

AERZEN POSITIVE DISPLACEMENT BLOWERS

Aerzen canned blowers for conveyance of air and gases in
vacuum technology



AERZEN

**AERZENER MASCHINENFABRIK
GMBH**

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Customer benefit by technical progress

Aerzener Maschinenfabrik has been manufacturing positive displacement blowers since 1868 (Roots design). Aerzener Maschinenfabrik is one of the oldest and biggest manufacturers worldwide and proud to be market leader in Europe.

Especially in vacuum technology Aerzen has an experience of more than 65 years.

Technical competence, experienced staff and continuous exchange with customers form an excellent basis for successful new developments in Aerzen.

Aerzener Maschinenfabrik gives priority to customer benefit. Thanks to innovative products manufactured by Aerzener Maschinenfabrik the market success of plant manufacturers and -users is a lasting one.

Application ranges

The new Aerzen blowers with canned drive are designed for the conveyance of air and neutral gases and are especially applied in the industrial high-vacuum technology. The blowers cover with a total of 14 sizes theoretical intake volume flows from 105 m³/h to 15.330 m³/h and pressure ranges up to 10⁻⁵ mbar abs.

Here are some examples of the various application ranges:

- Semiconductor industry
- Micro-electronics
- Production of flat screens
- Laser technology
- Solar technology
- Helium leak indicating units
- Chemical process technology
- Foil- and glass coating
- Manufacture of melting furnace
- Evacuation of hydrogen
- And many others



Construction and installation

Aerzen vacuum blowers are provided with o-ring sealings at the casing flanges. Further important advantages of the blower stage are the vacuum-tightness and air cooling. The lube oil supply is carried out by oil splash lubrication. As lubricant mineral oil can be used as well as the PFPE-oil mostly used in semiconductor technology.

The conveying room is protected by combined oil slinger-piston ring labyrinth sealings. Additionally, an amply dimensioned neutral chamber with condensate channels is installed. Optionally the neutral chamber can be purged with seal gas, in order to achieve an increased sealing effect. The integrated canned motor ensures the sealing of the drive shaft, a shaft passage to atmosphere can be omitted. Regarding the motors it can be chosen between a high-frequency design with a maximum speed of 7.400 rpm (125 c/s) and a corresponding frequency converter or a system frequency design with a maximum speed of 2.970 rpm at 50 c/s resp. of 3.565 rpm at 60 c/s.

Thanks to the water cooling of the motor, Aerzen canned blowers are appropriate for the application under clean-room conditions. Air-cooled canned motors can be delivered upon request.

The canned material is made of special, corrosion-resisting stainless steel, which has been tested successfully in an endurance material test with aggressive media of the semiconductor technology.

Depending on type of process it can be selected between two high-frequency motor variants: For continuous operation vacuum blowers with a max. load of 50 mbar are available. For cyclic operation of the vacuum blowers with a load of up to 150 mbar (< 5 minutes), there are special designs realizing shortest pump periods. The range of motors is completed by system motors for 50 or 60 c/s with a max. load depending on blower size of up to 75 mbar.

