Operating- and servicemanual
Standard cabinets
Version 3.0

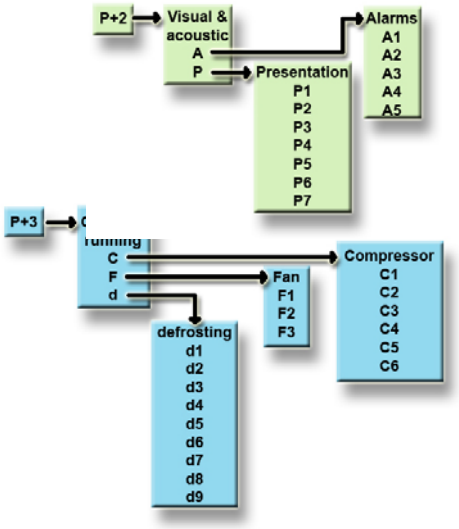
16th. March 2012

The introduction.

Since the introduction of our own standard controller I year 2001, the controller has gone through several software updates. More program variants is developed, new functions is added to existing variants and others is been improved.

There was a directly access to the menus on the front of our cabinet, which was a great help for the service men and also for the workers in the factory here in Vojens.

All different settings are categorize and placed in submenus.
The access comes through main menus.



MPC 46 and the new menus.

The menus are divided up in two main menus.

A menu for presentations of values in the display and settings for alarms parameters, and another menu for technical, practical or physical settings to a normal refrigerator or freezer.

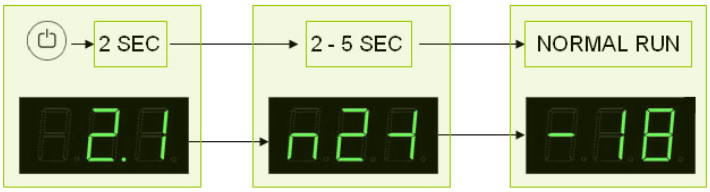
In each main menu there exist smaller submenus.
These submenus are divided up in specific menu for kind of cycles as defrosting or the settings for running the evaporator fan.

Make sure the appliance is switched off at the socket before service is performed on electrical parts. It is not sufficient to switch off the cabinet by the START/STOP key as there will still be voltage to some electrical parts of the cabinet..

Software version and program variant in start-up sequence

When the cabinet switches ON, the controller shows the software version and program variant.

The version number glows in 2 sec. followed by name on the program variant until the controller is finished with the start-up sequence. The program variant is like the example here below.



In the example above software ver. 2.1 and program variant M2+ is presented.

Cabinets with compressor (HAV) is given by the symbol " ⊣ ". The symbol should look like a "+" which means including compressor.

Cabinets without compressor (FAV) is given by the symbol " − ". The "-" symbol means "Compressor not included".

Because program variants like K and M is difficult to present in a 7-segment display, the symbols below is used instead:
- **H** (Refrigerator).
- **n** (Extended temperature range).

Other program variants name:
- **F** (freeze).
- **B** (Counter).
- **V** (Varm/hot/swallow cabinets)*.
- **P** (Process cabinets).
- **E** (Extreme low temperature).

* Complete new variant

Defrosting

The defrosting cycle runs 4 times each day. The lamp glows to indicate that a defrosting cycle is running.

If the cabinet is operating under severe load (frequent door opening and frequent replenishment) manual defrosting can become necessary. The manually defrosting can be carried through by pushing P and ⏻ key in more than 3 sec. The cabinet starts a defrosting cycle.
With the same to keys, a defrosting cycle can be stopped before end time.

The next defrost will occur 6 hours later.

Like other standard cabinets, the defrosting cycle is also controlled by time. This means that if the temperature hasn't reached the stop temperature, the timer function will stop the defrosting cycle.

Temperature control and regulation:

Press P to see the cabinet temperature setting; the display will show the set temperature.

Temperature up:

Keep P pressed. At the same time, press +. Each time + is pressed the temperature will change one degree. When the display shows the desired temperature let go of the two keys and the setting has been made. By keeping + pressed, the digits change fast.

Temperature down:

Keep P pressed. At the same time, press -. Each time - is pressed the temperature will change one degree. When the display shows the desired temperature let go of the two keys and the setting has been made. By keeping - pressed, the digits change fast.

Key lock

The keypad can be locked by entering the code: ⏻ + 1 .
The lamp 🔓 lights up to indicate that the keys are locked, and a short beep sounds. Now it is not possible to use the keys for temperature setting etc.
The same code is to be used for unlocking the keypad again.

Error codes in the display

Display code	Description
- o -	The door is open
A1	Door alarm ”dAd” from LAL and/or EAL has been activated
A2	Local upper alarm LHL is or has been avtivated
A4	External upper alarm EHL is or has been activated
F1	Cabinet sensor error. In the meantime the cabinet itself will maintain the set temperature by the memory of the controller. Temperature stability will be affected. Service assistance is required.
F2	Evaporator sensor error. Service assistance is required. The cabinet will keep running until the error has been mended.
F3*	Condenser sensor 1 error. The cabinet will keep running, until the error has been mended. Service assistance is required.
F4*	Condenser sensor 2 error. The cabinet will keep running, until the error has been mended. Service assistance is required.
F7*	Indicates that the condenser temperature is too high. The cause might be a clogged condenser, or too high ambient temperature. If the condenser or air filter needs cleaning, the cabinet must be disconnected at the mains power. Cleaning of the condenser is done with a brush or a vacuum cleaner. The air filter can be removed and cleaned in a dishwasher at max. 50°C. If the ambient temperature is too high, the placement of the cabinet might be wrong, and an alternative place should be found. Ventilation might help. If this does not help, request service assistance.

