MANUFACTURED & TESTED IN THE USA

THE BEST QUALITY • THE FASTEST DELIVERY

PWA-SP

SELF-PRIMING PROCESS PUMP

PumpWorks™ INDUSTRIAL

COMPETITIVE ADVANTAGES

5 Year Unconditional Power Frame Warranty is Standard at No Additional Cost.

Carbon Steel vs. Ductile Iron

- High strength, impact resistant Carbon Steel liquid ends for improved durability and pressure containment at no additional cost.
- Replaces non-repairable, ductile iron casing and impellers, with repairable carbon steel, for extended component life.

Flange Arrangement Options

- Standard ANSI class 150# flange pressure rating, flat or raised face design, provided to meet customer specified requirements at no additional cost.

Power Frame Superiority

- Superior high strength carbon steel vs. inferior cast iron power frame material.
- Addresses environmental and safety concerns.
- Exclusive finned bearing frame for maximum heat dissipation.
- Convenient dual oil level sight glasses provide flexible viewing as standard.

Shaft and Bearing Assembly

- Upgraded 316 SS vs. 4140 steel pump shaft is standard at no additional cost.
- Proven flinger disk lubrication device to ensure effective bearing lubrication. Provides 30% increased bearing L-10 life and minimum 15° lower bearing operating temperatures compared to flood oil design.

Standard bore *Tapered bore* *Big bore*

Component seal *Single cartridge seal* *Dual cartridge seal*

Casing

- High strength Carbon Steel casing, resistant to rupture due to retained priming fluid during freezing temperature conditions.
- Self venting, centerline discharge, back pull out design.
- Air serparators, valves or special priming chambers not required.
- Standard 150# FF and 150# RF optional flange connections.

Seal Chamber / Sealing Solutions

- Multiple seal chambers for maximum sealing flexibility for all process applications.
- Accommodates all mechanical seal manufacturer's component and ANSI cartridge seal configurations.
- Supports the full array of CPI seal support system options.
- Ensures superior leak protection with maximum heat dissipation, maximizing seal life and pump reliability.

All materials are USA sourced to meet all Country of Origin requirements.

LEVERAGING TECHNOLOGY

PumpWorks Industrial leverages technology by providing:

- Superior manufacturing capabilities.
- Company owned USA foundry.
- Extensive inventory selection.
- Professional, reliable service.

MANUFACTURING

- All of our pumps are manufactured and tested in the United States of America, utilizing exclusive state-of-the-art manufacturing equipment and US foundries for all castings. This ensures consistent quality, product availability, and low cost of ownership.

FOUNDRY *PumpWorks Castings*

- Precision investment cast impellers yields exceptionally smooth surface finish ensuring repeatable, efficient hydraulic performance.
- One ton piece part capacity. Metallurgies from Carbon Steel through Titanium.
- Complete in house casting inspection includes certified spectrographic, hardness, physical properties and live casting X-ray analysis.

INVENTORY

- Pump and component inventory in a variety of material options are strategically located through the Northern hemisphere ensuring consistent, rapid shipment tailored to customer requirements.

