FPG
food display = retail solutions

PRODUCT MANUAL

# Refrigerated Tower Display Cabinets

INSTALLATION - OPERATION - MAINTENANCE

# Table of Contents



# INTRODUCTION

## Welcome

*REFRIGERATED TOWER CABINETS - INTRODUCTION*

**Future Products Group (FPG)**

Welcome to the world of FPG! Our products are designed and engineered to give you the optimal performance that you deserve with innovative visual merchandising appeal.

We are confident that you will be delighted with your state of the art inline food service cabinet, and that it will become a valued appliance in your store.

**Guidance and Help**

Any new appliance can seem very complex and confusing at first glance. To ensure you receive the utmost benefit from your new inline cabinet, there are two things you can do.

- Before operating the cabinet, please read the instruction book carefully and follow its recommendations. The time taken will be well spent. These instructions both general and technical tell you how to install, operate and look after your inline food service cabinet so that you can receive the full benefits that this cabinet has to offer.
- These instructions cannot, however, cover all eventualities. If you are unsure of any aspect of the installation, instructions or performance of your cabinet, contact your dealer promptly or contact us via email to support@fpgworld.com.

## Warranty

*REFRIGERATED TOWER CABINETS - INTRODUCTION*

**Warranty Period**

Future Products Group Limited warrants, to the original purchaser of an FPG manufactured food service cabinet that for ONE YEAR (12 months), from the date of purchase, any defect in workmanship or material resulting in the product malfunctioning while under correct use will be rectified.

Liability under this warranty is limited to replacing or repairing a part, without charge.

*Continued on next page*

## Warranty cont.

*REFRIGERATED TOWER CABINETS - INTRODUCTION*

**Liability Exceptions**

Liability under this warranty does not include:

- Any loss, or damage or expenses directly or indirectly arising from use or inability to use the product or from any other cause.
- Any part of the cabinet which has been subject to misuse, neglect, alteration, incorrect installation, accident, or damage caused by transportation, use of abrasive or caustic chemicals, flooding, fire or acts of God.
- Damage, resulting from failure to have the cabinet regularly serviced every three months by a refrigeration engineer. NB: You will be required to provide copies of service records in the event of compressor failure.
- Any damage or malfunction resulting from the use of non-FPG supplied spare parts.

**Specific Exclusions**

The following are specifically excluded from warranty:

- Breakage of glass or plastic components or the replacement of LED assemblies or gaskets.
- Damage resulting from maladjustment of the electronic refrigeration controllers, by an unqualified person.
- Damage resulting from changes to the upper and lower temperature limits programmed into the temperature controllers.
- Routine compressor / radiator cleaning.
- Failure to re-assemble the cabinet correctly after cleaning.
- Fair wear and tear.

**Assessment**

The liability under this warranty is dependent on an assessment by FPG, to determine the defect in workmanship or materials.

**Time Limit**

FPG does not guarantee that any service to be performed under this warranty will be carried out within any particular time limit.

**Caution**

No warranty claim will be accepted unless authorised by FPG prior to commencement of service.

# OPERATION

## Cabinet Layout

*REFRIGERATED TOWER CABINETS - OPERATION*

**Refrigerated Tower Cabinets**

These cabinets have fixed glass sides, front and top. They have four glass sliding back doors, divided into two levels.

The cabinets are supplied with integral refrigeration condenser units. Condensate is piped either to a removable container, or to a drain.

The cabinet lighting and temperature controls are at the rear of the cabinet.

**Lighting**

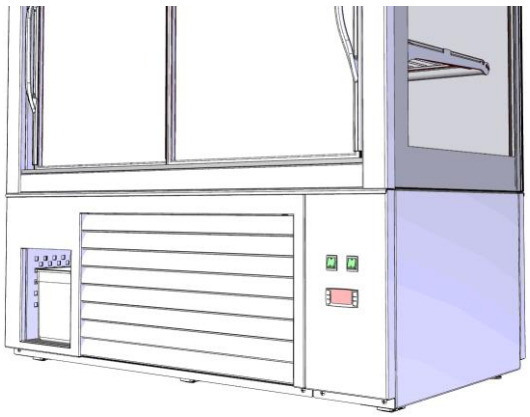
All cabinets are fitted with high efficiency LED lights as standard.

**Condenser Units**

The condenser unit is located in the base of the cabinet.

The cabinet has louvers to allow adequate ventilation to ensure efficient refrigeration performance.

**Articles which could restrict air flow must NOT be placed against the front or back louvers.**



**Thermometer**

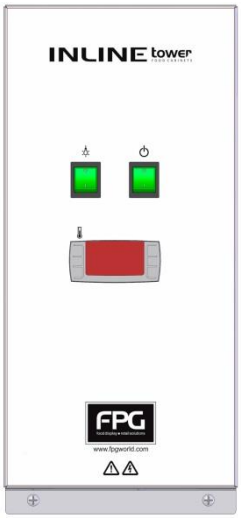
The internal temperature of the cabinet is displayed on the refrigeration controller, on the back of the cabinet.

# Cabinet Controls

*REFRIGERATED TOWER CABINETS - OPERATION*

**Control Panel**




The controls are mounted on the rear of the cabinet. There is a power switch, a light switch and a refrigeration controller.

The refrigeration controller shows the internal temperature of the cabinet display area.

**Refrigeration Controller**


The controller regulates the cabinet temperature and controls the automatic defrost cycles.

The display indicates the internal temperature of the display area.

**Temperature Controller Adjustment**

This controller should only be adjusted by a qualified service technician.

The controller is set up during manufacture of the cabinet, and should not require further adjustment.

The indicated temperature is sensed by a probe in the return air, entering the cooling coil. This is used to control the refrigeration condenser operation, and will be marginally higher than the internal cabinet temperature.

Incorrect adjustment can cause the fins to ice up, resulting in reduced airflow and poor performance.

The temperature of the condenser is also monitored, to protect the compressor from damage resulting from blocked radiators etc.

The controller also governs the de-frost cycles, and incorrect adjustment can again lead to poor temperature control or possible overflow of condensate.

If you think an adjustment may be needed, call the service technician.

# Preparation

*REFRIGERATED TOWER CABINETS - OPERATION*

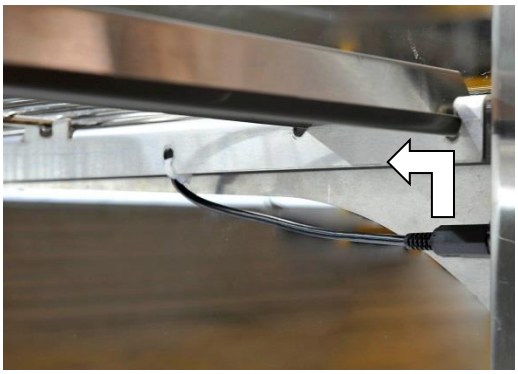
**Shelf Location and Ticketing**

All shelves are adjustable in height and can easily be moved up or down, to match product size.

The permitted movement is restricted to 50mm, because of the electric cables to the lights and air flow considerations.

The front edges of the shelves are profiled to carry ticketing/labels.

**Shelf Adjustment**



Unplug the cable to the lights, lift the brackets straight up and then pull the brackets forward, to disengage them from the slots in the support posts.

Insert the brackets into their new position, and push bracket down firmly and reconnect the lights.

***Make sure brackets are pushed down as far as they can go. Failure to do this may result in shelf collapse, when loaded with product.***

**Power Supply**

Confirm that the local mains supply conforms to that shown on the cabinet serial number label. Connect the power supply lead to a mains socket.

**Refrigeration**

The compressor will run as soon as the cabinet main switch is turned on, and the cabinet temperature will be controlled.

The temperature controller is pre-set to maintain the cabinet temperature between 2°C and 4°C, and should not need adjustment.

**Defrost Cycle**

Note that the defrost times are set from when the cabinet is first turned on. If they are required at a particular time, you must turn on the cabinet four hours before the first defrost required. The cycles will then occur every four hours, provided that the cabinet is not switched off.

Each defrost cycle terminates as soon as the temperature of the evaporator fins rises to a level indicating that all ice has melted. This active control improves the energy efficiency of the cabinet, and minimises temperature fluctuations.

