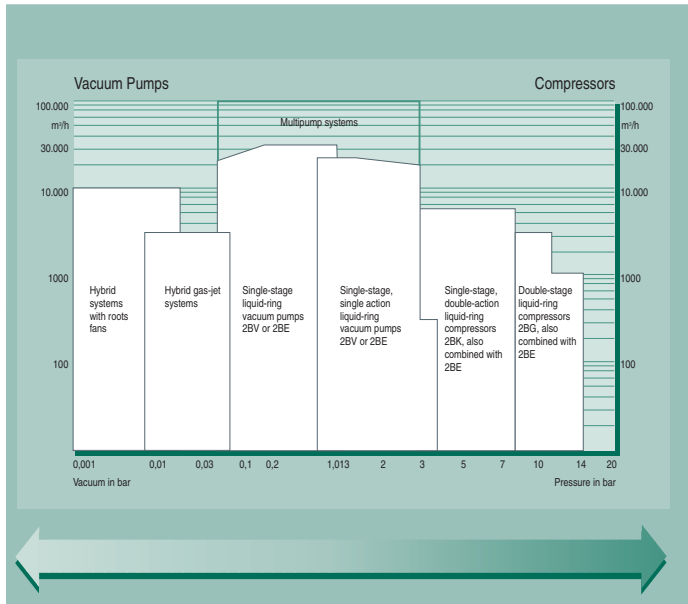


ELMO-F Vacuum Units with Vacuum Pumps, Range 2BE



ELMO systems as standard or customer-specific solutions covering a wide range of uses: from 1 mbar to 14 bar, from 10 to 100,000 m³/h

Selection example

Application:

e.g. foundry machines, casting technology

1 Duty point:

$\dot{V} = 570 \text{ m}^3/\text{h}$ at 50 Hz

$p_1 = 100 \text{ mbar}$

2 Choose the performance curve which lies closest to the duty point ①. In this example, No. **157 E**

3 Selection and order code:

ELMO-F vacuum unit with

vacuum pump 2BE1 153 - 0

No. **157 E** $\Rightarrow$ Type 2BE1 153-0BY4-Z

F43+F44+F97

Motor 1LA5 183 - 4AA60 ¹⁾

Note: When ordering motor, always indicate as separate item.

1) Scope of supply:

2BE1: vacuum pump with internal sealant supply, complete with mounted manifold, discharge-liquid separator, coupling, coupling guard and baseplate; **without motor**.

2) Motor should be ordered separately. For prices, other voltages etc., see Siemens price list M11.

3) Permissible voltage range:

Degree of protection	Rated voltage acc. to DIN IEC 38	perm. Voltage range acc. to DIN VDE or DIN IEC 34-1
IP 55	400 V Δ / 690 V γ **	380...420 V Δ / 660...725 V γ ***
EEx e II T3	400 V Δ / 690 V γ **	400 V Δ / 690 V γ *

* Voltage tolerance here $\pm 5\%$

** Voltage tolerance here $\pm 10\%$

*** This voltage range is also shown on the rating plate, together with the currents occurring in this range. For this range, the permissible voltage tolerance acc. to DIN VDE 0530 or IEC 34-1 is $\pm 5\%$

4) Based on operating duty "Standard" for inlet pressures:

2BE1: < 200 / $\geq$ 200 mbar abs.

5) Measuring-surface sound-pressure level acc. to EN 21680-1, measured at 1 m distance in a free field, at medium inlet pressure and with inlet and discharge pipes connected. Tolerance: +3 dB.

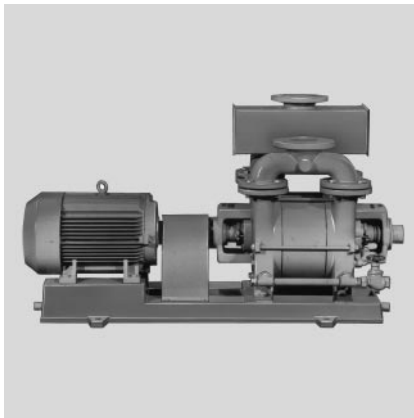
6) Special materials of construction, gaskets, motors and expanded scope of supply available on request.

7) See accessories.

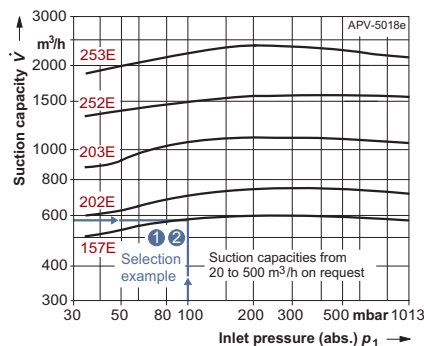
8) Including motor.

For dimensions, see page 61.

Selection and ordering examples for applications in the machine tools industry



Selection diagram



The selection diagram corresponding to PNEUROP with a tolerance of $\pm 10\%$ for:

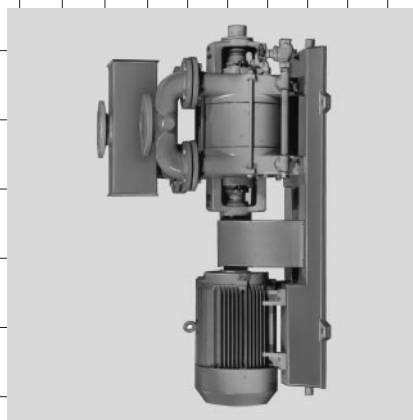
- The evacuation of 100% saturated air with a temperature of 20 °C (68 °F).
- Discharge pressure is 1013 mbar.
- The operating liquid is water with a temperature of 15 °C (59 °F).

Selection and ordering information

Curve No.	Motor					Vacuum pump		Sound-pressure level 5)	Order No. 6)		
	Rated output	Motor - Order No. 2)	Rated voltage 3)	Rated current	Degree of protection	Rated speed	Operating fluid requirement 4)		Vacuum pump	Accessories + mounting 7)	Total weight 8)
	kW		V	A		rpm	m³/h	dB(A)			kg
157E	18.5	1LA5 183 - 4AA60	400 Δ / 690 Y	35 Δ / 20.2 Y	IP 55	1460	1.9 / 1.3	70	2BE1 153-0BY4 - Z	F43 + F44 + F97	432
	17.5	1MA6 186 - 4BC80	400 Δ / 690 Y	33.5 Δ / 19.3 Y	EEx e II T3	1470			2BE1 153-0BY4 - Z	F43 + F44 + F98	500
202E	22	1LA5 207 - 6AA60	400 Δ / 690 Y	45.5 Δ / 26.3 Y	IP 55	975	2.1 / 1.4	71	2BE1 202-0BY4 - Z	F43 + F44 + F97	825
	20	1MA6 207 - 6BC80	400 Δ / 690 Y	39 Δ / 22.5 Y	EEx e II T3	980			2BE1 202-0BY4 - Z	F43 + F44 + F97	870
203E	30	1LA5 223 - 6AA60	400 Δ / 690 Y	61 Δ / 35.3 Y	IP 55	980	2.6 / 1.7	71	2BE1 203-0BY4 - Z	F43 + F44 + F96	815
	33	1MA6 253 - 6BC80	400 Δ / 690 Y	66 Δ / 38.2 Y	EEx e II T3	985			2BE1 203-0BY4 - Z	F43 + F44 + F97	1000
252E	45	1LA6 283 - 8AB60	400 Δ / 690 Y	84 Δ / 48.5 Y	IP 55	730	4.4 / 2.9	73	2BE1 252-0BY4 - Z	F43 + F44 + F97	1690
	45	1MJ6 283 - 8CB60	400 Δ / 690 Y	84 Δ / 48.5 Y	EEx de II C				2BE1 252-0BY4 - Z	F43 + F44 + F97	1710
253E	75	1LA6 313 - 8AB60	400 Δ / 690 Y	138 Δ / 80 Y	IP 55	740	5.2 / 3.5	73	2BE1 253-0BY4 - Z	F43 + F44 + F97	2110
	75	1MJ6 313 - 8CB60	400 Δ / 690 Y	138 Δ / 80 Y	FFX de II C				2BE1 253-0BY4 - Z	F43 + F44 + F97	2150

