SL 系列罗茨鼓风机

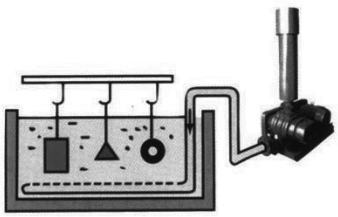
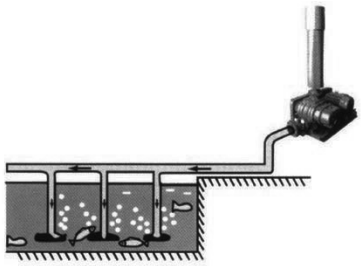
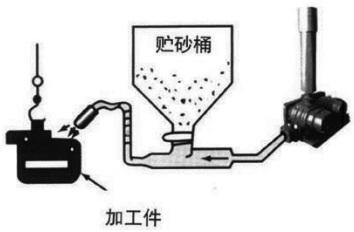
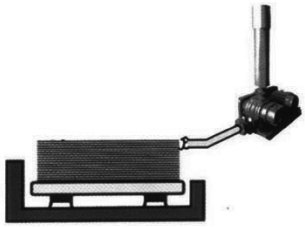
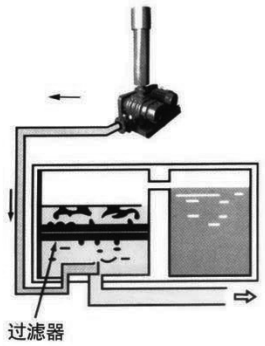
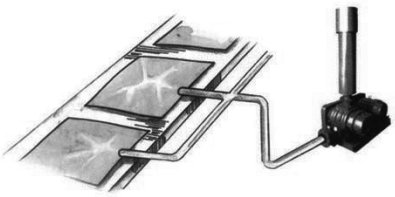
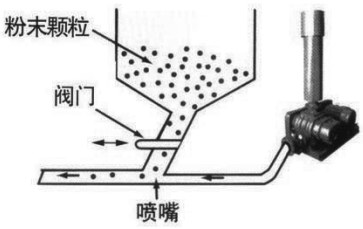
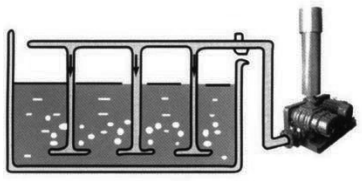
SL Series roots blower

一、用途与特点 Usage and feature

用途: Usage:

SL 型系列罗茨风机输送介质为清洁空气、二氧化碳、氮气及其它惰性气体，广泛适用于冶金、化工、化肥、食品加工、建材、纺织、环保等部门。

SL series roots blower adopts clean air, carbon dioxide, nitrogen and other inert gases as convey media. It can widely used in metallurgy、 chemicals、 fertilizer、petroleum、 foodstuff、building materials, textile , environmental protection industries and so on.

电　镀 Plating	鱼池供氧 Oxygen supply for fish pond	喷砂器 Sand blower
		
桑拿浴 Sauna	**加湿装置** Damping device	**逆　洗** Reverse washing
		
烘干生产线 drying production line	**粉末颗粒的输送** Powder particle conveying	**污水处理** Sewage treatment
		

特 点： Features：

SL型三叶罗茨鼓风机系容积式鼓风机，具有强制输送气体的特征，其最大特点是当工作压力在规定范围内变动时，其流量变化小。工作压力选择范围宽，与二叶罗茨鼓风机相比，气体脉动变化小、噪声低、结构简单，维修方便，振动小，使用寿命长。

SL type three leaves roots blower is displacement type featuring forcible convey of gas. Its main feature is little flow change following pressure change within stipulated range. With wide pressure range to select, three leaves roots blower, in comparison with two leaves roots blower, favors less pulse, low noise, simple structure, convenient maintenance, small vibration and long life time.

注：如需输送易燃、易爆、耐腐等要求的风机，需重新设计，本厂有能力按客户要求进行设计及制造。

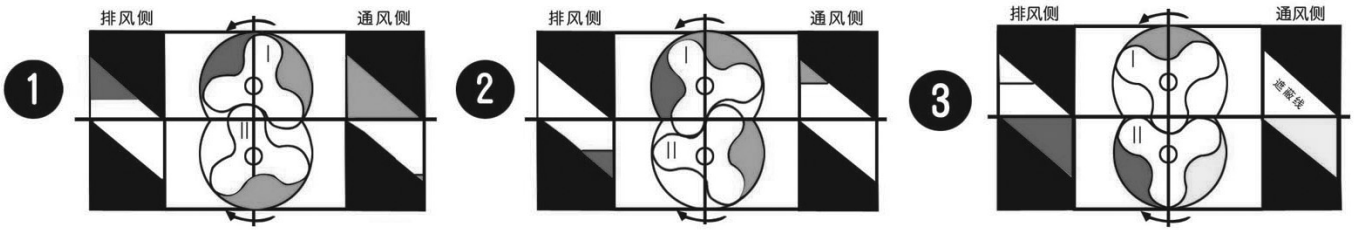
Note: If flammable, explosive, corrosive gas is required to convey, blower need be re-designed. Our factory is capable to design and manufacture blower according to client's requirements.