**Do NOT check the cabinet temperature within ½ hour of a de-frost cycle.**

## Preparation cont.

*REFRIGERATED TOWER CABINETS - OPERATION*

**Loading the Cabinet**

Load the cabinet with pre-chilled products.

The cabinet is designed to maintain the temperature of product at 2 - 4°C. It is not a refrigerator, and consequently, if warm product is introduced, there could be some delay before the operating temperature falls to the normal operating level.
It is important to leave adequate free space for the cool air to circulate within the cabinet.

A minimum clearance of 40 mm should be maintained below the shelves and the top of the cabinet.

The air grills at the front and rear of the cabinet must not be covered.

**Close all Doors**

It is important to keep all cabinet doors closed. If doors are not fully closed, an even temperature will not be maintained within the cabinet.

**Turn on Lights**

When ready for service, turn on the cabinet lights.

## Operating Routines

*REFRIGERATED TOWER CABINETS - OPERATION*

**After Hours**

If cabinets are not turned off after hours or at night, shut the doors and turn off the lights. The cabinet will then operate on minimum load, and be ready for instant operation when next required.

If cabinets are turned off, to conserve energy, products must be removed and stored at an appropriate temperature.

When turned on again, allow cabinets to run for about half an hour before replacing the products.

**Cleaning**

Since cabinets need to be switched off during cleaning operations, it is best to clean them at the end of the working day. Cabinets will then have time to recover their normal operating temperature, before replacing the products for the next day's business.

**Products must be maintained below 4°C while the cabinet is cleaned.**

**Door Opening**

The cabinets are designed to maintain food at the correct temperature with the doors being opened and closed up to 75 times per hour. If the doors are left open for an extended period the temperature will deviate. Once the doors are shut the temperature will take some time to return to the normal operating level. The longer the doors are open the longer the time to restore normal operating temperature.

# CLEANING

## Cautions

*REFRIGERATED TOWER CABINETS - CLEANING*

**Power** — **ALWAYS SWITCH THE ELECTRICITY SUPPLY OFF BEFORE CLEANING.**

**Water** — **CABINETS ARE NOT WATERPROOF. DO NOT USE A WATER JET SPRAY TO CLEAN THE INTERIOR OR EXTERIOR OF CABINETS.**

## Exterior

*REFRIGERATED TOWER CABINETS - CLEANING*

**Metal Surfaces** — Stainless steel or aluminium surfaces should be cleaned with hot soapy water or a good quality metal cleaning compound. DO NOT clean surfaces with abrasive pads or cleaners, as stainless steel and aluminium surfaces will be damaged.

**Painted Surfaces** — Painted surfaces should be cleaned with hot soapy water.
Do not use abrasives or strong solvents, because they will damage the surface.

**Glass** — All glass should be cleaned using a good quality glass cleaner and a clean cloth.

**DO NOT** use abrasive pads or cleaners, because they will damage the surface of the glass.

**Sliding Doors**

Sliding glass doors can be removed for cleaning by sliding the door to central position, placing hands either side of the door, lifting up and then swinging out at the bottom.

When replacing doors, make sure that the top is located in the correct slot, and the bottom is properly located on the correct bottom track.

Sliding door tracks should be vacuumed out regularly to keep doors sliding freely. Failure to do so will damage the gliders and track.

**Louvers** — Use a vacuum cleaner to remove dust and fluff from all ventilation louvers.

This will prevent overheating, and maintain the refrigeration efficiency.

# Cabinet Interior

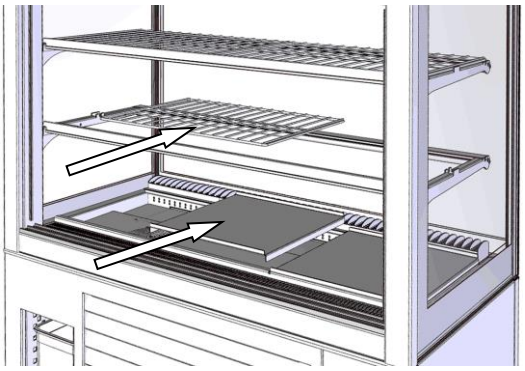
*REFRIGERATED TOWER CABINETS - CLEANING*

**Interior of Refrigerated Cabinet**

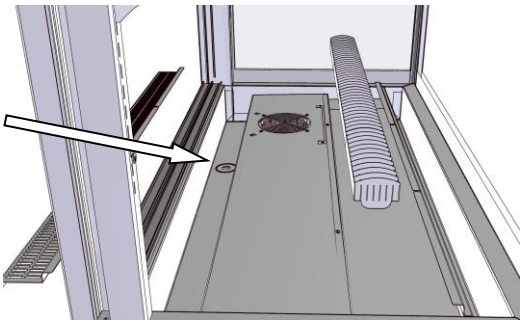
Remove the shelf trays and deck trays.

The inside of the cabinet can be cleaned without removing the shelf support brackets.

Clean all brackets and ticketing rails.



Remove the front and back air louvers, and sweep out, or use a vacuum cleaner, to remove any debris from the cabinet base cavity. Check the drain hole is clean.
A Wet-and-Dry vacuum cleaner should be used, since there is likely to be some water in the bottom. Finally, wipe out the bottom with a damp sanitized cloth.



**Do not pour water into the base, or the condensate container will overflow.**

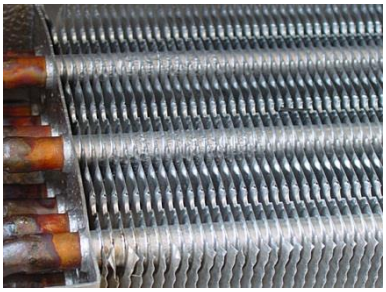
To access the cooling coil for extra cleaning. Remove the screws, securing the fan deck, and tilt it upright.

Lift the cover plate off the evaporator coil and disengage it from the chassis.

**Cooling Fins**

If there is food stuck in the cooling fins, it is best to use a wet and dry vacuum cleaner to suck out the food. DO NOT attempt to hose food parts from fins.

**Caution:** The fins are very sharp. Take extra care when cleaning this area. Do not bend the fins over, as this would restrict the air flow and degrade cabinet performance.



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# Cabinet Interior cont.

*REFRIGERATED TOWER CABINETS - CLEANING*

**Temperature Probes**

Take care not to damage or move the temperature probes, when cleaning the cooling fins.

One probe is inserted between the fins on the exit side of the cooling coil and the other is in free air, on the return air side of the coil.

**Condensate Container**

The condensate container is only designed to handle cooling-coil defrosting liquid that drains from the well.

**DO NOT fill the well with liquid, or attempt to hose out as condensate container will overflow and leak onto floor.**

**Trays, Shelves & Air Grills**

Stainless steel trays, shelves, grills etc. should be cleaned with hot soapy water. Do not use abrasive pads or cleaners, as these may damage surfaces.

**Warning:** Dishwasher detergents will damage any anodised aluminium parts.

**Re-assembly**

**Take care to re-assemble panels and covers correctly, as any air gaps can adversely affect air circulation and the cabinet temperature.**

# Cleaning Routines

*REFRIGERATED TOWER CABINETS - CLEANING*

**Schedules**

To maintain optimum performance, cleaning schedules must be regular and thorough.

**Warning**

**Failure to carry out routine cleaning/servicing schedules will void the warranty on refrigeration equipment.**

**Ventilation Louvers**

It is important to include cleaning the ventilation louvers in a regular cleaning routine. The frequency of cleaning will depend on the operating environment. Cleaning must be frequent enough to prevent more than a small amount of debris building up.

For efficient refrigeration performance, the condenser radiator itself must be kept clean. Failure to do this will lead to a build-up of dust, and restricted airflow will prevent the unit from working properly. The compressor may overheat and trip off the refrigeration.

**Regular vacuuming of the louvers will help prevent a build-up of dust and fluff, however, three monthly service checks by a refrigeration engineer, which include cleaning the condenser with compressed air, are mandatory.**

**Inspection**

As part of the cleaning routine, the controls, mechanical parts and electrical wiring should be inspected for damage, deterioration or need of adjustment.

**Fault Correction**

If any small faults are found, have them attended to promptly by a competent serviceman. Don't wait until they cause a complete breakdown.

