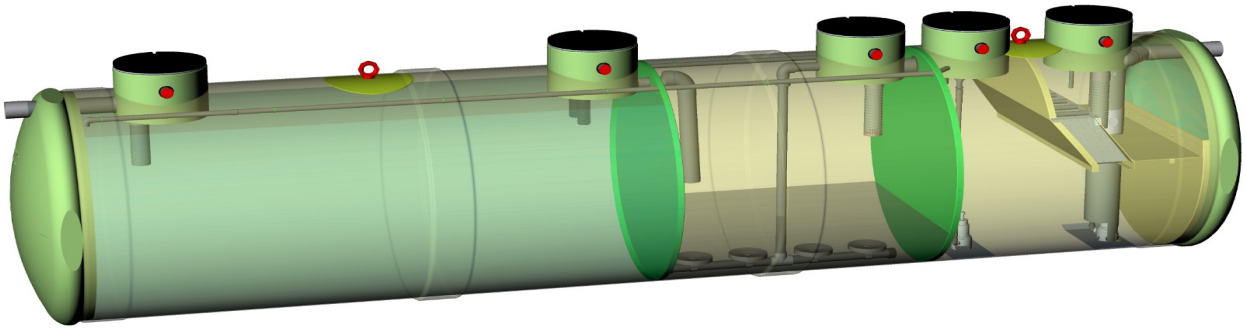
Redonnons le meilleur à la terre

SIMOP WASTEWATER TREATMENT PLANTS
BIOXYMOP MAX RANGE

51 to 980 People Equivalent (PE)

Primary decanter / Aeration tank / Clarifier



We thank you for your confidence and hope that your SIMOP micro-station gives you complete satisfaction.

Siège social : 10 rue Richedoux
50480 SAINTE-MÈRE-ÉGLISE

Tél. +33(0)2 33 95 88 00
Fax. +33(0)2 33 21 50 75

e-mail : simop@simop.fr
www.simop.fr

MANUFACTURING FRENCH

PRESENTATION SIMOP FRANCE

Specialist in water treatment since 1975, SIMOP designs, manufactures and markets environmental equipment.

A player in innovation and made in France, SIMOP works every day to clean up our water. The solutions offered are so varied and complete that they meet the needs of a home as well as the requirements of collective spaces, large agglomerations or important industrial sites.

Innovation

The experience gained in water purification has enabled SIMOP to diversify by offering

constantly developing new products for the treatment of rainwater, wastewater, etc

and for the evacuation of treated water (VRD).

The intensity of its research and development activities makes it possible for SIMOP's teams to constantly evolve its products and to offer increasingly reliable and sustainable solutions, with the aim of protecting the environment.

SIMOP has its own approved test base.

Manufacturing

SIMOP has an industrial production capacity and relies on different manufacturing processes:

- Rotational molding
- Filament winding
- Steel boilermaking

Expertise

Certified ISO 9001 and member of ATEP (union of players in the treatment of water on the plot) and of the association ADOPTA (Association for the operational development and promotion of alternative techniques in the field of rainwater) the company SIMOP , through the commitment of its teams, actively participates in working groups for the development of French and European standards.

Professions

SIMOP's field of expertise is broad.

Discover our solutions for :

- wastewater
- stormwater
- roads & networks
- safety environment storage
- subcontracting

Implantation

Today, the family business spreads its production over five production sites in France and abroad in order to ensure a high availability and a timely delivery.

SERENITY SIMOP FRANCE

Network of installers

Simop has selected installers throughout France who are trained and experienced in its equipment.

Contact us at www.simop.fr to obtain the details of the installer closest to you.

Commissioning

SIMOP offers on-site assistance for the commissioning of its approved non-collective sanitation systems, in order to guarantee the user optimal operation of the system.

Maintenance

We advise you to subscribe to a maintenance contract with a specialized company for the maintenance and upkeep of your water treatment solutions (microstations, compact filters, hydrocarbon separators...) The Assisteaux company can intervene on the whole French territory and is approved by SIMOP to ensure the upkeep and maintenance of its devices.

Guarantee

For even more peace of mind, we guarantee our tanks for 10 to 20 years. Electro-mechanical equipment is guaranteed for 1 year.

Warranties are valid subject to compliance with the installation conditions and the use of the product. The warranty period begins on the day of installation.

OUR ENVIRONMENTAL COMMITMENTS

Equipment for the environment

The essence of SIMOP is to create equipment that preserves the environment. SIMOP's products allow us to retain the waste from human activity, to clean up our water, to collect rainwater for reuse...
Our design office innovates every day to respond to environmental issues by imagining sustainable and passive solutions.

Recycling at all levels

Recycling is a central element of our growth process. Before producing, we first seek to reuse. This is how we created our Bionut compact filter based on hazelnut shells. Our filtering media comes from the food industry, which would consider the shells as waste, at Simop it becomes a real added value.
Most of our tanks are made of polyethylene. This material is very strong, corrosion resistant and durable. In addition, it is recyclable, so in our factories, the waste is recycled. At the end of its life, our PE tanks are recyclable.

Composting and savings

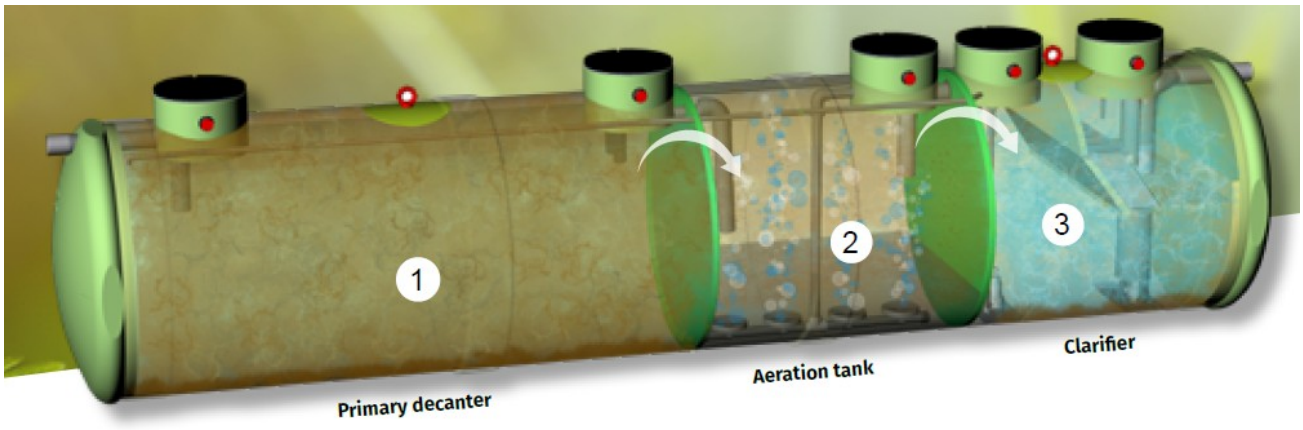
After having given a second life to shells discarded by the food industry, we value our filtering media at the end of their life through composting.
In collaboration with the urban community of Greater Villeneuvois, FNSA, and the company UNICOQUE, we have developed compost recipes to recover Bionut hazelnut shells at the end of their life in accordance with the NFU 44-095 standard.
We therefore respond to the law on the fight against waste and the circular economy (AGEC) of February 10, 2020, which provides for the establishment of an EPR (Extended Producer Responsibility) for building waste from January 1, 2022.
This recycling of Bionut hazelnut shells at the end of their life also has the effect of reducing treatment costs when replacing the filter media.

Table of Contents

Table of Contents

1 General information

1.1) Synthetic presentation of the purification concept:



SIMOP's micro-station is designed according to the MBBR (Moving Bed Biofilm Reactor) process, also known as fixed culture on a fluidized bed. Each Bioxymop-Max is composed of 3 compartments (primary settling tank, aeration tank and clarifier), distributed in 1 or more tanks depending on the model.

The purpose of this process is to eliminate organic pollution through the action of bacteria. The micro-organisms use the organic pollution as a source of energy to ensure bacterial growth. This development results in the formation of organic sludge that is easily settled. The clarified water is then treated, the pollution having been captured by the sludge.

The domestic wastewater is led to compartment n°1 to undergo a decantation of solid particles and a flotation of grease and light particles. The pre-treated effluent arrives in compartment n°2: the aeration tank. There, it undergoes a forced aeration; air is diffused in the form of fine bubbles in the effluent by EPDM membrane diffusers under the action of an air compressor. The purifying bacteria grow freely in the effluent.

After the aeration stage, the effluent passes through compartment n°3: the clarifier where it is decanted before being discharged to the outlet. The clarification compartment is equipped with 2 recirculation and extraction pumps which respectively maintain a constant sludge rate in the aeration tank and evacuate the excess sludge to the primary decanter where it will be stored.

1.2) Reference to standards used in construction for materials and equipment

The models of the "BIOXYMOP6346" range comply with the following regulations and standards:

- Order of July 21, 2015 on non-collective sanitation facilities receiving a gross organic pollution load greater than or equal to 1.2 kg BOD5/day.
- Orders of 08/24/2017 and 07/31/2020 amending the order of 07/21/2015.
- NF P 16-006 relating to the design of the sanitation system generally up to a hundred inhabitants equivalent, even if this standard is not restrictive.
- NF EN 12566-1 which specifies the requirements for prefabricated septic tanks and auxiliary equipment,
- NF EN 12566-2 which specifies the soil infiltration system,
- NF EN 12566-3+A2 Part 3: domestic wastewater treatment plants ready to use and/or assembled on site
- NF DTU 64.1, for the ventilation system,
- NF C 15-100 for electrical installations,
- NF P 98-331 and NF P 98-332 for earthworks.

1.3) Basis for sizing

The models of the "BIOXYMOP6346" range of stations are based on the following definition of the population equivalent:

- Hydraulic load 150 l/d/PE
- Organic load: 60 g BOD5/d/EH.

The primary decanter is sized to meet :

- Volume, Vs = 200 l/EH
- Climbing speed, Va less than or equal to 0.4m/h

The aeration basin is sized to meet :

- Mass loading, 0.082 kg BOD5 /kg MVS/d < Cm< 0.084 kg BOD5 /kg MVS/d
- Volume loading, Cv = 0.29 kg BOD_5 / m^3

The clarifier is sized to meet :

- Climbing speed, Va = 0,6 m/h

1.4) Guaranteed performance

Simop guarantees the minimum performances imposed by the modified decree of July 21, 2015, after a start-up period of the micro-station of about 1 month.

Parameters	Performance obtained *	Regulatory thresholds guaranteed SIMOP	Redhibitory concentration. Daily averages
BOD_5	Less than 35 mg/l	35 mg/l or 60 % in yield	70 mg/l
TSS	Less than 35 mg/l	50% in yield	400 mg/l
COD	Less than 125 mg/l	200 mg/l or 60 % in yield	85 mg/l

- These performances are obtained under normal conditions of use, care and maintenance in accordance with the prescriptions of this user's guide, and in the case of a biodegradable effluent with standard concentrations for a domestic effluent.

1.5) Composition of the treatment system

1.5.1 The lifting station (optional)

In case the water cannot enter the plant by gravity, Simop can offer a complete range of lifting stations made of Polyethylene (PE) or Glass Fiber Reinforced Polyester (GFRP). These stations can be equipped with one or more pumps controlled by a level sensor, a screen basket and a valve chamber.

1.5.2 The bar screen (optional)

It protects the downstream works against the arrival of solid waste that could damage or clog the pipes and electromechanical equipment.
SIMOP has a range of automatic bar screens.
The automatic bar screens are vertical inclined type with a 304L stainless steel frame ready to be installed in a channel. The effluent passes through a screen which retains the solids. The screenings are then automatically evacuated by an automatic shovel, and are deposited in a container.

1.5.3 Pre-treatment - Primary Decanter

The BIOXYMOP6346 range of plants are equipped with a primary decanter. Primary settling consists of the separation of liquid and solid elements by gravity. This process allows the retention of light particles and grease and the removal of approximately 50% of the TSS and 25% of the BOD5 and COD. The solids settle at the bottom of the primary decanter to form the primary sludge. The secondary sludge resulting from the biological treatment is also automatically returned and stored in this

structure..

1.5.4 The Aeration Basin

The pollution remaining in the wastewater, mainly in the form of dissolved organic matter, is brought into contact with the biomass in the aeration tank. The degradation of the pollution is then carried out aerobically (in the presence of oxygen). The bacteria will use the organic matter as a source of carbon necessary for their development.
It is necessary to maintain a sufficient concentration of biomass in the reactor and to provide enough oxygen to maintain a good treatment quality.
The oxygen necessary for the metabolism is brought by fine bubble air diffusers fed by a membrane compressor, controlled by a programmable clock.

1.5.5 The clarifier

The clarifier is a structure that allows the physical separation of the sludge from the pore water. The clarified water is directly discharged to the outlet while the sludge settles in the bottom of the tank.
The clarifier includes two pumps. A recirculation pump which sends part of the sludge back to the aeration basin in order to maintain a constant concentration of biomass in the reactor and an extraction pump which allows the sludge produced in excess to be evacuated towards the primary settling tank.

1.5.6 The metering canal (optional)

In order to allow the measurement of the flow that has passed through the station, the range can be equipped with a flowmeter at the outlet. The proposed flowmeter is a venturi type counting channel allowing the installation of an ultrasonic probe for the measurement of the water height and a recorder for the flow.

1.5.7 Phosphorus treatment unit (optional)

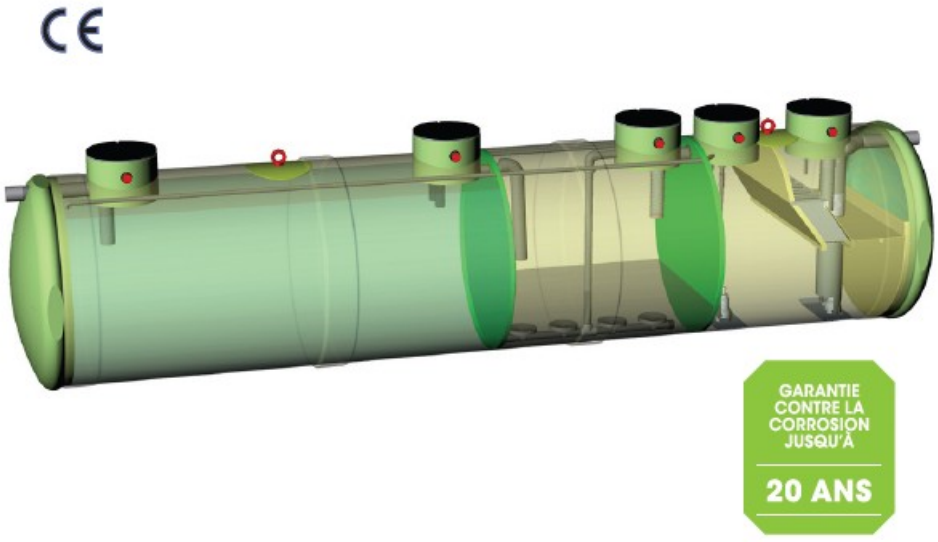
Eutrophication of lakes and rivers is a major problem linked to human activity. Eutrophication is an enrichment of nutrients (nitrogen and phosphorus), leading to an excessive development of algae, resulting in the degradation of river quality. In order to limit this development in sensitive areas, the purification yields on phosphorus are important. Simop offers an optional physico-chemical treatment unit. The goal is to eliminate phosphates by precipitation by adding ferric chloride $FeCl_3$.

2 Sizing

2.1) Determination and choice of units

PRESENTATION OF THE WHOLE RANGE		
	Capabilities	**Visuals**
MONOBLOC 1 single tank for the 3 compartments	60-80-100-130-200-250	
2 TANKS IN SERIES 1 tank for the particulate settling + 1 Clarification tank (aeration tank + clarifier)	160-200-250-300-360-420-490	
2 monoblocks stations in parallel 2 monoblocks in parallel	400 and 500	
2 parallel sets of 2 tanks in series 2 parallel sets of 2 tanks in series	320-400-500-600-720-840-980	
For systems > 980 PE, please contact us for a project study		

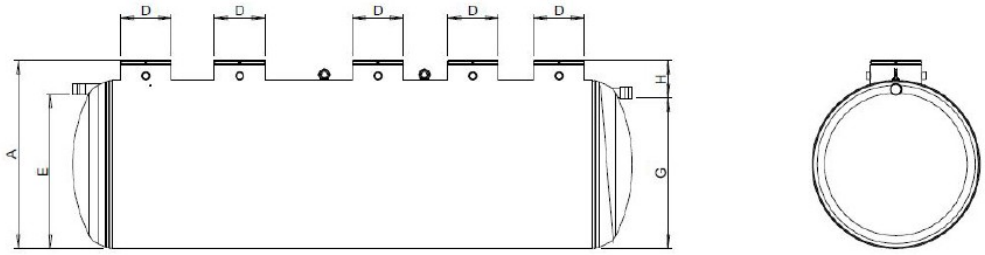
3 <u>Monobloc microstation (51 to 250 EH)</u>

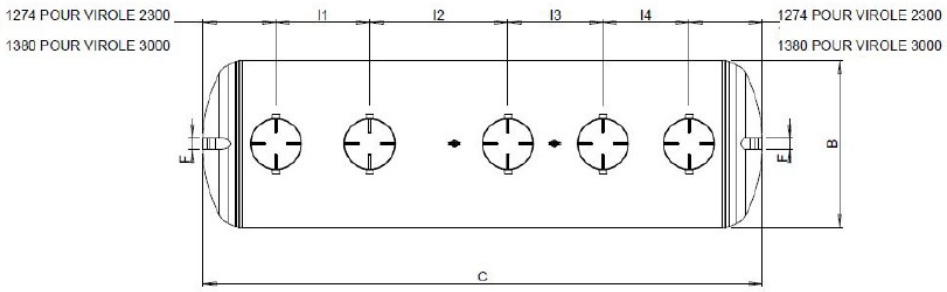


The entire treatment system consists of a single tank.

