MODELS
IN-VA10-HC-B1XX

PRODUCT MANUAL 33336

REV A MAY 2024

FPG

FPGWORLD.COM

visair

DUAL ZONE 1000
FREESTANDING/OPEN FRONT
HEATED/REFRIGERATED: R290 **VSD**

WIDTHS: 1000mm

HEIGHT: 1480mm

INTEGRAL REFRIGERATION

Warnings

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.
Water	THIS UNIT IS NOT WATERPROOF. DO NOT USE A WATER JET SPRAY TO CLEAN THE INTERIOR OR EXTERIOR OF THIS CABINET.
Caution	Do not store explosive substances, such as aerosol cans with flammable propellant, in this appliance.
Mains Supply Cord	If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons, in order to avoid a hazard.
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
≥ 9.57 m^2 Floor Area	This cabinet must only be installed, operated, and stored in a room with a floor area greater than the stated area.

Table of Contents

INTRODUCTION

Welcome

VISAIR 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 Visair 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 Visair 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 operate and look after your Visair 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

VISAIR 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.

For refrigerated cabinets with integral or near-remote refrigeration 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.

Liability Exceptions

Liability under this warranty does not include:

- Any loss, damage, or expenses directly or indirectly arising from the use of, 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, flood, fire or acts of God.
- Damage, resulting from failure to have the cabinet regularly serviced by a refrigeration engineer:
  - For cabinets with integral or near-remote refrigeration, every three months. NB: You will be required to provide copies of service records in the event of condenser failure.
  - For cabinets with remote refrigeration, annually.
- 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 assemblies or gaskets.
- Maladjustment of the electronic refrigeration controller, by an unqualified person.
- For cabinets with integral or near-remote refrigeration, failure resulting from a lack of routine condenser / 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

FPG will not be held responsible for any servicing costs incurred prior to FPG's acceptance of a warranty claim.

OPERATION

Cabinet Layout

VISAIR CABINETS - OPERATION

Dual Zone Cabinets

These dual zone cabinets are open fronted with closed backs.

The upper zone of the cabinet is heated and the lower zone is refrigerated.

Although the combined cabinet is constructed as a single unit, each half is electrically independent, with its own power supply cable and plug.

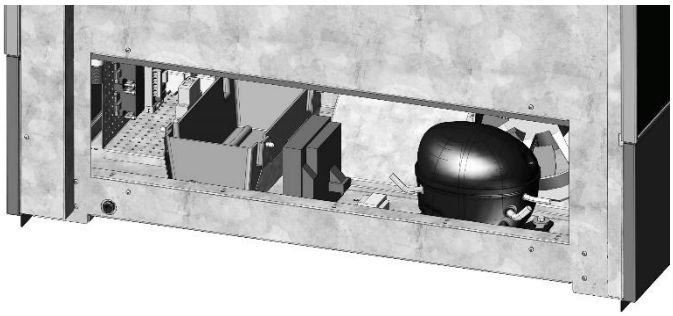
Lighting

Each half of the cabinet is fitted with high efficiency LED lighting as standard.

The lighting is not separately controlled, but comes on when the power is turned on.

Refrigeration Equipment

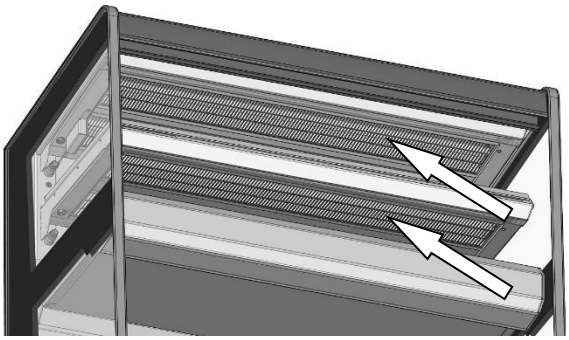
The refrigeration equipment is located in the base of the cabinet.



The cabinet has openings to allow adequate ventilation to ensure efficient performance. Air is exhausted through the grille at the back of the cabinet.

Articles which could restrict air flow must NOT be placed against the cabinet.

Heated Zone



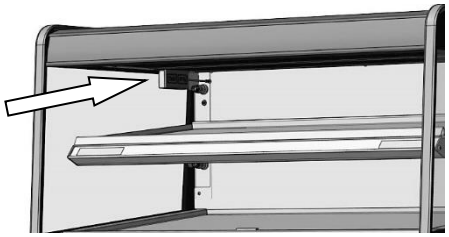
Heat is provided by radiant elements, above the shelves.

The lower shelf is directly heated by a resistive element.

Silicone Probe

The silicone encased probe, in the heated zone, replicates the infra-red heating characteristics of food products.

It will take some time for the temperature to stabilize after the cabinet is switched on from cold.



Controls

VISAIR CABINETS - OPERATION

Mains Power

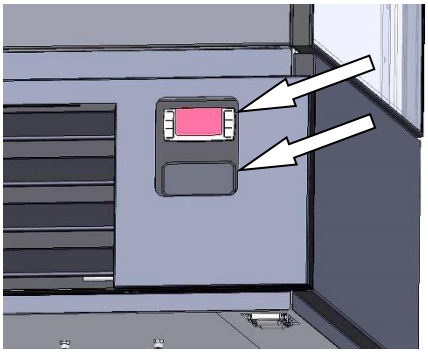
A common 10A supply feeds power to each zone of the cabinet.

All heating, refrigeration functions are controlled by electronic display panels.

The lights are not independently switched. They are controlled by the power buttons on the controllers.

A readily accessible means of electrical isolation must be provided adjacent to the cabinet.

Zone Controls



The cabinet controls are on the lower front panel.

Separate electronic controllers enable adjustment of the Heated and Refrigerated zones of the cabinet.

Heating Controller

The XR35CX is a microprocessor-based controller.

In this application it is configured as a heating controller, and unwanted functions are disabled.

The display shows the zone operating temperature.

Refrigeration Controller

The refrigeration controller features a touch-screen display.

The display shows the zone operating temperature..

Preparation

VISAIR CABINETS - OPERATION

Power Supply

Ensure that power is connected to both cabinet zones.

Heating

Use the upper control panel to turn on the heating.

The lighting in this zone will come on whenever the heating is on.

Refrigeration

1. Press the programme button once, the temperature icon, on/off button will appear.
2. Hold the programme button down until the 3 dashes appear. The Icons on the top LHS will also start to flash
3. The on/off button can now be operated.

The lighting in this zone will come on whenever the refrigeration is on.

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

Contact FPG to obtain passwords, which may be required to alter settings.

Defrost Cycle

The refrigeration system will automatically defrost periodically. By sensing the temperature of the cooling fins, the timing and duration of the defrost periods is optimised and has minimal effect on product temperature.

Load Cabinet

When the appropriate zone has reached its operating temperature, load the cabinet with pre-heated and pre-chilled product.

Hot products must be pre-heated before loading.

Shelves Positions

The shelf position in the heated zone is fixed.

The shelf position in the refrigerated zone can be adjusted to fit the product size.

Ticketing can be inserted along the front of each shelf.

Shelf Loading

The maximum loading of any shelf must not exceed 15kg of evenly distributed products.

Operational Routines

VISAIR CABINETS - OPERATION

After Hours

Products should be removed from the heated zone after hours.

This zone of the cabinet can then be switched off, to conserve power and enable cleaning.

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 resume its normal operation, before customers are next expected.

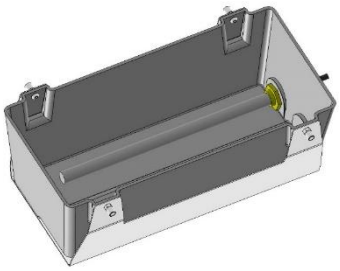
Condensate Disposal

Condensate is automatically disposed of.

