OXBOX™
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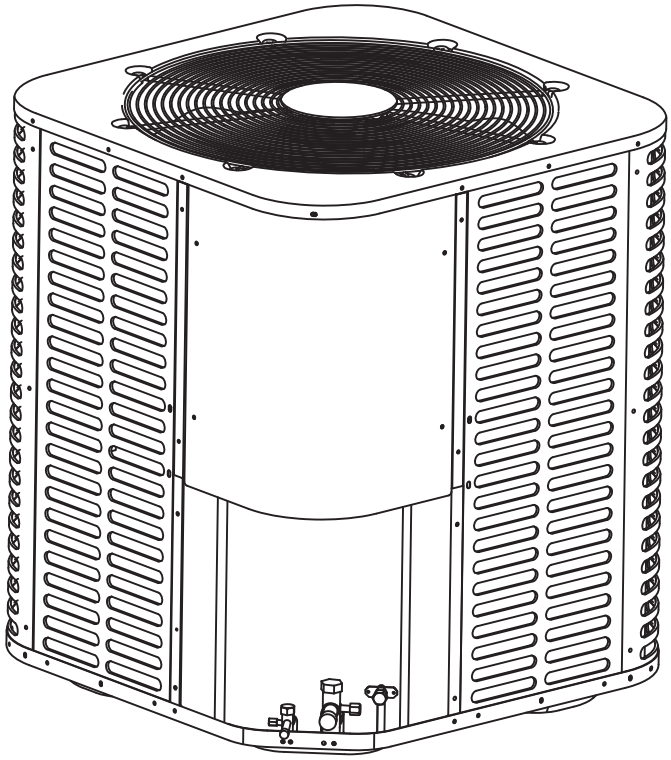
INSTALLATION INSTRUCTIONS

14 SEER

Split System Air Conditioner & Heat Pump

1.5-5 Tons

R410A



NOTE: Appearance of unit may vary.

RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION

⚠ WARNING

These instructions are intended as an aid to qualified licensed service personnel for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small HP
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

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Intertek

DO NOT DESTROY THIS MANUAL
Please read carefully and keep in a safe place for future reference by a serviceman.

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All phases of this installation must comply with NATIONAL, STATE, AND LOCAL CODES.

1. Key to symbols and safety instructions

1.1 Key to symbols

Warnings in this document are identified by a warning triangle. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

This symbol indicates important information where there is no risk to people or property.

The following keywords are defined and can be used in this document:

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.

NOTICE is used to address practices not related to personal injury.

1.2 Safety

CAUTION:

- This document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.
- These instructions do not cover all variations in systems or provide for every possible contingency to be met in connection with the installation.
- Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

This document contains a wiring diagram and service information.

CAUTION:

This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage.

WARNING: HAZARDOUS VOLTAGE

- Failure to follow this warning could result in property damage, severe personal injury or death.
- Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.

WARNING: REFRIGERANT OIL

These units use R-410A refrigerant which operates at 50% to 70% higher pressures than R-22. Use only R-410A approved service equipments. Refrigerant cylinders are painted a "Rose" color to indicate the type of refrigerant and may contain a "dip" tube to allow for charging of liquid refrigerant into the system. All R-410A systems use a POE oil that readily absorbs moisture from the atmosphere. To limit this "hygroscopic" action, the system should remain sealed whenever possible. If a system has been opening to the atmosphere for more than 4 hours, the compressor oil must be replaced. Never break a vacuum with air and always change the driers when opening the system for component replacement.

CAUTION: HOT SURFACE

May cause minor to severe burning. Failure to follow this Caution could result in property damage or personal injury. Do not touch the top of compressor.

CAUTION: CONTAINS REFRIGERANT

Failure to follow proper procedures can result in personal illness or injury or severe equipment damage. System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening system.

CAUTION: GROUNDING REQUIRED

Failure to inspect or use proper service tools may result in equipment damage or personal injury. Reconnect all grounding devices. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

WARNING: SERVICE VALVES

Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and/or property damage. Extreme caution should be exercised when opening the Liquid Line Service Valve. Turn valve stem counterclockwise only until the stem contacts the rolled edge. No torque is required.

WARNING: BRAZING REQUIRED

Failure to inspect lines or use proper service tools may result in equipment damage or personal injury.
All outdoor unit and evaporator coil connections are copper-to-copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. Do not use soft solder.

⚠ WARNING: HIGH CURRENT LEAKAGE

Failure to follow this warning could result in property damage, severe personal injury or death. Grounding is essential before connecting electrical supply.

2. Unit location considerations

2.1 Unit dimensions

Unit Dimensions				
Model		H(Inches)	W(Inches)	L(Inches)
AC	HP			
18	/	24-15/16	21-7/8	21-7/8
24	18/24	24-15/16	23-5/8	23-5/8
30	30	24-15/16	28	28
36	36	24-15/16	29-1/8	29-1/8
42	42	33-3/16	28	28
48	48	33-3/16	28	28
60	60	33-3/16	29-1/8	29-1/8

Table 1

The unit's weight value is on the cardboard box.

When mounting the outdoor unit on a roof, be sure the roof will support the unit's weight. Properly selected isolation is recommended to prevent sound or vibration transmission to the building structure.

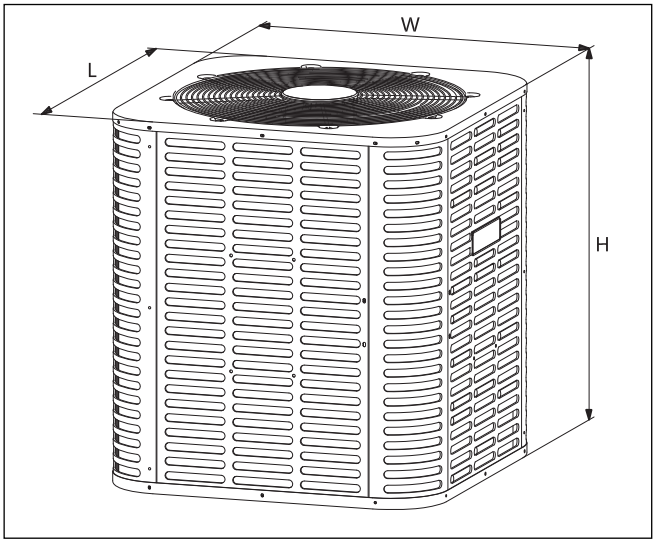


Figure 1

2.2 Location restrictions

Ensure the top discharge area is unrestricted for at least 60 inches above the unit.

Do not locate outdoor unit near bedrooms since normal operational sounds may be objectionable.

Position unit to allow adequate space for unobstructed airflow, wiring, refrigerant lines, and serviceability.

Maintain a distance of 24 inches between units.

24 inches clearance must be provided in front of the control box (access panels) and any other side requiring service.

Position unit where water, snow or ice from roof or overhang cannot fall directly on unit.

Position the outdoor unit a minimum of 12'' from any wall or surrounding shrubbery to ensure adequate airflow.

See Figure 2 and Figure 3.

Cold climate considerations (heat pump only)

Precautions must be taken for units being installed in areas where snow accumulation and prolonged below-freezing temperatures occur.

- Units should be elevated 3-12 inches above the pad or rooftop, depending on local weather. This additional height will allow drainage of snow and ice melted during defrost cycle prior to its refreezing. Ensure that drain holes in unit base pan are not obstructed, preventing drainage of defrost water (Figure 4).
- If possible, avoid locations that are likely to accumulate snow drifts. If not possible, a snow drift barrier should be installed around the unit to prevent a build-up of snow on the sides of the unit.

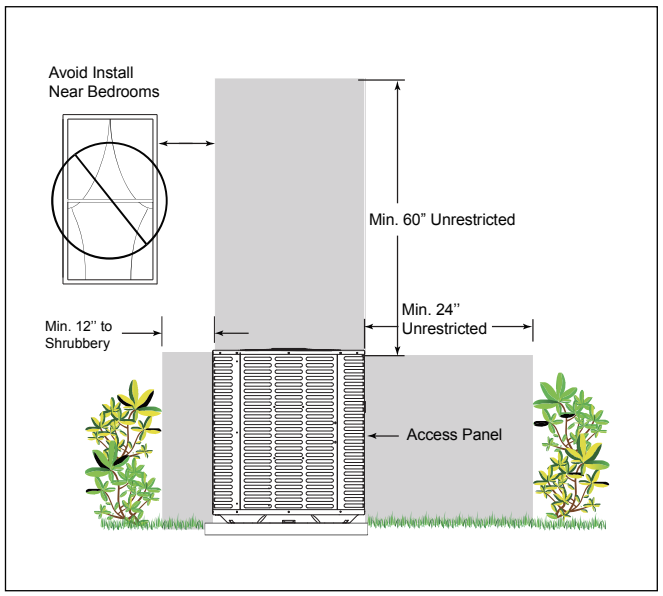


Figure 2

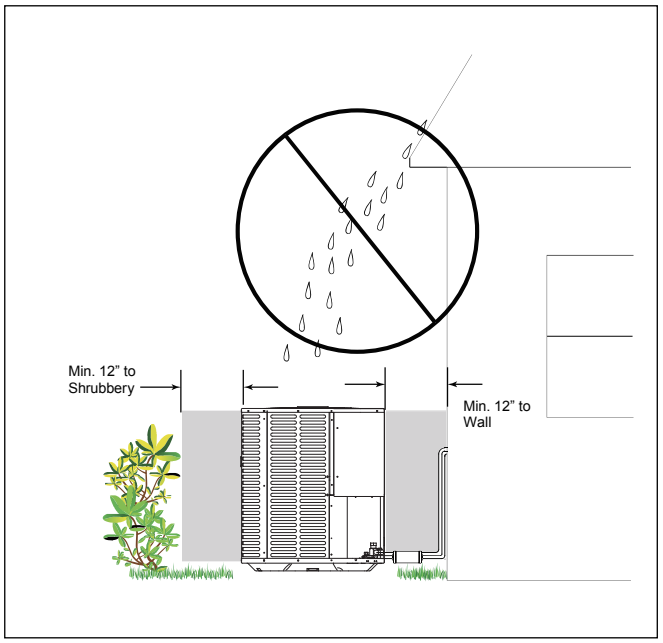


Figure 3

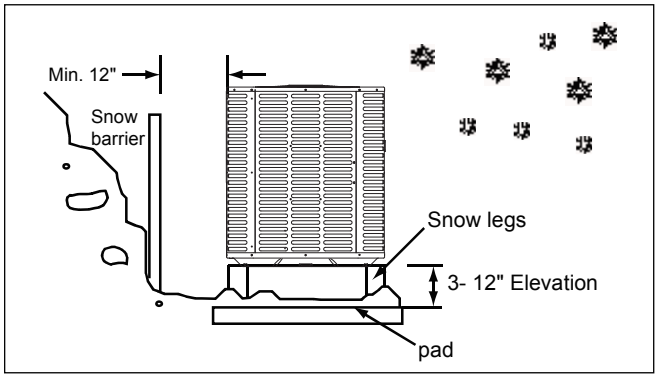


Figure 4

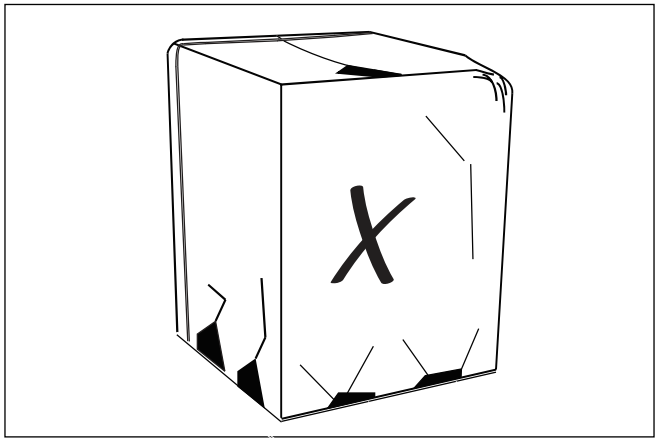
3. Unit preparation

3.1 Pre-installation

STEP 1 - Check for damage and report promptly to the carrier any damage found to the unit (Figure 5).

STEP 2 - Instruments must be designed to install/serve R410A equipmens.

- Gauge sets, hoses, refrigerant containers and recovery system must be designed to handle the POE type oils.
- Manifold sets should be 800 PSIG high side and 250 PSIG low side.
- All hoses must have a 700 PSIG service pressure rating.
- Leak detectors should be disigned to detect R410A.
- Recovery equipments (including refrigerant recovery containers) must be specifically designed to handle R410A.
- Do not use an R22 TXV.


Figure 5

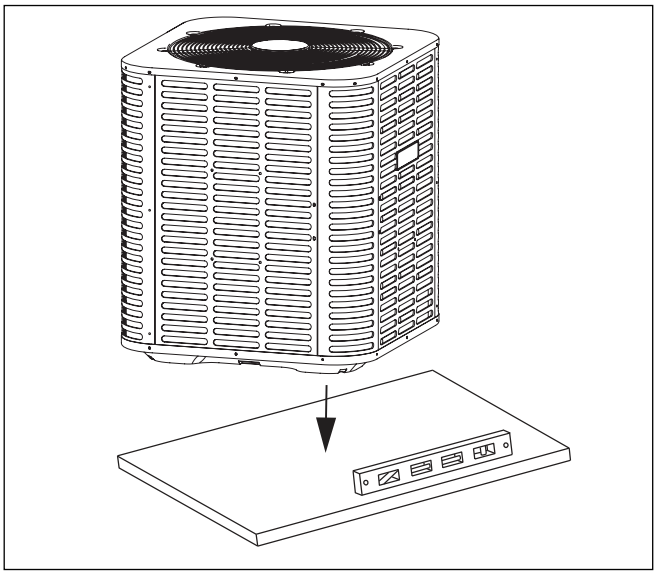
4. Setting up the unit

4.1 Pad installation

When installing the unit on a support pad, such as a concrete slab, consider the following:

- The pad must be at least 1-2” larger than the unit on all sides.
- The pad must be separate from any structure.
- The pad must be level.
- The pad must be high enough above grade to allow for drainage.
- The pad location must comply with National, State and Local codes.

These instructions are intended to provide a method to tie-down system to concrete slab as a securing procedure for high wind areas. Check Local Codes for tie-down methods and protocols.


