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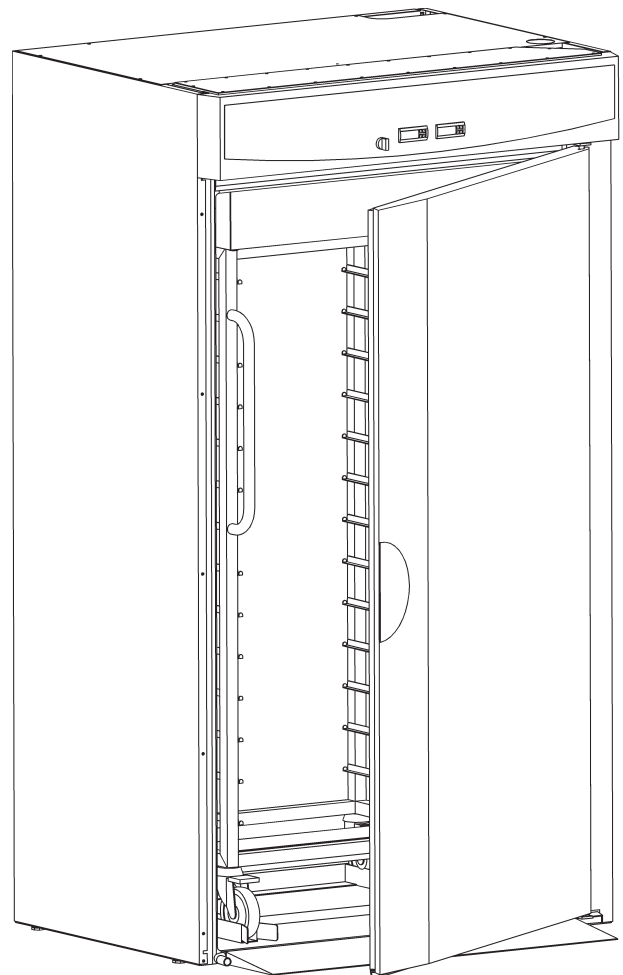
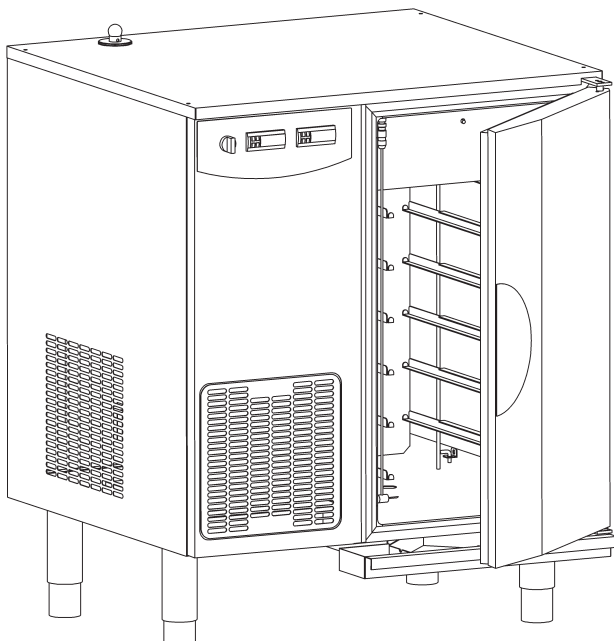
iPinium[®]

Thawing cabinet

Tina 1200

Tina 180

Service manual



DOC.NO
EDITION 1

STO 9192-02
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General instructions

If the instructions in this and other documentation for the equipment are not followed, it could endanger safety and void the supplier's guarantee and liability for the product.

- Read the instructions in this document carefully, since they contain important safety information about installation, operating reliability, use and maintenance of the product. Keep these documents so that they are available to relevant users.
- Installation and testing must be carried out by technicians who are trained for such work, and in accordance with the manufacturer's instructions.
- The product must be installed and connected to the necessary services in accordance with the relevant standards and directives.
- All servicing, maintenance and repairs must be carried out by technicians who are trained for such work. Use only original spare parts. See the Spare parts catalogue*.
- This product may only be operated and maintained by trained personnel (operators).

* Not supplied. May be ordered from the manufacturer or manufacturer's representative.



CE directives

Tina 1200R/Tina 180 have been manufactured in accordance with EU directives LVD 2006/95/EG, EMC 2004/108/EG

Safety instructions

- Switch off the power before attempting to rectify faults or operating problems with the thawing cabinet.
 - Set the **selector switch** in the **0** position. (See Operating Instructions)
 - Switch off the **Main circuit breaker** (NOT found on the thawing cabinet).



Warning! Electricity!

Warning sign indicates the thawing cabinet's electrical enclosure. The door of the electrical enclosure and other cover panels may only be opened by technicians who are trained for such work.

Warning!

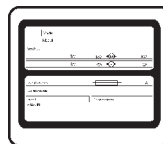
- The outside of the thawing cabinet should not be rinsed.
- If water comes into contact with live components it could be fatal. Always take care when cleaning, especially when close to electrical components.
- Use a damp cloth for cleaning.



Warning!

Note that the interior surfaces of the thawing cabinet can become hot during the cleaning program and cause burns if touched.

Also take care when the cabinet door is opened. Heat escapes and can cause personal injury.



Technical data

Rating plate

The product number for the thawing cabinet can be found on the rating plate, which is placed on the cover plate of the thawing cabinet and inside of the electrical cabinet, as well as on the EU declaration of conformity supplied with the machine on delivery.

Noise level: <70dB
Enclosure class: IP44

Functional specification of the Tina thawing cabinet

Thawing

1. Start up

Turn selector switch to 1. (thawing)

Fan no.1 starts.

Steam generator is emptied and refilled.

The probe detects that the frozen products have a temperature below set target temperature (0-1°C). The thawing process starts.

Fan no.2 starts.(**Tina 1200 only**)

The frozen products lower the temperature in the cabinet.

2. Heating up phase

As the cabinet temperature is decreased below 7°C the steam generator starts.

After 5 minutes the extra heating element is also energized.(**Tina 1200**)

As the probe has been detecting a temperature below set target temperature for a period of 10 minutes the cabinet temperature is increased to 15°C by the steam generator.

After 5 minutes the heating element is energized. (**Tina 1200**)

The cabinet then maintains 15°C mainly by using the steam generator. (The heating element operates with a 5 min. delay(**Tina 1200**))

When the frozen products reaches target temperature minus 3°C, the cabinet temperature is limited to 7°C.

If the cabinet temperature stays over 7 or 15°C for more than 5minutes, the refrigeration system will lower the cabinet temperature.

The product surface temperature then increases to set target temperature (0-1°C).

3. Temperature equalization phase

As the probe detects set target temperature the steam generator, the heating element and fan no.2 is shut of.

The products surface temperature then lowers, as the product core is still cold. As the probe detects a temperature below the target temperature the heating up phase re-starts from step 2.

If the probe has not detected a temperature below set target temperature for 5 minutes the cooling system starts and lowers the cabinet temperature to 2°C.

4. Cold storage

Step 2 and 3 is automatically repeated several times until the probe detects that the surface temperature has stabilized on the target temperature.

The cabinet then keeps a temperature of 2°C.

Remaining ice crystals in the core of the product is now slowly thawed without affecting the surface temperature. (Temp.difference between core and surface of product <2°C)

The steam generator is energized for 4 minutes every 40minutes, this to prevent dry out of the food.

The heating element is energized for 3 minutes every 30min, this to reduce ice on the evaporator.