* Applies only to cabinets with built-in compressor.

User menu

Push on (P) and (1) buttons at the same time in more than 3 sec. and the first Setup menu appears in the display.

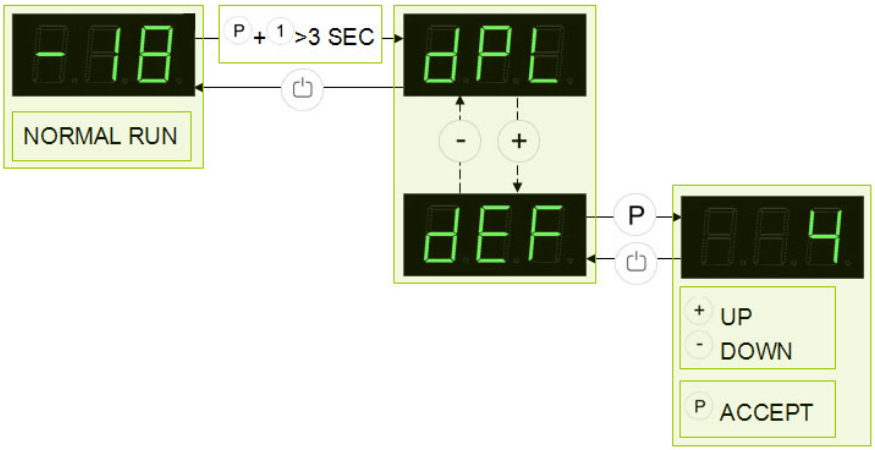
With (+) and (-) buttons its possible to look through each menu items in the “User menu”. Push on (P) button to activate the desired item and adjust the setting with (+) and (-) buttons.

To confirm the new setting, push (P) button. Leave the menu item and user menu with the (⏻) button.

Menu access P + 1 ⇥	↴	⇥		
Dry refrigeration*	dC	H0/H1		Activation of dry refrigeration. (**H0**=on; **H1**=off)
Rapid thaw**	UF	on/off		Activation of rapid thaw. (on/off)
Local alarm setting	LAL	LHL	°C	Setting the upper alarm limit. At alarm, the display shows: **A2**
		LHd	min.	Time delay for the upper alarm limit.
		dA	On/off	Activation of local door alarm. At alarm, the display shows: **A1** (1=on / 0=off)
		dAd	min.	Time delay for the door alarm.
		BU	On/off	Activation of buzzer. The buzzer sounds at alarms A1, A2. (1=on / 0=off)
External alarm setting	EAL	EHL	°C	Setting the upper alarm limit. At alarm, the display shows: **A3**
		ELL	°C	Setting the lower alarm limit. At alarm, the display shows: **A4**
		EHd	min.	Time delay for upper alarm.
		ELd	min.	Time delay for lower alarm.
Temperature offset (sensor calibration)	CAL	CA	K	-5…+5 K
Escorting alarm limits	ALL	FAS/ESC		Activation of escorting alarm limits. **FAS**= fixed limits / **ESC** = limits following the setpoint
No. of defrosts	dEF	4		Number of defrosts in 24 hours.

* Applies only on cabinets with dry cooling.

** Applies only on cabinets with rapid thaw. This mode can only run if set point is set between +2 and +8 °C. When this program runs, the lamp ◊ glows in the display.
If the temperature of the evaporator sensor gets above 60 °C, the rapid thaw mode will be cancelled.



Visual and acoustic settings

Push on (P) and (2) buttons at the same time in more than 6 sec. and the menu item [**A**] appears in the display.

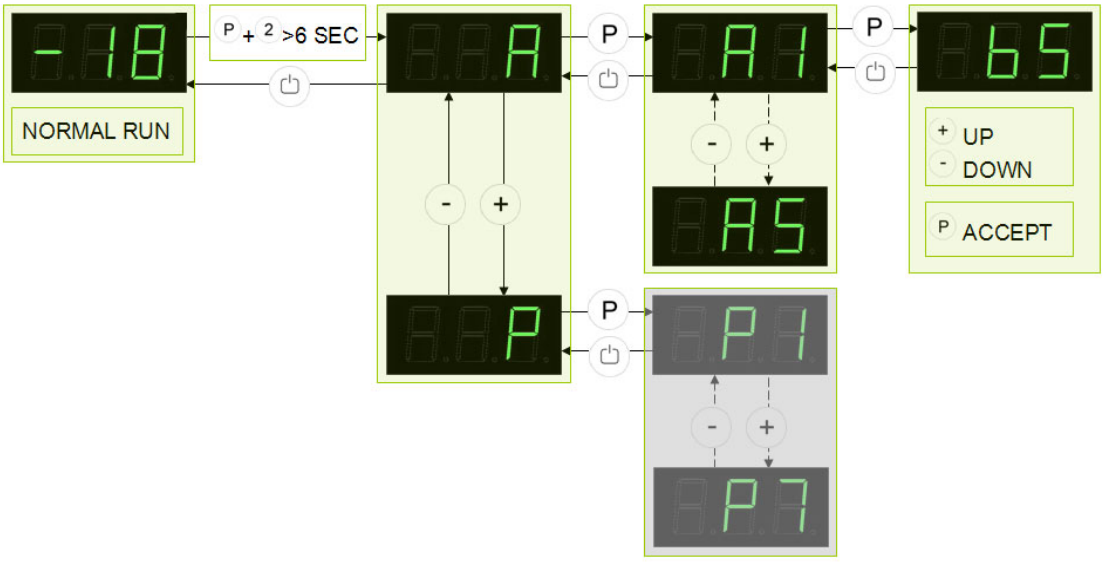
With (+) and (-) buttons it's possible to look through the main menu item [**A**] and [**P**]. Push on (P) button to enter the submenu from the main menu items.
With (+) and (-) buttons it's possible to look through the submenus menu items. Push on (P) button to enter the desired menu item and adjust the setting with (+) and (-) buttons.

