PINNACLE-FLO

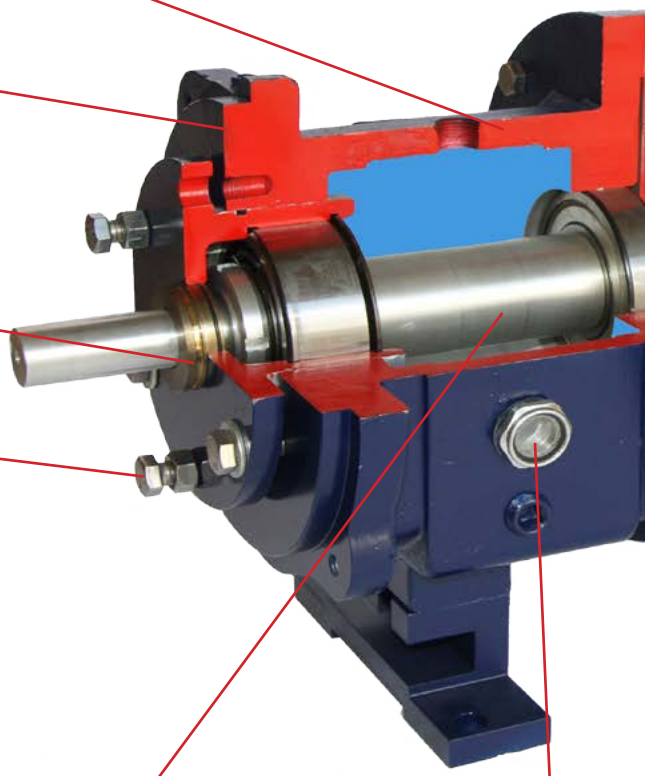
PINNACLE 8896
ANSI PUMP

Pinnacle-Flo, Inc.

Pinnacle-Flo, Inc.

ST1, MT1/LT1& XLT1

THE PINNACLE - FLO 8896 ANSI Process Pump is designed primarily for the chemical & process industry, which have a variety of corrosive process conditions.



APPLICATIONS:

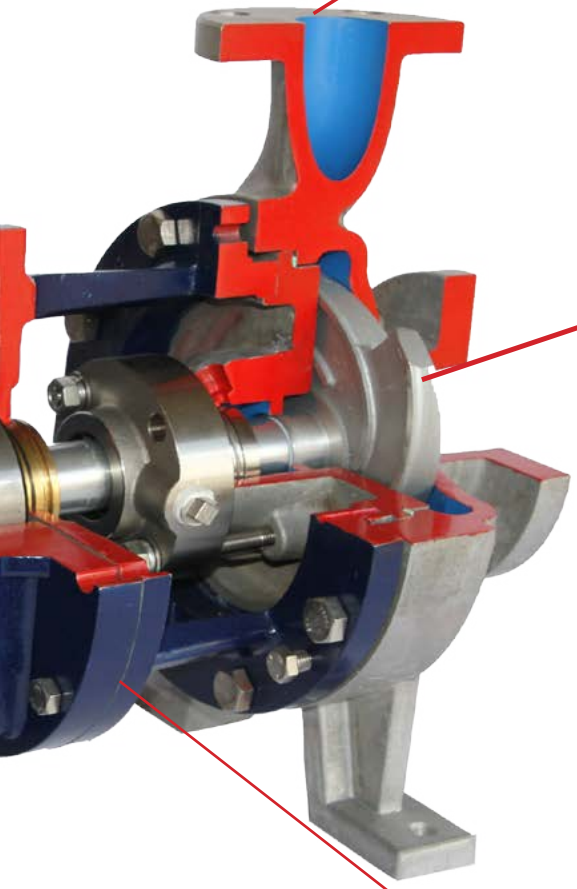
- *Chemical Process*
- *Pulp & Paper*
- *Oil & Gas*
- *Breweries • Food Processing*
- *Water Treatment*
- *Power Generation*
- *Petrochemical*

Call: 832-303-1245 Fax: 832- 900- 9398

Offered in 31 different sizes.

Pinnacle-Flo, Inc.

Serrated Flanges for Positive Sealing



Fully Open Design Investment Cast Impeller with Rear Pump Out Vanes

Carbon Steel Frame Adapter

MODEL&SIZES		
ST1	**MT1/LT1**	**XLT1**
1×1.5-6	2×3-8	6×8-13
1.5×3-6	3×4-8	8×10-13
2×3-6	3×4-8G	6×8-15
1×1.5-8	1×2-10	8×10-15
1×1.5×8LF	1×2-10LF	8×10-15G
1.5×3-8	1.5×3-10	8×1016H
	2×3-10	4×6-17
	3×4-10	6×8-17
	3×4-10H	8×10-17
	4×6-10G	
	4×6-10H	
	1.5×3-13	
	1.5×3-13LF	
	2×3-13	
	3×4-13	
	4×6-13	

Rely on the Quality of Pinnacle-Flo!

ANSI SERIES 8896

Consider this:

Pinnacle-Flo's Standard design features offer:

- ☑ *Performance & Reliability Through Highly Engineered Components*
- ☑ *Extra Metal in Wear Areas*
- ☑ *Engineered Seal Chambers*
- ☑ *Mechanical Sealing Solutions*
- ☑ *Shaft & Bearings are Engineered for High Performance and High Load Applications*
- ☑ *Lubrication Flexibility*

Carbon Steel

- ☐ *Brass Labyrinth oil seals*
- ☐ *Large sight glass*
- ☐ *Heavy duty shafts & bearings*

The Pinnacle-Flo 8896 pump features a heavy duty shaft assembly for high load applications and when conditions push the power frame beyond ANSI limits. Duplex angular contact bearings ensure zero end play for improved sealing and mechanical seal life.

Count on the Experience of Pinnacle-Flo!

Pinnacle-Flo, Inc.

Fully Open Impeller

Acknowledged Best Design for The Chemical Process Industry

The open impeller is the acknowledged best design for process service.It is ideally suited for corrosives/erosive, liquids containing solids and stringy materials. The most reliable pumps feature open impellers as standard.