The automatic condensate removal, ACR system consists of a water tray and evaporation element.

The element resistance has a positive temperature coefficient, so that the element power is reduced when it is not cooled by condensate water.

The element is replaceable, should it fail.



Temperature Monitoring

To detect uneven temperature distribution resulting from a failed element, the temperatures at all locations must be regularly monitored.

Since the cabinet uses infra-red radiation (IR), to maintain the temperature of displayed product, the air temperature will not be as high as the product temperature.

Accurate product temperature measurements can only be made by using a “probe” type thermometer, as shown below.

Periodic checks should be made, by inserting the probe into the body of a sample product.

Do not use an IR temperature gun, since ambiguous readings will be caused by random direct radiation from the elements and shelves etc.

TROUBLE SHOOTING

FAULT	POSSIBLE CAUSE	REMEDY
Heated zone does not operate	The mains switch is off, circuit breaker or fuses are off at the power board	Turn mains switch on and check circuit breakers and fuses
Heated zone temperature incorrect	Heating element failed	***Check and replace***
	Temp. probe plug dislodged	Insert plug correctly
	Incorrect controller setting	Adjust controller
	Strong draught	Relocate or shield cabinet
Refrigerated zone 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
	High condenser temperature	Clean condenser radiator
Refrigerated zone is not cold enough	Ventilation grills are blocked	Vacuum or remove blockage
	Product blocking air grill	Place product on shelves
	Evaporator coil fins blocked	Clean coil fins of debris etc.
	Strong draught	Relocate or shield cabinet
	Trays obstructing air flow	Re-position trays on shelves
	Thermostat needs adjustment	***Adjust the controller***
	Ambient temperature > 25°C	Adjust store air conditioning
	Evaporator coil iced up	***De-ice coil***
	Condenser radiator blocked	***Remove dust and debris***
	Thermostat faulty	***Replace the 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	LED strip has failed	***Replace LED strip***
	Supply plug dislodged	Insert plug correctly
Water on floor	ACR element failed	***Have element replaced***
	High humidity atmosphere	Temporary condition, no remedy
Refrigerated zone circulation fan rattling	Build-up of ice in cabinet well due to blocked drain or cabinet not being level	Clear drain, level cabinet and defrost ice

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

CLEANING

Cautions

VISAIR CABINETS - CLEANING

Power	**ALWAYS TURN THE POWER 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

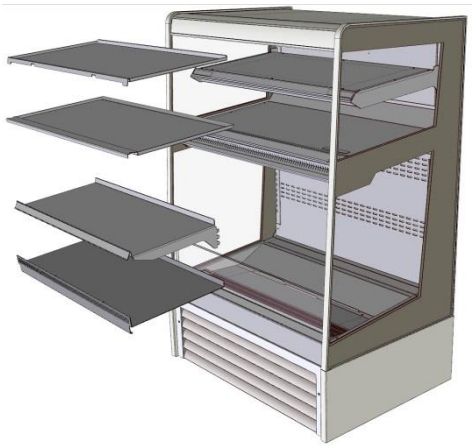
VISAIR CABINETS - CLEANING

Painted and Metal Surfaces	Painted, 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 paint, stainless steel and aluminium surfaces will be damaged.

Interior

VISAIR CABINETS - CLEANING

Condensate Tray	The condensate boil off heater 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 it out as the condensate tray will overflow and leak onto the floor.
Shelves & Trays	Shelves and trays can be removed for cleaning. They should be cleaned with hot soapy water, or in a dishwasher. Do not use abrasive pads or cleaners (e.g. Scotchbrite pads or Jif), as these may damage surfaces.



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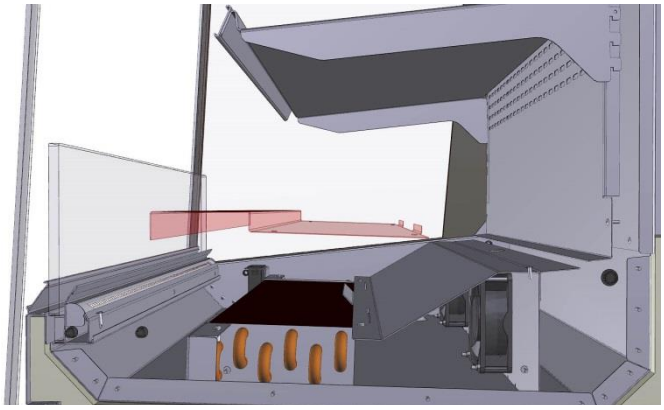
Interior cont.

VISAIR CABINETS - CLEANING

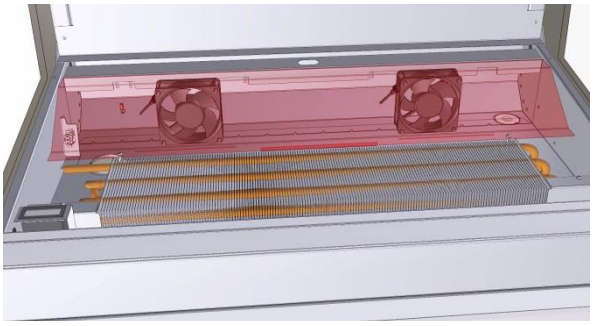
Cabinet Well



After removing the trays and shelves, remove two screws to allow the fan deck and coil cover to be lifted off.

Take care not to stretch the fan leads or damage the coil fins.

Cooling Fins



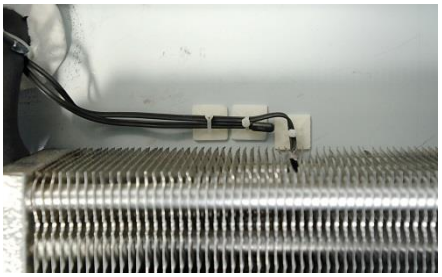
If there is debris stuck in the cooling fins, it is best to use a wet and dry vacuum cleaner to suck it out. DO NOT attempt to hose debris from fins.

Caution: The fins are very sharp. Take extra care when cleaning this area.

Temperature Probe

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

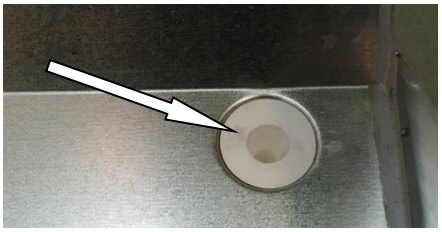
The silicone encased probe in the heated zone is fixed in place, but do not dislodge the plug.



Drain Holes

Make sure that the condensate drain in the cabinet base is free of debris.

If the drains become blocked, and water cannot drain away, the evaporator cooling coils may be damaged by a build-up of ice.



Routines

VISAIR CABINETS - CLEANING

Schedules

To maintain optimum performance, the following cleaning routine should be scheduled on a regular basis. The frequency should be adjusted to match the environmental conditions.

Condenser Radiator

Remove the louver panel by pulling the bottom edge, to disengage the magnetic catches. Then lower the top to unhook the panel from the cabinet.

Remove the pre-filter by pulling it off the retaining magnetic strips.

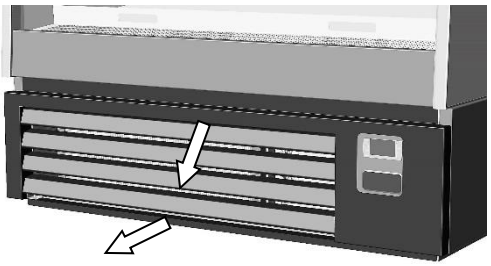
Shake off surface dust and rinse in warm soapy water. Leave to dry.

