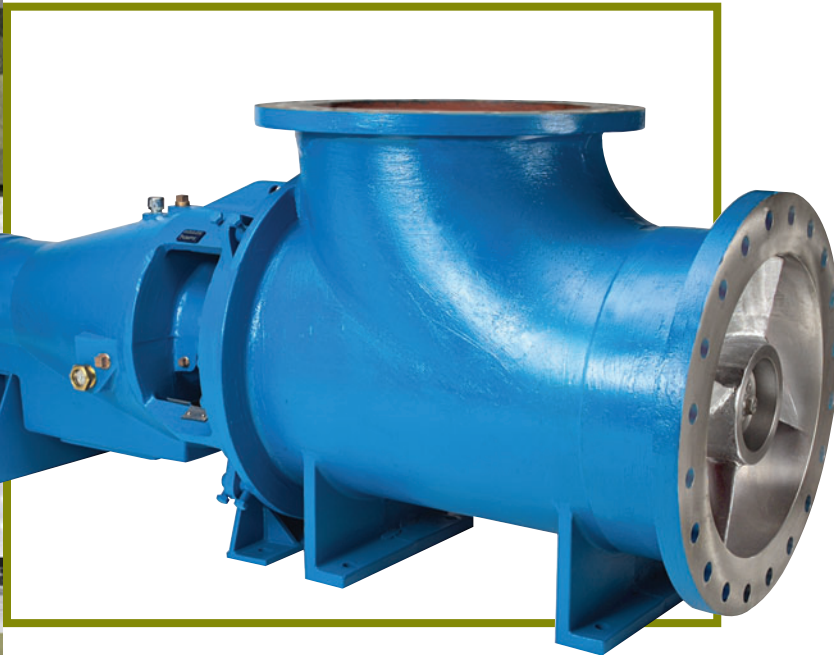
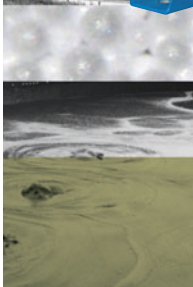


# Goulds AF

Axial Flow Pumps



**ITT**

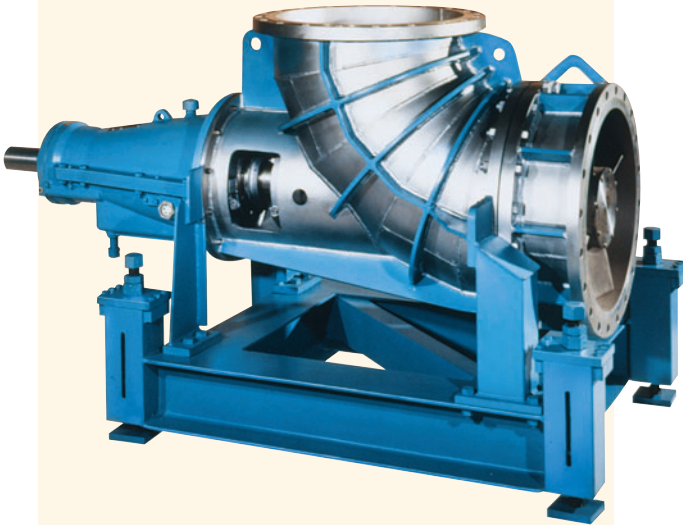
**motralec**

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX  
Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48  
Demande de prix / e-mail : [service-commercial@motralec.com](mailto:service-commercial@motralec.com)  
[www.motralec.com](http://www.motralec.com)

Goulds line of Axial Flow pumps is unmatched in the industry for high volume/low head pumping requirements... especially when corrosive and/or abrasive solutions are involved. Extended service life, mechanical reliability, custom engineering, and a wide range of materials allow the Model AF to stand out as the leader in the field.



Cast design 6-36" (152.4-14.4 mm)



Fabricated design 36-60" (914.4-1,524 mm) with optional spring mounted base

## Goulds AF

### The Industry Leader in Circulating Pump Technologies

For continuous circulation of corrosive/abrasive solutions and process wastes. Proven performance in a variety of services around the world.

- ◆ Capacities to 200,000 GPM (45,430 m<sup>3</sup>/h)
- ◆ Heads from 2-30 feet (.6096 -9.14400 m)
- ◆ Low NPSH requirements
- ◆ Temperatures to 600° F (315°C)
- ◆ Available in cast iron, austenitic stainless steels, duplex alloys, nickel, nickel-chrome alloys, nickel-chrome-moly alloys, titanium, and other alloys as required for the service
- ◆ Available in 6-66", (600-1400 mm) sizes

### Design Features

---

- ◆ Multiple Impeller selections for optimum performance and efficiency
- ◆ Tapered Bore Stuffing Box for longest seal life
- ◆ Back pullout construction as standard on sizes through 36" (914.4 mm)
- ◆ Robust bearing frame and shaft for long life on critical, continuous duty services

### Services

---

**Chemical** - evaporator and crystallizer circulation

**Mining and Minerals** - phosphate, soda ash, potash, and sodium chloride processing

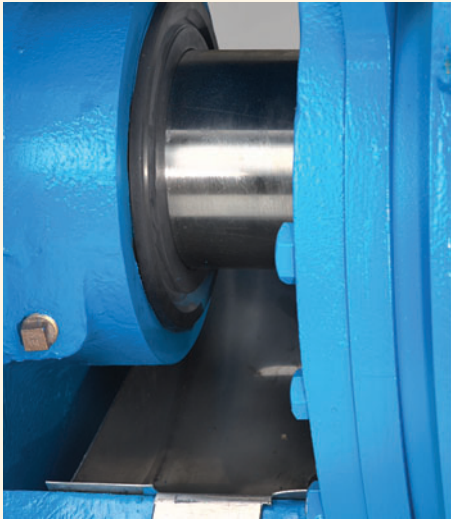
**Petrochemical** - polypropylene reactors, xylene

