

Healthy Business

Dustcontrol

Vacuum Producers

The vacuum producer is the heart of the system. Here the negative pressure is created that drives the system.

About Vacuum Producers

The heart of the system

The vacuum producer is the heart of the system. Here, the negative pressure is created that drives the system. In Dustcontrol extraction systems, the vacuum level is generally from 6–40 kPa.

Our normal source extraction and vacuum cleaning systems use turbopumps. This device has an ideally suited characteristic capacity for this type of system. Vacuum level increases as more resistance is presented, an important quality in minimising the possibility of blockages in the tubing system. For applications involving fume and light dust, such as paper, radial blowers are used. These have larger air-flows and operate at a lower, relatively constant vacuum level. Our turbopumps and radial blowers have very high quality silencing, see technical specifications.

Turbopumps

Dustcontrol's turbopumps are regenerative blowers, both the direct and belt driven models. As the impeller rotates, centrifugal force moves the air from the root of the blade to the tip. Leaving the tip, air flows around the contour of the housing and is picked up at the root of the succeeding blade. The "closed" area of the housing between the outlet and inlet, forces the air to atmosphere. The many blades on the impeller create increasing stages of pressure generation and result in a very stable pressure differential capability. This pressure generation causes

heat to be generated naturally which dissipates in the air flow and through the blower housing. Noise reduction, particularly on the larger units is very effective. When two or more units are installed in parallel, they can be operated on demand for maximum efficiency and minimum energy consumption.

Radial Blowers

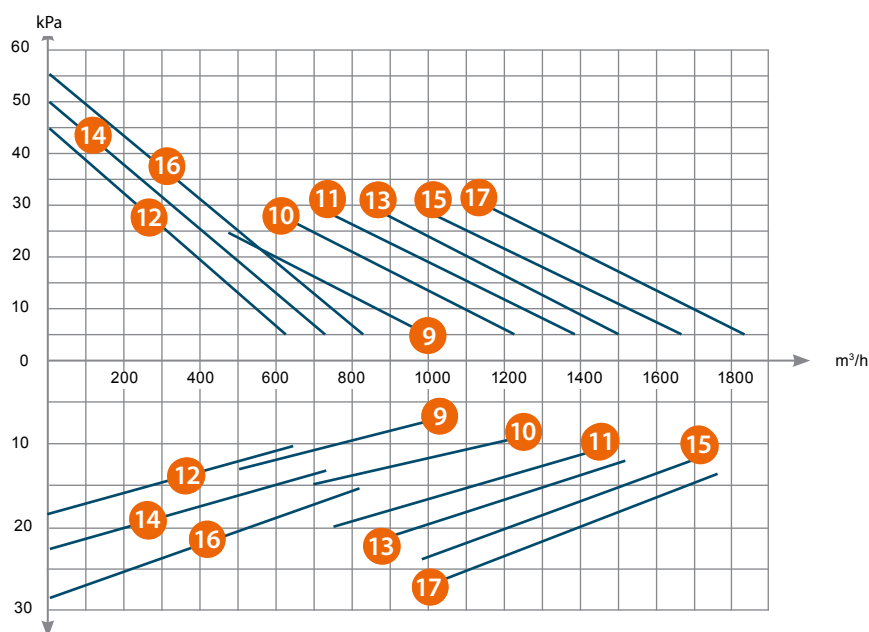
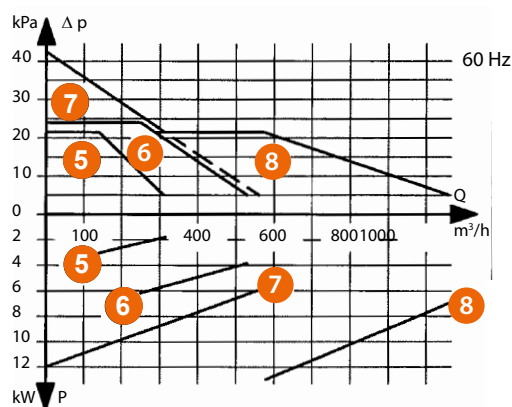
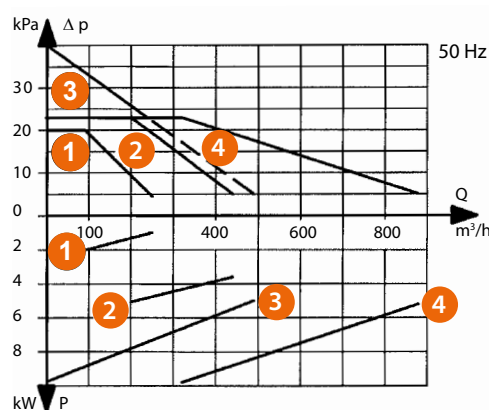
Dustcontrol fans are radial blowers, air is introduced at the center of the fan wheel and forced outward with centrifugal force toward the fan housing. These fans can be operated fully restricted in a "free-wheeling" condition without adverse effect and can therefore be operated without vacuum relief valves. The fans are designed for pressure and are overloading type units. They cannot be operated without being connected to the restriction of a tubing system. Operation above their maximum rated flow will result in overloading and the motor protection will trip out. To limit the power surge at start-up, install a shutter valve on the inlet which should be closed when the fan starts.