To confirm the new setting, push (P) button. Leave the menu item and submenu with the (⏻) button.

Parameter	Description	Setting range	Default setting
A3	Alarm re-appearing time	5 to 30 min	5 min.
P2	Temperature fluctuation filter *	00 = +0/-0 / 01 = +1/-1 / 02 = +2/-2 03 = +3/-3 / 04 = +4/-4 / 05 = +5/-5	03
P3	Display updating frequency	0 to 99 sec.	10 sec.
P4	Displaying	0 = shows set-point temperature 1 = follows the room temperature	0
P5	Temperature scale	Celsius = C / Fahrenheit = F	C
P6	Temperature offset on sensor input A Forced moving of sensor measuring	-5 to +5 K / In steps of 0,5 K	0,0 K
P7	Temperature offset on sensor input E Forced moving of sensor measuring	-5 to +5 K / In steps of 0,5 K	0,0 K

Values presented in light grey are values which can be different from model to model.

* When the temperature is within the limits, the set-point is displayed – when the temperature is outside the limits, the current temperature is displayed.



Settings for running cycle

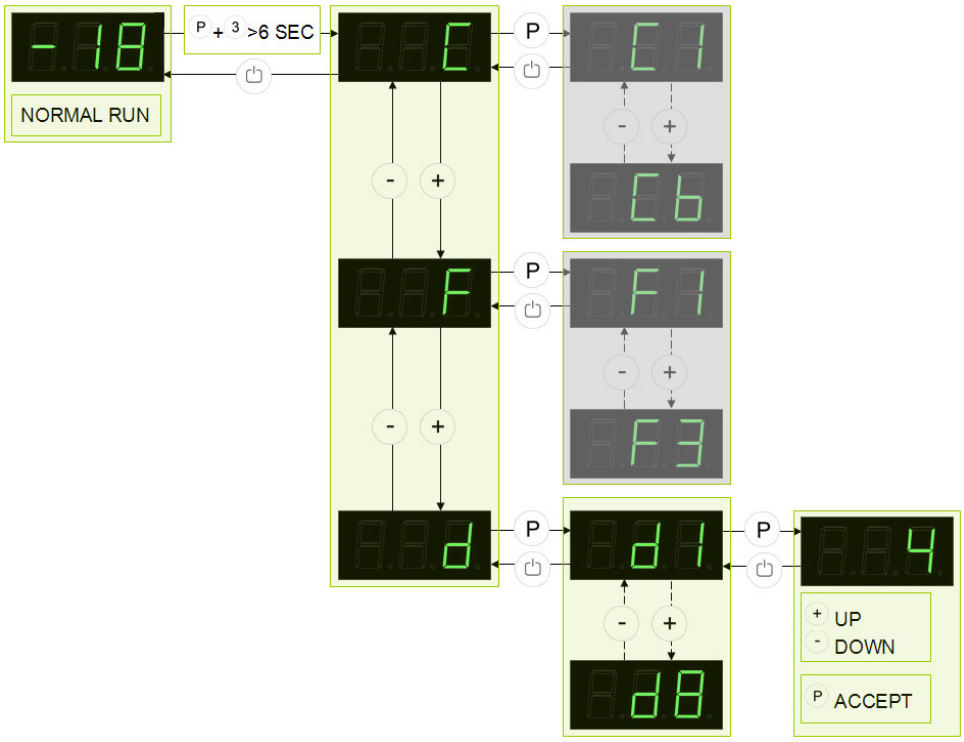
Push on (P) and (3) buttons at the same time in more than 6 sec. and the menu item [**C**] appears in the display.

With (+) and (-) buttons it's possible to look through the main menu item [**C**], [**F**] and [**d**]. Push on (P) button to enter the submenu from the main menu items.
With (+) and (-) buttons it's possible to look through the submenus menu items. Push on (P) button to enter the desired menu item and adjust the setting with (+) and (-) buttons.

To confirm the new setting, push (P) button. Leave the submenu and main menu item with the (⏻) button.

Parameter	Description	Setting range	Default setting
C1	Hysteresis	1= +1/ 0, 2= +1/-1, 3= +2/-1, 4= +2/-2, 5= +3/-2, 6= +3/-3	5
C5	Activation of condenser sensors	0 = No sensor / 1 = One sensor (C) / 2 = Two sensors (C & D)	1 (xx+)
C6	Compressor stop by open door	0 to 15 min.	5 min
d1	Number of defrosting cycles/24h	1,2,3,4,5,6,7 or 8	4 each day.
d3	Defrosting by start-up sequence	0 = Start-up defrosting / 1 = no defrosting	0
d4	Defrosting time	10 to 60 min.	30 min.
d5	Defrosting method	1 = auto / 2 = air / 3 = electrical	1 (M) / 2 (K) / 3 (F)
d6	Dripping time	0 to10 min.	4 min.

