FPG

PRODUCT MANUAL

INLINE 4000S
FOOD CABINETS

Refrigerated Cabinets

Square Format

INSTALLATION - OPERATION - MAINTENANCE

Table of Contents

INTRODUCTION

Welcome

REFRIGERATED 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 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.

The warranty is extended to THREE YEARS (36 months), for refrigeration condenser units. Conditions apply, see Liability Exceptions.

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

Continued on next page

Warranty cont.

REFRIGERATED 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 lighting strips or gaskets.
- Maladjustment of the electronic refrigeration controller, by an unqualified person.
- 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 CABINETS - OPERATION

4000 Series Cabinets

The 4000 Series Square cabinets are available with either fixed glass or sliding glass front doors, and sliding glass rear doors.

The series includes Ambient, Heated and Refrigerated models.

The cabinet lighting and temperature controls are on the back of the cabinet.

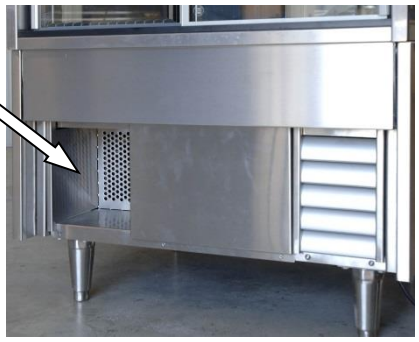
Lighting

All cabinets are fitted with high efficiency LED lighting strips in the ceiling of the cabinet and below each shelf, as standard.

Compressors

The condenser is located in the left side of the cabinet base.

Condenser cooling air is exhausted through the cavity where the condensate container is located, so if the supplied container is not used, the air grill must not be blocked by a larger container.



Controls

REFRIGERATED CABINETS - OPERATION

Control Panel

The controls are mounted on the back of the cabinet. There is a power switch, a light switch and a refrigeration control panel.

Power and Refrigeration

To turn the power and refrigeration on, use the switch, with the ON/OFF symbol. The refrigeration will be ON by default, see below.

Lights

To control the lights, use the switch, with the LIGHT symbol.

Temperature Controller

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

The display indicates the cabinet air temperature.

Temperature Controller Adjustment

Caution:
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 CABINETS - OPERATION

Shelf Location and Ticketing

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

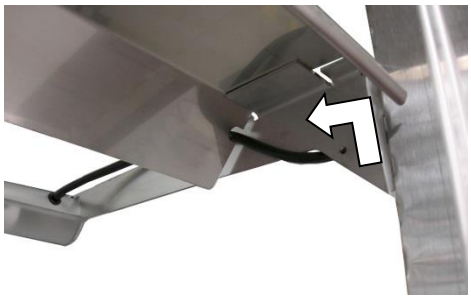
The movement is restricted to 50mm, because of the electric cables to the lights. For greater movement contact the manufacturer or supplier for advice, as electrical modifications may be required.

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

Shelf Adjustment

To move the shelf brackets, first remove the sliding doors and the shelf trays.

Using two people, one on each bracket, lift the brackets straight up firmly 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.

The brackets may be positioned to give two different degrees of slope to the shelves.

Refit all shelf trays and doors.

N.B. *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 and Fans

Ensure that power is connected to the cabinet.

Note that the evaporator fan will run whenever power is connected, even though the refrigeration switch may be off.

Turn on Refrigeration

Turn on refrigeration switch, as shown above. The condenser will run, and the cabinet temperature will begin to fall.

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

Fumes and Odours

Before use, operate the cabinet for 1-2 hours to remove any fumes or odours, which may be present. This will avoid possible tainting of food.

Continued on next page

Preparation cont.

REFRIGERATED CABINETS - OPERATION

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 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 defrost system improves the energy efficiency of the cabinet, and minimises temperature fluctuations.

Load Cabinet

Load the cabinet with pre-chilled product, from either the front or rear doors.

The cabinet is designed to maintain the temperature of pre-chilled product at between 2° and 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.

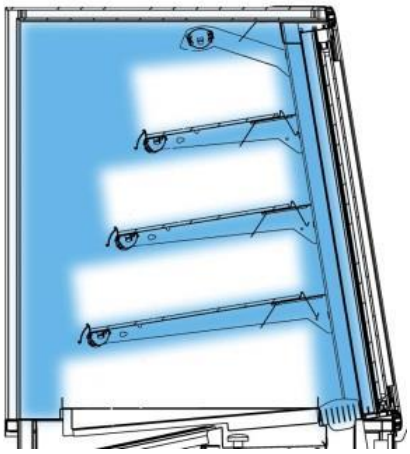
Loading Restrictions

It is important to leave adequate free space for the refrigerated air to circulate within the cabinet.

Product should be kept clear of the shaded areas, shown in the picture.

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 at all.



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.

Routines

REFRIGERATED CABINETS - OPERATION

After Hours

Ideally, cabinets should not be turned off after hours or at night. Products can either be left in the cabinet or placed in night storage. Shut the cabinet doors and turn off the lights. The cabinet will then operate on minimum load, and stay cold, ready for instant operation when next required.

If the cabinet is turned off, allow it to run for about half an hour before replacing the pre-chilled products.

Cleaning

Since the cabinet needs to be switched off during cleaning operations, it is best to clean it at the end of the working day. The cabinet will then have time to recover its normal operating temperature, before replacing the products.

Once the cleaning is finished, turn the cabinet on again, turn off the lights and shut the doors. The cabinet will cool down under minimum load and be ready for the next day's use.

De-frost Cycle

The cabinet will de-frost automatically six times per day. The cabinet should NOT be temperature tested within ½ hour of a de-frost programme being completed.

The first defrost cycle will occur four hours after the cabinet is first switched on.

Door Opening

The cabinet is designed to maintain food at a temperature of 2° to 4°C. The refrigeration system is designed to maintain this temperature with the doors being opened and closed up to 85 times per hour.

If the doors are left open for an extended period the temperature will rise. Once the doors are shut the temperature will take sometime to fall to the normal operating level. The longer the doors are open the longer the time to restore normal operating temperature.

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 fuse has blown	***Have wiring checked and replace fuse*** *(5A Slow Blow)*
	The main switch on the cabinet is OFF	Turn the main switch ON
Cabinet does not reach temperature	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
	Thermostat needs adjustment	***Adjust controller***
	Ambient temperature > 25°C	Adjust store air conditioning
	Damaged or missing door seal	***Replace door seal***
	Evaporator coil iced up	***De-ice coil***
	Condenser radiator blocked	***Remove dust and debris***
	Thermostat faulty	***Replace controller***
	Temperature probe damaged	***Replace temperature probe***
	Defrost cycle not suitable	***Adjust to match environment***
	Fans not operating	***Have fans checked/replaced***
Cabinet lights not working	The light switch is OFF	Turn light switch ON
	A failed LED power supply	***Replace the power supply***
	An LED strip has failed	***Replace the LED assembly***
	Fuse has blown	***Have wiring checked and replace fuse*** *(5A Slow Blow)*
Doors are not sliding smoothly	Door not in track	Install door correctly in track
	Debris in track	Clean door tracks (see cleaning)
	Lack of lubricant	Apply food grade lubricant to door track
Aluminium parts corroded	Caustic detergent damage	Order replacement parts

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

CLEANING

Cautions

REFRIGERATED CABINETS - CLEANING

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

Water **THIS UNIT IS NOT WATERPROOF. DO NOT USE A WATER JET SPRAY TO CLEAN THE INTERIOR OR EXTERIOR OF THIS CABINET.**

Exterior

REFRIGERATED 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 (e.g. Scotchbrite pads or Jif), as stainless steel and aluminium surfaces will be damaged.

