

RBQP Inox SERIES

Gear pump - Chemical process

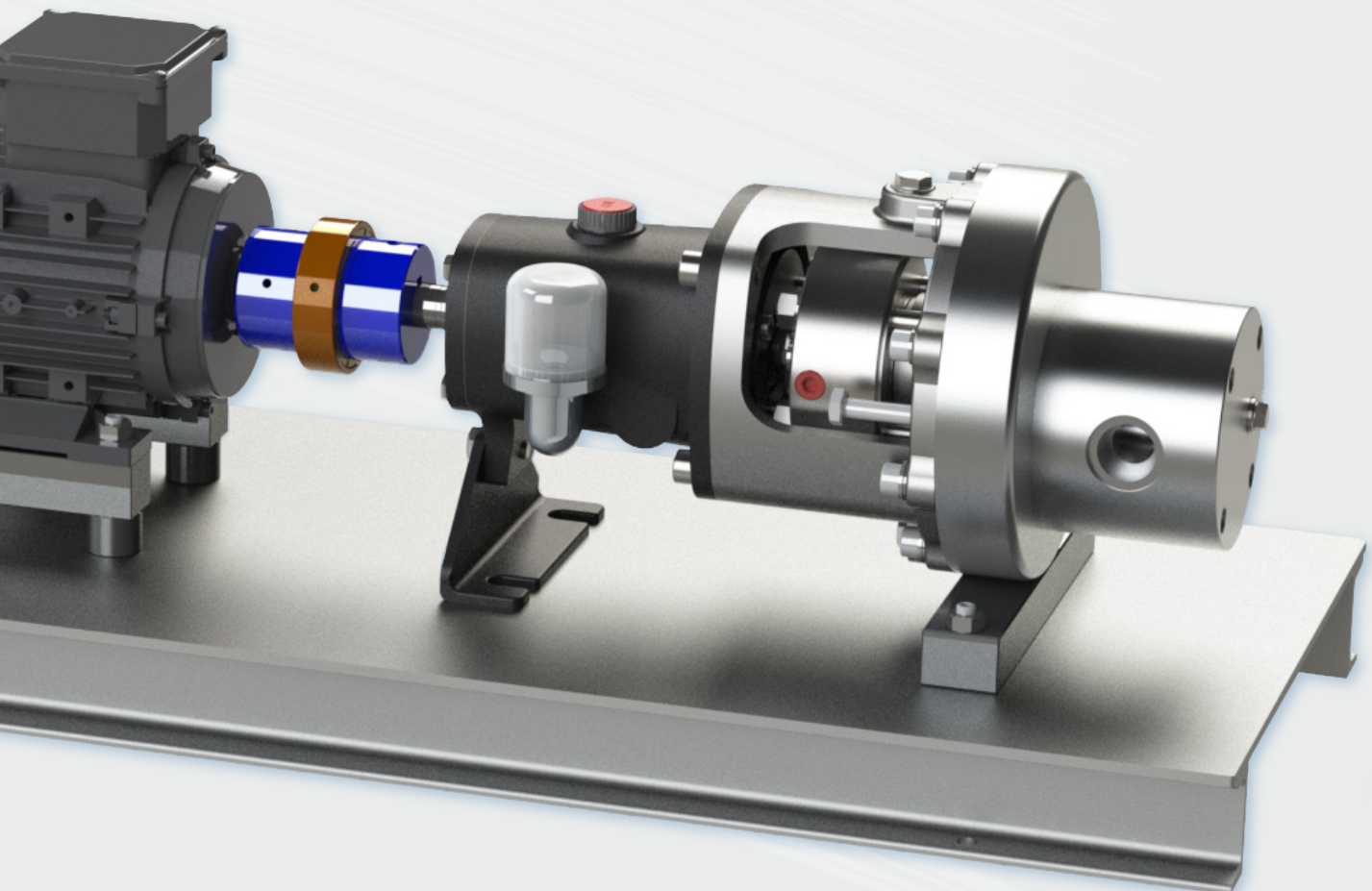
SPECIFICATIONS

DESIGN

SPARE PARTS

DIMENSIONS

PERFORMANCE CURVES



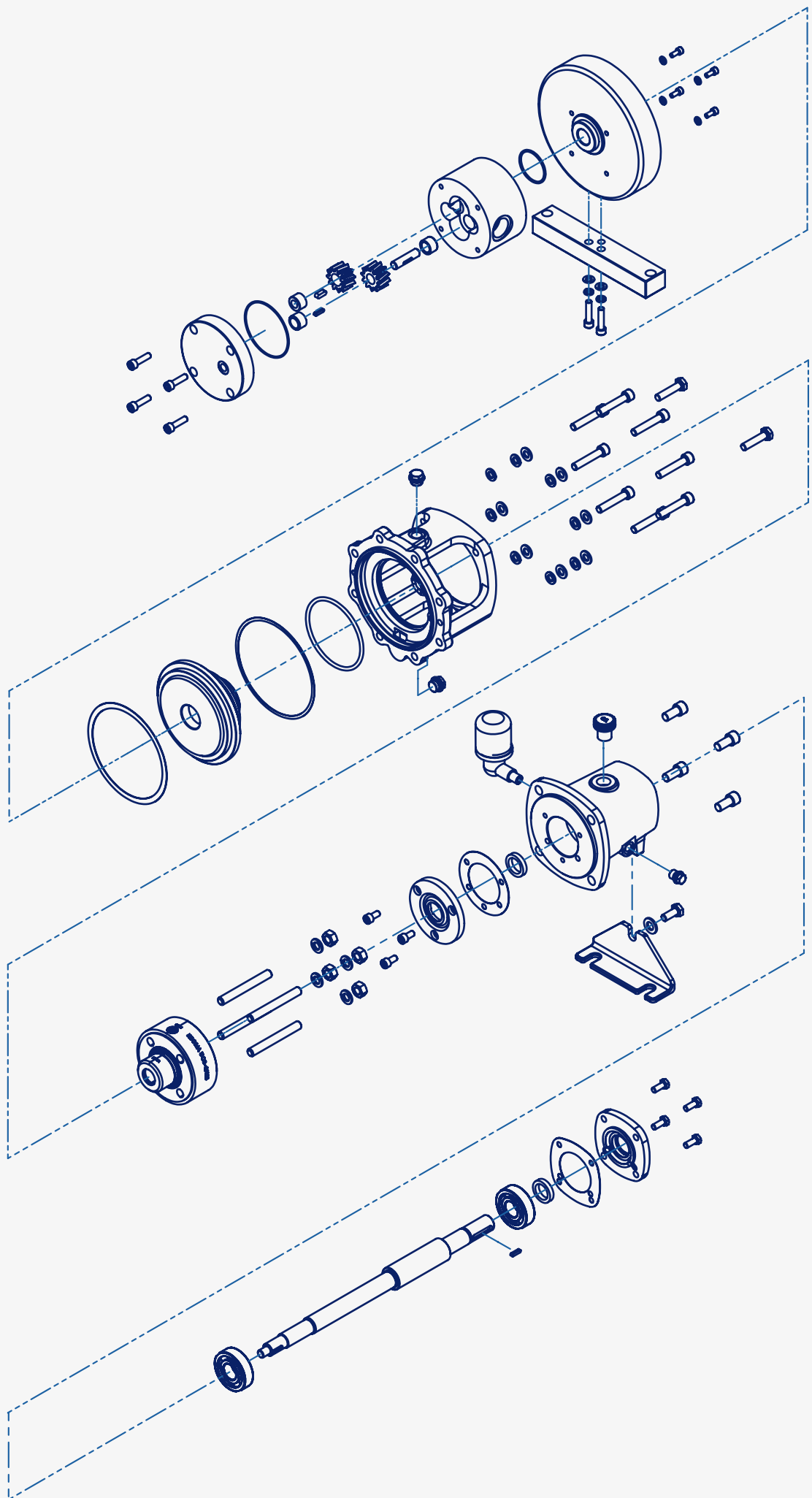


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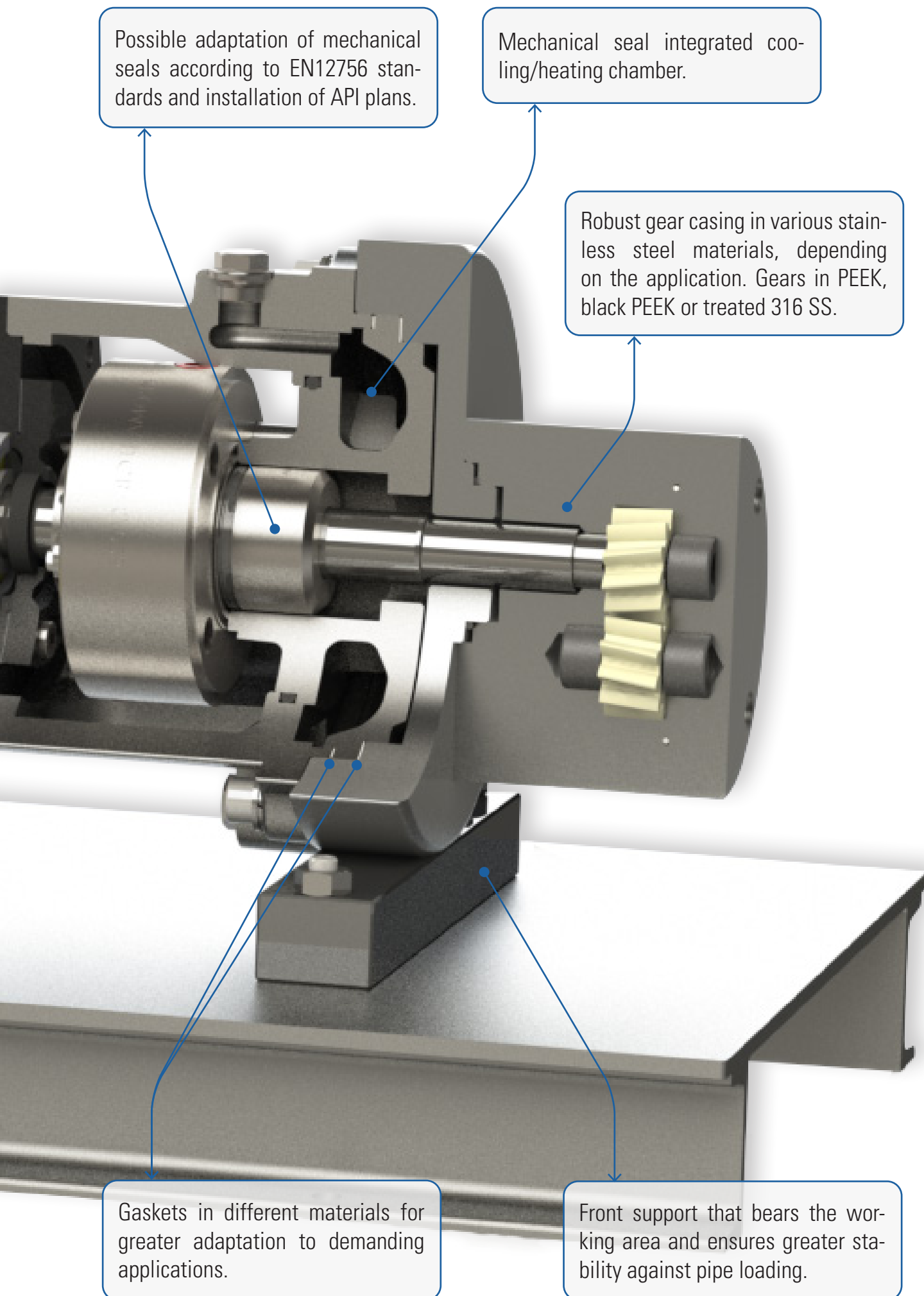


