PWA-SP

SELF-PRIMING PROCESS PUMP

PumpWorks™

Engineered, Assembled, & Tested in the USA

COMPETITIVE ADVANTAGES

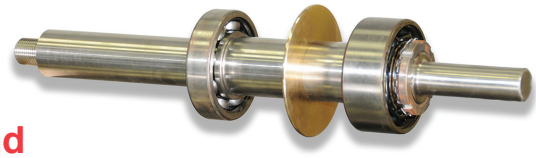
Carbon Steel vs. Ductile Iron

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.



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 22°F lower bearing operating temperatures compared to flood oil design.

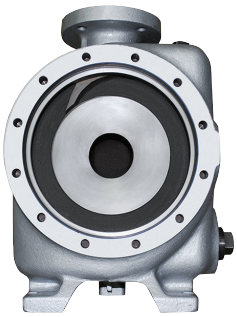
Casing

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.

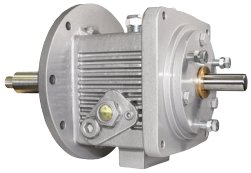
Air serparators, valves or special priming chambers not required.

Standard 150# FF and 150# RF optional flange connections.



Power Frame Superiority

Superior high-strength carbon steel vs. inferior cast iron power frame material.



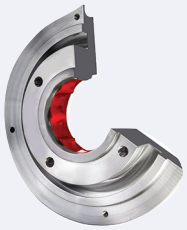
Addresses environmental and safety concerns.

Exclusive finned bearing frame for maximum heat dissipation.

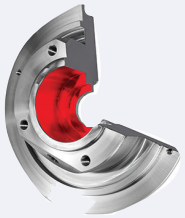
Convenient dual oil level sight glasses provide flexible viewing as standard.

Internal surfaces cleaned, rust preventative applied, and enamel coated assuring internal casting cleanliness.

Standard Bore



Tapered Bore



Big Bore

Component Seal

Single Cartridge Seal

Dual Cartridge Seal

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.

5 Year Unconditional Power Frame Warranty is standard at no additional cost.

LEVERAGING TECHNOLOGY

PumpWorks leverages technology by providing:

- Superior manufacturing capabilities.
- Extensive inventory selection.
- Professional, reliable service.

Manufacturing

All of our pumps are engineered, inspected, assembled and tested in the United States of America.This ensures consistent quality, product availability, and low cost of ownership.

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.

Service

Fully staffed professional sales and service teams providing superior customer support is available 24/7/365.

ePOD ELECTRONIC PUMP ON DEMAND

ePOD (Electronic Pump On Demand) is a browser-based front end software application allowing the end user and specifiers to intelligently select their own pump on the web.

ePOD software quickly delivers:

- Performance curves
- Comprehensive data sheets

Test drive ePOD at our website www.pumpworks.com today.

Quality

Engineered, assembled and tested in the USA

ePod Pump Selector

Access to end users and specifiers to select your pump application online at www.pumpworks.com, no password or login required.

Delivery

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

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 GASKET

Fully confined to maximize liquid sealing

Protects casing fits from corrosion, therefore increases maintenance ease and proper alignment during reassembly

CASING

Precisely machined discharge channel and circular casing volute providing higher efficiencies and stable hydraulics at low flows