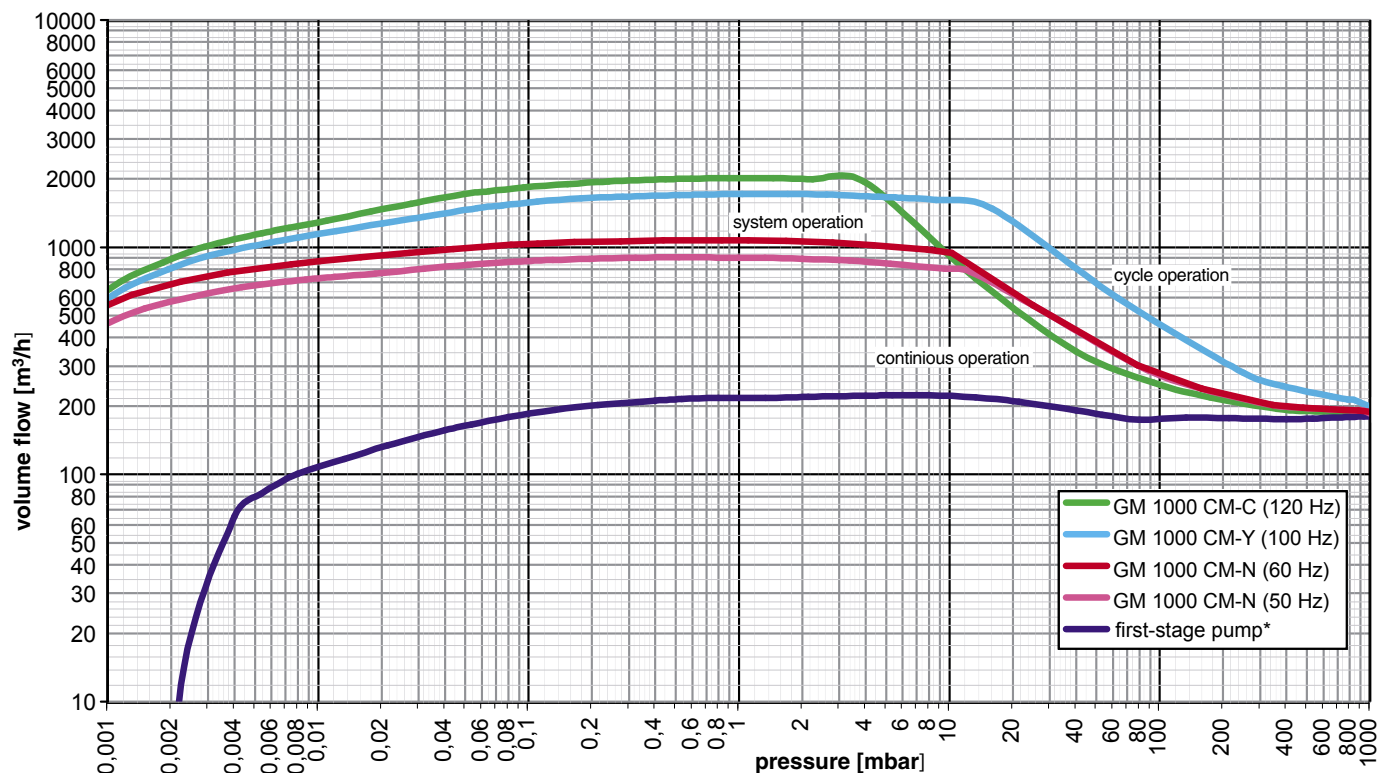


Advantages for the customer

- Biggest canned blower series with 14 sizes and volume flows of 105 m³/h to 15.330 m³/h
- ATEX-certification for zone 0 (internal)
- Optimum selection possibilities by 4 different motor variants
- Pressure ranges from 10⁻² to 10⁻⁵ mbar abs.
- High mechanical load (up to 150 mbar) and therefore, decrease of pump-down periods
- Only little consumptions of water, nitrogen and oil
- Appropriate for the application under clean-room conditions
- Big control range by means of frequency converter from 1.450 to 7.400 rpm resp. from 1.240 to 2.900 rpm
- Vertical and horizontal conveying direction possible
- Aerzen reliability
- Excellent price-/performance ratio