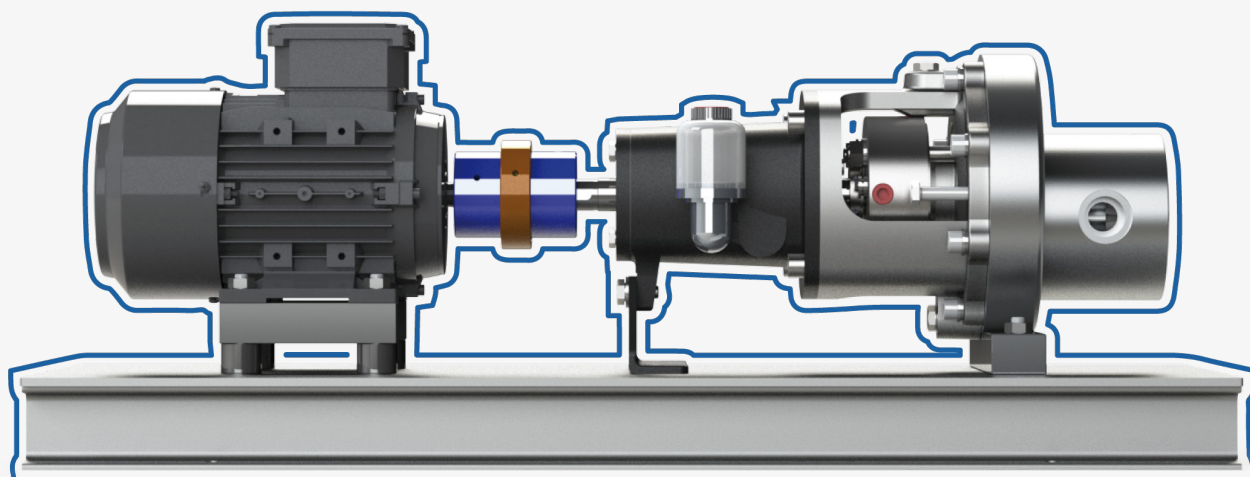
Simple elastic coupling

Integral bearing bracket that ensures the stability of the moving elements of the pump. A constant level oiler is also included to keep the bearings lubricated.

Rear support leg that holds the bearing housing and maintains a correct shaft alignment throughout the assembly.

Baseplate specially engineered to facilitate the installation, dampen vibrations and keep the shaft properly aligned.





RBQP Inox Series

The RBQP Inox Series consists of a set of self-priming external helical gear electric pumps, specially designed to work in chemical process applications, up to 300°C. It can meet the most demanding customer requirements thanks to the possible adaptation of mechanical seals according to EN 12756 standards and the addition of API plans.

Specifications

Materials

Pump casing	316 SS, 904 SS, Hastelloy...
Gears	Black PEEK/treated 316 SS
Pump shaft	316 SS, 904 SS, Hastelloy...
Pump front and back cover	316 SS, 904 SS, Hastelloy...
Mechanical seal and gaskets	According to the application
Bearing bracket and lantern	GG25

Technical data

Motor	Triphasic according to IEC 60034-30 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	4 and 6. 8 on demand.
Level of protection	IP55
Insulation	F class

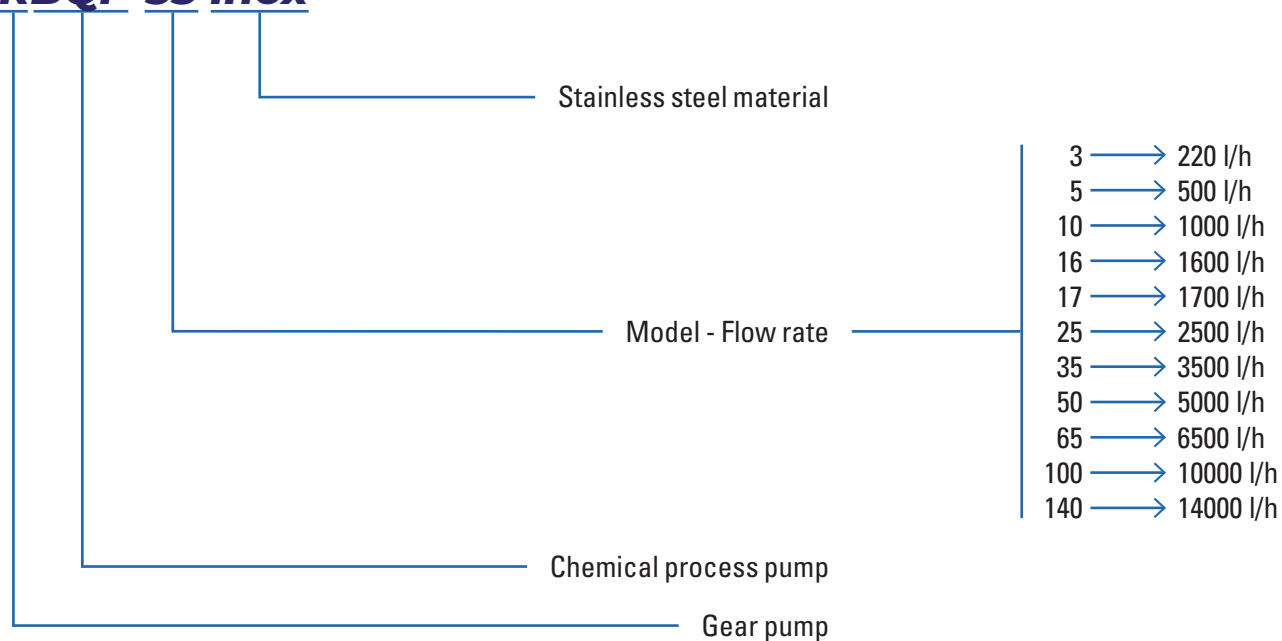
Usage limits

Range of flow rates	Up to 6500 l/h depending on the model
Range of pressures	Up to 10 bar depending on the model
Max. Working pressure	12 bar
Max. Working temperature	300°C according to construction materials

Connections

	Suction	Discharge
RBQP-3 Inox	3/8	3/8
RBQP-5 Inox	3/4	3/4
RBQP-10/16 Inox	1"	1"
RBQP-17/25/35/50/65 Inox	1" 1/4	1" 1/4
RBQP-100/140	DN65	DN65

Nomenclature

RBQP-35 Inox

Model characteristics

Model	Power		Tension	I	n	P _{MAX.}	Flow
	HP	kW	V	A	rpm	kg/cm ²	l/h
RBQP-3 Inox	0,5	0,37	230/400T	2,5/1,5	1450	10	220
RBQP-5 Inox	0,5	0,37	230/400T	2,5/1,5	1450	10	500
RBQP-10 Inox	1	0,75	230/400T	3,6/2,1	1450	10	1000
RBQP-16 Inox	1	0,75	230/400T	3,6/2,1	1450	6	1600
RBQP-17 Inox	2	1,5	230/400T	6,7/3,9	1450	10	1700
RBQP-25 Inox	2	1,5	230/400T	7,1/4,1	950	10	2500
RBQP-35 Inox	3	1,5	230/400T	8,8/5,1	1450	8	3500
RBQP-50 Inox	4	3	230/400T	12,3/7,1	1450	10	5000
RBQP-65 Inox	5,5	4	230/400T	16/9,3	1450	8	6500
RBQP-100 Inox	5,5	4	230/400T	16/9,3	950	10	10000
RBQP-140 Inox	7,5	5,5	230/400T	22,5/13	1450	7	14000



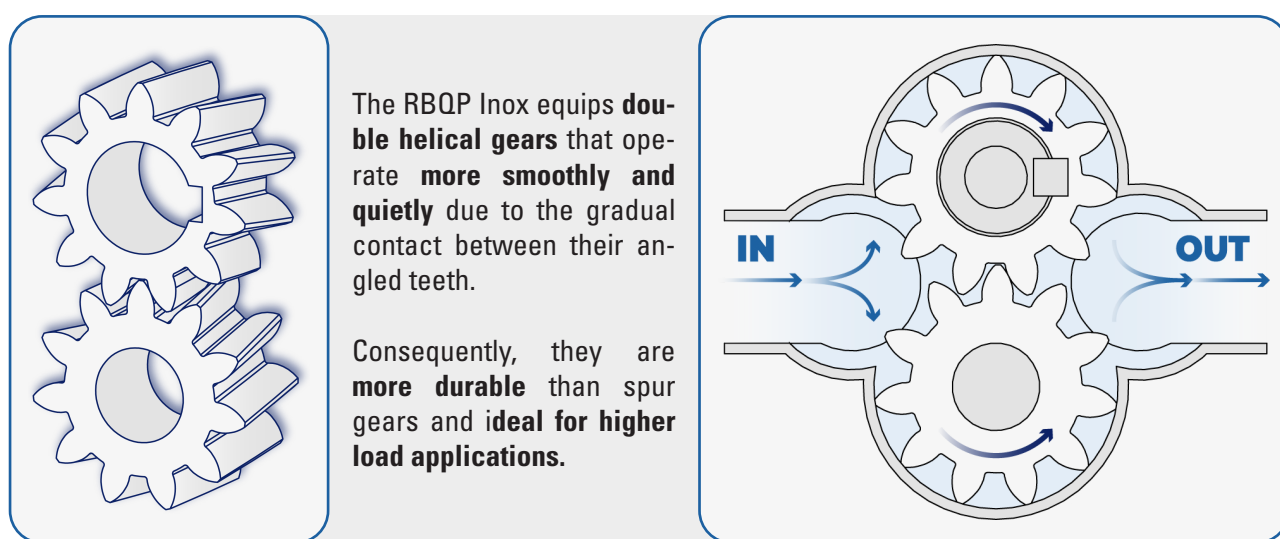
Pump design

Gear casing

Unlike the vast majority of pumps for chemical processes, the RBQP Inox series has been specially designed to work through gears.

External gear pumps are positive displacement pumps, which means that the flow is controlled by the speed of the driving shaft. This allows us to work in a wide range of flow rates and in low flow conditions without losing pressure, unlike a centrifugal pump, which generally suffers cavitation in these kinds of applications.

Therefore, the RBQP Inox is an ideal pump to work in situations where a centrifugal pump would offer a very low efficiency and/or would be forced to deliver a higher flow than required to the installation, having the excess flow to return to the tank.



Sealing solutions

The versatile design of the RBQP Inox allows the adaptation of standardized mechanical seals according to EN12756.

Due to the adaptable machining, and the external space available in the lantern, it is possible to mount internal mechanical seals or external solutions with single or double cartridge, allowing the pump to transfer a wide variety of fluids in a wide range of temperatures.

In addition, the unit permits the addition of different API plans: systems that allow modifying the environment of the mechanical seal with the ultimate goal of preventing or reducing seal failure through different actions such as lubrication, cooling or heating, drainage, pressure or others.

