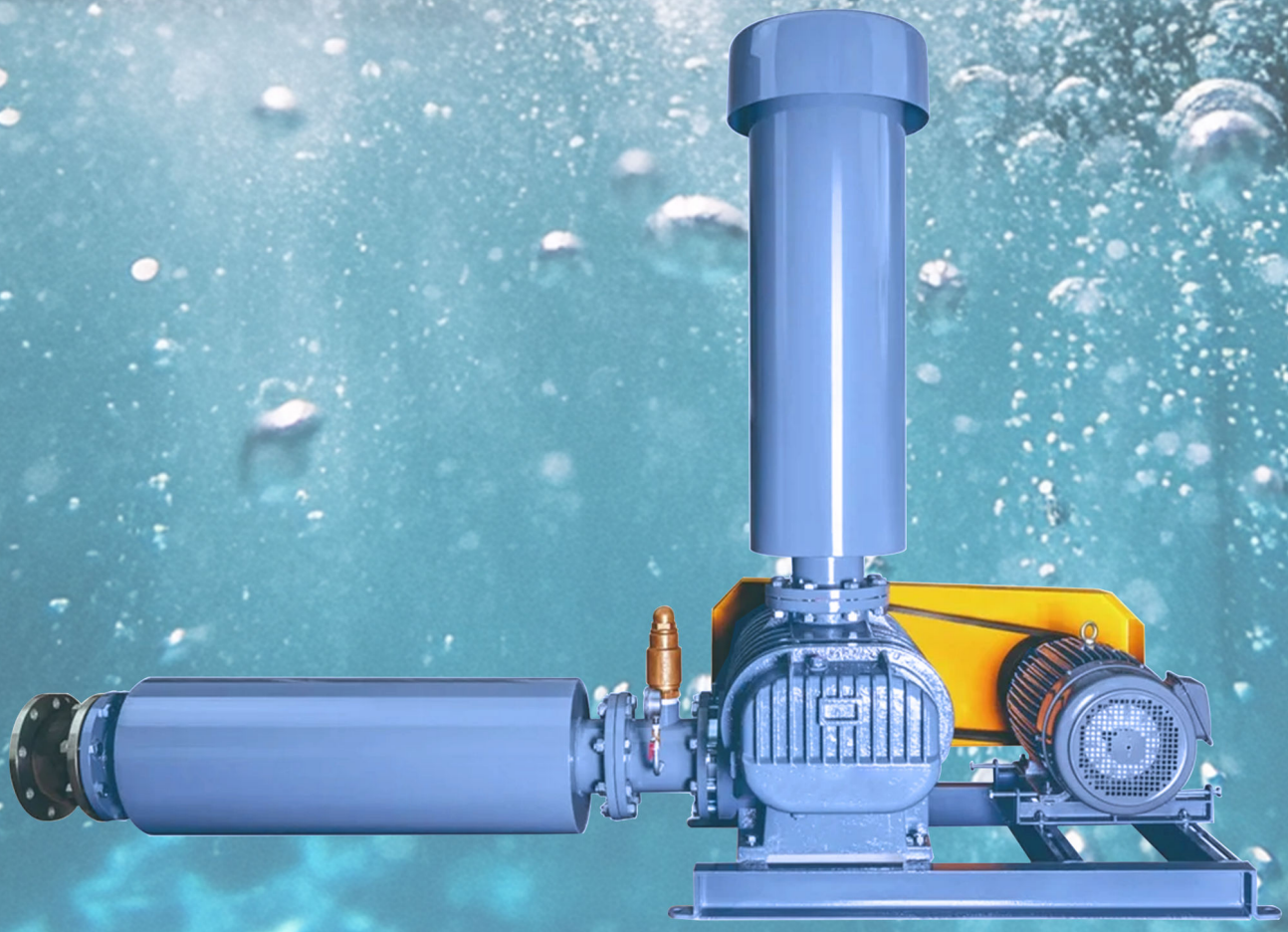
MARO

THREE LOBES BLOWER



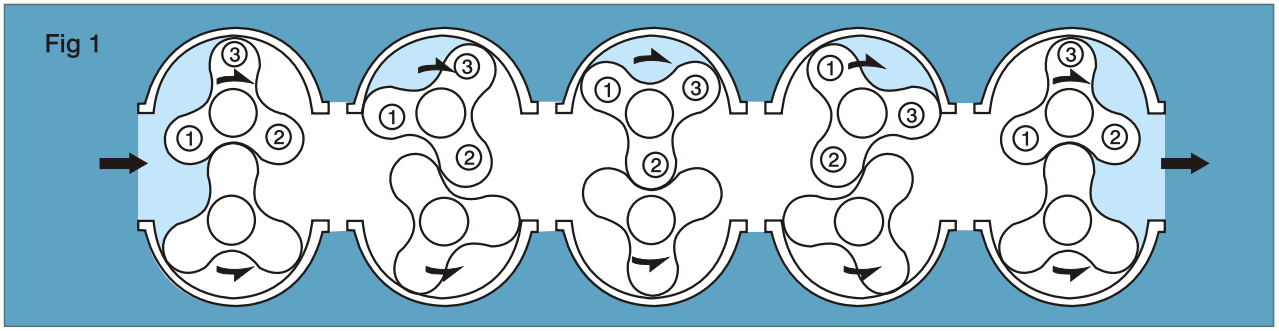
THREE LOBES BLOWER

GENERAL

MARO 3 LOBES ROOTS BLOWERS, Know also as POSITIVE DISPLACEMENT ROTARY LOBE PUMPS, are used in conditions ranging from strong vacuum to high pressure in all branches of industry, especially in waste watertreatment plant. The simple design, easy handling, and stable performance make possible a wide range of applications.Their main characteristic is to produce a constant flow of gas at different pressure and efficiencies are normally high.Another important feature is that the pumped gas does not get contaminated because there are no lubricants in the area in which the compression occurs. The blowers consist of a cast-iron casing in which two rotors with conjugateshape rotate and are sync-hronized by a set of timing gears. During the rotation, there is no contact either between thelobes or between the lobes and the casing. Two front and rear side covers close each casing: the bearing of the shaftsand the sealing devices to avoid gas leakage are located there.

OPERATING PRINCEPLE

The two three-lobe rotors rotate one opposite to the other; their movement is synchronized by a set of timing gears. The geometric configuration of the lobes allows them to have, at any moment, a generatrix in common; due to very low machine tolerance, this common generatrix acts also as a seal device for both rotors. During the operation, one or two lobes of each rotor come into contact with the internal surface of the casing: this create a chamber in which the gas is trapped. As the rotation continues, the trapped gas moves along until it reaches the position of discharging port. The two rotors make six intake and exhaust cycles per revolution; therefore the capacity of the MARO roots blower is determined by its operating speed and increase proportionally with the speed, but is independent from the pressure differential between inlet and outlet ports.



