



PWA-IL

**ANSI/ASME
B73.2 IN-LINE
PROCESS PUMP**



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.

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



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

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

Pump Works 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

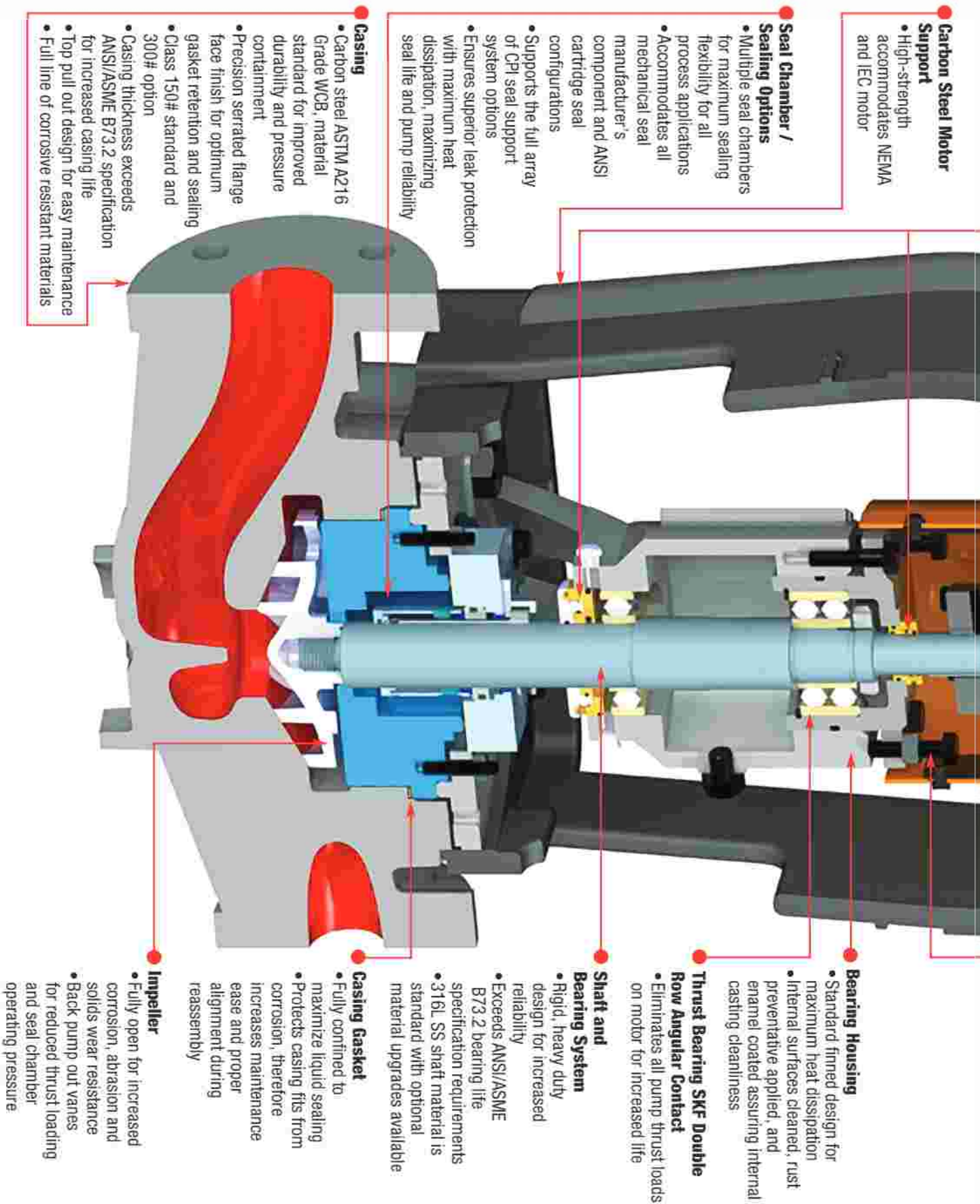
- Pump and component inventory in a variety of material options are strategically located through the Northern Hemisphere ensuring consistent, rapid shipment tailored to customer requirements.

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.pumpworksindustrial.com.



