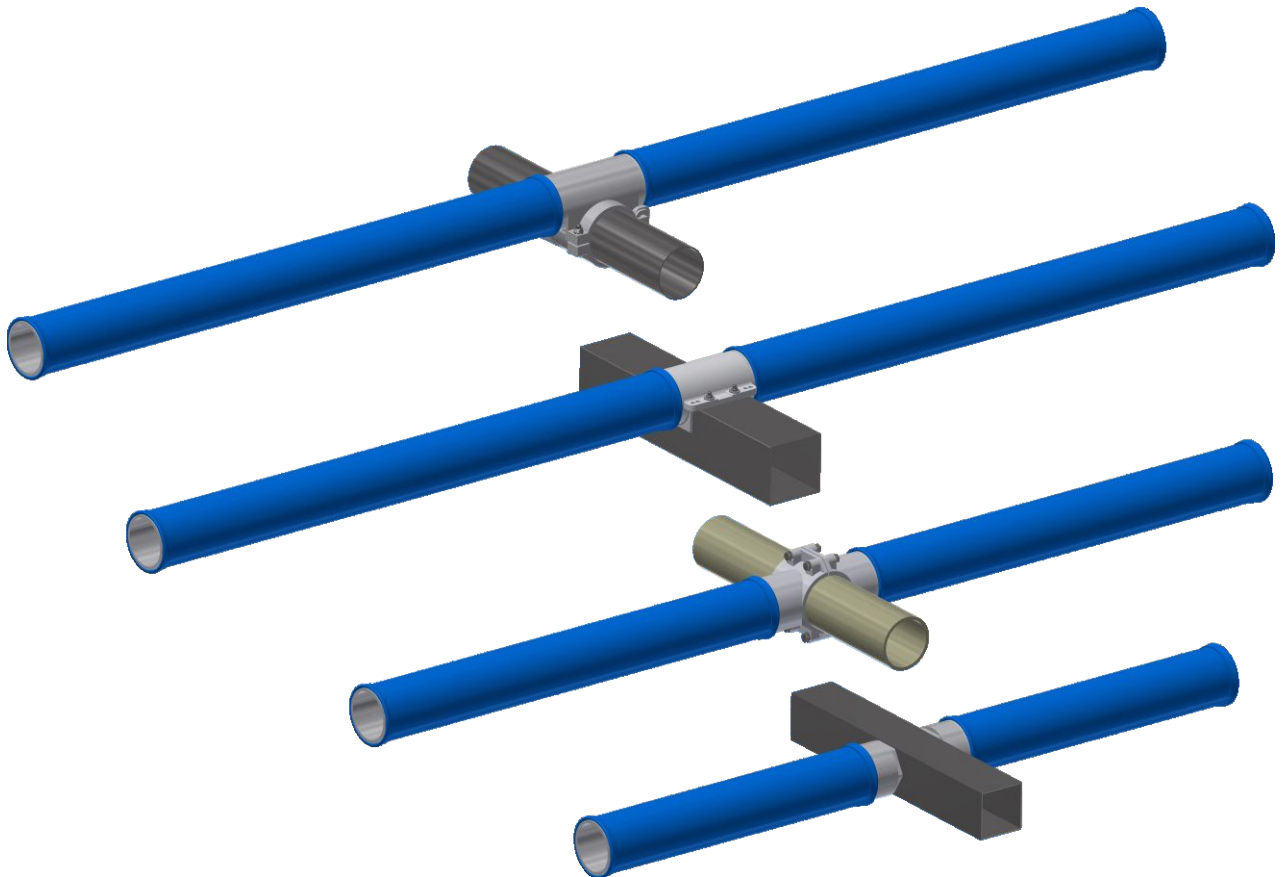


OXYFLEX[®] - MS96 MEMBRANE-TUBE-DIFFUSER



Supratec

GESELLSCHAFT FÜR UMWELT-
UND VERFAHRENSTECHNIK MBH

AERATION TECHNOLOGY



von-Drais-Straße 7
D-55469 Simmern / Hunsrück

Tel.: 06761 / 9 65 09-00
Fax: 06761 / 9 65 09-01

e-mail: info@oxyflex.de
internet: www.oxyflex.de

OXYFLEX® - MS96 **MEMBRANE-TUBE-DIFFUSER**

In comparison to standard tube diffuser models with outer diameter 70mm, the OXYFLEX® - MS96 diffuser model is larger than polypropylene tube with 90mm diameter.

