

FT M SERIES

EN733 Monoblock centrifugal pump - Heat transfer fluid

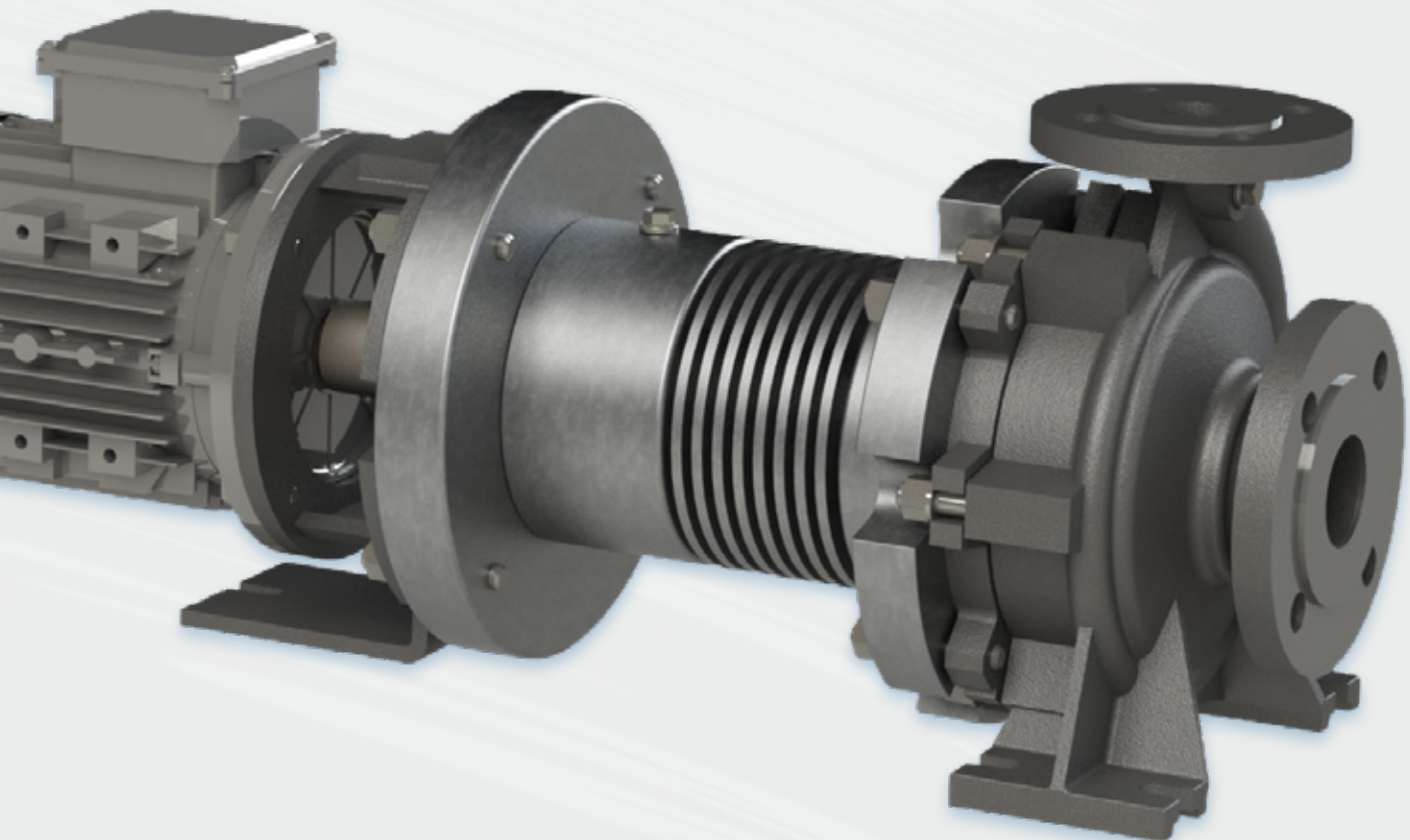
SPECIFICATIONS

DESIGN

SPARE PARTS

DIMENSIONS

PERFORMANCE CURVES



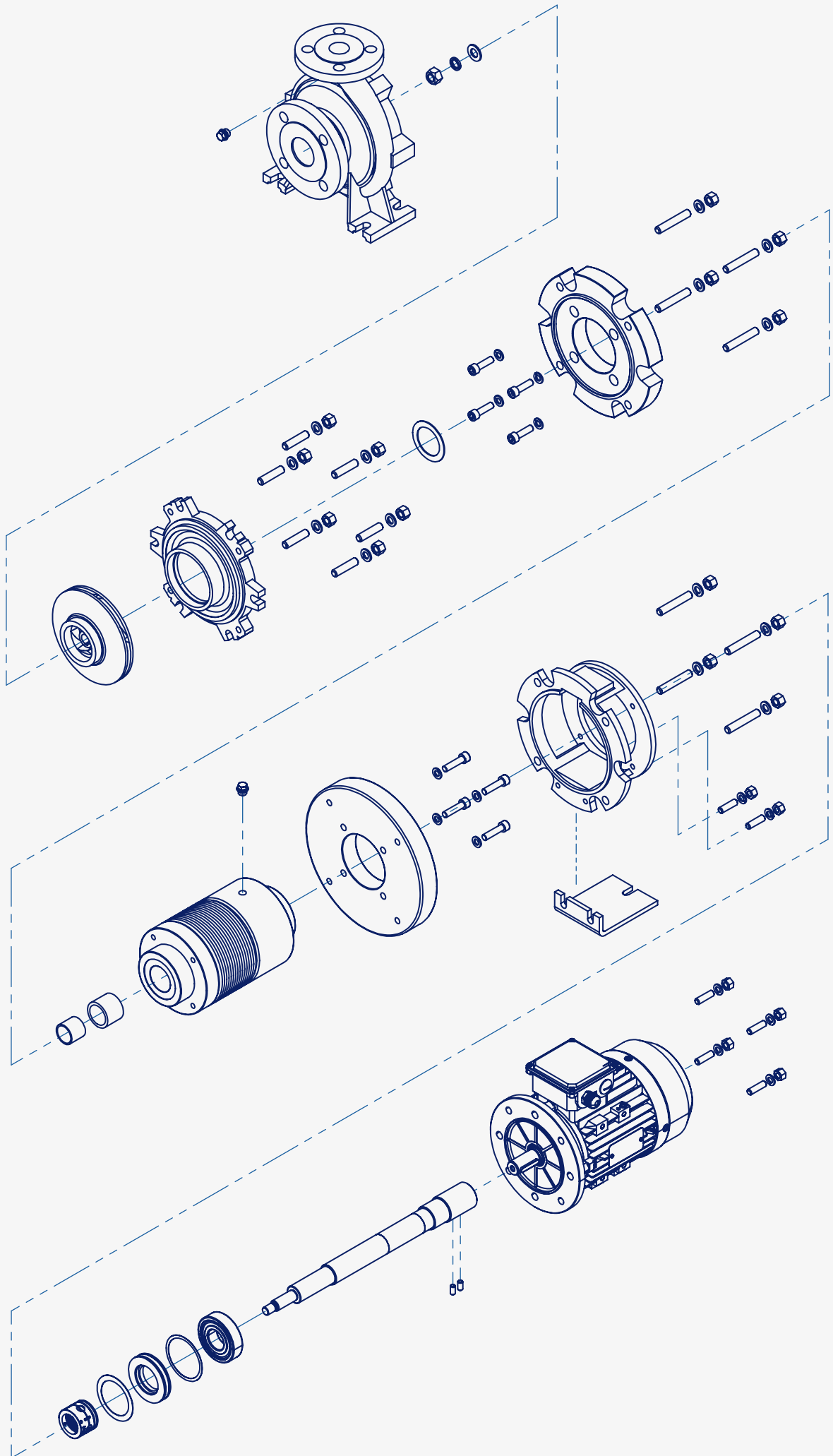
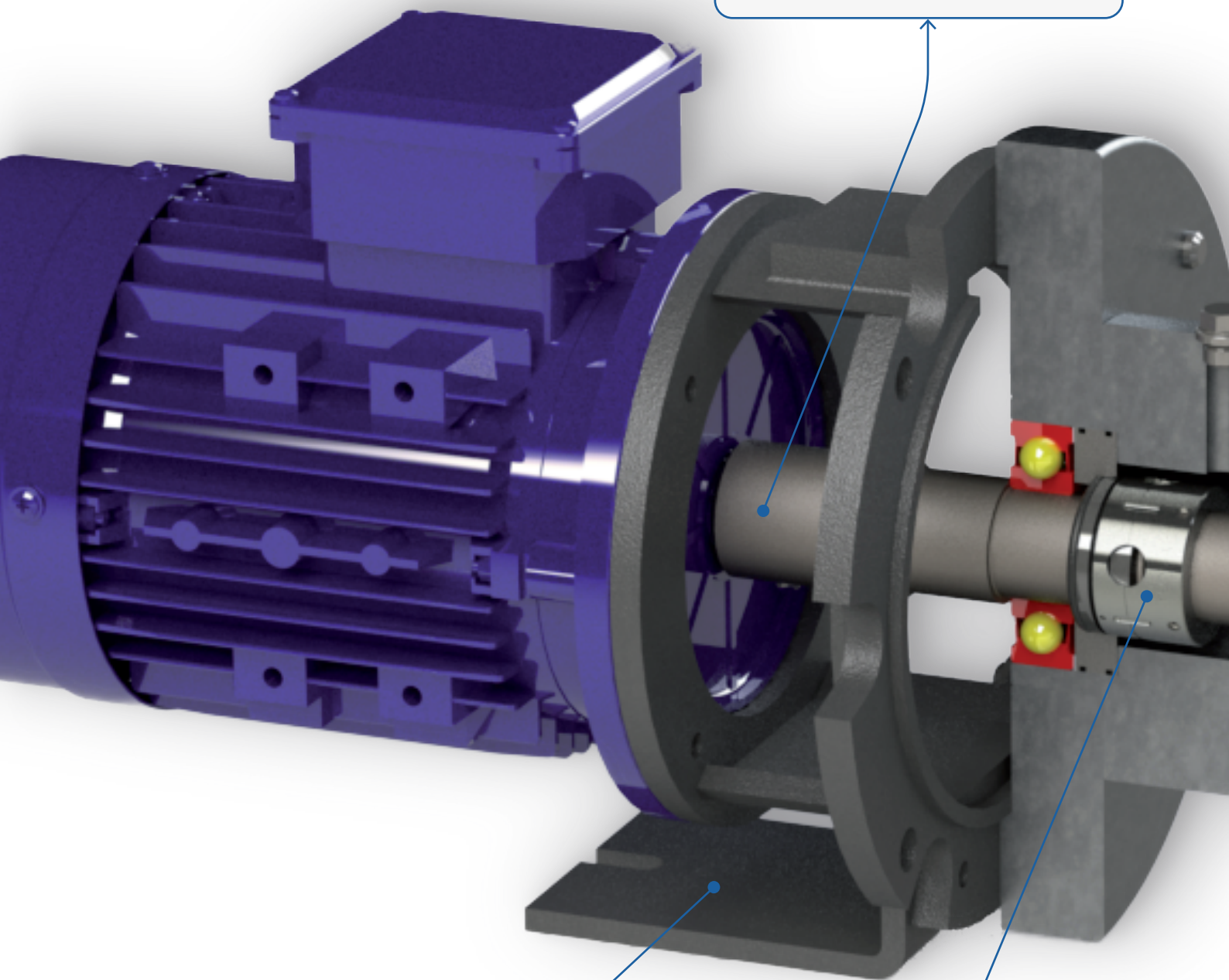