二、工作原理 Working principle

SL型三叶罗茨鼓风机由机壳、三叶叶轮、精密齿轮动力传动机构及电机等组成。电机通过皮带轮或联轴器带动主动转子，主动转子通过精密同步齿轮使两转子呈逆向旋转。每转动一周两个叶轮三次吸排气体达到连续不断输送气体的目的。

SL type three leaves roots blower is composed of housing, three leaves impeller, precise gear drive mechanism, motor and so on. Motor drives driving rotor through belt pulley and coupling. And driving rotor makes two rotors turning in two reverse directions through precise synchronizing gear. In every revolution, two impellers make three intake and exhaust cycles in order to convey gas continuously .

进排气示意图：



（1）Ⅰ转子：进风侧整个转子宽度都处于开始循序闭合的状态。排风侧处于循序打开并且是打开一半以上的状态。

Ⅱ转子：进风侧处于循序闭合并接近完全闭合的状态。排风侧处于没有打开但将要打开的状态。

（1）rotor Ⅰ：Inlet side in rotor width is always in sequencable closure status. Outlet side is in sequencable open and more than half shall be in open status.rotor Ⅱ：Inlet side is in sequencable closure status and near to complete closure status. Outlet side is in closure status, but it will be opened soon.

（2）Ⅰ转子：进风侧转子处于Ⅰ较闭合了一些的状态，斜线示出的三角孔沿机壳遮蔽线循序缩小。排风侧处于已排风完了的状态。

Ⅱ转子：进风侧处于即将到达机壳遮蔽线的状态。排风侧处于排风过程中，三角孔循序打开的状态。

（2）rotor Ⅰ：Rotor Ⅰ in inlet side is near to closure status. Bias indicates that triangular notch is gradually reduced along shield line of housing. Outlet side is in the status that air is exhausted completely. rotor Ⅱ：Inlet side is near to shield line of housing. Outlet side is in the process of exhaust and triangular notch is gradually opened.

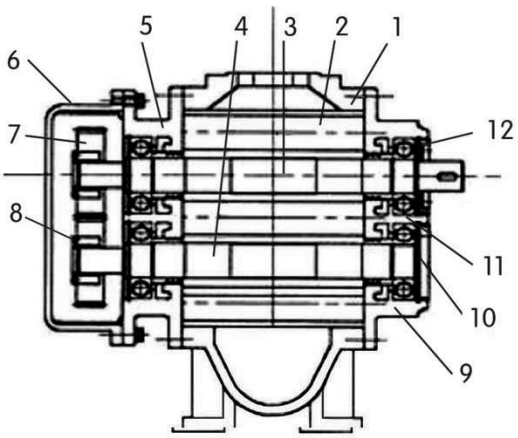
（3）转子：进风侧和排风侧处于闭合状态，但排风侧处于即将打开的状态。

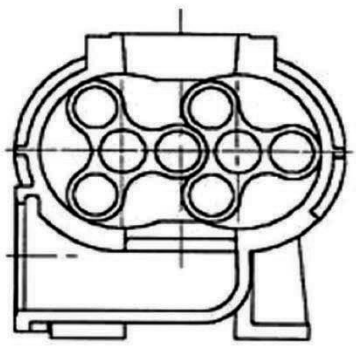
Ⅱ转子：进风侧刚刚进入闭合行程，处于循序闭合的状态，排风侧已循序打开，即将到达全开状态。

注：斜线所示部分是进排风口的开口部分。

（3）rotor Ⅰ：Inlet and outlet side are in closure status, but outlet side is near to open status.rotor Ⅱ：Inlet side is under initial closure process and sequencable status. Outlet side is in sequencable open status and it is going to be opened completely.Note: The part that bias refers to meansopen part of inlet/outlet.