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 are located by plastic guides at the top and bottom.

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

When replacing doors, make sure that they are located in the correct slots, top and bottom. The left door should be in the inner slots, and the right door in the outer slots.

Sliding door tracks should be vacuumed out regularly to keep doors sliding freely.

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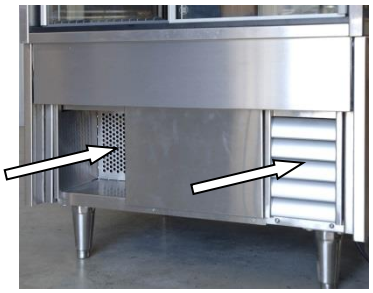
Exterior cont.

REFRIGERATED CABINETS - CLEANING

Louvers

Use a vacuum cleaner to remove dust and fluff from all of the ventilation louvers.

This will maintain the refrigeration efficiency, and prevent overheating.



Interior

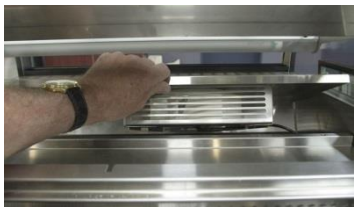
REFRIGERATED CABINETS - CLEANING

Access to the Cabinet Base Cavity

Remove the doors.

Lift out the deck trays and plastic louvers.

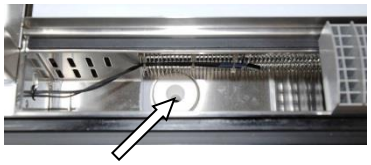
Remove the two screws, securing the fan deck.



Lift up the fan deck, and stand it vertically.

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

The whole of the cabinet interior is now accessible for cleaning.



Drain Hole

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Interior cont.

REFRIGERATED CABINETS - CLEANING

Cleaning the Base Cavity

Sweep out, or use a vacuum cleaner, to remove any debris from the cabinet base cavity. **Make sure that the condensate drain hole is clean.**

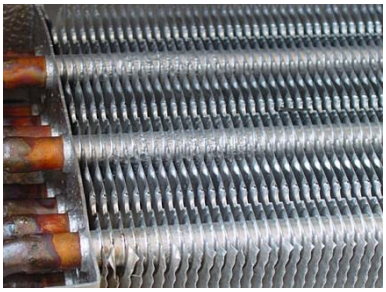
A Wet-and-Dry vacuum cleaner should be used, since there is likely to be some water in the bottom. Finally, wipe out the bottom with a damp sanitized cloth.

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

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.



Temperature Probes

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

One probe is located on the fan side of the cooling coil, in free air. A second probe is inserted between the fins of the cooling coil on the air exit side.

Do NOT move the probes.

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 (e.g. Scotchbrite pads or Jif), 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 effect air circulation and the cabinet temperature.

Routines

REFRIGERATED 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 the refrigeration equipment.

Condenser Radiator

For efficient refrigeration performance, the condenser radiator 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 the cabinet temperature may rise.

Regular vacuuming will prevent a build-up of dust and fluff, however, three monthly service checks, which include cleaning of the condenser using $C0_2$ by a refrigeration engineer, are mandatory.

Remove the louvered panel to access the radiator. 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.

Condensate

The condensate container should be checked each time the cabinet is cleaned.

The quantity of water will depend on the relative humidity and cabinet contents. Natural evaporation can be sufficient to keep the container empty, but if water has accumulated, it should be removed and emptied regularly.

If preferred, particularly in high humidity situations, the condensate can be plumbed to a drain.

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.

INSTALLATION

Regulations

REFRIGERATED 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 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 cabinet is supplied fully assembled, but the shelf trays are packed separately.

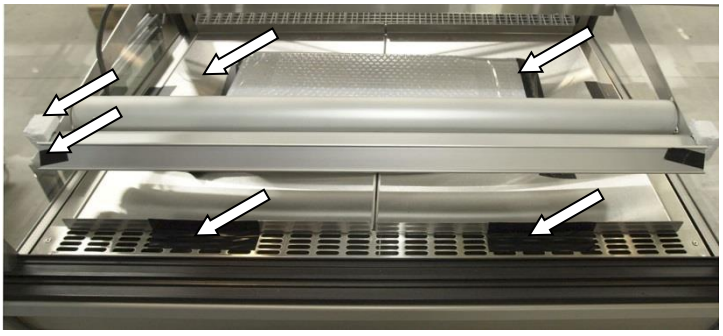
Site Preparation

Ensure the cabinet location and any bench cut outs are made to the precise measurements shown in the Mechanical Drawings.

For In-Counter and On-Counter installations, the joinery design must provide unrestricted ventilation for the condenser unit, and allow access for emptying the condensate bucket.

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).

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 as shown.

Shelf Trays

Remove the shelf trays from their packing, peel off the protective plastic coating and assemble them on the support members.

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Setting Up cont.

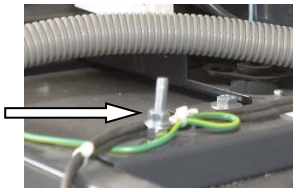
REFRIGERATED CABINETS - INSTALLATION

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.



Power Supply

Before connecting to the power supply, check that the local supply is correct to that shown on the rating plate, located on the rear of the cabinet.

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.

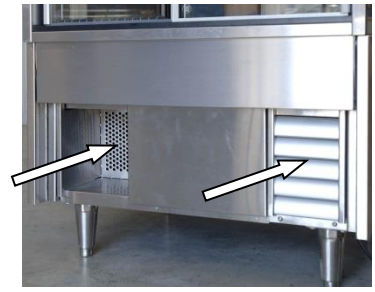
Location

REFRIGERATED CABINETS - INSTALLATION

Ventilation

The louvers located on the rear of the cabinet must never be obstructed. If obstructed the cabinet may overheat and cause an electrical malfunction.

Before use, operate the cabinet for 1-2 hours, to remove any fumes or odours which may be present.



Access

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

Livery

REFRIGERATED CABINETS - INSTALLATION

Custom Livery

Custom livery is available by special order only.

SERVICING

Control Gear

REFRIGERATED CABINETS - SERVICING

Location

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

Remove the top plate to access the power supplies for the lights, a phase-shift capacitor for the evaporator fan, the refrigeration and cabinet controller and a protective fuse.

Lighting

REFRIGERATED 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.

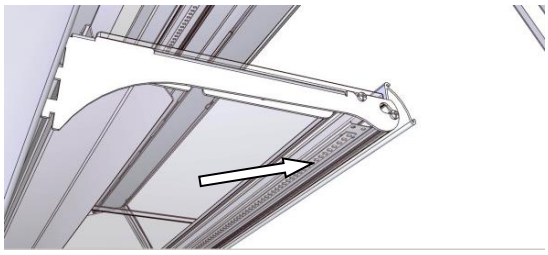
If there is a dc output, the LED strip must be replaced.

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.