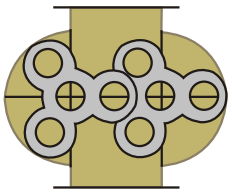
ADVANTAGES OF 3 LOBES DESIGN

Owing to new 3 lobes' rotor design, the reverse flow pressure variation period is only 2/3 of that of a conventional 2 lobes' rotor, the peak pressure value is also lower. So the noise and pressure pulsation are greatly limited.

Advantages of MARO 3 LOBES ROOTS BLOWER are as follows:

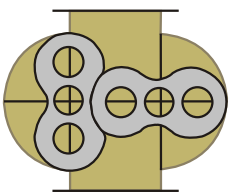
1. Less back flow, steady air flow rate, lower vibration and noise.
2. Discharge pressure pulsation are reduced, so lighter loading of bearings and timing gears ensures the long servicing life.
3. Running on the same operating speed, the 3 lobes blower can deliver large air flow and volume than conventional 2 lobes type.
4. Adequate clearance between the rotors and the rotors with the casing ensure no contact during operation, and this make the efficiency even higher.
5. The precision of rotors is fully controlled and variation of precision between blowers is almost nil because the rotors are produced by utilizing a precision NC machine.
6. The rotors are dynamically balanced in the fabrication stage already, so these rotors are almost free from vibrations.

3-Lobes Cylinder



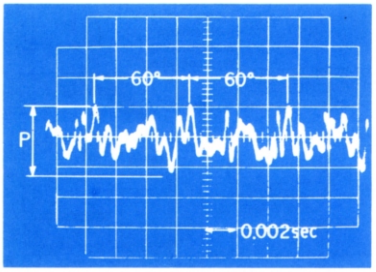
(Fig.1)

2-Lobes Cylinder

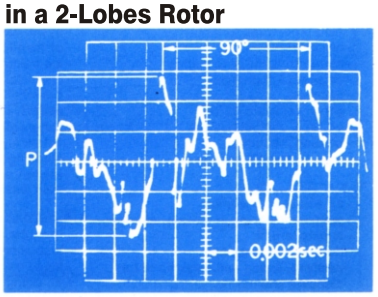


(Fig.2)

Discharge Pressure Variation in a 3-Lobes Rotor



Discharge Pressure Variation in a 2-Lobes Rotor



Note: Under the condition of Discharge Pressure at 5000 mmAq and Revolution of 1560 r.p.m. for both blowers.

MARO RL

THREE LOBES BLOWER



ADVANCED BLOWE DESIGN

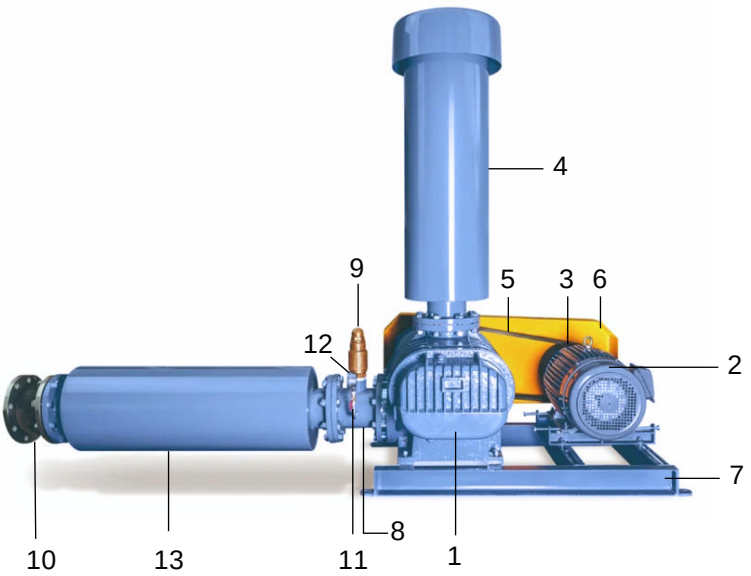
Maro Roots-type Blower is the innovative positive displacement rotary blow with three-lobe, combined with CNC and 3D machine to make precise rotors, precision and durability throughout the manufacturing of our rotors, while also 20% longer bearing life and reducing the 5dB noise, energy consumption and vibrations.

STANDARD ACCESSORIES

NO	NAME
1	BLOWER BODY
2	MOTOR
3	BLOWER PULLEY
4	SUCTION SILENCER SET (WITH AIRFILTER & COVER)
5	V-BELT
6	BELT COVER
7	BASE PLATE
8	T-TYPE REDUCER
9	PRESSURE SAFETY VALVE
10	FLEXIBLE JOINT
11	BALL VALVE
12	PRESSURE GAUGE
13	DISCHARGE SILENCER

FEATURE

- Stable air flow and fewer pressure variations
- Clean air; with no oil dirty particles
- Construction is simple and easy to maintain
- Bearings and gears are lubricated with oil on end side of the blower
- All of product can be used for OEM
- Proven design, backed by a 1-year warranty.