Figure 6

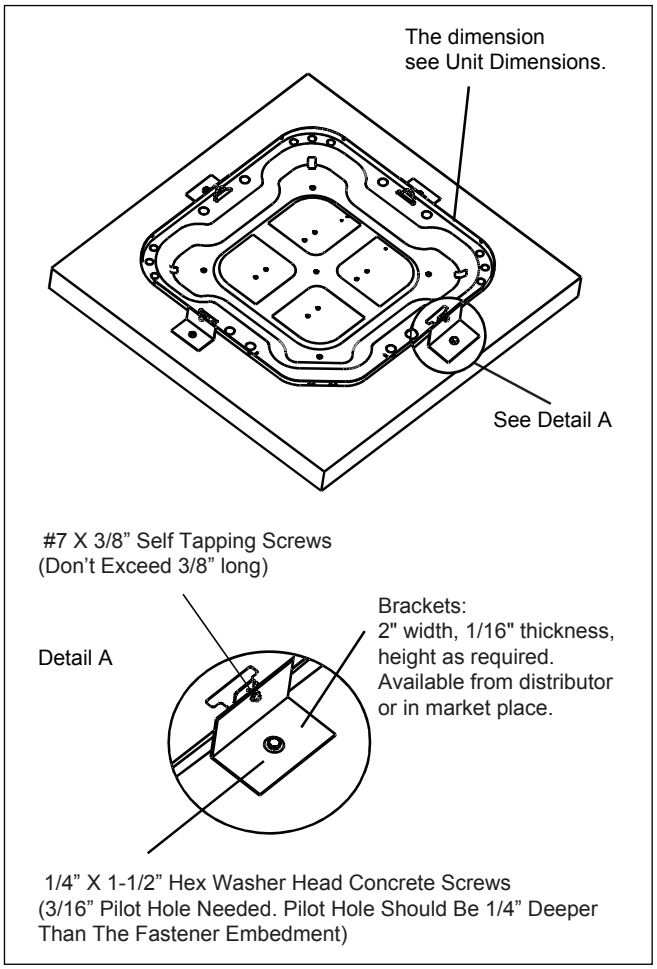


Figure 7

5. Refrigerant line considerations

5.1 Service valve connection sizes

Model	Suction line connection	Liquid line connection
18	3/4	3/8
24	3/4	3/8
30	3/4	3/8
36	3/4	3/8
42	3/4	3/8
48	7/8	3/8
60	7/8	3/8

Table 2

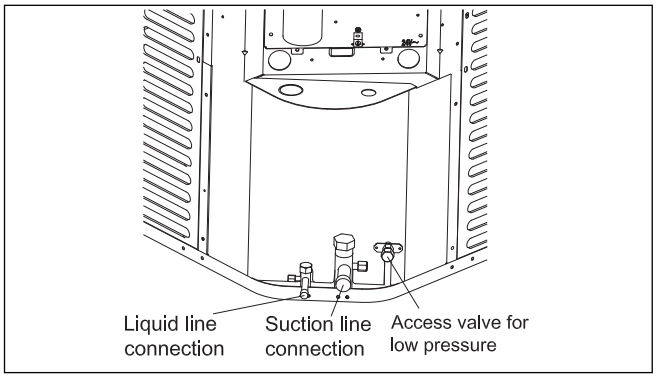


Figure 8

5.2 Refrigerant line sizes

Model	Suction line		Liquid line	
	optional	standard	optional	standard
18	5/8	3/4	5/16	3/8
24	5/8	3/4	5/16	3/8
30	5/8	3/4	5/16	3/8
36	5/8	3/4	5/16	3/8
42	5/8	3/4	5/16	3/8
48	3/4	7/8	1/2	3/8
60	7/8	1-1/8	1/2	3/8

Table 3

5.3 Refrigerant piping limits and required refrigerant line length

Model	Liquid line (Inches)	Total equivalent length(Feet)					
		25	50	75	100	125	150
		Maximum vertical length(Feet)					
18	5/16	25	50	60	58	40	30
	3/8	25	50	60	60	40	30
24	5/16	25	36	29	23	16	9
	3/8	25	50	60	60	40	30
30	5/16	25	49	38	27	17	6
	3/8	25	50	60	60	40	30
36	5/16	25	50	37	22	7	N/A
	3/8	25	50	60	60	40	30
42	5/16	25	23	4	N/A	N/A	N/A
	3/8	25	50	43	36	30	24
48	1/2	25	50	56	55	40	30
	3/8	25	46	38	30	22	15
60	1/2	25	50	60	60	40	30
	3/8	25	50	56	44	32	20

Table 4

Model	Suction line (Inches)	Total suction line length(Feet)			
		25	50	100	150
		Coefficient			
18	5/8	1.00	0.97	0.94	0.90
	3/4	1.00	0.98	0.95	0.92
24	5/8	1.00	0.97	0.94	0.90
	3/4	1.00	0.98	0.95	0.92
30	5/8	1.00	0.97	0.94	0.90
	3/4	1.00	0.98	0.96	0.93
36	5/8	1.00	0.97	0.94	0.90
	3/4	1.00	0.99	0.97	0.96
42	5/8	1.00	0.98	0.95	0.91
	3/4	1.00	0.98	0.97	0.96
48	3/4	1.00	0.98	0.95	0.92
	7/8	1.00	0.98	0.97	0.96
60	7/8	0.99	0.98	0.94	0.90
	1-1/8	1.00	0.99	0.98	0.97

Table 5 Suction line length/size VS capcaity multiplier

Using suction line larger than shown in chart will result in poor oil return and is not recommended.
For example: the system capacity published in AHRI is 17800 Btu/h. This data is based on the AHRI test condition and 25 feet line set with standard suction tube size (3/4" tube). If you need to add the line set more than 25 feet or use the optional suction tube size, you need to recalculate the capacity with the coefficient in the table. For 50 feet line and 5/8" suction tube, the capacity will be 17800*0.97=17266 Btu/h.

Determine required line length and lift. You will need this later in Section 14.

Total Line Length = _____ Feet.

Total vertical Change(Lift) = _____ Feet.

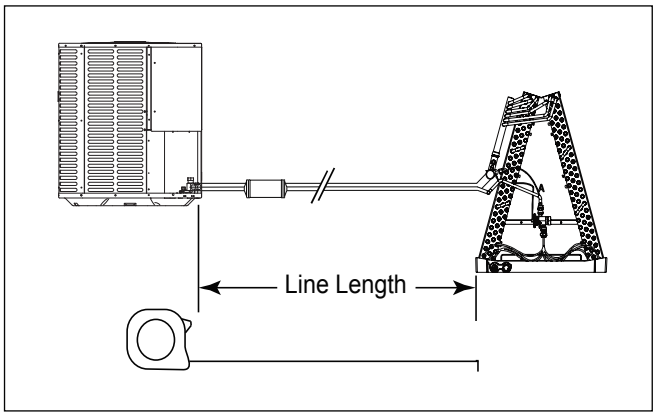


Figure 9

5.4 Refrigerant line insulation

The suction line must always be insulated. DO NOT allow the Liquid Line and Suction Line to come in direct (metal to metal) contact.

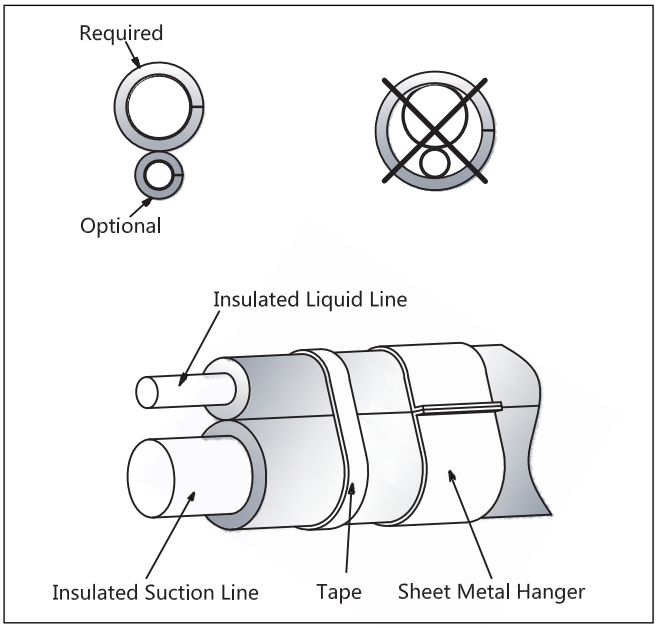


Figure 10

5.5 Reuse existing refrigerant lines

CAUTION:

If using existing refrigerant lines make certain that all joints are brazed, not soldered.

For retrofit applications, where the existing refrigerant lines will be used, the following precautions should be taken:

- Ensure that the refrigerant lines are the correct size. Refer to Section 5.1 listed and Table 3.
- Ensure that the refrigerant lines are free of leaks, acid, and oil.

The manufacturer recommends installing only approved matched indoor and outdoor systems. All of the manufacturer's split systems are AHRI certified. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance and the best overall system reliability.

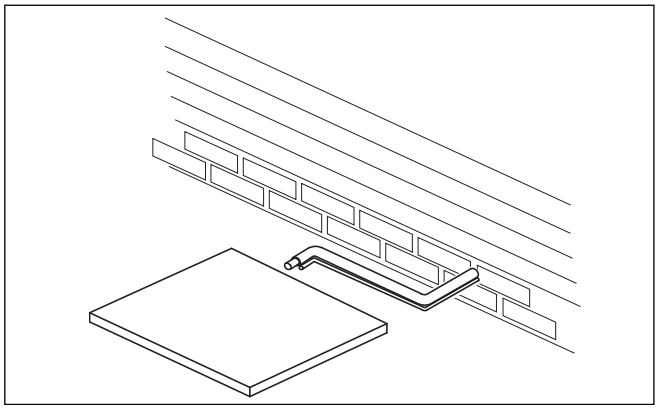


Figure 11

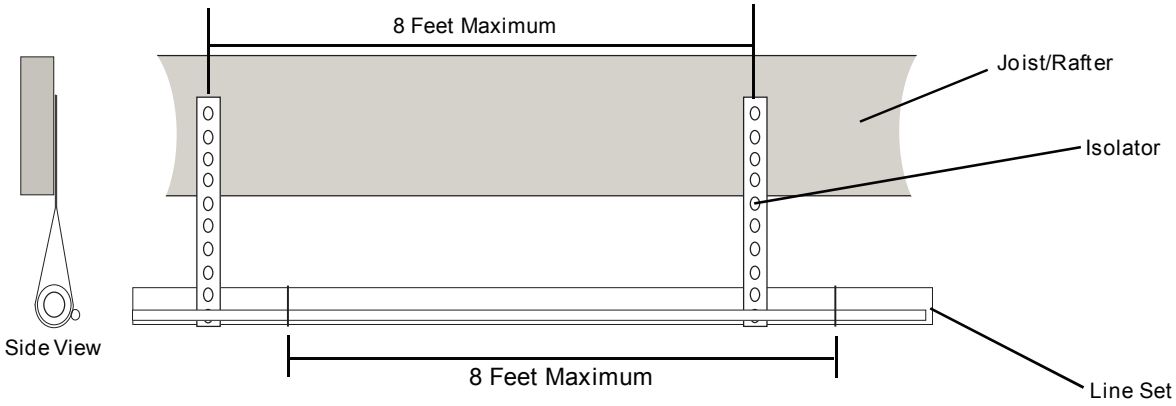
6. Refrigerant line routing

6.1 Precautions

Take precautions to prevent noise within the building structure due to vibration transmission from the refrigerant lines. For example:

- When the refrigerant lines have to be fastened to floor joists or other framing in a structure, use isolation type hangers.
- Isolation hangers should also be used when refrigerant lines are run in stud spaces or enclosed ceilings.
- Where the refrigerant lines run through a wall or sill, they should be insulated and isolated.
- Isolate the lines from all ductwork.
- Minimize the number of 90º turns.
- Use PVC piping as a conduit for all underground installations as shown in Figure 15. Buried lines should be keep as short as possible.
- The lines should not obstruct service access to the coil, air handling system or filter.
- Care must also be taken to isolate the refrigerant lines to minimize noise transmission from the equipment to the structure.

Comply with National, State, and Local Codes when isolating line sets from joists, rafters, walls or other structural elements.



Secure Suction line from joists using isolators every 8 feet. Secure Liquid Line directly to Suction line using tape, wire, or other appropriate method every 8 feet.

