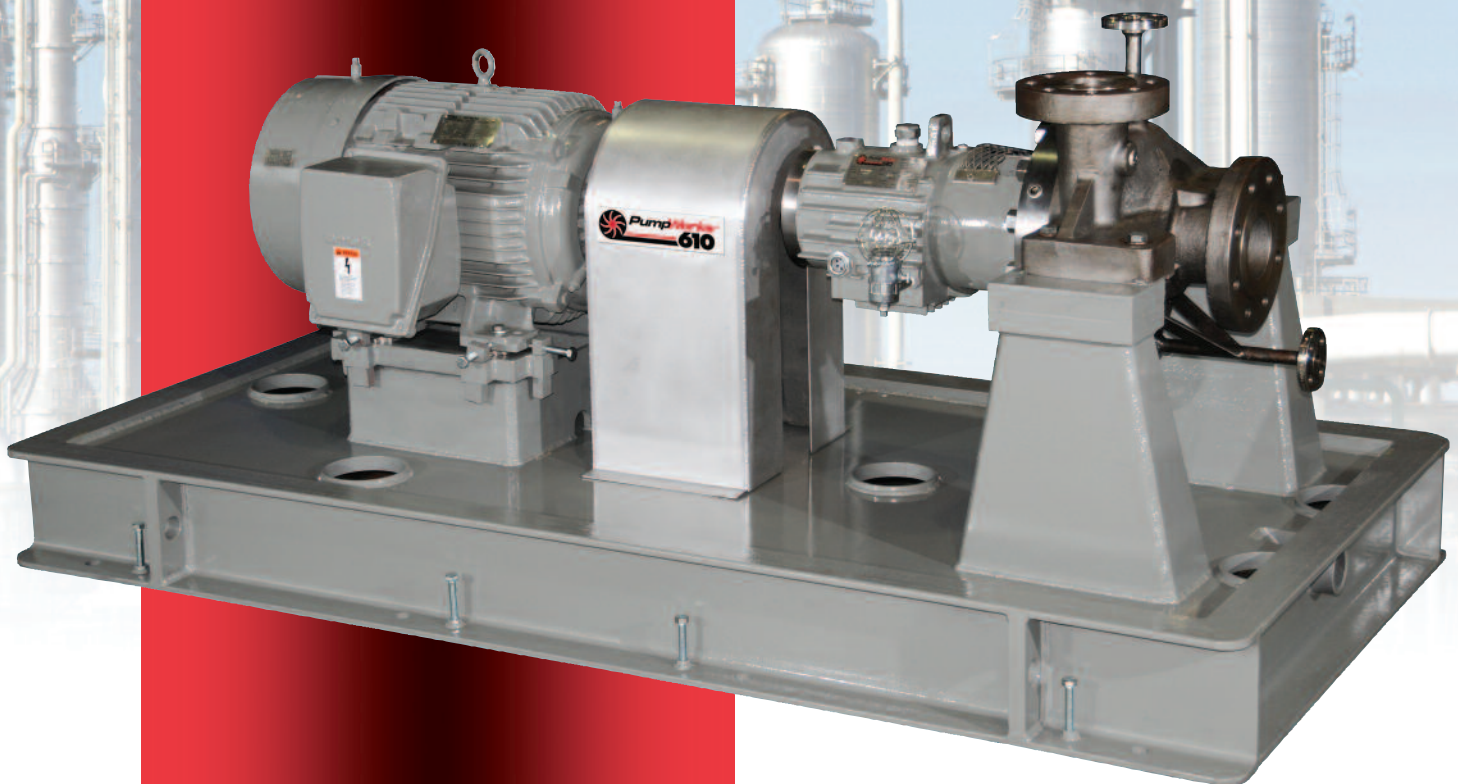




PWH

**API 610
SINGLE STAGE OH2**

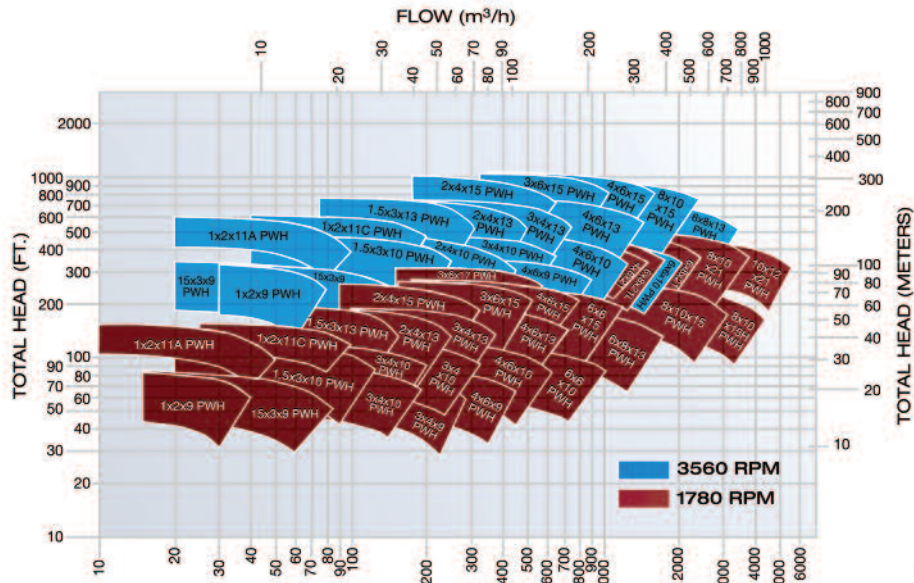


HYDRAULIC PERFORMANCE COVERAGE

60 Hz Performance Coverage



Visit our web site at www.pumpworks610.com and specify flow and performance needs and obtain pump selection, performance curve, drawing, and data sheet.

