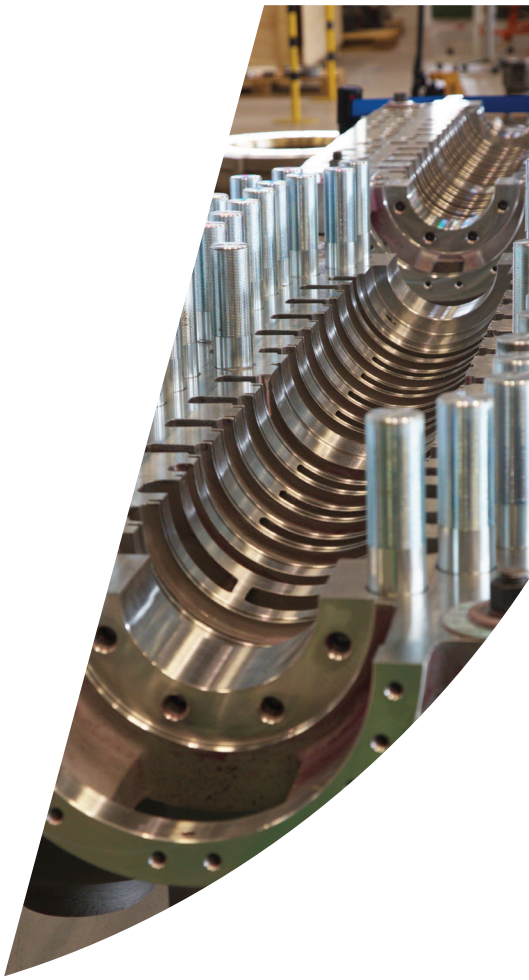
Combined files for 2100, 2200 & 2300

ROTO-JET PUMP®

HIGH PRESSURE PITOT TUBE PUMPS



TRILLIUM FLOW TECHNOLOGIES™

TRILLIUMFLOW.COM

HIGH PRESSURE MULTI-STAGE PERFORMANCE WITH THE COST ADVANTAGE, SIMPLICITY AND RELIABILITY OF A SINGLE-STAGE PUMP

Benefits of the Roto-Jet 2100 Pump

Improved Design

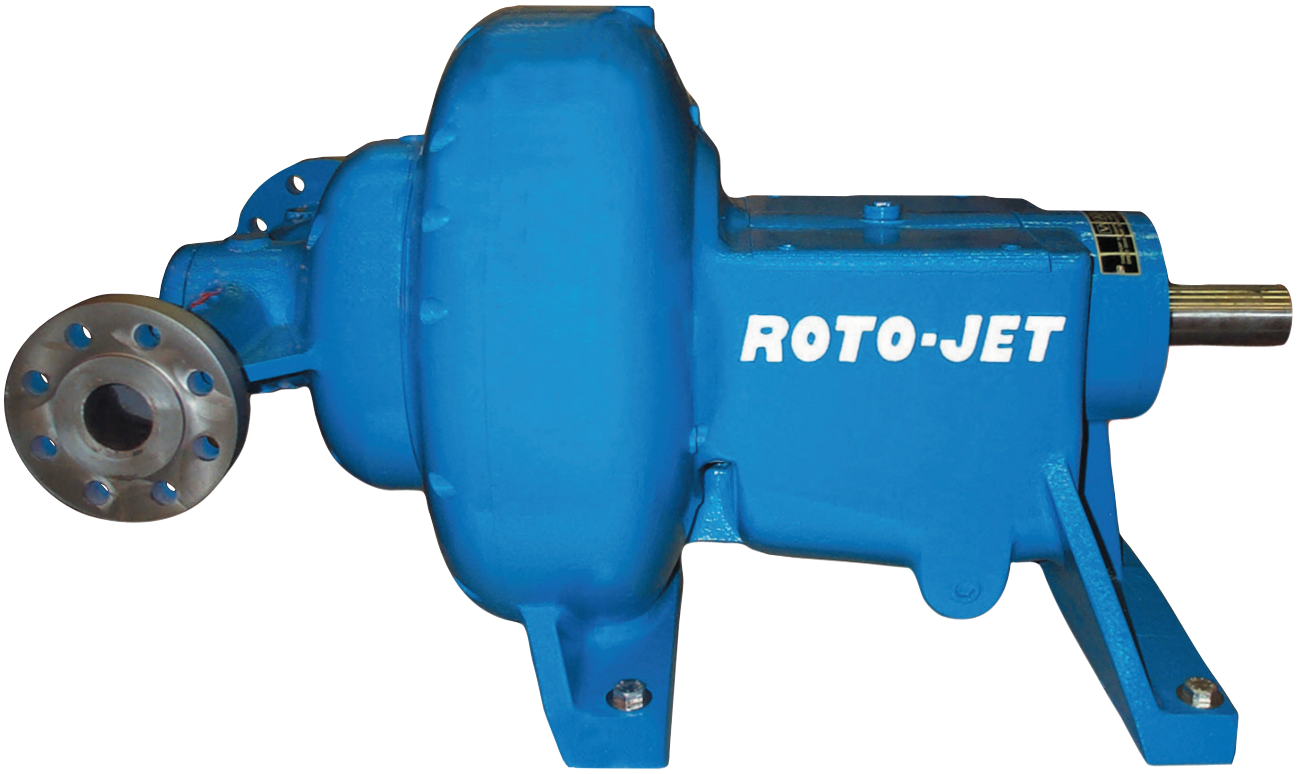
- **Lower Energy Cost:**
  Higher efficiencies using improved patented hydraulics
- **Flexible Installation:**
  Footprint interchangeable with Roto-Jet models RG and 2200
- **Low Maintenance Cost:**
  Simplified design means less maintenance

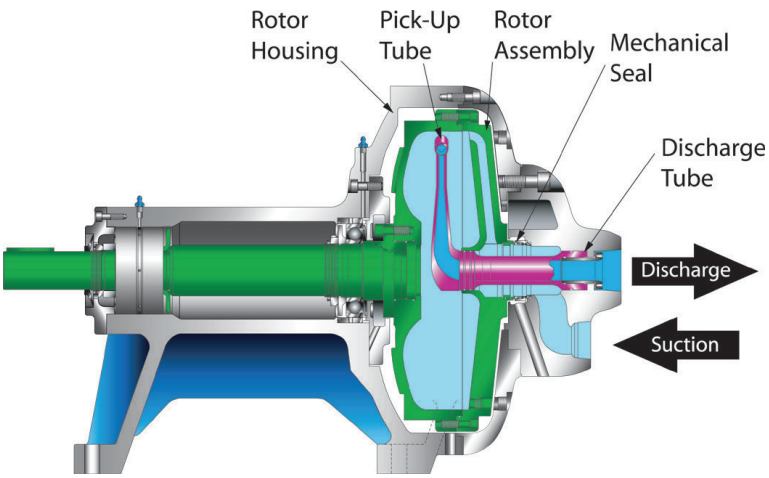
Improved Performance

- Broad range of speed, flow, and pressure capability
- Hydraulically stable along the entire performance curve and beyond BEP
- Enhanced hydraulics over previous designs

Enhanced Reliability

- **Fewer Parts:**
  Pick up tube locknut design
- **Seal Designed for Low Pressure:**
  Improves overall seal life
- **Isolated Bearing Pedestal:**
  Minimizes risk of bearing contamination



