ESP Platinum QUE
Split Ducted Unit - 3 Phase
Installation and Commissioning Guide - Outdoor

Model Numbers
CRQ2-16AT
CRQ3-18AT
CRQ5-21AT
CRQ5-24AT

IMPORTANT NOTE:
Please read this manual carefully before installing or operating your air conditioning unit.

That's better. That's Actron.

ActronAir

Table of Contents

01. Inspections

01.01. Product Inspections

Check your air conditioning unit and all items against the invoice upon receiving your shipment. Inspect the unit, components and accessories for any sign of damage. If there is any damage to the unit, contact ActronAir Customer Care Department immediately on: **1300 522 722** to obtain a Goods Return Number.

Check the unit nameplate to verify the model, serial number, electrical rated specifications are correct.

01.02. Codes, Regulations and Standards

The installer and/or contractor assumes responsibility to ensure that unit installation complies with the relevant council, state / federal codes, regulations and building code standards. All electrical wiring must be in accordance with current electrical authority regulations and all wiring connections to be as per electrical diagram provided with the unit.

02. General Information

The ActronAir Platinum-Series Split Ducted air conditioning units are designed for applications where superior performance, high efficiency, reliability, supply air quality and quiet operation are the prime priorities. The units are built with the latest technology, advanced variable speed driven compressor, EC indoor fans, low-noise outdoor fans and an intelligent electronic control.

For optimum efficiency, your air conditioning unit will deliver just the right amount of cooling or heating capacity you demand. Even in extreme conditions, the unit will still supply the required demand at peak performance.

Energy Efficient Refrigeration Circuits

The ActronAir Platinum-Series Split Ducted system is designed with a variable capacity refrigeration circuit that delivers only the amount of cooling or heating actually required to maintain your desired comfort at the most optimum efficiency.

The refrigeration circuit consists of:

- High efficiency variable capacity scroll compressor with individual compressor drive
- Hydrophillic coated condenser coil designed for optimum performance and efficiency with corrugated fins and riffled tubing
- Hydrophillic coated evaporator coil designed for optimum performance and efficiency with lanced fins and riffled tubing
- Electronic expansion valve (EEV), to maintain efficiency at different operating conditions

Evaporator Section

The evaporator section has EC fans which deliver just the right amount of airflow, depending on requirements. The fans provide superior performance for your comfort at optimum efficiency:

- Highly efficient variable speed EC motor that uses less energy than the traditional AC motor.
- Easy indoor fan commissioning via intelligent controllers.
- Low noise operation.

Condenser Section

Uses two (2) axial fans and an Inverter Compressor, with the following features:

- Efficient Tru-Inverter Compressor and Inverter Drive combination
- Efficient axial fans with direct drive AC motor
- Low noise operation

Electrical Section

The electrical section is composed of a panel for controls and a separate panel enclosure for the variable speed drive.

Durable Design and Construction

ActronAir is an Australian manufacturer with proven high quality air conditioning products. Known for their durability and reliable performance, these products are designed and built to withstand the extreme weather conditions.

The heavy gauge zinc and galvanized steel cabinet, with powder coated epoxy enamel finish, resists the toughest conditions. The louvered outdoor coil guard protects the condenser coil from any potential damage brought by hail, stones and other solid objects that may be projected to the unit.

Blue Hydrophillic coil fins provide protection to your heat exchangers and enhanced heat transfer with increased performance efficiency.

System Flexibility

The ActronAir Platinum-series of air conditioning units is the first choice for residential, office, schools and other air conditioning facilities applications, both for new construction or retrofitting projects.

Refrigerant Handling and Accountability

ActronAir strongly urges that all service technicians make every effort possible to reduce the emission of refrigerants to the atmosphere. Everyone must act in a responsible manner to conserve refrigerants in accordance to the industry code of practice.

03. Safety Instructions

- Only licensed HVAC technicians* should install and service this air conditioning equipment. Improper service or alteration by an unqualified technician could result in significant and major damage to the product or property which may render your warranty null and void. Such unqualified service could also lead to severe physical injury or death. Follow all safety instructions in this literature and all warning labels that are attached to the equipment.
- Prevailing WH&S regulations must be observed and will take precedence to the safety instructions contained on this manual. Safe work practices and environment must be the paramount importance in the performance of all the service procedures.
- Ensure that unit installation complies with relevant council regulations and building code standards.
- All electrical wiring must be in accordance with current electrical authority regulations and all wiring connections to be as per electrical diagram provided.
- Secure the fans against accidental contact. Beware of pinch point and sharp edges which can cause cutting injury.
- Always wear appropriate PPE, remove any dangling jewellery and protect long hair by wearing a cap.
- Make sure that safety guards and panel covers are always firmly secured and not damaged.
- This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely. Young children should be supervised to ensure that they do not play with the appliance.
- Installer must incorporate a means of electrical disconnection (isolator) in the sub mains fixed wiring in accordance with AS/NZS 3000:2018 (also known as Australian Wiring Rules).
- Secure the power cords and control cables that goes in/out the unit. Use the cable ties provided in the control box.

*Qualifications required will be appropriate Electrical, Refrigeration and Refrigerant Handling License & Training dependent on local State/Territory regulations.

⚠ DANGER

Hazardous Voltage - Risk of Electrocution.
TURN-OFF the power from main isolator before proceeding with any service work of the unit. Observe proper LOCK-OUT/TAG-OUT (LOTO) procedures for electrical appliances in order to prevent accidental switching-on of the power supply.

⚠ WARNING

EC Motors are fitted with high power capacitors and can have dangerous residual voltages at motor terminals after power has been isolated. Wait at least 5 minutes after power isolation and test for any residual voltage before beginning service work.

⚠ CAUTION

Beware of Rotating Fans!

Ensure that indoor & outdoor fans are isolated and have come to a complete stand still before servicing the equipment. Beware of pinch point and sharp edges which can cause cutting injury. Secure the fans against accidental contact.

Always wear appropriate PPE and remove any dangling jewellery and protect long hair by wearing a cap. Ensure that no loose clothing can be caught / entangled in moving parts.

VISUAL INSPECTION & WORK ASSESSMENT

Work areas and conditions must first be assessed and evaluated for any potential hazardous conditions. It is also important to be familiar with the unit parts and components before proceeding with any service task.

04. Installation Information

All service technicians handling refrigerant must be licensed to handle refrigerant gases.

Recover and Recycle Refrigerants

Never release refrigerant to the atmosphere! It is an offence in Australia to do so. Always recover, recycle and reuse refrigerants. When removing from the system, properly contain and identify refrigerants in its dedicated container for proper disposal and/or storage. Always consider the recycle or reclaim requirements of the refrigerant before beginning the recovery procedures. Obtain a chemical analysis of the refrigerant if necessary. Refer recovered refrigerant and acceptable refrigerant quality to existing standards and regulations.

Refrigerant Handling and Safety

Consult the refrigerant manufacturer's safety data sheet (SDS) for information on proper handling and to fully understand health, safety, storage and disposal requirements. Use the approved containment vessels and refer to appropriate safety standards. Comply with all applicable transportation standards when shipping refrigerant containers.

Service Equipment and Recovery Procedures

Always use refrigerant reclaiming equipment in order to minimise refrigerant emissions. Use equipment and methods which will pull the lowest possible system vacuum while recovering and condensing refrigerant. Equipment capable of pulling a vacuum of less than 500 microns is required.

Do not open the system to the atmosphere for service work until refrigerant is fully removed and/or recovered. Perform refrigeration system evacuation, prior to charging, in accordance with AIRAH / IRHACE Refrigerant handling code of practice.

Let the unit stand for 1 hour and with the vacuum not rising above 500 microns. A rise above 500 microns indicates a leak from the system and a leak test is required to locate and repair any leak.

⚠ CAUTION

A leak test is always required on any repaired section of the refrigeration system.

Charge refrigerant into the system only after the equipment does not leak or contain moisture. Ensure that R410A is only charged in liquid form. Take into consideration the correct amount of refrigerant charge specified for the system to ensure efficient unit operations. When charging is complete, reclaim refrigerant from charging lines into an approved refrigerant container. Seal all used refrigerant containers with approved closure devices to prevent unused refrigerant from escaping to the atmosphere. Take extra care to maintain all service equipment directly supporting refrigerant service work such as gauges, hoses, vacuum pumps and recycling equipment.

Use only cleaning solvents that do not have ozone depletion factors. Properly dispose of used cleaning materials.

INSTALLATION PREPARATION (Pre-Installation considerations)

The following items must be considered before beginning the unit installation:

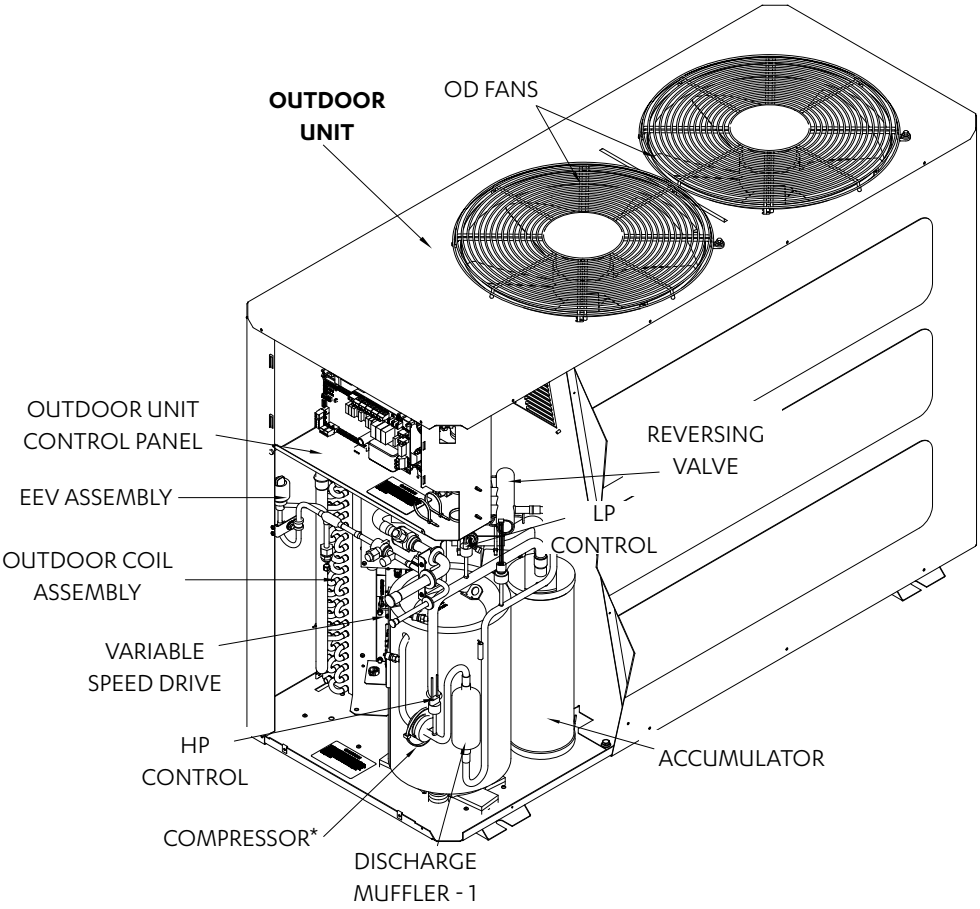
- Verify the unit capacities and ratings with the unit nameplate
- Make certain the floor or foundation is level, solid and has sufficient structural strength to support the unit and accessories weight.
- Install anti-vibration rubber (installer to supply) under **all of the unit's feet** to help reduce noise and minimize vibration transfer through the foundation. Ensure that all anti-vibration rubbers are rated to provide stable support without impairing the unit's structural integrity.
- Diameter or width of anti-vibration rubber's must be at least equal to the width of the actual feet to prevent deformation overtime.
- Preferably use anti-vibration rubber pads on residential units (up to 26kW split ducted).
- Allow minimum recommended clearances for periodic maintenance and service access.
- Allow sufficient space above the unit for the outdoor air discharge. Condenser air inlet, located on the coil side of the unit, requires sufficient airflow clearance for the optimum unit performance.
- Note the conditioned supply air and return air location. Ensure sufficient spaces are allocated for these purposes.
- Refer connection and location of condensate drain in the unit drawing and dimensions section of this manual.
- Wiring connections must be in accordance with the wiring diagram provided with the unit.
- Make sure all wirings are in accordance with local electricity authority regulations and standards.
- Do not install the unit close to an area where there is a danger of fire due to volatile, explosive, flammable and/ or hazardous materials.
- Ensure that spaces around the unit are free from any obstructions for optimum unit performance.
- Installer to ensure correct size/type that main circuit breaker and cable is installed in unit sub-mains to protect the sub-mains and unit wiring.
- Installer to ensure correctly rated residual current device (RCD) is installed as per AS/NZS 3000:2018 (also known as Australian Wiring Rules).
- Secure the power cords and control cables that goes in/out the unit. Use the cable ties provided in the control box.

IMPORTANT NOTES TO INSTALLER

This outdoor unit is designed to match only with specific ActronAir indoor unit as specified in the Technical Selection Catalogue.
This unit is designed for use with R410A refrigerant only.
The unit is supplied with factory charged R410A refrigerant. Be aware of all the relevant regulations concerning the handling of refrigerant.

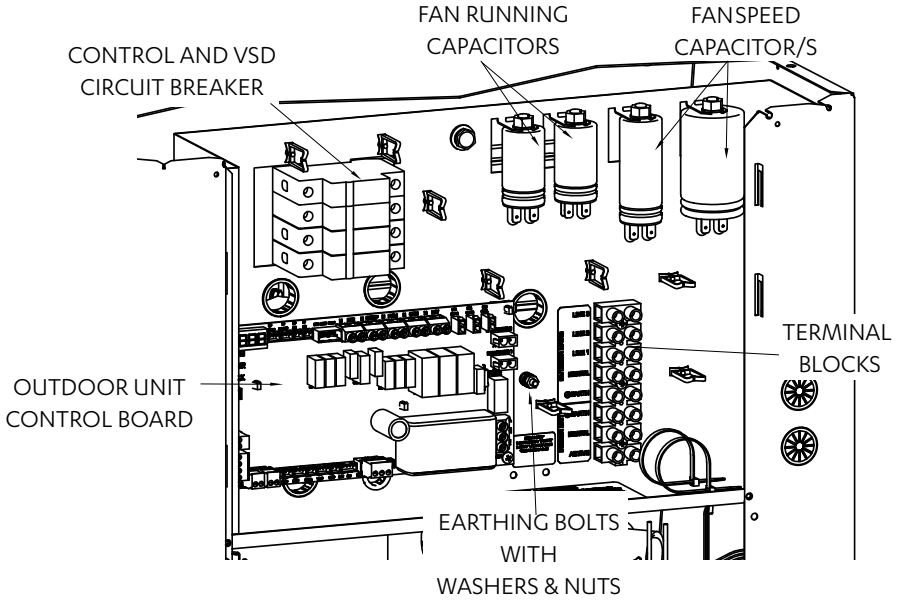
05. Components Overview

OUTDOOR UNIT COMPONENTS OVERVIEW



* Compressor has crankcase heater and wrapped with Compressor Jacket.

