

TRANSLATION INSTRUCTION MANUAL

CHILLY MAX

CHILLY MAX COOLER TO COOL



Dok-ID: V0.02 – 15.08.2011

WTG – Wine Technology GmbH
Moselstrasse 9 • D-54349 Trittenheim
Tel: +49 (0) 65 07 - 938 180
Fax: +49 (0) 65 07 - 938 188
www.kreyer.com • kreyer@kreyer.com

KREYER



OPERATING INSTRUCTIONS

1	SAFETY / PREVENTION OF ACCIDENTS	2
2	TRANSPORT	4
3	INSTALLATION AND INITIAL OPERATION	5
4	CARE AND MAINTENANCE	11
5	FAULT DIAGNOSIS	13
6	IMPORTANT INFORMATION ON WATER QUALITY	17
7	WASTE DISPOSAL	19

APPENDIX

- TECHNICAL DATA
- TEMPERATURE CONTROLLER
- WIRING DIAGRAM

These operating instructions have to be read carefully before putting the chiller into operation.

Please observe these instructions, otherwise the manufacturers liability for subsequent damage will be cancelled. All rights required for further technical development and modification, are reserved.

Proper use of the chiller

This chiller is designed for the cooling of water only. For the use of other agents (e.g. deionised water) please contact the manufacturer. Limits indicated in the technical data must be adhered to strictly, otherwise the manufacturers liability for subsequent damage will be cancelled. Chilling of flammable or explosive substances is prohibited.

IMPORTANT!

IMPORTANT!

**Please keep these operating instructions
for further use!**

1 SAFETY / PREVENTION OF ACCIDENTS

General information

These operating instructions contain valuable information which has to be observed during initial start-up, operation and maintenance. Therefore these instructions are to be read by the installer and operating personnel in charge, before putting the chiller into operation.

All general safety instructions mentioned in this chapter and special security instructions given in other sections of this manual have to be observed.

Personnel qualification and training

Operating, maintenance, inspection and installation personnel must be qualified. Responsibility and supervision must be clearly explained to the operator.

Danger due to non-observance of safety instructions

Non-observance of safety instructions may cause injuries, endanger the environment or damage the chiller. Non-observance of safety instructions will cancel the manufacturers liability for subsequent damage.

Safety conscious operation

The safety instructions given in these operating instructions, including national regulations on accident prevention as well as any specific chiller safety instructions must be observed.

Safety instructions for user / operator

Protective guards that have been installed to prevent contact with moving parts may not be removed when the unit is being operated. Danger resulting from the use of electrical power is excluded (for detailed information, refer to the VDE regulations and the regulations of the local power supply authorities).

Safety instructions on maintenance, inspection, and installation work

Basically none of the cleaning or maintenance tasks may be performed until the unit has come to a complete standstill. As soon as this work has been completed, all the safety devices and protective equipment must be mounted or installed according to their proper function.

Arbitrary modification and production of spare parts

The unit may be converted only if an agreement has been reached with the manufacturer. Original spare parts and accessories accepted by the manufacturer serve as safety guarantee. Use of other parts may cancel the manufacturer's liability for subsequent damages

1 SAFETY / PREVENTION OF ACCIDENTS

Non-permissible operating methods

The operational safety of the delivered unit is guaranteed only if the unit is properly used as intended. Limits indicated in the technical data must not be exceeded.

Health hazards with the refrigerant

The refrigerant has only a very low acute health hazard. It has narcotic effects only at extremely high concentrations. After acute exposure to extremely high concentrations the substance is eliminated over the lungs very quickly. The refrigerant has a certain irritating effect on skin and mucous membranes. Exposure of the skin to liquid refrigerant can cause frost bite. In the presence of open flames or hot surfaces refrigerant can decompose and form toxic decomposition products (e.g. hydrogen chloride, phosgene). The refrigerant evaporates when exposed to air. Intentional exposure of refrigerant is not permissible. The chiller must be handled with great care to prevent any damage occurring through transport operations.

Safety symbols



Warning!

This symbol is to be found next to all the safety instructions involving work that may result in serious injuries. Observe these instructions and proceed with extreme caution in such instances. Inform all other users as well. In addition to the instructions included in this manual, the applicable general safety and accident prevention regulations must also be taken into account.



Attention!

This symbol is to be found next to the items in this manual that must be strictly observed to ensure proper application of the guidelines, regulations, instructions and procedure of tasks and to make sure that the machine or other parts are not damaged or destroyed.



Note!

