

Goulds 3311

High-Pressure Multi-Stage Pumps



Goulds Model 3311

Multistage Pumps Designed for a Wide Range of High Pressure Services

- Capacities to 1100 GPM (250 m³/hr)
- Heads to 5250 feet (1600 m)
- Temperatures to 356° F (180°C)
- Pressures to 2320 psig (160 bar)

Design Features

High Efficiency Performance is achieved by utilizing multiple hydraulics for each pump size. Reduce running costs by operating in the best efficiency range.

Modular Design permits option flexibility, reduces lead-times, and maximizes interchangeability. Spare parts inventory is reduced.

Ease of Maintenance is assured as roller bearings, mechanical seal, and balance device can be serviced without disturbing piping or driver.

Balance Drum/Disc Combination balances axial thrust over the full range of performance.

Rotating Element is dynamically balanced after individual balancing of the impellers. First critical speed is always above maximum operating speed.

Multiple Nozzle Orientations to fit your piping configurations.

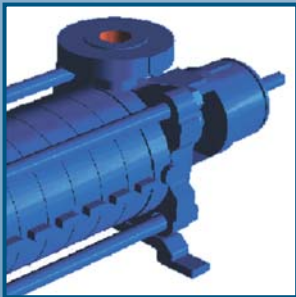
Services

- Cogeneration
- Boiler Feed
- Shower
- Pressure Boosting
- High Pressure Cleaning
- Mine De-watering

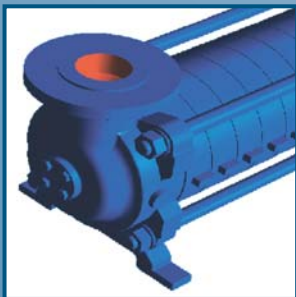
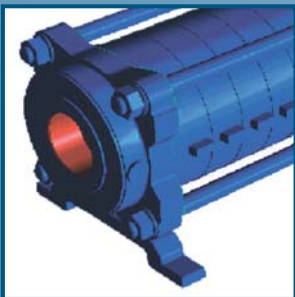


Goulds Model 3311 is a radial split, segmented ring multistage pump... a proven state-of-the-art design for the most demanding high pressure services. The modular design and parts interchangeability reduce maintenance and inventory costs. Compact size and flexible nozzle positions reduce space and piping costs. High reliability, optimum efficiency, and simplified maintenance combined with low initial cost and low operating costs make the 3311 a true world class pump.