As this heating element is on the cooling system and the steam generator is automatically switched off.(**Tina 1200**)

5. Thawing ready.

Cleaning program

Turn selector switch to cleaning

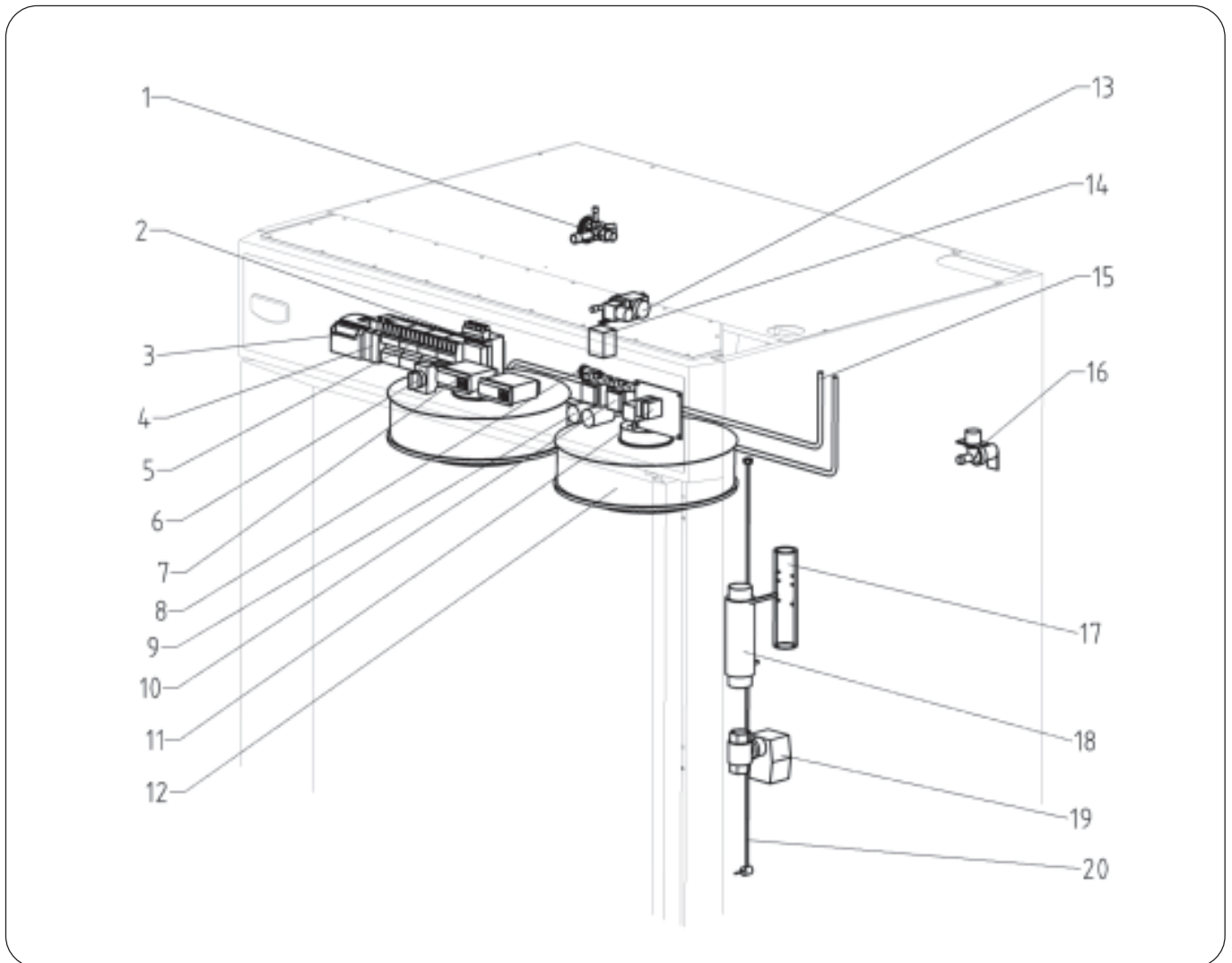
Steam generator is emptied and refilled.

The fans starts.

Both fans start.(**Tina 1200**)

The steam generator and the heating element(**Tina 1200**) heat the cabinet to 80°C and keep it there for 5 minutes. Generator, element(**Tina 1200**) and fans are then shut of and the cleaning phase is done.

