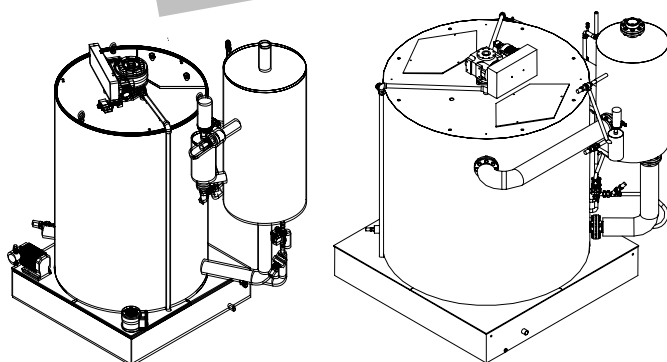


Manual generators

F600 to F2000

Contractor's manual


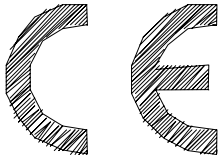


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IDENTIFICATION

 GENEGLACE - S.A.S	
Type / Model	
Date	
N° construction / Serial number	
Fluide / Fluid	
Pression de service Max. (PS) Max. working pressure	Bar
Charge fluide maxi Max. refrigerant charge	Kg
Tension (V) - Phases Voltage (V) - Phases	
Fréquence / Frequency	Hz
Puissance installée Installed power	kVA
Intensité maxi. / max. amperage	A
	

Manufacturer Plaque

Introduction

Your GENEGLACE ice machine has been designed and manufactured in accordance with current regulations; built with the greatest care, it has been subjected to a test for long-lasting quality. Nevertheless, if you discover a manufacturing fault and in order to protect your GENEGLACE machine, please do not attempt a repair but contact us as soon as possible.

Any reproduction of all or part of this notice is subject to prior permission.

The information contained in this notice is subject to modification without prior notice.

In order to update the present notice, please advise us by return of any errors or misunderstandings that may have slipped in.

GENEGLACE cannot be held responsible for damage or problems in operation occurring with GENEGLACE machines as a result of use outside the operating or safety limits or even the use of options or consumable items other than those approved by GENEGLACE.



1. General

Important

Read the safety instructions carefully before working on the ice machine.

1.1 Introduction to this notice

Your GENEGLACE ice machine has been designed and manufactured in accordance with current regulations; built with the greatest care, it has been subjected to a test for long-lasting quality. Nevertheless, if you discover a manufacturing fault and in order to protect your GENEGLACE machine, please do not attempt a repair but contact us as soon as possible.

1.2 Warning

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1.3 Where can you find the information you need?

After reading the safety instructions, the «Handling» section gives a list of the items that should come with your GENEGLACE, as well as instructions concerning handling with complete safety.

The layout will tell you about: the overall dimensions of your GENEGLACE, the procedure to follow for choosing the best location for it in relation to its environment and finally all information concerning accessibility for future service and maintenance.

«Connections»: In order to make all the hydraulic, electrical and cooling connections correctly, this section will give you some useful advice regarding the procedures for the connections.

To ensure that your GENEGLACE starts successfully the first time and not handling it incorrectly, refer to the **Initial Start Up Sheets** as well as this section 11.

The «Operation» section describes in detail all the operational features, factory settings and adjustments to be carried out.

The «Service, Maintenance and Fault Rectification» section will help you, by following its advice, to keep your GENEGLACE in optimum working condition for as long as possible.

The «Glossary» lists the symbols used and explains their meaning.

Throughout this notice, you will find boxes such as :

Note

A note provides certain general information relevant to the subject treated.

Tip

The tip suggests procedures enabling you to surmount or get round any difficulties that may arise.

Important

This inset is intended to draw the attention of the reader to particular points that could be relevant to the safety of the operator or the machine.

2. Safety rules

This notice contains important rules to be observed concerning safety, installation, operation and maintenance of ice machines and their scrapping. And for this reason it must be read before any handling. In addition, a copy of the «Notice for Users», including the safety rules, must be continuously available to the user at the place of operation of the GENEGLACE.

An information board, indicating the type, identification number and certain operating and safety features of your GENEGLACE machine must always be visible and under no circumstances must it be removed.

The safety rules contained in this notice, as well as the national or local requirements for the prevention of accidents must also be observed.

2.1 Meaning of the danger pictograms

The safety rules appearing in GENEGLACE notices which, if not observed, could result in body injury, are preceded by the following symbols :



These symbols are also placed directly on the machine (or on certain spare parts), as well as arrows indicating the direction of rotation which must be observed. You must ensure that all these markings remain legible. Non-observance of these safety or operating instructions can result in equipment damage or incorrect operation of the machine, this instruction must be taken seriously.

2.2 Qualification and training of personnel

Personnel employed in operation, upkeep, maintenance and installation must be qualified for these tasks

Note that all local and regional regulations and safety standards, such as EN378, must be taken into account when designing, connecting and running the system.

Concerning accessibility to the machine by the public, the operator is responsible for protecting himself against any accident that may occur associated with its mechanical, electrical or chemical operation.

2.3 Danger in the event of non-observance of the safety rules

Non-observance of the safety rules can also result in physical danger, equipment danger or pollution of the environment.

Failure to observe the safety rules may result in the loss of rights to damages or compensation.

2.4 Operating range.

Important

Your GENEGLACE is designed to operate within the following limits :

Type of fluid :	R22 -NH3 - R 404A (for other fluids : consult us)
Maximum Working pressure (MWP)	See page 7
Ambient air temperature :	+ 5 to + 35°C (dry bulb)
Minimum evaporating temperature :	- 25°C
Temperature of water to be frozen :	+ 5 to + 25°C
Mains water pressure :	2 to 4 bar
Hardness of mains water :	TH 15 to 20° French degrees
Acidity of mains water :	PH 7/8
Sodium chloride content :	about 100 g/m³ .
Electrical protection :	IP 44

Any use of the GENEGLACE machine outside these limits could result in malfunctions, or even damage.

Altitude : if greater than 500 m, consult us.

Electrical supply : as indicated on the manufacturer's rating plate and in accordance with current standards.

3. Safety and Environmental Instructions

3.1 Safety rules

Starting and stopping a GENEGLACE.

Use the switch provided for this purpose on the electrical terminal box.

The use of a mains socket or an upstream isolating switch is prohibited.

Before operating, switch off the installation



CAUTION

When stopping, the rotating part of the generator maintains a residual rotation that may cause an accident.

If it is difficult to reach the Start/Stop switch (machine mounted high up), request a remote control at a more convenient height.

If it is necessary to switch the machine off, use the isolating switch on the electrical terminal box (three phase). Lock the equipment with a padlock on the isolating switch to prevent inadvertent starting of the machine.

The principal area of danger is located inside the ice maker itself, enclosed by an upper cover and a base cover.

It is dangerous to place the hands or any object into this area while the rotating part is turning, for example during a normal cleaning operation of the water system.

It is recommended that the machine be stopped and switched off for cleaning or that the emergency switch on the upper part is used.

If the rotating part is driven by a reduction gear and a motor through a belt, a guard that can be removed by using tools is provided. Operation of the machine without this guard is prohibited.

The operation of manual valves is strictly reserved for maintenance personnel with the necessary skills (risk of spurting of fluids under pressure).

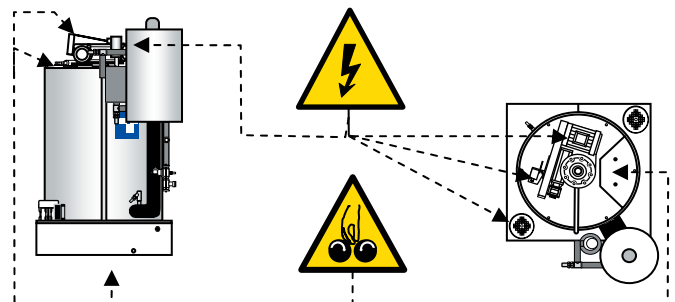
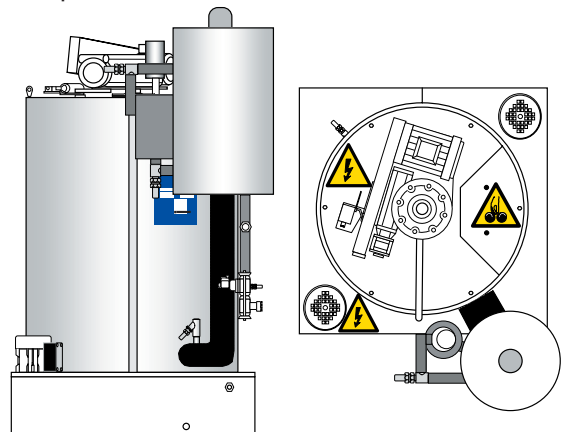
In the event of a general power failure, protect yourself against any risk when the power returns (unintended starting) : keep personnel away from dangerous areas.

Operation of the machine without the original safety equipment is prohibited: force limiter, electrical protection, pressostats, thermostats, transmission guards, etc. These devices must be maintained in working condition and the pictograms indicating the dangers must remain visible.

For all current maintenance operations mentioned in the user guide, it is advisable to stop the machine.

Other maintenance work, if required, must be carried out by an installer with the required skills.

Within the directives of the "MONTREAL PROTOCOL", any service work that might place the cooling system in communication with the atmosphere must be performed by skilled personnel.



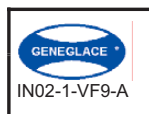
The drawing below indicates the principal dangerous areas of the GENEGLACE.

3.2 Protection of the Environment

Materials and fluids resulting from the disposal of machines must be treated via the approved channels in accordance with current regulations.



4. Safety concerning pressure vessels

 IN02-1-VF9-A Edition 04/07/05	GENEGLACE S.A.S Z.A.C de la forêt 9, rue des Orfèvres 44840 LES SORINIERES France	Operating instruction Specific to Geneglace pressure vessels according to PED 97/23/EC		PED 97/23/EC Page 1 / 1
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The Geneglace pressure vessel designated as « ice generator alone » is intended for installation in refrigerating plants, according to the EC Machines Directive 98/37/EC and according to the Pressure Vessel Directive 97/23/EC. It may be started-up only if it has been installed in such refrigerating plants, according to the following instructions and provided that the aforesaid plants comply as a whole with the national legislation. This operating instruction complements the Geneglace service manual.

I.1 Residual danger

Certain residual danger from the pressure vessels are unavoidable. All persons working on these units must therefore carefully read this operating instruction. All of the following have validity : specific rules for the prevention of accidents ; generally accepted safety standards ; EU guidelines ; national standards and regulations.

I.2 Location

When installed in extreme conditions, (e.g. aggressive atmospheres, low ambient temperatures etc.), suitable measures must be taken. Consultation with Geneglace is recommended.

Caution !

- Geneglace ice generators are intended to be installed in low pressure sides of refrigerating plants.
- Geneglace ice generators mustn't be used as refrigerant storage tanks.

I.3 PED 97/23/EC safety provisions

I.3.1 Geneglace ice generators operating limits :

Type	Volume (liters)	MWP (bar)	Category P.E.D	Group of Refrigerant	T° Min °C / °F	T° Max °C / °F	Maximum charge Kg	
							R22/ R404	NH3
F600 ABF	200	15	IV	I et II	-30 / -22	+45 / +113	100	80
F600 SBF	90						60	40
F800 ABF	325						180	130
F800 SBF	190						125	85
F800-2-ABF	715						350	XXX
F900 ABF	485						260	200
F900 SBF	260	145					100	
F2000 ABF	745	14.5					370	260
F2000 SBF	405						270	200

I.3.2 Maximum working Pressure

The entire plant should be designed and operated so that the **maximum working pressure (MWP)** in the ice generator cannot be exceeded. Pressure relief valves must be fitted and must be correctly rated according to current local regulations. (These will be supplied and fitted by the installer).

I.3.3 Safety switching device

Temperature and pressure limiting safety switching devices must be provided in compliance with local regulations.

I.3.4 Pump-down

To limit the build up of coolant when high pressure vessel is stopped, a timed pump down device is necessary when GENEGLACE generators are stopped.

I.4 Registration, mounting, commissioning, maintenance of pressure vessel PED97/23/EC

Geneglace ice generators are pressure vessels according to the Pressure Vessels Directive 97/23/CE. For this reason, the entire plant must be registered with the supervisory authority and duly approved in compliance with local regulations.

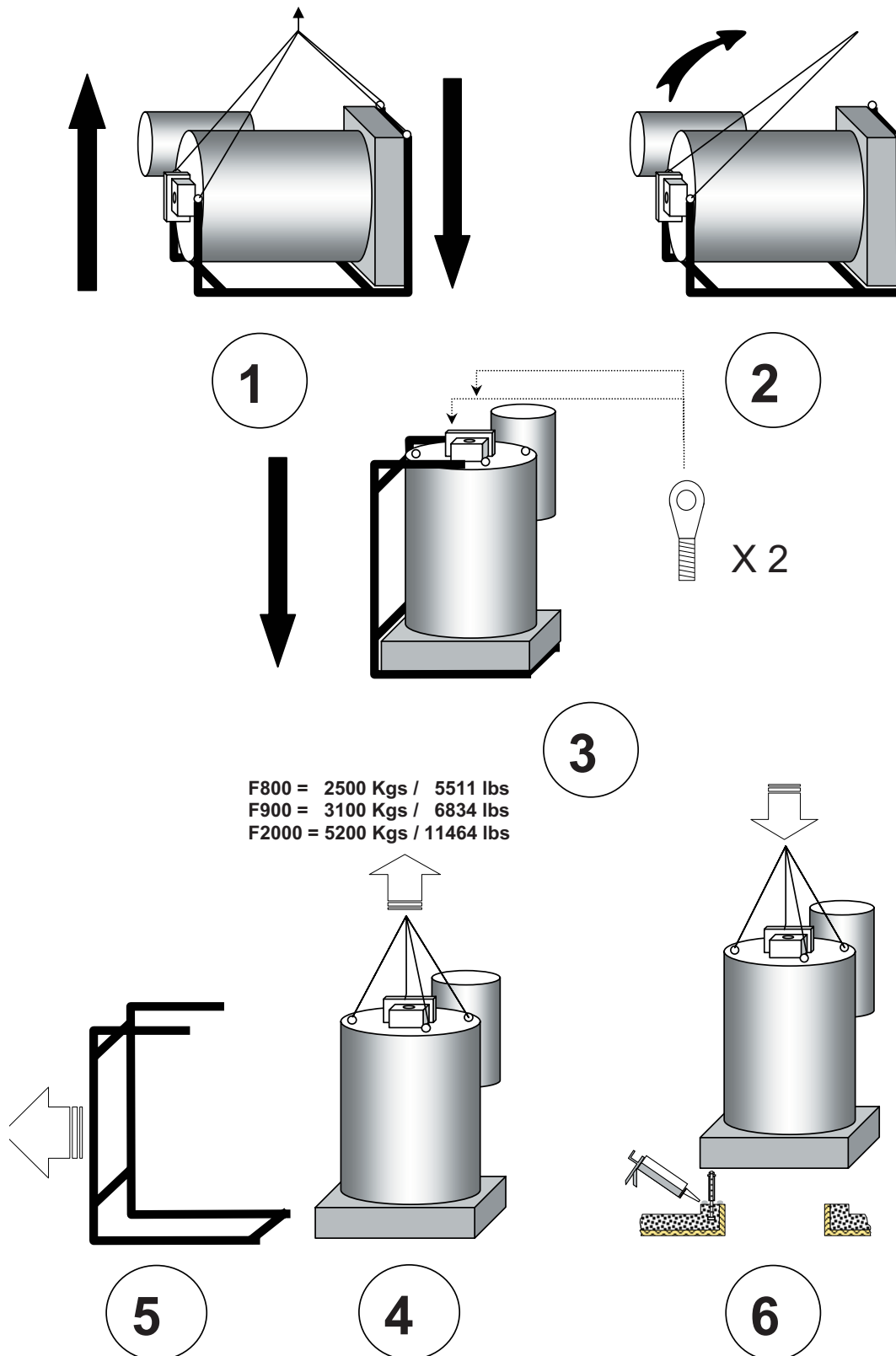
- A declaration of incorporation and conformity CE is provided with the pressure vessel.
- Mounting, commissioning and maintenance must comply with this operating instruction and with the Geneglace service manual.
- The pressure vessel must be periodically inspected by authorized personnel. The inspection intervals depends on refrigerant and mode of operation. They must be determined by the end user.

In countries outside of EU the applicable regulations must be complied with.

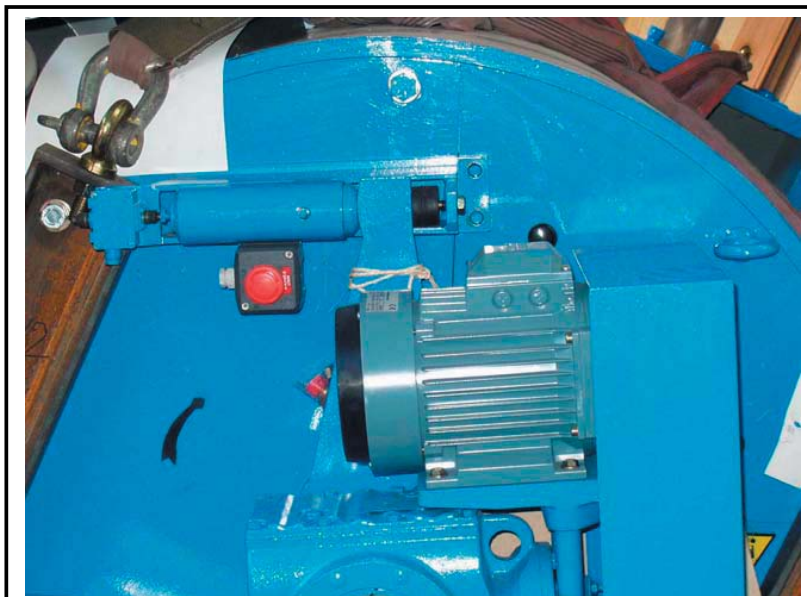
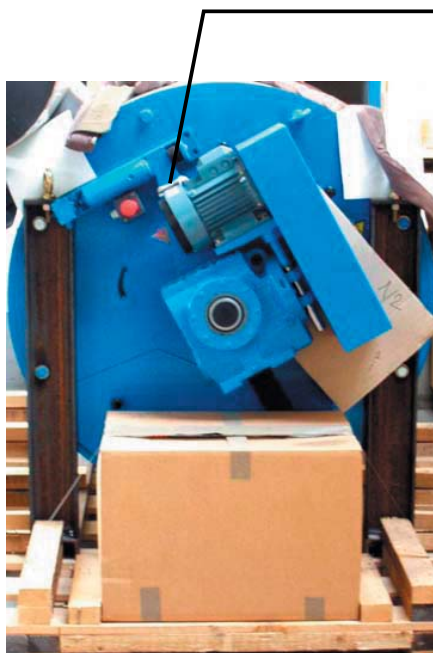
Reception of the generators on cradle (chassis)**Reception of the generators on cradle (chassis)**

The ice machine must be maintained by qualified personnel. Every precaution must be taken to ensure the safety of personnel and the machine during maintenance.

Slings must be of sufficient size: 23 feet (7m) and 26 feet (8m) with a breaking strain of 2204 lbs (5T).



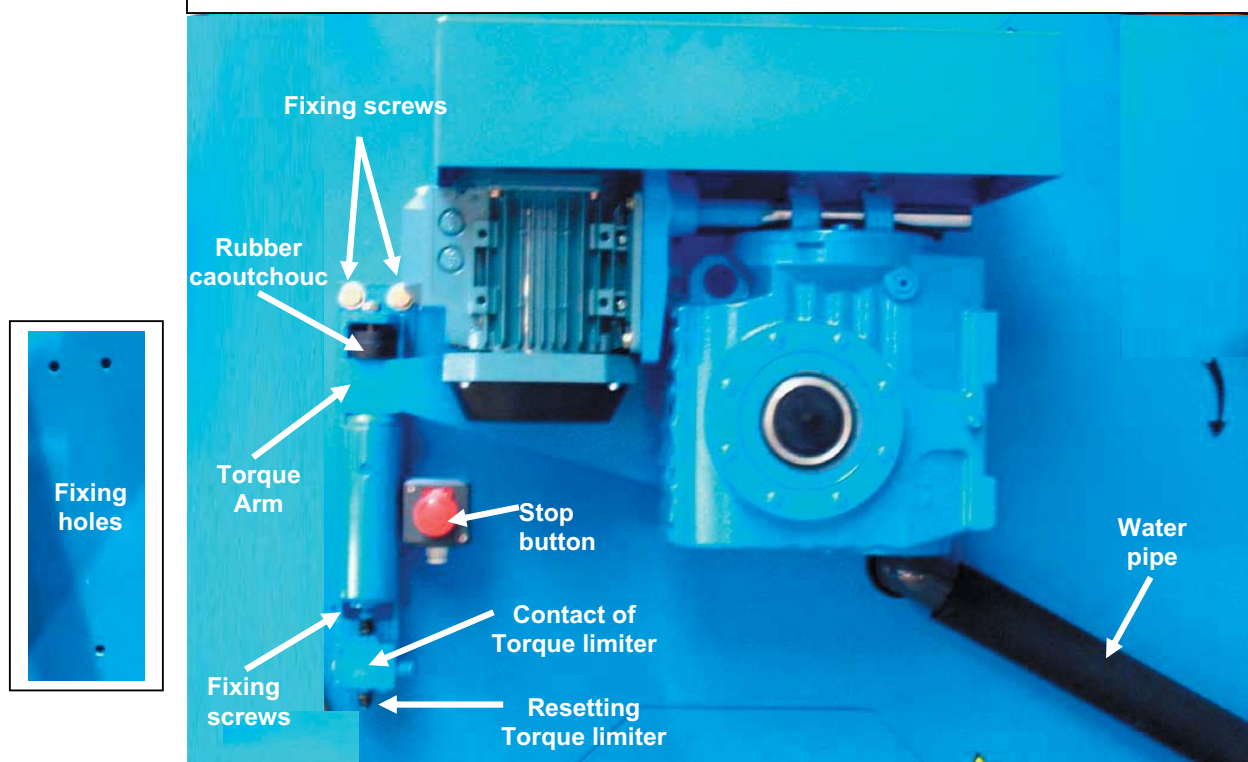
👉 Repositioning the torque limiter on F800 (for commissioning)



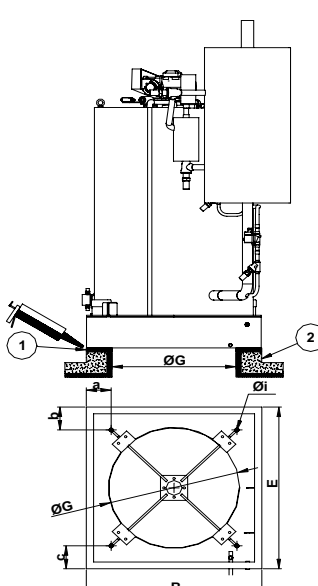
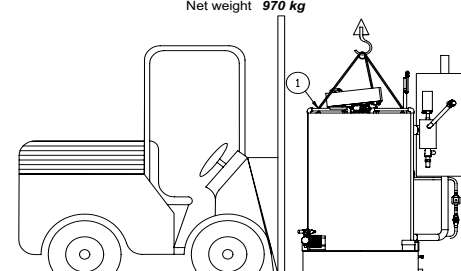
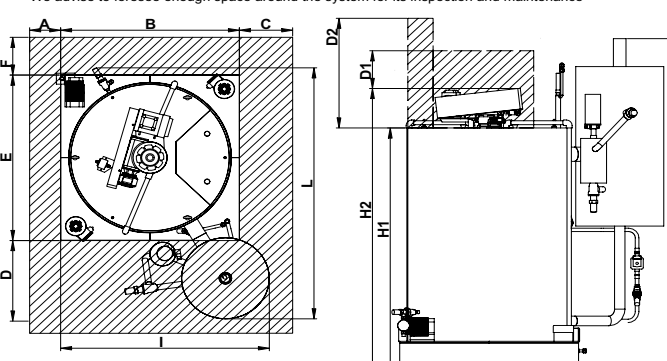

Positioning the reducer and Torque Limiter on the transport cradle (chassis)

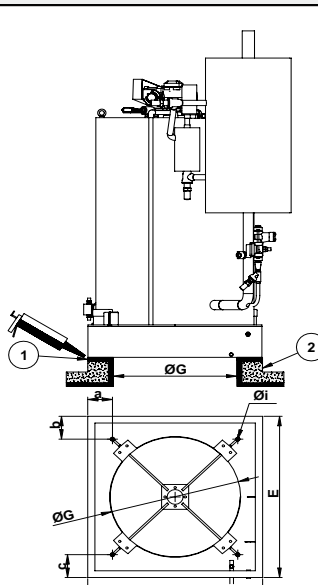
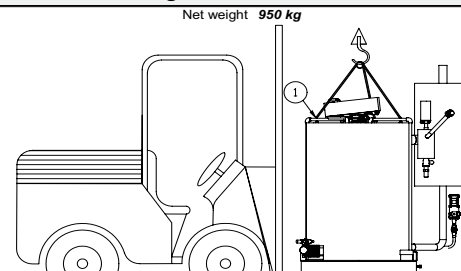
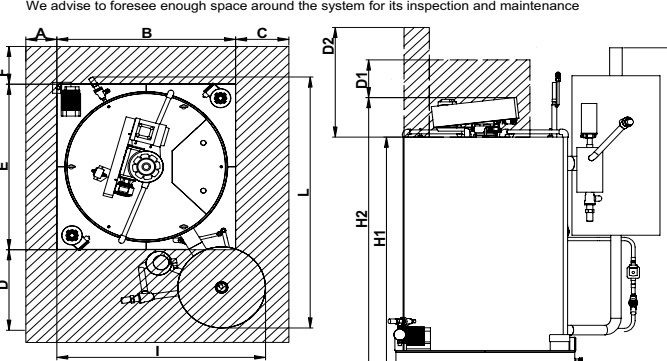

- Place the generator vertically and remove the transport cradle.
- Locate the bag containing the eye bolts and torque limiter screws
- Unscrew the screws securing the torque limiter to the upper part
- Rotate the reducer motor/torque limiter assembly (anti-clockwise) 1/4 of a turn
- Mount the torque limiter (see position below) with the 3 screws, inserting the torque arm into it

Positioning of the Reducer Motor and Torque Limiter for commissioning



5. Installation and Handling of the F600 ABF

Installation	Handling																																										
 <p>1 Tightness seal around the boring 2 Raising of the floor to avoid accidental water leaks in the storage D1 Minimum clearance for reducer removal D2 Minimum clearance for reamer removal G Ice chute k Fixation sleeves height of the base (ØI)</p>	<p style="text-align: right;">Net weight 970 kg</p>  <p>1 Three lifting eyes</p> <p style="text-align: center;">Minimum clearance for service</p> <p style="text-align: center;">We advise to foresee enough space around the system for its inspection and maintenance</p> 																																										
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5.1 Installation and Handling of the F600 SBF

Installation

1 Tightness seal around the boring
2 Raising of the floor to avoid accidental water leaks in the storage
D1 Minimum clearance for reducer removal
D2 Minimum clearance for reamer removal
G Ice chute
k Fixation sleeves height of the base (Øi)

A	500	F	500	a	147
B	1040	G	780	b	147
C	500	H1	1550	c	147
D	1700	H2	1800	i	20
D1	300	H3	1800		
D2	1360	I	1050		
E	1040	L	1050	k	170

* Dimensions in mm

Handling

Net weight 850 kg

1 Three lifting eyes

Minimum clearance for service

- We advise to foresee enough space around the system for its inspection and maintenance

GENEGLACE s.a.s.
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44840 Les Sorinières - France
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Installation and handling
Generator F600 SBF
INDUSTRIAL LAND-BASED

Edition date 01/04/2004

V0.0

GTI.001A

Installation

1 Tightness seal around the boring
2 Raising of the floor to avoid accidental water leaks in the storage
D1 Minimum clearance for reducer removal
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B	1040	G	780	b	147
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D	1000	H2	1800	i	20
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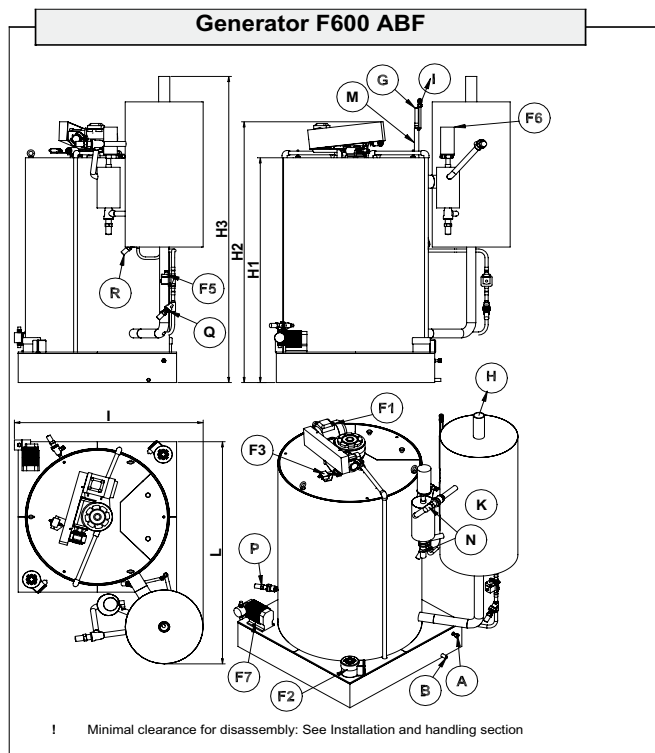
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Installation and handling
Generator F600 SBF NH3
INDUSTRIAL LAND-BASED