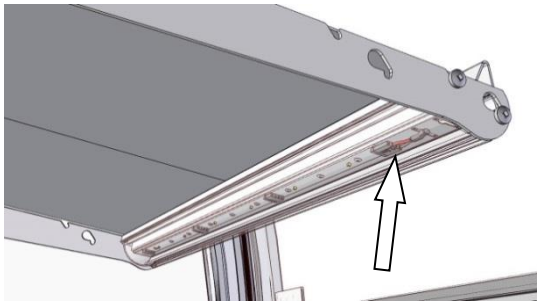


LED Strip Replacement

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.



Refrigeration

REFRIGERATED CABINETS - SERVICING

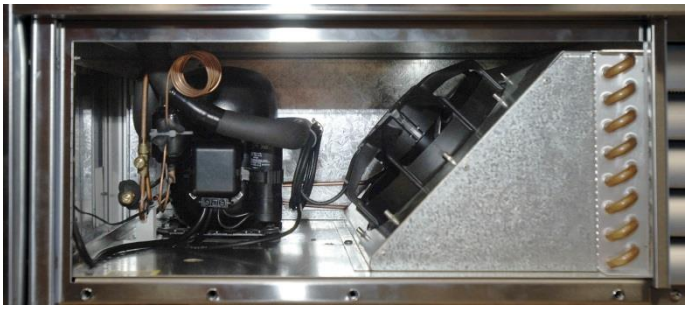
Caution

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

Access to Compressor etc.

To gain access to the integral refrigeration Compressor etc., the rear panel should be removed from the left side of the cabinet base.

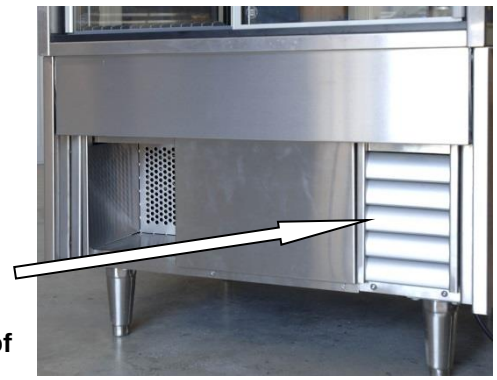
The panel is secured by screws along its bottom edge.



Condenser Radiator

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

Remove the louvered panel to access the condenser radiator.



Regular vacuuming will prevent a build-up of dust and fluff, but mandatory three monthly servicing by a refrigeration engineer should include cleaning with compressed air.

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 again result.

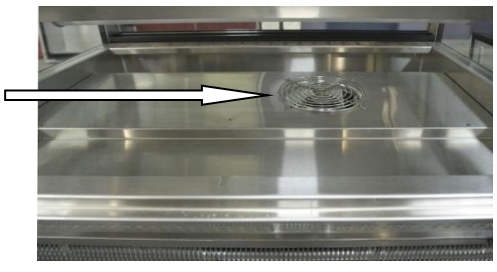
Ventilation Panels

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

Cabinet Air Circulation Fan

The cabinet air circulation fan is located in the base of the cabinet. Access is gained by removing the deck trays.

The fan is a single phase, capacitor run unit, with the capacitor housed in the top of the cabinet, along with the lighting control gear etc.



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Refrigeration cont.

REFRIGERATED CABINETS - SERVICING

Temperature Regulator XR40CX

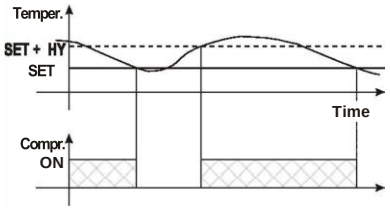
Model XR40CX is a microprocessor based controller.
It uses with three NTC probes, the first one, for temperature control, is located in the return air (air on). The second one, located between the fins of the cooling coil, measures the defrost termination temperature. The third one monitors the condenser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

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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 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 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.

Continued on next page

Refrigeration cont.

REFRIGERATED 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.

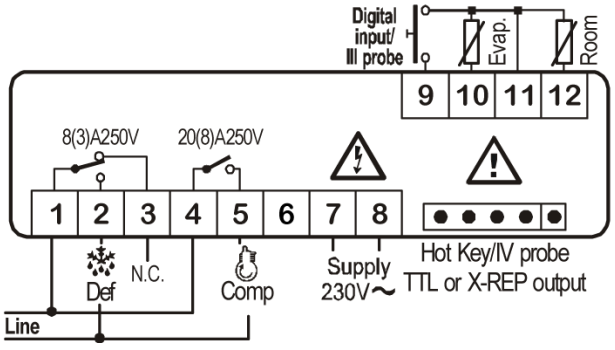
Temperature alarms HA, LA, HA2 and LA2 automatically stop as soon as the temperature returns to normal values.

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 **On the display** or in dP2, dP3, dP4: the selected probe is not enabled
noA	No alarm is recorded.

XR40CX Connections



Door Seals

REFRIGERATED CABINETS - SERVICING

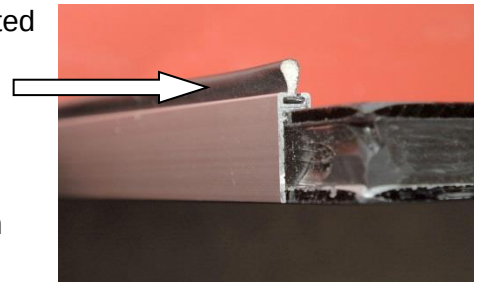
Seal Replacement

The doors should be removed to allow the old seals to be removed and the new ones fitted. See the Cleaning section for details.

Sliding Doors

Each sliding door has a rubber seal between the door and the cabinet end panel. The seal slides into a groove in the door extrusion, and can be withdrawn and replaced, if damaged.

A centre seal is fitted between the inner and outer doors. The Qlon seal is located in a slot in the aluminium extrusion, and can be replaced if damaged.



Mains Lead

REFRIGERATED CABINETS - SERVICING

Lead Replacement

If damaged, the mains lead must ONLY be replaced by a qualified service person.

Improvements

REFRIGERATED CABINETS - SERVICING

Ongoing Development

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

SPECIFICATIONS

Mechanical

REFRIGERATED CABINETS - SPECIFICATIONS

	CABINET MODEL			
	IN 4C08S	**IN 4C12S**	**IN 4C15S**	**IN 4C18S**
Height	1405 mm	1405 mm	1405 mm	1405 mm
Width	803 mm	1203 mm	1503 mm	1803 mm
Depth	778 mm	778 mm	778 mm	778 mm
Dry Weight	163 kg	212 kg	250 kg	290 kg
Cabinet Well Material	Stainless steel			
Cabinet Colour	Grey and natural anodised aluminium.			
Top Lighting	Standard			
Shelf Lighting	Standard			
Glass Type	Double glazed			
Front Doors	Fixed or Sliding options			
Number of Shelves	Three plus base			
Shelf Display Area	1.0 m² plus base 0.4 m²	1.5 m² plus base 0.6 m²	2.0 m² plus base 0.7 m²	2.5 m² plus base 0.9 m²
Refrigerant	R134A	R134A	R134A	R134A
Refrigerant Charge Refer to Serial No. label	≈ 650 g	≈ 420 g	≈ 600 g	≈ 850 g
Condensate capacity	2.5 litres			
Climatic Class & IP	Cabinets are tested under Climate Class 3 conditions and have IP 20 ratings			

Electrical

REFRIGERATED CABINETS - SPECIFICATIONS

	CABINET MODEL			
	IN 4C08S	**IN 4C12S**	**IN 4C15S**	**IN 4C18S**
Voltage	220 - 240 V 50 Hz 1ϕ			
Power	0.64 kW	0.69 kW	0.9 / 1.3 kW	1.13 kW
Current	2.8 A	3.0 A	4.3 / 5.7 A	4.9 A
Connection	3 pin plug, 10 A lead			
Temperature Range	Refrigerated 2° - 4°C Controlled Ambient 16° - 18°C			
Lighting	4 x LED strips	4 x LED strips	4 x LED strips	4 x LED strips

The above power ratings are for the standard cabinets, with LED lighting and without ACR units.