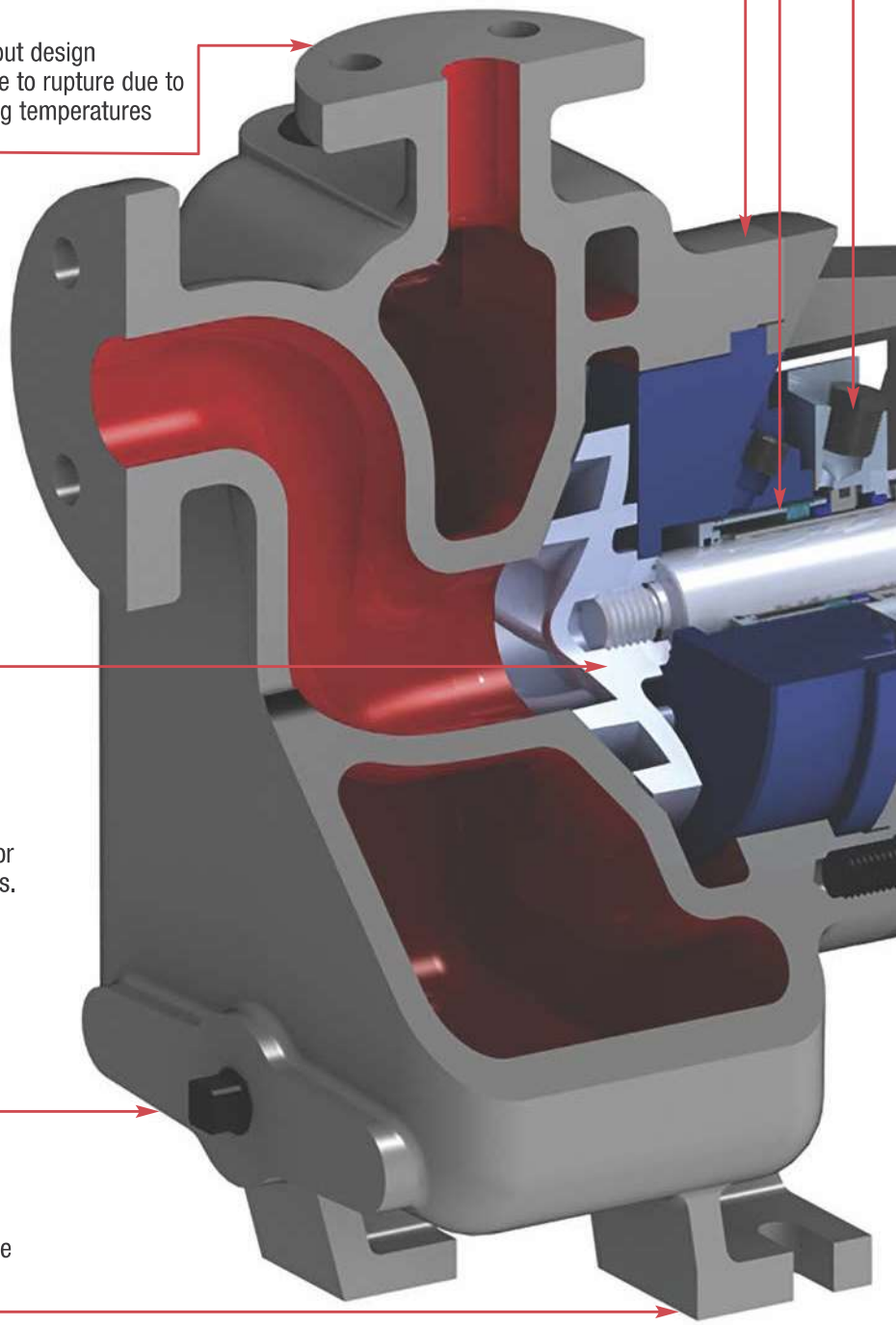
ePOD
ELECTRONIC PUMP ON DEMAND

DESIGN FEATURES AND BENEFITS

Casing Gasket
- Fully confined to maximize liquid sealing
- Protects casing fits from corrosion, therefore increase maintenance ease and proper alignment during reassembly

Seal Chamber / Sealing Options
- Multiple seal chambers for maximum sealing flexibility for all process applications.
- Accommodates all mechanical seal manufacturer's component and ANSI cartridge seal configurations
- Supports the full array of CPI seal support system options
- Ensures superior leak protection with maximum heat dissipation, maximizing seal life and pump reliability.

Casing
- Self venting, centerline discharge back pull out design
- High strength Carbon Steel casing, resistance to rupture due to retained priming fluid during ambient freezing temperatures
- Air serparators, valves or special priming chambers not required
- Standard 150# FF and 150# RF optional flange connections



Quality
- Manufactured and tested in the USA

Impeller
- Fully open for increased corrosion, abrasion and solids wear resistance
- Back pump out vanes for reduced thrust loading and seal chamber operating pressure

Delivery
- Pump components strategically inventoried for rapid shipment in a variety of material options.