三、结构示意图 Structure schematic diagram





No	名 称 Name	材 质 Material	数 量 Quantity	No	名 称 Name	材 质 Material	数 量 Quantity
1	机壳 housing	HT200	1	7	齿轮 gear	20GrMnTi	2
2	叶轮 impeller	QT450	2	8	胀紧套 shaft sleeve	45	2
3	主动轴 driving shaft	40Gr	1	9	右墙板 right wall plate	HT200	1
4	从动轴 driven shaft	40Gr	1	10	轴承 bearing	SUJ2	4
5	左墙板 left wall plate	HT200	1	11	密封套 gland cover	45	4
6	齿轮箱 gear box	HT200	1	12	密封架 frame	HT200	2

●特别警示：

1、罗茨鼓风机试运转前应彻底清除风机及进风管道内混入的粉尘杂物，紧固所有联接部位；

2、本机内所注润滑油为普通机油，仅供短期使用；

3、换油：第一次换油在累计开机140小时后；以后每月更换一次；6个月后每三个月更换一次。润滑油推荐选用N220防锈汽轮机齿轮油；或冬季用20#机油，夏季用40#机油代替。

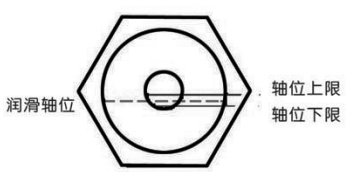
4、用户应定期检查油位线，油位(如图所示)以油镜中心圆孔下沿偏上为适中，油位过高会导致油温升高，油位过低会导致齿轮因断油而失效甚至损坏。

5、如发现表压偏高，安全阀有明显的排气现象，请适当调整安全阀；如仍未降低，可适当打开放空阀帮助排气或适当降低转速。

6、开关机程序：鼓风机在开关机时应处于空载状态，

开机时：打开放空阀，待鼓风机启动后，逐步关闭放空阀；

关机时：打开放空阀，待表压低于0.01MPa，断电停机。



● Cautions:

1. Before trial commissioning, roots blower shall be cleaned to remove dust and impurity from its blower and inlet and all connections shall be fastened.

2. Lubricate filled in blower is common oil for short term use only.

3. Lubrication: Initial lubrication will occur after accumulative operation time is 140 hours. After initial lubrication, it shall be lubricated on a monthly basis. Six months after initial lubrication, it shall be lubricated once per three months. N220 anti-corrosive gear oil for steam turbine is recommended. It can be also replaced by20# oil in Winter, or 40# oil in Summer.

4. User shall conduct regular check on oil level. Oil level shall be a little higher than hole bottom (as shown on drawing), which is in the center of oil lens. Too much oil will lead to temperature rise. Less oil may lead to disorder even damage of gear.

5. When gauge pressure is high and safety valve exhausts air obviously, safety valve shall be adjusted. If there is no pressure decreasing, it is proper to open exhaust valve or decrease speed to assist air exhausting.

6. Open/close procedure: Blower shall be in light condition when it is opened. Open step is: open exhaust valve first, wait for blower start up, close gradually exhaust valve. Close step is: open exhaust valve till pressure is lower than 0.01MPa, stop machine by switching off power.

四、性能换算 Characteristic conversion

性能表中的性能为标准状态风量，温度：293K（20℃） 大气压力：101325Pa

相对湿度：50% 空气密度：1.2kg/m^3

流量换算：$Q_2=Q_1 \times P_1/P_2 \times T_1/T_2$

Q_1：绝对压力P_1（Pa），绝对温度T_1（K）状态的风量

Q_2：绝对压力P_2（Pa），绝对温度T_2（K）状态的风量

The condition for the following data sheet is air volume in standard condition with

