AQUADISC

TECHNICAL SPECIFICATIONS

INSTALLATION, MAINTENANCE

STARTING UP, AND WARRANTIES

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AQUADISC TECHNICAL SPECIFICATIONS

1) Use:

The fine bubble diffuser AQUADISC has been developed for the aeration and oxygenation of activated sludge in municipal and industrial WWTP, for aeration of sand separators and in other various applications as the increase of the oxygen concentration of lakes and fish farming ponds.

2) Technical data:

• Usual air flow:	6 to 8 Nm^3/h/diffuser
• Maxi air flow:	12 Nm^3/h/diffuser (punctually)
• Active surface:	0,068 m^2
• Bubbles dimension:	1 to 3 mm
• Maxi Air temperature:	110 °C
• Weight:	0,750 kg
• Diameter	305 mm

3) Materials:

The AQUADISC diffuser consists of three separated parts:

1. The diffuser's support base
2. The membrane
3. The ring

1. The diffuser's support base is made of moulded polypropylene and is equipped in its central part of a chimney filing the office of air spray pipe. This pipe has been designed to make uniform the air's repartition on the membrane, to minimise the head loss and to preserve the diffuser's oxygenation capacity. The diffuser's base is equipped with a 3/4" threading which makes the tightness without any other device.

2. The diffuser's upper part is composed of an EPDM membrane regularly perforated by 8000 micro-holes. It covers the diffuser's support and is integral with it by a ring in PP. Extensive studies have enabled to optimise the membrane's characteristics (flexibility, thickness, piercing, shape and material). They have been led to minimise the head losses and maximise the fine bubble diffuser's oxygenation capacity.
3. The ring made of PP holds the membrane in position.

4) Assembling:

The diffusers shall be installed after the civil works completion. The assembly shall be made inside –or near- the basin to be equipped, and be considered as one of the last interventions to be made in the Civil work, in order to avoid any equipment handling or object drop that could damage them. The bottom of the basin shall be clean (no working waste) and free of water.
The assembling area approaches, the crane area (if necessary), and a stocking area shall be available, in order to unload and assemble the equipment at the nearest of the installation zone in the basin.

1)- The fine bubble diffuser AQUADISC can be installed on all circular pipe thanks to retailer's load tap clip by manual blocking only.
No other blocking tool (glue, seal or grease) is necessary to make the diffuser's tightness.

2)- The AQUADISC diffuser can be installed on galvanised or stainless steel frameworks to be hoisted with a crane also. It is only screwed on a nipple welded on the galvanised or stainless steel frame.

3)- The AQUADISC diffuser can be sold per unit and installed in accordance with the Client's need and the existing plant. In that case, our responsibility is engaged until the delivery of the diffusers. We will warranty only the visible defects

5) Hoisting:

The hoisting of the framework can be made by two different ways, according the type of basin where the framework will be placed

Hoisting by slings:

The framework is equipped with two slings. Their lower end are fixed to the framework, and the upper end is attached to a support fixed on the basin wall. The framework is fed by a pipe, and is set on adjustable supports. Their number is function of the length of the framework. It is possible to adjust the position of the framework in the horizontal plane, and correct the possible levelness defects of the bottom of the basin.

In that case, the framework is sliding between two lateral guides. These parts have two purposes: the first one is to stop any lateral movement of the framework if the mixing is very high. The second one is to guide the framework at the end of the descent, in the correct position.

Crane operation:

1. Turn off the air inlet of the framework
2. Disconnect the feeding tube from the central inlet pipe
3. Unhook the slings from their upper support
4. Hang up the slings to the crane ring, or to the crossbar (if available)
5. Lift up the framework, and place it on a flat surface.
6. Make all the scheduled maintenance operations, being careful not to walk on the framework and damage the diffusers.
7. When all the maintenance has been performed, position carefully the framework back in the basin
8. Keep the feeding pipe close to the main pipe. This can be made by one people, using a rope
9. Once the framework touches the guides at the bottom of the basin, bring it closer to the main pipe, if necessary.
10. Hang off the slings from the crane, and hook them on their support.

Rigid hoisting:

When the framework is installed in a channel, both ends are set with pipes. The first one is used for the air feeding, the second one is a guide used to lift up the framework. Those two pipes have hooks at their lower part, to catch the assembly. The framework is also equipped with lateral guides to avoid any lateral move, and insure the right positioning. Visual marks are provided to help the operations.

