NŌRDEN®

INSTALLATION MANUAL
13 SEER CONDENSER

MODELS:

CDV-060-130

Refrigerant R-410A

Rev 1.0

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.

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1 SAFETY

This document is customer property and is to remain with this unit.
These instructions do not cover all the different variations of systems nor does it provide for every possible contingency to be met in connection with installation.
All phases of this installation must comply with NATIONAL, STATE, AND LOCAL CODES. If additional information is required please contact your local distributor.

NOTE

⚠ This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

This is an attention alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.
Understand and pay particular attention to the signal words DANGER, WARNING, or CAUTION.
DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.
WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
CAUTION indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injury. It is also used to alert against unsafe practices and hazards involving only property damage.

⚠ WARNING

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.
Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance or for additional information, consult a qualified contractor, installer or service agency.

⚠ CAUTION

This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to building, electrical, and mechanical codes.

⚠ WARNING

FIRE OR ELECTRICAL HAZARD

Failure to follow the safety warnings exactly could result in serious injury, death or property damage.
A fire or electrical hazard may result causing property damage, personal injury or loss of life.

⚠ CAUTION

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

⚠ CAUTION

Scroll compressor dome temperatures may be hot. Do not touch the top of compressor; it may cause minor to severe burning.

1.1 Inspection

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's delivery receipt. A separate request for inspection by the carrier's agent should be made in writing. See local distributor for more information.

Requirements For Installing/Servicing R410A Equipment:

- Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle the POE or PVE type oils.
- Manifold sets should be 800 PSIG [5515 KPa] high side and 250 PSIG [1724KPa] low side with 550 PSIG [3793 KPa] low side restart.
- All hoses must have a 700 PSIG [4827KPa] service pressure rating.
- Leak detectors should be designed to detect R410A.
- Recovery equipment (including refrigerant recovery containers) must be specifically designed to handle R410A.
- **Do not use an R-22 TXV.**
- Good Refrigeration practices require the installation of a field supplied liquid line drier, as shown in Figure 1-1.

NOTE

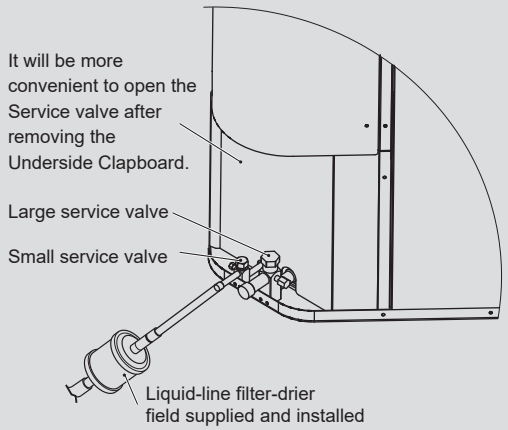


Figure 1-1 Filter-Drier installation

1.2 Limitations

The unit should be installed in accordance with all National, State, and Local Safety Codes and the limitations listed below:

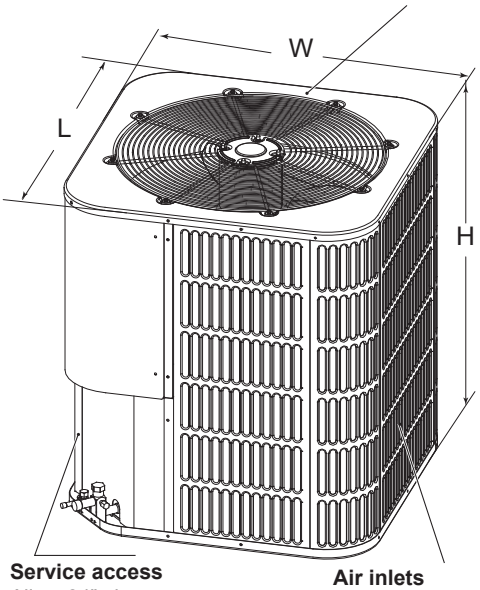
- Limitations for the indoor unit, coil and appropriate accessories must also be observed.
- The outdoor unit must not be installed with any duct work in the air stream. The outdoor fan is the propeller type and is not designed to operate against any additional external static pressure.
- The maximum and minimum conditions for operation must be observed to assure a system that will give maximum performance with minimum service.
- This unit is not designed to operate with a low ambient kit. Do not modify the control system to operate with any kind of low ambient kit.
- The maximum allowable line length for this product is 150 feet.

2 GENERAL

The outdoor units are designed to be connected to a matching indoor coil with braze connect lines. Units are factory charged with refrigerant for a matching indoor coil plus 15 feet of field supplied lines.

