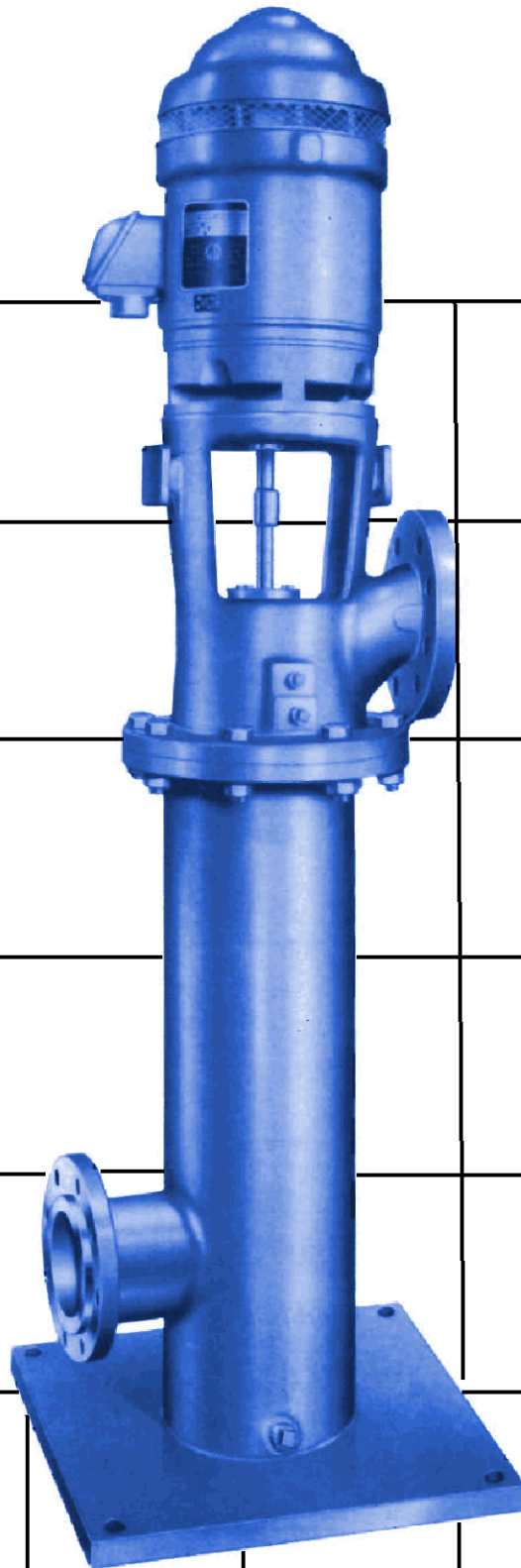


# Peerless Pump Company

VERTICAL TURBINE PUMPS  
TYPE VTM, VTP



# PEERLESS MODEL VTM, VTP PUMPS WILL GIVE YOUR WATER SYSTEM A BOOST.

Peerless model VTM, VTP vertical turbine pumps can handle a wide range of water system booster service specifications.

These pre-engineered pumps feature fabricated steel barrels for their bowl units; Type VTM pumps are equipped with mechanical shaft seals, and Type VTP pumps are equipped with packed type stuffing boxes. Capacities range from 80 to 500 USGPM, with discharge pressures of 30 through 205 PSI. Maximum working pressures are as follows:

Pump Model	Type VTP	Type VTM
6LB	400 psi	250 psi
7LB	400 psi	250 psi
8LB	400 psi	200 psi

Additionally, maximum suction pressure for the VTM and VTP is 175 psi, and the temperature range for both types is 0°C to 46°C (32°F to 115°F).

