



Pinnacle-Flo, Inc.

Pinnacle-Flo, Inc.



TOP OF THE LINE

8896
ANSI PUMP

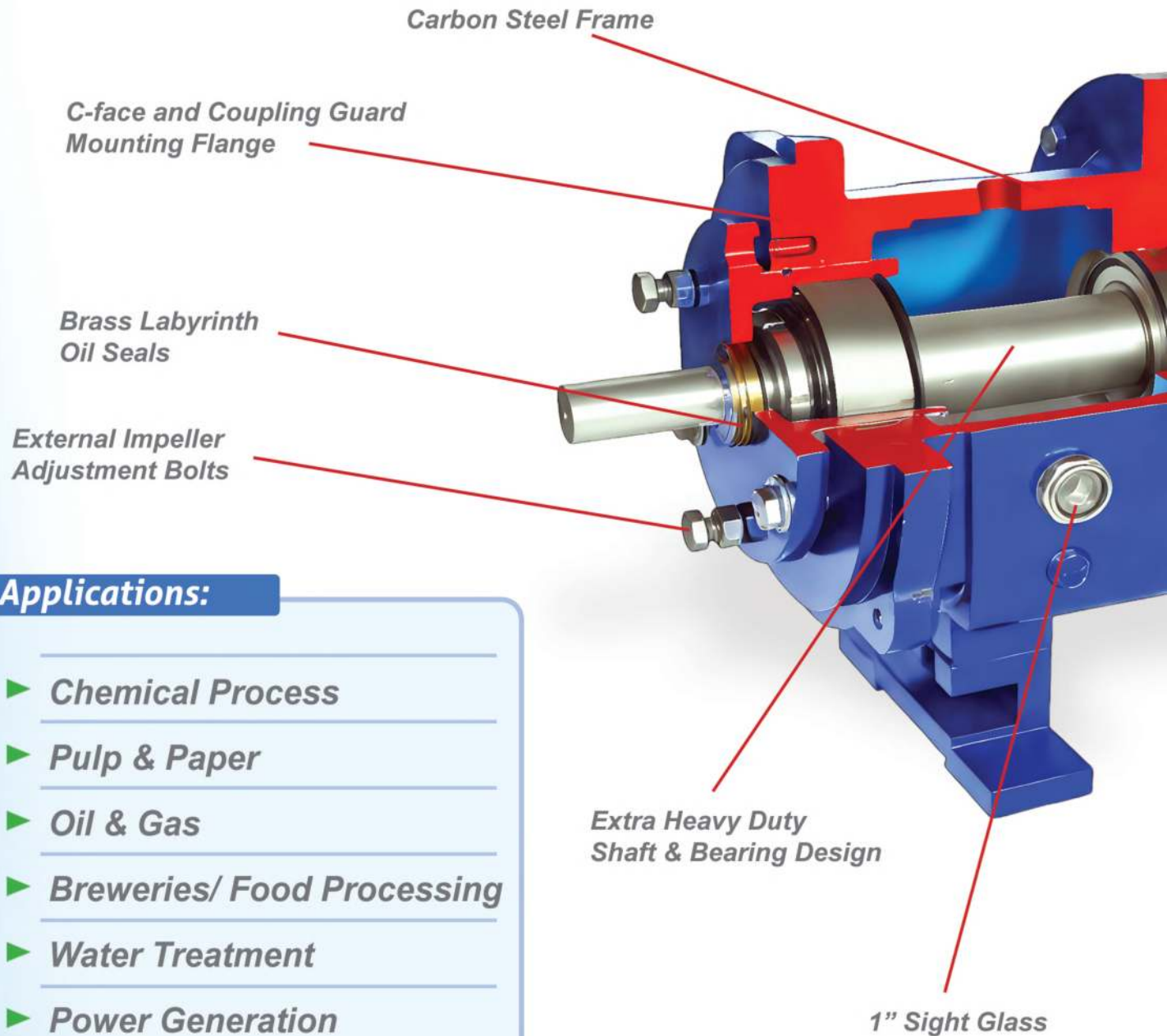
Ask for it by name!



Pinnacle-Flo, Inc.