Selection Overviews for Range 2BE1

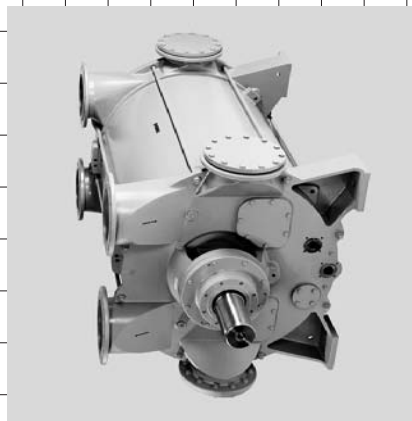
Selection overviews for range 2BE1

[illegible]

F

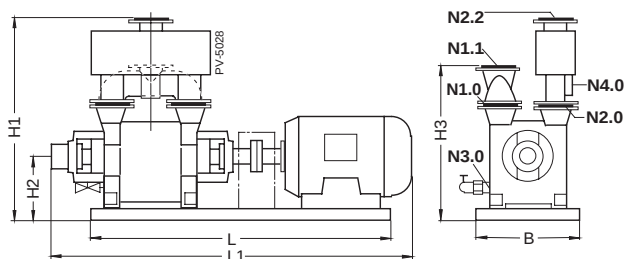
F

Speed of pump in rpm																															
170	180	190	200	210	230	240	260	270	290	300	320	330	340	350	370	380	390	400	420	440	450	470	490	530	560	570	610	630	690	740	810
Speed of pump in rpm →																															
Speed performance area of 2BE3 pumps																															
All figures are for guidance only. For precise design, please ask for our catalogue sheets or contact your nearest office.																															
					2BE3 50. - 2		2BE3 52. - 2																								
					m ³ /h kW	7400 110	8600 138	10500 170	m ³ /h kW	4100 63	4800 80	5500 95	6500 108	9200 205	12300 287	15050 285	18700 375	21200 470	25500 575	30500 675	35000 775	40000 880	45000 990	50000 1100	55000 1220	60000 1340	65000 1460	70000 1580	75000 1700	80000 1820	
					m ³ /h kW	9000 130	10500 170	12500 205	m ³ /h kW	5600 82	6500 108	7500 130	8400 160	9200 205	10500 276	12500 335	14500 415	16500 495	18500 575	20500 655	22500 735	24500 815	26500 895	28500 975	30500 1055	32500 1135	34500 1215	36500 1295	38500 1375	40500 1455	
					2BE3 30. - 2		2BE3 32. - 2																								
					m ³ /h kW	2700 45	2900 51	3100 57	m ³ /h kW	1650 113	1850 130	2050 147	2250 164	2450 181	2650 198	2850 215	3050 232	3250 249	3450 266	3650 283	3850 300	4050 317	4250 334	4450 351	4650 368	4850 385	5050 402	5250 419	5450 436	5650 453	



Dimensions for ELMO-F Units 2BE and Accessories

Dimensions for 2BE1 15. to 2BE1 25. (mm)



2BE1 153 to 2BE1 253

2BE1

Type	Curve No.	For motor size:	B	H1	H2	H3	L	L1	Vacuum-/pressure-side pipe socket			
									N1.0/N2.0 DN DIN 2501 PN 10	N1.1/N2.2 DN DIN 2501 PN 10	N3.0 Connection for op. liquid ISO 7/1	N4.0 Drain of separator ISO 7/1
2BE1 153	157 E 158 E	180M 180L	450	845	325	700	1265	1610	65	100	Rp 1/4	Rp 2
2BE1 202	202 E 204 E	200L	660	1085	415	940	1625	1755	100	125	Rp 1	Rp 3
2BE1 203	203 E 206 E	225M 250M	660	1110	415	965	1625	1935 2030	100	125	Rp 1	Rp 3
2BE1 252	252 E 254 E	280M	630	1400	555	1185	1800	2255	125	150	Rp 1/4	Rp 3
2BE1 253	253 E 256 E	315M	700	1400	555	1185	2060	2540	125	150	Rp 1/4	Rp 3

Accessories 2BE

	For vacuum pump Type	Order No.	Weight kg
Compressed-air gauge, loose Chrome-nickel steel for operating liquid	0.8 - 4 m³/h	2BE1 15. to 2BE1 20.	8
	0.8 - 4 m³/h	2BE1 25.	14
Pressure gauge -1 to +0.6 bar including shutoff tap and gaskets		2BE1	1
		Order codes	
Discharge-liquid separator		F43	
Manifold		F44	
Coupling, coupling protection, baseplate incl. motor mounting		F96, F97, F98	

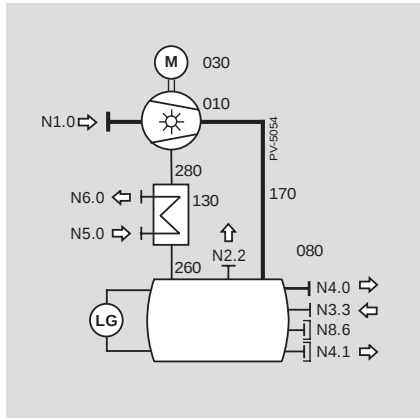
ELMO-F Systems

Standard closed-circuit units



ELMO-F closed-circuit vacuum pump range 2BW3

The ELMO-F Standard closed-circuit vacuum pumps/compressors 2BW consist of a vacuum pump/compressor with three-phase motor, liquid separator, heat exchanger, base frame and pipework. The schematic structure is shown in the picture above right.



