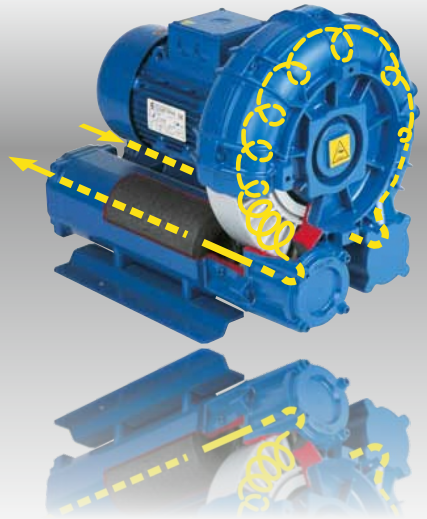
SIDE CHANNEL BLOWERS

seko

innovation > technology > future

ISO 9001:2000 CERTIFIED COMPANY

Side channel BLOWERS



Operating principle

The Side Channel Blower or exhauster increases the pressure of the aspirated gas by the creation, in the peripheral toroidal channel, of a series of vortex caused by the centrifugal thrust of the impeller.
While the impeller is rotating, the vanes force the gas forward and, because of the centrifugal thrust, outwards, producing a helical motion. During this motion, the gas is recompressed repeatedly with a conseguent linear pressure increase along the length of the channel.

Applications and advantages

The Side Channel Blower are suitable for all those applications requiring considerably higher pressuers than that which can be achieved using centrifugal fans. Side channel exhausters are used in all those applications requiring an operating vacuum higher than the achievable by a fan, but not as high as to require the use of a vacuum pump.
The rotating parts are not in contact with the casing. There is thereforeno friction during operation and thus no internal lubrification is necessary. The gas moving through the machine therefore remains uncontaminated and completely oil-free. The other main advantages of using side channel machines are:

- *easy installation*
- *low noise level*
- *non vibration and therefore complete dynamic stability*
- *pulsation free discharge*
- *minimal maintenance*

Accessories

A complete range of accessories is available for all machines:
cartridge type filters for blowers / in-line filters for exhausters / flexible hoses / non return valves / pressure relief valves for blowers / vacuum relief valve s for exhausters / pressure and vacuum gauges / acoustic enclosures.

Operating principle

- *Casing and impellers are made of aluminium alloy.*
- *The standard machines for air are manufacturated in the so-called «CLOSE COUPLED» versione; i.e. a flange mounted electric motor is bolted to the machine casing. The impeller, which is dynamically balanced, is fitted directly onto the motor shaft extension.*
- *The two-pole electric motors, designed for continuous operation, are available in three phase for allthe powers shownin the catalogue and in single phase up to 2,2 kW. They are manufactured according to IEC Specifications with the following standard features:*

- for machines with BLxxx010/020 suffix
degree of protection: - IP55
insulation class: - F for powers up to 3 kW
- H for powers 4 kW and above
line voltage:
- three phase motors, at 50 Hz
230 V Δ / 400 V ⅄ for powers up to 3 kW
400 V Δ / 690 V ⅄ for powers ≥ 4 kW
- three phase motors, at 60 Hz
265 V Δ / 460 V ⅄ for powers up to 3,6 kW
460 V Δ / 795 V ⅄ for powers ≥ 4,8 kW
- single phase motors, at 50 Hz
230 V

For 50 Hz supply, the allowed voltage variation is ±10% according to IEC 38 Specification.
For 60 Hz supply, as well as for motors specifically requested, for any other voltage at 50 Hz or at 60 Hz, a 5% tolerance on supply voltage is allowed, in accordance with IEC 34 Specification.