Discharge
Flange
Orientation

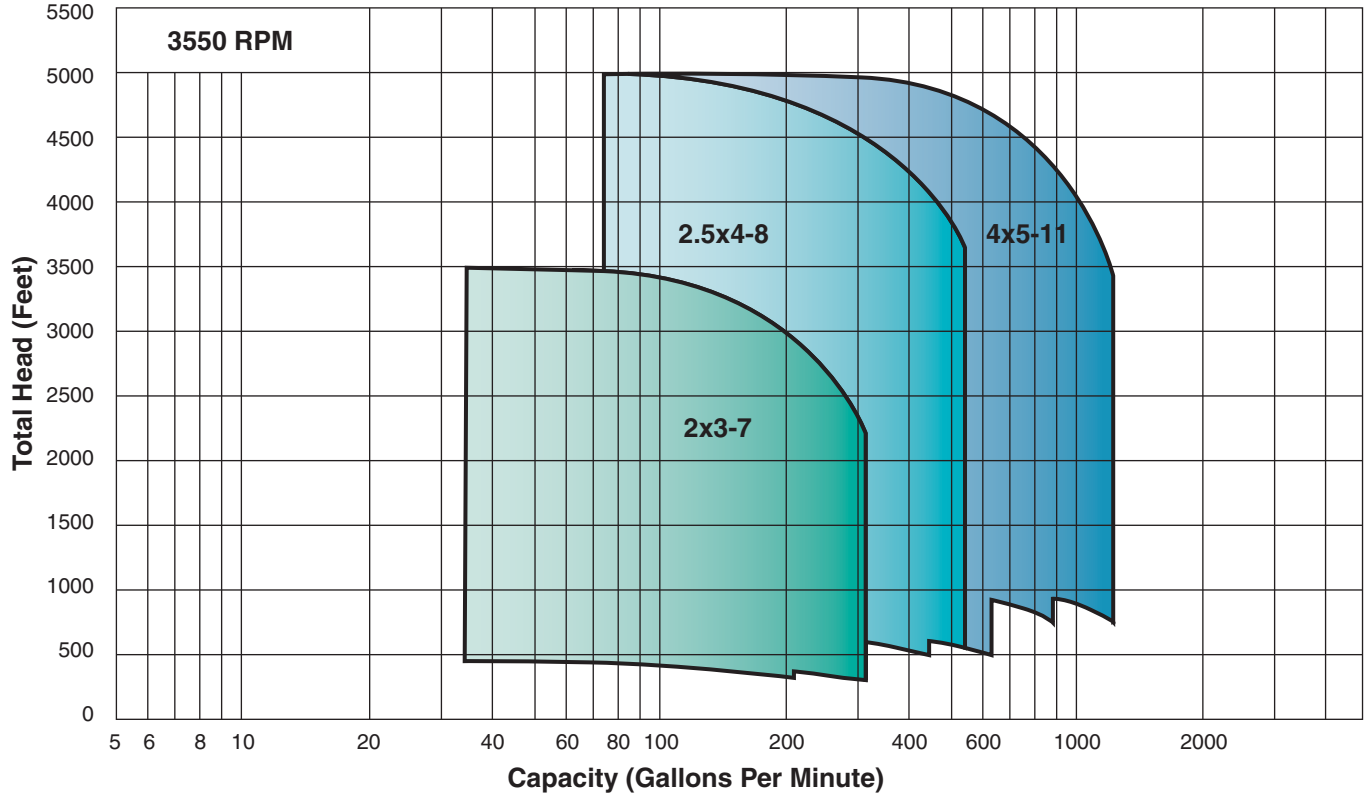


Available Suction Flange Orientations

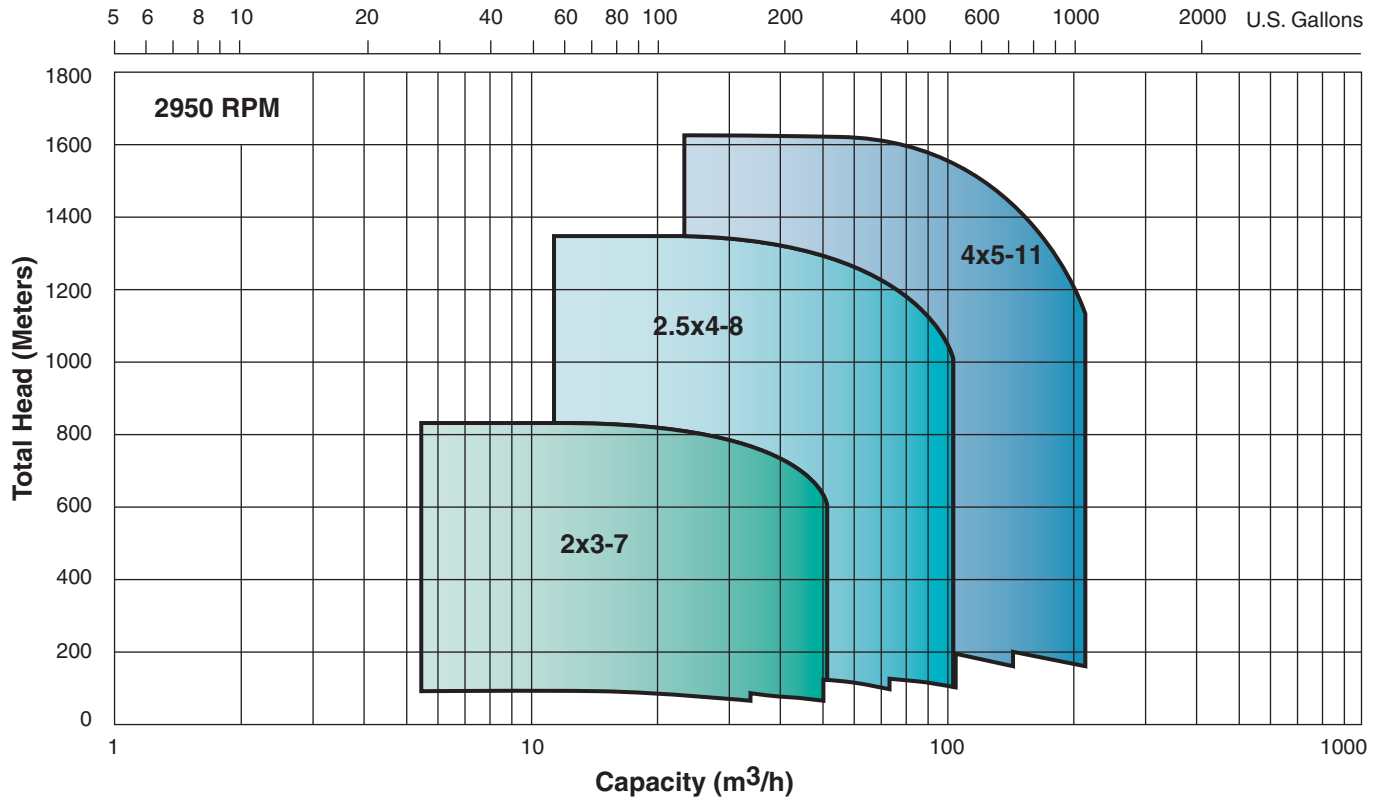


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Hydraulic Coverage 60 Hz



Hydraulic Coverage 50 Hz





Model 3311 High Pressure Multi-Stage Pumps

Rugged Design Features for a Wide Range of Services

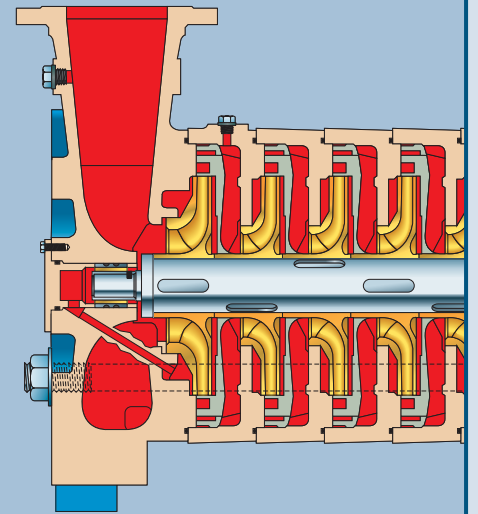
HIGH EFFICIENCY HYDRAULICS

Multiple impellers and diffusers for each pump size optimize efficiency for given conditions of service.

COMBINED BALANCE DRUM AND DISC

Axial thrust balancing is provided over the entire operating range.

