

# Elektror

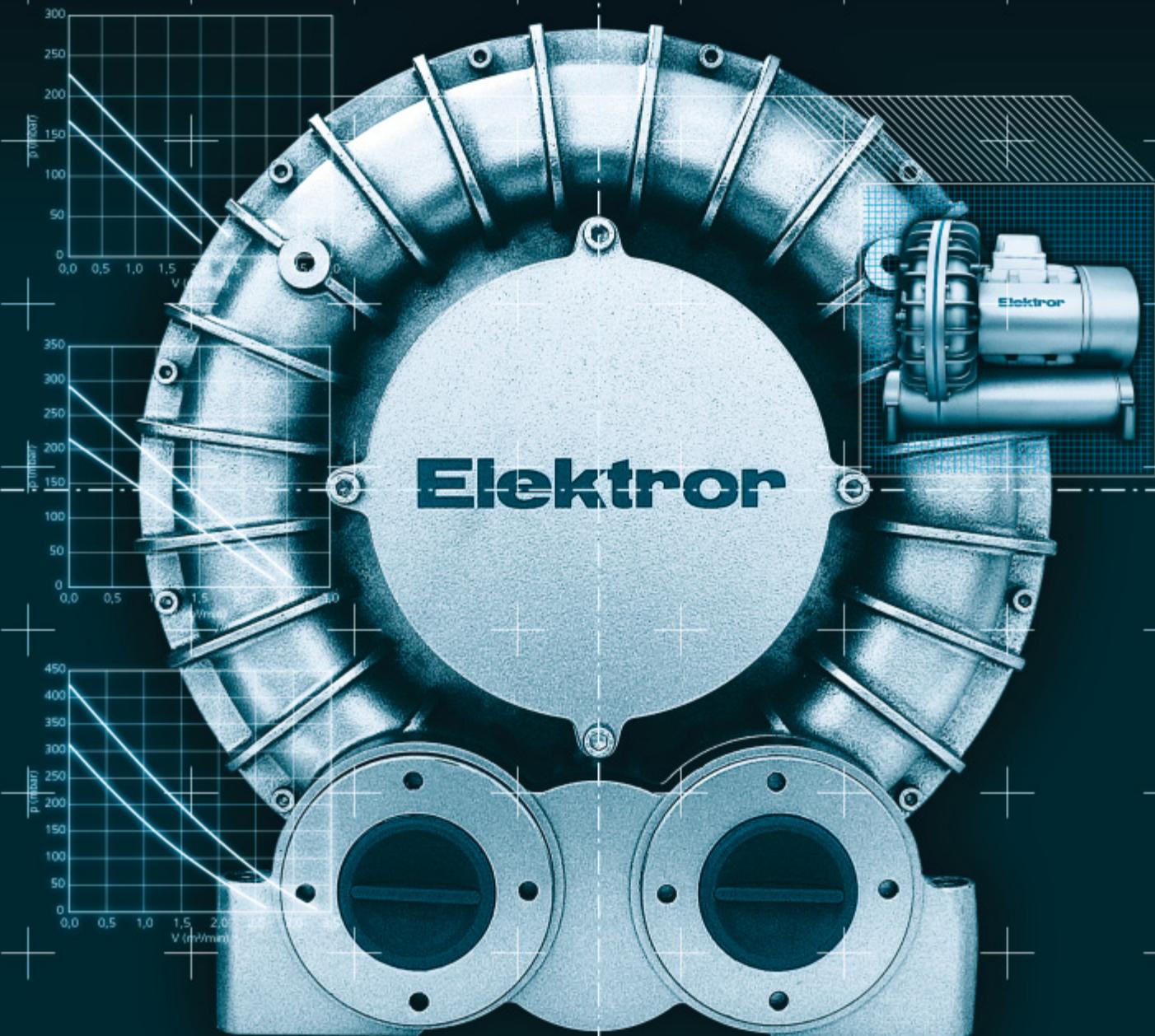
We make air work.

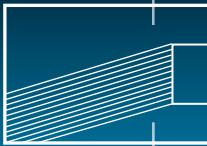
KARL W. MÜLLER GMBH & CO. KG



## THE NEW GENERATION OF SIDE CHANNEL BLOWERS. ESD range.

Elektror





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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
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- Aeration of galvanic tanks

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## TECHNICAL INFORMATION



### 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 circular working 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
- Vacuum relief valve
- Fine filter
- Connector

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#### 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.

**TECHNICAL INFORMATION**

The rated values indicated in the characteristic curves are valid within a tolerance of  $\pm 10\%$  at a density of the conveyed medium of  $1,2 \text{ kg/m}^3$ .

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 ( <b>max. <math>\pm 10\%</math></b> voltage tolerance) and a rated frequency of 50 Hz <b>or</b> 60 Hz.
-20° to + 40° C	- Special-purpose with multivoltage range (50 Hz <b>and/or</b> 60 Hz)

**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.

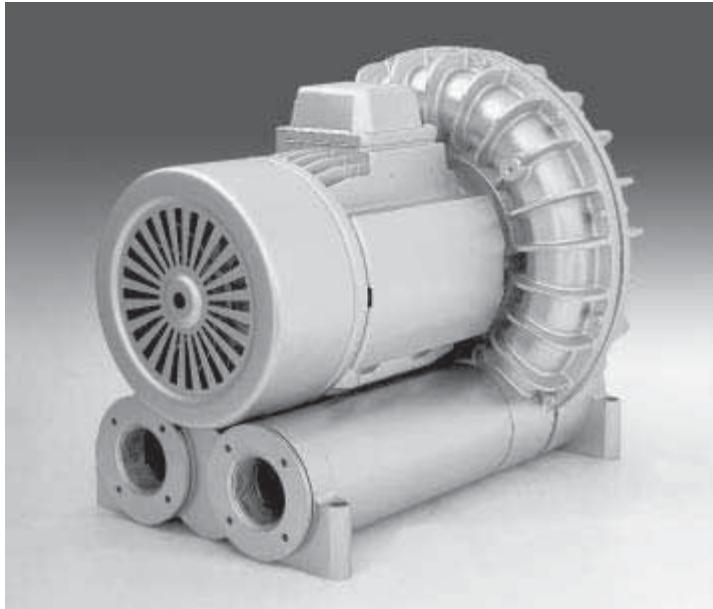
Details about installation and operation of side channel blowers and reversing units may be obtained from the respective installation and operating instructions.

