-160/200/260	DN65 Flange
	65-160/200	DN80 Flange
	80-160	DN125 Flange
<b>DNI</b>	32-160/200	DN32 Flange
	40-160/200/260	DN40 Flange
	50-160/200/260	DN50 Flange
	65-160/200	DN65 Flange
	80-160	DN80 Flange

## Design

### Nomenclature

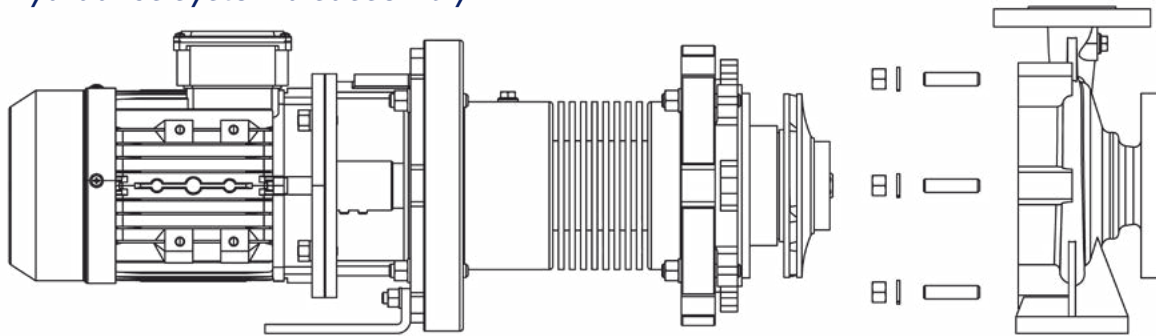


### Maintenance

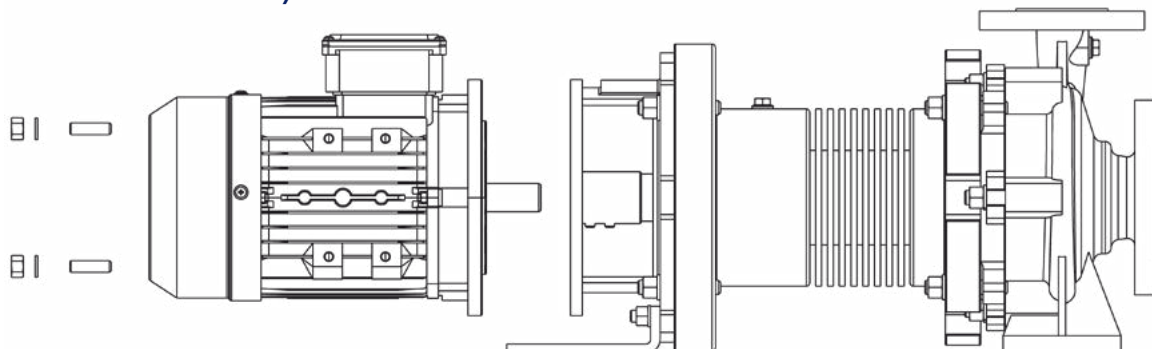
The monoblock design eases the pumps disassembly. On the one hand, it allows the entire moving part of the pump to be detached while keeping the body attached to the piping. On the other hand, the motor can also be easily disassembled without having to disassemble any other component of the equipment.

As a result, maintenance, cleaning, repair or replacement tasks can be carried out comfortably by the operator, who will also save time in the disassembly and the subsequent restart-up of the equipment once the maintenance has been finished.

#### Hydraulics system disassembly



#### Motor disassembly

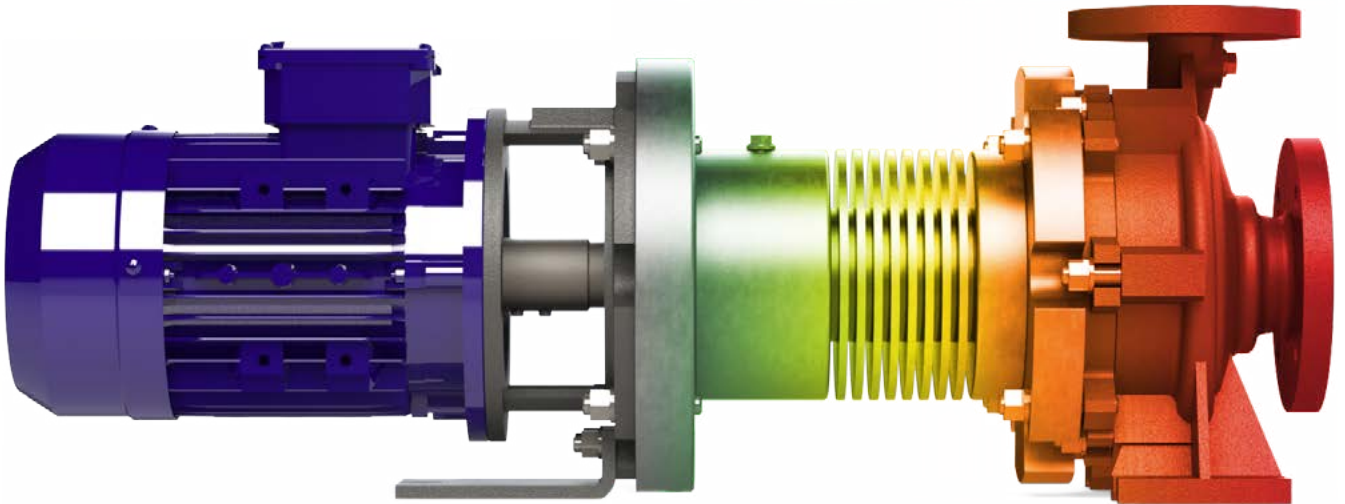




## Heat dissipation

The main and distinctive feature of the FT M series is none other than its ability to operate at elevated temperatures up to 350°C. The performance of the pump has been rigorously tested at Bomba Elias and verified by thermography tests. Therefore we can state that, as a result of the pumps design, the temperature of the working area is considerably reduced along the axial axis, ensuring the optimum condition of the seals, bearings and the mechanical seal.

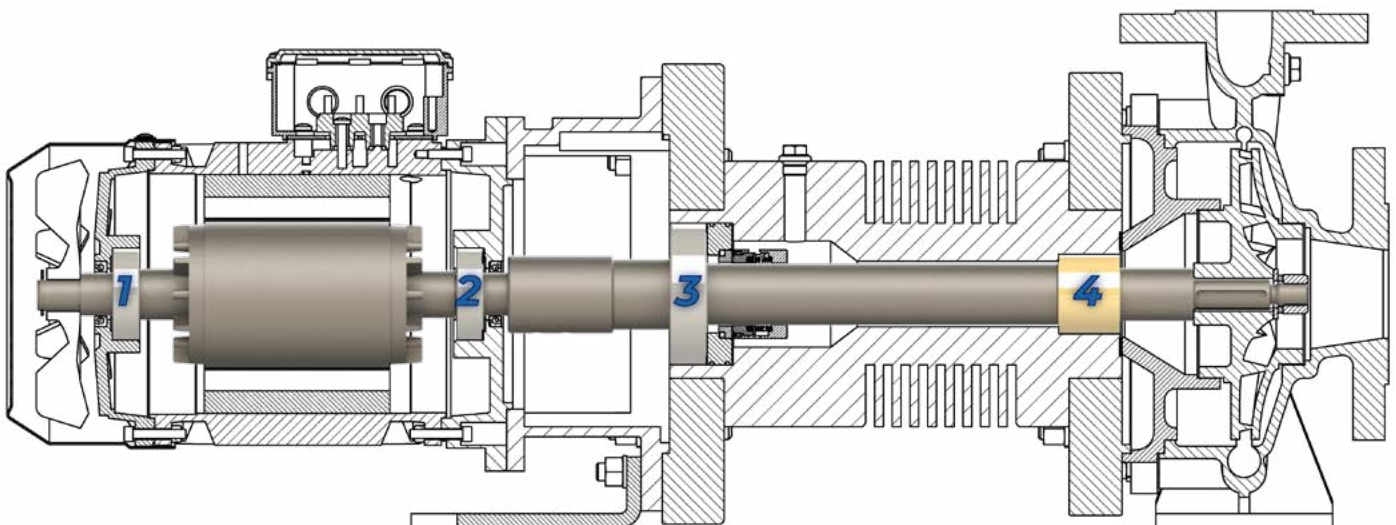
The heat sink reduces the temperature of the transfer fluid using its fins. The heat sink conducts the heat from the inner part, in contact with the fluid, to the outer part, and finally releases the heat to another place by radiation.