temperature: 293K（20℃）

pressure: ：101325Pa

relative humidity: 50%

air density: 1.2kg/m^3

flow conversion：$Q_2=Q_1 \times P_1/P_2 \times T_1/T_2$

Q_1: air quantity in absolute pressure P_1（Pa），absolute temperature T_1（K）

Q_2: air quantity in absolute pressure P_2（Pa），absolute temperature T_2（K）

性能表 Datasheet

转速 speed　　流量 flow quantity　　功率 power

型号 Type	口径 Bore	转速 rpm	排出压力（kPa）Exhaust pressure（kPa）											
			9.8		19.6		29.4		39.2		49		58.8	
			流量 Flow quantity	功率 Power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power
			m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW
SL65	65	1100	1.9	1.1	1.7	1.1	1.5	1.5	1.3	1.5	1.1	2.2	0.9	2.2
		1200	2.15	1.1	1.95	1.5	1.75	2.2	1.55	2.2	1.35	2.2	1.15	3
		1300	2.4	2.2	2.2	2.2	2.0	3	1.8	3	1.6	4	1.4	4
		1400	2.65	2.2	2.45	2.2	2.25	3	2.05	3	1.85	4	1.65	5.5
		1500	2.92	2.2	2.72	2.2	2.52	3	2.32	4	2.12	4	1.92	5.5
		1600	3.18	2.2	2.98	2.2	2.78	3	2.58	4	2.38	5.5	2.2	5.5
		1700	3.42	2.2	3.22	3	3.02	3	2.82	4	2.62	5.5	2.42	5.5
		1800	3.68	2.2	3.48	3	3.28	4	3.08	5.5	2.88	5.5	2.68	5.5
SL80	80	1000	2.36	1.1	2.16	1.5	1.96	2.2	1.76	2.2	1.56	3	1.36	3
		1100	2.71	1.1	2.57	1.5	2.37	2.2	2.17	3	1.97	3	1.77	4
		1200	3.03	2.2	2.83	2.2	2.63	3	2.43	4	2.23	4	2.03	5.5
		1300	3.38	2.2	3.18	2.2	2.93	3	2.75	4	2.53	5.5	2.35	5.5
		1400	3.7	2.2	3.5	3	3.3	4	3.07	4	2.88	5.5	2.67	5.5
		1500	4.04	2.2	3.84	3	3.64	4	3.41	5.5	3.2	5.5	3	5.5
		1600	4.35	2.2	4.15	3	3.95	4	3.75	5.5	3.55	5.5	3.35	5.5
		1700	4.68	3	4.48	3	4.28	4	4.08	5.5	3.88	5.5	3.7	7.5
		1800	5	3	4.8	4	4.6	5.5	4.4	5.5	4.21	7.5	4.02	7.5

性能表 Datasheet

转速 speed　　流量 flow quantity　　功率 power

型号 Type	口径 Bore	转速 rpm	排出压力（kPa）Exhaust pressure（kPa）													
			9.8		19.6		29.4		39.2		49		58.8		68.6	
			流量 Flow quantity	功率 Power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power
			m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW
SL100	100	1000	3	1.5	2.8	2.2	2.6	2.2	2.4	3	2.2	4	2.0	4		
		1100	3.45	1.5	3.25	2.2	3.05	3	2.85	4	2.65	4	2.45	5.5		
		1200	3.9	1.5	3.7	2.2	3.5	3	3.3	4	3.1	5.5	2.9	5.5		
		1300	4.35	2.2	4.15	3	3.88	4	3.6	5.5	3.35	5.5	3.1	7.5		
		1400	4.8	3	4.6	3	4.3	4	4.06	5.5	3.8	7.5	3.53	7.5		
		1500	5.25	3	5	4	4.73	5.5	4.5	5.5	4.25	7.5	3.97	7.5		
		1600	5.7	3	5.45	4	5.18	5.5	4.9	7.5	4.68	7.5	4.43	11		
		1700	6.1	3	5.9	4	5.63	5.5	5.38	7.5	5.12	7.5	4.9	11		
		1800	6.58	3	6.32	5.5	6.1	5.5	5.82	7.5	5.57	11	5.34	11		
SL125	125	1000	4.25	3	4.05	3	3.85	4	3.65	5.5	3.45	5.5	3.25	7.5		
		1100	4.7	3	4.45	3	4.25	4	4.03	5.5	3.8	7.5	3.6	7.5		
		1200	5.15	3	4.92	4	4.7	4	4.48	5.5	4.27	7.5	4.06	7.5		
		1300	5.58	3	5.37	4	5.15	5.5	4.92	7.5	4.7	7.5	4.47	11		
		1400	6.03	3	5.81	4	5.58	5.5	5.37	7.5	5.15	7.5	4.93	11	4.71	11
		1500	6.45	3	6.25	5.5	6.03	5.5	5.8	7.5	5.53	11	5.37	11	5.11	15
		1600	6.92	4	6.7	5.5	6.47	5.5	6.25	7.5	6.03	11	5.81	11	5.59	15
		1700	7.37	4	7.15	5.5	6.93	7.5	6.7	7.5	6.47	11	6.27	11	6.07	15
		1800	7.8	4	7.58	5.5	7.36	7.5	7.15	11	6.93	11	6.71	15	6.5	15