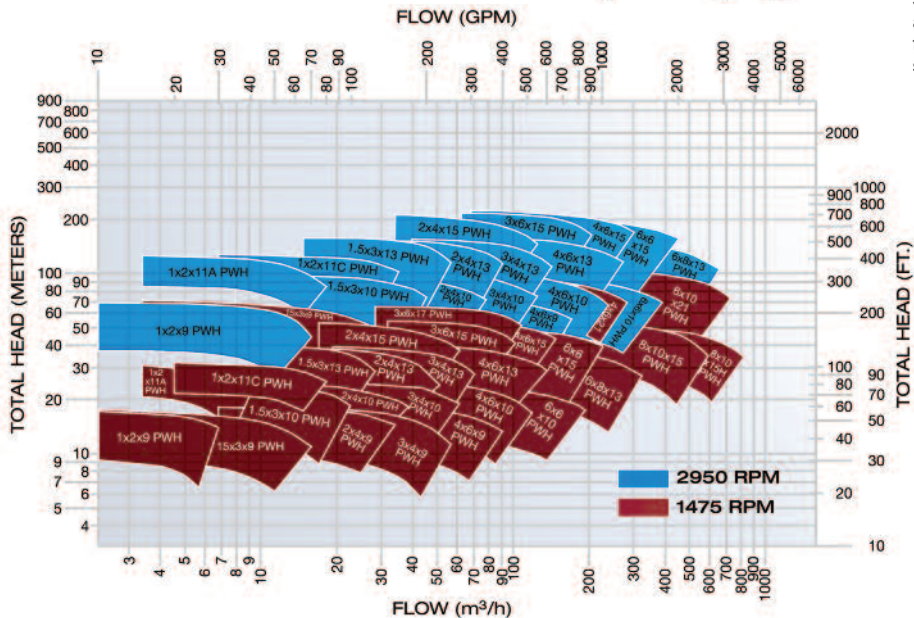


Performances shown are normal and are to be used for preliminary selection only.

50 Hz Performance Coverage



Visit our web site at www.pumpworks610.com and specify flow and performance needs and obtain pump selection, performance curve, drawing, and data sheet.