Casing Drain
- Optional casing drain and drain piping

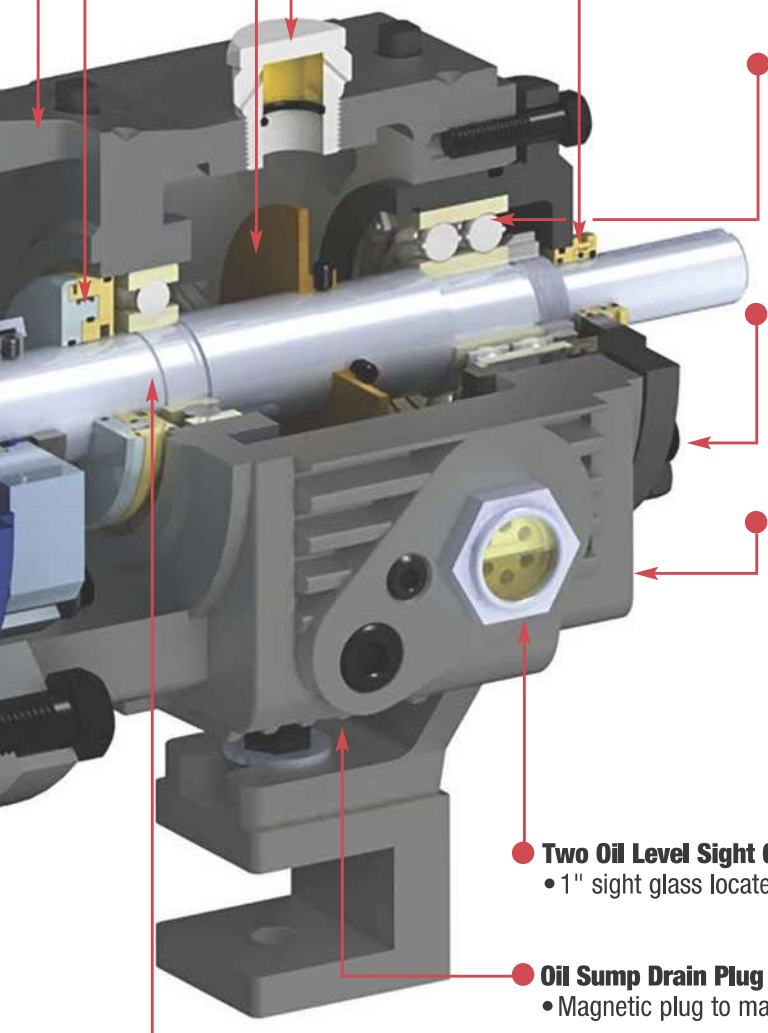
Foot Mounted Casing
- Maximum casing stability and support for back pull out maintenance feature
- Reduced vibration

Frame Adapter
- Carbon Steel standard for increased strength and stability

Bearing Lubrication
- Flinger disk lubrication device to ensure effective bearing lubrication and lower bearing operating temperatures

Filter Vent
- Allows free exchange of clean, dry filtered air within the bearing housing protecting oil and bearings from moisture and particle contamination

Labyrinth Oil Seal
- Inpro VBXX-D bearing housing isolators providing positive sealing environment preventing oil contamination
- Optional Sealed bearing frame with magnetic seals and expansion chamber for severe environments



Thrust Bearing
- Heavy duty double row standard
- Optional duplex angular contact thrust bearing

Externally Adjustable Shaft and Impeller System
- Easily adjust impeller to front casing clearance without removal of pump from piping
- Restoration to factory efficiencies

Bearing Housing
- Large oil sump capacity for increased cooling
- Standard Splash Oil design, with optional regreasable, purge oil mist and pure oil mist lubrication
- Standard finned design for maximum heat dissipation
- Contoured internal slope for positive collection of metal contaminants by magnetic drain plug
- Optional 316 SS Tube Finned Cooler for high process temperatures above 350° F to 500° F

