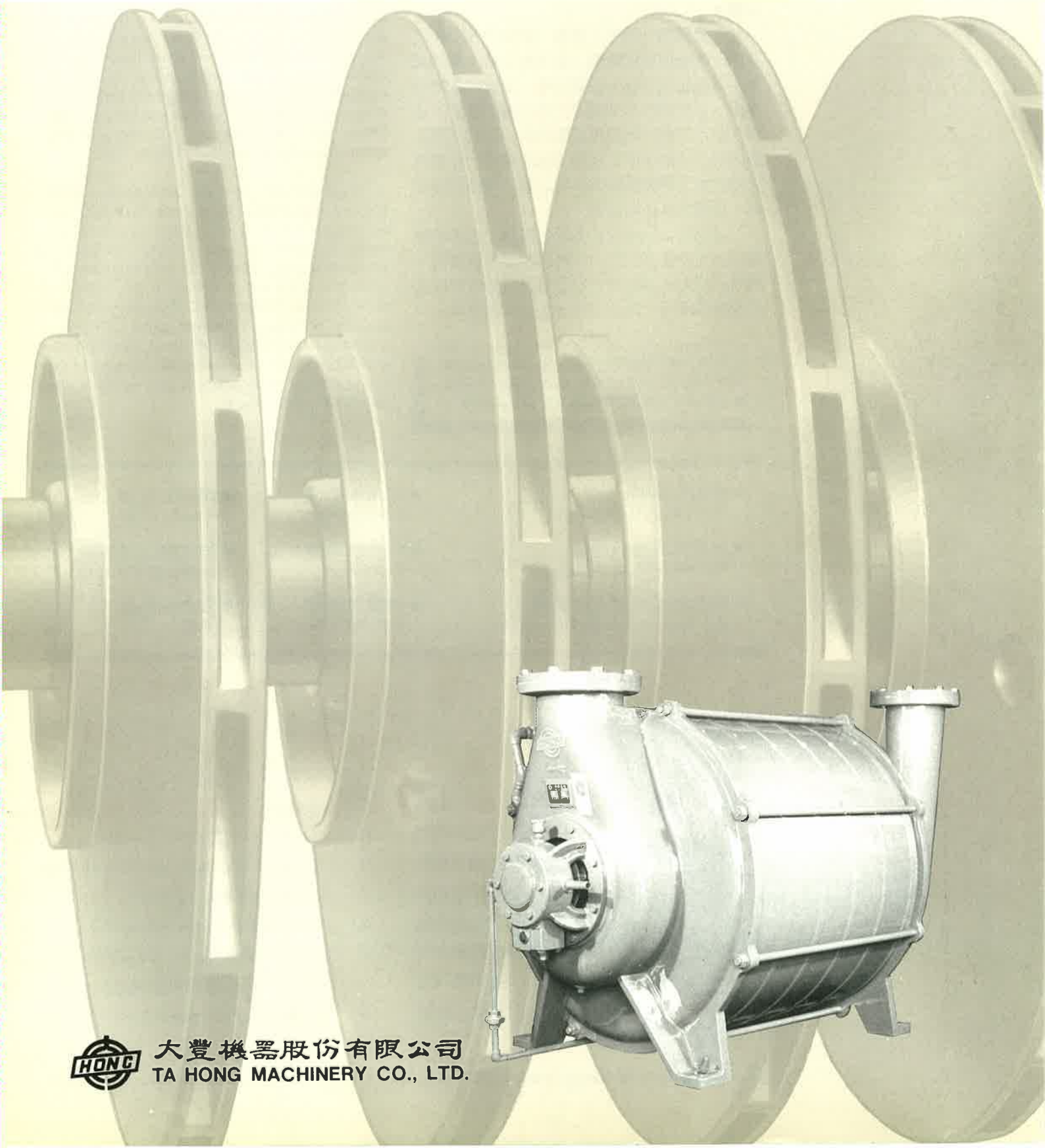


TURBO MULTI-STAGE BLOWER

透浦 多段 鼓風機

TB Multi-Stage 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，自1951年開始產製各種送風機，多年來積極地從事研究開發並引進新銳加工機械、儀器。經驗技術的累積、設計人才的養成，使大豐送風機能以高效率、低噪音、堅固耐用之特色，獲致國內工業界一致的讚譽。由於製造技術已達先進國家水準，產品更行銷至美國、中南美及東南亞，廣泛地用於空調、生產設備、發電廠、高溫爐及集塵、焚化爐、脫臭、排煙、脫硫等公害防治用之設備。

大豐擁有一流加工機械、檢驗測試設備及儀器，產品包括送風機、魯氏鼓風機、真空幫浦、真空排氣系統，為國內唯一能提供全系列單段、多段鋼板型或鑄造型送風機的廠家。基於大豐本身為一精密機械製造廠，因此不僅在使用點之性能設計上能滿足您的需要，在機械結構性能上更能讓您無後顧之憂，減少日後維修、更換的麻煩與浪費。

本型錄中的多段式透浦鼓風機，即為大豐得意的代表性產品之一，其噪音低、振動微、效率高的特性頗能符合現今環保意識的成長及注重節約能源、降低生產成本的工業要求。

本型錄中鼓風機性能皆係大豐多年來腳踏實地研究開發出來的成果，絕非抄襲自外國型錄，敬請放心選用或做為工程設計之參考。

Established in 1945, TAHONG CO., Ltd. is a promising company specializing in the production of all kinds of fans. The company has not only actively joined in many researches and developed new know-how but also brought in advanced processing machinery and instruments since the start of this line in 1951. With years of experience and skilled designers, TAHONG is a veteran. The products from the company are reputed in the domestic industry circle for high efficiency, low unpleasant noise, firmness, and durability. As the production technology is up to international standard, the export of the products spread out to the United States, South and Central America and Southeast Asia. These fans are widely used in air conditioning, production equipment, power plant, high-heat furnace, incinerator, and installations for prevention of pollution such as removing offensive-smelling, removing sulphur, smong exhaust, etc.

Equipped with advanced processing machinery and inspection instruments, TAHONG puts a variety of products on market including fans, Roots blowers, vacuum pumps, and vacuum pumping system. That is the only manufacturer providing a full range of fans in the models of steel plated and castiron in single or multi-stage systems in Taiwan. Moreover, since TAHONG is a specialist in the production of precision machinery, you will be satisfied by the quality and the capability of its products no matter in operation or maintenance.

● 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

目錄 Contents

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用途 Applications

1. 攪拌
2. 氣床
3. 空氣乾燥
4. 燃燒
5. 真空吸着
6. 曝氣
7. 增壓機
8. 煤礦排廢氣
9. 硫磺還原
10. 廢水處理
11. 流體化處理
12. 工業用真空吸塵
13. 粉粒體輸送
14. 產品冷卻
15. 製程用空氣源
16. 造紙工業
17. 印刷工業
18. 紡織工業
19. 鑄造工業
20. 食品工業

- Agitation
- Air Float
- Product Drying
- Combustion Air
- Vacuum Lift
- Aeration
- Gas Boosting
- Methane Exhaust Systems
- Sulphur Recovery
- Waste Water Treatment
- Fluidizing
- Industrial Vacuum Cleaning
- Conveying
- Products Cooling
- Process Air
- Paper Mill
- Printing Industry
- Textile Industry
- Foundry Industry
- Food Processing

TB-2.5×6T4



TB-3×8T



TB-6×6T



優點 Advantages

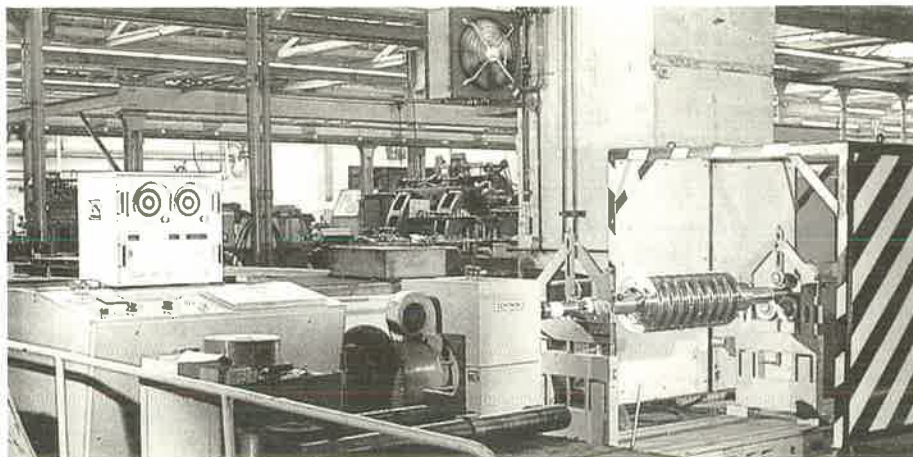
1. 輸送的氣體清潔、乾燥且無油
2. 絕無脈動
3. 超低噪音
4. 高效率
5. 保養容易
6. 振動極微
7. 穩定區域廣，操作容易
8. 安裝簡單，費用低