# TROUBLE SHOOTING

| FAULT | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| Cabinet does not operate/start | The mains isolating switch on the wall, circuit breaker or fuses are off at the power board | Turn isolating switch circuit breaker or fuses on |
| | Internal MCB has tripped | ***Have wiring checked and reset MCB*** |
| | The refrigeration switch is in the OFF position | Switch ON |
| | The condenser has overheated | Check that all radiators and ventilation grills are clean |
| | The main switch on the cabinet is OFF | Switch ON |
| Cabinet temperature is incorrect | One or more doors is open | Close doors and re-test temperature after 30 minutes |
| | Ventilation grills are blocked | Vacuum or remove blockage |
| | Product blocking air grill | Place product on shelves |
| | Evaporator coil fins blocked | Clean coil fins of food etc. |
| | Trays obstructing air flow | Re-position trays on shelves |
| | Controller needs adjustment | ***Adjust controller*** |
| | Ambient temperature > 25°C | Adjust store air conditioning |
| | Evaporator coil iced up | ***De-ice coil*** |
| | Condenser radiator blocked | ***Remove dust and debris*** |
| | Controller faulty | ***Replace controller*** |
| | Temperature probe damaged | ***Replace temperature probe*** |
| | Fans not operating | ***Have fans checked/replaced*** |
| Cabinet lights not working | The light switch is OFF | Turn light switch ON |
| | LED strip has failed | ***Replace LED assembly*** |
| | Power Supply has failed | ***Replace Power Supply*** |
| | MCB has tripped | ***Have wiring checked and reset MCB*** |

***Service Personnel Only*** The table entries in ***italics*** indicate actions to be taken only by qualified Service Personnel.

# INSTALLATION

## Regulations

*REFRIGERATED TOWER CABINETS - INSTALLATION*

**Compliance with Local Requirements**

It is very important that your inline food cabinet is installed correctly and that the operation is correct before use. Installation must comply with local electrical, health & safety and hygiene requirements.

## Setting Up

*REFRIGERATED TOWER CABINETS - INSTALLATION*

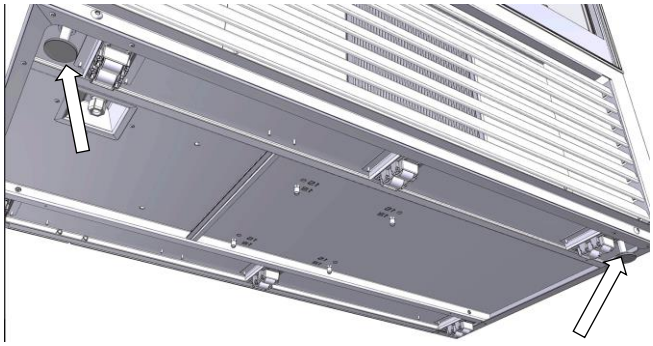
**Unpacking**

Unpack and check unit for damage and report any damage to the carrier and supplier. Report any deficiencies to your supplier.

The cabinets are supplied fully assembled, with the shelf trays wrapped separately and secured inside the cabinet.

**Site Preparation**

Position the cabinet in its allocated working position. Use a spirit level to ensure the cabinet is level from side to side and front to back. (If this is not carried out, water may accumulate in the cabinet well, and uneven temperature distribution could also occur).



The cabinet is fitted with rollers, to allow easy movement. If the floor is not level, packers must be placed under the appropriate rollers.

When in the desired position, wind the two jacking screws down to anchor the cabinet to the floor. Remove the front panel to adjust the screws.

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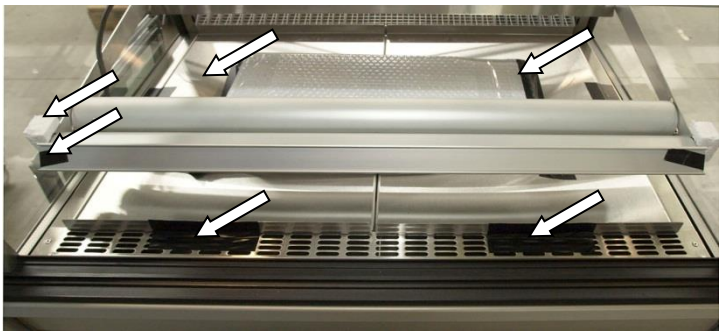
## Setting Up cont.

*REFRIGERATED TOWER CABINETS - INSTALLATION*

**Cabinet Preparation**



Remove all protective plastic film, tapes, ties and packers, used to prevent movement during transit.

Lift out the deck trays to gain access to the cabinet well. Be sure to replace them correctly.

**Shelf Trays**

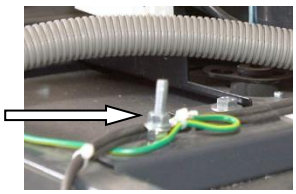
Remove the shelf trays from their packing and assemble them on the support members.

**Grounding**

**WARNING: THIS APPLIANCE MUST BE GROUNDED TO EARTH**

The grounding lead, in the mains cable, must always be connected to ground.

Terminals are also provided, to allow the cabinet to be bonded to a surge grounding conductor or to adjacent equipment.



**Isolation**

If the cabinet is not connected by a plug and socket, but is hard wired to the mains supply, a means of isolation must be provided.

If a plug and socket are used, they should still be accessible after the cabinet is installed.

## Location

*REFRIGERATED TOWER CABINETS - INSTALLATION*

**Ventilation**

Ventilation openings on cabinets must never be obstructed. If obstructed the condenser may overheat and cause an electrical malfunction.

The heated cabinet is designed to meet the HACCP specification with free room air circulation.

**Access**

The cabinet should be positioned so the operating controls are accessible. The shelves must also be easily reached, for loading and unloading.

# SERVICING

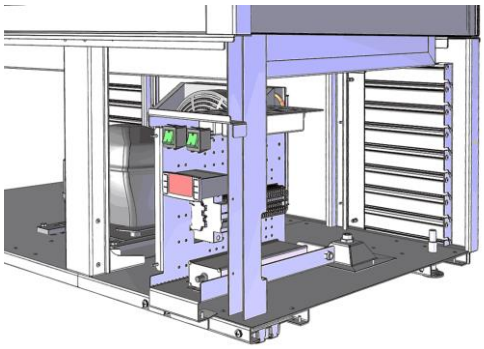
## Control Gear

*REFRIGERATED TOWER CABINETS - SERVICING*

**Location**

The electrical control gear is located in the base of the cabinet.

The switches, refrigeration controller circuit breaker and LED power supplies are all mounted on a removable chassis.



## Lighting

*REFRIGERATED TOWER CABINETS - SERVICING*

**Caution**

**Do <u>not</u> service lights without isolating the cabinet from the mains supply.**

**Test Lighting Components**

Before replacing an LED strip, check that the power supply is working.

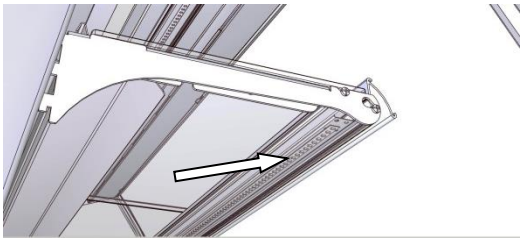
If there is no dc voltage at the output, the power supply should be replaced.

If there is a dc output, the LED strip must be replaced.

**Access to LED Strips**

The LED strips are protected with plastic covers. These clip into grooves in the aluminium extrusion.

Remove the plastic cover to access the LED strip.



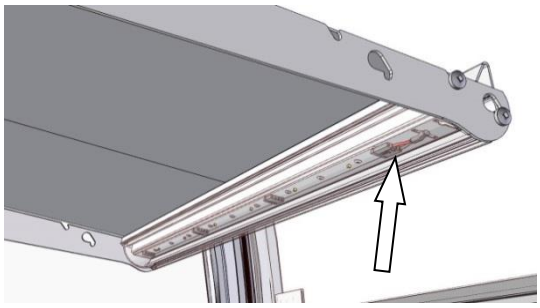
The top light assembly is similar to the shelf lights, but the correct replacement unit must be used.

**LED Strip Replacement**

Individual LED modules cannot be replaced. A complete light unit must be used.

Connection is made with a plug and socket. Disengage the supply lead from the faulty unit, and reconnect it to the replacement unit.