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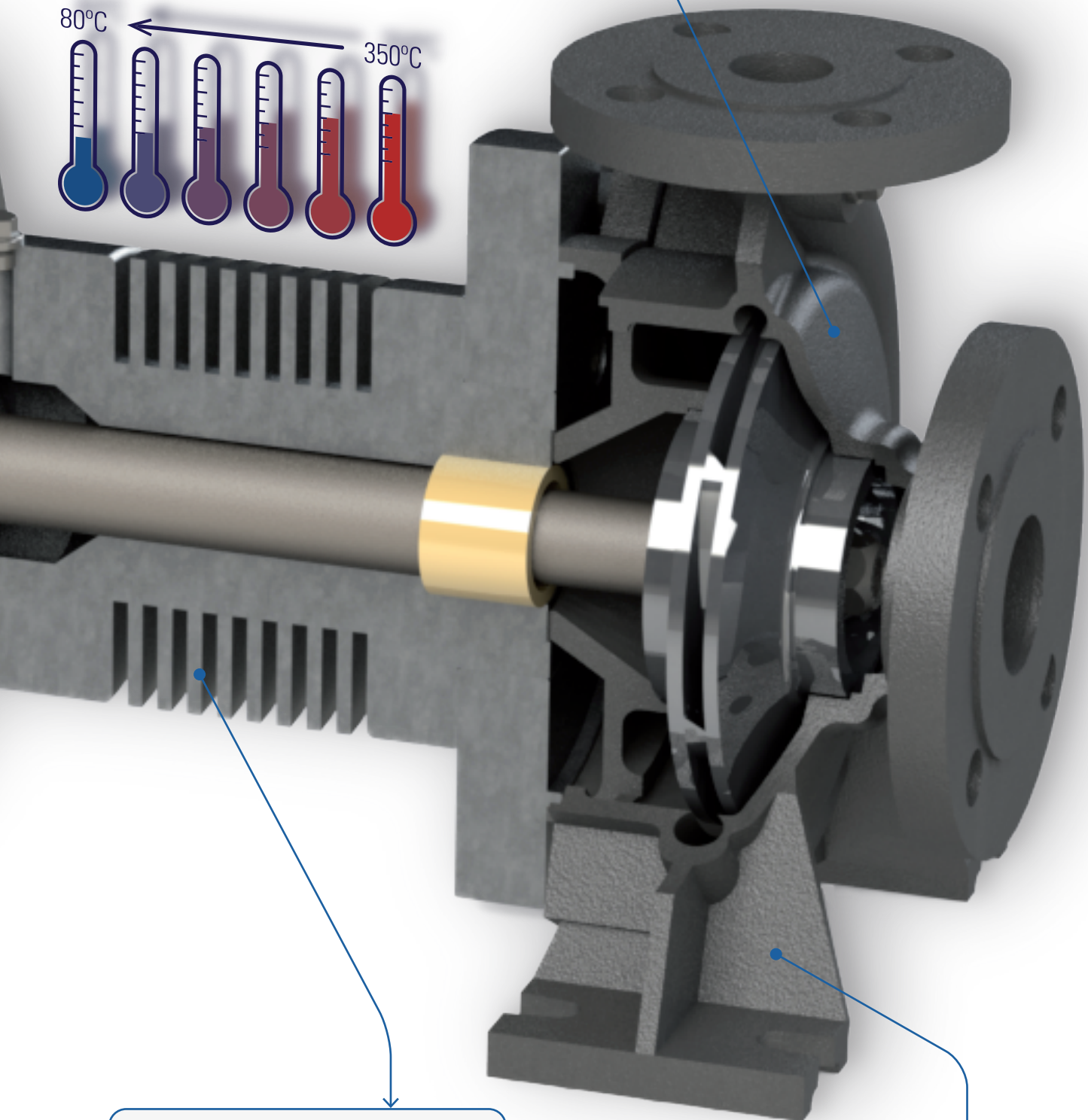
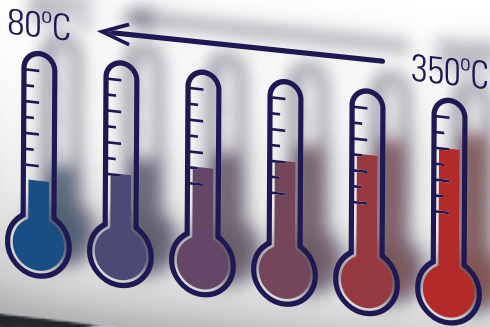


The unit is built in a monoblock version, with the motor shaft coupled to the pump by means of a rigid coupling.

Rear support leg that holds the bearing housing and maintains the correct alignment of the shaft along the assembly.

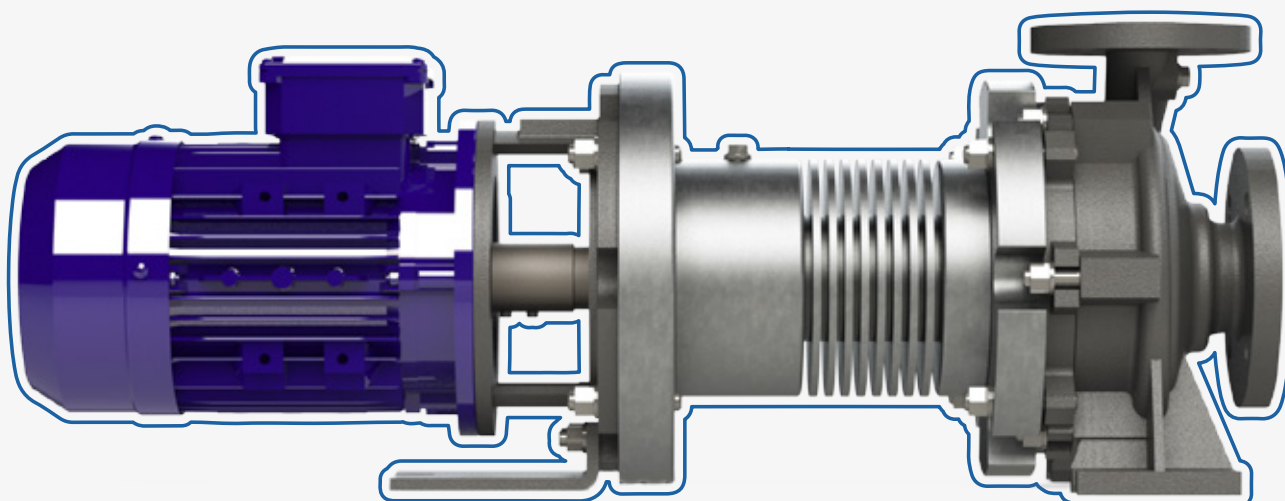
Single mechanical seal of the type NV-2 (EN12756) with independent direction of rotation. Cylindrical spring and drive by means of set screws. Robust and adaptable design.

Pump casing in GGG-40.
Hydraulics according to EN733 (DIN24255).
Maximum temperature 350°C.



Finned heat sink casing to ensure temperature reduction in the area of the mechanical seal and the ball bearing.

Front legs integrated into the pump casing to ensure greater stability against pipe loads.



FT M Series

The FT M series is a set of monoblock centrifugal electric pumps, with axial suction and radial discharge, according to EN733 (DIN 24255) standards. The pump is specially designed to work in high temperature applications (up to 350°C). Optimal for operation with frequency drive (VFD).

Specifications

Materials

Pump casing	GGG-40 Ductile cast iron
Impeller	GG-20 Cast iron
Pump shaft	F-114/AISI 316
Heat sink	Ductile cast iron
Mechanical seal	NV-2 Type (EN12756)
Lantern	GG-20 Cast iron

Technical data

Motor	Three-phase according to IEC standards
Efficiency	- IE2 or IE3 for powers > 1 HP - IE1 if the power < 1 HP - It can be supplied up to IE5.
Tension	- Three-phase 230/400 V $\pm$ 10% up to 5,5 HP - Three-phase 400/690 V $\pm$ 10% from 7,5 HP
Poles	2 or 4 depending on the model
Level of protection	IP55
Insulation	F Class

Usage limits

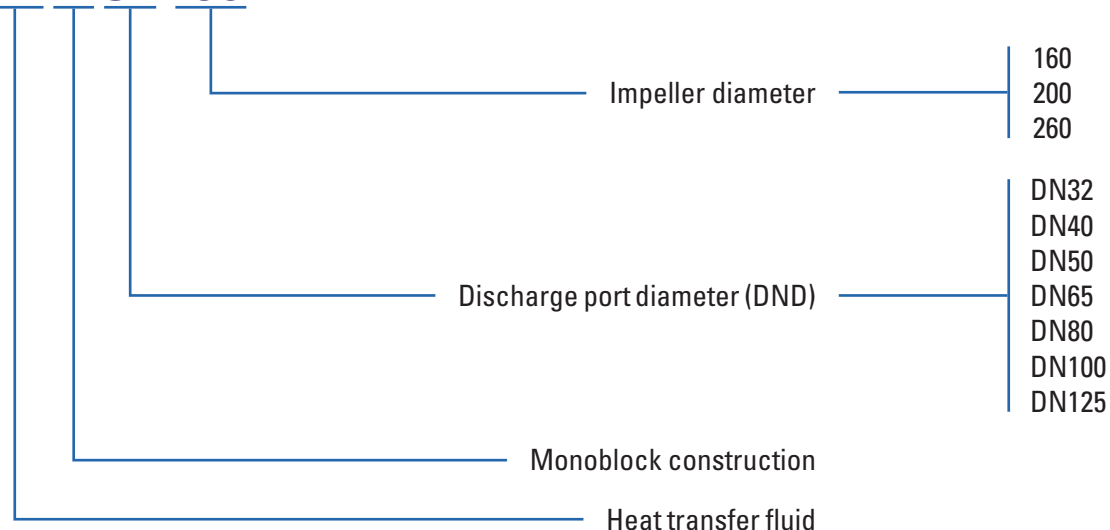
Range of flow rates	From 2 up to 200 m ³ /h
Range of pressures	From 4 up to 14 bar
Max. working pressure	16 bar
Max. working temperature	350°C

