



ADANDE®

Maintenance Manual VCC



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Welcome to Adande® Refrigeration

1 What is Adande®?

Adande® is a new method of cold storage developed as a series of refrigerated drawers that offer storage temperature flexibility in 1°C increments between –22°C and +15°C.

Each refrigerated drawer:-

- Provides stable temperature storage
- A removable container to act as temporary cool and safe product storage.
- Gives full plan area access providing space efficient storage.
- Is easily cleaned and maintained.

2 Adande® Explained

Adande® uses standard technology and refrigeration parts but in a completely new and patented way.







A dedicated fridge engine supplies refrigerant to an evaporator coil assembly. The evaporator coil assembly then supplies cooling to the insulated container and is sized to maintain up to 40kg of product at any set point temperature, in the range of –22°C to +15°C. VCC units operate at climate class 5 (30°C , 55% rH)



Figure 1: Front view of Adande® Single Drawer

3 Safety Symbols

The following safety symbols are used upon the product and throughout the product documentation.

<u>Meaning / Description</u>	<u>Symbol</u>
<p>Dangerous Voltage</p> <p>Electrical warning symbol To indicate hazards arising from High voltages.</p>	
<p>Protective Earth (Ground)</p> <p>To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode.</p>	
<p>Warning/Caution</p> <p>An appropriate safety instruction should be followed or caution to a potential hazard exists.</p>	
<p>Disposal of Hazardous Waste</p> <p>Disposal of Hazardous Waste The product contains hazardous waste which is harmful to the environment. Correct procedures in line with WEEE directive should be followed when disposing of the product, including removable/replaceable items like :-</p> <ul style="list-style-type: none"> a) Refrigerant Gas/oil b) Insulated container c) Controller 	
<p>Do Not Pressure Wash</p> <p>Do Not Pressure Wash the Modules.</p>	
<p>Heavy</p> <p>This product is heavy and reference should be made to the safety instructions for provisions of lifting and moving</p>	

4 EC Declaration of Conformity

Product Description: Professional Refrigerated Storage Counter Cabinets
Make: Adande®.
Type: Adande® Refrigeration Units manufactured by Adande® Refrigeration



We declare that the following product models:

VCS R1 & R2; VCS-BC R1; VCS-S2 & S3 R1; VCS-T R2; VCS-Rm R1 & R7
VCR R1 & R2; VCR-BC R1; VCS-S4 & S5 R1;
VCM R1 & R2; VCM-BC R1; VCM-T R2;
VLS R1 & R2; VCC R1 & R2; HCS R2; HCR R2;



Comply with the requirements of the following European Directives:

The Machinery Directive 2006/42/EC
The Low Voltage Directive 2014/35/EU
The Electromagnetic Compatibility Directive 2014/30/EU
The Pressure Equipment Directive 2014/68/EU
The Food Equipment Regulation (EC) 1935/2004
The Ecodesign Directive 2009/125/EC
The Energy Labelling Directive 2010/30/EU
The Fluorinated Greenhouse gases Regulation (EU) 517/2014
The Restriction of use of Hazardous Substances (RoHS2) Directive 2011/65/EU
The Waste Electrical and Electronic Equipment Directive 2012/19/EU

In accordance with the following transposed harmonised European Standards:

- 1.1 EN ISO 12100:2010 Safety of machinery. General principles for design. Risk assessment and risk reduction
- 1.2 EN ISO 13857:2008 Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs
- EN 60204-1:2006+A1:2009 Safety of machinery – Electrical equipment of machines – Part 1: General requirements
- 1.3 EN 378-1:2016 Refrigerating systems and heat pumps. Safety and environmental requirements. Basic requirements, definitions, classification and selection criteria
- 1.4 EN 61000-6-1:2007 Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments
- 1.5 EN 61000-6-3:2007+A1:2011 Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments
- EN IEC 60335-1:2012 + A11:2014 Household and similar electrical appliances – Part 1: General requirements
- EN IEC 60335-2-89:2010 + A1:2016 Household and Similar Electrical Appliances – Safety – Part 2–89: Particular requirements for commercial refrigerating appliances with incorporated or remote refrigerant condensing unit or compressor
- EN 16825:2016 Refrigerated storage cabinets and counters for professional use – Classification, requirements and test conditions

The technical file for this machinery will be prepared on demand by :-

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5 Top Tips

The following list of tips is designed to help quickly diagnose faults.

- **POWER LEADS:** Check the power leads and daisy chain lead are firmly plugged-in at both ends. Operators can run the castor wheels over the cables. Un-plug from the Mains then check the power leads for damage and replace as necessary.
- **DRAWER SWITCH:** The evaporator fans should run continually when the drawer is closed; check the fan light on the controller. If there is no fan light it could mean that the drawer switch has failed and needs replacing.
- **EVAPORATOR FANS:** Open the drawer and remove the insulated container. Operate the drawer switch at the rear of the cabinet and make sure the evaporator fans are running (the fans are located in the centre of the lid). If the fans are not running and the drawer switch is working (see above), then the 12Vdc power supply could have failed. With the drawer closed and drawer switch operated, check 12 volt output from power supply to fans and seal heater.
- **TEMPERATURE PROBES:** If the unit has just been switched on let it run for 5 minutes. Press and release the left button on the controller and then hold to see the T1 storage temperature. Check that the reading is sensible. Press and release the left button again to see the T2 evaporator temperature (T2 reading should be 4°C to 8°C cooler than T1). Replace temperature probes that are not giving sensible readings.
- **DEFROST HEATER:** Allow the controller to return to the normal screen. Then perform a manual defrost by pressing and holding the 2nd left button until 'dEF' is shown. Let the defrost run for about 5 minutes, checking T2 as above during this time should show rising temperature. To fully investigate defrost and draining un-plug the unit from the mains. Open the drawer and remove the insulated bin. Then unscrew 8 fixings to gently lower the white plastic lid diffuser inside the cabinet. Lowering the diffuser will expose the drain tray and defrost heater. Check that the heater is warm and that the condensation / melt-water is draining efficiently.
- **DRAINAGE:** Following on from the defrost heater above. If not already fitted, fit the drainage clip as detailed in Service Instruction VC001. Ensure that the drain tray is correctly angled to the drain spigot and that no water is leaking over the edges of the drain tray.
- **CONTROLLER:** Make sure the controller is calling for cooling (lower the T1 set point if required). Check that the condenser fan is blowing and that the compressor is running. If the condenser fan or compressor are not running check with a suitable meter on the electrical outputs of the controller. Un-plug the unit from the mains while removing covers from the units. To gain access to the controller do one of the following:
 - On serial Numbers after 100942 – Remove the condenser grille to access the controller.

- **On earlier serial numbers remove the worktop or and/or the side panel.**
- **SEALS:** The Adande seals are uniquely fitted with an internal heater wire fed from a 12 volt DC supply. Check that the seals are clean and not damaged. Check for frosting / condensation on the bin rim; either of which could indicate either a failed seal heater, failed power supply or incorrect lid height adjustment.
- **GAS LEAKS:** It is most unlikely that an Adande unit will suffer from a gas leak because units are leak tested in the factory with helium. The smaller helium molecule finds leaks far more readily than the larger R404a molecule. The helium is 'sniffed' using an incredibly sensitive leak detector. Possible exceptions to this are early units with serial numbers before 100444 where the evaporator coils may leak through corrosion. This can usually be checked by looking for green traces in the plastic drain tray above the compressor.
- **HOT TAPS:** Are NEVER required. Schrader access fittings are provided on the high and low sides of the system (remove the push fit insulated cap on the suction side).
- **SEALS:** The Adande horizontal magnetic seal is just like any other refrigeration seal except that it slides apart instead of being torn apart. The seal is also up and out of harms way so should not get damaged like conventional door seals. Sometimes condensation or icing can be found on the rim of the bin. This may be caused by a failed seal heater (or 12V power supply) or because the lid need adjustment to gain the correct gap. Refer to the maintenance manual or call Adande.
- **CONDENSER AIR:** The air for the condenser is drawn in around the drawer front, it then flows around the insulated bin and through the condenser, before being discharged via the condenser fan and grille. This air passage cleans the dirt/grease laden air before it reaches the condenser to prevent it blocking. The dirt and grease generally collects around the drawer front and down the sides of the bin, both easily cleanable by the operator. **The side panels and worktops must always be properly fitted or the condenser will not get adequate airflow.**

6 Operating Adande® Controls

The Adande® temperature control system allows you to set and control the drawer within a temperature range of -22°C (-8°F) and +15°C (59°F).




Temperature accuracy in the drawer will be maintained within $\pm 2^{\circ}\text{C}$ of the set point for R600a and $\pm 1^{\circ}\text{C}$ for R404a




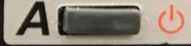


Figure 2: Adande® Display Control Panel

6.1 The Display Temperature Controls

The set-point is factory set to 3°C, however should you need to adjust the temperature set point, *please follow the procedure below:*

- First press and hold the set temperature button  this will display the current set point.
- To adjust the set point simply keep the set temperature button held down and press the +  or -  button until the desired set point is displayed.
- Next release all buttons. The temperature is now set.

Display Control Keys	
Set Temperature/Scroll Menu	
Decrease Temperature/Manual Defrost	
Increase Temperature	
Manual Defrost	

6.2 Defrost

The refrigeration system automatically defrosts 4 times a day by means of a defrost heater which runs off the 230v supply. If there is excessive ice build-up this may indicate a fault with the defrost heater. A manual defrost can be used as an indirect check for the defrost heater. If required, press and hold the down arrow manual defrost button until dEF is displayed. Check the defrost temperature probe is steadily rising in temperature, the cut out temperature is set to 8°C

If a faulty defrost heater is suspected a further check to rule out a controller issue is recommended. Use a multi meter to check the voltage from the controller to the defrost heater.

The defrost heater when operating correctly should draw 0.65 amps.

7 Error Codes

7.1 Drawer Open Alarm

If the drawer is open for more than 3 minutes, the Drawer Open alarm will be triggered, an audible alarm will sound and "DO" will flash on the display panel, if the drawer is still not closed after an additional 3 minutes then "HI" will be displayed.

If the DO alarm continues to sound even with container in place and the drawer shut, this may indicate a fault with the switch. Please ensure the correct container is being used as a VCM unit uses a reed switch activated by a magnet located in the container.

NOTE: THERE IS NO COOLING TO THE INSULATED CONTAINER WHEN THE DRAWER IS OPEN.