Controller Settings

REFRIGERATED CABINETS - SPECIFICATIONS

Dixell XR40CX Settings

		Cold Models		Controlled Ambient Models		
	Parameter	Integral Condenser	Remote Condenser	Integral Condenser	Remote Condenser	Units / Range
Set Point	Set	2	2	16	16	degC
Differential	Hy	2	2	2	2	degC
Third Probe Used	P3P	Y	*n*	Y	*n*	n, Y
Anti Short Cycle Delay	AC	0	0	0	0	Min
Comp On Time - Faulty Probe	C0n	4	4	4	4	Min
Comp Off Time - Faulty Probe	C0F	6	6	6	6	Min
Defrost Terminate Temp	dtE	3	3	3	3	degC
Interval Between Defrosts	IdF	4	4	4	4	Hrs
Display During Defrost	dFd	DEF	DEF	DEF	DEF	rt, it, SEt, DEF
Maximum Temperature Alarm	ALU	12	12	*110*	*110*	degC
Differential For Temp Alarm	AFH	8	8	*1*	*1*	degC
Temperature Alarm Delay	Ald	60	60	*15*	*15*	Min
Probe For High Temp Alarm	AP2	P3	*nP*	P3	*nP*	nP, P1, P2, P3, P4
High Temp Alarm Set Point	AU2	100	*110*	100	*110*	degC
High Discharge Temp Alarm Diff	AH2	25	*5*	25	*5*	degC
High Discharge Temp Alarm delay	Ad2	0	*15*	0	*15*	Min
High Alarm Delay At Start	dA2	0	*1.3*	0	*1.3*	Min
Comp Off For High Temp Alarm	AC2	Y	*n*	Y	*n*	n. Y

Parameters shown thus are Dixell default settings

Compliance

REFRIGERATED CABINETS - SPECIFICATIONS

Safety Aspects

This cabinet has been designed to comply with the relevant requirements of the following specifications:

- AS/NZS 3100 : General Requirements for Electrical Equipment
- 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

Operational Safety

This appliance is not intended for use by young children or infirm persons, unless they have been adequately supervised by a responsible person, to ensure that they can use the appliance safely.

Young children should be supervised, to ensure that they do not play with the appliance.

Performance Aspects

The refrigerated cabinets are HACCP compliant, with the following performance:

Cabinet Operating Temperature	Average Internal Humidity	Test Conditions
+2° to +4°C	70% RH	25°C Ambient with 60% RH

NB: Cabinets can also be supplied with an operating temperature of +16°C to +18°C

Equipment Disposal

REFRIGERATED CABINETS - SPECIFICATIONS

Specialist Disposal

Specialist disposal procedures are required for the safe removal of refrigerant gasses and potentially flammable foam materials.

Pentane, Dimethyl Ether, Isobutene, Butane and Propane may be present.

Hazardous Substances

The cabinet does not contain any of the following, in its construction:

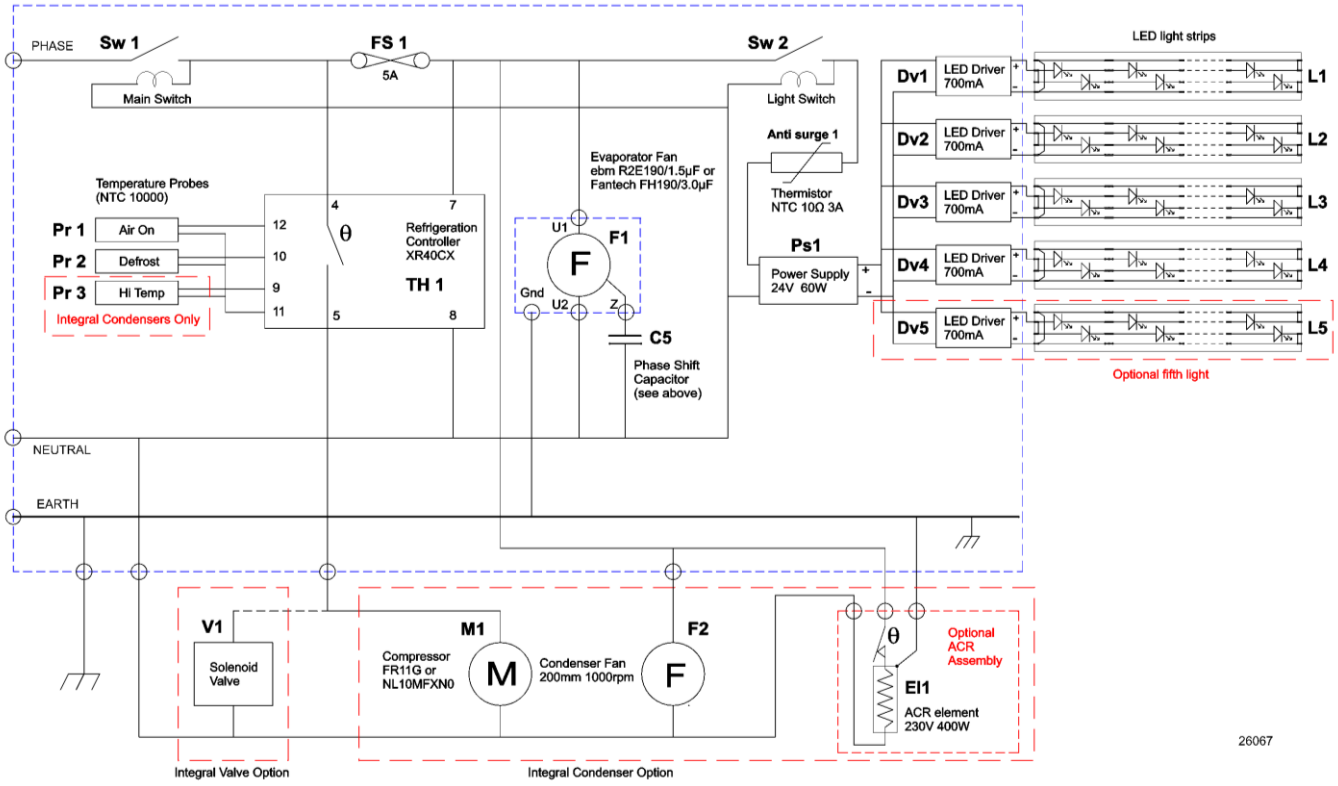
Asbestos

PCBs (Oils containing polychlorinated biphenyl)