Edition date 01/04/2004

V0.0

GTI.001A

5.2 Dimensions and Connections of the F600 ABF

Hydraulic connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
A	Generator water supply	1	1/2 "	Flare nut	Brass
B	Overflow + water drain	1	21,3 x 2,8 mm	Plain ends tube	Steel
Refrigerating connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
G	Liquid inlet	1	7/8 "	O.D.F.	Copper
H	Suction	1	73 x 5,16 mm	Plain ends tube	Steel
I	Oil return	1	3/8 "	O.D.F.	Copper
P	Oil drain	1	3/8 "	O.D.F. - G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 250 W	1 x 0,95 A
F2	Pump	2	230 V - 1 - 50 Hz	2 x 70 W	2 x 0,35 A
F3	Torque limiter switch	1	-	-	-
F5	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A
F6	Liquid level control	1	-	-	-
F7	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 590 l/h			Water pressure 2 -> 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Qty.
Length	mm	1500	1700	1800	K Flood bottle 1
Width	mm	1200	1400	1500	M Oil return exchanger 2
Height	mm	2050	2300	2350	N Shut-off valve 2
Volume	m3	3,69	5,47	6,34	Q Liquid inlet throttle valve 1
					R Oil return valve 1
Net weight	kg	970	970	970	
Gross weigh	kg	970	1160	1200	

Dimensions	
H1	1550
H2	1800
H3	2050
L	1200
L	1500

* Dimensions in mm

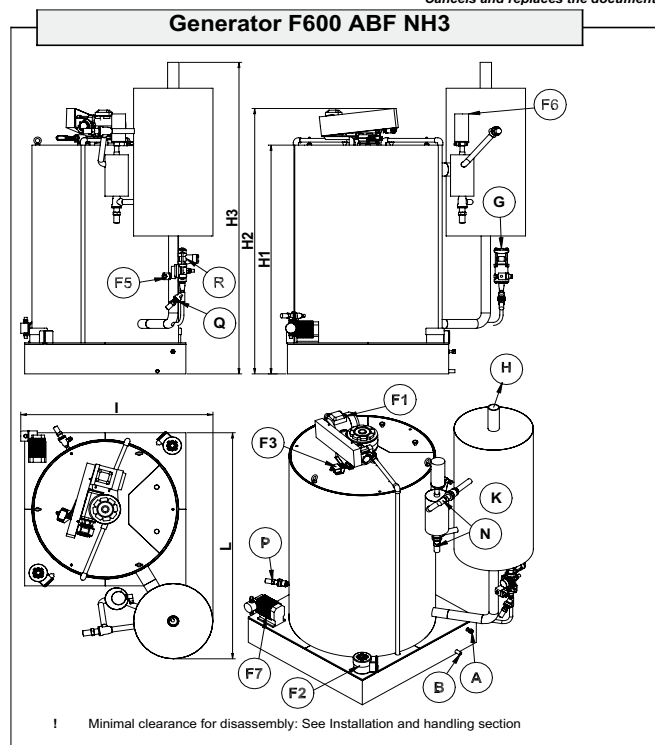
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Dimensions and connections**GTE.001A****Generator F600 ABF****INDUSTRIAL LAND-BASED**

Edition date 18/10/2004

V0.0



Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	1	1/2 "	Flare nut	Brass	
B	Overflow + water drain	1	21,3 x 2,8 mm	Plain ends tube	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
G	Liquid inlet	1	33,4 x 3,4 mm	Flange	Steel	
H	Suction	1	73 x 5,16 mm	Plain ends tube	Steel	
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 250 W	1 x 0,95 A	
F2	Pump	2	230 V - 1 - 50 Hz	2 x 70 W	2 x 0,35 A	
F3	Torque limiter switch	1	-			
F5	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A	
F6	Liquid level control	1	-			
F7	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A	
Other specifications						
Max. water flow 590 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,5 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Qty.	
Length	mm	1560	1700	K	Flood bottle	1
Width	mm	1200	1400	N	Shut-off valve	2
Height	mm	2050	2250	Q	Liquid inlet throttle valve	1
				R	Liquid filter	1
Volume	m3	3,84	5,35			
Net weight	kg	950	950			
Gross weigh	kg	950	1160			

Dimensions	
H1	1550
H2	1800
H3	2050
L	1200
L	1560

* Dimensions in mm

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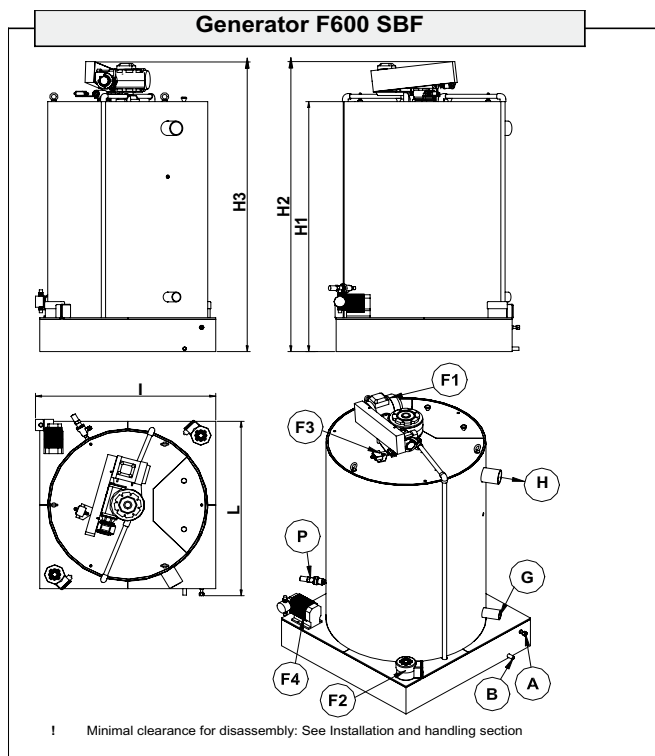
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Dimensions and connections**GTE.001A****Generator F600 ABF NH3****INDUSTRIAL LAND-BASED**

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V0.0

5.3 Dimensions and Connections of the F600 SBF



Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	1	1/2 "	Flare nut	Brass	
B	Overflow + water drain	1	21,3 x 2,8 mm	Plain ends tube	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
G	Liquid inlet	1	60,3 x 3,9 mm	Plain ends tube	Steel	
H	Refrigerant outlet	1	88,9 x 5,5 mm	Plain ends tube	Steel	
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 250 W	1 x 0,95 A	
F2	Pump	2	230 V - 1 - 50 Hz	2 x 70 W	2 x 0,35 A	
F3	Torque limiter switch	1	-			
F4	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A	
Other specifications						
Max. water flow 590 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,5 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	1050	1300	1400		
Width	mm	1050	1300	1400		
Height	mm	1800	2000	2100		
Volume	m3	1,98	3,38	4,12		
Net weight	kg	850	850	850		
Gross weigh	kg	850	1030	1070		

Dimensions	
H1	1550
H2	1800
H3	1800
I	1050
L	1050

* Dimensions in mm

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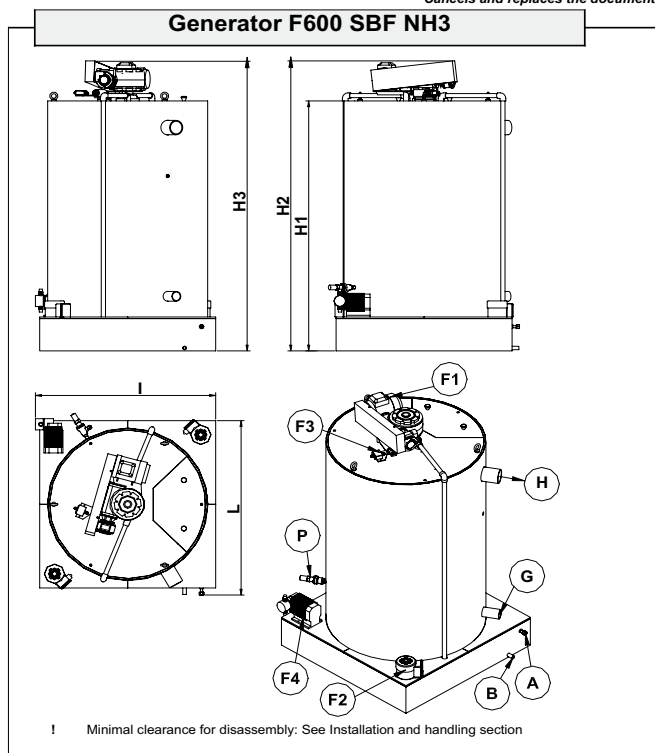
Dimensions and connections

Generator F600 SBF
INDUSTRIAL LAND-BASED

Edition date 18/10/2004

v0.0

GTE.001A



7/24/2019

Hydraulic connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
A	Generator water supply	1	1/2 "	Flare nut	Brass
B	Overflow + water drain	1	21,3 x 2,8 mm	Plain ends tube	Steel
Refrigerating connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
G	Liquid inlet	1	60,3 x 3,9 mm	Plain ends tube	Steel
H	Refrigerant outlet	1	88,9 x 5,5 mm	Plain ends tube	Steel
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 250 W	1 x 0,95 A
F2	Pump	2	230 V - 1 - 50 Hz	2 x 70 W	2 x 0,35 A
F3	Torque limiter switch	1	-		
F4	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 590 l/h			Water pressure 2 -> 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Qty.
Length mm	1050	1300	1400		
Width mm	1050	1300	1400		
Height mm	1800	2000	2100		
Volume m3	1,98	3,38	4,12		
Net weight kg	850	850	850		
Gross weigh kg	850	1030	1070		

Dimensions	
H1	1550
H2	1800
H3	1800
I	1050
L	1050

* Dimensions in mm

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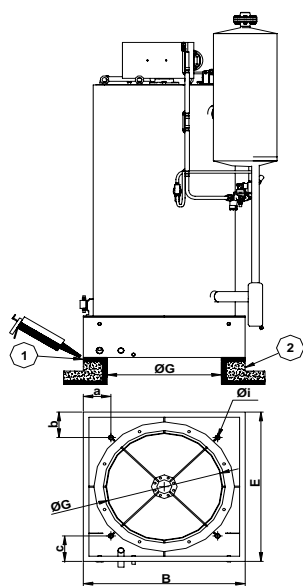
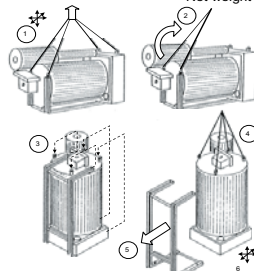
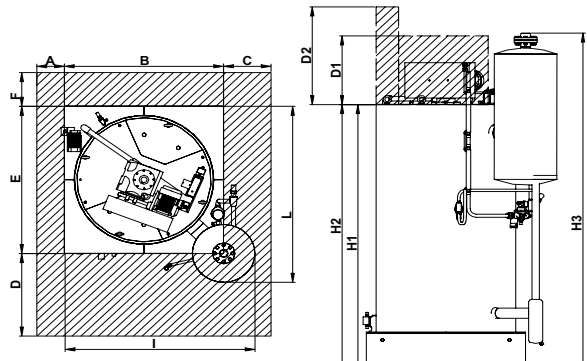

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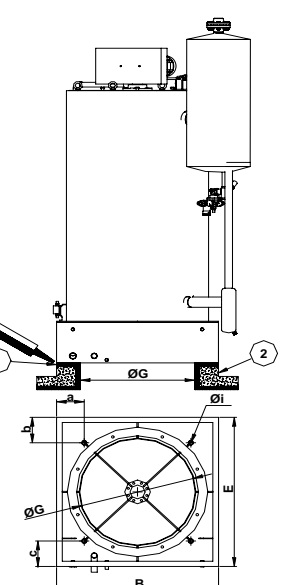
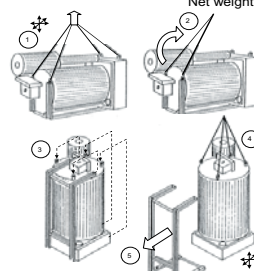
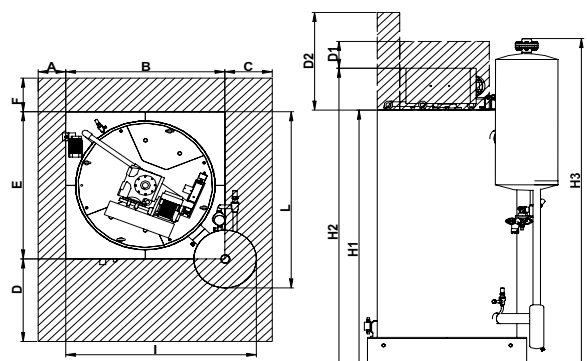

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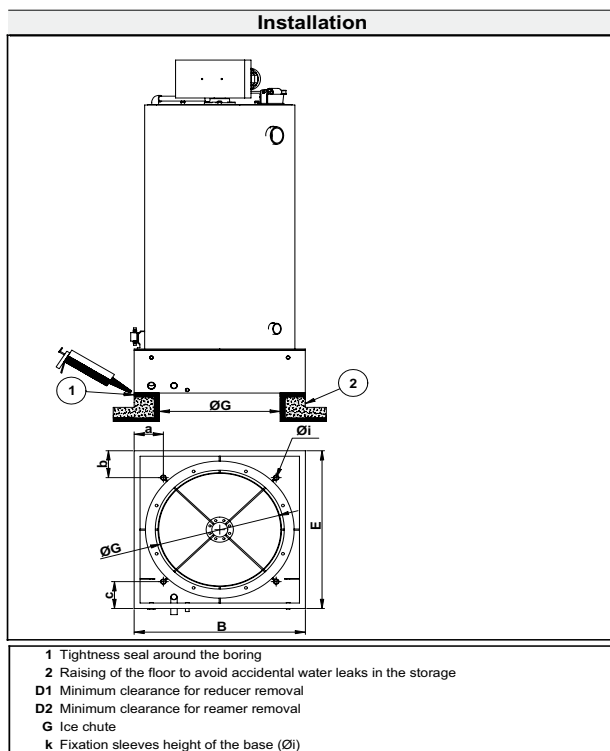
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6. Installation and Handling of the F800 ABF

Installation	Handling																																										
 <p>1 Tightness seal around the boring 2 Raising of the floor to avoid accidental water leaks in the storage D1 Minimum clearance for reducer removal D2 Minimum clearance for reamer removal G Ice chute k Fixation sleeves height of the base (Øi)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>A</td><td>500</td> <td>F</td><td>500</td> <td>a</td><td>220</td> </tr> <tr> <td>B</td><td>1290</td> <td>G</td><td>930</td> <td>b</td><td>220</td> </tr> <tr> <td>C</td><td>500</td> <td>H1</td><td>2350</td> <td>c</td><td>220</td> </tr> <tr> <td>D</td><td>1800</td> <td>H2</td><td>2750</td> <td>i</td><td>35</td> </tr> <tr> <td>D1</td><td>400</td> <td>H3</td><td>3100</td> <td></td><td></td> </tr> <tr> <td>D2</td><td>1980</td> <td>I</td><td>1550</td> <td></td><td></td> </tr> <tr> <td>E</td><td>1290</td> <td>L</td><td>1550</td> <td>k</td><td>300</td> </tr> </table> <p><i>* Dimensions in mm</i></p>	A	500	F	500	a	220	B	1290	G	930	b	220	C	500	H1	2350	c	220	D	1800	H2	2750	i	35	D1	400	H3	3100			D2	1980	I	1550			E	1290	L	1550	k	300	<p style="text-align: center;">Handling</p> <p>1 Horizontal handling 2 Set in vertical position 3 Lifting rings transfer 4 Lifting 5 Removal of shipping cradle</p> <p style="text-align: right;">Net weight 2500 kg</p>  <p style="text-align: center;">Minimum clearance for service</p> <p style="text-align: center;">We advise to foresee enough space around the system for its inspection and maintenance</p> 
A	500	F	500	a	220																																						
B	1290	G	930	b	220																																						
C	500	H1	2350	c	220																																						
D	1800	H2	2750	i	35																																						
D1	400	H3	3100																																								
D2	1980	I	1550																																								
E	1290	L	1550	k	300																																						
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Installation	Handling																																										
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A	500	F	500	a	220																																						
B	1290	G	930	b	220																																						
C	500	H1	2350	c	220																																						
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E	1290	L	1550	k	300																																						
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6.1 Installation and Handling of the F800 SBF



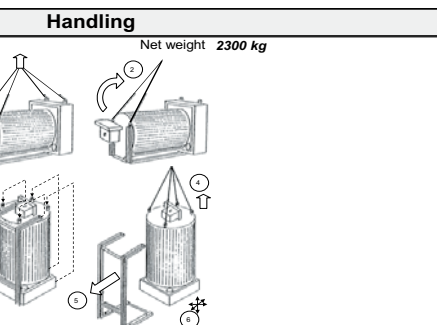
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B	1290	G	930	b	220
C	500	H1	2350	c	220
D	500	H2	2750	i	35
D1	400	H3	2750		
D2	1980	I	1300		
E	1290	L	1300	k	300

* Dimensions in mm



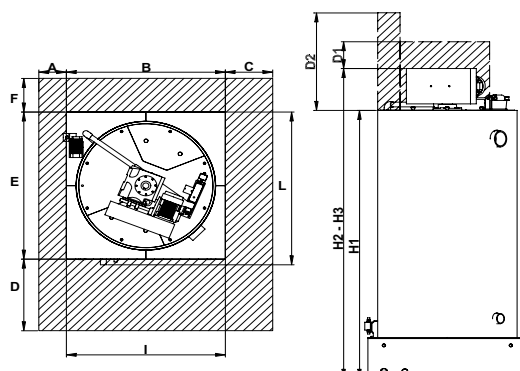
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Minimum clearance for service

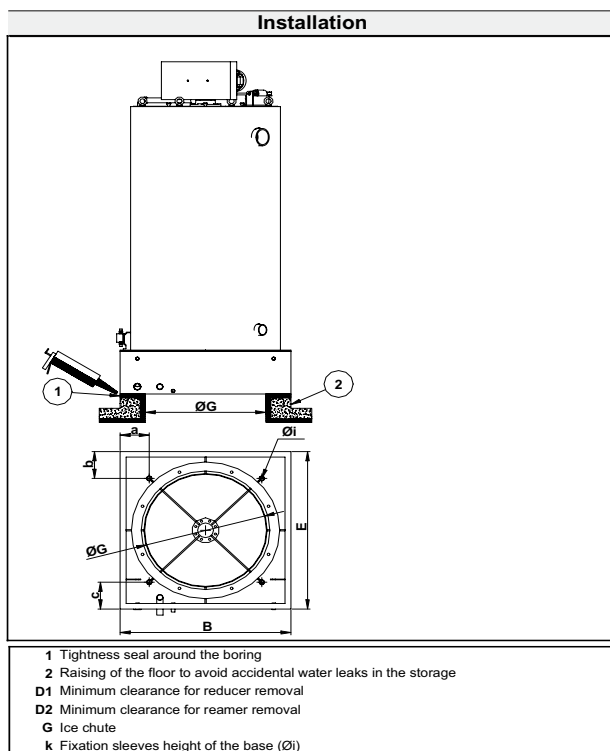
We advise to foresee enough space around the system for its inspection and maintenance



Installation and handling
Generator F800 SBF
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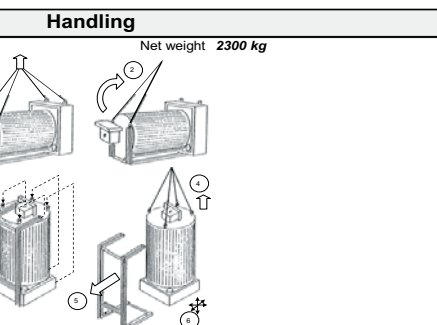
A	500	F	500	a	220
B	1290	G	930	b	220
C	500	H1	2350	c	220
D	500	H2	2750	i	35
D1	400	H3	2750		
D2	1980	I	1300		
E	1290	L	1300	k	300

* Dimensions in mm



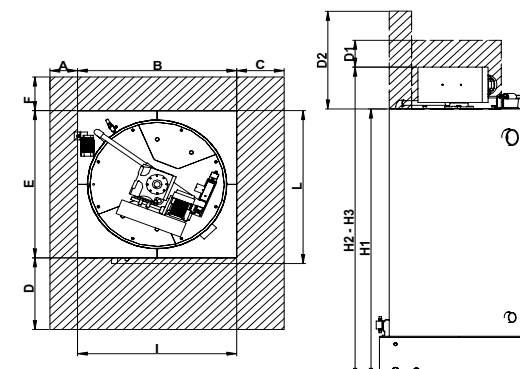
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Minimum clearance for service

We advise to foresee enough space around the system for its inspection and maintenance

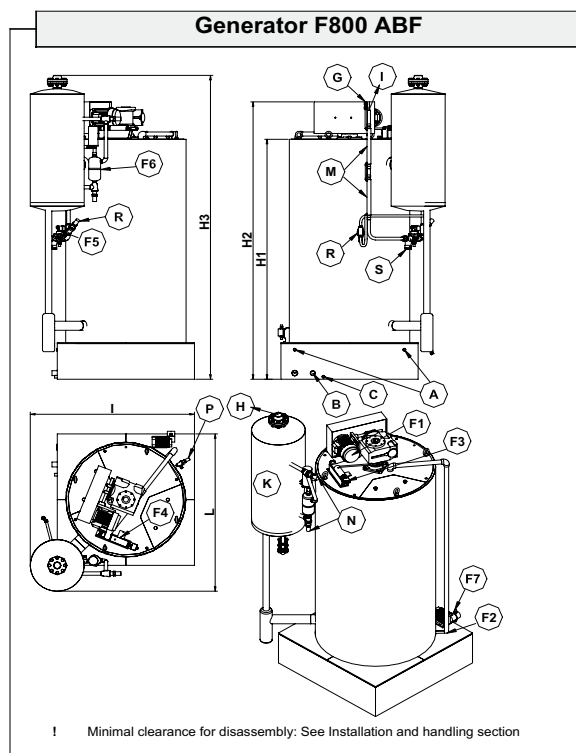


Installation and handling
Generator F800 SBF NH3
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6.2 Dimensions and Connections of the F800 ABF



Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass	
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel	
C	Water drainage	1	3/4 gaz	Plug	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
G	Liquid inlet	1	33,4 x 3,4 mm	Flange	Steel	
H	Suction	1	ND 65	Flange	Steel	
I	Oil return	1	1/2 "	Flare	Brass	
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A	
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A	
F3	Torque limiter switch	1	-	-	-	
F4	Emergency stop	1	-	-	-	
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A	
F6	Liquid level control	1	-	-	-	
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A	
Other specifications						
Max. water flow 960 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,5 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	1550	3250	M	Oil return exchanger	2
Width	mm	1550	1750	O	Shut-off valve	2
Height	mm	3100	1950	Q	Liquid inlet throttle valve	1
				R	Oil return valve	1
Volume	m3	7,45	11,09	S	Liquid filter	1
Net weight	kg	2500	2500			
Gross weigh	kg	2500	3000			

Dimensions	
H1	2350
H2	2750
H3	3100
I	1550
L	1550

* Dimensions in mm



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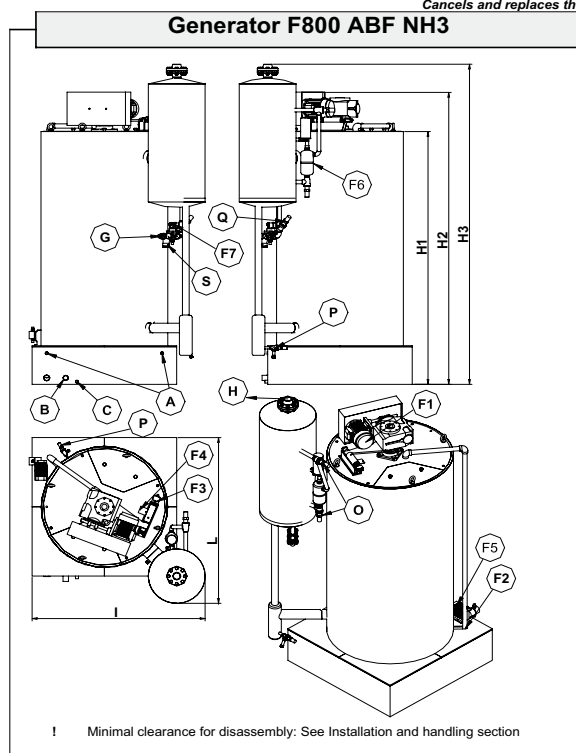
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Dimensions and connections

Generator F800 ABF

GTE.001A

Edition date 18/10/2004 v0.0



01/04/2004

Hydraulic connections

Item	Description	Qty.	Connections		
			Dimensions	Type	Material
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel
C	Water drainage	1	3/4 gaz	Plug	Steel

Refrigerating connections

Item	Description	Qty.	Connections		
			Dimensions	Type	Material
G	Liquid inlet	1	33,4 x 3,4 mm	Flange	Steel
H	Suction	1	ND 65	Flange	Steel
P	Oil drain	1	3/8 "	O.D.F. - G	Stainless Steel

Electrical connections

Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A
F3	Torque limiter switch	1	-		
F4	Emergency stop	1	-		
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
F6	Liquid level control	1	-		
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A

Other specifications

Max. water flow 960 l/h				Water pressure 2 → 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	1550	3250	O	Shut-off valve	2
Width	mm	1550	1750	P	Oil drain	2
Height	mm	3100	1950	Q	Throttle valve	1
				S	Liquid filter	1
Volume	m3	7,45	11,09			
Net weight	kg	2500	2500			
Gross weigh	kg	2500	3000			

Dimensions	
H1	2350
H2	2750
H3	3100
I	1550
L	1550

* Dimensions in mm



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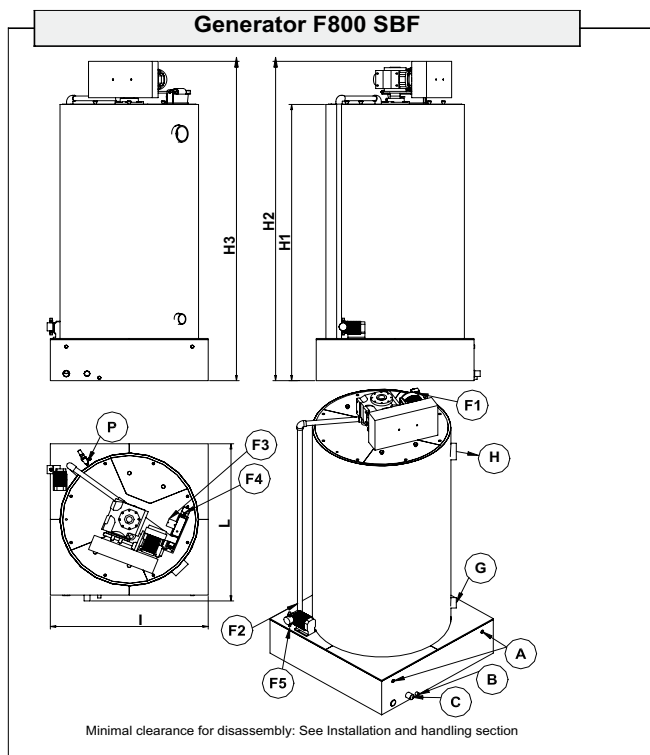
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Dimensions and connections Generator F800 ABF NH3

GTE.001A

Edition date: 18/10/2004 v0.0

6.3 Dimensions and Connections of the F800 SBF



Hydraulic connections					
Item	Description	Qty.	Dimensions	Connections Type	Material
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel
C	Water drainage	1	3/4 gaz	Plug	Steel
Refrigerating connections					
Item	Description	Qty.	Dimensions	Connections Type	Material
G	Liquid inlet	1	88,9 x 5,5 mm	Plain ends tube	Steel
H	Suction	1	168,3 x 11 mm	Plain ends tube	Steel
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A
F3	Torque limiter switch	1	-	-	-
F4	Emergency stop	1	-	-	-
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 960 l/h			Water pressure 2 -> 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Qty.
Length mm	1300	3000	3100		
Width mm	1300	1500	1600		
Height mm	2750	1800	1900		
Volume m3	4,65	8,10	9,42		
Net weight kg	2300	2300	2300		
Gross weight kg	2300	2750	2850		

Dimensions	
H1	2350
H2	2750
H3	2750
L	1300
L	1300

* Dimensions in mm

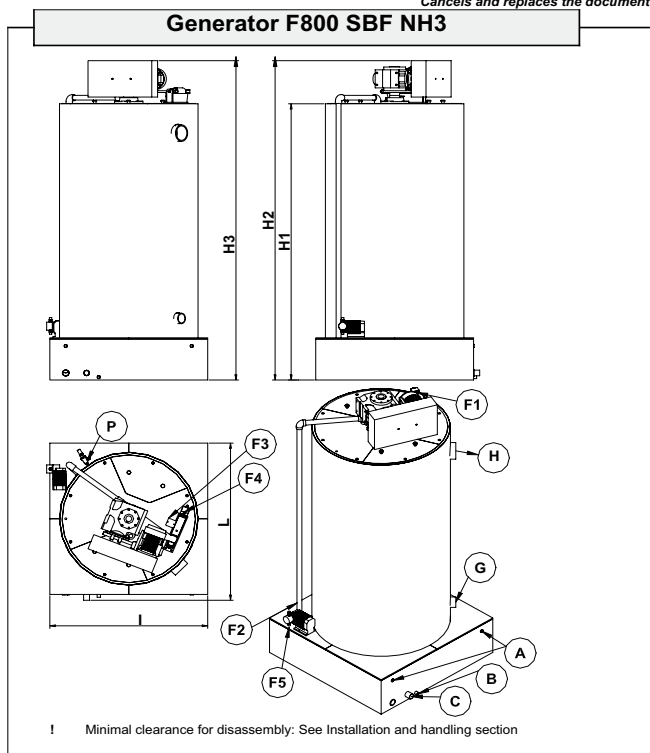
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Dimensions and connections
Generator F800 SBF
INDUSTRIAL LAND-BASED

