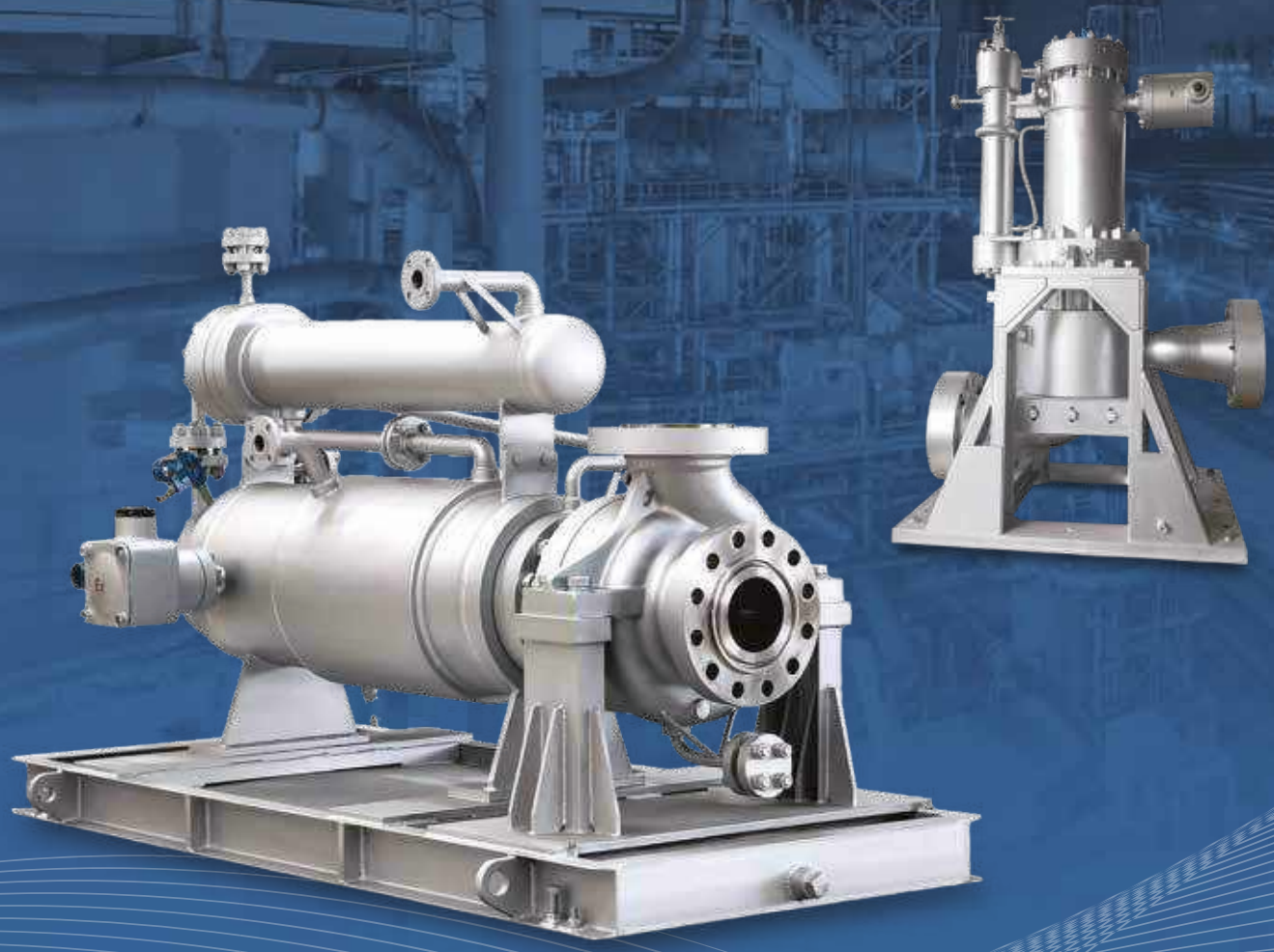
HAYWARD TYLER

Canned Motor Pumps

For zero-leakage operation in applications that demand robust and reliable performance



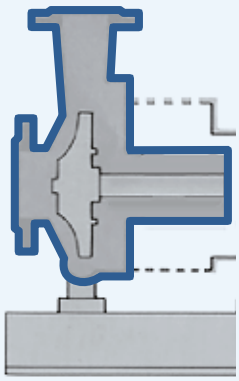
ENGINEERING EXCELLENCE
SINCE 1815
200 YEARS

CANNED MOTOR PUMPS

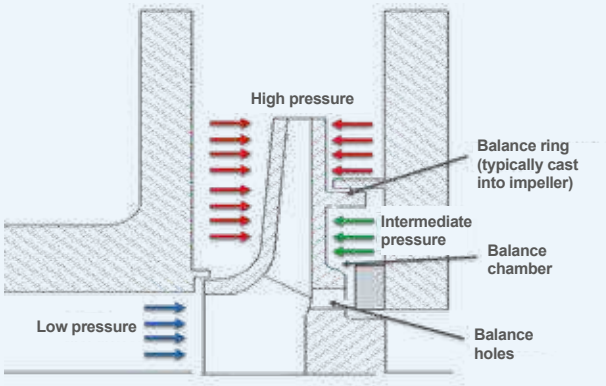
The safest pumping solution for your plant.

Hayward Tyler canned motor pumps offer the safest and most environmentally friendly pumping solution for your plant or process by utilizing two layers of protection (secondary containment). Unlike traditional pumps, canned motor pumps are completely sealless, eliminating the need for mechanical seals and ensuring leak-free operation.

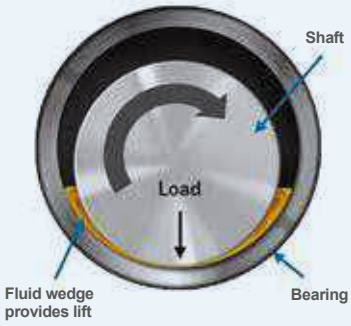
KEY FEATURES



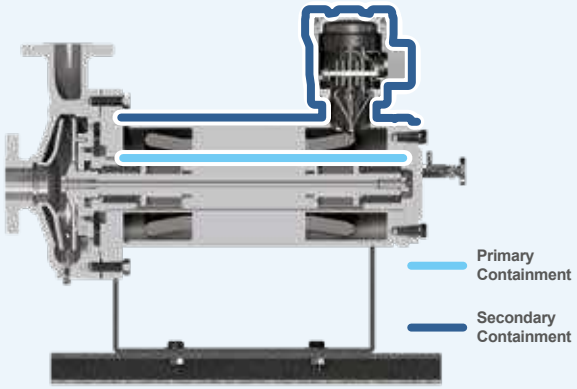
No Mechanical Seal



Balanced Thrust



Non-Contact Bearings



Double Containment

Industries

With their reliable performance and sealless design, canned motor pumps are utilized across a wide variety of industries. They are the preferred choice for applications where safety, equipment up-time and environmental concerns are paramount.

Petrochemical

Chemical Refinement & Processing

Hydrogen / Clean Energy

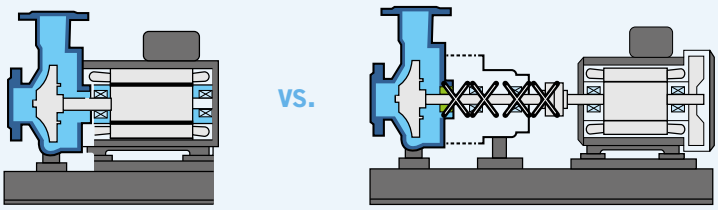
Refrigeration

Renewables

Nuclear

Why choose a CMP over other options?

CANNED MOTOR PUMP vs. MECHANICALLY SEALED PUMP



No Mechanical Seals
Faulty seals can leak, causing process shutdown upon failure. Sealless canned motor pumps eliminate this issue.