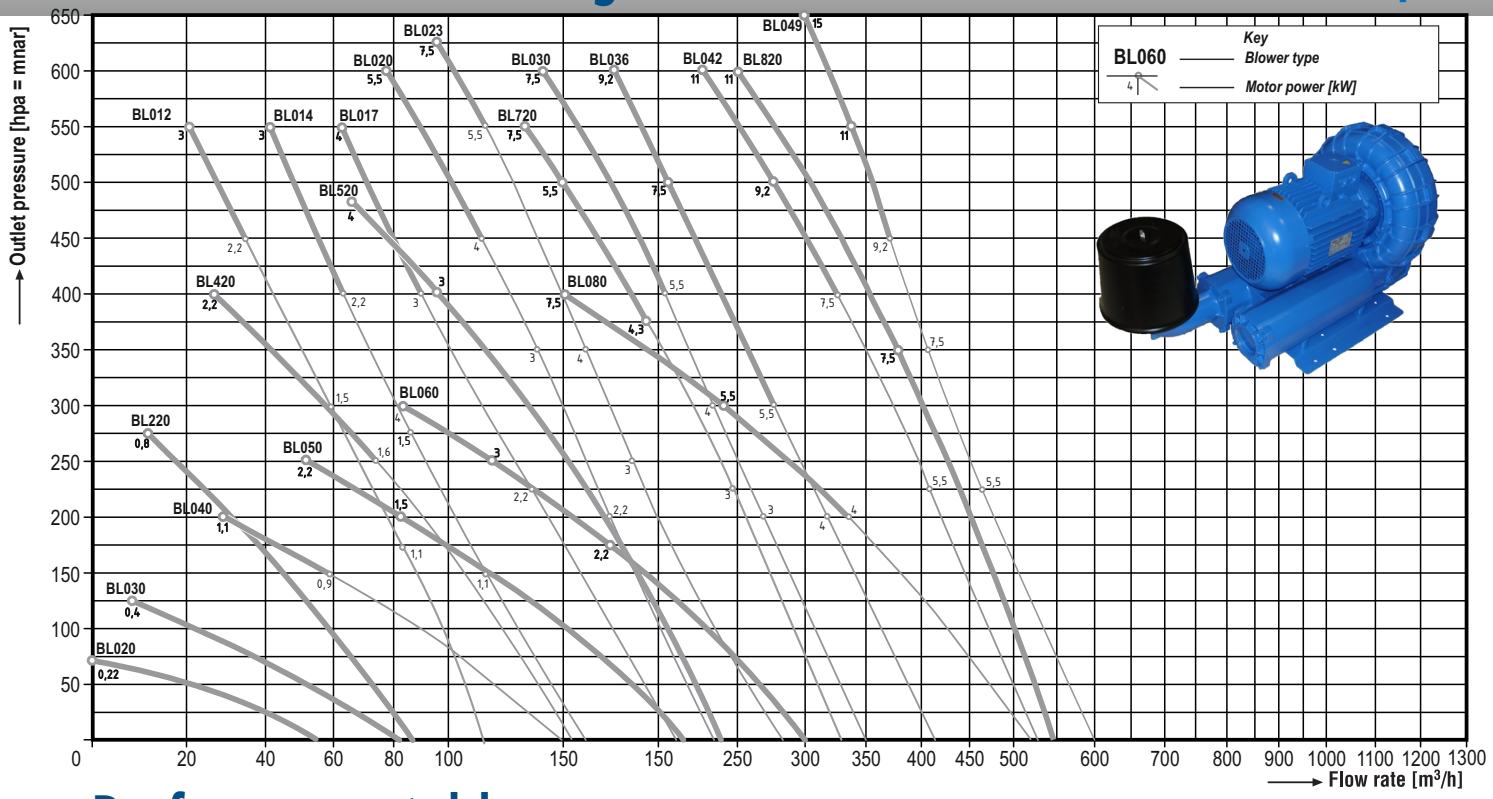
- for machines with BLxxx001/002 suffix
degree of protection: - IP54
insulation class: - F
line voltage:
- three phase motors, at 50 Hz
200~240 V Δ / 345~416 V ⅄ for powers up to 4 kW
345~415 V Δ / 600~720 V ⅄ for powers > 4 kW
- three phase motors, at 60 Hz
208~275 V Δ / 380~480 V ⅄ for powers up to 4,6 kW
380~480 V Δ / 660~720 V ⅄ for powers > 4,6 kW
- single phase motors, at 50 Hz and 60 Hz
104~127 V / 208~254 V

- *The machines meet the requirements of the European Directives 2006/42 (Machines), 2006/95 (Low Voltage), 2004/108 (Electro-magnetic Compatibility) and the applicable harmonised Standards.*
- *For the handling of gases other than air, e.g. steam, indistrial gases and mixture of explosive gases, special gas tight units can be manufactured.*
- *In case of corrosive gases, all the internal parts can be treated or lined with protecting coatings.*