7.2 Probe Error Alarm

If display reads "E1" or "E2", a temperature probe has failed and should be replaced. Please refer to chapter 20 for detailed instructions.

The Adande® drawer will operate with a 10 minute on / 10 minute off cycle in the event of an "E1" failure. This will help to maintain the stored product at a safe temperature, but precise temperature control will be lost. "E2" will only affect defrosts, and these will be timed to maintain operation of the unit.

7.3 Temperature Alarm

The "HI" temperature alarm is a general alarm indicating the drawer temperature has exceeded its set point by 7°C. The cause should be investigated as soon as possible. The alarm can also be triggered if the Adande® drawer has recently been turned on loaded with warm product or left open for a long period of time.

The "LO" temperature alarm is a general alarm indicating that the drawer temperature has fallen below its set point by 7°C. The cause should be investigated as soon as possible. The alarm can also be triggered if the Adande® drawer's temperature set point has recently been increased.

8 Display Panel Replacement



To replace a faulty display panel first isolate the power supply, then remove the front panel, (refer to chapter 12).

Next unplug the data ribbon from the back of the controller (figure 3a), then using a flat head screw driver depress the plastic lugs on the display and push the faulty display out of the front grill panel.(figure 3b/3c)

Push the new display into the front grill and click into position (figure 3d), finally plug in the new displays data ribbon into the back of the controller, ensuring that it is fully inserted.

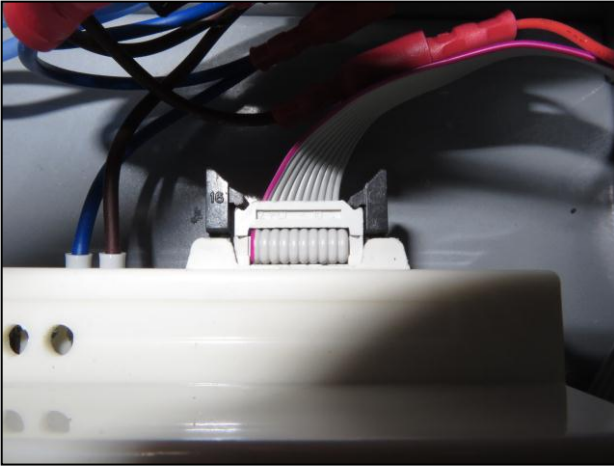


Figure 3a: Data cable input on controller



Figure 3b



Figure 3c



Figure 3d

Parts No.	Description
103755	Display Panel

9 Electrical Connection



The Adande® drawer should be connected to a 230V, single phase, 50 Hz, standard socket outlet supply. The drawer is connected to the mains supply with a detachable supply lead, one end of which is fitted with a standard 13 amp 3 pin plug (fused at 10A). The other end of the supply lead, fitted with an appliance plug, which is connected to the Adande® drawer as shown in *figure 4a* below. When replacing a mains lead ensure the P clips are secured back into position, this will prevent the leads being pulled out accidentally.

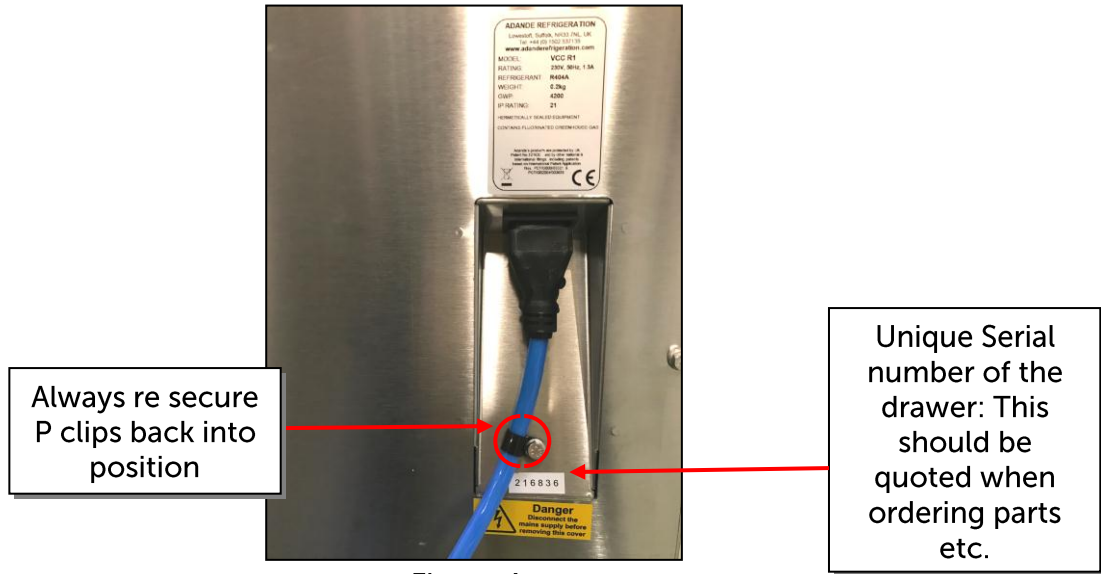


Figure 4

DO NOT REMOVE ACCESS PANELS WITH THE ELECTRICAL SUPPLY CONNECTED.

Parts No.	Description
103689	Mains supply cord 2m Commando
103036	Mains supply daisy chain 1m
102921	Mains inlet socket

10 Location and Stability

It is important that the Adande® drawer is installed and maintained on a flat, clean and **level surface** to ensure correct operation.

The room should be dry and sufficiently ventilated.

Optimum performance is obtained at ambient temperatures between +16°C (60°F) and +38°C (100°F).

The air outlet grill MUST be kept clear at all times to maintain optimum performance.

The Adande® drawer is mounted on castors, the front two castors should have their brakes ON during normal use as in *figure 5*.

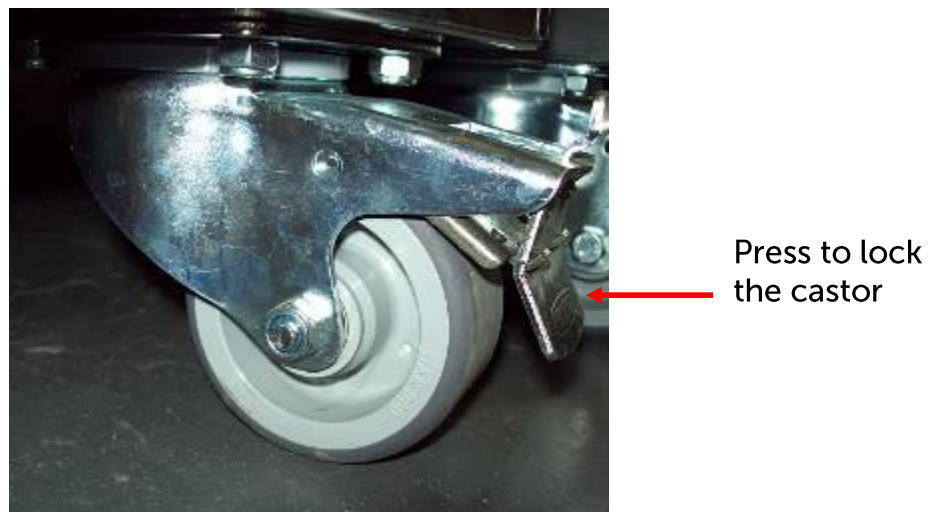


Figure 5: Lockable Castor

11 Insulated Container Removal



For many of the maintenance procedures the insulated container will need to be removed to allow access. To remove the insulated container, first pull the drawer out fully so that the rear edge of the drawer clears the front and the runners are fully extended. Then as the photo below shows (*figure 6*) lift the container vertically up to remove (two people should lift the container out if still filled with product).

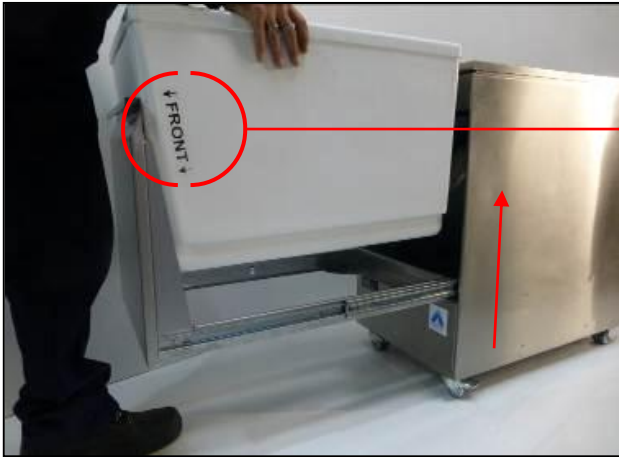


Figure 6



Figure 6.1

The insulated container will only fit with the recess of the plastic to the front of the drawer; this is also indicated with a "FRONT" sticker as shown in *figure 6.1*

It is important that the container is kept in good condition, if the container is damaged especially along the top edge this will dramatically affect the performance of the unit and cause excessive icing. In this case the container should be replaced. Below are some examples of badly damaged containers.



Parts No.	Description
103896	Insulated Container

12 Worktop Removal



To remove the worktop, first remove the two M5 X 8 bolts from the rear flange, lift the rear of the worktop and push slightly forward to slide over and clear from the front retaining slots (*figure 7*). Replacement is the reverse of the removal procedure.

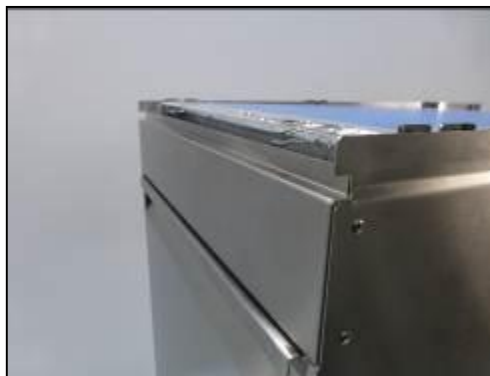


Figure 7: Worktop removal

13 Rear Panel Removal



The rear panel of the drawer may require removal to gain access to the drain pipe or assist in diffuser and heated seal replacements. To remove the back panel, first remove the worktop then remove all 8 off M5 Br. Zn. Pd. bolts as shown in *figure 8* below.



Figure 8: Rear panel removal

Parts No.	Description
103894	Rear Panel

14 Drawer Front Removal

To remove the drawer front you will need to remove the two M5 countersink screws as shown in *figure 9* below.

