# Picture guide

## Start-up of chillers type MCK and Chilly Max

Example with MCK (course of action is the same for Chilly Max)

**Important notes:**

**The following picture guide is additional information to the official instruction manual and does not replace it. The instructions in the manual are to be considered before this document.**

**Electrical and water installation and the start-up should be done by qualified personnel**


# Your new KREYER cooling unit has arrived…!

**First 'safety' tip:**

Step 1: Condition as delivered - inspect your chiller always on arrival for transport damages. If there are any – report this immediately to the driver and note the damage on the delivery note before signing it and keep a copy! You will need it to claim transport damages if the shipment is insured.

## Correct place of installation:

**In a well aired room.**
**If set outside, the unit should be under an awning or in a shed providing protection from the elements (sunshine, rain, snow) and well aired.**

The unit operates between the ambient temperatures:
Min. +10°C / 50°F
Max. + 42°C / 107°F

**Distance / placement:**
Free space in front of the cool air intake min. 1,0 meter / 3,5 feet
Free space in front of the hot air outlet min. 3,0 meter / 10 feet

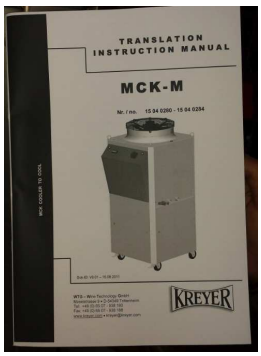
For exact installation conditions, please refer to the manual.

## And now to the installation and start-up:



Step 2: Unpack the unit completely and position it.


Step 3: Take the key (attached to the machine) and open cover panels and the control cabinet - you will find the instruction manual including the wiring diagram of the machine in your language with additional instructions regarding the start-up inside of the control cabinet.




Step 4: Read the complete instruction manual carefully.

**Please check and compare voltage on the type plate with your local voltage – if not correlating please contact your supplier!**



Step 5: Take a screwdriver and tighten all cable connections inside the control cabinet to ensure contact in all switches after the transportation.

Step 6: Set all circuit breakers to ON = 1 (they are set to OFF = 0 for safety).

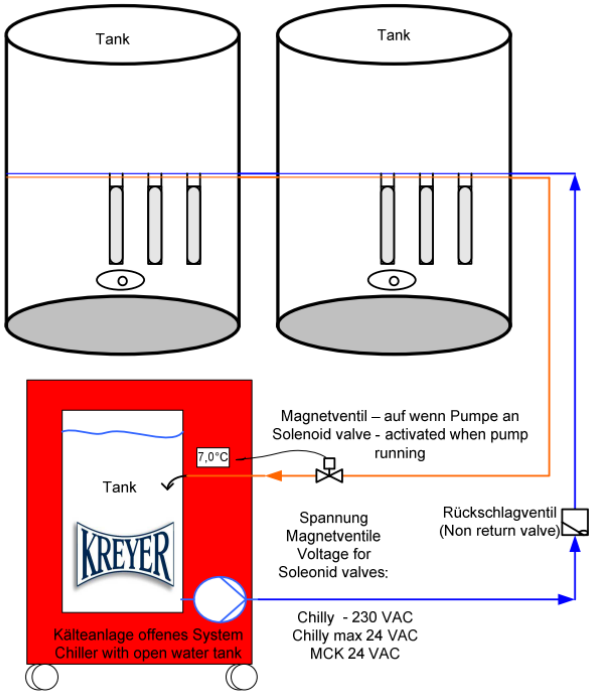
**IMPORTANT: Steps 5 and 6 have to be done by a qualified electrician!!**

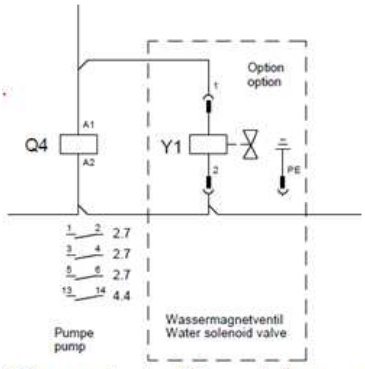
## Optional: Overflow protection kit

The units MCK and Chilly Max are working as an open water system. Water users (e.g. tanks) should be installed on the same level as the chiller or below to avoid an overflow of the chillers buffer tank when the unit/pump is off.

