ADIABATIC COOLING SOLUTION

20HP

OUTDOOR REFRIGERATION UNIT

INSTALLATION MANUAL

OCU-CR2000VF8

JAN 2025 - AJHH9A200150A

HUSSMANN®

CONTENTS

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HUSSMANN®

GENERAL INFORMATION

1.1 SYMBOLS:

NOTE: Not related to personal injury – Indicate[s] situations, 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 throughly whilst doing the installation. If not performed correctly, leakage, electric shock or fire may occur. Always keep manual in safe place.

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

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

NO CLIMB: Do not climb on top or on any parts of the unit. This may cause damage to the unit or personal injury.

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

NO WET AREA: Do not install unit 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 unit. DO NOT use pressurised hose. eg fire hose. This can result in electric shock.

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.

PRESSURE & VACCUM TEST : Ensure a pressure and Vaccum test is conducted. The leakage of refrigerant may result in poor performance or malfunction of the unit.

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

EARTHING : Ensure unit 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 UNIT: Do not place objects, stack or use the top of the unit as storage. Object may fall and cause injury to personnel and /or damage to the unit.

NO A/C: Do not install case where air blows directly at the unit. This will disrupt the unit 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 unit. It may risk explosion or fire.

NO CONNECTING SOCKETS: Do not use any connecting socket or extension cords. Be sure to use 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 dont rush. STOP if it can't be done safely.

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

1.3 STAFF TRAINING

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

Injury to personnel and damage to the unit and its components may occur if instructions in the manual are not correctly followed. If information would like to be added to this manual, or if suggestions would like to me made, contact Hussmann directly at any time.

1.4 ELECTRICAL CONNECTION

Check that the power supply voltage matches that displayed on the rating plate of the refrigeration unit, and that the power is adequate. Voltage provided should be ±10% of rating plate. Electrical 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.

Always use a dedicated circuit and install a ground fault protector.
Incorrect electrical work may lead to current leak and fire or electrical shock.
- Wiring work should conform to the installation instructions.

Electrical wiring should use the specified cable and to be properly secured.

When the specified cable is not used, or connection or securing is incomplete, electrical resistance becomes larger and may cause abnormal heating or fire.
- Use the specified cable and properly secure it on an appropriate location.

Grounding Work

Lack of grounding work may lead to electrical shock caused by current leak.
- Securely carry out grounding work by qualified technicians.

Securely place the cover on the solenoid valve.

Incomplete attachment may lead to penetration of water, thereby causing current leak and fire/electrical shock.
- Confirm that solenoid valve cover is securely installed

GENERAL INFORMATION

1.5 REFRIGERANTS

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

CO2:
The refrigerant 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.

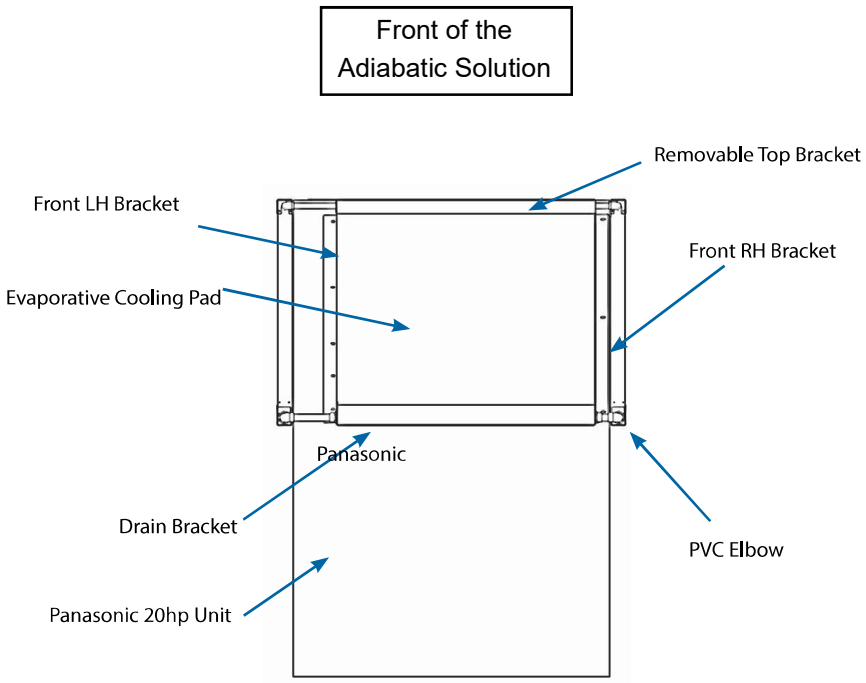
EVENT OF DAMAGE:
Keep surrounding flames or sources of ignition away from the appliance. Properly ventilate the premises and use a breathing apparatus. Turn the unit off and notify the customer service department. Fire and heat may cause gas receptacles to rupture. Use water spray/ not jet or fog to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

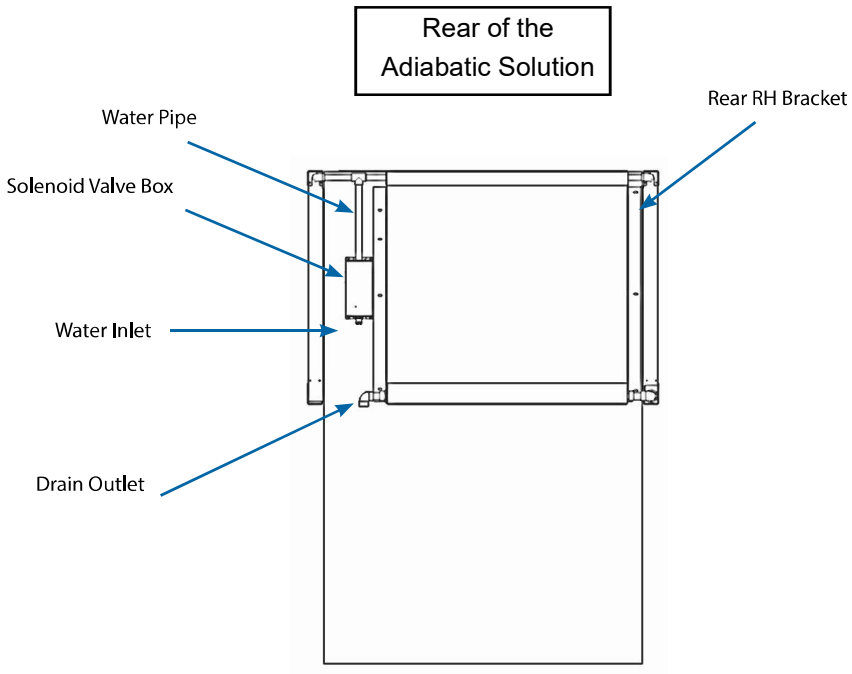
1.6 RATED SPECIFICATION

Item	Rating	Unit
Power Source	50 Hz 380 V/400 V/415 V /3N ~	V
Current	25.1 / 24.3 / 23.1	A
Phase	3 Phase	-
Operation Intake Air Temp	On=32° C, OFF=28° C	Degree Celcius
Water Consumption	3L / Min	L/Min
Protection class	IP65 with connector	

PRE INSTALLATION

2.1 Name of Each Part





PRE INSTALLATION

2.2 OPERATING ENVIRONMENT

To avoid condensation build-up, unit should be positioned to allow air to freely circulate around the underside and rear of the unit (refer page 7). 20HP Refrigeration unit must be level.

Place the refrigeration unit on a firm foundation to avoid an increase of noise and vibration case.

2.3 HANDLING AND TRANSPORTING CASES

20HP Refrigeration unit dimensions and weight can be found on the rating plate.

Always ensure that the moving device is of a suitable type, and has sufficient lifting capacity for the case weight and dimension. Always lift unit from the underside.

NOTE: These units are heavy, 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 unit. The 10HP refrigeration unit need to be secured correctly during road transport to insure damage free delivery.

Disregarding the necessary implementation of correct protection Warehouse Managers may refuse loading. Transportation requirements are to ensure unit integrity and prevent unnecessary damage and avoid delays in the unit installation schedule.

Before storing the unit, ensure packaging is unbroken and does not display defect that may compromise preservation of the unit.

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

2.4 SHIPPING DAMAGES AND SHORTAGES

Packaging needs to be disposed of responsibly (refer to page 34). by the installer and/or user.

Where possible please recylce as many items as possible.

After removing packaging, inspect the unit for any shipping damage. 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 unit are put into there approx 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 notification to Hussmann or representative within seven (7) days of delivery.
- Concealed loss or damage after removing all packing etc confirm with the parts list, attached to the unit for any short supplied and or damaged parts etc. If required notify Hussmann or representative within seven (7) days of delivery.

PRE INSTALLATION

2.4 SHIPPING DAMAGES AND SHORTAGES

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 page 35 (Risk Analysis) For MSDS sheet contact your Hussmann

CAUTION: Care must be taken to avoid damage to solenoid valve box and electrical cable mounted under or at the rear of unit

INSPECT UNDERSIDE BEFORE LIFTING WITH FORKLIFT.

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

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

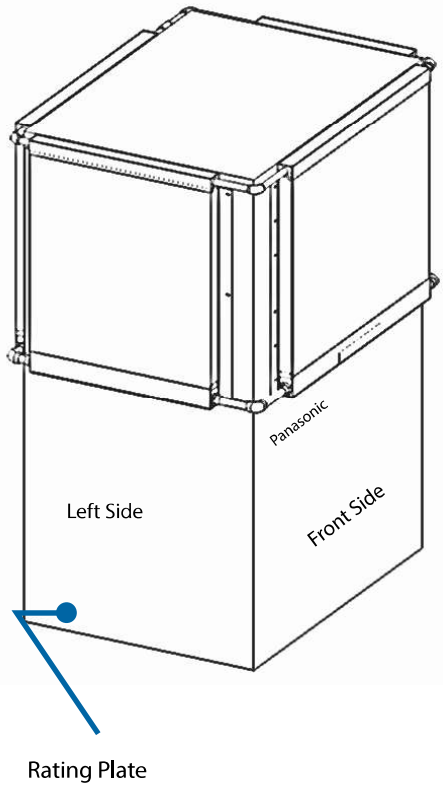
2.5 RATING PLATE:

Each unit has a unique rating plate which include the model number.
The rating plate for the 20HP Refrigeration unit is located at the bottom left hand corner on left side of unit.

NOTE: Refer to rating plate to identify the exact model, Serial number, weight, Refrigerant, Voltage and Amperage etc.

RATING PLATE:

LOCATION:



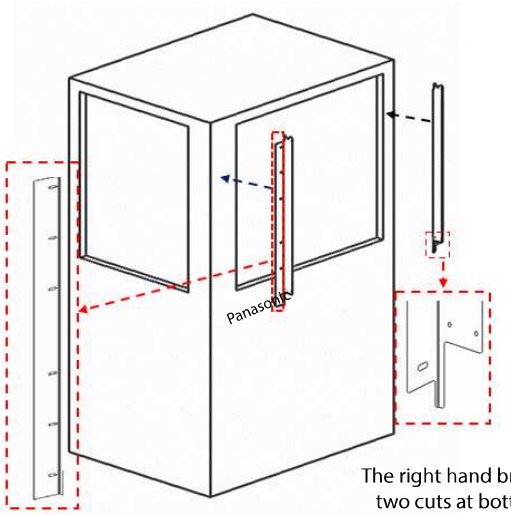
INSTALLATION

NOTE: If all four Kit is provided for the 20HP. Refer to Page 17 for installation and assembly.

3.1 FRONT SIDE FRAME ASSEMBLY

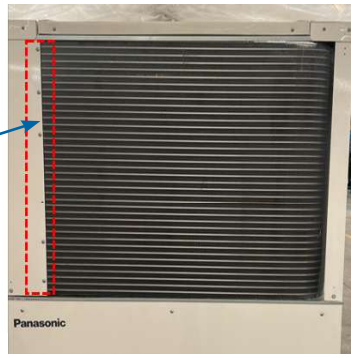
Install the front LH and RH brackets.
Use the existing holes on the unit to fix screws. Avoid drilling.