Once these fixings are removed the drawer front will now clip off, upwards then forwards, as shown below in *figure 10*.



Figure 9: Removing the two screws

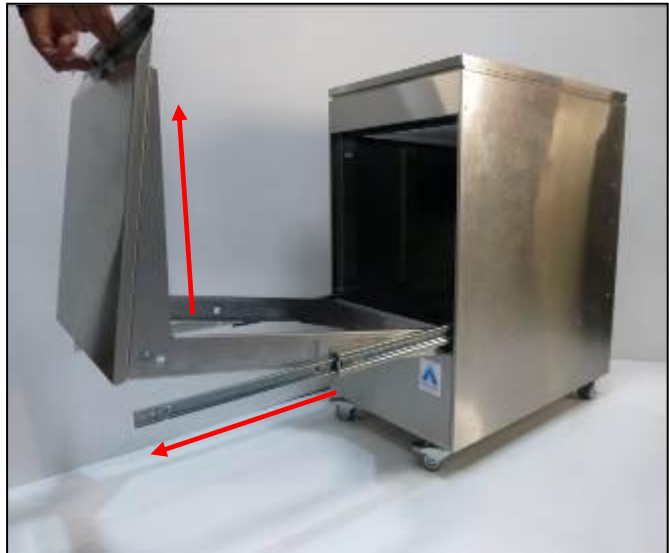


Figure 10: Removing the drawer front

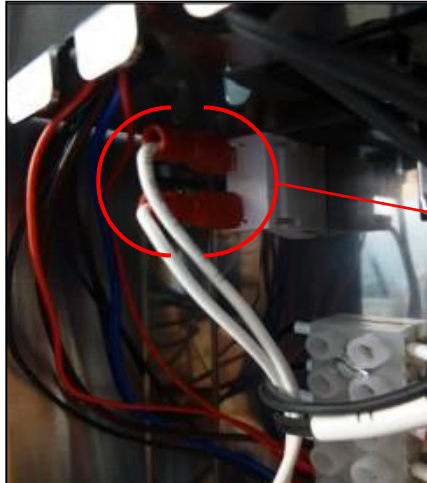
NOTE: WHEN REPLACING DRAWER FRONT LOCTITE SHOULD BE USED ON THE SCREWS



15 Drawer Switch Replacement



If the drawer switch has failed the display panel may alarm "DO" and the light next to the fan symbol on the display panel will not illuminate when the drawer is shut. To directly check the operation of the switch remove the container and physically depress the lever on the switch, the 12v fans should run. To gain access and replace the drawer switch, remove the insulated container. Using a flathead screw drive prise the faulty switch into the drawer cavity (*figure 12*) then remove the spade connection wires from the back (*figure 11*) Fit the wires to the new switch then click into the chassis. The wires on the switch are not polarity conscious.



Spade connectors connected to the drawer switch

Figure 11



Drawer switch mounted on the Inner Wall rear Panel

Figure 12

Parts No.	Description
102923	Drawer Switch

16 Removing the Diffuser

For many of the procedures the diffuser will need to be removed, for instance when replacing a temperature probe, evaporator fan, defrost heater or evaporator coil.

To remove the diffuser first remove the insulated container. Next remove the 4 x Pozi M5 x 16 ST/ST screws securing the diffuser in position. The fans mounted in the diffuser will be connected to the unit via 4 wires, there is enough slack on these wires built into the design to allow the diffuser to be lowered. It is important that the slack on the wires is pulled back through to the fridge engine compartment.

NOTE: THE DIFFUSER WILL BE CONNECTED TO THE UNIT BY THE EVAPORATOR FAN WIRES

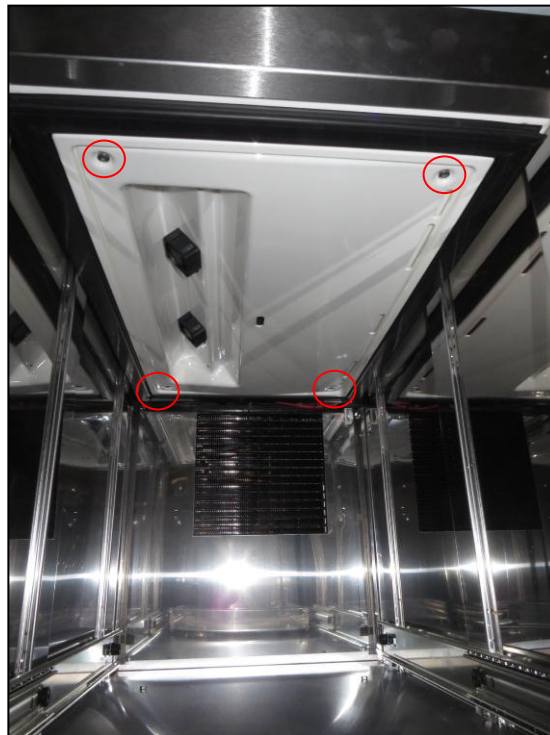


Figure 13: Lid Diffuser

Ensure that the diffuser is secured back into position so it does not sag and catch the container. The rubber fastenings located in the insulated lid are designed to seal against the plastic when tightened down so ensure the screws are fully inserted.

Parts No.	Description
103799	Diffuser
104783	Diffuser Assy (evap fans inc)
106868	Screw Pozi M5 x 16 ST/ST (Diffuser Screw)
106603	Rubber Nut M4 - Short Grip

17 Evaporator Fan Replacement



Once the diffuser is removed, the fans can be also be removed first by cutting the cable tie in the fridge engine area, then cut the wires at the fan end and use these to pull through the new wire. Now remove the four self tapping screws that hold the fans in place as shown in *figure 14a*.

Firstly remove the worktop. The fan wires need to be disconnected from the electrical block, pull the new wires through the hole in the lid (as shown in *figure 14c* below) fit the new fan wires to the electrical block, mount the fans back on the diffuser as shown below in *figure 14b*. Replace all cable ties.



Figure 14a: Evaporator fans

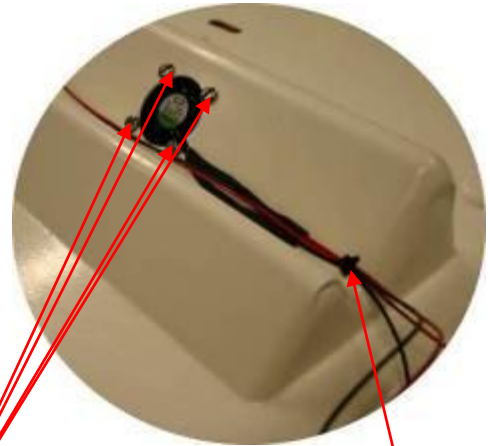


Figure 14b

4 off Fan self-tapping screws

Evaporator fan wires

Cable ties for fan wires

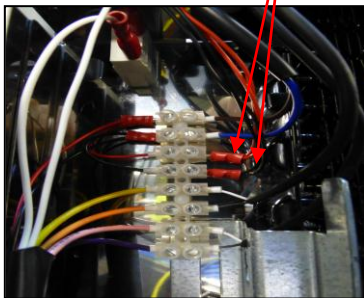


Figure 14c



Figure 14d

Parts No.	Description
106483	Evaporator Fan
106838	Screw pozi pan self-tap AB No.8 x 1/2" ST/ST (Fan Screws)
104783	Diffuser Assy (evap fans inc)

18 Defrost Heater Removal and Replacement



WARNING – Do not use mechanical devices or other means to accelerate the defrosting process other than those recommended by the manufacturer.

To indirectly check if the defrost heater has failed force the unit into a manual defrost, check the T2 defrost probes temperature, it should steadily rise in temperature, the cut out temperature is 8°C The defrost heater should draw 0.65 amps when working correctly.

To replace the defrost heater first remove the rear panel and carefully pull the drain pipe off the back of the defrost heater tray (*figure 16*). To gain access to the defrost heater remove the insulated container and drop the diffuser down.

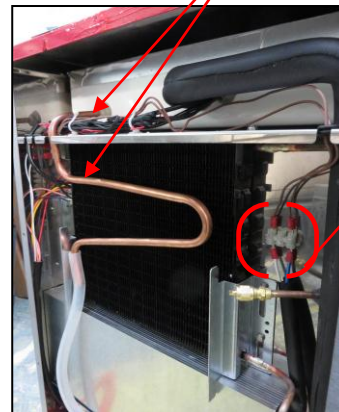
Remove the two M4 x 10 Pozi-Pan screws and two M5 x 12 bolts and associated sealing washers, then remove the blanking plate at the back, drop down the defrost heater and remove. Cut the wires from the old heater and use to pull the wires from the new heater through into the fridge engine compartment.

Fixings and washers



Figure 15

Drain pipe putty and silicone sleeve



Defrost heater terminal block

Figure 16

When replacing the drain tray take care not to bend the tray or the unit may not drain correctly, ensure all sealing washers are on the fixing bolts. Replace drain tray and make sure the silicone sleeve and copper drain butt up securely against the drain tray spigot. Replace the refrigeration putty.

Parts No.	Description
103936	Drain pipe silicone 600mm(10mm ID)
103936	Drain pipe silicone 100mm(10mm ID)
104310	Drain pipe copper
102082	M5 x 12 ST/ST Hex Head
103491	Washer bonded
104294	Defrost heater assembly

19 Evaporator Temperature Probe Replacement

If the display panel shows an E1 (T1 air probe) or E2 (T2 defrost probe) error message this means that a temperature probe has failed and needs to be replaced

To replace a faulty temperature probes the insulated container, diffuser and drain tray will need to be removed to gain access to the evaporator coil. Remove the P-Clips holding the probes in place and the refrigeration putty from wire penetration in lid.

Disconnect the faulty probe from the electrical block and pull the probe wires through the lid and remove from the drawer. Install the new probes back through the electrical wire penetration hole in the lid and re connect to the electrical block, replace the P-Clips and refrigeration putty, as shown in *figure 17*.