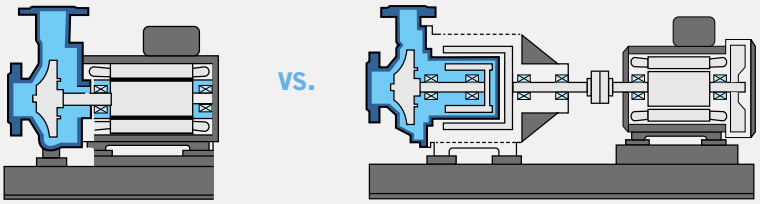
Low Maintenance
No motor and pedestal bearing lubrication levels to be continually monitored and maintained.

Single Motor & Pump Combination
There is no need for hot or cold alignment, and no special foundation is required due to the reduced weight of canned motor pumps.

Reduced Noise Levels
Noise sources are greatly reduced with canned motor pumps due to internal fluid dampening while not requiring cooling fans.

Eliminates Emissions Inspections & Reporting
Since canned motor pumps cannot leak, costly and time-consuming government and company emission monitoring and recordkeeping reporting are not required.

CANNED MOTOR PUMP vs. MAGNETIC DRIVE PUMP



Secondary Containment as Standard
Secondary containment—a standard in CMPs—protects the environment from potential leaks even in the event of equipment failure. Magnetic drive pumps do not have secondary seals, and if added are susceptible to the same problems of primary seals. Dual skin cans in magnetic drives add to losses and their reliability is not proven.

No Foundation Required
As they weigh less than magnetic drive pumps, no special foundation is needed.

Only Two Low-Maintenance Bearings
Pedestal-mounted mag drive pumps have a minimum of six bearings that must be checked frequently, making maintenance and monitoring more difficult than canned motor pumps.

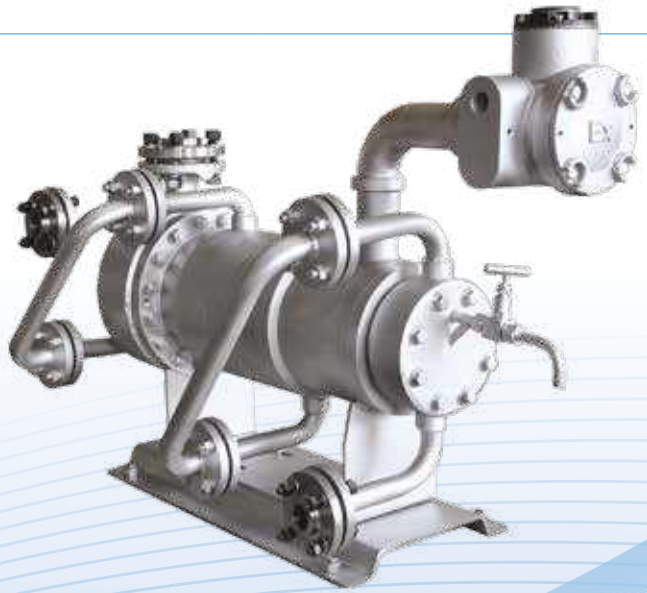
Reduced Noise Levels
Many sources of noise are absent in canned motor pumps, with no cooling fans, flexible couplings, rolling element bearings or pedestal assemblies.

Reduced Repair Costs
Studies have shown that canned motor pumps have lower total life cycle costs than magnetic drive and mechanically sealed pumps.

Operating Range

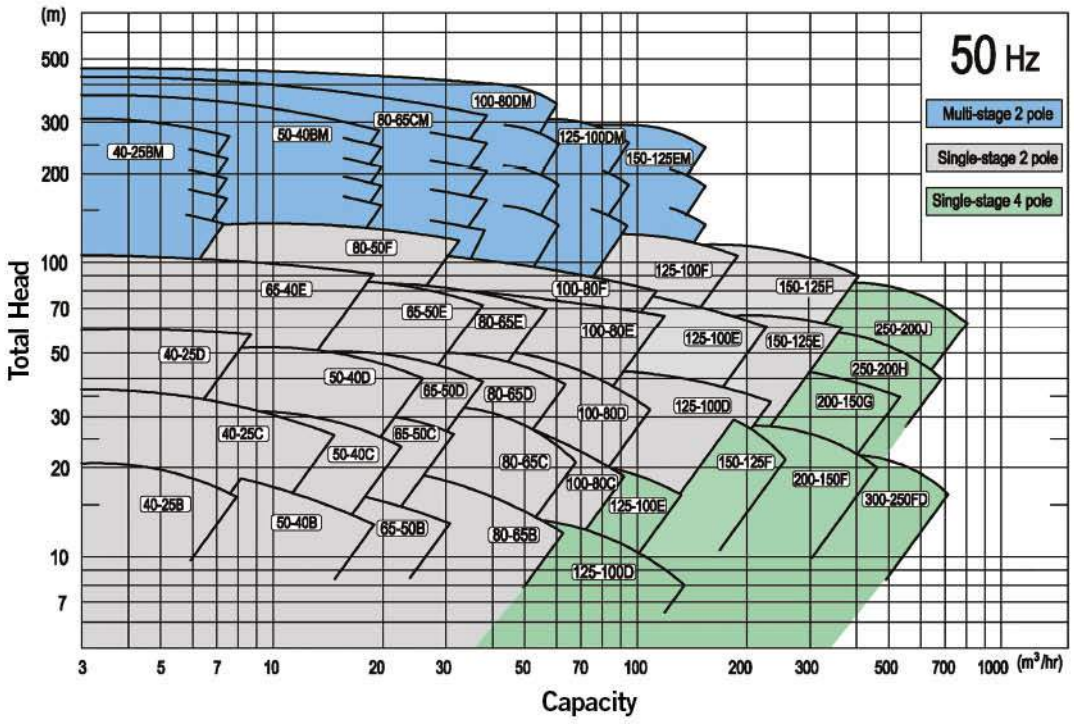
We have a wide range of standard pumps, allowing us to offer competitive leads times. We can extend the boundary and offer custom solutions to meet your needs. We pride ourselves on working with our customers to find the solutions that work for their applications.

Parameters	US	SI
Flowrate	2–11,500 USgpm	0.5–2600 m^3/hr
TDH	12–1970 ft	4–600 m
Power	Up to 600 hp	Up to 450 kW
Temperature	-160 to 750 ºF	-110 to 380 ºC
Design Pressure	6000 psig	42 Mpa
Viscosity	0.07–140 cps	0.07–140 mPa-s
Materials	**Most Common**	**Alternatives**
In Contact with Fluid	304, 316SS	316L, Hastelloy, Titanium, others as required
Winding Insulation	Class 200	Class H (180 ºC), Class 220, Class 400
Gasket	PFTE, metal spiral wound	Matched to any wetted material
Bearings	Carbon Graphite, Silicon Carbide	PEEK, others as required
Standards	Factory standard, ISO 2858, API 685, other international standards	
Hazardous Location Certification	ATEX Directive, UL and CSA certifications available	