NOTE: To fit the LH bracket, first need to remove screws from unit and have the bracket screwed in with same screws. (Refer to the image below for screw locations)



The six holes are to identify the front left hand bracket

The right hand bracket has two cuts at bottom and wider slots

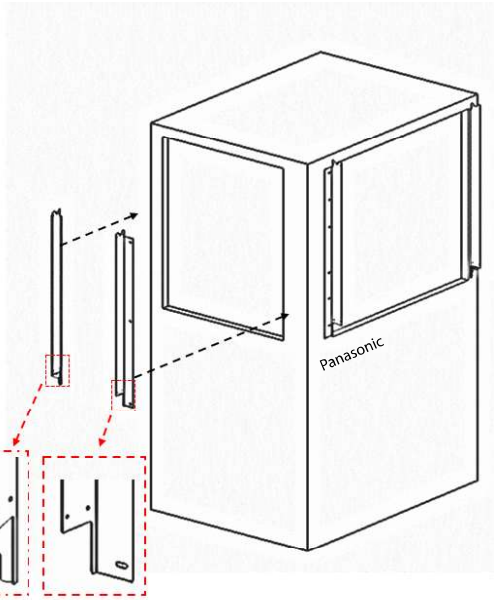


Screws for LH bracket

3.2 LEFT SIDE FRAME ASSEMBLY

Install the Left side LH and RH brackets.
The LH & RH brackets can be identified as shown below:

NOTE: Drilling new holes is required for fitting RH bracket.



The small holes are to identify left side LH bracket

The right hand bracket has a drain cut.

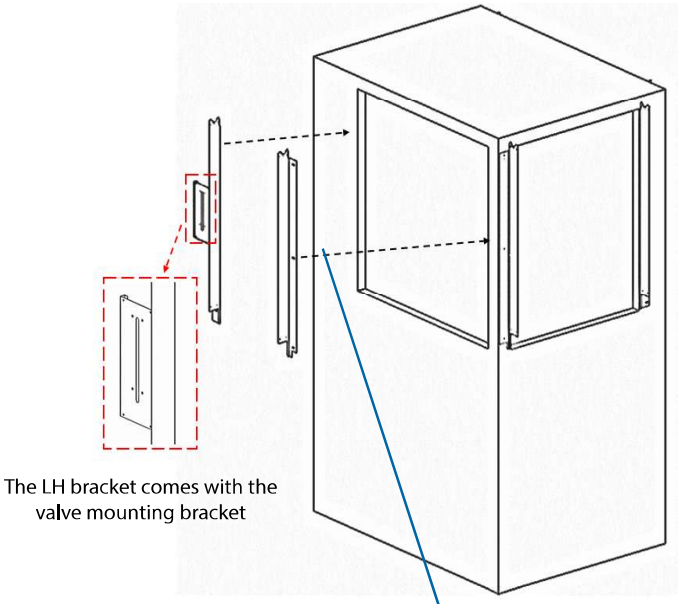
NOTE: Information in this manual is to be followed in conjunction with specifications, work practices and regulations of the customer, installing company and relevant industry.

INSTALLATION

3.3 REAR SIDE FRAME ASSEMBLY

Install the Rear side LH and RH brackets.
The LH bracket can be identified as shown below:

Note: The LH bracket screw location is shown in image below:



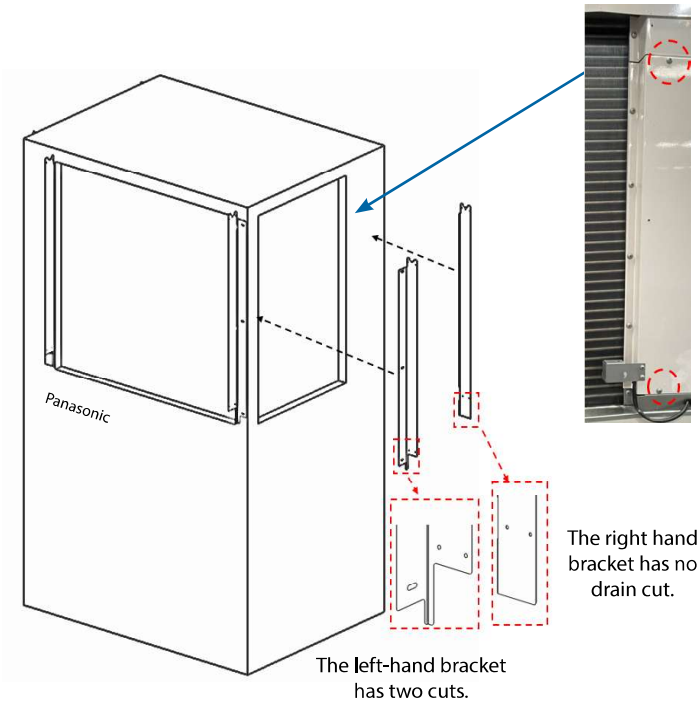
The LH bracket comes with the valve mounting bracket

The LH bracket screw location

3.4 RIGHT SIDE FRAME ASSEMBLY

Install the LH and RH brackets.

NOTE: Use the existing holes on the unit.
The RH bracket screw location is shown in image below:



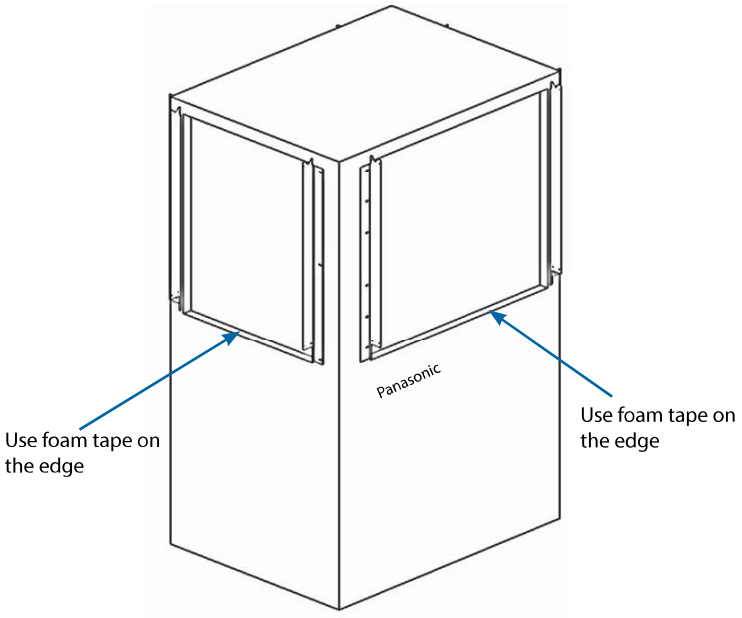
The right hand bracket has no drain cut.

The left-hand bracket has two cuts.

NOTE: All brackets are different, specially designed for each side. Each side has LH and RH brackets.
Please make sure to fit in the correct brackets for proper assembly of kit.

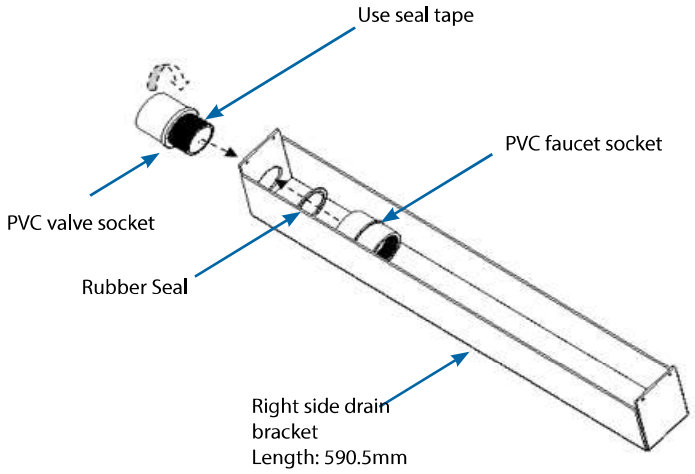
INSTALLATION

3.5 Use 3mm foam tape on edges of the unit on three sides (Front, Rear, & Left).

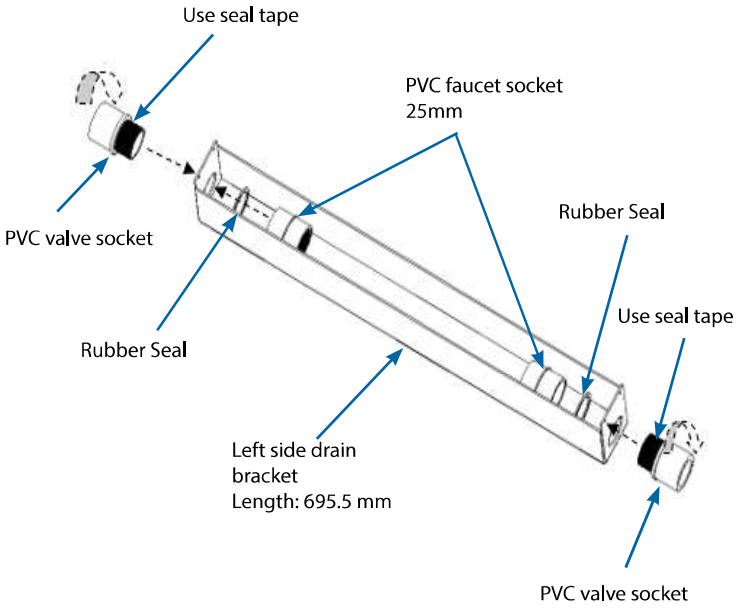


3.6A Right side drain bracket

Fix the drain fitting on the drain brackets. Use thread seal tape while fitting.
NOTE: Ensure that the drain bracket corners are sealed, and the PVC socket is tightened to avoid leakage.

