



QSCU Series Installation & Service Manual



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Installation and Maintenance Manual

Report all Shipping Damage to Carrier IMMEDIATELY, Check unit and box exterior for damage

Note to Installer

This manual is to aid the qualified HVAC contractor in the Installation and Maintenance of this Quietside R410a Side Discharge Condensing unit.

Please read and understand these instructions prior to installing the unit; failure to comply with these instructions may result in improper installation, operation and maintenance, possibly resulting in fire, electrical shock, property damage, personal injury or death.

Installers please retain this manual for future reference. Please pass warranty registration to end user.

If Technical Assistance is required during installation or start up, please visit our website at www.quietside.com

or call 1-562-699-6066 or 717 243 2535 to speak to a Technical Service Assistant

When calling please have the Model numbers and Serial numbers available.

Safety Instructions



Read all the Instructions; Install and apply the system per those instructions.
Use the unit only in the manner described in this manual.

- 1 Check Rating Plate for correct system voltage before installing the unit.
Installing and operating a unit with the incorrect voltage may result in malfunction or other issues and **will void the warranty.**
- 2 Units must be connected to a correctly grounded Electrical Supply
- 3 Do not use the units if they have been dropped or otherwise damaged or installed incorrectly

The manufacturer of the unit will not be liable for any damages caused by failure to comply with the installation and operating instructions in this manual

The unit Rating Plate contains pertinent information to the unit operation, please refer to it as required



This symbol is an indication of Important Safety Information



DANGER

Completely read all Instructions prior to assembling installing, operating, or working on these units
Inspect all parts for damage prior to installation and start up
Units must be installed by a Qualified HVAC Contractor

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Installation and Maintenance Manual

Installer Supplied Items

- Refrigerant Line Set : Brazed Connection only, suitable for R410A with both lines insulated, max length 100ft.
- Main System Breaker : Sized per unit requirements, to be mounted adjacent to Outdoor unit.
- Local Disconnect and power whip : Mounted adjacent to Condensing unit.
- Low Voltage Control Wiring : Y & C Wires required from Indoor unit/Thermostat.
- Mounting Hardware : Wall Anchors, Condenser Pad etc.
- Refrigerant : R410A required for additional line set charge (Unit is charged for 25ft interconnect as standard).

Items for Consideration

Application

Check the application of the unit prior to installation, certain applications require additional components or installation parameters

Indoor Unit Expansion Device

It is **MANDATORY** to use an Indoor unit or Coil equipped with a correctly sized balanced port TXV to control refrigerant flow to the evaporator coil.

Use of a TXV will ensure maximum efficiency of the unit plus control Suction gas quality to ensure reliability over the lifetime of the unit. Not using a correctly sized TXV will **VOID THE WARRANTY**

Locate the Indoor and Outdoor units as close together as possible, maximum line set run and lift **CANNOT BE EXCEEDED**, then determine how the Interconnect piping, wiring and condensate hose is to be run.

Unit	Max Line Set Run	Max Vertical Lift	Line Sizes
QSCU-361	100 Feet	50 Feet	3/8" & 5/8"
QSCU-481	100 Feet	50 Feet	3/8" & 3/4"
QSCU-601	100 Feet	50 Feet	1/2" & 7/8"

Ensure that all panels can be removed for service as required

Certifications

Safety

All Quietside QSCU Side Discharge Units are certified under UL Standard 1995 by ETL for sale in both US and Canada

Performance

Performance is certified by our pending certification under the ARI 210/240 Program



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Controls and Components

Units are set up to be used with a 24V AC Cooling only or Cool - Supplemental heat thermostat. Two wires are connected from either the thermostat or the Indoor unit (depending on Indoor unit model) to the Outdoor unit. All unit operating functions are controlled via the thermostat.

Optional Controls and Components

Low Ambient Controller : ICM 326H must be used in Data Room or Commercial applications

For a wiring diagram please contact Quietside or follow general diagram supplied with ICM Controller. Probe must be located in the fin pack or on a return bend that measures approx 100 DegF during normal operation.

Unit Installation



Follow Instructions, failure to follow instructions may cause possible malfunction and void any warranty

Step 1

Remove unit from the carton/box

Carton contains Installation manual, check entire unit, make sure the Suction and Liquid Service Valves have not been damaged prior to installation.