Peerless VTM and VTP pumps will save you time and money because:

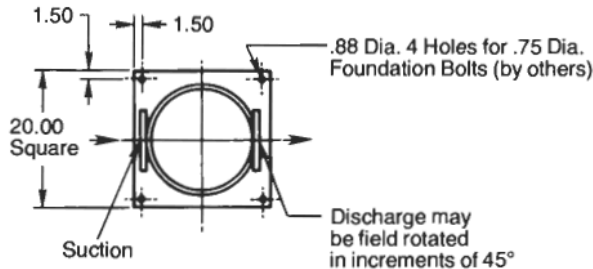
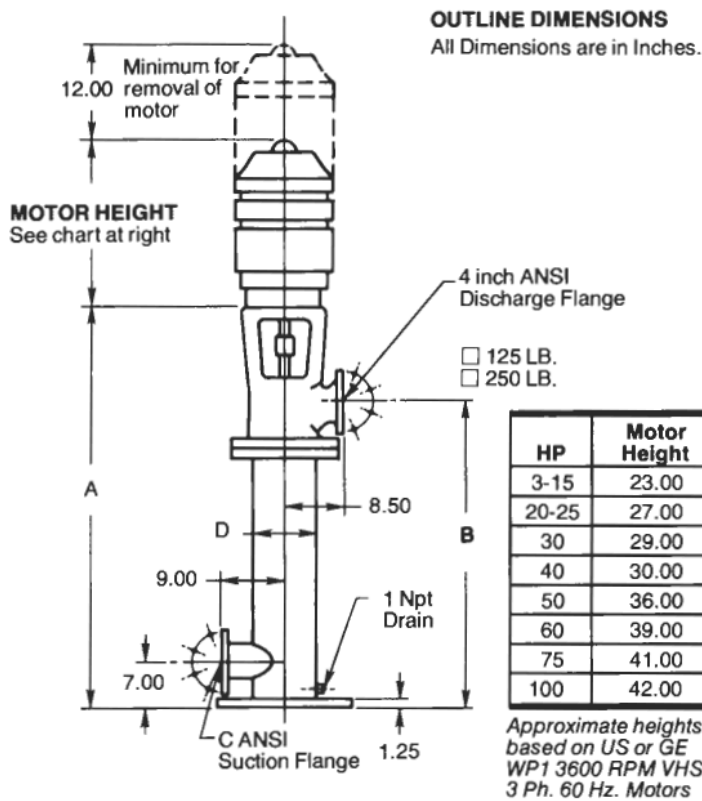
- Rotating elements are free from radial thrust, minimizing bearing wear and contributing to long, trouble-free service life
- Small floor space requirements (compared to horizontal pumps) reduce the cost of pump space occupied
- They're able to fill widely varying demand rates using constant speed motors (with or without pressure reducing valves) or variable speed drives
- Line shaft bearings are always lubricated by the pumped liquid, so there's no lubrication maintenance needed, and no bearing failures from lack of lubrication
- High tensile stainless steel impeller shafts provide maximum strength, wear resistance, and corrosion resistance
- Dual bronze and cutless rubber intermediate bowl bearings, lubricated by the pumped liquid, provide long life under normal operating conditions
- Extra long suction manifold bronze tail bearings provide accurate shaft alignment and long, vibration-free service life
- Precision cast bronze impellers are balanced to operate quietly and vibration-free at 3500 rpm; and less vibration contributes to reduced maintenance and longer life
- Steel cored rubber bowl lateral seal rings provide an abrasion-resistant seal between the end of the impeller skirt and the bowl. This provides high operating efficiency (by minimizing impeller recirculation losses); long trouble-free wear life between impeller and bowl; easily renewable wear surfaces at the time of overhaul; and easy, accurate impeller lateral adjustment (at the bronze top shaft nut) to provide optimal operating efficiency
- Optional epoxy lining inside the fabricated steel barrel is available.

Peerless VTM and VTP pumps have heavy fabricated steel barrels to serve two more important functions:

- They include the suction connection and provide the "sump" to assure adequate bowl unit submergence
- They provide rigid, vibration-free support for the discharge base and motor.