**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.

**TECHNICAL INFORMATION**

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 <sub>2</sub> O
Pressure	mWS	98,07	mbar	mbar	0,0102	mm H <sub>2</sub> O

European units of measurement 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/in <sup>2</sup>	psi = lb/in <sup>2</sup>	68,95	mbar
Pressure	bar	14,5	psi = lb/in <sup>2</sup>	psi = lb/in <sup>2</sup>	0,0689	bar
Pressure	mbar	0,402	inches water	inches water	2,49	mbar
Volumetric flow rate	m <sup>3</sup> /min	264,2	gal/min	gal/min	0,00379	m <sup>3</sup> /min
Volumetric flow rate	m <sup>3</sup> /min	35,31	cfm	cfm	0,0283	m <sup>3</sup> /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**

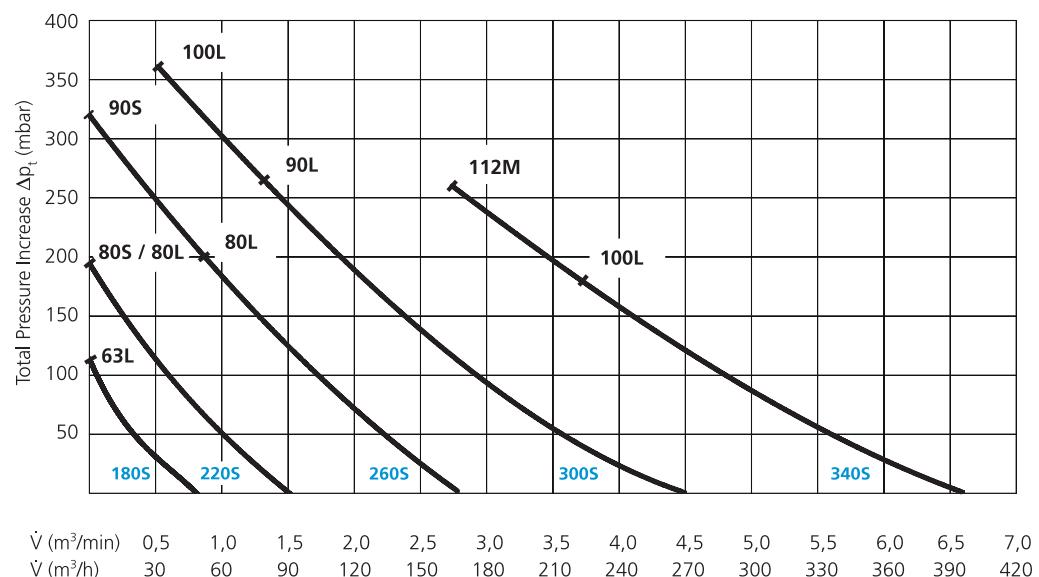
Pressure	180 mbar	0,0145	2,61 PSI	2,61 PSI	68,95	180 mbar
Volumetric flow rate	6 m <sup>3</sup> /min	35,31	211,8 ft <sup>3</sup> /min	211,8 ft <sup>3</sup> /min	0,0283	6 m <sup>3</sup> /min