Key:

- 010 Vacuum pump
- 030 Three-phase motor
- 080 Separator
- 130 Heat exchanger

Connections:

- N1.0 Gas inlet
- N2.2 Gas outlet
- N3.3 Make-up
- N4.0 Overflow
- N4.1 Total drain
- N5.0 Cooling water inlet
- N6.0 Cooling water outlet
- N8.6 Measurement point

With **ELMO-F closed-circuit vacuum pumps/compressors 2BW**, the condensate from the extracted process vapours is conveyed as the operating liquid in a closed circuit (vacuum pump/compressor → separator → heat exchanger → vacuum pump/compressor). This prevents polluted waste water and avoids the need to use fresh water. Recovered condensate can be removed for further use. The cooling water is only heated up, not polluted.

Closed-circuit vacuum pump with roots backing pump

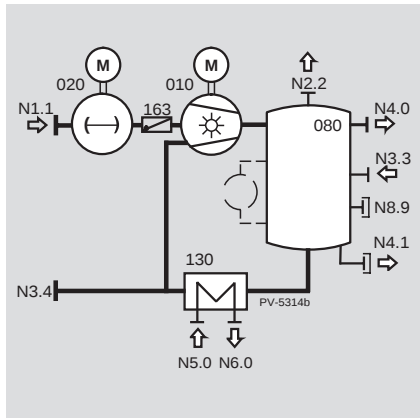


ELMO-F closed-circuit vacuum pump with roots backing pump for inlet pressures to 10 mbar abs.

Further versions:

ELMO-F vacuum pumps with backing pumps like gas ejectors, steam ejectors, roots pumps (see figure above) and ELMO-G for low limit pressure from 1 to 100 mbar abs.

ELMO-F plants with several parallel vacuum pumps and compressors for higher suction capacities.



Key:

- 010 Vacuum pump with motor
- 020 Roots backup pump
- 080 Separator, vertical
- 130 Heat exchanger
- 163 Non-return valve

Connections:

- N1.1 Gas inlet
- N2.2 Gas outlet
- N3.3 Make-up
- N3.4 TI measurement nozzle
- N4.0 Overflow
- N4.1 Total drain
- N5.0 Cooling water inlet
- N6.0 Cooling water outlet
- N8.9 Measurement point

To optimize the speed of ELMO-F closed-circuit vacuum pumps and compressors in accordance with the required process data, the following drives are possible:

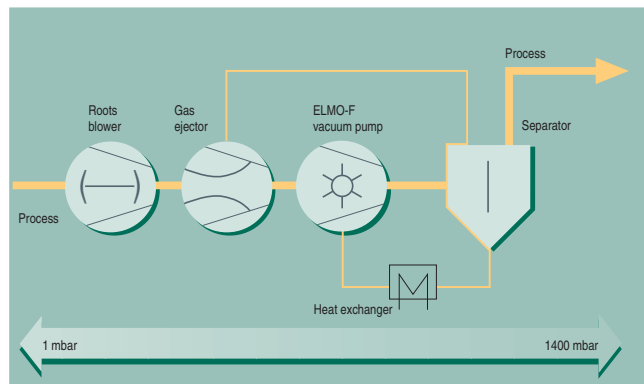
- Direct drive via coupling with electrical or other motors (e.g. Diesel motor)
- Drive via belt drive with electrical or other motors (e.g. Diesel motor)
- Drive via gear with electrical or other motors (e.g. Diesel motor)

For a flexible matching of ELMO-F closed-circuit vacuum pumps and compressors to the process data, the following control concepts can be supplied:

- Bypass control,
- Speed control with frequency converters when using electrical motors,
- Process-bound complete control systems for plants

ELMO-F Systems

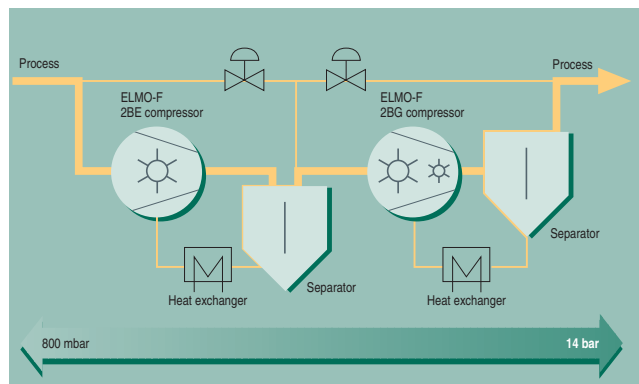
Vacuum system with roots backing pump and gas ejector



Sets for the range to 1 mbar.

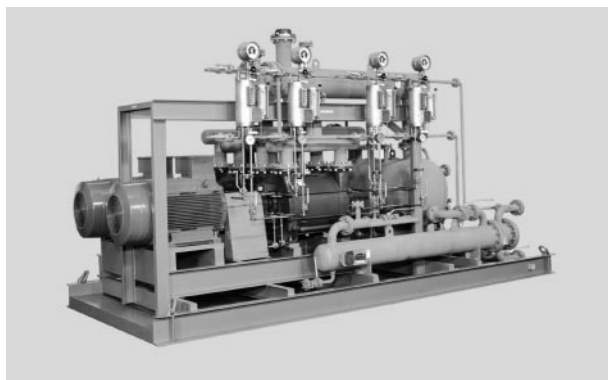
When combined with reliable components such as roots pumps or gas ejectors, the area of use of ELMO-F compressors is considerably extended. Even mixed operation from vacuum to pressure presents no problems for the machines.

Series-connected ELMO-F compressors



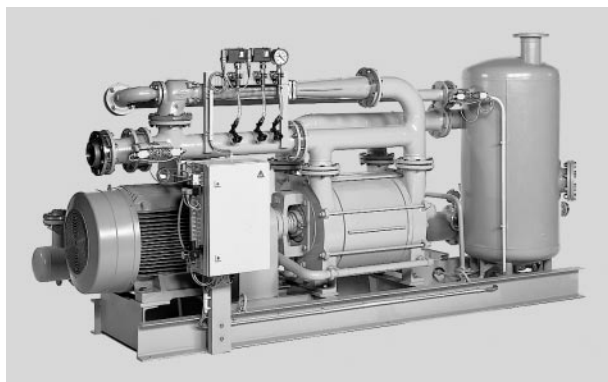
Series connection of ELMO-F compressors for use up to 14 bar abs.

