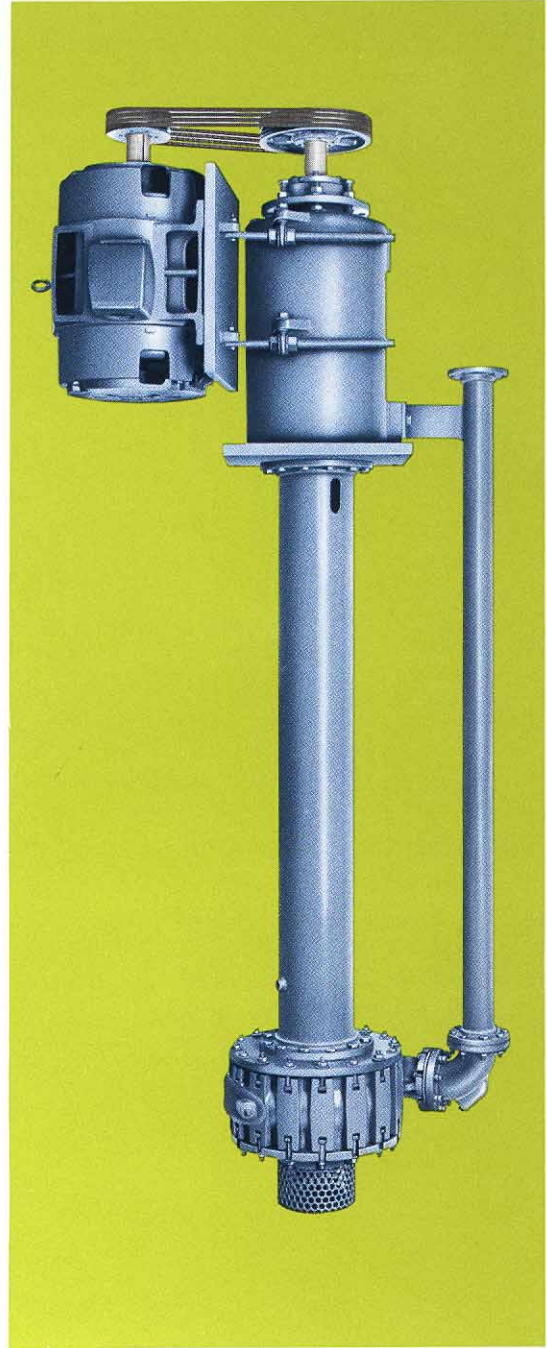
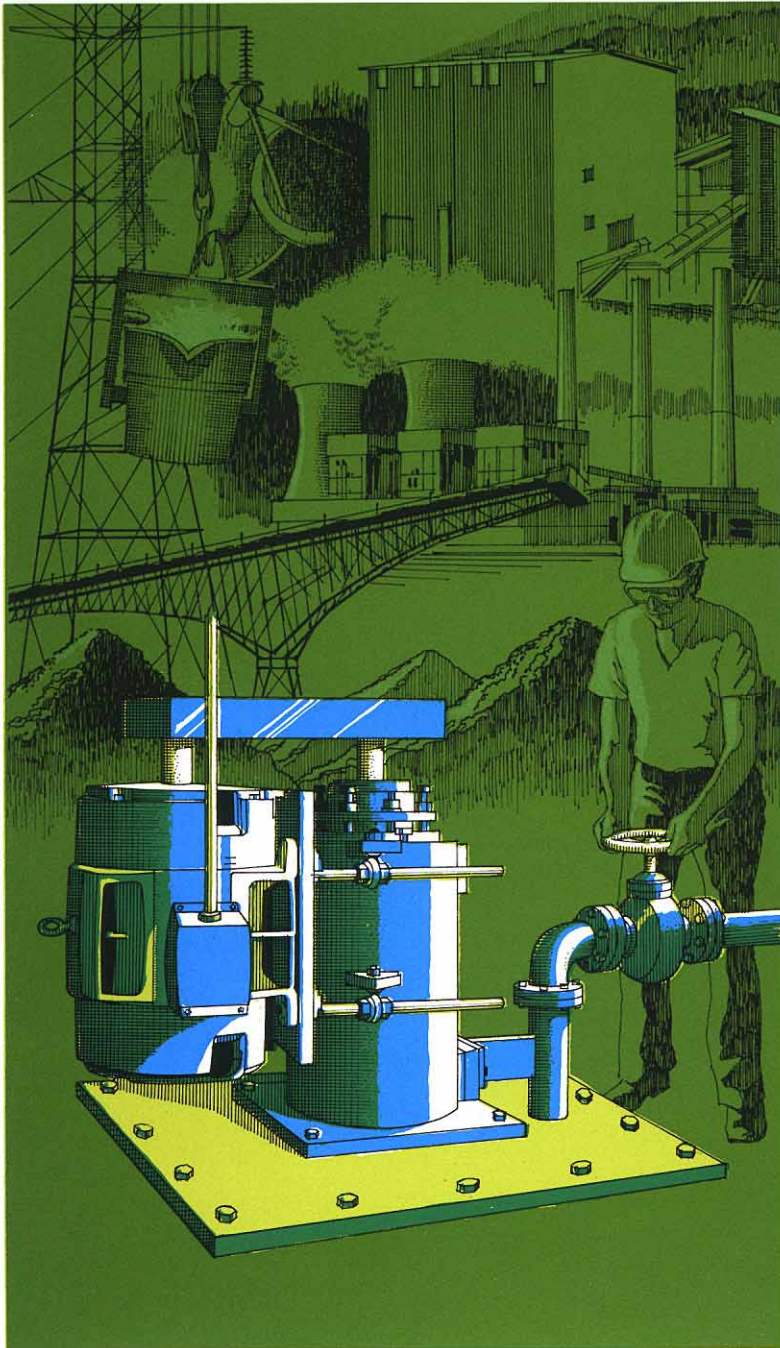