Open Impeller Enclosed-type Impeller

See The Difference

Pinnacle had performance in mind when developing the 8896 ANSI standard dimension process pump. The decision was made to use a fully open impeller rather than an enclosed type. There are three excellent reasons why:

1. Greater wear area for longer life
2. Renewable performance for reduce repair costs
3. Minimum hydraulic loads for maximum mechanical reliability

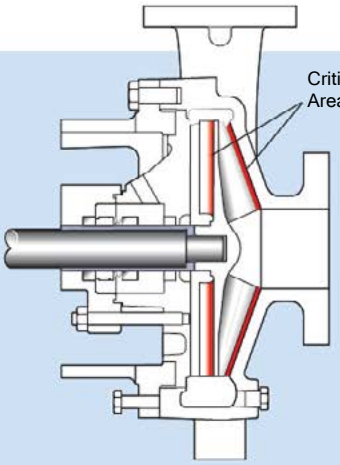
Two Times More Wear Area - Enabling Longer Life - Reduced Repair Costs

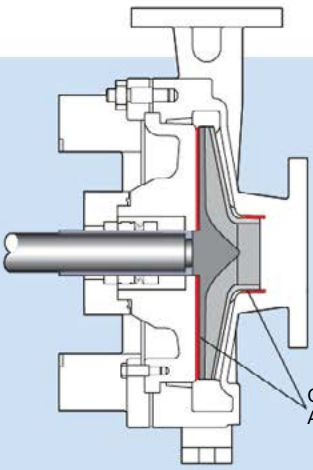
The most critical wear areas of a pump are the casing and stuffing box/seal chamber clearances.

At a given wear rate, the larger wear area means longer life.

OPEN IMPELLER

Wear is uniform Throughout the larger area; no concentrated wear areas, extended life; reduction in cost of ownership.





ENCLOSED TYPE IMPELLER

Less wear area with concentrated wear at nose of impeller... higher repair part cost.

Wear Area Calculation (10 inch dia. impeller)
Area Wear Surface = $\pi r = \pi(5) = 79$ in^2
Total Wear Area (Front & Back) = 2 x 79 = 158 in^2

Area Nose Ring = $2 \pi rW = 2 \times \pi \times (.9)\ (.9) = 5$ in^2
Area Back Cover = $\pi r = \pi(5) = 79$ in^2
Total Wear Area = 5 + 79 = 84 in^2

FEATURES AND BENEFITS

Features

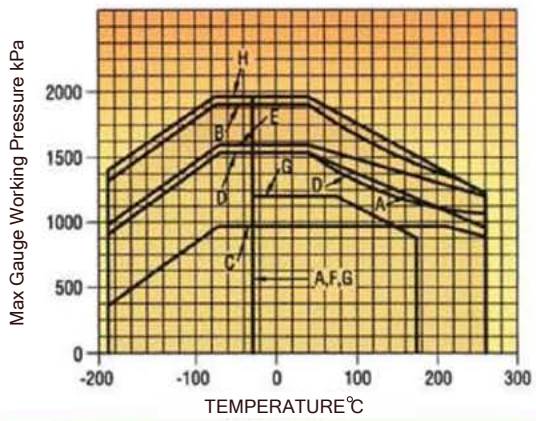
- ANSI B73.1M Standard Dimensions
- Maximum interchangeability, gives minimum spare parts inventory.
- Back-Pull-Out design permits quick inspections of repairs of rotating elements without disturbing electrical and piping connections.
- Wide variety of metallurgy available.

Range

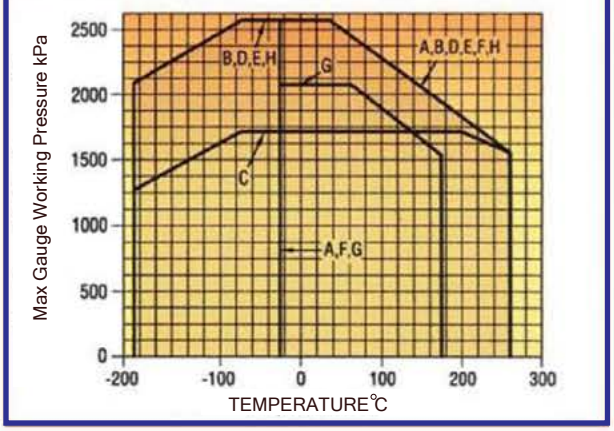
- CAPACITY 6000GPM / 1364 M3/H.
- HEAD 730FEET / 223M.
- TEMPERATURE 700 F / 371C.
- WORKING PRESSURE 375 PSI / 2586kPa

PRESSURE TEMPERATURE CAPABILITY

Standard clall 150# Flanges



Standard clall 300# Flanges



CODE										
A	B	C	D	E	F	G	H			J
DI	316	NI	A20	MO	CS	CI	CD4M	HB	HC	TI

COMPONENT	PINNACLE-FLO ANSI PUMP FEATURES	BENEFITS
A SHAFT	Optimum overhang vs diameter	Low deflection (less than zzz.002 in.) at seal faces for longer seal and bearing life.
B BEARINGS	Optimized size and configuration	Provide L 10(B10) bearing life exceeding 2 years within design operational range.
C OIL SEALS	Brass labyrinth style	Prevent primary cause of premature bearing failure - lubricant contamination. Also prevent loss of oil.
D BEARING FRAME	Large oil sump Removable frame foot One-inch oil sight glass	Bearings run cooler, last longer. Rigid design reduces effects of pipe loads on pump / motor shaft alignment. Bearings and seals last longer. Allows maintenance of proper oil level.
E CASING	Extra corrosive allowance Heavy duty design	Bonus thickness-class 150 pumps feature 300 wall thick-ness - longer life under corrosive. erosive conditions Superior resistance to pipe loads. Available with Class 150 or 300 flanges.
F IMPELLER	Fully open design Back pump- out vanes Impeller O - ring	“Best design for handling corrosive, erosive and stringy material. Five times wear area of enclosed impeller.” Reduces positive stuffing box/seal chamber pressure. Protects threaded area against corrosion.
G SEAL CHAMBER	Big bore, taper bore and standard bore seal chambers designed specifically for mechanical seals.	Accommodate larger diameter mechanical seals allowing use of “new generation” seal designs, improved lubrication and cooling of seal faces extend mechanical seal life.

SEALING OPTIONS

Pinnacle-Flo, Inc.

Mechanical seals for different applications...

