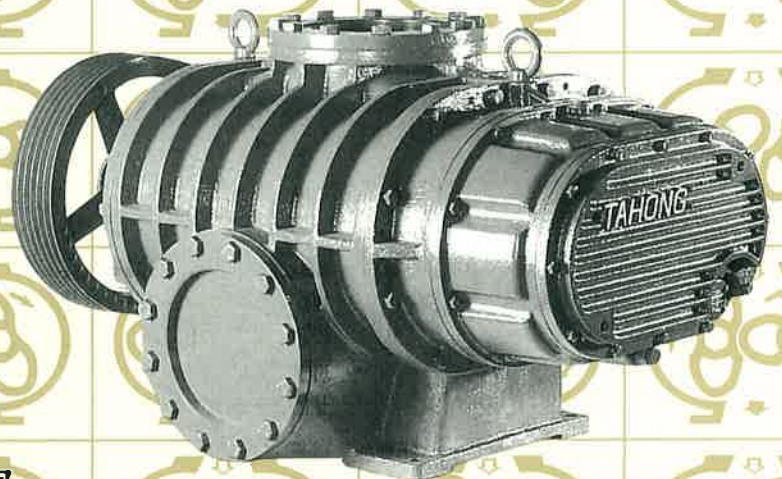


# ROOTS BLOWERS

## 魯氏鼓風機

RS, RSV Series



大豐機器股份有限公司  
TA HONG MACHINERY CO., LTD.

# 沿革 History

大豐創業於1945年，是送排風機、魯氏鼓風機、真空幫浦及真空排氣系統的專業製造廠。大豐魯氏鼓風機於二十多年前即研發成功，為國內自製魯氏鼓風機的先鋒，經多年製造改良，產品品質穩定、效率高、風量足、零件標準化、保養容易，尤其噪音改善方面更榮獲國家低噪音設計專利，且因國內外需求大增，製程上已步入量產、自動化。優良精密的機器配合豐富的經驗，大豐能針對您的需要，提供完善滿意的建議與服務。

Established in 1945, TAHONG Co., Ltd. is a promising company specializing in the production of fans, Roots blowers, vacuum pumps, and vacuum pumping systems. TAHONG's Roots blowers, had been successfully developed 2 decades ago, have pioneered domestic manufacturing of such products, and after years of improvement, have achieved the requirements of stable quality high efficiency, enough capacity, standardized parts, and easy maintenance. Noise reduction in particular has obtained the national patent of low noise design. To cope with the increasing need of the market, the process of automatic and quantitative manufacturing has been put into practice. Equipped with precise machinery and abundant experience, TAHONG will always provide the customers with considerate and pleasing service.

R S : 魯氏鼓風機 ROOTS BLOWER

RSV : 魯氏真空幫浦 ROOTS VACUUM PUMP

## ● 透浦送風機

Turbo Fans & Blowers

## ● 多段式透浦鼓風機

Multi-stage Turbo Blowers

## ● 迷你多段式透浦送風機

Mini Type Multi-stage Turbo Blowers

## ● 定載送風機

Limit-load Fans

## ● 徑向送風機

Radial Fans

## ● 多翼送風機

Multi-blade Fans

## ● 軸流送風機

Axial-flow Fans

## ● 筒狀離心送風機

Centri-line (Duct) Fans

## ● 斜流送風機

Mixed-flow Fans

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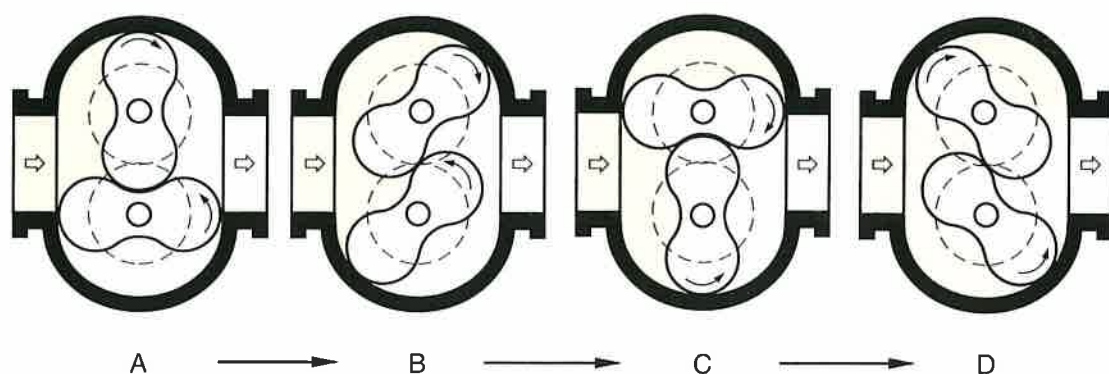


## 作用原理 Working Principle

魯氏鼓風機是一種容積形的鼓風機，亦可做為吸氣用的真空幫浦。如圖1，它是由兩個形狀像“8”字形的轉子，以相反方向轉動來達成壓送或排除氣體的效果。兩只轉子均固定於一組同步齒輪上，因此轉動時，轉子間及汽缸和轉子間維持著相當微小的間隙，使其不互相接觸，一般情形其間隙大約在十分之幾毫米。因為彼此不相摩擦，故可以高速運轉而獲得大的風量或排氣速度。

Roots Blowers, sometimes used as Roots Vacuum Pumps, are positive displacement blowers. The diagrammatic sections in Fig. 1 illustrate the operating Principle. Two symmetrical rotors (having a figure of "8" cross-section) rotate in opposite directions. The rotors are interlocked and synchronized by a pair of timing gears, running inside of the blower housing without touching. The small clearance between the rotors and between each rotor and the housing wall amounts to approx. a few tenth of a millimeter. This lack of contact between the rotors makes high rotational speeds possible. Hence Roots Blowers provide high capacity.

### 排氣行程



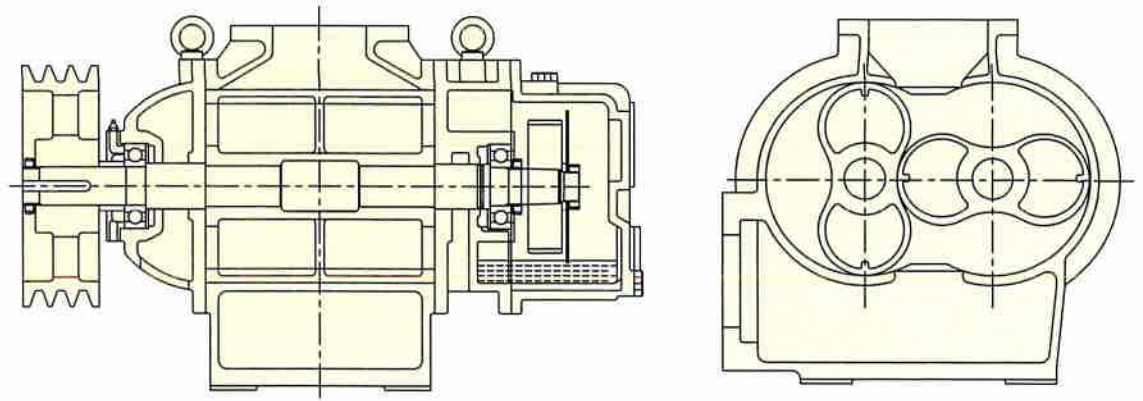
圖(fig.) 1

## 用途 Applications

1. 空氣輸送裝置
2. 污水處理曝氣用
3. 化學工業特殊氣體輸送用
4. 水產養殖送氣
5. 重油噴燃
6. 化學藥液、電鍍槽等之液體攪拌
7. 紡織工業之濕度調節
8. 造紙工業之紙漿吸取水份
9. 玻璃工業、製冰廠等之空氣源
10. 隧道工程及地下潛進法壓送空氣
11. 乾燥用
12. 真空吸取
13. 其他

- Pneumatic Conveying
- Sewage Treatment
- Conveying of Gas in Chemical Industry
- Water Aeration
- Supply of Combustion Air
- Agitating of Chemical Liquids
- Scavenging
- Drying
- Used as Vacuum Pumps
- Others

## 構造 Constructions



## 特點 Features

魯氏鼓風機內兩轉子間及轉子和汽缸間間隙大小，對於性能及容積效率影響甚大，若間隙過大或轉子表面粗糙，性能也將隨著變差。大豐魯氏鼓風機內的轉子係採用進口之數值控制自動化專用機加工，因此精密度可確保至最佳程度，使兩轉子保持最適當之間隙，在正常工作溫度下可連續24小時運轉而不致發生摩擦現象，也不影響鼓風機的性能。其他特點介紹如下：

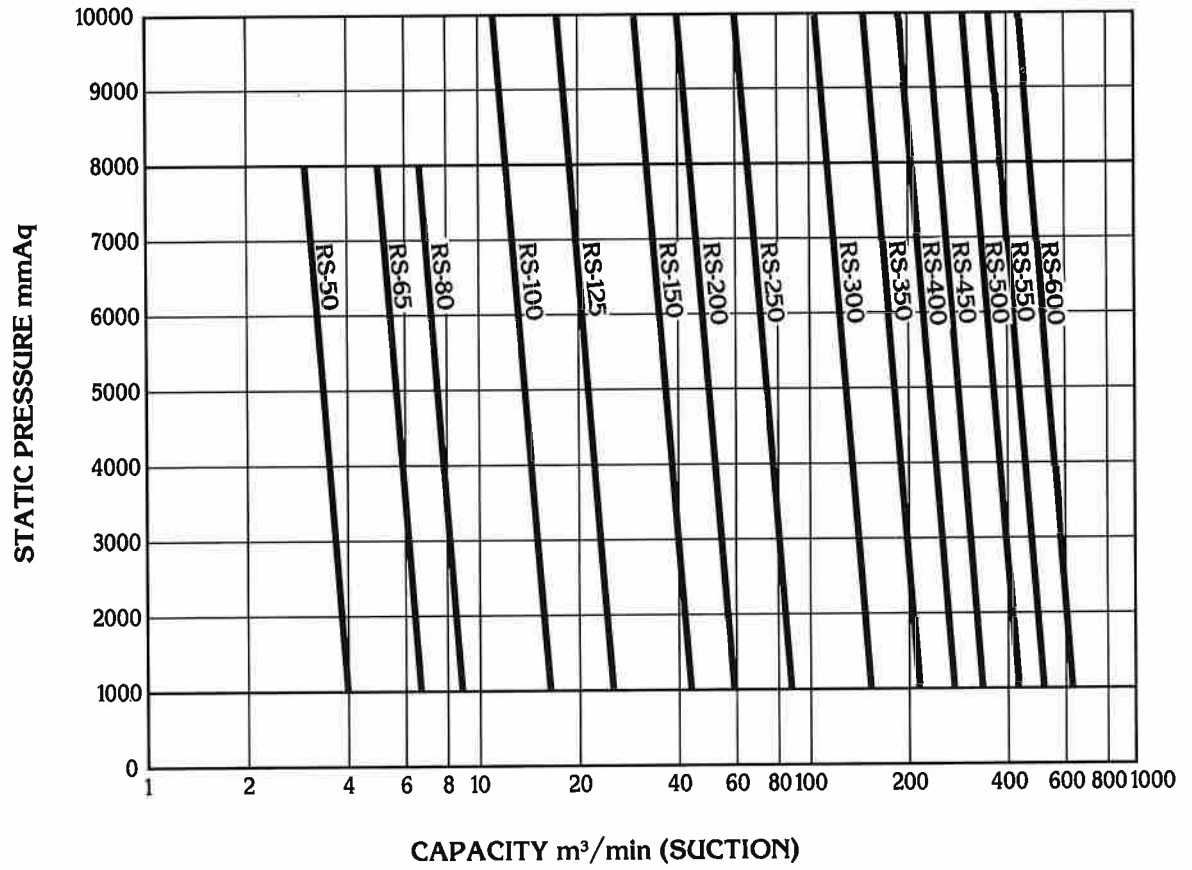
1. 轉子—採用高級鑄鐵材料製作。
2. 軸—採用高級材料並經熱處理，以增加其強度及剛性。
3. 齒輪—使用高級合金鋼為材料，加工精度達 JIS 標準 1 級，在高速運轉下平穩且無噪音。
4. 齒輪和軸的裝配採用斜度配合，使兩齒輪能確實啮合，間隙調整更容易。
5. 軸封—使用非接觸式曲折軸封，使整部機器的摩擦部分只剩下軸承，以減少不必要的動力損失及生熱。
6. 軸承潤滑—齒輪側軸承使用齒輪油潤滑，傳動側軸承使用滑脂潤滑，保養方便。
7. 汽缸使用空氣冷卻方式，不需冷卻水，因此外形美觀。
8. 壓力範圍—使用單段可達 1.0Kgf/cm<sup>2</sup>  
—使用兩部串聯可達 2.0Kgf/cm<sup>2</sup>  
—作為真空幫浦可達 -400mmHg

The amounts of clearances between the rotors and between each rotor and the housing wall affect the performances and volumetric efficiency considerably, TA HONG adopts a fully automatic precise special purpose machine cutting the rotors, therefore the clearances and roughness of rotors can be controlled to the perfect. The other features are introduced as follow:

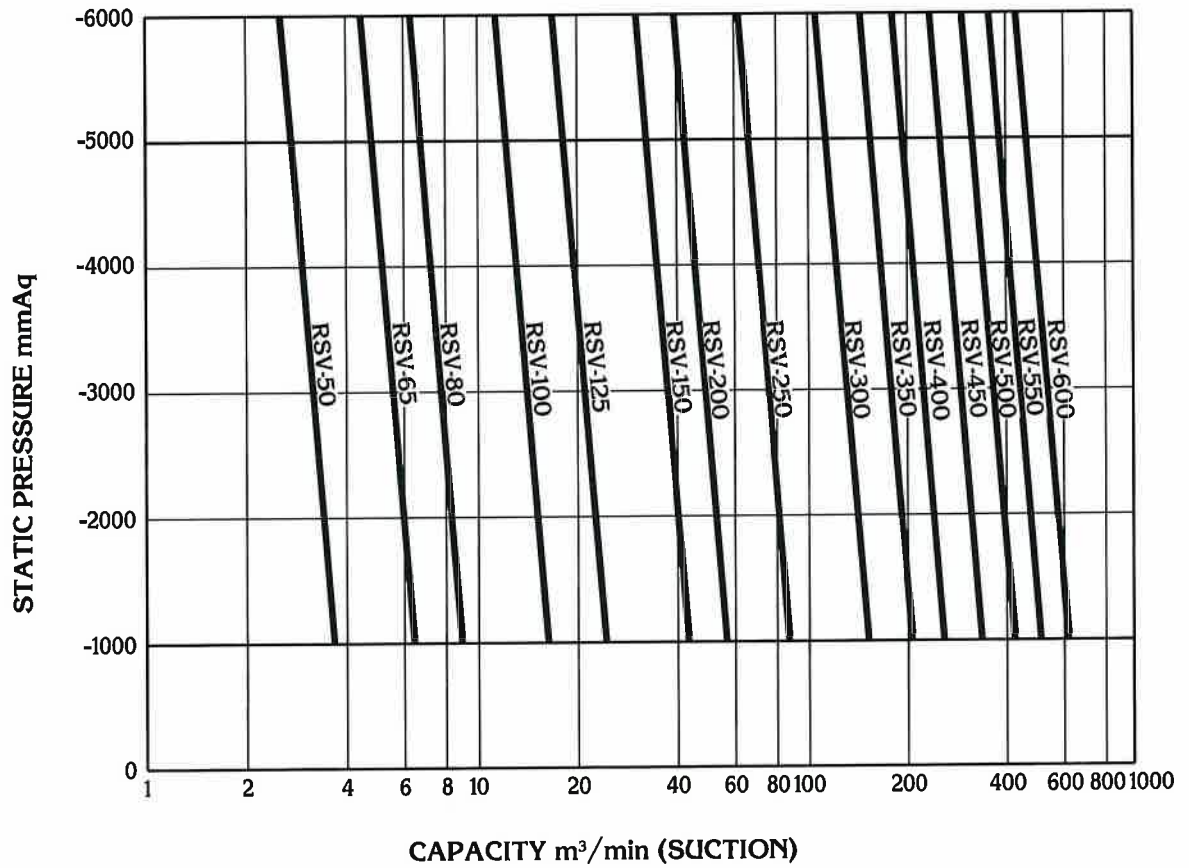
- Rotors – High class cast-iron is adopted.
- Shafts – High class material is adopted. After hardening processes the strength and stiffness are improved.
- Gears – Alloy steel is adopted. Precise grinding makes running smooth and low noise
- Seals – Non-contact labyrinth is designed for reducing friction and heat generation.
- Lubrication – Oil is used at gear-side for gears and bearings; the other side is grease lubricated.
- Cooling – Air Cooling for body and bearings.
- Pressure range – One-Stage: 1.0 kgf/cm<sup>2</sup>  
– Two-Stage: 2.0 kgf/cm<sup>2</sup>  
– As vacuum pump: -400 mmHg

綜合性能  
曲線  
Combined  
Performance  
Charts

RS性能曲線 Pressure Performance Chart



RSV性能曲線 Vacuum Performance Chart



## 選擇機型 步驟 Steps of Selecting Blowers

### ① 將操作規格換算為型錄上的規格

型錄上風量：指換算為吸入壓力、溫度狀態下之體積風量

型錄上靜壓：RS Type指出口壓力(入口為 1atm)  
RSV Type指入口壓力(出口為 1atm)

若操作規格不同於上述條件，其換算方式如下：

1. 風量為 $Q_N$ 基準狀態(0°C，絕對壓力10332 mmAq，相對濕度0%，又稱NTP，此時1m<sup>3</sup>之空氣重量為1.293kg)時，須依下式換算

$$Q = Q_N \cdot \frac{10332}{10332+P_1} \cdot \frac{273+t_1}{273} \quad (\text{m}^3/\text{min})$$