GOULDS PUMPS

BULLETIN 222.1
February 2002

Goulds Models 5150/VJC Vertical Cantilever Bottom Suction Pumps



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Goulds Pumps



ITT Industries
Engineered for life

Goulds Models 5150/VJC

Vertical Cantilever Pumps Designed to Handle Corrosive/ Extremely Abrasive Slurries

- Capacities to 8000 GPM (1817 m³/h)
- Heads to 260 feet (79 m)
- Temperatures to 200° F (93° C)
- Pit Depths to 11 feet (3.4 m)
- Solids to 3-7/8 in. (98 mm)

Design Features

Cantilever Design No submerged bearings.

External Impeller Adjustment Maintains pump efficiency and performance.

Dual Volute Casing Eliminates radial unbalance; reduces wear.

Materials of Construction Available in a wide range of corrosive/abrasive resistant alloys.

Heavy-Duty Bearings

Bottom Suction Removes solids from sump floor.

Removable Suction Liner

Maximum Interchangeability

Services

Steel Mills

Power Plants

Foundries

Alumina Refineries

Cement Mills

Phosphoric Acid Plants

Coal Prep Plants

Phosphate Mines

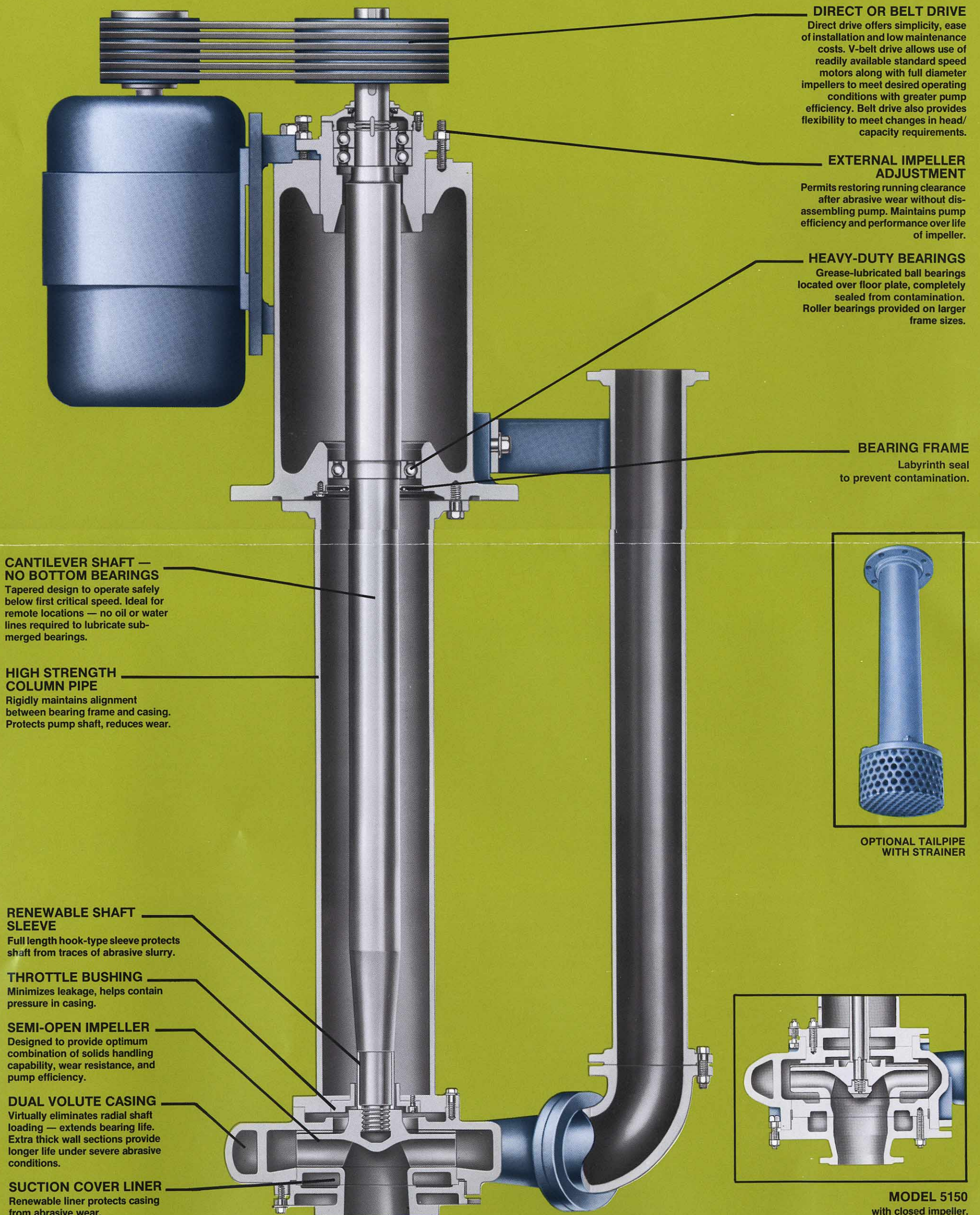
Iron Ore Slurry

Mine Slurry



Model VJC Vertical Cantilever Bottom Suction Pumps

Heavy-Duty Design Features for Wide Range of Severe Corrosive/Abrasive Slurry Services



DIRECT OR BELT DRIVE

Direct drive offers simplicity, ease of installation and low maintenance costs. V-belt drive allows use of readily available standard speed motors along with full diameter impellers to meet desired operating conditions with greater pump efficiency. Belt drive also provides flexibility to meet changes in head/capacity requirements.