STANDARD MATERIALS OF CONSTRUCTION

API MATERIAL CLASS	S-6	S-8	C-6	A-8
CASING	A216 GRADE WCB	A216 GRADE WCB	A487 GRADE CA6NM	A351 GRADE CF3M
COVER	A516 GRADE 70	A516 GRADE 70	A479 TYPE 410SS	A479 TYPE 316/316L
IMPELLER	A743 GRADE CA6NM	A743 CF3M 316SS	A743 GRADE CA6NM	A743 CF3M 316SS
SHAFT	A276 TYPE 410SS CONDITION "T"	A276 TYPE 316 / 316L	A276 TYPE 410SS CONDITION "T"	A276 TYPE 316 / 316L
IMPELLER LOCK NUT	A479 TYPE 316L	NITRONIC 60	A479 TYPE 316L	NITRONIC 60
BEARING HOUSING	A216 GRADE WCB CARBON STEEL	A216 GRADE WCB CARBON STEEL	A216 GRADE WCB CARBON STEEL	A216 GRADE WCB CARBON STEEL
IMPELLER WEAR RINGS	410 SS HT: 262-302 BHN	NITRONIC 50	410 SS HT: 262-302 BHN	NITRONIC 50
CASING WEAR RINGS	420 SS HT: 400-450 BHN	NITRONIC 60	420 SS HT: 400-450 BHN	NITRONIC 60
THROAT BUSHING	420 SS HT: 400-450 BHN	NITRONIC 60	420 SS HT: 400-450 BHN	NITRONIC 60
CASING STUDS	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-8
CASING NUTS	A194 GRADE 2H	A194 GRADE 2H	A194 GRADE 2H	A194 GRADE B8M

*Other API 610 Material Classes and Combinations are available

DESIGN FEATURES AND BENEFITS

Quality

- Manufactured and tested in the USA

Dual Volute Casing

- On larger pump sizes
- Minimizes radial loads and shaft deflection increasing mechanical seal and bearing life

Discharge Nozzle

- Tangential discharge maximizes hydraulic efficiency

Drain & Vent Ports

- Threaded or socket welded
- Socket welded drain port two-plane gusseted and piped to skid edge 3/4" SCH 160 300# RF

Casing Mounting Feet

- Gusseted and oversized to meet stringent API nozzle loading criteria

Nozzle Load

- Casing & baseplate design exceeds current edition API 610 nozzle load requirement

Impeller Retention

- Keyed and secured to shaft with exclusive dual set-screw locknut

Pump Casing

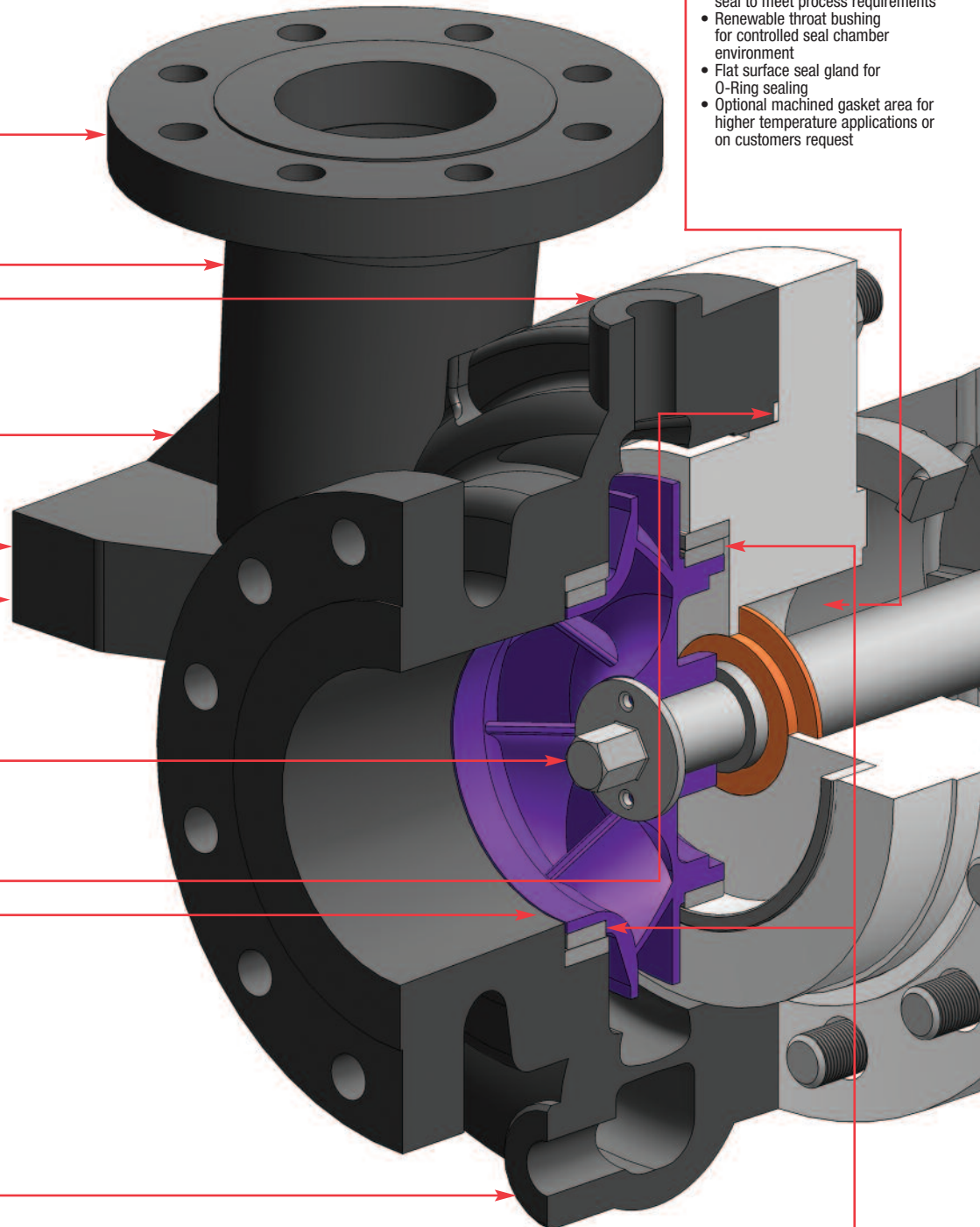
- Precision machining and fully confined controlled compression gasket ensures proper sealing and case to cover alignment