Isolation From Joist/Rafter

Figure 12

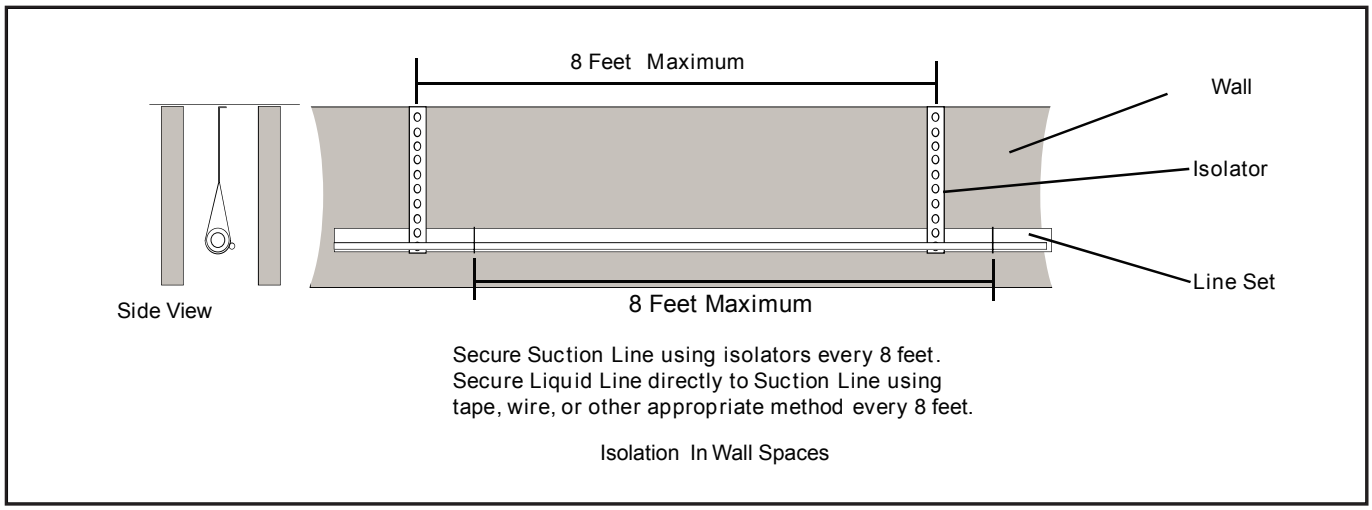


Figure 13

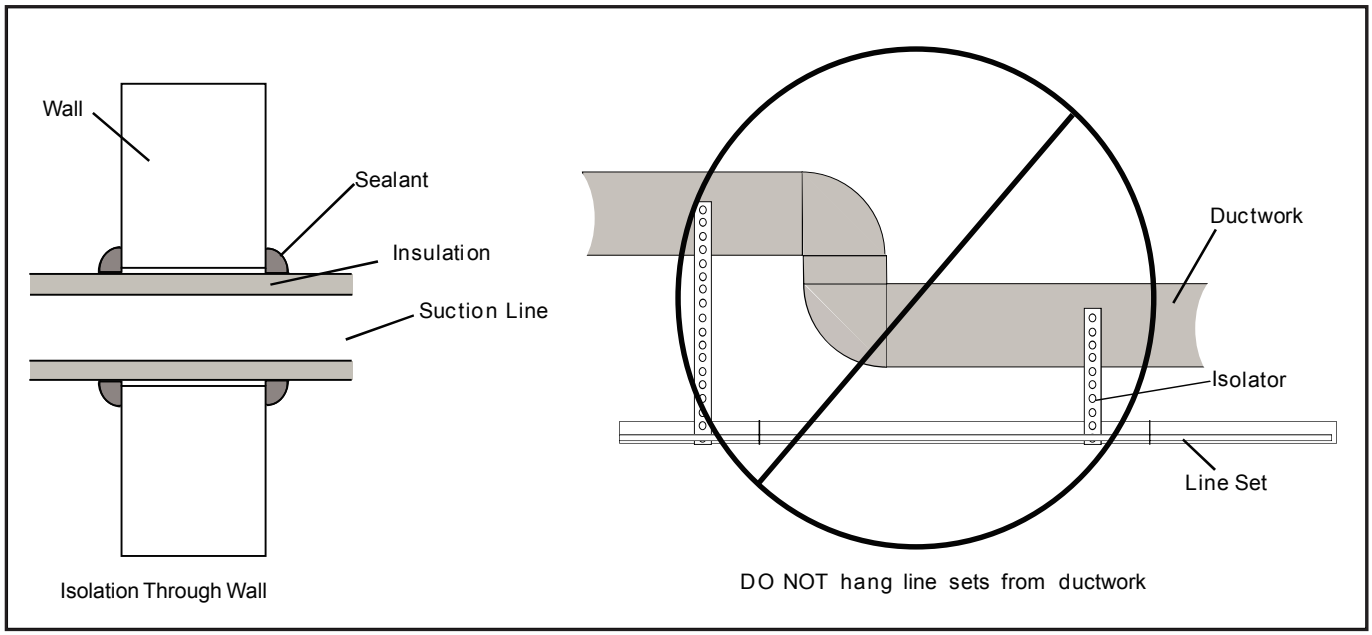


Figure 14

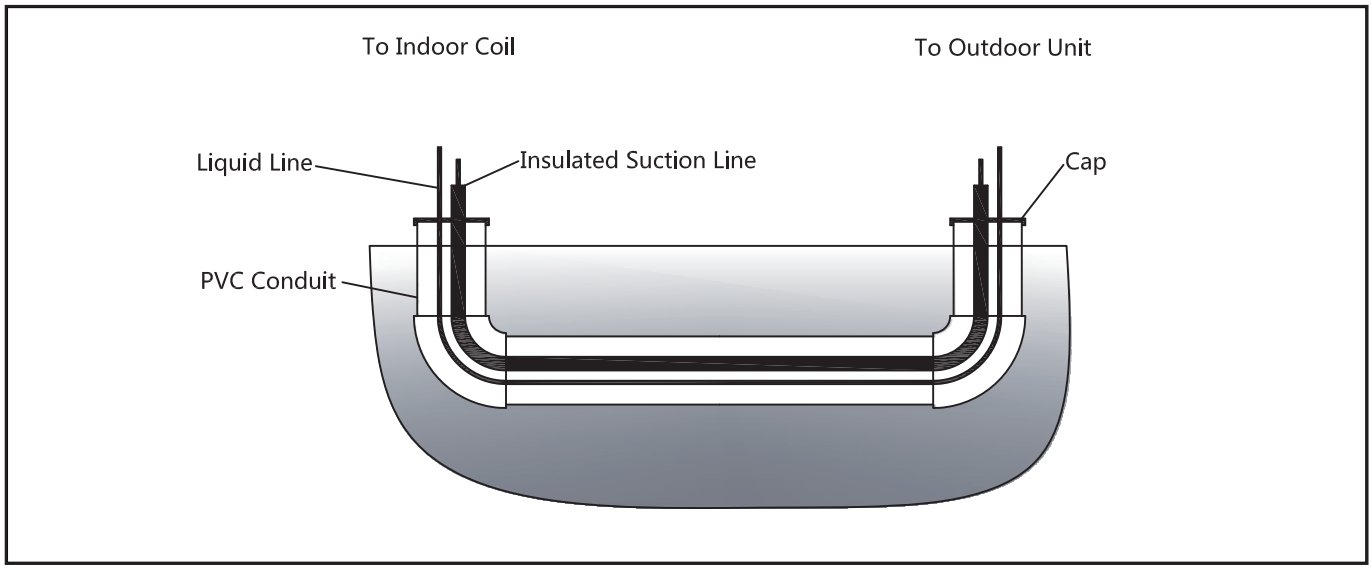


Figure 15

7. Refrigerant line brazing

7.1 Braze the refrigerant lines

1. Remove caps or plugs. Use a deburing tool to debur the pipe ends. Clean both internal and external surfaces of the tubing using an emery cloth.

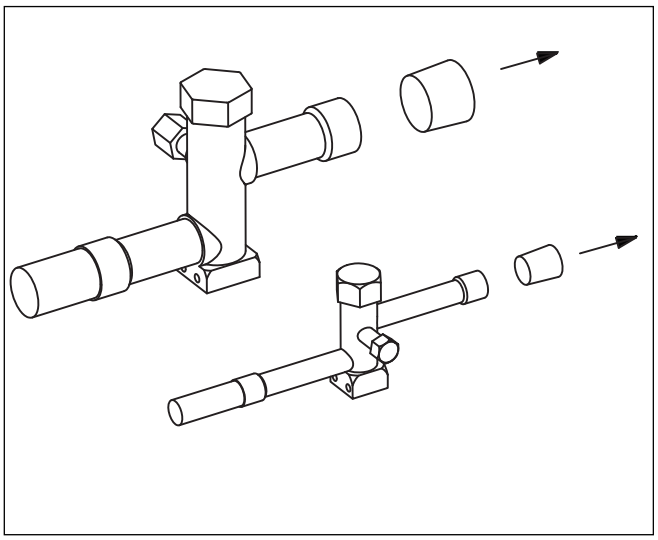


Figure 16

2. Remove the pressure tap cap from both service valves.

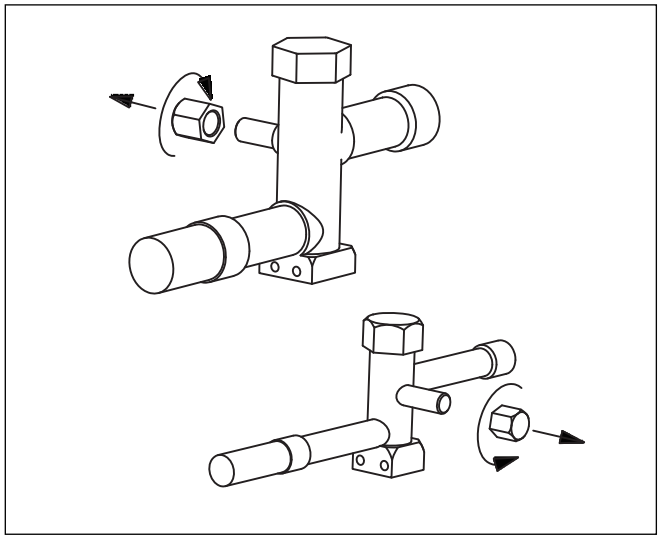


Figure 17

3. Purge the refrigerant lines and indoor coil with dry nitrogen.

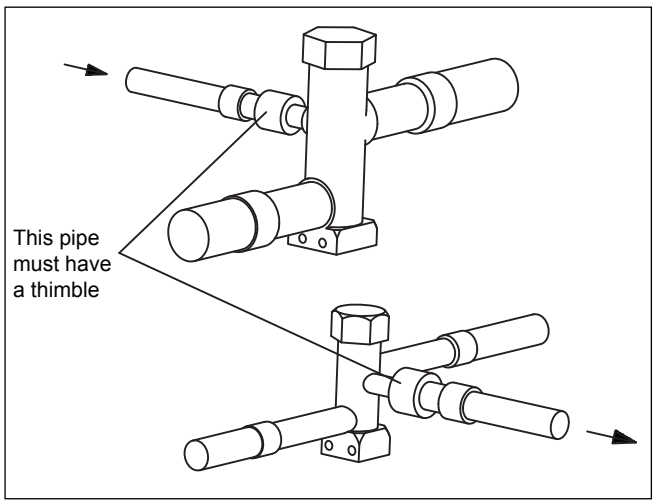


Figure 18

4. Wrap a wet rag around the valve body to avoid heat damage and continue the dry nitrogen purge (Figure 19).

   Braze the refrigerant lines to the service valves.

   Check liquid line filter drier's directional flow arrow to confirm correct direction of refrigeration flow (away from outdoor unit and toward evaporator coil) as illustrated. Brazing the filter drier to the Liquid Line.

   Continue the dry nitrogen purge. Do not remove the wet rag until all brazing is completed.

Remove the wet rag before stopping the dry nitrogen purge.

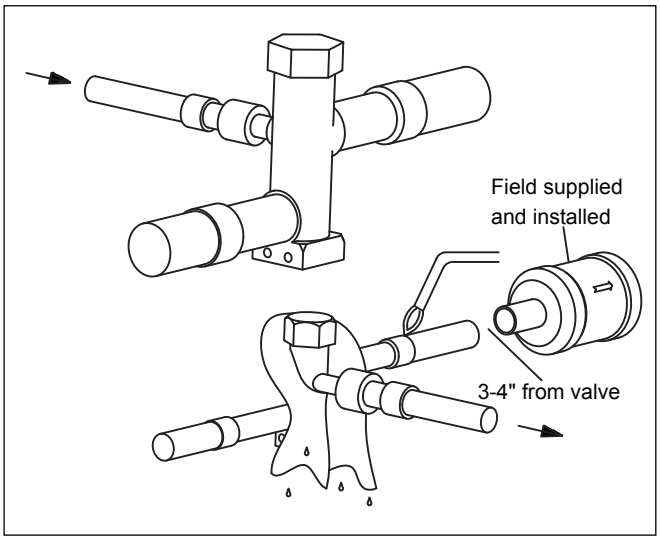


Figure 19

5. Replace the pressure tap caps after the service valves have cooled.

   Note: Do not over tighen (between 40 and 60 inch-lbs. maximum).

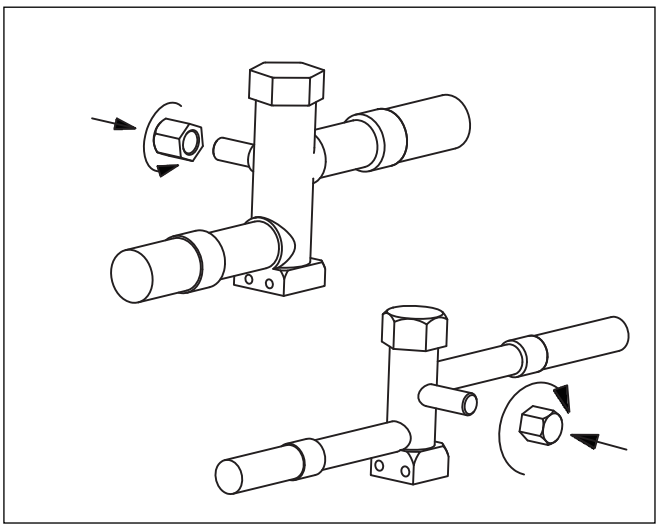


Figure 20

8. Refrigerant line leak check

8.1 Check for leaks

1. Pressurize the refrigerant lines and evaporator coil to 150 PSIG using dry nitrogen.

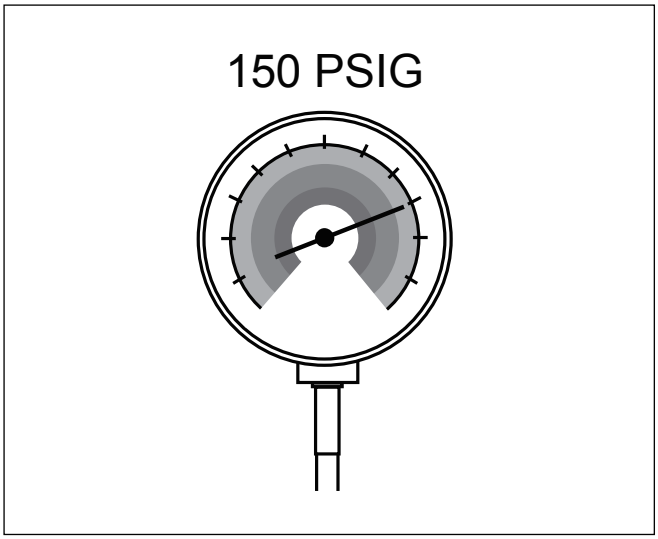


Figure 21

2. Check for leaks by using a soapy solution or bubbles at each brazed location.

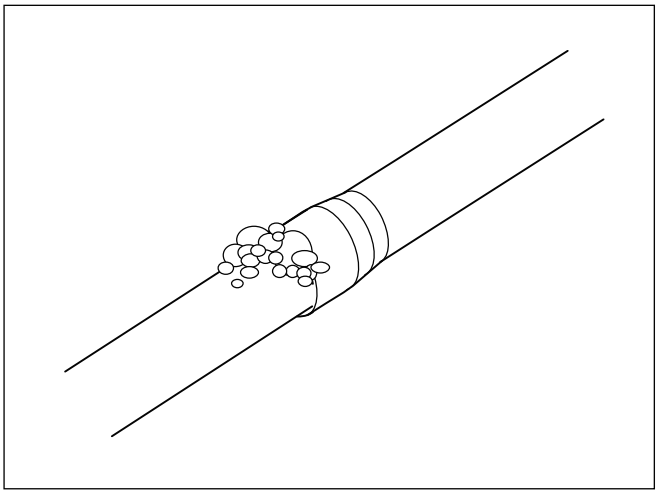


Figure 22

Remove nitrogren pressure and repair any leaks before continuing.

9. Evacuation

9.1 Evacuate the refrigerant lines and indoor coil

Do not open the service valves until the refrigerant lines and indoor coil leak check and evacuation are complete.

1. Evacuate until the micron gauge reads no higher than 350 microns, then close off the valve to the vacuum pump.

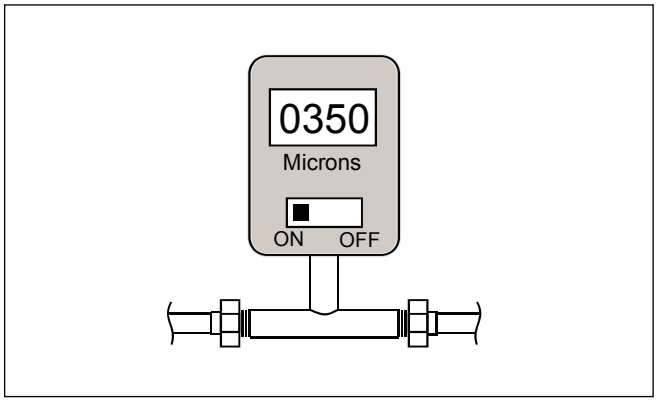


Figure 23

2. Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute.