Examples of vacuum/compressor systems with ELMO-F pumps



Double unit 2BW4 203 - 0ZY99 - Z

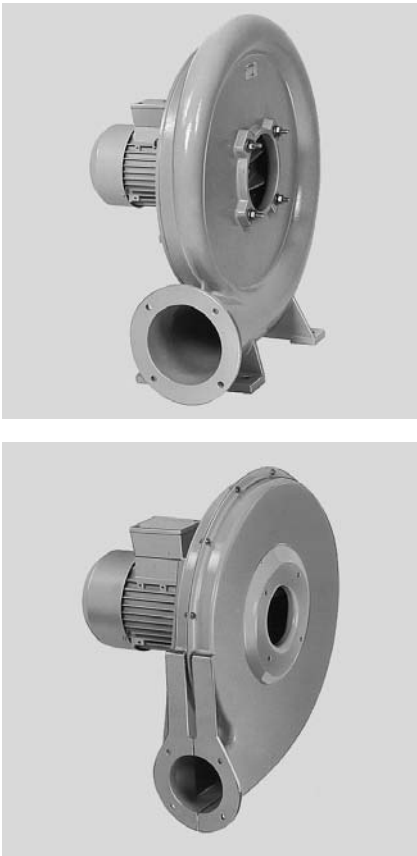
Suction flow:	N ₂ , Dichlorethane (EDC), VC, HCL
Suction capacity:	105 Nm ³ /h
Vacuum:	0.16 bar abs.
Pressure:	1.7 bar abs.
Drive capacity:	38 kW



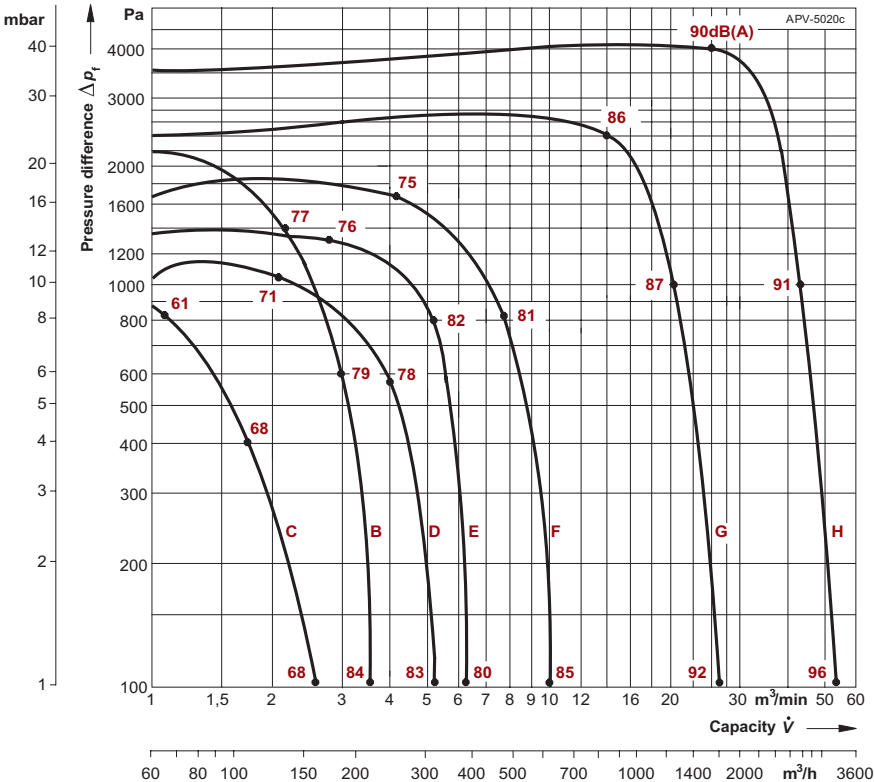
Power unit 2BW4 253 - 0BL4 - Z with gas ejector

Condenser evacuation	
Suction flow:	Vapour-air mixture
Leakage air flow evaporation:	10.32 kg/h
Vacuum:	0.015 bar abs.
Drive capacity:	47 kW

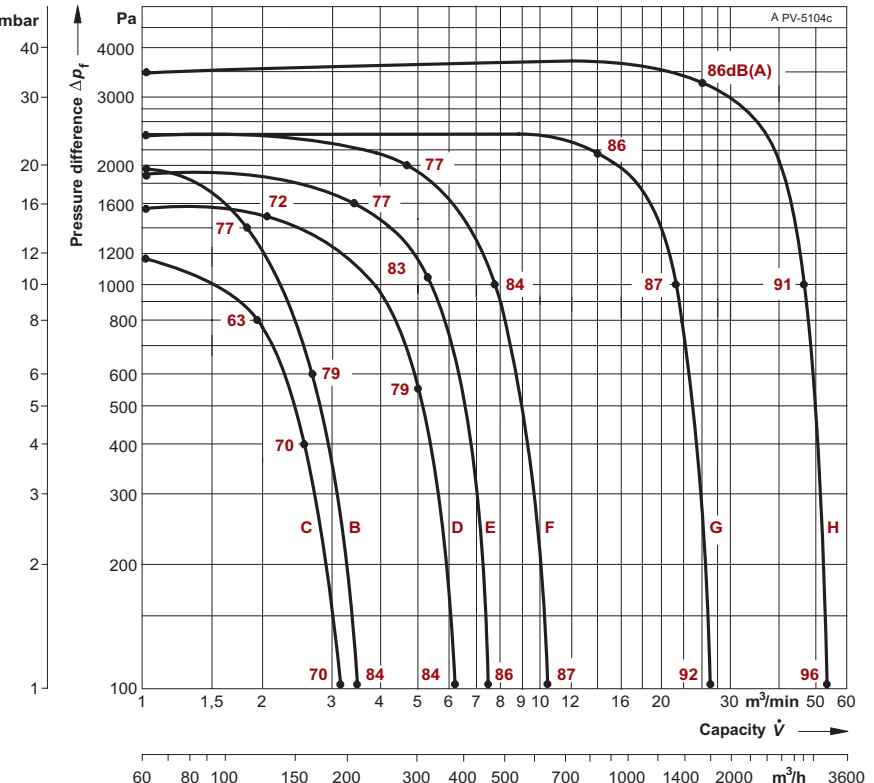
Radial Blowers Range 2CF1 and 2CF2



Selection diagram 50 Hz



Selection diagram 60 Hz



The performance curves are valid for a medium with a density $\rho = 1.2 \text{ kg/m}^3$ (measured on the suction side).