If this isn't possible you should install an overflow protection kit (consisting of a 24V solenoid valve, a solenoid connection cable and a non-return valve – available from **WTG / KREYER**):

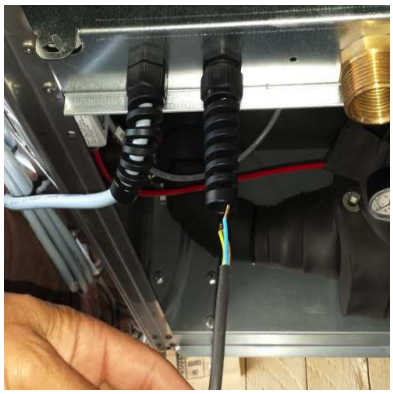
Install the non-return valve in the outlet pipe/flow line (for the right fitting position respect the flow direction indicated by an arrow on the non-return valve) and the solenoid valve in the inlet pipe/return line of your chiller (see picture below

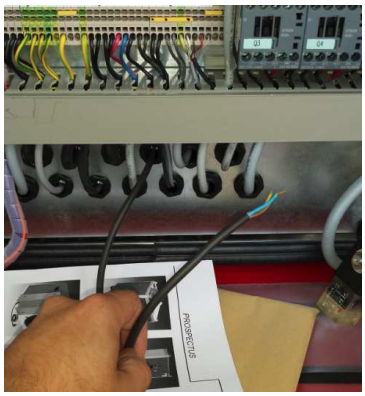


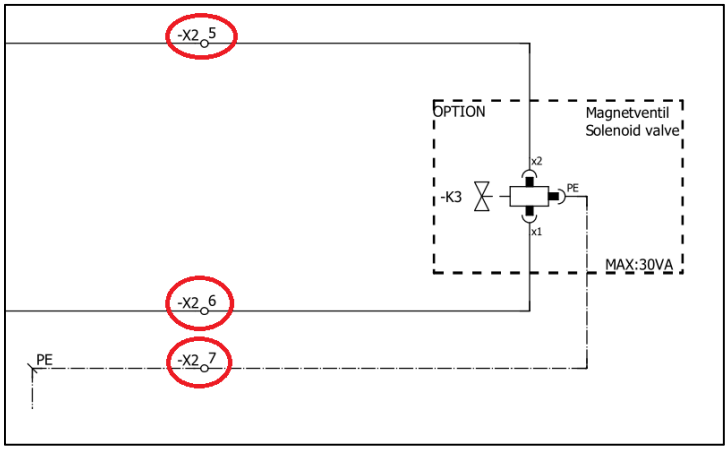

Or contacts 13 - 14 on contactor.

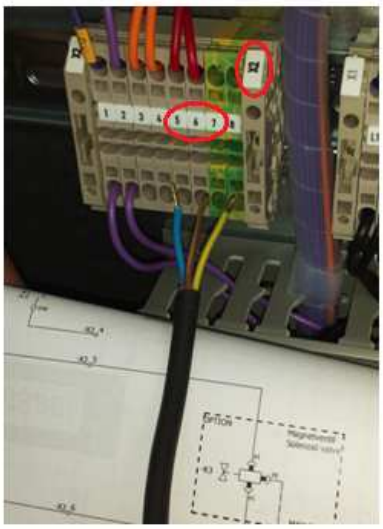
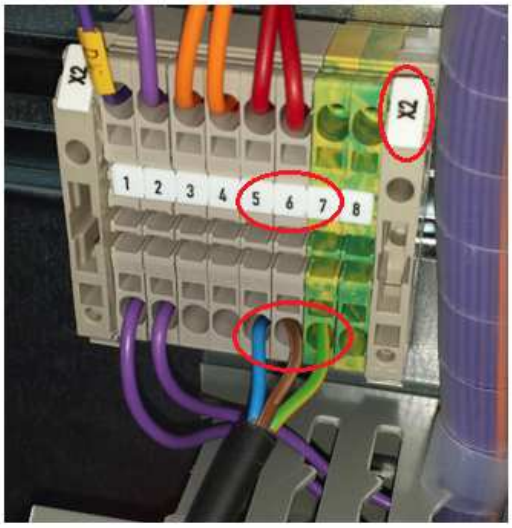
Insert the solenoid connection cable in the free cable inlet at the back side of the chiller and lead it through to the control cabinet:





Check the wiring diagram of the chiller appearing at the end of the instruction manual where to connect the cable of the solenoid valve (in this example here the contact inside the control cabinet is X2 -> clips 5, 6 and 7=earth). It doesn't matter whether you connect the brown or the blue cable to clip 5 or 6:




**- End of the optional overflow protection kit -**

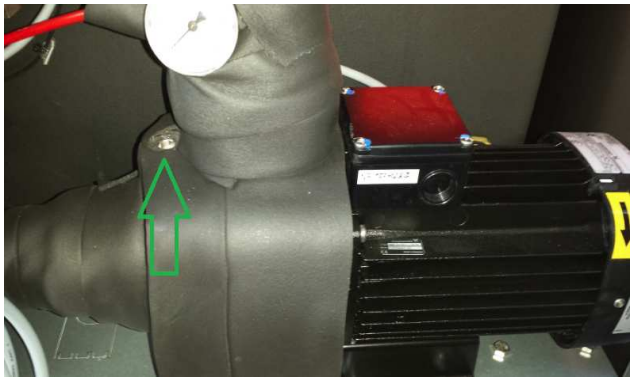

Step 7: Take the key, open the cover panels. Connect the chiller on the water-side of your installation (we strongly recommend to install an additional strainer/filter in the inlet pipe connected to your chiller).

Step 8: Take off the cover of the buffer tank.


Step 9: Fill in the water (observe the water quality as described in the instruction manual) and check the water level in the sight glass.


Step 10: If you are operating your chiller on set temperatures below +8°C (= +46,4°F) you need to fill in food safe glycol. We suggest a concentration of about 30% glycol relating to the total water content (e.g. water inside the buffer tank of the chiller + piping system + double cooling jackets or cooling plates). Glycol is also required if the ambient around chiller can be below 0°C.

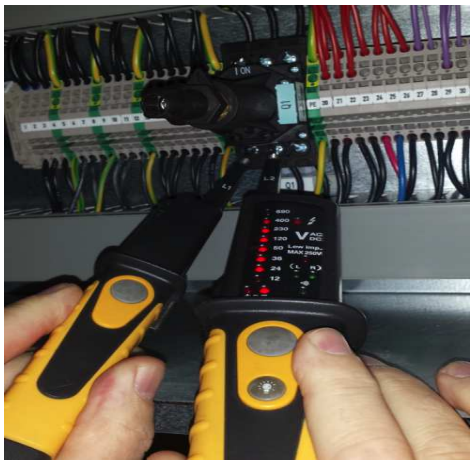
It is recommended to add glycol also in units that do not cool to low degrees due to its corrosion and bacteria prevention qualities.



Step 11: Bleed the pump -> remove the bleed screw and reinstall and tighten it as soon as medium exits from the filler fitting.

Step 12: Equip the machine with the right local plug. It is absolutely essential to use a plug with the right amperage. Plug it to its socket – the main switch of the unit stays in OFF-position.

**IMPORTANT: Steps 12 and 13 have to be done by a qualified electrician!!**

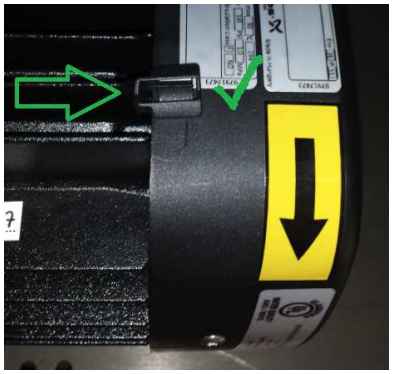


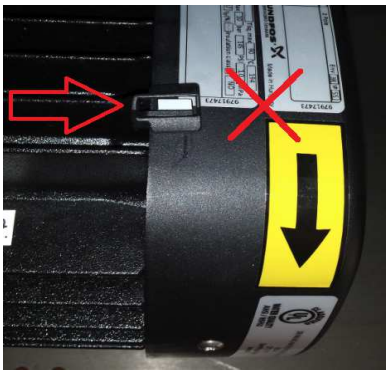
Step 13: Measure and ensure that the chiller is connected in the right rotating field (clockwise rotation).