2. RS Type入口壓力非 1 atm時

Suction pressure differs from 1 atm

$$P_s = \left( \frac{10332+P_2}{10332+P_1} - 1 \right) \cdot 10332 \quad (\text{mmAq})$$

- RSV Type出口壓力非 1 atm時

Discharge pressure differs from 1 atm

$$P_s = \left( \frac{10332+P_1}{10332+P_2} - 1 \right) \cdot 10332 \quad (\text{mmAq})$$

### ② 依換算後的規格選擇適當機型

以換算後的風量及靜壓先在綜合性能表上選擇一適當機型，再從該機型的性能表選出適合的馬力及轉速。

操作規格

風量：2.5m<sup>3</sup>/min

靜壓：5000mmAq (at 30°C)

- ① 因入口狀態為 1 atm，所以風量及靜壓不必換算

- ② 依上述規格可在第7頁RS-65性能表中找出轉速為1300R.P.M.及所需的馬力為5HP。(如圖一)

操作規格

風量：21 N m<sup>3</sup>/min

靜壓：-1000  
+3515 mmAq (at 50°C)

- ① 因入口狀態非 1atm，且為基準狀態風量，所以風量及靜壓需換算如下：

$$Q = 21 \cdot \frac{10332}{10332-1000} \cdot \frac{273+50}{273} = 27.5 \text{ m}^3/\text{min}$$

$$P_s = \left( \frac{10332+3515}{10332-1000} - 1 \right) \cdot 10332 = 5000 \text{ mmAq}$$

- ② 依換算結果可在第8頁RS-150性能表中找出轉速為1300R.P.M.及所需的馬力為50HP。(如圖二)

### ① To Change the Operating Specifications to the Specifications of Catalog

The capacity in this catalog is suction capacity. The static pressure of RS Type is discharge pressure and RSV type is suction pressure. If the operating specifications differ from above conditions, you may change them according to the following formulas. :

$Q(\text{m}^3/\text{min})$ ：型錄上所示風量 Capacity in catalog  
 $Q_N(\text{m}^3/\text{min})$ ：基準狀態下之風量 Capacity at NTP  
 $t_1(^{\circ}\text{C})$ ：鼓風機入口溫度 Temp. at blower suction  
 $P_s(\text{mmAq})$ ：型錄上所示靜壓 Static pressure in catalog

$P_1(\text{mmAq})$ ：入口操作壓力 Suction pressure

$P_2(\text{mmAq})$ ：出口操作壓力 Discharge pressure

### ② According to the Changed Specifications Selecting a Suitable Model

Now you can choose a suitable model from combined performance chart with the changed specifications firstly, then the R.P.M. and motor can be chosen from the performance chart of the model you selected.

Operating specification

Capacity: 2.5m<sup>3</sup>/min

Static pressures: 5000 mmAq (at 30°C)

- ① The suction condition is 1 atm, so the capacity and static pressure need not be changed.

- ② According to the above specification, you may select model RS-65 at page 7 with 1300 R.P.M. and 5 HP motor is required. (as fig. 1)

Operating Specification

Capacity: 21 Nm<sup>3</sup>/min

Static Pressure: -1000  
+3515 mmAq (at 50°C)

- ① The suction pressure is differ from 1 atm, so the capacity and static pressure should be changed as follows:

- ② You may select model RS-150 at page 8, with 1300 R.P.M. and 50HP motor is required. (as fig. 2)

#### 選擇例一 Example 1

#### 選擇例二 Example 2



## 選擇例三

## Example 3

操作規格

風量：10m<sup>3</sup>/min

靜壓：-3500mmAq (at 50°C)

- ① 因出口狀態為1 atm，所以風量及靜壓不必換算
- ② 依上述規格可在第13頁RSV-100性能表中找出轉速為1300R.P.M.及所需的馬力為15HP。(如圖三)

Operating specification

Capacity: 10m<sup>3</sup>/min

Static pressures: -3500 mmAq (at 50°C)

- ① The discharge pressure is 1 atm so the capacity and static pressure need not be changed.
- ② According to the above specification, you may select model RSV-100 at page 13, with 1300 R.P.M. and 15HP motor is required. (as fig. 3)

## 換算公式

## Conversion

## Formula

轉速或入口氣體改變對性能的關係

- 轉速改變

$$\frac{Q_2}{Q_1} = \frac{N_2}{N_1} \quad \frac{L_2}{L_1} = \frac{N_2}{N_1}$$

- 入口氣體改變

$$\frac{L_2}{L_1} = \frac{\gamma_2}{\gamma_1}$$

Q(m<sup>3</sup>/min) : 風量 Capacity

L(HP) : 所需馬力 Power Required

N(rpm) : 回轉速 Speed

 $\gamma$  (kgf/m<sup>3</sup>) : 比重量 Specific Weight

1 : 改變前 Befor Change

2 : 改變後 After Change

馬力計算

- 鼓風機的理论絕熱馬力

$$L_{ad} = \frac{k}{k-1} \cdot \frac{P_1 \cdot Q}{4560} \left[ \left( \frac{P_2}{P_1} \right)^{\frac{k-1}{k}} - 1 \right] \text{ (HP)}$$

- 制動馬力(BHP)

$$\text{BHP} = \frac{L_{ad}}{\eta_{\text{tad}}} \text{ (HP)}$$

k : 比熱比 Specific Heat Ratio (1.4 for Air)

 $\eta_{\text{tad}}$  : 全絕熱效率 Total Adiabatic Efficiency of Blower

Change in Performance with Speed or Suction Variation

- Change in Speed

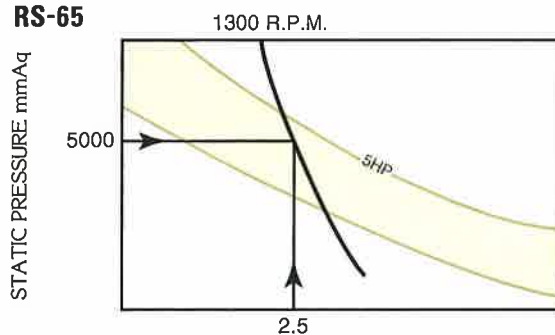
- Suction Gas Variation

Power Calculation

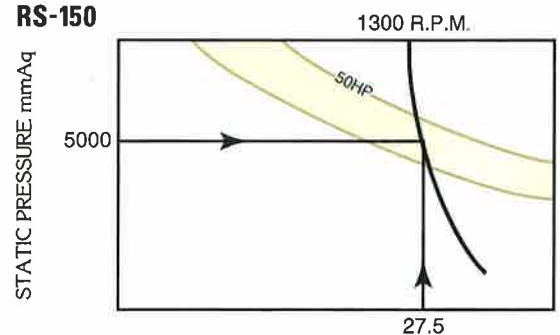
- The Theoretical Adiabatic Power of Blowers

- Brake Horsepower (BHP)

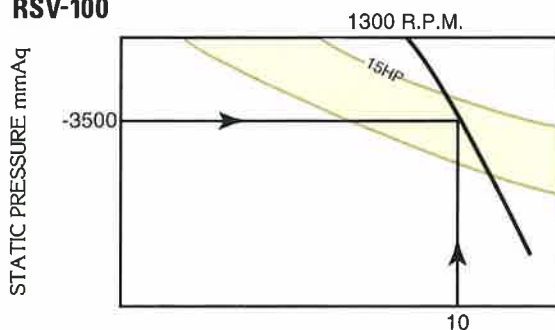
RS-65

圖(fig.)1 CAPACITY m<sup>3</sup>/min (SUCTION)

RS-150

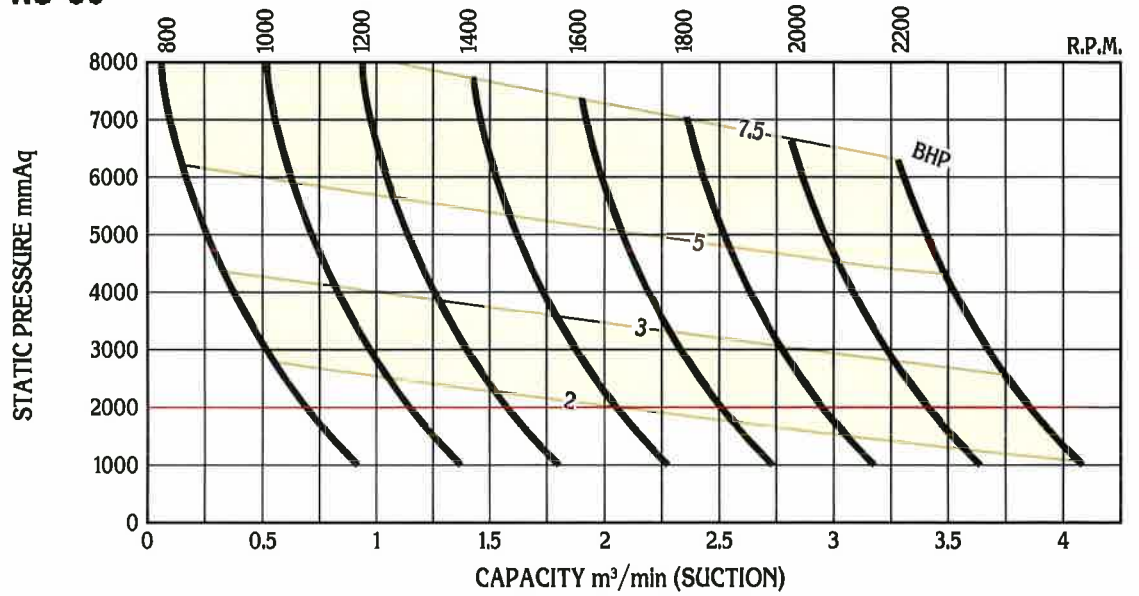
圖(fig.)2 CAPACITY m<sup>3</sup>/min (SUCTION)

RSV-100

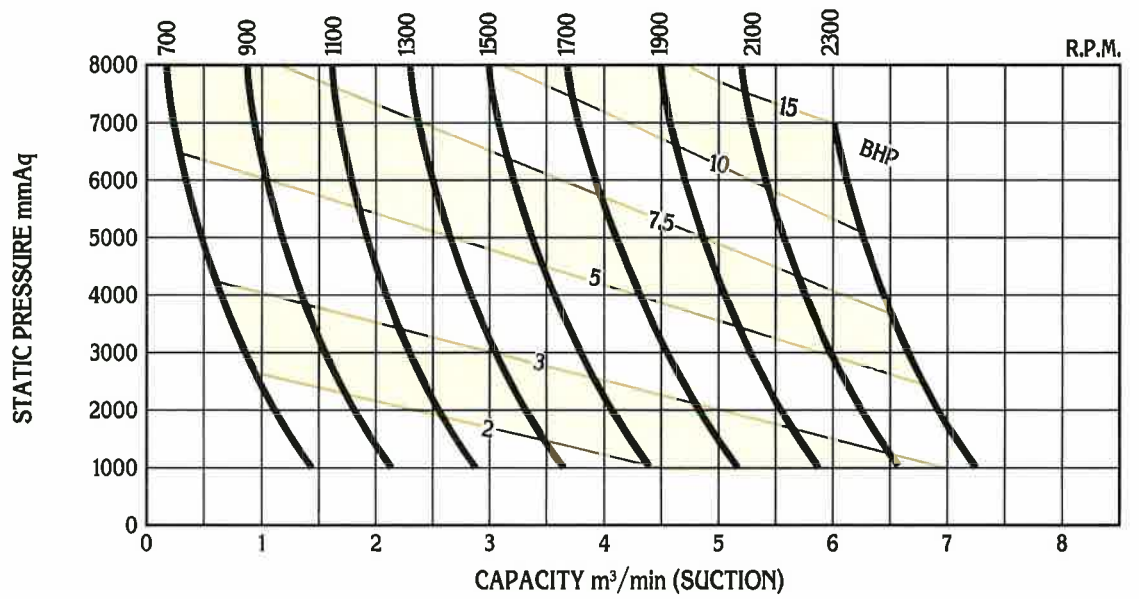
圖(fig.)3 CAPACITY m<sup>3</sup>/min (SUCTION)