Values presented in light grey are values which can be different from model to model.



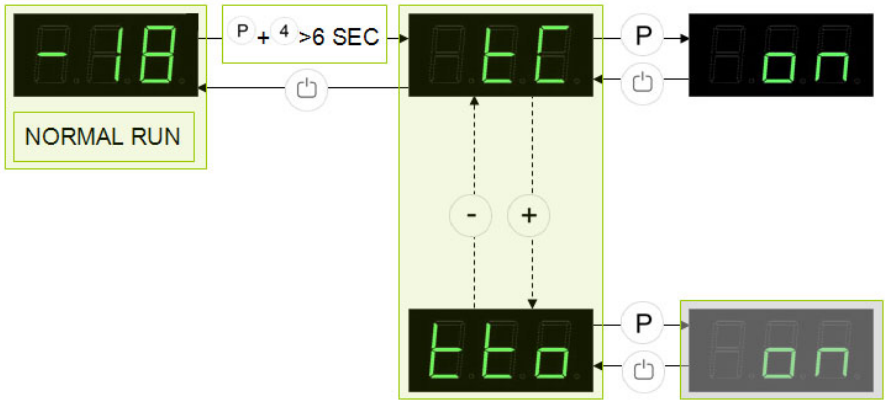
Service program for relays and electrical components

Push on (P) and (4) buttons at the same time in more than 6 sec. and the menu item [**tC**] appears in the display.

With (+) and (-) buttons its possible to look through each menu items in the “Service program”. Push on (P) button to activate the desired relay and the display glows with [**on**]. The desired relay conducts now power to the electrical component.

Push the (⏻) button to switch off the power from the electrical component. Leave the service program with the (⏻) button.

Parameter	Description
tC	Test of compressor and condenser fan
tF	Test of evaporator fan
td	Test of defrosting heating element
tL	Test of light
tA	Test of potential free alarm relay
t01	Value indication of sensor input A (room sensor)
t02	Value indication of sensor input B (evaporator sensor)
t03	Value indication of sensor input C (condenser sensor 1)
t04	Value indication of sensor input D (condenser sensor 2)
t05	Value indication of sensor input E (extra sensor e.g. sensor to GDL)
tdP	Test of display
tHy	Value indication of the hysteresis
tnd	Value indication of amount of defrosts/24 h
tto	Indication of offset value

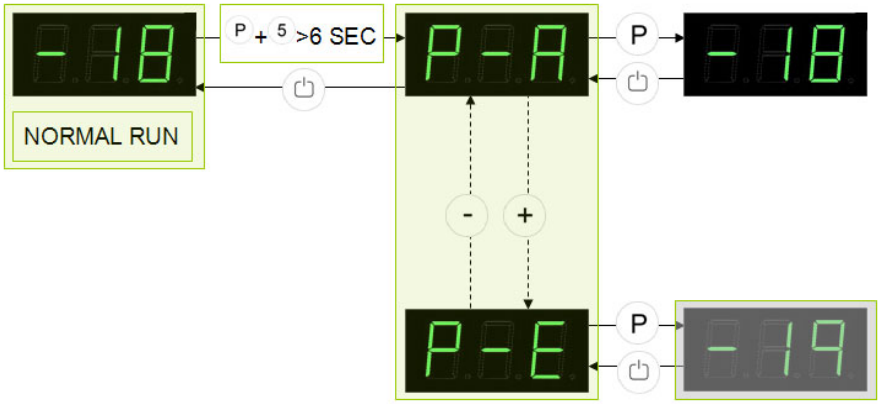


Value indication of sensor inputs

Push on (P) and (5) buttons at the same time in more than 6 sec. and the menu item [**P-A**] appears in the display.

With (+) and (-) buttons its possible to look through each menu items to check each sensor in the cabinet.
Push on (P) button to activate the actual sensor and the display shows the actual temperature.
Leave the program with the (⏻) button.

Parameter	Description
P-A	Value indication of sensor input A (room sensor)
P-b	Value indication of sensor input B (evaporator sensor)
P-c	Value indication of sensor input C (condenser sensor 1)
P-d	Value indication of sensor input D (condenser sensor 2)
P-E	Value indication of sensor input E (extra sensor e.g. sensor to GDL)



Earlier Software versions

From 372 to 103: version **1.2**
From 103 to 014: version **1.3**
From 014 to 214: version **1.4**
From 214 to 324: version **1.5**
From 324 to 334: version **1.6**
From 334 to 016: version **1.7**
From 016 to 127: version **1.8**
From 127 to 138: version **2.0**
From 138 to 122: version **2.1**
From 122: version **3.0**

Reset the controller to factory setting

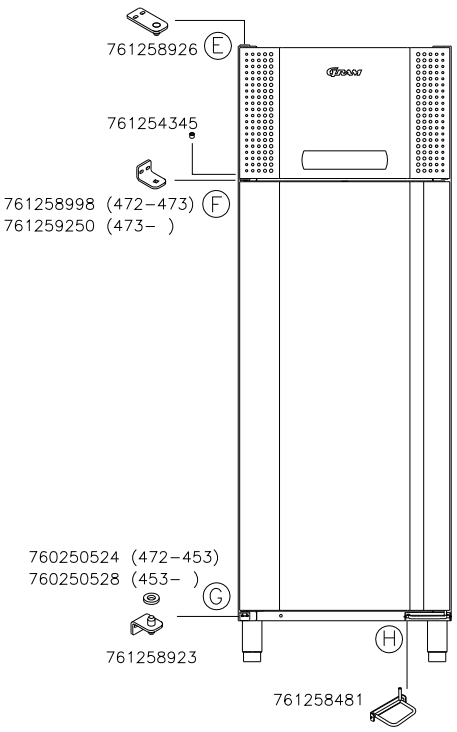
To reset the controller to factory settings:

Push (P) + (1) + (3) for more than 6 seconds. The display shows "**I**", if any parameters have been changed.
Push (+) or (-) until "**0**" is displayed, and the controller is reset to factory setting.
To confirm the setting, push (P), and then twice (⏻) to return to normal operation mode.

