PWV

API 610
Vertical Turbine Pump
VS6 (Can Type)
VS1 (Sump Type)

MANUFACTURED & TESTED IN THE USA
THE BEST QUALITY • THE FASTEST DELIVERY

PumpWorks™ 610

OUTLINE DIMENSIONS VS6 (Can Type)

BARREL AND BOWL DIMENSIONS (Inches)

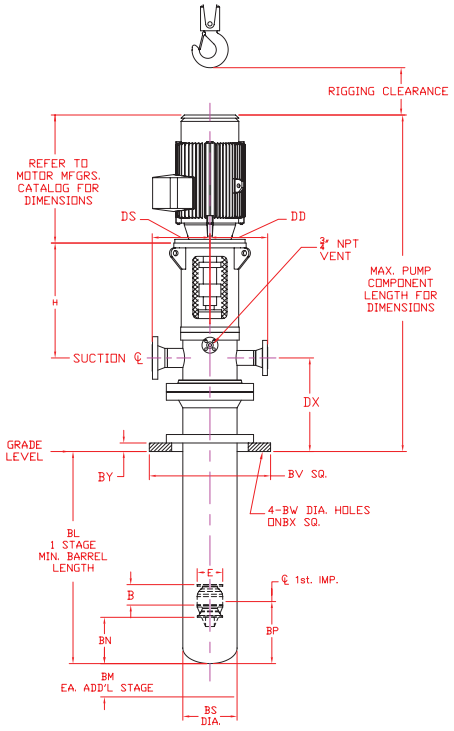
BOWL SIZE	BL	BM & B	BN	BP	APPROX. BOWL WT (lbs.) E	1st Stg.	Add Stg.
6LK	15 3/8	4 3/4	6	10 1/4	5 5/8	76	21
6JK	16 3/4	5	6 7/8	11 5/8	5 7/8	76	35
7YK	15 11/16	4 13/16	7 15/16	12 1/16	6 13/16	80	40
8XK	17 3/8	5	7 1/4	11	7 5/8	79	39
8LK	18 1/8	6 1/8	6 7/8	10 3/8	7 1/2	120	42
8JK	20 3/8	7 1/4	8	13 3/4	7 3/4	120	42
8FK	17 7/8	6 1/8	6 3/8	10	7 3/4	145	34
10XK	16	6 1/2	6 3/4	10 3/4	9 5/8	175	72
10LK	20 3/4	7 3/4	8 3/4	14 1/2	10	195	68
10JK	23 3/4	8 1/2	11 1/4	17 3/4	9 13/16	195	68
10DK	24 1/8	8 1/2	11 3/4	19 1/4	9 3/8	195	68
10BK	24 3/8	8 1/2	7 3/8	18 1/16	9 5/8	243	90
10FK	24 1/8	8 1/2	8 1/8	18 5/8	9 1/2	233	80
11XK	17 7/8	7 1/4	7 3/8	13 1/8	10 7/8	255	95
11JK	25 1/2	7 7/8	7 7/16	17 11/16	11	287	113
12LK	23 1/8	9 3/8	10	15 3/4	11 5/8	287	113
12JK	27 3/8	10 3/4	10 5/8	19 1/4	11 15/16	300	115
12DK	27 1/2	10 1/4	12 1/2	20 3/4	11 1/4	287	113
12FK	27 1/4	10 5/16	8 3/4	20	11 3/4	297	113
13XK	20 7/8	8 5/8	8 1/4	15	13 1/16	395	159
14LK	25 7/8	9 7/8	10 1/4	19 1/4	13 3/4	400	159
14JK	29 1/2	12 1/2	11 3/4	20	14 1/16	430	170
14DK	31 1/2	12	13 3/4	23 1/4	13 1/4	404	156
14FK	31	13 3/4	11 1/2	21 1/2	14	430	168
15DK	29 3/8	13 1/2	10 5/16	17 1/4	14 7/8	518	195
16MK	29	13	10 1/2	21 1/2	15 3/8	583	220
16DK	33	14 7/8	11 1/2	20	16	509	187

SUCTION BARREL SELECTION (Allowable capacity in USGPM)

NOM. BOWL SIZE (Inches)	BARREL SIZE 10	12	16	20	24
6	720				
8	440	1000			
10①		660	1650		
11-12②-13			1250	2750	
14				2025	3900
15				1800	3700
16				1600	3500

DISCHARGE HEAD AND BARREL DIMENSIONS (inches)