Step 2

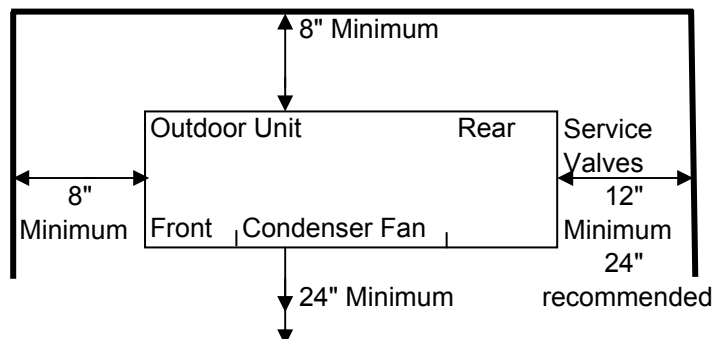
Locate area to Install Condensing unit

Unit must be installed on a flat, stable, and solid surface to prevent excessive noise and vibration. Quietside's recommendation is to install the Outdoor on a Condenser Pad.

When hanging the unit on the outside of building mounting brackets capable of supporting the unit weight are MANDATORY. If you have any questions regarding installation please contact the manufacturer.

Installing the unit on a side walk can cause inconvenience to pedestrians, ensure no obstruction is caused. Don't forget to peel any protective film and tapes off the unit after installation.

Clearances for the Outdoor unit are :





Installation and Maintenance Manual

Unit Installation (Cont)

Step 2 (Cont)

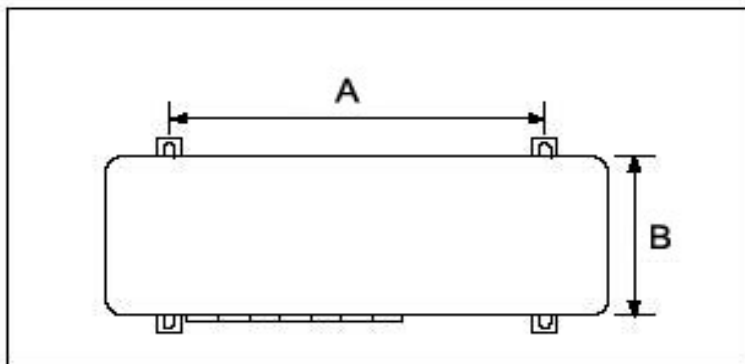
Do not install the Outdoor unit in a location exposed to high winds (field fabricated and installed wind baffle may be required). When installing unit on roof ensure that if possible unit is positioned so that airflow through the unit is not affected by any prevailing wind.

Make sure that location does not impede access around unit and pose a disturbance to neighboring areas.

Make sure that location offers easy access to Electrical power and that line set run to Indoor unit will not exceed the stated Maximum line set runs or lifts.

Make sure that location is away from gutters or other areas where water, snow or ice can drain directly onto the unit, also to maximize unit efficiency of the unit do not install it where it can be exposed to direct sunlight.

Mounting Hole Location



Model	Dimension A	Dimension B
QSCU-361	33 3/4"	18 3/4"
QSCU-481	33 3/4"	18 3/4"
QSCU-601	33 3/4"	18 3/4"

When locating multiple units in an area ensure that the hot condenser discharge air cannot enter the coil of another unit, possible malfunction and loss of capacity and efficiency may occur.

Always locate the units in line or facing each other to prevent air recirculation.

Units can be stacked vertically, however it is always recommended that enough separation to the base of the unit located above is provided to allow service access to the unit below (removal of the top panel).

Airflow on the Quietside QSCU is reversed to reduce noise levels with the condenser fan sucking in intake air and exhausting it through the condenser coil side of the unit.



Installation and Maintenance Manual

Unit Installation (Cont)

Step 3

Refrigerant Line Set Piping

Use only refrigerant grade copper tubing, ensure line set sizing follows the published table.

Interconnecting line set between the Outdoor unit and the Indoor unit, must have the Suction refrigerant line insulated with a minimum of 3/8" thick armafex or similar insulation.

INSTALL A LIQUID LINE SIGHT GLASS & R410A FILTER DRIER IN THE SYSTEM

Run the line set to the Indoor unit, avoid tight bends and kinking the lines.

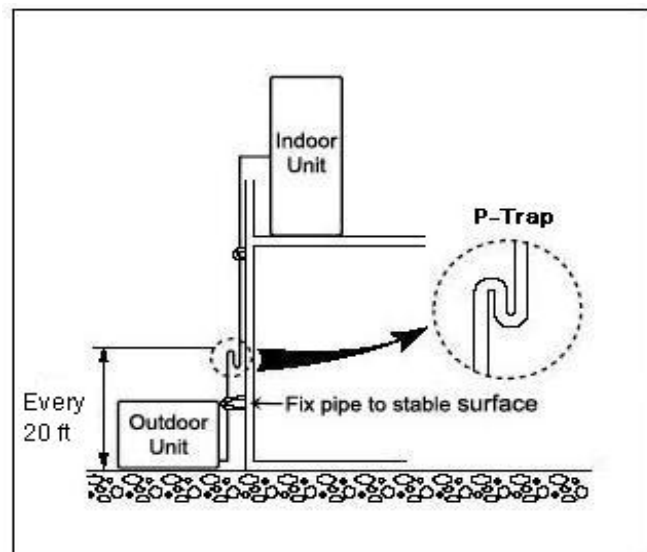
Quietside does not recommend the use of "Street Elbows" to make bends, this is due the pressure drop incurred with these.