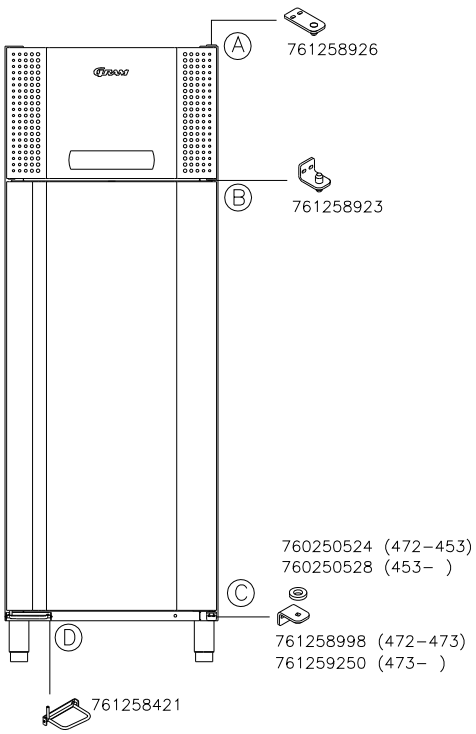
Changing door hinge side on PLUS, EURO and TWIN

The door can be changed from left hand-hinged to right hand hinged or vice versa.
Placement of hinges at right hand or left hand hinged doors:

Left hand



Right hand



Example: Changing from right hand to left hand hinged door.

1. Disconnect the cabinet at the mains. Dismount the hinge at pos. A, and then remove the front panel (Remember to disconnect the cables in the front panel).
2. Dismount the hinge at pos. B, and remove the door from pos. C.
3. The pedal at pos. D is to be removed, and a new pedal Pos. H is mounted.
4. The hinge at Pos. B is fixed in pos. G, and a nylon washer item no. 760250524 is applied.
5. The door is turned 180° relative to the original position. The self-closing device must be set in the neutral position (see fig.1). Check with a spanner, that there is spring power in both directions.
6. The hinge previously applied to pos. C is mounted on top of the door (pos. F) – see fig. 2.
7. Place the door in the hinge at pos. G. Adjust the door, and fasten the hinge at pos. F. This causes a tension of the self-closing device.
8. Place the front panel at pos. F, and mount the upper hinge previously applied to pos. A, at pos. E. Connect the cables in the front panel, and close the panel. Apply power to the cabinet again.

Regarding left hand hinged doors to be changed to right hand hinged, the procedure is reversed.

Fig. 1

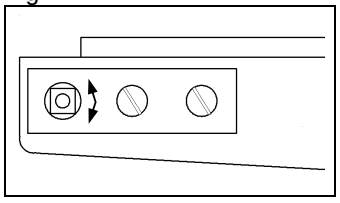
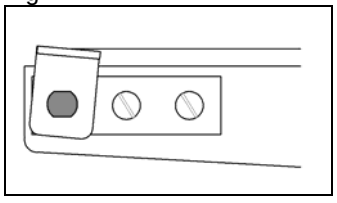
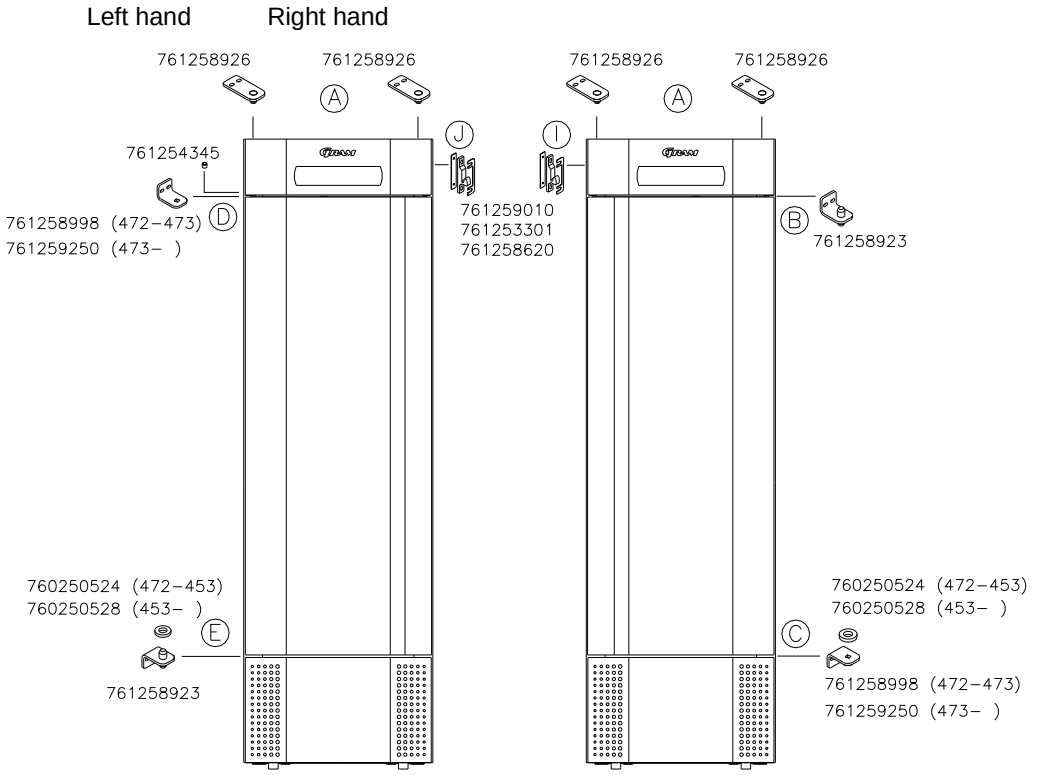