   Once evacuation is complete blank off the vacuum pump and micron gauge, and close the valves on the manifold gauge set.

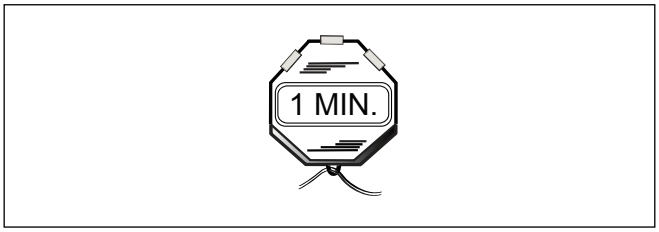


Figure 24

10. Service valves

10.1 Open the service valves

WARNING:

Extreme caution should be exercised when opening the Liquid Line Service Valve. Turn counterclock wise until the valve stem just touches the rolled edge. No torque is required. Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and /or property damage.

Leak check and evacuation must be completed before opening the service valves.

1. Remove service valve cap (Figure 25).

2. Fully insert hex wrench into the stem and back out counterclockwise until valve stem just touches the rolled edge.

3. Replace the valve stem cap to prevent leaks. Tighten finger tight plus an additional 1/6 turn.

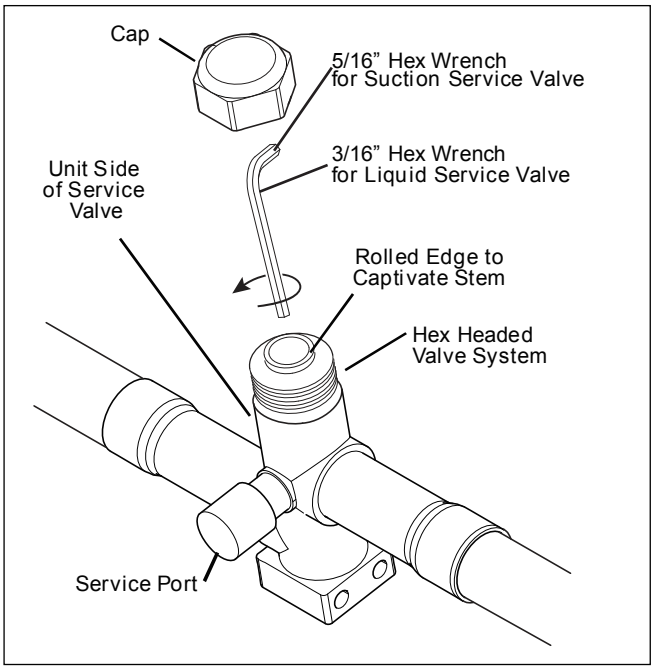


Figure 25

11. Electrical - low voltage

11.1 Low Voltage Maximum Wire Length

Table 6 defines the maximum total length of low voltage wiring from the outdoor unit to the indoor unit and to the thermostat.

24 Volts - Wire size	Max. wire length
18 AWG	150 Ft.
16 AWG	225 Ft.
14 AWG	300 Ft.

Table 6

11.2 Low voltage hook-up diagrams

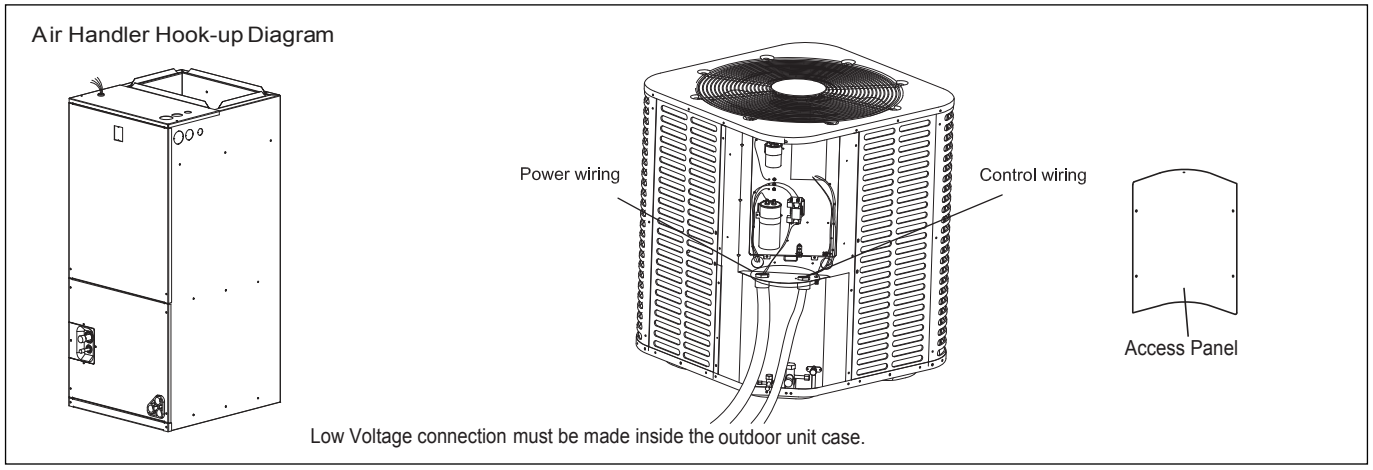


Figure 26

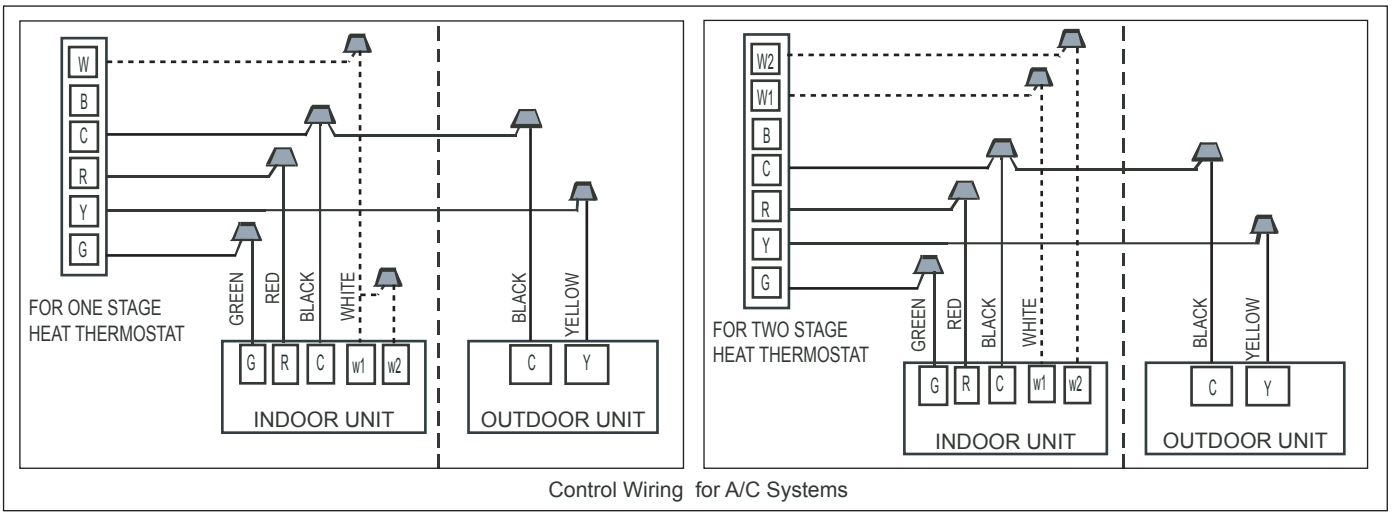
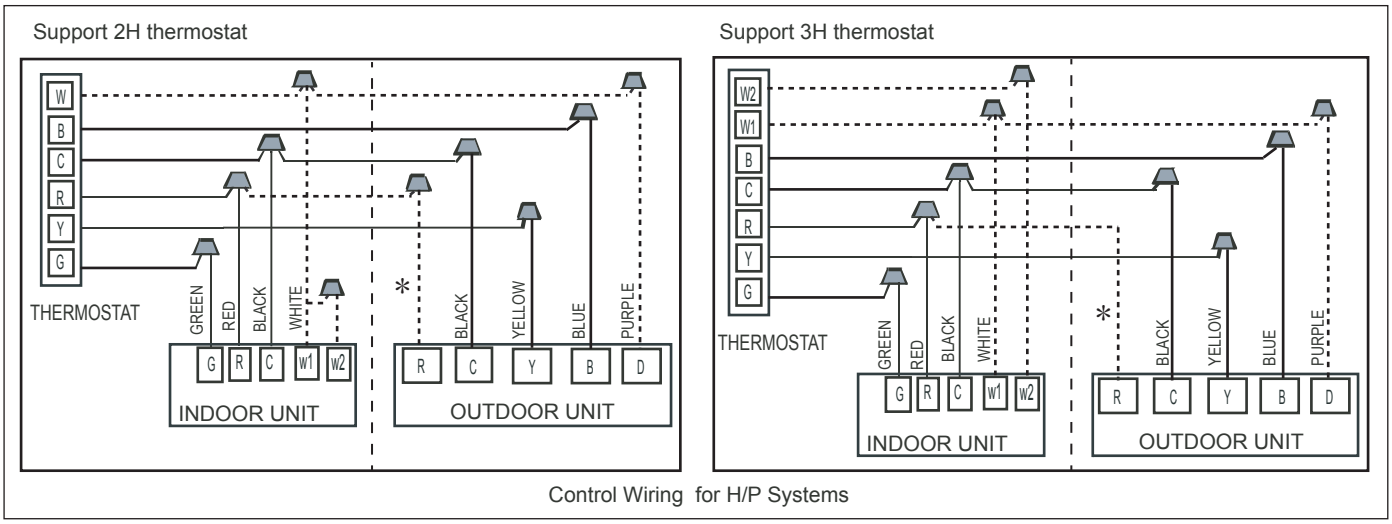


Figure 27

Notes: "-----"The electric auxiliary heat connection(optional).
W:Electric auxiliary heat signal.
W1 :The first Electric auxiliary heat signal.
W2 :The second Electric auxiliary heat signal.



Control Wiring for H/P Systems

Figure 28

Notes: "-----"The electric auxiliary heat connection(option).
W:Electric auxiliary heat signal.
W1 :The first Electric auxiliary heat signal.
W2 :The second Electric auxiliary heat signal.
D signal is connect to the Electric auxiliary heat or The first Electric auxiliary heat.
"*" :Outdoor unit signal. Only for single-stage compressor systems.

12. Electrical - high voltage

12.1 High voltage power supply

⚠ WARNING: LIVE ELECTRICAL COMPONENTS!

During installation, testing, servicing, and trouble shooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

The high voltage power supply must agree with the equipment nameplate.

Power wiring must comply with National, State and Local Codes.

Follow instructions on unit wiring diagram located on the inside of the access panel.

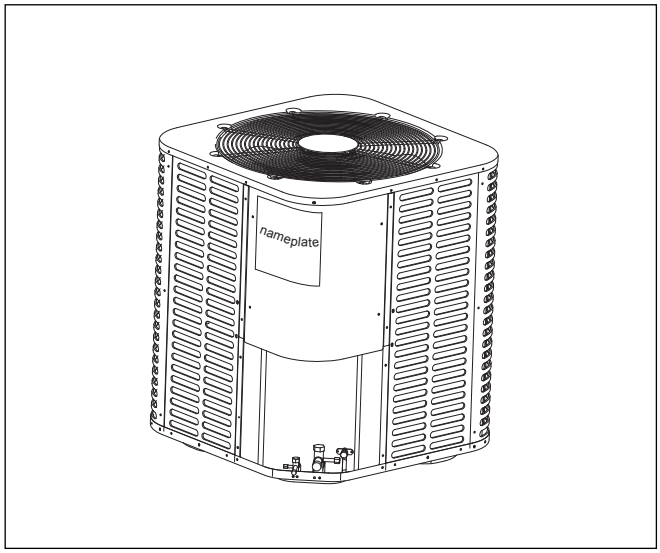


Figure 29

12.2 High voltage disconnect switch

Install a separate disconnect switch at the outdoor unit.

Field provided flexible electrical conduit must be used for high voltage wiring.

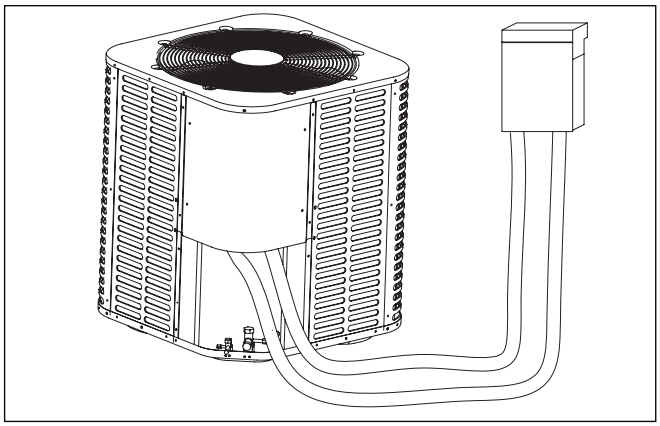


Figure 30

12.3 High voltage ground

Ground the outdoor unit per National, State and Local Code requirements.

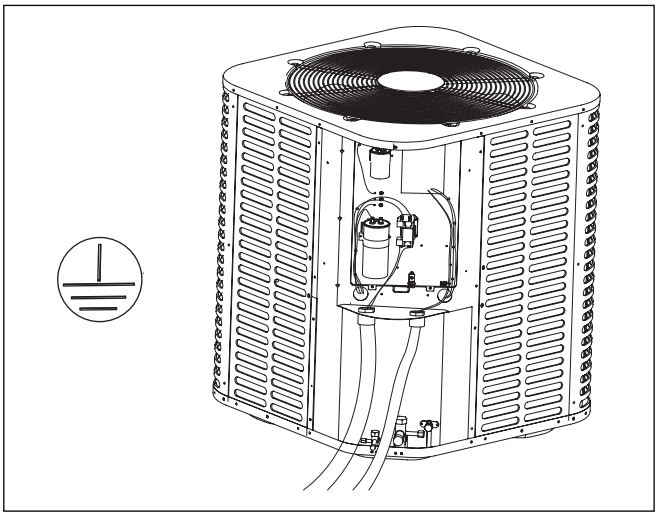


Figure 31

13. Start up

13.1 System start up

1. Ensure Sections 7, 8, 9, 10, 11 and 12 have been completed.

2. Set System Thermostat to OFF.

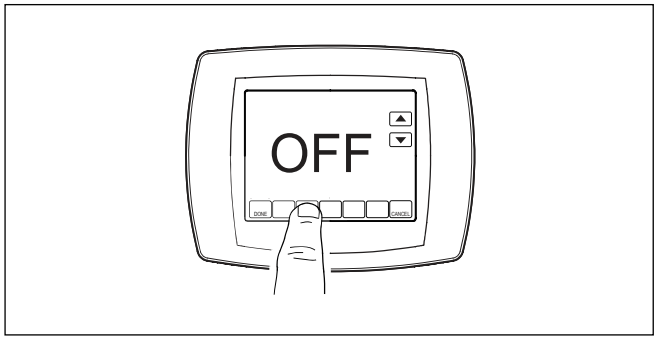


Figure 32

3. Turn on disconnect to apply power to the indoor and outdoor units.

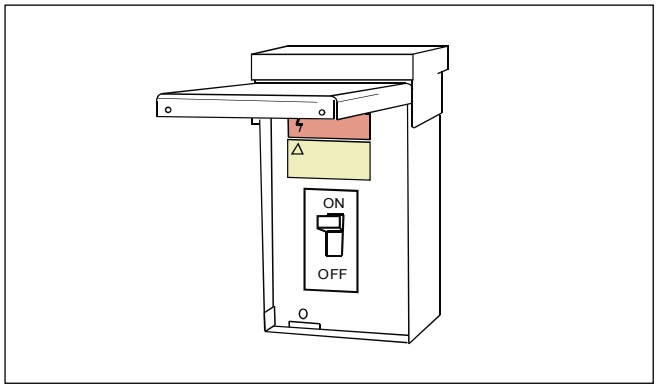


Figure 33

4. Wait one (1) hour before starting the unit if compressor crankcase heater is used and the outdoor ambient temperature is below 70 ºF.

