AQUALOOP pipe diffusor

- AL-PD78
- AL-PD142

Assembly and Operating Instructions

WATER, WE'RE IN OUR ELEMENT

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1. General Information

Thank you for choosing an INTEWA pipe diffusor unit. Please read the operating instructions carefully before commissioning to ensure safe and correct system startup.

The pipe diffusor system is intended for aerating of bioreactor tanks of greywater plants. The system can be used in places where aeration, saturation by air or liquid mixing is required.
AL-PD pipe diffusors are noted for their high efficiency of air transfer into water, high clogging resistance and low-pressure loss. They provide the user with low operating cost and trouble-free performance.

2. Safety Precautions

Before installing the product, these installation and operating instructions must be read carefully. The indicated instructions herein must be strictly observed. Modifications to the product are not permitted, otherwise any warranty expires.

The tube diffuser must be in at least 700mm deep water before the fan is started. If this is not observed, the EPDM membrane may be destroyed.

The following points must be adhered to for the installation and operation:

- Check the product for visible defects before installation. If there are any defects, do not install the product, as it could negatively affect the ventilation of the bioreactor.
- All products must be checked regularly for proper condition. The minimum inspection intervals are provided in the maintenance instructions in chapter 6.
- Never install water-bearing products in locations where the temperature may drop below 0°C.
- The operator is responsible for compliance with safety and installation requirements.
- The recommended air flow rate must be adhered to in order not to damage the membrane.

3. Scope of delivery

Fig.: Scope of delivery

4. Description

The AQUALOOP pipe diffusor (AL-PD) is designed especially for water treatment plants. The special construction enables easy installation in various types of tanks without the need to fix the diffusors to the bottom.
The diffusor is equipped with internal weight to operate against buoyancy force. The diffusor contains, depending on its size (AL-PD78 and AL-PD142), of one or two equally air-supplied nonelastic pipes, coated by EPDM membranes and based on two arched pillars. The pillars are coated with anti-slip rubber parts at the bottom to inhibit shifting of the diffusor. At the tail end of the pipe diffusor a lifting rope is installed.

Air enters the nonelastic pipe through a ball valve, shut-off fitting, connecting air hose and hose connector at the diffusor base. It exits nonelastic pipe via its membrane coated surface, thereby generating fine-air-bubbles. The system can be operated continually or intermittently.

Since emergence of condensation water on the pipe's inside occurs, each pipe is equipped with a drainage valve and drainage hose. From the drainage valve a separate air hose is led to the bottom part on the ground. After opening the valve, the condensate water is then pushed out of the pipe by the compressed air and thus cleans the pipe.

Note: Flow rate operation below the recommended range, results in faster fouling of the membrane. If the membrane is operated above the range for a longer period of time, overstretching of the membrane may occur and the service life will be reduced.

1. Membranes on a nonelastic pipe
2. air supply, 1" union nut
3. bleed valve
4. connecting air hose
5. diffusor base with hose connector
6. tail end base of diffusor with integrated lifting rope

Fig.: Basic configuration of the pipe diffusor AL-PD 142

5. Technical Data

	AL-PD78	AL-PD142
Air flow (Qvz,e)	1.5 – 10.0 m³/h	3.0 – 20.0 m³/h
Recommended air flow per diffusor (Qvz,e)	3.5 – 6.5 m³/h	7.0 – 13.0 m³/h
Loss of pressure depending on the air flow (Δp)	3 - 7 kPa	3 - 7 kPa
Maximal surface density of diffusor (Ds)	6 ks/m²	12 ks/m²
Oxygen use efficiency under standard conditions (Ea)	5 – 7 %/m	5 – 7 %/m
Standard oxygenation efficiency (E*)	3 – 5 kg O_2/kWh	6 - 10 kg O_2/kWh
Length	780 mm	1420 mm
Width	140 mm	140mm
Length air hose	2 m	3 m
Amount of aerator membrane	1	2
Connection	G 3/4	G 1"
Life time	6-10 years	6-10 years
Operating mode	permanent and intermittent	permanent and intermittent
Weight	11 kg	22 kg

Air admission:

If the air admission falls below the minimum limit, the aerator should be switched off completely.
The short-term overload limit should not be exceeded for longer than 10 minutes (e.g. for cleaning purposes).