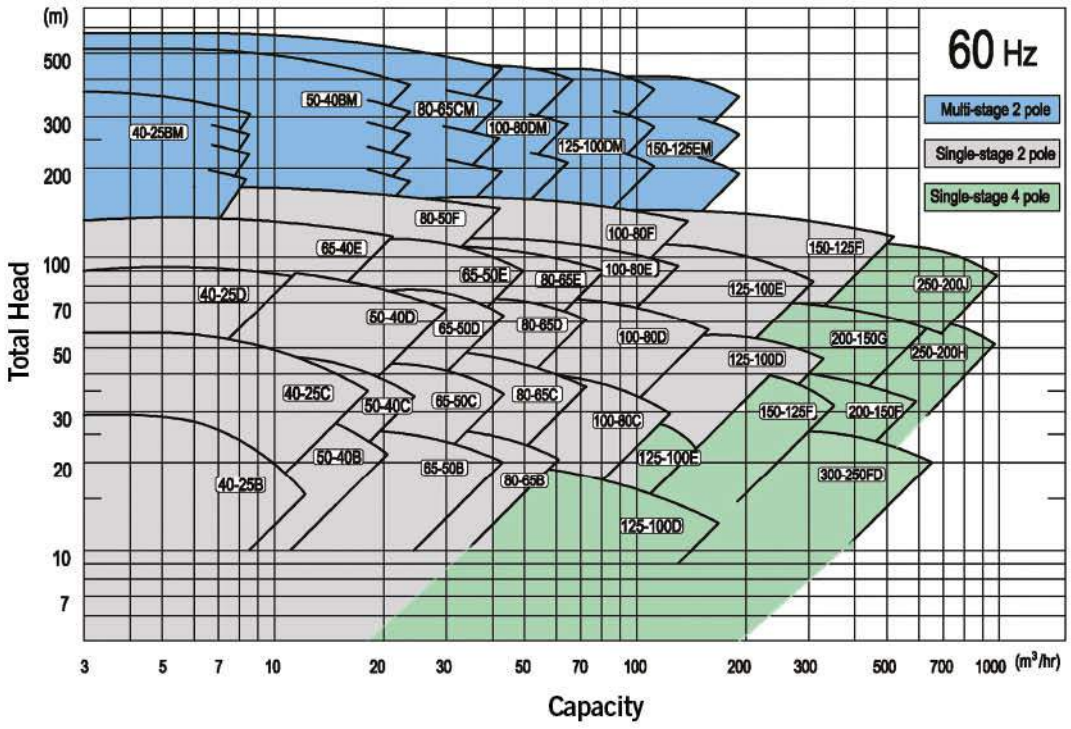


Performance Curves

2900/1450 rpm

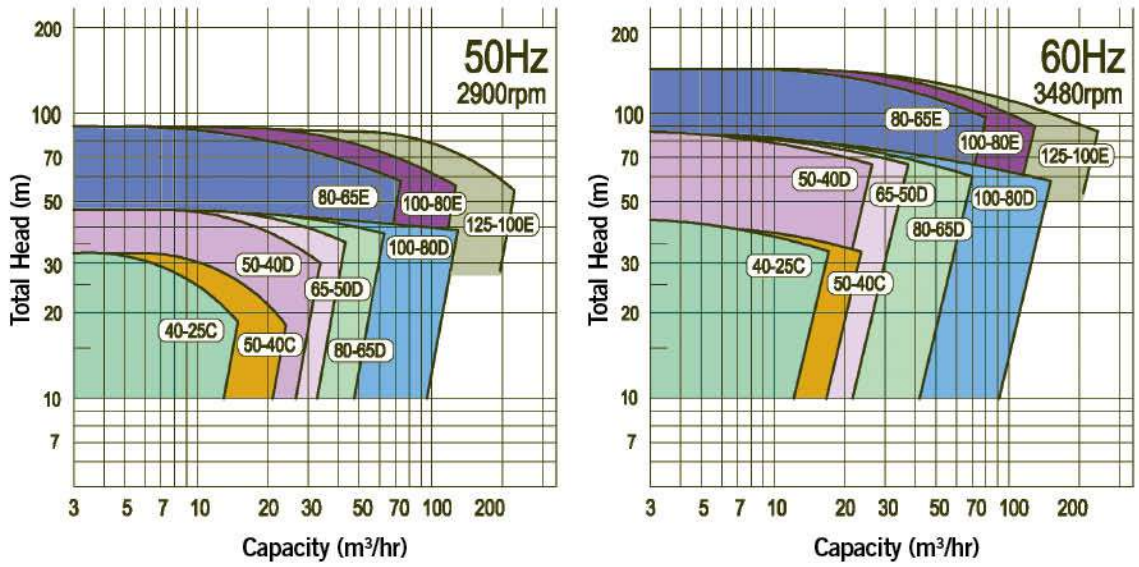


3480/1740 rpm



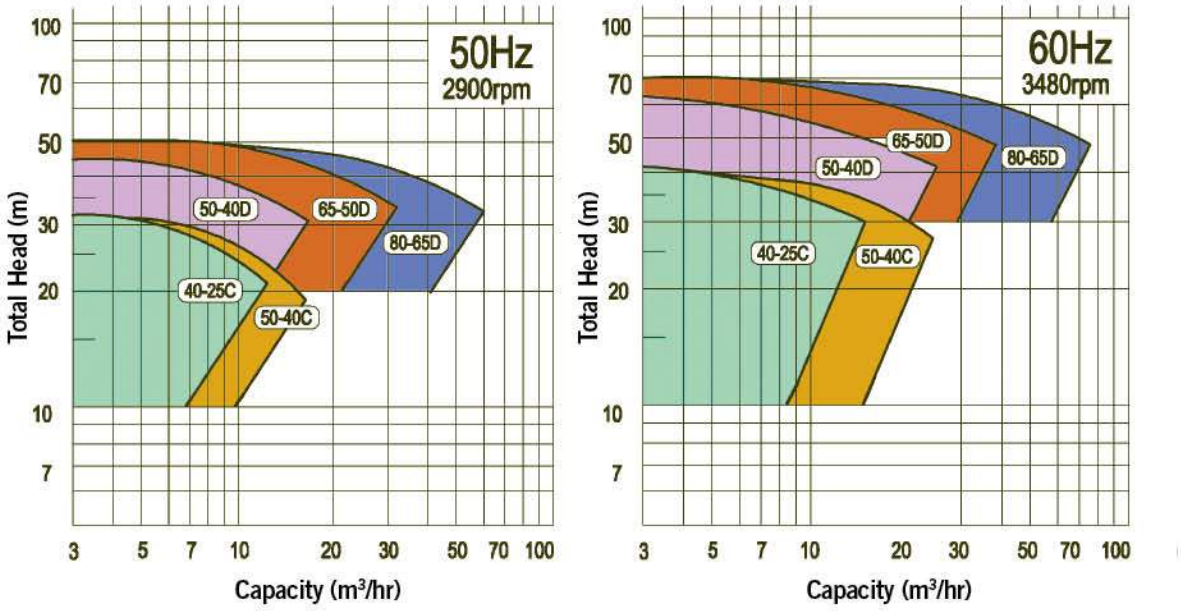
GAS SEAL SLURRY PUMP

2900 – 3480 rpm



SELF-PRIMING PUMP

2900 – 3480 rpm



SECTIONAL DIAGRAM

Canned Motor Pump Structure

We offer a variety of standard motor frame and pump hydraulic combinations to match your system need. This allows for cost optimization and industry leading delivery times.

Stator Windings

3-phase induction motor. Encapsulated with solid resin or nitrogen.

Flanges

Flanges available to major international standards, including DIN, EN, ANSI, ASME, JIS, and GB. Designed for 2x API nozzle loads.

