kishor pumps

Designed for processes, Made for people.

Vertical Sump Pumps

RedAx™ Technology

Vertical Extended Shaft Sump Pumps as per ISO 5199 for chemical & process duty applications

FreeLub Technology

EquiThrux™ Technology

Versatile Reliable Efficient

kishor pumps

VERSA Series

Vertical extended shaft single delivery sump pumps as per ISO 5199 design standard for heavy duty chemicals and chemical effluents

Product Description:

VERSA series vertical extended shaft pumps are designed based on ISO 5199 design standard and KISHOR dimension standard. These pumps are specially designed for process or transfer duty applications, having high efficiency for pumping clean or slightly contaminated chemicals and chemical effluents without solid contents. All types of corrosive and crystallising liquids can be handled. Pumps can be offered in seal-lessor with gland packing or mechanical seal options with all API flushing plans.

Applications:

- Acids
- Alkalis
- Dyes
- Paints
- Petrochemicals
- Intermediates
- Seawater
- Hydrocarbons
- Hot water
- Clear effluents

Industries:

- Fertiliser
- Petrochemicals
- Refineries
- Textile
- Desalination
- Water treatment
- Wastewater treatment
- Steel
- Power generation
- Pharmaceutical
- Acids
- Caustic soda
- Soda ash
- Adhesives
- Distillery

Performance Parameters:

Flow	: upto 1,750 m^3/hr
Head	: upto 150 m.l.c
Specific gravity	: upto 1.9
Temperature	: upto 140 ^{0}C
Viscosity	: upto 20 cP
DN sizes	: 25 to 300 mm
Installation depth	: upto 10 m
Solid passage size	: Nil

Pressure Ratings :

Discharge pressure	: upto 16 kg/cm^2
Test pressure	: 24 kg/cm^2

Standard Features:

- Centrifugal, single stage, bottom axial suction
- Closed or semi-open impeller
- Internal FreeLub Technology , deploying self-lubrication for wet bearings in case of clear liquids, eliminating the need for external flushing
- Grease lubricated bearings
- Rectangular or circular support plate
- Performance testing as per ISO 9906
- RedAx Technology, mitigating the effect of undesirable hydraulic forces
- Glandless execution

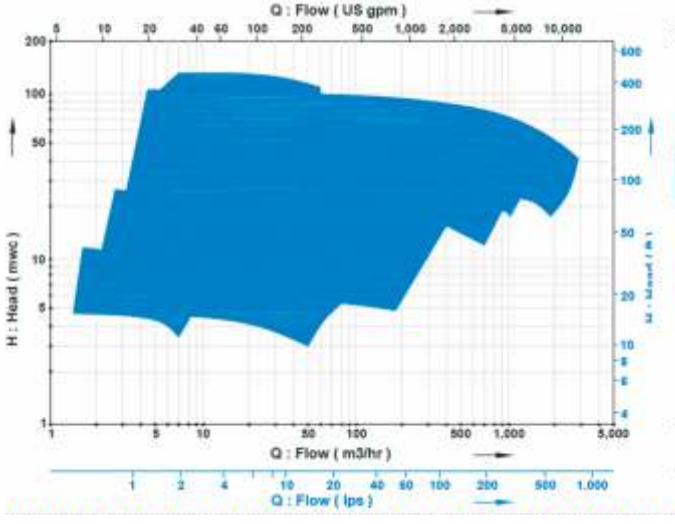
Versions:

- ES : Extended shaft, glandless pump
- EV : Extended shaft, pump with mechanical seal
- EG : Extended shaft, pump with gland packing
- EJ : Extended shaft, pump with jacketing

Material of Construction:

Casing	: CI, WCB, DIN 4136, CF8, CF8M, CF3, CF3M, CN7M, Duplex St. steels etc.
Impeller	: CI , WCB, DIN 4136, CF8, CF8M, CF3, CF3M, CN7M, Duplex St.steels, etc.
Shaft	: SS 410 , SS 316, SS 316L, EN8, Teflon lined, UNS 32760 etc.