Connections

DNS	32-160/200 40-160/200/260 50-160/200/260 65-160/200 80-160	Brida DN50 Brida DN65 Brida DN65 Brida DN80 Brida DN125
DND	32-160/200 40-160/200/260 50-160/200/260 65-160/200 80-160	Brida DN32 Brida DN40 Brida DN50 Brida DN65 Brida DN80

Nomenclature

FT M 32-160

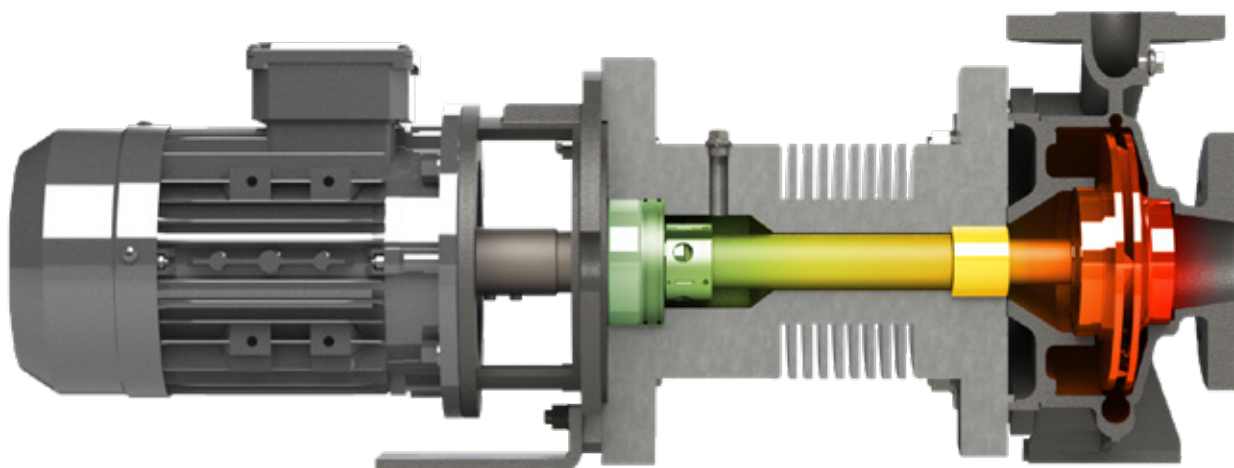


Design

Heat dissipation

The main feature of the FT M Series is none other than its ability to work at high temperatures, up to 350°C. The operation of the pump has been rigorously tested at Bomba Elias and verified by thermography. Therefore we can state that, thanks to the design of the pump, the temperature of the working area is considerably reduced along the axial axis, ensuring an optimal condition of gaskets, bearings and the mechanical seal.

The heatsink casing allows to reduce the temperature of the heat-transfer fluid. It conducts the heat from the internal part, in contact with the fluid, to the external part, and finally releases the heat to another medium by convection.

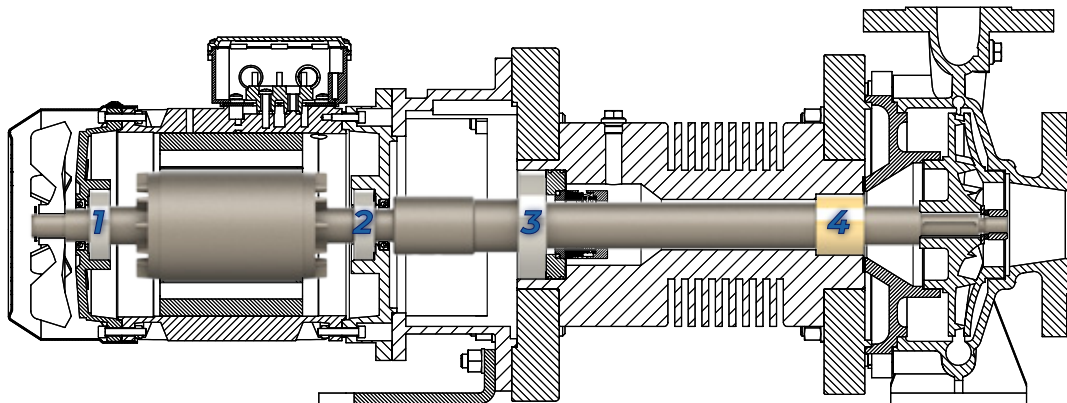




Shaft design

The pump shaft is directly coupled to the motor shaft end by means of a rigid coupling, which ensures optimum alignment and allows smooth, friction-free running.

The shaft is supported at up to four different points, consisting of three deep groove ball bearings and a front bearing which, apart from providing stability to the shaft, also serves as a restrictive ring. These supports, properly distributed along the assembly, provide excellent stability, ensuring the correct operation of the pump and increasing the service life of the equipment.

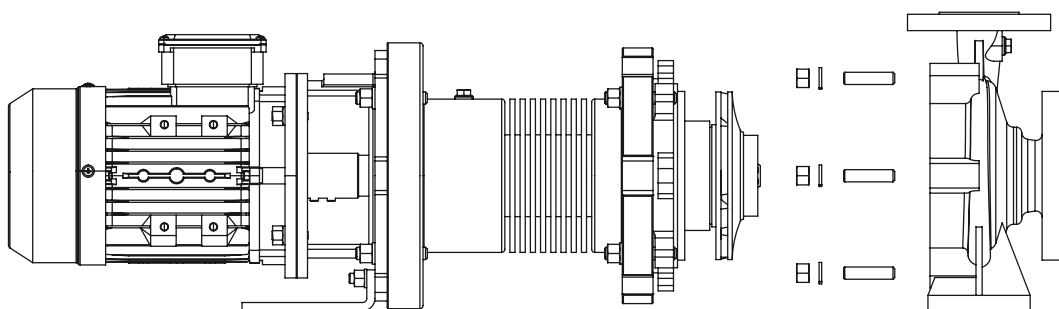


Maintenance

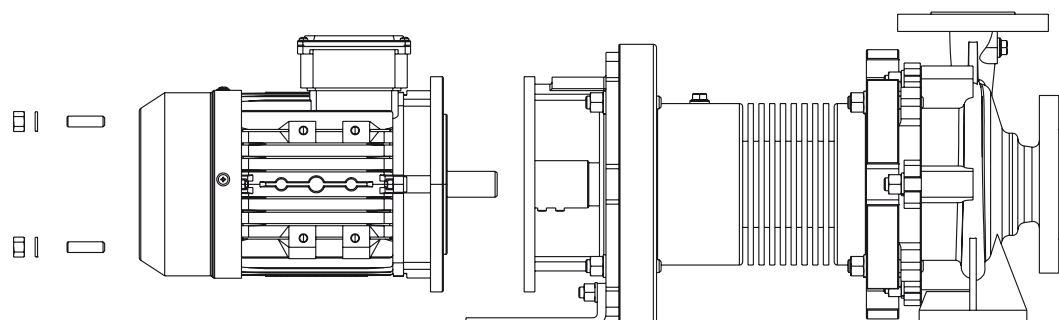
The monoblock design greatly facilitates the disassembly of the pump. On the one hand, it allows the entire moving part of the pump to be dismantled, keeping the pump body installed to the piping. On the other hand, the motor can also be easily disassembled without having to remove any other parts of the equipment.

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

Disassembling the hydraulics



Disassembling the motor



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* standards.

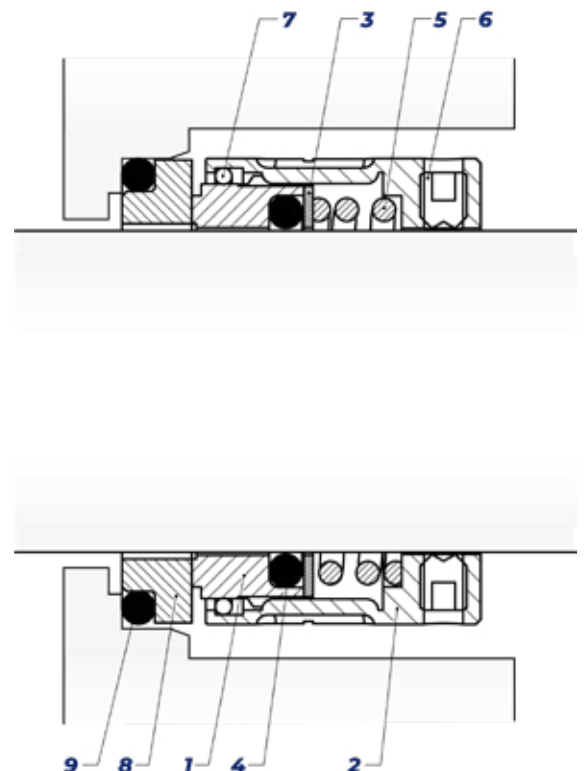


Usage limits

- 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)