Thrust Balanced

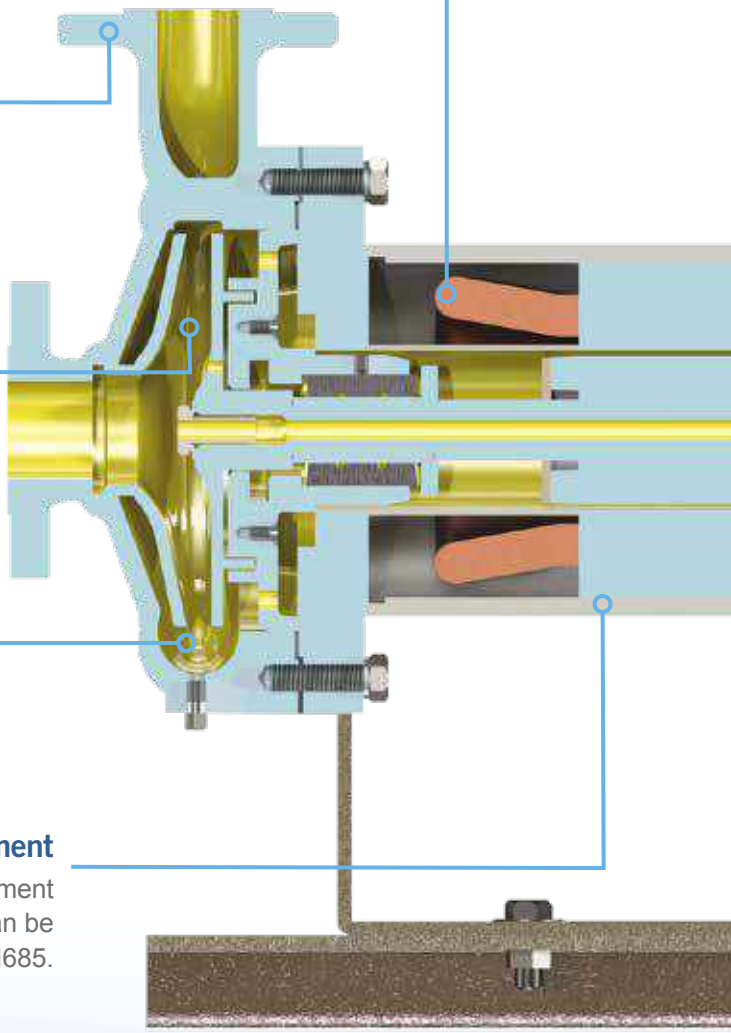
Automatic axial thrust balancing removes the need for a large thrust bearing

Impeller

Designed for high efficiency and low NPSHr. Available with an inducer for low NPSHa applications

Dual Containment

Two levels of containment against leakage. Motor can be designed to follow API685.

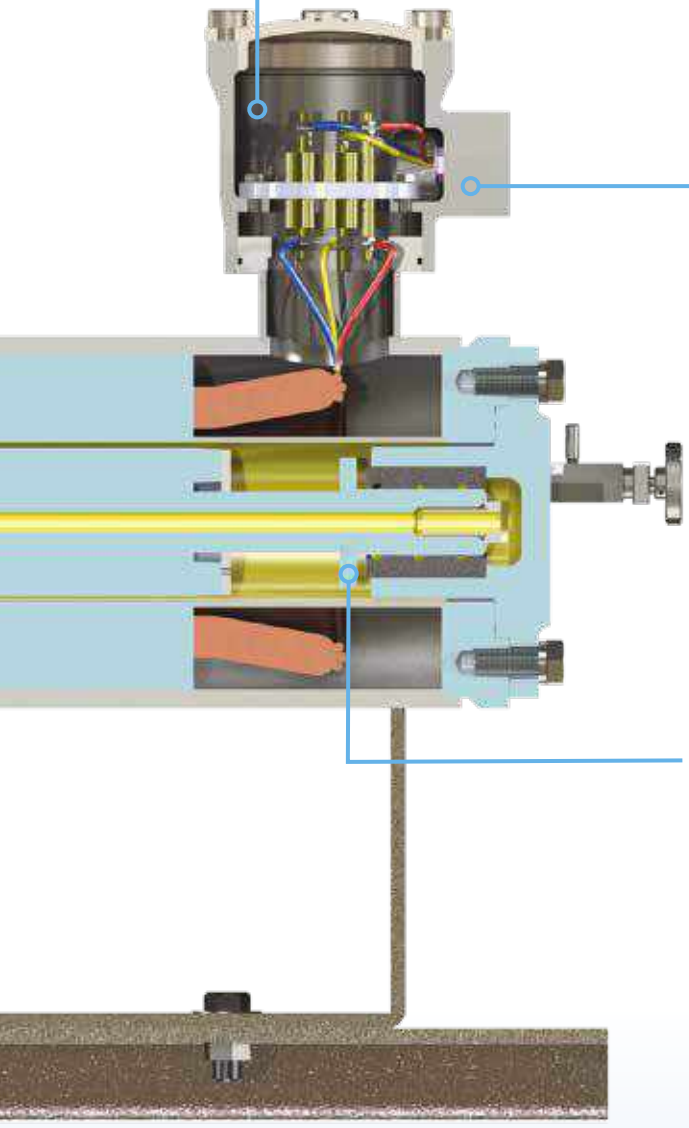


Safety and reliability come as standard with Hayward Tyler Canned Motor Pumps.

Explosion-Proof Terminal Box

Available in compliance with UL and CSA standards or ATEX directive

Ingress protection: IP66 standard



Bearing Wear Indicator

- Detects and indicates bearing wear
- Shows wrong rotating direction

Monitoring options:

- Local monitoring
- Remote panel mounting output
- Connect to existing PLC or DCS through 4-20 mA digital signal

Robust Wear Components

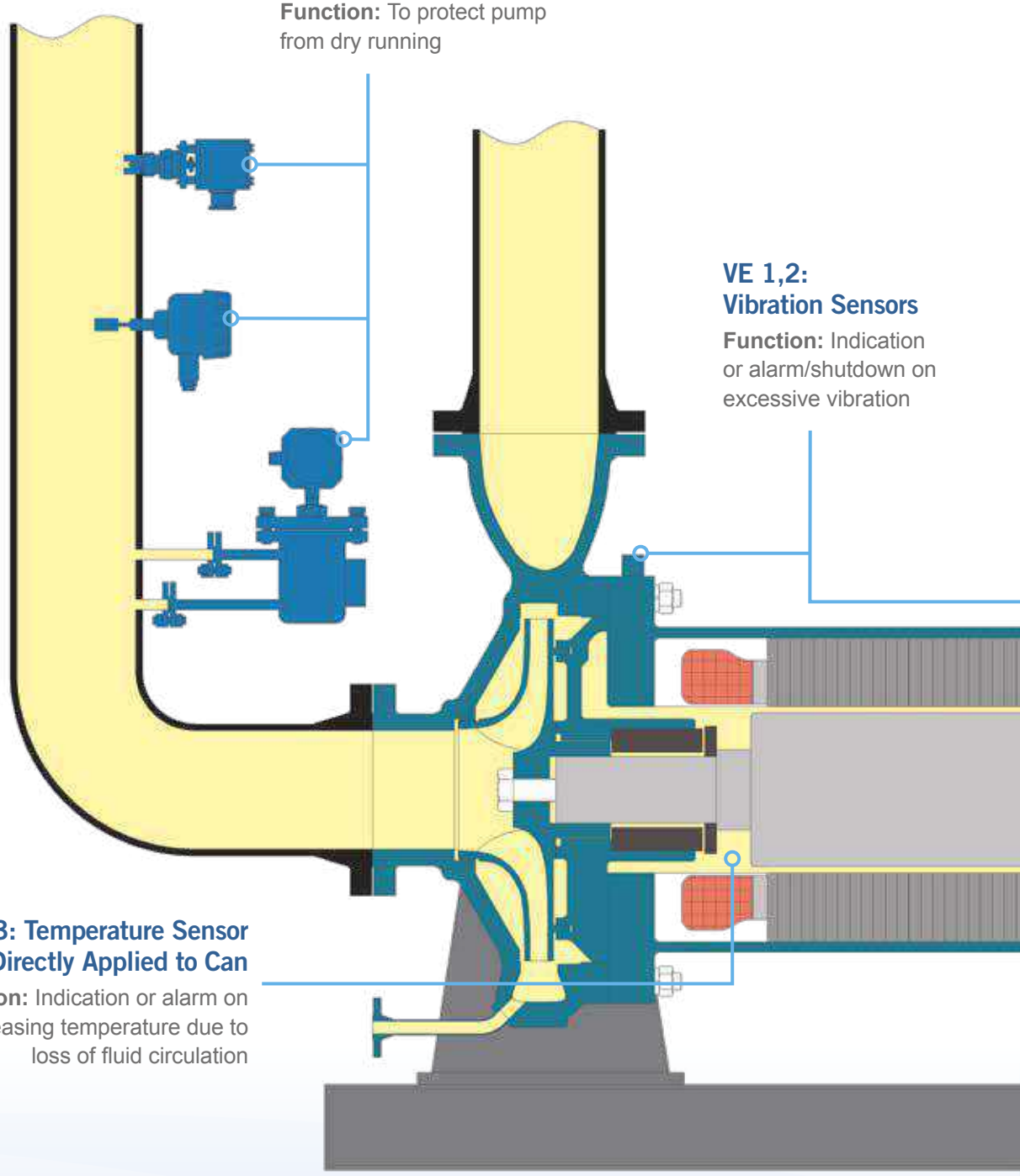
Radial bearing, shaft sleeve and thrust collar available in a variety of materials to suit the applications

