Disc diffuser system type ABS PRK 300 & PRF 300

Membrane disc diffusers for reliable and energy-efficient finebubble aeration of tanks in wastewater treatment plants. Suitable for normal continuous aeration systems as well as where intermittent aeration is required, e.g. biological nutrient removal and SBR processes.

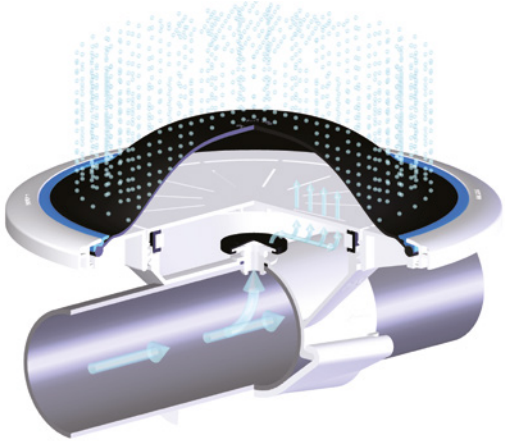
Features

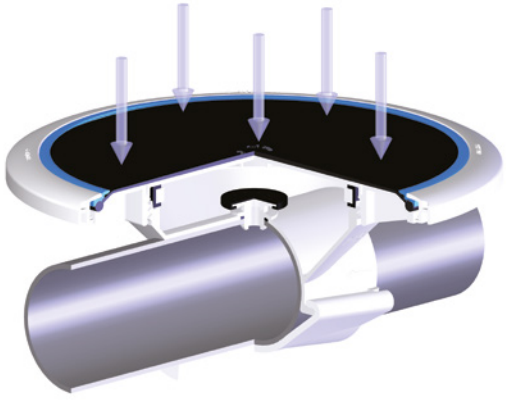
- Self-cleaning EPDM membrane with slits
- Membrane is fixed by a bayonet type screw-on ring
- Very rigid two part design
- Sliding ring of antifriction material helps in expansion and contraction of the membrane
- Elastic non-return valve
- Two part design provides easy and reliable service
- Wedge piece fixing to the pipe means that no glue, solvent or welding is needed in assembly
- Thread based fixing available as an option
- Sliding ring aids in opening the diffuser for maintenance after many years of operation
- Wedge piece fixing makes it easy to increase, decrease or relocate diffusers when process requirements change
- Applicable to various pipe materials and dimensions
- Inlet air temperature is up to 80°C

The PRF retrofit upgrade disc upgrades Nopon DDS diffusers with diameter 215 mm to 300 mm.

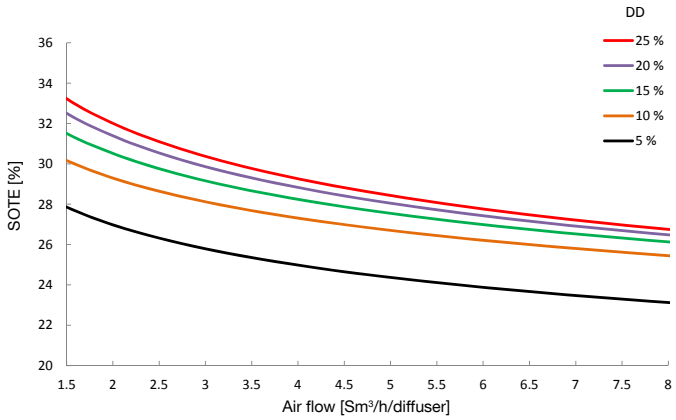
Working principle

The membrane bulges and slits open during aeration by the pressure of compressed air. The extension plate distributes the air evenly over the entire surface of the membrane. Air is spread into small bubbles, when released through the membrane. When the air flow is turned off, the pressure of the water above presses the membrane disc tightly to the extension plate closing the small slits on the membrane. The non-return valve closes and makes sure that no water enters the pipeline.