Performance Range:



Optional Features:

- Variety of wear rings
- Steam jacketing for crystallising liquids
- External flushing
- Tailpiece with / without strainer
- Support plate of special dimensions & thickness
- Outside tank mounting
- Tongue and groove flange
- Delivery flange as per ANSI / IS standards.

Constructional configuration & Installation options

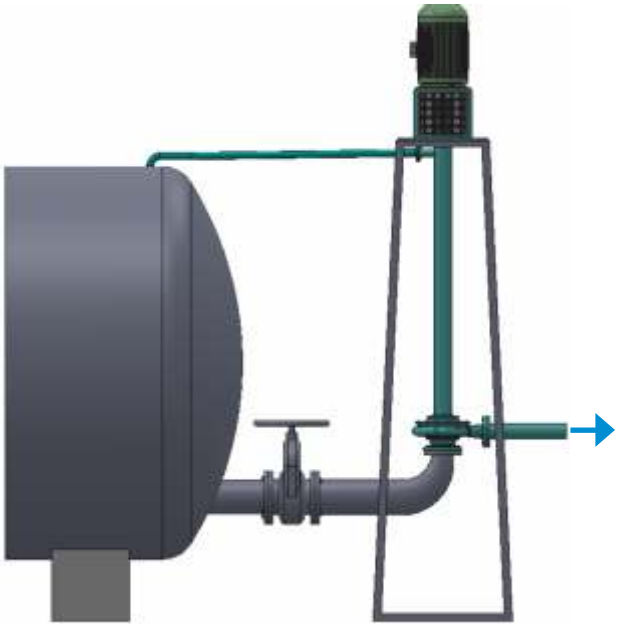
Single shaft, single column, or multi-shaft, multi-column vertical pump with external flushing / lubrication

Single shaft, single column, or multi-shaft multi-column vertical pump with internal flushing / lubrication

Steam jacketed vertical sump pump for crystallising liquids

Double volute for high flow applications

Outside Tank (OT) mount installation:



Outside Tank (OT) configuration of vertical pumps allows for numerous benefits over in-pit pumps. Such configurations are especially used in transfer applications. The pump is mounted outside tank with suction connected to the tank. The column pipe overflow is connected back to the tank and the discharge can be taken out as desired.

Benefits of OT mounted pump:

- Parts not exposed to outside corrosion & erosion
- Flood-proof, overflow liquid can be returned back into the tank
- Delivery pipe orientation can be as per requirement
- Leakage joints, if any, can be easily visible from outside

Typical Constructional Features:

Thrust bearings designed to handle critical loads along with ease of removal for maintenance

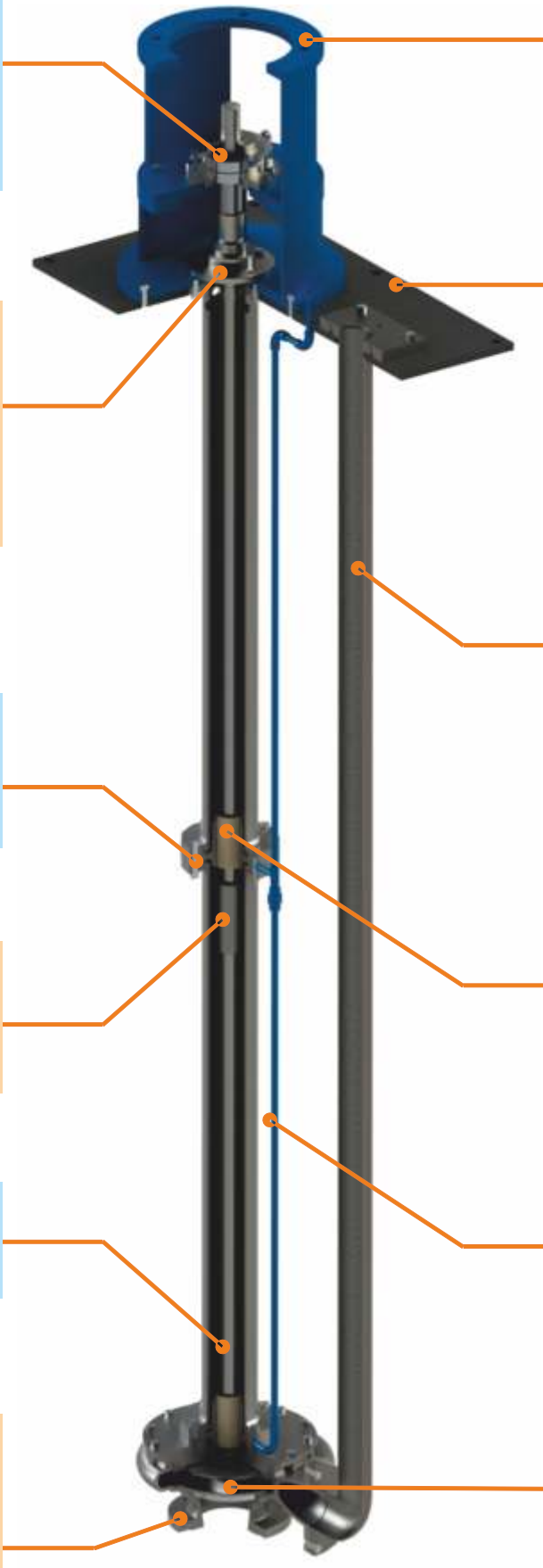
Option for various types of shaft sealing like gland packing, single / double mechanical seal, or complete seal-less design

