

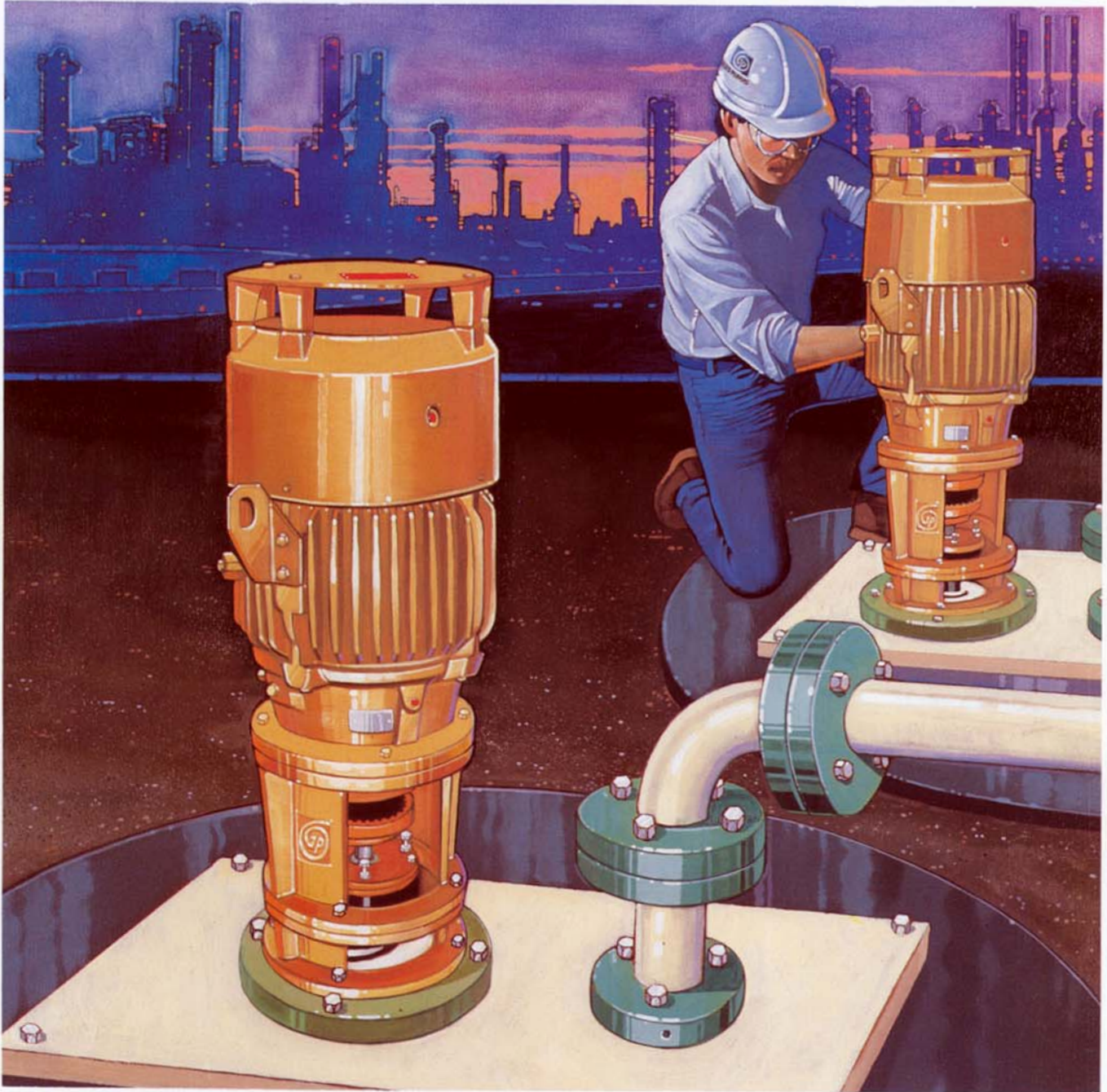


# GOULDS PUMPS

*LENNTECH*

info@lenntech.com Tel. +31-152-610-900  
www.lenntech.com Fax. +31-152-616-289

## Goulds Model NM 3171 Non-Metallic Vertical Process Pumps



# ITT



# Goulds Model NM 3171

## Non-Metallic Vertical Sump and Process Pumps Designed for Severe Corrosive Services

- Capacities to 1250 GPM (284 m<sup>3</sup>/h)
- Heads to 300 feet (92 m)
- Temperatures to 200° F (79° C)
- Pit Depths to 16 feet (5 m)