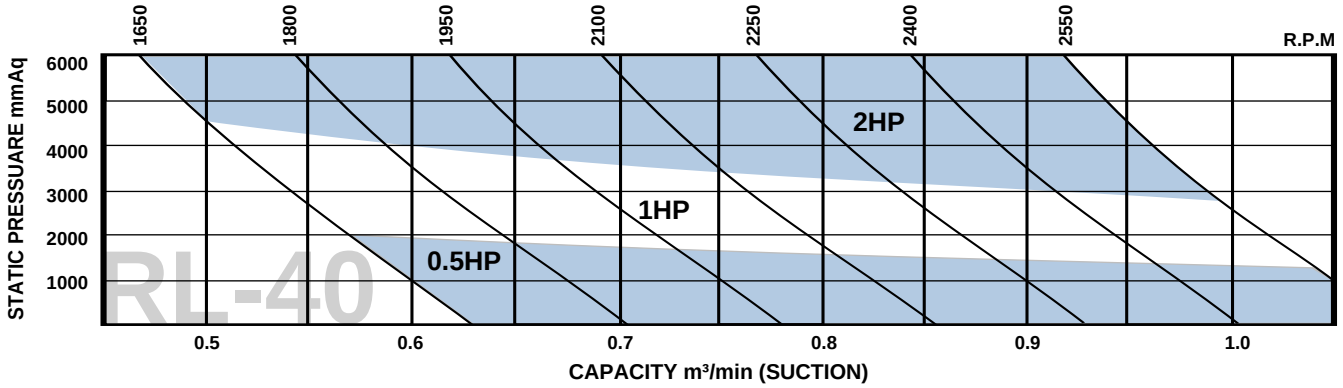


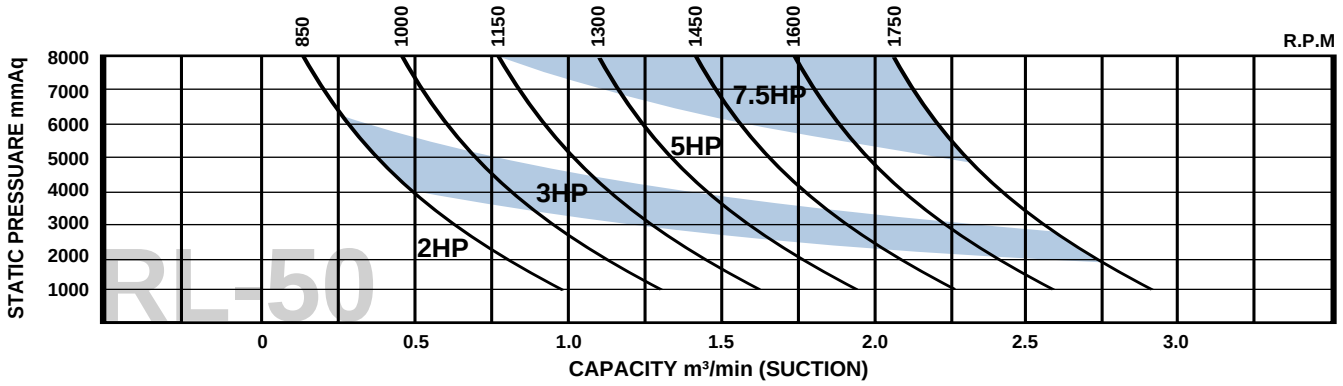
RL PERFORMANCE TABLE (FOR PRESSURE OPERATION)

