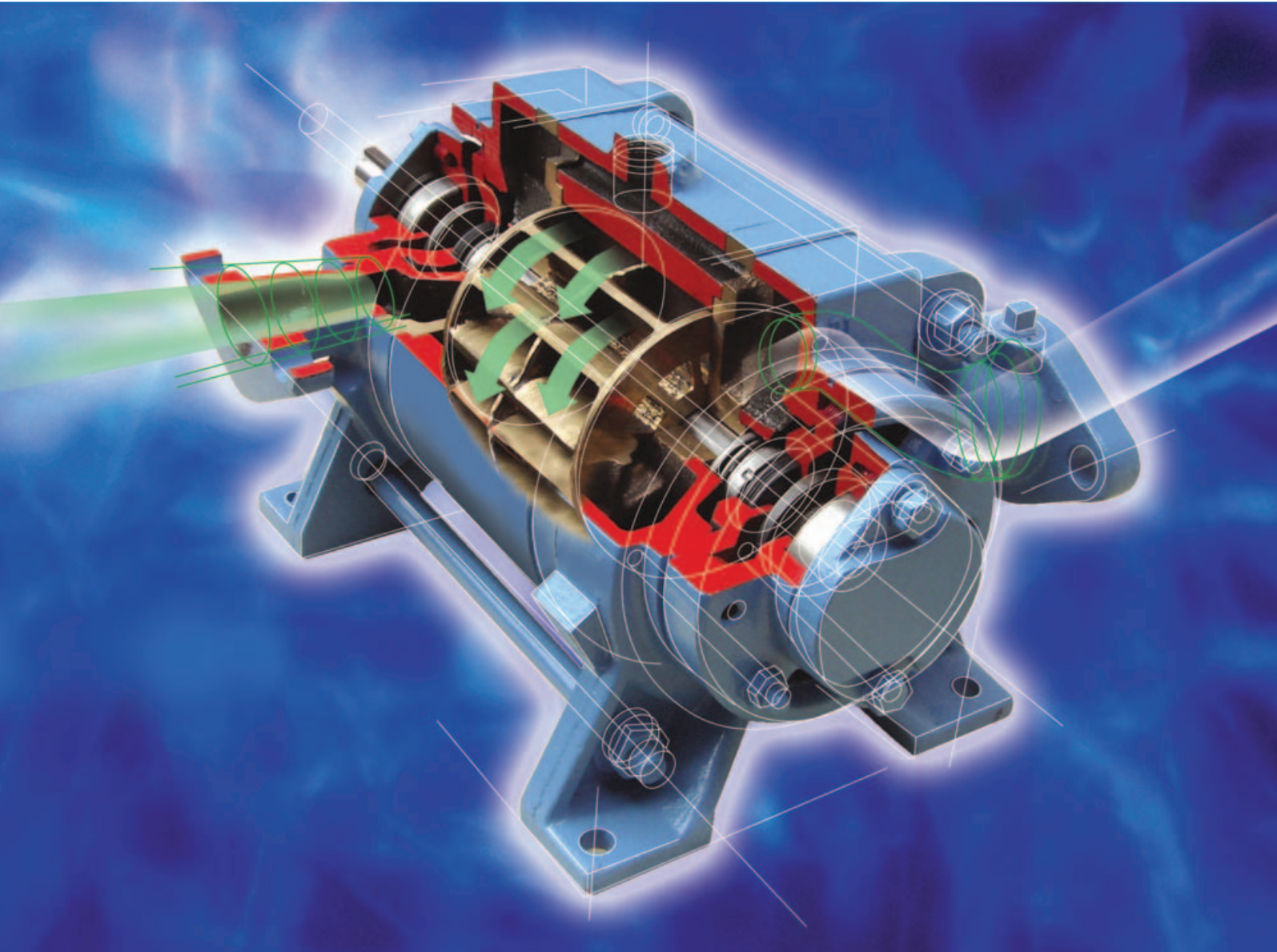




Liquid Ring Vacuum Pumps
SONIT Series

VK/VA
V/VL



The SONIT Series. Offering remarkable improvement in the high vacuum range through single-rotation/cycle operation and delivering high efficiency and high reliability throughout the operating vacuum range.

Features of Liquid Ring Vacuum Pumps

- Needs no lubricant and will not wear.
- The compact rotary pump and reduced vibration means the discharge side flow remains constant.
- The seal liquid prevents internal leakage, enabling greater clearance between rotary and stationary parts.
- The ball valve enables a full operation cycle for each impeller rotation for stable operation even in the high vacuum range.
- The seal liquid serves as a piston, so performance is unaffected by any liquid mixing with intake gas.
- Reduces noise and vibration.

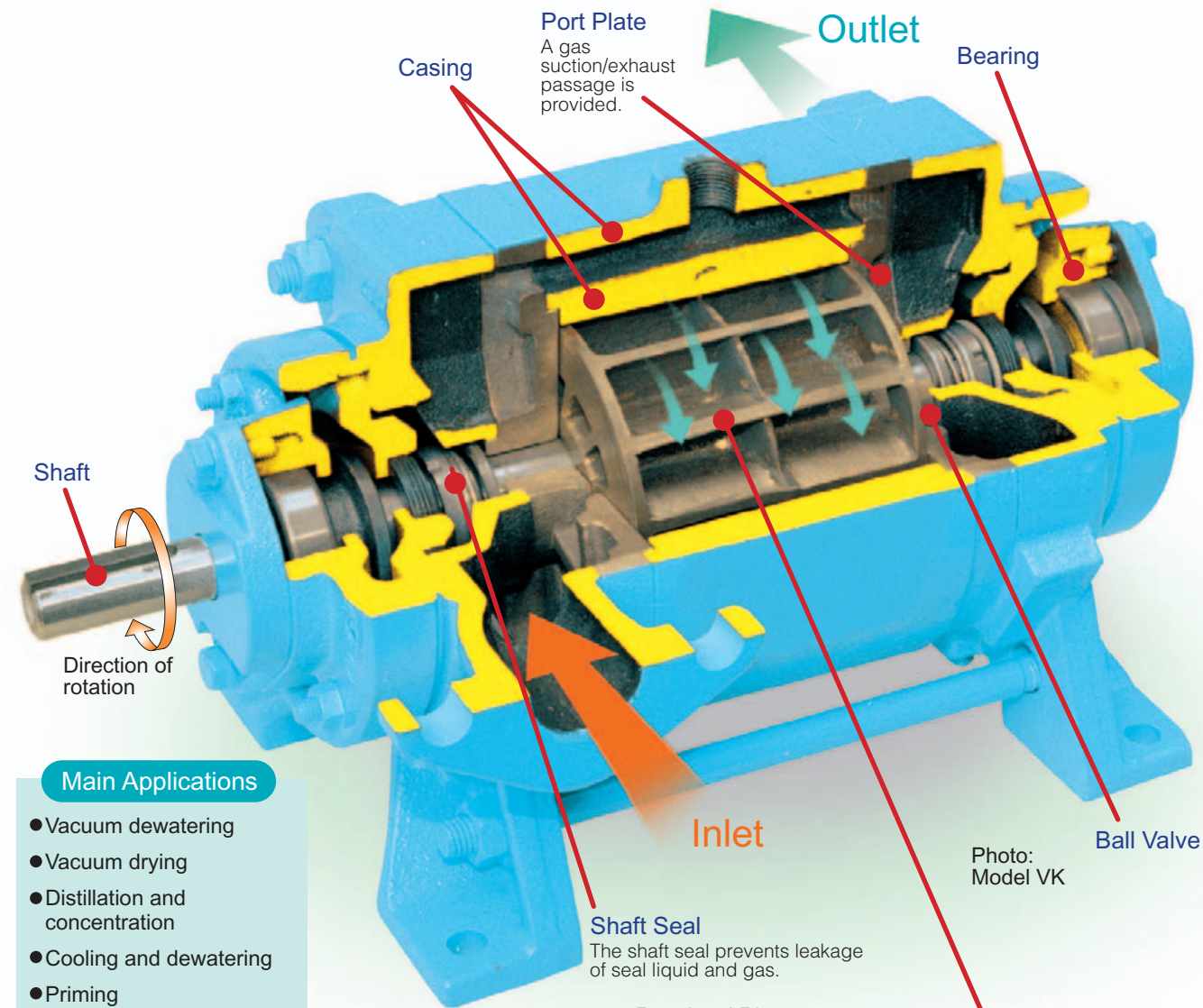
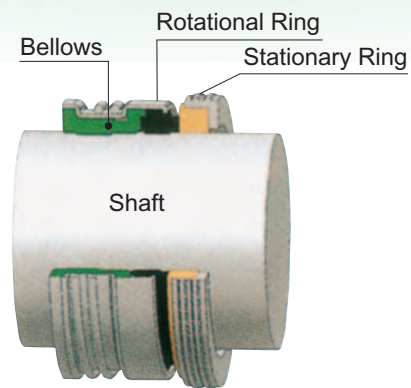


Photo: Model VK

Main Applications

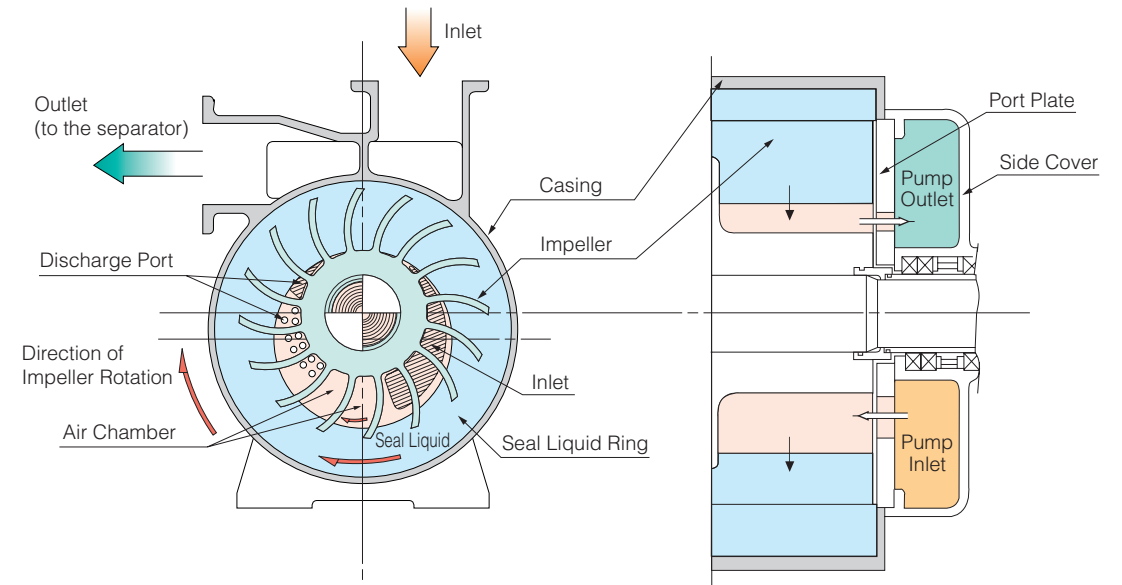
- Vacuum dewatering
- Vacuum drying
- Distillation and concentration
- Cooling and dewatering
- Priming
- Vacuum & suction transport
- Various filters for the chemical industry
- Paper machines for the pulp/paper manufacturing industry
- Exhaust gas desulfurizing equipment for the iron manufacturing and electric power industries
- Other vacuum sources



Impeller
Rotation of the impeller forms a seal liquid ring and compresses gas.



Liquid Ring Vacuum Pump Operating Mechanism

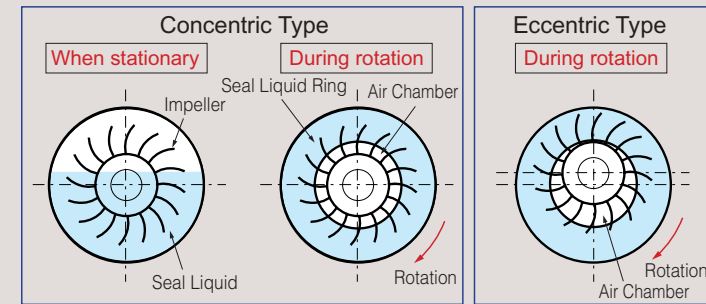
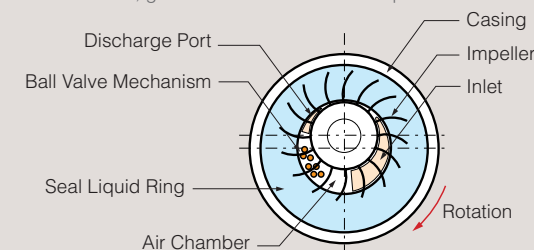


A simple structure with single-stage impeller that rotates stably and at a constant speed makes liquid ring vacuum pumps extremely easy to operate and maintain. While the impeller rotates eccentrically relative to the casing, seal liquid flows along the inner wall of the casing and forms a tangential flow to provide a crescent-shaped space internally. The inlet port is opened as the crescent space expands through rotation, drawing in gas and sealing it in an air chamber between the blades and the seal liquid ring. The volume of the air chamber is reduced with rotation, effectively compressing the gas inside. The outlet port is located at a position that allows the internal gas pressure to increase to a specified value, and the compressed gas is discharged from that port.

Operating Principle: Single-action Type

One operation cycle (Suction — Compression — Discharge) is executed with each impeller rotation.

- As the multi-blade impeller rotates in the casing, an air chamber is formed between the blades and the seal liquid ring. With the change in the volume of the air chamber, gas is drawn in and then compressed inside.

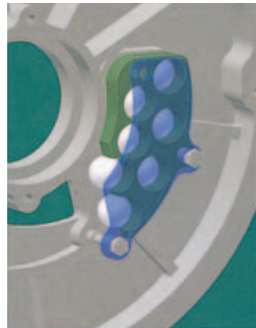


Ball Valve Characteristics

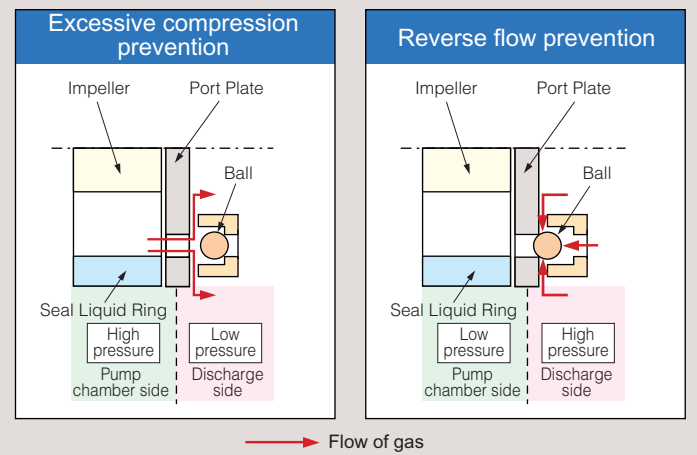
- Ensures stable suction capacity even in the high vacuum range
- Reduces power loss and lowers running costs
- Reduces operating noise

Ball Valve Mechanism

The ball valve is located in the discharge port, and comprised of the circular hole in the port plate, ball (Teflon ball) and ball holder. The ball valve mechanism prevents excessive and reverse flow compression as the operating pressure is increased or reduced.



Ball Valve Functions



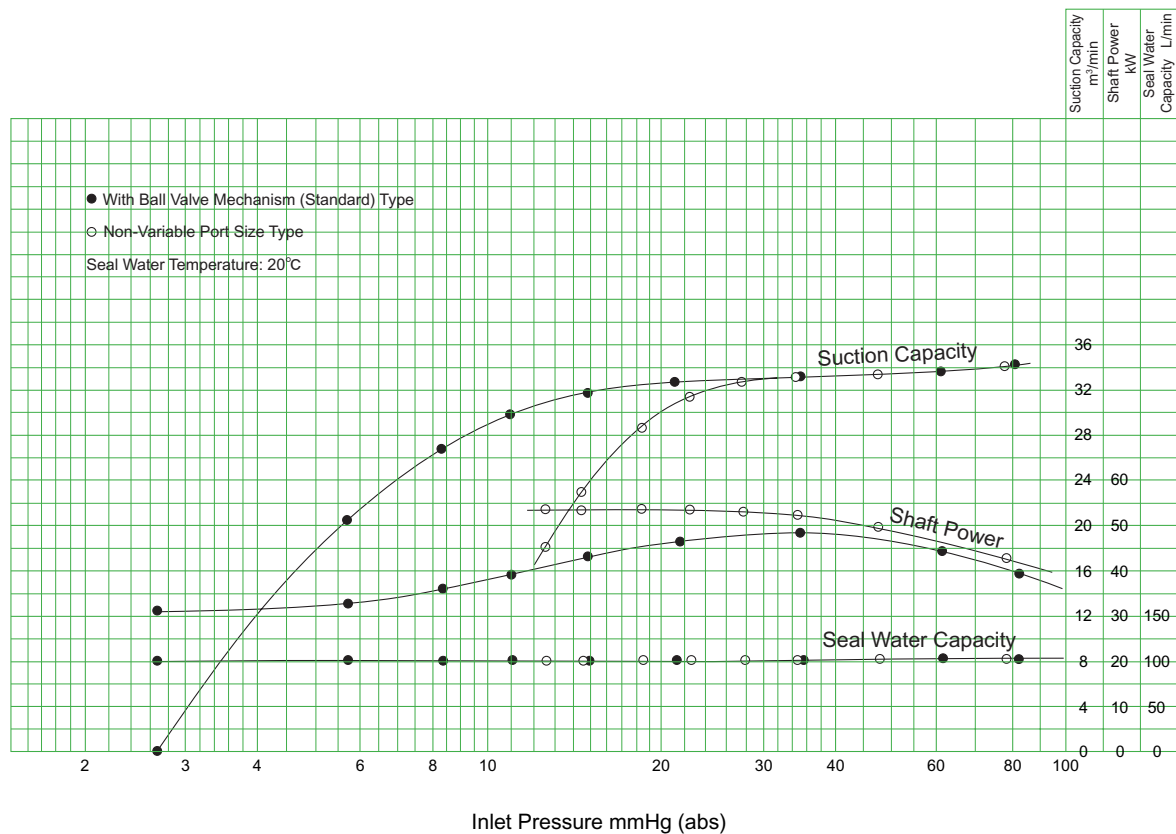
This ball valve serves an important role in maintaining a level of performance in the vacuum range that is simply not possible with single-stage pumps with a compression ratio of around 7 or over. The following curve is for comparison with the same type of pump without a ball valve mechanism (non-variable port size) and indicates a major difference in inlet capacity and shaft power in a vacuum range above 20 mmHg (abs).

Though ball valves have a major influence on performance at a high pressure compression ratio as explained above, precise accuracy is not required of the ball, so some accumulation of adhering material, for example, may not result in serious trouble. If you have any concerns about this point, a non-variable port size type is also available, but the vacuum range will be -600 mm Hg or less and the motor will be somewhat large depending on the model number.

Test Curve for V175V855

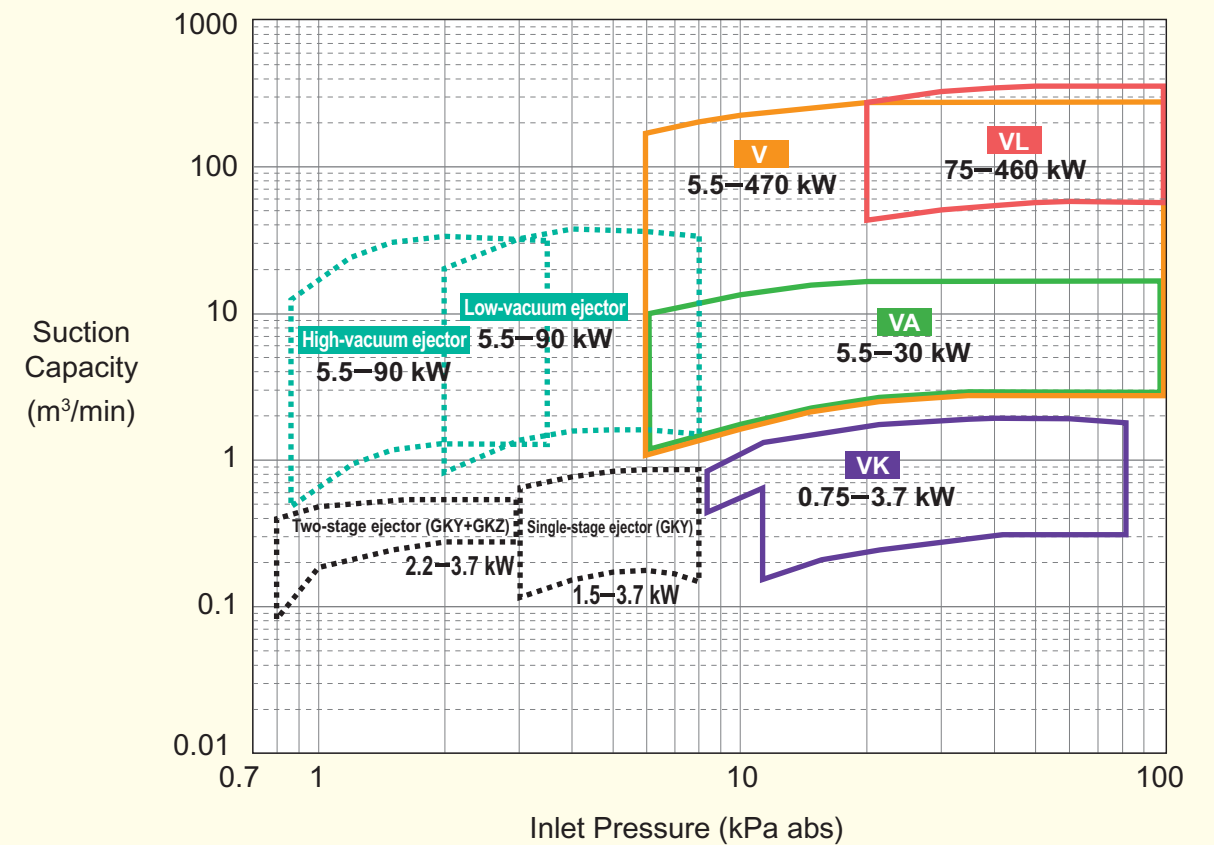
Operating Vacuum: 260 mmHg (abs)
Normal Suction Capacity: 32 m³/min

Discharge Pressure: Atmospheric Pressure
Speed: 710 min⁻¹ Motor: 55 kW



In addition to the vacuum pumps listed in this catalog, we also offer compressors. Contact us for details.

VK/VA/VL (SONIT Series) Product System Chart



High performance vacuum pumps play active parts in various industries.

Because the pump chamber needs no hydraulic fluid or lubricant, vacuum pumps are environmentally considerate and do not cause problems related to such issues as preventing exhaust emissions from being polluted with oil. The SONIT series offers an abundant product lineup and various optional accessories to meet the diverse needs of a wide range of users.



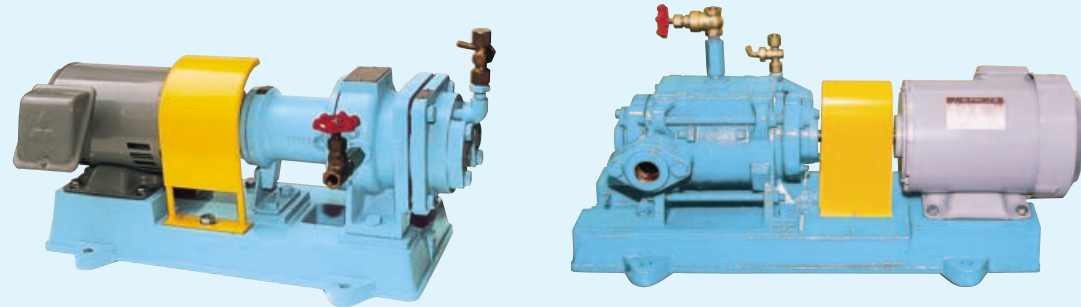
Testing

Degassing Vacuum Pump



- With liquid ring pumps, the vacant space in the pump is filled with seal liquid vapor. Therefore, as the seal liquid temperature increases, the vapor pressure is raised and suction capacity is reduced. This phenomenon has a particularly significant effect in the high vacuum range. When a seal liquid other than water is used, refer to the change rate for the water temperature that corresponds to the relevant vapor pressure. (The ratio of suction capacity relative to the performance at the standard seal liquid temperature of 15°C is called the "Change rate".) For details, see "Influence of the Seal Liquid Temperature" on page 42 at the end of this catalog.
- The VK, VA and V models are applicable to up to approx. 5.3 kPa abs. For operation in a higher vacuum range, stable suction performance can be ensured by providing a gas ejector (optional accessory) upstream from the pump.
- * For more details on gas ejectors, refer to pages 34 through 41.

VK Model

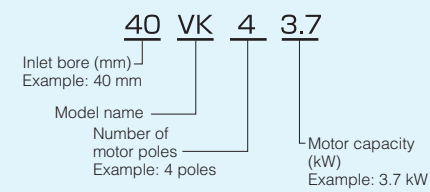


Standard Specifications of Major Components

Item	Bore [Inlet x Outlet] (mm)				
	20 x 20	25 x 25	32 x 32	40 x 40	
Applicable gas and seal liquid	Seal liquid	Water			
	Seal liquid temperature	13 to 50°C			
	Gas	Air			
	Gas temperature	Normal temperature			
	Outlet pressure	101.3 kPa abs (0 kPa G)			
Pump	Structure	Seal liquid filling method	Pressurized		
		Seal liquid pressure required	50 kPa G		
		Outlet type	Variable port (ball valve)		
		Shaft seal	Single mechanical seal		
	Material	Bearing	Deep groove ball bearing		
		Casing	FC200		
		Port plate	CAC406		
		Impeller	CAC402		
	Shaft	SUS420J2			
Motor	Type / Number of poles	Fully-enclosed, external fan (indoor), 2- or 4-pole			
	Phase	50 Hz: 3-phase 60 Hz: 3-phase			
	Piping connection	Special screwed companion flange			

Model Identification

The following model information is for example purposes only:



Standard Accessories (Direct Drive Type)

- Common base 1 pc
- Foundation bolt 1 set
- Motor 1 pc
- Companion flange 1 set
- Shaft coupling 1 set
- Safety cover 1 set
- Seal liquid control valve 1 pc

Optional Accessories

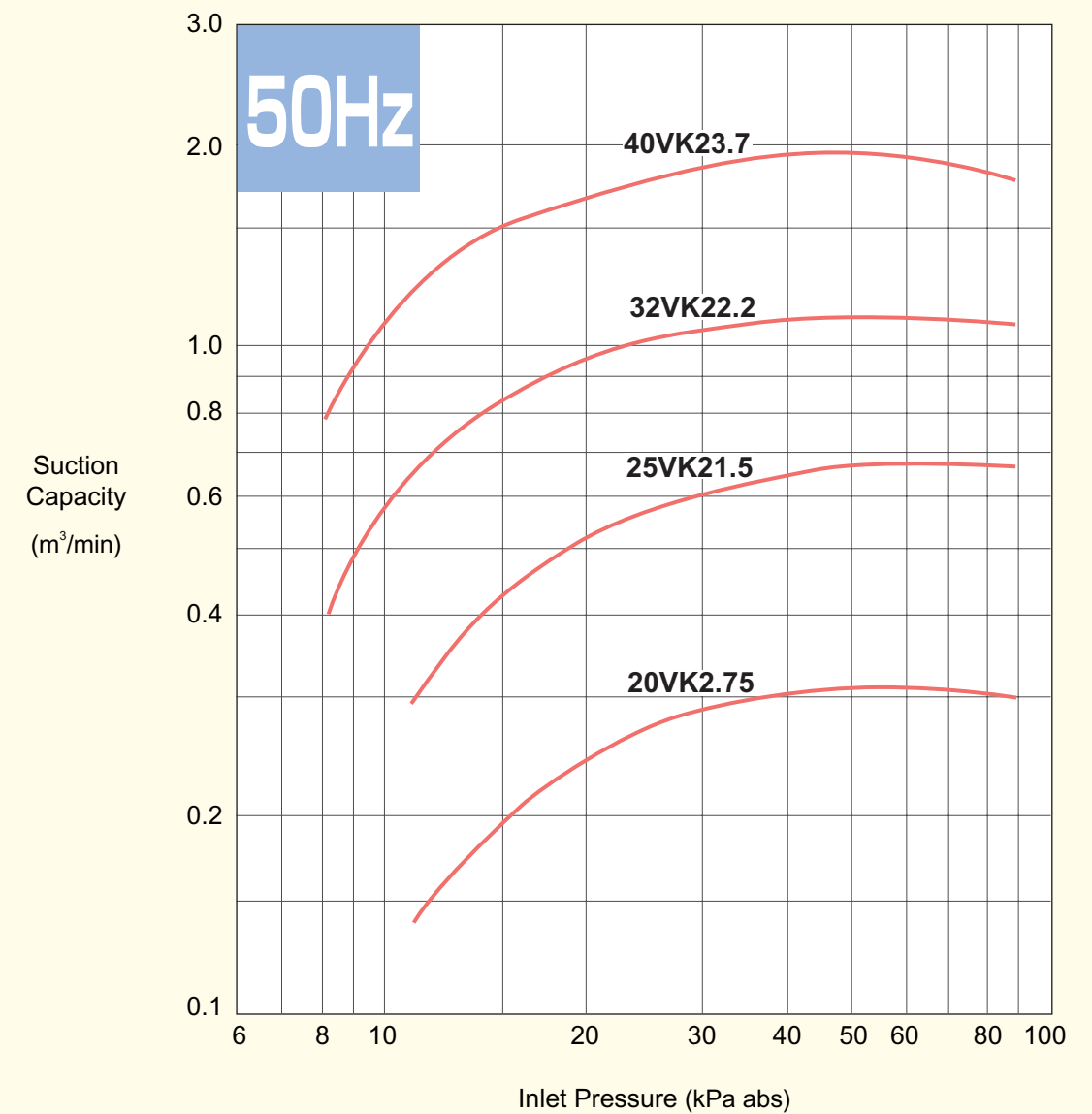
- Vacuum gauge
- Separator tank
- Temporary strainer
- Gas check valve
- Seal liquid flow meter
- Gas ejector

Special Specifications

Pump	Structure	Seal liquid filling method	Self-priming
		Outlet type	Fixed port
	Material	Casing	SCS13, SCS14
		Port plate	SCS13, SCS14
		Impeller	SCS13, SCS14
	Shaft	SUS304, SUS316	
Motor	Type	Fully-enclosed, external fan (outdoor)	
		Drip-proof	
		Increased safety explosion-proof, Pressure-resistant explosion-proof	

Contact us for custom specifications other than those noted above.