## Design Features

- Cost Effective Alternative to High Alloys
- Corrosion Resistant RULON® Column Bearings
- Casing and Impeller Molded with High Strength, Corrosion Resistant GMP-2000\*
- Casing and Impeller Interchangeable with Goulds Model NM 3196
- Rugged Double Row Thrust Bearing
- Thrust Bearing Sealed Against External Contamination
- Heavy Duty One-Piece Solid Shaft
- External Impeller Adjustment

## Services

**Chemical/Petrochemical** Waste acid, Hydrochloric acid, Sodium hydroxide; Ferric chloride, Sulfuric acid, Spinfinish wastes

**Utility** Coal pile runoff, Sea water, Demineralized water

**Metal Finishing** Spent pickling solutions, Electroplating rinses, Nickel plating baths

**General** Industrial process; Deionized water, Pollution control, Sump services

®RULON is a registered trademark of Dixon Industries Corp.  
\* Proprietary molding process/material GMP-2000





# Goulds Model NM 3171 Non-Metallic Vertical Process Pumps

## Design Features for Severe Corrosive Services

**STANDARD NORMAL THRUST MOTORS**

P-base, C-Face, I.E.C.

**NON-SPACER FLEXIBLE COUPLING**

**SEALED, SELF-CONTAINED THRUST BEARING ASSEMBLY**

Sealed at both ends to protect bearing from corrosive vapors.

**DOUBLE ROW THRUST BEARING**

Greased for life—standard.

**HEAVY DUTY FRP MOUNTING PLATE**

**VAPOR SEAL CONSTRUCTION**

Teflon® U-cup seal assures product vapors are contained in column.

**OVERSIZED SHAFT**

Available in 316 stainless steel, Alloy 20, Hastelloy B & C, Titanium.

**HIGH STRENGTH FRP COLUMN PIPE**

**CORROSION RESISTANT RULON® BEARINGS**

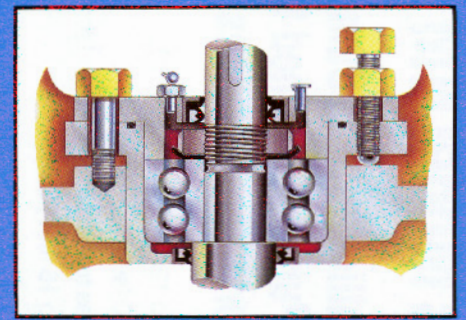
Designed specifically for non-metallic pump services.

**HIGH PERFORMANCE VOLUTE DESIGN**

High efficiency, true volute design achieved by exclusive Greg Molding Process.

**POSITIVE LIQUID SEALING AT IMPELLER**

Corrosion resistant Viton O-ring protects threaded area against corrosion.



**REGREASABLE OPTION**

**EXTERNAL IMPELLER ADJUSTMENT**

Original high efficiency maintained by simple adjustment.

**NO ALIGNMENT REQUIRED**

Precision rabbeted fits assure shaft alignment.

**150 LB. FRP DISCHARGE FLANGE**

**FULLY OPEN IMPELLER**

Best design for CPI services. Duplicates Model NM 3196 hydraulic performance.

**OPTIONAL FRP TAIL PIPE**

Available in lengths to 6 feet.

**SUCTION BELL AND STRAINER**

Supplied as standard.

\*E.I. Du Pont Reg. Trademark



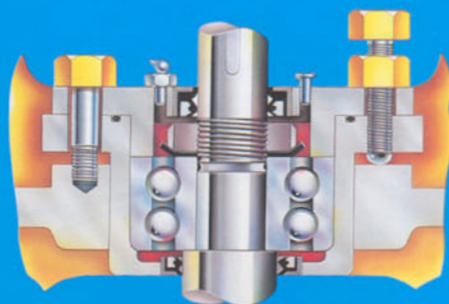
# Designed for Reliability

## Thrust Bearing Design

**Mechanical Reliability** Oversized double row thrust bearing accommodates entire range of NM 3171 sizes. Bearing is greased-for-life as standard for minimum maintenance.

**Protected from Contamination** Three-way bearing protection:

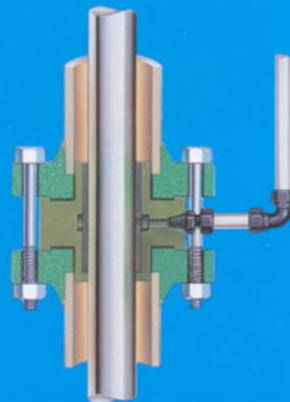
- Double lip shaft seals installed top and bottom.
- O-ring seal between bearing housing and end cover.
- Teflon U-cup vapor seal installed in shaft column.