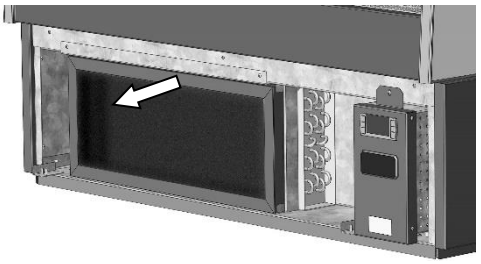
The condenser radiator fins are now exposed.

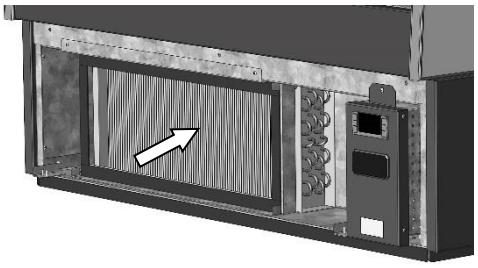
Use a vacuum cleaner to remove dust, taking care to not bend the fins.

For efficient refrigeration performance, the condenser radiator must be kept clean, (see Servicing, Condenser Radiator).

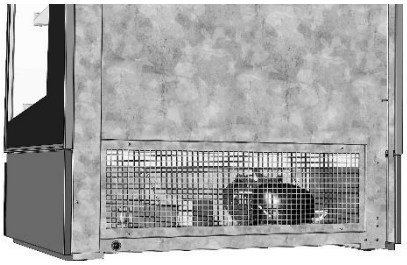
Regular vacuuming will prevent a build-up of dust and fluff, but periodic cleaning of the fins, by a refrigeration engineer, is recommended.







Rear Panel



The ventilation panel, on the rear of the cabinet, should be kept free of dust and fluff.

The cabinet is mounted on rollers, so can be pulled forwards for access.

Warning

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

Inspection

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

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

VISAIR CABINETS - INSTALLATION

Compliance with Local Requirements	It is very important that your door-less cabinet is installed correctly and that the operation is correct before use. Installation must comply with local electrical, health & safety and hygiene requirements.
Operational Safety	The appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Preparation

VISAIR CABINETS - INSTALLATION

Unpacking	Unpack and check unit for damage and report any damage to the carrier and supplier. The cabinet is supplied fully assembled. Report any deficiencies to your supplier.
Cabinet Preparation	Remove all tapes, ties and packers, used to prevent movement during transit. Lift out the deck trays and grilles to gain access to the cabinet well.
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.
Earthing	**WARNING-THIS APPLIANCE MUST BE EARTHED/GROUNDED** Cabinets will usually be earthed via the earth conductors in the three core mains leads of the refrigerated and heated cabinet zones.
Equipotential Bonding	An externally accessible terminal is also provided for bonding cabinets together and to earth.

Location

VISAIR CABINETS - INSTALLATION

Ventilation

To assist ventilation, locate the cabinet at least 20mm away from a back wall. Do not block the front ventilation grill, as this will cause the cabinet to overheat.

If the cabinet is installed in an alcove, or under any structure, a minimum clearance space of 200mm must exist above the cabinet top.

Do not place items on top of the cabinet.

The maximum recommended operating ambient temperature is 32°C.

Access

The mains power points supplying the cabinet should be accessible, to allow the cabinet to be turned off in case of emergency.

The cabinet should also be positioned so the shelves are easily reached for loading and unloading.

Draughts

The refrigerated zone features an “air curtain” to retain the cold air within the cabinet. A “curtain” of cold air falls from a linear vent, above the zone, to be re-circulated through the evaporator cooling coils.

The cabinet should not be sited where strong draughts will deflect the “air curtain”. If this happens, excess condensation will form on the products, and cooling will be less effective.

Similarly, strong draughts can cause uneven heating in the upper zone.

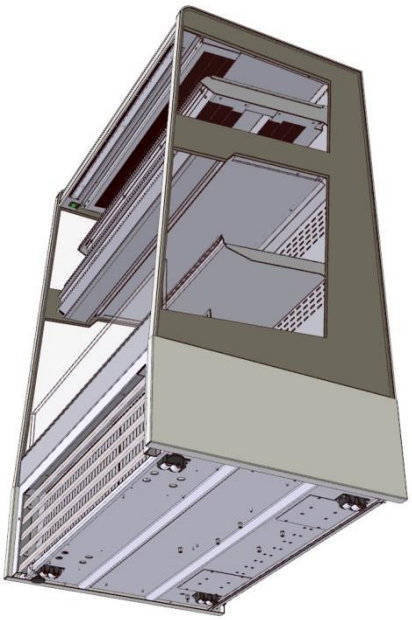
Level Site

Four rollers allow the cabinet to be easily positioned.

It is important that the cabinet stands level, so that condensate will drain away from the well.

If the cabinet is not level, both side to side and front to back, water may pond under the circulation fan and freeze. Ice will then build up into the impellor, which will start making a loud rattling noise.

If the floor is not level, use shims under the rollers, as required.



SERVICING

Lighting

VISAIR CABINETS - SERVICING

Test Lighting Components

Before replacing an LED strip, check that the power supply and drivers are working.

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

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

Remove Shelf

Unplug the lighting and heating cables, and lift out the shelf module.

See **Cleaning.**

Access to Heated Zone LED Strips

Remove two screws to release the LED assembly.

The LED strips are protected with plastic covers. 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.

Heated Zone LED Strip Replacement

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

Connection is made with a latching plug and socket.

Release the latch by pushing a small flat blade screwdriver into the upper orifice.

Fit a replacement module, pushing the connector until it clicks in place.

Refrigerated Zone LED Strip Replacement

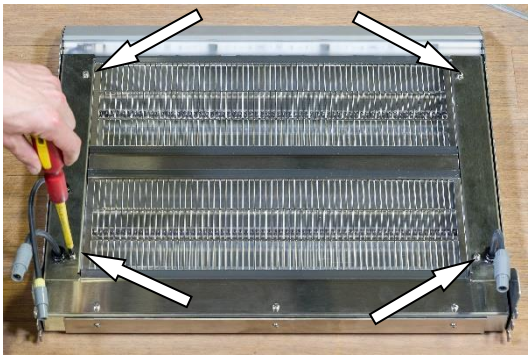
The replacement LED assemblies are different from those in the heated zone, but are secured to the cabinet with screws at each end.

Simply unplug the faulty unit and replace it with the new one.

Heating Element Replacement

VISAIR CABINETS - SERVICING

Remove Cover Plates

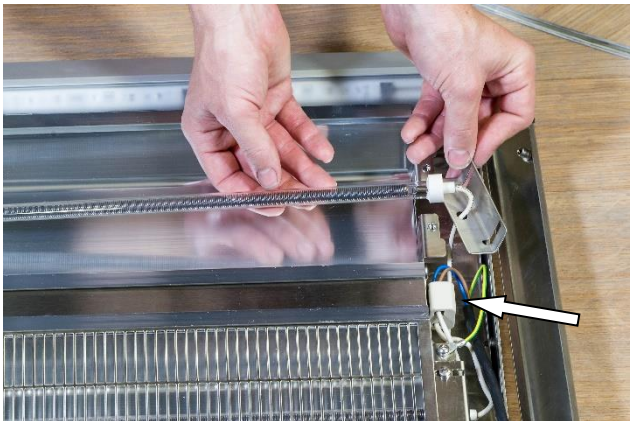



Remove the four screws that secure the cover plates on each side of the shelf.

Remove Grille


Slide out the grille from above the faulty element and remove the mounting brackets.

Replace Element



Disconnect the element tail cables from the ceramic terminal blocks at each side.

Fit a new element between the mounting brackets.

Position the brackets to allow for about 2mm expansion of the element.

Connect the tail cables to the ceramic terminal blocks.