Matching indoor coils are available with a thermostatic expansion valve or an orifice for the most common usage. The orifice size and/or refrigerant charge may need to be changed for some indoor-outdoor unit combinations, elevation differences or total line lengths.

Air discharge: allow 60” minimum clearance.



Service access
Allow 24” clearance

Air inlets
Louvered panels allow 18” minimum clearance

NOTE

Grill appearance may vary.

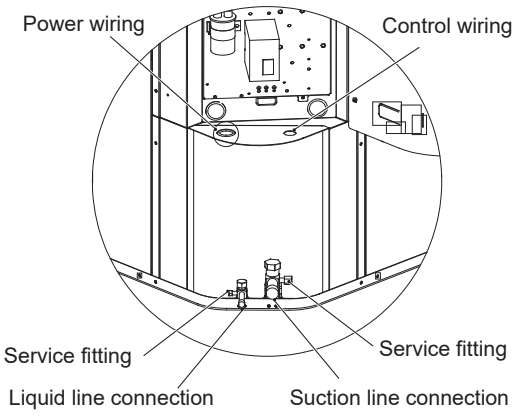


Figure 2-1 Dimensions

Dimensional data

Model size	Dimensions (Inches)			Refrigerant Connection Service Valve Size	
	"H" in. [mm]	"W" in. [mm]	"L" in. [mm]	Liquid in. mm]	Suction in. [mm]
18L/18T	24-15/16 [633]	21-7/8 [554]	21-7/8 [554]	3/8	3/4
24L	24-15/16 [633]	21-7/8 [554]	21-7/8 [554]	3/8	3/4
30T	24-15/16 [633]	28 [710]	28 [710]	3/8	3/4
30L	24-15/16 [633]	29-1/8 [740]	29-1/8 [740]	3/8	3/4
36L/24T	24-15/16 [633]	23-5/8 [600]	23-5/8 [600]	3/8	3/4
42L	33-3/16 [843]	28 [710]	28 [710]	3/8	3/4
48L	29-7/8 [759]	28 [710]	28 [710]	3/8	7/8
60L	33-3/16 [843]	28 [710]	28 [710]	3/8	7/8

NOTE

T: GMCC; L: LG Compressor.

3 Unit Installation

3.1 Location

Before starting the installation, select and check the suitability of the location for both the indoor and outdoor unit. Observe all limitations and clearance requirements. The outdoor unit must have sufficient clearance for air entrance to the condenser coil, for air discharge and for service access. See Figure 2-1

⚠ WARNING

Check the electric wire, water and gas pipeline layout inside the wall, floor and ceiling before installation. Do not implement drilling unless confirm safety with the user, especially for the hidden power wire. An electroprobe can be used to test whether a wire is passing by at the drilling location, to prevent physical injury or death caused by insulation broken cords.

NOTE

For multiple unit installations, units must be spaced a minimum of 18 inches apart. (Coil face to coil face.)

If the unit is to be installed on a hot sun exposed roof or a black-topped ground area, the unit should be raised sufficiently above the roof or ground to avoid taking the accumulated layer of hot air into the outdoor unit.

Provide an adequate structural support.

3.2 Ground Installation

The unit may be installed at ground level on a solid base that will not shift or settle, causing strain on the refrigerant lines and possible leaks. Maintain the clearances shown in Figure.2-1 and install the unit in a level position.

Normal operating sound levels may be objectionable if the unit is placed directly under windows of certain rooms (bedrooms, study, etc.).

Top of unit discharge area must be unrestricted for at least 60 in.[1.52m] above the unit.

⚠ WARNING

The outdoor unit should not be installed in an area where mud or ice could cause personal injury or system damage.

Elevate the unit sufficiently to prevent any blockage of the air entrances by snow in areas where there will be snow accumulation. Check the local weather bureau for the expected snow accumulation in your area. Isolate the unit from rain gutters to avoid any possible wash out of the foundation.

3.3 Roof Installation

When installing units on a roof, the structure must be capable of supporting the total weight of the unit, including a padded frame unit, rails, etc., which should be used to minimize the transmission of sound or vibration into the conditioned space.

3.4 Unit Placement

- Provide a base in the pre-determined location.
- Remove the shipping carton and inspect for possible damage.
- Compressor tie-down nuts should remain tightened.
- Position the unit on the base provided.

⚠ CAUTION

This system uses R410A refrigerant which operates at higher pressure than R-22. No other refrigerant may be used in this system. Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle R410A. If you are unsure, consult the equipment manufacturer.

