NEPTUNO PUMPS®

Innovation that flows.™

GENERAL PRODUCT CATALOG

NEPTUNO PUMPS®
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VERTICAL TURBINE PUMP (VTP)

OPERATING PARAMETERS

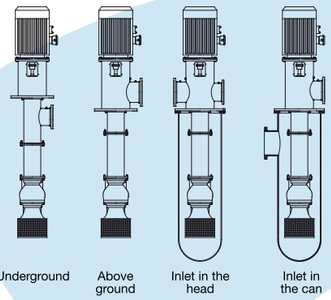
- Capacities up to 25000 (m^3/h) (95000 gpm)
- Head up to 600 (m) (1968 Feet)
- Power through 2.237 (kW) (3,000 hp)
- Frequency 50/60 Hz
- Temperatures to 200 (°C) (400 °F).

DESIGN FEATURES

- Low NPSH first stage construction
- Thrust balanced impellers available
- Packing or mechanical seal
- Independent axial-thrust bearing assembly

DISCHARGE CONFIGURATIONS

- Multiple discharge configurations and sizes.

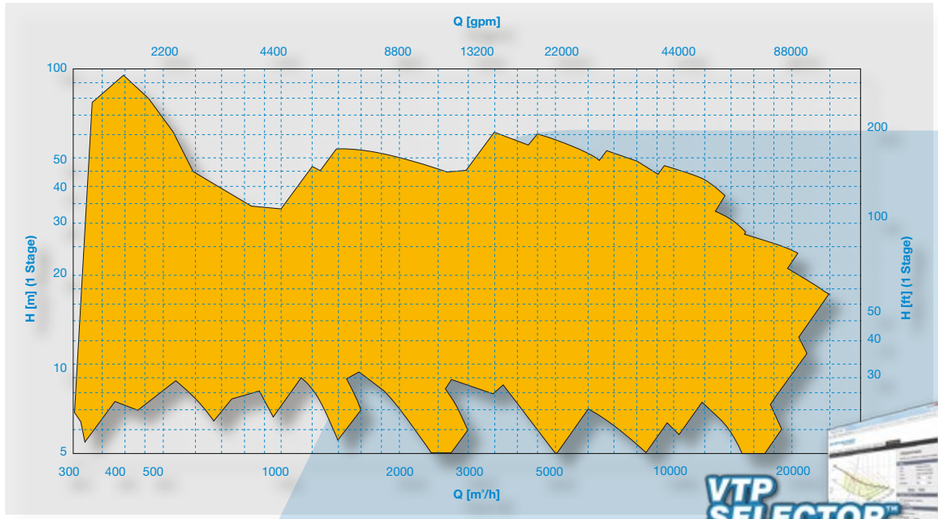


SERVICES

- Primary Water Supply – Fresh water or Sea water
- Mining Processes - Solvent Extraction/ Electro-Winning (SX/EW), Dewatering, Tailings & Post Processed Solutions
- Oil & Gas Production – Onshore, Offshore and Pipeline
- Pulp and Paper
- Municipal Water & Wastewater
- Agriculture - Irrigation.

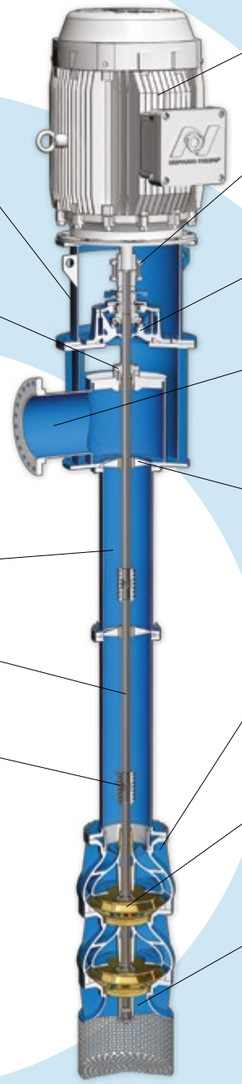
MATERIALS

- Bronze, Cast Iron, Carbon Steels
- Stainless Steels - 316, 317 SS
- Duplex - 2205
- Super Duplex - 2507
- Super Austenitic - 254 SMO, 654 SMO
- Nickel-Based Super Alloys - Hastelloy



www.vtpselector.com

OPEN SHAFT (OS)



Driver Stand
- Mechanical cartridge seal or stuffing box arrangements with piping plans
- Reliable sealing and simple maintenance

Mechanical Seal
- Type RREP High Duty Cartridge

Flanged Column Assembly
- Flanged ends for ease of assembly
- Custom fabricated to fit any size

Pumpshaft
- Fully machined and sized for application thrust and torque
- Different engineered alloys for aggressive applications

Lineshaft Coupling
- Threaded or sleeve available depending on shaft diameter and horsepower
- Locks lineshafts sections together Hydrodinamically design for high efficiency

Driver
- Vertical Solid Shaft (VSS)
- Fixed or variable speed drives
- Specified to customer needs and location data

Coupling
- Flexible with spacer or rigid (flange adjustable)
- Allows servicing the thrust bearing and mechanical seal as needed