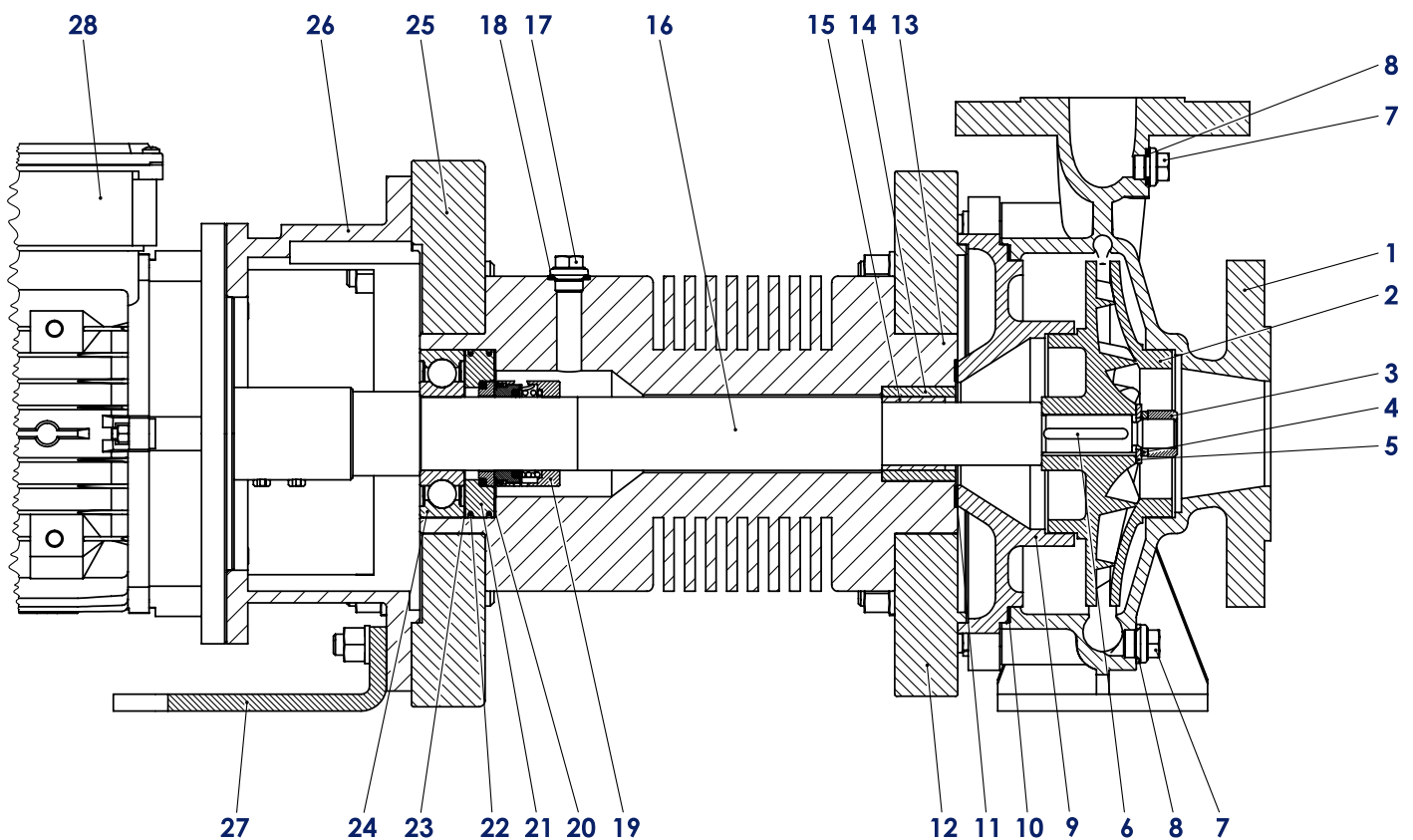
Components breakdown

REF	Designation	Material
1	Rotating ring	Carbon resin
2	Draging sleeve	CrNiMo-steel
3	Gasket	CrNiMo-steel
4	Shaft gasket	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 gasket	FPM (Viton)



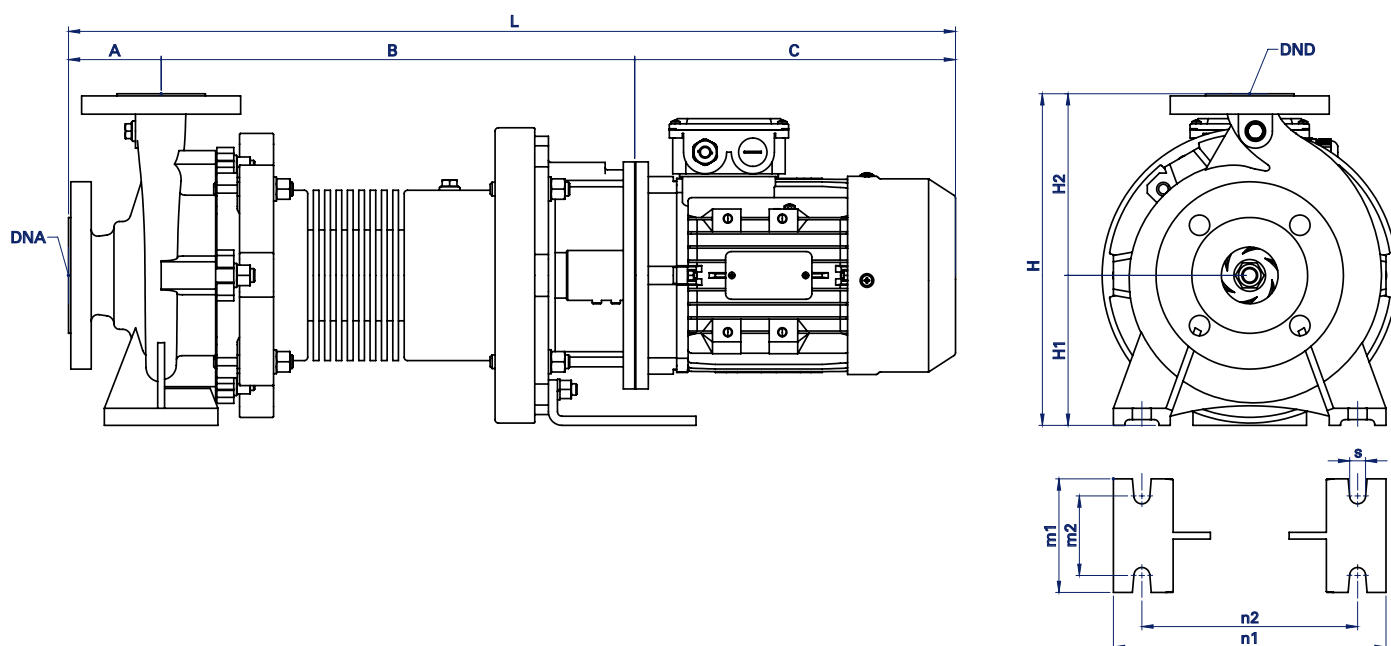


Components breakdown



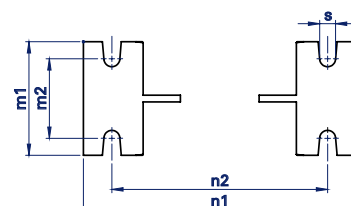
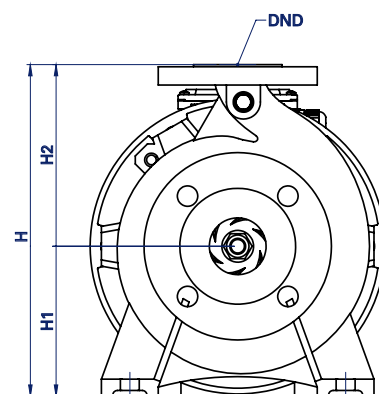
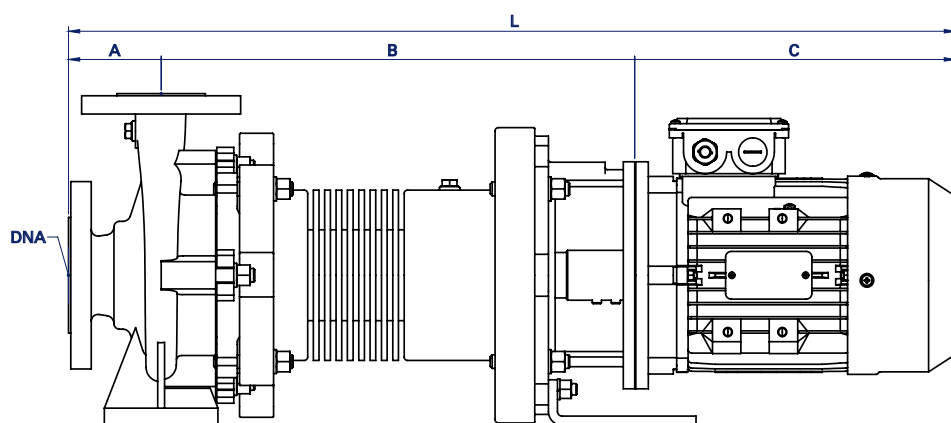
REF	Designation	REF	Designation
1	Pump casing	15	Front rotating inner bushing
2	Impeller	16	Pump shaft
3	Shaft end nut	17	Mechanical seal filling plug
4	Shaft end split lock washer	18	Mechanical seal filling plug gasket
5	Shaft end flat washer	19	Mechanical seal
6	Shaft-impeller key	20	Mechanical seal cover gasket
7	Pump casing filling/drain plug (2 pcs.)	21	Mechanical seal cover
8	Pump casing filling/drain plug gasket (2 pcs.)	22	Mechanical seal cover o-ring (2 pcs.)
9	Pump casing cover	23	Shim washer
10	Pump casing-cover gasket	24	Ball bearing
11	Pump cover-heat sink casing gasket	25	Heat sink casing-lantern flange
12	Pump casing-heat sink casing flange	26	Lantern
13	Finned heat sink casing	27	Rear mounting foot
14	Front stationary outer bushing	28	Electric motor

Dimensions table



$n=2900$ r.p.m. / 50 Hz

Model	Motor			Pump dimensions									Support/feet dimensions				
	kW	CV	MEC	DND	DNS	L	A	B	C	H	H1	H2	n1	n2	m1	m2	s
32-160	2,2	3	90 L	32	50	792	80	417	295	292	132	160	240	190	100	70	M12
	3	4	100 L			834		429	325								
	4	5,5	112 M			859			350								
32-200	5,5	7,5	132	32	50	924	80	454	390	340	160	180	240	190	100	70	M12
	7,5	10	132														
40-160	3	4	100 L	40	65	834	80	429	325	292	132	160	240	190	100	70	M12
	4	5,5	112 M			859		429	350								
	5,5	7,5	132 S			924		454	390								
40-200	7,5	10	132 S	40	65	952	100	462	390	340	160	180	265	212	100	70	M12
	11	15	160 M			1124		494	530								
40-260	11	15	160 M	40	65	1127	100	497	530	405	180	225	320	250	125	95	M12
	15	20	160 M														
	18,5	25	160 L														
50-160	5,5	7,5	132 S	50	65	944	100	454	390	340	160	180	265	212	100	70	M12
	7,5	10	132 S														
50-200	7,5	10	132 S	50	65	952	100	462	390	360	160	200	265	212	100	70	M12
	11	15	160 M			1124		494	530								
	15	20	160 M														
50-260	18,5	25	160 L	50	65	1127	100	497	530	405	180	225	320	250	125	95	M12
65-160	7,5	10	132 S	65	80	979	100	489	390	360	160	200	280	212	125	95	M12
	11	15	160 M			1151		521	530								
	15	20	160 M														
60-200	15	20	160 M	65	80	1124	100	494	530	405	180	225	320	250	125	95	M12
	18,5	25	160 M														
80-160	11	15	160 M	80	125	1176	125	521	530	405	180	225	320	250	125	95	M12
	15	20	160 M														
	18,5	25	160 L														