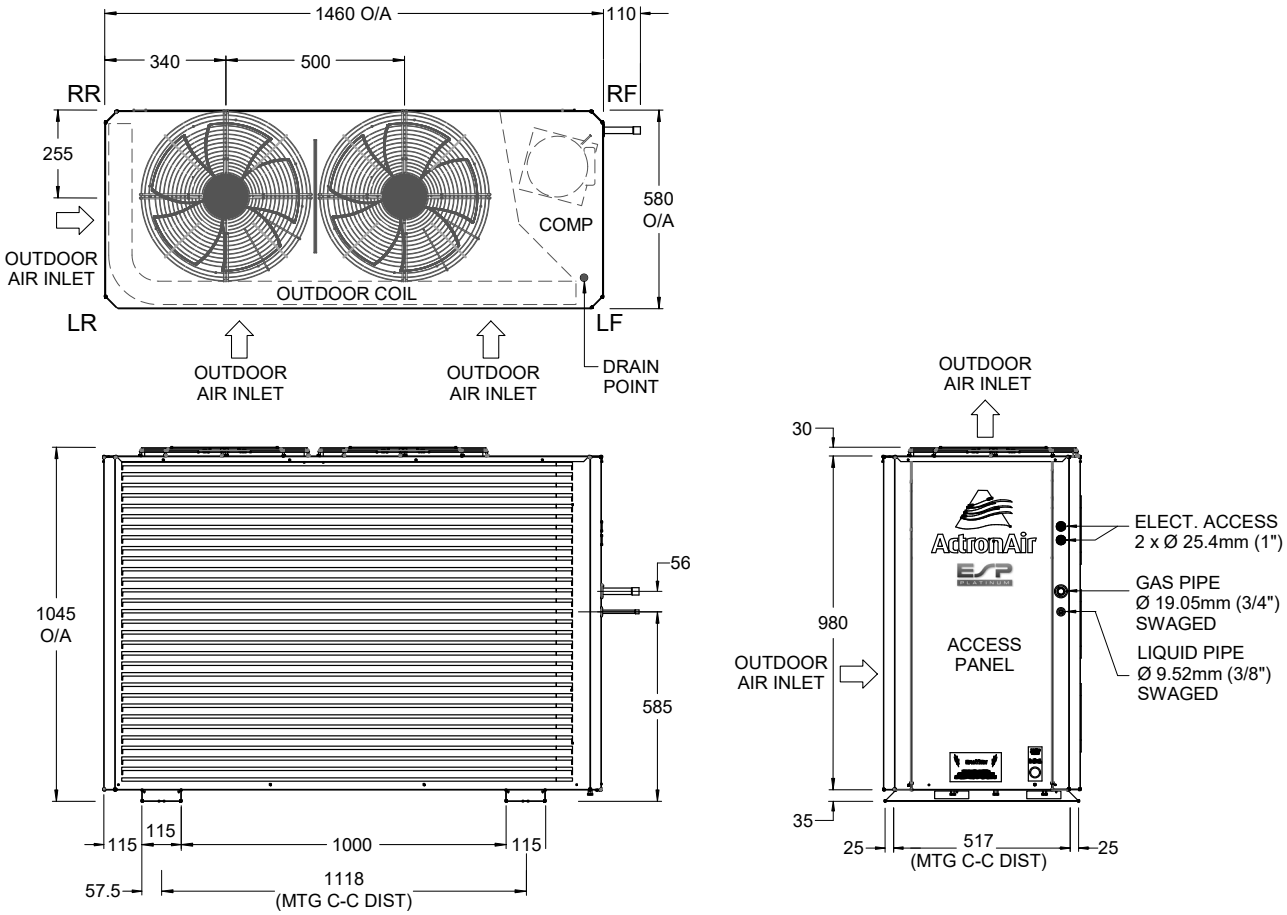
OUTDOOR UNIT ELECTRICAL PANEL OVERVIEW



06. Outdoor Unit Dimensions / Clearances

06.01. Unit Dimensions and Weights

CRQ2-16AT / CRQ3-18AT

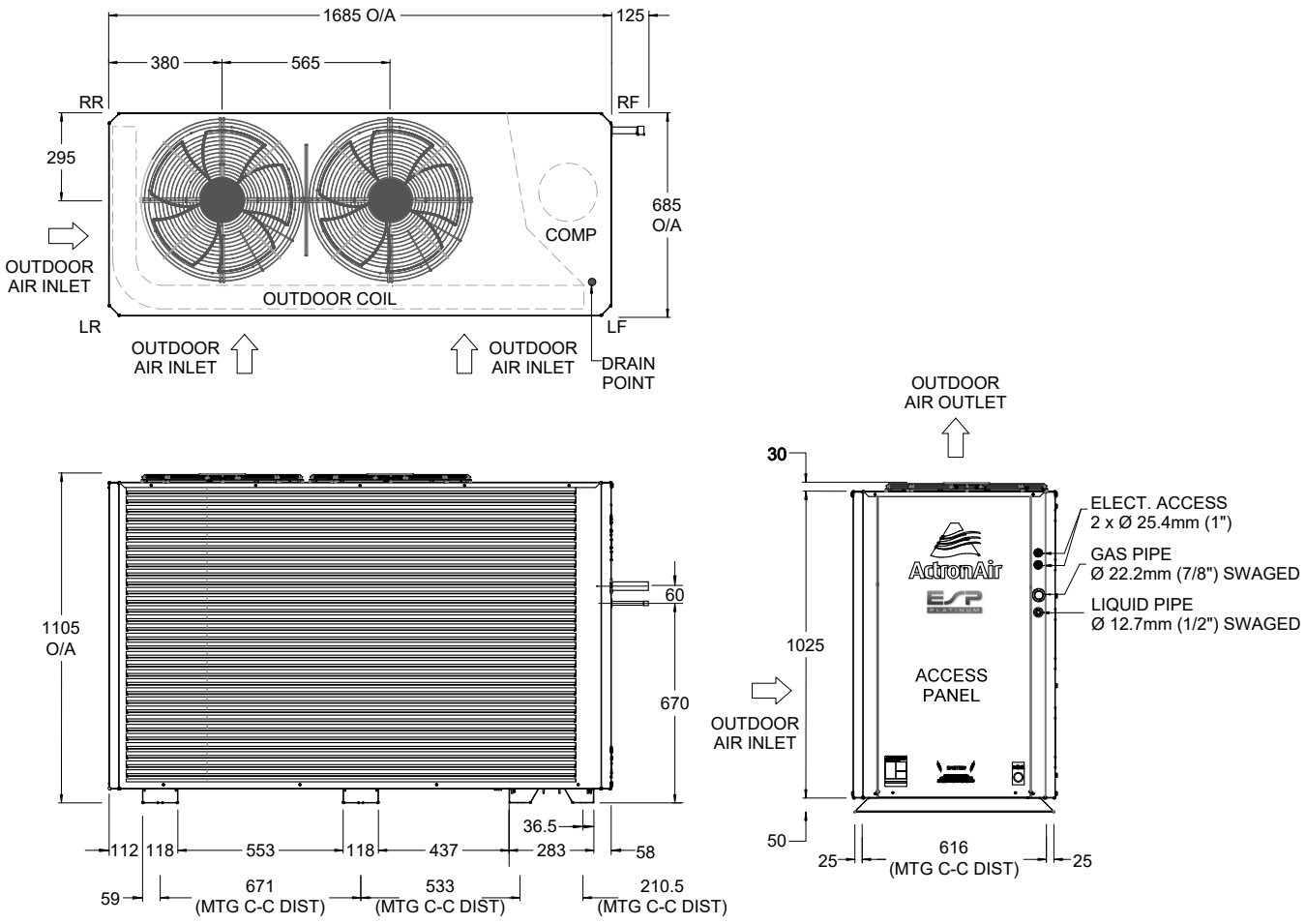


NOTE

- All dimensions are in mm unless specified.
- Do not scale drawing.
- MTG C-C DIST = Mounting Center to Center Distance

UNIT MODEL NUMBER	UNIT WEIGHT (kg)	CORNER WEIGHTS (kg)			
		RR	RF	LR	LF
CRQ2-16AT	147	33	33	16	65
CRQ3-18AT	158	36	34	20	68

CRQ5-21AT / CRQ5-24AT

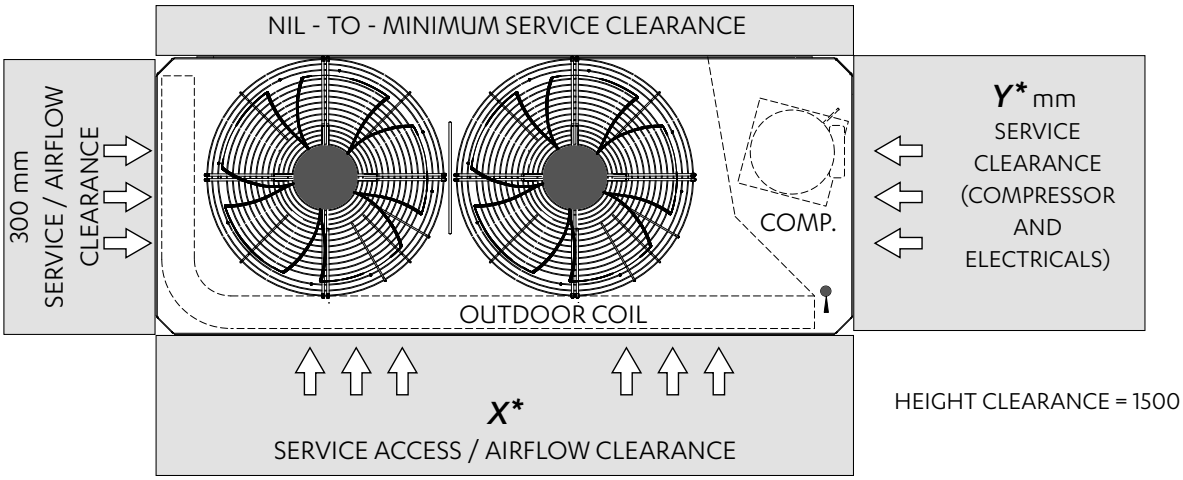


NOTE

- All dimensions are in mm unless specified.
- Do not scale drawing.

UNIT MODE NUMBER	UNIT WEIGHT (kg)	CORNER WEIGHTS (kg)			
		RR	RF	LR	LF
CRQ5-21AT	203	55	41	16	91
CRQ5-24AT	214	58	42	20	94

06.02. Minimum Service Access Areas and Airflow Clearances



*See table below.

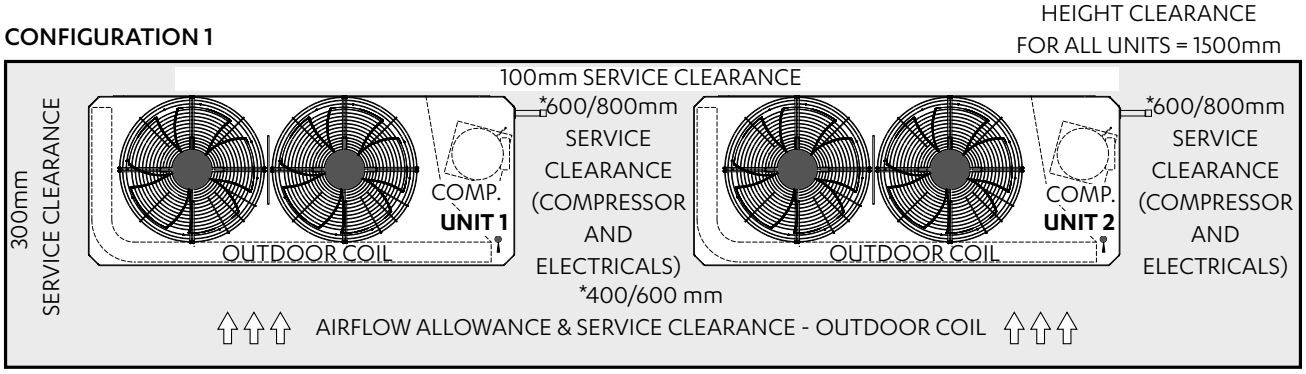
	Clearance Dimensions	
	X	Y
CRQ2-16AT / CRQ3-18AT	400	600
CRQ5-21AT / CRQ5-24AT	600	800

NOTES

- Do not scale drawing. All dimensions are in mm unless specified. Refer to corresponding unit dimensional drawing for mounting hole details.
- Service Access Areas & Spaces for Airflow Clearances given above are suggested minimum based on the condition that the spaces around the units are free from any obstructions and a walkway passage of 1000mm between the units or between the unit and the outside perimeter is available.
- Under all circumstances, condenser air must not recirculate back onto condenser coil. Keep all clearances free of any obstructions.
- Minimum service access areas & spaces for airflow clearances are responsibilities of the installer, ActronAir will not be held liable for any extra charges incurred due to lack of access and space for airflow.
- Maximum External Static of Outdoor Fans is **5 Pa**.
- STACKING OF UNITS: Ensure that minimum airflow and clearances are met.