ST1, MT1/LT1 & XLT1

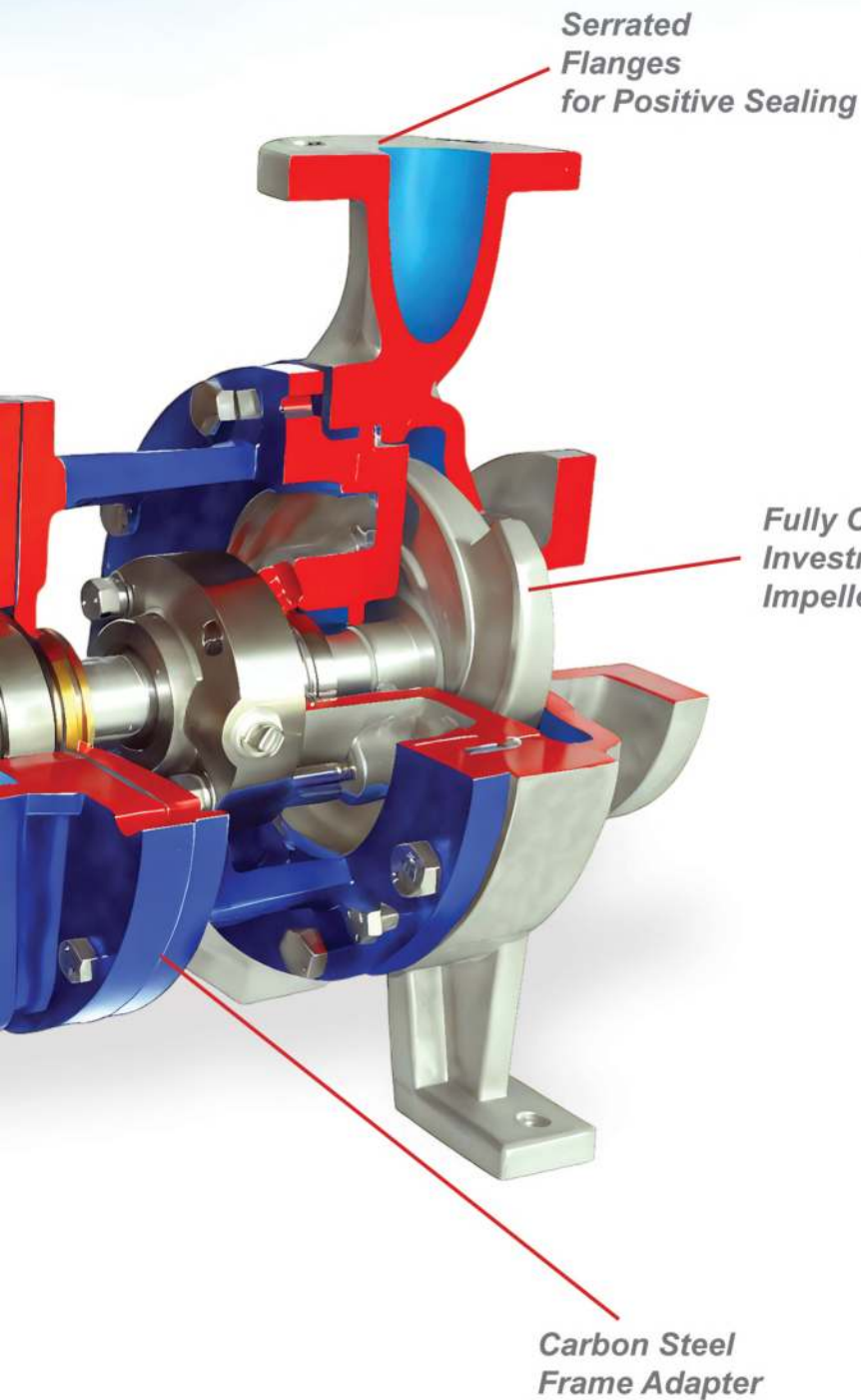
The Pinnacle -Flo 8896 ANSI Process Pump is designed primarily for the chemical & process industry, which have a variety of corrosive process conditions.



Applications:

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

Offered in 31 different sizes



Model & Sizes:

ST1	MT1 / LT1	XLT1
1x1.5-6	2x3-8	6x8-13
1.5x3-6	3x4-8	8x10-13
2x3-6	3x4-8G	6x8-15
1x1.5-8	1x2-10	8x10-15
1x1.5x8LF	1x2-10LF	8x10-15G
1.5x3-8	1.5x3-10	8x10-16H
	2x3-10	4x6-17
	3x4-10	6x8-17
	3x4-10H	8x10-17
	4x6-10G	
	4x6-10H	
	1.5x3-13	
	1.5x3-13LF	
	2x3-13	
	3x4-13	
	4x6-13	

Call: 832.303.1245
Fax: 832.900.9398

Rely on the Quality & Power of Pinnacle-Flo!

Chemical Process Pumps

ANSI SERIES 8896



Pinnacle-Flo's standard design: key features :

- ▶ *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 is engineered with a robust shaft assembly designed to withstand high-load applications, particularly in conditions that exceed ANSI power frame limitations. The incorporation of duplex angular contact bearings guarantees zero end play, significantly enhancing sealing integrity and extending the lifespan of the mechanical seal.



Count on the Experience of Pinnacle-Flo!

ANSI 8896 Impeller Design

Fully Open Impeller

Recognized as the Leading Design in the Chemical Process Industry

The open impeller is widely recognized as the top design for process applications. It is perfectly suited for handling corrosive and erosive fluids, as well as liquids containing solids and fibrous materials. The most reliable pumps come standard with open impellers.

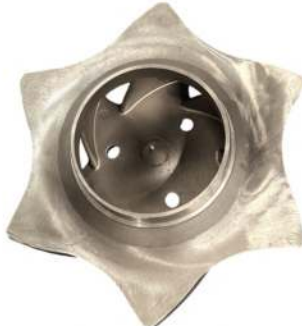


Pinnacle prioritized performance in the design of the 8896 ANSI standard dimension process pump. We opted for a fully open impeller instead of an enclosed one, and there are three compelling reasons for this choice:

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



Open Impeller



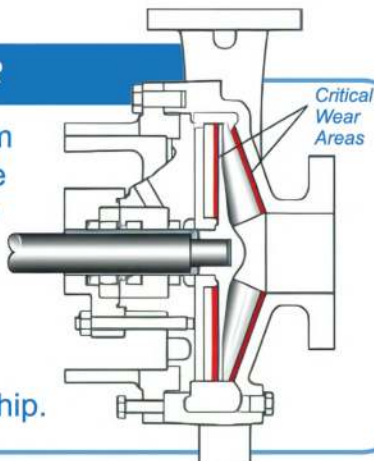
Enclosed Type Impeller

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

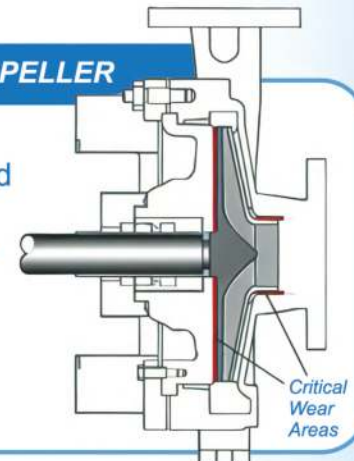
Wear is uniform Throughout the larger area; no concentrated wear areas, extended life; reduction in cost of ownership.



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

ENCLOSED TYPE IMPELLER

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



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



Pinnacle-Flo, Inc.

Features and Benefits

ANSI SERIES 8896

FEATURES

ANSI B73.1 M 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 600 GPM / 1364 M³/H.