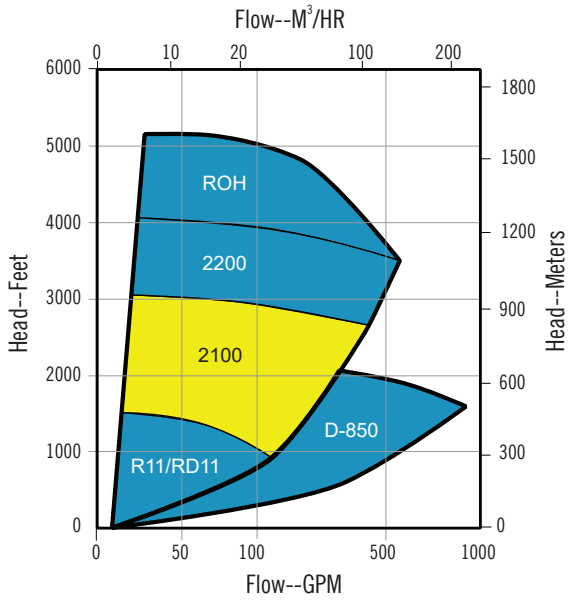


Typical Roto-Jet Model 210 Applications

- Food and beverage cleaning systems
- Reverse osmosis systems
- Automotive gun drilling coolant
- Spraying/washing systems
- High-pressure paper shower
- Circuit board wash systems
- Water/process injection systems
- Seal flushing systmes
- Boiler feed / cleaning systems
- Many more applications

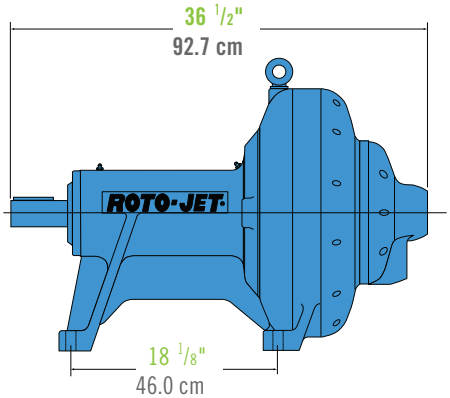
Specifications: Roto-jet Model 2100	
Maximum temperature	180^{0}F / 82^{0}C
Max temperature - with flush	250^{0}F / 121^{0}C
Maximum suction pressure	200 PSI / 14 Bar
Maximum head	3000 Ft. / 911 m
Maximum speed	4709 RPM
Maximum flow	465 GPM / 105 m^3/hr
Maximum horsepower	400 HP / 290 KW
Weight	825 Lbs. / 544 Kg
Lubrication	Grease

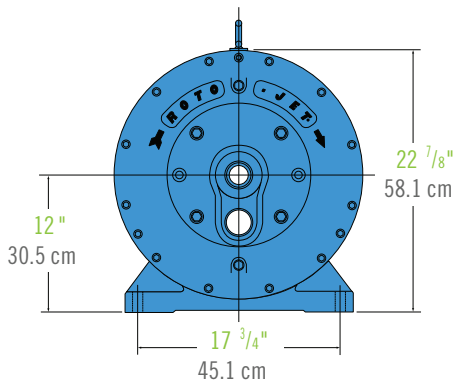
Materials of Construction	Stainless Steel Pump	Ductile Iron Pump
Rotor	316. SS	Ductile Iron
Rotor cover	316. SS	Ductile Iron
Manifold	316. SS	Ductile Iron
Endbell	Ductile Iron	Ductile Iron
Pickup tube	17-4 PH	17-4 PH
Shaft	AISI-4140	AISI 4140



Dimensions are for general reference only and will vary with actual model selected

Available with flanged connections





HIGH PRESSURE MULTI-STAGE PERFORMANCE WITH THE COST ADVANTAGE, SIMPLICITY AND RELIABILITY OF A SINGLE-STAGE PUMP

BENEFITS OF THE ROTO-JET® 2200 PUMP

IMPROVED DESIGN

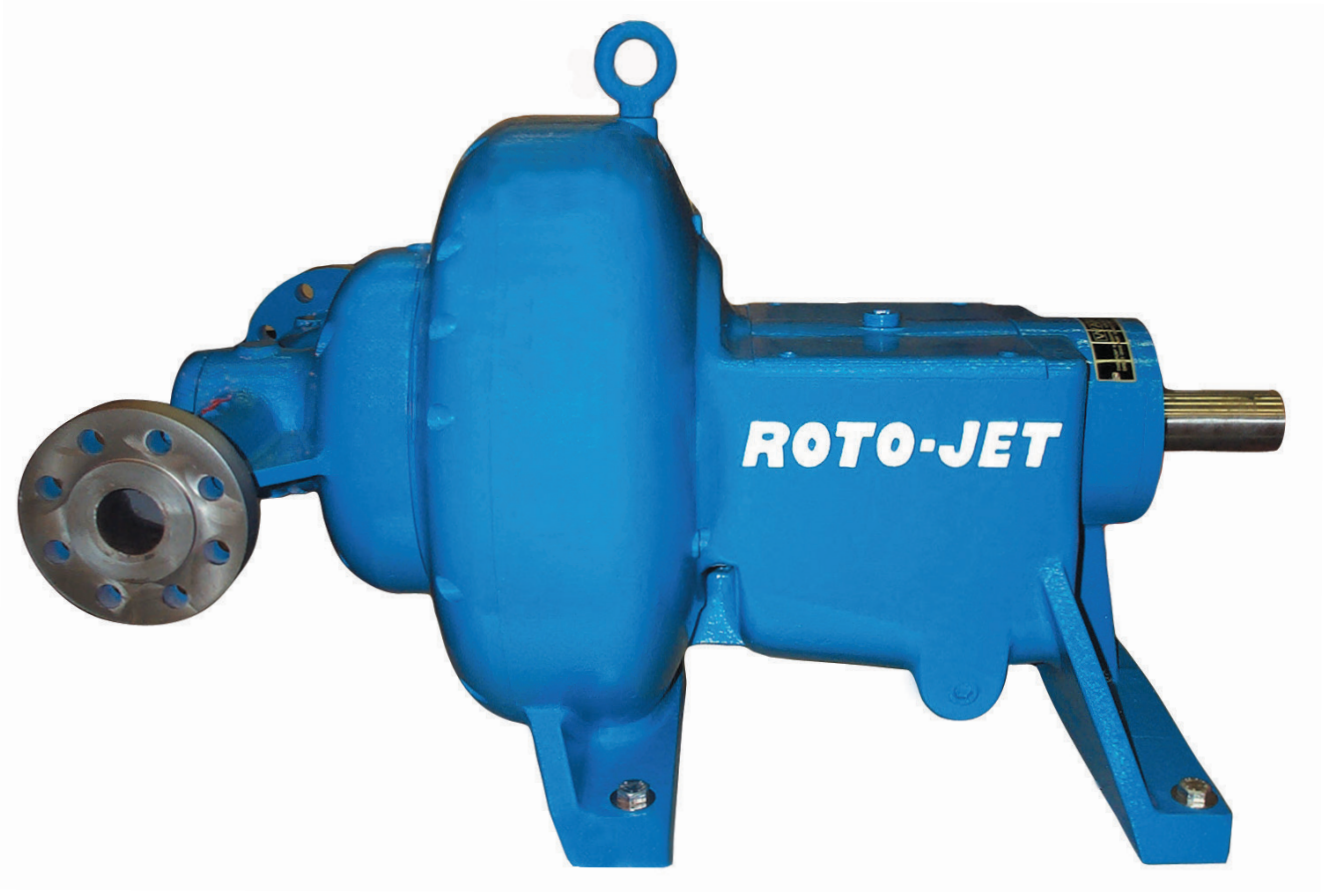
- **Lower Energy Cost:**
  Higher efficiencies using improved patented hydraulics
- **Flexible Installation:**
  Footprint interchangeable with Roto-Jet models RG and 2100
- **Low Maintenance Cost:**
  Simplified design means less maintenance