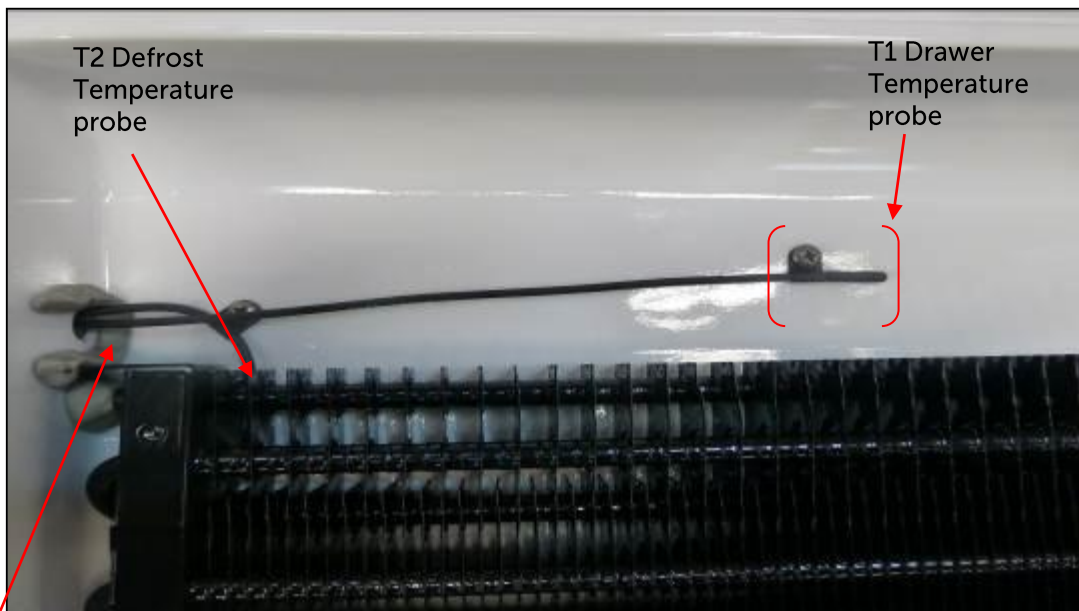


Figure 17: Temperature probes held in place with P-Clips

Replace
Refrigeration Putty

Parts No.	Description
103063	Temperature Probe
102093	P Clip H1P (To Secure Temperature Probes)

20 Lid Heated Seal Replacement

The seal condition is imperative to the performance of the unit, if the seal is damaged the unit will struggle to maintain its temperature and there is a risk of excessive icing on the evaporator coil.

To replace the seal first remove the worktop to gain access to the bullet terminals (*figure 18*). Then with the power turned off simply pull the two seal wires out of their associated bullet terminals (*figure 18a*).



NOTE: Be sure to replace and secure the worktop in position before fitting a new seal, this will retain the floating lid. Failure to do so may damage the refrigeration circuit.

Pull the faulty seal out of the retaining channel in the lid. Fit the new seal, first push seal into corners of the retaining channel for alignment. After the seal has been replaced remove the worktop once again and connect the new seal wires into two bullet terminals, be sure to re secure any loose wires into the wiring clip (*Figure 18*).



Figure 18

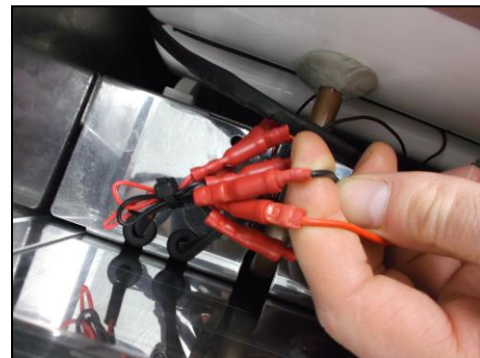


Figure 18a

Lid height adjustment is not required, the VCC unit utilises a self-adjusting 'floating' system. The lid should automatically return to the correct position once the drawer is shut. To ensure the system is working correctly, with the work top in place manually push the lid assembly up at the front and back, the lid should freely move up and drop back down in the slots (*figure 18b*). If the lid does not return to its original position the lid support pins can be checked for wear by removing the worktop (*figure 18c*). The pins are threaded so can easily be replaced.

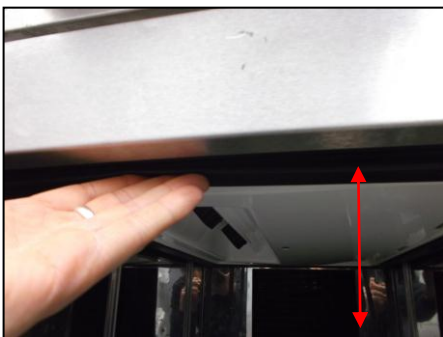


Figure 18b



Figure 18c

Parts No.	Description
103865	Drawer seal
103896	Lid assembly
104130	Pin lid support

21 Runner Replacement

To replace a drawer runner the Insulated container and drawer front will need to be removed to gain access.

The runner can now be removed from the drawer, extend the runner slightly, and with a firm grip twist the runner toward the middle of the drawer this will allow the front of the runner to be lifted clearing the front fastenings, pull the runner forward to clear the rear fixing. See figures below.



Figure 19: Twist runner.



Figure 19a: Lift and pull forward



Figure 19b

Replacing the runner is the reverse of the removal procedure, engage the rear lancing of the runner in the back vertical wall support and push horizontally to fully engage the rear lancing, engage the middle and front lancing's in their associated vertical wall supports and press down on the runner sharply, it should engage in the front vertical wall support with a 'CLICK', you should not now be able to lift the front of the runner vertically.

Fit the drawer front assembly in the same way by engaging the rear fixing first with a horizontal motion then engage the front 2 lancing's and press down fully engaging both, ensure the hole in the front of the runner lines up with the hole in the container support, and refit the M5 X 8 countersink screws.

If required the runner can be lightly greased with food grade grease.

Parts No.	Description
104741	RH Drawer runner
104740	LH Drawer runner

22 Condenser Fan Replacement

To replace the condenser fan the insulated container and the drawer front will have to be removed. The chamber base panel will need to be removed by removing 10 off M5 Br. Zn. Pd. Bolts, 6 of them are located just below the runners as shown below.



WARNING: Keep clear of any obstruction to all ventilation openings in the appliance enclosure or in the structure for units that are built in.

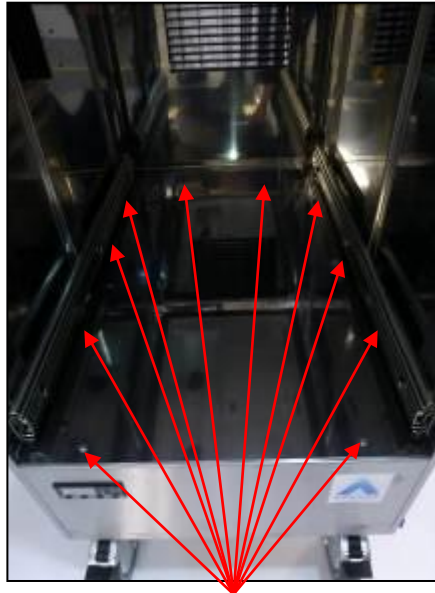


Figure 20: Base panel fixings (10 off)

Once these have been removed the base will slide forward revealing the condenser fan. Remove the four fixing screws and remove the fan (*figure 21*) and disconnect the wires. Reverse this to replace the fan and re-connecting the wires.



Figure 21: Condenser Fan mounting

Parts No.	Description
103008	Condenser fan

23 Front panel removal



To remove the front panel first remove the insulated container and the drawer front.

NOTE: POWER MUST BE ISOLATED BEFORE REMOVING ANY PANELS

Then remove the 2 off M5 Br. Zn. Pd. Bolts, pull the panel forward and lift to remove as shown below in *figure 22a* and *22b*.

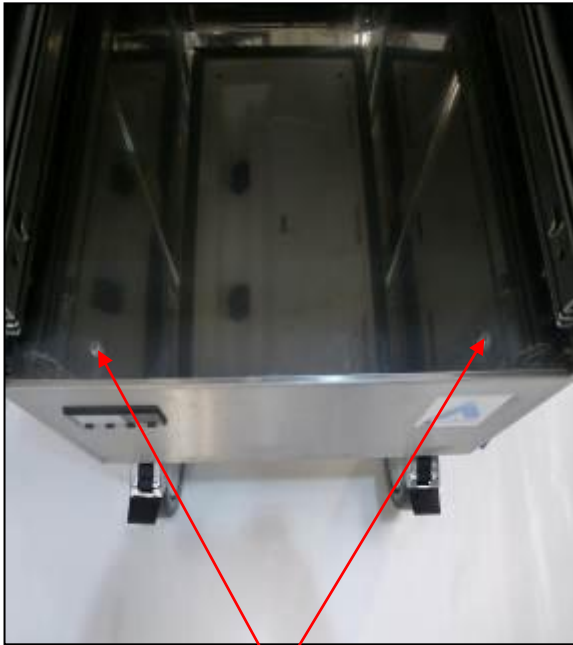


Figure 22a
2 Off M5 Br.Zn.Pd. Bolt



Figure 22b: Front Panel Removal

Parts No.	Description
103885	Panel front access spot weld assembly

24 Electrical components

There are two areas of interest for the electrical system. For evaporator fans, temperature probes, defrost heater and heated seal, there is an electrical block located underneath the worktop at the rear of the drawer. As shown in *figure 23* below. To gain access to this, remove worktop and back panel.