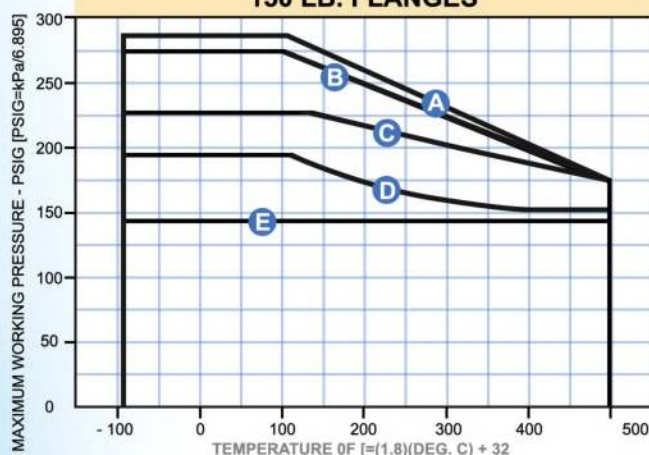
HEAD 730 FEET / 223 M.

TEMPERATURE 700° F / 371° C.

WORKING PRESSURE 375 PSI / 2586 kPa

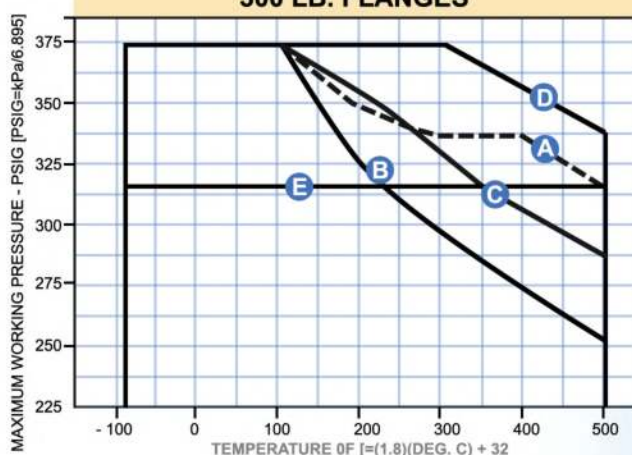
PRESSURE / TEMPERATURE RATINGS

150 LB. FLANGES



CURVE	MATERIAL	CURVE	MATERIAL
A	DUCT. IRON	B	316 S.S.
A	CAST STEEL	B	317 S.S.
A	CD4MCu	C	ALLOY 20
A	HAST. B	D	MONEL
A	HAST. C	E	NICKEL
A	TITANIUM		

300 LB. FLANGES



CURVE	MATERIAL	CURVE	MATERIAL
A	DUCT. IRON	B	HAST C.
A	CAST STEEL	B	CD4MCu
A	316 S.S.	C	TITANIUM
A	317 S.S.	D	MONEL
A	ALLOY 20	E	NICKEL
A	HAST B.		

CONTACT FACTORY FOR PRESSURES OVER 160 PSIG.

COMPONENT

PINNACLE-FLO ANSI PUMP FEATURES & BENEFITS

A	SHAFT	Optimum overhang vs diameter	Low deflection (less than .002 in.) at seal faces for longer seal and bearing life.
B	BEARINGS	Optimized size and configuration	Provide L 10(810) 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 thickness 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.



Double Cartridge Seal



Single Cartridge Seal



Conventional Double Seal

Mechanical Seals For Diverse Applications

Mechanical seals are integral to every industrial process. Wherever you find a rotating shaft moving fluid, mechanical seals are essential for ensuring smooth, efficient operation. They work by keeping process fluids contained while preventing contaminants from entering the system, ultimately enhancing equipment reliability and performance.

The effectiveness of a mechanical seal relies on a few key components and design principles. These work together at the critical interface between the rotating shaft and stationary housing, providing robust sealing solutions that minimize downtime and maintenance costs.



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	Accommodates 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 0-10% no Flush	✓ -	✓ +	✓ -
	✓ -	✓ +	✓ -
Paper Stock 0-5% no Flush	✓ -	-	✓ +
	✓ -	✓ +	✓ -
High Boiling Point Products no Flush	✓ -	✓ +	✓ -
	✓ -	✓ -	✓ -
Product with Greater than 10% Flush	✓ -	✓ -	✓ +
	✓ -	✓ +	✓ -
Temperature Control	✓ -	✓ -	✓ -
	✓ -	✓ +	✓
Seal Face Heat Removal	✓ -	✓ +	✓ +

Ask for it by name!