Reference	PE	Dimensions												
		A	ØB	C	ØD	Number of Man Holes (MH)	I1	I2	I3	I4	E	F	G	H	Empty weight (Kg)
	Mini/maxi	Maximum height	Ø Max. outer shell	Maximum length	Ø passage		Position of the Man Hole (MH)				INLET WATER LINE	Ø flow	OUTLET WATER LINE	Δ A/G	Kg
Shell Ø 2300															
BIOXYMOP6346/60-23	51 to 60	2584	2330	8694	600	5	1639	2396	967	1150	2104	160	2054	530	1854
BIOXYMOP6346/80-23	61 to 80			10710			2856	3195							2270
BIOXYMOP6346/100-23	81 to 100			12545			3893	3993							2537
BIOXYMOP6346/130-23	101 to 130			16095			5585	5191	1577	1200					3402
Shell Ø 3000															
BIOXYMOP6346/200-30	161 to 200	3294	3040	15182	600	5	4940	4705	1422	1356	2808	160	2758	536	5128
BIOXYMOP6346/250-30	201 to 250		3040	18556			6596	5880	2065	1356					6125

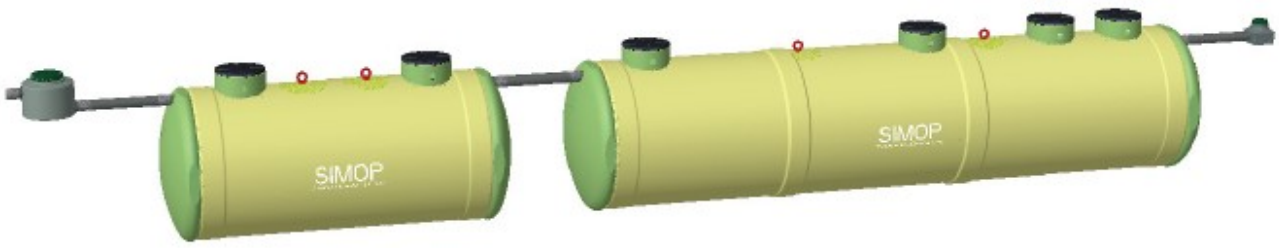
	Capacities							Lifting distance
	Primary decanter compartment		Aeration basin compartment		Clarifier compartment			
	Volume m³	Mirror surface m³	Volume m³	Mirror surface m³	Volume m³	Storage m³	Mirror surface m³	
Shell Ø 2300								
BIOXYMOP6346/60-23	12.77	4.61	9.36	3.45	9.41	5	16.4	4550
BIOXYMOP6346/80-23	17.13	6.22	12.48	4.6				5900
BIOXYMOP6346/100-23	21.57	7.84	15.6	5.75				2000
BIOXYMOP6346/130-23	28.17	10.28	20.28	7.47	12	6.5	19.13	
Shell Ø 3000								
BIOXYMOP6346/200-30	44.19	12.36	31.2	8.87	18.4	10	22.52	2000
BIOXYMOP6346/250-30	55.17	15.49	39	11.09	22.67	12.5		





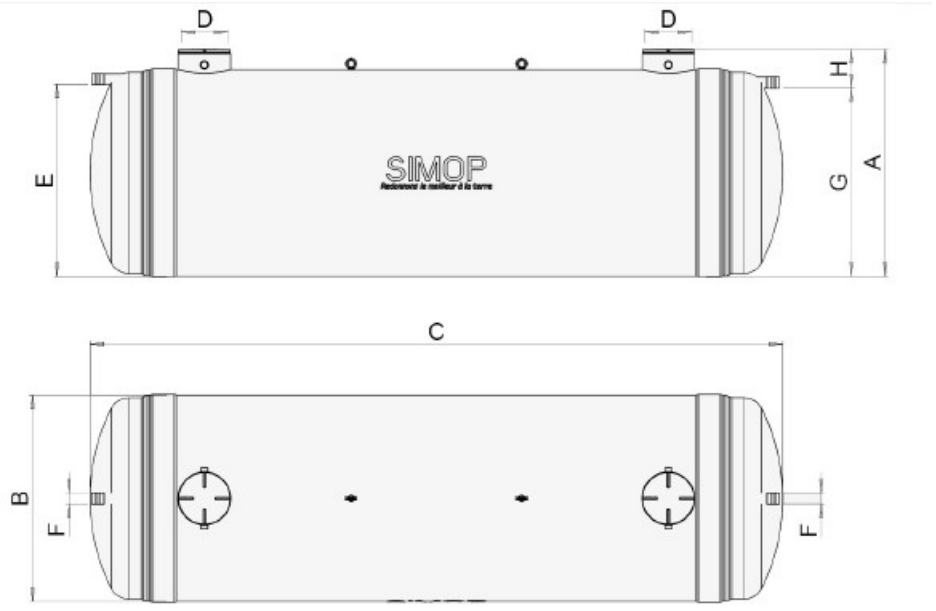
3.1.1 Microstation with 2 tanks in series (131 to 490 EH)

The treatment process is composed of 2 dependent tanks: 1 primary settling tank (DP3/6321/35 to 107) and a second tank composed of an aeration tank with clarifier (BACLA6346/160 to 490).



Dimensional characteristics of the primary decanters DP3/6321/35 to 107

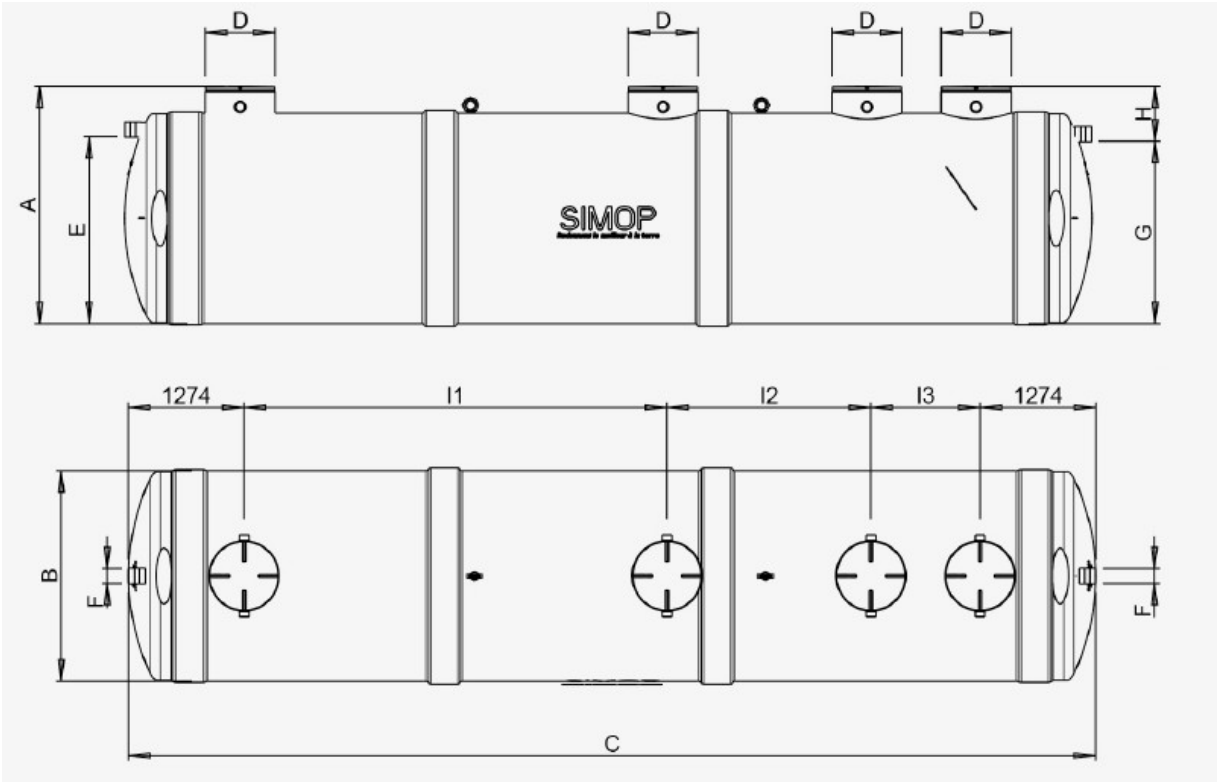
Reference Primary settling tank	PE	A	ØB	C	ØD	Number of MH	E	ØF	G	H	Primary decanter compartment		Weight
	Mini/maxi	Maximum height	Ø Shell	Maximum decanter length	Ø MH		INLET WATER LINE	Ø flow	OUTLET WATER LINE		Volume m³	S. to mirror m³	Kg
Shell Ø 2300													
DP3/6321/35-23-2	131 to 160	2584	2314	9222	600	2	2110	160	2060	550	34.41	12.48	1228
DP3/6321/44-23-2	161 to 200			11782							43.21	15.71	1610
DP3/6321/55-23-2	201 to 250			14342							54.23	21.47	1991
Shell Ø 3000													
DP3/6321/66-30	251 to 300	3320	3024	10159	600	2	2808	160	2758	562	66.6	18.54	2452
DP3/6321/79-30	301 to 360			12147							79.79	22.29	2912
DP3/6321/92-30	361 to 420			14141							92.98	26.04	3373
DP3/6321/107-30	421 to 490			16456							108.37	30.42	3908



Dimensional characteristics of BACLA6346/160 to 490

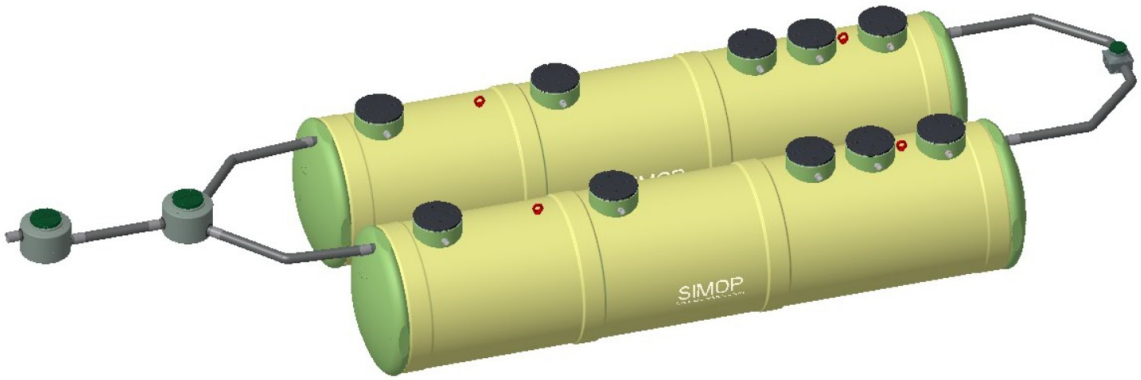
Reference	PE	Dimensions											
		A	ØB	C	ØD	Number of Man Holes (MH)	I1	I2	I3	E	F	G	H
	Mini/maxi	Height	Ø Sleeve max. outer	Maximum length	Ø passage		Position of the Man Hole (MH)			INLET WATER LINE	Ø flow	OUTLET WATER LINE	Δ A/G
Shell Ø 2300													
BACLA6346/160-23	131 to 160	2584	2330	10639	600	4	4650	2242	1200	2054	160	2004	580
BACLA6346/200-23	161 to 200			13121			6246	3027	1300				
BACLA6346/250-23	201 to 250			16380			8705	3827	1300				
Shell Ø 3000													
BACLA6346/300-30	251 to 300	3294	3040	11447	600	4	5192	2010	1486	2758	160	2708	586
BACLA6346/360-30	301 to 360			13499			6585	2669	1486				
BACLA6346/420-30	361 to 420			15552			7980	3263	1550				
BACLA6346/490-30	421 to 490			17947			9607	3966	1615				

	Aeration basin compartment		Clarifier compartment			Lifting distance	Weight
	Volume m³	Mirror surface m³	Volume m³	Storage m³	Mirror surface m³		
Shell Ø 2300							
BACLA6346/160-23	24.55	9	14.59	8	19.13	3200	2650
BACLA6346/200-23	30.79	11.3	18.04	10	21.87	3600	3255
BACLA6346/250-23	38.59	14.8	22.01	12.5	24.6	4800	4003
Shell Ø 3000							
BACLA6346/300-30	46.8	12.44	23,43	15	27,3	3600	4501
BACLA6346/360-30	56.16	14.93	27,85	18	27,3	5000	5217
BACLA6346/420-30	65.51	17.41	32,27	21	30,71	5000	5900
BACLA6346/490-30	76.43	20.32	37,42	24.5	34,13	3500	6552



3.1.2 BIOXYMOP MAX with 2 monobloc filters in parallel (400 and 500 EH)

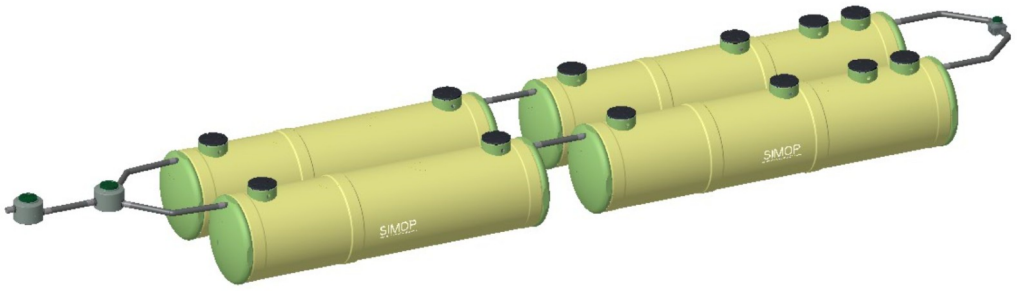
The incoming effluent must be distributed uniformly to the two tanks, via a lifting station for example or a distributor in the case of gravity flow.



Reference of unit	Detail
BIOXYMOP6346/400-30	2 x BIOXYMOP6346/200-30
BIOXYMOP6346/500-30	2 x BIOXYMOP6346/250-30

The dimensional characteristics of the monobloc tanks are available on the previous pages.

4 BIOXYMOP MAX with 2 parallel dies of 2 tanks in series (320 to 980 PE.)



Version reference	PE	Dimensions		Component		Option: extension shaft
		A	B	Decanter in m³	Aeration basin	
	Mini/Maxi	maximum height	Ø Outer shell max			
SHELL Ø 2300						
BIOXYMOP6346/400-23	321 to 400	2584	2330	2 x DP3/6321/44-23-2	2 x BACLA6346/200-23	RH602
BIOXYMOP6346/500-23	401 to 500	2584	2330	2 x DP3/6321/55-23-2	2 x BACLA6346/250-23	
SHELL Ø 3000						
BIOXYMOP6346/600-30	501 to 600	3294	3040	2 x DP3/6321/66-30	2 x BACLA6346/300-30	RH602
BIOXYMOP6346/720-30	601 to 720			2 x DP3/6321/79-30	2 x BACLA6346/360-30	
BIOXYMOP6346/840-30	721 to 840			2 x DP3/6321/92-30	2 x BACLA6346/420-30	
BIOXYMOP6346/980-30	841 to 980			2 x DP3/6321/107-30	2 x BACLA6346/490-30	

The dimensional characteristics of the monobloc tanks are available on the previous pages.

4.1) Basic data for 2300 mm diameter dies

4.1.1 Definition of population equivalent (PE)

The PE. is a unit of measurement for assessing the capacity of a wastewater treatment plant, based on the amount of pollution emitted per person per day.
The European directive of May 21, 1991 defines the population equivalent as the biodegradable organic load with a five-day biochemical oxygen demand (BOD5) of 60 grams of oxygen per day.
By extension the other parameters of wastewater pollution can be used to define it.
The treatment plants in the range are sized according to an incoming pollution load translated into PE
The table below defines the ratios used for each parameter:

basis for sizing		
Definition of a PE		
Daily feed	l/PE/d	150

BOD5	g/PE/d	60
COD		135
TSS		70
NTK		15
Pt		3,0

4.1.2 Organic and hydraulic loads

4.1.3 Pollution flows and concentration of raw water

4.1.4 Raw water hydraulic data

4.1.5 Target discharge levels (treated water)

Rejection level												
Concentration												
Model BIOXYMOP 6346-23		60 PE	80 PE	100 PE	130 PE	160 PE	200 PE	250 PE	300 PE	320 PE	400 PE	500 PE
BOD_5	mg/l	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0
COD		125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0
TSS		30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0
NTK		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

4.1.6 Layout

4.2) Primary decanter (PD) in diameter 2300 mm

4.2.1 Basis for sizing

In order to have storage volumes large enough to limit emptying and good settling of solids, the primary settling tank is sized to respect:

- Volume, Vs = 200 l/EH
- Climbing speed, Va < 0,4 m/h

5 Performance and discharge from the PD

5.1) Aeration tank (BA) in diameter 2300 mm

5.1.1 Basis for sizing

In order to optimally treat the organic load as well as the nitrogenous load, the plant has been sized to respect :

- Mass loading, 0.082 kg BOD5 /kg MVS/d < Cm < 0.084 kg BOD5 /kg MVS/d
- Volume loading, Cv = 0.29 kg BOD5 / m³

5.1.2 Nitrification

It is the process of transformation of Kjeldahl nitrogen (organic nitrogen + ammoniacal nitrogen $NH4_+$) into oxidized nitrogen (nitrate: $NO3^-$) which takes place in the aeration tank in the presence of oxygen and nitrifying bacteria.

Nitrogen to nitrify = NTK_{input} - $N_{assimilated}$ - $NTK_{discharge}$

It is commonly accepted that the nitrogen assimilated by bacteria during the degradation of organic pollution is 5% of the incoming BOD5.

5.1.3 Denitrification

This is the process of converting nitrate to nitrogen gas that takes place in the aeration tank in the absence of oxygen. In the absence of free oxygen, denitrifying bacteria use the oxidized form of nitrogen as a source of oxygen leading to the reduction of nitrate to nitrogen.
The origin of nitrates in water comes from the nitrification reaction.
Nitrogen to be denitrified = $NTK_{\text{à Nitrify}}$ -$N03_{\text{discharge}}$

5.1.4 Oxygen requirement

The oxygen requirement is defined by the following formula:
QO2 /d = a'Le + b'Sv + C' N - C'' c dN
Where

a'	oxygen required to oxidize 1kgDBO5
The	: BOD_5 to be degraded (yield is neglected)
b'	oxygen required for endogenous metabolism of 1kg MVS
Sv	mass of VSM in the biological reactor
N	nitrogen to Nitrifer
C'	conversion rate of amoniacal nitrogen to nitric nitrogen
C''	conversion rate of nitric nitrogen to gaseous nitrogen
c	o2 restitution efficiency during denitrification
dN	nitrogen to be denitrified

In order to allow denitrification, it is advisable to syncoperate the aeration as follows: 14 hours/day of aeration and 10 hours of shutdown. The operating times are adjustable and allow the process to cope with variations in pollution flows.

5.1.5 Hourly air flow in fine bubble aeration

The air flow rate for fine bubble insufflations is given by the following formula:
Qair =AH / (Rdt * CTG * Mass O2 * He * 0.001)
where:
AH: oxygen flow rate per hour
Rdt: the clear water yield per meter of immersion water of fine bubble diffusers.
CGT : the global coefficient of oxygen transfer in fine bubbles

He : the height of water above the diffusers
O2 mass: mass of oxygen present in the air under normal conditions.

2.3.6 Compressor selection

The choice of compressors was made in order to respect the theoretical hourly air flow.

5.1.6 Choice of fine bubble diffusers

The chosen diffusers are EPDM diffusers with a diameter of 34 cm and an operating range of 6.6 to 15.8$^{m3/h}$.