**Pulp & Paper** - black liquor evaporator, chlorine dioxide generators

**Municipal** - sewage digesters

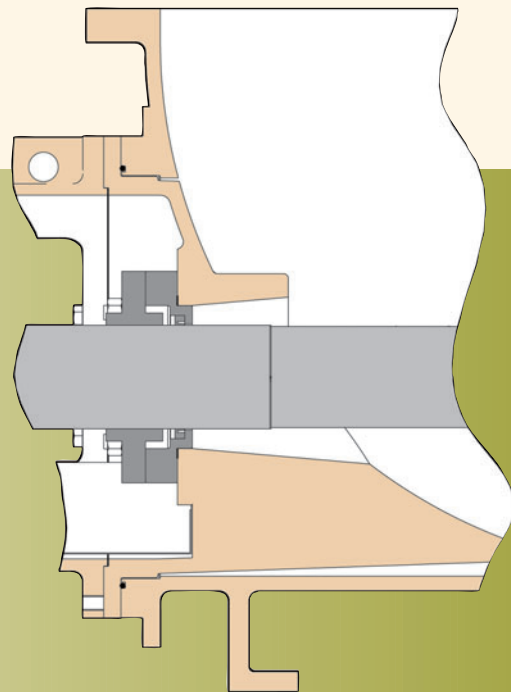
**General** - raw water pumping, flood control, marine ballast transfer

## Performance Features for Extended Pump Life



### LABYRINTH SEALS

Carbon-filled Teflon for maximum chemical resistance prevent premature bearing failure caused by lubricant contamination or loss of oil. Non-contracting unitized design for ease of maintenance assembly.

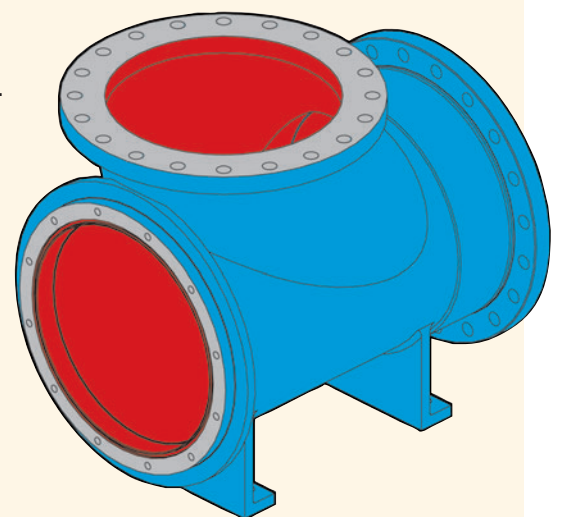
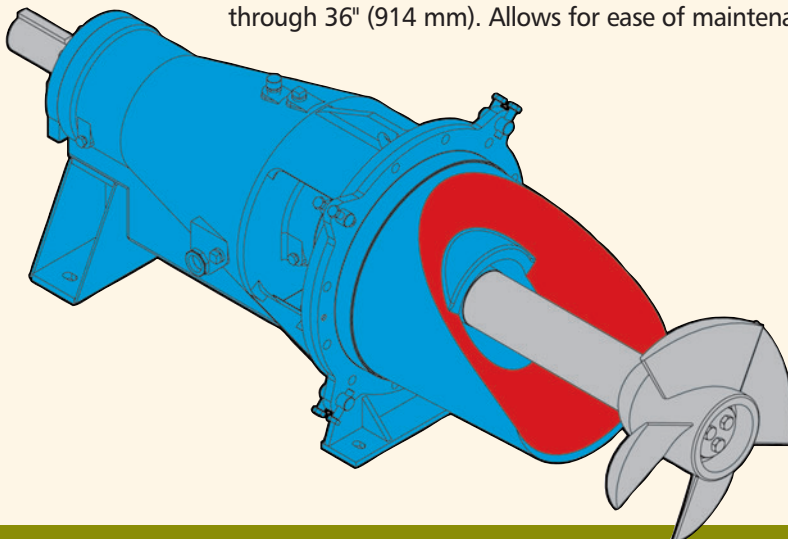


### TAPERBORE SEAL CHAMBER

Enlarged, tapered bore for increased life of mechanical seals through improved lubrication and cooling. Accommodates current cartridge designs.

### BACK PULLOUT

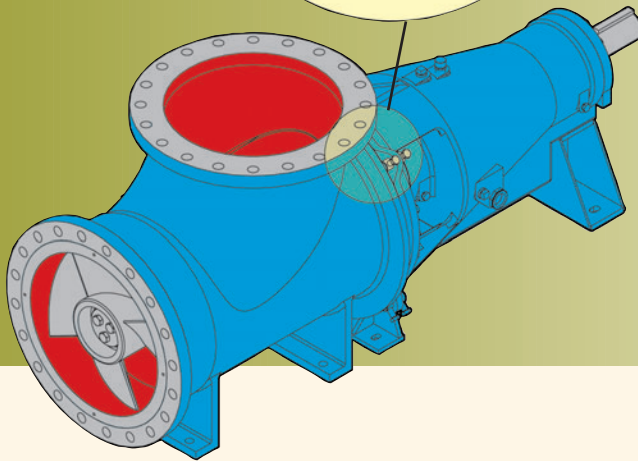
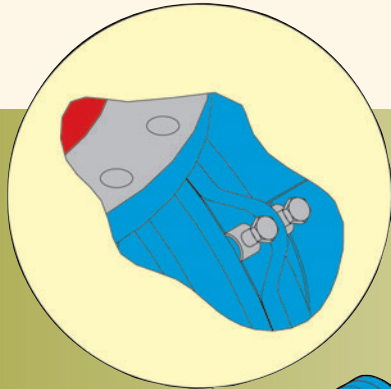
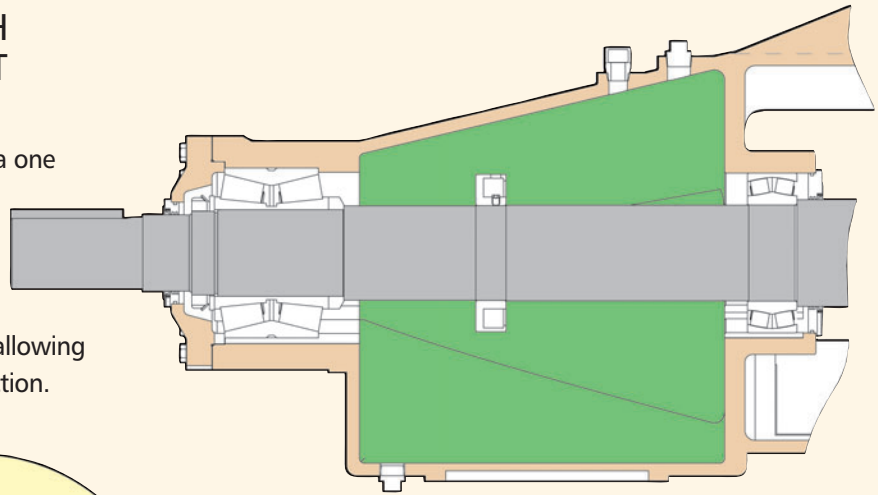
Back pullout feature provided as standard on sizes through 36" (914 mm). Allows for ease of maintenance.