Radial Suction Casing is available with Product Lubricated Bearing. Suction Flange is located over pump foot to maximize nozzle load capabilities.



BEARING ISOLATORS

Extends bearing life by providing maximum bearing protection.

OIL LUBRICATED ROLLER BEARINGS

Easily replaceable Radial Bearing. External cooling is available for high temperature applications.

EASE OF MAINTENANCE

Service bearings, mechanical seal, and balance device without disturbing piping.

SUCTION IMPELLER

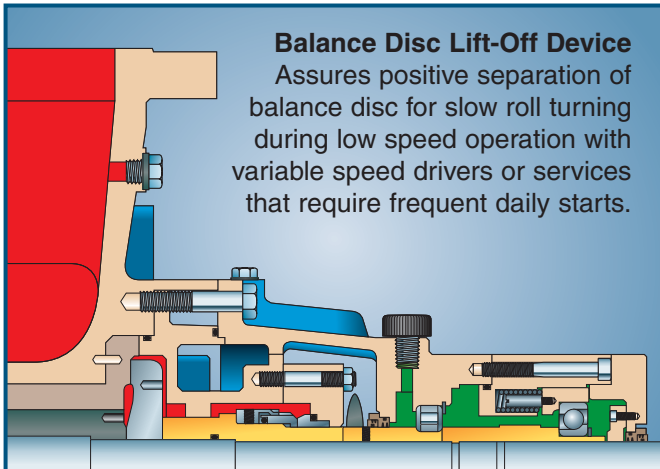
First stage suction impeller is designed with a large eye area to provide reliable operation in low NPSH_A applications.

