

TRD系列空调离心风机

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TRD SERIES CENTRIFUGAL AIR-CONDITIONING VENTILATOR



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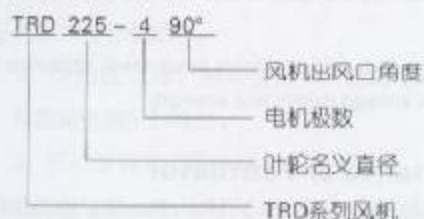
TRD SERIES CENTRIFUGAL AIR-CONDITIONING VENTILATOR

一、概述

TRD系列空调离心风机系引进德国和日本先进技术,通过公司工程技术中心进行吸收、消化、提高而研制开发的低噪声紧凑型风机,额定流量在 $1000\text{ m}^3/\text{h}$ ~ $18000\text{ m}^3/\text{h}$,采用外转子电机直联,产品经合肥通用机械研究所等权威机构检测,具有效率高、噪声低、流量大、体积小、结构紧凑等特点,广泛应用于柜式空调器、变风量空调器及其他暖通空调、净化、通风等设备。

二、产品命名方式

TRD系列空调离心风机型号命名方式由叶轮名义直径及电机极数组成:

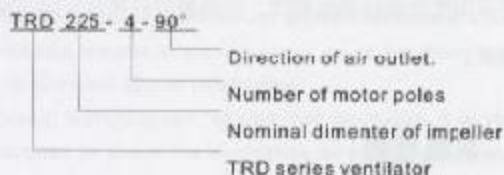


Outline

TRD Series centrifugal air-conditioning Ventilator is a low-noise compact ventilator successfully developed by introducing the international advanced technology from Germany and Japan. The volume ranges from $1000\text{ m}^3/\text{h}$ ~ $18000\text{ m}^3/\text{h}$. The ventilator can be directly driven by motor with external rotor, the product have been inspected by some of the authorized organs, such as Hefei General Machine institute. They have the features of high efficiency, low noise, large flow, small volume and compact construction and are used for cabinet air-conditioner, air volume changing air-conditioner, heating air-conditioner, purifier, ventilator, etc.

Code of Products

The code of TRD series centrifugal air-conditioner ventilator consists of nominal diameter of impeller and number of motor poles.



三、产品结构

TRD系列空调离心风机主要由机壳、叶轮、支架、电机、出风口法兰组成。

1、机壳

机壳采用优质热镀锌钢板制成,侧板具有符合空气动力的外形,并使风机体积达到最小,侧板进风口处设有进风集流器,使气流无损失地进入叶轮。蜗壳板用吸合加气焊的方式与侧板连成一体。在蜗壳侧板上预设了一系列的铆螺母孔,以便用户按自己需求的出风口方向进行安装。

Structure of Product

TRD Series ventilator consists of scroll, impeller, frame, motor and air outlet flange.

1. Scroll

The scroll is made of high quality hot-galvanizing steel. The side plates take the shape according to aerodynamics and make the ventilator volume minimum. On the air inlet of side plate there is an inlet cone to make the air stream enter the impeller without loss. The snail plate is fixed on the side plates by way of biting plus gas welding as a whole. On the side plate of the riveting nuts to carry out installation according to air outlet direction needed by the customer.

2、叶轮

叶轮采用优质镀锌钢板制造,叶片设计成符合空气动力的特定形状,使效率最高、噪声最低。叶片采用铆爪固定在中盘及前盘上,在最大功率连续运行时保持足够的强度、刚度。叶轮经高精度动平衡校验,平衡精度达ISO2.5级。

3、支架

TRD系列空调离心风机支架采用优质镀锌钢板制成,支架安装方向可根据用户的实用需求进行安装。

4、电机

TRD系列空调离心风机配用YDW和YDW2系列外转子低噪声三相异步电动机,该电机具有轴固定,外壳旋转的特点。叶轮安装在电机外壳上,由电机外壳旋转直接驱动。YDW2系列电机可采用三相调压器、可控硅调压器、变频器等手段,实行无级调速,以适应系统负荷多变的要求。

5、法兰

法兰采用优质镀锌钢板制成,外观精美并具有足够的刚度和强度。

四、风机性能

1、本样本中风机性能均指在标准状态下的性能。即指风机进气状态为:

进气压力 $P_a=101.325\text{KPa}$

进气温度 $t=20^\circ\text{C}$

进气气体密度 $\rho=1.2\text{kg/m}^3$

若用户实际使用的气体进气状态或使用的风机转速改变时则可按下列关系换算:

$$\frac{V_1}{V_2} = \frac{n_1}{n_2}$$

$$\frac{P_1}{P_2} = \frac{n_1^2}{n_2^2} \times \frac{\rho_1}{\rho_2}$$

$$\frac{N_1}{N_2} = \frac{n_1^3}{n_2^3} \times \frac{\rho_1}{\rho_2}$$

2. Impeller

The impeller is made of high quality hot galvanizing steel sheet and is designed to a special configuration to aerodynamics to make the efficiency highest and the noise lowest. The impeller is fixed on the middle disk plate and back disk plate with riveting grippers. The impeller has enough rigidity during continuous rotation with maximum power. The impeller is dynamism balanced up to grade ISO2.5.

3. Frame

The frame of TRD series ventilator frame is made of high quality galvanizing steel sheet. The direction of base plate installation can be carried out according to the different requirements of customers.

4. Electric Motor

The YDW and YDW2, which are low noise three phase asynchronous motor with external rotors, are used for matching TRD series ventilator. The electric motor features the fixed shaft and the rotating scroll. The impeller is installed on the external casing of the motor. The rotating casing will drive the impeller. The YDW2 series motor can be provided with three-phase voltage regulator, thyristor voltage regulator, frequency converter and etc. to realize stepless speed regulator to satisfy changeable load in system.

5. Flange

The flange is made of galvanizing angle steel, obtaining fine appearance, enough rigidity and strength.

Performance of Ventilator

1. The ventilator performance in this catalogue denotes the performance in standard conditions. It denotes air inlet conditions of ventilator as follows:

Inlet air pressure $P_a=101.325\text{KPa}$

Inlet air temperature $t=20^\circ\text{C}$

Inlet gas density $\rho=1.2\text{kg/m}^3$

If the practical air inlet conditions of customer or the speed of the operating ventilator changes, the conversion can be carried out according to the following expression:

$$\frac{V_1}{V_2} = \frac{n_1}{n_2}$$

$$\frac{P_1}{P_2} = \frac{n_1^2}{n_2^2} \times \frac{\rho_1}{\rho_2}$$

$$\frac{N_1}{N_2} = \frac{n_1^3}{n_2^3} \times \frac{\rho_1}{\rho_2}$$

$$\frac{P_1}{P_2} = \frac{n_1^2}{n_2^2} \times \frac{Pa_1}{Pa_2} \times \frac{273+t_2}{273+t_1}$$

$$\frac{N_1}{N_2} = \frac{n_1^5}{n_2^5} \times \frac{Pa_1}{Pa_2} \times \frac{273+t_2}{273+t_1}$$

上述公式中

① 流量 V_2 (m^3/h)、全压 P_2 (Pa)、转速 n_2 (r/min)、轴功率 N_2 (kW) 由性能曲线图上查得。

② 右下角 "1" 为用户实际使用气体进气状态下所需的性能参数。

③ 上述公式中略去了相对湿度的差别。

2、本样本中的风机性能按 GB1236-2000 标准检测，风机噪声按 GB2888-1991 标准在离进风口 1 米处测定的声压级指标。

五、说明

1、风机配用电机功率是指在特定工况下，轴功率加上电机容量安全系数而言，并非出风口全开时所需的功率，因此为防止电机超功率运转而烧毁，严禁风机未加外界任何阻力进行空运转。

2、风机在运输、装卸过程中严禁撞击或堆放于潮湿、有腐蚀性物品的场合。

3、风机安装前应用手或杠杆拨动叶轮，检查是否有过紧或碰撞现象，确认没有这些现象后方可进行试转。

4、风管与风机进风口、出风口之间连接时尽量采用软连接，接头不得拉紧。

5、风机安装后检查机壳和其他壳体内部，不应有掉入、遗留的工具和杂物。

6、风机正式运转前，需检查电机的转向是否符合风机转向的要求。

$$\frac{P_1}{P_2} = \frac{n_1^2}{n_2^2} \times \frac{Pa_1}{Pa_2} \times \frac{273+t_2}{273+t_1}$$

$$\frac{N_1}{N_2} = \frac{n_1^5}{n_2^5} \times \frac{Pa_1}{Pa_2} \times \frac{273+t_2}{273+t_1}$$

Where:

① Volume V_2 (m^3/h), total pressure P_2 (Pa), speed n_2 (r/min), and shaft power N_2 (kW) can be obtained from performance chart.

