



Rotary Screws Pumps





The new pumps series production model 2O represents the evolution of one hundred years of experience in design and construction of twin screws rotary pumps with internal or external timing device.

The new series has been completely designed and engineered to supply extremely reliable pumps, even if the working conditions are critical.

Thank to computer aid the hydraulic profile, the components and the dimensions are fully optimized. That means a compact and solid construction with an easy to repair feature.



The pumps series production model 2O are extremely versatile and can easy meet customer's requirements. The wide range of models, materials of construction and assemblies, for any specific applications, offer a reliable solutions in accordance with API 676 standard too.

The pumps series production model 20 are provided with a wear resistant inner casing for long life and trouble free operations. The inner casing, cast type, can be supplied in a wide range of materials to match fluid characteristics. The outer pump casing is of compact design type and provided with ample flow passages to minimize the frictions and increase the efficiency. The casing is designed for a working pressure up to 20 bar at the maximum temperature of 200°C. Special features with cooling or heating chamber are also available on request. The nozzles are flange type in accordance with ISO or ANSI standard. The nozzles positions are IN- LINE as standard, SIDE-TOP are on request

All gaskets are confined O-ring type, supplied in different synthetic plastic materials. Spiral wound gaskets can be also supplied for high temperature.

Screw rotors are single bar piece, forged type. On the screw rotor, non driving, are located the timing gear.

The timing position of the screws do not required any adjustment since the timing gears are positioned by keys, so that the screws never touch with one to another. Gears have hardened and rectified teeth profiles to allow high precision coupling and silent running.

Oversized roller bearings series NU on the timing gears side and ball bearing angular contact type on the coupling side are fitted. The bearings can be easily removed to allow mechanical seal replacement.

The lubrication of the bearing is grease type on the coupling side and oil type at the timing gears side. Oil lubrication for both side is also available, including external circulation if required. A wide range of solutions about bearings lubrication and protection are available including V-ring up to bearing protector IP66.

All mechanical seal are supplied in accordance with API682 standard. Cartridge type mechanical seal are available on request.

All pumps can be supplied with relief valve API520 standard.





The pump is timed twin screw rotary type and it is composed by a couple of rotor axes, with opponent coils, with mutual special outline that work inside a chamber set in the pump casing. On every rotor, made in one bar, two contrasted and synchronized screws are realized to balance

every hydraulics thrust, and through external device, gear couple with the rotors are sincronized together.

The pumped up fluid goes into the pump casing from the aspiration flange and then divided in two

different parts, after it is aspired by the screws and pushed in axial way toward the delivery flange.

The special opposed screws profile create during the

chambers rotations which constantly push without beats toward the delivery pump, in this way, the pump is able to

transport every kind of fluid independently from the fluid viscosity. The synchronisme device, timing gears, prevents any metallic contact during rotation and enable the pumping of nonlubricating fluids as well as aggressive media. This design also allows

dry running and

dry running and selfpriming





Twin screws pumps (PD pumps) create flow, centrifugal pumps create pressure. In a PD pump, flow is created by enclosing a volume at suction, moving it to discharge, and releasing it. Pressure is created by the system's response to flow. If delivery pressure is lower than rated, the flow would exit without any problem for the pump..

Centrifugal pumps create pressure by first imparting velocity to the fluid with the impeller, then converting the velocity to pressure with the volute. The centrifugal pump can not be work at lower pressure than rated, and If there was no discharge flange connection, noise and vibrations starting and centrifugal pump shall be broken quickly.

If the viscosity increase, the centrifugal pumps reduce its performance (loss of delivery pressure and capacity) and increase a absorbed power.

In a PD pump delivery pressure is indipendend from the viscosity and, when viscosity increase, the pump performance remaing the same or the flow increase.

The PD pumps is the most option when the fluid viscosity change in the process.







