



PWM

**API 610 BB3
Multistage Pump**



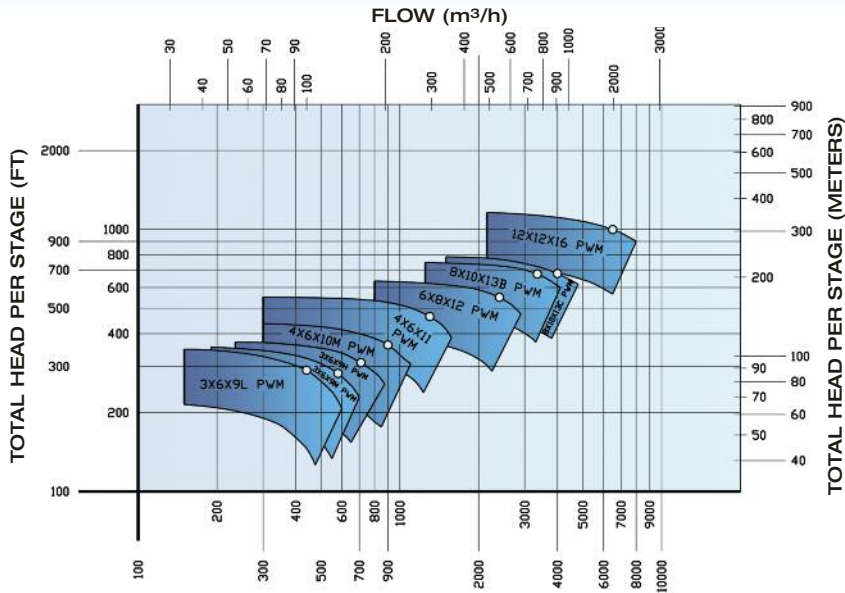
PWM API 610 BB3 MULTISTAGE PUMP

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.

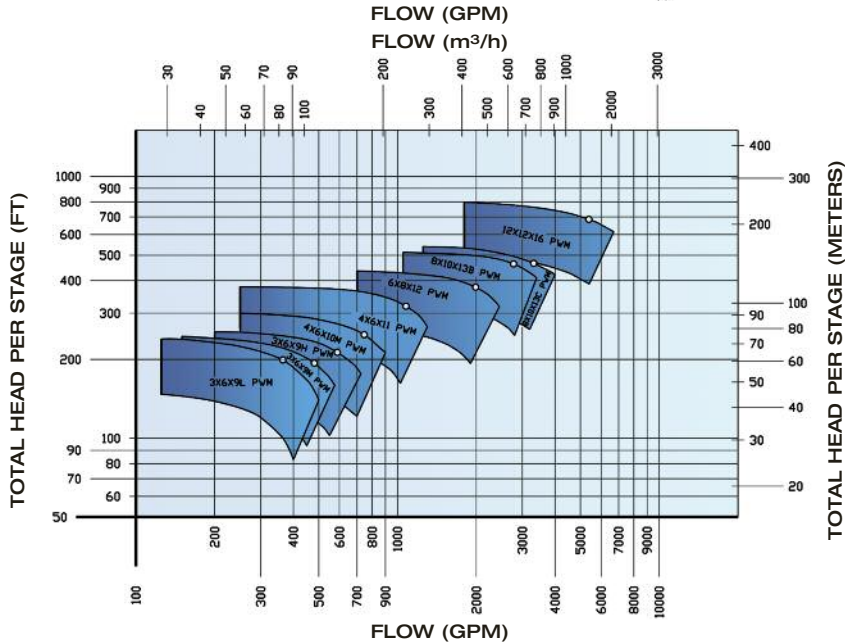


Performances shown are normal and are to be used for preliminary selection only.