Component placement Tina1200



1. Expansion valve

2. Fan transformer

3. Logic module

4. Timer relay

5. Contactor

6. Selector switch

7. Temp. regulator

8. Fuse

9. Condenser

10. Transformer, temp. regulator

11. Level control PCB

12. Fan

13. Solenoid valve, cooling

14. Overheating protection

15. Air heating element

16. Solenoid valve, water

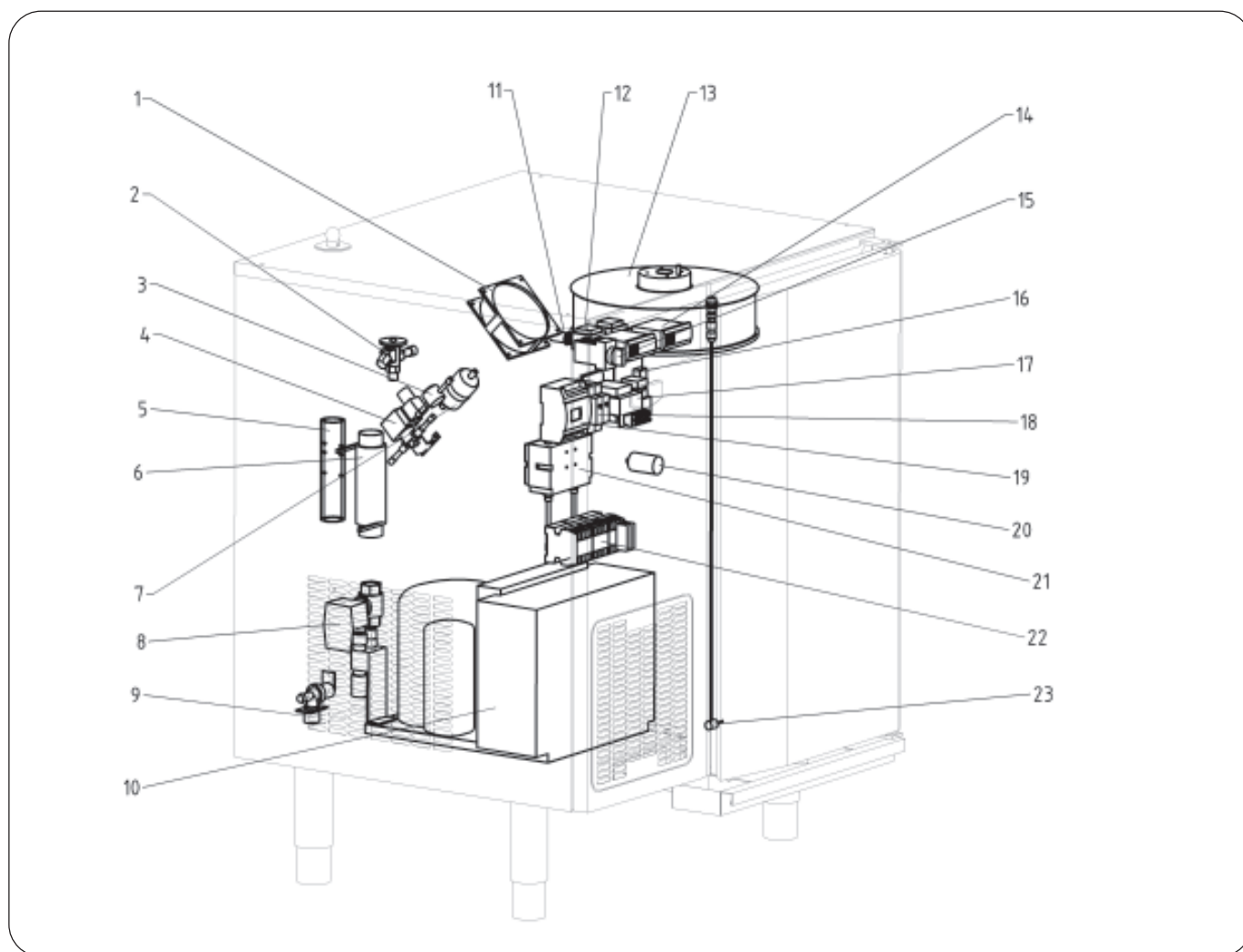
17. Level gauge

18. Tube heater

19. Powered ball valve

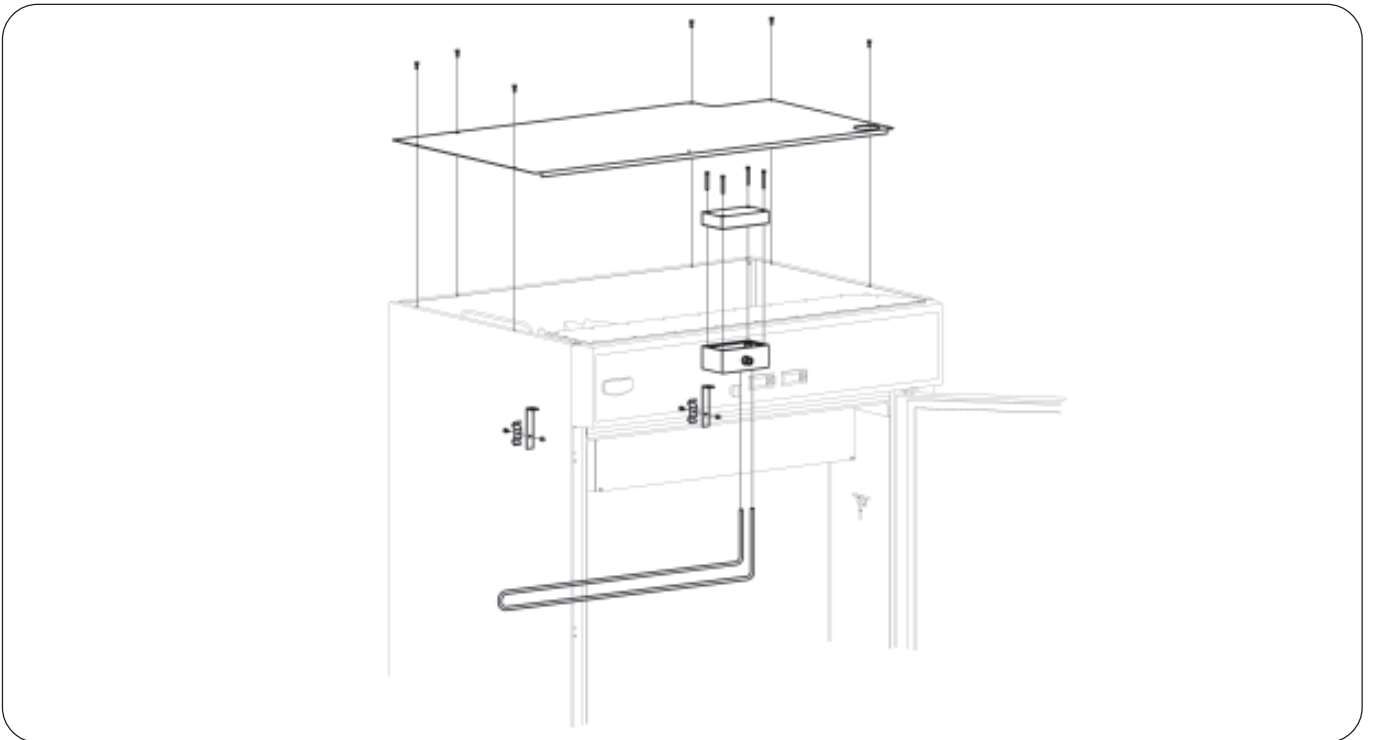
20. Surface probe sensor

Component placement Tina 180

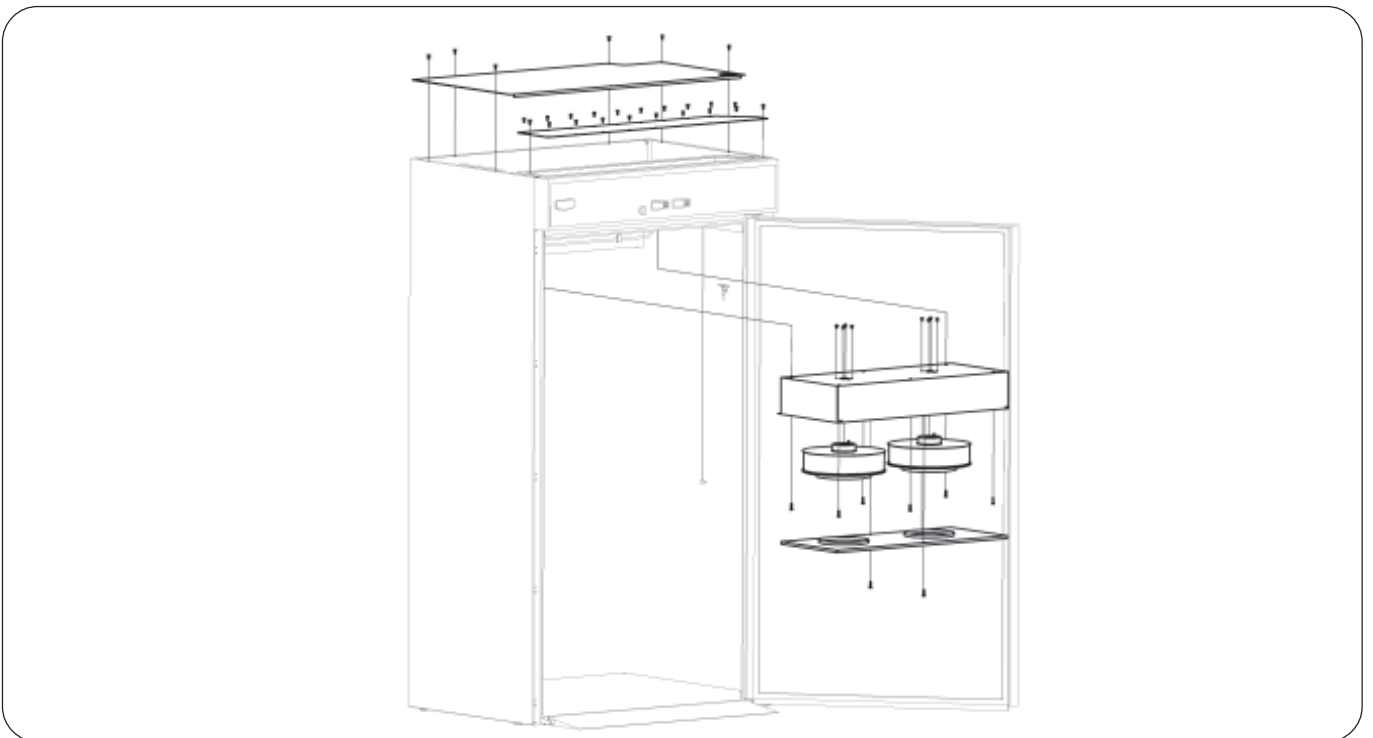


- | | |
|----------------------------|--------------------------------------|
| 1. Cooling fan | 12. Transformer, temp. regulator |
| 2. Expansion valve | 13. Fan |
| 3. Level glass | 14. Temp. regulator |
| 4. Solenoid valve, cooling | 15. Selector switch |
| 5. Glass gauge | 16. Level control PCB |
| 6. Tube heater | 17. Fan transformer |
| 7. Drying filter | 18. Timer relay |
| 8. Powered ball valve | 19. Logic module |
| 9. Solenoid valve, water | 20. Capacitor |
| 10. Compressor unit | 21. High and low pressure pressostat |
| 11. Fuse | 22. Contactor |
| | 23. Surface probe sensor |

Replacing the air heating element Tina1200



Loosen the hygiene top. Remove the cover on the enclosure to the air heating element's electrical connection. Disconnect the cables and washers from the air heating element. Open the door and lift out the bottom guide and air distributor plate. Fold down the cover. Unscrew the air element from its mounting and pull it down through the top. Fit the new air heating element in the reverse order.