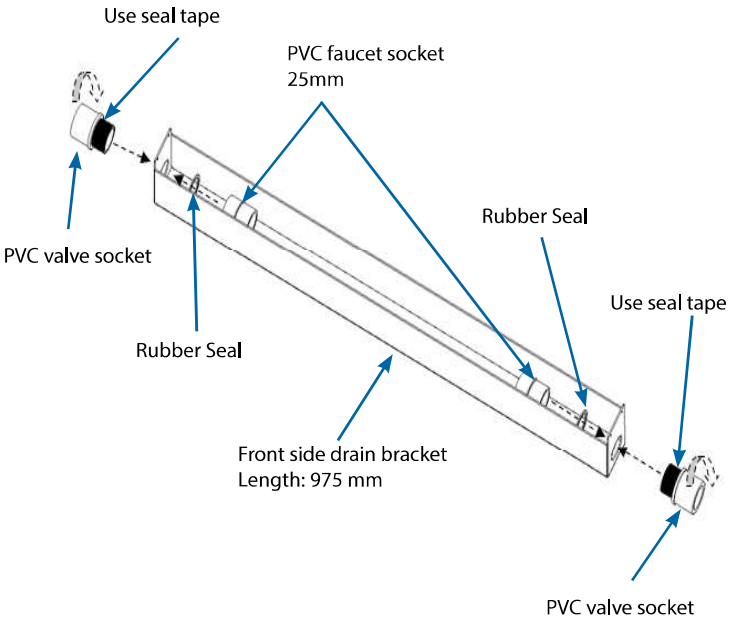


3.6B Left side drain bracket

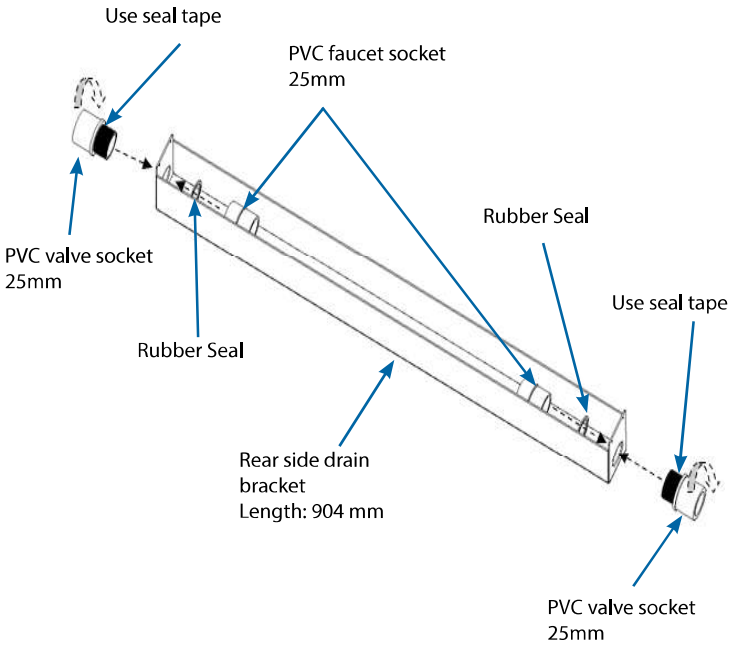


INSTALLATION

3.6C Front side drain bracket



3.6D Rear side drain bracket



3.7 Fix the right and left drain brackets to the LH and RH brackets using screws.

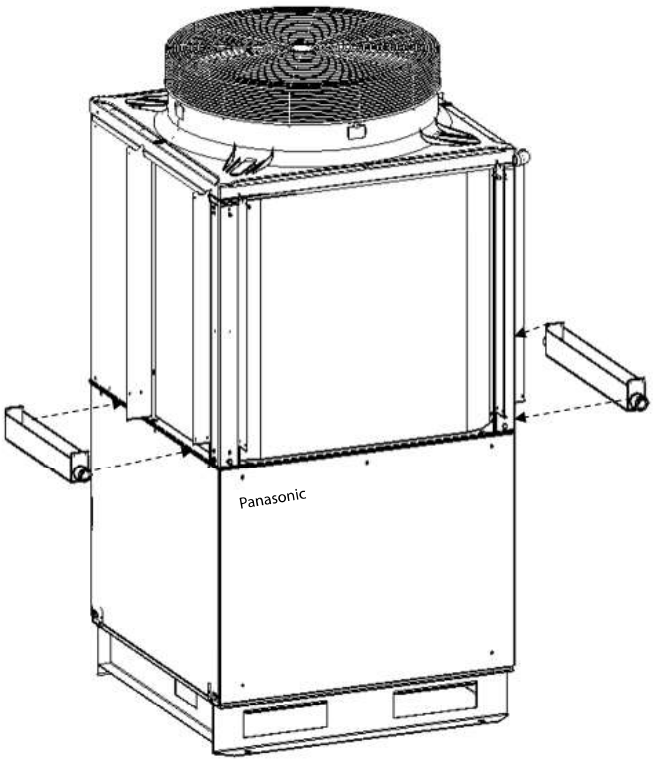


Fig A

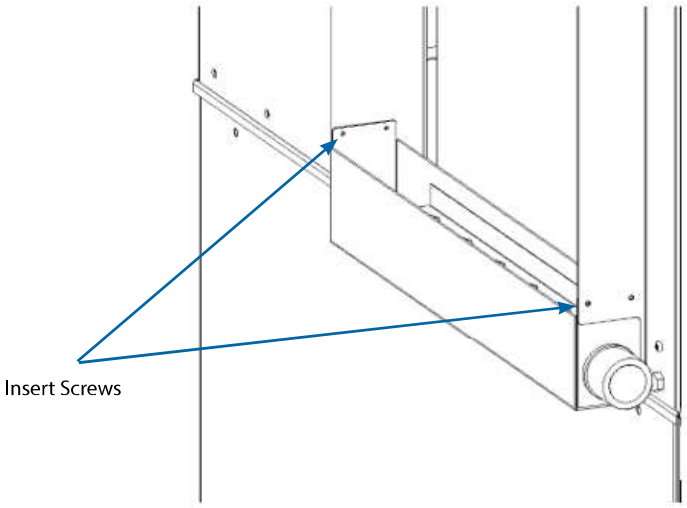
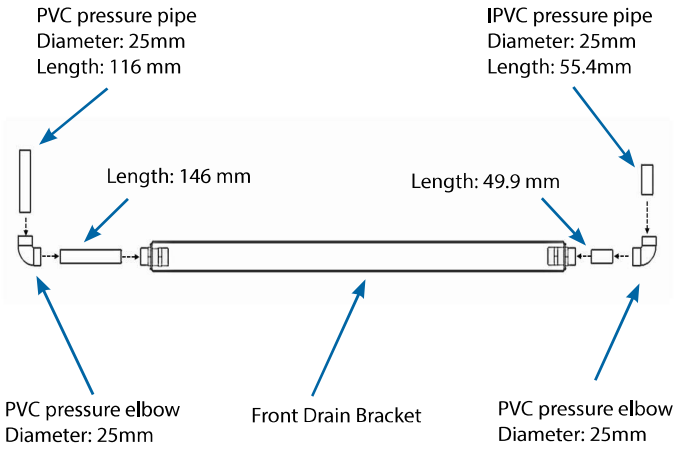


Fig B

INSTALLATION

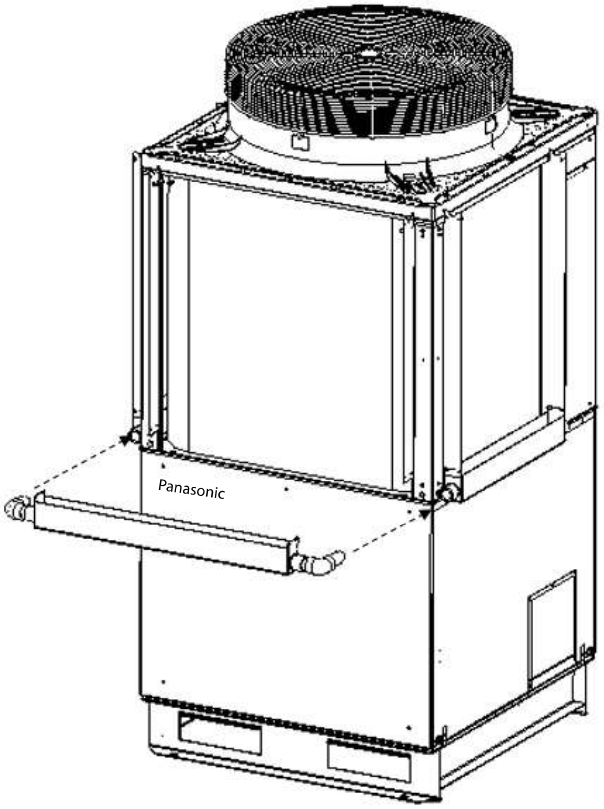
3.8 Front Drain Bracket Fitting

Use PVC glue to fix the corner drain pipes and elbow to the front drain fittings.

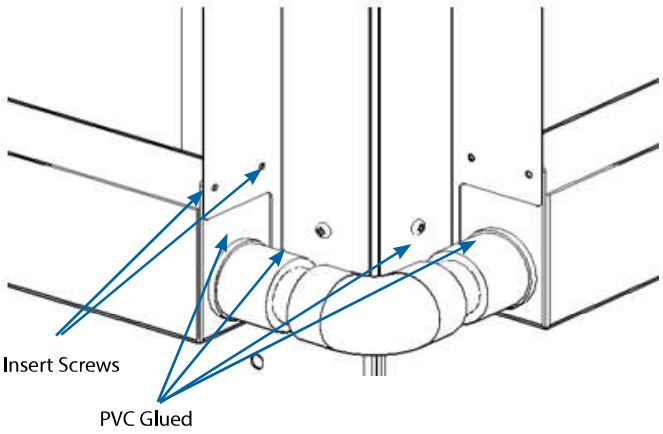


3.9

Use PVC glue on the drain corner pipes attached in the last step. Then, slowly slide in the front drain bracket to the side brackets and press to ensure that there is no gap between the front drain bracket and the unit edge



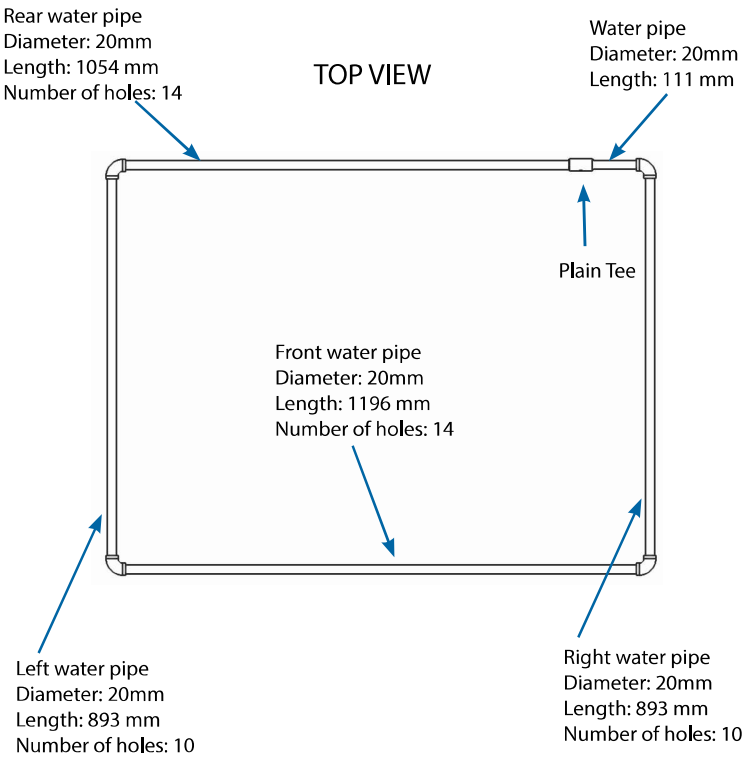
3.10 Insert screws to fix the front drain bracket



Note: Repeat same steps for Rear side drain bracket fitting. For drain pipe fitting lengths refer 3.11C

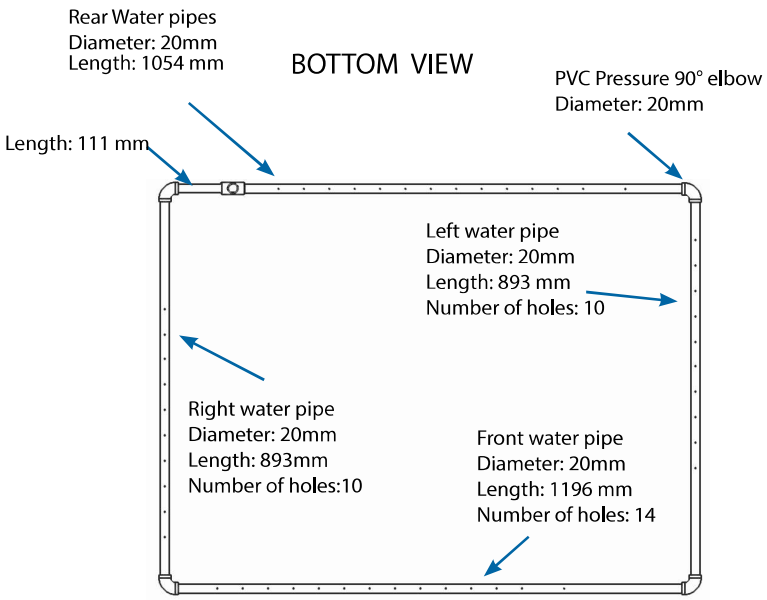
3.11A

Use PVC glue to join the top water pipes using 20mm PVC pressure 90° elbows.
NOTE: Differentiate the Front and Rear pipe and ensure that they are glued in the correct position. Left and Right pipes are same.
WARNING: Ensure that the water pipe holes are facing down.

