Elektror

We make air work.

KARL W. MÜLLER GMBH & CO. KG

Together into the Future! NextG The Next Generation of Elektror

THE NEW GENERATION OF SIDE CHANNEL BLOWERS.

ESD range.

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Elektror side channel blowers offer a wide variety of application options wherever the use of air as an energy source leads to optimum results. The fields of application listed below present just a small summary of the wide range of possible use of these devices.

- **Pneumatic air tube systems**
- **Pneumatic conveying systems**
- **Vacuum cleaning systems**
- **Vacuum lifting gear**
- **Vacuum transport systems**
- **Bottle-filling stations**
- **Printing machines**
- **Screen printing machines**
- **Air-cushion tables**
- **Drying systems**
- **Welding fume extraction**
- **Textile machinery**
- **Agricultural machines**
- **Dental equipment**
- **Water treatment**
- **Fish pond aeration**
- **Aquarium aeration**
- **Aeration of galvanic tanks**

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Elektror side channel blowers offer:

- **Non-contact operating pressure and vacuum generators**
- **Low noise level**
- **Maintenance-free**
- **Compact design**
- **Completely oil-free**

1.1 Function

Impeller and side channel facing each other form a circularworking chamber which is intersected between intake and discharge port. The rotation of the impeller causes a radial pressure rise in the cellular-shaped vanes which leads to a differing pressure distribution between channel and impeller resulting in a rotational flow between channel and cellular vanes. The pressure generated by the vanes ensues a further acceleration in the direction of rotation leading to a helical flow motion through the blower and a high pressure increase.

1.2 Design

Elektror side channel blowers are directly driven by asynchronous squirrel cage motors. In addition, a range of models without motor is available for external drive by means of a V-belt or other drive elements. Elektror side channel blowers are fitted with closed deep groove ball bearings. These bearings do not require lubrication. The service life of the ball bearing depends on the operating hours, the strain and other influences such as temperature etc.

All blower and motor parts are cast aluminium and therefore highly resistant to corrosion. The ribs on the blower housing provide a good heat dissipation, further assisted by the air flow of the motor.

1.3 Accessories

A variety of accessories allow a convenient installation of the Elektror side channel blowers. Special dimensions of connectors, flanges etc. as well as other model variations may be supplied on demand and after consultation.

- **Magnet change-over valve** Page 13 - 14
- **Vacuum relief valve** Page 15
- **Fine filter** Page 15
- **Connector** Page 15

1.4 Operating performance

Elektror side channel blowers may be operated – pulsation-free – over the whole range of their performance curves. They are designed for the conveying of air as well as for generating pressure or vacuum. The use of the units for aggressive and toxic media, air of high humidity and medium temperatures exceeding +40° C is subject to a detailed engineering review. The conveying of explosive gases is not permitted. The units are to be installed in weather protected places and must not be exposed to strain by vibrations, shocks and percussion. Units above 3,5 kW must be started in Y/Δ configuration.

To ensure faultless operation, the machine should be equipped with a suction filter and a vacuum relief valve as a minimum configuration. Further accessories are available on request. Admissible ambient temperature: -20°C to +60°C. The specified data are not binding and may be modified without prior notice.

Blowers with limited performance curves in the high pressure range should be fitted – depending on the application – with the relative vacuum relief valves in order to avoid an overload of the motor. Pressure relief valves can be mounted directly on the discharge port, vacuum relief valves directly on the intake port of the blower. Adjustment of the permitted maximum pressure of the blower is set in the factory. Settings below the maximum pressure are permitted.

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The rated values indicated in the characteristic curves are valid within a tolerance of ± 10% at a density of the conveyed medium of 1,2 kg/m³.

The sound pressure level has been ascertained at a distance of 1 m from the blower unit with reduction of the discharge port and an air duct connected to the intake side.

The drive motors are manufactured in accordance with EN 60034-1 (VDE 0530 part 1) amply dimensioned and suited for continuous operation. As a standard the motor insulation is class F and enclosure IP 54. Special voltage or frequency, multi-range windings, improved enclosure IP 55, tropical and humidity insulation, thermal class F as well as full motor protection may be supplied on demand. By request the side channel blowers can be speed controlled via frequency converter (see section 1.5).

