



**ITT**

Bulletin B-305F

**Bell & Gossett®**

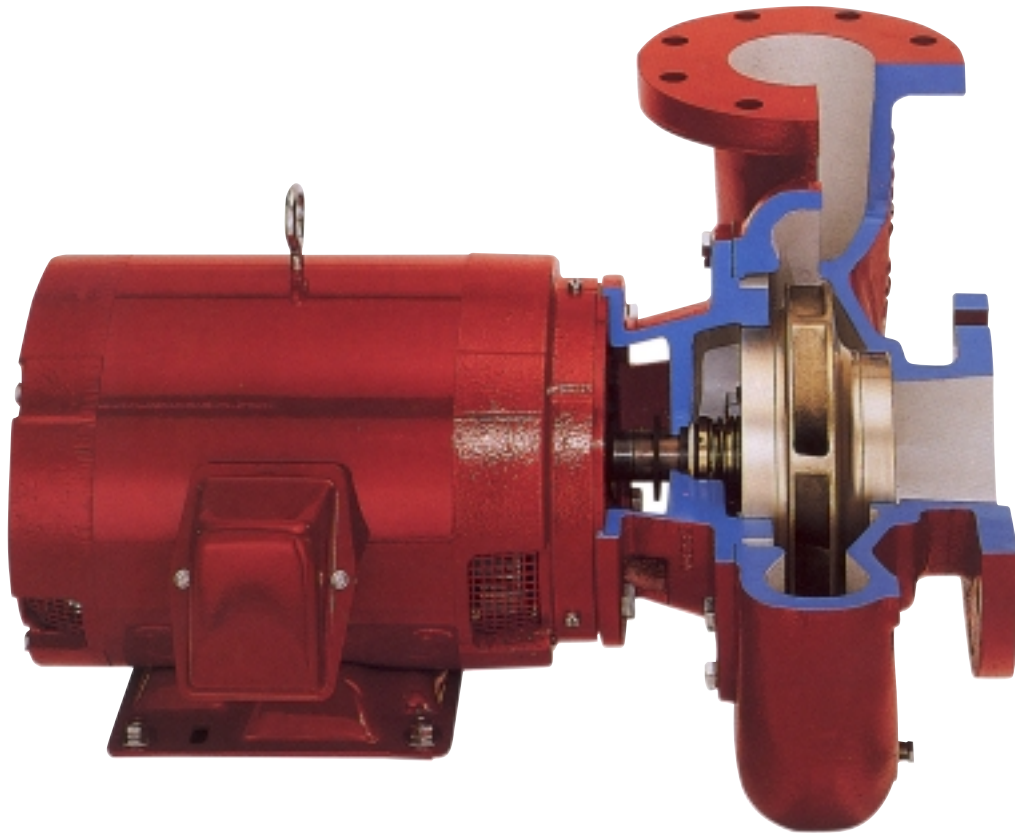


**Series 1531 Pumps  
The Industry Standard  
In End Suction Pump Design**

*Engineered for life*



# SERIES 1531 CLOSE-COUPLED PUMPS



## STANDARD DESIGN FEATURES

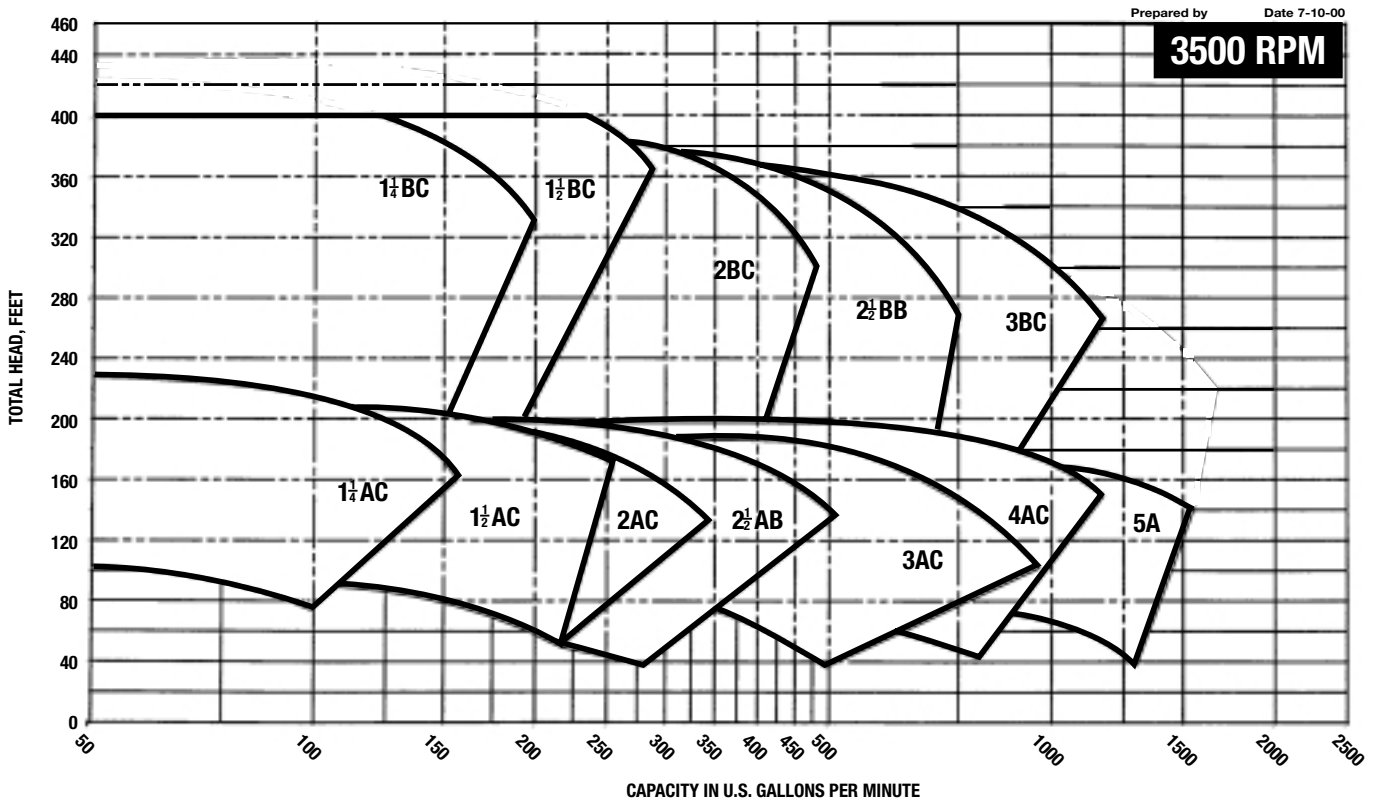
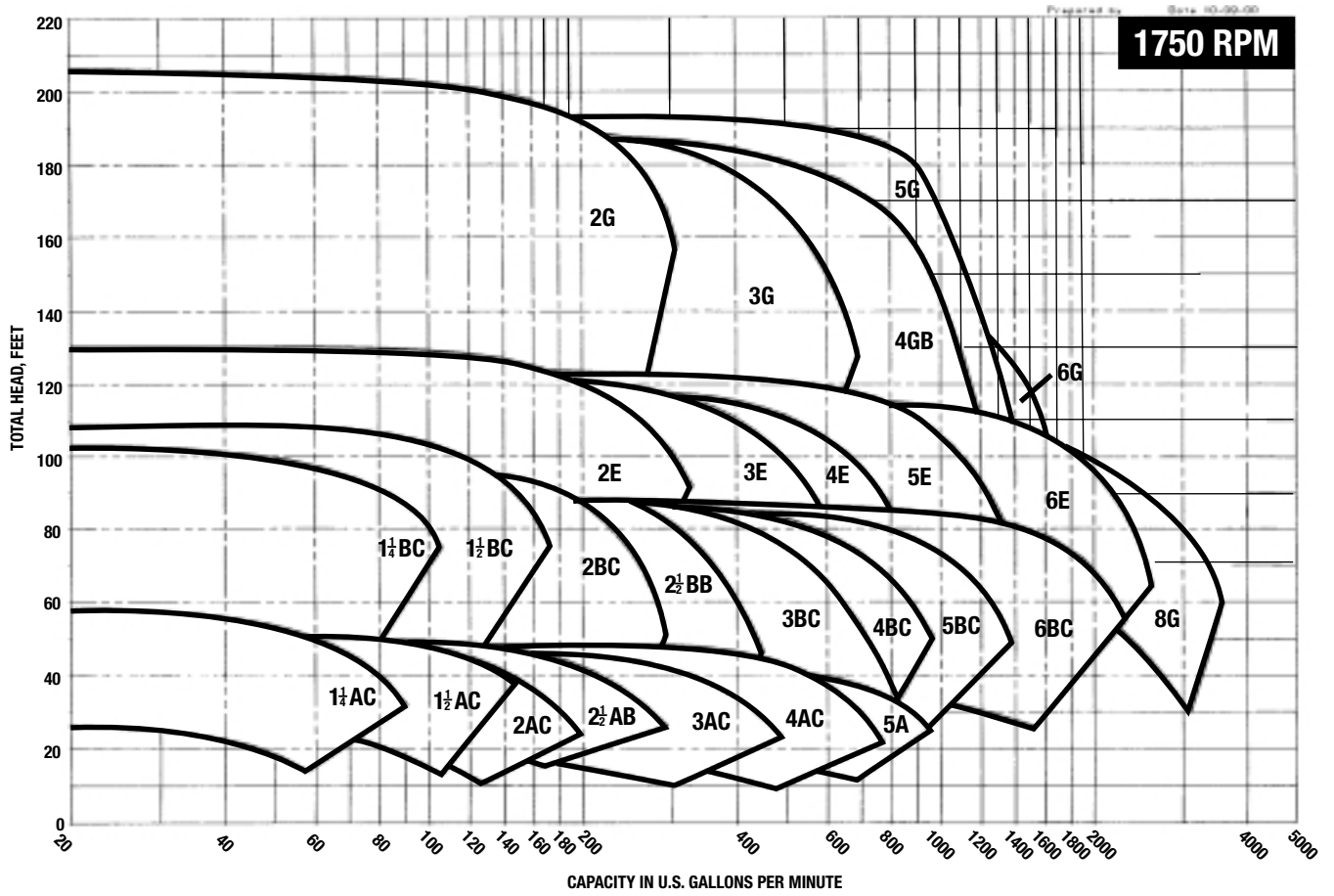
1. **Self-flushing mechanical seals** ensure maximum seal face lubrication, heat dissipation and debris removal without vulnerable, external flush tubing. As much as 25 percent of the total pump flow continuously flushes the seal faces.
2. **Back pull-out** design allows one service tech ease of maintenance.
3. **Aluminum bronze shaft sleeve** construction is standard. Special sealing between the sleeve and shaft prevents corrosion of the shaft by the pumped fluid.
4. **Enclosed, balanced impeller** for quiet, vibration free performance. Impellers are precision fitted to the shaft and positively locked with a shaft key.
5. **Heavy duty cast iron volute** construction for 175 PSI working pressure.
6. **Jacking bolts** provide ease of volute disassembly.
7. **Gauge tappings** on the suction and discharge flanges along with volute vent and drain tappings are standard.
8. **Hydrostatic testing** of each pump is standard.