Dustcontrol's radial fans meet the ErP directive 2009/125/EC. The ErP, Energy related products, directive 2009/125/EC aims to lower the energy consumption for fans. Commission Regulation (EU) No 327/2011 states how to implement this directive. The efficiency requirements affect Dustcontrol's RAF-range.



Turbopumps

Source Extractions, Cleaning, Pneumatic Transportation

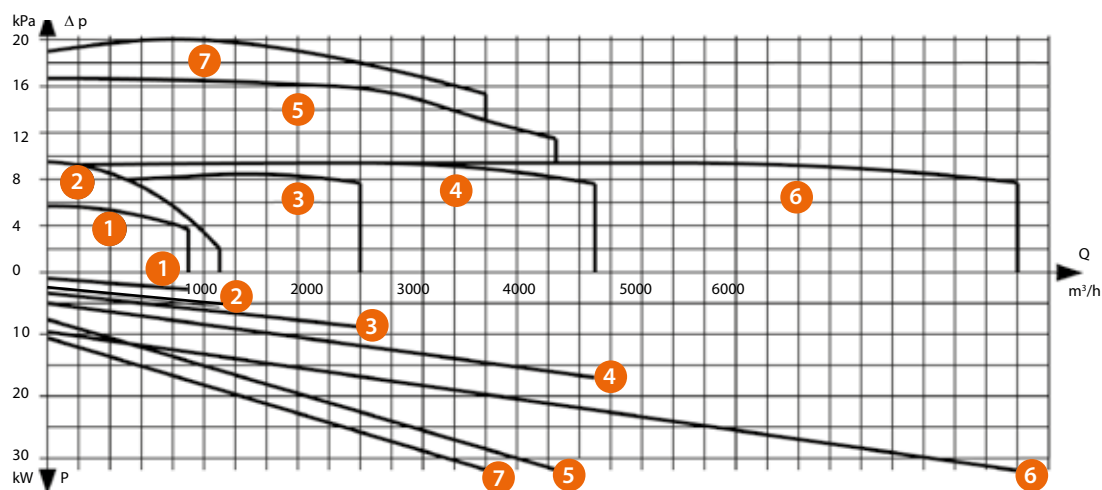


Turbopumps

- | | |
|---------------------|--------------------|
| 1. TLD 30 2.2 kW | 9. TPR 35 11 kW |
| 2. TED 30 5.5 kW | 10. TPR 40 15 kW |
| 3. TSD 30 9.2/11 kW | 11. TPR 43 18.5 kW |
| 4. TPD 30 11 kW | 12. TSR 43 18.5 kW |
| 5. TLD 36 4 Hp | 13. TPR 47 22 kW |
| 6. TED 36 10 Hp | 14. TSR 47 22 kW |
| 7. TSD 36 15 Hp | 15. TPR 50 30 kW |
| 8. TPD 36 15 Hp | 16. TSR 50 30 kW |
| | 17. TPR 53 37 kW |

Radial blowers

Fume Extraction of fine dust from light material, ie: wood and paper



Radial blowers

1. RAF 500
2. RAF 500 S
3. RAF 1600
4. RAF 2500
5. RAF 2501
6. RAF 2502
7. RAF 2503

The capacity curves for Dustcontrol vacuum producers have been measured and are stated empirically. Outlet pressure losses from a normal outlet (silencer, back-flow valve/bend) have been accounted for in the curve. Additional equipment such as a diffuser can result in increased pressure loss and must be taken into consideration. Stated air-flows are for standard air (101.3 kPa @ 20° C).

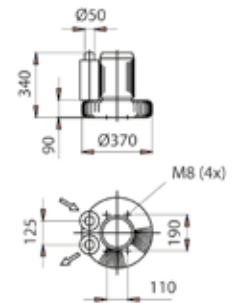
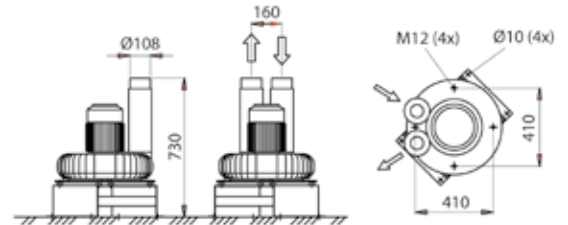
The stated curves are for negative application, all pressures stated are assumed to be below relative atmospheric pressure at sea level. These devices can also be used for positive pressure application and will generate a greater pressure differential.

Turbopumps Direct driven

TLD/TED 30/36

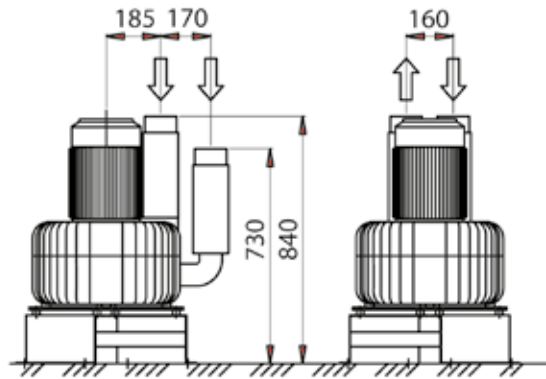
3-phase

Turbopumps TLD 30/36 and TED 30/36 are direct driven single stage units. To ensure constant pressure and that cooling air is available to the pump when all outlets are closed, the tubing system should be equipped with a vacuum relief valve.