- Clean, Dry, Oil Free Air or Gas
- Pulsation Free
- Exceptionally Low Noise Levels
- High Efficiency
- Maintenance Easy
- Low Vibration Level
- Wide Range of Stable Operation
- Simple Installation Low Expense

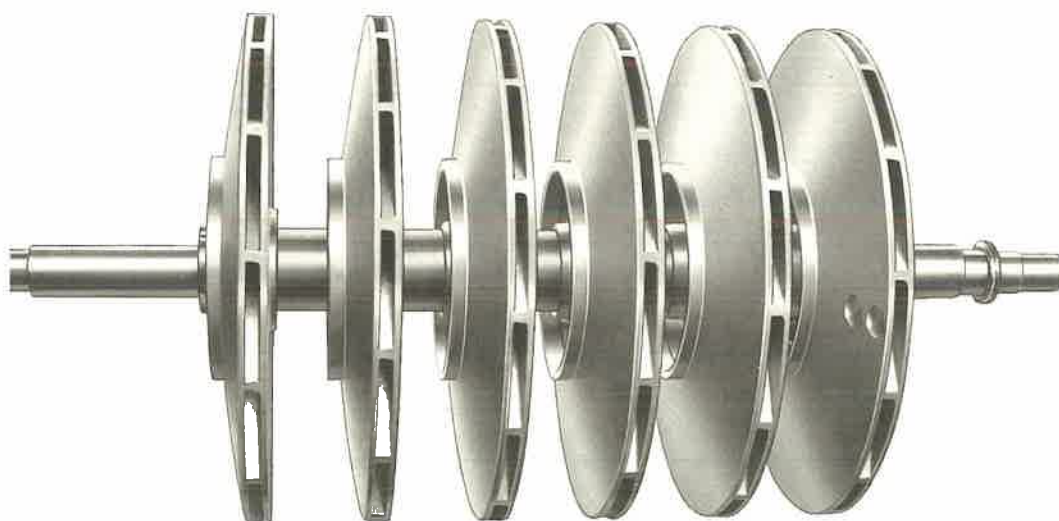
設計特色

Features of Design

1. 效率高，運轉穩定。
 2. 採用滾珠軸承，保養容易。
 3. 葉輪採用鋁合金材質鑄造，重量輕，强度高。
 4. 葉輪及軸均經電子動平衡機校正，振動極微。
 5. 採剛性軸設計。
 6. 每台測試均合乎中國國家標準(CNS)保證性能滿足規格要求。
 7. 採非接觸性的曲折式軸封，不會磨損及發熱，密封性極佳。
 8. 軸承座與本體分開，確保輸送氣體乾淨無油，軸承壽命長。
- High efficiency, running stable.
 - Anti-friction bearings are adopted, maintenance free.
 - Using aluminum alloy impeller, light and high strength.
 - Rotating elements are dynamically balanced, exceptional low vibration.
 - Rigid shaft design.
 - TAHONG has extensive facilities for conducting complete CNS, JIS, etc. code performance tests.
 - Non-contact labyrinth seals are adopted, abrasion and heat free. Also, sealing is exceptionally good.
 - Bearing housing & blower casing are separated to convey air or gas without oil and to make long life of bearings.



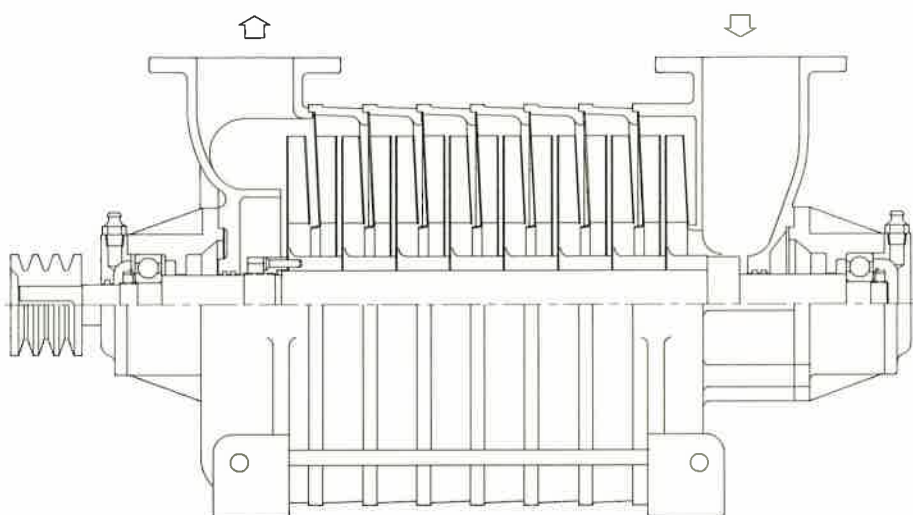
西德製動平衡校正機 "Schenck" dynamic balancing machine



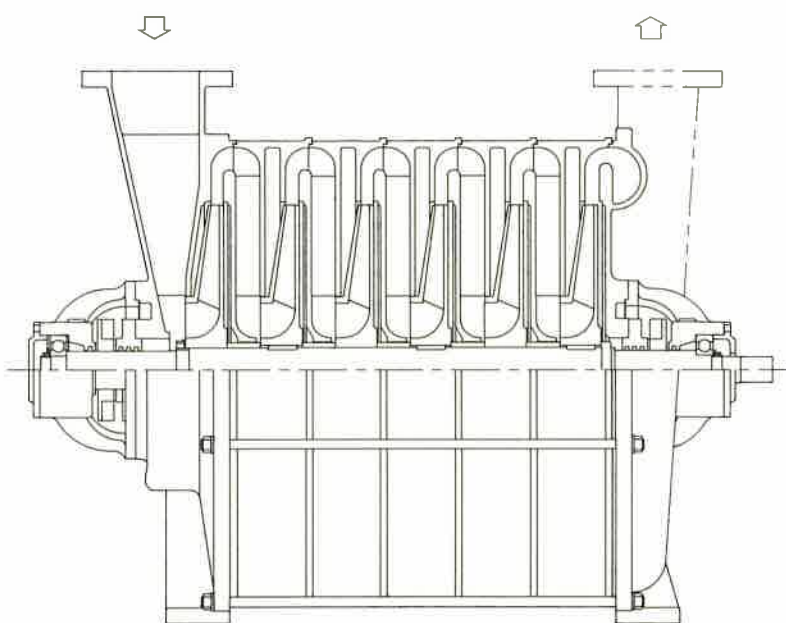
經精密動平衡校正的葉輪組合 The balanced multi-stage rotor