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## OPTIONAL EQUIPMENT

- All iron construction
- All bronze construction
- Bronze casing wear ring
- Vertical mounting
- Footed volute
- Mechanical seal construction

# SERIES 1531 PERFORMANCE CURVES



# SERIES 1531 DIMENSIONS

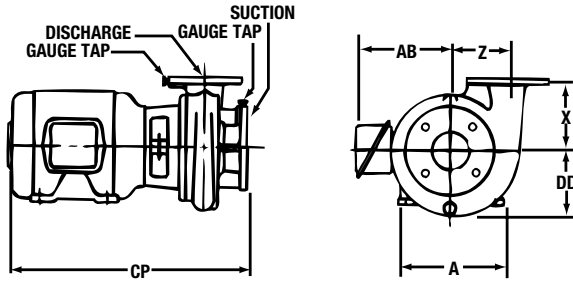


FIGURE 1

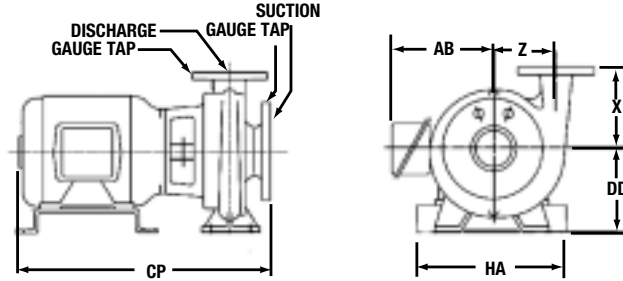


FIGURE 2

Standard working pressure 175 PSI (12 BAR). Flanges drilled and faced per 125# ANSI Standards\*.