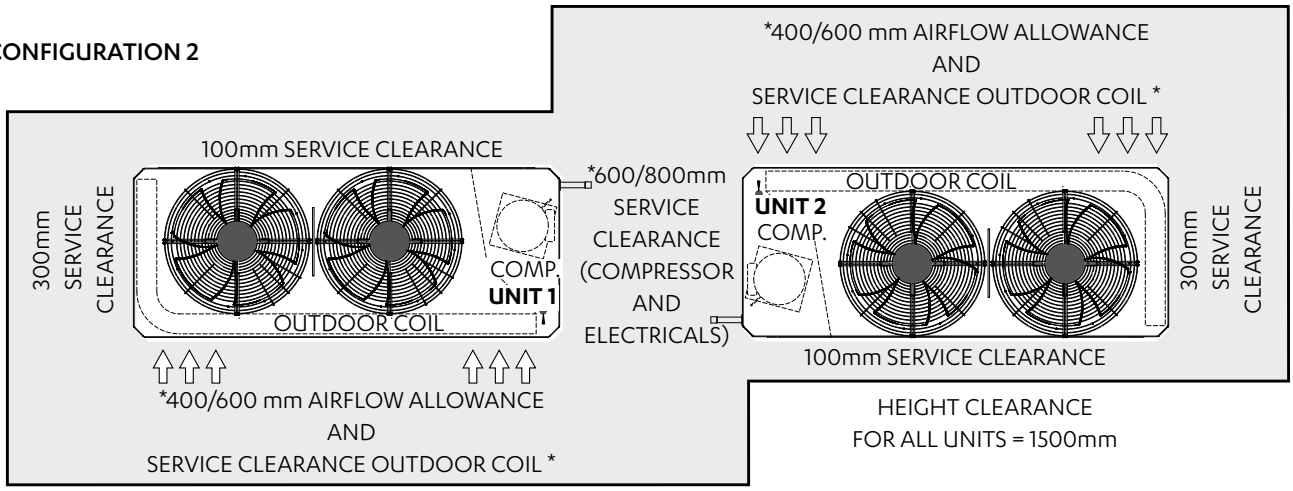
06.03. Banking of Units

CONFIGURATION 1

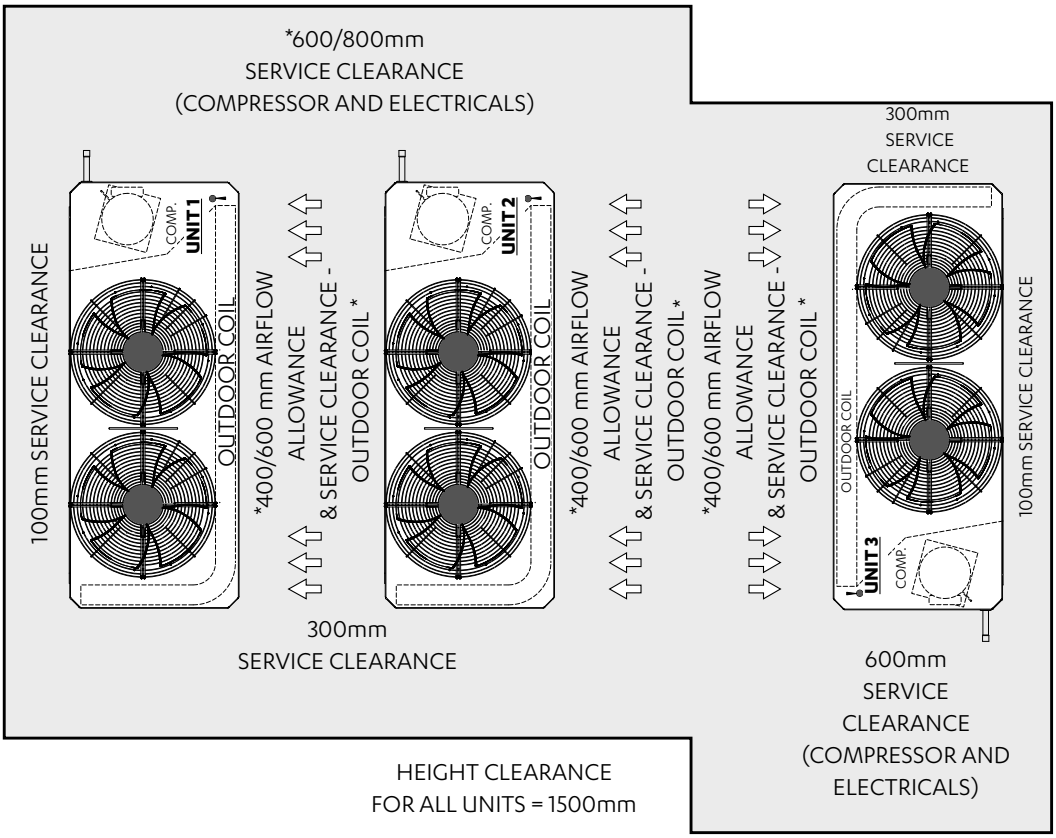


*Clearances will vary depending on model, see clearance table dimension on Section 06.02.

CONFIGURATION 2



CONFIGURATION 3



*Clearances will vary depending on model, see clearance table dimension on Section 06.02.

07. Unit Lifting Procedure

⚠ WARNING

WH&S regulations must be observed and will take precedence during lifting process.

07.01. Crane Lifting Method

Crane lifting method is recommended for high rise lifting

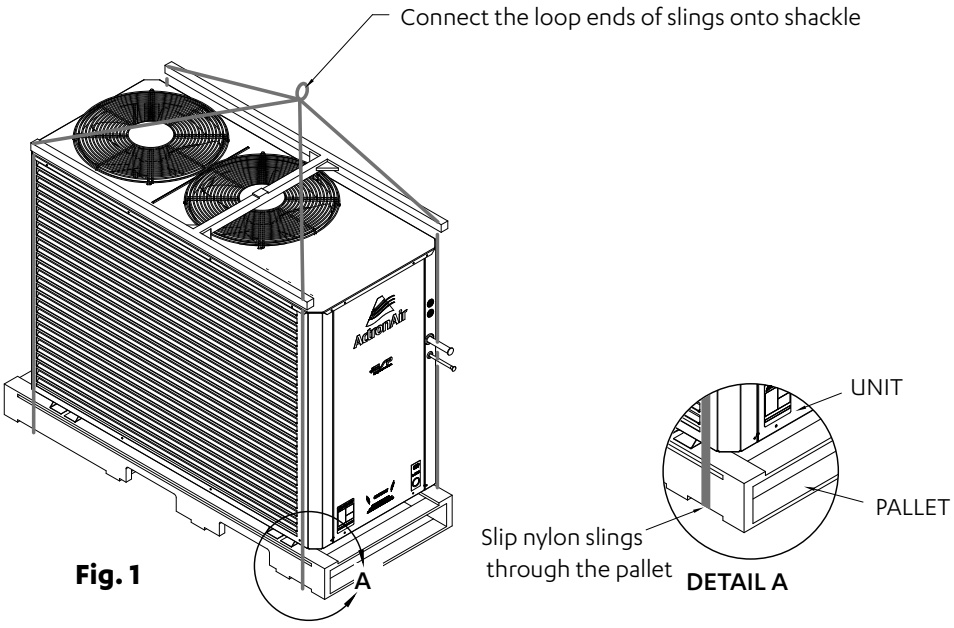


Fig. 1

EQUIPMENT REQUIRED FOR CRANE LIFTING:

- 1 x shackle
- 2 x nylon slings
- spreader bar

Refer to Unit Dimension and Weight section for unit weight before selecting shackles and slings.

PROCEDURE:

1. Slip nylon slings through the pallet as shown in Fig. 1.
2. Use a Bow or Dee shackle to connect the slings.
3. Ensure slings are protected by rubber pads or similar if slings are draped across unit edges, corners, or air grilles . This will prevent the unit from being damaged during lifting.
4. SPREADER BAR must be used when lifting the unit. Ensure that the spreader bar is slightly larger than the base.
5. Test lift the unit to determine exact unit balance and stability before hoisting it to the installation location.

07.02. Fork Lift Method

⚠ DANGER

Make sure rigging equipment, accessories and plant are sufficiently and safely capable to lift the unit in order to prevent potential damage to property, severe personal injury or death. Please check unit weight and weight distribution points on unit drawing dimensions section.

PROCEDURE:

1. To move the unit around with a forklift, insert the fork tines through the pallet, as shown in Fig. 2.
2. Only fork the unit through compressor end or side of the unit. (See illustration for location of compressor end).

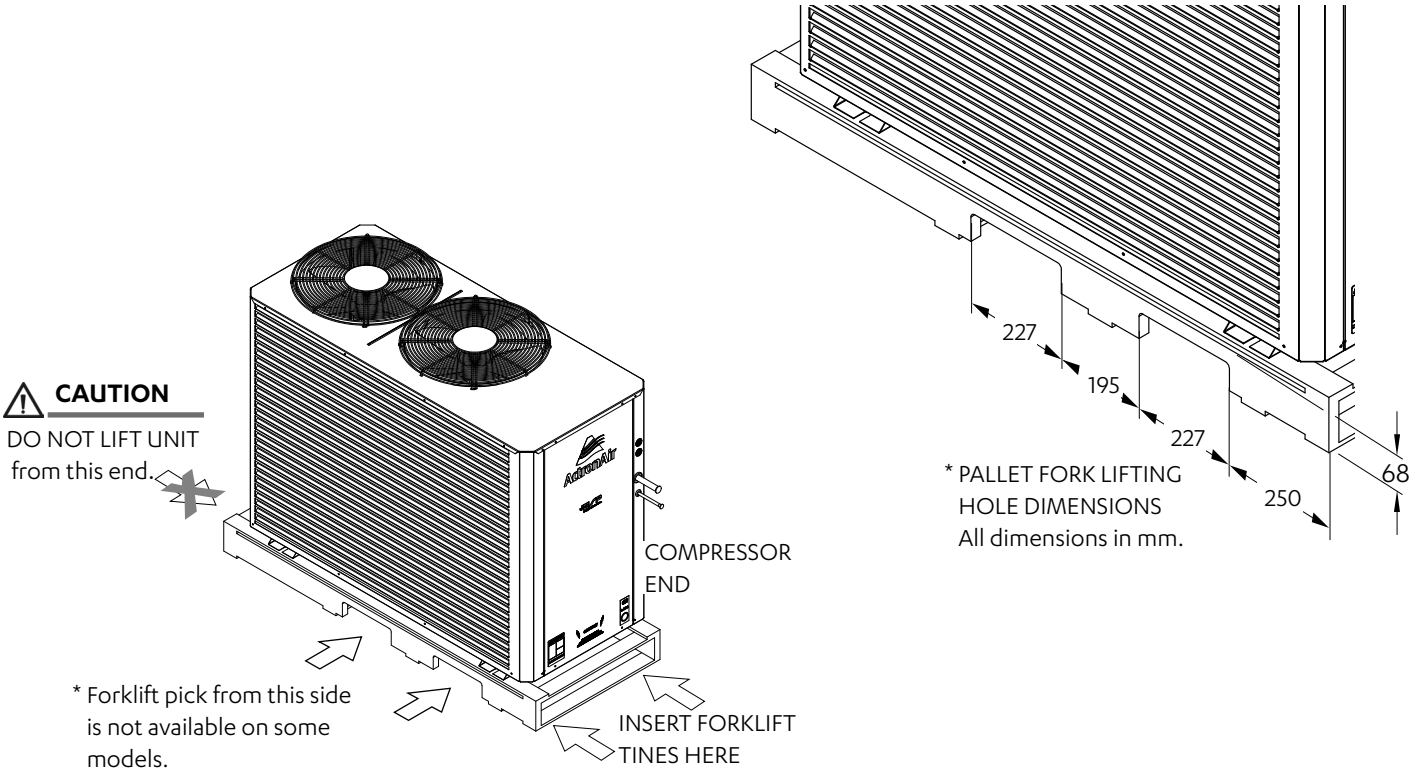


Fig. 2

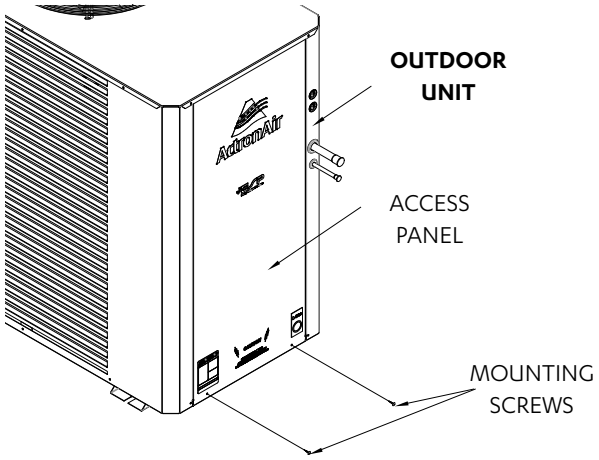
***** Side pallet tine openings may not be available on some models

⚠ CAUTION

Length of fork lift tines must pass the unit middle section, in order to safely carry the unit.

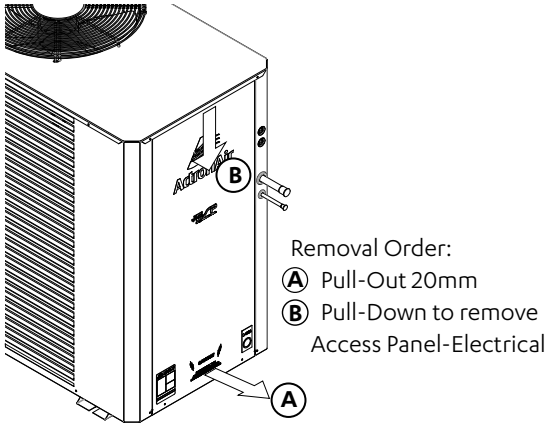
08. Outdoor Unit Preparation

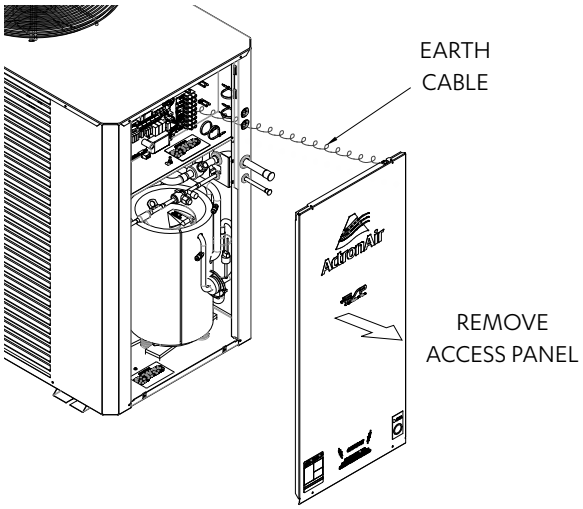
08.01. Remove mounting screws, as shown below:



08.02. Remove Access Panel

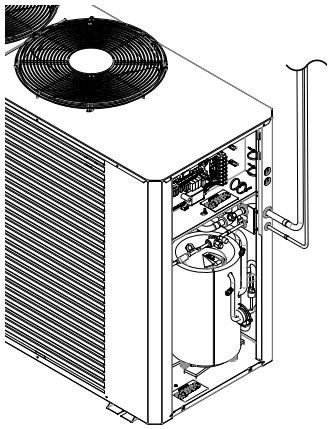
Remove access panel as illustrated below.





08.03. Install Interconnecting Field Pipes

Braze refrigeration piping. Refer to Section 09 for details of field pipe sizes and piping installation procedure.



WARNING

- There is an earth cable attached to the access panel. This must be disconnected first to fully remove the access panel.
- You must re-connect the earth cable when re-assembling the access panel.

