Wilo IPL Vertical Inline Pumps

Vertical Inline, Single Stage Pumps – March, 2013

Marcos D. Roimicher, Product Manager BS Market Segment, Product Management Department

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Agenda

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2. General Technical Specifications
3. Model Number Designation
4. Family Curves
5. Detailed Technical Features / Construction Details / Features and Benefits
6. Installation Instructions / Troubleshooting
7. Ordering Information
8. Application and Sizing Examples

Features and Benefits

WILO Brain “Easy Read” Model Numbering System

- References flange size and performance in standard North American units

Uses Baldor NEMA “C” Frame Motors (other Manufacturers are OK)

- All voltages and enclosures available
- Various efficiency types and VFD-ready
- Do not need to be Inverter Duty

Excellent Delivery Times – 72 hours

- Common pump ends and motors stocked in Thomasville, Georgia

¼” Pressure Gauge Tappings Standard

- Suction and discharge
- Using square-headed threaded plugs

Features and Benefits

External Snap Ring Fixes Impeller on Shaft

- Do not have to worry about "reverse threads" or application of Loctite® again!

Excellent Commercial Pump Warranty

- 24 months from date of purchase

German Designed and Built, specifically for the North American Market

- Heavy duty design – extremely robust!

General Technical Specifications

Size Range – Flange Size

- 1-¼" to 3"
- 15 Models @2 Pole (3600 RPM)
- 22 Models @ 4 Pole (1800 RPM)

Horsepower Range

- 2 Pole (3600 RPM) - 1.0 to 3.0 Hp
- 4 Pole (1800 RPM) – 1/3 to 1 1/2 Hp

Performance

- 2 Pole (3600 RPM), flows to 375 US GPM, heads to 65' TDH
- 4 Pole (1800 RPM), flows to 370 US GPM, heads to 38' TDH

General Technical Specifications

Standard Construction Material Specification

- Volute - Cast iron with cataphoresis coating for excellent corrosion resistance
- Impeller – Fibre-reinforced polypropylene (PPE) engineered composite
- Stub shaft – 420 Stainless steel

Operating Temperature Range

- 14°F (-10°C) to 250°F (120°C)
- Maximum ambient temperature 105°F (40°C)

System Pressures

- Maximum overall working pressure – 150 PSI max (10 bar)
- Minimum inlet (suction) pressure – dependent on NPSHR – see performance curves

General Technical Specifications

Mechanical Seal Details

- Standard type – Q1Q1XGG [all water/glycol solutions up to 200°F (93°C) and 50% concentration]
  - Rotating ring/head assembly – silicon carbide
  - Stationary seat – silicon carbide
  - Elastomers – EPDM, up to 104°F (40°C) and 40% concentration
  - Spring - Stainless Steel
    - For applications other than water and water/glycol mix, call Wilo

Model Number Designation

IPL 2.5 50/260 - 2

IPL

- Inline Vertical Pump, Single Suction, Dry Rotor, "Mechanical sealed"
- Cast iron flanged type

2.5 Suction and Discharge Size in Inches

- ≥2.5" : 125# ANSI raised face standard (150# same as 125#)
- ≤2": non-ANSI pump flange