The outdoor unit must be connected to the indoor coil using field supplied refrigerant grade copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for approved system combinations. The charge given is applicable for total tubing lengths up to 15 feet.

NOTE

Using a larger than specified line size could result in oil return problems. Using too small a line will result in loss of capacity and other problems caused by insufficient refrigerant flow. Slope horizontal vapor lines at least 1" every 20 feet toward the outdoor unit to facilitate proper oil return.

3.5 Precautions During Line Installation

- Install the lines with as few bends as possible. Care must be taken not to damage the couplings or kink the tubing. Use clean hard drawn copper tubing where no appreciable amount of bending around obstruction is necessary, if soft copper must be used, care must be taken to avoid sharp bends which may cause a restriction.
- The lines should be installed so that they will 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.
- The vapor line must be insulated with a minimum of 1/2" foam rubber insulation. Tape and suspend the refrigerant lines as shown. DO NOT allow tubemetal-to-metal contact. See Figure.3-1.
- Use PVC piping as a conduit for all underground installations as shown in Figure.3-2. Buried lines should be kept as short as possible to minimize the build up of liquid refrigerant in the vapor line during long periods of shutdown.
- Pack a sealing material such as perma gum around refrigerant lines where they penetrate a wall to reduce vibration and to retain some flexibility.

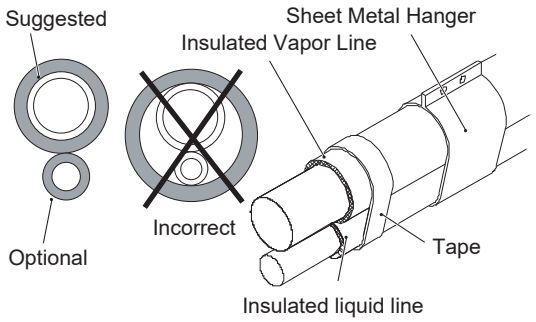


Figure 3-1 Tubing Hanger

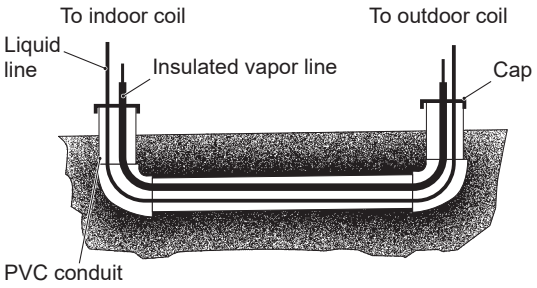
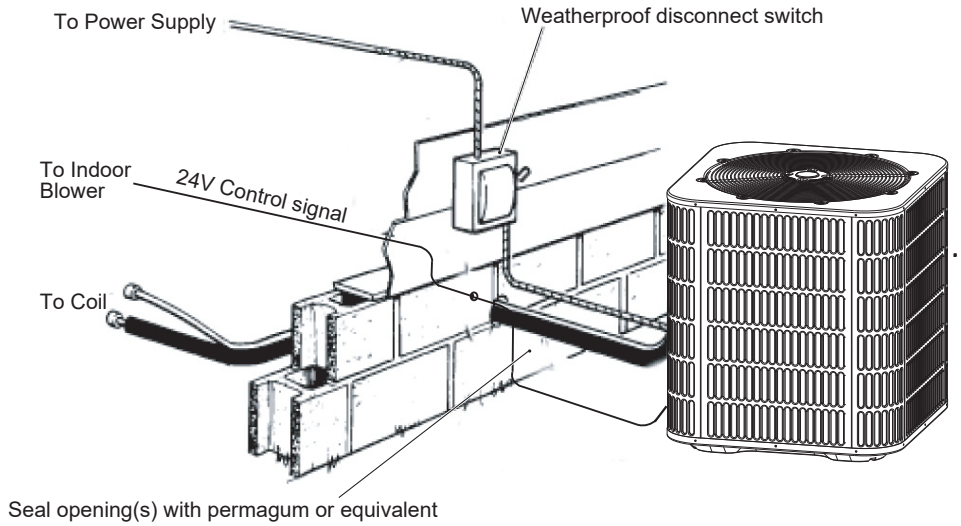


Fig.3-2 Underground installation



NOTE

All outdoor wiring must be weather proof .

Figure.3-3 Typical installation

3.6 Precautions during brazing of lines

- 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. The outdoor units have reusable service valves on both the liquid and suction connections. The total system refrigerant charge is retained within the outdoor unit during shipping and installation. The reusable service valves are provided to evacuate and charge per this instruction.
- Serious service problems can be avoided by taking adequate precautions to assure an internally clean and dry system.