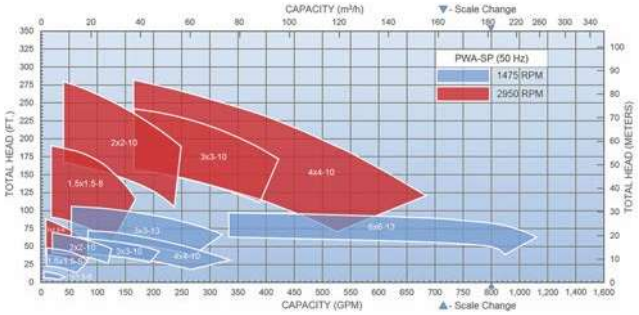
Two Oil Level Sight Glasses
- 1" sight glass located on each side of bearing housing for flexible viewing

Oil Sump Drain Plug
- Magnetic plug to maintain bearing housing cleanliness and increased protection

Shaft and Bearing System
- Rigid, heavy duty design for minimal shaft deflection at seal area and increased reliability
- Exceeds ASME B73.1 bearing life specification requirements
- 316L Shaft material is standard with optional material upgrades available

HYDRAULIC PERFORMANCE COVERAGE

50 Hz Performance Coverage

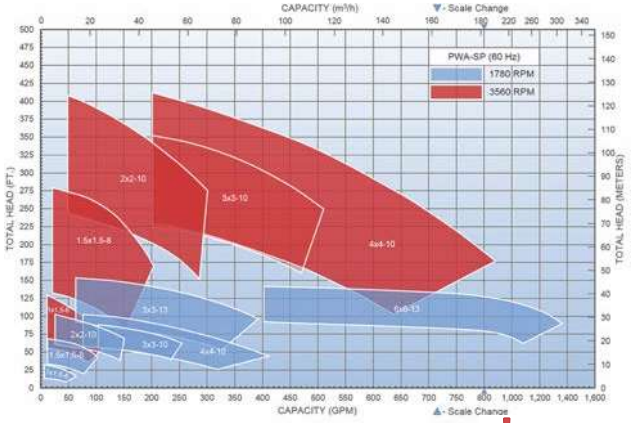


Visit our web site at **www.pumpworksindustrial.com** and specify flow and performance needs and obtain pump selection, performance curve, drawing, and data sheet.

ePOD ELECTRONIC PUMP ON DEMAND

Performances shown are nominal and are to be used for preliminary selection only.

60 Hz Performance Coverage



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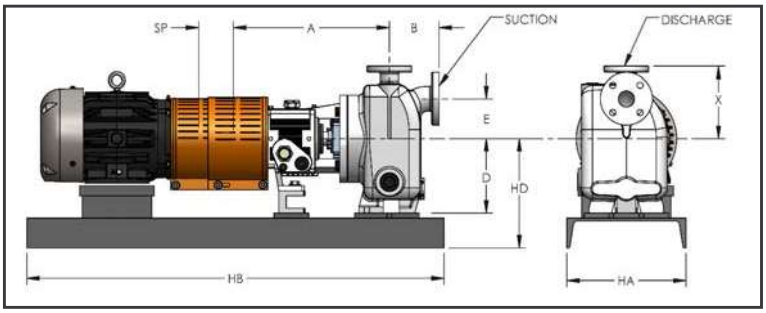
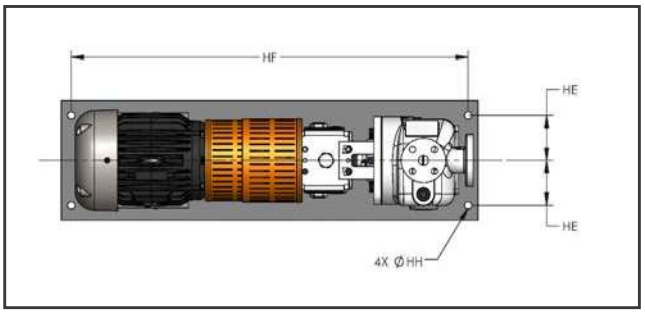




Not to be used for construction unless certified by manufacturer.