By this increased diameter OXYFLEX® - MS96 can be operated with higher air volume flows by having less pressure loss.

The increased membrane area and the lower pressure loss results in a higher efficiency.

The membrane is slipped over the polypropylene body and is fixed by stainless steel 1-ear clamps at the end.

The high quality membrane is available in EPDM.

The body of the OXYFLEX® - MS96 is flooded in the tank to reduce buoyancy.

As a standard, the OXYFLEX® - MS96 is available in 3 lengths:

OXYFLEX® - MS96 1.0 – with a length of 2 x 500mm

OXYFLEX® - MS96 1.5 – with a length of 2 x 750mm

OXYFLEX® - MS96 2.0 – with a length of 2 x 1000mm

Divergent lengths and special implementation on request possible.

In comparison to standard membrane tube diffuser the OXYFLEX® - MS96 is characterised by the following superior features:

- ➔ higher efficiency
- ➔ lower pressure loss
- ➔ higher operational reliability
- ➔ possible installation on stainless steel and/or plastic pipes, both round and square pipes
- ➔ availability in different lengths
- ➔ insusceptibility to fouling

The OXYFLEX® - MS96 membrane tube diffuser is able to cover a very broad operating range of up to 20 m³_N /h per meter dependent on chosen efficiency and purpose. With the fine-bubble design, specific oxygen transfer rates in pure water of more than 27 g O₂/(m³_N x m) can be achieved by an area-covering layout and appropriate water depths.

The diffuser is a high efficient aeration element, which is predominantly used for the oxygen supply of biological waste water treatment plants.

Of course, OXYFLEX® - MS96 can also be operated in intermittent mode.

As an option to fine-bubble aeration, the membrane can also be manufactured for a coarse-bubble version (up to 30 m³_N /h per meter).

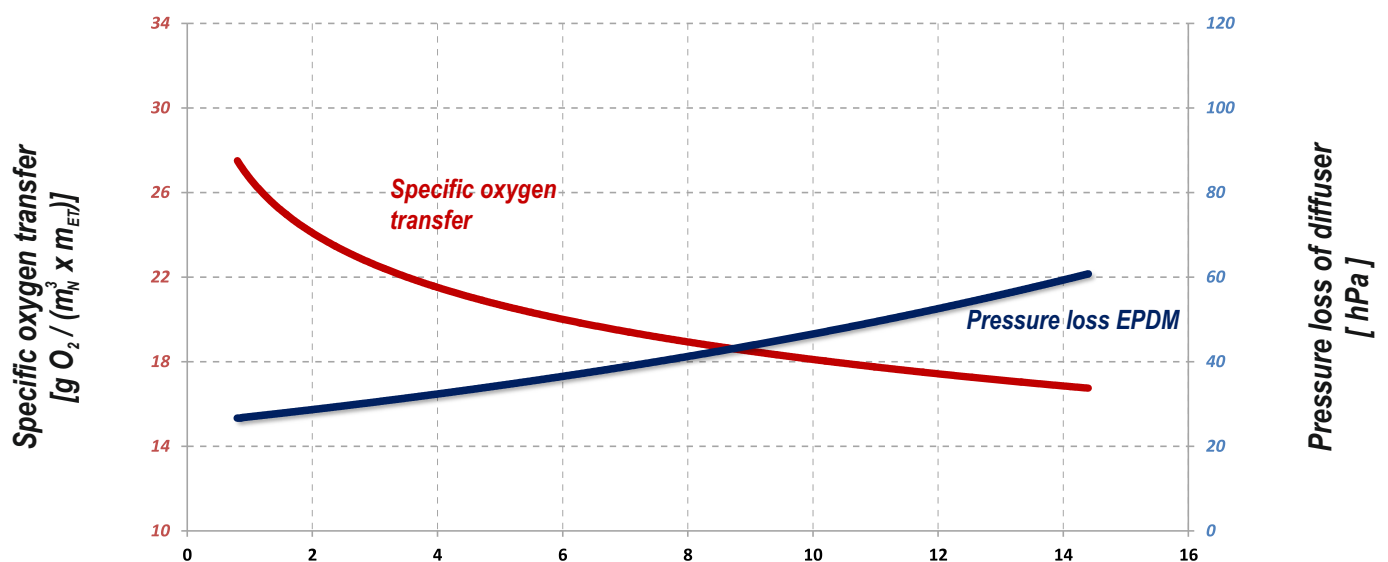
For selection of a suitable aeration system, the essential performance is an important criteria besides other technical reasons.