09. Field Pipe Connection

09.01. Piping and Brazing

⚠ CAUTION

The units described in this guide uses R410A refrigerant

R410A operates at a pressure approximately 1.6 times higher than a similar systems using R-22. When installing equipment using R410A refrigerant, there are number of standards that must be met:

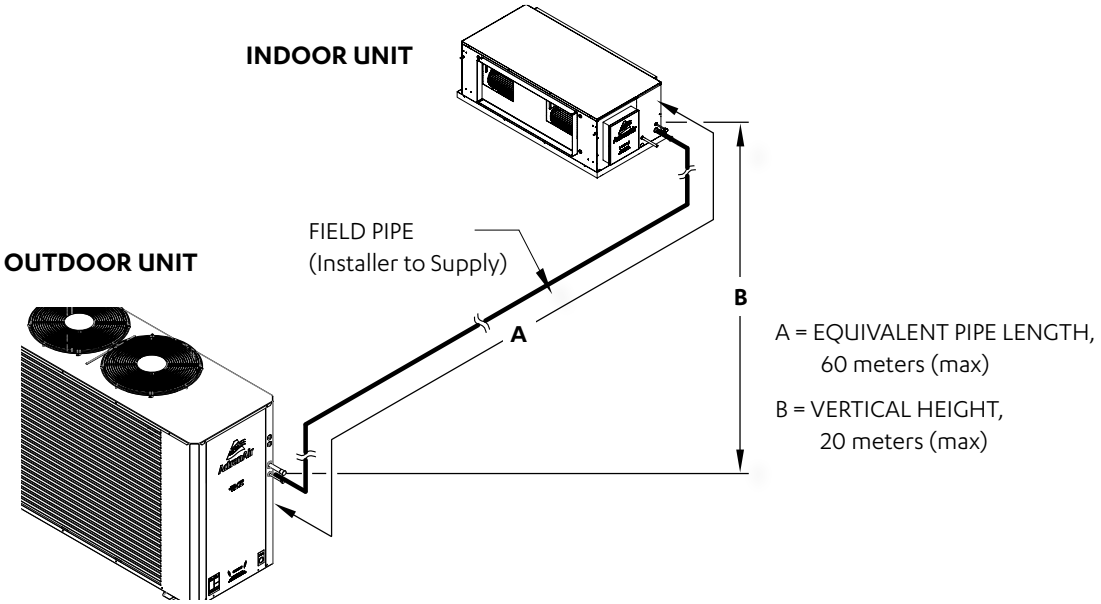
- The system of this unit operates with Polyvinylether (PVE) oil that rapidly absorbs moisture.
- The maximum time any system can be opened to atmosphere is 15 minutes.
- It is important to work with absolute cleanliness.
- Brazing must be done with the use of Nitrogen to avoid carbon deposits into the pipes.
- The system must be evacuated thoroughly to 500 microns (see evacuation procedure).
- The system must always be charged with R410A refrigerant in liquid state.
- Never allow R410A refrigerant to vent into the atmosphere. It is an offence to release refrigerant in Australia.
- Always reclaim refrigerant using equipment and container dedicated for R410a system use only.
- Only qualified persons are allowed to perform any work described in this guide.
- All work must be carried out in accordance with Australia and New Zealand refrigerant handling code of practice.

Maximum allowable total equivalent field pipe length is 60 metres, see diagram below. This includes all the equivalent pipe fitting losses and vertical height difference. Vertical height difference must not exceed 20 metres. Table 1 below shows the equivalent straight pipe length of elbow fittings.

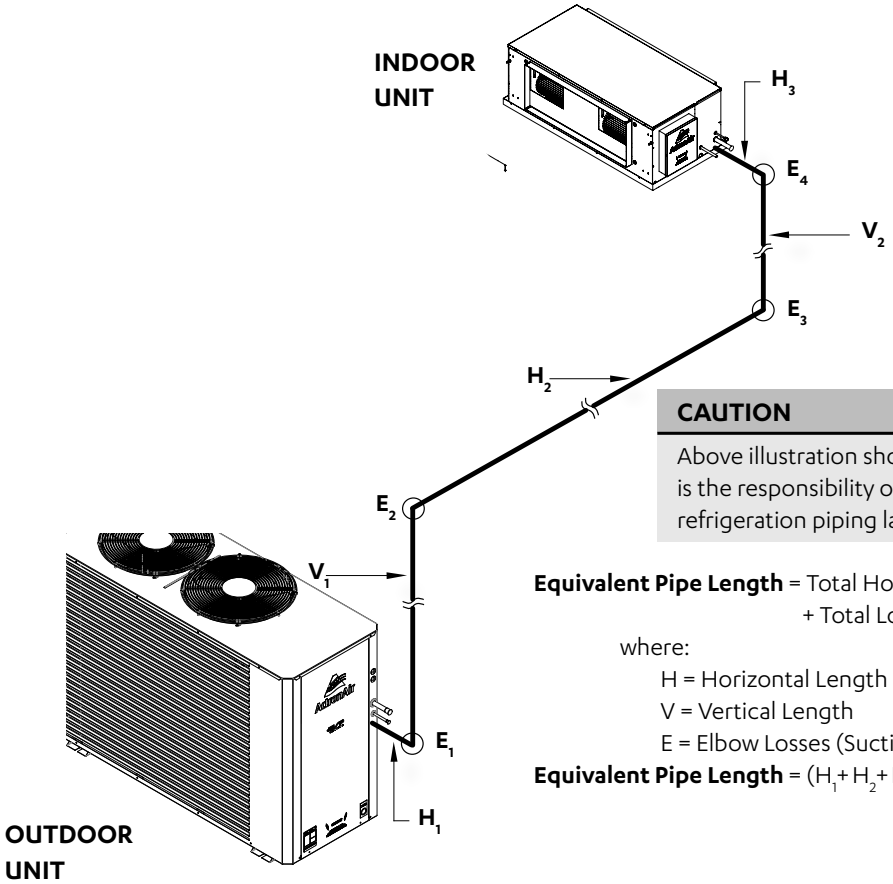
EQUIVALENT STRAIGHT PIPE LENGTH OF ELBOW FITTINGS (METRES)				
Pipe size Nominal Diameter	**90° Long Radius Elbow**	**90° Short Radius Elbow**	**45° Long Radius Elbow**	**45° Short Radius Elbow**
9.5 (3/8")	0.24	0.36	0.09	0.14
15.9 (5/8")	0.30	0.45	0.15	0.23
19.1 (3/4")	0.40	0.60	0.18	0.27
22.2 (7/8")	0.46	0.69	0.21	0.32
25.5 (1")	0.52	0.78	0.24	0.36
28.6 (1-1/8")	0.55	0.83	0.27	0.41

Selected field pipe sizes must match the recommended sizes in table above. If the installation requires different field pipe diameter due to different application condition other than recommended, contact ActronAir for advice. Most of unit pipe connections are factory swaged to easily fit to the recommended field pipe diameter. When it is required to install other refrigeration devices, such as refrigerant drier, solenoid valve and the like, include the equivalent straight pipe length of the device in the calculation of total equivalent field pipe length.

Both pipes are required to be insulated.



Example of Total Equivalent Field Pipe Length Calculations



CAUTION

Above illustration shown as calculation examples only. It is the responsibility of the Installer to design an efficient refrigeration piping lay out for optimum unit performance.

Equivalent Pipe Length = Total Horizontal Length + Total Vertical Length + Total Losses from Elbows

where:

H = Horizontal Length

V = Vertical Length

E = Elbow Losses (Suction)

Equivalent Pipe Length = $(H_1+H_2+H_3)+(V_1+V_2)+(E_1+E_2+E_3+E_4)$

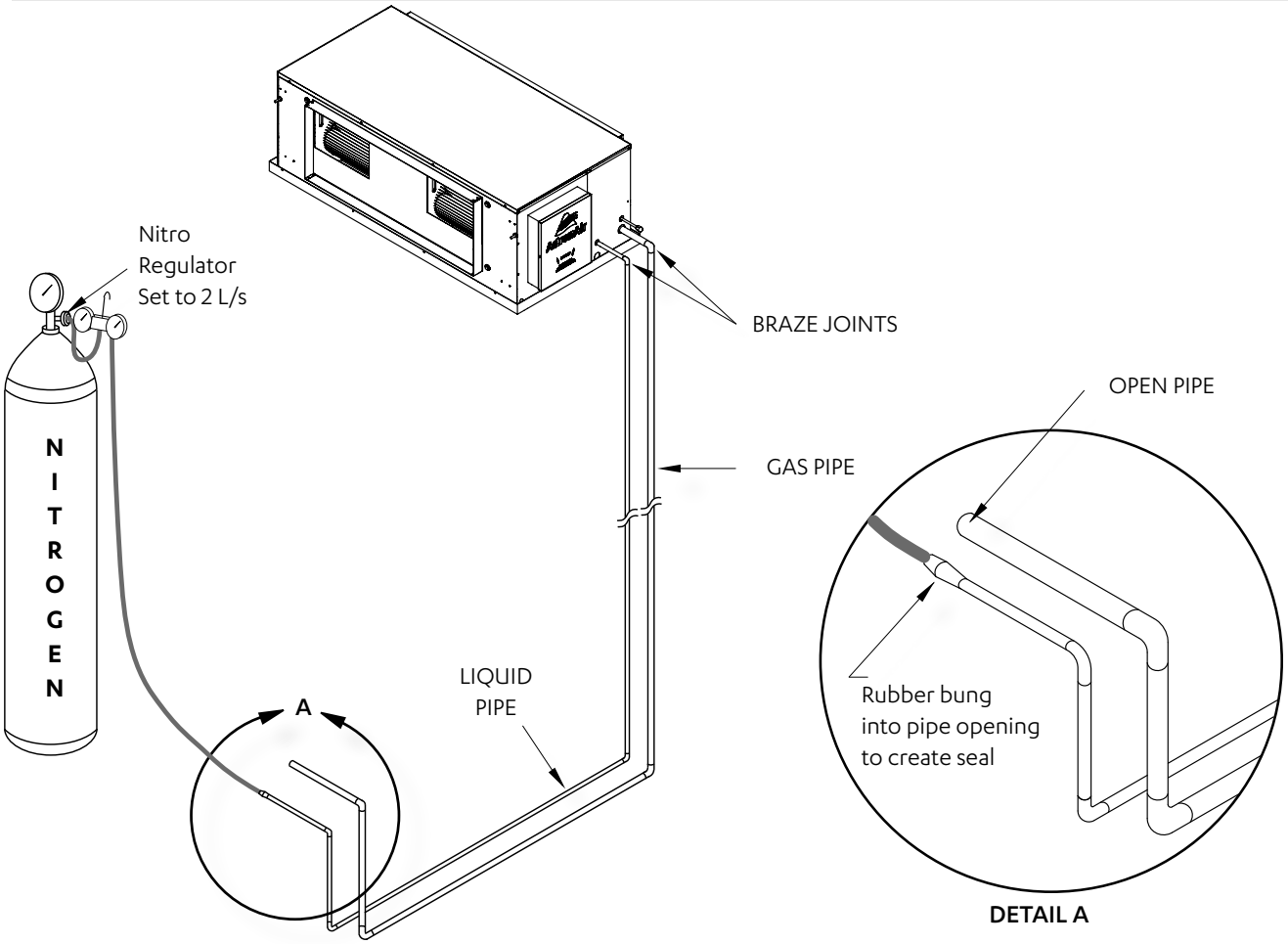
TABLE 2: REFRIGERATION PIPING

Outdoor Model		CRQ2-16AT	CRQ3-18AT	CRQ5-21AT		CRQ5-24AT
Indoor Model		ERQ2-16AS	ERQ3-18AS	ERQ5-21AS		ERQ5-24AS
Maximum Equivalent Pipe Length Range	metres	60	60	0-20	20-60	60
Maximum Vertical Height Differential*	metres	20	20	20	20	20
Field Pipe Size						
Liquid Line	mm (inch)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	12.7 (1/2)	12.7 (1/2)
Gas Line	mm (inch)	19.05 (3/4)	19.05 (3/4)	22.2 (7/8)	25.4 (1)	25.4 (1)
Outdoor Pipe Size						
Liquid Line	mm (inch)	9.52 (3/8) swaged	9.52 (3/8) swaged	12.7 (1/2) swaged		12.7 (1/2) swaged
Gas Line	mm (inch)	19.05 (3/4) swaged	19.05 (3/4) swaged	22.2 (7/8) swaged		22.2 (7/8) swaged
Indoor Pipe Size						
Liquid Line	mm (inch)	9.52 (3/8) swaged	9.52 (3/8) swaged	12.7 (1/2) swaged		12.7 (1/2) swaged
Gas Line	mm (inch)	19.05 (3/4) swaged	22.2 (7/8) swaged	25.4 (1) swaged		25.4 (1) swaged

* Included in maximum field pipe

⚠ CAUTION

Brazing joints should only be performed whilst purging Nitrogen through the system. Failure to do so will cause carbon deposits to be left on the internal pipe surface, that in turn can cause system failure and void of warranty.



Installing interconnecting pipe work to indoor, nitrogen bleed procedure (First fit or rough in stage only)

1. Run interconnecting pipe work from condenser location to evaporator.
2. Release pressure in evaporator and remove caps.
3. Fit field pipe work into evaporator's pipe tails and set nitrogen bottle and regulator up at condenser end of pipe work.
4. Fit nitrogen line into liquid line with rubber bung to seal the connection. The seal will prevent air being sucked into pipe work.
5. Leave suction line open, set nitro regulator for nitrogen to flow through pipe work at 2 l/s flow rate @20kPa.
6. Braze required joints as quick as possible.
   See "Brazed Joints" on illustration on previous page.

Installing interconnecting pipe work to outdoor, nitrogen bleed procedure (First fit or rough in stage only)

1. Starting with circuit 1 system, remove piping caps from the condenser and fit pipe work into tails.
2. Fit nitro hose onto suction ball valve and fit open hose onto liquid line post valve.
3. Set nitrogen regulator to 2 l/s flow rate through pipe work and evaporator.
4. Braze remaining joints as quick as possible.
5. Allow the brazed joints to cool and conduct leak test in the connections.

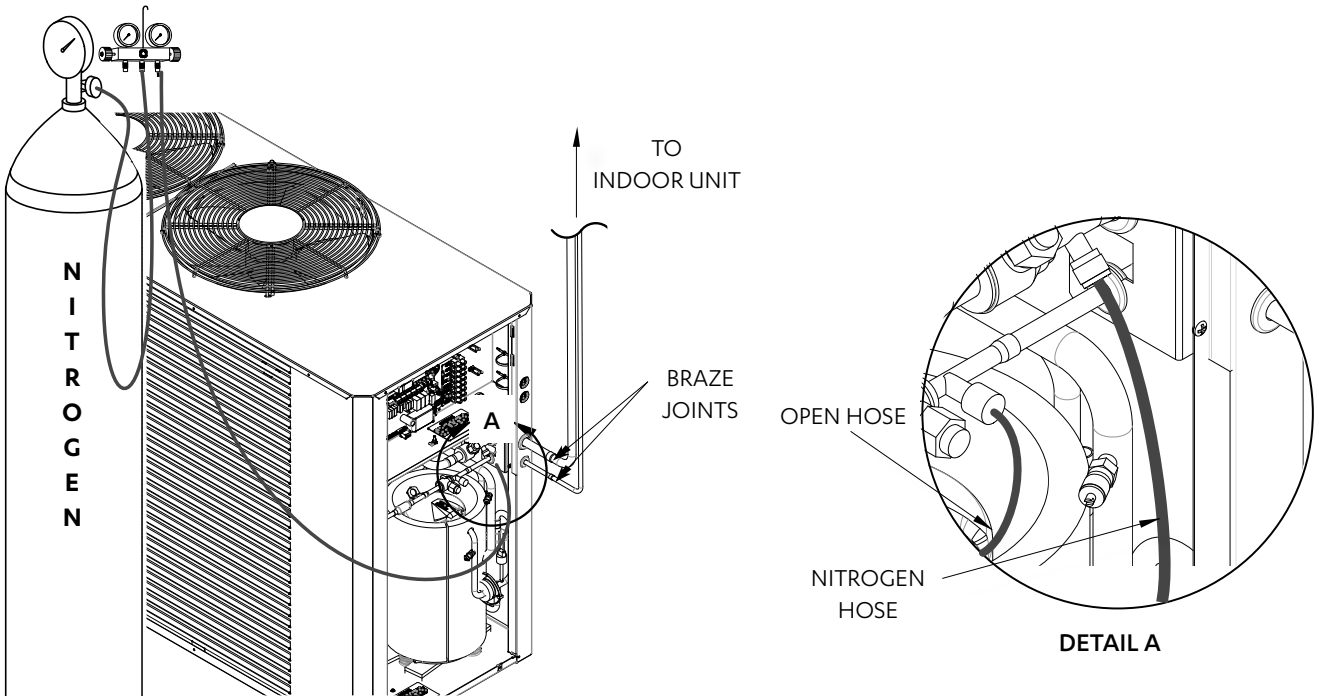
09.02. Pressure Testing

Pressurize the system to 2500kPa in stages. A recommended pressure test is to be performed for no less than 1 hour at 2500kPa.