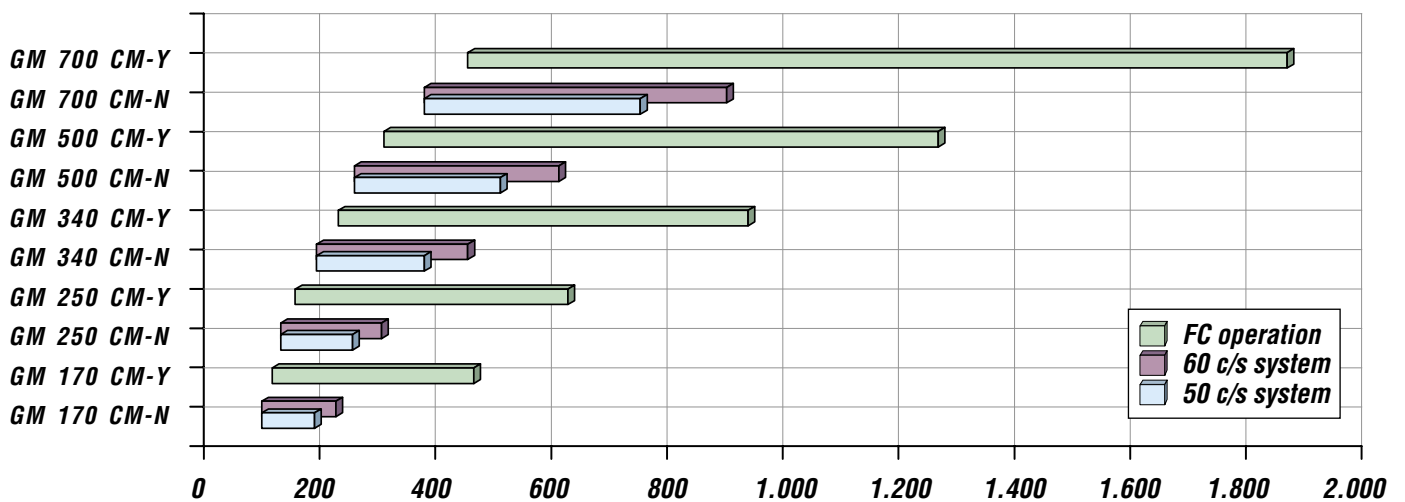
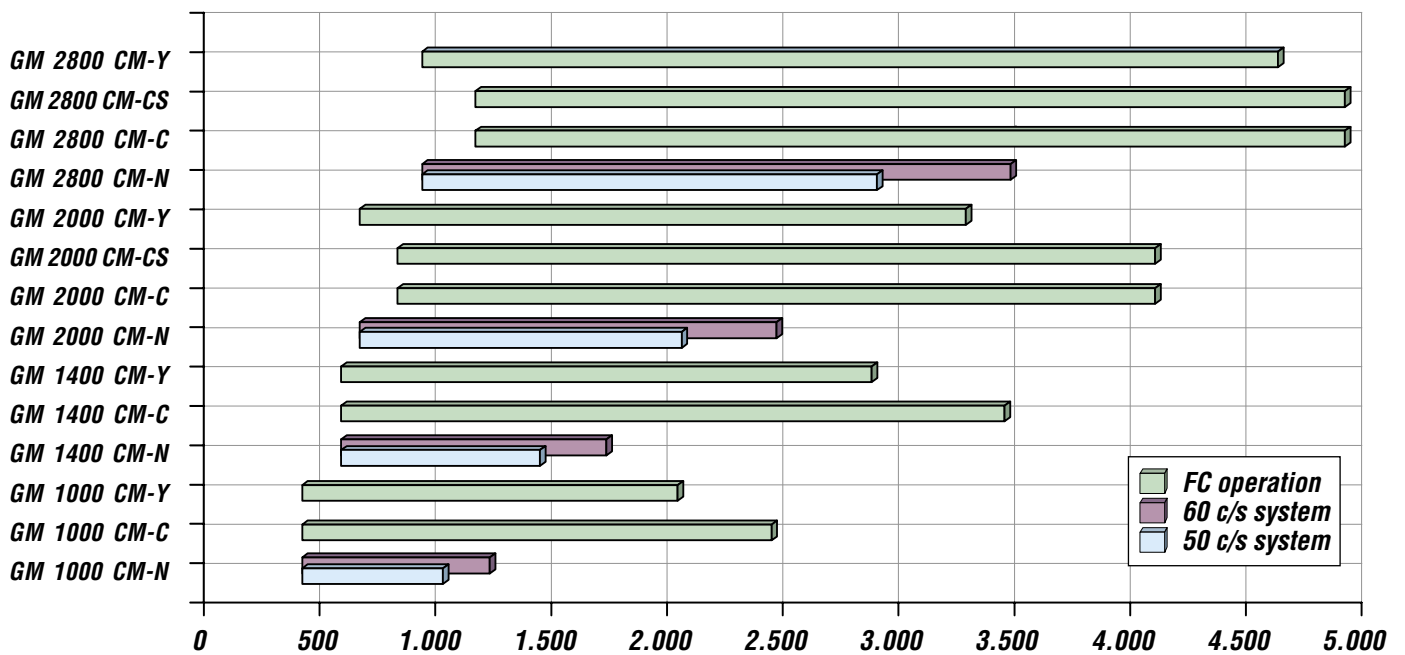
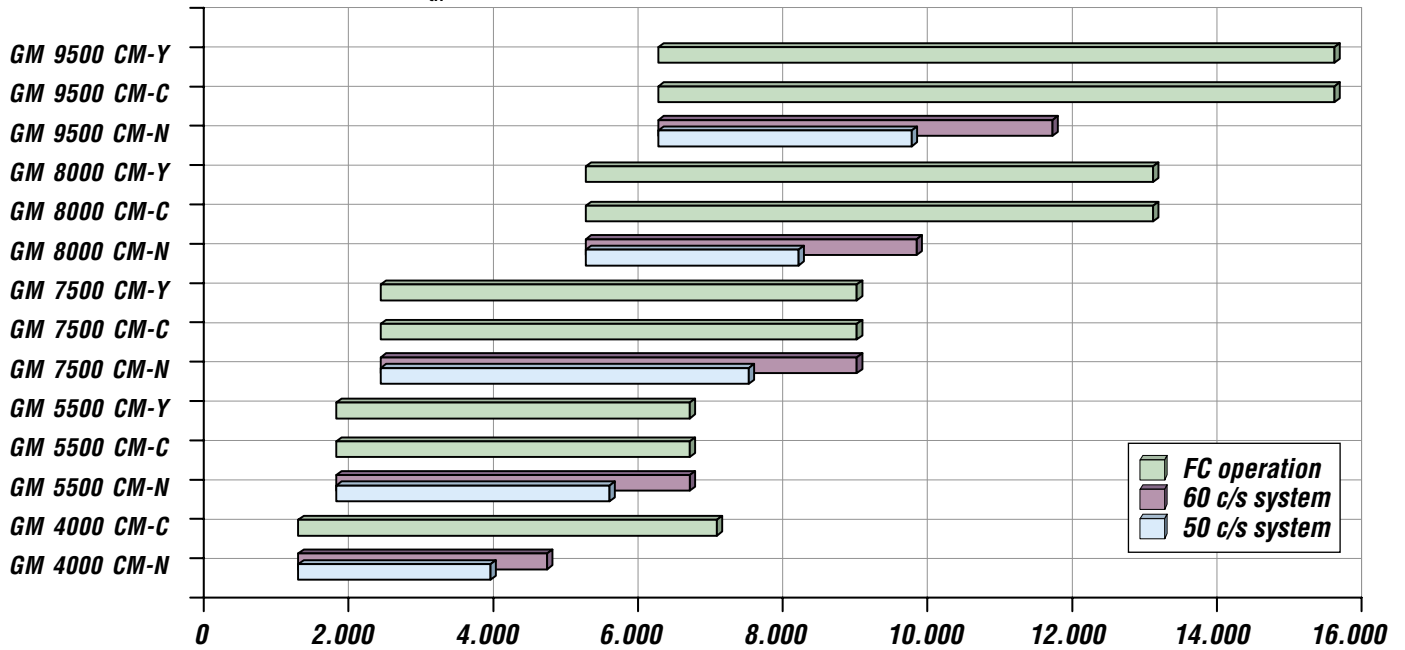
Exemplary performance curves with Aerzen canned motors