GTE.001A

Edition date 18/10/2004 V0.0



Hydraulic connections					
Item	Description	Qty.	Dimensions	Connections Type	Material
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel
C	Water drainage	1	3/4 gaz	Plug	Steel
Refrigerating connections					
Item	Description	Qty.	Dimensions	Connections Type	Material
G	Liquid inlet	1	88,9 x 5,5 mm	Plain ends tube	Steel
H	Suction	1	168,3 x 11 mm	Plain ends tube	Steel
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A
F3	Torque limiter switch	1	-	-	-
F4	Emergency stop	1	-	-	-
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 960 l/h			Water pressure 2 -> 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Qty.
Length mm	1300	3000	3100		
Width mm	1300	1500	1600		
Height mm	2750	1800	1900		
Volume m3	4,65	8,10	9,42		
Net weight kg	2300	2300	2300		
Gross weight kg	2300	2750	2850		

Dimensions	
H1	2350
H2	2750
H3	2750
L	1300
L	1300

* Dimensions in mm

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Dimensions and connections
Generator F800 SBF NH3
INDUSTRIAL LAND-BASED

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Edition date 18/10/2004 V0.0

7. Installation and Handling of the F900 ABF

Installation

1 Tightness seal around the boring
2 Raising of the floor to avoid accidental water leaks in the storage
D1 Minimum clearance for reducer removal
D2 Minimum clearance for reamer removal
G Ice chute
k Fixation sleeves height of the base (ØI)

A	500	F	500	a	260
B	1580	G	1200	b	260
C	600	H1	2350	c	260
D	2200	H2	2750	i	35
D1	400	H3	3100		
D2	1980	I	1950		
E	1580	L	1950	k	300

* Dimensions in mm

Handling

Net weight 3100 kg

- 1 Horizontal handling
- 2 Set in vertical position
- 3 Lifting rings transfer
- 4 Lifting
- 5 Removal of shipping cradle

Minimum clearance for service

We advise to foresee enough space around the system for its inspection and maintenance

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Installation and handling
Generator F900 ABF
INDUSTRIAL LAND-BASED

Edition date 01/04/2004

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Installation

1 Tightness seal around the boring
2 Raising of the floor to avoid accidental water leaks in the storage
D1 Minimum clearance for reducer removal
D2 Minimum clearance for reamer removal
G Ice chute
k Fixation sleeves height of the base (ØI)

A	500	F	500	a	260
B	1580	G	1200	b	260
C	600	H1	2350	c	260
D	2200	H2	2750	i	35
D1	400	H3	3100		
D2	1980	I	1950		
E	1580	L	1950	k	300

* Dimensions in mm

Handling

Net weight 3100 kg

- 1 Horizontal handling
- 2 Set in vertical position
- 3 Lifting rings transfer
- 4 Lifting
- 5 Removal of shipping cradle

Minimum clearance for service

We advise to foresee enough space around the system for its inspection and maintenance

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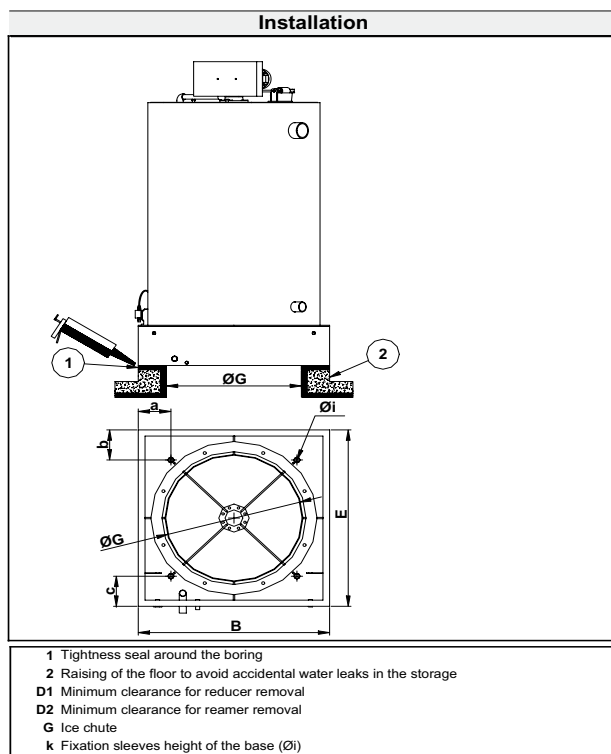
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Generator F900 ABF NH3
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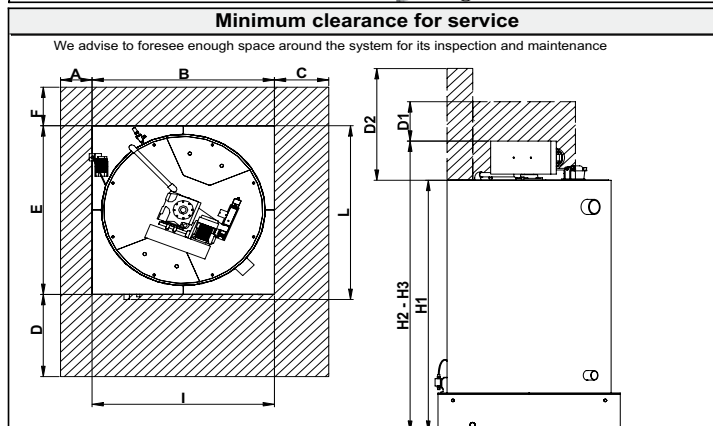
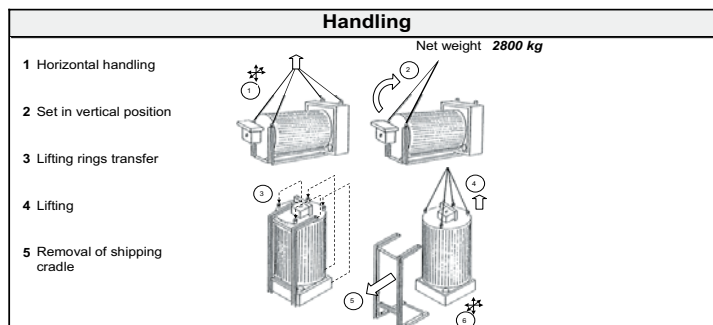
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7.1 Installation and Handling of the F900 SBF



A	500	F	500	a	260
B	1580	G	1200	b	260
C	600	H1	2350	c	260
D	500	H2	2750	i	35
D1	400	H3	2750		
D2	1980	I	1660		
E	1580	L	1700	k	300

* Dimensions in mm

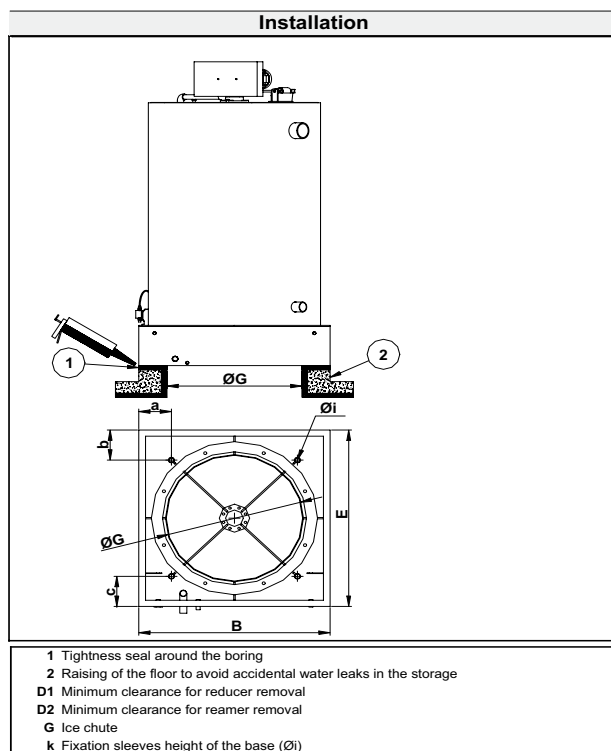


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Installation and handling
Generator F900 SBF
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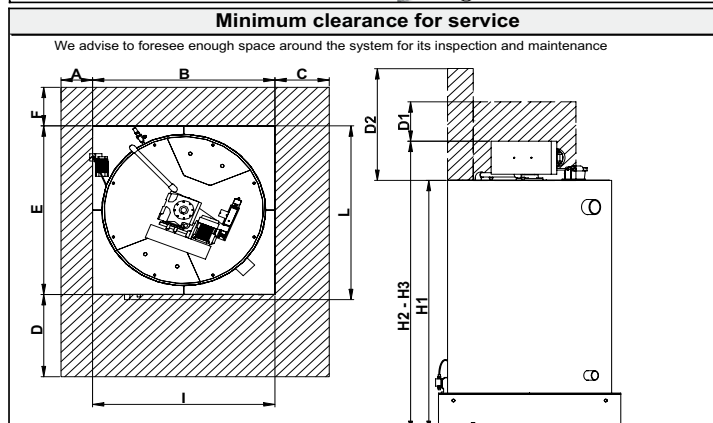
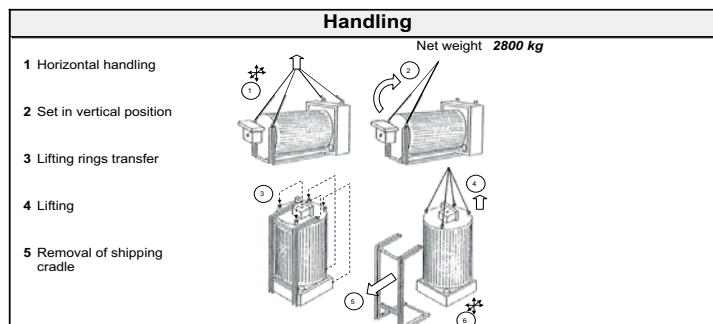
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A	500	F	500	a	260
B	1580	G	1200	b	260
C	600	H1	2350	c	260
D	500	H2	2750	i	35
D1	400	H3	2750		
D2	1980	I	1660		
E	1580	L	1700	k	300

* Dimensions in mm



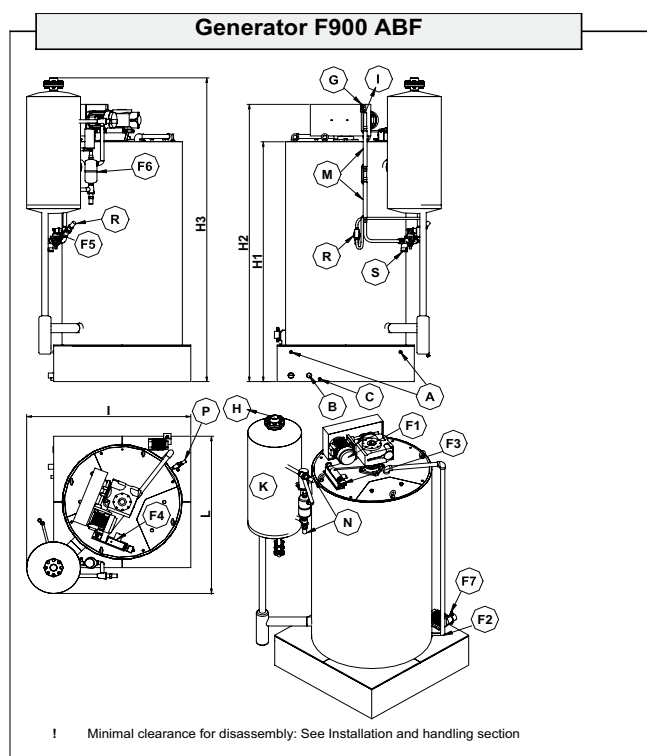
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Installation and handling
Generator F900 SBF NH3
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7.2 Dimensions and Connections of the F900 ABF



Hydraulic connections							
Item	Description	Qty.	Connections				
			Dimensions	Type	Material		
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass		
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel		
C	Water drainage	1	3/4 gaz	Plug	Steel		
Refrigerating connections							
Item	Description	Qty.	Connections				
			Dimensions	Type	Material		
G	Liquid inlet	1	1 1/8"	Plain ends tube	Copper		
H	Suction	1	ND 80	Flange	Steel		
I	Oil return	1	1/2 "	Flare	Brass		
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel		
Electrical connections							
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage		
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A		
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A		
F3	Torque limiter switch	1	-				
F4	Emergency stop	1	-				
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A		
F6	Liquid level control	1	-				
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A		
Other specifications							
Max. water flow 1380 l/h			Water pressure 2 -> 4 bar				
Maximum working pressure 1,5 MPa (PED 97/23 CE)							
Dimensions				Item			
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.	
Length	mm	1950	3300	3200	M	Oil return exchanger	2
Width	mm	1950	2100	2200	O	Shut-off valve	2
Height	mm	3100	2300	2400	Q	Liquid inlet throttle valve	1
					R	Oil return valve	1
Volume	m3	11,79	15,94	16,90	S	Liquid filter	1
Net weight	kg	3100	3100	3100			
Gross weigh	kg	3100	3500	3600			

Dimensions	
H1	2350
H2	2750
H3	3100
I	1950
L	1950

* Dimensions in mm

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Dimensions and connections

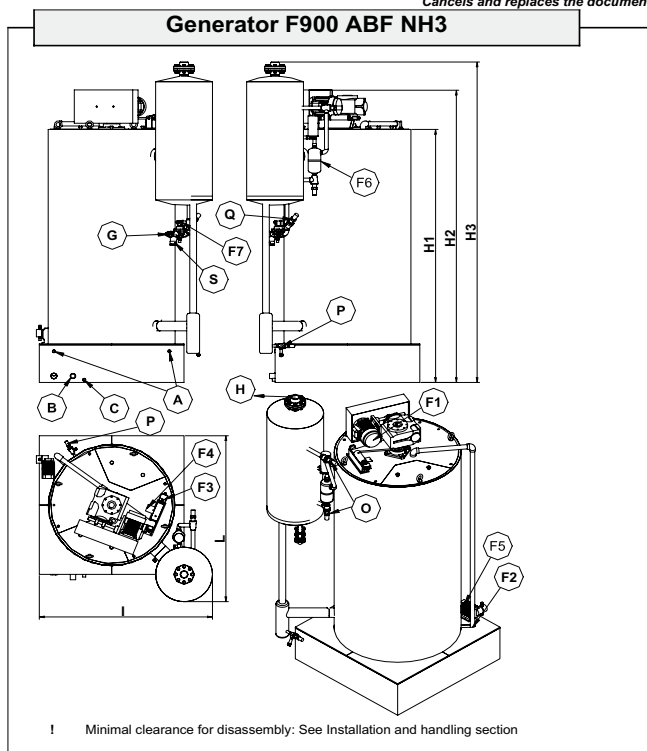
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Generator F900 ABF

INDUSTRIAL LAND-BASED

Edition date 18/10/2004

V0.0



Hydraulic connections							
Item	Description	Qty.	Connections				
			Dimensions	Type	Material		
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass		
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel		
C	Water drainage	1	3/4 gaz	Plug	Steel		
Refrigerating connections							
Item	Description	Qty.	Connections				
			Dimensions	Type	Material		
G	Liquid inlet	1	33,4 x 3,4 mm	Flange	Steel		
H	Suction	1	ND 80	Flange	Steel		
P	Oil drain	2	3/8 "	O.D.F.- G	Stainless Steel		
Electrical connections							
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage		
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A		
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A		
F3	Torque limiter switch	1	-				
F4	Emergency stop	1	-				
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A		
F6	Liquid level control	1	-				
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A		
Other specifications							
Max. water flow 1380 l/h			Water pressure 2 -> 4 bar				
Maximum working pressure 1,5 MPa (PED 97/23 CE)							
Dimensions				Item			
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.	
Length	mm	1950	3300	3200	O	Shut-off valve	2
Width	mm	1950	2100	2200	Q	Throttle valve	1
Height	mm	3100	2300	2400	S	Liquid filter	1
Volume	m3	11,79	15,94	16,90			
Net weight	kg	3100	3100	3100			
Gross weigh	kg	3100	3500	3600			

Dimensions	
H1	2350
H2	2750
H3	3100
I	1950
L	1950

* Dimensions in mm

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Dimensions and connections

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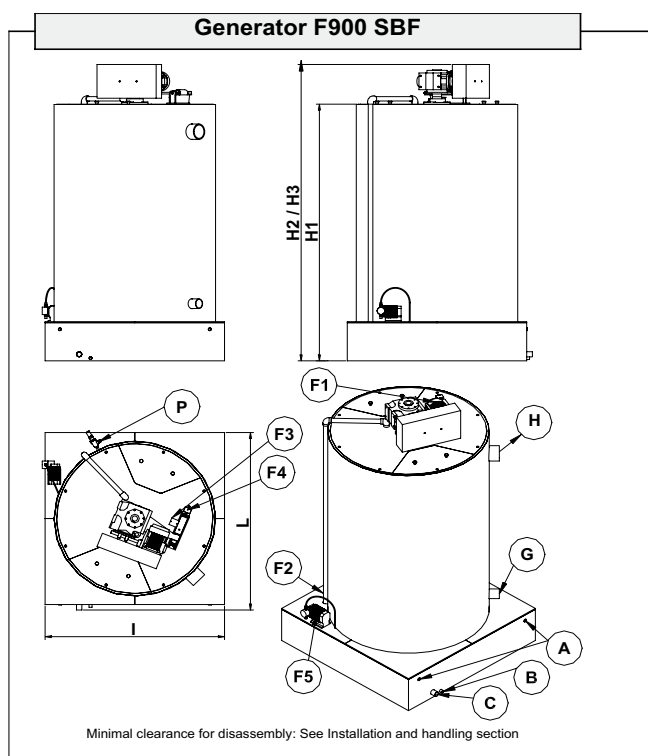
Generator F900 ABF NH3

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7.3 Dimensions and Connections of the F900 SBF



Hydraulic connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel
C	Water drainage	1	3/4 gaz	Plug	Steel
Refrigerating connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
G	Liquid inlet	1	88,9 x 5,5 mm	Plain ends tube	Steel
H	Suction	1	168,3 x 11 mm	Plain ends tube	Steel
P	Oil drain	1	3/8 "	O.D.F.- G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A
F3	Torque limiter switch	1	-		
F4	Emergency stop	1	-		
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 1380 l/h			Water pressure 2 → 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Qty.
Length	mm	1700	3000	3100	
Width	mm	1660	1800	1900	
Height	mm	2750	2100	2200	
Volume	m3	7,76	11,34	12,96	
Net weight	kg	2800	2800	2800	
Gross weigh	kg	2800	3150	3250	

Dimensions	
H1	2350
H2	2750
H3	2750
I	1660
L	1700

* Dimensions in mm

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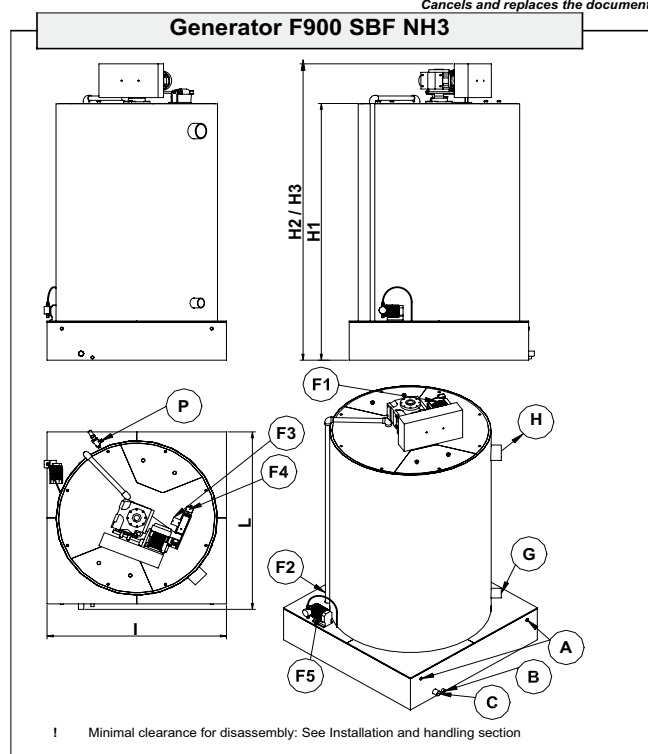
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Dimensions and connections

Generator F900 SBF INDUSTRIAL LAND-BASED

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06/09/2004

Hydraulic connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
A	Generator water supply	2	10/12 mm	Plain ends tube	Brass
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel
C	Water drainage	1	3/4 gaz	Plug	Steel
Refrigerating connections					
Item	Description	Qty.	Connections		
			Dimensions	Type	Material
G	Liquid inlet	1	88,9 x 5,5 mm	Plain ends tube	Steel
H	Suction	1	168,3 x 11 mm	Plain ends tube	Steel
P	Oil drain	1	3/8 "	O.D.F. - G	Stainless Steel
Electrical connections					
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A
F2	Pump	1	230 V - 1 - 50 Hz	1 x 300 W	1 x 1,4 A
F3	Torque limiter switch	1	-		
F4	Emergency stop	1	-		
F5	Salt dosing pump	1	230 V - 1 - 50 Hz	1 x 50 W	1 x 0,4 A
Other specifications					
Max. water flow 1380 l/h			Water pressure 2 → 4 bar		
Maximum working pressure 1,5 MPa (PED 97/23 CE)					
Dimensions				Item	
Dimensions	Overall	Open crate	Full crate	Item	Description
Length	mm	1700	3000		
Width	mm	1660	1800		
Height	mm	2750	2100		
Volume	m3	7,76	11,34		
Net weight	kg	2800	2800		
Gross weigh	kg	2800	3150		

Dimensions	
H1	2350
H2	2750
H3	2750
I	1660
L	1700

* Dimensions in mm

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Dimensions and connections

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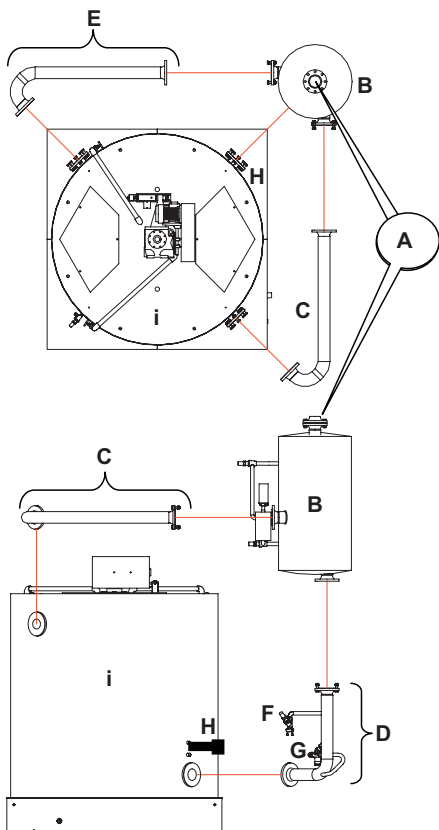
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8. Installation and Handling of the F2000 ABF

Installation	Handling																																										
<p> - Water frame base dimensions are given without insulation 1 Tightness seal around the boring 2 Raising of the floor to avoid accidental water leaks in the storage D1 Minimum clearance for reducer removal D2 Minimum clearance for reamer removal G Ice chute </p>	<p style="text-align: right;">Net weight 5200 kg</p> <ol style="list-style-type: none"> 5 Removal of shipping cradle 3 Lifting rings transfer 2 Set in vertical position 6 Vertical handling 4 Lifting <p style="text-align: center;">Minimum clearance for service</p> <p>- We advise to foresee enough space around the system for its inspection and maintenance</p>																																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>A</td><td>500</td> <td>F</td><td>500</td> <td>a</td><td>297,5</td> </tr> <tr> <td>B</td><td>2080</td> <td>G</td><td>1780</td> <td>b</td><td>297,5</td> </tr> <tr> <td>C</td><td>600</td> <td>H1</td><td>2350</td> <td>c</td><td>297,5</td> </tr> <tr> <td>D</td><td>2200</td> <td>H2</td><td>2750</td> <td>i</td><td>35</td> </tr> <tr> <td>D1</td><td>400</td> <td>H3</td><td>3100</td> <td></td><td></td> </tr> <tr> <td>D2</td><td>1980</td> <td>I</td><td>2435</td> <td></td><td></td> </tr> <tr> <td>E</td><td>2080</td> <td>L</td><td>2435</td> <td></td><td></td> </tr> </table> <p><i>* Dimensions in mm</i></p>	A	500	F	500	a	297,5	B	2080	G	1780	b	297,5	C	600	H1	2350	c	297,5	D	2200	H2	2750	i	35	D1	400	H3	3100			D2	1980	I	2435			E	2080	L	2435			<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>GENEGLACE s.a.s. ZAC de la Forêt - 9, rue des Orfèvres 44840 Les Sorinières - France Tél. +33-(0)2-51-19-10-51 Fax +33-(0)2-40-05-73-81</p> </div> <div style="width: 50%; text-align: center;"> <p>Installation and handling Generator F2000 ABF INDUSTRIAL LAND-BASED</p> <p style="font-size: small;">Edition date 01/04/2004 V0.0</p> </div> </div> <p style="text-align: right;">GTI.001A</p> <p style="font-size: x-small; text-align: center;">GENEGLACE may change this document whitout prior notice</p>
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B	2080	G	1780	b	297,5																																						
C	600	H1	2350	c	297,5																																						
D	2200	H2	2750	i	35																																						
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Installation	Handling																																										
<p> - Water frame base dimensions are given without insulation 1 Tightness seal around the boring 2 Raising of the floor to avoid accidental water leaks in the storage D1 Minimum clearance for reducer removal D2 Minimum clearance for reamer removal G Ice chute </p>	<p style="text-align: right;">Net weight 5200 kg</p> <ol style="list-style-type: none"> 4 Lifting 5 Removal of shipping cradle 2 Set in vertical position 1 Horizontal handling 3 Lifting rings transfer <p style="text-align: center;">Minimum clearance for service</p> <p>- We advise to foresee enough space around the system for its inspection and maintenance</p>																																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>A</td><td>500</td> <td>F</td><td>500</td> <td>a</td><td>297,5</td> </tr> <tr> <td>B</td><td>2080</td> <td>G</td><td>1780</td> <td>b</td><td>297,5</td> </tr> <tr> <td>C</td><td>600</td> <td>H1</td><td>2350</td> <td>c</td><td>297,5</td> </tr> <tr> <td>D</td><td>2200</td> <td>H2</td><td>2750</td> <td>i</td><td>35</td> </tr> <tr> <td>D1</td><td>400</td> <td>H3</td><td>3100</td> <td></td><td></td> </tr> <tr> <td>D2</td><td>1980</td> <td>I</td><td>2435</td> <td></td><td></td> </tr> <tr> <td>E</td><td>2080</td> <td>L</td><td>2435</td> <td></td><td></td> </tr> </table> <p><i>* Dimensions in mm</i></p>	A	500	F	500	a	297,5	B	2080	G	1780	b	297,5	C	600	H1	2350	c	297,5	D	2200	H2	2750	i	35	D1	400	H3	3100			D2	1980	I	2435			E	2080	L	2435			<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>GENEGLACE s.a.s. ZAC de la Forêt - 9, rue des Orfèvres 44840 Les Sorinières - France Tél. +33-(0)2-51-19-10-51 Fax +33-(0)2-40-05-73-81</p> </div> <div style="width: 50%; text-align: center;"> <p>Installation and handling Generator F2000 ABF NH3 INDUSTRIAL LAND-BASED</p> <p style="font-size: small;">Edition date 01/04/2004 V0.0</p> </div> </div> <p style="text-align: right;">GTI.001A</p> <p style="font-size: x-small; text-align: center;">GENEGLACE may change this document whitout prior notice</p>
A	500	F	500	a	297,5																																						
B	2080	G	1780	b	297,5																																						
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D	2200	H2	2750	i	35																																						
D1	400	H3	3100																																								
D2	1980	I	2435																																								
E	2080	L	2435																																								

8.a Assembly of the bottle flood



The assembly of the bottle **B** must be carried out after having positioned the generator.

To position piping **D**, to place the joint of flange, to screw the screws (20x70) on the flange cylinder **i** (without blocking them).

To connect the supports **F** you **G** with their joints on piping **H** fixed on cylinder **i** (without blocking them).

Using a means of adapted lifting, to raise the bottle **B** by point **A**, so that the flanges (piping **D** - bottle) are on the same level to place the joint of flange, to screw the screws (20x70) on the flange bottle **B** (without blocking them).

To take piping **C**, to screw the screws (20x70) on the flange cylinder **i** while placing the joint of flange, then to screw the screws (20x70) on the flange bottle **B** while placing the joint of flange (without blocking them).

