

The Vooner VaneGard® Vacuum Pump

“When Protecting Vacuum Counts”

In order to stay competitive in today's world, it is essential for industries to increase production while reducing production related costs. The Vooner VaneGard® liquid ring vacuum pump with its pioneer design accomplishes just this. By reducing fresh water usage costs and maintenance related downtime, while at the same time extending the pump's overall useful life, the VaneGard® reduces full life cycle cost.

Design Features

- 1. Cast Stainless Steel Rotor and Cones:** All Vooner VaneGard® pumps come equipped with solid cast 304 stainless steel (CF-8) Rotor and Cones as standard construction. The 304 stainless steel prevents erosive and corrosive wear at the critical seal area, therefore maintaining the original close tolerance clearance between the Rotor and Cones much longer than cast iron (see Figure 1).

The loss of this original clearance is what allows air to slip from the discharge port to the inlet port and recirculate inside the pump. This

recirculated air, known as Vaneslip, prevents process air from entering the pump thus reducing the pump's useful capacity. With 304 stainless steel Rotor and Cones, a close clearance and vacuum pump

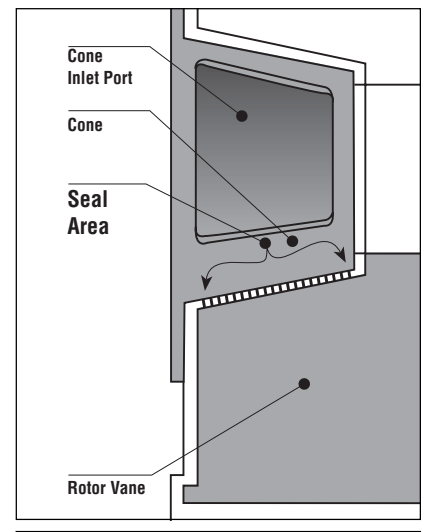


Figure 1
Rotor/Cone Clearance

capacity are retained longer. The Packing Glands and Gland Fixtures are constructed of 316 stainless steel (CF-8M) as standard. Solid cast 304 or 316 stainless steel Body (Rotor Housing) and replaceable Wear Plates can be added as options.



Vooner Vacuum Pumps, Inc.

4729 Stockholm Ct.

P. O. Box 240360

Charlotte, NC 28224-0360

Telephone: 704-552-9314

Toll Free: 800-345-7879

FAX: 704-554-8230

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2. Multi-Patented Dual Water Supply System: For VG10, VG20, VG30, VG40 Models Only. With the ever increasing costs of fresh or treated water, its conservation is becoming a necessity. The Patented Dual Water Supply System of the Vooner VaneGard® enables the use of up to 75% preused secondary water, and as little as 25% fresh water for the sealing liquid. The secondary water is introduced into the pump Housing through the Vooner® patented Secondary Water Manifold (see Figure 2).

The secondary water acts as water pistons compressing the gas in the Body of the pump. This corrosive and erosive water does not come in contact with the critical Rotor/Cone seal and Packing areas. The small flow of fresh water is introduced into each Head directly to the seal area of the Cones (see Figure 3).

The fresh water forms the seal between the Rotor and Cones and lubricates the Packing. This prevents erosion and corrosion at the tapered base of the Rotor Vanes, Cone surface area, and Shaft/Packing area. The result is reduced Vaneslip, less Shaft wear, and extended pump life.