鼓風機構造
Construction
of Blowers

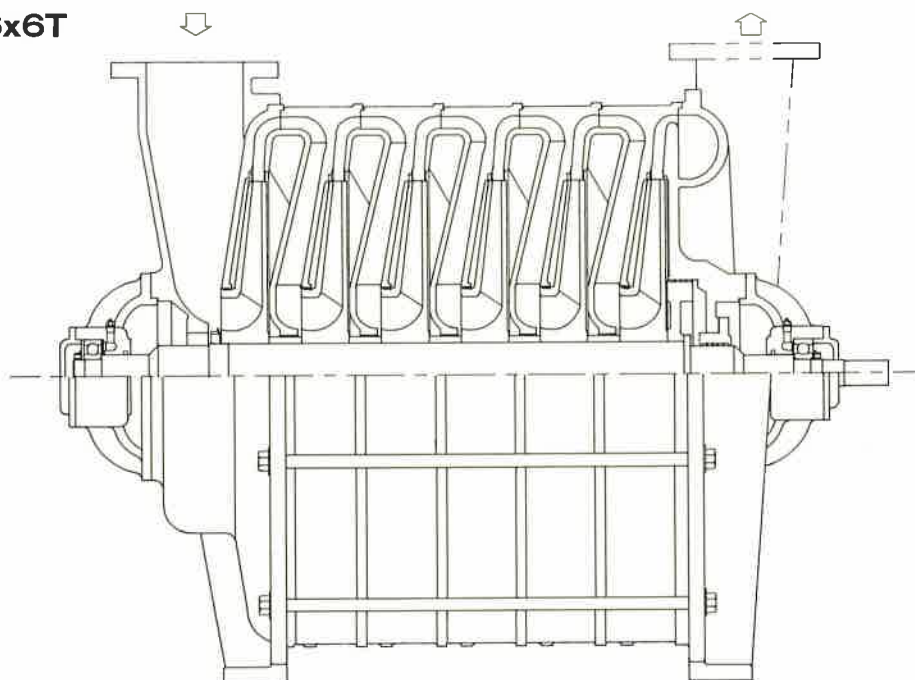
TB-3x8T



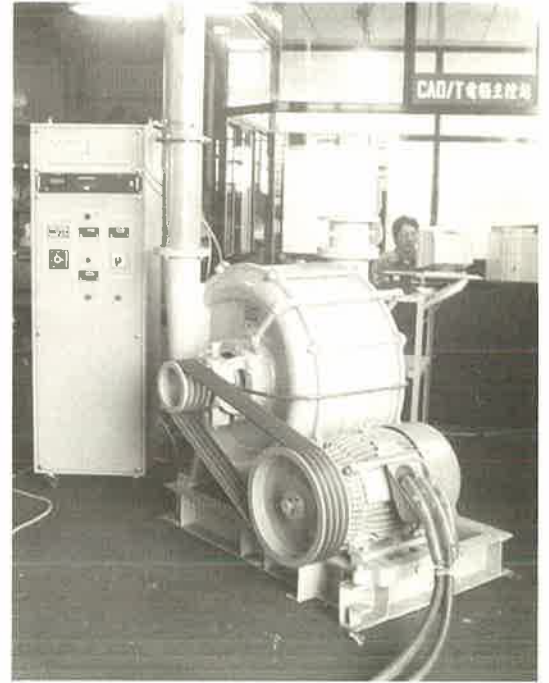
TB-4x6T



TB-6x6T



性能測試
設備
Performance
Testing
Equipments

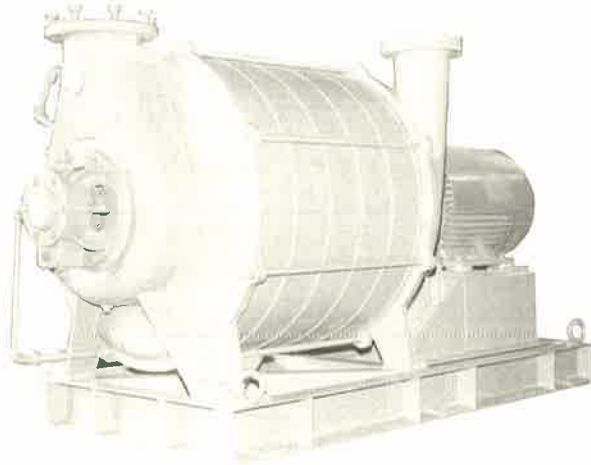


電腦化的性能測試設備 CAD/T performance testing equipments

傳動方式
Drive
Arrangements

GD

聯軸器傳動
Coupling direct-drive



BD

三角皮帶傳動
V Belt-drive



技術資料

Technical Data

動力計算

Power Calculation

鼓風機的理论絕熱動力可依下列公式計算

The theoretical adiabatic power of blowers is calculated by the following expression.

$$L_{ad} = \frac{P_s \cdot Q_s}{4560} \cdot \frac{k}{k-1} \cdot \left\{ \left(\frac{P_d}{P_s} \right)^{\frac{k-1}{k}} - 1 \right\} \text{ (HP)}$$

$k (= C_p/C_v)$: 比熱比 specific heat ratio

$Q_s (\text{m}^3/\text{min})$: 入口風量 suction gas flow rate

$P_s (\text{kgf}/\text{cm}^2)$: 入口絕對壓力 abs. suction pressure

$P_d (\text{kgf}/\text{cm}^2)$: 出口絕對壓力 abs. discharge pressure

原動機所需的額定輸出，可取全絕熱效率約60~80%，並加上10~15%的安全馬力，其計算如下式

For drive unit output, overall adiabatic efficiency is determined to 60 to 80% with a allowance from 10 to 15%.

$$LM = \frac{L_{ad}}{0.6 \sim 0.8} \times (1.1 \sim 1.15) \text{ (HP)}$$

在輸送氣體單位比重較小的氣體時，為使起動較易，需加大安全馬力的裕度。

In the case of gases having low specific gravity (for example, coke oven gas, hydrogen gas, etc.), more allowance must be taken in accordance with the starting and operating methods.

轉速或入口氣體狀態改變對性能的變化

Change in Performance with Speed or Suction Variation

當原使用條件(1)要改為條件(2)時，其關係依下式計算

When the original condition is represented by (1) and changed condition by (2) performance change is approximated by the following expression.

● 轉速改變

With speed changed.

$$\frac{Q_2}{Q_1} = \frac{n_2}{n_1} \quad \frac{H_2}{H_1} = \left(\frac{n_2}{n_1} \right)^2 \quad \frac{L_2}{L_1} = \left(\frac{n_2}{n_1} \right)^3$$

● 入口氣體單位比重改變

With specific gravity of suction gas changed.

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

壓力頭可由下式計算出

Pressure is found by inverse calculation using the adiabatic head H of the following expression.

$$H = RT_s \cdot \frac{k}{k-1} \left\{ \left(\frac{P_d}{P_s} \right)^{\frac{k-1}{k}} - 1 \right\}$$

Q 入口風量 : suction gas flow rate (m^3/min)

H 壓力頭 : head (m)

L 實際馬力 : actual power (HP)

n 轉速 : speed (rpm)

γ 入口氣體單位比重 : specific gravity of suction gas (kgf/m^3)

R 氣體常數 : gas constant (m^2/C)

T_s 入口氣體絕對溫度 : abs. temperature of suction gas ($^{\circ}\text{K}$)

出口氣體溫度

Gas Temperature of Discharge Outlet

當氣體被壓縮後，其溫度上升可依下式計算

When gas is compressed, temperature rise is calculated by the following expression.

$$T_d = T_s + \frac{T_s}{\eta_t} \left\{ \left(\frac{P_d}{P_s} \right)^{\frac{k-1}{k}} - 1 \right\}$$

T_s 入口氣體溫度 : abs. suction gas temperature ($^{\circ}\text{K}$)

T_d 出口氣體溫度 : abs. discharge gas temperature ($^{\circ}\text{K}$)

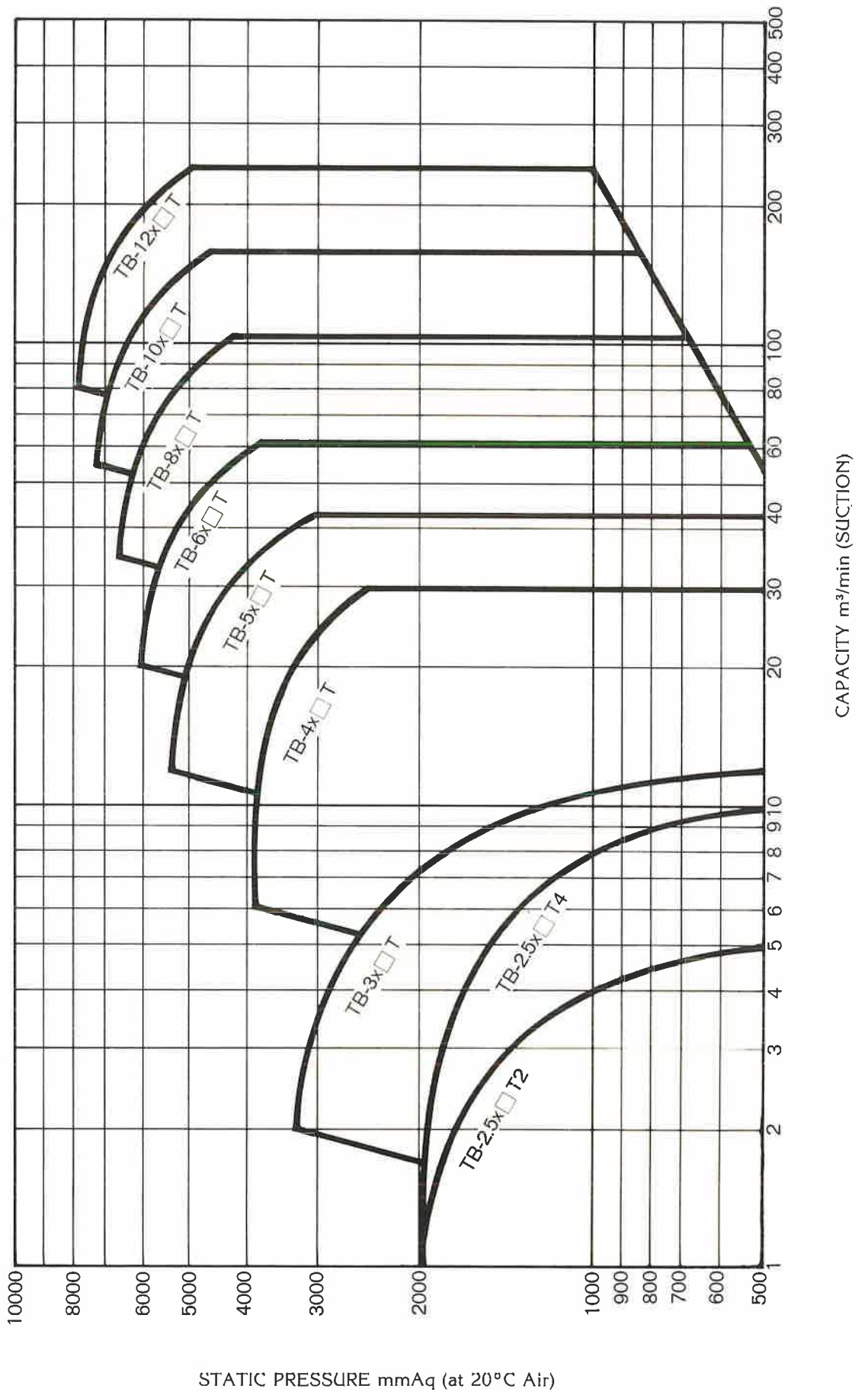
η_t 絕熱溫度效率 : adiabatic temperature efficiency (0.65 to 0.85)