⚠ NOTES

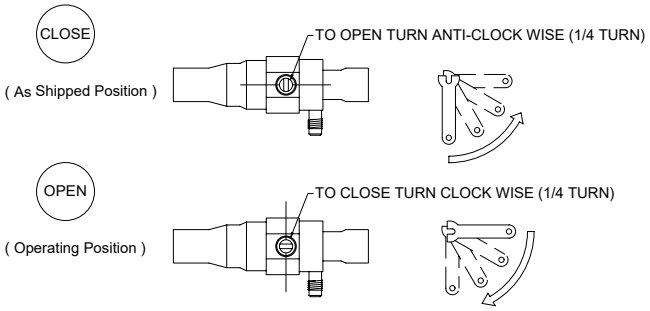
- Any non-condensables left in the system can cause the pressure in the high side of the system to increase and in turn, the compression temperature to rise.
- Moisture will result in an adverse reaction in the refrigerant circuit.
- The PVE oil used in the R410A compressor is hygroscopic, which absorbs moisture from the air. To prevent chemical reactions in the system, any moisture must be removed.
- Oxygen (air) reacts with the compressor oil and can lead to faults such as compressor failure.

See Diagram Below:



09.03. Evacuation Procedure (Triple Evacuation)

1. Fit gauges to the liquid and suction ball valves.
2. Evacuate the system to 1000 microns.
3. Break the vacuum with dry Nitrogen to 100kPa
4. Release Nitrogen pressure. Evacuate to 500 microns.
5. Break the vacuum with dry Nitrogen to 100kPa
6. Release Nitrogen pressure. Evacuate to 500 microns.
7. Open valve



10. Electrical Installation

All electrical work must be carried out by a qualified and licensed technician. Make sure all wiring is in accordance with local wiring rules. Wiring connections should be made in accordance with the wiring diagram provided.

⚠ DANGER

Live Electrical Supply !

During installation of your air conditioning unit, it may be necessary to work in close proximity to live electricity. Only licensed electricians are allowed to perform these tasks.

Follow all electrical safety precautions when exposed to live electrical components.

Wiring Diagram

The wiring diagram specific for your air conditioning system is located on the inside panel of the control access door. Always refer all wiring installation, servicing and troubleshooting of this equipment to this diagram to ensure correct electrical connections are satisfied.

Supply and Power Requirements Procedure

It is the installer's responsibility to provide power supply wiring to the mains supply terminal strip of the outdoor unit. Make sure all wiring are in accordance with local wiring rules. Wiring should conform to all current electrical authority regulations and all wiring connections to be as per electrical diagram provided with the unit.

- Confirm that the power supply available is compatible with the unit nameplate ratings. The supply power must be 230V/400VAC(+/- 6%)/50Hz.
- Protect electrical service from over current and short circuit conditions in accordance with AS/NZS 3000 "Australian / New Zealand Wiring Rules". Size protection devices according to the electrical data of the unit and the table below.
- Installer to connect an appropriate load break (AC3) isolator in sub mains wiring.
- Secure any power and control cables that enters in/exits out of the unit. Use the cable ties provided in the main electrical panel.

Provide proper unit earth in accordance with local and national codes.

Main Voltage Balance Requirement

Check the voltage at the mains supply terminals to determine if it is balanced. Voltage imbalance on three phase systems can cause motor overheating and premature failure. The maximum allowable imbalance is + 2.0%, should voltage imbalance exceed this value, check unit wiring connections to locate and rectify faults or contact local supply authority.

Maximum Cable Lengths

Refer to Indoor Unit's Installation & Commissioning Guide for control cable's specifications and max. cable lengths.

MODEL	Circuit Breaker Size	Cable Size * (mm)		Wiring Diagram
	Amps	MAIN	O.D. to I.D.	
CRQ2-16AT / ERQ2-16AS	20.0	2.5	1.0	WD2020
CRQ3-18AT / ERQ3-18AS	20.0	2.5	1.0	
CRQ5-21AT / ERQ5-21AS	25.0	4.0	1.5	WD2021
CRQ5-24AT / ERQ5-24AS	25.0	4.0	1.5	

* Suggested Minimum Cable Size should be used as a guide only, refer to AS/NZS 3000 "Australian / New Zealand Wiring Rules" for more details.

UPDATED WIRING DIAGRAM IS PROVIDED WITH THE UNIT

Outdoor Unit: Located at the back of electrical/compressor acess panel.
Indoor Unit: Located at the back of electrical box cover.

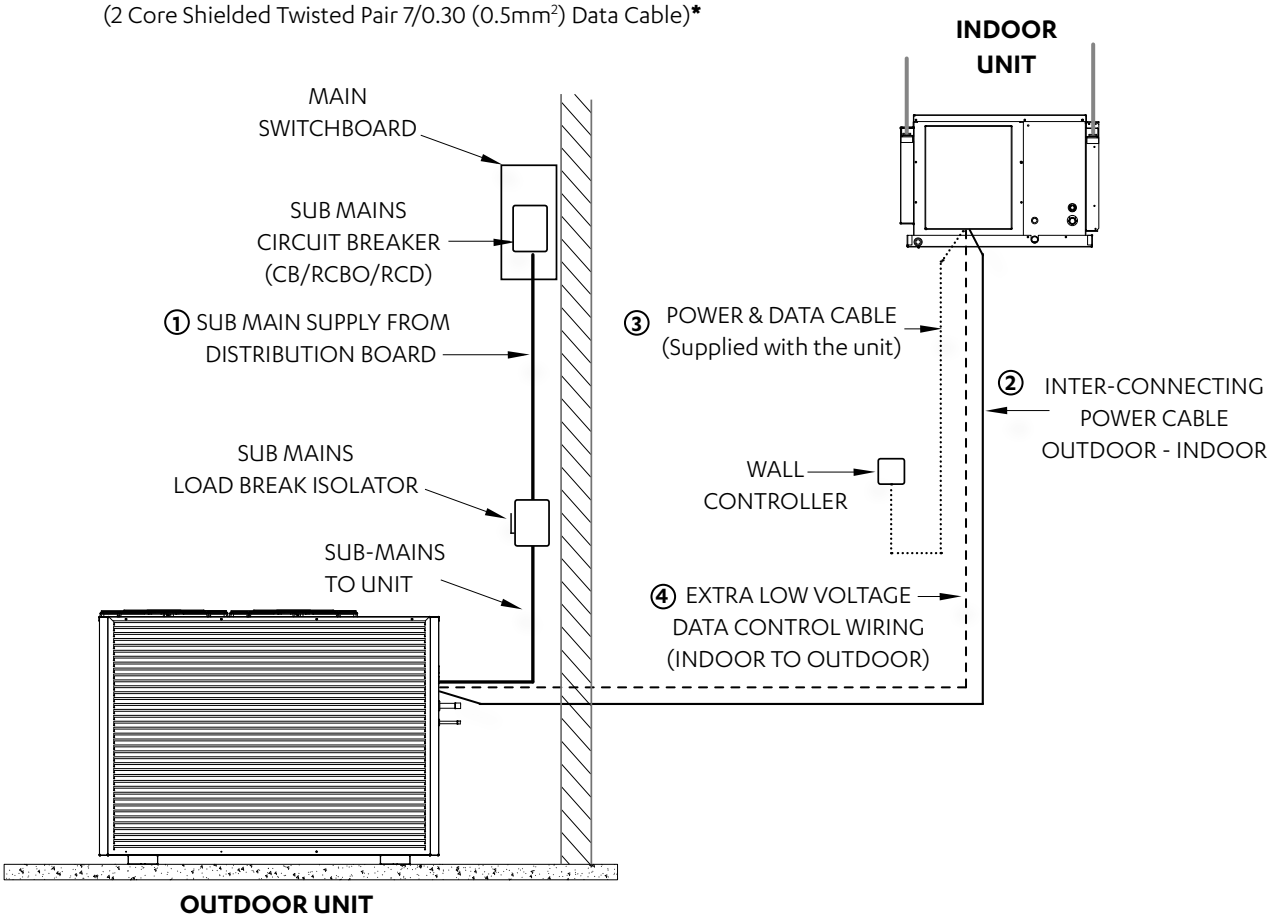
Split Unit Electrical Connection

① MAINS WIRING
(230/400VAC 50Hz 3Phase +Neutral+Earth)

② INTER-CONNECTING POWER CABLE
(230 VAC 50Hz + Neutral+Earth)

③ DATA CABLE TO WALL CONTROLLER
(Cat5E spec cable with RJ45 connectors & cable boots)

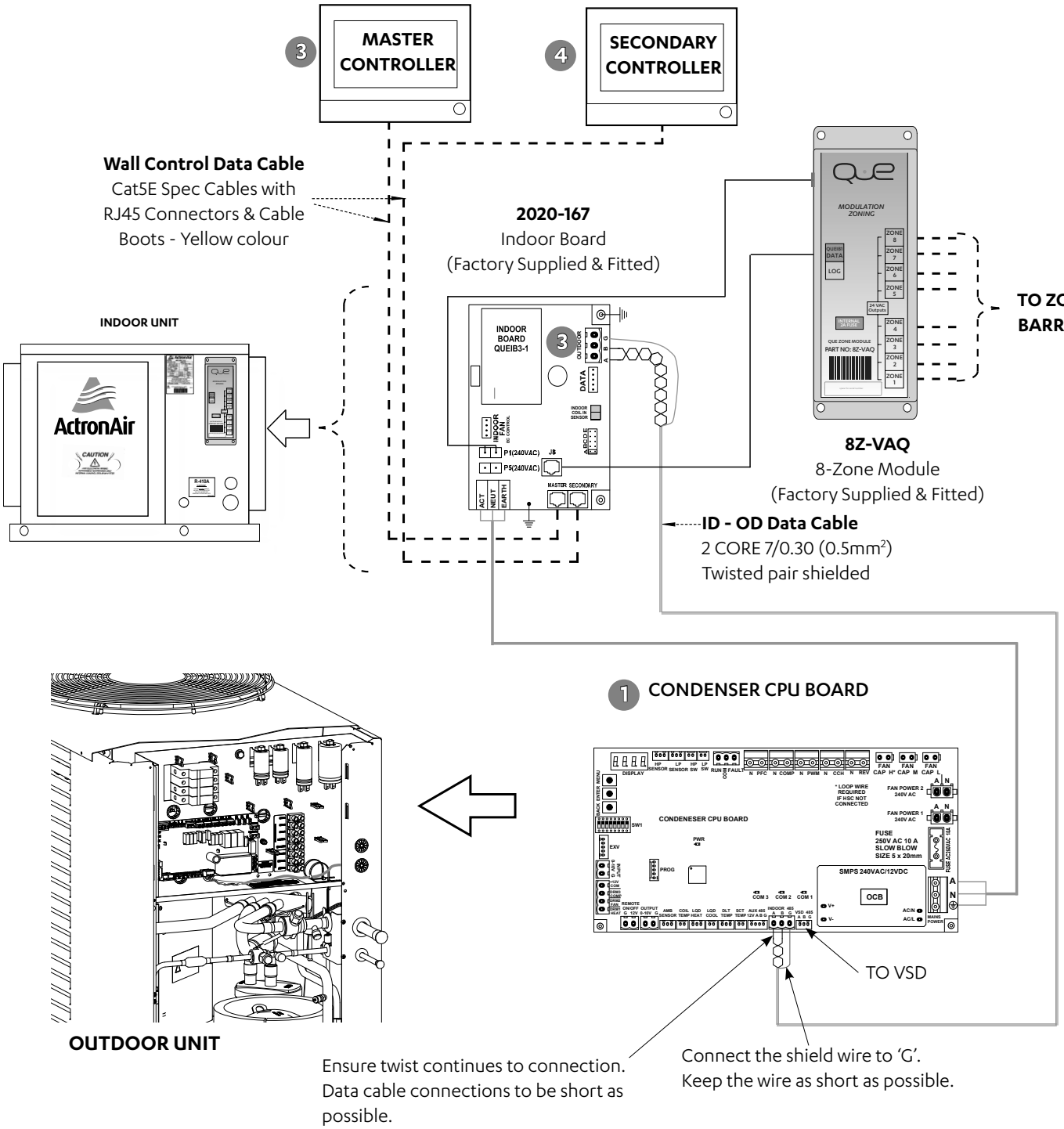
④ EXTRA LOW VOLTAGE DATA CONTROL WIRING
(2 Core Shielded Twisted Pair 7/0.30 (0.5mm^2) Data Cable)*****



⚠ NOTES

To minimise noise interference, Data and Power cable clearance should be maintained as much as possible (minimum 300mm).
* DO NOT USE the 2 Core Orange Shielded Data Cable (AEDC1) used on previous ActronAir units.

10.01. Wiring Connection, Control Cable Length and Specification



NOTES

- Diagram shown above is a general presentation only. Refer to individual unit wiring diagram for complete wiring connection details and specifications.

10.02. AEDC2 Data Cable Shielding Instructions

NOTES

- Maintain the twist of the core wires up to the Green Terminal Plug.
- Maximum stip length of outer insulation to the Green Terminal Plug is 50mm.
- Make sure the cable colours used for the Data Terminal in Outdoor Unit match the Data Terminal in Indoor unit.

Outdoor Unit Data Terminal (Green Plug)
"Terminal A" - White Wire
"Terminal B" - Black Wire
"Terminal G" - Shield Wire

Indoor Unit Data Terminal (Green Plug)
"Terminal A (+)" - White Wire
"Terminal B (-)" - Black Wire
"Terminal G" - Shield Wire

1. Insert data cable through the lower snap bushing and first cable tie on the right hand side of the electrical panel. (See Fig. 3 below).

Connect core wires and shield wire into the Outdoor Board green terminal plug marked " INDOOR A, B and G". (Refer to unit wiring diagram for complete wiring connection details).