Side channel BLOWERS

Flow rate-Pressure diagram

50 Hz 2900 rpm



Performance table

Outlet pressure hPa= mbar		0	50		100		150		200		250		300		350		400		450		500		550		600		650	
Flow rate		m³/h	m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h	
Motor power				kW		kW		kW		kW		kW		kW		kW		kW		kW		kW		kW		kW		kW
BLOWER Single Stage Single Channel Single Impeller	BL020	54	22	0,22	[0 m³/h at 70 mbar]																							
	BL030	84	54	0,4	24	0,4	[6 m³/h at 130 mbar]																					
	BL040	150	118	0,9 [•]	89	0,9 [•]	59	0,9 [•]	30	1,1																		
	BL050	212	182	1,5	151	1,5	116	1,5	82	1,5	50	2,2																
	BL060	300	268	2,2	230	2,2	192	2,2	155	3	117	3	82	4														
	BL080	518	472	4	426	4	380	4	334	4	288	5,5	242	5,5	196	7,5	150	7,5										
BLOWER Double Stage Double Channel Double Impeller	BL220	86	72	0,8	58	0,8	44	0,8	31	0,8	16	0,8																
	BL420	154	138	1,6 [•]	122	0,6 [•]	106	0,6 [•]	90	0,6 [•]	74	1,6 [•]	58	2,2	42	2,2	26	2,2										
	BL520	236	220	3	203	3	185	3	167	3	149	3	131	3	113	3	95	3	77	4	[65 m³/h at 480 mbar]							
	BL720	324	306	3	288	3	270	3	252	3	234	4,3	216	4,3	198	4,3	180	5,5	162	5,5	144	5,5	126	7,5				
	BL820	548	520	7,5	499	7,5	474	7,5	451	7,5	428	7,5	403	7,5	378	7,5	354	11	330	11	306	11	278	11	250	11		
BLOWER Double Stage Double Channel Single Impeller	BL012	130	114	1,1	100	1,1	87	1,1	75	1,5	65	1,5	57	1,5	49	2,2	42	2,2	35	2,2	28	3	21	3				
	BL014	160	142	1,1	127	1,1	114	1,1	102	1,5	91	1,5	81	2,2	72	2,2	63	2,2	54	3	47	3	41	3				
	BL017	205	189	2,2	173	2,2	158	2,2	143	2,2	127	3	112	3	100	3	89	3	80	4	73	4	67	4				
	BL020	235	216	2,2	200	2,2	186	2,2	174	2,2	162	3	150	3	138	3	125	4	113	4	101	5,5	89	5,5	77	5,5		
	BL023	280	254	3	233	3	215	3	200	3	186	3	174	4	162	4	150	5,5	138	5,5	126	5,5	114	5,5	102	7,5		
	BL030	350	328	3	306	3	285	3	268	3	252	4	236	4	220	5,5	204	5,5	188	7,5	172	7,5	157	7,5	142	7,5		
	BL036	410	387	4	363	4	340	4	317	4	294	5,5	273	5,5	255	7,5	238	7,5	222	7,5	206	7,5	190	9,2	174	9,2		
	BL042	525	496	5,5	470	5,5	445	5,5	420	5,5	395	7,5	370	7,5	346	7,5	322	7,5	298	9,2	274	9,2	250	11	225	11		
	BL049	600	560	5,5	530	5,5	504	5,5	478	5,5	454	7,5	430	7,5	408	7,5	388	9,2	370	9,2	352	11	334	11	317	15	300	15

TOLERANCE ON FLOW RATE VALUES: ±10%

[•] BL040 THREE PHASES MOTOR: 0,9 KW - SINGLE PHASE MOTOR: 0,8 KW

[•] BL420 THREE PHASES MOTOR: 1,6 KW - SINGLE PHASE MOTOR: 1,5 KW

Flow rates refer to air at the suction conditions of 20°C and 1013 mbar abs.