**RS**  
性能曲線  
Pressure  
Performance  
Curve

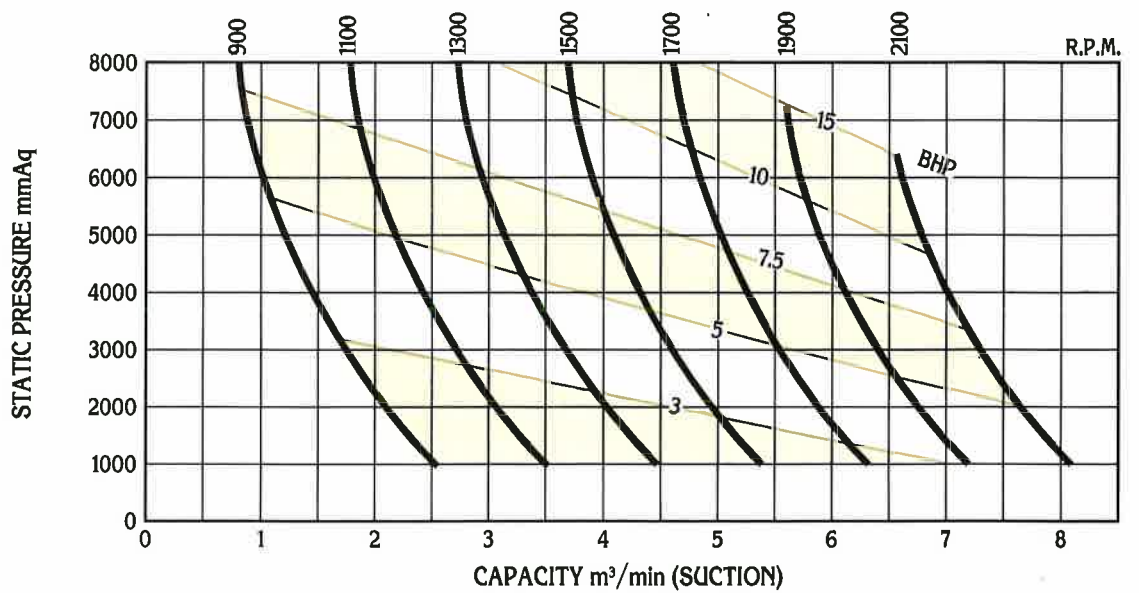
**RS-50**



**RS-65**

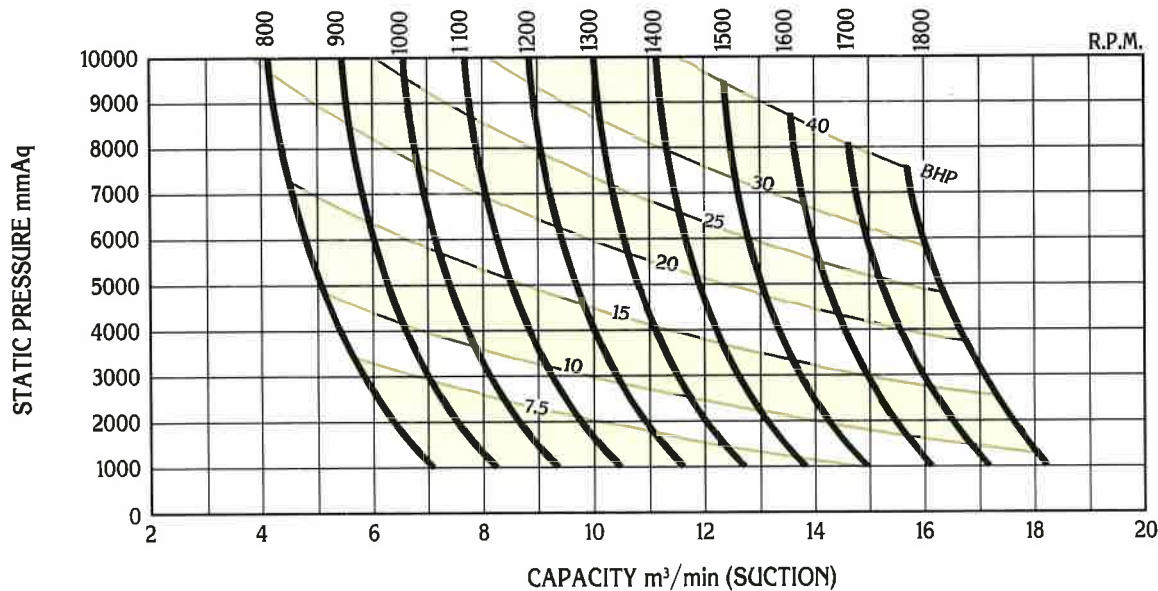


**RS-80**

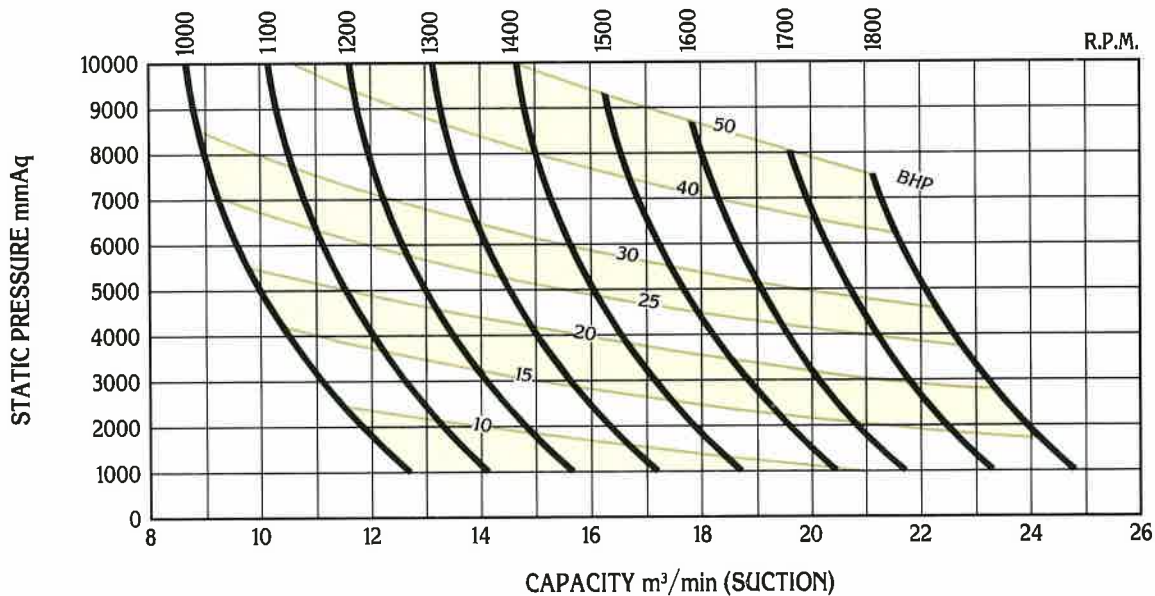




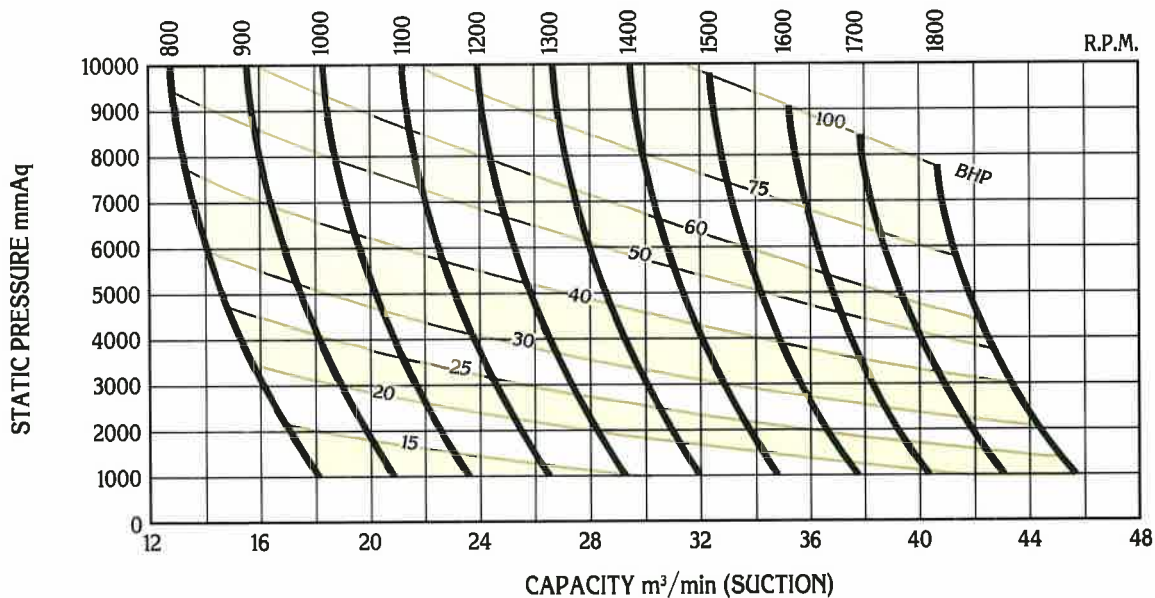
# RS-100



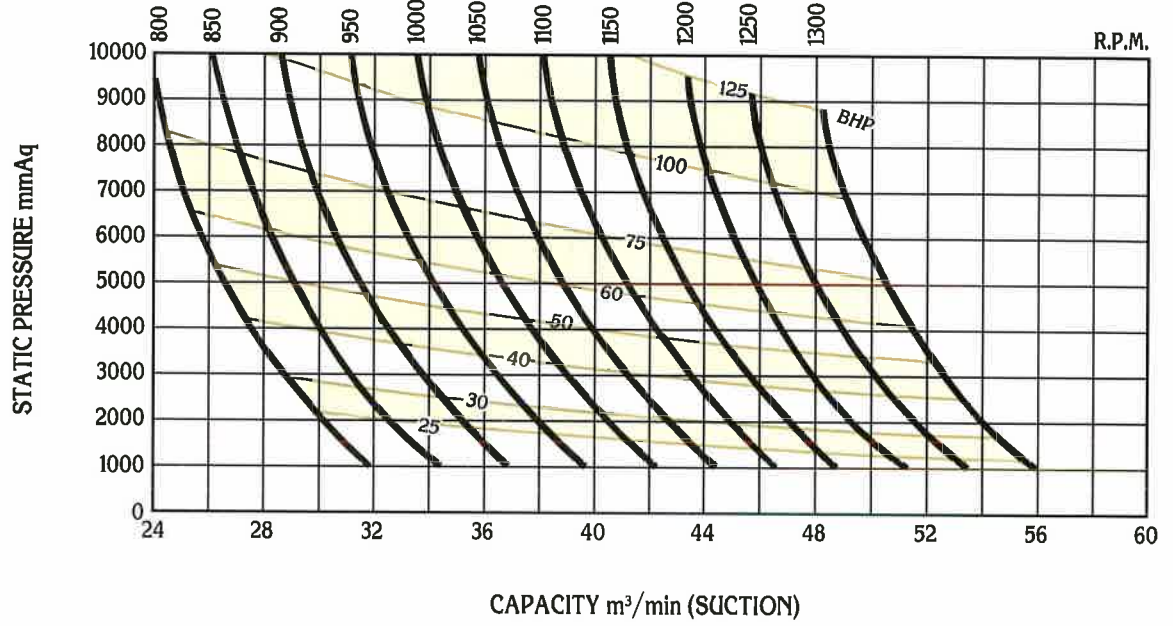
# RS-125



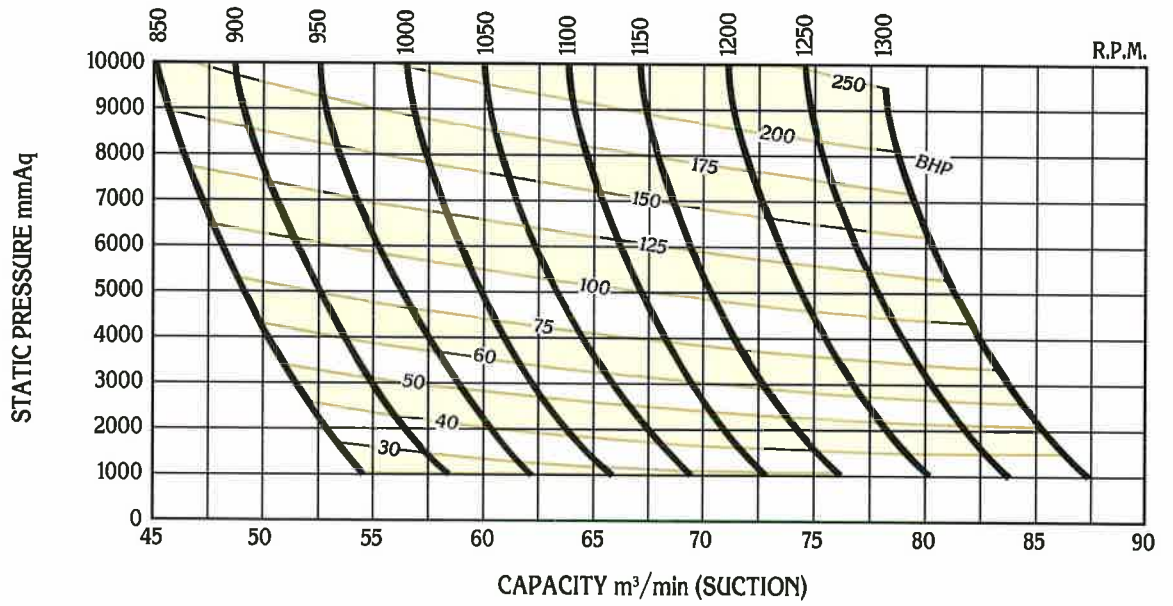
# RS-150



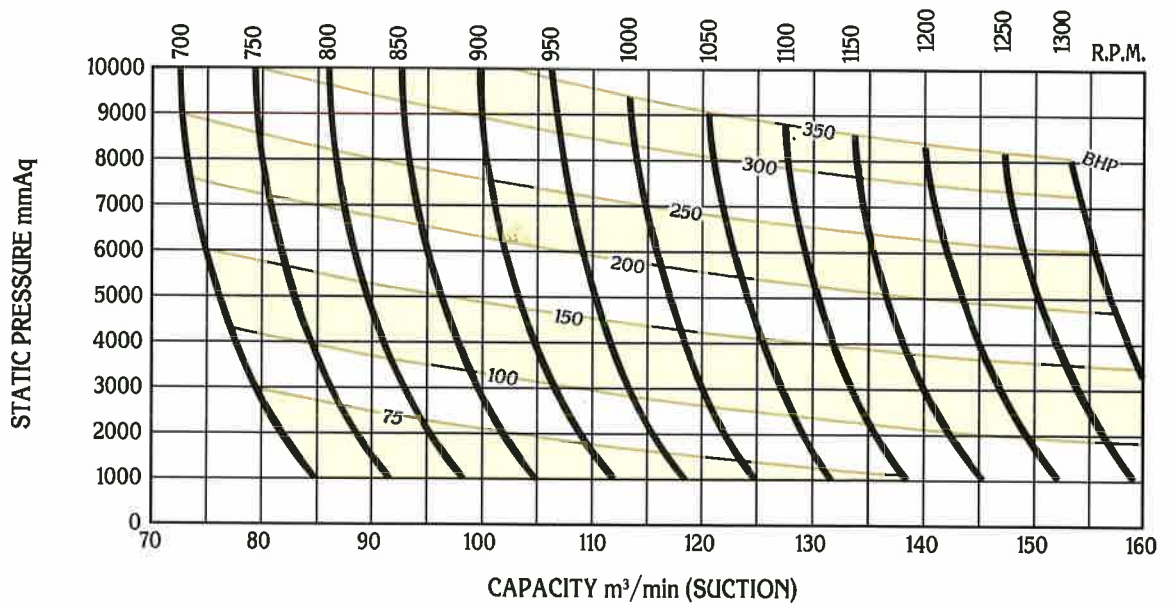
### RS-200



### RS-250

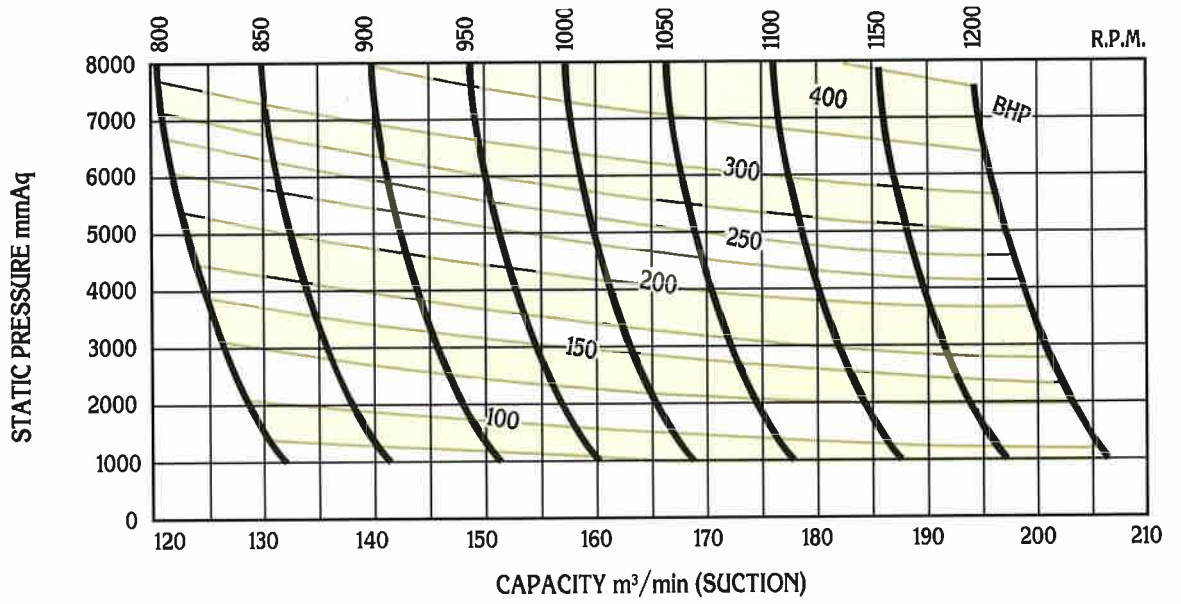


### RS-300

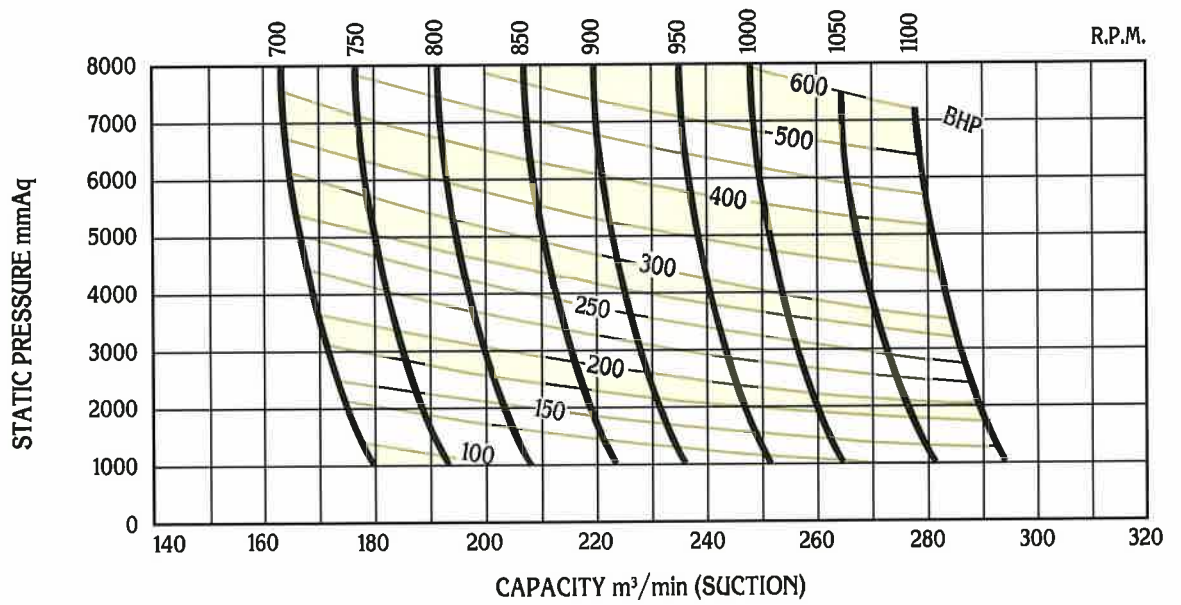




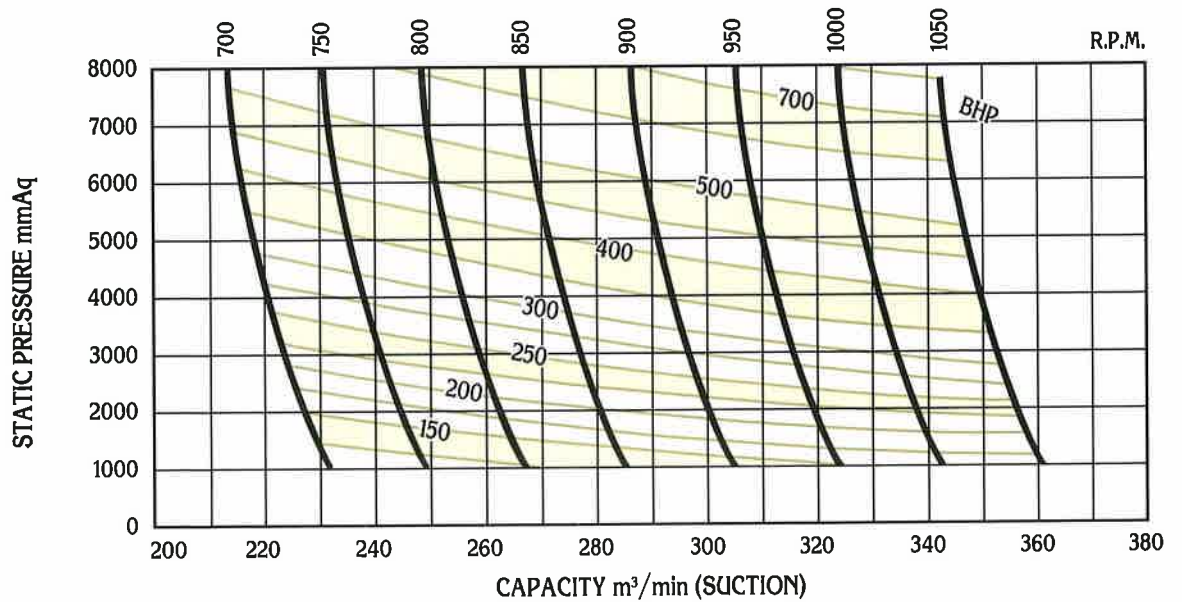
**RS-350**



**RS-400**

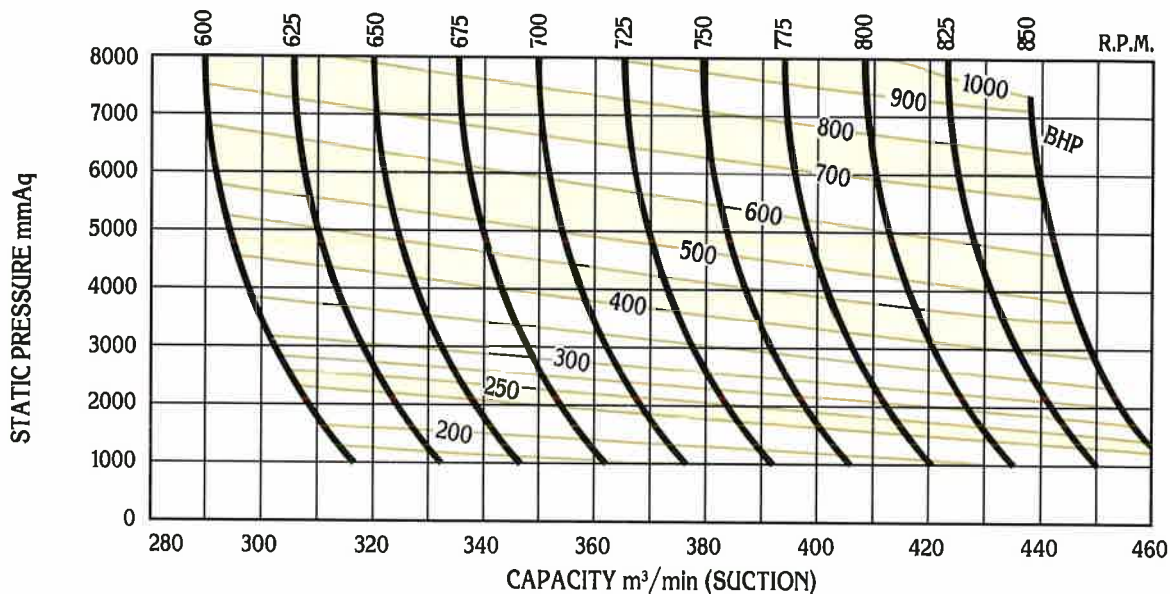


**RS-450**

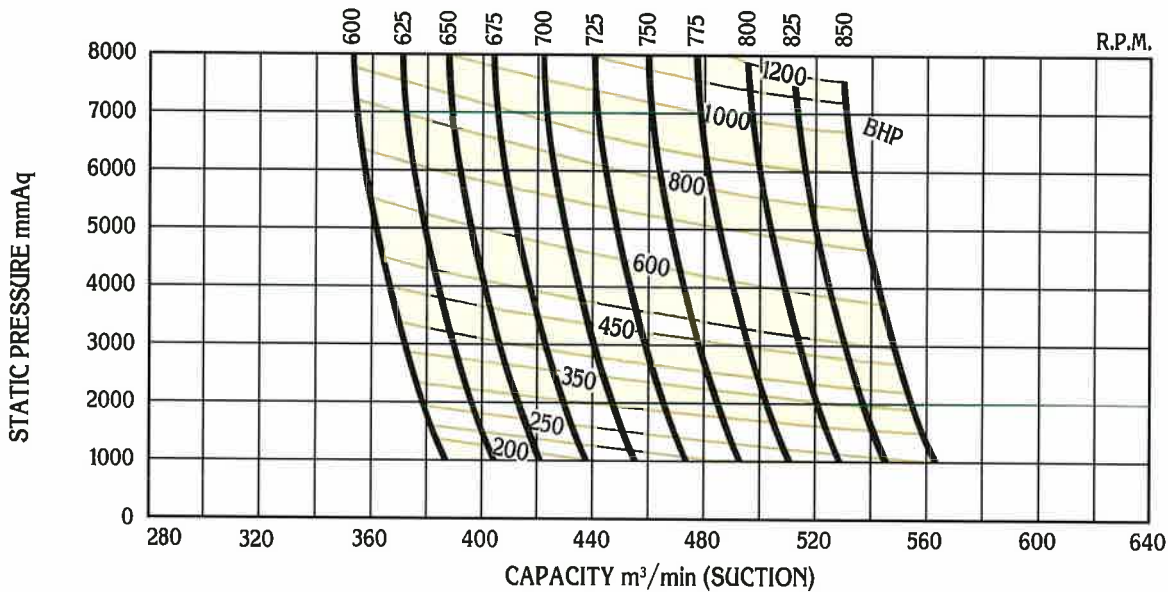




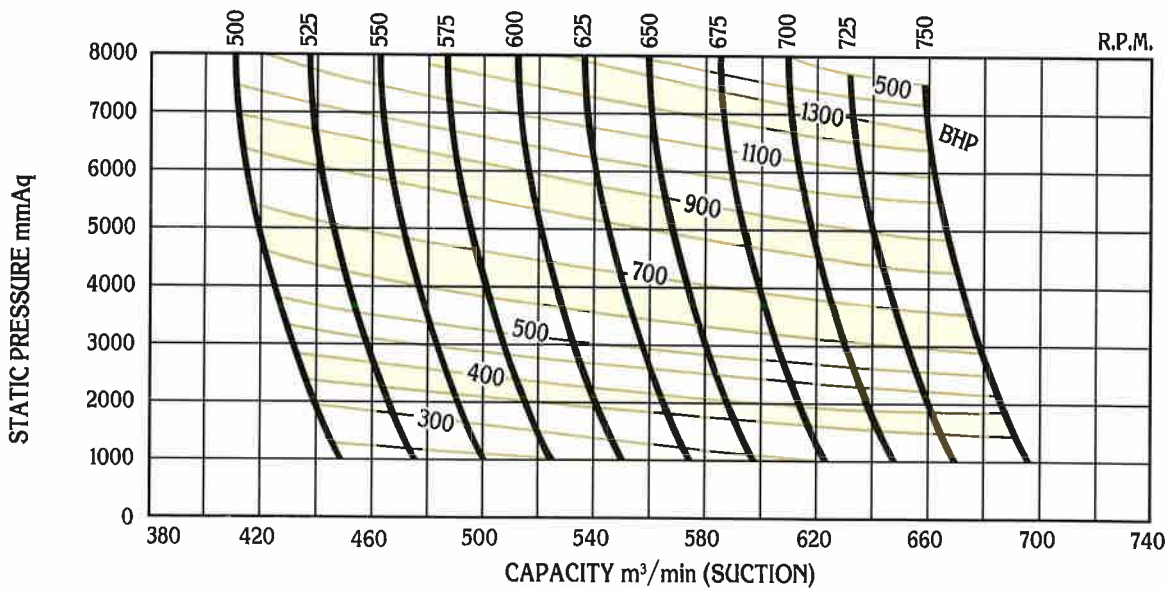
### RS-500



### RS-550

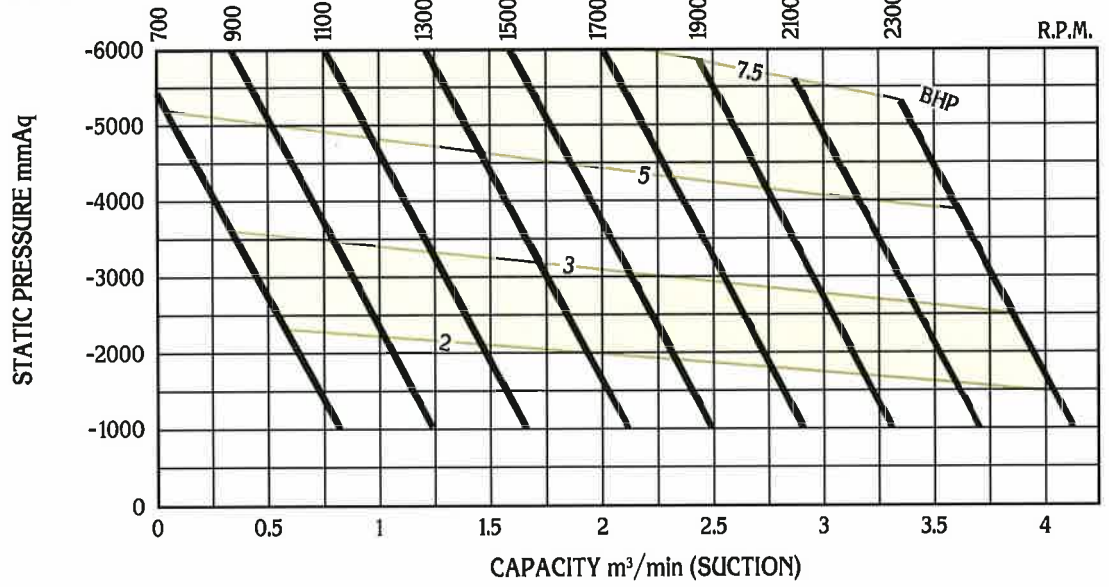


### RS-600

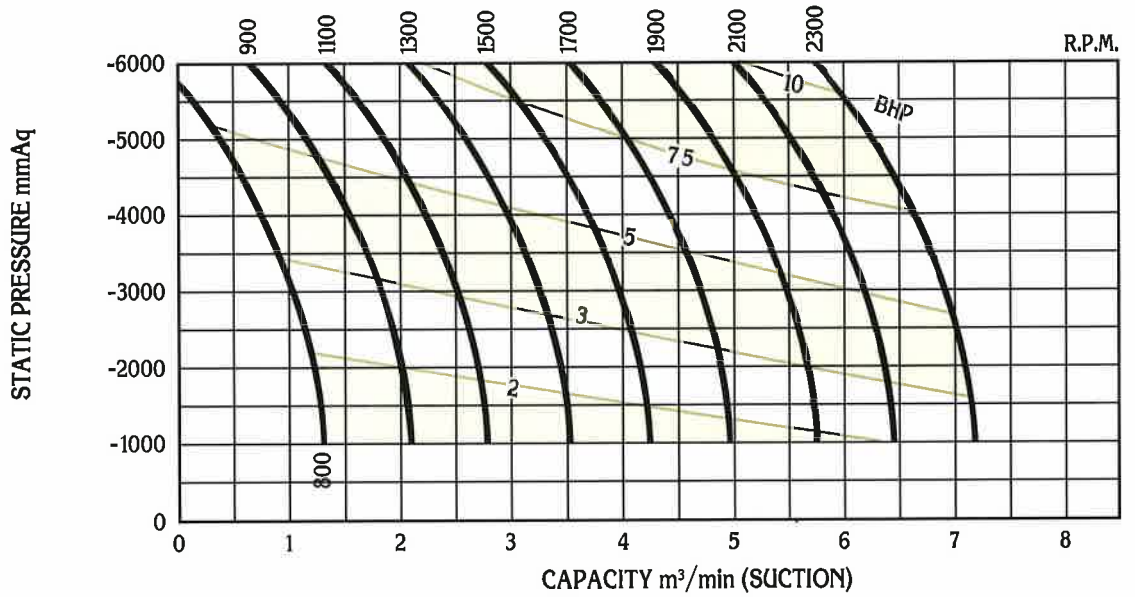