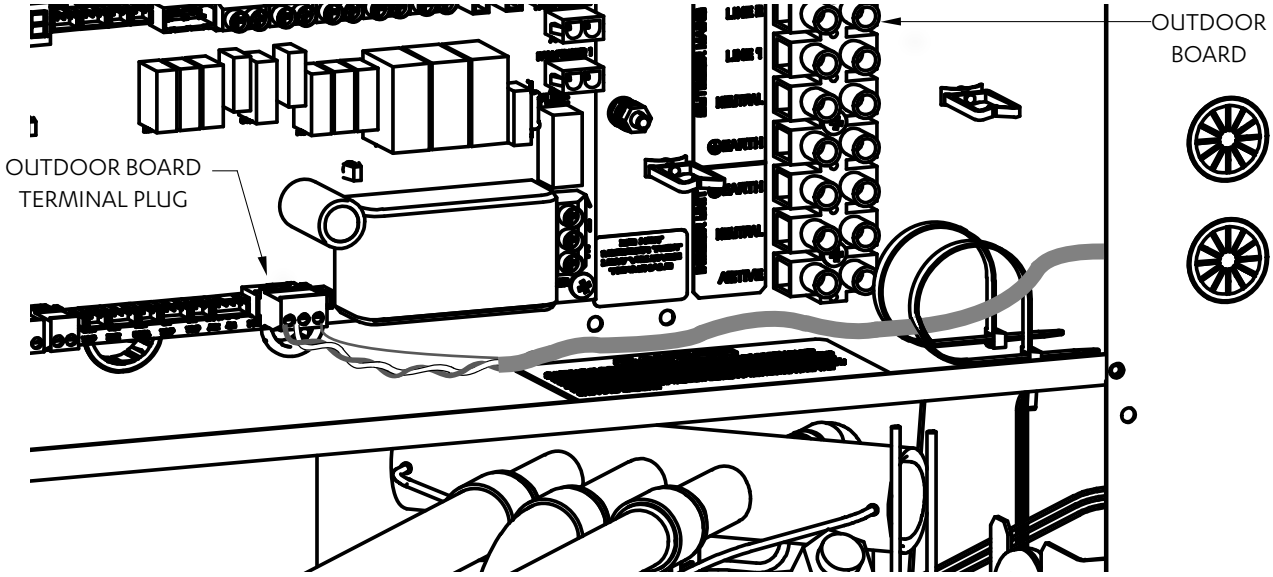
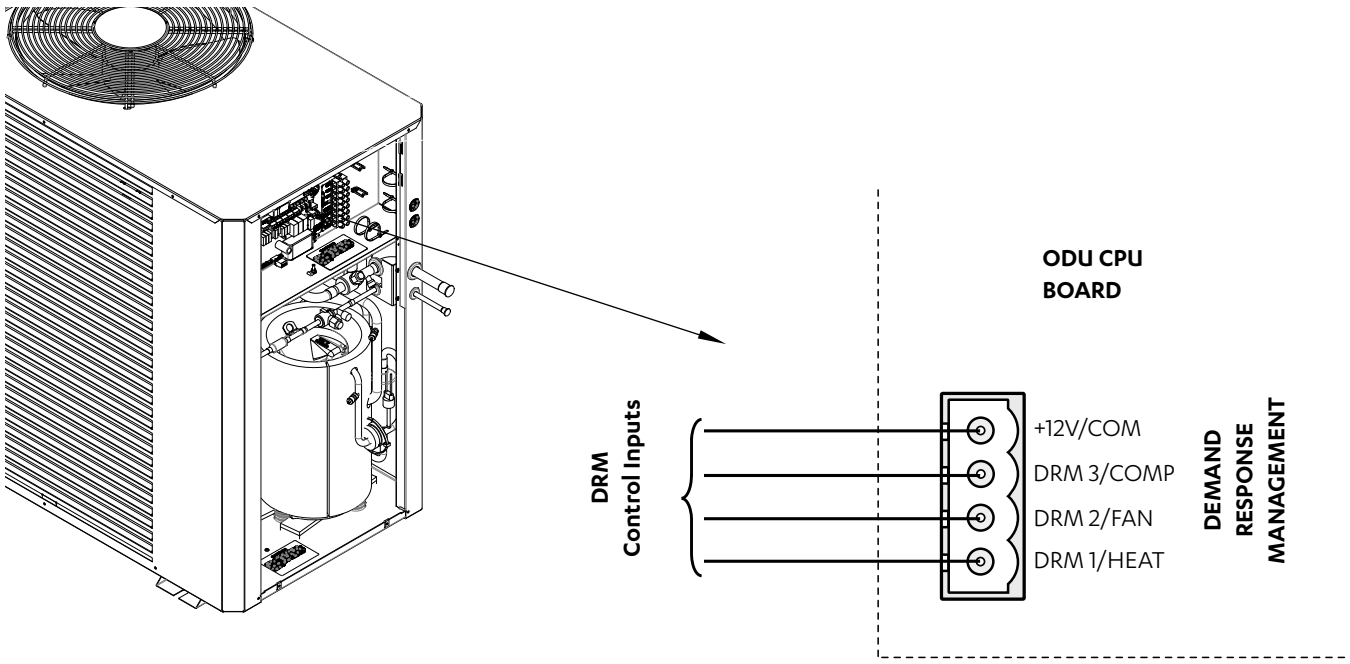


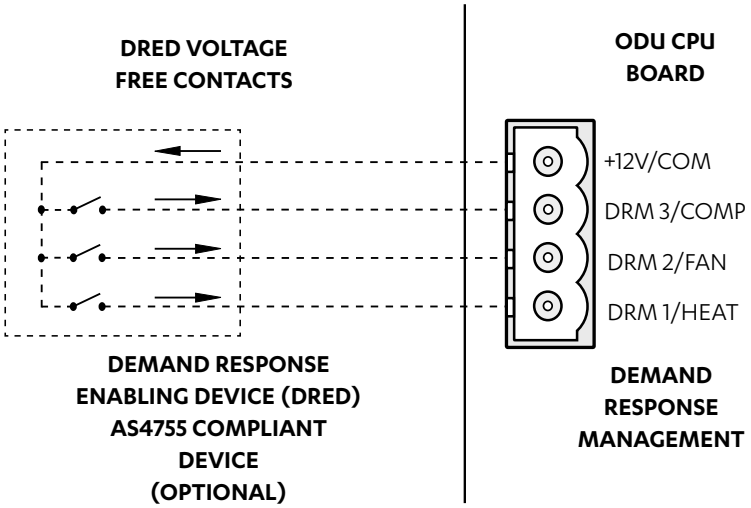
Fig. 3

10.03. Demand Response Management



1. Thread & Route DRM input cables into the Unit (as per previous wiring installation procedure)
2. Connect cables into terminals (as shown above and as per wiring diagram provided with the unit).

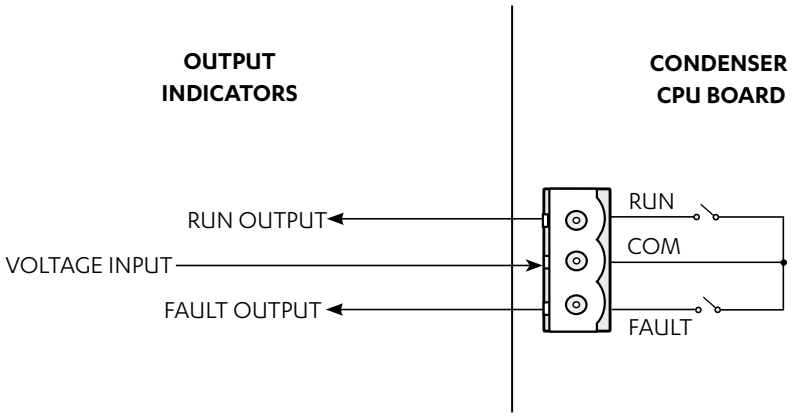
DEMAND MANAGEMENT MODE	DESCRIPTION OF MODE ALLOWABLE RANGE (%)	OPERATING MODE
DRM1	Compressor Off Mode	Compressor ONLY will cycle OFF & remain off for the entire Demand Response event. All other functions will operate as normal (i.e. Indoor Fan)
DRM2	Maximum 50% power use mode with 0 to <50% allowable power use range	Compressor 0 to <50% operation range for the total Demand Response event.
DRM3	Maximum 75% power use mode with 0 to <75% allowable power use range	Compressor 0 to <75% operation range for the total Demand Response event.



DEMAND RESPONSE ENABLING DEVICE CIRCUIT DIAGRAM

10.04. Run and Fault Indication Output

RUN/FAULT relay outputs (230VAC/5A MAX)



11. Refrigerant Charging

⚠ NOTES

- **The units detailed on this guide are pre-charged with R410A refrigerant.** Should there be a need to add or remove some refrigerant, it is recommended to follow the charging method explained below.
- Never allow R410A refrigerant to vent into the atmosphere. It is an offence to release refrigerant in Australia. Always reclaim refrigerant using equipment and container dedicated for R410A system use only.
- The use of other material as a refrigerant other than R410A may cause explosion and/or personal injury.
- All work must be carried out in accordance with Australia and New Zealand refrigerant handling code of practice.
- Only qualified personnel are allowed to perform any work described in this guide and specifically work related to addition or removal of refrigerant.
- If the ambient temperature is below 25˚C, ensure that the system is connected to power supply (stand by) for at least six hours prior to charging. This is to ensure that the crankcase heater is operating to avoid any liquid going into the compressor that may cause damage. If the ambient temperature is more than 25˚C, charging is allowed right away.
- R410A refrigerant must always be charged in liquid state.
- The system can be charged through the suction service port on the compressor suction line. But be careful not to charge too much refrigerant at once, let the liquid enter in short bursts by opening and closing your gauges.
- Changes in refrigerant charge must be noted to a label that is fixed to the unit for future reference.
- Make sure to use weighing scale for accurate measurements when adding or removing refrigerant charge.
- **The 5 step commissioning process MUST be completed, please refer to installation guide of QUE Touch controller.**

⚠ CAUTION

The system of this unit operates with PVE oil that rapidly absorbs moisture. The maximum time any system can be opened to atmosphere is 15 minutes.

REFRIGERANT CHARGE DETAILS					
Outdoor Model	**CRQ2-16AT**	**CRQ3-18AT**	**CRQ5-21AT**		**CRQ5-24AT**
Indoor Model	**ERQ2-16AS**	**ERQ3-18AS**	**ERQ5-21AS**		**ERQ5-24AS**
Refrigerant taype	R410A	R410A	R410A	R410A	R410A
Factory Charge	6400	7175	7400		9350
Pre-charged Length - (m)	15	15	15		15
Additional Refrigerant per charge - (g/m)	50	50	50	100*	100

* For liquid field pipe of 1/2”

SUB-COOLING AND SUPERHEAT CHARGING METHOD

Parameters:

LLT = Liquid Line Temperature
SCT = Saturated Condensing Temperature
SLT = Suction Line Temperature
SST = Saturated Suction Temperature

Cooling and Heating Operation:

Adjust the refrigerant charge to obtain the correct super heat and sub-cool for optimal performance as follows:

1. Ensure that air filters are fitted and total system airflow is achieved.
(Air filters are not supplied with the unit, it is the responsibility of the installing contractor to provide and fit adequate return air and fresh air filters).
2. Connect service gauges to the schrader valves.
3. Start the unit in cool mode ensuring that compressors are in 100% operation before taking service gauges reading.
Allow the system to stabilize for next 15-30 minutes before recording.
4. Record the discharge pressure, suction pressure, liquid line temperature and suction line temperature for all of the refrigeration circuits:

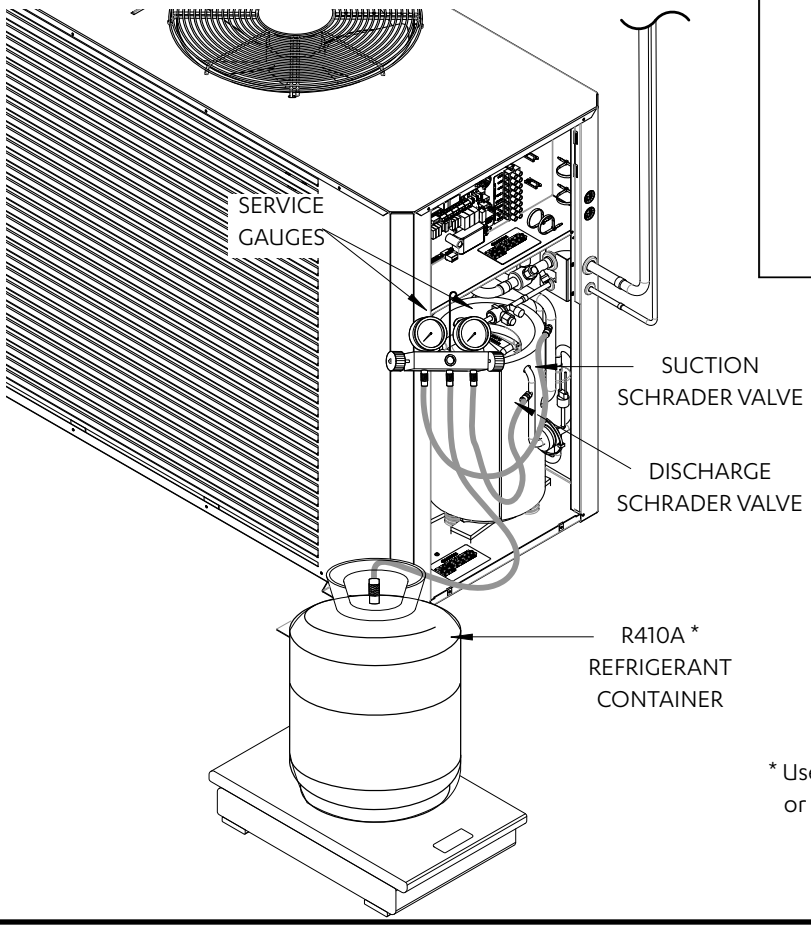
Discharge Pressure = _____ kPa Suction Pressure = _____ kPa

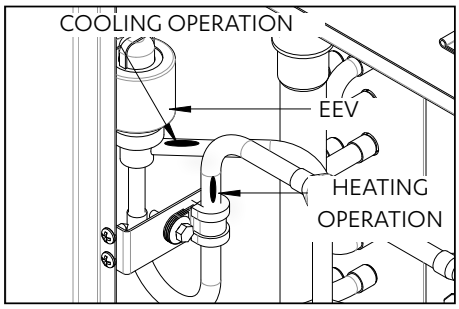
Liquid Line Temperature **(LLT) =** _____ °C Suction Line Temperature **(SLT) =** _____ °C

NOTES

- Accurate pressure and temperature measuring tools should be used to achieve satisfactory results.
- The sensor of a thermocouple must be in good contact with the area being measured and must be insulated in order to obtain correct reading.

See Diagram Below





Recommended liquid line thermocouple location during charging

* Use weighing scale when adding or removing refrigerant charge.

Checking for Sub-cooling:

1. From the R410A Pressure/Temperature Chart record the corresponding Saturated Condensing Temperature (SCT) at the given discharge pressure.
2. Calculate the system sub-cooling using the formula below:

   Sub-cooling = SCT - LLT

3. If sub-cooling is within the range (see charging table), there is no need to add/remove refrigerant.
   - If sub-cooling is lower than minimum, the system is undercharged, it is necessary to add refrigerant.
   - If sub-cooling is higher than maximum, the system is over charged . It is necessary to remove refrigerant.

Allow the systems to stabilise (15-30 mins) and repeat the step 1-3 until sub-cooling falls within the range specified in the table below.

Checking for Superheat:

Maintaining the correct superheat is important for ensuring the evaporator is achieving maximum capacity and avoiding excessive liquid refrigerant returning to the compressor.