Impeller

- Fully enclosed design provides increased efficiency
- Dynamically balanced to ISO G1.0 criteria before mounting

Casing Cover and Seal Chamber

- API 610 seal chamber allows user to install any API 682 cartridge seal to meet process requirements
- Renewable throat bushing for controlled seal chamber environment
- Flat surface seal gland for O-Ring sealing
- Optional machined gasket area for higher temperature applications or on customers request



ePOD Pump Selector

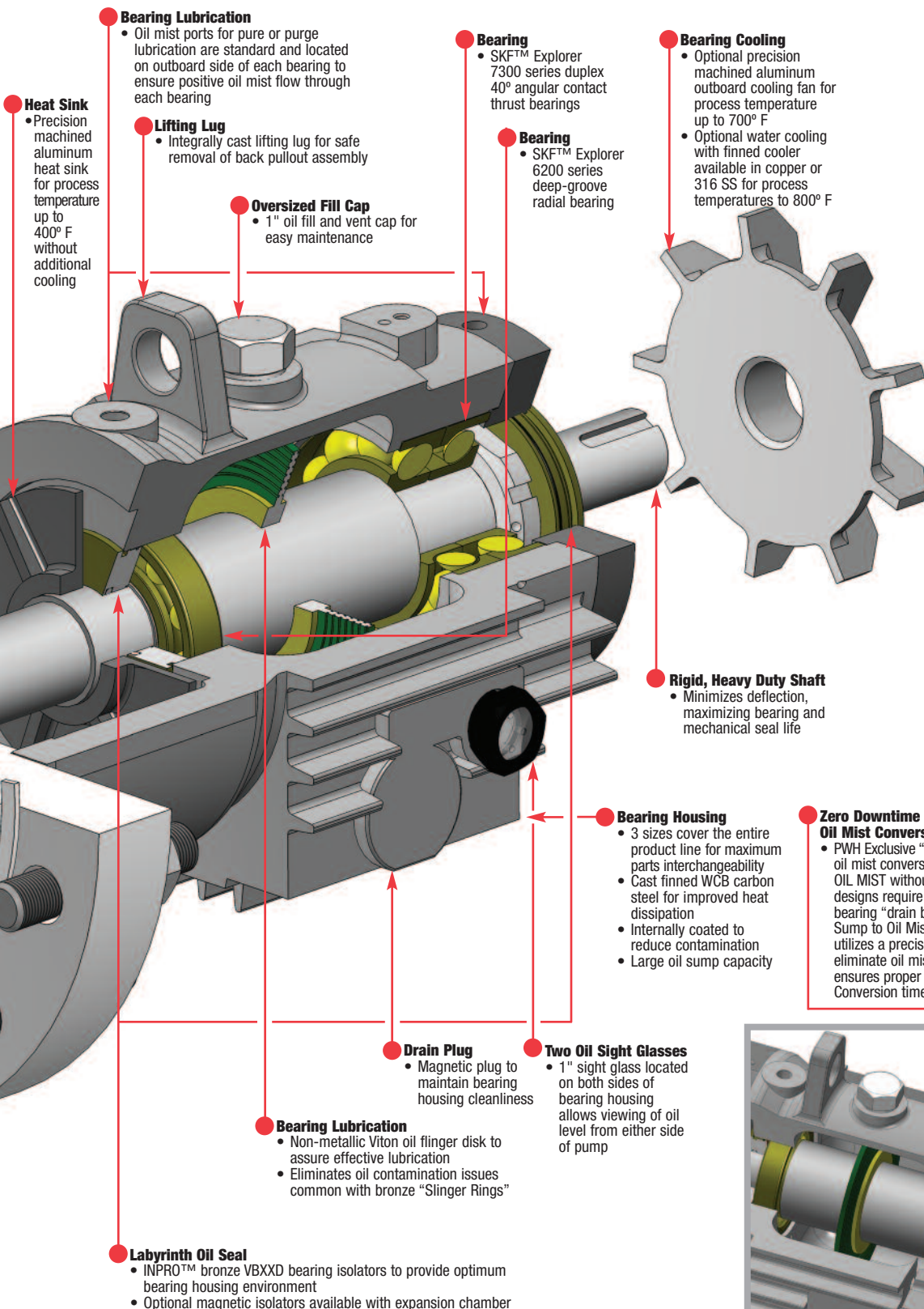
- Access to end users and specifiers to select, configure and price your pump application on line at www.pumpworks610.com