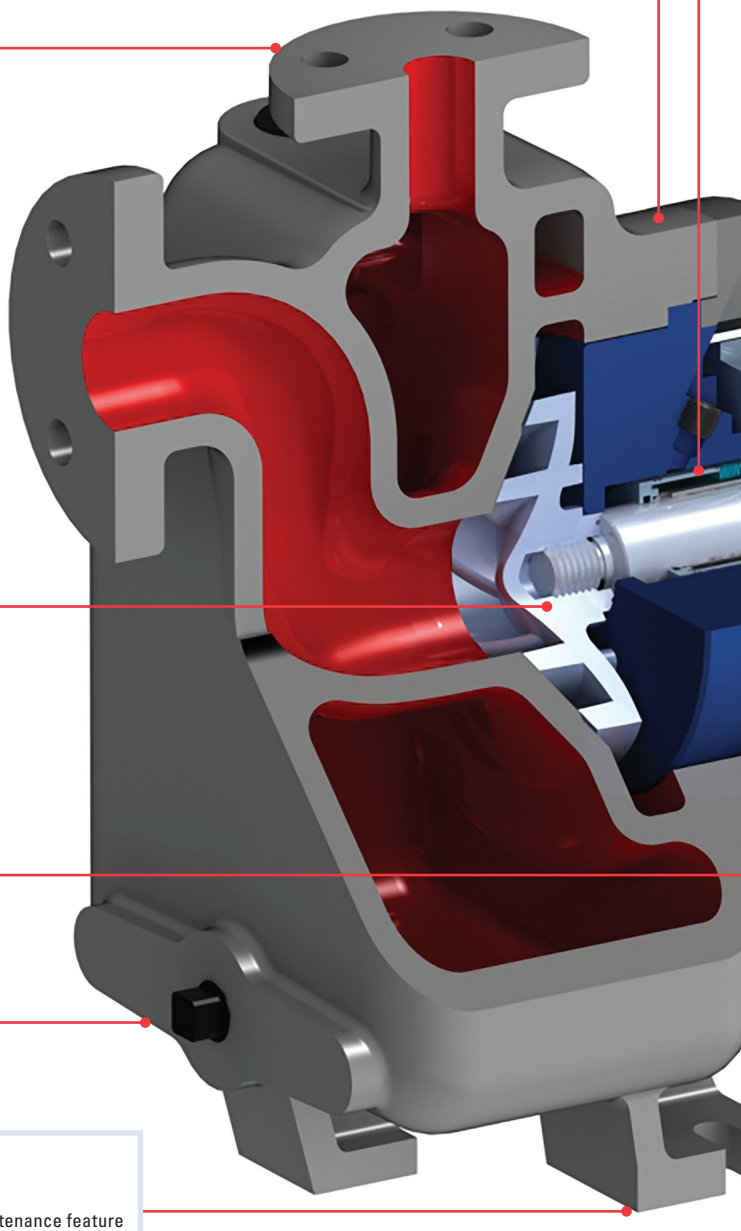
Precision serrated flange face finish for optimum gasket retention and sealing

Carbon Steel ASTM A216 material standard for improved durability and pressure containment

Class 150# flat and raised face flanges

Self venting, centerline mounted discharge flange

Casing thickness exceeds ASME B73.1specification for increased casing life



IMPELLER

Multi-vane open radial impeller providing reduced pulsations

Fully shrouded for exceptional vane strength during low flow operations

Balance holes reducing bearing thrust loads for extended bearing life and lower stuffing box pressure and increased seal life

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

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

ISOMAG MAGNETIC BEARING ISOLATORS

IP 65 rated Power Frame sealing

BEARING LUBRICATION

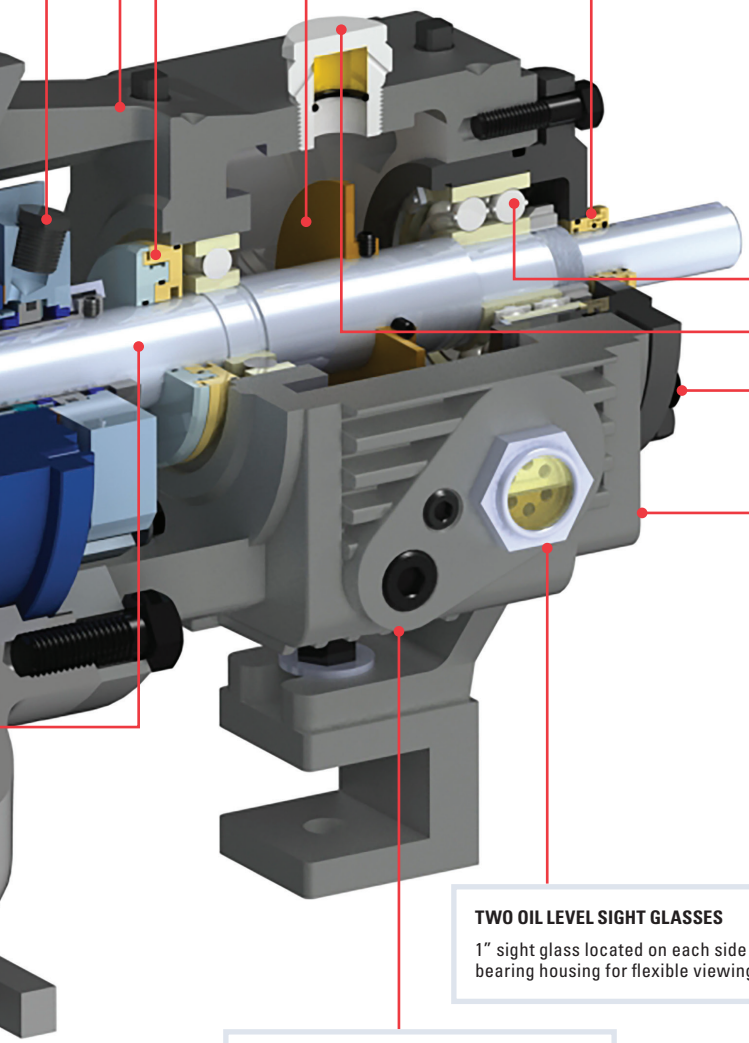
Flinger disk lubrication device to ensure effective bearing lubrication and lower bearing operating temperatures

