MEDIUM TEMPERATURE REMOTE CABINET

PMM 20F3 22E3 22F3

GLASS DOOR MULTIDECK



INSTALLATION MANUAL

PMM(20)(22)(E)(F)3 CASES

AJHH9A2002200H

HUSSMANN®

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GENERAL INFORMATION

1.1 SYMBOLS



NOTE: Not related to personal injury – Indicate(s) situation, which if not avoided, could result in damage to equipment.



CAUTION: Indicate(s) hazardous situation which, if not avoided, will result in moderate injury.



CAUTION: Indicate(s) hazardous situation which, if not avoided, will result in moderate or serious injury.



CAUTION: Indicate(s) hazardous situation which, if not avoided, will result in serious injury or death.



USE MANUAL: Be sure to follow the instruction thoroughly whilst doing the installation. If not performed correctly, leakage, electric shock, or fire may occur. Always keep manual in a safe place.



NO WALK: Do not walk on top or on any parts of the case. Case damages or personal injuries may occur.



NO SIT: Do not sit on top or on any parts of the case. Case damages or personal injuries may occur.



NO CLIMB: Do not climb on top or on any parts of the case. Case damages or personal injury may occur.



NO CHEMICALS: Do not use chemcial substances to clean the case. This may cause discoloration or could damage the case.



USE SOAPY WATER: Use soapy water in a spray bottle to clean the case.



NO WET AREA: Do not install case in a wet place or near water. Risk of electricity leakage or electrical shock may occur.



NO DIRECT WATER: Do not pour excessive water onto the case. DO NOT use pressurised hose; e.g. fire hose. This can result in electric shock.



NO OUTDOORS: Do not use or store the case outdoor. If the case is exposed to direct sunlight or rain, leakage of electricity, electric shock, or performance failure may occur.



PPE GEAR: Remember to wear Personal Protective Equipment whilst installing the case.

GENERAL INFORMATION

1.1 SYMBOLS



TURN OFF: Ensure that power source is disconnected when conducting any servicing or inspection. Injuries such as electric shock or burns could occur.



NO FLAMMABLE: Do not expose the case to any flamable objects. This may cause ignition and explosion due to spark.



WEIGHT: Do not exceed the weight limit of each shelf. Each standard shelf has a total maximum weight limit of 180kg/m2.



PRESSURE AND VACUUM TEST: Ensure a pressure and vacuum test is conducted. The leakage of refrigerant may result in poor performance or malfunction of the case.



NO GAS: Do not install the case where flammable gas could be realeased. If gas leaks out and flows around the case, there can be risk for fire.



EARTHING: Ensure case is earthed when proceeding with electical components. Electric shock or fire may occur if not correctly processed.



TECHNICIANS ONLY: Installation should only be performed by qualified technicians.



NO OBJECTS ON CASE: Do not place objects, stack, or use the top of the case as storage. Object may fall and cause injury to personnel and/or damage to the case.



NO A/C: Do not install case where air blows directly at the case. This will disrupt the case airflow and affect performance.



NO WET HANDS: Ensure not to touch switches or any component with wet hands. This may cause electrical shock.



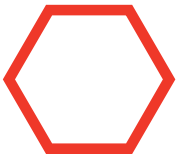
NO FLAMMABLE: Do not keep any volatile or flammable materials inside the case. It may risk explosion or fire.



NO CONNECTING SOCKETS: Do not use any connecting socket or extension cords. Be sure to use a private line or socket as the main power source. Failure to do so could result in electric shock or fire.

GENERAL INFORMATION

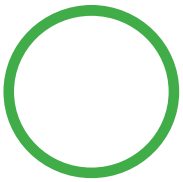
1.2 STOP THINK ACT



STOP: Take the time to think about the installation process. Consider the outcomes of the actions needed to be taken, worst thing that could happen?



THINK: How are you going to do it, is it the safest way? If not, how can you do it better? Do I have the right PPE, tools, and equipment.



ACT: Go about it in the safest way possible. Follow this installation manual here and don't rush. STOP if it can't be done safetly.



NOTE: These cabinets are heavy and can have high centres-of-gravity (thus 'tippy'). Use appropriate PPE, tools, and manpower levels.

1.3 STAFF TRAINING

This manual is to be used to understand and safely execute the installation and maintenance of the appliance. It is the installer and user's responsibility to carry out the instructions illustrated within the manual correctly. The installer and user is responsible for setting out the the training and requirements needed for their maintenance technician staff to be educated to use the case correctly. The case should always be kept in good working order to ensure installer and user safety.

Injury to personnel and damage to the case and its components may occur if instructions in the manual are not correctly followed. If you would like to suggest that information is to be added to this manual, please contact Hussmann directly at any time.



CAUTION: This case is not intended to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless have been given supervision or instructions concerning use by a person responsible for their safety. Children cannot play with the case.

1.4 ELECTRICAL CONNECTION

Check that the power supply voltage matches that displayed on the rating plate of the case, and that the power is adequate. Voltage provided should be +/-10% of rating plate. Electricals should be hard wired by an authorised electrician to comply with all local electrical regulations. Failure to do so could result in electric shock or fire.



CAUTION: If the power supply cord or the power plug is damaged, it must be replaced by the manufacturer, their service agent, or a suitably qualified persons in order to avoid any hazard.

1.5 REFRIGERANTS



Installation and maintenance must be performed by qualified technical personnel with appropriate training and authorisation to work with flammable refrigerants.

R134A:
The refrigerant R134A is not flammable. Pay close attention during transport, installation, and dismantling not to damage the refrigerant pipelines.

EVENT OF DAMAGE:
Keep flames or sources of ignition away from the appliance. Properly ventilate the premises for a few minutes. Turn the unit off and notify the customer service department. Although not flammable this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.

1.5 REFRIGERANTS

TCO2/CO2:
The refrigerant TCO2 and CO2 is a high pressure gas that is compatible with the environment, but is not flammable. Pay close attention during transport, installation, and dismantling not to damage the refrigerant pipelines.



CAUTION: Gas is under high pressure.

EVENT OF DAMAGE:
Keep surrounding flames or sources of ignition away from the appliance and gas. Properly ventilate the premises and use a breathing apparatus. Turn the unit off and notify the customer service department. Fire and heat may cause gas receptacles to rupture. Use water spray and not jet or fog to extinguish.

R449A:

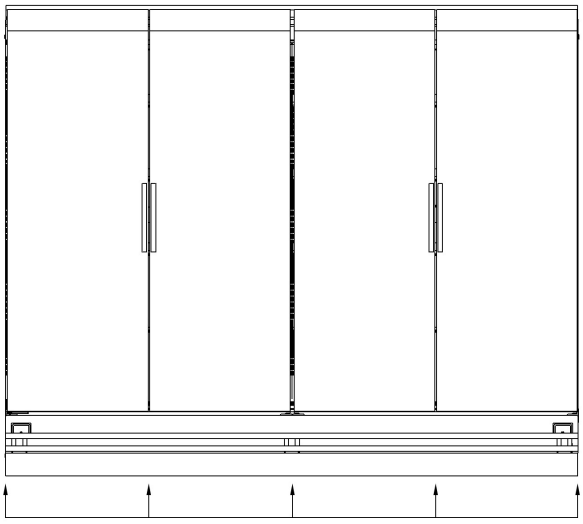
R449A (Solstice® N40) is a non-flammable HFO blend used in low and medium temperature refrigeration applications. It provides a combination of lower Global Warming Potential (GWP) and higher energy efficiency. R449A has a GWP of 1273. It is non-ozone-depleting which can be used in existing installations or for new installations.

EVENT OF DAMAGE:
Vapours of this refrigerant are heavier than air and can cause rapid suffocation by reducing oxygen available for breathing. Contact with liquid can cause frostbite and severe damage to the eyes. The system including the refrigerant is under pressure, it should be protected from sunlight and other heat sources.



GENERAL INFORMATION

NOTE: Check underside of case before lifting to ensure no damage to electrical, drain box, or other extrusions occurs.



Check underside of case

FIGURE 1A

1.6 CASE VENTILATION

AIR FLOW:

Sources of heat or air flow external to the cabinet should be avoided; i.e. ventilation ducts, open doors, and direct sunlight. This will deter external air from disrupting the air flow from the cabinet thus will help to maintain its performance.

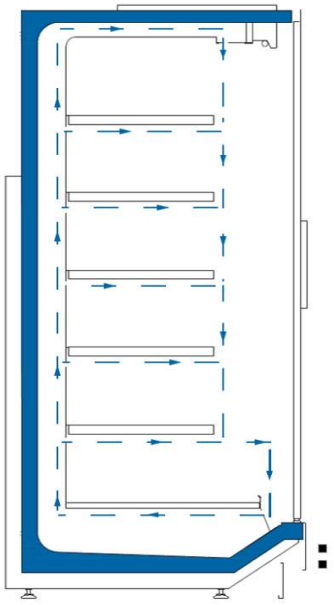


FIGURE 1B

LOCATION:

The refrigeration case should be positioned in a manner that optimal air flow can flow through the underside and rear. This will minimise the risk of condensation on the back and/or underside. Leave a minimum **75mm** gap between the rear of the case and the back wall.



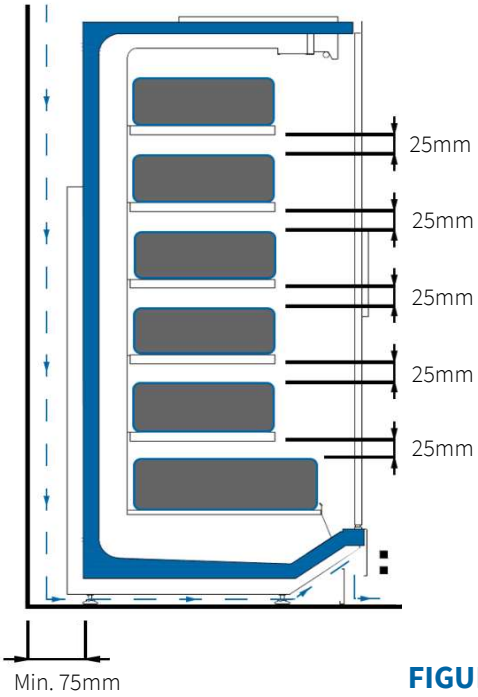


FIGURE 1C

STOCKING SHELVES:

When stocking the shelves, be sure to leave a **25mm** gap in between the stock and the above shelf to ensure even and consistant airflow. Not doing this correctly may result in a blockage of airflow which could freeze the stock at the rear, and not enough refrigeration to be produced toward the front of the case.



NO OBJECTS ON CASE: Do not place objects, stack, or use the top of the case as storage. Object may fall and cause injury to personnel and/or damage to the case.

2.1A CASE DIMENSIONS AND SERVICES

EXAMPLE:- PMM20F3R **PMM22F3R**

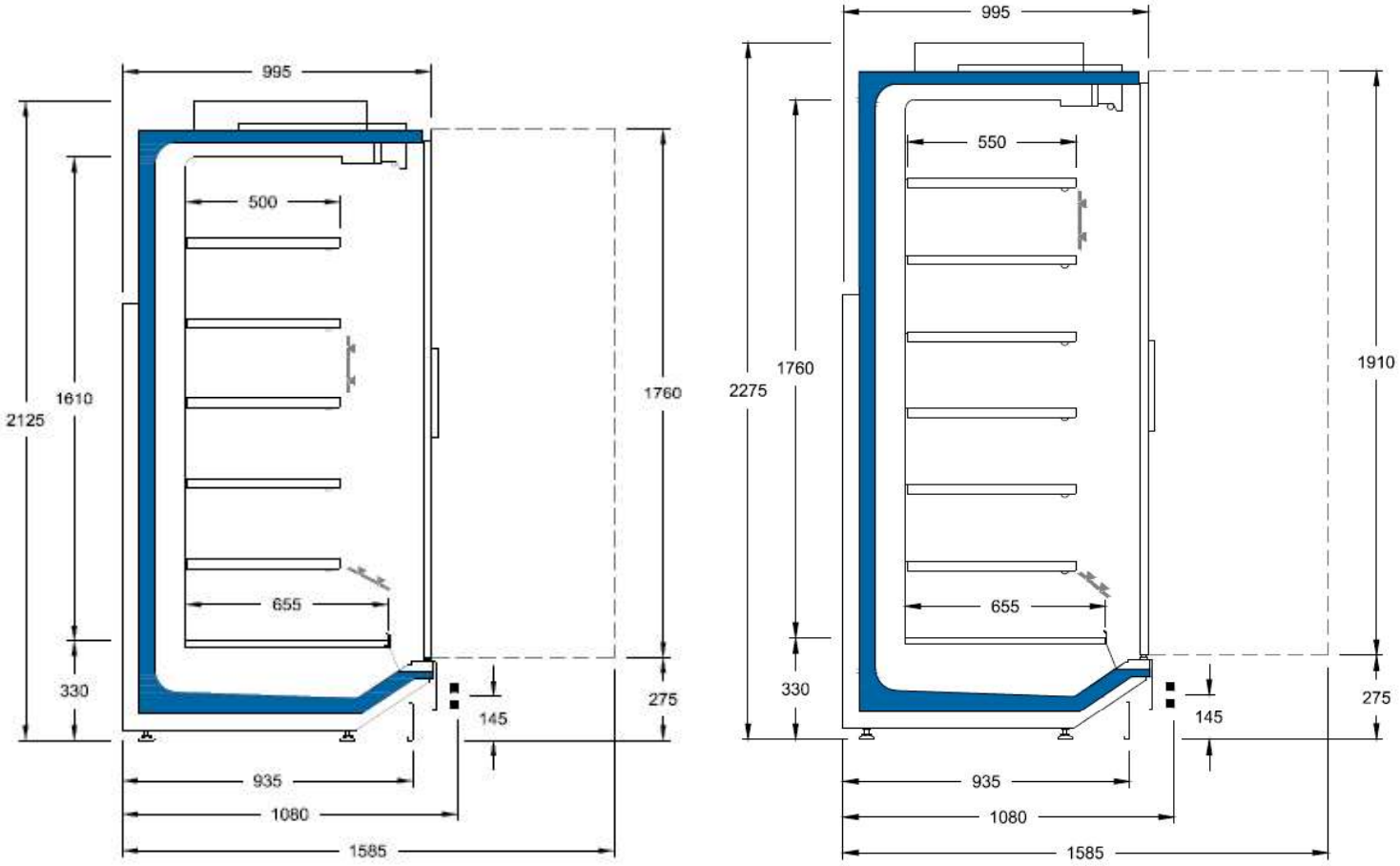
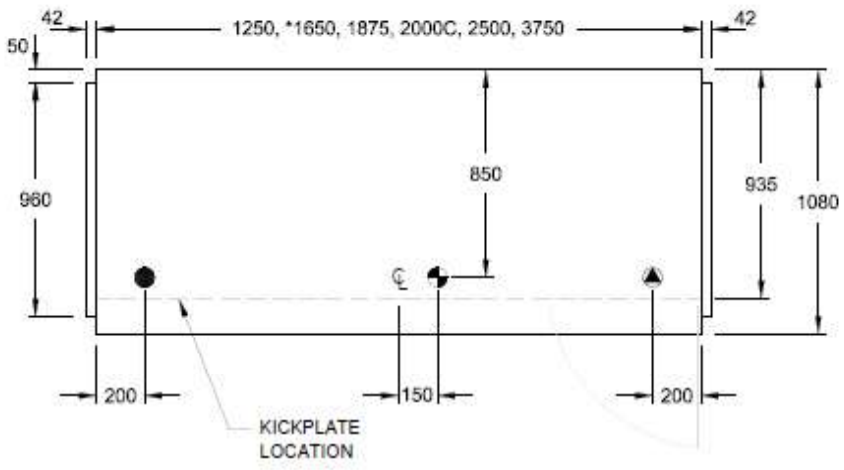


FIGURE 2A - EXAMPLE ONLY

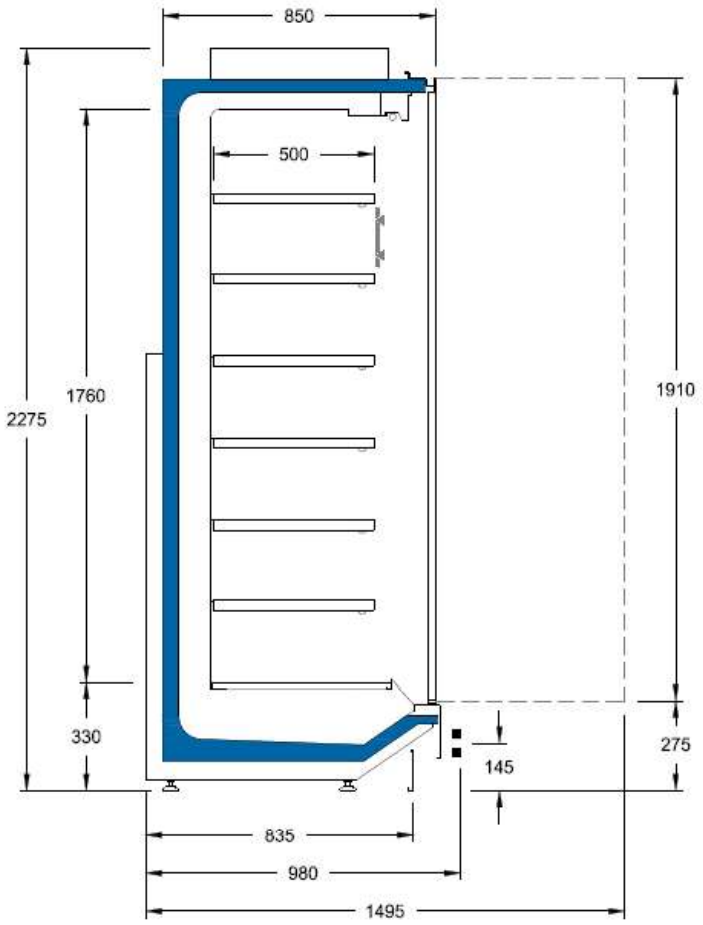


NOTE: This information is a reference only. Always refer to the latest Product Engineering Data sheet (PED).

DRAIN
ELECTRICAL
REFRIGERATION

2.1B CASE DIMENSIONS AND SERVICES

EXAMPLE:- PMM22E3R



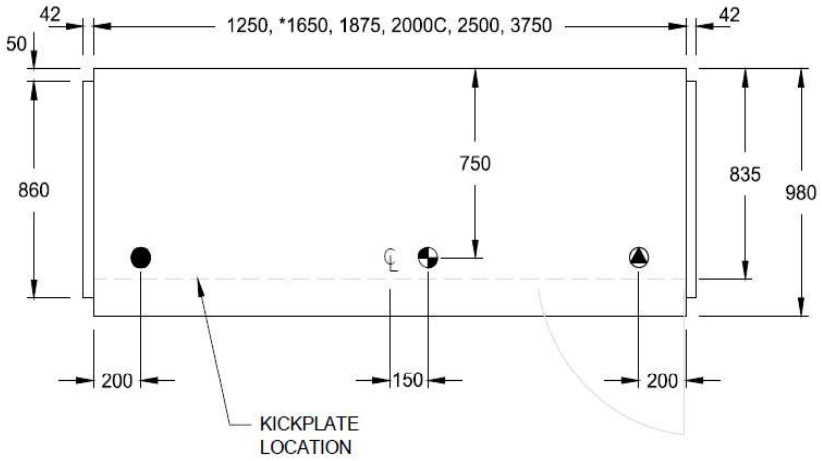


FIGURE 2A - EXAMPLE ONLY

NOTE: This information is a reference only. Always refer to the latest Product Engineering Data sheet (PED).