## Performance Features for Extended Pump Life (cont.)

### LARGER OIL SUMP WITH BI-DIRECTIONAL THRUST BEARINGS

The bearing frame is designed as a one piece unitized frame with extra large capacity oil sump to provide optimum cooling. Bearing arrangement is now identical for top and end suction allowing for pump operation in either direction.

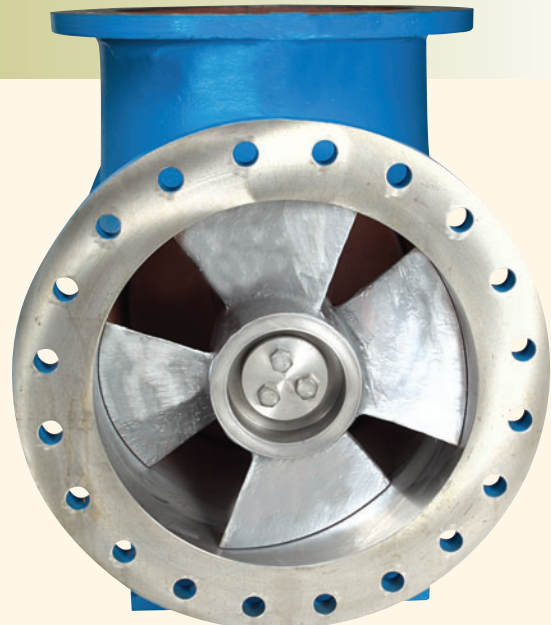


### ADJUSTING LUGS FOR EASE OF ADJUSTMENT

Adjusting bolts allow for precise, easy alignment of both the impeller clearance and stuffing box runout. Precise alignments minimize pump life cycle cost.

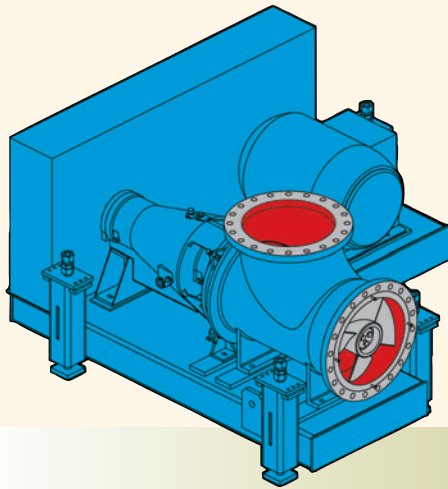
### MULTIPLE IMPELLERS FOR OPTIMUM PERFORMANCE

Impellers are available in 0° and 5° vane pitch along with CW or CCW rotation.





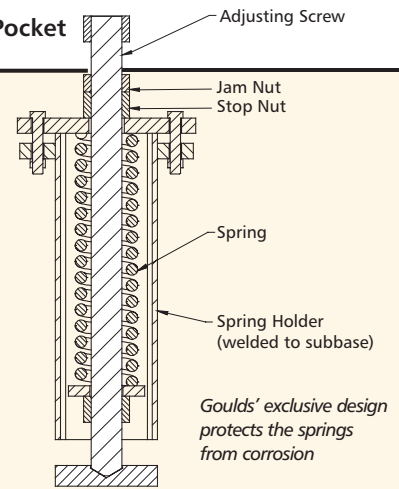
## Optional Features



### SPRING MOUNTED SUB-BASE

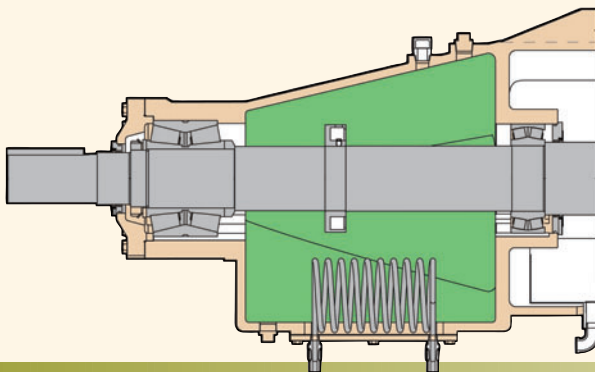
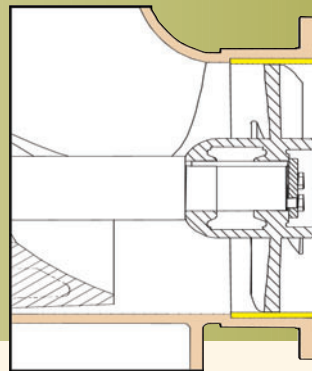
Goulds' exclusive enclosed design protects the springs from corrosion and spillage. Springs are used to protect the pump from large flange loads imposed by thermal expansion of the piping.

#### Enclosed Spring Pocket



### ELBOW LINER

Precision-made replaceable liners between impeller and casing are offered as an option to ensure continuous high efficiency.