EXTERNAL IMPELLER ADJUSTMENT

Permits restoring running clearance after abrasive wear without disassembling pump. Maintains pump efficiency and performance over life of impeller.

HEAVY-DUTY BEARINGS

Grease-lubricated ball bearings located over floor plate, completely sealed from contamination. Roller bearings provided on larger frame sizes.

BEARING FRAME

Labyrinth seal to prevent contamination.

CANTILEVER SHAFT — NO BOTTOM BEARINGS

Tapered design to operate safely below first critical speed. Ideal for remote locations — no oil or water lines required to lubricate submerged bearings.

HIGH STRENGTH COLUMN PIPE

Rigidly maintains alignment between bearing frame and casing. Protects pump shaft, reduces wear.

RENEWABLE SHAFT SLEEVE

Full length hook-type sleeve protects shaft from traces of abrasive slurry.

THROTTLE BUSHING

Minimizes leakage, helps contain pressure in casing.

SEMI-OPEN IMPELLER

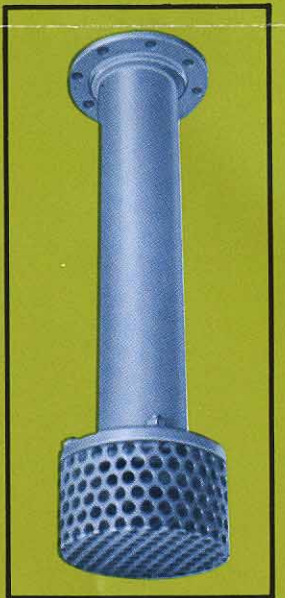
Designed to provide optimum combination of solids handling capability, wear resistance, and pump efficiency.

DUAL VOLUTE CASING

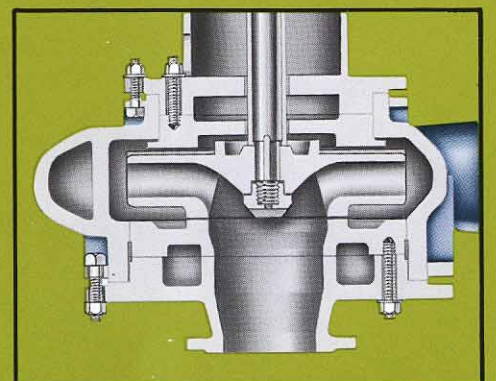
Virtually eliminates radial shaft loading — extends bearing life. Extra thick wall sections provide longer life under severe abrasive conditions.

SUCTION COVER LINER

Renewable liner protects casing from abrasive wear.



OPTIONAL TAILPIPE WITH STRAINER



MODEL 5150 with closed impeller.

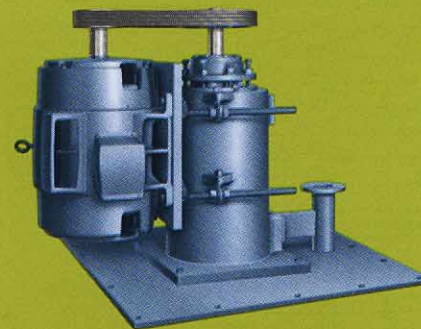
Application Flexibility

Direct or Belt Drive

Goulds offers drive arrangements to meet specific user requirements.



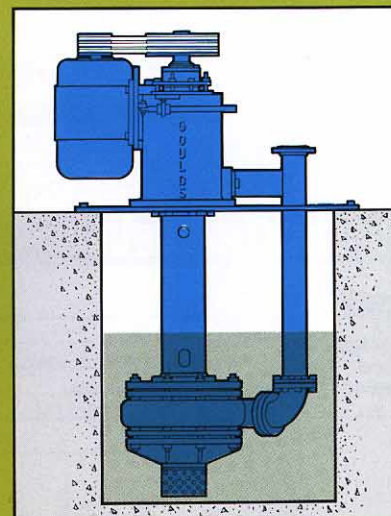
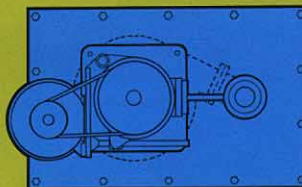
Direct drive offers simplicity, ease of installation and minimum maintenance.



Belt drive allows use of standard speed motors with full diameter impellers. Adapts pump to meet any head or capacity. Extends wear life through low operating speeds.