DISCH. X SUCTION X	BS	BV	BW	BX	BY	DD & DS	DX	H	DISCH. HEAD WT. (lbs.)	APPROX. Barrel Wt. Lbs. 1st. Ft.	Add. Ft.
3 X 4 X 10	8 5/8	15	3/4	13	1	10	15	41	300	102	33
4 X 6 X 12	10 3/4	18	3/4	16	1 1/4	10	16	42	320	160	40
6 X 8 X 16 1/2	14	23	7/8	20	1 1/4	12	18	45	390	247	55
8 X 10 X 20	18	27	7/8	24	1 1/4	15	19	51	480	336	71
10 X 12 X 24 1/2	20	29	7/8	26	1 1/2	16	19	51	930	451	104



NOTES:

① 10BK and 10FK bowls require the same barrel size as a 12" nominal bowl size.

② 12FK bowl requires the same barrel size as a 14" nominal bowl size.

The above capacities are based upon maximum suction inlet velocities of 5 ft./sec.

BARREL LENGTH ESTIMATION – Where limited NPSH available and minimum barrel length is insufficient to satisfy pump NPSH requirements the first stage impeller is lowered in the extended length barrel to provide sufficient NPSHR.

To estimate barrel length with customer's NPSH available at grade level. **Example:** 5-stage 10XKH at 3600 RPM; 2 ft. NPSHA at grade level; required capacity – 600 USGPM.

1. NPSHR (req'd) at C_L 1st. stage impeller (from performance curve) . + 18.00 Ft.
2. NPSHA at grade level (specified by customer) . . . . . – 2.0 Ft.
3. Additional barrel length from C_L 1st. stage impeller barrel to bottom (BP dimension on this page. convert from inches to feet) . . . . . + 0.9 Ft.
4. Estimated hydraulic friction losses . . . . . + 2.0 Ft.
5. Safety factor (pump runout allowance)* . . . . . + 2.0 Ft.

Estimated Barrel Length . . . . . 20.9 Ft.

* Will vary, depending on application.

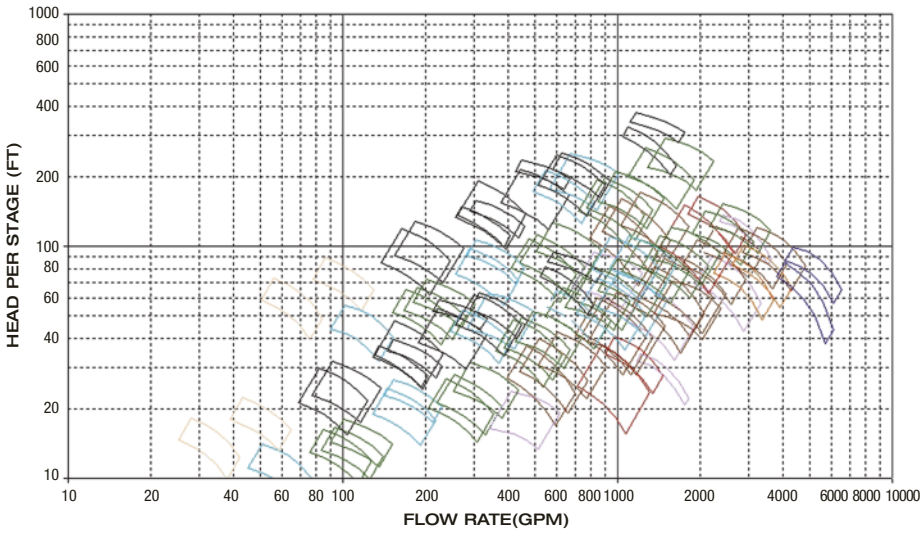
NOTE: Dimensions shown are consided standard but are not for construction purposes. Discharge heads may be designed to fit most dimensional requirements. Pumps with suction located in the barrel are available. For further information contact the factory. Discharge head dimensions and weights are suitable for 300# ASME flanges. Suction barrel dimensions and weights are suitable for 740 PSI rating.