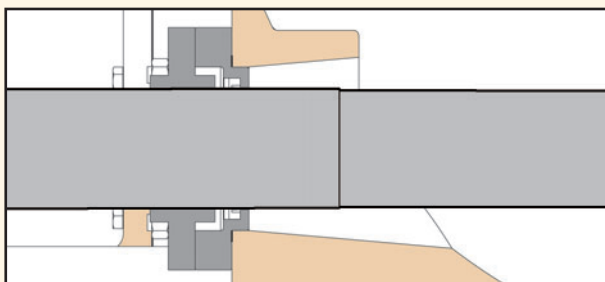
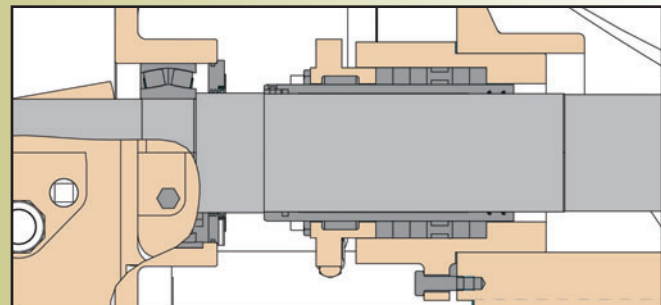


### OIL COOLING

An oil cooling option is available on 12" and larger sizes. A coiled tube mounted inside the bearing housing circulates water to cool the oil bath. Used when process temperatures cause excessive heat build up in the bearing housing and or bearings.

### PACKED BOX

Optional packed stuffing box with replaceable wear sleeve is available as a low cost alternative to mechanical seals.



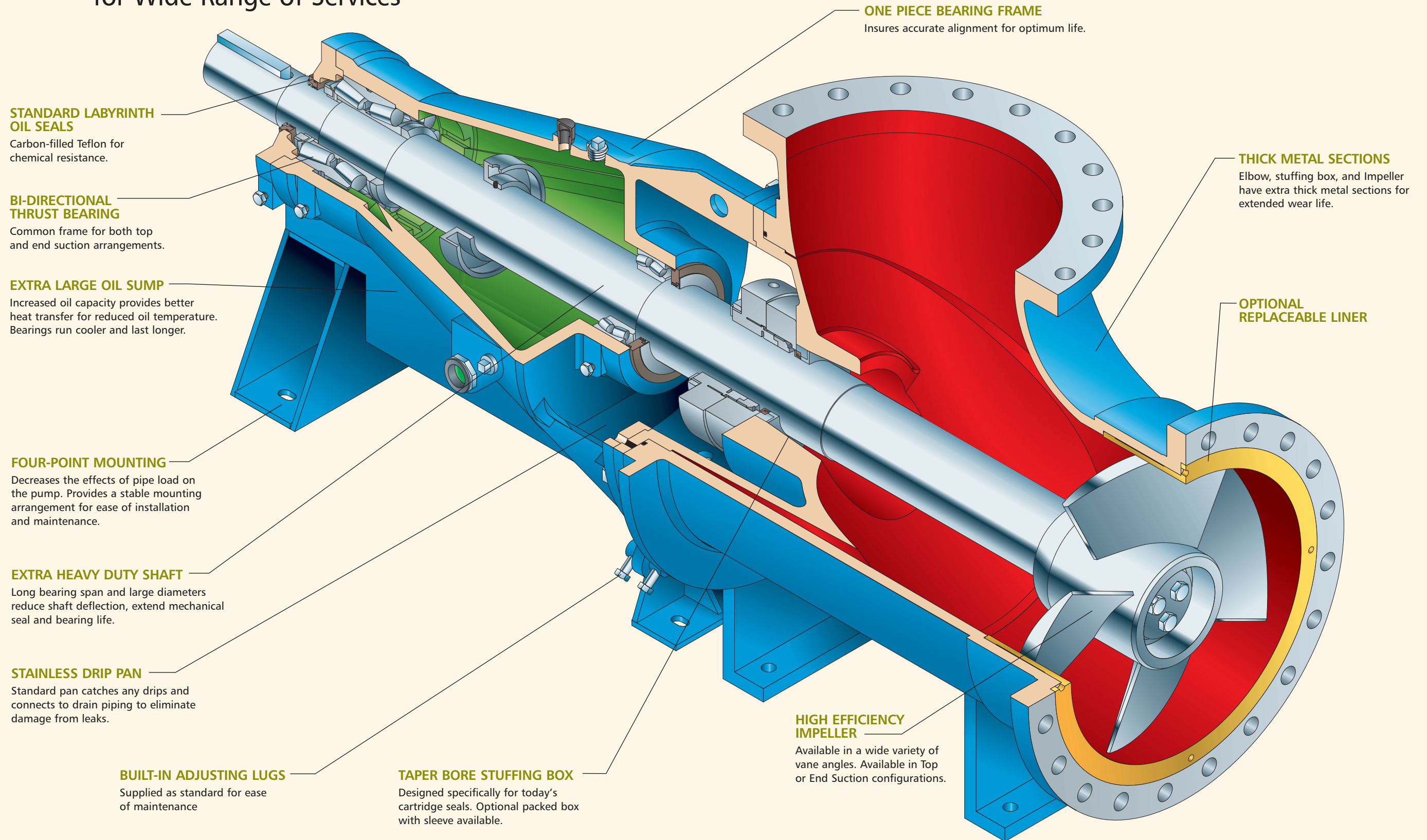
### RESTRICTOR BUSHING ADAPTER

An optional adapter is used for single mechanical seals requiring a restrictor bushing. The restrictor bushing minimizes product dilution that may be detrimental to the process.