Fig. 2



Changing door hinge side on MIDI

The door can be changed from left hand-hinged to right hand hinged or vice versa.
Placement of hinges at right hand or left hand hinged doors:



Example: Changing from right hand to left hand hinged door.

1. Disconnect the cabinet at the mains. Dismount the hinges at pos. A, and then remove the front panel (Remember to disconnect the cables in the front panel). Remove the bottom panel by pulling it outwards.
2. Dismount the hinge at pos. B, and remove the door from pos. C.
3. The hinge at Pos. B is fixed in pos. E, and a nylon washer item no. 760250524 is applied.
4. The door is turned 180° relative to the original position. The self-closing device must be set in the neutral position (see fig.1). Check with a spanner, that there is spring power in both directions.
5. The hinge previously applied to pos. C is mounted, including the adaptor, on top of the door (pos. D) – see fig. 2.
6. Place the door in the hinge at pos. E. Adjust the door, and fasten the hinge at pos. D. This causes a tension of the self-closing device.
7. Place the front panel at pos. D. Connect the cables in the front panel, and mount the upper hinges pos. A. Attach the lower panel. Apply power to the cabinet again.

Regarding left hand hinged doors to be changed to right hand hinged, the procedure is reversed.

Fig. 1

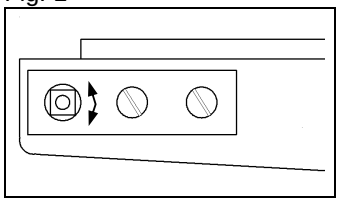
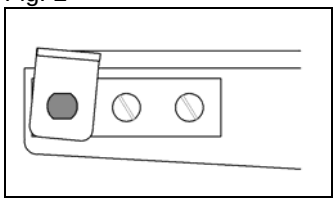
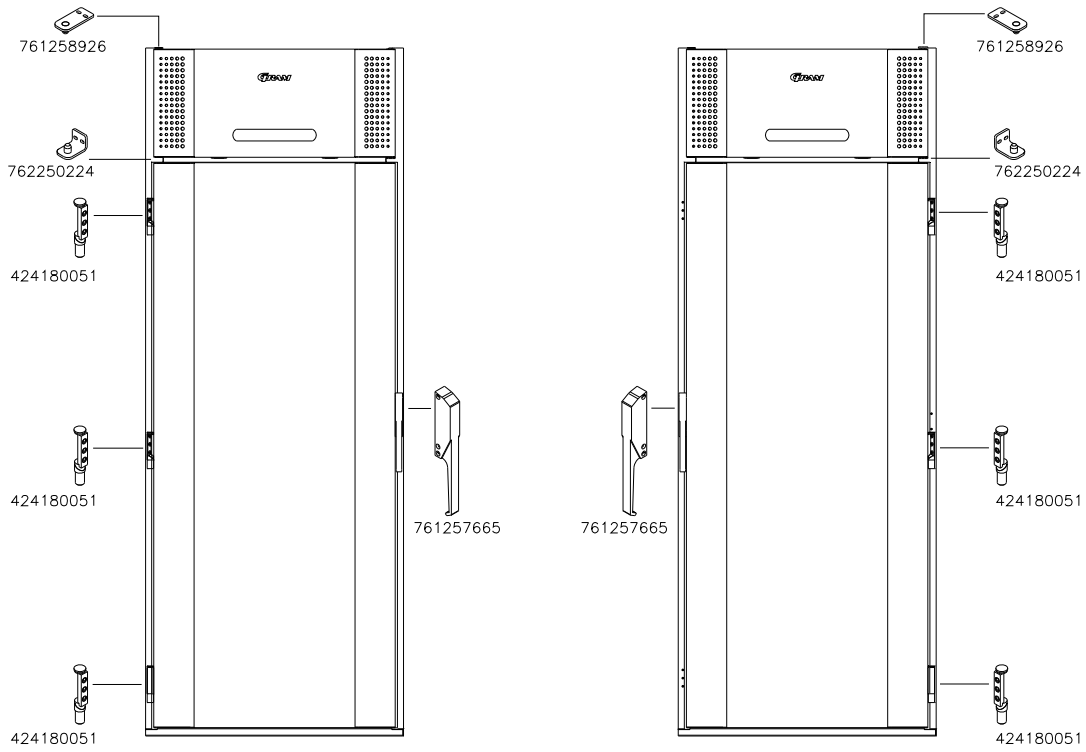