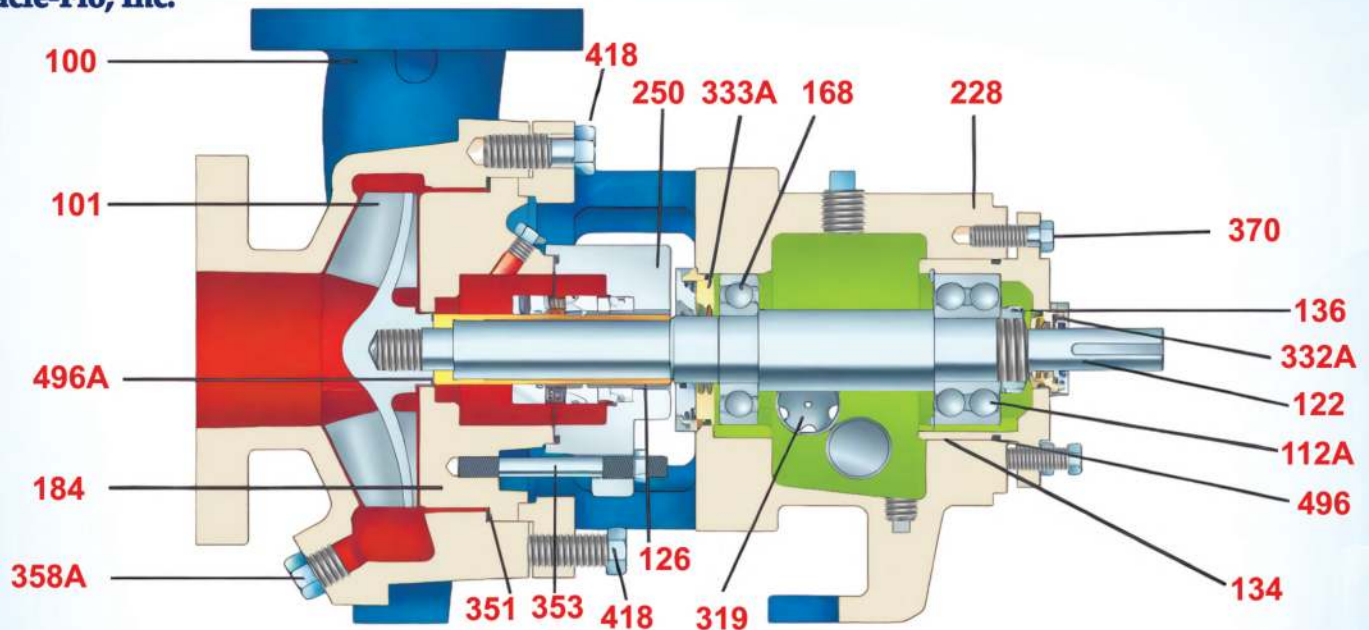


Pinnacle-Flo, Inc.

Parts Cross Section

ST1

Sectional View



ITEM NO.	PER PUMP	PART NAME	CARBON / STAINLESS	ALL 316SS	ALL ALLOY 20	ALL CD4MCU	TITANIUM	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	316SS					
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	6	Brg. Hsg. Hex Bolt	Steel					
418	3	Cas, Jack Screw	Steel					
418A	4-24	Case Bolts	Steel / 18-8 Stainless					
418B	4	Frame to Adapter Bolt	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					

