



RAUBIOXON

TECHNICAL INFORMATION 318610 EN



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ADVANTAGES OF RAUBIOXON DISC AERATOR

Silicone membrane
High energy cost savings for long term operation

- High tear resistance
- Low pressure loss increase
- No hardening or embrittlement
- Low scale formation tendency
- Suitable for industrial wastewater
- Suitable for intermittent operation
- High level of oxygen yield
- Optimum bubble size
- Quick and easy to assemble
- Inexpensive upgrading of existing systems
- Permanent elasticity
- Extreme temperature resistance
- Plasticiser-free
- Weather and ozone resistance
- Oil and grease resistance
- Ageing resistance
- Self-sealing during air switch-off



1 SCOPE AND APPLICATIONS

This Technical Information brochure applies to RAUBIOXON DISCAERATOR for fine-bubble aeration of sludge in biological wastewater treatment plants.

RAUBIOXON DISC AERATOR materials are pure, ecologically harmless and recyclable.



2 MATERIALS

2.1 Base plate

Material: PP
Colour: White

Density	0,9	[g/cm ³]	DIN EN ISO 1183
Tensile strength	24,5	[N/mm ²]	DIN EN ISO 527
Elongation at break	180	[%]	DIN EN ISO 527
Modulus of elasticity	1000	[MPa]	MA 17074

2.2 Disc membrane

Material: RAU-SIK silicone elastomer
Plasticiser-free, high tear resistance
Colour: Blue transparent

Density	1,19	[g/cm ³]	DIN 53479
Hardness	60	[Shore A]	DIN 53505
Tear resistance	9,5	[N/mm ²]	DIN 53504 SII
Elongation at break	800	[%]	DIN 53504 SII
Tear strength	≥ 40	[N/mm]	ASTM D624

2.3 Retainer ring

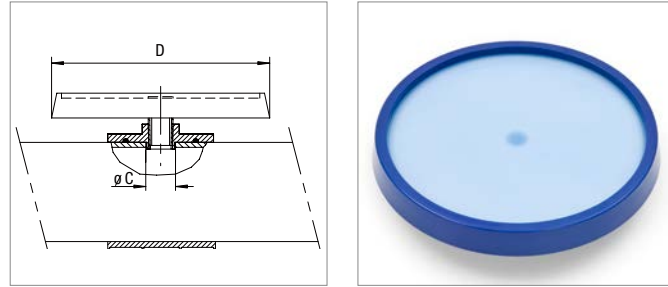
Material: RAU-PP
Colour: Blue

Density	0,9	[g/cm ³]	DIN EN ISO 1183-A
Tensile strength	24	[N/mm ²]	DIN EN ISO 527
Elongation at break	520	[%]	DIN EN ISO 527
Tensile modulus	880	[MPa]	GB 9341

3 PRODUCT RANGE

3.1 Disc aerator

Connection hole: C = 30 mm
 Connection: AG 3/4" NPT (ANSI B1.20.1)



Article No.	Type	Outer diameter D [mm]	Perforated area [m2]	Weight [kg]
14113351005	200	220	0,024	0,38
14113451005	300	340	0,063	0,89

3.2 Disc aerator with check valve

Connection hole C = 30 mm
 Connection: AG 3/4" NPT (ANSI B1.20.1)



Article No.	Type	Outer diameter D [mm]	Perforated area [mm2]	Weight [kg]
14113551005	200	220	0,024	0,38
14113651005	300	340	0,063	0,89

3.3 Disc saddle

Suitable for all disc aerators with a 3/4" male thread (ANSI B1.20.1)
 Material: Polypropylen



Article No.	for stainless steel pipes [mm]	for PVC-pipes [mm]
14170811006	88,9	-
14171111006	114,3	-
14170031006	-	90
14170051006	-	110