Radial Blowers Range 2CF1 and 2CF2 and Accessories

Selection and ordering information

Size	Designation letter	Speed	Sound-pressure level at 1 m distance ¹⁾	Temperature of conveying liquid ²⁾	Motor	Rated output	Rated voltage ³⁾	Rated current	Order No.	Weight approx.
mm		rpm	dB(A)	max. °C	Type	kW	V	A	• AVAILABLE EX STOCK	kg
Radial blowers with three-phase motor 50 Hz, IP 54 degree of protection										
50	B	7350 ⁴⁾	79	65	1LA5 053	0.12	230 Δ / 400 Y	0.34 ⁵⁾	• 2CF1 052 - 0BA 1	6.2
50	C	2850	68	50	1PP4 060	0.06	230 Δ / 400 Y	0.36 ⁵⁾	• 2CF2 052 - 2EA 1	4.3
63	D	2780	78	110	1LA5 060	0.18	230 Δ / 400 Y	0.52 ⁵⁾	• 2CF2 062 - 0EA 1	8.8
71	E	2750	82	110	1LA5 063	0.25	230 Δ / 400 Y	0.69 ⁵⁾	• 2CF2 072 - 0EA 1	10.2
80	F	2740	82	110	1LA5 070	0.42	230 Δ / 400 Y	1.2 ⁵⁾	• 2CF2 082 - 0EA 1	12.5
140	G	2900	87	65	1LA5 083	1.17	230 Δ / 400 Y	2.6 ⁵⁾	• 2CF1 142 - 0EA 1	30
180	H	2890	91	65	1LA5 113	4.2	400 Δ / 690 Y	8.2 ⁵⁾	• 2CF1 182 - 0EA 6	74
Radial blowers with three-phase motor 60 Hz, IP 54 degree of protection										
50	B	7350 ⁴⁾	79	65	1LA5 053	0.14	460 Y	0.35	2CF1 052 - 0BA 8	6.2
50	C	3300	70	50	1LA5 050	0.09	460 Y	0.23	2CF2 052 - 2EA 8	4.3
63	D	3240	79	110	1LA5 060	0.24	460 Y	0.58	• 2CF2 062 - 0EA 1	8.8
71	E	3300	83	110	1LA5 063	0.29	460 Y	0.68	• 2CF2 072 - 0EA 8	10.2
80	F	3280	84	110	1LA5 073	0.63	460 Y	1.35	2CF2 082 - 0EA 8	12.5
140	G	3480	87	65	1LA5 083	1.27	460 Y	2.3	2CF1 142 - 0EA 8	30
180	H	3480	91	65	1LA5 113	4.2	460 Y	7.3	2CF1 182 - 0EA 8	74
Radial blowers with single-phase AC motor 50 Hz, IP 54 degree of protection										
50	B	7490 ⁴⁾	79	60	1LF5 053	0.12	230 ⁶⁾	0.85	• 2CF1 052 - 1BH 1	6.2
50	C	2850	68	50	1LF4 063	0.09	230 ⁶⁾	0.80	• 2CF2 052 - 2EH 1	4.5

Other voltages

2CF ... - ... □		
The rated voltages shown alongside are available at no extra cost.	Voltage, frequency 500 V Y, 50 Hz	Voltage code number 3
Required voltage and frequency: ■		9

■ Please indicate in plain text and add L1 Y.

1) The tabulated values are with medium throttling.

2) Max. ambient temperature 40 °C.

3) Permissible voltage range.

Rated voltage acc. to DIN IEC 38*	Permissible voltage range acc. to DIN VDE 0530 or DIN IEC 34-1**	Frequency Hz
230 V Δ / 400 V Y 400 V Δ / 690 V Y	220...240 V Δ / 380...420 V Y 380...420 V Δ / 660...725 V Y	50 50
460 V Y 460 V Δ	440...480 V Y 440...480 V Δ	60 60

* Voltage tolerance here ±10%.

** This voltage range is also shown on the rating plate, together with the currents occurring in this range. For this range, the permissible voltage tolerance acc. to DIN VDE 0530 or DIN IEC 34-1 is ±5%.

4) 2-pole motor with gearbox.

5) At 400 V, 50 Hz.

6) Permissible voltage tolerance ±5%.

For dimensions, see page 66.

Selection example

Required air performance:

$\dot{V} = 6 \text{ m}^3/\text{min}$, at 50 Hz
 $\Delta p_1 = 1100 \text{ Pa}$

Two selections are possible:

Type 2CF2 072 ($\dot{V}$: -15 %), curve E

Type 2CF2 082 ($\dot{V}$: +5 %), curve F

Eventual choice depends on cost and performance priorities.

Applications

- The extraction of gases from moulding presses and injection machines.
- The extraction of dust, chips, fibres and threads when using a preseparator.
- Holding of paper, cardboard.
- Cooling.

Accessories

Selection and ordering information

For type	Duct connector for inlet-side	Weight approx.	for discharge-side	Weight approx.	Hose for inlet-side	Weight approx.	for discharge-side	Weight approx.	Metal filter for inlet-side	Weight approx.
	Order No.	kg	Order No.	kg	Order No.	kg	Order No.	kg	Order No.	kg
2CF1 052	• 2CX3 000	0.45	• 2CX3000	0.45	2CX3 004	1.5	• 2CX3 004	1.5	2CX3 003	1.2
2CF2 052	not necessary		not necessary		• 2CX3 717	1.2	2CX3 722	0.7	• 2CX3 730	2.4
2CF2 062	2CX3 726	0.24	• 2CX3 705	0.19	• 2CX3 717	1.2	2CX3 723	1.1	• 2CX3 731	1.8
2CF2 072	2CX3 727	0.28	• 2CX3 706	0.22	2CX3 720	1.3	2CX3 724	1.2	• 2CX3 732	2
2CF2 082	• 2CX3 728	0.30	2CX3 726	0.24	2CX3 721	1.4	2CX3 725	1.2	2CX3 733	2
For type	Filter bag for discharge-side	Weight approx.	Guard screen for inlet-side	Weight approx.	Connecting elbow	Weight approx.	Heating cartridge for discharge-side	Weight approx.	• AVAILABLE EX STOCK	
	Order No.	kg	Order No.	kg	Order No.	kg	Order No.	kg		
2CF1 052	2CX3 002	0.75	—	—	2CX3 001	1.8	2CX3 005	0.75		
2CF2 052	2CX3 713	1.5	—	—	—	—	—	—		
2CF2 062	2CX3 714	1.5	2CX3 735	0.22	—	—	—	—		
2CF2 072	2CX3 715	1.5	2CX3 736	0.25	—	—	—	—		
2CF2 082	2CX3 716	1.5	2CX3 737	0.27	—	—	—	—		

Features

The blower and motor form a single unit with the impeller mounted directly on the motor shaft. Only the types 2CF1 052-0BA and 2CF1 052-1BH have a gearbox between the impeller and the motor.

Drive

The blowers have surface-cooled, three-phase or single-phase motors with IP 55 class of protection. They are suitable for continuous operation.

