# tapflo

## WATER AND INDUSTRIAL CENTRIFUGAL PUMPS

2018 | 1



>> All about your flow

www.tapflo.com

## All about your flow

Tapflo is a leading pump manufacturer with the ambition to provide a wide range of premium products for various industrial applications. We focus on delivering the best fluid processing solutions and support on all stages of the process, worldwide.



## About Tapflo

Tapflo is an independent, Swedish, family owned manufacturer and global supplier of air operated diaphragm pumps, centrifugal pumps and other industrial process equipment. The company was founded in Kungälv, Sweden in 1980 and has since then been working with design and manufacture of thermoplastic, metal and sanitary series diaphragm pumps, as well as the complete range of centrifugal pumps and industrial equipment. After years of dynamic development, the company evolved into Tapflo Group with worldwide operations. Tapflo Group is represented by owned companies and independent distributors all over the world on 6 continents.

## **Quality certified**

At Tapflo, we believe that quality is one of the highest values, both for our customers as well as our employees. As a result, we comply with various globally recognised certification and quality control institutions. Many of our products comply with EC ATEX directives for equipment intended for used in explosive and hazardous environments.

The aseptic series is EHEDG certified (European Hygienic Engineering & Design Group) and the pharmaceutical series has USP VI and EC 1935/2004 approval.

All of our products are clearly CE marked and followed by our comprehensive instruction manuals. Tapflo manufacturing process is certified according to ISO 9001:2015.









#### Long term engagement is our core

Our aim is to continuously provide premium products according to the evolving needs of our customers. That is why we see each customer relationship as a long term commitment.

#### Local means on your terms

Tapflo is your global partner providing local support. No matter where your plant is located, you can expect us to support you locally.

#### Flexibility the foundation of good service

We are prepared to deal with reality, knowing that in practice this means answering questions, offering solutions and supplying spare parts with a minimal loss of time.

#### Customising to bring the product to the needs

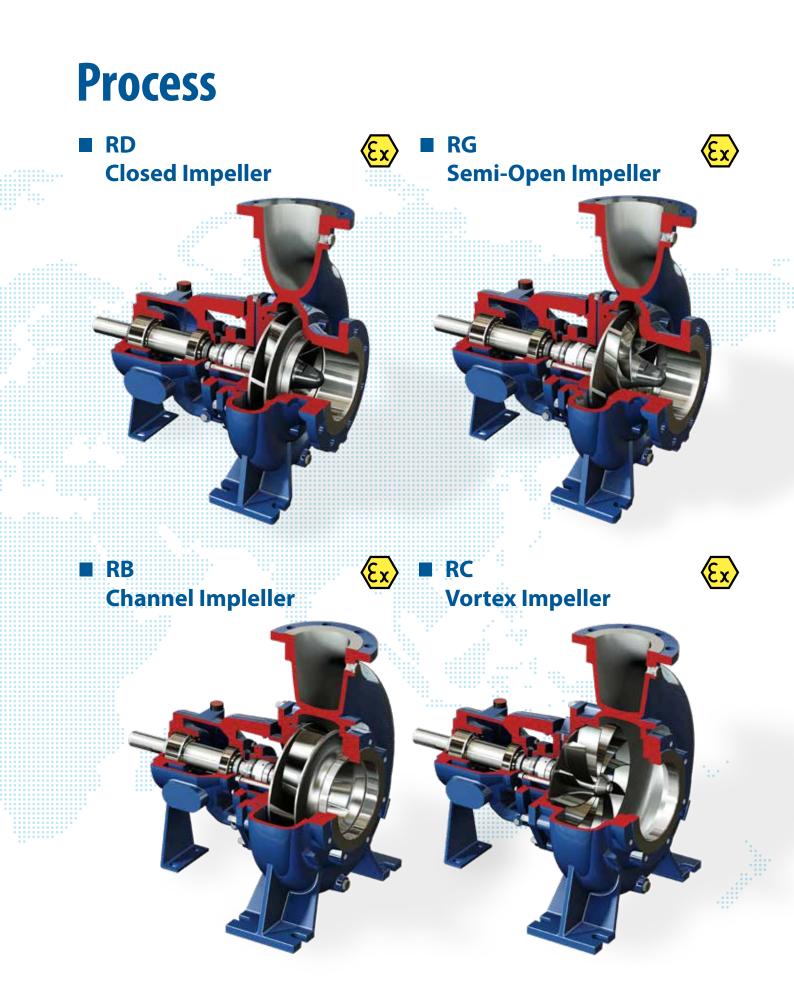
Our intention is always to help our clients find the most cost effective solutions to increase their company's efficiency.