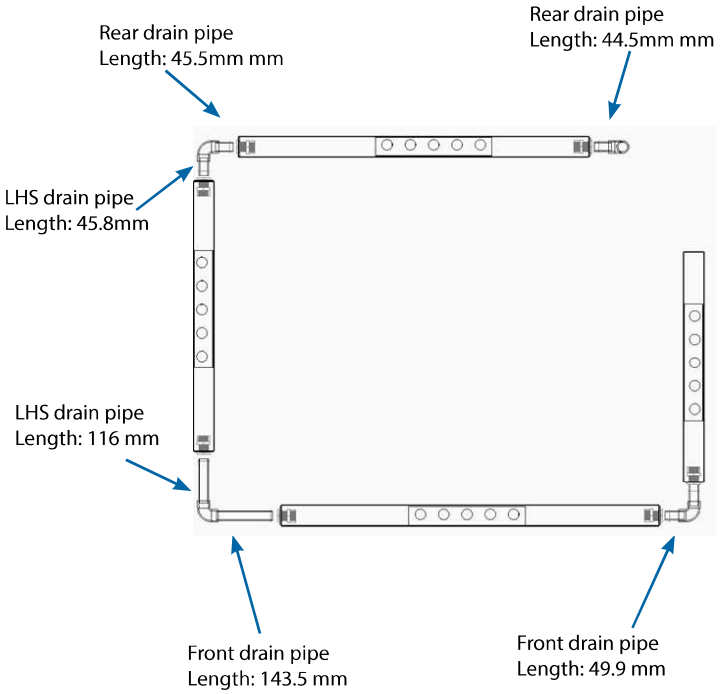


INSTALLATION

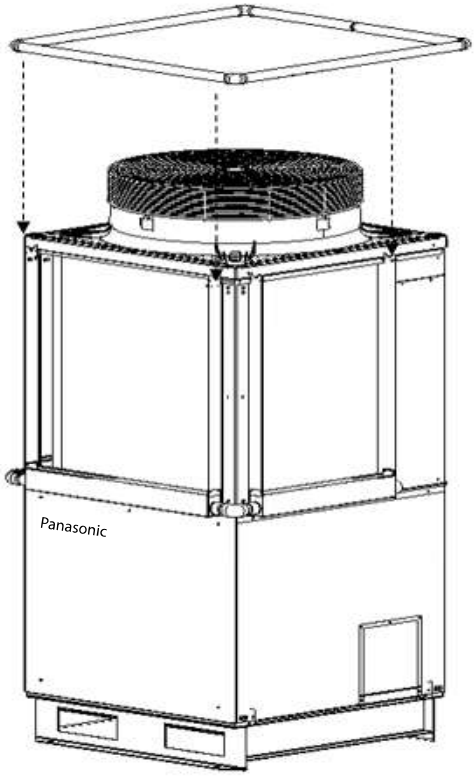
3.11B



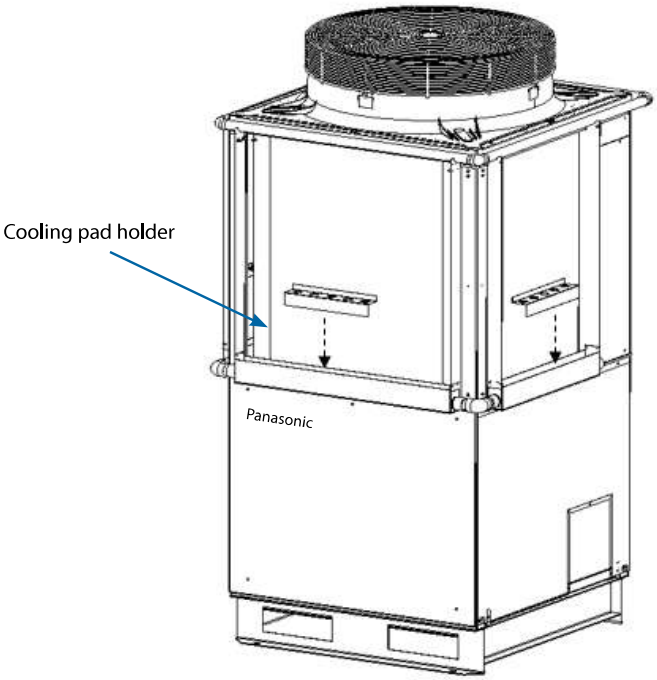
3.11C Drain Pipe fittings & respective lengths



3.12 Place the joined water pipes on the installed brackets slot from the top.

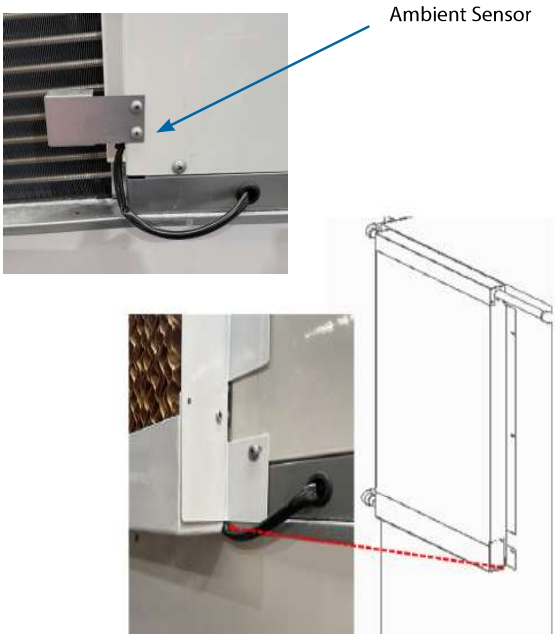


3.13 Insert the cooling pad holders into the drain brackets.

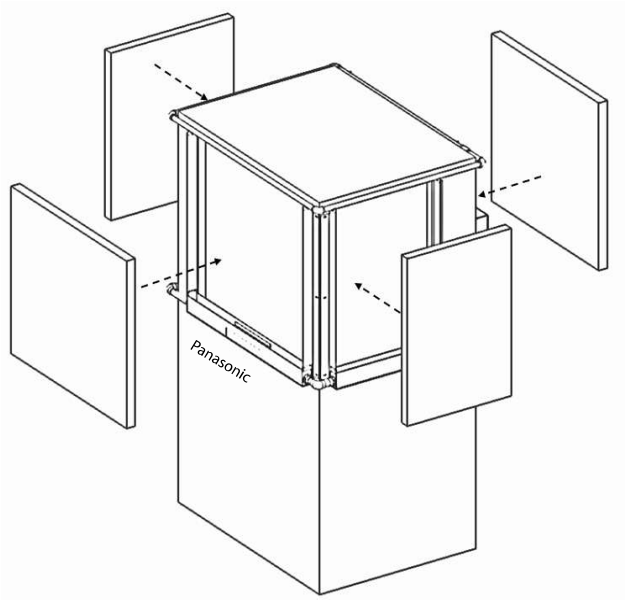


INSTALLATION

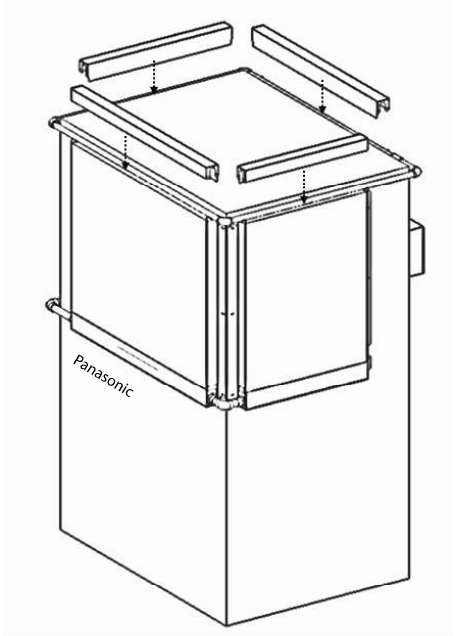
3.14 Place the kit in front of the sensor. Be sure the the sensor cable run under the bottom of drain tray (As shown below).



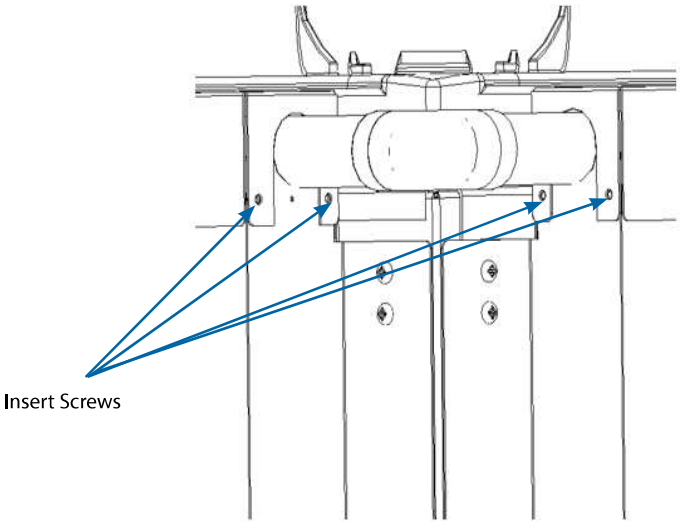
3.15 Place the evaporative cooling pads by fitting it between the LH and RH brackets and place on the pad holders on each side of unit.



3.16A Install the top brackets and use screws to fix them.



3.16B

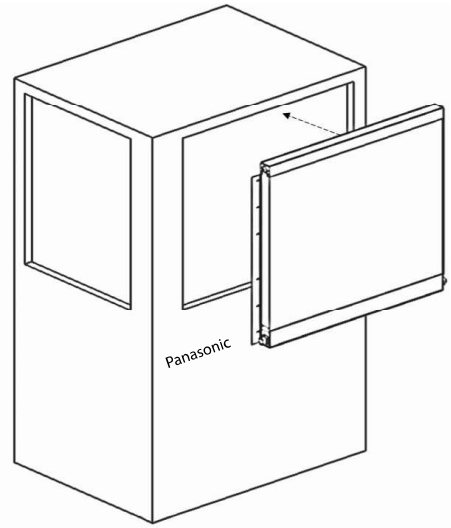


INSTALLATION (IF ASSEMBLED KIT IS PROVIDED)

3.17A FRONT SIDE PANEL

Unscrew screws from unit on LH and have the bracket screwed in with same screws.
(refer 3.1 for screw locations to unscrew for LH bracket).

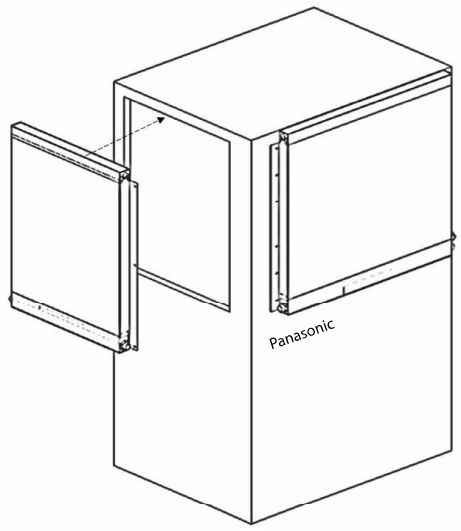
For rest use the existing holes on the unit to fix screws. Avoid drilling.



3.17B LEFT SIDE PANEL

Screw in the panel on the unit.

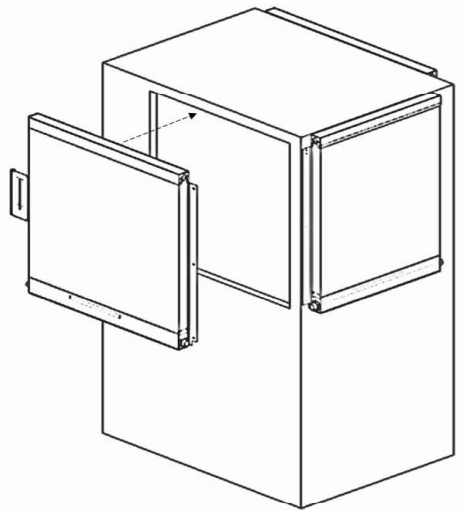
Note: The RH bracket needs drilling new holes to screw in the panel.