IB Housing design with FreeLub™ technology for ease of lubrication

Shaft coupling (in case of multishaft construction) using reliable sleeve coupling

Cast column pipe provides rigidity to the rotating assembly

Options for various suction accessories like strainer, bell mouth & tailpiece



Rigid cast motor stool for vibration free operation & ease of motor mounting

Option of rectangular or circular support plate design

Option for cast or fabricated delivery pipe to comply with material requirements

Option for various types of designs and material options including self-lubricating bushes for greater reliability

Flushing line options including self-flushing or external flushing depending on the application

High efficiency impeller design with RedAx™ technology for reduced axial thrust & increased bearing lifetime

Single shaft pump with tailpiece: Advantages over multi shaft pump

Vertical pumps are often required to be installed in applications where the liquids need to pumped out from great depths. One obvious solution is to have a multi-shaft long pump wherein the impeller and casing are submerged to the bottom most level of the liquid. However, this type of construction, although possible, has cost implications due to long shaft assemblies, and reliability may be hampered on periodic basis.

A simpler solution is to go for a single shaft pump with a tail-piece arrangement. The tail-piece acts as a suction pipe and can empty the liquid to the bottom most level. The pump can be configured to stop working on emptying the tank and restart when the liquid level reaches the casing level again. In this configuration, there are inherent commercial and technical benefits during purchase and lifecycle of the pump.

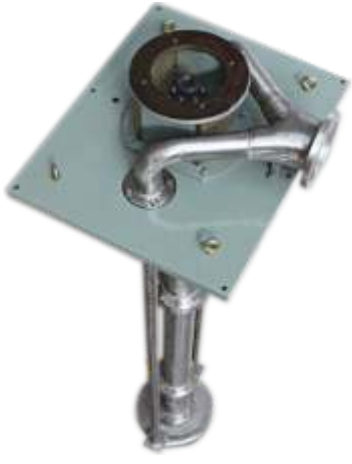
Parameter	Cantilever Single Shaft Pump	Multi Shaft Pump
Flushing	Not Required	Required
Intermediate Sleeve & Bush	Not required	Required
Dry running	Possible	Not Possible
Speed	Upto 2900 rpm (smaller pump for same duty)	Upto 1450 rpm (larger pumps for same duty)
Vibrations	Low	Comparatively high
Wear & Tear	Low	High
Handling	Easy	Difficult
Weight	Less	High
Price	Less	Comparatively High
Spares Requirement	Low	High
Operating Range	Wide	Limited
Restart Level	High	Low

Benefits & advantages of double delivery pumps:

Advantages :