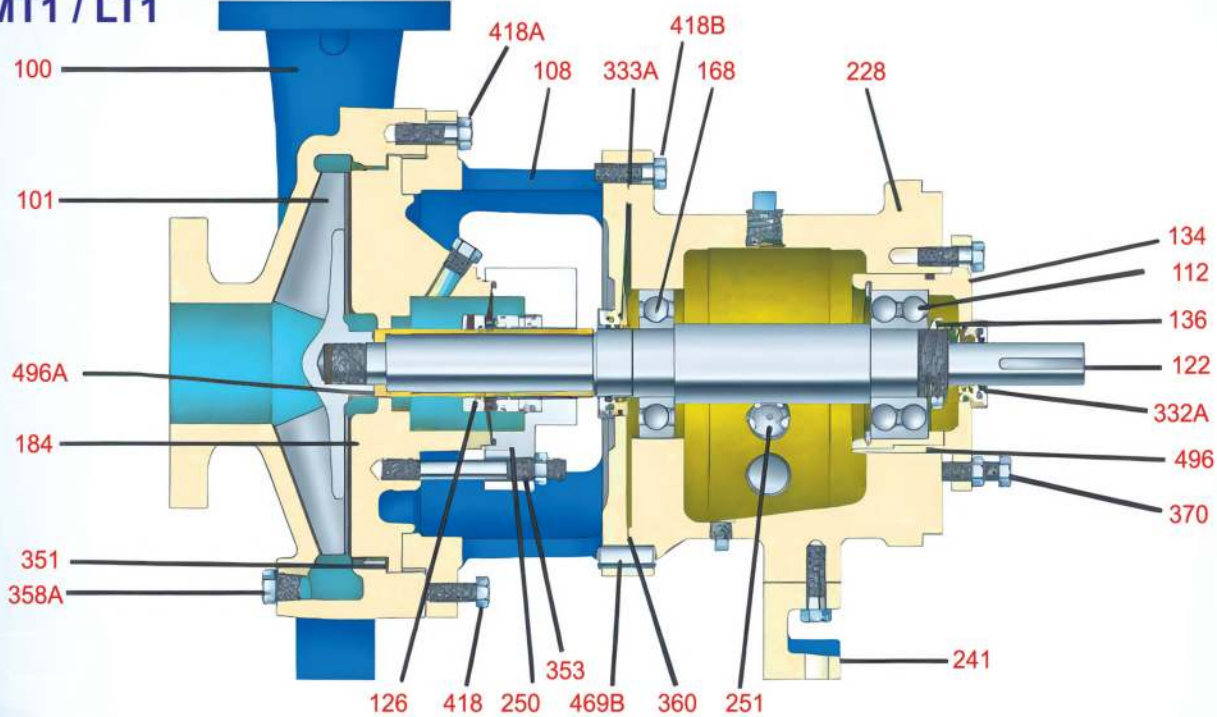
Parts Cross Section

Sectional View...Continued

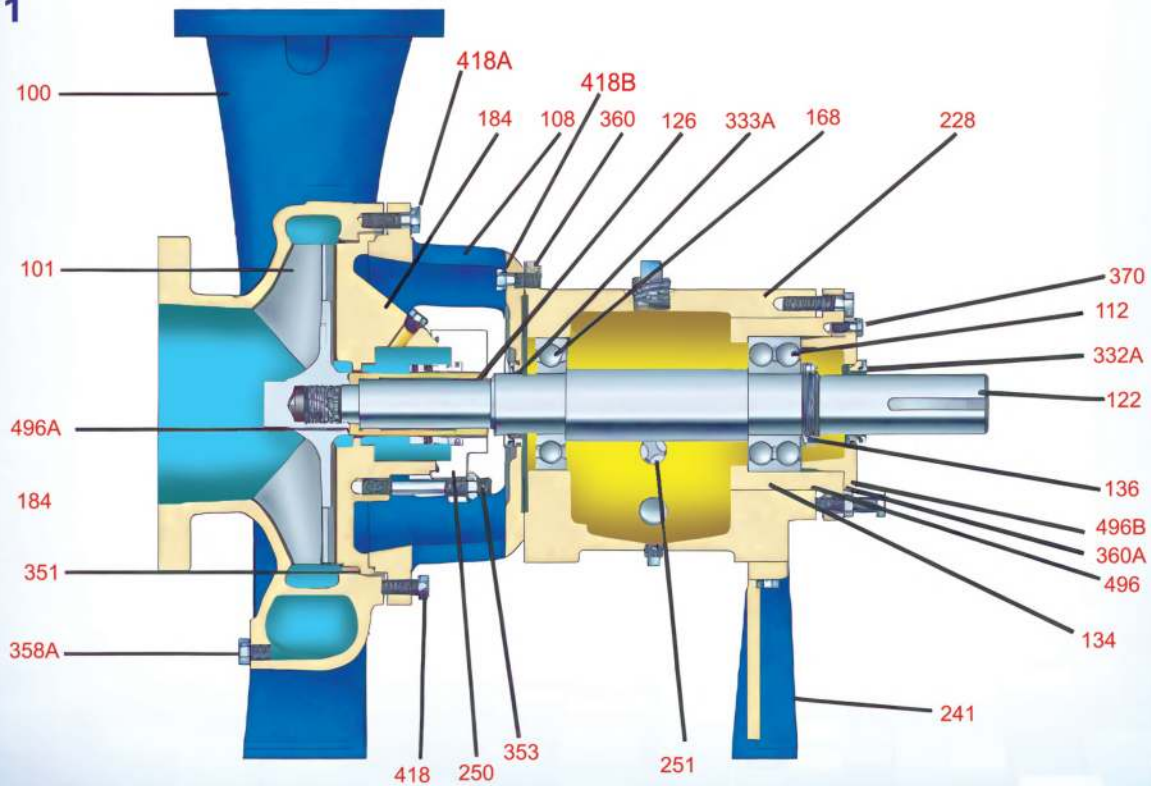


Pinnacle-Flo, Inc.