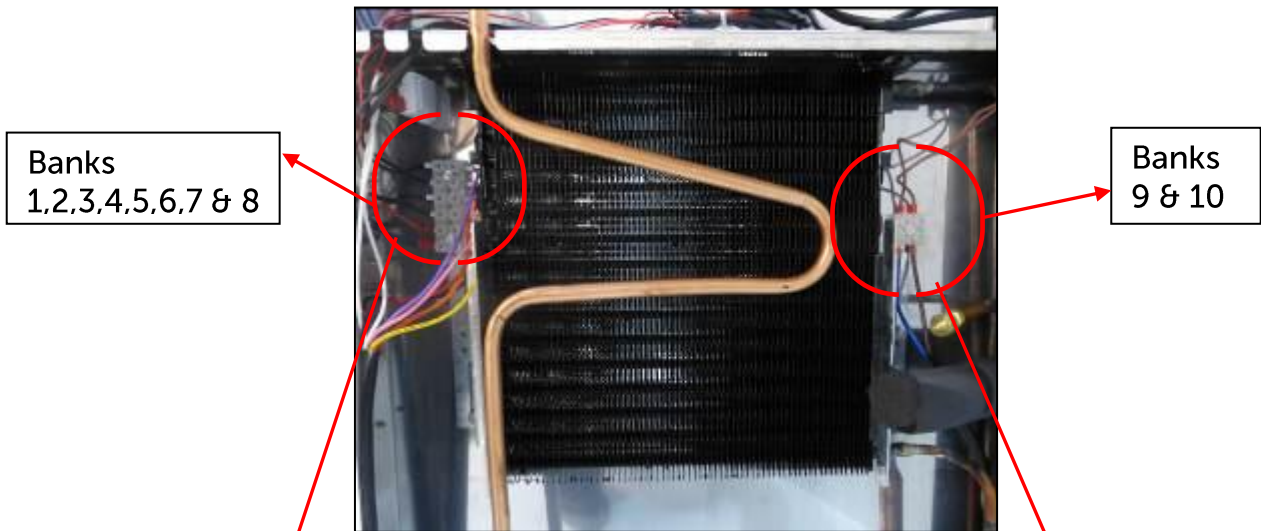
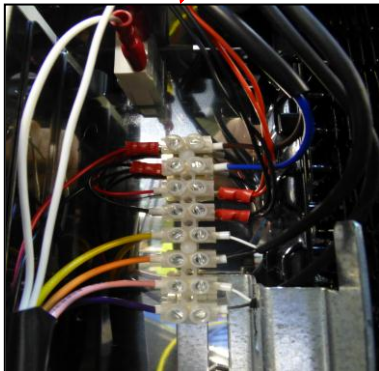


Figure 23: Electrical Block



Electrical Block	
1	12v Seal Heater Live
2	12v Heater Neutral
3	12v Evaporator Fans Live
4	12v Evaporator Fans Neutral
5	T1 Temperature Probe White
6	T1 Temperature Probe Black
7	T2 Temperature Probe White
8	T2 Temperature Probe Black
9	Defrost heater 240V Neutral
10	Defrost heater 240V Live

The other area where the controller and the above 'extensions' lead to, is located behind the front panel.

Each Adande drawer is fitted with a 6.3 amp fuse in which is situated in the controller (figure 24).

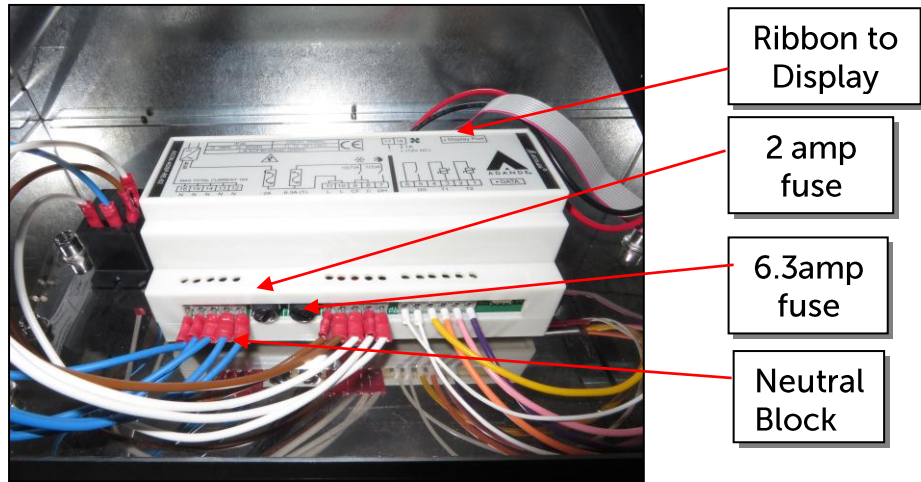
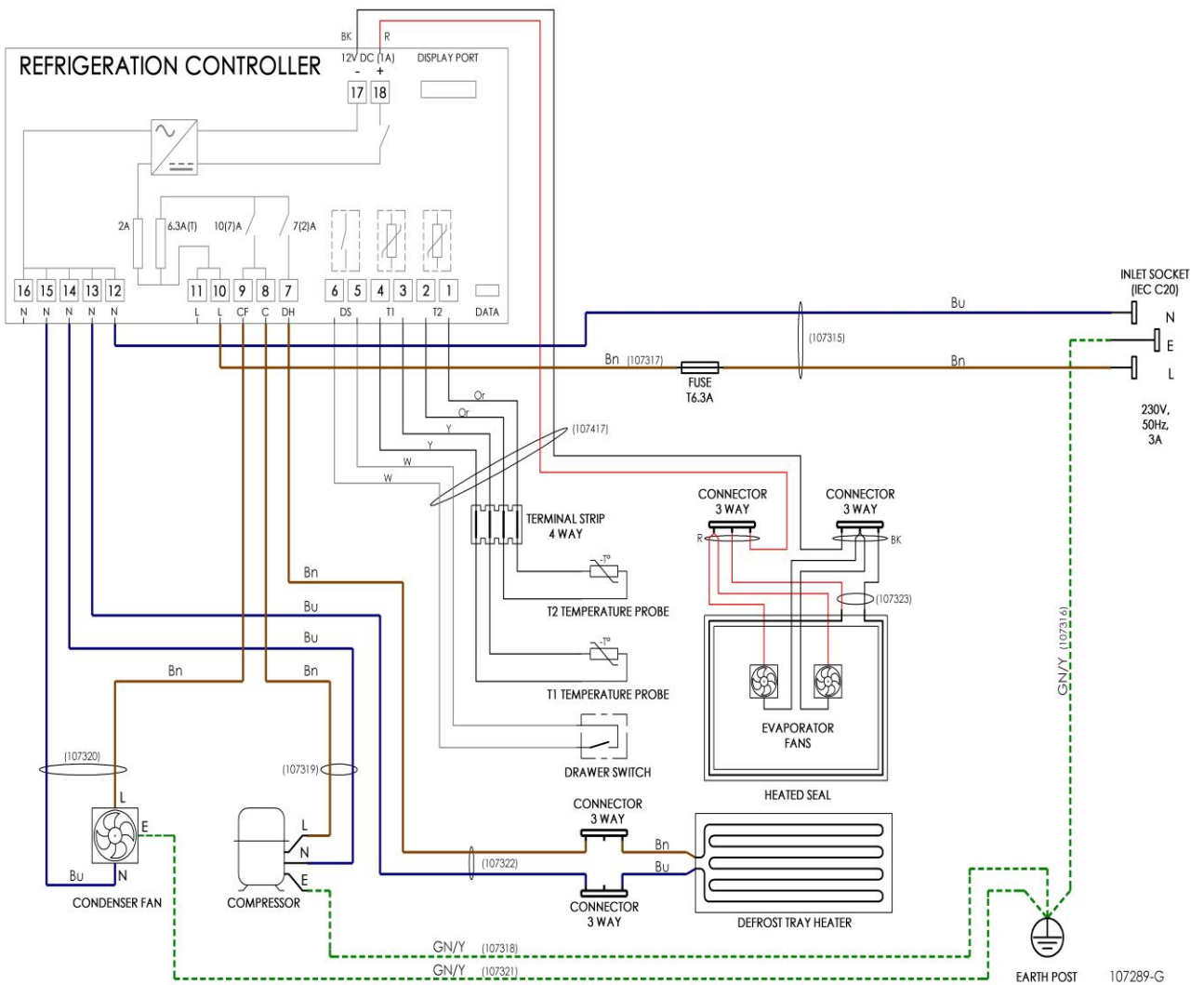


Figure 24: Controller

Controller	
1	Defrost temperature probe
2	Defrost temperature probe
3	Evaporator fans drawer temperature probe
4	Evaporator fans drawer temperature probe
5	Drawer switch
6	Drawer switch
7	Defrost heater live
8	Compressor live
9	Condenser fan live
10	Mains live in
11	
12	Defrost heater neutral
13	Compressor neutral
14	Condenser fan neutral
15	Mains neutral in
16	
17	12v DC neutral
18	12v DC live

24.1 Wiring diagram



25 Settings for Adande controller R404a

The Settings menu is accessed by pressing the 2 outer buttons X + i for 5 seconds

<i>Code</i>	<i>Setting</i>	<i>Description</i>	<i>Code</i>	<i>Setting</i>	<i>Description</i>
SCL	1.0°C	Readout scale	AHA	0	High temp alarm threshold
SPL	-22	Min temperature set point	ALR	-7	Low temp alarm differential
SPH	15	Max temperature set point	AHR	7	High temp alarm differential
SP	3.2	Effective temperature set point	ATD	60	Delay before alarm warning
C-H	REF	Ref or Htg control mode	ADO	3	Drawer alarm delay
HYS	2.0	Thermostat hysteresis	ACC	0	Periodic condenser cleaning
CRT	05	Compressor rest time	IISM	non	2 nd set switch mode
CT1	5	Compressor run time with sensor T1 failure	IISL	-20	Min 2 nd temperature set point
CT2	5	Compressor off time with sensor T1 failure	IISH	15	Max 2 nd temperature set point
CSD	1	Compressor stop delay from door opening	IISP	3	Effective 2 nd temperature set point
DFR	4	Defrosting frequency/24h	IIFY	3	Hysteresis of 2 nd temperature
DLI	8	Defrost end temperature	IIFT	1	Optimised fan control in mode 2
DTO	25	Max defrost duration	IIDF	3	Defrost timer start in mode 2
DTY	ELE	Defrost type	SB	YES	Button (0/1) enabling
DRN	6	Drain down time	DS	YES	Drawer switch enabling
DDY	30	Defrosting display control	LSM	Non	Light control mode
FID	No	Fans active during defrost	OAU	DEF	Enables defrost control
FDD	-15	Fan restart temp after defrost	INP	SN4	Temp sensor selection
FTC	NO	Evaporator fan timed out	OS1	0	Probe 1 offset
FT1	0	Fan stop delay after comp stop	T2	YES	Probe 2 enabling
FT2	0	Timed fan stop	OS2	0	Probe 2 offset
FT3	0	Timed fan run	TLD	5	Delay for min/max temp. logging
ATM	REL	Alarm thresholds	SIM	100	Display slowdown
ALA	0	Low temp alarm threshold	ADR	1	Address for PC communication

26 Refrigeration Maintenance



WARNING: Do not damage the refrigeration circuit

A standard hermetically sealed vapour compression refrigeration circuit is used in the Adande® drawer system and will need minimum maintenance. It is not advised to connect a manifold to the system unless absolutely necessary. Before attaching a manifold please check all other areas as mentioned in this maintenance manual first.

There are two access ports fitted to the refrigeration circuit to enable easy connection of a service manifold. The low pressure access fitting is located on the compressor service port (*figure 25a*) the high pressure access fitting is located between the compressor discharge and condenser inlet (*figure 25b*). **Do not use hot taps.**

Each unit is critically charged with 200g of R404a When recharging the gas must be weighed in and ideally be within 1-5g of the stated charge weight. Ensure the refrigeration system is fully vacuumed to a least 1.3mbar before recharging.