Bearing: SiC, CG, PTFE

Shaft Sleeve and Thrust Collar: SiC, Stellite, Hardened Chrome, WC

SECTIONAL DIAGRAM

Instrumentation Options



LE1: Level Monitor

Function: To protect pump from dry running

VE 1,2: Vibration Sensors

Function: Indication or alarm/shutdown on excessive vibration

TE3: Temperature Sensor Directly Applied to Can

Function: Indication or alarm on increasing temperature due to loss of fluid circulation

JE: Power Monitor

Function: Indication or alarm/shutdown on abnormal power due to running, excess load, or single phasing. This is attached at your switch gear.

STANDARD

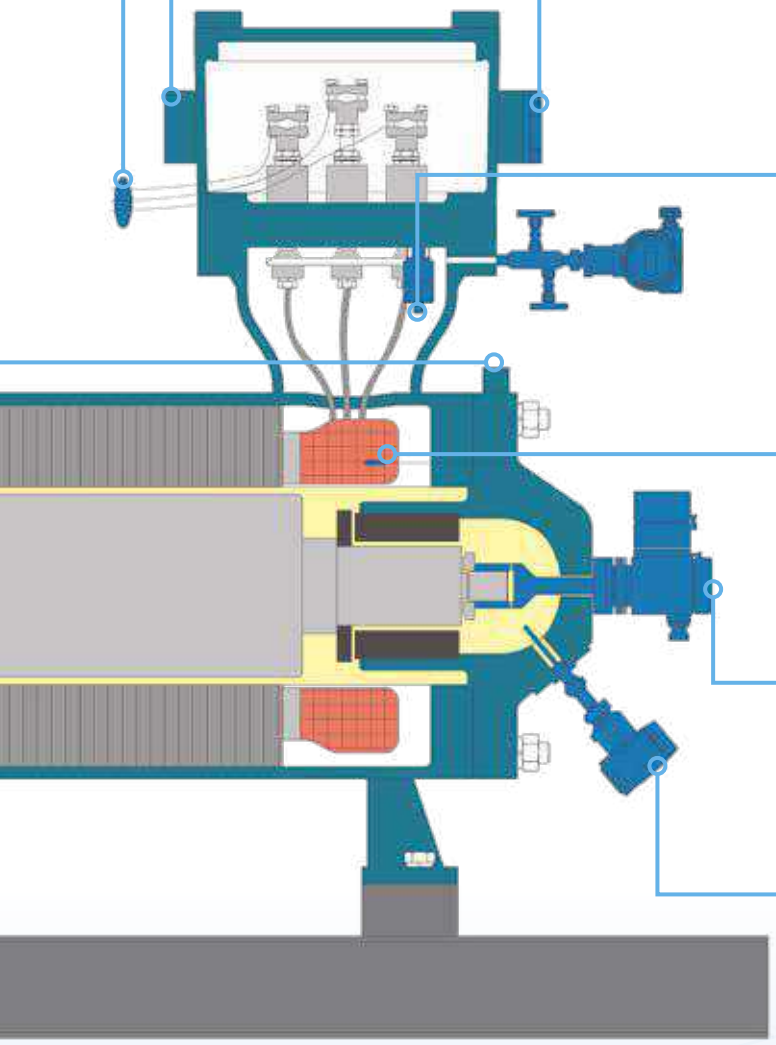
RE: Rotation Monitor

Function: Indication on motor rotation direction

STANDARD

ZE1: Bearing Radial Wear Monitor

Function: Indication or alarm/shutdown on bearings radial wear



PE: Pressure Monitor

Function: Shutdown on rising pressure due to containment shell leakage

STANDARD

TE1: Motor Thermal Protection

Function: Alarm shutdown on excessive temperature in windings due to loss of circulation fluid or over load

ZE2: Axial Shaft Position Monitor

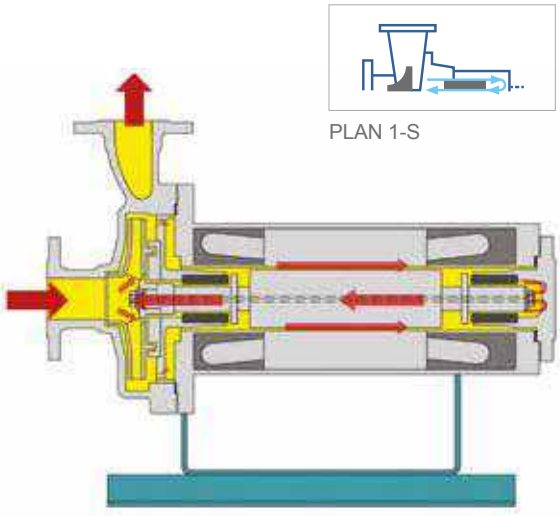
Function: Indication or alarm/shutdown on excessive change in axial shaft position

TE2: Temperature Monitor

Function: Indication or alarm/shutdown on increasing temperature on circulation flow path

HV
Hollow Shaft
API685 PLAN 1-S

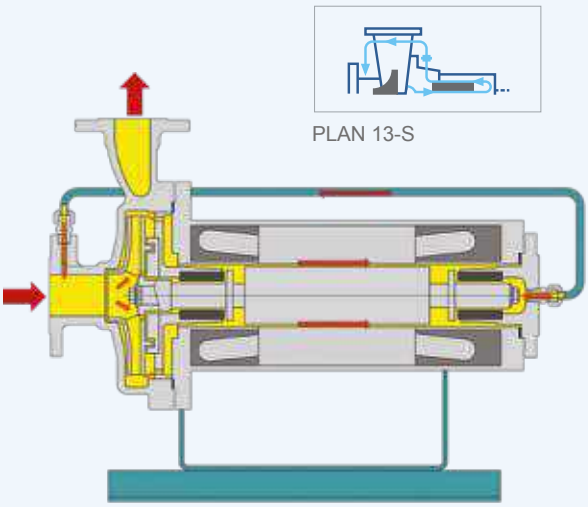
Basic canned motor pump design using a hollow shaft for inner circulation.



PLAN 1-S

HP
Standard
API685 PLAN 13-S

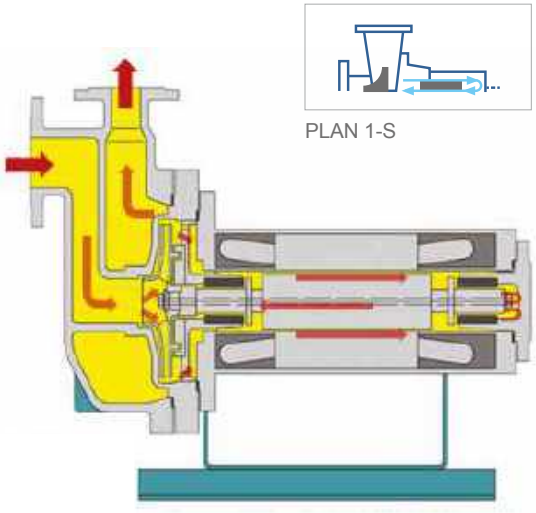
Solid shaft construction with an external recirculation line for cooling.