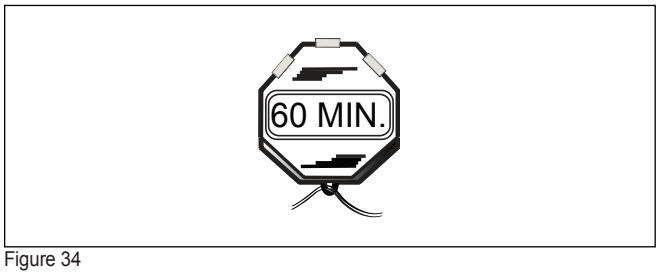


Figure 34

5. Set system thermostat to ON.

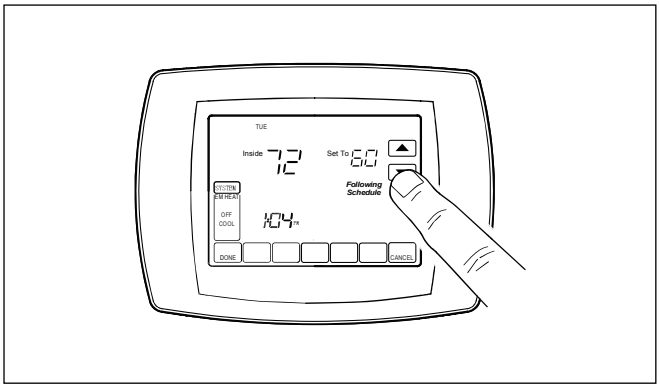


Figure 35

14. System charge adjustment

14.1 Charging: Weigh-In Method

Weigh-In method can be used for the initial installation, or anytime a system charge is being replaced. Weigh-In Method can also be used when power is not available to the equipment site or operating conditions (indoor/outdoor temperatures) are not in range to verify with the liquid line pressure charging method.

Model	Factory Charge	Charge multiplier for liquid line length		
		5/16"	3/8"	1/2"
All models	The data on nameplate	0.4 oz/ft	0.6 oz/ft	1.2 oz/ft

Table 7

The factory charge in the outdoor unit is sufficient for 15 feet of standard size interconnecting liquid line.

New Installations — Calculating additional charge for lineset greater than 15 feet.

1. Total Line Length (ft) =_____ (a)
2. Standard Line set (ft) =__15__ (b)
3. (a) minus (b) =_____ (c)
4. Refrigerant Multiplier =_____ (d)
5. Refrigerant Adder (c*d) =_____ (e*)

*If lineset is less than 15 feet, (e) = 0

Sealed-System Repairs — Calculating total system charge.

1. Total Line Length (ft) =_____ (a)
2. Standard Line set (ft) =__15__ (b)
3. (a) minus (b) =_____ (c)
4. Refrigerant Multiplier =_____ (d)
5. Refrigerant Adder (c*d) =_____ (e*)
6. Factory Charge (nameplate) =_____ (f)
7. Total System Charge (e+f) =_____ _

*If line set is less than 15 feet, (e) = 0

The only mode approved for validating system charge is while in Cooling Mode. Outdoor Temperature must be between 55°F and 115°F with Indoor Temperature kept between 70°F and 80°F.

14.2 Liquid line pressure charging and refrigerant adjustment in cooling (above 55°F outdoor temp.)

1. Check the outdoor ambient temperatures.

   Liquid line pressure (in cooling mode) is the only recommended method of charging above 55ºF outdoor ambient temperatures.

   For outdoor ambient temperatures below 55ºF , use weigh-in charge method.

   Note:It is important to return in the spring or summer to accurately charge the system in the cooling mode when outdoor ambient temperature is above 55ºF.

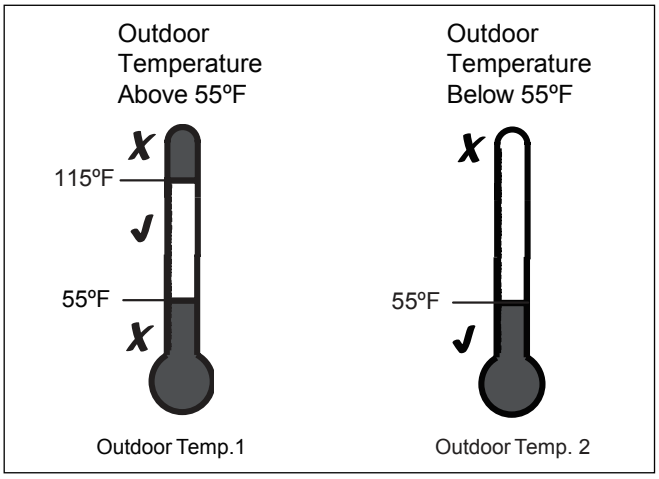


Figure 36

For best results the indoor temperature should be kept between 70ºF to 80ºF.

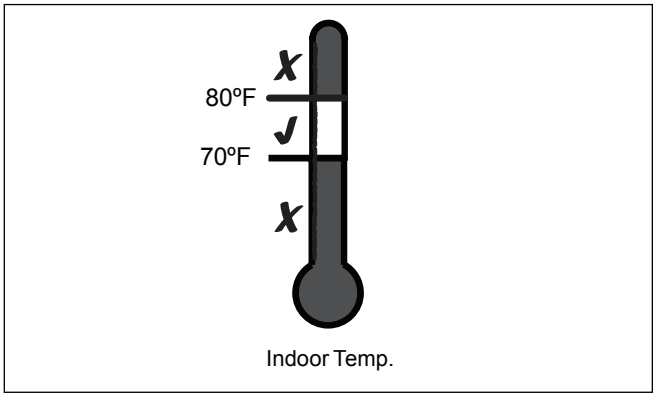


Figure 37

2. Ensure Sections 7, 8, 9, 10,11,12 and 13 have been completed.

3. Stabilize the system by operating for a minimum of 20 minutes.

At startup, or whenever charge is removed or added, the system must be operated for a minimum of 20 minutes to stabilize before accurate measurements can be made.

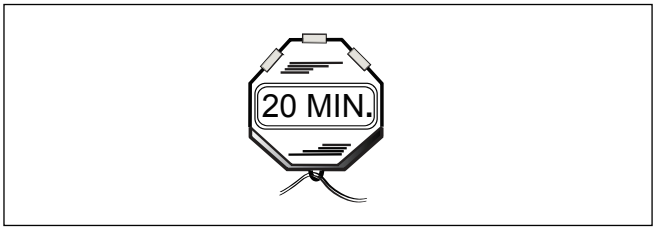


Figure 38

4. Calculate liquid line pressure (According to Refrigerant Charging Chart)
   - Measured Suction Line Pressure = _____PSIG
   - Outdoor Ambient Temperature = _____ ºF
   - Calculate Liquid Line Pressure = _____PSIG

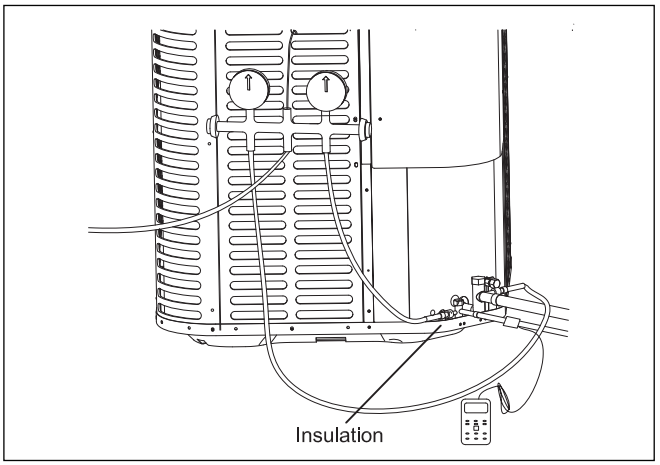


Figure 39

REFRIGERANT CHARGING CHART FOR AC SYSTEM

Cooling Mode		14 SEER R410A AC Charge Chart 1.5 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			253	274	296	317	336	354	373	400	428	455	482
	161			251	272	294	315	334	352	371	398	426	453	480
	157			249	270	292	313	332	350	369	396	424	451	478
	153		231	247	268	290	311	330	348	367	394	422	449	476
	149		229	245	266	288	309	328	346	365	392	420	447	474
	145		227	243	264	286	307	326	344	363	390	418	445	472
	141	208	225	241	262	284	305	324	342	361	388	416	443	470
	137	206	223	239	260	282	303	322	340	359	386	414	441	468
	133	204	221	237	258	280	301	320	338	357	384	412	439	466
	129	202	219	235	256	278	299	318	336	355	382	410	437	464
	125	200	217	233	254	276	297	316	334	353	380	408	435	462
	121	198	215	231	252	274	295	314	332	351	378	406	433	460
	117	196	213	229	250	272	293	312	330	349	376	404	431	458
	113	194	211	227	248	270	291	310	328	347	374	402	429	456
	109	192	209	225	246	268	289	308	326	345	372	400	427	454
	105	190	207	223	244	266	287	306	324	343	370	398	425	452

Cooling Mode		14 SEER R410A AC Charge Chart 2 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			256	275	295	314	336	357	379	405	431	457	483
	161			254	273	293	312	334	355	377	403	429	455	481
	157			252	271	291	310	332	353	375	401	427	453	479
	153		233	250	269	289	308	330	351	373	399	425	451	477
	149		231	248	267	287	306	328	349	371	397	423	449	475
	145		229	246	265	285	304	326	347	369	395	421	447	473
	141	210	227	244	263	283	302	324	345	367	393	419	445	471
	137	208	225	242	261	281	300	322	343	365	391	417	443	469
	133	206	223	240	259	279	298	320	341	363	389	415	441	467
	129	204	221	238	257	277	296	318	339	361	387	413	439	465
	125	202	219	236	255	275	294	316	337	359	385	411	437	463
	121	200	217	234	253	273	292	314	335	357	383	409	435	461
	117	198	215	232	251	271	290	312	333	355	381	407	433	459
	113	196	213	230	249	269	288	310	331	353	379	405	431	457
	109	194	211	228	247	267	286	308	329	351	377	403	429	455
	105	192	209	226	245	265	284	306	327	349	375	401	427	453

Cooling Mode		14 SEER R410A AC Charge Chart 2.5 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			250	272	293	315	334	353	372	398	425	451	477
	161			248	270	291	313	332	351	370	396	423	449	475
	157			246	268	289	311	330	349	368	394	421	447	473
	153		227	244	266	287	309	328	347	366	392	419	445	471
	149		225	242	264	285	307	326	345	364	390	417	443	469
	145		223	240	262	283	305	324	343	362	388	415	441	467
	141	204	221	238	260	281	303	322	341	360	386	413	439	465
	137	202	219	236	258	279	301	320	339	358	384	411	437	463
	133	200	217	234	256	277	299	318	337	356	382	409	435	461
	129	198	215	232	254	275	297	316	335	354	380	407	433	459
	125	196	213	230	252	273	295	314	333	352	378	405	431	457
	121	194	211	228	250	271	293	312	331	350	376	403	429	455
	117	192	209	226	248	269	291	310	329	348	374	401	427	453
	113	190	207	224	246	267	289	308	327	346	372	399	425	451
	109	188	205	222	244	265	287	306	325	344	370	397	423	449
	105	186	203	220	242	263	285	304	323	342	368	395	421	447

Cooling Mode		14 SEER R410A AC Charge Chart 3 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			257	277	296	316	339	361	384	410	436	462	488
	161			255	275	294	314	337	359	382	408	434	460	486
	157			253	273	292	312	335	357	380	406	432	458	484
	153		235	251	271	290	310	333	355	378	404	430	456	482
	149		233	249	269	288	308	331	353	376	402	428	454	480
	145		231	247	267	286	306	329	351	374	400	426	452	478
	141	212	229	245	265	284	304	327	349	372	398	424	450	476
	137	210	227	243	263	282	302	325	347	370	396	422	448	474
	133	208	225	241	261	280	300	323	345	368	394	420	446	472
	129	206	223	239	259	278	298	321	343	366	392	418	444	470
	125	204	221	237	257	276	296	319	341	364	390	416	442	468
	121	202	219	235	255	274	294	317	339	362	388	414	440	466
	117	200	217	233	253	272	292	315	337	360	386	412	438	464
	113	198	215	231	251	270	290	313	335	358	384	410	436	462
	109	196	213	229	249	268	288	311	333	356	382	408	434	460
	105	194	211	227	247	266	286	309	331	354	380	406	432	458

Cooling Mode		14 SEER R410A AC Charge Chart 3.5 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			250	269	288	307	329	351	373	400	426	453	479
	161			248	267	286	305	327	349	371	398	424	451	477
	157			246	265	284	303	325	347	369	396	422	449	475
	153		227	244	263	282	301	323	345	367	394	420	447	473
	149		225	242	261	280	299	321	343	365	392	418	445	471
	145		223	240	259	278	297	319	341	363	390	416	443	469
	141	204	221	238	257	276	295	317	339	361	388	414	441	467
	137	202	219	236	255	274	293	315	337	359	386	412	439	465
	133	200	217	234	253	272	291	313	335	357	384	410	437	463
	129	198	215	232	251	270	289	311	333	355	382	408	435	461
	125	196	213	230	249	268	287	309	331	353	380	406	433	459
	121	194	211	228	247	266	285	307	329	351	378	404	431	457
	117	192	209	226	245	264	283	305	327	349	376	402	429	455
	113	190	207	224	243	262	281	303	325	347	374	400	427	453
	109	188	205	222	241	260	279	301	323	345	372	398	425	451
	105	186	203	220	239	258	277	299	321	343	370	396	423	449

