

FQ/FQX

Double suction vertical pumps

50 Hz

MARELLI



Sundyne Marelli

More than 45 years designing, manufacturing and servicing centrifugal pumps for water treatment and general industry applications.

FQ/FQX Desing and Technical lay out

The pumps comprised within **FQ/FQX** family, are centrifugal pumps, vertical mounted and double suction casing. That design prevents some of the bad functioning of semi axial vertical pumps, eliminating the source of such potential faults.

The **FQ** sub-family comprises all one stage pumps. And the **FQX** sub-family comprises pumps with several stages, one of them as **FQ** sub-family inside the bulb volute, and all other stages incorporated alongside the suspension column itself.

The present design applies to sumps where it is prevailing **the life cycle cost analysis** on centrifugal pumps installed, and where the pumps run in critical conditions then, the reliability is demanded.

Double suction vertical suspended centrifugal pumps, **FQ/FQX**, improve the hydro-mechanical performances compare to the traditional vertical pumps, saving costs in their preventive maintenance and overhaul, to help the hydraulic management in medium and big flow applications.



The design concept for **FQ/FQX** product lane, permits **high efficiencies, better maintainability**, and at the end, **lower cost** with better energy disposal.

The range of applications is then very wide, with projects and industries as follows:

- ▶ Sea water in take pumps for desalination plants.
- ▶ Water reservoir pumps and dumps
- ▶ Big irrigation systems.
- ▶ Refrigeration towers
- ▶ Water transfer between different river sides.
- ▶ Industrial applications for **continuous running 24/24hrs**
- ▶ Petrochemical process and refineries under **API 610 10th Edition (VS2)**
- ▶ Mining.
- ▶ Fish farming
- ▶ Waste water treatments plants.

NOTES:



Life cycle cost and better MTBF and MTBR

Marelli's design applied to **FQ/FQX** is focused on reliability. As it is shown in the drawing, the flow intake is split into two identical semi flows, giving **beneficial effects** as:

- **Axial thrust is balanced**, then the dynamic pressure shared between the two identical suction intakes permits to avoid an additional thrust charged into the bearings, which only supports the weight of the impeller shaft
- **Radial charges are almost eliminated**, the very exclusive design to compensate the inertia moments produced by the conveyed fluid gets the total balance of radial thrust, having a better centrifugal pump solution .
- For **FQ** subfamily **it is not necessary to install** nor packing gland neither mechanical seal. Customer can install them on demand.
- Radial bearings are regularly **lubricated by conveyed fluid**, existing the possibility to have an auxiliary system using clean water if the application demands such a separate solution.
- The impellers design helps to get very **high efficiencies with drivers rotating to a higher speed**.
- **Frequency converters** are welcome when you drive the **FQ/FQX** family pumps thanks to a more centrifugal design of the impeller and casing. Problems with the harmonics and vibration proper frequencies are almost inexistent.

All those technical advantages match the mechanical and electrical parameters to get a very solid construction with high reliability and the biggest efficiency.

Thus, FQ/FQX serial production gets the best of all technicalities applied within the centrifugal pumps design.



FQX: Higher pressure performances

FQX, is a vertical suspended double suction pump as **FQ** with axial stages directly mounted into the column. **FQX can reach until 415 m.**