Models available upon request

Dimensions

Blower Type	Reference figure	A	B	C	D	E	F Ø	G	H	I	L	M	N	O	P	Q	R	S	Connection ("Gas) inlet Ø1	Connection ("Gas) outlet Ø2	Weight (kg)
BL020	Fig. 1	250	228	235	90	35	10	12	76	190	210	45	210	40	2,5				1"	1"	10,7
BL030	Fig. 1	263	246	247	90	39	10	13	83	205	219	54	310	20	2,5				1" ¼	1" ¼	11,7
BL040	Fig. 1	270	286	305	115	45	12	17,5	95	225	255	48	240	30	3				1" ½	1" ½	18
BL050	Fig. 1	315	333	335	120	48	14	20	115	260	295	125	345	30	4				2"	2"	26
BL060	Fig. 1	395	382	385	125	48	15	20	140	290	325	110	380	30	4,5				2"	2"	41,5
BL080	Fig. 1	477	451	509	152	65	15	23,5	170	356	394	114	462	35	6				2" ½	2" ½	68
BL220	Fig. 2	320	315	270	90	39	10	12,5	83	205	230	63	289	30	2,5	53	106	540	1" ¼	1" ¼	14
BL420	Fig. 2	400	355	315	116	46	12	16,5	95	225	256	51	314	30	3	45	154	570	1" ½	1" ½	27
BL520	Fig. 2	500	410	371	120	48	14	20	115	260	295	97	404	30	4	56	144	645	2"	2"	27
BL720	Fig. 3	590	435	424	154	94	14	20	140	290	325	225	595	45	4,5	76	164	685	2"	2"	77
BL820 (7,5 KW)	Fig. 2	532	435	424	126	50	14	20	140	290	325	86	451	45	4,5	76	164	685	2" ½	2" ½	89
BL820 (11 KW)	Fig. 3	590	435	424	154	94	14	20	140	290	325	225	595	45	4,5	76	164	685	2" ½	2" ½	107
BL012	Fig. 4	445	370	440	130	79	9	100	160	288	328	-	19	35	5	6	40		1" ½	1" ½	42
BL014	Fig. 4	445	370	440	130	79	9	100	160	288	328	-	19	35	5	6	40		2"	2"	42
BL017	Fig. 4	560	400	470	160	90	9	100	160	347	387	70	22	35	5				2" ½	2" ½	54
BL020	Fig. 4	550	416	490	160	90	9	100	160	347	387	70	22	35	5				2" ½	2" ½	66
BL023	Fig. 4	590	440	515	160	90	9	100	160	347	387	70	22	35	5				2" ½	2" ½	82
BL030	Fig. 4	700	440	520	180	97	11	60	330	400	450	120	22	45	5				3"	3"	88
BL036	Fig. 4	675	466	550	180	97	11	60	330	400	450	120	22	45	5				3"	3"	90
BL042	Fig. 4	765	505	615	180	107	11	60	330	420	470	185	17	45	5				3"	3"	106
BL049	Fig. 4	750	532	640	180	107	11	60	330	420	470	185	17	45	5				4"	4"	112

Dimension [mm]
Weights shown are for the machines fitted with the largest motor power

fig. 1 *Single STAGE - Single CHANNEL - Single IMPELLER*

BL020 BL030
BL040 BL050
BL060 BL080

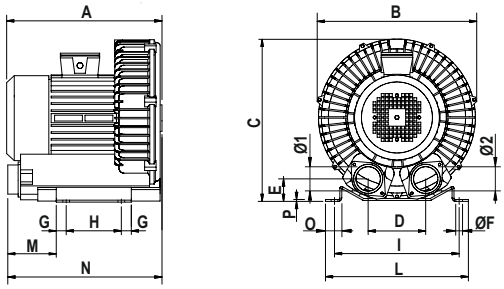


fig. 2 *Double STAGE - Double CHANNEL - Double IMPELLER*

BL220
BL420
BL520
BL820 (7.5 kW)

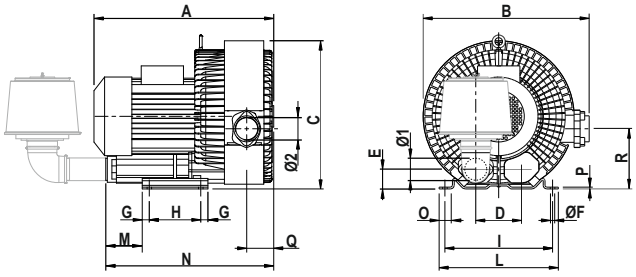


fig. 3 *Double STAGE - Double CHANNEL - Double IMPELLER*

BL720
BL820 (11 kW)