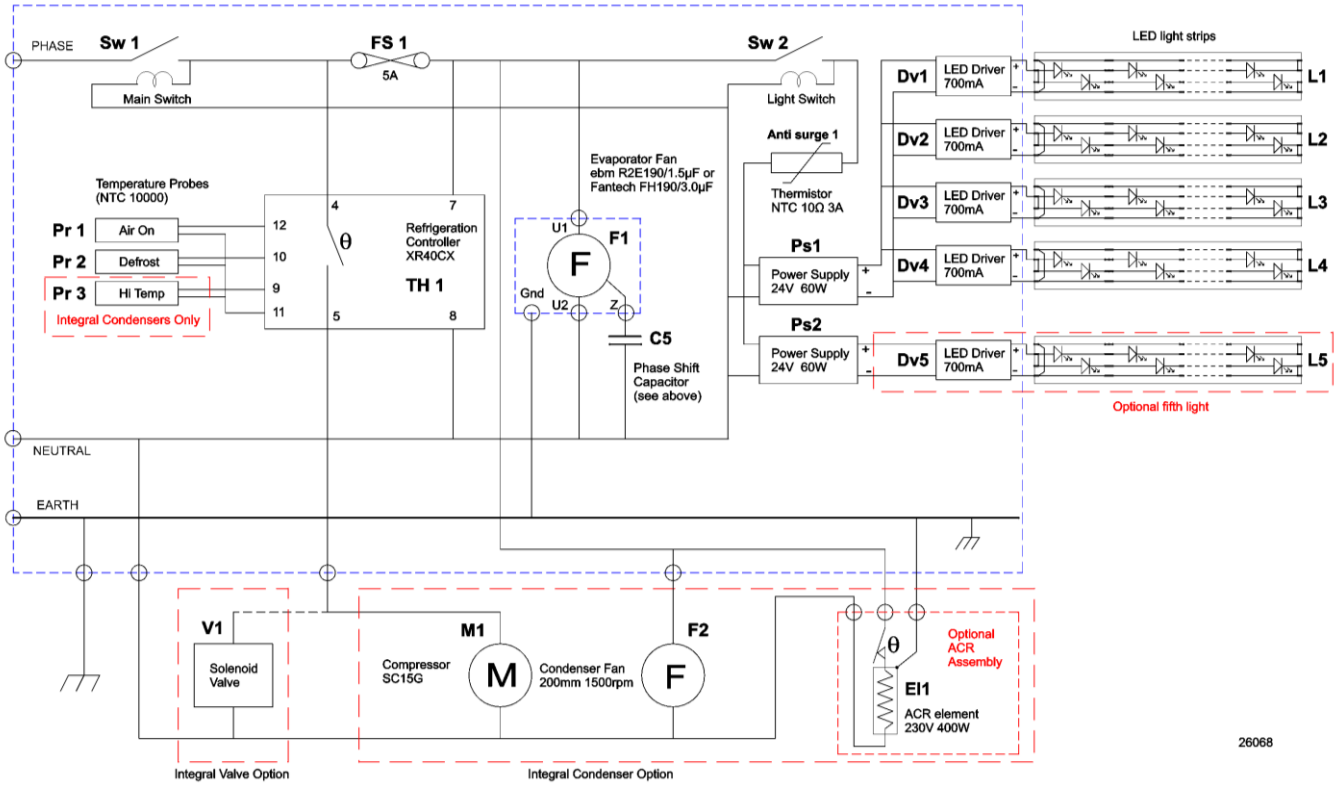
Mercury

ELECTRICAL CIRCUIT DIAGRAMS

Model: IN 4C08S **Inline 4000 Series, 800mm Refrigerated Cabinet**

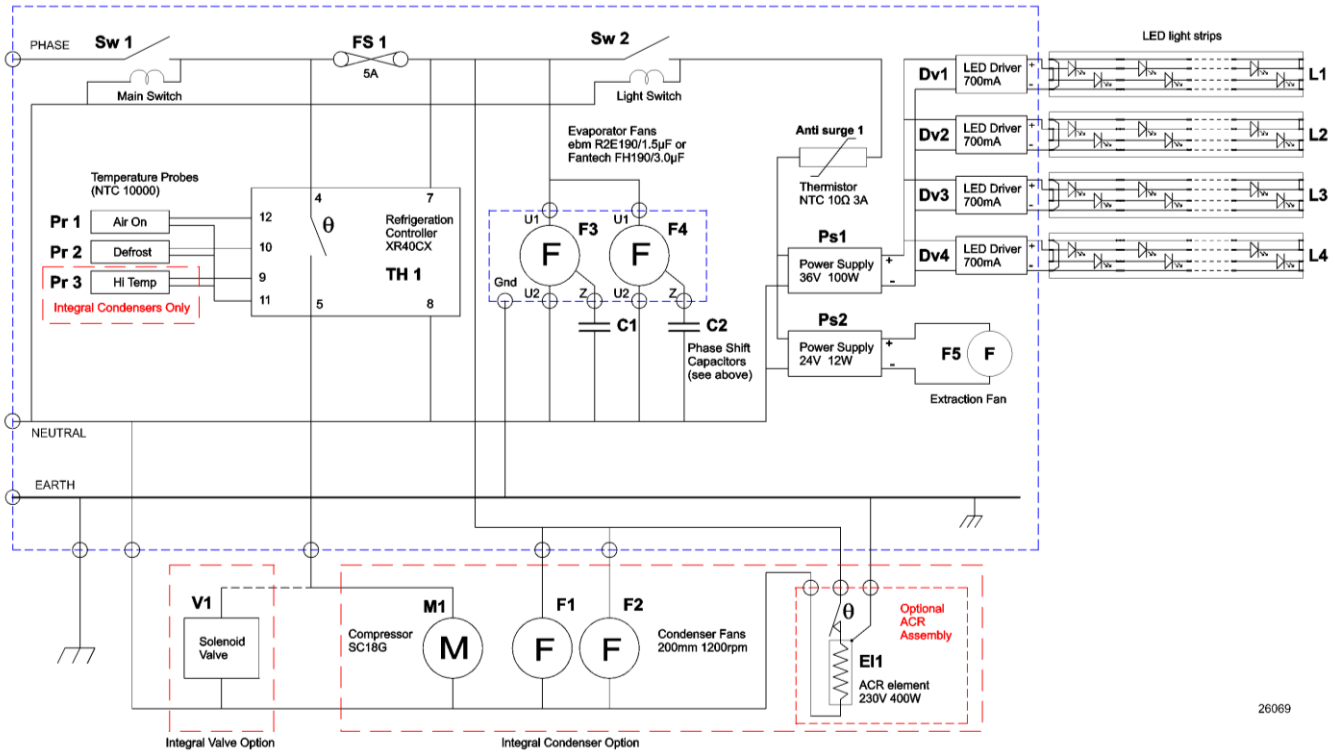


Model: IN 4C12S **Inline 4000 Series, 1200mm Refrigerated Cabinet**

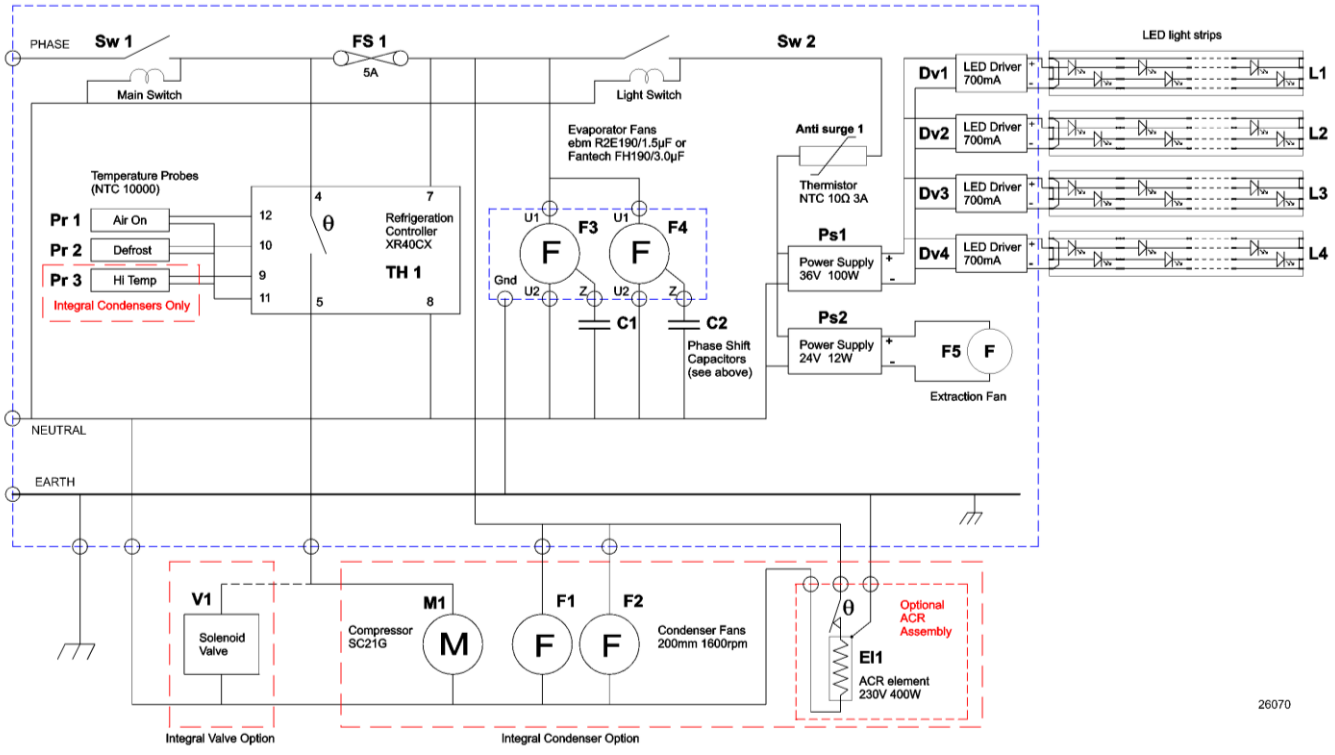


ELECTRICAL CIRCUIT DIAGRAMS, Continued

Model: IN 4C15S **Inline 4000 Series, 1500mm Refrigerated Cabinet**



Model: IN 4C18S **Inline 4000 Series, 1800mm Refrigerated 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
Dixell XR40CX digital refrigeration controller	21219
NTC temperature probe (3 metre)	15870
Fuse Link (5A, 250V, Slow Blow)	13330
Polycarbonate Light Cover 1120mm	18113
Polycarbonate Light Cover 720mm	18114
LED Driver 700mA	25762
24V 12W Fan power supply	25184
24V 60W LED power supply	21613
36V 100W LED power supply	25922
Top Light Replacement Kit for 4C08	69871
Shelf Light Replacement Kit for 4C08	69839
Top Light Replacement Kit for 4C12	69858
Shelf Light Replacement Kit for 4C12	69869
Top Light Replacement Kit for 4C15	69863
Shelf Light Replacement Kit for 4C15	69424
Top Light Replacement Kit for 4C18	69829
Shelf Light Replacement Kit for 4C18	69828
Anti-surge thermistor 10 Ohm 3A	22354
Cabinet Evaporator Circulation Fan ebm R2E190	12391
Cabinet Evaporator Circulation Fan Fantech FH190R	17995
Phase Shift Capacitor for R2E190 Fan (1.5µF 250V ac)	26230
Phase Shift Capacitor for FH190R Fan (3.0µF 450V ac)	14964
Condenser Fan Unada 200mm 1000rpm (800 cabinets)	72934