50 Maximum Pumping Head in Feet

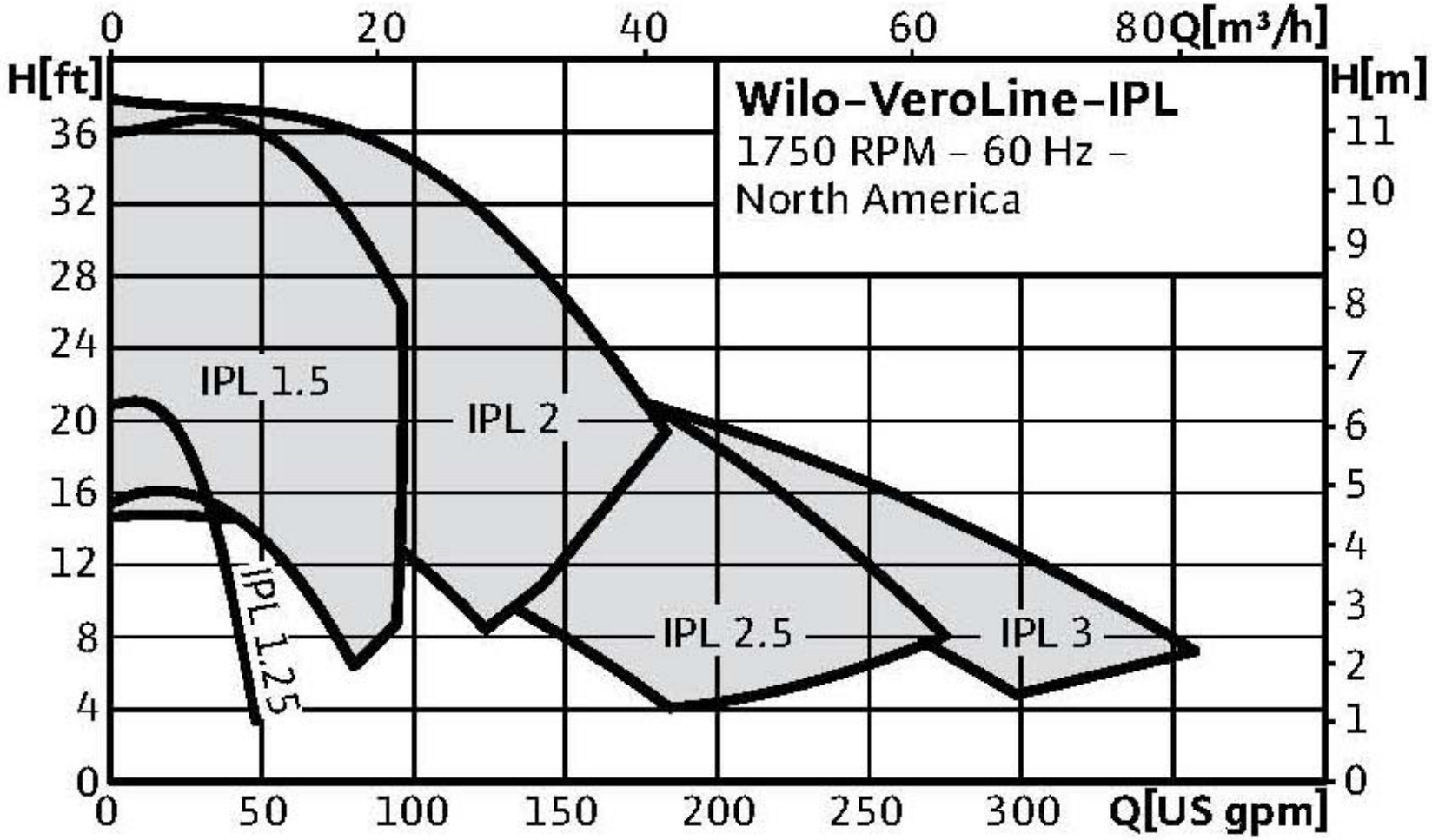
260 Maximum Flow in US GPM

2 # of Poles

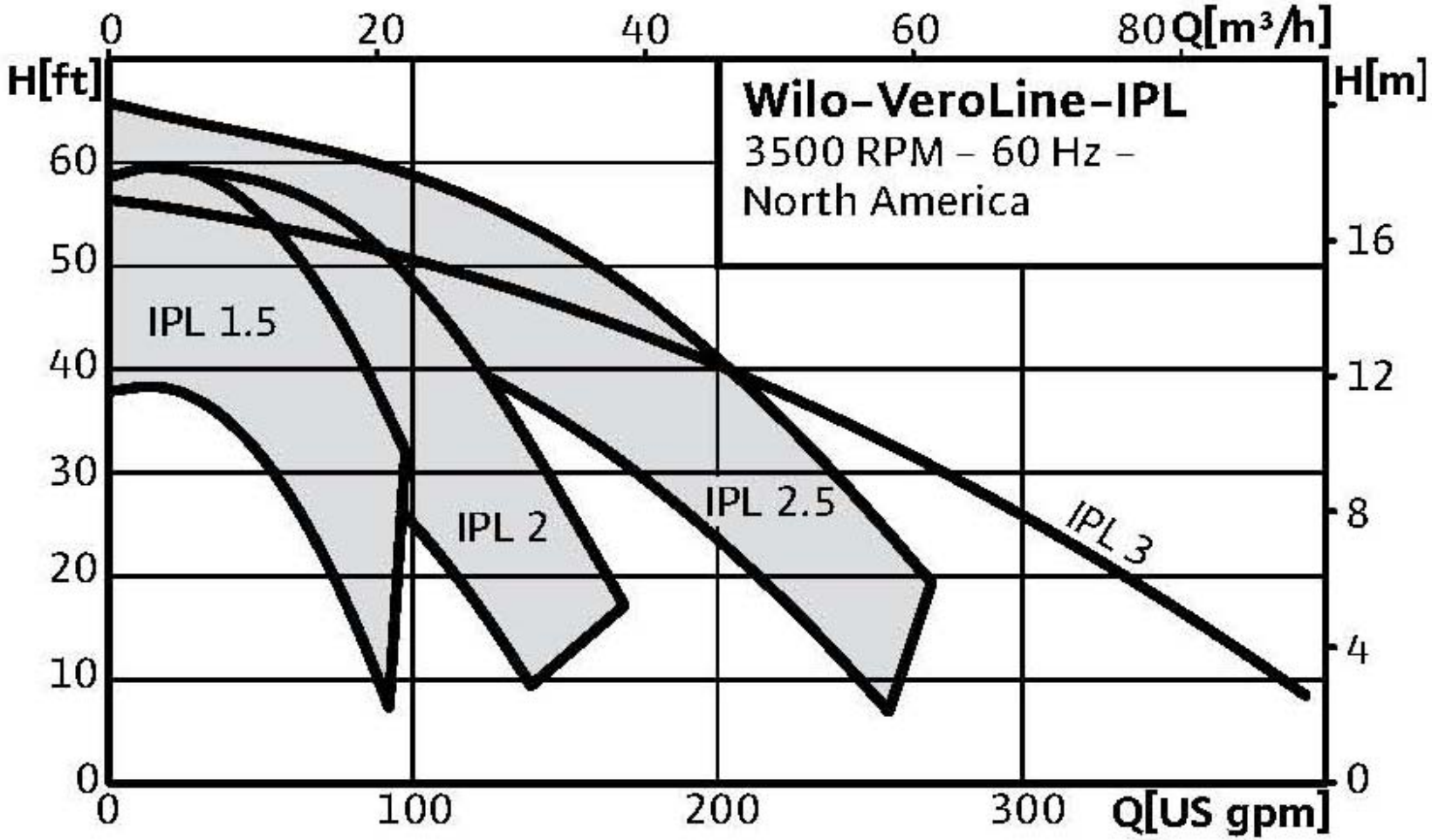
- 2 poles = 3500 RPM, 4 poles = 1750 RPM

Note: Complete units include motor HP, motor enclosure, # poles (RPM), frame size, phase and voltage

Family Curves – 4 Pole, 1750 RPM Models, 60 Hz



Family Curves – 2 Pole, 3500 RPM Models, 60 Hz



Detailed Technical Features

Construction Features

- Catophoretic coating inside of the pump body and lantern
- Pressure rating (standard construction) 150 PSI, with 1.5 times the hydrostatic test pressure (Hydraulic Institute Standard)
- (2) Eye bolts for lifting
- Oversized radial ball bearings in the vertical motors

Ease of Installation

- Short lay length – (F to F dimension)
- Install shaft vertical (motor up) or horizontal
- Bottom of volute body is threaded for frame mounting
- Round 2½" and above flanged units – 125# (150#) ANSI type
  - 2" – (4) bolt round flanged type similar to non-ANSI North American grooved style
  - 1½" and 1¼" oval (2) bolt grooved style