## Shaft support

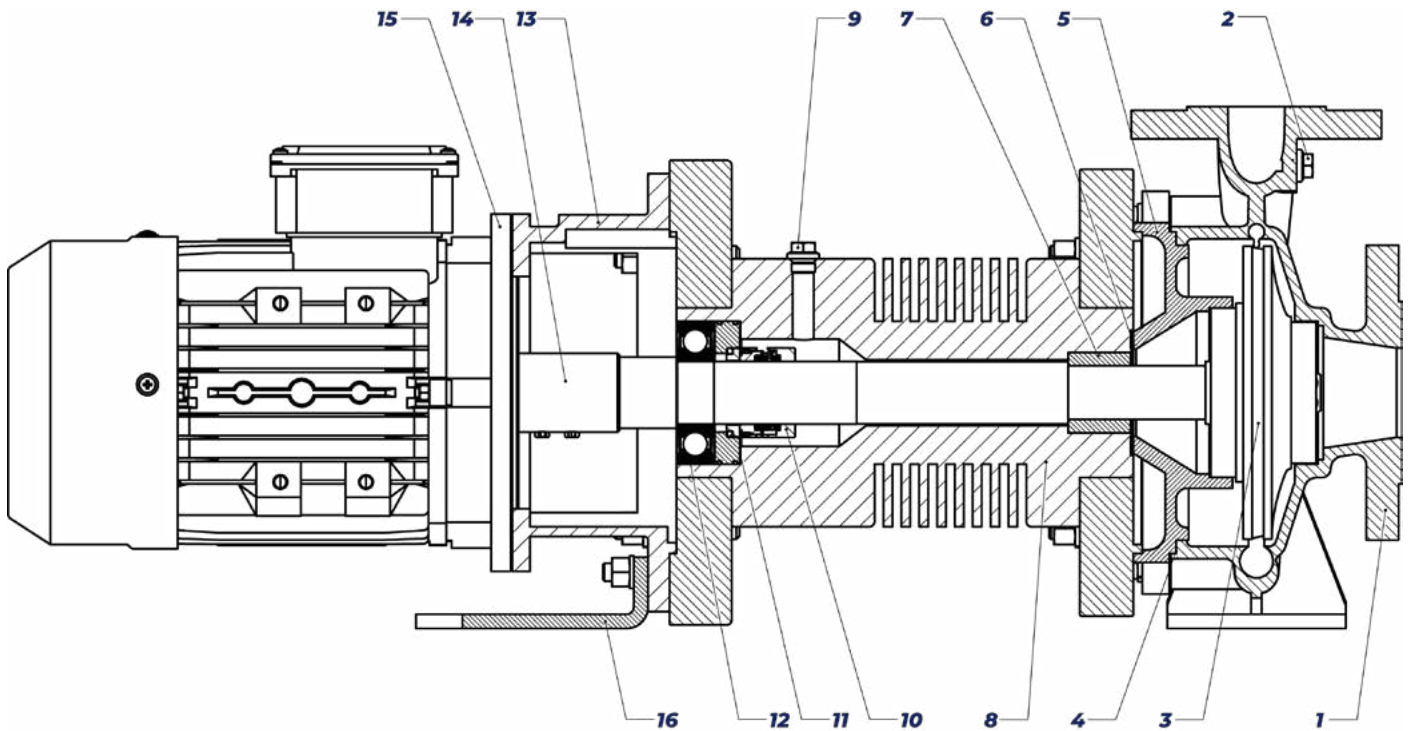
The pump shaft is joined to the end of the motor shaft by rigid coupling, which allows a smooth and frictionless operation, ensuring the best performance of the equipment.

The shaft is supported on four different points. These supports, properly distributed along the pump, provide excellent stability, assuring the correct functionality of the pump and increasing the lifetime expectancy of the equipment.