Always use long radius elbows or use a tube bender to ensure refrigerant flow in the system.

Unit	Max Line Set Run	Max Vertical Lift	Suction	Liquid
QSCU-361	100 Feet	50 Feet	5/8"	3/8"
QSCU-481	100 Feet	50 Feet	3/4"	3/8"
QSCU-601	100 Feet	50 Feet	7/8"	1/2"

Line Set sizing must be as shown in the table, maximum line length cannot be increased by altering line sizes.

When placing Outdoor unit below the Indoor unit a trap is required every 20ft to ensure correct oil return to the condensing unit.



ONLY MATCH WITH INDOOR UNITS USING TXV'S AS THE EXPANSION DEVICE



Installation and Maintenance Manual

Unit Installation (Cont)

Step 4

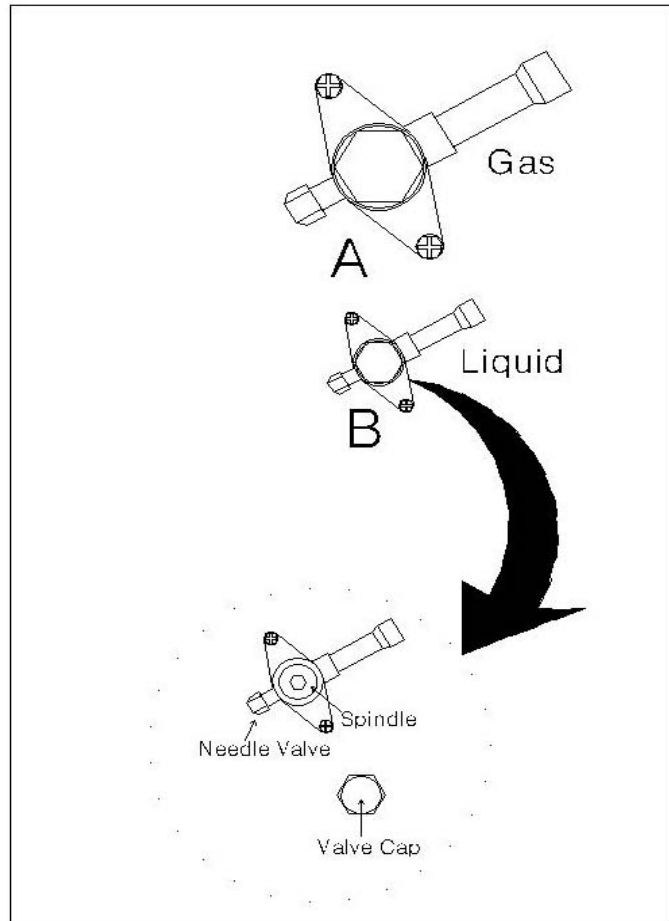
Connect Refrigerant Line Set Piping

Flow nitrogen or other inert gas through piping while brazing to prevent formation of copper oxide.

To avoid damage while brazing, service valves need to be wrapped with a heat-sink material such as a wet cloth to prevent possible damage to the valve seals.

Field piping and fan coil must be leak tested before start-up. Nitrogen or other inert gas should be used. A minimum pressure of 250 psig should be used.

Any detected leaks should be repaired prior to placing the system on the vacuum pump.



Step 5

Evacuation

Manifold Gauge set should be attached to both the service ports.

Evacuate the unit down to a minimum of 200 Microns; break vacuum with Nitrogen to further leak check. Re-evacuate the system down to 200 Microns or lower.

Use current leak check methods, including soapy bubbles etc.

This is an R410A System it is essential that a deep vacuum be pulled on the system to remove all traces of moisture.



Installation and Maintenance Manual

Unit Installation (Cont)

Step 6

Main Power Wiring



Electrical Wiring should be done in accordance with all National Electrical Code (NEC) and local state/city building codes

Breaker size and wiring to local disconnect must be sized for the rating plate amperage, MCA and MOP. If a smaller size breaker is used, the possibility of unit damage and other serious problems could occur

Use only HACR type breakers, each system installed must have a separate branch circuit with an individual breaker/fuse

	QSCU-361	QSCU-481	QSCU-601
Power Voltage	208/230V - 1Ph - 60Hz		
Breaker Size	30A	50A	60A
RLA Cooling (Amps)	9.9A	13.9A	14.1A
MCA (Amps)	18.9A	28.6A	34.8A
MOP (Amps)	30A	50A	60A
Control Voltage	24V AC	24V AC	24V AC

Size the wiring between the breaker and local disconnect per all applicable national, local and provincial codes.