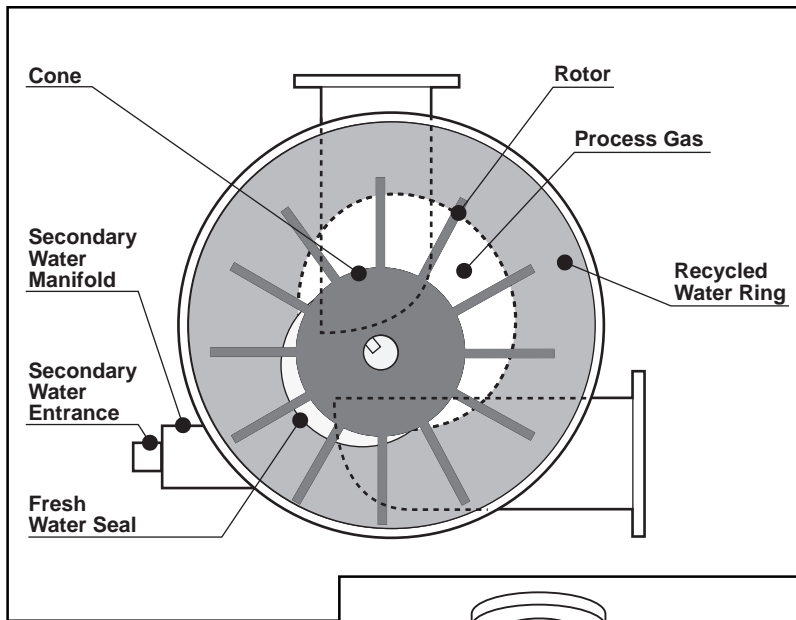


Figure 2
Recycled Water Flow

3. Self Aligning Removable Bearing Carrier: The unique self aligning Bearing Carrier featured in the Vooner VaneGard® allows Bearing removal and replacement without removing the pump from the process piping and the Heads from the pump Housing. By simply turning the Carrier jackbolts against the Head, the Bearing Carrier (with the Bearing) slides off the Shaft (see Figure 4).

This feature greatly reduces pump downtime when a Bearing change is necessary. The unique machine fitted circular design of the VaneGard® Bearing Carrier concentrically aligns the Bearings in the horizontal, vertical, and axial directions. The VaneGard® pump can be completely

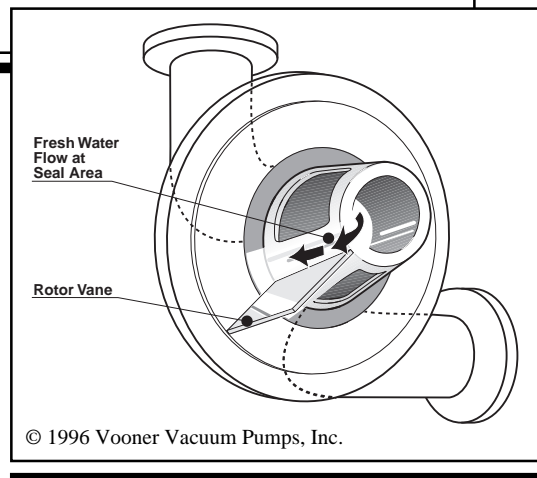


Figure 3
Fresh Water Flow

disassembled using only hand tools. This feature also allows the option of Packing or Mechanical Seals for shaft sealing.

4. 410 Heat Treated Stainless Steel Shafts: All Vooner VaneGard® pumps come with 410 heat treated stainless steel Shafts that are more corrosion and abrasion resistant than common carbon steel Shafts. The 410 stainless steel also has greater strength than carbon steel thus reducing the risk of Shaft failure under abnormal loads.