**RSV**  
**性能曲線**  
**Vacuum**  
**Performance**  
**Curve**

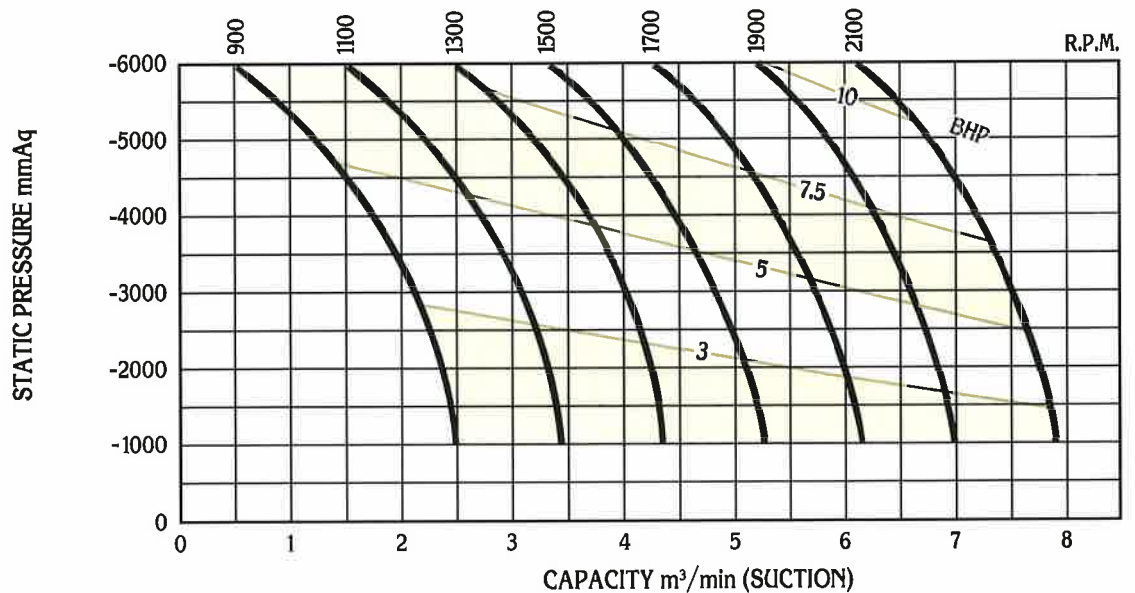
**RSV-50**



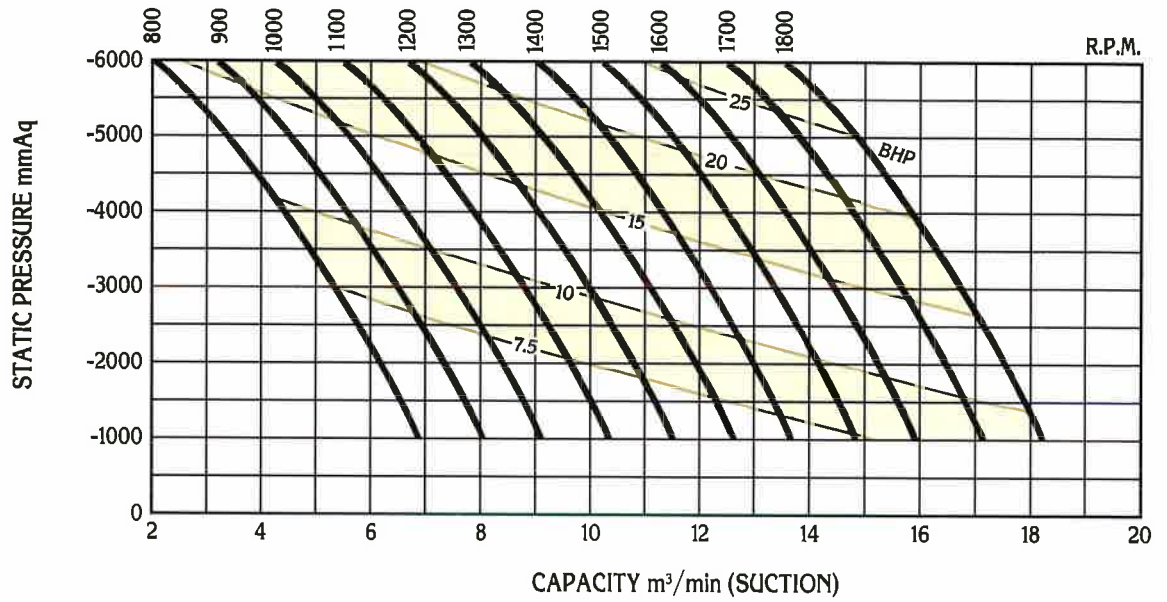
**RSV-65**



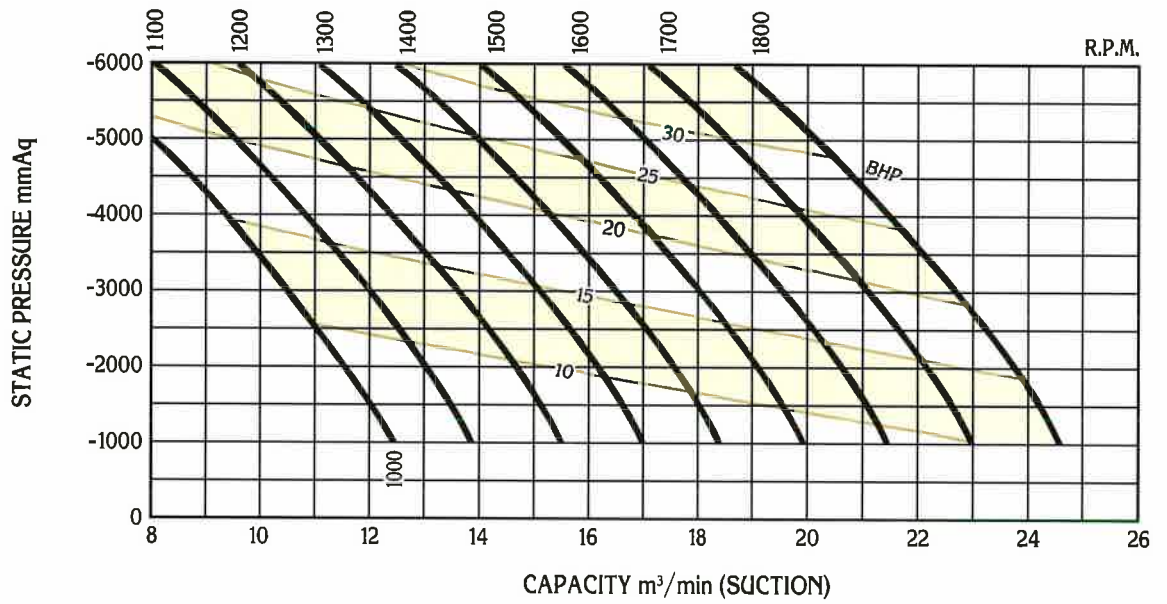
**RSV-80**



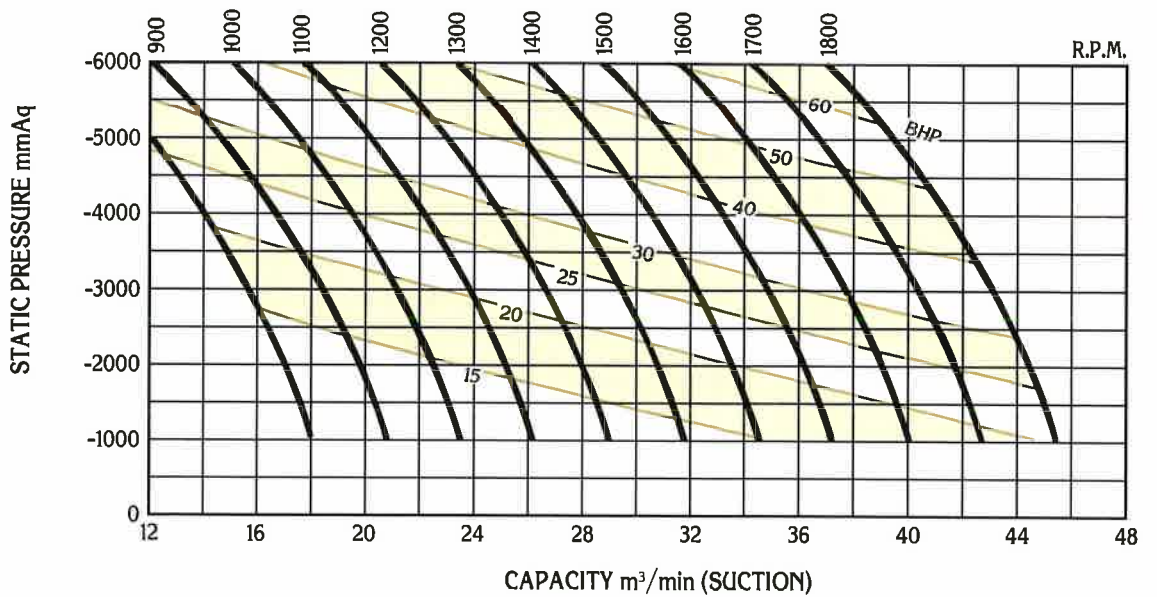
### RSV-100



### RSV-125

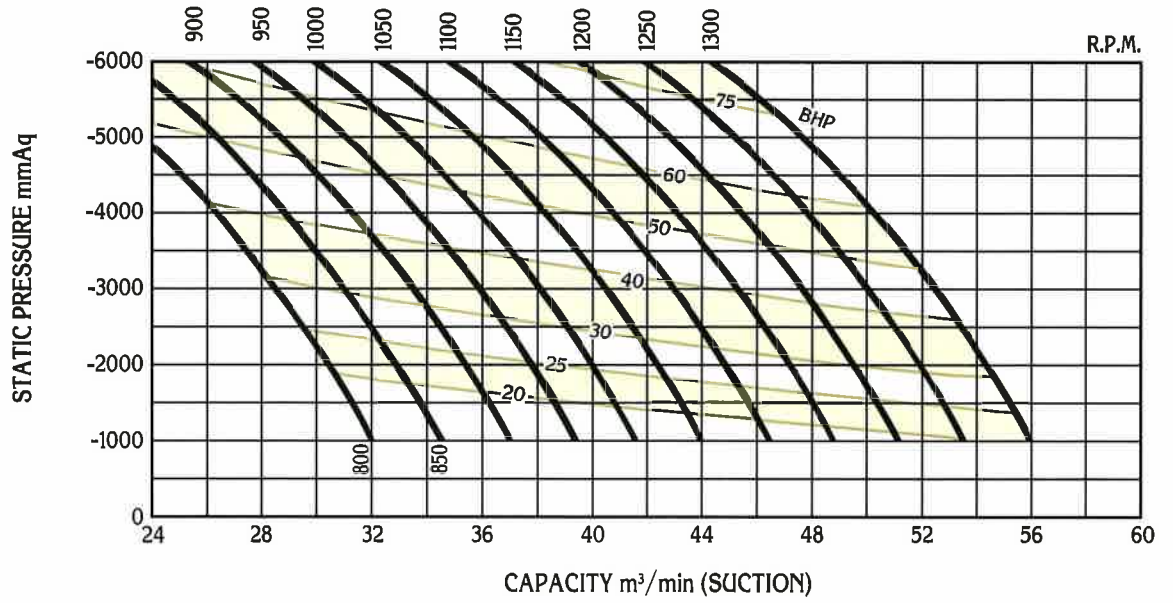


### RSV-150

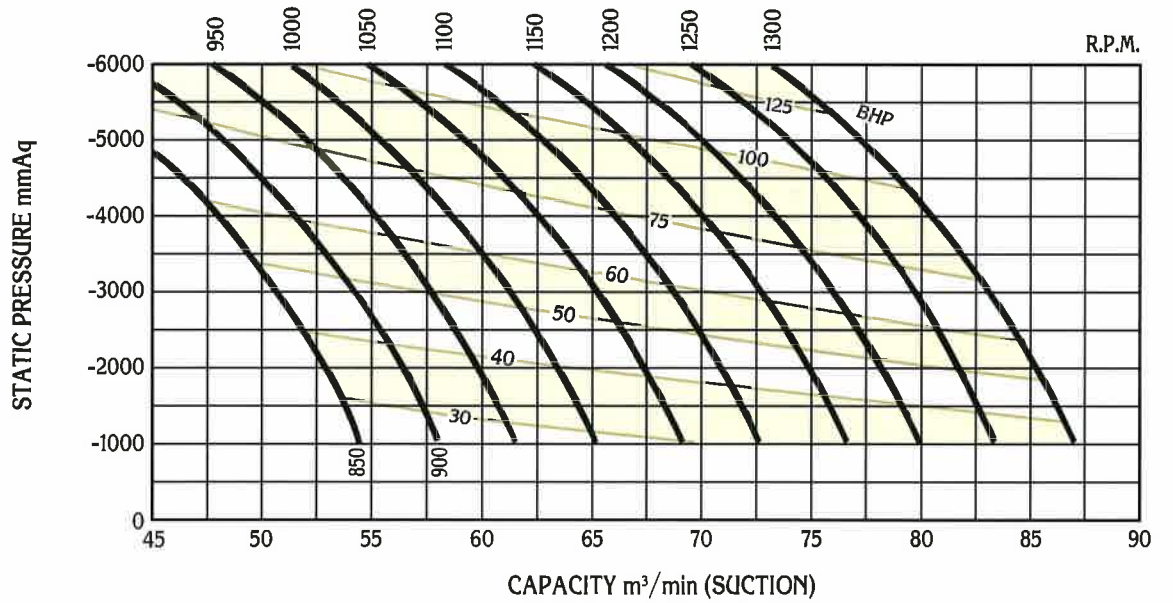




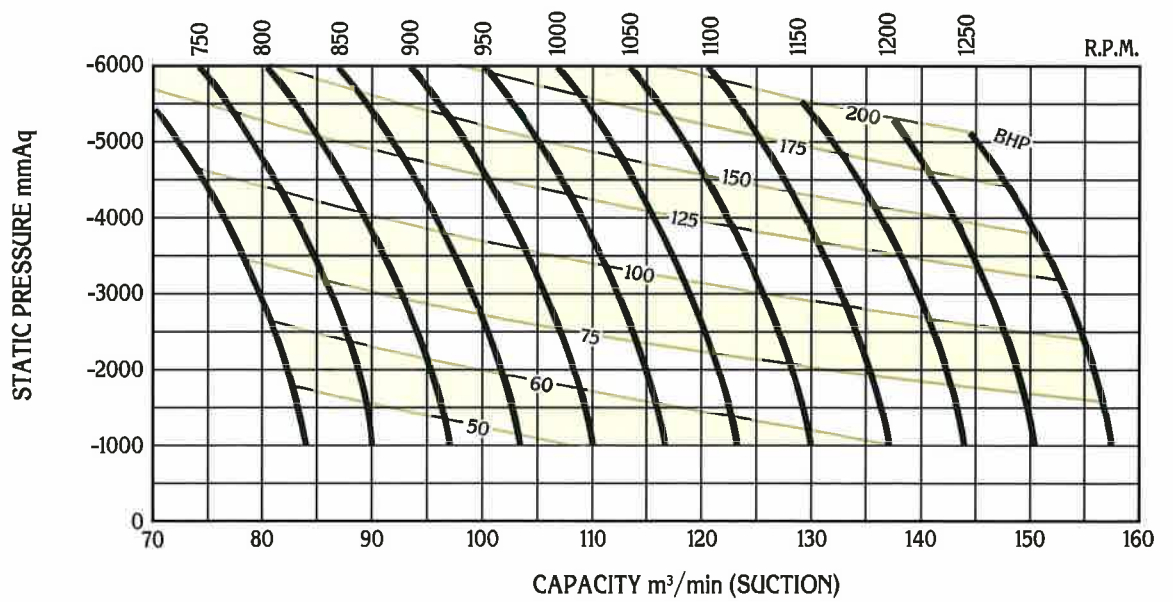
### RSV-200



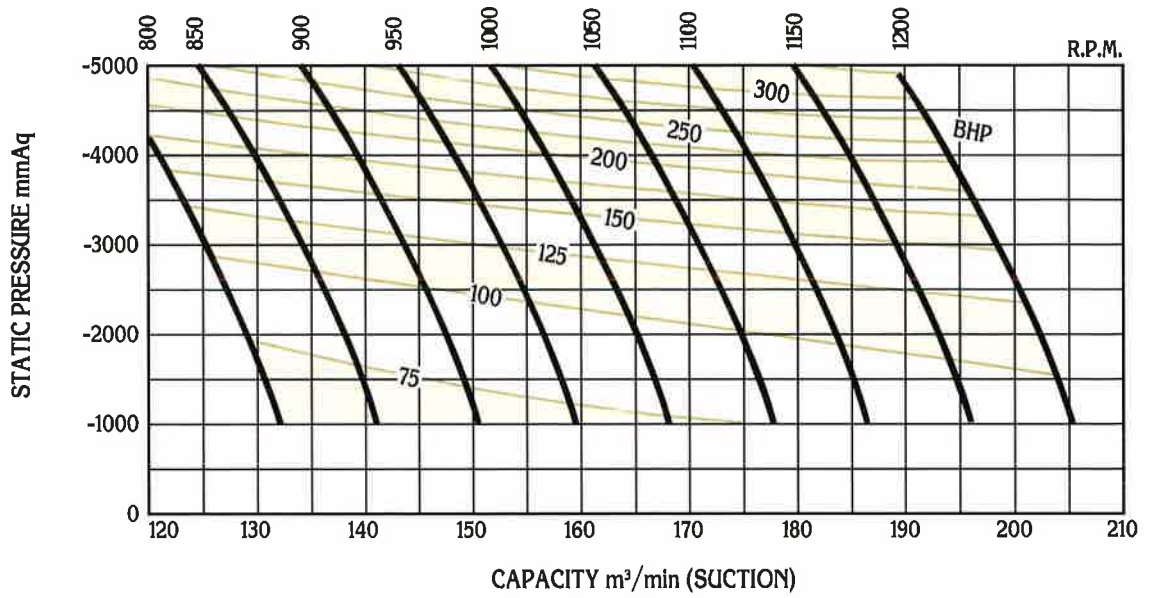
### RSV-250



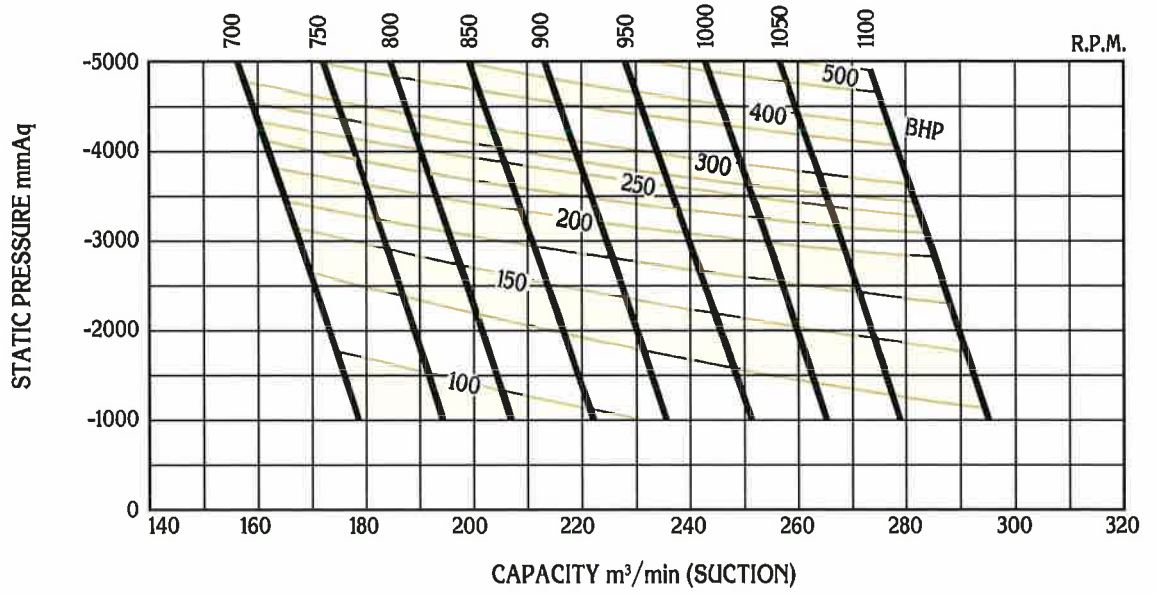
### RSV-300



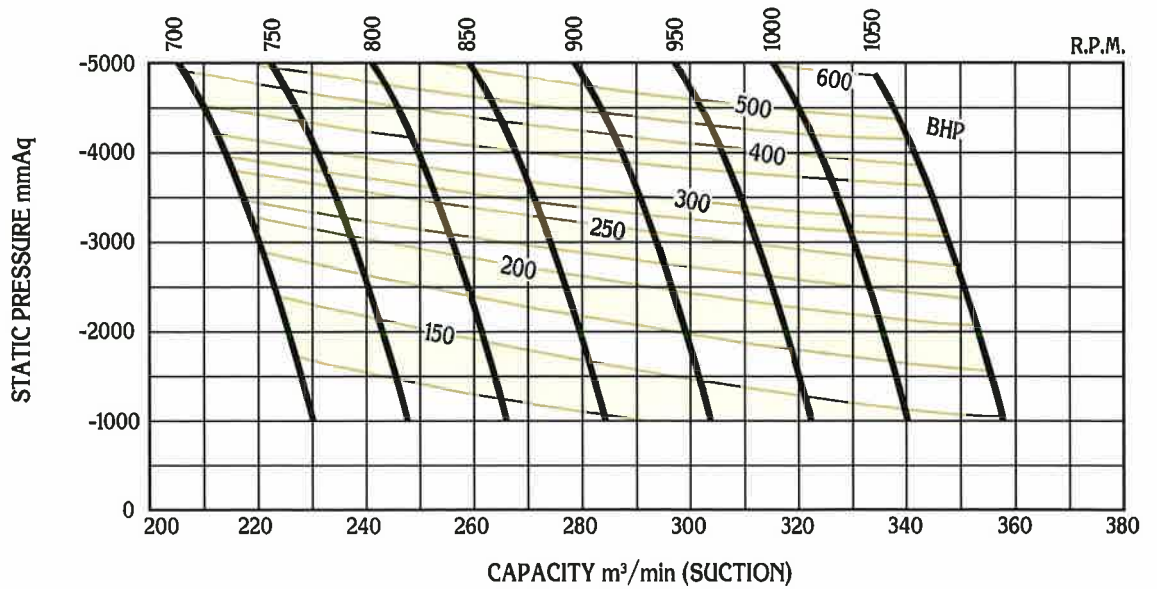
### RSV-350



### RSV-400

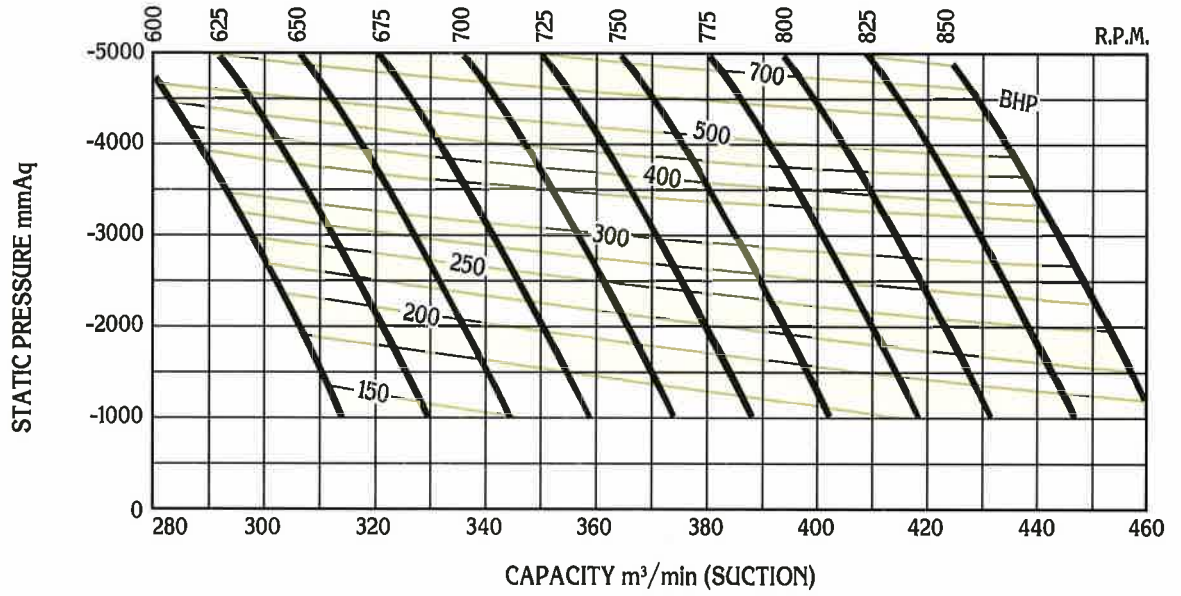


### RSV-450

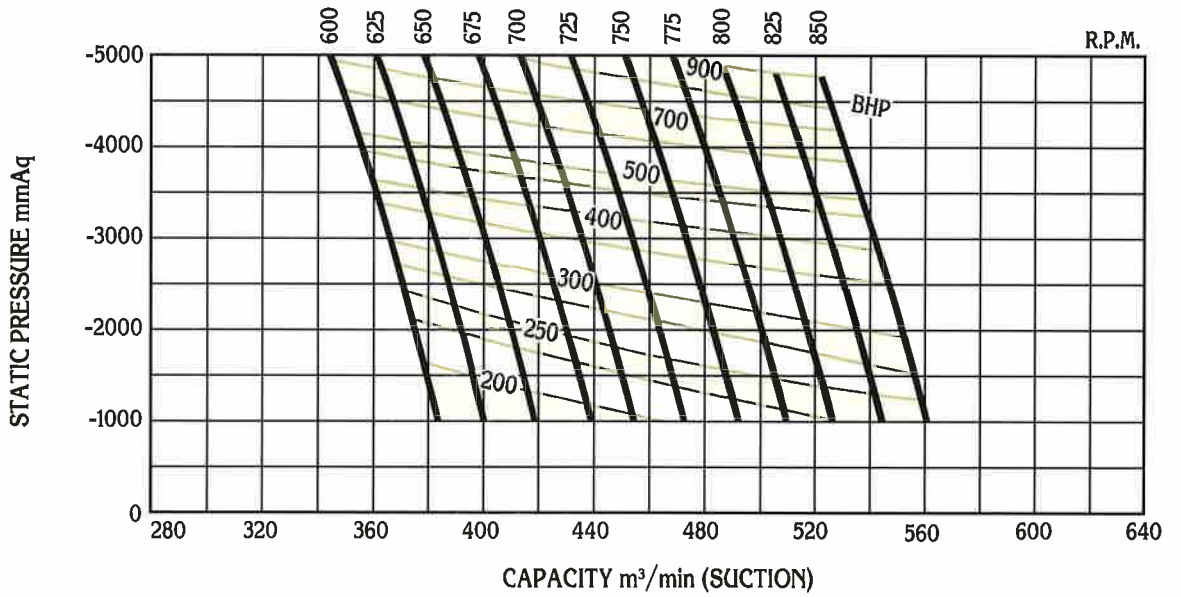




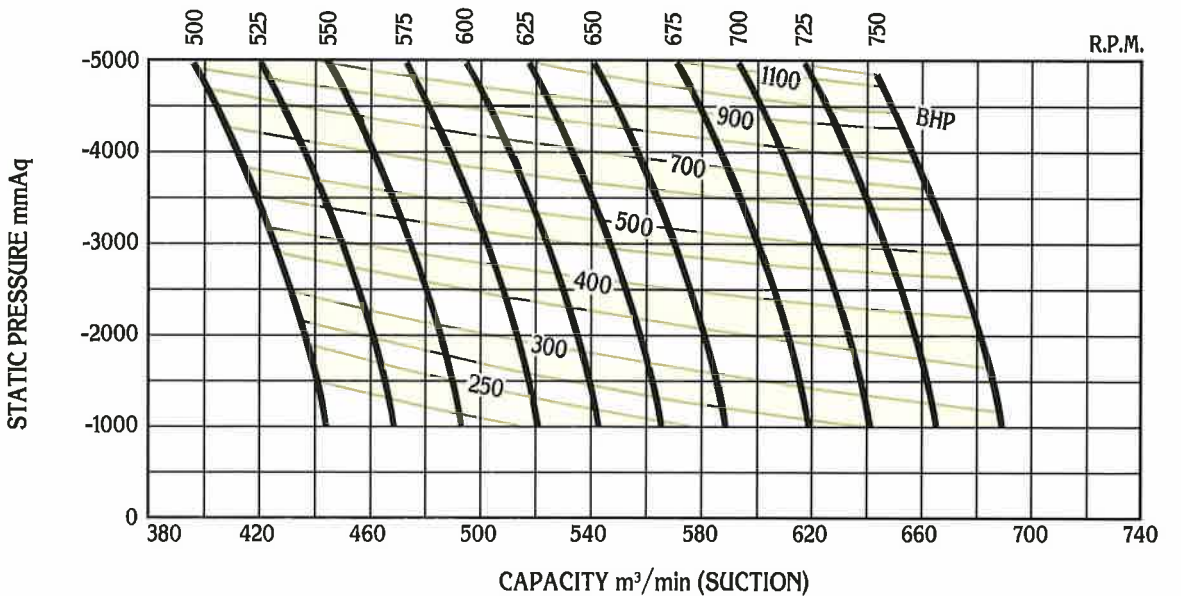
**RSV-500**



**RSV-550**



**RSV-600**

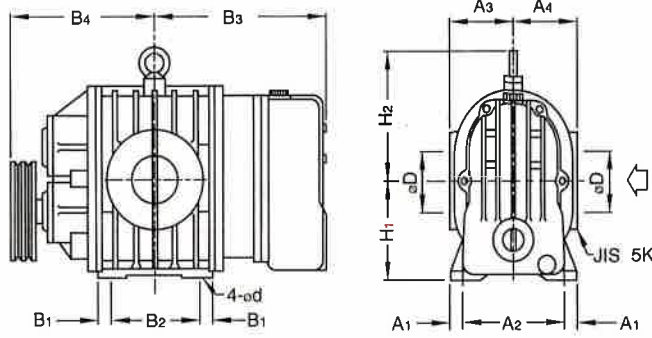