**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	A487 GRADE CA6NM	A351 CF8M 316SS	A487 GRADE CA6NM	A351 CF8M 316SS
SHAFT	A276 TYPE 410SS CONDITION "T"	A479 TYPE 316 / 316L	A276 TYPE 410SS CONDITION "T"	A479 TYPE 316 / 316L
IMPELLER LOCK NUT	A479 TYPE 316L	A479 TYPE 316L	A479 TYPE 316L	A479 TYPE 316L
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	420 SS HT: 400-450 BHN	316 SS HARD FACED	420 SS HT: 400-450 BHN	316 SS HARD FACED
CASING WEAR RINGS	410 SS HT: 262-302 BHN	316 SS HARD FACED	410 SS HT: 262-302 BHN	316 SS HARD FACED
THROAT BUSHING	410 SS HT: 262-302 BHN	316 SS HARD FACED	410 SS HT: 262-302 BHN	316 SS HARD FACED
CASING STUDS	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7
CASING NUTS	A194 GRADE 2H	A194 GRADE 2H	A194 GRADE 2H	A194 GRADE 2H

*Other API 610 Material Classes and Combinations are available including D-1 and D-2.

PWM API 610 BB3 MULTISTAGE PUMP

DESIGN FEATURES AND BENEFITS

Bearing Housing

- Finned design improves heat dissipation for cooler running bearing
- Large bearing housing easily accommodates vibration switches, transmitters and proximity probes
- Optional sleeve bearing designed to handle variety of RTDs

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
- Optional water cooled stuffing box for high process temperature application

Double Volute

- Precision cast hydraulic passageways minimizes radial thrust for less shaft deflection and bearing loading

Renewable Wear Rings

- All wear rings are replaceable permitting re-establishing initial running clearances and efficiency

Quality

- Manufactured and tested in the USA

Impeller

- Precision cast for maximum efficiency
- Dynamically balanced to 4W/N before mounting
- Opposing impeller design to limit axial thrust to maximize thrust bearing life
- Individually keyed, shrunk fit and restrained in the direction of thrust by split ring
- Mounted on shaft with vane tips staggered for reduced pressure pulsation
- Optional double suction large eye first stage impeller for lower NPSH performance

Flanges

- ANSI B16.5 Class 900# RF suction & discharge
- Optional 600# RF and 1500# RF

Nozzles

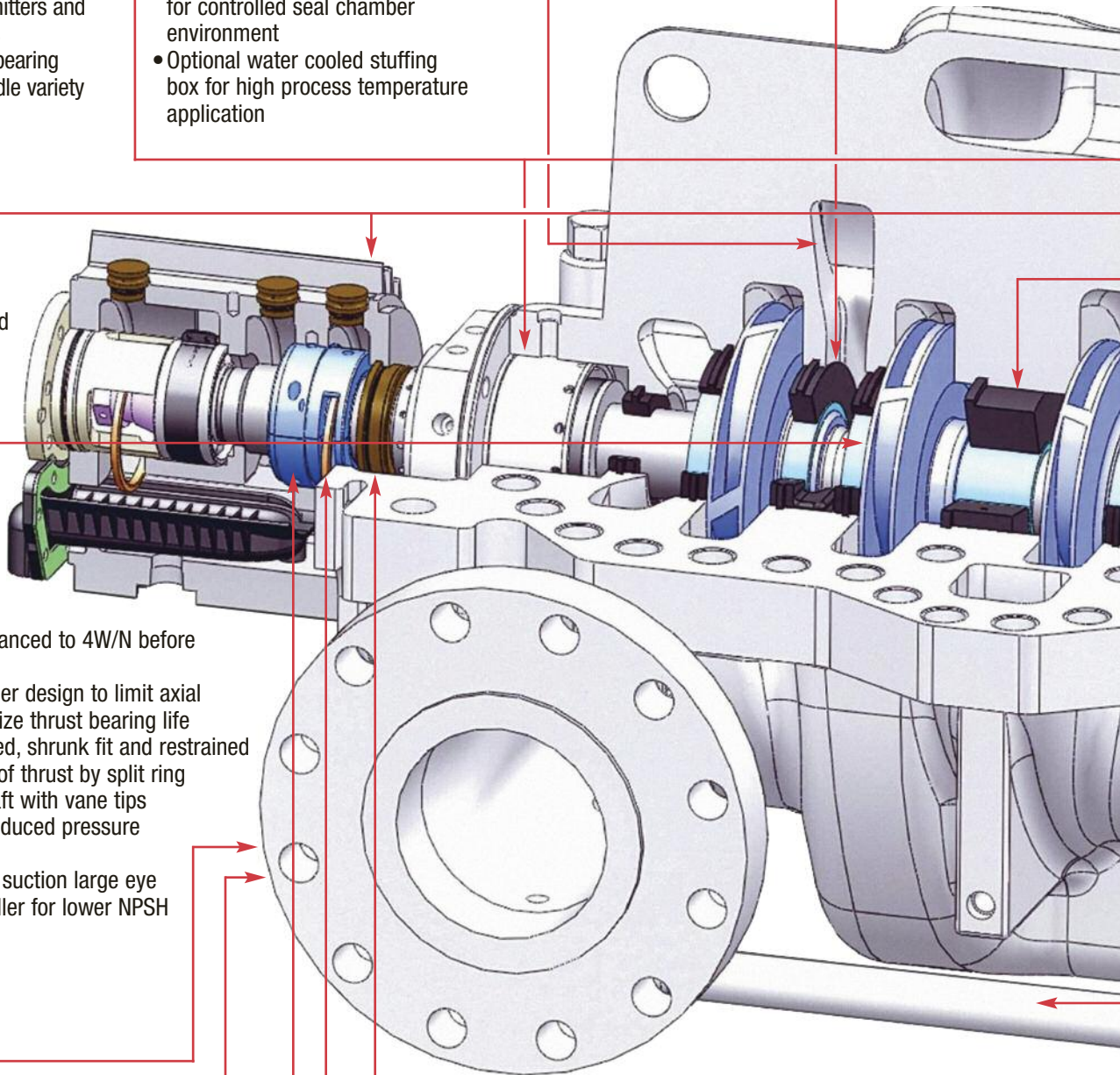
- Cast integrally in the lower half casing, permitting disassembly without disturbing piping connections