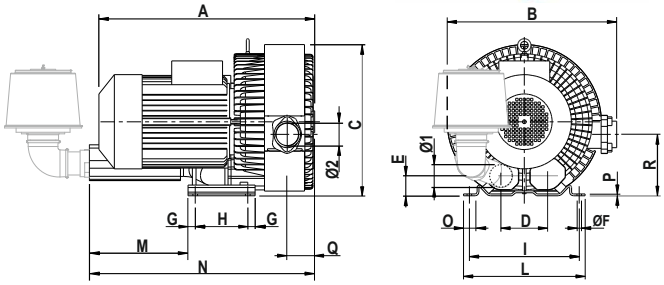
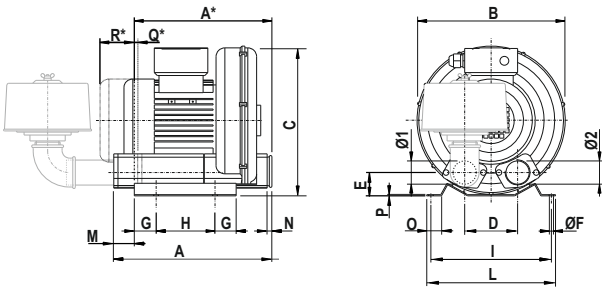
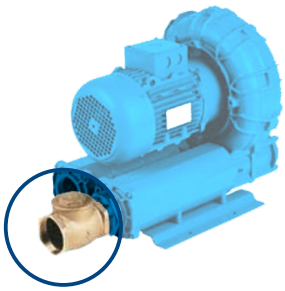


fig. 4 *Double STAGE - Double CHANNEL - Single IMPELLER*

BL012 BL014
BL017 BL020
BL023 BL030
BL036 BL042
BL049



Accessories

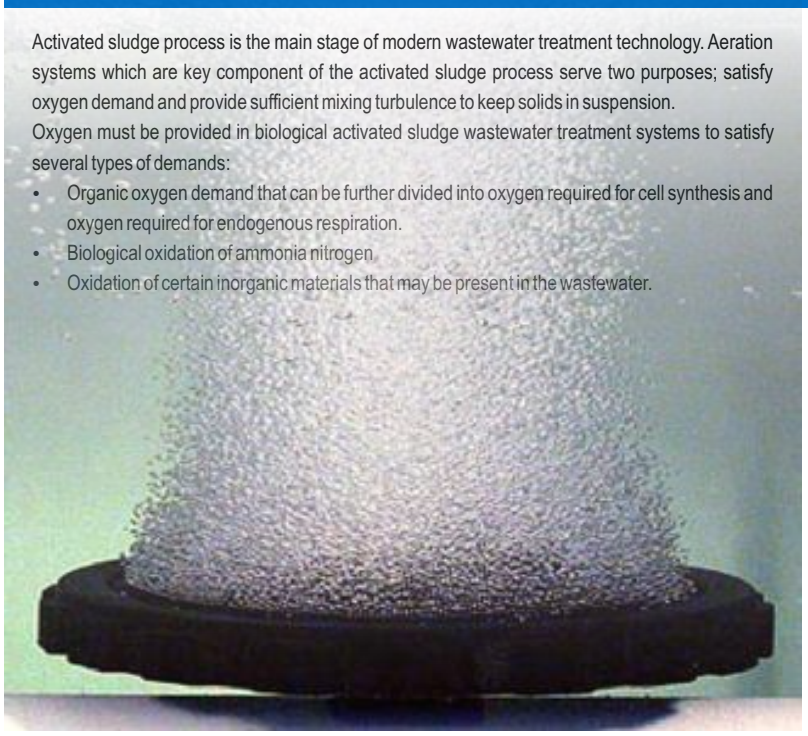
Blower		Filters				Non Return Valves			Pressure Relief Valves			Flexible hoses		
	Model	Model	Cartridge	Ø	Weight	Model	Ø	Weight	Model	Ø	Weight	Model	Ø	Weight
Single Stage Single Channel Single Impeller	BL020	SF4NG	C4			SVR4	1"	0,6	unavailable			SM4	1"	
	BL030	SF5NG	C6	1"¼	0,8	SVR5	1"¼	0,85	SVS5/6T	1"¼	1,6	SM5	1"¼	
	BL040	SF6NG	C6	1"½	1,3	SVR6	1"½	1,15	SVS6T	1"½	1,5	SM6	1"½	
	BL050	SF7NG	C8	2"	2,0	SVR7	2"	1,7	SVS7T	2"	2.3	SM7	2"	
	BL060	SF7NG	C8	2"	2,0	SVR7	2"	1,7	SVS7T	2"	2.3	SM7	2"	
	BL080	SF10NGR	C10	2"½	3,5	SVR8	2"½	2,5	SVS8T	2"½	3.5	SM8	2"½	
Double Stage Double Channel Double Impeller	BL220	SF5NG	C6	1"¼	0,8	SVR5	1"¼	0,85	SVS5/6T	1"¼	1,6	SM5	1"¼	
	BL420	SF7NGR	C8	1"½	2,0	SVR6	1"½	1,15	SVS6T	1"½	1,5	SM6	1"½	
	BL520	SF8NGR	C8	2"	3,1	SVR7	2"	1,7	SVS7T	2"	2.3	SM7	2"	
	BL720	SF10NGR	C10	2"	3,9	SVR7	2"	1,7	SVS7T	2"	2.3	SM7	2"	
	BL820	SF10NG	C10			SVR8	2"½	2.5	SVS8T			SM8	2"½	
Double Stage Double Channel Single Impeller	BL012	SF8/1G	C8		2,0	SVR6	1"½	1,15	SVS6	1"½	1.5	SM6	1"½	
	BL014	SF8/1G	C8		2,0	SVR7	2"	1,7	SVS6	1"½	1.5	SM7	2"	
	BL017	SF8/1G	C8		2,2	SVR8	2"½	2,5	SVS8	2"½	3.5	SM8	2"½	
	BL020	SF8/1G	C8		2,2	SVR8	2"½	2,5	SVS8	2"½	3.5	SM8	2"½	
	BL023	SF8/1G	C8		2,2	SVR8	2"½	2,5	SVS8	2"½	3.5	SM8	2"½	
	BL030	SF10/1G	C10		2,4	SVR10	3"	3,5	SVS10	3"	4.5	SM10	3"	
	BL036	SF10/1G	C10		2,4	SVR10	3"	3,5	SVS10	3"	4.5	SM10	3"	
	BL042	SF14G	C14		7,5	SVR10	3"	3,5	SVS10	3"	4.5	SM10	3"	
	BL049	SF14G	C14		7,5	SVR15	4"	6,0	SVS15	4"	8.3	SM15	4"	