⚠ CAUTION

Dry nitrogen should always be supplied through the tubing while it is being brazed, because the temperature required is high enough to cause oxidation of the copper unless an inert atmosphere is provide. The flow of dry nitrogen should continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing.Only a small flow is necessary to displace air and prevent oxidation.

3.7 Precautions during brazing service valve

- Precautions should be taken to prevent heat damage to service valve by wrapping a wet rag around it as shown in Figure.3-4. Also, protect all painted surfaces, insulation, during brazing. After brazing cool joint with wet rag.
- The valve can be opened by removing the plunger cap and fully inserting a hex wrench into the stem and backing out counter-clockwise until valve stem just touches the chamfered retaining wall.
- Connect the refrigerant lines using the following procedure:

1. Remove the cap and Schrader core from both the liquid and suction service valve service ports at the outdoor unit. Connect low pressure nitrogen to the liquid line service port.

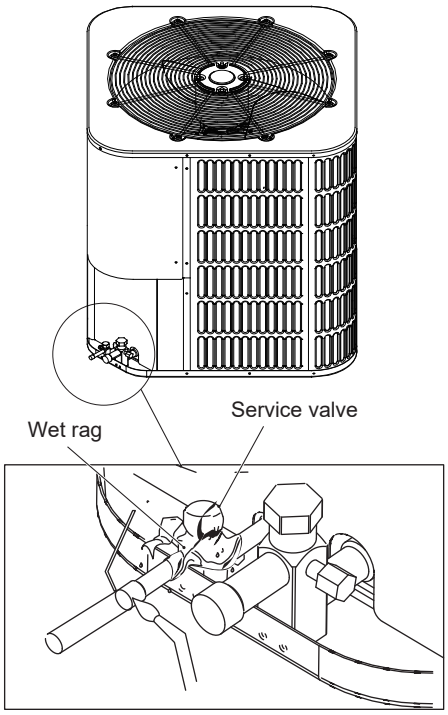


Figure.3-4 Heat protection

2. Braze the liquid line to the liquid valve at the outdoor unit. Be sure to wrap the valve body with a wet rag. Allow the nitrogen to continue flowing. Refer to the Tabular Data Sheet for proper liquid line sizing.
3. Carefully remove the rubber plugs from the evaporator liquid and suction connections at the indoor coil.
4. Braze the liquid line to the evaporator liquid connection. Nitrogen should be flowing through the evaporator coil.
5. Slide the plastic cap away from the suction connection at the indoor coil. Braze the suction line to the evaporator suction connection. Refer to the Table 3-1 for proper suction line sizing.
6. Protect the suction valve with a wet rag and braze the suction line connection to the outdoor unit. The nitrogen flow should be exiting the system from the suction service port connection. After this connection has cooled, remove the nitrogen source from the liquid fitting service port.
7. Replace the Schrader core in the liquid and suction valves.
8. Leak test all refrigerant piping connections including the service port flare caps to be sure they are leak tight. **DO NOT OVER TIGHTEN (between 40 and 60 inch -lbs. maximum).**
9. Evacuate the suction line, evaporator, and the liquid line, to 350 microns or less.

Refrigerant Connections and Recommended Liquid and Suction Tube Diameters (In.)

Model size	Liquid Tube Diameter	Suction Tube Diameter
18	3/8	3/4
24	3/8	3/4
30	3/8	3/4
36	3/8	3/4
42	3/8	3/4
48	3/8	7/8
60	3/8	7/8

Table 3-1

10. Replace cap on service ports. Do not remove the flare caps from the service ports except when necessary for servicing the system.
11. Release the refrigerant charge into the system. Open both the liquid and suction valves by removing the plunger cap and with an hex wrench back out counter-clockwise until valve stem just touches the chamfered retaining wall.
12. Replace plunger cap finger tight, then tighten an additional 1/12 turn (1/2 hex flat). Cap must be replaced to prevent leaks.

⚠ WARNING

Never attempt to repair any brazed connections while the system is under pressure. Personal injury could result.

See "System Charge" section for checking and recording system charge.

3.8 Unit Mounting

If elevating the heat pump, either on a flat roof or on a slab, observe the following guidelines.

- The base pan provided elevates the heat pump 2" above the base pad.
- If elevating a unit on a flat roof , use 4"× 4"(or equivalent) stringers positioned to distribute unit weight evenly and prevent noise and vibration (See Figure.3-5) .