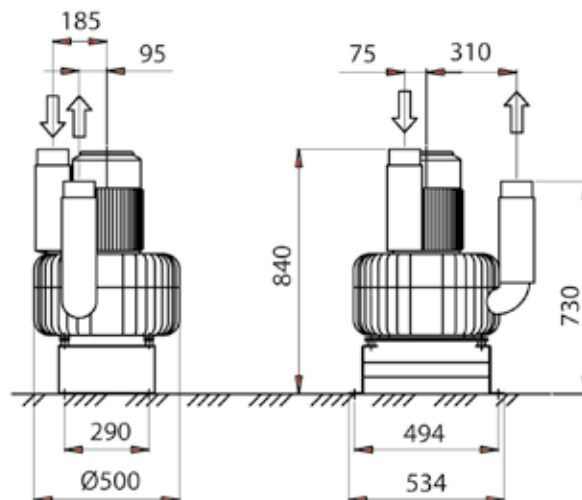
TPD 30/36

Turbopump TPD 30/36 is a direct driven twin impeller parallel series connected unit. To ensure constant pressure and that cooling air is available to the pump when all outlets are closed, the tubing system should be equipped with a vacuum relief valve.



TSD 30/36

Turbopumps TSD 30/36 is a direct driven twin impeller series connected unit. This is used in demanding applications where high vacuum levels are required. To ensure that cooling air is available to the pump when all outlets are closed, the turbopump can be equipped with a cooling air inlet.



Turbopumps Direct driven

3-phase



Technical data

		TLD 30	TLD 36	TED 30	TED 36	TPD 30	TSD 30	TSD 36	TPD 36
Power supply	Hz	50	60	50	60	50	50	60	60
Pump	rpm	3000	3600	3000	3600	3000	3000	3600	3600
Weight	kg/lb	30 kg	66 lb	65 kg	143 lb	90 kg	90 kg	242 lb	242 lb
Max dP	kPa	20	22*	23*	24*	21*	40	43	20
Nominal Pressure	kPa	18	20	18	20	18	30	32	17
Max Q	m³/h/cfm	260 m³/h	176.6 cfm	450 m³/h	353 cfm	900 m³/h	450 m³/h	329.6 cfm	618 cfm
Sound Level of unit 1 m	dB(A)	75	75	75	75	75	75	75	75
Inlet/Outlet	Ø mm	50/50	2"/2"	108/108	4.25"/4.25"	108/108	108/108	4.25"/4.25"	4.25"/4.25"

* Standard DC Green System max 22 kPa



Model (Part No)

	TLD 30	TLD 36	TED 30	TED 36	TPD 30	TSD 30	TSD 36	TPD 36
Power	2.2 kW	4 hp	5.5 kW	10 hp	11 kW	11 kW	15 hp	15 hp
230/400V/50 Hz	4322							
230V/50 Hz			4326		4910	4907		
400V/50 Hz			4126		4911	4908		
460V/60 Hz		419006						
460V US/CAN/60 Hz				419306			479700	488100
600V CAN/60 Hz		419004		419101			4615	



Lubrication interval

	TLD 30	TLD 36	TED 30	TED 36	TPD 30	TSD 30	TSD 36	TPD 36
Power	2.2 kW	4 hp	5.5 kW	10 hp	9.2/11 kW	9.2/11 kW	15 hp	15 hp
Hours	10000 h	10000 h	10000 h	10000 h	1500 h	1500 h	1500 h	1500 h



Service Tip

These direct driven units are extremely reliable and have low service requirements. Always change the O-ring when repcsing the outboard bearing in the TSD and TPD pump. Also change the thermoprotector if there is one installed.

400 g Grease Cartridge for Dustcontrol Turbopumps, Part no 9928.



Turbopumps Direct driven



Accessories (Part No)

3037 Bracket 500 mm (2 req'd)
For wall installation of TLD 30/36.

3195 Silencer 80300/180
Used for silencing of 50 mm vacuum valve.

4477 Pump Chassis
For separate mounting of TED 30/36, TPD 30/36 and TSD 30/36.

4942 Silencer 100 300/200
Used for silencing of 76 mm vacuum valve and also exhaust silencing on 2.2–11 kW/4–15 hp turbopump. For accompanying tubing details, see installation example.

8253 Vacuum Relief Valve 50 mm
Used with TLD 30/36. The vacuum relief valve is installed on the tubing system (inlet side) on a branch tube. This delivers cooling air to the turbopump and can be adjusted for the desired vacuum level in the system.

8001 Vacuum Relief Valve 76 mm
Used with TED 30/36 and TPD 30/36. The vacuum relief valve is installed on the tubing system (inlet side) on a branch tube. This delivers cooling air to the turbopump and can be adjusted for the desired vacuum level in the system.

40595 Cooling air inlet with silencer for TSD 30/36
Cooling air is introduced to the turbopump between stages so the unit can be driven with all outlets closed without the risk of overheating.

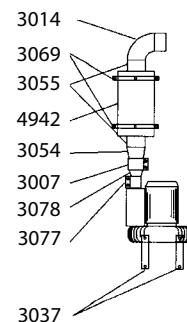
42297 Back Flow Valve Ø108
Installed on the inlet side of the turbopump when two or more units are parallel installed.

Silencing Covers. The silencing covers will reduce the sound level by 4 dB.