Replace the plastic cover.



## Mains Lead

*REFRIGERATED TOWER CABINETS - SERVICING*

**Lead Replacement**

Should a mains lead need replacing, the work must be carried out by a qualified service person.

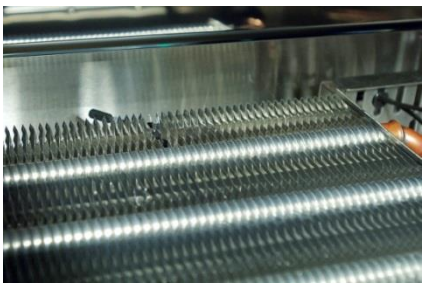
## Refrigeration

*REFRIGERATED TOWER CABINETS - SERVICING*

**Caution**

**DO NOT attempt to service the refrigeration equipment without isolating the cabinet at the supply switch or by unplugging it from the supply.**

**Temperature Probes**



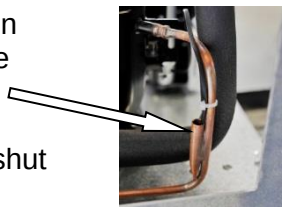
There are two temperature probes on the cooling coil.

One probe is inserted between the fins and controls the defrost cycle.

The other is in free air on the return air side of the coil, and controls the cabinet temperature.

**Condenser Temperature Probe**

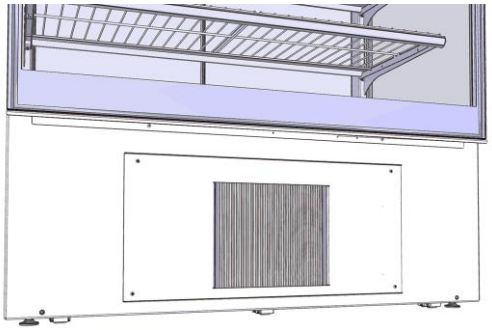
A temperature probe, connected to the XR40CX refrigeration controller, is located in a pocket on the discharge pipe of the condenser unit, to guard against overheating.



If the set temperature is exceeded, the refrigeration will be shut down to avoid damage.

**Condenser Radiator**

Remove the front louver panel from the cabinet to reach the condenser radiator.



For efficient refrigeration performance, the condenser radiator must be kept clean.

**Regular vacuuming will prevent a build-up of dust and fluff, however, three monthly service checks by a refrigeration engineer, which include cleaning the condenser with compressed air, are mandatory.**

Be very careful not to bend or damage the soft aluminium fins when vacuuming the radiator. If the fins are flattened, airflow will be restricted and overheating will result.

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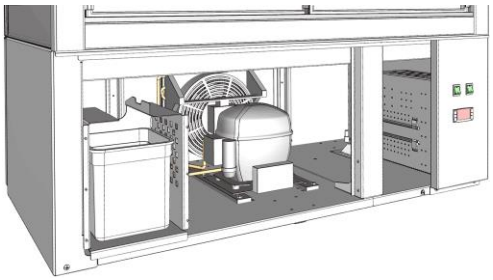
# Refrigeration cont.

*REFRIGERATED TOWER CABINETS - SERVICING*

**Ventilation Panels**

All ventilation panels should be kept free of dust by regular vacuuming, so that air flow is not restricted.

**Access to Condenser**



Remove the rear panel to access the condenser.

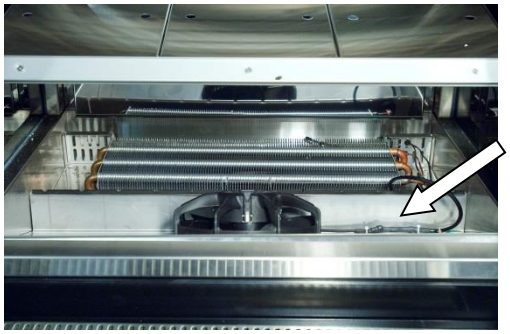
**Cabinet Air Circulation Fans**

The cabinet air circulation fan is located in the base of the cabinet.

Access is gained by removing the deck trays.

Remove the retaining screws, to allow the fan deck to be lifted upwards.

**Fan Replacement**



The fans is hard-wired, so the lead must be cut and re-spliced to the replacement fan.

The joint must be adequately protected, using heat shrink sleeves, to prevent ingress of moisture.

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**Temperature Regulator XR40CX**


Model XR40CX is a microprocessor based controller.
It uses with three NTC probes, the first one, for temperature control, is located in the return air (air on). The second one, located between the fins of the cooling coil, measures the defrost termination temperature. The third one monitors the condenser temperature for fault indication.

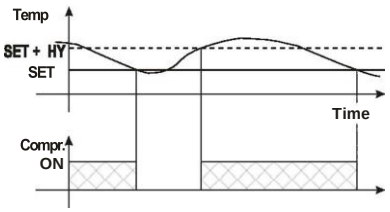
Since the temperature control probe is located on the return air side of the coil, (Air On), the measured temperature will be higher than the average air temperature inside the cabinet.

The Thermostat Probe Calibration parameter *Ot*, is used to compensate for this, so the displayed temperature will now indicate the actual product temperature.

The instrument is fully configurable through special parameters that can be easily programmed through the keyboard, or by use of a “hot key”.

**XR40CX Compressor Control**

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.




In case of a fault in the thermostat probe the start and stop of the compressor are timed through parameters **COn** and **COF**.

**XR40CX Defrost Control**

Parameters are used to control the interval between defrost cycles (IdF), its maximum length (MdF) and two defrost modes: timed or controlled by the evaporator’s probe (P2P).

In this cabinet, the start of the defrost cycle is timed, but the cycle will be terminated as soon as the defrost probe reaches the pre-determined temperature.

At the end of defrost dripping time is started, its length is set in the FSt parameter. With FSt =0 the dripping time is disabled

*Continued on next page*

**XR40CX Key Functions**

| KEY | FUNCTION |
|---|---|
| SET | To display target set point; in programming mode it selects a parameter or confirm an operation |
| ❄ | (DEF) To start a manual defrost |
| ∧ | (UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value |
| ∨ | (DOWN): To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value |
| ⏻ | To switch the instrument off, if onF = oFF. Not enabled |
| ∧ + ∨ | To lock & unlock the keyboard |
| SET + ∨ | To enter into programming mode |
| SET + ∧ | To return to the temperature display mode |

**XR40CX LED Functions**

| LED | MODE | FUNCTION |
|---|---|---|
| ❄ | ON | Compressor enabled |
| ❄ | Flashing | Anti-short cycle delay enabled |
| ❄ | ON | Defrost enabled |
| ❄ | Flashing | Drip time in progress |
| ((!)) | ON | An alarm is occurring |
| ❄ | ON | Continuous cycle is running |
| ☀ | ON | Energy saving enabled |
| °C/°F | ON | Measurement unit |
| °C/°F | Flashing | Programming phase |

*Continued on next page*

# Refrigeration cont.

*REFRIGERATED TOWER CABINETS - SERVICING*

**XR40CX Min & Max Recorded Temperature**

Press and release the ▽ key.
**Lo** will be displayed followed by the minimum temperature recorded.
Press the ▽ key again or wait 5s to restore the normal display.

Press and release the △ key.
**Hi** will be displayed followed by the maximum temperature recorded.
Press the △ key again or wait 5s to restore the normal display.

**XR40CX Reset Max/Min Temperature Memory**

Press the **SET** key for more than 3s, while the max. or min. temperature is displayed. (**rSt** message will be displayed)

To confirm the operation the **rSt** message starts blinking and the normal temperature will be displayed.

**XR40CX Display the Set-point**

To show the set-point value, press and immediately release the **SET** key.

Press and immediately release the **SET** key or wait for 5 seconds to display the probe temperature again.

**XR40CX Change the Set-point**

To change the set-point value, press the **SET** key for more than 2 seconds;
The value of the set-point will be displayed and the °C or °F LED starts blinking;
To change the set value push the △ or ▽ arrows within 10s.
To memorise the new set-point value push the **SET** key again or wait 10s.

**XR40CX Start a Manual Defrost**

To start a manual defrost, press the ❄ (DEF) key for more than 2 seconds.