Exploded view of components



**REF** *Designation*

**1** Pump casing

**2** Casing plug

**3** Impeller

**4** Casing-cover joint

**5** Cover

**6** Cover-heat sink joint

**7** Front bearing

**8** Heat sink

**REF** *Designation*

**9** Mechanical seal filling plug

**10** Mechanical seal

**11** Mechanical seal joint

**12** Ball bearing

**13** Lantern

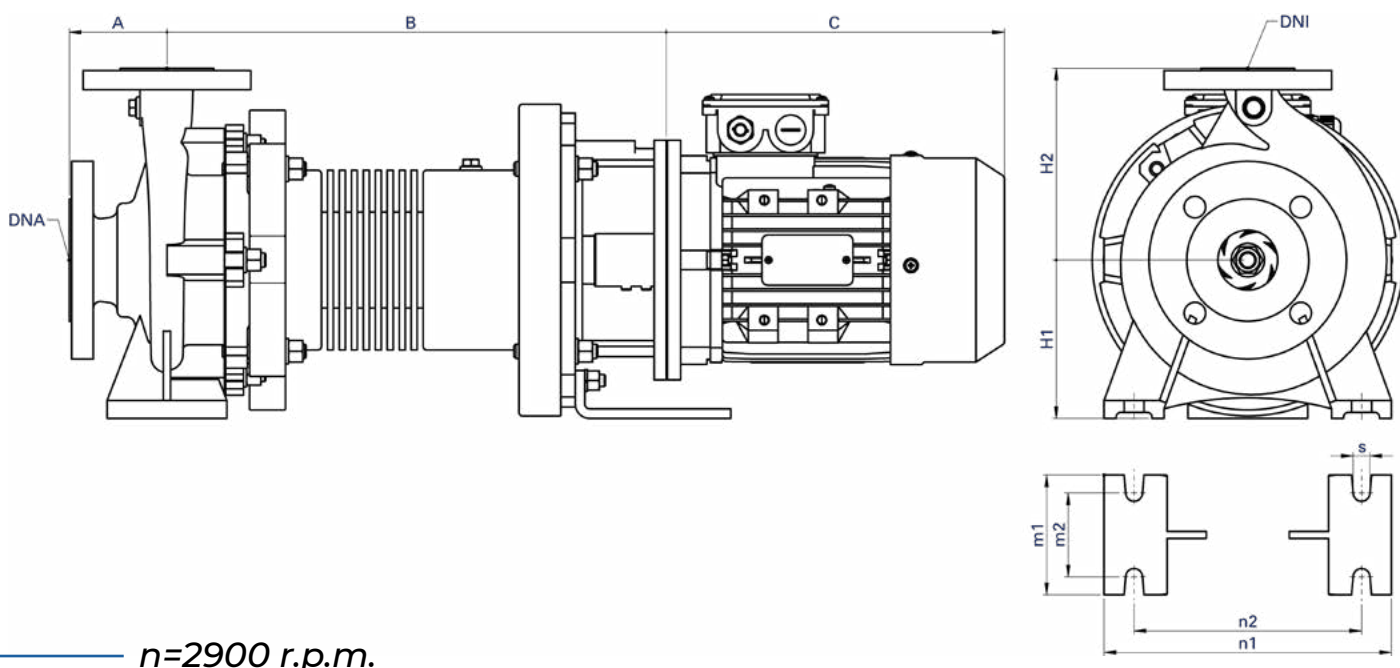
**14** Pump shaft

**15** Electric motor

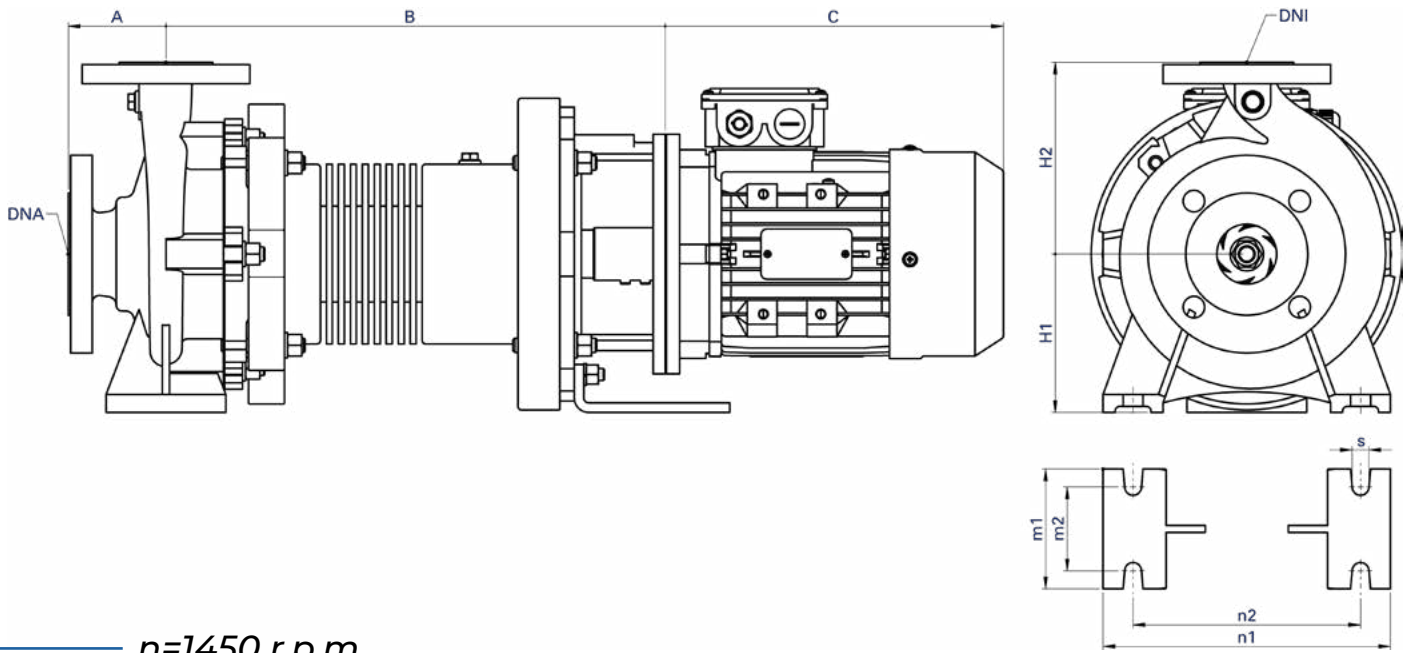
**16** Rear mounting foot



## Dimensions table



Model	Motor		A	B	C	DNA	DNI	H1	H2	n1	n2	m1	m2	s
	CV	MEC												
32-165	3	90 L	80	417	295	50	32	132	160	240	190	100	70	M12
32-163	4	100 L	80	429	325	50	32	132	160	240	190	100	70	M12
32-161	5,5	112 M	80	429	350	50	32	132	160	240	190	100	70	M12
32-203	7,5	132	80	454	390	50	32	160	180	240	190	100	70	M12
32-201	10	132	80	454	390	50	32	160	180	240	190	100	70	M12
40-165	4	100 L	80	429	325	65	40	132	160	240	190	100	70	M12
40-163	5,5	112 M	80	429	350	65	40	132	160	240	190	100	70	M12
40-161	7,5	132 S	80	454	390	65	40	132	160	240	190	100	70	M12
40-203	10	132 S	100	462	390	65	40	160	180	265	212	100	70	M12
40-201	15	160 M	100	494	530	65	40	160	180	265	212	100	70	M12
40-265	15	160 M	100	497	530	65	40	180	225	320	250	125	95	M12
40-264	20	160 M	100	497	530	65	40	180	225	320	250	125	95	M12
40-262	25	160 L	100	497	530	65	40	180	225	320	250	125	95	M12
50-163	7,5	132 S	100	454	390	65	50	160	180	265	212	100	70	M12
50-161	10	132 S	100	454	390	65	50	160	180	265	212	100	70	M12
50-205	10	132 S	100	462	390	65	50	160	200	265	212	100	70	M12
50-203	15	160 M	100	494	530	65	50	160	200	265	212	100	70	M12
50-201	20	160 M	100	494	530	65	50	160	200	265	212	100	70	M12
50-264	25	160 L	100	497	530	65	50	180	225	320	250	125	95	M12
65-165	7,5	132 S	100	489	390	80	65	160	200	280	212	125	95	M12
65-163	12,4	132 S	100	489	390	80	65	160	200	280	212	125	95	M12
65-161	20	160 M	100	521	530	80	65	160	200	280	212	125	95	M12
60-204	20	160 M	100	494	530	80	65	180	225	320	250	125	95	M12
60-202	25	160 M	100	494	530	80	65	180	225	320	250	125	95	M12
80-164	12,5	132 S	125	489	390	125	80	180	225	320	250	125	95	M12
80-163	20	160 M	125	521	530	125	80	180	225	320	250	125	95	M12
80-161	25	160 L	125	521	530	125	80	180	225	320	250	125	95	M12



Model	Motor		A	B	C	DNA	DNI	H1	H2	n1	n2	m1	m2	s
	CV	MEC												
<i>32-165</i>	0,5	71	80	391	230	50	32	132	160	240	190	100	70	M12
<i>32-163</i>	0,5	71	80	391	230	50	32	132	160	240	190	100	70	M12
<i>32-161</i>	0,75	80	80	417	255	50	32	132	160	240	190	100	70	M12
<i>32-203</i>	1	80	80	417	255	50	32	160	180	240	190	100	70	M12
<i>32-201</i>	1,5	90 S	80	417	270	50	32	160	180	240	190	100	70	M12
<i>40-165</i>	0,5	71	80	391	230	65	40	132	160	240	190	100	70	M12
<i>40-163</i>	0,75	80	80	417	255	65	40	132	160	240	190	100	70	M12
<i>40-161</i>	1	80	80	417	255	65	40	132	160	240	190	100	70	M12
<i>40-203</i>	1,5	90 S	100	425	270	65	40	160	180	265	212	100	70	M12
<i>40-201</i>	2	90 L	100	425	295	65	40	160	180	265	212	100	70	M12
<i>40-265</i>	2	90 L	100	428	295	65	40	180	225	320	250	125	95	M12
<i>40-264</i>	3	100 L	100	440	325	65	40	180	225	320	250	125	95	M12
<i>40-262</i>	4	100 L	100	440	325	65	40	180	225	320	250	125	95	M12
<i>50-165</i>	0,75	80	100	417	255	65	50	160	180	265	212	100	70	M12
<i>50-163</i>	1	80	100	417	255	65	50	160	180	265	212	100	70	M12
<i>50-161</i>	1,5	90 S	100	417	270	65	50	160	180	265	212	100	70	M12
<i>50-203</i>	2	90 L	100	425	295	65	50	160	200	265	212	100	70	M12
<i>50-201</i>	3	100 L	100	437	325	65	50	160	200	265	212	100	70	M12
<i>50-263</i>	4	100 L	100	472	325	65	50	180	225	320	250	125	95	M12
<i>50-261</i>	5,5	112 M	100	472	350	65	50	180	225	320	250	125	95	M12
<i>65-165</i>	1	80	100	452	255	80	65	160	200	280	212	125	95	M12
<i>65-163</i>	1,5	90 S	100	452	270	80	65	160	200	280	212	125	95	M12
<i>65-161</i>	3	100 L	100	464	325	80	65	160	200	280	212	125	95	M12
<i>60-203</i>	3	100 L	100	437	325	80	65	180	225	320	250	125	95	M12
<i>60-201</i>	4	100 L	100	437	325	80	65	180	225	320	250	125	95	M12
<i>80-164</i>	2	90 L	125	452	295	125	80	180	225	320	250	125	95	M12
<i>80-163</i>	3	100 L	125	464	325	125	80	180	225	320	250	125	95	M12
<i>80-161</i>	3	100 L	125	464	325	125	80	180	225	320	250	125	95	M12



## Sealing solution

### NV-2 mechanical seal

#### Characteristics

- Modular design. Components are easily interchangeable and fabricated in a variety of materials for each application.
- Reversible. It can rotate in both directions indistinctly.
- Friction faces. In monolithic and semi-balanced construction.
- Robustness. Fixed to the shaft by means of set screws and torque transmission through a solid machined steel ring.
- Spring. The cylindrical spring design allows to work with loaded liquids without locking problems.
- Simple assembly. The closure incorporates an indicator to adapt to the working benchmark.
- Self-cleaning. The design of the closure avoids the accumulation of product on its surface.
- Dimensions according to *EN 12756* norm.

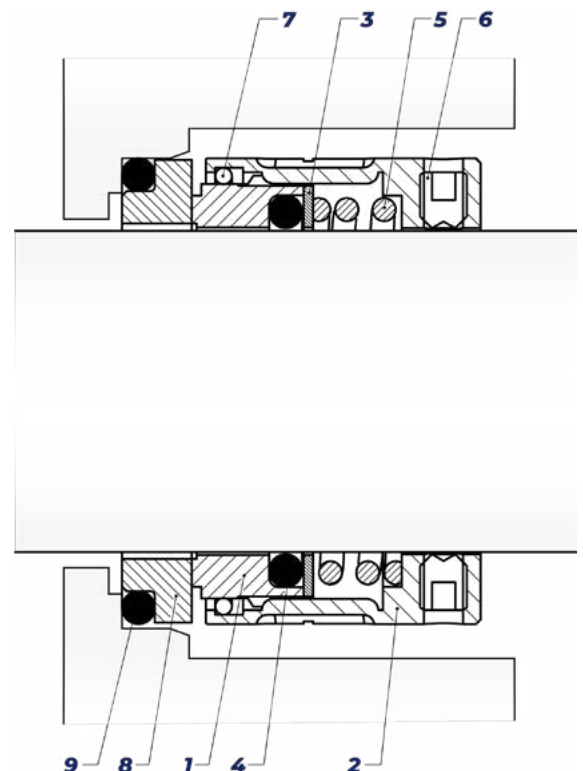


#### Usage limits

- P (Pressure): Up to 16 bar depending on the PV factor.
- T (Temperature): -40°C up to 200°C (depending on the secondary seal material).
- vg (Velocity): 20 m/s (10 m/s for U1U1)