# 外形尺寸 Dimensions

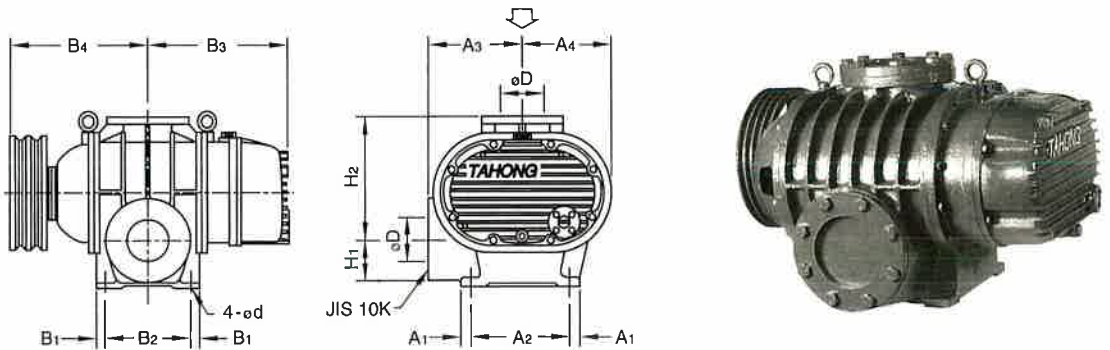
RSV外形尺寸同RS  
The dimensions of RSV  
are the same as RS's

## RS-50 • 65 • 80



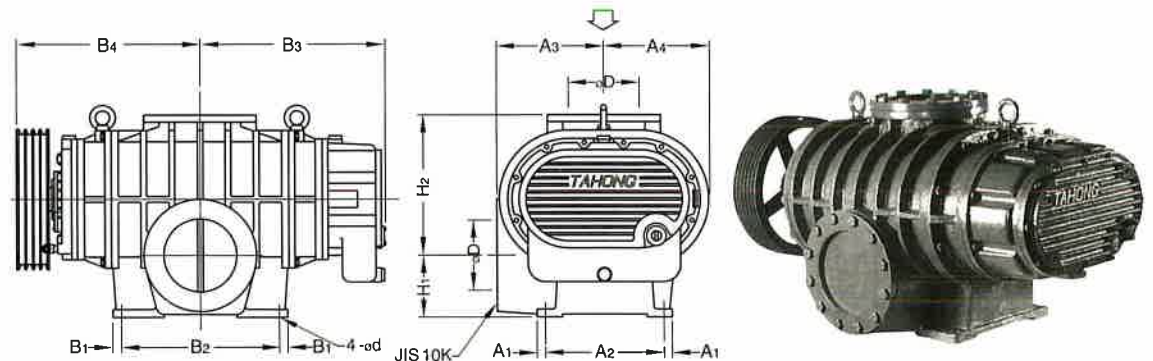
Type	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	øD	ød	H <sub>1</sub>	H <sub>2</sub>	Weight kg	GD <sup>2</sup> kgf-m <sup>2</sup>
RS-50	20	160	105	20	70	260	225	50	14	160	210	66	0.15
RS-65	20	160	105	20	150	300	265	65	14	160	210	80	0.2
RS-80	20	160	130	25	190	325	290	80	14	160	210	94	0.22

## RS-100 • 125 • 150



Type	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	øD	ød	H <sub>1</sub>	H <sub>2</sub>	Weight kg	GD <sup>2</sup> kgf-m <sup>2</sup>
RS-100	20	260	240	230	20	220	370	375	100	14	120	310	227	1.7
RS-125	20	260	240	230	20	320	415	425	125	14	140	340	276	1.9
RS-150	25	330	310	295	20	320	455	450	150	19	160	370	443	6.8

## RS-200 • 250 • 300



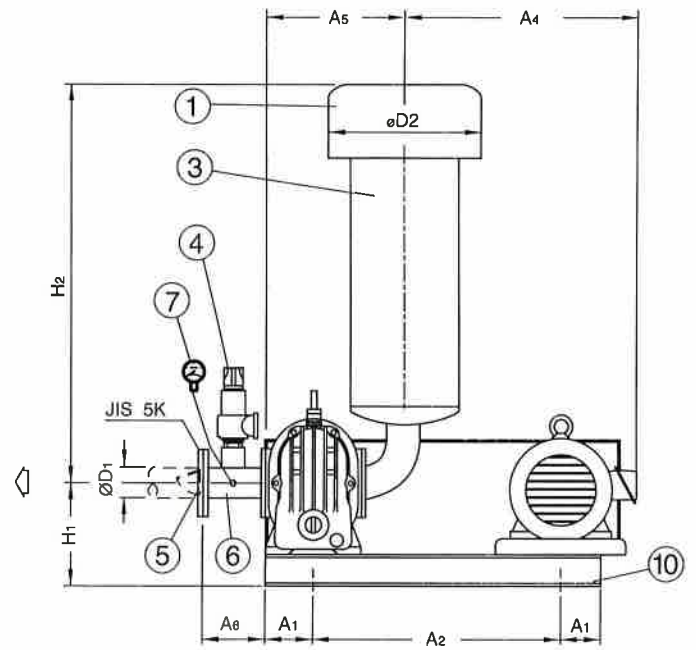