Optional Floor Plate

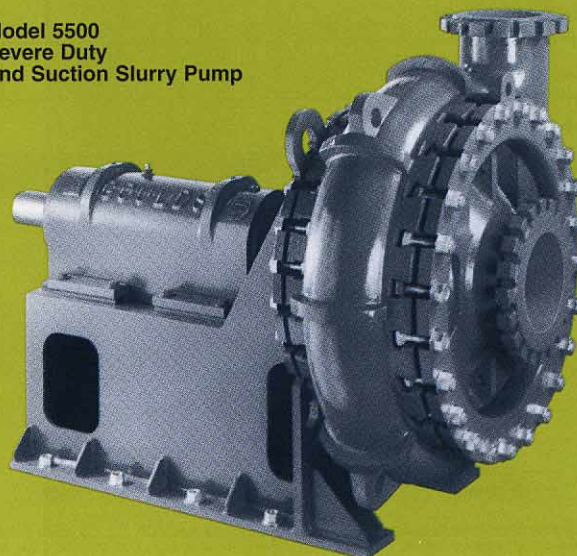
Optional floor plate enhances removal of pump from the sump. Custom designed floor plates can be provided to fit your sump.



Horizontal Pumps

Goulds makes a complete line of horizontal abrasive slurry pumps in sizes from 1" to 14" discharge with capacities to 16,000 GPM (3636 m³/h) and heads to 395 feet (120 m). Pumps are available in side suction or end suction configurations.

Model 5500
Severe Duty
End Suction Slurry Pump



Parts List and Materials of Construction

Item No.	Part Name	Material		
		Standard		Optional*
		Cast Iron (VJC)	HC600	316SS
100	Casing	Cast Iron	HC600	316
100B	Suction Liner	Cast Iron	HC600	316
101	Impeller	Cast Iron	HC600	316
103	Casing Ring (5150)	—	HC600	316
109	Bearing End Cover	Cast Iron		
112	Thrust Bearing	Steel		
122	Shaft	1144 Steel		316
123	Deflector	Rubber		
126	Shaft Sleeve	416		316
134	Thrust Bearing Housing	Cast Iron		
168	Radial Bearing	Steel		
178	Impeller Key (5150)	Steel		316
182	Suction Cover (5150)	—	HC600	316
182	Suction Cover (VJC)	Cast Iron		316
192	Pipe Column	Steel		316
195	Discharge Pipe	Steel		316
228A	Bearing Frame	Cast Iron		
304	Impeller Nut (5150)	316		
315	Discharge elbow	Steel	Cast iron-5150/Steel-VJC	316
333	Labyrinth Seal	Carbon Filled Teflon		
473	Throttle Busing (VJC)	Cast Iron	HC600	316

* For other materials, contact factory.

Materials of Construction

Material Specifications	
Cast iron	ASTM A48 — Classes 25 and 35
HC600	High Chrome Iron — Similar to ASTM A532 C 1.3 Type A
316SS	Stainless Steel — AISI 316 or ASTM A743, Grade CF8M

Construction Details

Model VJC			Pump Size												
			2x3-14	3x4-14	4x6-14	6x6-14	8x10-18	10x12-22							
Impeller and Casing	Net Weight — Lbs. (kg)		2000 (907)	2080 (943)	2100 (953)	2600 (1179)	3500 (1588)	6200 (2812)							
	Min. Casing Thickness — in. (mm)		.56 (14)	.62 (16)		.75 (19)									
	Max. Solids Size — in. (mm)		7/8 (22)	1-1/8 (29)	1-3/8 (35)	1-1/2 (38)	2 (51)	2-1/4 (57)							
	Working Pressure — PSIG (kPa)	127 PSIG (875)													
Model 5150			Pump Size												
			3x3-12	4x4-14½	4x6-18	4x6-21½	6x6-21½	5x6-15	6x6-17½	6x8-17½	6x8-21	8x8-17½	8x10-17½	8x10-21	10x12-21
Min. Casing Thickness — In. (mm)			5/8 (16)	7/8 (22)	1 (25)	1-1/8 (28)	7/8 (22)		1-1/8 (28)	3/4 (19)		1-1/8 (28)	1-3/8 (35)		
Max. Solids Size — In. (mm)			5/8 (16)	7/8 (22)	1-1/8 (29)	1-1/4(32)		2 (51)	1-3/4 (44)	1-1/2 (38)	3-7/8 (98)	2-3/4 (70)	2-3/4 (70)	2-7/8 (73)	3-3/8 (86)
Working Pressure — PSIG (kPa)		150 (1034)													

SHAFT AND BEARING DATA

		Bearing Frame						
		C2	C3	C4	C5A	C5	C6A	C6
Shaft	Diameter at Coupling (Size 6x6-12 and Larger)	2.375	2.875	2.875 (3.375)	2.875	2.875 (3.375)	2.875 (3.375)	2.875 (3.375)
	Dia. Between Bearings	4.0	5.0	5.75	7.0	7.0	8.125	8.125
	Dia. at Outboard Bearing	3.150	3.346	4.331	3.346	3.812	4.331	4.50
	Dia. at Inboard Bearing	3.543	4.724	5.512	6.692	6.692	7.784	7.784
	Bearing Span	24.63	29.25	33.0	29.6	31.75	33.0	34.38
Bearings	Outboard ¹	7216 Duplex	7317 Duplex	7322 Duplex	7317 Duplex	90381 90744	7322 Duplex	HM926740 HM926710D
	Inboard ²	6218	6224	6228	61834	23034	61804	2394D

1) Outboard bearings are duplex angular contact bearings on frame sizes C2, C3, C4, C5A, & C6A; and are double row tapered roller bearings on the C5 and C6 frames.