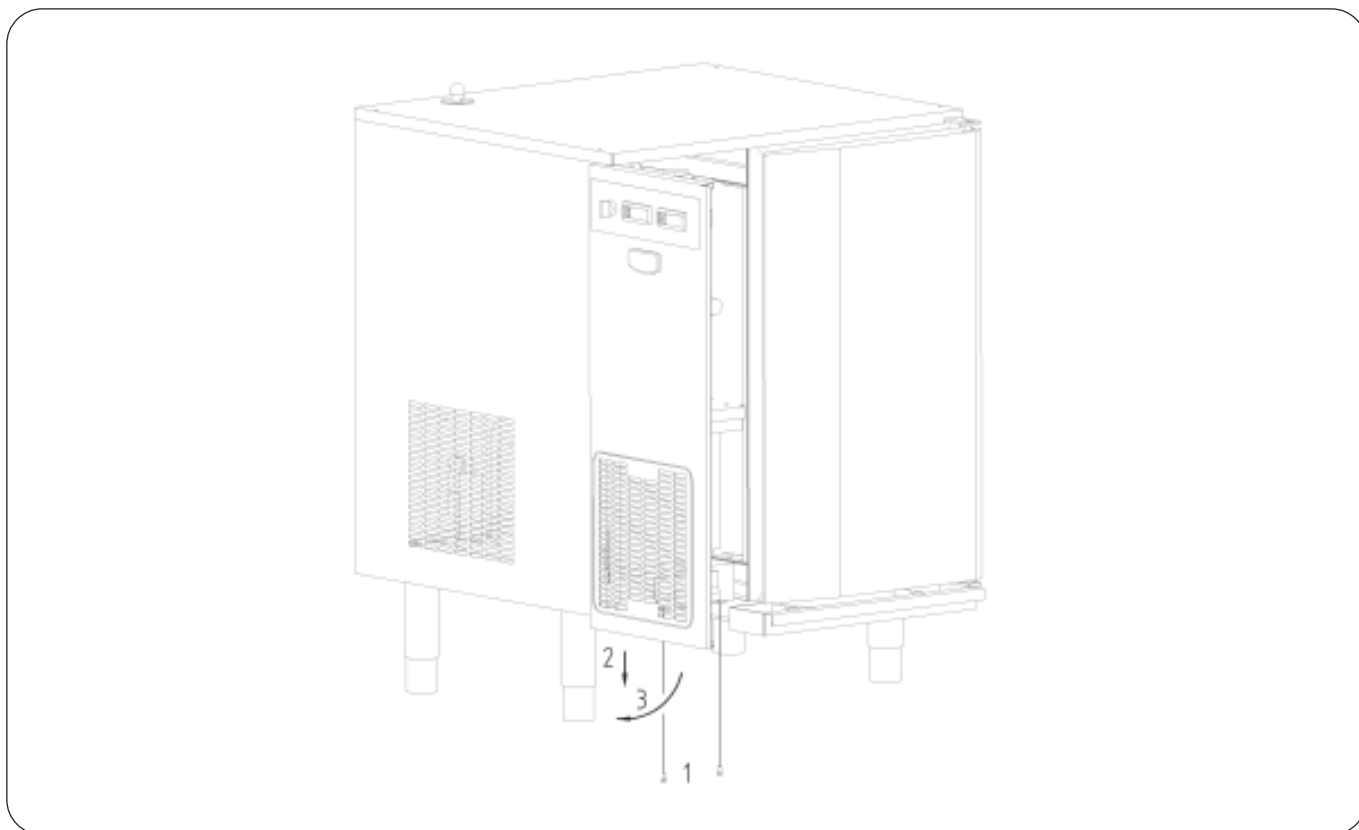


Replacing the fan Tina1200

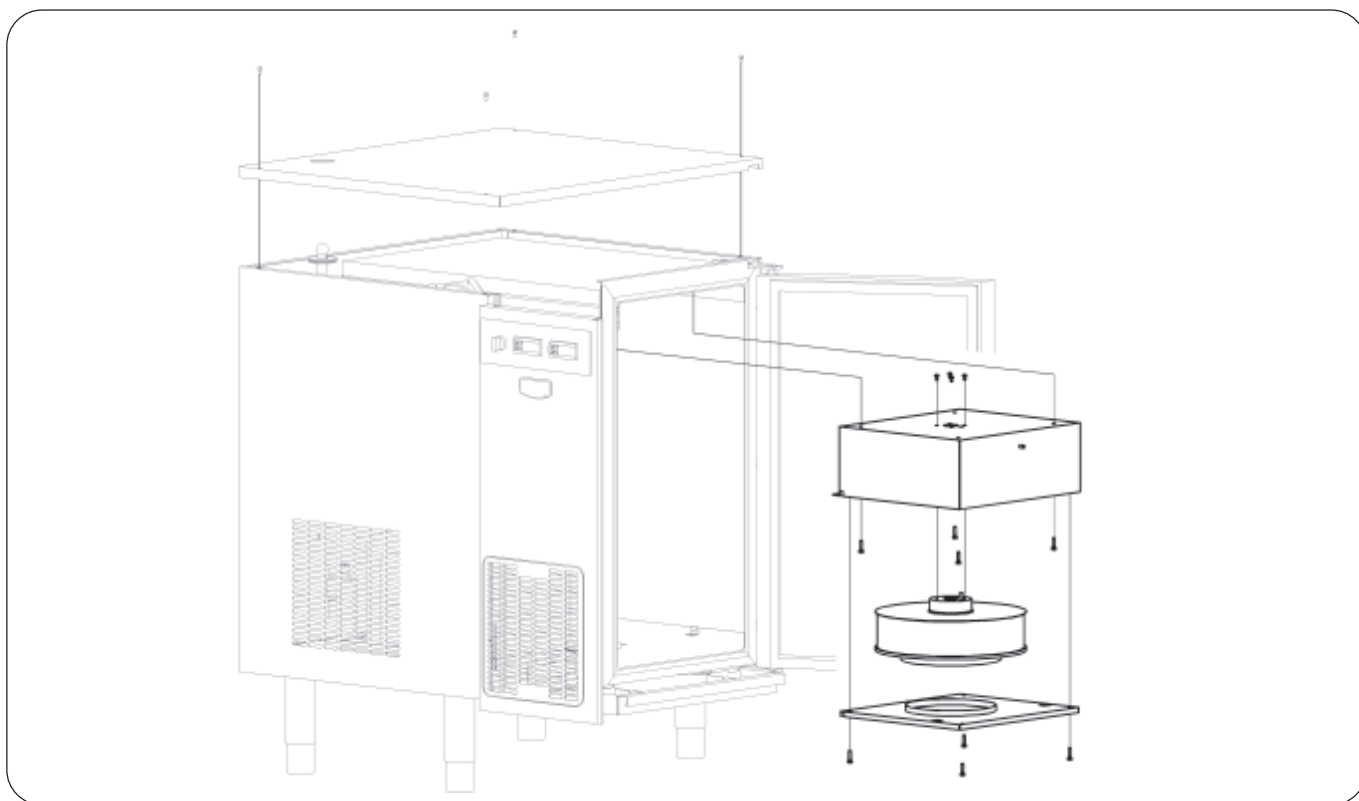
Loosen the electrical cover and the hygiene top. Disconnect both fan cables connected to the terminal in the electrical enclosure. Open the door and lift out the bottom guide and air distributor plate. Fold down the cover. Unscrew and move the cavity probe and overheating protection fitted to the underside of the fan cover to one side. Remove the fan cover. Dismantle the complete fan enclosure by unscrewing the 6 screws in the top and then carefully lift it out, without damaging the cables. (This should be done with the help of a colleague due to the weight of the fan enclosure.) Replace the faulty fan by removing the screws on the top of the fan enclosure. Replace the seal if damaged. Assemble in the reverse order.