5.2) Clarifier in diameter 2300 mm

5.2.1 Basis for sizing

The clarifier is sized to meet :

- Climbing speed, Va = 0.6 m/h calculated on the peak flow

5.3) Biological sludge in diameter 2300 mm

5.3.1 Sludge production (PB)

There are several predictive models for determining the production of biological sludge. The model chosen is the CIRSEE AGHTM model. The production of biological sludge is given by the formula :
Sludge production = Smin + Sdur + (0.83 + 0.2 log Cm)*DBO5 elim + k'N - Seff
Where:
Smin = Mineral part of TSS, 30 % of TSS
Sdur = Non-biodegradable part of SVD, 30% of SVD (70% of SS)
Cm = mass load
BOD5elim = amount of BOD removed that can be assimilated to the incoming BOD.
K' = nitrifying bacteria production coefficient per kg of nitrified nitrogen
seff = TSS leakage at the outlet

5.3.2 Sludge recirculation (R)

The recirculation of sludge keeps the sludge rate in the aeration tank constant. The recirculation rate is defined as R = Sa *100 / (Sr-Sa)
where

Sa = TSS concentration in the aeration tank
Sr = TSS concentration of recirculated sludge

5.3.3 Sludge extraction

The excess sludge produced is returned to the head of the primary decanter

6 Basic data for units in diameter 3000 mm

6.1.1 Definition of population equivalent (PE)

The PE. is a unit of measurement for assessing the capacity of a wastewater treatment plant, based on the amount of pollution emitted per person per day.
The European directive of May 21, 1991 defines the population equivalent as the biodegradable organic load with a five-day biochemical oxygen demand (BOD5) of 60 grams of oxygen per day.
By extension the other parameters of wastewater pollution can be used to define it.
The treatment plants in the range are sized according to an incoming pollution load translated into PE
The table below defines the ratios used for each parameter:

basis for sizing		
Definition of a PE		
Daily feed	l/PE/d	
BOD5	g/PE/d	
COD		
TSS		
NTK		
Pt		

6.1.2 Organic and hydraulic loads

6.1.3 Pollution flows and concentration of raw water

6.1.4 Raw water hydraulic data

6.1.5 Target discharge levels (treated water)

Rejection level													
Concentration													
Model BIOXYMOP 6346-30		200 PE	250 PE	300 PE	360 PE	420 PE	490 PE	400 PE	500 PE	600 PE	720 PE	840 PE	980 PE
BOD_5		25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0
COD		125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0	125,0
TSS		30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0	30,0

6.1.6 Layout

6.2) Primary decanter (PD) in diameter 3000 mm

6.2.1 Basis for sizing

In order to have storage volumes large enough to limit emptying and good settling of solids, the primary settling tank is sized to respect:

- Volume, Vs = 200 l/EH
- Climbing speed, Va < 0,4 m/h

7 Performance and discharge from the PD

7.1) Aeration tank (BA) in diameter 3000 mm

7.1.1 Basis for sizing

In order to optimally treat the organic load as well as the nitrogenous load, the plant has been sized to respect :

- Mass loading, 0.082 kg BOD5 /kg MVS/d < Cm < 0.084 kg BOD5 /kg MVS/d
- Volume loading, Cv = 0.29 kg BOD5 / m^3

7.1.2 Nitrification

It is the process of transformation of Kjeldahl nitrogen (organic nitrogen + ammoniacal nitrogen $NH4_+$) into oxidized nitrogen (nitrate: $NO3^-$) which takes place in the aeration tank in the presence of oxygen and nitrifying bacteria.

Nitrogen to nitrify = NTK_{input} - $N_{assimilated}$ - $NTK_{discharge}$

It is commonly accepted that the nitrogen assimilated by bacteria during the degradation of organic pollution is 5% of the incoming BOD5.

7.1.3 Denitrification

This is the process of converting nitrate to nitrogen gas that takes place in the aeration tank in the absence of oxygen. In the absence of free oxygen, denitrifying bacteria use the oxidized form of nitrogen as a source of oxygen leading to the reduction of nitrate to nitrogen.
The origin of nitrates in water comes from the nitrification reaction.
Nitrogen to be denitrified = $NTK_{\text{à Nitrify}}$ -$N03_{\text{discharge}}$

7.1.4 Oxygen requirement

The oxygen requirement is defined by the following formula:
QO2 /d = a'Le + b'Sv + C' N - C'' c dN
Where

a'	oxygen required to oxidize 1kgDBO5
The	: BOD_5 to be degraded (yield is neglected)
b'	oxygen required for endogenous metabolism of 1kg MVS
Sv	mass of VSM in the biological reactor
N	nitrogen to Nitrifer
C'	conversion rate of amoniacal nitrogen to nitric nitrogen
C''	conversion rate of nitric nitrogen to gaseous nitrogen
c	o2 restitution efficiency during denitrification
dN	nitrogen to be denitrified

In order to allow denitrification, it is advisable to syncoperate the aeration as follows: 14 hours/day of aeration and 10 hours of shutdown. The operating times are adjustable and allow the process to cope with variations in pollution flows.

7.1.5 Hourly air flow in fine bubble aeration

The air flow rate for fine bubble insufflations is given by the following formula:
Qair =AH / (Rdt * CTG * Mass O2 * He * 0.001)
where:

AH: oxygen flow rate per hour
Rdt: the clear water yield per meter of immersion water of fine bubble diffusers.
CGT : the global coefficient of oxygen transfer in fine bubbles
He : the height of water above the diffusers
O2 mass: mass of oxygen present in the air under normal conditions.

2.3.6 Compressor selection

The choice of compressors was made in order to respect the theoretical hourly air flow.

7.1.6 Choice of fine bubble diffusers

The chosen diffusers are EPDM diffusers with a diameter of 34 cm and an operating range of 6.6 to 15.8$^{m3/h}$.

7.2) Clarifier in diameter 3000 mm

7.2.1 Basis for sizing

The clarifier is sized to meet :

- Climbing speed, Va = 0.6 m/h calculated on the peak flow

7.3) Biological sludge in diameter 3000 mm

7.3.1 Sludge production (PB)

There are several predictive models for determining the production of biological sludge. The model chosen is the CIRSEE AGHTM model. The production of biological sludge is given by the formula :
Sludge production = Smin + Sdur + (0.83 + 0.2 log Cm)*DBO5 elim + k'N - Seff
Where:
Smin = Mineral part of TSS, 30 % of TSS
Sdur = Non-biodegradable part of SVD, 30% of SVD (70% of SS)
Cm = mass load
BOD5elim = amount of BOD removed that can be assimilated to the incoming BOD.
K' = nitrifying bacteria production coefficient per kg of nitrified nitrogen
seff = TSS leakage at the outlet

7.3.2 Sludge recirculation (R)

The recirculation of sludge keeps the sludge rate in the aeration tank constant. The recirculation rate is defined as R = Sa *100 / (Sr-Sa)
where

Sa = TSS concentration in the aeration tank
Sr = TSS concentration of recirculated sludge

7.3.3 Sludge extraction

The excess sludge produced is returned to the head of the primary decanter

8 Implementation and installation

It is imperative to follow the installation instructions in this paragraph 3, as well as the PHPRV-NC installation instructions, otherwise the simop warranty will be void. These instructions are attached in the appendix of this document.

8.1) Choice of the place of installation of the microstation

The place of installation of the microstation must respect the following points:

- The land must not be in a flood zone
- More than 3 m from any founded structure / dwelling
- More than 3 m from any neighbourhood boundary
- More than 2 m from any tree or plant with a significant root system
- More than 35 m from any declared water catchment used for human consumption
- the tank should not be located in the immediate vicinity of a traffic lane or parking area.

Any static or rolling load is forbidden in the immediate vicinity of the device (minimum distance to be respected), except for specific structural dimensioning provisions verified by a design office.
It is imperative to follow the installation instructions described in the following paragraphs, otherwise the Simop warranty will be void.

8.2) Installation instructions

The plot studies must be carried out in accordance with the regulations in force in order to evaluate the constraints related to the nature of the soil.

8.3) Electrical connections

The electromechanical elements (2 pumps, 1 side channel blower) are controlled and protected by a 400 V three-phase + neutral + ground control panel.
The electrical connection (extension cord between the station and the control cabinet) must be made by a professional certified to the NF C 15-100 standard by his employer.
Before any work is carried out on the electrical equipment, the installation must be de-energized.

During the earthwork :

- install a 180 mm sleeve between the station and the control cabinet for the passage of the electrical cables supplying the two pumps.
- Place a 180 mm sleeve between the blower and the manhole of the BA for the passage of the vent pipe.
- Put a 180 mm sleeve between the blower and the control cabinet to supply electricity to the blower
- Provide a 400 V three-phase + neutral + ground power supply.

Please note that the following items are not part of the SIMOP supplies:

- extension cords for pumps and compressors (use 5G1,5 mm cable²)
- network inlet/outlet tubes
- ventilation tubes
- ventilated technical room

Items provided:
- Polyurethane ventilation duct DN50, 10 m supplied by compressor

The electrical cabinet can be installed outside because it has a double door, which allows to protect the control buttons.
The compressor must be installed indoors in a dedicated technical room. The power supply must be connected to the general terminal block.

Standard control panel included (description and electrical diagram in appendix).

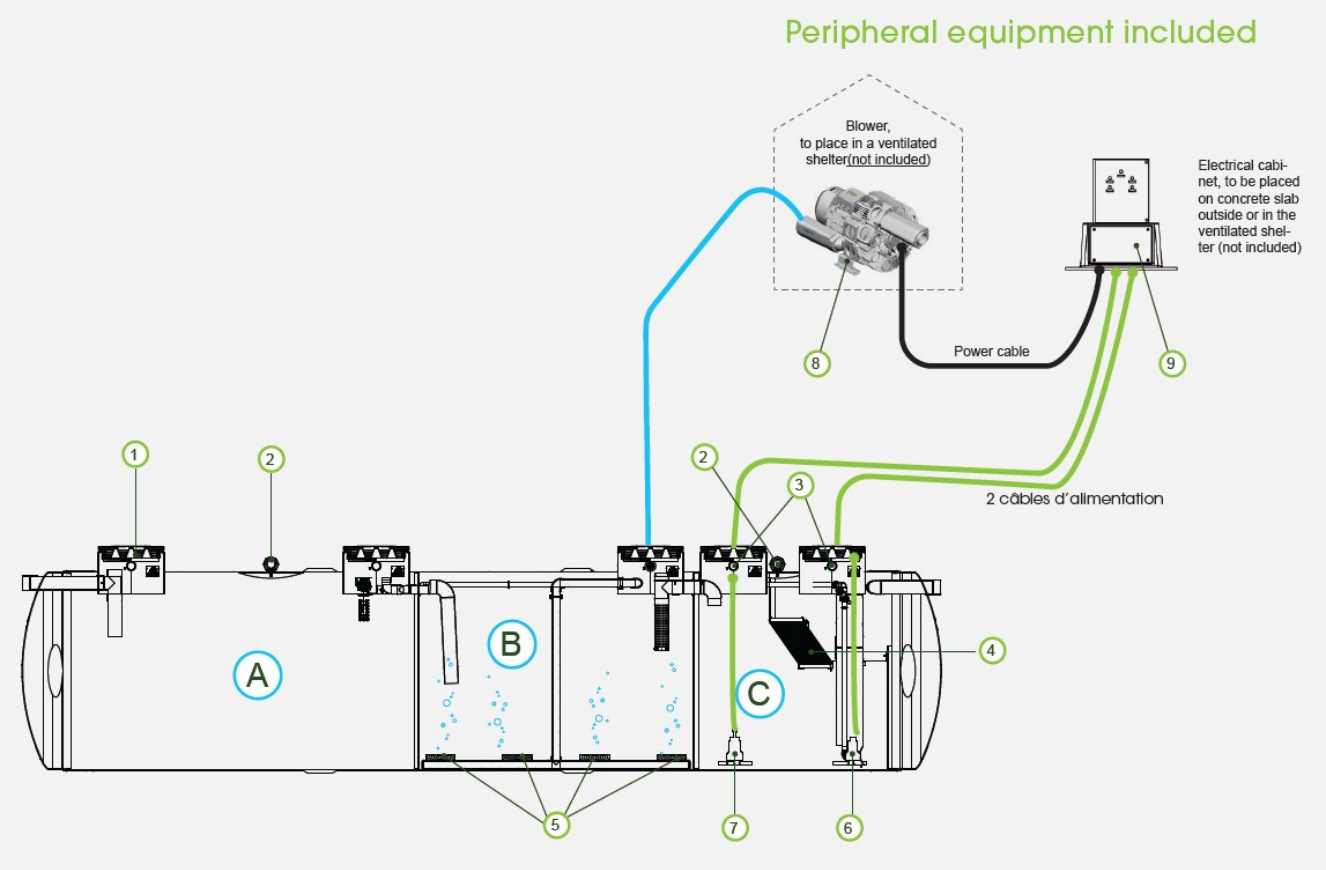
It is strongly advised not to install the compressors more than 10 m from the station (contact us if necessary). In addition, it is imperative that the compressor be located at an altitude higher than that of the air diffusers.

8.4) Methods of making hydraulic connections

The micro-station is delivered ready to be connected with PVC pipe DN160 or DN 200 (depending on the references). These connections are made by the company responsible for the installation of the micro-station following the SIMOP installation instructions described in this guide.
The effluent inlet and outlet pipes must have a slope of 2% to 4% (note: take into account the settlement of the land) at the inlet and 0.5% at the outlet. Ventilation and/or gas or odour discharge connection
Naturally, wastewater produces unpleasant odors. However, the micro-station should not produce strong odors. The presence of strong odors in the vicinity of the micro-station is a sign of malfunction. It is then advisable to call in a technician.
The micro-station mainly releases a gas called $_{H2S}$.

The air intake and extraction of fermentation gases must comply with NF DTU 64.1
The fermentation gases must be evacuated by a ventilation system equipped with a static or wind extractor located at 0.40 m above the ridge and at least 1 m from any opening and any other ventilation. Provide this connection on the ventilation sleeve of the primary decanter compartment.

8.5) Installation diagram



Ⓐ Primary settling tank
Ⓑ Aeration basin
Ⓒ Clarifier

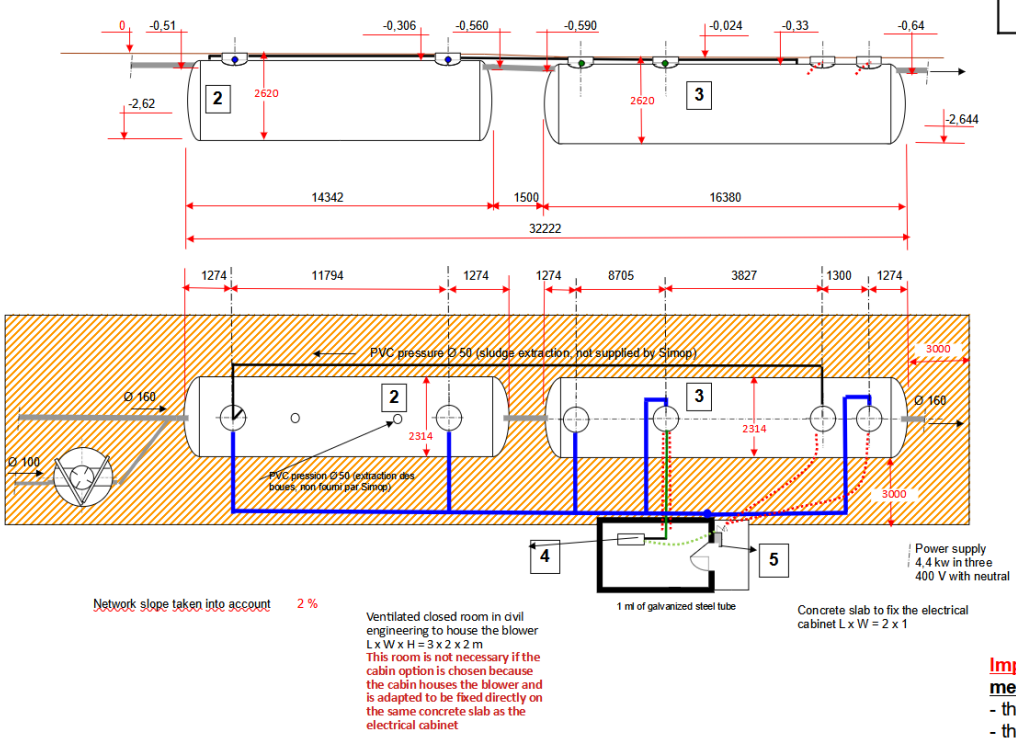
① Ventilation DN 100
② Lifting rings
③ Cable duct for pumps DN 100
④ Lamellar blocks
⑤ Air diffuser discs
⑥ Sludge recirculation pump
⑦ Sludge extraction pump

⑧ Blower
⑨ Standard electrical cabinet (for the power supply of the blower and the two pumps)

OPTION:
Screw-on extensions ref. RH602
Ø 600 and H= 250 mm (one maximum per manhole).

8.6) Example of a layout plan supplied with the order

Bioxymop 250 EH range



Imperative : Provide the room (or the blower cabin) + the concrete slab + passage of sheaths + supply of cables + preparation of the ventilation pipes before commissioning. Otherwise, this intervention cannot take place.

INDEX

- Ventilation (not supplied by SIMOP) in PVC Ø 100 (tube, elbows, tees not supplied by SIMOP).
  The outlets are to be connected to a single or several secondary ventilation pipes equipped with a static or wind extractor located 0.40 m above the ridge and at least 1 m from any opening and any other ventilation. In the absence of housing, the point of rejection must be above 2 m to avoid any olfactory nuisance
- Cable passageways
  - Station, Ø 50 mm sheaths
  - If above ground, provide cable trays
  Cables, sheaths and cable trays are not supplied by SIMOP
- 3 ml of flexible cable type 5G 2,5 mm2 supplied by SIMOP
- Ventilation pipe. At the outlet of the blower: 1 m of rigid galvanized steel pipe, then DN50 PU pipe (10 ml supplied by SIMOP) to be passed in a Ø 90 sleeve (not supplied by SIMOP)
- Non circulable zone (circulation possible at more than 3,00 m from the tank)

Importante note : for any length of conduit **greater than 5 meters**, the installer is required to pass :
- the electrical cables in the sheaths (Ø 50mm minimum)
- the flexible air duct (Ø50) in the sheath (Ø90 mm minimum).

For distances of less than 5 meters, the Assisteaux technician will be able to pass the electrical cables and air sheath in the sheaths himself, during the commissioning.