The system uses a copper capillary of 0.026" internal diameter at 2.75 meters in length, the vast majority of the capillary is wrapped around the base of the copper accumulator for heat exchange. One end of the capillary is inserted into a filter drier the other end is inserted into the evaporator coil inlet pipe, 175mm of the capillary tube should be inserted into the evaporator coil. It is recommended that after any procedure that involves breaking the refrigeration circuit the filter drier should be replaced.

The running pressures of the system during normal operation are as follows.
Please note these pressures may vary depending on the ambient temperature.

- R404a Low side pressures should read between 1 bar (14.5 PSI) and 3bar (43.5 PSI)
- R404a High side pressures should read between 10 bar (145 PSI) and 15 bar (217.5 PSI)

NOTE: The rear panel must be fitted when recording running pressures, failure to do so may result in false readings.

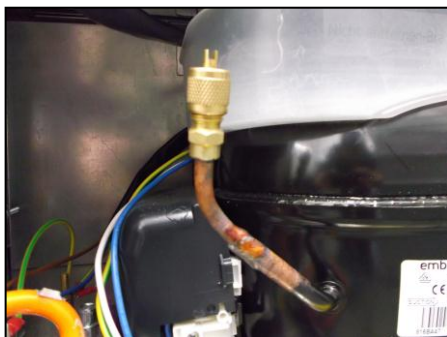


Figure 25a

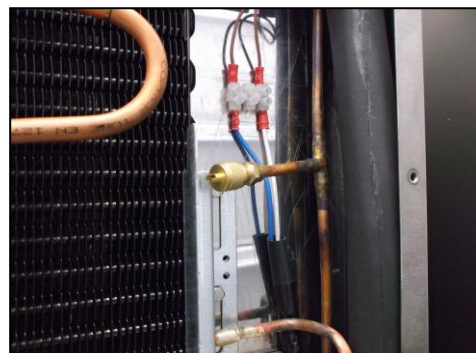


Figure 25b

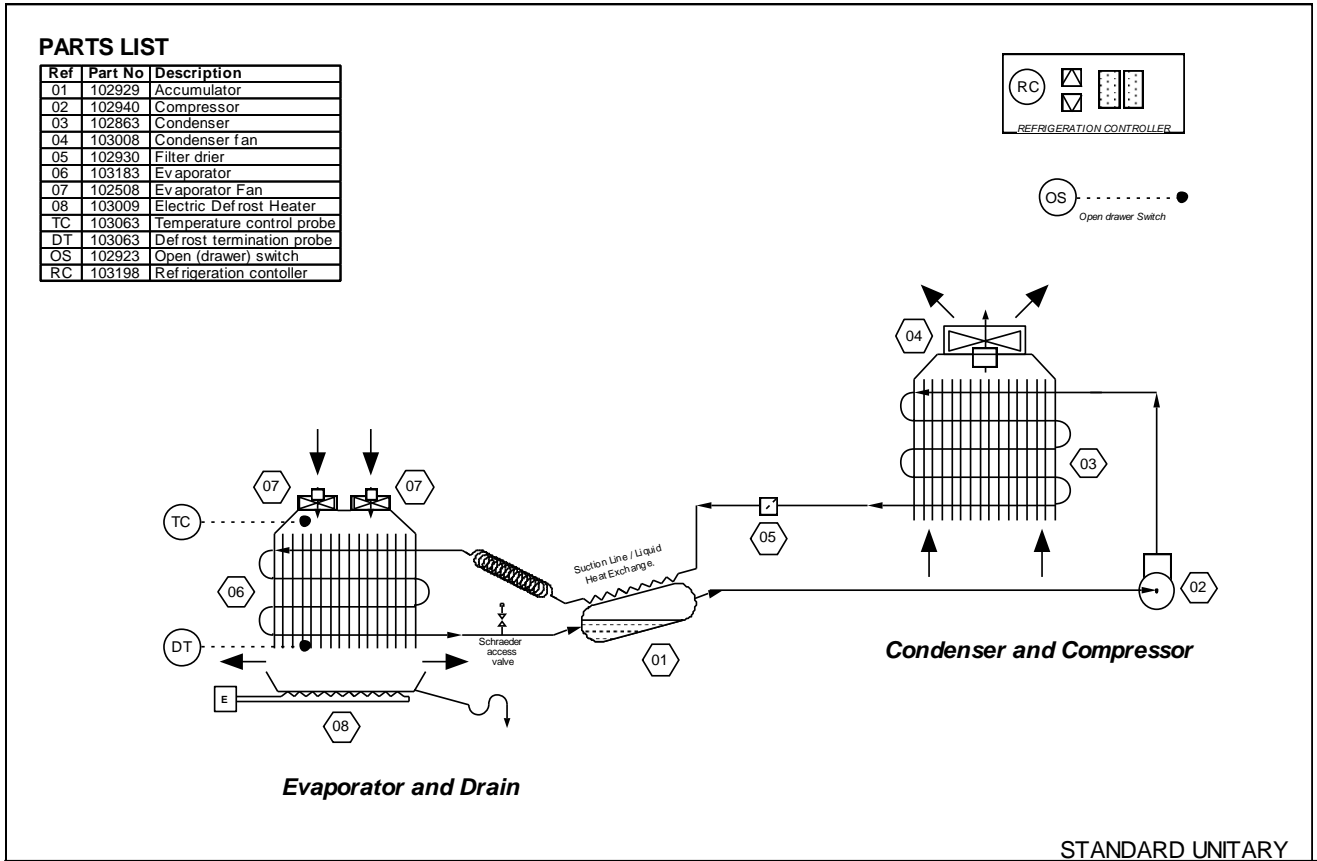


Figure 25: Refrigeration circuit diagram

Parts No.	Description
106014	Compressor – NBU1118Y R600a
103185	Condenser Coil
102930	Filter Drier
104628	Capillary 0.026" 2.75mtr
104629	Capillary 0.036" 3.2mtr
103745	Evaporator Coil
104286	Copper Accumulator
102062	Access Fitting 1/4"
104812	Pipework Assembly R404a
104813	Pipework Assembly R600a

28 Fault Finding

28.1 Drawers not operating correctly

Possible Cause	Recommended Action
Runners require lubrication	Lubricate runners, see Chapter 21
Runners are mechanically damaged	Replace runners, see Chapter 21
Ice build up causing diffuser to hit drawer	Check defrost heater operation and drain for blockages see Chapter 18

28.2 Seals and/or container rim have ice and condensation

Possible Cause	Recommended Action
Seal is contaminated	Clean the seal
Seal damaged	Replace seal, see Chapter 20
Seal heater is not working	a) Check 12 v power supply from controller, see Chapter 24 b) Check seal heater continuity, Replace seal if faulty, see Chapter 20
Product/packaging trapped between drawer rim and lid distorting seal	Ensure stored product is below Max Fill line in insulated container.

28.3 Drawer is not maintaining set temperature

Possible Cause	Recommended Action
Failure of evaporator fans	a) Check drawer switch operation b) Check 12v power supply from controller, see Chapter 24 c) Check evaporator fans. Replace evaporator fans if necessary, see Chapter 17
Seal failure	Check condition of heated seal
Excessive icing of evaporator coil	a) Check defrost operation b) Check defrost heater operation c) Manually defrost d) Check/clean drain from evaporator e) Check seal condition
Drawer temperature probe faulty	Replace temperature probe
Defrost termination probe faulty	Replace temperature probe
Blocked capillary line	Replace capillary tube.
Low refrigerant	Search for leak in system, repair leak and recharge with refrigerant
Failure of condenser fan	Check the condenser fan is operational, see Chapter 22
Condenser coil is blocked	Clean condenser coil
Failure of compressor	Replace compressor if faulty.

28.4 The drawer does not power up

Possible Cause	Recommended Action
Fuse has failed in mains plug	Check fuse, if it has failed investigate for possible cause before fitting new 13A fuse.
Fuse has failed within electrical system	Check 6.3 amp fuse – see Chapter 24
No mains power at mains terminals	If mains fuse OK then check wiring of the plug. Ensure power is switched off at socket.
Faulty mains lead	Replace mains lead – see Chapter 9 Investigate cause

28.5 Evaporator fans run when drawer is open

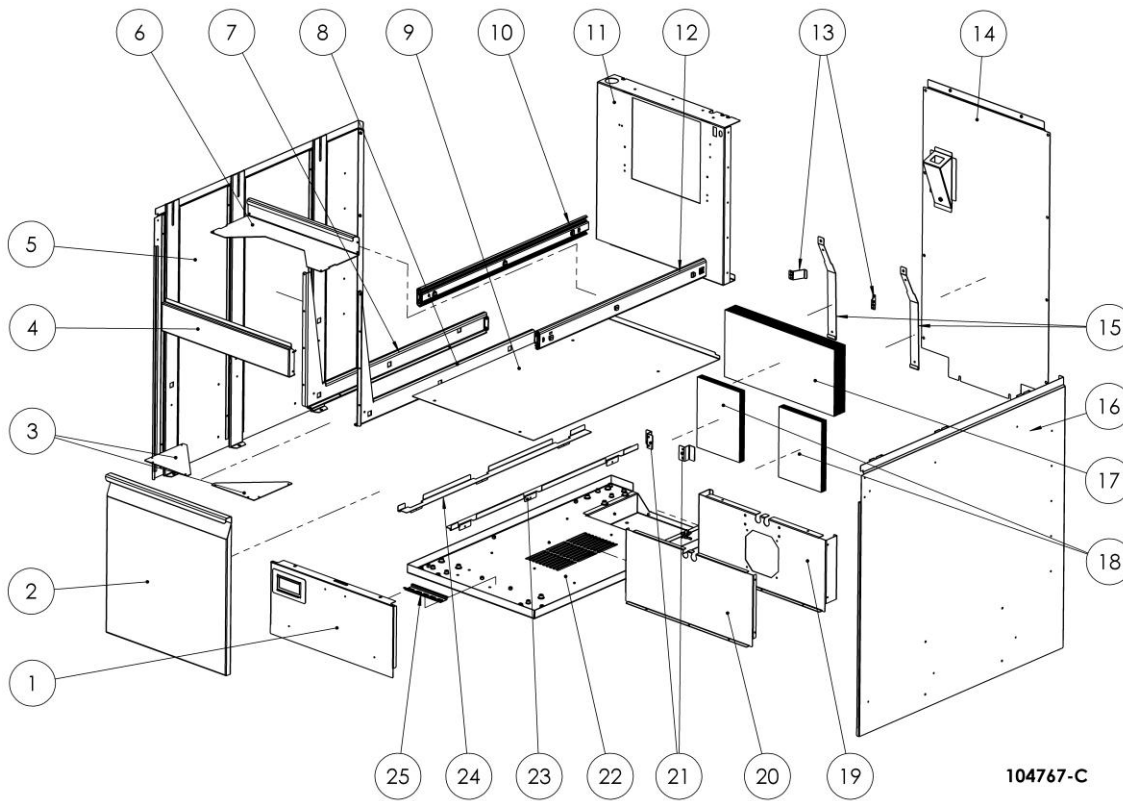
Possible Cause	Recommended Action
Controller has failed.	Replace Controller