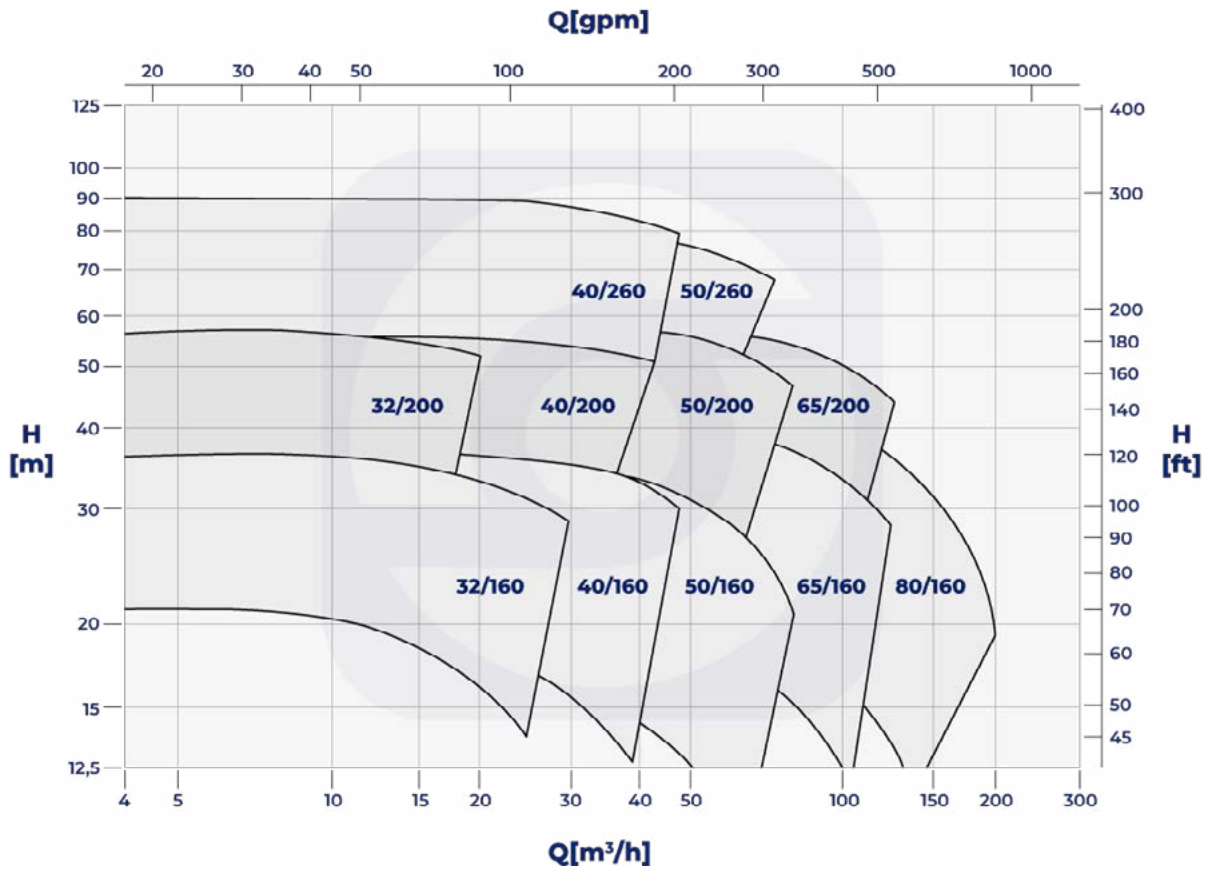
#### Exploded view of the assembly

REF	Designation	Material
1	Rotating ring	Carbon resin
2	Draging sleeve	CrNiMo-steel
3	Joint	CrNiMo-steel
4	Shaft Joint	FPM (Viton)
5	Spring	CrNiMo-steel
6	Set screw kit	CrNiMo-steel
7	Safety ring	CrNiMo-steel
8	Stationary ring	Silicone carbide Q2
9	Stationary joint	FPM (Viton)

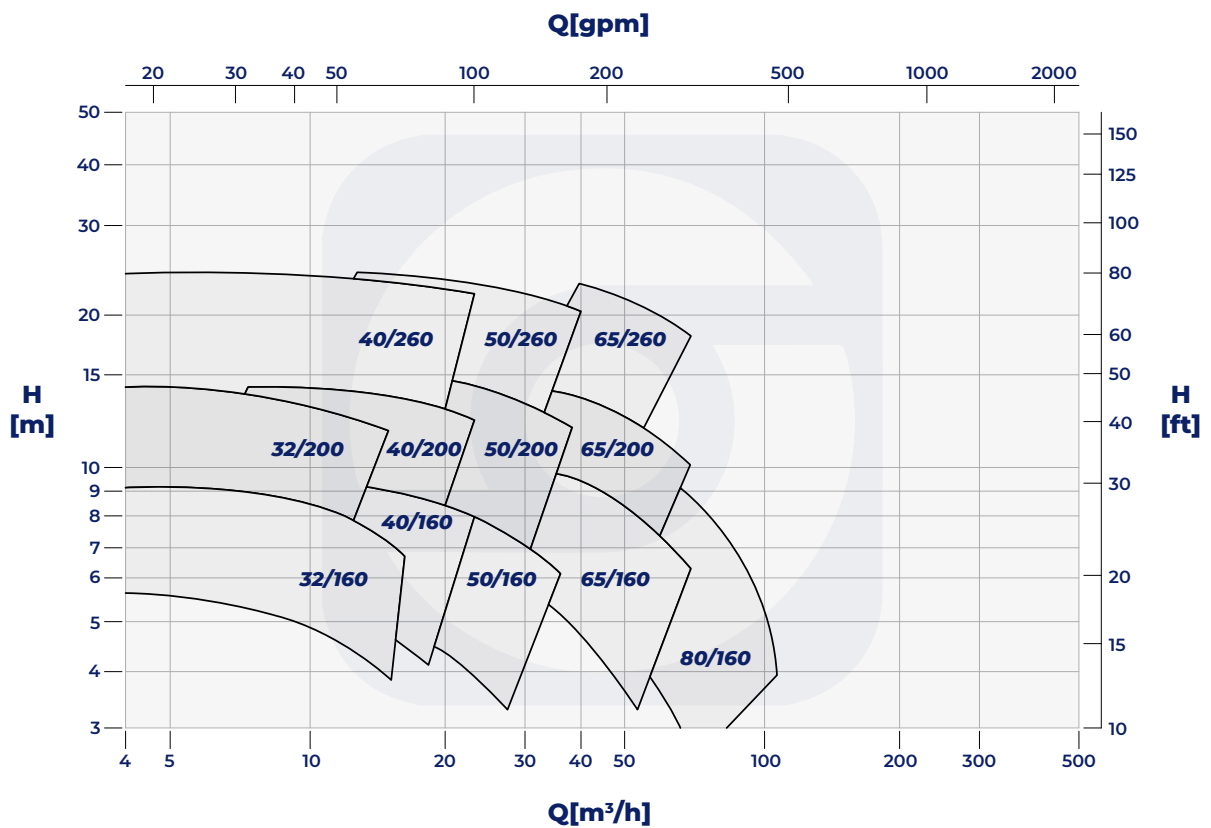


## Pump selection curves

$n = 2900$  r.p.m.



$n = 1450$  r.p.m.