If this means changing the design of the pump, we see it as a challenge - not a problem.

#### To produce is to develop

Being actively involved in the manufacturing of a product, it is almost impossible not to discover ways to improve it.

This allows us to frequently offer solutions that are even more sustainable and efficient.





VERTICAL
Closed, Open, Channel and Vortex Impeller

CANTILEVER K Vortex and Channel Impeller



# **Close Coupled**



# **RD Closed Impeller**



#### High hydraulic efficiencies and low NPSH requirements (investment casting impellers).

Centrifugal pumps build according to ISO 2858/ISO 5199 norms.

- >> Heavy Duty Shaft and Bearings.
- >> Only 3 bearing brackets for the whole range.
- >> Only 1 casing cover fits every seal arrangement

#### FIELDS OF APPLICATION:

handling aggressive organic and inorganic liquids in the chemical and petrochemical industries.

They are also used in:

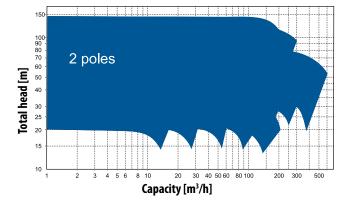
sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industry, hot water distribution.

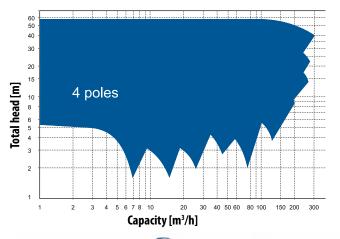


## Fast facts

Discharge sizes:	from DN 32 to DN 125
Maximum working pressure:	16 bar
Flow rate:	up to 500 m³/h
Differential head:	up to 140 m
Temperature:	up to 180-220°C - according to the pumped liquid
Materials:	AISI 316 Upon request AISI 304, AISI 904, duplex, superduplex,
	Hastelloy B and C

## **Selection Charts**







# **RG Semi-Open Impeller**



#### High hydraulic efficiencies and low NPSH requirements (investment casting impellers).

Centrifugal pumps build according to ISO 2858/ISO 5199 norms.

- >> Heavy Duty Shaft and Bearings.
- >> Only 3 bearing brackets for the whole range.
- Only 1 casing cover fits every seal arrangement

#### FIELDS OF APPLICATION:

handling slightly contaminated liquids or not abrasive slurries in the chemical and petrochemical industries. Well suited for handling liquids with gas contents up to 15%.

#### They are also used in:

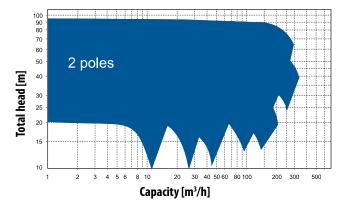
refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries, hot water distribution.

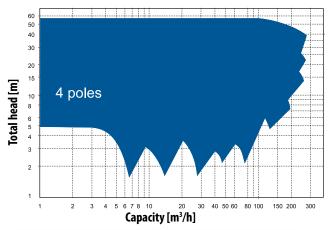


## Fast facts

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: from DN 32 to DN 125 16 bar - according to the pump size up to 300 m<sup>3</sup>/h up to 95m up to 180-220°C - according to the pumped liquid AISI 316 Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy B and C

## **Selection Charts**













# **RB Channel Impeller**



#### Impeller with special blades geometry for low NPSH and high free passage.

Centrifugal pumps with bearing bracket in according to ISO 2858/ISO 5199 norms.