Step 14: If you completed correctly all steps before you can now close the control cabinet and turn on the main switch to start the operation of the chiller.

Pictures below: While the unit is running you will also find two indications of the right rotating field on the pump: a directional arrow (pump turning in same direction as arrow shows = right) and a small colour-indicator made of plastic (black visible = right direction; white visible = wrong direction).

Additionally there is on most of the units fans a directional arrow as on the pump (fan turning in same direction as arrow shows = right).





**Attention:** Please check the pressure capacity of the unit pump. Please ensure that all components in your water system are compatible with the maximum pump pressure. If necessary, use pressure-reducer elements (e.g. bypass-valve) in your water system. Pump capacity and further information are inside the instruction manual.




Step 15: When the pump pressure is correctly set adapted to your tank installation -
The integral pump inside the cooling unit would switch-off when all tank valves are closed and there is temporarily no requirement for cooling/heating -> this needs to be adjusted.

While operating the unit take a screw driver, open the casing of the differential pressure switch and adjust it corresponding to the description in the instruction manual. Afterwards close the casing of the pressure switch and close all open cover panels of the unit.

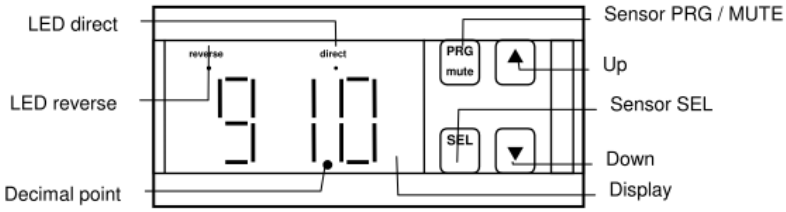
**NOTE:**

## Keep the unit in its housing with all side board and the lid closed while the unit is in operation!

Avoid any situation or unit positioning where hot air which is blown out by the unit itself or any other equipment nearby is sucked into it.
This may cause in some cases a stop due high-pressure, and may reduce significantly the cooling capacity of the unit, so low temperatures may not be reached as set.


# The chiller is now successfully adjusted and ready for use!

## Regulator: Carel IR32


# Description of the controller

**Display:** During normal operation display indicates value measured by sensor. In case of alarm measured value and alarm code are indicated alternately. Parameter is indicated during programming process.

**Decimal point:** Indication of decimal value.

**REVERSE:** LED for reverse flashes if at least one relay with this function was activated. Number of flash signals indicates number of relays activated with Reverse. Flash signals are interrupted by a pause of 2 seconds.

**DIRECT:** LED for direct flashes if at least one relay with this function was activated.

**SEL-key:** SEL indicates and chooses set-point.

**"PRG/MUTE"-key:** In case of alarm signal buzzer is switched off by means of PRG/Mute-key.

**"Up"-key:** Use UP-key to enlarge set-point or parameter values.

**"Down-key":** Use DOWN-key to reduce set-point or parameter values. If measured value is indicated by sensor 1 measured value of sensor 2 (if existent) can be indicated on NTC input version by pressing Down-key.

# Adjustment of controller by manufacturer

**Switching stages adjusted by manufacturer**:

**Stage 1:** Set-point ST1 is set on 20° C by factory. Relay switches on cooler as soon as set temperature is exceeded.

**Stage 2:** Relay switches on heating as soon as set temperature is too low.

# Indication on display

During normal operation display indicates actual values measured by sensor of medium.