Delivery

- 16 weeks for API 610 material class S-6, S-8 and C-6
- Refer to the factory on deliveries for other API material classes and customer specific material combinations

Renewable Casing and Impeller Wear Rings

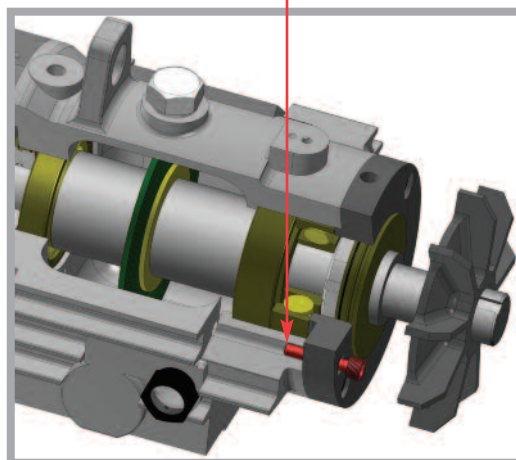
- Front and back rings control seal chamber pressure and provides impeller stability
- Optional non-metallic rings for improved efficiency and dry running



PW-11 is the PumpWorks 610 retrofit upgrade kit for any brand of API 610 single stage OH2 process pump. See our PW-11 API 610 Upgrade Program Brochure for more information.



PWV is the PumpWorks 610 API 610 current edition VS6 and VS1 vertical turbine pump. See our PWV API 610 Vertical Turbine VS6 (Can Type) and VS1 (Sump Type) Brochure for more information.



- Zero Downtime Oil Mist Conversion**
- PWH Exclusive "SMART LUBE SYSTEM": The innovative oil mist conversion kit allows user to convert to PURE OIL MIST without removing pump from service! Other designs require you to pull the unit and plug thrust bearing "drain back" ports when converting from Oil Sump to Oil Mist. The PWH "SMART LUBE SYSTEM" utilizes a precision tolerance, elongated port plug to eliminate oil mist "leakage" around bearings. This ensures proper lubrication and limited downtime. Conversion time is less than 5 minutes.