Double Cartridge Seal

Single Cartridge Seal

Conventional Double Seal

Standard Bore

Taper Bore

Large Bore

SEAL CHAMBER SELECTION GUIDE			
√+Ideally Suited	**√Acceptable**		**√-Not Recommended**
Service/Process	Accommodates Packing or Mechanical Seals	Accommodates Mechanical Seals Only-Lower Seal Face Temperature-True, Self Venting and Draining. Solid and Vapor Directed away from Seal Faces	Accommodated Mechanical Seals only Enlarge Chamber for Improved Seal Life through Improving Lubrication and Cooling.
	Standard Bore	**Taper Bore**	**Large Bore**
Water Based Product with Flush	√+	√+	√+
Product with Entrained Air or Vapor	√-	√+	√
Product with 0-10% no Flush	√-	√+	√-
Paper Stock 0-5% no Flush	√-	√+	√-
Paper Stock 0-5% with Flush	√-	-	√+
High Boiling Point Products with Flush	√-	√+	√-
High Boiling Point Products no Flush	√-	√+	√-
Molten or Polymerized Product no Flush	√-	√-	√-
Product with Greater than 10% Flush	√-	√-	√+
Slurry 0-5% No Flush	√-	√+	√-
Temperature Control	√-	√-	√-
Self-Venting and Draining	√-	√+	√
Seal Face Heat Removal	√-	√+	√+

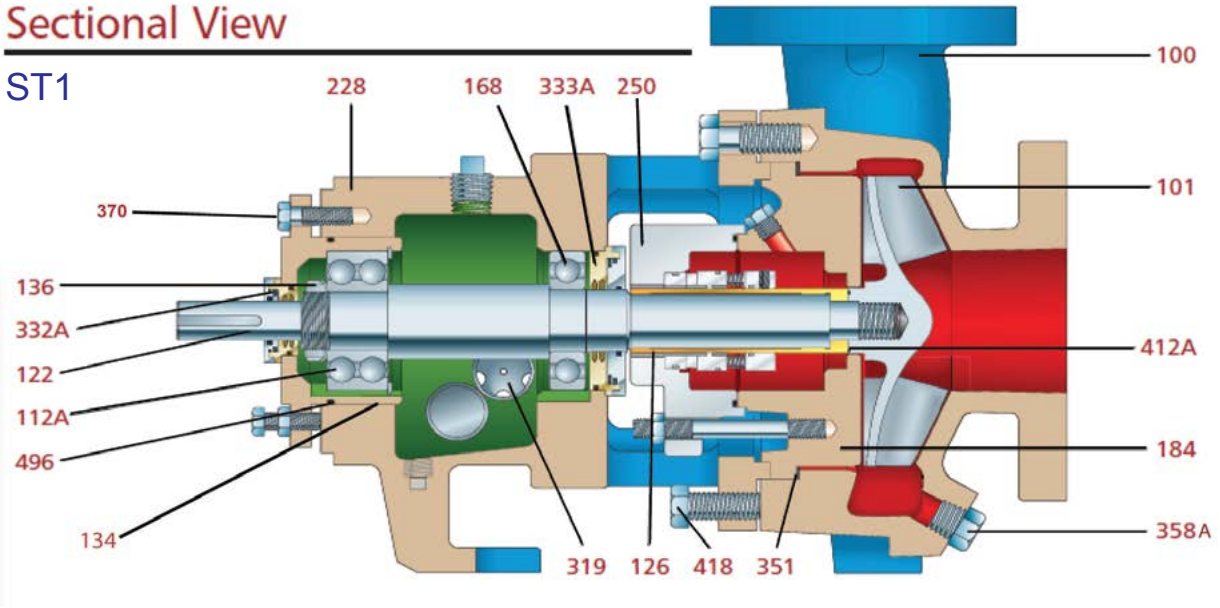
Depend on the commitment of Pinnacle-Flo!

Pinnacle-Flo, Inc.