NOTE! The connection cables to the fan package should be routed from above when assembling the fan package to avoid damaging the cables.

Opening the front panel Tina180



Loosen the two screws on the underside of the front panel. Pull down and swing open the front panel.



Replacing the fan Tina180

Open the front panel and remove the top. Disconnect the fan cables connected to the terminal. Open the door and remove the shelf-guides, air distributor plate and cover plate. Unscrew and move the cavity probe fitted to the underside of the fan cover to one side. Remove the fan cover. Dismantle the complete fan enclosure by unscrewing the 4 screws in the top and then carefully lift it out, without damaging the cables. Replace the faulty fan by removing the screws on the top of the fan enclosure. Replace the seal if damaged. Assemble in the reverse order.

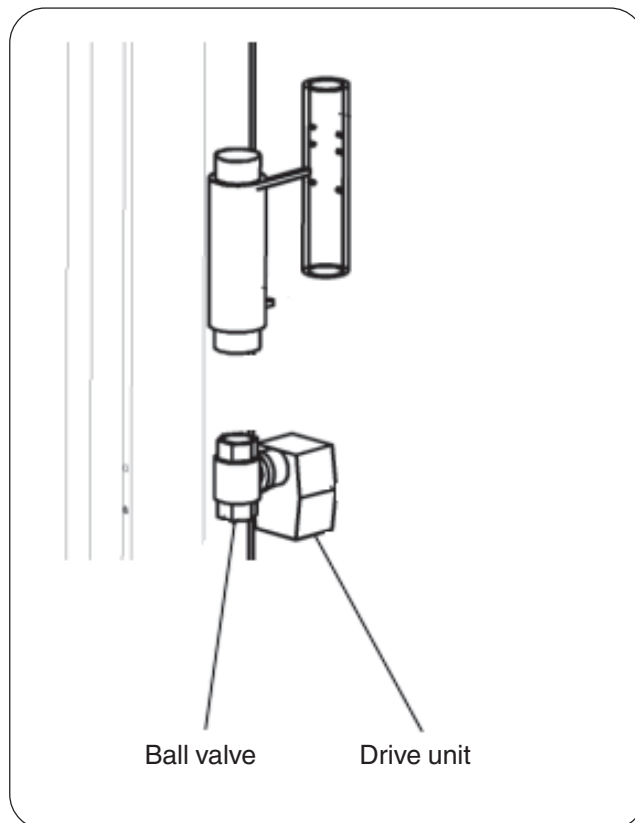
Function description of the Powered ball valve (drain valve)

The powered ball valve opens and closes automatically every time the thawing cabinet starts or using the disinfection/cleaning program. The process takes approximately 2.5 minutes

Replacement of the Powered ball valve (drain valve)

The Powered ball valve is delivered always complete with both drive unit and ball valve. In case of function failure delime first, if the function disorder still remains replace the drive unite first (marked in the electrical wiring diagram as M4).

- Switch off the power before attempting to rectify faults or operating problems with the thawing cabinet.
- Set the **selector switch** in the **0** position. (See Operating Instructions)
- Switch off the **Main circuit breaker** (NOT found on the thawing cabinet).
- Dismantle the electrical connection of the valve.
- Separate the drive unit and the ball valve by using the screw in the side of the valve.
- Replace the drive unit.



Replacing the logic module, PLC1

Open the front panel (Tina180) or dismantle the electrical cover from the electrical enclosure (Tina1200). Disconnect the cables to the logic module. Replace the old logic module with the new one and connect the cables. Turn the selector switch to position 1, and check that the display shows:

Tina

Rev:X (X=0-5)

ST02102-XX (XX=00-05)

Steeltech

If not, use the **▲, ▼, ESC** and **OK** buttons to start the module. (Run-mode)

Refit the front panel (Tina180) or fit the electrical cover on he electrical enclosure (Tina1200).

Trouble shooting, logic module, PLC1

The logic module receives input signals from the thermostats B1 and B3, these should be checked first when trouble shooting.

To trouble shoot the PLC-outputs proceed as follows:

The food and cavity temperature should be between +5°C and +70°C.

Turn the selector switch to cleaning mode, the outputs 1, 2 and 4 should be made.

Turn the selector switch to position 1, after 5 minutes output 3 should be made.

Setting, timer relay, K11

The top screw should be set to 1-10s.

The middle screw should be set to 7.

The lower screw should be set to A.

Setting, timer relay, K10

The top screw should be set to 6-60s.

The middle screw should be set to 10.

The lower screw should be set to A.

Replacing the temperature regulators, B1 and B3

From Serial number from Serial number 094871850 will the new series of the temperature regulators called IR33 used and supplied as spare part for the past IR32 series. A complete replacement kit with associated parts and electrical schedule will be delivered.

Spare parts kit:

Programed Surface probe sensor temp. regulator, B1	ST0857000
Programed Cavity probe temp. regulator, B3	ST0857001

Note!

When changing from IR32 to IR33 be aware that the mains voltage on the tem.regulator is changed from 12/24 Vac-dc to 230V. Disassemble the transformer associated to the temperature regulators and connect as supplied electrical schedule on page 11.

- . Open the front panel for Tina 180 or top plate for Tina 1200. Press together the shanks on the mounting frame at the same time as pushing the temp. regulator forwards and out of the front. Disconnect the cables to the temperature regulator.
- . Dismount the transformer T11 for B1 or T13 for B3 regulator.
- . Remove the associated red wires 026 and 027 for B1 or 028 and 029 for B3.
- . Attach the supplied terminal X30 on the transformers place.
- . Connect the temperature regulator with supplied cables according to electrical schedule on page 11.
- . Install the new temperature regulator in reverse order.

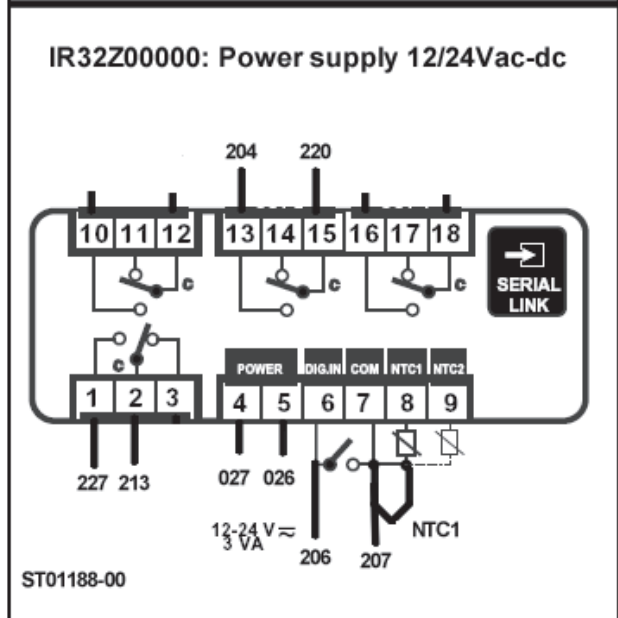
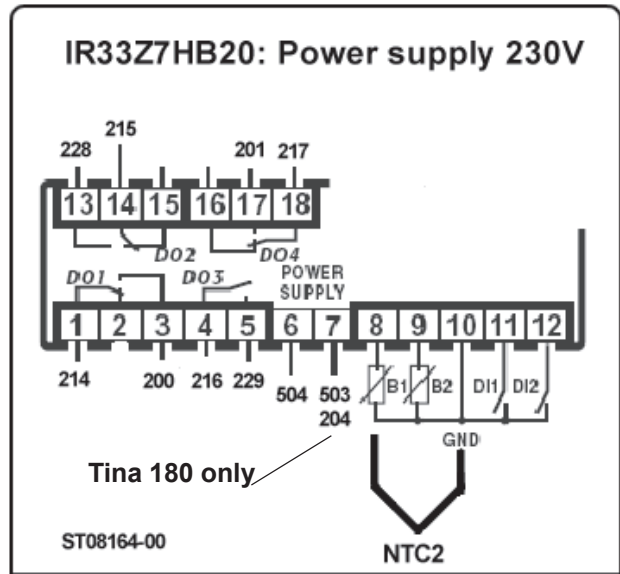
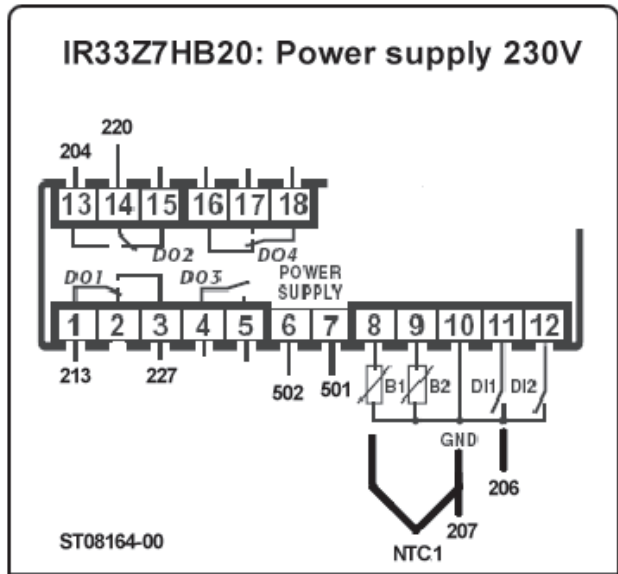
- . When installation of new IR 33, reset the temperature regulator first by press and hold the PRG / mute button while turning the power ON by means the main switch. Wait until "Std" is displayed. Release the PRG / mute button. Restart the thawing cabinet.
- . Program the temperature regulator according to the parameter list for IR33 temperature regulator.
- . Calibrate the temperature regulator and adjust by changing parameter P14. (See the procedure on page 13)