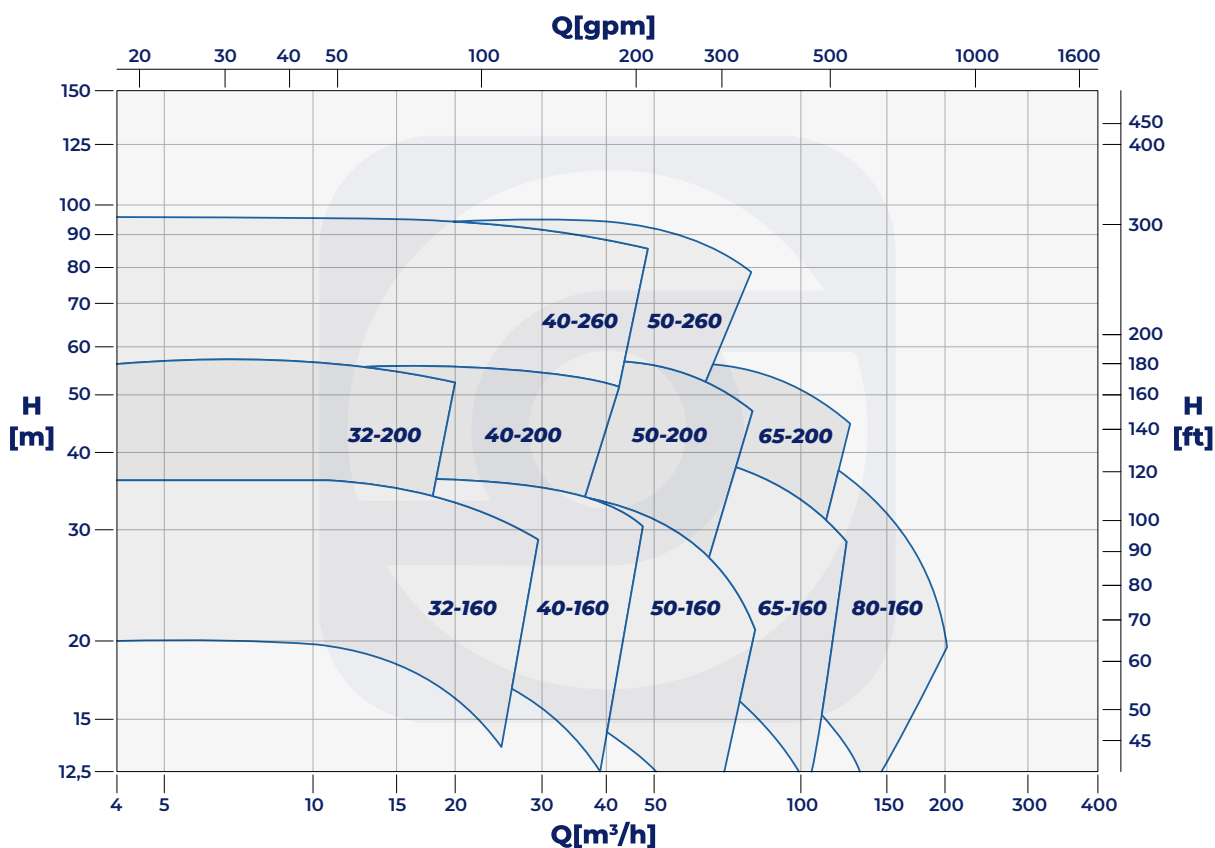


$n=1450 \text{ r.p.m.} / 50 \text{ Hz}$

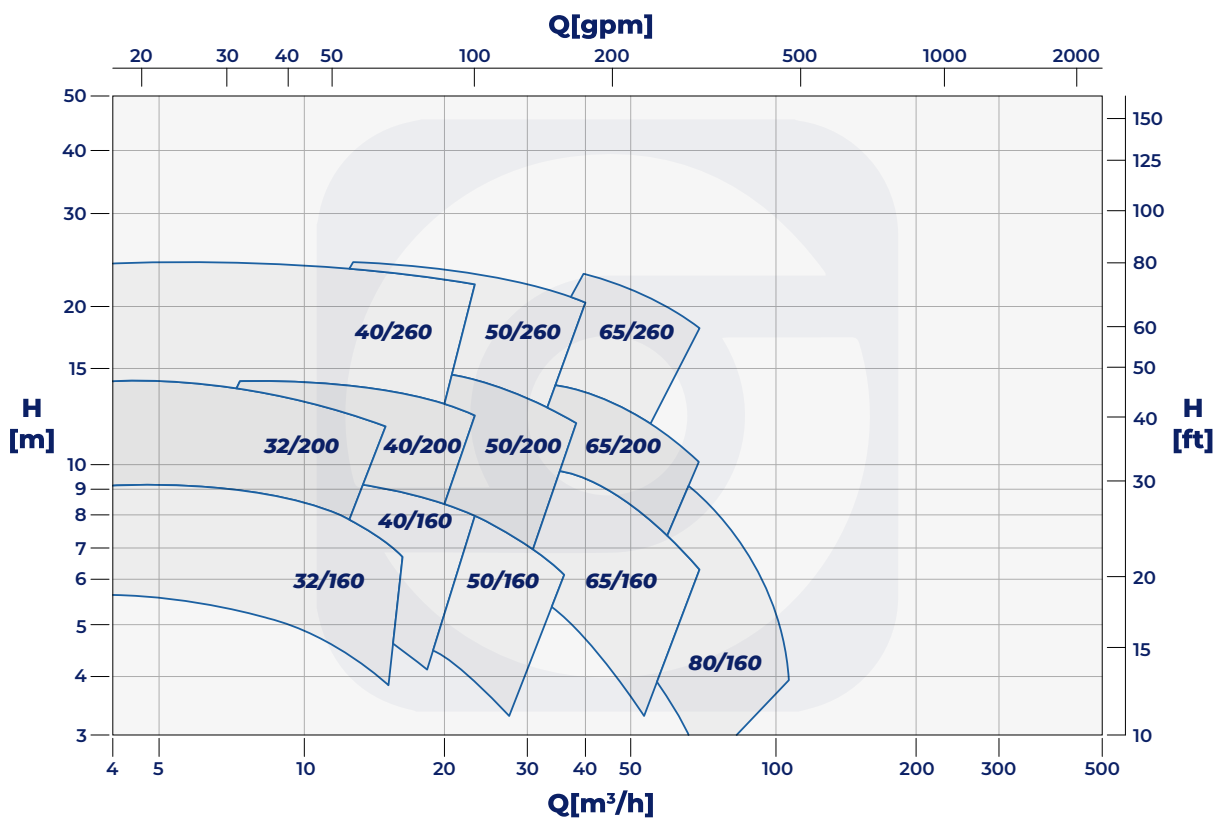
Model	Motor			Pump dimensions									Support/feet dimensions				
	kW	CV	MEC	DND	DNS	L	A	B	C	H	H1	H2	n1	n2	m1	m2	s
32-160	0,37	0,5	71	50	32	701	80	391	230	292	132	160	240	190	100	70	M12
	0,37	0,5	71														
	0,55	0,75	80														
32-200	0,75	1	80	50	32	752	80	417	255	340	160	180	240	190	100	70	M12
	1,1	1,5	90 S														
40-160	0,37	0,5	71	65	40	701	80	391	230	292	132	160	240	190	100	70	M12
	0,55	0,75	80														
	0,75	1	80														
40-200	1,1	1,5	90 S	65	40	795	100	425	270	340	160	180	265	212	100	70	M12
	1,5	2	90 L														
40-260	1,5	2	90 L	65	40	823	100	428	295	405	180	225	320	250	125	95	M12
	2,2	3	100 L														
	3	4	100 L														
50-160	0,55	0,75	80	65	50	772	100	417	255	340	160	180	265	212	100	70	M12
	0,75	1	80														
	1,1	1,5	90 S														
50-200	1,5	2	90 L	65	50	820	100	425	295	360	160	200	265	212	100	70	M12
	2,2	3	100 L														
50-260	3	4	100 L	65	50	897	100	472	325	405	180	225	320	250	125	95	M12
	4	5,5	112 M														
65-160	0,75	1	80	80	65	807	100	452	255	360	160	200	280	212	125	95	M12
	1,1	1,5	90 S														
	2,2	3	100 L														
60-200	2,2	3	100 L	80	65	862	100	437	325	405	180	225	320	250	125	95	M12
	3	4	100 L														
80-160	1,5	2	90 L	125	80	872	125	452	295	405	180	225	320	250	125	95	M12
	2,2	3	100 L														
	3	4	100 L														