## Column Bearing Design

Superior column bearing performance is assured by a special RULON® bearing ... a polymeric fluoropolymer material designed specially for use with high alloy shafting. RULON® provides significant advantages:

- Extremely low coefficient of friction.
- Chemically inert.
- Low wear rate.
- Minimum lubrication requirements.
- Ideal for non-metallic pumps and severe corrosive services.



## Corrosion Resistant Construction

### GMP-2000 Casing and Impeller

The NM 3171 casing and impeller are molded with high strength corrosion resistant GMP-2000 using the proprietary Greg Molding Process.

### Fibercast Piping

Fibercast Piping Column and discharge pipe are fabricated with quality Fibercast®.

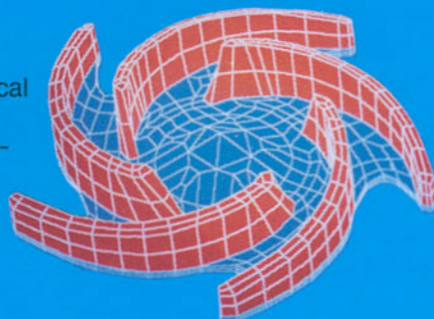


\* Fibercast is a registered trademark of Fibercast Company.

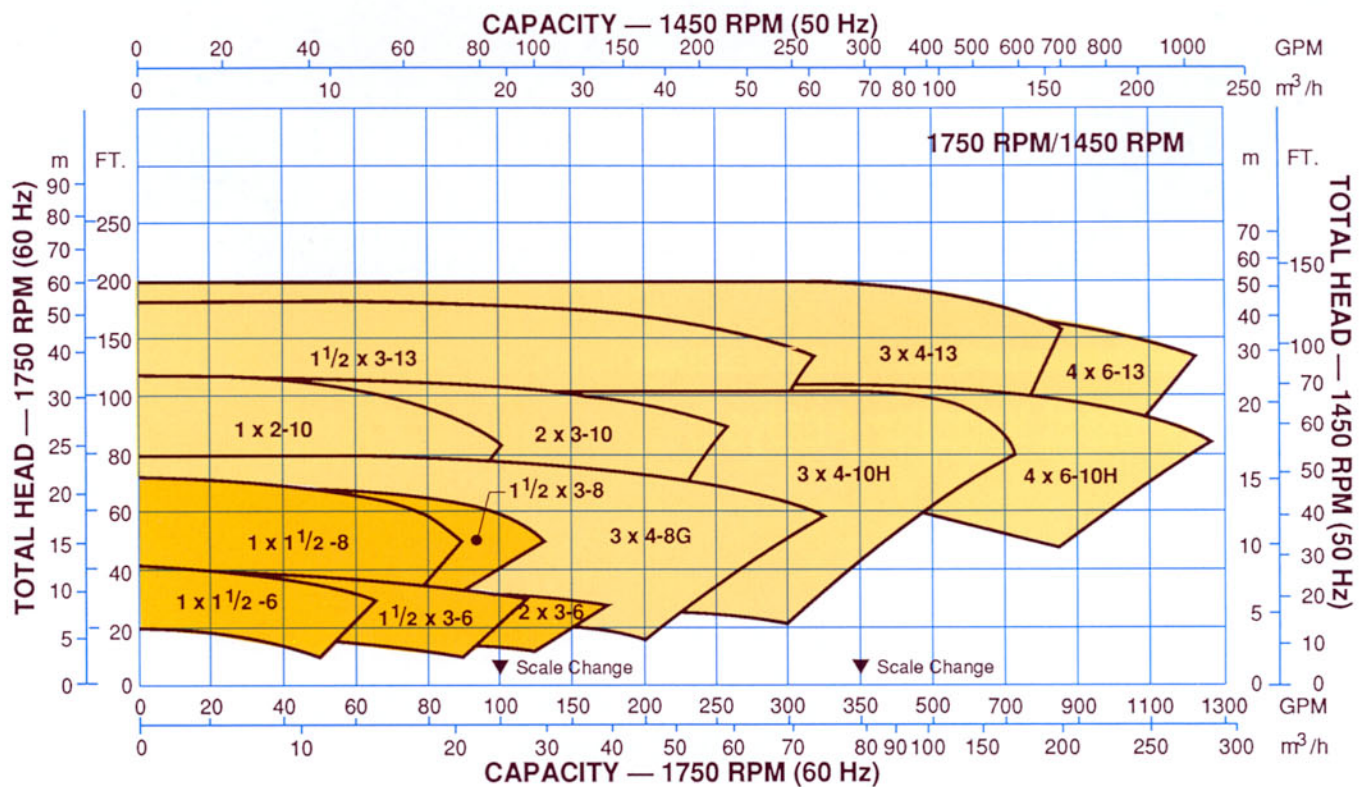
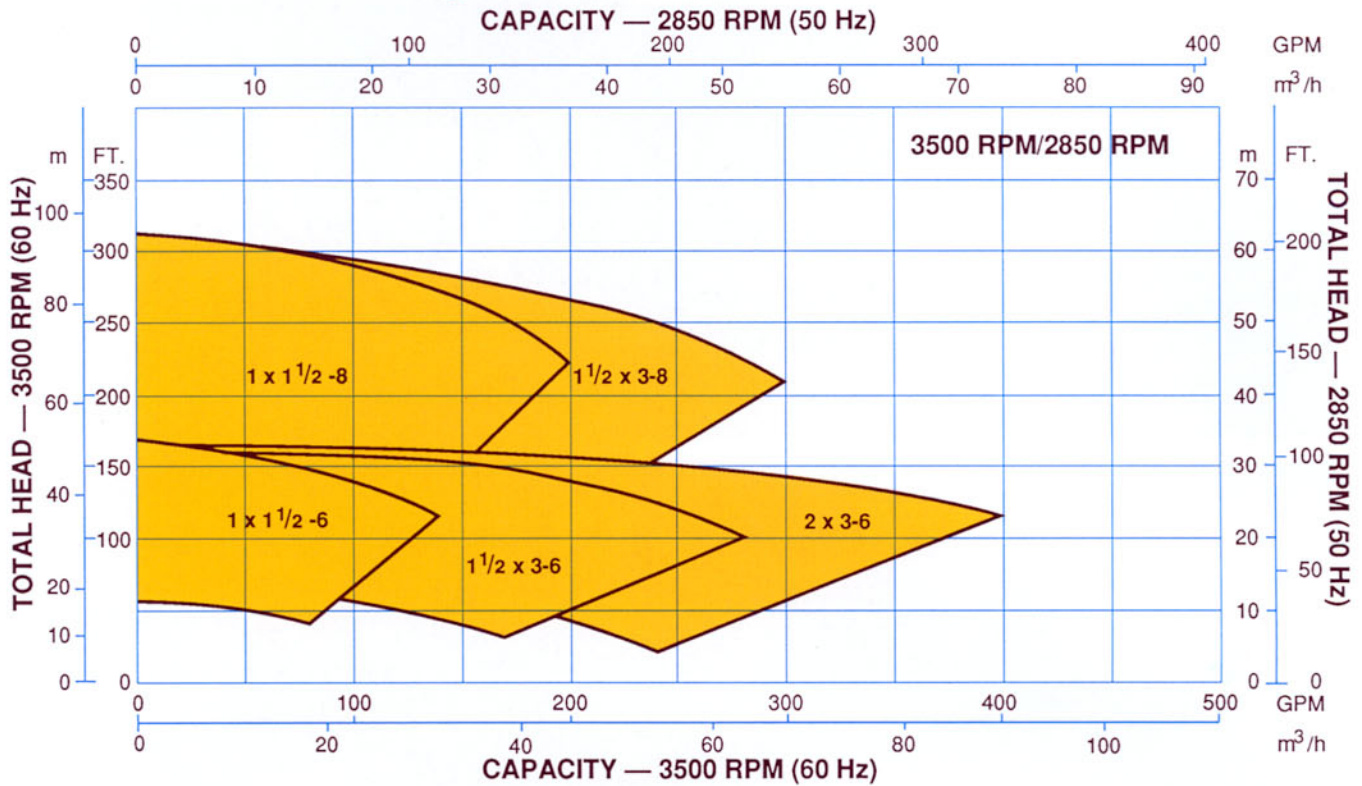
## Finite Element Impeller Analysis

Recognizing that the impeller must perform to high standards of mechanical reliability, Goulds developed a finite element stress analysis to explore design options. The result is an impeller that assures continuous trouble-free operation and superior hydraulic performance.

Goulds NM 3171 impeller was designed utilizing the most sophisticated tools available: finite element stress analysis combined with stress measurements using Stress Kote and stress gage techniques.