PRODUCT LUBRICATED BEARING

Self-aligning bearing for greater reliability.

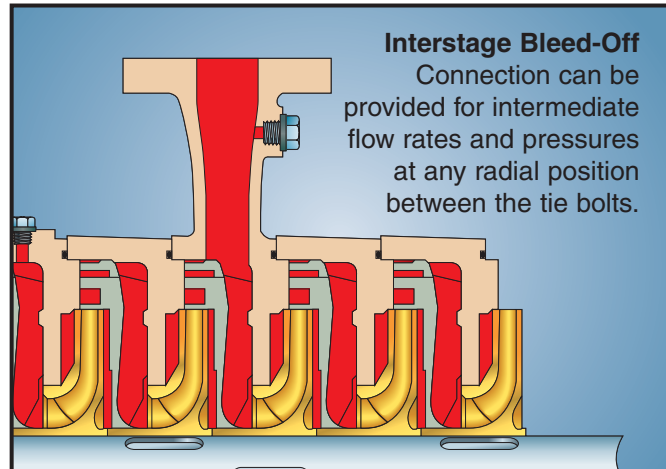
End Suction Configuration

Other Features/Application Flexibility



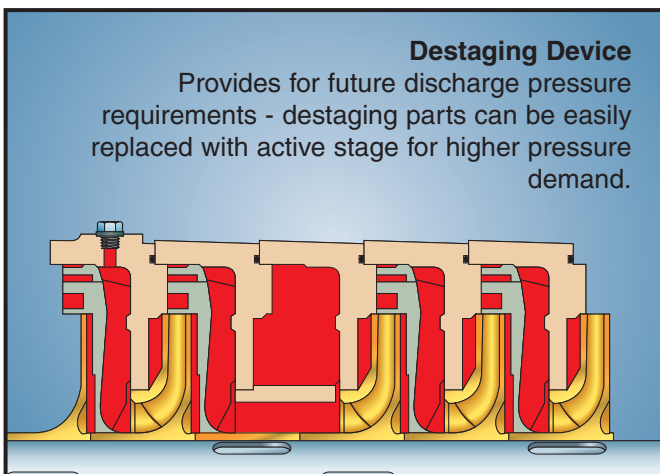
Balance Disc Lift-Off Device

Assures positive separation of balance disc for slow roll turning during low speed operation with variable speed drivers or services that require frequent daily starts.



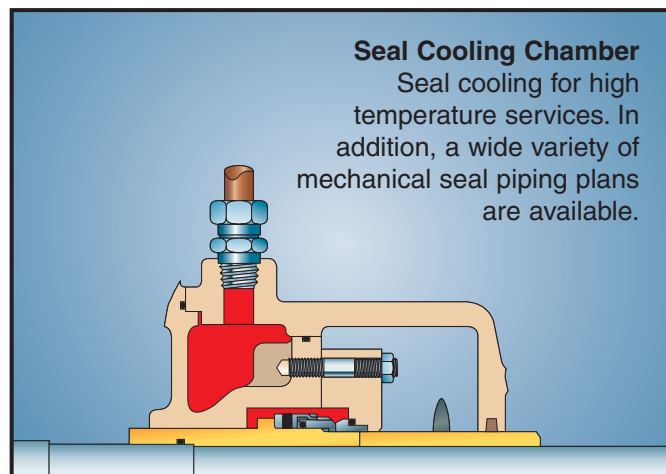
Interstage Bleed-Off

Connection can be provided for intermediate flow rates and pressures at any radial position between the tie bolts.



Destaging Device

Provides for future discharge pressure requirements - destaging parts can be easily replaced with active stage for higher pressure demand.



