

**PRIME**

# Liquid Ring Vacuum Pumps and Compressors PLR Series



## PRIME PLR SERIES VACUUM PUMPS

### Principle Of Operation:

PRIME 'PLR' Series Vacuum Pumps and Compressors are rotary machines in which liquid is made to act as a piston. A rotor having curved vanes fitted on a shaft is rotated freely in a cylindrical casing placed eccentric to the rotor. The space between the vanes thus forms a series of buckets, which are open at the bottom to allow the air to enter and return through the ports of cones on either ends. During the operation, the sealing liquid supplied into the casing will form a concentric ring of liquid due to centrifugal force. It will be seen that during part of the cycle of rotation, rotor buckets are gradually filled with liquid and during the next part of same cycle, the liquid gradually recedes enabling air to get filled into the empty buckets through the suction ports of pump heads and cones and forced out through discharge ports of the same heads and cones during the last part of the cycle. Thus, the liquid alternately entering and receding from the rotor buckets at high speed constitutes a series of liquid strokes like a piston. This effect is continuous and is repeated thousands of times in a minute producing an uninterrupted flow without pulsation. Connecting inlet to a closed system and outlet to atmosphere makes the unit work like a Liquid Ring Vacuum Pump. The unit works as a Liquid Ring Compressor if the inlet is open to atmosphere and outlet connected to a closed system through a receiver.

### Constructional Features:

PRIME Water Ring Vacuum Pumps are available in following combination of materials :

- 1) Heads, Body, Cones in close grained specially alloyed wear resistant Cast Iron, Rotor in S.G.iron and Shaft in Carbon Steel.
- 2) Heads in Cast Iron cladded with SS plates; Body & Cones in SS and Shaft in Carbon Steel.

Pumps can also be supplied in various combinations of materials, such as Phosphor Bronze and wear & corrosion resistant grade materials, to meet specific requirements of the customer.

### Special Features:

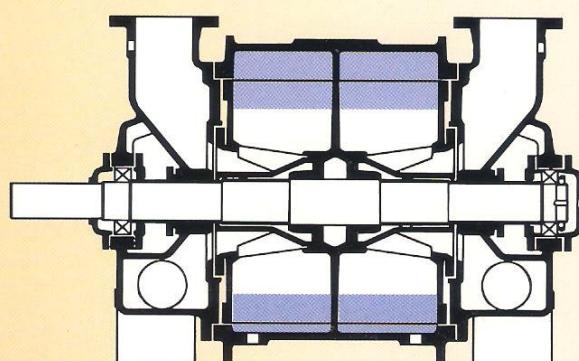
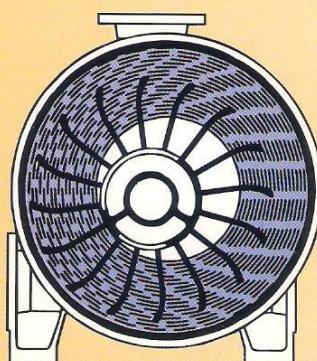
All Pumps are provided with spray nozzles at inlet flanges to enhance the air handling capacity through saturation of incoming air.

Improved design of cones enables the Pump to handle more air with less power consumption.

Dynamically balanced rotor enables the Pump to run without vibration giving longer life to Bearings.

Three types of cones are provided to suit different operating conditions :

L-type Cone is recommended for a vacuum level up to 300 mmHg. M-type for above 300 mmHg. & upto 500 mmHg. H-type for above 500 mmHg. of vacuum.