- >> Heavy Duty Shaft and Bearings.
- Only 5 bearing brackets for the whole range.
- >> Only 1 casing cover fits every seal arrangement

#### FIELDS OF APPLICATION:

Handling slightly contaminated liquids in waste water treatment plants, clean water for cooling towers or condensate recovery plants, viscous liquids in evaporators in food or chemical industry.

#### They are also used in:

refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries, hot water distribution.

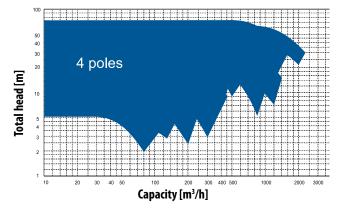
## Fast facts

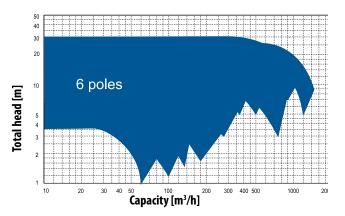
#### from DN 65 to DN 300

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials:

10 bar - according to the pump size up to 2400 m<sup>3</sup>/h up to 70 m up to 150-220°C - according to the pumped liquid AISI 316 Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy B and C

## **Selection Charts**











# **RC Vortex Impeller**



#### Large free passage clearance up to 180 mm due to the completely recessed impeller.

Centrifugal pumps with bearing bracket in according to ISO 2858/ISO 5199 norms.

- >> Heavy Duty Shaft and Bearings.
- >> Only 4 bearing brackets for the whole range.
- >> Only 1 casing cover fits every seal arrangement

#### FIELDS OF APPLICATION:

Handling chemical and crystalline suspensions, all viscous liquid, liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge.

#### Textile and tannely:

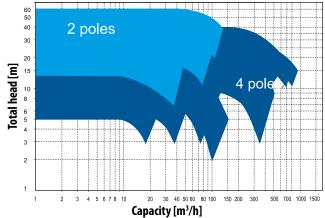
refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries.



## Fast facts

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: from DN 32 to DN 250 10 bar - according to the pump size up to 800 m<sup>3</sup>/h up to 60m up to 150-220°C - according to the pumped liquid Cast Iron GJL250 or AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy

## **Selection Charts**



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## Seals

#### Only one casing for different mechanical seal arrangement.

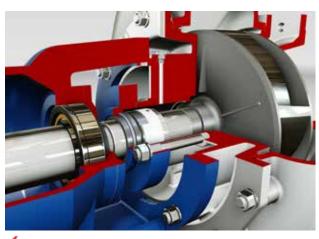
Cylindrical chamber built in according to EN 12756 standards can be fitted with any type of mechanical seal or cartridge.

Single mechanical seals, double mechanical seals (tandem or back to back arrangements) or packing can be obtained using few components. This modular system allow the customer to change seal arrangements using the same casing cover and replacing just few parts. Up to 15 different seal arrangement to cover all the customer needs. Seal arrangements can be fitted with flushing plans in according to API 682 standards (such as PLAN 11, PLAN 52, PLAN 53, PLAN 54).

## **Single mechanical seal**

This is the most popular type of mechanical seal in clean (no solid particles or crystals) liquid service. The pumped medium lubricates mech. seal surfaces and remove friction heat.





W Red color parts used in the arrangement.

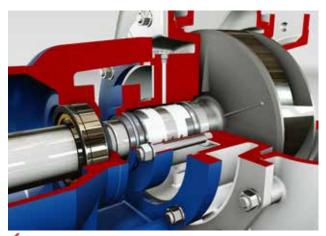
## Double back to back mechanical seal

This type of double seal (with back to back faces) is pressurized above the pressure inside the seal chamber.

An external buffer fluid serves to separate the product from the atmosphere. Buffer fluid pressure have to be around 0,5/1 bar above the pressure of the product.

To obtain the benefits of this seal, it is necessary to install a gauge indicating the actual seal chamber pressure. Sensors and transmitters can be used to monitor and act on a pressure change.





样 Red color parts used in the arrangement.