DRAIN
ELECTRICAL
REFRIGERATION

2.2 OPERATING ENVIRONMENT

Cases have been factory tested to ISO 23953, +25°C at 60% RH, and cross draft of maximum 0.2m/s. For best performance, we recommend maintaining store temperature below +24°C at 50% RH.

To avoid condensation build-up, cases should be positioned to allow air to freely circulate around the underside and rear of the case (refer page 7). Cases must be level.

Open refrigerated cases are sensitive to excessive air disturbances. Air currents passing around cases will seriously impair their operation. Do NOT allow air conditioning, electric fans, open doors, or windows, etc., to create air currents around the cases.

Place the case away from any heat sources as the heat radiation and heat currents will impair the performance.

The exterior of these cases provide space for air circulation. However, if the store conditions are outside the recommended limits, a fan ventilation kit can be requested.

2.3 HANDLING AND TRANSPORTING CASES

Case dimensions and case weight can be found on the rating plate. Also refer to the latest Product Engineering Data (PED) available from Hussmann Customer Service.

Always ensure that the moving device is of a suitable type, and has sufficient lifting capacity for the case weight and dimension. Always lift cases from the underside. Do not lift case by the bumper at any time.

NOTE: These cabinets are heavy and can have high centres-of-gravity (thus 'tippy'). Use appropriate PPE and tools and manpower levels.

It is the responsibility of the transport company to insure adequate loading strategies are implemented to insure the safe transportation of the Hussmann cases. Cases should be strapped using the indicated strapping points highlighted on the case packaging with the "strap here" stickers. Cases should be strapped in position ready for transport with the appropriate rated strapping and strap corner protector. Cases need to be secured correctly during road transport to insure damage free delivery. In Australia, cases should not be transported without the strap corner protectors to insure that the tie down web straps used from cutting into packaging and or causing damage to case panels in transport.

The strap corner protector is a case transport requirement in Australia, and disregarding using the protector may cause transport damage. Warehouse Managers may refuse loading without the necessary implementation of correct strapping protection. Transportation requirements are to ensure case integrity and prevent unnecessary damage and avoid delays in the case installation schedule.

Move the merchandiser as close as possible to its permanent location and then remove all packaging. Check for damage before discarding packaging. Remove all separately packed accessories such as kits and shelves.

NOTE: For demonstration watch: https://www.youtube.com/watch?v=C5wPzfFSc8Q

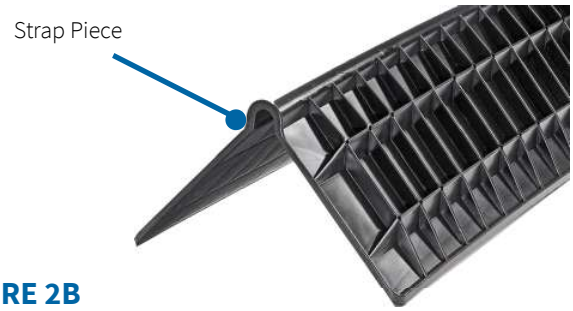


FIGURE 2B

2.3 HANDLING AND TRANSPORTING CASES

The cabinets must be stored indoors, with a temperature ranging between 0^{0}C and +40^{0}C and a humidity between 30% RH and 90% RH.
Before storing the cabinets, ensure packaging is unbroken and does not display defects that may compromise preservation of the cabinets.



Avoid UV rays:
Permanent deformation of plastic materials or damage of cabinet parts. **DO NOT** store the cabinets in uncovered areas exposed to atmospheric agents and to direct sunlight.



Depending on model, the electrical box is shipped attached to the back of the case, or within the base deck along with the other accessories.

2.4 SHIPPING DAMAGES AND SHORTAGES

Packaging needs to be disposed of responsibly by the installer and/or user (refer to page 33).



Where possible please recylce as many items as possible.

After removing packaging, inspect the case for any shipping damage and ensure that all case inclusions such as trims, etc., are accounted for. Immediately report any shipping damage to the carrier and inform Hussmann Customer Service of any short supplies.

Where possible all packaging and shipping braces should be removed before cases are put into their approximate final position.

- Apparent loss or damage. If there is an obvious loss or damage it must be noted on the freight documentation receipt supplied by the Transport Company and notified to Hussmann or representative within seven (7) days of delivery.
- Concealed loss or damage after removing all packing, etc., is to be confirm with the parts list attached to case for any short supplied and/or damaged trims, product fences, etc. If required, notify Hussmann or representative within seven (7) days of delivery.



NOTE: Refer to product MSDS for all hazardous substances used during installation in relation to their application, PPE, first aid, disposal, and emergency management. Refer to page 36 for risk analysis. For MSDS sheet contact your Hussmann Representative.



CAUTION: Care must be taken to avoid damage to drainage outlets and electrical equipment mounted under or at the rear of cases.



INSPECT CASE BEFORE LIFTING WITH FORKLIFT FOR LOCATION OF ELECTRICAL BOX AND DRAIN PIPE.



CAUTION: When moving cases confirm that the equipment used is approved for such works.

Do not lift or drag the case by the patch end as this may damage both the case and/or ends.



Refer to your companies' safe working procedure (SWP) when handling cases such as forklifts, trolleys, etc.

2.5 RATING PLATES

Each case has a 2 unique and 1 optional label that includes an identification number.
As well as on the packaging, the case identification number appears as a serial number on the rating plate (most commonly located on the ceiling panel left hand end of the case and left side rear panel) and is printed on a decal on the rear of the case. The case sequence number is also written on a ticket on the front panel.

PACKAGING TAG:

MODEL NO : PSM(20)(22)E3R
SERIAL NO : SZ0000
ASSET CODE :
PROJECT :
SO NO :
PO NO :
DEPARTMENT TYPE :

RATING PLATE:

HUSSMANN®

MODEL : PSM(20)(22)E3R	DIMENSIONS : X x X x X mm
CLIMATE CLASS : X	TYPE : X
NET VOLUME : X	NET WEIGHT : X kg
REFRIGERANT : X	DATE OF MANUFACTURE : X/X/XX
VOLTAGE (V) : X	FREQUENCY : X
FANS CURRENT (A) : X	LIGHT CURRENT (A) : X
ANTI SWEAT CURRENT (A) : X	
DEFROST AND DRAIN CURRENT (A) : X	

CONFIG ID : PMM23XXX-XX-XXXX SERIAL NO : SZ0000

Hussmann Refrigeration (Suzhou) Co. Ltd

ASSET TAG (Where Applicable)**:**

ASSET CODE
12345678

LOCATIONS:

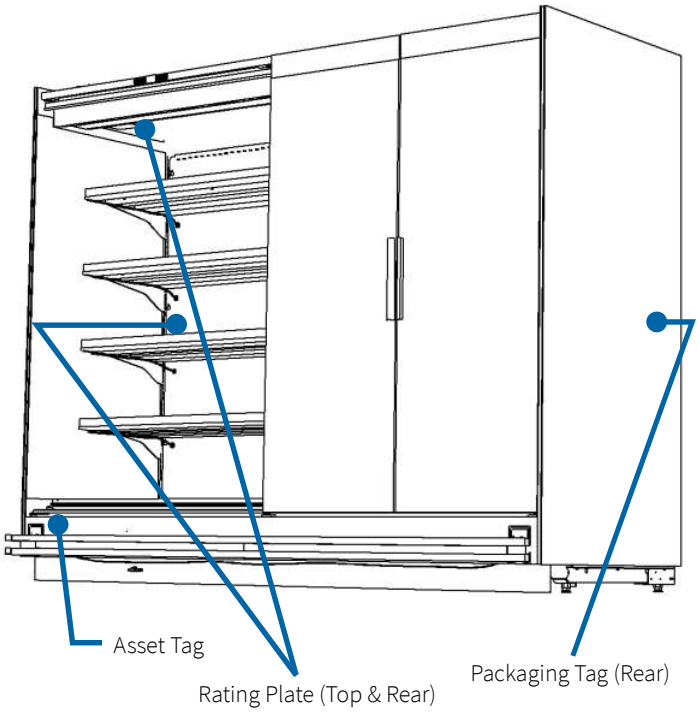


FIGURE 2C

NOTE: Refer to rating plate to identify the exact case model. The serial number and build date are key for aquiring information regarding spare parts, warranty, short parts, etc.

PACKAGING TAG:

- **Model No:** Identifies the model type (letters on left) as well as the model size (numbers on right).
- **Serial Number:** The unique number given to each case.
- **Asset Code:** Optional identification number for supermarket stores.
- **Project:** Used to identify location site for the case.
- **SO Number:** Sales Order number.
- **PO Number:** Purchasing Order invoice number.
- **Department Type:** The type given for merchandising location; e.g. bakery, dairy, deli, etc.

ASSET CODE:

- **Asset Code:** Optional identification number for supermarket stores.

RATING PLATE:

- **Model:** Identifies the model type (letters on left) as well as the model size (numbers on right).
- **Climate Class:** The climate class relates to the atmospheric or ambient conditions outside the fridge or freezer. These conditions determine how much energy the unit will utilise in specific environments.
- **Net Volume:** The net volume is the total space inside the case.
- **Refrigerant:** Identifies the refrigerant used in the case.
- **Voltage:** Voltage is the amount of potential energy between two points on a circuit. This is measured in Volts (V).
- **Fans Current:** The fans flow of electricity which results from the ordered directional movement of electrically charged particles, measured in Amps (A).

RATING PLATE (Continued):

- **Anti-Sweat Current:** The heater that is installed in the frames and doors of refrigerated cases to reduce condensation and prevention fogging, measured in Amps (A).
- **Defrost and Drain Current:** The current from heaters that are installed in freezer cases to stop the case from icing up, measured in Amps (A).
- **Dimensions:** The sizing of the case measured in milimeters (mm) L x W x H.
- **Type:** The type given for merchandising location; e.g. bakery, dairy, deli, etc.
- **Net Weight:** The net weight is the total weight including shelving and all part supplied with the case.
- **Date of Manufacture:** The date of build.
- **Frequency:** Frequency is the rate at which current changes direction per second. It is measured in Hertz (Hz), an international unit of measure where 1 Hertz is equal to 1 cycle per second.
- **Lights Current:** The total current of the lighting modules in a case, measured in Amps (A).
- **Configuration ID:** Identifies the model type, model size, the lineup number, and the case sequence number.
- **Serial Number:** The unique number given to each case.

3.1 POSITIONING AND LEVELLING

Unwrap the cabinet and remove the shipping braces and metal covers. Lift up cabinet and remove shipping base.

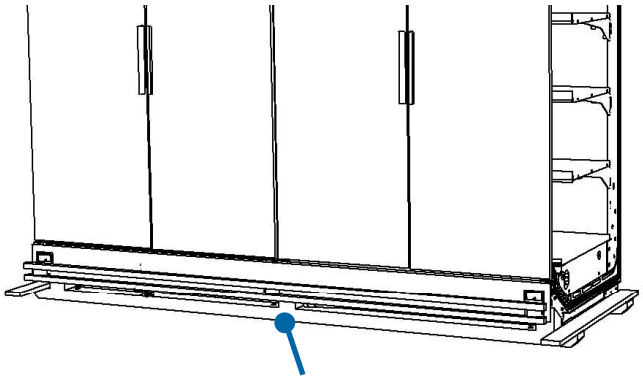


FIGURE 3A - Remove Shipping Base

To position the cases:

1. If the plinth surface is not level, determine where the highest point of the plinth is, and position the case allocated to this position first.

2. Snap a chalk line on the floor to use as a guide for positioning the front of the cases in the line-up. Determine the position of the case and choose a part of the case that will relate to the chalk line.

3. Adjust the case height using the adjustable feet to ensure the case is level to within +/-1.5mm from front to back, and side to side, and that the chassis of case is NOT twisted. Maximum 30mm adjustment.

Refer to and follow the manual handling policies of your Company when moving cases.

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. When leveling merchandisers, use a carpenter's level as shown below.

Make sure to never lift the case by the bumper to when levelling. Alway lift from the underneath of the case.

Cases must not be positioned in areas that may be subject to heat or air currents such as ventilation ducts, open doors or windows, direct sunlight, electric fans, or ovens, etc.



NOTE: Information in this manual is to be followed in conjunction with specifications, work practices and regulations of the customer, installing company, and relevant industry.

CAUTION: Ensure the lifting capacity of the trolley, etc., is sufficient for the case. Refer to the product engineering data tables at the front of this manual for case weights and risk analysis (page 36). The rating plates will also detail weight/size.

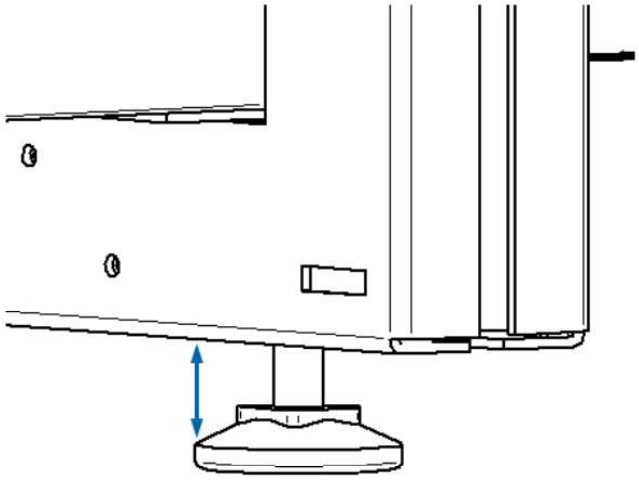


FIGURE 3B - Levelling Feet



3.1 POSITIONING AND LEVELLING

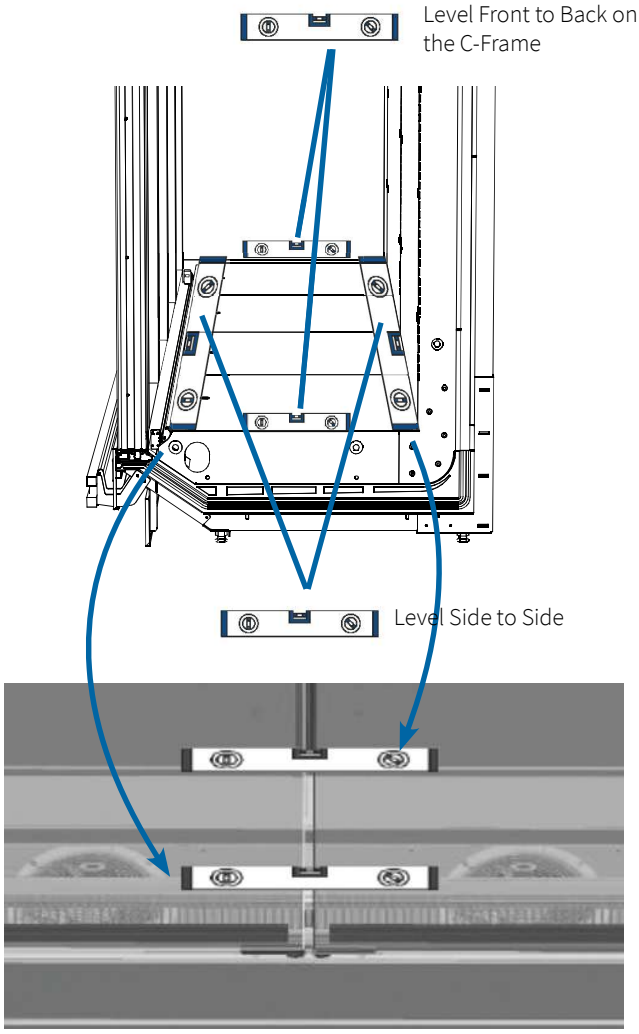


FIGURE 3C - Levelling Case

NOTE: It is important that all cases are level for correct case joining, operation and door alignment. DO NOT SET CASE LEVELS OFF THE PATCH END fitted to a case.

Make sure case is level:
Front to Back: +/- 1.5mm
Side to Side: +/- 1.5mm (Figure 3C)

NOTE: It is important that all cases are lined up.

REMOVE PAN DECK. USE THE C-FRAME CHASSIS AS MAIN POINT OF REFERENCE WHEN LEVELLING.

NOTE: Use string line to align with datum point when lining up multiple cases.
The bumper support and front ticket strip must be removed before lining up the cases.

Laser lines or spirit levels are also good instruments to use while lining a case up.

NOTE: Base on floor level and high and low spots. Adjusts the feet on each case as close as possible before you place the case in the final position minimizing levelling of the case.

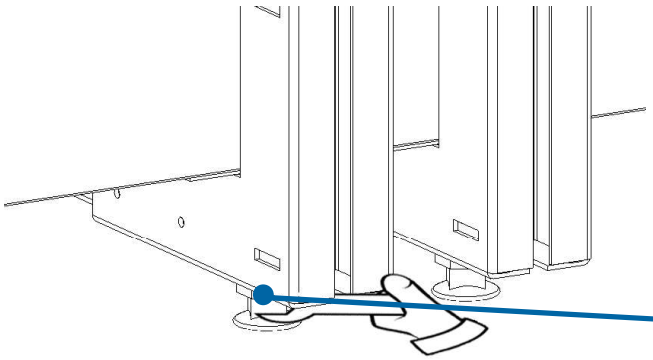
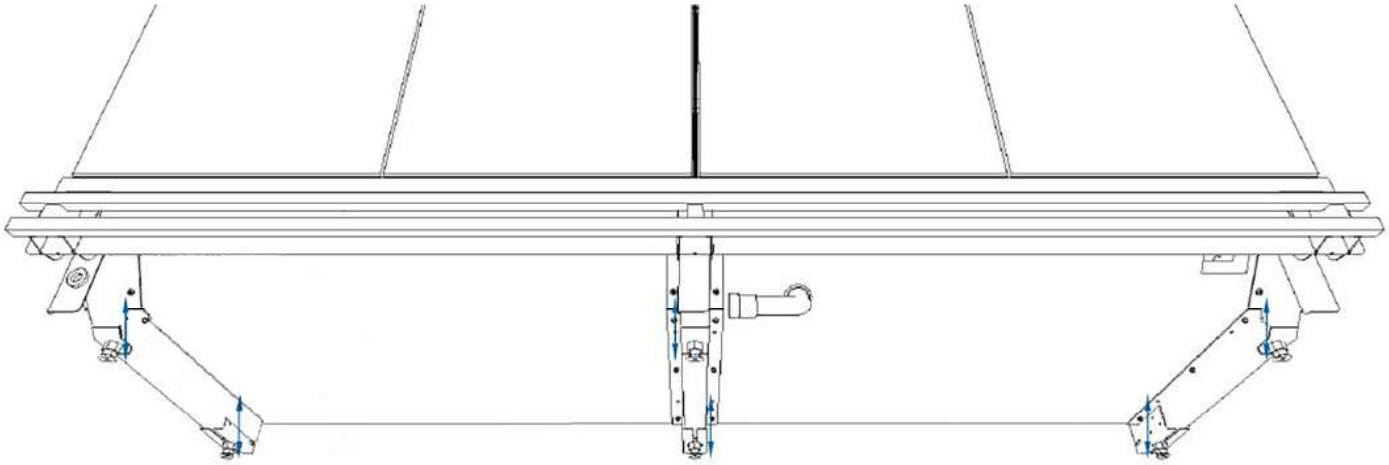


FIGURE 3D - Lining Up Case

NOTE: All feet need to be loaded evenly on the ground. If this is not undertaken this could cause the chassis to twist.

INSTALLATION



Example of a 2500mm case - The amount of legs will defer on each size case.