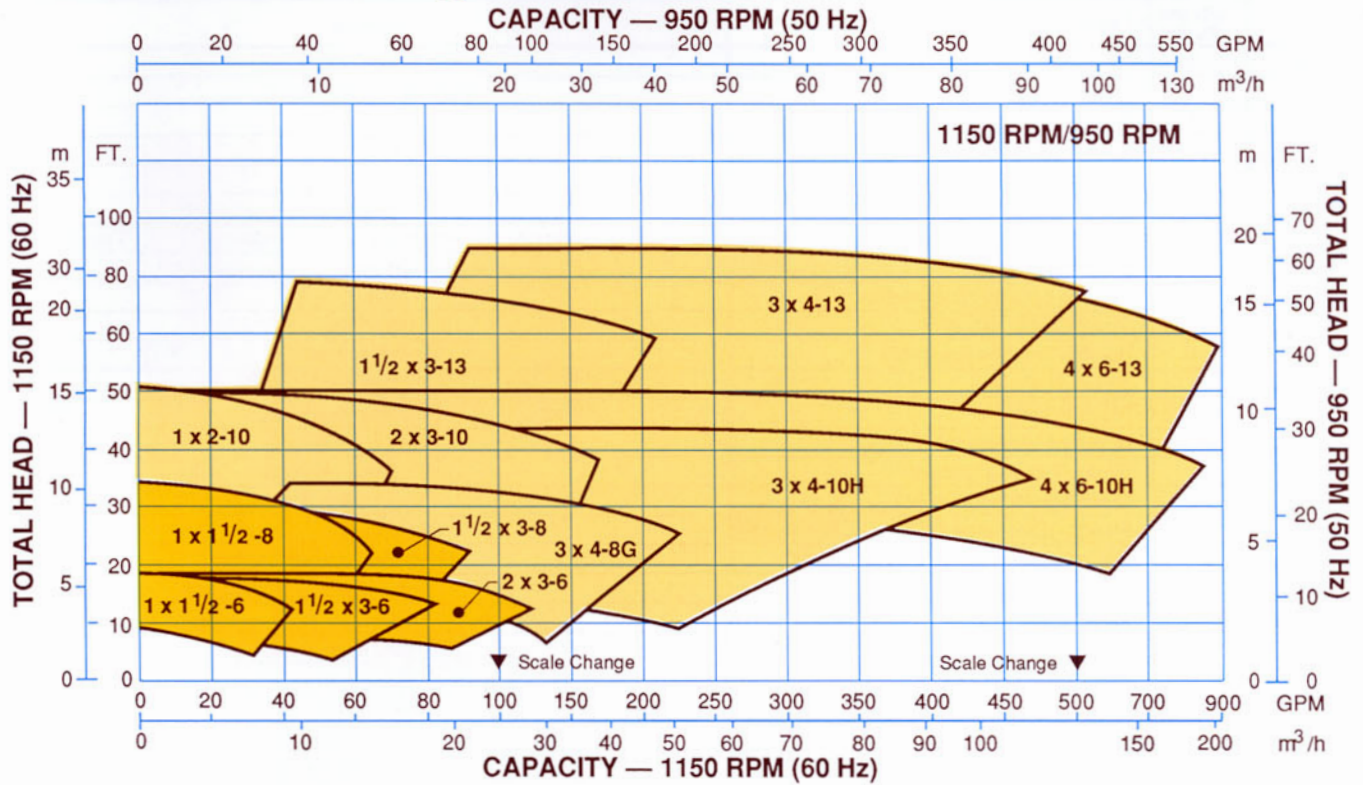


# Hydraulic Coverage 50 & 60 Hz





# Hydraulic Coverage 50 & 60 Hz



## Construction Details

Group ▶		ST					MT								
		Pump Size ▶		1x1 1/2-6	1 1/2x3-6	2x3-6	1x1 1/2-8	1 1/2x3-8	3x4-8G	1x2-10	2x3-10	3x4-10H	4x6-10H	1 1/2x3-13	3x4-13
Pump	Weight—3 Ft. Depth Less Motor—Lb. (kg)	125 (57)		135 (61)		140 (64)	155 (70)		160 (73)	170 (77)	200 (91)		210 (95)		
	Weight—Add For Each 6 In. Length—Lb. (kg)	15 (7)													
Casing	Maximum Diameter Solids—In. (mm)	11/32 (8.7)	7/16 (11.1)	3/8 (9.5)	11/32 (8.7)	7/16 (11.1)	11/16 (17.5)	7/32 (5.6)	3/8 (9.5)	5/8 (15.9)	1 (25.4)	7/32 (5.6)	5/8 (15.9)	1 (25.4)	
	Maximum Discharge—Head—Ft. (m)	170 (52)			290 (88)		76 (23)	122 (37)		180 (55)					
Shaft	Diameter At Coupling End—In. (mm)	1 (25.4)													
	Diameter At Steady Bearings—In. (mm)	1 3/8 (34.9)					1 3/4 (44.4)								
	Diameter At Impeller—In. (mm)	3/4 (19.1)					1 (25.4)								
	First Critical Speed (minimum)	4500 RPM													
Bearings	Thrust Bearing	5306													
	Steady Bearing—Sleeve Type—In. (mm)	1 1/8 I.D.x4 L. (34.9 I.D.x101.6 L.)					1 1/4 I.D.x4 L. (44.4 I.D.x101.6 L.)								
	Maximum Spacing—Center-to-Center—In. (mm)	32 (813)													
Maximum Liquid Temperature		200° F (79° C)													