PUMP DIMENSIONS AND WEIGHTS

Dimensions in inches (mm), weights in lbs. (kg)

POWER FRAME	SIZE	DISCHARGE	SUCTION	X	A	B	D	E	SP	WEIGHT BARE PUMP lb (kg)
GROUP 1	1X1.5X6	1	1.5	7.25 (184)	15.5 (394)	5.0 (127)	7.5 (191)	4.0 (102)	3.75 (95)	206 (93)
	1.5X1.5X8	1.5	1.5	7.875 (200)						215 (97)
GROUP 2 / GROUP 3	2X2X10	2	2	10 (254)	21.75 (552)	6.5 (165)	10 (254)	6.0 (152)	3.75 (95)	384 (174)
	3X3X10	3	3		22.625 (575)	6.75 (171)				396 (179)
	4X4X10	4	4		23.375 (594)	9.1875 (233)				453 (205)
	3X3X13	3	3	11.5 (292)	22.625 (575)	6.75 (171)				481 (218)
	4X4X13	4	4		23.375 (594)	9.1875 (233)				583 (264)
	6X6X13	6	6	15 (356)	27.70 (704)	7.5 (194)	12 (356)	7.0 (178)		715 (324)

NEMA MOTOR FRAME	WEIGHT lb (kg)
182T	98 (45)
184T	128 (58)
213T	197 (89)
215T	226 (103)
254T	375 (170)
256T	412 (187)
284T	495 (225)
286T	519 (235)
324T	700 (318)
326T	756 (343)
364T	948 (430)
365T	1009 (458)
405T	1330 (603)
444T	1820 (826)

Pump approximate weights shown are Group 2 Power Frame. For Group 3 Power Frame add 25 lb (11.5)
Weights and dimensions are approximate and not to be used for construction.

BASEPLATE DIMENSIONS AND WEIGHTS

Dimensions in inches (mm), weights in lbs. (kg)

MAX NEMA FRAME	HA	HB	HE	HF	HT	HH	WEIGHT lb (Kg)
145T	12 (305)	39 (991)	4.5 (114)	36.5 (927)	3.8 (97)	0.75 (19)	120 (55)
215T	15 (381)	45 (1143)	6 (152)	42.5 (1080)	4.03 (102)	0.75 (19)	167 (76)
286T	18 (457)	52 (1321)	7.5 (191)	49.5 (1257)	4.58 (116)	0.75 (19)	279 (127)

MAX NEMA FRAME	HA	HB	HD			HE	HF	HT	HH	WEIGHT lb (kg)
			D=7.5	D=10	D=12					
215T	18 (457)	60 (1524)	12.5 (318)	15 (381)	note (1)	7.5 (191)	57.5 (1461)	5 (127)	1 (25)	283 (129)
286T	18 (457)	66 (1676)	12.5 (318)	15 (381)	n/a	7.5 (191)	63.5 (1613)	5 (127)	1 (25)	313 (142)
286T	18 (457)	70 (1778)	12.5 (318)	n/a	17 (434)	7.5 (191)	67.5 (1715)	5 (127)	1 (25)	330 (150)
365T	18 (457)	72 (1829)	n/a	15 (381)	n/a	7.5 (191)	69.5 (1765)	5 (127)	1 (25)	346 (157)
365T	18 (457)	74 (1880)	n/a	n/a	17 (434)	7.5 (191)	71.5 (1816)	5 (127)	1 (25)	356 (162)
405TS	18 (457)	78 (1981)	n/a	15 (381)	note (1)	7.5 (191)	65.5 (1664)	5 (127)	1 (25)	340 (155)