Labyrinth Oil Seal

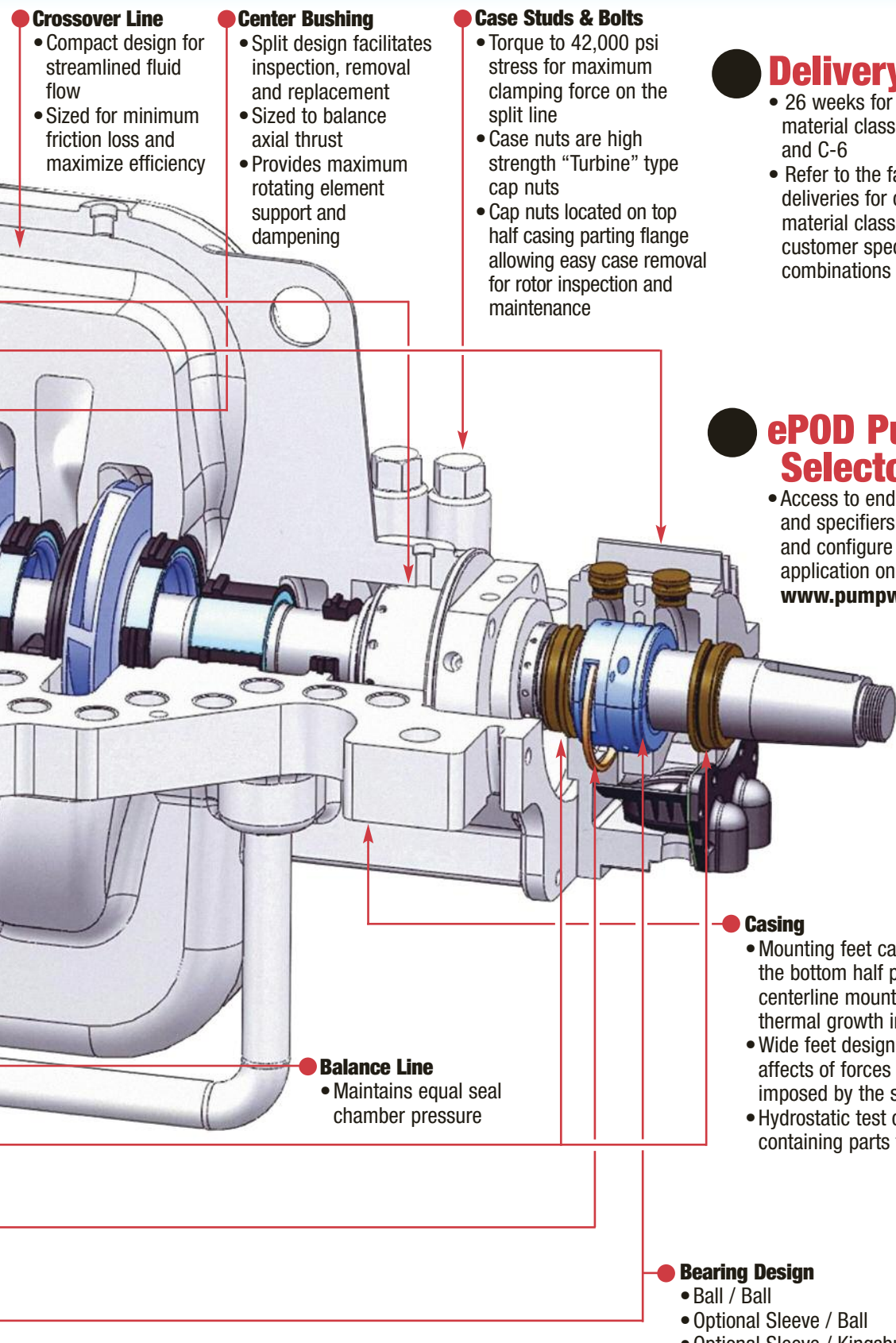
- INPRO™ bearing isolators to provide optimum bearing housing environment