2) Inboard bearings are single row deep groove ball bearings on frame sizes C2, C3, C4, C5A, & C6A; and are spherical roller bearings on the C5 and C6 frames.

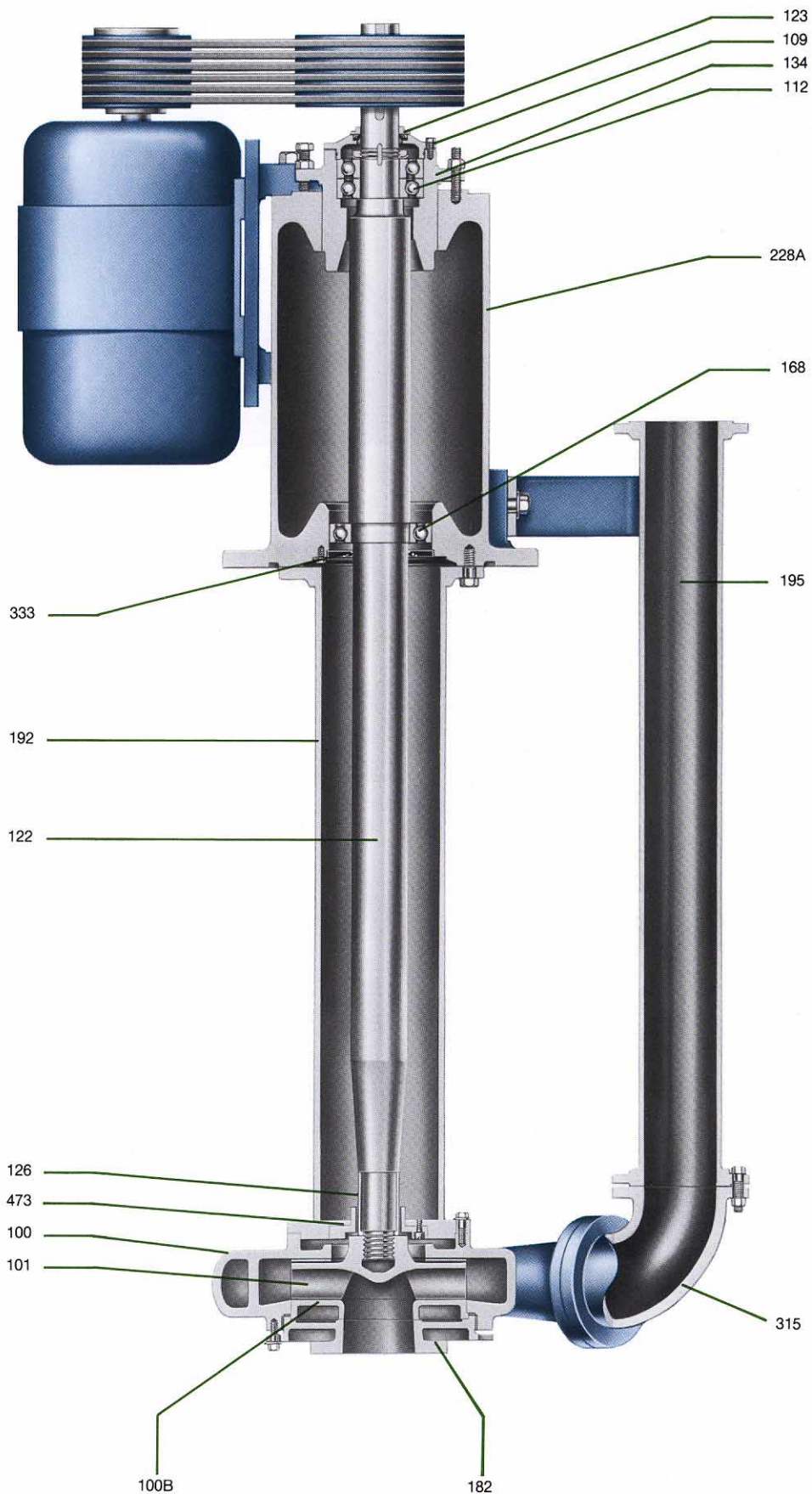
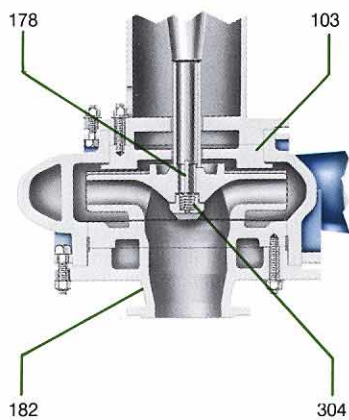
3) All dimensions are in inches.