ENHANCED RELIABILITY

- **Fewer Parts:**
  Pick up tube locknut design
- **Seal Designed for Low Pressure:**
  Improves overall seal life
- **Isolated Bearing Pedestal:**
  Minimizes risk of bearing contamination

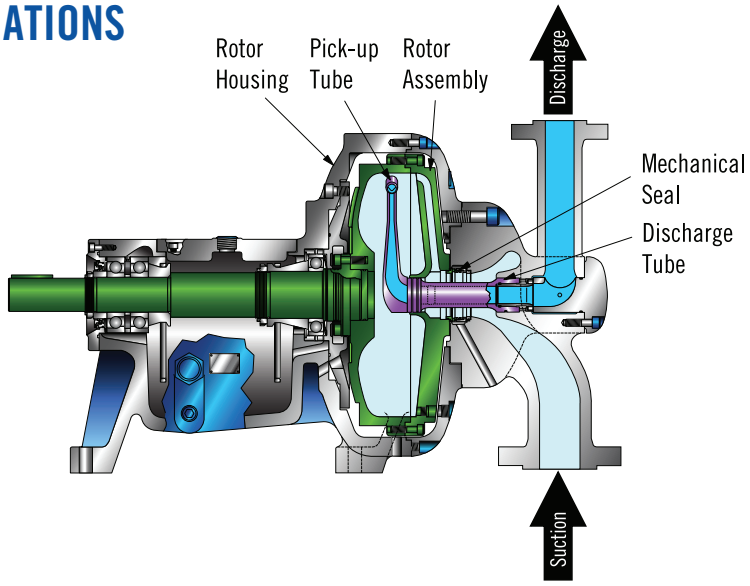
IMPROVED PERFORMANCE

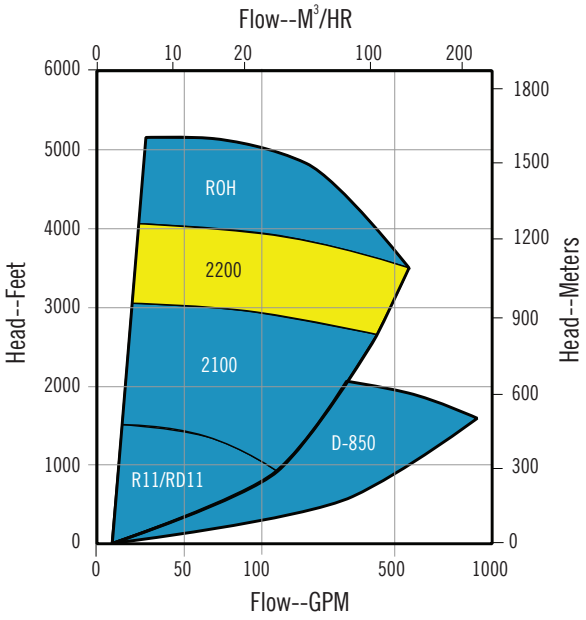
- Broad range of speed, flow, and pressure capability
- Hydraulically stable along the entire performance curve and beyond BEP
- Enhanced hydraulics over previous designs



TYPICAL ROTO-JET® MODEL 2200 APPLICATIONS

- Food and beverage cleaning systems
- Reverse osmosis systems
- NOX suppression
- Spraying/washing systems
- High-pressure paper shower
- Circuit board wash systems
- Water/process injection systems
- Boiler feed/cleaning systems
- Desuperheating/condensate return
- Many more applications



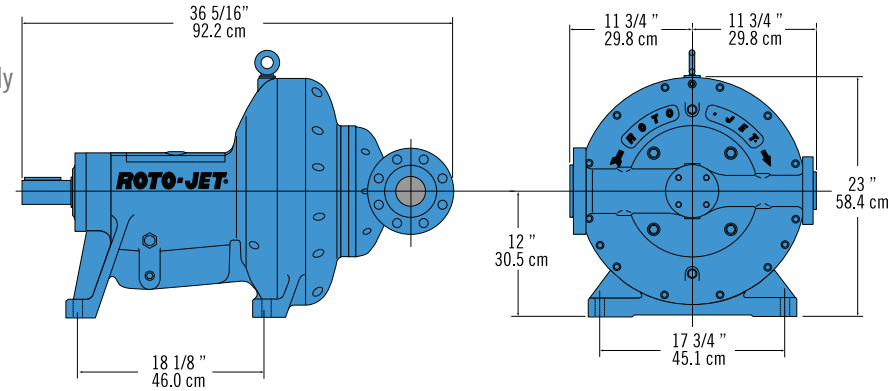


SPECIFICATIONS: ROTO-JET® MODEL 2200	
Maximum temperature	180 °F/82 °C
Max temperature - with flush	250 °F/121 °C
Maximum suction pressure	200 PSI/14 Bar
Maximum head	4042Ft./1232 m
Maximum speed	5443 RPM
Maximum flow	535GPM/121.5m³/hr
Maximum horsepower	400 HP/290 KW
Weight	985 Lbs./447 Kg
Lubrication	Oil

MATERIALS OF CONSTRUCTION	STAINLESS STEEL PUMP	DUCTILE IRON PUMP
Rotor	316. SS	Ductile Iron
Rotor cover	316. SS	Ductile Iron
Manifold	316. SS	Ductile Iron
Endbell	Ductile Iron	Ductile Iron
Pickup tube	17-4 PH	17-4 PH
Shaft	AISI-4140	AISI 4140

Dimensions are for general reference only and will vary with actual model selected