Bearing Lubrication

- Ring oil lubrication to ensure effective lubrication
- Optional pure or purge mist lubrication



PWM API 610 CONSTRUCTION BB3 MULTISTAGE PUMP



● Crossover Line

- Compact design for streamlined fluid flow
- Sized for minimum friction loss and maximize efficiency

● Center Bushing

- Split design facilitates inspection, removal and replacement
- Sized to balance axial thrust
- Provides maximum rotating element support and dampening

● Case Studs & Bolts

- Torque to 42,000 psi stress for maximum clamping force on the split line
- Case nuts are high strength "Turbine" type cap nuts
- Cap nuts located on top half casing parting flange allowing easy case removal for rotor inspection and maintenance

● Delivery

- 26 weeks for API 610 material class S-4, S-6, S-8 and C-6
- Refer to the factory on deliveries for other API material classes and customer specific material combinations

● ePOD Pump Selector

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

● Balance Line

- Maintains equal seal chamber pressure

● Casing

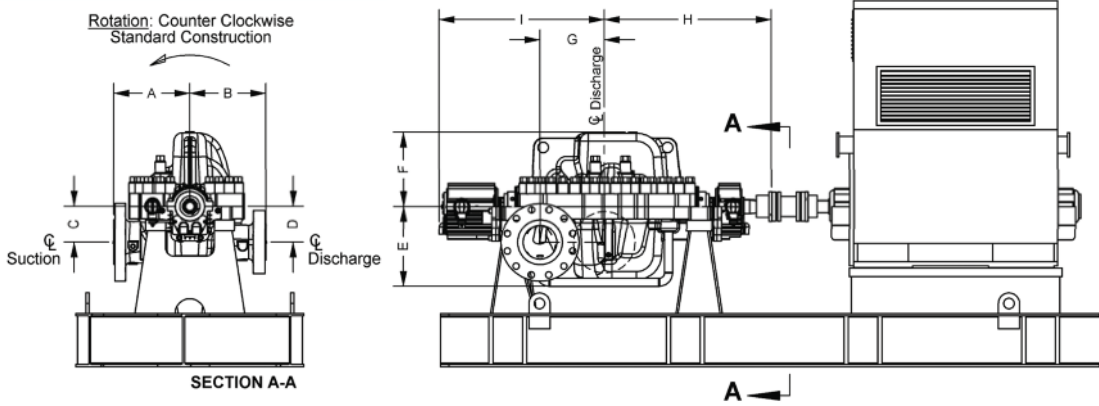
- Mounting feet cast integral into the bottom half providing near centerline mounting to minimize thermal growth in hot service
- Wide feet design to minimize affects of forces and moments imposed by the system piping
- Hydrostatic test of pressure containing parts to 1.5 MAWP