Check Operation

Re-assemble the shelf and install it in the cabinet.

Turn the cabinet power back on and check that the fault is cleared.

When operating correctly, the front elements are turned on with the first cycle time and the rear elements are turned on with the second cycle time.

Refrigeration

VISAIR CABINETS - SERVICING

Caution

DO NOT attempt to service the refrigeration equipment without isolating the cabinet by unplugging it from the mains supply socket.

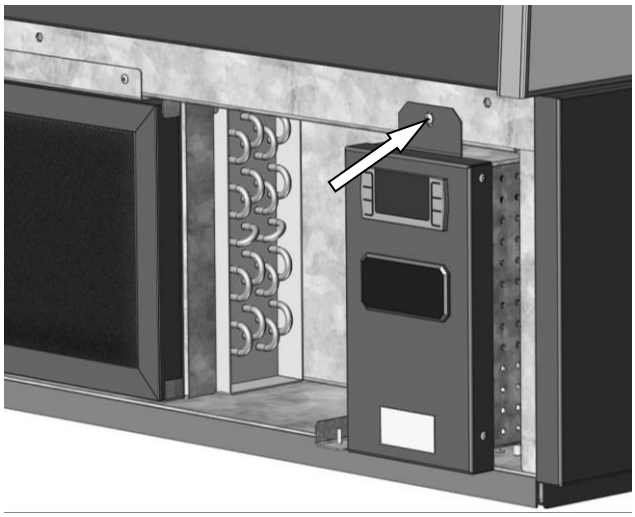
Access to Control Gear

The control gear chassis is reached by removing the louver panel from the front of the cabinet.

The chassis houses the temperature controllers, fuses, relays, LED power supplies and the terminal block for all interconnections.

Remove the top screw to release the chassis from the cabinet.

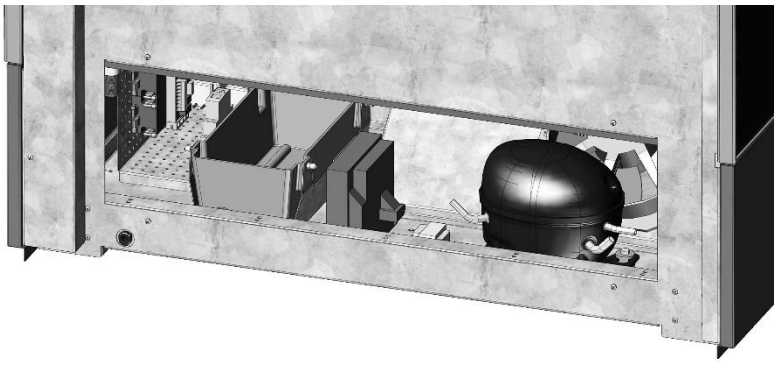
The whole chassis can then be pulled forward from the cabinet.



Access to Condensing Unit etc.

Remove the fixing screws to open the cabinet back panel.

The condenser unit and ACR element can then be reached.



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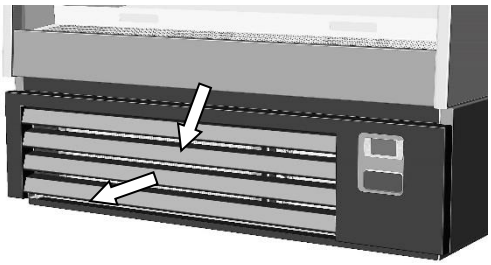
Refrigeration cont.

VISAIR CABINETS - SERVICING

Condenser Ventilation

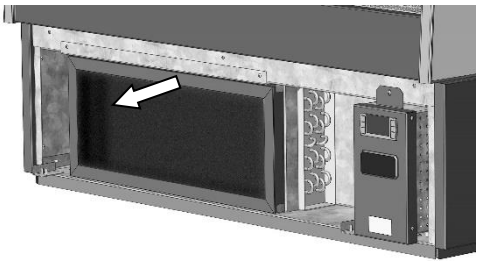
For efficient refrigeration performance, the condenser radiator and front and rear louvers must be kept clean. Failure to do this will lead to a build-up of dust, and restricted airflow will prevent the unit from working properly.

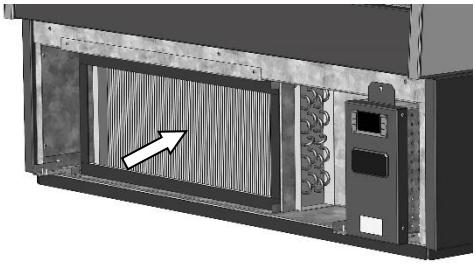
The compressor may overheat and the cabinet temperature may rise.



Regular vacuuming will prevent a build-up of dust and fluff, however, the condenser and radiator should be cleaned with compressed air during the mandatory three monthly service checks by a refrigeration engineer.

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.





Controller Adjustment

The controller must NOT be tampered with by an unqualified person.

The indicated temperature will be slightly higher than the air temperature inside the cabinet, because the refrigeration compressor is controlled in response to the temperature of the air entering the evaporator cooling coil.

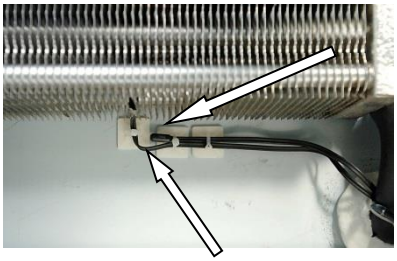
The controller can also display fault messages, caused by condenser overheating.

Continued on next page

Refrigeration cont.

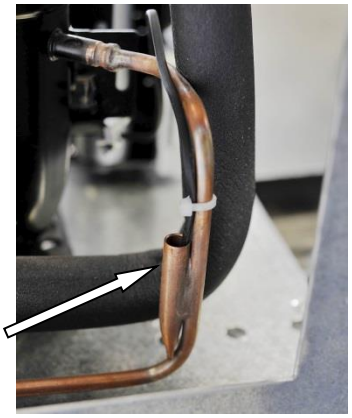
VISAIR CABINETS - SERVICING

Probe Locations



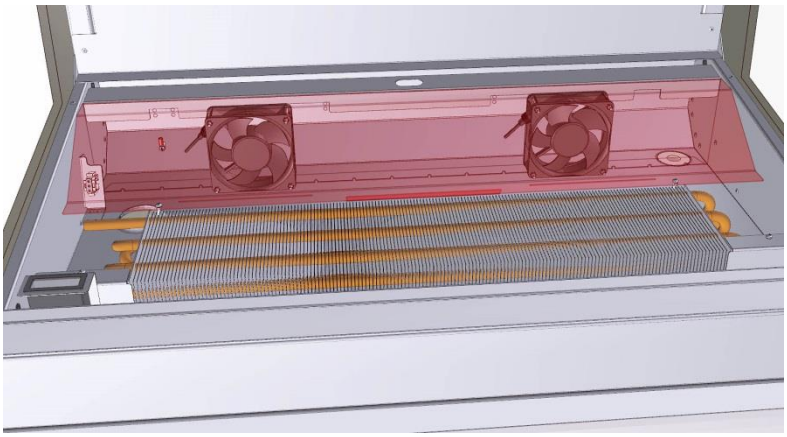
The temperature control probe is positioned in the off air stream from the evaporator coil.

A second probe, inserted in the fins of the coil controls the defrost termination.



A third probe (temperature sensor), is located in a pocket on the discharge line from the compressor. The function of this probe is to avoid the refrigeration system overheating.

Fan Deck



The fan deck is fitted with two fans, and is electrically connected to the cabinet with a plug and socket.

After removing the retaining screws, the complete assembly can be removed for servicing.