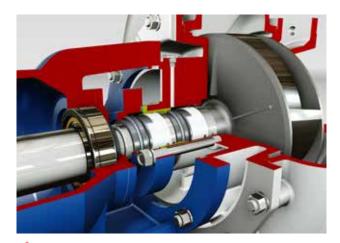
## **Double tandem mechanical seal**

This dual seal has both the rotary units facing in the same direction.

The purpose of the mechanical seal on the atmosphere side of tandem is either two-stage pressure reduction or else to seal in the quenching medium and to monitor the primary mechanical seal on the product.

An external buffer fluid serves to separate the product from the atmosphere.





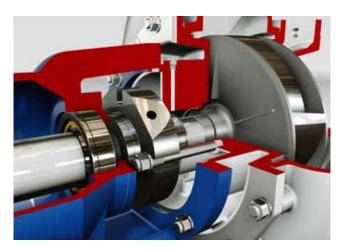
W Red color parts used in the arrangement.

## **Cartridge seal**

Cartridge mechanical seals and component seals use similar components, but the stationary components of cartridge seals are preassembled in a housing, and the rotating components are preassembled on a shaft-mounted sleeve that is sealed with an O-ring.

The cartridge seal housing typically replaces the gland cover plate and seals to the pump housing with a gasket, an O-ring or other elastomer.

Since cartridge mechanical seal components are preassembled onto the sleeve and into the cart-ridge housing, errors in parts installation are unlikely.

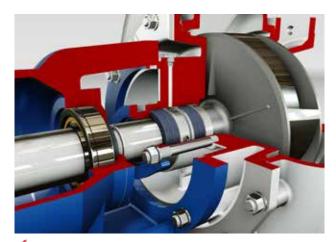


MRed color parts used in the arrangement.

## **Packing gland**

Gland packing is a braided, rope like material that is packed around the shaft - physically stuffing the gap between the shaft and the pump housing. Gland packing is still commonly used in many applications.





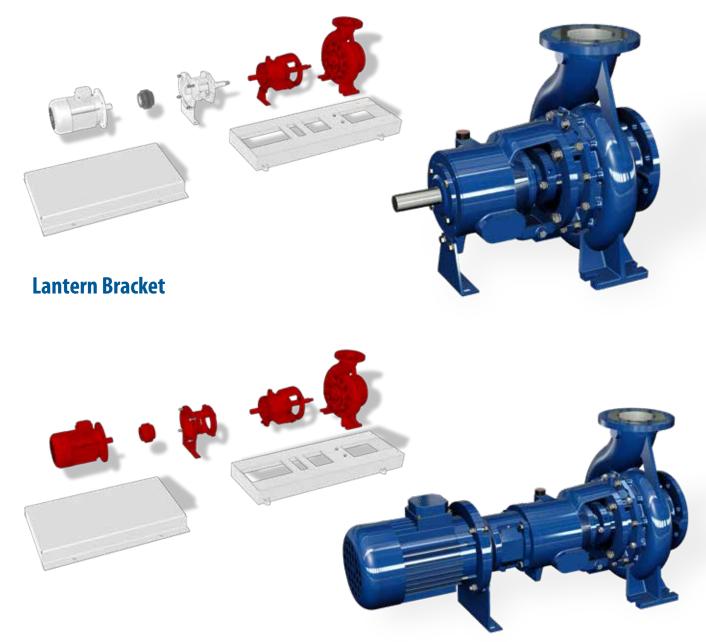
W Red color parts used in the arrangement.

# **Pump Unit Arrangement**

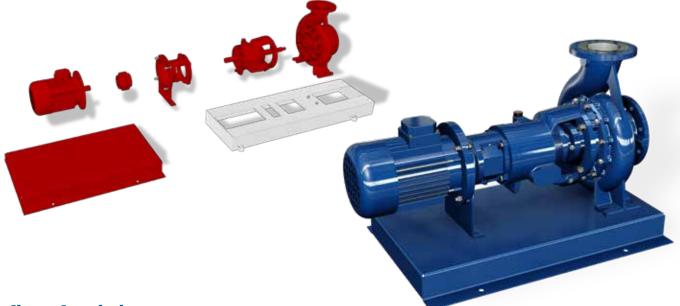
To build the whole pumps range (close-coupled, lantern bracket and on base plate execution) are necessary just 3 bearing housings and 6 lanterns .