Detailed Technical Features

Ease of Maintenance

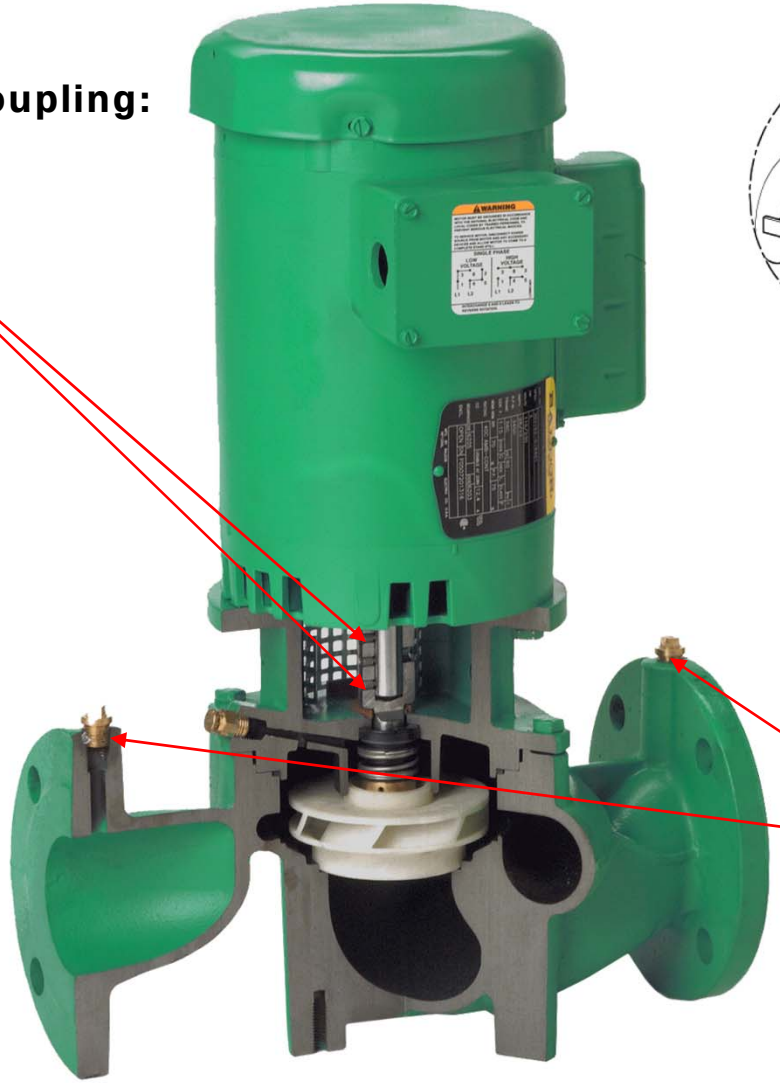
- Standard Baldor NEMA "C" frame motors
- All bolts are SAE
- Bellows type mechanical seal
- Cataphoresis coated cast iron volute and lantern – rust free!
- Stainless steel stub shaft – no need for dial indicators
- Snap rings fix impeller onto the shaft – no reverse threads, split cone nuts or Loctite®

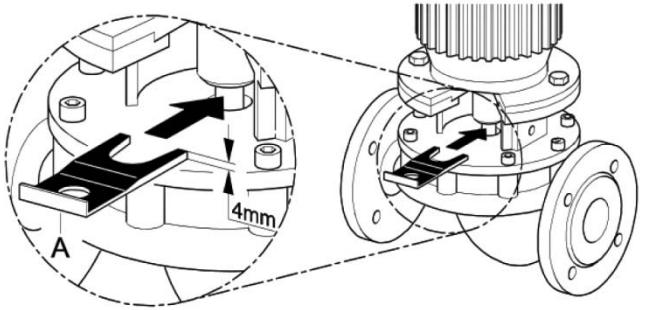
Painting

- 2-part epoxy paint as per internal standards
- Primer: Red Oxide Zinc Coated ~ 40 microns thick
- Final top coat: Enamel paint ~ 40 microns thick - "Wilo green" (Pantone 334) as standard
- Customized paint available upon request, will require longer lead time and extra cost