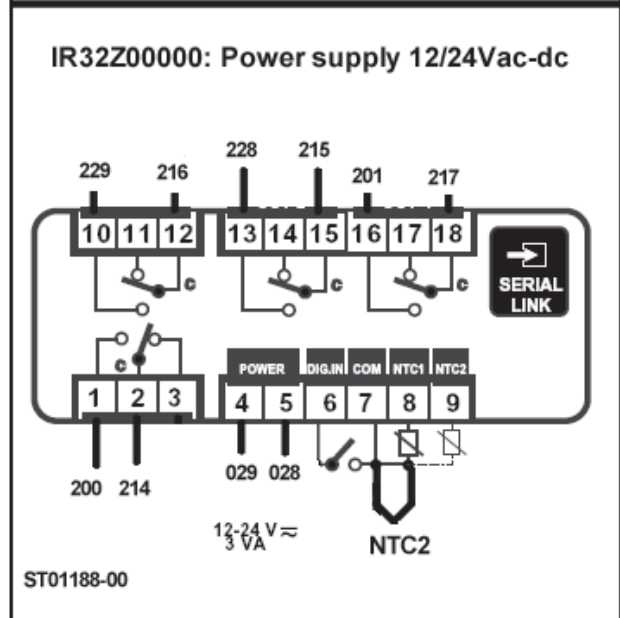
NOTE! The temperature regulator for surface food probe is not locked to set up the set point values st1. When pressing ▲ OR ▼ in normal mode, the digital inputs "b1" (sensor 1) ...and its value (alternate) will display, which is not active in the Thawing cabinet. Pressing the other buttons, an error message "n0" will display, scroll to "b1" and hold the Set button for 3 seconds to resume normal operation mode.

Any alarm is reset and removed by pressing the PRG / mute and UP together in 5 seconds.

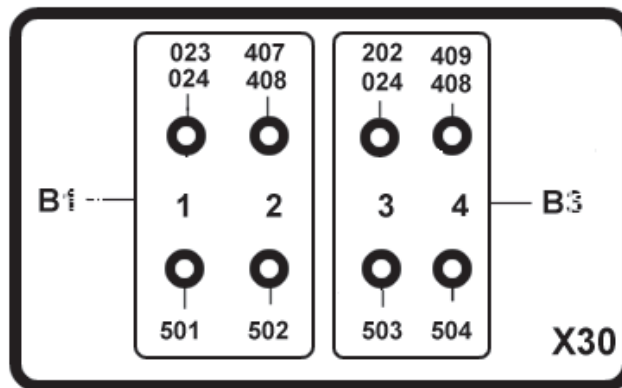
Wiring diagram temp. regulators, B1 and B3



B1(NTC1)



B3 (NTC2)



Programming the temperature regulator

To reset the temperature regulator **IR 33**, press and hold the **PRG / mute** button while turning the power ON by means the main switch. Wait until "**Std**" is displayed. Release the **PRG / mute** button. Restart the thawing cabinet.

- Program the temperature regulator according to the parameter list for **IR33** temperature regulator.
- Calibrate the temperature regulator and adjust by changing parameter **P14**. (See the procedure on page 13)

Programming the surface probe sensor temp. regulator, B1

Change the parameters as set out in the list of parameters, start setting C33 to 1 (Special programming). Restart the Tina cabinet.

Change the parameters as set out in the list of parameters on page 14-17 for IR32 and page 18-19 for IR33.

Change the set point values ST1 and ST2 (See the list of parameters).

Programming is complete.

Restart the Tina cabinet.

Programming the cavity probe temp. regulator, B3

Change the parameters as set out in the list of parameters, except C50, start setting C33 to 1 (Special programming) and C0 to 1(IR33). Restart the Tina cabinet.

Change the parameters as set out in the list of parameters on page 14-17 for IR32 and page 18-19 for IR33.

Programming is complete.

Restart the Tina cabinet.

Changing parameters (See the list of parameters):

Press **PRG/mute** and **Set(SEL on IR32)** simultaneously for 5 seconds. The display then shows **0**.

Press **▲** until the display shows 77 (factory set pass code).

Press **Set**. The display then shows the first parameter **C0** in the list of parameters. To scroll through the list of parameters press **▲** or **▼**. Go to the parameter to be changed.

Press **Set** to show the parameter value on the display. Change the value using **▲** or **▼**.

Press **Set** to return to the list of parameters.

When the changes have been made press **PRG/mute** to store the value in the temp. regulator memory.

To save the values turn OFF the Tina cabinet by setting the main switch to position 0.

Trouble shooting, the surface probe sensor temp. regulator, B1

1. IR32

Output 1 (terminals 2 and 1), should be made when the temperature is below ST1. (the set point value, for example, +1°C)

Output 2 (terminals 15 and 13), should be made when the temperature is below ST1-3°C. (for example, +1°C - 3°C = -2°C)

2. IR33

Output 1 (terminals 3 and 1), should be made when the temperature is below ST1. (the set point value, for example, +1°C)

Output 2 (terminals 14 and 13), should be made when the temperature is below ST1-3°C. (for example, +1°C - 3°C = -2°C)

Trouble shooting, the cavity probe temp. regulator, B3

1. IR32

Output 1 (terminals 2 and 1), should be made when the temperature is above +2°C.

Output 2 (terminals 15 and 13), should be made when the temperature is below +7°C.

Output 3 (terminals 12 and 10), should be made when the temperature is below +15°C.

Output 4 (terminals 18 and 16), should be made when the temperature is below +80°C.

2. IR33

Output 1 (terminals 3 and 1), should be made when the temperature is above +2°C.

Output 2 (terminals 14 and 13), should be made when the temperature is below +7°C.

Output 3 (terminals 4 and 5), should be made when the temperature is below +15°C.

Output 4 (terminals 18 and 17), should be made when the temperature is below +80°C.

Calibration of the surface temperature sensor

Place the surface probe sensor and a calibrated reference thermometer in a container filled with water at room temperature. Check the difference between the surface probe's display and the reference thermometer. If the difference is greater than 0.1°C, the surface probe sensor must be calibrated.