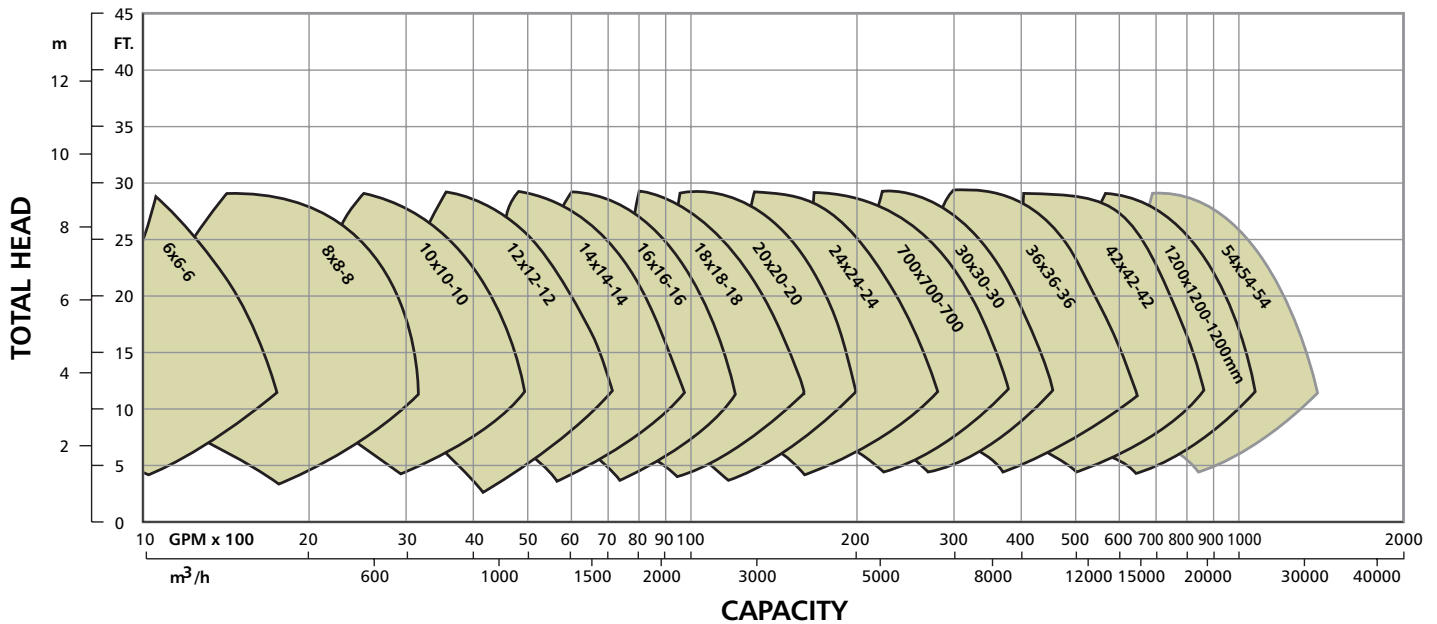


# Model AF

## Rugged Design Features for Wide Range of Services



# Hydraulic Coverage



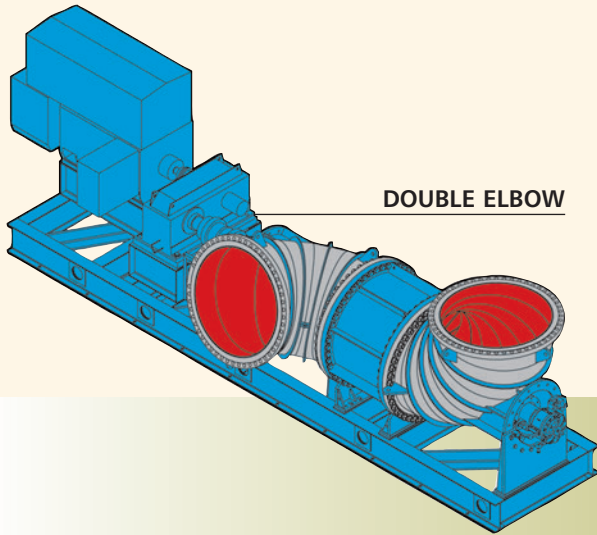
## Construction details

All dimensions in inches and millimeters unless otherwise specified.