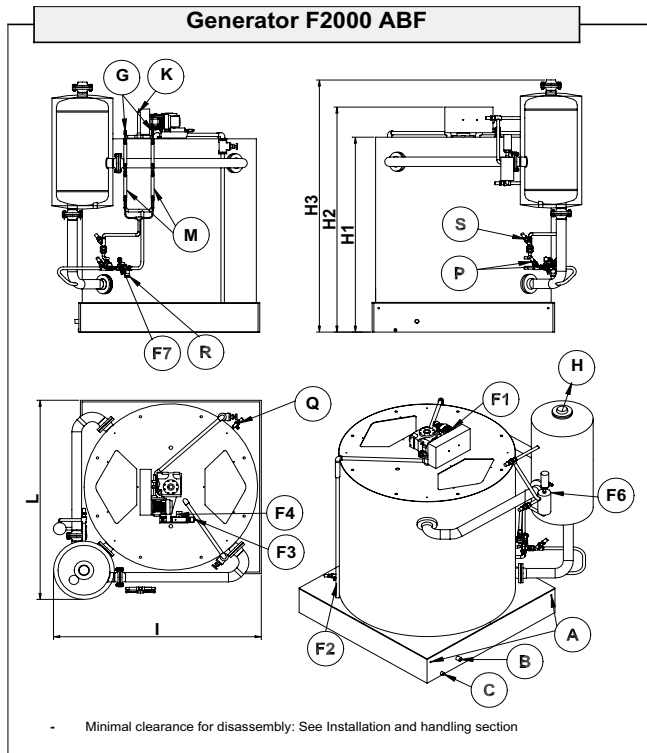
To take piping **E**, to screw the screws (20x70) on the flange cylinder **i** while placing the joint of flange, then to screw the screws (20x70) on the flange bottle **B** while placing the joint of flange (without blocking them).

Once checked the good assembly of all the flanges, to block all the screws (410 Nm Maxi), and to remove the system of lifting of the bottle.

8.1 Installation and Handling of the F2000 SBF

Installation				Handling																																				
				<p>Net weight 4800 kg</p> <p>5 Removal of shipping cradle</p> <p>1 Horizontal handling</p> <p>6 Vertical handling</p> <p>2 Set in vertical position</p> <p>3 Lifting rings transfer</p>																																				
<p>Both suction tubes must have equal length</p> <p>Water frame base dimensions are given without insulation</p> <p>1 Tightness seal around the boring</p> <p>2 Raising of the floor to avoid accidental water leaks in the storage</p> <p>D1 Minimum clearance for reducer removal</p> <p>D2 Minimum clearance for reamer removal</p> <p>G Ice chute</p>				<p>Minimum clearance for service</p> <p>- We advise to foresee enough space around the system for its inspection and maintenance</p>																																				
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A	500	F	2200																																					
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E	2080	L	2080																																					
a	297,5																																							
b	297,5																																							
c	297,5																																							
i	35																																							

* Dimensions in mm

8.2 Dimensions and Connections of the F2000 ABF

Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	4	10/12 mm	Plain ends tube	Chromed brass	
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel	
C	Water drainage	1	3/4 gaz	O.D.F.- G	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
G	Oil return	2	1/2 "	Flare	Brass	
H	Suction	1	ND 100	Flange	Steel	
K	Liquid inlet	1	1 5/8	Plain ends tube	Copper	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A	
F2	Pump	2	230 V - 1 - 50 Hz	2 x 300 W	2 x 1,4 A	
F3	Torque limiter switch	1	-			
F4	Emergency stop	1	-			
F6	Electrical liquid level control (regulation)	1	-			
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A	
Other specifications						
Max. water flow 2200 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,45 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	2435		M	Oil return exchanger	4
Width	mm	2435		P	Liquid inlet throttle valve	2
Height	mm	3100		Q	Oil drain	1
				R	Liquid filter	1
				S	Oil return valve	1
Volume	m3	18,38				
Net weight	kg	5200	5200			
Gross weigh	kg	5200				

Dimensions	
H1	2350
H2	2750
H3	3100
I	2435
L	2435

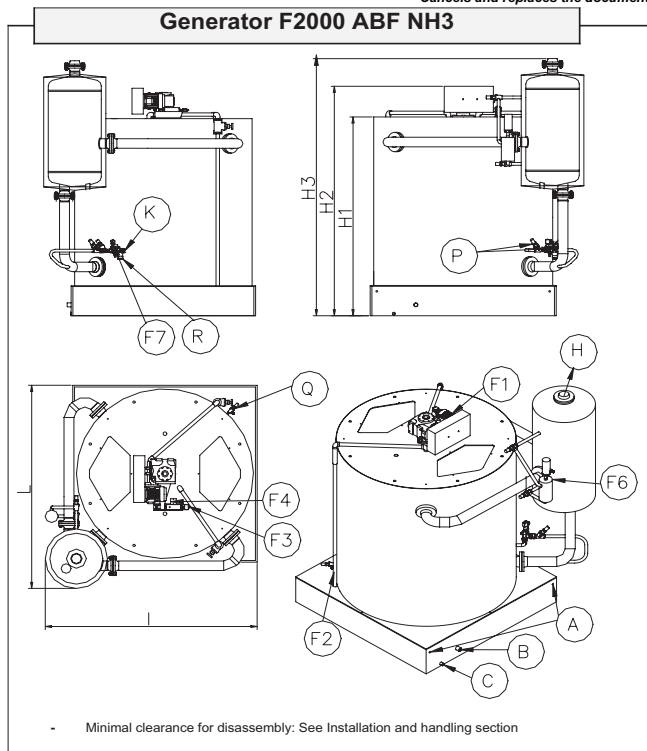
* Dimensions in mm

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Dimensions and connections
Generator F2000 ABF
INDUSTRIAL LAND-BASED

Edition date 18/10/2004 v0.0

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Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	4	10/12 mm	Plain ends tube	Chromed brass	
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel	
C	Water drainage	1	3/4 gaz	O.D.F.- G	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
H	Suction	1	ND 100	Flange	Steel	
K	Liquid inlet	1	33,4 x 3,4 mm	Flange	Steel	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A	
F2	Pump	2	230 V - 1 - 50 Hz	2 x 300 W	2 x 1,4 A	
F3	Torque limiter switch	1	-			
F4	Emergency stop	1	-			
F6	Electrical liquid level control (regulation)	1	-			
F7	Solenoid valve	1	230 V - 1 - 50 Hz	1 x 10 W	1 x 0,1 A	
Other specifications						
Max. water flow 2200 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,45 MPa (PED 97/23 CE)						
Dimensions				Item		
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	2435		P	Liquid inlet throttle valve	2
Width	mm	2435		Q	Oil drain	1
Height	mm	3100		R	Liquid filter	1
				S	Oil return valve	1
Volume	m3	18,38				
Net weight	kg	5200	5200			
Gross weigh	kg	5200				

Dimensions	
H1	2350
H2	2750
H3	3100
I	2435
L	2435

* Dimensions in mm

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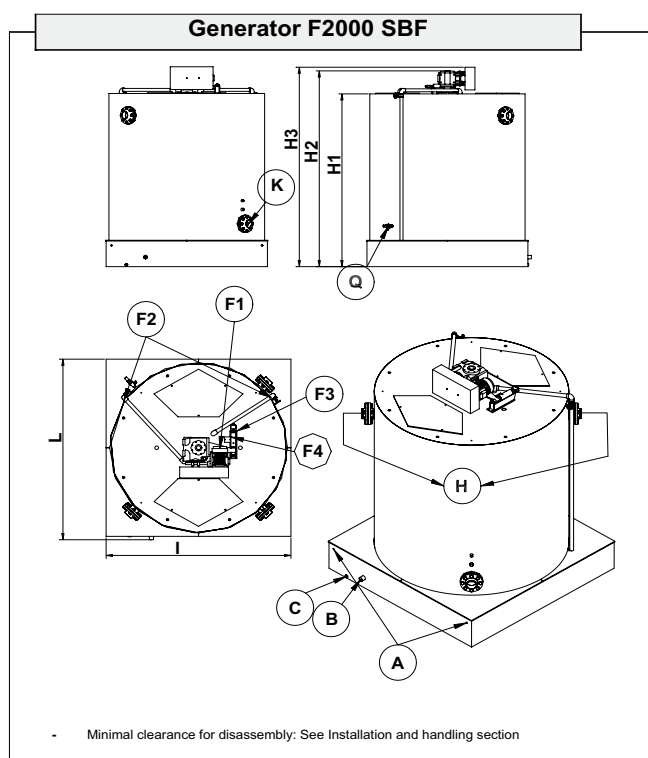
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Dimensions and connections
Generator F2000 ABF NH3
INDUSTRIAL LAND-BASED

Edition date 16/03/2005 v0.0

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8.3 Dimensions and Connections of the F2000 SBF



Hydraulic connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
A	Generator water supply	4	10/12 mm	Plain ends tube	Chromed brass	
B	Overflow	1	48,3 x 3,7 mm	Plain ends tube	Steel	
C	Water drainage	1	3/4 gaz	O.D.F.- G	Steel	
Refrigerating connections						
Item	Description	Qty.	Connections			
			Dimensions	Type	Material	
H	Suction	2	ND 100	Flange	Steel	
K	Liquid inlet	1	ND 100	Flange	Steel	
Electrical connections						
Item	Description	Qty.	Power supply	Nominal power	Nominal amperage	
F1	Reamer motor	1	400 V - 3 - 50 Hz	1 x 550 W	1 x 2,5 A	
F2	Pump	2	230 V - 1 - 50 Hz	2 x 300 W	2 x 1,4 A	
F3	Torque limiter switch	1	-			
F4	Emergency stop	1	-			
Other specifications						
Max. water flow 2200 l/h			Water pressure 2 -> 4 bar			
Maximum working pressure 1,45 MPa (PED 97/23 CE)						
Dimensions			Item			
Dimensions	Overall	Open crate	Full crate	Item	Description	Qty.
Length	mm	2080		Q	Oil drain	1
Width	mm	2080				
Height	mm	2750				
Volume	m3	11,90				
Net weight	kg	4800	4800			
Gross weigh	kg	4800				

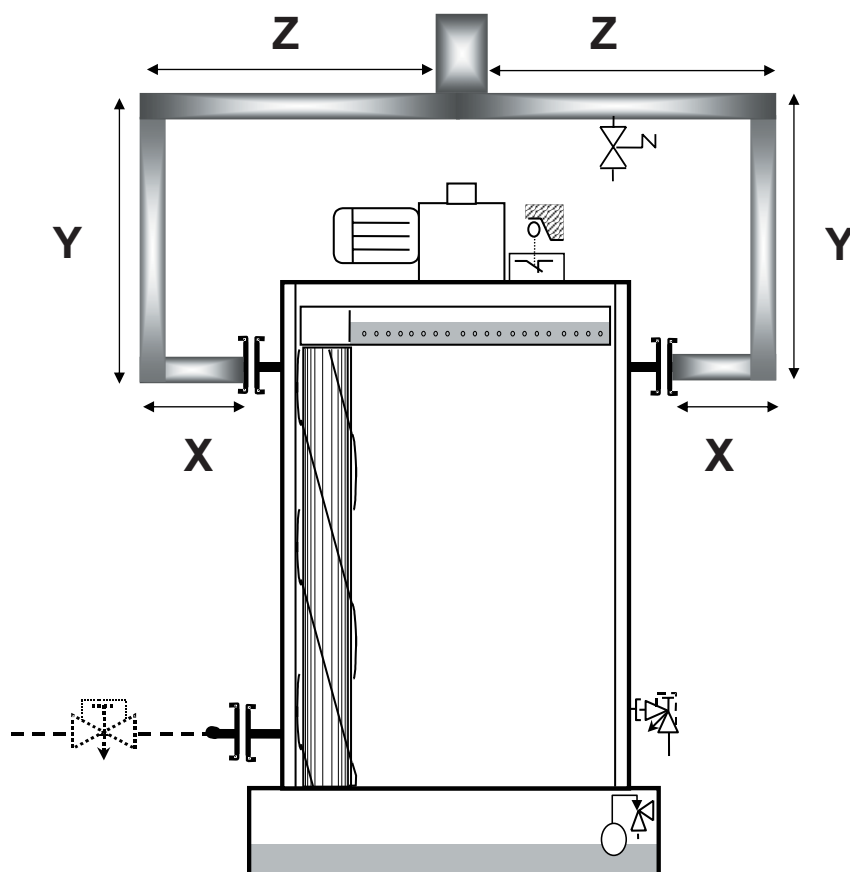
Dimensions	
H1	2350
H2	2750
H3	2750
I	2080
L	2080

* Dimensions in mm

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Dimensions and connections
Generator F2000 SBF
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The sizes and pipe diameters should match so as to avoid pressure drop.

Positioning the machine

9. Positioning the machine

- Place the generator on a level, flat surface.
- The generator must be located in a position protected from bad weather, water spray or any other liquid and in a non-aggressive environment.
- Position the generator so as to maintain adequate access for upkeep and maintenance (see Installation Handling - free access).
- The generator must be mounted sufficiently high, in order to permit suitable storage for its daily production of ice (e.g. cold chamber, static or orbital silo, etc.).
- Avoid locating the ice output in the air flow from an evaporator.
- Do not reduce the cross section of the ice output.

Note

In order to facilitate all upkeep and maintenance work on the generator, (such as regular greasing of the bearings of the shaft and the reamer), provide accessibility below and above the machine.

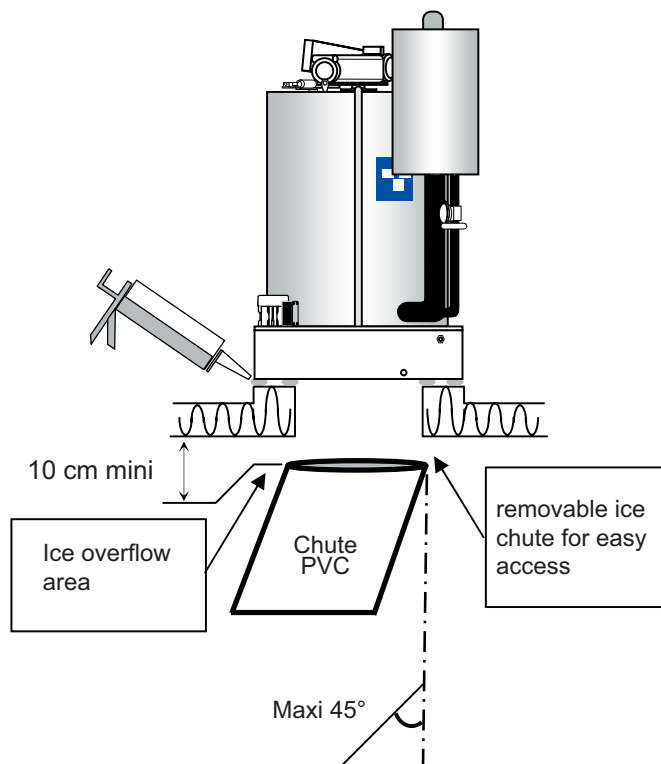


Fig 512. Optional chute, easily removable for maintenance of generator.

Important

Risk of freezing during machine downtime : protect the base of the pump and valve float by means of a heater housed in the base. This device will only be effective for an air temperature of - 10°C maximum for a period of 12 to 24 h. Beyond that, it is preferable to drain the machine if it is stopped. Also protect the water supply pipework.

Note

When fitting a heater resistance, provide a circuit breaker for protection and a thermostat to monitor the ambient air temperature.

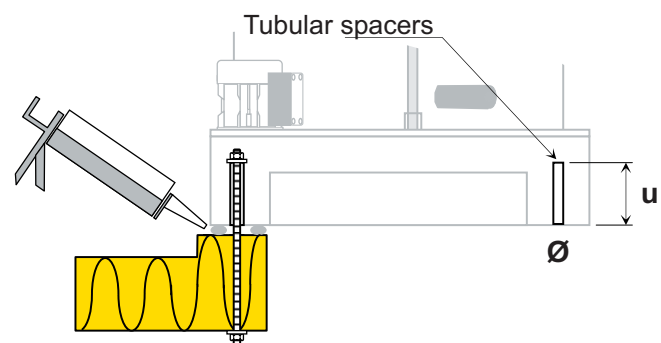
9.1 Mountings

The opening in the generator mounting must be at least equal to the diameter «G» of the ice chute.

Important

Do not forget to add a silicone seal all round the base of the generator to prevent water entering the ice storage area.

Seal with mastic before fitting and mount the generator with threaded rods inserted through the tubular spacers and also sealing the latter inside the water tray base and the cross members of the floor. If necessary, fit a heat-proof washer with the dimensions shown on the installation drawing to prevent condensates on the lower surface of the base.



mm	F600	F800	F900	F2000
Ø	20	35	35	35
u	180	310	310	310

10. Connections

10.1 Hydraulic connections

Recommendation

Risk of frost : fit the water supply and overflow pipes with a device (insulation and/or heater) to protect them against freezing.

10.2.1 Connection to the water supply

Water supply line is to be hooked to the connection fittings. As water supply line, it is preferable to connect to a flexible hose, however a rigid tube can also be used.

Note

It is a good idea to fit a shut-off valve on the water supply to facilitate maintenance.

When tightening the flange connector, hold the float valve so that its water outlet is perpendicular to the bottom of the base and the rod and float valve can move freely up and down.

Important

In order to prevent malfunctions of your GENEGLACE and from a food hygiene point of view, it is a good idea to fit a water filter or purifier as required.

In fact, filtering the water supply may considerably slow down the deposition of impurities in your GENEGLACE, but not scale formation. For this reason, when the hardness of the water is too high, it will be necessary to use a water softener.

Important

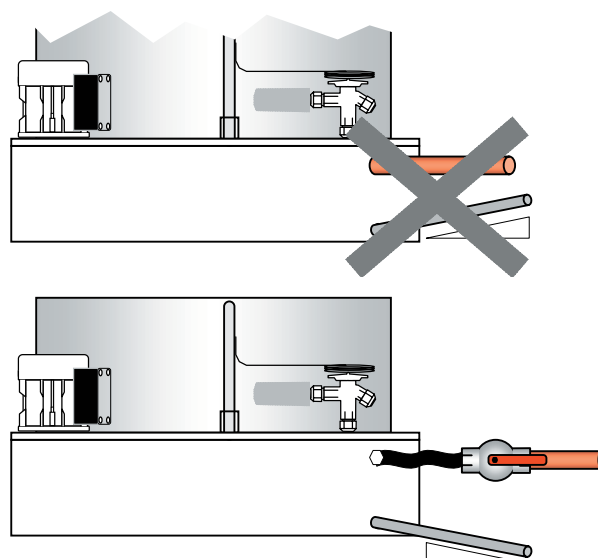
In order to prevent malfunctions of your GENEGLACE it is a good idea to fit a device for protection against falls in pressure or water flow rate.

the water supply pressure must be between 2 bar minimum and 4 bar maximum. The water flow rate must always be constant and greater than that due to the water consumption of your GENEGLACE. If this is not the case, the installation of a pump and reservoir and/or an expansion valve is essential.

The water consumption of your GENEGLACE is equal to its ice production.

10.2.2 Overflow connection

In the event of malfunction of the float valve, the excess water escapes through the overflow. The overflow therefore prevents any overflow of water through the ice descent hole and thus into the ice bin.



The overflow water must flow into the drains as required by the regulations.

The drain pipe must not have a rising portion that could prevent the natural flow of water, and its slope must be sufficient.

10.2 Electrical connection

The type of electrical power supply is stated on the rating plate attached to the generator.

Ensure that the electrical supply for your GENEGLACE complies with the regulations in force and in the following respects :

- voltage (Volts),
- three phase or single phase (3 or 1),
- frequency (Hz)
- installed power (KVA)
- nominal current (A)

An electrical control box is obligatory to control the operation of the generator. The electrical sequences and current regulations must be followed (refer to the functional diagram section).

Important

The cross section of the electrical supply cable must be adequate for the installed power of the machine (see rating plate) and comply with current standards. An electrical protection device complying with current standards must be fitted to protect the various parts of the machine. Using the electrical diagram of the machine, check the polarity of the electrical connection of single phase generators.

Electrical connection

10.2.1 Reamer motor

In the case of a three phase supply, connect as appropriate for the characteristics of the electrical supply.

The motors are supplied connected in star.

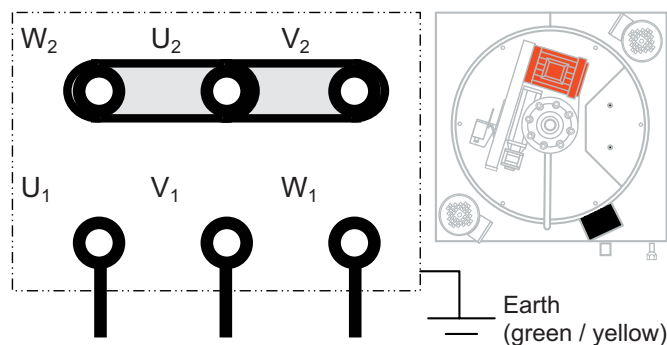


Fig. Electrical connection diagram for reamer motor.

If the moving parts assembly does not turn in the direction indicated by the arrow on the top, reverse the connection of two phases.

10.2.2 Torque limiter switch

The drawing below shows the position of the torque limiter switch when the generator is operating normally.

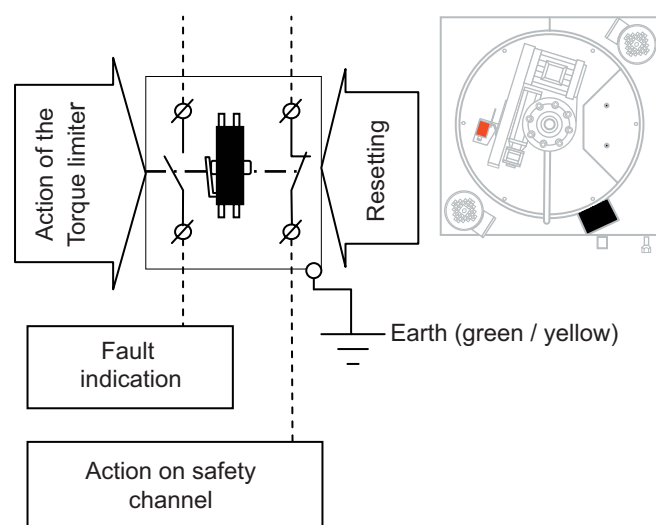
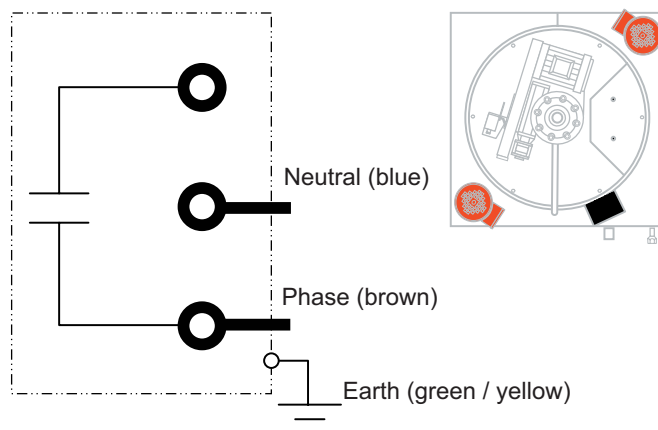


Fig. Electrical connection diagram for torque limiter switch.

10.2.3 Water pump

The water pump operates from 220 Volts, single phase and is fitted in advance with a 3 m cable.

However if the cable has to be changed, the connections must be as follows :



10.2.4 Water pump F800 to F2000

The water pumps (one pump on F800 & F900, two pumps on F2000), work on 220 V single-phase current and are pre-wired with a 3m-long cable with a single-phase + neutral + earth socket.

10.2.5 Emergency stop connection

This must be wired in series to the circuit that controls the whole installation.

10.2.6 Solenoid valve connection

This must be connected to the LLC float that controls its opening and closing.

10.2.7 Safety LLC connection (high alarm option)

This must be wired in series to the circuit that controls the whole installation.

Note

In all the above cases, do not forget to connect the earth terminals.

10.3 Connections to the refrigerant circuit

Refer to the section «Safety Concerning Pressure vessels»

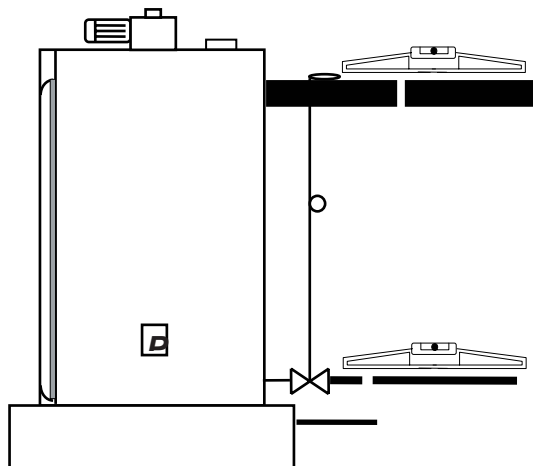
10.3.1 General topics concerning the liquid and suction pipes

Important

Every precaution must be taken to ensure that the refrigerant piping is clean and free from moisture and enhances oil return to the compressor.

The connections between the liquid line and the suction line shall need to follow the same alignment as the connection joints of the generator.

If this is not done, it is possible that cracks or even breaks in the pipe may appear.



The pipes must be fixed at regular intervals and the fixings must rest on a mounting which will prevent movement of the pipes and absorb the maximum amount of vibration.

As a matter of safety, it is advisable not to use pipes as steps, or as a support for other equipment.

Regarding the intake pipe, as far as possible the pressure drop between the generator and the compressor must be as small as possible (take this into account for calculations).

10.3.1.1 Compressor

The coolant compressor must be fitted with a crankcase heater.

10.3.1.2 Oil separator

The installation of an oil separator is required to prevent compressor oil from reaching the circuit components. This enables :

To maintain a low concentration of oil and thereby ensure an optimum coefficient of thermal conduction.

To eliminate the risks of abnormal mechanical wear of the compressor further to a lack of oil in the crankcase.

To reduce the pressure drop in the installation piping.

The oil separator must be selected in accordance with best current practice, the concentration of oil obtained after the separator must be a maximum of 80 ppm.

10.3.2 Generator and remote condensing unit located at same levels

F600 to F2000 generators are fitted with a manual throttle a heat exchanger.

The normal diameters of pipes can be retained for a maximum developed length of 6 m.

For the diameters of the pipes, refer to the table of Dimensions and Connection.

10.3.3 Generator and remote condensing unit located at different levels

In the case where the compressor and the generator are mounted at different levels, certain precautions concerning the piping must be taken into account.

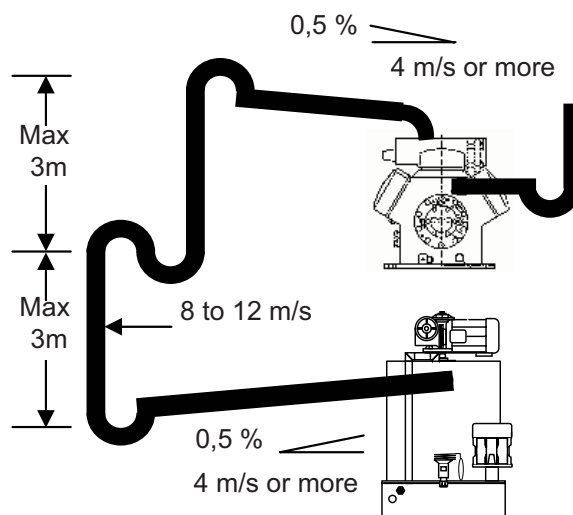
10.3.3.1 Suction line

The suction line must be arranged with a slope descending towards the compressor and any part of the piping that could constitute a fluid trap must be avoided.

Suction gas velocity must be high enough to provide for an adequate oil return. This velocity must be within 8 to 12 m/s in vertical risers.

In horizontal pipes, this velocity can decrease to 4 m/s.

The use of U-traps and double-suction risers may be required on vertical sections, wherever elevation exceeds 2 m. Where elevation exceeds 4 meters, it is advisable to install a U-trap every 2 to 3 meters.



Connections to the refrigeration circuit

The thermal insulation must prevent the diffusion of water vapour (this is to avoid rotting of the insulating material).

Suction line piping must be insulated (according to local climate) in order to minimize the superheat effects.

Note that all local and regional regulations and safety standards, such as EN378, must be taken into account when designing, connecting and running the system.

10.3.3.2 Liquid Line

Any gas trap must be avoided, that is any section of piping in an inverted «U» so as to prevent any interruption of the liquid flow.

A solenoid valve on the liquid line must shut-off the refrigerant feed to the generator in order to avoid any risk of slugging to the compressor.

Where the difference in elevation between generator and compressor is greater than 5 m approx., it is recommended that the diameter of the liquid line be increased.

In this case, the selection of the expansion valve may have to be reconsidered, no longer taking into account the condensation pressure but the pressure existing upstream of the expansion valve.

10.3.4 Generator connected to a central refrigerating plant

The installer should make provision for the following components :

- Evaporating pressure regulator with pressure gauge connector.
- Pressure relief valve in accordance with current local regulations.

Option : it is possible to install a safety LLC on the flood bottle (high alarm option).

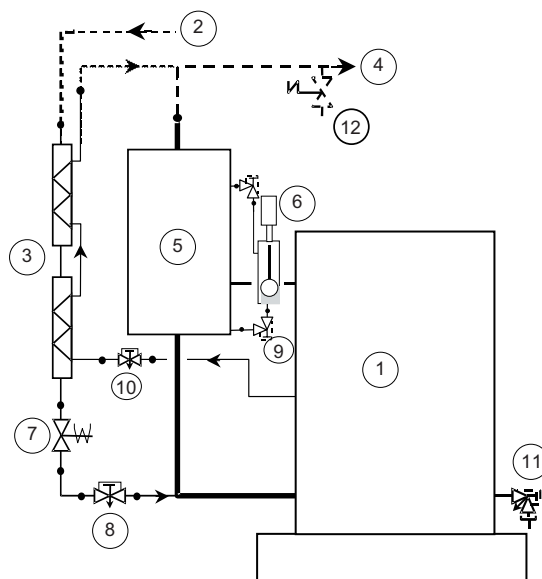
Electrical equipment to be supplied by the installer : refer to the section : Operating Diagram

Warning

Running the generator outside of the normal range specified by GENEGLACE is not recommended.