## PRESELECTION CHARACTERISTIC CURVES

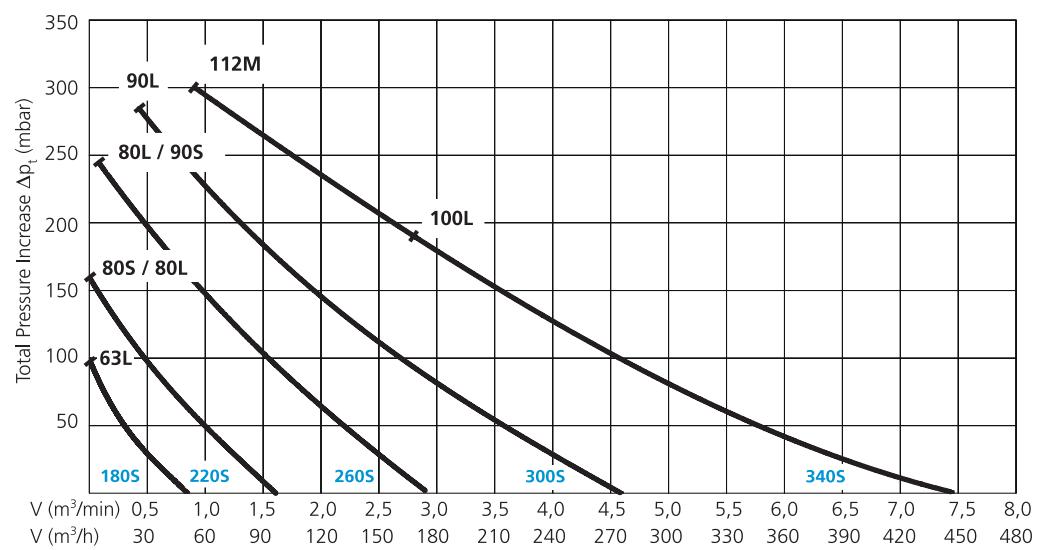
### Preselection characteristic curves

#### 50 Hz - pressure side



### Preselection characteristic curves

#### 50 Hz - suction side

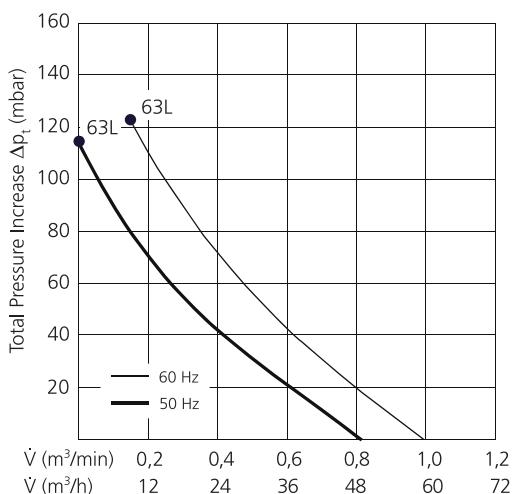


## ESD CHARACTERISTIC CURVES

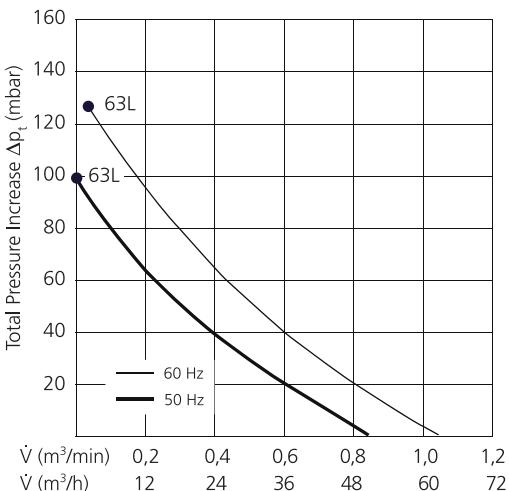


**pressure side**

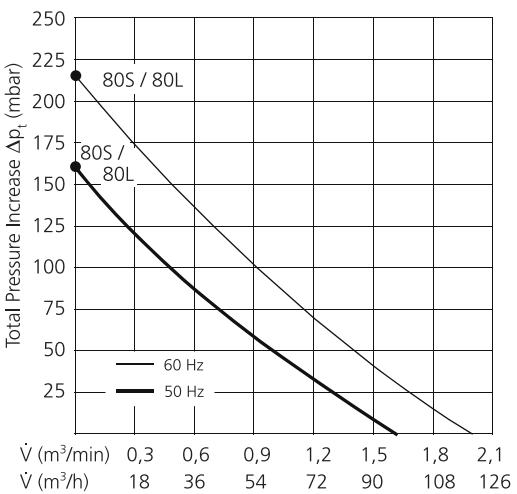
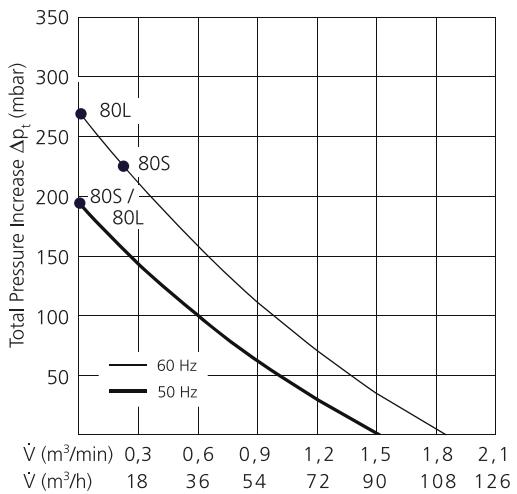
**ESD 180S**



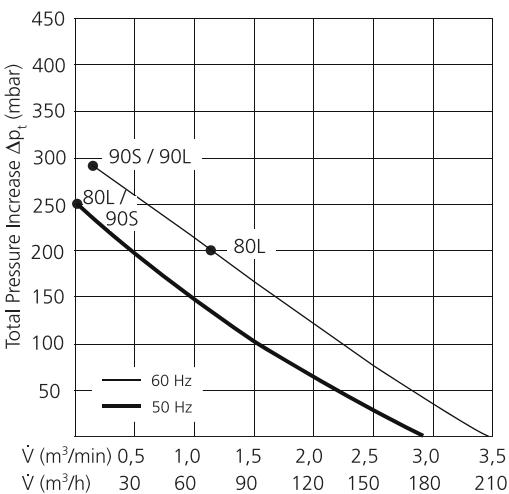
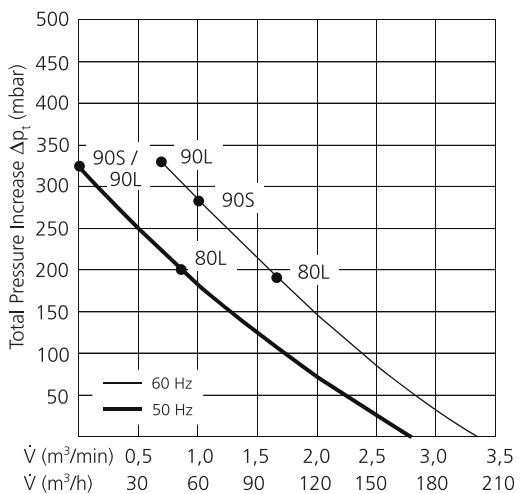
**suction side**