Oversized base-plates grant high stability; the lantern bracket execution avoids problems related to misalignment between pump and motor.

## **Bare Shaft**



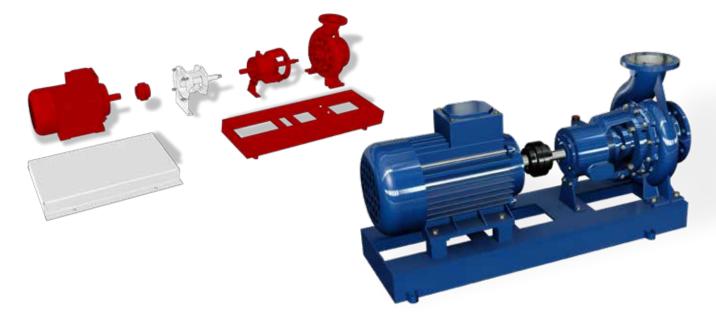
## Lantern Bracket on base



## **Close-Coupled**



## Bare shaft on base



# Vertical - Closed, Open, Channel and Vortex Impeller

Vertical immersible sump pump (ISO 5199 norms) line-shaft with bearing bushes.

The pump body is immersed into the liquid, whilst the motor is mounted above the plate, keeping it away from the liquid.

The discharge pipe is separated from the column pipe and the lubrication of the line bearings is normally obtained by means of the same pumped fluid, or from an external lubricating source (such as clear liquid or grease) in abrasive services.

The possibility to customize mounting plate shape and dimensions, discharge flange position and column length, allows designers and end-users to match sump or tank plates or flanges.

#### FIELDS OF APPLICATION:

Used in all industrial applications, refining, oil and gas production, chemical, pulp & paper, and water facilities.

Typical applications include: drainage sumps, oily water sumps, tank transfer.



## Fast facts

Materials:

Pump length: Mounting plate:

#### up to 6 meters

rectangular, circular or according to customer's specifications PTFE LIP SEAL or CARTRIDGE SEAL for vapor proof construction or pressurized designs. Cast Iron GJL250 or AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex. bronze, rubber, RULON and PEEK topcion on product

Bearing bush materials: bronze, rubber, RU Suction strainer and suction extension on request.

## **Impeller type**



Closed Impeller Clean liquids.



#### Channel Impeller

Slightly contaminated liquids or non abrasive slurries. Special blade geometry for low NPSH and high free passage. High efficiency and low NPSH.



## Semi-open impeller with wear plate and external adjustment

Slightly contaminated liquids or non abrasive slurries. Well suited for handling liquids with gas contents up to 15%.

#### Vortex Impeller



Chemical and crystalline suspensions, all viscous liquids, liquids with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge. Free passage up to 180 mm.

## Arrangements

#### Lubrication by means of pumped fluid.

Pumped fluid lubricates all the bearing bushes (bottom and intermediates).

The liquid must be clean: suspended solids could clog the small pipes for intermediate bearing bush lubrication.

Vertical pumps with bottom bearing bush only, can also work with liquids with non abrasive small solids.

#### Lubrication by external lubricating source.

A clean external source, clean liquid or grease lubricates all the bearing bushes (bottom and intermediates).

Used when the liquid is dirty, sticky or with suspended solids.

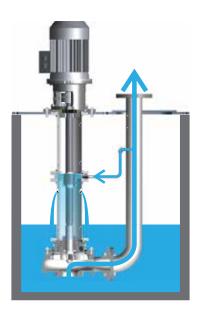
This arrangement also allows also the pump to work without liquid in the sump or with tail pipe. The external fluid is pumped together with the main fluid.

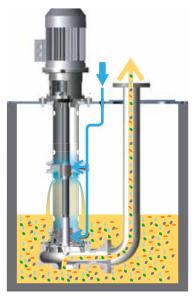
#### Lubrication by fluid into the pipe column.