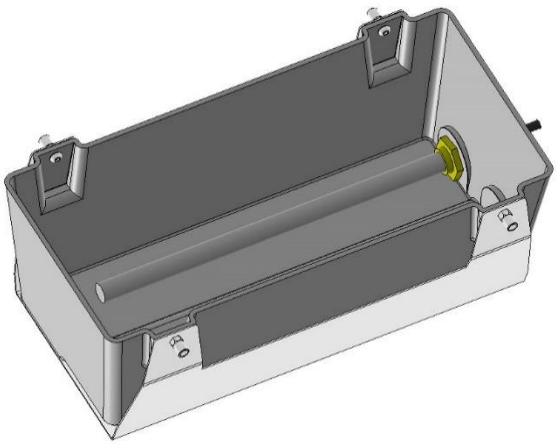
Take care to avoid trapping cables with the metalwork, when re-assembling

Condensate Disposal

The automatic condensate removal, ACR system consists of a water tray and evaporation element.

The element resistance has a positive temperature coefficient, so that the element power is reduced when it is not cooled by condensate water.

The element is replaceable, should it fail.



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Refrigeration cont.

VISAIR CABINETS - SERVICING

Refrigeration Controler Carel ijF

Carel model ijF is a microprocessor-based controller.
It is provided with three NTC probes. The first one for temperature control (air on), the second one, located on the evaporator coil, to control the defrost termination, the third one senses the temperature of the compressor discharge pipe.

The set-point temperature will be higher than the air temperature inside the cabinet, because the refrigeration compressor is controlled in response to the entry air (air on) temperature entering the evaporator cooling coils.

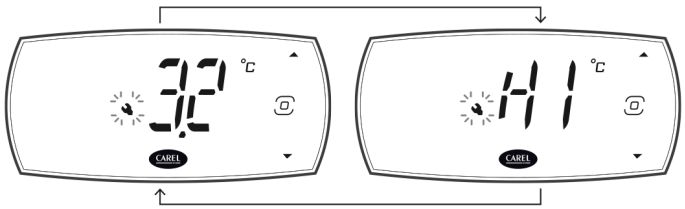
The instrument controls the speed of the VSD inverter/compressor to maintain the set cabinet temperature.

The instrument features a touch-screen display, and is fully configurable through special parameters that can be easily programmed, either through the keyboard, or by using the Carel Applica smart-phone app.

Contact FPG to obtain passwords, which may be required to alter settings.

Carel ijF Alarm Indications

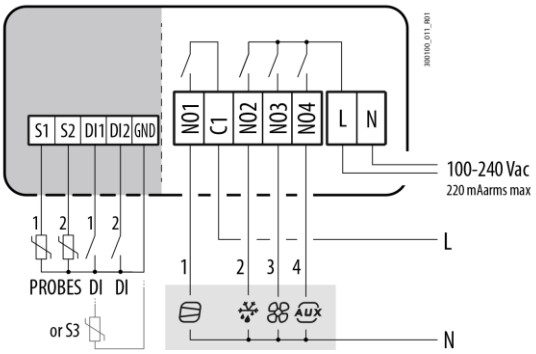
Active alarms are signalled by a buzzer and the flashing of the “Service” icon 🔧.
The alarm code is shown on the display, alternating with the main value.



Touching any button mutes the buzzer. If more than one error occurs, these are displayed in sequence. When an alarm is cleared, it is stored in the alarm log containing the latest five alarms. This error log can be accessed from the user terminal, via supervisor or Applica app (Bluetooth connection only).

Alarms can be reset manually using parameter rSA, from the user terminal or configuration tool, or in Applica (Bluetooth connection only) using the specific command on the Alarms page (“Service” or “Manufacturer” level is required. If the alarm condition is still present, the alarm will be re-activated after resetting.

Carel ijF Connections



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Refrigeration cont.

VISAIR CABINETS - SERVICING

Embraco Inverter Diagnostics

The variable frequency inverter, that drives the compressor, incorporates an LED indicator diagnostics function.

LED Status	Period	Colour	Description
1 Flash	30 seconds	Green	Normal operation
2 Flashes	5 seconds	Green	Communication problem
3 Flashes	5 seconds	Red	Inverter problem
4 Flashes	5 seconds	Red	Compressor problem
No Flash	-	-	No input power / Damaged inverter

Compressor Troubleshooting Guide

Compressor does not start	
Problem	Action
Compressor disconnected from the inverter.	·Verify compressor cable connection.
No AC power supply; or wrong voltage/terminals connected.	·Verify AC input cable connection and measure AC input voltage.
No control signal input or bad connection.	·Verify control input cable connection and measure the signal from the thermostat.
Blown fuse (due to previous major failure).	·Return the unit to manufacturer, replacing it by new one.
Open compressor motor winding.	·Measure winding for open circuit between all pair of pins on the hermetic terminal. If any winding is open, return compressor to manufacturer.
Compressor with locked rotor (due to mechanical damage).	·Replace compressor by new one and test for confirmation. Return damaged unit to manufacturer.
Dropped, damaged, burnt inverter.	·Replace by new one and test for confirmation. Return damaged unit to manufacturer.
Inverter on waiting time after failed start.	·Wait the necessary time or reset the inverter disconnecting it from the AC power supply. The reset time is about 50s.
Demagnetized rotor (only if compressor was previously connected directly to the AC power supply).	·Replace compressor by a new one and test for confirmation. Return damaged unit to manufacturer.
Unequaled pressures between discharge and suction pressures in the refrigerating system.	·Allow the Inverter to equalize pressure between suction and discharge sides.
Low input voltage supplied to the inverter.	·Measure AC voltage to confirm.
High compression load, with compressor being subjected to a stall condition.	·Review system design,refrigerant gas load or compressor capacity is not suitable for the application. If system is apropriated designed, speed will reach set value when load condition is stabilized.
Compressor always on pulldown cycle for Drop-In Mode.	·In Drop-In mode, check if the inverter AC input is connected to thermostat output. Inverter AC input should be directly connected to AC power supply (see Drop-In mode schematic).
No or incorrect control signal.	·Check if the appropriate control signal is being correctly applied to the Control Input Connection.

SPECIFICATIONS

Mechanical

VISAIR CABINETS SPECIFICATIONS

	CABINET MODEL			
	IN-VA10-HC-B100		**IN-VA10-HC-B101**	
	Cold Zone	Hot Zone	Cold Zone	Hot Zone
Height	1480 mm		1480 mm	
Width	1009 mm		1009 mm	
Depth	714 mm		714 mm	
Levelling adjustment	+30mm		+30mm	
Dry Weight				
Number of Shelves	1 + base	1 + base	Base only	Base only
Display Area	0.75 m^2	0.77 m^2	0.75 m^2	0.40 m^2
Refrigerant	R290	N/A	R290	N/A
Refrigerant charge	see Rating Label	N/A	see Rating Label	N/A
Condensate capacity	3 litres	N/A	3 litres	N/A

Electrical

VISAIR CABINETS SPECIFICATIONS

	CABINET MODEL	
	IN-VA10-HC-B100	**IN-VA10-HC-B101**
Voltage	220-240 V 50 Hz 1ϕ	
Maximum Power	2.14 kW	1.45 kW
ACR Element Power	330 W	330 W
Maximum Current	9.3 A	6.3 A
Connection	Three core cable with 3 pin plug	Three core cable with 3 pin plug
Lights	4 x LED strips	3 x LED strips
Average Energy Consumption	1.18 kWh/h	1.16 kWh/h

Cabinet Performance

VISAIR CABINETS SPECIFICATIONS

Zone Performance		Operating Temperature	Climatic Class 3 Test Conditions
	Heated	>65°C	22°C Ambient with 65% RH
	Refrigerated	+2° to +4°C	25°C Ambient with 60% RH

Heated Zone Controller Settings

VISAIR CABINETS SPECIFICATIONS

Dixell XR35CX Settings	Parameter	IN-VA10-HC-B100	IN-VA10-HC-B101	Range/Units
Set point	Set	75	75	degC
Differential	Hy	1	1	degC
Minimum Set Point	LS	0	0	degC
Maximum Set Point	US	85	85	degC
Kind of Action	CH	Ht	Ht	Heating
Second Relay Config.	oA1	onF	onF	Alr, dEF, Lig, AUS, AUX, onF, Fan, cP2, dF2, HES
On/Off Enabling	onF	oFF	oFF	nu, oFF, ES

Digital Timer Settings	IN-VA10-HC-B100	IN-VA10-HC-B101	Range
Front Elements	5	5	E=0.5–10min
Rear Elements	5	5	A=0.5-10min

Refrigerated Zone Controller Settings

VISAIR CABINETS SPECIFICATIONS

Carel IJF Controller	Parameter	Setting	Units/Range
Temp Control Differential	rd	2	degC
Temp Control Set Point	St	3	degC

Contact FPG for information about all other parameters.