**XR40CX Programming Mode**

Enter the Programming mode by pressing the SET + ▽ keys for 3s
(the °C or °F LED starts blinking).

- Use the △ or ▽ keys to select the required parameter.
- Press the SET key to display its value.
- Use the △ or ▽ keys to change its value.
- Press SET to store the new value and move to the following parameter.

To exit Programming mode, press SET + △ or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting for the time-out to expire.

*Continued on next page*

**XR40CX The Hidden Menu**

The hidden menu includes all the parameters of the instrument.

TO ENTER THE HIDDEN MENU

- Enter the Programming mode by pressing the SET+▽ keys for 3s, (the **°C** or **°F** LED starts blinking).
- Release the keys, then press the SET+▽ keys again, for more than 7s. The **Pr2** label will be displayed immediately followed from the **Hy** parameter.

NOW YOU ARE IN THE HIDDEN MENU.

- Select the required parameter.
- Press the SET key to display its value
- Use △ or ▽ to change its value.
- Press SET to store the new value and move to the following parameter.
- To exit: Press SET+△ or wait 15s without pressing a key.

NOTE 1: If no parameter is present in **Pr1**, after 3s the **noP** message is displayed. Keep the keys pushed till the **Pr2** message is displayed.

NOTE 2: The set value is stored even when the procedure is exited by waiting for the time-out period to expire.

TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing SET+▽

In HIDDEN MENU when a parameter is present in the First Level the decimal point is shown.

**XR40CX Locking and Unlocking the Keyboard**

To lock the keyboard, press the △ +▽ keys for more than 3 s.

The **POF** message will be displayed, followed by the previous temperature display.

If a key is pressed more than 3s the **POF** message will be displayed.

To unlock the keyboard, press the △ +▽ keys for more than 3s, till the **Pon** message is displayed.

*Continued on next page*

# Refrigeration cont.

*REFRIGERATED TOWER CABINETS - SERVICING*

**FPG Settings**

Note that the following settings are Dixell factory defaults. Refer to the Specification section for the correct FPG settings for your cabinet.

**Dixell Default Settings**

| Label | Name | Range | Default Setting |
|---|---|---|---|
| **Set** | Set point | LS÷ US | -5.0 |
| **Hy** | Differential | 0,1÷25.5°C/ 1÷ 255°F | 2.0 |
| **LS** | Minimum set point | -50°C÷SET/-58°F÷SET | -50.0 |
| **US** | Maximum set point | SET÷110°C/ SET ÷ 230°F | 110 |
| **Ot** | Thermostat probe calibration | -12÷12°C /-120÷120°F | 0.0 |
| **P2P** | Evaporator probe presence | n=not present; Y=pres. | Y |
| **OE** | Evaporator probe calibration | -12÷12°C /-120÷120°F | 0.0 |
| **P3P** | Third probe presence | n=not present; Y=pres. | n |
| **O3** | Third probe calibration | -12÷12°C /-120÷120°F | 0 |
| **P4P** | Fourth probe presence | n=not present; Y=pres. | n |
| **O4** | Fourth probe calibration | -12÷12°C /-120÷120°F | 0 |
| **OdS** | Outputs delay at start up | 0÷255 min | 0 |
| **AC** | Anti-short cycle delay | 0 ÷ 50 min | 1 |
| **rtr** | P1-P2 percentage for regulation | 0 ÷ 100 (100=P1 , 0=P2) | 100 |
| **CCt** | Continuous cycle duration | 0.0÷24.0h | 0.0 |
| **CCS** | Set point for continuous cycle | (-55.0÷150,0°C) (-67÷302°F) | -5 |
| **COn** | Compressor ON time with faulty probe | 0 ÷ 255 min | 15 |
| **COF** | Compressor OFF time with faulty probe | 0 ÷ 255 min | 30 |
| **CF** | Temperature measurement unit | °C ÷ °F | °C |
| **rES** | Resolution | in=integer; dE= dec.point | dE |
| **Lod** | Probe displayed | P1;P2 | P1 |
| **rEd2** | X-REP display | P1 - P2 - P3 - P4 - SEt - dtr | P1 |
| **dLy** | Display temperature delay | 0 ÷ 20.0 min (10 sec.) | 0 |
| **dtr** | P1-P2 percentage for display | 1 ÷ 99 | 50 |
| **tdF** | Defrost type | EL=el. heater; in= hot gas | EL |
| **dFP** | Probe selection for defrost termination | nP; P1; P2; P3; P4 | P2 |
| **dtE** | Defrost termination temperature | -50 ÷ 50 °C | 8 |
| **IdF** | Interval between defrost cycles | 1 ÷ 120 ore | 6 |
| **MdF** | (Maximum) length for defrost | 0 ÷ 255 min | 30 |
| **dSd** | Start defrost delay | 0÷99min | 0 |
| **dFd** | Displaying during defrost | rt, it, SEt, DEF | it |
| **dAd** | MAX display delay after defrost | 0 ÷ 255 min | 30 |
| **Fdt** | Draining time | 0÷120 min | 0 |
| **dPo** | First defrost after start-up | n=after IdF; y=immed. | n |
| **dAF** | Defrost delay after fast freezing | 0 ÷ 23h e 50’ | 0.0 |
| **ALc** | Temperature alarms configuration | rE= related to set; Ab = absolute | Ab |
| **ALU** | MAXIMUM temperature alarm | Set÷110.0°C; Set÷230°F | 110 |
| **ALL** | Minimum temperature alarm | -50.0°C÷Set/ -58°F÷Set | -50.0 |

*Continued on next page*

**Dixell Default Settings** cont.

| Label | Name | Range | Default Setting |
|---|---|---|---|
| **AFH** | Differential for temperat. alarm recovery | (0,1 °C÷25,5°C) (1 °F÷45°F) | 1 |
| **ALd** | Temperature alarm delay | 0 ÷ 255 min | 15 |
| **dAO** | Delay of temperature alarm at start up | 0 ÷ 23h e 50' | 1.3 |
| **AP2** | Probe for temperat. alarm of condenser | nP; P1; P2; P3; P4 | P4 |
| **AL2** | Condenser for low temperat. alarm | (-55 ÷ 150°C) (-67÷ 302°F) | -40 |
| **AU2** | Condenser for high temperat. alarm | (-55 ÷ 150°C) (-67÷ 302°F) | 110 |
| **AH2** | Differ. for condenser temp. alar. recovery | [0,1 °C ÷ 25,5°C] [1 °F ÷ 45°F] | 5 |
| **Ad2** | Condenser temperature alarm delay | 0 ÷ 254 (min.) , 255=nU | 15 |
| **dA2** | Delay of cond. temper. alarm at start up | 0.0 ÷ 23h 50' | 1,3 |
| **bLL** | Compressor OFF for condenser low temperature alarm | n(0) - Y(1) | n |
| **AC2** | Compressor OFF for condenser high temperature alarm | n(0) - Y(1) | n |
| **i1P** | Digital input polarity | oP=opening; CL=closing | cL |
| **i1F** | Digital input configuration | EAL, bAL, PAL, dor; dEF; Htr, AUS | EAL |
| **did** | Digital input alarm delay | 0÷255min | 5 |
| **Nps** | Number of activation of pressure switch | 0 ÷15 | 15 |
| **odc** | Compress status when open door | no; Fan; CPr; F_C | no |
| **rrd** | Regulation restart with door open alarm | n – y | y |
| **HES** | Differential for Energy Saving | (-30°C÷ 30°C) (-54°F÷ 54°F) | 0 |
| **Adr** | Serial address | 0÷247 | 1 |
| **PbC** | Kind of probe | Ptc; ntc | ntc |
| **onF** | on/off key enabling | nu, oFF; ES | nu |
| **dP1** | Room probe display | -- | -- |
| **dP2** | Evaporator probe display | -- | -- |
| **dP3** | Third probe display | -- | -- |
| **dP4** | Fourth probe display | -- | -- |
| **rSE** | Set operating value | actual set | -- |
| **rEL** | Software release | -- | -- |
| **Ptb** | Map code | -- | -- |

**XR40CX Hot Key**

To program the controller from a Hot Key:

- Turn OFF the instrument.
- Insert a programmed Hot Key into the 5 PIN socket and then turn the Controller ON.
- The parameter list of the Hot Key is automatically downloaded into the Controller memory, the **doL** will blink, followed a by a flashing **End**.
- After 10 seconds the instrument will restart working with the new parameters.
- Remove the Hot Key.