氣體特性表

Properties of Gases

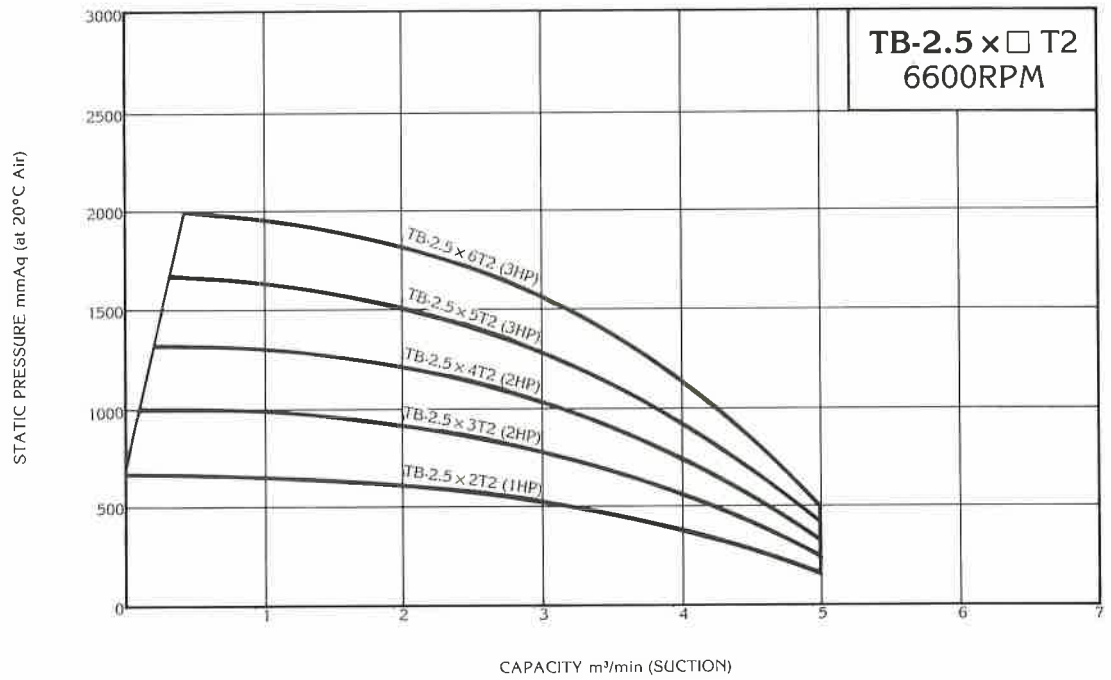
Type of Gas	Symbol	Molecular Weight	Specific Gravity (kgf/Nm^3)	$k (C_p/C_v)$
Air	—	28.97	1.293	1.4
Oxygen	O_2	32.00	1.429	1.4
Nitrogen	N_2	28.02	1.251	1.4
Hydrogen	H_2	2.016	0.0899	1.41
Carbon monoxide	CO	28.00	1.250	1.4
Carbonic acid gas	CO_2	44.00	1.964	1.3
Sulfurous acid gas	SO_2	64.07	2.857	1.39
Ammonium	NH_3	17.03	0.760	1.31
Acetylene	C_2H_2	26.02	1.161	1.26
Methane	CH_4	16.03	0.715	1.31
Coke oven gas	—	—	0.45	1.35
Blast furnace gas	—	—	1.31	1.39
Steam	H_2O	18.02	—	1.33

綜合性能
曲線
General
Performance
Charts

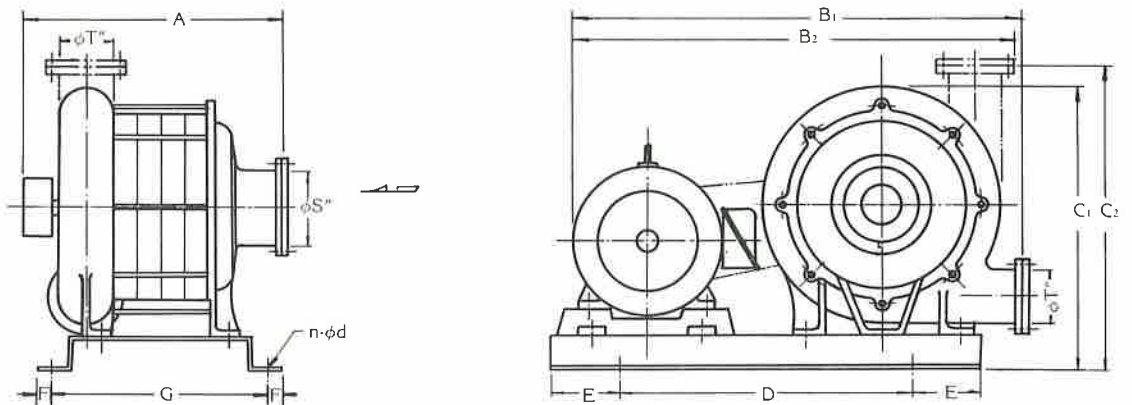


TB-2.5×□T2

性能曲線 Performance Curves



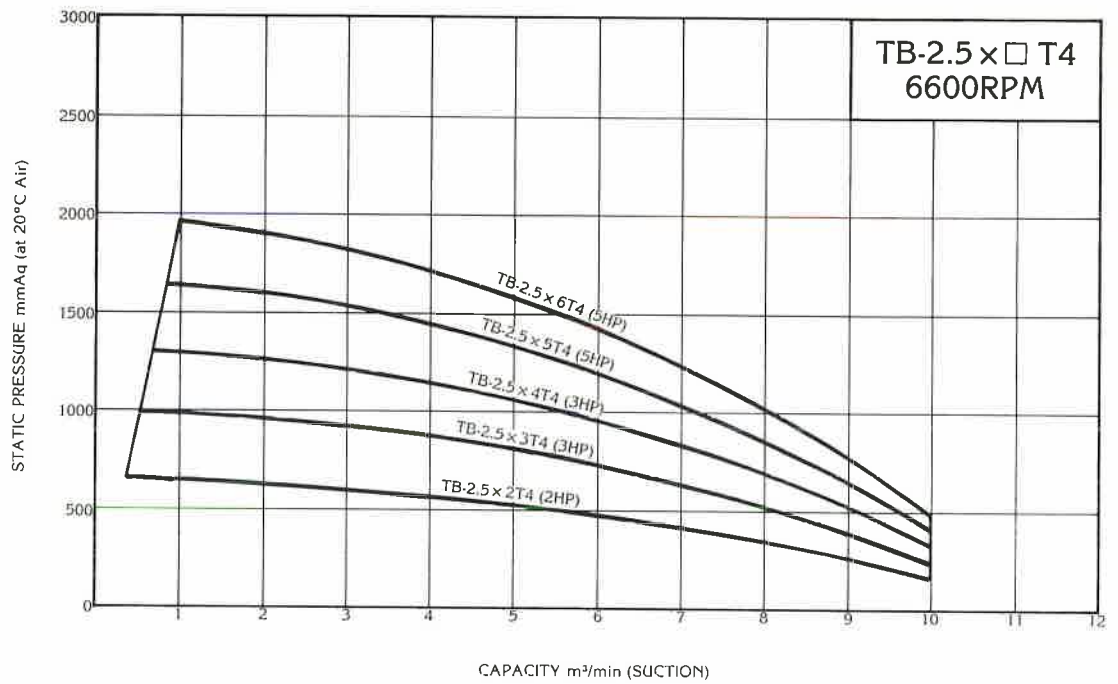
外形尺寸 Dimensions



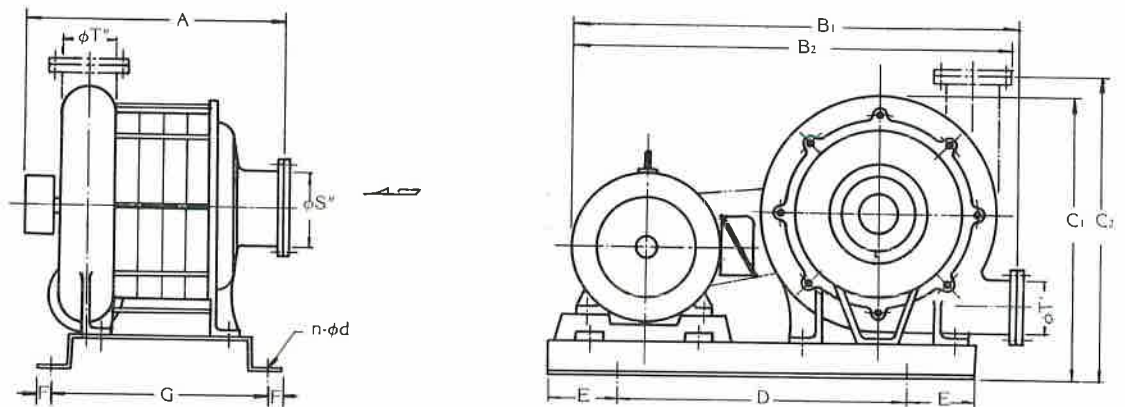
Type	A	B ₁	B ₂	C ₁	C ₂	D	E	F	G	n	d	φ S''	φ T''
TB-2.5x2T2	235	650	640	420	450	430	100	25	280	4	12	3	2.5
TB-2.5x3T2	271	715	705	420	450	430	100	25	310	4	12	3	2.5
TB-2.5x4T2	307	715	705	420	450	430	100	25	310	4	12	3	2.5
TB-2.5x5T2	343	730	720	420	450	430	100	25	310	4	12	3	2.5
TB-2.5x6T2	379	730	720	420	450	430	100	25	310	4	12	3	2.5