Permissible ambient temperatures	
-20° to +60° C	Standard motors with a rated voltage (**max. ± 10%** voltage tolerance) and a rated frequency of 50 Hz **or** 60 Hz.
-20° to + 40° C	- Special-purpose with multivoltage range (50 Hz **and/or** 60 Hz)

Details about installation and operation of side channel blowers and reversing units may be obtained from the respective installation and operating instructions.

1.5 Variable-speed side channel blowers

These are used anywhere where changed volumetric flows or pressures are required for process control or process engineering reasons or these output parameters have to be kept constant.

Advantages:

- Energy and cost saving through optimised applications
- Devices are operated more controlled, resulting in longer service life
- No unnecessary noise load and generation of heat

All side channel blowers can be executed so that they are suitable for frequency converter operation (speed control). To this end the motors have to be equipped with PTC thermistors and provided with a reinforced coil insulation. The speed range may not exceed 50 Hz in the 50 Hz version and 60 Hz in 60 Hz version. The technical data is identical to that of the standard versions.

Special executions
on request

1.6 Details for ordering

Blower type
Execution
Motor size
Flow volume
Required total pressure difference
Voltage, frequency, three or single phase a.c.
Variants
Ambient and conveyed medium temperatures
Density of conveyed medium
Conveyed medium
Field of application
Accessories/special requirements

1.7 Remarks

Dimensions, technical data and descriptions are approximate. We are unable to accept responsibility for any errors contained in this document, and we reserve the right to make technical changes.

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design award winner 2004

1.8 Conversion table

Units of measurement

	from unit of measurement	with conversion factor	into units of measurement	from units of measurement	with conversion factor	into units of measurement
Pressure	bar	1000	mbar	mbar	0,001	bar
Pressure	mbar	100	Pa	Pa	0,01	mbar
Pressure	mmWS	0,098	mbar	mbar	10,2	mm H_2O
Pressure	mWS	98,07	mbar	mbar	0,0102	mm H_2O

European units of measuremer t in the USA

	from SI-unit of measurement	with conversion factor	into anglo-amer. unit of measur.	from anglo-amer. unit of measur.	with conversion factor	into SI-units of measurement
Pressure	mbar	0,0145	psi = lb/in²	psi = lb/in²	68,95	mbar
Pressure	bar	14,5	psi = lb/in²	psi = lb/in²	0,0689	bar
Pressure	mbar	0,402	inches water	inches water	2,49	mbar
Volumetric flow rate	m³/min	264,2	gal/min	gal/min	0,00379	m³/min
Volumetric flow rate	m³/min	35,31	cfm	cfm	0,0283	m³/min
Electrical Power output	kW	1,341	hp	hp	0,746	kW
Length	mm	0,0394	inch	inch	25,4	mm
Length	m	39,37	inch	inch	0,0254	m
Length	mm	0,00328	ft	ft	305	mm
Length	m	3,28	ft	ft	0,305	m
Weight	kg	2,205	lb	lb	0,454	kg

Example for conversion						
Pressure	180 mbar	0,0145	2,61 PSI	2,61 PSI	68,95	180 mbar
Volumetric flow rate	6 m³/min	35,31	211,8 ft³/min	211,8 ft³/min	0,0283	6 m³/min