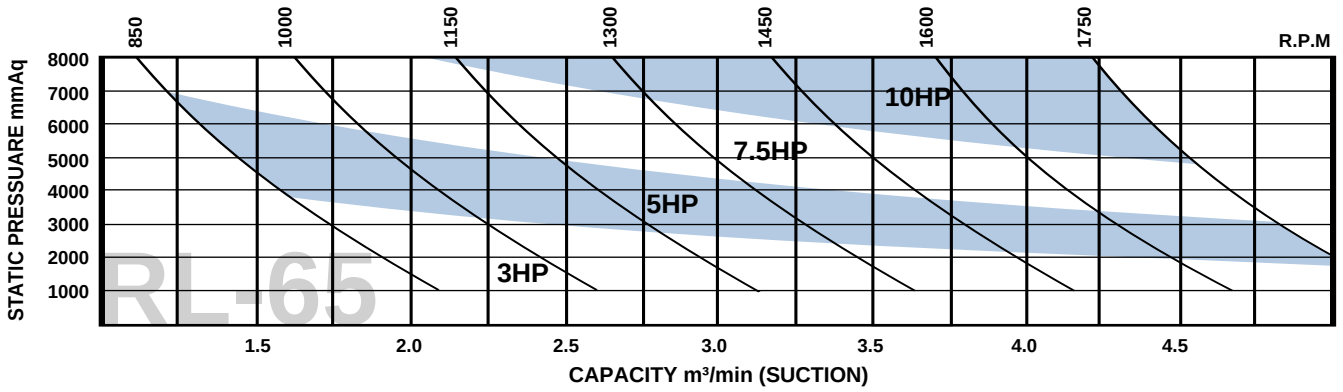
MODEL	Bore	Revolution	1000mmAq 9.8kPa		2000mmAq 19.6kPa		3000mmAq 29.4kPa		4000mmAq 39.4kPa		5000mmAq 49kPa		6000mmAq 58.8kPa		7000mmAq 68kPa		8000mmAq 78.4kPa	
	Inch(mm)	R.P.M	m³/min	kW	m³/min	kW	m³/min	kW	m³/min	kW	m³/min	kW	m³/min	kW	m³/min	kW	m³/min	kW
RL-40	1½ (40)	1650	0.60	0.19	0.57	0.37	0.54	0.53	0.51	0.67	0.49	0.81	0.48	0.94				
		1800	0.68	0.21	0.64	0.40	0.61	0.57	0.59	0.74	0.57	0.88	0.55	1.02				
		1950	0.75	0.23	0.71	0.43	0.69	0.62	0.66	0.80	0.64	0.96	0.62	1.11				
		2100	0.83	0.24	0.79	0.47	0.76	0.67	0.74	0.86	0.71	1.03	0.70	1.19				
		2250	0.90	0.26	0.86	0.50	0.84	0.72	0.81	0.92	0.79	1.11	0.77	1.28				
		2400	0.97	0.28	0.94	0.53	0.91	0.77	0.88	0.98	0.86	1.18	0.85	1.36				
		2550	1.05	0.30	1.01	0.57	0.98	0.81	0.96	1.04	0.94	1.25	0.92	1.45				
RL-50	2 (50)	850	0.99	0.41	0.79	0.80	0.64	1.16	0.50	1.51	0.38	1.84	0.29	2.15	0.21	2.45	0.15	2.74
		1000	1.31	0.48	1.11	0.94	0.96	1.37	0.82	1.77	0.70	2.16	0.61	2.53	0.53	2.88	0.47	3.22
		1150	1.63	0.56	1.44	1.08	1.28	1.57	1.15	2.04	1.02	2.49	0.93	2.91	0.86	3.32	0.79	3.71
		1300	1.95	0.63	1.76	1.22	1.61	1.78	1.47	2.31	1.34	2.81	1.25	3.29	1.18	3.75	1.12	4.19
		1450	2.27	0.70	2.08	1.36	1.93	1.98	1.79	2.57	1.67	3.13	1.58	3.67	1.50	4.18	1.44	4.67
		1600	2.60	0.77	2.40	1.50	2.25	2.19	2.11	2.84	1.99	3.46	1.90	4.05	1.82	4.61	1.76	5.16
		1750	2.92	0.85	2.72	1.64	2.57	2.39	2.43	3.11	2.31	3.78	2.22	4.43	2.14	5.05	2.08	5.64
RL-65	2½ (65)	850	2.07	0.62	1.89	1.21	1.71	1.76	1.55	2.29	1.41	2.78	1.29	3.26	1.19	3.71	1.09	4.15
		1000	2.58	0.73	2.41	1.42	2.22	2.07	2.07	2.69	1.93	3.27	1.81	3.83	1.71	4.37	1.60	4.88
		1150	3.10	0.84	2.93	1.64	2.74	2.38	2.58	3.09	2.45	3.77	2.33	4.41	2.22	5.03	2.12	5.62
		1300	3.62	0.95	3.45	1.85	3.26	2.69	3.10	3.50	2.96	4.26	2.84	4.99	2.74	5.68	2.64	6.35
		1450	4.13	1.06	3.96	2.06	3.77	3.01	3.62	3.90	3.48	4.75	3.36	5.56	3.26	6.34	3.15	7.08
		1600	4.65	1.17	4.48	2.28	4.29	3.32	4.13	4.30	4.00	5.24	3.88	6.14	3.77	6.99	3.67	7.81
		1750	5.17	1.28	5.00	2.49	4.81	3.63	4.65	4.71	4.51	5.73	4.39	6.71	4.29	7.65	4.19	8.55
RL-80	3 (80)	850	3.24	1.12	2.87	2.14	2.54	3.08	2.23	3.94	1.95	4.73	1.70	5.47	1.48	6.15	1.28	6.79
		1000	4.14	1.32	3.77	2.52	3.44	3.62	3.13	4.63	2.85	5.57	2.60	6.44	2.38	7.24	2.18	7.99
		1150	5.04	1.51	4.67	2.90	4.34	4.16	4.03	5.33	3.75	6.40	3.50	7.40	3.28	8.33	3.08	9.19
		1300	5.94	1.71	5.57	3.27	5.24	4.71	4.93	6.02	4.65	7.24	4.40	8.37	4.18	9.41	3.98	10.39
		1450	6.84	1.91	6.47	3.65	6.14	5.25	5.83	6.72	5.55	8.07	5.30	9.33	5.08	10.50	4.88	11.58
		1600	7.74	2.11	7.37	4.03	7.04	5.79	6.73	7.41	6.45	8.91	6.20	10.30	5.98	11.58	5.78	12.78
		1750	8.64	2.30	8.27	4.41	7.94	6.33	7.63	8.11	7.35	9.75	7.10	11.26	6.88	12.67	6.68	13.98
RL-100	4 (100)	850	5.80	1.57	5.19	3.00	4.65	4.31	4.16	5.51	3.74	6.63	3.36	7.66	3.03	8.62	2.74	9.51
		1000	7.06	1.84	6.45	3.53	5.91	5.07	5.42	6.49	5.00	7.80	4.62	9.01	4.29	10.14	4.00	11.19
		1150	8.32	2.12	7.71	4.05	7.17	5.83	6.68	7.46	6.26	8.97	5.88	10.36	5.55	11.66	5.26	12.86
		1300	9.58	2.40	8.97	4.58	8.43	6.59	7.94	8.43	7.52	10.14	7.14	11.71	6.81	13.18	6.52	14.54
		1450	10.84	2.67	10.23	5.11	9.69	7.53	9.20	9.41	8.78	11.31	8.40	13.06	8.07	14.70	7.78	16.22
		1600	12.10	2.95	11.49	5.64	10.95	8.11	10.46	10.38	10.04	12.47	9.66	14.42	9.33	16.22	9.04	17.90
		1750	13.36	3.23	12.75	6.17	12.21	8.87	11.72	11.35	11.30	13.64	10.92	15.77	10.59	17.74	10.30	19.57
RL-125	5 (125)	750	10.29	2.59	9.42	4.96	8.62	7.13	7.88	9.12	7.25	10.97	6.66	12.67	6.11	14.26	5.65	15.74
		900	12.69	3.11	11.81	5.95	11.01	8.55	10.28	10.95	9.64	13.16	9.05	15.21	8.51	17.11	8.04	18.89
		1050	15.08	3.63	14.20	6.94	13.41	9.98	12.67	12.77	12.03	15.35	11.44	17.74	10.90	19.97	10.44	22.04
		1200	17.48	4.15	16.60	7.93	15.80	11.40	15.07	14.59	14.43	17.55	13.84	20.28	13.29	22.82	12.83	25.18
		1350	19.87	4.66	18.99	8.92	18.19	12.83	17.46	16.42	16.82	19.74	16.23	22.81	15.69	25.67	15.23	28.33
		1500	22.26	5.18	21.39	9.91	20.59	14.25	19.85	18.24	19.22	21.93	18.63	25.35	18.08	28.52	17.62	31.48
		1650	24.66	5.70	23.78	10.90	22.98	15.68	22.25	20.07	21.61	24.13	21.02	27.88	20.48	31.38	20.01	34.63
RL-150	6 (150)	750	13.32	3.34	12.62	6.39	11.98	9.19	11.40	11.76	10.87	14.14	10.39	16.34	10.00	18.39	9.61	20.30
		900	16.40	4.01	15.70	7.67	15.06	11.03	14.49	14.11	13.95	16.97	13.48	19.61	13.09	20.07	12.70	24.36
		1050	19.49	4.68	18.79	8.95	18.15	12.86	17.58	16.47	17.04	19.80	16.57	22.88	16.18	25.75	15.78	28.41
		1200	22.58	5.35	21.88	10.23	21.24	14.70	20.66	18.82	20.13	22.62	19.65	26.15	19.26	29.42	18.87	32.47
		1350	25.66	6.02	24.96	11.50	24.33	16.54	23.75	21.17	23.21	25.45	22.74	29.42	22.35	33.10	21.96	36.53
		1500	28.75	6.68	28.05	12.78	27.41	18.38	26.84	23.52	26.30	28.28	25.83	32.69	25.44	36.78	25.05	40.59
		1650	31.84	7.35	31.14	14.06	30.50	20.21	29.92	25.88	29.39	31.11	28.91	35.96	28.52	40.46	28.13	44.65
RL-200	8 (200)	600	17.01	4.84	15.95	9.27	15.04	13.32	14.21	17.06	13.53	20.51	12.93	23.71	12.40	26.68	11.98	29.45
		750	22.68	6.05	21.62	11.58	20.71	16.65	19.88	21.32	19.20	25.64	18.60	29.64	18.07	33.36	17.65	36.82
		900	28.35	7.27	37.29	13.90	26.38	19.98	25.55	25.59	24.87	30.77	24.27	35.57	23.74	40.03	23.32	44.18
		1050	34.02	8.48	32.96	16.22	32.05	23.32	31.22	29.85	30.54	35.89	29.94	41.49	29.41	46.70	28.99	51.55
		1200	39.69	9.69	38.63	18.53	37.72	26.65	36.89	34.12	36.21	41.02	35.61	47.42	35.08	53.37	34.66	58.91
		1350	45.36	10.90	44.30	20.85	43.39	29.98	42.56	38.38	41.88	46.15	41.28	53.35	40.75	60.04	40.33	66.27
		1500	51.03	12.11	49.97	23.17	49.06	33.31	48.23	42.65	47.55	51.28	46.95	59.28	46.42	66.71	46.00	73.64