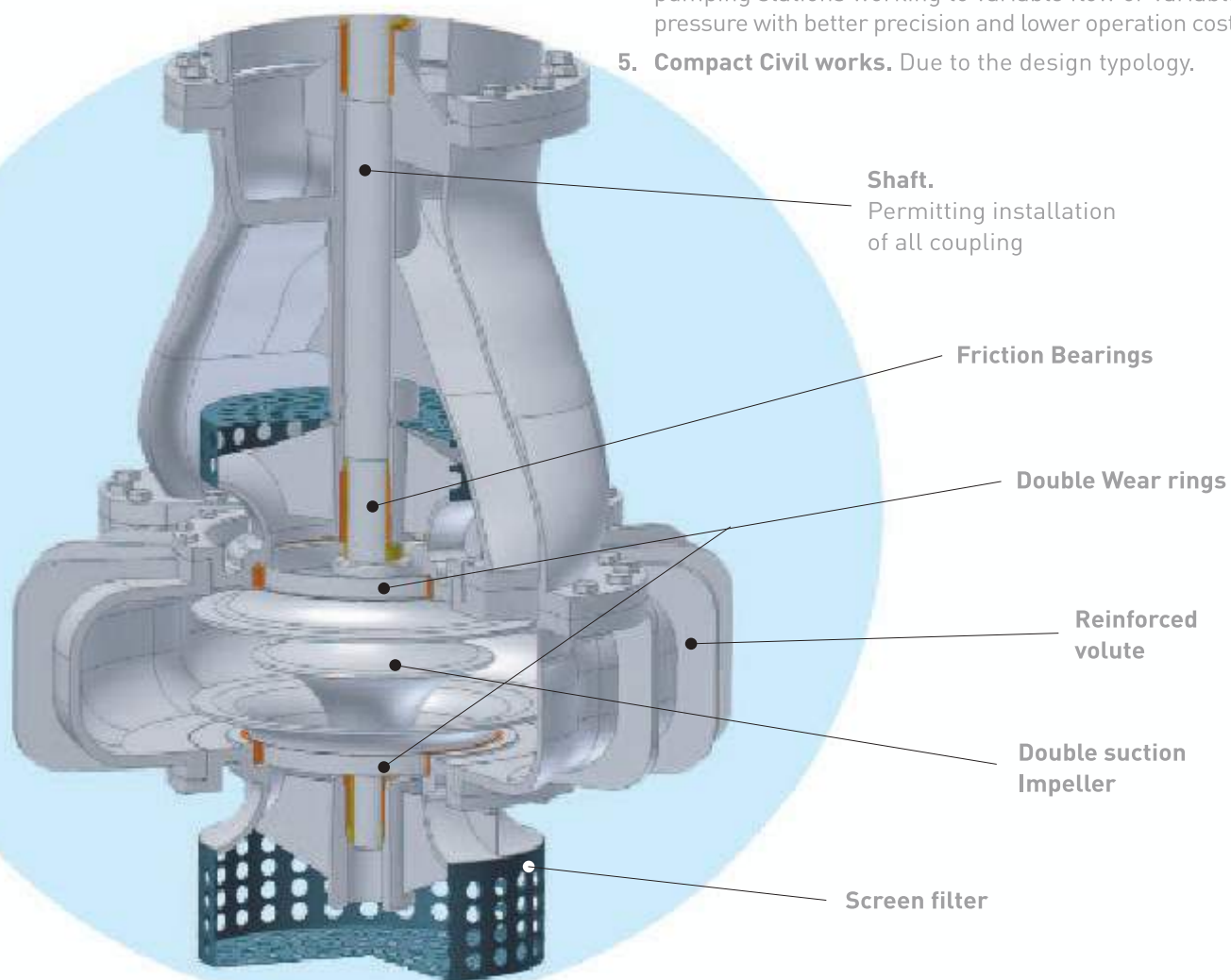
FQX family might be mounted with gland packing or mechanical seals, getting the best solution compare to other semi-axial pumps.

FQX design, demands a correct calculation to install the semi-axial stages to reach a correct balance of transitory and stationary flow inside the pump. It increases the efficiency, and the life of the pumps.

Major improvements

Taking into account the design concept applied to FQ/FQX serial production, the advantages are:

1. **NPSH required by the pump.** The double suction intake permits better start up conditions and bigger tolerance in the average running of the pump and also improving the submergence conditions.
2. **Simple design.** Less number of moving parts increasing the reliability thus bigger MTBF and MTBR. It also decreases the life cycle cost of the machinery.
3. **Better efficiencies.** Less energy consumption (green tag pump)
4. **Smooth operation.** The machine could be used in pumping stations working to variable flow or variable pressure with better precision and lower operation costs.
5. **Compact Civil works.** Due to the design typology.