Detailed Technical Features

420 SS stub shaft coupling:
1/8" Allen screws

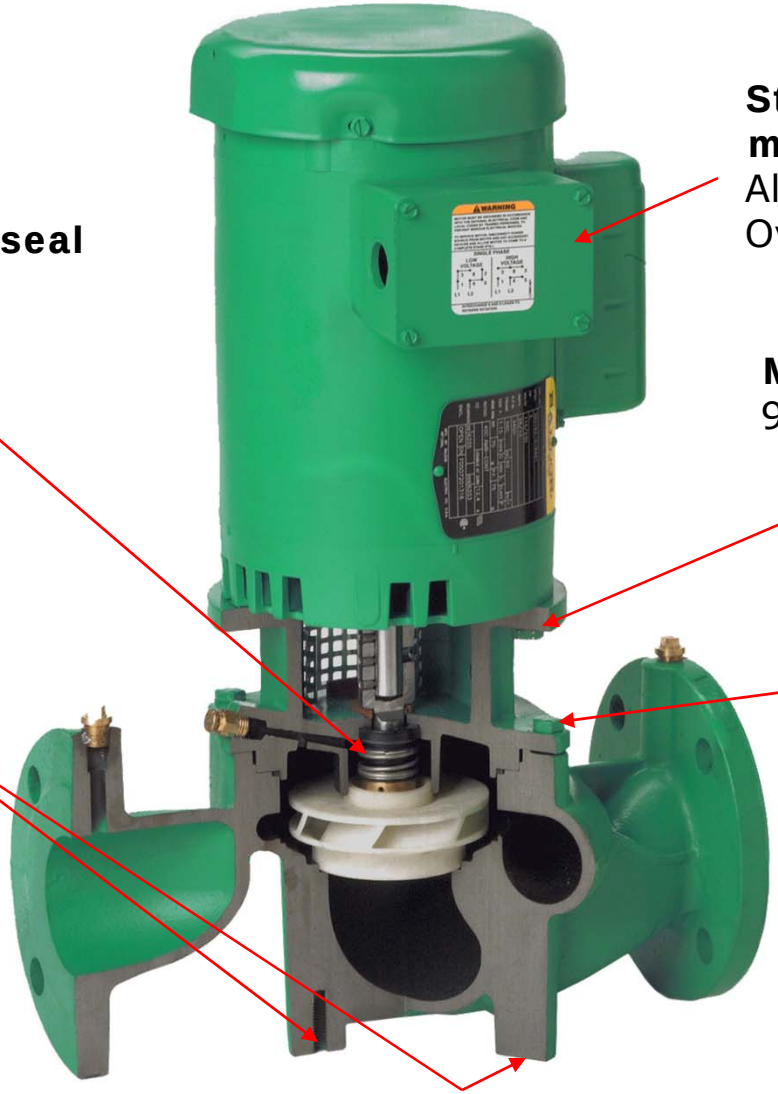




Seal pre-load instructions:
Use supplied tool – 4mm

¼" NPT gauge tappings:
Squared headed plugs

Detailed Technical Features



One size, one-piece bellows mechanical seal

Standard Baldor NEMA C-face motors:
All voltages avaliable
Oversized bearings

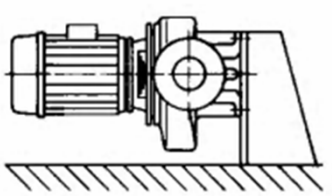
Motor to Lantern bolt torque:
9/16" – 25ft-lbs [34N-m]

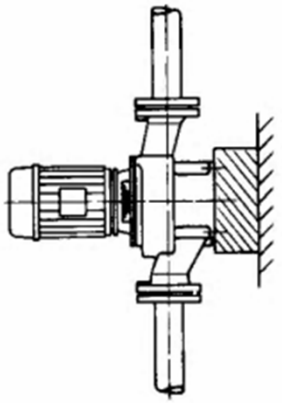
Bottom legs :
3/8" SAE tapped

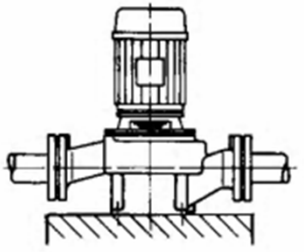
Lantern to volute bolt

Installation Instructions

- Install with shaft horizontal or vertical (motor conduit facing up)
- Pump in any direction (vertical, horizontal, etc)
- If pumping vertical try to pump up (with air)
- Locate in system where suction pressure is as high as possible
  - Avoids cavitation
- Pump away from thermal expansion tank!
- Fluid should be relatively free of abrasive particles
  - Causes damage to mechanical seals and wears out PPE impellers
- When installing horizontally, read the IOM!
  - Watch motor and mechanical seal air vent orientation
- Do not install at the highest point (air)
- Do not install at the lowest point (dirt)

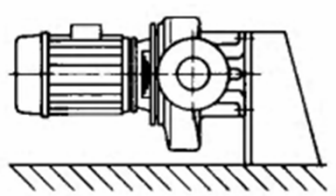


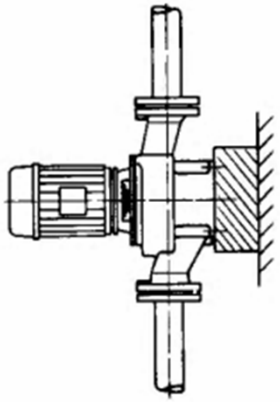


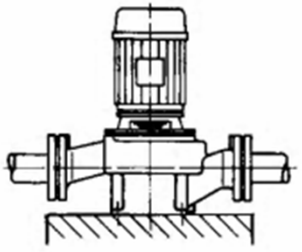


Installation Instructions

- Be careful with the suction side (laminar flow)
  - Recommendation – 5 pipe diameters or more of straight pipe or device
- Always CHECK ROTATION!