MT1 / LT1

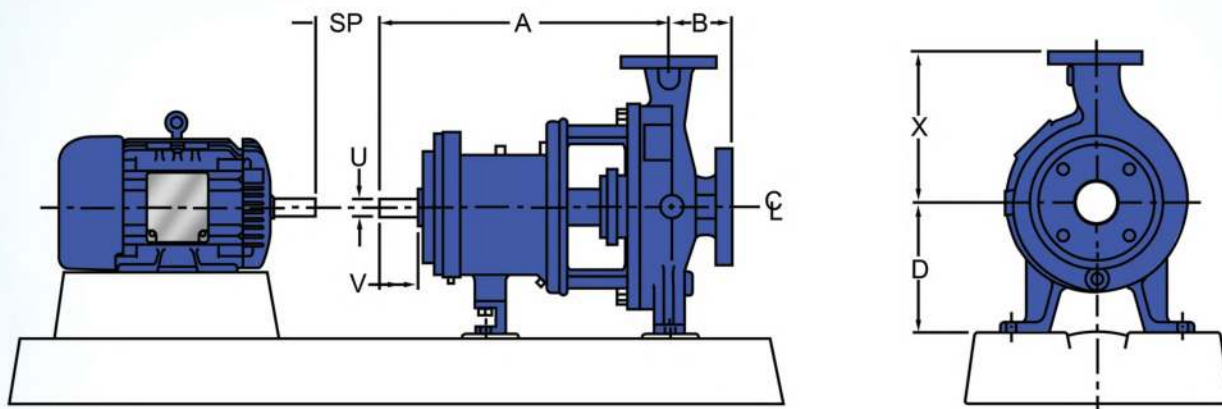


XLT1



Dimensional Outline

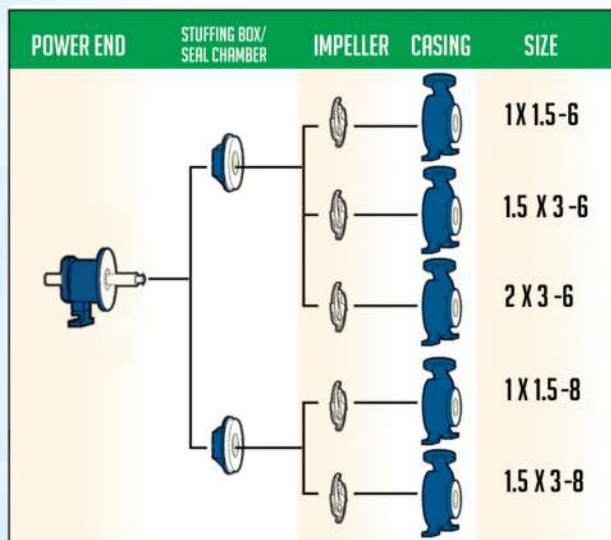
Skid Packages



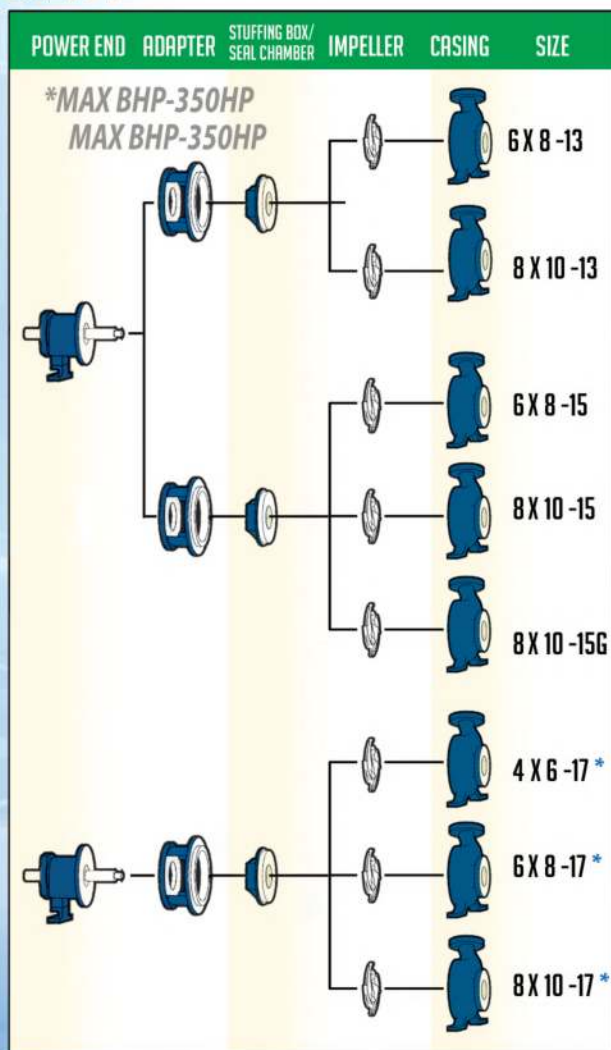
DIMENSIONS																			
Model	Pump Size	ANSI Desination	Discharge Size	Suction Size	X	A	B	D	SP	SHAFT									
										U	KEYWAY	V							
ST1	1X1.5-6	AA	1	1 1/2	6.5 (165)	13.5 (343)	4 (102)	5.25 (133)	3.75 (95)	0.875	3/16 X 3/16	2							
	1.5X3-6	AB	1 1/2	3															
	2X3-6		2	3															
	1X1.5-8	AA	1	1 1/2															
	1.5X3-8	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	8.5 (216)														
	1x2-10	A05	1	2															
	1.5X3-10	A50	1 1/2	3															
	2x3-10	A60	2	3	9.5 (242)		4 (102)	10 (254)	3.75 (95)	LT1 1.875	LT1 1/2 X 1/2	2 5/8							
	3x4-10	A70	3	4	11 (280)														
	3x4-10H	A40	3	4	12.5 (318)														
	4X6-10	A40	3	4	12.5 (318)														
	4X6-10G	A80	4	6	13.5 (343)														
	4X6-10H	A80	4	6	10.5 (267)														
	1.5X3-13	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	19 (483)														
	8X10-15	A120	8	10															
	8X10-15G	A120	8	10															
	8X10-16H		8	10	16 (406)														
	4X6-17		4	6									16 (406)						
	6X8-17		6	8	18 (457)														
	8X10-17		8	10	19 (483)														