HYDRAULIC PERFORMANCE COVERAGE

60 Hz
Performance Coverage
3560 RPM & 1780 RPM

ePOD ELECTRONIC PUMP ON DEMAND

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

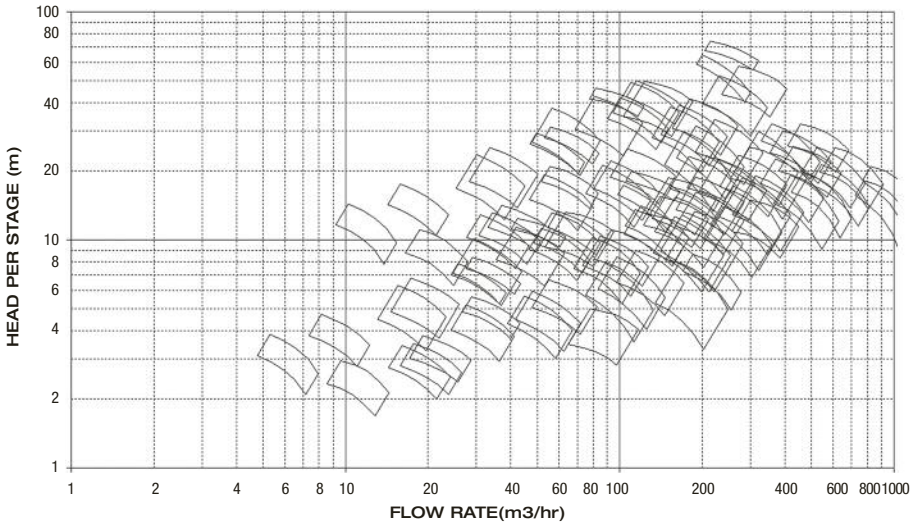


50 Hz
Performance Coverage
2950 RPM & 1475 RPM

ePOD ELECTRONIC PUMP ON DEMAND

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.



STANDARD MATERIALS OF CONSTRUCTION VS6 (Can Type)

API MATERIAL CLASS	S-1	S-4	S-5	S-8	A-8
DISCHARGE HEAD	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A312 Grade TP316 SS Pipe
SUCTION BARREL / CAN	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A312 Grade TP316 SS Pipe
COLUMN PIPE	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A106 Grade B Carbon Steel Pipe	A312 Grade TP316 SS Pipe
BOWL	A536 GR 60-40-18 DUCTILE IRON	A536 GR 60-40-18 DUCTILE IRON	A216 Grade WCB	A 743 GR CF8M	A 743 GR CF8M
IMPELLER	A536 GR 60-40-18 DUCTILE IRON	A216 Grade WCB	A216 Grade WCB	A 743 GR CF8M	A 743 GR CF8M
BOWL WEAR RING	A48 CLASS 30 CAST IRON	A48 CLASS 30 CAST IRON	410 SS HT: 262-302 BHN	316 SS HARD FACED	316 SS HARD FACED
IMPELLER WEAR RING	A48 CLASS 30 CAST IRON	A48 CLASS 30 CAST IRON	420 SS HT: 400-450 BHN	316 SS HARD FACED	316 SS HARD FACED
COLUMN SHAFT	A582 TYPE 416 SS CONDITION A	A582 TYPE 416 SS CONDITION A	A582 TYPE 416 SS CONDITION A	A 479 TYPE 316 / 316L	A 479 TYPE 316 / 316L
BOWL ASSEMBLY SHAFT	A582 TYPE 416 SS CONDITION A	A582 TYPE 416 SS CONDITION A	A582 TYPE 416 SS CONDITION A	A 479 TYPE 316 / 316L	A 479 TYPE 316 / 316L
COLUMN SHAFT BUSHING	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON
BOWL SHAFT BUSHING	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON	GRAPHALLOY CARBON
COLUMN STUDS	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7
COLUMN NUTS	A1934 GRADE 2H	A1934 GRADE 2H	A1934 GRADE 2H	A1934 GRADE 2H	A1934 GRADE 2H
BOWL STUDS	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7	A193 GRADE B-7
GASKET	O-RING	O-RING	O-RING	O-RING	O-RING