- Turn off the air inlet of the framework
- Disconnect the feeding tube from the central inlet pipe
- Hook the crossbar or the slings on the ring at the upper part of the pipes
- Gently lift up the assembly
- Place the framework on a flat surface
- Make all the scheduled maintenance operations, being careful not to walk on the framework and damage the diffusers.
- When all the maintenance has been performed, position carefully the framework back in the basin The axis of the framework is given by the visual mark on the opposite wall and by the feeding pipe.
- Hang off the crossbar (or the slings) from the rings
- Tighten the air feeding pipes
- Open the air gate

6) Condensates draining:

The framework is equipped with a condensate drain, which can be used at any moment. This drain consists of:

- A stainless steel pipe, a short flexible pressure resistant PVC junction,
- A stainless steel gate

The drain is positioned in an easy accessible place for the operator, in order to make the operation securely.
Considering the working of the aeration (working time and period), every framework should be drained once a week to evacuate the condensats. The draining time is very short, and lasts only a few seconds.

7) Starting up:

Once the frames set in position, it is a prime necessity to achieve the following operations before starting the diffusion:

- Check the tightening of all bolts and nuts
- Check the tightening and state of all the diffusers
- Fill up the basin with water, to 10 to 20 cm over the diffusers surface
- Close all the drain valves and open the air feeding valves.
- Start the blowers at ca 10 % of the nominal flow.
- Check that the all the diffusers are blowing, and that the air is evenly distributed
- Verify or replace the diffusers that would not work properly
- Fill up the basin
- Set the blowers at their nominal

8) Maintenance:

The AQUADISC diffuser is made of synthetic material, and gives an excellent resistance to a large range of chemicals. We would advise you to contact us for any advice.

A regular spreading of the bubbles at the surface of the basin shows a normal operation of the framework.

In particular effluents, enriched with carbonates, a mineral clogging of the membrane can appear. It is possible to prevent it by introducing formic acid in the suppressed air. (please contact us)

As a precaution, we recommend to lift up the framework every 12 months, and every 9 months in tanks, which contain grease.

- Check the tightening of bolts, nuts and disks
- Clean the membranes: brush the membranes with a soft brush. Usually, only an external brushing is enough. This action eliminates the organic build up, which degrades the oxygenation efficiency of the diffuser.
- Take off all the solids that may be built up on the frames

In the case of a fixed framework, it is recommended to empty the tanks every 12 to 18 months (every 9 months in case of a grease tank) in order to clean and verify the good state of the framework. Before filling up the tanks, it is necessary to control with bubble test in order to make sure that there is no leak left.

If any malfunction is seen during the working of the diffusers, it imperious to lift up the framework, and check all the diffusers. If any diffuser shows a defect, it has to be replaced, and all the other diffusers of the framework have to be cleaned in order to equalize the headlosses.

A little raise of the headloss of the diffuser is normal when time passes by. It does not affect the oxygenation efficiency.

If sludge penetrates the framework, it should be rinsed inside to eliminate the sludge.

The membranes should be protected from petroleum products, ie mineral oils and aromatic hydrocarbons which could degrade the membrane.

The suppressed air should be filtered to 99.5% removal of 2 microns particles to prevent clogging of the material.

For any technical questions, please contact us:

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209 rue de l'Université
75007 Paris
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9) Storage:

If the starting up is not made immediately after the installation, you must keep 10 to 20 cm of water above the diffusers.

10) Warranty:

The one year warranty is restricted to repair free of charge or replacement free of charge (as decided by the manufacturer or his representative) of parts recognised as defective, without any other service or compensation. Supply free of charge of spare parts is "ex-factory" from the manufacturer's plant, the manufacturer being entitled to request the return FOB to his plants of the parts replaced or to be replaced.

a) Start of the warranty:

The warranty starts on the date of the delivery voucher or, in the event of extended storage, the date of the availability voucher.
The terms of the warranty may have been negotiated when the order was placed. In this case, only the written clauses of the order explicitly accepted by our services are applicable.

b) Warranty conditions:

In order for the warranty to be effective on the equipment, certain conditions must comply with, i.e.:

- The installation of the diffusers must comply with the drawings contained in this booklet.
- Their maintenance must be performed in compliance with the instructions of this booklet.
- In all cases, a written request (mail, telex, fax) is required for our intervention

c) Restrictive clauses:

Repair, modification or replacement of parts during the warranty does not extend the warranty period on the equipment.