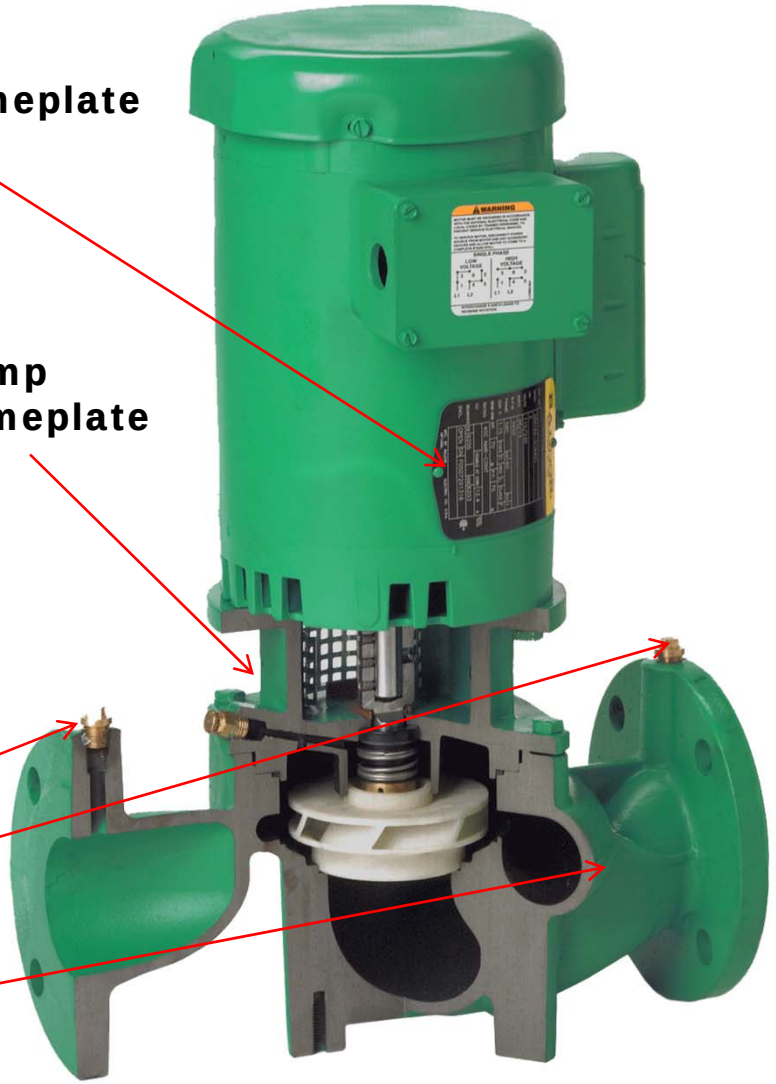






Troubleshooting

- Check power
- Check rotation - single phase also
- Confirm RPM on motor nameplate or use a tachometer
- Install pressure gauges on the suction and discharge flanges
- Check suction pressure
- Perform pressure differential test
- Do not assume!
- Read the IOM!



Pressure gauges:
installed at these locations

Ordering Information

Application Type

- Water and/or water/glycol, 50% concentration, 200°F (95°C) max.
  - Use standard Wilo mechanical seal
  - Elastomers – EPDM, up to 104°F (40°C) and 40% concentration
- Other applications – contact Wilo

Application Considerations

- Head and capacity required
- Available voltage and number of phases (1 or 3)
- Motor Enclosure (dependent of ambient conditions)
  - TEFC standard (for all "flange mount motor types" – C frame)
  - ODP optional
  - Motor efficiency ratings (EISA compliant – Premium or High E)

Sizing Examples – Simplified Heating

- Determine BTU's and temperature differential (mostly given)
- Calculate flow (US GPM) = BTU per hour/500 (constant)/temperature differential (°F)
  - Example: 100 US GPM will pump 1,000,000 BTU/hour @ 20° F differential
- Once flow is known, size pipe based on maximum velocity of 4 ft/sec
  - Higher velocities cause noise, erosion and air problems
- Once pipe is sized, estimate friction loss
  - Manifold systems heads are not additive – use the highest loss loop
- Once friction loss and flow are determined, match point to performance curve
- Remember to use the correct companion flanges

Questions / Comments?