DESIGN FEATURES AND BENEFITS



Carbon Steel Motor Support

- High-strength accommodates NEMA and IEC motor

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 CPl 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
- Precision serrated flange face finish for optimum gasket retention and sealing
- 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

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 specification 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

PWA-1L ANSI/ASME B73.2 IN-LINE PROCESS PUMP

Quality

- Manufactured and tested in the USA

ePOD Pump Selector

- Access to end users and specifiers to select your pump application on line at www.pumpworksindustrial.com, no password or login required

Delivery

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

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

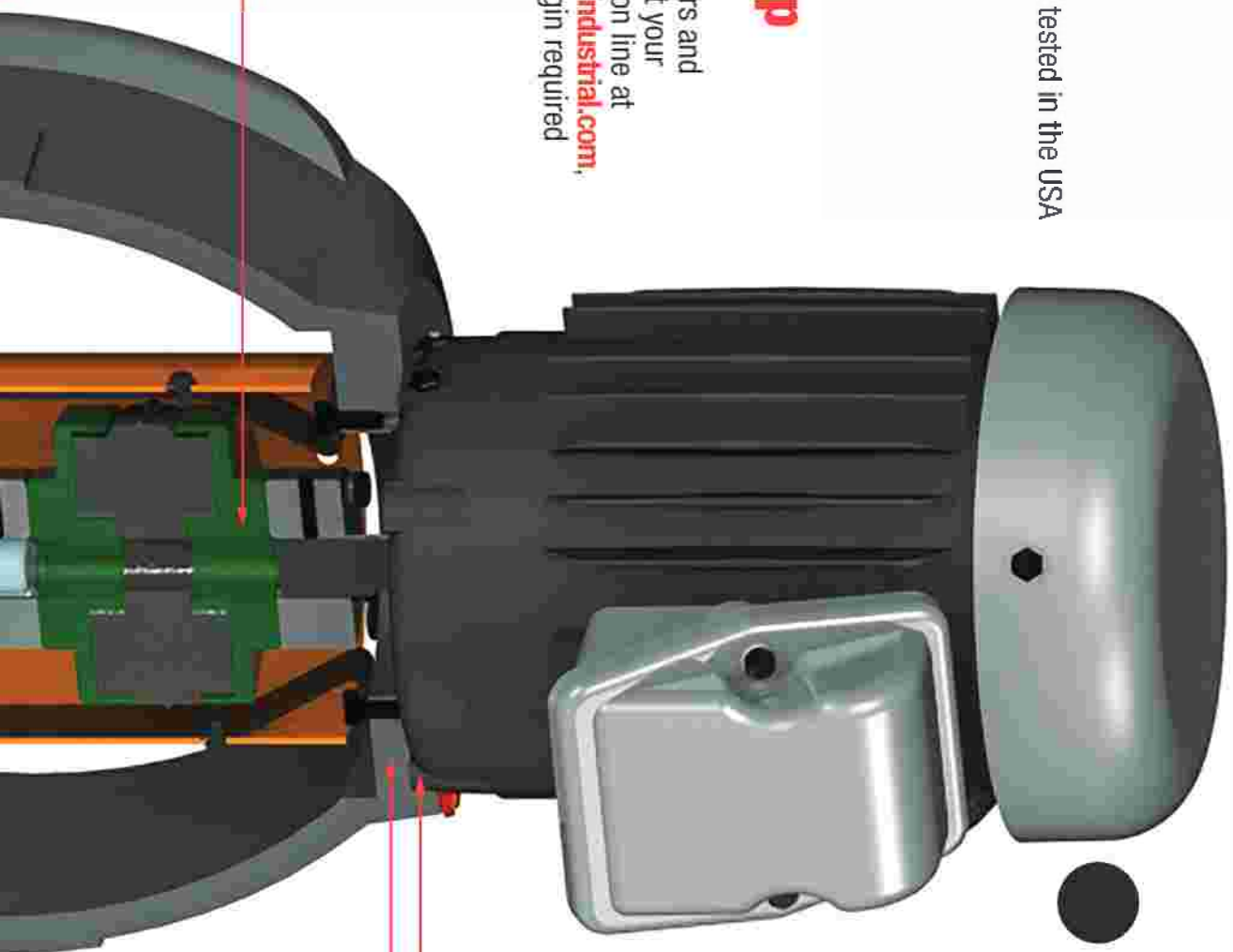
- Easily adjust impeller to front casing clearance without removal of pump from piping
- Restoration to factory efficiencies