Cooling Mode		14 SEER R410A AC Charge Chart 4 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			258	277	297	316	339	361	384	411	438	465	492
	161			256	275	295	314	337	359	382	409	436	463	490
	157			254	273	293	312	335	357	380	407	434	461	488
	153		234	252	271	291	310	333	355	378	405	432	459	486
	149		232	250	269	289	308	331	353	376	403	430	457	484
	145		230	248	267	287	306	329	351	374	401	428	455	482
	141	210	228	246	265	285	304	327	349	372	399	426	453	480
	137	208	226	244	263	283	302	325	347	370	397	424	451	478
	133	206	224	242	261	281	300	323	345	368	395	422	449	476
	129	204	222	240	259	279	298	321	343	366	393	420	447	474
	125	202	220	238	257	277	296	319	341	364	391	418	445	472
	121	200	218	236	255	275	294	317	339	362	389	416	443	470
	117	198	216	234	253	273	292	315	337	360	387	414	441	468
	113	196	214	232	251	271	290	313	335	358	385	412	439	466
	109	194	212	230	249	269	288	311	333	356	383	410	437	464
	105	192	210	228	247	267	286	309	331	354	381	408	435	462

Cooling Mode		14 SEER R410A AC Charge Chart 5 TON												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			265	285	305	325	348	372	395	423	450	478	505
	161			263	283	303	323	346	370	393	421	448	476	503
	157			261	281	301	321	344	368	391	419	446	474	501
	153		242	259	279	299	319	342	366	389	417	444	472	499
	149		240	257	277	297	317	340	364	387	415	442	470	497
	145		238	255	275	295	315	338	362	385	413	440	468	495
	141	219	236	253	273	293	313	336	360	383	411	438	466	493
	137	217	234	251	271	291	311	334	358	381	409	436	464	491
	133	215	232	249	269	289	309	332	356	379	407	434	462	489
	129	213	230	247	267	287	307	330	354	377	405	432	460	487
	125	211	228	245	265	285	305	328	352	375	403	430	458	485
	121	209	226	243	263	283	303	326	350	373	401	428	456	483
	117	207	224	241	261	281	301	324	348	371	399	426	454	481
	113	205	222	239	259	279	299	322	346	369	397	424	452	479
	109	203	220	237	257	277	297	320	344	367	395	422	450	477
	105	201	218	235	255	275	295	318	342	365	393	420	448	475

REFRIGERANT CHARGING CHART FOR HP SYSTEM

Cooling Mode		14SEER R410A HP Charge Chart 1.5 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			246	265	284	303	323	343	364	390	416	441	467
	161			244	263	282	301	321	341	362	388	414	439	465
	157			242	261	280	299	319	339	360	386	412	437	463
	153		221	240	259	278	297	317	337	358	384	410	435	461
	149		219	238	257	276	295	315	335	356	382	408	433	459
	145		217	236	255	274	293	313	333	354	380	406	431	457
	141	196	215	234	253	272	291	311	331	352	378	404	429	455
	137	195	213	232	251	269	288	309	328	350	376	402	427	453
	133	193	211	230	249	267	286	306	326	347	373	399	425	451
	129	191	209	228	247	265	284	304	323	344	370	397	423	449
	125	190	209	227	245	264	282	302	320	341	368	394	421	447
	121	190	208	226	244	262	280	300	320	341	367	393	419	445
	117	188	206	224	242	260	278	298	318	339	365	391	417	443
	113	186	204	222	240	258	276	296	316	337	363	389	415	441
	109	184	202	220	238	256	274	294	314	335	361	387	413	439
	105	182	200	218	236	254	272	292	312	333	359	385	411	437

Cooling Mode		14SEER R410A HP Charge Chart 2 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			255	274	294	313	335	358	381	407	434	461	486
	161			253	272	292	311	333	356	379	405	432	459	484
	157			251	270	290	309	331	354	377	403	430	457	482
	153		230	249	268	288	307	329	352	375	401	428	455	480
	149		228	247	266	286	305	327	350	373	399	426	453	478
	145		226	245	264	284	303	325	348	371	397	424	451	476
	141	204	224	243	262	282	301	323	346	369	395	422	449	474
	137	203	222	241	260	279	298	320	344	367	393	420	447	472
	133	201	220	239	258	277	296	318	342	365	391	418	445	470
	129	199	218	237	256	275	294	316	340	363	389	416	443	468
	125	197	216	235	254	273	292	314	338	361	387	414	441	466
	121	195	214	233	252	271	290	312	336	359	385	412	439	464
	117	193	212	231	250	269	288	310	334	357	383	410	437	462
	113	191	210	229	248	267	286	308	332	355	381	408	435	460
	109	189	208	227	246	265	284	306	330	353	379	406	433	458
	105	187	206	225	244	263	282	304	328	351	377	404	431	456

Cooling Mode		14SEER R410A HP Charge Chart 2.5 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			253	269	288	305	327	348	370	390	414	435	461
	161			251	267	286	303	325	346	368	388	412	433	459
	157			249	265	284	301	323	344	366	386	410	431	457
	153		231	247	263	282	299	321	342	364	384	408	429	455
	149		229	245	261	280	297	319	340	362	382	406	427	453
	145		227	243	259	278	295	317	338	360	380	404	425	451
	141	208	225	241	257	276	293	315	336	358	378	402	423	449
	137	206	223	239	255	274	291	313	334	356	376	400	421	447
	133	204	221	237	253	272	289	311	332	354	374	398	419	445
	129	202	219	235	251	270	287	309	330	352	372	396	417	443
	125	199	215	232	249	267	285	307	328	350	370	394	415	441
	121	195	213	230	247	267	285	306	327	348	368	392	413	439
	117	193	211	228	245	265	283	304	325	346	366	390	411	437
	113	191	209	226	243	263	281	302	323	344	364	388	409	435
	109	189	207	224	241	261	279	300	321	342	362	386	407	433
	105	187	205	222	239	259	277	298	319	340	360	384	405	431

Cooling Mode		14SEER R410A HP Charge Chart 3 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			260	278	296	314	336	359	381	402	427	454	482
	161			258	276	294	312	334	357	379	400	425	452	480
	157			256	274	292	310	332	355	377	398	423	450	478
	153		236	254	272	290	308	330	352	374	395	420	448	476
	149		234	252	270	288	306	328	350	372	393	418	446	474
	145		232	250	268	286	304	326	347	369	390	416	444	472
	141	212	230	248	266	284	302	323	345	366	388	413	442	470
	137	210	228	246	264	282	300	321	342	363	385	411	439	468
	133	208	226	244	262	280	298	319	339	360	382	408	437	466
	129	206	224	242	260	278	296	316	337	357	379	406	435	464
	125	204	222	240	258	276	294	314	335	355	377	404	433	462
	121	202	220	238	256	274	292	312	333	353	375	402	431	460
	117	200	218	236	254	272	290	310	331	351	373	400	429	458
	113	198	216	234	252	270	288	308	329	349	371	398	427	456
	109	196	214	232	250	268	286	306	327	347	369	396	425	454
	105	194	212	230	248	266	284	304	325	345	367	394	423	452

Cooling Mode		14SEER R410A HP Charge Chart 3.5 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			254	271	288	305	327	348	370	394	417	441	464
	161			252	269	286	303	325	346	368	392	415	439	462
	157			250	267	284	301	323	344	366	390	413	437	460
	153		231	248	265	282	299	321	342	364	388	411	435	458
	149		229	246	263	280	297	319	340	362	386	409	433	456
	145		227	244	261	278	295	317	338	360	384	407	431	454
	141	208	225	242	259	276	293	315	336	358	382	405	429	452
	137	206	223	240	257	274	291	313	334	356	380	403	427	450
	133	204	221	238	255	272	289	311	332	354	378	401	425	448
	129	202	219	236	253	270	287	309	330	352	376	399	423	446
	125	200	217	234	251	268	285	307	328	350	374	397	421	444
	121	198	215	232	249	266	283	305	326	348	372	395	419	442
	117	196	213	230	247	264	281	303	324	346	370	393	417	440
	113	194	211	228	245	262	279	301	322	344	368	391	415	438
	109	192	209	226	243	260	277	299	320	342	366	389	413	436
	105	190	207	224	241	258	275	297	318	340	364	387	411	434

Cooling Mode		14SEER R410A HP Charge Chart 4 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			255	273	291	310	330	351	371	396	420	445	469
	161			253	271	289	308	328	349	369	394	418	443	467
	157			251	269	287	306	326	347	367	392	416	441	465
	153		231	249	267	285	304	324	345	365	390	414	439	463
	149		229	247	265	283	302	322	343	363	388	412	437	461
	145		227	245	263	281	300	320	341	361	386	410	435	459
	141	206	225	243	261	279	298	318	339	359	384	408	433	457
	137	204	223	241	259	277	296	316	337	357	382	406	431	455
	133	204	222	240	258	275	294	314	335	355	380	404	429	453
	129	202	220	238	256	273	292	312	333	353	378	402	427	451
	125	200	218	236	254	271	290	310	331	351	376	400	425	449
	121	198	216	234	252	269	288	308	329	349	374	398	423	447
	117	196	214	232	250	267	286	306	327	347	372	396	421	445
	113	194	212	230	248	265	284	304	325	345	370	394	419	443
	109	192	210	228	246	263	282	302	323	343	368	392	417	441
	105	190	208	226	244	261	280	300	321	341	366	390	415	439

Cooling Mode		14SEER R410A HP Charge Chart 5 TON(Cooling mode)												
		Outdoor Ambient Temperature(℉)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
		Liquid Pressure at Small Service Valve(psig)												
Suction Pressure at Large Service Valve(psig)	165			254	274	291	309	329	350	370	398	421	447	472
	161			252	271	289	306	327	348	368	396	419	445	470
	157			250	268	287	304	325	346	366	394	417	443	468
	153		229	248	266	285	302	323	344	364	392	415	441	466
	149		227	246	264	283	300	321	342	362	390	413	439	464
	145		225	244	262	281	298	319	340	360	388	411	437	462
	141	205	224	242	260	279	296	317	338	358	386	409	435	460
	137	202	222	240	258	277	294	315	336	356	384	407	433	458
	133	199	220	238	256	275	292	313	334	354	382	405	431	456
	129	197	218	236	254	273	290	311	332	352	380	403	429	454
	125	195	216	234	252	271	288	310	330	350	378	401	427	452
	121	193	214	232	250	269	286	308	328	348	376	399	425	450
	117	191	212	230	248	267	284	306	326	346	374	397	423	448
	113	189	210	228	246	265	282	304	324	344	372	395	421	446
	109	187	208	226	244	263	280	302	322	342	370	393	419	444
	105	185	206	224	242	261	278	300	320	340	368	391	417	442

5. Adjust refrigerant level to attain proper gage pressure.

Add refrigerant if the design liquid line pressure is lower than the chart value.

- Connect gages to refrigerant bottle and unit as illustrated (Figure 40).
- Purge all hoses.
- Open bottle.
- Stop adding refrigerant when liquid line pressure matches the Refrigerant Charging Chart.

Recover refrigerant if the design liquid line pressure is lower than the chart value.

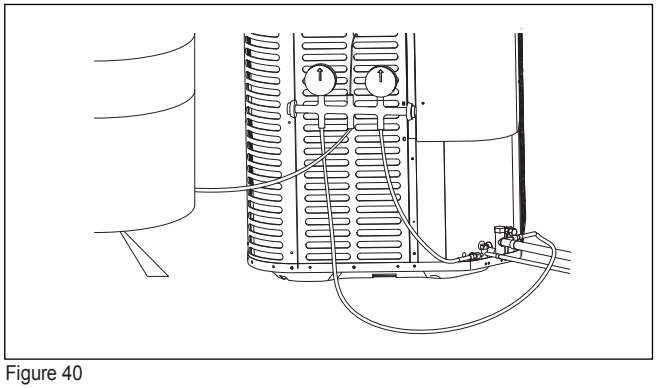


Figure 40

6. Stabilize the system.

- Wait 20 minutes for the system condition to stabilize between adjustments.

When the liquid line pressure match the chart, the system is properly charged.

- Remove gages.
- Replace service port caps to prevent leaks. Tighten finger tight plus an additional 1/6 turn.



Figure 41

7. Record system Information for reference (Table 8).
   Record system pressures and temperatures after charging is complete.

Description	Value
Outdoor model number	
Measured Outdoor Ambient	°F
Measured Indoor Ambient	°F
Liquid Gage Pressure	PSIG
Suction Gage Pressure	PSIG

Table 8

15. System operation and troubleshooting

15.1 Compressor crankcase heater (CCH) (Heat pump only)

The crankcase heating start must meet two conditions:
A. Outdoor temperature＜37.4°F
B. At power up or if the compressor has been off for more than 3 hours

The crankcase heating stop must meet the following condition:
Outdoor temperature＞44.6°F or compressor starts.

15.2 Reversing valve (Heat pump only)

Reversing valve energizes at the heating conditions, and cuts off at the cooling condition.

15.3 Protection function (Heat pump only)

- T3 = Outdoor Coil Temperature
  T3＞143.6°F, compressor stops working
  T3＜125.6°F, compressor restarts working

- T4 = Ambient Temperature
  T4 < 5°F, compressor stops working
  T4 > 10.4°F, compressor restarts working
  If 55°F ≤ T4 ≤ 115°F, unit can operate in cooling
  If 5°F ≤ T4 ≤ 75°F, unit can operate in heating

When T4< 5°F, the outdoor unit would provide a signal to drive up the heater installed in the indoor unit.

- Discharge temperature protection

  Discharge temperature > 275°F, compressor stops working.
  Discharge temperature < 194°F, compressor restarts working.

- High pressure protection

  High pressure > 638 PSIG, compressor and outdoor fan motor stop working.
  High pressure < 464 PSIG, compressor and outdoor fan motor restart working (3 minutes delay necessary).

- Low pressure protection

  Low pressure < 21 PSIG, compressor and outdoor fan motor stop working.
  Low pressure > 44 PSIG, compressor and outdoor fan motor restart working (3 minutes delay necessary).

In stand-by status, the compressor will not start in low pressure protection. Within 30 minutes, if 4 protection cycles occur. The system will be locked. It will be restore after power cycle.

15.4 Protection function (Air conditioner only)

- High pressure protection

  High pressure > 638 PSIG, compressor and outdoor fan motor stop working.
  High pressure < 464 PSIG, compressor and outdoor fan motor restart working (3 minutes delay necessary).

15.5 Defrost mode (Heat pump only)

Manual defrost mode
When the switch SW3-1 is set to “ON”, the system turns to the defrost mode. The defrost mode exits by the logic of shut-down conditions of defrost mode.

Once the manual defrost mode is finished, please turn the switch SW3-1 back to “off ”.