Condenser Fan Unada 200mm 1500rpm (1200 cabinets)	72938
Condenser Fan Unada 200mm 1200rpm (1500 cabinets)	72932
Condenser Fan Unada 200mm 1600rpm (1800 cabinets)	72936
Extraction Fan BLDC 60mm 24V dc	23282
ACR Element 400W, with thermostat	18274
Compressor FR11GXN0	21481
Compressor NL10MFXN0	21734
Compressor SC15GXN0	21744
Compressor SC18GXN0	21669
Compressor SC21GXN0	21670

SPARE PARTS Continued

Location of Glass Parts

In the following table, handed glass parts are labelled as viewed from the REAR of the cabinet.

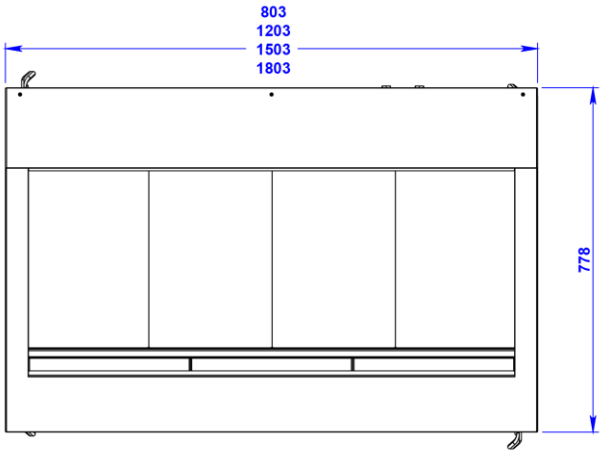
Part Description	FPG Part No.
4K Square Glass End Panel LH-RH	21234
Top Glass (800 cabinets)	21249
Top Glass (1200 cabinets)	21250
Top Glass (1500 cabinets)	21251
Top Glass (1800 cabinets)	21252
4K 800 Refrigerated DG Flat Inner Slider Door	69390
4K 800 Refrigerated DG Flat Outer Slider Door	69391
4K 1200 Refrigerated DG Flat Inner Slider Door	69577
4K 1200 Refrigerated DG Flat Outer Slider Door	69576
4K 1500 Refrigerated DG Flat Inner Slider Door	73631
4K 1500 Refrigerated DG Flat Outer Slider Door	73630
4K 1800 Refrigerated DG Flat Inner Slider Door	73633
4K 1800 Refrigerated DG Flat Outer Slider Door	73632
Front fixed glass(800 cabinets)	21539
Front fixed glass(1200 cabinets)	21541
Front fixed glass(1500 cabinets)	21542
Front fixed glass(1800 cabinets)	21543
Slide-in rubber door seal	11424
Qlon door seal	12922
Plastic Air Grill	12480
Solenoid Valve Body	23412
Solenoid Valve Coil 230V 9W	23413
Product Manual for Inline 4000 Square Series Refrigerated Cabinets	26125