Marker	Description	Reference	Dimensions	Weight (kg)	Number
1	Grease separator size 4	SG2/6630/04	Ø = 1,720 m H 1,100 m	110	1
2	Primary decanter	DP3/6321/55-23-2	L = 14.342 m and Ø = 2.314 m	2200	1
3	Secondary treatment: Aeration + Clarification	BACLA6346/250-23	L = 16,380 m and Ø = 2,314 m	5135	1
4	Blower ASP0165-2ST331-6, 3,3 kw in tri 400V	KOXY3/6336/5-23-1	L x W x H = 578 x 442 x 495 mm	48	1
5	Electrical cabinet for OXY3 4,4 kW three 400 V + neutral	AE301/6339/4-A	H x W x D = 530 x 430 x 200 mm	25	1

9 Commissioning

9.1) List of the equipment of the installation

The 2300 mm diameter dies are composed of the following elements

Model BIOXYMOP6346-23		60 PE	80 PE	100 PE	130 PE	160 PE	200 PE	250 PE	300 PE	320 PE	400 PE	500 PE	600 PE
Side channel blower	brand	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH
	model	ASP0065-2ST111-6	ASP0065-2ST111-6	ASP0085-2ST151-6	ASP0120-2ST221-6	ASP0120-2ST221-6	ASP0165-2ST331-6	ASP0165-2ST331-6	ASP00165-2ST751-7	ASP0120-2ST221-6	ASP0165-2ST331-6	ASP0165-2ST331-6	ASP0065-2ST751-7
	number	**1**	**1**	**1**	**1**	**1**	**1**	**1**	1	2	**2**	**2**	**2**
	unit power kW	1,1	1,1	1,5	2,2	2,2	3,3	3,3	7,5	2,2	3,3	3,3	7,5
Recirculation pump	brand	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA
	model	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75
	number	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**
	unit power kW	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
Extraction pump	brand	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA
	model	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75
	number	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**
	unit power kW	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
Air diffusers	brand	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER
	model	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340
	number	**4**	**4**	**6**	**9**	**9**	**11**	**12**	**15**	**18**	**22**	**24**	**30**
	flow rate per diffuser m³/h	**7,8**	**7,8**	**7,8**	**8,0**	**8,0**	**9,6**	**8,8**	**8,5**	**8,0**	**9,6**	**8,8**	**8,5**

The units in diameter 3000 mm are composed of the following elements

Model BIOXYMOP6346-30		200 PE	250 PE	300 PE	360 PE	420 PE	490 PE	400 PE	500 PE	600 PE	720 PE	840 PE	980 PE
Side channel blower	brand	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH	AIRTECH
	model	ASP0165-2ST331-6	ASP0165-2ST331-6	ASP0165-3ST751-7	ASP0165-3ST751-7	ASC0315-2ST551-7	ASC0315-2ST551-7	ASP0165-2ST331-6	ASP0165-2ST331-6	ASP0315-2ST751-7	ASP0165-2ST331-6	ASC0315-2ST551-7	ASC0315-2ST551-7
	number	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**
	unit power kW	3,3	3,3	7,1	7,1	5,5	5,5	3,3	3,3	7,1	7,1	5,5	5,5
Recirculation pump	brand	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA
	model	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75
	number	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**
	unit power kW	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
Extraction pump	brand	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA	EBARA
	model	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75	Right 75
	number	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**
	unit power kW	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
Air diffusers	brand	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER	JAEGER
	model	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340	HD340
	number	**11**	**11**	**14**	**14**	**22**	**22**	**22**	**22**	**28**	**28**	**44**	**44**
	flow rate per diffuser m³/h	**8,8**	**8,8**	**8,7**	**8,7**	**8,4**	**8,4**	**8,8**	**8,8**	**8,7**	**8,7**	**8,4**	**8,4**

9.2) Installation of electromechanical equipment

The different electromechanical equipment (pumps, blowers, an electrical cabinet) are delivered on a separate pallet from the unit and can be delivered to a different address from the unit on request (make sure to put the material at the disposal of the company carrying out the commissioning).

10 The blower

The blower must be installed in a technical room designed for this purpose. This room must be ventilated and soundproofed if necessary (blowers have a sound level of between 60 and 70 dB(A)). It is strongly recommended not to install the compressor more than 10 m from the station (consult us if necessary).

10.1.1 The pumps

The recirculation and extraction pumps are identical and must be installed in the clarifier. The connection is made by a 1''1/2 threaded nipple.
Please note that the electrical cables of each pump must be identified.

- The recirculation pump discharges the sludge to the aeration tank (central compartment) and must be connected to the pump terminal block N°1 (recirculation).
- The extraction pump discharges to the primary decanter(1st compartment) and must be connected to the terminal block of pump N°2 (extraction).
- Each pump is equipped with 5 meters of electric cable.
-

10.1.2 The electrical cabinet

- The three-phase power supply must be connected to the general terminal block of the electrical cabinet. This cabinet supplies and controls the two pumps and the blower.

Référence armoire*	Puissance kW
AE301/6339/2 — A	1,1
AE301/6339/3 — A	1,5
AE301/6339/4 — A	2.2/3,3/3
AE301/6339/5 — A	7,5
AE301/6339/4 — AD	4.4/6,6/6
AE301/6339/5 — AD	15

Main features :

- Double door electrical cabinet IP66 530x43x200
- light column on the outside door : green light ''under tension'' and red light ''fault''
- a general disconnect switch on the inside door
- 3 fault lights on the inside door (pump 1, pump 2, blower)
- a programmable time switch for the blower
- 2 cyclic dosing units for the pumps
- Terminal blocks for power cables

The electrical cabinet can be installed outside, fixed on a wall or placed on a base (supplied), it can be installed inside in a technical room provided for this purpose.

AE301/6339/OPT1	Verrine rouge Flash, signalisation de défaut, sur colonne lumineuse
AE301/6339/OPT2	Résistance chauffante
AE301/6339/OPT3	3 Compteurs horaires sur porte intérieure, pour les 2 pompes et le compresseur
AE301/6339/OPT5	Prise 230V monophasée sur porte intérieure
AE301/6339/OPT6	Voltmètre général avec commutateur permettant la mesure des tensions entre phases et entre phase et neutre
AE301/6339/OPT7	Renvoi GSM, transmetteur téléphonique GSM signalisation de défaut moteur et présence tension via batterie 12V
AE301/6339/OPT8	Buzzer
AE301/6339/OPT9	1 commutateur M/0/A par moteur
AE301/6339/OPT10	1 commutateur M/0/A par moteur pour armoire double

The following options are available:

11 Setting the time delays

Ventilation :

The compressor is controlled by a time switch and programmable (15 minutes).
All the units have been dimensioned for 14 hours of operation, so the time delay is identical on all models.

Make the settings as follows:

Sequence 1	05h30 09h00	3h30
Sequence 2	11h30 14h00	2h30
Sequence 3	16h30 00h00	7h30
Sequence 4	02h30 03h00	0h30

Recirculation and extraction :

The recirculation and extraction pumps are controlled by a cyclic dosing unit which allows to alternate the running and stopping times in a cyclic way.
The ON and OFF times can be different and chosen in a different time base.

Make the settings as follows:

Recirculation delay :

Tank diameter 2300 mm

Model BIOXYMOP6346-23		60 PE	80 PE	100 PE	130 PE	160 PE	200PE	250 PE	300 PE	320PE	400 PE	500 PE	600 PE
Recirculation pump flow rate	m3/h	12,6	12,55	12,45	12,3	12,2	12,1	12,1	12	2 *12,2	2 * 12,1	2 * 12,1	2 * 12
required operating time	min/d	**43**	**58**	**73**	**96**	**119**	**149**	**186**	**225**	**119**	**149**	**186**	**225**
actual operating time	min/d	46	58	76	96	125	160	206	240	125	160	206	240
Base Time ON		1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min
Time ON		1	1	1	3	4	3	2	2	4	3	2	2
Base Time OFF		6-60 min	6-60 min	6-60 min	6-60 min	6-60 min	6-60 min	6-60 min	1-10 min	6-60 min	6-60 min	6-60 min	1-10 min
Time OFF		5	4	3	7	7	4	2	10	7	4	2	10

Interpretation of the settings for the 60 EH

1 minute on (1 x 1) for 30 minutes off (5 x 6)

=> 46 minutes of walking per day

Tank diameter 3000 mm

Model BIOXYMOP6346-30		200 PE	250 PE	300 PE	360 PE	420 PE	490 PE	400 PE	500 PE	600 PE	720 PE	840 PE	980 PE
Recirculation pump flow rate	m3/h	11,4	11,35	11,3	11,2	10,9	10,8	2 * 11,4	2 * 11,35	2 *11,3	2 * 11,2	2 * 10,9	2 * 10,8
Required operating time	min/d	**158**	**199**	**239**	**290**	**347**	**409**	**158**	**199**	**239**	**290**	**347**	**409**
Actual operating time	min/d	160	206	240	313	360	424	160	206	240	313	360	424
Base Time ON		1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min
Time ON		3	2	2	5	6	5	3	2	2	5	6	5
Base Time OFF		6-60 min	6-60 min	1-10 min	6-60 min	6-60 min	6-60 min	6-60 min	6-60 min	1-10 min	6-60 min	6-60 min	6-60 min
Time OFF		4	2	10	3	3	2	4	2	10	3	3	2

Extraction delay :

Tank diameter 2300 mm

Model BIOXYMOP6346-23		60 PE	80 PE	100 PE	130 PE	160 PE	200PE	250 PE	300 PE	320PE	400 PE	500 PE	600 PE
Pump flow rate Extraction	m3/h	12,45	12,2	12,2	12,1	12	11,7	11	10,8	2 * 12	2 * 11,7	2 * 11	2 * 10,8
required operating time	min/d	**1,2**	**1,7**	**2,1**	**2,8**	**3,4**	**4,4**	**5,8**	**7,1**	**3,4**	**4,4**	**5,8**	**7,1**
	min/3 days	3,7	5,1	6,3	8,3	10,3	13,2	17,5	21,4	10,3	13,2	17,5	21,4
actual operating time	min/d	1,20	2,40	2,40	3,19	3,59	4,78	5,98	7,16	3,59	4,78	5,98	7,16
Base Time ON		1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min
Time ON		1	2	2	4	3	4	5	3	3	4	5	3
Base Time OFF		10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h
Time OFF		2	2	2	3	2	2	2	1	2	2	2	1

Tank diameter 3000 mm

Model BIOXYMOP6346-30		200 PE	250 PE	300 PE	360 PE	420 PE	490 PE	400 PE	500 PE	600 PE	720 PE	840 PE	980 PE
Pump flow rate Extraction	m3/h	11,2	10,8	10,8	10,6	10,2	10,1	2*11,2	2*10,8	2 * 10,8	2 * 10,6	2 * 10,2	2 * 10,1
required operating time	min/d	**4,6**	**6,0**	**7,1**	**8,7**	**10,6**	**12,5**	**4,6**	**6,0**	**7,1**	**8,7**	**10,6**	**12,5**
	min/3 days	13,8	17,9	21,4	26,2	31,8	37 ,4	13,8	17,9	21,4	26,2	31,8	37,4
actual operating time	min/d	4,78	7,16	7,16	9,54	11,90	13,21	4,78	7,16	7,16	9,54	11,90	13,21
Base Time ON		1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min	1-10 min
Time ON		4	6	6	4	5	5	4	6	6	4	5	5
Base Time OFF		10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	1-10h	10-100 h	10-100 h	10-100 h	10-100 h	10-100 h	1-10h
Time OFF		2	2	2	1	1	9	2	2	2	1	1	9

11.1) Safety recommendations

Electrical safety:

All electrical work on the station must be carried out by a qualified professional in accordance with the regulations in force and in particular the NF C 15-100 standard.

Before any work is carried out on the electrical components of the micro-station, it is imperative to cut off the power supply.

Safety of the installation :

Without a load distribution slab, the access buffers withstand a pedestrian load of 2.5kN/m².

Life safety:

During the execution of the excavation, the protection of the operators must be done in accordance with the national regulations, in particular the wearing of PPE (individual protection equipment) must be respected in order to avoid any contact with the wastewater.

12 Maintenance and Operation

12.1) Conditions fromoperation for the sustainability performance

Wastewater treatment plants are designed to treat urban wastewater continuously. They are not suitable for occasional treatment. Moreover, it is strictly forbidden to convey rainwater to the plant. In the case of a combined sewer system, it is mandatory to protect the plant with a regulation structure allowing to bypass the peak flows during rainy periods.

It is prohibited to reject any of the following products (non-exhaustive list):

- Mineral oils
- Petroleum products
- Chlorinated products
- Pure bleach
- Any bactericidal product
- Condensation water (air conditioner, boiler)
- Water softener brine drain
- Pesticide
- Resins
- Non-biodegradable materials
- Periodic protection, condoms, wipes, diapers
- Construction waste (paint, rubble, plaster, cement) etc)

The materials used in the station are insensitive to corrosion.

12.2) Power consumption

Units in diameter 2300 mm

Units in diameter 3000 mm

12.3) Wear parts list

Recirculation pump :
We recommend replacing the pump at the first sign of weakness, the replacement is estimated at about every 5 years.
Bearings Blower :
We recommend replacing the bearings every two years.
Blower:
We recommend replacing the pump at the first sign of weakness, the replacement is estimated at about every 5 years.
Air diffuser :
We recommend replacing the diffuser after 7 years of operation.

The supply of spare parts is carried out by the manufacturer, the installer or the company in charge of the maintenance of the station; and this during the warranty period or not.
Contact SIMOP after sales service (manufacturer) :
SIMOP
10, rue Richedoux
50480 Sainte-Mère-Eglise
Tel : 02 33 95 88 00 Fax : 02 33 21 50 75

12.4) Drainage

The emptying must be done by an approved emptying contractor according to the terms of the modified decree of September 7th, 2009. No other person or company is legally authorized. He will then establish a follow-up slip of the emptying materials in three parts for the owner of the installation, the person in charge of the elimination channel, the approved emptying contractor. These follow-up slips will have to be signed and preserved by each of the three parts.

In the case of an emptying with presence of groundwater, draw down the groundwater with a vacuum pump at the level of the piezometer bottom in order to limit the risks of deformations of the tank. The pumping of the groundwater must be carried out before the emptying and be maintained during all

the emptying operation until the compartments are levelled.
The emptying vehicle must park at least 5 meters from the station.
The emptying operations shall be recorded in the sludge removal tracking table.

The emptying of the plant must take place when the height of sludge in the primary settling compartments reaches 50% of the useful volume, i.e. approximately every 3 years. When emptying the primary settling tank, the sludge must be removed and the clarifier cleaned.
The floats and grease must be emptied at least once a year. After each emptying, the station must be put back in water.

13 Guarantees

13.1) Warranties on and electromechanical equipment

Simop guarantees that Bioxymop plants will treat domestic wastewater in compliance with the regulatory requirements in force at the time of installation.

This performance is guaranteed under normal conditions of use, care and maintenance, in accordance with the provisions of this user guide.

The cuverie is guaranteed for 10 years against corrosion, provided the installation conditions have been respected. Electromechanical components are guaranteed for 1 year under normal conditions of use, after commissioning. Our tanks are not treated against UV rays (orthophthalic resin) because they are used underground.

Prolonged exposure to high outdoor temperatures will lead to material degradation.
- Composite assemblies are designed for mechanical resistance to pressure, not impact.
- They can only be handled by means of lifting rings, and any friction, whether on the ground or on the blanks when leaving the containers, for example, will result in a reduction in the thickness of the lamination, which in turn will considerably reduce the strength of the assemblies.

MATERIALS	DURATION OF THE WARRANTY
TANK	10 YEARS
BLOWER	1 YEAR
PUMP	1 YEAR
CONTROL BOX	1 YEAR
CONTROL BOX COMPONENT	1 YEAR

13.2) Description of the traceability process for devices and components of the facility.

SIMOP's quality management system is certified ISO 9001: 2008 Each station has a traceability number.
To this number is attached a set of information:

- Date of manufacture
- Production order number
- Material batch number
- Identity of the editor
- Quality control sheet
- Batch material, its certificate of analysis
- Component lot (internal equipment)

14 Quality certificate:

CAPCERT

CERTIFICAT

CERTIFICATE

Certificat n° CAP0143

CAPCERT certifie que le système de management de la société :
CAPCERT certifies that the management system of the company:

F2F

10 rue Richedoux
50480 Sainte Mère L'Église

A été audité et jugé conforme aux exigences de la norme :
Has been assessed and found to meet the requirements of the standard:

ISO 9001 v2015

Pour le domaine de certification suivant :
For the following scope of certification:

Conception, fabrication et commercialisation de produits et d'équipement pour le traitement de l'eau

Date de certification : **le 09 septembre 2021**

Date d'expiration du certificat précédent : **le 27 septembre 2021**

Date de fin de certification : **le 27 septembre 2024**

Le certificat ne restera valable jusqu'à la date de fin de certification que si le système de management est évalué et jugé conforme aux critères suscités lors des audits de surveillance.
Pour toute information relative au présent certificat, veuillez contacter l'équipe de CAPCERT : contact@capcertification.com

Luc MOUNEY
Le Représentant de CAPCERT
CAPCERT Representative

Le Représentant de l'Entreprise
The Company Representative

CAPCERT : 2, square Aquitaine - 33100 Argenteuil
SAS au capital de 100000 € - SIRET : 88413658200019

PG10-D02d0
V1-Nov20

CAPCERT

ANNEXE AU CERTIFICAT n° **CAP143** – LISTE DES SITES COMPRIS DANS LE PERIMETRE DE CERTIFICATION **ISO 9001** DE L'ENTITE **F2F**

*ANNEX TO THE CERTIFICATE n° **CAP0143** – LIST OF SITES INCLUDED IN THE SCOPE OF ISO 9001 CERTIFICATION OF **F2F***

Site n°1 : **LE HAM**

3 Rue Saint Pierre, 50310 Le Ham

Site n°2 : **MONTDIDIER**

ZI de la Roseraie, 80500 Montdidier

Site n°3 : **BUJARALOZ**

P.I Lastra, Monegros Parc B1, 50177 Bujaraloz, Espagne

Fait à Argenteuil – Le 09/09/2021

Luc MOUNEY – Le représentant de CAPCERT

15 Annexes

15.1) Definition and characteristics of polyester

Our tanks are made of glass fiber reinforced polyester and are molded by filament winding.
The filament winding process simply consists in winding a wire, previously impregnated with resin, on a die in order to produce a ferrule or any other part of revolution.
The result is an ultra-resistant wall composed of successive layers of wound wire, where each layer of wire is optimally oriented to respond effectively to the various mechanical stresses. The mechanical resistance is even more effective thanks to a very high glass fiber content in mass, in the order of 60% to 70%. In addition to these interesting mechanical characteristics, this laminate has the particularity of offering excellent durability over time.
Our tanks have a perfectly controlled thickness, which can vary from 7 to 12mm depending on the diameter.
The polyester resin used for our fiberglass-reinforced tanks is a pre-accelerated thixotropic resin with low styrene emission. The viscosity and rheology of this resin have been specially studied and adapted to filament winding molding, while allowing optimal impregnation of the fiber.

Density at 25°C 1,12

Brookfield viscosity at 25°C 4.5-5 Dpa.s

Acid number 27-30 mg KOH/g

Volatile content 40 à 44 %

Density at 20°C	1,2
Barcol Hardness	45
Moisture recovery (24h at 23°C)	20 mg KOH/g
Strain temperature under load (1.8MPa)	70 °C
Elongation at break	2 %
Resistance to bending	65 MPa
Modulus of elasticity	3100 MPa

The glass yarn used is a type E yarn covered with a silane-based sizing that facilitates its association with the polyester resin. It is specially adapted to pultrusion or filament winding and offers very good mechanical characteristics.