Sectional View Model VJC



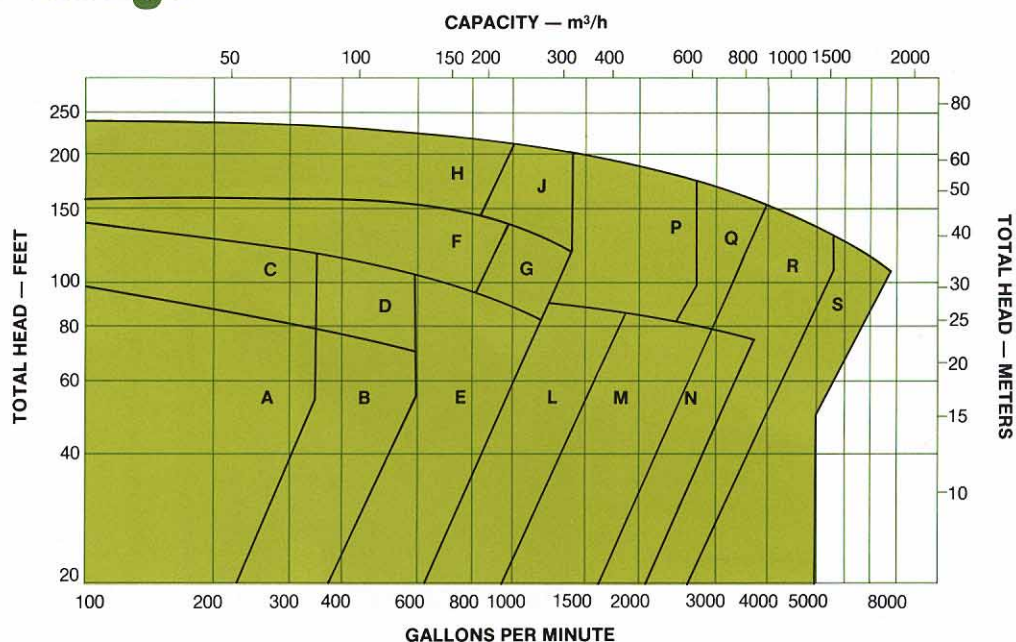
OPTIONAL TAILPIPE WITH STRAINER

Model 5150



Hydraulic Coverage

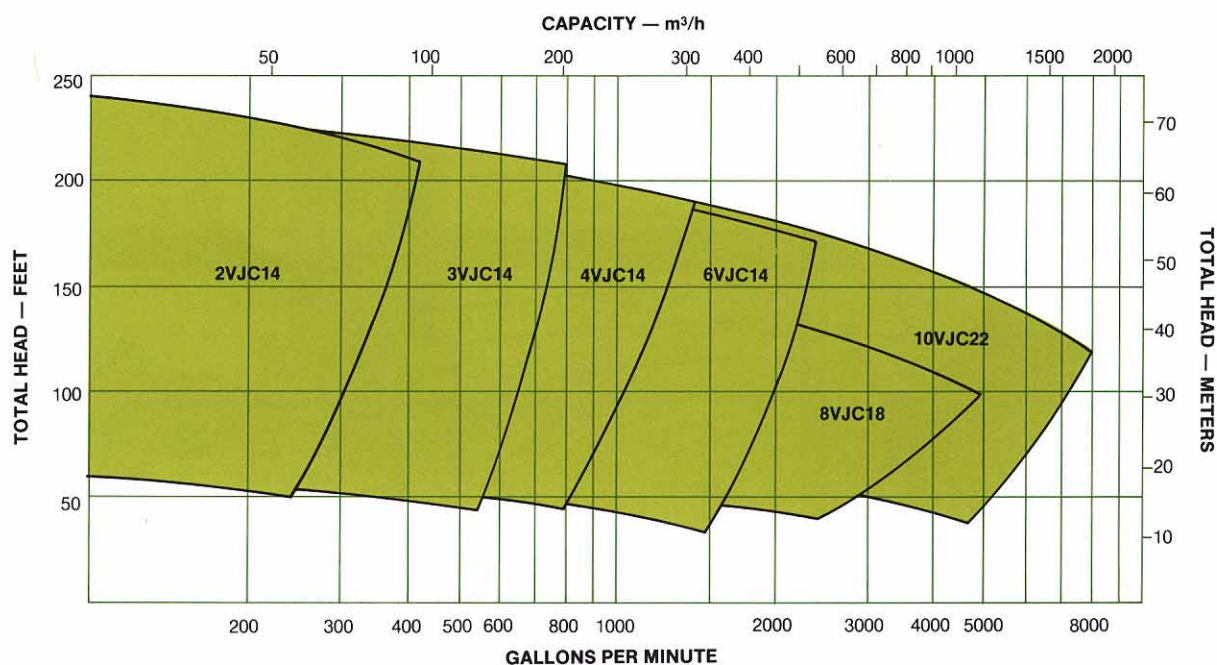
Model 5150



MODEL 5150 PUMP SELECTION CHART

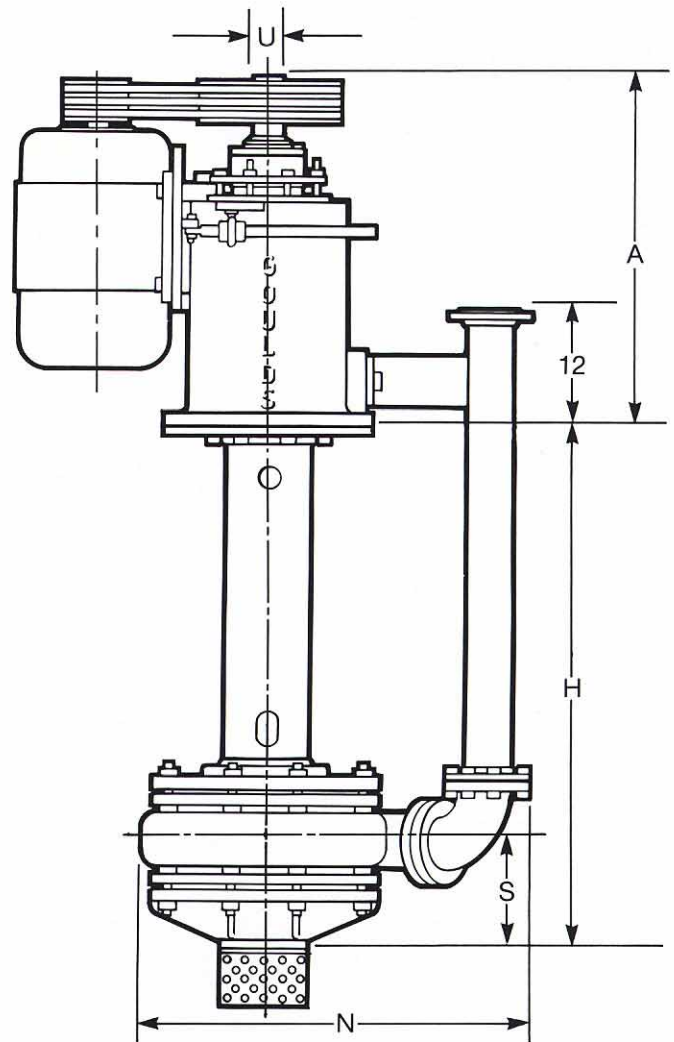
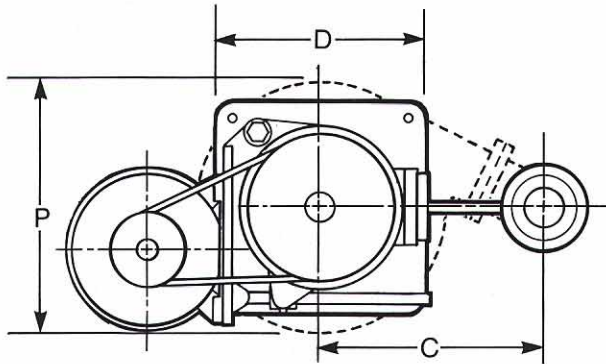
Code	Pump Size	Code	Pump Size
A	3 x 3 x 12, 3 x 4 x 12, 4 x 4 x 14½, 4 x 5 x 14½	J	6 x 8 x 21, 6 x 6 x 21½
B	4 x 4 x 14½, 4 x 5 x 14½, 5 x 5 x 15	L	6 x 8 x 17½, 6 x 8 x 21, 8 x 10 x 21, 8 x 8 x 17½
C	4 x 4 x 14½, 4 x 5 x 14½, 4 x 6 x 21½	M	8 x 8 x 17½, 8 x 10 x 17½, 6 x 8 x 21, 8 x 10 x 21, 10 x 12 x 21
D	4 x 4 x 14½, 4 x 5 x 14½, 5 x 6 x 15, 4 x 6 x 18, 4 x 6 x 21½	N	8 x 10 x 17½, 10 x 12 x 21
E	5 x 6 x 15, 6 x 6 x 17½, 6 x 8 x 17½, 4 x 6 x 18, 6 x 8 x 21	P	6 x 8 x 21, 8 x 10 x 21, 10 x 12 x 21
F	4 x 6 x 18, 6 x 8 x 21, 4 x 6 x 21½, 6 x 6 x 21½	Q	8 x 10 x 21, 10 x 12 x 21, 12 x 14 x 21¾
G	6 x 6 x 17½, 6 x 8 x 21, 8 x 10 x 21, 6 x 6 x 21½	R	10 x 12 x 21, 12 x 14 x 21¾
H	4 x 6 x 21½	S	12 x 14 x 21¾

Model VJC



Dimensions Models 5150/VJC

All dimensions in inches and (mm). Not to be used for construction.



DIMENSIONS						
Model	Pump Size	C	H	N	P	S