50 Hz Performance Curves

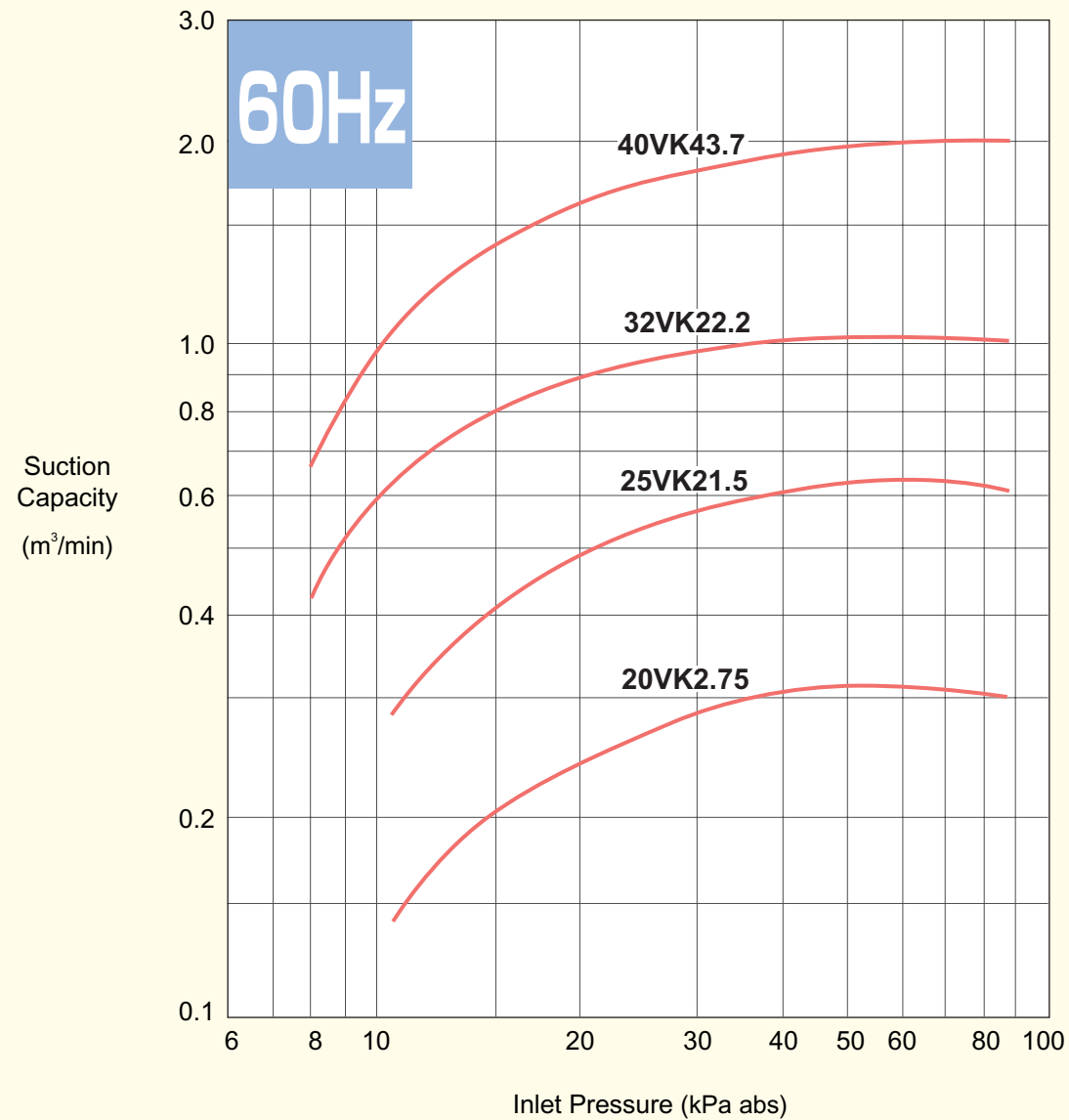


50 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet x Outlet] (mm)	Model	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)				Inlet pressure (kPa G / kPa abs)			Approx. seal liquid flow rate* (L/min)	
					-93	-90	-86	-80	-60	-40	-20		-80
					8.3	11.3	15.3	21.3	41.3	61.3	81.3		21.3
20 x 20	20VK2.75	2900	0.75	2	—	0.15	0.2	0.25	0.3	0.31	0.3	3	
25 x 25	25VK21.5	2900	1.5	2	—	0.32	0.44	0.54	0.64	0.67	0.66	7	
32 x 32	32VK22.2	2900	2.2	2	0.43	0.68	0.85	0.98	1.08	1.1	1.08	8	
40 x 40	40VK23.7	2900	3.7	2	0.84	1.28	1.5	1.72	1.92	1.9	1.8	12	

* The seal liquid flow rate indicates the values at -80 kPa G (21.3 kPa abs).

60 Hz Performance Curves

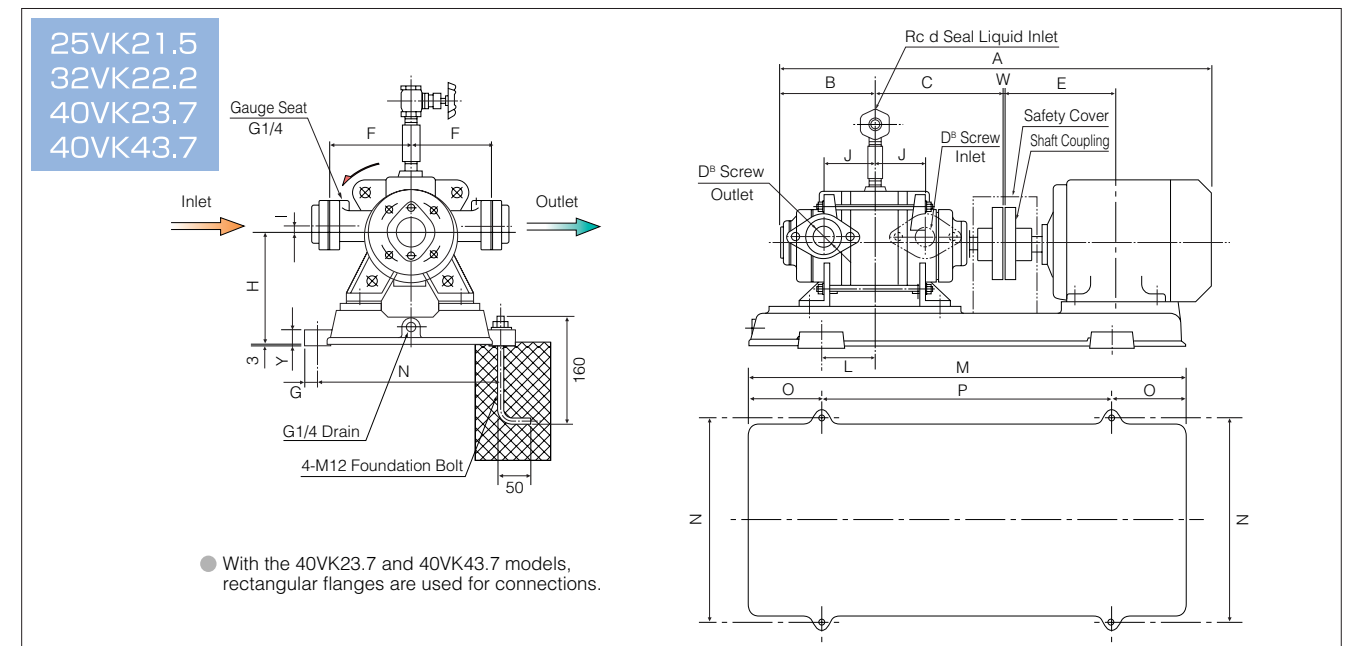
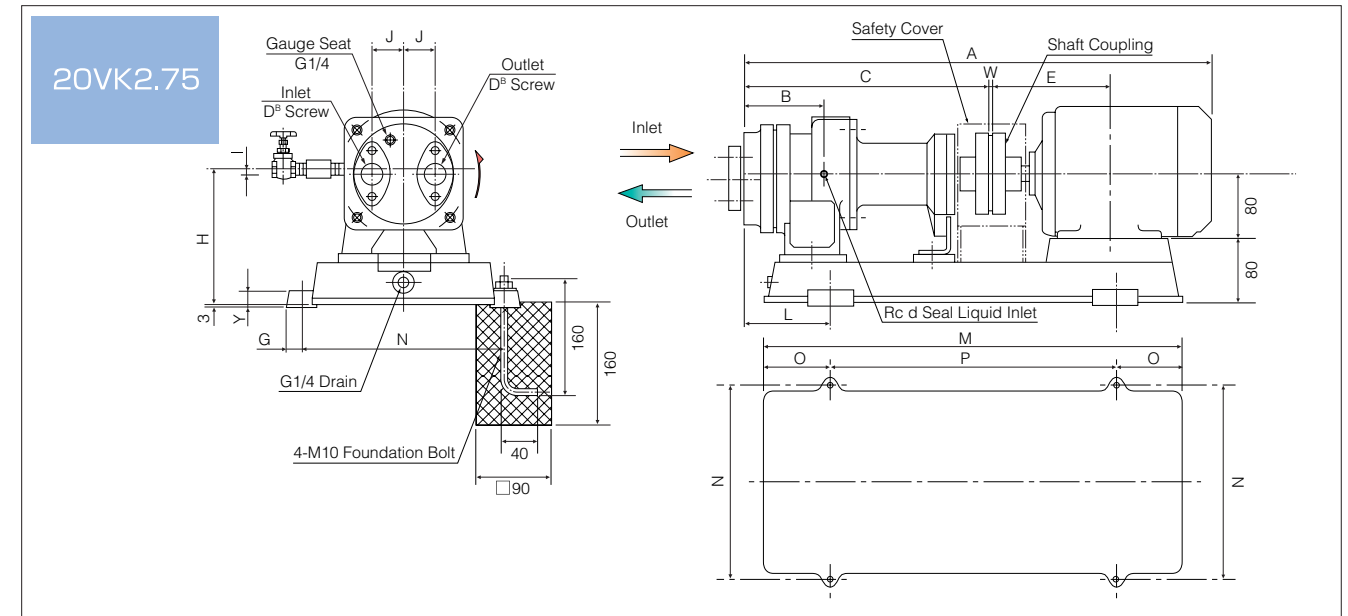


60 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m³/min)				Inlet pressure (kPa G) (kPa abs)				Approx. seal liquid flow rate* (L/min)
					-93	-90	-86	-80	-60	-40	-20	-80	
					8.3	11.3	15.3	21.3	41.3	61.3	81.3	21.3	
20 × 20	20VK2.75	3500	0.75	2	—	0.15	0.2	0.24	0.3	0.31	0.3	4	
25 × 25	25VK21.5	3500	1.5	2	—	0.30	0.4	0.5	0.61	0.62	0.61	7	
32 × 32	32VK22.2	3500	2.2	2	0.43	0.64	0.78	0.89	1	1.02	1	8	
40 × 40	40VK43.7	1750	3.7	4	0.68	1.10	1.4	1.62	1.9	1.98	2	12	

* The seal liquid flow rate indicates the values at -80 kPa G (21.3 kPa abs).

Dimensions (Direct drive type) Unit: mm



50 Hz Dimensions Unit: mm

Model	D ^s *	A	B	C	E	F	G	H	I	J	L	M	N	O	P	W	Y	d*	Approx. weight (kg)
20VK2.75	3/4	561.5	96	293	140	—	17	160	6	35	104	500	230	80	340	3	20	1/4	50
25VK21.5	1	665	142	195	168.5	115	21	165	10	77	90	660	260	110	440	3	25	3/8	75
32VK22.2	1 ¼	695	162	215	168.5	115	21	165	10	97	65	660	260	110	440	3	25	3/8	80
40VK23.7	1 ½	777	172	230	200	125	21	175	20	110	60	740	320	130	480	3	25	1/2	105

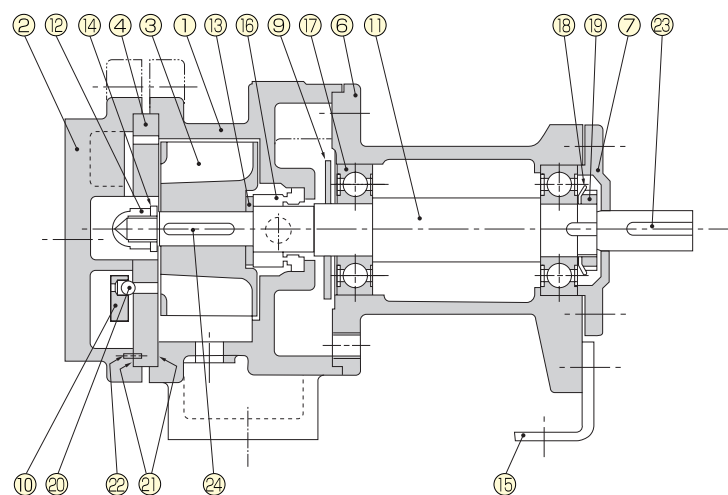
60 Hz Dimensions Unit: mm

Model	D ^s *	A	B	C	E	F	G	H	I	J	L	M	N	O	P	W	Y	d*	Approx. weight (kg)
20VK2.75	3/4	561.5	96	293	140	—	17	160	5	35	104	500	230	80	340	3	20	1/4	50
25VK21.5	1	665	142	195	168.5	110	21	160	10	77	90	660	260	110	440	3	25	3/8	70
32VK22.2	1 ¼	695	162	215	168.5	110	21	160	10	97	65	660	260	110	440	3	25	3/8	75
40VK43.7	1 ½	777	173	232	200	170	21	230	50	100	60	740	320	130	480	3	25	1/2	140

The approx. weight includes the weight of the common base and the motor. The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately. The gas inlet and outlet are equipped with companion flanges. * The "D^s" and "d" dimensions are indicated in inches.

Sectional Drawings

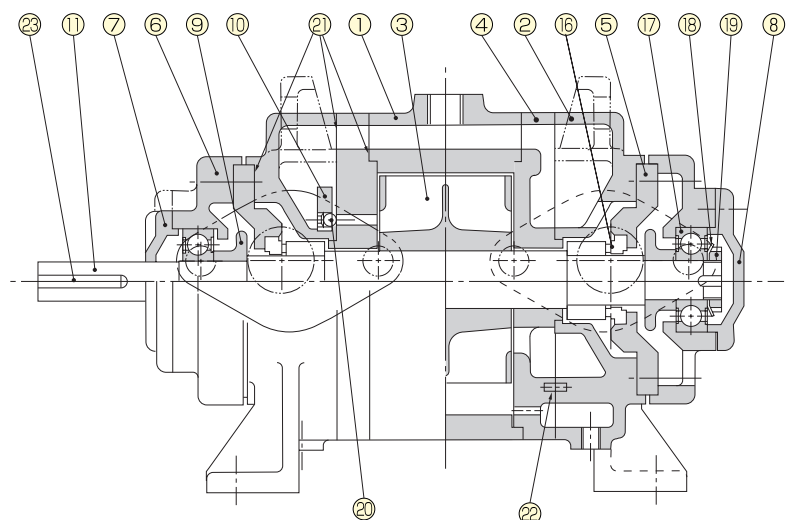
20VK2.75



Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	14	Washer	SUS304
2	Side Cover	FC200	15	Bearing Support	SS400
3	Impeller	CAC402	16	Mechanical Seal	SUS304CM/C
4	Port Plate	CAC406	17	Deep Groove Ball Bearing	—
6	Bearing Case	FC200	18	Lock Washer	SS400
7	Bearing Cover	FC200	19	Lock Nut	S30C
9	Deflector	SUS316	20	Teflon Ball	PTFE
10	Ball Holder	CAC406	21	Liquid Gasket	TB-1104
11	Shaft	SUS420J2	22	Straight Pin	SUS316
12	Impeller Nut	SUS304	23	Key	S45C
13	Spacer	SUS403	24	Key	SUS403

25VK21.5
32VK22.2
40VK23.7
40VK43.7

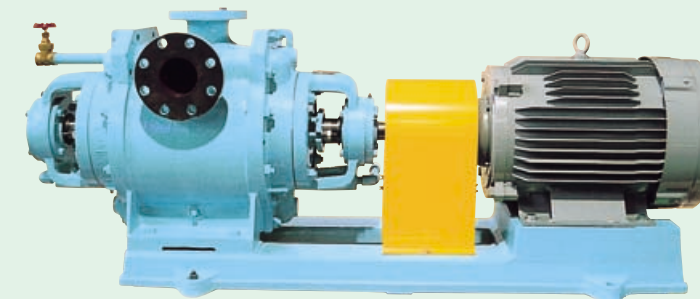


Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	11	Shaft	SUS420J2
2	Side Cover	FC200	16	Mechanical Seal	SUS304CM/C
3	Impeller	CAC402	17	Deep Groove Ball Bearing	—
4	Port Plate	CAC406	18	Lock Washer	SS400
5	Seal Cover	FC200	19	Lock Nut	S30C
6	Bearing Case	FC200	20	Teflon Ball	PTFE
7	Bearing Cover	FC200	21	Liquid Gasket	TB-1104
8	End Cover	FC200	22	Straight Pin	SUS316
9	Deflector	FC200	23	Key	S45C
10	Ball Holder	CAC406			

Liquid Ring Vacuum Pump (Single-action type)

VA Model

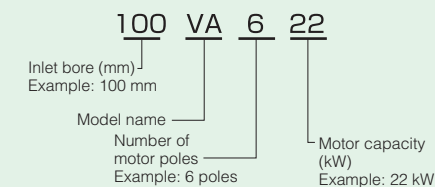


Standard Specifications of Major Components

Item	Bore (Inlet x Outlet) (mm)				
	40 x 40	50 x 50	65 x 65	80 x 80	100 x 100
Applicable gas and seal liquid	Seal liquid	Water			
	Seal liquid temperature	13 to 50°C			
	Gas	Air			
	Gas temperature	Normal temperature			
	Outlet pressure	101.3 kPa abs (0 kPa G)			
Pump Structure	Seal liquid filling method	Pressurized			
	Seal liquid pressure required	0.1 MPa G			
	Outlet type	Variable port (ball valve)			
	Shaft seal	Single mechanical seal			
	Bearing	Deep groove ball bearing Self-aligning roller bearing (100 VA model only)			
Pump Material	Casing	FC200			
	Port plate	FC250			
	Impeller	FC250			
	Shaft	SUS420J2			
Motor	Type / Number of poles	Fully-enclosed, external fan (indoor), 4- or 6-pole			
	Phase	50 Hz: 3-phase, 60 Hz: 3-phase			
Piping connection		JIS10K flange (FF)			

Model Identification

The following model information is for example purposes only:



Standard Accessories (Direct Drive Type)

- Common base 1 pc
- Foundation bolt 1 set
- Motor 1 pc
- Shaft coupling 1 set
- Safety cover 1 set
- Seal liquid control valve 1 pc

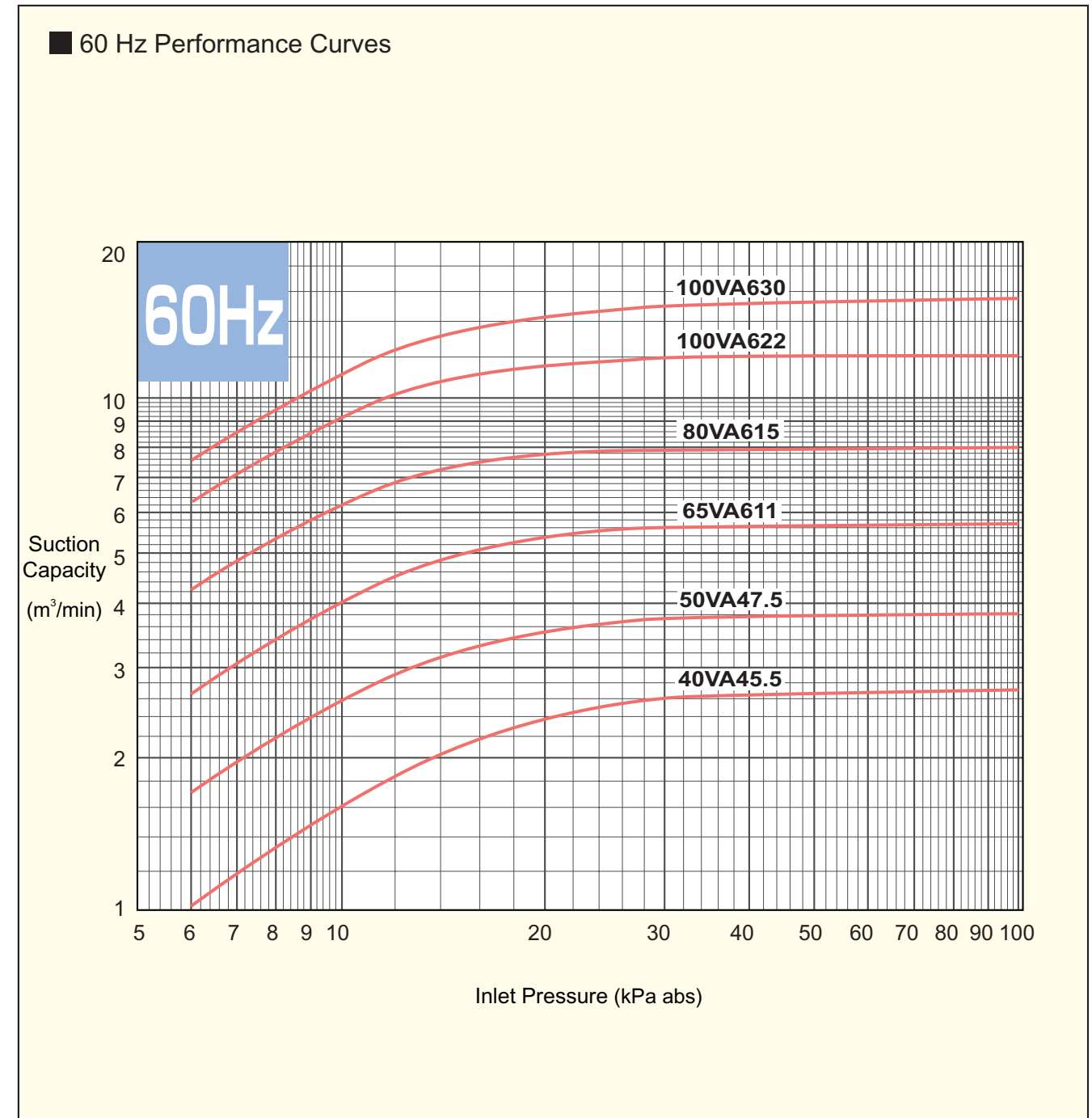
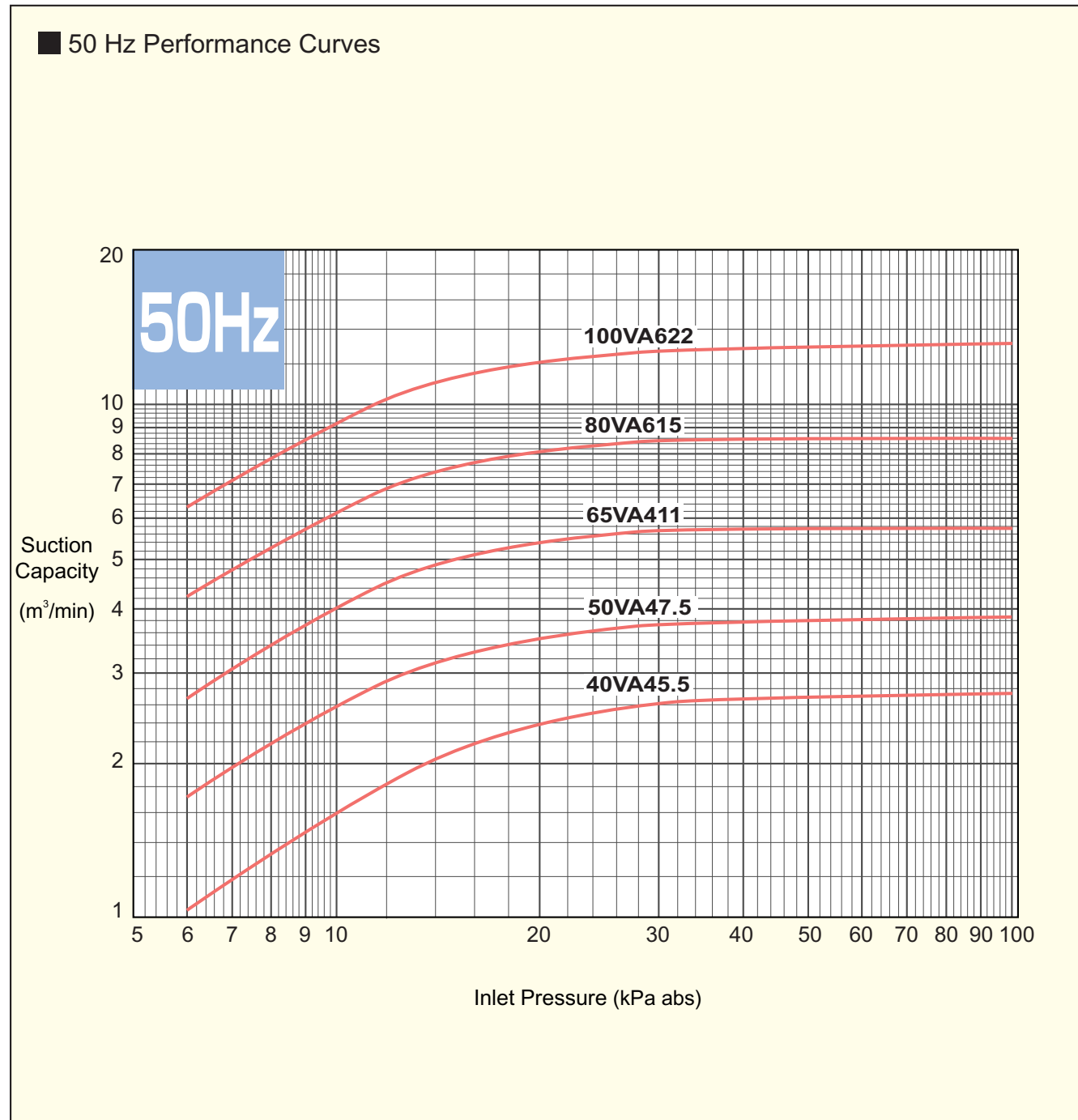
Optional Accessories

- Vacuum gauge
- Separator tank
- Temporary strainer
- Gas check valve
- Seal liquid flow meter
- Gas ejector

Special Specifications

Pump Structure	Seal liquid filling method	Self-priming
	Outlet type	Fixed port
	Shaft seal	Gland packing
Pump Material	Casing	SCS13, SCS14
	Port plate	CAC406, SCS13, SCS14
	Impeller	CAC402, SCS13, SCS14
	Shaft	SUS304, SUS316
Motor Type		Fully-enclosed, external fan (outdoor)
		Drip-proof
		Increased safety explosion-proof, Pressure-resistant explosion-proof

Contact us for custom specifications other than those noted above.