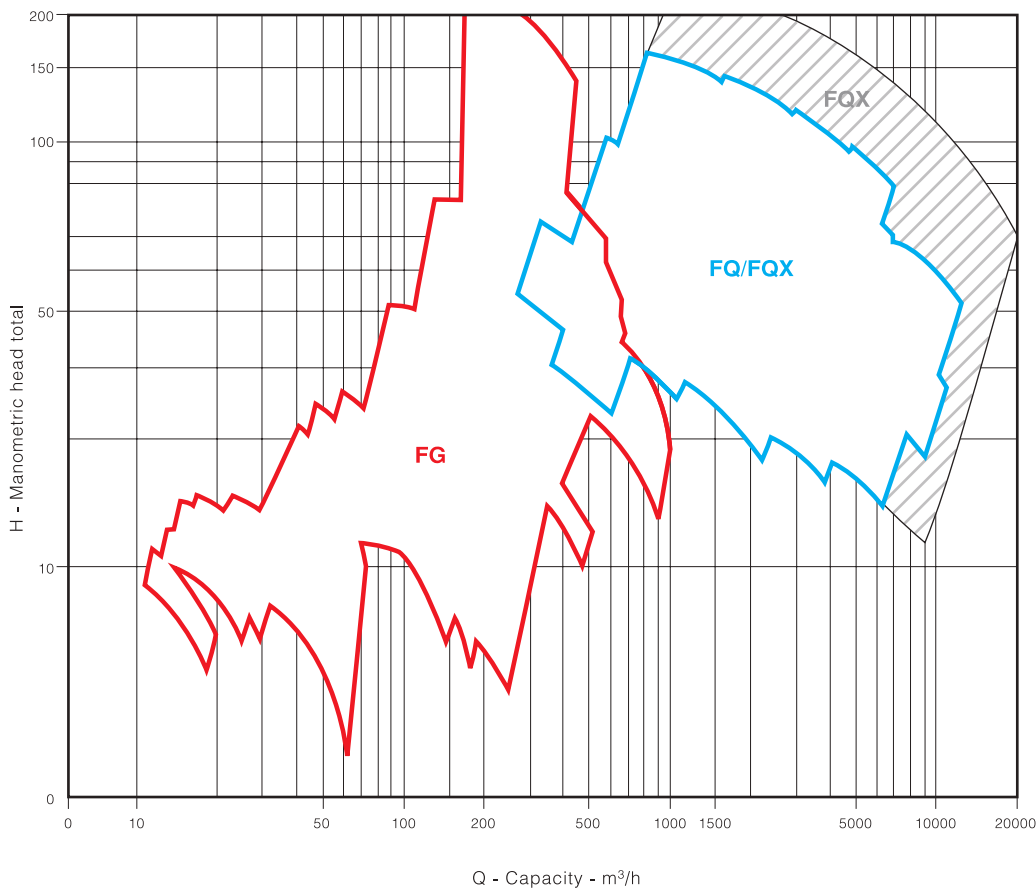
COMPRESSORS

PUMPS

GENUINE PARTS

SERVICE

Performance curves



Flows covering a range **250 to 15.000** m³/h.

Pressure range **25 to 415** meters water column in standard atmospheric conditions.

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Sundyne Headquarters:
Sundyne, LLC
14845 West 64th Avenue
Arvada, Colorado 80007
USA
1-866-Sundyne
Phone: 1.303.425.0800
Fax: 1.303.425.0896
www.sundyne.com

Sundyne China:
Building 1, No. 879 Shen Fu Road
XinZhuang Industrial Zone
Min Hang District
Shanghai, China 201108
Phone: +8621 5055 5005
Fax: +8621 5442 5265

Sundyne France:
Sundyne International S.A.
13-15, Boulevard Eiffel - B.P. 30
21604 Longvic Cedex
France
Phone: +33 380 38 33 00
Fax: +33 380 38 33 66

Sundyne Spain:
Sundyne Marelli Bombas, S.R.L.
Ctra. Madrid-Toledo, Km.30.8
45200 Illescas
Toledo, Spain
Phone: +34 925 53 45 00
Fax: +34 925 51 16 00

Sundyne United Kingdom:
Sundyne HMDKontro Sealless Pumps, Ltd.
Marshall Road
Hampden Park Industrial Estate
Eastbourne East Sussex, BN22 9AN
United Kingdom
Phone: +44 1323 452000
Fax: +44 1323 503369
Email: info@hmdkontro.com

Worldwide Sales Headquarters
Unit 2 Harvington Business Park
Hampden Park Industrial Estate
Brampton Road
Eastbourne East Sussex, BN22 9BN
United Kingdom
Phone: +44(0) 1323 452125

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