NOTE the message **Err** is displayed if programming fails. In this case turn the unit off and then on again, if you want to restart the download again, or remove the Hot Key to abort the operation.

# Refrigeration cont.

*REFRIGERATED TOWER CABINETS - SERVICING*

**XR40CX Alarm Signals**

| Message | Cause | Outputs |
|---|---|---|
| **P1** | Room probe failure | Compressor output acc. to par. **Con** and **COF** |
| **P2** | Evaporator probe failure | Defrost end is timed |
| **P3** | Third probe failure | Outputs unchanged |
| **P4** | Fourth probe failure | Outputs unchanged |
| **HA** | Maximum temperature alarm | Outputs unchanged. |
| **LA** | Minimum temperature alarm | Outputs unchanged. |
| **HA2** | Condenser high temperature | It depends on the **Ac2** parameter |
| **LA2** | Condenser low temperature | It depends on the **bLL** parameter |
| **dA** | Door open | Compressor according to rrd |
| **EA** | External alarm | Output unchanged. |
| **CA** | Serious external alarm (i1 F=bAL) | All outputs OFF. |
| **CA** | Pressure switch alarm (i1 F=PAL) | All outputs OFF |

**XR40CX Alarm Recovery**

Probe alarms P1, P2, P3 and P4 start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.

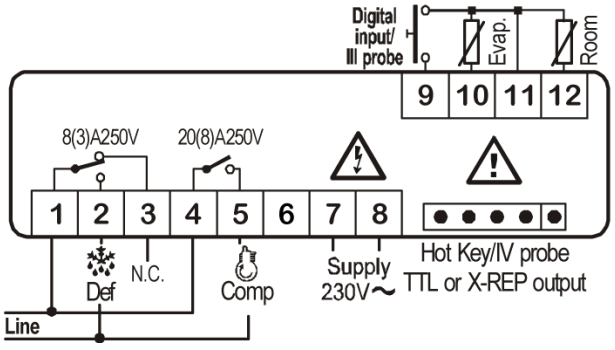
Temperature alarms HA, LA, HA2 and LA2 automatically stop as soon as the temperature returns to normal values.

Alarms EA and CA (with i1 F=bAL) recover as soon as the digital input is disabled. Alarm CA (with i1 F=PAL) recovers only by switching off and on the instrument.

**XR40CX Other Messages**

| Message | Cause |
|---|---|
| **Pon** | Keyboard unlocked. |
| **PoF** | Keyboard locked |
| **noP** | **In programming mode**: none parameter is present in Pr1<br>**On the display** or in dP2, dP3, dP4: the selected probe is not enabled |
| **noA** | No alarm is recorded. |

**XR40CX Connections**



# SPECIFICATIONS

## Mechanical

*REFRIGERATED TOWER CABINETS - SPECIFICATIONS*

| | CABINET MODEL | | | | |
|---|---|---|---|---|---|
| | **IN-TC08** | **IN-TC12** | | | |
| Height mm | 1941 | 1941 | | | |
| Width mm | 801 | 1201 | | | |
| Depth mm | 679 | 679 | | | |
| Dry Weight kg | 220 | 280 | | | |
| Cabinet Well Material | Stainless Steel | | | | |
| Shelf Lighting | LED | LED | | | |
| Rear Sliding Doors | 4 | 4 | | | |
| Number of Shelves | 5 + base | 5 + base | | | |
| Shelf Display Area | 1.5 $m^2$ | 2.35 $m^2$ | | | |
| Base Display Area | 0.28 $m^2$ | 0.45 $m^2$ | | | |
| Refrigerant | R134A | R134A | | | |
| Refrigerant Charge | Refer to rating label on cabinet | | | | |
| Condensate capacity | Removable 4 litre container | | | | |
| Climatic Class & IP | All cabinets are suitable for class N climates and have an IP 22 rating | | | | |

## Electrical

*REFRIGERATED TOWER CABINETS - SPECIFICATIONS*

| | CABINET MODEL | | | | |
|---|---|---|---|---|---|
| | **IN-TC08** | **IN-TC12** | | | |
| Voltage | 220-240V 1Φ | 220-240V 1Φ | | | |
| Power | 952 W | 1100 W | | | |
| Current | 4.14 A | 4.8 A | | | |
| Energy Consumption | 0.59 kWh/h | TBA | | | |
| Connection | 3 core cable and plug | | | | |
| Operating Temp. | 2°C – 4°C | 2°C – 4°C | | | |
| LED lights | 6 x LED strips | 6 x LED strips | | | |

# Controller Settings

*REFRIGERATED TOWER CABINETS - SPECIFICATIONS*

**Changes from Dixell Defaults**

The following table specifies the controller settings which differ from the Dixell default values.

Parameters not listed in this table should remain at the default values specified in the **XR40CX Parameters** listed in the **Servicing** section.

**Dixell XR40CX Settings**

| Parameter | IN-TC08 | IN-TC12 | | | Units / Range |
|---|---|---|---|---|---|
| Set Point | Set | 2 | 2 | | | degC |
| Differential | Hy | 2 | 2 | | | degC |
| Thermostat Probe Calibration | Ot | -2 | -2 | | | -12 to +12°C |
| Third Probe Used | P3P | Y | Y | | | n, Y |
| Anti Short Cycle Delay | AC | 0 | 0 | | | Min |
| Comp On Time - Faulty Probe | C0n | 4 | 4 | | | Min |
| Comp Off Time - Faulty Probe | C0F | 6 | 6 | | | Min |
| Defrost Terminate Temp | dtE | 3 | 3 | | | degC |
| Interval Between Defrosts | IdF | 4 | 4 | | | Hrs |
| Display During Defrost | dFd | DEF | DEF | | | rt, it, SEt, DEF |
| Maximum Temperature Alarm | ALU | 12 | 12 | | | degC |
| Differential For Temp Alarm | AFH | 8 | 8 | | | degC |
| Temperature Alarm Delay | Ald | 60 | 60 | | | Min |
| Probe For High Temp Alarm | AP2 | P3 | P3 | | | nP, P1, P2, P3, P4 |
| High Temp Alarm Set Point | AU2 | 100 | 100 | | | degC |
| High Discharge Temp Alarm Diff | AH2 | 25 | 25 | | | degC |
| High Discharge Temp Alarm delay | Ad2 | 0 | 0 | | | Min |
| High Alarm Delay At Start | dA2 | 0 | 0 | | | Min |
| Comp Off For High Temp Alarm | AC2 | Y | Y | | | n. Y |

# Compliance

*REFRIGERATED TOWER CABINETS - SPECIFICATIONS*

**Safety Aspects**

These cabinets have been designed to comply with the relevant requirements of the following specifications:

- AS/NZS 3100 : General Requirements for Electrical Equipment
- AS 1731: Refrigerated Display Cabinets
- AS/NZS 3182 : Refrigerated Food Commercial Cabinets
- AS/NZS 60335: Household and Similar Electrical Appliances
- AS/NZS 3820 : Essential Safety Requirements
- AS/NZS 4417 : Marking of Electrical Products

**Performance Aspects**

| Cabinet Operating Temperature | Test Conditions |
|---|---|
| 2-4°C | 25°C Ambient with 60% RH |