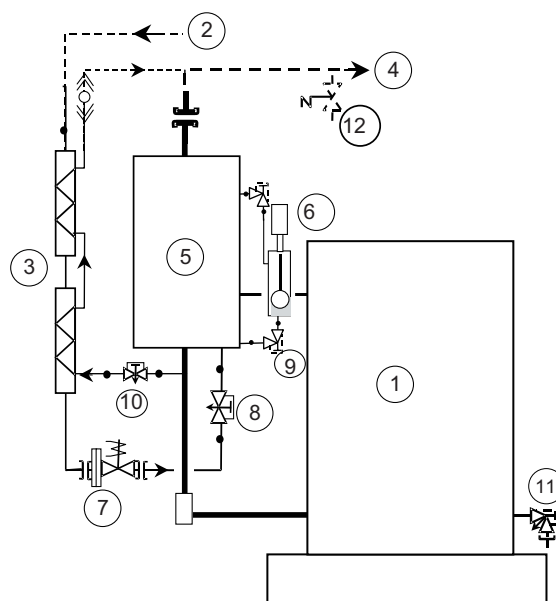
10.3.5 Refrigeration Diagram

10.3.5.1 Generators with Flood bottles (AB version)

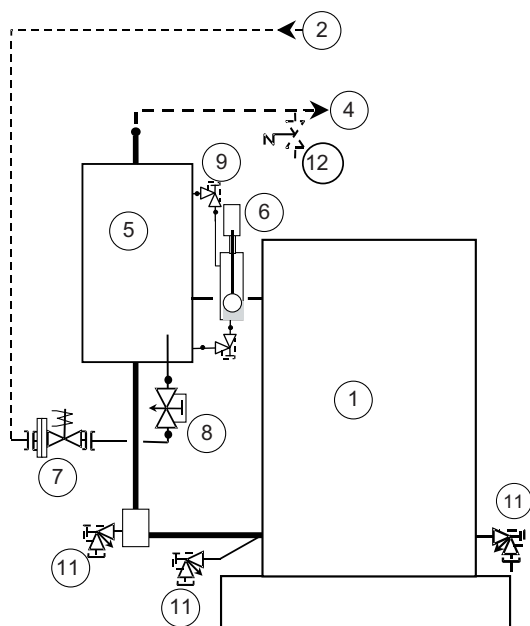


Refrigeration diagram F600-(AB)-R22/R404a

1	Generator
2	HP Liquid
3	Oil return heat exchanger
4	Suction
5	Vertical surge drum (flood bottle)
6	Liquid Level Control « L.L.C. »
7	liquid solenoid valve
8	Manual throttle
9	Shut-off valve
10	Manual oil return valve
11	Oil drain
12	LP pressure relief valve – (not included)



Refrigeration diagram F800 F900-(AB)-R22/R404a



Refrigeration diagram F600 to F900-(AB)-NH3

Warning

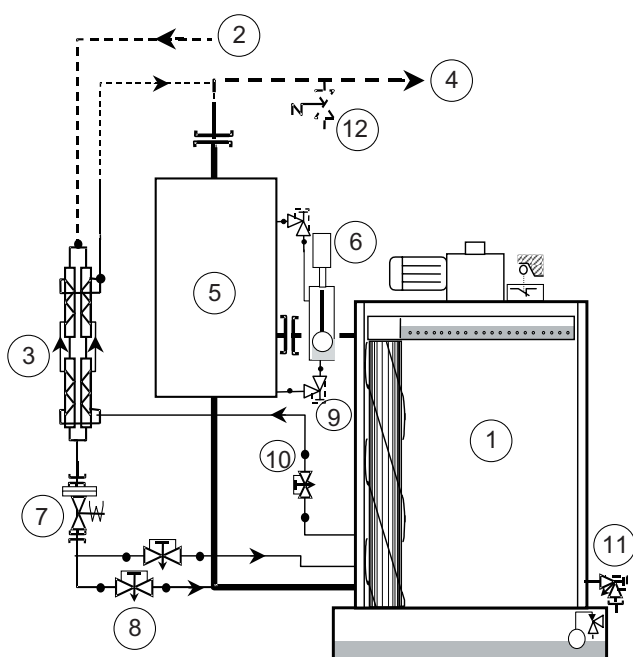
Risk of generator blow out

The value for the Maximum Working Pressure (MWP) is given in the chapter "Safety concerning pressure vessels", like to the plate of identification manufacturer located on the generator.

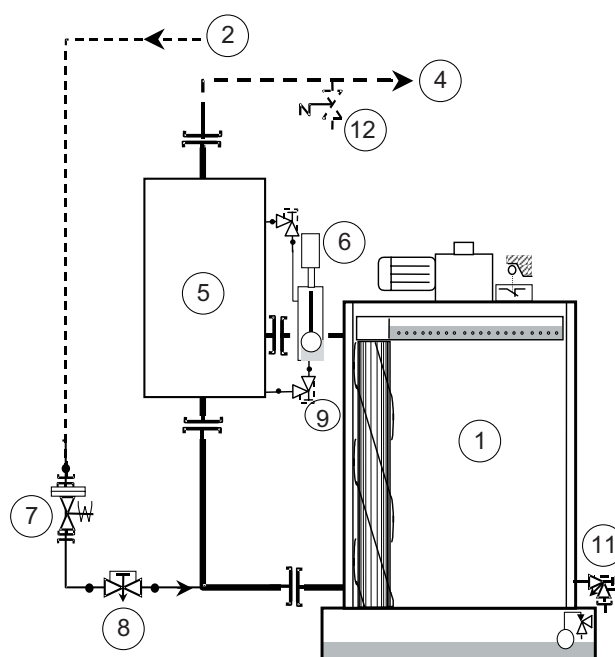
Appropriate security systems should be set up to avoid pressure building up higher than the MWP, If the generator is likely to be isolated from the rest of the refrigeration circuit by isolation valves :

- A pressure relief valve must be installed to protect the generator.
- The generator must be systematically emptied before these valves are shut.

1	Generator
2	HP Liquid
3	Oil return heat exchanger
4	Suction
5	Vertical surge drum (flood bottle)
6	Liquid Level Control « L.L.C. »
7	liquid solenoid valve
8	Manual throttle
9	Shut-off valve
10	Manual oil return valve
11	Oil drain
12	LP pressure relief valve – (not included)



Refrigeration diagram F2000-(AB)-R22/R404a



Refrigeration diagram F2000-(AB)-NH3

Oil return device**10.3.6 Oil return device****- R22 - R404a**

The oil return device comprises a heat exchanger and a manual valve.

During operation only the lower heat exchanger should be frosted (fully frosted).

See chapter "Refrigeration Diagram".

The manual valve controls the flow rate, and therefore the frosting of the exchangers.



To ensure that the oil return device operates correctly, the temperature of the high pressure liquid entering the generator must be greater than 15°C.

It is possible that a functional problem decreases flow rate, causing oil to accumulate in the generator; it is possible to drain off this oil through the drain valve on the cylinder.

10.3.7 NH3 oil drain device**- R717**

In cooling installations using ammonia, the oil is denser and remains trapped the generator where it accumulates. This reduces the heat exchange, reduces the production of ice and its quality and affects correct operation of the generator. It is therefore necessary to drain the oil regularly.

Generators operating with ammonia, whether ABF or SBF, include oil drain valves. These may be located at various points on the generator depending on the type. Refer to the chapter 'Cooling Diagrams'.

10.3.7.1 Generators without flood-bottles (SB versions).

SB Generators are designed to be installed on centralised refrigerating systems with forced recirculation.

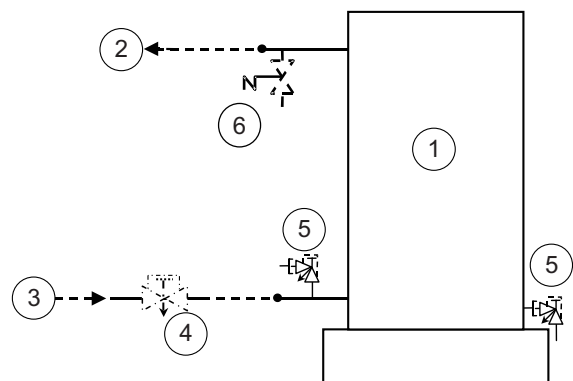
The rate of recirculation :

$$\frac{\text{The mass-flow of fluid circulating in the generator}}{\text{The mass-flow of fluid evaporated}}$$

Must be between of 3 to 5.

Which means that the mass of fluid circulating in the generator must be between 3 and 5 times greater than evaporated fluid.

The refrigerant flow control valve (throttle), is used to adjust the recirculation flow rate, but can also be used to balance the pressure drop in multi-evaporator circuits with forced circulation.



Refrigeration diagram F600 to F2000 - R22-R404a-NH3-SB versions

1	Generator
2	Suction
3	HP Liquid
4	Manual throttle
5	Manual oil drain valve
6	LP pressure relief valve – (not included)

Generators without flood bottles are designed for use in refrigerated installations already equipped with a suction accumulator.

The installations often tend to use a number of evaporators at different evaporation temperatures.

Therefore, it is often necessary to fit a constant pressure valve and maintain the correct suction pressure in the GENEGLACE generator.

Important

Repair and maintenance tasks on ammonia systems must be performed by qualified and authorized personnel, in compliance with the applicable standard and legal safety regulations.

10.4 Refrigeration operation

As stated in the "description of operation" Section, the refrigerant fluid circulates freely in the double wall : it is a flooded system.

After expansion, the refrigerant is injected into the lower part of the cylinder or into its bottle.

The fluid circulates inside the double wall where it changes from a liquid to a gaseous state.

The consequence of this evaporation is to absorb the heat introduced by the water that flows against the inner wall of the drum, where it is frozen.

All the heat is exchanged through the inner wall of the generator, and the refrigerant fluid cannot contact the water to be frozen.

The refrigerant is circulated and regenerated by a condenser system.

Important

The refrigerating power applied to the generator must be close to that recommended by GENEGLACE.

Too low or too high a refrigerating power may cause serious malfunctions.

In order to ensure trouble-free operation of the ice machine, the flow of expanded refrigerant fluid injected into the generator must be perfectly controlled in order to obtain optimum and constant filling of the generator.

10.4.1 Adjustment of liquid feed

Adjustment of the expansion can be performed only if the refrigerant charge is correct and the condensing pressure is stable and close to the average working conditions.

10.4.1.1 R404a or R22 or R717

Adjust the injection throttle while checking times of opening and closing of the liquid solenoid valve, so that the opening time for the solenoid valve is at least twice as long as the closing time.

Indirectly, maladjustment of the opening/closing sequences may induce adverse mechanical consequences for the generator itself, as well as for the compressor.

Note

If the refrigerating capacity is oversized, a back pressure valve must be fitted to maintain the desired evaporating temperature.

The following depend directly on correct adjustment of the throttle :

- the filling of the generator with refrigerant fluid and thus the ice production rate.
- the evaporation pressure.
- the suction superheat.
- the return of oil to the compressor.

Important

Set the hand expansion throttle so that the opening time is 2 times greater than the Closing Time (at least).

Too long an opening time in relation to the closing time indicates that the throttle is not open wide-enough.

Too long a closing time in relation to the opening time indicates that the throttle is too wide open.

An opening time which is 5 to 10 times greater than the closing time may indicate a lack of gas.

The correct regulation of the LLC creates the superheat for a proper oil-return.

Excessive superheat causes insufficient filling and trapping of oil inside the cylinder.

Ice production is very much reduced.

Insufficient superheat causes slugging to the compressor.

Important

For the use of any fluid other than R22 or R404A, consult GENEGLACE.

11. Initial start up

This section gives the chronological order of the checks and actions to be carried out before, during and after the initial start up of your GENEGLACE in complete safety. This is why, before operation of your GENEGLACE, we invite you to refer to the recommendations suggested in this section, by ticking ☒ the boxes ☐ corresponding to the checks you carry out. Refer to chapter “**Commissioning Check List**”.

11.1 Checks and adjustments

11.1.1 Hydraulics

- ☐ Ensure that the water flow rate is greater than the quantity of water required for maximum production of your GENEGLACE and that the water quality is as required.
- ☐ Check that the water supply pressure of your machine lies between 2 and 4 bar.
- ☐ Check, by pressing on the valve float, that water is reaching the base.

11.1.1.1 Presetting the float valve

The float valve has two basic settings. The first setting is the level of water in the base. The level must be sufficient to prevent cavitation of the pump through lack of water on the one hand and to prevent water overflow on the other hand. The second setting is for the water flow rate, which must correspond to the quantity of water necessary for the maximum ice production rate of your GENEGLACE.

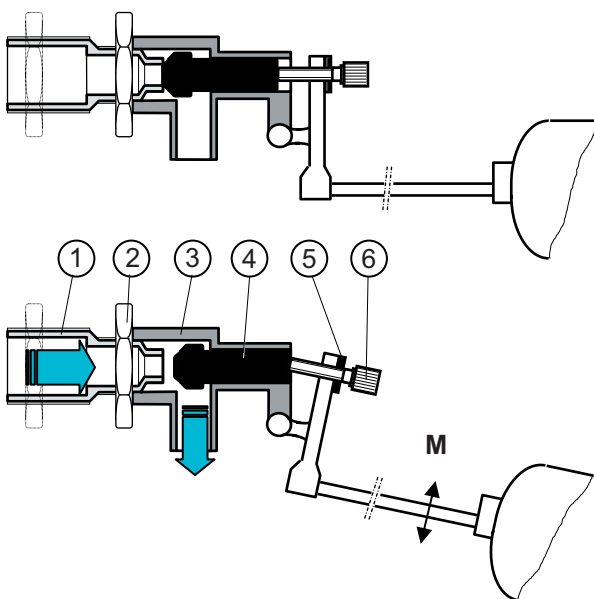


Fig. 7111. Illustration of the float valve in its closed and open positions.

◆ Setting the level

- ☐ By turning the screw 6, adjust the water level in the base while observing the following dimensions :

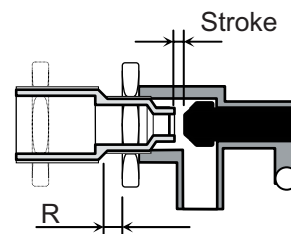
Water level in the "base"	F600	F800–F900–F2000
Maximum shut-off level	95 mm	140 mm
Minimum operating level	75 mm	100 mm

Once the adjustment of the water level in the base has been completed, lock the setting with the lock nut 5.

◆ Adjusting the flow rate

Adjusting the flow rate of the float valve must be carried out when its flow rate is not sufficient to provide the water required for the production of ice in your GENEGLACE. In this case :

- ☐ Shut-off the water supply and remove the inlet connector of the machine.
- ☐ Unlock the nut 2, (see fig. 7111)
- ☐ Unscrew adjustment 1 in the housing 3 to increase the flow rate.
- ☐ Lock the setting by locking the nut 2 on the housing 3, the normal setting of dimension R varies from 1 to 3 mm.
- ☐ Adjust the water level.



◆ Measure

- ☐ To prevent flooding of the ice container if the float valve sticks open, check, with the machine stopped, that the flow rate of the valve when the float is completely submerged does not exceed the capacity of the overflow.
- ☐ If, after 1 hour of operation, the level in the base is lower than the minimum level, increase the flow rate of the valve as described above.

Tip

At the first start up, submerge the float to obtain a water level close to the overflow, in order to assist priming of the pump.

11.1.1.2 Levels of water inside the upper water pan

For F600 generators, the water level in the upper water distribution pan is obtained by adjusting the restrictors located on the discharge hose of the water pumps.

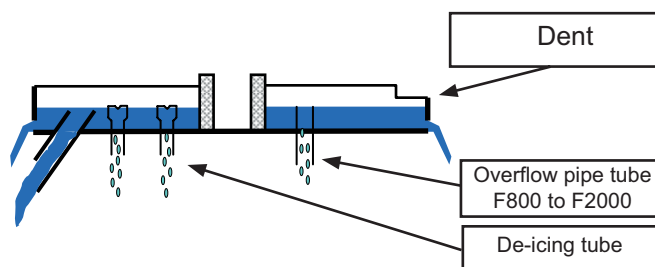


For the F800 - 900 and F2000, this is obtained by the valve located on the water pump (1 or 2 depending on the model) In order to check the water level, power the water pump only.

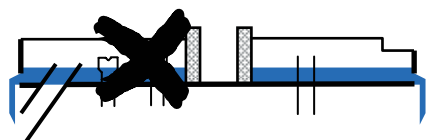
- ☐ The water level should be at least as indicated here- under and at max one mm below the dent in the top of the upper water tray.

the deicing tube must be submerged

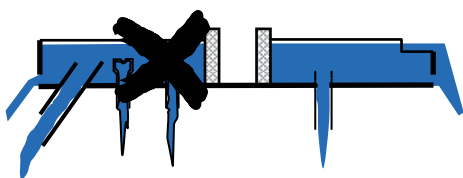
**Correct level : minimum 35 mm F600
50 mm F800 to F2000**



4 adjustable de-icing tubes are fitted to the F600, 3 overflow pipes of which 2 are adjustable on the F800 and F900 and 4 overflow pipes of which 3 are adjustable on the F2000. On all generators the pan has a rear, non adjustable, rubber wiper de-icing pipe which must be continuously fed with water.



Water level too low : check the pump flow rate



If the water level in the distribution pan is much too high, check the holes in the pan and look for blocked holes.

11.1.2 Electrical system

First insure that the water pump is in good working order

- ☐ Adjust all the circuit breakers to the values corresponding to the nominal current consumed by their respective motors.

- ☐ Adjust or preset the time delays.
Checking the reamer motor :
- ☐ Check that the motor is correctly coupled.
Energise the motor from a separate supply and check :
- ☐ that the direction of rotation of the rotating parts is the same as that shown by the arrow marked on the top of the generator.
- ☐ that the speed of rotation of the reamer corresponds to the production rate of the machine (see "Operating parametre").

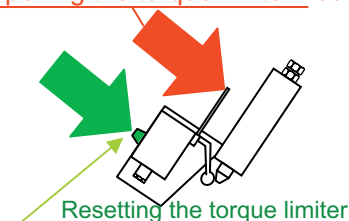
Note

The speed of the reducer is the number of complete revolutions made by all the rotating parts in one hour.

- ☐ At the same time, check the operation of the torque limiter by causing it to trip.

For that it is sufficient to switch off the torque limiter by actuating the red lever (F600) or button (F800 to F2000), of the electric torque limiter switch. To reset the limiter, press the black rubber covered button on the opposite side to the red lever (F600) or the button (F800 to F2000) or on generators F800 to F2000, an emergency stop button on the limiter.

Opening the torque limiter F600



Opening the torque limiter F800 to F2000

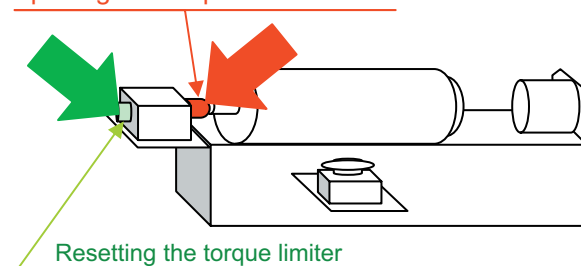


Fig. 712. Illustration of resetting the torque limiter after tripping.

11.1.3 Refrigerating checks

11.1.3.1 Before initial start up

- ☐ Ensure that the refrigerating system is free of leaks.
- ☐ In the case of an independent refrigerating system, ice generator connected to a dedicated compressor, the quantity of fluid in the generator is indicated in the chapter "Safety concerning pressure vessels". The installer must fill the remainder of the system.

**Initial start up**

- ☐ Ensure that the isolating valves of the L.L.C. "Liquid Level Control" are fully open.
- ☐ Fill the generator with refrigerant fluid, filling the solenoid valve separately.

11.1.3.2 Starting your ice machine

- ☐ In the case of an ABF generator (With Flood Bottle), open the manual liquid injection throttle by about 3 turns for the R22/R404a and 1 turn for the NH3.
- ☐ Opening the R22 – R404a oil return throttle by 1 to 2 turns.
- ☐ Check that the starting procedure of your GENEGLACE is carried out as described in the section "Diagram of operation".
- ☐ Check that the distribution tank is correctly filled with water.
- ☐ Adjust the constant pressure valve to the reference inlet pressure for your GENEGLACE (in the case of connection to a control unit).
- ☐ Adjust the injection throttle to obtain an opening time (at least) 2 times greater than the closing time for R22 - R404a - R717. Check the opening and closing times of the liquid solenoid valve.
- ☐ Check the correct return of oil to the compressor (in the case of an independent system).
- ☐ After a few minutes of operation, check that ice is forming over the full height of the drum associated with the reamer.

If this is not the case, see the section "Faults".

11.1.4 Other checks

- ☐ Check that the ice is stripped correctly.
If after a few minutes of operation the generator makes a significant noise when the ice is stripped and the ice has difficulty in releasing itself, see sections "Failure and Addition of salt".
- ☐ Check that the wipers are performing their function (adjustment, no water flowing into the ice store). To adjust the wipers see section "Adjusting the wipers".

11.1.4.1 Addition of salt

- ☐ If required, adjust the salt dosage. See section "Addition of salt".
- ☐ Check that the salt addition system is operating correctly.

11.2 Recommended uses

In the case of an independent refrigerating system, leave the power supply of the system switched on during periods of stoppage : the crankcase heater must remain live.

In the same case, after a long period without electrical power, power on at least 3 hours before starting-up.

Avoid short duration run and stop periods. It is preferable to leave the machine operating for 4 hours rather than short-cycling it 4 times 1 hour on and 1 hour off.

During prolonged stoppages (more than a week), it is advisable to run the machine for 1 hour without adding salt and to drain and dry the base.

Management of a stock of ice:

The basis for calculating the effective volume is : 500 kg of freshly flaked ice approx. per cubic meter.

To keep the ice fresh, do not keep it for more than 2 days.

The ice storage container must be emptied at least once a week so that the user has no difficulty in extracting the ice. There is also a risk of damage to the GENEGLACE, by a build-up of ice in the generator.

11.3 Start-up report

A start-up report at the initial start up will :

- enable you to check the correct operation of your installation by noting a few important points of operation.
- Open all right for warranty.

You will find an initial start up report at the end of this notice, it has four headings.

- Points to note: description of the inspection or check to be carried out.
- Values : generally a physical quantity to be measured and entered or a box to be ticked as checked.
- Where to note : the exact location of the note or check to be made in relation to the fluid diagram attached to the note.
- How to note : for the purpose of helping you to make the most accurate note possible by means of a precise procedure.

12. Operation

12.1 Principle of operation

12.1.1 Description of generator

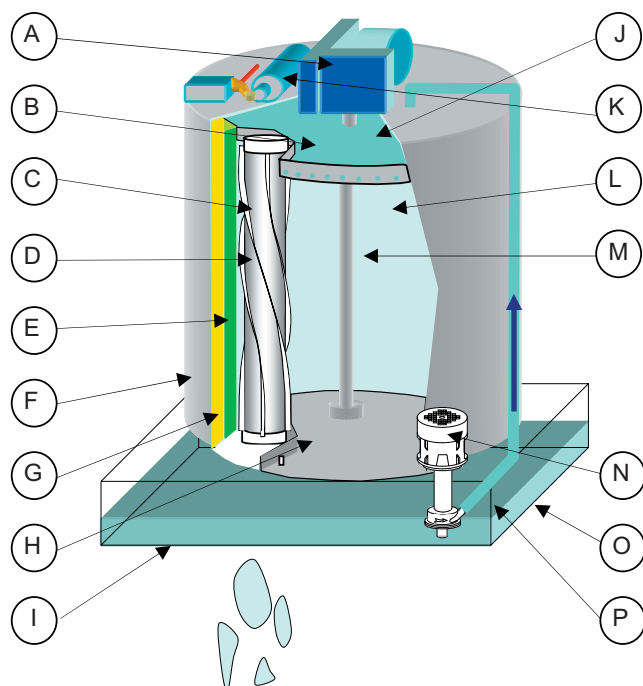


Fig.1 Simplified exploded view of a generator

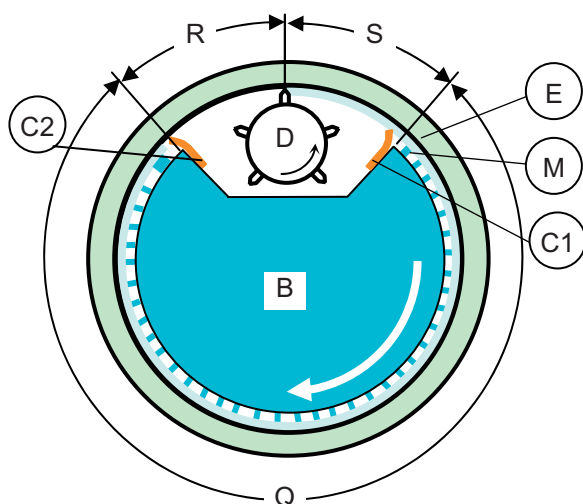


Fig.2 Simplified exploded view of a generator, and an illustration of the water distribution seen from above.

The water distributed by the tray **B** flows copiously and continuously over the internal surface of the stationary drum **F**, inside which a low-temperature refrigerant fluid circulates inside the double wall **E**. The insulation **G** of the drum ensures heat exchange with the water only.

Part of this water **M** is frozen and the excess returns via the lower water pan **H** into the base **O**, where the level **P** is kept constant by means of a float valve (not shown). This water is circulated by the pump **N**.

A helical reamer **D**, driven through a reduction gear **A**, sweeps the surface **L**, when the coat of ice is thick enough, the reamer starts rotating and harvesting the ice by applying pressure on it.

The torque limiter **K** switches off the electrical supply to the motor-gearbox in the event of mechanical overbad.

The sprayed area **Q** is bounded by two wipers **C1** and **C2**, which surround the reamer **D**.

The purpose of wiper **C1**, situated before the reamer, is to dry the ice before it reaches the subcooling area **S**. The area **R** for stripping the ice is located between one blade of the reamer **D** and the rear wiper **C2**.

The purpose of this wiper is to remove the residues of ice which may have remained on the drum after the passage of the reamer. There is no flow of water in the areas **R** and **S**. The ice **I** is stripped in the area **R** and falls into the storage bin under the machine.

The thickness and quantity of ice produced by the generator depends on :

- The refrigerating power applied to the generator.
- The speed of rotation of the reamer.

Important

The thickness of the ice does not depend on the spacing of the reamer from the drum. IT IS DANGEROUS TO SPACE THE REAMER AWAY FROM THE DRUM this can cause: fatigue of the bearings, tripping of the torque limiter, slugging oil departure that could destroy the compressor.

Note

The reamer speed is set in the factory and cannot be changed without the risk of causing operating problems.

In the factory, the reamer is set as close as possible to the drum : a distance of less than 0.4 mm, for a proper operation (text missing).

Operating diagram**12.2 Operating diagram**

When starting the ice machine, with the compressor working, only the liquid solenoid valve is open.

After the time delay T1, the water pump and the reamer motor start, the ice machine is then in its normal operating configuration.

T1 = time required after activation of the solenoid valve to fill 75 % of the cylinder with refrigerant.

If the torque limiter trips, the solenoid valve, the reamer motor and the water pump stop immediately.

When the torque limiter is reset, the standard start-up procedure is repeated again.

On stoppage of the machine, the water pump and the solenoid valve cut out while the motor gearbox continues to rotate for 3 minutes.

Time delay T1 : Time required to fill the cylinder with refrigerant before starting production (15s to 180s).

Time delay T2 : 15 to 20 seconds for the R22/R404a circuit with dedicated compressor, 60s for R717.

Time delay T.KA1 : Time required for cleaning the cylinder after stopping the generator (180s).