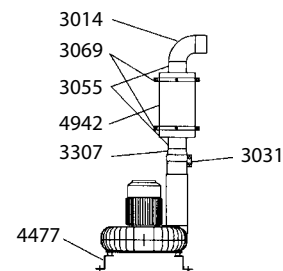
- 4659 Intermediate piece Ø108**
- 40261 Silencing Cover for TED 30 2,5 kW**
- 40697 Silencing Cover for TED 30 5.5 kW**
- 40698 Silencing Cover for TED 30 9.2 kW**
- 42988 Silencing Cover for TLD 30 2.5 kW**

Installation Example, Silencers

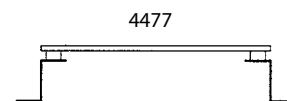
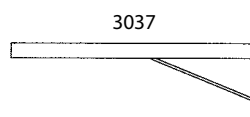
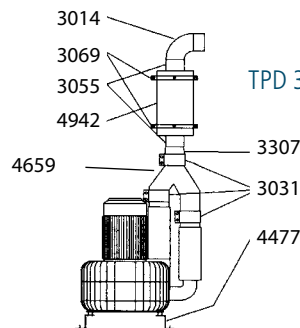
TLD 30/36



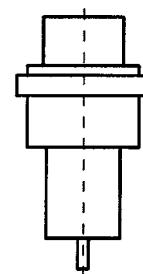
TED 30/36 TSD 30/36



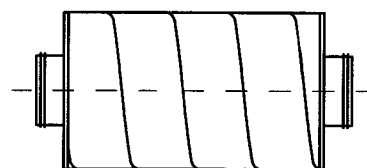
TPD 30/36



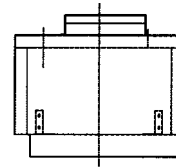
8001



4942/3195



40261
40697
40698



Turbopumps Belt driven

TPR

Turbopumps with TPR designation are parallel connected twin impeller belt driven units. Cooling air is introduced into the unit through an adjustable vacuum relief valve. The vacuum pressure in the system can be held constant when different outlets are opened. The turbopumps are equipped with thermal overload protection on the outboard bearing which will trip out when bearing temperature becomes excessive. A back flow valve is built into the unit on the inlet side.



TSR

Turbopumps with TSR designation are series connected two stage belt driven units. Cooling air is introduced into the pump through a slot between the two stages.

In this way the second stage cools the first stage indirectly, allowing the pump to run at extremely high vacuum and low airflow without overheating. The turbopumps are equipped with thermal overload protection on the outboard bearing which will trip out when bearing temperature becomes excessive.

A back flow valve must be additionally installed on the inlet side of the unit when several units are to be installed in parallel.



Turbopumps Belt driven



Technical data	TPR 35	TPR 40	TPR 43	TSR 43	TRP 47	TSR 47/48	TPR 50	TSR 50/52	TPR 53
Pump (rpm)	3500	4000	4300	4300	4700	4700	5000	5000	5300
Weight (kg)	400	400	430	430	450	450	530	530	530
Max dP (kPa)	22	26*	28*	46	29*	50	30*	54	30*
Nominal Pressure (kPa)	20	20	20	35	21	37	23	40	23
Max Q (m³/h)	1000	1200	1400	650	1500	700	1650	800	1800
Sound Level of unit 1 (dBa)	66	66	66	66	66	66	66	66	66
Inlet/Outlet (Ø mm)	160/160	160/160	160/160	108/108	160/160	108/108	160/160	108/108	160/160

*Standard DC Green System Max 22 kPa.



Power consumption	TPR 35	TPR 40	TPR 43	TSR 43	TRP 47	TSR 47/48	TPR 50	TSR 50/52	TPR 53
	Part No/kW(hp)								
230V (50Hz)		106802/15 kW	107202/18.5 kW	107252/18.5 kW	107702/22 kW	107752/22 kW	109202/30 kW	109252/30 kW	109302/37 kW
400V (50Hz)	106600/11kW	106800/15 kW	107200/18.5 kW	107250/18.5 kW	107700/22 kW	107750/22 kW	109200/30 kW	109250/30 kW	109300/37 kW
460V USA/CAN (60Hz)		106805/20 hp	107207/25 hp	107257/25 hp	107707/30 hp	107757/30 hp	109207/40 hp	109257/40 hp	109307/50 hp
600V CAN (60Hz)		106806/20 hp	107206/25 hp	107256/25 hp	107706/30 hp	107756/30 hp	109206/40 hp	109256/40 hp	109306/50 hp



Lubrication interval	TPR 35	TPR 40	TPR 43	TSR 43	TRP 47	TSR 47/48	TPR 50/53	TSR 50/52
Δ p								
22 kPa	1500 h	1500 h	1500 h	-	1500 h	-	1500 h	-
25 kPa	750 h	750 h	1500 h	-	1500 h	-	1500 h	-
28 kPa	-	-	1000 h	-	1000 h	-	1000 h	-
30 kPa	-	-	-	1500 h	-	1500 h	750 h	1500 h
40 kPa	-	-	-	1000 h	-	1000 h	-	1000 h



Accessories (Part No)