Fig. 2



Reversing the door on Roll – in



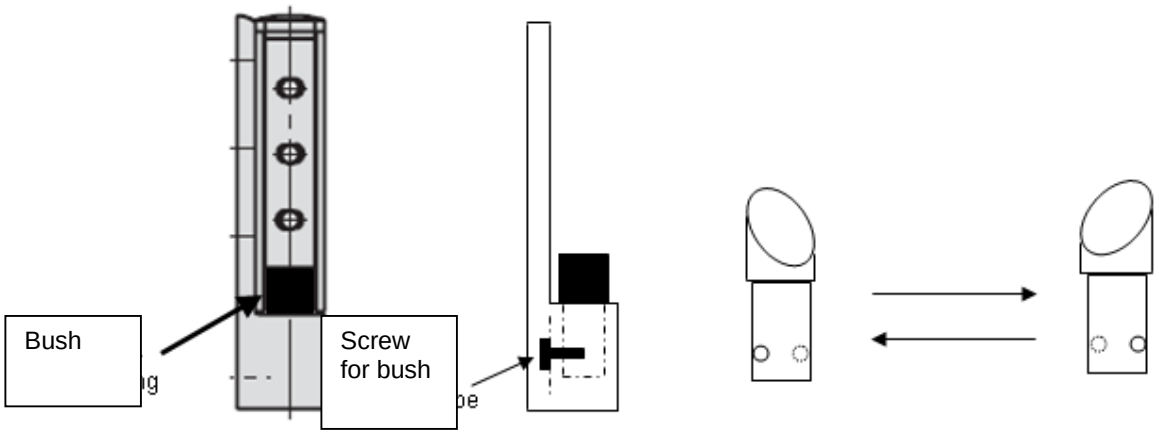
To change the door hinge position, no further parts are needed, other than those which are already present at the cabinet. The changes can be made, while the cabinet is in the upright position. The door is lifted off in the open position. The chromed cap on the door part of the hinge, must be removed to access the screws holding each of the 3 hinges.

The door is turned 180°. The door hinges are also turned 180°, because they are facing upside down after the door has been turned.

The 3 hinges at the cabinet are moved to the opposite side. The grey caps positioned in the holes are also to be reversed.

Attention!: The black plastic bushes in the cabinet part hinges are those parts of the hinges, that lifts the door when opening it. This means that the drag strip has no contact to the floor, until the door is closed (reduces wear). These black bushes must also be turned 180° in the bracket itself. This is done by loosening the screw, that is positioned on the cabinet side of the hinge. Then the bush is turned around 180° in the hinge until a screw hole appears again. When the bush has been turned so that the recess points towards the door opening, the screw holding the bush is fixed again.
The handle fixed at the door, must be turned around 180° as well.

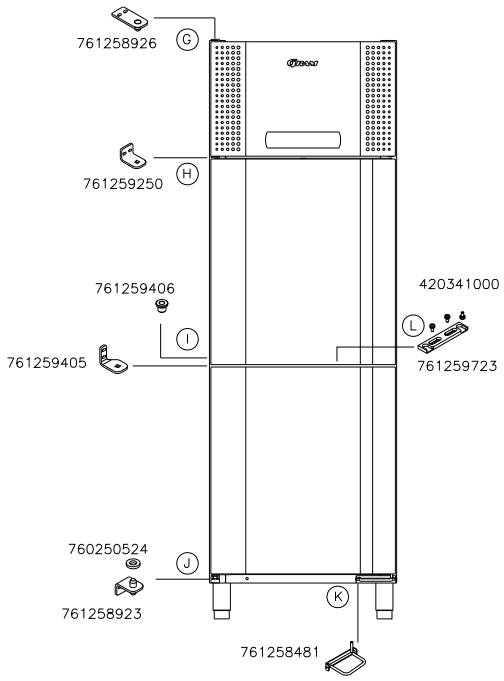
The drag strip at the bottom of the door must be fitted at the opposite end.


Bush
Screw
for bush

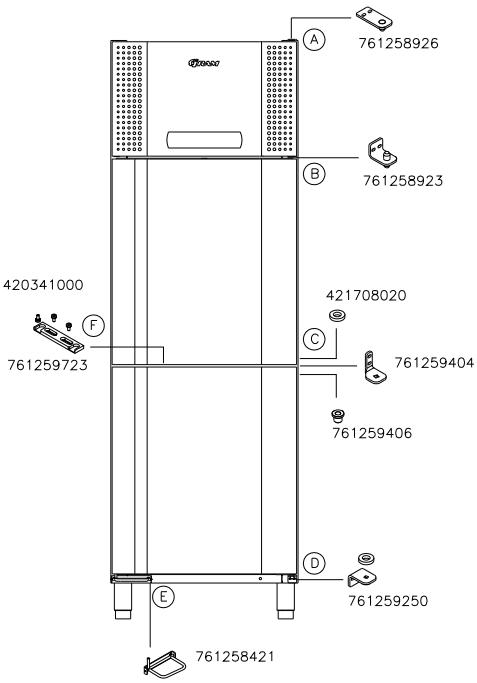
Changing door hinge side on TWIN COMBI.

The door can be changed from left hand-hinged to right hand hinged or vice versa.
Placement of hinges at right hand or left hand hinged doors:

Left hand



Right hand



Example: Changing from right hand to left hand hinged door.