3.4 Fastener

For disc saddles
 Material: POM



Article No.
 13517261001

3.5 O-ring

For disc saddles
 Material: EPDM



Article No.	D x s [mm]	For disc saddle
13517281001	60 x 4	DN 100
13517271001	62 x 4	DN 80

4 MAKE-UP FOR DELIVERY

4.1 Disc aerator without / with check valve

Article No.	Type	Outer diameter [mm]	Packing unit [pcs.]	Box dimensions [mm]	Weight [kg]
14113451005/ 14113651005	200	220	36	780 x 580 x 260	15
14113351005/ 14113551005	300	340	12	780 x 580 x 260	12

4.2 Disc saddle

Article No.	for stainless steel pipes [mm]	for PVC pipes [mm]	Packing unit [pcs.]	Box dimensions [mm]	Weight [kg]
14170811006	88,9		100	780 x 580 x 310	23,5
14171111006	114,3		90	780 x 580 x 310	21,5
14170031006		90	100	780 x 580 x 310	23,5
14170051006		100	90	780 x 580 x 310	21,5



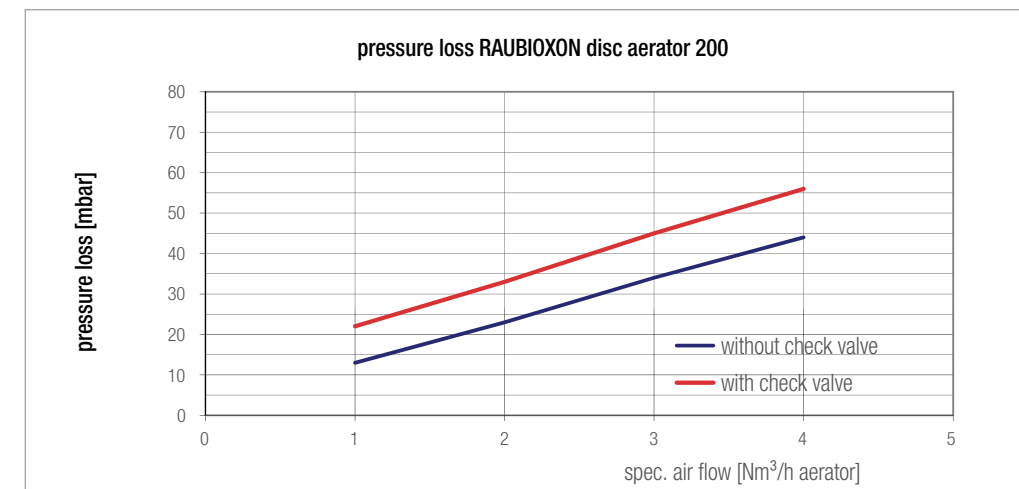
5 DESIGN

5.1 General points

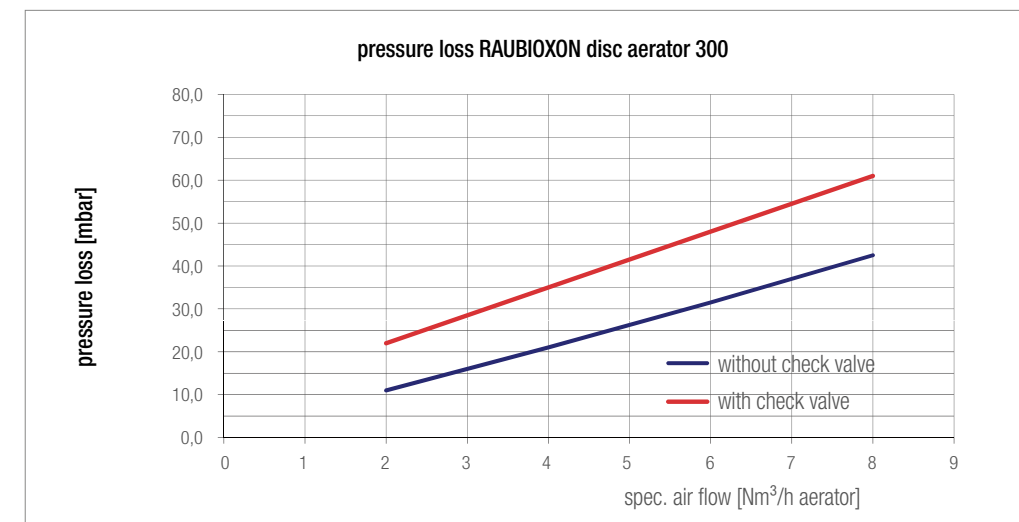
The characteristic values are adjusted on the basis of calculated and empirically determined factors to reflect the actual conditions. The characteristic values are adjusted on the basis of calculated and empirically determined factors to reflect the actual conditions.