# TYPICAL SPECIFICATIONS



VTM or VTP Model No.	A	B	C	D
6LB 1	49.50	38.88	4x150 LB	8
6LB 2	49.50	38.88	4x150 LB	8
6LB 3	49.50	38.88	4x150 LB	8
6LB 4	59.50	48.88	4x150 LB	8
6LB 5	59.50	48.88	4x150 LB	8
6LB 6	69.50	58.88	4x150 LB	8
6LB 7	69.50	58.88	4x150 LB	8
7LB 1	52.50	41.88	6x150 LB	10
7LB 2	52.50	41.88	6x150 LB	10
7LB 3	52.50	41.88	6x150 LB	10
7LB 4	66.50	55.88	6x150 LB	10
7LB 5	66.50	55.88	6x150 LB	10
8LB 1	52.50	41.88	6x150 LB	10
8LB 2	52.50	41.88	6x150 LB	10
8LB 3	52.50	41.88	6x150 LB	10
8LB 4	66.50	55.88	6x150 LB	10
8LB 5	66.50	55.88	6x150 LB	10

**GENERAL.** Contractor shall furnish and install as shown on the plans \_\_\_\_\_ Peerless Pump vertical turbine pump(s) in a barrel Model (VTM) (VTP) number \_\_\_\_\_. Each unit shall have a capacity of \_\_\_\_\_ USGPM discharging against a total head of \_\_\_\_\_ feet operating at a maximum speed of 3500 rpm.

**PUMP CONSTRUCTION.** Pumps shall be heavy duty industrial turbine-type equipped with cast iron bowls with vitreous enameled flow passages for optimal operating efficiency. The bowls shall be equipped with dual bronze and rubber bowl bearings for maximum resistance to entrained erosives/corrosives and steel cored rubber lateral bowl wear rings to provide optimal efficiency via impeller lateral adjustment and a renewable wear surface at the time of overhaul. Impellers shall be of cast bronze, enclosed type single plane balanced to operate within the acceptable field vibration limits for vertical turbine pumps as defined by the Hydraulic Institute Standards.

Impeller shaft and top shaft shall be of 416 stainless steel. Discharge flange shall be ANSI (125 lb.) (250 lb. optional)

**SHAFT SEALING.** Pump type shall be:

( ) VTM with single bellows type mechanical seal with Ni-resist seat and carbon sealing washer. The seal shall have precision lapped faces for true seating.  
( ) VTP (optional) equipped with stuffing-box type packing container with gland and graphited packing. The packing container shall be integral with the pump construction.

The shaft seal (mechanical seal or packed type stuffing box) shall include an air bleed and vent line to the pump suction. This vents entrapped air from the high point of the flow passage and relieves discharge pressure from the seal and packing area.

**THE BARREL.** The barrel shall be structurally designed to support the unit rigidly, without vibration at any operational speed. It shall have a 1¼ inch thick steel base plate for mounting to the foundation. The barrel shall be hydraulically designed to complement the performance of the pumping element to obtain the best possible operating efficiency. All weldments shall be made by qualified welders to eliminate voids and inclusions. The barrel shall be hydrostatically tested to 262 psi.

( ) (Optional) Each fabricated steel barrel shall be epoxy lined.

**OPTIONAL TESTS.**

( ) Each unit shall be vibration tested for frequency and amplitude. A written report shall be furnished.

( ) Each unit shall be performance tested at the factory. A written report shall be furnished.

**ELECTRIC DRIVE.** Each pump shall be driven by a \_\_\_\_\_ HP \_\_\_\_\_ RPM \_\_\_\_\_ volt \_\_\_\_\_ phase \_\_\_\_\_ Hertz

( ) vertical hollow shaft electric motor with a steady bushing to minimize shaft deflection.

( ) (optional) vertical solid shaft motor with a spacer coupling to permit mechanical seal replacement without disturbing the motor.

Each motor shall have Class B windings for 40°C ambient temperature operation. The motor service factor shall be 1.15.