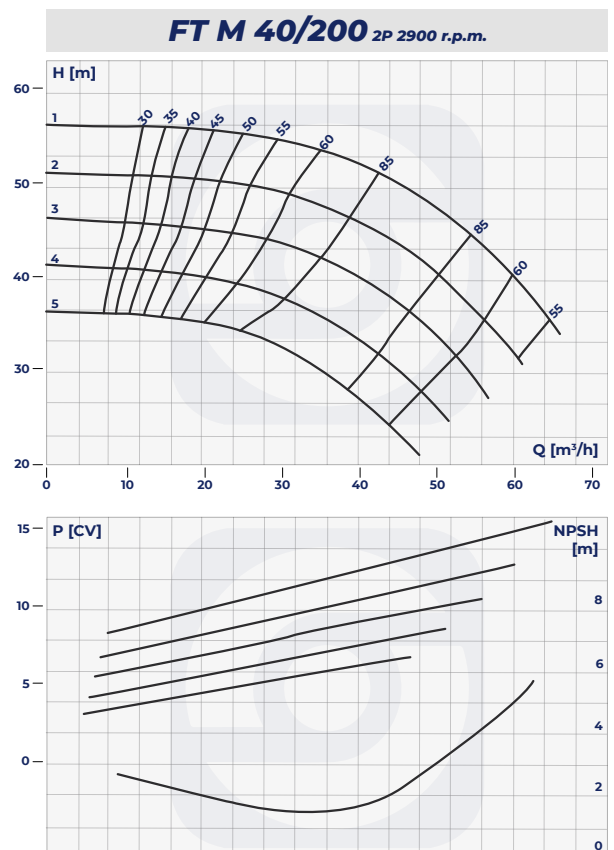
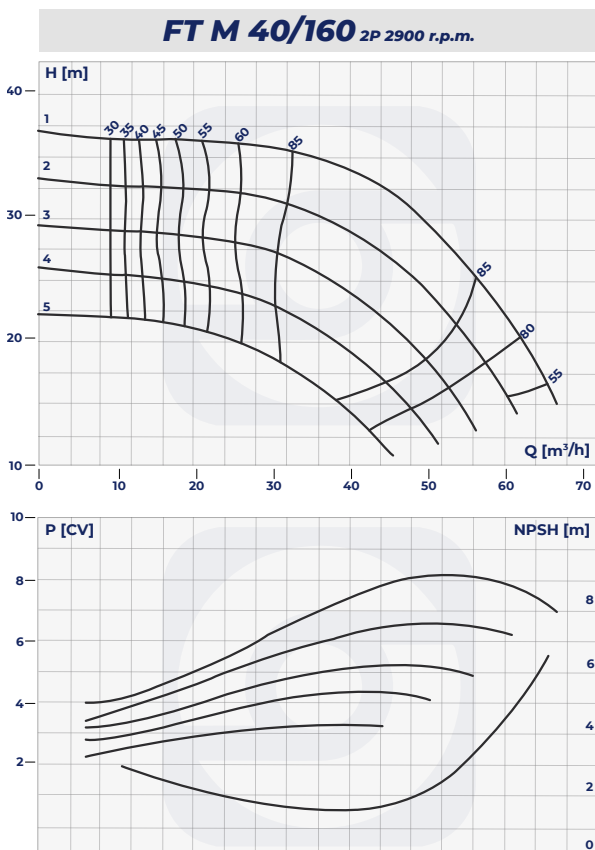
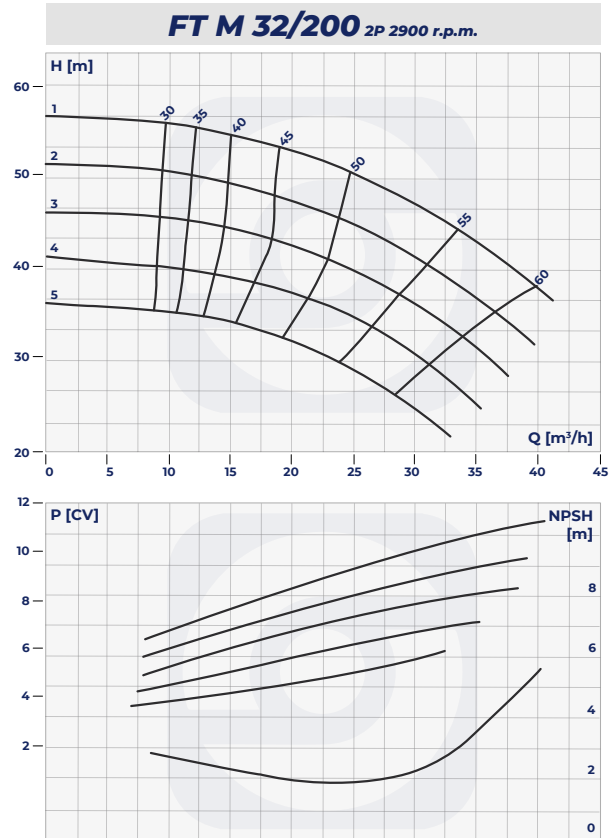
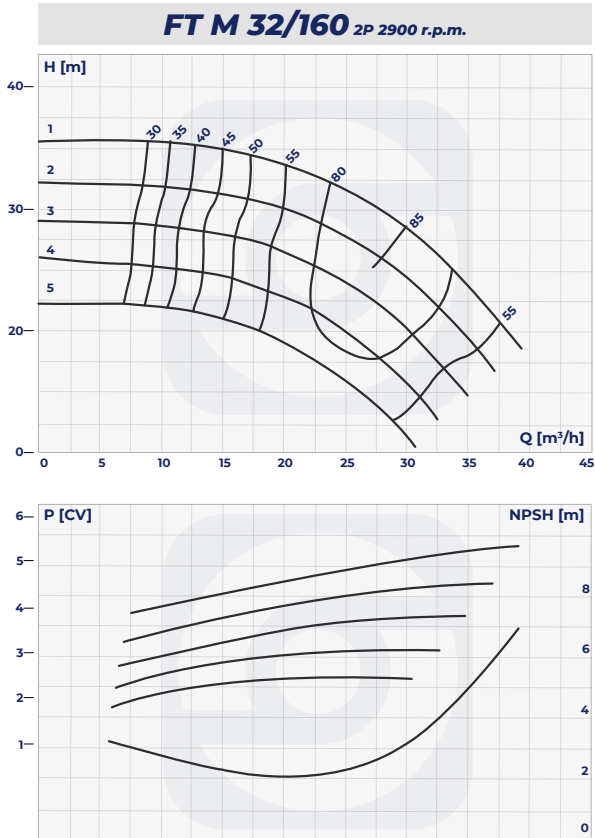


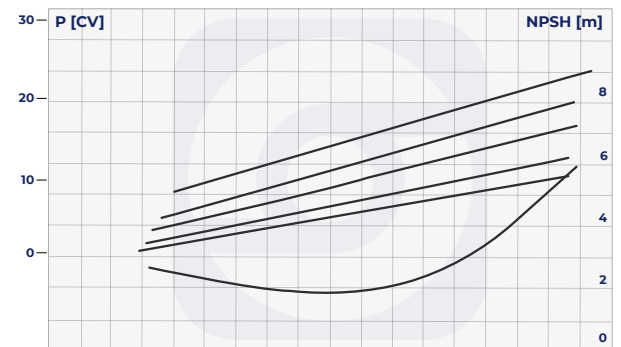
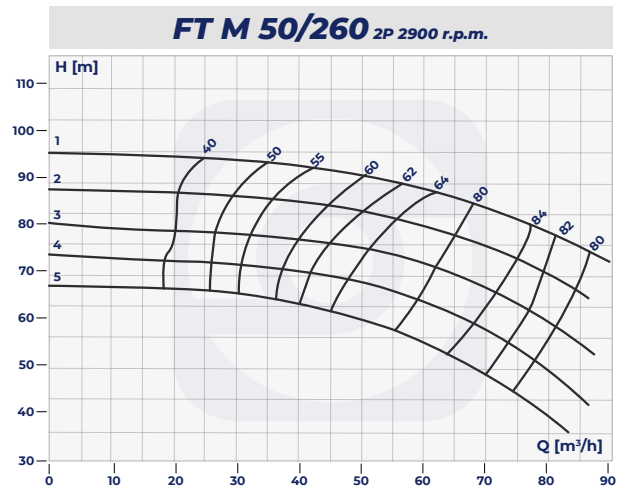
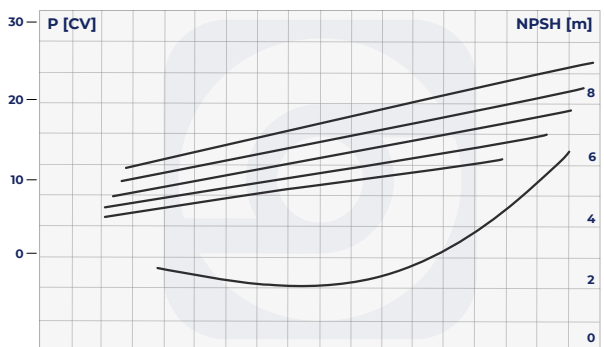
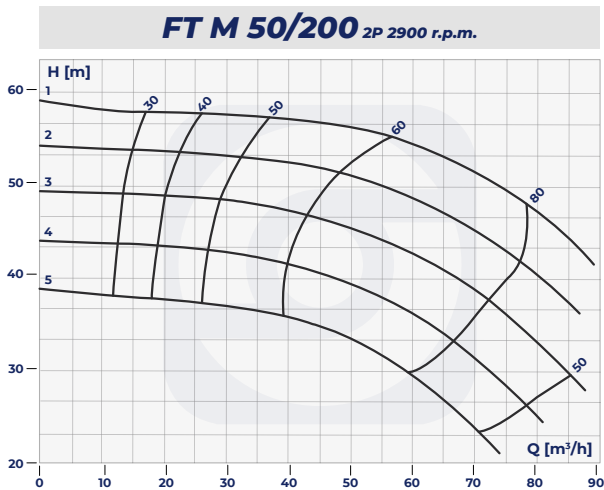
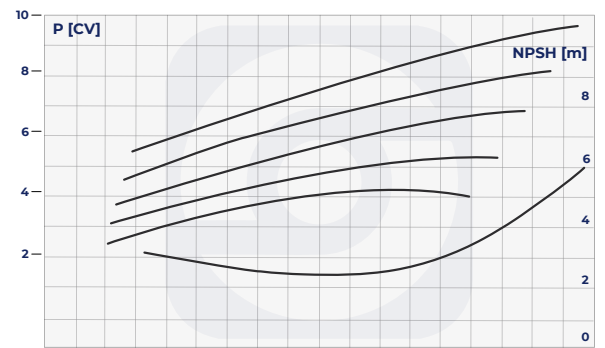
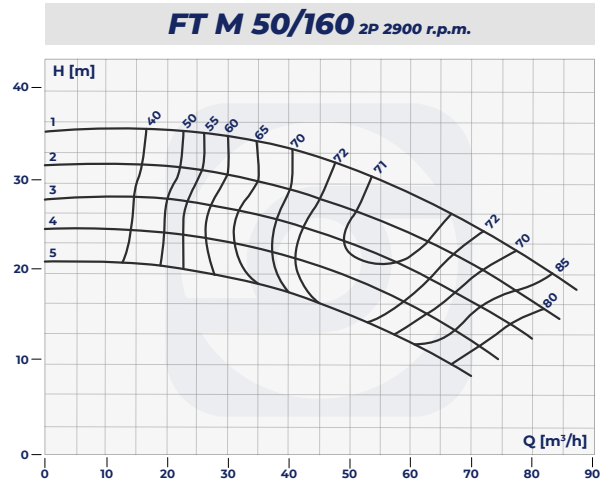
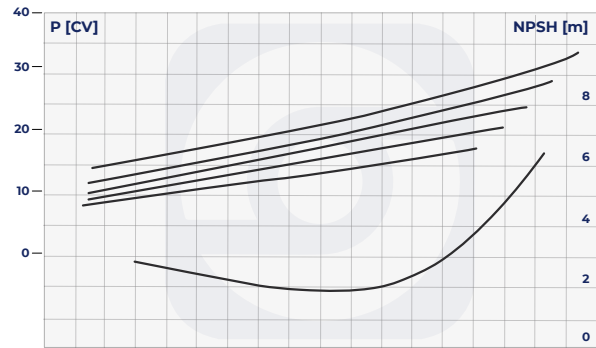
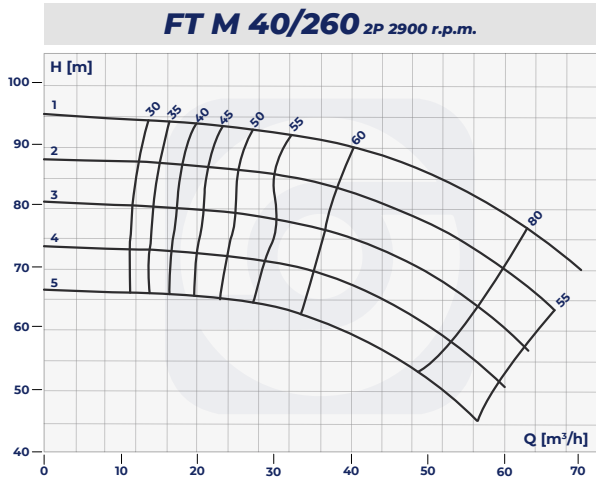