# Improvements

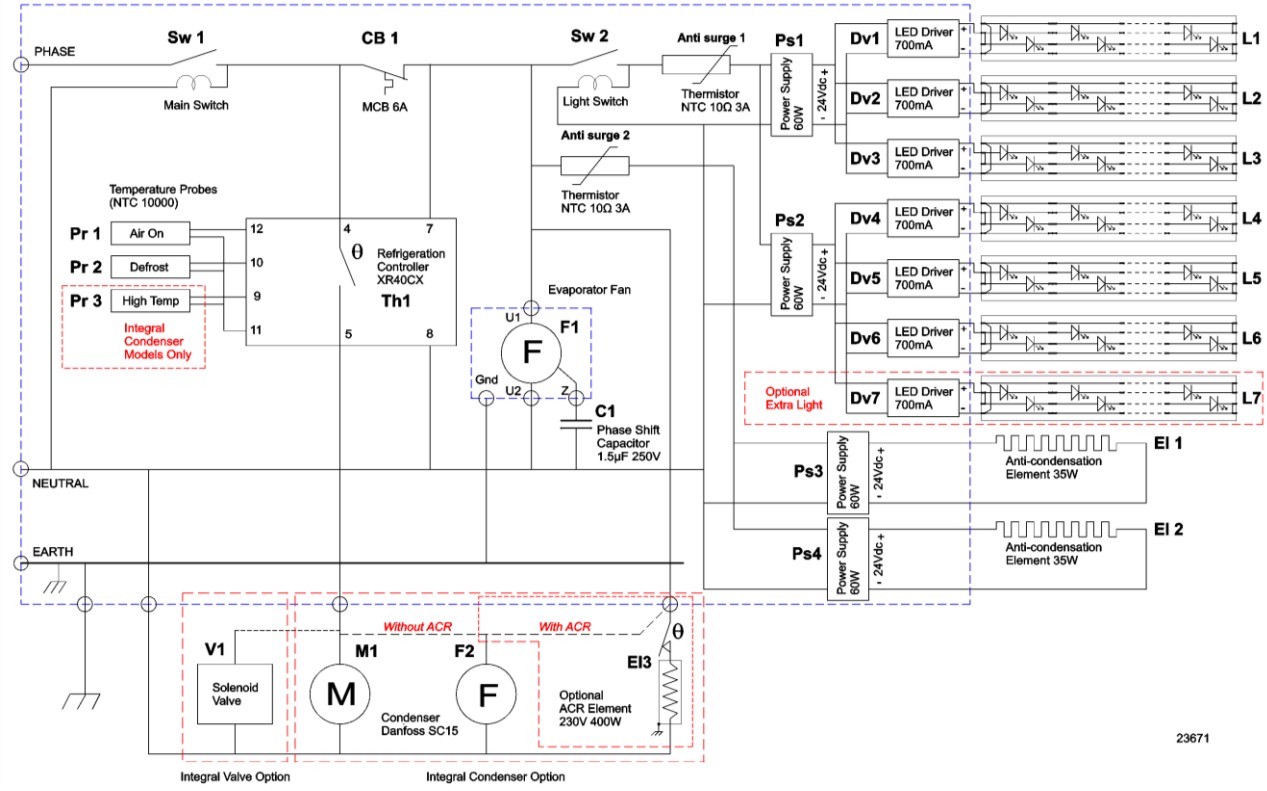
*REFRIGERATED TOWER CABINETS - SPECIFICATIONS*

**On-going Development**

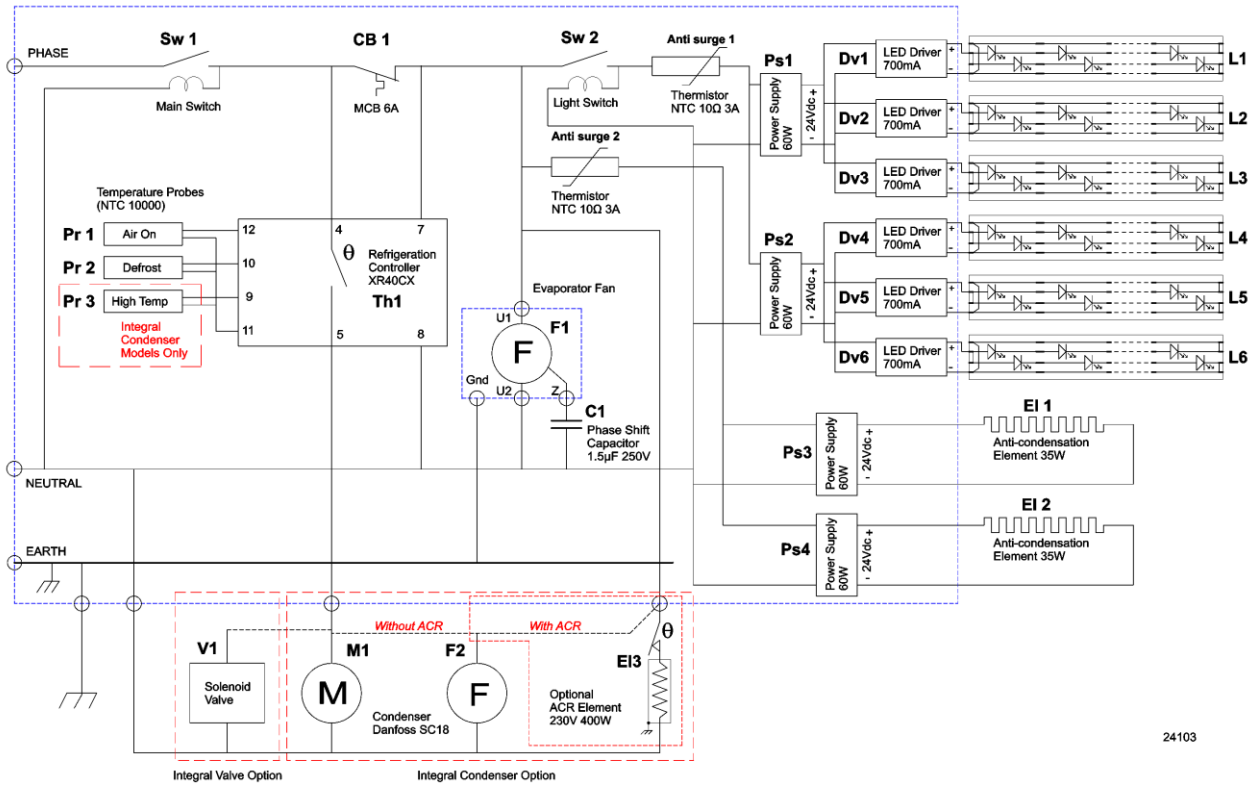
FPG reserves the right to change specifications and construction, as part of on-going product improvement.

# ELECTRICAL CIRCUIT DIAGRAMS

**Model:IN-TC08-A001** **800mm Refrigerated Tower Cabinet**




**Model: IN-TC12-A001** **1200mm Refrigerated Tower Cabinet**



# SPARE PARTS

**Cabinet Serial Number**

When ordering spare parts, it is important to quote the Serial Number printed on the label fixed to the control panel. This will enable FPG to trace details of the build specification of your particular cabinet, and hence ensure that spare parts are fully compatible.

**To satisfy warranty conditions, and ensure optimum performance, use only FPG supplied spare parts.**

| Part Description | FPG Part No. |
|---|---|
| Switch DPST 16A 250V 150A High Inrush Green Rocker | 17287 |
| Miniature Circuit Breaker 6A | 10522 |
| Phase Shift Capacitor 1.5µF 250V | 26230 |
| Dixell XR40CX digital refrigeration controller | 21219 |
| NTC temperature probe (6 metre) | 22293 |
| Polycarbonate Light Cover 1120mm | 18113 |
| Polycarbonate Light Cover 720mm | 18114 |
| LED Driver 700mA | 25672 |
| 24V 60W LED power supply | 21613 |
| 36V 100W LED power supply | 25922 |
| Top Light Replacement Kit for TC08 | 71384 |
| Shelf Light Replacement Kit for TC08 | 71383 |
| Top Light Replacement Kit for TC12 | 69818 |
| Shelf Light Replacement Kit for TC12 | 69817 |
| Anti-surge thermistor 10 Ohm 3A | 22354 |
| Cabinet Air Circulation Fan, EBM R2E190 | 12391 |
| Condenser Unit SC15GXN0 | 12613 |
| Condenser Unit SC18GXN0 | 12614 |
| Solenoid Valve Body | 23412 |
| Solenoid Valve Coil 230V 9W | 23413 |

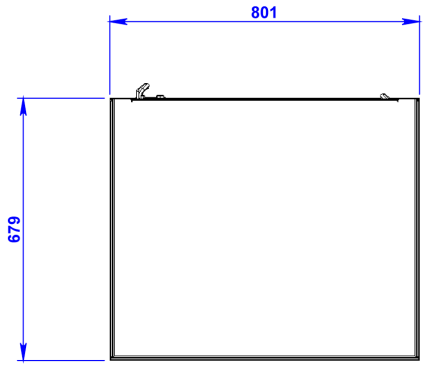
**Handed Parts**

All handed parts are as viewed from the rear of the cabinet.