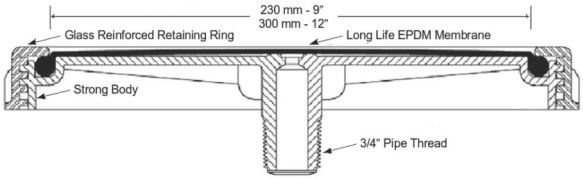
Membrane diffuser

Activated sludge process is the main stage of modern wastewater treatment technology. Aeration systems which are key component of the activated sludge process serve two purposes; satisfy oxygen demand and provide sufficient mixing turbulence to keep solids in suspension.

Oxygen must be provided in biological activated sludge wastewater treatment systems to satisfy several types of demands:

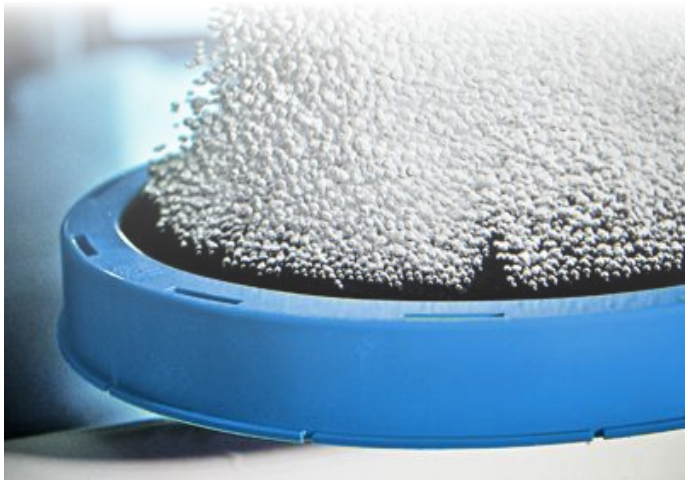
- Organic oxygen demand that can be further divided into oxygen required for cell synthesis and oxygen required for endogenous respiration.
- Biological oxidation of ammonia nitrogen.
- Oxidation of certain inorganic materials that may be present in the wastewater.