- The warranty is rendered null and void if the buyer undertakes repair or modification on his own initiative.

- In all cases, when handling of the frameworks requires hoisting gear, this gear must always be supplied to our crews by the customer. In the event we have to rent the hoisting gear ourselves, the cost will be refunded to us by the customer.

d) Various clauses:

No claims are receivable more than ten days after the reception of the equipment by the customer.

- The drawings or preliminary projects communicated to our customers remain our property and must be considered as confidential.
- The transfer of property of the goods sold will not become effective until the full agreed price has been paid (law n° 80335 dated May 12,1980)
- No works can be performed under warranty before the transfer of property.

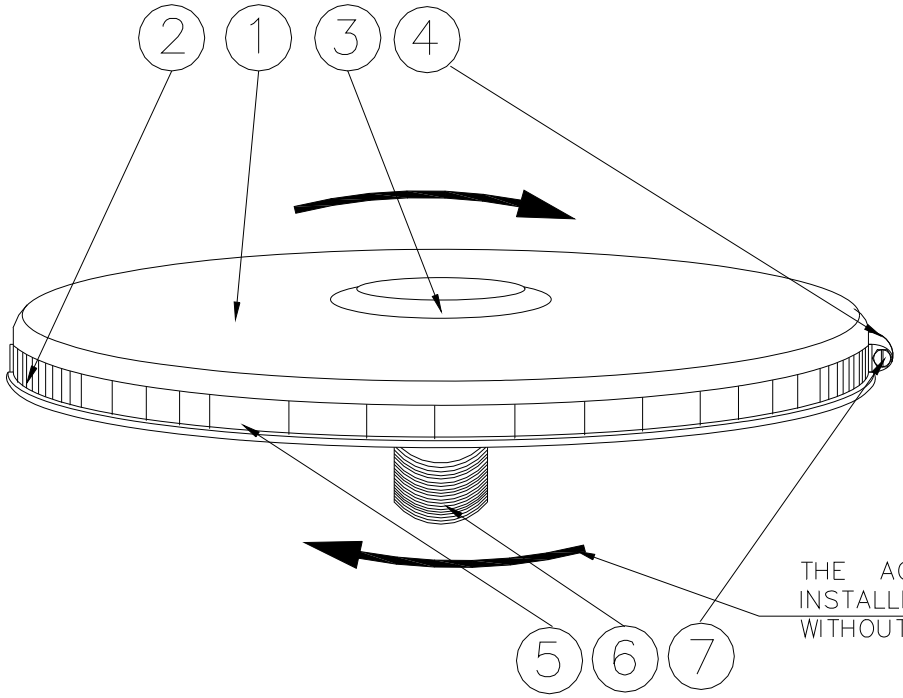
11) WARNING:

Weights, dimensions, efficiencies and other characteristics mentioned in this booklet are given only for information and without warranty

These data are mandatory only if our order acknowledgement refers to it

At any moment our equipments may be modified to improve their performances

N°	NAME	MATERIAL
1	MEMBRANE DISC	EPDM
2	STAINLESS STEEL CLAMP RING	INOX
3	NON-RETURN VALVE	EPDM
4	CLAMP SCREW CAP	INOX
5	DIFFUSEUR'S SUPPORT BASE	PP
6	3/4'' NPT THREADED NIPPLE	PP
7	CLAMP'S SCREW	INOX