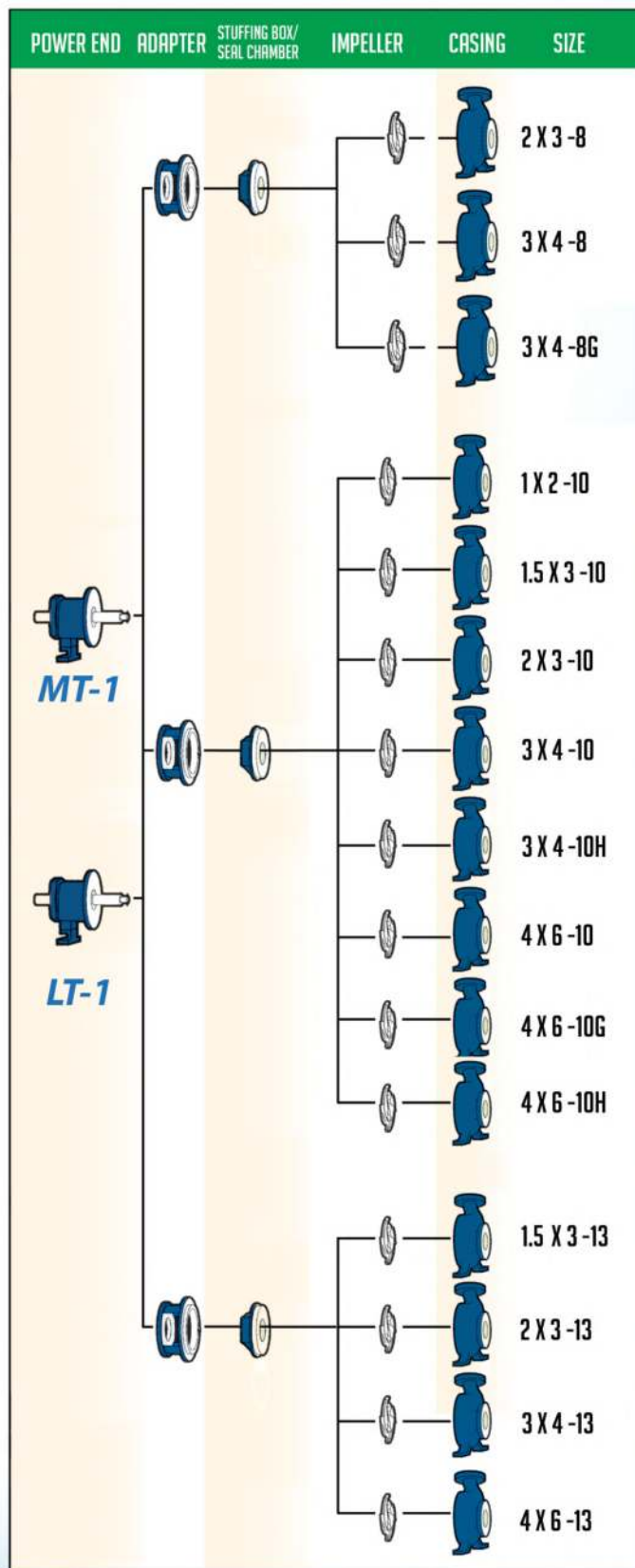
ST1 MAX BHP-40HP



XLT1



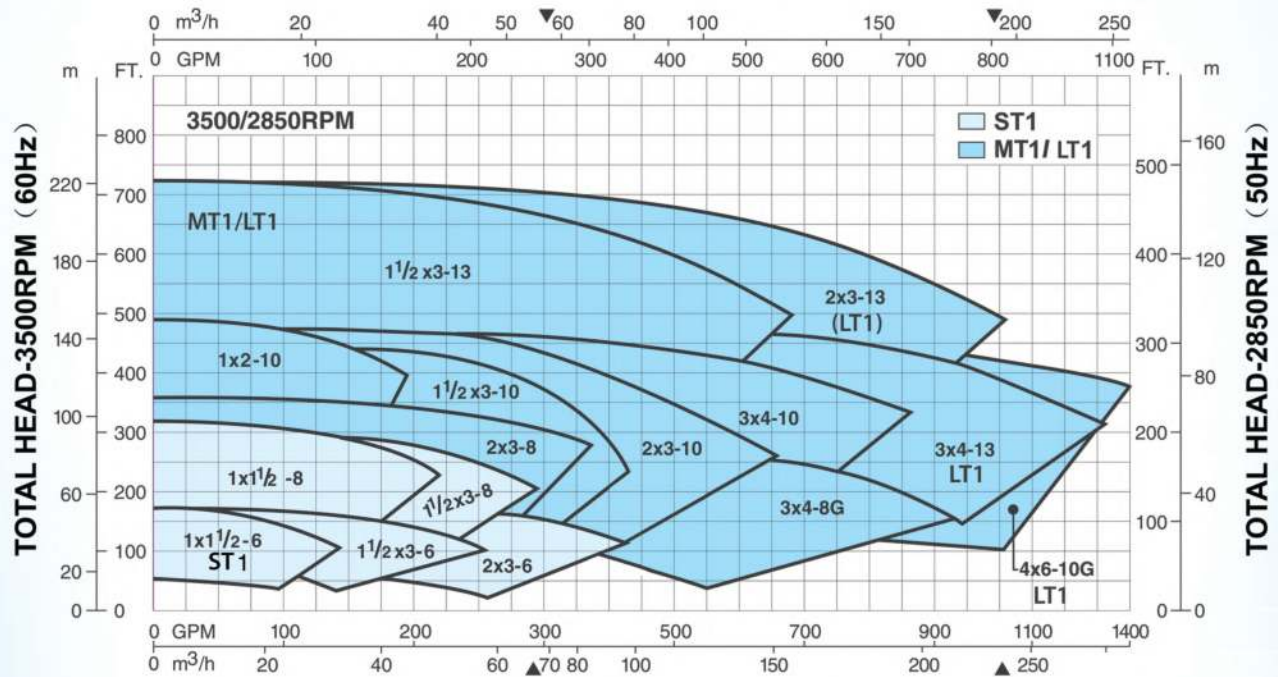
MT1 MAX BHP-122HP LT1 MAX BHP-200HP



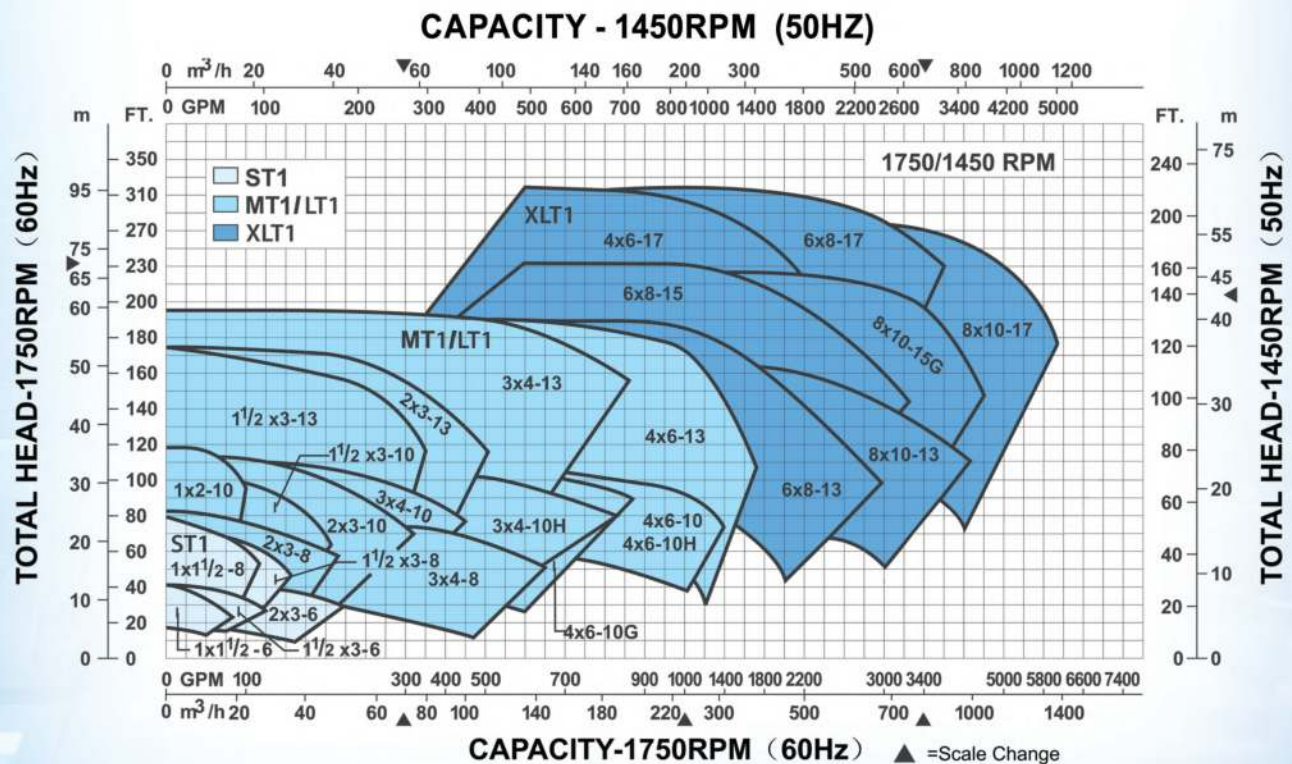
Flow Range

ANSI SERIES 8896

CAPACITY - 2850RPM (50HZ)



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



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

ANSI 8896

Low Flow Series



Pinnacle-Flo, Inc.