ADD 230/ADD 300 Disc Diffuser Technical Data		
Property	**Unit**	**Value**
Disc Class	inch	9/12
Air Flow	m^3/h	2-8/2-10
Maximum Air Flow	Nm^3/h	12/15
Total Diameter	mm	270/340
Perforated Diameter	mm	230/312
Perforated Area	m^2	0.039/0.066
Total Weight	kg	0.68/0.85
Density (DIN 53479)	g/cm^3	1.07
Tensile Strength (DIN 53504)	N/mm^2	9.2
Elongation at Break (DIN 53504)	%	>500
Tear Strength (DIN 53507)	N/mm	>7
Hardness (DIN 53505)	Shore A	50±5
Operating Temperature	°C	-30/+130
Tensile Value (at 100% extension after 24 h)		<%5
Membrane Thickness	mm	2±0.15
Membrane Specification		EPDM (DuPont)
Support Plate Material		PP GFR30 (Basell)

Membrane Diffuser



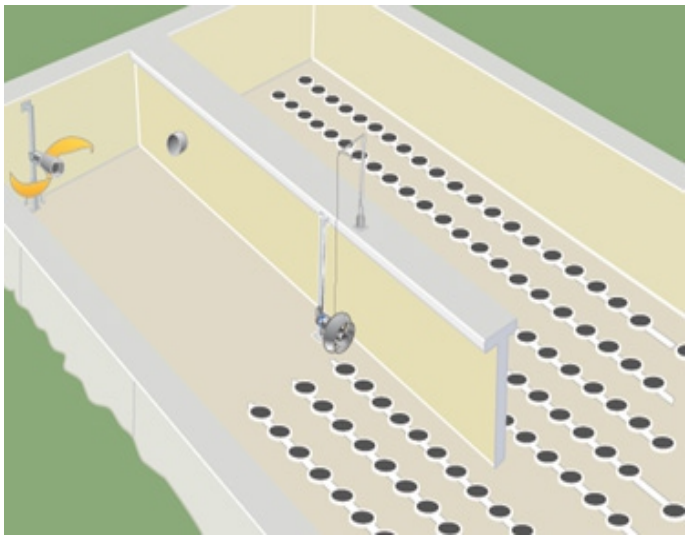
Fine pore diffusion is a subsurface form of aeration in which air is introduced in the form of very small bubbles. There has been increased interest in fine pore diffusion of air as a competitive system due to its high Oxygen Transfer Efficiency (OTE). Smaller bubbles result in more bubble surface area per unit volume and greater OTE.

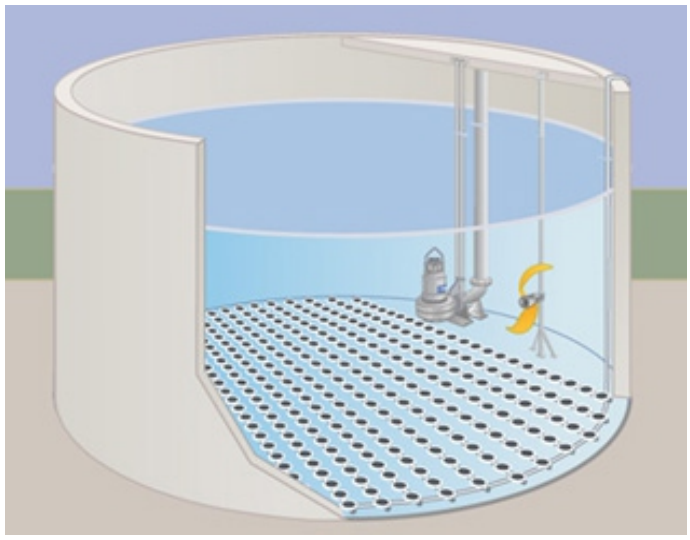
Diffused aeration systems can be classified into three categories:

- Porous (Fine Bubble) Diffusers: Concept of the fine bubble corresponds to the size of 1- 3 mm. These diffusers come in various shapes and sizes, such as discs, tubes, domes, and plates.

- Nonporous (Coarse Bubble) Diffusers: These are in the form of perforated piping, spargers etc. The bubble size of these diffusers is larger than the porous diffusers (larger than 10 mm), thus lowering the OTE.

- Other Diffusion Devices: Jet aerators, aspirators, and U tubes.