This symbol explains that chiller is designed according to state-of-the-art technology and is safe to operate. Dangerous situations may, however, be the result if the unit is used by personnel without adequate qualification or if it is not used correctly according to its intended purpose. Accordingly, this may affect efficient operation of the unit.

2 TRANSPORT

The chiller may only be transported in original packaging to the site of initial operation. In case of damage the manufacturer must be informed immediately. If the unit is moved to another location in a factory, all connections must be disconnected from the unit. Moving the unit to another location must be carried out without causing damages. If damage occurs despite these instructions, the unit must be checked by an expert and repaired as required before it is put into operation again.

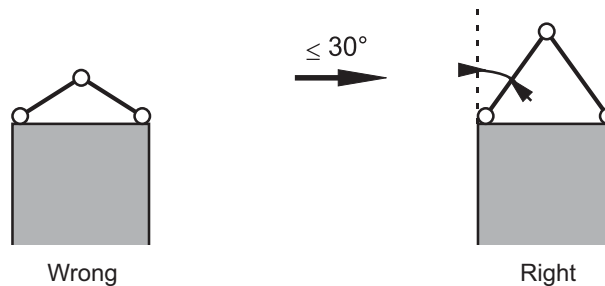
Note:

The Manufacturers Liability excludes any Damage to the Chiller subsequent to Transportation.

When transporting the unit, consider the weight limits indicated in the technical data. Use a fork-lift, truck or a crane with the corresponding load-capacity.

The fully-hermetic compressor is mounted on rubber. Always transport the chiller as mentioned below. Avoid vibrations during transport. Failure to observe can result in compressor damage.

Instructions during transport!



Attention: Never remove the top cover if transporting the chiller by means of a hoist (via eyelets)!

3 INSTALLATION AND INITIAL OPERATION

Installation

Prior to installation and commissioning of the chiller, please observe the following points strictly:

The fresh air intake temperature may not exceed the max.ambient temperature (refer to name plate)

Assure that the required quantity of air is available at air cooled chillers.

Assure that the chiller hot air outlet does not warm up the environment or room excessively.

Min.distance of fresh air intake: at least 1,0 m (air cooled version)

Min.distance of hot air outlet: at least 3,0 m (air cooled version)

Connection of an air supply and exhaust duct is admitted only for machines with radial fans.

The fresh air intake of the unit (condenser) may not be situated in front of a heat rejecting device like a pump or electric motor.

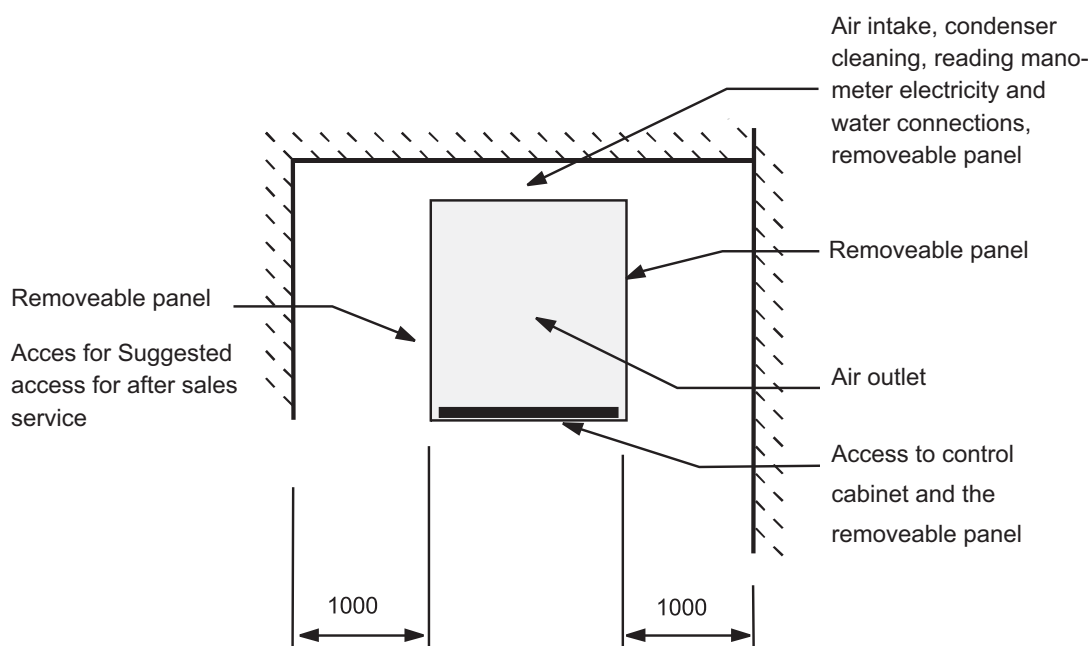
The unit must be set up on level, solid surfaces only, in order to ensure the required stability.