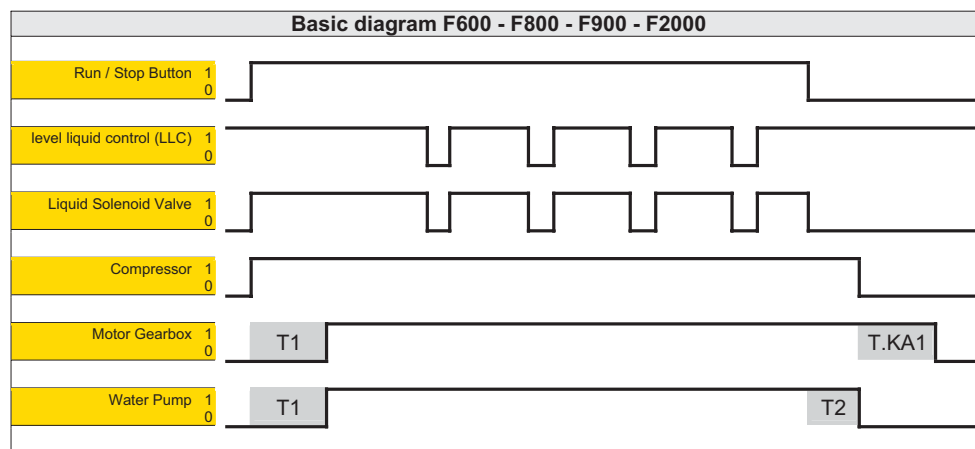
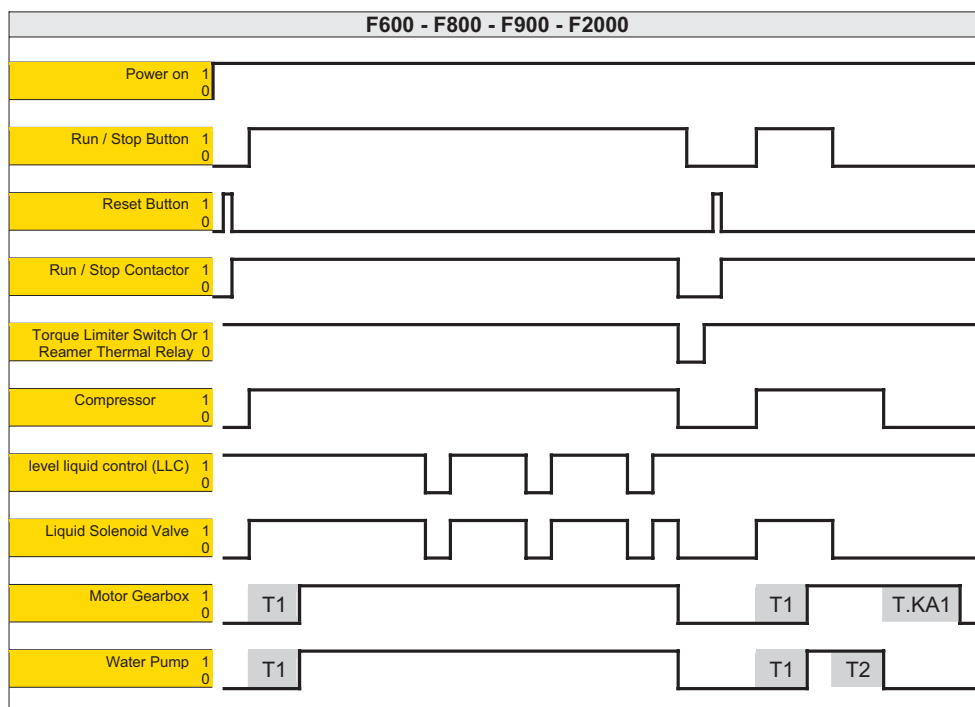
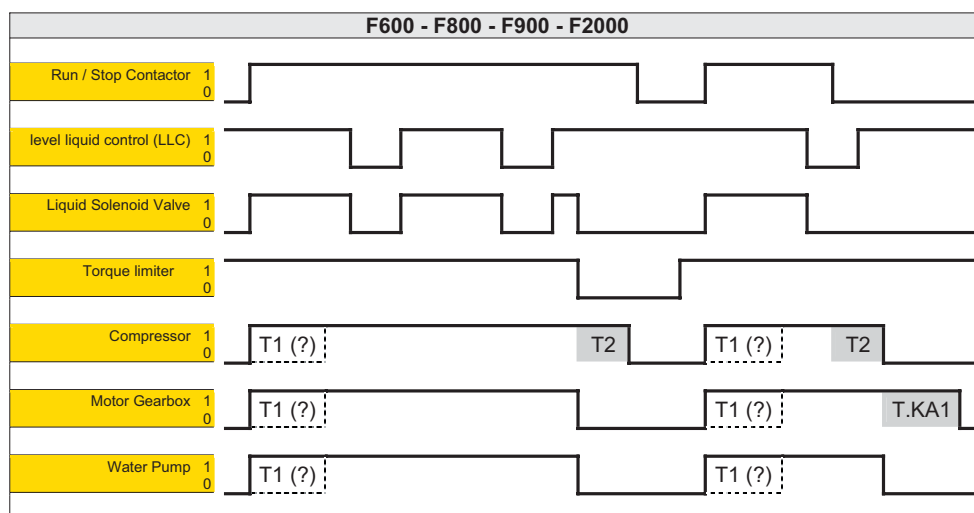
**12.2.1 Central refrigerating plant (with one compressor serving several evaporators).**

Fig. sequential diagram for the optional control panel (central refrigerating plant)

Where the salt dosing system includes a dosing pump, its operation will be slaved to that of the liquid solenoid valve.

12.2.2 Refrigerating plant with a dedicated compressor

When starting the ice generator, the compressor, the liquid solenoid valve, water pump and reamer motor start simultaneously. If the condensing set is outside there may be a delay of a few seconds before the reamer and the pump start. (This is to ensure that at least 3/4 of the height of the generator is frozen at the start.). On the diagrams, according to T1 a question mark has (?), this suggests that it is not always necessary to install it, if the condensation unit is near the generator.



12.2.3 Automatic starting and stopping

Ice production can be controlled by a clock. The start time is estimated according to the capacity of the ice bin (500 kg of ice approx. per cubic meter) and the hourly production rate of the machine.

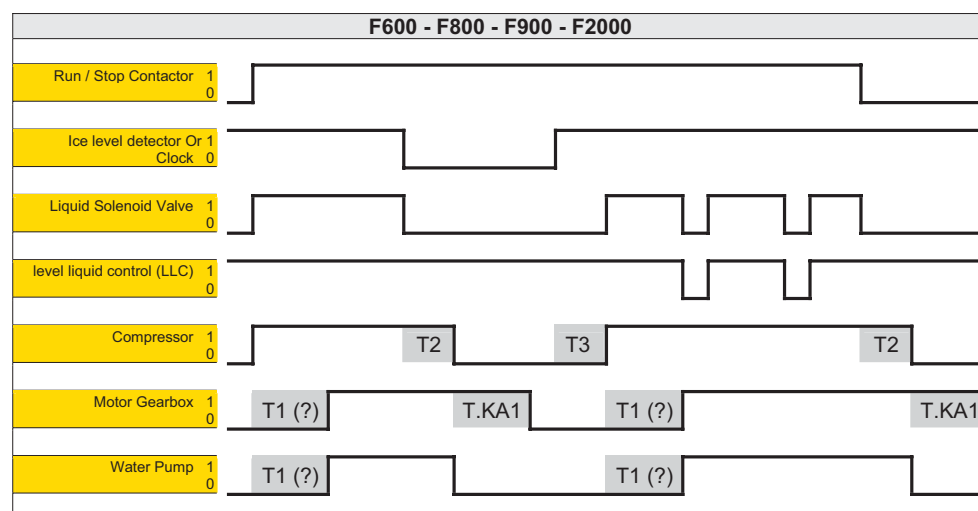
Important

In order to avoid short cycles that could damage your GENEGLACE, the ice level detector switch must be associated with manual or time-delayed resetting.

The electro-mechanical Ice level detector (a blade driven by a micro-motor) is the most commonly used. In order to avoid short cycles, also use the terminal box 534004 requiring manual resetting or 534005 permitting resetting with a T3 time delay.

If the ice level detector or the clock cut out, the solenoid valve and the water pump stop immediately while the reamer continues to rotate for 3 minutes.

When starting again after such cut-outs, the standard start-up sequences are followed.



12.3 Operating parameters F600

Specifications		F600													Units
Fluid load approx.of R22 or R404A		R22 – R404a : 100 / R717 : 80													kg
Refrigerant		R22						R404a							
Production		water to be frozen = 15°C													
T /24h		9	10	11	12	13	14	9	10	11	12	12			
Required refrigeration power		45	50	55	60	65	70	45	50	55	60	60			
Condensing T°															
Maxi : (Slugging limit)		55	55	55	55	55	53	55	52	50	44				
Mini : (Oil return limit)		30	30	30	30	30	30	30	30	30	30	30			
Frequency		50													
Speed of rotation		74	74	93	93	112	132	74	74	93	112				
Thickness of ice flakes		2	2,3	2	2,2	2	1,8	2,5	2,2	1,9	1,9				
Evaporation temperature at the generator		- 18	- 21	- 21,5	- 24	- 25,5	- 25,5	- 18,5	- 19	- 19,5	- 23				
Frequency		60													
Speed of rotation		74	74	89	89	113	120	74	89	89	113				
Thickness of ice flakes		2	2,3	2,1	2,3	2	2	2	1,9	2,1	1,9				
Evaporation temperature at the generator		- 18	- 21	- 22	- 25	- 25,5	- 27	- 18	- 19,5	- 22	- 23				

12.4 Operating parameters F800

F800												
Specifications	Units	R22 – R404a : 180 / R717 : 130										
Fluid load approx.of R22 or R404A	kg											
Refrigerant		R22										
		R404a										
Production		water to be frozen = 15°C										
T /24h		13	14	15	16	17	18	13	14	15	15,5	
Required refrigeration power	KW	65	70	75	80	85	90	65	70	75	77,5	
Condensing T°												
Maxi : (Slugging limit)	°C	55	55	55	55	55	55	55	52	48	45	
Mini : (Oil return limit)	°C	30	30	30	30	30	30	30	30	30	30	
Frequency	Hz	50										
Speed of rotation	r.p.h	62	62	77	77	77	93	50	62	77	77	
Thickness of ice flakes	mm	2,1	2,2	1,9	2	2,2	1,9	2,5	2,2	1,9	2	
Evaporation temperature at the generator	°C	- 17	- 20	- 19	- 21	- 22,5	- 22,5	- 18,5	- 19	- 19,5	- 21	
Frequency	Hz	60										
Speed of rotation	r.p.h	60	74	74	74	74	93	60	74	74	74	
Thickness of ice flakes	mm	2,1	1,9	2	2,1	2,3	1,9	2,1	1,9	2	2,1	
Evaporation temperature at the generator	°C	- 17	- 18	- 19,5	- 21	- 23	- 22,5	- 17	- 18	- 20	- 21	

12.5 Operating parameters F900

F900													
Fluid load approx.of R22 or R404A		R22 – R404a : 260 / R717 : 200											
Refrigerant		R22						R404a					
Production		water to be frozen = 15°C											
T /24h		19	20	22	24	25	27	17	19	21	23		
Required refrigeration power	KW	95	100	110	120	125	135	85	95	105	115		
Condensing T°													
Maxi : (Slugging limit)	°C	55	55	55	55	55	51	55	55	54	48		
Mini : (Oil return limit)	°C	30	30	30	30	30	30	30	30	30	30		
Frequency	Hz	50											
Speed of rotation	r.p.h	62	77	77	93	93	93	62	77	77	93		
Thickness of ice flakes	mm	2,3	2	2,2	1,9	2	2,2	2,1	1,9	2	1,9		
Evaporation temperature at the generator	°C	- 19	- 18	- 20	- 21,5	- 23	- 26	- 17,5	- 17,5	- 19,5	- 21,5		
Frequency	Hz	60											
Speed of rotation	r.p.h	74	74	74	93	93	93	60	74	74	93		
Thickness of ice flakes	mm	1,9	2	2,2	1,9	2	2,2	2,1	1,9	2,1	1,9		
Evaporation temperature at the generator	°C	- 19,5	- 18,5	- 21	- 21,5	- 23	- 26	- 17,5	- 18	- 20	- 21,5		

12.6 Operating parameters F2000

F2000												
Fluid load approx.of R22 or R404A	kg	R22 – R404a : 350 / R717 : 260										
Refrigerant		R22					R404a					
Production		water to be frozen = 5°C										
	T /24h	28	33	38	43	48	50	28	33	38	40	
	KW	130	153	176	199	222	232	130	153	176	185	
Required refrigeration power												
Condensing T°												
Maxi : (Slugging limit)	°C	55	55	55	55	51	40	55	55	45	41	
Mini : (Oil return limit)	°C	30	30	30	30	30	30	30	30	30	30	
Frequency	Hz	50										
Speed of rotation	r.p.h	62	77	93	109	139	139	62	77	93	109	
Thickness of ice flakes	mm	2,3	2,2	2	2	1,7	1,8	2,3	2,2	2	1,9	
Evaporation temperature at the generator	°C	- 18,5	- 20	- 22,5	- 25,5	- 25	- 28	- 18,5	- 21	- 24	- 24,5	
Frequency	Hz	60										
Speed of rotation	r.p.h	60	74	93	111	130	147	60	74	93	111	
Thickness of ice flakes	mm	2,3	2,2	2	1,9	1,8	1,6	2,3	2,2	2	1,8	
Evaporation temperature at the generator	°C	- 18,5	- 20	- 22,5	- 25,5	- 27	- 26	- 18,5	- 21	- 24	- 24,5	

Addition of salt**13. Addition of salt**

The operation of a flake ice machine is improved by the addition of sodium chloride to the water to be frozen.
Addition of salt :

- delays the formation of scale when hard water is used.
- gives larger flakes, with less breaking up or "snow".
- facilitates release of the ice and minimises the forces produced by reaction on the reducer.

In short, large flakes of ice are produced with a "smoother" operation.

To add the salt, one method is proposed :

- a dosing pump using a solution of purified salt (fine cooking salt) dissolved in water in PVC containers.

The quantity of salt consumed is indicated in the section (Dosing Pump). 100 g of salt is added per tonne of ice, the usual quantity, to be adjusted according to the water quality.

- Ice which is very broken up indicates a lack of salt which is often due to very soft water.
- Ice in very large flakes that can be detached before the passage of the reamer indicates too high a dosage.

Precautions must be taken in the use of this system :

- The purified salt used with dosing pumps must be dissolved in small successive quantities to ensure a complete melting, either in cold water or preferably hot water. Final mixing, after complete filling of the PVC tank, will ensure a homogeneous solution.

13.1 Salt consumption

The production rates and the lives indicated in the table side-issue are given for 24h/24h operation under nominal conditions of operation with air at +25°C and water at +15°C.

This data is for a salt solution of 80 to 110 grams per tonne of ice produced.

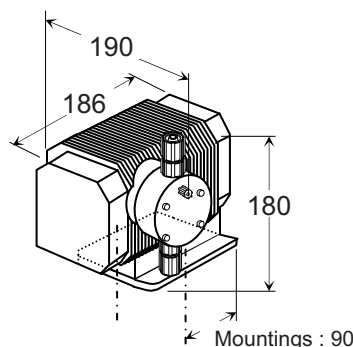
"to be corrected, depending on the quality of the water"
see limits chapter 2.4 and consult GENEGLACE.

Generator	50 HZ	DOSING PUMP		
	Production Kg/24h	SETTING	TANK 30L	
			SALT	LIFE
F 600	10.000	20 %	6 Kg	6 D
F 600	11.000	20 %	6,6 Kg	6 D
F 600	12.000	20 %	7,2 Kg	6 D
F 600	13.000	20 %	7,8 Kg	6 D
F 800	15.000	40 %	4,5 Kg	3 D
F 800	17.000	40 %	5,250 Kg	3 D
F 800	18.000	40 %	5,4 Kg	3 D
F 800	19.000	40 %	6 Kg	3 D
F 900	22.000	60 %	4,5 Kg	2 D
F 900	26.000	60 %	5,2 Kg	2 D
F 900	27.000	60 %	5,4 Kg	2 D
F 900	30.000	60 %	6 Kg	2 D
F 2000	50.000	60 %	10 Kg	1,5 D

Generator	60 HZ	DOSING PUMP		
	Production Kg/24h	SETTING	TANK 30L	
			SALT	LIFE
F 600	10.000	20 %	5 Kg	5 D
F 600	11.000	20 %	5,5 Kg	5 D
F 600	12.000	20 %	6 Kg	5 D
F 600	13.000	20 %	6,5 Kg	5 D
F 800	15.000	40 %	3,75 Kg	2,5D
F 800	17.000	40 %	4,4 Kg	2,5 D
F 800	18.000	40 %	4,5 Kg	2,5 D
F 800	19.000	40 %	5 Kg	2,5 D
F 900	22.000	60 %	3,75 Kg	1,5 D
F 900	26.000	60 %	4,3 Kg	1,5 D
F 900	27.000	60 %	4,5 Kg	1,5 D
F 900	30.000	60 %	5 Kg	1,5 D
F 2000	50.000	60 %	8,3 Kg	1 1/4 D

13.2 The dosing pump

13.2.1 Dimensions of the dosing pump



13.2.2 Connecting the dosing pump

If your GENEGLACE is fitted with a salt dosing tube with tablets, a dosing pump is not supplied.

Electrical connection

The dosing pump must be connected in parallel with the fluid solenoid valve (terminals 44 and 31 on drawing no. 538003 of the GENEGLACE electrical terminal box).

The electrical characteristics are as follow :

Voltage : 230 Volt

Single phase

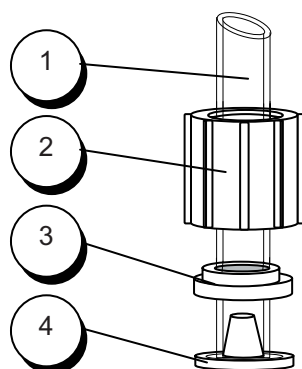
Frequency : 50 or 60 Hertz

Power : 50 Watt

Nominal current : 0,4 Ampère

Hydraulic connection: procedure

The diagram opposite indicates the steps to be taken to connect the plastic tube **1** to the four connections: inlet **E** and flow of the pump **B**, inlet strainer **G** and injector pipe **A** (with reference to figure 652).



Insert the tube **1** through the sleeve nut **2**, then the locking ring **3** in the position shown in the sketch, engage the plastic tube **1** in the bush **4**, then tighten the sleeve nut **2** to crimp the locking ring **3** and ensure that the system is watertight.

Together with the salt dosing pump, you will receive an injector pipe and inlet strainer already assembled.

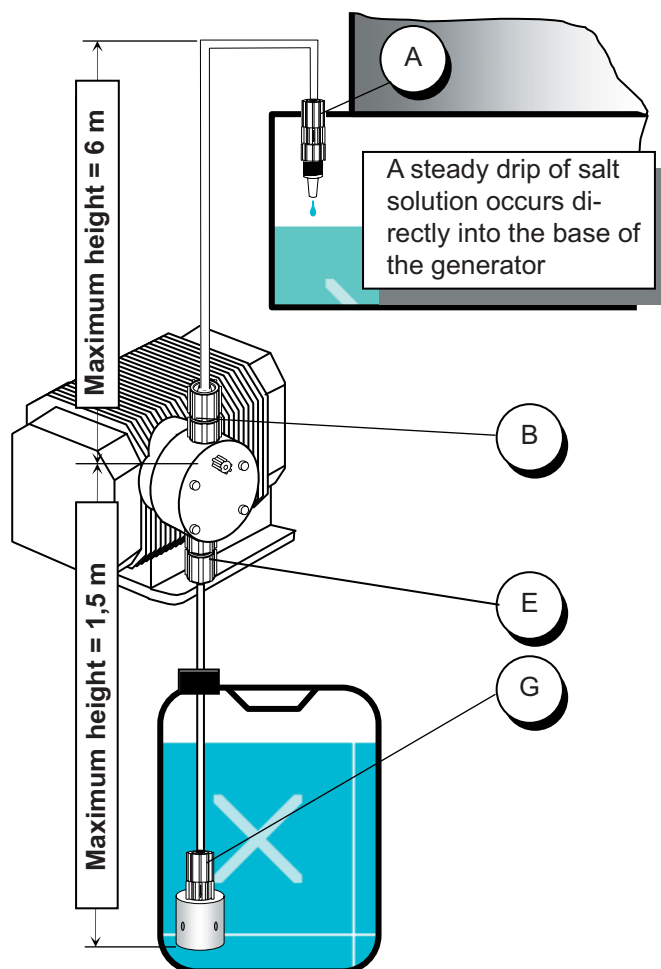
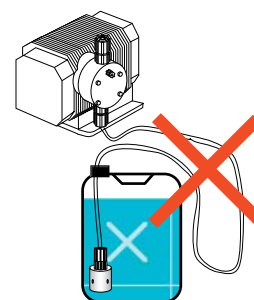
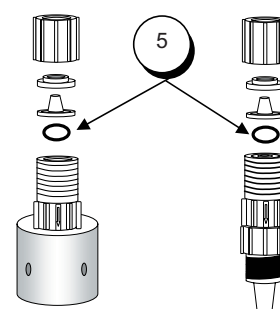


Fig. 652. Illustration of the connection of the dosing pump between the brine container and the base of the generator.

The inlet pipe must be positioned vertically, with no swan neck throughout its length.



The illustration below shows the mounting position of these items. Not forgetting the «O» ring no. **5** located between item no. **4** and the strainer or the injector pipe and the two connectors to the dosing pump.



Assembling the injector pipe and inlet filter

Salt consumption

13.2.4 Operation of the dosing pump

13.2.4.1 Operation

The dosing pump uses a «brine» solution consisting of a precise mixture of water and fine cooking salt.

The brine previously prepared in a container is added drop by drop to the water for freezing in the base of the generator.

The adjustment of the dosing pump must be set to the % indicated in the tables on page 42 and the brine solution is dosed according to the production of ice by the generator.

Do not wait until the brine drum is empty before replacing.

Recommendation

It is recommended that you switch off the dosing pump when changing the brine container so that it does not require repriming.

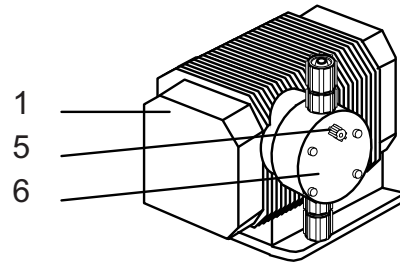
Tip

The salt dissolves more quickly if you use fine salt and hot water.

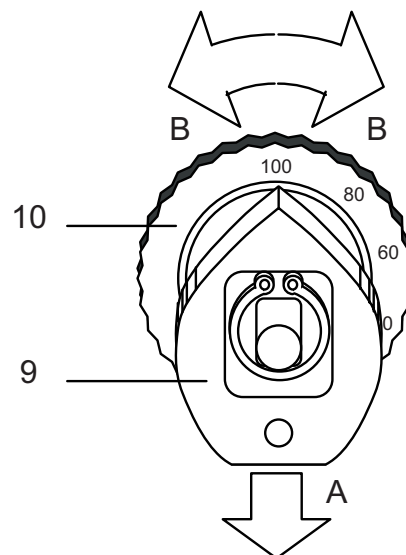
The life of the tanks can be extended simply by increasing the volume of the tanks, calculating or consulting GENEGLACE for the quantity of salt to be mixed with the volume of water.

13.2.4.2 Priming the salt dosing pump

- Do not switch on the dosing pump.
- Remove the cover 1, and push the slider 9 in direction A. Set the notched wheel 10 to 100% (as shown in the drawing) then push back the slider.



- Unscrew the bleed valve 5 one turn anti-clockwise. Switch on the pump. Wait until brine flows from the bleed valve 5 and there are no further air bubbles in the inlet tube. Retighten the bleed valve 5. Wait until brine flows from the injector pipe (fig 652 - (A)). Switch off the pump, reset the wheel 10 to 20% in the same way as previously, then replace the cover 1 and switch on again.



Tip

If you are unable to prime the pump using the method indicated above, you can unscrew the pump inlet connector and prime the pump by immersing the inlet pipe in the brine.

14. Options

The options cover any equipment peripheral to the ice machines connected directly with their operation and offered by GENEGLACE.

14.1 Electrical terminal box

You will find this in the section "diagram of operation".

It is suitable for a three phase + neutral supply.

14.2 «ILD» Ice level detector (regulation)

14.2.1 Specifications

Supply voltage	220 volts single phase 50 Hz
Consumption	3 – 4 VA
Changeover switch	1 inverter - 6A - 220V
Protection of housing	IP 65
Rotor speed	12 r.p.m.
Reinforced tube	Stainless steel 28 mm diameter
Retractable blade	Polyamide
Housing	Red ABS
Stuffing gland	16 mm diameter
Mounting	Horizontal or vertical
Motor	Switched off in detection position
Blade	Friction system

14.2.2 Principle of operation

The unit consists of a motor driving a rod with a probe at the end. The assembly rotates continuously. When the ice reaches the probe, the resistance causes a rotation of the motor on its axis which triggers a small switch.

This switch then cuts the supply to the "ILD" motor and also trips another changeover switch dedicated to the output signal which stops the ice machine. When the level decreases, the "ILD" motor returns to its initial position and starts to rotate again. Production of ice then becomes possible again.

14.2.3 Mounting

It is important to consider the angle of slope formed by the flaked ice in the storage container when choosing the position of the «ILD».

The «ILD» can be installed inside the ice storage container or directly through the wall of the silo using the locking ring provided for the purpose. Every precaution must be taken to ensure that the passage of the «ILD» through the wall is watertight.

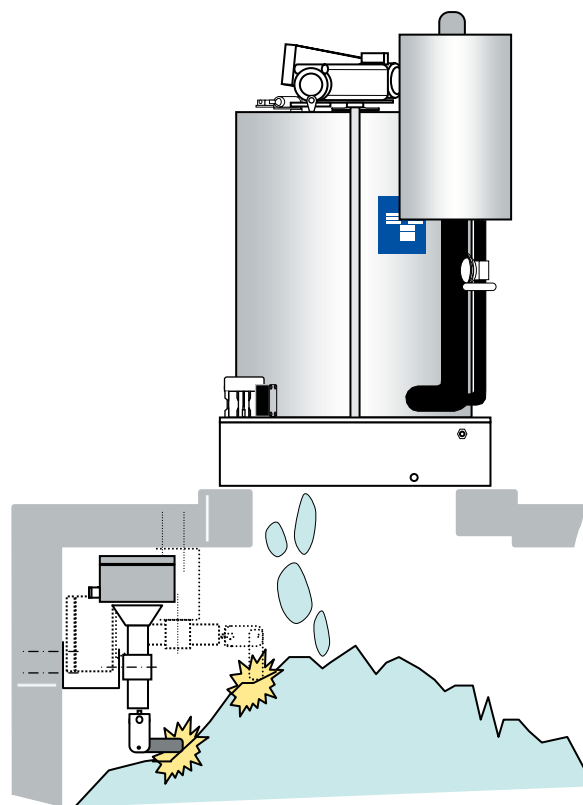


Fig. 8623. Illustration of a possible mounting of the «ILD».

14.2.4 Connection to the terminal box

A 5 core cable is sufficient to connect the «ILD»: 2 for the control (terminals 1 and 2) and three for the power supply (terminals 4, 5 and 6). Refer to the end of the instructions.

Important

In order to avoid repeated starting of the GENEGLACE, it is recommended that you install manual or automatic time-delayed resetting.

14.3 Remote Control

The remote control can be used to set different operating times for the GENEGLACE.

It is a digital time switch controlled by a microprocessor.

With this time switch you can enter several programmes to switch the ice machine on and off.

Programming instructions and a connection diagram are supplied in the remote control box



15. Maintenance

15.1 Maintenance schedule

In order to prevent faults or malfunctions, you are advised periodically to examine certain essential points of your GENEGLACE.

The user guide mentions the current service and inspection operations that can be performed. To this must be added :

Operation	Recommended frequency
Routine inspection Compressor oil level, icing of inlet valve, temperature of casing (Base cools down when stopped), spraying of the wall of the drum, accumulation of ice on the reamer, bearings, regular consumption of salt or salt solution.	daily
Recharge standard salt dosing system Or Filling up the brine containers for the dosing pump	depending on consumption
Cleaning standard salt dosing system	monthly
Cleaning water system Base, tanks, valve operation	weekly
Draining oil (NH3 ice generator) Use draining valves (oil drainages must be performed by qualified engineers)	If needed (production decreases)
Greasing the pump bearings Central shaft and reamer bearings (With Edible fat to the standards : NSF.H1), if need be to consult us.	every three months
Checking operating pressures	every three month
Checking operation of the torque limiter switch and the condition of the wipers	every three month
Examining the gearbox (for traces of oil)	occasionally
Examining the internal wall of the drum for scaling Presence of a whitish deposit on the dry wall	occasionally
Check the condition and insulation of the coolant pipes (oxidation – chemical attack, etc.) and repair as necessary	Annually

15.2 Routine maintenance

With time, certain problems can arise with the operation of the ice machine associated with the water quality.

The two main sources of problems are scaling and proliferation of micro-organisms.

In addition to the potential risks associated with public health, in both cases the operation of the ice machine can be seriously affected.

We therefore recommend a range of products for descaling and attacking micro-organisms.

Important

These products have been tested on our premises and possess all the reliability criteria in terms of their effectiveness and compatibility with GENEGLACE machines.

The use of other products (for example : hydrochloric acid) will cause irreparable damage to the generator.

For purposes of good hygiene and correct operation, external cleaning of the generator assembly is essential. Dusting before washing by hand is recommended, in order to prevent bacteria from multiplying. Do not use a water jet, or high pressure washer.

16.2.1 Anti-micro organism product

PR 61 is an anti-algae sanitary decontaminant product for any microbial contamination.

It is in the form of a clear liquid.

- Density 1.02.
- PH 7.

It is sanitary and not dangerous to use.

It is not volatile.

It is rapid and works on any surface.

It has great powers of decontamination.

It can be added to a sanitary descaler to act as both a descaler and decontaminant.

It halts corrosion of the walls of systems attacked by microbial corrosion.

PR 61 consists of dimethyl benzyl ammonium chloride. This type of cationic detergent is authorised in annex 1, an approved product for cleaning equipment that may come into contact with foodstuffs. Decree of 27 October 1975.

15.2.2 Descaling

- Stop the machine or isolate the supply to the terminal box.
- Pour a measure of the descaler into the base tank in accordance with the table.
- Top up with water to reach the overflow of the base.
- Start the reducer and the pump only for about 1 to 2 hours according to scaling.
- Stop operation, drain and rinse 2 or 3 times while restarting the reducer and the pump.

Recommended descaling products

- PR 5200 ST (France)

A technical data sheet accompanies each container, giving instructions for use.

THE INSTRUCTIONS MUST BE READ BEFORE USE.

Average dosage 7%

GENERATOR	F600	F800	F900	F2000
QUANTITY (L)	3	7,5	10,5	17
ABOUT (kg)	4,2	10,5	14,7	23,8

Important

Take care that the descaler does not fall into the ice storage container.

15.2.3 NH3 oil drain device

Oil draining procedure for a generator running on ammonia.

- Observe the safety instructions for NH3.
- Empty the generator of coolant by closing the liquid inlet valve, and allow the pressure to descend to 0,1 bars.
- Use the pump to circulate warm water (30C max) for 30 to 60 minutes, in order to liquefy the oil inside the generator. This will make the oil run down quicker to the oil bleed valves at the bottom of the generator.
- Drain the oil, repeat the previous steps, if necessary, until there is no more oil.

15.3 Replacement of worn parts

For dismantling, reassembly and adjustment, the parts are identified in the exploded views in the annex.
The average frequencies are given for normal 24h/24 conditions of operation and correct preventive maintenance.

Explanatory sheets for replacement and adjustment are supplied with spare parts or on request. These are coded depending on the generator and its type.