● Bearing Design

- Ball / Ball
- Optional Sleeve / Ball
- Optional Sleeve / Kingsbury

PWM API 610 BB3 MULTISTAGE PUMP

OUTLINE DIMENSIONS



NOTES:

1. All dimensions are in inches. Dimensions are not certified for construction.
2. Standard construction flange rating 900#
3. All dimensions based on ball thrust housings, except for 12x12x16, which is a 6" JHJ Pivot Shoe Thrust Bearing.
- *4. For clockwise rotation - suction and discharge are on opposite sides in Section View A-A and side view. Dimension G is toward motor from discharge c'line

SIZE	INDEPENDENT OF ROTATION								CCW - STD		*CW								
	Stages	A	B	C	D	E	F	*G	H	I	H	I							
3x6x9	3	14.50	14	7.50	6.50	12.50	12.50	8.00	31.94	29.31	28.69	32.63							
	4							12.00	31.94	33.31	32.69	32.63							
	5							12.00	35.94	33.31	32.69	36.63							
	6							16.00	35.94	37.31	36.69	36.63							
	7							16.00	39.94	37.31	36.69	40.63							
	8							20.00	39.94	41.31	40.69	40.63							
	9							20.00	43.94	41.31	40.69	44.63							
	10							24.00	43.94	45.31	44.69	44.63							
	11							24.00	47.94	45.31	44.69	48.63							
	12							30.00	47.94	49.31	48.69	48.63							
	4x6x10							3	17	17	8	8	14.50	14.50	8.00	34.06	31.94	30.31	35.69
								4							12.50	34.06	36.44	34.81	35.69
5		12.50	38.56	36.44	34.81	40.19													
6		17.00	38.56	40.94	39.31	40.19													
7		17.00	43.06	40.94	39.31	44.69													
8		21.50	43.06	45.44	43.81	44.69													
9		21.50	47.56	45.44	43.81	49.19													
10		26.00	47.56	49.94	48.31	49.19													
11		26.00	52.06	49.94	48.31	53.69													
12		30.50	52.06	54.44	52.81	53.69													
4x6x11		3	17	17	8	8	16	15							9.75	34.44	32.44	30.81	36.06
		4													14.50	34.44	37.19	35.56	36.06
	5	14.50							39.19	37.19	35.56	40.81							
	6	19.25							39.19	41.94	40.31	40.81							
	7	19.25							43.94	41.94	40.31	45.56							
	8	24.00							43.94	46.69	45.06	45.56							
	9	24.00							48.69	46.69	45.06	50.31							
	10	28.75							48.69	51.44	49.81	50.31							
	11	28.75							53.44	51.44	49.81	55.06							
	12	33.50							53.44	56.19	54.56	55.06							
	6x8x12	3							18	18	8.50	8.50	19	18	9.50	39.63	33.44	32.88	40.19
		4													15.25	39.63	39.19	38.63	40.19
5		15.25	45.38	39.19	38.63	45.94													
6		21.00	45.38	44.94	44.38	45.94													
7		21.00	51.13	44.94	44.38	51.69													
8		26.75	51.13	50.69	50.13	51.69													
9		26.75	56.88	50.69	50.13	57.44													
10		32.50	56.88	56.44	55.88	57.44													
11		32.50	62.63	56.44	55.88	63.19													
12		38.25	62.63	62.19	61.63	63.19													
8x10x13		4	22	21	10	10	23	21							17.63	44.75	45.25	44.75	45.25
		5													17.63	52.63	45.25	44.75	53.13
	6	25.50							52.63	53.13	52.63	53.13							
12x12x16	3	26.38	25.25	12.31	12.31	28	26	12.13	51.19	43.63	41.19	53.63							
	4							21.81	51.19	53.31	50.88	53.63							