PWH API 610 PROCESS PUMP

PUMP AND DRIVER DIMENSIONS

PUMP	FRAME SIZE	CP	X	Y	Z	SUCTION	DISCHARGE	MOTOR	BASEPLATE #	MIN. CL.
1x2x9	IA	25.15	8.5	5.375	5.188	2	1	184T, 213-215T	API # 3	8.50
								254-256TS	API # 3.5	9.50
								324T	API # 3	8.25
								213-215T	API # 3	8.50
1.5x3x9	IA	25.29	8.5	6.642	5.125	3	1.5	254-256T	API # 3.5	9.50
								284TS, 286T	API # 3.5	14.00
								324-326T	API # 4	9.25
								215T	API # 3	9.50
3x4x9	IA	25.28	9.50	7.38	5.38	4	3	254-256T, 284-286T/TS, 324-326T/TS, 364T/TS, 365T	API # 3.5	10.50
								404-405T	API # 4	11.50
								254-256T, 284-286T/TS 324-326T/TS 364-365T	API # 3.5	9.25
								404T	API # 4	9.50
1.5x3x10	IB	25.53	10.50	6.91	5.88	3	1.5	254-256T, 284-286T/TS 324-326T/TS 364-365T	API # 3.5	10.50
								404T	API # 4	11.50
								254-256T, 284-286T/TS 324-326T/TS 364T/TS, 365T	API # 3.5	9.25
								404-405T	API # 4	9.50
2x4x10	IB	25.28	10.03	5.44	5.85	4	2	286T/TS, 324-326T/TS 364-365T/TS 404-405T	API # 3.5	10.00
								444T/TS, 445T, 447T	API # 6.5	10.50
								256T, 284-286T/TS, 324-326T/TS	API # 3.5	11.50
								364-365T/TS 404-405T, 405TS	API # 4	12.50
3x4x10A	IB	25.65	10.06	7.44	6.31	4	3	444-445T	API # 6.5	12.50
								324-326T/TS 364-365T/TS 404-405T, 405TS	API # 5.5	11.25
								444-445T/TS, 447-449T	API # 6.5	12.50
								326T	API # 5.5	13.75
3x4x10B	IB	25.65	10.06	7.44	6.31	4	3	364-365T/TS, 404-405T, 405TS	API # 6	8.75
								444-445T/TS, 447T/TS, 449T	API # 6.5	9.50
								256T, 284-286T/TS, 324-326T/TS	API # 3.5	10.50
								404-405T	API # 4	11.50
4x6x10	IIB	25.62	10.50	6.84	6.88	6	4	256T, 284-286T/TS, 324-326T/TS	API # 5.5	10.50
								364,365T/TS	API # 6	10.50
								404-405T, 405TS	API # 6	11.50
								444-445T	API # 6.5	12.50
6x6x10	IIB	25.65	11.19	6.63	8.69	6	6	326T, 364-365T/TS 404-405T, 405TS	API # 6	11.00
								444-445T/TS	API # 6.5	12.50
								447T/TS, 449T	API # 6	13.25
								365T/TS, 405T/TS 444-445T/TS 447-449T/TS	API # 6.5	14.00
1x2x11	IIA	25.53	10.00	6.88	5.69	2	1	445T/TS	API # 8	14.50
								447-449T/TS	PW610 # 2	11.75
								447-449T/TS	PW610 # 2	12.50
								364-365T/TS, 404-405T, 405TS	API # 6	13.50
1.5x3x13	IIA	27.88	11.88	7.00	6.88	3	1.5	444-445T/TS	API # 6.5	14.25
								326T, 364-365T/TS 404-405T, 405TS	API # 6	14.25
								444-445T/TS	API # 6.5	18.00
								447T/TS, 449T	PW610 # 1	18.00
3x4x13	IIA	27.75	13.06	7.50	8.38	4	3	365T/TS, 405T/TS 444-445T/TS 447-449T/TS	API # 6.5	16.75
								445T/TS	API # 8	19.25
								447-449T/TS	PW610 # 3	19.25
								444-445T	API # 10	19.25
4x6x13	IIB	27.88	14.00	9.94	9.25	6	4	447-449T	PW610 # 3	20.75
								445T/TS	API # 7	
								447-449T/TS	API # 7.5	
								447-449T/TS	PW610 # 2	
3x6x17	IIB	28.00	13.38	8.06	10.19	6	3	405T, 444-445T	API # 10	
								447-449T	PW610 # 3	
								444-445T	API # 10	
								447-449T	PW610 # 3	
6x8x13	IIB	28.44	15.06	9.19	10.50	8	6	405T,444-445T	API # 10	
								447-449T	PW610 # 3	
								447-449T/TS	API # 7	
								447-449T/TS	API # 7.5	
2x4x15	IIB	28.19	13.00	8.00	8.38	4	2	447-449T/TS	PW610 # 2	
								444-445T/TS	API # 6.5	
								447-449T/TS	PW610 # 1	
								405T/TS	API # 6	
3x6x15	IIB	27.91	12.37	8.06	9.19	6	3	444-445T/TS	API # 6.5	
								447-449T/TS	PW610 # 1	
								445T/TS	API # 7	
								447-449T/TS	API # 7.5	
4x6x15	IIB	28.38	13.69	9.31	10.31	6	4	447-449T/TS	PW610 # 2	
								447-449T/TS	API # 10	
								405T, 444-445T	API # 10	
								447-449T	PW610 # 3	
6x6x15	IIB	28.13	14.88	9.56	10.31	6	6	444-445T	API # 10	
								447-449T	PW610 # 3	
								447-449T	API # 10	
								447-449T	PW610 # 3	
8x10x15	IIB	28.57	16.06	10.43	12.25	10	8	405T,444-445T	API # 10	
								447-449T	PW610 # 3	
								444-445T	API # 10	
								447-449T	PW610 # 3	
8x10x15H	IIB	28.57	16.06	10.43	12.25	10	8	405T,444-445T	API # 10	
								447-449T	PW610 # 3	
								444-445T	API # 10	
								447-449T	PW610 # 3	
4x6x21	IIC	29.00	16.06	11.38	12.69	6	4	447-449T	PW610 # 3	
								447-449T	PW610 # 4	
								444-445T	API # 10	
								447-449T	PW610 # 4	
6x8x21	IIC	29.13	16.06	10.03	14.44	8	6	447-449T	PW610 # 4	
								444-445T	API # 10	
								447-449T	PW610 # 4	
								447-449T	PW610 # 4	
6x8x21L	IIC	29.13	16.06	10.03	14.44	8	6	447-449T	PW610 # 4	
								444-445T	API # 10	
								447-449T	PW610 # 4	
								447-449T	PW610 # 4	
8x10x21	IIC	29.50	19.13	10.25	15.50	10	8	447-449T	PW610 # 4	
								444-445T	API # 10	
								447-449T	PW610 # 4	
								447-449T	PW610 # 4	