SIZE OF PUMP AND DISCHARGE	SUCTION	PUMP DIMENSIONS FIGURE 1 - INCHES (MM)					
		DD	X	Z	AB (MAX) <sup>1</sup>	A (MAX) <sup>1</sup>	CP (MAX) <sup>1</sup>
1 1/4 AC (NPT)	1 1/2 NPT	4 3/4 (121)	5 (127)	4 1/2 (114)	10 3/4 (273)	10 1/2 (267)	25 1/2 (648)
1 1/2 AC (NPT)	2 NPT	5 (127)	6 (152)	4 5/8 (117)	10 3/4 (273)	12 1/2 (318)	32 1/4 (819)
2 AC	2 1/2	5 1/2 (140)	6 1/2 (165)	4 3/4 (121)	10 3/4 (273)	12 1/2 (318)	34 1/2 (876)
2 1/2 AB	3	5 13/16 (148)	6 (152)	4 11/16 (119)	10 3/4 (273)	12 1/2 (318)	35 1/4 (895)
3 AC	4	6 1/4 (159)	6 (152)	5 (127)	12 5/8 (321)	14 (356)	36 1/8 (918)
4 AC	5	6 7/8 (175)	7 1/2 (191)	5 3/4 (146)	15 1/8 (384)	16 (406)	40 5/8 (1032)
5 A	6	7 7/8 (200)	8 1/2 (216)	6 1/4 (159)	15 1/8 (384)	16 (406)	42 (1067)
1 1/4 BC (NPT)	1 1/2 NPT	6 1/8 (156)	8 (203)	5 1/2 (140)	12 5/8 (321)	14 (356)	35 1/8 (892)
1 1/2 BC (NPT)	2 NPT	6 1/4 (159)	6 1/2 (165)	5 3/4 (146)	15 1/8 (384)	16 (406)	36 3/8 (924)
2 BC	2 1/2	6 1/8 (156)	7 (178)	5 7/8 (149)	15 1/8 (384)	16 (406)	39 (991)
2 1/2 BB	3	7 1/4 (184)	6 3/4 (171)	6 (152)	15 1/8 (384)	16 (406)	39 1/8 (994)
3 BC	4	7 (178)	7 1/2 (191)	6 1/8 (156)	15 1/8 (384)	16 (406)	40 (1016)
4 BC	5	8 5/8 (219)	8 (203)	7 (178)	10 3/4 (273)	12 1/2 (318)	36 3/8 (924)
5 BC	6	9 1/2 (241)	10 (254)	7 1/2 (191)	12 5/8 (321)	14 (356)	37 1/8 (943)
6 BC	8	10 3/8 (264)	10 1/2 (267)	8 1/4 (210)	15 1/8 (384)	16 (406)	43 1/2 (1105)
2 E	3	7 5/8 (194)	8 (203)	6 1/2 (165)	10 3/4 (273)	12 1/2 (318)	39 1/4 (997)
3 E	4	8 1/2 (216)	9 1/2 (241)	7 3/8 (187)	10 3/4 (273)	12 1/2 (318)	35 1/2 (902)
4 E	5	9 1/4 (235)	9 3/4 (248)	7 1/4 (184)	12 5/8 (321)	14 (356)	35 (889)
5 E	6	9 5/8 (244)	10 1/2 (267)	7 15/16 (202)	15 1/8 (384)	16 (406)	38 (965)
6 E	8	10 7/8 (276)	11 (279)	8 15/32 (215)	15 1/8 (384)	16 (406)	40 5/8 (1032)

Dimensions are subject to change. Not to be used for construction purposes unless certified.  
<sup>1</sup>Varies with motor manufacturer.

SIZE OF PUMP AND DISCHARGE	SUCTION	PUMP DIMENSIONS FIGURE 2 - INCHES (MM)					
		DD	X	Z	AB (MAX) <sup>1</sup>	HA (MAX) <sup>1</sup>	CP (MAX) <sup>1</sup>
2G	3	10 (254)	9 (229)	7 1/4 (184)	11 1/2 (292)	14 (356)	31 7/8 (810)
3G	4	10 (254)	9 1/2 (241)	8 (203)	14 5/8 (371)	15 3/4 (400)	34 1/16 (865)
4GB	5	11 (279)	10 (254)	8 9/16 (217)	14 5/8 (371)	15 3/4 (400)	36 1/16 (916)
5G	6	12 (305)	13 (330)	9 (229)	14 5/8 (371)	22 1/2 (571)	36 5/16 (922)
6G	8	12 (305)	14 (357)	9 5/16 (236)	14 5/8 (371)	22 1/2 (571)	37 1/16 (941)
8G**	10*	14 3/8 (365)	17 5/16 (440)	0	15 7/8 (403)	27 1/2 (698)	40 27/64 (1026)

Dimensions are subject to change. Not to be used for construction purposes unless certified.  
<sup>1</sup>Varies with motor manufacturer.  
 \*8G suction flange drilled and tapped per ANSI B16.1 standard.  
 \*\*8G is Stuffing Box Configuration only.