THE AQUADISC DIFFUSEUR IS
INSTALLED BY MANUAL TIGHTENING
WITHOUT ANY TOOL

Ind	Date	Modifications
0		EMISSION ORIGINALE

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8 rue d'ABOUKIR
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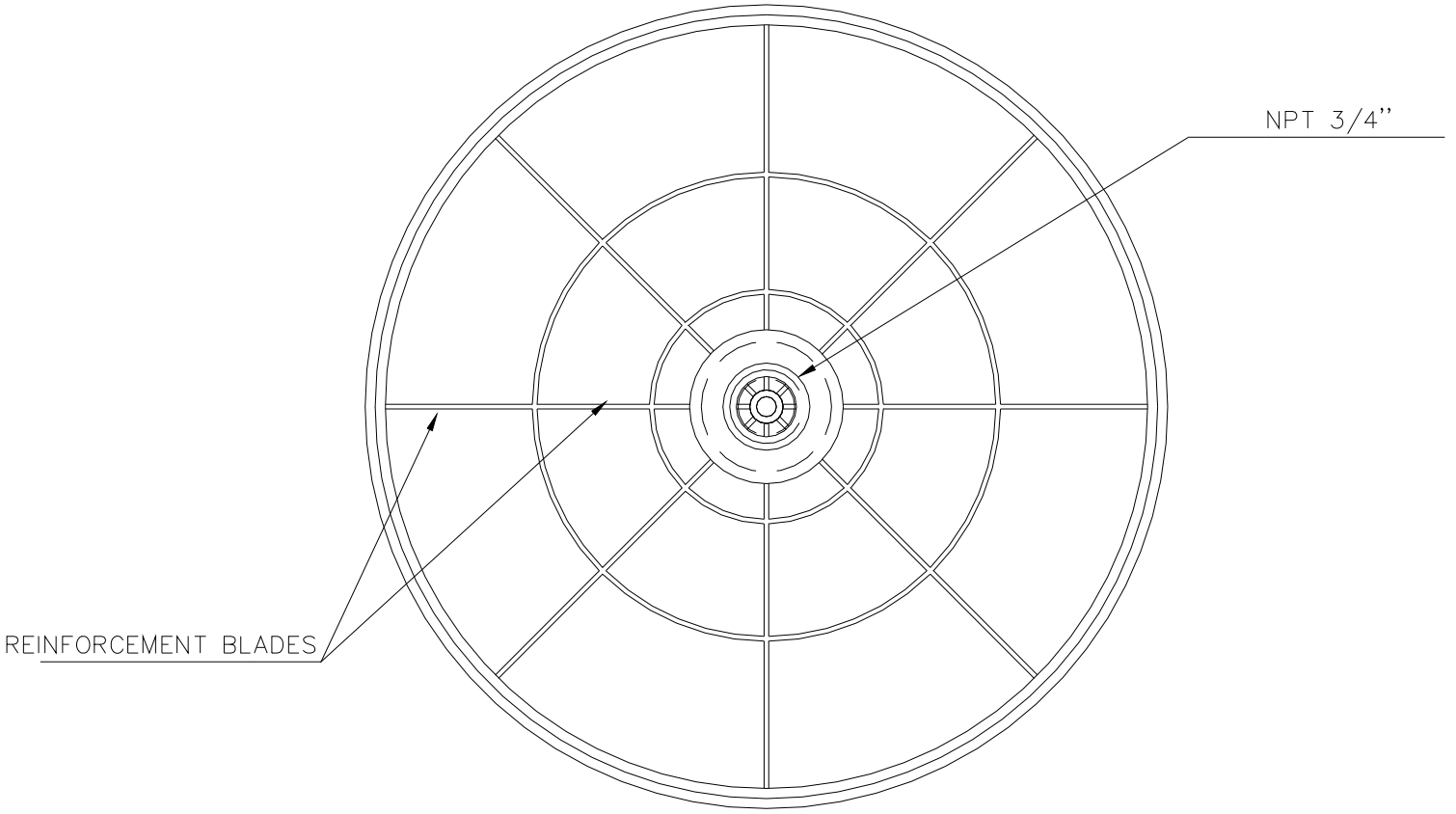
FINE BUBBLES DIFFUSER
AQUADISC TYPE