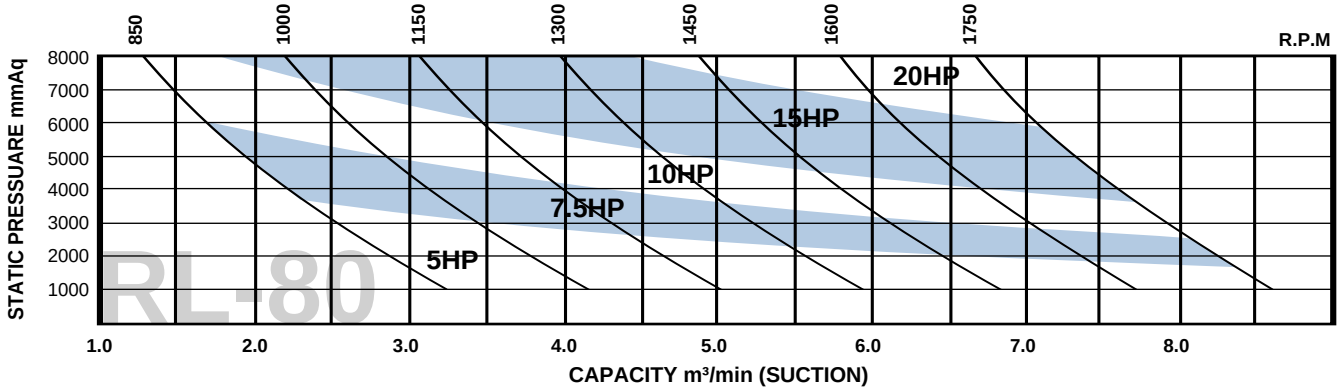
Note:
1. The values are expressed as required power including drive power for the transmission unit.
2. The rated range for the air volume at specified ± 5%.
3. When the design pressure is 8000 mmAq and above, shall be applied RW type (water-cooling design)

RL PERFORMANCE CURVE (FOR PRESSURE OPERATION)