3.17C REAR SIDE PANEL

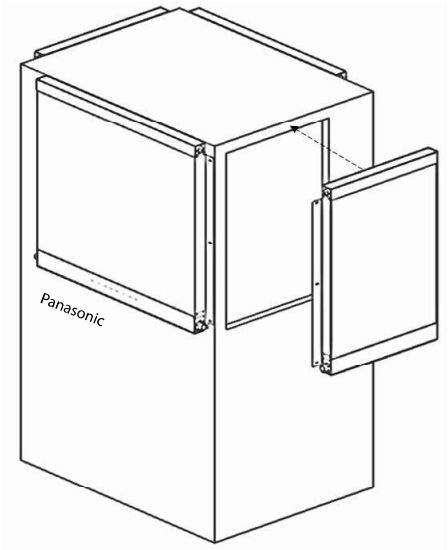
Unscrew two screws from unit on LH and have the bracket screwed in with same screws.
(refer 3.3 for screw locations to unscrew for LH bracket).

For rest use the existing holes on the unit to fix screws. Avoid drilling.



3.17D RIGHT SIDE PANEL

Remove screws from unit on LH and have the bracket screwed in with same screws.
(refer 3.4 for screw locations for LH bracket).

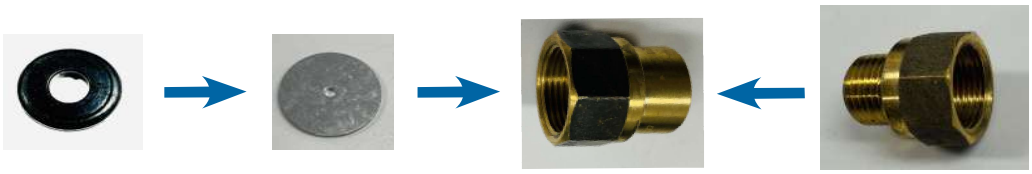


NOTE: Refer to 3.8 on page 14 front drain fitting to continue the installation

INSTALLATION

3.18A Reducer assembly with Flow control disc and rubber gasket

Insert the flow control disc and the rubber gasket into the Female-Female reducer and then connect the Female-Male reducer as shown in Fig. 3.18A below.



3/4" Rubber Gasket | Flow Control Disc | Female to Female 15mm x 20mm Reducer | Female to Male 20mm x 15mm Reducer

Fig. 3.18A Flow Control Disc installation

3.18B. The reducer assembly should look as shown in Fig. 3.17B and Fig 3.17C below after inserting the disc and gasket.

Female-Female 15mm x 20mm Reducer with inserted disc and rubber gasket

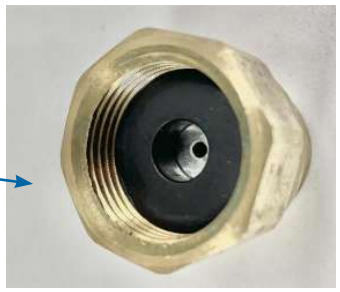


Fig. 3.18B. Left Side view of inserted flow control disc and gasket

Female-Female 15mm x 20mm Reducer

Female-Male 20mm x 15mm Reducer

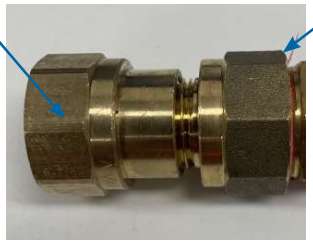


Fig. 3.18C. Reducer Assembly with Flow control Disc and Rubber Gasket

3.19A. Steps for installing pressure reducing valve and solenoid valve to PVC water pipes

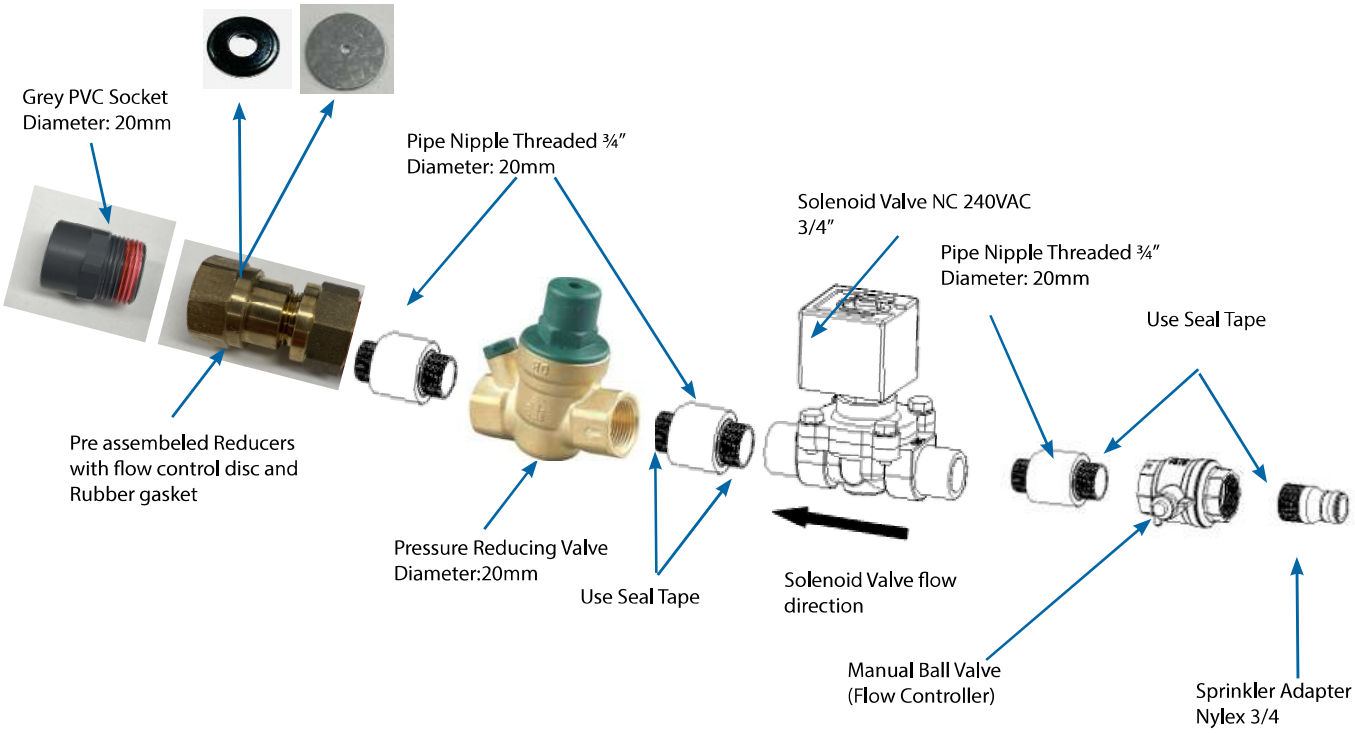
Step 1: Connect the sprinkler adapter to ball valve.
Step 2: Connect the ball valve to a male pipe nipple threaded 3/4"
Step 3: Connect the male pipe nipple threaded 3/4" to the solenoid valve
Step 4: Connect the solenoid valve to a second male pipe nipple threaded 3/4".
Step 5: Connect second male pipe nipple threaded 3/4" to the pressure reducing valve.
Step 6: Connect the pressure reducing valve to a third male pipe nipple threaded 3/4".
Step 7: Connect the third male pipe nipple threaded 3/4" to the pre assembled reducers from Fig. 3.18A.
Step 8: Connect pre assemble Female-Female Reducer to your Grey PVC socket. Make sure the Flow control disc and rubber gaskets are fitted tightly and at correct location. Refer Fig 3.19A. for correct installation.

Note: Use plumbing tape on all joints and tighten using spaners to prevent any leakage

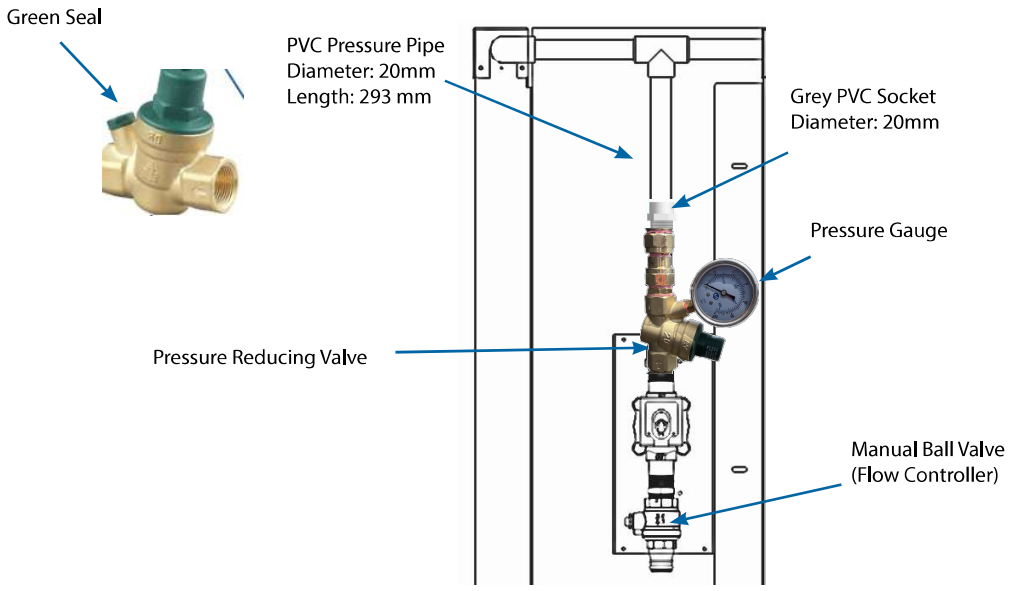
INSTALLATION

NOTE: Use seal tape on all joints and ensure that the sockets are tightened to avoid leakage.
NOTE: Ensure the Solenoid Valve and Pressure Reducing Valve flow direction is as marked below.

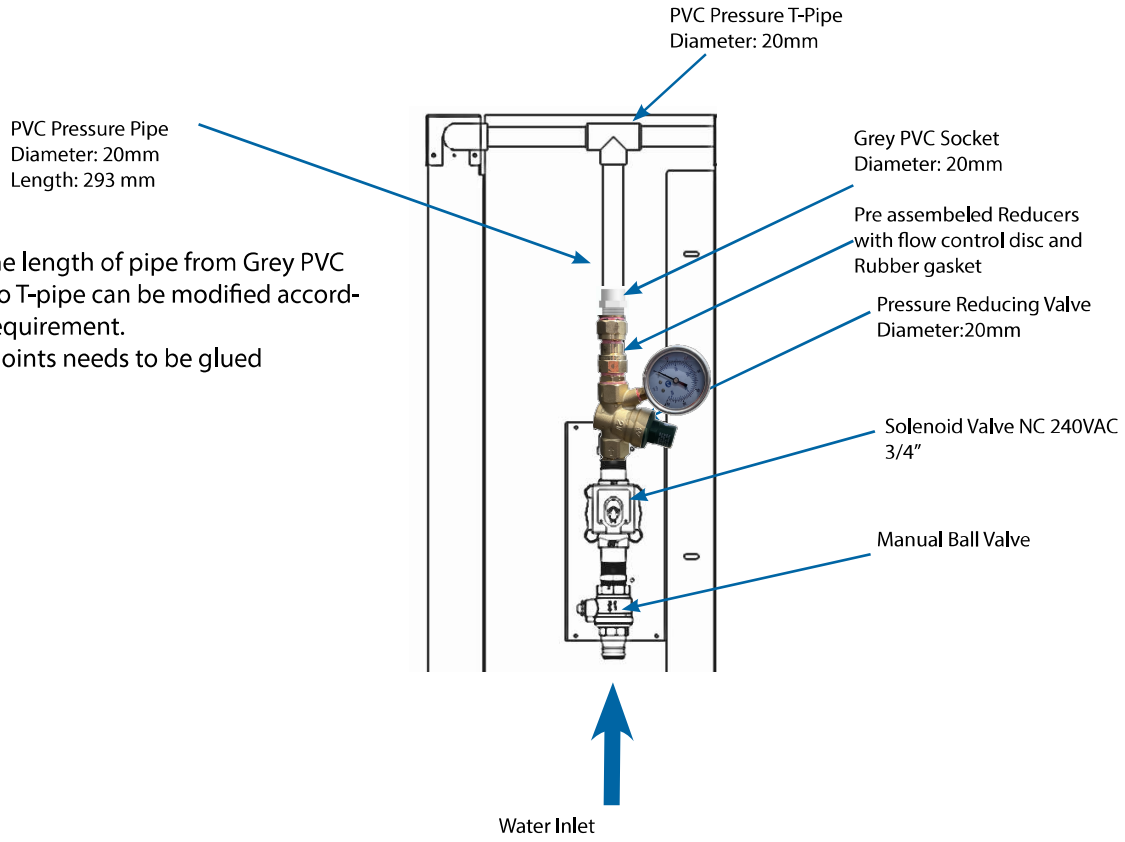
Fig. 3.19A Correct Sequence for installation



3.20A Mount the assembly on the bracket using cable ties and clips and connect the reducer output to the water pipe using a 20mm T-pipe.
Connect the pressure gauge provided, to the pressure reducing valve by removing the green seal and keep it in a safe place to seal it again after adjusting the pressure.