VJC	2x3-11	16 (406)	48 (1219)	29 (737)	17 (432)	4 (102)
	2x3-14	17.5 (444)	Standard.	31 (787)	19 (483)	4 (102)
	3x4-11	17.8 (452)	42 (1067)	31 (787)	19 (483)	4.8 (122)
	3x4-14	19 (483)	thru 132	35 (889)	23 (584)	4.8 (122)
	4x6-14	19.4 (493)	(3353) avail. in	35 (889)	23 (584)	5.3 (135)
	6x6-14	22.6 (574)	3" (76)	41 (1041)	26 (660)	5.6 (142)
	8x10-18	28.7 (730)	increments.	53 (1346)	37 (940)	9.6 (244)
	10x12-22	35.4 (899)		65 (1651)	41 (1041)	9.6 (244)
5150	3x3-12			31 (787)	18 (457)	6.9 (175)
	3x4-12	17.3 (439)				
	4x4-14½			33 (838)	20 (508)	7.5 (190)
	4x5-14½	18.5 (470)				
	4x6-18	23.3 (592)	Standard	42 (1067)	26 (660)	
	4x6-21½	25.1 (238)	H Dimension	46 (1168)	30 (762)	9.5 (241)
	6x6-21½	26.5 (673)	is 48 (1219).	49 (1245)		
	5x6-15	20.6 (523)	42 (1067)	38 (965)	23 (584)	9.25 (235)
	6x6-17½		thru 132 (3353)			11 (279)
	6x8-17½	26.75 (679)	is available in	46 (1168)	29 (737)	11.5 (292)
	6x8-21		3" (76)			11.25 (286)
	8x8-17½	26.4 (671)	increments.	50 (1270)	33 (838)	11.75 (298)
	8x10-17½					
	8x10-21	30.8 (782)		58 (1473)	37 (940)	12 (305)
	10x12-21	32.6 (828)		63 (1600)	39 (991)	12.5 (317)
	12x14-21¼	33.5 (851)		66 (1676)		14.25 (362)