PLAN 13-S

HZ
Self-Priming
API685 PLAN 1-S

Has a chamber that allows for self priming. Particularly suitable for pumping from underground tanks and applications with entrained gases.



PLAN 1-S

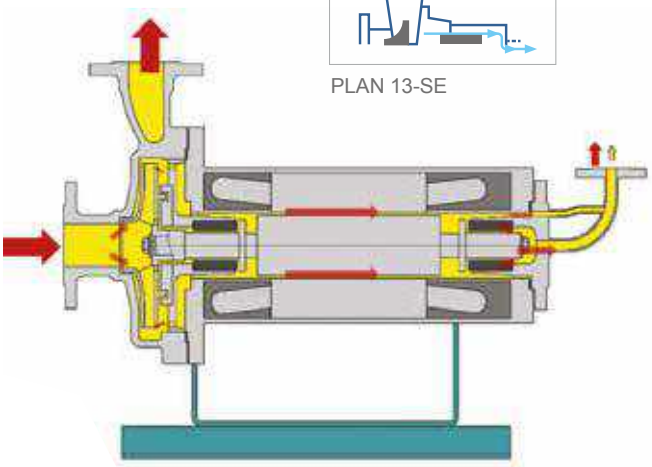
HN

Reverse Circulation

API685 PLAN 13-SE

Uses a reverse circulation flow path and is self-venting. Suitable for fluids with a low vapor pressure.

PLAN 13-SE

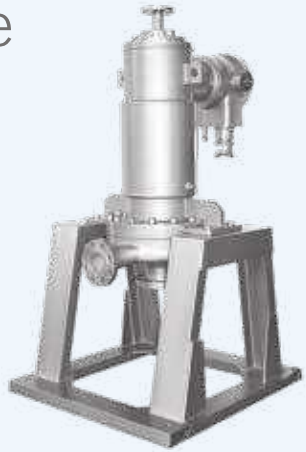


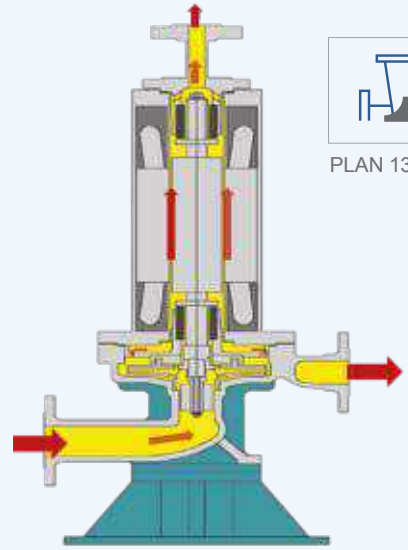
HW

Vertical Reverse Circulation

API685 PLAN 13-SE

Vertical orientation Reverse Circulation. Typical applications include liquefied gases (LPG, CO_2 etc.) and refrigerants (Ammonia, etc).





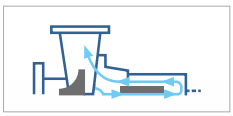
PLAN 13-SE

HNP

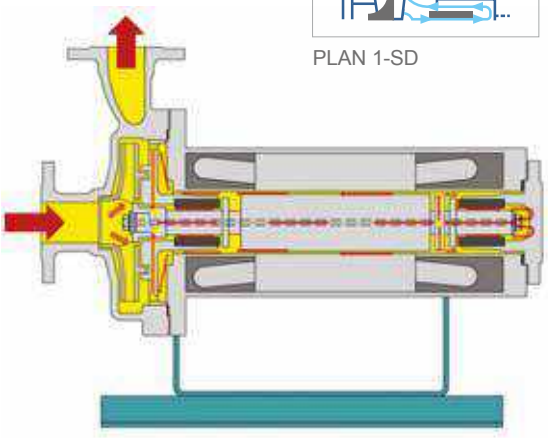
Internal Pressurized Circulation

API685 PLAN 1-SD

Suitable for handling volatile fluids, especially those with low vapor pressure.



PLAN 1-SD

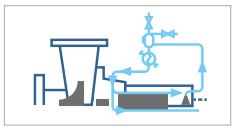


HS

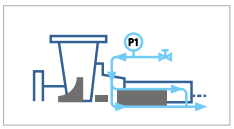
Slurry Handling

API685 PLAN 53-S & 54-S

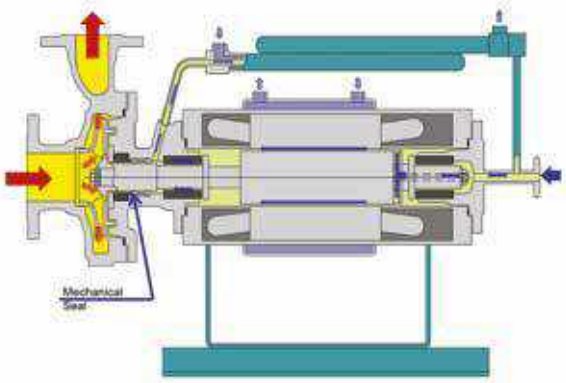
An internal mechanical seal allows the handling of fluids with a small amount of fine particles.



PLAN 53-S



PLAN 54-S

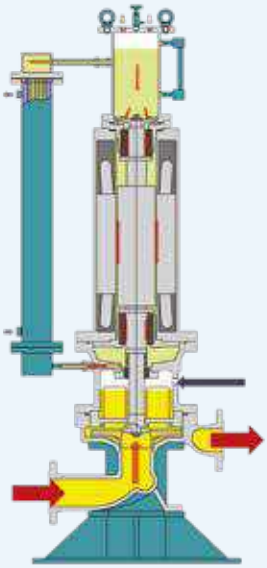


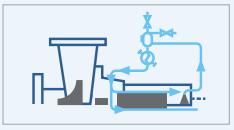
HJ HG

Slurry Handling with Gas Seal

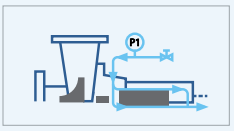
API685 PLAN 53-S & 54-S

Vertical design with the ability to handle solid content up to 30%wt. The design uses and internal mechanical seal and a gas chamber between the pump and motor for isolation.





PLAN 53-S



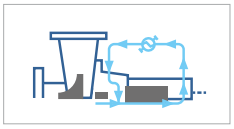
PLAN 54-S

HT

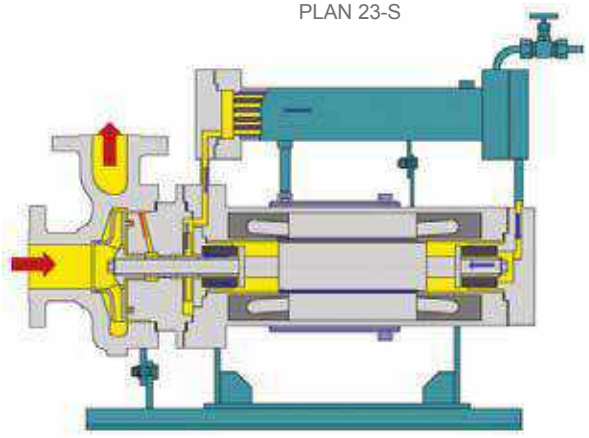
High Temperature

API685 PLAN 23-S

Thermal barrier between the pump case and motor to thermally isolate the motor. Suitable for high temperature applications including hot oils and hot water. External heat exchanger keeps the motor temperature regulated.



PLAN 23-S

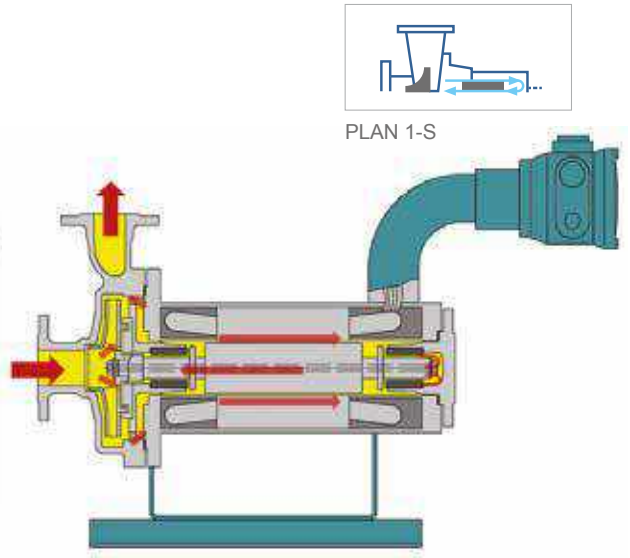


HV-X

High Temperature

API685 PLAN 1-S

Excellent for high temperature applications where no cooling water is available. Non-organic insulation materials allow for higher motor operating temperatures.



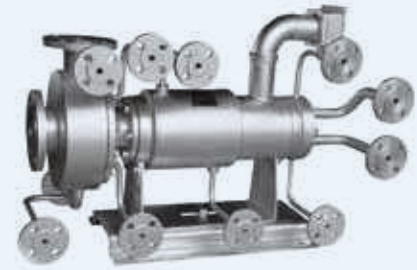
PLAN 1-S

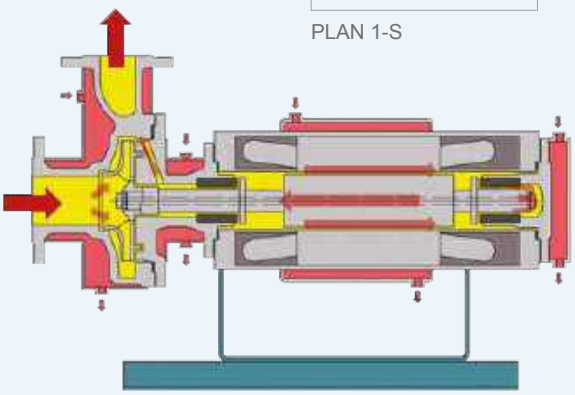
HR

High Melting Point

API685 PLAN 1-S

Uses a series of heating jackets to maintain an increased temperature around the motor. Ideal for handling liquids with high melting points.





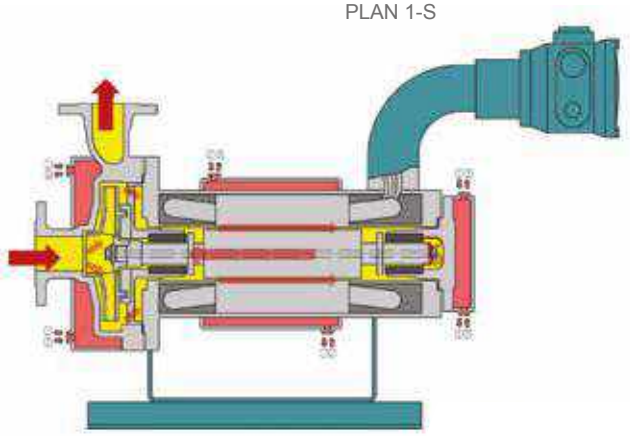
PLAN 1-S

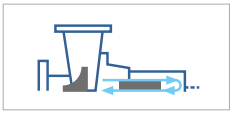
HR-Y

High Temperature, High Melting Point

API685 PLAN 1-S

Similar to model HR, with a key difference in its ability to handle higher motor temperatures.





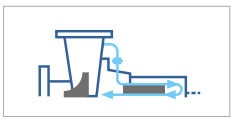
PLAN 1-S

HP-M

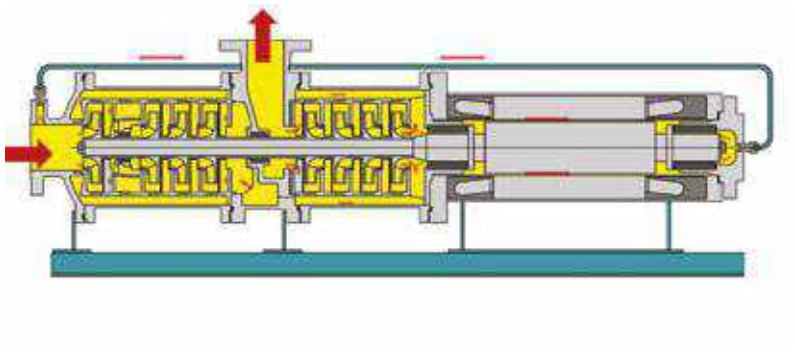
Basic Circulation Multistage

API685 PLAN 11-S

For applications requiring high head for the process while maintaining zero leakage.



PLAN 11-S



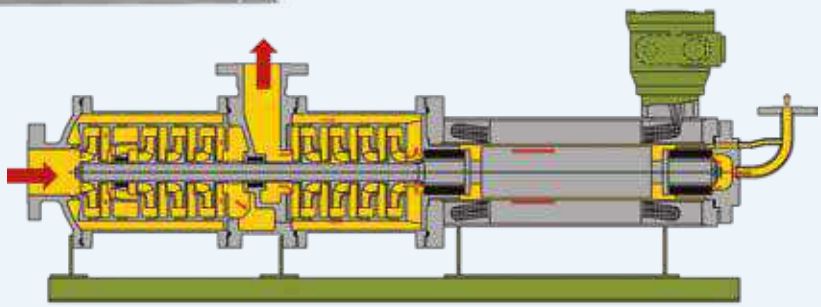
HN-M

Reverse Circulation Multistage

API685 PLAN 13-SE

Similar multistage pump design for fluids with low vapor pressure.

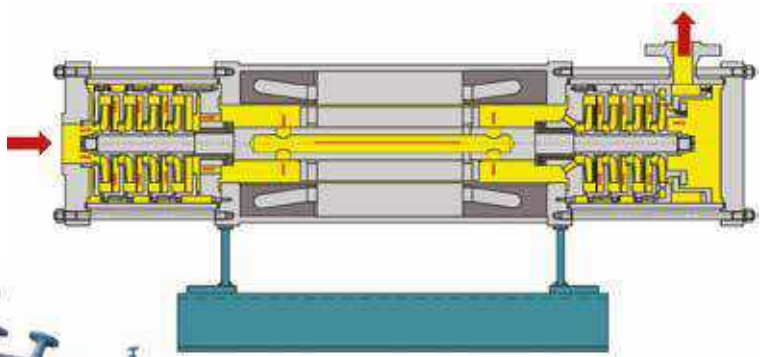
PLAN 13-SE



HP-T

Tandem Multistage

The offset multi-stage design is suited for the highest head applications. It uses a rigid shaft to minimize deflection.



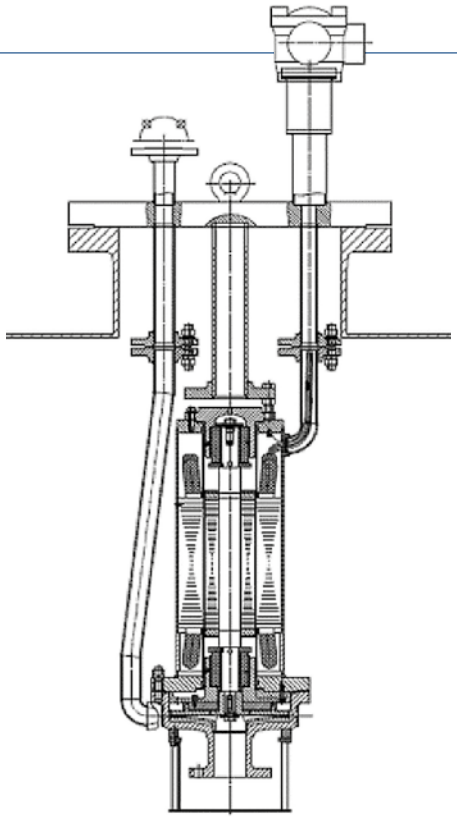
ADDITIONAL CANNED MOTOR PUMP TYPES

HE

Submersible Type

Submerged pumps can be mounted directly into tanks offering space savings.

They are most frequently used with liquefied gases or flammable liquids within gas plants, tank farms, chemical transportation and other industrial processes.

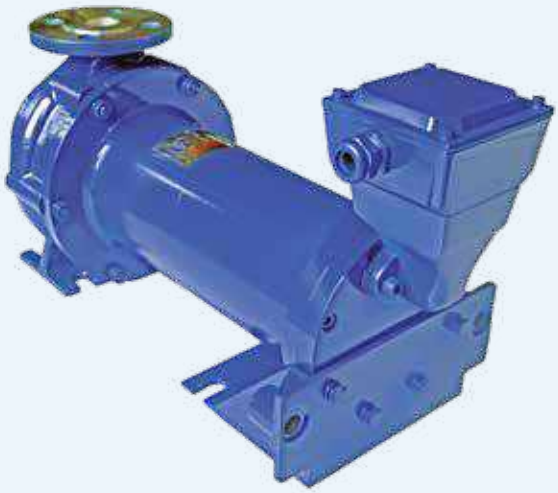


HX

Small Circulation

Designed for use in cooling fluid circulation systems such as inverters, transformers and small package equipment.

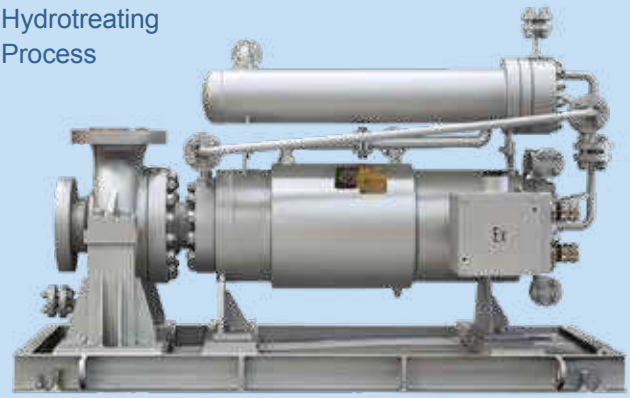
They are frequently used in wind turbines, locomotives and high voltage power transformers.



A High Pressure Butanediol Pump

Vinyl Chloride Monomer Pump used in manufacturing of PVC.

Diesel Reactor Effluent Pump for a Hydrotreating Process



Pumping a Caustic Solution. Our canned motor pump eliminated a seal leak that was occurring every 3 months.

Steam Generator Start-up Pump for Concentrated Solar Plant

Typical fluids handled by Hayward Tyler Canned Motor Pumps

A

Acetaldehyde
Acetic acid
Acetic anhydride
Acetone
Acetone cyanohydrin
Acetonitrile
Acrolein
Acrylamide
Acrylonitrile
Alkylbenzenes
Allyl acetone
Allyl chloride
Aluminum sulfate
Amidol
Ammonia water
Ammonium copper acetate
Ammonium sulfate
Ammonium sulfide
Ammonium sulphite
Amyl acetate
Anhydrous ammonia
Anhydrous hydrogen chloride
Anhydrous hydrogen fluoride
Anhydrous sulfur dioxide
Aniline
Anol

B

Benzaldehyde
Benzene
Boiler feed water
Boric acid
Butadiene
Butane
Butanol

C

Calcium chloride
Calcium hydroxide
Caprolactam
Carbon disulfide
Carbon tetrachloride
Caustic potash
Caustic soda
Chloroform
Chloroprene
Chlorosulfonic acid
Chromic acid
Cooking oil
Cresol
Crotonaldehyde
Crude oil
Cyclohexane
Cyclohexanol

D

Demineralized water
Detergents
Developers
Dichlorobenzene
Diethyl aluminum chloride
Dimethyl formamide
Dowtherm

E

Ethanol
Ethanol amine and other amines
Ethyl acetate
Ethyl ethers
Ethylene dichloride (EDC)
Ethylene oxide

F

Fatty acid
Fermentation solution
Formaldehyde
Formic acid
Freon
Furfural

G

Gasoline
Gelatine
Glycerine
Ethylene glycol

H

Hexane
Hexanol
Hexanone
Hydraulic acid
Hydrazine
Hydrocyanic acid
Hydrofluoric acid
Hydrogen peroxide

I

Isopropyl alcohol

K

KC

L

Lactic acid
Lactonitrile
Liquid ammonia
Liquid carbon dioxide
Liquid chlorine
Liquid ethylene
Liquid methane
Liquid propane
Liquid propylene
Liquified ammonia
Lithium bromide
Lithium chloride
LPG
Lubricants

M

Maleic acid
Mercury
Methacrylic acid
Methanol
Methyl acetate
Methyl acrylate
Methyl chloride and other coolants
Methyl ether ketone
Methyl ethers
Methyl hydrazine
Methyl methacrylate
Methyl naphthalene
Methyl silane
Methyl sulfoxide
Methylene chloride
Mixed acids
Mobiltherm and other heat transfer media

N

Naphtha
Naphthalene
Nitric acid
Nonane

O

Octyl alcohol
Oleic acid
Oxalic acid

P

PAC
Paints
Petroleum (Naphtha, Crude Oil, Gasoline)
Phenol
Phosgene
Phosphoric acid
Phosphorus oxychloride
Phosphorus trichloride
Plasticizers
Potassium bichromate
Potassium hydroxide
Propionic acid
Propylene dichloride
Propylene glycol
Propylene oxide
PVA
PVC
Pyridine

S

Sea water
Silane
Silicochloroform
Silicon tetrachloride
SK oil
Sodium carbonate
Sodium chlorate
Sodium chloride
Sodium cyanide
Sodium hydroxide
Sodium hypochlorite
Sodium silicate
Sodium sulfide
Stearic acid
Styrene
Sulfurous acid
Sulphuric acid
Syrups

T

TDI
Tetrachloroethylene
Tetraethyl lead
Titanium tetrachloride
Toluene
TPA slurry
Transformer oil
Trichloroethylene
Triethyl aluminum silane

V

Various catalyst slurry
Various polymer slurry
Various solvents
Vinyl ether

W

Waste water and other types of treated water

X

Xylene

Our Global Facilities

We have manufacturing facilities across the globe to provide reliable and timely support to our customers.

Each location offers repair services and field service support capable of providing technical expertise to you, no matter where your location. Additionally, we have a network of partners across the globe to allow us to provide the most convenient options for your aftermarket support. We offer a wide range of repair options for all planned and predictive maintenance cycles, as well as comprehensive electrical and mechanical inspection capabilities.

Our field service support teams can be used on a supervisory or turnkey basis. With turnkey growing in popularity as an effective means of reducing staff overhead, Hayward Tyler is there to meet industry needs.

For further information on Hayward Tyler's Canned Motor Pumps, please contact us at a location below:

HAYWARD TYLER

Engineered solutions for the global energy sector

USA
Hayward Tyler Inc.
Vermont, USA
+1 (802) 655 4444
vermont@haywardtyler.com

ENGLAND
Hayward Tyler Ltd.
Luton, England
+44 (0)1582 731144
luton@haywardtyler.com

SCOTLAND
Hayward Tyler Fluid Handling
Glasgow, Scotland
+44 (0)1355 225461
glasgow@haywardtyler.com

INDIA
Hayward Tyler India
Delhi, India
+91 11 4575 6831 / 4507 5971
delhi@haywardtyler.com

CHINA
Hayward Tyler Kunshan
Kunshan, China
+86 512 57723311
kunshan@haywardtyler.com

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