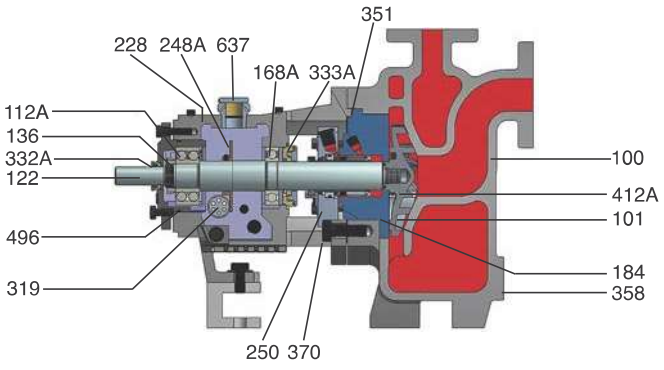
Note (1): Pump size 6x6x13 not available on baseplate size.
Weights and dimensions are approximate and not to be used for construction.

PARTS LIST AND MATERIALS OF CONSTRUCTION

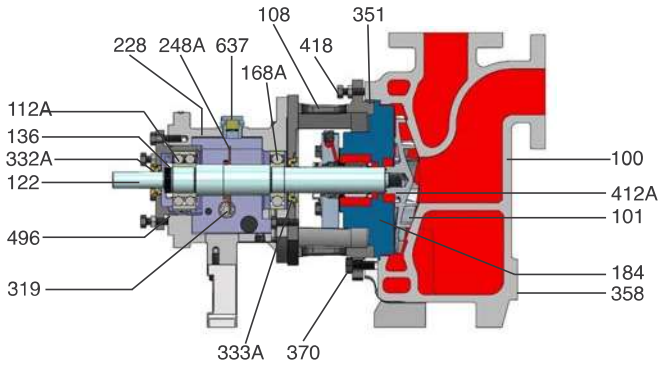
Item Ref Number	Part Name	Carbon Steel	Carbon Steel w 316 SS Impeller	316SS	Super Duplex SS	Alloy 20	Hastelloy B & C	Titanium
100	Casing	Carbon Steel	Carbon steel	316SS	Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
101	Impeller	Carbon Steel	316SS	316SS	Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
105	Lantern Ring	Glass Filled Teflon						
106	Packing, Stuffing Box	Teflon - Impregnated Fibers						
108	Adapter, Frame	Carbon Steel						
112A	Thrust Bearing	Double Row Angular Contact (1)						
122	Shaft - Less Sleeve	316L (Optional-Alloy 20 & A2205)				Alloy 20	Hastelloy B & C	Titanium
122	Shaft with Sleeve	316L (Optional-Alloy 20 & A2205)						
126	Shaft Sleeve	316SS (Optional-Alloy 20 & A2205)			Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
136	Bearing Lock Nut and Lock Washer	Steel						
168A	Radial Bearing	Single Row Deep Groove						
184	Cover, Stuffing Box (Packed Box)	Carbon Steel	Carbon Steel	316SS	Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
184	Seal Chamber (Mechanical Seal)	Carbon Steel	Carbon Steel	316SS	Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
228	Frame, Bearing	Carbon Steel						
248A	Flinger with set screw	Bronze with steel set screw						
250	Gland - Seal/Packing	316SS			Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
370H	Stud/Nut, Cover to Adapter	304SS						
319	Sight Glass - Oil	Glass/Steel						
332A	INPRO-Oil Seal (Outboard)	Bronze						
333A	INPRO-Oil Seal (Inboard)	Stainless Steel/Bronze						
351	Gasket, Casing	Aramid Fiber with Binder						
358	Plug, Casing Drain (Optional)	Carbon Steel	Carbon Steel	316SS	Super Duplex SS CD4 Gr5A	Alloy 20	Hastelloy B & C	Titanium
360F	Gasket, Frame to Adapter	Buna Rubber						
360C	Gasket, Bearing End Cover	Cellulose Fiber with Binder						
370	Cap Screw, Adapter to Casing	Steel						
412A	O-ring, Impeller	Glass Filled Teflon						
418	Jacking Bolt	304SS						
469B	Dowel Pin, Frame to Adapter	Steel						
496	O-ring, Bearing Housing	Buna Rubber						
637	Filter Vent	Carbon Steel						

(1) Duplex angular contact bearing Standard on Group 3, Bearing Frame and optional on Group 1 and 2.