TB-2.5×□T4

性能曲線 Performance curves

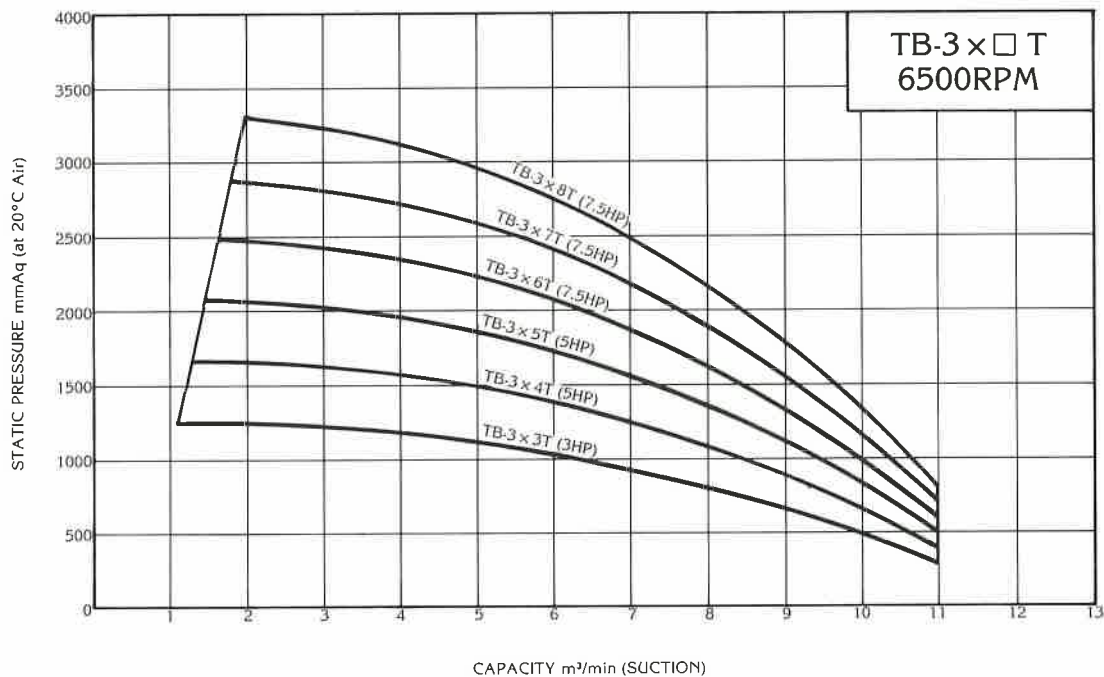


外形尺寸 Dimensions

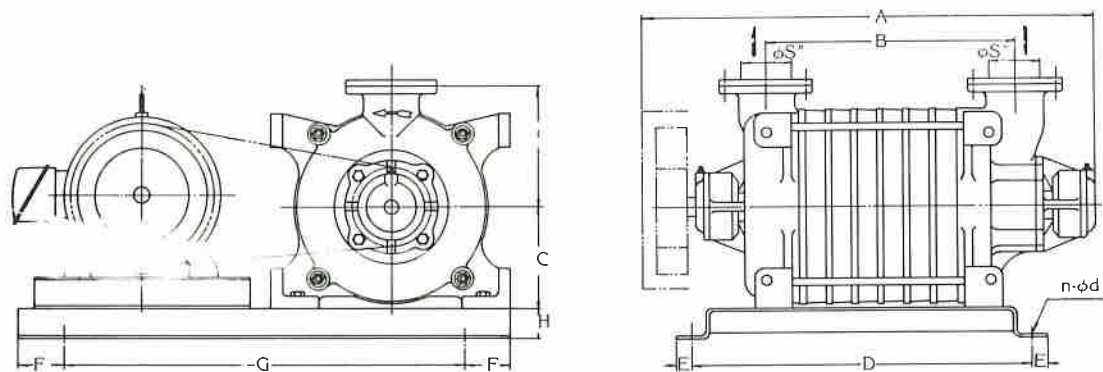


l type	A	B ₁	B ₂	C ₁	C ₂	D	E	F	G	n	φ d	φ S''	φ T''
TB-2.5x2T4	256	650	640	420	450	430	100	25	310	4	12	3	2.5
TB-2.5x3T4	297	715	705	420	450	430	100	25	340	4	12	3	2.5
TB-2.5x4T4	338	715	705	420	450	430	100	25	340	4	12	3	3.5
TB-2.5x5T4	379	730	720	420	450	430	100	25	340	4	12	3	2.5
TB-2.5x6T4	420	730	720	420	450	430	100	25	340	4	12	3	2.5

性能曲線 Performance curves



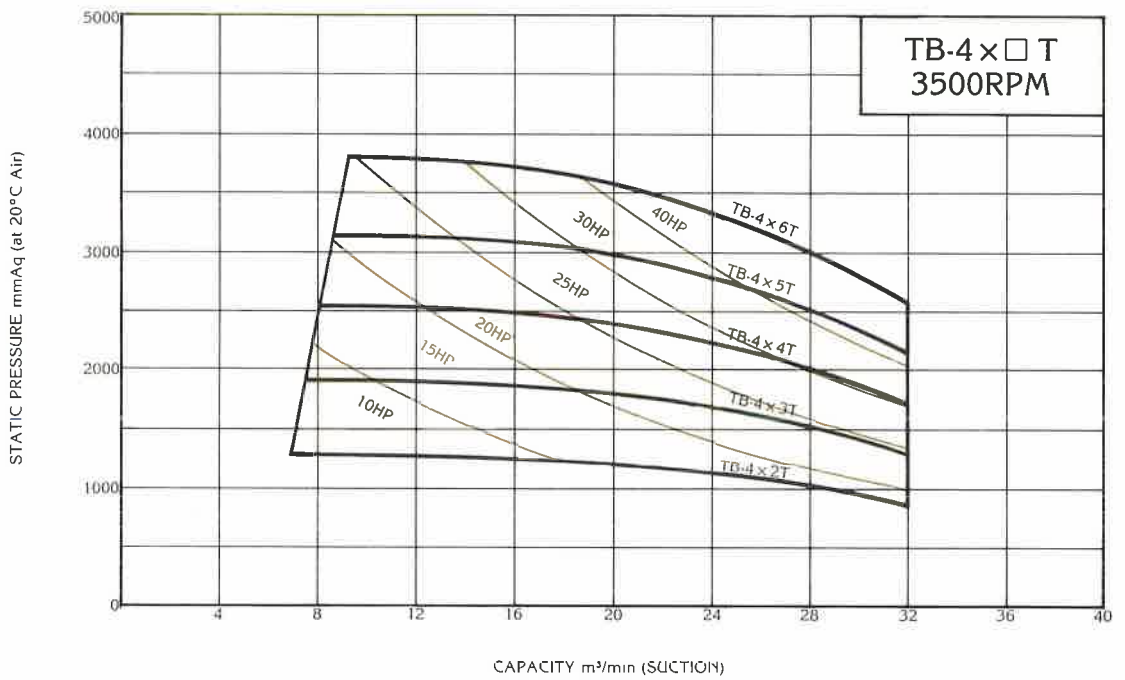
外形尺寸 Dimensions



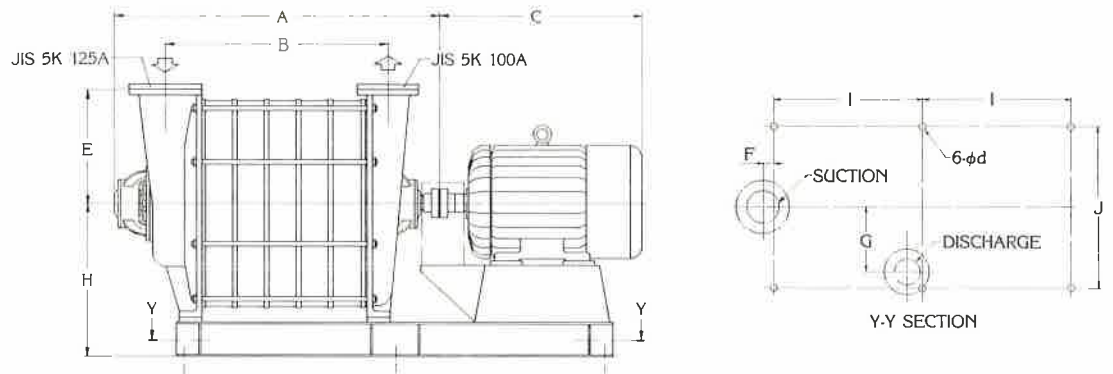
Type	A	B	C	D	E	F	G	H	I	φ S''	n	φ d
TB-3x3T	505	165	165	540	20	75	650	50	195	3	4	15
TB-3x4T	552	212	165	540	20	75	650	50	195	3	4	15
TB-3x5T	599	259	165	540	20	75	650	50	195	3	4	15
TB-3x6T	646	306	165	540	20	75	650	50	195	3	4	15
TB-3x7T	693	353	165	540	20	75	650	50	195	3	4	15
TB-3x8T	740	400	165	540	20	75	650	50	195	3	4	15