* Screw vacuum pump for semiconductor industry made by another manufacturer

Ranges of application of Aerzen canned motor blowers

(theor. nominal intake volume S_{th} [m³/h])



Definition of abbreviations e.g.: GM 170 CM-N

G:	blower	-C:	high frequency, continuous operation e.g. process application
M:	vertical conveying direction	-CS:	high frequency, continuous operation e.g. process application "special short design"
L:	horizontal conveying direction	-Y:	high frequency, cycle operation e.g. load lock application
number:	volume flow at 50 Hz	mode S1:	continuous operation
CM:	canned motor	mode S2:	cycle operation
HM:	canned motor for aggressive gases		
-N:	system frequency		

Performance data

Aerzen blower type	GM/GL	170 CM-N	170 CM-N	170 CM-C*	170 CM-Y	250 CM-N	250 CM-N	250 CM-C*	250 CM-Y
System connection/Voltage	V	200 - 460	200 - 460	*in preparation	200 - 460	200 - 460	200 - 460	*in preparation	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s	50	60		30 - 125	50	60		30 - 125
Intake capacity max.	m³/h	170	205		450	231	279		610
Speed max. (mineral oil/PFPE-oil)	rpm	2800	3380		7400	2800	3380		7400
Motor- rating S 1 / S 6	kW	1	1,2		3 / 9,2	1	1,2		3 / 9,2
Mech.: Load S 1 / S 6	mbar	100	100		50 / 150	100	100		50 / 150
Oil filling quantities Vertical conveying direction	l	0,9	0,9		0,9	0,9	0,9		0,9
Oil filling quantities Horizontal conveying direction	l	0,7	0,7		0,7	0,7	0,7		0,7
Cooling water consumption	l/min	2,5	2,5		2,5	2,5	2,5		2,5