Noise

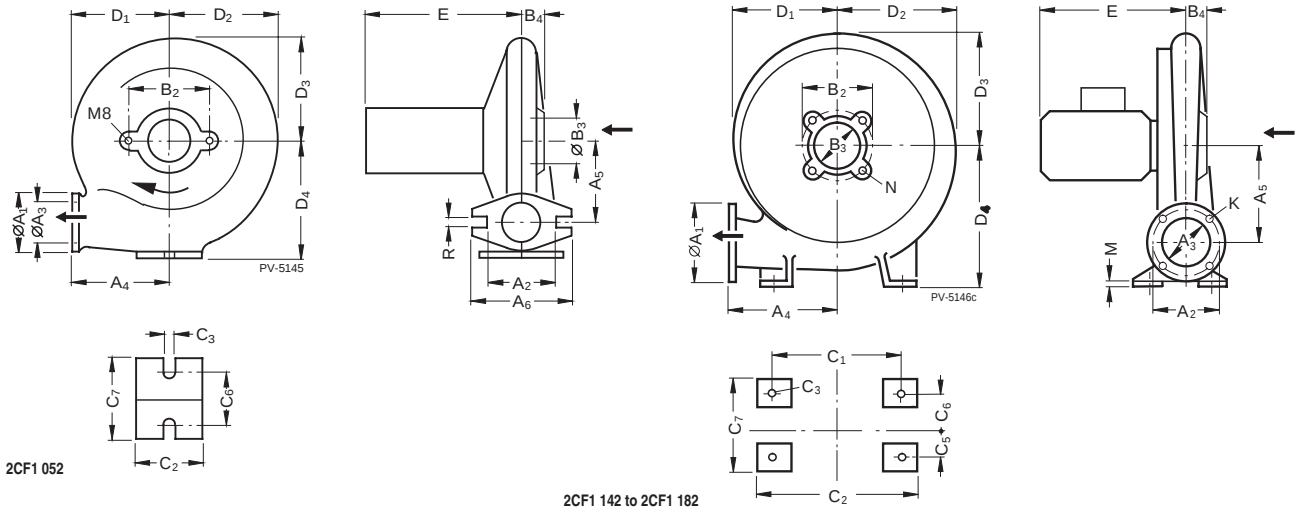
In the performance curves and selection tables, the noise values given are for an average sound-pressure level, measured at a distance of 1 m. The noise levels given are for a steadily-running machine, connected for extraction, and are evaluated according to DIN 45 635, Part 13. Tolerance is + 3 dB.

Other designs

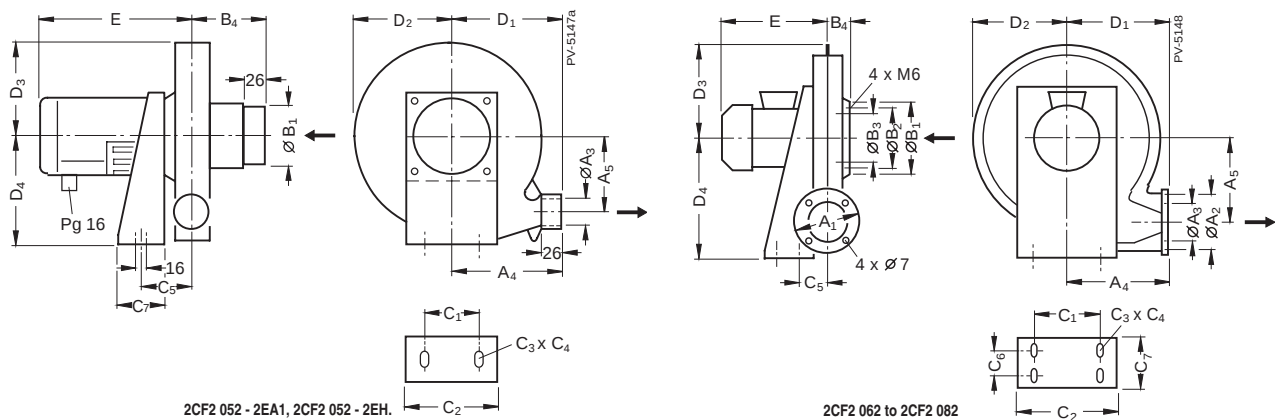
Radial blowers with 3-phase motors for other voltages and/or frequencies are available on request. Accessories can also be supplied.

Dimensions for Radial Blowers 2CF1 and 2CF2

Dimensions for 2CF1 0, 2CF1 1, 2CF2 0 (mm)



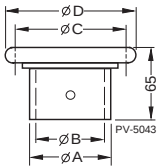
Type	Curve	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃
2CF1 052 - 0BA.	B	70	70	50	100	80	100	—	85	50	22	—	70	12
2CF1 052 - 1BH.	B	70	70	50	100	80	100	—	85	50	22	—	70	12
2CF1 142 - 0EA.	G	210	180	140	275	250	—	—	180	140	35	300	360	18
2CF1 182 - 0EA.	H	260	230	180	350	320	—	—	230	180	45	400	480	18
Type	Curve	C ₄	C ₅	C ₆	C ₇	D ₁	D ₂	D ₃	D ₄	E	K	M	N	R
2CF1 052 - 0BA.	B	—	—	62	90	96	111	103	120	250	—	—	—	12
2CF1 052 - 1BH.	B	—	—	62	90	96	111	103	120	250	—	—	—	12
2CF1 142 - 0EA.	G	—	55	125	230	263	301	284	360	302	4 x 11.5	15	M 10	—
2CF1 182 - 0EA.	H	—	80	170	310	337	386	364	460	376	4 x 14	15	M 12	—



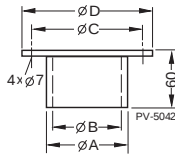
Type	Curve	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	B ₁	B ₂	B ₃	B ₄	C ₁
2CF2 052 - 2EA.	C	—	—	42.3	143	96	—	80	—	—	95	73
2CF2 052 - 2EH.	C	—	—	42.3	143	96	—	80	—	—	95	73
2CF2 062 - 0EA.	D	110	92	63	155	138	—	130	108	80	32	120
2CF2 072 - 0EA.	E	120	100	71	172	156	—	140	118	90	35	160
2CF2 082 - 0EA.	F	130	108	80	192	175	—	150	129	100	39	160
Type	Curve	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	D ₁	D ₂	D ₃	D ₄	E
2CF2 052 - 2EA.	C	120	12	16	62	—	60	120	125	123	140	214
2CF2 052 - 2EH.	C	120	12	16	62	—	60	120	125	123	140	214
2CF2 062 - 0EA.	D	160	12	16	51	40	80	153	161	157	195	217
2CF2 072 - 0EA.	E	200	12	16	54	40	80	171	180	175	220	219
2CF2 082 - 0EA.	F	200	12	16	57	40	80	191	201	196	245	243

Dimensions for Accessories for Radial Blowers 2CF1 and 2CF2

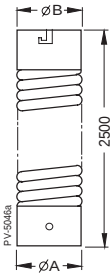
Dimensions (mm)



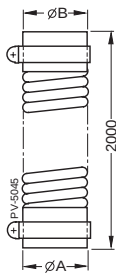
Connection piece for 2CF1



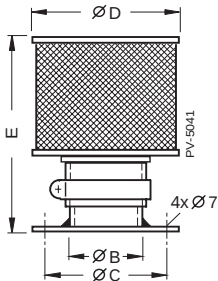
Connection piece for 2CF2



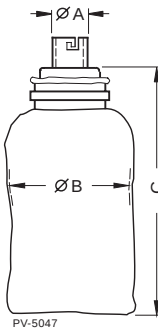
Hose for 2CF1



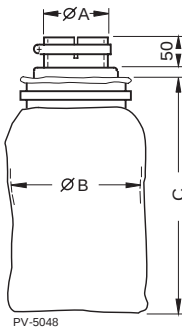
Hose for 2CF2



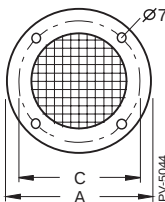
Metal filter
for 2CF1 and 2CF2



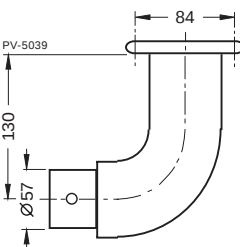
Filter bag for 2CF1



Filter bag for 2CF2



Guard screen
for 2CF2



Connecting elbow
for 2CF1

Connection piece for suction and pressure-side (to be used for hose, filter bag or heater cartridge)