Part	Frequency	Coding of Data Sheets
Float valve	When appropriate	F600 or F800 or F900 or F2000 / <u>10</u>
Central shaft bearings	About 1460 to 1825 Days (4 to 5 years)	F600 or F800 or F900 or F2000 / <u>01</u>
Centring of central shaft	After replacing the bearings	F600 or F800 or F900 or F2000 / <u>02</u>
Torque limiter	1095 Days to 1825 Days (3 to 5 years)	F600 or F800 or F900 or F2000 / <u>06</u>
Wipers	1095 Days to 1825 Days (3 to 5 years)	F600 or F800 or F900 or F2000 / <u>03</u>
Water pump	912 to 1095 Days Estimated replacement period (2,5 to 3 years)	F600 or F800 or F900 or F2000 / <u>20</u>
Reamer bearings	1095 Days to 1825 Days (3 to 5 years)	F600 or F800 or F900 or F2000 / <u>05</u>
Reamer and its bearings	1825 Days to 2555 Days (5 to 7 years)	F600 or F800 or F900 or F2000 / <u>04</u>
Gearbox	1095 Days Estimated replacement period (3 years)	F600 or F800 or F900 or F2000 / <u>30</u>

16.Troubleshooting

The table below will assist you in the diagnosis of any malfunction detected.

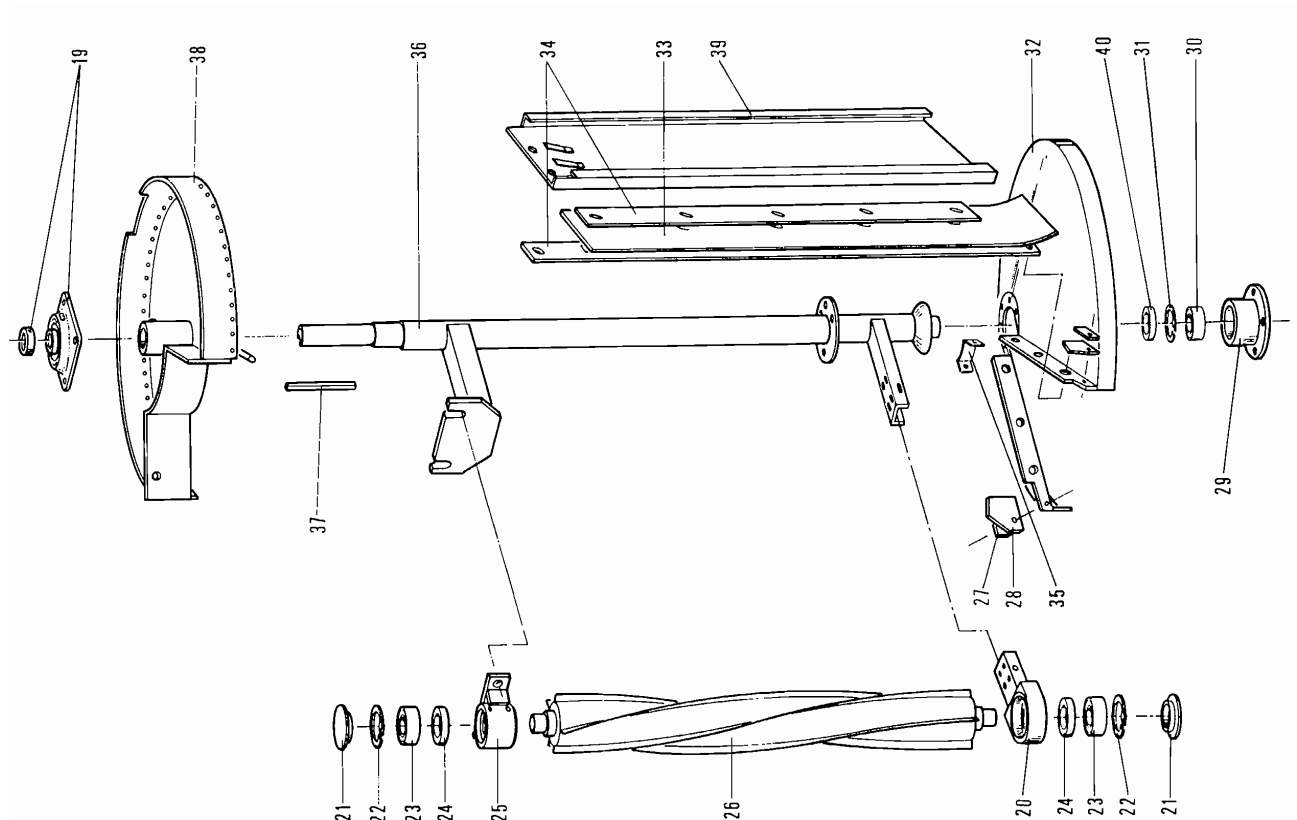
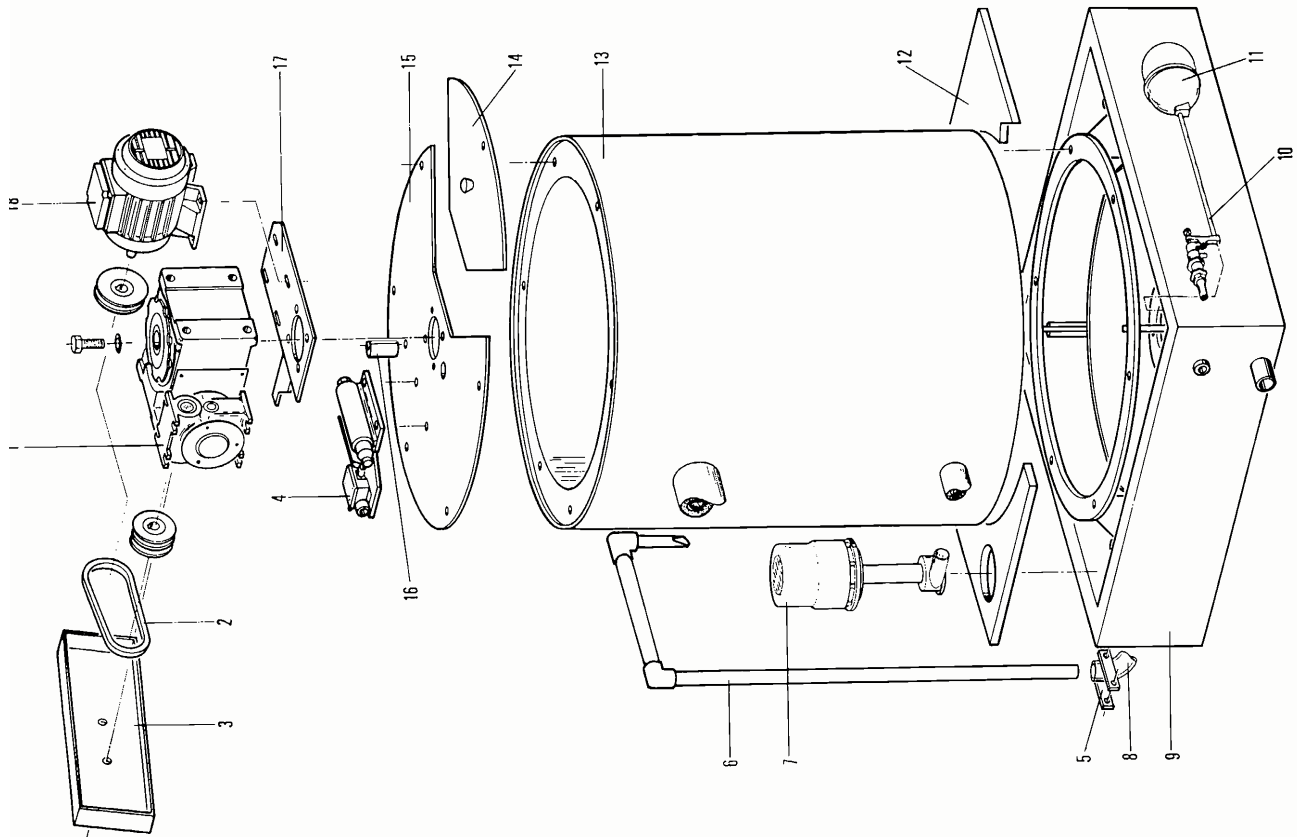
Observations, symptoms and effects	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Causes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 LACK OF SALT	1																		
2 TOO MUCH SALT		2																	
3 FRONT WIPER SETTING LOST OR INCORRECT (LEAK)			3																
4 REAR WIPER SETTING LOST OR INCORRECT (LEAK)				4															
5 BALL COCK STUCK IN OPEN POSITION OR NOT CLOSING FULLY? HOLE IN FLOAT					5														
6 INADEQUATE WATER DISTRIBUTION : HOLES BLOCKED, LOW PUMPING RATE (UNPRIMED)						6													
7 NO WATER DISTRIBUTION : WATER CLOSED OFF, BALL COCK STUCK IN CLOSED POSITION, FAULT IN PUMP							7												
8 REAMER TOO FAR FROM CYLINDER								8											
9 CLEARANCE IN BEARINGS ON SHAFT, INCORRECTLY CENTRED									9										
10 SCALE IN CYLINDER										10									
11 OIL OR LACK OF REFRIGERANT IN THE DOUBLE WALL : EXCESSIVE SUPERHEAT, LEAK, PARTIAL BLOCKAGE IN FLUID LINE, FILTER OF THERMOSTATIQUE EXPANSION VALVE											11								
12 LACK OF REFRIGERATING CAPACITY : CONDENSER DIRTY, HIGH AMBIENT TEMPERATURE, FLAP VALVES ON COMPRESSOR WORN, FILTER OF COMPRESSOR DIRTY												12							
13 CONDENSER DIRTY, HIGH AMBIENT TEMPERATURE													13						
14 TOO LITTLE A SUPERHEAT OF THE EXPANSIO VALVE														14					
15 LACK OF REFRIGERANT, LEAK															15				
16 CONDENSATION TOO LOW																16			
17 EXCESSIVE REFRIGERATING CAPACITY (EVAPORATION RATE TOO LOW)																	17		
18 CRANKCASE HEATER OF COMPRESSOR NOT WORKING																		18	
19 TORQUE LIMITER ELIMINATED OR INCORRECTLY SET																			19
A LOW PRESSURE ABNORMALLY HIGH																			
B LOW PRESSURE ABNORMALLY LOW																			
C BUBBLES IN THE LIQUID FLOW INDICATOR																			
D TORQUE LIMITER CUTS OUT (REAMER LOCKED)																			
E LP PRESSURE SWITCH CUT OUT																			
F HP PRESSURE SWITCH CUT OUT																			
G ROTATING PART MOTOR THERMAL CUT OUT																			
H CONSTANT DISCHARGE FROM OVERFLOW IN THE BASE																			
I NOISY OPERATION																			
J UNUSUAL ICING IN SUCTION OF COMPRESSOR																			
K HARD ICE, DOES NOT EASILY COME AWAY FROM THE CYLINDER, 2 THICKNESSES																			
L FINE ICE, TRANSPARENT, MOIST, HAS COME AWAY IN TWO THICKNESSES																			
M GRANULAR ICE ON ONE SIDE ("ORANGE PEEL")																			
N IRREGULAR ICE FORMATION, WITH DRIPS																			
O ICE ACCUMULATED IN THE BOTTOM OF THE CYLINDER, THICK																			
P ICE ACCUMULATING UNDERNEATH THE MACHINE																			
Q ICE DOES NOT COME AWAY EASILY OR NOT AT ALL WHEN THE REAMER OVER																			
R ICE VERY THICK, SOFT, DOES NOT COME AWAY FROM THE CYLINDER																			
S ICE VERY FRAGMENTED																			
T ROTATING PART MOTOR NOT WORKING																			
U LOW OIL LEVEL IN COMPRESSOR																			
V OIL LEVEL IN COMPRESSOR HIGH WHEN STARTED, THEN LOW																			
W DROPE IN ICE PRODUCTION RATE																			

Exploded view F600

17. Exploded view

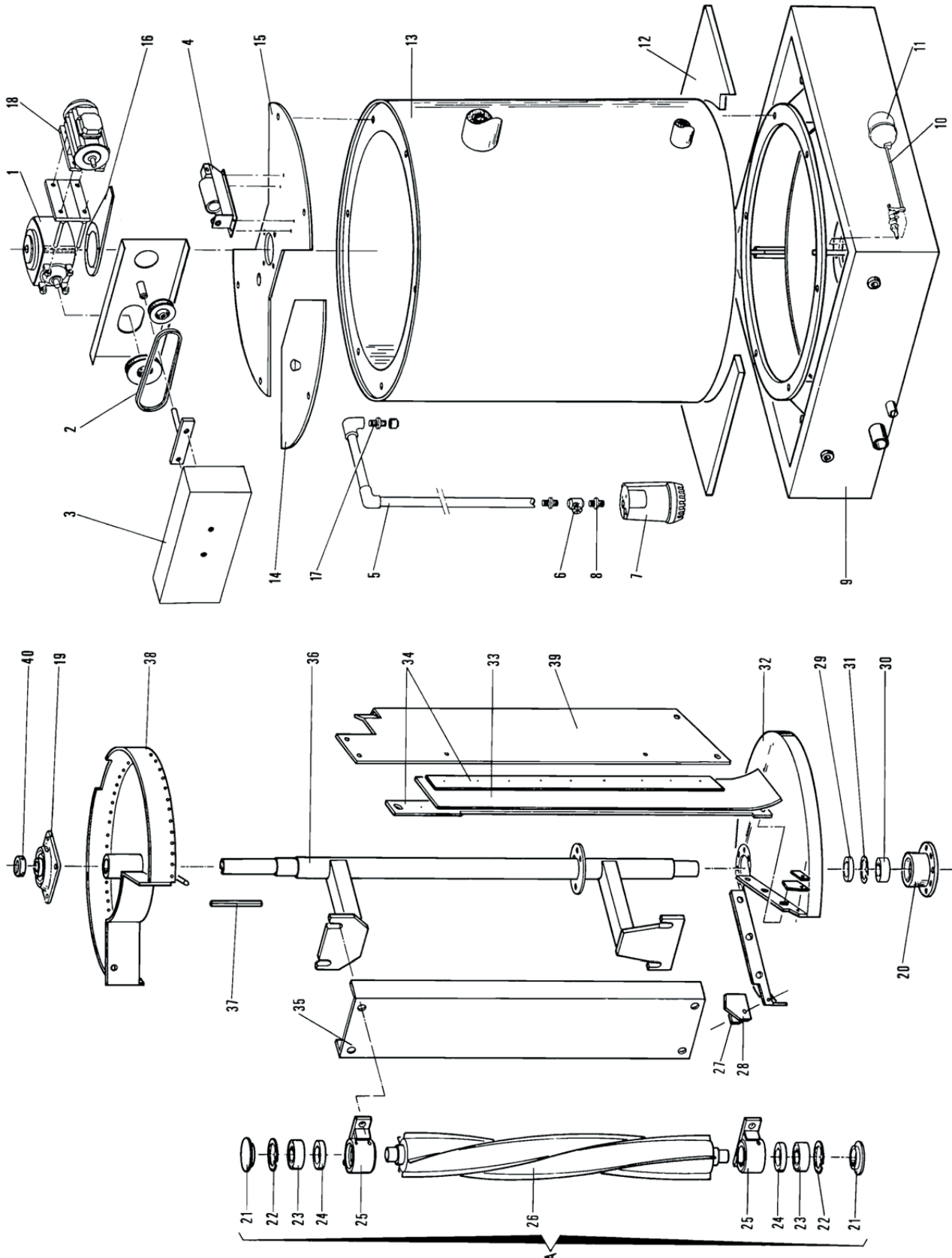
17.1 F600 Generator

This drawing is the property of Généglaçe, it is forbidden to reproduce it or to communicate it to a third party without our permission



17.2 F800 - F900 - F2000 Generator

This drawing is the property of Généglaçe, it is forbidden to reproduce it or to communicate it to a third party without our permission



18. Commissioning Check List

Before Start-up, refer to the safety instructions and further recommendations in the installer manual



The aim of this checklist is to check the essential points of the Pack installation, in order to keep it in good working order.

Tick the boxes as you perform the checks



1. Checks before switching on

Watertightness of the base (seal around the base; its fixing points and the ice outlet zone)	<input type="checkbox"/>
Proper diameter of the ice chute (if applicable in accordance with notice)	<input type="checkbox"/>
Provision for a possible removal of the ice chute for maintenance purpose	<input type="checkbox"/>
Ice is not falling through the airflow of the coldroom evaporator	<input type="checkbox"/>
The water overflow is connected to a drain pipe	<input type="checkbox"/>
That the oil drain inlet is correctly set up on the suction tube	<input type="checkbox"/>
Ensure that oil purging valves are closed	<input type="checkbox"/>
Opening the LLC shut-off valves	<input type="checkbox"/>
The hand expansion valve is open 3 turns (R404a /R22) or 1 turn (R717)	<input type="checkbox"/>
The hand valve on the oil return line is open (1 to 2 turns) (R404a /R22)	<input type="checkbox"/>
Fine adjustment of the water float valve (when the machine is at a stop – as per installer manual)	<input type="checkbox"/>
The water float is free to move up and down (as per manual) (the arm must move freely up and down)	<input type="checkbox"/>
The level of water in the generator base is correct (refer to manual)	<input type="checkbox"/>
Proper installation of the salt dosing pump (if applicable - in accordance with manual)	<input type="checkbox"/>
Prepare the brine using fine salt (if a dosing pump is installed)	<input type="checkbox"/>
Proper electrical coupling of the reducer motor	<input type="checkbox"/>
Connection of the torque limiter switch + safety switch	<input type="checkbox"/>
Connection of the LLC switch	<input type="checkbox"/>
There is a timed pump-down (to be field adjusted)	<input type="checkbox"/>
The reducer start and the pump start are delayed (unless the dedicated compressor is near to the generator)	<input type="checkbox"/>
The reducer stop is delayed (180 sec)	<input type="checkbox"/>

2. Cheks after supplying power to the unit

- Manually trip the torque limiter** (*roller or red bar*), then reset it
(*this safety switches off all electrical items*) ☐
- Check the direction of rotation of the reducer** (*clockwise, as shown by the arrow painted on the top*) ☐
- Ensure that the dosing pump operates** (*where applicable*) ☐
- Set the "work" timer to between 0 and 15 s** if the machine is connected to a power station,
then set the reducer motor timer to 180 s. ☐
- Pre-Charge the refrigerant system** ☐
- Ensure that the LLC is operational** (on /off) ☐

3. Checks after the initial start-up

- Adjust the reamer and water pump timer, so that the cylinder completly fills with fluid after
opening of the solenoid valve.** (*unless the dedicated compressor is near to the generator*) (*see frost on
the inner wall*) ☐
- Measure the filling time ; set a delay equal to the filling time on
"reducer-start" as well as on "pump-start"** ☐
- Ensure that the back-pressure valve is well adjusted** (*where applicable*)
so as to obtain the LP recommended by GENEGLACE ☐
- Ensure that the wipers are correctly adjusted**(*in accordance with manual*) ☐
- The Levels of water in the upper pan and in the generator base are correct**
(*Level is ajusted by means of clamps (f600) or by means of valve on the pump (F800-F900-F2000)*) ☐
- Check the oil level at the compressor sight glass**(*in accordance with manual*) ☐

4. Checks after 10 to 15 minutes of operation

- Check the water level in the base** (*in accordance with manual*)
(*ensure that water is not flowing out through the overflow*) ☐
- Ensure that ice harvesting from the inner wall is complete,
whithout any mechanical overload on the reducer** ☐
- Set the injection adjuster so that the opening time is twice as long as the closing time** (at least) ☐
- Check the drip by drip feed from the dosing pump** (*where applicable*) ☐
- Check frost on the oil return line – adjust the manual valve so that frost covers ¾ of the heat
exchanger approx** ☐
- Ensure that the oil returns properly to the compressor by checking the compressor oil sight glass** ☐
- Check operating pressures** (*according to the desired production*) ☐
- Stop the generator with the ILD (check if installed), then the Stop button., check the level of water
in the water tray base** (*according to instructions*) (*check to make sure that no water drains out of the overflow*) ☐
- Start the plant again and fill-in the start-up report** ☐



19. Operational Measurement sheet R22 / R404a

CHECK LIST : INITIAL START UP			
GENEGLACE TYPE	<input style="width: 90%;" type="text"/>	USER	<input style="width: 90%;" type="text"/>
ICE MAKER SERIAL NUMBER	<input style="width: 90%;" type="text"/>	CUSTOMER	<input style="width: 90%;" type="text"/>
TESTING DATE	<input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/>	FILE NUMBER	<input style="width: 60%;" type="text"/>

Check the calibration of the tools before the operation.

Check points	Data	Where to check	How to check
--------------	------	----------------	--------------

GENERATOR

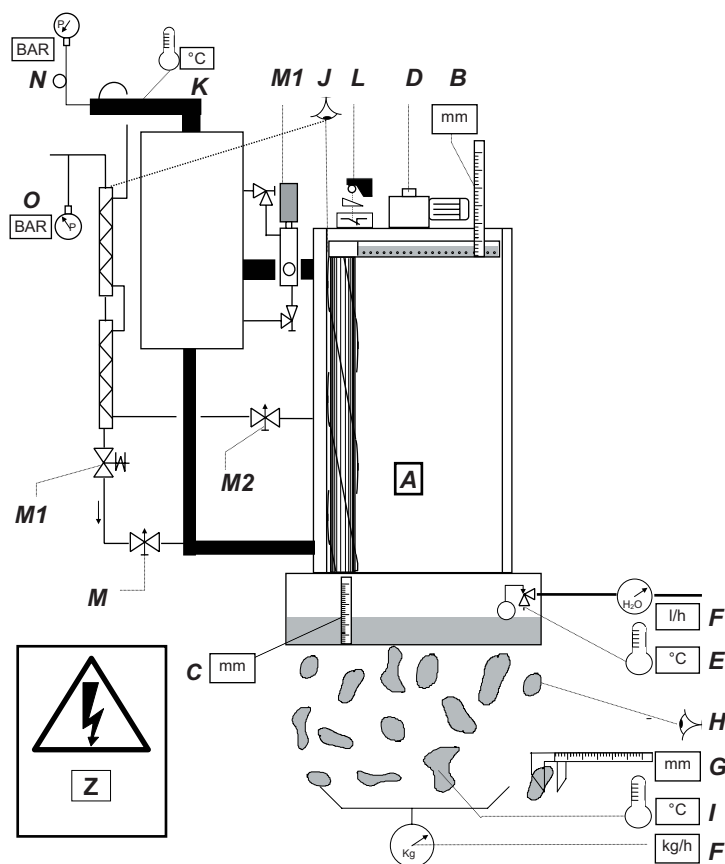
Refrigerant type	<input style="width: 90%;" type="text"/>	CF. refrigerating	A	sketch	Read on the GENEGLACE identification plate.																		
Voltage supply of the generator	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Ph 1-2</td> <td style="width: 33%;">Ph 1-3</td> <td style="width: 33%;">Ph 2-3</td> </tr> <tr> <td style="text-align: center;">V</td> <td style="text-align: center;">V</td> <td style="text-align: center;">V</td> </tr> </table>	Ph 1-2	Ph 1-3	Ph 2-3	V	V	V		Z		Measure the voltage on the terminal of the electrical control panel.												
Ph 1-2	Ph 1-3	Ph 2-3																					
V	V	V																					
Water supply	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">base tray</td> <td style="width: 33%;"></td> <td style="width: 33%;">mm</td> </tr> <tr> <td>upper tray</td> <td></td> <td>mm</td> </tr> </table>	base tray		mm	upper tray		mm		B		Measure the water level in the upper water tray and in the water base, when operating the machine.												
base tray		mm																					
upper tray		mm																					
Reamer control	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">upper tray</td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>	upper tray				C		Measure the water level in the upper water tray and in the water base, when operating the machine.															
upper tray																							
rotation speed	<input style="width: 80%;" type="text"/> Sec/Rnd		D		Duration of one complete reamer rotation.																		
Temperature of water supply	<input style="width: 80%;" type="text"/> °C		E		Measure the temperature of the water at the outlet of water float valve. Don't measure the temperature inside the base.																		
Ice production	<input style="width: 80%;" type="text"/> kg/H		F		By weighing the ice or by reading of a water flow meter fitted on the water supply pipe.																		
Thickness of ice flakes	<input style="width: 80%;" type="text"/> mm		G		Use a caliper square. The tool must not warm up the ice (preferably use a plastic caliper square). When using a metal caliper square you must precool it.																		
Aspect of the ice flakes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 33%;"></td><td style="width: 33%;">Dry</td><td style="width: 33%;"></td></tr> <tr><td></td><td>Wet</td><td></td></tr> <tr><td></td><td>Transparent</td><td></td></tr> <tr><td></td><td>White and opaque</td><td></td></tr> <tr><td></td><td>Smooth surface</td><td></td></tr> <tr><td></td><td>Granular on 1 side</td><td></td></tr> </table>		Dry			Wet			Transparent			White and opaque			Smooth surface			Granular on 1 side			H		By examining the ice at the outlet of the generator (tick appropriate boxes).
	Dry																						
	Wet																						
	Transparent																						
	White and opaque																						
	Smooth surface																						
	Granular on 1 side																						
			H																				
			H																				
			H																				
			H																				
Ice temperature	<input style="width: 80%;" type="text"/> °C		I		Make the measurement during several minutes.																		
Level of ice forming in the generator and on the oil return line			J		Indicate on the drawing : the level of ice forming in the cylinder and on the oil return line																		
Temperature of the refrigerant at the outlet of the cylinder	<input style="width: 80%;" type="text"/> °C		K		Use an electronic contact thermometer.																		
Control the torque limiter switch	<input style="width: 80%;" type="text"/>		L		0																		
Opening of the hand expansion valve	<input style="width: 80%;" type="text"/> Turns		M		0																		
Control of the injection times	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">- opening time</td> <td style="width: 33%;"></td> <td style="width: 33%;">Sec</td> </tr> <tr> <td>- closing time</td> <td></td> <td>Sec</td> </tr> </table>	- opening time		Sec	- closing time		Sec		M1		Measure the opening and closing times of the liquid level control or of the solenoid valve.												
- opening time		Sec																					
- closing time		Sec																					
Opening of the hand valve of oil return	<input style="width: 80%;" type="text"/> Turns		M2		0																		
Evaporating pressure	<input style="width: 80%;" type="text"/> bar		N		valve.																		
Corresponding temperature	<input style="width: 80%;" type="text"/> °C		N		Read pressure with a manometer at the outlet of the generator.																		
Condensing pressure	<input style="width: 80%;" type="text"/> bar		O		Read pressure with a manometer at the inlet of the generator.																		
corresponding temperature	<input style="width: 80%;" type="text"/> °C		O																				

Others controls

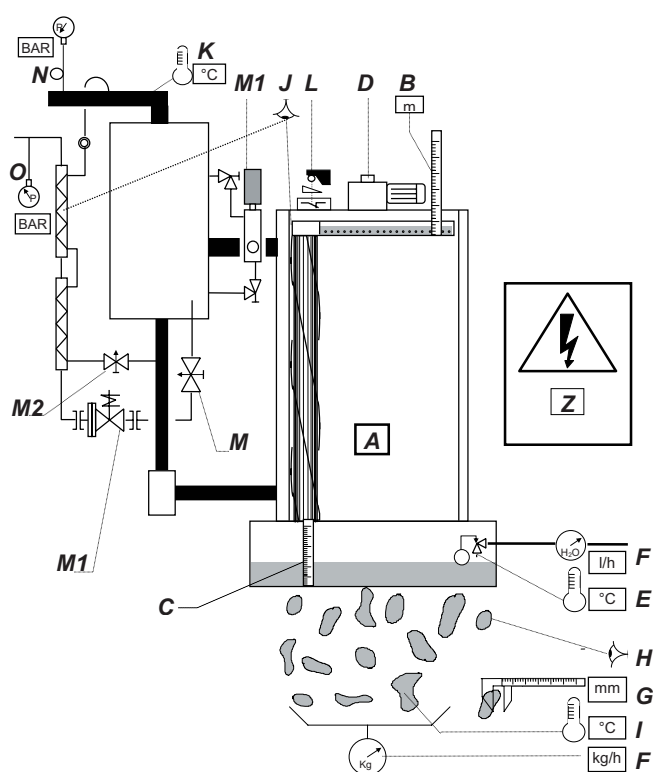
Timer for the GENEGLACE start	<input style="width: 90%;" type="text"/> Sec	Z	sketch	Read the timer value.								
Timer for the reducer stop	<input style="width: 90%;" type="text"/> Sec	Z		Read the timer value.								
Timer for the pump down	<input style="width: 90%;" type="text"/> Sec	Z		Read the timer value.								
Refrigerant connection	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Height</td> <td style="width: 25%;">Length</td> <td style="width: 25%;">Dia / i</td> <td style="width: 25%;">Dia / o</td> </tr> <tr> <td><input style="width: 90%;" type="text"/></td> <td><input style="width: 90%;" type="text"/></td> <td><input style="width: 90%;" type="text"/></td> <td><input style="width: 90%;" type="text"/></td> </tr> </table>	Height	Length	Dia / i	Dia / o	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>			Height between the generator and the condensing unit. Length of tube between the generator and the condensing unit. Dia : inlet and outlet diameters of connecting tubes.
Height	Length	Dia / i	Dia / o									
<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>									
Generator located :	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;">above the condenser</td> <td style="width: 33%;">-</td> </tr> <tr> <td></td> <td>below the condenser</td> <td>-</td> </tr> </table>		above the condenser	-		below the condenser	-			Tick the appropriate box.		
	above the condenser	-										
	below the condenser	-										

Name of the engineer who performed this test : <input style="width: 90%;" type="text"/>	signature of the person in charge, and stamp of the company : <div style="border: 1px solid black; height: 100px; margin-top: 10px;"></div>
Name of the person in charge : <input style="width: 90%;" type="text"/>	
Date : <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/>	

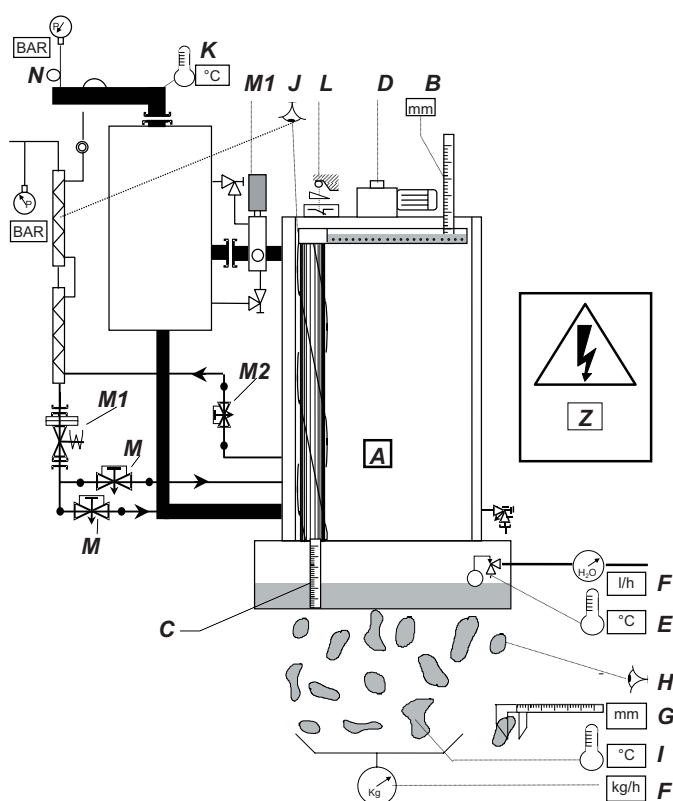
19.1 Measurement Points for F600 Generator



19.2 Measurement Points for F800 and F900 Generator



19.3 Measurement Points for F2000 Generator



19.4 Operational Measurement sheet NH3


CHECK LIST : INITIAL START UP

GENEGLACE TYPE	<input type="text"/>	USER	<input type="text"/>
ICE MAKER SERIAL NUMBER	<input type="text"/>	CUSTOMER	<input type="text"/>
TESTING DATE	<input type="text"/>	FILE NUMBER	<input type="text"/>

Check the calibration of the tools before the operation.