Tab.: Overview air load

Description	Operating conditions [m³/h]	Lowest load limit [m³/h]	Short-term overload limit [m³/h]
AL-PD78	3.5 – 6.5	1.5	10.0
AL-PD142	7.0 – 13.0	3.0	20.0

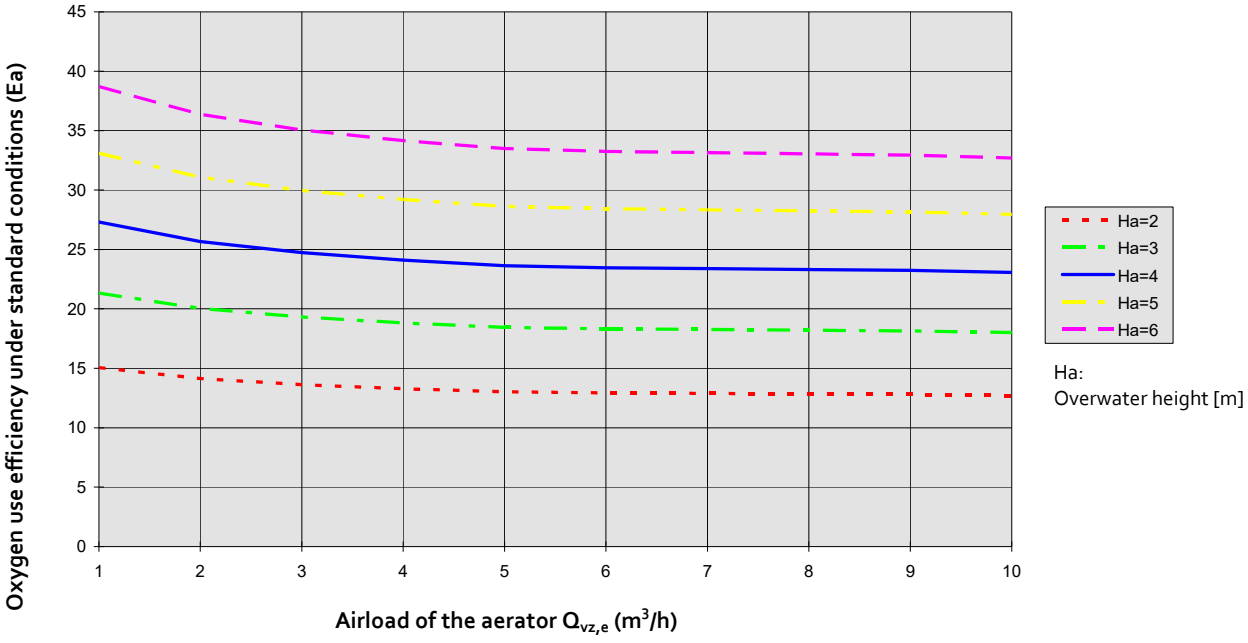
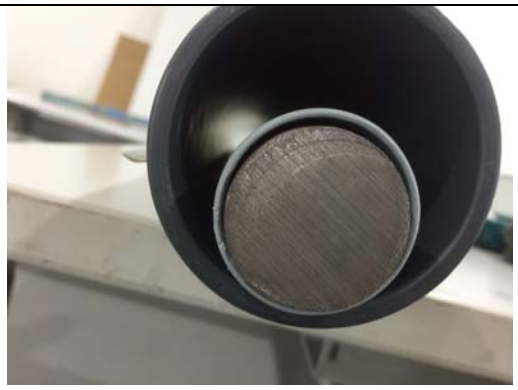


Fig.: Oxygenation characteristics of fine bubble aerator AL-PD78

Note: In the grey water application AL-GW XXX a minimum water level of 700 mm is required before starting the tube diffuser. Other application has to be calculated to guarantee, that the air load not exceed the required operation condition.