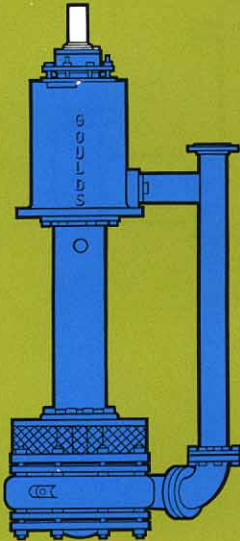
DIMENSIONS – BEARING FRAMES			
Frame	A	D	U
C-2	38.9 (988)	22 (559)	2.38 (60.4)
C-3 & C5A	45.5 (1153)	26 (660)	2.88 (73.1)
C-4 & C6A	50.8 (1290)	29 (737)	2.88 (73.1)
C-5	50.8 (1290)	29 (737)	3.38 (85.8)
C-6	53.4 (1356)	30 (762)	3.38 (85.8)

FLANGE DIMENSIONS			
I.D.	O.D.	B.C.	Holes
2	6	4.75	4 — 5/8
3	7.5	6.0	4 — 5/8
4	9	7.5	8 — 5/8
5	10	8.5	8 — 3/4
6	11	9.5	8 — 3/4
8	13.5	11.75	8 — 3/4
10	16	14.25	12 — 7/8
12	19	17	12 — 1
14	21	18.25	12 — 1

One Cantilever Design—Four Pump Models

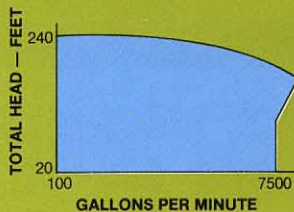
Model 5100

Vertical Cantilever
Top Suction Pump



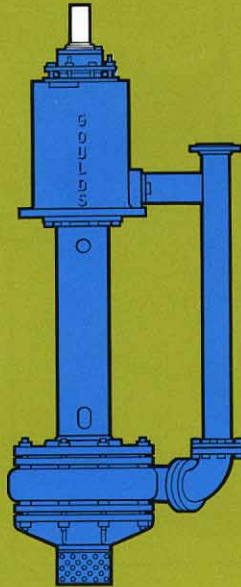
Designed for wide range of corrosive and severe abrasive slurry services. Top suction design eliminates air binding, provides ease of maintenance. Handles abrasive solids to 3-3/8 in. (86 mm).

Hydraulic Coverage



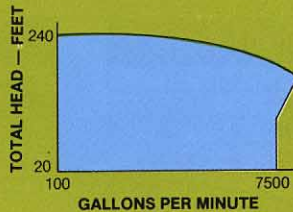
Model 5150

Vertical Cantilever
Bottom Suction Pump



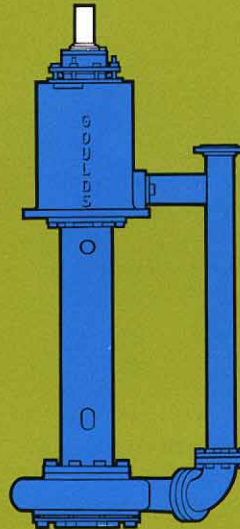
For corrosive and extremely abrasive slurry services. Bottom suction removes solids from sump floor. Handles solids to 3-7/8 in. (98 mm).

Hydraulic Coverage



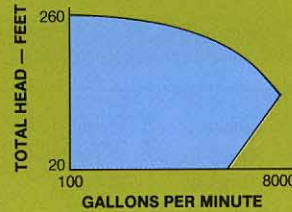
Model VJC

Vertical Cantilever
Bottom Suction Pump



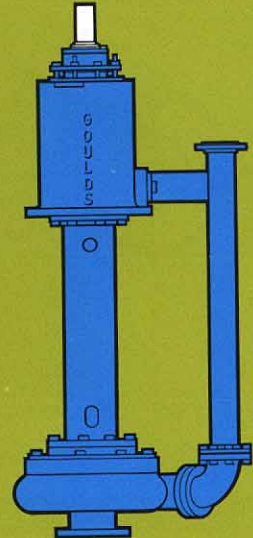
Similar to model 5150, the Model VJC is ideal for corrosives and extremely abrasive slurries.

Hydraulic Coverage



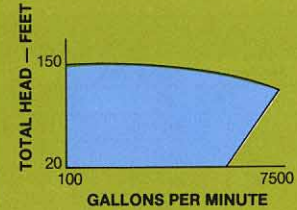
Model VHS

Vertical Cantilever
Recessed Impeller Pump



Designed to handle large or fibrous solids. Recessed, non-clog impeller — maximum solid size is equal to pump suction. Solids to 10 in. (254 mm).

Hydraulic Coverage



For more information about Goulds Vertical Cantilever Pumps,
call your nearest Goulds sales office or representative or visit

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