Pump selection charts

$n = 2900 \text{ r.p.m.} / 50 \text{ Hz}$



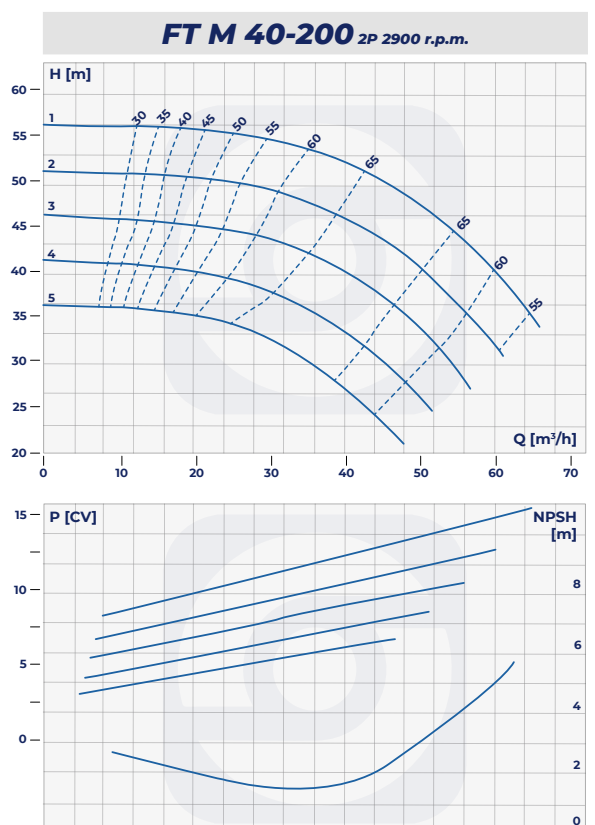
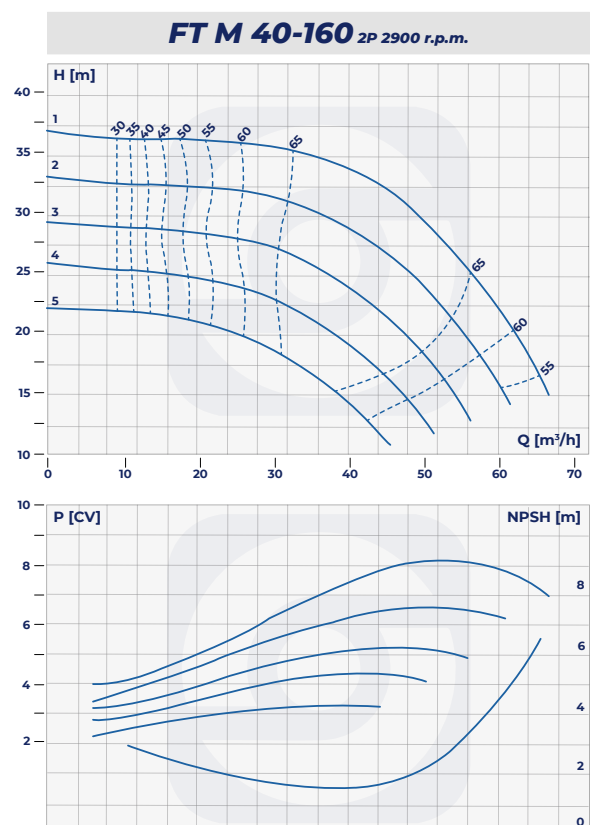
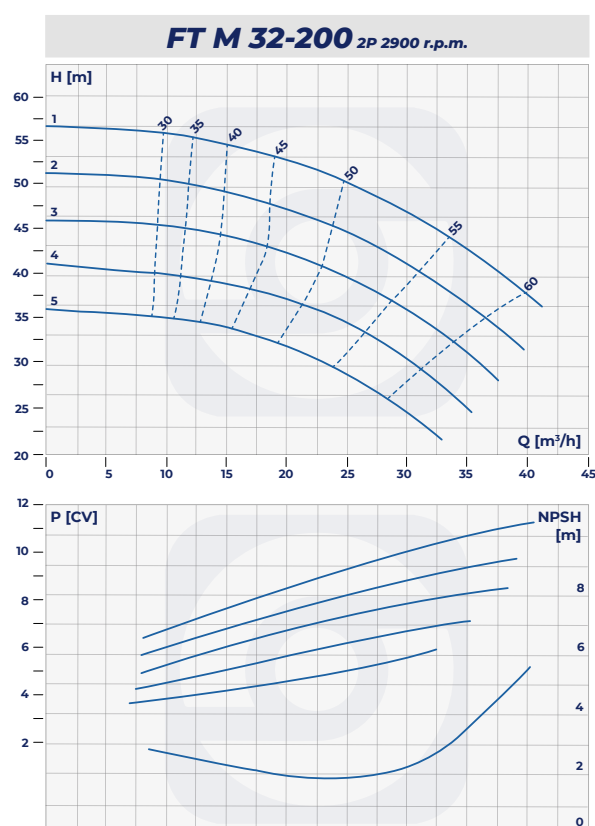
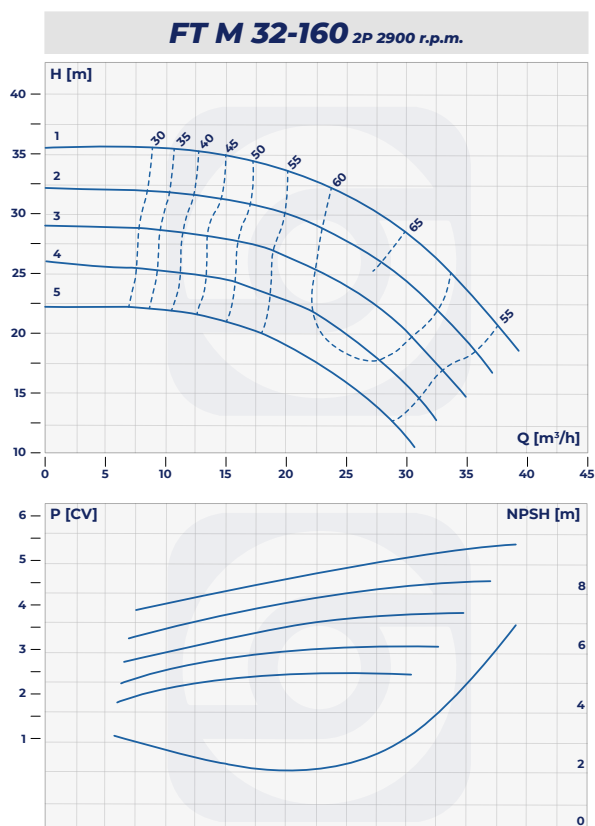
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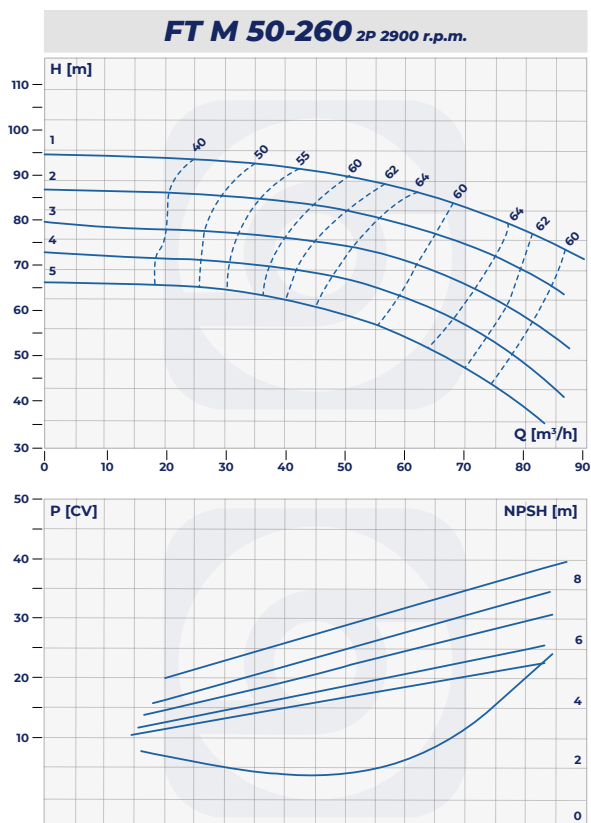
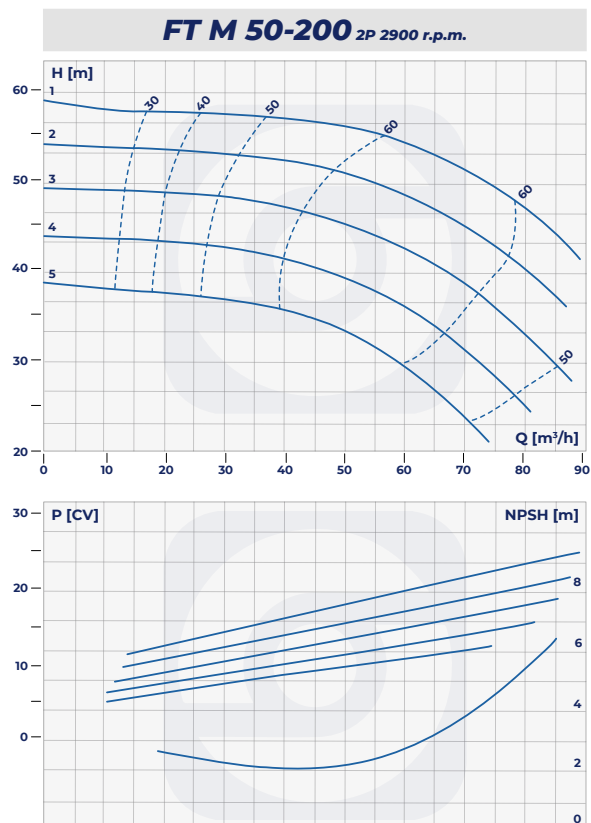
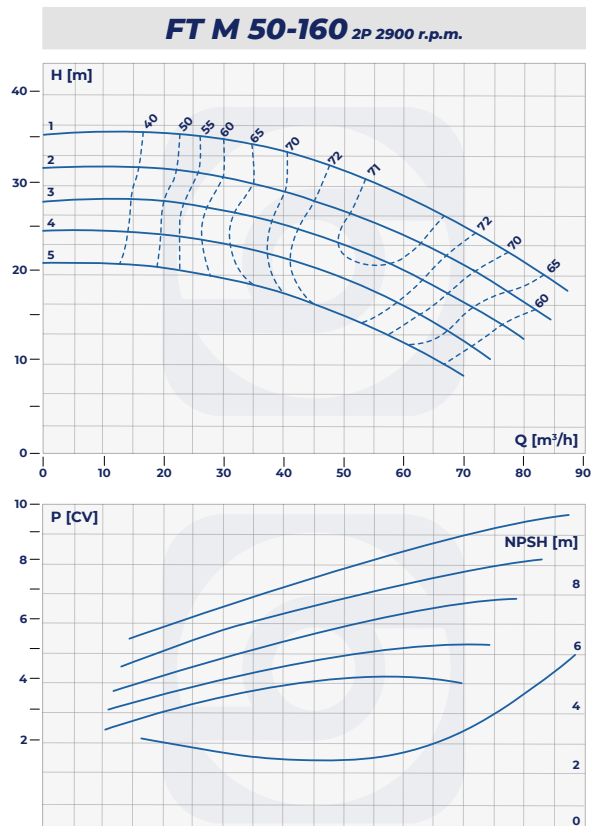
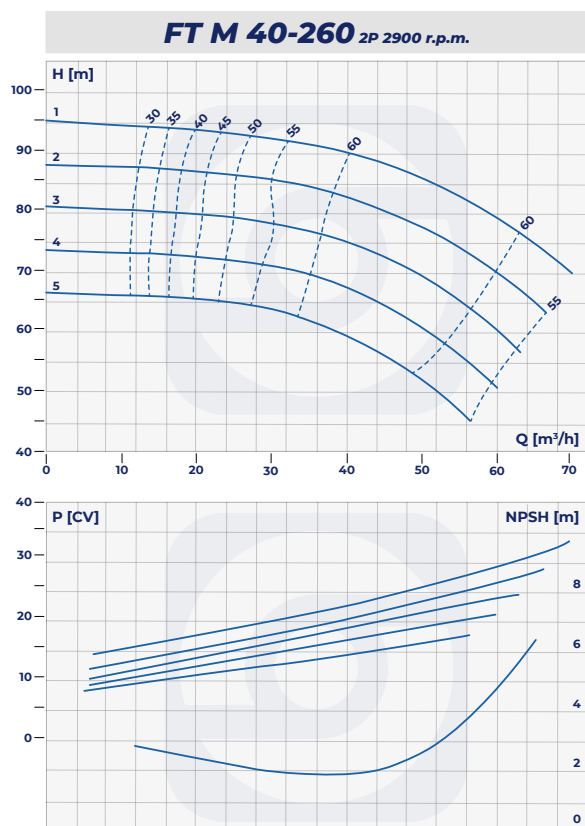