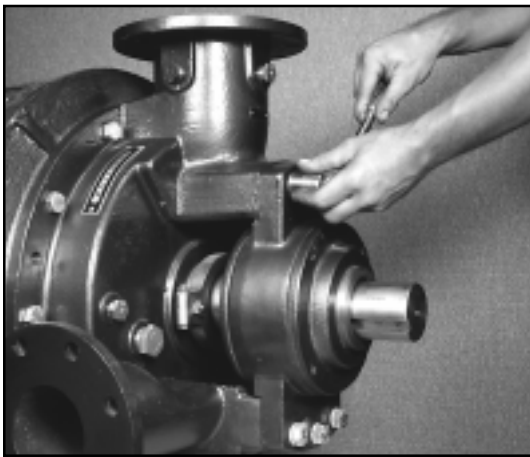
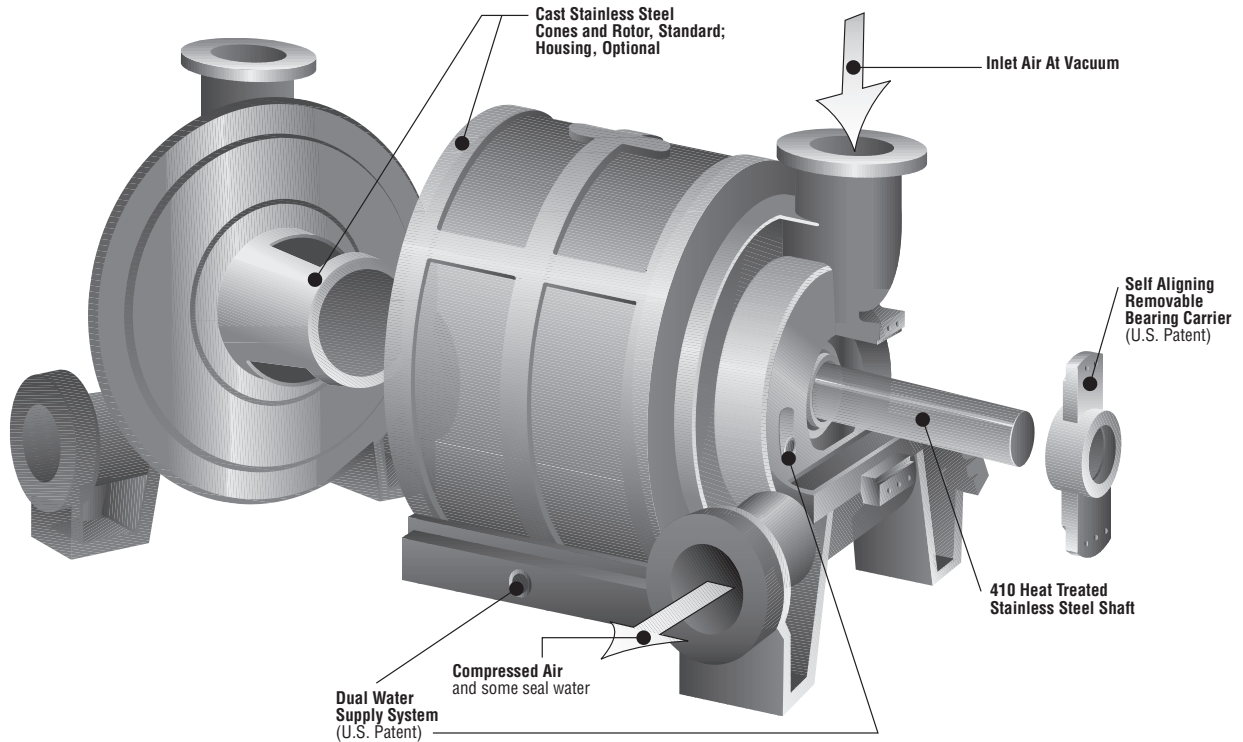


Figure 4
Removable Bearing Carrier



BENEFITS from FEATURES

1. Increases useful pump life by maintaining airflow capacity longer than cast iron pumps.

Cast Stainless Steel Rotor and Cones which develop polished surface with use.

2. Reduces fresh water requirements up to 75%.

Patented Dual Water Supply System. Fresh water for seal into heads. Plant water for pistons enters through housing.

3. Protects critical tapered base dimension of Rotor Vanes by concentrating fresh water in the Rotor/Cone Seal Segment.

4. Reduces Costly Vaneslip; Lost ACFM and wasted horsepower and water.

Combination of: Stainless Steel Components and Dual Water Supply System.

5. Reduces downtime required for bearing replacement. Pump removal from piping and disassembly are no longer necessary.

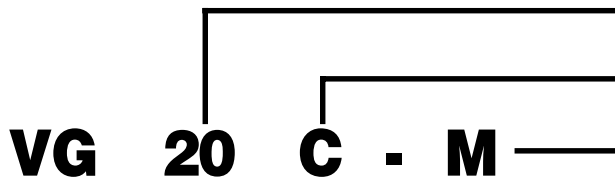
Patented self-aligning removable Bearing Carrier. Optional 3 year maintenance free bearing protection package available.

6. Option to use packing or mechanical seals.

7. Increases Shaft durability and life.

410 heat treated Stainless Steel Shaft. Packing lubricated with fresh water.