PARTS CROSS SECTION VIEW

Sectional View

ST1

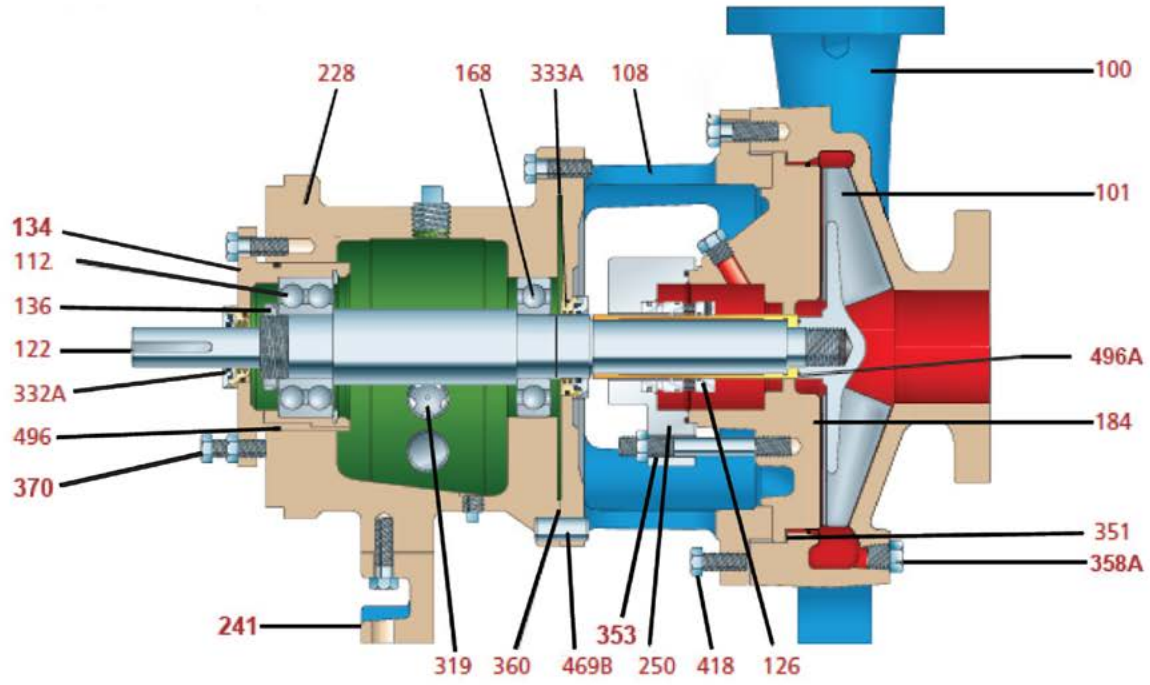


ITEM NO.	REQ'D PER PUMP	PART NAME	ALL CARBON STEEL	ALL 316SS	ALL ALLOY 20	ALL CD4MCU	HASTALLOY B&C	HASTALLOY B&C
100	1	Casing	CS	316SS	Alloy 20	CD4MCU	Monel	B&C
101	1	Impeller	CS	316SS	Alloy 20	CD4MCU	Monel	B&C
105	1	Latern Ring	Glass Filled TFE					
106	1	Packing	SIL C-8201 Acid Rest.		TFE			
107	1	Packing Gland	316SS		Alloy 20		Monel	B&C
108	1	Frame Adapter	Carbon Steel					
112	1	Outboard (Thrust) Bearing	Double Row Angular Contract					
122	1	Shaft-less Sleeve (Optional)	316SS					
122	1	Shaft-with Sleeve	SAE4140				316SS	
126	1	Shaft Sleeve	316SS		Alloy 20		Monel	B&C
134	1	Bearing Housing	Carbon Steel					
136	1	Lock Nut/Lock Washer	Steel					
168	1	Inboard (Radial) Bearing	Single Row Deep Groove					
184	1	Stuffing Box	CS	316SS	Alloy 20	CD4MCU	Monel	B&C
228	1	Frame	Carbon Steel					
241	1	Frame Foot	Carbon Steel					
250	1	Gland	316SS		Alloy 20			
319	1	Sight Oil Glass	Cad. Plated					
332A	1	Labyrinth Oil Seal (Outboard)	Bronze (Optional Carbon Filled Teflon, 316SS)					
333A	1	Labyrinth Oil Seal (Inboard)	Bronze (Optional Carbon Filled Teflon, 316SS)					
351	1	Casing Gasket	Aramid Fiber with EPDM Rubber					
353	4	Gland Stud	316SS					
355	4	Gland Nut	304SS					
357K	2	Hex Nut	304SS					
358A	1	Casing Drain Plug (Optional)	Steel	316SS	Alloy 20	316SS	Monel	Hastelloy
360	1	Gasket, Frame-to-Adapter	Vellumoid					
360A	1	Gasket, Bearing End Cover	Vellumoid					
370	3	Brg. Hsg. Hex Bolt	Steel					
418	3	Cas, Jack Screw	Steel					
469B	2	Dowel Pin	Steel					
496	1	Brg. Hsg. O-Ring	Buna Rubber					
496A	1	Impeller O-Ring	Glass Filled TFE					
496B	1	Bearing End Cover	Carbon Steel					

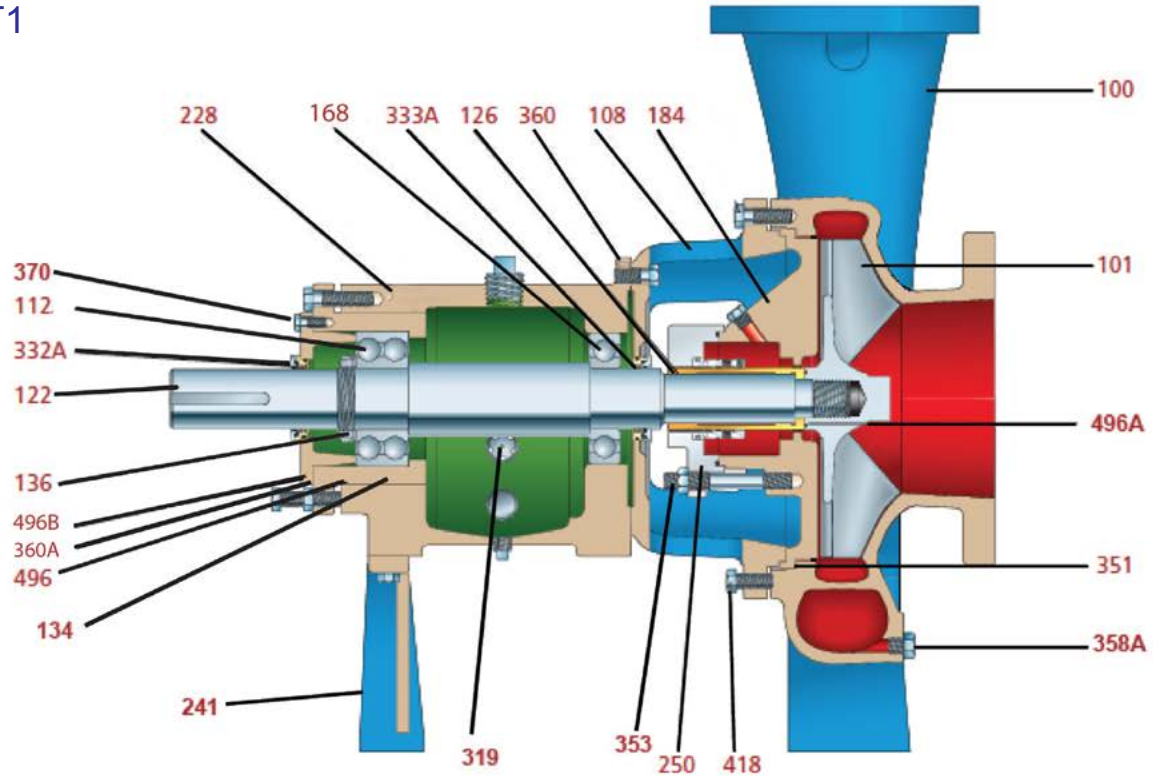
PARTS CROSS SECTION VIEW CONTINUED

Pinnacle-Flo, Inc.