性能表 Datasheet

转速 speed　　流量 flow quantity　　功率 power

型号 Type	口径 Bore	转速 rpm	排出压力（kPa）Exhaust pressure（kPa）															
			9.8		19.6		29.4		39.2		49		58.8		68.6		78.4	
			流量 Flow quantity	功率 Power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power
			m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW
SL150	150	900	7.8	5.5	7.3	5.5	6.8	7.5	6.2	7.5	5.6	11	5.4	11				
		1000	9.1	5.5	8.6	5.5	8.1	7.5	7.5	7.5	7	11	6.5	11	6	15		
		1100	10.3	5.5	9.8	7.5	9.3	11	8.8	11	8.3	11	7.7	15	7.1	15		
		1200	11.5	7.5	11	7.5	10.5	11	10	11	9.4	15	8.9	15	8.3	18.5		
		1300	12.8	7.5	12.2	11	11.7	11	11	15	10.6	15	10.1	18.5	9.6	22		
		1400	14.0	7.5	13.4	11	12.9	11	12.4	15	11.8	18.5	11.3	18.5	10.6	22		
		1500	15.2	7.5	14.6	11	14.1	15	13.5	15	13	18.5	12.5	22	11.9	30	11	30
		1600	16.3	7.5	15.8	11	15.3	15	14.8	18.5	14.2	18.5	13.7	22	13.1	30	12.4	37
		1700	17.5	11	17	15	16.5	15	15.9	18.5	15.5	22	14.9	30	14.2	30	13.5	37
SL200	200	800	14.2	7.5	13	7.5	12	11	10.8	15	9.7	15	8.7	18.5				
		900	16.5	7.5	15.4	11	14.3	15	13.2	15	12.1	18.5	11	22				
		1000	18.8	7.5	17.7	11	16.6	15	15.5	18.5	14.4	22	13.4	22	12.4	30	11	30
		1100	21.7	11	20.5	15	19.5	18.5	18.3	18.5	17.3	30	16.2	30	14.5	30	13.2	37
		1200	24.1	11	23	15	22	18.5	20.7	22	19.6	30	18.5	30	16.8	37	15.5	45
		1300	26.5	15	25.3	18.5	24.2	22	23	30	21.9	37	20.8	37	19.1	45	17.8	45
		1400	28.9	15	27.7	18.5	26.5	22	25.3	30	24.2	37	23.1	37	21.4	45	20	55
		1500	31.3	15	30.1	18.5	28.9	30	27.7	30	26.5	37	25.4	45	23.7	55	22.4	75
		1600	33.7	15	32.5	18.5	31.3	30	30.1	37	28.9	37	27.7	45	26	55	24.5	75
		1700	36.1	15	34.9	18.5	33.7	30	32.4	37	31.2	45	30	45	28.7	75	27.8	75

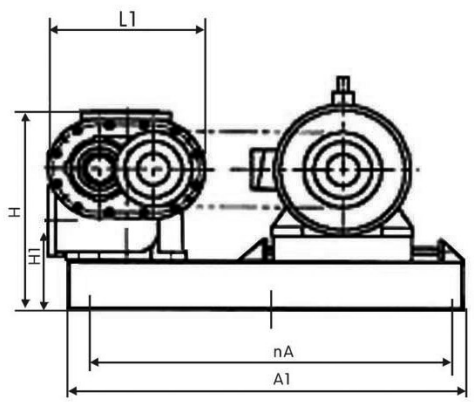
性能表 Datasheet

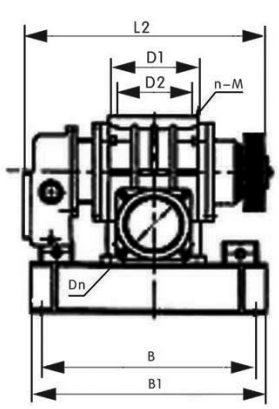
转速 speed　　流量 flow quantity　　功率 power

型号 Type	口径 Bore	转速 rpm	排出压力（kPa）Exhaust pressure（kPa）															
			9.8		19.6		29.4		39.2		49		58.8		68.6		78.4	
			流量 Flow quantity	功率 Power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power	流量 Flow quantity	功率 power
			m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW	m^3/min	kW
L250	250	★980	38.7	11	36.9	18.5	35	30	33.5	37	32	55	30.5	55	29	75	27.5	75
		1200	49	15	46.8	30	45.4	37	44	45	42.3	75	41	75	39.3	90	37.7	90
		★1450	60	15	57.5	30	56.4	45	55	55	53.5	75	52	90	50.5	110	49	132
		1600	67	18.5	65	37	63	45	61	75	59	75	57	90	55	132	52.5	132
L300	300	★730	60	18.5	57.3	30	55.2	45	53.1	75	51	75	49.5	90	47.5	110	45.5	110
		★980	84.6	22	81.7	45	78.9	75	77	90	75	110	73	132	71	160	69	160
		1200	106	30	102	55	100	75	97	110	95	110	93	160	91	185	89	205
		1300	115	30	111	55	109	90	107	110	105	132	103	160	101	205	98	230
		★1450	129	37	126	75	123	90	120	132	117	160	114	160	111	230	107	250