For outside erected chillers, the minimum outdoor temperature should be considered from the technical data.

Floor space

A minimum space must be left free around the installation, so that there is access to the various components and to the control cabinet.

The unit can be installed in a corner. However, its movability must be ensured to enable access to the various components.



The distance from any constructions blocking the air supply must be at a minimum distance of 1 meter.

3 INSTALLATION AND INITIAL OPERATION

Options

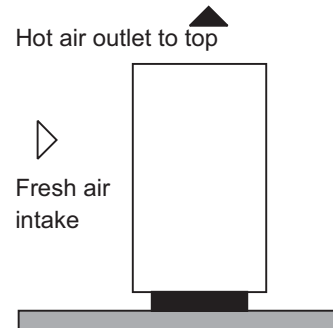
Option No 1:

The most frequent example. Air is taken in and evacuated in the same room. A large sized room is required.

Hot air outlet: min. 3 m

Fresh air intake: min.1 m

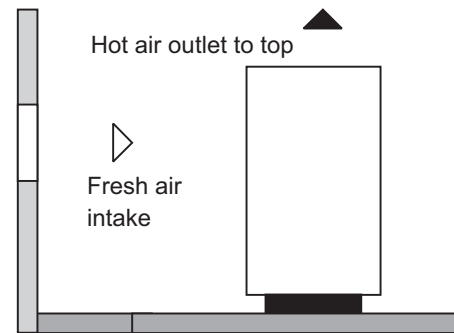
Note: The hot air outlet may not shortcycle with the fresh air intake.



Option No 2:

Air taken in from an adjoining room or from outside. If the incoming air in winter is too cold, provide a condensation pressure controller and the compressor casing resistance. A screen can be provided in winter so that taking in the cold air can however be prevented.

Note: The hot air outlet may not shortcycle with the fresh air intake.



Option No 3:

Air intake and evacuation to outside or an adjoining room using ducts.

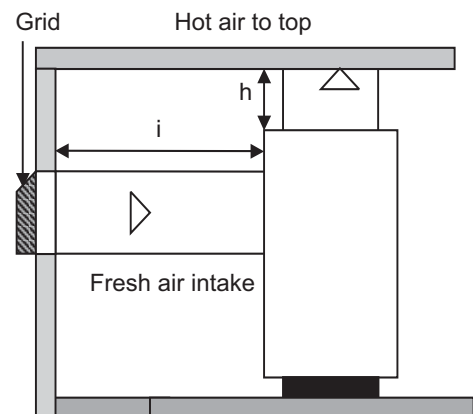
For the maximum permissible pressure loss, note the dimensions $h+i$

Take the same precautions as in Option No 2 for the air intake temperatures in winter.

Note: Only permissible on chillers with radial fans.

$h+i = 5$ m max. with grid

$h+i = 7$ m max. without grid

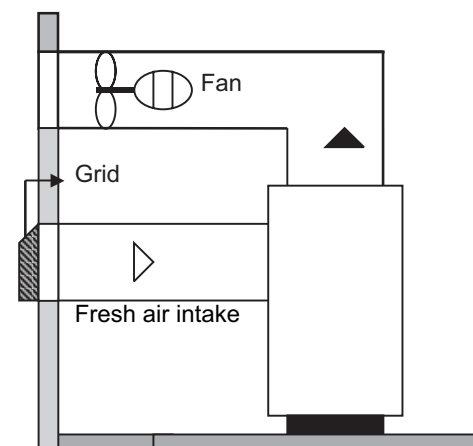


Option No 4:

Air intake and evacuation at the same floor level, either to outside or to an adjoining room.

A large bend is required in the duct so as to reduce pressure loss.

Use the same precautions as in option No 2.



3 INSTALLATION AND INITIAL OPERATION

Electrical connection

The chiller is ready for connection and should only be connected to a three phase current network (mains voltage refer to technical data).

The power supply has to be connected in a **right handed rotatory field**. In order to confirm the correct connection the direction of rotation of the fan motor must turn in the same direction as the arrow.

All electrical connections in the switch board are to be tightened prior to commissioning.

