

PWA-IL

ANSI/ASME
B73.2 IN-LINE
PROCESS
PUMP



 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.

Optional ANSI class 300# flange (375 PSI MAWP), flat or raised face design, provided at no additional cost over 150# flanges.



| Additional Features

Installs like a valve, providing for a small dimensional foot print and reduced installation costs.

Flexible, elastomeric spacer coupling provided as standard.

Superior high-strength carbon steel motor support with machined registered fit, accommodates vertical C-face NEMA electric motors. Simplifies field coupling alignment.

External impeller adjustment.

Rotating element can be removed without disturbing the motor or piping.

Optional carbon steel motor support to accommodate IEC motors.

| 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.

| Power Frame Superiority

Superior high-strength carbon steel vs. inferior cast iron power frame, adapter and bearing housing material.

Addresses environmental and safety concerns.

Exclusive finned bearing frame for maximum heat dissipation.

Upgraded 316 L SS vs. 4140 steel pump shaft is standard at no additional cost.

Grease lubricated bearing standard, with 'greased for life' and oil mist lubrication optional.

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



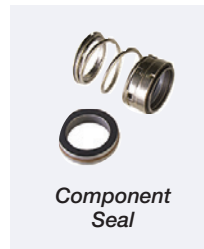
Standard Bore



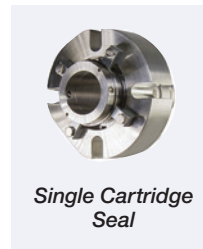
Tapered Bore



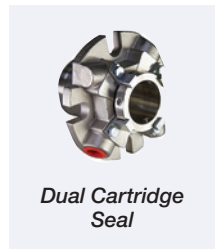
Big Bore



Component Seal



Single Cartridge Seal



Dual Cartridge Seal

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

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.



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.

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.



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 Pump Selector access by end users and specifiers available online at no additional cost at www.pumpworks.com.





| Quality

Manufactured 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.

LABYRINTH OIL SEAL

Non-contacting Labyrinth bearing housing isolators provide positive sealing environment preventing housing contamination

FLEXIBLE ELASTOMERIC SPACER COUPLING

Provided as standard

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

Carbon steel ASTM A216 Grade WCB, material standard for improved durability and pressure containment

Class 150# standard and 300# option

Casing thickness exceeds ANSI/ASME B73.2 specification for increased casing life

Top pull out design for easy maintenance

Full line of corrosive resistant materials

CARBON STEEL MOTOR SUPPORT

High-strength accommodates NEMA and IEC motor

VERTICAL C-FACE NEMA ELECTRIC MOTOR

Mounted to a Carbon Steel support frame with machined registered fit, simplifies field coupling alignment

Optional Carbon Steel motor support frames to accommodate IEC motors

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

Standard finned design for maximum heat dissipation

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

THRUST BEARING SKF DOUBLE ROW ANGULAR CONTACT

Eliminates all pump thrust loads on motor for increased life

SHAFT AND BEARING SYSTEM

Rigid, heavy duty design for increased reliability

Exceeds ANSI/ASME B73.2 bearing life specifications requirements

316L SS shaft material is standard with optional material upgrades available

CASING GASKET

Fully confined to maximize liquid sealing

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

IMPELLER

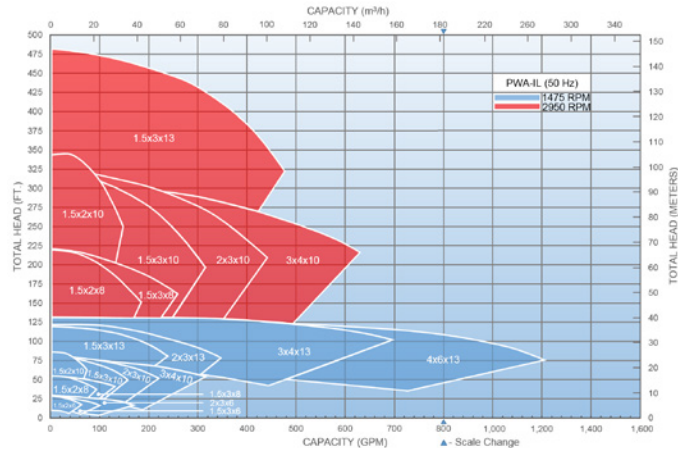
Fully open for increased corrosion, abrasion and solids wear resistance