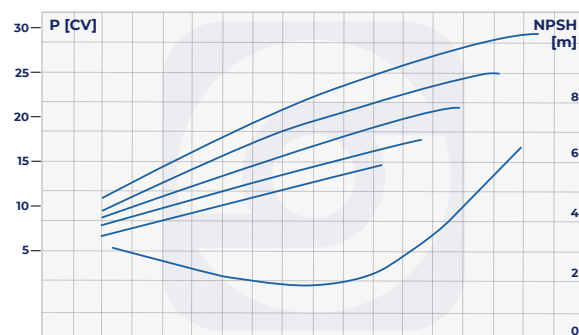
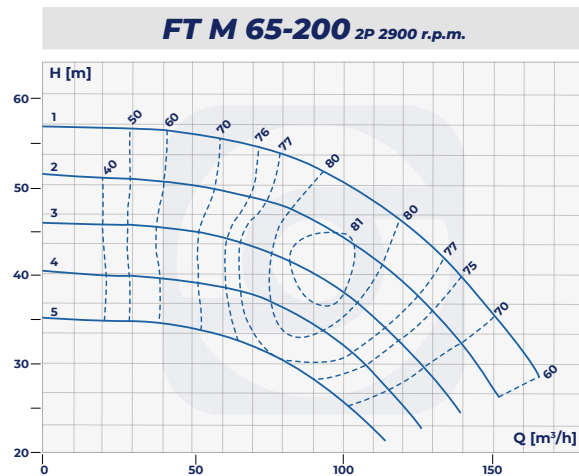
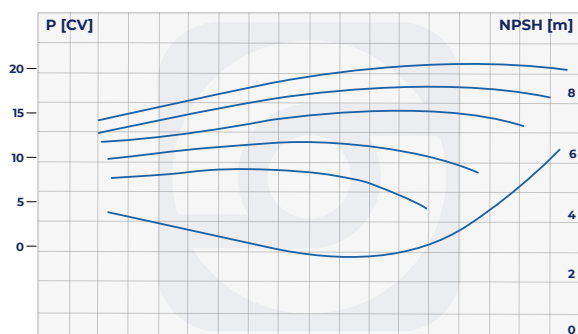
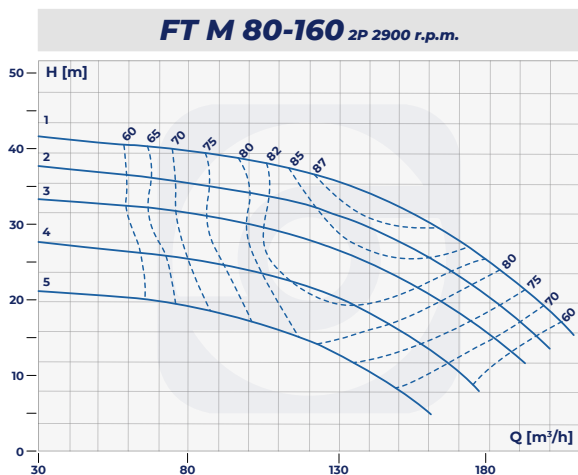
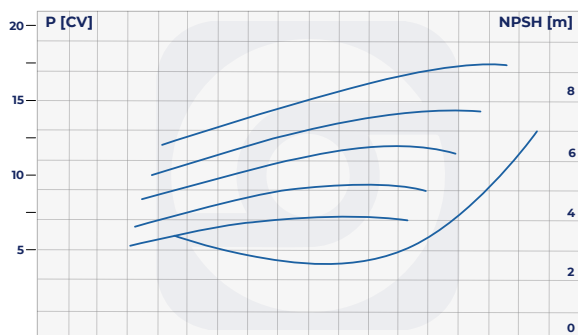
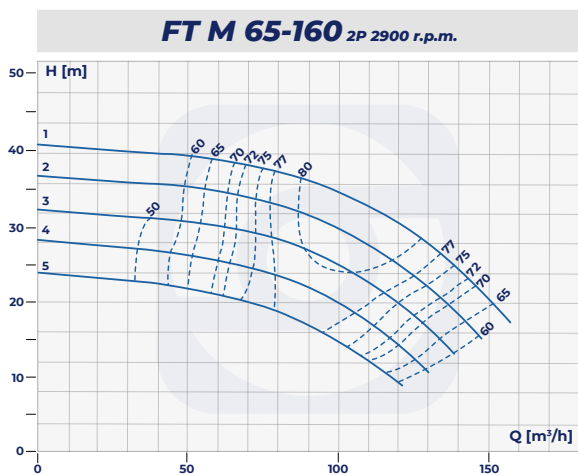


Performance curves

$n = 2900 \text{ r.p.m.} / 50 \text{ Hz}$

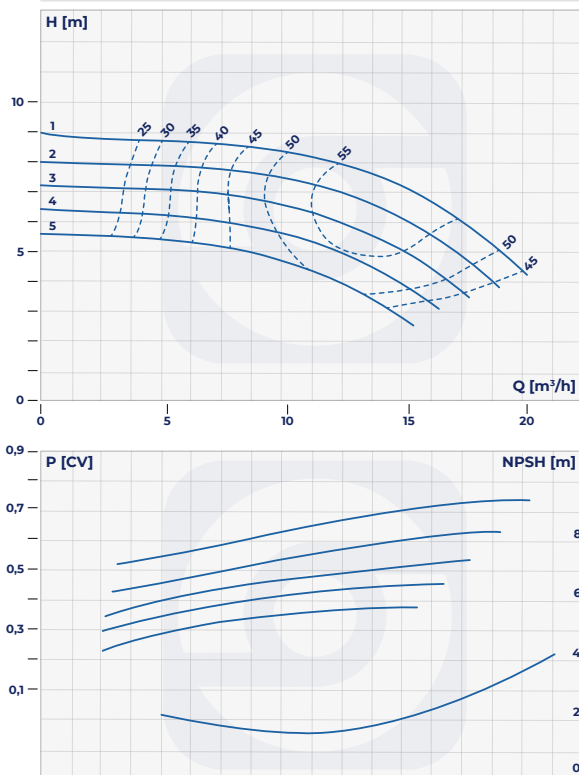




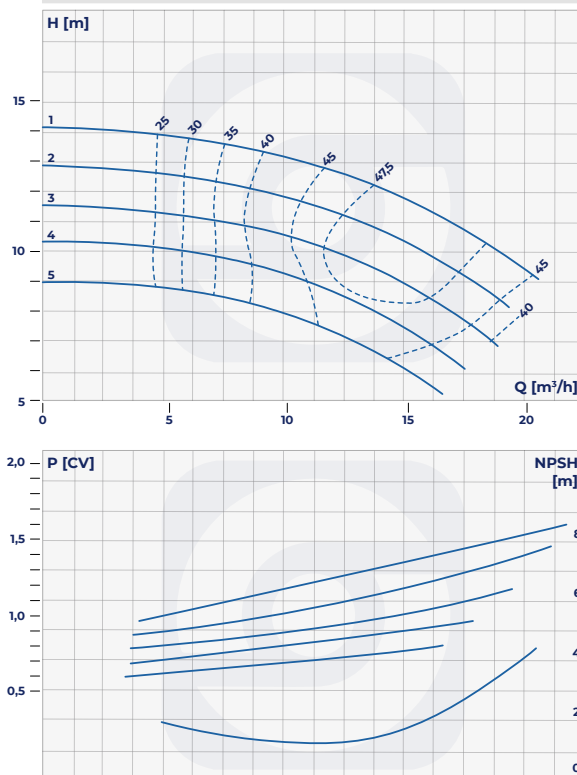


$n = 1450 \text{ r.p.m.} / 50 \text{ Hz}$

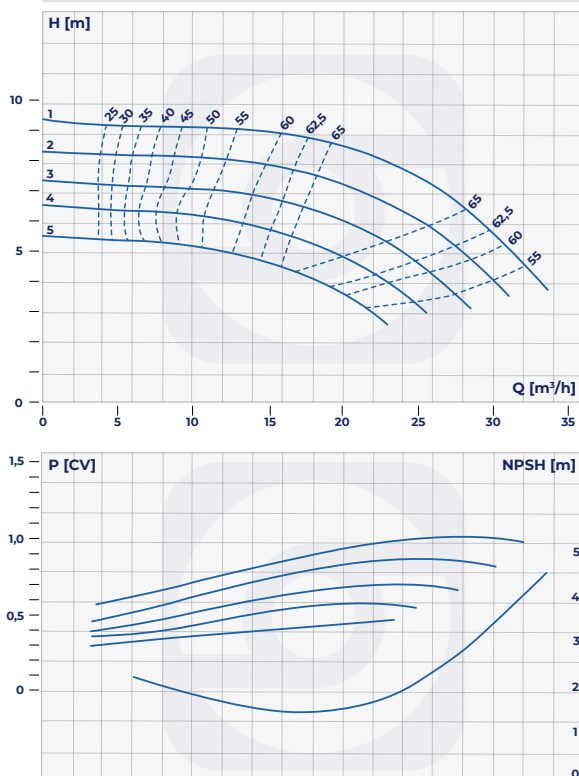
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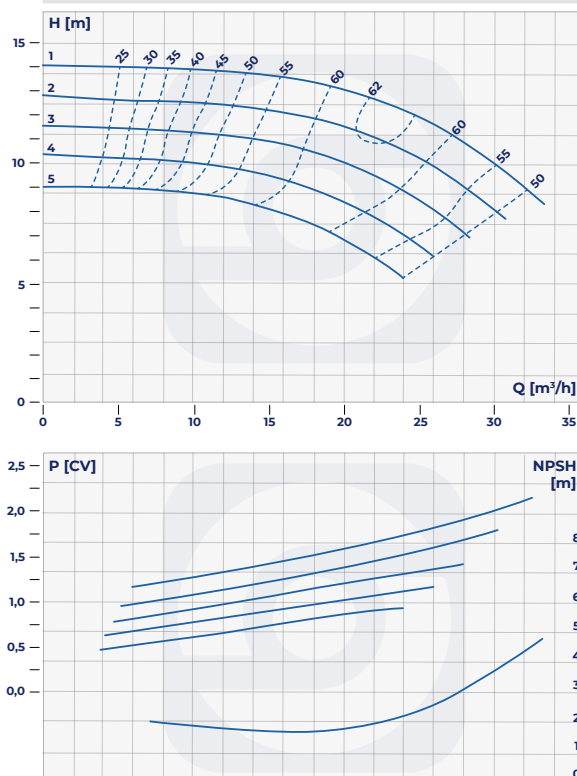
FT M 32-200 4P 1450 r.p.m.



FT M 40-160 4P 1450 r.p.m.