28.6 Evaporator fans do not run when drawer is closed

Possible Cause	Recommended Action
Drawer switch has failed	Replace switch
12 v power supply failed	Check 12v power supply from controller Check wiring to fans for damage

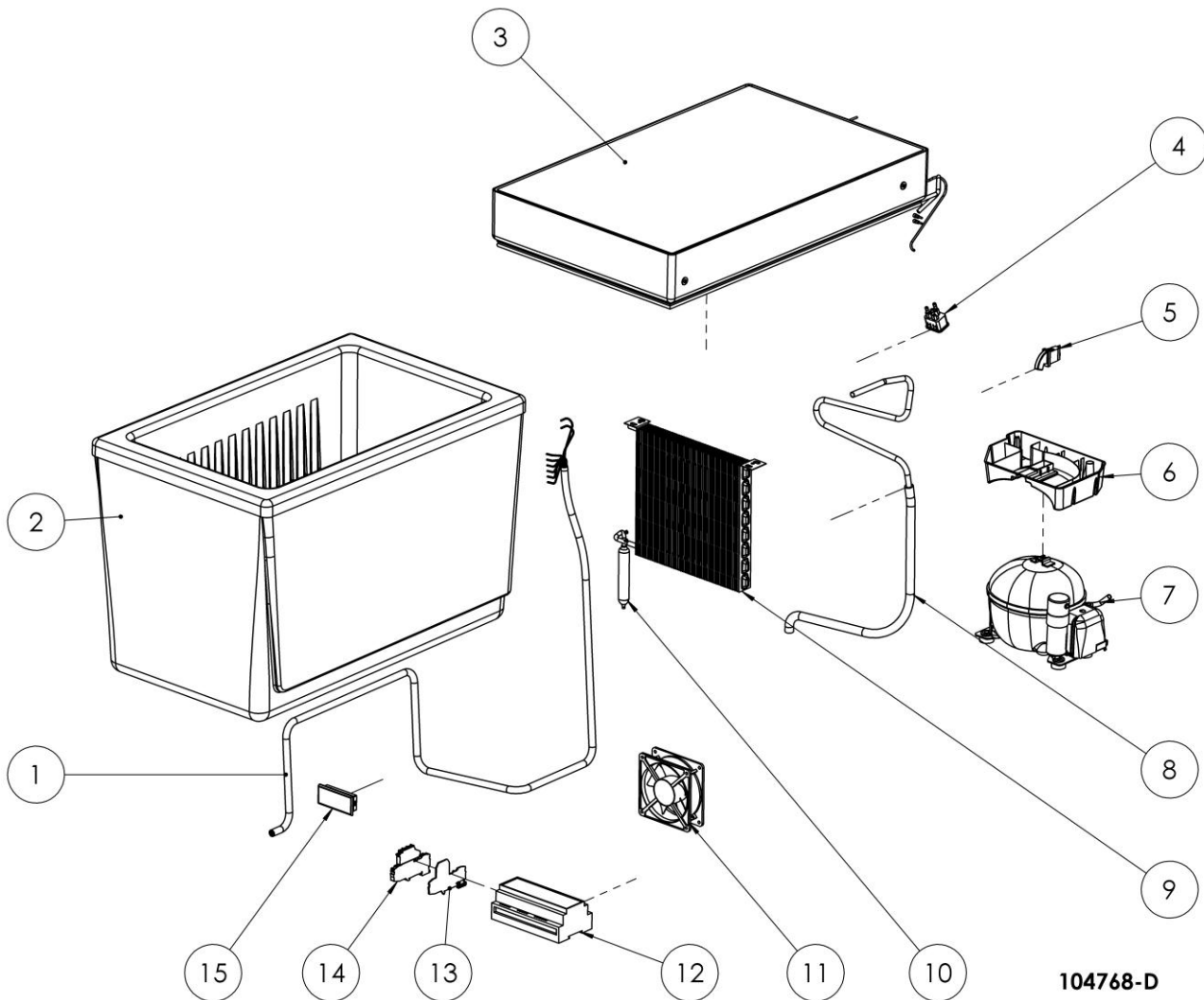
29 Exploded diagrams

29.1 Housing spare parts



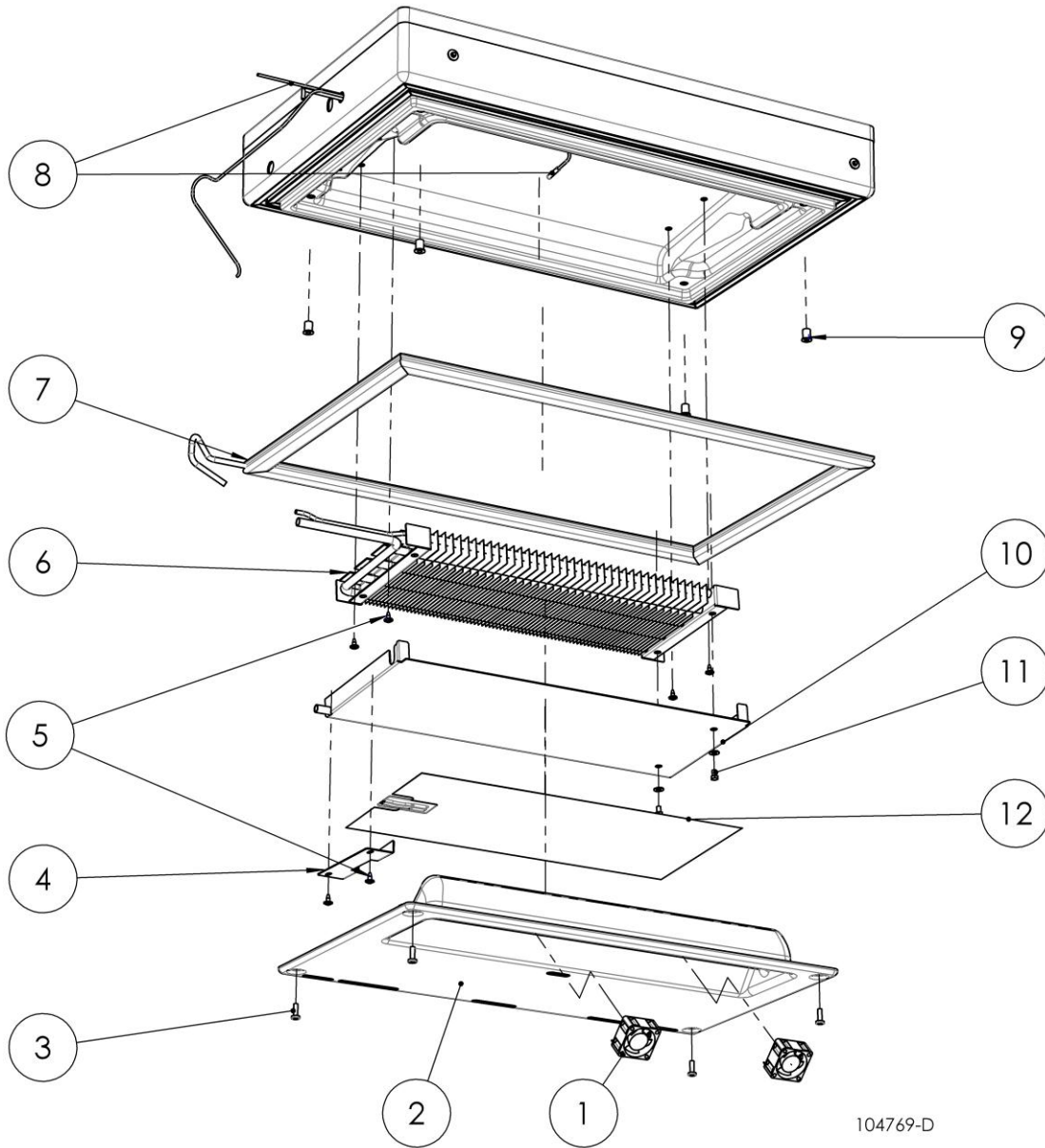
1	103885	Panel front access spot weld assy	14	107346	Panel rear & mains incomer spot weld assy
2	103890	Drawer front	15	107396	Strap counterbalance weight shelf support
3	104123	Bracket drawer assembly stiffening	16	103867	Panel housing RH spot weld assy
4	103887	Channel upper front	17	103905	Panel counterbalance
5	103868	Panel housing LH spot weld assy	18	103972	Counterbalance weight lower
6	103891	Channel container back stop	19	103874	Panel fan mounting
7	103889	Container support LH	20	104129	Panel electrical compartment isolation
8	103888	Container Support RH	21	104122	Bracket counterbalance weight restraint
9	103881	Panel drawer chamber base	22	104155	Panel base spot weld assy
10	104740	Drawer slide LH assy	23	103875	Bracket support RH drawer chamber base
11	103971	Panel internal rear	24	103876	Bracket support LH drawer chamber base
12	104741	Drawer slide RH assy	25	103575	DIN rail 35 x 7.5mm
13	107329	Bracket condenser restraint			

29.2 Fridge, Electrical System and drawer



Item	Part No.	Description	Item	Part No.	Description
1	107281	Kit spares – harnesses (VCC)	7	104582	Compressor EMYE70CLP (50-60Hz)
2	103790	Insulated container	7	104944	Compressor ML45FG ECC (50-60Hz)
3	103896	Insulated lid built assembly	8	107532	Defrost drain tube assembly (VCC)
4	106430	Power inlet C20 16A snap fit	9	103185	Condenser tubeless
5	102923	Drawer switch	10	102930	Filter drier
6	103970	Evaporator tray compressor	11	103008	Fan axial
6	104048	Evaporator NBU1118Y compressor	12	103755	Refrigeration controller display
6	102945	Evaporator tray MLxxFB compressor	13	107178	End plate 10A DIN rail mounted fuse holder
7	103969	Compressor EMT2117GK	14	107168	Fuse holder 10A DIN rail mounted
7	106014	Compressor NBY1118Y	15	103744	Refrigeration controller relay unit