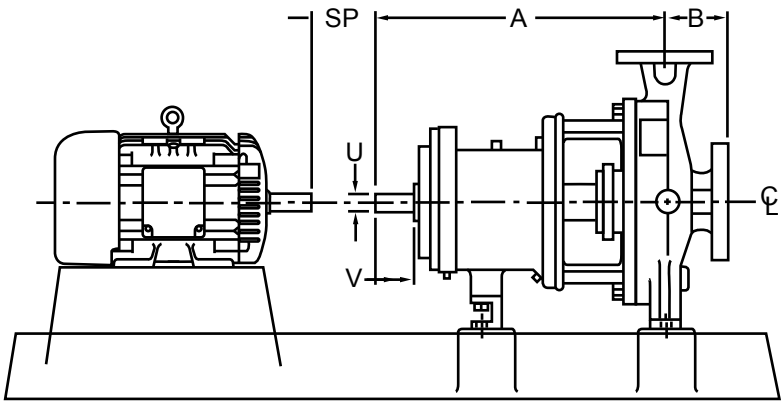
MT1 / LT1

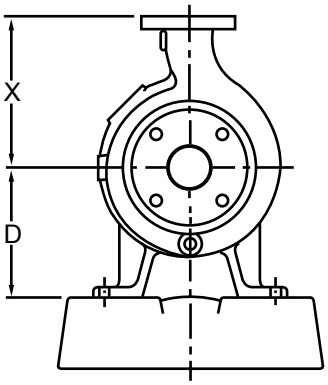


XLT1



DIMENSIONAL OUTLINE - SKID PACKAGES





DIMENSIONS												
Model	Pump Size	ANSI Desination	Discharge Size	Suction Size	X	A	B	D	SP	SHAFT		
										U	KEYWAY	V
ST1	1X1 1/2-6	AA	1	1 1/2	6.5 (165)	13.5 (343)	4 (102)	5.25 (133)	3.75 (95)	0.875	3/16 X 3/16	2
	1X1/2X3-6	AB	1 1/2	3								
	2X3-6		2	3								
	1X1 1/2-8	AA	1	1 1/2								
	1 1/2X3-8	AB	1 1/2	3								
MT1/LT1	2x3-8	A60	2	3	9.5 (242)	19.5 (495)	4 (102)	8.25 (210)	3.75 (95)	MT1 1.125	MT1 1/4 X 1/4	2 5/8
	3x4-8	A70	3	4	11 (280)							
	3x4-8G	A70	3	4								
	1x2-10	A05	1	2	8.5 (216)							
	1 1/2x3-10	A50	1 1/2	3								
	2x3-10	A60	2	3	9.5 (242)							
	3x4-10	A70	3	4	11 (280)							
	3x4-10H	A40	3	4	12.5 (318)	19.5 (495)	4 (102)	10 (254)		LT1 1.875	LT1 1/2 X 1/2	
	4X6-10G	A80	4	6	13.5 (343)							
	4X6-10H	A80	4	6								
	1 1/2X3-13	A20	1 1/2	3	10.5 (267)							
	2X3-13	A30	2	3	11.5 (292)							
	3X4-13	A40	3	4	12.5 (318)							
	4X6-13	A80	4	6	13.5 (343)							
XLT1	6X8-13	A90	6	8	16 (406)	27.875 (708)	6 (152)	14.5 (368)	5.25 (133)	2.375	5/8 X 5/8	4
	8X10-13	A100	8	10	18 (457)							
	6X8-15	A110	6	6								
	8X10-15	A120	8	10	19 (483)							
	8X10-15G	A120	8	10								
	8X10-16H		8	10								
	4X6-17		4	6	16 (406)							
	6X8-17		6	8	18 (457)							
	8X10-17		8	10	19 (483)							

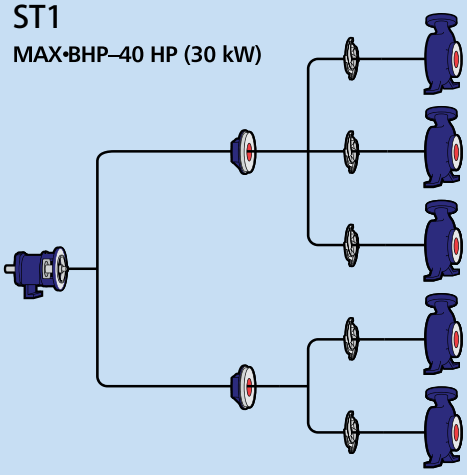
PARTS INTERCHANGEABILITY

Pinnacle-Flo, Inc.

Power end	Adapter	Stuffing box/seal chamber	Impeller	Casing	Size

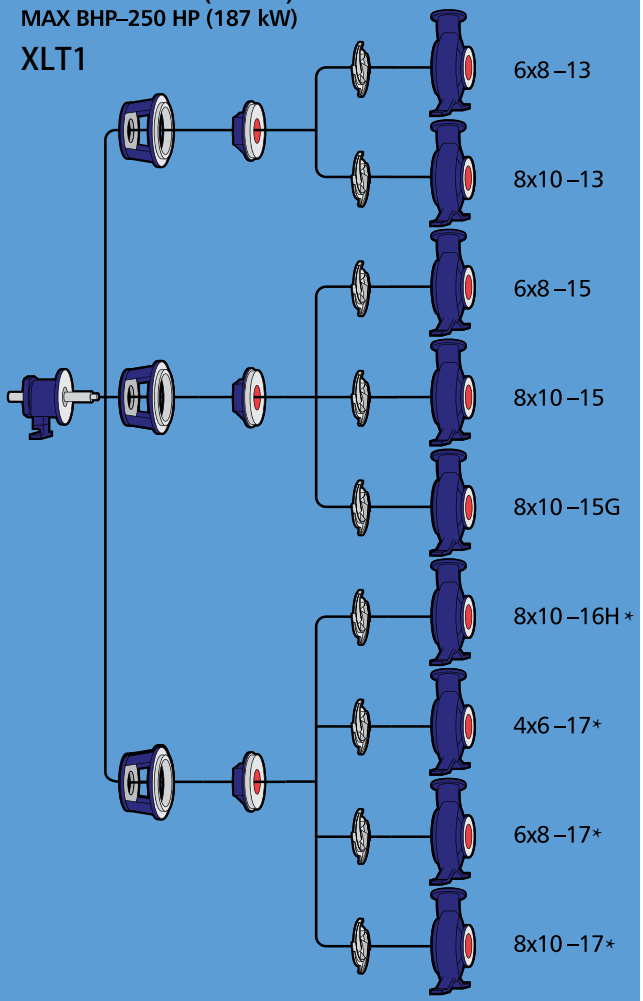
ST1

MAX•BHP–40 HP (30 kW)



XLT1

* MAX BHP-350HP(261KW)
MAX BHP–250 HP (187 kW)

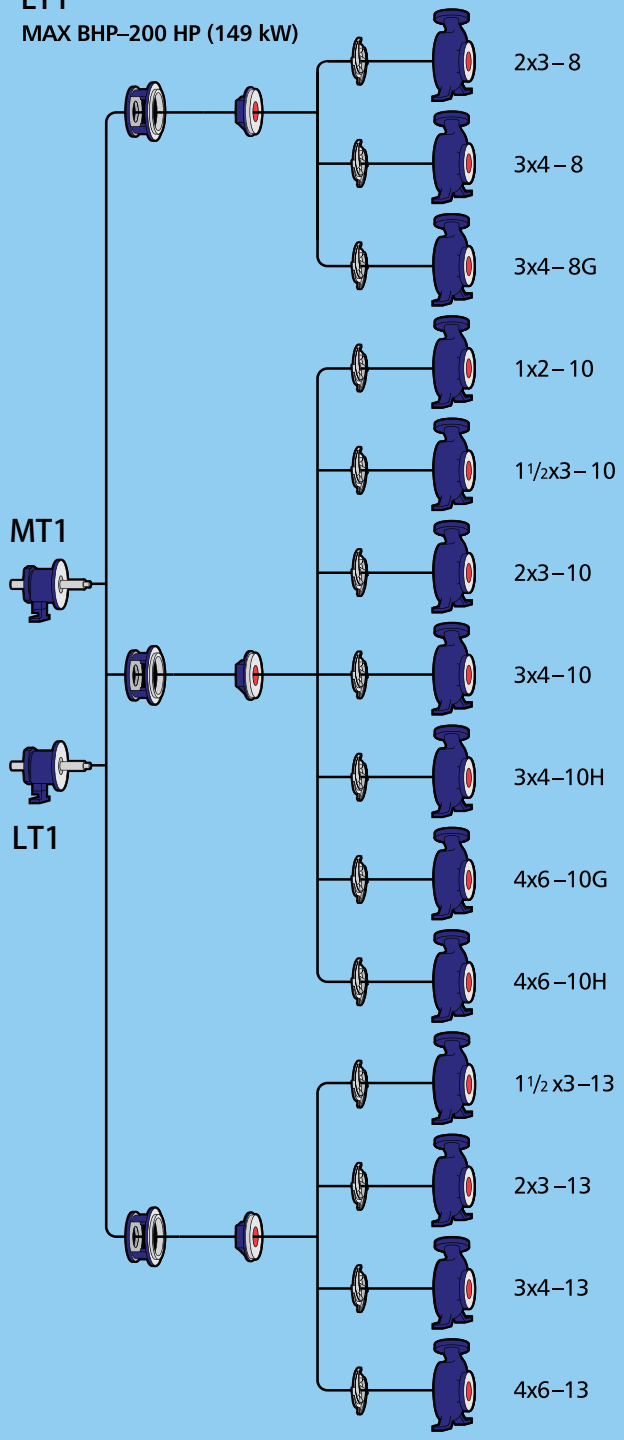


MT1

MAX BHP–122 HP (91 kW)