# Performance curves

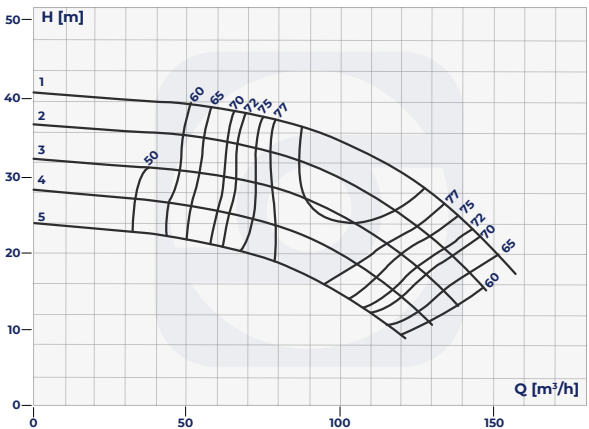
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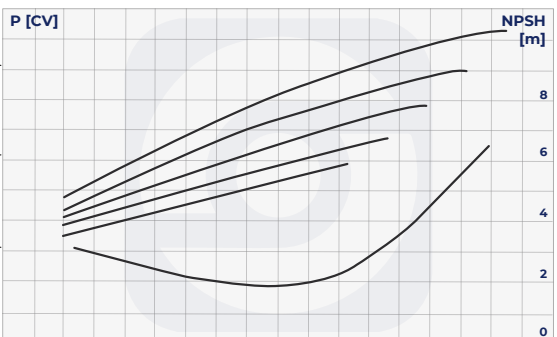
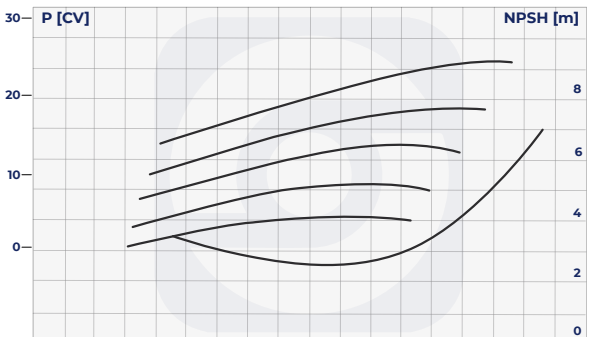
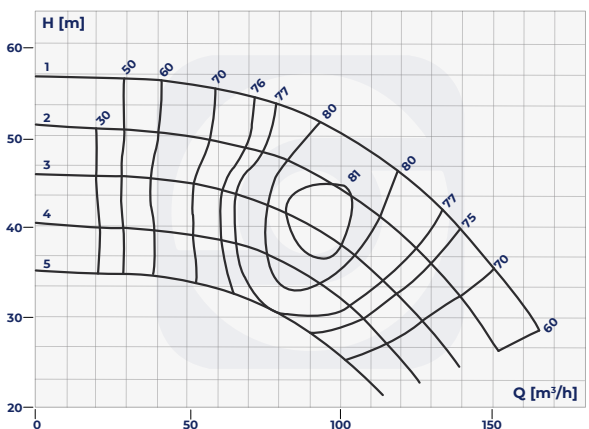




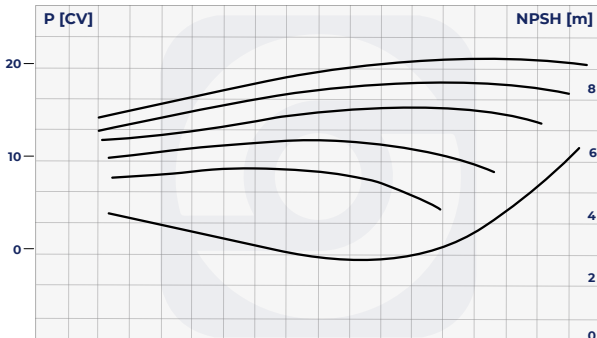
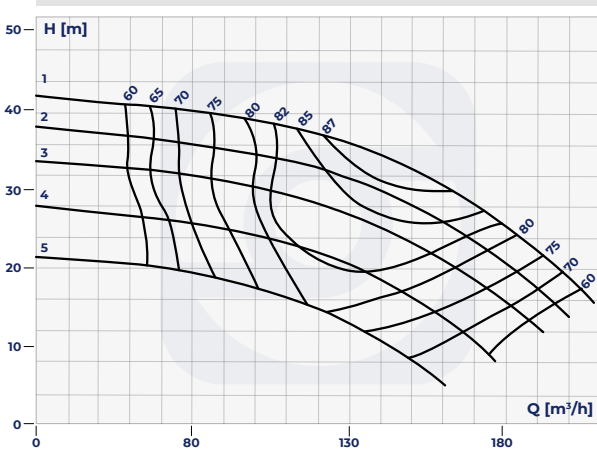
**FT M 65/160** 2P 2900 r.p.m.



**FT M 65/200** 2P 2900 r.p.m.

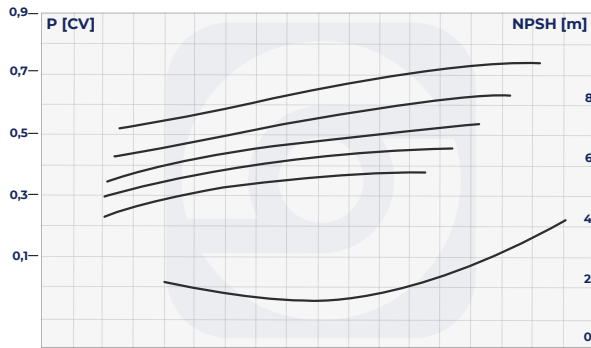
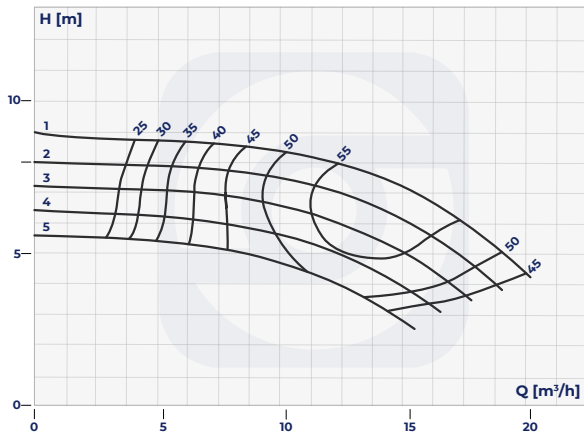


**FT M 80/160** 2P 2900 r.p.m.

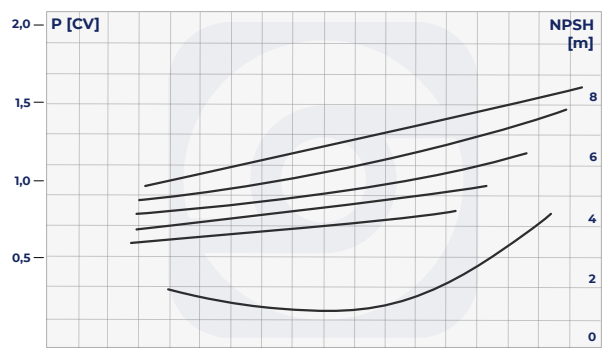
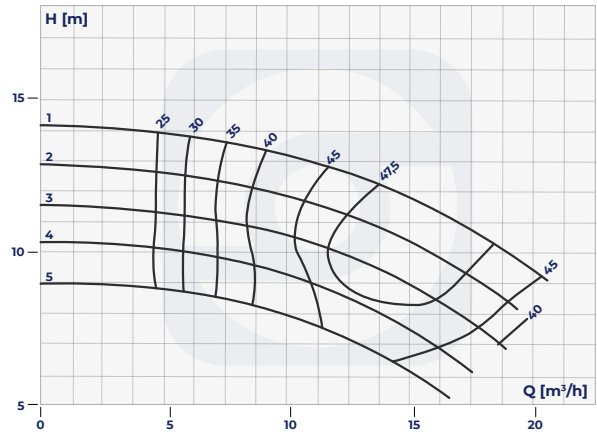