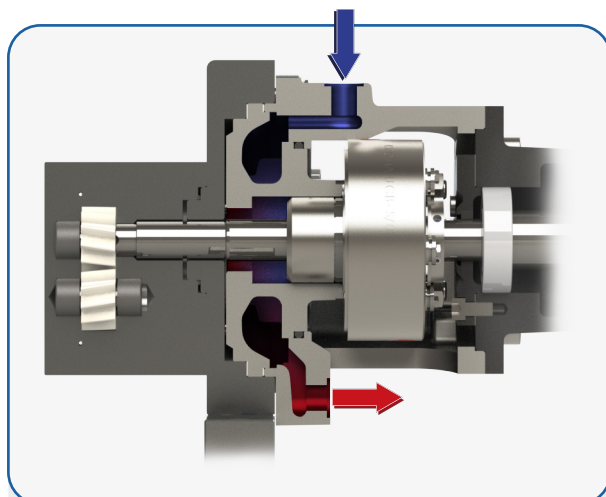


Cooling/heating chamber

The RBQP Inox has a back cover specially designed to form an inner chamber when assembled with the lantern. The chamber has an inlet and outlet for fluid circulation from the outside.

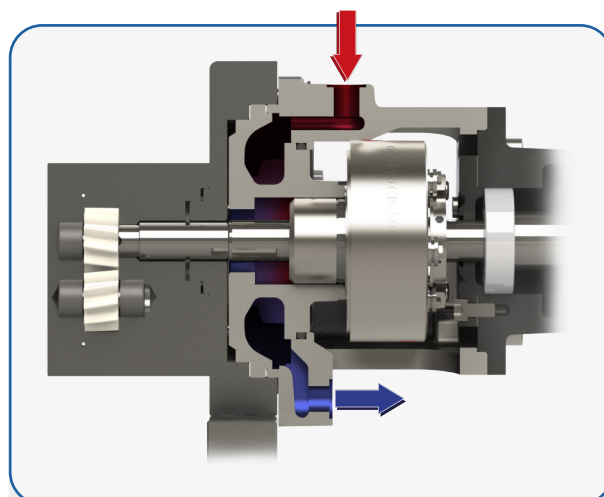
Thus, the options of cooling or heating the shaft sealing area, where the mechanical seal is located, by circulating fluid inside the chamber, are given.

Cooling



In conditions where the fluid is transferred at high temperatures, it is convenient to cool the mechanical seal area down using the integrated inner chamber to prevent unwanted damage to the seal.

Heating



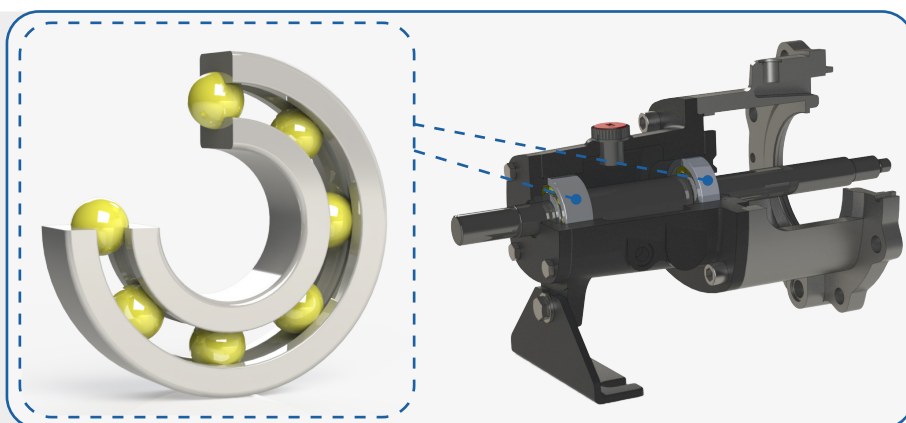
It is useful to heat the contact area between the liquid and the mechanical seal in the case of a liquid that solidifies when filling this cavity and causes dry running of the mechanical seal, which is not properly lubricated.

Pump shaft and bearing bracket

The entire RBQP Inox pump series is equipped with three different sizes of standardized bearing housings that ensure proper shaft support and, consequently, a long service life of the bearings and seals of the unit.

The bearings inside are perfectly lubricated in an oil immersion bath. In addition, the assembly has a filling/draining plug and is supplied with a constant level oiler that provides an ideal environment for the bearings throughout the pump's operation.

By default, the RBQP Inox is mounted with single row deep groove ball bearings. However, they can be replaced by double row ball bearings or roller bearings (for radial loads), or angular contact ball bearings (for axial loads) depending on the application.





Sealing solution

NV-2 Type mechanical seal

Characteristics

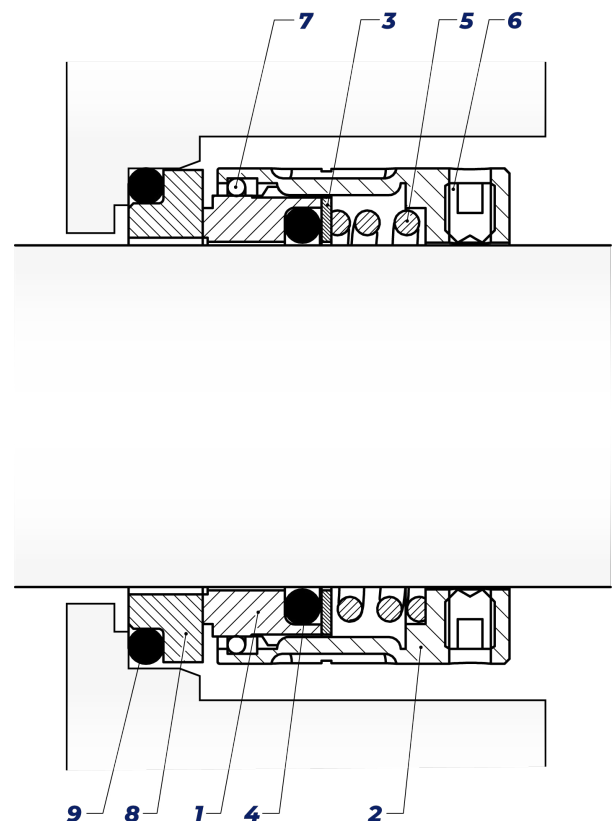
- Modular design. Its components are easily interchangeable and are manufactured in a wide variety of materials for specific applications.
- Reversible. It can rotate in both directions indistinctly.
- Friction faces in monolithic and semi-balanced construction.
- Robustness. The rotating part is fastened to the shaft using setscrews and the torque is transmitted through a solid, machined steel ring.
- Spring. The cylindrical spring design allows the seal to work with loaded liquids without blockage problems.
- Easy assembly. The seal incorporates an indicator to adjust it to the working dimension.
- Self-cleaning. The design of the seal avoids product accumulation 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 to 200°C (depending on secondary seal material).
- vg (Speed): 20 m/s (10 m/s for U1U1).

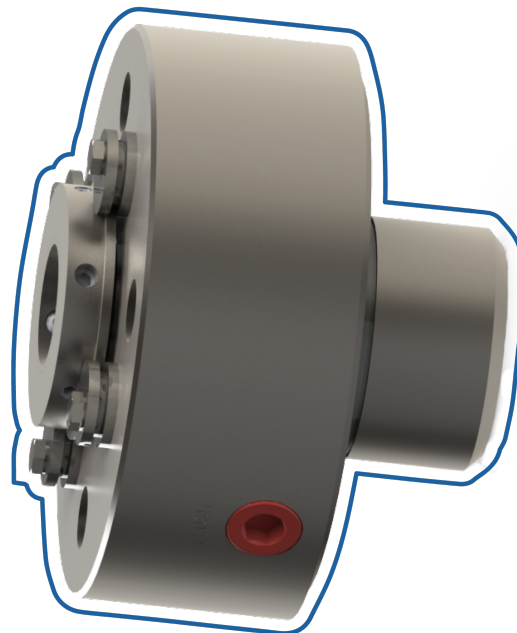
Components breakdown

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)



*UCB-S Type mechanical seal**Characteristics*

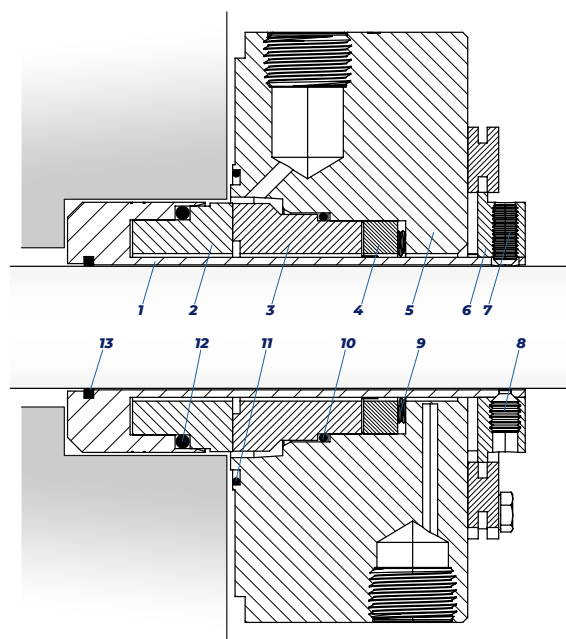
- Single mechanical seal mounted on cartridge, with hydraulically balanced rubbing faces to work with pressure or vacuum.
- Independent direction of rotation.
- Stationary multispring design isolated from the product.
- Includes machined flange with flush, quench or drain connections.
- Compact design and easy external mounting.
- Its design without dynamic elements does not damage the shaft surface, avoiding progressive wearing of the shaft.
- The sealing is complete. Leakage control is total and dripping and consequent product losses are eliminated.
- Greater safety and hygiene for people and the environment.
- Reduced maintenance costs and energy consumption.

*Usage limits*

- P (Pressure): Up to 20 bar
- T (Temperature): -20°C to 220°C (depending on elastomers material)
- vg (Speed): 20 m/s depending on PV factor

Components breakdown

REF	Designation	REF	Designation
1	Sleeve	8	Retaining ring
2	Rotary seal face	9	Gasket
3	Stationary seal face	10	Gasket
4	Spring support	11	Retaining ring
5	Connecting plate	12	Gasket
6	Mounting accessory	13	Pin
7	Fixing screw		





UCD-S Type mechanical seal

Characteristics

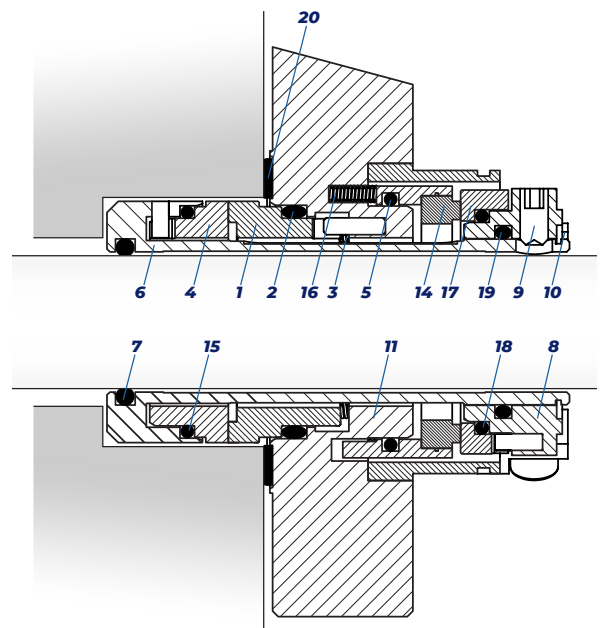
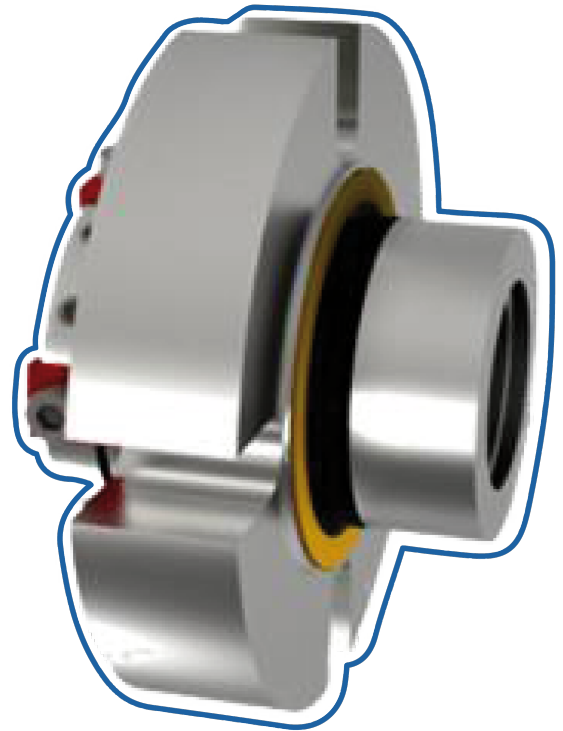
- Mechanical seal mounted on double cartridge, with hydraulically balanced rubbing faces to work with pressure or vacuum.
- Independent direction of rotation.
- Includes machined flange with flush, quench or drain connections through auxiliary fluids.
- Compact design and easy external assembly.
- Its design without dynamic elements does not damage the shaft surface, avoiding progressive wear of the shaft.
- The sealing is very complete. Leakage control is total and dripping and consequent product losses are eliminated.
- Greater safety and hygiene for people and the environment.
- Reduced maintenance costs and energy consumption.