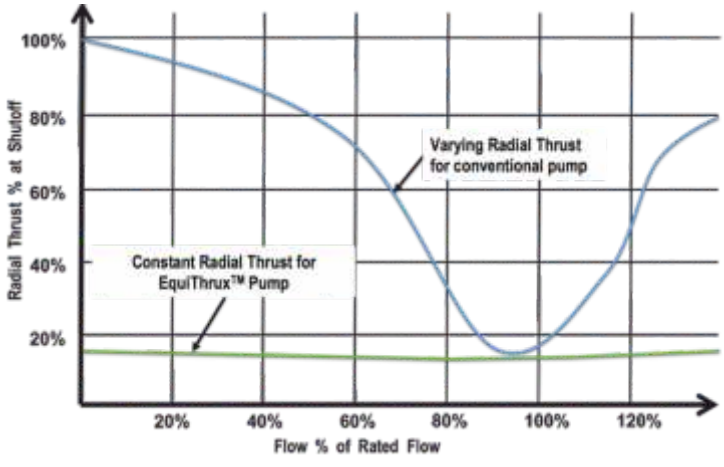
- Balanced hydraulics for trouble free operation with long life
- Eliminates maintenance associated with intermediate supports like sleeve & bush in cantilever design pumps
- No external flushing / lubrication required for cantilever design pumps
- Pump can run at any head & flow point point even close to shut off without any damage
- Internal pumped liquid lubrication using for pumps with longer installation depths using sleeve & bush
- Pump can run completely dry for long time without any damage in cantilever design
- Less spares needed compared to conventional design

EquiThrux™
Technology



Radial thrust, (the main culprit in pump wear and tear) is the force due to liquid leaving the pressurised casing chamber (based on Newton's 3rd law). It is a function of the impeller vane thickness and the casing pressure. Radial thrust gives rise to deflection on the entire rotating assembly of the pump, which includes the impeller, shaft, intermediate shaft supports (in case of vertical pumps) and the bearings. The effect of radial thrust is especially enhanced in a vertical pump due to the long rotating assembly. Due to the design structure of the vertical pump, the radial thrust is absorbed by the wet bearings and finally by the upper dry bearings. Due to this deflection, there arises a need to continually monitor the health of the bearings by vibration monitoring and motor current spikes. Also, longer the installation depth of the pump, bigger the concern of deflection on the pump and more the wear and tear. For the same duty point with the same design basis, vertical pumps have a narrower safe operating zone than horizontal pump, primarily due the larger deflection due to radial thrust.

The main criteria for deciding the safe operating zone of a pump depends on the radial thrust which the pump is designed to handle. With EquiThrux™ , the radial thrust is completely balanced and nullifies its effect on the pump i.e. deflection of the rotating assembly is more or less zero. As with any force, in mechanical design, it is the unbalanced nature of the force which creates the problem. If the force can be balanced, most of the mechanical design issues are simplified. The same happens with EquiThrux™. The casing design ensures that the liquid, with same pressure leaves the casing in equal volume from diametrically opposite ends. Since there is radial thrust in same magnitude with opposite in direction, the effect of radial thrust, i.e. deflection on the rotating assembly, is minimised if not eliminated. Since the deflection is minimised, the resulting wear and tear on the wet and dry bearings is minimised improving the reliability drastically. Further, there may not be a need to have wet bearings for most of the applications. Even if the operating point of the pump shifts away from the BEP, the resultant radial thrust increase is nullified by an equal amount of radial thrust increase in the opposite direction. Therefore, no matter where the pump operates on the curve, at any point the radial thrust is balanced. The pump can be operated to near shut off to full valve (near pump runout) without much wear and tear on the pump. If the pump is a cantilever pump, then also there will not be any damage even if the pump runs dry.



YUVA Series

Vertical extended shaft double delivery pumps for light and heavy duty chemicals and chemical effluents

Product Description:

YUVA series vertical extended shaft double delivery pumps are designed based on KISHOR standard. These pumps are specially designed for process or transfer duty applications, having high efficiency for pumping dean or slightly contaminated chemicals and chemical effluents without solid contents. These pumps can handle all types of corrosive and high temperature liquids. Double delivery & cantilever design can be offered for liquids containing fine abrasive solids or where pump need to be operated for a wide range of duties. Pumps are available in seal-less or with gland packing/ mechanical seal options. The design is a completely hydraulically balanced design which makes the pump almost maintenance free.