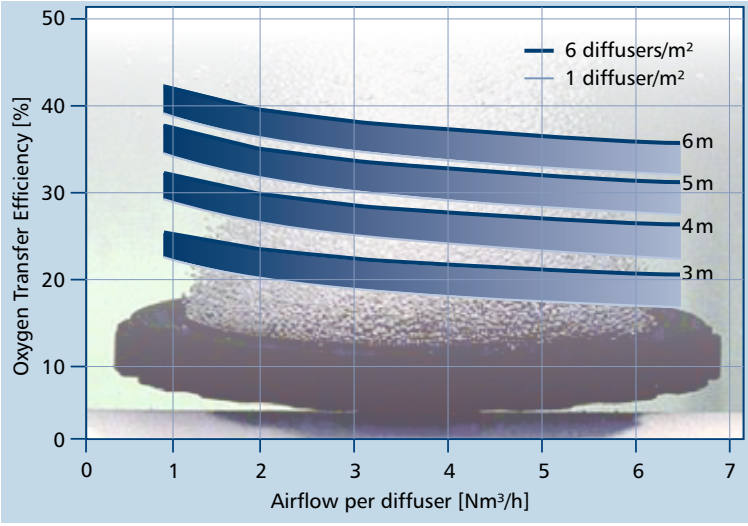




Performance of the Diffused Aeration Sytem

The performance of diffused aeration systems under normal operating conditions is directly related to the following parameters:

- Wastewater characteristics,
- Process type and flow regime,
- Loading conditions,
- Basin geometry,
- Diffuser type, size, shape, density, and airflow rate,
- Mixed liquor dissolved oxygen control and air supply flexibility,
- Mechanical integrity of the system,
- Operator expertise,
- Fouling,
- The quality of the preventive operation and maintenance program.



Seko sends the equipments which are bought by you and thus usage period of the products will be started. When you acquire these goods you should firstly examine them for the damages originated from transportation process. If you encounter to any problem please report them to our Technical Service Department or the distributor in ten days.

Applications

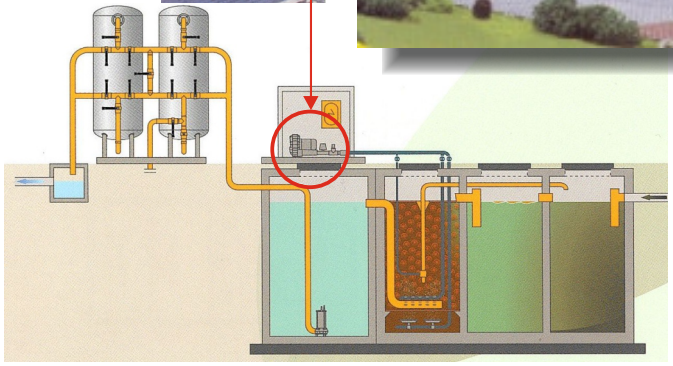
The Side Channel Blowers are suitable for very wide field of application some of them are:

WATER TREATMENT PLANTS

Anaerobic digestion is an organic process by means of which, in the absence of oxygen, the organic substance is converted into biogas, which consists mainly of methane and carbon dioxide.
The percentage of methane in the biogas varies, depending on the type of organic substance and digested of process conditions, from a minimum of 50% up to 80 %.
In this cycle, SEKO blowers are used to extract the biogas from the dome of digester for blow it to the base, so as to keep in motion the organic mass and then to send the biogas to the user, which may be a co-generation plant or a turbine.

SWIMMING POOLS - WHIRLPOOLS

There are many jobs for the SEKO Side channel blowers in swimming pool systems .
They are used to inject air into swimming pools where necessary to create water features , whirlpools , swimming against the tide.
The pools are used to create path of water for hydromassage legs .
His qualities of the very low noise machine, and the maximum ease of installation and minimal



CAR WASH PLANTS

With these treatments are eliminated from wastewater organics and inorganic substances present, favoring the reproduction of bacterial species-specific already present in the waters of the sewe , but not in sufficient concentration.
The water used in the car mash plant, to the output of chemical and physical are then mixed with water from the toilet .
The SEKO Side channel blowers activate oxidative process with the recirculation sludge and keep the mixed substances from various plants.

A Worldwide Group at your service

seko has been a significant manufacturer of metering pumps and dosing systems for over 40 years. This long activity allowed seko to acquire a vast experience in diversified applications and to confirm its international success in many industrial fields through the supply of reliable solutions for the dosing, injection and transfer of liquids

Today **seko** is an International Group, developing, manufacturing and delivering its products in more than 50 countries, through its 15 subsidiaries and an extended network of distributors, agents and authorized dealers

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