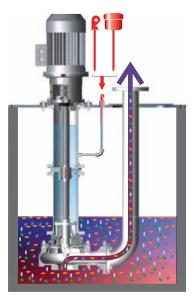
Used when the liquid is aggressive, dirty, sticky or with suspended solids.

A mechanical seal is placed between the shaft and the casing cover to fill the pipe column. All the bearing bushes (bottom and intermediates) are lubricated by flushing fluid.

Before startup, the pipe column must be filled with antifreeze solution. The level can be controlled by a dip-stick or level probe upon request.







# Cantilever - Vortex And Channel

Vertical cantilever sump pumps with non-clogging vortex and channel impeller.

The pump body is immersed into the liquid, whilst the motor is mounted above the plate, keeping it away from the liquid.

Oversize heavy duty ball bearing are supplied with grease fittings and located above the mounting plate out of the corrosive area. This means:

- None of the bearings are in the liquid and there is no shaft seal or bearing bush;
- Bearing assembly is sealed-off to prevent bearing contamination by liquids or gases-vapors;
- >> Pumps can run dry without risk of damage;
- Reliable operation and reduced cost.

The possibility to customize mounting plate shape and dimensions, discharge flange position and column length, allows designers and end-users to match sump or tank plates or flanges.

#### FIELDS OF APPLICATION:

Used for sludges, slurries and liquids containing large or long solids.

Typical applications include: drainage sumps, oily water sumps, tank transfer, food processing, ground water development and irrigation, heavy oil, oil sands and shale, paper stock, sewage collection and treatment, shower pumps, slurry processing, slurry transfer.



## Fast facts

Pump length:

#### up to 1,8 meters.

	Can be extended by means of a suction suction extension allowing
	the pump to operate with a liquid level under the impeller level
Mounting plate:	rectangular, circular or according to customer's specifications
	PTFE LIP SEAL for vapor proof construction.
Materials:	Cast Iron GJL250 or AISI 316. Upon request CA6NM (400HB hardness),
	AISI 304, AISI 904, duplex, superduplex, CA6NM (400HB hardness)
Curstian strain and such	

Suction strainer and suction extension on request.

## **Impeller type**

#### Channel Impeller

Slightly contaminated liquids or non abrasive slurries. Special blades geometry for low NPSH and high free passage. High efficiency and low NPSH.



#### Vortex Impeller

Chemical and crystalline suspensions, all viscous liquid, liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge. Free passage up to 180 mm.

## Installation

#### Typical installation

The cantilever pump is installed at the top of sump/tank and works without level controls. With liquid level above the pump "priming holes", the pump works properly.

As soon as the liquid level is below the suction port, the pump will be unprimed and work dry.

The pump will restart to work when the liquid level reaches. the pump "priming holes".

#### Typical installation with sution extension

The cantilever pump is installed at the top of sump/tank and works without level controls. With liquid level above the pump "priming holes", the pump works properly.

As soon as the liquid level is below the end of suction extension or when the NPSHa is lower then NPSHr, the pump will be unprimed and work dry.

This arrangement allows to empty tanks up to 5 meters below the suction port.

The pump will restart to work when the liquid level reaches the pump "priming holes".

#### **External installation**

The cantilever pump is installed beside of sump/tank and works without level controls. When the liquid level inside the tank is above the pump casing the pump can operate.

As soon as the liquid level is below the suction port, the pump will be unprimed and work dry. The pump will start again to work when the liquid level inside the tank is above the pump casing.

The liquid level inside the tank has to be lower than recirculation pipe in order to allow the liquid back to into the tank and not damage motor.

This arrangement allows to work with very hot fluid (up to 300°C) with suspended solids.



# **HD Closed Impeller**



#### Heavy duty close coupled centrifugal pumps.

Same interaxis of ISO 5199 chemical norm pump:

- >> Easy interchangeability.
- Casing and impeller manufactured with investment casting technology.
- Standard IEC motor (different brand available) stub shaft design.
- Different seal execution and materials options available on request.