**ESD 220S**



**ESD 260S**

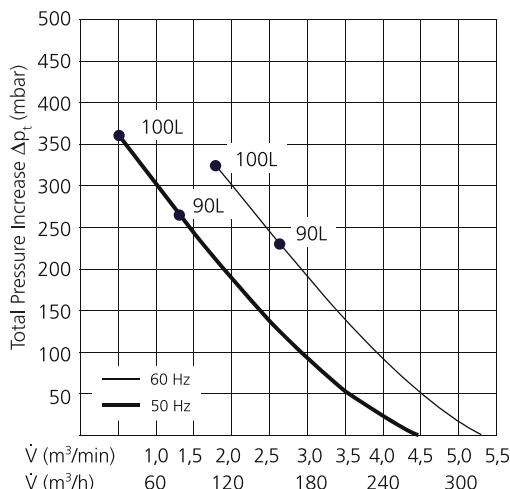




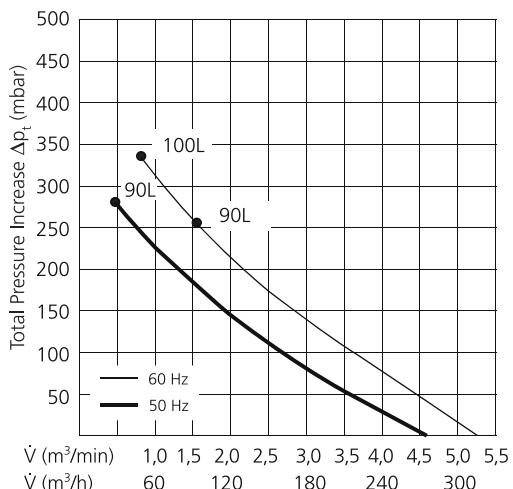
## ESD CHARACTERISTIC CURVES

**pressure side**

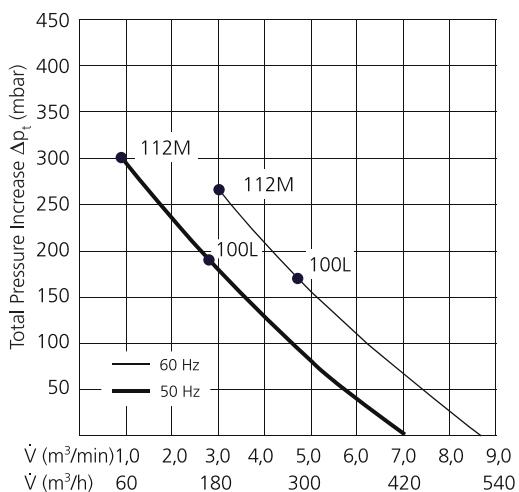
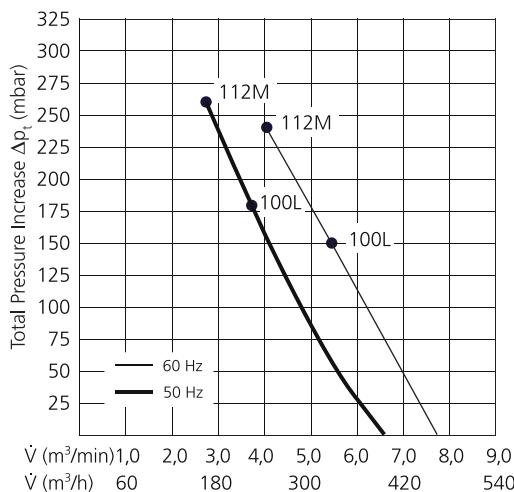
**ESD 300S**



**suction side**



**ESD 340S**



**PERFORMANCE CHARACTERISTICS****ESD / 50 Hz**

Side Channel Blower

Type	Execution	Motorsize	Volumetric flow rate Press. / Vacu. (m³/min)	Total pressure difference		Motor performance			Sound pressure level dB (A)
THREE PHASE A.C. MOTOR				Pressure mbar	Vacuum mbar	Rated Output (kW)	RPM (1/min)	Current (A) at Voltage (V)	
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

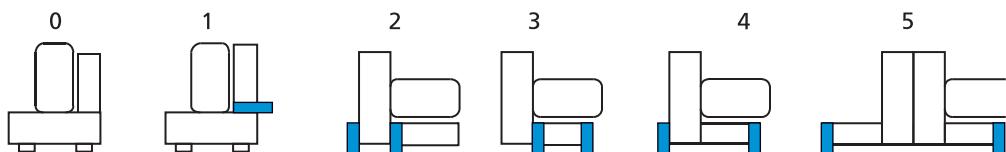
Type	Execution	Motorsize	Volumetric flow rate Press. / Vacu. (m³/min)	Total pressure difference		Motor performance			Sound pressure level dB (A)
THREE PHASE A.C. MOTOR				Pressure mbar	Vacuum mbar	Rated Output (kW)	RPM (1/min)	Current (A) at Voltage (V)	
180	S	63L	1,0	125	125	0,30	3350	1,26/0,73 (277/480 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