50 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)						Inlet pressure (kPa G / kPa abs)	Approx. seal liquid flow rate* (L/min)
					-93.3	-90.6	-86.6	-80.0	-66.6	0		
					-86.6	8.0	10.7	14.7	21.3	34.7		
40 × 40	40VA45.5	1450	5.5	4	1.35	1.72	2.1	2.5	2.7	2.7	20	
50 × 50	50VA47.5	1450	7.5	4	2.22	2.75	3.25	3.64	3.8	3.8	25	
65 × 65	65VA411	1450	11	4	3.44	4.26	5.02	5.55	5.7	5.7	30	
80 × 80	80VA615	970	15	6	5.4	6.6	7.6	8.3	8.5	8.5	35	
100 × 100	100VA622	970	22	6	8.0	9.7	11.3	12.5	13.0	13.0	50	

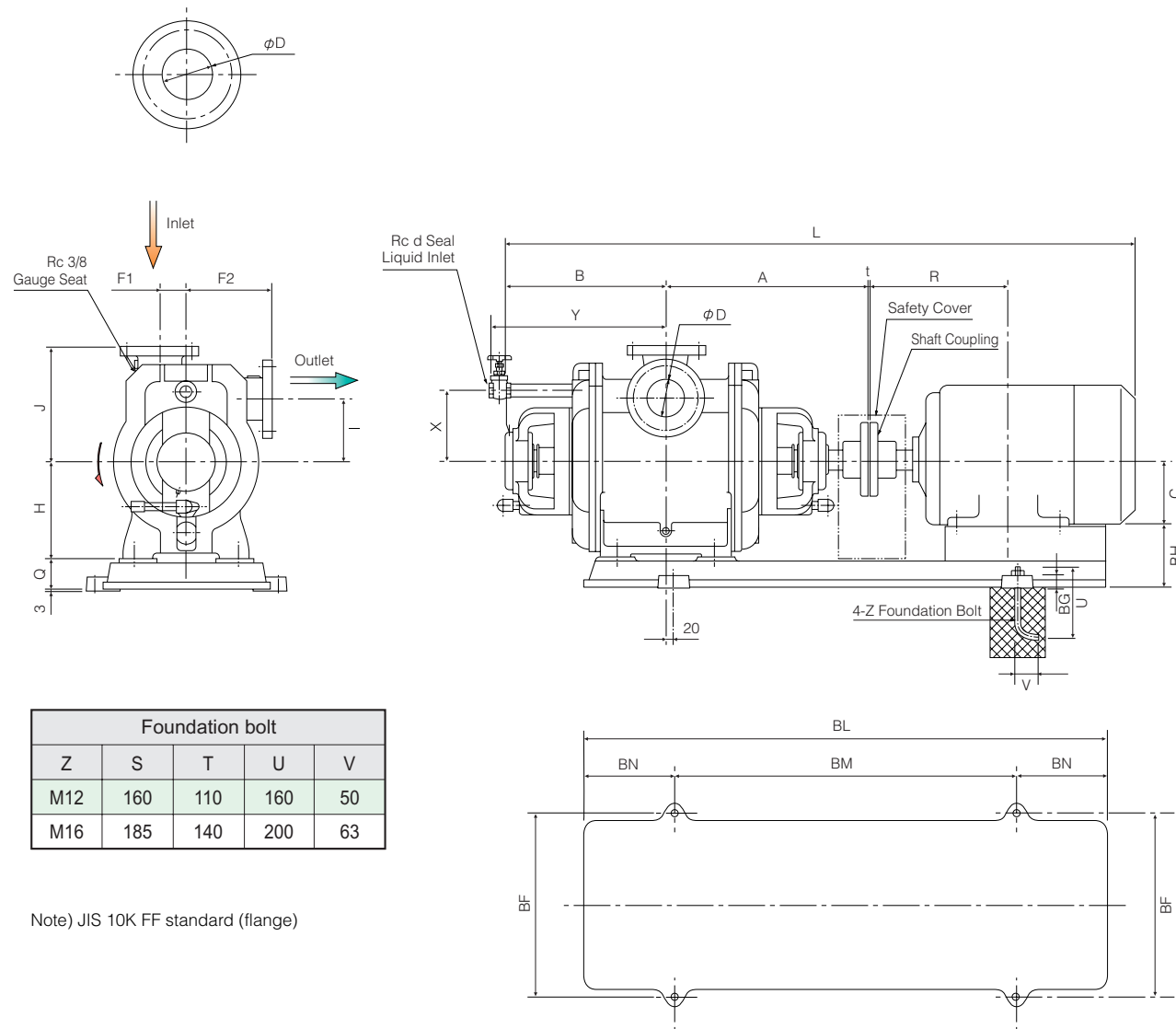
* The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

60 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)						Inlet pressure (kPa G / kPa abs)	Approx. seal liquid flow rate* (L/min)
					-93.3	-90.6	-86.6	-80.0	-66.6	0		
					-86.6	8.0	10.7	14.7	21.3	34.7		
40 × 40	40VA45.5	1750	5.5	4	1.35	1.72	2.1	2.5	2.7	2.7	20	
50 × 50	50VA47.5	1750	7.5	4	2.22	2.75	3.25	3.64	3.8	3.8	25	
65 × 65	65VA611	1150	11	6	3.44	4.26	5.02	5.55	5.7	5.7	30	
80 × 80	80VA615	1150	15	6	5.4	6.55	7.4	7.9	8.0	8.0	35	
100 × 100	100VA622	1150	22	6	8.0	9.7	11.0	11.8	12.0	12.0	50	
100 × 100	100VA630	1150	30	6	9.5	11.6	13.5	14.8	15.5	15.5	60	

* The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

Dimensions (Direct drive type) Unit: mm



50 Hz Dimensions Unit: mm

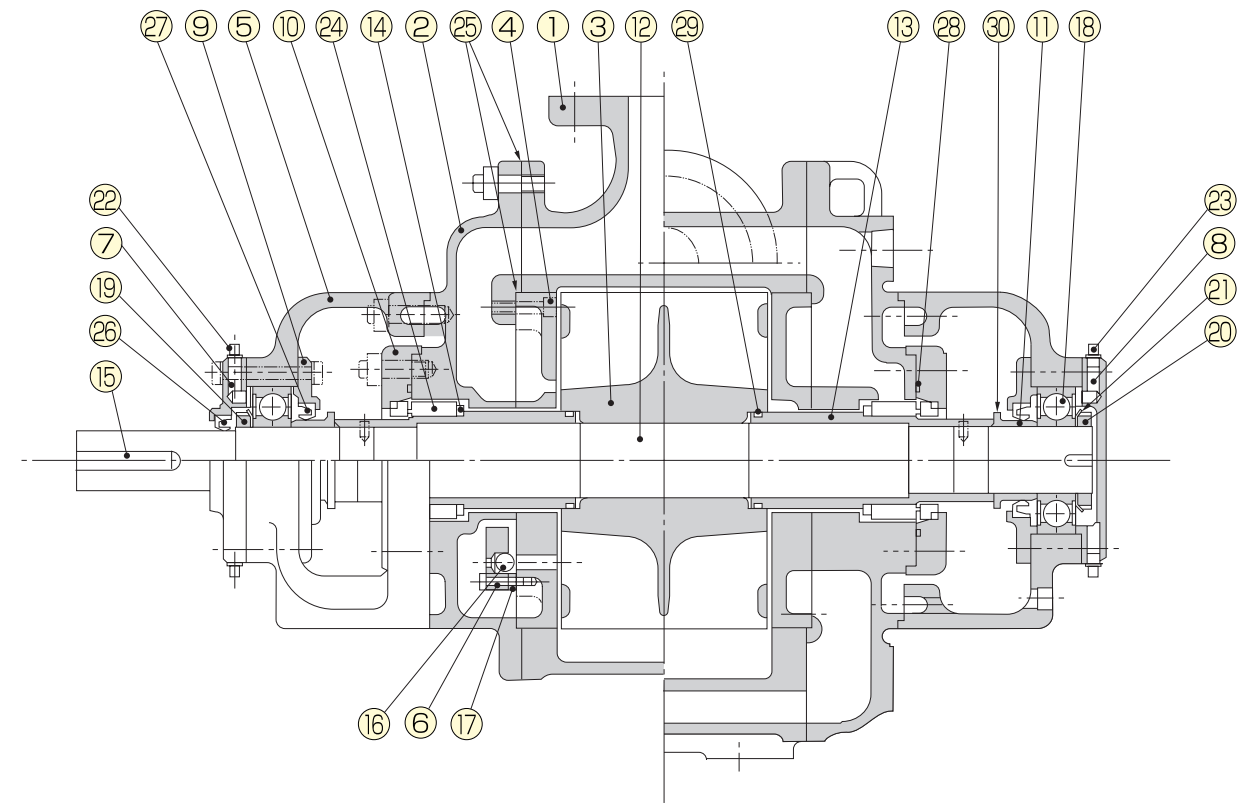
Model	D	A	B	L	F1	F2	H	I	J	X	Y	R	C	Q	BL	BF	BN	BM	BH	BG	t	Z	d*	Approx. weight (kg)
40VA45.5	40	374	276	1081	50	190	205	135	250	145	300	239	132	70	880	340	120	640	143	28	3	M12	3/4	220
50VA47.5	50	396	298	1163	50	190	205	135	250	145	330	258	132	70	910	340	130	650	143	28	3	M12	3/4	240
65VA411	65	431	333	1362	50	190	205	135	250	145	365	323	160	70	1060	400	160	740	115	28	3	M12	3/4	290
80VA615	80	527	399	1572	70	250	285	190	330	200	465	351.5	180	90	1250	490	180	890	195	33	3	M16	1	560
100VA622	100	587	459	1766	70	250	285	190	330	200	525	370.5	180	90	1440	500	240	960	195	33	4	M16	1	700

60 Hz Dimensions Unit: mm

Model	D	A	B	L	F1	F2	H	I	J	X	Y	R	C	Q	BL	BF	BN	BM	BH	BG	t	Z	d*	Approx. weight (kg)
40VA45.5	40	386	289	1106	40	180	180	120	230	135	280	239	132	70	850	340	120	610	118	28	3	M12	1/2	210
50VA47.5	50	410	313	1192	40	180	180	120	230	135	310	258	132	70	930	340	140	650	118	28	3	M12	1/2	220
65VA611	65	476	366	1440	55	220	245	145	280	170	400	345	160	80	1140	430	160	820	165	33	3	M16	3/4	410
80VA615	80	508	398	1552	55	220	245	145	280	170	420	351.5	180	80	1240	440	180	880	145	33	3	M16	3/4	490
100VA622	100	544	429	1693	70	230	260	170	310	190	490	370.5	180	80	1400	490	240	920	160	33	4	M16	1	610
100VA630	100	587	459	1870	70	250	285	190	330	200	525	425.5	200	90	1440	500	240	960	175	33	4	M16	1	800

The approx. weight includes the weight of the common base and the motor. The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.
 * The "d" dimensions are indicated in inches.

Sectional Drawing



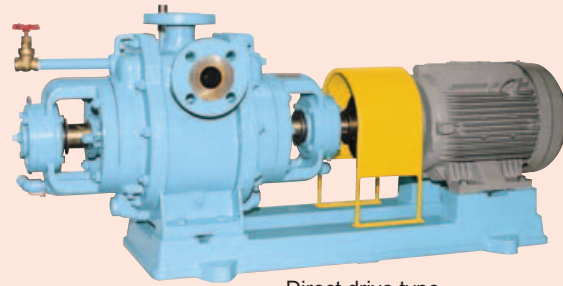
Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	16	Teflon Ball	PTFE
2	Side Cover	FC200	17	Distance Piece	SUS316
3	Impeller	FC250	18	Deep Groove Ball Bearing	*
4	Port Plate	FC250	19	Lock Nut	S30C
5	Bearing Case	FC200	20	Lock Nut	S30C
6	Ball Holder	FC200	21	Lock Washer	SS400
7	Bearing Cover	FC200	22	Grease Nipple	C3604B+Cr
8	End Cover	FC200	23	Grease Nipple	C3604B+Cr
9	Bearing Cover	FC200	24	Mechanical Seal	316/Sic+Sic
10	Seal Cover	FC200	25	Liquid Gasket	TB-1104
11	Deflector	FC200	26	Oil Seal	NBR
12	Shaft	SUS420J2	27	Oil Seal	NBR
13	Shaft Sleeve	SUS304	28	O-Ring	NBR
14	Collar	SUS304	29	O-Ring	NBR
15	Key	S45C	30	O-Ring	NBR

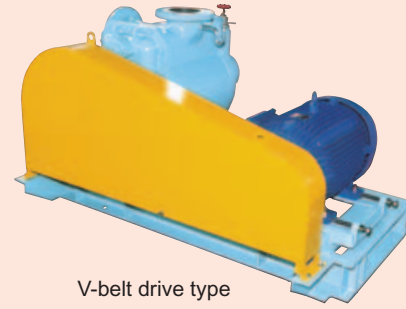
* Self-aligning roller bearing (100 VA model only)

Liquid Ring Vacuum Pump (Single-action type)

V Model



Direct drive type



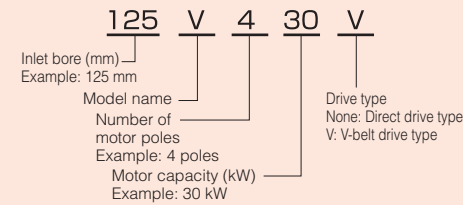
V-belt drive type

Standard Specifications of Major Components

Item	Bore [Inlet x Outlet] (mm)	40 x 40	50 x 50	65 x 65	80 x 80	100 x 100	125 x 125
		150 x 150	175 x 175	200 x 200	250 x 250	300 x 300	
Applicable gas and seal liquid	Seal liquid	Water					
	Seal liquid temperature	13 to 50°C					
	Gas	Air					
	Gas temperature	Normal temperature					
	Outlet pressure	101.3 kPa abs (0 kPa G)					
Pump	Structure	Seal liquid filling method	Pressurized				
		Seal liquid pressure required	0.1 kPa G				
		Outlet type	Variable port (ball valve)				
	Material	Shaft seal	Gland packing				
		Bearing	Self-aligning roller bearing				
		Casing	FC200				
		Port plate	FC250				
Motor	Impeller	FC250					
	Shaft	SUS420J2					
	Type / Number of poles	Fully-enclosed, external fan (indoor), 4-, 6-, 8-, 10- or 12-pole					
Phase	50 Hz: 3-phase 60 Hz: 3-phase						
Piping connection	JIS10K flange (RF)						

Model Identification

The following model information is for example purposes only:



Standard Accessories (Direct Drive Type)

- Common base 1 pc
- Foundation bolt 1 set
- Motor 1 pc
- Shaft coupling 1 set
- Safety cover 1 set
- Seal liquid control valve 1 pc

Optional Accessories

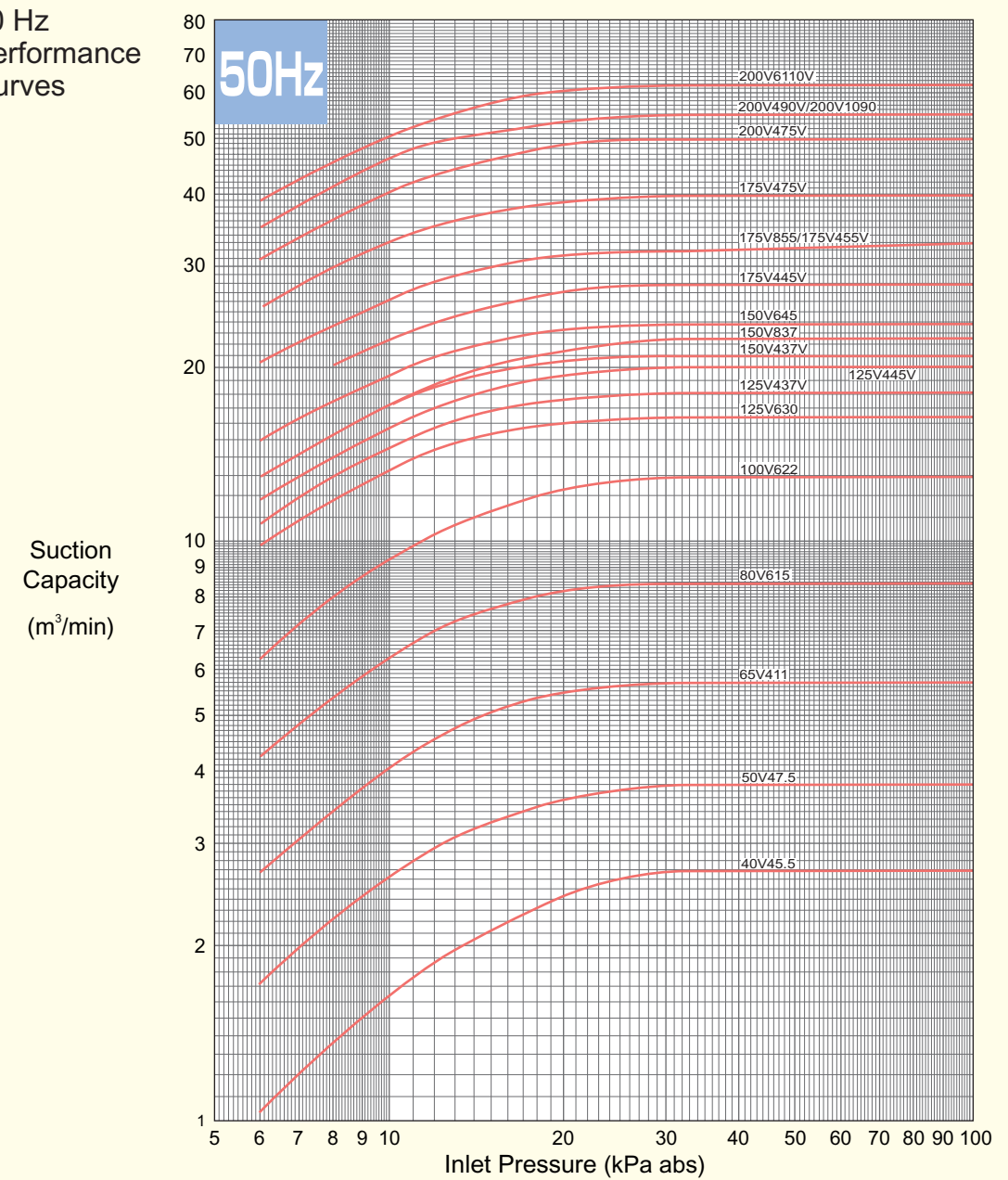
- Vacuum gauge with cock
- Separator tank
- Temporary strainer
- Gas check valve
- Seal liquid flow meter
- Gas ejector

Special Specifications

Pump	Structure	Seal liquid filling method	Self-priming
		Outlet type	Fixed port
	Material	Shaft seal	Mechanical seal
		Casing	SCS13, SCS14
		Port plate	SCS13, SCS14
Motor	Impeller	SCS13, SCS14	
	Shaft	SUS304, SUS316	
	Type	Fully-enclosed, external fan (outdoor) Drip-proof Increased safety explosion-proof, Pressure-resistant explosion-proof	
Other	ANSI 150lb flange		

Contact us for custom specifications other than those noted above.

50 Hz Performance Curves

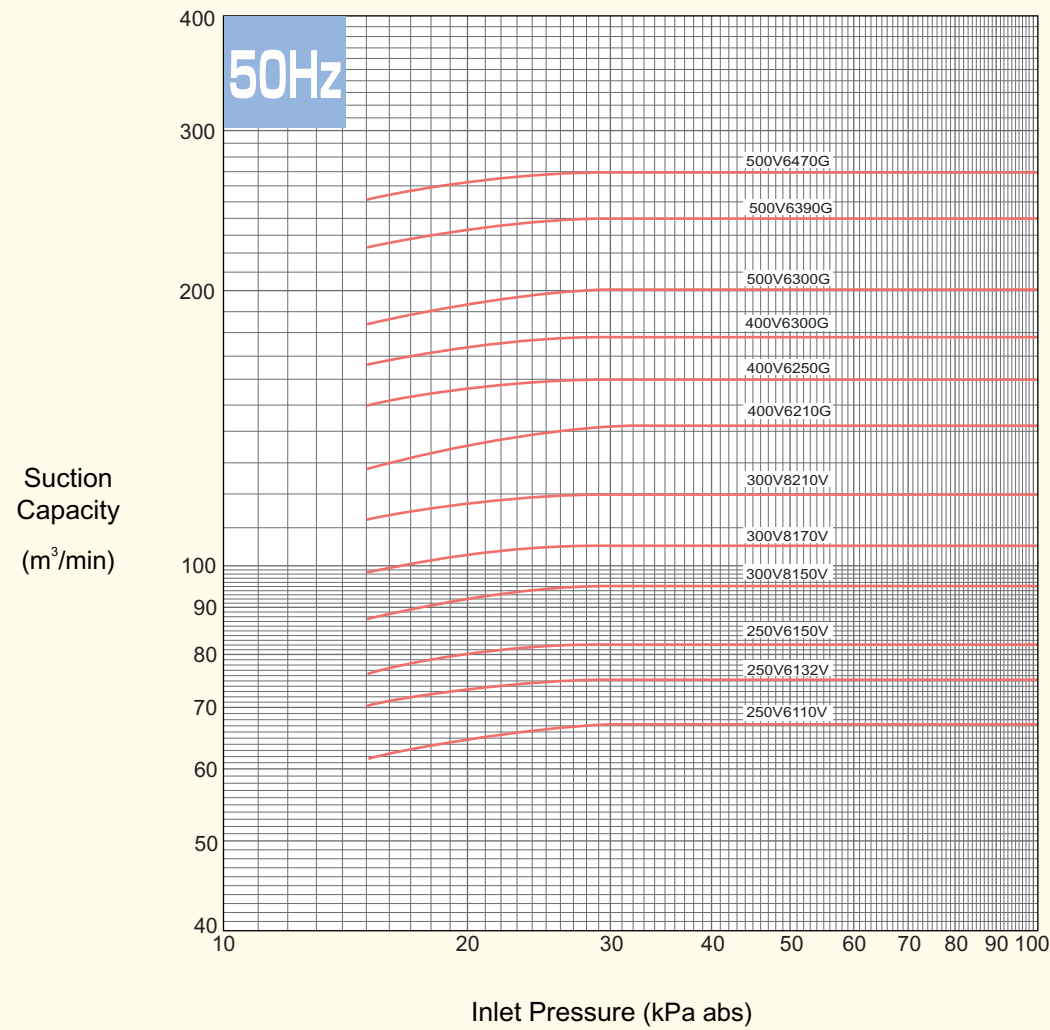


50 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet x Outlet] (mm)	Model	Drive type	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)						Inlet pressure (kPa G)	Approx. seal liquid flow rate (L/min)
						-93.3	-90.6	-86.6	-80.0	-66.6	0		
40 x 40	40V45.5	Direct drive type	1450	5.5	4	1.35	1.72	2.1	2.5	2.7	101.3	14.7	
50 x 50	50V47.5	Direct drive type	1450	7.5	4	2.22	2.75	3.25	3.64	3.8	3.8	25	
65 x 65	65V411	Direct drive type	1450	11	4	3.44	4.26	5.02	5.55	5.7	5.7	30	
80 x 80	80V615	Direct drive type	970	15	6	5.4	6.6	7.6	8.3	8.5	8.5	35	
100 x 100	100V622	Direct drive type	970	22	6	8.0	9.7	11.3	12.5	13	13	50	
125 x 125	125V630	Direct drive type	970	30	6	11.8	13.8	15.3	16.2	16.5	16.5	60	
125 x 125	125V437V	Belt drive type	1070	37	4	13	15	16.7	17.7	18	18	70	
125 x 125	125V445V	Belt drive type	1150	45	4	14.0	16.3	18.2	19.5	20	20	70	
150 x 150	150V437V	Belt drive type	870	37	4	15.3	17.7	19.6	20.7	21	21	70	
150 x 150	150V837	Direct drive type	730	37	8	15.3	17.8	20.2	21.6	22.5	22.5	70	
150 x 150	150V645	Direct drive type	970	45	6	17.3	20	22	23.5	24	24	70	
175 x 175	175V445V	Belt drive type	650	45	4	20.1	23.1	25.5	27.5	28	28	70	
175 x 175	175V855	Direct drive type	730	55	8	23.8	27.2	30.0	31.6	32	33	100	
175 x 175	175V455V	Belt drive type	730	55	4	23.8	27.2	30.0	31.6	32	33	100	
175 x 175	175V475V	Belt drive type	870	75	4	30.0	34.1	37.2	39.3	40	40	100	
200 x 200	200V475V	Belt drive type	530	75	4	36.2	41.7	46.0	49.2	50	50	130	
200 x 200	200V1090	Direct drive type	590	90	10	41	47.5	51	54	55	55	130	
200 x 200	200V490V	Belt drive type	590	90	4	41	47.5	51	54	55	55	130	
200 x 200	200V6110V	Belt drive type	670	110	6	45.5	52	57.5	61	62	62	150	