Pump Model Number Specification



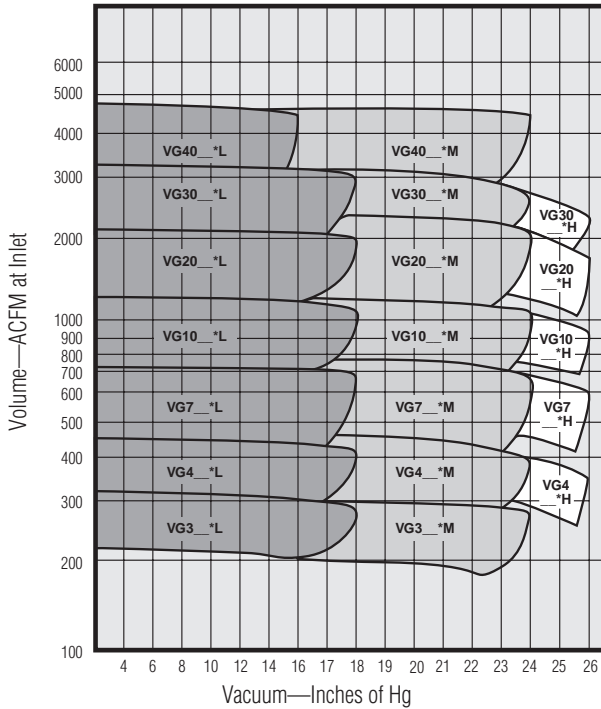
Actual Cubic Feet per Minute in Hundreds
(example indicates 2000 ACFM)

Pump Component Metallurgy
(see Chart B below)

Vacuum Level Ranges

L – Low, 4-16" HgV: **M** – Medium, 12-24" HgV **H** – High, 24-26" HgV

Composite Performance Curve



*Add Pump Component Metallurgy – See Chart B

A Bolt in Replacement

The VaneGard® is engineered to fit standard industry dimensions and installs readily into existing systems. Piping for secondary water supply is optional.

VaneGard® Model #	Replaces Model #		
VG3	LR3	LP3	CL300
VG4	LR4	LP4	CL400
VG7	LR7	LP7	CL700
VG10	LR10	LP10	CL1000
VG20	LR20	LP20	CL2000
VG30	LR30	LP30	CL3000
VG40	LR40	LP40	CL4000

B Pump Component Metallurgy

*	Rotor	Cones	Heads	Bearing Carrier	Housing	Shaft	Packing Gland
B¹	304 CS	CI	CI	CS	CI	CrS	316 SS
C	304 SS	304 SS	CI	CS	CI	410 HT	316 SS
S	304 SS	304 SS	CI	CS	304 SS	410 HT	316 SS
XVC	304 SS	304 SS	†316 SS	CS	CI	410 HT	316 SS
XVS	304 SS	304 SS	†316 SS	CS	304 SS	410 HT	316 SS
PVS	316 SS	316 SS	†316 SS	CS	316 SS	410 HT	316 SS
SS4	304 SS	304 SS	304 SS	CS	304 SS	410 HT	316 SS
SS6	316 SS	316 SS	316 SS	CS	316 SS	410 HT	316 SS

SS – Stainless Steel
CS – Cast Steel

CI – Cast Iron
HT – Heat Treated

CrS – Carbon Steel

1 Vooner Basic™ Model for Lower Price Alternative
† Replaceable Wear Plates on Cast Iron Heads

Engineering Data

DESIGN ITEMS	PUMP MODELS						
	VG3	VG4	VG7	VG10	VG20	VG30	VG40
Minimum RPM	1170	980	800	630	450	400	300
Maximum RPM	1750	1470	1170	880	640	530	450
Min. ACFM @ 10" HgV	210	315	510	820	1530	2500	3075
Max. ACFM @ 10" HgV	310	455	730	1105	2100	3075	4600
Min. ACFM @ 23" HgV	187	310	540	820	1320	2000	2300
Max. ACFM @ 23" HgV	285	405	670	1030	2000	2800	4600
BHP @ 10"HgV (Min. RPM)	7	12	17	25	50	74	85
BHP @ 10"HgV (Max. RPM)	17	26	36	52	102	150	175
BHP @ 23"HgV (Min. RPM)	11	20	27	40	65	100	132
BHP @ 23"HgV (Max. RPM)	20.5	28	41	62	116	162	260
Seal Water Requirement Fresh / Recycled (GPM)	-----Dual Water is Not Available -----						
@ 10" HgV	6	5	10	5/15	8/12	14/6	16/14
@ 23" HgV	7	12	15	5/15	8/22	14/42	16/48
Suction Sizes, in.	3	3	4	5	6	8	10
Discharge Sizes, in.	2	2.5	3	4	5	6	8
Pump Weight, lb.	425	540	900	1475	3285	5755	8850