The membranes are perforated individually and specifically for each project in order to achieve the perfect oxygen transfer for all requirements.

The membrane tube diffuser OXYFLEX® - MS96 is usually operated between 2 – 12 m³/h per meter length. This offers a reasonable compromise between investment and operating costs and flow range.

The following diagram shows the example of a result of an oxygen transfer test. The values were measured in a square tank with a water depth of 4.0 m, a diffuser blow-in depth of 3.8 m and coverage of 20%.

**Specific oxygen transfer and pressure loss of the
OXYFLEX® - MS96 membrane tube diffuser**



**Specific airload of OXYFLEX® - MS96 Membrane-Tube-Diffuser
[m³ /h per m diffuser length]**

These values cannot be transferred to other plants. The results that are shown here depend on several influencing factors, such as the tank shape, blow-in depth, coverage or a separate recirculation due to additional mixers.

Supratec will be pleased to prepare a technical data sheet for each individual application for you on request.

The diagram cannot be used in order to derive warranty claims of any kind.

AIR-PULSING: mixing without a mixer

The option of the intermittent operating mode means that, in a combined tank with alternating nitrification and denitrification phases and for a sufficient coverage by OXYFLEX® membrane diffusers, the use of a mixer may be not necessary ("Air-Pulsing" process).

Any sedimentation of the activated sludge during the denitrification phase is prevented by short-term aeration intervals. The required aeration intervals are individually adapted to the respective plant with regard to its specific conditions such as the sludge index of the waste water. The aeration time is up to 20 seconds and the process is repeated approximately every 10 to 20 minutes depending on the plant type.

MAINTENANCE

The OXYFLEX® - MS96 membrane tube diffuser is a low-maintenance system and is partially self-cleaning due to the different specific air loads during the normal operating cycle. Any deposits are removed by short-term load-dependent changes of the membrane extension. This also prevents any accumulation of biological growth. If the normal operating mode is insufficient for cleaning, we recommend that an additional maintenance cycle is introduced at regular intervals. This maintenance cycle depends on the project and can either include a short-term maintenance load or short-term pressure relief with subsequent quick restart up to full-load operation.

This maintenance cycle is also used for removing deposits after longer periods of inactivity and long-term operation with low specific loads.

MONITORING

The bubble pattern and the pressure loss should be checked and documented at regular intervals under similar operating conditions (such as water level and air quantity). The pressure loss development in the load-dependent, seasonal comparison makes it possible to evaluate the condition of the container objectively.

ACID DOSING

For plants, for which limescale deposits are to be expected, we recommend that these plants are cleaned with diluted acid (75-85% formic acid for EPDM membranes) at regular intervals. The diluted acid is dosed into the compressed air if required. Our experience shows that these activities will reduce the membranes' pressure loss and extend their service life. For this purpose, we offer a dosing station for perfectly dosed cleaning.

Please contact Supratec for further information about acid dosing.

Variety of installation options

The OXYFLEX® - MS96 membrane tube diffuser is suitable for installation on stainless steel pipes and plastic pipes and can therefore be used easily for all existing and new plants. (Clamp saddles and adapters are available for different pipe dimensions.)