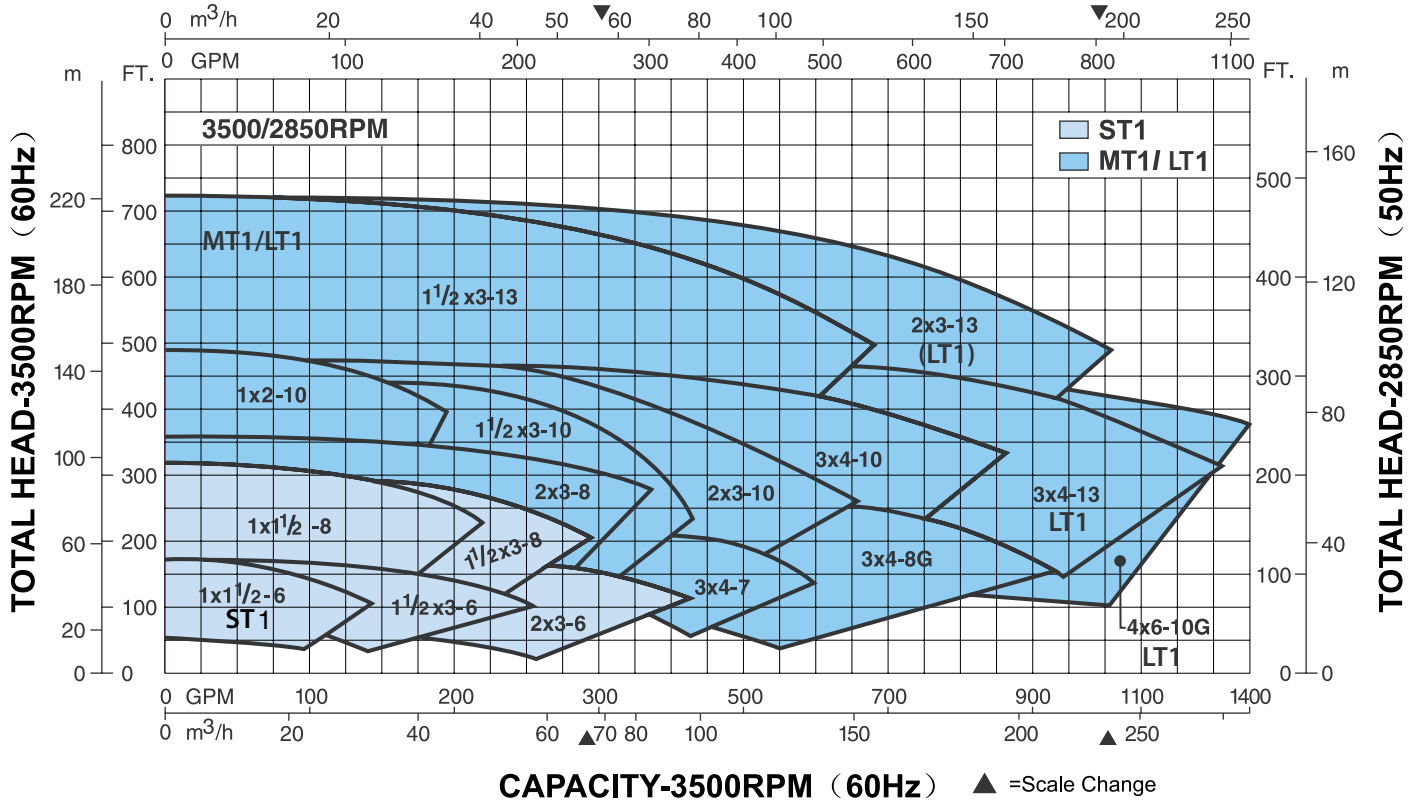
LT1

MAX BHP–200 HP (149 kW)