* The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

50 Hz Performance Curves

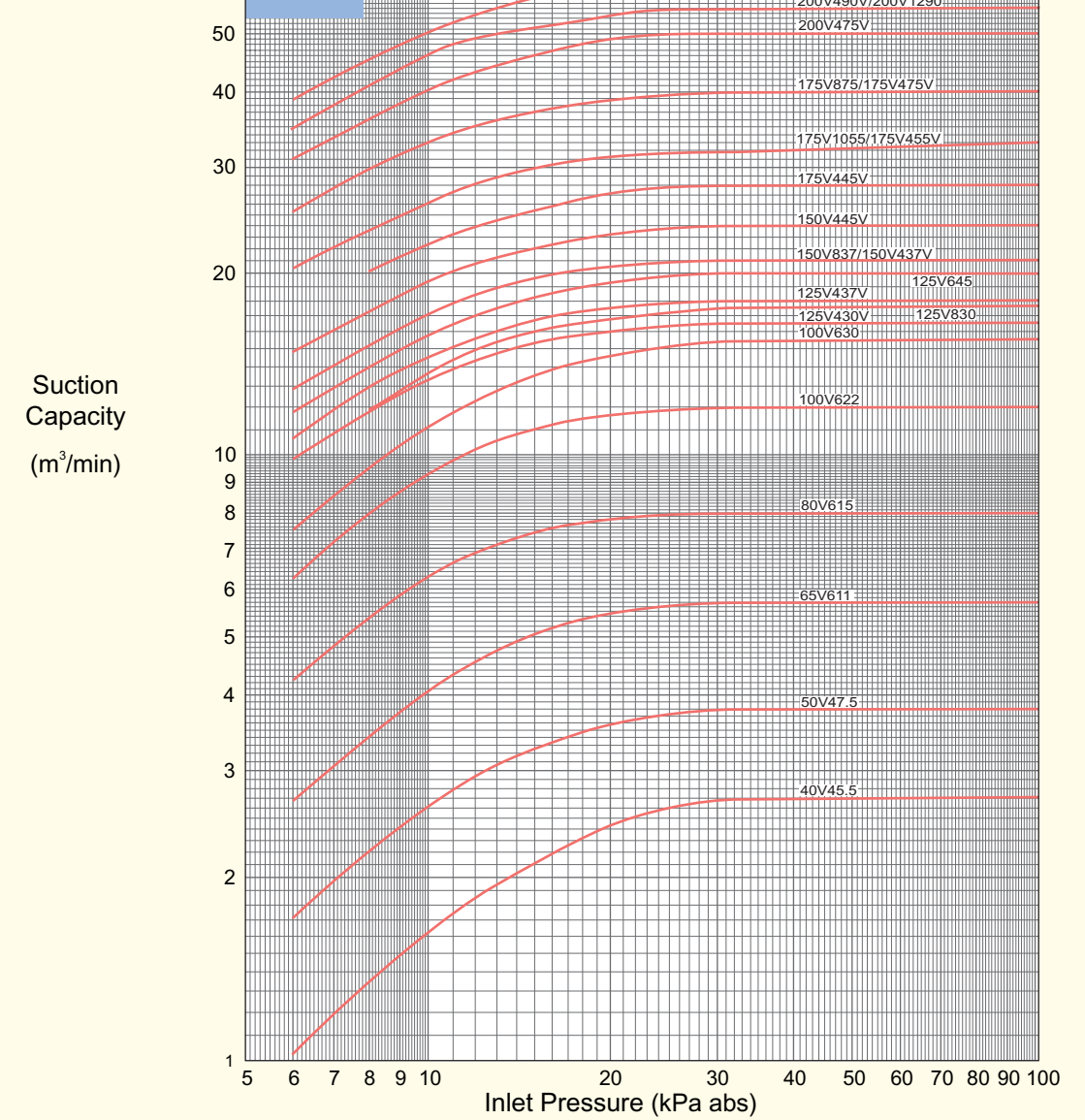


50 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Drive type	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)							Approx. seal liquid flow rate* (L/min)
						Inlet pressure (kPa G / kPa abs)							
						-93.3	-90.6	-86.6	-80.0	-66.6	0	-86.6	
250 × 250	250V6110V	Belt drive type	430	110	6	—	—	61.5	21.3	34.7	101.3	14.7	150
250 × 250	250V6132V	Belt drive type	480	132	6	—	—	70	74	75	75	150	150
250 × 250	250V6150V	Belt drive type	530	150	6	—	—	76	81	82	82	170	170
2-200 × 2-200	300V8150V	Belt drive type	350	150	8	—	—	87	93	95	95	200	200
2-200 × 2-200	300V8170V	Belt drive type	385	170	8	—	—	98	104	105	105	240	240
2-200 × 2-200	300V8210V	Belt drive type	435	210	8	—	—	112	118	120	120	300	300
2-250 × 2-250	400V6210G	Gear drive type	290	210	6	—	—	127	137	142	142	300	300
2-250 × 2-250	400V6250G	Gear drive type	330	250	6	—	—	149	158	160	160	350	350
2-250 × 2-250	400V6300G	Gear drive type	365	300	6	—	—	165	175	178	178	400	400
2-300 × 2-300	500V6300G	Gear drive type	230	300	6	—	—	183	195	200	200	400	400
2-300 × 2-300	500V6390G	Gear drive type	275	390	6	—	—	222	235	240	240	500	500
2-300 × 2-300	500V6470G	Gear drive type	310	470	6	—	—	250	265	270	270	600	600

* The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

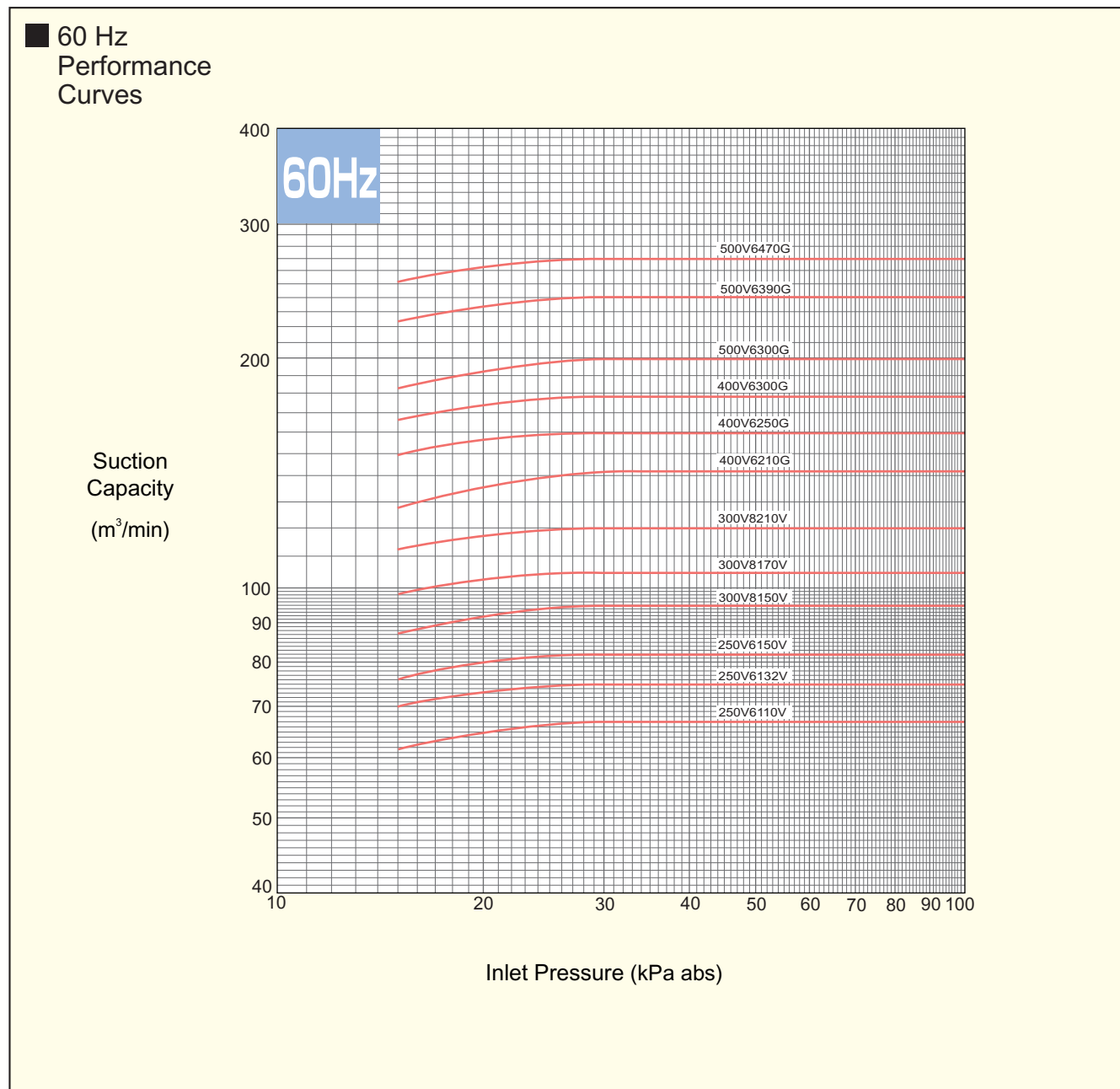
60 Hz Performance Curves



60 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Drive type	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)							Approx. seal liquid flow rate* (L/min)
						Inlet pressure (kPa G / kPa abs)							
						-93.3	-90.6	-86.6	-80.0	-66.6	0	-86.6	
40 × 40	40V45.5	Direct drive type	1750	5.5	4	1.35	1.72	2.1	2.5	2.7	2.7	20	
50 × 50	50V47.5	Direct drive type	1750	7.5	4	2.22	2.75	3.25	3.64	3.8	3.8	25	
65 × 65	65V611	Direct drive type	1150	11	6	3.44	4.26	5.02	5.55	5.7	5.7	30	
80 × 80	80V615	Direct drive type	1150	15	6	5.4	6.55	7.4	7.9	8.0	8.0	35	
100 × 100	100V622	Direct drive type	1150	22	6	8.0	9.7	11.0	11.8	12	12	50	
100 × 100	100V630	Direct drive type	1150	30	6	9.5	11.6	13.5	14.8	15.5	15.5	60	
125 × 125	125V430V	Belt drive type	970	30	4	11.8	13.8	15.3	16.2	16.5	16.5	60	
125 × 125	125V830	Direct drive type	870	30	8	11.9	14.2	16.0	17.0	17.6	17.6	70	
125 × 125	125V437V	Belt drive type	1070	37	4	13	15	16.7	17.7	18	18	70	
125 × 125	125V645	Direct drive type	1150	45	6	14.0	16.3	18.2	19.5	20	20	70	
150 × 150	150V837	Direct drive type	870	37	8	15.3	17.7	19.6	20.7	21	21	70	
150 × 150	150V437V	Belt drive type	870	37	4	15.3	17.7	19.6	20.7	21	21	70	
150 × 150	150V445V	Belt drive type	970	45	4	17.3	20	22	23.5	24	24	70	
175 × 175	175V445V	Belt drive type	650	45	4	20.1	23.1	25.5	27.5	28	28	70	
175 × 175	175V1055	Direct drive type	710	55	10	23.8	27.2	30.0	31.6	32	33	100	
175 × 175	175V455V	Belt drive type	710	55	4	23.8	27.2	30.0	31.6	32	33	100	
175 × 175	175V875	Direct drive type	870	75	8	30.0	34.1	37.2	39.3	40	40	100	
175 × 175	175V475V	Belt drive type	870	75	4	30.0	34.1	37.2	39.3	40	40	100	
200 × 200	200V475V	Belt drive type	530	75	4	36.2	41.7	46.0	49.2	50	50	130	
200 × 200	200V1290	Direct drive type	590	90	12	41	47.5	51	54	55	55	130	
200 × 200	200V490V	Belt drive type	590	90	4	41	47.5	51	54	55	55	130	
200 × 200	200V6110V	Belt drive type	670	110	6	45.5	52	57.5	61	62	62	150	

* The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

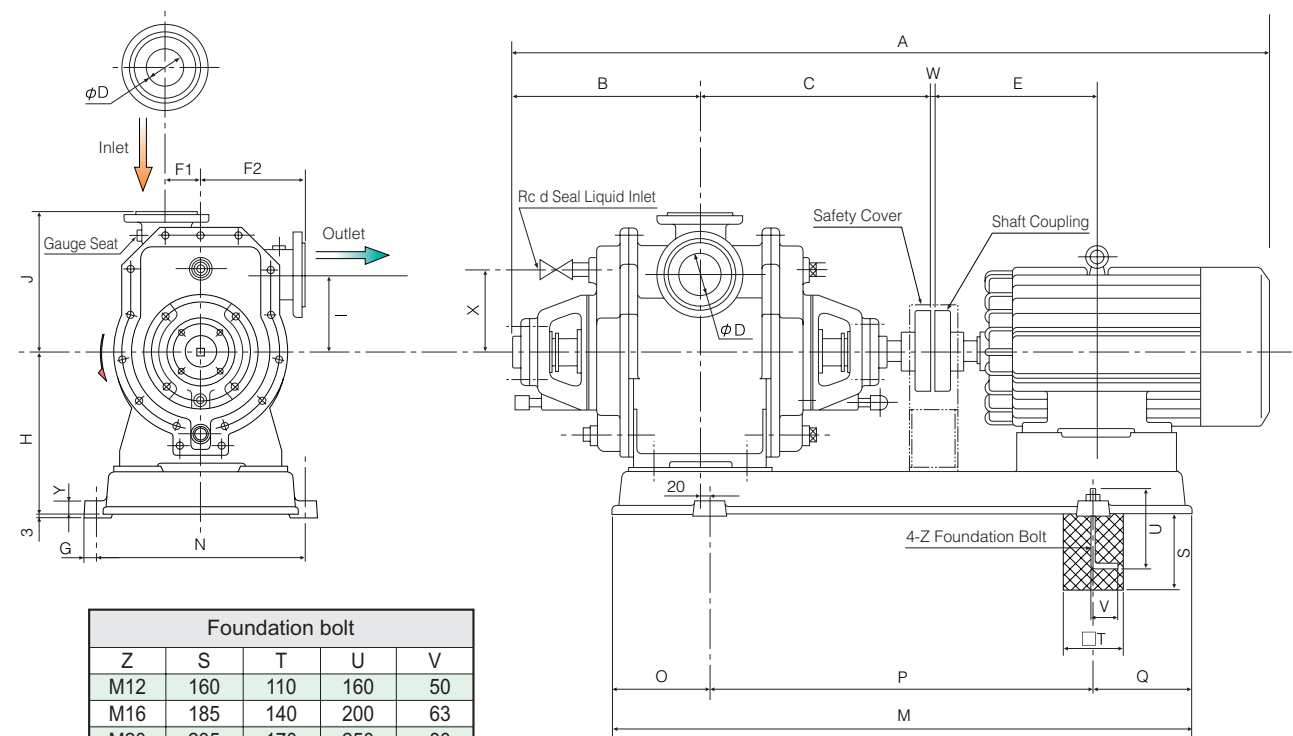


60 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet × Outlet] (mm)	Model	Drive type	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)						Inlet pressure (kPa G / kPa abs)	Approx. seal liquid flow rate ^{*)} (L/min)
						-93.3	-90.6	-86.6	-80.0	-66.6	0		
250 × 250	250V6110V	Belt drive type	430	110	6	—	—	61.5	65.5	67	67	150	
250 × 250	250V6132V	Belt drive type	480	132	6	—	—	70	74	75	75	150	
250 × 250	250V6150V	Belt drive type	530	150	6	—	—	76	81	82	82	170	
2-200 × 2-200	300V8150V	Belt drive type	350	150	8	—	—	87	93	95	95	200	
2-200 × 2-200	300V8170V	Belt drive type	385	170	8	—	—	98	104	105	105	240	
2-200 × 2-200	300V8210V	Belt drive type	435	210	8	—	—	112	118	120	120	300	
2-250 × 2-250	400V6210G	Gear drive type	290	210	6	—	—	127	137	142	142	300	
2-250 × 2-250	400V6250G	Gear drive type	330	250	6	—	—	149	158	160	160	350	
2-250 × 2-250	400V6300G	Gear drive type	365	300	6	—	—	165	175	178	178	400	
2-300 × 2-300	500V6300G	Gear drive type	230	300	6	—	—	183	195	200	200	400	
2-300 × 2-300	500V6390G	Gear drive type	275	390	6	—	—	222	235	240	240	500	
2-300 × 2-300	500V6470G	Gear drive type	310	470	6	—	—	250	265	270	270	600	

*The seal liquid flow rate indicates the values at -86.6 kPa G (14.7 kPa abs).

Dimensions (Direct drive type / 40–150 V) Unit: mm



Foundation bolt				
Z	S	T	U	V
M12	160	110	160	50
M16	185	140	200	63
M20	235	170	250	80

Note) JIS 10K RF standard (flange)

50 Hz Dimensions Unit: mm

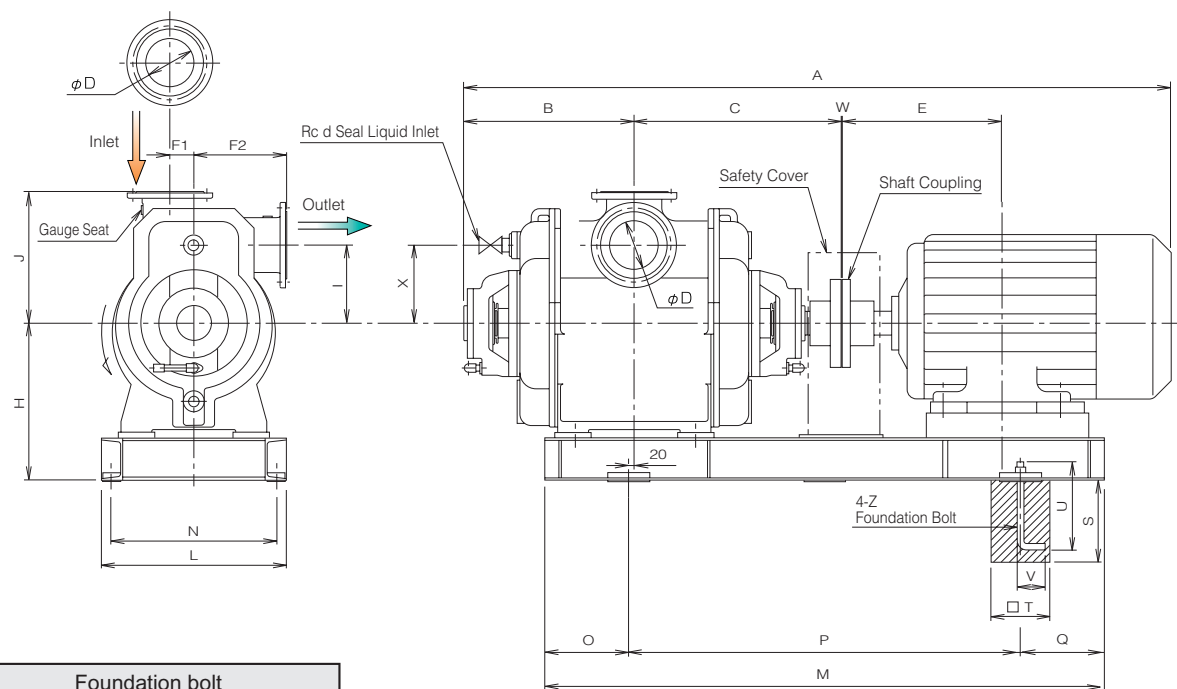
Model	D	A	B	C	E	F1	F2	G	H	I	J	M	N	O·Q	P	W	X	Y	Z	d*	Approx. weight (kg)
40V45.5	40	1104	299	374	239	50	190	21	275	135	250	880	340	120	640	3	145	25	M12	3/4	220
50V47.5	50	1186	321	396	258	50	190	21	275	135	250	910	340	130	650	3	145	25	M12	3/4	240
65V411	65	1415	356	431	323	50	190	21	275	135	250	1060	400	160	740	3	145	25	M12	3/4	290
80V615	80	1590	417	527	351.5	70	250	25	375	190	330	1250	490	180	890	3	200	30	M16	1	560
100V622	100	1784	477	587	370.5	70	250	25	375	190	330	1440	500	240	960	4	200	30	M16	1	700
125V630	125	2032	548	660	425.5	75	270	30	420	190	350	1710	630	260	1190	4	205	40	M20	1½	970
150V645	150	2034	530	643	432	100	295	30	450	235	400	1800	680	300	1200	4	250	50	M20	1½	1100
150V837	150	2116	537	670	463.5	85	330	30	520	280	470	1730	680	290	1150	4	280	50	M20	1½	1700

60 Hz Dimensions Unit: mm

Model	D	A	B	C	E	F1	F2	G	H	I	J	M	N	O·Q	P	W	X	Y	Z	d*	Approx. weight (kg)
40V45.5	40	1128	311	386	239	40	180	21	250	120	230	850	340	120	610	3	135	25	M12	1/2	210
50V47.5	50	1214	335	410	258	40	180	21	250	120	230	930	340	140	650	3	135	25	M12	1/2	220
65V611	65	1455	381	476	345	55	220	25	325	145	280	1140	430	160	820	3	170	30	M16	3/4	410
80V615	80	1567	413	508	351.5	55	220	25	325	145	280	1240	440	180	880	3	170	30	M16	3/4	490
100V622	100	1713	449	544	370.5	70	230	25	340	170	310	1400	490	240	920	4	190	30	M16	1	610
100V630	100	1888	477	587	425.5	70	250	25	375	190	330	1440	500	240	960	4	200	30	M16	1	800
125V830	125	1866	471	584	432	100	295	30	430	235	400	1520	550	260	1000	4	250	35	M20	1½	960
125V645	125	2069	548	660	432	75	270	30	420	190	350	1710	630	260	1190	4	205	40	M20	1½	1110
150V837	150	2116	530	643	463.5	100	295	30	450	235	400	1800	680	300	1200	4	250	50	M20	1½	1220

The approx. weight includes the weight of the common base and the motor. The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately. *The "d" dimensions are indicated in inches.

Dimensions (Direct drive type / 175–200 V) Unit: mm



Foundation bolt				
Z	S	T	U	V
M24	300	210	315	100

Note: JIS 10K RF standard (flange)

50 Hz Dimensions Unit: mm

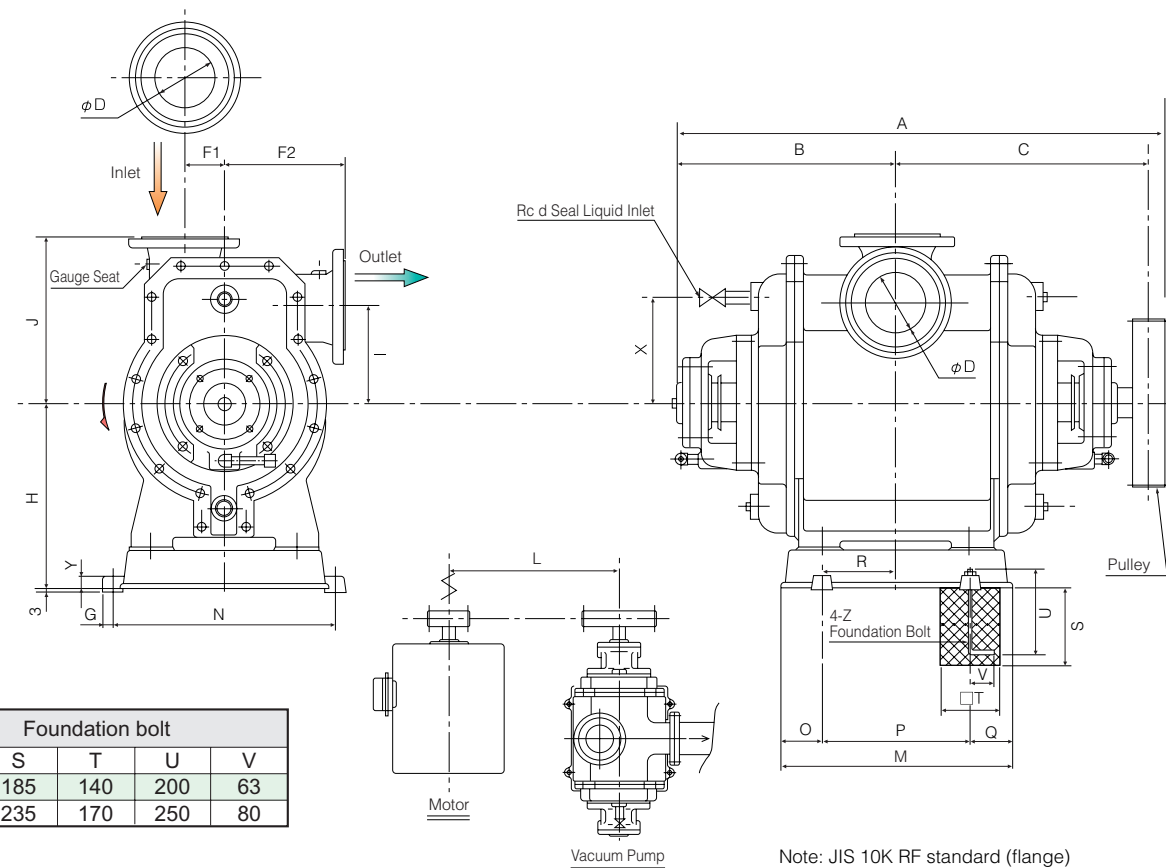
Model	D	A	B	C	E	F1	F2	H	I	J	M	N	O·Q	P	W	X	Z	d*	Approx. weight (kg)
175V855	175	2422	610	740	544	85	330	560	280	470	2000	660	300	1400	4	280	M24	1½	1800
200V1090	200	2902	738	904	704	100	390	565	350	560	2500	910	420	1660	5	360	M24	2	3400

60 Hz Dimensions Unit: mm

Model	D	A	B	C	E	F1	F2	H	I	J	M	N	O·Q	P	W	X	Z	d*	Approx. weight (kg)
175V875	175	2422	610	740	569.5	85	330	560	280	470	2000	660	300	1400	4	280	M24	1½	1900
200V1290	200	2902	738	904	704	100	390	565	350	560	2500	910	420	1660	5	360	M24	2	3400

The approx. weight includes the weight of the common base and the motor. The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.
* The "d" dimensions are indicated in inches.

Dimensions (V-belt drive type / 125–200 V) Unit: mm



Foundation bolt				
Z	S	T	U	V
M16	185	140	200	63
M20	235	170	250	80

Note: JIS 10K RF standard (flange)

50 Hz Dimensions Unit: mm

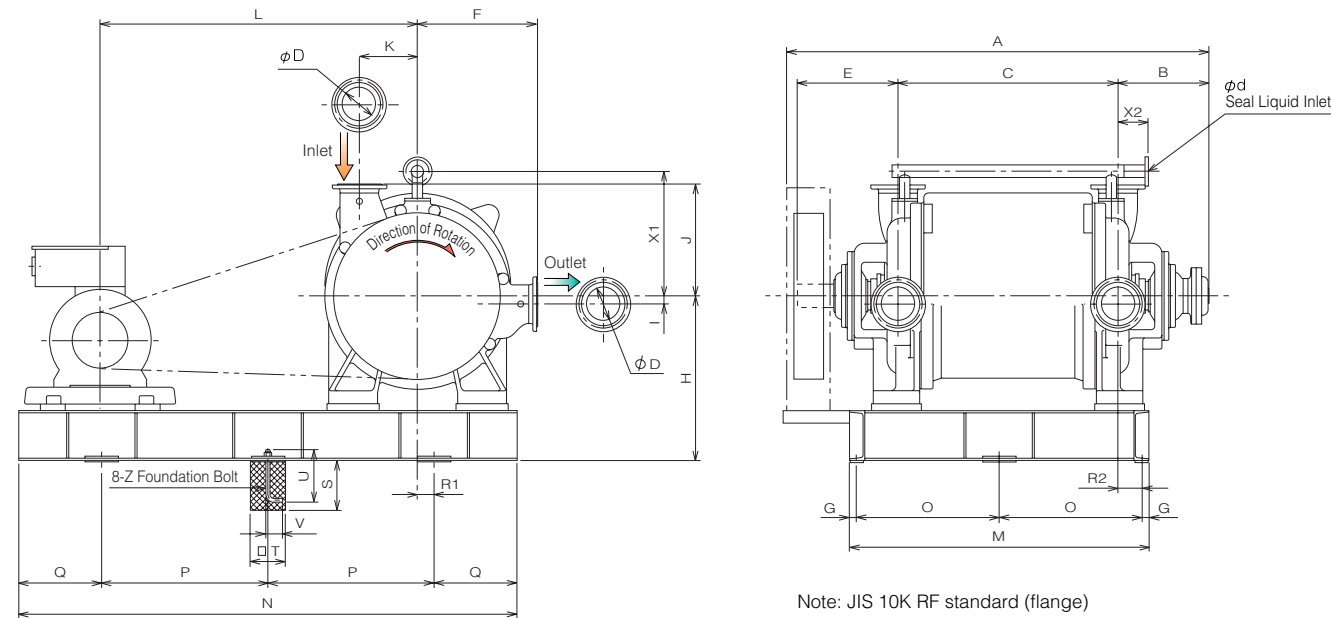
Model	D	A	B	C	F1	F2	G	H	I	J	L	M	N	O·Q	P	R	X	Y	Z	d*	Approx. weight (kg)
125V437V	125	1208	548	630	75	270	25	390	190	350	900	500	490	100	300	150	205	30	M16	1½	440
125V445V	125	1208	548	630	75	270	25	390	190	350	900	500	490	100	300	150	205	30	M16	1½	440
150V437V	150	1173	530	613	100	295	25	440	235	400	950	560	540	100	360	180	250	30	M16	1½	600
175V445V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
175V455V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
175V475V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
200V475V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600
200V490V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600
200V6110V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600

60 Hz Dimensions Unit: mm

Model	D	A	B	C	F1	F2	G	H	I	J	L	M	N	O·Q	P	R	X	Y	Z	d*	Approx. weight (kg)
125V430V	125	1208	548	630	75	270	25	390	190	350	900	500	490	100	300	150	205	30	M16	1½	440
125V437V	125	1208	548	630	75	270	25	390	190	350	900	500	490	100	300	150	205	30	M16	1½	440
150V437V	150	1173	530	613	100	295	25	440	235	400	950	560	540	100	360	180	250	30	M16	1½	600
150V445V	150	1173	530	613	100	295	25	440	235	400	950	560	540	100	360	180	250	30	M16	1½	600
175V445V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
175V455V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
175V475V	175	1350	610	701	85	330	30	500	280	470	1100	700	620	150	400	200	280	35	M20	1½	880
200V475V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600
200V490V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600
200V6110V	200	1642	738	856	100	390	30	670	350	560	1300	800	800	150	500	250	360	40	M20	2	1600

The approx. weight includes the weight of the separate base (pump side) and the pulley (pump side). The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately. * The "d" dimensions are indicated in inches.