Improvements

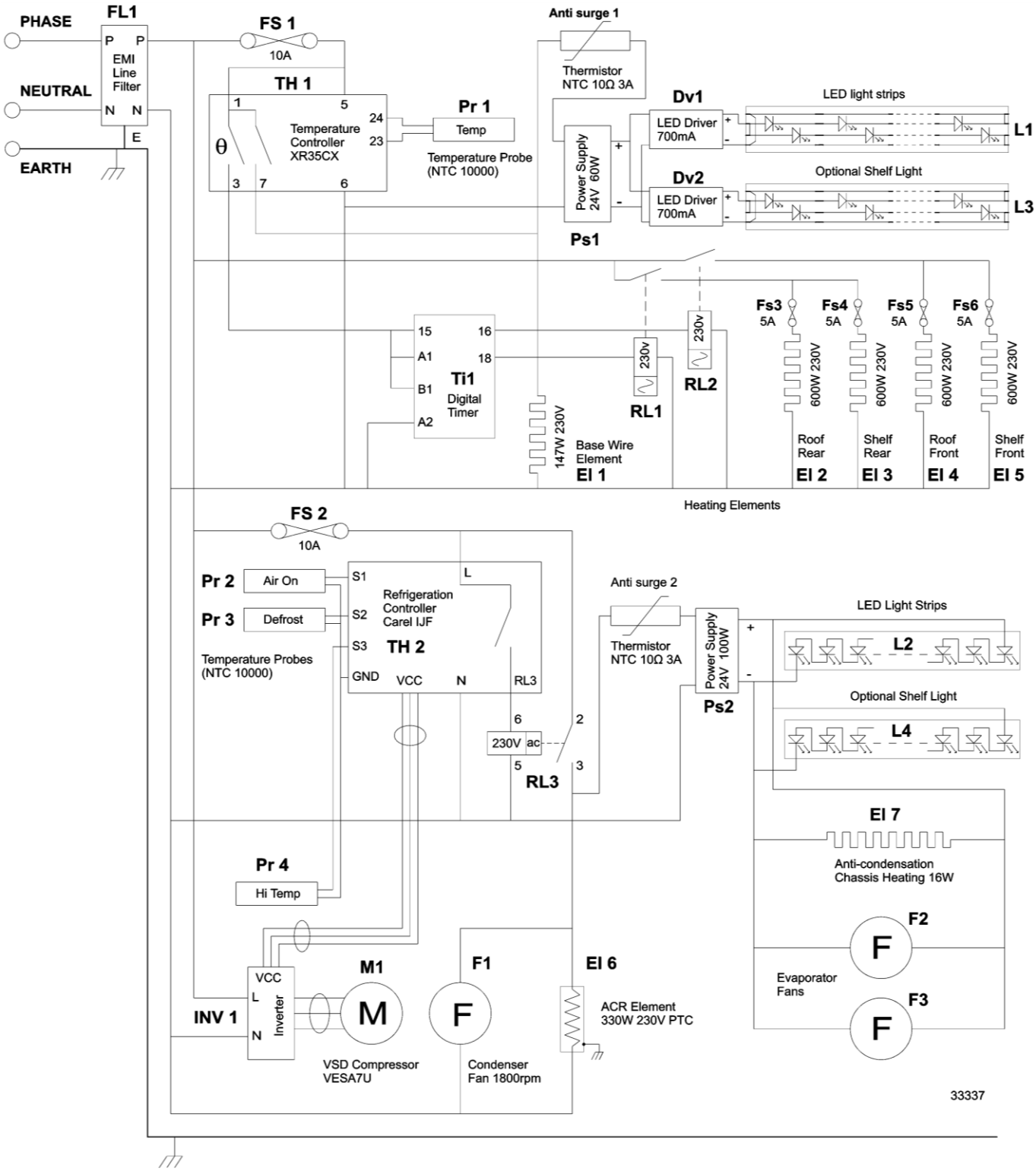
VISAIR CABINETS - SPECIFICATIONS

Ongoing Development

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

ELECTRICAL CIRCUIT DIAGRAMS

Model: IN-VA10-HC-B100/B101 **1000 mm Dual Zone Open-front**



SPARE PARTS

Cabinet Serial Number

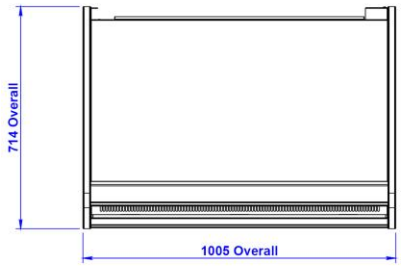
When ordering spare parts, it is important to quote the Serial Number printed on the label fixed to the cabinet. This will enable FPG to trace details of the build specification of your particular cabinet, and hence ensure that spare parts are fully compatible. **To satisfy warranty conditions, and ensure optimum performance, use only FPG supplied spare parts.**

Part Description	FPG Part No
Side glass kit	68554
LED power supply 24V 60W	21613
LED power supply 24V 100W	30086
700mA LED Driver Assembly	69130
Anti-surge thermistor 10 Ohm 3A	22354
Heated Zone Replacement Light assembly (Top and Shelf)	78136
Refrigerated Zone Replacement Top Light assembly	77005
Refrigerated Zone Replacement Shelf Light assembly	78373
ACR Element 330W 230V PTC	27751
Quartz Heating Element 600W	23173
Relay 230V (Refrigerated Zone)	23287
Element Relay 230V (Heated Zone)	16824
Condenser Fan Unada 200mm 1800rpm	72935
Evaporator Fan 24V dc	31383
10A Fuse Link	24018
Compressor VESA7U (7cc)	32978
Dixell XR35CX Temperature controller	24933
Carel IJF Refrigeration Controller ***pre-programmed***	78640
GIC digital cycle timer	29909
Silicone Encased Temperature probe assy.	31231
NTC temperature probe (Black, Defrost)	31217
NTC temperature probe (Red, Hi Temp)	31219
NTC temperature probe (Green, Air On)	20943
Pre-filter Black Frame Permalon	33383
Product Manual for Visair Dual Zone cabinet	33336

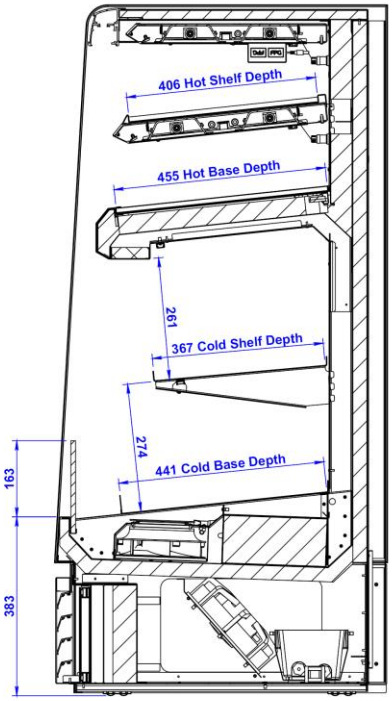
MECHANICAL DRAWINGS

IN-VA10-HC-B100

For adequate ventilation, a minimum clearance of 200mm is required between the top of the cabinet and any overhead structure.

