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 consequent 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 pressures 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 therefore no friction during operation and thus no internal lubrication 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.

- Casing and impellers are made of aluminium alloy.
- The standard machines for air are manufactured in the so-called «CLOSE COUPLED» version; 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 all the powers shown in 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 / 400 V / 690 V, for powers up to 3 kW
        400 V / 690 V / 795 V, for powers ≥ 4 kW
      - three phase motors, at 60 Hz
        265 V / 460 V / 795 V, for powers up to 3,6 kW
        460 V / 795 V / 990 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 / 345~416 V, for powers up to 4 kW
        345~415 V / 600~720 V, for powers > 4 kW
      - three phase motors, at 60 Hz
        208~275 V / 380~480 V, for powers up to 4,6 kW
        380~480 V / 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 (Electromagnetic Compatibility) and the applicable harmonised Standards.
    For the handling of gases other than air, e.g. steam, industrial 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

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

**TOLERANCE ON FLOW RATE VALUES:** ±10%

**Models available upon request**

50 Hz 2900 rpm
## Dimensions

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</table>

*Fig. 1 Single STAGE - Single CHANNEL - Single IMPELLER*  
*Fig. 2 Double STAGE - Double CHANNEL - Double IMPELLER*  
*Fig. 3 Double STAGE - Double CHANNEL - Double IMPELLER*  
*Fig. 4 Double STAGE - Double CHANNEL - Single IMPELLER*  

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

---  

**References:**  
1. [Reference 1](#)  
2. [Reference 2](#)  
3. [Reference 3](#)  
4. [Reference 4](#)  

---  

**Blower Type:**  
- **BL020**  
- **BL030**  
- **BL040**  
- **BL050**  
- **BL060**  
- **BL080**  
- **BL720**  
- **BL820 (11 kW)**  
- **BL820 (7.5 kW)**  
- **BL012**  
- **BL014**  
- **BL017**  
- **BL020**  
- **BL023**  
- **BL030**  
- **BL036**  
- **BL042**  
- **BL049**
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 must 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
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**Blower**

<table>
<thead>
<tr>
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<th>Pressure Relief Valves</th>
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**ADD 230/ADD 300 Disc Diffuser Technical Data**

- **Disc Class:** inch
- **Air Flow:** m³/h
- **Maximum Air Flow:** Nm³/h
- **Total Diameter:** mm
- **Perforated Diameter:** mm
- **Perforated Area:** m²
- **Total Weight:** kg
- **Density (DIN 53479):** g/cm³
- **Tensile Strength (DIN 53504):** N/mm²
- **Elongation at Break (DIN 53504):** %
- **Tear Strength (DIN 53507):** N/mm
- **Hardness (DIN 53505):** Shore A
- **Operating Temperature:** °C
- **Tensile Value (at 100% extension after 24 h):** N/mm²
- **Membrane Thickness:** mm
- **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 System**

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 equipment 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. In all these cases, SEKO blowers can also be ATEX certified (European Directive 94/9 EC).

**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 maintenance, make it particularly also suitable for these uses.

**CAR WASH PLANTS**

With these treatments are eliminated from wastewater organics and inorganic substances present, favoring the reproduction of bacterial species already present in the waters of the sewer, but not in sufficient concentration. The water used in the car wash 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.

BRAZIL
Seko do Brasil Commercio de Sistemas de Dosagem Limitada
03170-050 São Paulo (SP)
Phone:+55 11 2606 9878
Fax: +55 11 2606 9878
se kobrasil@se kobrasil.com.br
www.se kobrasil.com.br

CHINA
Seko China Ltd
072750 Hebei
Phone:+86 312 552 0904
Fax: +86 312 552 0901
china@seko.com
www.sekochina.com

DENMARK
Seko Denmark
DK-4930 Maribo
Phone:+45 5475 7546
Fax: +45 5474 7545
info@seko.com

FRANCE
Seko Lefranc-Bosi S.A.
77435 - Marne La Vallée Cedex 2
Phone:+33 1 6005 9060
Fax: +33 1 6480 4104
lefrancbosi@lefrancbosi.com
service.commercial@seko.fr
www.lefrancbosi.com

ITALY
Seko Spa
Via Salaria Km. 92,200
02010 S.Rufina - Rieti
Phone:+39 0746 605801
Fax: +39 0746 607072
sales@seko.com

Seko Spa
[Process & Sytems ]
Via Di Vittorio, 25 - 20068
Peschiera Borromeo - Milano
Phone:+39 02 97372411
Fax: +39 02 95301744
info.psd@seko.com
info@seko.com

ROMANIA
Seko Sieta S.r.l.
400293 Cluj-Napoca
Phone:+40 264 415 251
Fax: +40 264 415 622
info.dpro@seko.com

RUSSIA
OSS Seko
129347 - Moscow
Phone:+74 99 182 52 8
Fax: +74 99 182 52 8
sekorussia@seko.com
www.sekorussia.ru

SINGAPORE
Seko Dosing Systems
Asia Pacific Pte Ltd
608838 Singapore
Phone:+65 6515 698
Fax: +65 6515 5079
asiapacific@seko.com

SOUTH AFRICA
Seko Southern Africa (PTY) Ltd
Kya sands -
Johannesburg - Gauteng
Phone:+27 11 704 6589
Fax: +27 11 704 6588
sales@sekosa.co.za

SPAIN
Seko Ibérica Sistemas de Dosificación S.A.
08960 San Just Desvern - Barcelona
Phone:+34 93 4802 570
Fax: +34 93 4802 571
sekoiberica@sekoiberica.com

SWEDEN
Seko Sweden
26123 Landskrona
Phone:+46 418 448 482
Fax: +46 418 448 483
info@seko.com

TURKEY
Seko Endüstriyel Pompalar ve Proses Sistemleri San. ve Tic. Ltd. Şti.
Kartal Istanbul
Phone:+90 216 353 2542
Fax: +90 216 353 1450
info@seko.com.tr
www.seko.com.tr

UNITED KINGDOM
Seko UK - Chemical Controls Ltd
Harlow, Essex - CM19 5JH
Phone:+44 1279 423550
Fax: +44 1279 423993
seko.uk@seko.com
www.sekouk.com

USA
Seko Dosing Systems Corporation USA
Tullitytown - PA 19007 (USA)
Phone:+1 215 945 01 25
Fax: +1 215 945 09 37
sales@sekousa.com
www.sekousa.com

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