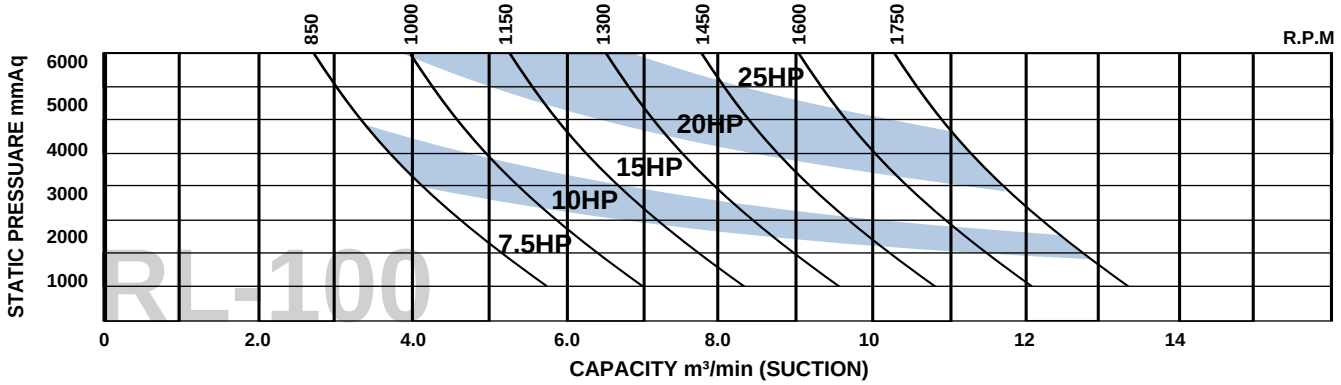


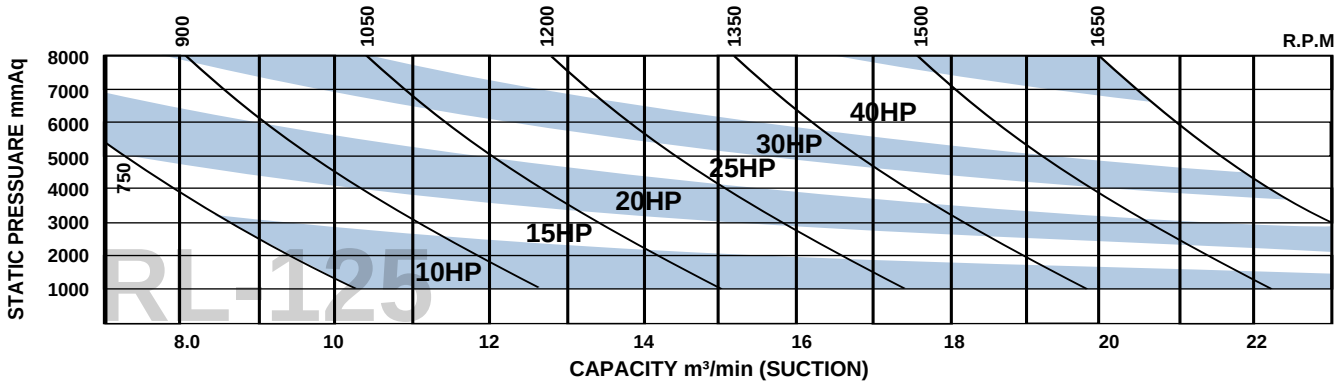


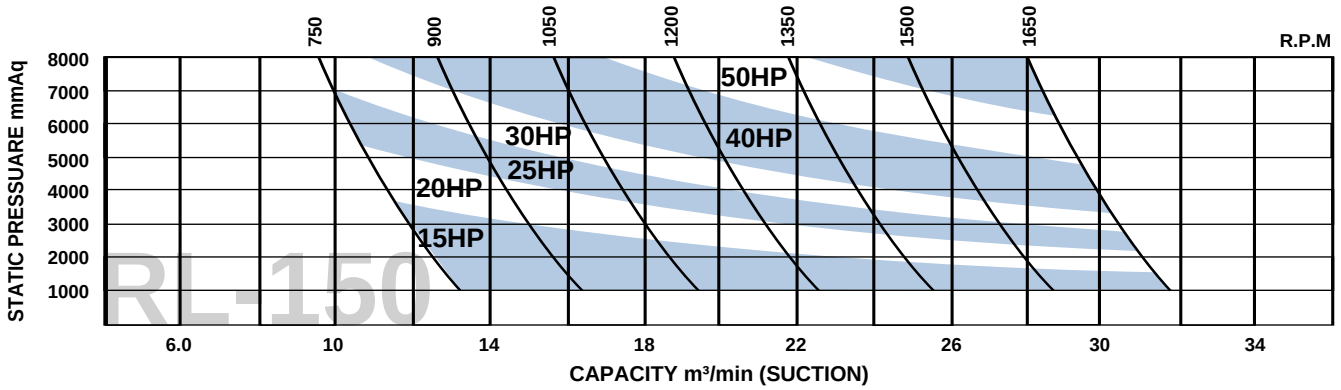


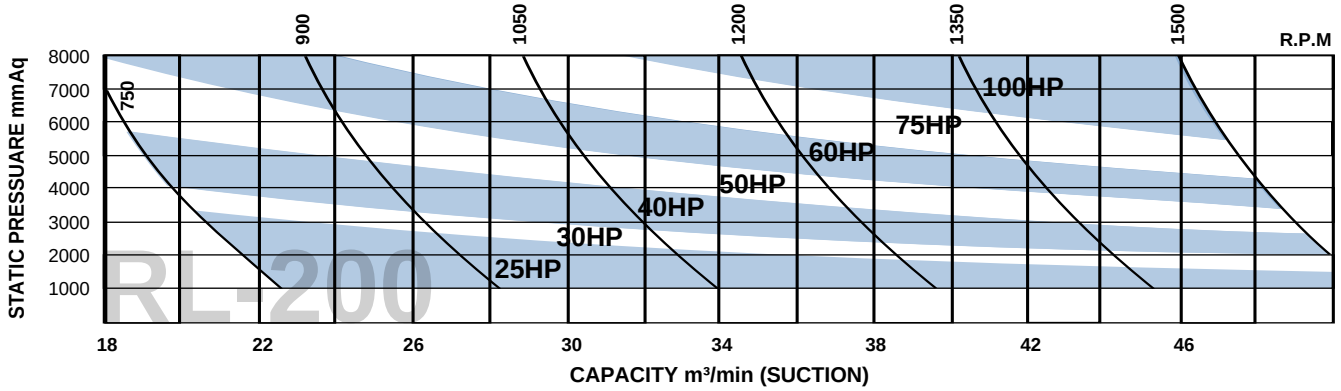


RL PERFORMANCE CURVE (FOR PRESSURE OPERATION)









RL NOISE LEVER

1. **Measure method (1.0m On Machine Side)**

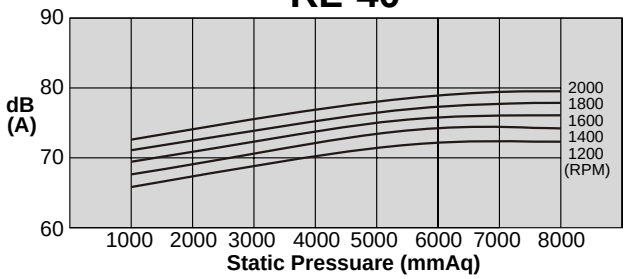
   For your information, the following noise reading are the average value measured at a distance 1m from the MARO blowers under standard condition.

2. **Noise prevention method**

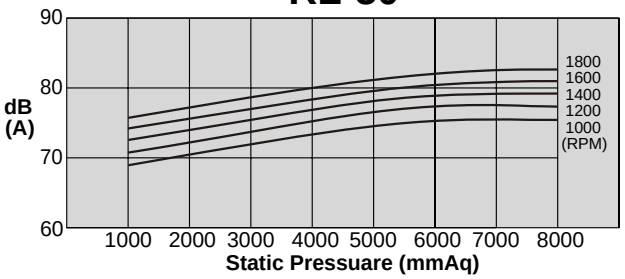
   The naise of MARO blower has direct relationship with the factors such as blower size, discharge pressure and R.P.M. To get even greater effectiveness in noise reduction, please refer to some methods as follow:

   1. Establish the silencer to inlet and outlet to prevent the noise of air flow.
   2. Decrease the revolution of blower to reduce the noise of it.
   3. Use the expansion joint or the rubber vibration isolator to prevent the surging and vibration.