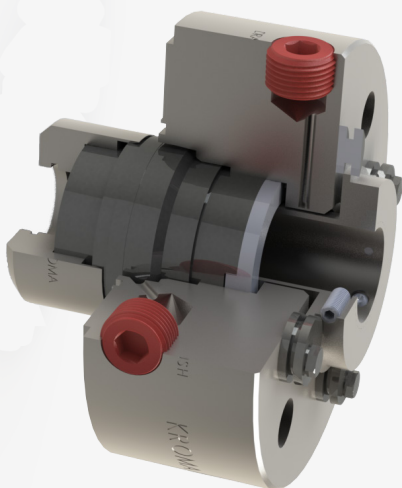
Usage limits

- P (Pressure): Up to 25 bar depending on PV.
- T (Temperature): -40°C up to 250°C (depending on elastomer material).
- vg (Speed): Up to 16m/s as a function of PV factor.

Components breakdown

REF	Designation	Material
1	Inner stationary ring	Silicone carbide Q1
2, 5, 7	Inner o-rings	FPM (Viton)
3, 16	Springs	CrNiMo-steel
4	Inner stationary ring	Silicone carbide Q1
6	Sleeve	316 Stainless steel
8	Draging ring	316 Stainless steel
9	Fixing screw	316 Stainless steel
10	Safety ring	316 Stainless steel
11	Flange	316 Stainless steel
14	Outer stationary ring	Carbon
15, 18, 19	Outer o-rings	FPM (Viton)
17	Outer rotating ring	Silicone carbide Q1
20	Flange gasket	PTFE





iCartridge control module

The latest innovation for our chemical process pump sealing is the intelligent cartridge, which equips the **iCartridge module**.

The iCartridge module is an electronic component that is installed in ISO, DIN and API standard cartridge seals to monitor three crucial parameters that have a direct impact on the life cycle of the seal: temperature, pressure and vibration.

Thanks to the iCartridge module, it will be possible to monitor pump operation to detect changes in service and avoid unexpected emergency shutdowns.

Temperature sensor

The temperature sensor is based on contact measurement technology. It is able to measure temperatures up to 200°C and even withstand exposure to higher temperatures. The sensor electronics are located inside the flange and isolated from high temperatures.

Pressure sensor

The pressure sensor is installed to measure one of the most important values in a pump, the pressure in the sealing chamber. Considering the application possibilities of the iCartridge module, a high quality sensor capable of measuring up to 50 bar pressure is used. As with the temperature sensor, the electrical components are isolated and located inside the flange. The sensor is made of stainless steel and can withstand temperatures up to 150°.

Vibration sensor

In order to provide the user with as much information about seal performance as possible, the iCartridge module is equipped with a triaxial vibration sensor. With a sensitivity of only 2g of pressure, the vibration sensor can detect movement and display the status of the equipment. The sensor is located on the flange and is useful for measuring vibrations throughout the pump.

Live data reading

The built-in APP offers different possibilities to read the data. The first is real-time monitoring from the iCartridge module. The reading interval can be adjusted in each application to achieve optimal battery performance.

Data registration

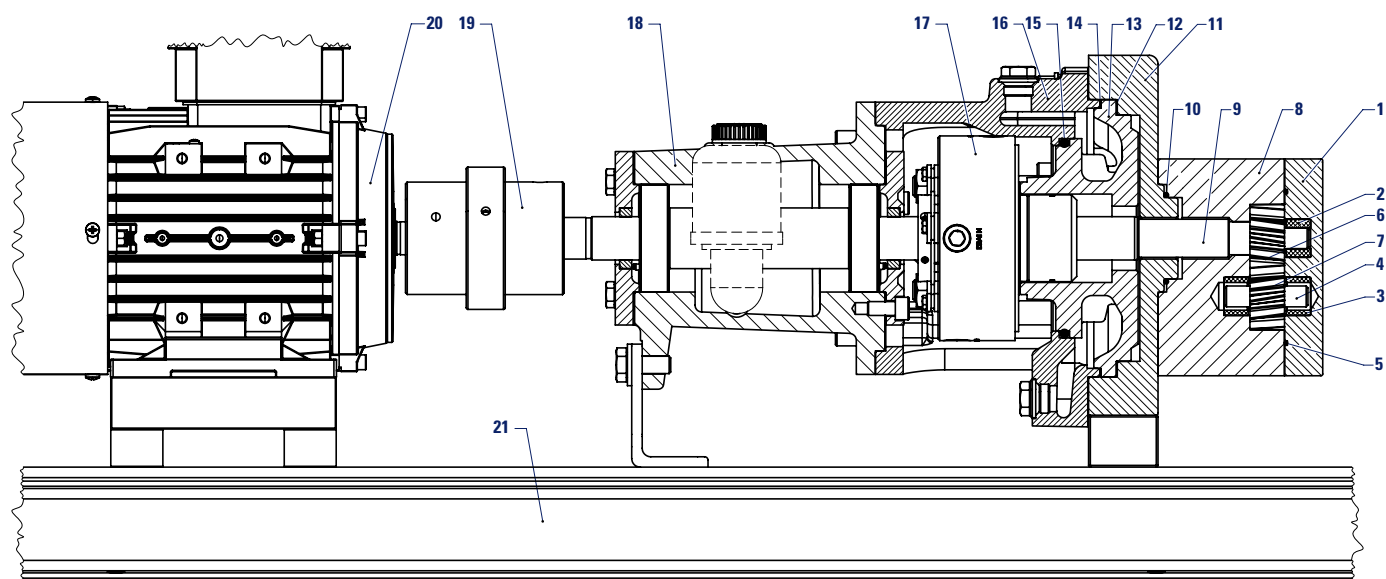
Along with the real time monitoring option you can also save these readings in a .csv file. The APP is designed to always work with the same file. This allows you to save all readings on your device for later analysis.

Data storage

The iCartridge module can be programmed to store sensor readings at configurable intervals using the internal SD card. At any time you have the option to store the recorded data using the APP or by simply removing the SD card.

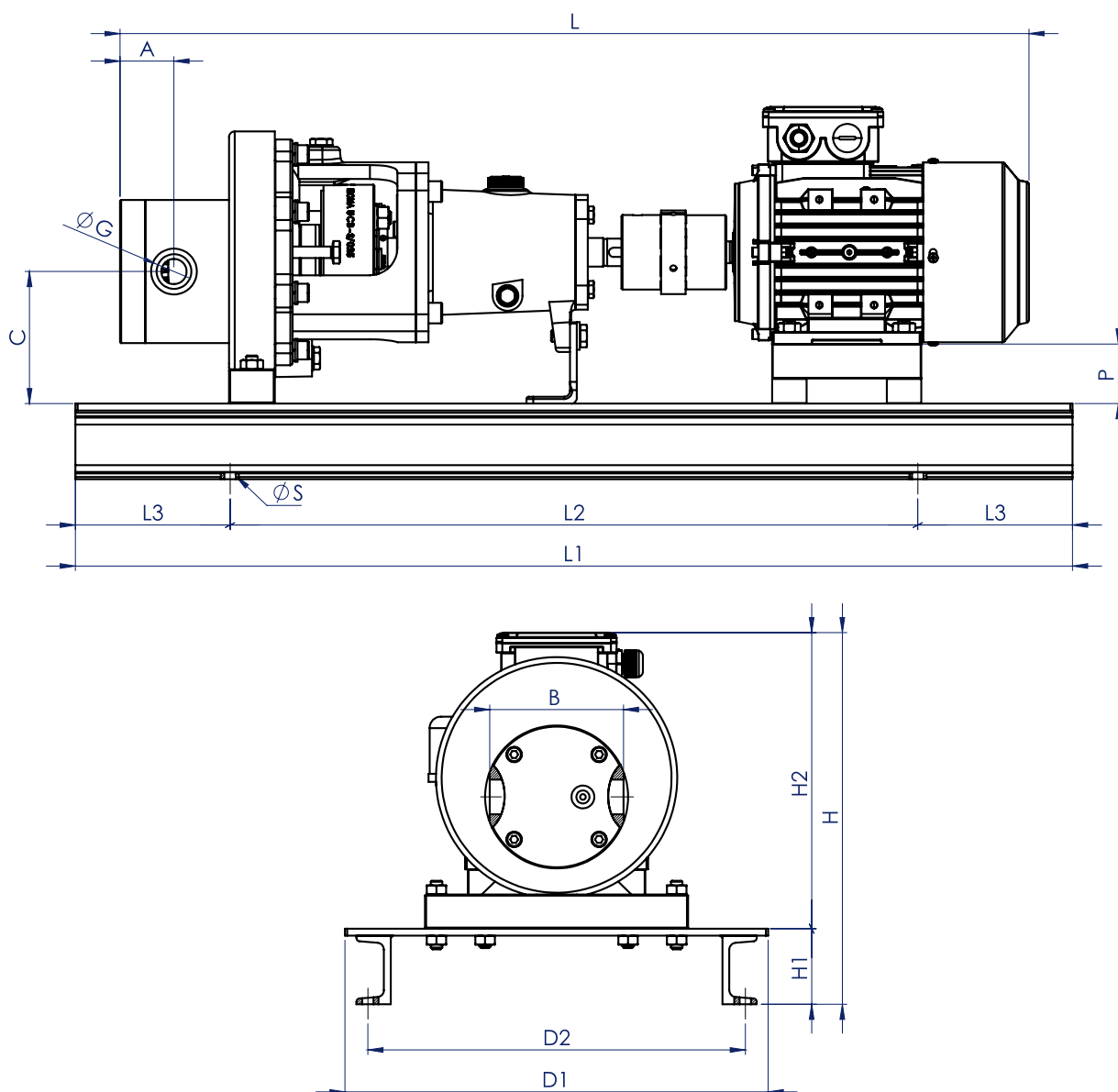


Exploded view of components



REF	Designation	REF	Designation
1	Front cover	12	Flange-Back cover gasket
2	Driving shaft bearing	13	Back cover
3	Driven shaft bearing	14	Back cover-Lantern gasket
4	Driven shaft	15	Back cover-Lantern o-ring
5	Casing-Front cover o-ring	16	Lantern
6	Helical driving gear	17	Mechanical seal
7	Helical driven gear	18	Bearing bracket
8	Pump casing	19	Elastic coupling
9	Drive shaft	20	Motor
10	Flange-Casing o-ring	21	Baseplate
11	Casing-lantern flange		