FIGURE 3E

Make sure case is level:
Front to Back: +/-1.5mm
Side to Side: +/-1.5mm

Make sure all feet are adjusted, NOT just the ones at the end of the case, ensuring case load is fully and evenly supported.

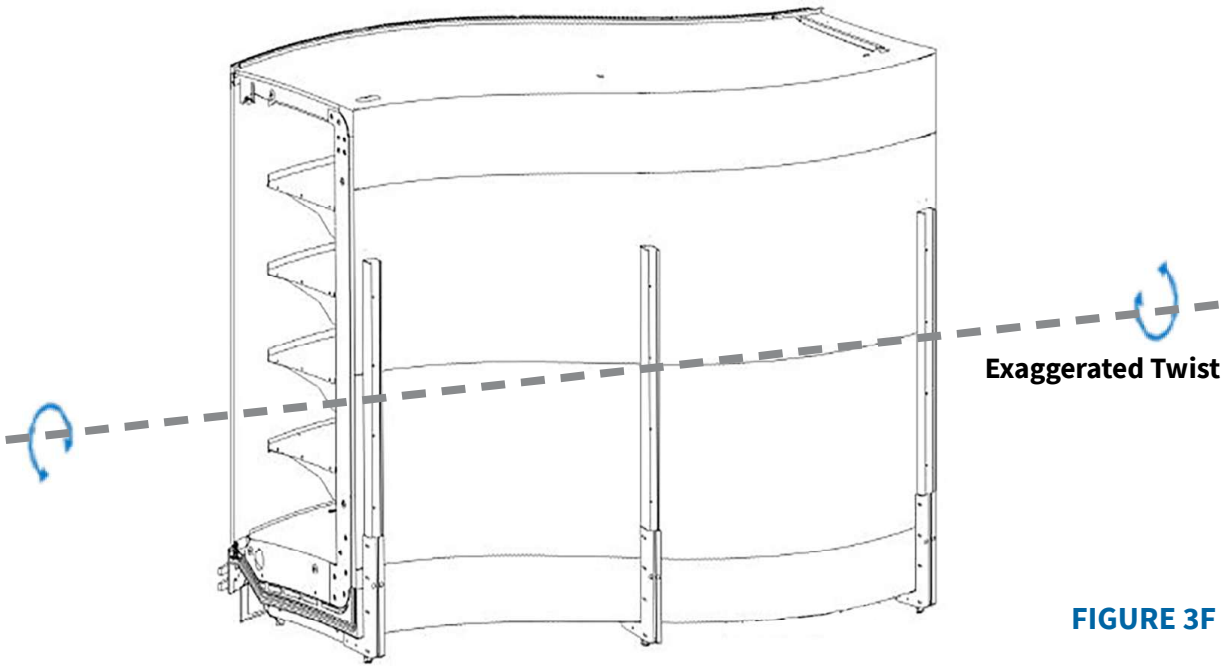
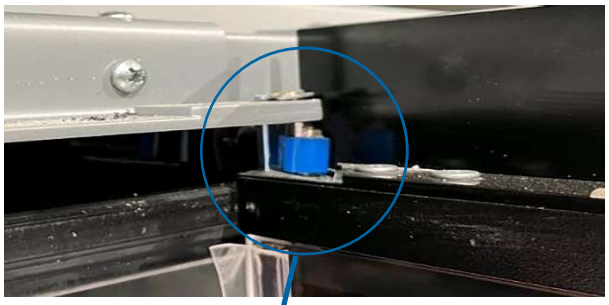


FIGURE 3F

NOTE: If feet are not adjusted and levelled correctly, the case chassis could twist causing saw toothing of the doors and other misalignments.
Front support feet help with the added weight of the door assembly, ensure these are adjusted correctly.

3.1b REMOVE SPACER LOCATED TOP OF DOOR

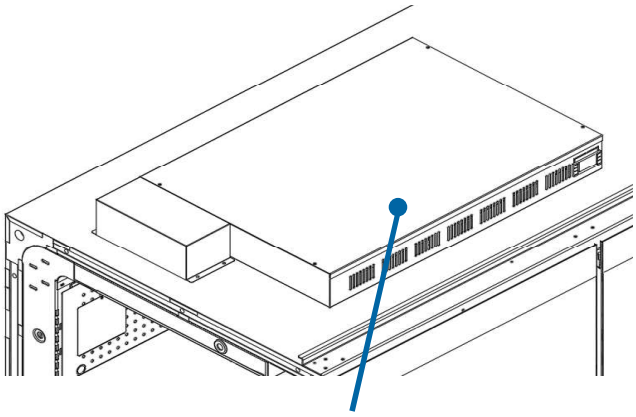
Door spacer is used for shipping to protect door pin. Remove spacer during installation.



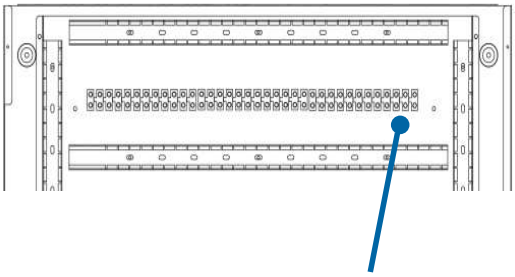
Remove door spacer

3.2 ELECTRICAL BOX INSTALLATION

1. The electrical box is located at the top of the case.
2. Remove the lid from the electrical box by removing the screws from the top of the box.
3. Hard-wire the power cable into the main power block as per Figure 3H.
4. Replace the lid and fasten screws removed in step 2.



Electrical Box top of case



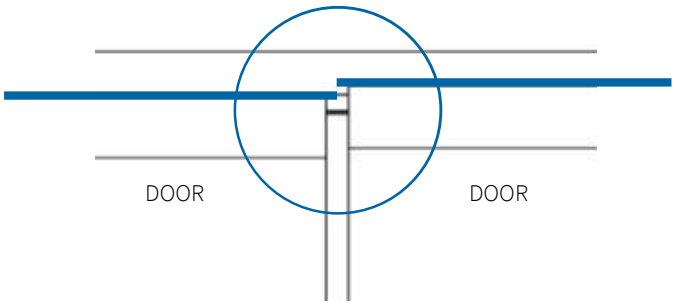
Mains Power Block

FIGURE 3H

3.3a DOOR SAW TOOTHING

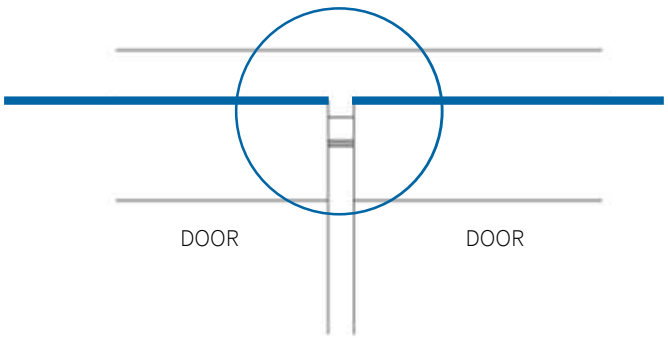
The doors in the images below show the misalignment (saw toothing) see Fig. 3J1. This should be completely horizontal and flush with each other see Fig. 3J2. The door system on this case only has a minor adjustment. If doors cannot be aligned as per the following examples then the case chassis has not been leveled to tolerance and needs to be readjusted. If the case has been levelled, and the doors are still misaligned, reinstalling the doors as per section 4.6, can help assist in realigning the doors.

If doors remain saw toothed after levelling and checking for installment issues, please follow the instruction in 3.3b.



Misaligned/Not Parallel/Twisted

FIGURE 3J1



Aligned/Parallel/Not Twisted

FIGURE 3J2

3.3b Instructions to removing saw toothing

To remove the saw tooth, you need to follow the below instructions and it can be completely removed.

1. Saw tooth can be removed only by the adjusting the case feet.
2. Please check the lifted-up door hinges are engaged properly and tension working fine.
3. Check all case joints are done to the same level. If not release the connections and level before tightening bolts.
4. Check the case level. Check the doors are vertical.
5. If all checks are fine, start with the highest saw tooth door and adjust the front feet under it by using a pallet jack or a Ply lever bar (See.

a. Make sure not to damage the drain piping or the bumper.
b. Check that the packet jack or ply lever bar does not hit the electrical box.
c. Check and Inspect for refrigeration pipes and electrical cables underneath case.

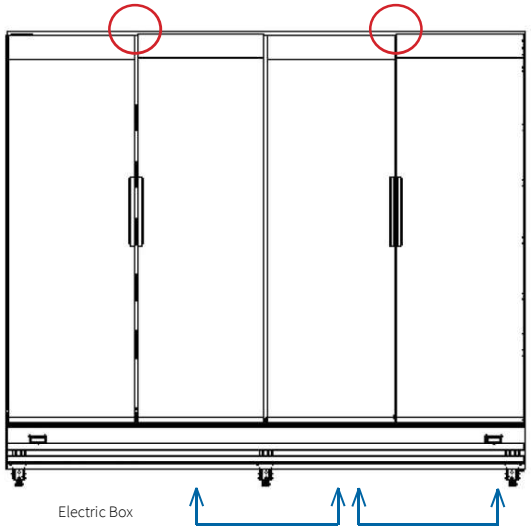
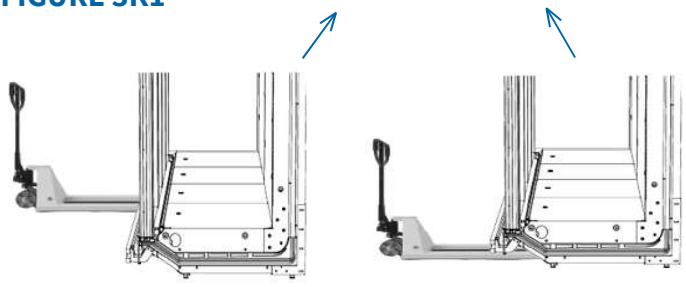


FIGURE 3K1



Pallet Jack on left side

Pallet Jack on the right

FIGURE 3K2

6. When you increase the feet height, it will lift the door (See Fig 3K3).

7. When you decrease the feet height, it will lower the door (See Fig 3K3).

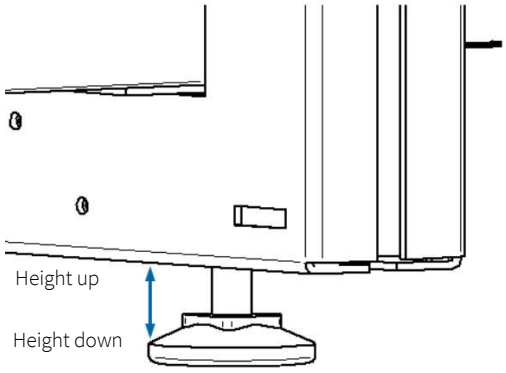


FIGURE 3K3

8. Test this for the extreme for the first door and identify the behaviour.
6. Continue this to the next saw tooth location and keep repeating until all doors are aligned.
7. This needs to be done for most of the front feet and might need to repeat few times to get better alignment (See Fig 3K4).

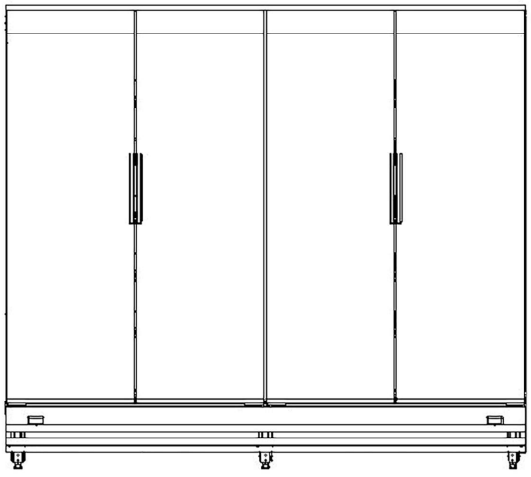


FIGURE 3K4

3.4A DOOR ADJUSTMENT

Tensioning the Door
The doors should be properly tensioned from factory.

Recommended Door Closing Specification
To ensure correct performance and long term reliability, the door self close mechanism must meet the following requirements:

- **Automatic closing :** Starts at approx. 85° =+/-5° until 0°
- **Target closing time: 4 seconds**
- **Measured from: 80° door open position**
- Door must close **smoothly, fully,** and **without slamming or rebound**

Left Door	Right Door
"+" Increase tension → Door closes **faster / stronger** **"–" Reduce tension** → Door closes **slower / softer** **"o" Knob position indicator** The arrow symbols around the knob indicate the **rotation direction** used to change the position of the dot.	**"–" Increase tension** → Door closes **faster / stronger** **"+" Reduce tension** → Door closes **slower / softer** **"o" Knob position indicator** The arrow symbols around the knob indicate the **rotation direction** used to change the position of the dot.

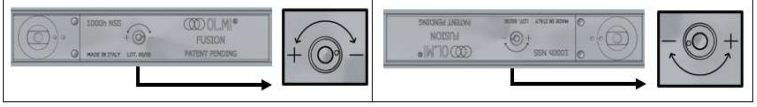


FIGURE 3L1

Adjustment Procedure
⚠**Ensure the refrigeration case is level before adjusting the door self close mechanism.** (If the case is not level, refer to the installation manual for the correct levelling procedure).

Location of the self-closing mechanism

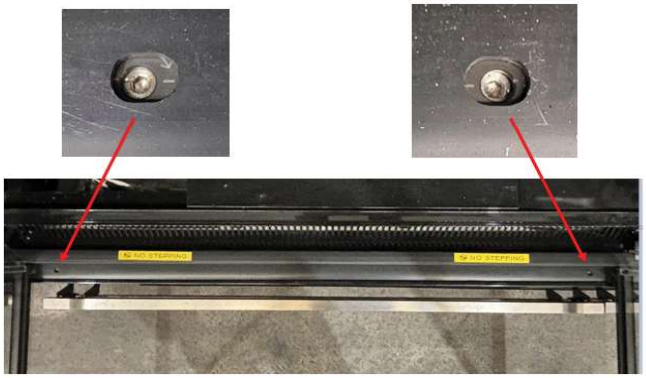


FIGURE 3L2

INSTALLATION

Required Tool
M3 Allen key or (H3 hex head screwdriver bit) is required to adjust the self close mechanism knob.

Step 1 — Inspect Door and Hinges

- Inspect hinges for wear, looseness, or damage
- Verify door alignment within the frame
- Ensure gasket is intact and not obstructing door travel

Step 2 — Left Door Establish Adjustment Reference Position

To achieve the **recommended door closing time of 4 seconds from an 80° open position**, adjust the self close mechanism as follows:

1. Insert an **M3 Allen key or (H3 hex head screwdriver bit)** into the adjustment knob. (Figure 3L3)
2. Fully rotate the adjustment knob **clockwise (CW) or position indicator dot to the "-" symbol** until it reaches the mechanical stop. (Figure 3L4)
   o This position is the **reference (slowest tension) starting point.**
3. From the **"–" reference**, rotate the knob counter clockwise (CCW) in small increments. (Figure 3L5)
   o As the knob is rotated CCW, the **indicator dot moves toward the "+" symbol**, increasing self close tension.
4. Continue adjustment until the door closes from **80° to fully closed within 4 seconds.** (Figure 3L6)

⚠ Adjustments must be made incrementally (small turn) and verified after each change. The figure below is for illustration purpose only and indicator dot may vary its position due to tolerances.



FIGURE 3L3



FIGURE 3L4



FIGURE 3L5

Step 3 — Right Door Establish Adjustment Reference Position

To achieve the **recommended door closing time of 4 seconds from an 80° open position**, adjust the self close mechanism as follows:

1. Insert an **M3 Allen key or (H3 hex head screwdriver bit)** into the adjustment knob. (Figure 3L6)
2. Fully rotate the adjustment knob **clockwise (CW) or position indicator dot to the "+" symbol** until it reaches the mechanical stop. (Figure 3L7)
   o This position is the **reference (slowest tension) starting point.**
3. From the **"+" reference**, rotate the knob counter clockwise (CCW) in small increments. (Figure 3L8)
   o As the knob is rotated CCW, the **indicator dot moves toward the "-" symbol**, increasing self close tension.
4. Continue adjustment until the door closes from **80° to fully closed within 4 seconds.** (Figure 3L9)

⚠ Adjustments must be made incrementally (small turn) and verified after each change. The figure below is for illustration purpose only and indicator dot may vary its position due to tolerances.



FIGURE 3L6



FIGURE 3L7



FIGURE 3L8

⚠**Important Note – Tension Adjustment Limit**
The tensioning screw on the hinge can only be rotated a maximum of **four (4) full turns** from minimum to maximum tension and maximum to minimum tension. Rotating the screw beyond this limit may cause **wear or damage to the screw head**, preventing further adjustment of the self close mechanism.

⚠**Do not force the adjustment screw beyond the specified rotation limit.**

Warranty on the hinge will be void if inspection reveals that the adjustment screw head has been worn, stripped, or damaged due to over rotation or improper adjustment.

Step 3 — Functional Validation

- o Open the door to 80° (Figure 3L9)
- o Release the door without assistance
- o Measure closing time (4sec)
- o Observe door behavior (no slamming or rebound)
- o Repeat 5x to guarantee door operation
- o Repeat adjustment in step 3 as necessary

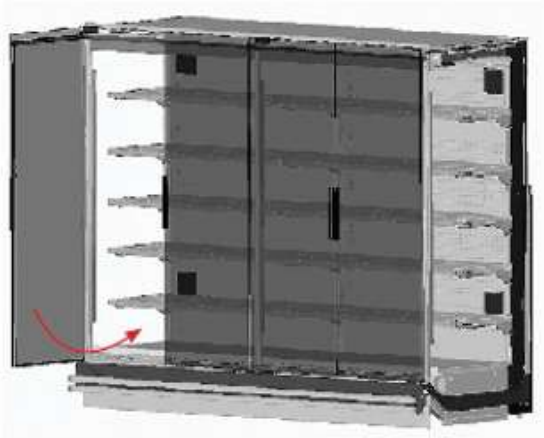


FIGURE 3L9

Troubleshooting Guide – Door Self Close Mechanism

Symptom	Likely Cause	Corrective Action
Door closes too fast (< 4 seconds from 80°)	Excessive self-close tension	Left Door Reduce tension to "**–**" **(CW)** Right Door Reduce tension to "**+** " **(CW)**
Door bounces open	Over-speed closure or excessive momentum	Left Door Reduce tension to **"– " (CW)** and inspect door gasket Right Door Reduce tension to **"+ " (CW)** and inspect door gasket
Door closes too slow (> 5 seconds from 80°)	Insufficient tension or hinge friction	Left Door Increase tension **"+ " (CCW)** and inspect hinges Right Door Increase tension **"– " (CCW)** and inspect hinges
Door does not close fully (stops short)	Insufficient closing force	Left Door Increase tension **"+" (CCW)** Right Door Increase tension **"–" (CW)**
Door fails to close after multiple opening cycles	Insufficient tension or hinge friction	Re-adjust the self-closing mechanism (refer page 2, Adjustment Direction Reference and follow steps 1 to 4)
Door only closes manually; no tension at all even if adjusted.	Door might come out from the door hinge pin or damage hinge mechanism	Contact Hussmann Service team

Left Door	Right Door
"+" Increase tension → Door closes **faster / stronger** **"–" Reduce tension** → Door closes **slower / softer** **"o" Knob position indicator** The arrow symbols around the knob indicate the **rotation direction** used to change the position of the dot.	**"–" Increase tension** → Door closes **faster / stronger** **"+" Reduce tension** → Door closes **slower / softer** **"o" Knob position indicator** The arrow symbols around the knob indicate the **rotation direction** used to change the position of the dot.
	