② Asterisk "1" on the upper right corner denotes the performance parameter need by the customers in practical gas inlet conditions.

③ The difference in relative humidity is omitted from the above-mentioned formulas.

2. The performance of the sample ventilator is tested in accordance with GB1236-2000. Its sound pressure level is measured according to GB 2888 -1991 at the point meter from the inlet.

Instructions

1. Matching electric motor power of ventilator denotes shaft power plus safety coefficient of electric motor capacity in special operating condition, it does not denote the power required during full opening of air outlet. Therefore no-load running of ventilator without any applied resistance is strictly prohibited in order to avoid burning out of the motor caused by its operation at over rated power.

2. During transportation, charge and discharge, it is strictly prohibited to shock the ventilators or put them in wet and corrosive place.

3. Prior to installing ventilator, rotate the impeller by hand or stick to check for tightness or impact. If it is ensured that there is no tightened and impact, then installation can be carried out.

4. Soft connection between air pipe and ventilator air-inlet and outlet should be made as possible. The joints should not be tightened too much.

5. After installing the ventilation, the scroll of ventilator and internal parts of other casing should be inspected. There should not be tools and extra matters remained in the casing.

6. Prior to official operation of ventilation, it is necessary to check the rotating direction of both motor and ventilator for their coordination.

TRD系列空调离心风机性能参数表

TRD Series Centrifugal Air-conditioning Ventilator performance table

型号 Type	转速 Speed (r/min)	工况 Work Condition	风量 Air Flow (m ³ /h)	全压 Total Pressure (Pa)	轴功率 Power (kW)	噪声 Noise dB(A)	电机 型号规格 Type	重量 Weight (kg)
TRD225-6	900	1	1480	143	0.147	57	YDW0.25-6	18
		2	1830	147	0.151	58		
		3	2030	145	0.156	60		
		4	2150	138	0.173	61		
		5	2250	131	0.186	62		
		6	2345	121	0.195	62.5		
TRD225-4	1340	1	1610	315	0.345	60	YDW0.55-4	22
		2	2100	314	0.449	60.5		
		3	2385	296	0.475	62		
		4	2550	277	0.481	63		
		5	2690	258	0.489	64		
		6	2825	236	0.512	65		
TRD250-6	900	1	1655	197	0.213	60	YDW0.37-6	24
		2	2030	208	0.249	61		
		3	2510	211	0.255	63		
		4	2790	201	0.265	65		
		5	2950	198	0.294	67		
		6	3185	184	0.315	69		
TRD250-4	1340	1	1580	387	0.488	66	YDW0.8-4	34
		2	1785	397	0.554	67		
		3	2000	407	0.621	68		
		4	2565	414	0.719	69		
		5	3110	403	0.725	72		
		6	3400	391	0.736	73		
TRD280-6	900	1	1680	302	0.257	61	YDW0.55-6	35
		2	2075	304	0.290	62		
		3	2290	307	0.309	62.5		
		4	2505	306	0.329	64		
		5	2965	301	0.390	66		
		6	3295	296	0.455	67		
TRD280-4	1340	1	1945	537	0.609	69	YDW1.1-4	43
		2	2540	540	0.683	70		
		3	3130	543	0.778	72		
		4	3785	546	0.886	73		
		5	4130	541	0.957	73.5		
		6	4450	538	1.003	74		

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TRD Series Centrifugal Air-conditioning Ventilator performance table