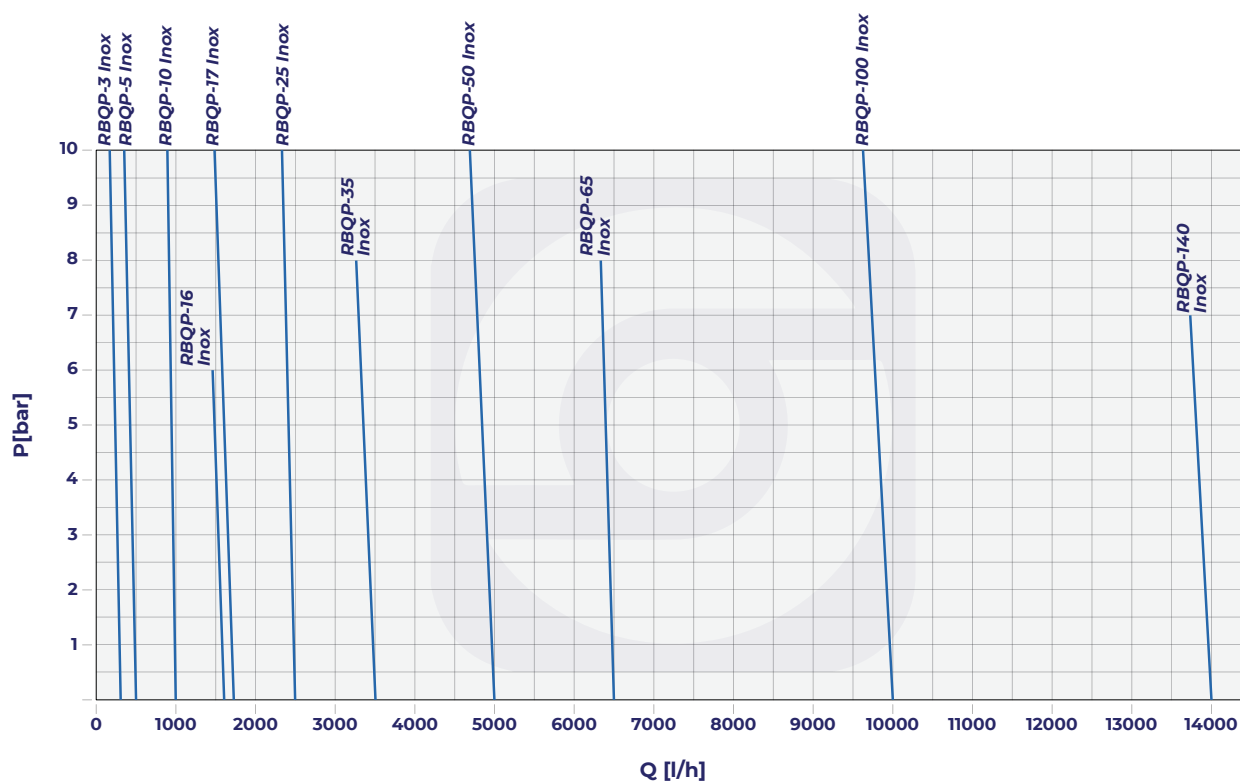
Dimensions



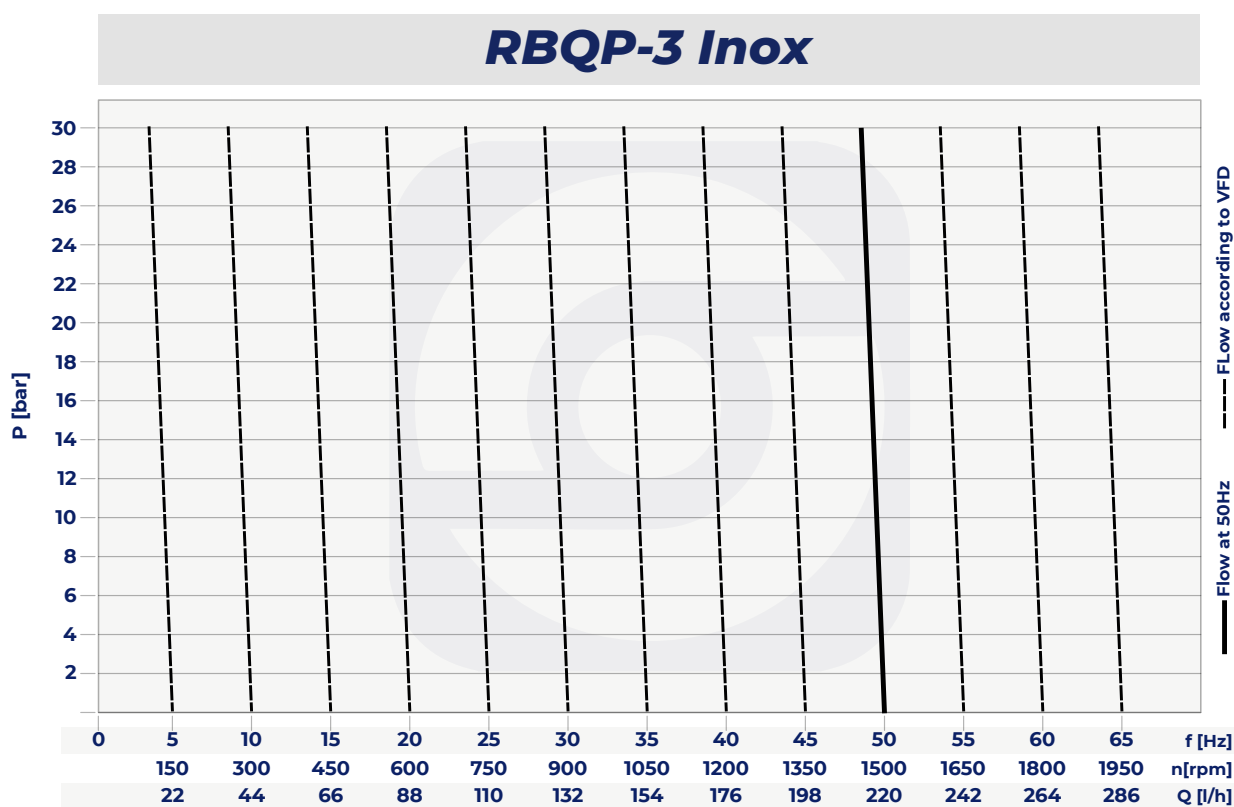
Model	Pump dimensions							Baseplate and anchoring dimensions						
	L	H	H2	A	B	C	G	L1	L2	H1	L3	D1	D2	S
RBQP-3 Inox	741,5	315	249	38	117	119	G 3/8	870	600	66	135	370	330	10
RBQP-5 Inox	741,5	315	249	42	117	119	G 3/4	870	600	66	135	370	330	10
RBQP-10 Inox	789	328	262	47	117	115,25	G 1	870	600	66	135	370	330	10
RBQP-16 Inox	789	328	262	47	117	115,25	G 1	870	600	66	135	370	330	10
RBQP-17 Inox	1060	360	292	81	157	133,65	G 1 1/4	1100	760	68	170	425	385	10
RBQP-25/35 Inox	1095	379	311	81	157	133,65	G 1 1/4	1100	760	68	170	425	385	10
RBQP-50 Inox	1095	379	311	81	157	133,65	G 1 1/4	1100	760	68	170	425	385	10
RBQP-65 Inox	1095	388	320	81	157	133,65	G 1 1/4	1100	760	68	170	425	385	10

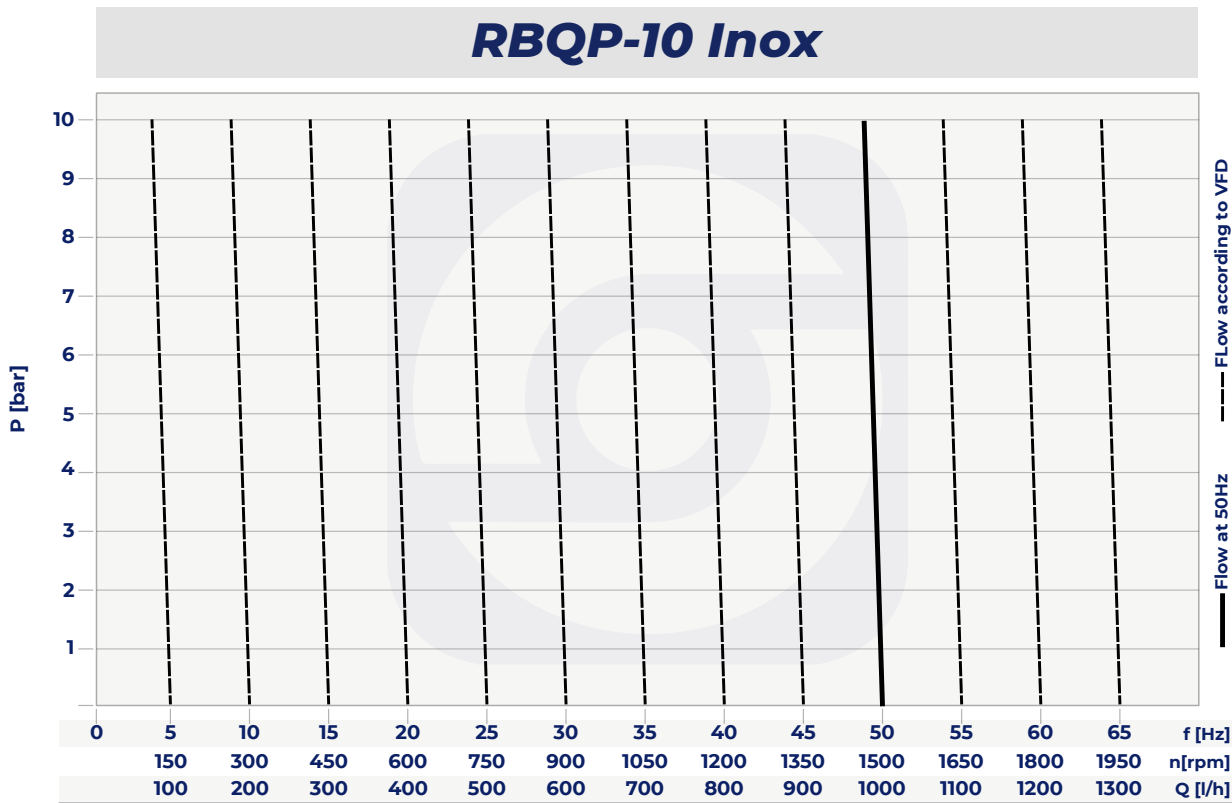
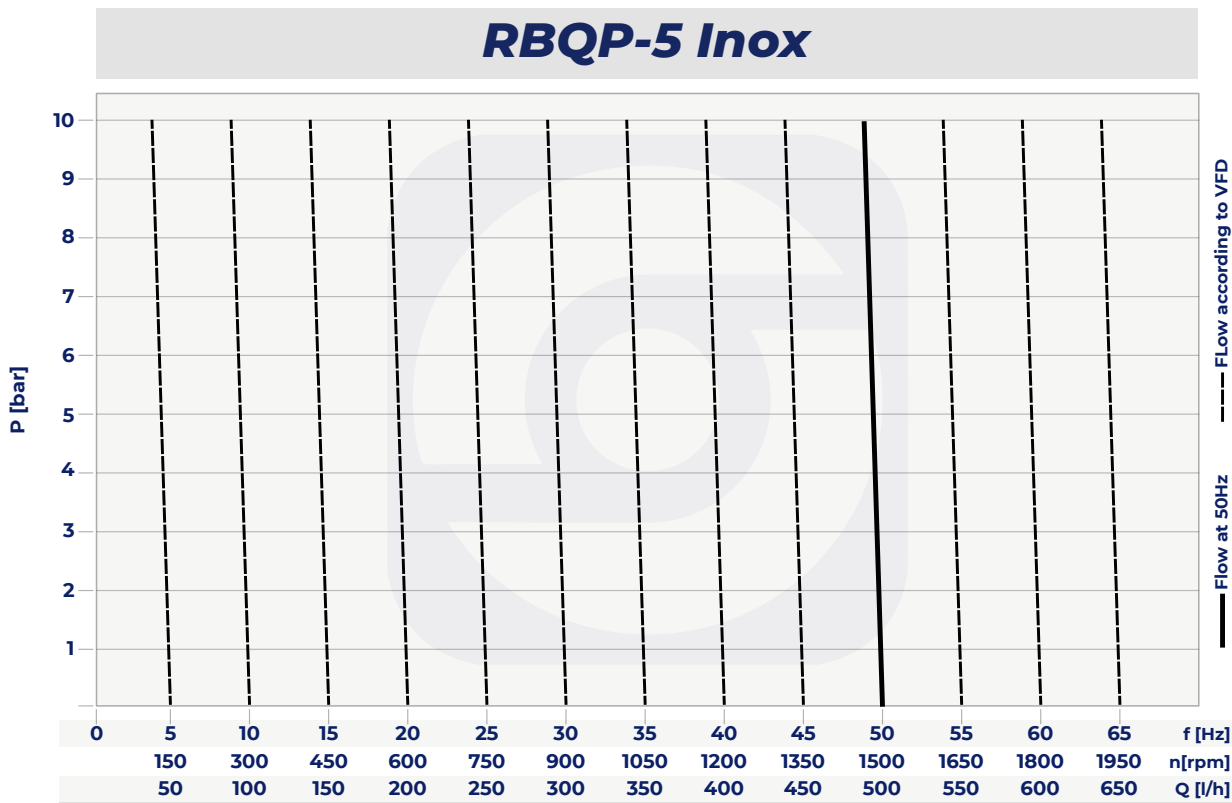