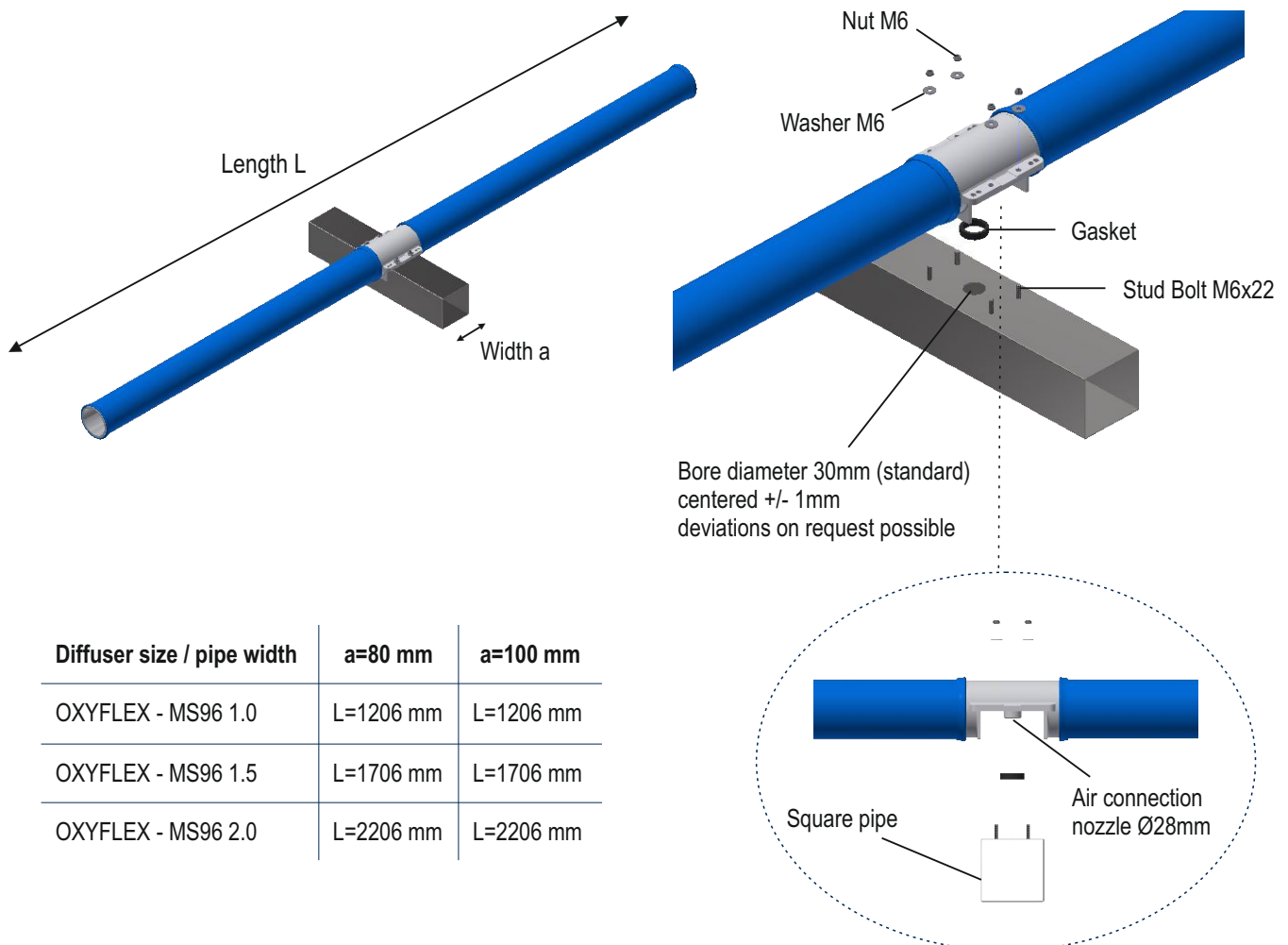
Due to the large variety of installation options for round and square pipes, the OXYFLEX® - MS96 membrane tube diffuser allows also the easy upgrading and efficiency increase of existing aeration systems while maintaining existing pipelines and minimising costs.