# Parts List and Materials of Construction

Part No.	Qty per Pump	Part Name	Material				
100	1	Casing	GMP-2000				
101	1	Impeller with Insert	GMP-2000/Hastelloy C				
108	1	Adapter	Cast Iron				
109	1	Bearing End Cover	Cast Iron				
112	1	Ball Bearing	Steel				
113	1	Grease Relief Fitting (Optional)	Steel				
122	1	Shaft	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
134	1	Bearing Housing	Cast Iron				
136	1	Bearing Locknut/Lockwasher	Steel				
180	1	Pump Cover	Polyester				
181	1	Suction Tail Pipe Assembly	Polyester				
189	1	Mounting Plate	Polyester				
190	1-4	Flush Tubing	Polypropylene				
192	1-4	Column Pipe Assembly	Vinyl Ester				
193A	1	Grease Fitting (Optional)	Steel				
195	1	Discharge Pipe Assembly	Vinyl Ester				
195C	1	Flange—Discharge Pipe	Vinyl Ester				
213	1-4	Column Bearing Assembly	Polyester/Rulon®				
215	1	Protector Plate	Polyester				
215A	1	Vapor Seal	Teflon				
240	1	Motor Support	Cast Iron				
242	1	Pipe Collar	Polyester				
332	1	Lip Seal—Upper	Steel/Buna				
333A	1	Lip Seal—Lower	Steel/Buna				
351A	1	Gasket—Casing/Discharge Pipe Assembly	Non-Asbestos				
356A	4-16	Stud/Nut—Casing/Pump Cover	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
360Y	1	Gasket—Casing/Tail Pipe Assembly	Non-Asbestos				
371H	4-8	H Cap Screw—Casing/Discharge Pipe Assembly	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
371W	4	H Cap Screw—Column Pipe Assembly/Pump Cover	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
371Z	4	H Cap Screw—Column Pipe Assembly/Protector Plate	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
372A	4-8	H Cap Screw—Casing/Suction Tail Pipe Assembly	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
372B	4-12	H Cap Screw—Column/Column Tail	316 SS	Alloy 20	Hastelloy B	Hastelloy C	Titanium
412A	1	O-Ring—Impeller	Acid-Resistant Viton				
412Z	1	O-Ring—Pump Cover	Acid-Resistant Viton				
445A	1	Pin—Anti-Rotation	Nylon				
496	1	O-Ring—Bearing Housing	Buna				

Note: All hardware above mounting plate is 304 stainless steel.

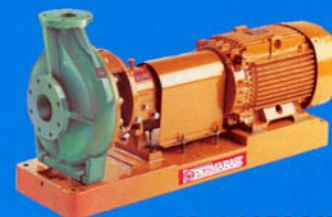
## Horizontal Non-Metallic Process Pumps For Application Flexibility

Goulds Model NM 3196 is a horizontal version of the NM 3171. Liquid end parts are made of the same material—high strength, corrosion resistant GMP-2000. Available in thirteen sizes, the NM 3196 conforms to dimensional requirements of ANSI B73.1 and includes ANSI features such as foot-mounted, centerline discharge casings and back pull-out design. A corrosion resistant FRP baseplate is standard.

For complete details, ask for Goulds Bulletin 725.6.