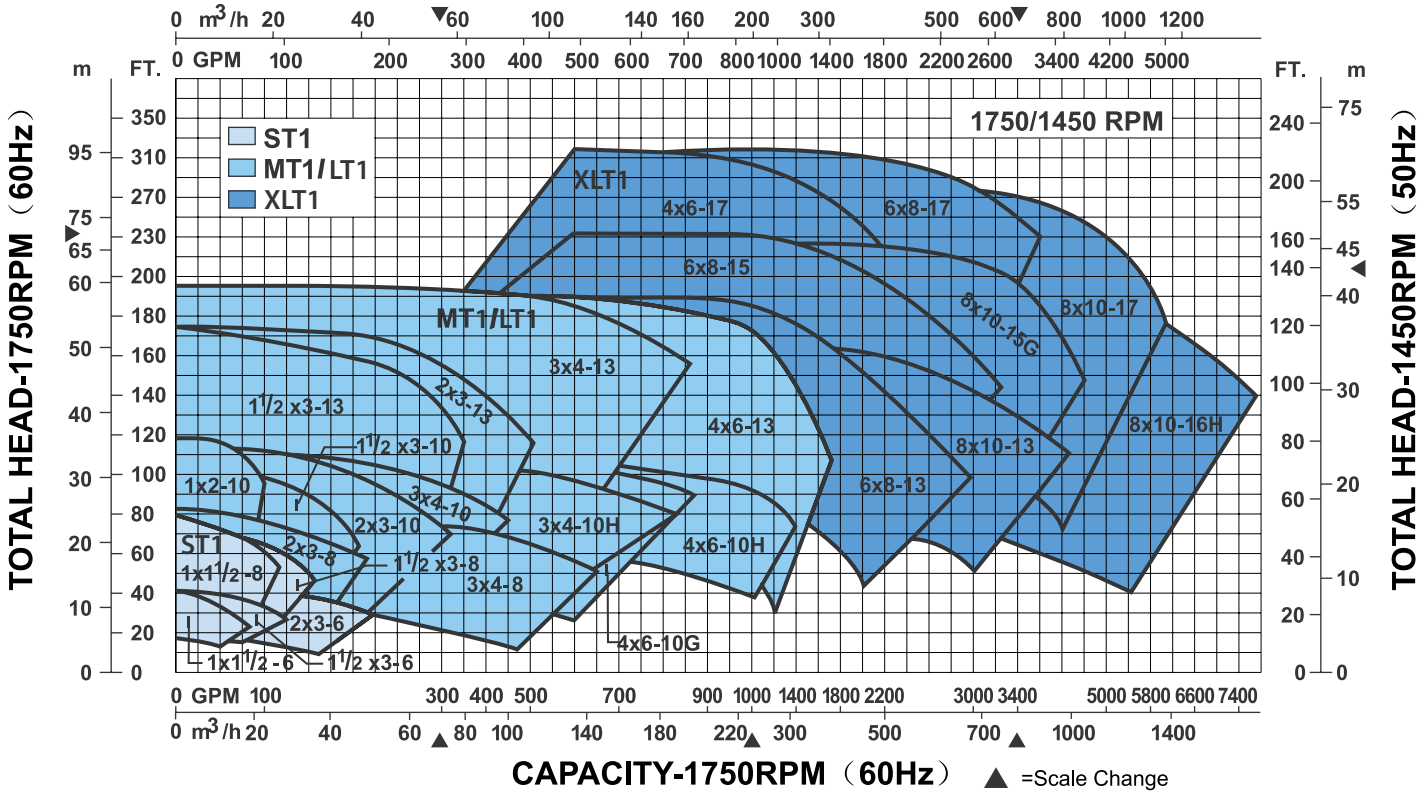
FLOW RANGE

CAPACITY-2850RPM（50Hz）



CAPACITY-3500RPM（60Hz） ▲ =Scale Change

CAPACITY-1450RPM（50Hz）



CAPACITY-1750RPM（60Hz） ▲ =Scale Change

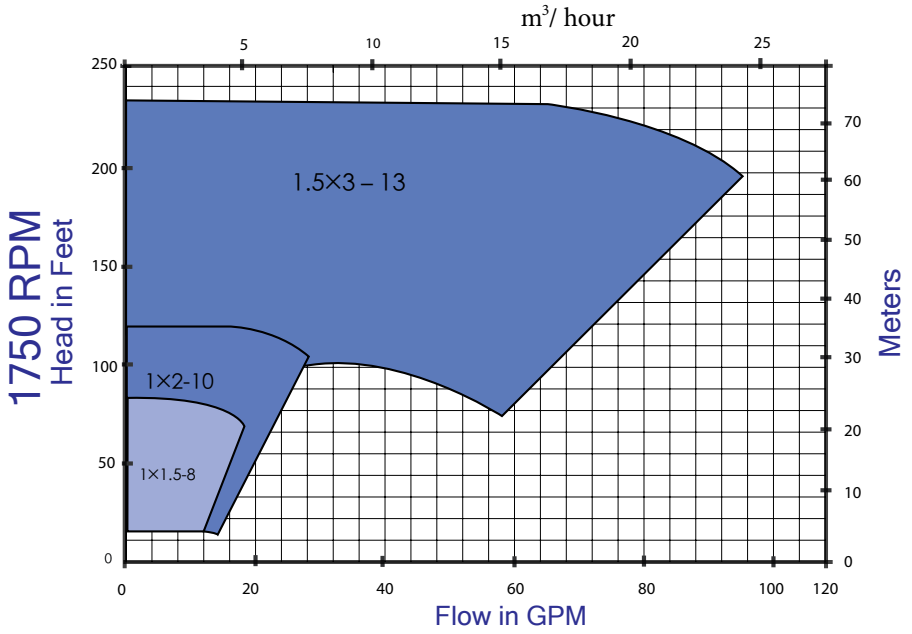
LOW FLOW 8896 SERIES

Pump sizes:

1×1.5×8 ST1- LF

1×2×10 MT1/LT1-LF

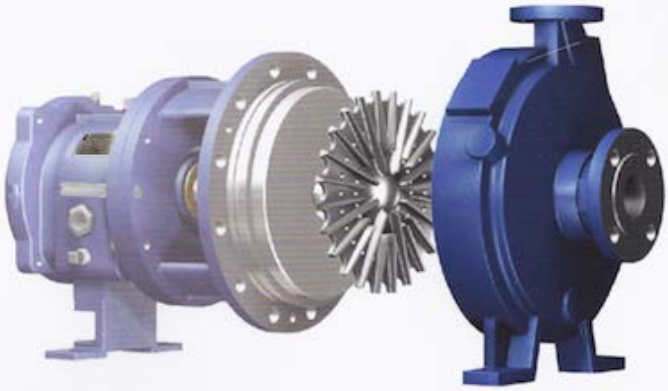
1.5×3×13 LT1-LF

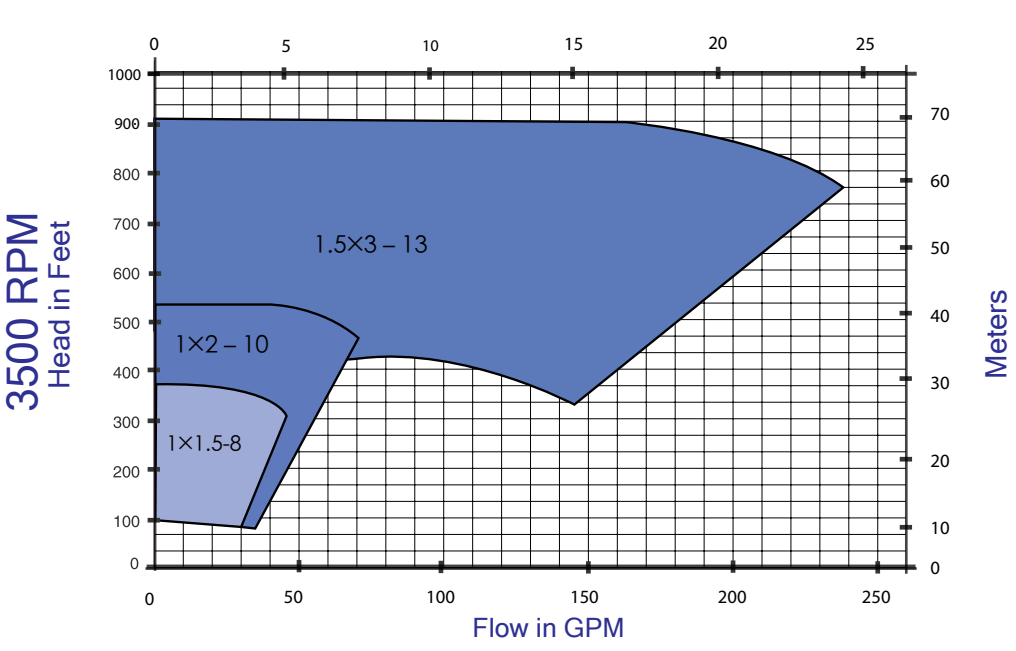


ST1 Frame
MaxBHP-20HP
@1800rpm
MaxBHP-40HP
@3600rpm

MT1 Frame
1 3/4 Shaft Dia.
Max BHP-122
LT1 Frame
2 1/8 Shaft Dia.
Max BHP-200HP

Pinnacle-Flo 8896 Low Flow Series





Benefits
Reduced shaft vibration
Lower NPSHr
Lower seal chamber pressure
Extended MTBF on the pump and mechanical seals

Options

Pinnacle-Flo offers users a variety of options to meet specific plant and process requirments.