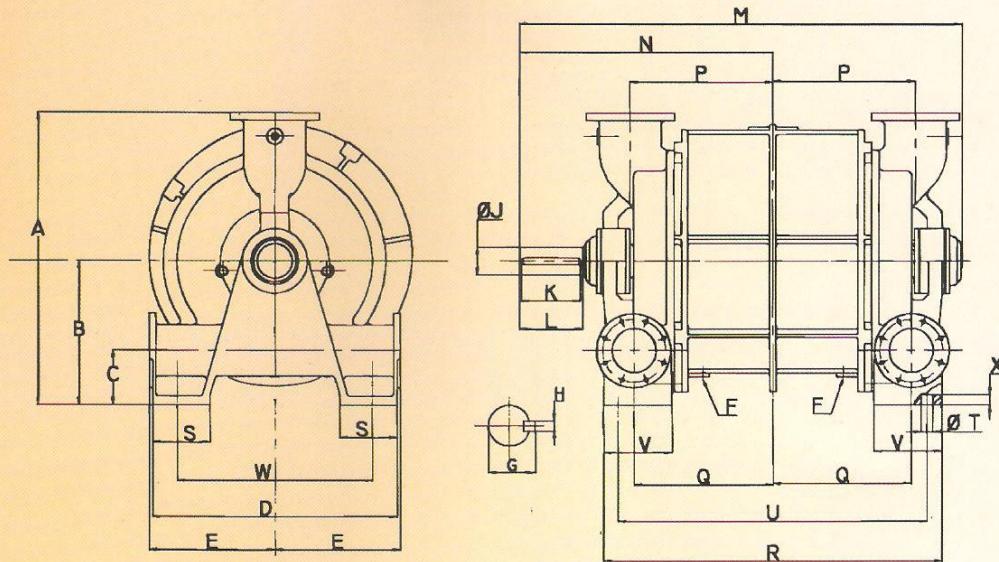
## PERFORMANCE TABLE

PUMP MODEL	PUMP SPEED RPM	MOTOR POWER K W (HP)	SUCTION CAPACITY IN M <sup>3</sup> / Hr. @ DIFFERENT SUCTION PRESSURES						SEALING WATER QUANTITY (LPM)	
			SHAFT POWER IN KW							
			100 mm.Hg	200 mm.Hg	300 mm.Hg	400 mm.Hg	500 mm.Hg	600 mm.Hg		
PLR 100	960	15 (20)	560	550	517	500	500	450	17 TO 34	
			7.5	8.5	10.5	10.5	10.5	10.5		
	1150	18.5 (25)	650	650	612	600	600	550	25 TO 40	
			10.5	11.5	12.0	13.5	13.5	13.5		
	1350	22 (30)	775	775	686	700	700	650	34 TO 50	
			14.0	14.5	18.0	18.0	18.0	18.0		
	890	30 (40)	1025	1025	517	975	950	800	25 TO 40	
			13.0	15.0	18.0	18.0	19.0	19.0		
	980	30 (40)	1125	1125	1090	1075	1050	900	34 TO 58	
			17.0	17.5	21.0	21.0	22.0	22.0		
PLR 200	1070	37 (50)	1200	1200	1180	1150	1150	1000	34 TO 58	
			20.0	22.5	24.0	24.0	26.5	26.5		
	690	37 (50)	1500	1500	1500	1450	1375	1275	34 TO 58	
			20.0	22.5	24.0	28.0	29.0	29.0		
	770	45 (60)	1700	1700	1650	1600	1550	1425	50 TO 75	
			26.0	28.0	30.5	33.0	35.0	35.0		
	820	55 (75)	1800	1800	1760	1700	1650	1525	58 TO 84	
			30.0	32.0	34.0	36.0	39.0	39.0		
PLR 450	525	45 (60)	1870	1875	1860	1840	1800	1780	60 TO 85	
			22.0	28.0	32.0	42.0	42.0	42.0		
	640	55 (75)	2220	2288	2280	2275	2260	2200	65 TO 120	
			33.5	35.0	38.0	48.0	48.0	46.0		
	700	67 (90)	2510	2542	2475	2470	2460	2300	70 TO 130	
			37.5	42.0	52.0	56.0	56.0	56.0		
PLR 600	500	75 (100)	3000	3000	2925	2800	2700	2400	67 TO 134	
			40.0	44.0	48.0	53.0	53.0	56.0		
	550	75 (100)	3300	3300	3230	3100	3000	2700	75 TO 150	
			47.0	52.0	58.0	60.0	60.0	63.0		
	600	90 (120)	3600	3600	3510	3400	3300	3000	80 TO 160	
			56.0	59.0	65.0	69.0	69.0	71.0		

### APPLICATIONS:

Mineral Beneficiation | Coal Washerries | Textile Industry | Cement Industry | Paper Industry |  
 Sugar Industry | Chemical & Pharmaceutical Industry | Steel Plants | Thermal & Atomic Power  
 Plants | Fertilizer Plants

## OVERALL DIMENSIONS



PUMP SIZE	SUCTION FLANGE					DISCHARGE FLANGE										
	N.B	O.D	P.C.D	HOLE	NO.OF	N.B	O.D	P.C.D	HOLE	NO.OF	A	B	C	D	E	F
PLR 100	80	184	146	18	4	65	165	127	18	4	482	229	127	406	240	3/4"BSP
PLR 200	100	215	178	18	4	80	184	146	18	4	572	254	130	460	275	3/4"BSP
PLR 300	125	254	210	18	4	100	220	180	18	4	660	300	170	510	320	1"BSP
PLR 450	150	285	235	18	8	100	215	178	18	4	806	355	230	-	-	25
PLR 600	150	285	235	18	8	125	254	210	18	8	915	432	213	750	381	1"BSP

PUMP SIZE	SHAFT END					BASE										
	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
PLR 100	47	12	42	90	105	900	505	224	224	572	82	22	505	115	355	20
PLR 200	54	16	50	100	124	1030	575	270	270	636	90	22	578	115	400	22
PLR 300	78	20	70	110	140	1160	650	339	339	714	95	22	633	120	420	25
PLR 450	84	20	76	142	170	1400	762	381	381	860	127	28	160	780	420	24
PLR 600	102	25	92	180	203	1500	851	454	454	1160	127	35	1045	203	622	35



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