THRUST BEARING

Heavy duty double row standard

SEALED FILL CAP

Oversized for easier oil change



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

Internal surfaces cleaned, rust preventative applied, and enamel coated assuring internal casting cleanliness

TWO OIL LEVEL SIGHT GLASSES

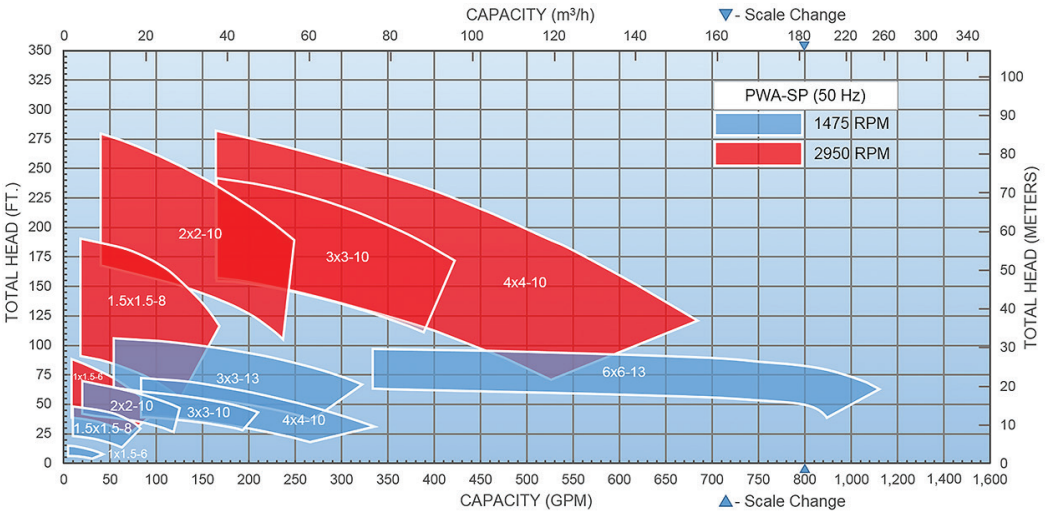
1" sight glass located on each side of bearing housing for flexible viewing

OIL SUMP DRAIN PLUG

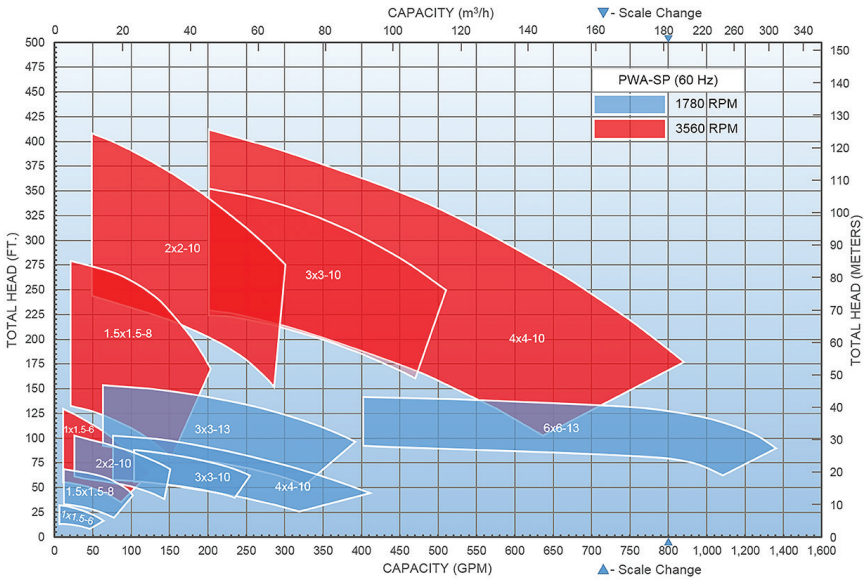
Magnetic plug to maintain bearing housing cleanliness and increased protection