A local disconnect should be installed adjacent to the Outdoor unit in accordance with all applicable codes.



Two Knockouts are provided in the side panel of the unit.

One knockout is for power 208/230V wiring.

One knockout is for control 24V wiring.



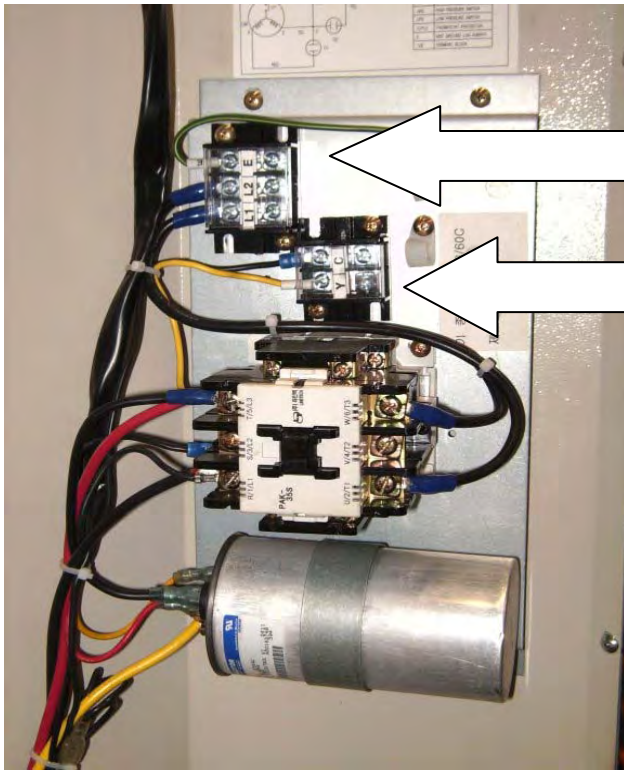
Installation and Maintenance Manual

Unit Installation (Cont)

Step 6 Wiring (cont)



Electrical Wiring should be done in accordance with all National Electrical Code (NEC) and local state/provincial/city building codes.



Power Wiring - 208/230V to L1 and L2
Ground wire to Terminal E (Earth)

Control Wiring Y and C wires from the
Air Handler or Thermostat to wired to the
Outdoor unit to energize the compressor
contactor.



The basic system installation is now complete.
The unit is now ready for start up -
Use this time to ensure that worksite is tidy. Quietside recommend the use of Slimduct products to hide the refrigerant line set interconnects - available from your Quietside distributor.



Installation and Maintenance Manual

Unit Start Up

With the refrigerant system completely evacuated the system can now be opened to allow the refrigerant charge in the Outdoor unit to be released into the line set.

The Service Valves require Allen wrenches sized per the table to undo the valve stems .
Remove the brass caps from the Service Valves to access the valve stems.

Service Valve Wrench size

	Suction Valve	Liquid Valve
QSCU-361	4mm	4mm
QSCU-481	4mm	4mm
QSCU-601	8mm	4mm

Open the service valves to flood the system with refrigerant.

Unscrew both valve stems until they come to a stop against the valve body, replace the Brass Caps and then tighten the caps to prevent leaks.

Energize the breaker to allow system to be powered.

Unit is charged with enough R410A refrigerant for a line set of 25ft length.

	R410A Charge	Add Charge at
QSCU-361	159 oz	0.5oz/ft
QSCU-481	194 oz	0.5oz/ft
QSCU-601	194 oz	0.5oz/ft

For longer line set lengths additional charge must be WEIGHED in per the following table

Unit	Added Charge required for a line set of varying lengths					
	40	50	60	75	90	100
QSCU-361	7.5oz	12.5oz	17.5oz	25oz	32.5oz	37.5oz
QSCU-481	7.5oz	12.5oz	17.5oz	25oz	32.5oz	37.5oz
QSCU-601	7.5oz	12.5oz	17.5oz	25oz	32.5oz	37.5oz

Standard Operation of the unit - Cooling

Indoor Temperature Split 20 DegF
Suction Pressure 125 Psig, approx 43 DegF
Suction Line Temperature 50-55 DegF





Installation and Maintenance Manual

Troubleshooting

No Cooling

- 1 Check for a cooling signal from the Indoor unit or thermostat, 24V AC should be present at the Y and C terminals at the Outdoor unit/
If 24V AC is not present, check that the thermostat or Indoor unit is calling for cooling.
- 2 If 24V AC is present; check to ensure compressor contactor is energized, if contactor is not energized, check for voltage at the contactor coil, if voltage is present, but contactor is not pulled in, then contactor is faulty and should be replaced.
- 3 If 24V AC is not present at the contractor, check the high and low pressure switches for continuity. Both switches are auto reset type but if no continuity can be found across either switch it is possible that the high or low pressure situation exists or the switch is faulty.
- 4 If the contactor has pulled in, and the compressor is not running, check the overload on the top of the compressor for continuity, if overload is tripped replace.
- 5 If the OLP has continuity, but the compressor is not running, check the compressor and capacitor for operation, replace if found faulty.