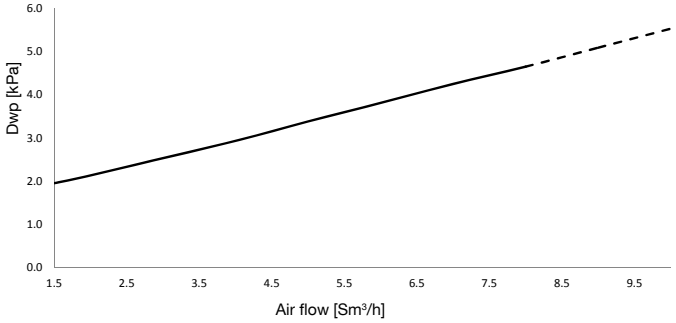




Standard oxygen transfer efficiency, SOTE

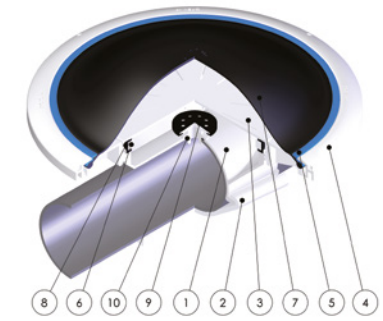


Wet pressure loss



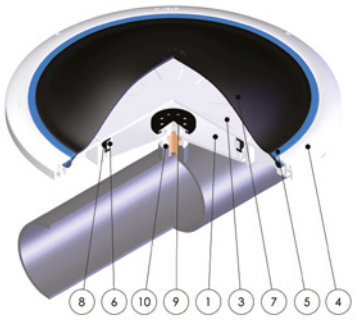
Clean tap water, standard conditions (+ 20 °C, 101,3 kPa), TDS level 1000 mg/l, submersion depth 4 m, diffuser density, DD = total diffuser area / total bottom area

Components and materials



Wedge attachment

	Description	Material
1	Main body	uPVC
2	Wedge piece	uPVC
3	Extension plate	Glass fiber reinforced PP
4	Screw-on ring	PP (polypropylene)
5	Sliding ring	POM (polyacetal)
6	Support ring	PP
7	Membrane disc	EPDM
8	Circular gasket	EPDM
9	Non-return valve	EPDM
10	O-Ring	NBR



Thread attachment

Model range (wedge attachment)

	PRK 300 D90	PRK 300 D88,9	PRK 300 4"*	PRF 300
Fitting	90mm PVC pipe	88,9mm SS pipe	NS4" PVC pipe	Main body of 215 diffuser
Main body	HSA 215	HSA 215	HSA 4	-
Wedge piece	HSK 215	HSK 215	HSK 4	-
Extension plate	PTL 300	PTL 300	PTL 300	PTL 300
Screw-on ring	PKR 300-3	PKR 300-3	PKR 300-3	PKR 300-3
Sliding ring	PVR 300-3	PVR 300-3	PVR 300-3	PVR 300-3
Support ring	HTR 300	HTR 300	HTR 300	HTR 300
Membrane disc	HIK 300	HIK 300	HIK 300	HIK 300
Circular gasket	HUR 300	HUR 300	HUR 300	HUR 300
Non-return valve	HVK 215	HVK 215	HVK 215	-
O-Ring	HOR 19	HOR 18	HOR 19	-

Model range (thread attachment)

	PRK 300 R½*	PRK 300 R½K*	PRK 300 BSF½*
Fitting	R½ cylindrical thread (ISO 228/1)	R½ taper thread (ISO 7/1)	BSF½ thread (½"-16 BSF)
Main body	HSA 215 R½	HSA 215 R½K	HSA 215 BSF½
Extension plate	PTL 300	PTL 300	PTL 300
Screw-on ring	PKR 300-3	PKR 300-3	PKR 300-3
Sliding ring	PVR 300-3	PVR 300-3	PVR 300-3
Support ring	HTR 300	HTR 300	HTR 300
Membrane disc	HIK 300	HIK 300	HIK 300
Circular gasket	HUR 300	HUR 300	HUR 300
Non-return valve	HVK 215	HVK 215	HVK 215
O-Ring	HOR 19	HOR 19	HOR 19

*) Available as spare parts

Diffuser data

Design air flow range	1,5-8,0 m³/h/diffuser [1] (+20 °C; 1 013 mbar)
Diffuser level	250 mm [2]
Air temperature, max	+ 80°C
Max/min assembly depth	3 - 8 m (optimal) [3]
Diffuser diameter	336 mm
Membrane surface area	0,060 m²
Size of bubbles	1 - 3 mm
Diffuser weight	1,42 kg
Max/min interval, c/c	1,25 / 0,4 m

1) When waste water contains chemicals harmful to EPDM or when water temperature is >30°C or air temperature is close to 80°C, a lower maximum air flow should be used. A peak value of 10 m³/h can be used for max. of 15 min only e.g. for cleaning the membrane.

2) Recommended measure from basin bottom to diffuser top.

3) Consult Sulzer on depths outside the range

www.sulzer.com

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