MECHANICAL DRAWINGS

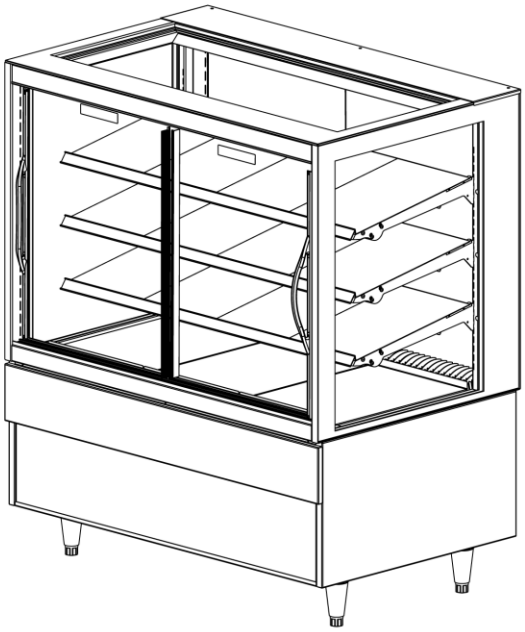
Dimensions

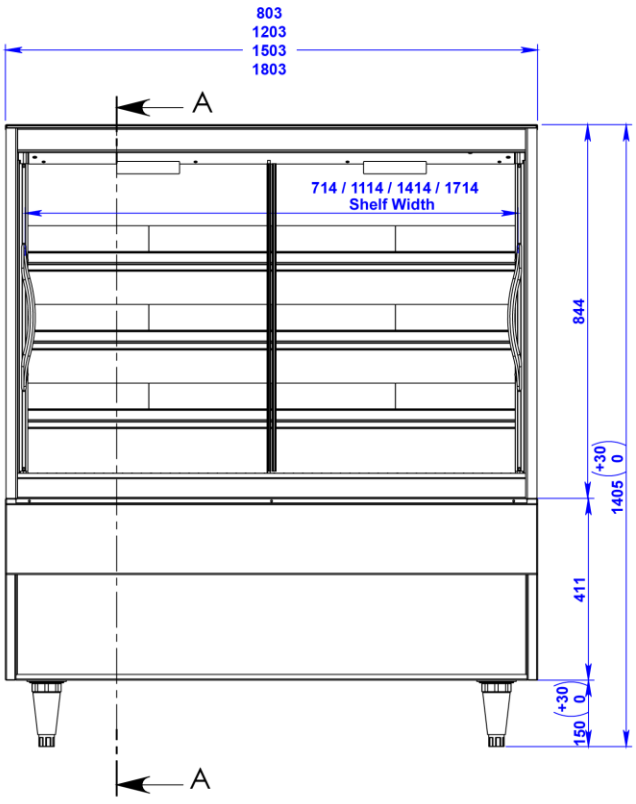
REFRIGERATED CABINETS - MECHANICAL DRAWINGS

IN-4C08S/12S/15S/18S Square – Sliding front doors

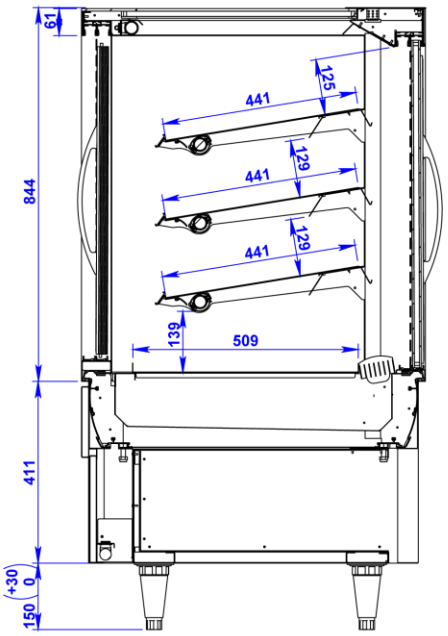


PLAN





FRONT ELEVATION

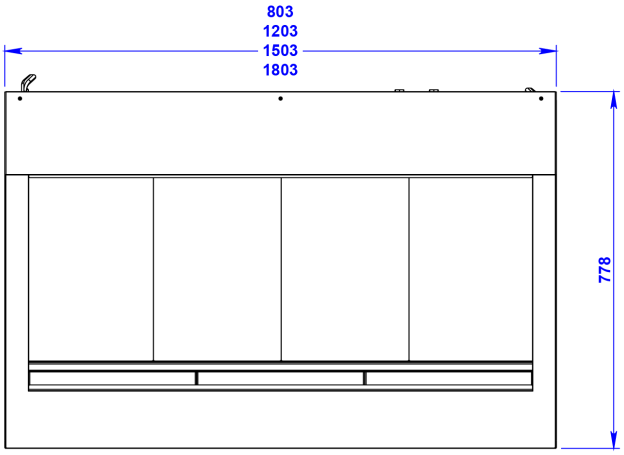


SECTION A-A

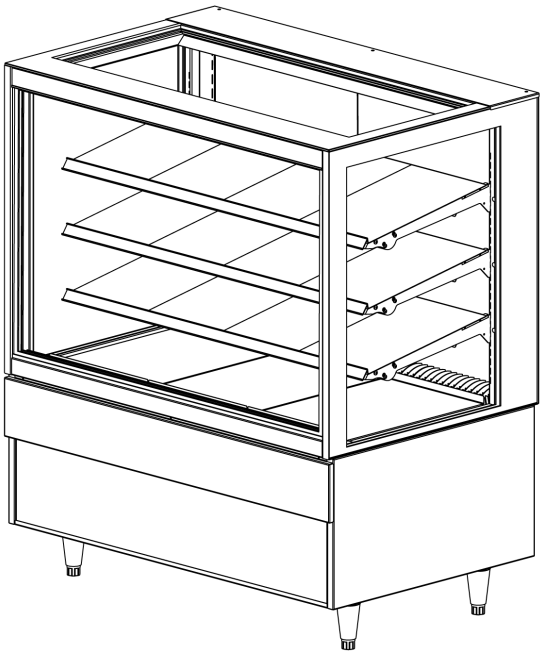
Dimensions cont.

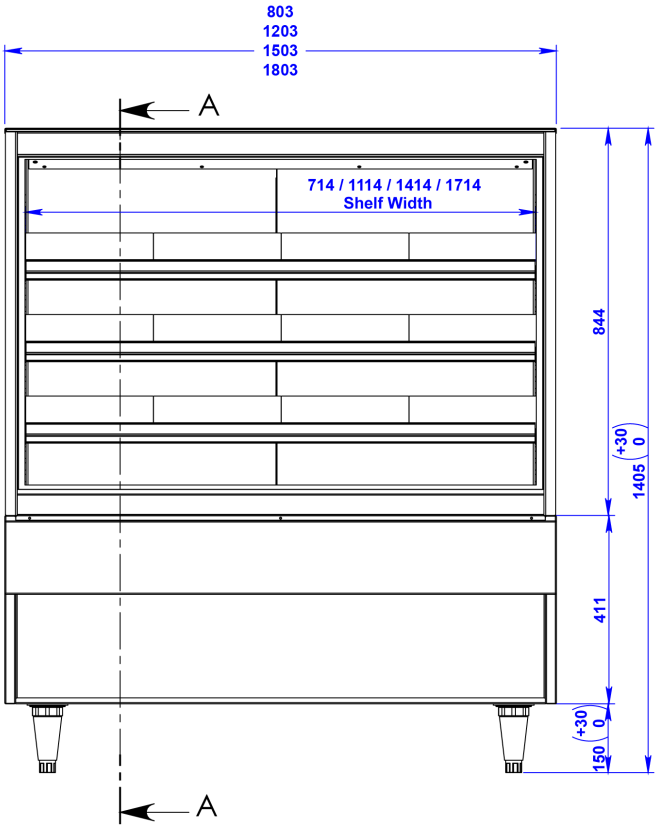
REFRIGERATED CABINETS - MECHANICAL DRAWINGS