Seal Cooling Chamber

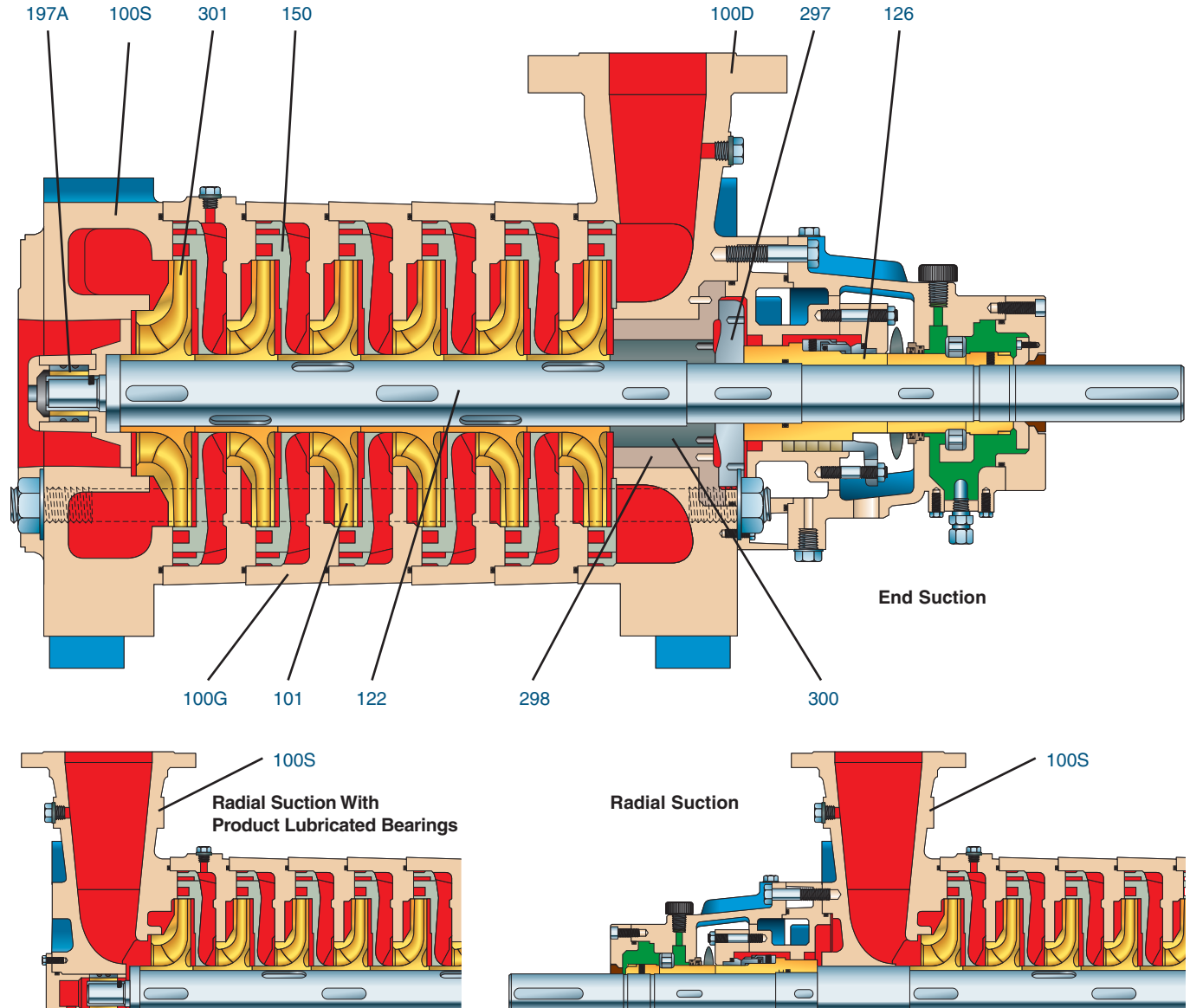
Seal cooling for high temperature services. In addition, a wide variety of mechanical seal piping plans are available.