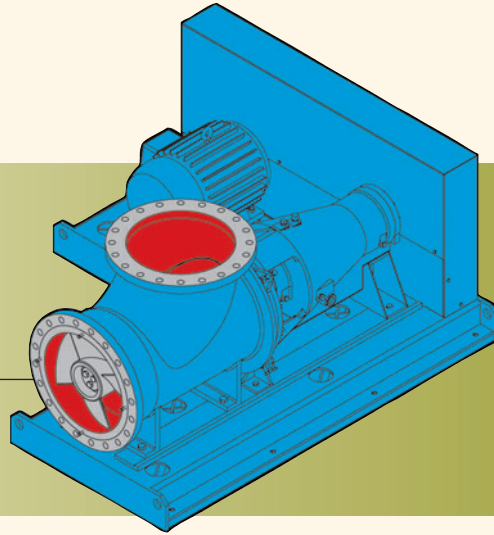
Description in. (*mm)	6	8	10	12	14	16	18	20	24	700*	30	36	42	1200*	54	60
<b>Impeller</b>																
Number of Vanes	4															
Sphere Size (in.)	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	7.5	9.0	10.5	12.0	13.5	15.0
WR2 (Lb-Ft2)	.054	.67	1.74	3.50	6.64	10.20	21.90	36.80	89.50	197.0	311.0	653.0	1302.0	2131.0	3550.0	3586.0
<b>Shaft Diameter</b>																
At Impeller	1.25	1.38	2.00	2.62	3.62	4.00	4.00	4.75	5.12	8.00	8.50	8.50	8.50	8.50	8.50	8.50
Stuffing Box w/Sleeve	1.69		2.44		3.25		5.19		6.19		6.94		11.625		11.625	
Stuffing Box w/o Sleeve	1.75		2.50		3.25		5.25		6.25		7.00		11.500		11.500	
Between Bearings	7.88		14.28		16.06		24.62		24.53		27.16		32.11		32.11	
Overhang	16.22	17.44	19.47	28.12	30.50	34.82	37.19	44.06	50.94	64.41	61.90	89.08	89.08	90.83	93.26	93.26
Drive End Dia.	1.50		2.25		2.62		3.50		4.38		5.12		6.00		7.00	
Keyway (sq.)	.375		.500		.625		.875		1.000		1.250		1.500		1.750	
<b>Bearing Configuration</b>																
Inboard	1MXR		2MXR		3MXR		4MXR		5MXR		6MXR		7LM			
Outboard	210-S		213-S		217-S		23124W33		23130W33		23134W33		23156W33			
Oil Lube	7309 BECCM		7313 BEAGY		7316-BECCY		HH224340		HH926749		HH932145		22252W33			
Grease Lube	90073		90023		902A4		100TP144									
<b>Packed Box</b>																
Bore	2.875		3.750		4.750		7.500		8.625		9.250		14.875			
Depth	3.00		3.25		4.00		5.75		6.12		5.12		8.00 ~12.00			
Packing Size	3/8		1/2		3/4		3/4				1					
No. of Rings	5															
Lantern Ring Width	.88		1.00		1.25		1.50		1.62		3.00					
Sleeve Diameter	2.125		3.000		3.750		6.000		7.125		7.750		12.875			
<b>Mechanical Seal Box</b>																
Bore	2.750		3.750		4.375		7.250		8.250		9.000		14.875			
Depth	1.50	2.69	2.69	4.50	4.25	4.00	4.38	5.63	5.00	5.50	5.50	6.88				
Taper	5 deg.															
Qty & Bolt Size	(2) 1/2-13		(4) 1/2-13		(4) 5/8-11		(4) 3/4-10		(8) 1.0-8							
Bolt Circle Diameter	3.88		5.50		7.00		9.50		10.00		10.50		17.75		19.00	
Nearest Obstruction	2.74	6.18	6.06	7.00	7.99	8.43	8.93	10.18	11.05	13.50	13.75	11.49	11.29	11.29	12.29	10.50
<b>Elbow</b>																
Cast	Std.												N/A			
Fabricated	N/A												Std.			
Wall Thickness	3/8		1/2		5/8		3/4		7/8		3/4		3/8	1/2	1/2	5/8
Flange Thickness	1.00	1.12	1.19	1.25	1.38	1.44	1.56	1.69	1.88	1.50	2.38	2.38	2.63	2.75	3.00	3.12
<b>Back-Pullout</b>	Y												N			