VARIANTS

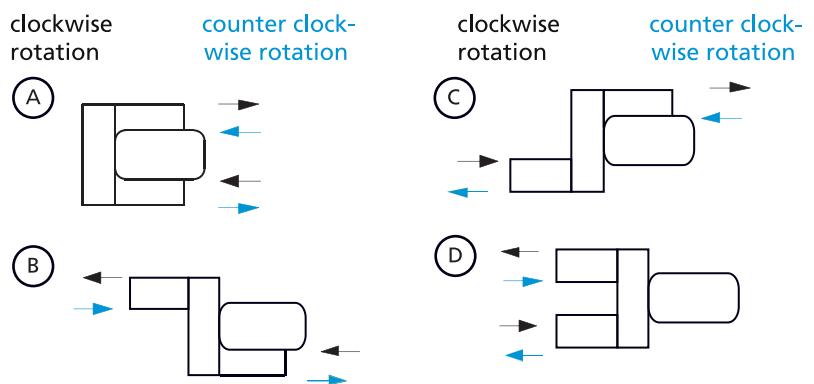


### Base position



### Silencer connection position

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



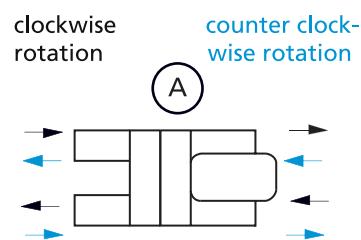
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**Elektror**

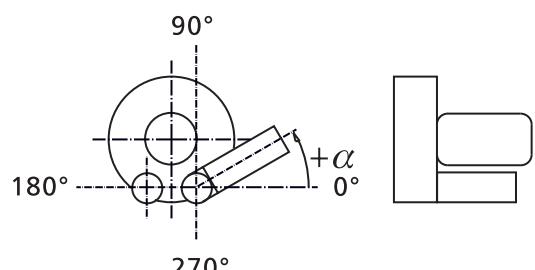
### Blower configuration separated

#### Connection position

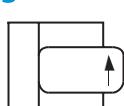
	A
0	X
1	X
2	X
3	X
4	X
5	X



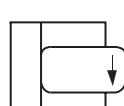
### Angle position pressure- / suction side View motor side



### Running direction (definition)



- Pressure side / clockwise rotation
- ← Suction side / clockwise rotation

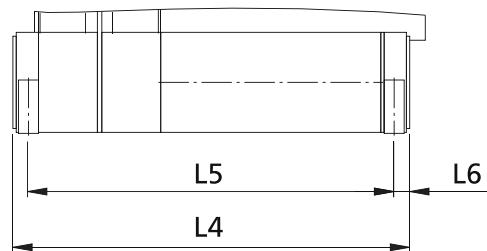
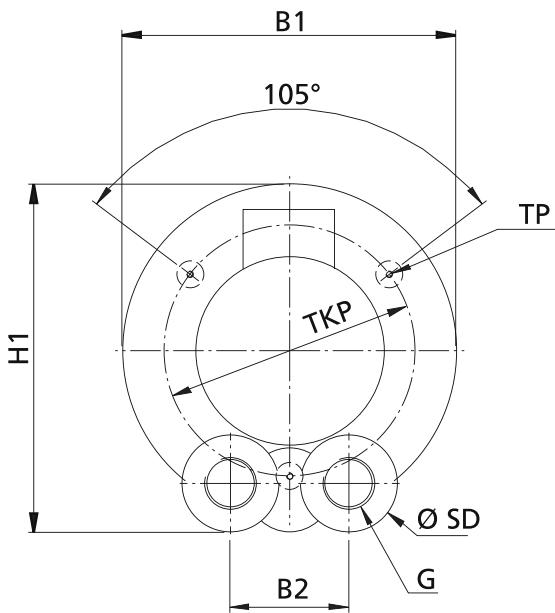


- ← Suction side / counter clockwise rotation
- Pressure side / counter clockwise rotation

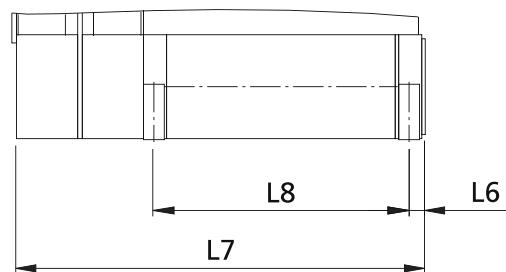
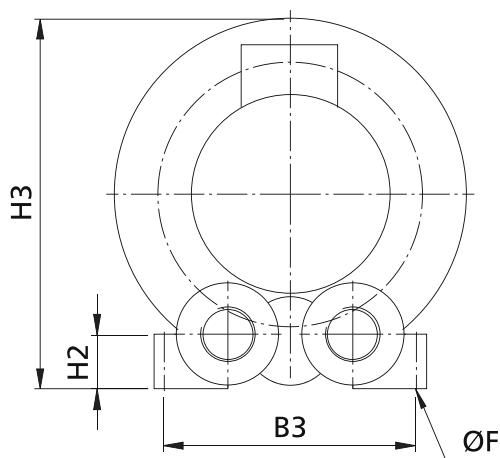
## DIMENSIONAL DRAWING



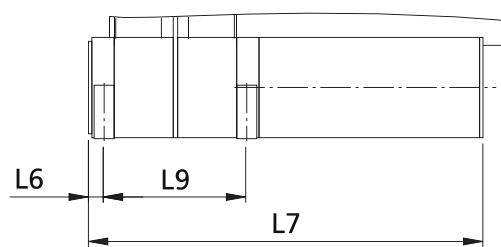
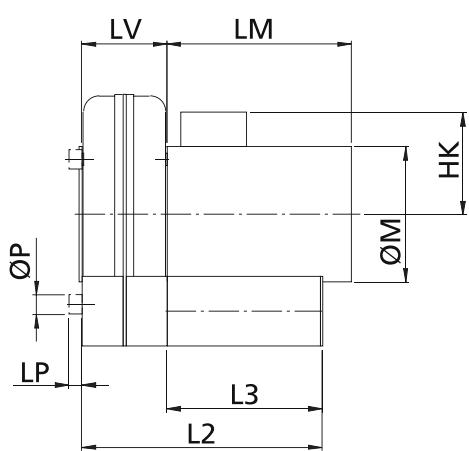
**Version without base**