Available with flanged connections



Roto-Jet® 2300

OVERVIEW

TRILLIUM FLOW TECHNOLOGIES™

Key Markets Served

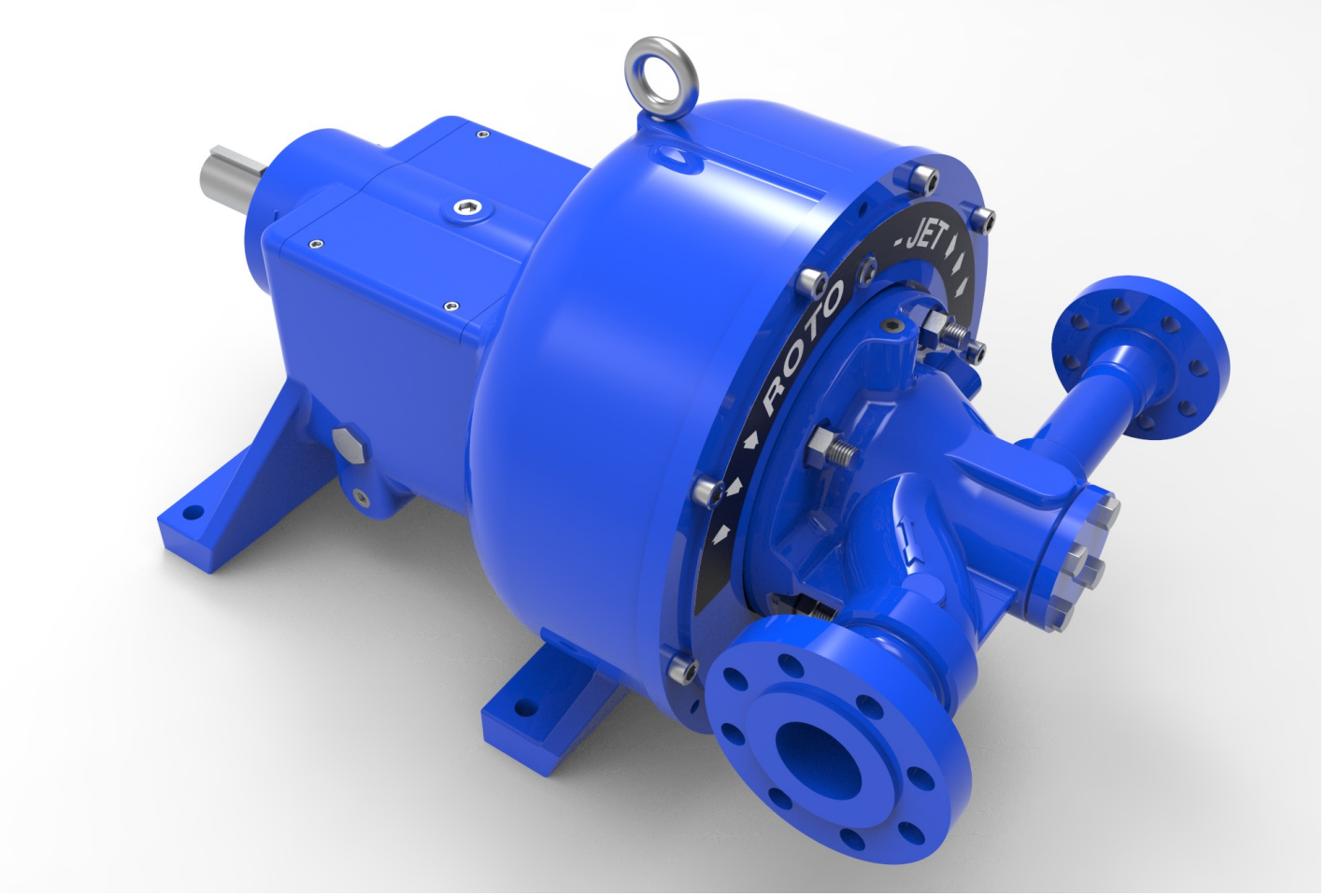
ROTO-JET® 2300

Overview

ROTO-JET® 2300

Roto-Jet High Pressure Pump

- High head
- Low flow
- Single stage
- Centrifugal pump



Overview

ROTO-JET® 2300

Features

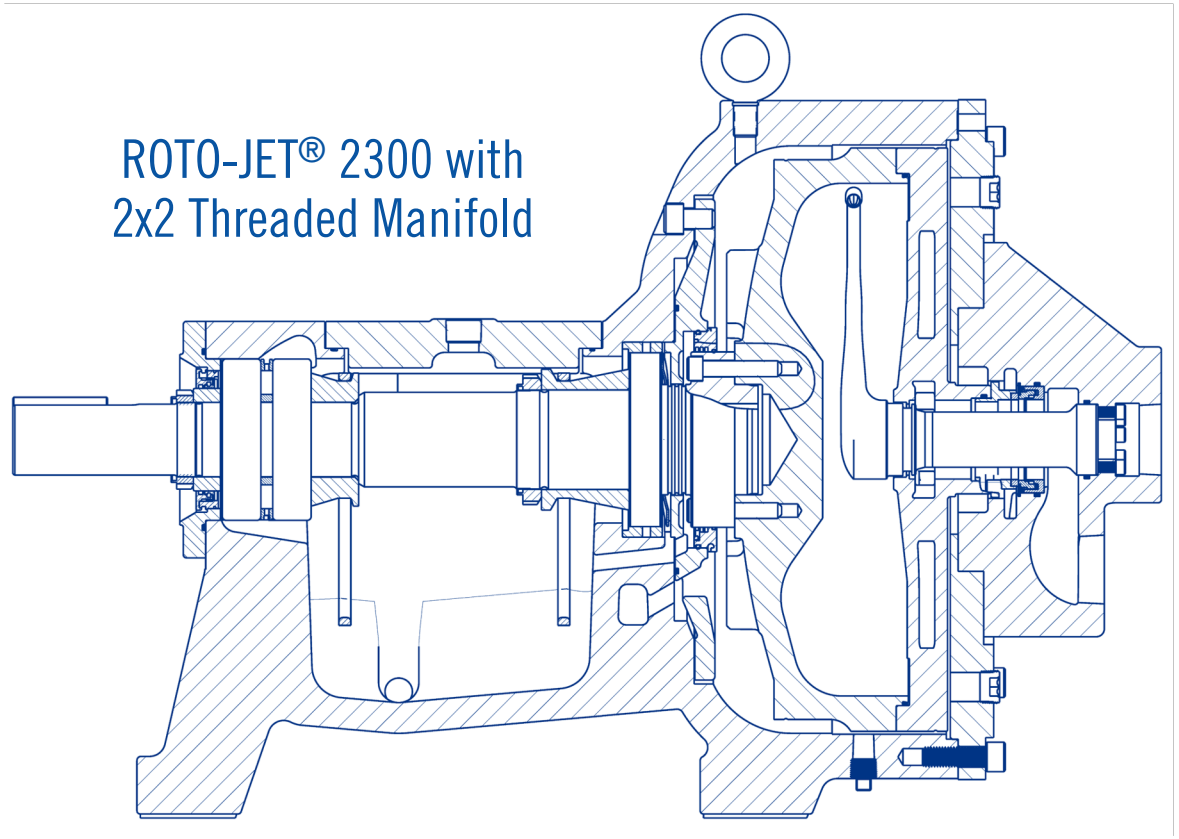
- Improved Up Time Performance
- Reliability Across All Flow Rates
- Built on Proven Technology
  Thousands of Roto-Jet Pumps Installed Globally
- Maximum Flexibility for High Pressure Applications
- Built to Perform in Multi-Pump Systems including Parallel Operations

Overview

ROTO-JET® 2300

The Roto-Jet® 2300 is Interchangeable with the Roto-Jet® 2200 Pump:

- Same Footprint, Drop-in Replacement
- Designed to Operate in Parallel with Additional Roto-Jet® 2300 Pumps
- Utilizes the Same:
  - Anchor Bolts and Footings
  - Shaft Height
  - Flange Location
  - Pump Center Line



Overview

ROTO-JET® 2300

A high-pressure cleaning system provides the best of both worlds.