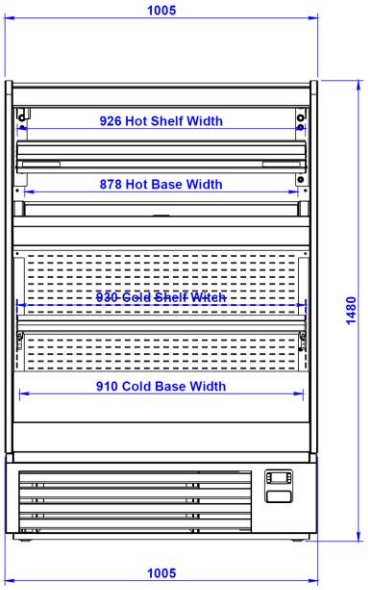


PLAN

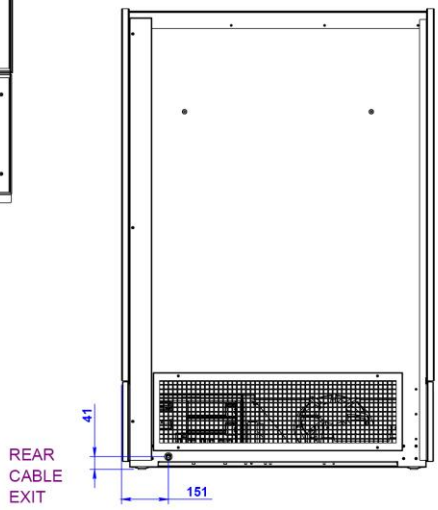


SECTION A-A

PERSPECTIVE



FRONT ELEVATION



REAR ELEVATION

IN-VA10-HC-B101

The elevations and dimensions are as shown above, except that no shelf is fitted in the heated zone.

APPENDIX A
R-290 Refrigerant

General Guidance

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

R-290	R-290 is the name for refrigerant grade high purity odorless propane. **It is NOT barbeque grill propane.** PROPANE IS HIGHLY FLAMMABLE. You MUST observe caution and proper safety practices when servicing equipment with R-290.
Servicing	Servicing refers to making repairs to the hermetically-sealed system and any parts of the electrical system.
Specialized Training	Although not mandatory, specialized training of service personnel is desirable.
Environment	Repair on R-290 equipment should always be done in a well ventilated area.
Gas Detector	Because R-290 is highly flammable, an electronic combustible gas leak detector is required when servicing R-290 systems.
Replacement Parts	When opening any refrigeration system, the filter/dryer must be replaced with the manufacturers specified spare part.
Fault Diagnosis	Since there are no access fittings on R-290 systems, temperatures and current draw must be used to evaluate system performance.
Check List	Before proceeding with servicing, check the following: **MONITOR**: make sure the combustible-gas meter is on and in proper position. **VENTILATE**: make sure there is adequate ventilation in the work area. **ELIMINATE**: make sure to eliminate any potential ignition sources.

Servicing

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Gas Monitor

Before entering any service area that may have hydrocarbons, always turn on a combustible gas monitor to alert you to the presence of flammable refrigerants while you are working.

Do not turn the combustible gas monitor off until you leave the service area.

Ignition

Do not unplug, disconnect power to, or begin servicing a system before checking for flammable refrigerants with the combustible gas monitor.

Sparks from unplugging or power disconnects could ignite flammable refrigerants.

Danger Sign

Display a Danger Propane placard to alert all that you are working on a R-290 system.

No open flames or smoking is allowed.

Instruct anyone in the immediate area the nature of the work taking place.

Be aware that E-cigarettes or similar electronic devices could be a source of ignition.

Fire Extinguisher

An approved fire extinguisher is required when servicing a system that contains a flammable refrigerant.

Access Fittings

Since access fittings are not supplied on any R-290 systems. Before adding access-fittings you should check temperatures and amps and contact FPG for guidance on fault finding.

Electrical Connectors

Wire nuts are not approved for R-290. All connectors must be UL approved for use with Hydrocarbons.

Wire connectors must have sufficient strength to hold the conductor/wire in place.

Replacement Components

When replacing components, ignition-proof sealed electrical components are required.

To avoid using unapproved parts, only FPG replacement parts are to be used on a R-290 system.

Tools

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Basic Tools

Use the same basic refrigeration tools as for R404-A & R-134a refrigerant.

Required Tools

	Combustible gas leak detector (Inficon Gas Mate) or equal		Propane warning notice
	Tubing cutter		Approved fire extinguisher (Class B dry powder type)
	Vacuum gauge		30cm charging hose (low Loss design)
	Ball charging valves (3)		Gram scale
	Tap valves 1/4” (2)		Digital thermometer
	Pinch off tool (2		Venting hose

Leak Checking

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Warning

Do NOT use any leak test dyes when working on an R-290 refrigeration system.

Detection Methods

- Bubble test.
- Electronic combustible gas detection.
- Nitrogen holding pressure test (only possible on accessed systems).

For the most part, you would leak check a R-290 system the same way you would a R-134a or R-404A system with a couple of exceptions.

You cannot use a halide leak detector on an R-290 system, the electronic leak detector must be designed specifically for combustible gas.

Using oxygen-free dry nitrogen with a trace gas not exceeding 150PSIG is also recommended.

Accessing the Refrigeration System

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Installing Piercing Valves

Line tap valves can be used to access the refrigeration system. Line tap valves should be temporarily placed on the suction and liquid process tubes.

IMPORTANT: Never leave piercing valves of any type on the R-290 refrigeration system. This would void the warranty.

Procedure

Make sure the cabinet is disconnected from the power source. Wear safety glasses and gloves (rubber coated are best).	
Turn the combustible-gas leak detector “ON”. Refer to the manufacturer’s instructions for the detector you are using.	
Post the warning notice in plain view for all to see on the front and rear of the refrigeration appliance.	
Remove the red sleeves on the suction and liquid line process tubes. Install the piercing valves following manufacturer’s instructions. Red sleeves must be replaced when done servicing.	

Recovering Refrigerant

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Recovery Machines

Recovery machines for use with hydrocarbon refrigerants are in limited production.

Only an explosion proof recovery machine can be used to recover.

Procedure Without Machine

1. Evacuate an empty recovery cylinder into a vacuum.
2. Using an accurate refrigerant scale, zero out the refrigerant scale and weigh the empty recovery cylinder prior to adding refrigerant gauges or hoses. Note this weight.
3. Securely connect the evacuated cylinder to the refrigeration system using refrigerant gauges and hoses.
4. Open both refrigerant gauges to allow refrigerant to flow through the gauges to the recovery cylinder. You must evacuate from both sides.
5. Once the pressures have equalized, valve off the refrigerant gauges and the recovery cylinder securely.
6. Carefully remove the refrigerant hose from the recovery cylinder.
7. Zero out the refrigerant scale and weigh the recovery cylinder. Note this weight.
8. Subtract the empty tank weight recorded from the cylinder now containing the refrigerant. This will be the amount recovered.
   NOTE: You can check Serial Label to verify any leak.
9. A recovery cylinder containing R-290 can be vented outdoors.
   See “Venting R-290” for instructions on venting R-290.
10. After venting the refrigerant, purge the recovery cylinder with nitrogen at a flow rate of 5PSIG through the liquid port of the recovery cylinder for 2 minutes outdoors, 3 metres away perimeter from any structures or ignition sources.
11. Repeat steps 1-9 until the recovery cylinder and the system equalize into a vacuum.