N° PI: SPECIF1	Date: 30.07.97	Ech: 1/2



Ind	Date	Modifications
0		EMISSION ORIGINALE

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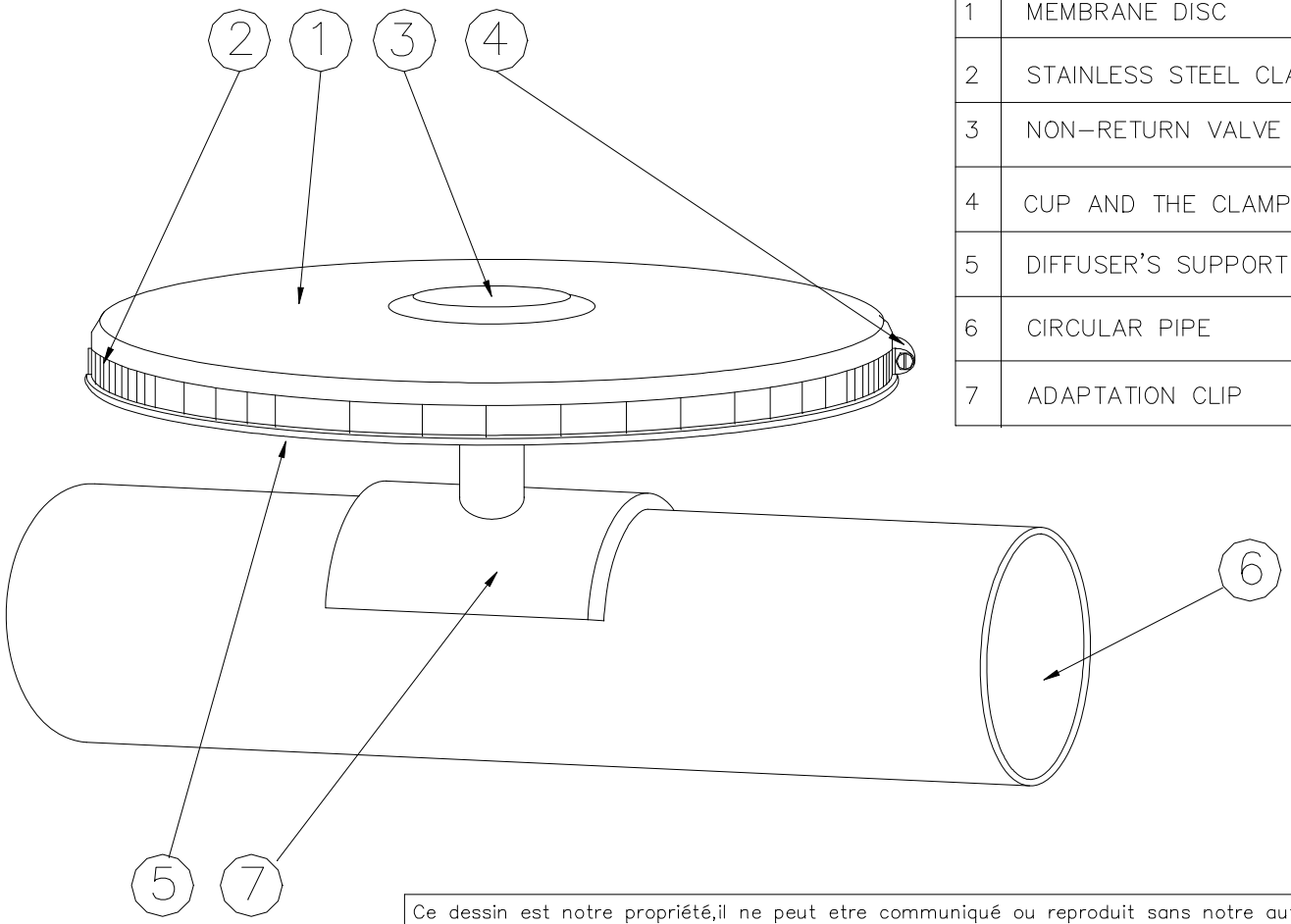
DIFFUSEUR FINES BULLES
AQUADISC TYPE

N° PI: SPECIF6	Date: 30.07.97	Ech: 1/2



N°	DESIGNATION	MATIERE
1	MEMBRANE DISC	EPDM
2	STAINLESS STEEL CLAMP	INOX
3	NON–RETURN VALVE	EPDM
4	CUP AND THE CLAMP'S SCREW	INOX
5	DIFFUSER'S SUPPORT BASE	PP
6	CIRCULAR PIPE	PVC
7	ADAPTATION CLIP	PVC