注：转速为风机名义转速　★为直联　　Note: speed is nominal speed.　★ direct connect

五、外形图 Outline figure



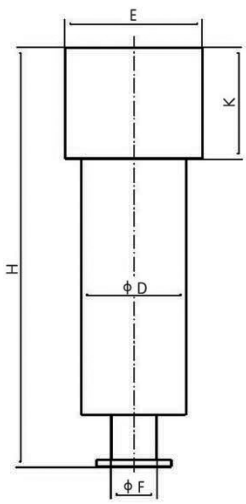


型号 TYPE	Dn	A1	nXA	B	B1	D1	D2	H1	H	L1	L2	n-M
SL65	65	720	620×1	400	450	Φ135	Φ115	185	410	294	470	8-M12
SL80	80	760	660×1	410	460	Φ150	Φ125	172	420	311	480	8-M12
SL100	100	820	720×1	450	500	Φ170	Φ145	202	460	337	517	8-M12
SL125	125	940	840×1	500	550	Φ205	Φ170	215	478	361	560	8-M12
SL150	150	1020	920×1	730	780	Φ235	Φ200	220	535	436	803	8-M16
SL200	200	1400	650×2	900	950	Φ285	Φ250	278	680	536	964	8-M16
L250	250	1500	700×2	1010	1060	Φ350	Φ315	330	830	654	1073	8-M16
L300	300	1600	750×2	1340	1390	Φ410	Φ370	360	975	825	1395	12-M20

进口消音器 Inlet silencer

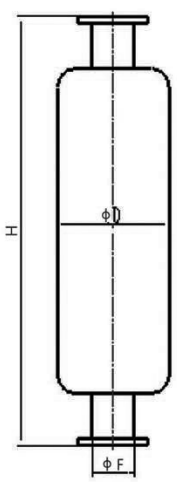
单位(unit)：mm

型号 TYPE	H	D	F	E	K
SL-65	630	165	76	190	180
SL-80	720	216	89	241	180
SL-100	820	241	108	267	200
SL-125	990	267	133	318	200
SL-150	1120	318	159	345	250
SL-200	1300	345	219	345	300
SL-250	1500	345	273	394	300
SL-300	1650	394	326	500	450



出口消音器 Outlet silencer

单位(unit)：mm



型号 TYPE	H	D	F
SL-65	640	145	76
SL-80	810	185	89
SL-100	920	210	108
SL-125	1160	250	133
SL-150	1400	285	159
SL-200	1600	345	219
SL-250	1800	394	273
SL-300	2000	400	326

● 主要规格 Main specification

风机口径	65—300mm
流　量	0.9—129m³/min
升　压	9.8—78.4kpa
电机功率	1.5—250kW

Blower bore	65—300mm
Flow	0.9—129m³/min
Pressure rise	9.8—78.4kpa
power	1.5—250kW

● 附属品供货范围 Spare parts scope

公用底座	安全阀
皮带防护罩	压力表
带轮 窄V带	单向阀
进、出口消声器（带空气滤清器）	地脚螺栓

common pedestals	safety valve
belt shield	pressure gauge
v belt	one way valve
inlet/outlet silencer（with air filter）	anchor bolt

说 明：

(1)每种机型都有详细的性能表和配功标准，易于型号选择和功率配备。

(2)包括附件在内，风机主体实行标准化、系列化，能够满足不同用户的要求。

(3)风机具有独特的结构，匹配带有无声空气滤清器的消声器，风机的运行噪声更低。

(4)转子经过特殊精密加工，已经取得了完全的动平衡，风机的振动值近乎为零。

(5)采取小型化设计，安装占地面积小。

Note:

(1) Every machine has detailed datasheet and power standard, which is easy to select type and power application.

(2) Blower body including fittings has been standardized and serialized, which can meet requirements of different users.

(3) Blower has unique structure, equips silencer/filter and runs with muffler under less noise.

(4) Being specially and precisely fabricated, rotor is dynamic-balanced completely. Blower vibration value is almost zero.

(5) Being designed into compact type, it covers small area.

六、安装 Installation

本型号鼓风机的安装，除可参阅一般通用机械安装的规范和规程外，必需注意下列事项：

⑴安装时，必须使机组进出气口位置校正准确，不准勉强连接后灌注地脚，在机座下面允许衬垫铁板，但必须四周衬垫结实。

⑵安装时，必须封闭风机的进、排气口，严禁杂物侵入机内，在确认机内无杂物后方可连接管道。凡气体通流的管道，必须彻底清除管内铁锈、焊渣等杂物，各管道法兰接合面严禁漏气。