Pump selection curves



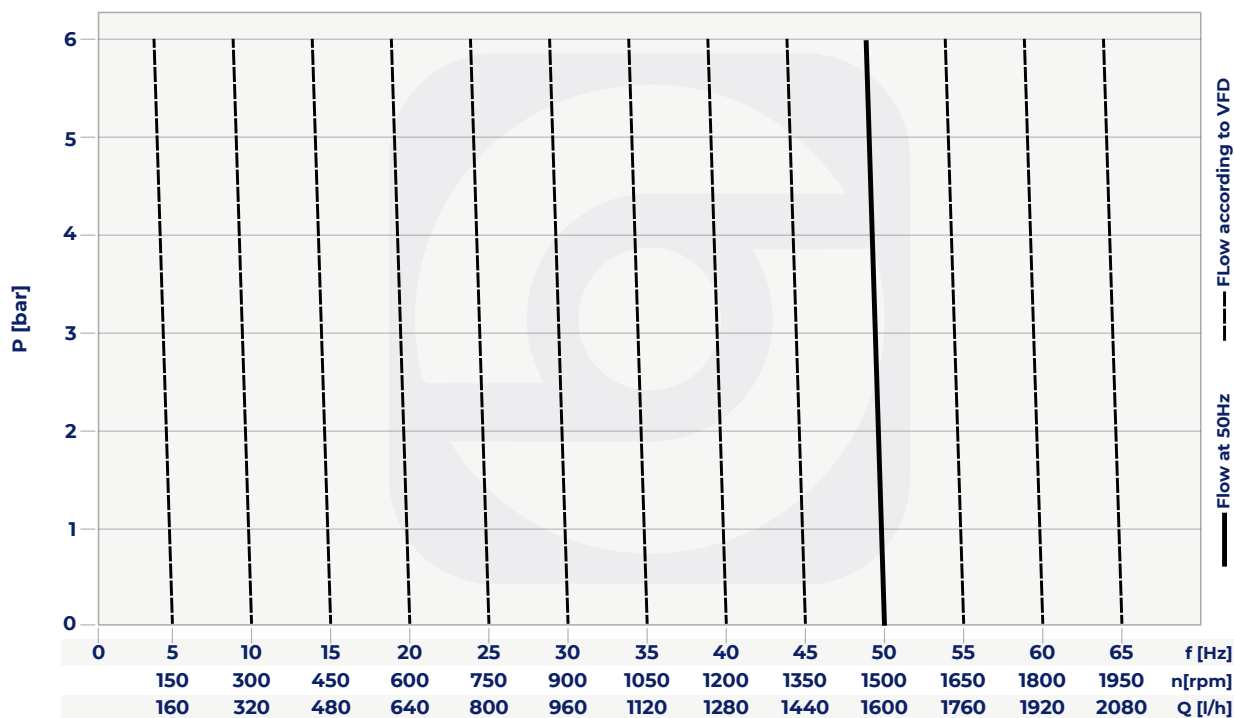
Performance curves



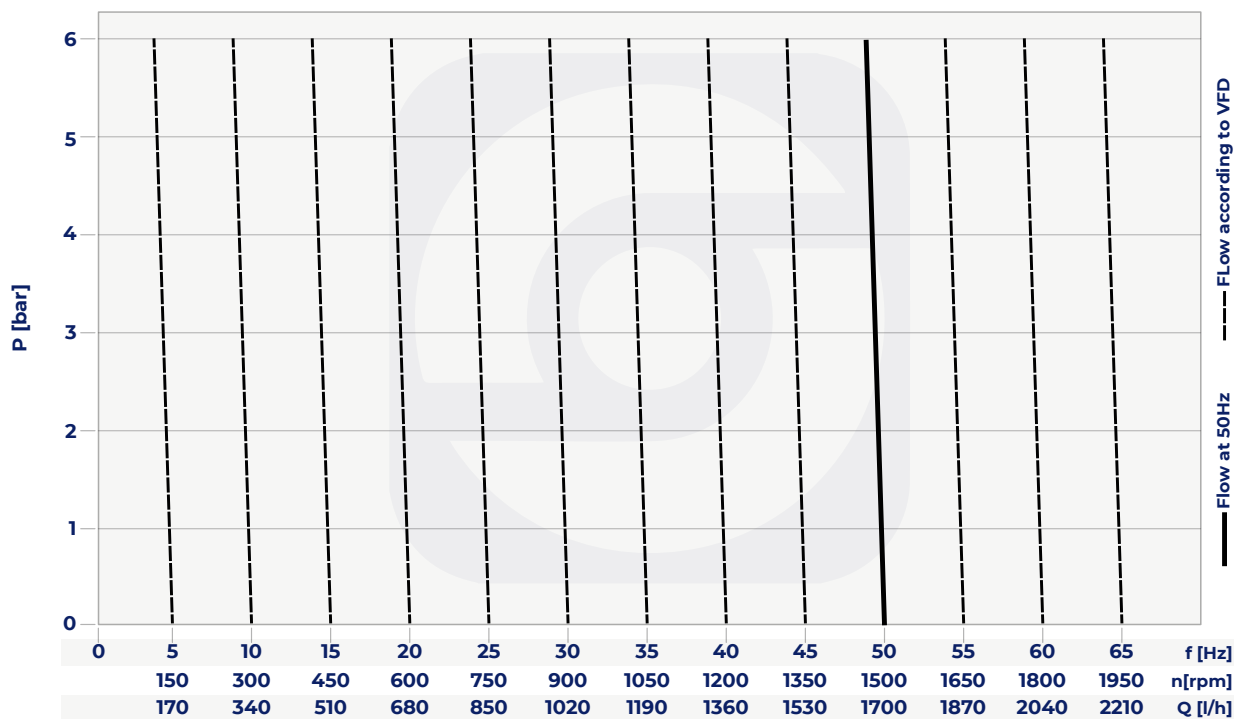


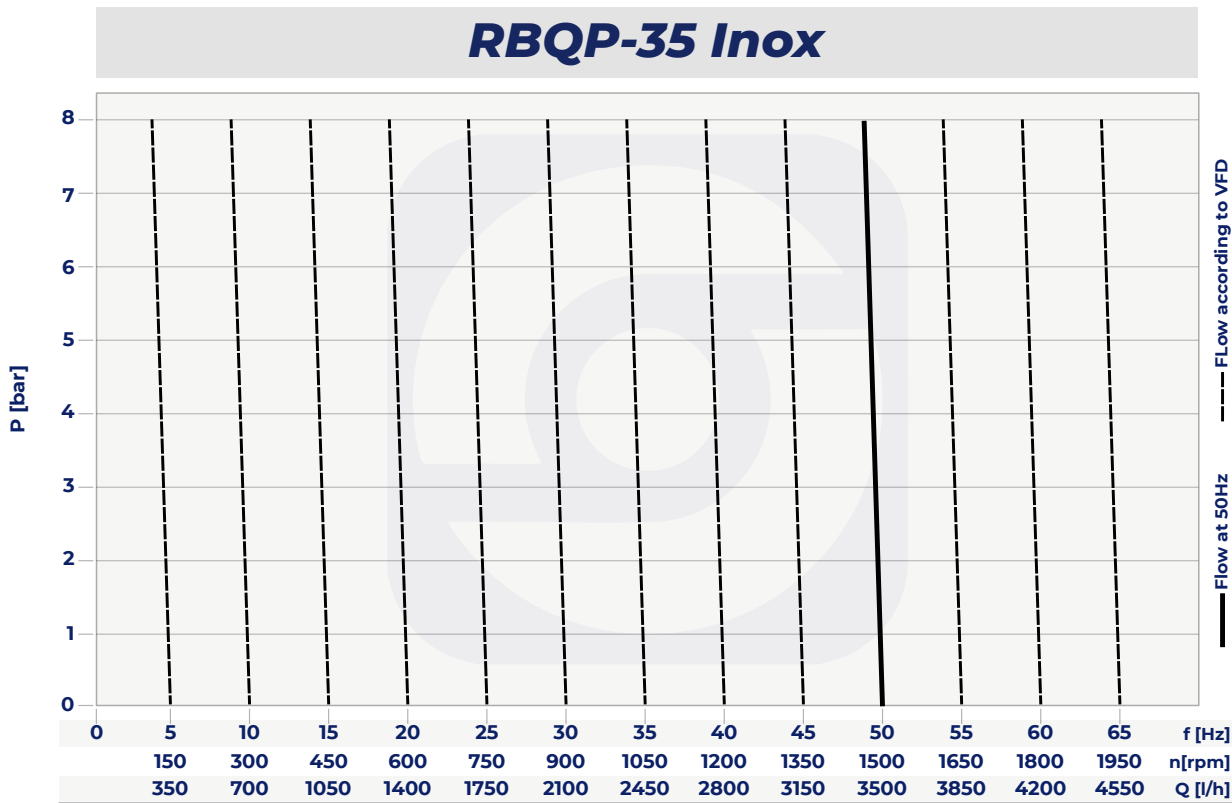
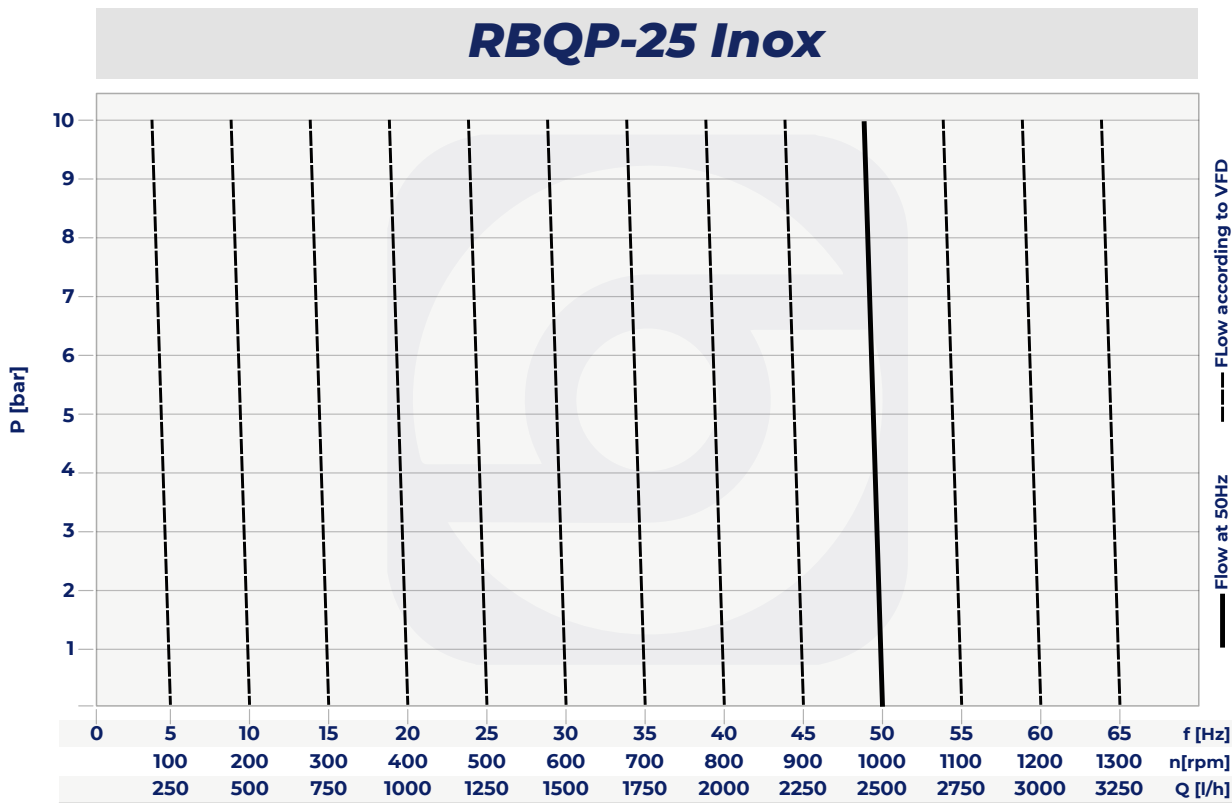