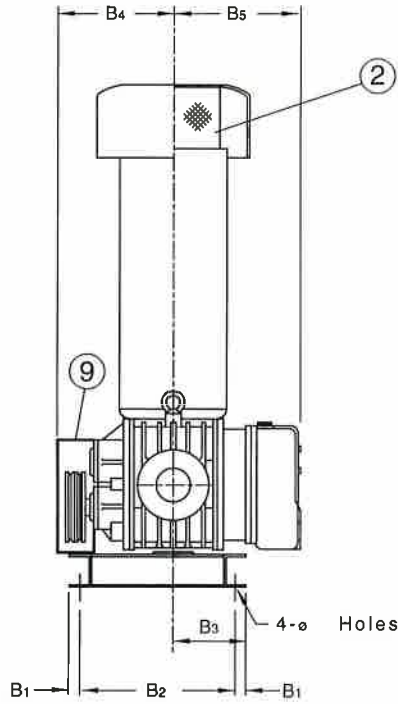
Type	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	øD	ød	H <sub>1</sub>	H <sub>2</sub>	Weight kg	GD <sup>2</sup> kgf-m <sup>2</sup>
RS-200	30	420	380	370	30	340	550	550	200	24	185	445	707	28
RS-250	30	420	380	370	30	560	660	660	250	24	220	500	865	34.5
RS-300	30	540	475	450	30	675	730	790	300	24	250	600	1550	90.5

※RS(V)-300以上型式請向本公司洽詢。Other series above RS(V)-300, please contact with us.

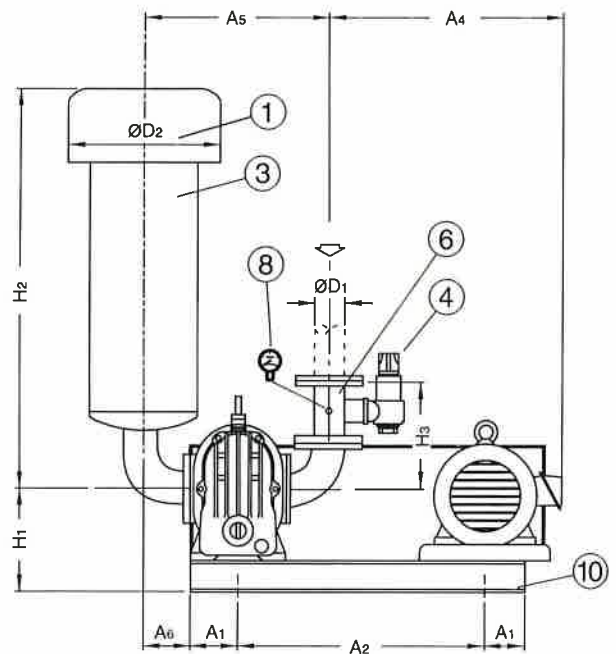
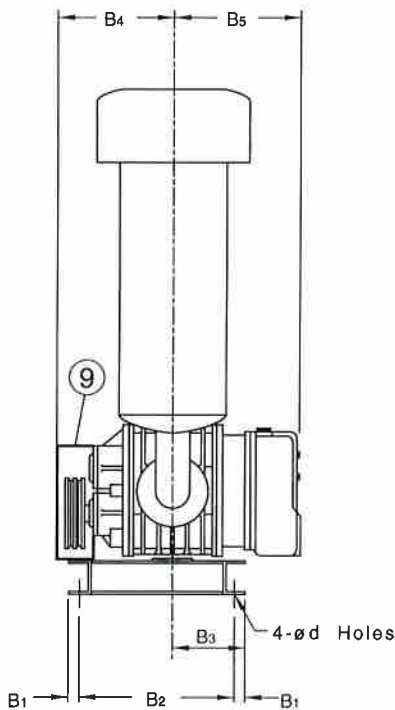
標準配置圖

RS-50 • 65 • 80

Typical Arrangement



RSV-50 • 65 • 80

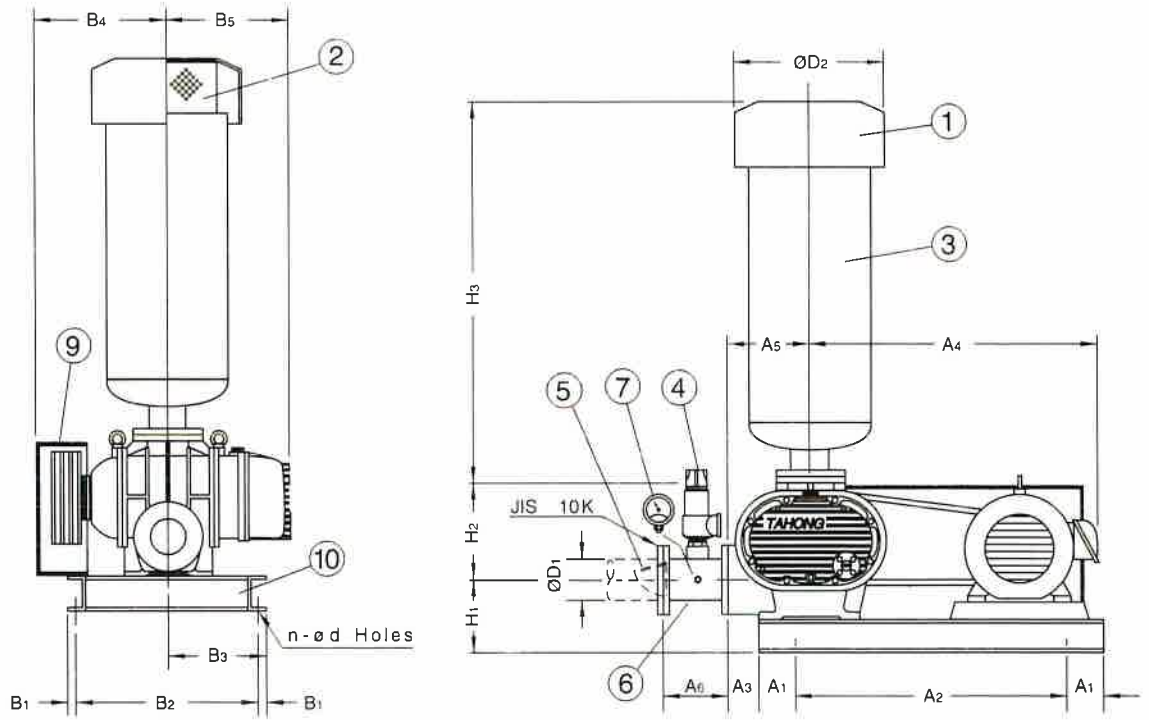


No.	附件	Accessories	No.	附件	Accessories
1	防雨蓋	Rain Cover	6	三通管 "T" Joint	
2	空氣濾清器	Air Filter	7	壓力錶	Pressure Gauge
3	消音器	Silencer	8	真空錶	Vacuum Gauge
4	安全閥	Safety Valve	9	皮帶護蓋	Belt Cover
5	逆止閥	Check Valve	10	連結台	Common Bed