Calibration procedure:

To access the calibrating mode press the **PRG/mute** buttons for 5 seconds.

P1 (parameter 1) now twinkle on the display.

The calibration parameter is **P14**, Press the **▲** or **▼** buttons until **P14** flashes on the display.

Press the **Set(SEL on IR32)** button to change the parameter, the parameter value can be changed with the **▲** or **▼** buttons.

Correct calibration is performed by either deducting or adding the difference between the temperature values from the surface probe sensor's display and the reference thermometer to the previously set parameter value on **P14**. When the changes have been made press **PRG/mute** in 5 sec. to store the value in the temp. regulator memory.

Example:

The surface probe sensor's display shows **19°C**

The reference thermostat shows **21°C**

When checked the parameter **P14** is set to **+1.0** (Example of calibration at the factory)

To perform correct calibration set **P14** to **+3.0** ($21-19=+2.0$ degrees difference + the previous setting of +1.0 degree)

Calibration of cavity temperature sensor

Place the cavity temp. sensor and a calibrated reference thermometer in a container filled with water at room temperature.

Check the difference between the cavity temp. sensor's display and the reference thermometer. If the difference is greater than 0.2°C, the cavity temp. regulator must be calibrated.

The cavity probe temp. regulator is locked at the factory to prevent unwanted changes.

To unlock the temp. regulator:

Press **PRG/mute** and **Set(SEL on IR32)** simultaneously for 5 seconds. The display then shows **0**.

Press **▲** until the display shows **77** (factory set pass code).

1. IR32

Press **SEL**. The display then shows the first parameter **C0** in the list of parameters.

Scroll through the list of parameters press **▲** or **▼**. Go to the parameter **C50**.

Press **SEL** to show the parameter value **2** (locked position) on the display. Change the value to **3** (unlock position).

Press **SEL** to return to the list of parameters.

The cavity probe can then be calibrated as set out in "Calibration procedure" above.

When the changes have been made, lock the temp. regulator by resetting C50 value from **3** to **2** as set out above.

When the changes have been made press **PRG/mute** to store the value in the temp. regulator memory.

2. IR33

P1 (parameter 1) twinkle on the display.

Scroll through the list of parameters press **▲** or **▼**. Go to the parameter **P14(calibrating value)**.

Press **Set** to show the parameter value on the display. Change the value press **▲** or **▼**.

Press **SEL** to return to the list of parameters.

In order to achieve proper calibration, the difference between the temperature values from the display for surface temperature sensor and reference thermometer either deducted from or added to the previously set parameter value at P14.

When changes are complete press the **PRG / mute** for 5 seconds to store the value on the memory of the temperature sensor.

List of parameters

Temperature regulator for Surface probe sensor (B1) IR32 Z00000, upp to Serial number: 094871848

Parameter	Setting, °C	Setting, °F	Description
St1	1.0	34.0	Set point value 1
St2 (func. 6,7,8,9)	0.0	0.0	Set point value 2
C0	2	2	Function mode
P1	10.0	20.0	Difference 1
P2 (func. 3,4,5,7,8,9)	2.0	2.0	Difference 2
P3 (func. 3,4,5)	2.0	2.0	Dead zone
C4	0.5	0.5	Compensation coefficient
C5	0	0	Control type P or PI
C6	5	5	Time between 2 stages
C7	0	0	Time between switching on same stage
C8	0	0	Minimum down period in stage
C9	0	0	Minimum operating time in stage
C10	0	0	Relay function with sensor fault: 0= All relays off 1= All relays on 2= Only chilling stage on 3= Only heating stage on
C11	0	0	Rotation func 1.2.6.7.8 model W & Z: 0= No rotation 1= Default, first on, first off (FiFo) 2= 2+2 rotation (compr. on relays 1 & 3) 3= 2+2 rotation with used relay funct.
C12	20.0	20.0	Time PWM (pulse)-cycle
C13	0	0	Sensor display -control sensor1
P14	0.0	0.0	Calibration
C15	0.0	0.0	Displayed value at lowest current/voltage value
C16	100	100	Displayed value at highest current/voltage value
C17	5	5	Sensor filter
C18	0	1	Temperature unit
C19 (func. 1,2)	0	0	Sensor NTC function: 0= Default 1= Diff NTC1 - NTC2 2= Summer comp. 3= Winter comp. 4= Active comp. with dead zone
C21	-1.0	30	Minimum value St1
C22	2.0	35	Maximum value St1
C23	0.0	0.0	Minimum value St2
C24	0.0	0.0	Maximum value St2
P25	-50	-99	Low alarm limit
P26	90.0	200	High alarm limit
P27	2.0	2.0	Alarm difference
P28	60	60	Alarm delay
C29	2	2	Configuration of digital input1 (not func.6.7.8): 0= Not used 1= Direct alarm with automatic reset. 2= Direct alarm with manual reset 3= Delayed (P28) alarm with man. reset 4= on/off of the controller
C30	0	0	Digital input 2 as above (only IRDR)

Temperature regulator for Surface probe sensor (B1) IR32 Z00000, up to Serial number: 094871848

Parameter	Setting, °C	Setting, °F	Description
C31	0	0	Relay function with digital input alarm same as parameter C10
C32	1	1	Series address
C33	1	1	Special functions (C34- C49): 0= Standard functions 1= Special functions
C34	1	1	Function, relay output1: 0= Not activated 1= Refers to St1 2= Refers to St2 3-14= Different functions with an alarm 15= Timer function
C35	0	0	Relay function, output1: 0= On/of function 1= PWM (Pulse)-cycle
C36	0	0	Activation output1 (+/- percentage share of P1/P2)
C37	1	2	Difference output1 (percentage share of P1/P2) Minus = Chilling on Plus = Heating on
C38	1	1	Function, relay output 2 (see C34)
C39	0	0	Relay function, output 2 (see C35)
C40	-30	-27	Activation. output 2 (see C36)
C41	1	2	Difference output 2 (see C37)
C42	0	0	Function, relay output 3 (see C34)
C43	0	0	Relay function, output 3 (see C35)
C44	-75	-75	Activation. output 3 (see C36)
C45	25	25	Difference output 3 (see C37)
C46	0	0	Function, relay output 4 (see C34)
C47	0	0	Relay function, output 4 (see C35)
C48	-100	-100	Activation output 4 (see C36)
C49	25	25	Difference output 4 (see C37)
C50	4	4	Locking keypad (K) and remote control (F) 0= K off, F on only P-Parameters 1= K on, F on only P-Parameters 2= K off, F off 3= K on, F off 4= K on, F all parameters
C51	0	0	Access code for remote control

List of parameters

Temperature regulator for Cavity probe (B3) IR32 Z00000, upp to Serial number: 094871848

Parameter	Setting, °C	Setting, °F	Description
St1	2.0	36.0	Set point value 1
St2 (func. 6,7,8,9)	2.0	100	Set point value 2
C0	2	2	Function mode
P1	5.0	99.9	Difference 1
P2 (func. 3,4,5,7,8,9)	99.9	99.9	Difference 2
P3 (func. 3,4,5)	2.0	2.0	Dead zone
C4	0.5	0.5	Compensation coefficient
C5	0	0	Control type P or PI
C6	5	5	Time between 2 stages
C7	0	0	Time between switching on same stage
C8	0	0	Minimum down period in stage
C9	0	0	Minimum operating time in stage
C10	2	2	Relay function with sensor fault: 0= All relays off 1= All relays on 2= Only chilling stage on 3= Only heating stage on
C11	0	0	Rotation func 1.2.6.7.8 model W & Z: 0= No rotation 1= Default, first on, first off (FiFo) 2= 2+2 rotation (compr. on relays 1 & 3) 3= 2+2 rotation with used relay funct.
C12	20.0	20.0	Time PWM (pulse)-cycle
C13	0	0	Sensor display -control sensor1
P14	0.0	0.0	Calibration
C15	0.0	0.0	Displayed value at lowest current/voltage value
C16	100	100	Displayed value at highest current/voltage value
C17	5	5	Sensor filter
C18	0	1	Temperature unit
C19 (func. 1,2)	0	0	Sensor NTC function: 0= Default 1= Diff NTC1 - NTC2 2= Summer comp. 3= Winter comp. 4= Active comp. with dead zone
C21	-50	-50	Minimum value St1
C22	90.0	90.0	Maximum value St1
C23	-50	-50	Minimum value St2
C24	90	100	Maximum value St2
P25	-20	-4	Low alarm limit
P26	75	167	High alarm limit
P27	35	72	Alarm difference
P28	10	10	Alarm delay
C29	0	0	Configuration of digital input1 (not func.6.7.8): 0= Not used 1= Direct alarm with automatic reset. 2= Direct alarm with manual reset 3= Delayed (P28) alarm with man. reset 4= on/off of the controller
C30	0	0	Digital input 2 as above (only IRDR)