NOTE: Trace amounts of R-290 will remain trapped in the POE oil of the compressor.

Venting R-290

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Venting Procedures

1. Do NOT vent hydrocarbon refrigerants inside a building under any circumstance (SAFETY RISK).
2. Venting hydrocarbon refrigerants to a public area or where people are unaware of the procedure is not permitted.
3. When venting R-290 YOU MUST make everyone in the immediate area aware that you are venting a flammable gas to the atmosphere.
4. Ensure there are no ignition sources within a 10 ft. perimeter of the area you are venting R-290. Be aware that E-cigarettes or similar electronic devices could be a source an ignition.
5. Ensure that all local legislation/regulations addressing safety of hazardous or flammable substances are satisfied.
6. Ensure you are not venting R-290 into a low-lying area. R-290 is heavier than air and can accumulate in floor drains, grease traps, piping troughs, etc.
7. After venting, purge with Nitrogen through the system for a minimum of 10 seconds.

System Evacuation

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Preliminary Tasks

Prior to sealing up the system make sure you have a sufficient amount of service access tubing remaining for service in the future.

1. Remove the crimped tubing and piercing/saddle valve from the process tube.
2. Extend the process tube a minimum of 30cm.
3. Crimp and braze the process tube extension.
4. Install piercing/saddle valve just before last crimp.

After the system has been sealed and leak checked, it is necessary to evacuate it in order to remove air, moisture, and unwanted residual refrigerant.

NOTE

Technician must use tube cutter instead of torch when removing refrigeration system components.

System Evacuation cont.

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Evacuation Procedure

1. It is necessary to purge the system with nitrogen. This is necessary to prevent flammable mixtures from occurring.
2. When connecting the hoses between the system, gauge manifolds, and vacuum pump, ensure that the connections are secure and there are no potential ignition sources nearby.
3. Ensure that the pump discharge is in an area free of potential ignition sources.
4. Ensure that a micron gauge is used since conventional manifold gauges may not provide a proper reading.
5. The system should be evacuated to the desired pressure (typically 250 microns or less) and then left to stand for 15 minutes to ensure that the entire refrigerant charge has been removed from the oil and any residual moisture has been evaporated from the system.
6. Ensure that the vacuum pump is of good quality and of appropriate capacity for the system, and the oil level is correct.

Charging the System

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

WARNING

Dial-a-charge cylinders, with a sight glass, should not be used to charge systems with flammable refrigerant.

Precautions

Although charging procedures are similar to those used with any other type of refrigerant, the following considerations are important for R-290:

- Prior to charging, ensure the system has been leak checked.
- Hoses or lines must be as short as possible to minimize the amount of refrigerant contained in them.
- Evacuate the hoses and manifold prior to charging to avoid contamination of the refrigerant.
- Upon completion of charging, a further leak check must be carried out prior to leaving the site.
- After charging, carefully disconnect the hoses, attempting to minimize the release of refrigerant.
- After charging, all access ports/points must be removed following the correct procedures.

DO NOT OVERCHARGE A SYSTEM USING R-290.
Weigh in the exact charge.

Removal and Sealing of Access Ports

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

CAUTION **Do not leave piercing valves on the system.**

Procedure

1. Pinch line off just before the temporary access port two times using a crimping tool. Keep crimping tool in place as shown in photo.
2. Verify that there are no leaks.
3. Remove the piercing valve/temporary access port.
4. Snap off at “crimp 1” and check for leaks.
5. Braze open end shut while crimping tool is in place.
6. Leak check the system, with crimping tool removed.

Electrical Repairs

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

CAUTION The electrical power to the equipment must be disconnected. A combustible-gas leak detector must be on at all times.

Protect yourself from hazards of working on the electrical components by following some basic guidelines before you begin the repair. Prior to starting your repair work on an electrical component, use your combustible gas detector to see if flammable gas is present.

Only when the area is clear of any flammable gas should you start the repair.

Guidlines

- Do not use components that produce sparks, discharge, etc.
- Components that could produce a potential ignition source need to be positioned in an area, distant and unreachable, from any potential refrigerant leak.
- FPG components are designed for use with flammable refrigerants.
- Do not replace faulty components that are intended not to spark with components that do. ONLY use FPG recommended spares.
- • Do not modify components that are intended not to spark in such a way that they will spark.

Electrical Repairs cont.

VISAIR CABINETS - APPENDIX A
R-290 Refrigerant

Check General Condition

You may not be the first person that has worked on this system.

- Check all components for unauthorized/non-OEM replacement parts.
- Look beyond your repair for any wear, stresses, that could become an ignition source. Are terminal connections tight and in a UL approved connectors?
- Check all protective conductors' connections each time you access a system or repair is made.
- Finally, check the plug, cabling and wiring for any damage.

R-290 SERVICING FLOW CHART

Before starting work on the R-290 system, turn on the gas-leak detector and place it on the floor, next to the cabinet.

	Refrigeration Circuit Access	Comments
1	Disconnect electrical supply to appliance.	If possible, ground the appliance to avoid static electric sparks.
2	Access condenser/compressor and install two piercing valves.	Vent both the high and low side of the system in case there is a blocked cap tube and/or drier.
3	Connect your refrigeration gauge equipped with 30cm hoses to the two piercing valves.	
4	Connect the yellow hose of your gauge set to a recovery bag or a venting tube, if a safe venting location is available.	
5	Once the charge is removed, connect the Nitrogen tank.	
6	Purge Nitrogen through the system for a min. of 10 seconds.	If using a recovery bag, be sure to take it to a safe location and vent.
7	Always cut the compressor or other components out with a tubing cutter.	
8	Purge Nitrogen through the system at 70 to 140 hPa, before any parts must are un-brazed.	
9	Purge Nitrogen through system at 70 to 140 hPa, while brazing in new components.	

	Installing New Components	Comments
1	Remove old compressor, drier and any other defective component.	If the compressor is removed, seal the suction and discharged tubes to prevent a spill.
2	Install new FPG approved spare parts.	A new dryer must be fitted if the compressor is replaced.
3	If the two access line tubes are not at least 30cm long, add more tube with brazed pinched-off ends. Reinstall tap valves.	Access tubing lines may need to be braced to prevent bending over.
4	Purge with Nitrogen again at 70 to 140 hPa while brazing. Wrap drier with wet rag when brazing.	
5	Fill the system with Nitrogen to 1000 kPa and check for leaks.	
6	Release Nitrogen and pull a vacuum on the system to 250 microns or less. Turn off the vacuum and confirm that it holds the vacuum.	
7	If vacuum holds, the system can now be charged.	Propane labelled ‘R-290 Refrigerant’ must be used. **DO NOT USE BBQ PROPANE**.
8	Purge the charging hoses and ready your gauge set and hoses so they will not move during the charging process.	
9	Check the cabinet Serial Number label for the required charge.	
10	Use the ball valves installed on your hose to meter in the charge.	Because the charge is small, take care and be precise.
11	Charge the circuit. (preferred method of charging is to charge liquid into liquid line).	
12	If new starting components have been fitted, check electrical connections and install all terminal covers.	FPG compressor start components are designed for use with HC refrigerants. Do not use non-FPG approved spare parts.
13	Start the system and check operation. Do a final check for leaks	

Revision History

Revision Level	Date of Change	Change Details
A	01/05/24	New manual created for R290 VSD cabinet

PRODUCT MANUAL 33336

REV A MAY 2024

Have a question? Please email us at:
sales@fpgworld.com or visit www.fpgworld.com for full contact details for your region.

Worldwide contact details: