



## Goulds Model 3171/CV 3171 Vertical Sump and Process Pumps



Goulds Pumps



**ITT Industries**  
*Engineered for life*



The “Veteran” vertical sump and process pump. Thousands of installations—industrial process, sump drainage, corrosive liquids, pollution control, molten salts—attest to the 3171’s remarkable performance. Simple mounting.

# Goulds Model 3171

## Vertical Sump and Process Pumps Designed for the Total Range of Industry Services

- Capacities to 3180 GPM (722 m<sup>3</sup>/h)
- Heads to 344 feet (105 m)
- Temperatures to 450° F (232° C)
- Pit Depths to 20 feet (6 m)

## Design Features

- Self-Priming
- Rugged Double Row Thrust Bearing
- Heavy Duty One-piece Shaft
- External Impeller Adjustment
- Available in a Wide Range of Alloys
- Open Impeller Design
- Vapor Proof Option: Choice of packing, or mechanical seal for containing sump vapors

## Services

- Industrial Process
- Industrial Sump Wastes
- Molten Sulfur
- Tank Unloading
- Corrosive and Non-Corrosive Liquids

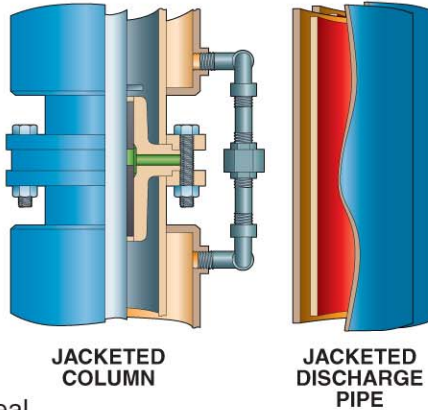
# Optional Features for Application Flexibility

Goulds offers a variety of options to meet users' specific plant and application requirements. Your Goulds representative will be glad to recommend the features

best suited to your particular service conditions to assure safe, efficient and reliable operation.

## Molten Sulfur Pumps

- Jacketed column and discharge pipes (tested to 150 PSIG [1034 kPa])
- Available in all principal alloys
- One-piece, self-lubricating, graphite impregnated steady bearing
- Vapor-proof construction to seal sump vapors
- Balanced, low NPSH, semi-open impeller for optimum performance
- Multiple intermediate bearings permit overall settings to 20 feet (6 m)

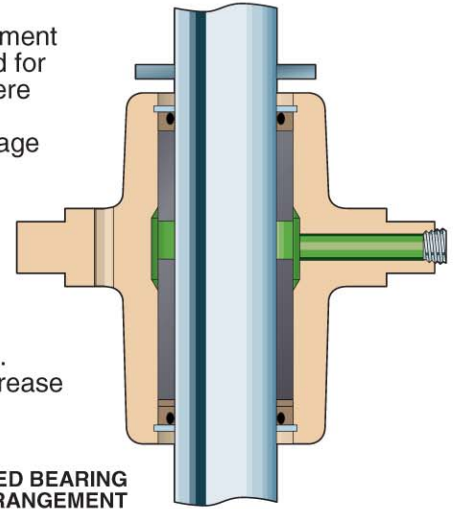


JACKETED COLUMN

JACKETED DISCHARGE PIPE

## Abrasive Liquids

Goulds sealed bearing arrangement is recommended for applications where abrasive solids are in the pumpage and no clean flush is available. A carbon bearing and lip seal is used for sealing the bearing housing. Spring loaded grease cup is provided.



SEALED BEARING ARRANGEMENT

## Optional Bearings

Goulds offers the best choice of steady bearings to meet service requirements...optional fluted rubber with rigid shell, bronze, and (standard) carbon.



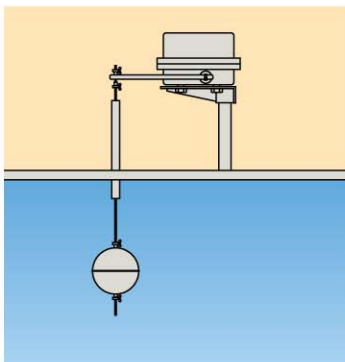
## Mounting Systems

Goulds can provide optional mounting systems to meet specific user requirements including pit covers fabricated with float control mounting points, man holes for access, vapor-proof designs, lube line holes.

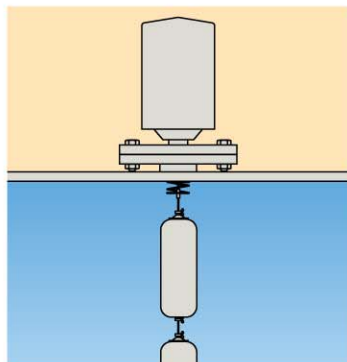


## Float Controls

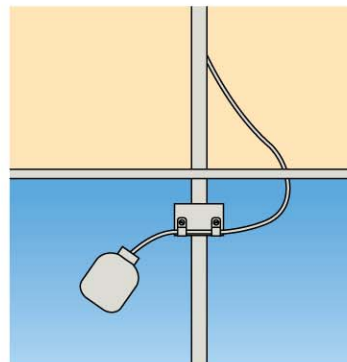
The widest range of float controls is offered to suit the individual requirements of every installation. Ask your Goulds representative for a complete list of options.



BALL-OPERATED FLOAT SWITCH



DISPLACER TYPE LIQUID LEVEL SWITCH

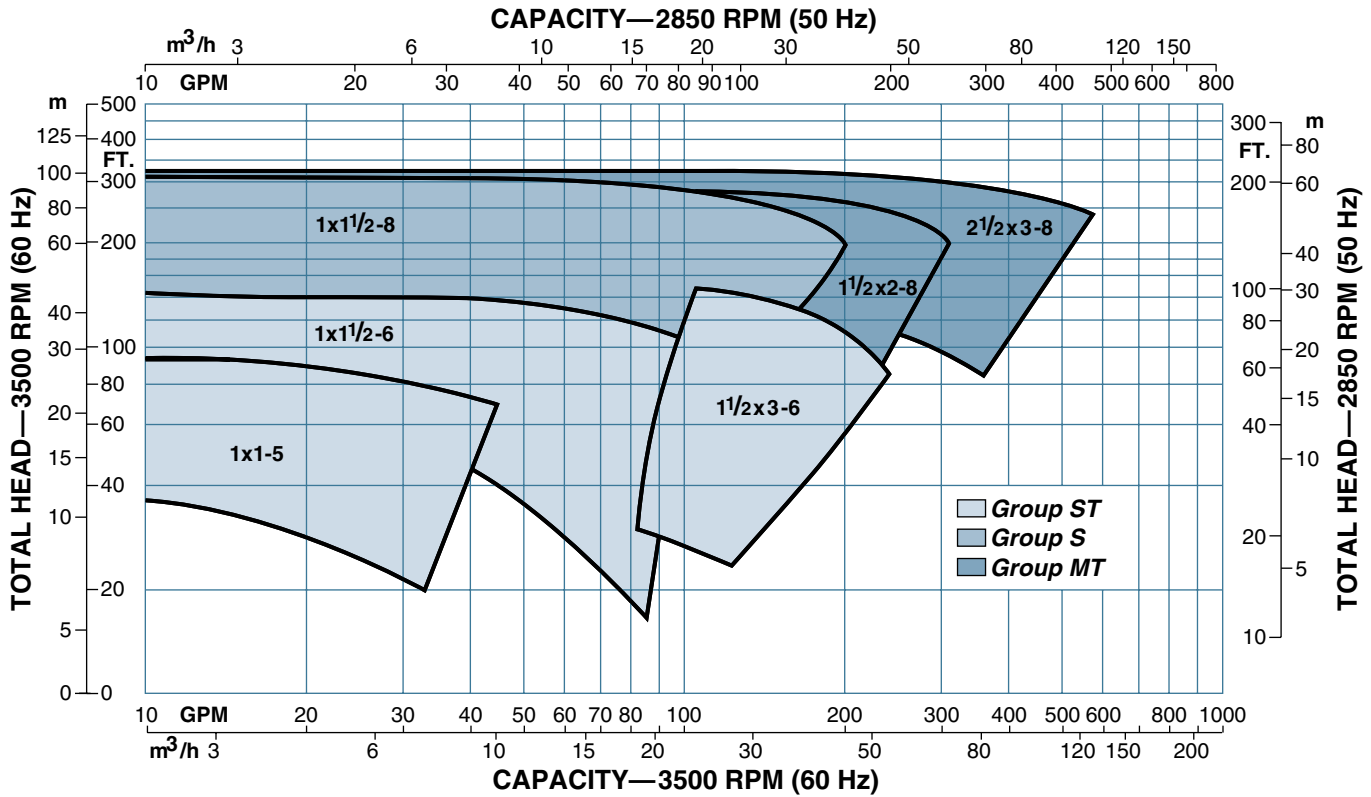


PIPE-MOUNTED, DIRECT ACTING FLOAT SWITCH

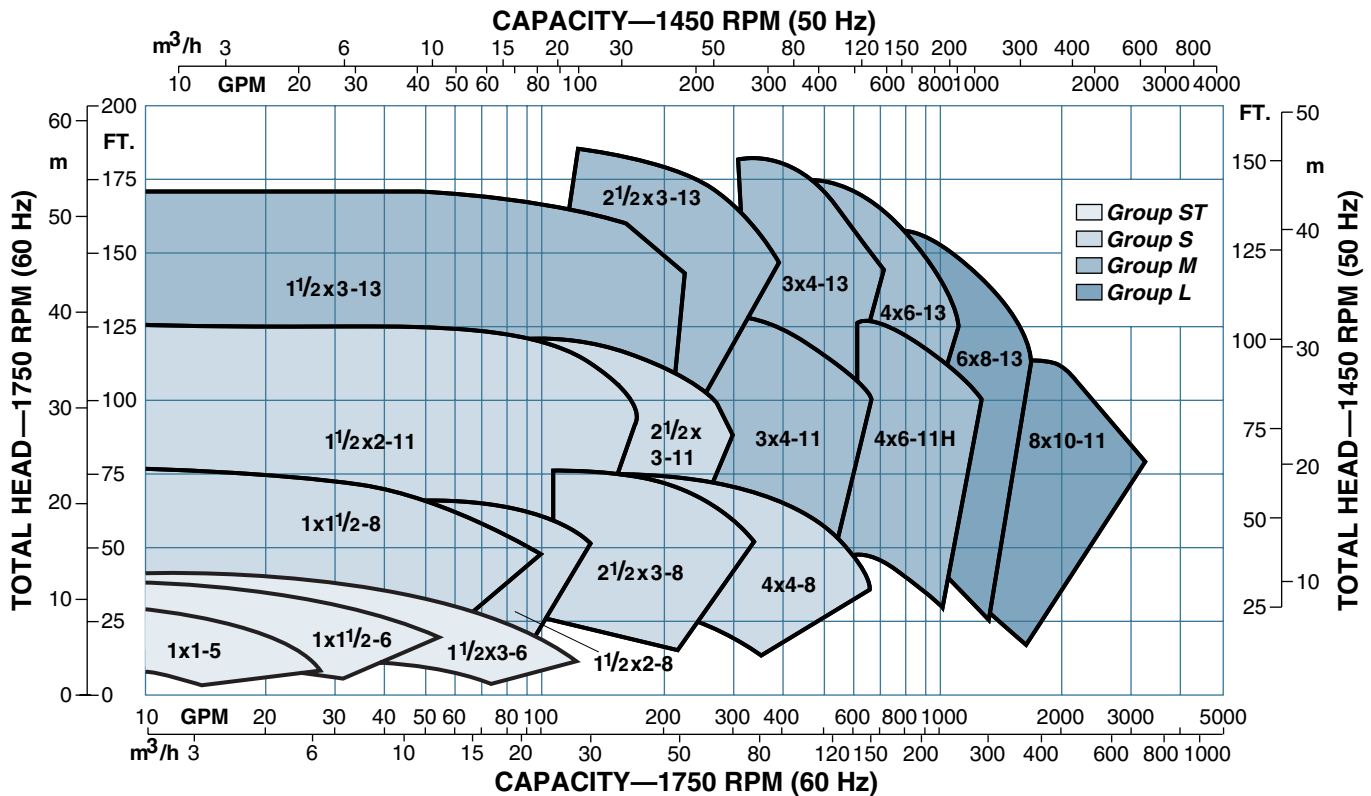
## Other Options

- Complete line of controls and starters
- Enclosed lineshaft
- Other types of float controls
- ANSI tank mounting
- Flanged discharge connections

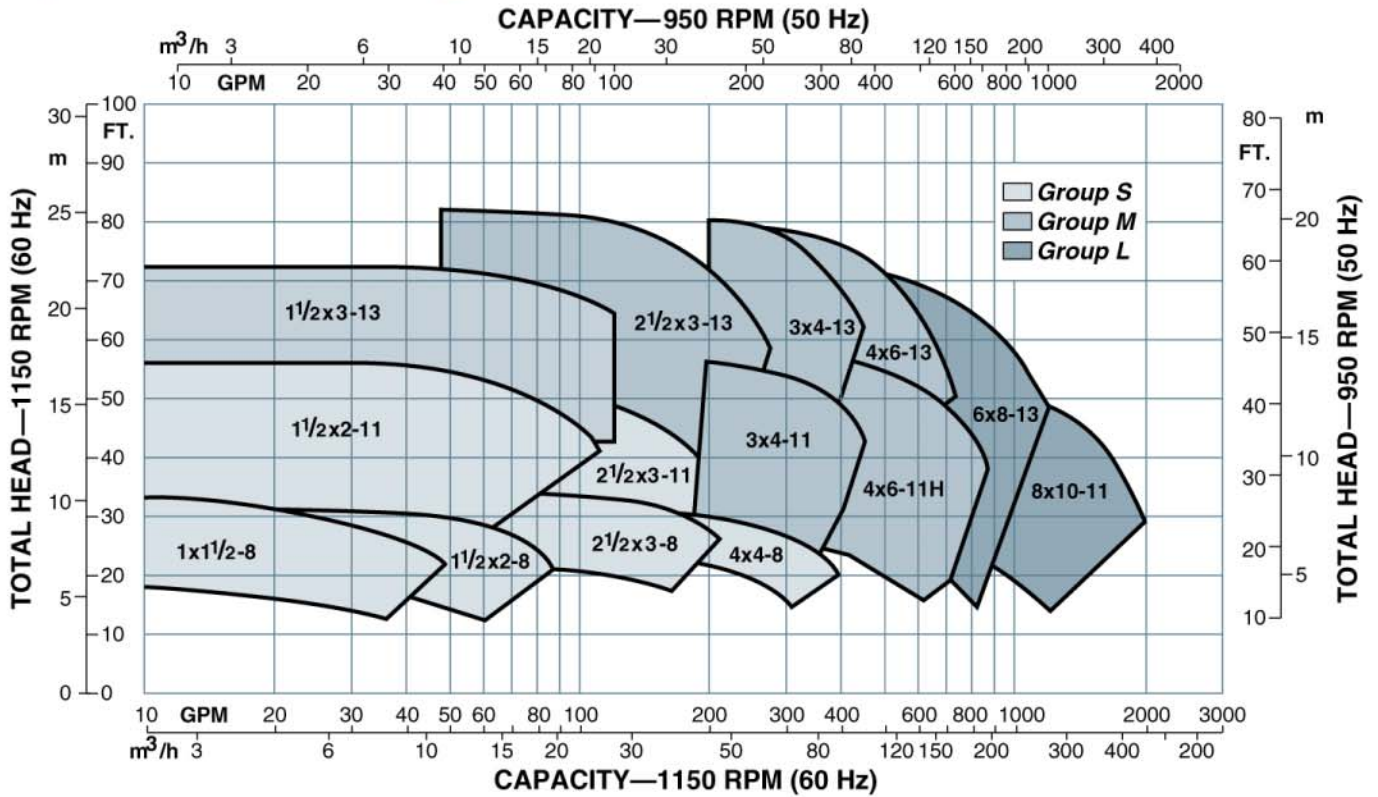
# Hydraulic Coverage 3500/2850 RPM



# Hydraulic Coverage 1750/1450 RPM



# Hydraulic Coverage 1150/950 RPM

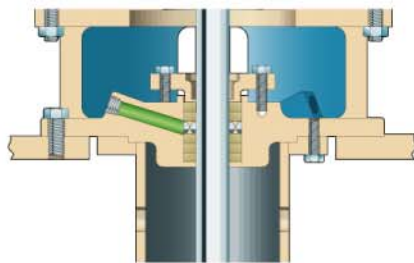


## Maximum Sealing Flexibility Vapor-Proof Construction

Optional upper stuffing box allows use of wide range of sealing arrangements to meet specific user requirements for sealing toxic, hazardous, noxious or corrosive fumes. With this option, the discharge pipe

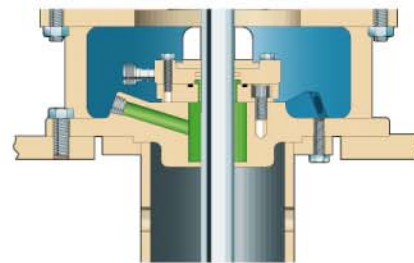
and all fittings are sealed at the support plate.

Your Goulds representative will gladly recommend the best sealing solution for your service, some of which are illustrated here.



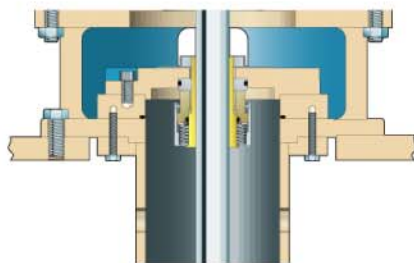
### PACKED BOX

Standard vapor-proof sealing option. Includes packing, lantern ring and grease lubricator (not illustrated).



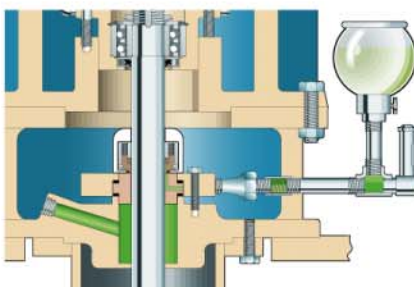
### FERROFLUIDIC SEAL

Leak tight seal accomplished by magnetically positioning a "ferro fluid" between the housing and shaft. No parts to wear or generate heat.



### DRY RUNNING SEAL

Dry running, non-contacting cartridge gas seal. Pressurized air barrier between seal faces prevents vapor leakage.



### SINGLE OUTSIDE SEAL

Mechanical seal with oil lubricator and sight glass. Outside mount has no metal parts in contact with vapors.

# Parts List and Materials of Construction

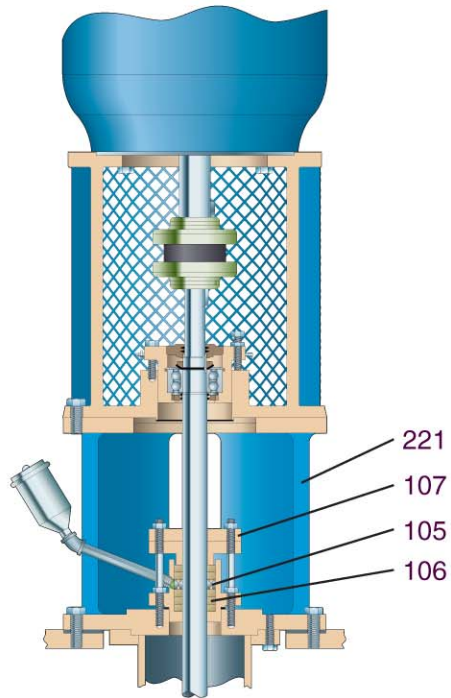
Item Number	Part Name	Material					
		Cast Iron	Bronze Fitted	Carbon Steel	316SS	Alloy 20	Hastelloy B & C
100	Casing	Cast Iron		Steel	316SS	Alloy 20	Hastelloy
101	Impeller	Ductile Iron	Bronze	Steel	316SS	Alloy 20	Hastelloy
105	Upper Stuffing Box Lantern Ring	Teflon					
106	Upper Stuffing Box Packing	Acrylic Graphite					
107	Upper Stuffing Box Gland	316SS					
112	Ball Bearing	Double Row Angular Contact					
122	Pump Shaft	Steel		316SS	Alloy 20	Hastelloy	
123	Deflector	EPDM					
134	Bearing Shell	Cast Iron					
136	Bearing Locknut	Steel					
178	Impeller Key	316SS			Alloy 20	Hastelloy	
155	Restrictor Bushing	Carbon-Filled Teflon®					
182	Suction Cover	Cast Iron	Steel	316SS	Alloy 20	Hastelloy	
187	Strainer	Cast Iron	316SS	Alloy 20	Hastelloy		
189	Pump Support Plate	Steel					
190	Lubrication or Flush Pipe	Steel	316SS	Alloy 20	Hastelloy		
192	Head Column	Steel	316SS	Alloy 20	Hastelloy		
195	Discharge Pipe	Steel	316SS	Alloy 20	Hastelloy		
197	Steady Bearings	Carbon					
198	Impeller Screw	316SS			Alloy 20	Hastelloy	
199	Impeller Washer	316SS			Alloy 20	Hastelloy	
213	Steady Bearing Housing	Cast Iron	316SS	Alloy 20	Hastelloy		
221	Upper Stuffing Box (When Used)	Cast Iron					
240	Motor Support	Cast Iron					
242	Pipe Collar (Discharge Pipe)	Steel	316SS	Alloy 20	Hastelloy		
306	Column Extension	Steel	316SS	Alloy 20	Hastelloy		
315	Discharge Elbow	Cast Iron	Steel	316SS	Alloy 20	Hastelloy	
332A	Labyrinth Seal	Carbon-Filled Teflon® with Viton O-ring					
351	Gasket—Suction Cover to Casing	Nitrile Acrylic					
369	Retaining Ring—Steady Bearing	Stainless			Alloy 20	Hastelloy	

## Construction Details All dimensions in inches and (mm).

		ST			S						M				MT			L			
		1x1-5	1x1 1/2-6	1 1/2x3-6	1x1 1/2-8	1 1/2x2-8	2 1/2x3-8	4x4-8	1 1/2x2-11	2 1/2x3-11	3x4-11	4x6-11H	1 1/2x3-13	2 1/2x3-13	3x4-13	4x6-13	1 1/2x2-8	1 1/2x2-11	2 1/2x3-8	6x8-13	8x10-11
Pump	Weight (2 Foot Depth) Less Motor Lb (kg)*	275 (125)	280 (127)	295 (134)	305 (139)	315 (143)	325 (148)	390 (177)	385 (175)	425 (193)	540 (245)	590 (268)	535 (243)	550 (250)	570 (259)	600 (273)	325 (148)	385 (175)	335 (152)	830 (377)	910 (414)
	Weight—Add to Each 6" of Length Lb (kg)*	13 (6)	14 (6)	15 (7)	14 (6)	14 (6)	15 (7)	17 (8)	14 (6)	15 (7)	20 (9)	20 (9)	19 (9)	19 (9)	20 (9)	20 (9)	14 (6)	15 (7)	15 (7)	35 (16)	40 (18)
	Maximum Diameter of Solids	0.188 (5)	0.250 (6)	0.500 (13)	0.281 (7)	0.281 (7)	0.938 (24)	0.938 (24)	0.344 (9)	0.594 (15)	0.594 (15)	1.125 (29)	0.250 (6)	0.594 (15)	0.594 (15)	0.594 (15)	0.281 (7)	0.344 (9)	0.938 (24)	0.594 (15)	1.188 (30)
Shaft	Diameter at Impeller	0.6875 (17)			Tapered 1.1118 (28) Large End						Tapered 1.585 (40) Large End				Tapered 2.222 (56) Large End						
	Diameter at Coupling End	0.875 (22)						1.375 (35)				1.875 (48)									
	Diameter at Steady Bearing	1.125 (29)						1.625 (41)				2.25 (57)									
Bearings	Ball Bearing	5305 or Equal						5308 or Equal				5311 or Equal									
	Steady Bearing (Sleeve Type)	1.125 I.D. x 1.625 O.D. (29x41)						1.625 I.D. x 2.125 O.D. (41x54)				2.25 I.D. x 3.0 O.D. (57x75)									
General	Maximum Total Working Pressure—Casing	150 PSI (1034 kPa)																			
	Max. Liquid Temp.—Without Upper Stuffing Box	210° F (99° C)																			
	Max. Liquid Temperature—Upper Stuffing Box	450° F (232° C)																			

\*L Group Pump Weights are based on a 3 ft (.9m) Setting

# Sectional View Model 3171

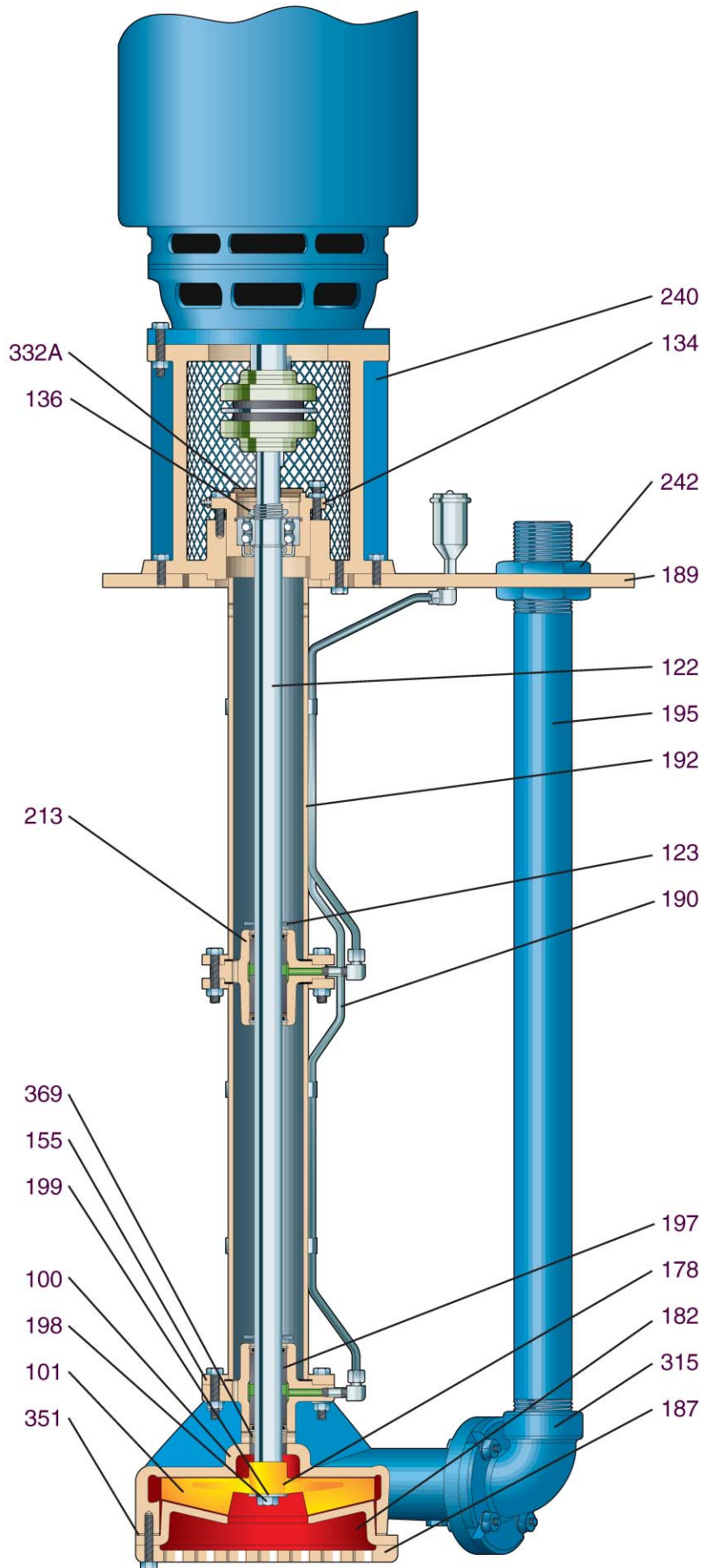


Optional Upper Stuffing Box



## Designed to Meet (or Exceed) Today's Tough Environmental Requirements

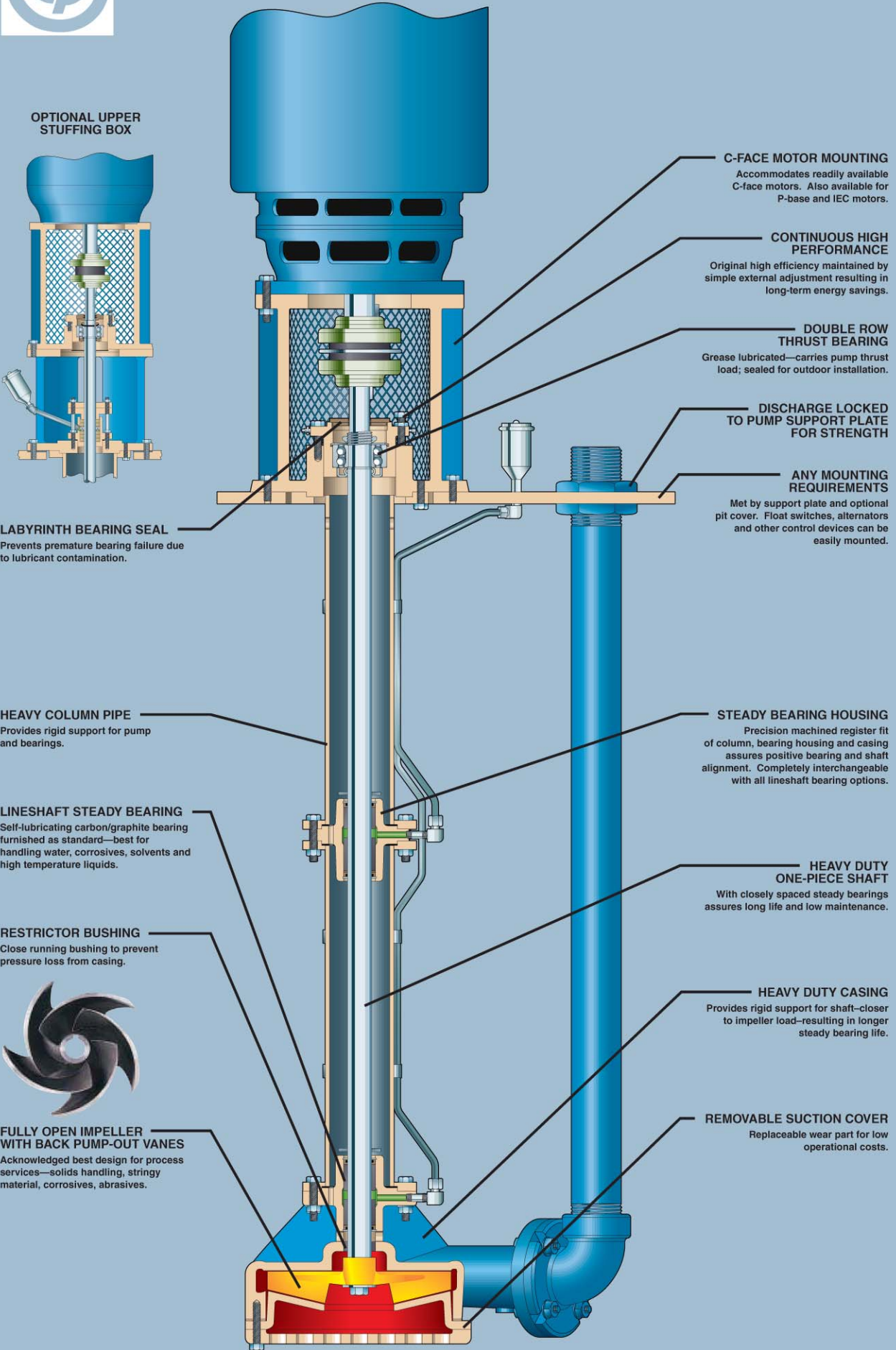
Installed in 1988 on hydrocarbon waste sump service, this 3171 was easily retrofitted with vapor-proof construction including a ferrofluidic seal (see page 5) to meet tougher EPA emission requirements. Readings were less than 30 ppm—*exceeding* EPA requirements





# Model 3171 Vertical Sump and Process Pumps

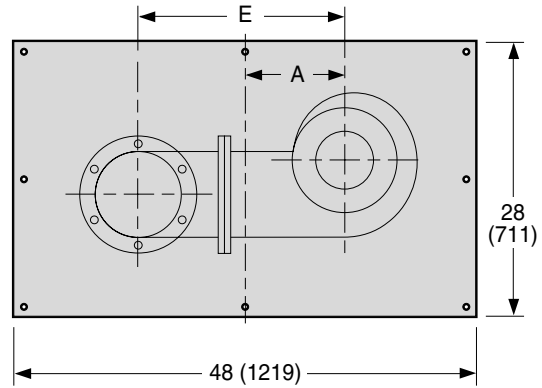
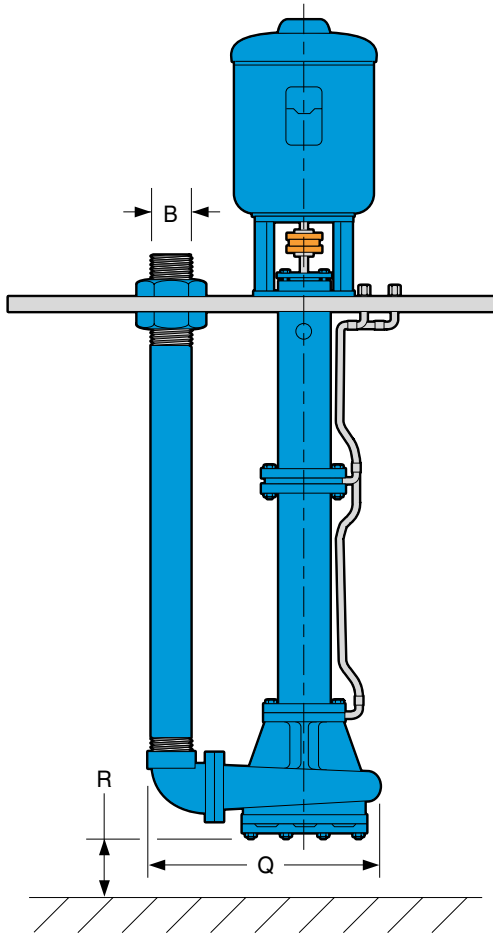
## Heavy Duty Design Features for a Wide Range of Services



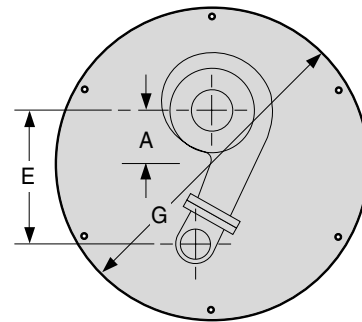


# Dimensions Model 3171

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



L Group



S, ST, M, MT Groups

## DIMENSIONS

	ST			S						M				MT			L					
	1x1-5	1x1 <sup>1</sup> / <sub>2</sub> -6	1 <sup>1</sup> / <sub>2</sub> x3-6	1x1 <sup>1</sup> / <sub>2</sub> -8	1 <sup>1</sup> / <sub>2</sub> x2-8	2 <sup>1</sup> / <sub>2</sub> x3-8	4x4-8	1 <sup>1</sup> / <sub>2</sub> x2-11	2 <sup>1</sup> / <sub>2</sub> x3-11	3x4-11	4x6-11H	1 <sup>1</sup> / <sub>2</sub> x3-13	2 <sup>1</sup> / <sub>2</sub> x3-13	3x4-13	4x6-13	1 <sup>1</sup> / <sub>2</sub> x2-8	1 <sup>1</sup> / <sub>2</sub> x2-11	2 <sup>1</sup> / <sub>2</sub> x3-8	6x8-13	6x8-13	8x10-11	8x10-11
A	3.6 (92)	3.6 (92)	3.6 (92)	3.6 (92)	3.6 (92)	3.6 (92)	4 (102)	4 (102)	4 (102)	4.5 (114)	4.5 (114)	4.5 (114)	4.5 (114)	4.5 (114)	4.5 (114)	4 (102)	00.0 (000)	4.5 (114)	10.4 (264)	10.4 (264)	10.4 (264)	10.4 (264)
B	1.5 (38)	2 (51)	3 (76)	2 (51)	2 (51)	3 (76)	4 (102)	2 (51)	3 (76)	4 (102)	4 (102)	3 (76)	3 (76)	4 (102)	4 (102)	3 (76)	0 (00)	4 (102)	6 (152)	8 (203)	8 (203)	10 (254)
E	8.1 (205)	8.4 (213)	9.2 (232)	10.1 (256)	9.6 (244)	10.3 (262)	12.1 (306)	11.4 (289)	12.1 (306)	12.8 (325)	14.3 (362)	13.6 (346)	13.2 (335)	13.8 (351)	14.8 (375)	11.4 (289)	00.0 (000)	13.6 (346)	21.5 (546)	21.5 (546)	24.3 (616)	24.3 (616)
G	22 (559)	22 (559)	22 (559)	22 (559)	22 (559)	22 (559)	26.5 (673)	26.5 (673)	26.5 (673)	31 (787)	31 (787)	31 (787)	31 (787)	31 (787)	31 (787)	26.5 (673)	—	31 (787)	—	—	—	—
R	6 (152)	5.8 (148)	5.3 (132)	4.3 (108)	4.4 (111)	3.8 (97)	3.3 (84)	4.6 (116)	4.2 (106)	4 (102)	3.7 (94)	4.8 (121)	4.7 (119)	4.3 (109)	3.7 (94)	4.4 (111)	0.0 (000)	3.8 (97)	6.9 (174)	6.9 (174)	5.3 (133)	5.3 (133)
Q*	14.3 (362)	15.3 (387)	16.8 (425)	17 (432)	17 (432)	19.5 (495)	22.5 (572)	20.5 (521)	22.5 (572)	24 (610)	26.5 (673)	25 (635)	25 (635)	25.5 (648)	27.5 (699)	20 (508)	00.0 (0000)	22.8 (578)	38.5 (978)	39.5 (1003)	42.5 (1080)	43.5 (1105)

\*Add 3 in. (76) for float mounted option.

# Goulds Model CV 3171

## Vertical Sump and Process Pumps Designed for the Total Range of Industry Services

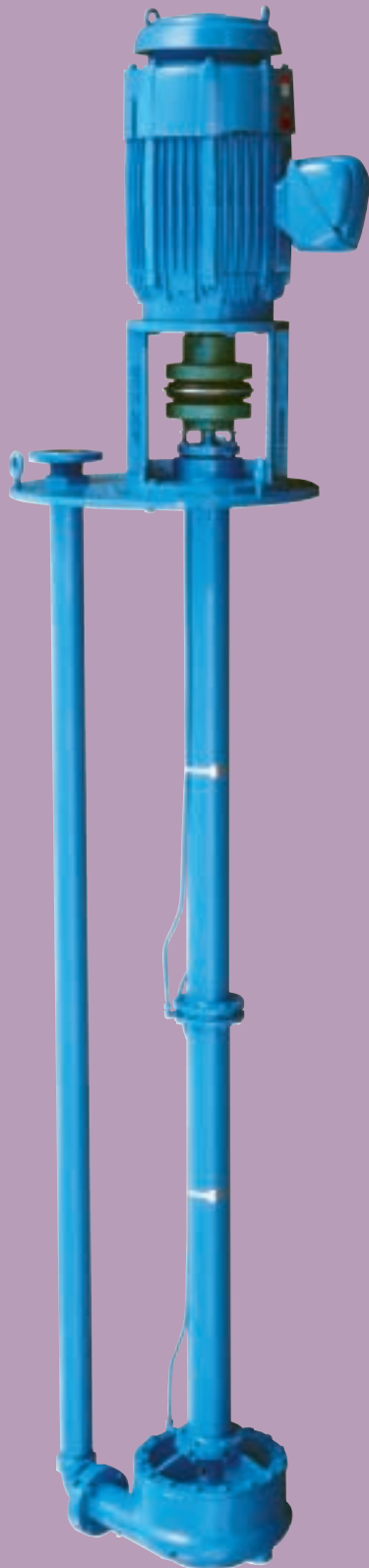
- Capacities to 1300 GPM (295 m<sup>3</sup>/h)
- Heads to 320 feet (97 m)
- Temperatures to 450° F (232° C)
- Pit Depths to 20 feet (6 m)

## Design Features

- Self-Priming
- Rugged Double Row Thrust Bearing
- Heavy Duty One-piece Shaft
- External Impeller Adjustment
- Available in a Wide Range of Alloys
- Concentric Volute Design
- Sealless Design
- Optional Vapor Proof Construction

## Services

- Fibrous Wastewater
- Industrial Process
- Industrial Sump Wastes
- Tank Unloading
- Corrosive and Non-Corrosive Liquids
- Food Processing
- Chemical Slurries



The CV 3171 is a recessed impeller (except LF 1x1.5-8), circular volute type sump pump. Ideal for large solids and shear sensitive fluids. It will pass any solid that will pass through the discharge pipe. Circular volute minimizes radial loads making this the ideal pump for low flow process applications.

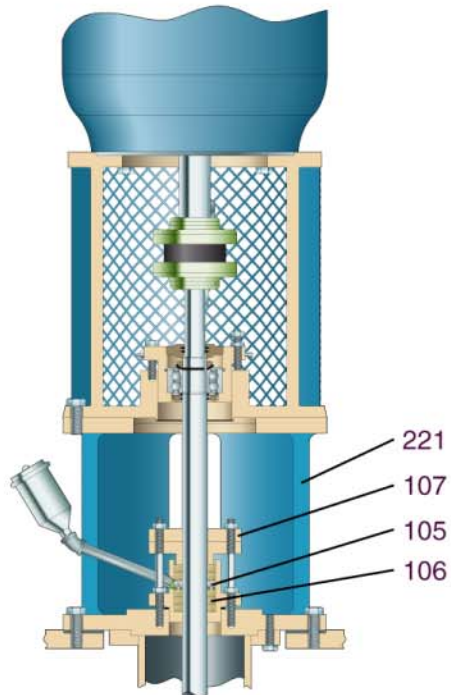
# CV 3171 Parts List and Materials of Construction

Item Number	Part Name	Material		
		Cast Iron	CD4	GA-20
100	Casing	D.I.	CD4	GA-20
101	Impeller	CD4	CD4	GA-20
105	Lantern Ring	Teflon	Teflon	Teflon
106	Packing	Acrylic Yarn	Acrylic Yarn	Acrylic Yarn
107	Gland	316SS or as Specified	316SS or as Specified	316SS or as Specified
108A	Adapter, Casing	D.I.	CD4	GA-20
112	Bearing, Ball	Steel	Steel	Steel
122	Shaft	Steel	316SS	C-20
123	Deflector	EPDM	EPDM	EPDM
134	Shell, Bearing	C.I.	C.I.	C.I.
136	Locknut, Bearing	Steel	Steel	Steel
155	Bushing (casing)	Carbon Teflon	Carbon Teflon	Carbon Teflon
187	Strainer (OPTIONAL)	Steel	316SS	C-20
189	Plate, Support	Steel or as Specified	Steel or as Specified	Steel or as Specified
190	Tubing, Lube Line	Steel	316SS	C-20
192	Column, Head	Steel	316SS	C-20
195	Pipe, Discharge	Steel	316SS	C-20
197	Steady Bearing	Carbon/Bronze/Rubber/Viton	Carbon/Bronze/Rubber/Viton	Carbon/Bronze/Rubber/Viton
213	Steady Bearing Housing	C.I.	316SS	GA-20
221	Upper Stuffing Box	Cast Iron or as Specified	Cast Iron or as Specified	Cast Iron or as Specified
240	Support, Motor	C.I.	C.I.	C.I.
242	Nut, Pipe	Steel	316SS	C-20
306	Extension, Column	Steel	316SS	C-20
315	Elbow, Discharge	D.I.	CD4	GA-20
332A	Seal, Labyrinth	Teflon/Viton	Teflon/Viton	Teflon/Viton
333	Seal, Housing	Steel/Nitrile	Steel/Nitrile	Steel/Nitrile
333H	Seal, Lip	Nitrile	Viton	Viton
351	Gasket, Casing	Nitrile/Acrylic	Nitrile/Acrylic	Nitrile/Acrylic
351A	Gasket, Elbow	Nitrile Acrylic	Nitrile/Acrylic	Nitrile/Acrylic
361A	Ring, Retaining Ball Bearing	Steel	Steel	Steel
369	Ring, Retaining Steady Bearing	316SS	316SS	C-20
369A	Ring, Retaining Shaft	Steel	Steel	Steel
382	Washer Lock Nut	Steel	Steel	Steel
412A	O-Ring, Impeller	Teflon	Teflon	Teflon

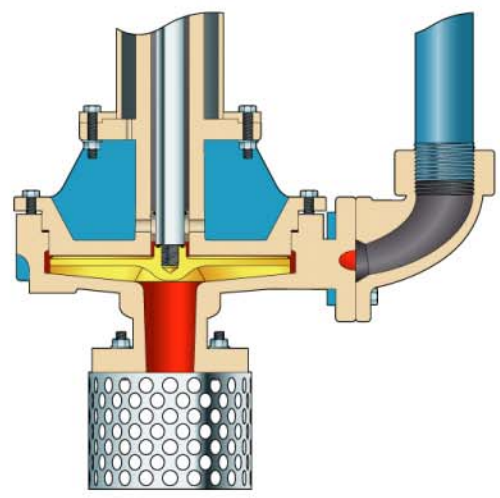
# CV 3171 Construction Details All dimensions in inches and (mm).

		LF 1x1.5-8	2x2-8	2x2-10	3x3-10	2x3-13	3x4-13
Pump	Weight (3 Foot Depth) Less Motor Lb (kg)*	385 (175)	484 (220)	531 (241)	559 (254)	565 (257)	616 (280)
	Weight—Add to Each 6" of Length Lb (kg)	20 (9)	20 (9)	20 (9)	20 (9)	20 (9)	20 (9)
	Maximum Diameter of Solids	0.25 (6)	1.75 (45)	1.75 (45)	2.75 (70)	1.75 (45)	2.75 (70)
Shaft	Diameter at Impeller		0.6309 (16)	0.9008 (23)	0.9008 (23)	0.9008 (23)	0.9008 (23)
	Diameter at Coupling End				1.375 (35)		
	Diameter at Steady Bearing of Solids				1.625 (41)		
Bearings	Ball Bearing				5308 or Equal		
	Steady Bearing (Sleeve Type)				1.625 I.D. x 2.125 O.D. (41 I.D. x 54 O.D.) 4.00 LG. (102 LG.)		
General	Maximum Total Working Pressure—Casing				285 PSIG (1965 kPa)		
	Max. Liquid Temp.— Without Upper Stuffing Box				210° F (99° C)		
	Max. Liquid Temp.— With Upper Stuffing Box				450° F (232° C)		