Incorrect connection of power supply and incorrect power supply will cancel the manufacturers liability for subsequent damage.



Hydraulic connection

After completing the electrical connection it is necessary to connect the Chiller to the consumer VIA flexible or fixed pipes.

Selection of materials of pipes. PVC, Plastic, Stainless Steel, Copper and Brass are permissible.

Note: Mild Steel and Galvanized Steel is not permissible.

Selection of cross – section of pipes (for advise please refer to manufacturer).

Insulated pipes are to be used if the distance between the chiller and the consumer is greater than 5 m.

Refer to technical data (pump diagram) for flow rate and pressure available from the chiller.

Before starting up it is always necessary to prime the pump with the medium to be transported. (refer to BLEEDING OF PUMP in this chapter).

If the consumer is placed on a higher level than the chiller unit, a non-return valve has to be installed in the water outlet as well as an solenoid valve has to be installed in the water inlet.

Connect water inlet port to consumer return line.

Connect water outlet port to consumer inlet line.

Connect water supply port to tap/fresh water supply.

Incorrect hydraulic installation will cancel the manufacturers liability for subsequent damage.



3 INSTALLATION AND INITIAL OPERATION

Refilling of the tank

Manual refill (Option)

Filling of water manually through water inlet port or directly into tank.

The waterlevel can be observed by the water sightglass which can be seen from the outside of the housing .

Ensure that the evaporator is submerged.

Important:

Prior to filling of the tank it is essential to test the water quality and if required carry out wattertreatment (refer to chapter 7).

To avoid corrosion at the evaporator, we recommend to use water with a low salt content (chloride content < 20 mg/l). To avoid thickening of the tank water, we recommend to replace the system content every 1 to 3 months an increasing evaporation of the tank water means an increasing chloride content (please refer to chapter 7).

For chillers running at temperatures lower than freezing point, a water/glycol mixture at the appropriate ratio should be filled.

30% Glycol up to -10°C, at lower temperatures please refer to the manufacturer.

The tank should be filled to the max. level of the water level tube.

Prior to start up it is always necessary to prime the pump with the medium to be transported.

Prior to start up the pump must be bled in order to remove air from the pump.

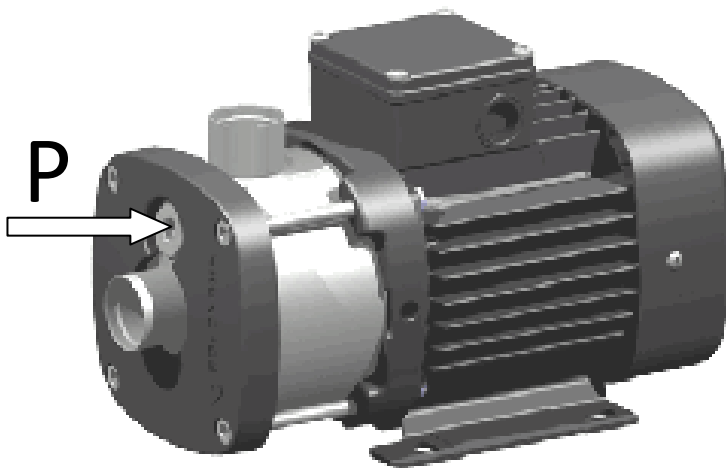


3 INSTALLATION AND INITIAL OPERATION

Bleeding of the pump

Remove bleeding screw P

Reinstall bleeding screw and tighten as soon as medium exits from filler fitting.



3 INSTALLATION AND INITIAL OPERATION

Start-up of chiller

Control switch »Standard«:

After successful completion of all instructions given in this chapter, the refrigerating plant is switched on by means of the main switch or master switch (if installed). The **OPERATION** light will light up during normal operation.

Master switch position: **0 = Off** **1 = Operation**

In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the control switch (please contact the manufacturer).

Confirm the correct power supply connection. The direction of rotation of the fan motor must turn in the same direction as the arrow.

*If the **FAULT** light lights up or the chiller does not start at all please refer to chapter 5.*



4 CARE AND MAINTENANCE

General

In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the control or main switch.(please contact the manufacturer)

4 CARE AND MAINTENANCE



Refilling of fluid

Manual refill (option)

Ensure that the evaporator is always submerged.

Water supply

Larger volumes of fresh water supply may disturb the equilibrium of mixture or reduce concentration of antifreezing agent. The content of concentration should be checked and determined at required intervals of time.