型号 Type	转速 Speed (r/min)	工况 Work Condition	风量 Air Flow (m ³ /h)	全压 Total Pressure (Pa)	轴功率 Power (kW)	噪声 Noise dB(A)	电机 型号规格 Type	重量 Weight (kg)
TRD315-6	900	1	4430	276	0.626	62	YDW 1.1-6	45
		2	4665	278	0.725	63		
		3	5010	284	0.801	64.5		
		4	5360	279	0.864	66		
		5	5520	275	0.939	67		
		6	5910	256	1.010	68		
TRD315-4	1340	1	2965	596	0.944	70	YDW 1.8-4	50
		2	3285	602	1.050	71		
		3	3750	608	1.162	72.5		
		4	4215	610	1.336	74		
		5	5480	598	1.506	75.5		
		6	5910	587	1.612	76		
TRD355-6	900	1	3370	418	0.810	68	YDW 1.8-6	75
		2	3850	420	0.894	68.5		
		3	4800	426	1.159	69		
		4	5765	411	1.48	71		
		5	6070	400	1.639	72		
		6	6525	381	1.762	73		
TRD400-6I	900	1	2610	491	0.966	70	YDW 1.8-6	73
		2	3240	495	1.085	71		
		3	3890	496	1.187	71.5		
		4	4540	497	1.290	72		
		5	5240	488	1.504	73		
		6	5900	478	1.619	73.5		
TRD400-6II	900	1	6575	485	1.735	71	YDW 3-6	86
		2	7000	495	1.951	72		
		3	7425	503	2.177	73		
		4	8290	510	2.466	74		
		5	9060	504	2.664	75		
		6	9835	489	2.863	76		
TRD450-6I	900	1	4780	679	2.134	73	YDW 4-6	121
		2	5620	681	2.443	74		
		3	6470	685	2.589	75		
		4	7315	688	2.735	75.5		
		5	8270	686	3.036	76		
		6	9900	679	3.506	77		

TRD系列空调离心风机性能参数表

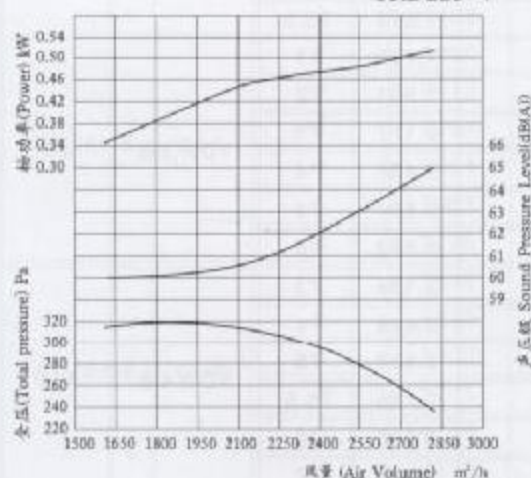
TRD Series Centrifugal Air-conditioning Ventilator performance table

型号 Type	转速 Speed (r/min)	工况 Work Condition	风量 Air Flow (m ³ /h)	全压 Total Pressure (Pa)	轴功率 Power (kW)	噪声 Noise dB(A)	电机 型号规格 Type	重量 Weight (kg)
TRD450-6II	900	1	9085	679	3.271	73.5	YDW5.5-6	127
		2	10490	717	3.915	74.5		
		3	11079	726	4.221	75		
		4	12250	736	4.537	76		
		5	13425	731	4.953	77.5		
		6	13980	726	5.079	78		
TRD500-6	900	1	9640	809	4.145	75	YDW7.5-6	160
		2	11195	823	4.663	76		
		3	12760	837	5.182	77		
		4	13940	834	5.663	78		
		5	15130	831	6.145	78.5		
		6	16835	814	7.089	79		