Factors that need to be considered include the wastewater temperature and the air pressure (which affect the oxygen saturation concentration), increased concentrations of dissolved salts or surface active substances (surfactants), currents, and the positions and extents of nonaerated regions. Please provide REHAU with details of your particular requirements using the form which is provided in section 7 of this brochure and which contains relevant parameters. **Graphs 1 and 2** show the dependence of the decrease in pressure on the specific air flow in new condition.

5.2 Graphs

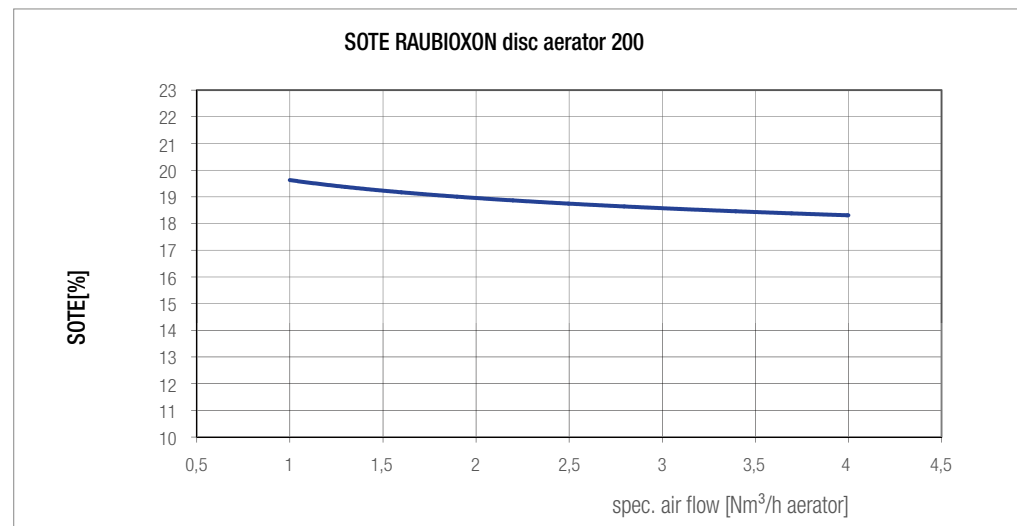


Graph 1: Pressure loss for disc aerator 200

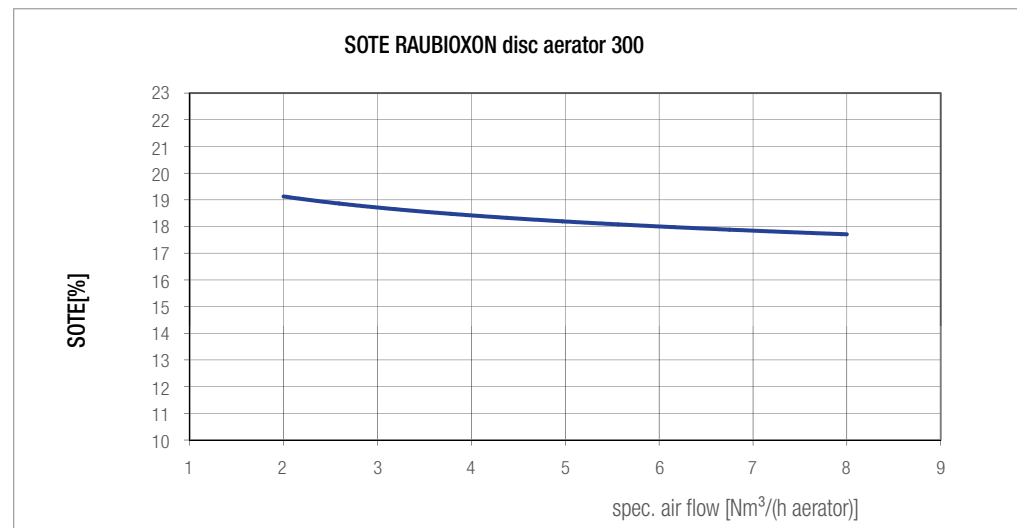


Graph 2: Pressure loss for disc aerator 300

6 FITTING AND OPERATING INSTRUCTIONS



Graph 3: SOTE for disc aerator 200



Graph 4: SOTE for disc aerator 300

The graphs for the specific oxygen transfer rate are based on measurements in pure water under standard conditions.
Aerator density: 10.9%
Immersion depth: 5.7 m

5.3 Measurement of oxygen capacity

Oxygen capacity frequently need to be determined by testing. In almost all cases the measurements to find the amounts of oxygen added are taken in pure water using the absorption method. The first step is to add chemicals to remove all the oxygen from the water. Oxygen is then added again using the aeration system. The concentration increases from zero to maximum saturation, and the resulting concentration curve is used to calculate the oxygen absorption. This is correlated with the power consumption of the blower in order to calculate the specific energy consumption, which is

known as the oxygen gain. In Germany, oxygen uptake measurements are carried out in accordance with DIN EN 12255-15. However, it is still necessary for certain parameters such as the permissible tolerances to be specifically agreed between the supplier and the customer.