Aerzen blower type	GM/GL	340 CM-N	340 CM-N	340 CM-C*	340 CM-Y	500 CM-N	500 CM-N	500 CM-C*	500 CM-Y
System connection/Voltage	V	200 - 460	200 - 460	*in preparation	200 - 460	200 - 460	200 - 460	*in preparation	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s	50	60		30 - 125	50	60		30 - 125
Intake capacity max.	m³/h	348	420		920	470	567		1242
Speed max. (mineral oil/PFPE-oil)	rpm	2800	3380		7400	2800	3380		7400
Motor- rating S 1 / S 6	kW	1	1,2		3 / 9,2	1	1,2		3 / 9,2
Mech.: Load S 1 / S 6	mbar	75	75		50 / 150	50	50		50 / 150
Oil filling quantities Vertical conveying direction	l	0,9	0,9		0,9	1,1	1,1		1,1
Oil filling quantities Horizontal conveying direction	l	0,7	0,7		0,7	0,8	0,8		0,8
Cooling water consumption	l/min	2,5	2,5		2,5	3,0	3,0		3,0

Aerzen blower type	GM/GL	700 CM-N	700 CM-N	700 CM-C*	700 CM-Y	1000 CM-N	1000 CM-N	1000 CM-C	1000 CM-Y
System connection/Voltage	V	200 - 460	200 - 460	*in preparation	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s	50	60		30 - 125	50	60	30 - 125	20 - 100
Intake capacity max.	m³/h	695	839		1837	962	1158	2400	2000
Speed max. (mineral oil/PFPE-oil)	rpm	2800	3380		7400	2850	3430	7100	5920
Motor- rating S 1 / S 6	kW	1	1,2		3 / 9,2	2,5	3	5,5	5 - 15
Mech.: Load S 1 / S 6	mbar	35	35		30 / 100	55	55	40	50 / 150
Oil filling quantities Vertical conveying direction	l	1,1	1,1		1,1	1,8	1,8	1,5	1,8
Oil filling quantities Horizontal conveying direction	l	0,8	0,8		0,8	1,4	1,4	1,1	1,4
Cooling water consumption	l/min	3,0	3,0		3,0	3,0	3,0	3,0	3,0

Performance data

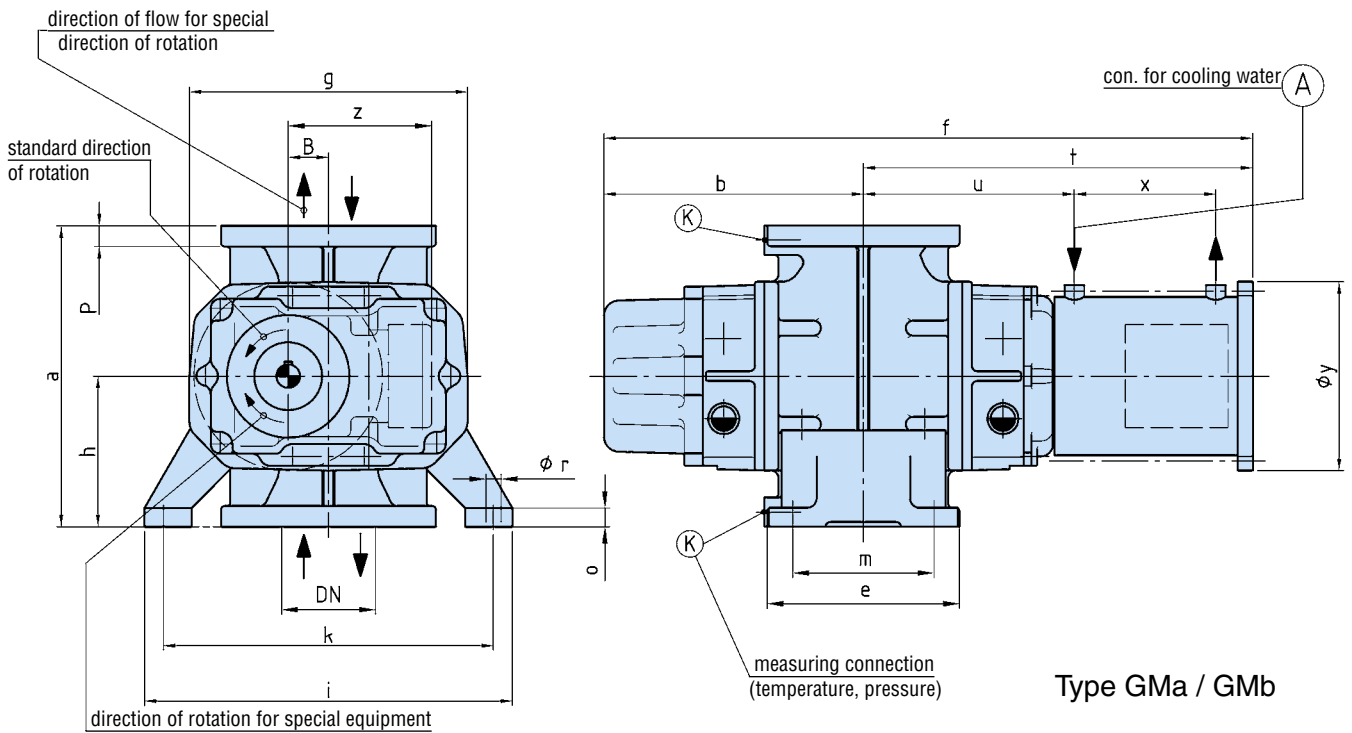
Aerzen blower type	GM/GL	1400 CM-N	1400 CM-N	1400 CM-C	1400 CM-Y	2000 CM-N	2000 CM-N	2000 CM-C/ 2000 CM-CS	2000 CM-Y
System connection/Voltage	V	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s	50	60	30 - 120	20 - 100	50	60	20 - 100	16 - 80
Intake capacity max.	m³/h	1360	1637	2825	2825	1976	2385	4035	3240
Speed max. (mineral oil/PFPE-oil)	rpm	2850	3430	5920	5920	2900	3500	5920	4750
Motor- rating S 1 / S 6	kW	2,5	3	5,5	5 / 15	5	5,9	9 / 5,6	8 / 20
Mech.: Load S 1 / S 6	mbar	35	35	30	30 / 100	55	55	50 / 40	50 / 150
Oil filling quantities Vertical conveying direction	l	1,8	1,8	1,5	1,8	2,9	2,9	2,9	2,9
Oil filling quantities Horizontal conveying direction	l	1,4	1,4	1,1	1,4	2,5	2,5	2,5	2,5
Cooling water consumption	l/min	3,0	3,0	3,0	3,0	4,0	4,0	3,0	4,0