Dimensions (V-belt drive type / 250–300 V) Unit: mm



Foundation bolt				
Z	S	T	U	V
M20	235	170	250	80
M24	300	210	315	100

50 Hz Dimensions Unit: mm

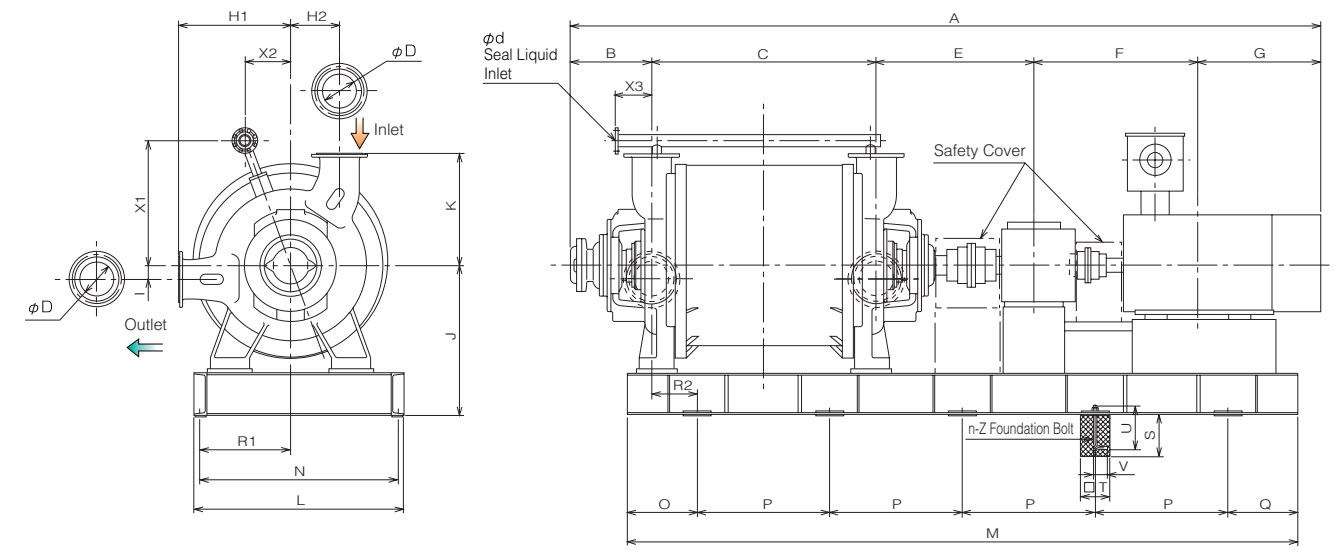
Model	D	A	B	C	E	F	G	H	I	J	K	L	M	N	O	P	Q	R1	R2	X1	X2	Z	d	Approx. weight (kg)
250V6110V	200	2090	475	1050	515	650	40	750	0	650	270	1210	1800	2100	860	850	200	220	110	680	150	M20	50A	4100
250V6132V	200	2090	475	1050	515	650	40	750	0	650	270	1210	1800	2100	860	850	200	220	110	680	150	M20	50A	4300
250V6150V	200	2090	475	1050	515	650	40	750	0	650	270	1275	1800	2300	860	900	250	210	110	680	150	M20	50A	4300
300V8150V	200	2540	546	1324	606	720	40	950	50	670	350	1325	1800	2500	860	950	300	300	145	750	180	M24	80A	7300
300V8170V	200	2540	546	1324	606	720	40	950	50	670	350	1910	1800	3000	860	1100	400	200	145	750	180	M24	80A	7500
300V8210V	200	2570	546	1324	606	720	40	950	50	670	350	1790	1800	3000	860	1100	400	200	145	750	180	M24	80A	7800

60 Hz Dimensions Unit: mm

Model	D	A	B	C	E	F	G	H	I	J	K	L	M	N	O	P	Q	R1	R2	X1	X2	Z	d	Approx. weight (kg)
250V6110V	200	2090	475	1050	515	650	40	750	0	650	270	1210	1800	2100	860	850	200	220	110	680	150	M20	50A	4100
250V6132V	200	2090	475	1050	515	650	40	750	0	650	270	1210	1800	2100	860	850	200	220	110	680	150	M20	50A	4300
250V6150V	200	2090	475	1050	515	650	40	750	0	650	270	1275	1800	2300	860	900	250	210	110	680	150	M20	50A	4300
300V8150V	200	2540	546	1324	606	720	40	950	50	670	350	1325	1800	2500	860	950	300	300	145	750	180	M24	80A	7300
300V8170V	200	2540	546	1324	606	720	40	950	50	670	350	1910	1800	3000	860	1100	400	200	145	750	180	M24	80A	7500
300V8210V	200	2570	546	1324	606	720	40	950	50	670	350	1790	1800	3000	860	1100	400	200	145	750	180	M24	80A	7800

The approx. weight includes the weight of the common base and the motor.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Dimensions (Gear drive type / 400–500 V) Unit: mm



Foundation bolt				
Z	S	T	U	V
M24	300	210	315	100
M30	385	230	400	112

50 Hz Dimensions Unit: mm

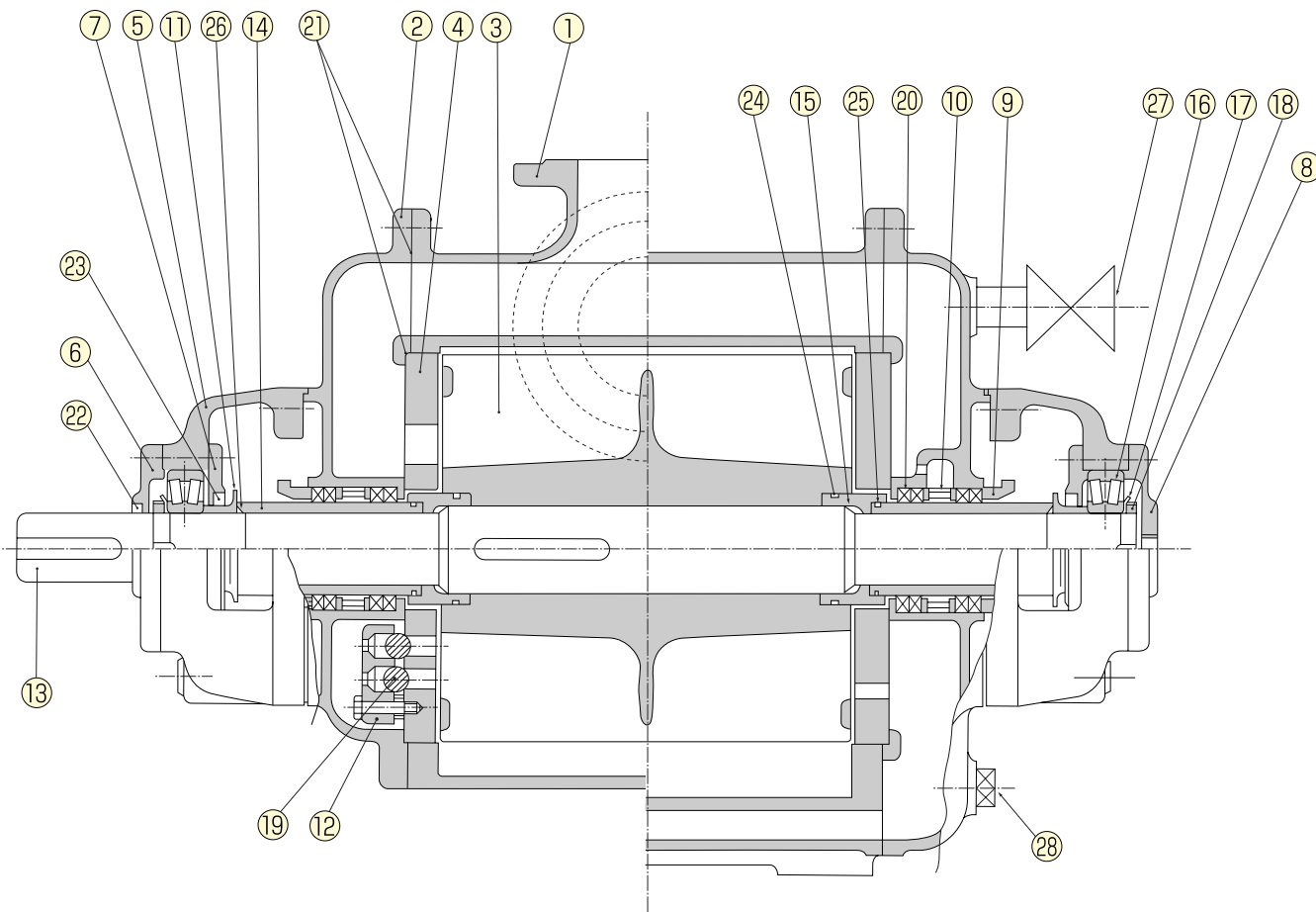
Model	D	A	B	C	E	F	G	H1	H2	I	J	K	L	M	N	O	P	Q	R1	R2	X1	X2	X3	n	Z	d	Approx. weight (kg)
400V6210G	250	5224	582	1605	1180	1027	830	800	350	100	1080	800	1300	4500	1220	350	950	350	650	100	950	0	265	10	M24	80A	12400
400V6250G	250	5464	582	1605	1180	1166	931	800	350	100	1080	800	1300	4700	1220	350	1000	350	650	100	950	0	265	10	M24	80A	12500
400V6300G	250	5464	582	1605	1180	1166	931	800	350	100	1080	800	1300	4700	1220	350	1000	350	650	100	950	0	265	10	M24	80A	13200
500V6300G	300	6346	735	2200	1320	1160	931	950	0	210	1140	950	1500	5400	1400	325	950	325	725	120	700	700	450	12	M30	100A	13500
500V6390G	300	6346	735	2200	1320	1160	931	950	0	210	1140	950	1500	5400	1400	325	950	325	725	120	700	700	450	12	M30	100A	13500
500V6470G	300	6546	735	2200	1320	1271	1020	950	0	210	1140	950	1500	5600	1400	300	1000	300	725	100	700	700	450	12	M30	100A	17500

60 Hz Dimensions Unit: mm

Model	D	A	B	C	E	F	G	H1	H2	I	J	K	L	M	N	O	P	Q	R1	R2	X1	X2	X3	n	Z	d	Approx. weight (kg)
400V6210G	250	5224	582	1605	1180	1027	830	800	350	100	1080	800	1300	4500	1220	350	950	350	650	100	950	0	265	10	M24	80A	12400
400V6250G	250	5464	582	1605	1180	1166	931	800	350	100	1080	800	1300	4700	1220	350	1000	350	650	100	950	0	265	10	M24	80A	12500
400V6300G	250	5464	582	1605	1180	1166	931	800	350	100	1080	800	1300	4700	1220	350	1000	350	650	100	950	0	265	10	M24	80A	13200
500V6300G	300	6346	735	2200	1320	1160	931	950	0	210	1140	950	1500	5400	1400	325	950	325	725	120	700	700	450	12	M30	100A	13500
500V6390G	300	6346	735	2200	1320	1160	931	950	0	210	1140	950	1500	5400	1400	325	950	325	725	120	700	700	450	12	M30	100A	13500
500V6470G	300	6546	735	2200	1320	1271	1020	950	0	210	1140	950	1500	5600	1400	300	1000	300	725	100	700	700	450	12	M30	100A	17500

The approx. weight includes the weight of the common base and the motor.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

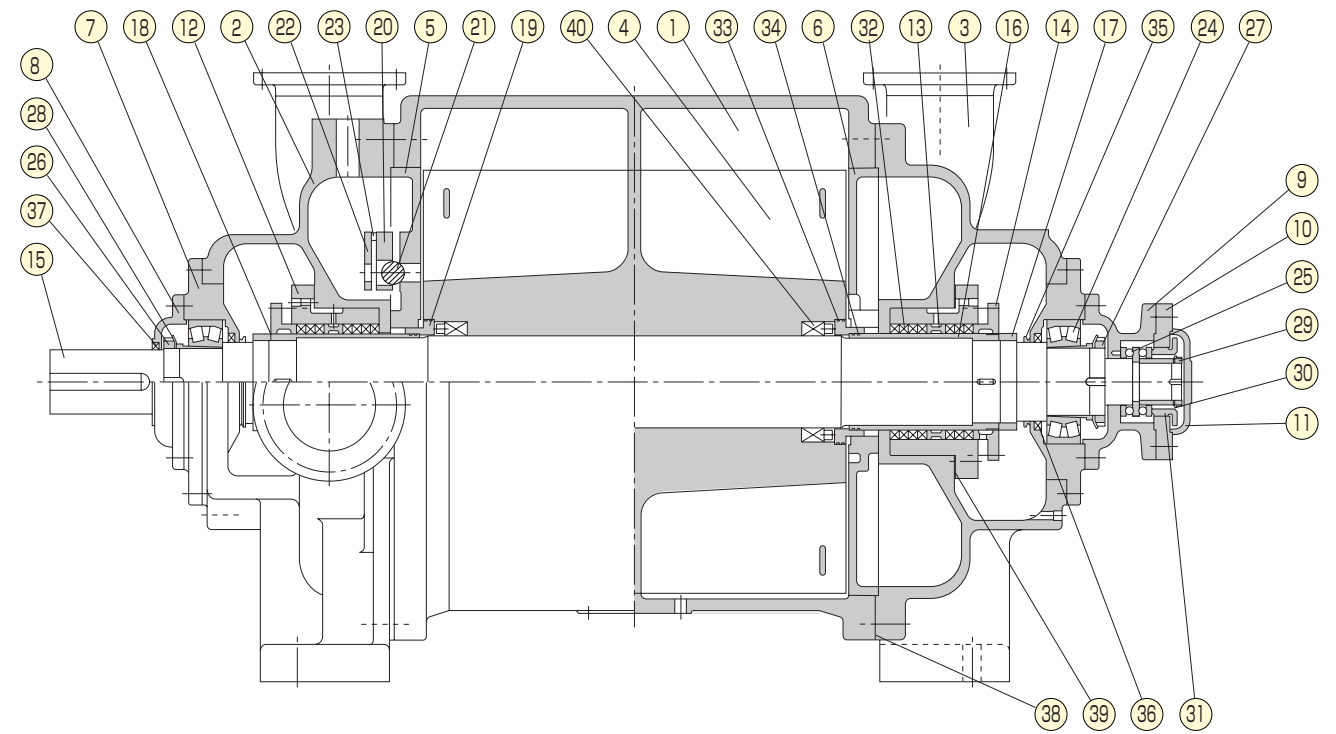
Sectional Drawing (40–200 V)



Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	15	Seal Liner	SUS304
2	Side Cover	FC200	16	Self-Aligning Roller Bearing	—
3	Impeller	FC250	17	Lock Washer	SS400
4	Port Plate	FC250	18	Lock Nut	S30C
5	Bearing Case	FC200	19	Teflon Ball	PTFE
6	Bearing Cover (coupling side)	FC200	20	Gland Packing	P#6501L
7	Bearing Cover (gland side)	FC200	21	Liquid Gasket	TB-1194
8	End Cover	FC200	22	Oil Seal	NBR
9	Packing Gland	FC200	23	Oil Seal	NBR
10	Lantern Ring	FC200	24	O-Ring	NBR
11	Deflector	FC200	25	O-Ring	NBR
12	Ball Holder	FC200	26	O-Ring	NBR
13	Shaft	SUS420J2	27	Seal Liquid Pressurizing Pipe	SGP
14	Shaft Sleeve	SUS403	28	Seal Liquid Self-Priming Inlet	—

Sectional Drawing (250–500 V)



Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	21	Teflon Ball	PTFE
2	Side Cover	FC200	22	Plate	SS400
3	Side Cover	FC200	23	Distance Piece	SUS304
4	Impeller	FCD450	24	Self-Aligning Roller Bearing	—
5	Port Plate	FC250	25	Thrust Ball Bearing	—
6	Port Plate	FC250	26	Lock Nut	S30C
7	Bearing Case	FC200	27	Lock Nut	S30C
8	Bearing Cover	FC200	28	Lock Washer	SS400
9	Bearing Housing	FC200	29	Lock Nut	S30C
10	Adjuster Flange	FC200	30	Lock Washer	SS400
11	End Cover	FC200	31	Adjusting Nut	S45C
12	Stuffing Box	FC200	32	Gland Packing	P#6501L
13	Lantern Ring	FC200	33	O-Ring	NBR
14	Packing Gland	FC200	34	O-Ring	NBR
15	Shaft	SUS420J2	35	V-Ring	NBR
16	Shaft Sleeve	SUS304	36	Oil Seal	NBR
17	Sleeve Nut	SUS304	37	Oil Seal	NBR
18	Lock Washer	SUS304	38	Liquid Gasket	TB-1194
19	Seal Liner	SCS13	39	Gasket	V#6500
20	Ball Holder	FC200	40	Impeller Lock	C.S.

VL Model



Standard Specifications of Major Components

Item	Bore [Inlet x Outlet] (mm)				
	150 x 150	200 x 200	250 x 250	300 x 300	
Applicable gas and seal liquid	Seal liquid	Water			
	Seal liquid temperature	13 to 50°C			
	Gas	Air			
	Gas temperature	Normal temperature			
	Outlet pressure	101.3 kPa abs (0 kPa G)			
Pump	Structure	Seal liquid filling method	Pressurized		
		Seal liquid pressure required	50 kPa G		
		Outlet type	Variable port (ball valve)		
		Shaft seal	Gland packing		
		Bearing	Self-aligning roller bearing		
	Material	Casing	FC200		
		Port plate	FC250		
		Impeller	SS400		
		Shaft	SUS420J2		
		Type / Number of poles	Fully-enclosed, external fan (indoor), 4- or 8-pole		
Motor	Phase	50 Hz: 3-phase 60 Hz: 3-phase			
	Piping connection	JIS10K flange (FF)			

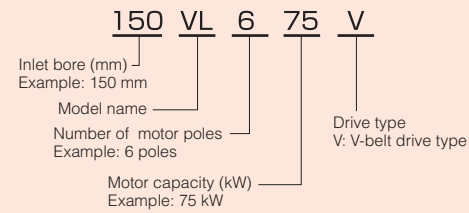
Special Specifications

Pump	Structure	Shaft seal	Mechanical seal
		Casing	SCS13, SCS14
	Material	Port plate	SCS13, SCS14
		Impeller	SUS304, SUS316
		Shaft	SUS304, SUS316

Contact us for custom specifications other than those noted above.

Model Identification

The following model information is for example purposes only:



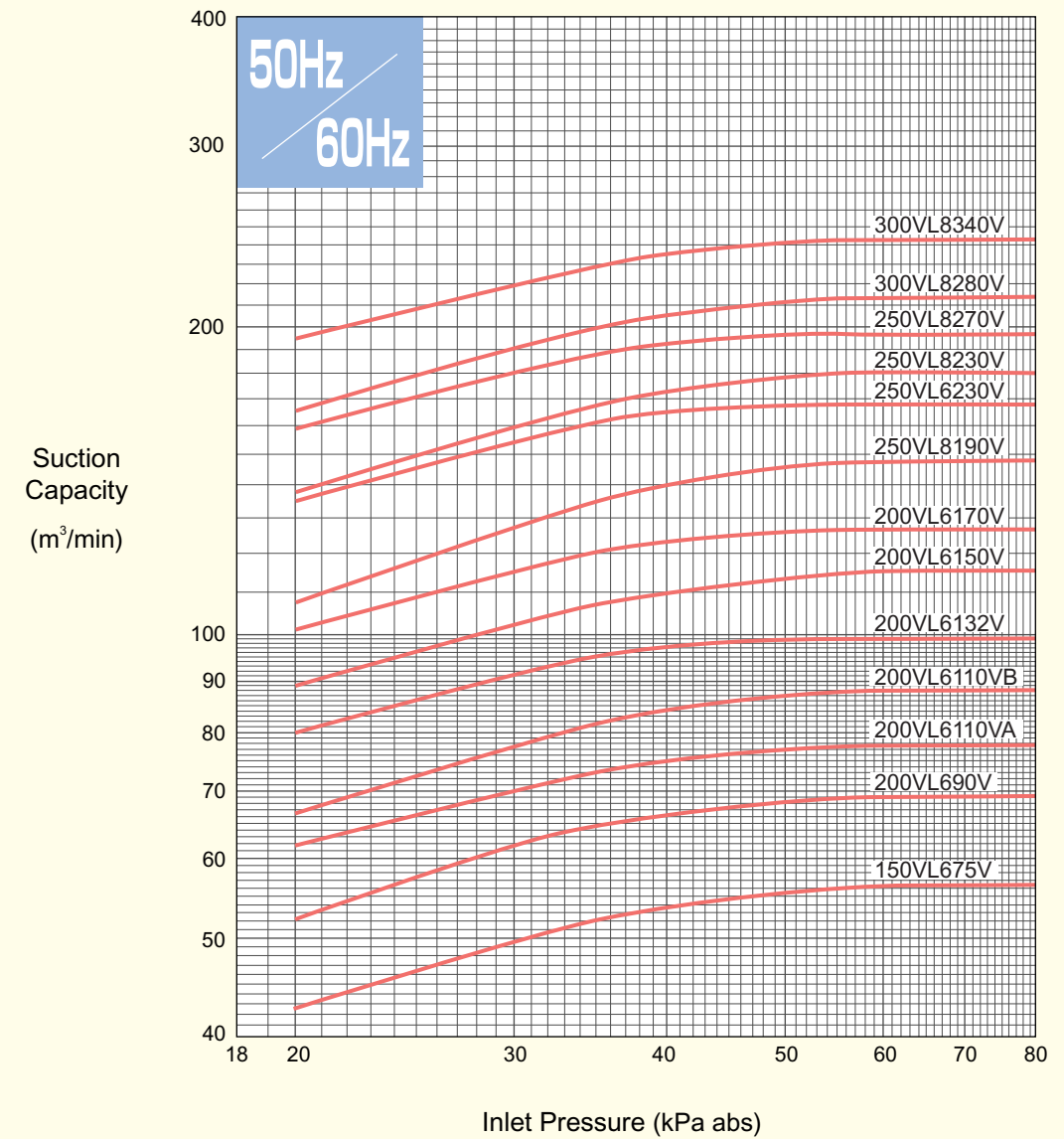
Standard Accessories (V-belt Drive Type)

- Common base 1 pc
- Foundation bolt 1 set
- Motor 1 pc
- V-pulley 1 set
- V-belt 1 set
- Safety cover 1 set

Optional Accessories

- Vacuum gauge
- Connecting pipe (suction, discharge)
- Separator tank
- Temporary strainer
- Gas check valve
- Seal liquid flow meter

50/60 Hz Performance Curves

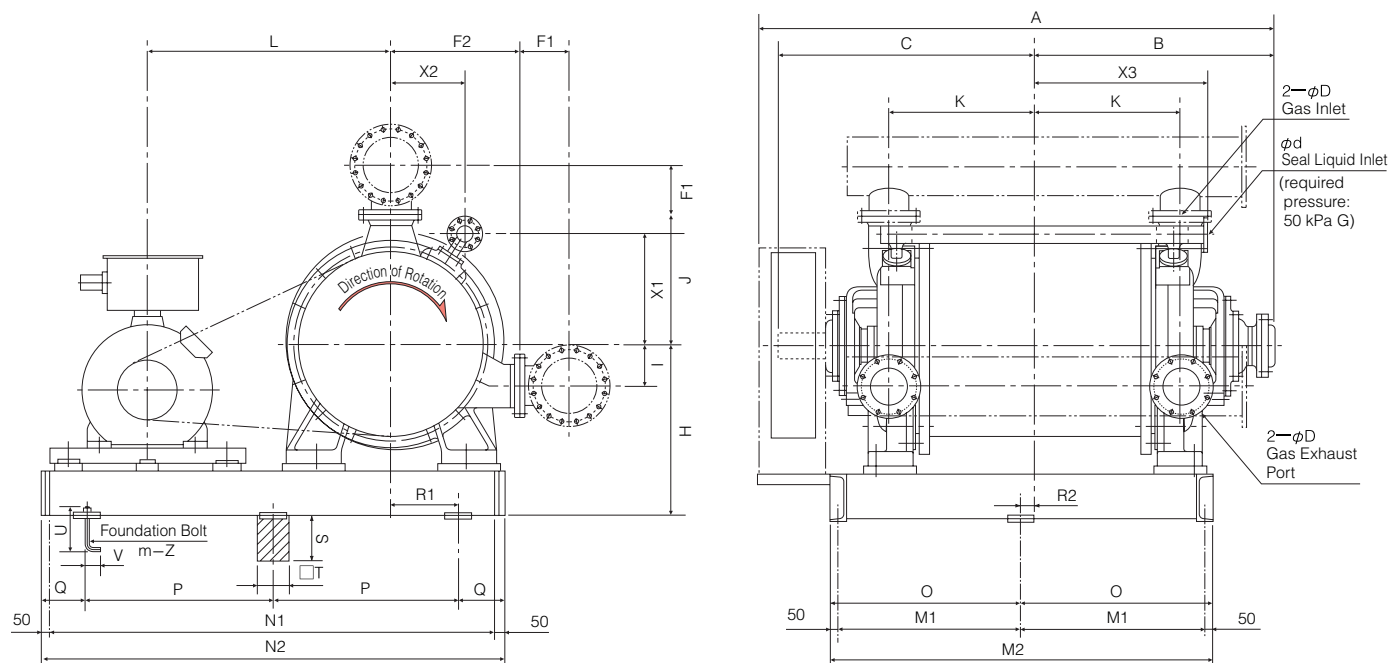


50/60 Hz Standard Specifications (at a seal liquid temperature of 15°C)

Bore [Inlet x Outlet] (mm)	Number of ports	Model	Rotation speed (min ⁻¹)	Motor capacity (kW)	Number of poles	Suction capacity [suction condition] (m ³ /min)						Approx. seal liquid flow rate* (L/min)
						Inlet pressure (kPa G)						
						-81.3	-71.3	-61.3	-51.3	-41.3	-21.3	
						20	30	40	50	60	80	30
150 x 150	2	150VL675V	470	75	6	42.5	49.5	53.5	55.5	56.5	56.5	120
200 x 200	2	200VL690V	365	90	6	52	61.5	66	68	69	69	160
200 x 200	2	200VL6110VA	415	110	6	61.5	70	75	77	77.5	77.5	160
200 x 200	2	200VL6110VB	310	110	6	66	77	84	87	88	88	200
200 x 200	2	200VL6132V	350	132	6	80	91	97	98.5	99	99	200
200 x 200	2	200VL6150V	295	150	6	88	102	110	113	115	115	260
200 x 200	2	200VL6170V	330	170	6	101	115	123	126	127	127	260
250 x 250	2	250VL8190V	260	190	8	107	127	140	145	148	148	320
250 x 250	2	250VL6230V	310	230	6	134	154	165	167	168	168	320
250 x 250	2	250VL8230V	245	230	8	137	159	172	178	180	180	380
250 x 250	2	250VL8270V	275	270	8	158	180	192	196	197	197	380
300 x 300	2	300VL8280V	225	280	8	164	190	205	211	214	214	440
300 x 300	2	300VL8340V	260	340	8	194	219	235	241	243	243	440

* The seal liquid flow rate indicates the values at -71.3 kPa G (30 kPa abs).

Dimensions (V-belt drive type) Unit: mm



Note: JIS 10K RF standard (flange)

● For the outer dimensions of the direct drive type, please order the relevant drawings separately.