Illustration

Materials:

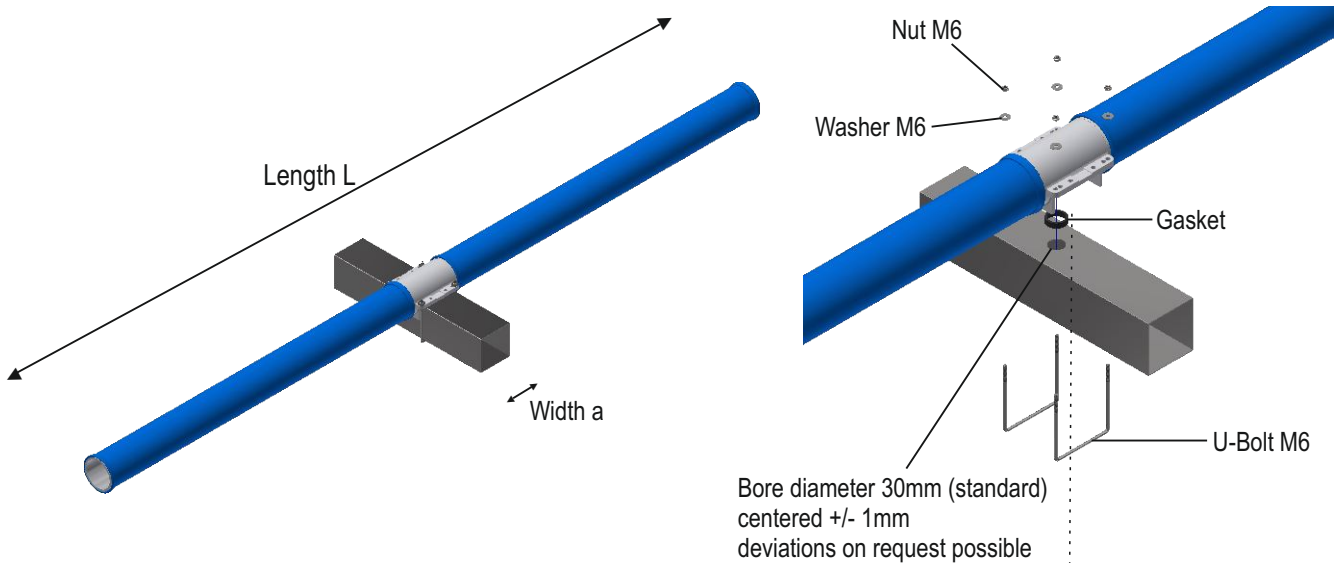
| | |
|----------------|--------------------|
| Diffuser body: | Polypropylene (PP) |
| Membrane: | EPDM |
| Seals: | EPDM |
| 1-ear clip: | AISI304 (Standard) |

Installation on square pipes with stud bolts

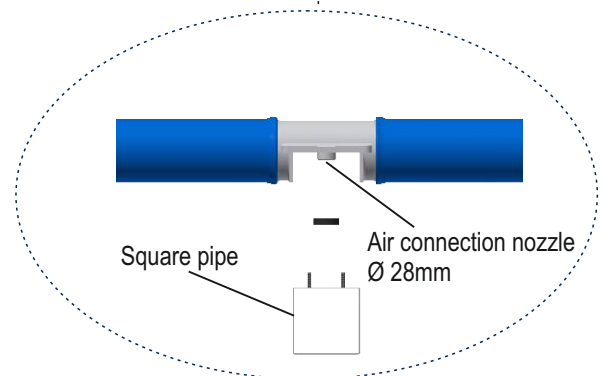


| Diffuser size / pipe width | a=80 mm | a=100 mm |
|----------------------------|-----------|-----------|
| OXYFLEX - MS96 1.0 | L=1206 mm | L=1206 mm |
| OXYFLEX - MS96 1.5 | L=1706 mm | L=1706 mm |
| OXYFLEX - MS96 2.0 | L=2206 mm | L=2206 mm |