# SELECTION INFORMATION

## DETERMINE TOTAL PUMP HEAD

**EXAMPLE:** Static head (total height of lift) ..... 125 feet  
 Friction loss in pipe riser ..... 6 feet  
 Pressure required at highest point of The System ..... 40 feet  
 Flow control valve pressure loss (add regardless of number or size of valves) ..... 10 feet  
 Less minimum suction pressure ..... -58 feet  
 Total pump head required ..... 123 feet

## DETERMINE FLOW RATE REQUIRED 1. Determine fixture ratings in flow units:

Fixture	Usage	Type	Flow Units		
			Public* Commercial	Public† Restricted	§ Private
Water closet		F. Valve F. Tank	10 5	8 4	6 3
Bidet		F. Valve	4	3	2
Urinal	Pedestal Stall Wall	F. Valve F. Valve F. Valve F. Tank	10 5 5 3	8 4 4 2	3
Bathtub	Standard Emergency Immersion		4 4 20	3	2
Shower	Standard Emergency		4 8	3 8	2
Lavatory			2	1	1
Bathroom Group	W.C. Lav & Tub/Shower	F. Valve F. Tank			8 6
Sink	Kitchen General Service Laboratory Bar	Double Single Floor	4 3 4 3	3 2 3 2	2
Dishwasher	General Pot & Pan		6 3	4 3	2
Garbage Disposal		In sink	3	3	2
Washing Machine	10 lb. Load			6	4
Laundry Tub		Triple		3	2
Drinking Fountain			1	1	
Ice Cube Flaker			1	1	
Steamtable			1	1	
Hose Connection		¾"		4	4

\*Public-Commercial-Available to public without restriction-Buildings, Hospitals, Hotels, Factories, Dept. Stores, Theaters, Restaurants, Night Clubs.  
 †Public-Restricted-Offices, employees only, Clubs, Rooming Houses, Motels, Small Shops.  
 §Private-Homes, Apartments, Private Offices.

## 2. Convert flow units to peak demand GPM:

Total Fixture Flow Units	GPM Peak Demand	Total Fixture Flow Units	GPM Peak Demand
150	80	2650	400
250	100	3000	440
370	120	3400	480
500	140	3800	520
630	160	4250	560
775	180	4700	600
920	200	5100	640
1070	220	5600	680
1225	240	6050	720
1550	280	6550	760
1900	320	7050	800
2250	360		

The above values in both tables are based on survey reports by the Bureau of Standards published in the ASHRAE Guide.