	Lube oil Fuel oil Hydraulic Oil Every fluid with lubricant characteristics	Self priming , double entry design, with internal bearings and sincronism timing gear, no. One mechanical or packing seal
	Non lubricating low and medium viscosity and corrosive fluid	Self priming , double entry design, with external bearings separated by seals. Compact design for a simple maintenance and ceappest solution. Shaft seal shall be single or double.
	Non lubricating low and medium viscosity, corrosive and dangereous fluids.	Self priming , double entry design, with external bearings separated by seals. Long shaft design suitable for a wide range of seals conficurations. Possibility to install cartdridge design.
H	Non lubricating low and medium viscosity, corrosive and dangereous fluids in heavy duty service with operating more than 3 year.	Self priming , double entry design, with external bearings separated by seals. Strong shaft design for all dangereous fluids in all conditions. Design to meet API 676 and all API 682 mechanical seal configurations. Possibility to work in mixed phases.







	Horizontal (O)	
tallation	Horizontal installation	
ins	Vertical (V)	
Pump Casing	Vertical installation	
	In line design (L)	
sposition	Suction and discharge flanges are in Line, at the same plane.	
e di	Side Top (S)	
Flange	Suction and discharge flanges are in Line, at the same plane.	
	No Heating (-)	
E		
ten	Foot Heating (F)	
Heating syst	A chamber installed on pump food, Suitable for steam vapour or hot oil	
-	Heating jacket (T)	
	Heating jacket in double casing, suitable for steam vapour or hot oil.	



Bearing arrangements of all types do not pnly consist of bearings but include the associated components, such as shafts and housings, as well as seals. The performance of the seal is of decisive importance where lubricant cleanliness is concerned and this cleanliness has considerable influence on bearing and pump life.

	Seal rings	
50	Standard installation, possibility to have perfluoroelastomer polymers.	
sing	Labirinth	
earing Hou	Bronze labirinth.	
ш	Bearing protectors	
	Bearing protectors or magnetic seals, IP67, for fully enclosed installation.	



(S) Single mechanical seals, compact solution in open seal chamber

Component mechanical seals installed directly on pump shaft to minimize dimensions.

The seal it is installed closed to the bearing housing to to have short shaft extensions.

Mechanical seal chamber meet DIN and ANSI recomandation.



In this configuration it is possible to install quelch bush for monitoring and/or washing using low temperature fluids only.

(F) Mechanical seals with mechanical seal flange in open seal chamber

Component mechanical seals installed directly on pump shaft to minimize dimensions.

Mechanical seal chamber meet DIN and ANSI recomandation. Single or double configuration are possible.

In this configuration it is possible to install quelch bush for monitoring and/or washing.

Open chamber installation, with separate mechanical seal flange to minimises installation and maintenance problems. This chamber permit also washing/cooling capability for seals, but it is not recommended with lower suction pressure or high vacuum and flashing fluids.



(C) Cartdridge mechanical seals in open seal chamber

Medium/heavy duty cartdridge mechanical seals assure high reability pump seals, and the cartridge assembly minimises installation problems to a minimum and is suitable for most applications.

Mechanical seal chamber meet DIN and ANSI recomandation, which have very limited radial and axial. Single or double configuration are possible and cartdridge solution minimize installation and maintenance throubles and protect the shaft by mean of shaft sleeve. These seals have also possibility to install quelch bush for monitoring and/or washing. Open chamber permit washing/cooling capability for seals, but it is not recommended with lower suction pressure or high vacuum and flashing fluids.





(A) API 682 cartdridge mechanical seals

Cartdridge Mechanical Seals according to API 682 with fully confined mechanical seal chamber.

API recomment to use a confined mechanical seal chamber by mean of throttle bushing with non galling materials.

All mechanical flushing and quelching Plan according to API 682 recomendation.

The purpose of the standard was to capture proven solutions to the most common sealing applications seen in refineries where we must be assure high reability in heavy duties service. No limits for mechanical seal flushing configuration. Fully confined mechanical seal chamber assure high reability also with mixed phase fluids. Large space with longer supports for easy maintenance.









Lubricant oils

Hydraulic oils Fluid with poor or low lubricant capabilities Clean fuel oils.

Seals

These pump can be mount all type of seal including cartdridge.