TB-4×□T

性能曲線 Performance curves



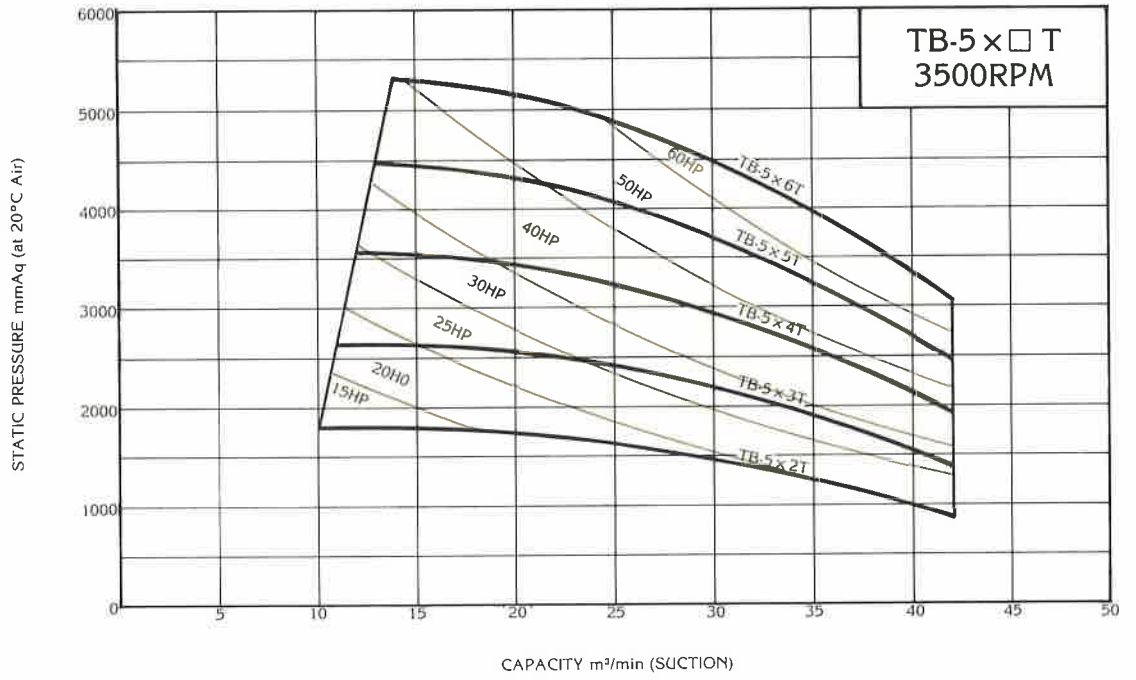
外形尺寸 Dimensions



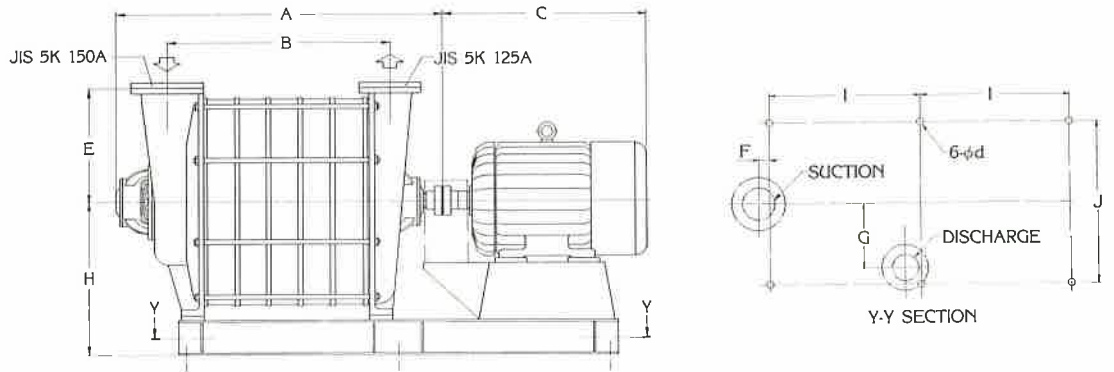
Type	A	B	C	E	F	G	H	I	J	φd
TB-4×2T	700	320	604	470	38	302	545	510	620	19
TB-4×3T	815	435	604	470	38	302	545	570	620	19
TB-4×4T	930	550	648	470	38	302	545	625	620	19
TB-4×5T	1048	668	667	470	38	302	545	685	620	19
TB-4×6T	1165	785	705	470	38	302	545	745	620	19

TB-5 × □ T

性能曲線 Performance curves



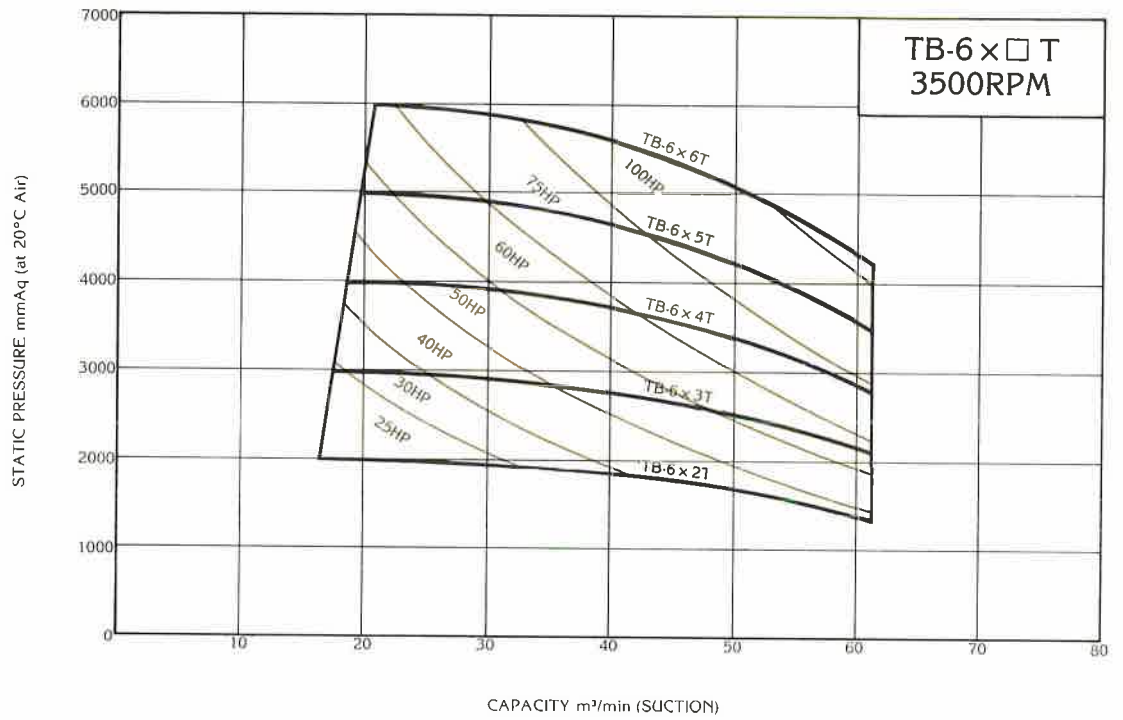
外形尺寸 Dimensions



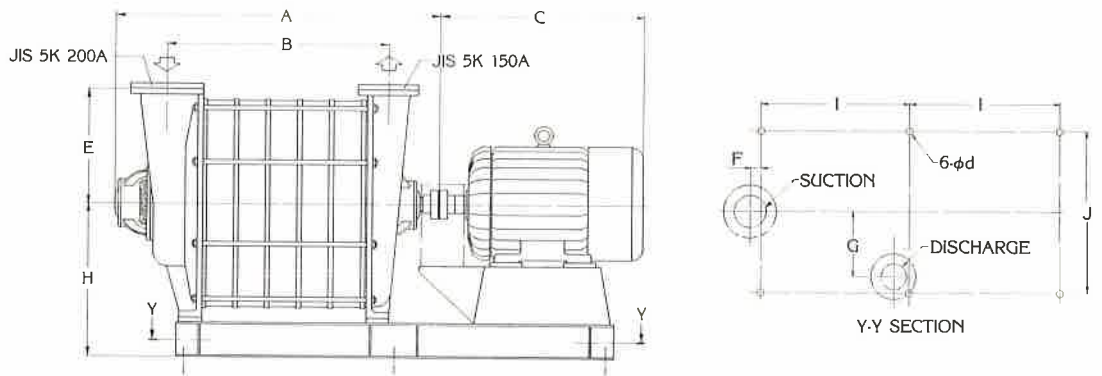
Type	A	B	C	E	F	G	H	I	J	φd
TB-5 × 2T	800	355	604	500	48	365	660	565	830	24
TB-5 × 3T	925	480	667	500	48	365	660	630	830	24
TB-5 × 4T	1050	605	705	500	48	365	660	720	830	24
TB-5 × 5T	1175	730	768	500	48	365	660	820	830	24
TB-5 × 6T	1300	855	768	500	48	365	660	895	830	24