Construction Details

Pump Size ▶		English			Metric		
		2x3-7	2.5x4-8	4x5-11	2x3-7	2.5x4-8	4x5-11
Pump/Casing	Wt. - 3 Stage Pump - Lbs, kg	401	774	1069	182	351	485
	Wt. - Ea. Add'l Stage - Lbs, kg	13	24	42	6	11	19
	Min. Wall Thickness - in, mm	0.49	0.49	0.59	12.5	12.5	15
	Max. Allowable Suction Pressure	232 psi			16 bar		
	Max. Allowable Temperature	356° F			180° C		
	Max. Allowable Working Pressure	2320 psi			160 bar		
Stuffing Box	Stuffing Box Bore - in, mm	2.83	3.94	5.12	72	100	130
	Stuffing Box Depth - in, mm	1.81	2.17	2.68	46	55	68
	Packing Size - in, mm	0.39	0.39	0.49	10	10	12.5
	Packing ID/OD - in, mm	2.05/2.83	3.15/3.94	4.13/5.12	52/72	80/100	105/130
	No. of Packing Rings Ea. Stuffing Box	4	5	5	4	5	5
	Dia. Of Shaft Sleeve (pkg) - in, mm	1.77	2.76	3.74	45	70	95
Shaft/Bearings	Dia. Of Shaft at Impeller - in, mm	1.42	1.89	2.60	36	48	66
	Dia. Of Shaft at Sleeve - in, mm	1.18	1.65	2.32	30	42	59
	Dia. Of Shaft at Bearings - in, mm	1.77	2.17	2.95	45	55	75
	Dia. Of Shaft at Coupling - in, mm	1.10	1.50	2.20	28	38	56
	Max. (BHP, kW) per 100 RPM	5.36	20.12	44.25	4	15	33
	Bearing - Inboard	NU 1009	NU 1011	NU 1015	NU 1009	NU 1011	NU 1015
	Bearing - Outboard*	NU 1009	NU 1011	NU 1015	NU 1009	NU 1011	NU 1015