⑶建议用户在风机进、排气口处安装挠性接头，以消除管道振动和热变形影响。

⑷风机不允许承载管道、阀门、支架等外部载荷，所有外部载荷安装时必须另行固定。

⑸安装时，严禁变动鼓风机的工作间隙，不得随意解体鼓风机。安装后，须盘动产品转子，复查工作间隙是否正常。

⑹在靠近风机进、排气口管道和直管段上，应装置压力表。当风机处于超负荷运行时，应及时采取有效措施。

⑺在风机出口与之后的管道间应安装单向阀或逆止阀，防止停机时高压气体回冲使转子间隙发生改变，安装时应注意阀片打开方向是否朝气体排出方向。

⑻风机已规定进、排气口方向，不得反向使用，如需改变，则必须重新调整叶轮与叶轮之间的工作间隙后，方可试用。

Besides referring to general mechanical installation specification and procedure, this type blower must be installed in accordance with the following:

(1) When installation is performed, inlet and outlet must be positioned and adjusted correctly. It is not allowed to pour concrete inside anchor bolt after improper connection. Iron plate is allowed to place under pedestal and it must be firmly padded.

(2) When installation is performed, inlet and outlet shall be blocked out to avoid foreign substance going inside. Pipeline can’t be connected until no foreign substance is found. All pipeline with air inside shall be cleaned thoroughly free from iron rust, slag and so on. All flange connection face shall be connected properly to avoid of leakage.

(3) User is recommended to install flexible joint in inlet/outlet to eliminate any vibration and deformation.

(4) Blower is not allowed to bear any external load such as pipe, valve and support. All external loads shall be fixed in another specified way when installation is performed.

(5) When installation is performed, it is forbidden to change working clearance. It is also not allowed to disassemble blower freely. After installation, working clearing shall be double–checked by turning rotor.

(6) Pressure gauge is installed in a place near inlet/outlet and straight pipeline. Effective measures shall be taken in a timely manner in case of blower running in overload.

(7) One way valve or check valve shall be installed after outlet to avoid that rotor clearance is changed by returned high pressure in case of stoppage of blower. During installation, attention shall be taken to make valve element in same direction with air.

(8) For blower, inlet/outlet direction is specified without reverse direction. If the direction change is needed, blower can’t be used until working clearance between impellers is readjusted.

七、使用、维护和检修 Usage, maintenance and repair

(一)鼓风机启动前的一些准备工作

1、检查各紧固件和定位销的安装质量；

2、检查进、排气管道和阀门的安装质量；

3、检查机组在基础上的就位质量；向油箱内注入规定牌号机械油，至规定油位线。

4、全部打开进、排气口阀门，盘动风机转子，检查转动是否灵活、有无异常声响。

5、检查机组转子旋转方向是否符合规定。

A. Preparation prior to blower startup

1. Check installation quality of fastener and pilot pin.
2. Check installation quality of inlet/outlet pipeline and valve.
3. Check positioning quality of unit on base; Adopt specified oil to fill in oil tank to level defined.
4. Open all inlet/outlet valves and run blower rotor to check if turning is smooth or not, if there is abnormal noise or not.
5. Check whether rotating direction accords to requirements or not.

(二)鼓风机空负荷试运转

1、新安装或大修后的风机都应经过空负荷试运转。

2、罗茨鼓风机空负荷运转的概念，指鼓风机在进、排气口阀门全部打开的条件下投入运转。

3、空负荷运转应达到要求：

机器无碰撞或磨擦等不正常的声响；

调整润滑油的正常油位；

各部分不应有很高的温度，没有不正常的气味或冒烟现象；

空负荷持续运转一般不少于30分钟。

B.Blower trial commissioning without load

1. Blower shall be trial commissioning when it is newly installed or overhauled.
2. Roots blower trial commissioning means that blower is commissioned in a condition that all inlet/outlet valves are open.
3. Trial commissioning without load shall accord to the following requirements:

Blower is free from abnormal noise such as collision or friction.

Adjust oil to normal level.

No temperature rise, no abnormal odor nor smoking is identified.

Trial commissioning without load shall last at least 30 minutes.

(三)鼓风机正常带负荷持续运转

1、经空负荷试运转过程良好的机组，可以投入带负荷运行，带负荷的方法是借助于调节阀门逐步、缓慢地带上负荷，直至满负荷，不准一次调节至额定负荷。

2、鼓风机在正常运转中，严禁完全关闭进、排口阀门和超负荷运行。

3、罗茨鼓风机的额定压力指进、排气口之间的静压差。在排气口压力正常的情况下须注意进气口的压力变化，以免超负荷运行而损坏机件。

4、鉴于罗茨鼓风机的特性，风机排气管道上的气体，不能直接、长时间地回入鼓风机的进气口，否则必须将影响风机性能，甚至危及机组的安全。

5、风机在额定情况下正常运转时，各滚动轴承的表温一般不超过85℃，润滑油温度不超过65℃。

C.Blower commissioning continuously with load

1. Unit, which proves good after trial commissioning without load, shall go through commissioning with load. Commissioning with load method is to gradually open adjust valve to bring to load gradually to full load. It is not allowed to bring to load in one operation.