Seal Flush Plans

All ANSI B73.1 Seal flush and cooling plans are available to control emission levels and meet seal installation requirements. Pinnacle can also provide other special arrangements of user preference.

CPI PLAN 7311
By-pass flush lubricates single seal faces.

CPI PLAN 7353
Pressurized circulation lubricates double seal faces.

BEARING FRAME FINNED COOLER

Directly cools oil for lower bearing operating temperature. Requires minimum cooling water, Corrosion resistant construction, Recommended for temperatures over 350F(177°C) when using conventional oil. When synthetic oil is used, pump can run up to 450F without cooling. Above 450F add for high temperature option.

Equipment Monitoring

- Wireless technology
- Alerts you to performance changes in the equipment
- Affordable

Pinnacle-Flo, Inc.

ANSI 8896 PUMPS

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
No liquid delivered.	Pump not primed.	Reprime pump, check that pump and suction line are full of liquid.
	Suction line clogged.	Remove obstructions.
	Impeller clogged with foreign material.	Back flush pump to clean impeller.
	Wrong direction of rotation.	Change rotation to concur with direction indicated by arrow on bearing housing or pump casing.
	Foot valve or suction pipe opening not submerged enough.	Concult factory for proper depth. Use baffle to eliminate vortices.
	Suction lift too high.	Shorten suction pipe.
	Air leak thru gasket.	Replace gasket.
Pump not producing rated flow or head.	Air Leak thru stuffing box.	Replace or readjust packing/mechanical seal.
	Impeller partially clogged.	Back flush pump to clean impeller.
	Insufficient suction head.	Ensure that suction line shutoff valve is fully open and replace if necessary.
	Worn or broken impeller.	Inspect and replace if necessary.
Pump starts then stops pumping. Bearing run hot.	Improperly primed pump.	Reprime pump.
	Air or vapor pockets in suction line.	Rearrange piping to eliminate air pockets.
	Air leak in suction line.	Repair(plug) leak.
	Improper alignment.	Re-align pump and driver.
	Improper lubrication.	Check lubricant for suitability and level.
	Lube cooling.	Check cooling system.
Pump is noisy or vibrates.	Improper pumping/driver alignment.	Align shafts.
	Partly clogged impeller causing imbalance.	Back-flush pump to clean impeller.
	Broken or bent impeller or shaft.	Replace as required.
	Foundation not rigid.	Tighten hold down bolts of pump and motor of adjust stilts.
	Worn bearings.	Replace.
	Suction or discharge piping not anchored or properly supported.	Anchor per Hydraulic institute Standards Manual recommendations.
	Pump is cavitating.	System problem.
Excessive leakage from stuffing box.	Packing gland improperly adjusted.	Tighten gland nuts.
	Stuffing box improperly packed.	Check packing and repack box.
	Worn mechanical seal parts.	Replace worn parts.
	Overheating mechanical seal.	Check lubrication and coolling lines.
	Shaft sleeve scored.	Remachine or replace as required.
Motor requires excessive power.	Head lower than rating. Pumps too much liquid.	Consult factory. Install throttle valve, trim impeller diameter.
	Liquid heavier than expected.	Check specific gravity and viscostity.
	Stuffing packing too tight.	Readjust packing. Replace if worn.
	Rotating parts bind.	Check internal wearing parts for proper clearances.

ASSEMBLY TROUBLESHOOTING

Symptom	Cause
Excessive shaft end play.	Bearing internal clearance too great. Replace bearing with correct type.Snap ring loose in bearing housing groove. Reseat.
Excessive shaft/sleeve runout.	Sleeve worn. Replace Shaft bent. Replace.
Excessive bearing frame flange runout.	Shaft bent. Replace. Bearing frame flange distorted. Replace.
Excessive frame adapter runout.	Corrosion. Replace. Adapter-to-frame gasket not seated properly. Reseat.
Excessive seal chamber/stuffing box cover runout.	Seal chamber/stuffing box cover not properly seated in frame adapter. Corrosion or wear. Replace.
Excessive impeller vane tip runout.	Bent vane(s). Replace impeller.

Engineered Excellence!

Need assistance?....Call: 832-303-1245

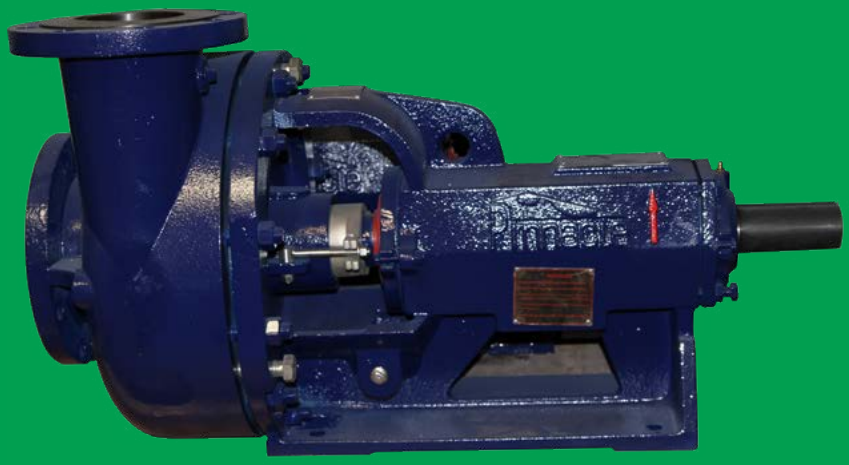
Pinnacle-Flo, Inc.

Experience the Performance of Pinnacle-Flo.

Additional products offered:

- Air Operated Double Diaphragm Pump
  - Blue Dogs Series

- Self-Priming Solids Handling Pump
  - PFSPP Series



- Centrifugal MUD Pump
  -2500 Series

Pinnacle-Flo, Inc.

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