- Utilizing a high-pressure cleaning system will allow you to maximize effective Impact while minimizing water and energy consumption.
- Under designed operating conditions, high pressure systems are a preferred alternative to low-pressure systems and safely provide savings and increase efficiency.

Changing from a 250 psi low pressure cleaning system to 1,000 psi system can reduce water use by over 50%, saving millions of gallons of water per year.*

*Water savings estimates may vary based on current system pressure and fan spray nozzle angle.
SOURCE: MEAT PROCESSING JULY 1998.

Overview

ROTO-JET® 2300

- **Reduce Energy and Water Usage by Increasing Cleaning Effectiveness** (applies to any Roto-Jet ® pump)
- Using an appropriate high-pressure water nozzle allows you to capitalize on the increased system efficiency.
- It is a misconception that high-pressure systems can damage equipment.

Changing from a 250 psi low pressure cleaning system to 1,000 psi system can reduce water use by nearly 50%, saving millions of gallons of water per year.*

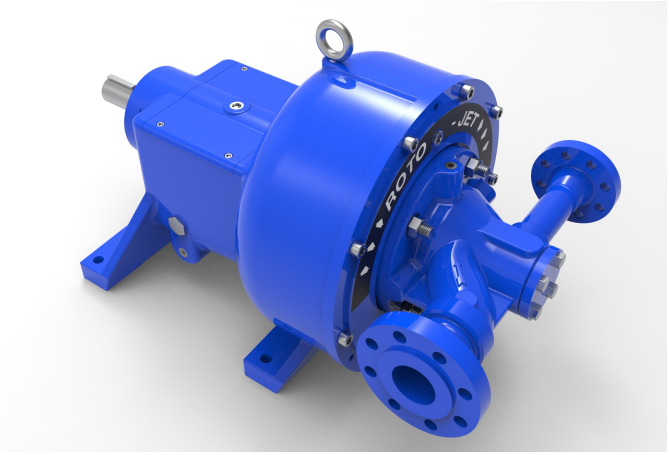
*Water savings estimates may vary based on current system pressure and fan spray nozzle angle.
SOURCE: MEAT PROCESSING JULY 1998.

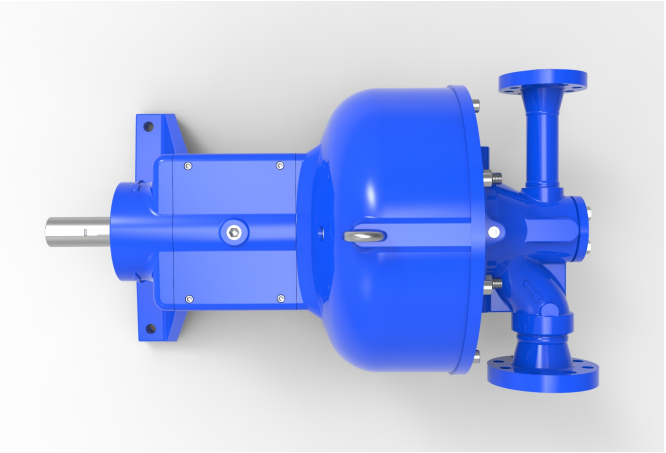
Principles of Operation

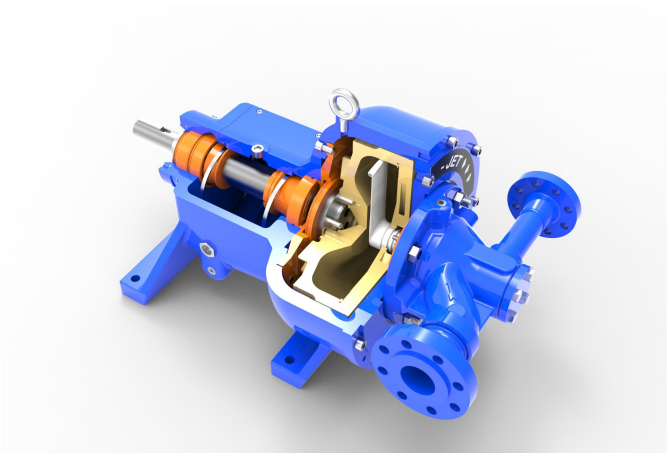
ROTO-JET® 2300

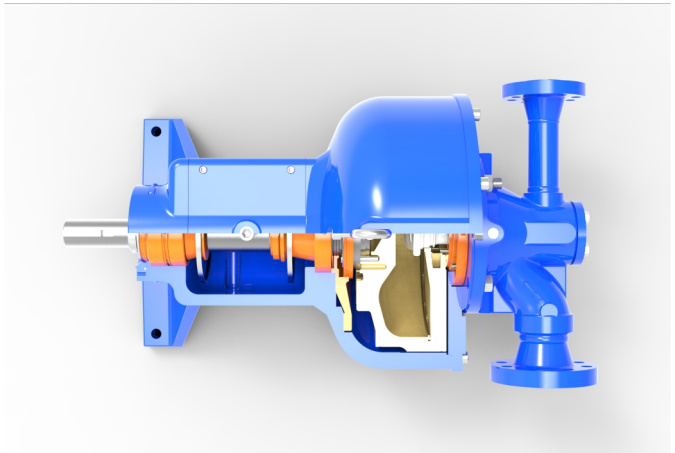
Features

- Improved Up Time Performance
- Reliability Across All Flow Rates
- Built on Proven Technology
  Thousands of Roto-Jet Pumps Installed Globally
- Maximum Flexibility for High Pressure Applications
- Built to Perform in Multi-Pump Systems including Parallel Operations