Applications:

- Acids
- Alkalis
- Dyes
- Paints
- Petrochemicals
- Intermediates
- Seawater
- Hydrocarbons
- Hot water
- Clear effluents

Industries:

- Fertiliser
- Petrochemicals
- Refineries
- Textile
- Desalination
- Steel
- Power generation
- Pharmaceutical
- Acids
- Caustic soda

Performance Parameters:

Flow	: upto 400 m^3/hr
Head	: upto 125 m.l.c
Specific gravity	: upto 1.9
Temperature	: upto 160 ^{0}C
Viscosity	: upto 20 cP
DN sizes	: 25 to 100 mm
Solid passage size	: Nil

Pressure Ratings :

Discharge pressure	: upto 16 kg/cm^2
Test pressure	: 24 kg/cm^2

Standard Features:

- Centrifugal, single stage, bottom axial Suction
- Semi-open (B) & Closed impeller
- Grease lubricated bearings
- Internal "Free Lub' Technology deploying self lubrication for wet bearings in case of clear liquids, eliminating the need for external flushing
- Rectangular or circular support plate
- Performance testing as per ISO 9906
- RedAx Technology, mitigating the effect of undesirable hydraulic forces
- Shaft sealing bygland packing or mechanical seal
- Support plates of special dimensions & thickness
- Glandless execution

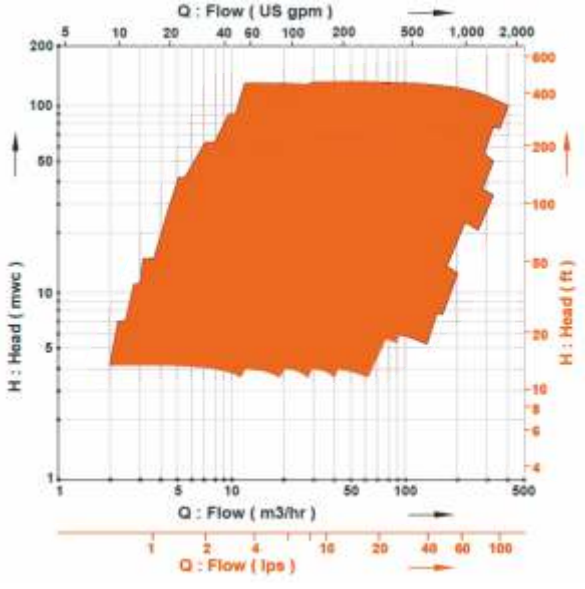
Versions:

- ES: Extended shaft, gland less pump.
- EV: Extended shaft, pump with mechanical seal.
- EG: Extended shaft, pump with gland packing.

Material of Construction:

Casing	:	CI, WCB, DIN 4136, CF8, CF8M, CF3, CF3M, CN7M, Duplex St.steels etc.
Impeller	:	CI, WCB, DIN 4136, CF8, CF8M, CF3, CF3M, CN7M, Duplex St.steels, etc.
Shaft	:	SS 410 , SS 316, SS 316L, EN8, Teflon lined, UNS 32760 etc.

Performance Range:



Optional Features:

- Semi-open (F) impeller
- Cantilever design forslurries
- Variety of wearrings
- Tailpiece with/without strainer
- Tongue and groove flange
- Delivery flange asper ANSI/IS standards
- External flushing

About Us:

We design & manufacture tailor-made products for pumping and mixing of corrosive, abrasive and solids laden liquids, along with suitable service support. We have one of widest spectrums of material options to suit the application based on over 5 decades of experience and expertise. At the core of product selection process, lies a deep understanding of the application and the environment in which the pump is supposed to operate, ensuring optimal selection to suit the requirement.

Project References:

Vertical sump pumps

Vertical sump lined pumps

Vertical double delivery pumps

Service Support :

Service support is at the heart of our business philosophy. Being a custom-made product manufacturer we need to ensure that our products are handled, installed, commissioned, maintained and repaired in time and with skilled manpower. In addition, we provide service of energy audit of existing installations and suggest the required modifications at site, if any, to enhance energy efficiency & reliability. We have deployed our team of experts across India and along with our service partners who are trained in all aspects of the product. We ensure prompt and apt service support to our customers. We also ensure continuous training to our service partners so that they are upto the mark on the latest developments and practices.

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