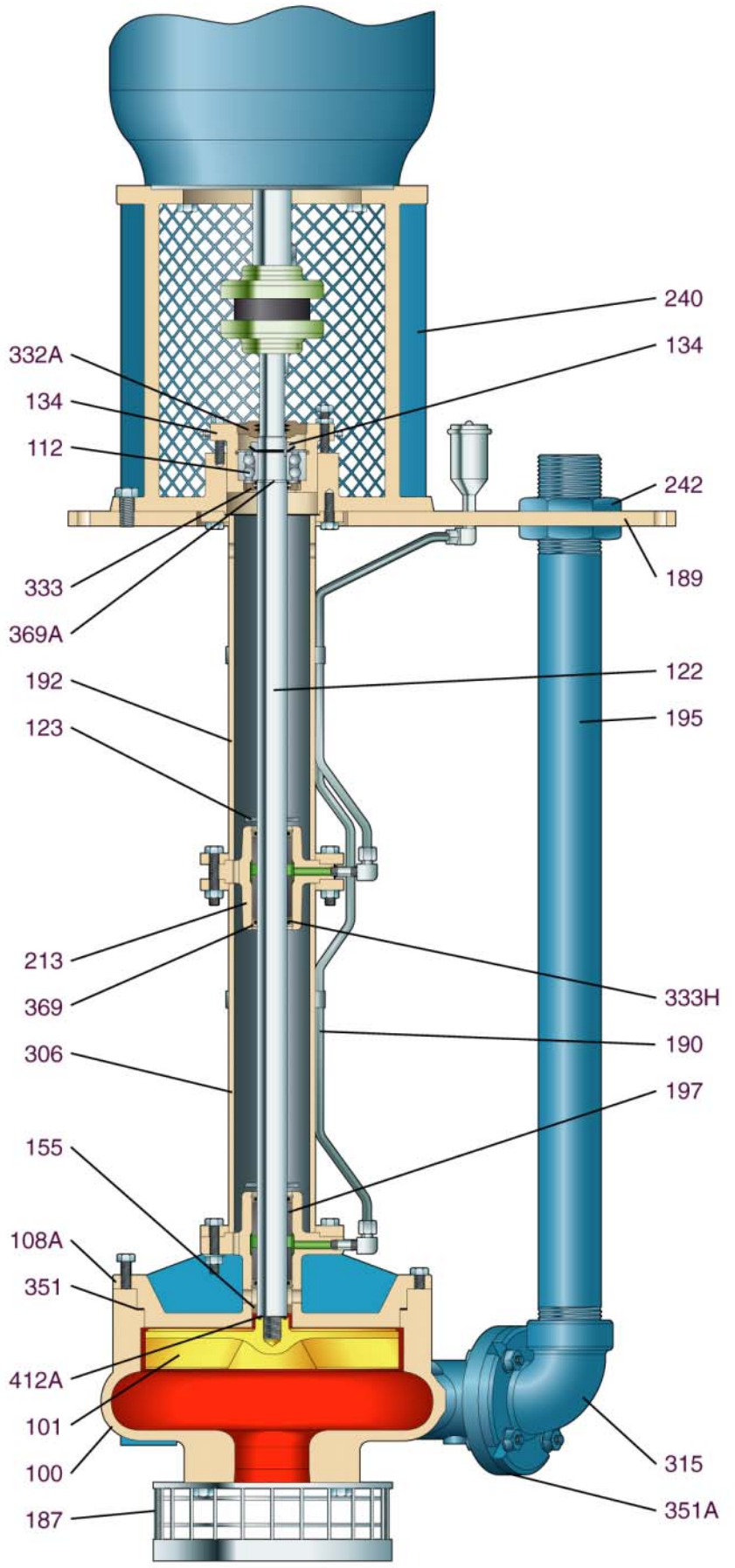
# Sectional View Model CV 3171



**Upper Stuffing Box**



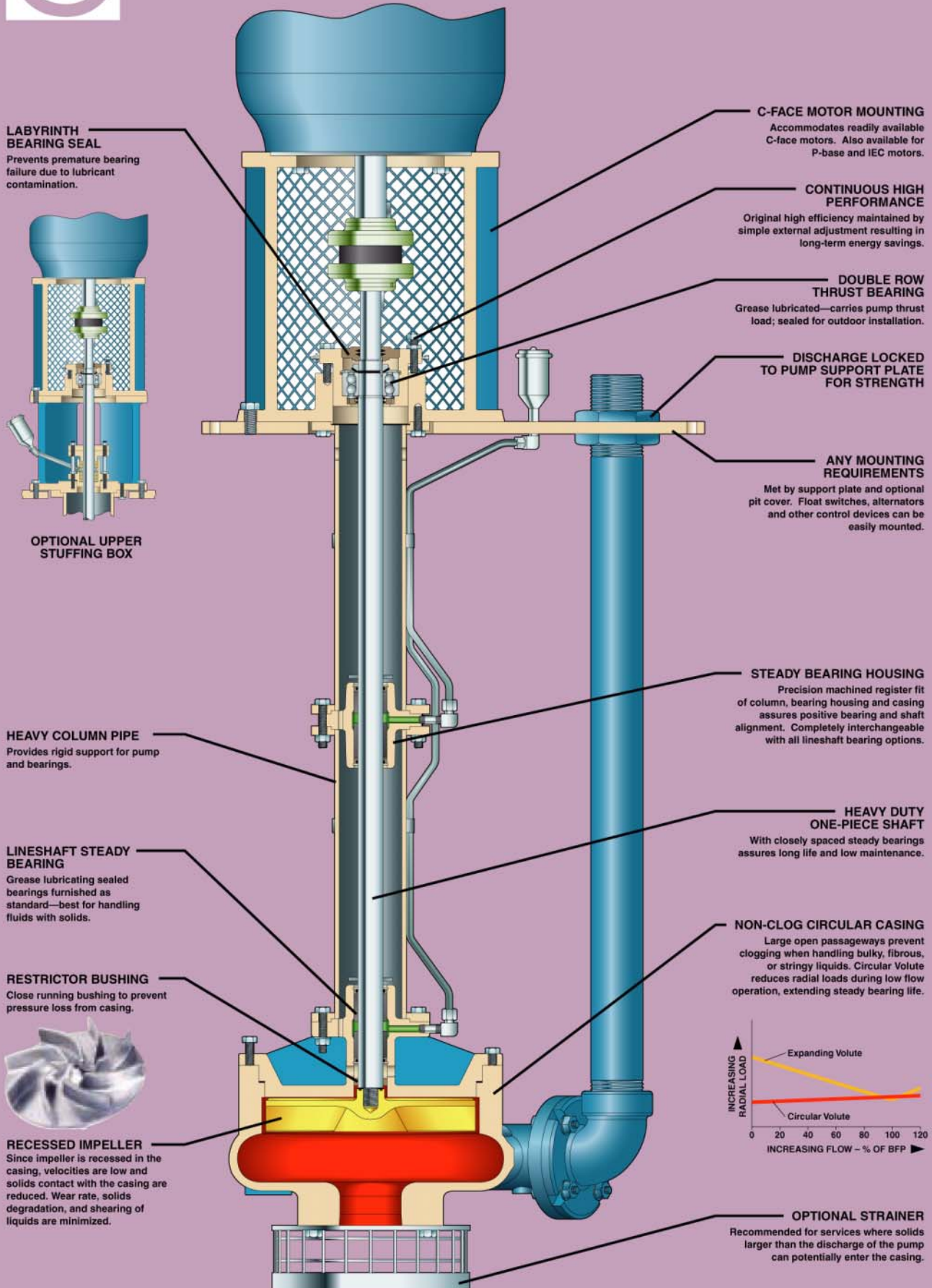
**LF1x1.5-8  
Low Flow  
Concentric Volute  
Not For Solids Handling**