TB-6×□T

性能曲線 Performance curves

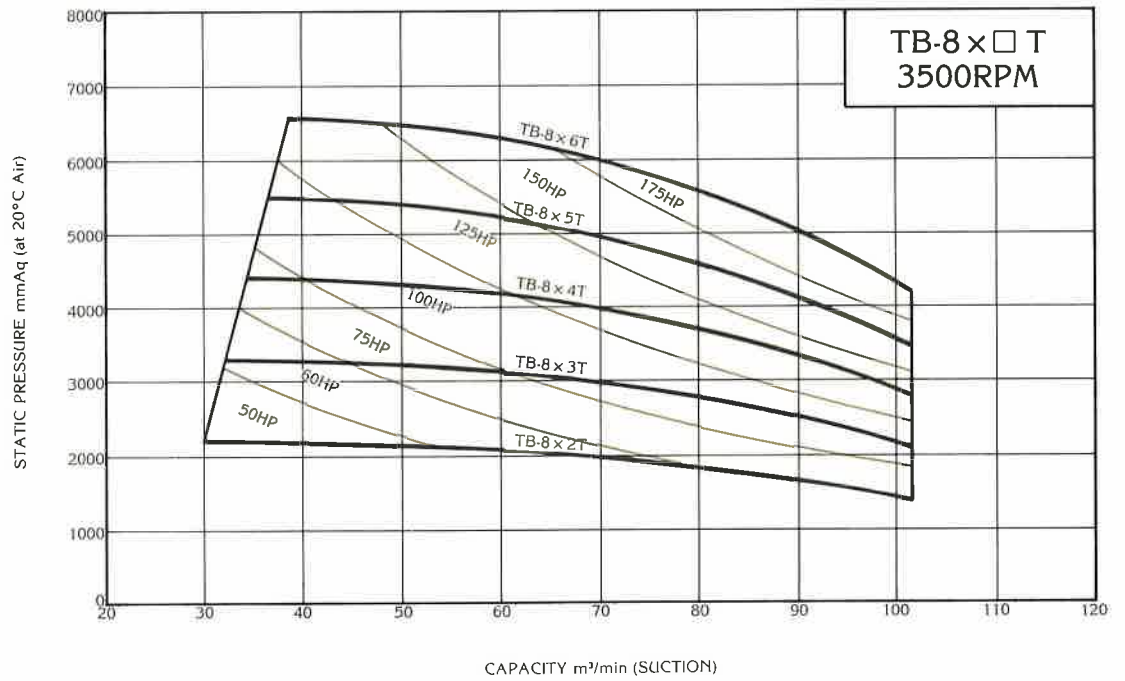


外形尺寸 Dimensions

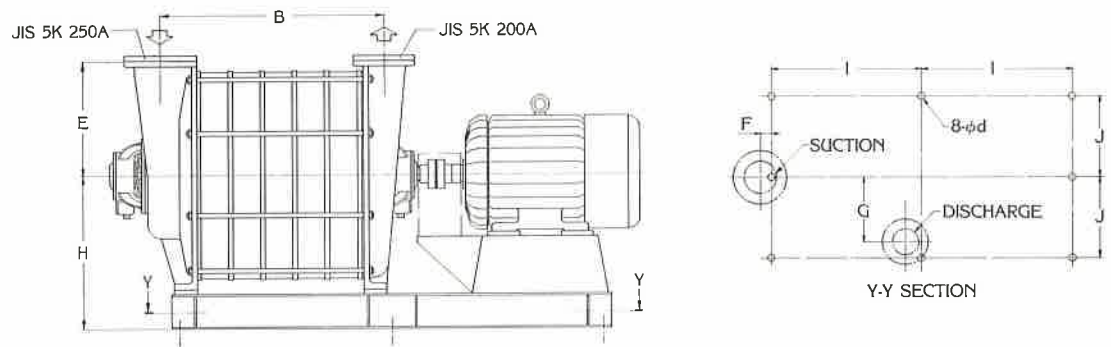


Type	A	B	C	E	F	G	H	I	J	φd
TB-6×2T	870	415	705	500	75	380	670	640	420	24
TB-6×3T	1010	555	768	500	75	380	670	710	420	24
TB-6×4T	1150	695	806	500	75	380	670	780	420	24
TB-6×5T	1290	835	886	500	75	380	670	850	420	24
TB-6×6T	1430	975	886	500	75	380	670	920	420	24

性能曲線 Performance curves



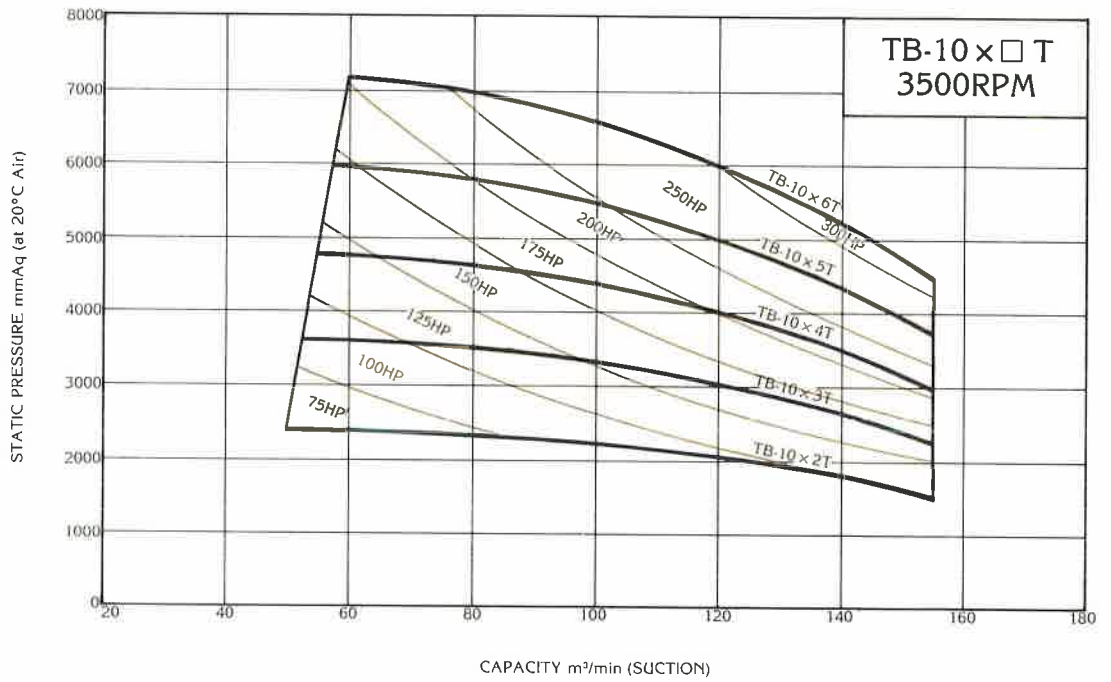
外形尺寸 Dimensions



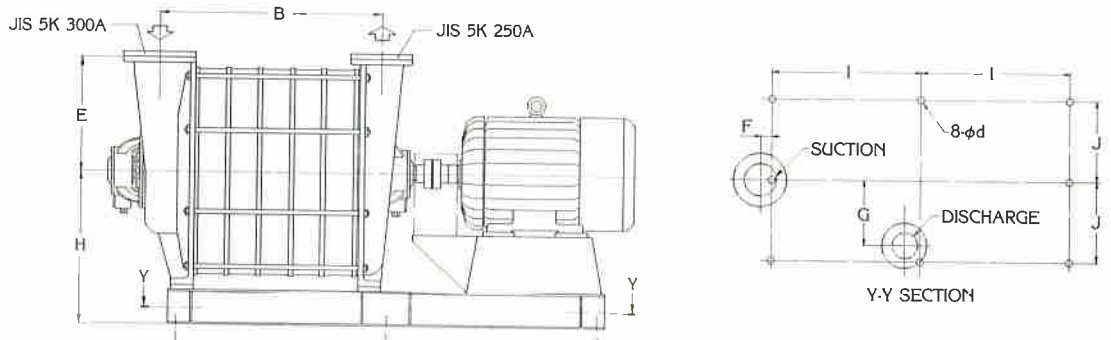
Type	B	E	H	I	J	φd
TB-8 × 2T	530	530	750	700	470	28
TB-8 × 3T	690	530	750	780	470	28
TB-8 × 4T	850	530	750	860	470	28
TB-8 × 5T	1010	530	750	940	470	28
TB-8 × 6T	1170	530	750	1020	470	28