3.4B REINSTALLING DOOR

Removing Door

1. Remove grub screw from lower hinge as per Figure 3L4. Door will need to be in the closed position to access screw.

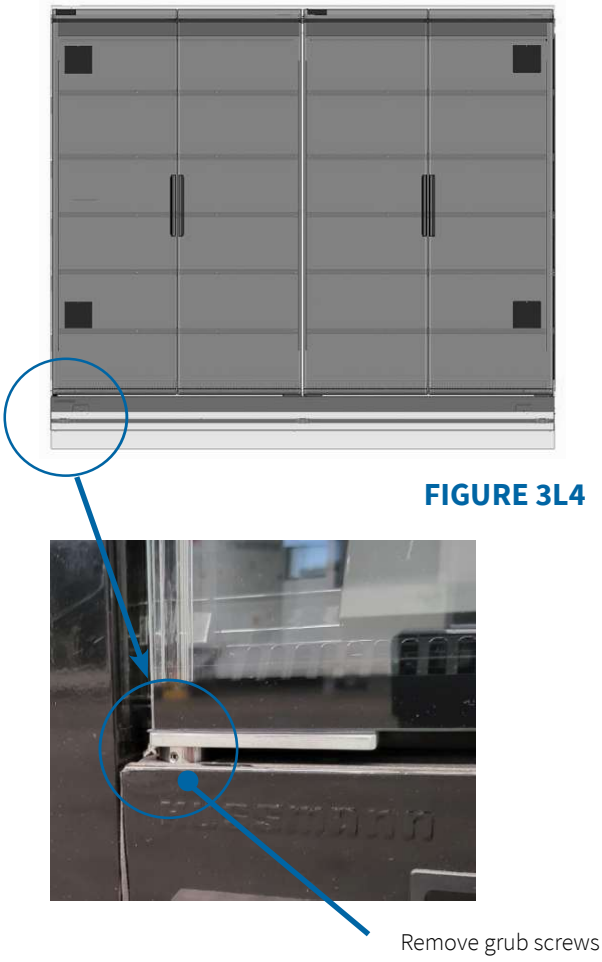


FIGURE 3L4

CAUTION: The door is heavy it is recommended to have 2 people working on the door at all times to prevent injury and door falling. Wear PPE.

2. Open door to the maximum open position. Remove security pin from the top of the hinge pin as per Figure 3L5.

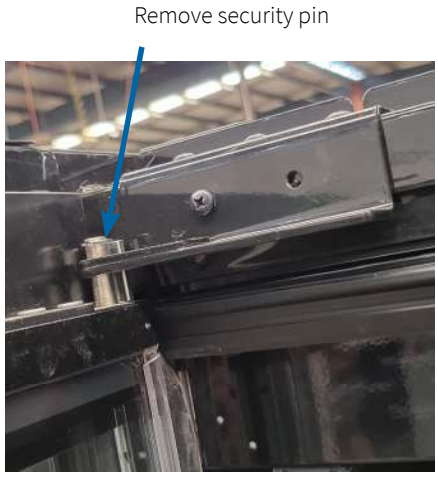


FIGURE 3L5

3. Slide door up to remove from lower hinge.

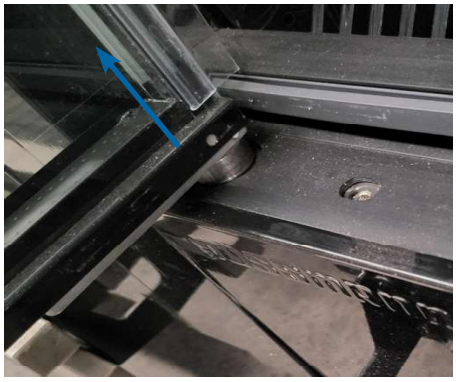


FIGURE 3L6

4. Tilt door bottom out and lower to remove from the top hinge.

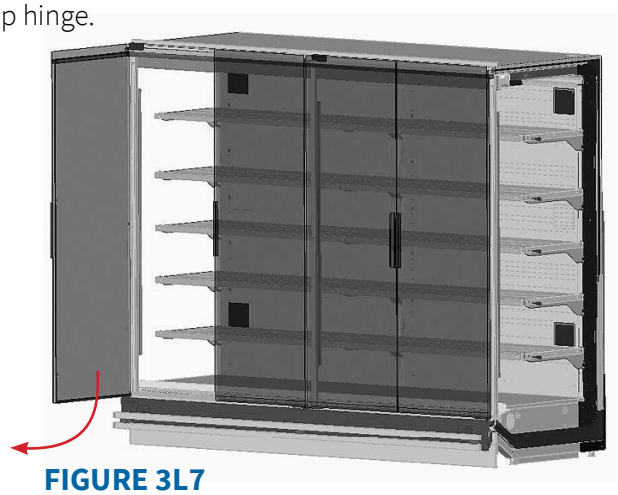


FIGURE 3L7

INSTALLATION

Reinstalling Door

(i). Turn locking hinge clockwise 90 Degree. Reference the hollow circle on the pin must face the operator refer to (Figure 3L9).

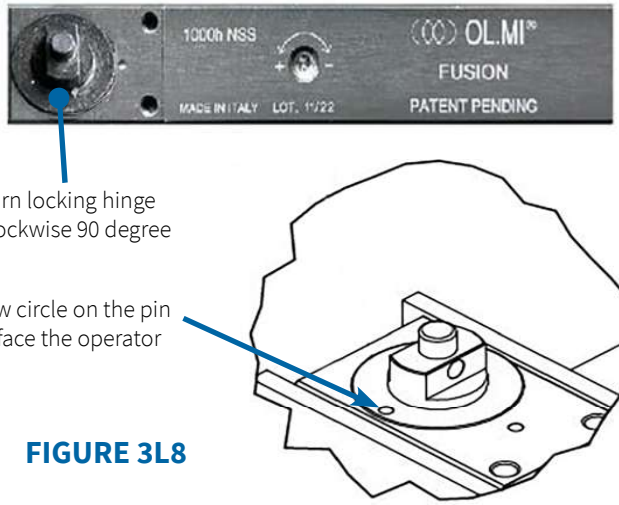


FIGURE 3L8

(ii). Reinstall door by tiling at an angle to insert into the top hinge

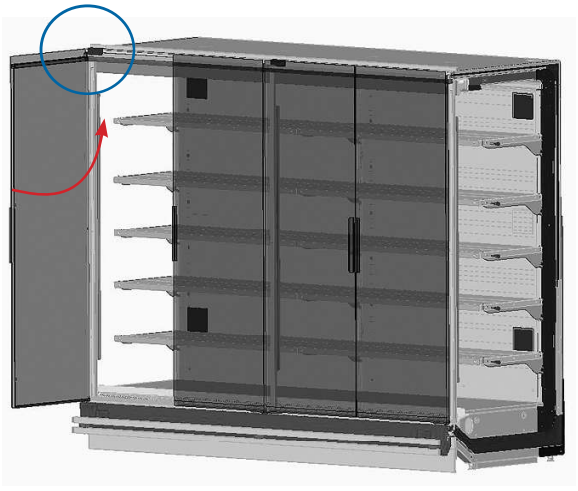




FIGURE 3L9

(iii). Lower the door onto the locking hinge. Ensure the door is properly aligned and sit firmly at 90 degrees on the locking hinge.

If door is not aligned correctly it will not sit on the locking hinge.

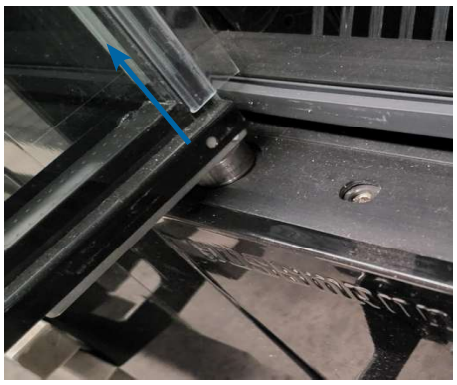


FIGURE 3L10

(iv). Insert the security pin to the hinge pin as per Figure 3L11.



FIGURE 3L11

CAUTION: The door is heavy it is recommended to have 2 people working on the door at all times to prevent injury and door falling. Wear PPE.

(v). Tighten the grub screw from lower hinge as per Figure 3L12.



FIGURE 3L12

(vi). Open and close the door several times to check for a smooth operation and proper latching speed. If tensioning door is required refer to section **3.4A door adjustment of this manual** (Page 19).

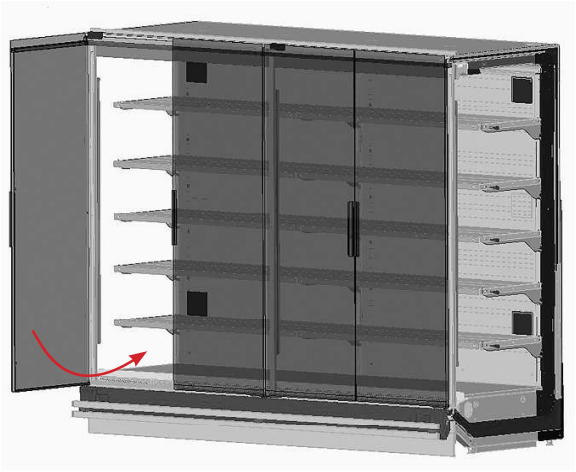


FIGURE 3L13

3.5 LIGHTING

Mullion LED lighting is standard.

Various optional shelf LED lighting is available and is fitted under each of the shelves.

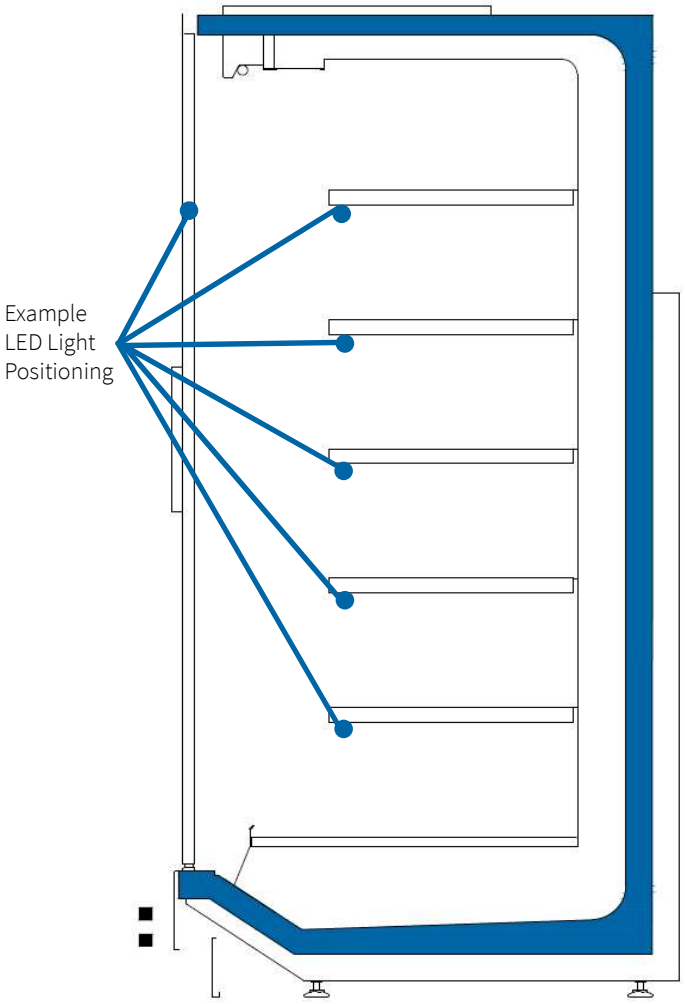


FIGURE 3M

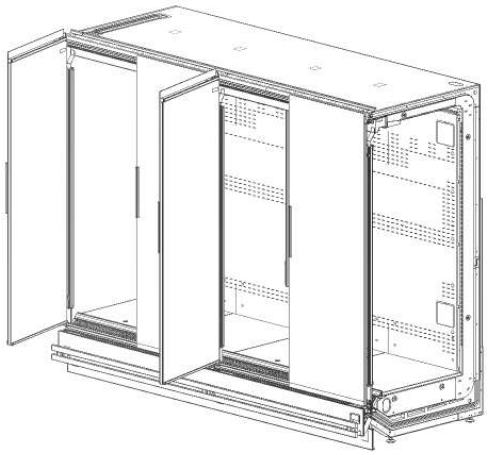


FIGURE 3N

It is important that proper cable management is followed and cables are clipped in correctly. There is a plastic clip that clips into the bracket that holds the cable. Ensure all mullion LED cables are retained into the canopy ceiling and shelf LED cables into the back panel.

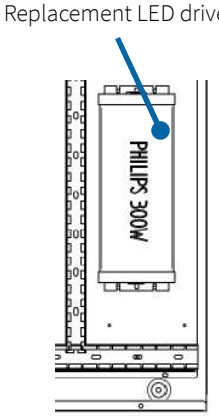


FIGURE 3O

The LED driver can be found in the electrical box on the left underside of the case. The LED driver will be on the right hand side of the electrical box. If lights appear faulty or not functioning, contact your nearest service provider for replacement.

NOTE: For any information regarding customer specific lights, reach out to Hussmann.

3.6 FITTING SHELVES

Although the shelf sizes may vary, the installation and fitting will remain the same.

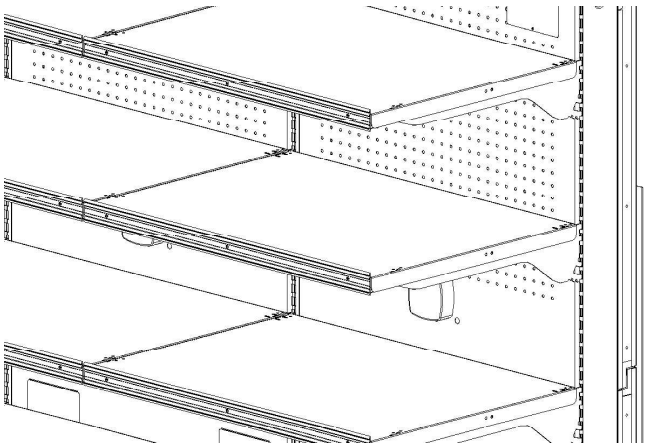


FIGURE 3P

Using the hook bracket shown down below. Lift the shelf up to the back vertical bracket. The height is independently adjustable by which holes you put the bracket on. Make sure you level the shelf by inserted the bracket in its corresponding hole on the other side.

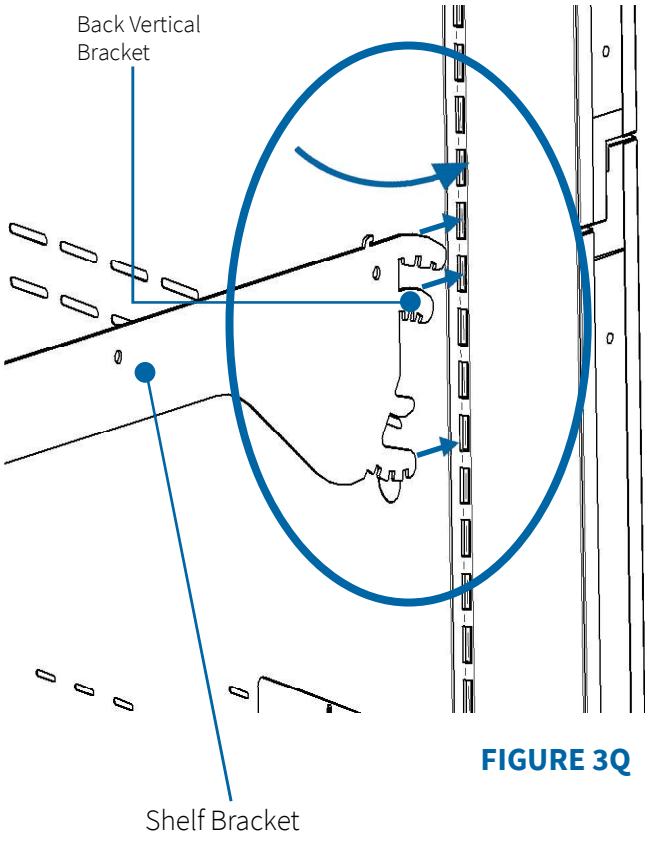


FIGURE 3Q

TILTING SHELVES

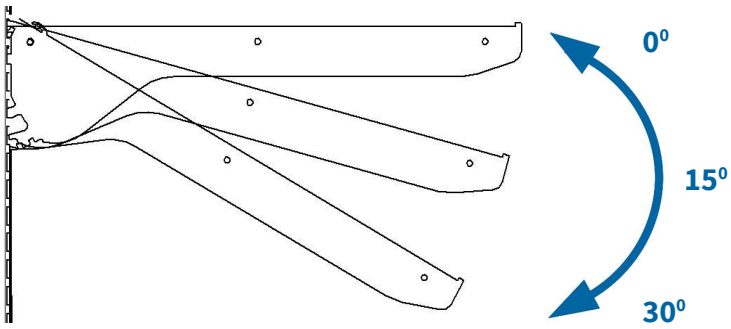


FIGURE 3R

The shelves can be titled downward in between 0^0 and 30^0. This is done by the placement of hinges on the shelf brackets.

NOTE: The shelves are not able to be tilted upward.

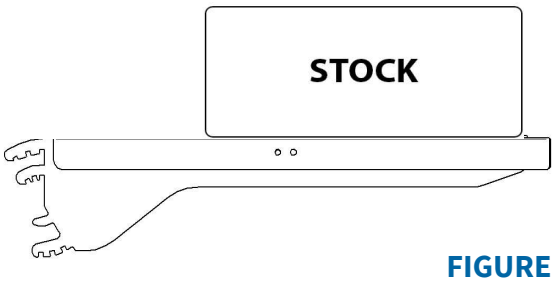


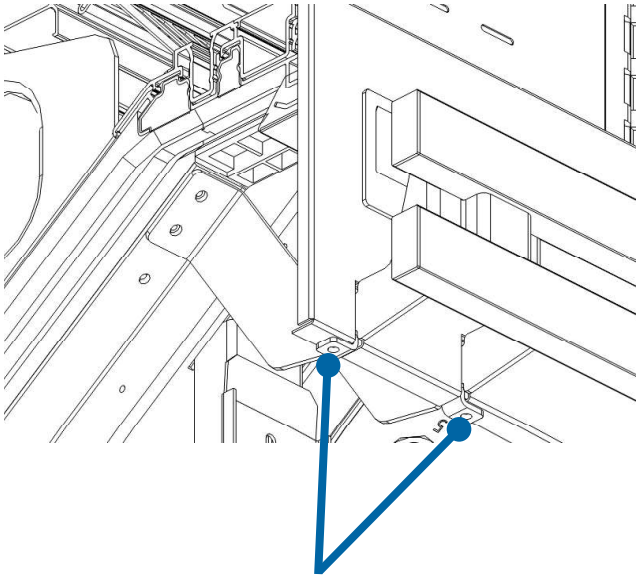
FIGURE 3S

CAUTION: Do not exceed the weight limit of each shelf. Each shelf has a total maximum weight limit of 180kg/m2.

NOTE: If the case shelf arrangement has been deviated significantly from original specified setup, then product temperature may be affected.
The quantity and location of shelving may affect cabinet performance. Refer to PED sheet and/or your refrigeration service provider.