BASEPLATE DIMENSIONS

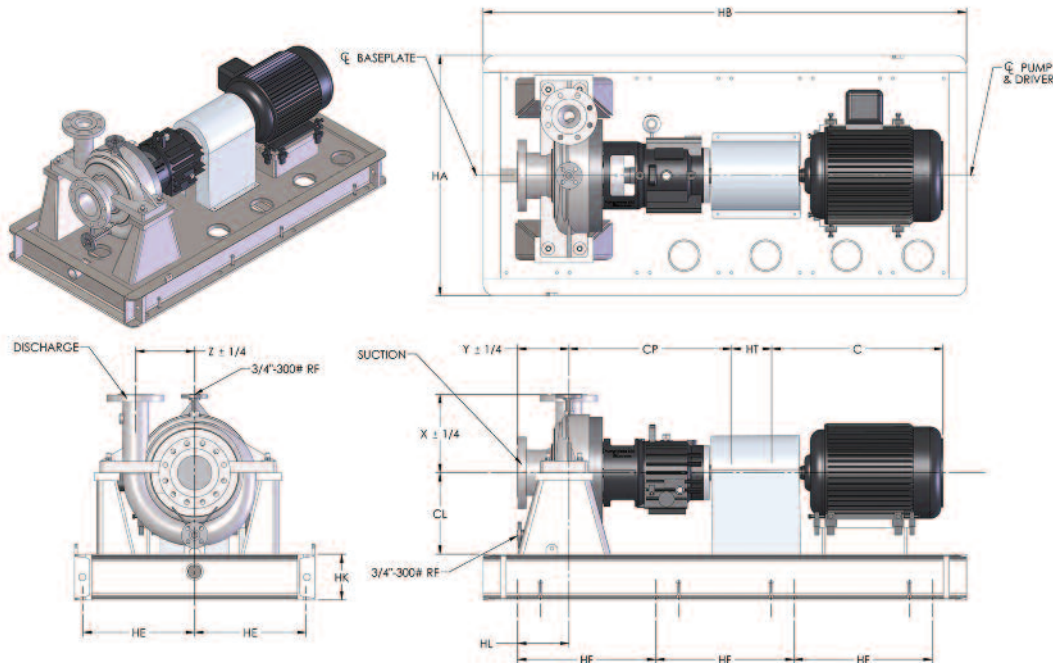
BASEPLATE #	HA	HB	HE	# HOLES PER SIDE	HF	HK
API # 3	36.00	72.50	16.50	3	30.25	8
API # 3.5	36.00	84.50	16.50	4	24.16	8
API # 4	36.00	96.50	16.50	4	28.16	8
API # 5.5	42.00	84.50	19.50	4	24.16	8
API # 6	42.00	96.50	19.50	4	28.16	8
API # 6.5	42.00	108.50	19.50	5	24.12	8
API # 7	49.00	84.50	23.00	4	24.16	8
API # 7.5	49.00	96.50	23.00	4	28.16	8
API # 8	49.00	108.50	23.00	5	24.12	8
API # 10	55.00	108.50	26.00	5	24.12	8
PW610 # 1	42.00	118.50	19.50	5	26.63	8
PW610 # 2	49.00	118.50	23.00	5	26.63	8
PW610 # 3	55.00	118.50	26.00	5	26.63	8
PW610 # 4	61.00	118.50	29.00	5	26.63	8