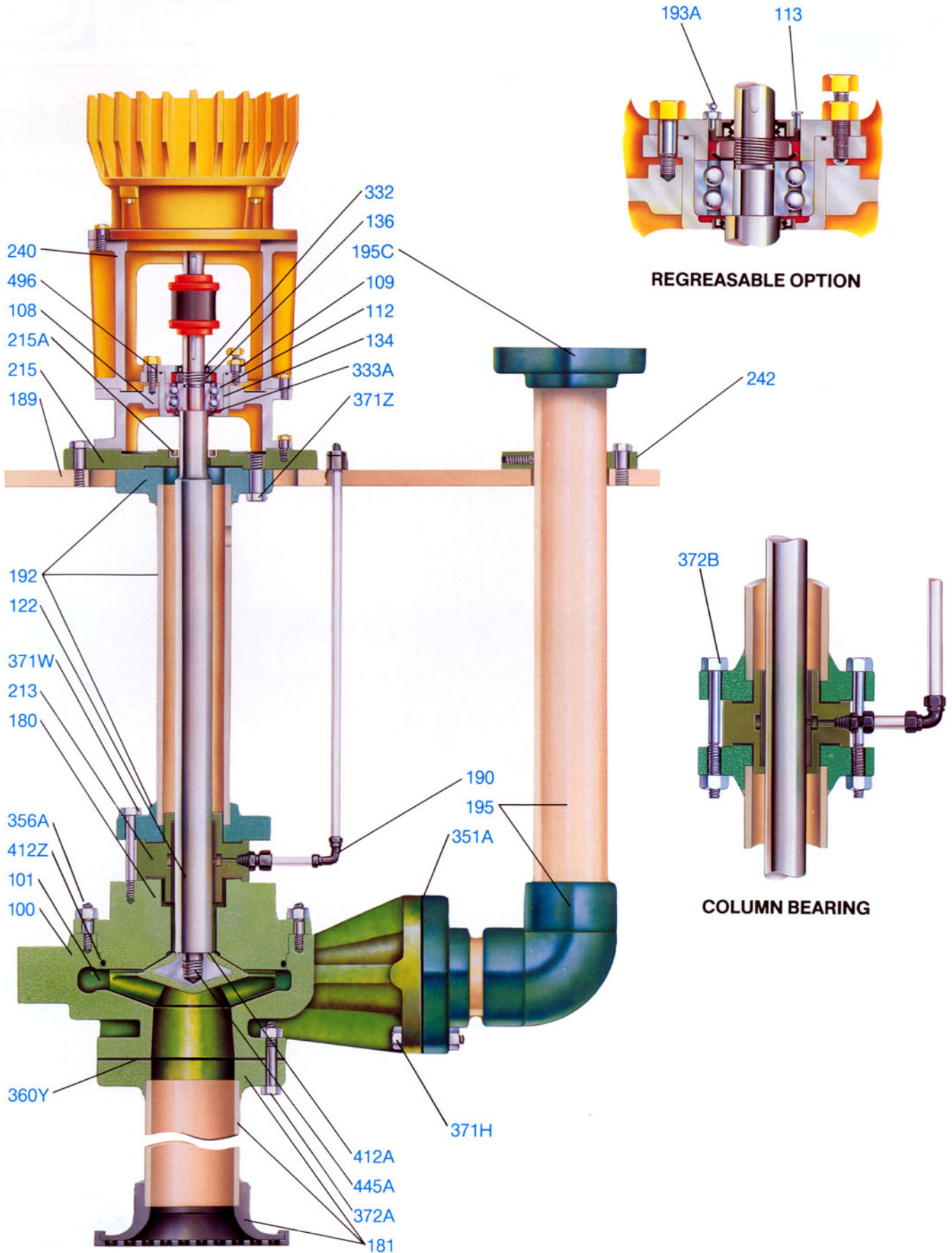


Model NM 3196 ST



Model NM 3196 MT

# Sectional View Model NM 3171



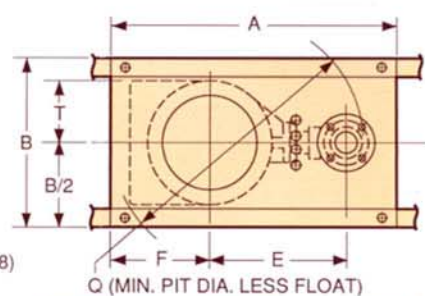
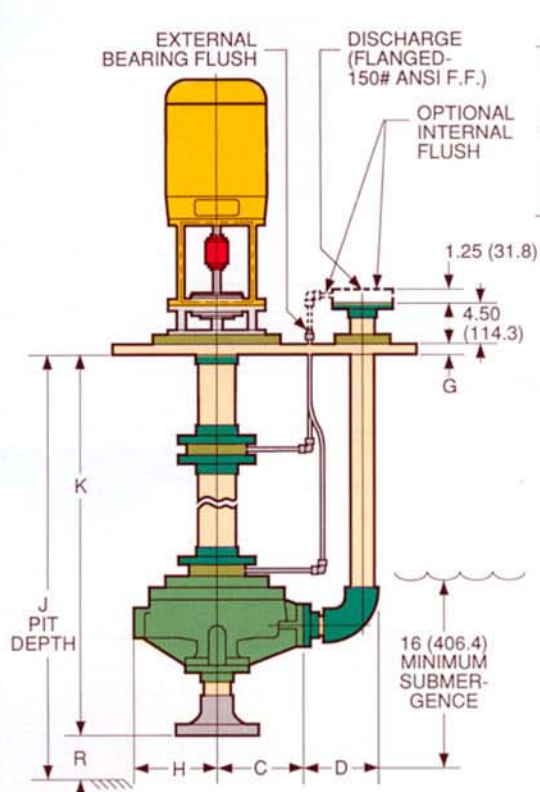