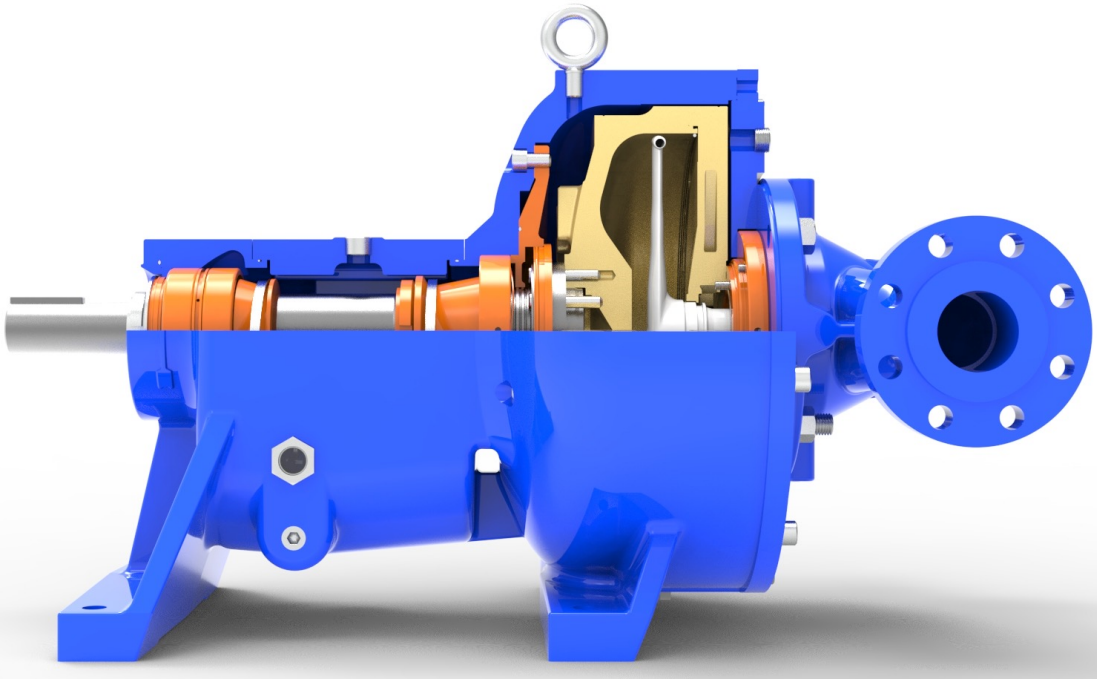




Principles of Operation

ROTO-JET® 2300

- Increase capacity by increasing diameter
- “S” single opening & “D” double opening
- 17-4ph SS or 718 Inconel
- 12 o’clock orientation
- Stationary
- Options for increasing pick-up tube life for abrasive service
- Increase pressure by increasing speed
- Typical speeds 4000 – 5500 RPM
- V-belts / sheaves, gearbox, or VFD



Principles of Operation

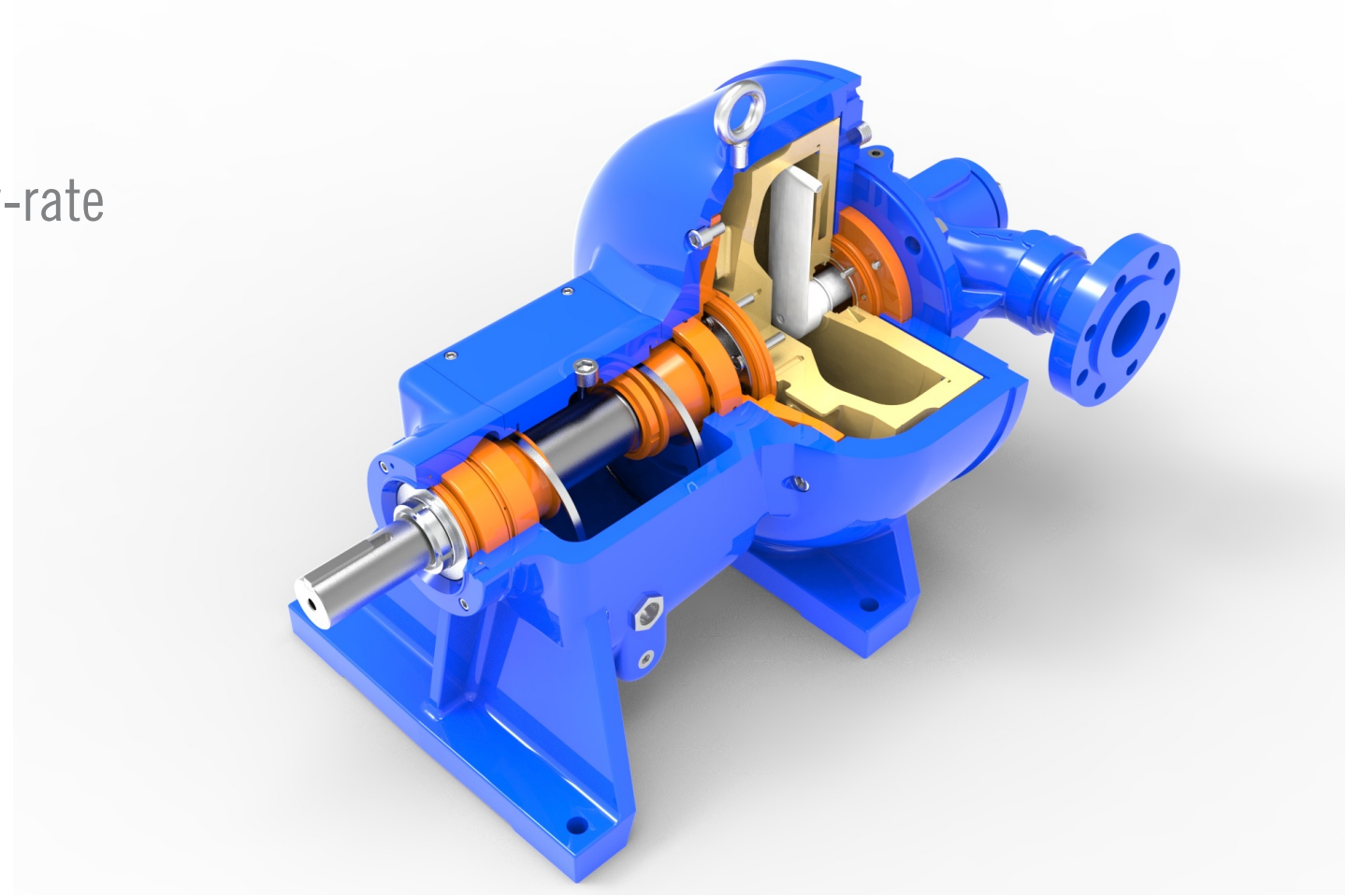
ROTO-JET® 2300

Performance

- Bearing load is NOT a function of flow-rate
- Able to operate at low minimum flow
- Stable operation
- Affinity laws