The strict adherence to our fitting and operating instructions is a prerequisite for the proper and reliable operation of the aeration system. It is also the basis of our warranty.

6.1 Fitting

6.1.1 Storing

The disc aerators have to be stored in their original packaging, in a dry, ventilated room, according to ISO 2230.

Do not store outdoor!

6.1.2 Checking

All disc aerators, particularly the membranes, must be checked for damage.

6.1.3 Installation Preparation

Prior to assembly of the aeration system remove all debris (stones, metal scrap, ...) from the tank.
All air headers must be levelled within ± 5 mm for proper function of the diffusers.

In order to assemble the holes in air lateral pipes, openings with diameter of $30 \pm 0,3$ mm must be predrilled. Vertical alignment of the holes has to be within $\pm 3^\circ$.

6.2 Installation

The disc saddle is taken out of the carton box. The o-rings are to be inserted into the destined grooves.

Place the opened disc saddle with the female thread on top and in vertical position over the predrilled hole in the air distribution pipe. Ensure that saddle and o-ring are firmly seated on the pipe. Place the blue fastener over the open side of the disc saddle and snap it into position by pressing firmly against the fastener.

Finally, the male 3/4" NPT outer thread of the aerator is screwed into the female thread of the disc saddle until the lower rim of the disc aerator touches the top of the saddle nipple.



Pic. 1



Pic. 2



Pic. 3



Pic. 4



Pic. 5

6.3 Commissioning

6.3.1 Trial

A trial of the system should be carried out after fitting, with the tank filled with clean water. The system should be checked for air tightness, section by section, with a max. depth of 20 cm of water above the membranes. Leaks are revealed when, after a brief period, the air supply is switched off. Air bubbles then rise where the seal is poor (depending on system pressure).

Work that could cause damage to the aerators (such as painting, welding, concrete sealing etc.) must not be carried out in the area of the treatment tank.