3.20B Connect the water pipe / hose into the water inlet as marked and the final assembly on the bracket should look as in the image below.



Note: The length of pipe from Grey PVC socket to T-pipe can be modified according to requirement.
All PVC joints needs to be glued

INSTALLATION

3.21A Test run for leakage testing and adjusting the water pressure

WARNING: Perform a test run to ensure that the joints are sealed and there is no leakage.
In case of leakage tighten the valve fittings and use silicon to reseal the drain brackets.

To test run:
a. Ensure water source is connected to the water inlet and tighten.
b. Set the solenoid valve state to "Open" manually by placing a magnet on top or lower the ambient temperature on controller to trigger the solenoid valve.

NOTE: The solenoid valve is normally closed. Opening it manually will allow the water to flow freely.

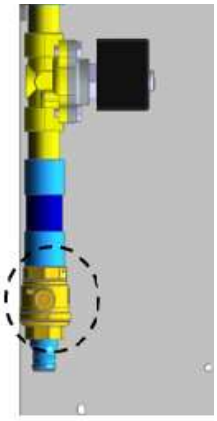
c. Open the manual ball valve completely
d. Tune the pressure reducing valve to 0.6 bar with the help of pressure gauge connected.
e. Monitor the water flow to be sufficient across the cooling pads and ensure that there is no leakage from the pipe fittings and the drain.

WARNING: During this test, if the water flow is high or low than it is needed, use the pressure reducing valve to control the water flow and set it for required pressure.

f. After checking for leakage and the optimal water flow. Close the ball valve. Remove the magnet and put back the solenoid valve.

g. Remove the pressure gauge from the pressure reducing valve and put back the green seal as shown below.

h. After test run, keep the manual ball valve completely open and remove the valve handle.



3.21B WATERFLOW (Optional Dynamic Valve

NOTE: Ensure that the waterflow on site supply must maintain a consistent flow.

If water flow is not consistent, a dynamic valve is recommended to be installed.

WIRING AND CIRCUIT DIAGRAM

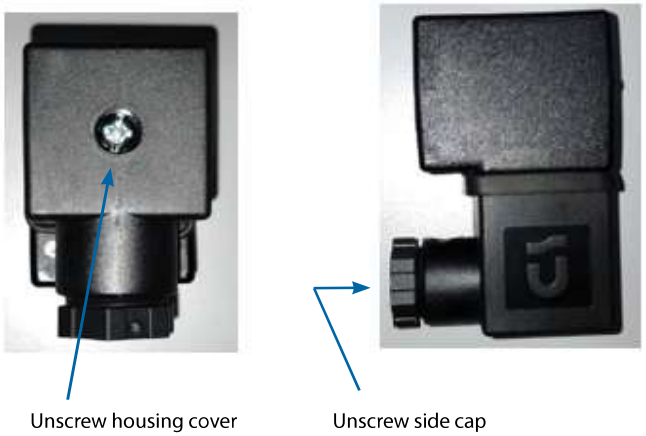
Electrical work must be carried out by a certified electrician according to the local requirements, regulations and laws

3.22 CONNECT SOLENOID VALVE TO THE UNIT CONTROLLER

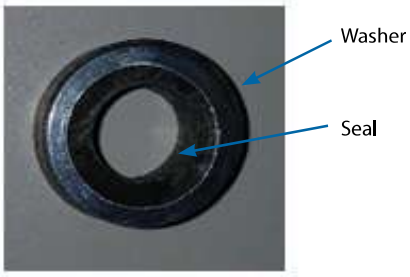
WARNING:- To avoid serious injury from electrical shock, always disconnect the electrical power at the main when replacing or fitting any electrical component.

STEP A. Loosen the top nut and remove the coil from the solenoid valve.

STEP B. Unscrew the housing cover and unscrew the side cap.

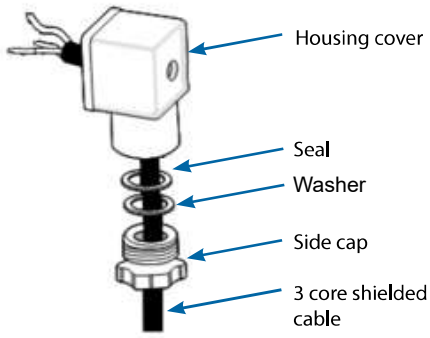


STEP C. Once the side cap has been removed. Take out the washer and seal.

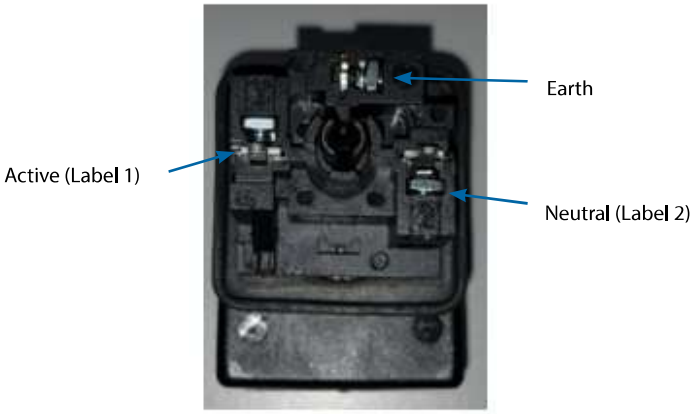


WIRING AND CIRCUIT DIAGRAM

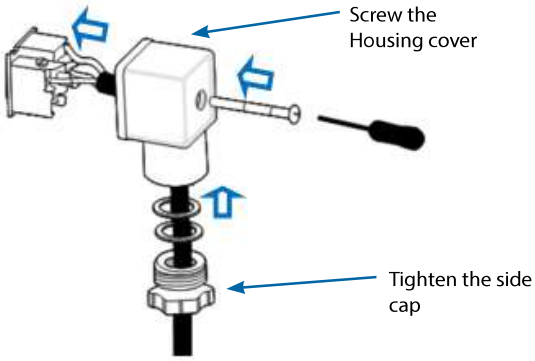
STEP D. Insert the 3 core shielded cable through the side cap, washer, seal and coil housing.



STEP E. Connect the 3 core shielded cable to active brown wire label 1
Connect the neutral blue wire label 2
Connect the earth wire Green/yellow wire label Earth.

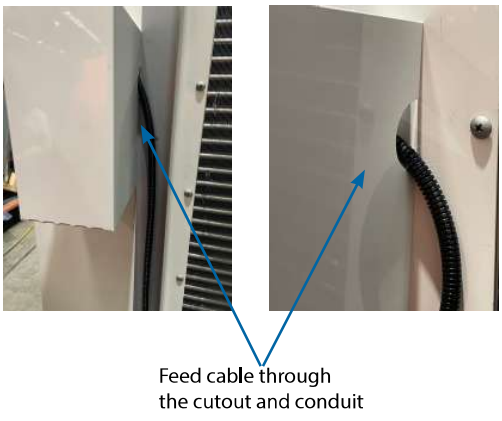


STEP F. Screw back the housing cover and tighten the side cap.



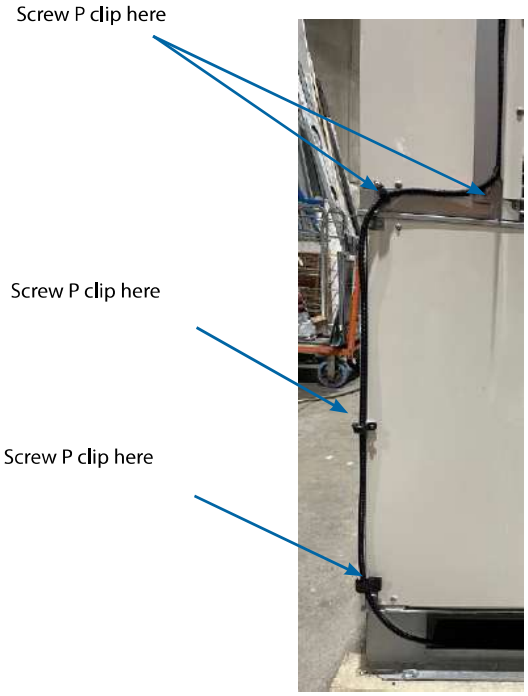
STEP G. Insert the coil back to the solenoid valve and tighten the nut.

STEP H. Feed the 3 core shielded cable down through the cutout provided as pictured and through a conduit.



WIRING AND CIRCUIT DIAGRAM

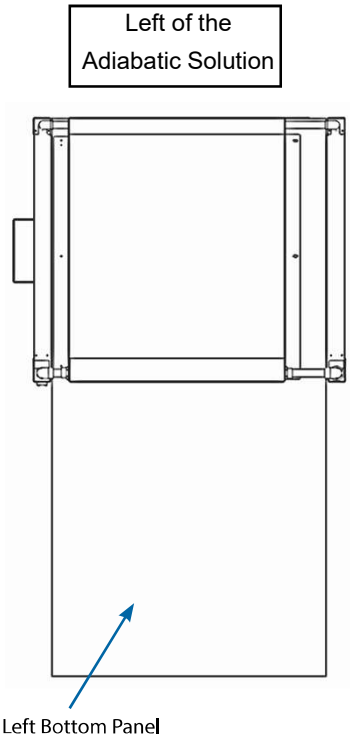
STEP I. Run the cable and conduit down the unit as pictured. Use the cable P clip to hold the conduit. Fasten the P clip by screws.



STEP J. Run the cable and conduit down through to the bottom access hole as shown

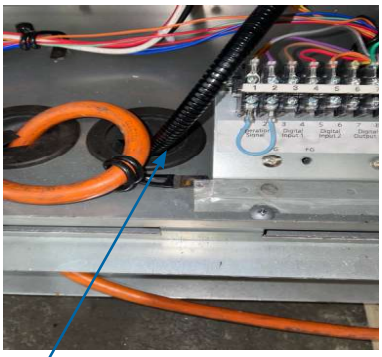
STEP K. Remove the left bottom panel and remove the electrical controller access panel

Note: In order to remove left bottom panel first you need to open the front bottom panel.



WIRING AND CIRCUIT DIAGRAM

STEP L. Keep feeding the cable and conduit toward the right. Make a hole in the eyelet rubber nearest to the terminal block and push the cable through as shown.



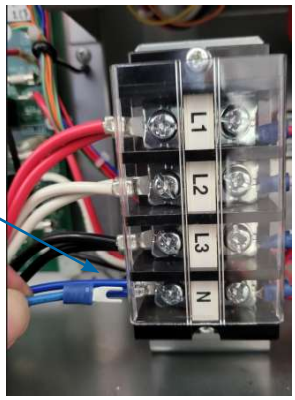
Feed cable towards and up through the eyelet rubber

STEP M. Connect the 3 x 0.75mm2 core cable of the solenoid valve to terminal block digital output 1.
Connect the active brown wire to terminal block pin 8.
Connect the neutral blue wire to the Neutral terminal block label (N).
Connect the Green/yellow earth wire to the Earth screw as shown.