**Other API 610 Material Classes and Combinations are available*

PWV API 610 VERTICAL TURBINE PUMP

DESIGN FEATURES AND BENEFITS

Quality

- Manufactured and tested in the USA

Barrel and Discharge Head

- Mounting flange O-Ring for positive sealing

Barrel Mounting Plate

- Supplied with 4 jackscrews for leveling
- Optional Soleplate

Suction Barrel

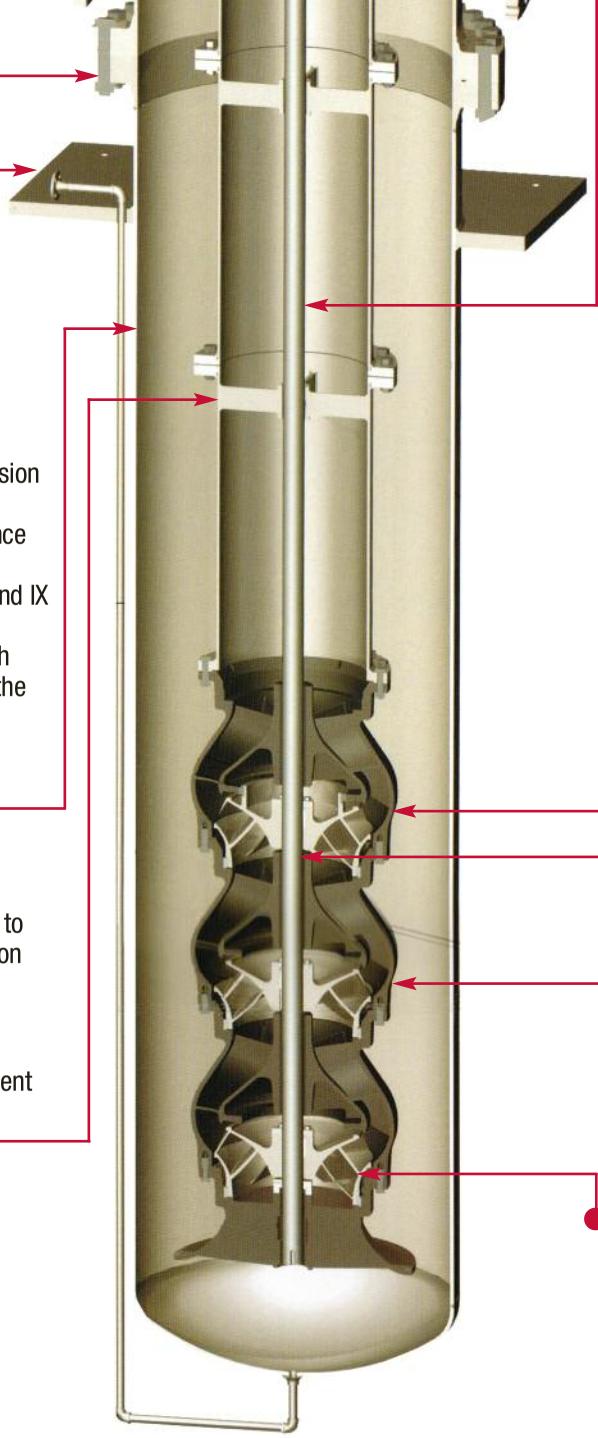
- Externally coal tar epoxy coated for rust and corrosion resistance
- Fabricated steel designed and welded in accordance with ASME Section VIII
- Welded in accordance to ASME code section VIII and IX certified weld procedure qualification
- Designed to minimize velocity along the can length resulting in optimum hydraulic inlet conditions at the suction bowl entrance
- Optional below ground suction connection
- Optional drain piping (internal or external)

ePOD Pump Selector

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

Bearing Retainer

- Welded into the column section to assure alignment and concentricity



Renewable Bowl and Impeller Wear Rings

- Permits re-establishing initial running clearances and efficiency

Bowl Bearing

- Provides hydraulic shaft support to each stage
- Optional materials to meet pumping requirement