Back pump out vanes for reduced thrust loading and seal chamber operating pressure

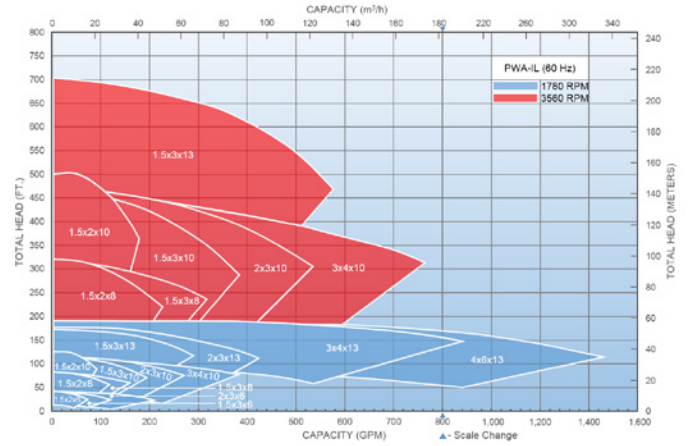


HYDRAULIC PERFORMANCE COVERAGE

| 50 Hz Performance Coverage



| 60 Hz Performance Coverage



Visit our web site at www.pumpworks.com and specify flow and performance needs and obtain pump selection and performance curve.

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

TECHNICAL DATA

All dimensions in inches (mm).

		GP1	GP2
Shaft*	Shaft Diameter at Impeller	0.75 (19)	1 (25)
	Diameter in Stuffing Box/Seal Chamber Less Sleeve With Sleeve	1.375 (35) 1.125 (29)	1.75 (45) 1.5 (38)
	Diameter Between Bearings	1.5 (38)	2.125 (54)
	Diameter at Coupling	0.875 (22)	1.125 (29)
	Overhang	6.125 (156)	8.375 (213)
	Maxium Shaft Deflection	0.002 (0.05)	
Sleeve*	Outside Diameter thru Stuffing Box/Seal Chamber	1.375 (35)	1.75 (45)
Bearings	Radial	6207	6309
	Thrust	3306 A/C3	3309 A/C3
	Bearing Span	4.125 (105)	6.75 (171)
Large Bore Seal Chamber*	Bore	2.875 (73)	3.5 (89)
Stuffing Box*	Bore	2 (51)	2.5 (64)
Maximum Power Limits	HP (kW) per 100 RPM	1.1 (0.82)	3.4 (2.6)
Maximum Allowable Working Pressure (note 1)	MAWP PSI (Kap)**	up to 280 PSI (1931 Kpa) at 100°F with 150 # flanges	
		up to 375 PSI (2586 Kpa) 100°F with 300 # flanges	
Maximum Temperature	Grease Lubrication without Cooling	250°F (121°C)	
	Grease Lubrication with Heat Finger	450°F (232°C)	
	Oil Mist Lubrication with Heat Finger and Cooling	500°F (260°C)	
Casing	Corrosion Allowance	0.125 (3) minimum	

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

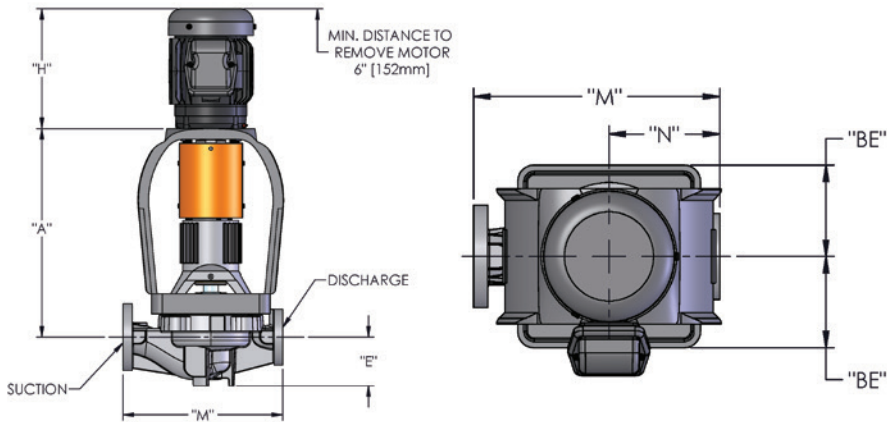
*Shaft, sleeve, seal chamber and stuffing box fully interchangeable with Model PWA Group 1 and 2 pumps.