GROUP 1 *Sectional View PWA-SP*



GROUP 2 / GROUP 3 *Sectional View PWA-SP*



TECHNICAL DATA All dimensions in inches and (mm)

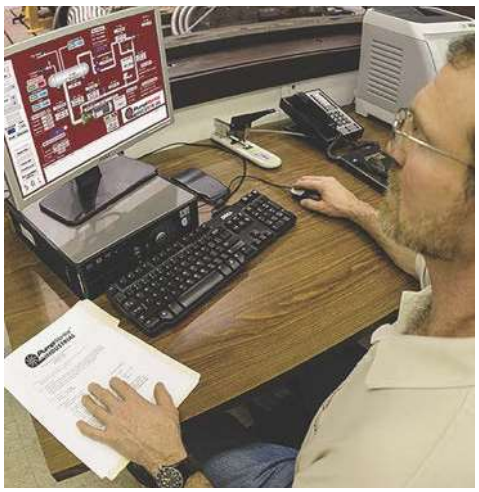
		GP1	GP2	GP3
Shaft	Shaft Diameter at Impeller	0.75 (19)	1 (25)	1.25 (32)
	Diameter in Stuffing Box/Seal Chamber			
	(Less sleeve)	1.375 (35)	1.75 (45)	2.125 (54)
	(With sleeve)	1.125 (29)	1.5 (38)	1.875 (48)
	Diameter Between Bearings	1.5 (38)	2.125 (54)	2.5 (64)
	Diameter at Coupling	0.875 (22)	1.125 (29)	1.875 (48)
	Overhang	6.125 (156)	8.375 (213)	8.375 (213)
	Maximum Shaft Deflection	0.002 (0.05)		
	Shaft Deflection Index (L^3/D^4)			
	(Less sleeve)	64	63	48
	(With sleeve)	143	116	29
Sleeve	Outside Diameter thru Stuffing Box/Seal Chamber	1.375 (35)	1.75 (45)	2.125 (54)
Bearings	Radial	6207	6309	6311
	Thrust	3306	3309	7310
	Bearing Span	4.125 (105)	6.75 (171)	6.875 (164)
Large Bore Seal Chamber	Bore	2.875 (73)	3.5 (89)	3.875 (98)
Stuffing Box	Bore	2 (51)	2.5 (64)	2.875 (73)
Maximum Power Limits	HP (kW) per 100 RPM	1.1 (0.82)	3.4 (2.6)	5.6 (4.2)
Maximum Allowable Working Pressure	MAWP PSI (kPa)*	up to 280 PSI (1931 kPa) at 100° F with 150# flanges – consult factory for higher pressure requirements		
		*Consult Pressure Temperature chart for various temperatures		
Maximum Temperature	Oil or Grease Lubricated Bearing Frame without Optional Cooling	350° F (177°C)		
	Oil Lubricated Power Frame with Tube Finned Cooler	500° F (260°C)		
Casing	Corrosion Allowance	0.125 (3) minimum		

Hydro-static test pressure equal to 1.5 times Maximum Allowable Working Pressure

Test Facilities

- Test flows up to 7,500 GPM.
- Discharge test pressures up to 740 PSI.
- Supply tank rated from full vacuum to 65 psi.
- 460 volt through 500 HP, 3600 RPM.
- Variable Frequency Drive for precise speed control through 500 HP @ 460 volt.

See our Test Facilities Brochure for more information.



Typical Industries

- Chemical/Petrochemical
- Pulp and Paper
- Food and Beverage
- Oil and Gas
- Primary Metals Manufacturing
- Mining
- Power Generation
- Waste Treatment
- General Industrial

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