1. Disconnect the cabinet at the mains. Dismount the hinge at pos. A, and then remove the front panel (Remember to disconnect the cables in the front panel).
2. Dismount the hinge at pos. B, and remove the upper door from pos. C.
3. Dismount the hinge at pos. C, and remove the lower door from pos. D.
4. Dismount the lock bracket and screws (pos. F) and mount it at the opposite end of the door (pos. L).
5. The pedal at pos. E is to be removed, and a new pedal Pos. K is mounted.
6. The hinge at Pos. B is fixed in pos. J, and a nylon washer item no. 760250524 is applied.
7. The lower door is turned 180° relative to the original position. The self-closing device must be set in the neutral position (see fig.1). Check with a spanner, that there is spring power in both directions. Remove the bush (pos. C) and put it in the upper door (pos.I).
8. A new hinge is mounted on top of the lower door (pos. I) – see fig. 2.
9. Place the door in the hinge at pos. J. Adjust the door, and fasten the hinge at pos. I. This causes a tension of the self-closing device.
10. The upper door is turned 180° relative to the original position. The self-closing device must be set in the neutral position (see fig.1). Check with a spanner, that there is spring power in both directions.
11. The hinge previously mounted at pos. D is mounted on top of the upper door (pos. H).
12. Place the door in the hinge at pos. I. Adjust the door, and fasten the hinge at pos. H. This causes a tension of the self-closing device.
13. Move the closing device in the control panel to the opposite side.
14. Place the front panel at pos. H, and mount the upper hinge previously applied to pos. A, at pos. G. Connect the cables in the front panel, and close the panel. Apply power to the cabinet again.

Regarding left hand hinged doors to be changed to right hand hinged, the procedure is reversed.

Fig. 1

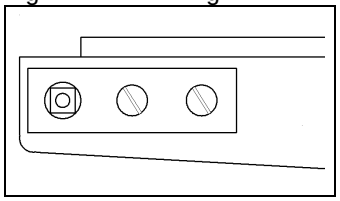
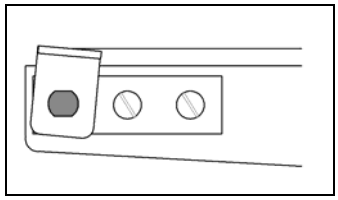
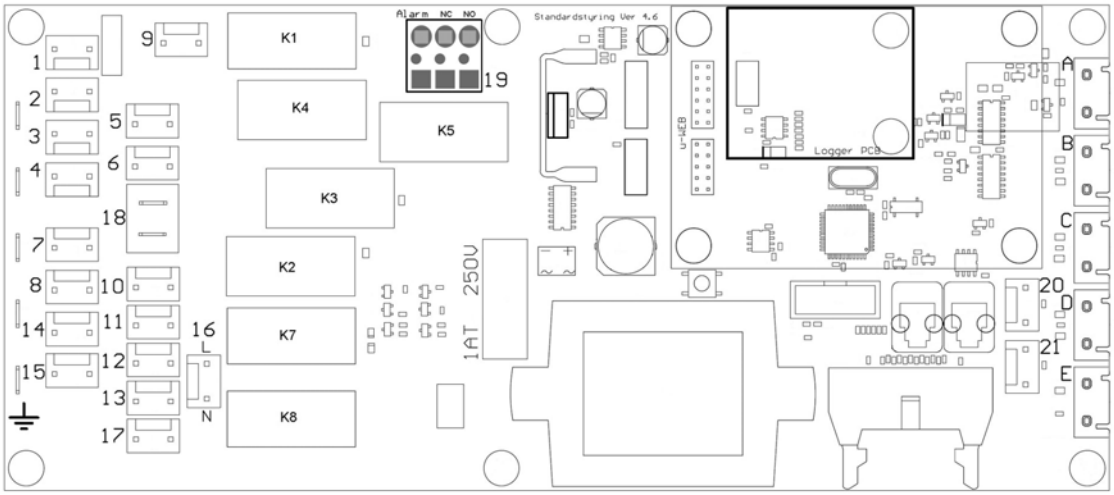


Fig. 2



Plug connections onboard the controller

The description here below explains the plugs or terminals to each special function and relay.



Plug	Electrical component	Description
1	230 Volt relay – K1	The relay supplies the compressor and the condenser fan with power.
2		
3		
4		
5	230 Volt relay – K3	The relay supplies the evaporator fan with power.
6		
7	230 Volt relay – K2	The relay supplies the defrosting heating element and the drip water heating element with power
8		
14		
15		
9	230 Volt relay – K4	The relay supplies the halogen light transformer with power (230V/12V).
10	230 Volt relay – K7 and K8	The relay supplies the front frame heater, re-evaporating heating element, and the condensing pump with power. When the cabinet is switched on, the power is constantly viable.
11		
12		
13		
17		
18	Plug connection for the safety thermostat	The plug is connected in series with the defrosting heating element.
19	230 Volt relay – K5	The potential free alarm relay. The relay changes position when the cabinet switches the power on. By alarms and by power failure the relay switches back to normal position.
16	230 Volt input	These terminals are the power input connection with 230 V to the controller.

20 21	Digital input from the door contact	When these terminals are not in use, the controller lets the evaporator fans keep running. By shortcutting the terminals, the fan stops.
A	Room sensor input	NTC sensor
B	Evaporator sensor input	NTC sensor
C	Condenser sensor input 1	NTC sensor
D	Condenser sensor input 2	NTC sensor
E	Sensor input for a extra sensor	NTC sensor