1. From the R410A Pressure/Temperature Chart record the corresponding Saturated Suction Temperature (SST) at the given suction pressure.
2. Calculate the system super heat using the formula below:

   Superheat = SLT -SST

3. If superheat is within the range (see charging table below), there is no need to add/remove refrigerant.
   - If superheat is lower than minimum, it means that liquid refrigerant may be returning to compressor. It is necessary to remove refrigerant or check EEV settings.
   - If superheat is higher than maximum, it means that refrigeration capability of evaporator is not fully maximised. it is necessary to add refrigerant charge or check EEV settings.

Allow the systems to stabilise (15-30 mins) and repeat the step 1-3 until superheat falls within the range specified in the table below.

SUB-COOL & SUPERHEAT TABLE

MODELS	Nominal Indoor Airflow (L/s)	COOLING		HEATING	
		SUB-COOL	SUPERHEAT	SUB-COOL	SUPERHEAT
CRQ2-16AT	750	6 ±1	2 ±1	13 ±1	2 ±1
CRQ3-18AT	850	7 ±1	6 ±1	17 ±1	2 ±1
CRQ5-21AT	950	7 ±1	3 ±1	17 ±1	2 ±1
CRQ5-24AT	1100	4 ±1	3 ±1	13 ±1	4 ±1

R410A Pressure / Temperature Chart

Temp °C	Pressure kPa	Temp °C	Pressure kPa	Temp °C	Pressure kPa	Temp °C	Pressure kPa
-60	-34.4	-28	194.9	4	805.9	36	2090.7
-59	-30.7	-27	206.9	5	834.1	37	2145.5
-58	-26.8	-26	219.2	6	862.9	38	2201.3
-57	-22.8	-25	231.9	7	892.6	39	2258.2
-56	-18.6	-24	245.1	8	922.8	40	2316.1
-55	-14.2	-23	258.7	9	953.8	41	2375.1
-54	-9.6	-22	272.6	10	985.4	42	2435.1
-53	-4.8	-21	286.9	11	1017.8	43	2496.2
-52	0.8	-20	301.7	12	1050.9	44	2558.5
-51	5.3	-19	316.9	13	1084.7	45	2621.8
-50	10.7	-18	332.6	14	1119.2	46	2686.2
-49	16.3	-17	348.7	15	1154.6	47	2751.8
-48	22.2	-16	365.2	16	1190.7	48	2818.5
-47	28.2	-15	382.3	17	1227.5	49	2886.4
-46	34.0	-14	399.7	18	1265.2	50	2955.5
-45	40.9	-13	417.7	19	1303.6	51	3025.7
-44	47.8	-12	436.2	20	1342.9	52	3097.2
-43	54.8	-11	455.1	21	1382.9	53	3169.9
-42	62.1	-10	474.6	22	1423.9	54	3243.7
-41	69.6	-9	494.6	23	1465.7	55	3318.9
-40	77.4	-8	515.1	24	1508.3	56	3395.2
-39	85.5	-7	536.2	25	1551.8	57	3472.9
-38	93.9	-6	557.8	26	1596.2	58	3551.8
-37	102.5	-5	579.9	27	1641.4	59	3631.9
-36	111.5	-4	602.6	28	1687.6	60	3713.5
-35	120.8	-3	625.9	29	1734.6	61	3796.3
-34	130.4	-2	649.8	30	1782.6	62	3880.5
-33	140.3	-1	674.3	31	1831.6	63	3965.9
-32	150.5	0	699.4	32	1881.5	64	4052.8
-31	161.1	1	724.9	33	1932.3	65	4140.9
-30	171.9	2	751.3	34	1984.1	66	4230.6
-29	183.3	3	778.3	35	2036.9	67	4321.5

12. Maintenance

Maintenance Procedures

This section describes the procedures that must be performed as a part of normal maintenance program. Regular servicing of equipment by licensed technician is highly recommended. Regular servicing of your unit helps in maintaining its optimum performance and reliability. **The checklist and service periods provided on this manual are guides only, as some sites may require more frequent servicing**. Always disconnect electrical power to the unit before performing these procedures. It is always a safe practice to observe all safety warnings and cautions when conducting maintenance tasks.

⚠ DANGER

Live Electrical Connections !
It may be necessary to work with live electrical components on certain maintenance tasks. Only licensed electricians and qualified technicians are allowed to perform these tasks.

Beware of Rotating Fan Blades !
Always make sure that all power supply, to the Outdoor Fans are turn-off and isolated.

Observe WH&S safety procedures, do not wear loose clothing and any jewellery when working near the fans.
Wear PPE whenever performing any maintenance procedures.
Observe all necessary procedures when working on a confined space.

⚠ WARNING

Hazardous Voltage !
Always make sure that all power supply, including remote controls, are disconnected before performing maintenance. Observe proper Lock-Out / Tag-Out procedures to ensure that power cannot be inadvertently energised. Failure to disconnect power before maintenance procedures can result in serious injury and/or death.
EC Motors and Inverter Drives are fitted with high power capacitors and can have dangerous residual voltages at motor terminals after power has been isolated. Wait at least 5 minutes after power isolation and test for any residual voltage before beginning service work.

Annual Maintenance Checklists

- Perform general maintenance inspections.
- Perform scheduled start-up checks.
- Leak test refrigerant circuits.
- Inspect contacts of all contactors and relays. Replace all worn contacts as required.
- Inspect, clean and tighten all electrical connections.
- Check fans for balanced operation. Make sure that there are no loose screws / bolts, no fan blades interference and no damage to the fans and guards.
- Inspect the air filters, clean or replace as required.
- Clean and repaint any corroded panel section.
- Ensure no blockage of airflow through variable speed drive.

Cleaning the Condenser Coils

Clean the coils at least once a year or more frequently if unit is located in a dusty and dirty environment, in order to maintain your system's proper operating performance. High discharge pressures are good indication that the coils need cleaning. When using detergent or solvents to clean the coils, follow the manufacturer's instructions to avoid potential damage to the coils and to the unit.

To clean the refrigerant coils, use a soft brush and water spray, such as garden hose or pressure washer with low pressure nozzle.

⚠ WARNING

Do Not Use High Alkaline Detergent!
When using detergent for coil cleaning, ensure that the alkaline level is no higher than 8.5, which can cause corrosion damage to the coils.

No Water into the Drive!
Ensure consideration is given to the possibility of water entering the electrical compartments during cleaning of the condenser coil.

Coil Cleaning Procedures

- Disconnect power to the unit.
- Remove the louvered panels from the unit to gain access to the air inlet side of the coils.
- Use a soft brush to remove loose dirt and debris from both sides of the coils.
- Straighten bent coil fins with fin comb.
- Prepare the detergent solutions according to the manufacturer's instructions.
- Spray solution at a 90° angle to the coils, keeping a minimum nozzle spray angle of 15°, with at least a 1800mm distance from the coils and 600 psi pressure.
- Spray leaving air side of the coils first then the air inlet side. Allow the solution to stand on the coils for five minutes.
- Rinse both sides of the coils with cool clean water.
- Inspect the coils, if they are still dirty, repeat the cleaning procedure.
- Clean and wipe dry the outer and inner sides of the unit, the refrigerating parts and other components.
- Ensure that the condensate drain lines are not blocked.
- Reinstall all unit panels, covers and guards.
- Restore electrical power to the unit.

13. Maintenance Frequency Checklist

Electrical										
Parts	**Service Frequency**								**Detail of Service Check**	**Service Methods**
	1 Mth	**3 Mth**	**6 Mth**	**1 Yr**	**2 Yrs**	**3 Yrs**	**4 Yrs**	**5 Yrs**		
Printed Circuit Boards				✓					Visual Inspection	Tighten Terminals as necessary on printed circuit boards
Electrical Connections				✓					Check all electrical terminals, mains, communications, etc	Re-tighten if loose.

Indoor Unit										
Parts	**Service Frequency**								**Detail of Service Check**	**Service Methods**
	1 Mth	**3 Mth**	**6 Mth**	**1 Yr**	**2 Yrs**	**3 Yrs**	**4 Yrs**	**5 Yrs**		
Casing/Panels and Frames				✓					Visual check for damage, rust and dust accumulation.	For highly corrosive environment, wash panels quarterly with water & neutral detergent solution. Wax panels. Repair / re-paint where required.
Insulation				✓					Visual check for insulation conditions.	Repair / replace insulation material.
Fan				✓					Visual check for run out of balance and dust attached	Clean off dust as necessary to negate possibility of fan running out of balance
Motor				✓ Ω					Visual check on wiring. Insulation resistance check to be carried out annually	Measure insulation resistance. Should be more than 1MΩ
Heat Exchanger				✓					Check for clogging by dust. Check for leaks / damage.	Clean air inlet side as necessary. Straighten any bent fins using fins comb.
Drain Pan/ Condensation line				✓					Check for obstructions & free flow of water	Clean to eliminate obstructions/ sludge & check condition of pan. Pour water to ensure free flow.
Filter*		✓							Check for clogging by dust.	Clean Filter
Temperature Readings				✓					Measure air on & air off	Place temperature probe in return & supply air of unit.
Zone Motors				✓					Visual inspection of motors open/housing. Ensure no obstructions	Drive motors opened & closed. Ensure correct operation.
Duct Works				✓					Inspect duct works for air gaps.	Re-tape any loose ducts.

*Service period for filter cleaning may vary depending on operating time & surrounding environment

Outdoor Unit										
Parts	**Service Frequency**								**Detail of Service Check**	**Service Methods**
	1 Mth	**3 Mth**	**6 Mth**	**1 Yr**	**2 Yrs**	**3 Yrs**	**4 Yrs**	**5 Yrs**		
Casing / Panels and Frames				✓					Visual check for damage, rust and dust accumulation.	For highly corrosive environment, wash panels quarterly with water & neutral detergent solution. Wax panels. Repair / re-paint where required.
Insulation				✓					Visual check for insulation conditions.	Repair / replace insulation material.
Fan			✓						Visual check for run out of balance and dust attached	Clean off dust as necessary to negate possibility of fan running out of balance
Motor				✓ Ω					Visual check on wiring. Insulation resistance check to be carried out annually	Measure insulation resistance. Should be more than 1MΩ
Heat Exchanger				✓					Check for clogging by dust. Check for leaks / damage.	Clean air inlet side as necessary. Straighten any bent fins using fins comb.
Condensate Drain Line (if available)				✓					Check for obstructions & free flow of water	Clean to eliminate obstructions/ sludge & check condition of drain line. Pour water to ensure free flow.
Compressor				✓ Ω					Check for high / low pressure. Measure insulation resistance. Check compressor for abnormal noise/vibrations	Measure insulation resistance. Should be more than 1MΩ. Ensure to isolate first the VSD from the compressor before measuring insulation resistance.
Compressor Drive				✓					For variable drive compressor check full operation of drive from minimum hertz to maximum, check fan operation of drive	Check compressor amperage & running frequency feedback from outdoor board seven segment display.
				✓					Ensure drive fresh air path is clear	Check ventilation holes on top and bottom of drive cover are clear of leaves, pebbles or dirt.
Refrigeration Operational Readings				✓					Make note of operational reading in test cool/heat	Check operating pressures, record super heat & sub-cool values
Safety Devices				✓					Check calibration of safety devices such as HP & LP controls, sensors, etc	Check resistance of sensors, pressure cut in / cut out of pressure controls
Faults Faults				✓					Check for any previous fault history on unit.	Investigate any causes for previous faults, reset fault history.

14. Troubleshooting Guide

Fault	Possible Causes	Remedies
The system does not start	Built-in safety timers have been activated	Wait for up to 20 minutes to pass from turn on time.
	A breaker has turned OFF or a fuse has blown.	Check breakers and fuses.
	The thermostat set point is incorrect. In wall controller and zone controller.	Check master wall control or zone controller settings are correct. Check the thermostat "set-point" is set low enough for cooling or high enough for heating.
	The master wall controller timer setting is incorrect.	Check the master wall controller timer settings. See Operating Instructions section.
Air does not flow (Indoor unit)	Zones might be switched off.	Check zones are switched on.
	During heating operation, the hot start function may have been activated.	During heating operation the indoor fan is delayed for 46 seconds or until the indoor coil reaches 24°C (whichever occurs first). This is to prevent cold drafts. Wait 46 seconds and the air will start flowing.
	During defrost of the outdoor coil in heating operation; the indoor fan will not operate for several minutes. Defrost status will be shown in master controller.	This is normal operation during the defrost cycle to prevent cold air being blown into rooms.
Cooling/Heating is not sufficient	The cooling/heating function may not work effectively when the return air filter is clogged with dust and dirt.	Clean the return air filter.
	The cooling/heating function may not work effectively if the air inlet and air outlet on the outdoor unit are blocked.	Make sure the air inlet and air outlet on the outdoor unit is not blocked. Check that the area around the outdoor unit is free from obstructions that may cause the airflow to recirculate.
	The airflow across the indoor coil may not be enough and the anti-freeze protection or over heat prevention systems can lower the cycle capacity for the unit.	Reduce the total static pressure on the indoor fan to increase airflow. For example increase duct sizes, reduce tight duct work bends or increase return air grille size.
	The cool/heat load is too great for the air conditioner.	Perform a heat load analysis on the conditioned space. You may need to consider upgrading your air conditioner with a larger system.
	Open windows or doors will cause inefficient operation.	Close windows and doors in conditioned areas.
	Appropriate zones not turned on.	Turn on appropriate zones (if applicable)
	The outside temperature is beyond the air conditioner design conditions.	If you know a extreme day is coming turn the air conditioner on a few hours before ambient temperatures reach extreme. This should help on those few extreme days.
	You may be trying to operate the whole house on Auto Fan Mode.	Change fan mode to CONT HIGH fan speed. This increases the total fan speed. This will boost fan capacity.

Fault	Possible Causes	Remedies
Steam emitted from outdoor unit	This is caused by the defrosting operation of the outdoor units heat exchanger in heating operation in cold ambient conditions.	This is normal during the defrost operation in cold ambient conditions.
Water emitted from outdoor unit	Condensation of water on the outdoor coil during heating operation.	This is normal during heating operation. You can purchase drip trays to contain then drain this excess water.
Set temperature cannot be adjusted	The zone control set temperature limits is reached.	Check the upper and lower temperature limits are set correctly. See operation manual for details on setting upper and lower temperature limits.
Occasional wishing noise can be heard on heating cycle	This is the sound of the gas changing directions as de-ice cycle begins.	This is a normal function of an air conditioner. The unit is removing any ice on the outdoor unit.
The compressor is running but the system is not cooling.	You are in heating mode.	Check the temperature settings.
	The reversing valve has jammed between heating and cooling.	Replace reversing valve.
The outdoor coil keeps freezing over	Outdoor coil sensor might be faulty. See sensor (temperature/resistance) table and check resistance value.	Replace faulty sensor.
	May have obstruction in outdoor coil.	Remove obstructions.
There is only one condenser fan working	The fan is faulty. Test the fan motor for correct voltage, check the motor winding resistance, open circuit, check capacitor, etc.	Replace faulty fan. If the fan motor needs to be replaced and there isn't one available immediately, then just disconnect the fan electrically and cover the faulty motors fan guard. This way the unit can still operate at reduced capacity using 1 fan until you get a replacement fan motor.
The system is short on gas. You've fixed the leak and want the system to operate at 100% so gas charge can be corrected. What can you do to ensure 100% compressor operation?	You can adjust your wall controller temperature so you have a large differential. This will operate at the system at 100% till the temperature gets to within 4°C of the set point. NOTE: Ensure the the Quiet mode option is disabled.	Select Cooling or heating mode. If cooling adjust set-points more than 4°C lower than room temp. If Heating adjust set-points more than 4°C higher than room temp. Complete refrigerant charging procedure until finished.
The indoor unit gives out odour.	This happens when smell of the room, furniture, or cigarettes are absorbed into the unit and discharged with the airflow.	If this happens, we recommend you to run the air conditioner on cooling for a period of time with the doors and windows open or have the indoor unit washed by a technician. Consult the installer from whom you bought the air conditioner.
	Check the drain is not piped into the sewerage drain line.	Re-pipe drain with a P-Trap and connect into household drainage or storm water drain.