RBQP-16 Inox



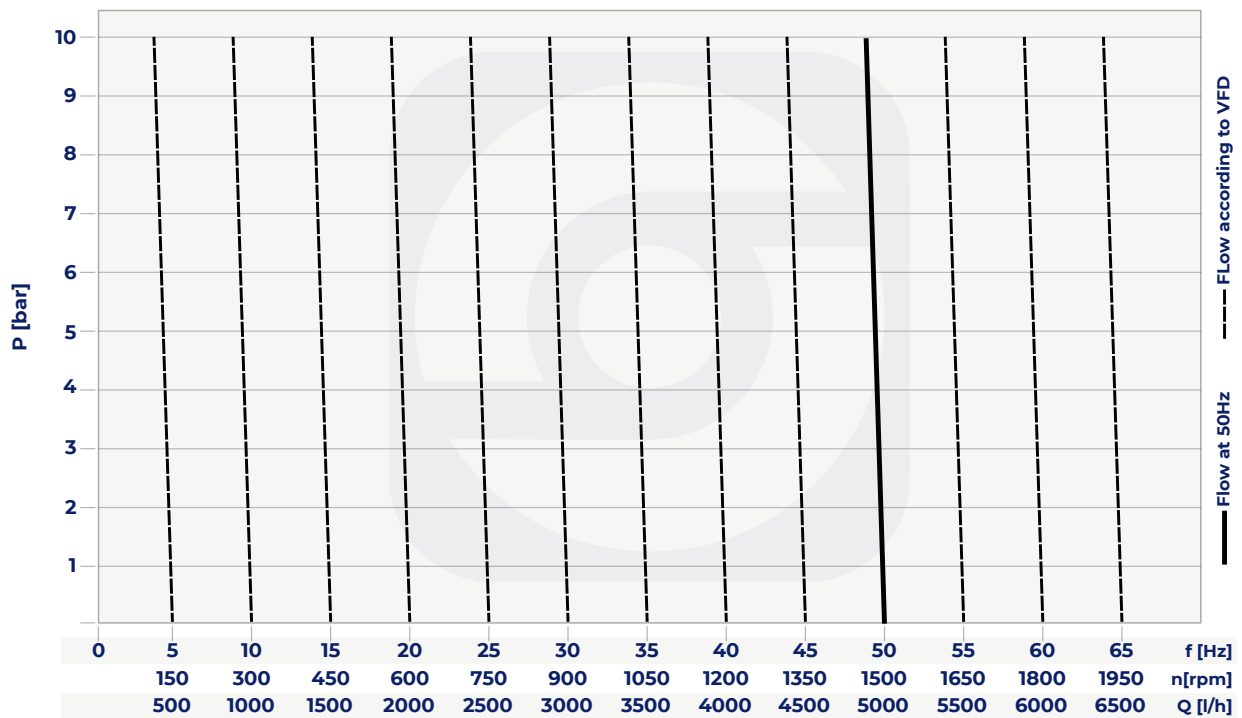
RBQP-17 Inox



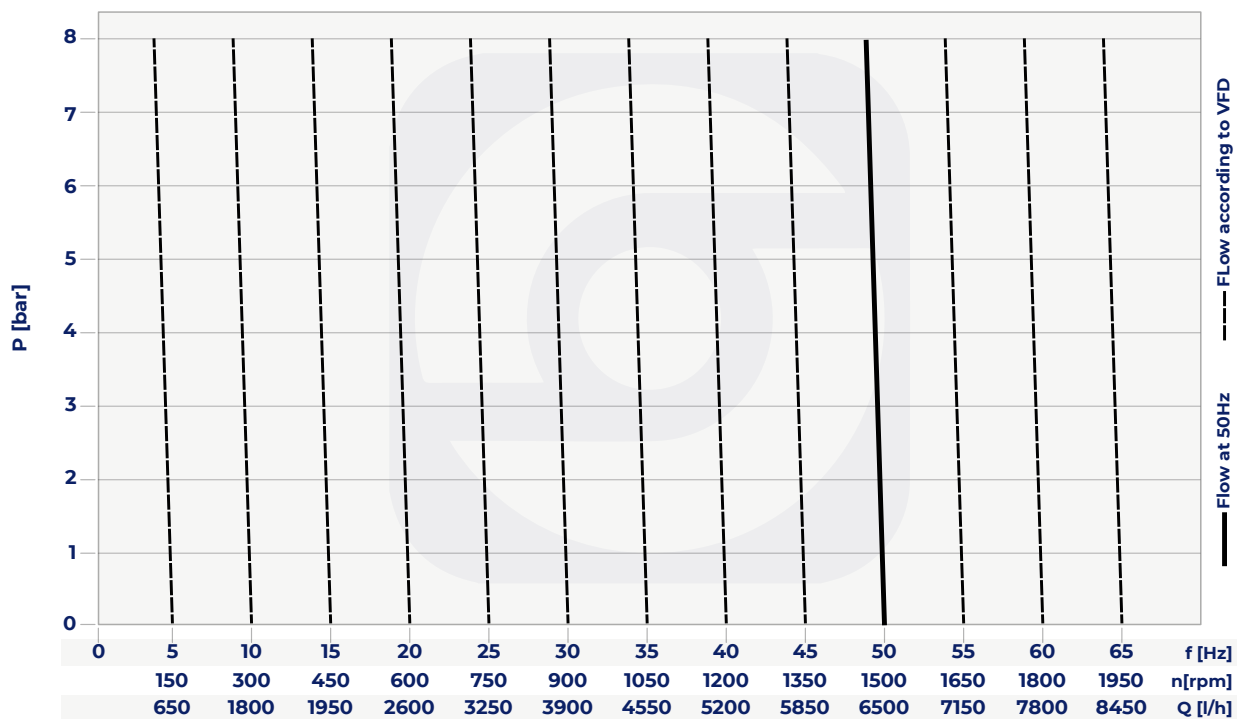


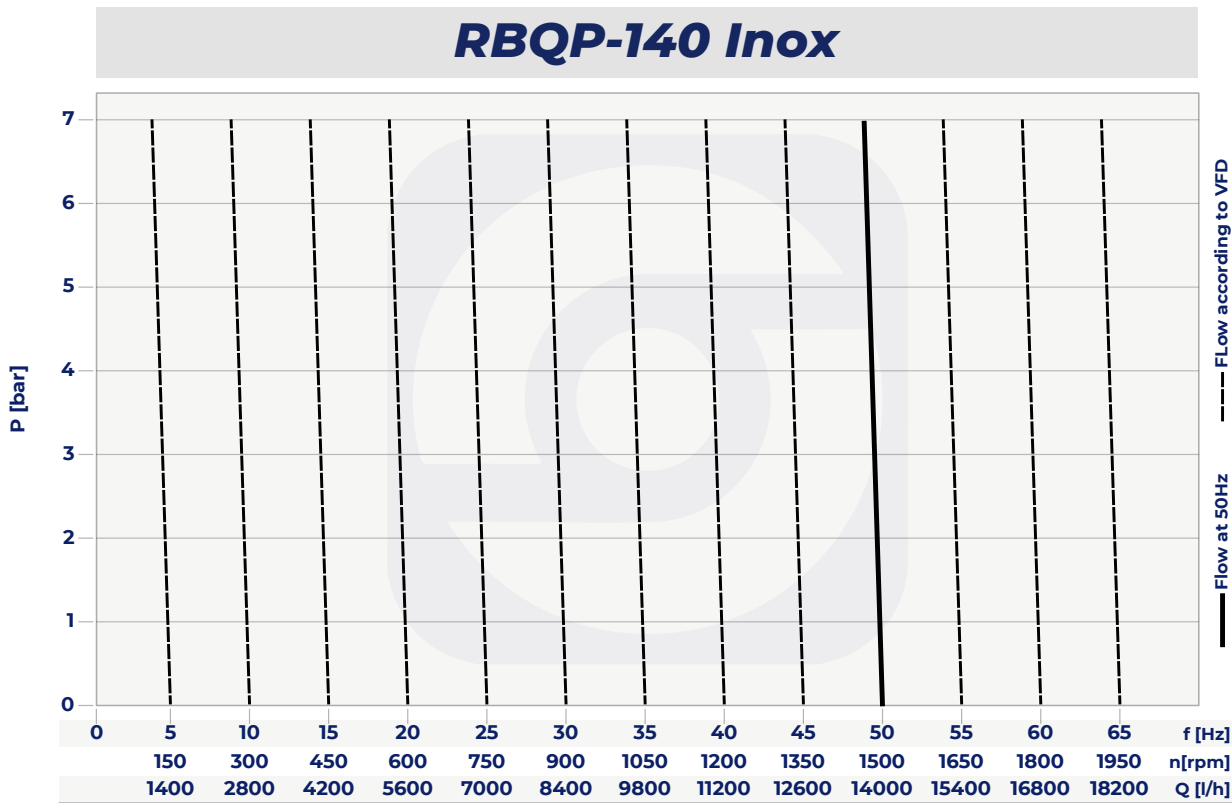
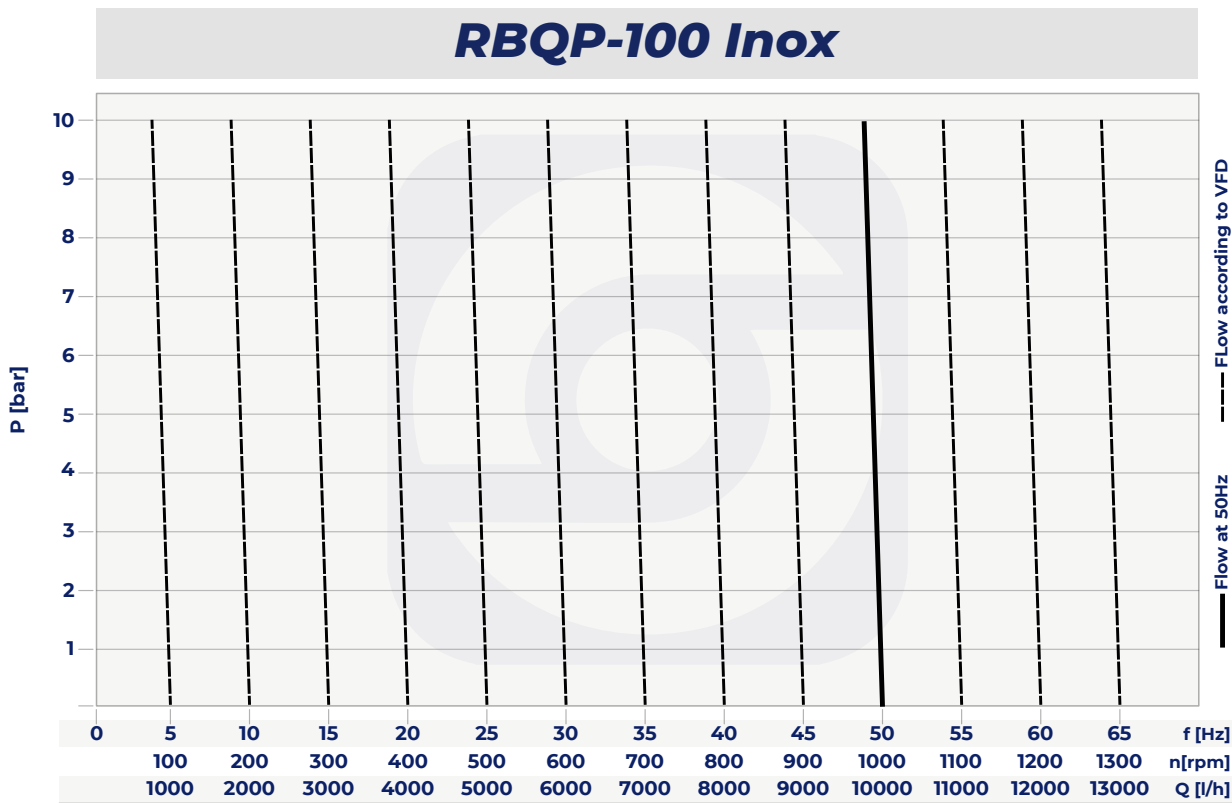


RBQP-50 Inox



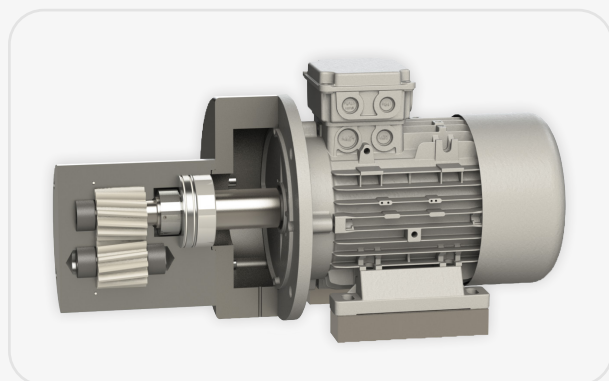
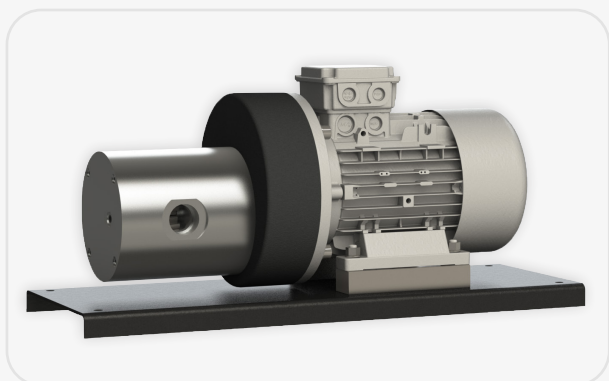
RBQP-65 Inox







*If you need a smaller size and monoblock unit for chemical process, we recommend the **R Inox Series!***



Description

- Self-priming external helical gear pump specially designed for chemical process applications.
- Suitable for transferring a wide variety of fluids such as alcohols, bases, solvents, acids, oils and many more.
- Compact monoblock construction with rigid coupling. Optionally on baseplate.
- Internal mechanical seal that adapts to the most demanding applications due to its versatility of construction materials.

Materials

Pump Casing	316 SS, 904 SS, Hastelloy...
Gears	Black PEEK or treated 316 SS
Pump shaft	316 SS, 904 SS, Hastelloy...
Pump cover	316 SS, 904 SS, Hastelloy...
Sealing solution	Mechanical seal or lip seal
Motor flange	Ductile cast iron

Usage limits

Range of flow rates	From 220 to 6500 l/h
Range of pressures	Up to 10 bar depending on the model
Max. working pressure	12 bar
Max. working temperature	150°C according to construction materials

Technical data

Motor	Triphasic according to IEC 60034-30 standards
Efficiency	- IE2 or IE3 for powers > 1CV - IE1 if the power < 1CV - It can be supplied up to IE5