9928 400 g Grease Cartridge for Dustcontrol Turbopumps

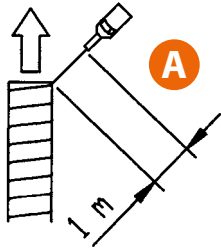
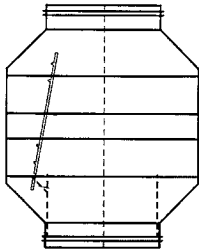
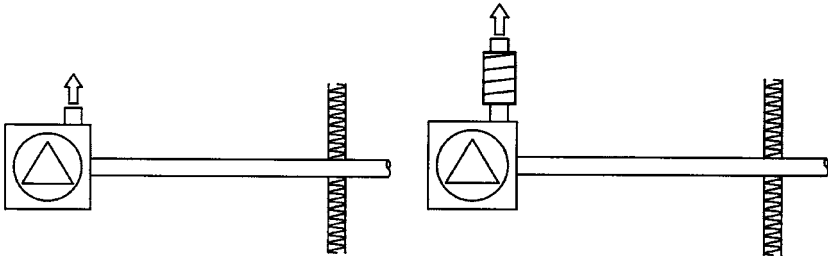
Turbopumps Belt driven

+

Accessories (Part No)

Silencer

Part No	Conn	Dimensions
3182	Ø160	L=1200, Ø355
3183	Ø160	L=600, Ø355
3184	Ø160	L=600, Ø260



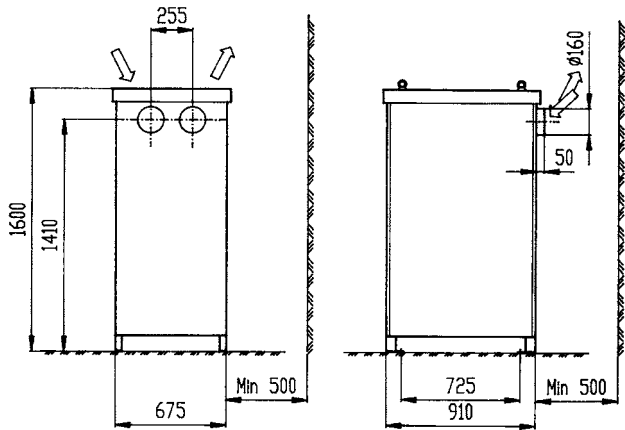
Part No	A
-	75 dB(A)
3184	64 dB(A)
3182	62 dB(A)

8051 Back Flow Valve 160 mm

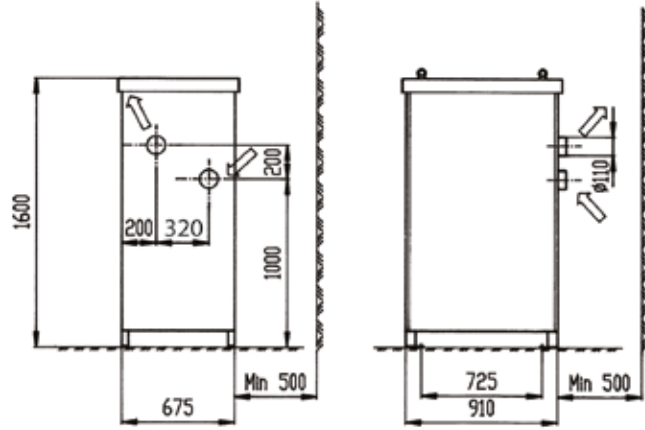
Installed on the inlet side of the TSR or TPR when two or more units are parallel installed.

Dimensions, Installation Example

TPR



TSR



Radial blowers

RAF 500

RAF 500S

3-phase

The RAF 500 is ideal for small fume extraction systems, for example with Flexpipes. Spiral tubing is generally used. The blower is a direct driven unit with minimal service requirements. (Lubrication interval 10000 hours.)

The RAF 500S is for application in extraction systems with lighter dust, e.g: wood dust. It is a twin wheel, series connected unit. The unit is direct drive and has minimal service requirements. (Lubrication interval 10000 hours.)

RAF 500 (Part No)

Without Silencing Enclosure:

111900 2.2 kW 220–240/380–420 V/ 50 Hz
111904 4 hp 460 V/60 Hz USA/CAN
111906 4 hp 600 V/60 Hz CAN

With Silencing Enclosure:

111910 2.2 kW, 220–240/380–420 V/50 Hz
111916 4 hp 460 V/60 Hz USA/CAN

RAF 500S (Part No)

Without Silencing Enclosure:

111800 5.5 kW 220–240/380–420 V/ 50 Hz
111804 10 hp 460 V/60 Hz USA/CAN

With Silencing Enclosure:

111810 5.5 kW, 220–240/380–420 V/50 Hz
111816 10 hp 460 V/60 Hz USA/CAN



Shutter valve auto



Technical data

		RAF 500	RAF 500S
Motor	kW	2.2 kW/4 hp	5.5 kW/10 hp
Pump	rpm	3000	3000
Weight	kg	39	150
Max dp	kPa	5.6	9.5
Max Q	m³/h	900	1100
Sound Level*			
- without silencing enclosure	dB(A)	79	79
- with silencing enclosure	dB(A)	66	66
Inlet/Outlet	mm	108/76	108/100

*) with exhaust silencer, 1 m



Accessories RAF 500 and RAF 500S (Part No)

4476 Silencer 100, 600/200 mm.
Used for silencing exhaust and inlet.
42297 Back Flow Valve 108 mm.
Installed on the inlet side of the fan when two or more units are parallel installed.
A closed shutter valve on the inlet at start-up decreases the power surge.
808404 Shutter valve auto 108 mm
8088 Solenoid valve 24 V AC
8026 Solenoid valve 24 V DC