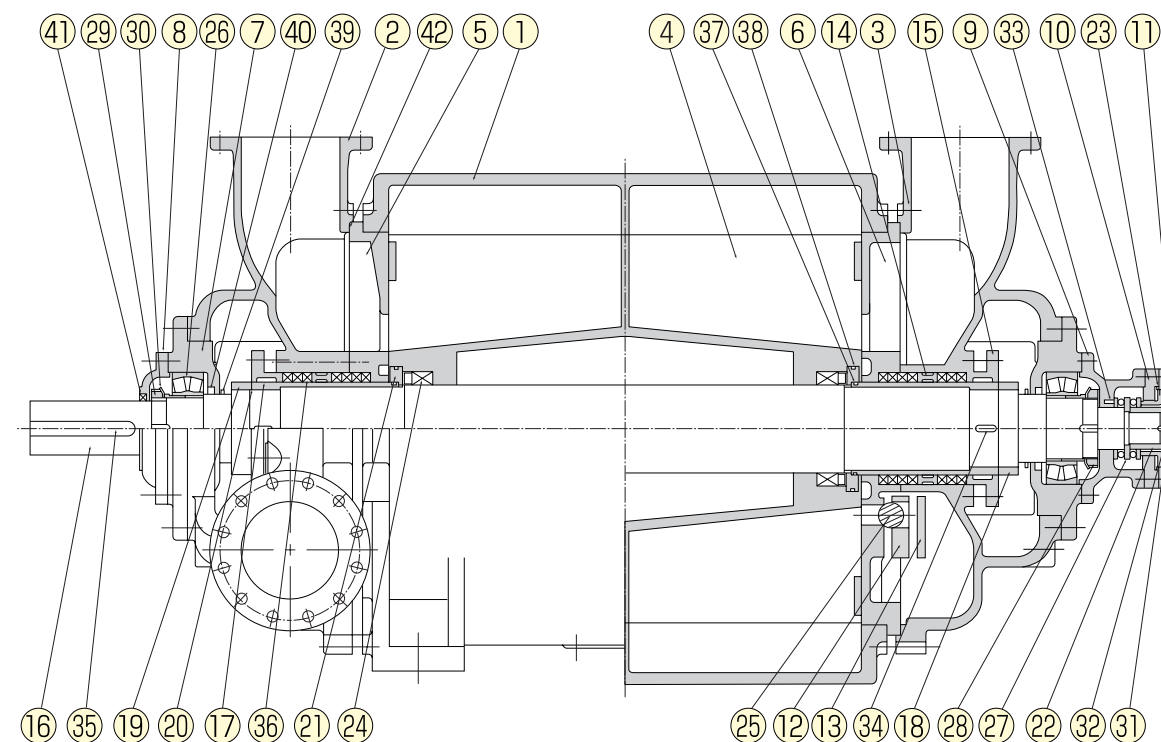
Foundation bolt				
Z	S	T	U	V
M20	250	170	250	80
M24	315	210	315	100
M30	400	230	400	112

50/60 Hz Dimensions Unit: mm

Model	D	A	B	C	F1	F2	H	I	J	K	L	M1	M2	N1	N2	O	P	Q	R1	R2	X1	X2	X3	m	Z	d	Approx. weight (kg)
150VL675V	150	2140	1000	1090	220	410	685	190	480	610	1290	650	1400	1700	1800	700	700×2	200	200	150	410	420	850	8	M20	40	3000
200VL690V	200	2355	1110	1195	250	500	730	210	530	685	1350	700	1500	2000	2100	750	850×2	200	220	185	460	470	900	8	M20	40	4300
200VL6110VA	200	2355	1110	1195	250	500	730	210	530	685	1360	700	1500	2000	2100	750	850×2	200	220	185	460	470	900	8	M20	40	4500
200VL6110VB	200	2565	1210	1290	250	550	760	250	600	760	1480	800	1700	2100	2200	850	900×2	200	305	220	500	400	1040	8	M20	50	6200
200VL6132V	200	2565	1210	1290	250	550	760	250	600	760	1550	800	1700	2100	2200	850	900×2	200	305	220	500	400	1040	8	M20	50	6400
200VL6150V	200	2925	1365	1495	270	700	950	220	700	850	1630	1050	2200	2400	2500	1100	1000×2	250	365	75	600	400	1100	8	M20	50	8000
200VL6170V	200	2925	1365	1495	270	700	950	220	700	850	1610	1050	2200	2400	2500	1100	1000×2	250	365	75	600	400	1100	8	M20	50	8300
250VL8190V	250	3175	1500	1600	300	780	1000	200	780	940	1750	1150	2400	2900	3000	1200	1250×2	250	445	50	660	440	1100	8	M24	80	9800
250VL6230V	250	3175	1500	1600	300	780	1000	200	780	940	1770	1150	2400	2900	3000	1200	1250×2	250	445	50	660	440	1100	8	M24	80	10200
250VL8230V	250	3485	1650	1760	350	860	1100	300	860	1010	2070	1200	2500	3100	3200	1250	900×3	250	505	50	780	450	1300	10	M24	80	12000
250VL8270V	250	3485	1650	1760	350	860	1100	300	860	1010	2090	1200	2500	3100	3200	1250	900×3	250	505	50	780	450	1300	10	M24	80	12500
300VL8280V	300	3900	1835	1965	400	950	1150	210	950	1100	2190	1300	2700	3300	3400	1350	900×3	350	475	50	700	700	1550	10	M30	80	16000
300VL8340V	300	3900	1835	1965	400	950	1150	210	950	1100	2240	1300	2700	3300	3400	1350	900×3	350	475	50	700	700	1550	10	M30	80	16500

The approx. weight includes the weight of the common base and the motor.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Sectional Drawing (V-belt drive type)



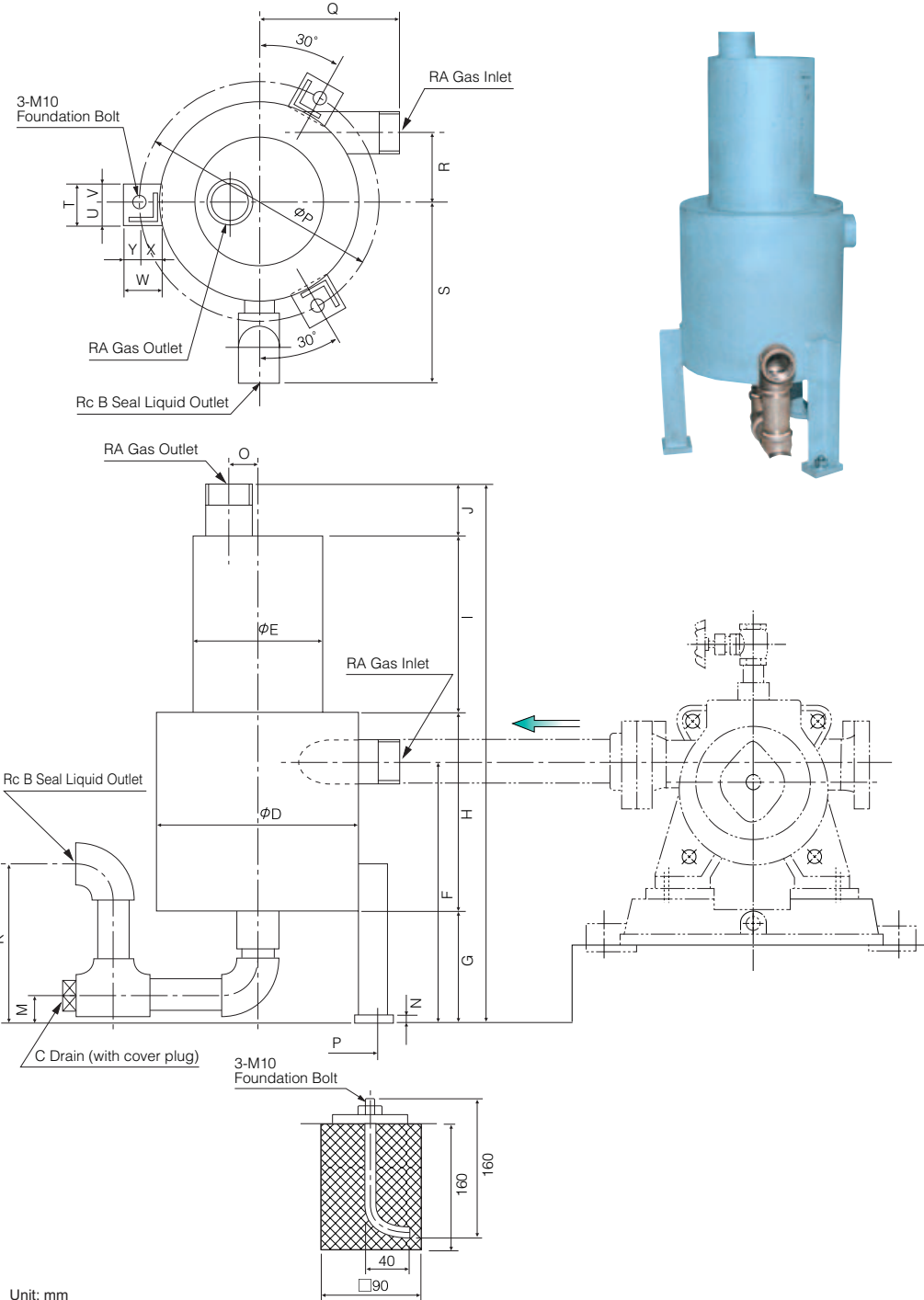
Part Name/Material List

Part No.	Part name	Material	Part No.	Part name	Material
1	Casing	FC200	22	Bearing Sleeve	S45C
2	Side Cover	FC200	23	Adjusting Nut	S45C
3	Side Cover	FC200	24	Impeller Lock	—
4	Impeller	SS400	25	Ball	PTFE
5	Port Plate	FC250	26	Self-Aligning Roller Bearing	—
6	Port Plate	FC250	27	Thrust Ball Bearing	—
7	Bearing Case	FC200	28	Lock Nut	S30C
8	Bearing Cover	FC200	29	Lock Nut	S30C
9	Bearing Housing	FC200	30	Lock Washer	SS400
10	Adjuster Flange	FC200	31	Lock Nut	S30C
11	End Cover	FC200	32	Lock Washer	SS400
12	Ball Holder	FC200	33	Coil Spring	SUS304
13	Plate	SS400	34	Key	SUS304
14	Lantern Ring	SUS304	35	Key	S45C
15	Packing Gland	FC200	36	Gland Packing	P#6501L
16	Shaft	SUS420J2	37	O-Ring	NBR
17	Shaft Sleeve	SUS304	38	O-Ring	NBR
18	Sleeve Nut	SUS304	39	V-Ring	NBR
19	Sleeve Nut	SUS304	40	Oil Seal	NBR
20	Lock Washer	SUS304	41	Oil Seal	NBR
21	Seal Liner	SUS304	42	Liquid Gasket	TB-1104

Optional Accessories

Liquid ring vacuum pumps are provided with an operating mechanism that simultaneously discharges gas and seal liquid from the pump outlet. Thus, a separator tank is normally provided on the pump discharge side in order to separate the gas and liquid.

Silencer Separator Tank (DG type) for VK



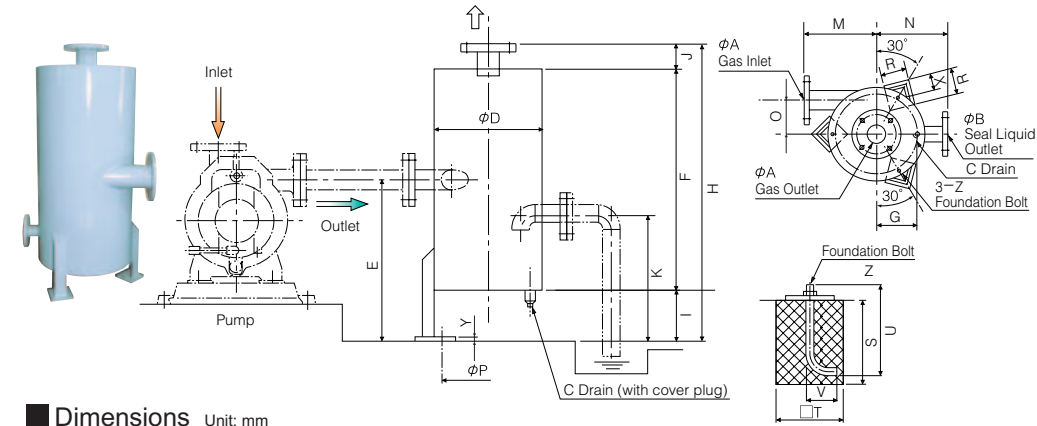
■ Dimensions Unit: mm

Model	Compatible pump type	A*	B*	C*	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Approx. weight (kg)
DG-25	20VK2.75	1	3/4	3/4	165	89	250	115	185	190	40	170	530	30	9	20	200	120	55	162	40	20	20	32	22	10	10
DG-25	25VK2.1.5	1	3/4	3/4	165	89	250	115	185	190	40	170	530	30	9	20	200	120	55	162	40	20	20	32	22	10	10
DG-40	32VK2.2.2	1 1/2	1	1	216	140	280	120	215	190	55	170	580	30	9	30	255	150	75	193	45	25	20	40	25	15	18
DG-40	40VK4.3.7	1 1/2	1	1	216	140	280	120	215	190	55	170	580	30	9	30	255	150	75	193	45	25	20	40	25	15	18
DG-40	40VK2.3.7	1 1/2	1	1	216	140	280	120	215	190	55	170	580	30	9	30	255	150	75	193	45	25	20	40	25	15	18

* The "A", "B" and "C" dimensions are indicated in inches.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Optional Accessories

Silencer Separator Tank (DTS type) for VA/V



Foundation bolt				
Z	S	T	U	V
M12	160	110	160	50
M16	200	140	200	63
M20	250	170	250	80
M24	315	210	315	100

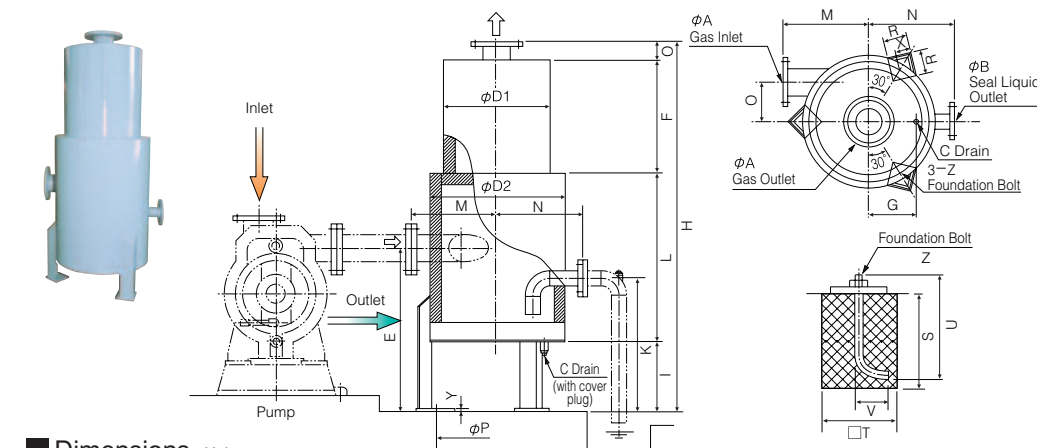
- Notes:
- JIS 10 K FF standard (flange)
 - The pump exhaust port and the separator connection port should be connected via horizontal piping.
 - The seal liquid outlet pipe should be 5 m or shorter, and open to the atmosphere.

■ Dimensions Unit: mm

Model	A	B	C*	D	E	F	G	H	I	J	K	M	N	O	P	R	X	Y	Z	Approx. weight (kg)
DTS-40	40	25	1/2	240	420	480	90	700	150	70	340	180	180	85	200	65	45	12	M12	25
DTS-50	50	40	1/2	300	480	660	120	880	150	70	240	220	220	110	260	80	60	12	M12	35
DTS-65	65	40	1/2	340	480	580	140	800	150	70	370	240	240	120	300	80	50	12	M12	45
DTS-80	80	40	1/2	400	520	770	160	1000	150	80	250	260	260	150	360	80	50	12	M12	55
DTS-100	100	50	3/4	550	550	950	230	1180	150	80	290	340	340	210	500	100	65	12	M16	110
DTS-125	125	50	3/4	600	650	1000	250	1310	230	80	470	380	380	220	550	100	65	12	M16	130
DTS-150	150	65	1	660	680	1100	270	1440	230	100	480	400	400	240	600	100	70	12	M16	190
DTS-175	175	65	1	850	750	1300	350	1650	250	100	520	510	510	320	800	130	80	16	M20	290
DTS-200	200	80	1 1/2	1000	820	1500	400	1860	250	110	550	590	590	380	950	130	80	16	M20	380

* The "C" dimensions are indicated in inches.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Silencer Separator Tank (DD2 type) for VA/V



Foundation bolt				
Z	S	T	U	V
M12	160	110	160	50
M16	200	140	200	63
M20	250	170	250	80
M24	315	210	315	100

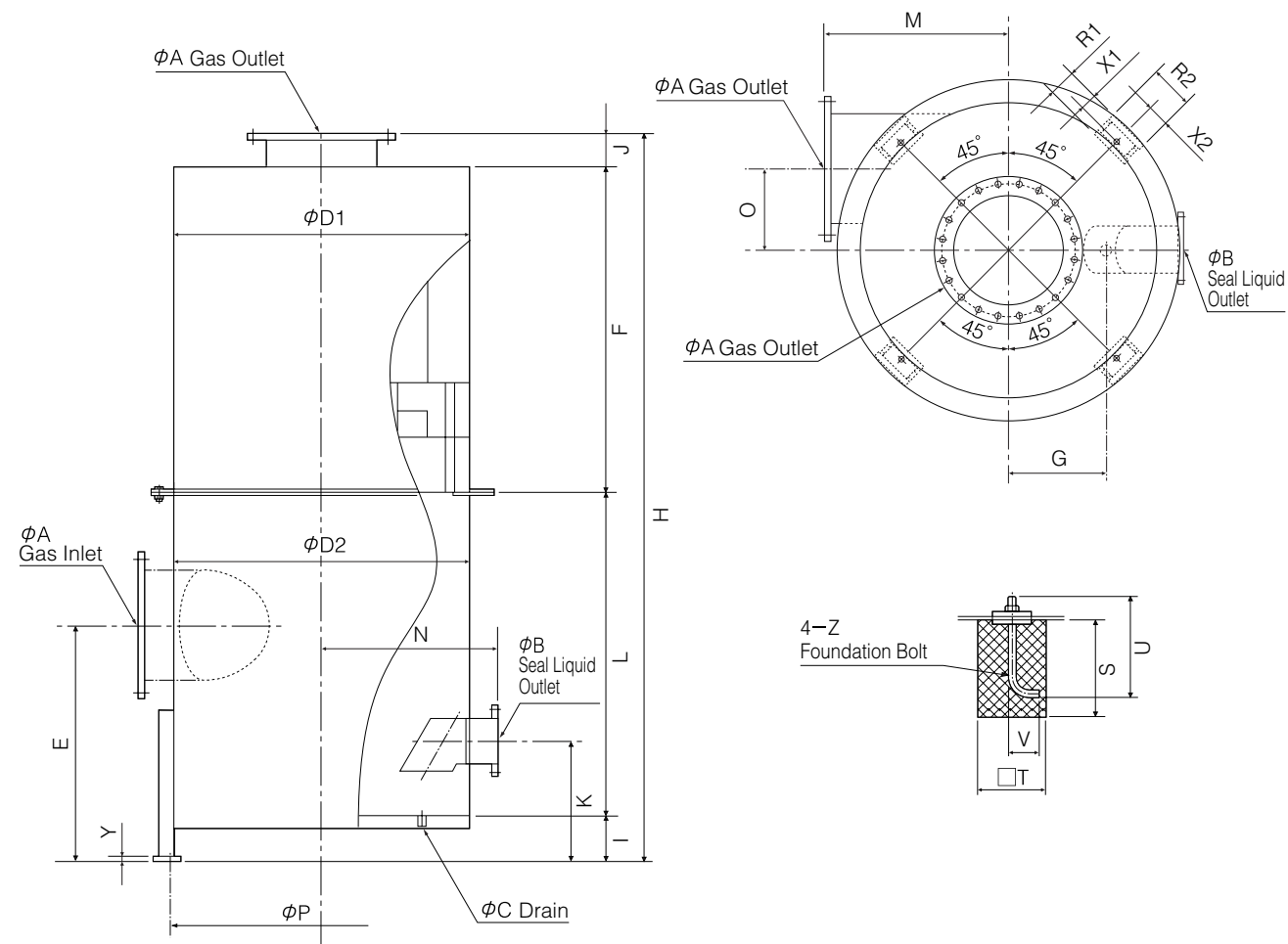
- Notes:
- JIS 10 K FF standard (flange)
 - The pump exhaust port and the separator connection port should be connected via horizontal piping.
 - The seal liquid outlet pipe should be 5 m or shorter, and open to the atmosphere.

■ Dimensions Unit: mm

Model	A	B	C*	D1	D2	E	F	G	H	I	J	K	L	M	N	O	P	R	X	Y	Z	Approx. weight (kg)
DD2-40	40	25	1/2	260	320	420	330	130	1000	150	70	370	450	230	230	75	290	80	50	12	M12	45
DD2-50	50	40	1/2	340	380	480	420	160	1180	150	70	400	540	250	250	105	350	80	50	12	M12	70
DD2-65	65	40	1/2	340	380	480	420	160	1180	150	70	400	540	250	250	105	350	80	50	12	M12	70
DD2-80	80	40	1/2	380	480	520	450	200	1320	150	80	410	640	300	300	150	450	80	50	12	M12	100
DD2-100	100	50	3/4	430	540	550	470	240	1410	150	80	420	710	350	350	170	500	100	65	12	M16	125
DD2-125	125	50	3/4	480	640	650	540	280	1630	230	80	500	780	380	380	200	600	100	65	12	M16	190
DD2-150	150	65	1	585	750	680	650	320	1840	230	100	510	860	450	450	240	700	100	70	12	M16	250
DD2-175	175	65	1	680	870	750	730	380	2040	250	100	570	960	520	520	280	820	130	80	16	M20	340
DD2-200	200	80	1 1/2	800	1040	820	880	450	2330	250	110	590	1090	600	600	350	1000	130	80	16	M20	450

* The "C" dimensions are indicated in inches.
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Silencer Separator Tank for VL



Foundation bolt				
Z	S	T	U	V
M16	185	140	200	63
M20	235	170	250	80
M24	300	210	315	100

Notes:

1. JIS 10 K FF standard (flange)
2. The pump exhaust port and the silencer separator connection port should be connected via horizontal piping, or by a down-pipe from the pump to the tank.

Dimensions Unit: mm

Model	A	B	C	D1	D2	E	F	G	H	I	J	K	L	M	N	O	P	R1	R2	X1	X2	Y	Z	Approx. weight (kg)
150VL675V	200	65	25	700	700	645	800	280	1860	150	110	420	800	420	420	225	740	90	140	70	70	15	M16	260
200VL690V 200VL6110VA	250	80	25	800	800	720	900	320	2120	150	120	440	950	480	480	245	740	90	140	70	70	15	M20	330
200VL6110VB 200VL6132V	250	80	25	900	900	710	1000	360	2220	150	120	430	950	530	530	300	950	125	170	80	85	15	M20	420
200VL6150V 200VL6170V	300	100	25	1050	1050	880	1150	420	2570	200	120	540	1100	620	620	340	1100	125	170	80	85	15	M20	600
250VL8190V 250VL6230V	350	100	25	1200	1200	900	1350	480	2920	200	120	550	1250	700	700	380	1250	125	170	80	85	19	M24	1000
250VL8230V 250VL8270V	400	125	40	1250	1250	1000	1400	490	3150	200	150	550	1400	740	740	380	1300	125	200	80	100	19	M24	1100
300VL8280V 300VL8340V	500	125	40	1400	1400	1140	1550	550	3500	200	150	590	1600	800	800	400	1450	125	200	80	100	19	M24	1350

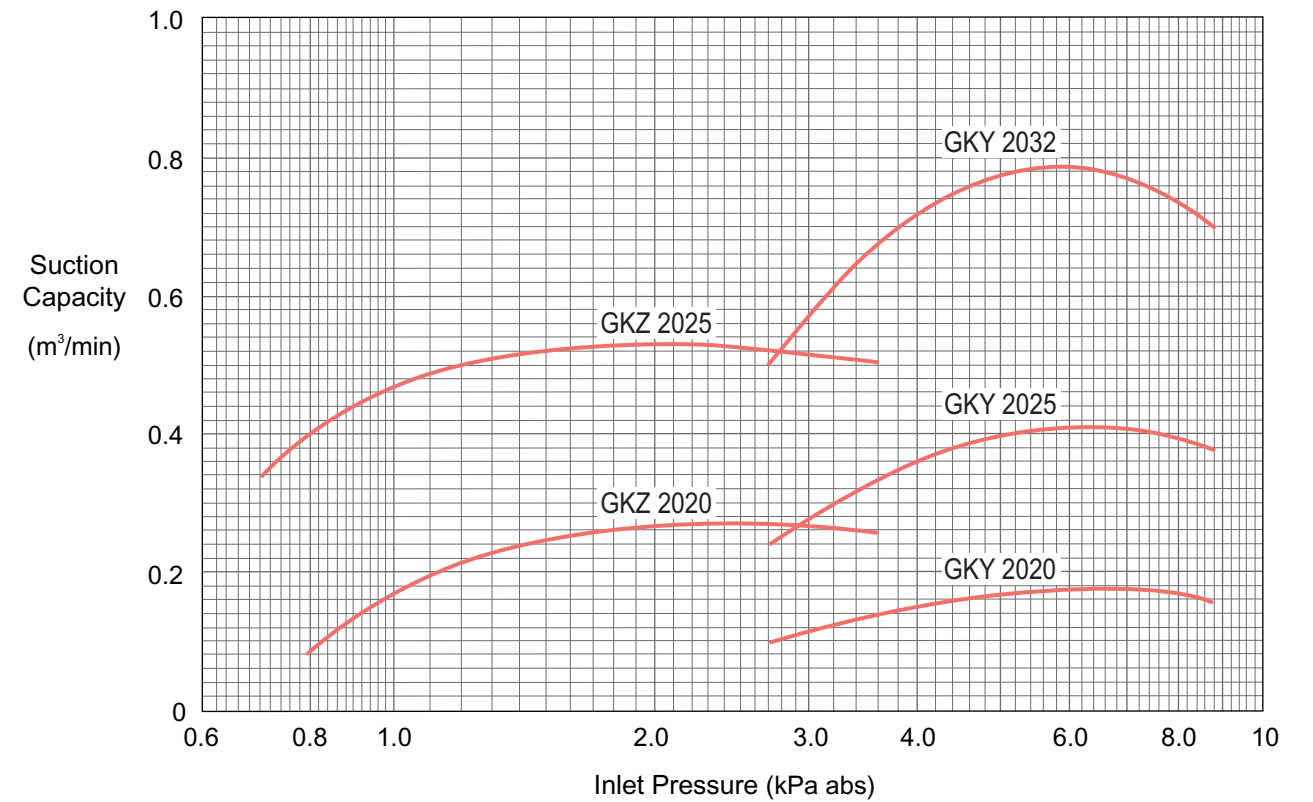
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

When the gas ejector is mounted to the suction side of the liquid ring vacuum pump, the pump provides a higher vacuum.

1. High vacuum (approx. 0.8 to 8 kPa abs) can be provided.
2. The gas ejector needs no power.
3. Operating pressure of approx. 10 to 15 kPa abs in the liquid ring vacuum pump downstream from the gas ejector eliminates cavitation.