For ventilator Type	Connection piece for suction side Order No.	A	B	C	D	for pressure-side Order No.	A	B	C	D
2CF1 052	2CX3 000	54	46	84	100	2CX3 000	54	46	84	100
2CF2 062	2CX3 726	80	73	108	130	2CX3 705	70	63	92	110
2CF2 072	2CX3 727	95	88	118	140	2CX3 706	75	68	100	120
2CF2 082	2CX3 728	100	93	129	150	2CX3 726	80	73	108	130

Hose

Temperature range -55 to +150 °C; bending radius 12 to 75 mm;
Hose can be compressed to 60 % of total length.

For ventilator Type	Hose for suction side Order No.	A	B	for pressure-side Order No.	A	B
2CF1 052	2CX3 004	54	58	2CX3 004	54	58
2CF2 052	2CX3 717	83	72	2CX3 722	51	51
2CF2 062	2CX3 717	83	72	2CX3 723	70	75
2CF2 072	2CX3 720	95	102	2CX3 724	76	80
2CF2 082	2CX3 721	102	102	2CX3 725	83	85

Metal filter complete with connection piece

For ventilator Type	Order No.	B	C	D	E
2CF1 052	2CX3 003	50	84	130	140
2CF2 052	2CX3 730	70	1)	130	1)
2CF2 062	2CX3 731	70	108	130	165
2CF2 072	2CX3 732	100	118	180	180
2CF2 082	2CX3 733	102	129	180	180

1) The metal filter is supplied without connection piece, but with 2 m long plastic hose NW 83.

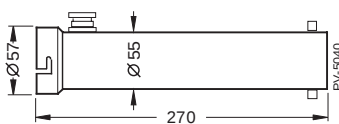
Filter bag complete with connection piece

Flow resistance of empty bag
500 Pa at $\dot{V} = 2 \text{ m}^3/\text{min}$

For ventilator Type	Order No.	A	B	C
2CF1 052	2CX3 002	55	250	500
2CF2 052	2CX3 713	48	250	500
2CF2 062	2CX3 714	71	300	600
2CF2 072	2CX3 715	76	300	600
2CF2 082	2CX3 716	81	350	700

Guard screen for suction-side

For ventilator Type	Order No.	A	C
2CF2 062	2CX3 735	130	108
2CF2 072	2CX3 736	140	118
2CF2 082	2CX3 737	150	129



Heater cartridge for 2CF1 052

Heating capacity: 1000 W; power connection: 230 V
Flow resistance: approx. 550 Pa at $\dot{V} = 1.2 \text{ m}^3/\text{min}$

Radial Blower, Range 1BA

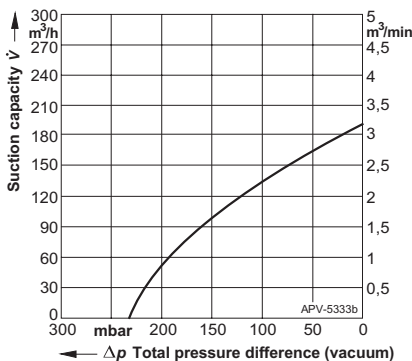


These single-circuit radial blowers are particularly suitable for vacuum cleaners, small vacuum-transfer machines and pneumatic mail systems with short running times.

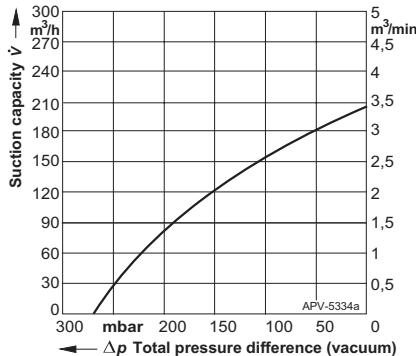
The blowers have motors without fans. The air is sucked through a prefilter and simultaneously cools the motor. The blowers have commutator motors which are suitable for a 230 V, 50 Hz electrical supply. The service-life of the brushes (before re-machining the commutator) is given in the table below. The motor rotor, with bearings, should be replaced at the end of this period. Phase control and radio interference suppression are both possible.

Selection diagram

1BA4 420 - 6FE04



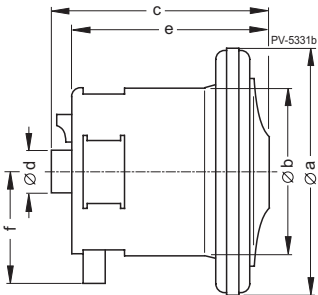
1BE4 425 - 6JE03



Selection and ordering information

Motor					Suction capacity max.	Vacuum max.	Order No.	Weight approx.
Average power consumption	Rated voltage	Frequency	Speed	Service life of brushes				
W	V	Hz	rpm	h	m³/h	mbar		kg
1100	230	50	32000 to 43200	850	184	235	1BA4 420 - 6FE01	1.6
1400	230	50	34000 to 47 000	850	206	271	1BA4 425 - 6JE03	1.7

Dimensions (mm)



Radial blower

Type	a	b	c	d	e	f
1BA4 420 - 6FE01	138.8	97.5	121.7	24.5	110.2	63.25
1BA4 425 - 6JE03	138.8	97.5	121.7	24.5	110.2	63.25

Conversion Tables

Pressure

Multiplication of the value with units	With conversion factor	Results in the value with units
Pa	0.01	mbar
hPa	1.0	mbar
kPa	10.0	mbar
mm H ₂ O	0.098	mbar
m H ₂ O	98.07	mbar
at	980.7	mbar
inch H ₂ O	2.491	mbar
PSI lbf/in ²	68.948	mbar
mbar	100	Pa
mbar	10.2	mm H ₂ O
mbar	$10.2 \cdot 10^{-3}$	m H ₂ O
mbar	$1.02 \cdot 10^{-3}$	at
mbar	0.4016	inch H ₂ O
mbar	$14.505 \cdot 10^{-3}$	PSI lbf/in ²

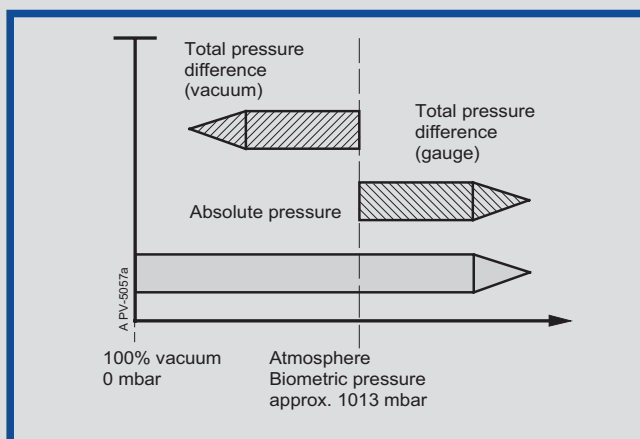
Example of conversion:

250 [inch H₂O] · 2.491 = 622.5 [mbar]

The following formula is used to convert values in the unit — inch of mercury vacuum to values in the unit — mbar abs.ii:
 $1013 - X [\text{inches of mercury vacuum}] \cdot 33.8 \hat{=} Y [\text{mbar abs.}]$

Types of pressure

- Absolute pressure
The pressure measured from absolute zero, using ideal vacuum as the datum.
The measured pressure is always greater than the reference pressure.
- Total pressure difference, pressure
The pressure measured above the prevailing atmospheric pressure. The datum is the prevailing atmospheric pressure and the measured pressure is always higher than the datum.
- Total pressure difference, vacuum
The pressure measured lower than the prevailing atmospheric pressure. The datum is the prevailing atmospheric pressure and the measured pressure is always lower than the datum.



Suction capacity

Multiplication of the value with units	With conversion factor	Results in the value in units
l/min	0.06	m ³ /h
gal/min	0.227	m ³ /h
ft ³ /min	1.699	m ³ /h
m ³ /h	16.667	l/min
m ³ /h	4.403	gal/min
m ³ /h	0.588	ft ³ /min

Electrical power

Multiplication of the value with units	With conversion factor	Results in the value in units
hp	0.746	kW
Btu/h	293.1	kW
kW	1.341	hp
kW	$3.41 \cdot 10^{-3}$	Btu/h

Weight

Multiplication of the value with units	With conversion factor	Results in the value in units
lbm	0.454	kg
kg	2.205	lbm

Length

Multiplication of the value with units	With conversion factor	Results in the value in units
in.	25.4	mm
in.	0.0254	m
ft	305	mm
ft	0.305	m
m	39.37	in.
m	3.28	ft

Temperature conversion

Conversion from	to	
°F	K	$T[K] = \frac{t[°F] + 459.67}{1.8}$
°F	°C	$t[°C] = \frac{t[°F] - 32}{1.8}$
K	°F	$t[°F] = 1.8 \cdot T[K] - 459.67$
°C	°F	$t[°F] = 1.8 \cdot t[°C] + 32$

General Safety Information

NOTE:

The products in this catalogue are used in the

- capital goods industry
 - consumer goods industry
- and in such sectors as
- agriculture
 - the building industry and
 - allied trades.

This equipment has bare parts that are dangerous because they are live during operation, in some cases these are moving or rotating parts. Such parts could cause severe injury to persons and severe damage to property, for example in the event of unauthorised removal of protective covers, improper use, wrong operation or insufficient maintenance.

The people in charge of safety must therefore guarantee that

- only qualified personnel are allowed to work on or around this equipment;

supplied with the equipment, and are under an obligation to systematically follow the instructions given therein;

- unqualified personnel are not allowed to work on these machines or equipment or in the vicinity thereof.

Qualified personnel are persons who – on account of their training, experience, instruction, knowledge of the appropriate standards, specifications, accident prevention regulations and the operating environment – have been authorised by those responsible for plant safety to perform the necessary work and at the same time to recognise and circumvent potential hazards.

Knowledge of first aid and familiarity with the pertinent life-saving equipment are also necessary.

The debarring of unqualified personnel from work on heavy-current equipment is regulated by DIN VDE 0105 or IEC 364.

variations, or to provide for every possible contingency that might arise in installation, operation or maintenance. The operating instructions therefore only contain the information necessary to enable qualified personnel (see above) to operate the machines or equipment correctly in industrial applications.

In the event that the machines or equipment are intended for service outside of industry, where more exacting demands may be placed on them (such as touch protection for children), the installation work must be supplemented by further protective measures that are to be implemented by others.

Where clarifications are necessary, particularly with respect to lack of product-specific detailed information, please contact the sales office concerned, quoting the type designation of the machine or equipment.

It is advisable to arrange for our service centres to take charge of the necessary planning, installation, commissioning and after-sales service.

- this personnel have access at all times while working on the equipment to the appropriate operating instructions and other documents

For the sake of clarity, the operating instructions supplied with the machines are not intended to cover all details of equipment

Conditions of Sale and Delivery, Export Regulations

Small orders

With small orders, the costs of handling the order exceed the value of the order. It is recommended that requirements are added together. If this is not possible, we will be obliged to charge a handling supplement of EUR 20.- for orders with a net goods value of less

than EUR 100.– to cover a proportion of our costs for order handling and invoicing.

Ordering special versions

If products are orders that are different from the versions given in the catalogue, a “-Z” is to be added to the order number given in the catalogue, and the required characteristic is then also to be added in **full text**.

Conditions of Sale and Delivery

Within Germany:

The General Conditions of Sale apply, plus the

General Conditions of Delivery for electrical products and services.

Prices are given in EURO ex factory, excluding packaging; this is charged at cost.

Value-added tax is not included in the prices.

It will be charged at the rate valid at the time in accordance with the requirements of the law.

For export:

The General Conditions of Delivery for products and services from the electrical industry and all other conditions agreed with the recipients of the price lists.



Unless otherwise stated on the individual pages of this catalogue, we reserve the right to make changes, especially to the given values, dimensions and weights.

Illustrations are not binding.

We also reserve the right to make price modifications and will charge the prices valid on delivery.

Export regulations

According to the current provisions (09/98) of the German and US export regulations, the products listed in this catalogue do not require any export permit. Export or re-export is therefore allowed without the permission of the competent authorities unless the Order on

Foreign Trade lays down country-specific restrictions. The markings given on the delivery slip and invoice are the decisive criteria. An export permit obligation may arise for specific countries as a result of the intended use of the products.

Trade marks: All product designations are trade marks or product names of **elmo** vacuum technology GmbH or other companies.

Responsible for the
technical content
Lutz Kasimir
elmo vacuum technology GmbH
Marketing Communication

Only Quality Has a Future



Electronic check of the dimension accuracy of an ELMO-G impeller.



Fully automatical final check of endshields of ELMO-F and -G drives.



Check of performance data and printing of the test protocol.



Technical progress and market success are inseparable from the high quality of ELMO vacuum pumps and compressors. To guarantee this high quality level, a reliable quality assurance system has been established for monitoring all phases of production from development to delivery.

This quality assurance system meets the worldwide requirements, corresponds with the relevant standards and specifications and fulfils the requirements of ISO 9001.

This gives our customers the following advantages:

- maximum operational safety;
- high, consistent supply reliability;
- compliance with the requirements of the European Market;
- participation in national and international tenders.

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For your local contact partner, please take a look in our Internet site under www.elmo-vacuum.com >> contacts or contact the regional office for further assistance.



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Yes, we can.