**Version with base**



**Side view**





## DIMENSIONS AND WEIGHTS

### Dimensions

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

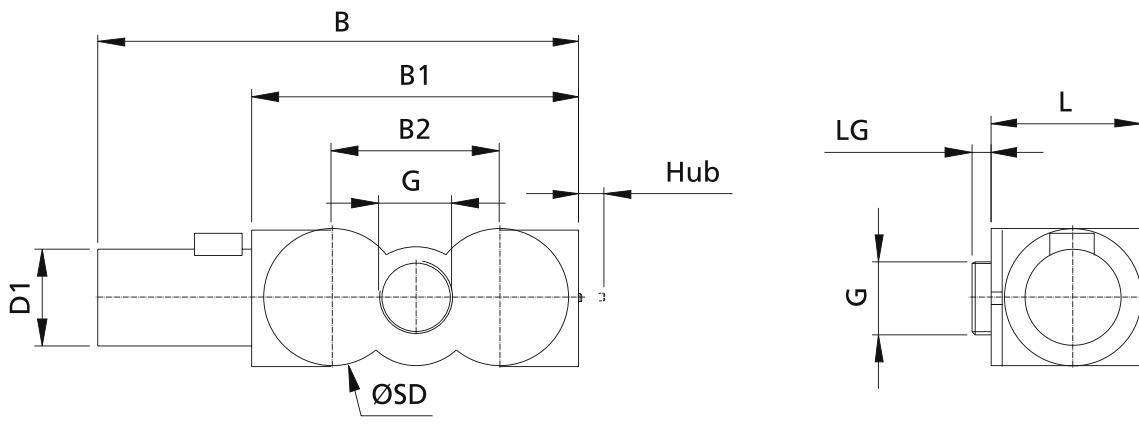
Motorsize	63 S/L	71 S/L	80 S/L	90 S	90 L	100 L	112 M
<b>ØM</b>	121,5	137	153	173	173	191	217
<b>HK</b>	96	105	126	131	131	139	151,5
<b>LM</b>	163	177,5	199,5	212,5	237,5	261,5	277

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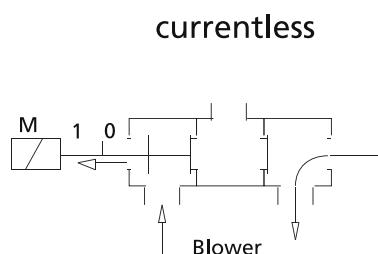
### Weights

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

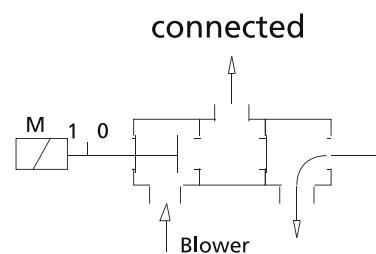
Motor-size	BG 63S/L	BG 71S/L	BG 80S/L	BG 90S	BG 90L	BG 100L	BG 112M
<b>Motor (kg)</b>	3,9 / 4,5	5,7 / 6,6	6,55 / 9,85	12,30	15,45	18,60	27,30

**ACCESSORIES****Magnet change-over valve**

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

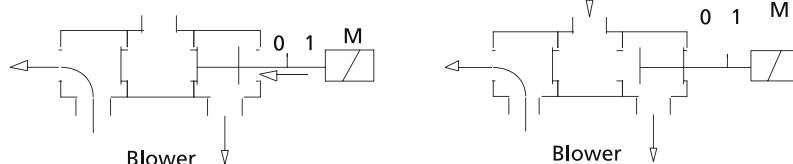


currentless

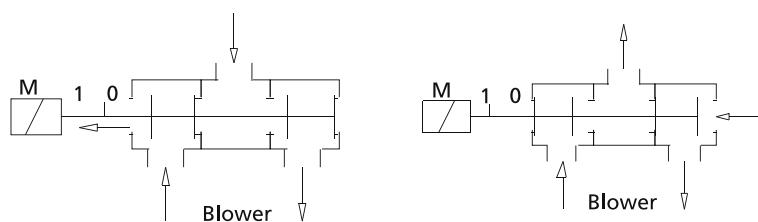


connected

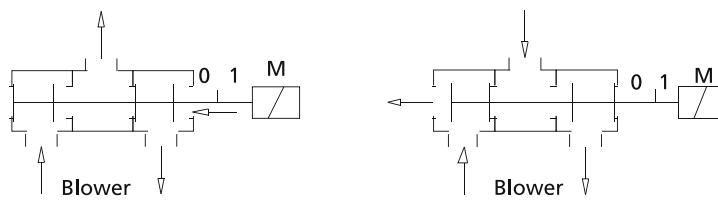
Switch-over from suction operation to a neutral intermediate position (pressure to system is cut off) or vice versa.



Switch-over from pressure to vacuum operation or vice versa.