High Pressure Switch trip

If the High Pressure switch trips during operation the following items should be checked

- 1 Outdoor Fan Motor, ensure that it operates in conjunction with the compressor, if it does not operate check the motor windings and also the fan capacitor, replace if necessary
- 2 Make sure the condenser coil is free from debris, clean if necessary, make sure that the airflow to and from the unit is not impeded or discharge air from another unit is entering this unit.
- 3 Check system refrigerant pressure with compressor off, pressure should convert to approx ambient temperature (use the conversion on the manifold gauge dial). This ensures that non condensibles are not present in the refrigerant. If system pressure is abnormally high, reclaim refrigerant, evacuate and recharge with virgin R410A.

Low Pressure Switch Trip

If the low pressure switch trips during operation the following items should be checked

- 1 Refrigerant charge. Low pressure trips are a symptom of a loss of refrigerant charge, check the refrigerant piping and units for a leak
- 2 Check the Indoor unit to make sure it is operating and the filters are clean. A frozen Indoor unit coil can be caused by low or no airflow, dirty filters, or a restriction in the line set or expansion device

Poor Cooling Performance

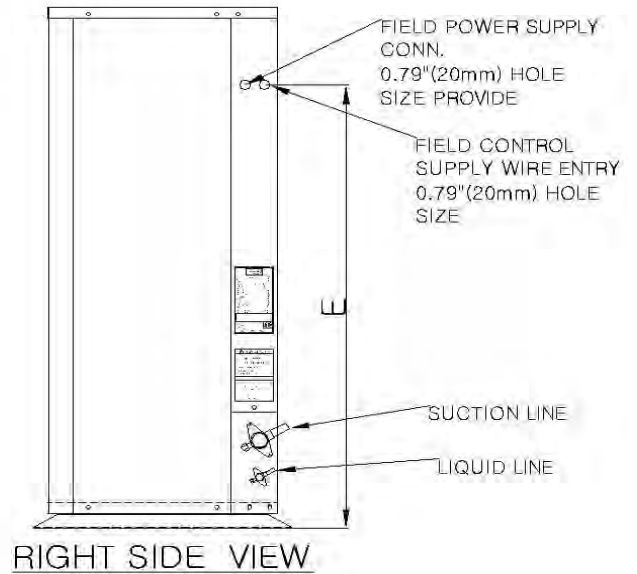
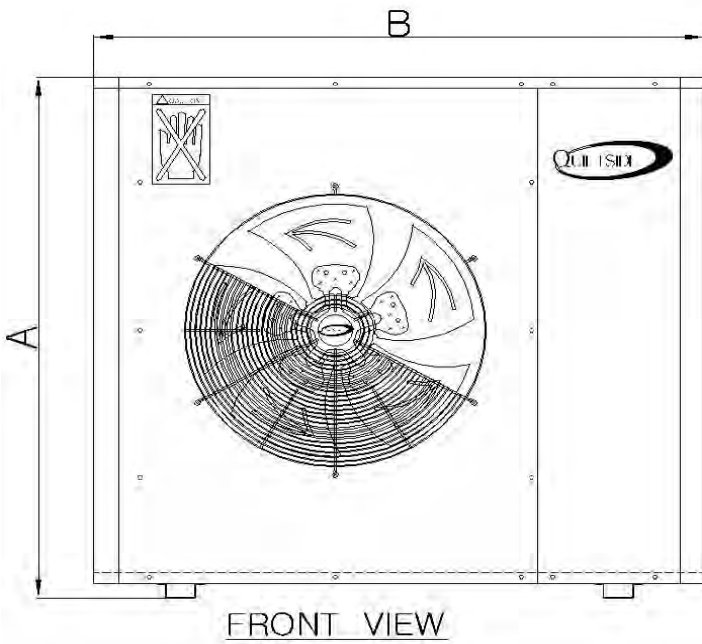
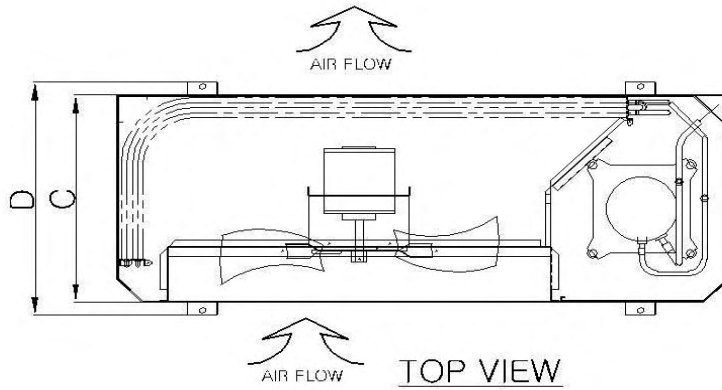
Most issues with poor cooling performance are related to the Indoor unit, airflow, ductwork, dirty filters, however also check.