Preselection characteristic curves
50 Hz - pressure side

Preselection characteristic curves
50 Hz - suction side

ESD CHARACTERISTIC CURVES

pressure side | **suction side**

ESD 180S

ESD 220S

ESD 260S

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ESD CHARACTERISTIC CURVES

pressure side | **suction side**

ESD 300S

ESD 340S

PERFORMANCE CHARACTERISTICS

ESD / 50 Hz

Side Channel Blower

Type	Execution	Motorsize	Volumentric flow rate Press. / Vacu. (m³/min)	Total pressure difference Pressure mbar	Total pressure difference Vacuum mbar	Motor performance Rated Output (kW)	Motor performance RPM (1/min)	Motor performance Current (A) at Voltage (V)	Sound pressure level dB (A)
THREE PHASE A.C. MOTOR									
180	S	63L	0,8	115	100	0,25	2790	1,26/0,73 (230/400 V)	58
220	S	80L	1,5	195	160	1,10	2800	4,50/2,60 (230/400 V)	64
260	S	80L	2,7	200	245	1,10	2800	4,50/2,60 (230/400 V)	68
260	S	90S	2,7	320	245	1,50	2825	6,20/3,60 (230/400 V)	68
300	S	90L	4,4	265	280	2,20	2875	8,70/5,00 (230/400 V)	70
300	S	100L	4,4	360	280	3,00	2880	10,5/6,10 (230/400 V)	74
340	S	100L	6,3	180	190	3,00	2880	10,6/6,10 (230/400V)	77
340	S	112M	6,3	260	300	4,00	2905	8,20 (400 V)	77
SINGLE PHASE A.C. MOTOR									
180	S	63L	0,8	115	100	0,25	2805	1,80 (230 V)	58
220	S	80L	1,5	195	160	1,10	2800	6,70 (230 V)	64
260	S	80L	2,7	200	245	1,10	2800	6,70 (230 V)	68
260	S	90S	2,7	320	245	1,50	2880	9,50 (230 V)	68

ESD / 60 Hz

Side Channel Blower

Type	Execution	Motorsize	Volumentric flow rate Press. / Vacu. (m³/min)	Total pressure difference Pressure mbar	Total pressure difference Vacuum mbar	Motor performance Rated Output (kW)	Motor performance RPM (1/min)	Motor performance Current (A) at Voltage (V)	Sound pressure level dB (A)
THREE PHASE A.C. MOTOR									
180	S	63L	1,0	125	125	0,30	3350	1,26/0,73 (277/480 V)	62
220	S	80L	1,8	270	215	1,32	3360	4,50/2,60 (277/480 V)	68
260	S	80L	3,2	190	200	1,32	3360	4,50/2,60 (277/480 V)	72
260	S	90S	3,2	260	290	1,80	3390	6,20/3,60 (277/480 V)	72
260	S	90L	3,2	330	290	2,65	3450	7,60/4,40 (277/480 V)	72
300	S	90L	5,4	230	255	2,65	3450	8,70/5,00 (277/480 V)	75
300	S	100L	5,2	320	335	3,60	3455	10,5/6,10 (277/480 V)	77
340	S	100L	7,5	150	170	3,60	3420	10,6/6,10 (277/480 V)	81
340	S	112M	7,5	240	265	4,80	3485	8,20 (480V)	81
SINGLE PHASE A.C. MOTOR									
180	S	63L	1,0	125	125	0,30	3365	2,20 (230V)	62
220	S	80L	1,8	270	215	1,32	3360	8,00 (230V)	68
260	S	80L	3,2	190	200	1,32	3360	8,00 (230V)	72
260	S	90S	3,2	275	290	1,80	3455	11,0 (230V)	72

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Base position

Silencer connection position

Connection position

Base execution	A	B	C	D
0	X			
1	X			
2	X	X	X	X
3	X			X
4	X			X
5				

Blower configuration separated

Connection position

Base execution	A
0	X
1	X
2	X
3	X
4	X
5	X

Angle positon pressure- / suction side

View motor side

Running direction (definition)

Pressure side / clockwise rotation

Suction side / clockwise rotation

Suction side / counter clock-wise rotation

Pressure side / counter clock-wise rotation

DIMENSIONAL DRAWING

Version without base

Version with base

Side view

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Dimensions in mm - Subject to modifications.