Start-up conditions of defrost mode
When SW3-3 switch is set to “ON” (Figure 4), the mode will start up in any of the following conditions:

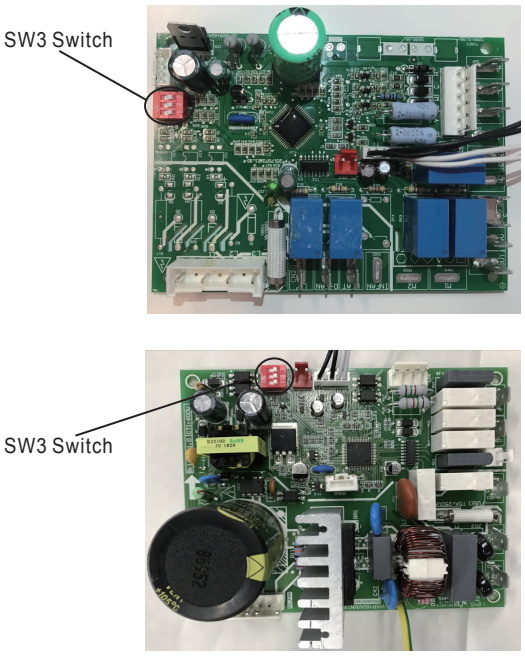
- Compressor operates and T3 < 32°F for a period of 30 minutes.
- T3 < 28.4°F and compressor operates for the first time after connected to the power source.
- When T3 < 28.4°F and the system is on standby for two hours continuously.

When SW3-3 switch is set to “OFF”(Figure 41), the mode will start up in any of the following conditions:

- Compressor operates and T3 < 32 °F for a period of 60 minutes.
- T3 < 28.4 °F and compressor operates for the first time after connected to the power source.
- When T3 < 28.4 °F and the system is on standby for two hours.

Shut-down conditions of defrost mode:
The mode will shut down in any of the following conditions:

- The defrosted time lasts 10 minutes
- T3 ≥ 64.4°F and T4 ≥ 28.4°F
- Compressor stops operating
- T3 ≥ 64.4°F lasts 60 seconds when T4 < 28.4°F



The location of SW3 Switch in the PCB Board

Figure 42

15.6 Temperature sensor resistance table

Temperature °F	Resistance kΩ	Temperature °F	Resistance kΩ	Temperature °F	Resistance kΩ	Temperature °F	Resistance kΩ
-4	106.73	37	29.87	78	10.00	119	3.69
-3	103.25	38	29.22	79	9.50	120	3.61
-2	99.89	39	28.19	80	9.26	121	3.53
-1	96.65	40	27.39	81	9.03	122	3.45
0	93.53	41	26.61	82	8.81	123	3.38
1	90.53	42	25.85	83	8.59	124	3.30
2	87.62	43	25.12	84	8.38	125	3.23
3	84.83	44	24.42	85	8.17	126	3.16
4	82.13	45	23.73	86	7.97	127	3.10
5	79.52	46	23.07	87	7.78	128	3.03
6	77.01	47	22.42	88	7.59	129	2.96
7	74.58	48	21.80	89	7.40	130	2.90
8	72.24	49	21.20	90	7.22	131	2.84
9	69.98	50	20.61	91	7.05	132	2.78
10	67.80	51	20.04	92	6.88	133	2.72
11	65.69	52	19.49	93	6.72	134	2.67
12	63.65	53	18.96	94	6.56	135	2.61
13	61.68	54	18.44	95	6.40	136	2.56
14	59.78	55	17.94	96	6.25	137	2.50
15	57.95	56	17.45	97	6.10	138	2.45
16	56.17	57	16.98	98	5.96	139	2.40
17	54.46	58	16.52	99	5.82	140	2.35
18	52.80	59	16.08	100	5.68	141	2.30
19	51.20	60	15.65	101	5.55	142	2.25
20	49.65	61	15.23	102	5.42	143	2.21
21	48.16	62	14.83	103	5.30	144	2.16
22	46.71	63	14.43	104	5.18	145	2.12
23	45.31	64	14.05	105	5.06	146	2.08
24	43.95	65	13.68	106	4.94	147	2.03
25	42.64	66	13.32	107	4.83	148	1.99
26	41.38	67	12.97	108	4.72	149	1.95
27	40.15	68	12.64	109	4.61	150	1.91
28	38.97	69	12.31	110	4.51	151	1.88
29	37.82	70	11.99	111	4.41	152	1.84
30	36.71	71	11.68	112	4.31	153	1.80
31	35.64	72	11.38	113	4.21	154	1.77
32	34.60	73	11.09	114	4.12	155	1.73
33	33.59	74	10.80	115	4.03	156	1.70
34	32.61	75	10.53	116	3.94	157	1.66
35	31.67	76	10.00	117	3.85	158	1.63
36	30.76	77	10.00	118	3.77	159	1.60

Table 9

15.7 Electrical data table

Model	AC							HP						
	18	24	30	36	42	48	60	18	24	30	36	42	48	60
Minimum circuit ampacity(A)	10.4	13.4	14.7	19.4	21.6	24.6	29.6	10.4	13.4	16.5	19.4	21.6	24.6	28.8
Maximum circuit protecetor(A)	15	20	25	30	35	40	50	15	20	25	30	35	40	45

Table 10

15.8 Troubleshooting table

SYSTEM FAULTS		WHAT TO CHECK MODE	POWER SUPPLY	HIGH VOLTAGE WIRING	I.D. CONTROL DEF.	COMPRESSR CAPACITOR	O.D. FAN CAPACITOR	I.D. BLOWER CAPACITOR	CONTACTOR CONTACTS	LOW VOLTAGE WIRING	CONTROL TRANSFORMER	THERMOSTAT	CONTACTOR COIL	LOW VOLTAGE FUSE	STUCK COMPRESSOR	INEFFICIENT COMP.	REF. UNDERCHARGE	REF. OVERCHARGE	EXCESSIVE EVAP. LOAD	NONCONDENSABLES	RES. O.D. AIRFLOW	O.D. AIR RECIRCULATION	TXV STUCK OPEN	SUPERHEAT	RES. I.D. AIRFLOW	REF. CIR. RESTRICTIONS	SOV LEAKING	SOV COIL DEFECTIVE	CHECK VALVE LEAKING	LPC SENSOR DEF.	DEFROST CONTROL DEF.	T4 TEMP. SENSOR DEF.	T3 TEMP. SENSOR DEF.	HPC/HGS SENSOR DEF.
REFRIGERANT CIRCUIT																																		
Head Pressure Too High	C																	P	P	S	P	S				S								
	H																	P	P	S					P	S								
Head Pressure Too Low	C															S	P						S	S		S	S		P				
	H															S	P						S	S		S	S	S	P				
Suction Pressure Too High	C															S		P	P					S			P		P				
	H															S								S			P						
Suction Pressure Too Low	C																P							S	P	S							
	H																P				S	S		S		S		S					
Liquid Refrig. Floodback (TXV)	C																						P						P				
	H																						P						P				
I.D. Coil Frosting	C																P				S	S											
	H																																
Compressor Runs Inadequate or No Cooling/Heating	C															S	P		S	S				S	P	S	S		S				
	H															S	P			S				S	P	S	S	S	S				
ELECTRICAL																																		
Compressor & O.D. Fan Won't Start	C	P	P					S	S	P	S	P	P																		S	S	S	S
	H	P	P						S	P	S		P																	S	S	S	S
Compressor Will Not Start But O.D. Fan Runs	C		P		P									P																				
	H		P		P			S				P		P																	S		S	
O.D. Fan Won't Start	C		P			P																												
	H		P			P																									S			
Compressor Hums But Won't Start	C				P			S						P																				
	H				P			S						P																				
I.D. Blower Won't Start	C	P	P	S			P		S	P	S		S																					
	H	P	P	S			P		S	P	S		S																					
DEFROST																																		
Unit Won't Initiate Defrost	C																																	
	H																											P			P		S	
Defrost Terminates on Time	C																																	
	H																P														P		S	
Unit Icing Up	C																																	
	H																P				S	S			S			P			P			

C- Cooling H - Heating P - Primary Causes S - Secondary Causes

16. Warranty

Assist owner with processing Warranty cards and/or online registration.

16.1 Maintenance

Dirt should not be allowed to accumulate on the indoor or outdoor coils or other parts in the air circuit. Clean as often as necessary to keep the unit clean. Use a brush, vacuum cleaner attachment or other suitable means.

The outdoor fan motor is permanently lubricated and does not require periodic oiling.

Refer to the furnace or air handler instructions for filter and blower motor maintenance.

The indoor coil and drain pan should be inspected and cleaned regularly to assure proper drainage.



It is unlawful to knowingly vent, release or discharge refrigerant into the open air during repair, service, maintenance or the final disposal of this unit. When the system is functioning properly and the owner has been fully instructed, secure the owner's approval.

16.2 Changing motor

When motor requires changing, follow the steps below:

STEP 1 - Go into electrical panel, disconnect motor power lines.

Note: Disconnect main power to unit. Severe burns and electrical shock will occur if you do not disconnect main power.

STEP 2 - Remove cover (be careful of motor wires).

STEP 3 - Be sure to place fan cover unit on the ground (Figure 43).

Note: Do not place or lean fan blades on ground or against surface.

STEP 4 - Remove fan motor by removing 5/16” nuts from cover.

STEP 5 - Remove fan blade from motor by removing 1/2” nut and place fan on the ground.

STEP 6 - Reverse removal process to reinstall the fan and motor.

Note: When connecting motor wires be sure to check motor direction.

Damage will occur to condenser unit if you remove 5/16’’ nuts prior to cover removal.