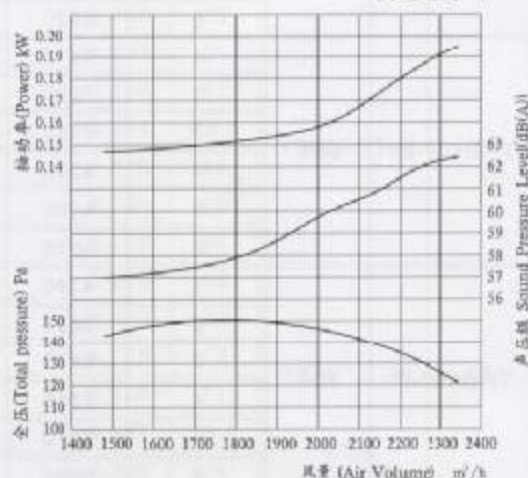
TRD系列空调离心风机性能曲线

TRD Series Centrifugal Air-conditioning Ventilator performance Curve

TRD225-4



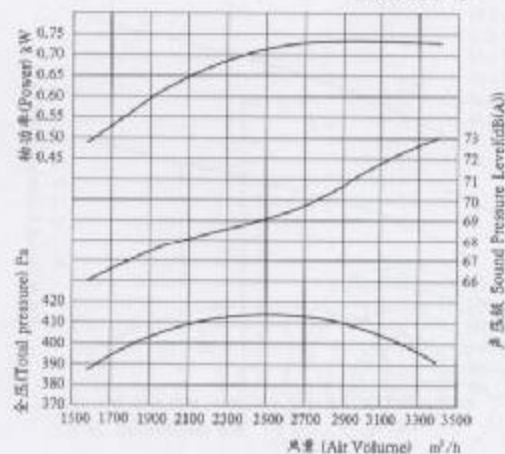
TRD225-6



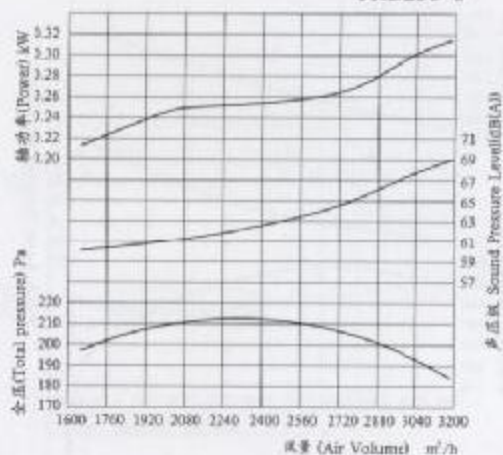
TRD系列空调离心风机性能曲线

TRD Series Centrifugal Air-conditioning Ventilator performance Curve

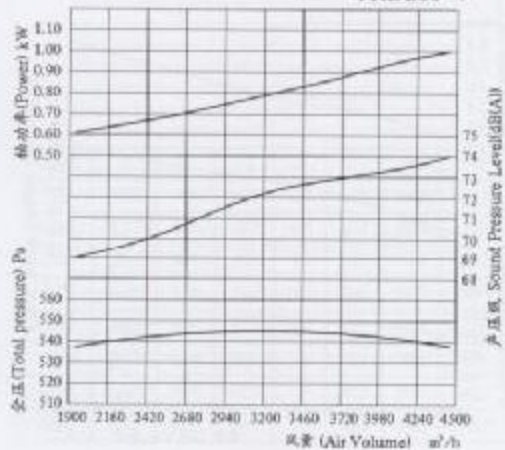
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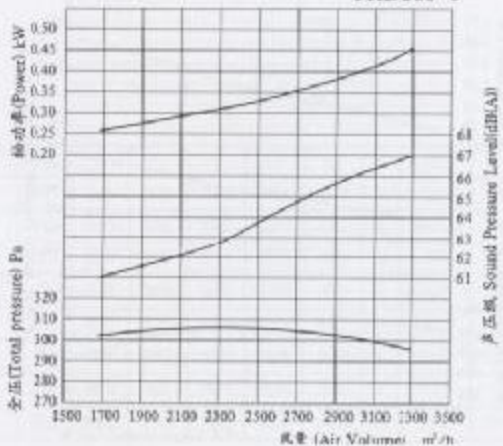
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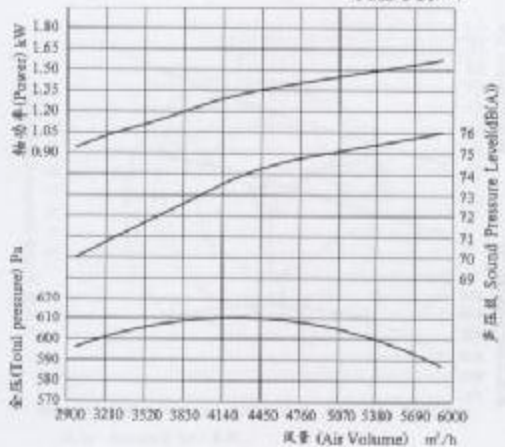
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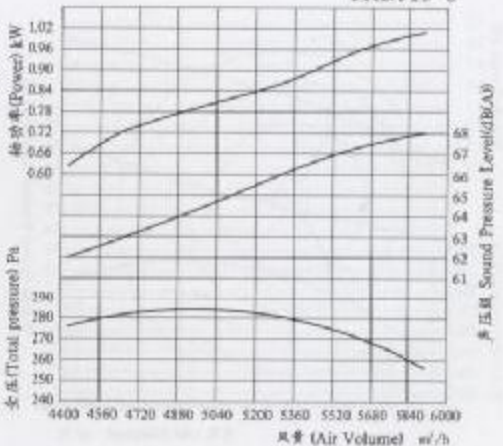
TRD280-6