# Temperature adjustment of the medium

**Set-point:**

1. Press key SEL for approx. 5 seconds. Indication display: „ST 1“
2. Let go SEL-key. Indication display: set-point 1
3. Use keys UP and DOWN to adjust set-point 1.
4. Press SEL-key. Indication display: „ST 2“
5. Press SEL-key to return to operation mode.

| Parameter | Set point | Description |
|---|---|---|
| ST1 | 120°C | Set-point: cooling<br>Can be changed within limitations given by factory ( -10 at 25°C ) |
| ST2 | | Set-point: heating<br>Can be changed within limitations given by factory ( -10 at 40°C ) |

Maximum temperature of the medium is limited on 40° C by controller.

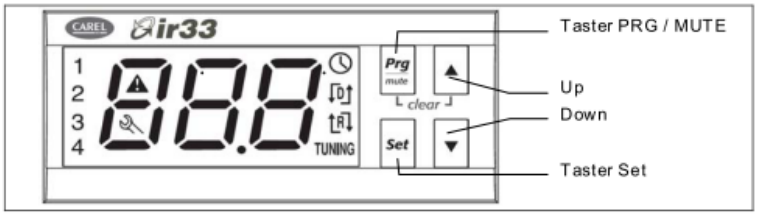
**Hysteresis:** Hysteresis is set by manufacturer and must not be changed by customer.

**Correction of failures**

| Indication | Description | Cause | Correction |
|---|---|---|---|
| | | | |
| Er0 | Failure: Sensor | Sensor cable broken or short-circuited<br>Connection failure<br>Sensor defective | Check connections between sensor and thermostat<br>Check sensor signal NTC = 10 kΩ at temperature of 25°C |
| Er1 (NTC) | Failure: Sensor NTC 2 | As described for Er0, only for room sensor | As described for Er0, only for NTC 2 |
| Er2 | Failure : Store | Current supply interrupted during programming process (indication of alarm) | In case failure is not corrected, exchange unit |
| Er4 | Alarm „HIGH“ | Temperature of medium exceeds +42° C | Temperature of medium too high |
| Er5 | Alarm „LOW“ | Temperature of medium below -12° C | Temperature of medium too low |

**Attention:**
In case of failure, acoustic signal and indication of failure must be reset by means of key PRG (Annotation: indication of failure disappears only if failure is corrected). Delay of alarm (Mode 5 only) is reset automatically if reason for alarm is not given any more. Manual resetting may be required for parameters P27 (Er4 and Er5) and C29 (Er3) only (see technical instruction). In case of failure indication: Er0, Er1 and Er2 normal function of the controller is restored again as soon as the reason for failure indication is not given any more.

## Regulator: Carel IR33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**Switching stages adjusted by manufacturer:**

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# Indication on display

During normal operation display indicates actual values measured by sensor of medium.

# Temperature adjustment of the medium

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5. Press SEL-key to return to operation mode.

| Parameter | Description |
|---|---|
| ST1 | Set-point: cooling<br>Can be changed within limitations given by factory ( -10 at 25°C ) |
| ST2 | Set-point: cooling<br>Can be changed within limitations given by factory ( -10 at 40°C ) |

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**Correction of failures**

| Indication | Description | Cause | Correction |
|---|---|---|---|
| | | | |
| Er0 | Failure: Sensor | Sensor cable broken or short-circuited<br>Connection failure<br>Sensor defective | Check connections between sensor and thermostat<br>Check sensor signal NTC = 10 kΩ at temperature of 25°C |
| Er1 (NTC) | Failure: Sensor NTC 2 | As described for Er0, only for room sensor | As described for Er0, only for NTC 2 |
| Er2 | Failure : Store | Current supply interrupted during programming process (indication of alarm) | In case failure is not corrected, exchange unit |
| Er3 | Digital input | Interrupted safety chain | Complete safety chain (see electrical diagram) |
| Er4 | Alarm „HIGH“ | Temperature of medium exceeds +42° C | Temperature of medium too high |
| Er5 | Alarm „LOW“ | Temperature of medium below -12° C | Temperature of medium too low |

**Attention:**
In case of failure, acoustic signal and indication of failure must be reset by means of key PRG (Annotation: indication of failure disappears only if failure is corrected). Delay of alarm (Mode 5 only) is reset automatically if reason for alarm is not given any more. Manual resetting may be required for parameters P27 (Er4 and Er5) and C29 (Er3) only (see technical instruction). In case of failure indication: Er0, Er1 and Er2 normal function of the controller is restored again as soon as the reason for failure indication is not given any more.