Mechanical Seal

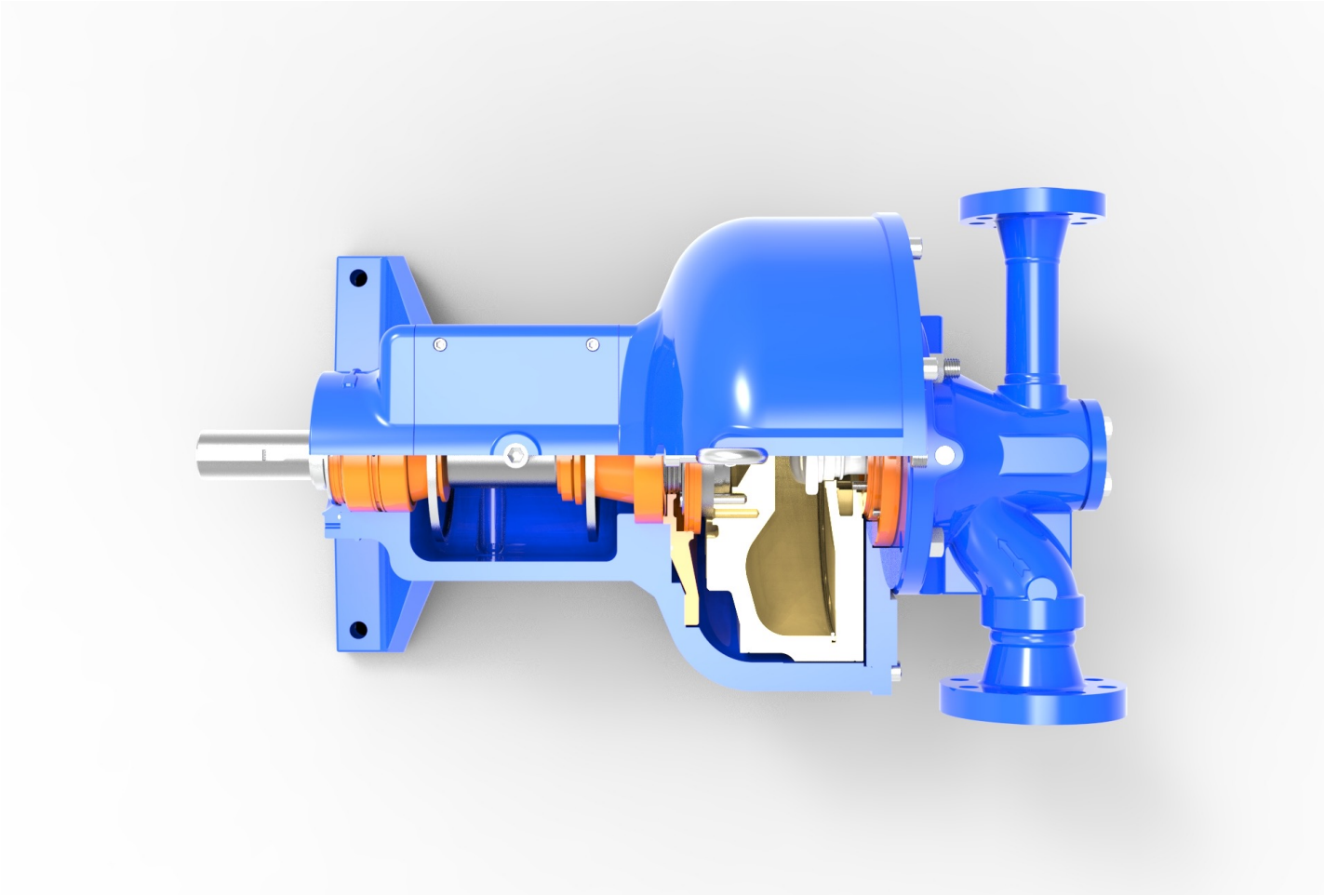
- Single or double
- Isolated from bearings
- Easy access
- Sees suction pressure only



Principles of Operation

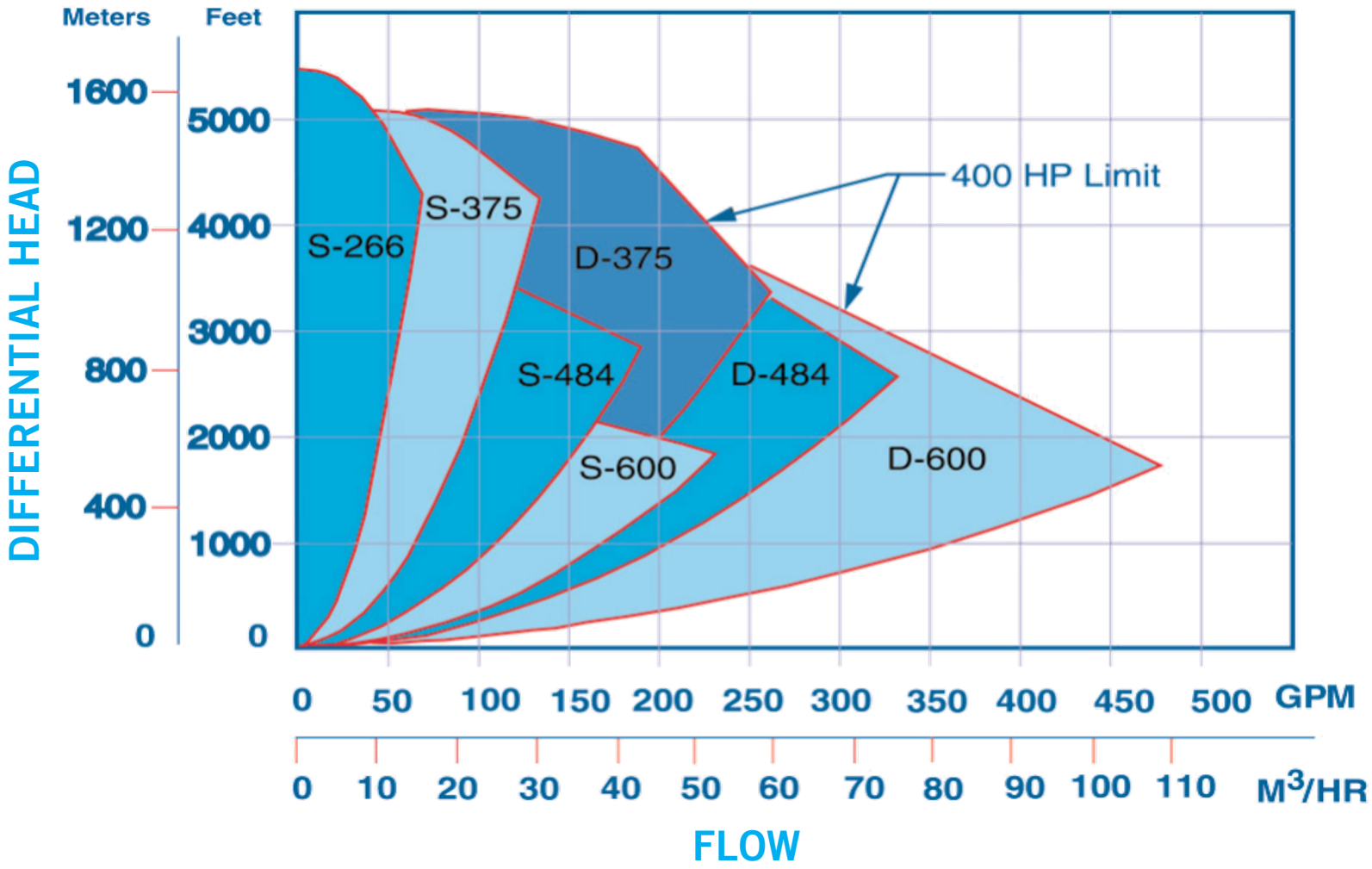
ROTO-JET® 2300

- Oil lubrication
- Single and double seal
- DI, 316SS
- Threaded or flanged connections
- Footprint interchangeable with 2100, 2200 and RG
- Flows to 450 GPM (102 m^3/hr.)
- Heads to 2600 feet (792 meters)
- Temperature to 250°F (121°C)
- Speeds to 4380 RPM