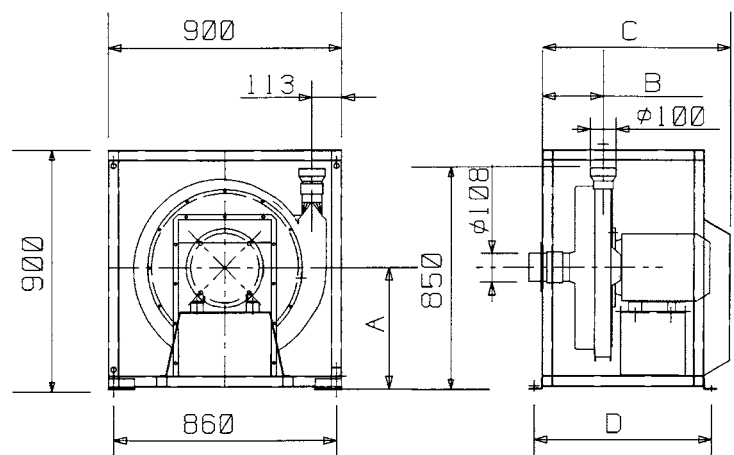
The target efficiencies for Dustcontrol's RAF-fans

The target efficiencies for Dustcontrol's RAF-fans when measuring the pressure differential over the fan with a duct fitted at the inlet and a free outlet.

RAF	η_v (%)
500	41,7
500s	48,0
1600	47,4
2500	49,0
2501	46,5
2502	44,8
2503	47,2

Radial blowers

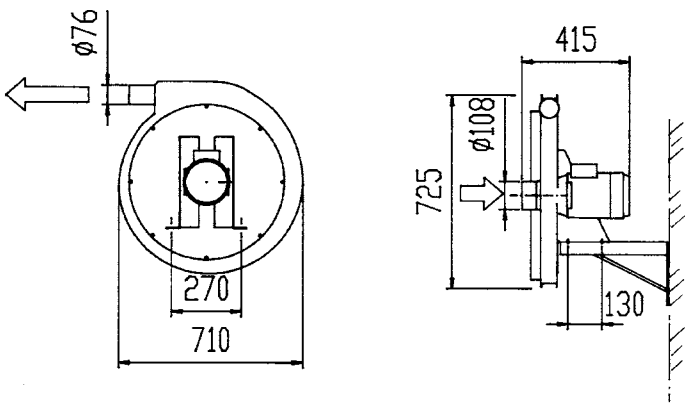
Dimensions RAF 500/ RAF 500S with Silencing Enclosure



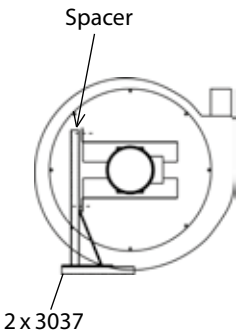
	A	B	C	D
RAF 500	450	157	550	510
RAF 500S	460	325	725	685

Dimensions RAF 500 without Silencing Enclosure

Wall installation



Floor installation



RAF 500S



Radial blowers

RAF 1600/2500

RAF 1600/2500 are single stage direct driven radial blowers for less demanding pressure applications such as fume extraction. The blowers are equipped with vibration isolators and silenced enclosure. They should always be equipped with an exhaust silencer. These units have minimal service requirements (lubrication interval 10000 hours).



Technical data

		RAF 1600		RAF 2500	
		50 Hz	60 Hz	50 Hz	60 Hz
Pump	rpm	3000	3600	3000	3600
Weight ca	kg	290	290	330	3300
Max dp	kPa	7.7	7.7	9.3	9.3
Max Q	m³/h	2000	2000	3500	3500
Sound Level*	dB(A)	68	68	70	70
Inlet/Outlet	mm	200/160	200/160	200/160	200/160

* with exhaust silencer, 1 m



Power consumption

Power consumption		RAF 1600		RAF 2500	
	Hz				
400V	50	112000	7.5 kW	112100	15 kW
230V	50	112002	7.5 kW	112102	15 kW
460V USA/CAN	60	112007	10 hp	112107	20 hp
600V CAN	60	112006	10 hp	112106	20 hp



Accessories (Part No)

8051 Back Flow Valve 160 mm.

Installed on the inlet side of the fan when two or more units are parallel installed.

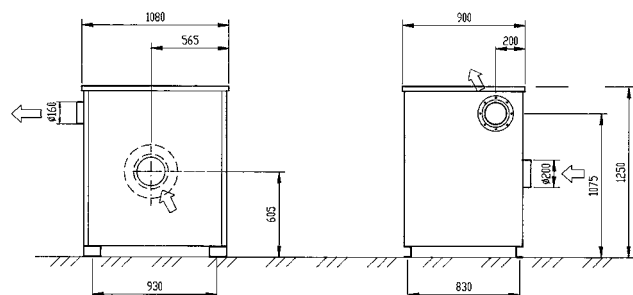
A closed shutter valve on the inlet at start-up decreases the power surge.

807500 Shutter valve auto 200 mm

8088 Solenoid valve 24 VAC

8026 Solenoid valve 24 VDC

Dimensions, Installation Example



Radial blowers

RAF 2501

The RAF 2501 is applied in extraction systems requiring large air-flows for lighter types of dust and cleaning. Pressure generation is achieved through two series connected stages. The unit is equipped with vibration isolation and a silenced enclosure. The unit should always be equipped with an exhaust silencer.