PUMP SIZES

1×1.5×8 ST1- LF

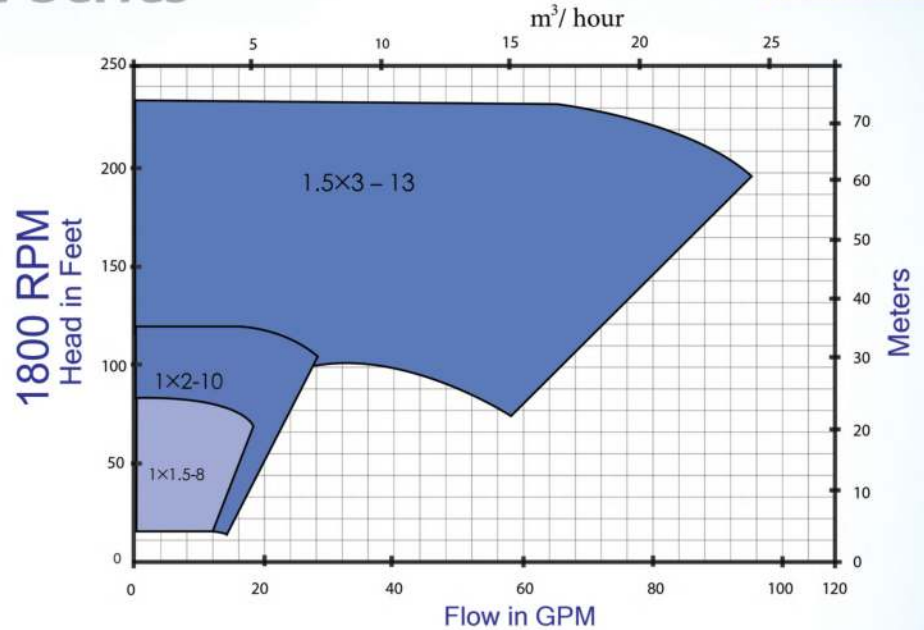
Flange Rating: 150/150 RF

1×2×10 MT1/LT1-LF

Flange Rating: 150/150 RF- 300/300 RF

1.5×3×13 LT1-LF

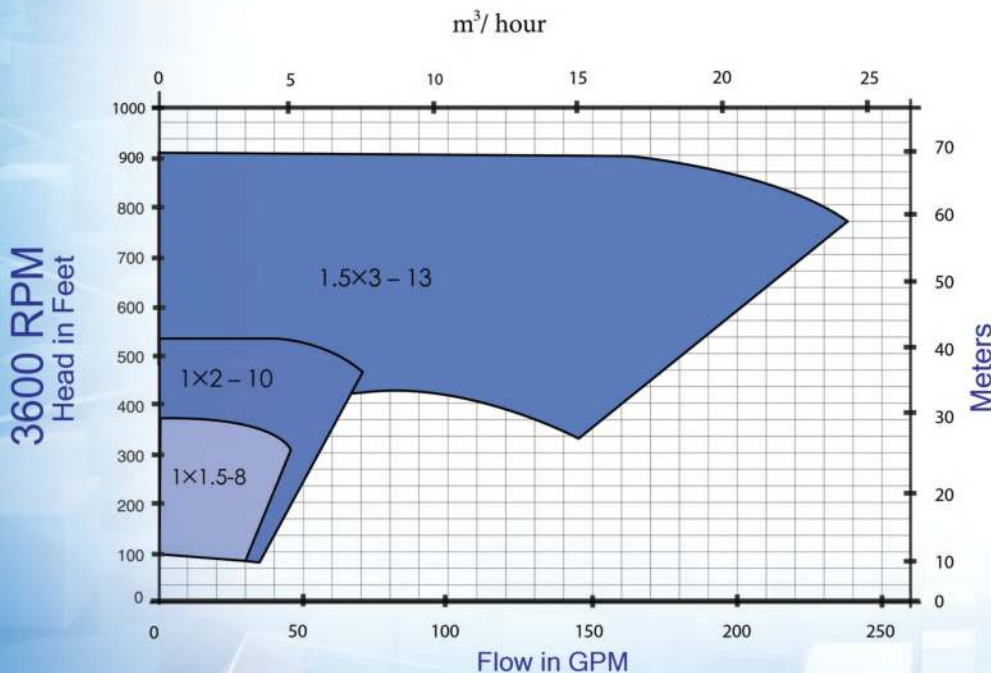
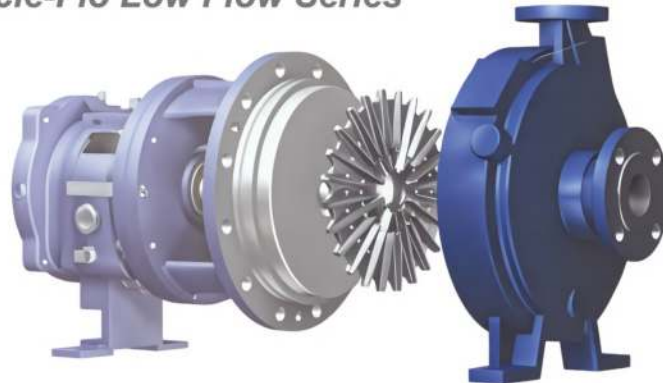
Flange Rating: 300/300 RF



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 Low Flow Series



Benefits

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

Options / Seal Flush Plans

ANSI SERIES 8896

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

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.



API PLAN 31

By-pass flush lubricates single seal faces.



API PLAN 53

Pressurized circulation lubricates double seal faces.

Bearing Frame Finned Cooler



Directly cools oil for lower 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.

TROUBLESHOOTING

ANSI 8896 PUMPS

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.	Consult factory for proper depth. Use baffle to eliminate vortices.
	Suction lift too high.	Shorten suction pipe.
Pump not producing rated flow or head.	Air leak thru gasket.	Replace gasket.
	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.
Pump starts then stops pumping. Bearing run hot.	Worn or broken impeller.	Inspect and replace if necessary.
	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 cooling 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 viscosity.
	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.



AODD Pump
Blue Dog series



Self-Priming Solids
Handling Pump
Mad Dog series



Gear Pump
Buffalo series



ANSI **8830** series

Pinnacle-Flo, Inc.

12247 FM 529 • Cypress, TX 77433
Office: (832) 303-1245 / Fax: (832) 900-9398

www.pinnacle-flo.com

email: sales@pinnacle-flo.com