IN-4C08S/12S/15S/18S Square – Fixed front glass

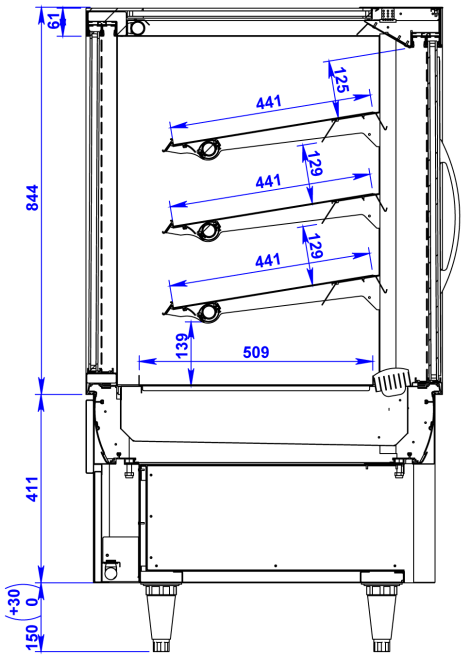


PLAN





FRONT ELEVATION

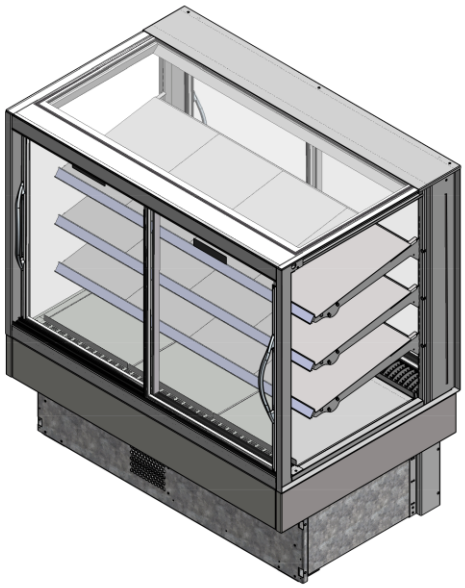


SECTION A-A

Dimensions cont.

REFRIGERATED CABINETS - MECHANICAL DRAWINGS

IN-4C08S/12S/15S/18S Square On-counter Versions

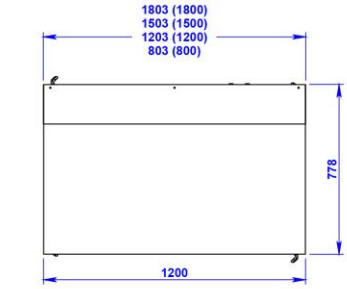


Dimensions cont.

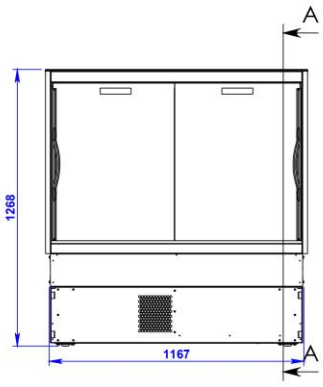
REFRIGERATED CABINETS - MECHANICAL DRAWINGS

IN-4C08S/12S/15S/18S Square In-counter Versions

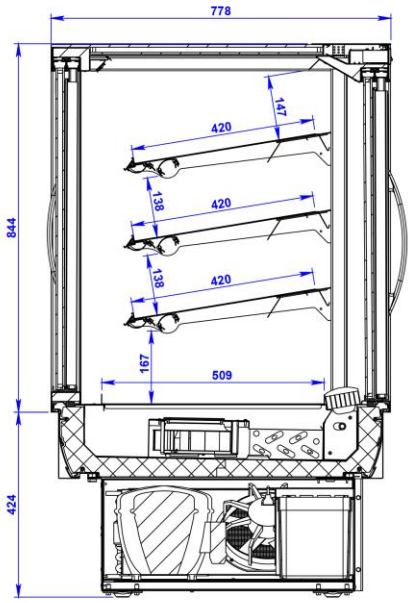
PERSPECTIVE



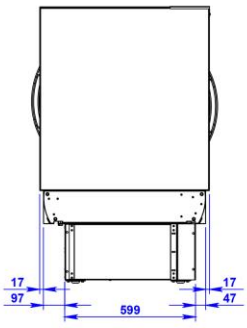
PLAN



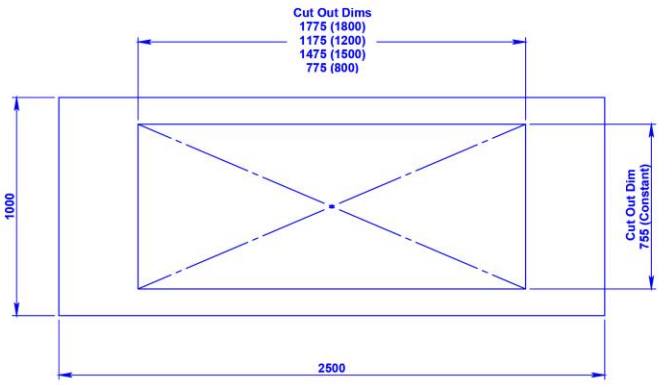
FRONT ELEVATION



SECTION A-A



SIDE ELEVATION

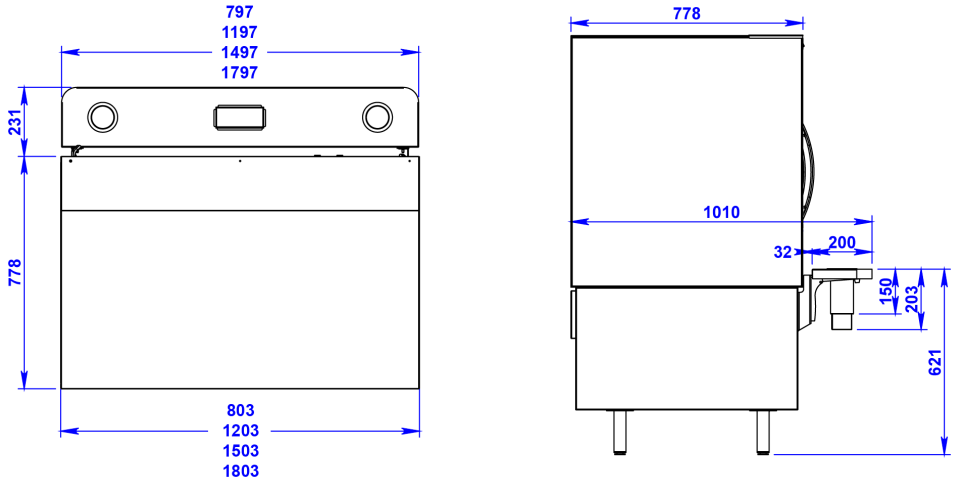


Dimensions cont.

REFRIGERATED CABINETS - MECHANICAL DRAWINGS

Optional Rear Shelf

Cabinets can be fitted with a rear sandwich preparation shelf, as an optional extra.



Cabinet Variants

The drawings show the common overall dimensions for 800mm, 1200mm, 1500mm and 1800mm cabinets.

The cabinets can have front sliding doors, or a single fixed front glass.

An optional interior modification is also available, to accommodate “Gastronorm dishes”.

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