Check points	Data	Where to check	How to check
--------------	------	----------------	--------------

GENERATOR

Check points	Data	Where to check	How to check												
Refrigerant type	<input type="text"/>	CF. refrigerating sketch	A Read on the GENEGLACE identification plate.												
Voltage supply of the generator	<table border="1"> <tr> <td>Ph 1-2</td> <td>Ph 1-3</td> <td>Ph 2-3</td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>	Ph 1-2	Ph 1-3	Ph 2-3	<input type="text"/>	<input type="text"/>	<input type="text"/>		Z Measure the voltage on the terminal of the electrical control panel.						
Ph 1-2	Ph 1-3	Ph 2-3													
<input type="text"/>	<input type="text"/>	<input type="text"/>													
Water supply	<table border="1"> <tr> <td>base tray</td> <td><input type="text"/></td> <td>mm</td> </tr> <tr> <td>upper tray</td> <td><input type="text"/></td> <td>mm</td> </tr> </table>	base tray	<input type="text"/>	mm	upper tray	<input type="text"/>	mm		B Measure the water level in the upper water tray and in the water base, when operating the machine.						
base tray	<input type="text"/>	mm													
upper tray	<input type="text"/>	mm													
Reamer control	<table border="1"> <tr> <td>upper tray</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>	upper tray	<input type="text"/>	<input type="text"/>		C Measure the water level in the upper water tray and in the water base, when operating the machine.									
upper tray	<input type="text"/>	<input type="text"/>													
rotation speed	<input type="text"/>	Sec/Rnd	D Tick the box corresponding to the rotating side, seen from the top of the generator.												
Temperature of water supply	<input type="text"/>	°C	D Duration of one complete reamer rotation.												
Ice production	<input type="text"/>	kg/H	E Measure the temperature of the water at the outlet of water float valve. Don't measure the temperature inside the base.												
Thickness of ice flakes	<input type="text"/>	mm	F By weighing the ice or by reading of a water flow meter fitted on the water supply pipe.												
Aspect of the ice flakes	<table border="1"> <tr> <td><input type="checkbox"/></td> <td>Dry</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Wet</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Transparent</td> </tr> <tr> <td><input type="checkbox"/></td> <td>White and opaque</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Smooth surface</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Granular on 1 side</td> </tr> </table>	<input type="checkbox"/>	Dry	<input type="checkbox"/>	Wet	<input type="checkbox"/>	Transparent	<input type="checkbox"/>	White and opaque	<input type="checkbox"/>	Smooth surface	<input type="checkbox"/>	Granular on 1 side		G Use a caliper square. The tool must not warm up the ice (preferably use a plastic caliper square). When using a metal caliper square you must precool it.
<input type="checkbox"/>	Dry														
<input type="checkbox"/>	Wet														
<input type="checkbox"/>	Transparent														
<input type="checkbox"/>	White and opaque														
<input type="checkbox"/>	Smooth surface														
<input type="checkbox"/>	Granular on 1 side														
Ice temperature	<input type="text"/>	°C	H By examining the ice at the outlet of the generator (tick appropriate boxes).												
Level of ice forming in the generator			H												
Temperature of the refrigerant at the outlet of the cylinder	<input type="text"/>	°C	I Make the measurement during several minutes.												
Control the torque limiter switch	<input type="checkbox"/>		J Indicate on the drawing : the level of ice forming in the cylinder												
Opening of the hand expansion valve	<input type="text"/>	Turns	K Use an electronic contact thermometer.												
Control of the injection times	<table border="1"> <tr> <td>- opening time</td> <td><input type="text"/></td> <td>Sec</td> </tr> <tr> <td>- closing time</td> <td><input type="text"/></td> <td>Sec</td> </tr> </table>	- opening time	<input type="text"/>	Sec	- closing time	<input type="text"/>	Sec		L Tick the box if the switch is operational.						
- opening time	<input type="text"/>	Sec													
- closing time	<input type="text"/>	Sec													
Evaporating pressure	<input type="text"/>	bar	M valve.												
Corresponding temperature	<input type="text"/>	°C	M1 Measure the opening and closing times of the liquid level control or of the solenoid valve.												
Condensing pressure	<input type="text"/>	bar	N Read pressure with a manometer at the outlet of the generator.												
corresponding temperature	<input type="text"/>	°C	O Read pressure with a manometer at the inlet of the generator.												
Timer for the GENEGLACE start	<input type="text"/>	Sec	Z Read the timer value.												
Timer for the reducer stop	<input type="text"/>	Sec	Z Read the timer value.												
Timer for the pump down	<input type="text"/>	Sec	Z Read the timer value.												
Refrigerant connection	<table border="1"> <tr> <td>Height</td> <td>Length</td> <td>Dia / i</td> <td>Dia / o</td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>	Height	Length	Dia / i	Dia / o	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		Height between the generator and the condensing unit. Length of tube between the generator and the condensing unit. Dia : inlet and outlet diameters of connecting tubes.				
Height	Length	Dia / i	Dia / o												
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>												
Generator located :	<table border="1"> <tr> <td><input type="checkbox"/></td> <td>above the condenser</td> </tr> <tr> <td><input type="checkbox"/></td> <td>below the condenser</td> </tr> </table>	<input type="checkbox"/>	above the condenser	<input type="checkbox"/>	below the condenser		- Tick the appropriate box.								
<input type="checkbox"/>	above the condenser														
<input type="checkbox"/>	below the condenser														
Oil drainage's	<table border="1"> <tr> <td>frequency</td> <td><input type="text"/></td> </tr> <tr> <td>quantity</td> <td><input type="text"/></td> </tr> </table>	frequency	<input type="text"/>	quantity	<input type="text"/>		- Frequency of oil drainage's								
frequency	<input type="text"/>														
quantity	<input type="text"/>														

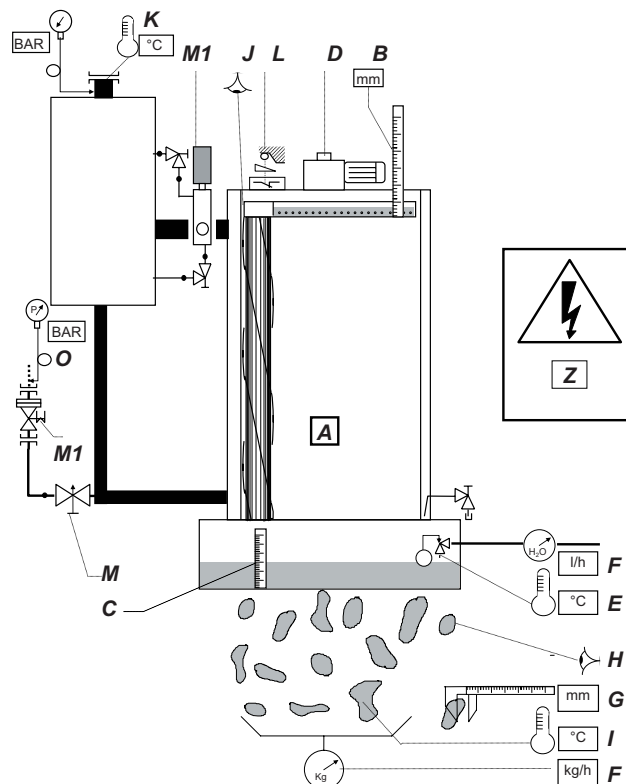
Name of the engineer who performed this test :

Name of the person in charge :

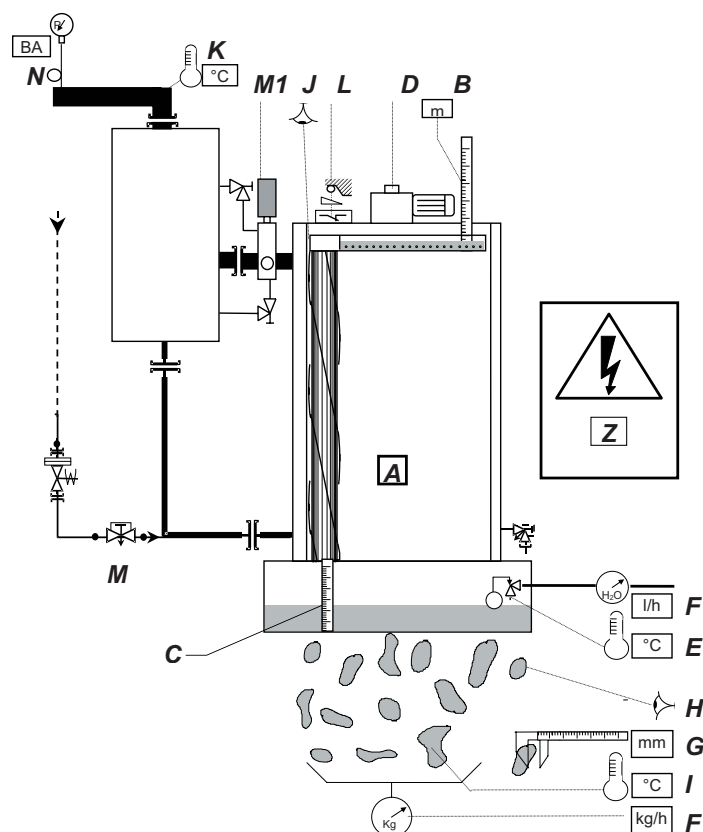
Date :

signature of the person in charge, and stamp of the company :

19.5 Measurement Points for F600 to F2000 NH3 Generator



F600 to F900



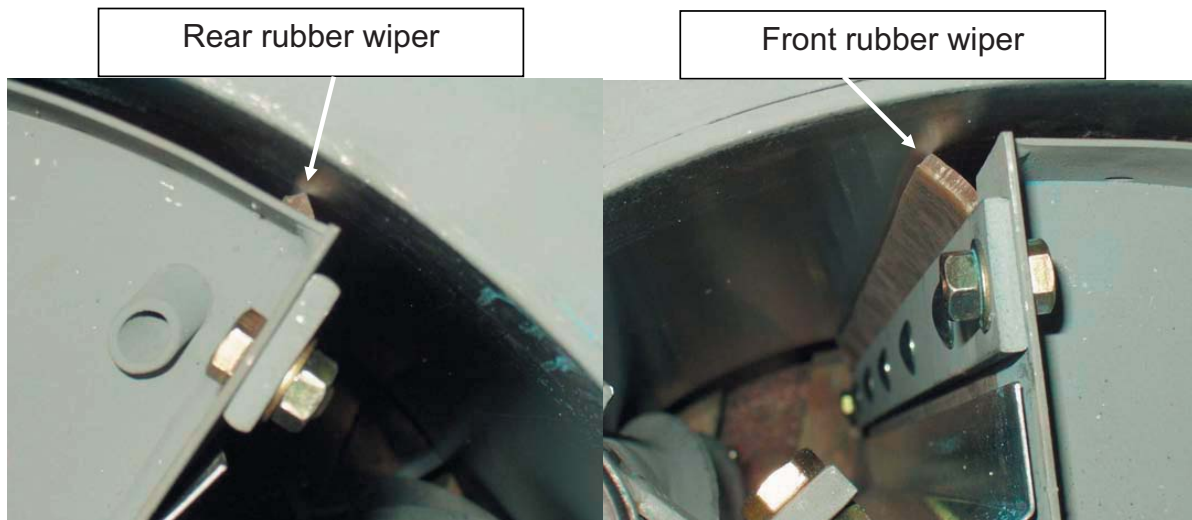
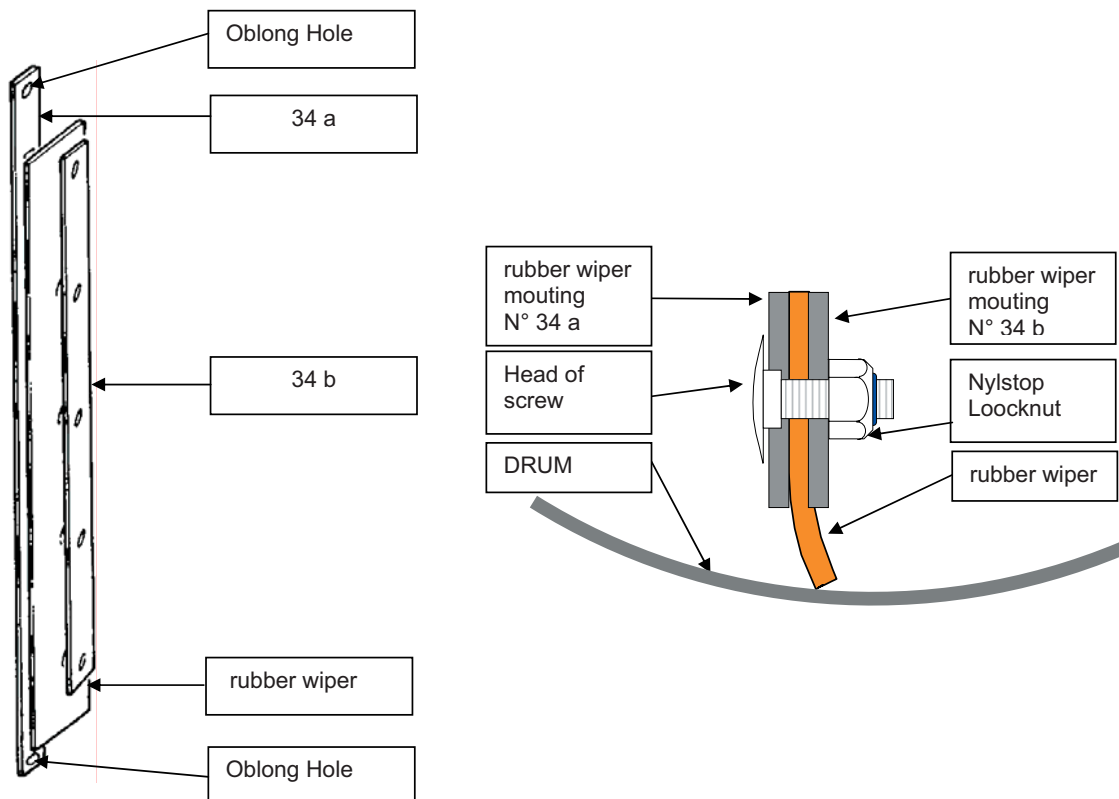
F2000

20. Adjustment of Rubber Wipers Blade

Important

Before operating, switch off the installation

- Adjustment of the rubber wipers is by means of oblong fixing holes at the ends of the rubber wiper mountings
- Ensure that the rubber wiper only touches the drum with its outer edge (see Photos below)



21. Adjusting the Reamer F600

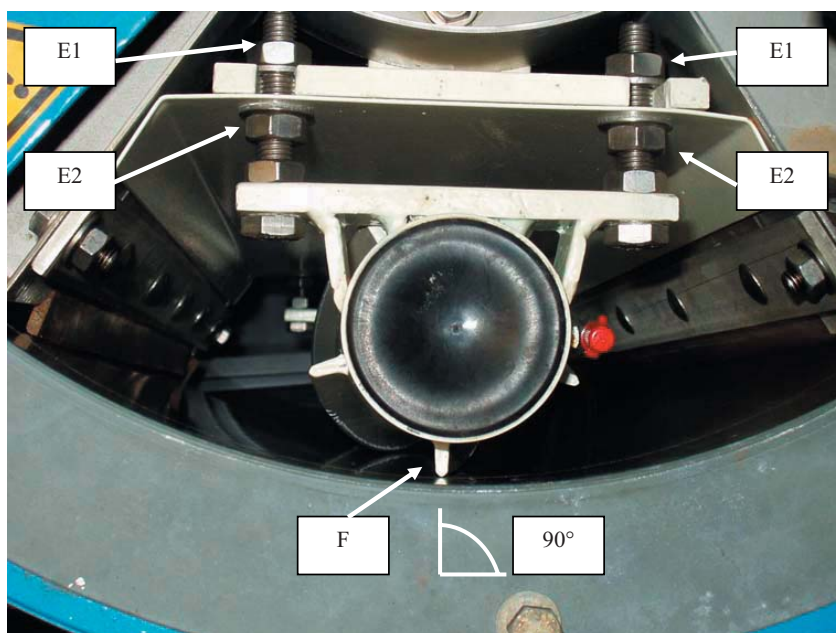
Important

Before operating, switch off the installation

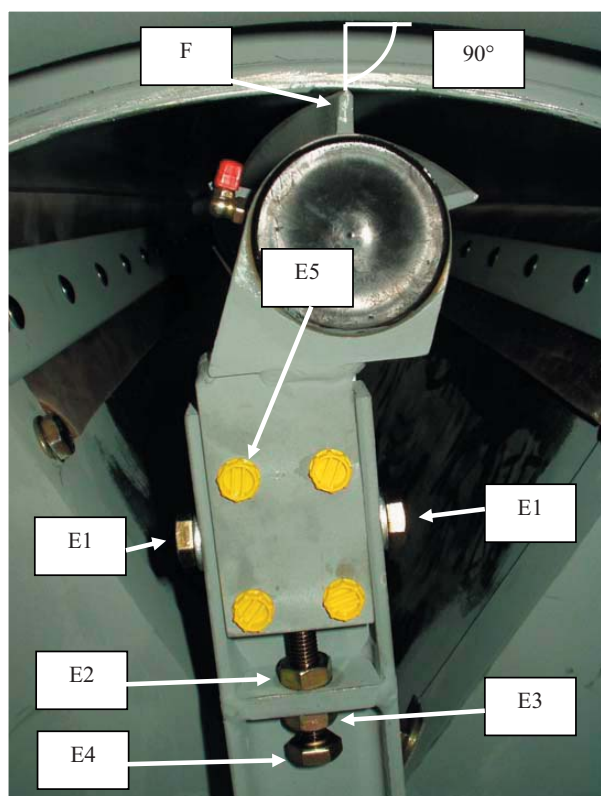
TOOLS REQUIRED :

- 1 set of engineer's wedges and two 17mm-flat spanners

Adjusting the upper reamer end



- Place the reamer opposite the inspection hole
- Select the largest tooth on the reamer using a set of engineer's wedges, turning them one after another perpendicular to the cylinder
- Loosen E1 and E2 screws
- Position the selected tooth (F) perpendicular to the cylinder
- Tighten the E1 screws to distance the reamer tooth from the cylinder
- Unscrew the E2 screws to bring the reamer tooth towards the cylinder
- Take a wedge equal to or less than 0.4mm and place it between the tooth and the cylinder.
- Unscrew the E1 screws and tighten the E2 screws until there is contact between the tooth/wedge/cylinder
- Isolate this adjustment by locking the E1 screws while maintaining the E2 screws
- Remove the wedge by turning the reamer on itself



Adjusting lower part

- Place the reamer in an accessible position
- Select the largest tooth on the reamer using a set of engineer's wedges, turning them one after another perpendicular to the cylinder
- Unscrew the E1 screws as well as the four screws which are above the four yellow caps E5
- Position the selected tooth (F) perpendicular to the cylinder
- While holding the E4 screw tight in position, untighten the E2 nut and tighten the E3 nut to move the reamer away from the cylinder
- While holding the E4 screw tight in position, tighten the E2 nut and untighten the E3 nut to bring the reamer tooth close to the cylinder.
- Take a wedge equal to or less than 0.4mm and place it between the tooth and the cylinder.
- While holding the E4 screw tight in position, tighten the E2 nut and untighten the E3 nut until there is contact between the tooth/wedge/cylinder.
- Isolate this adjustment by locking the E3 nut while holding tight the E4 screw. Then lock the E1 screws as well as the four screws above the four yellow caps E5.
- Remove the wedge by turning the reamer on itself

22. Adjusting the Reamer F800 to F2000

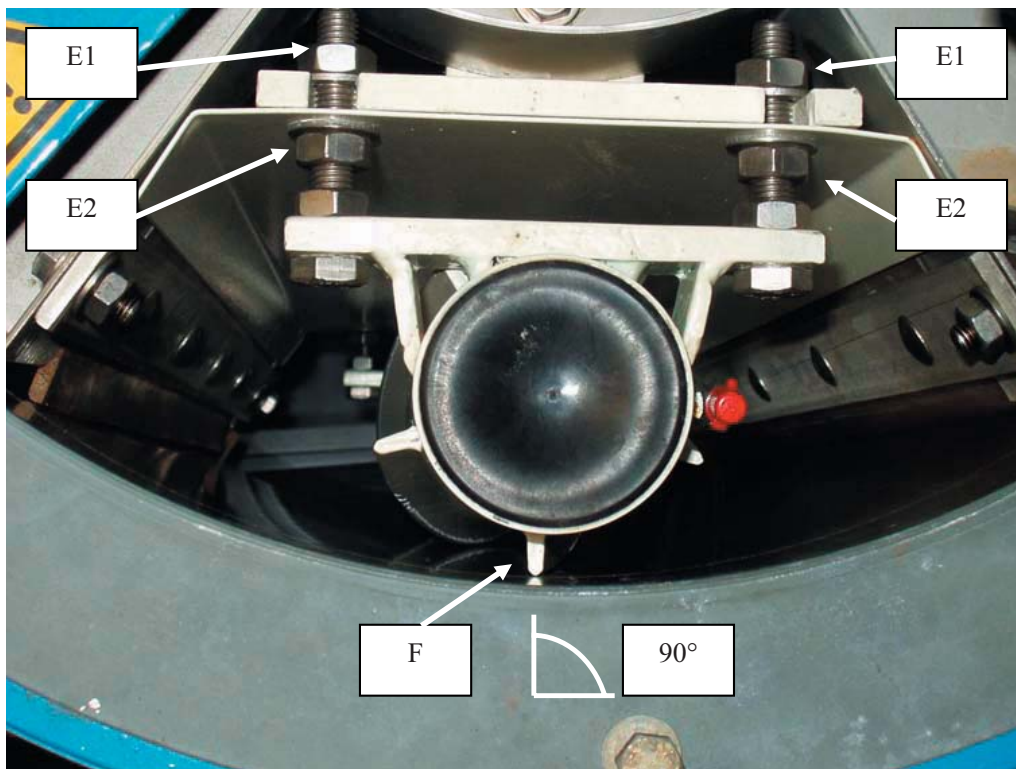
Important

Before operating, switch off the installation

TOOLS REQUIRED :

1 set of engineer's wedges and two 22mm-flat spanners

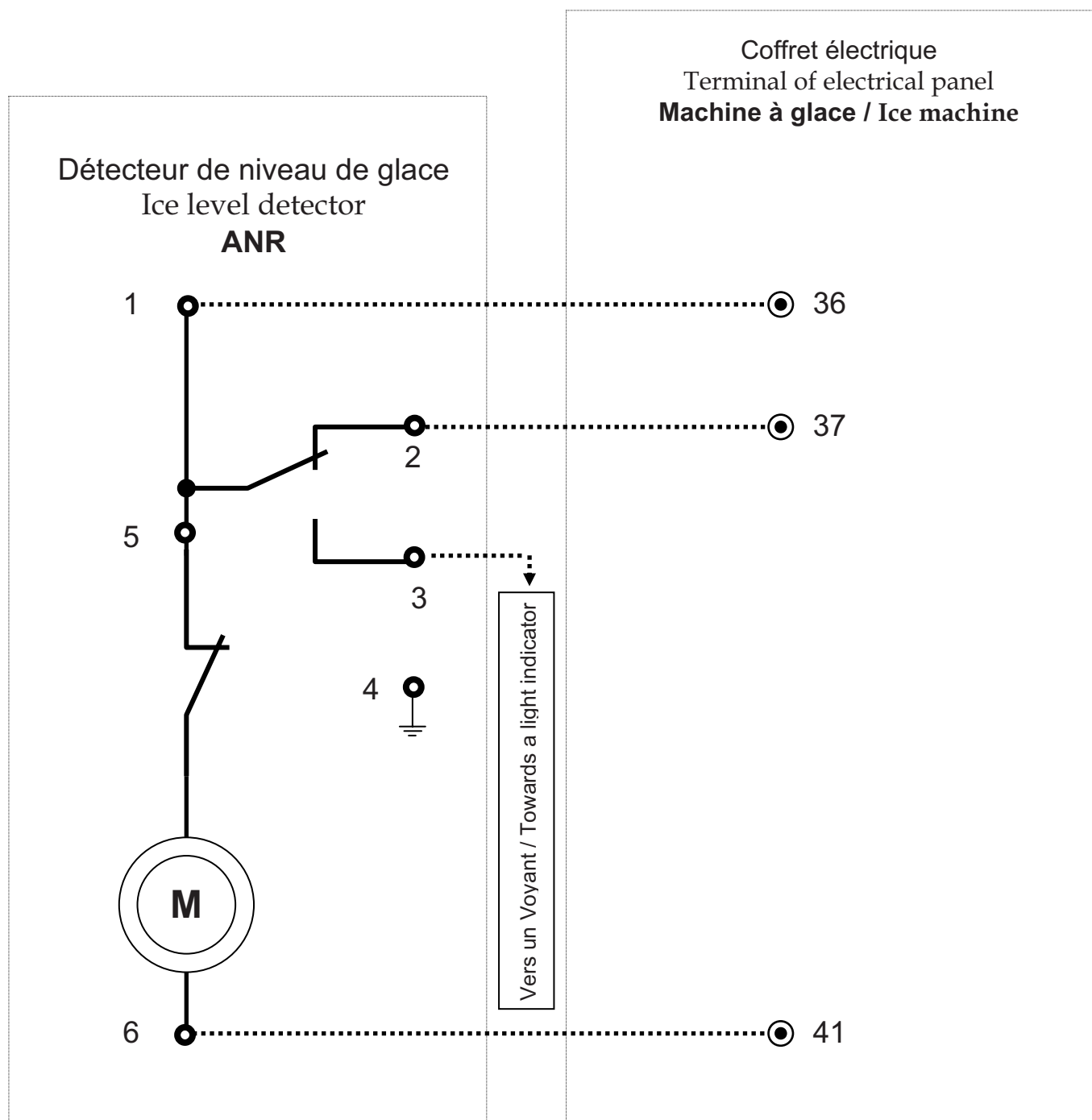
The adjustment principle referred to below for the top bearing of the reamer is identical to that of the low bearing.



- Place the reamer opposite the inspection hole
- Select the largest tooth on the reamer using a set of engineer's wedges, turning them one after another perpendicular to the cylinder.
- Loosen E1 and E2 screws
- Position the selected tooth (F) perpendicular to the cylinder
- Tighten the E1 screws to distance the reamer tooth from the cylinder

- Unscrew the E2 screws to bring the reamer tooth towards the cylinder
- Take a wedge equal to or less than 0.4mm and place it between the tooth and the cylinder.
- Unscrew the E1 screws and tighten the E2 screws until there is contact between the tooth/wedge/cylinder
- Isolate this adjustment by locking the E1 screws while maintaining the E2 screws
- Remove the wedge by turning the reamer on itself

23. Electrical connexion of the ILD



RACCORDEMENT ELECTRIQUE DE L'ANR
ELECTRICAL CONNEXION OF THE ANR
CONEXIÓN ELÉCTRICA DEL ANR

" Partout où vous êtes, nous avons la solution. "

" Wherever you are, we have the solution. "

" En cualquier parte donde esté, tenemos la solución "

" überall wo Sie sind, haben wir die richtige Lösung "

" Em qualquer parte onde voce se encontra, temos a solução "



GENEGLACE S.A.S

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