* Pumps with product lubricated bearing utilize a Silicon Carbide bearing

Sectional View Model 3311

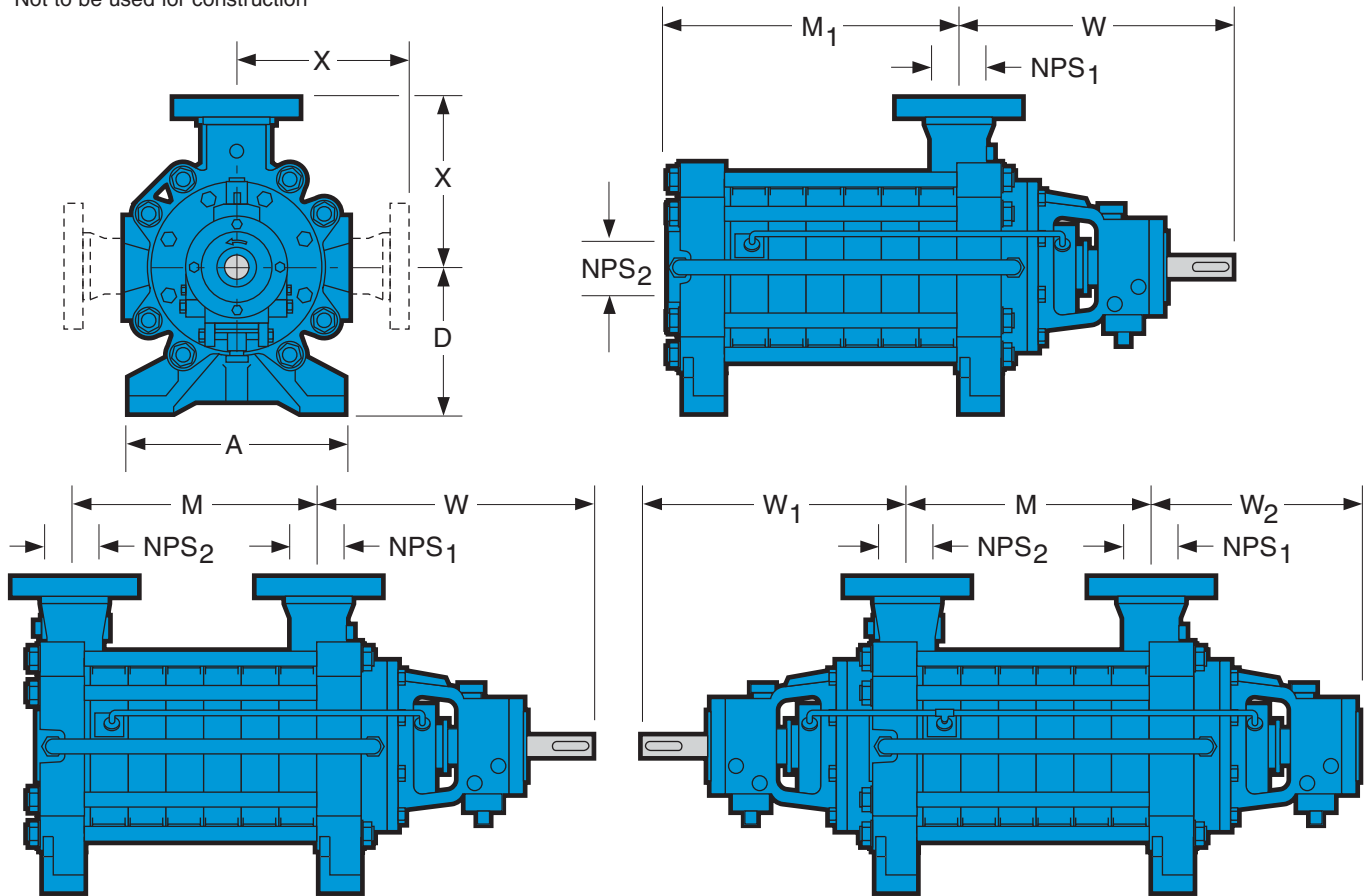


Parts List and Materials of Construction

Part No.	Part Name	D I N Standard		ASTM Equivalent	
		Chrome Steel/ Cast Iron	All Chrome	Chrome Steel/ Cast Iron	All Chrome
100D	Casing, Discharge	G-X8CrNi 13	G-X8CrNi 13	A743 CA-15	A743 CA-15
100G	Casing, Stage	G-X8CrNi 13	G-X8CrNi 13	A743 CA-15	A743 CA-15
100S	Casing, Suction	G-X8CrNi 13	G-X8CrNi 13	A743 CA-15	A743 CA-15
101	Impeller	GG-25	B-X2CrNiMo 18 10	A48 Cl. 40B	A351 CF-3MN
301	Suction Impeller	B-X2CrNiMo 18 10	B-X2CrNiMo 18 10	A351 CF-3MN	A351 CF-3MN
122	Shaft	X4CrNi 13 4	X4CrNi 13 4	A473 410	A473 410
150	Diffuser	GG-25	B-X2CrNiMo 18 10	A48 Cl. 40B	A351 CF-3MN
126	Shaft Sleeve	X35CrMo17	X35CrMo17	17% Chr	17% Chr
197A	Product Lube Sleeve Bearing	Silicon Carbide	Silicon Carbide	Silicon Carbide	Silicon Carbide
297	Balance Disc	X46Cr13	X46Cr13	13% Chr	13% Chr
298	Balance Counter Disc	G-X170Cr18	G-X170Cr18	18% Chr	18% Chr
300	Balance Drum	X20Cr13	X20Cr13	A276 Gr. 420	A276 Gr.420

Dimensions Model 3311

Not to be used for construction



Dimensions - English (Inches)

Pump Size	NPS ₂ End Suction	NPS ₂ Radial Suction	NPS ₁	X	D	A	W	W ₁	W ₂	M 3-Stage	M ₁ 3-Stage	Each Add'l Stage M & M ₁
2x3-7	4	3	2	9.65	7.28	13.19	17.13	17.52	13.07	8.27	9.06	2.17
2.5x4-8	5	4	2.5	11.81	10.04	14.96	19.37	19.21	14.72	10.63	12.99	2.76
4x5-11	6	5	4	13.58	11.02	14.96	21.26	20.71	15.20	13.39	15.75	3.35



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