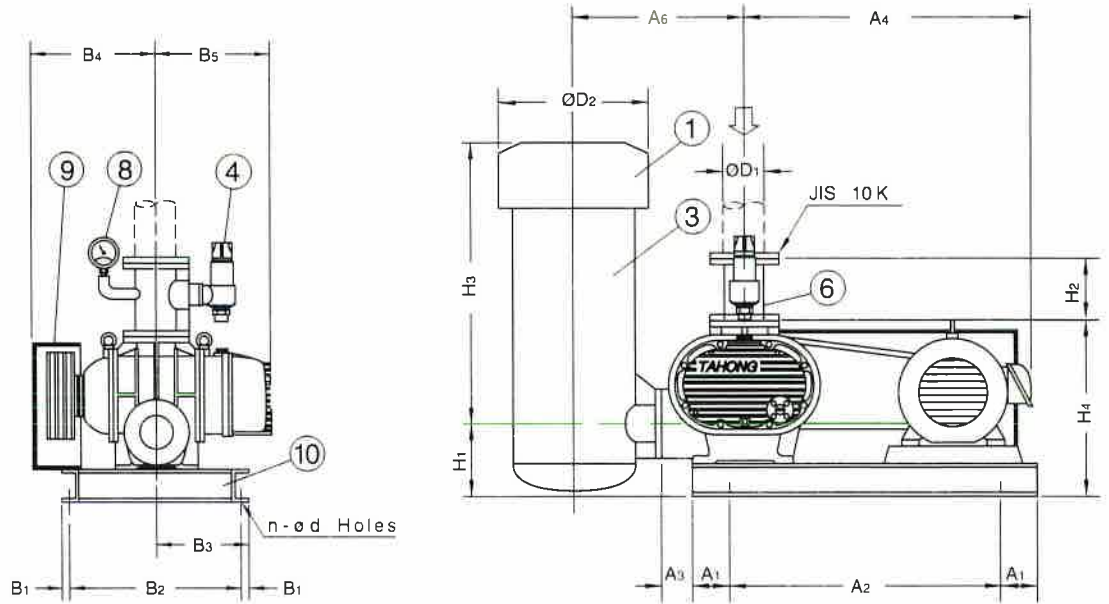
Type	A <sub>1</sub>	A <sub>2</sub>	A <sub>4</sub>	A <sub>5</sub>	A <sub>5</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	B <sub>5</sub>	∅D <sub>1</sub>	∅D <sub>2</sub>	∅d	H <sub>1</sub>	H <sub>2</sub>	Weight kg
RS-50	100	410	400	293	145	15	240	100	260	245	50	350	14	235	920	135
RS-65	100	560	540	310	145	15	360	160	280	300	65	350	14	235	940	160
RS-80	100	560	500	380	170	15	360	160	300	325	80	350	14	235	960	185
RSV-50	100	410	400	383	88	15	240	100	260	245	50	350	14	235	920	140
RSV-65	100	560	540	410	105	15	360	160	280	300	65	350	14	235	940	165
RSV-80	100	560	500	495	125	15	360	160	300	325	80	350	14	235	960	190

\*表中重量不含馬達。The weights in above chart exclude weight of motor.

RS-100 • 125 • 150 • 200 • 250 • 300



RSV-100 • 125 • 150 • 200 • 250 • 300



Type	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>	A <sub>6</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	B <sub>5</sub>	øD <sub>1</sub>	øD <sub>2</sub>	ød	n	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Weight kg
RS-100	100	815	90	900	240	200	20	540	280	390	370	100	445	19	4	220	310	1180	-	375
RS-125	100	815	90	900	240	200	20	540	230	440	415	125	445	19	4	240	340	1180	-	440
RS-150	100	950	110	1050	310	250	30	620	300	470	455	150	445	19	4	285	370	1560	-	720
RS-200	150	1000	130	1230	380	260	35	580	300	530	535	200	580	24	6	335	445	1700	-	1100
RS-250	150	1000	130	1270	380	260	35	800	400	640	640	250	760	24	6	370	500	1770	-	1380
RS-300	35	1530	165	1505	475	340	35	1030	480	850	850	300	760	24	8	450	600	1770	-	2300
RSV-100	100	815	90	900	-	500	20	540	280	390	370	100	445	19	4	220	200	910	530	405
RSV-125	100	815	90	900	-	500	20	540	230	440	415	125	445	19	4	240	200	910	580	480
RSV-150	100	950	110	1050	-	540	30	620	300	470	455	150	445	19	4	285	250	1250	655	770
RSV-200	150	1000	130	1230	-	705	35	580	300	530	535	200	580	24	6	335	260	1330	780	1155
RSV-250	150	1000	130	1270	-	780	35	800	400	640	640	250	760	24	6	370	260	1340	870	1465
RSV-300	35	1530	165	1505	-	875	35	1030	480	850	850	300	760	24	8	450	340	1340	1050	2400

\*RS(V)-300以上型式請向本公司洽詢。 Other series above RS(V)-300, please contact with us.

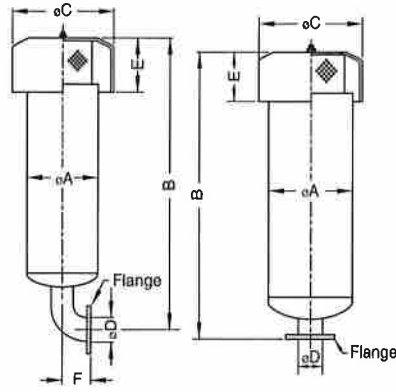
\*表中重量不含馬達。 The weights in above chart exclude weight of motor.



# 附件及尺寸 Accessories with Dimensions

※註記為選擇附件  
optional accessories

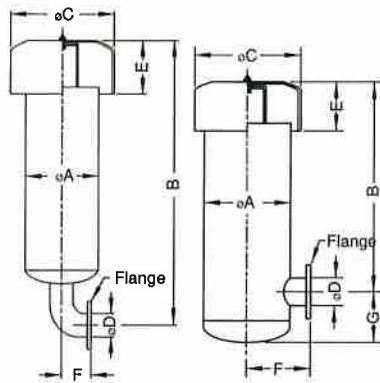
## 入口消音器 Suction Silencer



SS-50,65,80      SS-100,125,150,200,250,300

Type	øA	B	øC	øD	E	F	Flange	適用機型
SS 50	244	920	350	50	160	80	JIS 5K	RS-50
SS 65	244	940	350	65	160	100	JIS 5K	RS-65
SS 80	244	960	350	80	160	120	JIS 5K	RS-80
SS 100	360	1175	445	100	195	—	JIS 10K	RS-100
SS 125	360	1175	445	125	195	—	JIS 10K	RS-125
SS 150	360	1560	445	150	195	—	JIS 10K	RS-150
SS 200	470	1690	580	200	310	—	JIS 10K	RS-200
SS 250	600	1765	760	250	360	—	JIS 10K	RS-250
SS 300	600	1765	760	300	360	—	JIS 10K	RS-300

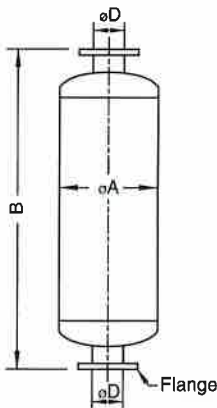
## 出口消音器 Discharge Silencer



DS-50,65,80      DS-100,125,200,250,300

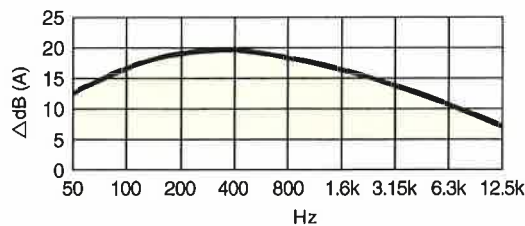
Type	øA	B	øC	øD	E	F	G	Flange	適用機型
DS 50	244	920	350	50	160	80	—	JIS 5K	RS-50
DS 65	244	940	350	65	160	100	—	JIS 5K	RS-65
DS 80	244	960	350	80	160	120	—	JIS 5K	RS-80
DS 100	360	905	445	100	195	260	195	JIS 10K	RS-100
DS 125	360	905	445	125	195	260	195	JIS 10K	RS-125
DS 150	360	1245	445	150	195	270	235	JIS 10K	RS-150
DS 200	470	1325	580	200	310	325	295	JIS 10K	RS-200
DS 250	600	1340	760	250	360	400	360	JIS 10K	RS-250
DS 300	600	1320	760	300	360	400	380	JIS 10K	RS-300

## ※ 出入口配管型消音器 Piping Silencer

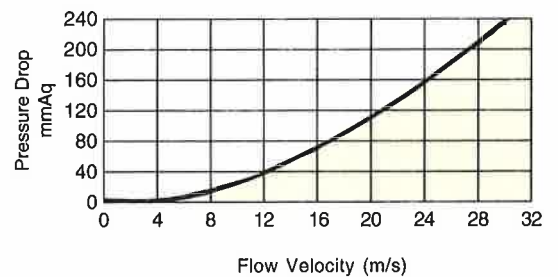


Type	øA	B	øD	Flange	適用機型
PS 50	244	780	50	JIS 5K	RS-50
PS 65	244	780	65	JIS 5K	RS-65
PS 80	244	780	80	JIS 5K	RS-80
PS 100	360	1110	100	JIS 10K	RS-100
PS 125	360	1110	125	JIS 10K	RS-125
PS 150	360	1510	150	JIS 10K	RS-150
PS 200	470	1585	200	JIS 10K	RS-200
PS 250	600	1660	250	JIS 10K	RS-250
PS 300	600	1660	300	JIS 10K	RS-300

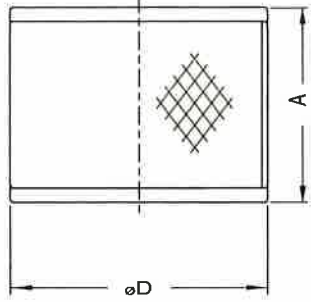
## 消音器減音效果例 Attenuation Curve of Silencer



## 消音器壓損例 Pressure Drop of Silencer

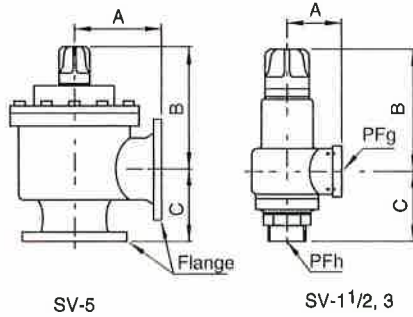


空氣濾清器 Air Filter



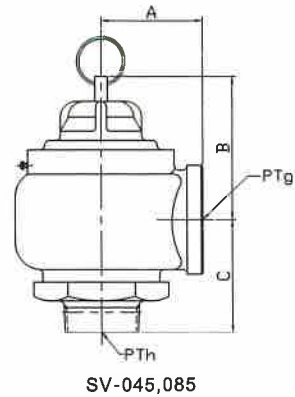
Type	A	øD	適用機型
AF 10	160	220	RS-50, 65, 80
AF 20	185	320	RS-100, 125, 150
AF 30	285	420	RS-200
AF 40	330	550	RS-250, 300

安全閥 Safety Valve



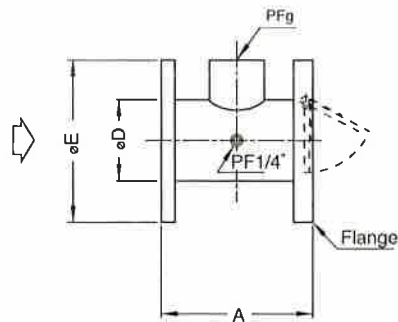
Type	A	B	C	g	h	適用機型
SV 1 1/2	70	170	80	1 1/2"	1 1/2"	RS-50, 65, 80, 150, 125
SV 3	100	255	145	3"	3"	RS-150, 200, 250
SV 5	210	300	175	*	*	RS-300

• JIS 10K 125A



Type	A	B	C	g	h	適用機型
SV 045	65	93	72	1 1/2"	1 1/2"	RS-50, 65, 80, 100, 125
SV 085	100	125	115	3"	3"	RS-150, 200, 250

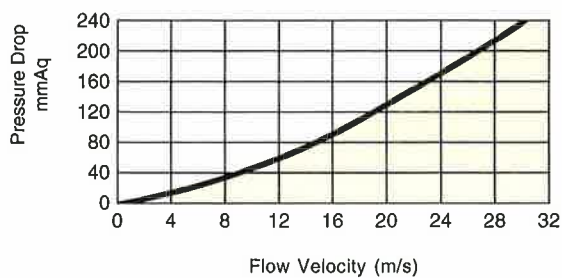
三通管逆止閥 "T" Joint & Check Valve



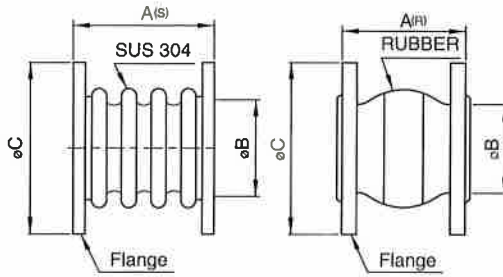
Type	A	øD	øE	g	Flange	適用機型
TC 50	140	50	130	1 1/2"	JIS 5K	RS-50
TC 65	140	65	155	1 1/2"	JIS 5K	RS-65
TC 80	140	80	180	1 1/2"	JIS 5K	RS-80
TC 100	200	100	210	1 1/2"	JIS 10K	RS-100
TC 125	200	125	250	1 1/2"	JIS 10K	RS-125
TC 150	250	150	280	3"	JIS 10K	RS-150
TC 200	260	200	330	3"	JIS 10K	RS-200
TC 250	260	250	400	3"	JIS 10K	RS-250
TC 300	340	300	445	*	JIS 10K	RS-300

• JIS 10K 125A

逆止閥壓損例 Pressure Drop of Check Valve



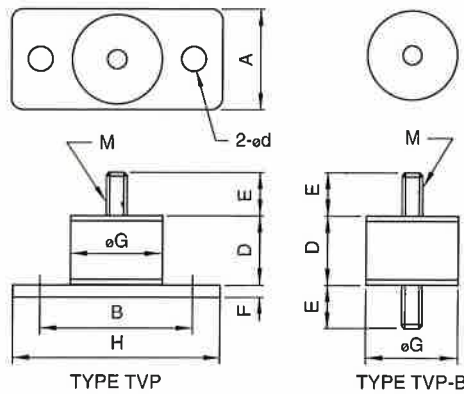
※伸縮接頭 Expansion Joint



Type	A(s)	A(r)	øB	øC	Flange	適用機型
EJ 50	105	105	50	130	JIS 5K	RS 50
EJ 65	115	115	65	155	JIS 5K	RS 65
EJ 80	130	130	80	180	JIS 5K	RS 80
EJ 100	150	135	100	210	JIS 10K	RS 100
EJ 125	150	170	125	250	JIS 10K	RS 125
EJ 150	150	180	150	260	JIS 10K	RS 150
EJ 200	200	205	200	330	JIS 10K	RS 200
EJ 250	200	240	250	400	JIS 10K	RS 250
EJ 300	200	260	300	445	JIS 10K	RS 300

※SUS 304伸縮管適用於 $P_s=5000\text{mmAq}$ 以上  
The SUS 304 bellows is suitable for pressure over 5000 mmAq

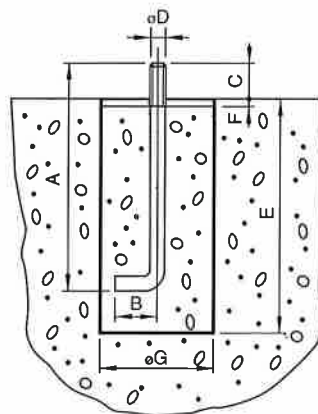
※防震墊 Vibration Isolator



Type	A	B	D	E	F	øG	M	ød	H	適用機型
TVP 102	60	90	40	25	6	50	M12	12	140	RS-50, 65, 80
TVP 103	80	120	55	35	9	70	M16	15	160	RS-100, 125, 150
TVP 104	110	160	80	45	12	100	M20	19	210	RS-200, 250, 300

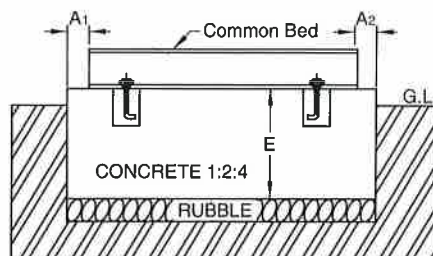
Type	D	E	øG	M	適用機型
TVP 102B	40	25	50	M12	RS-50, 65, 80
TVP 103B	55	35	70	M16	RS-100, 125, 150
TVP 104B	80	45	100	M20	RS-200, 250, 300

基礎螺栓 Anchor Bolt



Type	A	B	C	øD	E	F	øG	適用機型
M12	165	30	25	12	165	5	100	RS-50, 65, 80
M16	245	45	40	16	245	5	120	RS-100, 125, 150
M20	325	55	55	20	325	5	150	RS-200, 350, 300

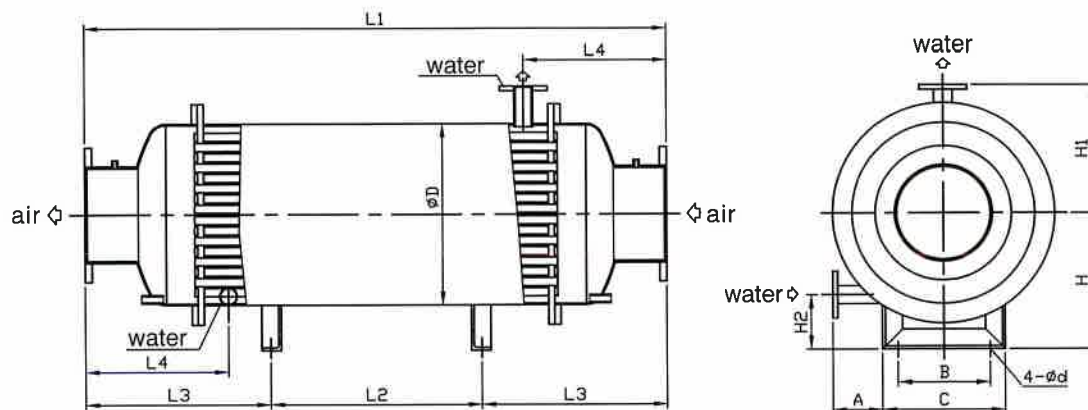
水泥基礎連結台 Concrete Foundation for Reference