# Dimensions Model NM 3171

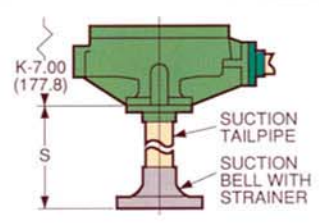
All dimensions in inches (mm). Not to be used for construction.

## DIMENSIONS—PUMP SETTING

Set No.	Pit Depth J in Ft(m)	No. of Steady Bearings	K	R
01	3.00 (.914)	1	28.50 (723.9)	7.50 (190.5)
02	3.50 (1.067)		34.50 (876.3)	
03	4.00 (1.219)		40.50 (1028.7)	
04	4.50 (1.372)		46.50 (1181.1)	
05	5.00 (1.524)	2	54.50 (1384.3)	5.50 (139.7)
06	5.50 (1.676)		60.50 (1536.7)	
07	6.00 (1.829)		66.50 (1689.1)	
08	6.50 (1.981)		72.50 (1841.5)	
09	7.00 (2.134)	3	78.50 (1993.9)	6.50 (165.1)
10	7.50 (2.286)		83.50 (2120.9)	
11	8.00 (2.438)		89.50 (2273.3)	
12	8.50 (2.591)		95.50 (2425.7)	
13	9.00 (2.743)	4	101.50 (2578.1)	7.50 (190.5)
14	9.50 (2.896)		107.50 (2730.5)	
15	10.00 (3.048)		112.50 (2857.5)	



## OPTIONAL SUCTION TAIL PIPE



S	
12.00 ( 304.8)	48.00 (1219.2)
18.00 ( 457.2)	54.00 (1371.6)
24.00 ( 609.6)	60.00 (1524.0)
30.00 ( 762.0)	66.00 (1676.4)
36.00 ( 914.4)	72.00 (1828.8)
42.00 (1066.8)	

## DIMENSIONS DETERMINED BY PUMP

Grp.	Size	Disch.	A	B	C	D	E	F	G	H	T	Weight* Lbs/(kg)	Q	
ST	1x1½-6	2	24.00 (609.6)	15.00 (381)	6.50 (165.1)	8.00 (203.2)	12.88 (327.2)	7.25 (184.2)	.75 (19.1)	5.25 (133.4)	4.50 (114.3)	125 (57)	22.00 (558.8)	
	1½x3-6	2									4.88 (123.9)			
	2x3-6	2									4.88 (123.9)			
	1x1½-8	2		18.00 (457.2)							5.50 (139.7)			135 (61)
	1½x3-8	2		5.50 (139.7)										
MT	3x4-8G	3	36.00 (914.4)	18.00 (457.2)	11.00 (279.4)	9.12 (231.6)	18.00 (457.2)	11.75 (298.5)	1.00 (25.4)	8.25 (209.6)	6.88 (174.7)	140 (64)	31.00 (787.4)	
	1x2-10	2			8.50 (215.9)	11.12 (282.4)					6.75 (171.5)	155 (70)		
	2x3-10	2			9.50 (241.3)	10.12 (257.1)					7.00 (177.8)	155 (70)		
	3x4-10H	3	36.00 (914.4)	30.00 (762)	12.50 (317.5)	9.12 (231.6)	19.50 (495.3)	12.00 (304.8)	10.00 (254)	7.62 (193.5)	175 (79)	35.00 (889)		
	1½x3-13	2			10.50 (266.7)	11.12 (282.4)				8.62 (218.9)	200 (91)	34.00 (863.6)		
	3x4-13	3	40.00 (1016)	30.00 (762)	12.50 (317.5)	9.12 (231.6)	21.12 (536.4)	13.00 (330.2)	10.38 (263.7)	9.62 (244.3)	200 (91)	250 (113)		
	4x6-10H	4			8.00 (203.2)	155 (70)				36.00 (914.4)				
	4x6-13	4			10.38 (263.7)	250 (113)								

\* Weight shown is for 36 in. pit depth. Weight increases by 30 lb. (13.6 kg) for each additional 1 foot increment. Weights are approximate.



ITT

LENNTECH

info@lenntech.com Tel. +31-152-610-900  
www.lenntech.com Fax. +31-152-616-289