Ind	Date	Modifications
0		EMISSION ORIGINALE

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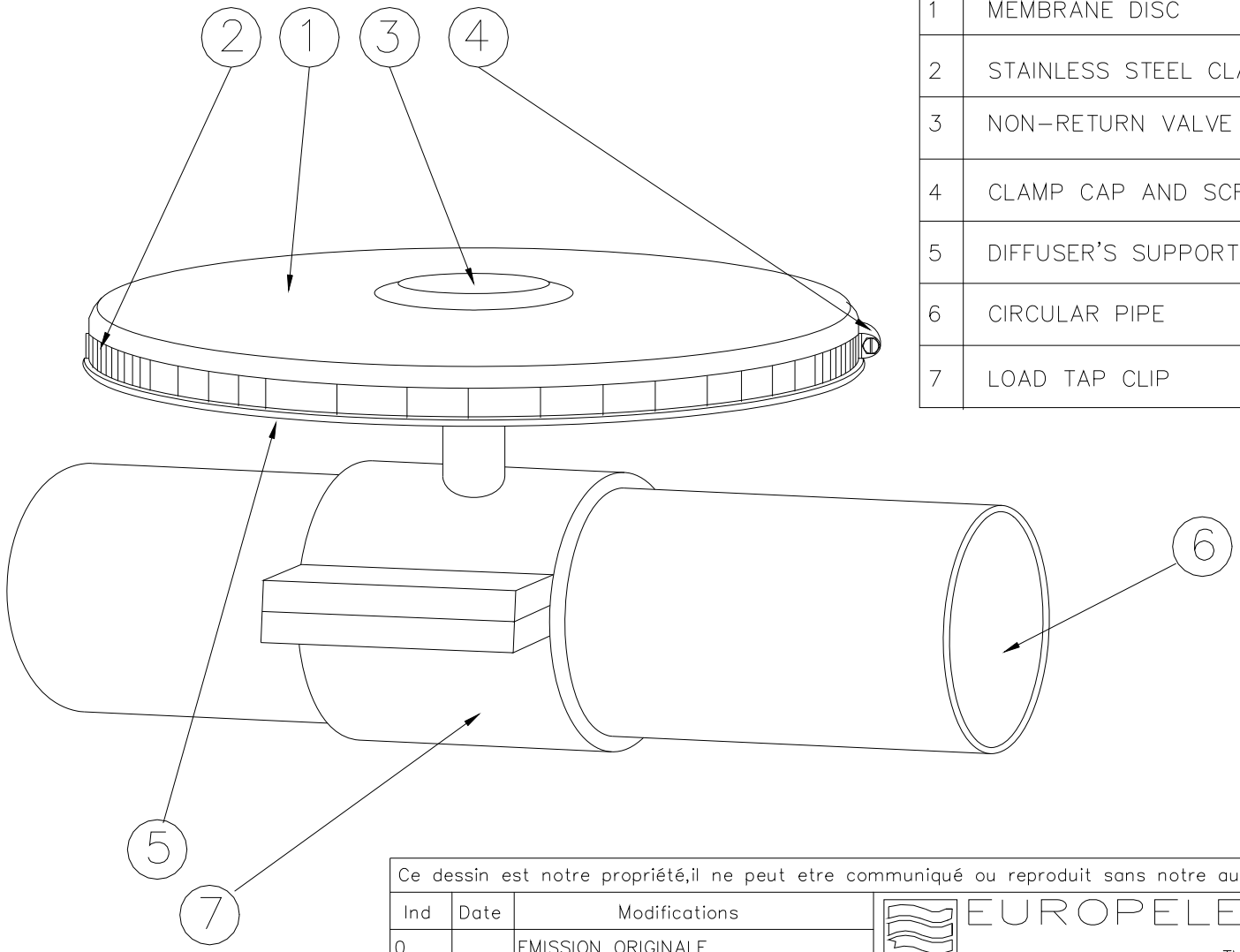
FINE BUBBLES DIFFUSER
AQUADISC TYPE

N° Pl:	Date:	Ech:
SPECIF7	09.01.01	1/2

El



N°	NAME	MATERIAL
1	MEMBRANE DISC	EPDM
2	STAINLESS STEEL CLAMP RING	SS
3	NON-RETURN VALVE	EPDM
4	CLAMP CAP AND SCREW	SS
5	DIFFUSER'S SUPPORT BASE	PP
6	CIRCULAR PIPE	PVC
7	LOAD TAP CLIP	PVC