Installation on square pipes with U-Bolts

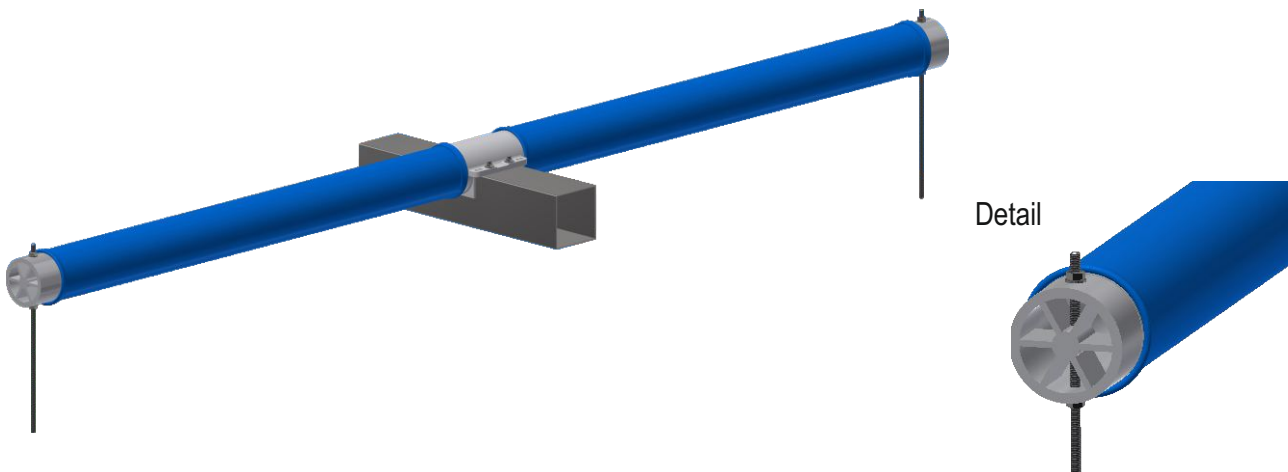


| Diffuser size / pipe width | a=80 mm | a=100 mm |
|----------------------------|-----------|-----------|
| OXYFLEX - MS96 1.0 | L=1206 mm | L=1206 mm |
| OXYFLEX - MS96 1.5 | L=1706 mm | L=1706 mm |
| OXYFLEX - MS96 2.0 | L=2206 mm | L=2206 mm |

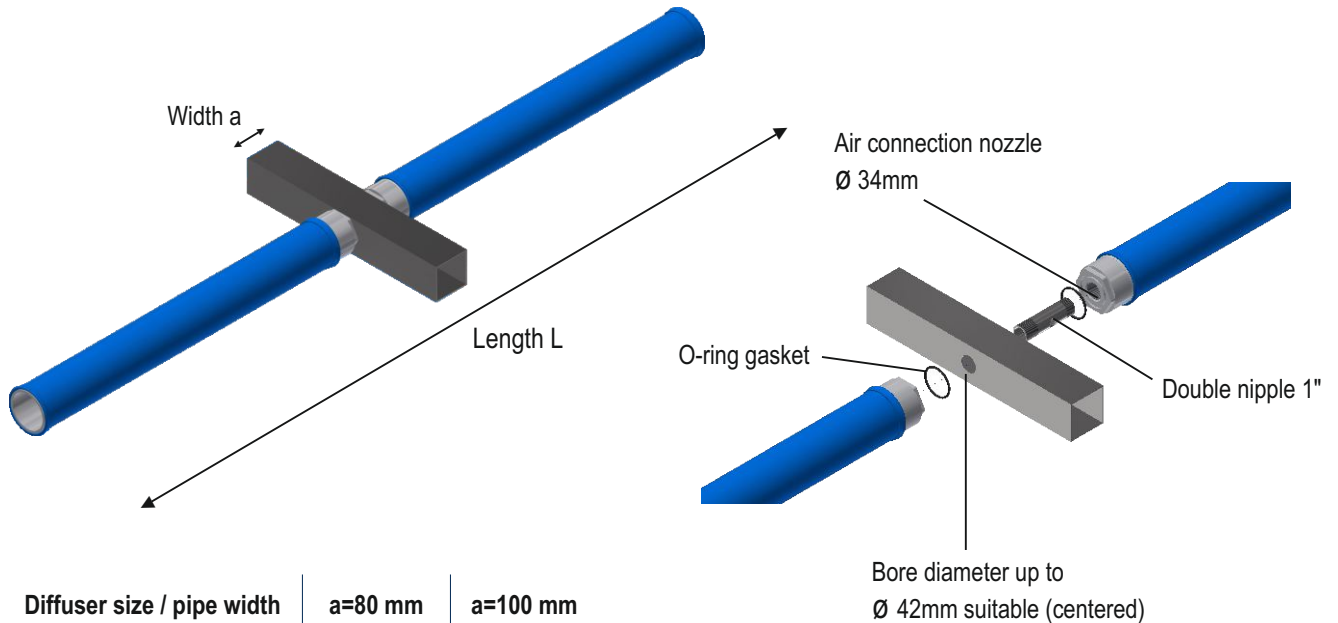


Installation with additional side brackets near the mixer

The optional side brackets allow an area-wide coverage irrespective of the installation type (round or square distribution pipe) near the mixer.