**VERTICAL PUMPS Types VTM, VTP Selection Table—3500 rpm**

Bowl Size	Capacity US GPM	Pump Total Head—PSI (Feet)														
		Number of Stages/Impeller Number/Motor H.P.														
		30 (69)	40 (92)	50 (115)	60 (138)	70 (161)	80 (184)	90 (207)	100 (231)	115 (265)	130 (300)	145 (335)	160 (369)	175 (404)	190 (439)	205 (473)
6LB	80	1 8292 3	2 6324 5	2 5	2 8292 5	3 6324 7.5	3 7.5	3 8292 7.5	4 6324 7.5	4 8292 10	5 6324 10	6 15	6 15	6 8292 15	7 15	7 20
	100	1 8292 5	2 6324 5	2 8292 5	2 7.5	3 7.5	3 7.5	3 10	4 10	4 15	5 6324 15	6 15	6 15	6 8292 15	7 20	7 20
	125	1 6318 5	2 6324 5	2 8292 7.5	2 6318 7.5	3 8292 10	3 10	3 6318 10	4 8292 15	4 6318 15	5 8292 20	5 6318 20	5 20	6 20	6 25	7 25
	150	1 6318 5	2 7.5	2 7.5	2 10	3 10	3 10	3 15	4 8292 15	4 6318 15	5 20	5 20	5 25	6 25	6 25	7 30
	175	1 6318 5	2 7.5	2 7.5	2 10	3 10	3 15	3 15	4 15	4 20	5 20	5 25	6 25	6 25	7 30	7 30
	200	2 6318 7.5	2 7.5	2 10	3 10	3 15	3 15	4 15	4 20	4 20	5 20	5 25	6 30	6 30	7 40	7 40
7LB	225	1 6207 7.5	1 10	2 15	2 15	2 15	2 15	3 20	3 20	3 25	3 25	4 30	4 30	5 40	5 40	5 40
	250	1 6207 7.5	1 6208 10	2 6207 15	2 2	2 2	2 2	3 20	3 20	3 25	3 6208 30	4 30	4 40	4 40	5 40	5 50
	275	1 6207 7.5	1 6208 10	2 6207 15	2 6207 15	2 6207 20	2 6208 20	2 6208 20	3 6207 25	3 6208 25	3 30	4 40	4 40	4 40	5 50	5 50
	300	1 6208 10	1 10	2 15	2 15	2 20	2 20	2 25	3 25	3 30	3 40	4 40	4 40	5 50	5 50	5 50
	325	1 6208 10	1 10	2 15	2 20	2 20	2 20	2 25	3 30	3 30	3 40	4 40	4 50	5 50	5 50	6 60
8LB	350	1 6464 10	1 6464 15	1 6465 15	2 6464 20	2 6464 20	2 6464 25	2 6464 30	2 6465 30	2 40	3 40	3 50	3 50	4 60	4 60	4 60
	375	1 6464 10	1 6464 15	1 6465 20	2 6464 20	2 6464 25	2 6464 25	2 6465 30	2 40	2 40	3 40	3 50	3 50	4 60	4 60	4 75
	400	1 6464 15	1 6464 15	1 6465 20	2 20	2 25	2 30	2 30	2 40	3 40	3 50	3 50	3 60	4 60	4 75	4 75
	425	1 6464 15	1 6465 15	1 6465 20	2 6464 25	2 6464 25	2 6465 30	2 30	2 40	3 40	3 50	3 50	3 60	4 60	4 75	4 75
	450	1 6464 15	1 6465 20	1 6465 25	2 6464 25	2 6465 30	2 30	2 40	2 40	3 50	3 50	3 60	4 60	4 75	4 75	5 100
	475	1 6465 15	1 20	1 20	2 25	2 30	2 30	2 40	2 40	3 50	3 50	3 60	4 60	4 75	4 75	5 100
	500	1 6465 15	1 20	2 25	2 30	2 30	2 40	2 40	3 50	3 50	3 60	4 60	4 75	4 75	5 100	5 100

Note: Impeller number is last 4 numerals of actual 7 digit impeller number. For complete number see performance curves. Motor size is based on utilizing 1.15 service factor. Subject to change without notice. For 1750 RPM selections, contact your Peerless representative.

**3. Convert peak demand GPM to building demand:**

**A. For Apartments, Office Buildings and Hotels.**

- (1) If the fixture flow unit demand indicates 150 GPM or less use 100% of that amount. EXAMPLE: 500 FFU = 140 GPM; Use 100% or 140 GPM = Building Demand.
- (2) If the fixture flow unit demand indicates more than 150 GPM but less than 250 GPM, use 150 GPM as the building demand. EXAMPLE: 920 FFU = 200 GPM; Use 150 GPM = Building Demand.
- (3) If the fixture flow unit demand is over 250 GPM, use 60% of that amount to arrive at the building demand. EXAMPLE: 4000 FFU = 525 GPM; 60% of 525 = 315 GPM = Building Demand.

**B. For Schools, Hospitals, Dormitories, Factories and Stadiums.**

- (1) If the fixture flow unit demand indicates 150 GPM or less use 100% of that amount. EXAMPLE: 370

FFU = 120 GPM; Use 100% or 120 GPM = Building Demand.

- (2) If the future flow unit demand indicates 150 to 214 GPM select 150 GPM as capacity. EXAMPLE: 920 FFU = 200 GPM; Use 150 GPM = Building Demand.
- (3) If the fixture flow unit demand is over 214 GPM, use 70% of peak demand as building demand. EXAMPLE: 4700 FFU = 600 GPM; 600 × 0.70 = 420 GPM Building Demand.