Description

Twin screw rotary pump with renevable liner and internal bearings for all lubricant fluids or fluids which do not chemically attack the internal bearings materials. The journal bearings can be supply in several material and in function of pumping temperature. Specially designed for large capacities on lube oil service in marine, off-shore or industrial plants.

Performance data

Working temperature	up to 150°c
Viscosity range	up to 1500 cst
Inlet pressure	up to 6 Bar
Differential pressure	up to 16 Bar
Speed	up to 3500 rpm







Water Light chemical and petrochemical products Fuel and heavy fuel oils Non lubricanting fluids with light or medium viscosity range.

Seals

These pump can be mount only single or double back to back mechanical seal configuration.

Description

Twin screw rotary pump with renevable liner and external bearings, in compact design, for all non lubricant fluids with light and medium viscosities. Compact seal chamber according to ISO. Specially designed for industrial plants with low cost impact.

Performance data

Working temperature	up to 150°c
Viscosity range	up to 1500 cst
Inlet pressure	up to 6 Bar
Differential pressure	up to 16 Bar
Speed	up to 3500 rpm











Water Light chemical and petrochemical products Fuel and heavy fuel oils Non lubricanting fluids with light or medium viscosity range.

Seals

A wide range of seals shaft design including flanged and cartdridge, with flush or quelching pipes. Possibility to install shaft sleeve and throttle bushing for a difficults suction conditions.

Description

Twin screw rotary pump with renevable liner and external bearings, for all non lubricant fluids with light and medium viscosities.

Supports and seal chamber designed for flanged seal. Possibiliti to install a wide range of flushing and or quelching pipes.

Custom design for bearings housing including cooling, deflectors, bearing protectors, monitoring sensors etc..

Performance data

Working temperature	up to 200°c
Viscosity range	up to 2500 cst
Inlet pressure	up to 6 Bar
Differential pressure	up to 16 Bar
Speed	up to 3500 rpm











Dangereous fluds Chemical and petrochemical products Hydrocarbon and process fluids Fuel and heavy fuel oils Non lubricanting fluids with light or high viscosity range.

Seals

Shaft seal and design without compromise, fully API 676 and API 682, with all flushing or quelching pipes, for proces and dangereaous working conditions. Special intermediate flange with several material selection for an easier maintenance.

Possibility to mount bearing protector for any industrial atmosphere, with dust and pollution to protect bearing.

Description

Twin screw rotary pump with renevable liner and external bearings, for all non lubricant fluids with light and medium viscosities, in heavy duty services Seal chamber designed for all API 682 mechanical seal configuration. Possibility to install a wide range of flushing and or quelching pipes. Custom design for bearings housing including cooling, deflectors, bearing protectors, monitoring sensors etc.

Performance data

Working temperature	up t
Viscosity range	up t
Inlet pressure	up t
Differential pressure	up t
Speed	up t

up to 300°c up to 15000 cst up to 10 Bar up to 40 Bar up to 3500 rpm





General Informations

On every PD (positive displacement pump) it is necessary to install a By-pass valve to control that deliver pressure do not reach the maximum allowable working pressure for pump casing and delivery brach pipes.

The 2O pumps can be supplied with an integral pressure relief valve.

It is possible also install PRV, pressure relief valve (named also by-pass valve) directly on pump casing throught a pressure relief connection flange.

Other configurations are available according to client specification up to API 676 with API 520 PRV external valve.

REMARKS

The pressure relief valve is not foreseen as a flow control device and not as a security protection of the whole plant.

If no pressure relief valve is installed on the pump, a separate overload protection has to be installed in the pressure line in form of a PSV (Pressure Safety Valve).



WORKING PRINCIPLE

If the pre-set values are exceeded the valve lifts from its seat and the fluid passes back into the pump suction side.

SETTING

The opening pressure can be adjusted by resetting the valve with the adjusting screw.



800	Valve casing
801	Valve

- 802 Spring
- 803 Gasket
- 805 Valve cover
- 806 Gasket
- 807 Screw
- 808 Washer
- 810 Spring pusher
- 811 Gasket
- 812 Screw, regulating
- 820 Valve spacer
- 821 Gasket
- 822 Screw
- 823 Washer

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