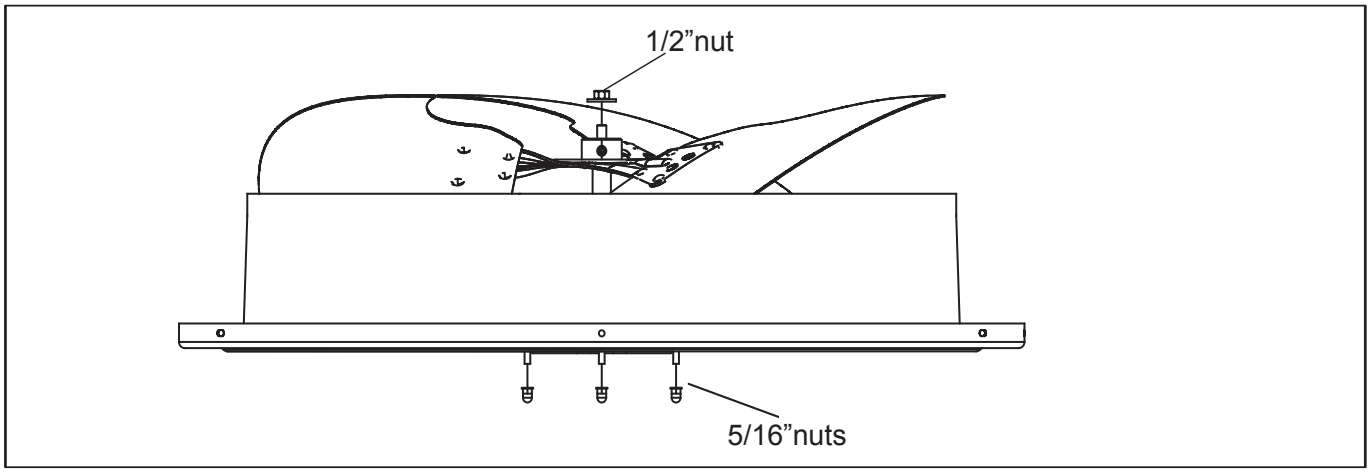


Figure 43

17. Wiring diagrams

17.1 For AC System

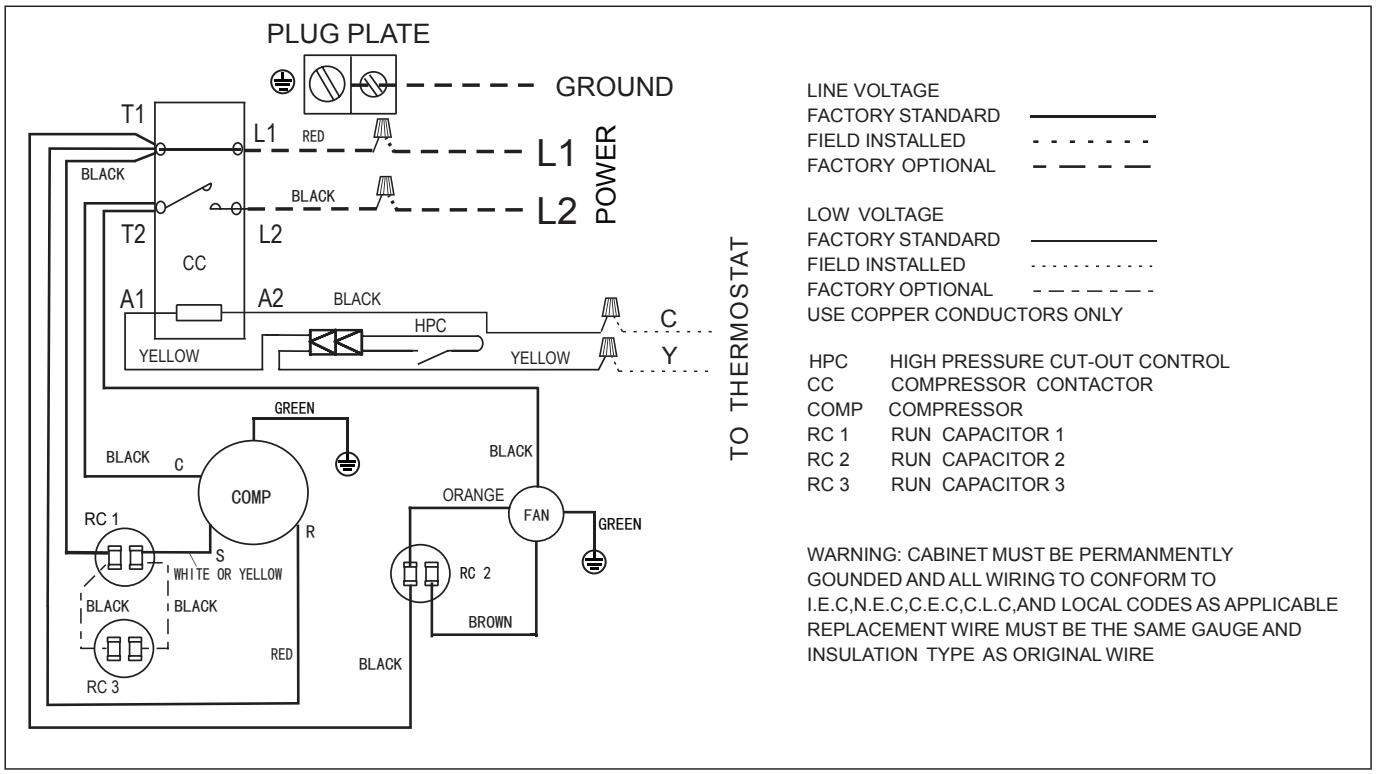
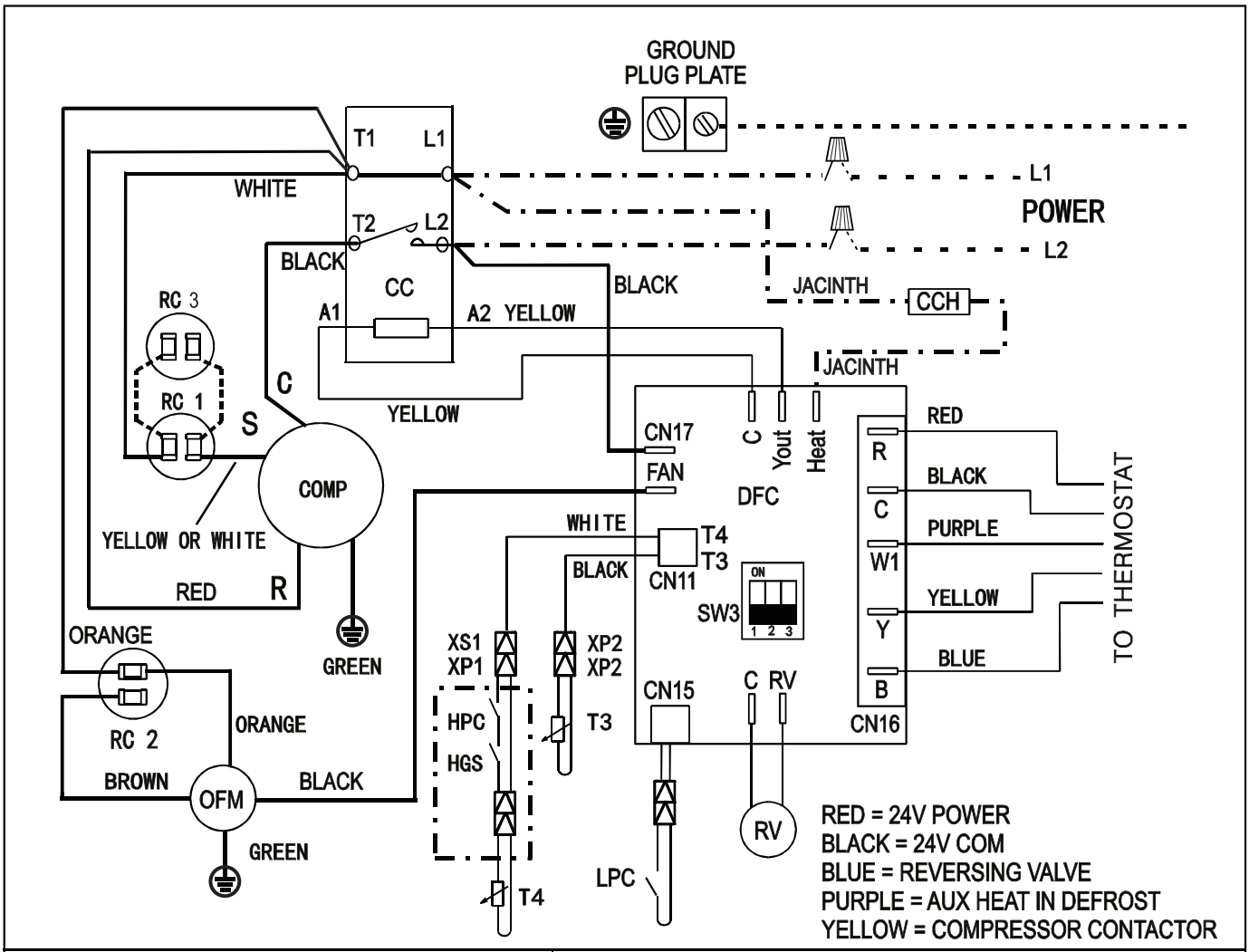


Figure 44

17.2 For 18-48K HP System



SW3

SW3-1	ON	MANUAL DEFROST
	OFF	AUTOMATIC DEFROST
SW3-2	ON	RESERVED
	OFF	NORMAL DEFROST
SW3-3	ON	DEFROSTING CYCLE:30MIN
	OFF	DEFROSTING CYCLE:60MIN

- STEADY ON = NORMAL OPERATION
- OFF = DFC FAILURE
- 1 FLASH = T3 SENSOR FAILURE
- 2 FLASH = T4 SENSOR FAILURE OR HGS OPEN
- 3 FLASH = LPC OPEN

LINE VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL

LOW VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL

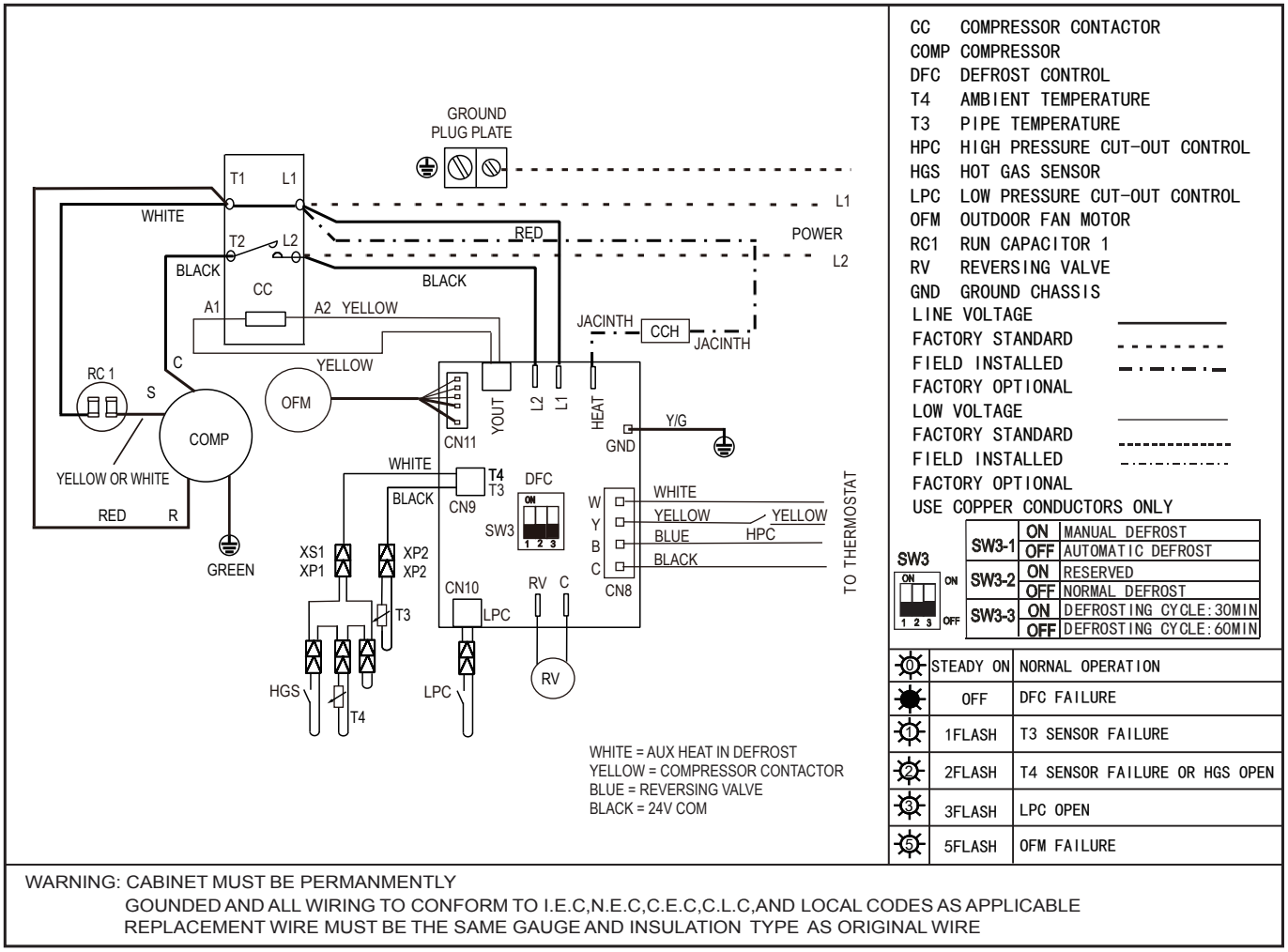
USE COPPER CONDUCTORS ONLY

WARNING
CABINET MUST BE PERMANENTLY GROUNDED AND ALL WIRING TO CONFORM TO I.E.C, N.E.C, C.E.C, C.L.C, AND LOCAL CODES AS APPLICABLE
REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE.

CC	COMPRESSOR CONTACTOR
CCH	CRANKCASE HEATER
COMP	COMPRESSOR
DFC	DEFROST CONTROL
T4	AMBIENT TEMPERATURE
T3	PIPE TEMPERATURE
HPC	HIGH PRESSURE CUT-OUT CONTROL
LPC	LOW PRESSURE CUT-OUT CONTROL
OFM	OUTDOOR FAN MOTOR
RC 1	RUN CAPACITOR 1
RC 2	RUN CAPACITOR 2
RC 3	RUN CAPACITOR 3
RV	REVERSING VALVE
GND	GROUND CHASSIS
HGS	HOT GAS SENSOR

Figure 45

17.3 For 60K HP System



WARNING: CABINET MUST BE PERMANMENTLY
GOUNDED AND ALL WIRING TO CONFORM TO I.E.C,N.E.C,C.E.C,C.L.C,AND LOCAL CODES AS APPLICABLE
REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE

Figure 46

18. Matching table and Checkout Procedures

18.1 Matching table

Condensing Unit	Air Handle / A-Coil	Piston Size / TXV Valve Model	SEER	If Preinstalled Piston Replace Required
J4AC4018A1000AA	J4AH4P18A1A00AA	0.050/(4AYTXVH3G2436A)	14	YES
	J4AH4E24A1A00AA	0.052/(4AYTXVH3G2436A)	14	YES
	J4GXCA001AC6HUA	0.052/(4AYTXVH3G2436A)	14	YES
	J4MXCA001AC6HCA	0.052/(4AYTXVH3G2436A)	14	YES
J4AC4024A1000AA	J4AH4P24A1B00AA	0.056/(4AYTXVH3G2436A)	14	YES
	J4AH4E24A1A00AA	0.058/(4AYTXVH3G2436A)	14	YES
	J4GXCA001AC6HUA	0.058/(4AYTXVH3G2436A)	14	NO
	J4MXCA001AC6HCA	0.058/(4AYTXVH3G2436A)	14	NO
J4AC4030A1000AA	J4AH4P30A1B00AA	0.063/(4AYTXVH3G2436A)	14	YES
	J4AH4E36A1B00AA	0.065/(4AYTXVH3G2436A)	14	YES
	J4GXCA001AC6HUA	0.063/(4AYTXVH3G2436A)	14	YES
	J4MXCA001AC6HCA	0.063/(4AYTXVH3G2436A)	14	YES
J4AC4036A1000AA	J4AH4P36A1B00AA	0.073/(4AYTXVH3G2436A)	14	YES
	J4AH4E36A1B00AA	0.073/(4AYTXVH3G2436A)	14	YES
	J4AH4E60A1C00AA	0.073/(4AYTXVH3G2436A)	14	YES
	J4GXCB004AC6HUA	0.070/(4AYTXVH3G2436A)	14	NO
	J4MXCB004AC6HCA	0.070/(4AYTXVH3G2436A)	14	NO
J4AC4042A1000AA	J4AH4P42A1C00AA	0.075/(4AYTXVH3G4248A)	14	YES
	J4AH4E60A1C00AA	0.075/(4AYTXVH3G4248A)	14	YES
	J4GXCC009AC6HUA	0.075/(4AYTXVH3G4248A)	14	YES
	J4MXCC009AC6HCA	0.075/(4AYTXVH3G4248A)	14	YES
J4AC4048A1000AA	J4AH4P48A1C00AA	0.083/(4AYTXVH3G4248A)	14	NO
	J4GXCC009AC6HUA	0.083/(4AYTXVH3G4248A)	14	YES
	J4MXCC009AC6HCA	0.083/(4AYTXVH3G4248A)	14	YES
J4AC4060A1000AA	J4AH4P60A1C00AA	4AYTXVH3G6000A	14	YES
	J4AH4E60A1C00AA	4AYTXVH3G6000A	14	YES
	J4GXCC009AC6HUA	4AYTXVH3G6000A	14	YES
	J4MXCC009AC6HCA	4AYTXVH3G6000A	14	YES
J4HP4018A1000AA	J4AH4P18A1A00AA	0.050/(4AYTXVH3G2436A)	14	NO
	J4AH4E24A1A00AA	0.052/(4AYTXVH3G2436A)	14	YES
J4HP4024A1000AA	J4AH4P24A1B00AA	0.056/(4AYTXVH3G2436A)	14	NO
	J4AH4E36A1B00AA	0.058/(4AYTXVH3G2436A)	14	YES
J4HP4030A1000AA	J4AH4P30A1B00AA	0.063/(4AYTXVH3G2436A)	14	NO
	J4AH4E36A1B00AA	0.065/(4AYTXVH3G2436A)	14	YES
	J4GXCB016AC6HUA	0.065/(4AYTXVH3G2436A)	14	YES
	J4MXCB016AC6HCA	0.065/(4AYTXVH3G2436A)	14	YES
J4HP4036A1000AA	J4AH4P36A1B00AA	0.068/(4AYTXVH3G2436A)	14	NO
	J4AH4E60A1C00AA	0.073/(4AYTXVH3G2436A)	14	YES
J4HP4042A1000AA	J4AH4P42A1C00AA	0.075/(4AYTXVH3G4248A)	14	NO
	J4AH4E60A1C00AA	0.075/(4AYTXVH3G4248A)	14	YES
J4HP4048A1000AA	J4AH4P48A1C00AA	0.083/(4AYTXVH3G4248A)	14	NO
	J4AH4E60A1C00AA	0.083/(4AYTXVH3G4248A)	14	YES
J4HP4060B1000AA	J4AH4P60B1C00AA	4AYTXVH3G6000A	14	YES

18.2 Operational and Checkout Procedures

Final phases of this installation are the unit Operational and Checkout Procedures. To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts of the Outdoor Unit.

After installation has been completed, it is recommended that the entire system be checked against the following list:

1. Be sure unit suspension(if used) is secure and that there are no tools or loose debris in or around or on top of the unit.....[ ]
2. Properly insulate suction lines and fittings.....[ ]
3. Properly secure and isolate all refrigerant lines... [ ]
4. Verify that all electrical connections are tight. .....[ ]
5. Check all duct outlets; they must be open and unrestricted. [ ]
6. Check drain lines and be sure all joints are tight..... [ ]
7. Be sure that a return air filter is installed..... [ ]
8. Operate complete system in each mode to verify proper performance. Verify operation of supplementary electric heater. .....[ ]

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