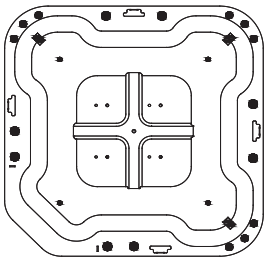
NOTE

Do not block drain openings shown in Figure.3-5.

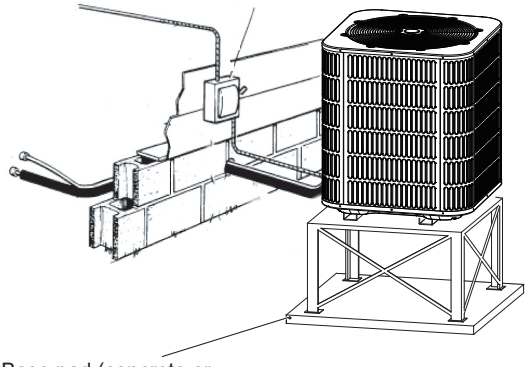
- If unit must be elevated because of anticipated snow fall, secure unit and elevating stand such that unit and/or stand will not tip over or fall off.

NOTE

To tie down unit, see Figure.3-7.



Base pan (bottom view) do not obstruct drain holes (shaded)



Base pad (concrete or other suitable material)

Elevation above anticipated snow is necessary

Figure.3-5 recommended elevated installation

3.9 Factory-preferred tie-down method

Step 1: Prior to installing clear pad of debris.

IMPORTANT

The cement pad must meet local codes and must be the proper thickness to accommodate fasteners.

Step 2: Center and level unit onto pad

Step 3: Using field supplied L-shaped bracket to locate holes on concrete and drill pilot holes which is at least 1/4" deeper than fastener being used.

IMPORTANT

Self drilling screws to base pan should not exceed 3/8" long to avoid damaging coil.

Step 4: Using conventional practices to install brackets, tighten concrete fasteners and self-tapping screws (See Figure.3-6).

NOTE

One bracket for each side. For extra stability, 2 brackets for each side.
Do not over-tighten the concrete fastener to avoid weakening the concrete.

IMPORTANT NOTE:

These instructions are intended to provide a method to tie-down system to cement slab as a securing procedure for high wind areas. It is recommended to check Local Codes for tie-down methods and protocols.

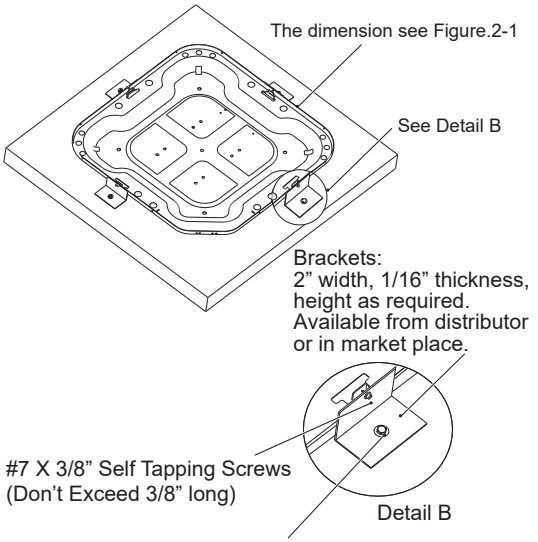


Figure.3-6 Preferred tie-down method

3.10 Prohibited locations

Only use this unit in well-ventilated spaces and ensure that there are no obstructions that could impede the airflow into and out of the unit.

Do not use this unit in the following locations:

- Locations with mineral oil.
- Locations with saline atmospheres, such as seaside locations.
- Locations with sulphurous atmospheres, such as near natural hot springs.
- Where high voltage electricity is present, such as in certain industrial locations.
- On vehicles or vessels, such as trucks or ferry boats.
- Where exposure to oily or very humid air may occur, such as kitchens.
- In proximity to sources of electromagnetic radiation, such as high-frequency transmitters or other high strength radiation devices.

4 ELECTRICAL CONNECTIONS

4.1 General information & grounding

- Check the electrical supply to be sure that it meets the values specified on the unit nameplate and wiring label.
- Power wiring, control (low voltage) wiring, disconnect switches and over current protection must be supplied by the installer. Wire size should be sized per requirements.

⚠ WARNING

Check the power supply before installation. Ensure that the power supply must be reliably grounded following local, state and National Electrical Codes. If not, for example, if the ground wire is detected charged, installation is prohibited before it is rectified. Otherwise, there is a risk of fire and electric shock, causing physical injury or death.