Tension	- Three-phase 230/400 V $\pm$ 10% up to 5,5 CV - Three-phase 400/690 V $\pm$ 10% from 7,5 CV
Poles	4 and 6. 8 on demand.
Level of protection	IP55
Insulation	F Class

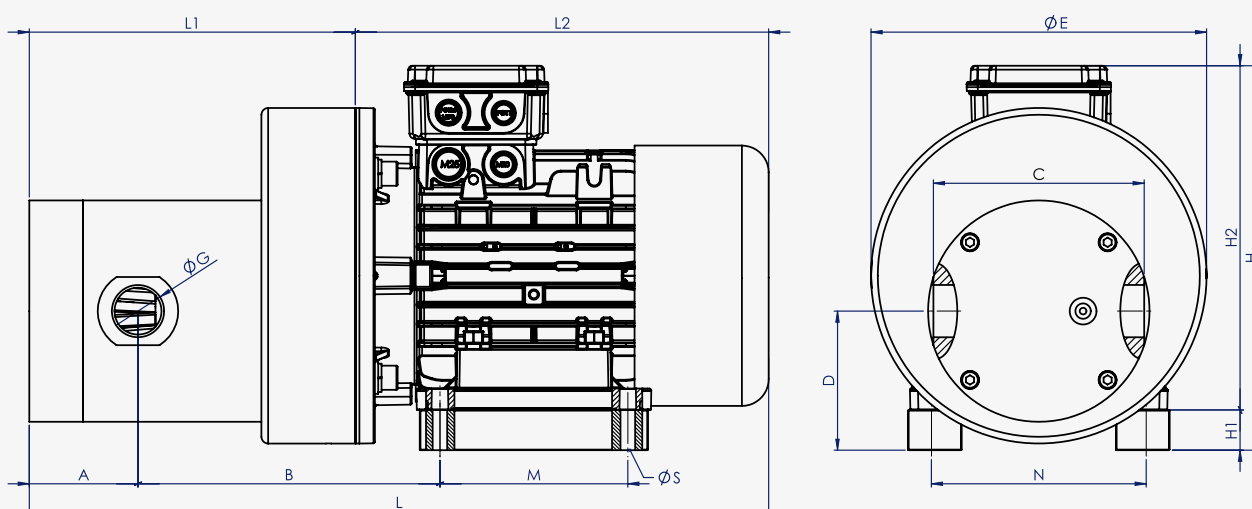
Connections

	Suction	Discharge
R-3 Inox	3/8	3/8
R-5 Inox	3/4	3/4
R-10/16 Inox	1"	1"
R-17/25/35/50/65 Inox	1" 1/4	1" 1/4

Model characteristics

Model	Power		Tension	I	n	P _{MAX.}	Flow
	CV	kW	V	A	rpm	kg/cm ²	l/h
R-3 Inox	0,5	0,37	230/400T	2,5/1,5	1450	10	220
R-5 Inox	0,5	0,37	230/400T	2,5/1,5	1450	10	500
R-10 Inox	1	0,75	230/400T	3,6/2,1	1450	10	1000
R-16 Inox	1	0,75	230/400T	3,6/2,1	1450	6	1600
R-17 Inox	2	1,5	230/400T	6,7/3,9	1450	10	1700
R-25 Inox	2	1,5	230/400T	7,1/4,1	950	10	2500
R-35 Inox	3	1,5	230/400T	8,8/5,1	1450	8	3500
R-50 Inox	4	3	230/400T	12,3/7,1	1450	10	5000
R-65 Inox	5,5	4	230/400T	16/9,3	1450	8	6500

Pump dimensions



Model	General dimensions												Anchorage		
	L	L1	L2	H	H1	H2	A	B	C	D	ØE	ØG	M	N	ØS
R-3 Inox	397	167	230	208	20	188	38	166,5	117	78	160	3/8	90	112	7
R-5 Inox	397	167	230	208	20	188	42	170,5	117	78	160	3/4	90	112	7
R-10 Inox	432	177	255	240	30	210	47	180	117	93,25	200	1"	100	125	10
R-16 Inox	432	177	255	240	30	210	47	180	117	93,25	200	1"	100	125	10
R-17 Inox	528	233	295	258	30	228	47	208	157	93,65	200	1"1/4	125	140	10
R-25/35 Inox	568	243	325	290	30	260	81	225	157	103,65	200	1"1/4	140	140	12
R-50 Inox	568	243	325	290	30	260	81	225	157	103,65	200	1"1/4	140	140	12
R-65 Inox	568	243	325	290	30	260	81	225	157	103,65	200	1"1/4	140	140	12



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