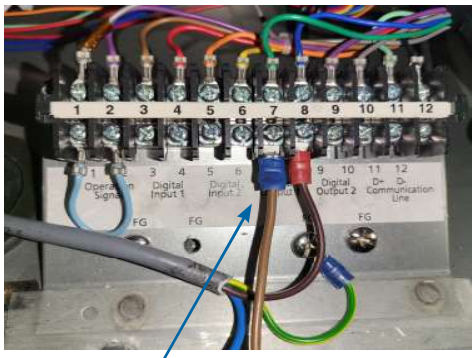
Connect Active (L)

Connect Earth

Connect Neutral (N)



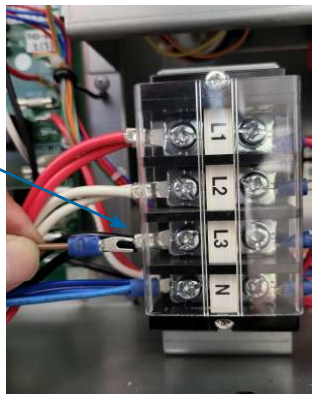
STEP N. Connect a single core cable 0.75mm2 brown wire to terminal block digital output 1 to pin 7.



Connect Active (L)

STEP O. Connect the other end of the active brown wire to terminal block label L3

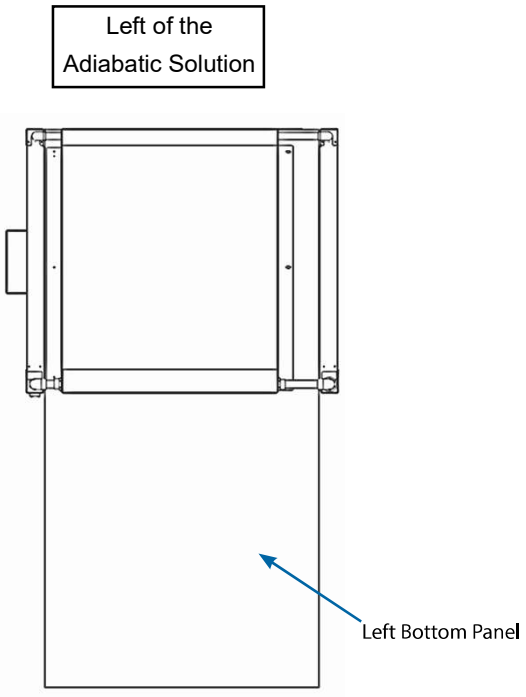
Connect to L3



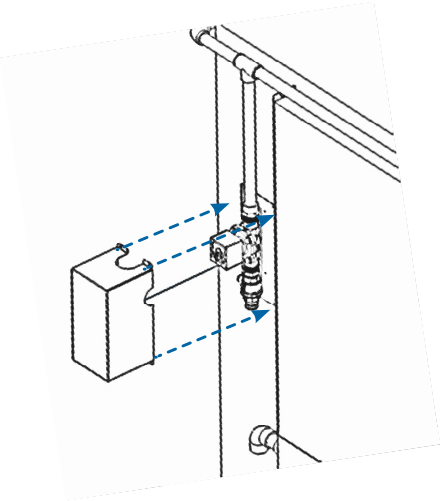
Ensure case earthed when proceeding with electical components. Electric shock or fire may occur if not correctly processed.

WIRING AND CIRCUIT DIAGRAM

STEP O. Screw and closed the electrical controller access panel and Left bottom panel.



STEP P. Mount the valve box onto the valve box bracket and insert screws from the top & bottom to fix it.



Note:- Rechecking electrical termination for tightness. During wiring the solenoid valve. It is a requirement to check the electrical connection for tightness and re-tension where needed prior to powering up the equipment.

Cautions for Electrical Wiring Work

Electrical Shock and Fire Prevention

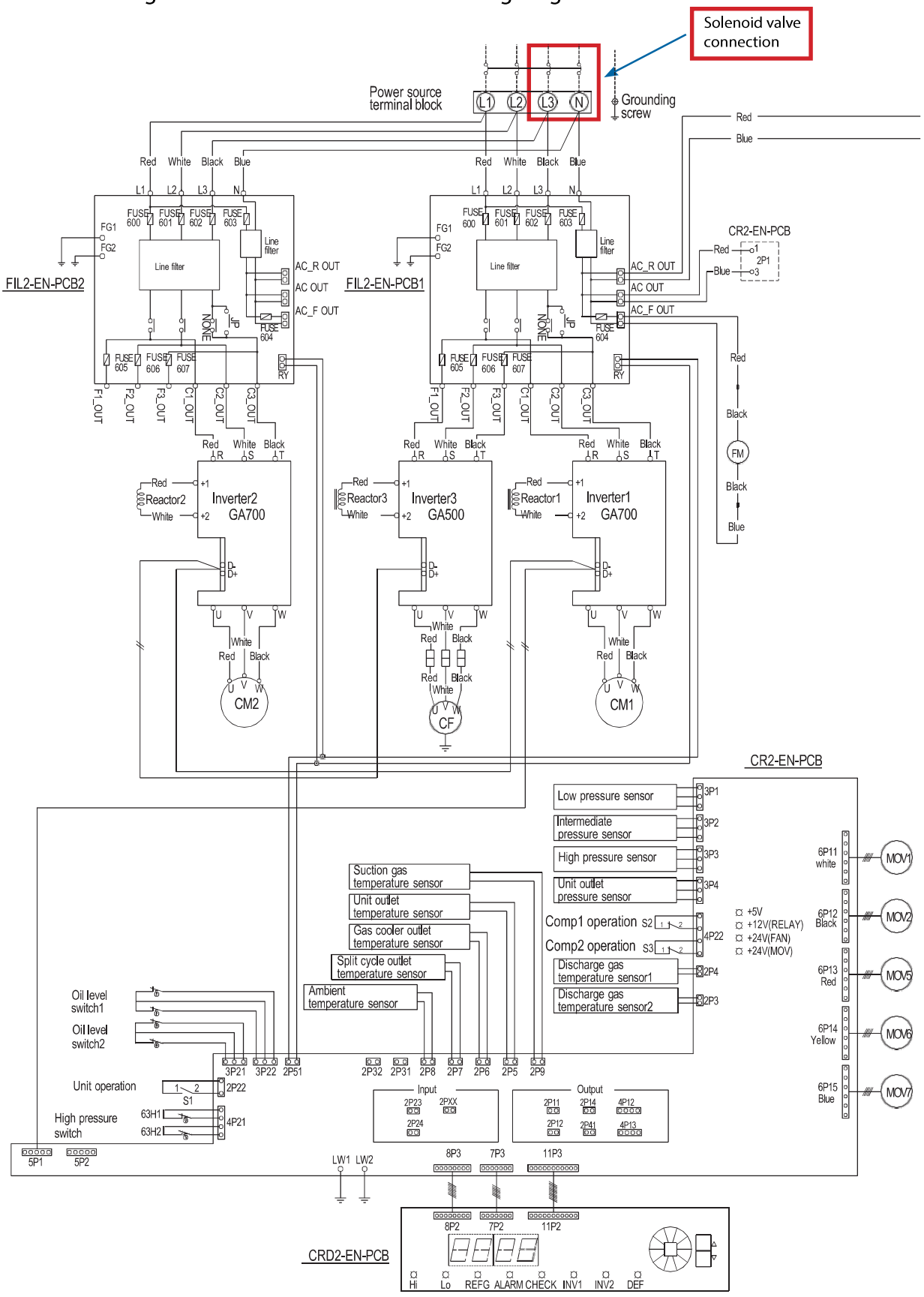
(1) Apply grounding wiring.

(2) The circuit must not be shared with other circuits. (The wire should not be shared with other equipment)

(3) Electric wire should not touch high temperature components(compressor,gascooler,dischargepiping, etc.) and any metal edge.

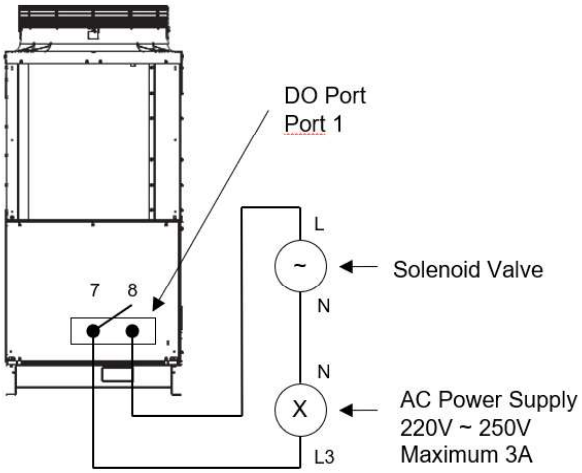
WIRING AND CIRCUIT DIAGRAM

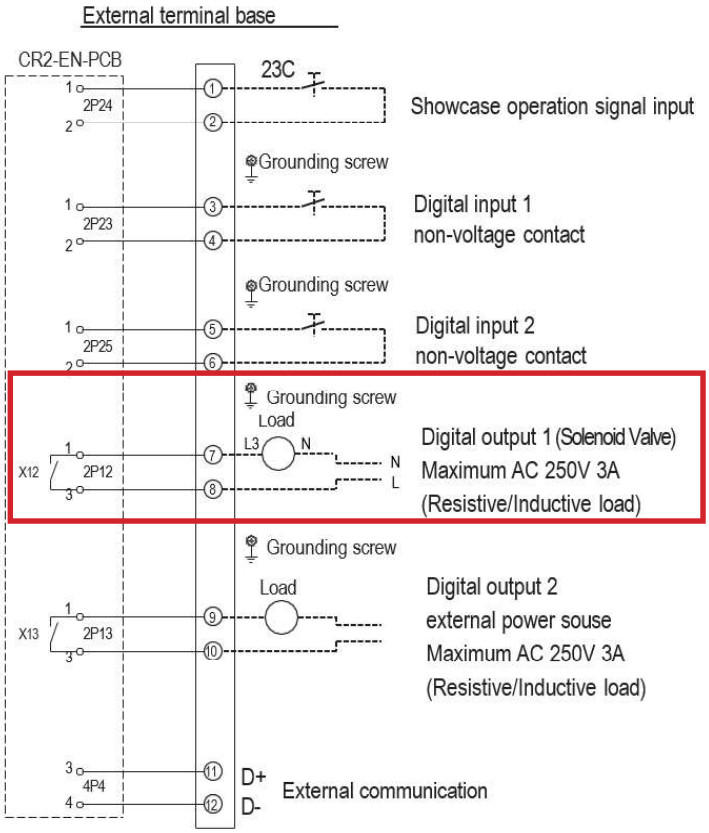
3.23a Adiabatic cooling solution with Solenoid valve wiring diagram

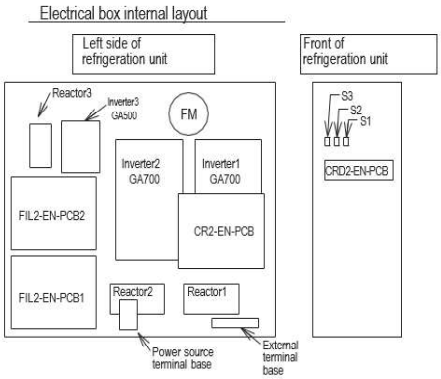


WIRING AND CIRCUIT DIAGRAM

3.23b Adiabatic cooling solution with Solenoid valve wiring diagram







Symbol	Name	
S1	Unit Operation switch	
S2, S3	Compressor operation swich	
CM1, CM2	Compressor motor	
CH1, CH2	Crankcase heater	
CF	Gas cooler fan motor	
FM	Electrical box cooling fan motor	
MOV1, MOV2	Oil control electronic expansion valve	
MOV5	Electronic expansion valve for pressure reduction	
MOV6	Electronic expansion valve for gas return	
MOV7	Electronic expansion valve for liquid return	
CR2-EN-PCB	Compressor capacity control, oil level and other protection control X23: Operation/protection	
EV2	Balance pressure Solenoid valve	
EB1	Earth leakage circuit breaker	*
23C	Compartment temperature adjustment thermostat	*2
63H1, 63H2	High pressure switch	
————	Factory wiring	
----------	Local wiring	

MAINTENANCE AND INSPECTION

4.1 COMMISSIONING

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 solenoid valve is installed the right way up (refer to 3.21 section)
- Check that all pvc pipe are installed correctly

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 pvc pipe are not leaking
- Check if the evaporative cooling pads are fitted and secure in place.
- Check that the water hose to the solenoid valve is not leaking.
- After start-up, check that the 20HP refrigeration unit is running correctly.