**Consult pressure temperature chart for various temperatures



PWA-IL ANSI/ASME B73.2 IN-LINE PROCESS PUMP

PUMP DIMENSIONS & WEIGHTS



NEMA MOTOR FRAME	H	WEIGHT lbs (kg)
145 TC	12.5 (318)	106 (50)
182 TC	15.25 (386)	112 (52)
184 TC	15.25 (386)	128 (58)
213 TC	15.25 (386)	197 (89)
215 TC	18.5 (470)	226 (103)
254 TC	20.5 (521)	375 (170)
256 TC	20.5 (521)	412 (187)
284 TSC	22.6 (574)	495 (225)
286 TSC	27.5 (692)	519 (235)
324 TSC	30.0 (760)	700 (318)
326 TSC	30.0 (760)	756 (343)
364 TSC	30.5 (775)	948 (430)
365 TSC	32.0 (814)	1009 (458)
404 TSC	34.5 (873)	1150 (500)
405 TSC	39.25 (996)	1330 (603)

FRAME	SIZE	ANSI DESIGNATION	DISCHARGE SIZE	SUCTION SIZE	E	M	N	BE	WEIGHT BARE PUMP lbs (kg)
GROUP 1	1.5 x 2 x 6	2105/15	1.5	2	4.25 (108)	15 (381)	6.75 (171)	6.375 (162)	190 (86)
	1.5 x 3 x 6	3015/15	1.5	3	4.875 (124)	15 (381)	6.75 (171)		200 (91)
	2 x 3 x 6	3020/17	2	3	4.625 (118)	17 (432)	7.5 (191)		205 (93)
	1.5 x 2 x 8	2015/17	1.5	2	4.8125 (122)	17 (432)	8 (203)		200 (91)
	1.5 x 3 x 8	3015/19	1.5	3	5.25 (133)	19 (483)	8.375 (213)		210 (95)
GROUP 2	1.5 x 2 x 10	2015/19	1.5	2	5.125 (130)	19 (483)	9.25 (235)	10 (254)	370 (168)
	1.5 x 3 x 10	3015/19	1.5	3	5 (127)	19 (483)	9.25 (235)		380 (173)
	2 x 3 x 10	3020/20	2	3	5.25 (133)	20 (508)	9.5 (241)		390 (177)
	3 x 4 x 10	4030/25	3	4	6 (152)	25 (635)	11.5 (292)		430 (195)
	1.5 x 3 x 13	3015/24	1.5	3	5.625 (143)	24 (610)	11.5 (292)		460 (209)
	2 x 3 x 13	3020/24	2	3	5.75 (146)	24 (610)	11.5 (292)		490 (223)
	3 x 4 x 13	4030/28	3	4	6.875 (175)	28 (711)	13 (330)		520 (236)
	4 x 6 x 13	6040/30	4	6	8.5 (216)	30 (762)	14 (356)		610 (277)

All dimensions in inches (mm). All weights in lbs. (kg). Not to be used for construction unless certified by manufacturer.