- 1 Unit refrigerant charge: Check to ensure charge is correct.
- 2 Check condenser coil for dirt and debris: Clean coil if necessary.

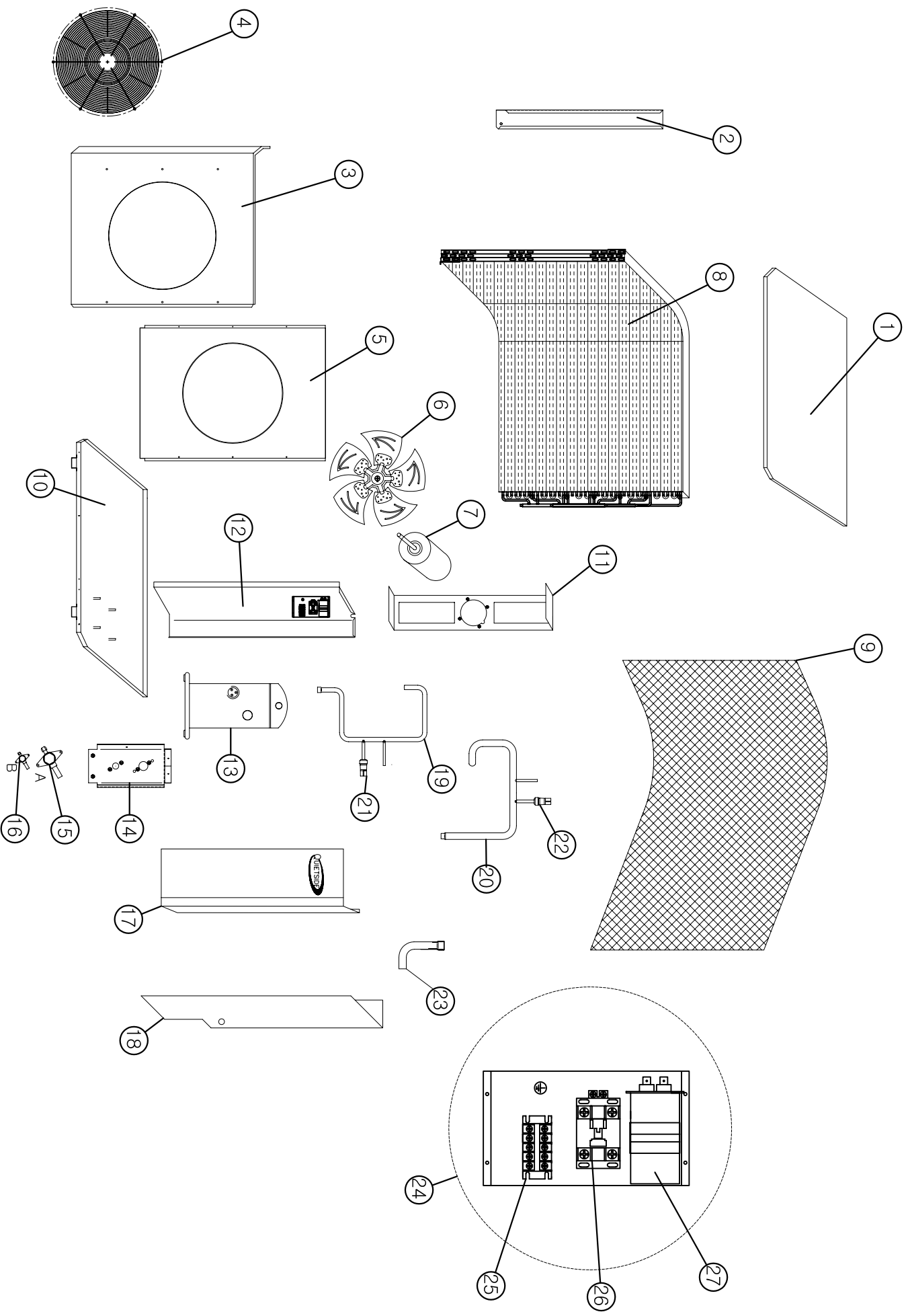
Unit Dimensions

UNIT MODELS	A	B	C	D	E
QSCU-361	37 5/8" (956)	47 1/4" (1200)	17 3/4" (450)	20" (506)	31 3/8" (797)
QSCU-481/601	43 1/2" (1106)	47 1/4" (1200)	17 3/4" (450)	20" (506)	37 1/4" (947)

NOTE : Dimensions shown in feet-inches. () are millimeters.