**Description how to leave the menu „Displaying inputs“ on the IR33 controller**

Status 17.09.14

By pressing the button ▼ you can enter the menu of displaying the inputs and their actual values.

- b1: actual value probe 1
- b2: actual value probe 2 (unused)
- di1: digital input 1 (unused)
- di2: digital input 2 (unused)
- St1: Actual set point 1
- St2: Actual set point 2

The display changes automatically between the name and the actual value of the input.



You can change between the displayed inputs by pressing the buttons ▼ and ▲

**You can only return to the standard-menu when the value *b1* is displayed by pressing the *Set*-button for 3 seconds.**

If there is displayed „***nO***“, the input in this unit is not existent or the value not configured. The massage „**OPn**“ signals an open input, the massage „**CLO**“ means that this input is closed.

After leaving this menu, the actual measured value will be displayed.

## Regulator: Eliwell Free-Smart SMP5500


# 1. Switching ON/OFF:

Press and hold the **esc**-key (> 3 seconds) to switch from the operating status "OFF" to "ON" and vice versa.

In the operating status "Off", the display shows **OFF**; this symbol lights up in the operating status "ON": ⏻

# 2. Pump inching mode:

The pump can be operated in inching mode in the operating status "Off". If you press and hold the "**Down**"-key for more than 3 seconds, the pump starts and continues to operate until the key is released.

# 3. Normal display:

The **ACTUAL value** is displayed.

# 4. Adjusting the set-point:

**a. With fixed value control (absolute):**

Briefly press **set** 1x ⇒ **SET** appears on the display.
Briefly press **set** 1x ⇒ **St1** (cooling set-point) appears on the display.
Briefly press **set** 1x ⇒ The set-point appears on the display and can be changed with the "**Up**"- and "**Down**"-keys. The set-point is confirmed with **set**. The display returns to **St1**.
Briefly press **esc** 2x ⇒ The controller returns to the normal display.

**b. Reference-guided control (difference):**

The set-point consists of the addition of the room temperature and **St1**.

Briefly press **set** 1x ⇒ **Set** appears on the display.
Briefly press **set** 1x ⇒ **St1** (cooling set-point) appears on the display.
Briefly press **set** 1x ⇒ The set-point appears on the display and can be changed with the "**Up**"- and "**Down**"-keys. The set-point is confirmed with **set**. The display returns to **St1**.
Briefly press **esc** 2x ⇒ The controller returns to the normal display.

# 5. Optional functions

**a. Switching between heating and cooling**

Press and hold "**Up**" 1x ⇒ lights up on the display, the system is in heating mode
Press and hold "**Down**" 1x ⇒ lights up on the display, the system is in cooling mode.