Flexible Elastomeric Spacer Coupling

- Provided as standard

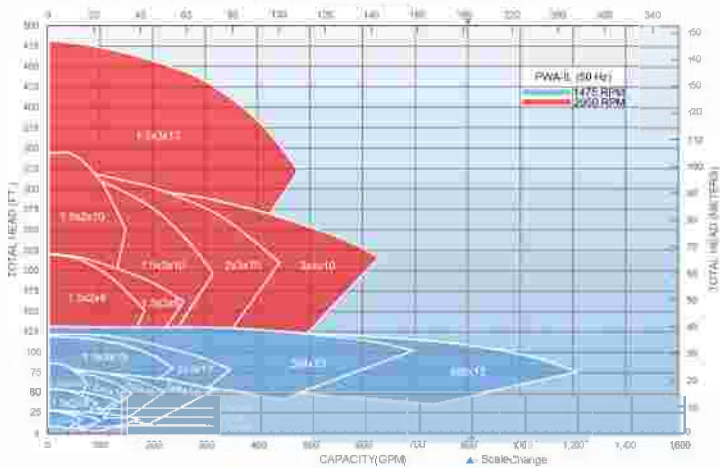
Labyrinth Oil Seal

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

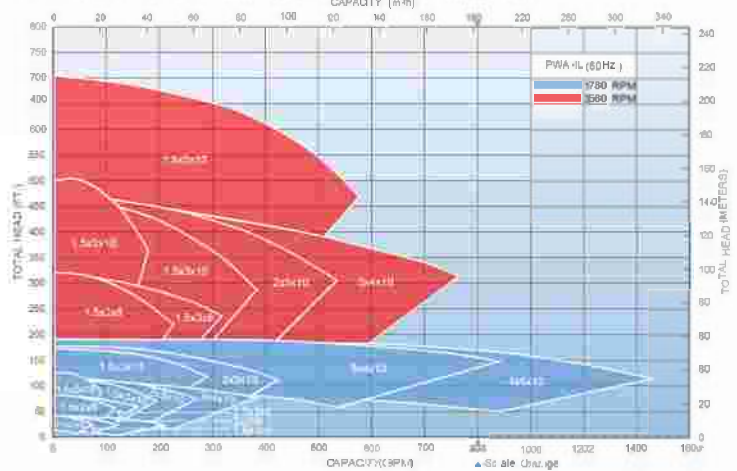


HYDRAULIC PERFORMANCE COVERAGE

50 Hz Performance Coverage



60 Hz Performance Coverage



Capabilities

- Capacities to 318 m³/h | 1,400 GPM
- Heads to 213 m | 700 ft
- Temperatures to 260° C | 500° F
- Pressures to 26 bar | 375 PSIG

Visit our web site at www.pumpworksindustrial.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

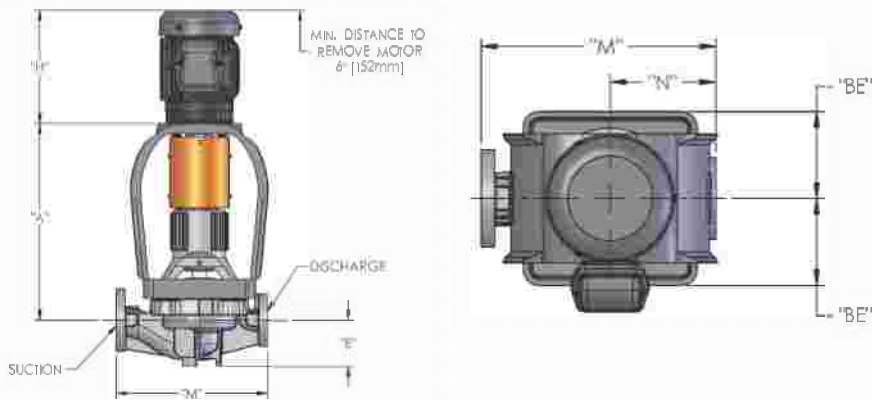
All dimensions in inches and (mm)

		GP1	GP2
Shaft*	Shaft Diameter at Impeller	0.75 (19)	1 (25)
	Diameter in Stuffing Box/Seal Chamber (Less sleeve)	1.375 (35)	1.75 (45)
		(With sleeve)	1.125(29)
	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)
Maximum 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	11(0.82)	3.4 (2.6)
Maximum Allowable Working Pressure Note 1	MAWP PSI (Kpa)**	up to 285 PSI (1965 Kpa) at 100°F with 150 # flanges	
		up to 375 PSI (2586 Kpa) at 100°F with 300 # flanges	
		**Consult Pressure Temperature chart for various temperatures	
Maximum Temperature	Grease Lubricated without cooling	250°F (121 °C)	
	Grease Lubrication with Heat Flinger	450° F(232°C)	
	Oil Mist Lubrication with Heat Flinger 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.