Gas Ejector (GKY/GKZ type) for VK

Performance Curves



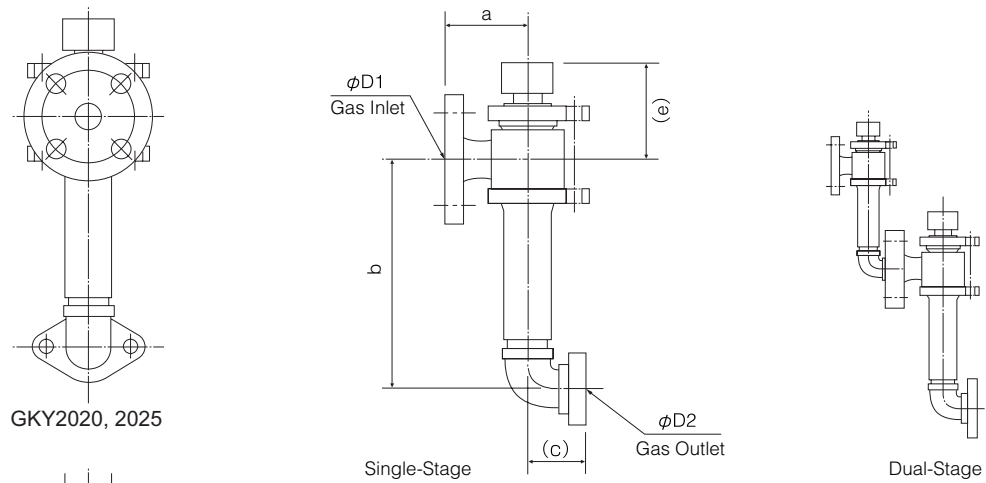
Standard Specifications (at a seal liquid temperature of 30°C)

Model	Suction capacity [suction condition] (m³/min)										Vacuum pump		
	Inlet pressure (kPa abs)										Compatible pump type	Rotation speed (min ⁻¹)	Pump capacity (kW)
	0.8	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0				
GKY2020	—	—	—	—	0.12	0.15	0.17	0.18	0.17	—	25VK21.5	3500 2900	1.5
GKY2025	—	—	—	—	0.28	0.36	0.40	0.41	0.40	—	32VK22.2	3500 2900	2.2
GKZ2020+ GKY2025 *	0.08	0.18	0.24	0.27	0.27	—	—	—	—	—	32VK22.2	3500 2900	—
GKY2032	—	—	—	—	0.57	0.72	0.78	0.79	0.74	—	40VK43.7 40VK23.7	1750 2900	3.7
GKZ2025+ GKY2032 *	0.4	0.47	0.52	0.53	0.52	—	—	—	—	—	40VK43.7 40VK23.7	3500 2900	—

* These models are series two-stage gas ejectors. Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.

Gas Ejector (GY/GZ type)

Dimensions



Note: JIS 10K FF standard (gas inlet flange)

Dimensions Unit: mm

Model	D1	D2	a	b	c	e
GKY2020	20	25	70	170	80	100
GKZ2020	20	25	70	170	80	100
GKY2025	25	32	80	230	85	105
GKZ2025	25	32	80	230	85	105
GKY2032	32	40	100	300	85	105

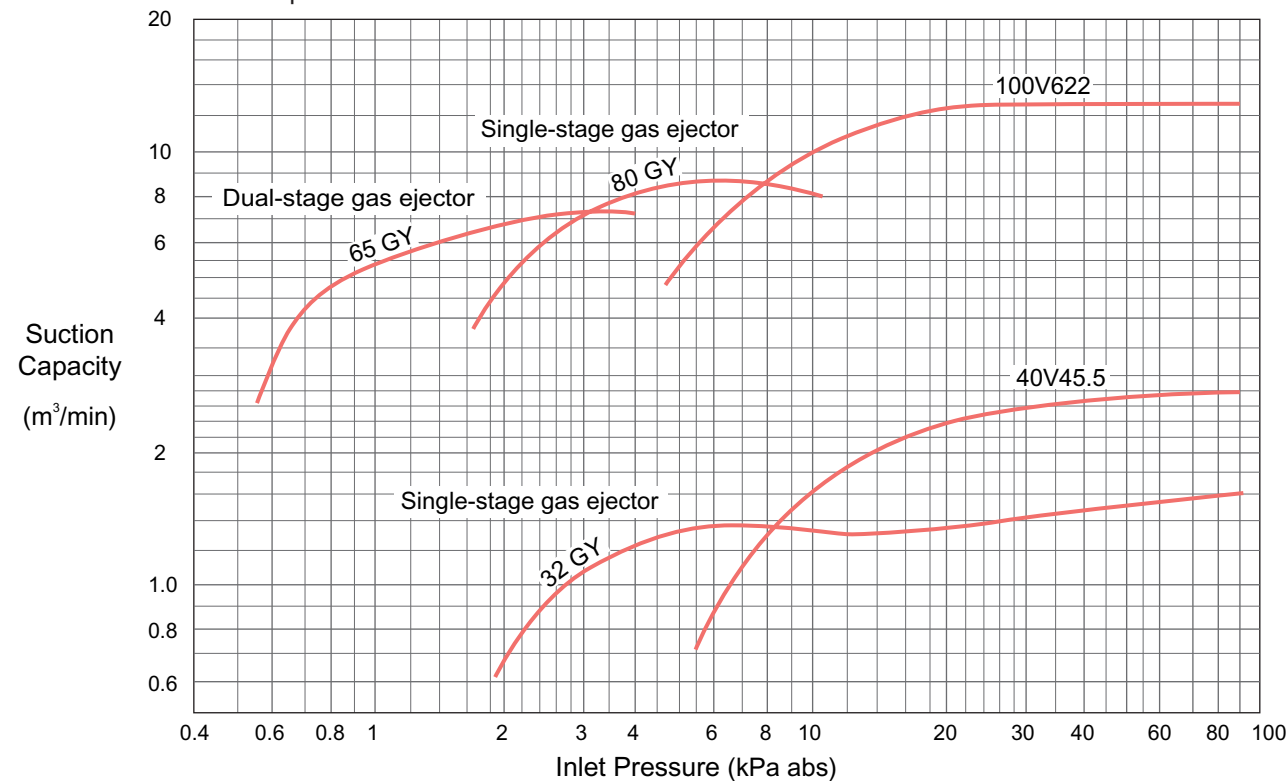
The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

GKY2020, 2025

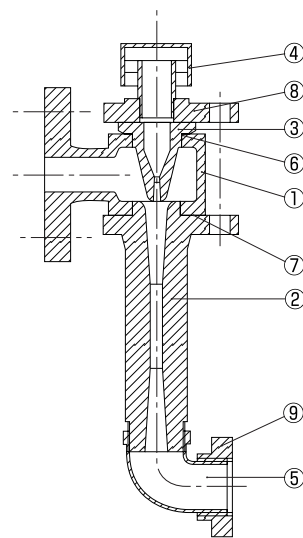
GKY2032

GKZ2020, 2025

Examples of Performance



● Dual-stage gas ejectors are custom-designed. Contact us for details.



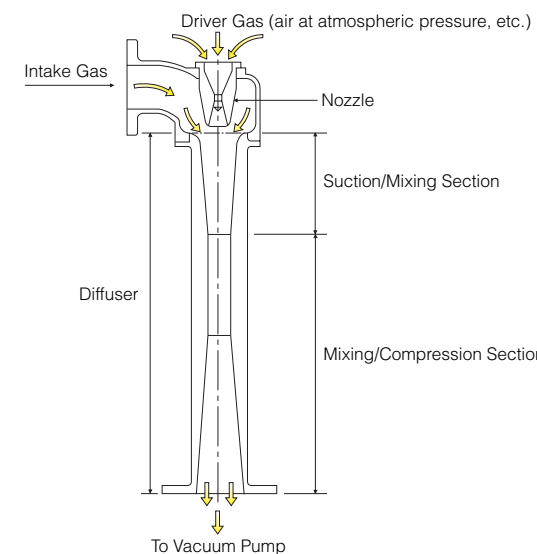
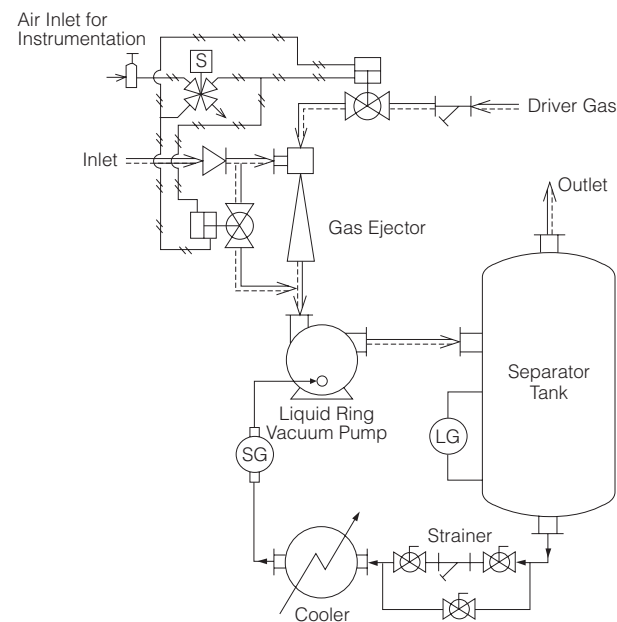
Part Name/Material List

Part No.	Part name	Material
1	Suction Chamber	FC200
2	Diffuser	FC200, plated
3	Nozzle	SUS304
4	Top Cover	SS400
5	Elbow	FCMB
6	O-Ring	NBR
7	Liquid Packing	TB-1104
8	Companion Flange	FC200
9	Companion Flange*	FC200

* Indicates standard vacuum pump accessories.

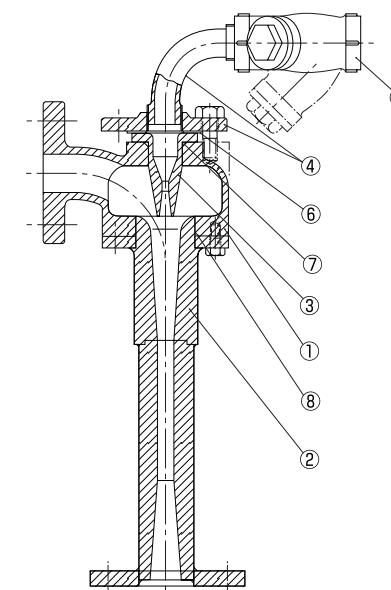
Vacuum Pump with Gas Ejector

The following figure shows an example of automatic operation flow using a gas ejector. We accept orders to manufacture such vacuum exhaust systems. For large-capacity operation, a combination of roots + vacuum pump, and for high-vacuum operation, a combination of roots + (roots) + gas ejector + vacuum pump are available.



Gas Ejector Operating Principle

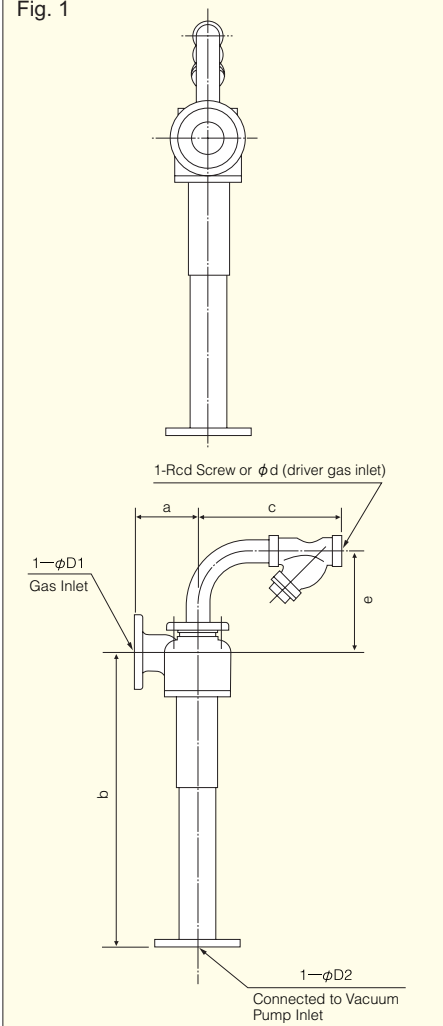
- When the vacuum pump connected downstream from the gas ejector is operated, driver gas is taken in through the nozzle. The driver gas is then injected into the diffuser as a supersonic flow.
- [Suction/Mixing Section] The narrowed portion of the diffuser produces an intake gas flow (secondary flow) in accordance with the flow of driver gas (primary flow) in order to draw in and mix the gas.
- [Mixing/Compression Section] The driver gas and the intake gas are mixed in the throat and widened portion of the diffuser, and that gas mixture is compressed. The ejector draws in the intake gas using the supersonic flow of the driver gas and compresses that gas during the process of reducing the flow rate and restoring the pressure.



Part Name/Material List

Part No.	Part name	Material
1	Suction Chamber	FC200
2	Diffuser	S20C/SS400
3	Nozzle	SUS304
4	Bend and Flange	FCMB, FC200
5	Strainer	FC200/SUS304
6	Seat Packing	V#6500
7	O-Ring	NBR
8	O-Ring	NBR

Fig. 1



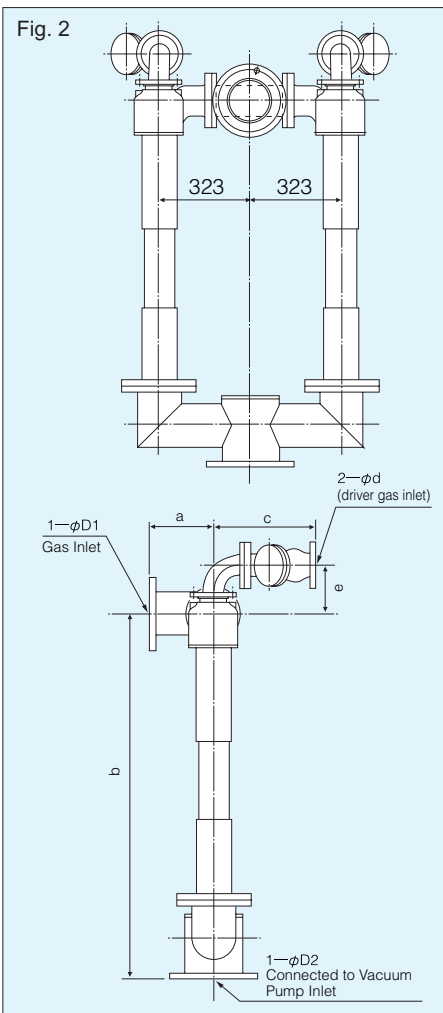
■ Gas Ejector Dimensions Unit: mm

Model	D1	D2	d	a	b	c	e	Approx. weight (kg)	Dwg. No.
GY1032	32	40	3/4B	110	327	160	100	13	Fig. 1
GZ1032	32	40	3/4B	110	295	160	100	13	
GY2032	32	40	3/4B	110	302	160	100	13	
GZ2032	32	40	3/4B	110	260	160	100	13	
GY1040	40	50	1B	120	405	196	126	17	
GZ1040	40	50	1B	120	366	196	126	17	
GY2040	40	50	1B	120	380	196	126	17	
GZ2040	40	50	1B	120	319	196	126	17	
GY1050	50	65	1 1/4B	130	500	232	149	26	
GZ1050	50	65	1 1/4B	130	457	232	149	26	
GY2050	50	65	1 1/4B	130	462	232	149	26	
GZ2050	50	65	1 1/4B	130	403	232	149	26	
GY1065	65	80	1 1/2B	140	605	259	166	40	
GZ1065	65	80	1 1/2B	140	564	259	166	40	
GY2065	65	80	1 1/2B	140	563	259	166	40	
GZ2065	65	80	1 1/2B	140	495	259	166	40	
GY1080	80	100	2B	160	730	304	197	62	
GZ1080	80	100	2B	160	668	304	197	62	
GY2080	80	100	2B	160	672	304	197	62	
GZ2080	80	100	2B	160	593	304	197	62	
GY1081	80	125	2B	160	840	304	202	70	
GZ1081	80	125	2B	160	778	304	202	70	
GY2081	80	125	2B	160	782	304	202	70	
GZ2081	80	125	2B	160	673	304	202	70	
GY1100	100	125	65A	200	960	389	179	120	
GZ1100	100	125	65A	200	902	389	179	120	
GY2100	100	125	65A	200	888	389	179	120	
GZ2100	100	125	65A	200	791	389	179	120	
GY1101	100	150	65A	200	998	389	179	128	
GZ1101	100	150	65A	200	930	389	179	128	
GY2101	100	150	65A	200	924	389	179	128	
GZ2101	100	150	65A	200	822	389	179	128	
GY1102	100	150	65A	200	1062	389	179	128	
GZ1102	100	150	65A	200	995	389	179	128	
GY2102	100	150	65A	200	974	389	179	128	
GZ2102	100	150	65A	200	863	389	179	128	
GY1125	125	175	80A	240	1165	429	207	200	
GZ1125	125	175	80A	240	1064	429	207	200	
GY2125	125	175	80A	240	1094	429	207	200	
GZ2125	125	175	80A	240	934	429	207	200	
GY1126	125	175	80A	240	1291	429	207	200	
GZ1126	125	175	80A	240	1207	429	207	200	
GY2126	125	175	80A	240	1204	429	207	200	
GZ2126	125	175	80A	240	1042	429	207	200	
GY1150	150	200	65A	200	1394	389	179	260	
GZ1150	150	200	65A	200	1393	389	179	260	
GY2150	150	200	65A	200	1326	389	179	260	
GZ2150	150	200	65A	200	1206	389	179	260	

Fig. 1

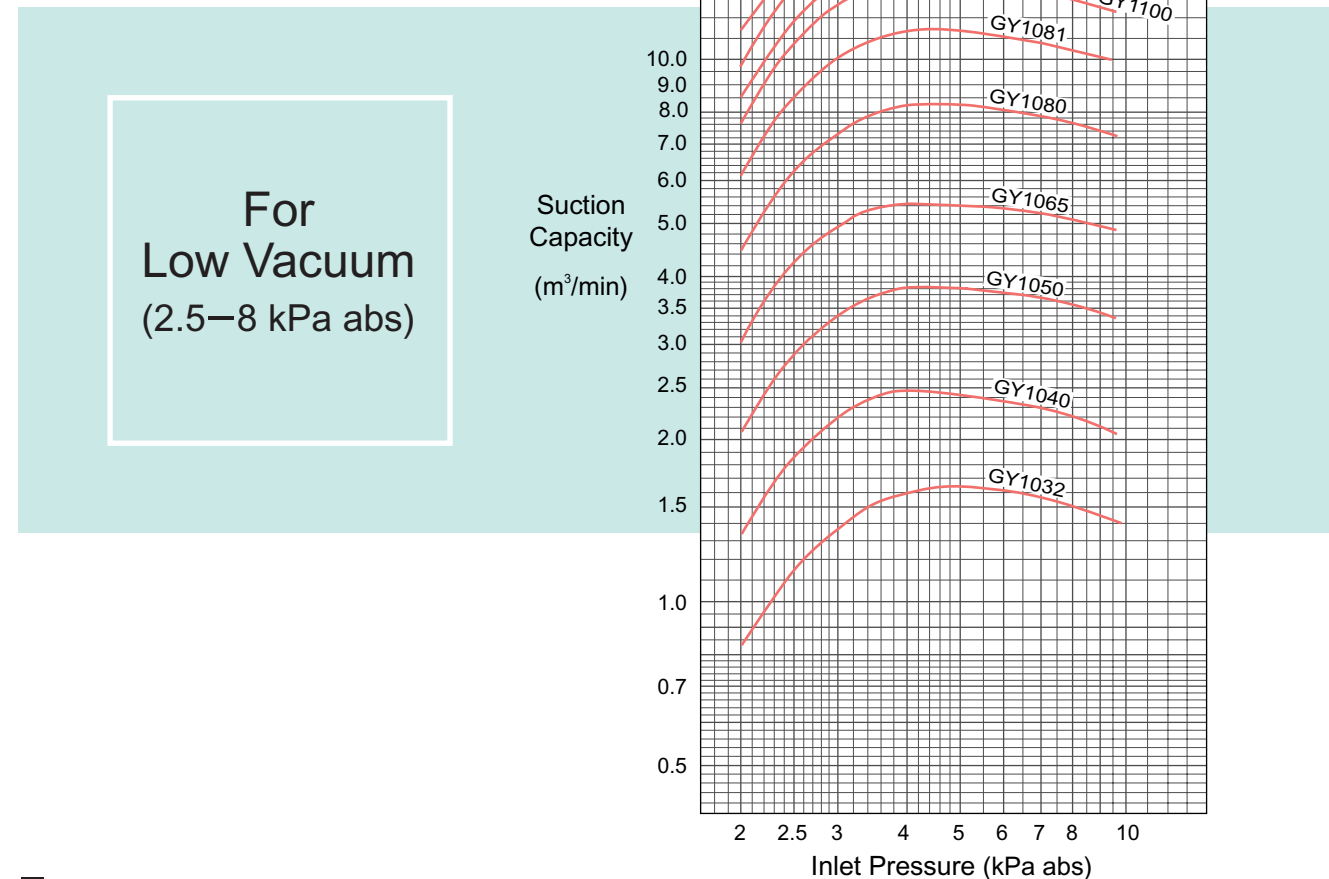
Fig. 2

Fig. 2



The dimensions above are subject to change due to modification. For design use, please order delivery drawings separately.

Performance Curves



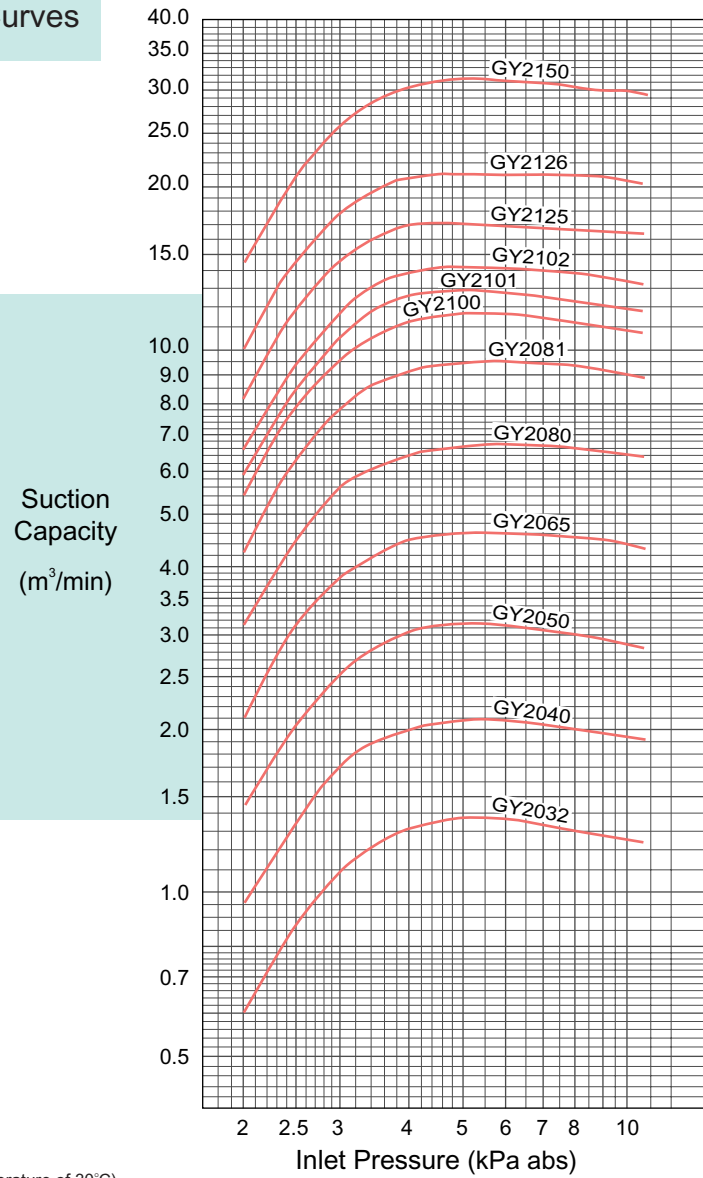
■ Standard Specifications (at a seal liquid temperature of 15°C)

Model	Inlet bore (mm)	Suction capacity [suction condition] (m³/min)							Vacuum pump											
		0.8				2.5			3		4		5		6		8		Compatible pump type	Rotation speed (min⁻¹)
GY1032	32	0	1.14	1.37	1.58	1.62	1.61	1.50	40V45.5/40VA45.5		1750	5.5	25							
											1450									
GY1040	40	0	1.86	2.20	2.45	2.42	2.35	2.20	50V47.5/50VA47.5		1750	7.5	30							
											1450									
GY1050	50	0	2.85	3.35	3.80	3.80	3.75	3.55	65V611/65VA611		1150	11	35							
											1450									
GY1065	65	0	4.20	4.90	5.40	5.40	5.30	5.15	80V615/80VA615		1150	15	40							
											970									
GY1080	80	0	6.20	7.30	8.30	8.30	8.10	7.70	100V622/100VA622		1150	22	60							
											970									
GY1081	80	0	8.50	10.1	11.3	11.3	11.1	10.5	125V630		970	30	75							
									125V430V		870									
									125V830		870									
GY1100	100	0	10.7	12.7	14.1	14.1	13.8	13.0	125V645		1150	45	85							
									125V445V		730									
GY1101	100	0	11.8	14.0	15.5	15.2	15.0	14.2	150V837		870	37	85							
									150V437V		730									
GY1102	100	0	13.6	16.0	17.6	17.5	16.9	15.9	150V645		970	45	85							
									150V445V		730									
GY1125	125	0	15.3	18.2	20.5	20.5	20.2	19.5	175V855		730	55	120							
									175V455V		730									
GY1126	125	0	19.5	23.0	25.5	25.5	24.5	23.0	175V875		870	75	120							
									175V475V		730									
GY1150	150	0	27.0	32.5	37.0	36.5	36.0	33.5	200V1090		590	90	155							
									200V1290		730									
									200V490V		730									

Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.

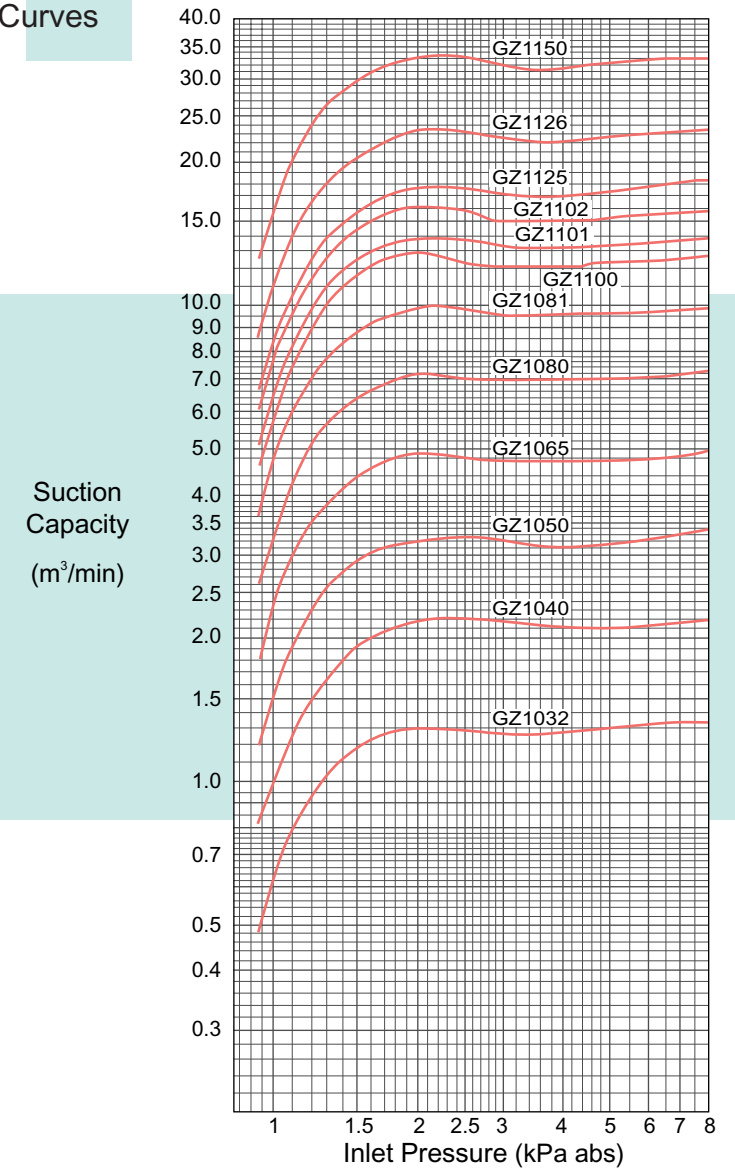
Performance Curves

■ Designed for a Seal Liquid Temperature of 30°C



Performance Curves

■ Designed for a Seal Liquid Temperature of 15°C



For High Vacuum (1.2–3.5 kPa abs)

Standard Specifications (at a seal liquid temperature of 30°C)

Model	Inlet bore (mm)	Suction capacity [suction condition] (m³/min)							Inlet pressure (kPa abs)	Vacuum pump			
		0.93	2.5	3	4	5	6	8		Compatible pump type	Rotation speed (min ⁻¹)	Pump capacity (kW)	Approx. seal liquid flow rate (L/min)
GY2032	32	0	0.87	1.10	1.32	1.38	1.37	1.30	40V45.5/40VA45.5	1750 1450	5.5	20	
GY2040	40	0	1.39	1.72	2.00	2.09	2.08	2.00	50V47.5/50VA47.5	1750 1450	7.5	25	
GY2050	50	0	2.08	2.55	3.05	3.15	3.12	3.00	65V611/65VA611 65V411/65VA411	1150 1450	11	30	
GY2065	65	0	3.15	3.85	4.50	4.65	4.60	4.50	80V615/80VA615	1150 970	15	35	
GY2080	80	0	4.50	5.60	6.50	6.70	6.75	6.60	100V622/100VA622	1150 970	22	50	
GY2081	80	0	6.30	7.80	9.20	9.50	9.50	9.30	125V630 125V430V 125V830	970 870	30	60	
GY2100	100	0	7.90	9.70	11.3	11.8	11.7	11.2	125V645 125V445V	1150	45	70	
GY2101	100	0	8.50	10.6	12.6	13.0	12.8	12.3	150V837 150V437V	730 870	37	70	
GY2102	100	0	9.50	11.9	14.0	14.3	14.2	13.9	150V645 150V445V	970	45	70	
GY2125	125	0	12.0	14.7	17.0	17.1	17.0	16.8	175V855 175V455V	730*710	55	100	
GY2126	125	0	14.8	18.0	21.0	21.2	21.2	21.0	175V875 175V475V	870	75	100	
GY2150	150	0	21.0	26.0	30.5	31.5	31.0	30.5	200V1090 200V1290 200V490V	590	90	130	

Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.