Aerzen blower type	GM/GL	2800 CM-N	2800 CM-N	2800 CM-C/ 2800 CM-CS	2800 CM-Y	4000 CM-N	4000 CM-N	4000 CM-C	4000 CM-Y
System connection/Voltage	V	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	200 - 460	-
Frequency (mineral oil/PFPE-oil)	c/s	50	60	20 - 100	16 - 80	50	60	16 - 85	-
Intake capacity max.	m³/h	2790	3367	5695	4570	3825	4605	6580	-
Speed max. (mineral oil/PFPE-oil)	rpm	2900	3500	5920	4750	2930	3530	5050	-
Motor- rating S 1 / S 6	kW	5	5,9	9 / 5,6	8 / 20	5	5,9	10,9	-
Mech.: Load S 1 / S 6	mbar	35	35	30 / 20	30 / 100	25	25	40	-
Oil filling quantities Vertical conveying direction	l	2,9	2,9	2,9	2,9	7,5	7,5	7,5	-
Oil filling quantities Horizontal conveying direction	l	2,5	2,5	2,5	2,5	4,0	4,0	4,0	-
Cooling water consumption	l/min	4,0	4,0	3,0	4,0	4,0	4,0	4,0	-

Aerzen blower type	GM/GL	5500 CM-N	5500 CM-N	5500 CM-C	5500 CM-Y	7500 CM-N	7500 CM-N	7500 CM-C	7500 CM-Y
System connection/Voltage	V	upon request	upon request	200 - 460	200 - 460	upon request	upon request	200 - 460	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s			16 - 60	16 - 60			16 - 60	16 - 60
Intake capacity max.	m³/h			6580	6580			8853	8853
Speed max. (mineral oil/PFPE-oil)	rpm			3553	3553			3553	3553
Motor- rating S 1 / S 6	kW			10,9	16,8 / 27,5			10,9	16,8 / 27,5
Mech.: Load S 1 / S 6	mbar			50	55 / 100			30	35 / 80
Oil filling quantities Vertical conveying direction	l			12,7	12,7			12,7	12,7
Oil filling quantities Horizontal conveying direction	l			6,1	6,1			6,1	6,1
Cooling water consumption	l/min			4,0	4,0			4,0	4,0