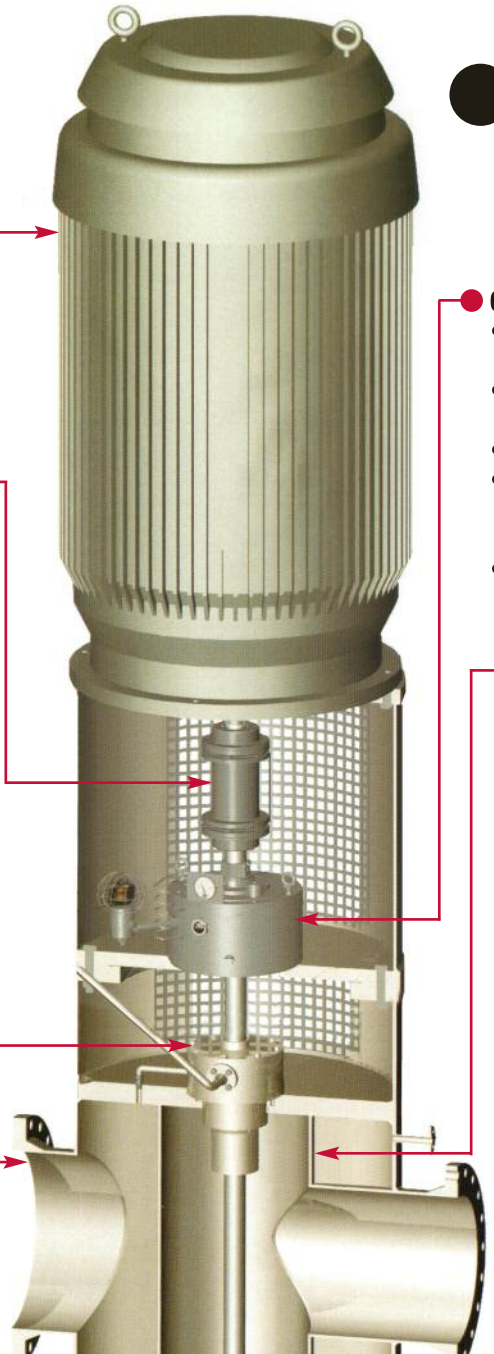
Bowl

- Diffuser type casing has no appreciable radial thrust and provides down thrust to keep shaft in tension during normal operation effectively reducing shaft deflection and vibration
- Flanged and o-ring sealed connection to provide ease of maintenance
- Radial hydraulic forces are equalized by multi-vane passages reducing shaft loading and exceptional bearing life

Impeller

- Fully enclosed design for high efficiency and eliminates critical field adjustments required by semi or open impeller
- Dynamically balanced per ISO G1.0 for vibration free operation
- Keyed to shaft for longer life, and less maintenance
- Optional thrust balancing to reduce axial thrust load

API-610 CONSTRUCTION
Vertical Turbine Pump (Double Casing)



Motor
- Thrust handling vertical solid shaft (VSS) NEMA "P" base
- Optional IEC "C" base VSS without thrust bearing requiring separate thrust bearing assembly in pump

Coupling
- Rigid, flanged adjustable spacer type by Metastream™ model CPLR for solid shaft drivers designed to allow servicing of mechanical seal without disturbing the motor
- Permits easy maintenance of optional thrust bearing assembly without having to remove driver

Seal Chamber
- API 610 seal chamber allows user to install any API 682 cartridge seal to meet process requirements
- Removable seal housing with jackscrews allows servicing throttle bushing without removing pump head and enables mating parts to be separated easily

Fabricate Head
- Weld-Neck 300# RF flange on both suction and discharge providing increased MAWP and designed to withstand API nozzle loadings
- Incorporates all gauge, vent and drain connections
- NDE (non-destructive evaluation) nozzle welds
- Designed in accordance to ASME code section VIII and IX
- Welded in accordance to ASME code section VIII and IX certified weld procedure qualification
- Suction and discharge flanges on the same above ground centerline, simplifying piping layout

Delivery
- 16 weeks for API 610 material class S-1
- Refer to factory on deliveries for other API material classes and customer specific material combinations

Optional Separate Thrust Bearing Assembly
- Designed to withstand total hydraulic thrust for motors with limited thrust carrying capabilities
- Allows use of standard motors for high horsepower and ultra-high thrust operating conditions
- Self-lubricated, anti-friction bearings
- Option self-contained oil lubricated, anti-friction angular contact type bearings with Trico™ constant level oiler and guard, oil fill and vent
- Optional pure or purge mist lubrication

Column Pipe
- Sections are flanged, registered fit and o-ring sealed for ease of alignment during assembly and facilitates disassembly
- Optional column bearing in a variety of materials to meet pumping requirement

Shafting
- Stiff design and minimum bearing span ensures stable operation under varying service conditions
- Machined turned, ground, polished and straightened to API 610 tolerances
- Product lubricated lineshaft for ease of maintenance

PWV API 610 VERTICAL TURBINE PUMP

API 610 Classifications

- Vertical Suspended Single Casing (Sump Type / Wet Pit) VS1
- Vertical Suspended Double Casing (Can Type) VS6

Typical Services

- Vertical Process
- Light Hydrocarbon, High-Vapor Pressure (Low NPSHA)
- Pipeline Booster
- Offshore Platform/ Sea Water Lift (Crude Oil Transfer)
- LBPG Transfer
- Refinery Service
- Waste Water
- Secondary Recovery
- Cryogenic Liquid
- Cooling Water
- Aircraft Fueling

PumpWorks 610 test facility for horizontal and vertical pumps located in Tyler TX USA provides performance and NPSHR to API 610 compliance.

See our PumpWorks 610 Test Facility Brochure for more information.

PWH is the PumpWorks 610 API 610 current edition process pump.

See our PWH API 610 Single Stage OH2 Brochure for more information.

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.

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