Standstill for prolonged period

Longer standstill of chiller requires draining of tank and complete water circuit. For renewed start-up of the chiller the same steps as for the initial start-up must be considered.

Cleaning of condenser (air-cooled chillers)

Make sure that the cooling fins of the condenser remain clean in order to guarantee the required heat exchange.

The condensor must be cleaned in monthly intervals or if required at shorter time intervals.

Dust and dirt clogging up the cooling fins should be removed by means of compressed air.

If the chiller is equipped with an air filter, the filter has to be exchanged (please contact the supplier).

If the airfilter is replaced, only make use of a EU2 filter.

Remove grid in order to change filter or/and carefully clean the condenser with compressed air.



Note:

Please ensure to switch »0« the main switch, before any maintenance or repairment work has to be performed on the chiller.

5 FAULT DIAGNOSIS

By means of the following instructions a quick failure analysis can be made. The user can repair some failures without any assistance. Please do not hesitate in phoning the manufacturers after sale service department if assistance is required.

Corrective maintenance of the refrigeration cycle must be performed by competent refrigeration specialists only. In case of any problems concerning the refrigeration cycle, please contact the manufacturer



If error message at the display appears ...

... refer to **Correction of failures** matrix (see page 14/15)

If error message at the display does not appear ...

... refer to **Unit does not start** matrix (see page 16)

Note:

Please ensure to switch »0« the main switch, before any maintenance or repairment work has to be performed on the chiller.



5 FAULT DIAGNOSIS



(parts are identified on the wiring diagram)

Fault	Possible cause	Repairment
Compressor clixon cuts out	<p>Compressor current too high</p> <p>Compressor defect</p> <p>Clixon (Kriwan) defect</p> <p>Evaporation temp. too high</p>	<p>Incorrect power supply L1, L2, L3 testing of ocurent (ampere)</p> <p>Current and power supply OK: compressor or clixon defect</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Fluid (water, emulsion, oil) temp. too high</p>
Low pressure switch tripped	<p>Fluid (water, emulsion, oil) level in tank too low</p> <p>Refrigerant leakage</p> <p>Expansion valve defect</p> <p>Option:solenoid valve defekt</p> <p>Fluid temperature too low</p> <p>Ambient temp. too low</p>	<p>Resetting of low pressure switch</p> <p>Testing of correct fluid level - refilling tank</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Refer to technical specification</p> <p>Refer to technical specification</p>
High pressure switch tripped	<p>Clogged or dirty airfilter (Option)</p> <p>Clogged or dirty condensor</p> <p>Fan motor rotation - wrong way around</p> <p>Fan motor defect</p> <p>Fluid (water, emulsion,oil) temperature to high</p> <p>Watervlve at watercooled units</p> <p>Ambient temperature to high</p>	<p>Resetting of high pressure switch</p> <p>Replace airfilter (EU 2)</p> <p>Clean condensor</p> <p>Testing of correct rotation - see rotation arrow on condensor</p> <p>Replacement of fan motor</p> <p>Refer to technical specification</p> <p>Testing of correct waterflow</p> <p>Measure air inlet temp. at condensor refer to chapter 3</p>

5 FAULT DIAGNOSIS

(parts are identified on the wiring diagram)



Fault	Possible cause	Repairment
Overload tripped	Current of the specific part too high Burnt or broken cable Loose connection Insufficient power supply	Resetting of overload Testing of current (ampere), replace defect part Repair broken cable Tighten all contacts and terminals Test power supply
Option: Flow switch tripped	Flow switch dirty Flow switch defect Pump defect Pump rotation - wrong way around Fluid (water, emulsion, oil) level too low	Clean flow switch Replace flow switch Replace pump Testing of correct pump rotation, see arrow on pump Testing of sufficient fluid in system and damaged or clogged up piping
Option Anti-freeze thermostat	Fluid (water, emulsion, oil) temperature too low	Test the setting of the Anti-freeze thermostate Testing of correct temperature setting on controller controller defect
Option: float switch tripped	Water level in tank too low Float switch defect	Testing of waterlevel, refilling of tank Replace floatswitch

5 FAULT DIAGNOSIS

(parts are identified on wiring diagram)