2. It is forbidden to close completely inlet/outlet valves nor work under overload when blower is innormal operation.

3. Roots blower’s rated pressure refers to static pressure difference between inlet and outlet. When outlet is under normal pressure, observation shall be done on pressure change of inlet to avoid any component damage due to overload.

4. Due to characteristic of roots blower, air exhausted from blower outlet can not be directly returned to inlet for a long time. Otherwise, it must affect performance of blower, even endanger safety of blower.

5. When blower is in normal operation, scroll temperature on gauge shall not exceed 850C and oil temperature shall not exceed 650C.

(四)开机、停机

鼓风机在开、停机时应处于空载状态。

开机时：打开放空阀，待鼓风机启动后，逐步关闭放空阀，调至所需工作压力使用；

风机应先卸荷后停机，不宜在满负荷状态下突然停机，以免损坏机器。

停机时：打开放空阀，待表压低于0.01MPa，断电停机。

D. Startup and stoppage

Blower shall be free from load when it is in startup / stoppage condition.

Startup: open ： open air release valve, start blower, close gradually air release valve and adjust to required pressure.

Machine is stopped in the following: unload first, then stop blower. It is not proper to stop suddenly blower with full load to avoid any damage.

Stoppage: open air release valve, wait pressure to lower than 0.01MPa, switch off power and stop machine.

罗茨鼓风机应用于脉冲除尘器的说明

罗茨鼓风机作为脉冲除尘器的高压气源已在各行业得到广泛应用。

1、选型：用户在选择罗茨鼓风机时，可按以下方法计算：首先确定除尘器工作压力(一般为58.8kPa),然后将脉冲除尘器所有布筒数量相加乘以0.01～0.012m^3/min，按得数在性能表中相应压力下选择最接近的流量值，对应的型号和转速即可确定。

2、安装：除必须按上述安装要求操作外，还需注意以下要点，鼓风机出口面积与主风管截面积之比应在0.7～1.3之间，主风管上应安装排空阀，鼓风机至除尘器之间最好安装储气包。设备安装完毕进行调试时，应严格遵循开关机规定。

3、常见问题调整：

a.鼓风机工作正常，脉冲显示无压力，检查脉冲电磁阀是否工作；

b.鼓风机表压超过0.06MPa且电机工作电流偏高，将鼓风机出口安全阀的调节螺栓逆时针方向旋转，同时观察压力表，直至表压降至0.05MPa以下；同时可适当减短脉冲电磁阀工作的间隔时间或延长排气时间；

C.鼓风机表压超过0.06MPa，且安全阀有剧烈放气现象，而脉冲无故障，说明鼓风机流量过大，此时如装有排空阀，则将排空阀打开帮助放气，直至鼓风机表压降至0.05MPa以下；或适当降低鼓风机的工作转速，减少流量；

D.鼓风机表压偏低，说明鼓风机流量偏低，此时可适当延长脉冲电磁阀工作的间隔时间或缩短排气时间，或者在功率许可的条件下适当增加鼓风机转速。

Notes on Roots blower application for pulse duster

As the high pressure source, roots blower is widely used for pulse duster in various industries.

1、 Type selection: Selecting roots blower, user can use the following method to calculate: first define working pressure of duster(58.8kPa in normal), total cloth tubes of pulse duster and multiple 0.01～0.012m^3/min(value), select flow quantity in datasheet according to the value and the define corresponding type & speed.

2、 Installation: Besides the above, the following points shall be paid during installation: blower outlet area to duct section area shall be within range of 7～1.3. Main duct shall equip air release valve. It is better to install air bag between blower and duster. After completion of installation, commissioning shall follow strictly startup/stoppage procedure.

3、 Recommendation to frequently asked questions:

A. When blower works well and pulse is in zero pressure, check shall be done to confirm if solenoid valve works or not.

B. When gauge pressure is over 0.06MPa and motor current is high, adjustment is done to turn in anti-clock direction bolt of outlet safety valve and observation is carried out to check gauge pressure until pressure is lower than 0.05MPa; Meanwhile, it is proper to shorten duration of pulse solenoid valve or extend air release time.

C. When gauge pressure is over 0.06MPa, safety valve releases air acutely and pulse is free from fault this shows that flow quantity is too large. In this case, air release valve(if any)shall be opened to help release air, wait until gauge pressure is lower than 0.05MPa. Or working speed can be decreased to decrease flow quantity;

D. When gauge pressure is too low and this means flow quantity is too low, it is proper in this case to extend duration of solenoid valve or shorten air release time, or increase speed according to power limit.