TB-10×□T

性能曲線 Performance curves

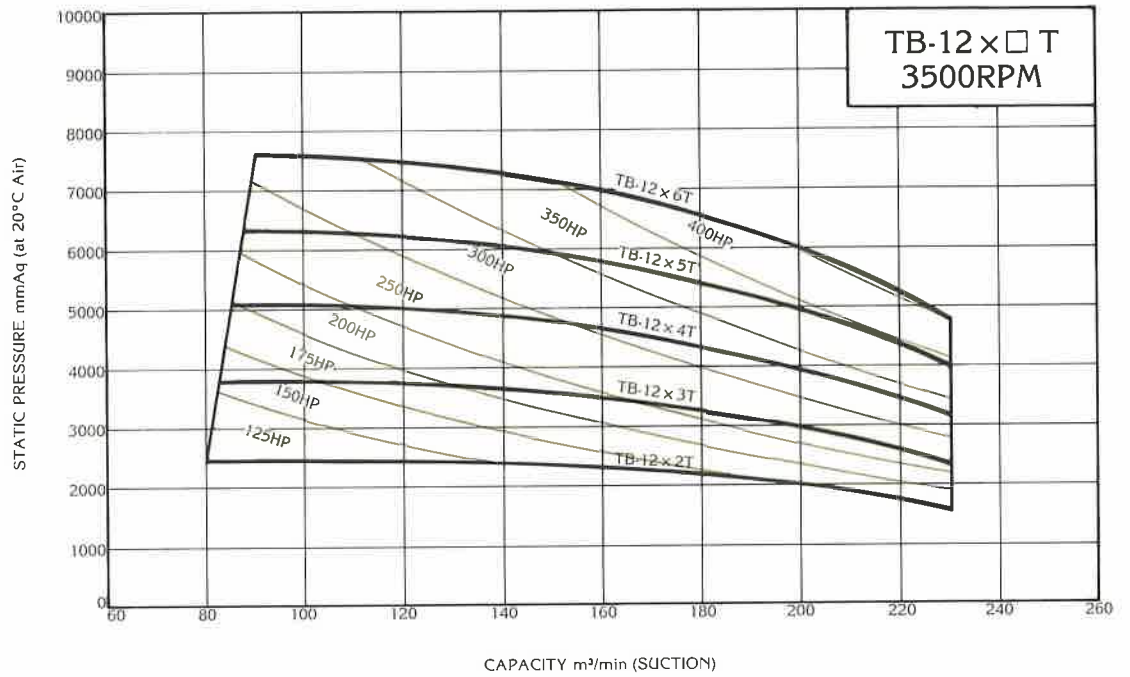


外形尺寸 Dimensions

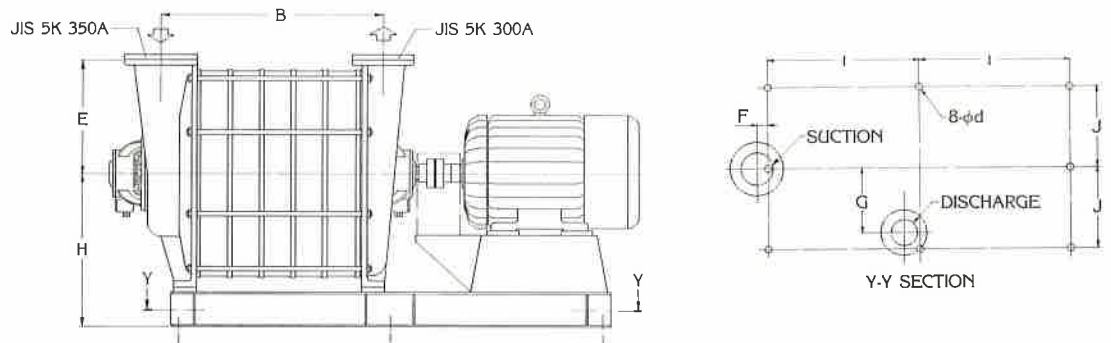


Type	B	E	H	I	J	φd
TB-10×2T	660	560	780	760	470	28
TB-10×3T	860	560	780	860	470	28
TB-10×4T	1060	560	780	960	470	28
TB-10×5T	1260	560	780	1060	470	28
TB-10×6T	1460	560	780	1160	470	28

性能曲線 Performance curves



外形尺寸 Dimensions

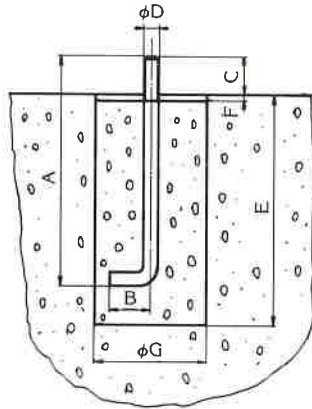


Type	B	E	H	I	J	φd
TB-12×2T	870	600	870	890	550	32
TB-12×3T	1090	600	870	1000	550	32
TB-12×4T	1310	600	870	1110	550	32
TB-12×5T	1530	600	870	1220	550	32
TB-12×6T	1750	600	870	1330	550	32

附件及尺寸 Accessories With Dimensions

標準附件 Standard Accessories

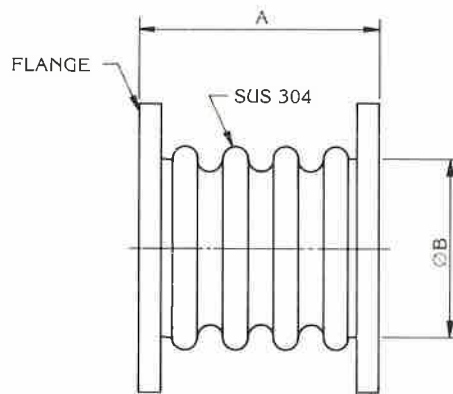
1. 聯結器護蓋或皮帶護蓋 Coupling Guard or Belt Guard
2. 連結底台 Common Bed
3. 基礎螺栓 Anchor Bolt



Type	A	B	C	φD	E	F	φG
M12	165	30	30	12	165	5	100
M16	245	45	45	16	245	5	120
M20	325	55	60	20	325	5	150
M24	430	55	60	24	430	5	180

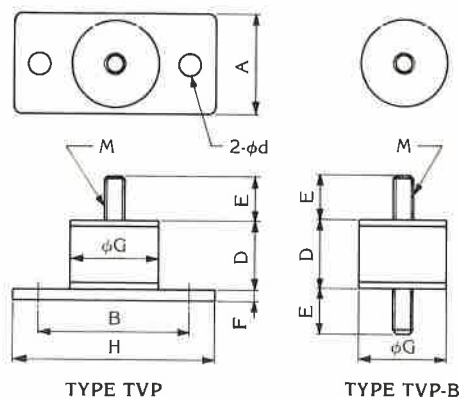
特別附件 Optional Accessories

1. 入口濾清器 Suction Filter
2. 入口消音器 Suction Silencer
3. 出口消音器 Discharge Silencer
4. 風量控制開關 Capacity Control Damper
5. 出口冷卻器 Discharge Cooler
6. 伸縮接頭 Expansion Joint



Type	A	φB	FLANGE
EJS 100	135	100	JIS5K 100A
EJS 125	170	125	JIS5K 125A
EJS 150	180	150	JIS5K 150A
EJS 200	205	200	JIS5K 200A
EJS 250	240	250	JIS5K 250A
EJS 300	260	300	JIS5K 300A
EJS 350	280	350	JIS5K 350A

7. 橡膠防振墊 Rubber Vibration Isolator



Type	A	B	D	E	F	φG	M	φd	H
TVP 102	60	90	40	25	6	50	M12	12	140
TVP 103	80	120	55	35	9	70	M16	15	160
TVP 104	110	160	80	45	12	100	M20	19	210

Type	D	E	φG	M
TVP 102B	40	25	50	M12
TVP 103B	55	35	70	M16
TVP 104B	80	45	100	M20

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 其它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

大豐透浦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。

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 Turbo 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 etc.,

單位換算 Unit Conversion

壓力 Pressure

1 Pa = 1 N/m²

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

風量 Capacity

	m ³ /min	m ³ /hr	ℓ/min	ft ³ /min (cfm)
1 m ³ /min	1	60	1000	35.31
1 m ³ /hr	0.017	1	16.67	0.589
1 ℓ/min	0.001	0.06	1	0.035
1 ft ³ /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

* 型錄內容若有更改，恕不另行通知。 Revision of this catalogue will make no additional information.

主要產品

Main Products

- 工業用送排風機 • Fans & Blowers
- 魯氏鼓風機 • Roots Blowers
- 真空幫浦 • Vacuum Pumps
- 真空排氣系統 • Vacuum Pumping Systems



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