TRD315-4



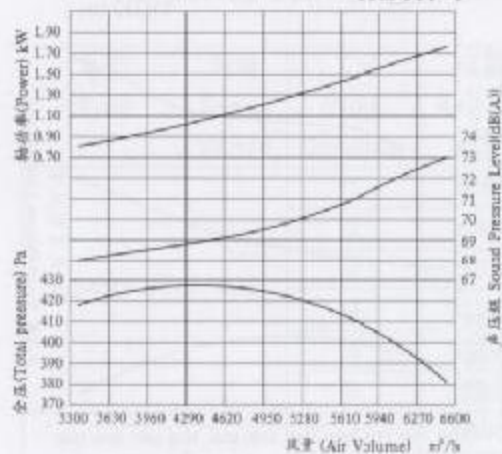
TRD315-6



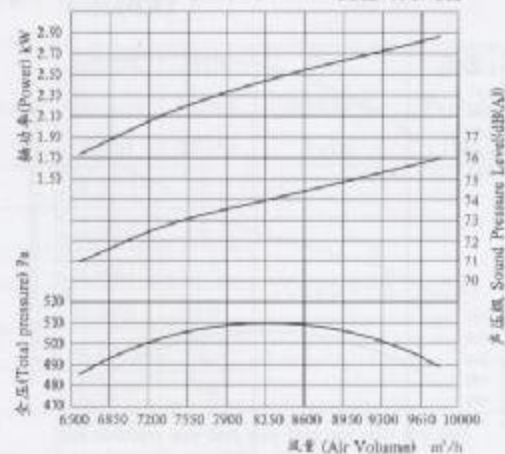
TRD系列空调离心风机性能曲线

TRD Series Centrifugal Air-conditioning Ventilator performance Curve

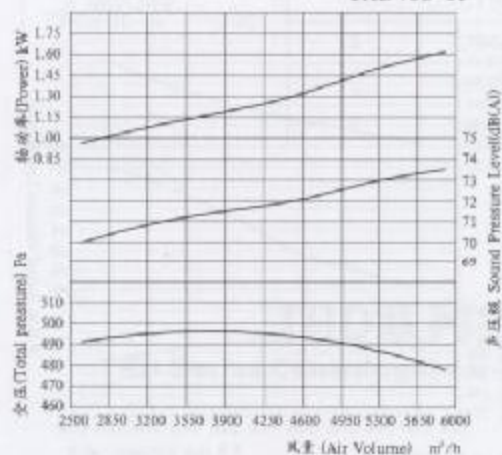
TRD355-6



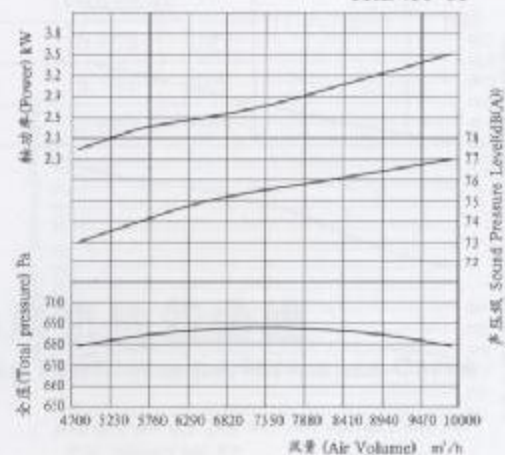
TRD400-6II



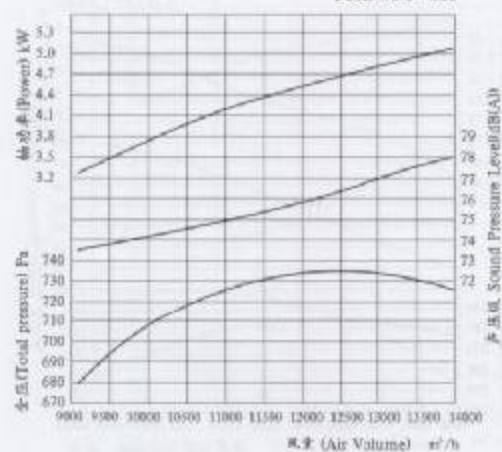
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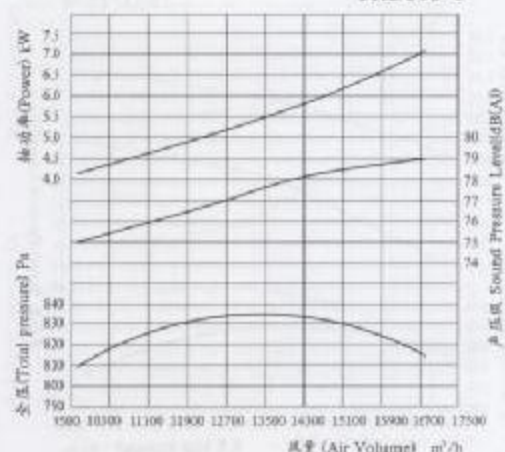
TRD450-6I



TRD450-6II



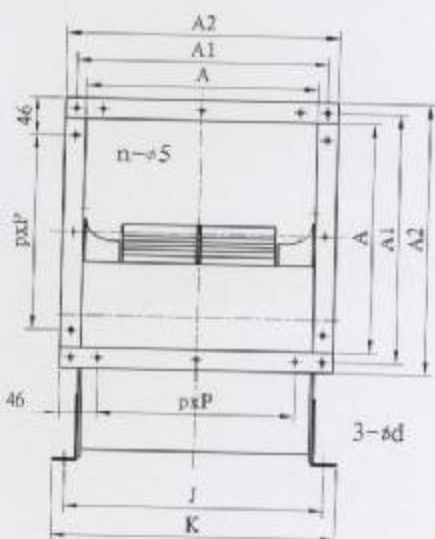
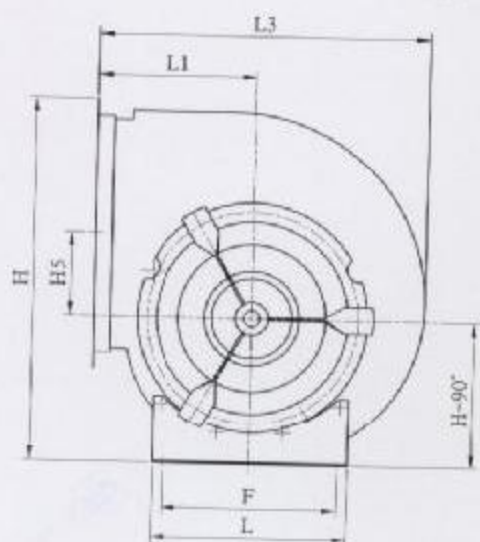
TRD500-6



TRD系列空调离心风机外形尺寸

Overall Dimension for TRD Series Centrifugal Air-conditioning Ventilator

225-500



型号	A	A1	A2	d	F	H	H-0°	H-90°	H-270°	H5	J	K	L	L1	L3	p	P	n
225	282	306	332	8.2	214	448	213	180	257	101	315	345	240	194	404	2	120	16
250	317	341	367	9.2	214	492	236	195	284	111	350	380	240	209	441	2	137.5	16
280	357	381	407	10	280	547	262	216	316	123	390	420	315	228	486	3	105	20
315	402	426	452	10	280	610	293	246	354	138	435	465	315	249	539	3	120	20
355	452	476	502	12	355	682	329	275	397	156	495	535	400	275	600	3	136.7	20
400	502	526	552	12	355	764	358	308	445	180	546	586	400	306	670	4	115	24
450	562	586	612	12	450	856	413	346	499	204	605	645	500	335	744	4	130	24
500	632	656	682	12	450	946	457	382	553	222	675	715	500	366	810	5	118	28