HYDRAULIC PERFORMANCE COVERAGE

50 Hz Performance Coverage



60 Hz Performance Coverage



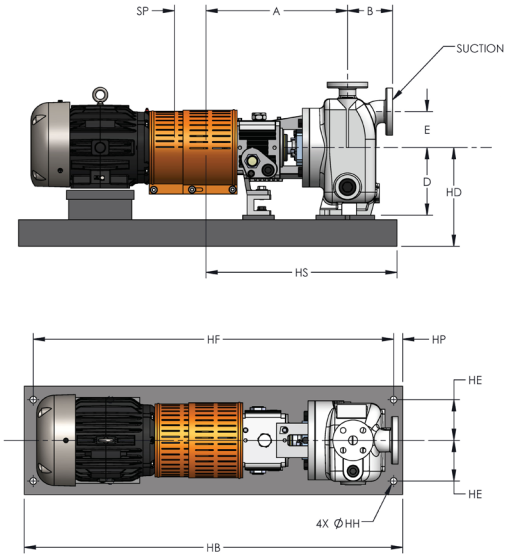
Capabilities

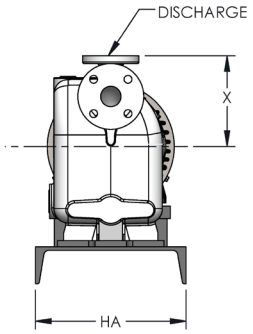
- Capacities to 1,250 GPM (284 m³/h)
- Heads to 430 feet (131 m)
- Temperatures to 500° F (260°C)
- Pressures to 375 PSIG (2586 kPa)
- Effective static lift to 20 feet (6 m)

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

PUMP DIMENSIONS AND WEIGHTS

FRAME	SIZE	DISCHARGE	SUCTION	X	A	B	D	E	SP	HS MAX	WEIGHT BARE PUMP lbs (kg)
GROUP 1	1 x 1.5 x 6	1	1.5	7.25 (184)	15.5 (394)	5.0 (127)	7.5 (191)	4.0 (102)	3.75 (95)	23.5 (597)	145 (66)
	1.5 x 1.5 x 8	1.5	1.5	7.875 (200)						23.5 (597)	154 (70)
GROUP 2 / GROUP 3	2 x 2 x 10	2	2	10 (254)	21.75 (552)	6.5 (165)	10 (254)	6.0 (152)	3.75 (95)	37 (940)	384 (174)
	3 x 3 x 10	3	3		22.625 (575)	6.75 (171)				37 (940)	396 (179)
	4 x 4 x 10	4	4		23.375 (594)	9.1875 (233)				37 (940)	453 (205)
	3 x 3 x 13	3	3	11.5 (292)	22.625 (575)	6.75 (171)				37 (940)	481 (218)
	4 x 4 x 13	4	4		23.375 (594)	9.1875 (233)				37 (940)	583 (264)
	6 x 6 x 13	6	6	15 (356)	27.75 (704)	7.5 (191)	12 (356)	7.0 (178)		39 (991)	715 (324)





Not to be used for construction unless certified by manufacturer.

NEMA MOTOR FRAME	WEIGHT lbs (kg)
182 T	98 (45)
184 T	128 (58)
213 T	197 (89)
215 T	226 (103)
254 T	375 (170)
256 T	412 (187)
284 T	495 (225)
286 T	519 (235)
324 T	700 (318)
326 T	756 (343)
364 T	948 (430)
365 T	1009 (458)
405 T	1330 (603)
444 T	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.HS dimension varies with base plate type. Consult factory for specific dimension.

BASEPLATE DIMENSIONS AND WEIGHTS

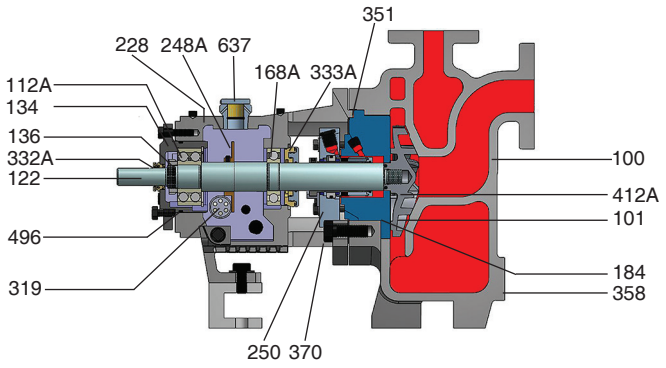
MAX NEMA FRAME	HA	HB	HD MAX			HE	HF	HT	HH	WEIGHT lb (kg)
			D=7.5	D=10	D=12					
145T	12 (305)	39 (991)	—	—	—	4.5 (114)	36.5 (927)	3.8 (97)	0.75 (19)	120 (55)
215T	15 (381)	45 (1143)	—	—	—	6 (152)	42.5 (1080)	4.03 (102)	0.75 (19)	167 (76)
286T	18 (457)	52 (1321)	—	—	—	7.5 (191)	49.5 (1257)	4.58 (116)	0.75 (19)	279 (127)
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)	—	7.5 (191)	63.5 (1613)	5 (127)	1 (25)	313 (142)
286 T	18 (457)	70 (1778)	12.5 (318)	—	17 (434)	7.5 (191)	67.5 (1715)	5 (127)	1 (25)	330 (150)
365 T	18 (457)	72 (18229)	—	15 (381)	—	7.5 (191)	69.5 (1765)	5 (127)	1 (25)	346 (157)
365 T	18 (457)	74 (1880)	—	—	17 (434)	7.5 (191)	71.5 (1816)	5 (127)	1 (25)	356 (162)
405 TS	18 (457)	78 (1981)	—	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.