Consult Publication B-360 "Performance Curves" for required horsepower.

# SERIES 1531 CONSTRUCTION FEATURES AND OPTIONS

STANDARD	OPTIONAL
Cast Iron Volute	All Iron Construction
Bronze Impeller	All Bronze Construction*
Alloy Steel Shaft	Bronze Casing Wear Ring
Bronze Shaft Sleeve	Stainless Steel Shaft Sleeve
Internal Flushed Seal	Bypass Flush Line
	Stuffing Box Configuration
Buna/Carbon-Ceramic Seal	(Standard Configuration only)
	EPR/Tungsten Carbide-Carbon Seal
	EPR/Silicone Carbide-Silicone Carbide Seal
	Stuffing Box Configuration
	EPR/Tungsten Carbide-Carbon Seal

## SEAL SELECTION GUIDE

### STANDARD CONFIGURATION

Buna/Carbon-Ceramic – PH Limitations 7-9; Temperature Range -20 to +225°F

EPR/Tungsten Carbide-Carbon – PH Limitations 7-11; Temperature Range -20 to +250°F

EPR/Silicone Carbide-Silicone Carbide – PH Limitations 7-12.5; Temperature Range -20 to +250°F

Recommended for use on closed or open systems which are relatively free of dirt and/or other abrasive particles.

### STUFFING BOX CONFIGURATION

#### Flushed Single Seal

EPR/Tungsten Carbide-Carbon – PH Limitations 7-11; Temperature Range -20 to +300°F†

Recommended for use on closed or open systems which may contain a high concentration of abrasives. An external flush is required.

#### Flushed Double Seal

EPR/Carbon-Ceramic – PH Limitations 7-9; Temperature Range 0 to +250°F

Recommended for use on closed or open systems which may contain a high concentration of abrasives. An external flush is required.

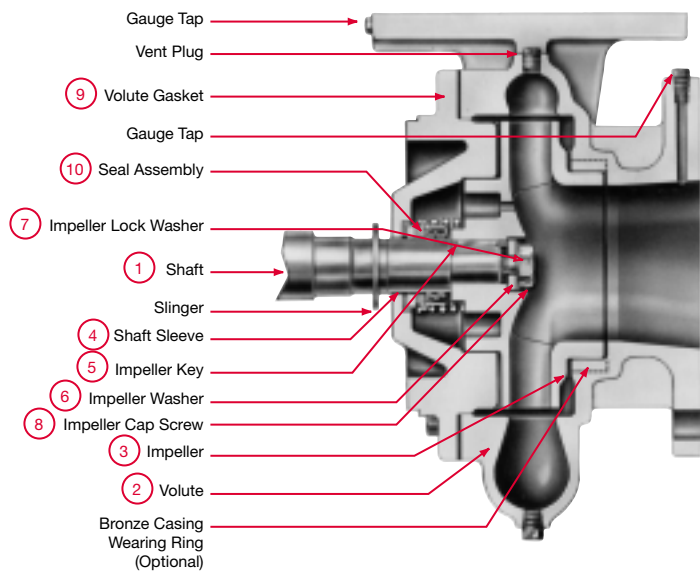
#### Packing

Braided Graphite PTFE-PH Limitations 7-9; Temperature Range 0 to +250°F

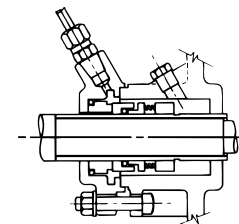
Recommended for use on closed or open systems which require a large amount of makeup water, as well as systems which are subjected to widely varying chemical conditions and solids buildup.

† For operating temperatures above 250°F a cooled flush is required and is recommended for temperatures above 225°F for optimum seal life. On closed systems cooling is accomplished by inserting a small heat exchanger in the flush line to cool the seal flushing fluid.