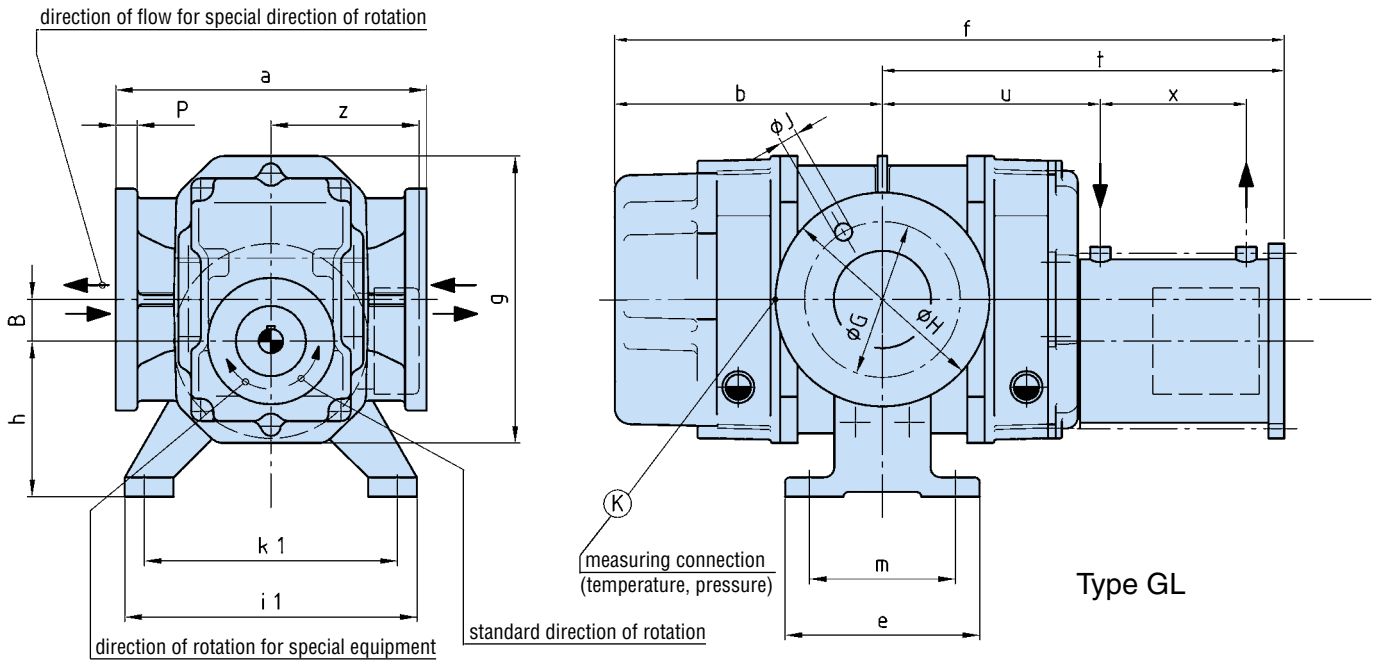
Aerzen blower type	GM/GL	8000 CM-N	8000 CM-N	8000 CM-C	8000 HM-Y	9500 CM-N	9500 CM-N	9500 CM-C	9500 HM-Y
System connection/Voltage	V	upon request	upon request	200 - 460	200 - 460	upon request	upon request	200 - 460	200 - 460
Frequency (mineral oil/PFPE-oil)	c/s			16 - 40	16 - 40			16 - 40	16 - 40
Intake capacity max.	m³/h			12865	12865			15330	15330
Speed max. (mineral oil/PFPE-oil)	rpm			2364	2364			2364	2364
Motor- rating S 1 / S 6	kW			19,8	24,3 / 35,2			19,8	24,3 / 35,2
Mech.: Load S 1 / S 6	mbar			45	50 / 90			35	45 / 75
Oil filling quantities Vertical conveying direction	l			12	12			12	12
Oil filling quantities Horizontal conveying direction	l			8,7	8,7			8,7	8,7
Cooling water consumption	l/min			4,0	7,0			4,0	7,0