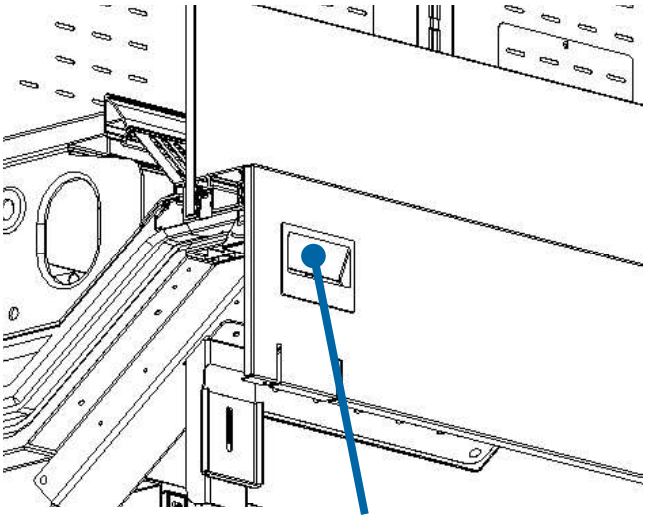
3.7 FRONT PANEL REMOVAL

1. Remove the kickplate by sliding up and off the brackets. Place in a safe place away from the workspace.
2. Unscrew and remove the screws holding the front panel located at the bottom as per Figure 3T. Screws will be on both sides and the centre.
3. Remove the people counters as shown in Figure 3U by pushing from the inside out. Slide counter through slot to ensure wires do not get caught when removing front panel.
4. Lift the front panel up and out to remove.



Bumper Screws

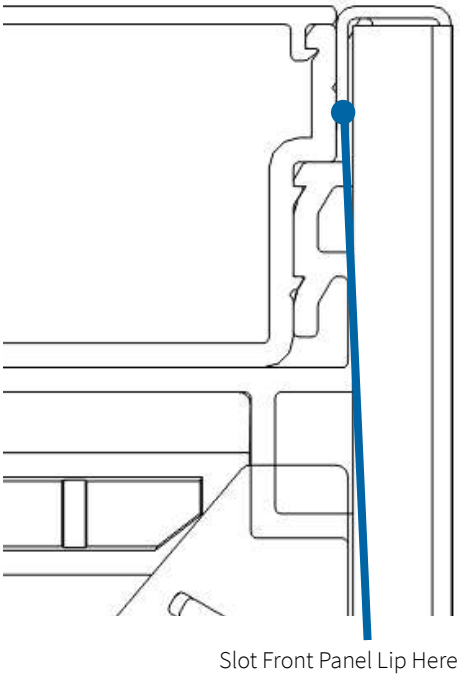
FIGURE 3T



Remove People Counter

FIGURE 3U

1. To reinstall, slot front panel into the slot as per Figure 3V. Follow removal instructions to reinstall other components.



Slot Front Panel Lip Here

FIGURE 3V

3.8 SEALING CASE JOINS

All cases must be sealed against water and air leakage before joining.

To seal the joins:

1. Remove the shelving, racks, mirrors, etc., from the end bays, where necessary. Cases must not be positioned in areas that may be subject to heat or air currents such as ventilation ducts, open doors or windows, direct sunlight, electric fans, ovens, etc.

2. Cases joints must be air tight to prevent formation of ice or condensation. Foam tape is factory fitted.

Check to ensure foam tape has not been damaged before the final joining of both cases together.

Foam Tape factory fitted

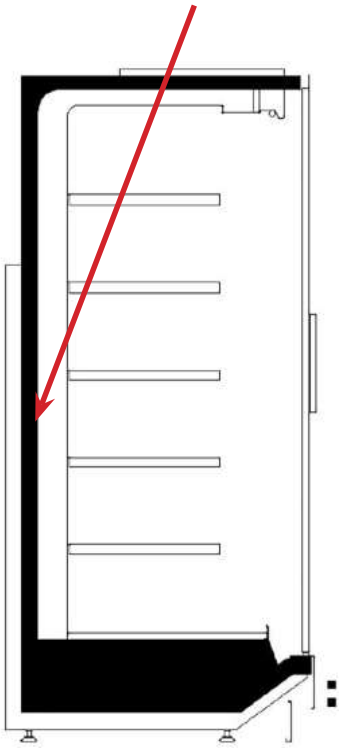


FIGURE 3W

3.9a JOINING THE CASES

To join the cases

1. Draw up the required case tightly against the case already in position.
2. Ensure that the case is level, from front to back and side to side, with the existing case.

CAUTION: Case joining bolts should only be tightened when the cases have been positioned as close together as possible.

3. Insert the 3/8" All thread steel bolt, 3/8" washer and 3/8" nut (found in the blister pack), into the end holes and tighten in sequence order label **(1)** to **(5)** refer Fig. 3Y1. Begin with the top bolt label **(1)**. Align the holes of both cabinets, and tighten about 90%, allow for final adjustment later. **Check doors for misalignment. If doors are misalign loosen all case joint bolts before adjusting the feet it is important to relieve stress and allow easier alignment (Refer to section 3.9b).**
If doors are aligned. Tighten all bolts in sequence order.

Check doors for misalignment.
(Refer section 3.9b).
If doors are align. Tighten bolts in sequence order.
From 1 - 5

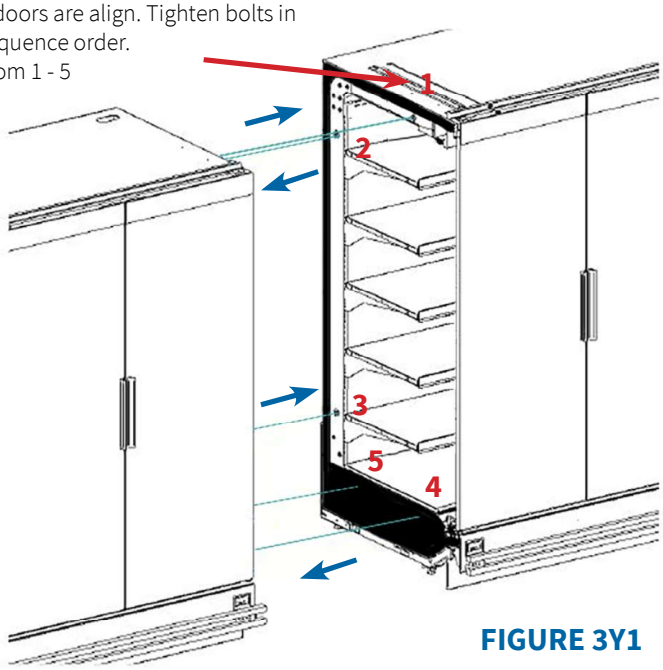


FIGURE 3Y1

4. Apply either black or white silicon (depending on the interior colour of the case) all the way along the top of the join, only between the endframes of the cases.

5. The applied silicone need to be pressed gently to make a continuous silicone. Finish the silicone neatly.

Seal along this edge only when cases are joined together

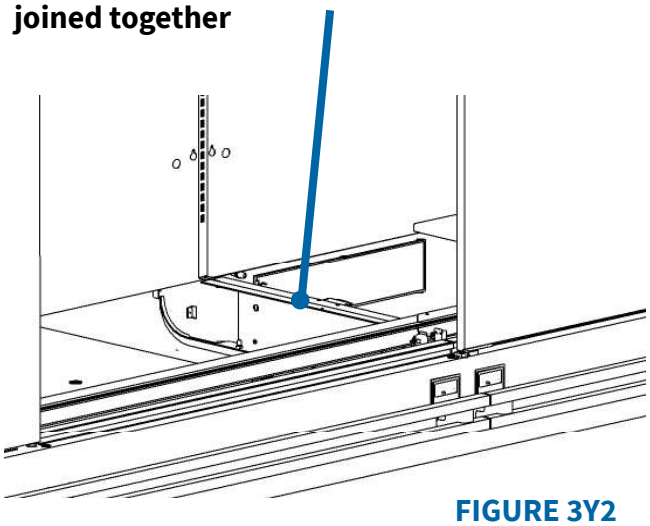


FIGURE 3Y2

3.9b DOORS MISALIGN AT THE CASE JOINT

Doors at the case joints sit higher than the rest of the case doors (refer Fig. 3Y2 for misaligned doors)

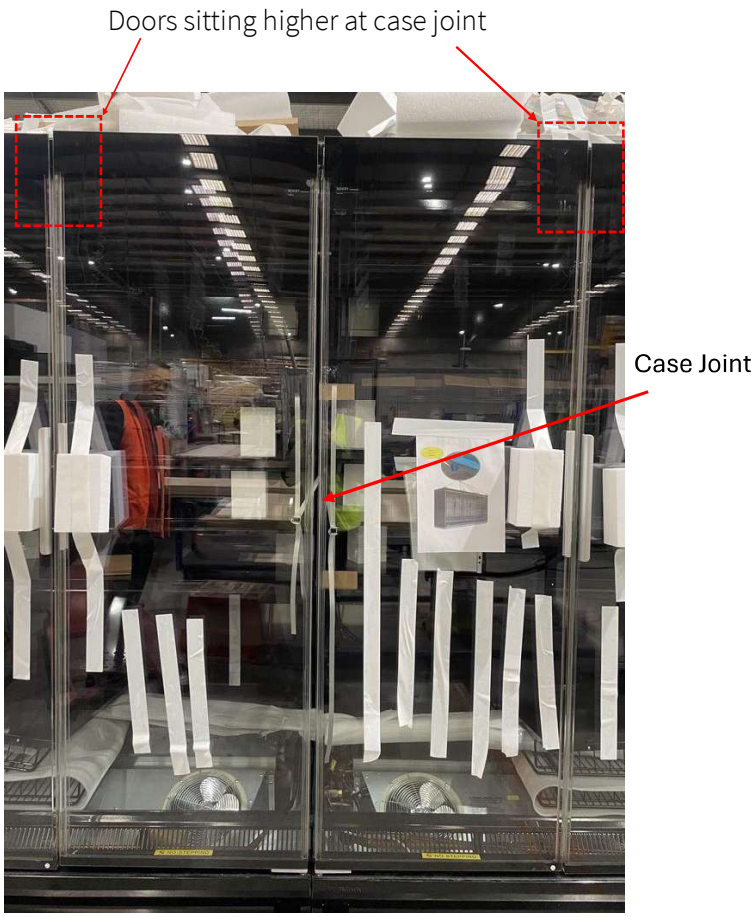


FIGURE 3Y2 (Misaligned doors at case joint)

Root Cause: The feet beneath the affected doors are extended more than the rest of the feet, causing the doors to sit higher.

Door alignment at the case joint cannot be corrected by adjusting the feet alone. It is necessary to loosen the case joint bolts before carrying out alignment.

Note: All values in this section are for reference purposes only. Actual field values may differ depending on the installation carried out and should be assessed accordingly.

Observations & Analysis:

- In this scenario the feet height at the case joint is approximately higher and is bearing majority of load (refer fig. 3Y3).

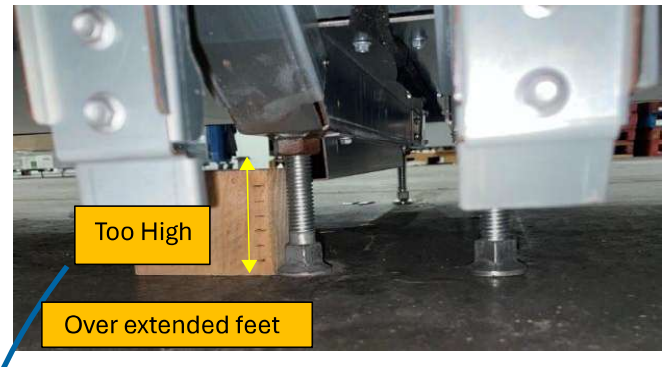


FIGURE 3Y3 (Feet height at case joint)

- The first and second RH feet after the case joint are both approximately lower and appear to be carrying very minimal load compared to the case joint feet (refer Fig. 3Y4 and 3Y5).

Feet lower than the case joint causing misalignment

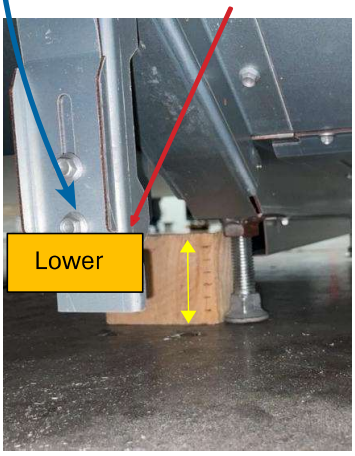


FIGURE 3Y4 (First RH foot (immediate feet after the case joint)

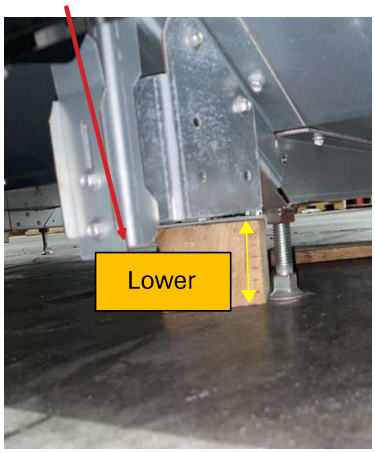


FIGURE 3Y5 (Second RH Foot)

- As the case joint feet are bearing most of the load, the adjacent lower height feet provide reduced support, causing the doors in those sections to sit lower than the doors at the case joint and resulting in misalignment.

Door Alignment

- Loosen the case joint bolts & lower the feet height at the case joint to match the height with the adjacent feet and redistribute the load evenly (refer Fig. 3Y6). Tighten the case joint bolts once all doors are aligned.

Match feet at case joint with adjacent feet

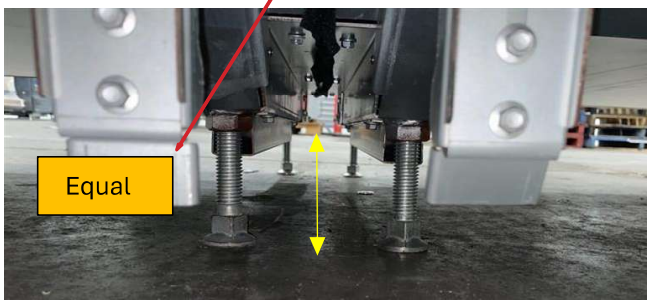


FIGURE 3Y6 (Feet height at case joint)

Feet adjustment bolts are only 85 mm long and may be at risk of failure if extended too high.



FIGURE 3Y7 (Aligned after adjustment)

Conclusion:

For misalignment at the case joint, loosening the case joint bolts before adjusting the feet it is important to relieve stress and allow easier door alignment.

3.10 ATTACHING KICKPLATES

(This should be done after final installation of refrigeration and drainage connections)

- Use hex screws 6.3 x 19mm to fix the kickplate support to the base. These parts are in the accessories box.
- Do NOT fix the kickplate support to the base too tightly. It should be able to slip up and down through the oblong hole. This will enable the kickplate to be moveable and it will naturally sit correctly in relation to the floor.

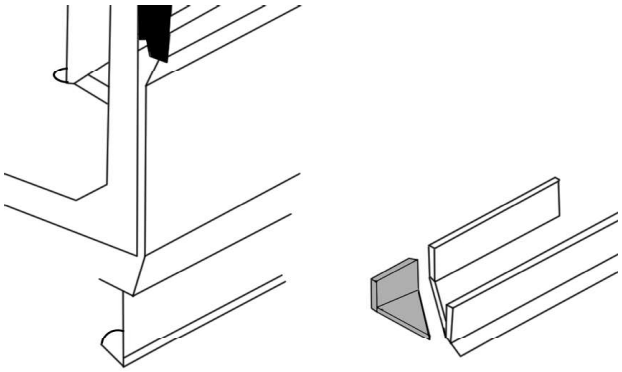


FIGURE 3Z

On patch or crown end kickplates, cut the profile seal in a 45^0 angle in order to attach it to the bottom of the front kickplate panel.

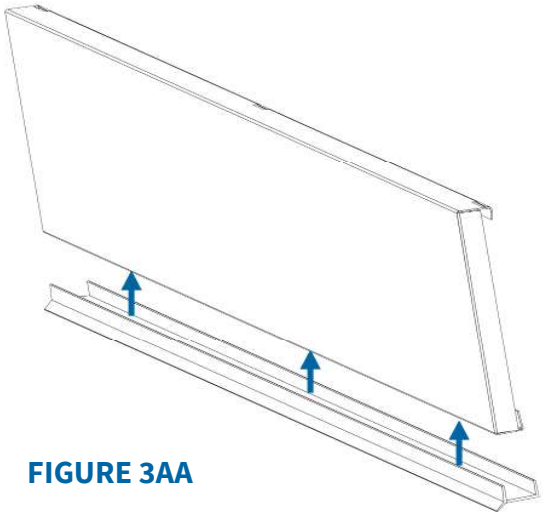


FIGURE 3AA

Attach the profile seal to the bottom of the front kickplate panel.

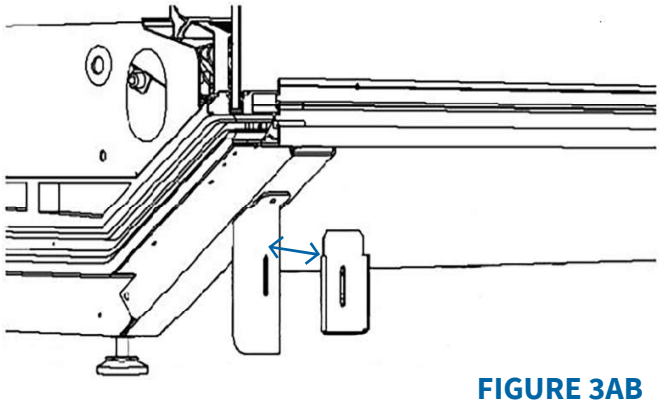


FIGURE 3AB

This front kickplate ajdustment bracket will be screwed onto the support assembly.

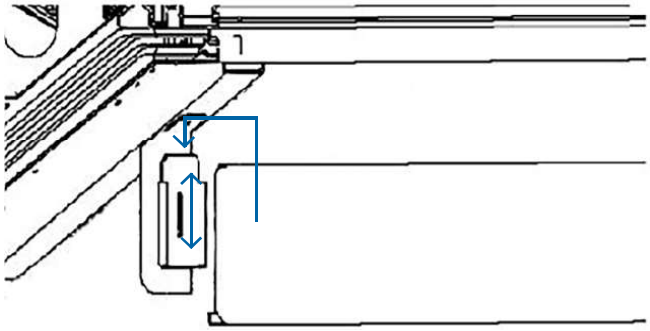


FIGURE 3AC

Attach the front kickplate panel to the kickplate support bracket by hooking the slot onto top of the bracket. This will allow the kickplate to slide vertically to allow for a slight variation in height.



3.11 ATTACHING ENDS

Attaching Ends

1. Foam tape is pre-installed onto the case end. If foam tape is damaged or worn, replace before installing new end.
2. Ensure case is in its final position and is levelled, and line up end with frame holes as seen in Figure 3AD.
3. Screw bolts in through the frame side of the case ensuring that the end is level to the ground and is touching the foam tape at all sides of the frame to ensure a good seal is formed.
4. Tighten bolts.
5. Gaps between the frame and the end can be sealed with a matching colour silicone filler, applied neatly and uniformly across the length of the end.