6. Installation Instructions

The installation in the tank, as well as the removal and re-positioning is carried out with the help of the air hose and lifting rope. This allows easy installation and repair of the diffusor system, without the need to empty the tanks. Installation, removal and re-placement are performed manually and require one person only.

The special design of the pipe diffusor allows easy installation in various types of tanks without the need to fix the diffusor to the floor.	
The diffusor elements are equipped with internal weight to compensate against the buoyancy force.	
The air is supplied to each diffusor through a ball valve, shut-off fitting and connecting pipe.	

7. Maintenance and spare parts replacement

Removing condensate

The condensation water must be regularly removed from the system. We recommend removing the condensate within a 6-month interval. Depending on the surroundings humidity, the maintenance interval can be extended.

Each pipe diffusor is equipped with a mechanism to drain condensed water. A small drainage hose from the bleed valve is connected to the bottom of the diffusor. After manually opening of drainage valve and with the system operating fully, internal air overpressure discharges the condensed water from the supporting tube above water level.

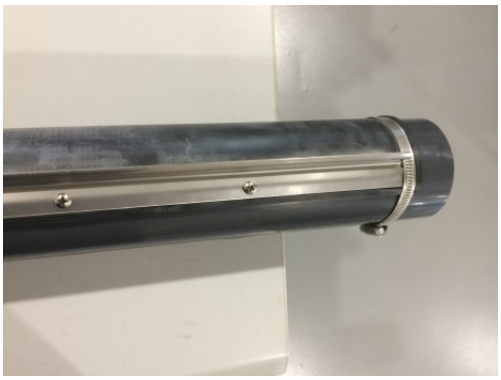
Membrane replacement

The diffusor membrane or the whole diffusor must be replaced every 5 years in case of continuous operation.

The membrane is attached to the arched bases from right and left side and with a few screws.

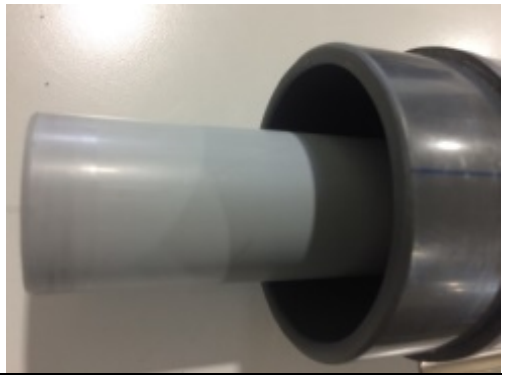
a.) Remove old membrane

Loosen the clamps from both bases. Remove both bases from the pipe. Open the screws which attach the membrane on the plastic pipe. Now you can separate the used membrane from the tubular weight.



b.) Install new membrane

Put the tubular weight inside the new membrane-pipe. Screw the membrane on the pipe. Install the bases on both sides and tighten the clamps on the rubber base.



8. Replacement Parts

Article description	Code	Art. No.	Amount AL-PD78	Amount AL-PD142
Spare membrane for AQUALOOP pipe diffuser	AL-PD-MEM	230197	1	2

9. Warranty / Contact

The warranty terms can be found in our sales conditions. See:

www.intewa.com

For customers in Germany:
For any queries, ordering of spare parts, as well as in case of service, kindly contact INTEWA GmbH directly, quoting your product's model and identification numbers and the purchase invoice details, at:

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For customers in other countries:
For any queries, ordering of spare parts, as well as in case of service, kindly contact your installer or the authorised importer, quoting your product's model and identification numbers, and the purchase invoice details.