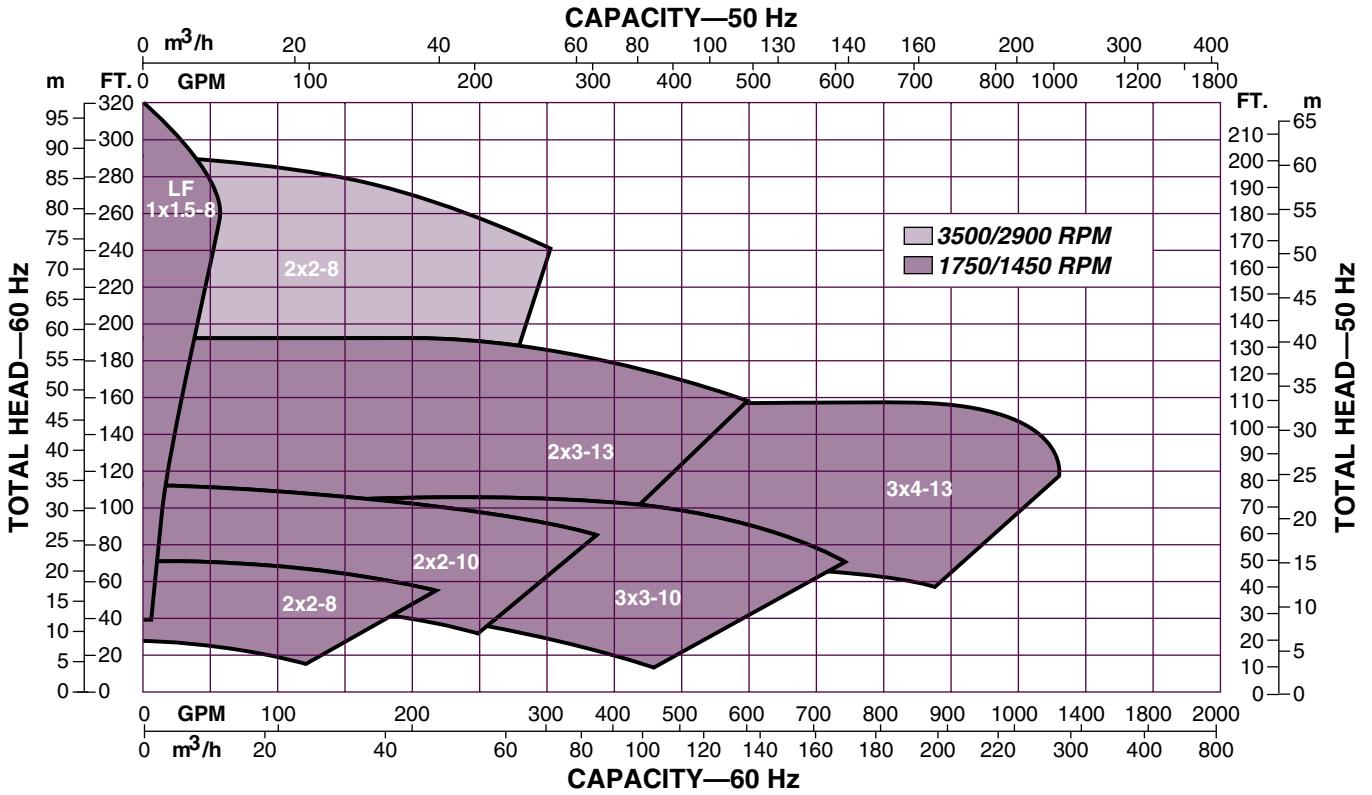


# Model CV 3171 Vertical Sump and Process Pumps

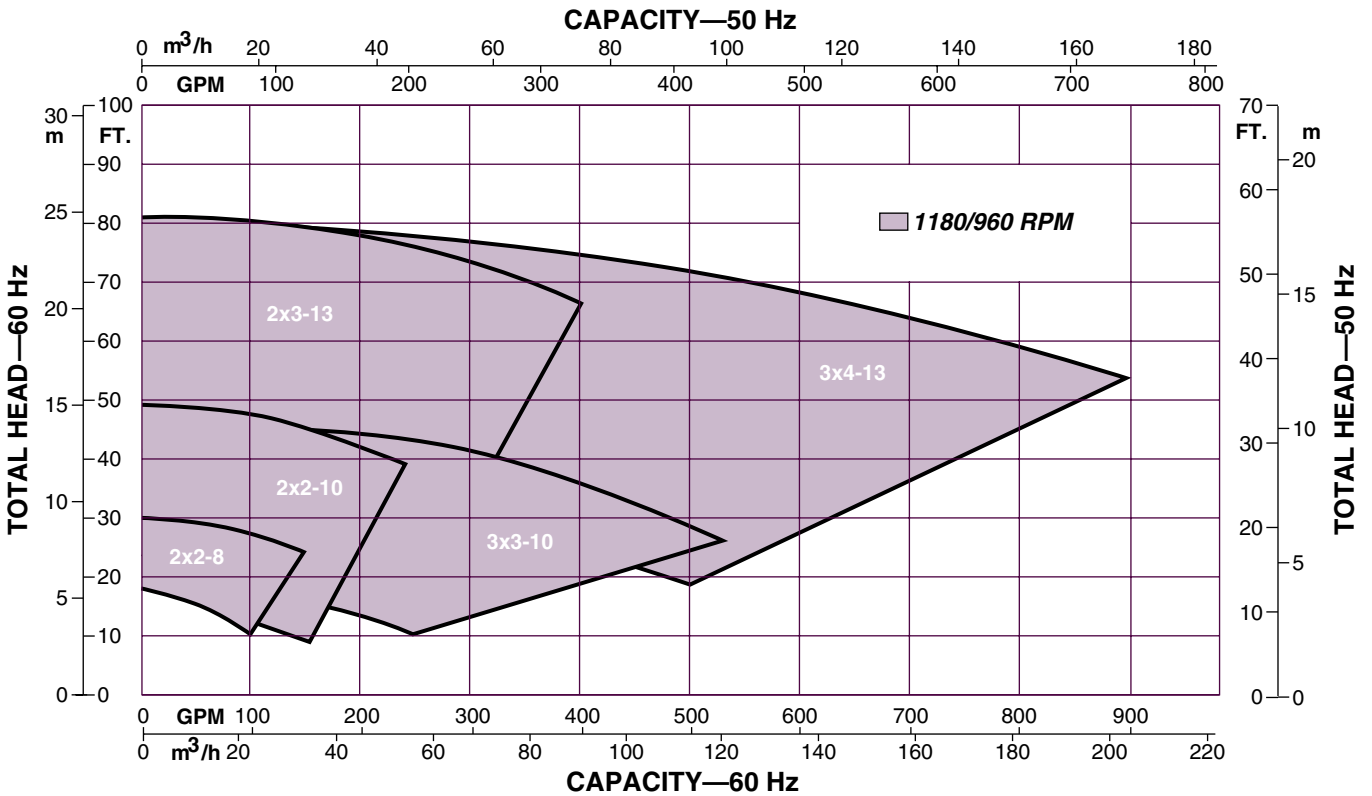
## Heavy Duty Design Features for a Wide Range of Services



# Hydraulic Coverage CV 3171 3500/2900/1750/1450 RPM

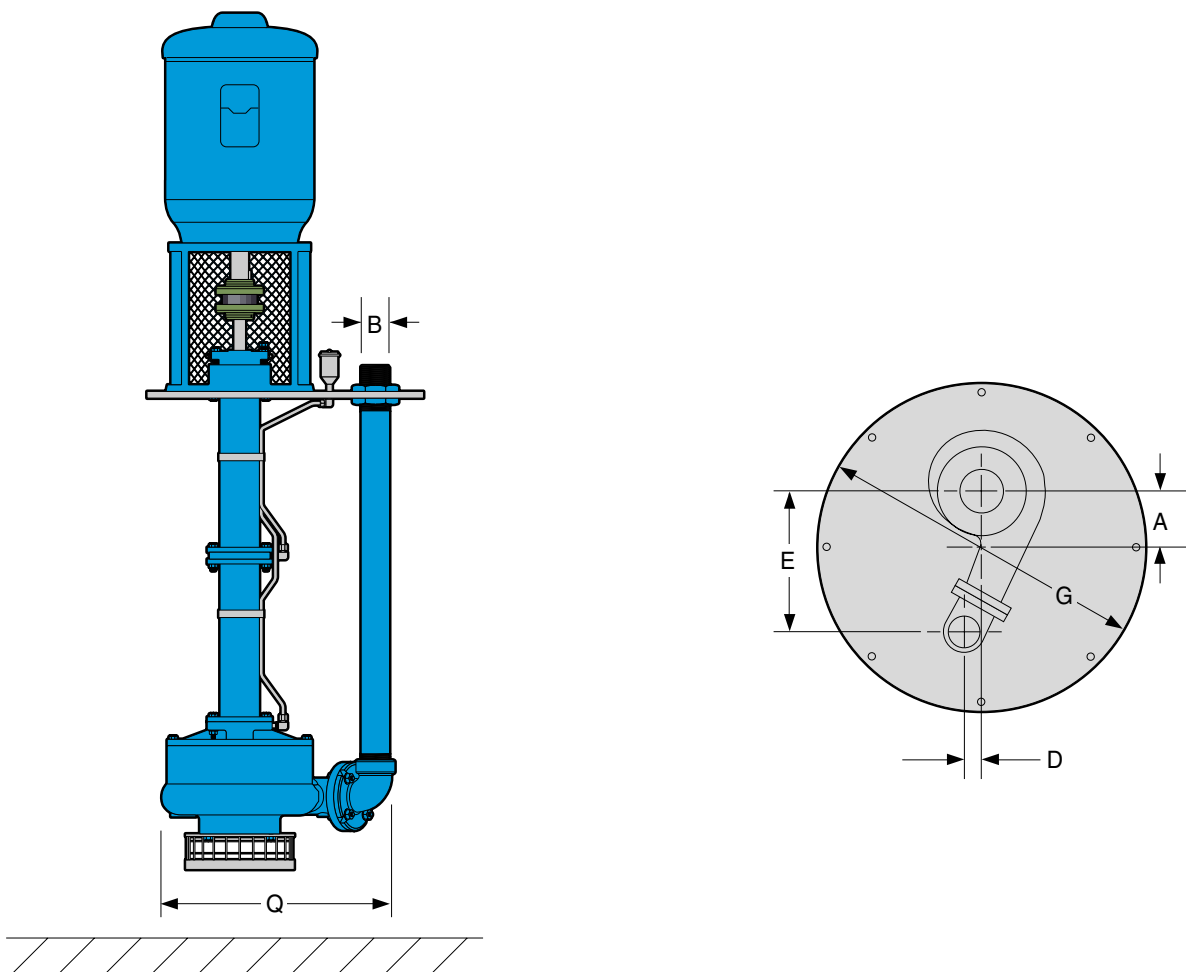


# Hydraulic Coverage CV 3171 1180/960 RPM



# Dimensions Model CV 3171

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



## DIMENSIONS

	2x2-8	2x2-10	3x3-10	2x3-13	3x4-13
A	4.00 (102)	4.50 (114)	4.50 (114)	4.50 (114)	4.50 (114)
B	2.00 (51)	2.00 (51)	3.00 (51)	2.00 (51)	3.00 (76)
D	1.32 (34)	1.45 (37)	1.69 (43)	1.27 (32)	1.14 (29)
G	26.50 (673)	31.00 (787)	31.00 (787)	31.00 (787)	31.00 (787)
E	10.79 (274)	13.01 (330)	13.17 (335)	15.44 (392)	15.22 (387)
Q*	18.11 (460)	21.47 (545)	22.97 (583)	25.24 (641)	26.32 (669)

\*Add 3 in. (76) for float mounted option.

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