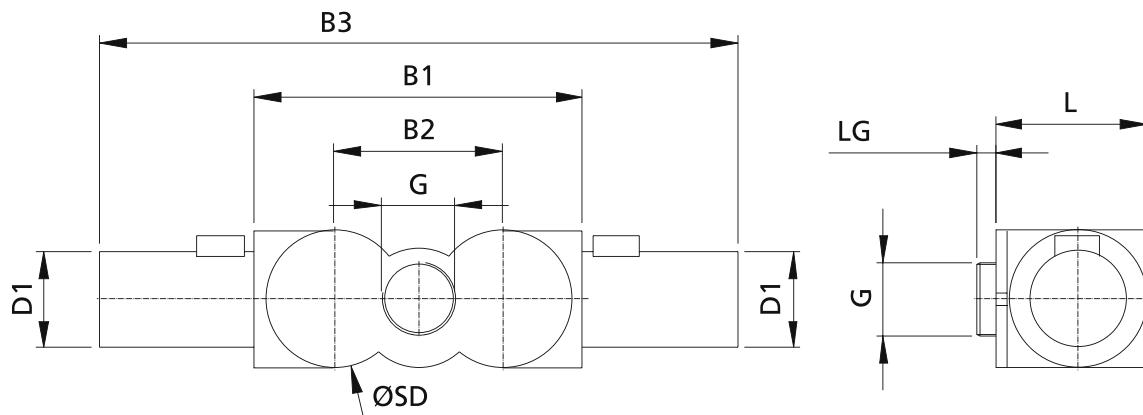


Switch-over from pressure to vacuum operation or vice versa.

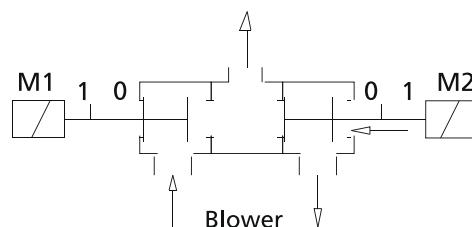




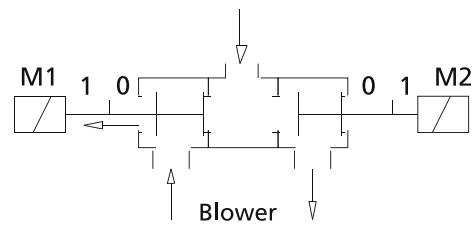
## Magnet change-over valve with neutral intermediate position



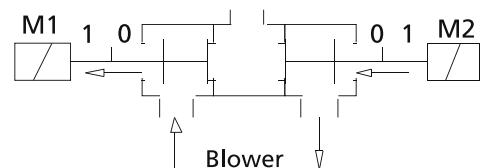
**M1 connected**



**M2 connected**



**currentless**

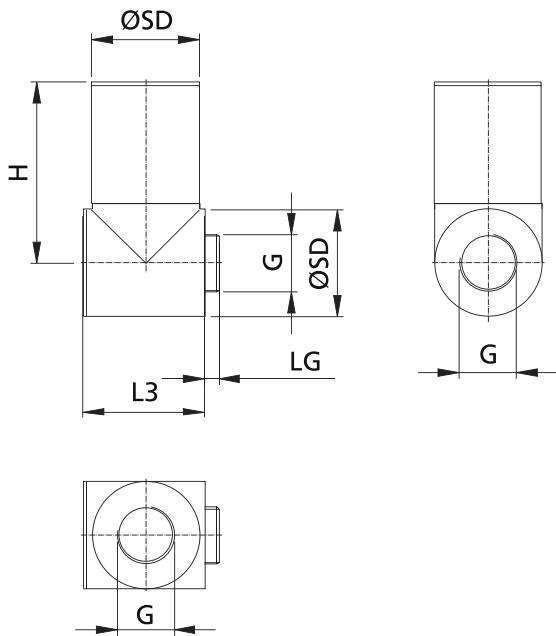


**M1 / M2 connected:  
not allowed / does not define**

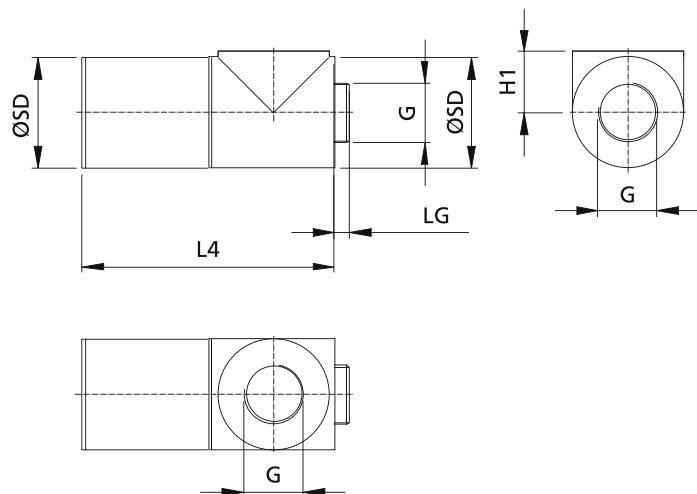
Dimensions in mm - Subject to modifications.