6.3.2 Oxygen transfer measurement

Prior to taking oxygen transfer measurement, the aerating process is to be continued for a period of at least 48 hours at a specific air flow rate of at least 3 (type 200) or 6 (type 300) Nm³/h-aerator in order to ensure that the aerators function properly. Otherwise the latest version of DIN EN 12255-15 shall apply.

6.3.3 Idle time, prior to continuous operation

If the aeration tubes are not taken into operation immediately following the trial, then the depth of water above the aerators has to be increased to 1 m. This depth of water must be maintained until the equipment is finally taken into operation.

Keep an eye on water evaporation!

If there is frost, the depth of water above the aerators must be at least 10 % of the minus temperature.

Example:

At -20 °C, water depth above aerators = 2 m.

6.4 Operation

6.4.1 General

Water temperature must be between 5 and 30 °C.

Higher temperatures may be permitted in consultation with the manufacturer.

6.4.2 Air supply

The air supply system has to be free of oil, dust and solvent, and must include a filtration system. Dust filters for ambient dust are to be designed to achieve 90 % filtration in conformity with DIN EN 779, filter class G4. Air temperature at inlets may not exceed 80 °C. Higher temperatures may be permitted in consultation with the manufacturer.

The disc aerators can be operated with a specific air flow of 0,5-4,0 (type 200) or 1,5-8,0 (type 300) Nm³/h-aerator.

6.4.3 Maintenance / cleaning

If the treatment tank is drained or the aerator system is pulled up, care is to be taken that the deposits on the membranes do not dry out, i.e. the membranes are to be immediately cleaned. Dried on deposits will impair aeration performance.

Occasionally, there might be process-related deposits which can be removed in their initial stages. It is therefore necessary to check for such deposits regularly, right from the start, and to determine an appropriate cleaning cycle.

Membranes can be cleaned mechanically by washing them down using a pressure cleaner at a water depth of approx. 10 cm. Air admission of 4-5 Nm³/h-aerator is to be adjusted.

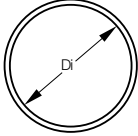

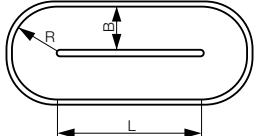
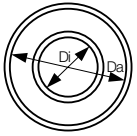
6.5 Guarantee

Guarantee according to our current guarantee declaration..

7 PROJECT SPECIFICATION FORM/INTERNET

Desing data

Sender

Last name:			
First name:			
Company:			
Town and postcode:			
Telephone:			
E-Mail:			
WWTP/ project:			
Project:			
Client:			
Address:			
Town and postcode::			
Telephone:			
Contact person:			
Size:	population equivalent		
Tank geometry			
- Circular tank	- Rectangular tank	- Circulatory tank	- Combination tank
			
Tank dimensions:			
Water depth:	m		
Outside diameter (OD):	m		
Radius (R):	m		
Inside diameter (ID):	m		

Width (W):			m
Length (L):			m
Number of tanks:			St.
Oxygen demand:	min:	max:	kg/h (standard conditions)
	min:	max:	kg/h (operation)
Industrial discharges?	<input type="checkbox"/> Yes, (please specify) <input type="checkbox"/> No		
Existing or proposed compressor	<input type="checkbox"/> Rotary piston <input type="checkbox"/> Turbo		
Max. volume flow rate:			m ³ /min
Max. operating pressure:			mbar
Manufacturer/ type:			Number:
Comments:			
Reply details			
Please give the address to which you would like the reply sent. For the fastest possible response, please indicate an e-mail address.			
By e-mail			
Reply address			
Company:			
Name:			
Town and postcode:			
Telephone:			
E-Mail:			

Further REHAU product ranges



AWADUKT PP SN10



AWASCHACHT PP DN 1000



AWADOCK connecting system



biogas plant

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