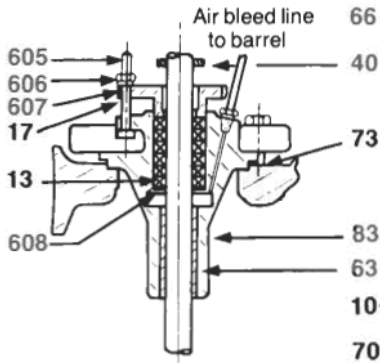
The above examples take into consideration the building fixtures only and do not include water requirements for air conditioning, swimming pools, laundries, restaurants, boiler make-up, etc. The additional water demand for these services should be added to fixture requirements based on actual load in GPM. Refer to ASPE data book, Fundamentals of Plumbing Design, and ASHRAE Handbooks for Criteria on Hot and Cold Water Usage.

# DESIGN AND CONSTRUCTION

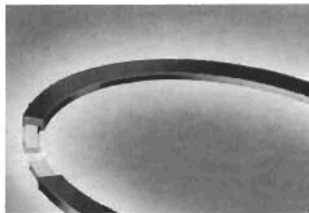
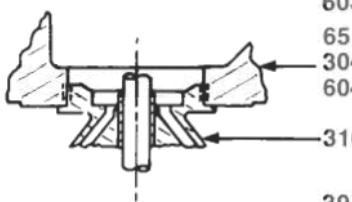
Standard construction utilizes a hollow shaft motor with steady bushing to stabilize the shaft. Solid shaft motors with spacer type drive couplings can be specified. Both VHS and VSS motors have standard NEMA mounting dimensions.

Item No.	Description	Material	
2	Impeller	Bronze	
6	Impeller Shaft	416 Stn. Stl.	
10	Top Shaft	416 Stn. Stl.	
13	Packing	Graphited	
15	Top Bowl	Cast Iron Enameled	
17	Split Gland	Cast Iron	
39A	Top Bowl Bearing	Bronze	
39B	Top Bowl Bearing	Bronze	
39C	Std. Bowl Bearing	Bronze	
39D	Std. Bowl Bearing	Rubber	
39E	Suction Bell Brg.	Bronze	
39F	Suction Bell Brg.	Bronze	
40	Top Shaft Seal Ring	Rubber	
55	Suction Bell	Cast Iron	
63	Pkg. Container Brg.	Bronze	
64	Sand Collar	Cast Iron	
65-80	Mechanical Seal	Seat	Ni—Resist
		Spring	18-8 Stn. Steel
		Washer	Carbon
		Flexible Members	Rubber
		Metal Parts	Brass
66	Top Shaft Nut	Bronze	
70	Shaft Coupling	Steel	
73	Packing Container or Mech. Seal Flange Gasket	Veg. Fiber	
73A	Head to Barrel Gasket	Rubber	
83	Packing Container	Cast Iron	
304	Discharge Head	Cast Iron	
310	Standard Bowl	Cast Iron Enameled	
311	Taperlock Bushings	Steel	
315	Suction Barrel	Steel	
601	Lateral Seal Rings	Rubber	
602	Vent Valve	Assembly	
603	Mech. Seal Flange	Cast Iron	
604	Shaft Collar	Steel	
605	Gland Bolts	Steel	
606	Gland Bolt Nuts	Brass	
607	Gland Clamp	18-8 Stn. Stl.	
608	Pkg. Container Washer	Brass	

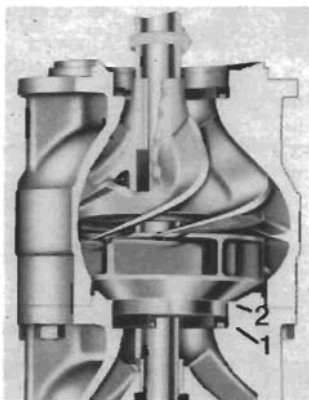
**DETAIL A** Optional packing container assembly