The unit is direct driven and has minimal service requirements (lubrication interval 10000 hours).

V	Hz	Motor	Part No
400	50	30 kW	112200
230	50	30 kW	112202
460 USA/CAN	60	40 hp	112204
600 CAN	60	40 hp	112206

RAF 2502

The RAF 2502 is applied in extraction systems requiring large air-flows such as systems for fume extraction. RAF 2502 work with two parallel impellers. The unit is equipped with vibration isolation and a silenced enclosure. The unit should always be equipped with an exhaust silencer.

The unit is direct driven and has minimal service requirements (lubrication interval 10000 hours).

V	Hz	Motor	Part No
400	50	30 kW	112300
230	50	30 kW	112302
460 USA/CAN	60	40 hp	112304
600 CAN	60	40 hp	112306

RAF 2503

Pressure generation is achieved through two series connected stages. The unit is equipped with vibration isolation and a silenced enclosure. The unit should always be equipped with an exhaust silencer. The unit is direct driven and has minimal service requirements (lubrication interval 10000 hours).

RAF 2503 develops a maximum negative pressure of 20 kPa. Note though that the maximum airflow is 2800 m³/h. Above this, the power consumption would be too large for the 30 kW motor, so the design of the system must throttle to this level for all cases.

V	Hz	Motor	Part No
400	50	30 kW	112400



Technical data

		RAF 2501		RAF 2502		RAF 2503
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz
Pump	rpm	3000	3600	3000	3600	3000
Weight ca	kg	440	440	430	430	450
Max dp	kPa	17	17	9.4	9.4	20
Max Q	m³/h	3300	3300	6200	6200	2800
Sound Level*	dB(A)	74	74	74	74	74
Inlet/Outlet	mm	200/160	200/160	2x200/2x160	2x200/2x160	200/160

*) with exhaust silencer, 1 m



Accessories (Part No)

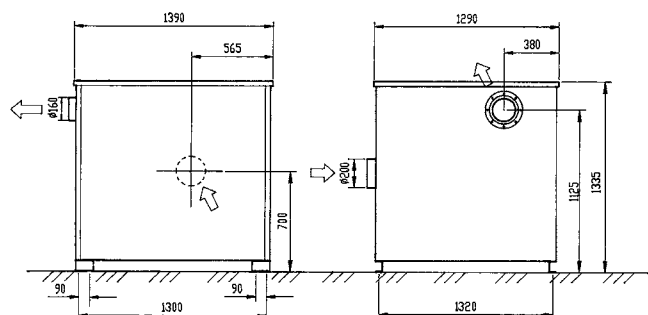
8051 Back Flow Valve 160 mm.
Installed on the inlet side of the fan when two or more units are parallel installed.

A closed shutter valve on the inlet at start-up decreases the power surge.

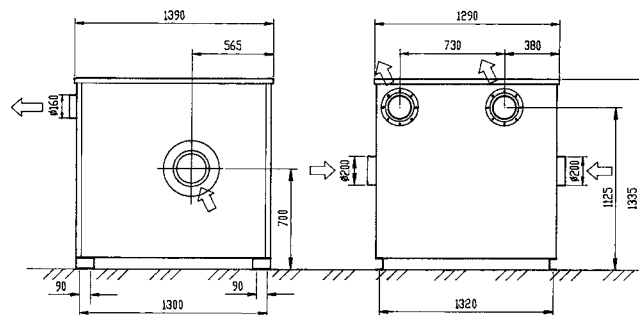
807500 Shutter valve auto 200 mm *
8088 Solenoid valve 24 V AC

* **Note:** Shutter valve Ø 200/Ø 250 only for single step fans (10 kPa).

Dimensions RAF 2501 / RAF 2503



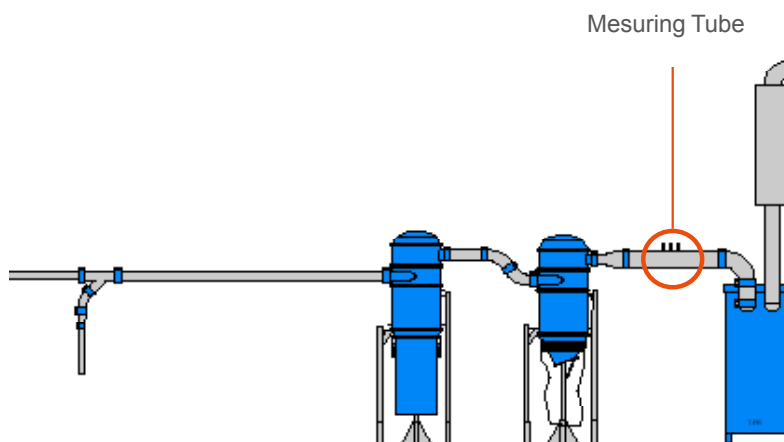
Dimensions RAF 2502



Measuring Tube

Dustcontrol's measuring tube is an easy and fast tool for the service engineer to carry out a control measurement – before and after installing the central vacuum system. The tube measures the air flow Q (m³/h) when the system is open, leakage flow and negative pressure when the system is closed. The measuring tube is placed between the filter and the vacuum producers, see graphic.

The measuring tube is included as a standard part in central vacuum systems from Dustcontrol's and can also be added to existing systems. Air flow meter is not included.