$n = 1450 \text{ r.p.m.}$

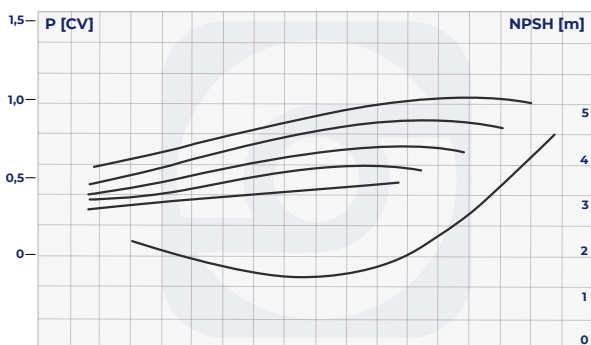
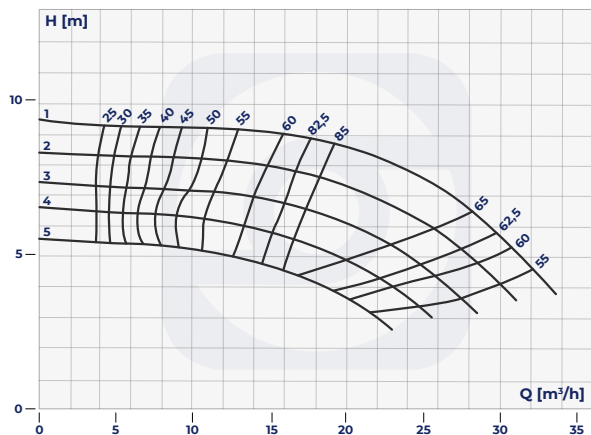
**FT M 32/160** 4P 1450 r.p.m.



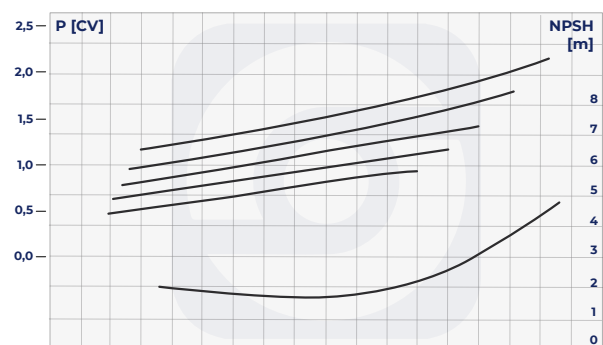
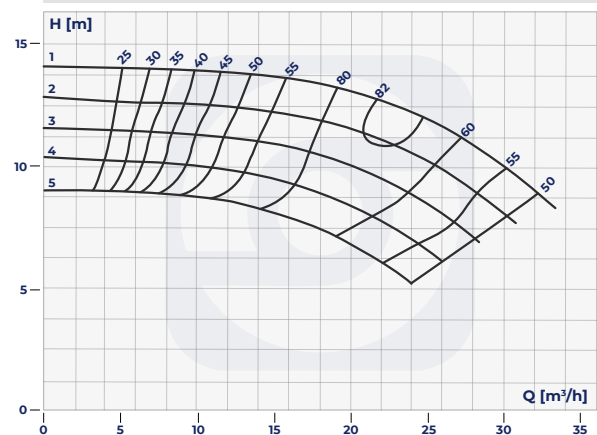
**FT M 32/200** 4P 1450 r.p.m.



**FT M 40/160** 4P 1450 r.p.m.

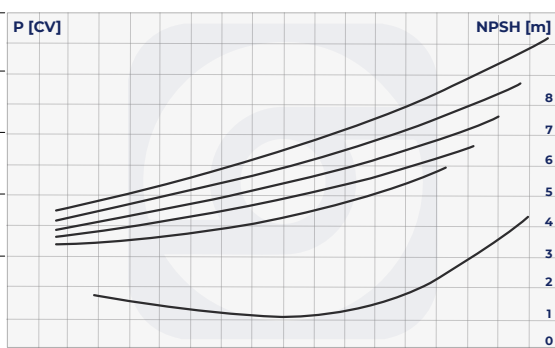
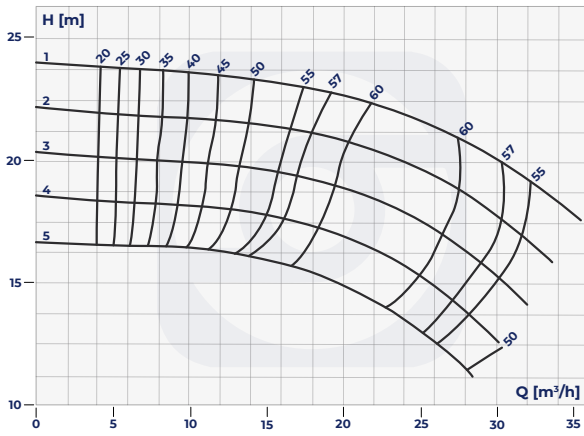


**FT M 40/200** 4P 1450 r.p.m.

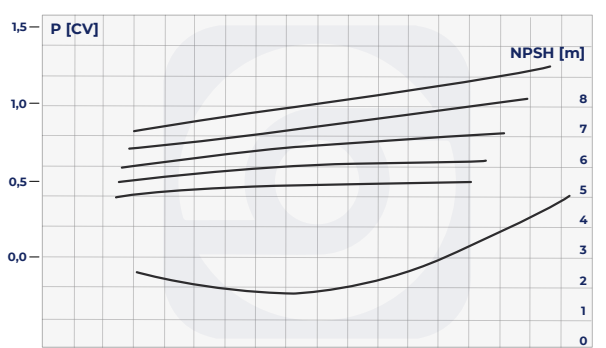
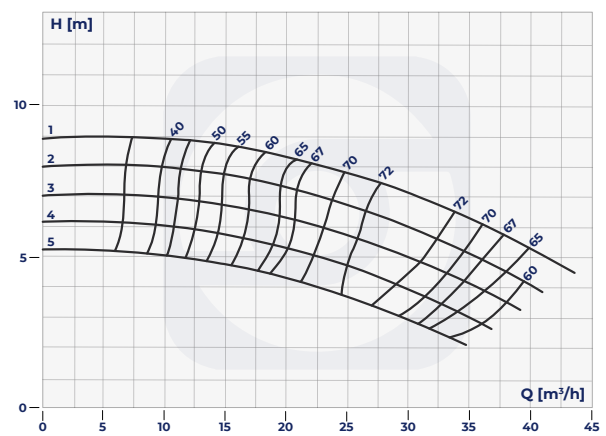




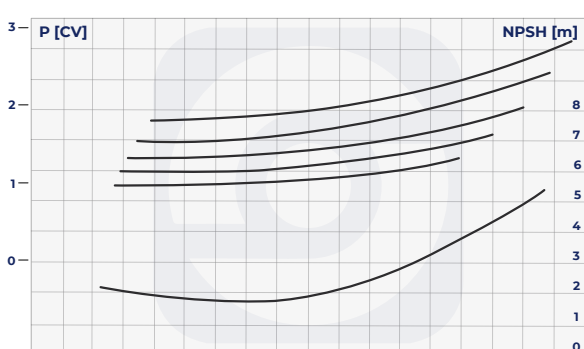
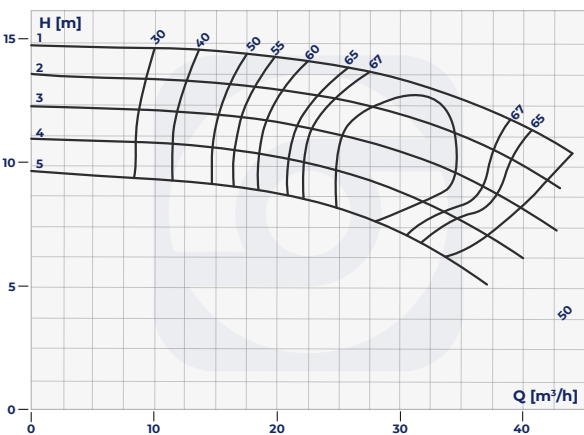
**FT M 40/260** 4P 1450 r.p.m.



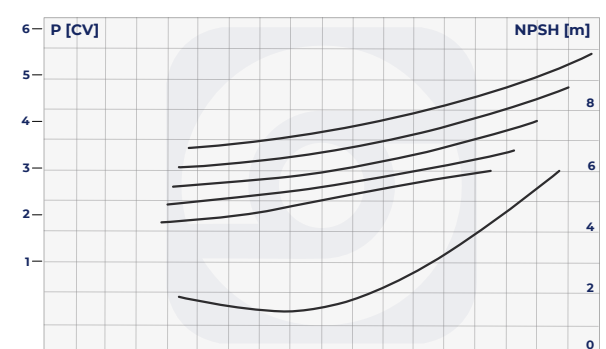
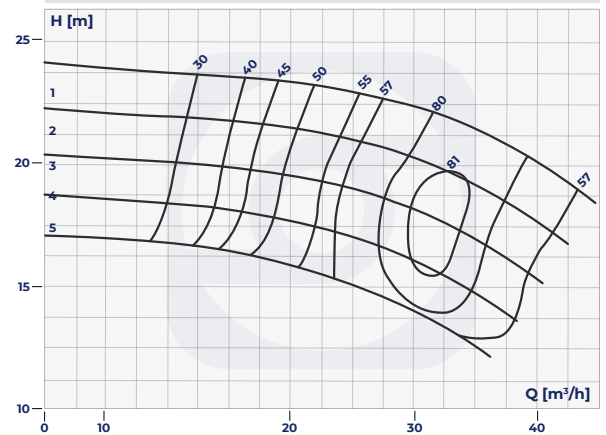
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**FT M 50/200** 4P 1450 r.p.m.