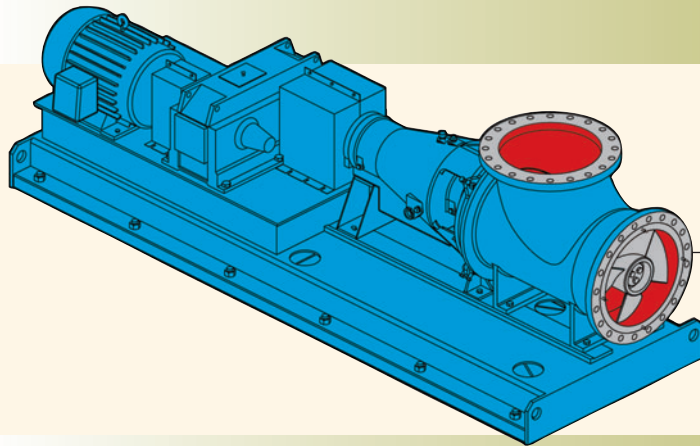
# Construction Options



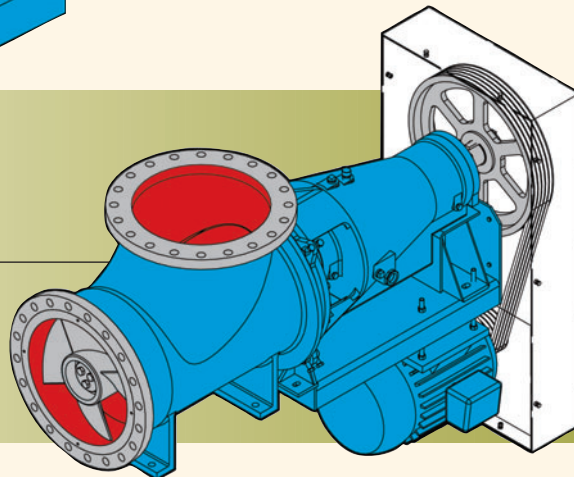
DOUBLE ELBOW



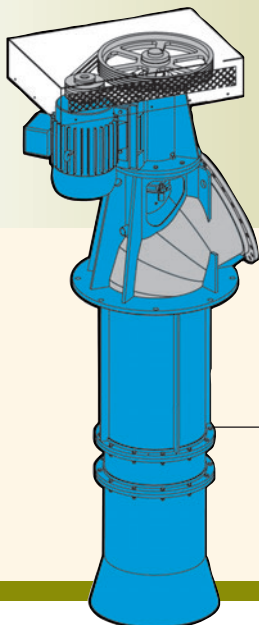
SIDE BY SIDE



DIRECT CONNECT



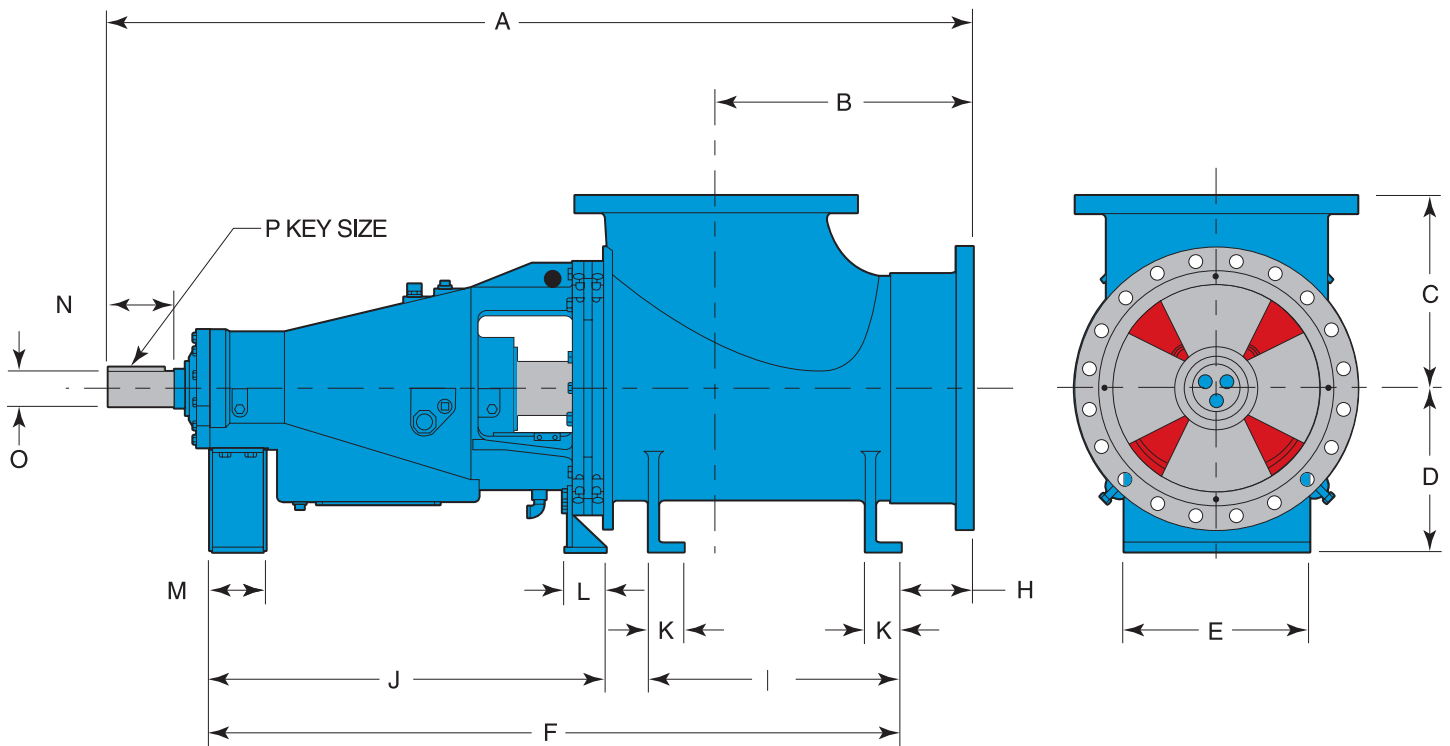
PIPE MOUNTED



VERTICAL



# Dimensions

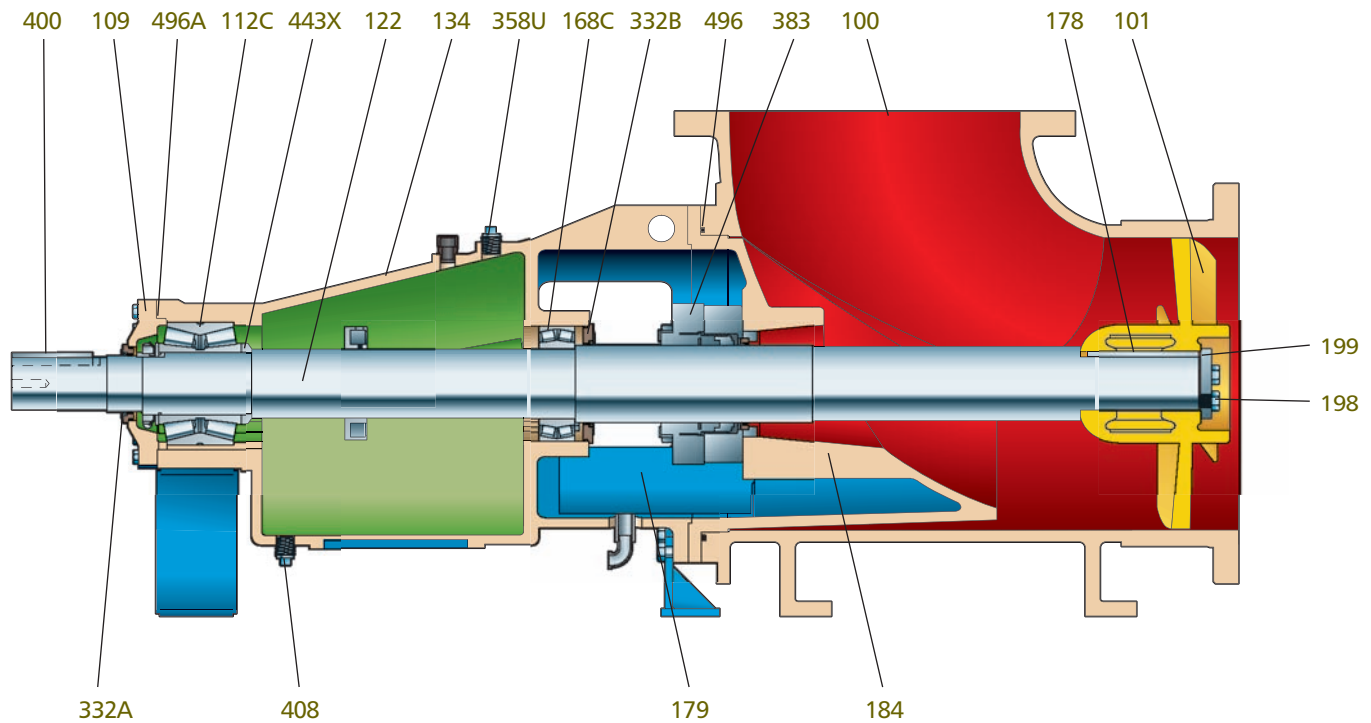


# Construction details

All dimensions are in inches.