Temperature regulator for Cavity probe (B3) IR32 Z00000, up to Serial number: 094871848

Parameter	Setting, °C	Setting, °F	Description
C31	0	0	Relay function with digital input alarm same as parameter C10
C32	1	1	Series address
C33	1	1	Special functions (C34- C49): 0= Standard functions 1= Special functions
C34	1	1	Function, relay output1: 0= Not activated 1= Refers to St1 2= Refers to St2 3-14= Different functions with an alarm 15= Timer function
C35	0	0	Relay function, output1: 0= On/of function 1= PWM (Pulse)-cycle
C36	20	2	Activation output1 (+/- percentage share of P1/P2)
C37	-20	-2	Difference output1 (percentage share of P1/P2) Minus = Chilling on Plus = Heating on
C38	2	1	Function, relay output 2 (see C34)
C39	0	0	Relay function, output 2 (see C35)
C40	4	7	Activation output 2 (see C36)
C41	1	2	Difference output 2 (see C37)
C42	2	1	Function, relay output 3 (see C34)
C43	0	0	Relay function, output 3 (see C35)
C44	12	21	Activation output 3 (see C36)
C45	1	2	Difference output 3 (see C37)
C46	2	2	Function, relay output 4 (see C34)
C47	0	0	Relay function, output 4 (see C35)
C48	77	74	Activation output 4 (see C36)
C49	1	2	Difference output 4(see C37)
C50	2	2	Locking keypad (K) and remote control (F) 0= K off, F on only P-Parameters 1= K on, F on only P-Parameters 2= K off, F off 3= K on, F off 4= K on, F all parameters
C51	0	0	Access code for remote control

List of parameters

Temperature regulator for Surface probe sensor **IR33 Z7HB20**, from Serial number: 094871850

Parameter	Inställning, °C	Inställning, °F	Beskrivning
St1	1,0	33,8	Set point value 1
St2 (funk. 6,7,8,9)	0,0	32,0	Set point value 2
C0	2	2	Function mode
P1	10,0	18,0	Difference1
C17	5	5	Sensor filter
C18	0	1	Temperature unit
C21	-1,0	30,2	Minimum value St1
C22	2,0	35,6	Maximum value St1
C23	0,0	32,0	Minimum value St2
C24	0,0	32,0	Maximum value St2
P26	90,0	194	High alarm limit
P28	60	60	Alarm delay
C29	2	2	Configuration of digital input1 (not func.6.7.8): 0= Not used 1= Direct alarm with automatic reset 2= Direct alarm with manual reset 3= Delayed (P28) alarm with man. reset 4= on/off of the controller
C30	0	0	Digital input 2 as above (only IRDR)
C33	1	1	Special functions (C34- C49): 0= Standard functions 1= Special functions
C36	-1	-1	Activation output1 (+/- percentage share of P1/P2)
C37	1	1	Difference output1 (percentage share of P1/P2) Minus = Chilling on Plus = Heating on
d35	0	0	Dactivation restriction for output 1
C40	-30	-30	Activation for output 2 (see C36)
C41	1	1	Difference output 2 (see C37)
d38	0	0	Activation restriction for output 2
d39	0	0	Dactivation restriction for output 2
C46	0	0	Function, relay output 4 (see C34)
C50	1	1	Locking keypad (K) and remote control (F) 0= remote control 1= keypad 2= Disabled, from controll program only
C51	0	0	Access code for remote control

List of parameters

Temperature regulator for Cavity probe (B3) **IR33 Z7HB20**, from Serial number: 094871850

Parameter	Inställning, °C	Inställning, °F	Beskrivning
St1	2,0	35,6	Set point value 1
St2 (funk. 6,7,8,9)	50	122	Set point value 2
C0	1	1	Function mode
P1	13,1	23,6	Difference 1
P2 (funk. 3,4,5,7,8,9)	30	54	Difference 2
C10	2	2	Relay function with sensor fault: 0= All relays off 1= All relays on 2= Only chilling stage on 3= Only heating stage on
C17	5	5	Sensor filter
C18	0	1	Temperature unit
C21	-50	-58	Minimum value St1
C22	90,0	194	Maximum value St1
C23	-50	-58	Minimum value St2
C24	90	194	Maximum value St2
P25	-20	-4	Low alarm limit
P26	75	167	High alarm limit
P27	35	63	Alarm difference
P28	10	10	Alarm delay
C30	0	0	Digital input 2 as above (only IRDR)
C33	1	1	Special functions (C34- C49): 0= Standard functions 1= Special functions
C36	7	7	Activation output1 (+/- percentage share of P1/P2)
C37	-7	-7	Difference output1 (percentage share of P1/P2) Minus = Chilling on Plus = Heating on
d35	0	0	Dactivation restriction for output 1
C40	30	30	Activation output 2 (see C36)
C41	8	8	Difference output 2 (see C37)
d38	0	0	Activation restriction for output 2
d39	0	0	Dactivation restriction for output 2
C44	92	92	Activation output 3 (see C36)
C45	8	8	Difference output 3 (see C37)
d42	0	0	Tillslagsbegräsning utgång 3
d43	0	0	Frånslagsbegräsning utgång 3
C46	2	2	Function, relay output 4 (see C34)
C48	96	96	Activation output 4 (see C36)
C49	4	4	Difference output 4(see C37)
d46	0	0	Tillslagsbegräsning utgång 4
C50	2	2	Locking keypad (K) and remote control (F) 0= K off, F on only P-Parameters 1= K on, F on only P-Parameters 2= K off, F off 3= K on, F off 4= K on, F all parameters
C51	0	0	Access code for remote control

Error codes

Alarm	Description	Cause	Temp. regulator action	Resetting	Action
Er0	Sensor1 fault	Faulty sensor signal	Caused by parameter C10	R: Automatic V: manual	Check sensor1 and connection NTC=10k Ω at 25°C
Er1	Sensor2 fault	See Er0	See Er0	See Er0	See Er0
Er2	Memory error	Voltage drop at programming. Memory damaged due to electro-magnetic disturbance.	Stop	R: Automatic V: Manual	Reset temp. regulator by holding down the PRG-button at the same time as the voltage is switched on, then reprogram the temp. regulator as per list of parameters.
Er3	External alarm	Power failure** or circuit is connected to the digital input being open.	Due to parameter C31	R: due to parameter C29 and C30. V: Manual	Check parameter C29, C30, C31 and 28. Check the circuit which is connected to the digital input.
Er4	High temperature -alarm	Parameter P26 has been exceeded under a period longer than P28 OR Cleaning program is finished. See Operating Instructions.	Works normally.	R: Automatic* V: Manual	Check parameter P26, P27 and P28.
Er5	Low temperature alarm	Parameter P25 has dropped for a period longer than P28		R: Automatic* V: Manual	Check parameter P25, P27 and P28.

R= Thermometer action, resets automatically when error cause has been corrected.

V= Display window.

***= Manual resetting, increase the value on P27. (alarm difference)**

****= Only on the surface probe sensor temp. regulator. (left temp. regulator)**



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