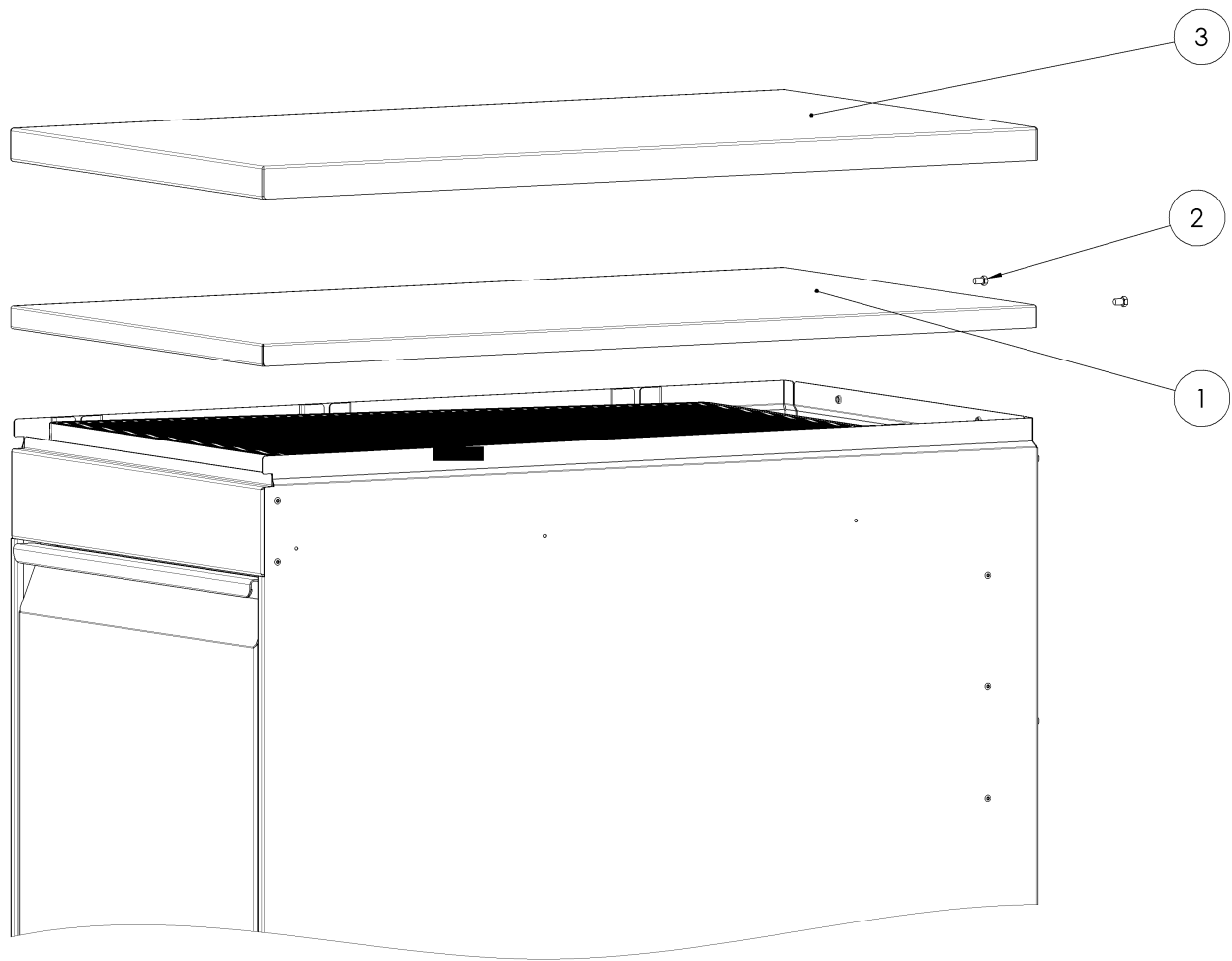
29.3 Insulated Lid (part No. 103896 – Complete Assembly)



104769-D

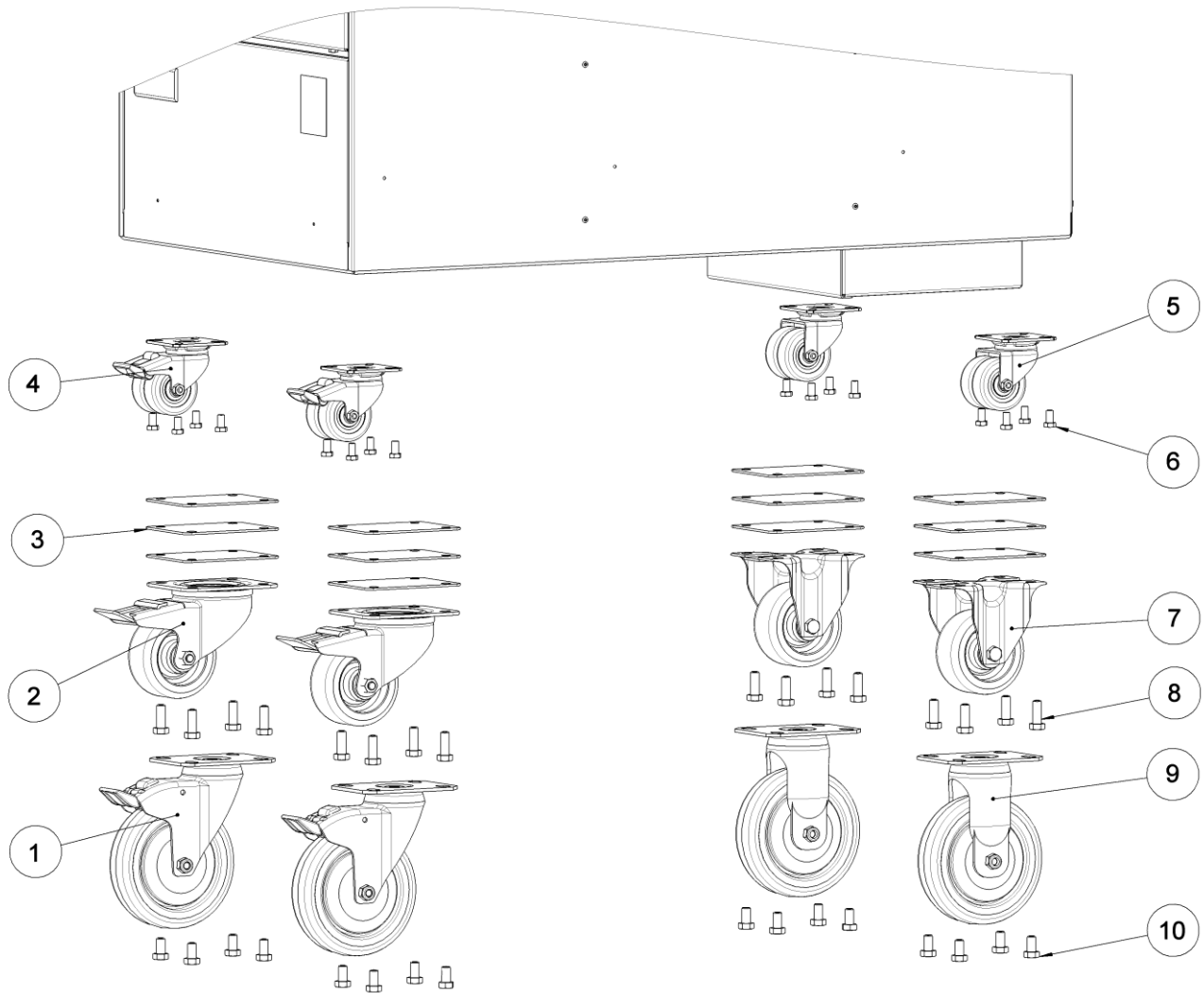
Item	Part No.	Description	Item	Part No.	Description
1	107381	Kit spares - Costech fans x2 & screws	7	103865	Heated container seal assy
2	103799	Lid diffuser	8	103063	Temperature probe – NTC silicone sheathed
3	106868	Screw pozi M5 x 16 ST/ST	9	106436	Rubber nut M5 – short grip
4	103903	Bracket retaining plate defrost collection	10	103800	Plate defrost collection
5	103145	Screw pozi pan self-tapping ST/ST	11	103491	Bonded sealing washer M5 ST/ST
6	104290	Evaporator coil coated	12	102082	Screw hex M5 x 12 ST/ST

29.4 Worktop and Cover top



Item	Part No.	Description
1	104141	Panel cover top
2	106295	Screw hex flange head M5 x 8 ST/ST
3	103895	Worktop assembly

29.5 Castors



Item	Part No.	Description
1	103502	Castor swivel 125mm BRAKED
2	103898	Castor swivel 80mm braked plate mounting
3	104094	Castor shim 2mm
4	103376	Castor swivel double wheel braked
5	104579	Fixed castor double wheel

Item	Part No.	Description
6	107261	Screw hex serrated face flange head M6 x 12
7	103897	Castor fixed 80mm plate mounting
8	107259	Screw hex serrated face flange head M8 x 25
9	104547	Castor fixed 125mm
10	107260	Screw hex serrated face flange head M8 x 16

30 Product Fiche VCC R1

Information requirements for professional refrigerated storage cabinets			
Model: VCC R1			
Intended use	storage		
Operating temperature(s)	multi-use		
Category	counter		
(where applicable)			
Refrigerant fluid: HFC R404A (GWP ~ 4200)			
Item	Symbol	Value	Unit
Annual Energy Consumption	<i>AEC</i>	1278	kWh
Energy Efficiency Index	<i>EEl</i>	45.9	
Net volume	V_N	68.8	litre
(where applicable)			
Chilled volume	V_{NRef}	-	litre
Frozen volume	V_{NFz}	68.8	litre
Refrigerant charge		0.200	kg
Contact details	Applied Design and Engineering Ltd. trading as: Adande Refrigeration. 45 Pinbush Road, South Lowestoft Industrial Estate, Lowestoft, Suffolk. NR33 7NL. United Kingdom.		

31 Appendix

Contact us

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