Independent Axial Thrust Bearing Assembly
- Withstands the total hydraulic thrust as well with the rotor weight
- Allows servicing with standard drives

Discharge Head
- Fabricated or fully Casted Heavy-Duty and Low-loss design
- Fabricated segmented elbow available for efficiency improvement
- Flanges ratings of ASME Class150 -300 depending on pressure requirements

Bearing Retainer / Lineshaft Bearing
- Provides shaft support and maintains alignment
- Retainers spaced between column sections
- Polymer or metal bearings available

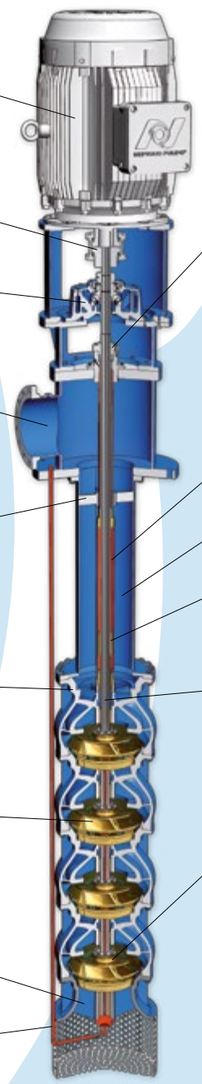
Bowls
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Wear rings and bearings available in a wide range of materials for extended operation life

Impellers
- Precisely trimmed and balanced to reduce vibration and wear
- Located with either collet or keyed construction depending on horsepower
- Wear rings for extended operation life

Suction Bell
- Provides efficient flow into first stage impeller
- Basket strainer available to restrict large solids from entering the pump

External Lubrication System
- Allows flow of lineshaft bearing lubricant into enclosing tube

ENCLOSED SHAFT (ES)



Mechanical Seal
- John Crane® Type RREP High Duty Cartridge

Suction/Discharge Head
- Fabricated or fully Casted Heavy-Duty and Low-loss design
- Fabricated segmented elbow available for efficiency improvement
- Flanges ratings of ASME Class150 -300 depending on pressure requirements

Enclosing Tube
- Provides lineshaft protection from pumped liquid and support

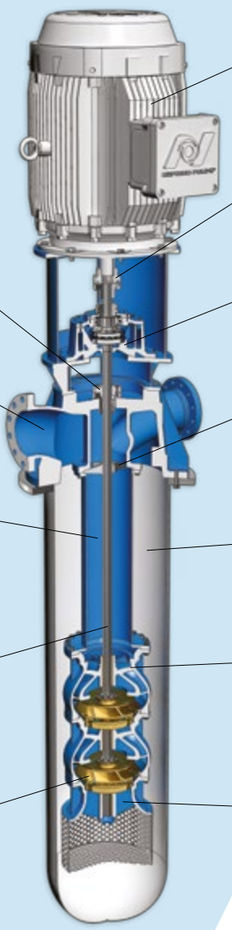
Flanged Column Assembly
- Flanged ends for ease of assembly
- Custom fabricated to fit any size

Lineshaft Coupling
- Threaded or sleeve available depending on shaft diameter and horsepower
- Locks lineshafts sections together Hydrodinamically design for high efficiency

Pumpshaft
- Fully machined and sized for application thrust and torque
- Different engineered alloys for aggressive applications

Impellers
- Precisely trimmed and balanced to reduce vibration and wear
- Located with either collet or keyed construction depending on horsepower
- Wear rings for extended operation life

CAN TYPE (VC)



Driver
- Vertical Solid Shaft (VSS)
- Fixed or variable speed drives
- Specified to customer needs and location data

Coupling
- Flexible with spacer or rigid (flange adjustable)
- Allows servicing the thrust bearing and mechanical seal as needed

Independent Axial Thrust Bearing Assembly
- Withstands the total hydraulic thrust as well with the rotor weight
- Allows servicing with standard drives

Bearing Retainer / Lineshaft Bearing
- Provides shaft support and maintains alignment
- Retainers spaced between column sections
- Polymer or metal bearings available

Suction Can
- Fabricated Suction Can for optimum hydraulic conditions
- Provides uniform and adequate velocity flow downstream along the can length

Bowls
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Wear rings and bearings available in a wide range of materials for extended operation life

Suction Bell
- Provides efficient flow into first stage impeller
- Basket strainer available to restrict large solids from entering the pump

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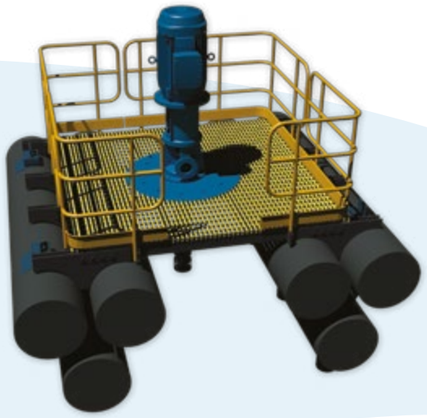
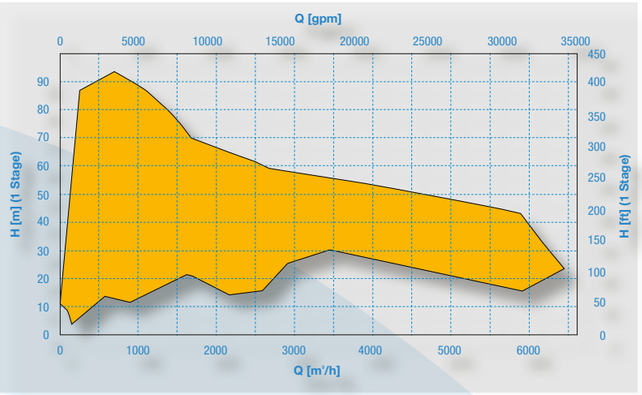
NEPTUNO BARGE PUMP SYSTEM™





OPERATING PARAMETERS

- Capacities up to 6700 (m³/h) (34000 gpm)
- Head up to 400 (m) (1312 Feet)
- Power through 1500 (kW) (2000 hp)
- Frequency 50/60 Hz
- Temperatures to 200 (°C) (400 °F)

DESIGN FEATURES

- Low NPSH first stage construction
- No priming required
- Thrust balanced impellers available
- Product lube or enclosed lineshaft
- Minimum space requirement
- Packing or mechanical seal
- Independent axial-thrust bearing assembly.

DIFFERENT BARGE CONFIGURATIONS

- Multiple barge configurations and sizes.

Interconnected piping and floating walkways

SERVICES

- Primary Water Supply – Fresh water or Sea water
- Mining Processes - Solvent Extraction/Electro-Winning (SX/EW), Dewatering, Tailings & Post Processed Solutions
- Oil & Gas Production – Onshore, Offshore and Pipeline.

MATERIALS

- Bronze, Cast Iron, Carbon Steels
- Stainless Steels - 316, 317 SS
- Duplex - 2205
- Super Duplex - 2507
- Super Austenitic - 254 SMO, 654 SMO
- Nickel-Based Super Alloys - Hastelloy.

Driver
- Vertical Solid Shaft (VSS)
- Fixed or variable speed drives
- Specified to customer needs and location data

Vertical Turbine Pump
- Maximum versatility and reliability
- Low NPSH first stage construction
- No priming required
- Minimum space requirement

Base Plate
- Serves as base or support for the pump and attaches it to the barge

Barge System
- High Density Polyethylene (HDPE) non-collapsible flotation chambers
- Foam filled chambers for long term applications
- Eliminates chances of catastrophic failure from a chamber leak
- Modular design for quick on site setup and commissioning

Mechanical Seal
- John Crane® Type 5860 Slurry Seal

- Special material selection for standard or abrasive/corrosive service
- Packing or mechanical seal
- Independent axial-thrust bearing assembly
- Multiple discharge configurations and sizes

- Always at proper submergence
- Different configurations depending on operation conditions
- Free-Floating Barge Design requires no civil works
- Optional rails and access platform available

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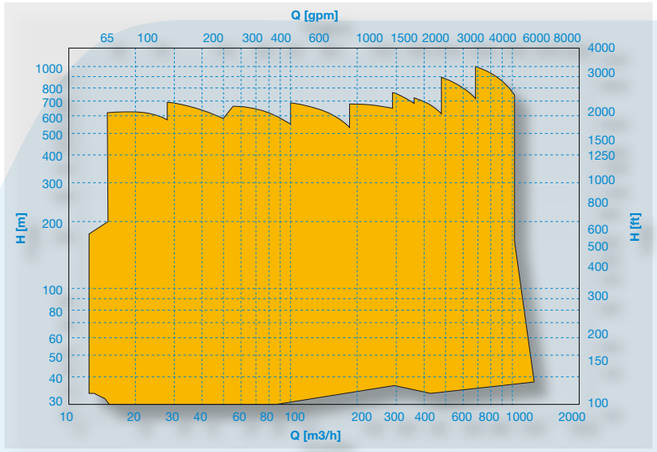
HORIZONTAL MULTISTAGE PUMP (HR)



OPERATING PARAMETERS

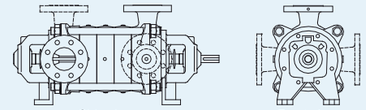
- Capacities up to1500 (m³/h) (5000 gpm)
- Head up to 1000 (m) (3280 Feet)
- Power through 750 (kW) (1000 hp)
- Frequency 50/60 Hz
- Temperatures to 150°C (300 °F)
- Discharge sizes from 3" to 12".

DESIGN FEATURES

- Modular design concept for maximum interchangeability
- Both ends bearings and axial thrust balancing
- Packing or mechanical seal.

FLANGE ORIENTATION

- Different suction and discharge flange orientation.

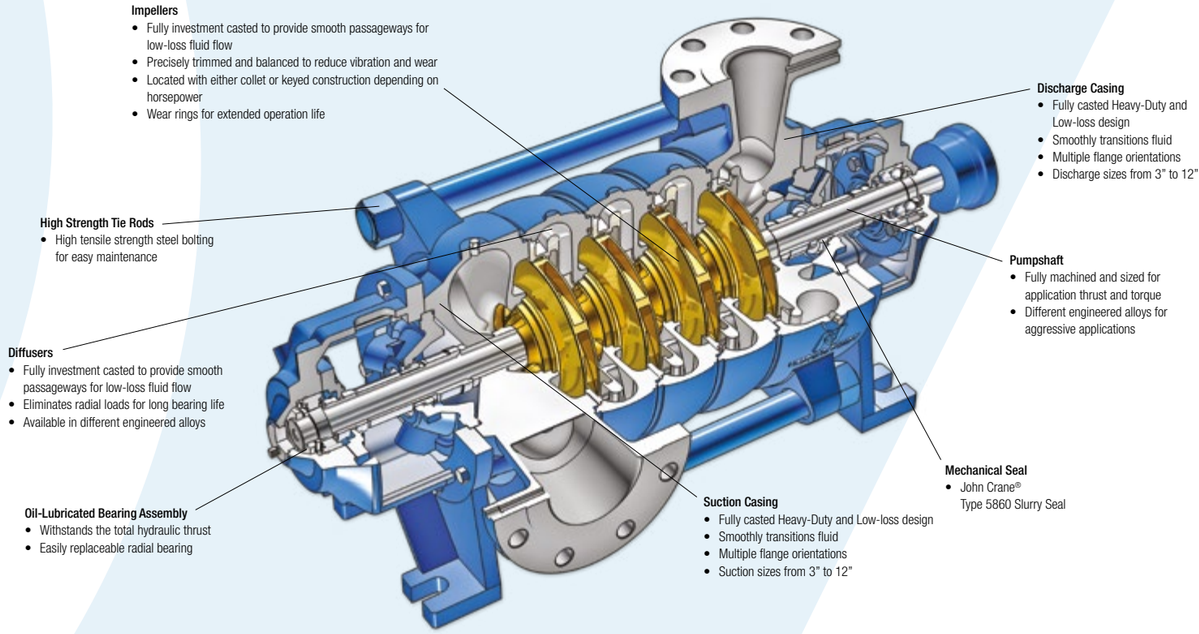


SERVICES

- Primary Water Supply – Fresh water or Sea water
- Mining Processes - Solvent Extraction/ Electro-Winning (SX/EW), Dewatering, Tailings & Post Processed Solutions
- Oil & Gas Production – Onshore, Offshore and Pipeline
- Pulp and Paper
- Municipal Water & Wastewater
- Agriculture - Irrigation.

MATERIALS

- Bronze, Cast Iron, Carbon Steels
- Stainless Steels - 316, 317 SS
- Duplex - 2205
- Super Duplex - 2507
- Super Austenitic - 254 SMO, 654 SMO
- Nickel-Based Super Alloys - Hastelloy.



Impellers
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Precisely trimmed and balanced to reduce vibration and wear
- Located with either collet or keyed construction depending on horsepower
- Wear rings for extended operation life

High Strength Tie Rods
- High tensile strength steel bolting for easy maintenance

Diffusers
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Eliminates radial loads for long bearing life
- Available in different engineered alloys

Oil-Lubricated Bearing Assembly
- Withstands the total hydraulic thrust
- Easily replaceable radial bearing

Discharge Casing
- Fully casted Heavy-Duty and Low-loss design
- Smoothly transitions fluid
- Multiple flange orientations
- Discharge sizes from 3" to 12"

Pumpshaft
- Fully machined and sized for application thrust and torque
- Different engineered alloys for aggressive applications

Suction Casing
- Fully casted Heavy-Duty and Low-loss design
- Smoothly transitions fluid
- Multiple flange orientations
- Suction sizes from 3" to 12"

Mechanical Seal
- John Crane® Type 5860 Slurry Seal

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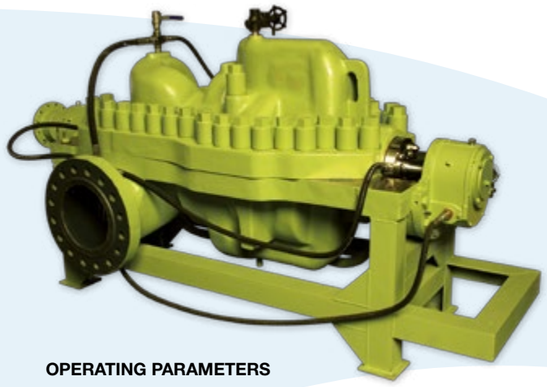
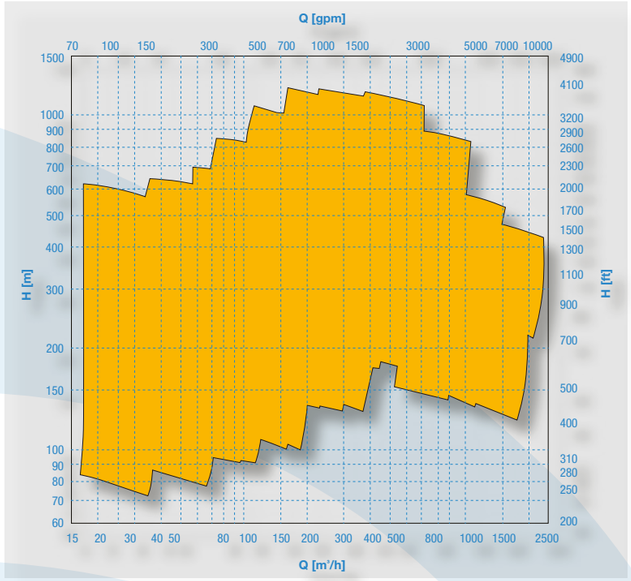
AXIAL SPLIT CASE MULTISTAGE PUMP (HA)





OPERATING PARAMETERS

- Capacities up to 2400 (m^3/h) (11000 gpm)
- Head up to 1200 (m) (3937 Feet)
- Power through 2237 (kW) (3000 hp)
- Frequency 50/60 Hz
- Temperatures to 300°F (150°C).

DESIGN FEATURES

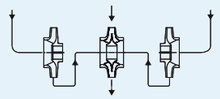
- Axially split casing for ease of maintenance
- Heavy duty single row bolting
- Opposed impeller arrangement for thrust balancing
- Different suction and discharge

SERVICES

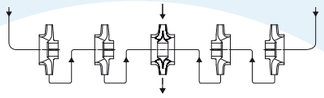
- Primary Water Supply – Fresh water or Sea water
- Mining Processes - Solvent Extraction/ Electro-Winning (SX/EW), Dewatering, Tailings & Post Processed Solutions
- Oil & Gas Production – Onshore, Offshore and Pipeline.

IMPELLER ARRANGEMENT

- Double suction + 2 impellers in parallel



- Double suction + 4 back-to-back impellers.



MATERIALS

- Bronze, Cast Iron, Carbon Steels
- Stainless Steels - 316, 317 SS
- Duplex - 2205
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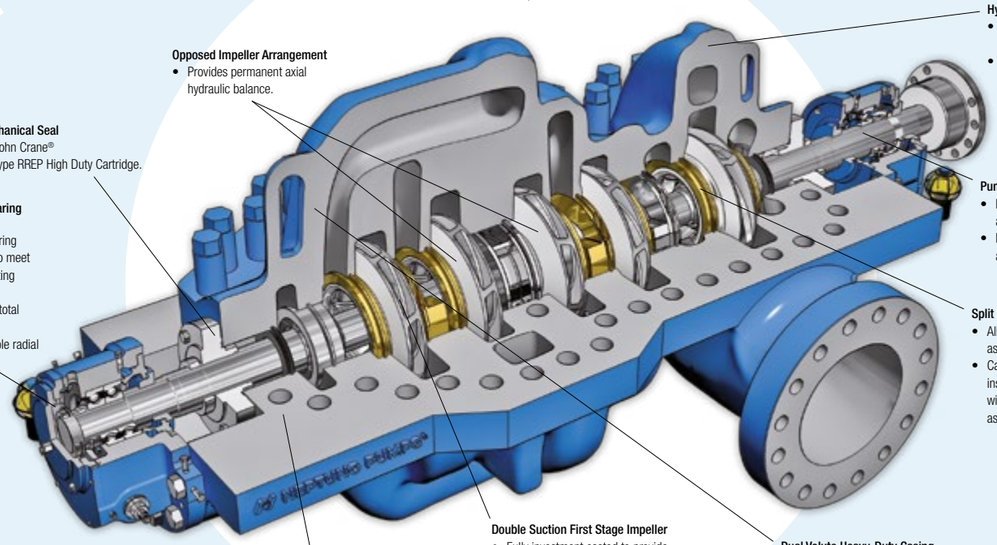
- Super Austenitic - 254 SMO, 654 SMO
- Nickel-Based Super Alloys - Hastelloy



Hydraulic Crossover
- Minimum friction loss, maximum efficiency.
- Provides permanent axial hydraulic balance.

Opposed Impeller Arrangement
- Provides permanent axial hydraulic balance.

Mechanical Seal
- John Crane®
  Type RREP High Duty Cartridge.

Pumpshaft
- Fully machined and sized for application thrust and torque
- Different engineered alloys for aggressive applications.

Oil-Lubricated Bearing Assembly
- Engineered bearing arrangements to meet specified operating requirements.
- Withstands the total hydraulic thrust
- Easily replaceable radial bearing.

Split Stage Center Bushing
- Allow dynamic balancing of assembled rotating element.
- Can be removed for inspection of wear surfaces without disassembling rotor assembly.

Single Row Bolting
- All nuts located on top for ease of maintenance.

Double Suction First Stage Impeller
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Precisely trimmed and balanced to reduce vibration and wear
- Available for low NPSH service requirements.

Dual Volute Heavy-Duty Casing
- Smoothly transitions fluid
- Assures radial balance for minimum shaft deflection.
- Discharge connections are in the lower half casing, allowing removal of upper half casing for ease on-site inspection and/or reparation.

AXIAL SPLIT CASE DOUBLE SUCTION PUMP (HA-DS)

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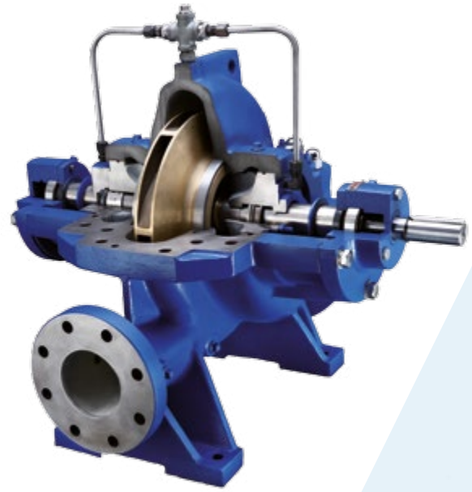
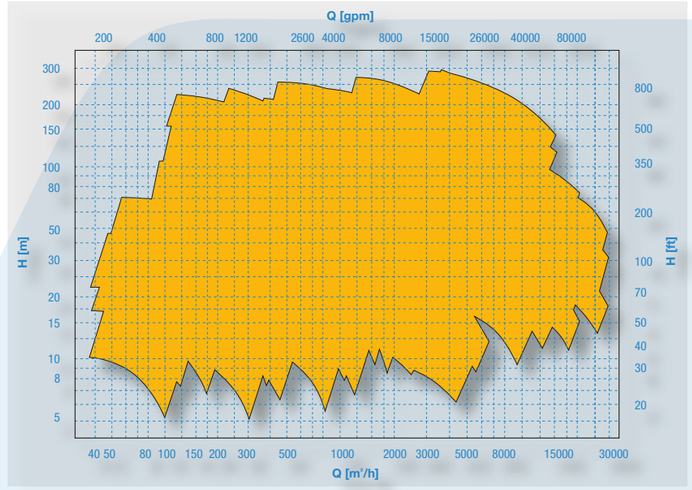




OPERATING PARAMETERS

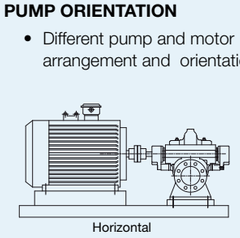
- Capacities up to 25000 (m^3/h) (10000 gpm)
- Head up to 280 (m) (850 Feet)
- Power through 1000 hp (750 kW)
- Pressures up to 1,180 psi (8,148 kPa)
- Frequency 50/60 Hz
- Temperatures to 300°F (150°C)
- Discharge sizes from 3" to 14".

DESIGN FEATURES

- Axially split casing for ease of maintenance
- Heavy duty single row bolting
- Opposed impeller arrangement for thrust balancing

PUMP ORIENTATION

- Different pump and motor arrangement and orientation.



SERVICES

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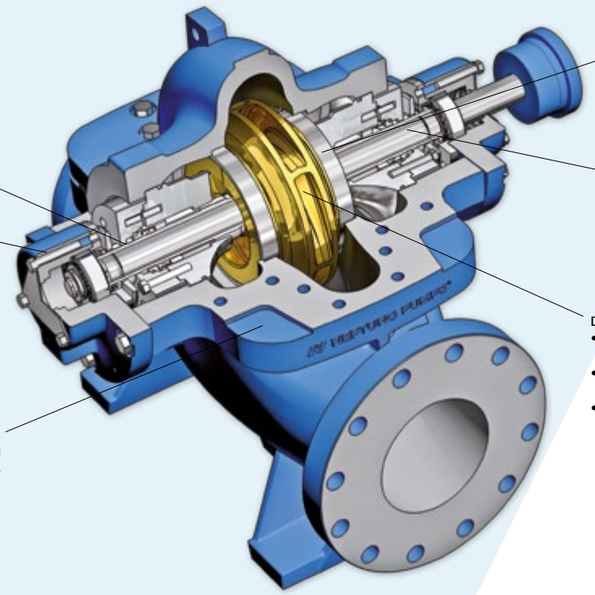

Renewable Casing and Impeller Wear Rings
- Eliminates casing wear
- Easy maintenance
- Proper running clearances for maximum efficiency operation.

Mechanical Seal
- John Crane®
  Type 1900 Cartridge.

Pumpshaft
- Fully machined and sized for application thrust and torque
- Designed for minimum deflection

Oil-Lubricated Bearing Assembly
- Engineered bearing arrangements to meet specified operating requirements.
- Withstands the total hydraulic thrust
- Easily replaceable radial bearing.

Double Suction Impeller
- Fully investment casted to provide smooth passageways for low-loss fluid flow
- Precisely trimmed and balanced to reduce vibration and wear
- Wear rings for extended operation life

Heavy-Duty Casing
- Rugged foot-mounted fully casted Heavy-Duty and Low-loss design
- Discharge connections are in the lower half casing, allowing removal of upper half casing for ease on-site inspection and/or reparation.

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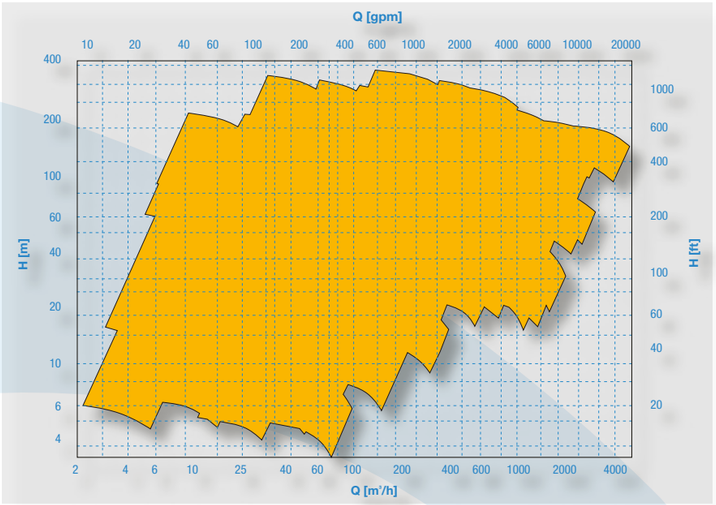
END SUCTION PUMP (HV)



OPERATING PARAMETERS

- Capacities up to 4000 (m^3/h) (19000 gpm)
- Head up to 350 (m) (1000 Feet)
- Power through 1000 hp (750 kW)
- Frequency 50/60 Hz
- Temperatures to 300°F (150°C)
- Discharge sizes from 3” o 12”.

SERVICES

- Primary Water Supply – Fresh water or Sea water
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- Super Duplex - 2507
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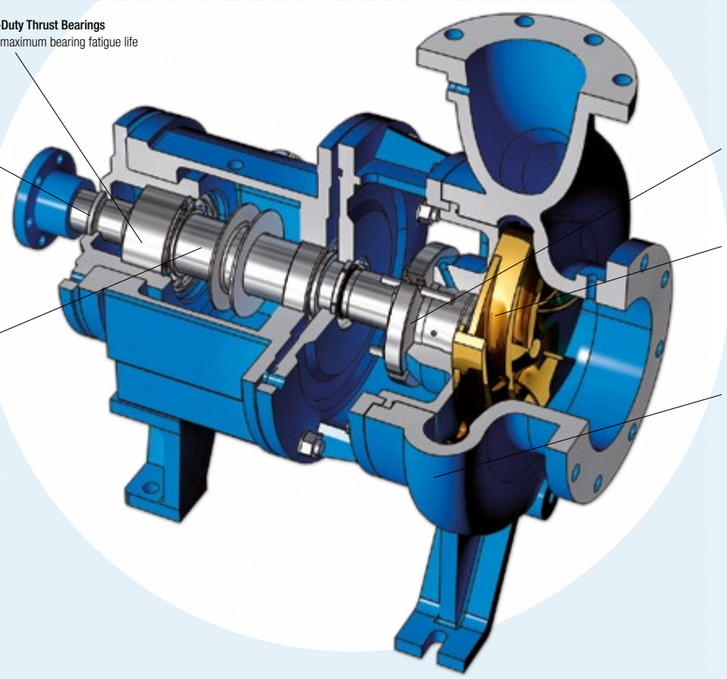
- Nickel-Based Super Alloys - Hastelloy

DESIGN FEATURES

- High-quality investment cast impellers and volute
- Special material selection for standard or abrasive/corrosive service
- Mechanical sealing



Heavy-Duty Thrust Bearings
- For maximum bearing fatigue life

Optimized Oil Sump Design
- For best heat transfer for reduced oil temperature
- Prevent premature bearing failure caused by lubricant contamination or loss

Heavy-Duty Shaft
- Rigid shaft designed for minimum deflection
- Dry shaft by sealing from pumpage

Mechanical Seal
- John Crane®
  Type RREP High Duty Cartridge

Impeller
- Fully open or closed impeller depending on application.
- Reduce life cycle costs and downtime costs
- Renewable wear rings

Casing
- Investment cast volute for maximum hydraulic performance and integral casing feet prevent pipe load misalignment
- Special volute design reduces radial loads
- Back pull-out design
- Foot-mounted with large casing and bearing frame feet for improved driver alignement and absorption of system vibration

SPARES & SERVICES

NEPTUNO PUMPS®
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ORIGINAL SPARE PARTS

High-integrity and correctly fitted original or upgrades spare parts with worldwide guaranteed supply for all our models.