15. Fault and Status Codes

QT*-1000, Master Controller (Main Screen)	ZT*-100 Zone Controller	Outdoor Unit CPU	Category	FUNCTION / FAULT
OFF	OFF	oFF	Status	Unit Off or Unit Turning Off (flashing)
Cooling (Status Bar)	Cooling	CooL	Status	Unit Cooling Mode or Start Cooling (flashing)
Heating (Status Bar)	Heating	HEAt	Status	Unit Heating Mode or Start Heating (flashing)
-	-	dEF3	Status	3 min to defrost
Defrost Status	-	dEF	Status	Heating Mode - Defrost
Heating	Heating	HEAt	Status	Heating Mode - Indoor coil pre-heat after defrost
-	-	dEF2	Status	2 min to defrost
-	-	dEF1	Status	1 min to defrost
-	-	oiLr	Status	Oil returning
Flash Icon (Stat Bar)	-	dr-1	Status	DRM1
Flash Icon (Stat Bar)	-	dr-2	Status	DRM2
Flash Icon (Stat Bar)	-	dr-3	Status	DRM3
❗ - Tech Menu (E02)	-	E02	IDU	Indoor Coil IN Sensor Error (open or short circuit)
❗ - Tech Menu (E03)	-	E03	IDU	Indoor Room Sensor Error (open or short circult)
❗ - Tech Menu (E04)	-	E04	IDU	Indoor Coil OUT Sensor Error (open or short circuit)
❗ - Tech Menu (E06)	-	E06	ODU	High Discharge Temp. (Discharge Temp exceeded 138°C)
❗ - Tech Menu (E07)	-	E07	ODU	Outdoor Coil Sensor Error (open or short circuit)
❗ - Tech Menu (E08)	-	E08	ODU	Outdoor Discharge Sensor Error (open or short circuit)
❗ - Tech Menu (E09)	-	E09	ODU	LP Tripped
❗ - Tech Menu (E10)	-	E10	ODU	LP Sensor Error (open/short circuit)
❗ - Tech Menu (E11)	-	E11	ODU	HP Tripped
❗ - Tech Menu (E12)	-	E12	ODU	HP Sensor Error (open/short circuit)
❗ - Tech Menu (E15)	-	E15	ODU / VSD	VSD Communication Error
❗ - Tech Menu (E18)	-	E18	ODU	In EEV Module Suction Temp Sensor is Open
❗ - Tech Menu (E22)	-	E22	ODU	Ambient Sensor Failure (open/short circuit) - Safe Mode
❗ - Tech Menu (E26)	-	E26	VSD	Over Current
❗ - Tech Menu (E27)	-	E27	VSD	Over Voltage
❗ - Tech Menu (E28)	-	E28	VSD	VSD Temperature High
❗ - Tech Menu (E29)	-	E29	VSD	Low Supply Voltage
❗ - Tech Menu (E30)	-	E30	VSD	Trip Lock
❗ - Tech Menu (E41)	-	E41	VSD	DC Link Voltage Low
❗ - Tech Menu (E42)	-	E42	ODU	Envelope protection error
❗ - Tech Menu (E43)	-	E43	ODU	Envelope protection error
❗ - Tech Menu (E44)	-	E44	ODU	Envelope protection error
❗ - Tech Menu (E45)	-	E45	ODU	Envelope protection error
❗ - Tech Menu (E50)	-	E50	ODU	Outdoor Board configuration error
❗ - Tech Menu (E51)	-	E51	IDU / ODU	Communication error between outdoor and indoor units
❗ - Tech Menu (E52)	-	E52	IDU / ODU	Communication error between indoor board and 8-zone module
❗ - Tech Menu (E53)	-	E53	AMIB / ODU	Communication error between indoor and master controller
❗ - Tech Menu (E60)	-	E60	VSD	Compressor Phase Over Current
❗ - Tech Menu (E62)	-	E62	VSD	DC Bus Over Voltage
❗ - Tech Menu (E63)	-	E63	VSD	DC Bus Under Voltage
❗ - Tech Menu (E66)	-	E66	VSD	AC Voltage Imbalance
❗ - Tech Menu (E67)	-	E67	VSD	Inverter Desaturation
❗ - Tech Menu (E69)	-	E69	VSD	PFC-IGBT Over Temp
❗ - Tech Menu (E70)	-	E70	VSD	Lost Rotor Position
❗ - Tech Menu (E71)	-	E71	VSD	Motor Thermistor Fault46
❗ - Tech Menu (E72)	-	E72	VSD	Precharge Relay Open
❗ - Tech Menu (E74)	-	E74	VSD	Compressor Phase Over Current

QT*-1000, master controller (Main Screen)	ZT*-100 zone controller	Outdoor Unit CPU	Category	FUNCTION / FAULT
❗ - Tech Menu (E75)	-	E75	VSD	Compressor Phase Current Foldback Timeout
❗ - Tech Menu (E76)	-	E76	VSD	Power Module Temp. Fold Back Timeout
❗ - Tech Menu (E77)	-	E77	VSD	AC Input Current Fold Back Timeout
❗ - Tech Menu (E78)	-	E78	VSD	Auto Config Communication Timeout
❗ - Tech Menu (E80)	-	E80	VSD	Motor Temp High
❗ - Tech Menu (E81)	-	E81	VSD	Board Temp High
❗ - Tech Menu (E82)	-	E82	VSD	Power Module Temp High
❗ - Tech Menu (E83)	-	E83	VSD	PFC-IGBT Temp High
❗ - Tech Menu (E84)	-	E84	VSD	DSP to PFC Communication Lost
❗ - Tech Menu (E85)	-	E85	VSD	Comms to DSP Communication Lost
❗ - Tech Menu (E86)	-	E86	VSD	Compressor Phase Current Imbalance
❗ - Tech Menu (E87)	-	E87	VSD	3 Phase PFC Current Imbalance
❗ - Tech Menu (E88)	-	E88	VSD	Micro Electronic Fault or Drive EEPROM Fault
❗ - Tech Menu (E89)	-	E89	VSD	Motor Overspeed
❗ - Tech Menu (E90)	-	E90	VSD	Compressor Model Configuration Error
❗ - Tech Menu (E91)	-	E91	VSD	Inverter Temp Imbalance
❗ - Tech Menu (E92)	-	E92	VSD	PFC Temp Imbalance
❗ - Tech Menu (E93)	-	E93	VSD	Motor Temp Low
❗ - Tech Menu (E94)	-	E94	VSD	Board Temp Low
❗ - Tech Menu (E95)	-	E95	VSD	Power Module Temp Low or Sensor Open fault
❗ - Tech Menu (E96)	-	E96	VSD	PFC-IGBT Temp Low
❗ - Tech Menu (E97)	-	E97	VSD	Comms ADC Failure

PFC: Power Factor Correction
DSP: Digital Signal Processor
IGBT: Insulated-Gate Bipolar Transistor
ADC: Analog to Digital Convertor

NOTE

When unit is powered up, "boot" will show in 7 segment display of outdoor board for 30 seconds, followed by normal controller status codes.

16. Frequently Asked Questions

Q. What is the difference between a VAV and a Non-VAV zone in Platinum System with Que controller?

A. VAV zone modulates airflow to achieve required zone temperature. VAV zone must have its own zone device installed (zone controller or zone sensor). Non-VAV zone is ON or OFF zone only. Any zone that shares zone device or a zone assigned to master controller is a Non-VAV zone.

Q. Can I have both VAV and Non-VAV zones in a Que Control system?

A. Yes. VAV and Non-VAV zone is determined by type of zone device linked to the zone and also the accessories you have. This can be configured via zone set up.

Q. Can you turn the system off from the individual zone controller?

A. YES. From zone controller, press and hold the power button (approx. 3 seconds) to turn OFF the whole system.

Q. Can you turn the system ON from the zone controller?

A. YES. From zone controller, press and hold the power button (approx. 3 sec onds). It will activate the zone and will maintain

the previous state of all other zones.

Q. Can you adjust differentials of the zone?

A. No, you cannot. Differential settings are configured at the master wall control and are applicable to all zones connected to it.

Q. Is there any indication on the zone control when it is in defrost mode?

A. No. The status on the master control indicates this.

Q. Can you put a Zone Sensor and Zone Control in each zone?

A. Yes you can, it will average the temperature between the two sensors. This application is normally used for large open plan areas that may be on the same zone.

Q. Is the sensor on the master control operational?

A. Yes, by default, all zones are linked to the master control unless changed. Sensor assignment can be changed via zone set-up menu.

Q. Would an in-line fan cause any operational problems if installed?

A. Yes it would. An in-line fan is not recommended on the variable fan units connected to it.

Q. Can you use a master control to act as a zone sensor controlling the varying air to that zone?

A. No, any zone linked to master control is a Non-VAV zone.

Q. Is it possible to turn all zone controls off to shut the system down?

A. Yes, the system will turn OFF

Q. Is it possible to use the Manual fan speed mode to increase the air into a particular zone if the auto fan mode is not producing enough air?

A. Yes, during extreme conditions you may need to turn the fan mode to either Manual High or Medium to increase the airflow into the zone thus improving the system performance.

NOTE

This is when using less than your total number of installed zones.

Q. Can I still piggyback 2 zone barrels together as 1 zone?

A. Yes, up to a total of 10 zone barrels per system with maximum of 2 dampers per zone can be installed.

Q. During AUTO mode, if the system receives 2 equal call for both Cooling and Heating while the system is in standby, what cycle starts first?

A. It will start on whatever mode required by a zone with highest temperature differential (between set point and actual zone temperature).

Q. Can I use 2 Zone Controller to average a large room?

A. No, for averaging large rooms you must use a 1 x zone controller + 1 x remote sensor or 2 x remote sensors.

Q. Does the Que Platinum system use a different zone barrel to the standard ON/OFF type 24volt ActronAir barrels?

A. No, they are the same barrels. ActronAir designed these zone motors with the intension to communicate with the Que system.

Q. Can I calibrate the onboard temperature sensor on the zone control or remote sensor?

A. No.

Q. Do I have to assign zones or sensor to zones on commissioning?

A. During commissioning process, the controller will detect available zones connected to the system. By default, all zones are assigned to master controller.

Q. If I am not in Auto Fan mode on the master will my zone still modulate the airflow?

A. Yes, it doesn't matter what fan mode you are in, if your zone is configured as a VAV zone, it will modulate to control your conditions.

Q. Where would we put common zones if we wanted to use one?

A. You no longer need wasteful common zones with ESP Platinum System. Common zones are impractical, as you have to dump unwanted excess air from the fan in spaces you don't necessarily need. Common zones were introduced because of the limitations of all standard fan coils. The system is designed to control every zone in your house and eliminate this element of waste and maximise comfort.

Q. How can I make the System run at a constant 100% capacity (for example when re-charging the system)?

A. In Cooling Mode: Adjust the master wall control set temperature 4°C lower than the room temperature and set the indoor fan speed to nominal airflow.

In Heating Mode: Adjust the master wall control set temperature 4°C higher than the room temperature and set the indoor fan speed to nominal airflow.

NOTES

- Ensure that quite mode option is disabled to allow the compressor to run at 100%.
- Nominal airflow is the air supplied by the air conditioners at its standard rating conditions. This data can be found in the ActronAir technical catalogue or by contacting technical support on 1800 119 229 & quoting the applicable unit model

17. Key Components Parts List

			MODELS			
			CRQ2-16AT	CRQ3-18AT	CRQ5-21AT	CRQ5-24AT
ITEM	DESCRIPTION	PART NUMBER	QUANTITY	QUANTITY	QUANTITY	QUANTITY
1	Compressor ZPV038LE-4X9	1560-474	1	1	---	---
	Compressor ZPV050DE-4X9	1560-475	---	---	1	1
2	Compressor Drive 497-1921-00(EV2080M-K8-291)	2065-014	1	1	---	---
	Compressor Drive 497-1921-00(EV2080M-K7-291)	2065-015	---	---	1	1
3	Outdoor Coil Assembly	1020-158	1	---	---	---
		1020-159	---	1	---	---
		1020-161	---	---	1	---
		1020-160	---	---	---	1
4	OD Fan	2505-109	2	2	---	---
		2505-130	---	---	2	2
5	OD Control Board	2020-159	1	1	1	1
6	Capacitor Board (143-0020-00)	2020-161	1	1	1	1
7	EMI Filter Board (143-0028-01)	2020-162	1	1	1	1
8	Inductor (037-0045-00)	2045-187	1	1	1	1
9	Control Isolator - 10A	2010-021	1	1	---	---
	Control Isolator - 16A	2010-028	---	---	1	1
10	Circuit Breaker - Compressor Drive 20A	2010-048	1	1	1	1
11	Capacitor - Med Speed 30 µF	2005-730	---	---	1	1
12	Capacitor - Low Speed 20 µF	2005-720	---	---	1	1

			MODELS			
			CRQ2-16AT	CRQ3-18AT	CRQ5-21AT	CRQ5-24AT
ITEM	DESCRIPTION	PART NUMBER	QUANTITY	QUANTITY	QUANTITY	QUANTITY
13	Capacitor - Med Speed 25 µF	2005-725	1	1	---	---
14	Capacitor - Low Speed 10 µF	2005-710	1	1	---	---
15	Capacitor - Run 4 µF	2005-704	2	2	---	---
	Capacitor - Run 8 µF	2005-708	---	---	2	2
16	LP Sensor	2060-043	1	1	1	1
17	LP Switch	2060-112	1	1	1	1
18	HP Sensor	2060-042	1	1	1	1
19	HP Switch	2060-116	1	1	1	1
20	Metering Device (0.0700" / 2.4mm) Piston	4540-070	1	---	---	---
	Metering Device (0.0720" / 2.4mm) Piston	4540-072	---	1	---	---
	Metering Device (0.0846" / 2.4mm) Piston	4540-084	---	---	1	---
	Metering Device (0.0625" / 2.4mm) Piston	4540-062	---	---	---	2
21	EEV (Assy)	4550-040	1	1	---	---
		4550-044	---	---	1	---
		4550-041	---	---	---	1
22	EEV Stator Coil	4550-031	1	1	1	1
23	Reversing Valve	4560-112	1	1	1	1
24	Suction Accumulator	4510-026	1	1	1	1
25	Crankcase Heater	2025-009	1	1	1	1

ActronAir

That's better. That's Actron.

actronair.com.au
1300 522 722

Document: 0525-063 Issue Date: 01/2019