## ACCESSORIES

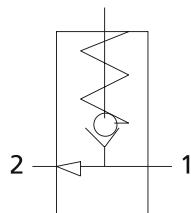
Vacuum relief valve  
Type 1



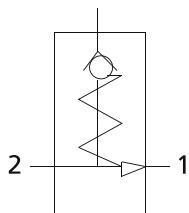
Vacuum relief valve  
Type 2



## Operation

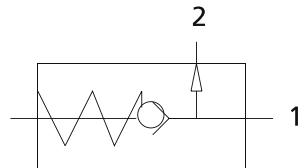


Pressure  
Side

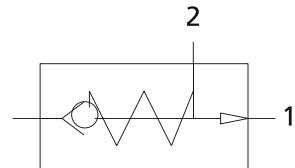


Suction  
Side

## Operation

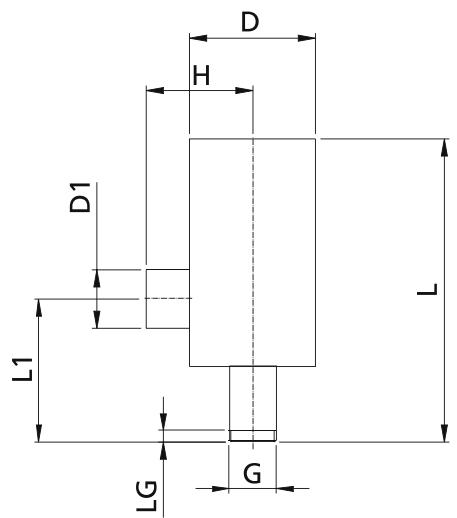


Pressure  
Side

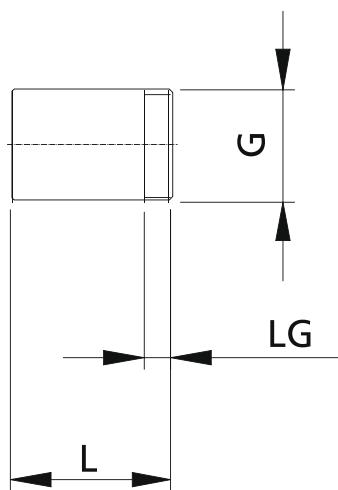


Suction  
Side

## Finefilter



## Connector





## DIMENSION TABLE ACCESSORIES

## Magnet change-over valve

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

## Finefilter

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

## Vacuum relief valve

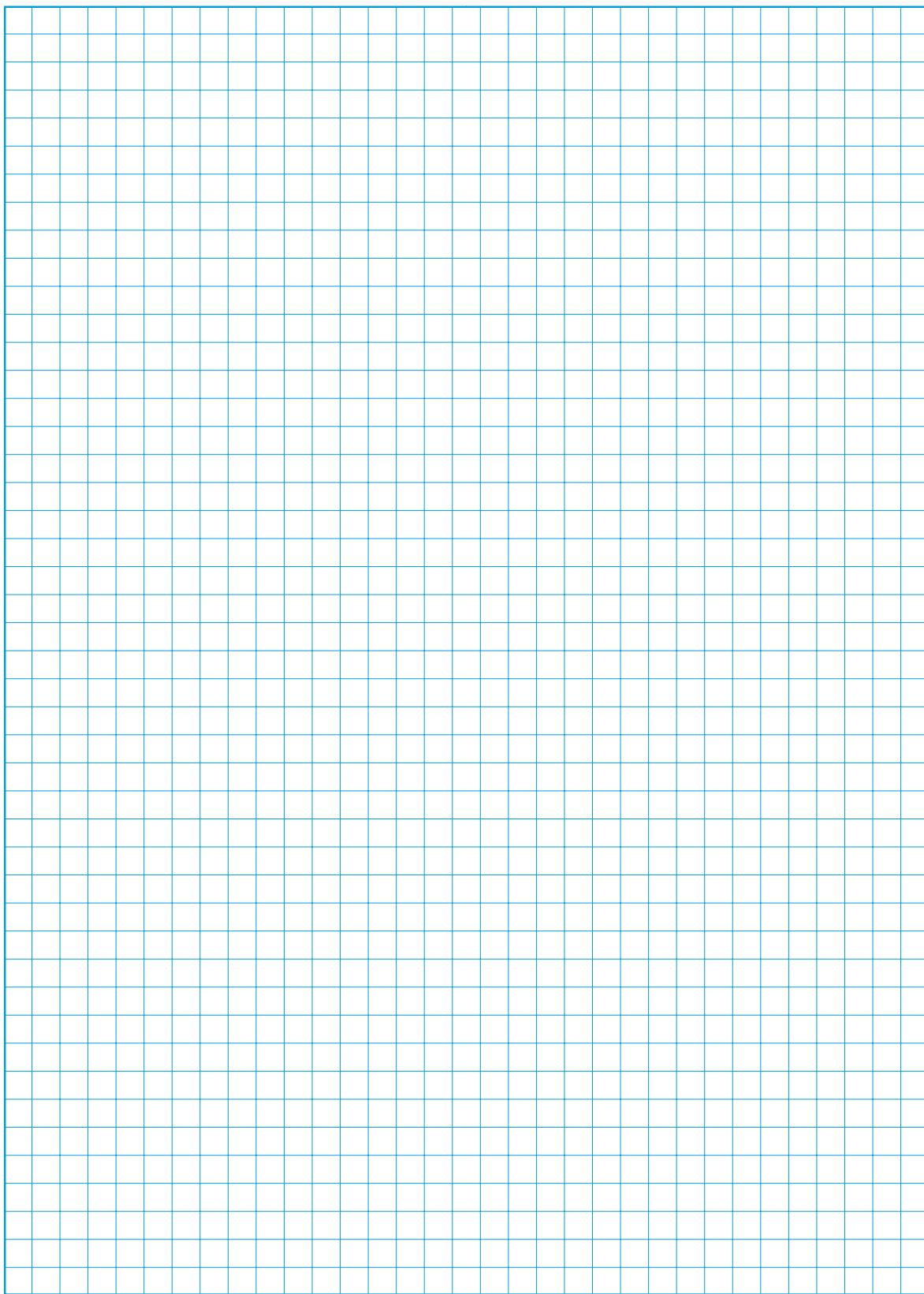
	<b>G</b>	<b>LG</b>	<b>D</b>	<b>L3</b>	<b>H</b>	
<b>ESD 180 / 220</b>	G1 "	10	75	82,5	126,75	
<b>ESD 260</b>	G1 1/2 "	12	90	99	151,5	
<b>ESD 300 / 340</b>	G2 "	12	120	132	201	

## Connector

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

**FOR YOUR NOTES**



**Elektror**

# Elektror

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KARL W. MÜLLER GMBH & CO. KG



## PRODUCT REVIEW

**LOW PRESSURE BLOWERS**  
catalogue ND

**MEDIUM PRESSURE 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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