⚠ CAUTION

All field wiring must USE COPPER CONDUCTORS ONLY and be in accordance with Local, National Fire, Safety & Electrical Codes. This unit must be grounded with a separate ground wire in accordance with the above codes.

- The complete connection diagram and schematic wiring label is located on the inside surface of the unit service access panel and this instruction.

4.2 Field connections power wiring

- Install the proper size weatherproof disconnect switch outdoors and within sight of the unit.
- Remove the screws at the side of the corner panel. Slide corner panel down and remove from unit. See Figure.4-1.
- Run power wiring from the disconnect switch to the unit.
- Route wires from disconnect through power wiring opening provided and into the unit control box.
- Install the proper size time-delay fuses or circuit breaker, and make the power supply connections.
- Energize the crankcase heater if equipped to save time by preheating the compressor oil while the remaining installation is completed.

NOTE

When changing the motor, remove top cover first.

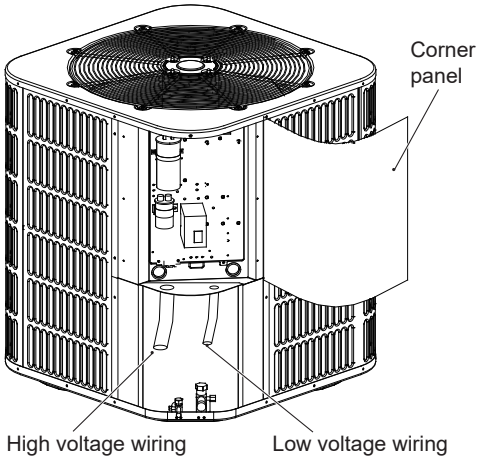


Figure.4-1 Typical field wiring

4.3 Removing the top panel and motor

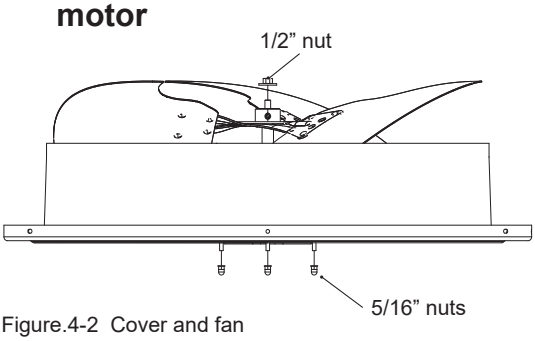


Figure.4-2 Cover and fan

NOTE

Damage will occur to condenser unit if you remove fan nuts prior to cover removal.

When motor requires changing follow the steps below:

Step 1: Go into electrical panel, disconnect motor power lines.

IMPORTANT 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 as indicated in Figure.4-2

IMPORTANT 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.

IMPORTANT NOTE

When connecting motor wires be sure to check motor direction.

5 EVACUATION

It will be necessary to evacuate the system to 350 microns or less. If a leak is suspected, leak test with dry nitrogen to locate the leak. Repair the leak and test again. To verify that the system has no leaks, simply close the valve to the vacuum pump suction to isolate the pump and hold the system under vacuum. Watch the micron gauge for a few minutes. If the micron gauge indicates a steady and continuous rise, it's an indication of a leak. If the gauge shows a rise, then levels off after a few minutes and remains fairly constant, its an indication that the system is leak free but still contains moisture and may require further evacuation if the reading is above 500 microns.

6 INTERCONNECTING TUBING

6.1 VAPOR AND LIQUID LINES

Keep all lines sealed until connection is made.

Make connections at the indoor coil first.

Refer to Line Size Information in Tables 6-1 and 6-2 for correct size and multipliers to be used to determine capacity for various vapor line diameters and lengths of run. The losses due to the lines being exposed to outdoor conditions are not included.

The factory refrigerant charge in the outdoor unit is sufficient for the unit and 15 feet of standard size interconnecting liquid and vapor lines. For different lengths,adjust the charge as indicated below.

- 5/16" ± .4 oz. per foot
- 3/8" ± .6 oz. per foot
- 1/2" ± 1.2 oz. per foot

6.2 MAXIMUM LENGTH OF LINES

The maximum length of interconnecting line is 150 feet.

Always use the shortest length possible with a minimum number of bends.

NOTE

Excessively long refrigerant lines cause loss of equipment capacity.

6.3 VERTICAL LIFT

Keep the vertical lift to a minimum. Use the following guidelines when installing the unit:

- DO NOT exceed the vertical lift as indicated on Table 6-2.
- It is recommended to use the smallest liquid line size permitted to minimize system charge which will maximize compressor reliability.
- Table 6-2 may be used for sizing horizontal runs.