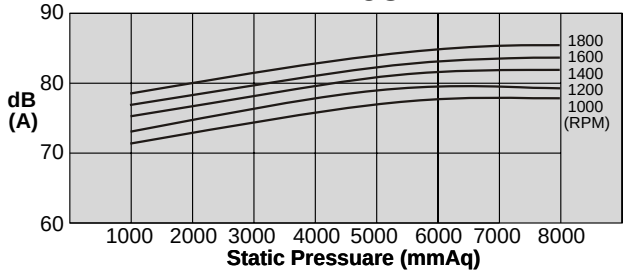
RL-40



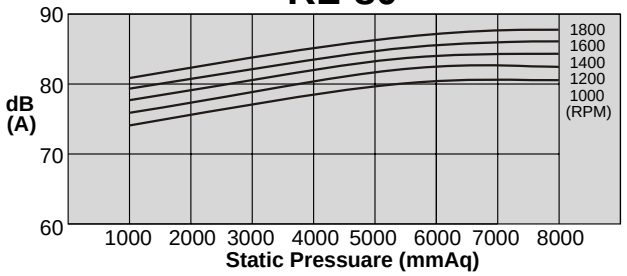
RL-50



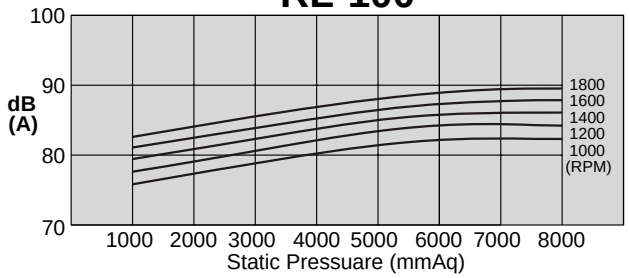
RL-65



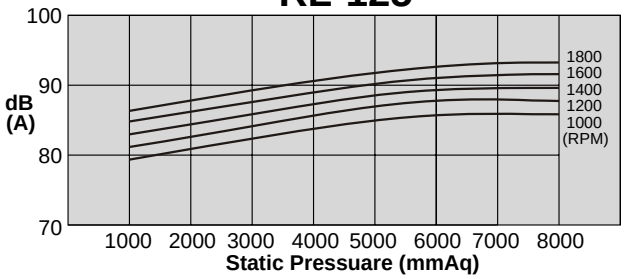
RL-80



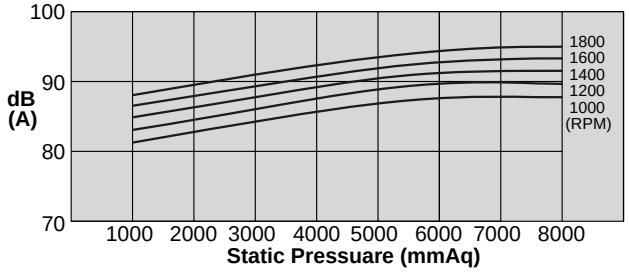
RL-100



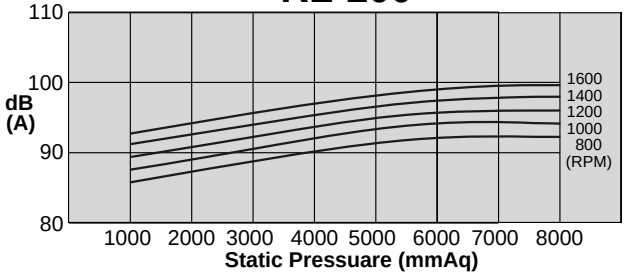
RL-125



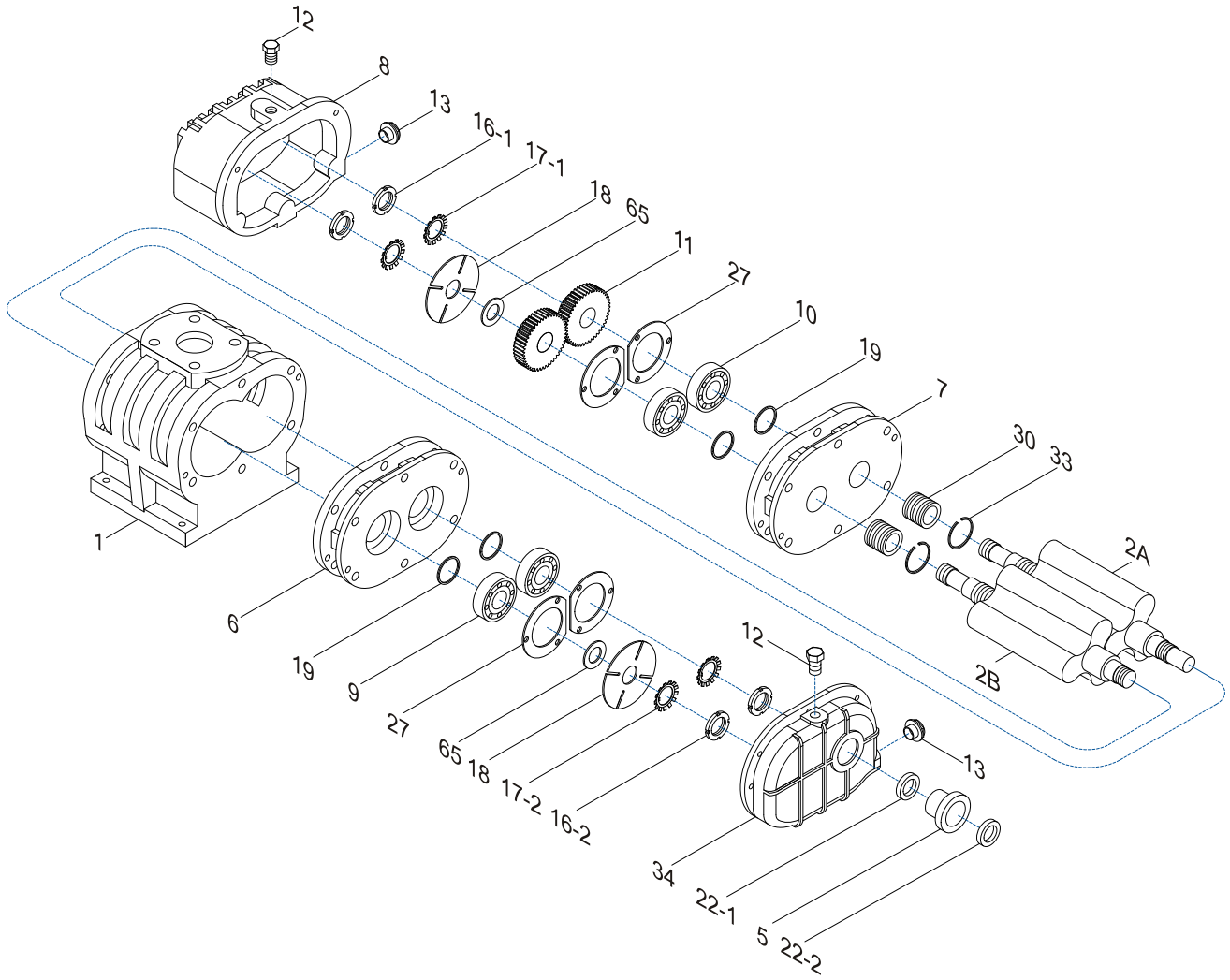
RL-150



RL-200



RL STRUCTURAL DRAWING



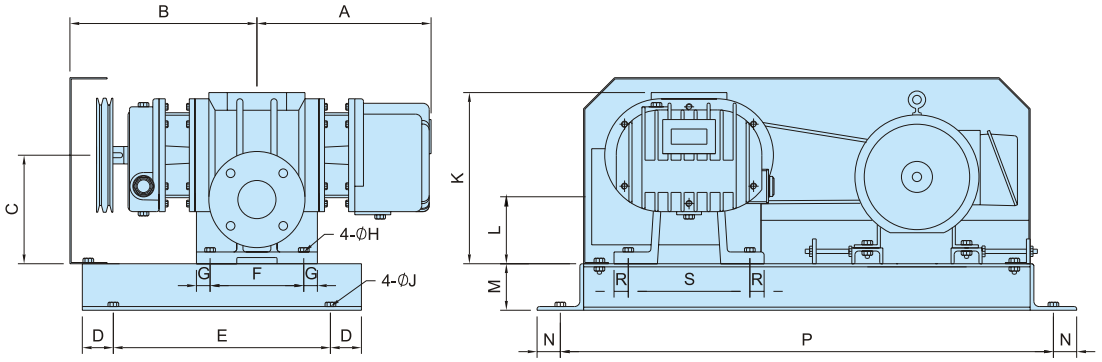
STANDARD ACCESSORIES

NO.	NAME	MATERIAL	Q'ty	FITTING MODEL
1	CASING	FC25	1	
2A	ROTOR+DRIVE SHAFT	FC25+SCM440	1	
2B	ROTOR+DRIVEN SHAFT	FC25+SCM440	1	
5	SEAL COVER	FC25	4	RL-80~150
6	FRONT SIDE COVER	FC25	1	
7	REAR SIDE COVER	FC25	1	
8	GEAR BOX	FC25	1	
9	FRONT BEARING	SUJ2	2	
10	REAR BEARING	SUJ2	2	
11	TIMING GEAR	SNCM220	2	
12	LUBRICATION PLUG	S45C	2	
13	OIL GAUGE	GLASS	2	