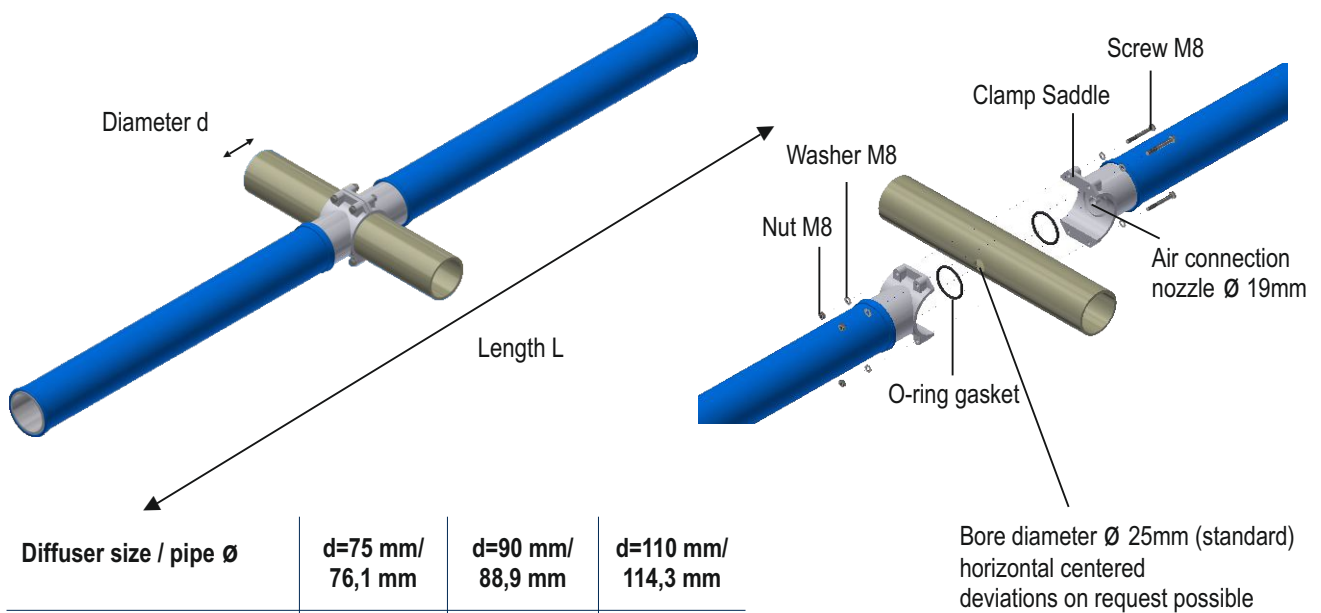


Installation on square pipes with clamp saddle



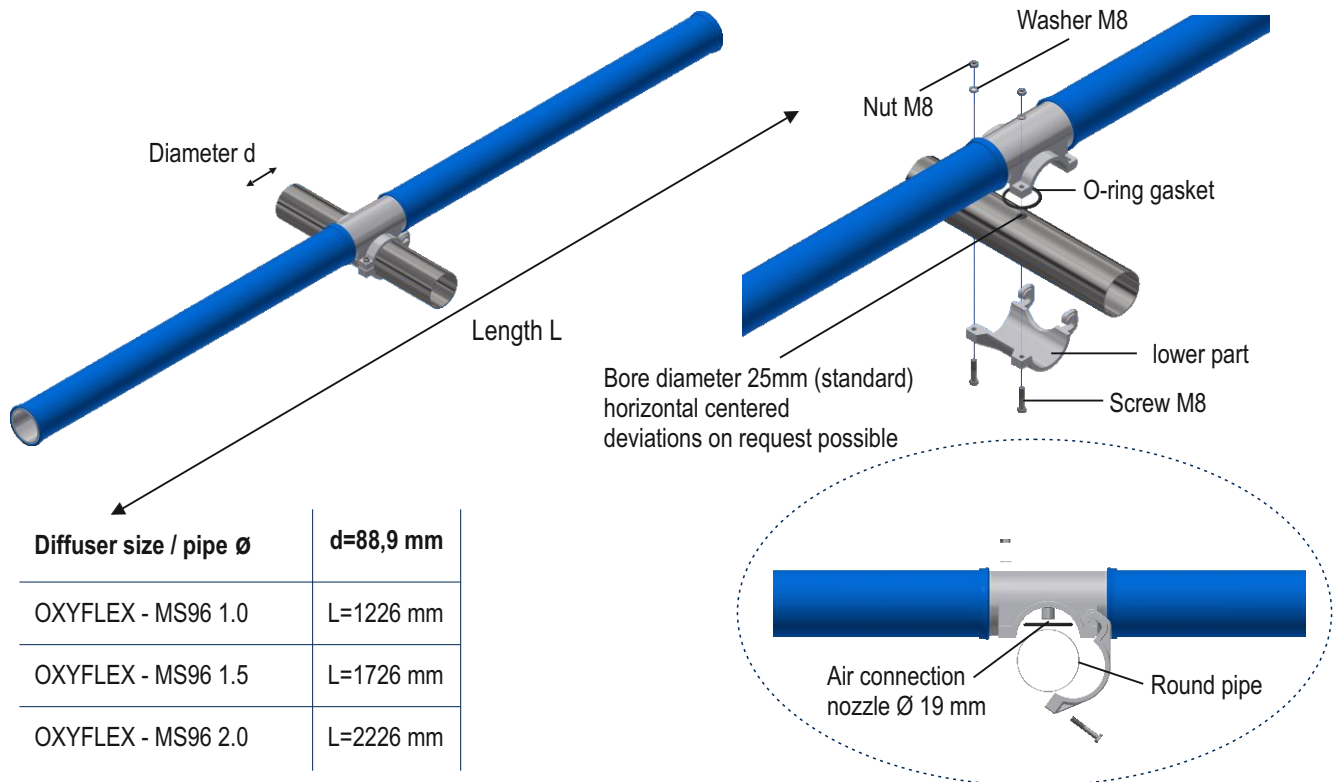
| Diffuser size / pipe width | a=80 mm | a=100 mm |
|----------------------------|-----------|-----------|
| OXYFLEX - MS96 1.0 | L=1245 mm | L=1265 mm |
| OXYFLEX - MS96 1.5 | L=1745 mm | L=1765 mm |
| OXYFLEX - MS96 2.0 | L=2245 mm | L=2265 mm |

Installation on round pipes with clamp saddle



| Diffuser size / pipe Ø | d=75 mm/ 76,1 mm | d=90 mm/ 88,9 mm | d=110 mm/ 114,3 mm |
|------------------------|---------------------|---------------------|-----------------------|
| OXYFLEX - MS96 1.0 | L=1242 mm | L=1258 mm | L=1276 mm |
| OXYFLEX - MS96 1.5 | L=1742 mm | L=1758 mm | L=1776 mm |
| OXYFLEX - MS96 2.0 | L=2242 mm | L=2258 mm | L=2276 mm |

Installation on round pipes with clamp saddle



GENERAL INFORMATION

Supratec Gesellschaft für Umwelt- und Verfahrenstechnik mbH has more than 40 years of experience with aeration technology and manufactures state-of-the-art, highly efficient aeration systems. These products are predominantly used for providing the oxygen supply for biological waste water treatment processes but can also be used for the aeration of liquids of all kinds.

Possible areas of application for Supratec diffusers are:

- ➔ communal waste water treatment plants
- ➔ industrial waste water treatment plants
- ➔ special technical processes such as "stripping" of gases, etc.

We have the competence and wealth of experience in order to consult and support you with the planning, implementation and operation of your projects. We will also like to carry out the installation of our products for you if required.



Our QMS is certified in
compliance with
DIN ISO 9001