Ind	Date	Modifications
0		EMISSION ORIGINALE
	31/10/01	legends

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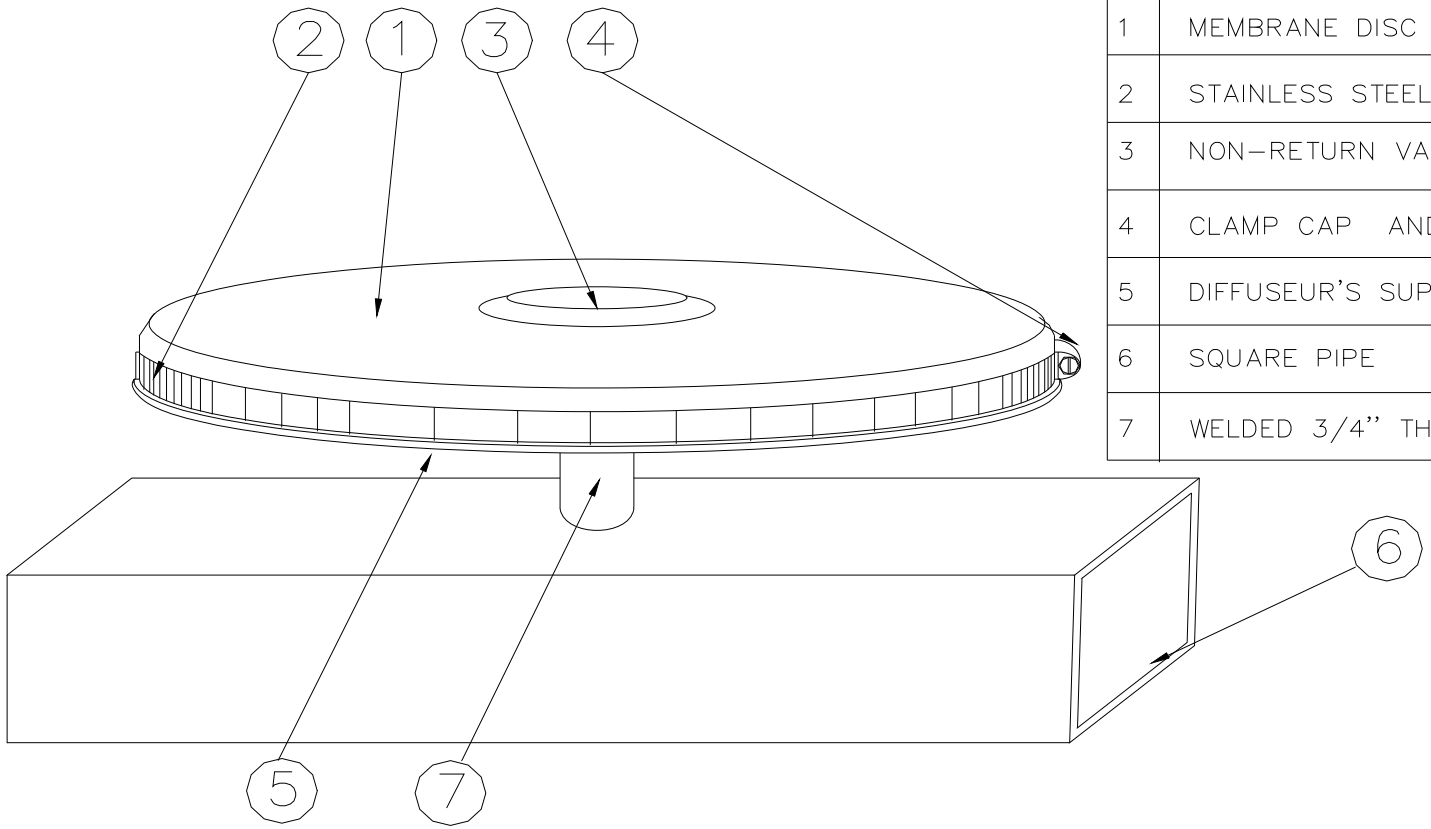
FINE BUBBLES DIFFUSER
AQUADISC TYPE

N° Pl: SPECIF2	Date: 30.07.97	Ech: 1/2



N°	NAME	MATERIAL
1	MEMBRANE DISC	EPDM
2	STAINLESS STEEL CLAMP	SS
3	NON-RETURN VALVE	EPDM
4	CLAMP CAP AND SCREW	SS
5	DIFFUSEUR'S SUPPORT BASE	PP
6	SQUARE PIPE	SS
7	WELDED 3/4'' THREADED NIPPLE	SS

Ind	Date	Modifications
0		EMISSION ORIGINALE

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FINE BUBBLES DIFFUSER
AQUADISC TYPE

N° Pl: SPECIF3	Date: 30.07.97	Ech: 1/2