15.2) Data sheet of the fine bubble diffuser disc

Disques diffuseurs HD

HD 270 / HD 340

Caractéristiques produit

- Coût d'installation faible
- Grande fiabilité
- Excellentes performances
- Maintenance faible
- Conception rentable

Conditions de fonctionnement

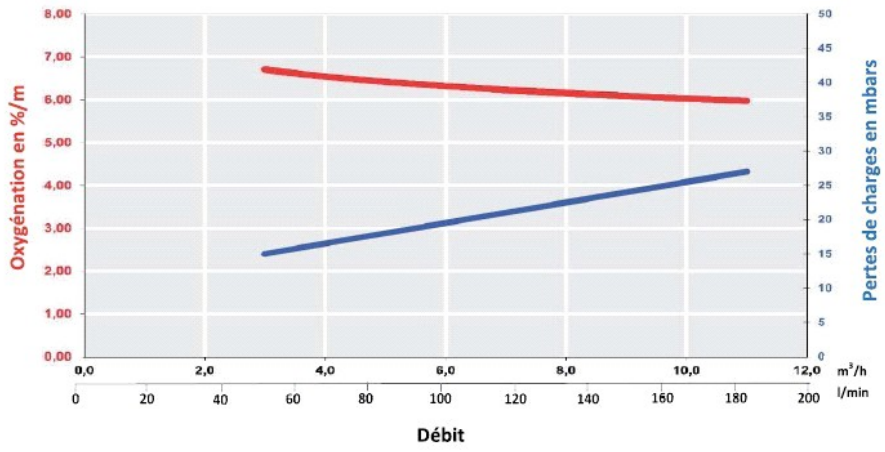
En continu ou par intermittence

Type	Débit mini		Débit optimal		Débit maxi		Débit surcharge / maintenance	
	l/min	m³/h	l/min	m³/h	l/min	m³/h	l/min	m³/h
HD 270	33	2	66	4	100	6	166	10
HD 340	83	5	140	8.5	200	12	250	15

Oxygénation et pertes de charges

Pertes de charges dues au diffuseur environ 30 à 40 mbars.

Disque diffuseur HD 340 en EPDM standard



BIBUS Tous les designs, dimensions et spécifications sont sujets à modifications sans préavis (oct. 2012).
www.bibusfrance.fr

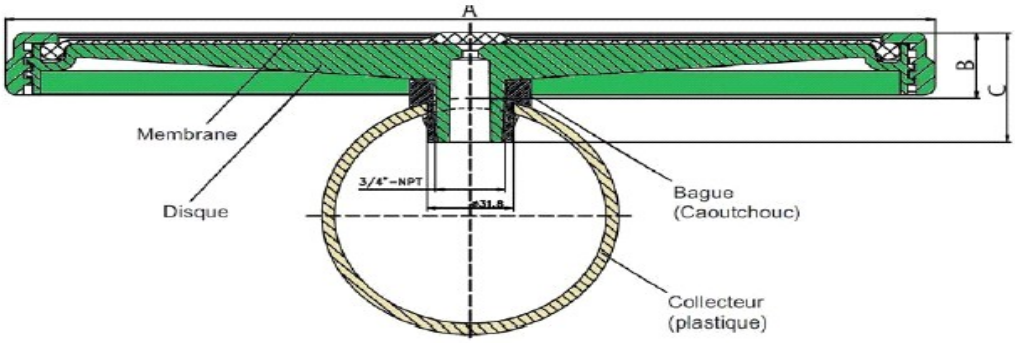
Matières de membranes

Matière	Couleur	Température de fonctionnement	Utilisation
EPDM Standard F053	noir	0 à 80 °C	Eaux usées
EPDM Plastifié F057	noir	0 à 80 °C	Eaux usées avec rejets industriels
Silicone	translucide	0 à 100 °C	Eaux usées industrielles à forte teneur en graisses, huiles et hydrocarbures

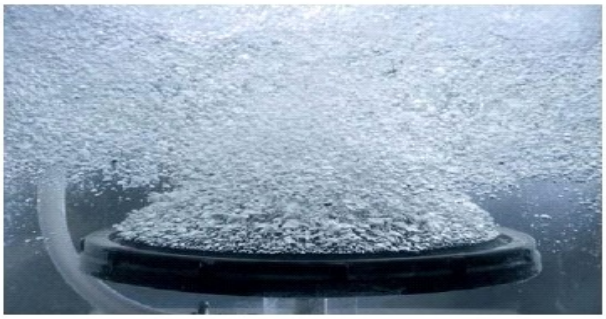
Dimensions

Type	Hauteur (C) mm	Diamètre total (A) mm	Diamètre effectif mm	Hauteur totale (B) mm	Surface perforée m²	Matière disque	Poids total kg
HD 270	60	268	218	30	0.037	PP GF 30	0.60
HD 340	76	340	310	46	0.060	PP GF 30	0.85

Tous les diffuseurs sont équipés d'une connexion mâle filetée ¾".
Autres filetages disponibles sur demande en fonction de la quantité.



Exemple de montage



Tous les designs, dimensions et spécifications sont sujets à modifications sans préavis (oct. 2012).
www.bibusfrance.fr

15.3) Technical data sheet for pumps (recirculation and extraction)

EBARA

RIGHT

ÉLECTROPOMPES SUBMERSIBLES POUR EAUX CHARGÉES
en AISI 304

Électropompes submersibles pour eaux chargées en acier inox AISI 304.

APPLICATIONS
- Relevage de liquides chargés contenant des substances solides et/ou filamenteuses en suspension
- Vidange d'eaux d'infiltration
- Relevage d'eaux de décharge (services sanitaires)
- Vidange de fosses septiques et évacuation des égouts

PARTICULARITÉS TECHNIQUES
- Dotées de câble d'alimentation de 5 m type H07 RN-F (sur demande 10 m câble H07 RN-F)
- Disponibles avec ou sans flotteur

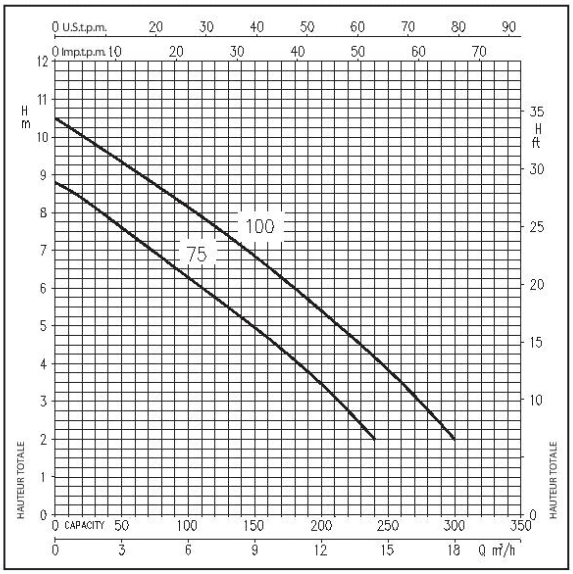
DONNÉES TECHNIQUES
- Immersion maximale: 10 m
- Température maximale du liquide: 50°C
- Passage maximum de solides: 35 mm
- Moteur asynchrone 2 pôles autoventilé
- Classe d'isolation F
- Degré de protection IPX8
- Tension monophasée 230V ± 10%, 50Hz
  tension triphasée 400V ± 10%, 50Hz
- Condensateur permanent et protection thermoampérométrique à réarmement automatique incorporée pour le moteur monophasé
- Protection à charge de l'utilisateur pour la version triphasée
- Raccord refoulement: G1½

MATÉRIAUX
- Corps pompe, roue, filtre, couvercle moteur, disque support garniture et caisse moteur en AISI 304
- Arbre en AISI 303
- Double garniture mécanique avec chambre à huile:
  - supérieure en Carbone/Céramique/NBR (côté moteur)
  - inférieure en SiC/SiC/NBR (côté pompe)

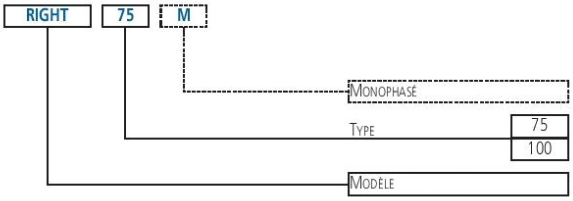
VERSIONS SPÉCIALES
- Version MA avec flotteur
- Version avec 10 m de câble

Pour accessoires et tableaux, voir à partir de la page 66

COURBES DE PRESTATION (selon ISO 9906 Annexe A)



SIGLE D'IDENTIFICATION



RIGHT

ÉLECTROPOMPES SUBMERSIBLES POUR EAUX CHARGÉES

en AISI 304

TABLEAU DES PERFORMANCES

Modèle Monophasée 230V	Modèle Triphasée 230/400V	P_2 [HP]	P_2 [kW]	Condensateur µF	Condensateur Vc	Cour. Ab. [A] 1~	Cour. Ab. [A] 3~	Q=Débit l/min	40	80	120	160	200	240	300
								m^3/h	2	4,8	7,2	9,6	12	14,4	18
								H=Hauteur d'élévation [m]							
RIGHT 75 M	RIGHT 75	0,75	0,55	20	450	4,8	2,1		7,8	6,8	5,7	4,7	3,4	2,0	-
RIGHT 100 M	RIGHT 100	1	0,75	31,5	450	5,7	2,6		9,5	8,6	7,6	6,6	5,4	4,2	2,0

DIMENSIONS

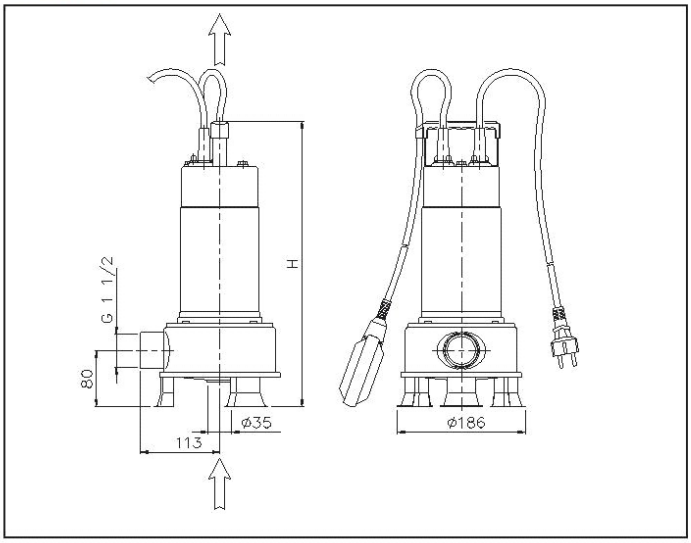
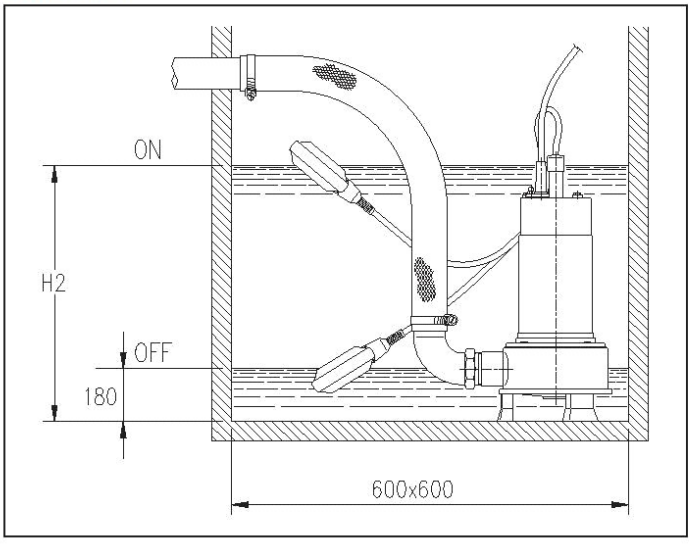


TABLEAU DE DIMENSIONS

Modèle	Dimensions [mm] H	Dimensions [mm] H2	Poids [kg]
RIGHT 75	405	410	10,0
RIGHT 100	430	430	11,5

INSTALLATION



ÉLECTROPOMPES SUBMERSIBLES POUR EAUX CHARGÉES

en AISI 304

VUE EN SECTION

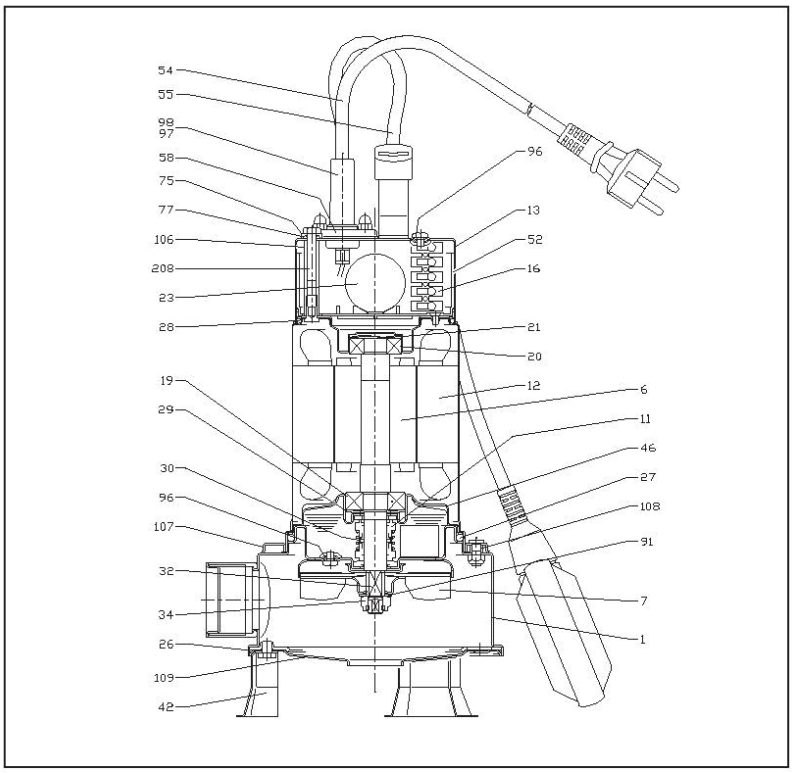


TABLEAU DE DIMENSIONS

Réf.	Nom	Matériel	Réf.	Nom	Matériel
1	Corps de la pompe	AISI 304	42	Pied	AISI 304
6	Arbre avec rotor	AISI 303	46	Supp. roulement inf.	AISI 304
7	Roue à ailettes	AISI 304	52	Boîtier pour condensateur	PA66 Renforcé par fibres de verre
11	Garniture mécanique	Céramique/Carbone/NBR	54	Câble	-
12	Caisse moteur	-	55	Flotteur	-
13	Couvercle	AISI 304	58	Arrêtoir de câble	AISI 304
16	Boîtier	-	75	Rondelle	AISI 303
19	Roulement inférieur	-	77	Bague OR	NBR
20	Roulement supérieur	-	91	Rondelle	AISI 304
21	Anneau de compensation	AISI 304	96	Bague OR	NBR
23	Condensateur	-	97	Presse-étoupe pour câble	NBR
26	Bague OR	NBR	98	Presse-étoupe pour câble	NBR
27	Bague OR	NBR	106	Entretoise	AISI 304
28	Bague OR	NBR	107	Bride de fixation	AISI 304
29	Rondelle	AISI 304	108	Joint	NBR
30	Entretoise pour garniture mécanique	Laiton	109	Couvercle côté asp.	AISI 304
32	Languette	AISI 304	208	Vis	AISI 304
34	Écrou	AISI 303	-		-

15.4) Technical sheet Blowers

IT-017_v.02

SP

TURBINAS DE CANAL LATERAL DE ALTO RENDIMIENTO SERIES HSP
MANUAL DE INSTALACIÓN, OPERACIÓN Y MANTENIMIENTO

EN

HIGH PERFORMANCE SIDE CHANNEL BLOWERS SERIES HSP
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

FR

SOUFFLANTES À CANAL LATÉRAL D'HAUTE PERFORMANCE SÉRIES HSP
NOTICE D'INSTALLATION, DE FONCTIONNEMENT ET D'ENTRETIEN

Simple etapa
Single stage
Mono-étagées

Doble etapa
Double stage
Bi-étagées

Triple etapa
Triple stage
Tri-étagées

www.hpe-technology.com

SP

INTRODUCCIÓN

El presente manual ilustra los correctos procedimientos para la instalación, la operación y el mantenimiento de las turbinas de canal lateral de alto rendimiento de simple y multi-etapa de las series HSP. Antes de comenzar a trabajar lea atentamente las instrucciones contenidas en este manual.

DESCRIPCIÓN DEL PRODUCTO

Utilización

La turbina de canal lateral está diseñada para

- la aspiración
- la compresión

de

- aire y otros gases secos, no agresivos, no tóxicos y no explosivos.

Vehicular un gas con una mayor densidad que el aire conduce a un aumento de la carga térmica y mecánica en la turbina de canal lateral y sólo debe realizarse tras la consulta y pertinente autorización del fabricante.

El gas deberá estar exento de vapores que puedan condensar en las condiciones de temperatura y presión dentro de la turbina de canal lateral.

La turbina de canal lateral está diseñada para su emplazamiento en un entorno no potencialmente explosivo.

La turbina de canal lateral es adecuada para la operación continua, siempre que no exista impedimento para la transmisión del calor al medio ambiente y se garantice una transferencia mínima del gas. Si existe el riesgo de que la turbina de canal lateral pueda trabajar con la impulsión o la admisión obstruidas durante más de unos pocos segundos, deberá instalarse una válvula limitadora de presión o vacío. Arrancar y detener frecuentemente la turbina de canal lateral conduce a un aumento de la temperatura del bobinado del motor. En caso de duda consulte a su representante autorizado.

El valor nominal (valor de referencia para datos de rendimiento) para la temperatura del gas es de 15ºC. La temperatura máxima permitida para el gas aspirado es de 40ºC.

El valor nominal para la temperatura ambiente es de 25ºC. La temperatura ambiente mínima permitida es de -30ºC. La temperatura ambiente máxima permitida es de 40ºC.

Para conocer los valores máximos de presión diferencial permitidos, deberá leer la placa de características (valores con signo negativo ("-") para el funcionamiento en vacío, valores sin signo positivo ("+") para la operación en presión). Los datos son válidos para temperaturas ambiente de hasta 25 ° C y altitudes de hasta 1000 m. sobre el nivel del mar. Temperaturas más elevadas reducen el valor máximo de presión diferencial permitida hasta un 10 por ciento a

EN

INTRODUCTION

This manual shows the right procedures for the installation, operation and maintenance of the HSP series high performance single and multi-stage side channel blowers. Prior to handling the side channel blower, please read carefully the instructions written on this manual.