Flush-line Filters and Sediment Separators are available on special request.



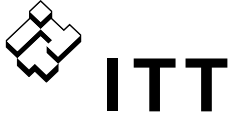
**1531-F OPTION**  
**BYPASS FLUSH LINE**  
**INTERNALLY FLUSHED SEAL**



**1531-S OPTION**  
**FLUSH SINGLE SEAL**  
**STUFFING BOX CONSTRUCTION**

DESCRIPTION	BRONZE FITTED PUMP	ALL IRON PUMP	ALL BRONZE PUMP*
1 Shaft	Steel SAE 1144	Steel SAE 1144	Steel SAE 1144
2 Volute	Cast Iron ASTM #A159	Cast Iron ASTM #A159	Cast Bronze ASTM #B584
3 Impeller	Cast Bronze ASTM #B854	Cast Iron ASTM #159	Cast Bronze ASTM #B584
4 Shaft Sleeve	Aluminum Bronze ASTM #B111	#304 Stainless Steel ASTM #A312	Aluminum Bronze ASTM #B111
5 Impeller Key	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
6 Impeller Washer	1531 – Brass	Stainless Steel	Brass
7 Impeller Lock Washer	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
8 Impeller Cap Screw	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
9 Volute Gasket	Cellulose Fiber	Cellulose Fiber	Cellulose Fiber
10 Seal Assemblies			
<b>Standard Seal</b>			
Bellows	Buna N	Buna N	Buna N
Faces	Carbon-Ceramic	Carbon-Ceramic	Carbon-Ceramic
Metal Parts	Brass	Stainless Steel	Brass
Spring	Stainless Steel	Stainless Steel	Stainless Steel
<b>For Stuffing Box</b>			
10A Flushed Single			
O-Rings	EPR	EPR	
Faces	Carbon-Tungsten Carbide	Carbon-Tungsten Carbide	
Metal Parts	Stainless Steel	Stainless Steel	
Spring	Stainless Steel	Stainless Steel	
10B Flushed Double			
O-Rings	EPR	EPR	
Faces	Carbon-Ceramic	Carbon-Ceramic	
Metal Parts	Stainless Steel	Stainless Steel	
Spring	Stainless Steel	Stainless Steel	
Packed			
Packing	Graphited Braided Yarn	Graphited Braided Yarn	
Gland	Bronze	Cast Iron	
Lantern Ring	Filled TFE	Filled TFE	

\*All Bronze Construction **NOT** available in **stuffing box construction** or any of the following sizes: 1 1/2AC, 4AC, 5A, 3AC, 3BC, 4BC, 5BC, 6BC, all E and G sizes.



## ENGINEERING SPECIFICATIONS FOR BELL & GOSSETT SERIES 1531 HORIZONTAL CLOSE COUPLED PUMPS

Furnish and install pumps with capacities as shown on plans. Pumps shall be close coupled, single stage, end suction design, capable of being serviced without disturbing piping connections.

Pump volute shall be Class 30 cast iron. The impeller shall be cast bronze enclosed type, balanced, keyed to the shaft and secured by a locking capscrew.

The liquid cavity shall be sealed off at the motor shaft by an internally flushed mechanical seal with ceramic seal seat and carbon seal ring, suitable for continuous operation at 225°F. A replaceable shaft sleeve of bronze alloy shall completely cover the wetted area under the seal.

Pumps shall be rated for 175 psi maximum working pressure. Volute shall have gauge tapings at the suction and discharge nozzles and vent and drain tapings at the top and bottom.

Motor shall meet NEMA specifications and shall be of the size, voltage and enclosure called for on the plans. It shall

have heavy duty grease lubricated ball bearings, completely adequate for the maximum load for which the motor is designed.

The pump(s) selected shall conform to ANSI/HI 9.6.3.1 standards for Preferred Operating Region (POR) unless otherwise approved by the engineer. The pump NPSH shall conform to the ANSI/HI 9.6.1-1997 standards for *Centrifugal and Vertical Pumps for NPSH Margin*.

Each pump shall be factory tested per Hydraulic Institute standards. It shall then be thoroughly cleaned and painted with at least one coat of high-grade machinery enamel prior to shipment.

The pump(s) shall be manufactured, assembled and tested in an ISO 9001 approved facility.

Pumps shall be Series 1531 as manufactured by ITT Bell and Gossett.

**AUTHORIZED REPRESENTATIVE**