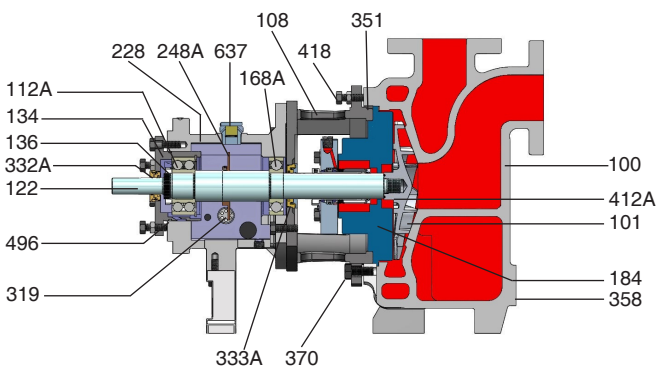
PARTS LIST AND MATERIALS OF CONSTRUCTION

ITEM REF NUMBER	PART NAME	CARBON STEEL	CARBON STEEL W/ 316L SS IMPELLER	316L SS	DUPLEX SS	SUPER DUPLEX SS	ALLOY 20	HASTELLOY B & C	TITANIUM
100	Casing	•	Carbon Steel	•	Duplex SS CD4 Gr1B	Super Duplex SS CD4 Gr5A	•	•	•
101	Impeller	•	316L SS	•	Duplex SS CD4 Gr1B	Super Duplex SS CD4 Gr5A	•	•	•
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							
122	Shaftless Sleeve	316L SS (Optional Alloy 20 & A2205)					•	•	•
122	Shaft with Sleeve	316L SS (Optional Alloy 20 & A2205)							
126	Shaft Sleeve	316L SS (Optional Alloy 20 & A2205)			Duplex SS CD4 Gr1B	Super Duplex SS CD4 Gr5A	•	•	•
134	Thrust Bearing Housing	Carbon Steel							
136	Bearing Lock Nut and Lock Washer	Steel							
168A	Radial Bearing	Single Row Deep Groove							
184	Cover, Stuffing Box (Packed Box)	•	Carbon Steel	•	•	•	•	•	•
184	Seal Chamber (Mechanical Seal)	•	Carbon Steel	•	•	•	•	•	•
228	Frame, Bearing	Carbon Steel							
248A	Flinger with Set Screws	Bronze with Steel Set Screws							
250	Gland–Seal/Packing	316LSS			Duplex SS CD4 Gr1B	Super Duplex SS CD4 Gr5A	•	•	•
370H	Stud/Nut, Cover to Adapter	304SS							
319	Sight Glass–Oil	Glass/Steel							
332A	Labyrinth Seal (Outboard)	Bronze							
333A	Labyrinth Seal (Inboard)	Stainless Steel/Bronze							
351	Gasket, Casing	Aramid Fiber with Binder							
358	Plug, Casing Drain (Optional)	•	Carbon Steel	•	•	•	•	•	•
360F	Gasket, Frame to Adapter	Buna Rubber							
360C	Gasket, Bearing End Cover	Cellulose Fiber with Binder							
370	Cap Screw, Adapter to Casing	Stainless Steel, ASTM A193							
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							

Group 1 *Sectional View PWA-SP*



Group 2/3 *Sectional View PWA-SP*



TECHNICAL DATA

All dimensions in inches (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 With Sleeve	 1.375 (35) 1.125 (29)	 1.75 (45) 1.5 (38)	 2.125 (54) 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)
	Maxium Shaft Deflection	0.002 (0.05)		
	Shaft Deflection Index (L^3/D^4) Less Sleeve With Sleeve	 64 143	 63 116	 29 48
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

PumpWorks™

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