#### FIELDS OF APPLICATION:

handling aggressive organic and inorganic liquids in the chemical industries.

They are also used in:

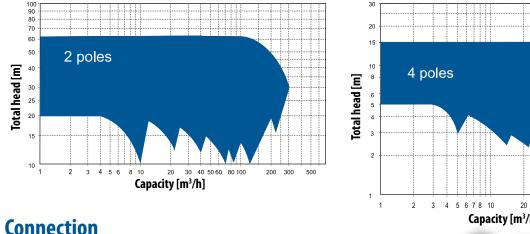
general industrial service, foodstuffs industry, water/ solvent recovery process, power stations, steel industry, small evaporator plants.



## **Fast facts**

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: Flanges: from DN 32 to DN 80 up to 8 bar - according to the pump size up to 300 m<sup>3</sup> /h up to 55 m up to 120°C - according to the pumped liquid AISI 316 PN16 reduced thickness or DIN 11851 food connections

## **Selection Charts**





FLANGED or FOOD CONNECTIONS



# **HG Semi-Open Impeller**



#### Heavy duty monoblock centrifugal pumps.

- Same interaxis of ISO 5199 chemical norm pump:
- >> Easy interchangeability.
- Casing and impeller manufactured with investment casting technology.
- Standard IEC motor (different brand available) stub shaft design.
- Different seal execution and materials options available on request.

#### FIELDS OF APPLICATION:

handling slightly contaminated liquids or non abrasive slurries in the chemical and petrochemical industries. Well suited for handling liquids with gas contents up to 10%.

#### They are also used in:

general industrial service, foodstuffs industry, dissolvedairflotation systems, small evaporator plants, sugar industry, water/solvent recovery process, power stations, steel industry textile.

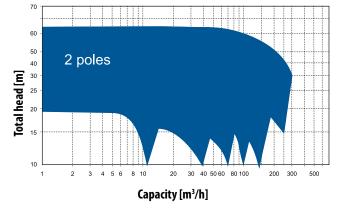


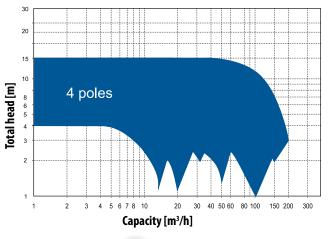
## **Fast facts**

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: Flanges: from DN 32 to DN 80 up to 8 bar - according to the pump size up to 200 m<sup>3</sup>/h up to 60 m up to 120°C - according to the pumped liquid AISI 316

PN16 reduced thickness or DIN 11851 food connections

## **Selection Charts**





## Connection



FLANGED or FOOD CONNECTIONS



# **RS Vortex Impeller**



#### Heavy duty monoblock centrifugal pumps.

- Same interaxis of ISO 5199 chemical norm pump:
- >> Easy interchangeability.
- >> Casing and impeller manufactured with investment casting technology.
- >> Large free passage clearance up to 50 mm due to the completely recessed impeller.
- Standard IEC motor (different brand available) stub shaft design.
- >> Different seal execution and materials options available on request.

#### FIELDS OF APPLICATION:

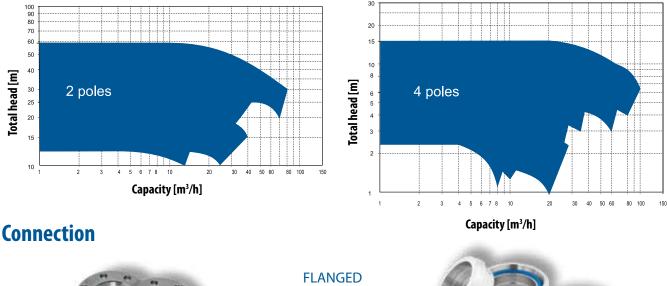
Handling chemical and crystalline suspensions, all viscous liquid, liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge. They are also used in:

general industrial service, dissolved air flotation systems, waste water treatment plant, water/solvent recovery process, steel industry.