PUMP DIMENSIONS AND WEIGHTS



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

PUMP DIMENSIONS AND WEIGHTS

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

FRAME	SIZE	ANSI DESIGNATION	DISCHARGE SIZE	SUCTION SIZE	E	M	N	BE	WEIGHT BARE PUMP (lbs AND (kg))
GROUP 1	1.5X2X6	2015/15	1.5	2	4.25(108)	15(381)	6.75(171)	6.375(162)	190(86)
	1.5x3x6	3015/15	1.5	3	4.875(124)	15(381)	6.75(171)		200(91)
	2x3x6	3020/17	2	3	4.625(118)	17(432)	7.5(191)		205(93)
	1.5x2x8	2015/17	1.5	2	4.8125(122)	17(432)	8(203)		200(91)
	1.5x3x8	3015/19	1.5	3	5.25(133)	19(483)	8.375(213)		210(95)
GROUP 2	1.5X2X10	2015/19	1.5	2	5.125(130)	19(483)	9.25(235)	10(254)	370(168)
	1.5X3X10	3015/19	1.5	3	5(127)	19(483)	9.25(235)		380(173)
	2X3X10	3020/20	2	3	5.25(133)	20(508)	9.5(241)		390(177)
	3X4X10	4030/25	3	4	6(152)	25(635)	11.5(292)		430(195)
	1.5X3X13	3015/24	1.5	3	5.625(143)	24(610)	11.5(292)		460(209)
	2X3X13	3020/24	2	3	5.75(146)	24(610)	11.5(292)		490(223)
	3X4X13	4030/28	3	4	6.875(175)	28(711)	13(330)		520(236)
	4X6X13	6040/30	4	6	8.5(216)	30(762)	14(356)		610(277)

MOTOR SUPPORT DIMENSIONS AND WEIGHTS

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

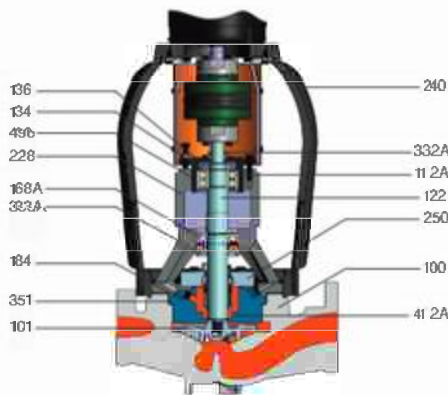
FRAME	SIZE	A Dimension															
		NEMA MOTOR FRAME SIZE															
		143TC b 145 TC	Weight	182 TC to 184 TC	Weight	213 TC to 215 TC	Weight	254 TC to 256TC	Weight	284 TSC to 286 TSC	Weight	324 TSC to 326 TSC	Weight	364 TSC b 365 TSC	Weight	404 TSC to 4045TSC	Weight
GROUP1	1.5X2X6																
	1.5x3x6	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)						
	2x3x6																
	1.5x2x8	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)				
GROUP 2	1.5X3X8																
	1.5X2X10																
	1.5X3X10	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)
	2X3X10																
	3X4X10																
	1.5X3X13																
	2X3X13	25.8(682)	214(473)	27.3(724)	214(473)	27.3(724)	214(473)	27.3(724)	214(473)	28.8(762)	213(471)	29.7(787)	226(500)	29.7(787)	226(500)	29.7(787)	226(500)
3X4X13																	
4X6X13																	

Weights and dimensions are approximate and not to be used for construction.

PARTS LIST AND MATERIALS OF CONSTRUCTION

Item Ref Number	Part Name	Materials											
		Carbon Steel	Carbon Steel w 316L SS Impeller	316L SS	CA6NM (12% Chrome)	Duplex SS	Super Duplex SS	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
100	Casing	Carbon Steel	Carbon Steel	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
101	Impeller	Carbon Steel	316L SS	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
105	Lantern Ring	Glass Filled Teflon											
106	Packing, Stuffing Box	Teflon- Impregnated Fibers											
11 2A	Thrust Bearing	Double Row Angular Contact											
122	Shaft - Less Sleeve	316L SS (Optional Alloy 20 & Duplex SS A2205)				Duplex A2205			Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium
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	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
134	Thrust Bearing Housing	Carbon Steel											
136	Bearing Lock Nut & Lock Washer	Steel											
168A	Radial Bearing	Single Row Deep Groove											
184	Cover/ Stuffing Box (Packed Box)	Carbon Steel	Carbon Steel	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
184	Seal Chamber (Mechanical Seal)	Carbon Steel	Carbon Steel	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
228	Frame, Bearing	Carbon Steel											
240	Motor Support	Carbon Steel											
250	Gland- Seal/Packing	316L SS			CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
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	Carbon Steel	316L SS	CA6NM (12% Chrome)	Duplex SS CD4 Gr 1B	Super Duplex SS CD4 Gr 5A	Alloy 20	Monel	Nickel	Hastelloy B, C & G	Titanium	
370	Cap Screw, Adapter to Casing	Stainless Steel, ASTM A 193											
41 2A	O-ring/Impeller	Glass Filled Teflon											
418	Jacking Bolt	304SS											
469B	Dowel Pin	Steel											
498	O-ring, Bearing Housing	Buna Rubber											

GROUP 1 Sectional View PWA-IL



GROUP 2 Sectional View PWA-IL