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, this unit should be well ventilated and all debris removed.

4.3 DAILY CHECKS

- Check for any water leakage from pvc pipe
- Check for any water leakage connection from water hose to solenoid valve
- Check evaporative cooling pads are secure in place.
- Visually check the 20HP refrigeration unit for any damage and take appropriate remedial action (Call a licence technician or call Hussmann)

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 20HP refrigeration unit should be carried out by qualified refrigeration and electrical engineers on a six monthly basis. Please contact Hussmann Pty Ltd or your service provider.

DO NOT USE:

- DO NOT use abrasive, solvent, ammonia or oil-based cleaners.
- 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 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 unit.

CLEANING & MAINTENANCE

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 termination has been tightened once more.

Check all electrical connections for tightness and re-tensioned where needed prior to powering up the 20HP unit.

1. Isolate power.
2. Remove the evaporative cooling pads and clean the drain extrusions and drain outlets accordingly.
3. Ensure the drain is free flowing. Refrain from adding excessive water that will not be able to be drained as rapidly as poured.
4. Inspect the evaporative cooling pads for sign of worn, deteriorating or tear. If required ideally replace them (See evaporative cooling pad replacement section 4.5).
5. Visual check solenoid valve for wear and tear or broken. If broken (Call a licence electrician to replaced soleniod valve)
6. Ensure all cable connections, including screw terminals, earth leads and straps, are secure.
7. Ensure that the correct fuse rating and type is fitted for all circuits.
8. Ensure that there are no refrigerant leaks.
9. Check that all case panels, pvc pipe and extrusions are secure and undamaged.
10. Check for rust or paint damage.
11. Safely switch power to the unit back on.

With case power turned on:

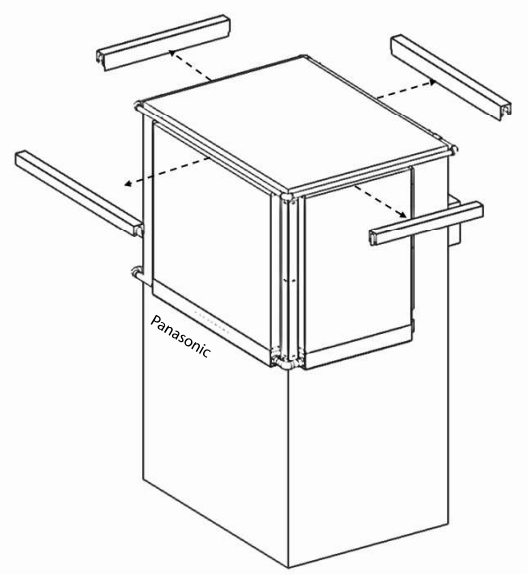
12. Check that solenoid valve and controls are working correctly.
12. Check for any water leakage from pvc pipe
13. Check for any water leakage connection from water hose to solenoid valve
14. Check evaporative cooling pads are secure in place.
15. Allow the unit to attain correct working condition.

NOTE: The structural components of adiabatic cooling solution do not last permanently but include those wearing out in a certain period of time.

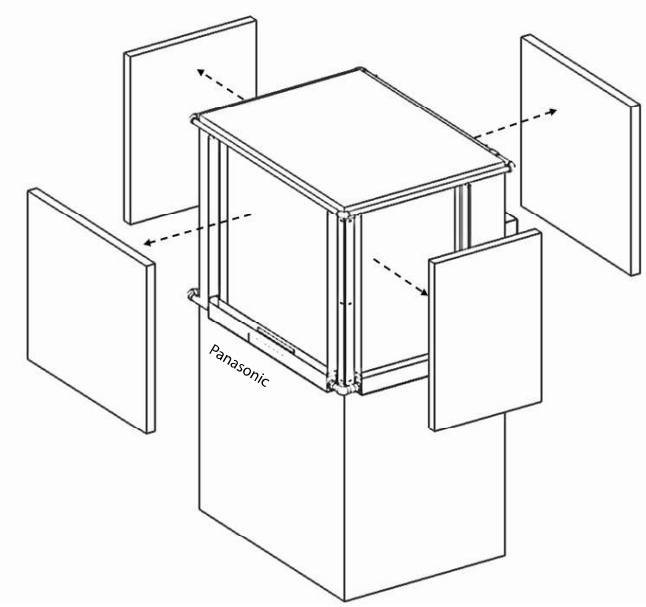
OPTIONAL: To prolong the evaporative cooling pad lifespan, it is recommended to install pre-filter on the air-inlet side. This is to avoid dust clogging in the pads.

EVAPORATIVE COOLING PAD REPLACEMENT

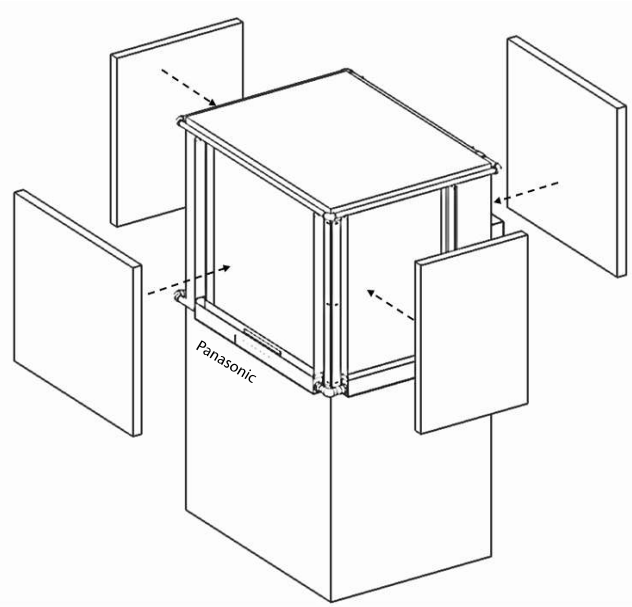
4.5 Unscrew the top brackets from the Left hand and Right hand brackets from all sides of unit.



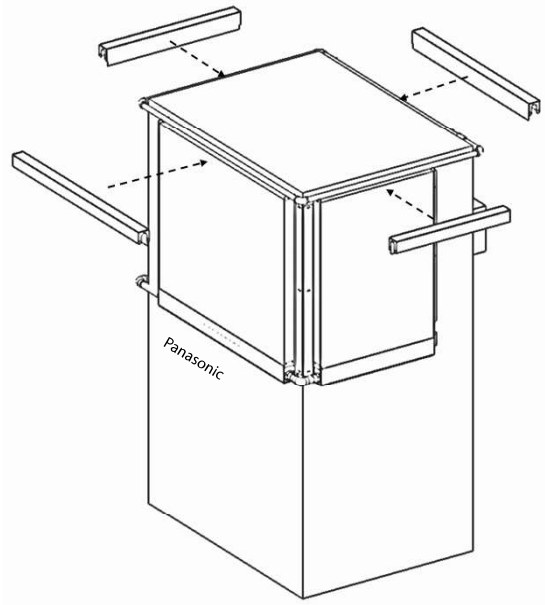
4.51 Remove the old evaporative cooling pads.



4.52 Place the new evaporative cooling pads.



4.53 Screw back the top brackets to the LH and RH brackets



SPRINKLING CONTROL & TEMPERATURE SETTINGS

5.1 CONTROLLER SETTINGS

Setting method of sprinkling control for 20HP CO2 condensing unit

Target model: OCU-CR2000VF8(SL)
OCU-CR2000VF8A(SL)

To activate Adiabatic solution

1. Turn ON No.7 and No.8 of 8P DIP switch (SW13).
2. Set the rotary switch (SW11) to "FREQ"
3. Operate the (Up)/ (Down) buttons and change the setting to DO port 1. Change to Out 1
4. Set the rotary switch (SW11) to "OPERATION".
5. Turn OFF No. 7 and No.8 of 8P DIP switch (SW13).

Set Adiabatic ON/OFF ambient temperature

1. Turn ON No.3 of 8P DIP switch (SW13).
2. Set the rotary switch (SW11) to "ON"
3. Operate the (Up)/ (Down) buttons and Change to Out 1. Adiabatic ON temperature (20°C~ 40°C) Set to 32 Degrees
4. Set the rotary switch(SW11) back to "OFF".
5. Operate the (Up)/ (Down) buttons and Change to Out 1. Adiabatic OFF temperature by difference from ON value (1C to 20C). Set to 4
6. Set the rotary switch (SW11) to "OPERATION"
7. Turn OFF No.3 of 8P DIP switch (SW13).

Restart unit

DECOMMISSIONING & DISPOSAL

6.1 DECOMMISIONING

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

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

6.2 DISPOSAL

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

75% of the materials in this refrigeration unit are able to be recycled; the materials in this case are as follows;

- Sheet Metal and other various metals.
- Copper / Aliminum
- Cardboard
- PVC

Remaining by commercial waste management

TROUBLESHOOTING

7.1 TROUBLESHOOT TABLE

ISSUE	POSSIBLE REASON	REMEDIAL ACTION
Solenoid Valve	Water flow is not initiated while temperature reaching to its limit.	Check Solenoid valve. Check its settings, power and lose connection.
Low water pressure	This can be due to the position of the manual valve.	Ensure that the manual ball valve is at its open position and then check if the water piping is clogged. It may also be due to low water supply pressure or pipe clogged which may require cleaning or pipe replacement.
Water leakage	PVC pipe broken or not seal correctly. Drain bracket broken or not seal correctly.	Check pipe fittings and ensure that they are fasten tightly and used plumbing seal taped. If there is any leakage from the drain brackets check the water sealant hasn't degraded. If leakage still present resealing of the drain brackets using silicon may be required.
Drain extrusions blocked	Drain brackets might be clogged with dirt.	Remove the evaporative cooling pads and clean the drain extrusions and drain outlets accordingly.
Evaporative cooling pad	Worn pad and sign of Deteriorating	Inspect the evaporative cooling pads and if required ideally replace them within 1-2 years to avoid clogs of dirt

7.2 ACTION AT THE TIME OF FAILURE

When the adiabatic cooling solution fails to operate, close the water supply manual ball valve to avoid over flow. To avoid failure recurrence, use caution for the following.

(1) To avoid recurrence of the same failure, execute reliable failure diagnosis and identify the true cause before starting a repair.

(2) When the piping is to be corrected, be sure to close the water supply and disconnect the solenoid valve from the power supply. Disconnect is to be undertaken by qualified persons only.

(3) Always check and if necessary, shut down power and restart the unit.

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

APPENDIX

8.1 APPENDIX 1 - Risk Analysis

HAZARD	CONTROL MEASURES
Electrical - Replacement of solenoid valve	Request a service call. Electrically isolate unit before works
Ergonomic - Moving/ positioning/ adjusting unit	Staff must be trained in the correct procedures for setting up unit and ergonomic practices. PPE must be worn
Falling -Connecting wiring during installation	Use of barriers & fall arrest systems as appropriate & in accordance with State & Territory Legislation. Safe working at heights
Falling - Climbing on 20HP refrigeration unit	Staff must be trained in OH&S procedures. MUST not climb on unit.
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.

APPENDIX

8.2 APPENDIX 2 - 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.

Please include the following:

Customer site location.
Model number of product.
Reason for warranty.

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

8.3 APPENDIX 3 - DISCLAIMER

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.

8.4 APPENDIX 4 - LIABILITIES

The manufacturer is not liable for:

- Defects in the electrical power supply
- Failure to comply with instructions
- Interventions carried out by unqualified/ untrained personnel
- Improper, incorrect and unreasonable use of the unit
- Non-compliance of maintenance and cleaning schedules as recommended by Hussmann.
- Use of accessories that are not provided nor authorized by Hussmann.
- Unauthorized modifications and interventions
- Incorrect installation not performed in accordance with the norms indicated
- Use of non-original spare parts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