NO.	NAME	MATERIAL	Q'ty	FITTING MODEL
16-1	LOCK NUT	S45C	2	
16-2	LOCK NUT	S45C	2	
17-1	SPRING WASHER	SS41	2	
17-2	SPRING WASHER	SS41	2	
18	OIL SPLASH	SS41	2	
19	V SEAL	SS41	4	
22-1	OIL SEAL	SS41	1	
22-2	OIL SEAL	SS41	1	
27	BEARING COVER	SS41	4	
30	BEARING HOLDER	SCM440	2	RL-150,RL-200
33	PISTON RING	FC25	2	(OPTIONAL)
34	FRONT COVER	FC25	1	
65	WASHER	SS41	2	

RL OUTLINE DIMENSIONS

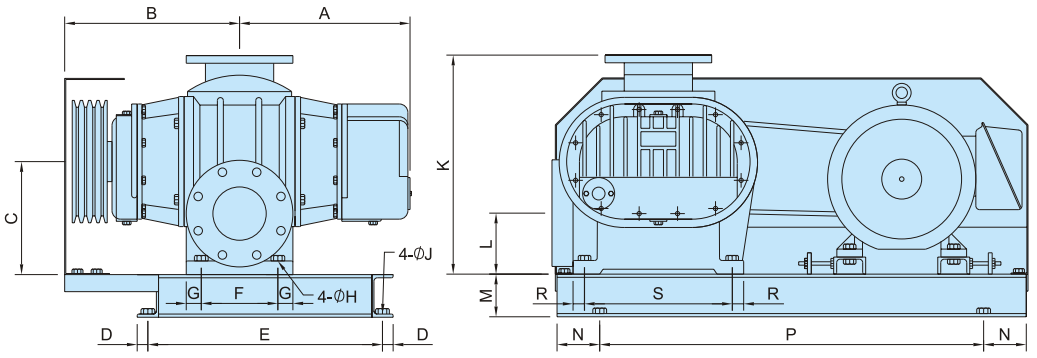
DIMENTIONS OF RL-40, 50, 65



UNIT: mm

MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	W.T kg
RL-40	162	185	120	15	350	80	15	10	12	340	40	43	50	400	15	135	1.5	25
RL-50	240	270	168	20	370	125	15	15	15	356	90	75	18	734	15	200	2	76
RL-65	280	290	173	20	370	210	15	15	15	356	95	75	18	734	15	200	2.5	94

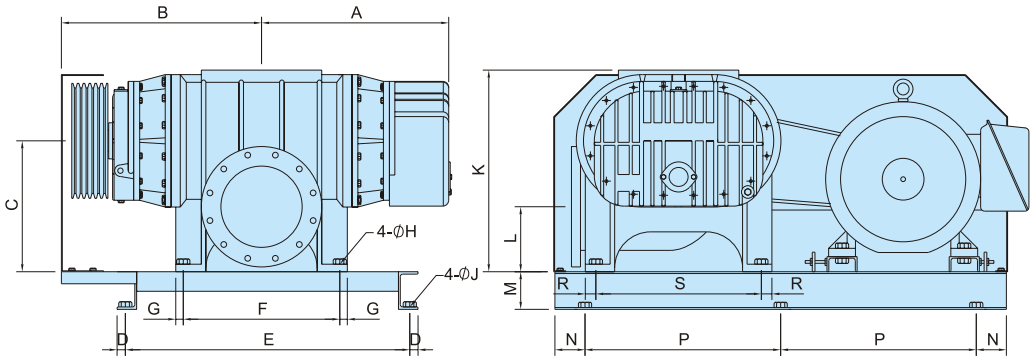
DIMENTIONS OF RL-80, 100, 125, 150



UNIT: mm

MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	W.T kg
RL-80	315	375	220	20	450	190	25	19	15	395	102	75	18	934	25	250	3	167
RL-100	365	425	220	20	450	290	25	19	15	395	115	75	18	934	25	250	4	193
RL-125	445	485	300	25	605	320	25	19	19	515	155	100	20	1190	25	350	5	353
RL-150	500	540	300	25	605	425	25	19	19	515	155	100	20	1190	25	350	6	418

DIMENTIONS OF RL-200

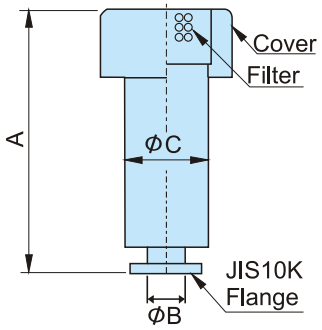


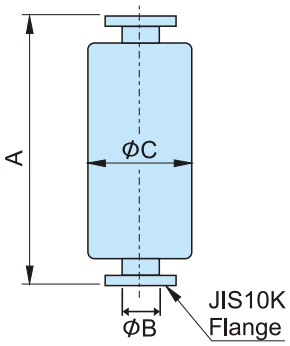
UNIT: mm

MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	W.T kg
RL-200	515	495	363	30	730	270	35	23	19	650	190	125	200	550	40	550	8	720

W.T kg: Main body weight

RL OUTLINE DIMENSIONS





SUCTION SILENCER UNIT: mm

MODEL	A	B	C	SUITABILYTY
S050	680	50	165	RL-40, RL-50
S065	680	65	165	RL-65
S080	800	80	216	RL-80
S100	820	100	267	RL-100
S125	1300	125	350	RL-125
S150	1300	150	350	RL-150
S200	2030	200	525	RL-200

DISCHARGE SILENCER UNIT: mm

MODEL	A	B	C	SUITABILYTY
D050	660	50	165	RL-40, RL-50
D065	660	65	165	RL-65
D080	760	80	216	RL-80
D100	760	100	267	RL-100
D125	1190	125	350	RL-125
D150	1190	150	350	RL-150
D200	1735	200	525	RL-200

RL APPLICATIONS

- PIPE CLEANING
- FURNACE
- PURIFICATION TANK
- BOTTLE WASHER
- GAS BURNER
- PLATING TANK
- FERTILIZER PRODUCTION USING MANURE FERMENTATION
- AIRBRUSH
- SANDBLASTING
- PRINTING PRESS PAPER FEED
- FISHERY POND ENZYME SUPPLY
- SPRAYING
- BACKWASH
- THERAPEUTIC BATH
- STAMPING DIE
- BALLAST PUMP