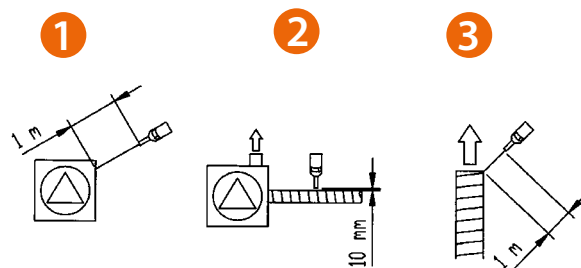
Accessories (Part No)

- 3365** Measuring Tube Ø 200
- 3366** Measuring Tube Ø 160
- 3367** Measuring Tube Ø 108
- 3372** Measuring Tube Ø 76
- 3371** Measuring Tube Ø 50

Fan Silencers for RAF 1600/2503

In order to decrease the noise level of our fans, RAF 1600 and RAF 2503, an in-line silencer must be installed on the exhaust duct. But you can fit one to the inlet as well, if required.

Several examples are illustrated of how noise level measurements can be affected. It is not unusual to obtain measurements of up to 110–120 dB(A) in completely non-silenced installations.



	1	2	3
	96	100	102
Silencer Ø 160 x 600 x 260 (Prod no 3184)			
	75	78	81
Silencer Ø 160 x 1200 x 260 (Prod no 3182)			
	68	72	71

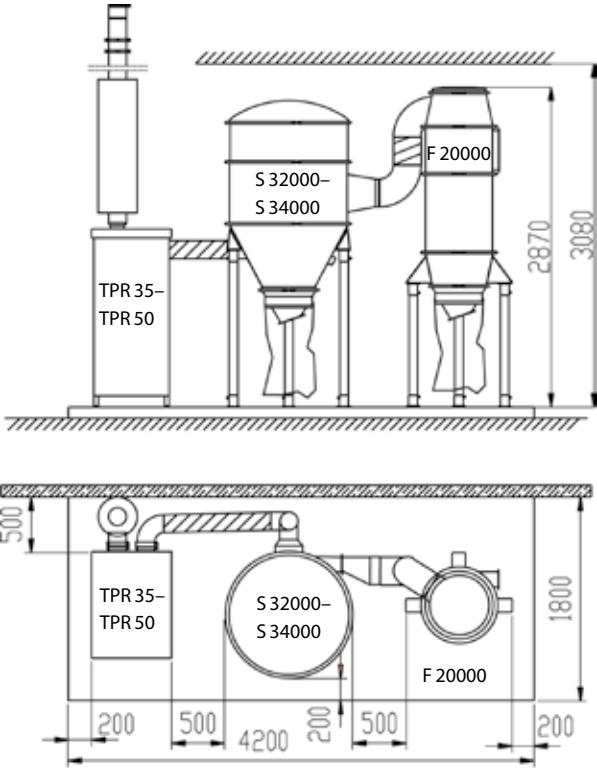


Accessories Fan silencers (Part No)

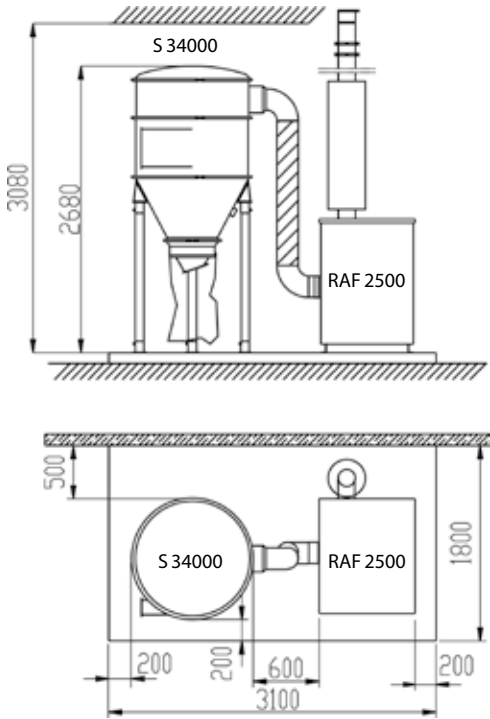
Part No	Conn	Dimensions
3182	Ø160	L=1200, Ø355
3183	Ø160	L=600, Ø355
3184	Ø160	L=600, Ø260

Dimensions, Installation Example

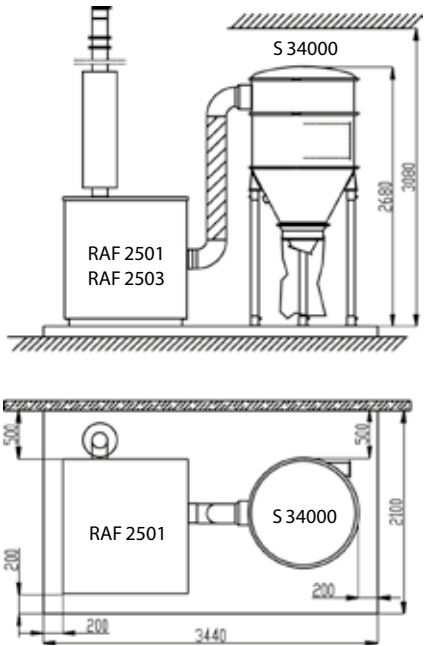
TPR 35–TPR 50, S 32000–S 34000, F 20000



S 34000, RAF 2500



RAF 2501 / 2503, S 34000



RAF 2502, S 34000X