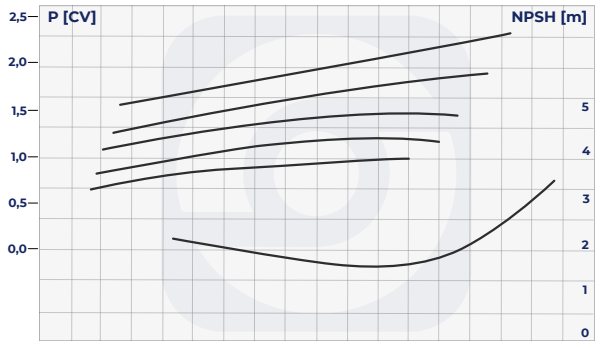
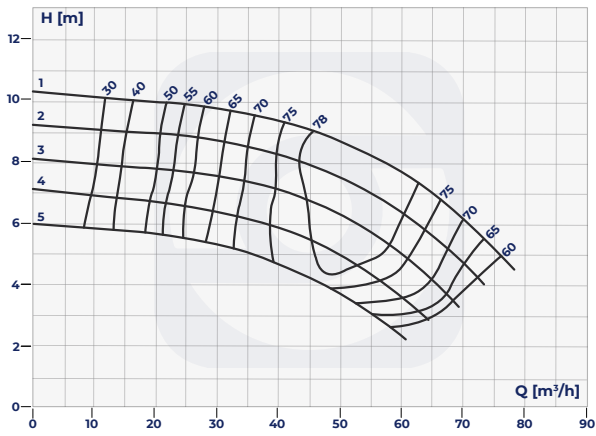


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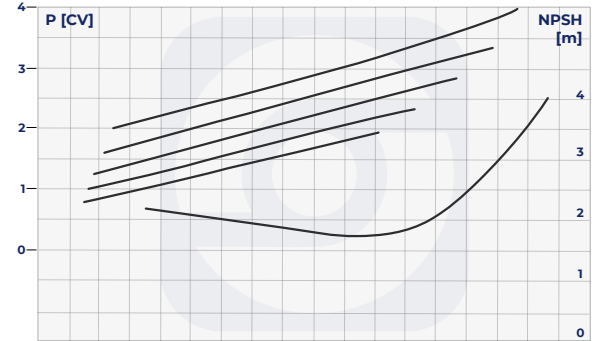
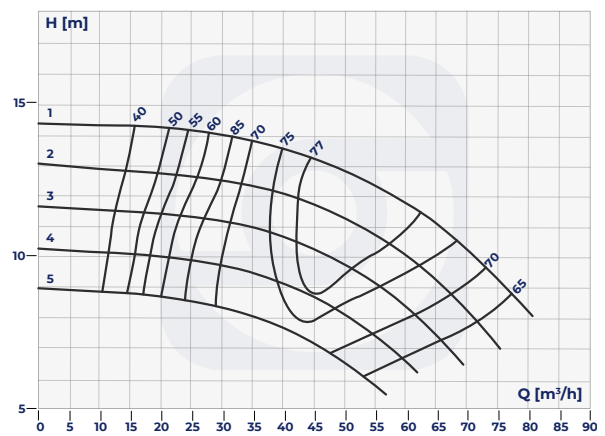




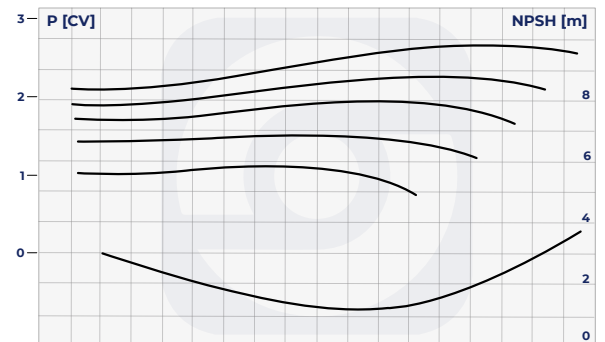
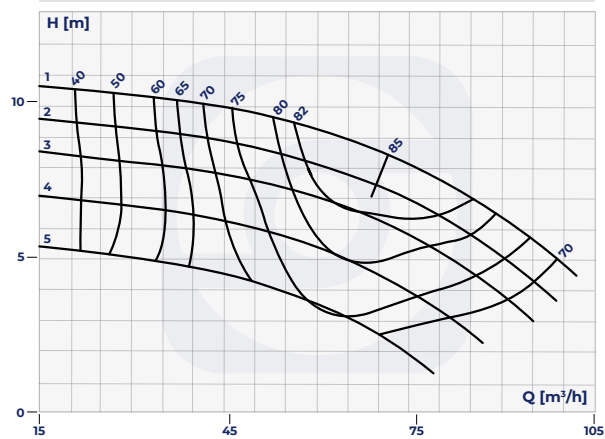
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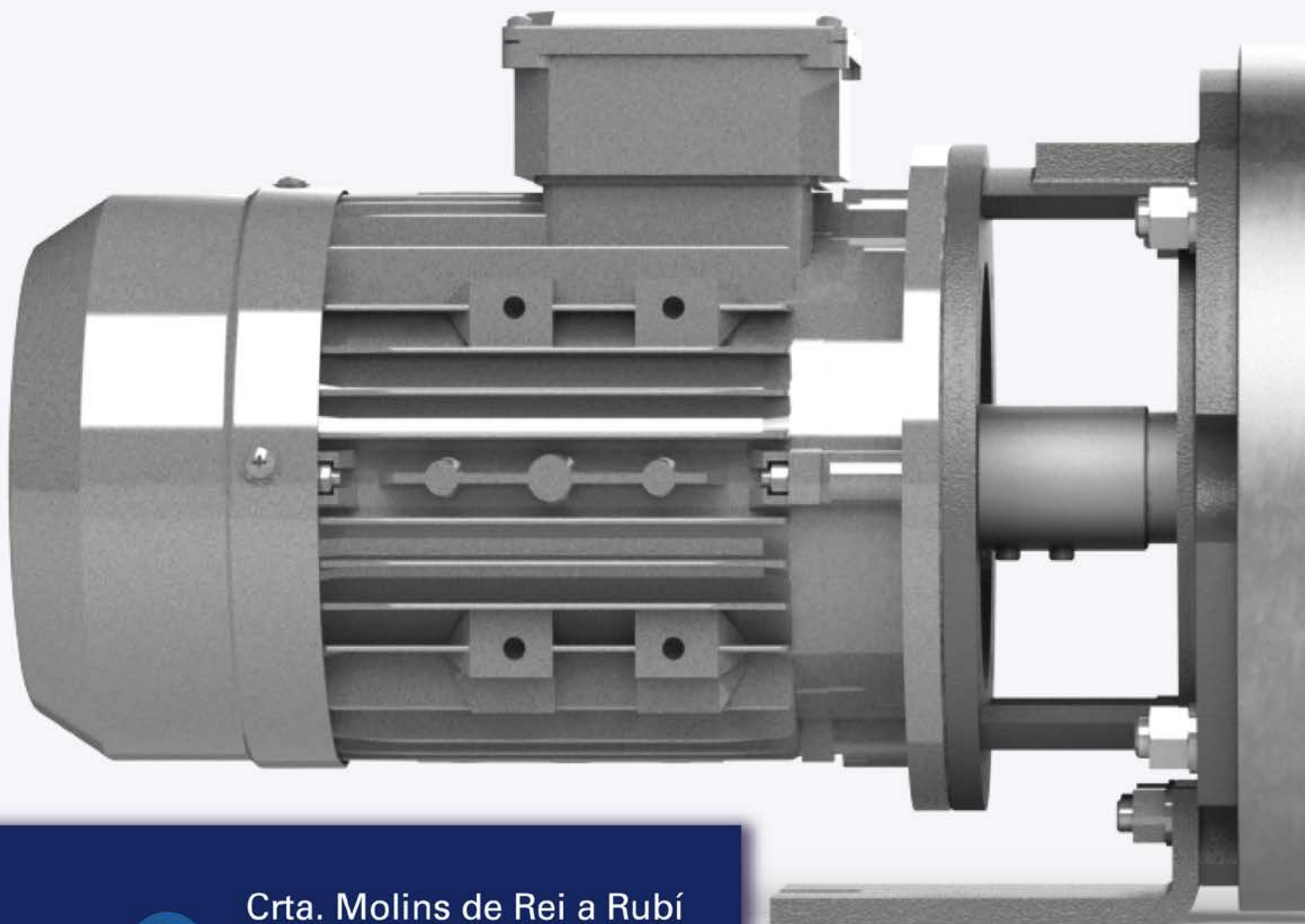


**FT M 65/200** 4P 1450 r.p.m.



**FT M 80/160** 4P 1450 r.p.m.





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