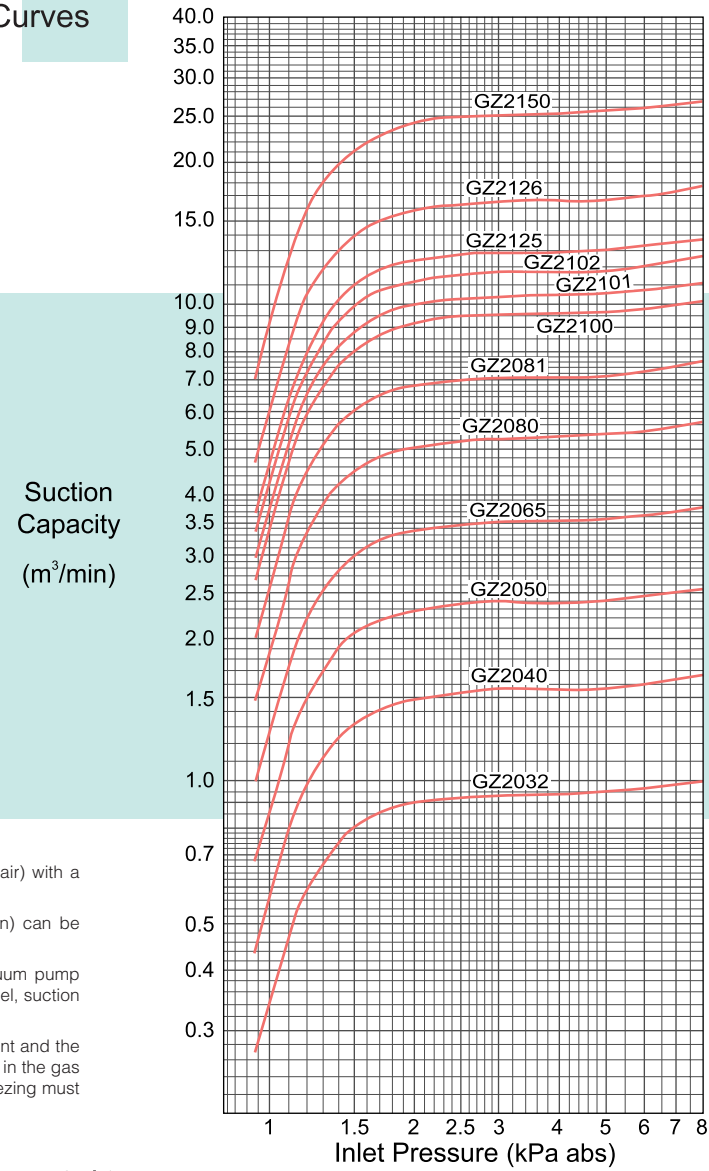
Standard Specifications (at a seal liquid temperature of 15°C)

Model	Inlet bore (mm)	Suction capacity [suction condition] (m³/min)							Inlet pressure (kPa abs)	Vacuum pump			
		0.53	1.2	1.5	2	2.5	3	3.5		Compatible pump type	Rotation speed (min ⁻¹)	Pump capacity (kW)	Approx. seal liquid flow rate (L/min)
GZ1032	32	0	0.94	1.19	1.29	1.28	1.27	1.27	40V45.5/40VA45.5	1750 1450	5.5	30	
GZ1040	40	0	1.50	1.93	2.15	2.20	2.15	2.12	50V47.5/50VA47.5	1750 1450	7.5	35	
GZ1050	50	0	2.30	2.95	3.20	3.25	3.21	3.15	65V611/65VA611 65V411/65VA411	1150 1450	11	45	
GZ1065	65	0	3.50	4.40	4.85	4.80	4.70	4.70	80V615/80VA615	1150 970	15	50	
GZ1080	80	0	5.10	6.40	7.15	7.00	6.90	6.90	100V622/100VA622	1150 970	22	75	
GZ1081	80	0	7.00	8.90	9.80	9.70	9.50	9.50	125V630 125V430V 125V830	970 870	30	90	
GZ1100	100	0	9.00	11.5	12.9	12.3	12.0	12.0	125V645 125V445V	1150	45	105	
GZ1101	100	0	9.90	12.5	13.8	13.8	13.2	13.0	150V837 150V437V	730 870	37	105	
GZ1102	100	0	11.3	14.4	16.0	15.8	15.0	14.9	150V645 150V445V	970	45	105	
GZ1125	125	0	12.6	15.9	17.6	17.6	17.0	16.9	175V855 175V455V	730*710	55	150	
GZ1126	125	0	16.7	20.9	23.1	23.1	22.2	22.0	175V875 175V475V	870	75	150	
GZ1150	150	0	24.0	30.0	33.0	33.0	32.0	31.5	200V1090 200V1290 200V490V	590	90	195	

Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.

Performance Curves

■ Designed for a Seal Liquid Temperature of 30°C



1. Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.
2. Inlet pressure of up to approx. 0.4 kPa abs (at 0 suction) can be designed.
3. If both the impeller and port plate in the liquid ring vacuum pump downstream from the gas ejector are made of stainless steel, suction capacity may be reduced by several percent.
4. If the temperature of the driver gas is near the freezing point and the intake gas contains water vapor, the driver gas may freeze in the gas ejector. In this case, measures to prevent the gas from freezing must be taken. Contact us for details.

■ Standard Specifications (at a seal liquid temperature of 30°C)

Model	Inlet bore (mm)	Suction capacity [suction condition] (m³/min)							Inlet pressure (kPa abs)	Vacuum pump			
		0.6	1.2	1.5	2	2.5	3	3.5		Compatible pump type	Rotation speed (min ⁻¹)	Pump capacity (kW)	Approx. seal liquid flow rate (L/min)
GZ2032	32	0	0.60	0.80	0.90	0.93	0.93	0.94	40V45.5/40VA45.5	1750 1450	5.5	30	
GZ2040	40	0	1.00	1.32	1.48	1.54	1.56	1.57	50V47.5/50VA47.5	1750 1450	7.5	35	
GZ2050	50	0	1.53	2.05	2.29	2.33	2.35	2.37	65V611/65VA611 65V411/65VA411	1150 1450	11	45	
GZ2065	65	0	2.23	3.00	3.39	3.49	3.51	3.52	80V615/80VA615	1150 970	15	50	
GZ2080	80	0	3.35	4.50	5.05	5.20	5.25	5.25	100V622/100VA622	1150 970	22	70	
GZ2081	80	0	4.50	6.10	6.80	7.00	7.05	7.05	125V630 125V430V 125V830	970 870	30	85	
GZ2100	100	0	6.00	8.10	9.10	9.40	9.50	9.50	125V645 125V445V	1150	45	100	
GZ2101	100	0	6.50	8.80	9.90	10.2	10.3	10.3	150V837 150V437V	730 870	37	100	
GZ2102	100	0	7.30	10.0	11.2	11.5	11.7	11.7	150V645 150V445V	970	45	100	
GZ2125	125	0	8.20	11.0	12.4	12.8	12.9	12.9	175V855 175V455V	730-710	55	140	
GZ2126	125	0	10.5	14.0	15.8	16.2	16.3	16.5	175V875 175V475V	870	75	140	
GZ2150	150	0	16.0	21.0	24.0	24.8	24.9	25.0	200V1090 200V1290 200V490V	590	90	180	

Separate consideration is required for gases (other than air) with a different specific gravity. Contact us for more information.

Influence of the Seal Liquid Temperature

Influence of the Seal Liquid Temperature

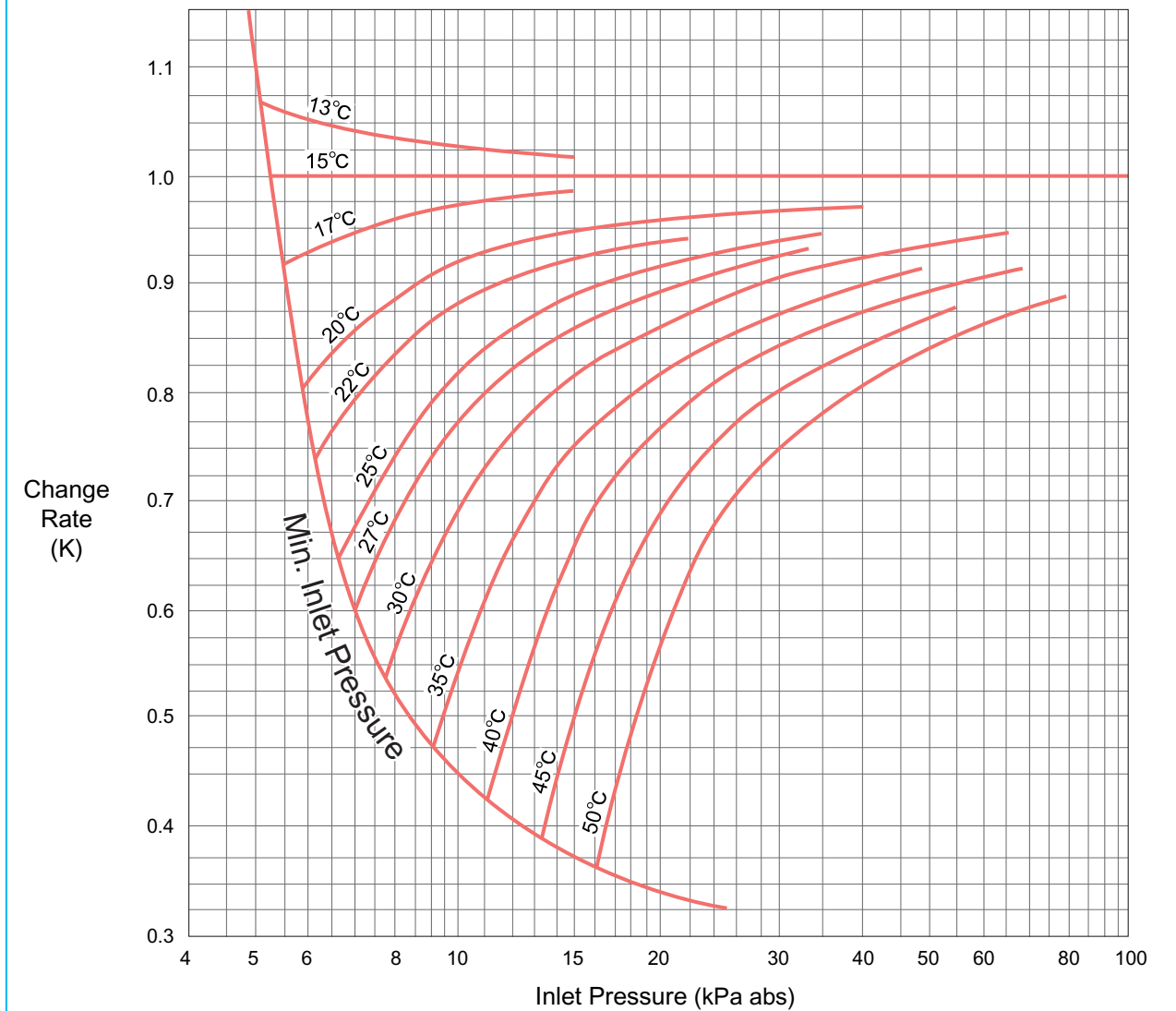
- With liquid ring pumps, the vacant space in the pump is filled with seal liquid vapor. Therefore, as the seal liquid temperature increases and the vapor pressure is raised, suction capacity is reduced, particularly in the high vacuum range.
- The estimated suction capacity is based on operation at a seal liquid temperature of 15°C. (Q15) Determine the change rate (K) with the chart below, and use the following formula to calculate the suction capacity (Qt) at a seal liquid temperature of t°C. (The following chart is based on actual measurement values.)
Suction capacity Qt = K x Q15 [m³/min]

- Especially when the seal liquid temperature is 30°C or lower, the change rate is approximately expressed with the following formula:

$$\text{Change rate } K = \frac{P_s - P_v t^\circ\text{C}}{P_s - P_v 15^\circ\text{C}}$$

Wherein, P_s is the inlet pressure (kPa abs), and P_v is the vapor pressure (kPa).

- When using a seal liquid other than water, you can approximate the suction capacity change rate by referring to the performance curves for the water temperature that corresponds to the relevant vapor pressure.



■ Water Vapor Pressure Pv (kPa)

t°C	0	1	2	3	4	5	6	7	8	9
0	0.611	0.657	0.706	0.758	0.813	0.872	0.935	1.002	1.073	1.148
10	1.228	1.312	1.402	1.497	1.598	1.705	1.818	1.937	2.063	2.197
20	2.338	2.487	2.643	2.809	2.983	3.167	3.361	3.565	3.780	4.005
30	4.243	4.492	4.755	5.030	5.319	5.623	5.941	6.275	6.625	6.992
40	7.376	7.778	8.199	8.639	9.101	9.583	10.09	10.61	11.16	11.74
50	12.33	12.96	13.61	14.29	15.00	15.74	16.51	17.31	18.14	19.01
60	19.92	20.86	21.83	22.85	23.91	25.00	26.14	27.33	28.55	29.83

Evacuation Time Characteristics

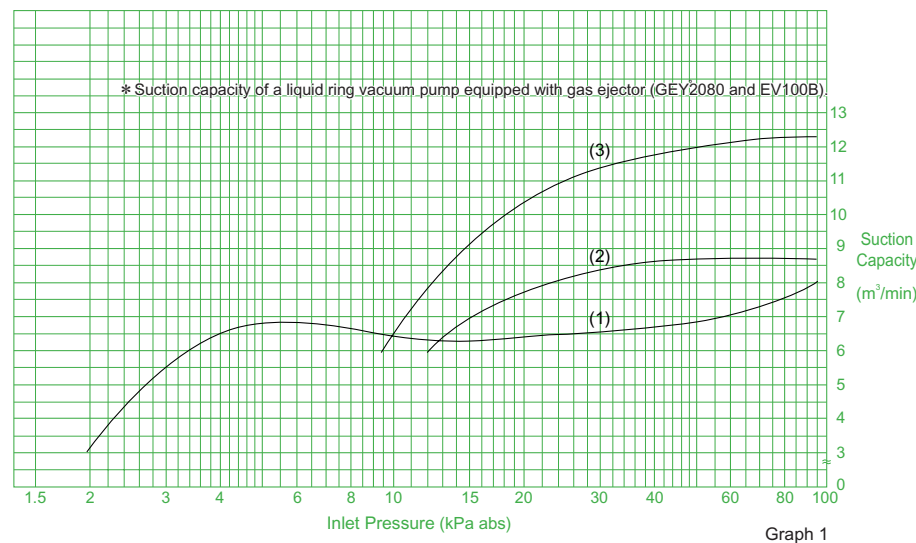
Gastight Container Evacuation Time

When using a liquid ring vacuum pump equipped with gas ejector, the following three types of exhaust methods are available:

- (1) The gas ejector is operated in conjunction with the liquid ring vacuum pump, without a bypass pipe connected.
Evacuation time is longest, but no valve operation is required.
- (2) The liquid ring vacuum pump is operated first, and the gas ejector is then operated at certain inlet pressure, without a bypass pipe connected.
Evacuation time is slightly reduced, but operation of a single valve (valve A) is required.
- (3) The liquid ring vacuum pump is operated first, and the gas ejector is then operated at certain inlet pressure, with a bypass pipe connected.
Evacuation time is shortest, but operation of two valves (valves A and B) is required.

Graph 1 shows the performance curves of the liquid ring vacuum pump equipped with gas ejector (combination of GEY2080 and EV100B). Curves (1), (2) and (3) in this graph correspond to methods (1), (2) and (3) above.

In the inlet pressure range of approx. 101.3 to 12 kPa abs, suction capacity (1) is lower than (3) due to the gas ejector driver gas flow rate and the resistance in the narrowed portion of the diffuser. Suction capacity (2) is also lower than that of (3), also due to the resistance in the narrowed portion of the diffuser.



Graph 2 shows the 100 m³ gastight container evacuation time based on calculation with the performance curves (1), (2) and (3) in Graph 1. (Air leakage: 0)

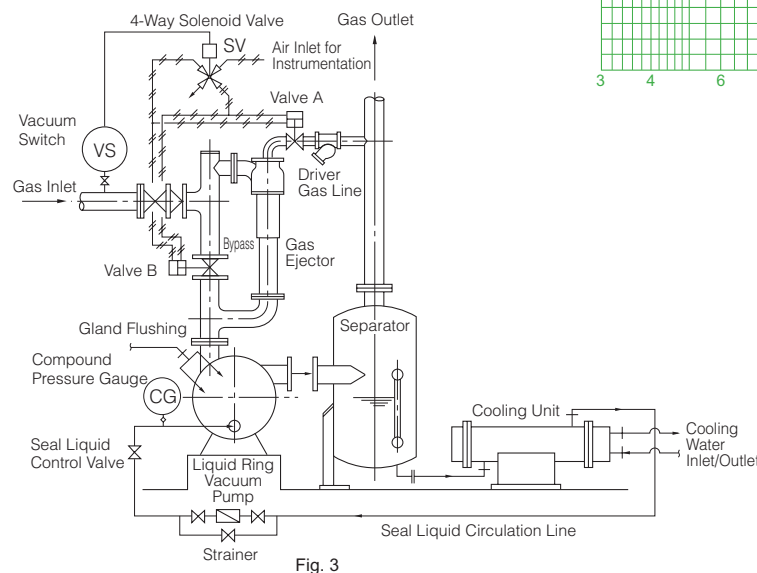
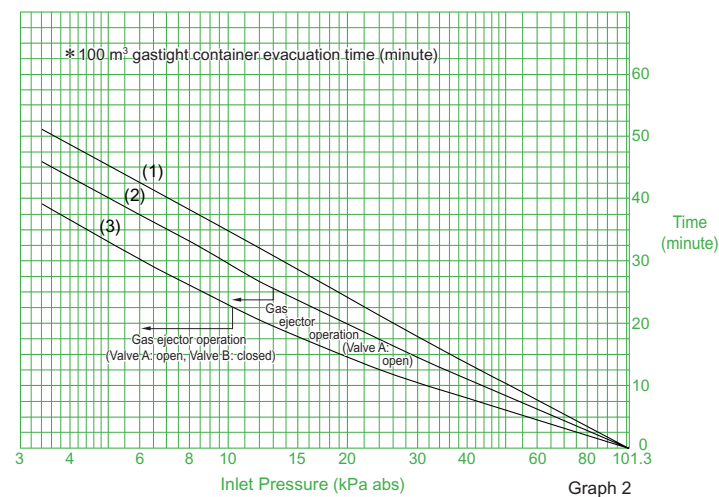


Fig. 3 shows the flow of fully-automated operation. In an inlet pressure range of 101.3 kPa abs to 10 kPa abs using a vacuum switch, Valve A is closed and Valve B is opened. When the inlet pressure is 10 kPa abs or lower, Valve A is opened and Valve B is closed.

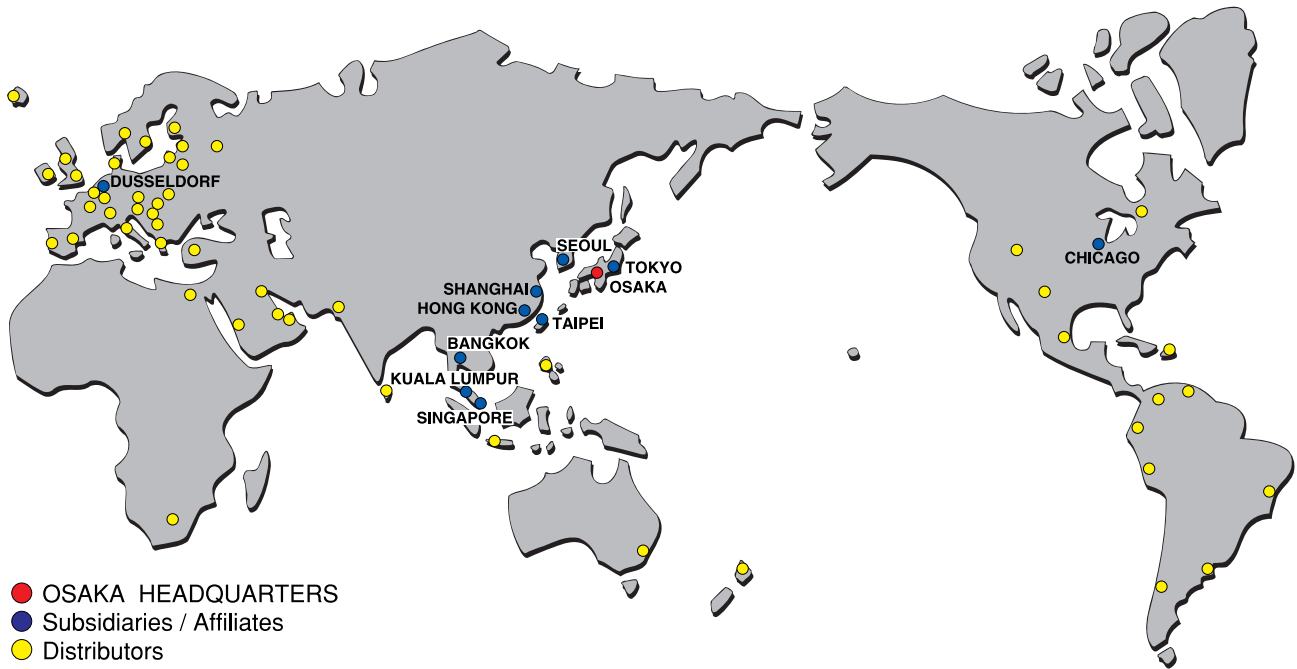
Inquiry Sheet

For specifications other than those given in this catalog, please use a copy of this sheet, fill in the necessary items, and send it to us by facsimile. We will then select the pump that is most suitable for your system.



Company name			Date	
Address			Phone	
Department/Section			FAX	
Person in charge		E-Mail		
Product required	<input type="checkbox"/> Standalone product	<input type="checkbox"/> Unit	<input type="checkbox"/> Other ()	
Application				
Pump type	<input type="checkbox"/> Vacuum pump	<input type="checkbox"/> Compressor		
Delivery record	<input type="checkbox"/> Delivered	<input type="checkbox"/> Undelivered	Date of delivery (on or around)	
	Serial No. ()		Bore diameter ()	
Quantity				
Inlet pressure	<input type="checkbox"/> mmHg <input type="checkbox"/> kPa <input type="checkbox"/> kgf/cm² (<input type="checkbox"/> abs <input type="checkbox"/> G)			
Outlet pressure	<input type="checkbox"/> mmHg <input type="checkbox"/> kPa <input type="checkbox"/> kgf/cm² (<input type="checkbox"/> abs <input type="checkbox"/> G)			
Suction capacity	<input type="checkbox"/> m³/min <input type="checkbox"/> kg/h (for kg/h, specify average molecular weight)			
Gas name	<input type="checkbox"/> Air <input type="checkbox"/> Air — Water vapor saturated <input type="checkbox"/> Other ()			
Gas temperature	°C			
Seal liquid	Name	<input type="checkbox"/> Water <input type="checkbox"/> Other ()		
	Temperature	°C		
	Density	(For water, this item is not required.)		kg/m³
	Specific heat	(For water, this item is not required.)		kJ/kg · K
	Viscosity	(For water, this item is not required.)		mPa · s
Thermal conductivity	(Specify this item only when a cooling unit is required. For water, this item is not required.)			W/m · K
Power supply frequency	<input type="checkbox"/> 50 Hz <input type="checkbox"/> 60 Hz			
Voltage				
Explosion-proof				
Material of main parts	(<input type="checkbox"/> Standard <input type="checkbox"/> As follows)			
Material of main parts	Casing		Shaft	
	Side cover		Sleeve	
	Impeller		Gasket	
	Port plate/passage			
Shaft seal type	<input type="checkbox"/> Standard <input type="checkbox"/> Specified (<input type="checkbox"/> Gland packing <input type="checkbox"/> Single mechanical seal <input type="checkbox"/> Double mechanical seal)			
Shaft seal material	<input type="checkbox"/> Standard <input type="checkbox"/> Specified ()			
Accessories				
Common base	<input type="checkbox"/> Required <input type="checkbox"/> Not required	Circulation pump	<input type="checkbox"/> Required <input type="checkbox"/> Not required	
Shaft coupling	<input type="checkbox"/> Required <input type="checkbox"/> Not required	Seal liquid strainer	<input type="checkbox"/> Required <input type="checkbox"/> Not required	
Separator	<input type="checkbox"/> Required <input type="checkbox"/> Not required	Seal liquid pressure gauge	<input type="checkbox"/> Required <input type="checkbox"/> Not required	
Liquid level gauge	<input type="checkbox"/> Required <input type="checkbox"/> Not required	Gas inlet strainer	<input type="checkbox"/> Required <input type="checkbox"/> Not required	
Thermometer	<input type="checkbox"/> Required <input type="checkbox"/> Not required	Gas check valve	<input type="checkbox"/> Required <input type="checkbox"/> Not required	
Supply valve	<input type="checkbox"/> Required <input type="checkbox"/> Not required			
Overflow valve	<input type="checkbox"/> Required <input type="checkbox"/> Not required			
Seal liquid cooler	<input type="checkbox"/> Required <input type="checkbox"/> Not required			
Condition of cooling water	Name		Density	kg/m³
	Temperature	°C	Specific heat	kJ/kg · K
	Thermal conductivity	W/m · K	Viscosity	mPa · s
	Contamination factor	m² · K/W	Contamination factor (seal liquid side)	m² · K/W
Remarks				
		Spare parts		

Transcending Language and Borders



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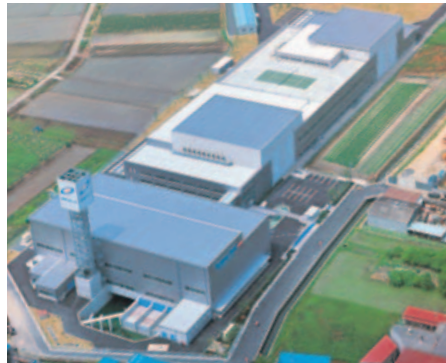
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