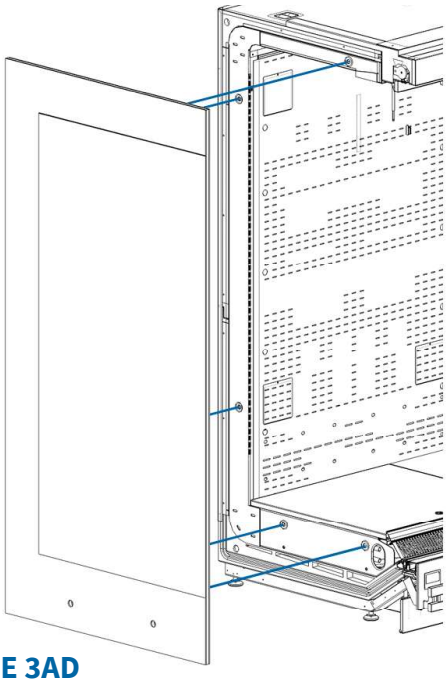


FIGURE 3AD

Attaching End Bumpers

1. To attach the end bumper, insert the bumper bracket into the holes as per Figure 3AE.
2. Screw bolts in through the frame side of the case, ensuring that the bumper is level with the ground and is aligned with the front bumper.
3. Tighten bolts.

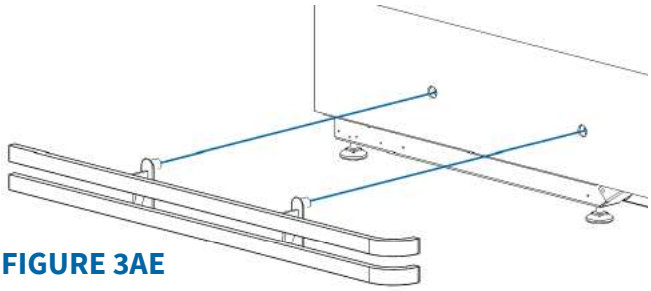


FIGURE 3AE

Attaching End Kickplates

1. Screw the kickplate bracket to the frame as per Figure 3AF.
2. Screw the kickplate onto the bracket as per Figure 3AG, ensuring that the edge of the kickplate is flush with the front kickplate.

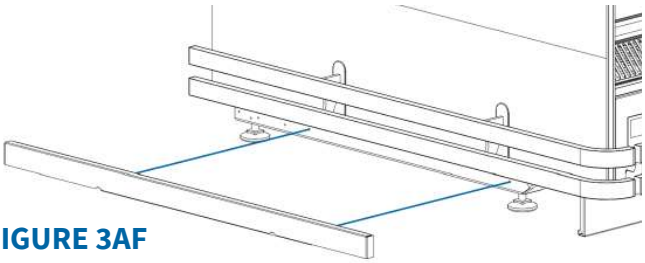


FIGURE 3AF

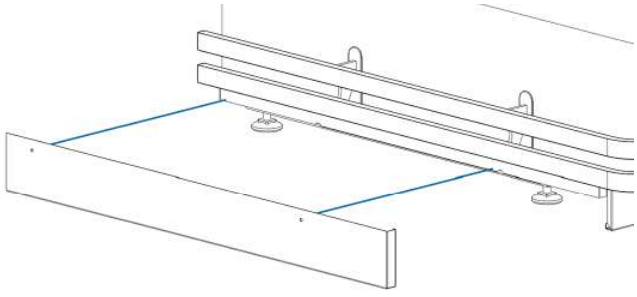


FIGURE 3AG

3.12 CONNECTING REFRIGERANT LINES

- Connection of refrigeration lines is to be undertaken by qualified persons only.
- Refrigeration pipes are located under the pan decks and can be run from case to case through designated access holes. These are in:
  - The end frames
  - Base of the case
  - Run through to the top of the case. See Figure 3AH for the service layout for locations of the refrigerant supply line
- Up to four cases can share one refrigeration supply line, however, to ensure best performance, it is recommended that no more than three cases share an up-stand. Liquid lines must be sized to supply full head of liquid at all times, and suction line sizes must consider refrigerant velocities for proper oil return during both high and low loads whilst meeting customer specifications for maximum allowable pressure drop.
- The evaporator coils have been charged with dry nitrogen in the factory. The holding charge of dry nitrogen will be stated on a tag on each evaporator coil. Please check and verify pressure is within +/-20 kPa (3 psi) of tag stated pressure before installation.
- For all pipe sizes refer to latest Product Engineering Data Sheet (PED).

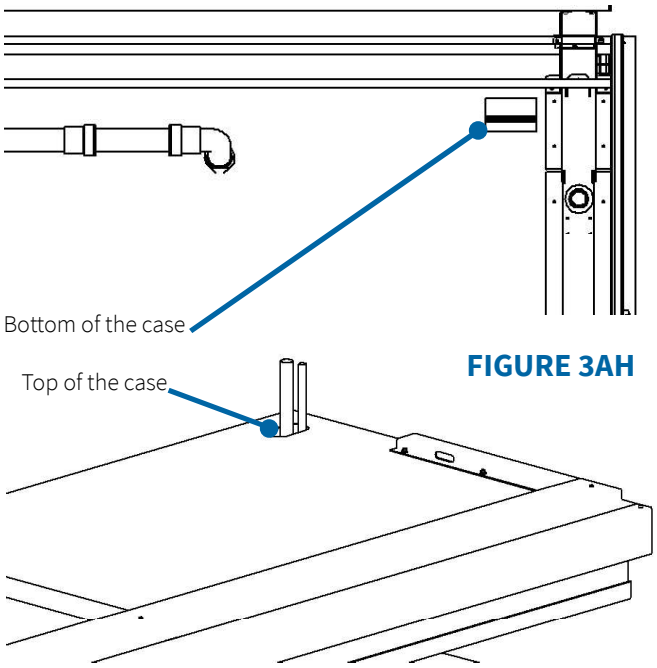


FIGURE 3AH

To connect refrigeration lines:

1. Use free-flowing dry nitrogen when brazing piping to ensure internal cleanliness of piping and to eliminate copper oxide debris.
2. Insulate all external pipe work to standard practice and customer specifications. Insulation should be adequately sized/rated to prevent condensation forming under any circumstances.
3. Permanent sealing of all penetrations made in the cabinet panels inside-to-outside is the responsibility of the installer.
4. Connect to condensing unit or compressor.
5. Pressure test all welded and fastened connections to ensure they are free of leaks.
6. Dehydrate the refrigeration system using the triple evacuation method. Use a vacuum pump to a minimum of 1000 microns for the first two evacuations, and a minimum 500 of microns on the third, or to the customer's specific requirements. Break evacuations 1 and 2 with dry nitrogen, allowing the pressure to rise above atmospheric pressure each time.
7. Charge with refrigerant after final (3rd) evacuation. Once the last vacuum has passed holding 500 microns or lower with no rise for 1 hour with the vacuum pump off and measured at the furthest feasible point in the system away from the vacuum pump.

NOTE: All installation works must be completed by a qualified person to best trade practices, customer specifications, relevant AS or ISO Standards and any Territorial Authority requirements or regulations.

CAUTION: Remove or protect the expansion (TX) valve feeler bulbs (or power lead if electronic valve) from heat. Ensure the power lead is clear of heat and flame.

3.13 INSTALLING WASTE DRAIN

1. Install PVC drain parts using recommended PVC cleaner, primer, and cement per manufacturer's recommendation.
2. Installed drain piping may require additional support depending on the number and location of the hub floor drains. The installer should always provide adequate support to all drain piping arrangements to prevent excess stress on all drain piping components.
3. Ensure the drain trap is assembled correctly as per Figure 3AI below.
4. Test for leakage and fall by pouring water down the drain.
5. Ensure trap is primed before starting refrigeration.

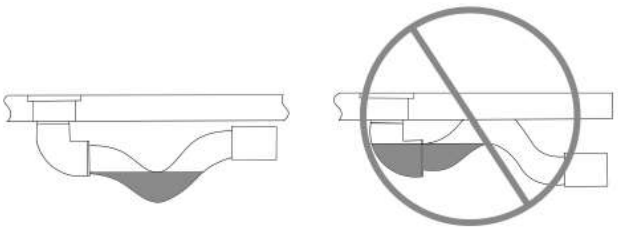


FIGURE 3AI- Drain Tap Orientation

Drain waste diameter should be nominal 40mm standard AS/NZS pipe.

NOTE: Drains must be connected to local council requirements.

Each case must be connected to its own waste drain. See Figure 3AJ below.

CAUTION: Incorrectly installed drain traps could result in adverse air leaking into the case or the drain becoming blocked.

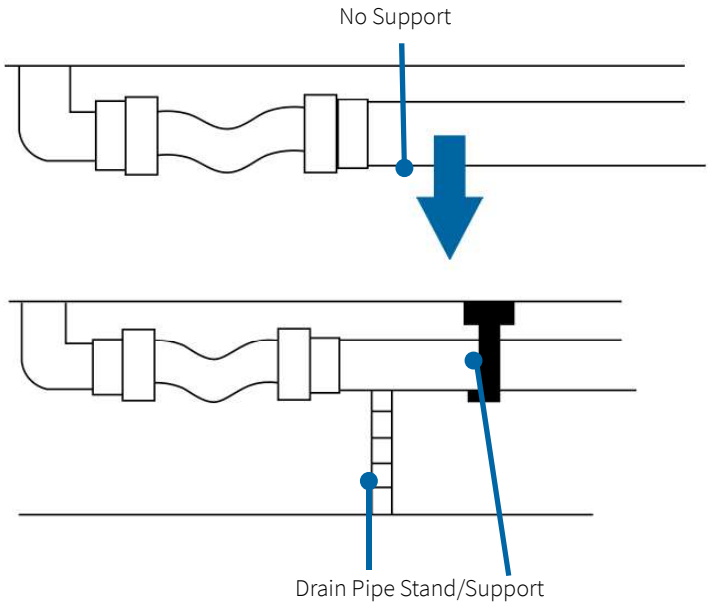


FIGURE 3AJ- Drain Tap Orientation

3.14 INSTALLING SENSOR PROBES

Probe Locations:

1. Air off probe in honeycomb panel.
2. Air on probe in air return grille.
3. Defrost temp probe in coil area.
4. Suction coil temp probe in coil area.

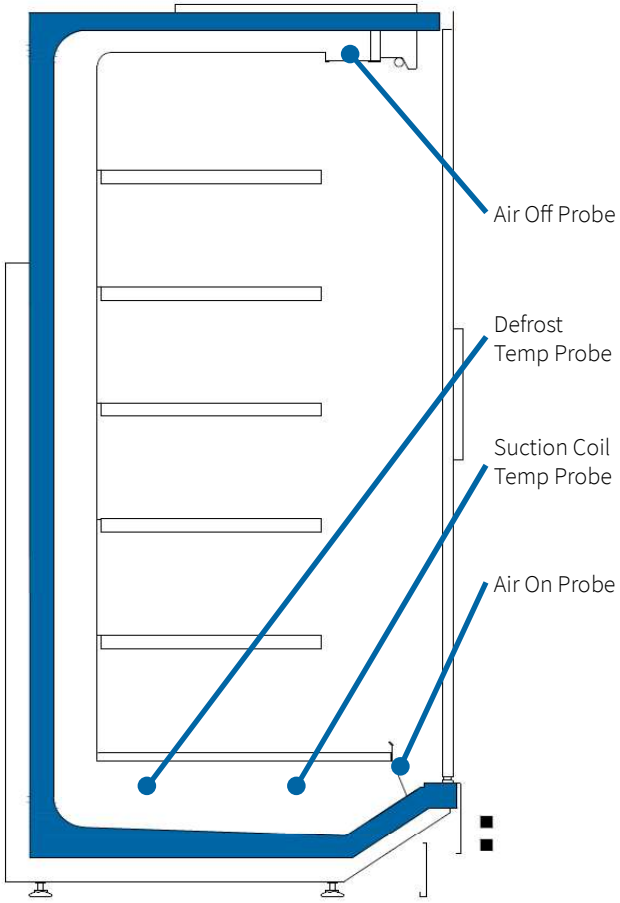


FIGURE 3AK

Ensure case earthed when proceeding with electical components. Electric shock or fire may occur if not correctly processed.

Probe Locations:

Air Off Probe

This probe is located in the canopy under the panel in Figure 3AL. The probe needs to be positioned so that it is in the air and is not touching any parts that may influence the reading.

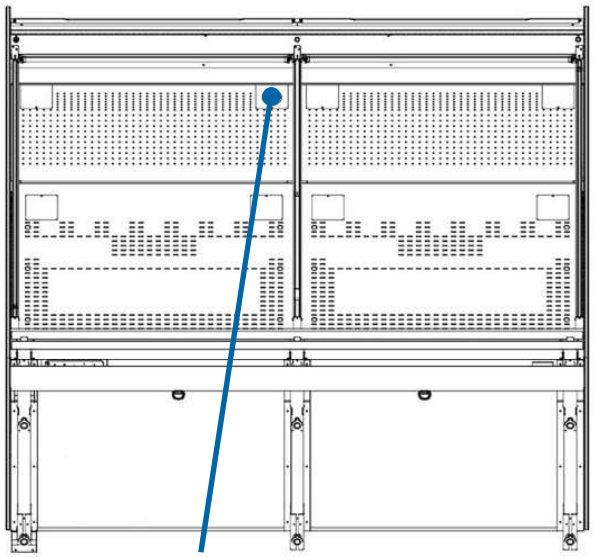


FIGURE 3AL

Defrost Temperature Probe

This probe is located at the top of the coil on the left hand side of the base, as per Figure 3AM.

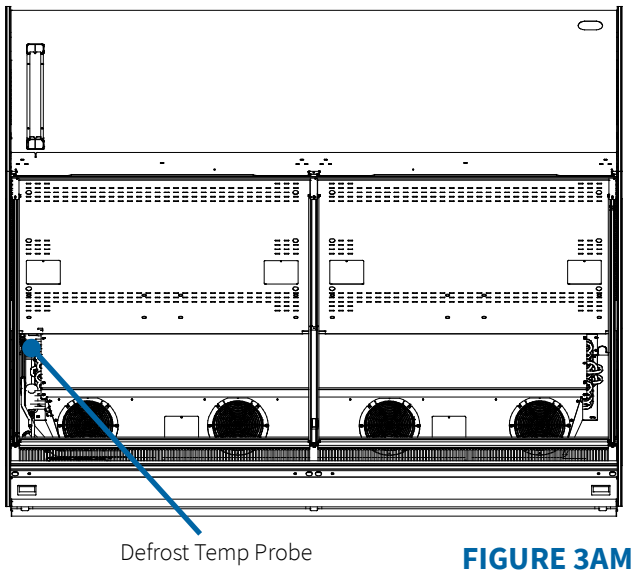


FIGURE 3AM

Suction Coil Temperature Probe

This probe is located at front left of the base on the suction coil, as per Figure 3AN.

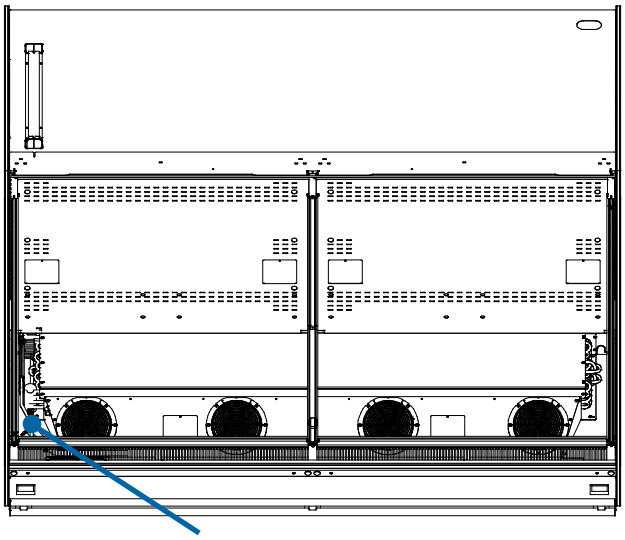


FIGURE 3AN

Air On Temperature Probe

This probe is located under the air return grill just on the left of the centre of the case as per Figure 3AO.

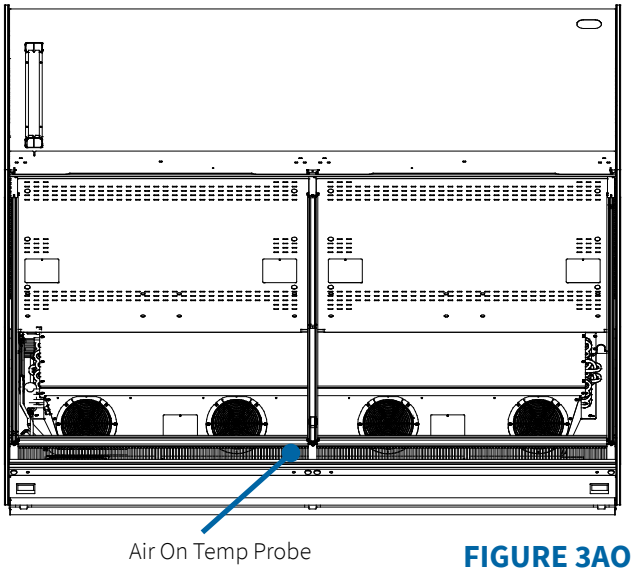


FIGURE 3AO

To install the probe:

1. Unscrew the plate from the ceiling panel to get access to the conduit for the probe wire. A coloured piece of wire acting as a draw string is located behind the plate in the conduit.

NOTE: The sensor orientation should be as per the control system's recommendations. Some control system's sensors require air to be in same direction as sensor, others at a 90° angle.

The discharge air control sensor should be located in the air stream only and should not make contact with any metal parts.

CAUTION: Refer to relevant State or Territory legislation relating to safe working heights.

2. Secure the end of the sensor wire to the draw string wire.
3. On the roof of the case, pull draw wire and sensor wire all the way through the conduit.
4. Seal end of the conduit with putty or silicon.
5. Repeat for each case.

CAUTION: Personnel access atop the cabinet is limited to 100kg personnel and only when the cabinet is empty of product/merchandise. Do not walk atop cabinets, sedentary work/access only is permitted. Always have suitable PPE and working from heights SWMS in place. Work as far from edges as feasible. If unsafe, do not access the top of the cabinet.



3.15 MOUNTING MIRROR KIT

- Start with lower mirror brackets first.
- Two cutouts are provided at the top of each up-right frame, for fitting the mirror lower brackets.
- The brackets will need to be fitted in the upper cutout.
- Insert top end of bracket first, as shown in Figure 3AP.
- Once top of bracket has been fully inserted, drop bottom of bracket towards the case upright as shown in Figure 3AQ.