LINE SIZING

- Suction Line Length/size Vs Capacity Multiplier(R410A)

System Capacity		1 1/2 Ton	2 Ton	2 1/2 Ton	3 Ton	3 1/2 Ton	4 Ton	5 Ton
Suction Line Connection Size		3/4″ O.D.	3/4″ O.D.	3/4″ O.D.	3/4″ O.D.	3/4″ O.D.	7/8″ O.D.	7/8″ O.D.
Suction Line Run-Feet		5/8 Opt.	5/8 Opt.	5/8 Opt.	5/8 Opt.	5/8 Opt.	3/4 Opt.	1 1/8 Opt.
		3/4* Std.	3/4* Std.	3/4* Std.	3/4* Std.	3/4* Std.	7/8* Std.	7/8* Std.
25′	Optional	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Standard	1.00	1.00	1.00	1.00	1.00	1.00	0.99
50′	Optional	0.97	0.97	0.97	0.97	0.98	0.98	0.99
	Standard	0.98	0.98	0.98	0.99	0.98	0.98	0.98
100′	Optional	0.94	0.94	0.94	0.94	0.95	0.95	0.98
	Standard	0.95	0.95	0.96	0.97	0.97	0.97	0.94
150′	Optional	0.90	0.90	0.90	0.90	0.91	0.92	0.97
	Standard	0.92	0.92	0.93	0.96	0.96	0.96	0.90

Table 6-1

NOTE

* Standard size
Using suction line larger than shown in chart will result in poor oil return and is not recommended.

- Liquid Line Size (R410A)

System Capacity	Line Size Connection Size (Inch O.D.)	Compressor Type	Line Size Connection And Line Size (Inch O.D.)	Liquid Line Size					
				Outdoor unit above or below indoor coil					
				Total Equivalent Length - Feet					
				25	50	75	100	125	150
				Maximum Vertical Separation - Feet					
1 1/2 Ton	3/8″	Scrol	5/16	25	50	60	58	40	30
			3/8*	25	50	60	60	40	30
		Rotary	3/8*	25	30	30	27	NA	NA
2 Ton	3/8″	Scrol	5/16	25	36	29	23	16	9
			3/8*	25	50	60	60	40	30
		Rotary	3/8*	25	30	30	24	NA	NA
2 1/2 Ton	3/8″	Scrol	5/16	25	49	38	27	17	6
			3/8*	25	50	60	60	40	30
		Rotary	3/8*	25	30	30	22	NA	NA
3 Ton	3/8″	Scrol	5/16	25	50	37	22	7	N/A
			3/8*	25	50	60	60	40	30
3 1/2 Ton	3/8″	Scrol	5/16	25	23	4	N/A	N/A	N/A
			3/8*	25	50	43	36	30	24
4 Ton	3/8″	Scrol	3/8*	25	46	38	30	22	15
			1/2	25	50	56	55	40	30
5 Ton	3/8″	Scrol	3/8*	25	50	56	44	32	20
			1/2	25	50	60	60	40	30

Table 6-2

NOTE

* Standard line size
N/A Application not recommended.

7 CHECKING REFRIGERANT CHARGE

Charge for all systems should be checked against the Charging Chart inside the access corner panel .

- **IMPORTANT:** Do not operate the compressor without charge in system. Addition of R-410A will raise pressures (vapor, liquid and discharge).

7.1 Charging By Liquid Pressure

In order to properly charge the system, the following conditions must be met: 1) Outdoor temperature above 60F. 2) Indoor temperature between 70F to 100F. 3)Installation must be complete with brazed joints and drier visually inspected. 4) The unit electrical installation must be checked and unit powered for one (I) hour if crank case heat is used or five (5) minutes if no crank case heat is used.

Follow these steps:

- Run in cooling mode at least 10 minutes.
- Measure OUTDOOR AMBIENT TEMPERATURE within 6 inches of coil.
- Measure SUCTION LINE PRESSURE.
- Find the TARGET LIQUID PRESSURE at the intersection between the SUCTION LINE PRESSURE and the OUTDOOR AMBIENT TEMPERATURE, if falls between rows or columns then estimate the TARGET LIQUID PRESSURE or SUCTION LINE PRESSURE falls between rows or columns then estimate the TARGET LIQUID PRESSURE between the rows and columns.
- Compare the measured LIQUID LINE PRESSURE to the TARGET LIQUID PRESSURE, add charge to raise the pressure or recover charge to lower it.
- After running unit for 10 minutes if the SUCTION LINE PRESSURE changes, go back to step 2 otherwise remove test equipment and cover the valves.