Dimensions and weights



Type GMa / GMb

Type	Size	a [mm]	b [mm]	e [mm]	f [mm]	g [mm]	h [mm]	i [mm]	i1 [mm]	k [mm]	k1 [mm]	m [mm]	DN	Weight approx. kg
GM / GL	170 CM-N	264	224	152	680,5	258	132	332	264	300	232	120	50	110
GM / GL	170 CM-C*	* in preparation												
GM / GL	170 CM-Y	264	224	152	680,5	258	132	332	264	300	232	120	50	110
GM / GL	250 CM-N	264	239	157	722,5	258	132	332	264	300	232	125	80	120
GM / GL	250 CM-C*	* in preparation												
GM / GL	250 CM-Y	264	239	157	722,5	258	132	332	264	300	232	125	80	120
GM / GL	340 CM-N	264	287	239	804,5	258	132	332	264	300	232	207	80	130
GM / GL	340 CM-C*	* in preparation												
GM / GL	340 CM-Y	264	287	239	804,5	258	132	332	264	300	232	207	80	130
GM / GL	500 CM-N	320	280	200	778,5	295	160	390	300	350	260	150	100	150
GM / GL	500 CM-C*	* in preparation												
GM / GL	500 CM-Y	320	280	200	778,5	295	160	390	300	350	260	150	100	150
GM / GL	700 CM-N	320	330	290	878,5	295	160	390	300	350	260	245	100	170
GM / GL	700 CM-C*	* in preparation												
GM / GL	700 CM-Y	320	330	290	878,5	295	160	390	300	350	260	245	100	170
GM / GL	1000 CM-N	320	325	260	915	360	180	440	336	400	296	210	100	225
GM / GL	1000 CM-C	320	325	260	834	360	180	440	336	400	296	210	100	210
GM / GL	1000 CM-Y	320	325	260	915	360	180	440	336	400	296	210	100	225
GM / GL	1400 CM-N	376	381	340	1021	360	180	500	396	460	356	290	150	275
GM / GL	1400 CM-C	376	381	340	946	360	180	500	396	460	356	290	150	250
GM / GL	1400 CM-Y	376	381	340	1021	360	180	500	396	460	356	290	150	275



Type	Size	a [mm]	b [mm]	e [mm]	f [mm]	g [mm]	h [mm]	i [mm]	i1 [mm]	k [mm]	k1 [mm]	m [mm]	DN	Weight approx. kg
GM / GL	2000 CM-N	400	375	330	1035	445	200	570	440	510	380	270	150	370
GM / GL	2000 CM-C	400	375	330	1012	445	200	570	440	510	380	270	150	345
GM / GL	2000 CM-CS	400	375	330	958	445	200	570	440	510	380	270	150	295
GM / GL	2000 CM-Y	400	375	330	1035	445	200	570	440	510	380	270	150	370
GM / GL	2800 CM-N	400	445	470	1175	445	200	570	440	510	380	410	150	470
GM / GL	2800 CM-C	400	445	470	1152	445	200	570	440	510	380	410	150	445
GM / GL	2800 CM-CS	400	445	470	1096	445	200	570	440	510	380	410	150	395
GM / GL	2800 CM-Y	400	445	470	1175	445	200	570	440	510	380	410	150	470
GM / GL	4000 CM-N	500	460	350	1180	538	250	652	484	600	432	290	200	525
GM / GL	4000 CM-C	500	460	350	1180	538	250	652	484	600	432	290	200	525
GM / GL	4000 CM-Y	-	-	-	-	-	-	-	-	-	-	-	-	-
GM / GL	5500 CM-N	-	-	-	-	-	-	-	-	-	-	-	-	-
GM / GL	5500 CM-C	630	458	360	1162	652	315	800	588	720	508	280	200	730
GM / GL	5500 CM-Y	630	458	360	1262	652	315	800	588	720	508	280	200	770
GM / GL	7500 CM-N	-	-	-	-	-	-	-	-	-	-	-	-	-
GM / GL	7500 CM-C	630	523	490	1292	652	315	800	588	720	508	410	250	800
GM / GL	7500 CM-Y	630	523	490	1392	652	315	800	588	720	508	410	250	840
GM / GL	8000 CM-N	-	-	-	-	-	-	-	-	-	-	-	-	-
GM / GL	8000 CM-C	710	627	670	1620	810	355	910	640	830	560	525	300	1345
GM / GL	8000 CM-Y	710	627	670	1620	810	355	910	640	830	560	525	300	1345
GM / GL	9500 CM-N	-	-	-	-	-	-	-	-	-	-	-	-	-
GM / GL	9500 CM-C	710	692	800	1750	810	355	910	640	830	560	655	300	1385
GM / GL	9500 CM-Y	710	692	800	1750	810	355	910	640	830	560	655	300	1385

Socket flanges drilled acc. to EN-1092-2



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