MINI-SPLIT
INSTALLATION AND MAINTENANCE MANUAL

FOR MODELS

MSC49A14115B	**9A44YCB**
MSC412A14115B	**12A44YCB**
MSC418A14230B	**18A44ZCB**
MSC424A13230B	**24A43ZCB**
MSC49HP14115B	**9H44YCB**
MSC412HP13115B	**12H43YCB**
MSC418HP13230B	**18H43ZCB**
MSC424HP13230B	**24H43ZCB**

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Installation and Maintenance Manual

Report shipping damage to carrier IMMEDIATELY. Check units and box exterior for damage.

NOTE TO INSTALLER

This manual is to aid the qualified HVAC contractor in the installation and maintenance of this mini-split system.

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; pass warranty registration to end user. If technical assistance is required during installation or start up, please call 704-504-8590 for technical assistance. Before calling please have the model and serial numbers available.

Safety Instructions
Read all the instructions. Install and operate the system per these 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 damage 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.

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.

The following Installation kits are recommended for worry free installation.
1. 24331412 (33 ft) is for 9,000 / 12,000 BTU/h units.
2. 24253858 (25 ft.) or 24503858 (50 ft.) is for 18,000 / 24,000 BTU/h units.

If a condensate pump is needed for installation, the following is recommended.
1. 115VAC – P/N DE05LUA520 (4100122)
2. 230VAC – P/N DE05LUA720 (4100123)
3. Easy Fix Kit – P/N GC1KFX2010 (4100124)

Installer Supplied Items

The following items are necessary for the installation of the unit. An installation kit may be purchased that includes these items.

- Refrigerant line set: Flared connection only, suitable for R410A with both lines insulated, max length 50 ft.
- High voltage interconnect wiring: 14 AWG wiring from outdoor unit to indoor unit for power and control.
- Condensate tubing: Per local codes to remove condensate from the indoor unit.
- 5/8" drain tubing as necessary.
- Wall Sleeve
- Sealant
- 2' wide tape

The following Items are necessary for installation but are **NOT** included in the installation kit.

- Main system breaker: Sized per unit requirements (see specifications - page 16 and page 18), to be mounted adjacent to outdoor unit.
- Refrigerant: R410A required for additional line set charge.
- Mounting hardware: Wall anchors, condenser pad etc.

Parts Included with Unit

Indoor unit	Outdoor Unit
• Mounting Plate	• Installation Manual
• Remote Control	• Installation Quick Guide
• Remote Control Holder	• Plastic drain connection (Heat Pump unit only)
• Batteries for Remote Control (2 AAA)	
• Operation Manual	

Items for Consideration

Application
Check the application of the unit prior to installation. Certain applications require additional components or installation parameters.

Computer or Data Server Rooms
These require ballpark sizing of approximately 12,000 BTU/H Capacity per 250 sq. ft. of room size.
The units will be running 24/7, so an ICM 326H or ICM 326HN fan controller and a crankcase heater (MARS # 32342 - not supplied) should be installed in the system. If winter temperatures fall below 32°F, a Wind Baffle (Field Supplied) **must** be installed.

Offices and Commercial Spaces, Churches etc
These require ballpark sizing of approximately 12,000 BTU/H Capacity per 400 sq. ft. of room size. The units could have the possibility of providing cooling with ambient temperatures below 65°F, an ICM 326H or ICM 326HN fan controller and a crankcase heater (MARS # 32342 - not supplied) should be installed in the system.

Residential, Bedrooms, Family Rooms etc
These require ballpark sizing of approximately 12,000 BTU/H capacity per 600 sq. ft. of room size. Low ambient controllers typically are not needed, unless a home office application is required.

NOTICE:
Heat Pumps are a great application; however the unit may not provide adequate heat even with the backup resistance heat. So we do not recommend their use as a primary source of heat in areas where the winter temperatures fall below 30°F.

Installation
Determine the best location for mounting the Indoor unit. It must be located a minimum of 4 ft. from the floor. Pay close attention to the air circulation in the room. 9,000 &12,000 BTU units throw air approximately 15ft., 18,000 & 24,000 BTU units throw air approximately 25 ft. Ensure there are no obstacles to airflow.

Locate the indoor and outdoor units as close together as possible, maximum line set run and lift CANNOT BE EXCEEDED. Determine how the Interconnect piping, wiring and condensate hose is to be run.

Unit	Max Line Set Run	Max Vertical Lift	Line Sizes
MSC49A14115B / 9A44YCB MSC49HP14115B / 9H44YCB	50 Feet	16.4 Feet	1/4” Liquid – 1/2” Suction
MSC412A14115B / 12A44YCB MSC412HP13115B / 12H43YCB	50 Feet	16.4 Feet	1/4” Liquid – 1/2” Suction
MSC418A14230B / 18A44ZCB MSC418HP13230B / 18H43ZCB	50 Feet	16.4 Feet	3/8” Liquid – 5/8” Suction
MSC424A13230B / 24A43ZCB MSC424HP13230B / 24H43ZCB	50 Feet	16.4 Feet	3/8” Liquid – 5/8” Suction

Ensure that all panels can be removed for service as required.

CAUTION! Using old refrigerant lines with new Air Conditioner installation
This air conditioner adopts the new HFC refrigerant (R410A) which does not destroy ozone layer. R410A refrigerant operates at approximately 1.6 times the pressure of refrigerant R22. Accompanied with the adoption of the new refrigerant, the refrigeration lubricating oil has also been changed. During installation work be sure that water, dust, former refrigerant, or refrigeration lubricating oil does not enter into the new type refrigerant R410A air conditioner system. The system must not be left open to the atmosphere for any reason for any period of time as the systems oil quickly absorbs moisture and will contaminate and damage the system. To prevent mixing of refrigerant or refrigeration lubricating oil, the sizes of connecting sections of charging port on main unit and installation tools are different from those used for the conventional refrigerant units. Accordingly, special tools are required for the new refrigerant (R410A) units. For connecting pipes use new and clean piping materials with high pressure fittings made for R410A only. The best and recommended solution is not to use the existing line sets because there may be some problems with pressure fittings and possible impurities in the existing piping.

Certification
AII Ductless Mini Splits are certified by UL under UL standard 1995. Performance is certified by AHRI standard 210/240-2006.

Operating Limit
Outdoor operating temperature range: 20°F to 110 °F.

Controls and Components
Units are supplied with a wireless remote controller, which communicates with the unit microprocessor controller. The return air temperature sensor mounted on the unit then controls the unit operation.
Several modes of operation are available to the end user depending on the type of comfort required. AII unit operating functions are controlled via the remote controller.

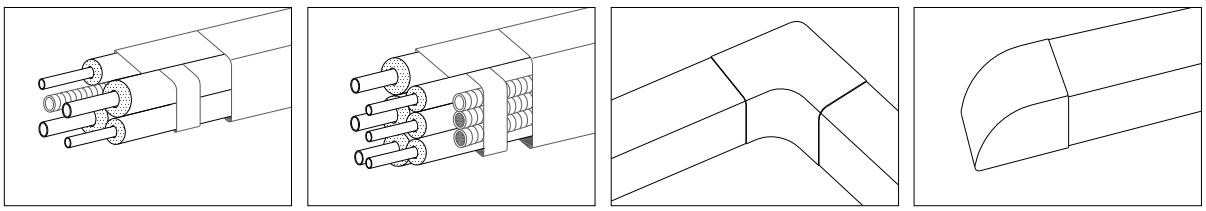
Optional Controls and Components

Low Ambient Controller: Recommended for use in Server Rooms or in Commercial applications (not included).

Condensate Pump: Condensate pump can be used when gravity drain is not practical.
To power a condensate pump connect to outdoor unit input (SUPPLY) power.

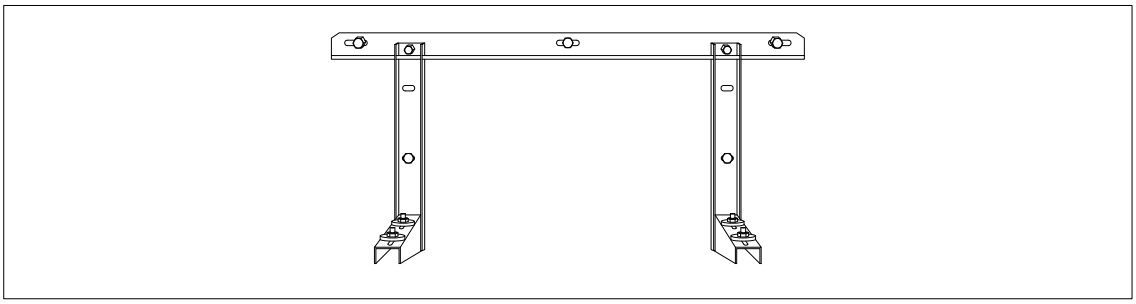
Decorative Channel: Route the bundled piping and wiring to the outdoor unit and connect per the OUTDOOR UNIT installation instructions.

Our **Plastic-Duct** piping and wiring duct work provides a convenient and professional looking system to route and protect the pipes and wires. Please see the illustrations below:



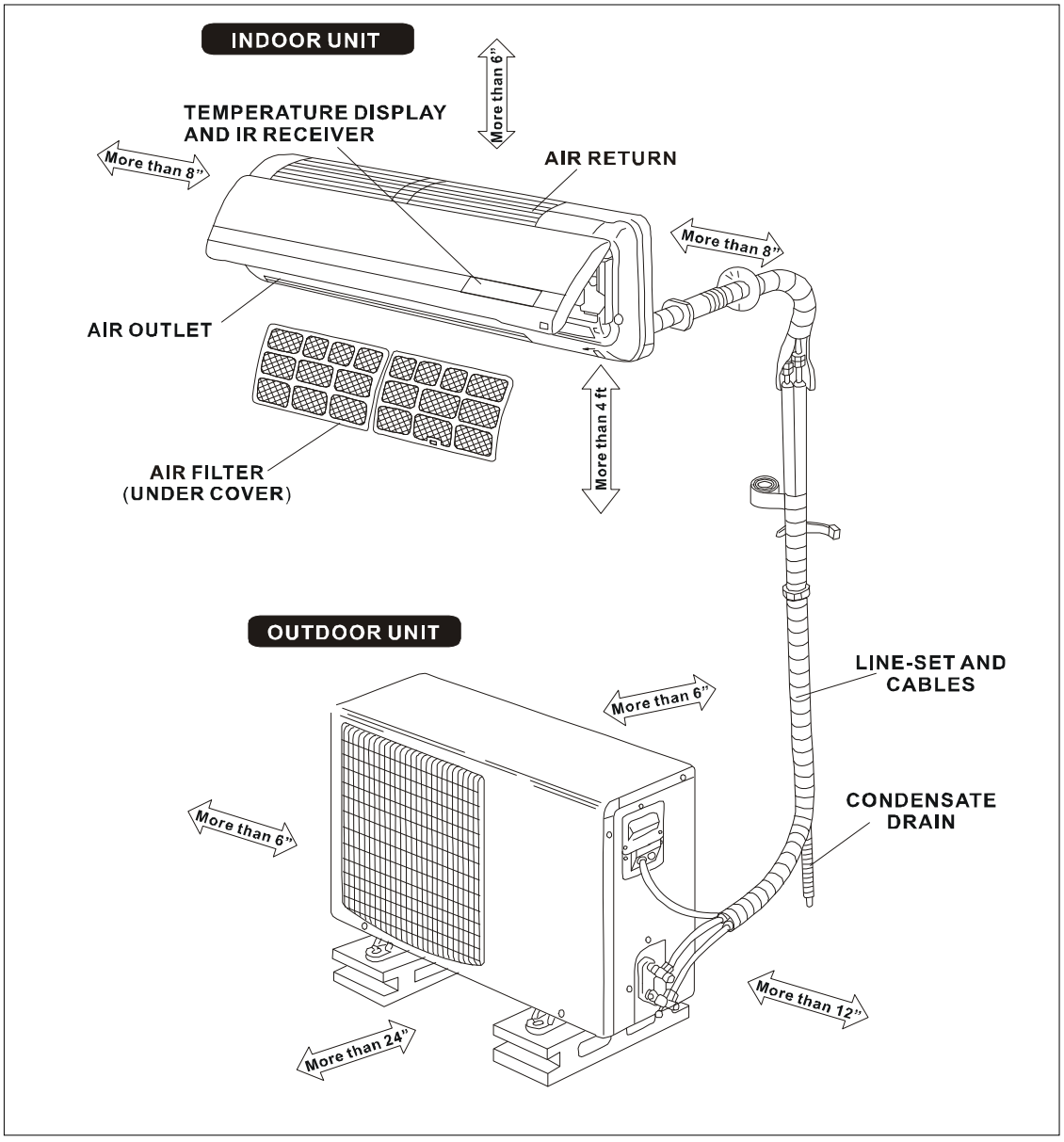
Wall Bracket: Mounting the outdoor unit on the wall is common throughout the world keeping the outdoor out of the way and as a method for keeping units inside the maximum line set runs.

We offer wall brackets (Our Catalog# **BR-440** for up to 440 lbs) as an accessory.



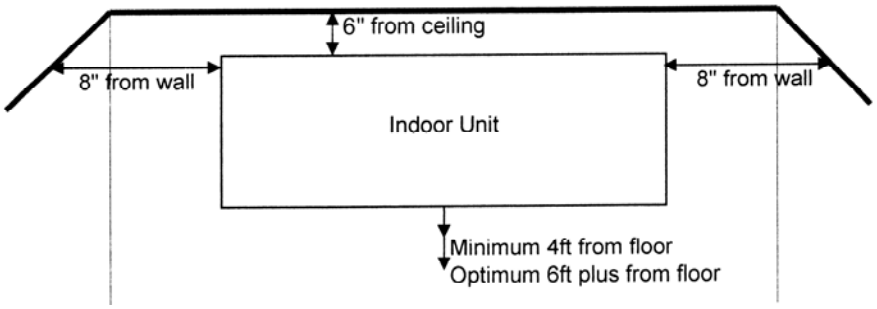
UNIT INSTALLATION

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



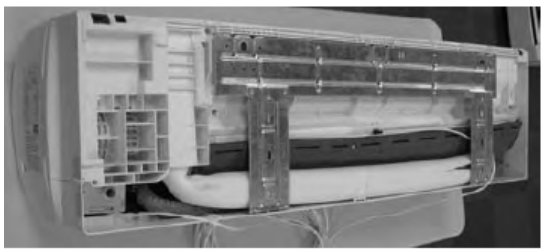
Step 1
INDOOR INSTALLATION
Remove Indoor and Outdoor units from the carton. Indoor unit carton contains Remote Control and Batteries, ensure these are kept in a safe place during installation. Heat Pump models have a two conductor cable in the indoor unit carton that must be located and installed during installation.

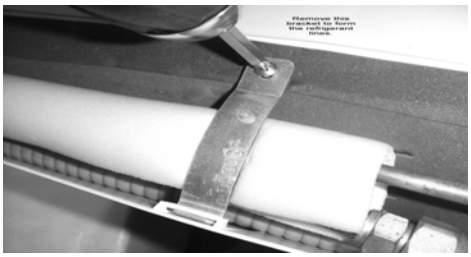
Step 2
Locate area to Install Indoor unit Indoor unit must be located a minimum of 4 ft. from the floor and 6" from the ceiling.
Choose an area where the wall is plumb and determine how to best to run the unit interconnects.



Ensure no obstacles to airflow are directly in front of the unit, for a minimum of 12 ft for 9,000 / 12,000 Btu/h units and 16 ft. for 18,000 / 24,000 Btu/h units.
Do not install the Indoor unit units in areas exposed to high humidity (RH of 80% plus), direct sunlight and direct heat from stoves or other devices.

Step 3
Remove mounting bracket from the rear of the Indoor unit, using a Phillips head screwdriver. Remove the unit pipe strap, and if unit is a heat pump the defrost sensor cable also must be undone from its retainer.

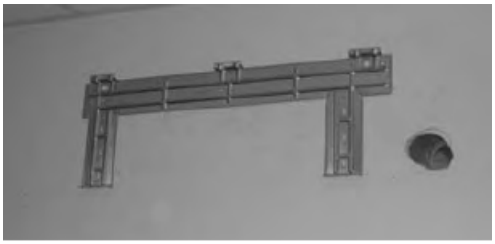




If mounting the unit on an outside wall measure from the edges of the unit to the center of the line set stub 90° bend to locate the center of the wall penetration.

If the line set exits on the left or right, use the knockouts provided on the left and right sides of the unit to route the piping and wiring connections.
Drill a 3" diameter hole through the wall for line set. If using the installation kit, measure the diameter of the sleeve and cut/drill correct size hole. If not make sure the sleeve you use is large enough to allow the line set and wiring to pass through. Angle the wall penetration slightly down towards the outside to assist in draining the condensate away from the unit.

Step 4
Install Mounting Bracket
Locate and secure the mounting bracket to the wall. The indoor unit weighs a maximum of 68 lbs., use wall anchors and mount to a wall stud to ensure that the wall is capable of holding the weight of the unit. Use a level to ensure mounting bracket is leveled, so condensate can drain properly.



Wall sleeve can now be inserted into the hole. Wall sleeve included with unit. Insert sleeve from the inside. Excess length may be cut off if necessary.
We recommend the sleeve to be approximately 3/16" longer than the wall thickness.

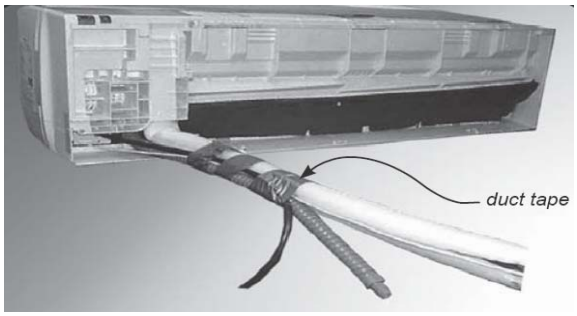
Step 5

Prepare Unit Line Set Connections

Rotate refrigerant line stubs set gently through 90° (if mounting on an outside wall). For other line set configurations align the stubs as required.

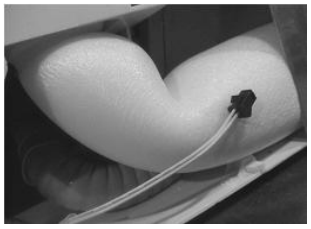
Tips:

♦ Use Duct tape to tape the condensate hose (make sure it is below the line set stubs) and the Defrost Sensor Cable (Heat Pump only), this makes it easier to guide them though the hole drilled in the wall.



For Heat Pump Units

Defrost Sensor Cable



Defrost Sensor cable location

♦ Feed the 14 AWG Interconnect wiring between Indoor and Outdoor (Maximum # of wires required is 6) through the unit electrical connection (if required by local codes an electrical connector can be attached to the rear of the unit). Tape the loose wire to the line set stubs.

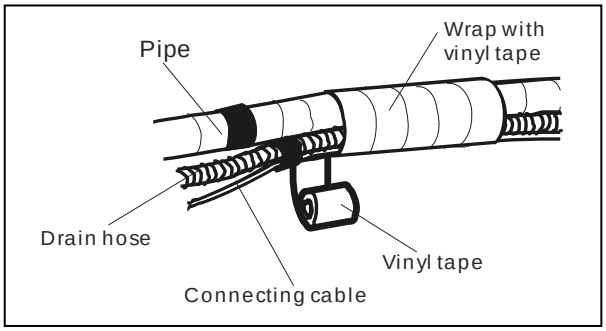
♦

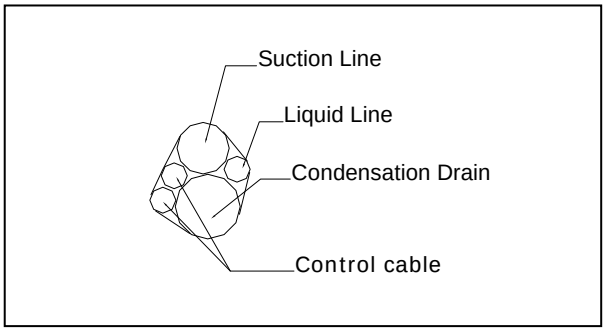
These two tips save time and prevent damage to the stubs when mounting the Indoor unit.

Wire fed from back

Note:

Condensate hose is taped below line set stubs. Wrap Duct tape to the end of the condensate hose for easier installation.





Step 6

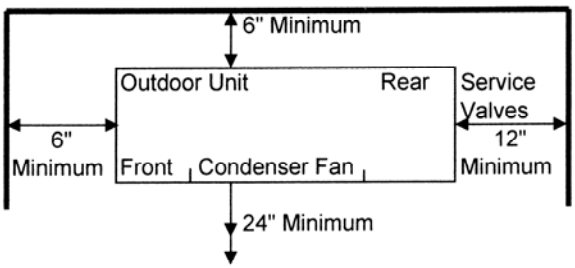
Install unit on Mounting Bracket. Feed the line set stubs/condensate hose/wiring connections through the 3" hole.

Hook the top of the indoor unit to the top of the bracket (2 or 3 places) and once hooked, gently let it swing down and then push the lower portion of the indoor unit against the bracket until it snap into the bracket.

Indoor unit is now installed. It should be plumb, level and flush with the wall. Insure that the line set stubs are completely through the wall penetration. Also check that the wall is plumb. The unit must be level and plumb for proper condensate removal.

Check the drain hose, Observe that the condensate drain pipe does not curve upward and is in the lower part of the pipe bundle.

Step 7
OUTDOOR INSTALLATION
Locate Outdoor unit. Clearances for the Outdoor unit are:

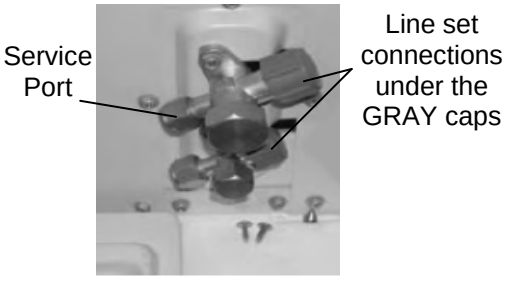


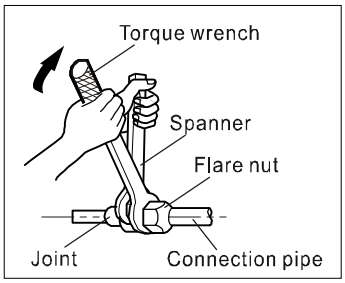
Note:
Install the Outdoor unit on a Condenser Pad or if a Heat Pump use feet to raise unit up approx 6" to allow for defrost to drain away

Do not install the Outdoor unit in a location exposed to high winds (field fabricated and installed wind baffle may be required). Ensure location does not impede access around unit and pose a disturbance to neighboring areas.

Step 8
Refrigerant Line Set Piping
Interconnecting line set between the Outdoor unit and the Indoor unit must have both refrigerant lines insulated as condensing device is located in the Outdoor unit.
Gently bend the line set stubs from the Indoor unit to the desired location. Using 2 x 10 -12" Crescent wrenches remove the flare nuts from the Indoor unit line stubs.
The indoor unit is filled with a dry gas, check for release of this to ensure that no leaks are present. Use a small amount of vacuum pump oil on the male flare threads to ease installation.
Connect the line set to the stubs. Using the 2 wrenches, 1 on the male & 1 on the female, tighten the flare nuts.

DO NOT INSTALL A LIQUID LINE SIGHT GLASS OR FILTER DRIER IN THE SYSTEM.
Run the line set to the Outdoor unit. Avoid tight bends and kinking the lines. It is not recommended to braze line sets together or to the unit connections.
If line set length is in excess of that required, cut the pipes a little longer than measured distance. Completely remove all burrs from the cut cross section of pipes. Follow standard flaring procedures and use proper flaring tools for a leak proof connection. If a flared section is defective, cut it off and follow standard flaring procedures again.
See caution note page 5.
Align the center of the piping flare to its' mating connector, then screw on the flare nut by hand and then tighten the nut with a spanner and torque wrench.

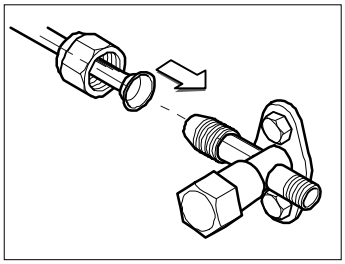




Note: Exceeding the tightening torque will damage the flare surface.

Tightening Torque Table							
1/4"	11-15 Ft-lbs	3/8"	25-30 Ft-lbs	1/2"	36-42" Ft-lbs	5/8"	54-58 Ft-lbs

Step 9
Evacuation
Gauges can now be attached to the service ports - SERVICE PORTS HAVE A 5/16" CONNECTION TO GAUGES, which is different from the norm for R22. Use caution on page 5 to ensure that the proper size fittings are used when connecting.
Once the gauges are attached the line set can be leak checked using Nitrogen at 300 Psig. 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. This is an R410A system; It is essential that a deep vacuum be pulled on the system to remove all traces of moisture.



Step 10

⚠ DANGER

MAIN POWER WIRING: ELECTRICAL WIRING SHOULD BE DONE BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

♦ Tip: Small Electrical Screwdriver is required for unit terminals. Breaker size and wiring must be sized for the rating plate amperage. If a smaller than required breaker is used there is a possibility of unit damage. Use breaker as specified in Specifications Table page 16 and page 18.

Each system installed must have a separate branch circuit with an individual breaker/fuse. A local disconnect should be installed adjacent to the outdoor unit in accordance with National and Local Codes. The outdoor unit provides power for the indoor unit therefore, no disconnect is required between the outdoor and indoor units.

Line voltage from the disconnect should be wired to:
N - L – Ground screw (115V Unit)
L1 - L2 – Ground screw (208/230V Unit).
Remove right side knockout on the terminal access panel for whip/wiring connection. Ground connection must be made to the terminal plate.

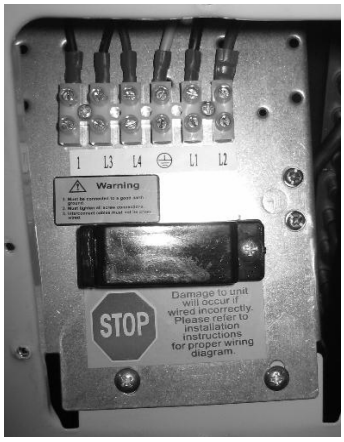
♦ Tip: For easier access to the terminals in the outdoor unit remove the lower access panel to install whip and sealtite connectors for conduit.

Step 11
CONTROLS WIRING
ALL CONTROL WIRING BETWEEN INDOOR AND OUTDOOR UNIT IS HIGH VOLTAGE. USE A MINIMUM 14 AWG WIRE.
Remove terminal covers from Indoor unit and wire to the terminals. A small electrical screwdriver required. Control wiring from the outdoor unit must be a point to point; i.e. the terminal that the wire is attached to on the outdoor unit must be the same terminal it is wired to in on the Indoor unit.

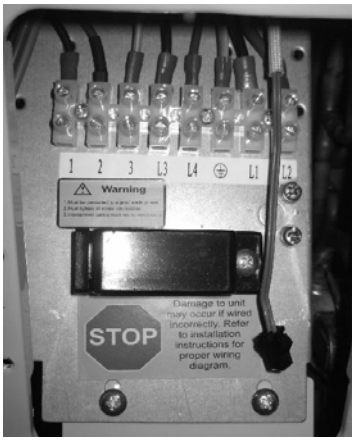
*** **DO NOT CROSS WIRES BETWEEN TERMINALS.** ***

THIS IS EXTREMELY IMPORTANT!

Miswiring (cross connecting wires) between the indoor unit and outdoor unit will cause the unit to fail to operate at a minimum, and can seriously damage the unit in the worst case. Use extreme care to ensure that wiring between the inside unit and the outside unit is per the wiring diagrams on the next pages.
Ground wires connected to the terminal plate indoor and outdoor units must be grounded.
For Heat Pump units, defrost sensor cable must be connected from the indoor unit to the outdoor unit. Standard lead length is 25 ft. If a longer length is required the lead can be extended using thermostat wire.

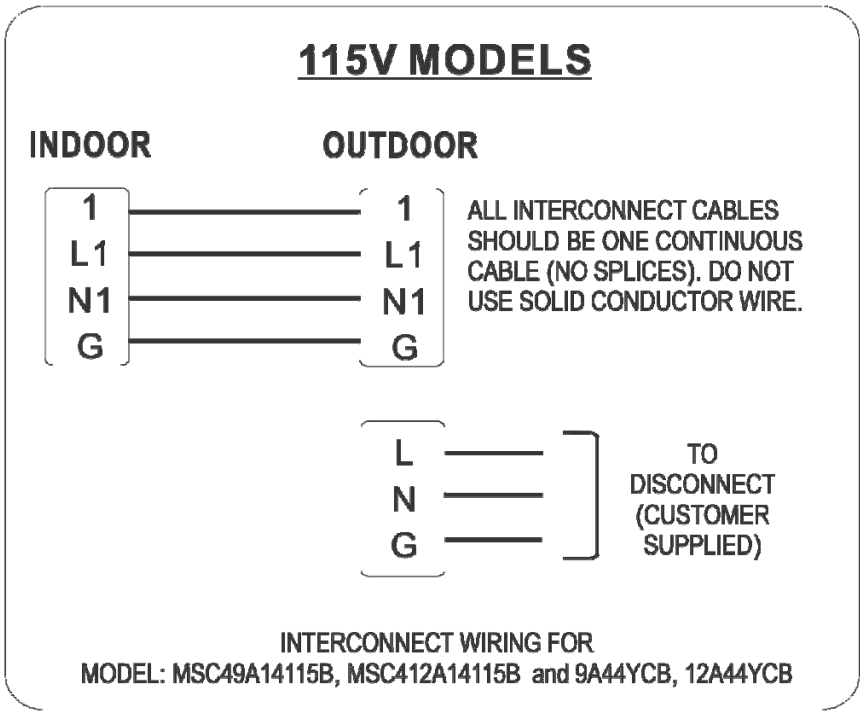


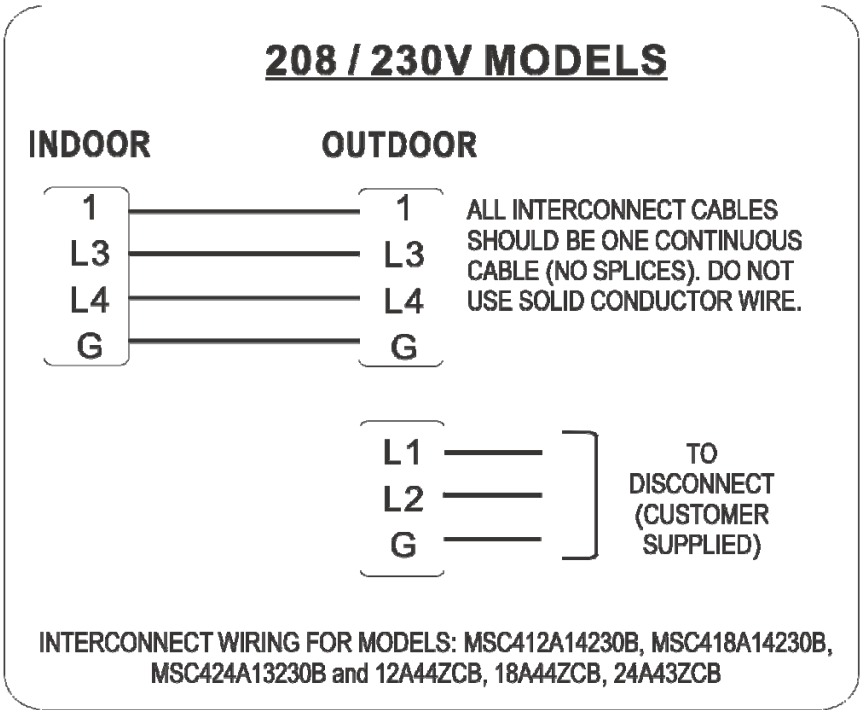
18K / 24K Cooling only unit terminals



18K / 24K Heat Pump unit terminals

COOLING ONLY WIRING



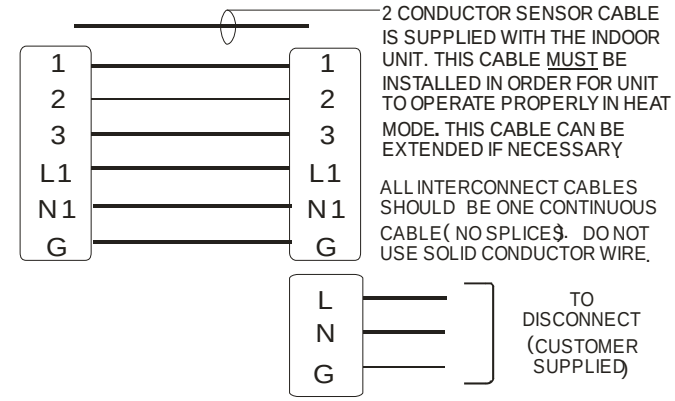


Note:

1. When connecting terminals wire color is not important, except green, which should always be used for GND.
2. Wire outdoor to indoor terminal to terminal as indicated in drawing above.

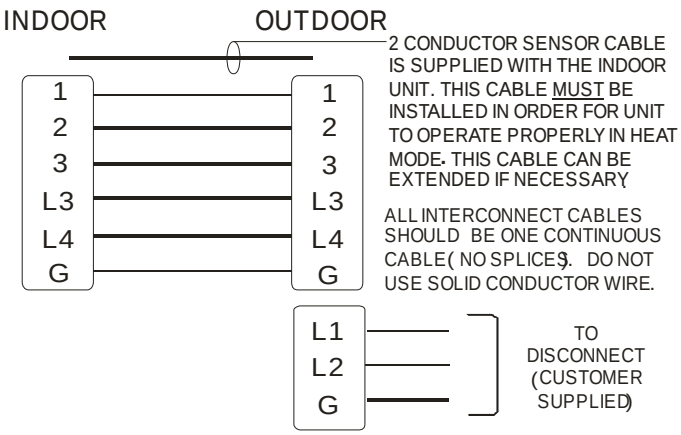
HEAT PUMP WIRING

115V MODELS



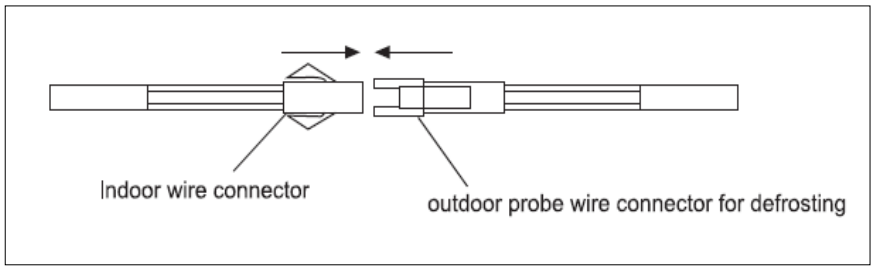
INTERCONNECT WIRING FOR
MODEL: MSC49HP14115B, MSC412HP13115B and 9H44YCB, 12H43YCB

208 / 230V MODELS



INTERCONNECT WIRING FOR
MODEL: MSC418HP13230B, MSC424HP13230B and 18H43ZCB, 24H43ZCB

Defrost Sensor Cable



Note:
1. When connecting terminals wire color is not important, except green, which should always be used for GND.
2. Wire outdoor to indoor terminal to terminal as indicated in drawing above.
3. Never cross wire between terminals. Terminal to Terminal connections must be adhered - electrical damage will occur if cross wired.

Step 12

Condensate Hose

Unit is provided with approximately 18" of condensate hose. Hose connection is sized to accept a 5/8" OD or 1/2" ID clear plastic hose to then extend to building drain. Connect it to the gray condensate line coming from the indoor unit.

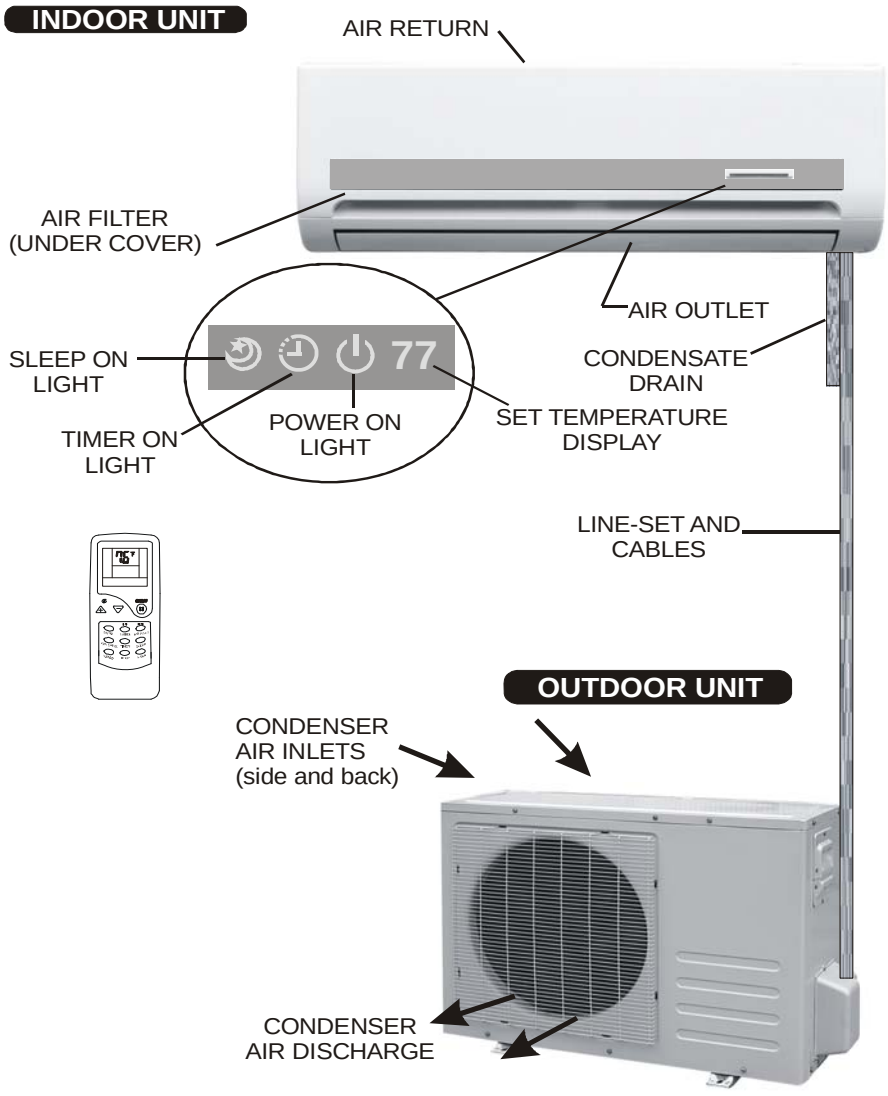
All condensate hose extensions should be in accordance with local building codes. Remember water only flows downhill to ensure positive draining from the unit. Check using water for a positive flow of condensate. Route the condensate hose on the bottom of the bundle making sure it is not crushed when passing through the wall.

OUTDOOR UNIT DRAIN (HEAT PUMP MODELS ONLY)

Insert drain fitting into the hole provided in the base pan. The 1/2" I.D. tubing can be connected to the fitting directing the water away from the unit. Check to be sure the drain water is free to exit.

The basic system installation is now complete; the unit is ready for start up.

Unit Start Up



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 a 6 mm and a 5 mm allen wrench to undo the valve stems. Remove the brass caps from the service valves.

Open the SUCTION line Valve first to prevent any possible oil clogged of the Capillary tube.

(This can occur if the liquid line valve is opened first with the rest of the system in a deep vacuum)

LIQUID or EXPANDED GAS line can then be opened.

Check that both service valve stems are fully open and stop against the valve body. Replace the brass caps and tighten them to prevent leaks.

Energize the breaker to power up the system. **Compressor has a 3 minute time delay on startup**.

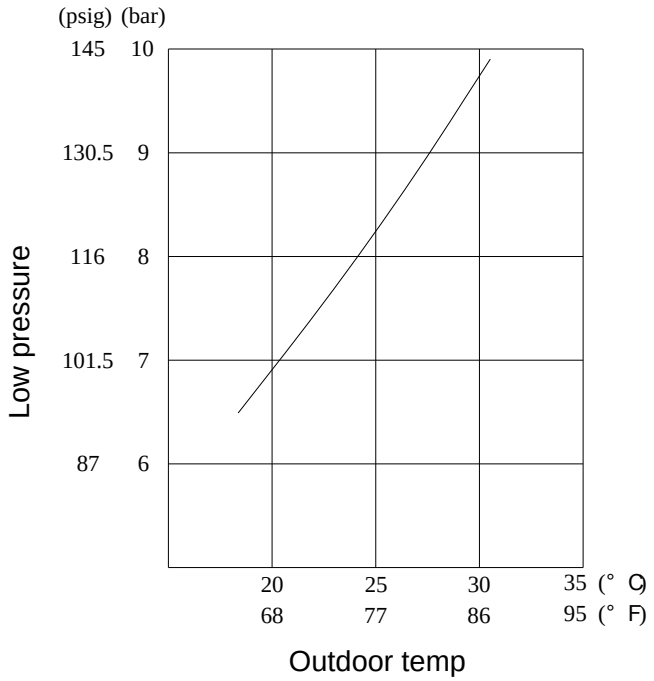
NOTE: Outdoor unit is pre-charged with enough R410A refrigerant for a line set of 25ft. length. For longer line set lengths additional charge must be WEIGHED in per the following table.

Unit	Line-set Length and Added Charge Required					
	per ft.	30 ft.	35 ft.	40 ft	45 ft.	50 ft
MSC49A14115B / 9A44YCB MSC49HP14115B / 9H44YCB	0.32 oz.	1.6 oz.	3.2 oz.	4.8 oz.	6.4 oz.	8.0 oz.
MSC412A14115B / 12A44YCB MSC412HP13115B / 12H43YCB	0.32 oz.	1.6 oz.	3.2 oz.	4.8 oz.	6.4 oz.	8.0 oz.
MSC418A14230B / 18A44ZCB MSC418HP13230B / 18H43ZCB	0.86 oz.	4.3 oz.	8.6 oz.	12.9 oz.	17.2 oz.	21.5 oz.
MSC424A13230B / 24A43ZCB MSC424HP13230B / 24H43ZCB	0.86 oz.	4.3 oz.	8.6 oz.	12.9 oz.	17.2 oz.	21.5 oz.

DO NOT EXCEED THE 50 FT. MAXIMUM LINE LENGTH.

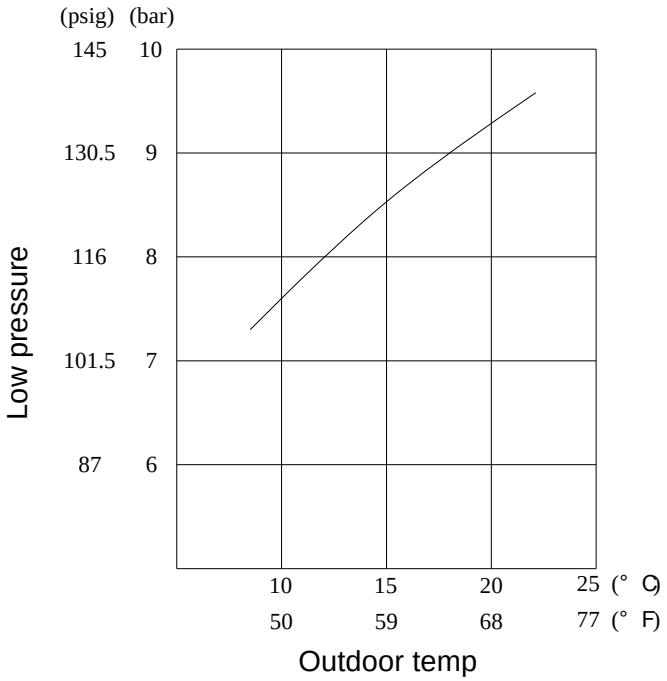
NOTE: After installation, the pressure reading as indicated below. By taken from the service port, the pressure under the outdoor temperature should match the charts readings.

Cooling operation



It is recommended to record and charge when the outdoor temperature is within the chart temperatures.

Heating operation



TECHNICAL SPECIFICATIONS FOR COOLING ONLY UNITS

Model		MSC49A14115B 9A44YCB	MSC412A14115B 12A44YCB	MSC418A14230B 18A44ZCB	MSC424A13230B 24A43ZCB
Function		COOLING	COOLING	COOLING	COOLING
Rated Voltage		115V AC	115V AC	208-230V AC	208-230V AC
Rated Frequency		60Hz	60Hz	60Hz	60Hz
Cooling/Heating Capacity (BTU)		9000	12000	18000	24000
SEER		14	14	14	13
Outdoor Operating Range		20°F to 110°F			
Cooling/Heating Power Input (W)		770	1010	1460	1930
Cooling/Heating Rated Current (A)		7.2	9.6	6.4	8.5
Indoor Air Circulation (CFM)		294	470	618	736
Dehumidifying Volume(pts/h)		1.1	2.6	3	2.67
Auto Restart		Yes	Yes	Yes	Yes
Breaker Size (AMPS)		15	20	15	20
Circuit Ampacity		10.6	14	9.5	13.8
Indoor	**Model Of Indoor Unit**	**MSC49A14115EB 9A44YICB**	**MSC412A14115EB 12A44YICB**	**MSC418A14230EB 18A44ZICB**	**MSC424A13230EB 24A43ZICB**
	Fan Motor Speed(RPM) (L / M /H)	1300 / 1150 / 950	1000 / 1100 / 1200	1050 / 1200 / 1350	1000 / 1100 / 1220
	Output of Fan Motor (W)	16	16	30	40
	Fan Motor Capacitor (ufd)	4	4	2	3.5
	Fan Motor FLA (A)	1.4	1.9	1.6	0.4 (RLA)
	Fan Type	Cross Flow Fan			
	Diameter-Length (in)	3.86 - 24.5	3.86 - 28.15	4.02 - 34.65	4.27“
	Evaporator	Aluminum fin - copper tube			
	Pipe Diameter (in)	0.275	0.275	0.275	0.275
	Row-Fin Gap (in)	0.055	0.0629	0.063	2 - 0.055118
	Coil length(L) x height(H) x coil width(L) (in)	24.2 x 12.4 x 1	27.8 x 14.1 x 1	34.4 x 14.1 x 1	37.8×16×1
	Swing Motor Model (for vertical louver)	KF(R)-36GW	MP24J-A	MP24J-A	24BYJ-48 / 1.2 W
	Swing Motor Model / Output (W) (for horizontal louver)	KFR-35GW/KD (61A)	24BYJ-48 / 1.2 W	24BYJ-48 / 1.2 W	24BYJ-48 / 1.2 W
	Fuse(A)	6.3	6.3	3.15	6.3
	Sound Pressure Level dB(A) (L / M / H)	33 / 38 / 42	35 / 39 / 45	46 / 48 / 50	44 / 47 / 49
	Sound Power Level dB(A) (L / M / H)	43 / 48 / 52	45 / 49 / 55	56 / 58 / 60	54 / 57 / 59
	Dimensions of Unit (W / D / H) (approx in)	31.5 / 7.5 / 11	35.5 / 8.5 / 11.5	42.5 / 8.9 / 12.1	48.6 / 8.9 / 12.8
	Dimension of Package(W / D / H) (approx in)	34.1 / 14.1 / 10.8	39 / 14.9 / 11.8	45.9 / 15.4 / 12.5	57.5 / 15.5 / 12.6
	Net / Gross Weight (lb)	22 / 27	29 / 34	35 / 42	68 / 75

TECHNICAL SPECIFICATIONS FOR COOLING ONLY UNITS (cont)

	Model Of Outdoor Unit	MSC49A14115CB 9A44YOCB	MSC412A14115CB 12A44YOCB	MSC418A14230CB 18A44ZOCB	MSC424A13230CB 24A43ZOCB
Outdoor	Compressor Model	EA82X1C-1FZDU1	EA108X1C-1FZDU1	PA150X2CS-3KUU	PA200X2CS-3MUU
	Compressor Type	Rotary	Rotary	Rotary	Rotary
	LRA (Amps)	40.3	47.3	32.6	50.4
	Compressor RLA (Amps)	7.46	9.9	6.65	9.16
	Compressor Power Input (W)	810	1085	1510	1650
	Compressor overload protection	External	External	Thermal (internal)	Thermal (internal)
	Throttling Method	Capillary throttling			
	Compressor Start Capacitor(ufd)	45	45	40	45
	Outdoor Operating Range	20°F to 110°F			
	Condenser	Aluminum fin - copper tube			
	Pipe Diameter (in)	0.275	0.313	0.275	0.375
	Row-Fin Gap (in)	0.06	0.07 - 0.059	0.063	2-0.062992
	Coil length(L) x height(H) x coil width(L) (in)	29.4 x 19 x 0.53	30.3 x 21.7 x 0.75	29.4 x 31.5 x 0.87	36.5 x 31.59 x 1.7
		30.2 x 19 x 0.53	31.5 x 21.7 x 0.75	31.2 x 31.5 x 0.87	
	Fan Motor Speed (rpm)	910	790	840	780
	Output of Fan Motor (W)	35	45	60	60
	Fan Motor FLA (A)	2.2	5	2.5	0.9
	Fan Motor Capacitor (μfd)	8	11	4	4
	Air Flow Volume (CFM)	1059	1471	1765	1912
	Fan Type	Axial fan			
	Fan Diameter (in)	15.78	16.54	18.11	18.11
	Defrosting Method	Auto defrost			
	Climate Type	T1			
	Isolation	1			
	Moisture Protection	IP24			
	Design Pressure High (PSI)	465	465	652.5	445
	Design Pressure Low (PSI)	252	252	290	237
	Sound Pressure Level dB(A)	53	53	57	60
	Sound Power Level dB(A)	63	63	67	68
	Dimension of Unit (H / W / D) (approx in)	21.3 / 31.3 / 10	23.8 / 33.5 / 11.6	33 / 35.4 / 13	33 / 35.4 / 13
	Dimension of Package (H / W / D) (approx in)	23.4 / 36.2 / 13.2	27.2 / 39.2 / 16.3	37.8 / 40.6 / 17.3	37.8 / 40.5 / 17.3
	Net/Gross Weight (lb)	70.5 / 79.5	79. 3 / 90.3	143 / 154	150 / 165
	Refrigerant Charge (lb)	R410A / 1.96 lbs	R410A / 2.55 lbs	R410A / 4.8 lbs	R410A / 5.3 lbs
Connection Pipe	Design Length (ft)	24.6	24.6	24.6	24.6
	Extra Refrigerant Charge Per feet above design length (oz/ft)	0.32	0.32	0.86	0.86
	Outer Diameter Liquid Pipe (in)	1/4	1/4	3/8	3/8"
	Outer Diameter Gas pipe (in)	1/2	1/2	5/8	5/8"
	Max Distance Height(ft)	16.4	16.4	16.4	16.4
	Max Distance Length(ft)	49.2	49.2	49.2	50
	Installation kit Catalog Number	2433 -1412		2425-3858 / 2450-3858	

TECHNICAL SPECIFICATIONS FOR HEAT PUMP UNITS

Model		MSC49HP14115B 9H44YCB	MSC412HP13115 B 12H43YCB	MSC418HP13230B 18H43ZCB	MSC424HP13230B 24H43ZCB
Function		COOLING HEATING	COOLING HEATING	COOLING HEATING	COOLING HEATING
Rated Voltage		115V AC	115V AC	208-230V AC	208-230V AC
Rated Frequency		60Hz	60Hz	60Hz	60Hz
Cooling/Heating Capacity (BTU)		9000 / 9000	12000 / 12000	18000 / 18000	24000 / 24000
SEER		14	13	13	13
HSPF		7.7	7.7	7.7	7.7
Outdoor Operating Range		20°F to 110°F			
Cooling/Heating Power Input (W)		770 / 770	1010 / 1010	1480 / 1480	1930 / 1800
Cooling/Heating Rated Current (A)		7.2 / 6.8	9.6 / 9.6	6.5 / 6.5	8.5/8
Indoor Air Circulation (CFM)		294	470	618	736
Dehumidifying Volume(pts/h)		1.1	2.6	3	2.67
Auto Restart		Yes	Yes	Yes	Yes
Breaker Size (AMPS)		15	20	15	20
Circuit Ampacity		10.6	14	9.5	13.8
Indoor	**Model Of Indoor Unit**	**MSC49HP14115EB 9H44YICB**	**MSC412HP13115E B 12H43YICB**	**MSC418HP13230EB 18H43ZICB**	**MSC424HP13230EB 24H43ZICB**
	Fan Motor Speed(RPM) (L / M / H)	1300 / 1150 / 950	1000 / 1100 / 1200	1050 / 1200 / 1350	1000 / 1100/ 1220
	Output of Fan Motor (W)	16	16	30	40
	Fan Motor Capacitor (ufd)	4	4	2	3.5
	Fan Motor FLA (A)	1.4	1.9	1.6	0.4 (RLA)
	Fan Type	Cross Flow Fan			
	Diameter-Length (in)	3.86 - 24.5	3.86 - 28.15	4.02 - 34.65	4.27“
	Evaporator	Aluminum fin - copper tube			
	Pipe Diameter (in)	0.275	0.275	0.275	0.275
	Row-Fin Gap (in)	0.055	0.0629	0.063	2 - 0.055118
	Coil length(L) x height(H) x coil width(L) (in)	24.2 x 12.4 x 1	27.8 x 14.1 x 1	34.4 x 14.1 x 1	37.8 x 16 x 1
	Swing Motor Model (for vertical louver)	KF(R)-36GW	MP24J-A	MP24J-A	24BYJ-48 / 1.2 W
	Swing Motor Model / Output (W) (for horizontal louver)	KFR-35GW/KD(61A)	24BYJ-48 / 1.2 W	24BYJ-48 / 1.2 W	24BYJ-48 / 1.2 W
	Fuse(A)	6.3	6.3	3.15	6.3
	Sound Pressure Level dB(A) (L / M / H)	33 / 38 / 42	35 / 39 / 45	46 / 48 / 50	44 / 47 / 49
	Sound Power Level dB(A) (L / M / H)	43 / 48 / 52	45 / 49 / 55	56 / 58 / 60	54 / 57 / 59
	Dimensions of Unit (W / D / H) (approx in)	31.5 / 7.5 / 11	35.5 / 8.5 / 11.5	42.5 / 8.9 / 12.1	48.6 / 8.9 / 12.8
	Dimension of Package (W / D / H) (approx in)	34.1 / 14.1 / 10.8	39 / 14.9 / 11.8	45.9 / 15.4 / 12.5	57.5 / 15.5 / 12.6
	Net/Gross Weight (lb)	22 / 27	29 / 34	35 / 42	68 / 75

TECHNICAL SPECIFICATIONS FOR HEAT PUMP UNITS (cont)

	Model Of Outdoor Unit	MSC49HP14115CB 9H44YOCB	MSC412HP13115CB 12H43YOCB	MSC418HP13230CB 18H43ZOCB	MSC424HP13230CB 24H43ZOCB
Outdoor	Compressor Model	EA82X1C-1FZDU1	EA108X1C-1FZDU1	PA150X2CS-3KUU	PA200X2CS-3MUU
	Compressor Type	Rotary			
	LRA (Amps)	40.3	47.3	32.6	50.4
	Compressor RLA (Amps)	7.46	9.9	6.65	9.16
	Compressor Power Input (W)	810	1085	1510	1650
	Compressor overload protection	External	External	Thermal (internal)	Thermal (internal)
	Throttling Method	Capillary throttling			
	Compressor Start Capacitor (ufd)	45	45	40	45
	Outdoor Operating Range	20°F to 110°F			
	Condenser	Aluminum fin - copper tube			
	Pipe Diameter (in)	0.275	0.313	0.275	0.375
	Row-Fin Gap (in)	0.06	0.07 - 0.059	0.063	2-0.062992
	Coil length(L) x height(H) x coil width(L) (in)	29.4 x 19 x 0.53	30.3 x 21.7 x 0.75	29.4 x 31.5 x 0.87	36.5 x 31.5 x 1.7
		30.2 x 19 x 0.53	31.5 x 21.75 x 0.75	31.2 x 31.5 x 0.87	
	Fan Motor Speed (rpm)	910	790	840	780
	Output of Fan Motor (W)	35	45	60	60
	Fan Motor FLA (A)	2.2	5	2.5	0.9
	Fan Motor Capacitor (µfd)	8	11	4	4
	Air Flow Volume (CFM)	1059	1471	1765	1912
	Fan Type	Axial fan			
	Fan Diameter (in)	15.78	16.54	18.11	18.11
	Defrosting Method	Auto defrost			
	Climate Type	T1			
	Isolation	1			
	Moisture Protection	IP24			
	Design Pressure High (PSI)	465	465	652.5	445
	Design Pressure Low (PSI)	252	252	290	445
	Sound Pressure Level dB(A)	53	53	57	60
	Sound Power Level dB(A)	63	63	67	68
	Dimension of Unit (H / W / D) (approx in)	21.3 / 31.3 / 10	23.8 / 33.5 / 11.6	35.4 / 13 / 33	35.4 / 13 / 33
	Dimension of Package (H / W / D)(approx in)	23.4 / 36.2 / 13.2	27.2 / 39.2 / 16.3	40.6 / 17.3 / 37.8	40.5 / 17.3 / 37.8
	Net/Gross Weight (lb)	70.5 / 79.5	79.3 / 90.3	143 / 154	150 / 165
	Refrigerant Charge (lb)	R410A / 1.96 lbs	R410A / 2.55 lbs	R410A / 5.0 lbs	R410A / 5.3 lbs
Connection Pipe	Design Length (ft)	24.6	24.6	24.6	24.6
	Extra Refrigerant Charge Per feet above design length (oz/ft)	0.32	0.32	0.86	0.86
	Outer Diameter Liquid Pipe (in)	1/4	1/4	3/8	3/8
	Outer Diameter Gas pipe (in)	1/2	1/2	5/8	5/8
	Max Distance Height(ft)	16.4	16.4	16.4	16.4
	Max Distance Length(ft)	49.2	49.2	49.2	50
	Installation kit Catalog Number	2433 -1412		2425-3858 / 2450-3858	

TROUBLESHOOTING

Failure	LED Display	Run-LED Lamp	Solution
Outdoor coil pipe temp. sensor failure	E1	Blinks 7 times in 9 seconds	1) Check the sensor according to the Sensor Resistance table below. 2) Check the indoor PC board and connection.
Indoor room temp. sensor failure	E2	Blinks 2 times in 4 seconds	1) Check the sensor according to the Sensor Resistance table below. 2) Check the indoor PC board and connection.
Indoor coil pipe temp. sensor failure	E3	Blinks 3 times in 5 seconds	1) Check the sensor according to the Sensor Resistance table below. 2) Check the indoor PC board and connection.
Outdoor unit abnormal	E4	Blinks 4 times in 6 seconds	1) Low refrigerant. (Refer to charging chart on page 14 for proper pressures.) Check for leaks. 2) Check if there are any materials blocking the intake and outlet of the outdoor unit. 3) Blocked capillary. 4) Check the current of compressor. 5) Check outdoor fan motor and capacitor. 6) Check indoor PC board.
Indoor fan motor failure	E5	Blinks 5 times in 7 seconds	1) Check the wiring connection. 2) Check the indoor fan motor. 3) Check the indoor PC board.
Indoor Zero cross detection failure	E6	Blinks 6 times in 8 seconds	1) Check the indoor fan motor. 2) Check the indoor PC board.
Outdoor communication failure	E7	Blinks 7 times in 9 seconds	1) Check the current of compressor. 2) Check the pressure. (Refer to the pressure chart on page 15.) 3) Check the wiring connection. 4) Check the AC contactor. 5) Check the indoor PC board.
Evaporator freeze or overheat protection	E8	Blinks 8 times in 10 seconds	1) Check to be sure the air filter is clean. 2) Check the indoor fan motor. 3) Check the room temperature sensor according to the Sensor Resistance table below. 4) Check the pressure. (Refer to the pressure chart on page 15.)
Defrost Operation (normal)	DF	Blinks 1 time in 1 second	Normal, the defrost mode is activated. It will return to normal condition automatically.
Warm Start (normal)	DF	Blinks 1 time in 3 seconds	In heating mode, the indoor coil temperature must be 86 °F or higher to allow indoor fan to operate.

Sensor Resistance

Temperature	Resistance
20 °F	**17670 Ohm**
30 °F	**13920 Ohm**
40 °F	**11040 Ohm**
50 °F	**8820 Ohm**
60 °F	**7100 Ohm**
70 °F	**5760 Ohm**
80 °F	**4600 Ohm**
90 °F	**3860 Ohm**
100 °F	**3190 Ohm**

WARRANTY

International Refrigeration Products warrants the accompanying split air conditioner or heat pump system to be free of defects in material and workmanship for the applications specified in the operation manual and installation manual for a period of one (1) year on parts and five (5) years on compressor, valid from the date of original retail purchase in the United States or Canada. Labor or shipping is not covered under this warranty.

If the unit exhibits a defect in normal use and is determined to be within the warranty period, International Refrigeration Products will, at its option, either repair or replace the unit free of charge within a reasonable time after the unit is returned.

This warranty does not cover:

- Damage, accidental or otherwise, to the unit while in possession of the consumer that is not a result of a defect in material in workmanship.
- Damage caused by consumer misuse, tampering, or failure to follow all care and maintenance instructions in the manuals.
- Damage to the finish of the case or other parts caused by water.
- Damage caused by repairs or alterations to the unit by anyone other than a qualified technician.
- Filter.
- Freight and Insurance cost for the warranty service.

Warranty card must be completed and sent in to activate the warranty for the accompanying unit. Warranty may also be activated via the website www.irproducts.biz

TECHNICAL SUPPORT

If you need technical support please call (704) 504-8590 M-F 8:00 am to 4:30 pm.

International Refrigeration Products
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Toms River, NJ 08755