Performance Curve

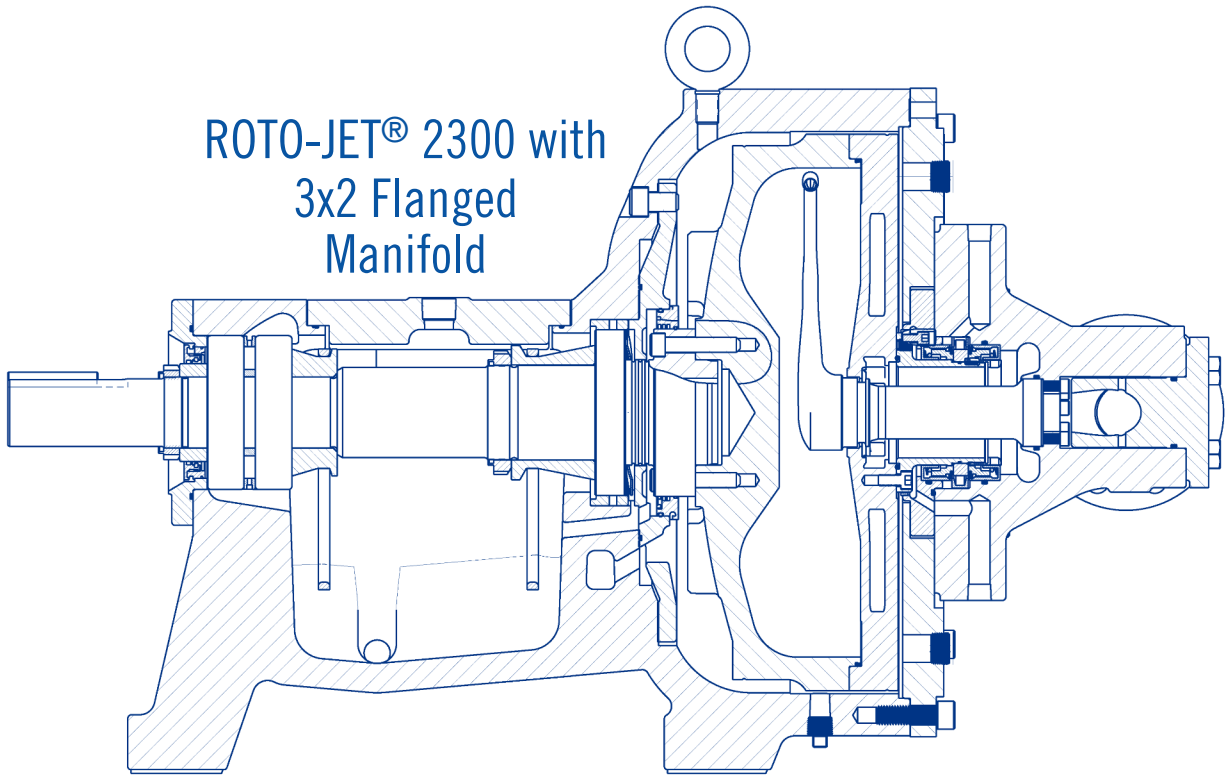
ROTO-JET® 2300



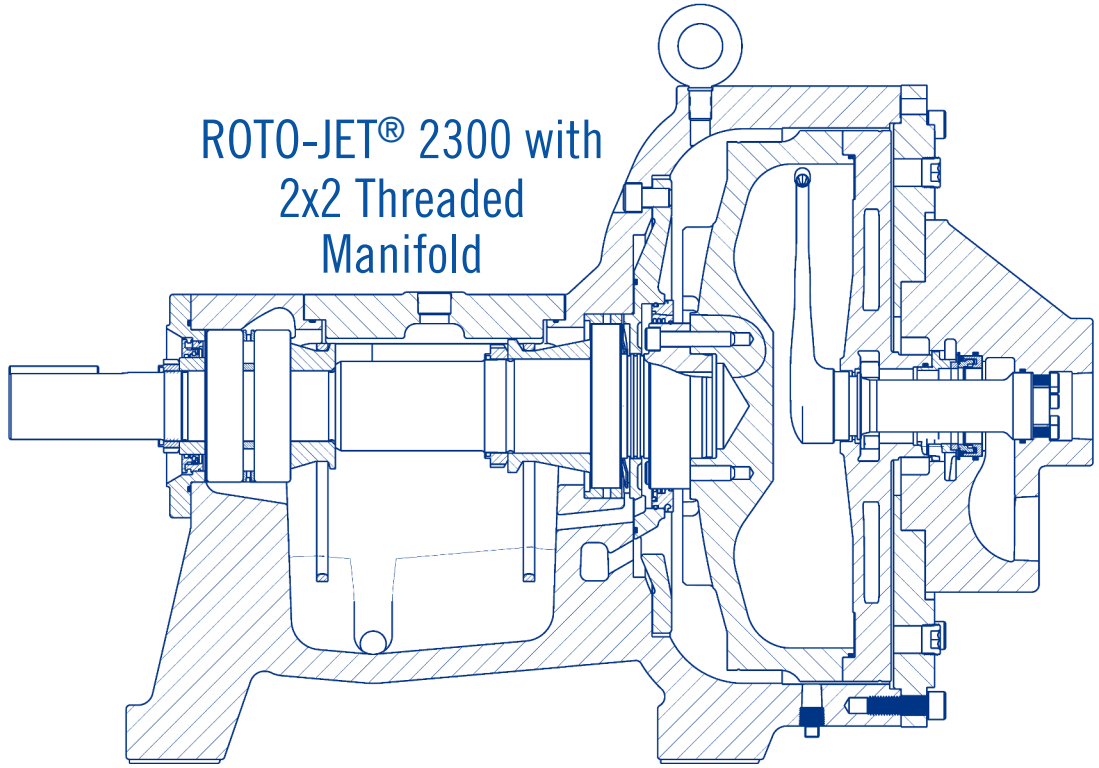
Roto-Jet® 2300

Expanded Drawing, Showcasing Different Manifold Types

ROTO-JET® 2300 with 3x2 Flanged Manifold



ROTO-JET® 2300 with 2x2 Threaded Manifold



Roto-Jet® Models

ROTO-JET® 2300

- R11
- RD11
- API R11
- RG
- RO / ROH
- RO D850
- RO D850
- RO-FT
- VSR
- 2100
- 2200
- 2300

Model RO D850 Pump

Capacity: to 750 gpm (170 m^3/hr)
Heads: to 2100 ft. (640 m)
Pressures: to 900 psi (62 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4380 RPM

Model RO/ROH Pump

Capacity: to 450 gpm (102 m^3/hr)
Heads: to 5500 ft. (1676 m)
Pressures: to 2250 psi (155 Bar)
Temperatures: to 550°F (288°C)
Maximum Speed: 6321 RPM

Model RG Pump

Capacity: to 400 gpm (91 m^3/hr)
Heads: to 2600 ft. (792 m)
Pressures: to 1125 psi (77 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4380 RPM

Model RD-11 Pump

Capacity: to 150 gpm (34 m^3/hr)
Heads: to 1500 ft. (457m)
Pressures: to 650 psi (45 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4858 RPM

Model VSR® Pump
(Variable Speed Roto-Jet®)

Capacity: to 535 gpm (121 m^3/hr)
Heads: to 3930 ft. (1198 m)
Pressures: to 1730psi (120 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 5400 RPM

Model R11 Pump

Capacity: to 150 gpm (34 m^3/hr)
Heads: to 1500 ft. (457 m)
Pressures: to 650 psi (45 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4858 RPM

Model 2100 Pump

Capacity: to 465 gpm (106 m^3/hr)
Heads: to 2950 ft. (899m)
Pressures: to 1300 psi (90 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4709 RPM

Model API R11 Pump

Capacity: to 150 gpm (34 m^3/hr)
Heads: to 1500 ft. (457 m)
Pressures: to 650 psi (45 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 4858 RPM

Model 2200 Pump

Capacity: to 535 gpm (121 m^3/hr)
Heads: to 3930 ft. (1198 m)
Pressures: to 1750 psi (120 Bar)
Temperatures: to 250°F (121°C)
Maximum Speed: 5443 RPM