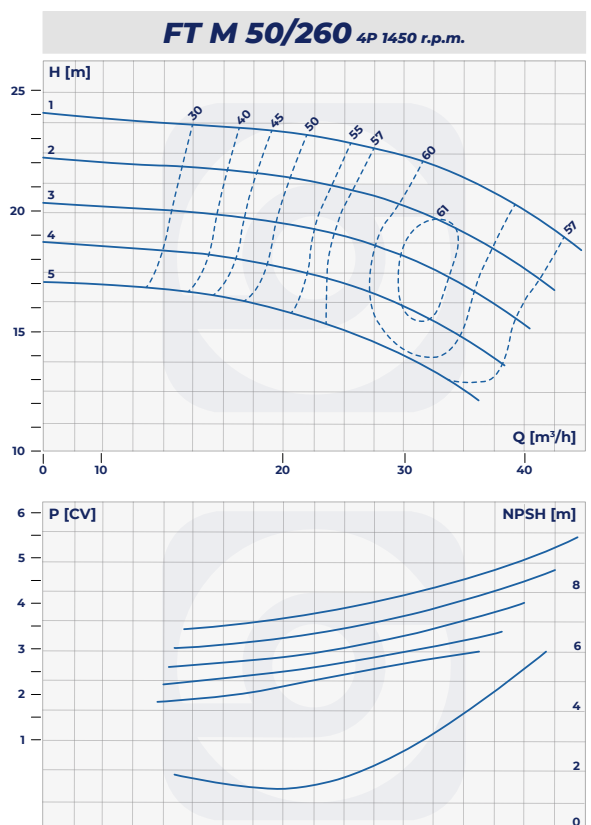
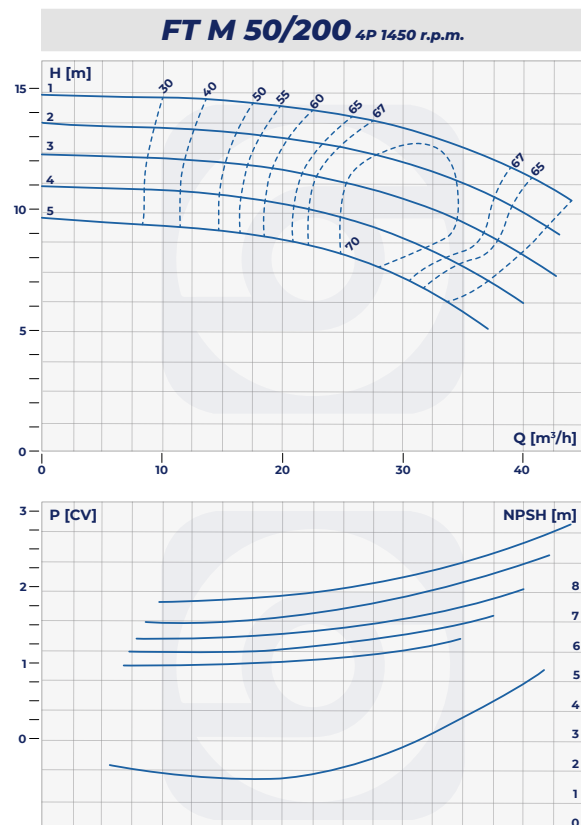
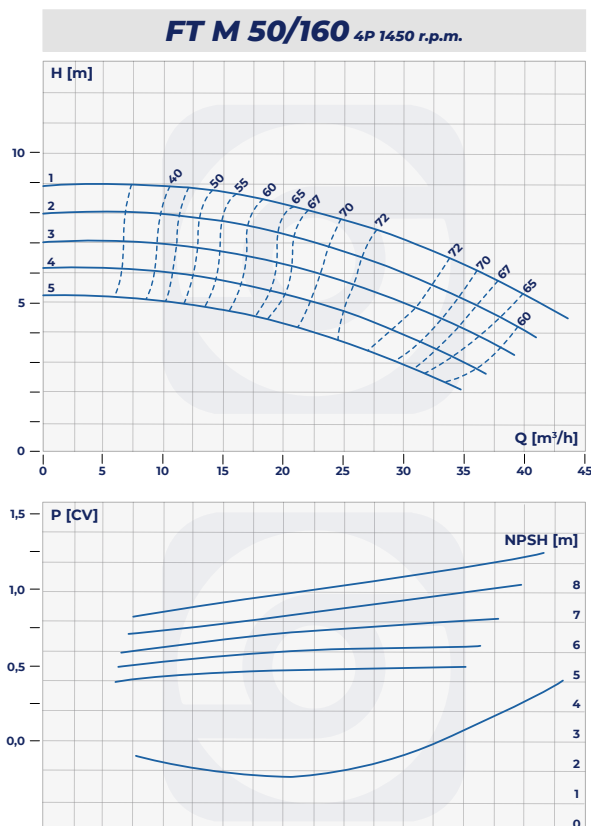
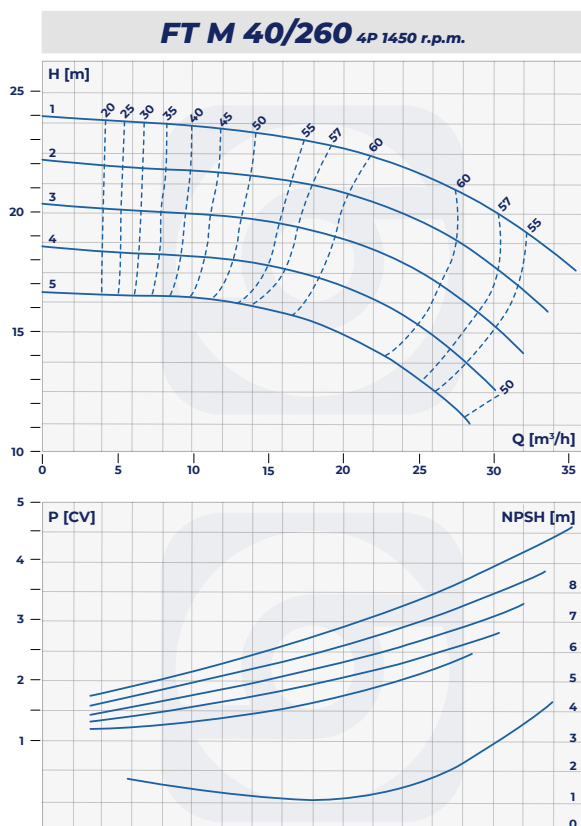


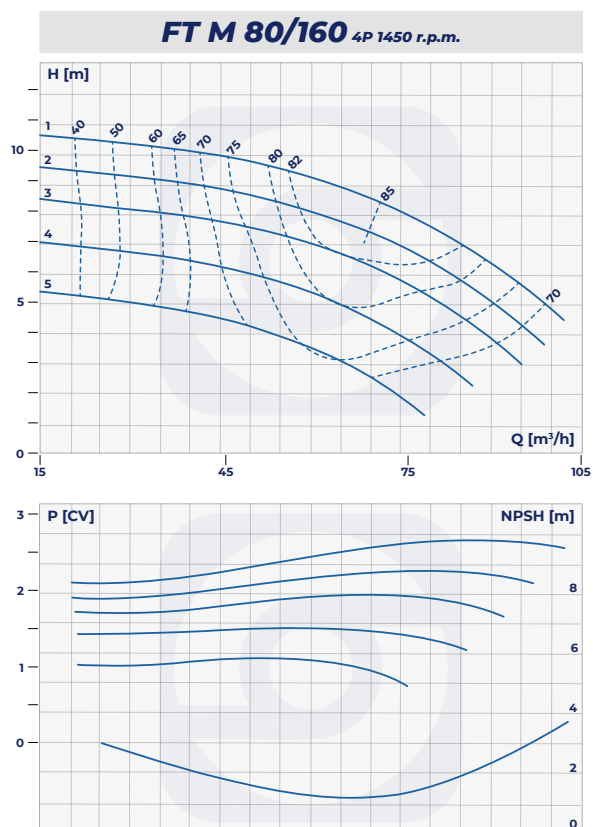
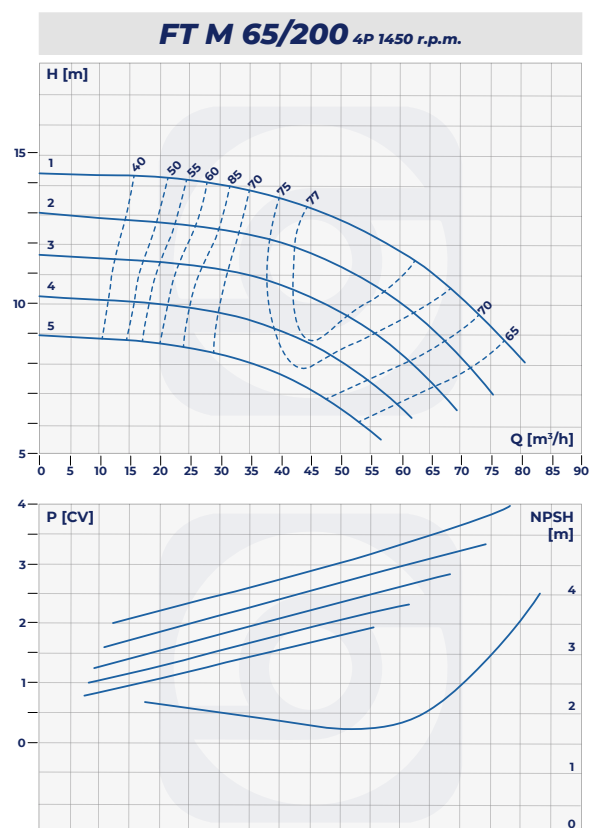
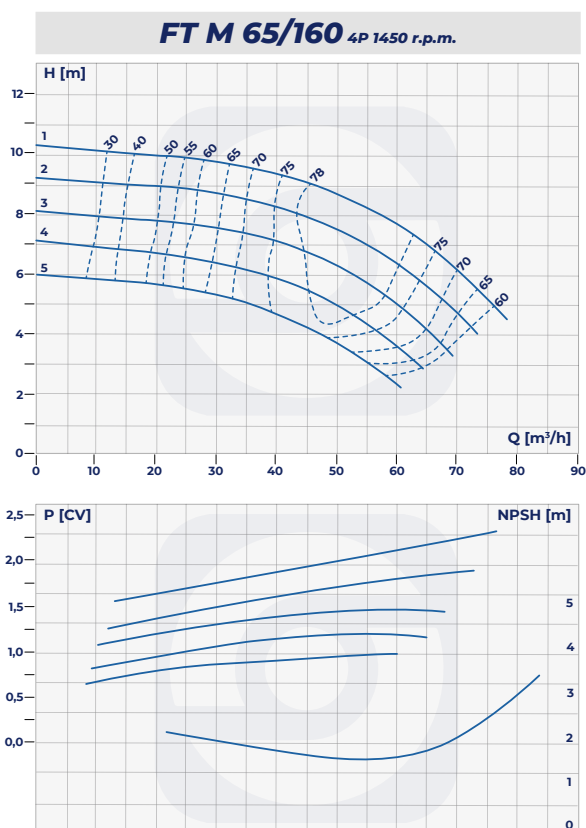
FT M 40-200 4P 1450 r.p.m.





$n = 1450 \text{ r.p.m.} / 50 \text{ Hz}$







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