NOTES

1. DIMENSIONS ARE IN INCHES
2. DIMENSIONS OF PUMP ARE $\pm 0.12"$ UNLESS OTHERWISE NOTED
3. DIMENSIONAL TOLERANCES OF MOTOR ARE IN COMPLIANCE WITH NEMA MG-1
4. PUMP FLANGE RATINGS ARE ANSI B16.5 300# RF
5. CCW ROTATION VIEWED FROM COUPLING END
6. BASEPLATE DIMENSIONS NOT TO BE USED FOR CONSTRUCTION

SHORT PANEL DOTTED LINE DOES NOT PRINT

OUTLINE DIMENSIONS



MOTOR DIMENSIONS

FRAME SIZE	C*
184T	16.25
213-215T	19.50
254-256T/TS	25.25
284-286T/TS	28.18
324-326T/TS	31.19
364-365T/TS	33.44
404-405T	38.38
404-405TS	37.00
444-445T	45.88
444-445TS	44.00
447-449T	55.12
447-449TS	54.00

* = Dimensions may vary

TECHNICAL DATA

PUMP SIZE		1.5x3x9	1x2x9	3x4x9	1.5x3x10	1x2x11	2x4x10	3x4x10	4x6x10	6x6x10	2x4x13	1.5x3x13	3x4x13	3x6x17	4x6x13	6x6x15	6x8x13	2x4x15	3x6x15	4x6x15	8x10x15	4x6x21	6x8x21	8x10x21	8x10x21								
FLANGE	SUCTION - 300# RF [IN]	3	2	4	3	2	4	4	6	6	4	3	4	6	6	6	8	4	6	6	10	6	8	10	10								
	DISCHARGE - 300# RF [IN]	1.5	1	3	1.5	1	2	3	4	6	2	1.5	3	3	4	6	6	2	3	4	8	4	6	8	8								
MAWP	S-6 [PSIG 100 DEG F]	740																															
	S-8 [PSIG 100 DEG F]																																
	C-6 [PSIG 100 DEG F]																																
	A-8 [PSIG 100 DEG F]																																
	Mechanical Group	IA		IB				IIA				IIB				IIC				IIIA													
	Bearing Frame	I								II																III							
	Volute Type	SINGLE								DOUBLE		SINGLE				DOUBLE				SINGLE		DOUBLE											
AUX PORTS	Discharge (Flush) [IN]	3/4																															
	Vent [IN]																																
	Drain [IN]																																
	Suction [IN]	1/2																															
	SHAFT	Max Impeller [IN]	9.0	9.0	9.0	10.5	11.1	10.5	10.5	10.5	10.5	13.3	13.3	13.3	17.0	13.3	15.5	13.3	15.5	15.5	15.5	15.5	21.0	21.0	21.0	21.0							
Min Impeller [IN]		7.0	7.0	7.0	8.0	8.8	7.5	8.0	8.0	8.0	10.0	10.0	10.0	13.5	10.0	10.0	10.0	12.0	12.0	12.0	12.0	14.0	14.0	14.0	14.0								
Diameter at Coupling [IN]		1.63								1.88				2.00				2.38		1.88		2.38		2.00		2.25		2.75					
Keyway at Coupling [IN]		0.38																0.5								0.5				0.63			
Extension at Coupling [IN]		3.5																								3.5				4.50			
Diameter at Mechanical Seal [IN]		2																								2.75				3.37			
Diameter Between Bearings [IN]		3																								3.5				4.25			
Distance Between Bearings [IN]		7.74																								8.81				9.64			
Radial Bearing		6212																								6215				6218			
Thrust Bearing		7312x2																								7314x2				7317x2			
Maximum RPM		3600																1800				3600				1780							
Maximum HP/100 RPM		2.0				4.5				6.9		7.7		6.9		11.5		7.7		19		9.5		19		11.5		16.3		10.5		16.3	



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