QSCU-361, 481, 601

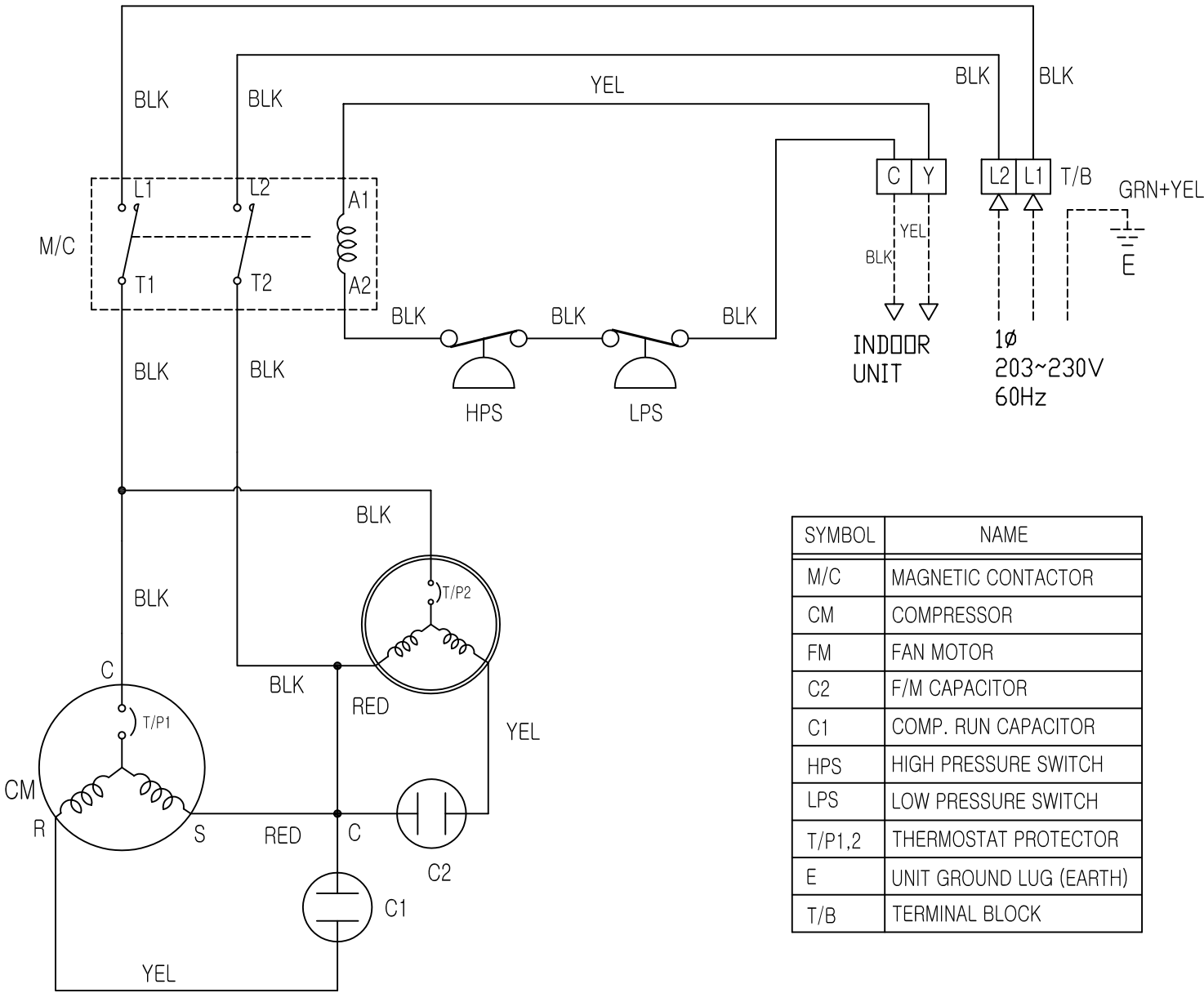


Parts List : QSCU-361/481/601

No.	CODE No.	Description	Specification	Q'TY		
				QSCU-361	QSCU-481	QSCU-601
1	KC2001	TOP COVER	SECC	1	1	1
2	KC2009	SIDE FRAME	SECC	1		
	KC2019				1	1
3	KC1001	FRONT COVER	SECC	1		
	KC1002				1	1
4	KC2011	FAN GUARD	SWRM	1	1	1
5	KC2005	FAN COVER	SECC	1		
	KC2016				1	1
6	KC3005	FAN ASS'Y	AL	1	1	1
7	KC3034	FAN MOTOR ASS'Y	IC-13670COA	1	1	1
8	KC1004	CONDENSER ASS'Y	ASS'Y	1		
	KC1005				1	1
9	KC3004	NET COIL	P.E,H	1	1	1
10	KC2002	BASE ASS'Y	ASS'Y	1	1	1
11	KC2010	MOTOR BRACKET	SGCC, T1.6	1		
	KC2021				1	1
12	KC2007	COMP COVER	SECC	1		
	KC2020				1	1
13		COMPRESSOR	ZP29K5E-PFV	1		
			ZP42K5E-PFV		1	
			ZP51K5E-PFV			1
14	KC2008	VALVE BRACKET	SECC	1	1	1
15	KC3035	SERVICE VALVE - A	5/8"	1		
	KC3036		3/4"		1	
	KC3037		7/8"			1
16	KC3038	SERVICE VALVE - B	3/8"	1	1	
	KC3039		1/2"			1
17	KC2003	SIDE COVER	SECC	1		
	KC2018				1	1
18	KC2004	COVER	SECC	1		
	KC2017				1	1
19	KC3026		ASS'Y	1		
	KC3027				1	1
20	KC3028	SUCTION PIPE	ASS'Y	1		
	KC3029				1	
	KC3033					1
21	KC3040	HIGH PRESSURE SWITCH	HR200-HITECH 25-001	1	1	1
22	KC3041	LOW PRESSURE SWITCH	HR200-HITECH 25-002	1	1	1
23	KC3013	COIL OUT PIPE	3/8"	1	1	
	KC3014		1/2"			1
24	KC3001	CONTROL BOX ASS'Y	ASS'Y	1	1	1
25		TERMINAL BLOCK	DATB-S 5P	1	1	1
26		CONTACTOR	PAK-25S	1		
			PAK-35S		1	1
27		CAPACITOR	45 μ F, 5 μ F/450VAC	1		
			70 μ F, 5 μ F/450VAC		1	1

WIRING DIAGRAM

QSCU 361/481/601



SYMBOL	NAME
M/C	MAGNETIC CONTACTOR
CM	COMPRESSOR
FM	FAN MOTOR
C2	F/M CAPACITOR
C1	COMP. RUN CAPACITOR
HPS	HIGH PRESSURE SWITCH
LPS	LOW PRESSURE SWITCH
T/P1,2	THERMOSTAT PROTECTOR
E	UNIT GROUND LUG (EARTH)
T/B	TERMINAL BLOCK



Side Discharge Condensers

Specifications	QSCU-361	QSCU-481	QSCU-601
General			
Nom Cooling Capacity (Btu/h)	36,000	48,000	60,000
SEER	Dependant on Indoor 13 SEER Minimum	Dependant on Indoor 13 SEER Minimum	Dependant on Indoor 13 SEER Minimum
EER	Dependant on Indoor	Dependant on Indoor	Dependant on Indoor
Power Voltage	208/230V-1Ph-60Hz	208/230V-1Ph-60Hz	208/230V-1Ph-60Hz
Breaker Size	30A	50A	60A
RLA Cooling (Amps)	9.9A	13.9A	14.1A
Control Voltage	24V AC	24V AC	24V AC
Refrigerant Type	R410A	R410A	R410A
Outdoor Noise Level (Db)	65Db	66Db	67Db
Width (Inches)	37 1/2"	43 3/8"	43 3/8"
Height (Inches)	47 1/4"	47 1/4"	47 1/4"
Total Depth (Inches)	17 3/4"	17 3/4"	17 3/4"
Weight (lbs)	238lbs	267lbs	295lbs
Compressor	ZP29K5E-PFV-130	ZP42K5E-PFV-130	ZP51K5E-PFV-130
Compressor RLA (Amps)	14.1A	21.8A	26.4A
Outdoor Fan	1 x Ø21 5/8"	1 x Ø21 5/8"	1 x Ø21 5/8"
Fan Motor (hp)	0.45hp	0.45hp	0.45hp
Fan Motor FLA (Amps)	1.3A	1.3A	1.3A
Nominal Airflow (CFM)	4000 CFM	4200 CFM	4200 CFM
Line Set Sizes (")	3/8" & 5/8"	3/8" & 3/4"	3/8" & 7/8"
Max Line Set Length inc	100ft	100ft	100ft
Max Vertical Separation of	50ft	50ft	50ft
Charged with R410A for	25ft	25ft	25ft
Addl R410A charge required	0.4oz/ft over 25ft	0.5oz/ft over 25ft	0.6oz/ft over 25ft
Safety Certification	ETL		
Low Pressure Switch	Cut Out 20psig - Cut In 45psig		
High Pressure Switch	Cut Out 650psig - Cut In 450psig		
Performance Certification	ARI Certified		
ARI Certification Reference #	TBA	TBA	TBA
Warranty	5 Years Compressor 5 Years Parts		
Options	Low Ambient Control Condenser Brackets		

Quietside

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