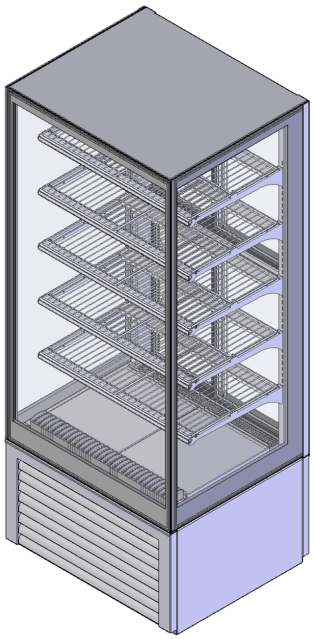
| Part Description | FPG Part No. |
|---|---|
| Glass SQ Tower DG End Left Hand | 23639 |
| Glass SQ Tower DG End Right Hand | 23640 |
| Glass SQ Tower DG Front TC08 | 23641 |
| Glass SQ Tower DG Front TC12 | 23738 |
| Rear Door, Glass Slider TC08 DG Flat | 23642 |
| Rear Door, Glass Slider TC12 DG Flat | 23739 |
| | |
| Product Manual for Refrigerated Tower Cabinets | 22827 |

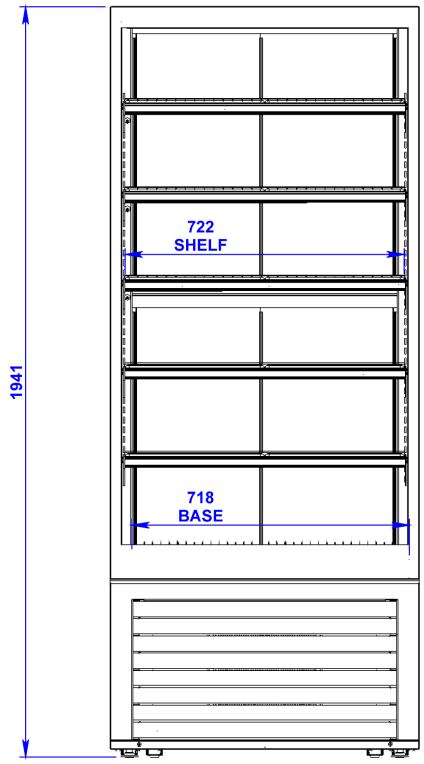
# MECHANICAL DRAWINGS

**IN-TC08-A001**

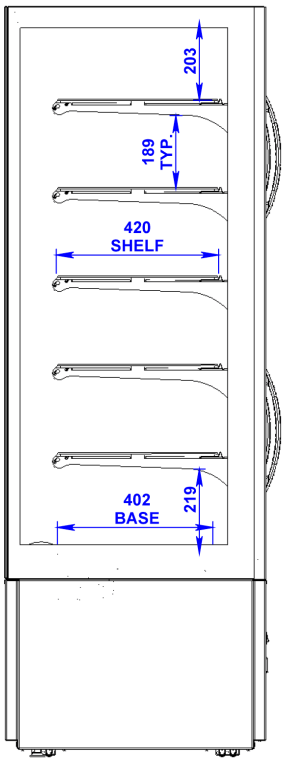



**PLAN**

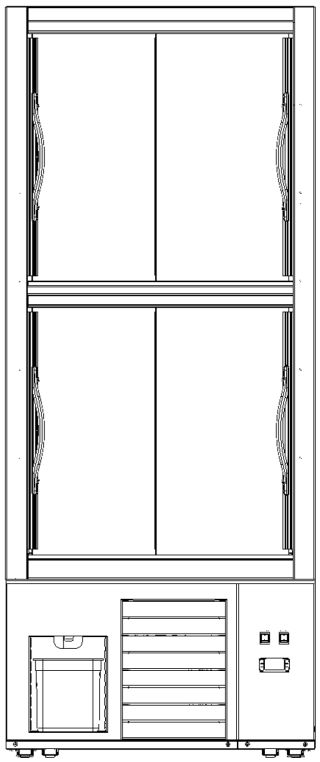





**FRONT ELEVATION**



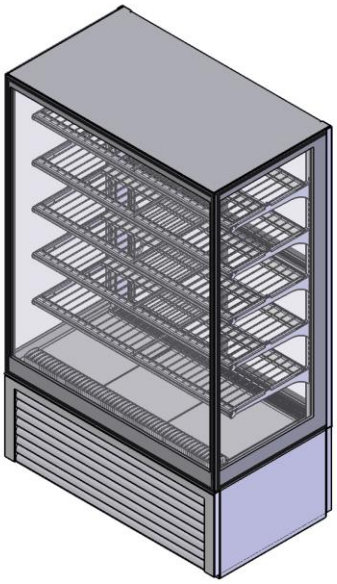

**SIDE ELEVATION**

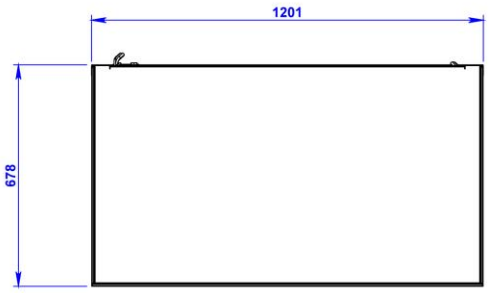


**REAR ELEVATION**

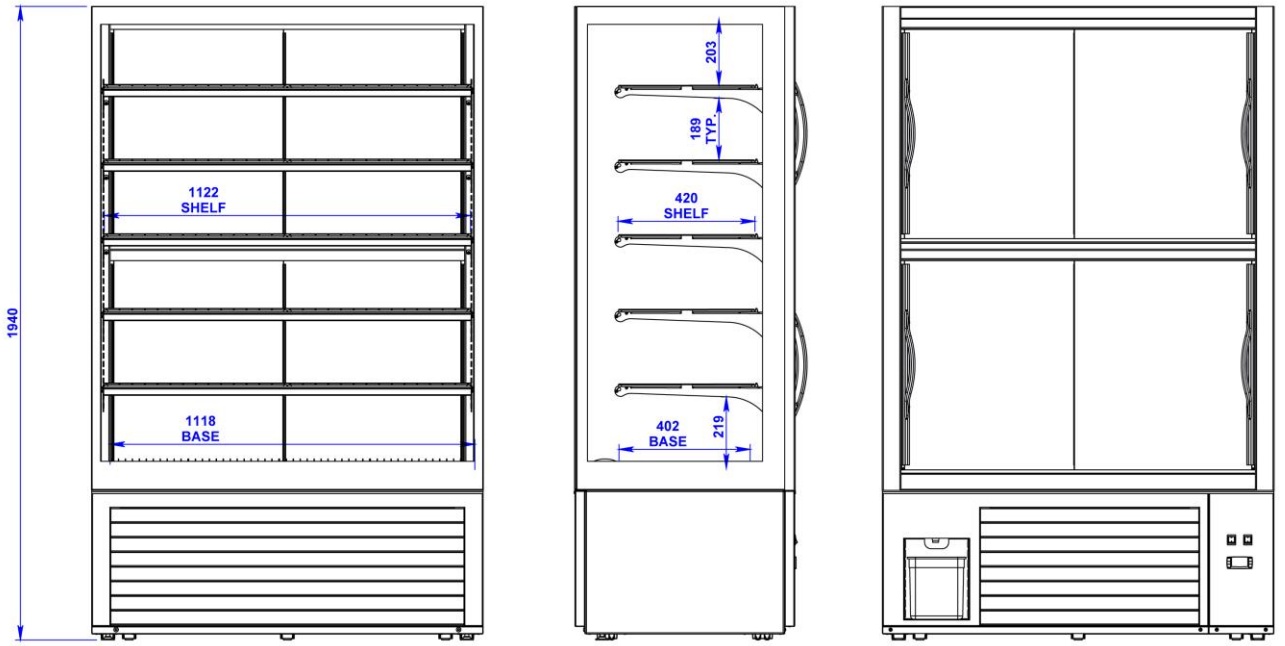
 

**IN-TC12-A001**






PLAN




FRONT ELEVATION

SIDE ELEVATION

REAR ELEVATION

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