PRODUCT DESCRIPTION

Use

The side channel blower is intended for

- the suction
- the compression

of

- air and other dry, non-aggressive, non-toxic and non-explosive gases

Conveying media with a higher density than air leads to an increased thermal and mechanical load on the side channel blower and is permissible only after prior consultation with the manufacturer.

The gas shall be free from vapors that would condensate under the temperature and pressure conditions inside the side channel blower.

The side channel blower is intended for the placement in a non-potentially explosive environment.

The side channel blower is suitable for continuous operation, provided that the housing can transmit heat to the environment unobstructedly and a certain minimum gas transfer is warranted. If there is a risk that the side channel blower may be operated against a closed inlet or outlet for more than a few seconds, a vacuum or pressure relief valve, respectively, shall be provided. Frequent switching on and off leads to increased coil temperatures. In case of doubt seek advice from your authorized representative!

The nominal value (=reference value for performance data) for the temperature of the process gas is 15°C. The max. allowed temperature of the inlet gas is 40 °C.

The nominal value for the ambient temperature is 25°C. The min. allowed ambient temperature is -30°C. The maximum allowed ambient temperature is 40°C.

Binding data with regard to the allowed differential pressure are to be read from the nameplate (value with negative sign ("-") for vacuum operation, value without sign for pressure operation). The data is valid for ambient temperatures up to 25°C and location altitudes up to 1000 m above sea level. Higher ambient temperatures reduce the allowed differential pressures by up to 10 percent at 40°C. In case of placement in altitudes beyond 1000 m above sea level the allowed differential pressure shall be agreed upon with the manufacturer.

The maximum allowed pressure on the pressure connection (d) is 2 bar abs. By means of process control and/or pressure relief valves it must be made sure that the

FR

INTRODUCTION

Ce document illustre les procédures correctes concernant l'installation, le fonctionnement et l'entretien des soufflantes d'haute performance mono-étagées et multi-étagées à canal latéral des séries HSP. Avant de commencer à les utiliser, veuillez lire attentivement les instructions contenues dans ce document.

DESCRIPTION DU PRODUIT

Utilisation

La soufflante à canal latéral a été conçue pour

- l'aspiration
- la compression

- d'air et autres gaz secs, non agressifs, non toxiques et non explosifs.

Transporter un gaz à plus grande densité que l'air a pour conséquences une augmentation de la charge thermique et mécanique dans la soufflante à canal latéral et cela ne doit être entrepris qu'après avoir dûment consulté le fabricant et avoir reçu son autorisation.

Le gaz doit être exempt de vapeurs pouvant se condenser dans les conditions de température et de pression à l'intérieur de la soufflante à canal latéral.

La soufflante à canal latéral a été conçue pour être installée dans un environnement n'étant pas potentiellement explosif.

La soufflante à canal latéral est appropriée pour un fonctionnement en continu si la transmission de chaleur vers l'environnement peut avoir lieu et s'il y a une garantie de transport minimum du gaz. S'il existe un risque quelconque d'obstruction pendant plus de quelques secondes au niveau du refoulement ou de l'admission de la soufflante à canal latéral pendant son fonctionnement, il faut monter une soupape de limitation de pression ou de vide. Un démarrage fréquent ou un arrêt fréquent de la soufflante à canal latéral provoque une augmentation de la température de la bobine du moteur. En cas de doute, veuillez consulter le représentant autorisé.

La valeur nominale (valeur de référence pour les données de performance) de la température du gaz est de 15ºC. La température maximum autorisée pour le gaz aspiré est de 40ºC.

La valeur nominale de la température ambiante est de 25ºC. La température ambiante minimum autorisée est de -30ºC. La température ambiante maximum autorisée est de 40ºC.

Pour connaître les valeurs maximums de pression différentielle autorisées, il faut consulter la plaque de caractéristiques (valeurs négatives ("-") pour le fonctionnement à vide, valeurs positives ("+") pour le fonctionnement sous pression). Les données sont valables jusqu'à 25°C de température ambiante et jusqu'à 1000m d'altitude au-dessus du niveau de la mer. Des températures supérieures réduisent de

SP

40°C. En caso de instalación en altitudes por encima de 1000 m sobre el nivel del mar, consulte con el fabricante para determinar la presión diferencial máxima.

La presión máxima permitida en la conexión de impulsión es de 2 bar abs. El usuario debe asegurar, mediante el control del proceso y/o mediante válvulas limitadoras, que este valor máximo no puede excederse.

Principio de operación

La turbina de canal lateral trabaja según el principio de impulso, es decir, la energía cinética se transfiere del rotor al medio vehiculado y entonces es transformada en presión.

En las versiones de dos y tres etapas, éstas trabajan según el principio descrito. Estos modelos instalan las etapas en serie, con el objetivo de alcanzar una mayor presión diferencial final.

La compresión del gas se realiza de una manera totalmente exenta de aceite. No se necesita ni se permite una lubricación de la cámara de compresión.

Refrigeración

La turbina de canal lateral está refrigerada mediante:

- radiación de calor desde la superficie de la turbina de canal lateral
- el flujo de aire del ventilador del motor
- el gas de proceso

Interruptor de arranque /parada

La turbina de canal lateral se entrega sin interruptor de arranque / parada. El control del funcionamiento de la soplante debe realizarse durante la instalación.

SEGURIDAD

Esta turbina de canal lateral ha sido diseñada y fabricada de acuerdo con el estado de la técnica. Sin embargo, algunos riesgos residuales pueden permanecer. Estas instrucciones de servicio informan sobre los peligros potenciales. Los consejos de seguridad son etiquetados con una de las palabras **PELIGRO**, **ADVERTENCIA** y **PRECAUCIÓN** de la siguiente manera:

PELIGRO

Hacer caso omiso de esta nota de seguridad conduce siempre a lesiones graves e incluso a accidentes mortales.

EN

maximum allowed pressure will not be exceeded.

Principle of operation

The side channel blower works on the impulse principle, i.e. kinetic energy is transferred from the rotor to the conveyed medium and then is converted into pressure.

For the two and three stage version:

2 or 3 stages, all working on the principle described above, are installed in line in order to achieve a better ultimate/differential pressure.

The side channel blower compresses the inlet gas absolutely oil-free. A lubrication of the pump chamber is neither necessary nor allowed

Cooling

The side channel blower is cooled by

- radiation of heat from the surface of the side channel blower
- the air flow from the fan wheel of the drive motor
- the process gas

On / Off Switch

The side channel blower comes without on/off switch. The control of the side channel blower is to be provided in the course of installation.

SAFETY

The side channel blower has been designed and manufactured according to the state-of-the-art. Nevertheless, residual risks may remain. These operating instructions inform about potential hazards where appropriate. Safety notes are tagged with one of the keywords **DANGER**, **WARNING** and **CAUTION** as follows:

DANGER

Disregard of this safety note will always lead to accidents with fatal or serious injuries.

FR

jusqu'à 10% la valeur maximum de pression différentielle à 40°C. En cas d'installation en altitudes supérieures à 1000 m au-dessus du niveau de la mer, veuillez consulter le fabricant pour déterminer la pression différentielle maximum.

La pression maximum autorisée pour la connexion de refoulement est de 2 bars abs. L'utilisateur doit s'assurer, par le contrôle du processus et/ou par des soupapes de limitation, que cette valeur maximum ne peut être dépassée.

Principe de fonctionnement

La soufflante à canal latéral fonctionne selon le principe de refoulement, c'est-à-dire que l'énergie cinétique est transférée du rotor au milieu transporté, se transformant alors en pression.

Dans les versions à deux et trois étages, ils fonctionnent sur le principe décrit. Ces modèles installent les étages en série pour obtenir une plus haute pression différentielle finale.

La compression du gaz se fait d'une manière complètement exempte d'huile. Pas de lubrification de la chambre de compression nécessaire, et qui n'est d'ailleurs pas autorisé.

Refroidissement

La soufflante à canal latéral est refroidie par:

- radiation de chaleur depuis la surface de la soufflante à canal latéral
- le flux d'air du ventilateur du moteur
- le gaz de procédé

Interrupteur marche/arrêt

La soufflante à canal latéral est fournie sans interrupteur de marche/arrêt. Lors de l'installation, il faut contrôler le fonctionnement de la soufflante.

SÉCURITÉ

Cette soufflante à canal latéral a été conçue et construite conformément à la technique en l'état. Cependant, quelques risques résiduels peuvent être présents. Cette notice de fonctionnement informe des risques potentiels. Les conseils de sécurité sont indiqués avec les mots **DANGER**, **ATTENTION !** et **PRÉCAUTION**, de la manière suivante:

DANGER

Ne pas tenir compte de cette note de sécurité conduit toujours à des accidents avec lésions graves, voire mortelles.

SP

ADVERTENCIA

Hacer caso omiso de esta nota de seguridad puede conducir a lesiones graves e incluso a accidentes mortales.

PRECAUCIÓN

Hacer caso omiso de esta nota de seguridad puede conducir a accidentes menores o a daños materiales.

PELIGRO

El manejo inadecuado del equipo puede ocasionar lesiones graves o incluso mortales.

La caja de bornes del motor sólo deberá abrirse después de haber constatado la ausencia de voltaje.

Utilizar elementos de fijación, uniones, tuberías, válvulas y recipientes de hermeticidad y resistencia suficientes para las presiones que alcance cada equipo.

La soplante contiene partes giratorias (ventilador del motor, rodete, eje,...). Evite el contacto con estas partes.

La turbina en funcionamiento puede alcanzar una temperatura de más de 125 ºC. Durante y después de su utilización de forma continua, tome las precauciones necesarias para evitar cualquier contacto accidental con la turbina.

Si los silenciadores de aspiración o de impulsión se han deteriorado, el nivel sonoro de la turbina puede aumentar. Emplee protectores auditivos cuando el nivel sonoro supere los 85 dB(A).

EN

WARNING

Disregard of this safety note may lead to accidents with fatal or serious injuries.

CAUTION

Disregard of this safety note may lead to accidents with minor injuries or property damage.

DANGER

Inadequate operation with the equipment can cause serious injury or death.

The motor terminal box must be opened only after having noted the absence of voltage.

Use fasteners, joints, pipes, valves and containers of air tightness and resistance enough to the pressure that the equipment can reach.

The blower includes rotating parts (fan motor, impeller, shaft,...). Avoid contact with these parts.

The blower can reach a temperature of more than 125 ° C. During and after its operation, take precautions to avoid any accidental contact with the blower.

If silencers have deteriorated the sound level of the blower may increase. Use hearing protectors when noise level exceeds 85 dB (A).

FR

ATTENTION !

Ne pas tenir compte de cette note de sécurité peut conduire à des accidents avec lésions graves, voire mortelles.

PRÉCAUTION

Ne pas tenir compte de cette note de sécurité peut entraîner des accidents légers ou des dommages matériels.

DANGER

Une manipulation inappropriée de l'équipement peut occasionner des lésions graves, voire mortelles.

La boîte à bornes du moteur ne doit être ouverte qu'après vérification de l'absence de courant.

Utiliser des éléments de fixation, joints, tuyauterie, soupapes et récipients avec une étanchéité et une résistance suffisantes pour les pressions pouvant être atteintes par chaque équipement.

La soufflante incorpore des éléments qui tournent (ventilateur du moteur, roue à aubes, arbre). Evitez le contact avec ces éléments.

Lors du fonctionnement, la soufflante peut atteindre une température supérieure à 125ºC. Pendant son utilisation et après l'avoir utilisée en continu, prenez toute précaution utile pour éviter un contact accidentel avec la soufflante.

Si les silencieux d'aspiration ou de refoulement sont endommagés, le niveau sonore de la soufflante peut augmenter. Utilisez une protection auditive si le niveau dépasse 85 dB(A).

INSTALACIÓN Y PUESTA EN MARCHA

Requisitos previos para la instalación

PRECAUCIÓN

Si no se cumplen los requisitos previos para la instalación, particularmente en caso de refrigeración insuficiente:
Riesgo de daños o destrucción de la turbina de canal lateral y componentes adyacentes.
¡Riego de lesiones!
Los requisitos previos para la instalación deben cumplirse.

INSTALLATIÓN AND COMMISSIONING

Installation Prerequisites

CAUTION

In case of non-compliance with the installation prerequisites, particularly in case of insufficient cooling:
Risk of damage or destruction of the side channel blower and ad-joining plant components!
Risk of injury!
The installation prerequisites must be complied with.

INSTALLATION ET MISE EN MARCHE

Exigences avant installation

PRÉCAUTION

Si les exigences ne sont pas respectées avant l'installation, et en particulier si le refroidissement est insuffisant:
risque de dommages ou de destruction de la soufflante à canal latéral et des composants adjacents.
Risque de lésions!
Les exigences avant installation sont à respecter.

SP

Asegúrese de que la integración de la turbina de canal lateral se lleva a cabo de tal manera que los requisitos esenciales de seguridad de la Directiva de Máquinas 98/37/CE se han cumplido (en la responsabilidad del diseñador de la máquina en la que la turbina de canal lateral se incorpora, véase también la nota de la Declaración de conformidad CE).

Posición de montaje y espacio

La turbina de canal lateral puede trabajar con el flujo de gas en posición horizontal o vertical (en posición vertical el motor debe estar en la posición más elevada).

Asegúrese de que el entorno de la turbina de canal no es potencialmente explosivo.

Asegúrese de que se cumplen las siguientes consideraciones ambientales:

- Temperatura ambiental: -5 ... +40 °C

- Presión ambiental: atmosférica

Asegúrese de que las condiciones ambientales se ajustan a la clase de protección del motor (de acuerdo con lo especificado en la placa de características).

Asegúrese de que la base de montaje está equilibrada.

Asegúrese de que, con el fin de disponer de una ventilación correcta, existirá una distancia lateral mínima de 0,1 metros entre la turbina de canal lateral y las paredes cercanas.

Asegúrese de que haya una distancia mínima de 5,5 cm entre la cubierta del ventilador y las paredes cercanas.

Asegúrese de que habrá un espacio libre de un mínimo de 4 cm entre la tapa de la soplante y las paredes cercanas.

Asegúrese de que ningún elemento de material sensible al calor (plástico, madera, cartón, papel, circuitos electrónicos) pueda tocar la superficie de la turbina de canal lateral.

Asegúrese de que el lugar donde se instala la turbina de canal lateral dispone de la ventilación suficiente.

PRECAUCIÓN

Durante el funcionamiento, la superficie de la turbina de canal lateral puede alcanzar temperaturas de más de 125°C.
¡Riesgo de quemaduras!

Asegúrese de que la turbina de canal lateral no puede tocarse de manera inadvertida durante su funcionamiento.

Tenga en cuenta la disposición de los silenciadores de admisión e impulsión en función del modelo de soplante adquirido. La turbina de canal lateral no puede hacerse funcionar alterando la disposición de la admisión o de la impulsión, de lo contrario puede quedar dañada (véase las figuras 1, 2 y 3).

EN

Make sure that the integration of the side channel blower is carried out such that the essential safety requirements of the Machine Directive 98/37/EC are complied with (in the responsibility of the designer of the machinery into which the side channel blower is to be incorporated; see also the note in the EC-Declaration of Conformity)

Mounting Position and Space

The side channel blower can be operated with horizontal or vertical gas flow (with vertical gas flow the drive motor shall be in the uppermost position).

Make sure that the environment of the side channel blower is not potentially explosive.

Make sure that the following ambient conditions will be complied with:

- Ambient temperature: -5 ... +40 °C

- Ambient pressure: atmospheric

Make sure that the environmental conditions comply with the protection class of the drive motor (according to the nameplate).

Make sure that the mounting base is even

Make sure that in order to warrant a sufficient cooling there will be a clearance of minimum 0,1 m between the side channel blower and nearby walls.

Make sure that there will a clearance of minimum 5,5 cm between the fan hood and nearby walls.

Make sure that there will be a clearance of minimum 4 cm between the cover and nearby walls.

Make sure that no heat sensitive parts (plastics, wood, cardboard, paper, electronics) will touch the surface of the side channel blower.

Make sure that the installation space or location is vented such that a sufficient cooling of the side channel blower is warranted.

CAUTION

During operation the surface of the side channel blower may reach temperatures of more than 125°C.

Risk of burns!

Make sure that the side channel blower will not be touched inadvertently during operation, provide a guard if appropriate.

Note the position of the inlet and discharge silencers, depending on the side channel blower model. The side channel blower can't be operated by altering the disposition of the inlet or the discharge otherwise it can be damaged (see Figures 1, 2 and 3).

FR

Vérifiez si l'intégration de la soufflante à canal latéral est faite en respectant les exigences essentielles de sécurité de la Directive Machines 98/37/CE (voir également la note Déclaration de Conformité CE dans la responsabilité du concepteur de la machine qui incorpore la soufflante à canal latéral).

Position de montage et espace

La soufflante à canal latéral peut fonctionner avec un flux de gaz en position horizontale ou verticale (en position verticale, le moteur doit être situé le plus haut possible).

Vérifiez si la soufflante à canal latéral n'est pas dans un environnement potentiellement explosif.

Vérifier si les éléments suivants sont respectés:

- Température ambiante: -5 ... +40 °C

- Pression ambiante : atmosphérique

Vérifiez si les conditions ambiantes correspondent à la classe de protection du moteur (conformément aux spécifications figurant sur la plaque de caractéristiques).

Vérifiez si la base de montage est stable.

Vérifiez s'il existe une distance latérale minimum de 0,1 m entre la soufflante à canal latéral et les murs pour une ventilation correcte.

Vérifiez s'il y a une distance minimum de 3,5 cm (pour les soufflantes à dimensions de construction jusqu'à la série 0140) ou de 5,5 cm (pour celles à partir de la série 0210) entre la protection supérieure du ventilateur et les murs.

Vérifiez s'il y a un espace libre d'au moins 2 cm (pour les soufflantes à dimensions de construction jusqu'à la série 0210), 3 cm (pour celles de la série 0315) ou de 4 cm (à partir de la série 0530), respectivement, entre la protection de la soufflante et les murs.

Vérifiez si aucun élément fabriqué en matériau sensible à la chaleur (plastique, bois, carton, papier, circuits électroniques) ne peut être en contact avec la surface de la soufflante à canal latéral

Vérifiez si la soufflante à canal latéral est à un endroit ayant une ventilation suffisante.

PRÉCAUTION

Pendant le fonctionnement, la surface de la soufflante à canal latéral peut atteindre des températures supérieures à 125°C.
Risque de brûlures!

Vérifiez si la soufflante à canal latéral ne peut pas être touchée par inadvertance pendant le fonctionnement.

Veillez à la disposition des silencieux d'admission et de refoulement en fonction du modèle de soufflante acheté. La soufflante à canal latéral ne peut pas être mise à fonctionner en modifiant la disposition des silencieux sans risquer d'être endommagée (voir les figures 1, 2 et 3).

SP

Conexión eléctrica / controles

PELIGRO

La conexión eléctrica debe realizarse por personal cualificado respetando la normativa local.