MOTOR SUPPORT DIMENSIONS & WEIGHTS

FRAME	SIZE	A DIMENSION															
		NEMA MOTOR FRAME SIZE															
		143 TC – 145 TC	WEIGHT	182 TC – 184 TC	WEIGHT	213 TC – 215 TC	WEIGHT	254 TC – 256 TC	WEIGHT	284 TSC – 286 TSC	WEIGHT	324 TSC – 326 TSC	WEIGHT	364 TSC – 366 TSC	WEIGHT	404 TSC – 404S TSC	WEIGHT
GROUP 1	1.5 x 2 x 6																
	1.5 x 3 x 6	19.5 (517)	74 (164)	21.5 (570)	108 (239)	21.5 (570)	102 (225)	21.5 (570)	102 (225)	21.5 (570)	102 (225)						
	2 x 3 x 6																
	1.5 x 2 x 8	19.5 (517)	103 (228)	21.4 (567)	113 (250)	21.4 (567)	113 (250)	21.4 (567)	113 (250)	21.4 (567)	114 (252)	21.4 (567)	116 (256)				
	1.5 x 3 x 8																
GROUP 2	1.5 x 2 x 10																
	1.5 x 3 x 10	25.8 (682)	148 (327)	27.6 (730)	178 (393)	27.6 (730)	178 (393)	27.6 (730)	178 (393)	27.8 (735)	175 (387)	27.8 (735)	190 (420)	27.8 (735)	190 (420)	27.8 (735)	190 (420)
	2 x 3 x 10																
	3 x 4 x 10																
	1.5 x 3 x 13																
	2 x 3 x 13	25.8 (682)	214 (473)	27.3 (724)	214 (473)	27.3 (724)	214 (473)	27.3 (724)	214 (473)	26.8 (762)	213 (471)	29.7 (787)	226 (500)	29.7 (787)	226 (500)	29.7 (787)	226 (500)
	3 x 4 x 13																
	4 x 6 x 13																

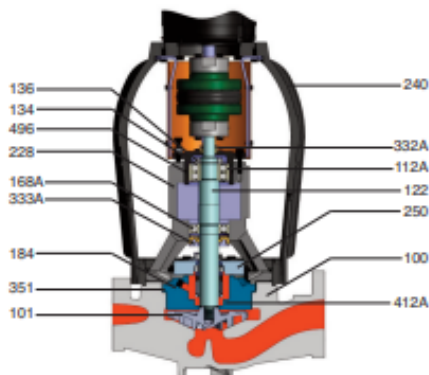
All dimensions in inches (mm). All weights in lbs. (kg).



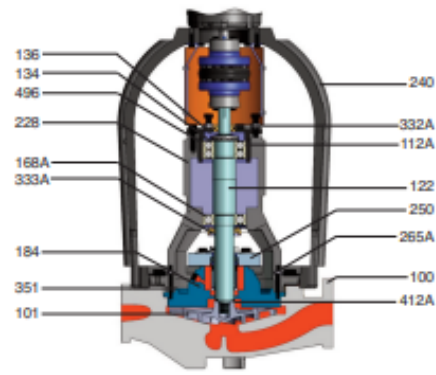
PARTS LIST & MATERIALS OF CONSTRUCTION

Item Ref #	Part Name	Carbon Steel	Carbon Steel w/316L SS Impeller	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr1B	Super Duplex SS CD4 Gr5A	Alloy 20	Monel	Nickel	Hastelloy B, C, & G	Titanium
100	Casing	•	Carbon Steel	•	•	•	•	•	•	•	•	•
101	Impeller	•	316L SS	•	•	•	•	•	•	•	•	•
105	Lantern Ring	Glass Filled Teflon										
106	Packing, Stuffing Box	Teflon - Impregnated Fibers										
112A	Thrust Bearing	Double Row Angular Contact										
122	Shaft - Less Sleeve	316L SS (Optional Alloy 20 & Duplex SS A2205)					Duplex A2205	•	•	•	•	•
122	Shaft with Sleeve	316L SS (Optional Alloy 20 & Duplex SS A2205)										
126	Shaft Sleeve	316L SS (Optional Alloy 20 & Duplex SS A2205)					Super Duplex SS	Super Duplex SS	•	•	•	•
134	Thrust Bearing Housings	Carbon Steel										
136	Bearing Lock Nut & 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										
240	Motor Support	Carbon Steel/Carb										
250	Gland - Seal/Packing			•	•	•	•	•	•	•	•	•
265A	Stud/Nut, Cover to Frame	304SS										
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	•	•	•	•	•	•	•	•	•
370	Cap Screw, Adapter to Casing	Stainless Steel, ASTM A193										
412A	O-ring, Impeller	Glass Filled Teflon										
418	Jacking Bolt	304SS										
469B	Dowel Pin	Steel										
496	O-ring, Bearing Housing	Buna Rubber										

| Group 1 Sectional View PWA-IL



| Group 2 Sectional View PWA-IL





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