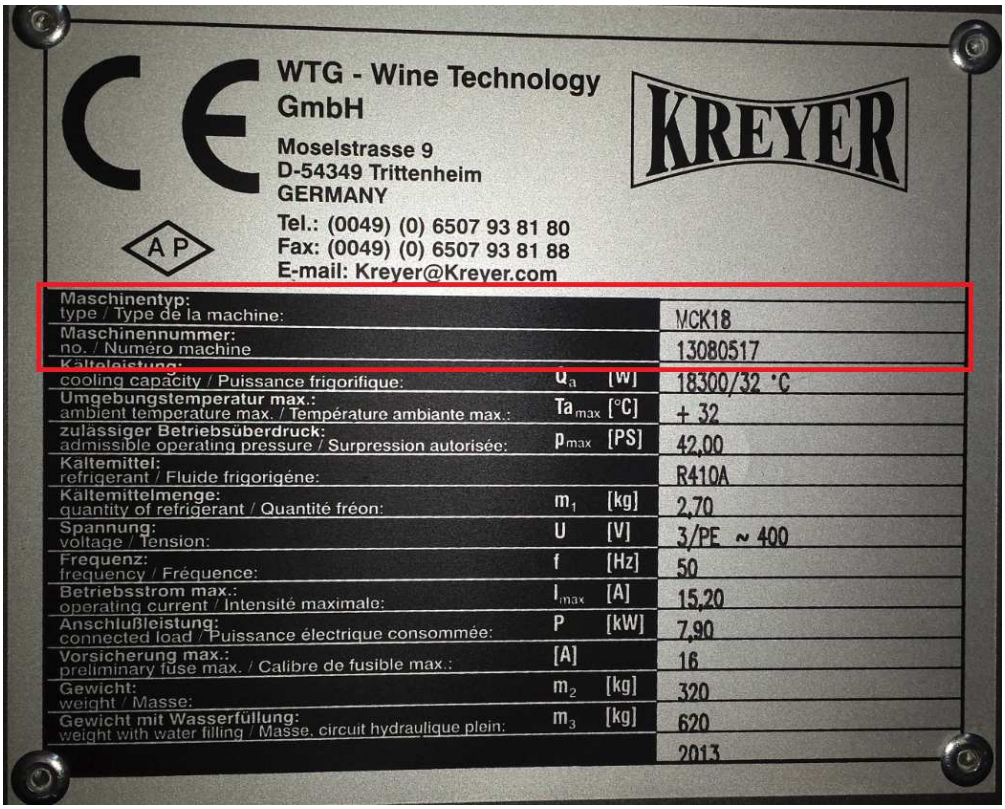
**b. Self-optimisation of the PID parameters (auto-tune)**

Press and hold the **set**-key (> 3 seconds); the controller now shows **tune** and tries to define the optimal PID parameters. Once self-optimisation is completed, the display returns to the actual value.

To cancel the self-optimisation before it is complete, press and hold the **esc**-key (> 3 seconds).

# 6. Clear errors:

Press "**Up**" + "**Down**"-keys at the same time.



WTG - Wine Technology GmbH
Moselstrasse 9
D-54349 Trittenheim
GERMANY
Tel.: (0049) (0) 6507 93 81 80
Fax: (0049) (0) 6507 93 81 88
E-mail: Kreyer@Kreyer.com

| | | | |
|---|---|---|---|
| Maschinentyp: type / Type de la machine: | | | MCK18 |
| Maschinennummer: no. / Numéro machine | | | 13080517 |
| Kälteleistung: cooling capacity / Puissance frigorifique: | $Q_a$ | [W] | 18300/32 °C |
| Umgebungstemperatur max.: ambient temperature max. / Température ambiante max.: | $Ta_{max}$ | [°C] | + 32 |
| zulässiger Betriebsüberdruck: admissible operating pressure / Surpression autorisée: | $p_{max}$ | [PS] | 42,00 |
| Kältemittel: refrigerant / Fluide frigorigène: | | | R410A |
| Kältemittelmenge: quantity of refrigerant / Quantité fréon: | $m_1$ | [kg] | 2,70 |
| Spannung: voltage / Tension: | U | [V] | 3/PE ~ 400 |
| Frequenz: frequency / Fréquence: | f | [Hz] | 50 |
| Betriebsstrom max.: operating current / Intensité maximale: | $I_{max}$ | [A] | 15,20 |
| Anschlußleistung: connected load / Puissance électrique consommée: | P | [kW] | 7,90 |
| Vorsicherung max.: preliminary fuse max. / Calibre de fusible max.: | [A] | | 16 |
| Gewicht: weight / Masse: | $m_2$ | [kg] | 320 |
| Gewicht mit Wasserfüllung: weight with water filling / Masse, circuit hydraulique plein: | $m_3$ | [kg] | 620 |
| | | | 2013 |

**In case of technical questions or problems please <u>always</u> indicate the machine type and its serial number - see red box in the picture above! You will find this information on the type plate mounted on the outer side of each machine.**

**It is recommended to save this manual and the operation manual of your unit within reach and to keep another copy in your office as back-up.**

**For questions and assistance please contact your local MCK and Chilly Max provider or contact us at KREYER Germany:**

**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