Pump Size	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P
6	31.62	7.75	6.13	9.00	6.00	24.03	3.00	7.00	~	1.50	~	2.25	3.00	1.50	.375
8	34.56	10.00	7.50	9.00	8.00	26.10	4.00	8.00	~	2.00	~	2.25	3.00	1.50	.375
10	37.81	12.50	9.38	9.00	10.00	33.34	5.00	10.00	~	2.00	~	2.25	3.00	1.50	.375
12	51.38	15.00	11.25	11.00	12.00	39.27	6.00	12.00	24.14	2.75	2.75	2.75	4.00	2.25	.500
14	55.18	17.50	13.12	11.00	14.00	42.03	7.00	14.00	24.14	2.75	2.75	2.75	4.00	2.25	.500
16	62.47	20.00	15.00	13.00	16.00	47.14	8.00	16.00	26.58	3.00	3.00	3.00	5.00	2.62	.625
18	65.75	22.50	16.88	13.00	18.00	58.40	9.00	18.00	26.58	3.00	3.00	3.00	5.00	2.62	.625
20	84.37	25.00	18.75	16.00	18.00	74.19	7.00	24.50	38.50	3.50	4.00	5.00	6.50	3.50	.875
24	91.12	30.00	22.50	17.00	24.00	70.19	11.00	24.00	39.63	5.00	5.00	5.00	6.50	3.50	.875
700mm	107.12	36.81	25.50	20.00	24.00	76.00	17.56	28.00	43.50	4.00	5.00	5.00	9.75	4.38	1.000
30	109.31	36.50	25.00	22.00	30.00	81.00	15.00	30.00	43.50	5.00	5.00	5.00	9.75	4.38	1.000
36	114.47	39.94	28.00	26.00	33.00	102.59	18.44	33.00	45.77	5.00	5.00	5.75	8.50	5.12	1.250
42	157.88	60.88	43.25	32.00	40.00	124.18	16.50	67.13	~	6.00	~	11.87	10.00	6.00	1.500
1200mm	157.93	60.93	43.25	32.00	40.00	124.18	16.75	67.25	~	6.00	~	11.87	10.00	7.00	1.750
54	164.62	67.00	54.00	39.00	48.00	127.44	20.19	67.25	~	6.50	~	11.87	10.00	7.00	1.750
60	167.18	68.00	48.00	40.00	48.00	131.15	19.03	73.15	~	7.50	~	11.87	10.00	7.00	1.750

## Sectional View



## Parts List and Materials of Construction

Item Number	Description	Material									
		Cast Iron	304	316	Alloy 20	Duplex SS	904L	Monel	Inconel	Nickel	Titanium
100	Elbow	Cast Iron	CF8	CF8M	CN7M	CD4MCuN	904L	M-35-1	CW-6MC	CZ-100	Gr. C-3
101	Impeller	Cast Iron	CF8	CF8M	CN7M	CD4MCuN	904L	M-35-1	CW-6MC	CZ-100	Gr. C-3
109	Thrust Bearing Retainer	Cast Iron									
112C	Outboard Bearing	Steel									
122	Shaft	Steel	304SS	316SS	C-20	2205	904L	Monel 400	Inconel 625	Nickel 200	Tit. Gr. 2
134	Bearing Housing	Cast Iron									
168C	Inboard Bearing	Steel									
178	Impeller Key	Steel	304	316	C-20	Hast C	904L	Monel 400	Inc. 625	Nickel	Titanium
179	Drip Pan	316 standard. Other options available.									
184	Stuffing Box Cover	Cast Iron	CF8	CF8M	CN7M	CD4MCuN	904L	M-35-1	CW-6MC	CZ-100	Gr. C-3
198	Impeller Screw	Steel	304	316	C-20	Hast C	904L	Monel 400	Inc. 625	Nickel	Titanium
199	Impeller Lockplate	Steel	304	316	C-20	2205	904L	Monel 400	Inc. 625	Nickel	Titanium
215C	Oiler Plug	Brass									
332A	Laby Seal Outboard	Carbon Filled Teflon									
332B	Laby Seal Inboard	Carbon Filled Teflon									
356A	Adjusting Bolts	Steel									
383	Mechanical Seal	As Specified									
358U	Filler Plug	Brass									
400	Coupling Key	Steel									
408	Drain Plug	Brass									
408A	Sensor Plugs	Brass									
443X	Spacer	Steel									
496A	Thrust Bearing Retainer O-ring	Brass-N									
496	Stuffing Box Cover O-ring	Buna-N				EPDM					Teflon
787H	Adjusting Lug	Steel									



**PRO Services®**  
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**Reliability Improvement**

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**Optimization of Assets**

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- Pump & System Assessments
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- |                                     |   |
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# PROSMART

ProSmart™ encompasses the latest technology\* in condition monitoring to transform your Predictive Maintenance program into a Plant Profitability program. It provides a cost-effective solution to maintaining uptime on all of your rotating equipment. ProSmart continuously monitors, analyzes and annunciates an alarm when critical criteria is not met. By identifying, diagnosing, and sounding an alert to potential equipment problems before they have a chance to manifest into unexpected downtime or catastrophic failure, ProSmart helps to assure plant profitability.



**ProSmart delivers benefits that go right to the bottom line.**

- Extends equipment life
- Optimizes costly “walk arounds” by skilled personnel
- Can help reduce overall equipment failures and the cost of downtime
- Sends alerts prior to potential catastrophic process failures
- Automatically alerts personnel to machine problems
- Consolidates data for equipment optimization (\*Patent pending)

ProSmart is a wireless machinery monitoring system that collects and analyzes operating data automatically every 5 seconds. Integrated analysis capabilities provide enhanced data and reporting functions.

## PUMPSMART System Options

- Energy savings
- Provides for pump protection
- Low flow protection (torque-based) when low levels are encountered in standpipe
- Provides upper speed limit to protect motor and drive from excessive load
- Provides lower speed limit to allow Model 3500XD air removal system to work satisfactorily
- Several proven control schemes allow for the maximum benefit of variable speed drive system
- Allows for future operating condition with same pump
- Allows for same pump size to be used when multiple pumps are involved with large TDH variations among them
- Allows for one impeller diameter (and Back Pullout) to be used for multiple pump installations — minimize inventory for critical services



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[www.motralec.com](http://www.motralec.com)