PWM API 610 BB3 MULTISTAGE PUMP

OUTLINE DIMENSIONS

PUMP SIZE	Case Min. Thick	Max. Hydro Test	STANDARD SHAFT DIMENSIONS						Ball Bearing Sizes		Sleeve Ball	Sleeve Pivot Shoe	Max. BHP/100 RPM	Wear Ring Dia.	Stuffing Box Dim.			Gland BC
			Imp.	Stuff. Box	Slv. Brg.	Ball Thrust Brg.	Radial Ball Brg.	Cplg.	Thrust Brg. Size	Radial Brg. Size					Bore	Face to 1st Obstruction		
											Int.	Ext.						
3x6x9	.75	3250	2.69	2.635	2.625	2.166	2.559	2.44	7311	6213	7310	5 JHJ	42	5.50	5.19	3.38	3.88	6.69
4x6x10	.75	3250	2.75	2.635	2.625	2.166	2.559	2.44	7311	6213	7310	5 JHJ	42	6.00	5.19	3.38	3.88	6.69
4x6x11	.75	3250	2.88	2.635	2.625	2.166	2.559	2.44	7311	6213	7310	5 JHJ	42	6.25	5.19	3.38	3.88	6.69
6x8x12	.63	3250	3.50	3.260	3.250	2.166	2.559	2.44	7311	6213	7310	5 JHJ	80	7.13	6.31	4.50	4.00	8.00
8x10x13	.69	3250	3.38	3.260	3.250	2.559	3.150	3.00	7313	6216	7313	5 JHJ	80	8.50	6.31	4.50	4.88	8.00
12x12x16	.69	3250	4.19	3.760	3.750	---	---	3.75	---	---	---	6 JHJ	123	10.50	6.75	5.50	5.13	8.75

NOTES:

1. All dimensions are in inches.
2. Hydrotest pressures based on standard 900# flange rating, at 1 1/2 maximum working pressure
3. Max BHP/100 RPM based on 7500# torsional shaft stress

Typical Applications

PWM pump is designed for covering the full range of High Pressure petroleum refinery services, petrochemical plant services, gas processing, oil processing, offshore installations (platforms), hydrocarbon and crude oil pipeline and finished products pipeline services.

PumpWorks 610 TEST FACILITY

Comprehensive Performance Test
A critical function of any pump manufacturer is the performance test of their product to ensure the pump is meeting the design intent. The PumpWorks 610 Test Facility is a state-of-the-art facility designed to provide comprehensive performance testing for pumps up to 1200 HP and 1000 RPM. The facility is equipped with the latest test equipment and software to ensure accurate and reliable test results.

Test Facility Capabilities:

- Test capacity: 1200 HP
- Test pressure: up to 3000 psi
- Test flow: up to 1000 GPM
- Test speed: up to 1000 RPM
- Test media: up to 1000 ppm solids
- Test duration: up to 1000 hours
- Test accuracy: ±0.5%
- Test repeatability: ±0.5%
- Test safety: full PPE and safety protocols
- Test documentation: comprehensive test reports
- Test flexibility: capable of testing a wide range of pump types
- Test expertise: experienced test engineers and technicians
- Test equipment: state-of-the-art test equipment
- Test software: advanced test software
- Test facility: clean and well-maintained
- Test location: convenient location
- Test services: comprehensive test services
- Test pricing: competitive pricing
- Test contact: easy to reach

For more information, please contact us at www.pumpworks610.com or call us at 888-405-0209. We are located at 8885 Monroe, Houston, TX 77061.

PumpWorks 610 • Ph. 888-405-0209 • www.pumpworks610.com • email: info@pumpworks610.com

The PumpWorks 610 Pump Test Facility

located in Tyler, Texas USA provides performance and NPSHR test in accordance with latest edition of API 610 for horizontal and vertical pumps.

See our PumpWorks 610 Test Facility Brochure for more information.

Typical Services

Services covered but not limited by the PWM pump include:

- Boiler Feed Water
- High Pressure Water Services
- Crude Oil Pipeline
- Crude Products Pipeline
- Water Injection
- High Pressure Condensate
- Propane Transfer
- Gasoline Pipeline Service
- NGL Pipeline
- Mine Dewatering
- Water Flood
- HP Amine Circulation
- High Pressure Refinery Services



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