Debe conectarse la toma de tierra para prevenir accidentes por fugas eléctricas (véase figura 4 para conexión).

Asegúrese de que según lo establecido en la Directiva EMC 89/336/EEC y en la Directiva de Baja Tensión 73/23/EEC, así como las normas estándar EN, las directivas de seguridad eléctrica y profesional y la normativa local o nacional, respectivamente, se han cumplido (esto es responsabilidad del diseñador de la máquina en la que la turbina de canal lateral debe incorporarse, véase también la nota de la Declaración de conformidad CE)

Asegúrese de que la fuente de alimentación es compatible con los datos definidos en la placa de características del motor.

Asegúrese de que se proporciona una protección de sobrecarga según la norma EN 60204-1, para el motor de accionamiento.

Asegúrese de que el motor de la turbina de canal lateral no se vea afectado por perturbaciones electromagnéticas de la red; si fuese necesario asesórese por su proveedor.

Después de haber realizado la instalación, poner en marcha brevemente la soplante y asegúrese de que el sentido de rotación de la turbina es el indicado por la flecha y, por lo tanto, el aire se aspira y se impulsa por las respectivas bocas de aspiración e impulsión, y no al revés.

EN

Electrical Connection / Controls

DANGER

The electrical connection should be done by qualified personnel in compliance with local regulations.

Connect earth lines, in order to prevent electrical leakage accident (see Fig. 4 for connection)

Make sure that the stipulations acc. to the EMC-Directive 89/336/EEC and Low-Voltage-Directive 73/23/EEC as well as the EN-standards, electrical and occupational safety directives and the local or national regulations, respectively, are complied with (this is in the responsibility of the designer of the machinery into which the side channel blower is to be incorporated; see also the note in the EC-Declaration of Conformity).

Make sure that the power supply is compatible with the data on the nameplate of the drive motor.

Make sure that an overload protection according to EN 60204-1 is provided for the drive motor.

Make sure that the drive of the side channel blower will not be affected by electric or electromagnetic disturbance from the mains; if necessary seek advice from your supplier service.

After the installation, turn the blower on briefly and verify that the direction of rotation of the impeller is according the arrow and, therefore, air is sucked and blown by the respective inlet and outlet and not vice versa.

FR

Branchements électriques / contrôles

DANGER

Les branchements électriques doivent être réalisés par du personnel qualifié et conformément aux normes locales.

La prise de terre doit être mise pour éviter les accidents par fuites électriques (voir la figure 4 pour les branchements).

Vérifiez si, conformément à la Directive EMC 89/336/EEC et à la Directive Basse Tension 73/23/EEC, et aussi aux normes standards EN, les directives de sécurité électrique et professionnelle et normes locales ou nationales, respectivement, ont été respectées (cette responsabilité incombe au concepteur de la machine allant recevoir la soufflante à canal latéral ; voir également la note de Déclaration de Conformité CE).

Vérifiez si la source d'alimentation est compatible avec les données figurant sur la plaque de caractéristiques du moteur.

Vérifiez s'il y a une protection contre la surcharge pour le moteur d'entraînement, conformément à la norme EN 60204-1.

Vérifiez si le moteur de la soufflante à canal latéral n'est pas gêné par les perturbations électromagnétiques du réseau ; si nécessaire, demandez conseil auprès de votre fournisseur.

Après l'installation, mettez rapidement en marche la soufflante et vérifiez si la turbine tourne dans la direction signalée par la flèche et donc si l'air est aspiré et refoulé par les orifices d'aspiration et de refoulement correspondants, et non dans l'autre sens.

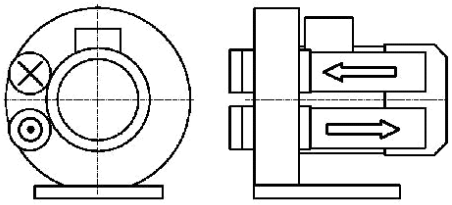


Fig. 1: Simple etapa (1 rodete)
Single stage (1 impeller)
Mono-étagées (1 turbine)
Series: HSPxxxx-1M...

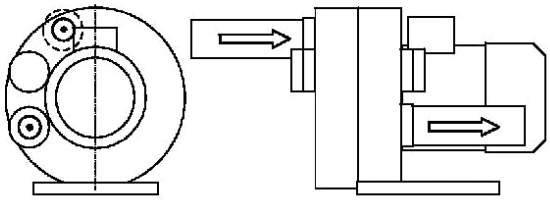


Fig. 2: Doble etapa (2 rodetes)
Double stage (2 impellers)
Bi-étagées (2 turbine)
Series: HSPxxxx-2S...

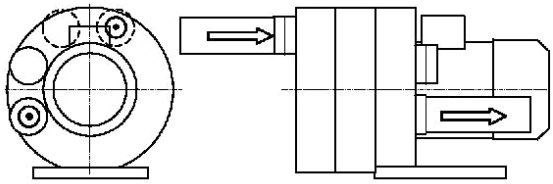


Fig. 3: Triple etapa (tres rodetes)
Triple stage (3 impellers)
Tri-étagées (3 turbine)
Series: HSPxxxx-2S...

SP EN FR

NOTA: Las turbinas de canal lateral de alto rendimiento de doble y de triple etapa (HSPxxxx-2S… y HSPxxxx-3S…), se suministran con el silenciador de admisión suelto y deberá ser montado por el instalador, según la posición indicada.

NOTE: Double and triple stage high performance side channel blowers (HSPxxxx-2S... and HSPxxxx-3S...) are supplied with the inlet silencer apart and must be installed by the installer, according to the position indicated.

N.B.: Les soufflantes à canal latéral d'haute performance bi et tri-étagées (HSPxxxx-2S-3S HSPxxxx ... et ...) sont livrés avec silencieux d'admission lâches et doivent être montés par l'installateur, selon la position indiquée.

PRECAUCIÓN

Hacer funcionar la turbina de canal lateral en sentido contrario puede destruirla en poco tiempo.

Antes de la puesta en marcha debe asegurarse de que la turbina de canal lateral gira en la dirección correcta.

CAUTION

Operating in the wrong direction of rotation can destroy the side channel blower in short time.

Prior to starting-up it must be made sure that the side channel blower is operated in the proper direction.

PRÉCAUTION

Faire fonctionner la soufflante à canal latéral dans le sens contraire peut la détruire en peu de temps.

Avant la mise en marche, vérifiez si la turbine à canal latéral tourne dans la bonne direction.

NOTA: Si ciertas aplicaciones requieren la operación inversa durante un corto periodo, por favor, consulte con su representante autorizado.

Versión con motor trifásico:

- Determine cuál debe ser el sentido de giro (según la flecha pegada o grabada en la soplante)
- Ponga en marcha e inmediatamente detenga el motor
- Verifique cuál es el sentido de giro del ventilador del motor justo antes de que se detenga

Si el sentido de rotación debe invertirse:

- Intercambie dos de los tres cables de conexión del motor (motor trifásico).

NOTE: If certain applications require reverse operation over short periods, please seek advice from your authorized representative!

Version with three-phase motor:

- Determine the intended direction of rotation with the arrow (stuck on or cast)
- "Bump" the drive motor
- Watch the fan wheel of the drive motor and determine the direction of rotation just before the fan wheel stops

If the rotation must be changed:

- Switch any two of the drive motor wires (three-phase motor).

N.B. Si des applications doivent fonctionner à l'envers pendant une courte période, veuillez consulter le représentant autorisé.

Version à moteur triphasé:

- Déterminer la direction de rotation (selon la flèche collée ou gravée sur la soufflante)
- Mettre en marche et arrêter immédiatement le moteur
- Avant que le ventilateur du moteur ne s'arrête, vérifier sa direction de rotation

Si la direction de rotation doit être inversée :

- Interchanger deux des trois câbles de connexion du moteur (moteur triphasé).

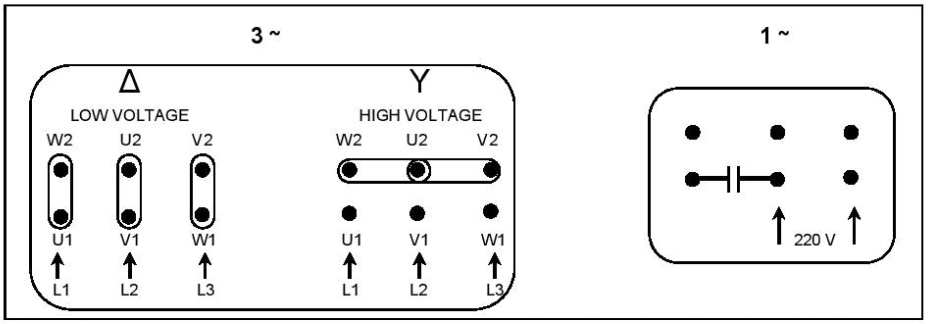
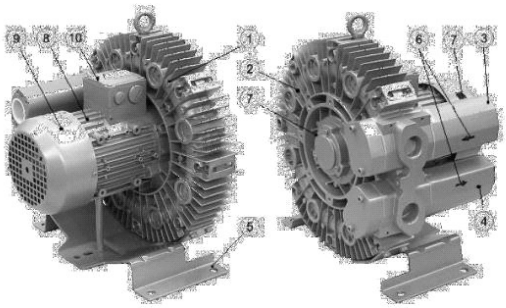


Fig. 4



1) Cuerpo de la soplante / Compressor housing / *Corps de la soufflante*
2) Tapa de la soplante / Compressor cover / *Couvercle de la soufflante*
3) Silenciador de aspiración / Suction silencer / *Silencieux d'aspiration*
4) Silenciador de impulsion / Discharge silencer /*Silencieux refoulement*
5) Pie / Foot / *Pied*
6) Flecha indicadora de la dirección del aire / Arrow indicating direction of the air / *Flèche indiquant le sens de l'air*
7) Flecha indicadora de la dirección de rotación / Arrow indicating direction of rotation / *Flèche indiquant le sens de rotation*
8) Motor / Motor / *Motor*
9) Tapa del ventilador / Fun cover / *Couvercle de ventilateur*
10) Caja de bornes / Terminal box / *Boîte à bornes*

SP

PRECAUCIóN

Los modelos de mayor tamaño de turbinas de canal lateral pueden emitir ruido de alta intensidad.

Riesgo de daños en el oído.

Las personas que se encuentran en las proximidades de una turbina de canal lateral sin aislamiento acústico durante períodos prolongados, deben usar protección para los oídos.

- Recomendamos la instalación de filtros de aspiración para prevenir la entrada de polvo u otras partículas en el interior de la soplante. Estos filtros se instalan en la línea de admisión. Contacte con su distribuidor habitual para la selección del filtro.
- Recomendamos la instalación de válvula limitadora de presión ó vacío para evitar daños en la soplante por exceso de presión o nivel de vacío. Estas válvulas se instalan en la línea de aspiración o de impulsión, según se emplee como bomba de vacío o compresor, respectivamente. Contacte con su distribuidor habitual para determinar el modelo de válvula adecuado.

EN

CAUTION

Depending on the construction size the side channel blower may emit noise of high intensity.
Depending on the operating state the side channel blower may emit noise in a narrow band.

Risk of damage to the hearing.

Persons staying in the vicinity of a non noise insulated side channel blower over extended periods shall wear ear protection.

- We recommend the installation of suction filters to prevent entry of dust or other particles inside the side channel blower. These filters are installed in the inlet line. Contact your dealer for the filter selection.
- We recommend installing a pressure or vacuum relief valve to prevent damage to the blower from excessive pressure or vacuum level. These valves are installed in the suction line or in the discharge line, depending on the use as vacuum pump or compressor. Contact your dealer to determine the appropriate valve model.

FR

PRÉCAUTION

Les modèles de plus grandes dimensions de soufflantes à canal latéral peuvent émettre un bruit de très grande intensité.

Risque de dommages auditifs.

Les personnes se trouvant pendant de longues périodes près d'une soufflante à canal latéral sans isolation acoustique doivent se protéger contre le bruit.

- Il est recommandé d'installer des filtres d'aspiration pour éviter que la poussière ou autres particules ne pénètrent dans la soufflante. Ces filtres sont à monter sur la ligne d'admission. Veuillez contacter votre distributeur habituel pour le choix du filtre.
- Il est recommandé d'installer une soupape de limitation de pression ou de vide pour éviter des dommages sur la soufflante en raison d'un excès de pression ou du niveau de vide. Ces soupapes sont à monter sur la ligne d'aspiration ou de refoulement, selon si son utilisation comme pompe à vide ou compresseur respectivement. Veuillez contacter votre distributeur habituel pour déterminer le modèle approprié de la soupape.

MANTENIMIETO

PELIGRO

En el caso de que el gas vehiculado por la turbina de canal lateral haya sido contaminado por materiales que puedan ser peligrosos para la salud, el material nocivo puede residir en los filtros o en orificios o espacios internos de la turbina de canal lateral.

Peligro para la salud durante la manipulación, limpieza o substitución de los filtros o durante el desmontaje de la turbina de canal lateral.

Daño para el medio ambiente.

Deben emplearse equipos de protección personal para la manipulación de los elementos contaminados.

Los elementos contaminados son residuos especiales y deben ser tratados separadamente en cumplimiento de la normativa aplicable.

- La turbina de canal lateral es un producto técnico, por favor no la desmonte ni repare sin consultar a un técnico.
- Antes de realizar cualquier operación sobre la turbina, asegúrese de que está apagada y

MAINTENANCE

DANGER

In case the side channel blower conveyed gas that was contaminated with foreign materials which are dangerous to health, harmful material can reside in filters.

Danger to health during inspection, cleaning or replacement of filters.

Danger to the environment.

Personal protective equipment must be worn during the handling of contaminated filters.

Contaminated filters are special waste and must be disposed of separately in compliance with applicable regulations.

- The side channel blower is a technical product, please do not dismantle or repair without consulting professional technician to avoid danger.
- Before doing any operation in the blower, be

ENTRETIEN

DANGER

Si le gaz transporté par la soufflante à canal latéral a été contaminé par des matériaux pouvant être nocifs pour la santé, le matériau nocif peut rester dans les filtres ou les orifices ou espaces internes de la soufflante à canal latéral.

Danger pour la santé pendant la manipulation, le nettoyage ou le changement des filtres ou pendant le démontage de la soufflante à canal latéral.

Danger pour l'environnement.

Il faut utiliser des équipements de protection personnelle lors de la manipulation des éléments contaminés.

Les éléments contaminés sont des résidus spéciaux et doivent être traités de manière isolée conformément à la norme applicable.

- La soufflante à canal latéral est un produit technique. Veuillez ne pas la démonter ni la réparer sans consulter un technicien.
- Avant toute intervention sur la soufflante, vérifiez si elle est éteinte et débranchée.

SP

desconectada de la corriente eléctrica.
- No actuar sobre la turbina hasta que no haya alcanzado una temperatura que no sea peligrosa para el operario.
- Limpiar periódicamente los silenciadores de aspiración e impulsión con aire comprimido. Sustituirlos en caso necesario.
- Limpiar el polvo y el aceite que se aloje en el cuerpo de la soplante asegurando una mejor disipación del calor y un rendimiento óptimo.
- Deben revisarse y substituirse periódicamente los rodamientos. La duración de los mismos depende de diversos factores ambientales y de funcionamiento, entre los que destacan la presión de trabajo y la temperatura.
- El transporte de aire con un nivel alto de humedad puede reducir la vida de la soplante. En caso de trabajar en ambientes con niveles de alta humedad, revisar periódicamente la soplante para prevenir daños por corrosión.

PRECAUCIÓN

Con el objetivo de alcanzar un funcionamiento más eficiente y de mayor duración, la turbina de canal lateral ha sido ensamblada y ajustada con tolerancias muy precisas.

Estos ajustes se perderán durante el desmontaje de la turbina de canal lateral.
Por tanto, es muy recomendable que cualquier desmontaje de la turbina de canal lateral que vaya más allá de lo que se describe en este manual se lleve a cabo por el servicio técnico autorizado.

REPUESTOS

Únicamente los rodamientos están concebidos como piezas de repuesto. Se trata de piezas estándar disponibles en el mercado abierto. Si requiere una revisión de otros elementos a parte de los rodamientos, contacte con su servicio técnico autorizado para que se valore si se aconseja la reparación o debe considerarse la substitución por una turbina de canal lateral nueva.

NOTA: Cuando solicite recambios o accesorios proporcione siempre el modelo y número de serie de la turbina de canal lateral (datos que se pueden leer en la placa de características).

EN

sure that it is switched off and disconnected from the power supply.
- Do not touch the blower until it has reached a non dangerous temperature.
- Clean the inlet and outlet silencers with compressed air, periodically. Substitute silencers when necessary.
- Clean the dust and oil on the blower housing to ensure best heat dissipation performance.
- Check and replace the bearings, periodically. Bearings lifetime depends on several ambient and operation factors, specially pressure and temperature.
- Conveying air with higher moisture may make blower shorter service life, and moist air shall be avoided, if not avoidable, shall inspect blower parts periodically to prevent blower damage or injury occurred due to corrosion problem.

CAUTION

In order to achieve best efficiency and a long life the side channel blower was assembled and adjusted with precisely defined tolerances.

This adjustment will be lost during dismantling of the side channel blower.

It is therefore strictly recommended that any dismantling of the side channel blower that is beyond of what is described in this manual shall be done by the authorized technical service.

SPARE PARTS

Only the bearings are intended as spare parts. Commercially available standard parts are to be purchased on the open market. If an overhaul requires parts other than bearings or standard parts your authorized representative will clarify whether an overhaul is economic or a replacement side channel blower should be considered.

NOTE: When ordering spare parts or accessories always quote the type and the serial no. of the side channel blower (data on the nameplate).

FR

- N'intervenez pas sur la soufflante jusqu'à ce que sa température ne représente pas un danger pour le personnel devant intervenir.
- Nettoyez régulièrement les silencieux d'aspiration et de refoulement à l'air comprimé. Les changer si nécessaire.
- Enlever la poussière et l'huile logés dans le corps de la soufflante, permettant ainsi une meilleure dissipation de chaleur et une haute performance.
- Il faut régulièrement réviser et changer les roulements. Leur durée dépend de différents facteurs d'environnement et de fonctionnement, parmi lesquels la pression de service et la température.
- Le transport d'air à haut degré d'humidité peut raccourcir la durée de vie de la soufflante. Si l'environnement de service est très humide, il est recommandé de vérifier régulièrement la soufflante pour éviter les dommages provoqués par l'oxydation.

PRÉCAUTION

Afin d'obtenir un fonctionnement plus efficace et plus durable, la soufflante à canal latéral a été montée et réglée selon des tolérances très précises.

Ce réglage se perd pendant le démontage de la soufflante à canal latéral.
Si le démontage de la soufflante à canal latéral doit aller au-delà de ce qui est décrit dans ce document, il est donc fortement recommandé de le faire exécuter par le service technique autorisé.