## Fast facts

**Discharge sizes:** from 3/4 M to DN 65 Maximum working pressure: up to 8 bar - according to the pump size Flow rate: up to 100 m<sup>3</sup>/h **Differential head:** up to 60 m **Temperature:** up to 120°C - according to the pumped liquid **Materials: AISI 316** PN16 reduced thickness or DIN 11851 food connections **Flanges:** 

## **Selection Charts**



or FOOD CONNECTIONS



# **RN Closed Impeller**



#### Centrifugal pumps in according to EN 733 norms.

#### FIELDS OF APPLICATION:

Clean and non-aggressive liquids for the pump materials (contents of solids up to 0,2% max).

They are also used for:

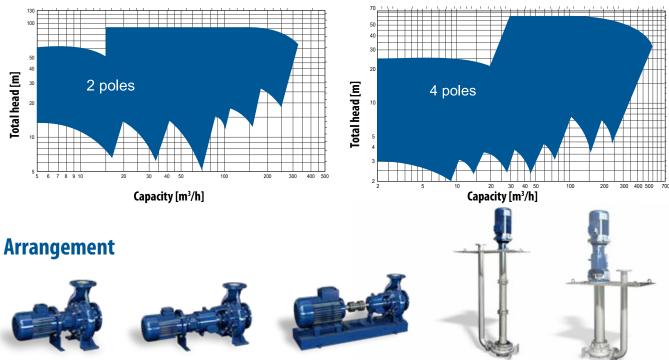
non aggressive industrial liquids, water supply, heating, conditioning, cooling and circulation plants, civil and industrial applications, fire-fighting plants and irrigations.



## Fast facts

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: from DN 35 to DN 150 10 bar up to 480 m<sup>3</sup> /h up to 90 m up to 130°C - according to the pumped liquid CAST IRON GJL200 EN1561, Shaft in AISI 430 or AISI 316, Impeller in CAST IRON GJL200 EN1561 or BRASS according to the pump size

## **Selection Charts**



# **TS Multistage**

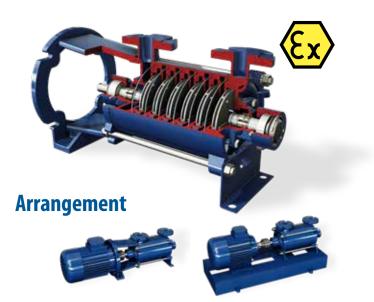
#### Centrifugal pumps in according to EN 733 norms.

#### FIELDS OF APPLICATION:

Clean and non-aggressive liquids for the pump materials (contents of solids up to 0,2% max).

They are also used for:

non aggressive industrial liquids, water supply, heating, conditioning, cooling and circulation plants, civil and industrial applications, fire-fighting plants and irrigations.



## Fast facts

Discharge sizes: Maximum working pressure: Flow rate: Differential head: Temperature: Materials: from DN 32 to DN 150 10 bar up to 480 m<sup>3</sup>/h up to 90 m up to 130°C - according to the pumped liquid CAST IRON GJL200 EN1561, Shaft in AISI 430 or AISI 316, Impeller in CAST IRON GJL200 EN1561 or BRASS according to the pump size

# **RAM Peripheral**

#### Multistage centrifugal pumps.

#### FIELDS OF APPLICATION:

clean liquids without solid parts in suspension.

They are used in: boiler feeding, washing plants, flotation plants in waste water treatment, and whenever low capacity and high pressure are required.



## Fast facts

Discharge sizes:	from DN 25
Maximum working pressure:	up to 25 bar
Flow rate:	up to 6,3 m³/h
Differential head:	up to 180 m
Temperature:	up to 120°C
Materials:	Casing and diffusers in cast iron GJL250, Shaft in AISI 420, impellers
	in BRASS or AISI 316 SS upon request
Flanges:	PN25

# Tapflo product range

#### Diaphragm pumps & accessories



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#### Tapflo products and services are available in 75 countries on 6 continents.

Tapflo is represented worldwide by own Tapflo Group Companies and carefully selected distributors assuring highest Tapflo service quality for our customers' convenience.

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