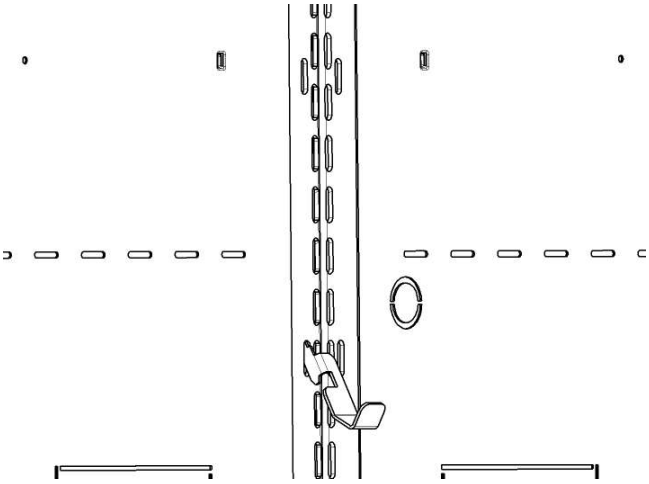


FIGURE 3AP

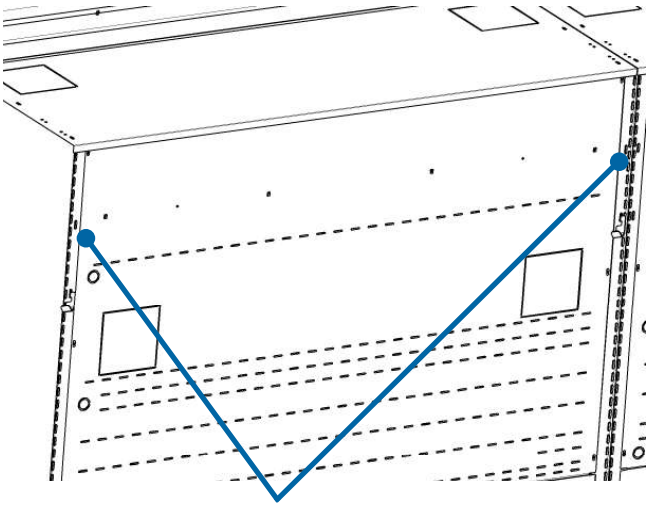


FIGURE 3AQ

- Once lower brackets are fitted, commence fitting of upper mirror brackets.
- Two pairs of holes are provided at the back end of the ceiling panel. The brackets are to be fitted to the rear pair of holes in the ceiling panel.
- Fasten upper brackets to ceiling panel with the tek screws provided as shown in Figure 3AR.
- Repeat upper bracket fastening for each end of the mirror as shown in Figure 3AS.

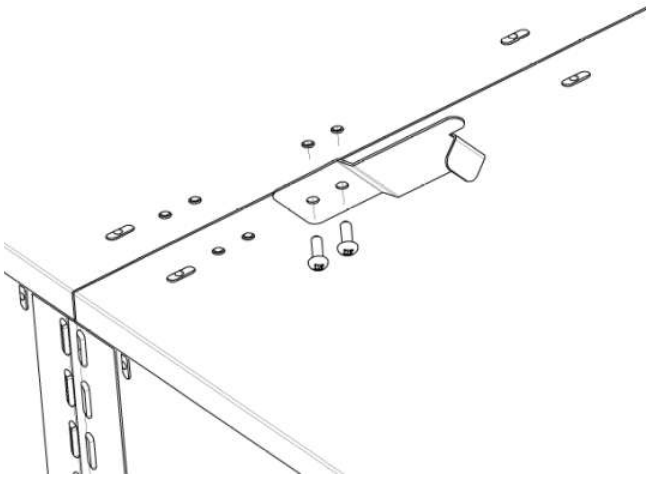


FIGURE 3AR

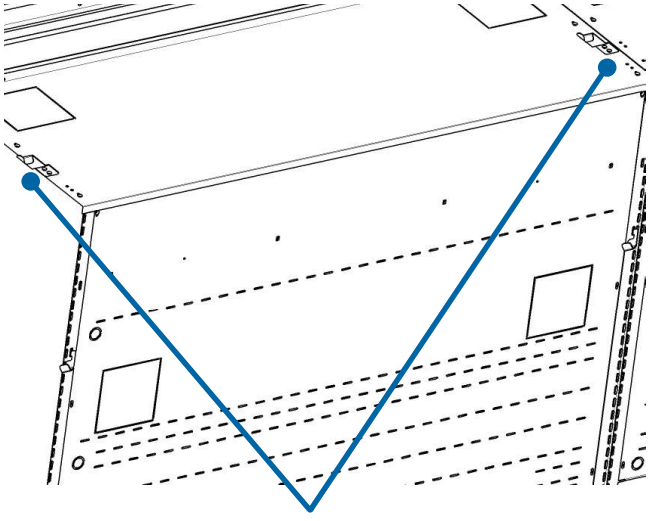


FIGURE 3AS

3.15 MOUNTING MIRROR KIT

- At this point, there should be two lower brackets and two upper brackets fitted to the bay where the mirror is being installed.
- First, place the bottom edge of the mirror onto the lower brackets as shown in Figures 3AT and 3AU.

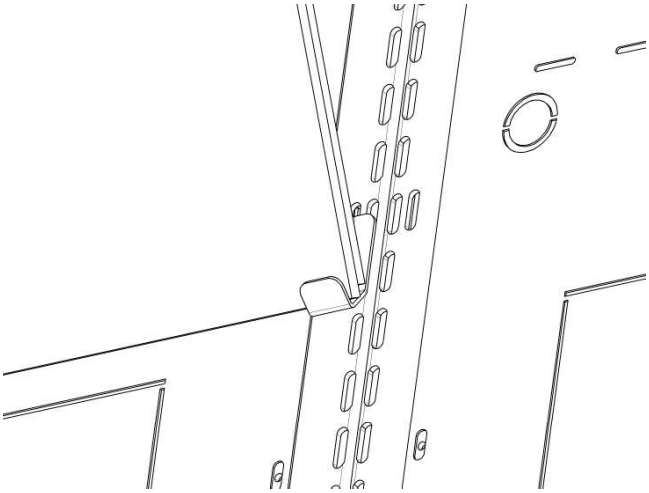


FIGURE 3AT

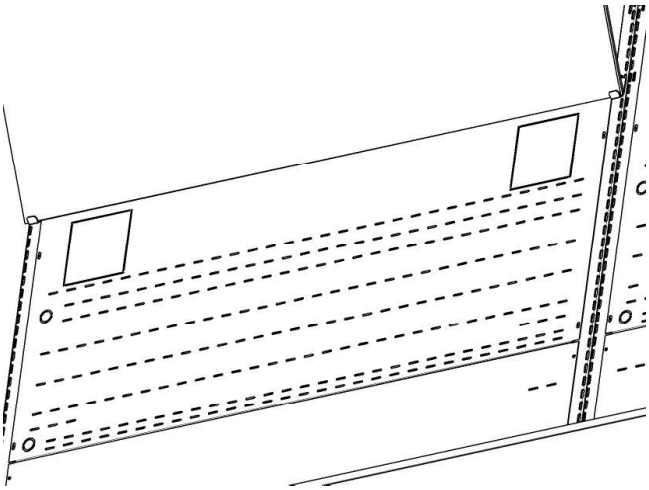


FIGURE 3AU

- Once mirror is in the bottom brackets, gently move top edge of mirror towards the upper brackets as shown in Figure 3AV.
- When top edge of mirror is touching the upper brackets, push upper bracket upwards by the push tab provided.
- While pushing up on the upper bracket, move mirror into position and then release the upper
- bracket. This is shown in Figure 3AW.
- Repeat this at the other end of the mirror.
- Ensure mirror ends are correctly aligned with the case bay.
- Once all these steps are done, mirror installation is complete.

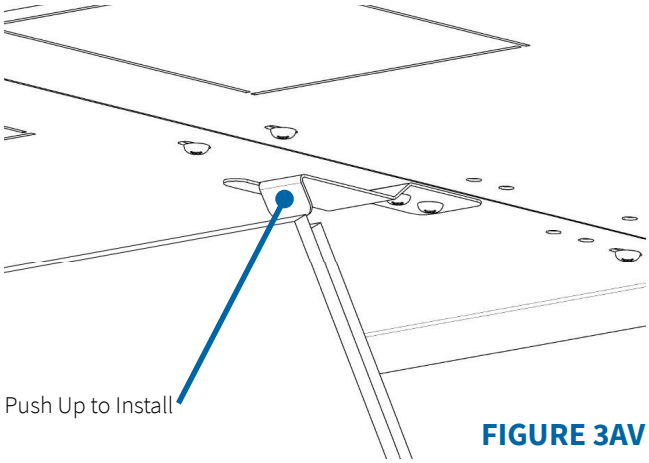


FIGURE 3AV

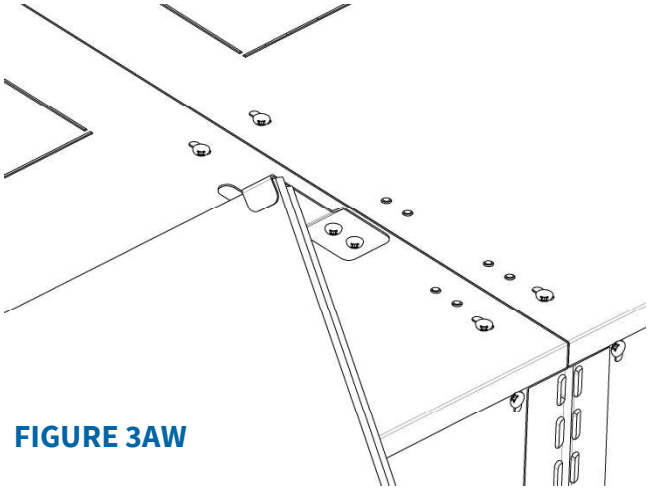


FIGURE 3AW

4.1 COMMISSIONING

CLEANING

For all case cleaning activities cabinet should be turned off. Electrical power should be safely disconnected and refrigeration switched off. Once all cleaning is completed, remember to turn it back on safely.

- Remove the PVC protective coating on stainless steel, where applicable.
- Remove any residue, silicon, or tape marks with a cloth moistened with rubbing alcohol.
- Remove all debris from in and around the case.
- Wipe case with a clean, damp cloth, if necessary.

Doors:

» At temperatures above 0°C hand wash with warm water and using a mild detergent is recommended.
» A glass cleaner can be used (Windex) using a towel. Paper towels are not suggested.
» Take care with cleaning, and avoid any materials that may mark the door (including fingerprints).
» Do not use tape, glue, stickers, attachments, magic markers, or the like on the glass.
» Do not use razor blades or any other mechanical device to remove foreign residue or objects directly from the glass.
» Do not use abrasive cleaners or materials on the glass like Ajax, Scotch Brite, or Steel Wool.
» Do not use cleaners or materials on the glass that hinder the anti-fog performance (if applicable), by leaving a residue or damaging the surface. Examples of these cleaners include: Armor All, Tilex, Bleach, Windex No-Drip, Windex Wipes, Pledge, or any product containing silicone oils or waxes.
» Recommended cleaners include: Greased Lightning, Formula 409 Grease & Grim, Formula 409 Grease & Surface, Fantastic, Windex Vinegar, Windex Original, Now, Mean Green, or Mr. Clean (degreasing cleaners).

START UP & CHECKS

- Check supply power is ready and correct voltage. (by Licensed Person).
- Confirm correct operation of RCD (if fitted) (by Licensed Person).
- Ensure that the drain trap is installed the right way up (refer to Figure 3AI for drain trap orientation in the section installing the waste drain).

NOTE: Verify all electrical termination during commissioning. It is a requirement to check all electrical connections for tightness where appropriate. All electrical connections must be re-tensioned prior to powering up the cabinet.

TURN POWER ON

- Check that all fans and lights (and light RCDs, if installed) are working correctly.
- Check the anti sweat circuit is working correctly.
- Set expansion valves and EPRs as per Product Engineering Data (Available from Hussmann).
- Approximately 24 hours after start-up, check that the case is at correct operating temperature (refer the Product Engineering Data).

4.2 CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependent upon the care it receives. To ensure long life, proper sanitation, and minimum maintenance costs; these merchandisers should be thoroughly cleaned, all debris removed and the interiors washed down weekly.

FAN PLENUM

To facilitate cleaning, the fan plenum is hinged and also fastened with screws at each end. After cleaning be sure the plenum is properly returned into position and that screws are reinstalled or performance loss will result due to improper refrigeration.

CAUTION: Power to the case needs to be turned off when cleaning to ensure the fans are off during this process. REMINDER: when cleaning is completed, check all items are ready to go, then safely reconnect power.

INTERIOR SURFACES

The interior surfaces may be cleaned with mild domestic detergents.

EXTERIOR SURFACES

The exterior surfaces should be cleaned with a mild detergent and warm water to protect and maintain their attractive finish. Never use abrasive or solvent based cleaners and scouring pads.

CAUTION: Do NOT use HOT (+35^{0}C or higher) water on COLD glass surfaces. This can cause the glass to shatter and could result in personal injury. Allow glass fronts, ends, and service doors to warm before applying hot water. Do NOT use hot water inside the case.

DO NOT USE:

- Abrasive cleansers and scouring pads, as these will mar the finish.
- Coarse paper towels on coated glass.
- Ammonia or sovent-based cleaners on acrylic parts.
- Solvent, oil, or acetic based cleaners on any interior surfaces.



DO USE:

Remove the product and all loose debris to avoid clogging the waste outlet.

- When deep cleaning cabinets that may require the removal of the refrigerated product, ensure this is stored in a suitable refrigerated area to maintain the cold chain.
- Then turn off refrigeration, and safely disconnect electrical power.
- Thoroughly clean all surfaces with appropriate cleaners noted previously. Do not use steam or high pressure water to wash the interior. These may damage the merchandisers' sealing causing leaks and poor performance.
- Remove screws and lift hinged fan plenum for cleaning. Be sure to reposition the fan plenum after cleaning merchandiser.
- Avoid water contact on all electrical components includng fan motors and lights.

CLEANING & MAINTENANCE

DO USE:

- Rinse with warm water, but do NOT flood. Never introduce water faster than the waste outlet can remove it.
- Allow merchandiser to dry before resuming operation.
- After cleaning is completed, turn on power and refrigerant to the merchandiser.
- Verify that merchandiser is working properly (i.e. achieves control temperature).
- Restock cabinet with refrigerated product.



CAUTION: Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

CLEANING STAINLESS STEEL SURFACES

Use non-abrasive cleaning materials, and always polish with the grain of the steel. Use warm water or add a mild detergent to the water and apply with a cloth. Always wipe dry after wetting to avoid stains.

Use non-chlorine containing cleaners such as window cleaners and mild detergents. Do not use cleaners containing salts as this may cause pitting and rusting of the stainless steel finish. Do not use bleach.

Clean frequently to avoid build-up of hard, stubborn stains. A food grade stainless steel cleaning solution may be used periodically to minimize scratching and remove stains. Rinse and wipe dry immediately after cleaning. Never use hydrochloric acid (muriatic acid) on stainless steel.



WEAR APPROPRIATE PPE GEAR WHILST CLEANING.

CLEANING COILS

Wear apppropriate PPE.
NEVER USE SHARP OBJECTS AROUND COILS. Use a soft brush and water to clean debris from coils.
Do not puncture coils!
Do not bend fins. Contact an authorized service technician if a coil is punctured, cracked, or otherwise damaged.
Do NOT use chlorine or ammonia-based cleaners.
Ice in or on the coil indicates the refrigeration and defrost cycle is not operating properly. Contact an authorized service technician to determine the cause of icing, and to make adjustments as necessary. To maintain product integrity, move all product to a cooler until the unit has returned to normal operating temperatures.



WARNING: Do NOT allow cleaning agent or cloth to contact food product.

CLEANING UNDER MERCHANDISERS

Remove splashguards not sealed to floor. Use a vacuum with a long wand attachment to remove accumulated dust and debris from under the merchandiser. Ensure this is undertaken by qualified personnel. Caution needs to be taken below case around power cables and drainage, ensuring nothing is dislodged during the cleaning process.

4.3 DAILY CHECKS

- If an alarm system is not part of the refrigeration installation, the temperature of each case should be checked on a daily basis via the thermometer that may be located in the left hand side of the ceiling panel, or via another reliable method.
- The case temperature should be in the range of -2^{0}C to +4^{0}C (except during defrost).
- Up to three separate readings may have to be taken to ensure the case temperature isn't being taken during a defrost cycle (which would give a higher than desired reading).
- If it is consistently outside this range, contact your refrigeration service provider.
- Visually check the case for damage or spills, and take appropriate remedial action.
- Visually inspect drain strainer and drain for any debris which could result in the drains becoming blocked with the possibility of spilling on the floor creating a slip hazard.
- If the cabinet is turned off during non trading hours ensure the cabinet is cleaned thoroughly to avoid bacterial growth during off time.



CAUTION: If any damaged electrical components are identified during inspection, isolate case power and contact service contractor.

CLEANING

A thorough cleaning and service of the case should be carried out by qualified refrigeration and electrical engineers on a six monthly basis. Please contact Hussmann Pty Ltd or your service provider. Cases should also be cleaned by store staff on at least a weekly basis; some cases may require more frequent cleaning.

IMPORTANT NOTES

- DO NOT use hot water on cold glass surfaces as the glass may shatter and cause serious injury.
- DO NOT use abrasive, solvent, ammonia, or oil-based cleaners.
- DO NOT use steam or a high-pressure system to clean the case.
- When flushing the waste drain, do not use high pressure water hoses and be careful not to introduce water faster than the waste outlet/drain can drain it.
- DO NOT apply the detergents directly onto the surfaces to be cleaned.
- DO NOT use steam cleaning equipment.
- DO NOT use excessive force.
- DO NOT use high pressure cleaning equipment. This may cause injury to the installer or user and may damage cabinet.



4.4 SIX MONTHLY MAINTENANCE

A thorough cleaning and maintenance check should be carried out on a six monthly basis by qualified and approved refrigeration and electrical engineers. The following procedures should be undertaken as a minimum.



CAUTION: If any damaged electrical components are identified during inspection, isolate case power and contact service contractor.

Validate all electrical terminations have been tightened once more.

Check all electrical connections for tightness, and re-tension where needed prior to powering up the cabinet.

1. Isolate power.
2. Remove of all product stock and store appropriately.
3. Check that all case panels, glass, and trims are secure and undamaged.
4. Check for rust or paint damage.
5. Clean the air grilles on the cases.
6. Clean glass or mirrored surfaces with a clean soft cloth and mild glass cleaner.
7. Wipe LED lights with a dry cloth.
8. Wipe down the exterior and interior of the case, paying particular attention to the perforations in the rear panels and the air return grill with a clean soft cloth and mild soapy water.
9. Remove the base trays and fan panel, wash with mild soapy water and rinse.
10. Remove all foreign materials from the bottom of the case. Wipe over with clean dry cloth.
11. Carefully clean the evaporator using a soft bristle brush and mild soapy water, clean any residue with a bucket of warm water and drain out. Ensure the drain is free flowing and check it for damage.
12. Carefully flush the waste drain with a bucket of water and allow the base to drain. Ensure the drain is free flowing. You may need to clean out the drain trap. Refrain from adding excessive water that will not be able to be drained as rapidly as poured.
13. Ensure all cable connections, including screw terminals, earth leads, and straps, are secure.
14. Ensure insulation to all electrical components, including solenoid valves, fans, controls, earth terminals, and lights are sound.
15. Carry out electrical safety tests, including earth continuity and insulation resistance.
16. Ensure that the correct fuse rating and type is fitted for all circuits.
17. Ensure that there are no refrigerant leaks.
18. Replace fan panel and base trays.
19. Safely switch power to the case back on.

With case power turned on:

20. Check that all fans, valves, lights, and controls are working correctly.
21. Ensure light RCDs (if fitted) are working.
22. Allow the case to attain correct working temperature (approximately 30 minutes) and restock the shelves.

4.5 REPLACING FAN MOTORS AND BLADES

See Figure 4A for an exploded view of the evaporator fan assembly. Should it ever be necessary to service or replace the fan motors or blades, be certain that the fan blades are re-installed correctly.

1. Isolate power.
2. Remove bottom display pans.
3. Remove fan guard and fan blade.
4. Remove screws holding fan motor/bracket assembly to plenum and remove assembly.
5. Disconnect and remove the fan assembly.
6. In reverse order replace fan motor/bracket and harness assembly, ensuring it is retained in its original location.
7. Safely switch power to the case back on.
8. Remove of all product stock and store appropriately.

With case power turned on:

1. Verify that motor is working and blades are turning in the correct direction.
2. Check fan plenum is seated correctly with no air re-circulation.
3. Replace display pans.
4. Allow the case to attain correct working temperature (approximately 30 minutes) and restock the shelves.