Fault	Possible cause	Repairment
<p>Unit does not start</p>	<p>No power supply Broken main fuse Transformer fuse broken Temperature controller broken Fluid temperature outside min. or max. allowable values</p>	<p>Test power supply Replace main fuse Replace transformer fuse Replace temperature controller Testing of correct temperature setting</p>
<p>Fluid (water, oil) temp. too high</p>	<p>Clogged or dirty air filter Dirty evaporator Dirty condensor Refrigerant leakage (bubbles in sight glass) Temp.controller setting incorrect Water level in tank too low Ambient temp. too high Consumer capacity too high</p>	<p>Replace air filter Clean evaporator Clean condensor Repairement only by refrigeration specialist Re-adjustment of temp. controller Testing of waterlevel refilling of tank Refer to technical specification or chapter 3 Test consumer capacity and compare with chiller capacity</p>

6 IMPORTANT INFORMATION ON WATER QUALITY



In order to achieve a correct and trouble-free operation on your water chiller it is necessary to examine the water quality and, when necessary, carry out water treatment. Corrosion, furring and biological problems can occur in the water system.

The following information is important for the assessment of a half-open system:

- water quality
- all materials having contact with the cooling water
- max. and min. system water temperature
- requirements for water quality

1. Deionized / Demineralized / Distilled / Return Osmosis water

When using deionized, demineralized, distilled or return osmosis water it is required to add a corrosion inhibitor or glycol to the water system.

2. Fresh water/ City water / Tap water

When using fresh water, city water or tap water it is recommended to analyse the water by a specialist to minimize the risk of any chiller damage through a high chloride content. A high chloride content (>20mg/l) in the system water can cause corrosion on the stainless steel evaporator.

It is required to make use of a corrosion inhibitor as additive to the system water. We recommend the use of **Nalco 77382 at a concentration of 5g/l in the complete water system**, unless an Inhibitor with similar characteristics is prescribed from the manufacturer.

Organic sediments and algae in the water cycle can be controlled by analysing the number of organic germs. If the number of organic germs exceeds 1000 KBE/ml, we recommend to use

Biozid Nalco 77352 at a concentration of 100mg/l. After 3 to 4 days it is recommended to exchange the complete system water. The chiller can operate during this period.

Evaporation leads to a concentration of minerals and chloride in the system water, especially at the surface level. The water parameters which are initially below the guide values, can increase to exceed the guideline value as a result of the evaporation. An excessive chloride content in the system water will cause corrosion on the stainless steel evaporators and stainless steel tank. We therefore recommend to regularly monitor the water quality and if necessary drain the concentrated water from the system in order to rematch the water values to the parameters as per guideline. It is recommended to exchange the water at least once or more times per year and to inspect the evaporators on regular intervals.

Water quality parameters:

ph-value:	7-9	alkalinity (°dH):	<1
conductivity:	<300 µS/cm	chloride content:	<20 mg/L
hardness (°dH):	<0,1	organic germs:	<1000 KBE/ml

For any further questions please contact the water specialist (S. 18)

Ignorance of the above information cancels the Manufacturers liability for subsequent damage.

6 IMPORTANT INFORMATION ON WATER QUALITY

For assistance regarding watertreatment please contact:

GERMANY

Nalco Deutschland GmbH
Ludwig-Landmann-Strasse 405
D-60486 Frankfurt am Main
Phone: 069-793-40
Fax: 069-793-4295

FRANCE

Nalco
N°5 rue Rosa Bonheur
F-59290 Wasquehal
Phone: 03 20 11 70 00
Fax: 03 20 11 70 70

EUROPE

Nalco European Operations
2342 BV Oegstgeest
P.O. Box 627, NL-2300 Leiden, The Netherlands
Phone: 31-71-524-1100
Fax: 31-71-524-1197

USA

Nalco Company
Nalco Center
1601 W. Diehl Road
Naperville, IL 60563-1198 U.S.A.
Phone: 630-305-1000
Fax: 630-305-2900

SOUTH AMERICA

Nalco Latin America Operations
Av. Das Nacoes Unidas
17.891, 11o, Andar
Santo Amaro 04795-100
Sao Paulo, Brazil
Phone: 55-11-5644-6500
Fax: 55-11-5641-7687

ASIA

2 International Business
2-20 The Stategy Tower 2
Singapore 609930
Phone: 0065 (0) 68 61 40 11
Fax: 0065 (0) 68 61 40 11

7 Waste disposal

The refrigerant cycle of the chiller contains an environment friendly refrigeration fluid. Only registered and qualified refrigeration companies are permissible to carry out work on the chiller. Before attending any repairments or maintainance work on the refrigeration cycle the refrigerant must be recovered by means of a recovery unit. Any intention blowing off the refrigerant is prohibited. Disposal of the refrigerant and any other parts like compressor oil or waste water must be completed according to local regulations only.