- Restores high operational efficiency
- Optimizes energy consumption
- Assures compatibility
- Minimizes unexpected failures
- Fast & reliability

Capabilities

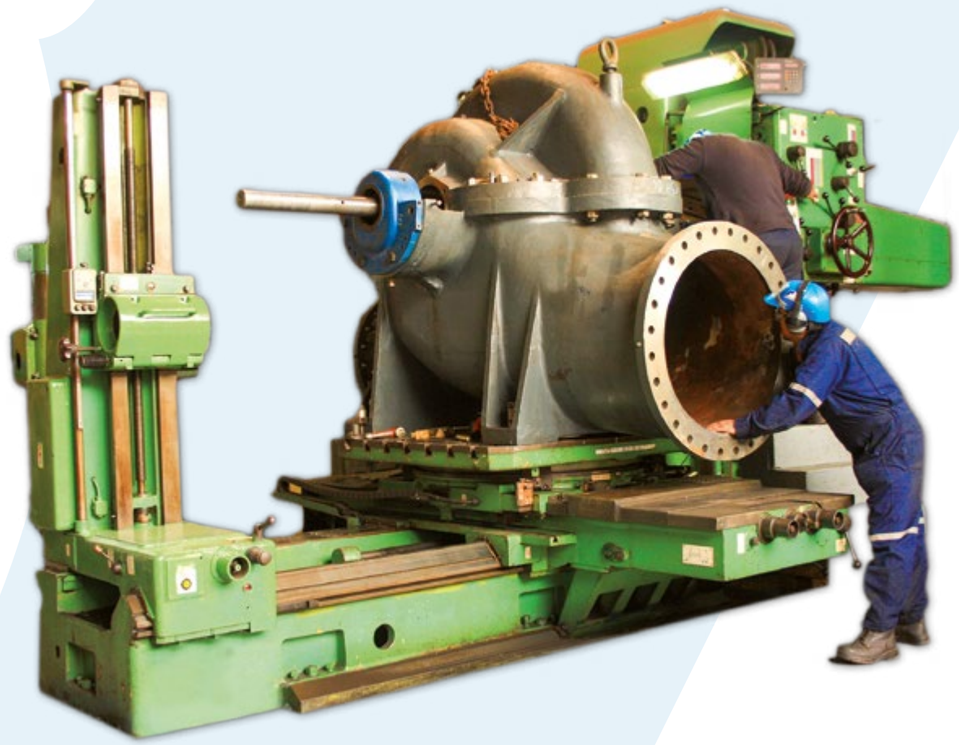
- Shafts
- Diffusers
- Impellers
- Bowls / Volutes
- Discharge heads

REPAIR & OVERHAUL

Our ISO 9001:2008 Certified Pump Repair Center provides rapid turnaround, high-quality repair services.

Typical Process:

- Overall condition
- Detailed examination of all critical parts
- Estimate of time and cost of work needed
- Re-machining
- Hydrostatic tests
- ISO 1940 dynamic balancing
- ISO 9906 performance tests



NEPTUNO ENERGY™

ENERGY EFFICIENT PUMPING SOLUTIONS

Energy Efficienct Pumping Solutions

90% of a pump's Life Cycle Cost (LCC) represents energy consumption and maintenance, relegating to the background initial purchase cost to a second plane.

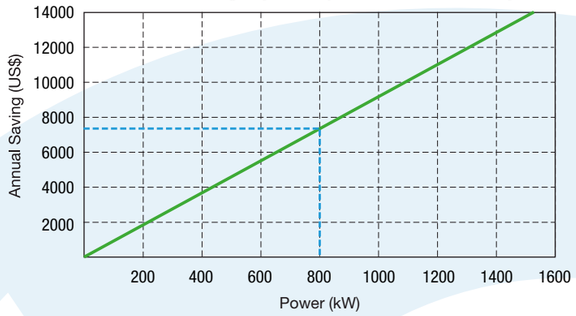
Implementing the award winning recommendations of Neptuno Energy™ you can achieve reductions in energy consumption of up to 30% and the following benefits:

- Reduce maintenance cost
- Increase productivity
- Reduce production cost
- Improve utilization of installed capacity
- Improve reliability
- Improve process safety.

Source: *Hydraulic Institute, Europump & Office of Industrial Technologies Energy Efficiency and Renewawble Energy, U.S. Department of Energy.*

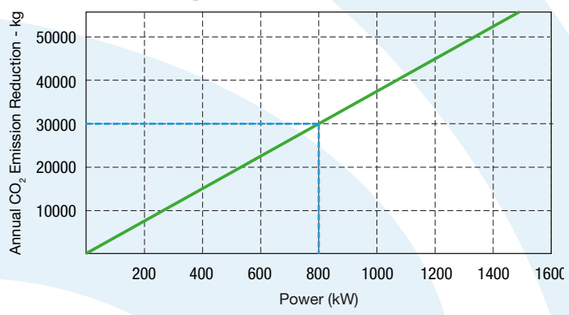
By using proven techniques for assessment of his pumping system, Neptuno Energy™ offers a complete solution for energy savings. Efficiency improvements as minimum as 1% can lead to significant results in terms of cost savings and reduced CO_2 emissions.

Annual Savings by 1% Improvement in Efficiency



Energy cost:	0.1 (US$/kW)	Hours per year:	8750 (h)
Power:	800 (kW)	Annual Savings:	US$ 7.500

Annual CO_2 savings by 1% Improvement in Efficiency



Energy cost:	0.43 (kg CO_2/kW)	Hours per year:	8750 (h)
Power:	800 (kW)	Annual Savings:	30.000 kg CO_2

For more information about our award winning energy efficient pumpling solutions, energy saving services and CO_2 emission reduction, please visit us at:

www.neptunoenergy.com

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