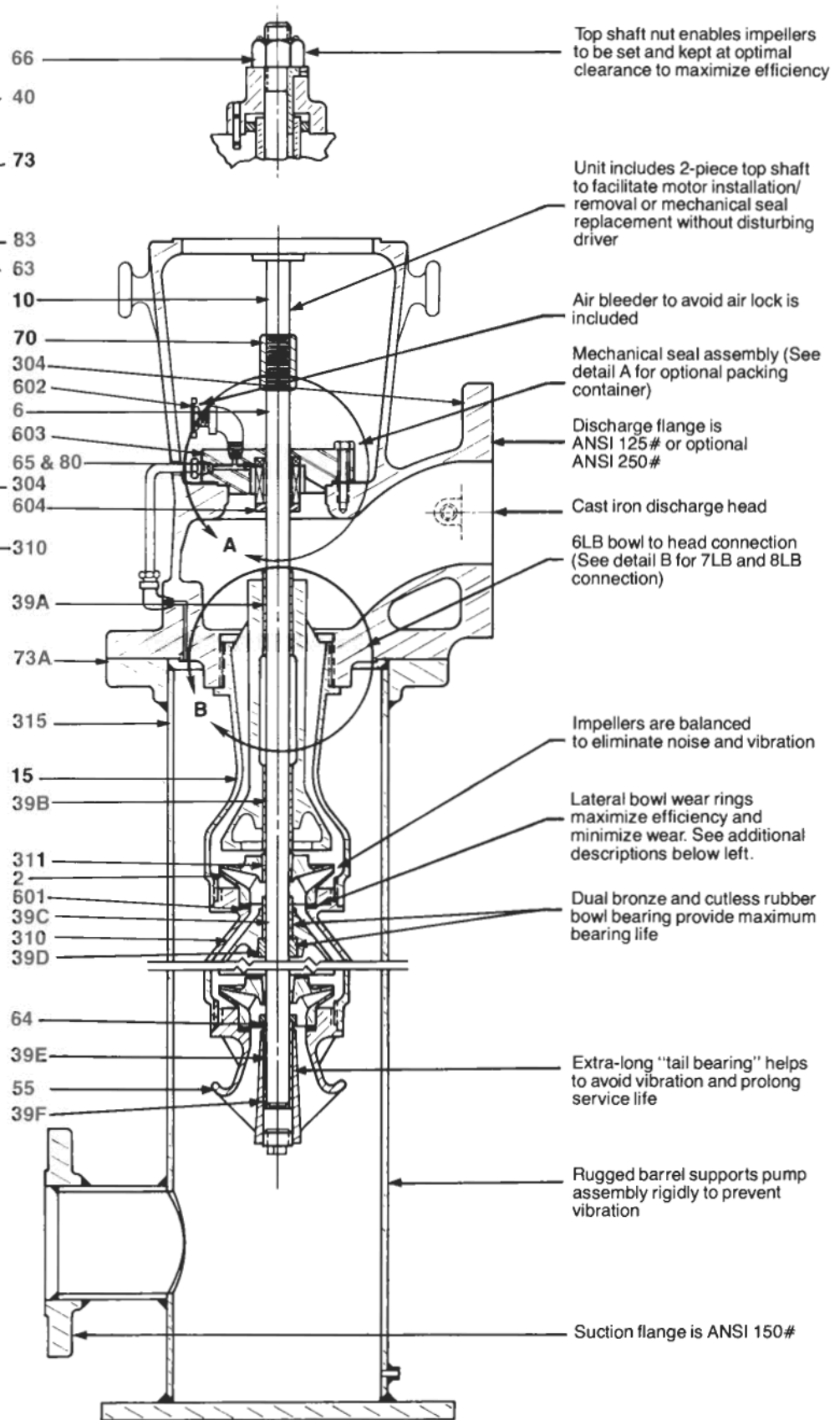
**DETAIL B** 7LB and 8LB connection



The Peerless lateral bowl wear ring is a heavy duty resilient rubber ring with a rigid steel core embedded in it.



The lateral bowl wear ring (1) is mounted below the impeller skirt (2). Regardless of any wear which might take place on the side of the impeller skirt, the efficiency can be sustained by a simple impeller adjustment.



**ADDITIONAL INFORMATION.**

The performance characteristics of Peerless model VTM, VTP pumps make them especially well suited to multi-pump package system applications. For additional information, consult your local Peerless Pump professional.



**Peerless Pump Company**

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