PIÈCES DE RECHANGE

Seuls les roulements font partie des pièces de rechange. Il s'agit de pièces standards et disponibles sur le marché ouvert. Si une révision d'éléments autres que les roulements s'avère nécessaire, veuillez contacter le service technique autorisé aux fins d'évaluation pour savoir s'il vous faut une réparation ou s'il faut changer la soufflante à canal latéral par une neuve.

N.B. Lorsque vous demandez des pièces de rechange ou des accessoires, indiquez toujours le modèle et le numéro de série de la soufflante à canal latéral (ces données figurent sur la plaque de caractéristiques).

CONDICIONES DE LA GARANTÍA

Las turbinas de canal lateral de alto rendimiento tienen una garantía de 12 meses a partir de la entrega (fecha factura). Durante este periodo de garantía el suministrador deberá reemplazar o reparar las piezas que se reconozcan como defectuosas por fallo de origen, soportando también los gastos de mano de obra implícitos en el desmontaje y montaje de las mismas.

Las reparaciones en garantía se efectuarán únicamente en los talleres y por personal del suministrador, quedando a cargo del cliente la entrega y la recogida de la máquina.

CONDITIONS OF THE WARRANTY

The duration of the warranty for the high performance side channel blowers is 12 months from the date of delivery (in accordance with the date of the invoice). During this warranty period, the supplier has the obligation to replace or repair pieces or parts found to be defective because of a manufacturing failure, covering those labor costs included in the disassembly and re-assembly of said parts.

Warranted repairs will only be done in the workshops and by the personnel of the supplier. The customer will be responsible for

CONDITIONS DE LA GARANTIE

La garantie des soufflantes à canal latéral d'haute performance est de 12 mois à compter de la livraison (date de facture). Pendant la période de garantie, le fournisseur se doit de remplacer ou de réparer les pièces reconnues comme défectueuses d'origine, prenant à sa charge les frais de main d'œuvre de montage et démontage des éléments.

Les réparations sous garantie sont à effectuer uniquement dans les ateliers et par du personnel appartenant au fournisseur, la livraison et la récupération de la machine

SP

La garantía se aplicará exclusivamente para el suministro de equipos nuevos.

La garantía no se aplicará si el equipo no ha sido instalado correctamente, si se ha utilizado de una manera anormal, o bien, no se le ha realizado el mantenimiento indicado.

La garantía no se aplicará si el equipo ha estado trabajando en condiciones de funcionamiento que estén fuera de los parámetros establecidos por el fabricante; una tensión de alimentación incorrecta, utilización de lubricantes no homologados, presiones anormales o temperaturas ambiente excesivas que pudiesen alterar las prestaciones y duración de los propios materiales.

La responsabilidad del suministrador queda estrictamente limitada a las obligaciones especificadas y no está obligado a indemnizar al comprador por cualquier tipo de daño o perjuicio.

EN

the delivery and pick up of the machine.

The warranty will only apply for the supply of new equipment.

The warranty will not apply if the equipment was not been properly installed, if the equipment has been used in an irregular way, or moreover, if the required maintenance has not be done.

The warranty will not apply if the conditions of use of the equipment have been outside the established parameters, as specified by the manufacturer, examples of which may include but are not limited to the following: use of incorrect power supply, use of non-officially-recognized lubricants, use under inappropriate pressure or operation of the equipment in excessive ambient temperature, which could alter the performance or durability of the equipment.

The responsibility of the supplier is strictly limited to the conditions specified herein and does not include compensating the purchaser of the equipment for any other type of damage to or harm caused by the equipment.

FR

étant à la charge du client.

La garantie est applicable uniquement dans le cas d'équipements neufs.

La garantie n'est pas applicable si l'équipement n'a pas été correctement installé ou s'il a été anormalement utilisé, ou encore si l'entretien indiqué n'a pas été réalisé.

La garantie n'est pas applicable si l'équipement a fonctionné dans des conditions non conformes aux paramètres établis par le fabricant, un voltage incorrect de l'alimentation électrique, l'utilisation de lubrifiants non homologués, des pressions anormales ou des températures ambiantes excessives pouvant modifier les prestations et la durée des matériaux eux-mêmes.

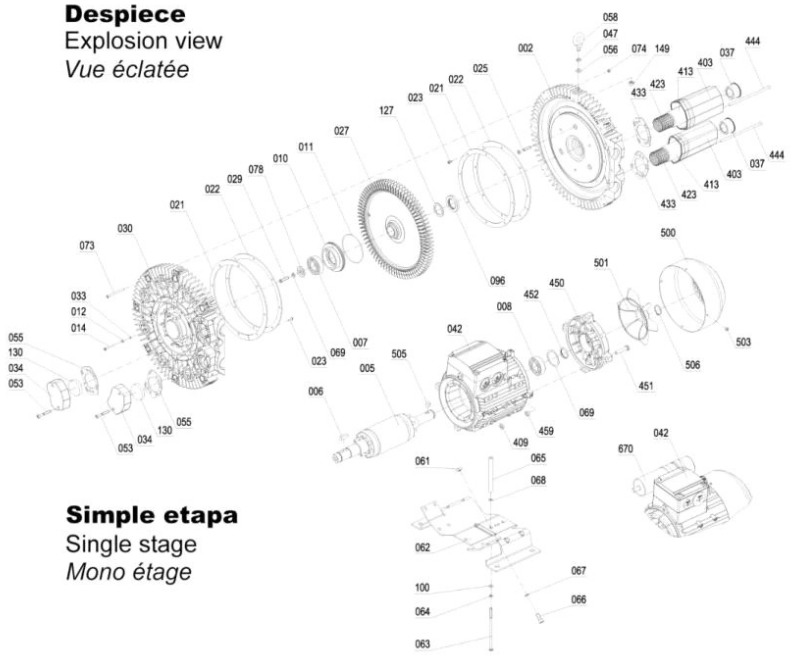
La responsabilité du fournisseur est uniquement limitée aux obligations spécifiques et il n'est pas obligé d'indemniser l'acheteur pour tout type de dommage ou préjudice.

Lista de piezas / Parts list / *Liste des pieces*

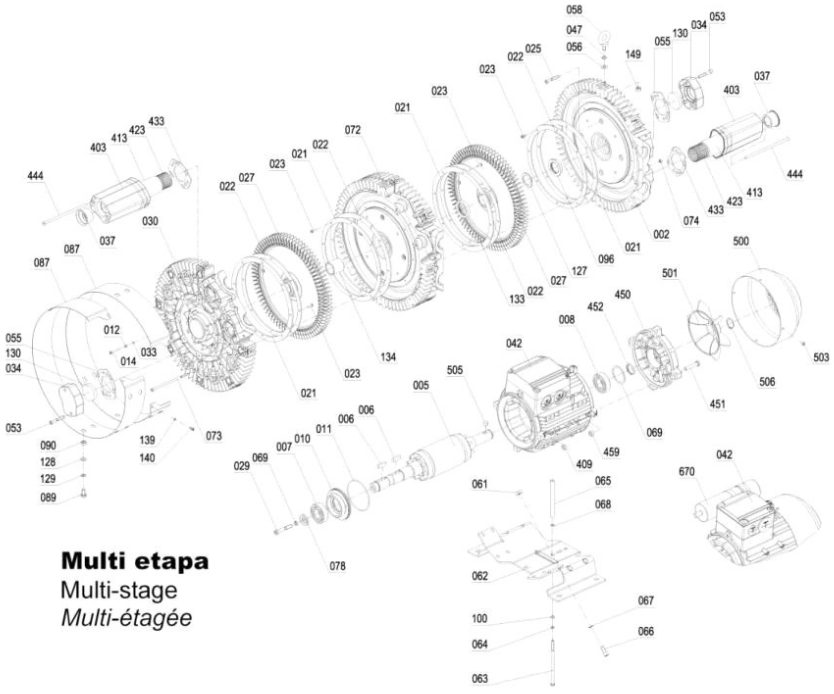
No	Description
001	Motor housing complete
002	Blower housing
005	Motor rotor
006	Parallel key
007	Deep groove ball bearing
008	Deep groove ball bearing
010	Bearing cover complete
011	O-ring
012	Washer
014	Screw
021	sealing ring
022	support ring
023	Screw
025	Screw
027	Impeller
029	Screw
030	Blower cover complete
033	O-ring
034	Flange
037	Cap
042	Terminal box, complete
047	Washer
053	Screw
055	Gasket
056	Washer
058	Lifting eye bolts
061	Square nut
062	Base
063	Screw
064	Spring lock washer
065	Sleeve
066	Screw
067	Spring lock washer
068	Washer

No	Description
069	Spring lock washer
072	Centre section
073	Screw
074	Nut
078	Washer
087	Blower cowl
089	Blower cowl
090	Nut
096	Rotary shaft lip type seal
100	Nut
127	Washer
128	Washer
129	Washer
130	Filler
133	Rotary shaft lip type seal
134	Sleeve
139	Washer
140	Screw
149	Nut
403	Silencer housing
409	Nut
413	Silencer inset
423	Net pipe
433	Gasket
444	Screw
450	End shield
451	Screw
452	Rotary shaft lip type seal
459	Nut
500	fan cowl
501	External fan
503	Screw
505	Parallel key
506	Retaining ring
670	capacitor

Despiece
Explosion view
Vue éclatée



Simple etapa
Single stage
Mono étage



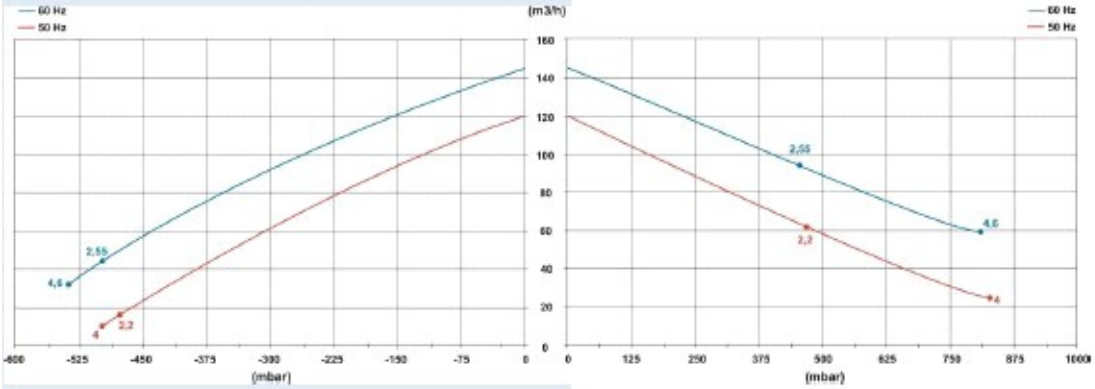
Multi etapa
Multi-stage
Multi-étagée

Seitenkanalverdichter zweistufig, luftgekühlt / **Side channel blower** double stage, TEFC

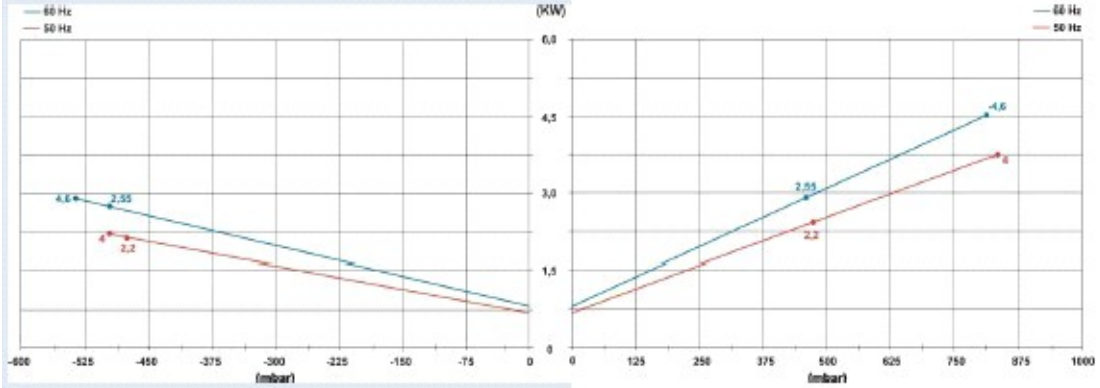
Vakuumbetrieb / Vacuum Operation

Druckbetrieb / Pressure Operation

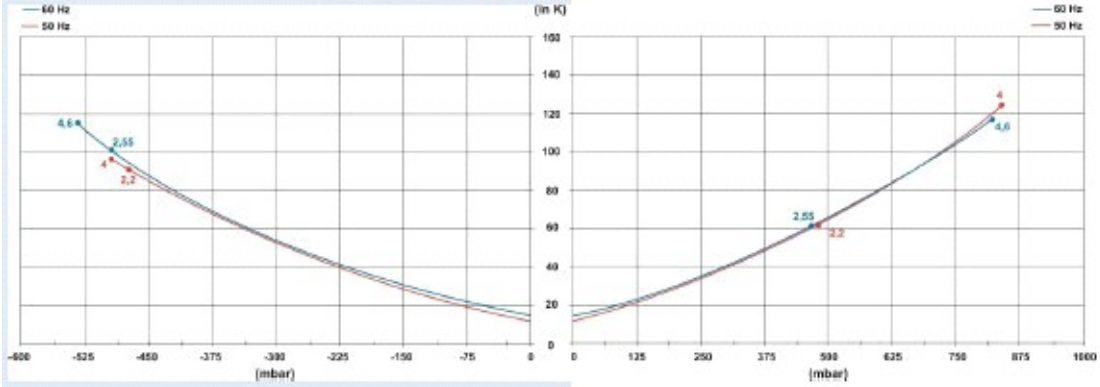
Ansaugvolumenstrom / Suction air flow



Wellenleistung / Power requirement on the blower shaft



Förderlufterwärmung / Temperature rise on the exhaust air



Die Kennlinien gelten für Dauerbetrieb; Medium: Luft von 15°C am Saugstutzen und einen atmosphärischen Gegendruck von 1013hPa (mbar abs.), Toleranz: ± 10%; Zulässige Umgebungsbedingungen: -25° bis +40°C

Curves are valid for continuous operation; medium: air at 15°C, measured at inlet port and 1013 hPa (mbar abs.) atmospheric backpressure, Tolerance: ± 10%; ambient temperature: -25° to +40°C

Die Kennlinien gelten für Dauerbetrieb; Medium: Luft von 15°C am Saugstutzen und einen atmosphärischen Ansaugdruck von 1013hPa (mbar abs.), Toleranz: ± 10%; Zulässige Umgebungsbedingungen: -25° bis +40°C

Curves are valid for continuous operation; medium: air at 15°C, measured at inlet port and 1013 hPa (mbar abs.) atmospheric pressure, Tolerance: ± 10%; ambient temperature: -25° to +40°C

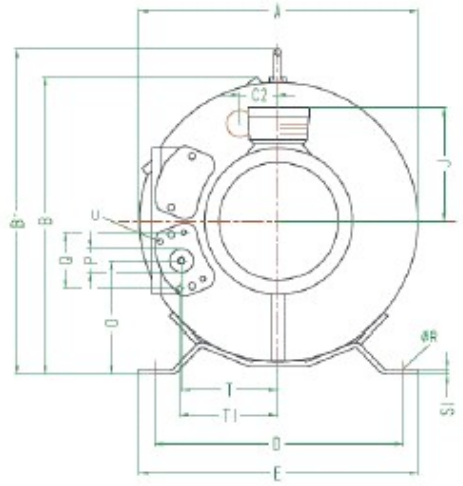
Seitenkanalverdichter zweistufig, luftgekühlt / **Side channel blower** double stage, TEFC

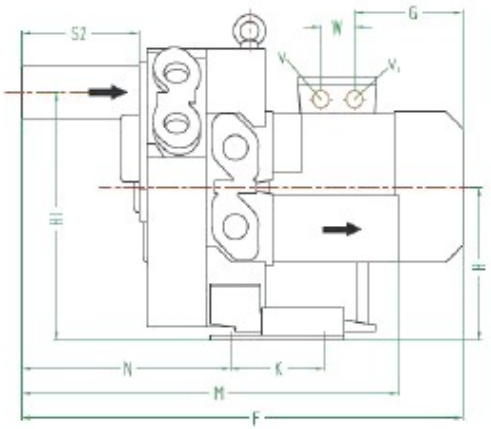
Type	kW	Hz	m³/h	hPa (mbar)[3]	V[2]	A	dB(A)[3]	kg
ASP0120-2ST221-6	2,2	50	120	-470 / 460	200-240 Δ / 345-415 Y	Δ 11,4 / Y 6,6	64	40
	2,55	60	145	-500 / 450	220-275 Δ / 380-480 Y	Δ 11,2 / Y 6,5	70	40
ASP0120-2ST401-7	4	50	120	-500 / 820	345-415 Δ / 600-720 Y	Δ 9,0 / Y 4,4	65	51
	4,6	60	145	-530 / 810	380-480 Δ / 660-720 Y	Δ 9,5 / Y 4,5	71	51

1) Zur Differenzdruckbegrenzung stehen Vakuum-/Druckbegrenzungs-ventile als Zubehör zur Verfügung / Relief valves are available for limiting differential pressure
2) Weitere Spannungen auf Anfrage verfügbar / Other voltages are available on request
3) Schalldruckpegelmessung nach EN ISO 3744 in 1 m Abstand bei mittlerer Drosselung beidseitig verschlaucht / Noise level measurement acc. to EN ISO 3744 at a distance of 1m with hoses connected

Type	Hz	V[2]	Tol.
ASP ....-..T...-1	50	185-225 Δ / 320-390 Y	+/- 5%
	60	200-240 Δ / 345-415 Y	+/- 5%
ASP ....-..T...-5	50	500 Δ	+/- 5%
	60	575 Δ	+/- 5%
ASP ....-..T...-6	50	200-240 Δ / 345-415 Y	+/- 5%
	60	220-275 Δ / 380-480 Y	+/- 5%
ASP ....-..T...-7	50	345-415 Δ / 600-720 Y	+/- 5%
	60	380-480 Δ / 660-720 Y	+/- 5%
ASP ....-..A...-1	50	230	+/- 5%
	60	230	+/- 5%
ASP ....-..S...-5	50	115/230	+/- 5%
	60	115/230	+/- 5%

Abmessungen / Dimensions





Abmessungen in mm / Dimensions in mm

Type	A	B	B'	C2	D	E	F	G	H	H1	J	K	M	N	O	P
ASP0120-2ST221-6	387	402	435	57	328	363	549	185	206	343	128	152	453	256	148	G1 ¼"
ASP0120-2ST401-7	387	402	435	57	328	363	603	211	206	343	148	152	453	256	148	G1 ¼"

Type	Q	ØR	S1	S2	S3	T	T1	U	V	V1	W
ASP0120-2ST221-6	64	14	4	140	31	137	138	M6 x 17	M25 x 1,5	M16 x 1,5	42
ASP0120-2ST401-7	64	14	4	140	31	137	138	M6 x 17	2 X M32 x 1,5	M16 x 1,5	32

15.5) Installation instructions to be respected