Type	A <sub>1</sub>	A <sub>2</sub>	E
RS-50, 65, 80	100	100	650
RS-100, 125	150	150	750
RS-150	150	150	1000
RS-200, 250	200	200	1250
RS-300	200	200	1350

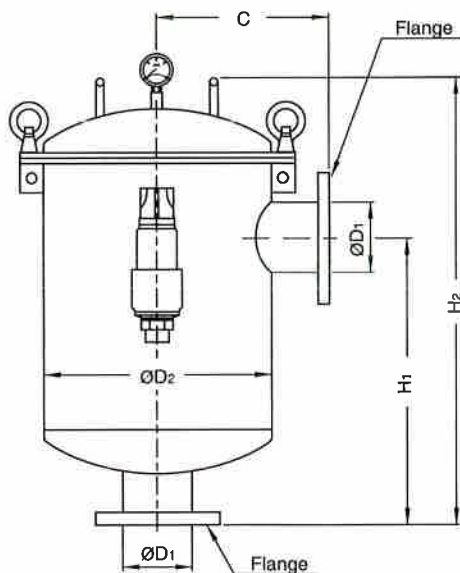


※冷却器 Cooler



Type	$\phi D$	L1	L2	L3	H	H1	H2	A	B	C	$\phi d$	冷却水
CL 50	244	1600	700	450	235	190	125	165	90	150	12	20A
CL 65	244	1600	700	450	235	190	125	165	90	150	12	20A
CL 80	244	1600	700	450	235	190	125	165	90	150	12	20A
CL 100	285	2000	900	550	220	210	95	180	115	175	12	25A
CL 125	285	2000	900	550	220	210	95	180	115	175	12	25A
CL 150	360	2000	900	550	285	250	130	215	165	225	12	40A
CL 200	470	1900	700	600	335	310	130	275	240	300	15	50A
CL 250	600	2200	900	650	370	390	100	325	340	400	15	50A
CL 300	600	2200	900	650	450	390	180	325	340	400	15	50A

※入口過濾桶(RSV用) Suction Filter Tank (for RSV)



Type	$\phi D_1$	$\phi D_2$	C	H1	H2	Flange	適用機型
FT 50	50	244	222	340	530	JIS 5K	RSV-50
FT 65	65	244	222	440	630	JIS 5K	RSV-65
FT 80	80	244	222	525	730	JIS 5K	RSV-80
FT 100	100	360	280	470	730	JIS 10K	RSV-100
FT 125	125	360	280	470	730	JIS 10K	RSV-125
FT 150	150	360	280	595	880	JIS 10K	RSV-150
FT 200	200	470	335	635	1000	JIS 10K	RSV-200
FT 250	250	470	335	800	1200	JIS 10K	RSV-250
FT 300	300	600	405	1000	1400	JIS 10K	RSV-300

※濾網：20 mesh(SUS 304)

※齒輪箱冷却水套 Gear Box with Water Jacket

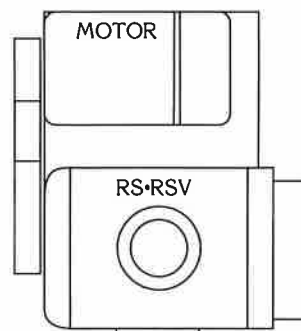
適用於壓力比1.6以上或125HP以上  
It is suitable for pressure ratio over 1.6 or horsepower over 125HP

Type	冷却水配管尺寸	水量	水壓
RS-100	PT 1/2	8l/min	1~2 kg/cm <sup>2</sup>
RS-125	PT 1/2	8l/min	1~2 kg/cm <sup>2</sup>
RS-150	PT 1/2	8l/min	1~2 kg/cm <sup>2</sup>
RS-200	PT 1/2	10l/min	1~2 kg/cm <sup>2</sup>
RS-250	PT 1/2	10l/min	1~2 kg/cm <sup>2</sup>
RS-300	PT 3/4	12l/min	1~2 kg/cm <sup>2</sup>

# 傳動方式 選擇 Drive Arrangements

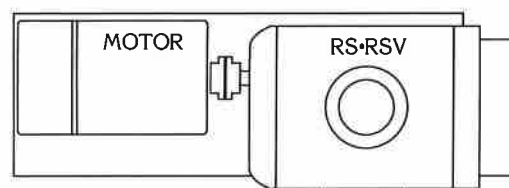


皮帶傳動  
Belt-Drive



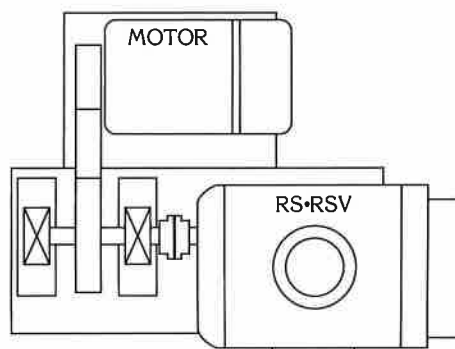
聯結器直結  
Coupling Direct-Drive

適合於4、6極轉速的性能使用。  
It is suitable for 4 or 6 poles motor.



對軸傳動  
V-Belt with counter Shaft-Drive

適合於150HP以上之大馬力傳動使用。  
It is suitable for over 150HP motor.



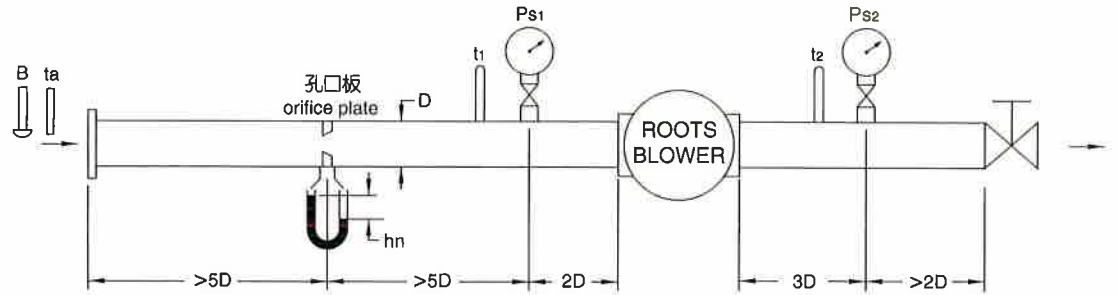
## 氣體特性表 Properties of Gases

Type of Gas	Symbol	Molecular Weight	Specific Gravity (kgf/ Nm <sup>3</sup> )	k (Cp/Cv)
Air	—	28.97	1.293	1.4
Oxygen	O <sub>2</sub>	32.00	1.429	1.4
Nitrogen	N <sub>2</sub>	28.02	1.251	1.4
Hydrogen	H <sub>2</sub>	2.016	0.0899	1.41
Carbon monoxide	CO	28.00	1.250	1.4
Carbonic acid gas	CO <sub>2</sub>	44.00	1.964	1.3
Sulfurous acid gas	SO <sub>2</sub>	64.07	2.857	1.39
Ammonium	NH <sub>3</sub>	17.03	0.760	1.31
Acetylene	C <sub>2</sub> H <sub>2</sub>	26.02	1.161	1.26
Methane	CH <sub>4</sub>	16.03	0.715	1.31
Coke oven gas	—	—	0.45	1.35
Blast furnace gas	—	—	1.31	1.39
Steam	H <sub>2</sub> O	18.02	—	1.33

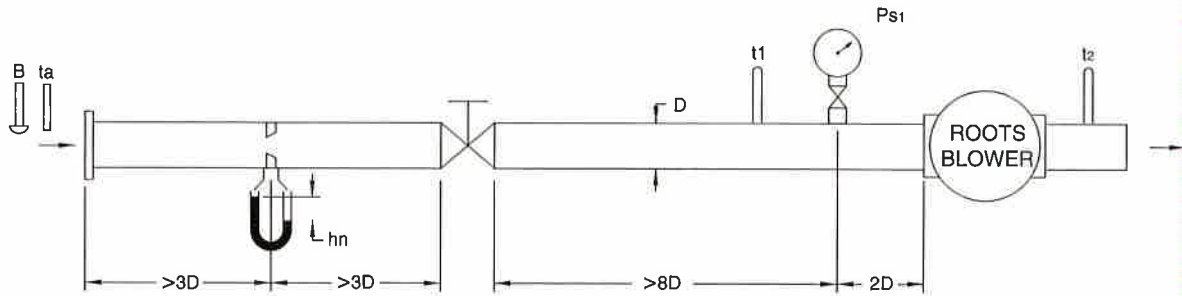
性能測試  
裝置  
Performance  
Testing  
Arrangements

Refer to JIS  
B-8340, B-8341

RS Type



RSV Type

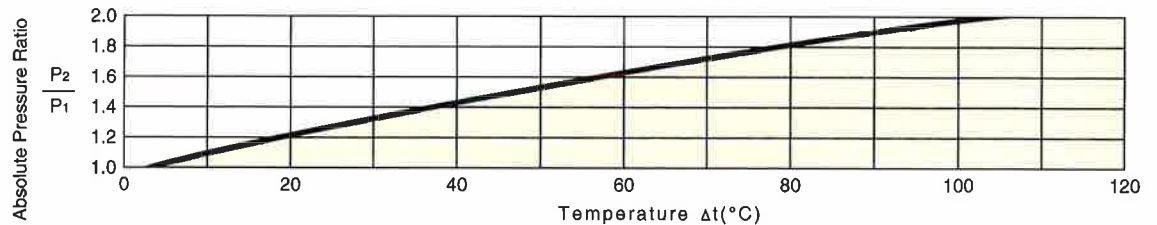


風量計算公式  
Capacity  
Calculation

$$Q = \frac{60 \alpha \epsilon A}{\gamma_1} \sqrt{2g \gamma_n h_n}$$

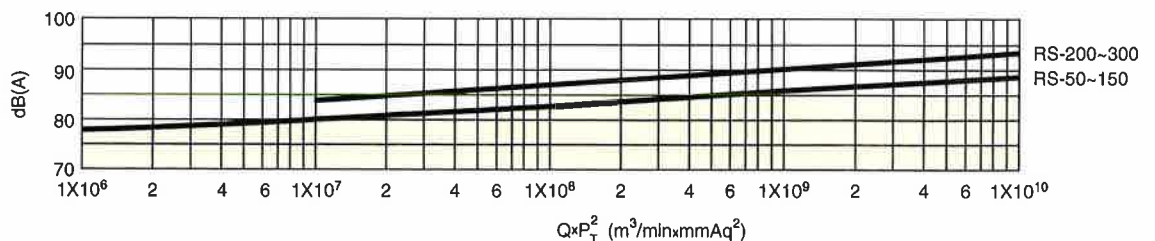
- Q (m<sup>3</sup>/min) : 吸入風量 Suction capacity
- A (m<sup>2</sup>) : 孔口板內圓孔面積 Circular hole area of orifice
- α : 流量係數 Flow coefficient
- ε : 空氣膨脹修正係數 Correction factor due to expansion of air
- g (m/s<sup>2</sup>) : 重力加速度 Acceleration of free fall
- γ<sub>n</sub> (kgf/m<sup>3</sup>) : 孔口板前空氣的比重量 Weight per unit volume of air in front of orifice
- γ<sub>1</sub> (kgf/m<sup>3</sup>) : 鼓風機吸入口空氣的比重量 Weight per unit volume of suction air
- h<sub>n</sub> (mmAq) : 孔口板前後的壓力差 Pressure difference before and after the orifice

出口溫昇圖  
Temperature  
Rise of  
Discharge



(附入口消音器；出口配管狀態下)

魯氏鼓風機噪音  
Noise Level of  
Roots Blower





# 訂製資料 In Making Purchase or Enquiry

## 1. 用途及使用狀況

說明用途、使用場所及運轉的情形，例如連續運轉或間歇性運轉。

## 2. 風量

說明要求的風量是在標準狀態（一大氣壓、20°C、相對濕度65%）或基準狀態，除非特別說明，一般均指入口狀態而非出口狀態。

## 3. 壓力

需註明使用壓力是否穩定在一特定的壓力值或壓力隨時在改變。假如壓力有變化，請說明壓力改變和風量的相對關係。如壓力下降則風量增大，反之則風量減少。並訂出其變化的範圍。所訂定的壓力是指出口的靜壓或是出入口的壓差均須標明，還有入口壓力是否在一大氣壓下，如非一大氣壓請註明其出入口的壓力。

## 4. 輸送氣體的種類及其比重

請標明下列各項：

- a 氣體種類及其成分
- b 其他物質的成分及其大小
- c 比重
- d 化學性質
- e 建議使用材質
- f 是否有爆炸性或毒性

如無註明上列事項，將以一般空氣處理之。

## 5. 氣體溫度

大豐魯氏鼓風機的標準規格品是用來輸送入口溫度為常溫的氣體，如入口使用溫度高於常溫，請告知本公司，以便作特殊設計以適用於高溫狀態。

## 6. 原動機

如使用馬達帶動，請告知電源之電壓、頻率、單相或三相等。

## 1. Application and conditions

Describe the purpose of use, continuous or intermittent operation.

## 2. Flow Rate

Describe whether the flow rate is at standard condition or normal condition (unless specified, the flow rate will be calculated as a flow rate under suction condition, and it is not handled as discharge flow rate i.e. at 760 mm Hg, 20°C, 65% RH or standard condition.)

## 3. Pressure

Describe whether pressure is constant or variable, if variable, specify the range and the relationship between air flow rate and pressure. Describe whether pressure shows static pressure of the discharge or difference between suction and discharge pressure. State whether suction pressure is atmospheric pressure. Otherwise, specify suction and discharge pressure respectively.

## 4. Type of Gas and Specific Gravity

Specify the following points: Type of gas and its components, content of impurities and their sizes, specific gravity, chemical properties, suggestions for materials, explosive and/or toxic nature (regarded as normal-temperature, normal-pressure air unless specified).

## 5. Gas Temperature

TA HONG's Roots Blowers are normally used for normal temperature at suction. If suction temperature is higher than normal temperature, please inform TA HONG CO.,

## 6. Type of Prime Mover

When a motor is used as the prime mover, Specify the voltage, frequency and power supply condition ect.,

## 單位換算 Unit Conversion

### 壓力 Pressure

1 Pa=1N/m<sup>2</sup>

	mbar	Pa	atm	lbf/in <sup>2</sup>	kgf/cm <sup>2</sup>	in Hg	mmAq
1 mbar	1	10 <sup>2</sup>	9.869x10 <sup>-4</sup>	1.45x10 <sup>-2</sup>	1.02x10 <sup>-3</sup>	2.953x10 <sup>-2</sup>	10.197
1 Pa	0.01	1	9.87x10 <sup>-6</sup>	1.45x10 <sup>-4</sup>	1.02x10 <sup>-5</sup>	2.953x10 <sup>-4</sup>	0.102
1 atm	1.013x10 <sup>3</sup>	1.013x10 <sup>5</sup>	1	14.7	1.033	29.92	1.033x10 <sup>4</sup>
1 lbf/in <sup>2</sup>	68.95	6.895x10 <sup>-2</sup>	6.805x10 <sup>-2</sup>	1	7.03x10 <sup>-2</sup>	2.036	7.03x10 <sup>2</sup>
1 kgf/cm <sup>2</sup>	9.807x10 <sup>2</sup>	9.807x10 <sup>4</sup>	0.968	14.22	1	28.96	10 <sup>4</sup>
1 in Hg	33.86	3.386x10 <sup>3</sup>	3.342x10 <sup>-2</sup>	0.491	3.45x10 <sup>-2</sup>	1	3.45x10 <sup>2</sup>
1 mmAq	9.807x10 <sup>-2</sup>	9.807	9.677x10 <sup>-5</sup>	1.42x10 <sup>-2</sup>	10 <sup>-4</sup>	2.896x10 <sup>-3</sup>	1

### 風量 Capacity

	m <sup>3</sup> /min	m <sup>3</sup> /h	l/min	ft <sup>3</sup> /min (cfm)
1 m <sup>3</sup> /min	1	60	1000	35.31
1 m <sup>3</sup> /h	0.017	1	16.67	0.589
1 l/min	0.001	0.06	1	0.035
1 ft <sup>3</sup> /min (cfm)	0.028	1.699	28.32	1

### 功率 Power

	kg-m/sec	kW	HP	PS
1 kg-m/sec	1	0.01	0.013	0.013
1 kW	101.97	1	1.341	1.360
1 HP	76.038	0.746	1	1.014
1 PS	75	0.736	0.986	1

### 壓力常用換算公式

#### Pressure Conversion Formula

- 1 Pa = 0.102 mmAq
- 1 mbar = 10.197 mmAq
- 1 mmHg = 13.6 mmAq
- 1 psi = 703 mmAq
- 1 Torr = 133.3 Pa
- 1 Torr = 1.333 mbar

## 主要產品

## Main Products

- 工業用途排風機 • Fans & Blowers
- 魯氏鼓風機 • Roots Blowers
- 多段魯氏壓縮機 • Multi-Stage Roots Compressors
- 真空幫浦 • Vacuum Pumps
- 真空排氣系統 • Vacuum Pumping Systems
- 乾式真空幫浦 • Dry Vacuum Pumps



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