WARNING: Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to items such as fans, heaters, thermostats, and lights.

Fan Assembly

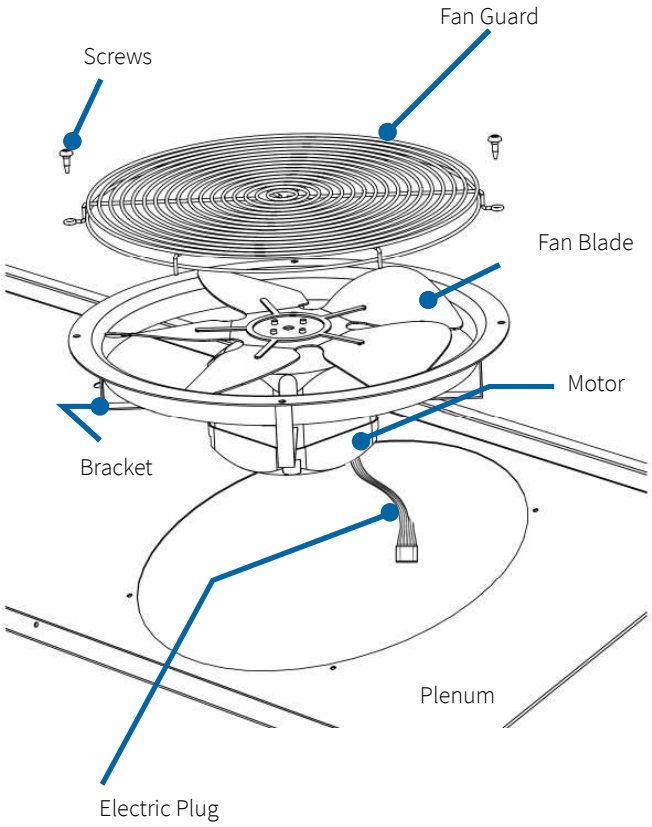


FIGURE 4A

4.6 REPLACING DOOR HINGE

Removing Door

1. Remove grub screw from lower hinge as per Figure 4B. Door will need to be in the closed position to access screw.

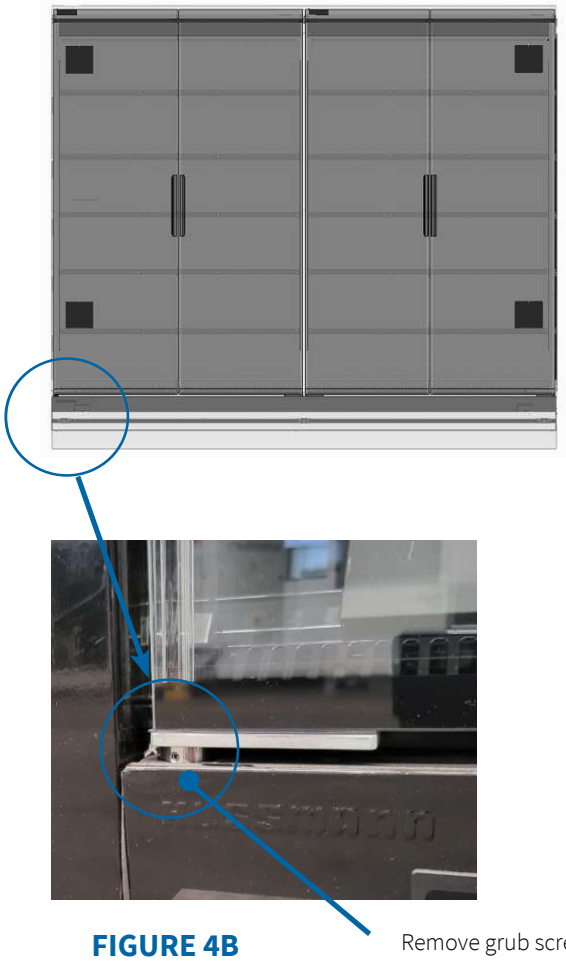


FIGURE 4B

CAUTION: The door is heavy it is recommended to have 2 people working on the door at all times to prevent injury and door falling. Wear PPE.

3. Open door to the maximum open position. Remove security pin from the top of the hinge pin as per Figure 3L5.



FIGURE 4C

4. Slide door up to remove from lower hinge.

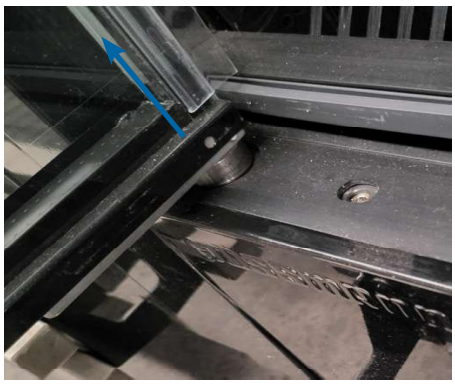


FIGURE 4D

5. Tilt door bottom out and lower to remove from the top hinge.

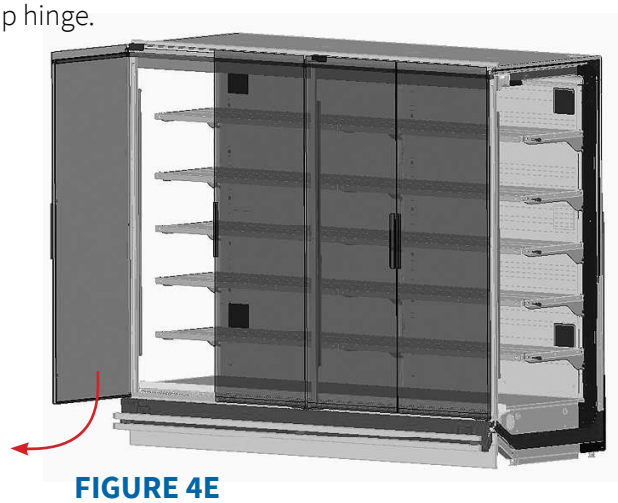


FIGURE 4E

CLEANING & MAINTENANCE

Removing Door Hinge:

1. Remove door as per above instructions. Multiple doors may need to be removed if door is in centre of the case.

2. Remove the lower front panel as per Figure 4D by removing all screws from bracket under the lower front panel (See Figure 4E).

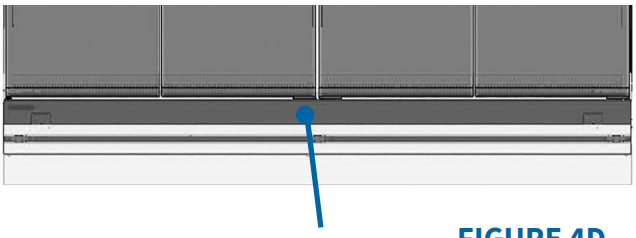


FIGURE 4D

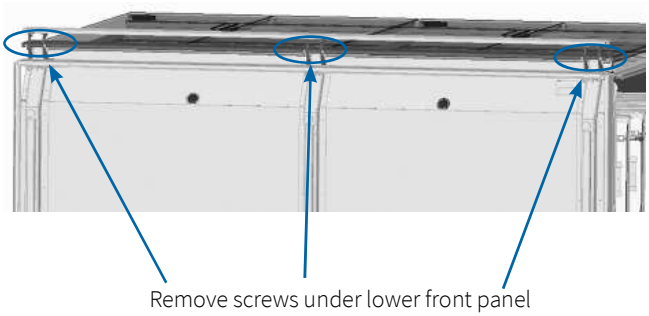


FIGURE 4E

3. Lift lower front panel up and out (See figure 4F) .

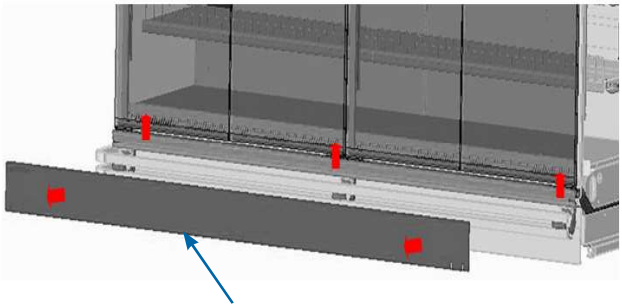


FIGURE 4F

4. Remove the bottom door frame cover to reveal the hydraulic hinge. By slipping a flat-head screwdriver under the cover and gently lift the cover outward away from the retaining tab (See Figure 4G and 4H). Do this along the cover. Lift the cover straight off once the retaining tab has been release.



FIGURE 4G

Slip a flat head screwdriver to lift the cover outward away from the retaining tab

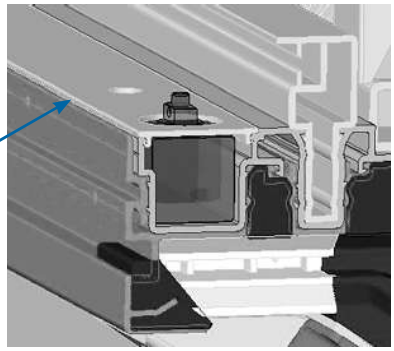


FIGURE 4H

5. Once available, undo screws holding the hydraulic hinge as per Figure 4i and replace.



FIGURE 4i

CLEANING & MAINTENANCE

6. Re-assemble in reverse order for the bottom door frame cover, lower front panel and door. Ensure all parts are retained in their original locations.

7. When assembling door turn locking hinge clockwise 90 Degree. Reference the hollow circle on the pin must face the operator refer to (Figure 4J).

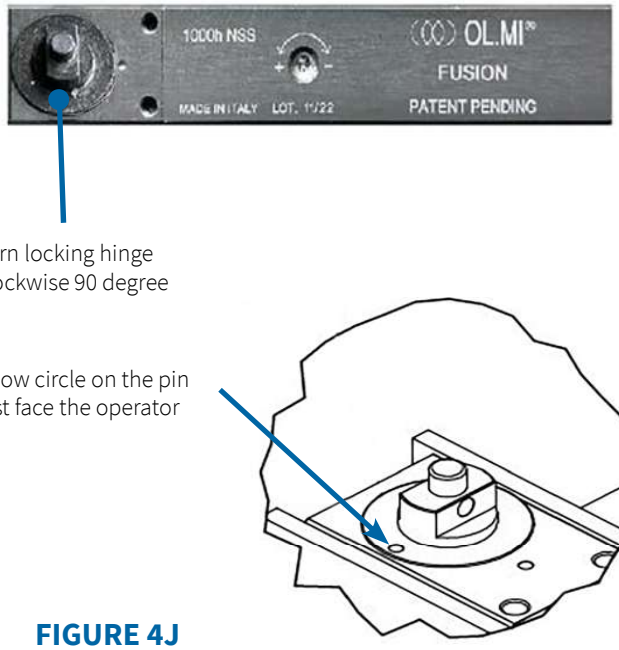


FIGURE 4J

Install door onto the locking hinge. Ensure the door is properly aligned and sit firmly at 90 degrees on the locking hinge.

If door is not aligned correctly it will not sit on the locking hinge.

8. Test door opening and closing several times to check for a smooth operation and proper latching speed. If tensioning door is required refer to **section 3.4A door adjustment of this manual.**

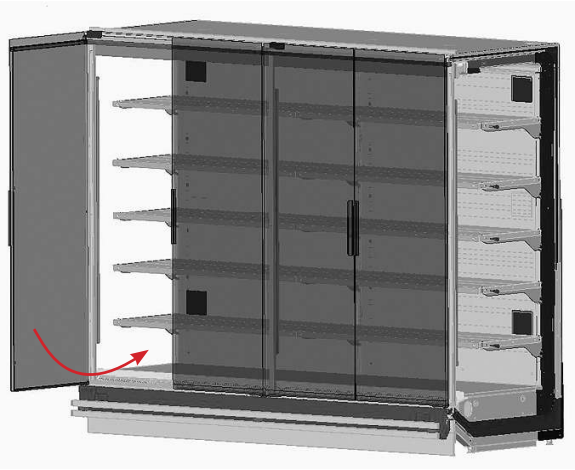


FIGURE 4K

DECOMMISSIONING & DISPOSAL

5.1 DECOMMISIONING

Plan and risk assess the decommissioning process to include the following:

- Disconnect all case services. Disconnection is to be undertaken by qualified persons only.
- Removal of the case is to be in the reverse order of installation listed previously.
- Dismantle the cabinet in accordance with the local laws on waste disposal and in respect of the environment in which we live.



5.2 DISPOSAL

The case must be disposed of in accordance with local authority guidelines.

The majority of the materials in this case are able to be recycled. The materials in this case are as follows:

- **Sheet Metal** and other various metals
- **Copper / Aluminum**
- **Tempered Glass**
- **Wood**
- **PVC**
- **Polystyrene**
- **Polycarbonate**

Remaining materials to be disposed of by commercial waste management.



6.1 TROUBLESHOOTING TABLE

ISSUE	POSSIBLE REASON	REMEDIAL ACTION
Product temperature is higher than requirement	Store condition is warmer or more humid than climate class 3 (25°C/60%RH).	Check store climate control is operating correctly.
	Refrigeration plant is not running or operating at inappropriate settings or conditions.	Check for refrigeration plant operation. If refrigeration is running and other possible reasons are eliminated then call refrigeration mechanic to check plant operation.
	Evaporator pressure is not set correctly.	Check suction pressure settings at the case and if required, adjust as per case specification.
	Insufficient or no air flow appears at the case air curtain.	Check if evaporator coil is iced. If ice is present then check defrost settings as per the manufacturers guideline or set to suit the store operating condition. A colder store may require longer defrost duration. A humid store may need more frequent defrost.
		Check if case fans are turned on and operating correctly. If any doubt of fan operation, contact technician.
	Case shelf arrangement has been deviated significantly from original specified setup.	Re-do the shelf arrangement as per the original specification.
	Air return is blocked by merchandise.	Move merchandise to be within the load limit.
	None of above.	Contact your refrigeration service provider.

TROUBLESHOOTING

ISSUE	POSSIBLE REASON	REMEDIAL ACTION
Products are freezing up	Store condition is too cold compared to design climate class 3.	Check store climate control is operating correctly. If store condition cannot be lifted, then adjust cabinet evaporator pressure and defrost strategy to suit.
	Case evaporator pressure is lower than specification.	Adjust cabinet evaporator pressure to suit.
	Ambient moisture leakage.	Check any sealing issue.
Cabinet exterior is sweating	Store humidity is high.	Check store climate control is operating correctly.
	Insufficient ventilation.	Check case ventilation under and at rear of the case. A fan kit may be needed, please see your refrigeration service provider for details.
	Icon controller settings (if fitted).	Check settings.
	Case SST.	SST set too low.
Door alignment is out	Case is not level.	Refer to page 14 for levelling information.
Lights are not working	No power supply.	Check supply is “on” and light switch is working.
	Light components maybe faulty or operating in fail safe.	Call your refrigeration service provider to check and replace if necessary.
	Lamp failed.	Replace lamp.
Door is closing too fast or too slow	Incorrect tensioning of doors	Refer to page 19 (3.15) for door adjustment

APPENDIX

7.1 **APPENDIX 1 -** WIRING DIAGRAMS - SUPPLIED WITH EACH CASE

7.2 **APPENDIX 2 -** RISK ANALYSIS

HAZARD	CONTROL MEASURES
Electrical - Replacement of electrical components	Request a service call. Electrically isolate cases before works.
Ergonomic - Moving/positioning/adjusting cases	Staff must be trained in the correct procedures for setting up cases and ergonomic practices. PPE must be worn.
Falling - Connecting sensor probe wiring during installation	Use of barriers and fall arrest systems as appropriate and in accordance with State and Territory Legislation. Safe working at heights.
Entanglement - Contact with fans when cleaning	Electrically isolate cases before work is carried out. Staff training is required.
Cuts and stabbing - Potential for cuts from broken fluorescent tube or during tube replacement	Electrically isolate cases. Staff not to replace tubes. Call service provider. PPE must be worn.
Electrical - Potential for electric shock when cleaning electrical fittings and components	Electrically isolate cases before work is carried out. Staff training, RCD. Keep electrical connections dry at all times.
Falling - Climbing on shelves	Staff must be trained in OH&S procedures. MUST not climb on shelves or cases.
Crushing - Hands or fingers may become pinched or crushed during the positioning of base trays, shelves, and stock	Staff must be trained in the correct procedures for setting up cases and ergonomic practices.
Slipping - Drain may leak or become blocked causing water spillage	Visual inspection and regular maintenance. Request service call when necessary.
Cuts and stabbing - Potential for cuts caused by damaged or missing parts	Visual inspection and regular maintenance. Request service call when necessary. PPE must be worn when handling broken or damaged parts.

7.2 APPENDIX 2 - RISK ANALYSIS

HAZARD	CONTROL MEASURES
Ergonomic - Stretching during the cleaning of the case and positioning of stock and shelves leading to strains and sprains	Staff must be trained in the correct procedures for setting up cases and ergonomic practices. PPE must be worn.
Slipping - Surfaces may become slippery due to spillage from the case during operation or cleaning	Visual inspection of work area and cleaning when required.
Cuts and stabbing - Potential for cuts caused by sharp edges and evaporator coil during cleaning	Visual Inspection and regular maintenance. Request service call when necessary. PPE must be worn when handling broken or damaged parts.
Cuts and stabbing - Cleaning cold glass surfaces with hot water	Staff must be trained in OH&S procedures and should where appropriate PPE gear. Staff should avoid glass contact with hot water.
Cuts and stabbing - Potential for cuts from broken fluorescent tube or during tube replacement	Electrically isolate cases. Staff not to replace tubes. Call service provider. PPE must be worn.
Crushing - Fingers, hands or body between doors	Staff must be trained in OH&S procedures.
Electrical - Electrical connections in cases	Request a service call. Electrically isolate cases before works.
Cuts and stabbing - Potential for cuts caused by damaged or missing parts	Visual Inspection and regular maintenance. Request service call when necessary. PPE must be worn when handling broken or damaged parts.
Temperature (Thermal Comfort) - Should a refrigerant leak occur there maybe risks of cold burns	Operators should where appropriate PPE gear. Gloves and long sleeved shirts.
Suffocation - Should a refrigerant leak occur there maybe risks of oxygen deprivation in enclosed spaces	Ensure that the work area is well ventilated.

APPENDIX

7.3 APPENDIX 3 - WARRANTY

The information in this manual is for **"Qualified Persons Only"**. It is **NOT** an Installation Guide for **"NON Qualified Persons".**

To obtain addititonal warranty information or other support, contact your nearest Hussmann representative.

When submitting a warranty claim, please include the following:

- Customer site location
- Cabinet model & serial number of product
- Reason for warranty



NOTE: Failure to comply with the instructions in this manual shall void the warranty.

7.4 APPENDIX 4 - MODIFICATIONS

Hussmann reserves the right to modify the components within the case, as well as alter the descriptions and instructions provided in the manual.

In order to obtain the latest manual, please contact your nearest Hussmann representative.

7.5 APPENDIX 5 - LIABILITIES

The manufacturer is not liable for:

- Defects in the electrical power supply to which you connect the cabinet
- Failure by you to comply with instructions
- Interventions carried out by unqualified/ untrained personnel (i.e. NON Qualified Persons)
- Improper, incorrect, and unreasonable use of the cabinet (including any failure to comply with this manual and/or purchase terms and conditions)
- Non-compliance of maintenance and cleaning schedules as recommended by Hussmann
- Use of accessories that are not provided nor authorised by Hussmann
- Unauthorised modifications and interventions
- Incorrect installation not performed in accordance with the norms indicated
- Use of non-original spare parts


HUSSMANN®