7.2 Charging By Weight

For a new installation,evacuation of interconnecting tubing and indoor coil is adequate; otherwise,evacuate the entire system. The factory refrigerant charge in the outdoor unit is sufficient for the unit and 15 feet of standard size interconnecting liquid and vapor lines. For tube lengths over 15ft add the additional refrigerant see Figure. 6-1.

With an accurate scale (+/- 1 oz.) adjust charge

difference between that shown on the unit data plate and that calculated for the new system Installation. if the entire

system has been evacuated, add the total calculated charge.

7.3 Final Leak Testing

After the unit has been properly evacuated and charged, a halogen leak detector should be used to detect leaks in the system. All piping within the condensing unit, evaporator, and interconnecting tubing should be checked for leaks. If a leak is detected, the refrigerant should be recovered before repairing the leak. The Clean Air Act prohibits releasing refrigerant into the atmosphere.

8 WARRANTY

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

8.1 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.

⚠ CAUTION

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.

9 WIRING DIAGRAM

⚠ CAUTION

These units must be wired and installed in accordance with all National and Local Safety Codes.

- To avoid the electrical shock, please connect the air conditioner with the ground lug. The main power plug in the air conditioner has been joined with the ground wiring, please don't change it freely.
- The power socket is used as the air conditioner specially.
- Don't pull the power wiring hard.
- When connecting the air conditioner with the ground, observe the local codes.
- If necessary, use the power fuse or the circuit, breaker or the corresponding scale ampere.

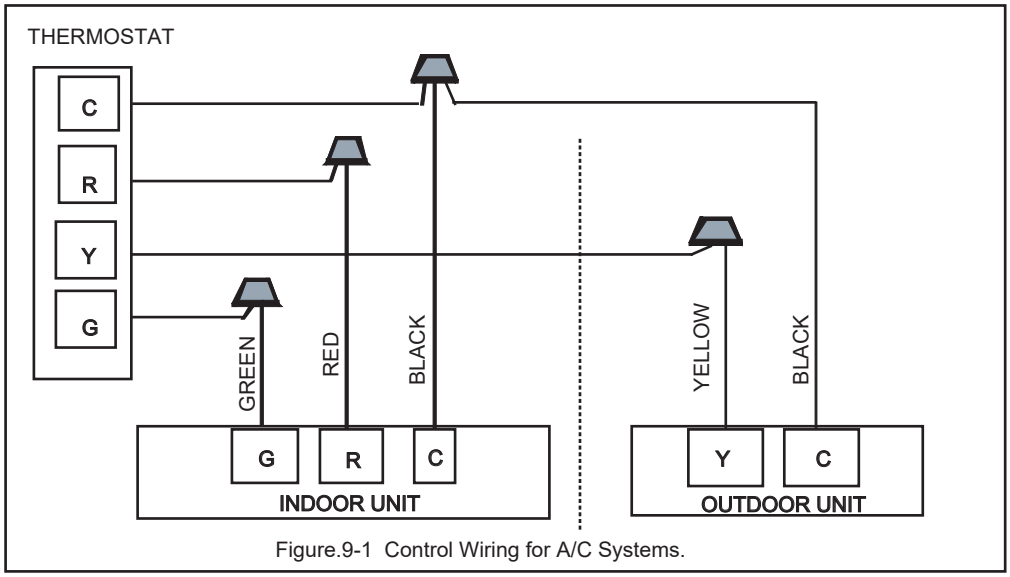


Figure.9-1 Control Wiring for A/C Systems.

Suggestion: When choosing a thermostat, choose KJR-25B or a non-programmable electric thermostat series . Please refer to thermostat electrical manual for wiring schematic.

Electrical Data:

Model	Minimum Circuit Ampacity(A)	Maximum Circuit Protector(A)
18L	10.4	15
24L	13.4	20
30L	16.2	25
36L	19.1	30
42L	21.6	35
48L	24.6	40
60L	29.6	50
18T	9.0	15
24T	11.6	20
30T	16.0	25

Table 9-1

NOTE

T: GMCC; L: LG Compressor.

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 thereare 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.....[ ]

1. Check all duct outlets; they must be open and unrestricted.....[ ]
2. Check drain lines and be sure all joints are tight..[ ]
3. Be sure that a return air filter is installed.....[ ]
4. Operate complete system in each mode to verify proper performance. Verify operation of supplementary electric heater.....[ ]

Table 9-2

NOTE - Due to Nōrden's ongoing commitment to quality, specifications, ratings, and dimensions are subject to change without notice and without incurring liability.