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Dimensions

	ESD 180S	ESD 220S	ESD 260S	ESD 300S	ESD 340S	
L2	253	260	311	395	413	
L3	168	168	201	267	267	
L4	291	298	357	449	467	
L5	267	274	329	417	435	
L6	12	12	14	16	16	
L7	288	295	354	446	464	
L8	184	184	221	291	291	
L9	99	106	128	150	168	
B1	220	260	310	350	400	
B2	90	90	110	140	140	
B3	183	183	222	286	286	
H1	237	276	323	379	417	
H2	90	40,5	48	64	64	
H3	240	279	326	383	421	
ØSD	75	75	90	120	120	
LG	85	92	110	128	146	
ØF	8,8	8,8	11	13,2	13,2	
G	G1"	G1"	G1 1/2"	G2"	G2"	
TP	M6	M6	M6	M6	M6	
TKP	156	193	233	273	312	
LP	17	17	17	17	17	
ØP	25	25	25	25	25	

Motorsize	63 S/L	71 S/L	80 S/L	90 S	90 L	100 L	112 M
ØM	121,5	137	153	173	173	191	217
HK	96	105	126	131	131	139	151,5
LM	163	177,5	199,5	212,5	237,5	261,5	277

Weights

Side channel blower	ESD 180S	ESD 220S	ESD 260S	ESD 300S	ESD 340S	
Blower (kg)	4,20	6,50	8,60	11,90	16,90	
Silencer (kg)	0,65	0,65	0,95	1,90	1,90	
Base (kg)	0,60	0,60	0,90	1,70	1,70	

Motor-size	BG 63S/L	BG 71S/L	BG 80S/L	BG 90S	BG 90L	BG 100L	BG 112M
Motor (kg)	3,9 / 4,5	5,7 / 6,6	6,55 / 9,85	12,30	15,45	18,60	27,30

Dimensions in mm - Subject to modifications.

Magnet change-over valve

	currentless	connected
Switch-over from pressure operation to a neutral intermediate position (pressure to system is cut off) or vice versa.		
Switch-over from suction operation to a neutral intermediate position (pressure to system is cut off) or vice versa.		
Switch-over from pressure to vacuum operation or vice versa.		
Switch-over from pressure to vacuum operation or vice versa.		

Dimensions in mm - Subject to modifications.

Magnet change-over valve with neutral intermediate position

Switch-over from pressure or vacuum operation with neutral intermediate position (pressure or vacuum to system is cut off) or vice versa. In the neutral position the consumer port is closed down.

M1 connected

M2 connected

currentless

M1 / M2 connected:
not allowed / does not define

Dimensions in mm - Subject to modifications.

Vacuum relief valve Type 1

Vacuum relief valve Type 2

Operation

Pressure Side

Suction Side

Operation

Pressure Side

Suction Side

Finefilter

Connector

Dimensions in mm - subject to modifications.

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Magnet change-over valve

	G	LG	D	D1	B	B1	B2	B3	L	Hub
ESD 180 / 220	G1"	10	75	63	279,5	178,5	90	380,5	82,5	12
ESD 260	G1 1/2"	12	90	63	316	215	110	417	99	15
ESD 300 / 340	G2"	12	120	70	438	288	150	588	132	15

Finefilter

	G	LG	L	L1	D	D1	H
ESD 180 / 220	G1"	10	313	148	130	60	110
ESD 260	G1 1/2"	12	313	148	130	60	110
ESD 300 / 340	G2"	12	381	148	150	60	110

Vacuum relief valve

	G	LG	D	L3	H
ESD 180 / 220	G1"	10	75	82,5	126,75
ESD 260	G1 1/2"	12	90	99	151,5
ESD 300 / 340	G2"	12	120	132	201

Connector

	G	LG	L
ESD 180 / 220	G1"	10	70
ESD 260	G1 1/2"	12	70
ESD 300 / 340	G2"	12	70

Dimensions in mm - Subject to modifications.

FOR YOUR NOTES

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PRODUCT REVIEW

- LOW PRESSURE BLOWERS
  catalogue ND
- MEDIUM PRESUURE BLOWERS
  catalogue RD
- HIGH PRESSURE BLOWERS
  catalogue HRD
- SIDE CHANNEL BLOWERS
  catalogue SD
- CONVEYING BLOWERS
  catalogue FD RDF
- AIR KNIFE
- ESD
- PLUSPACK

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