NATIONAL® COMFORT PRODUCTS

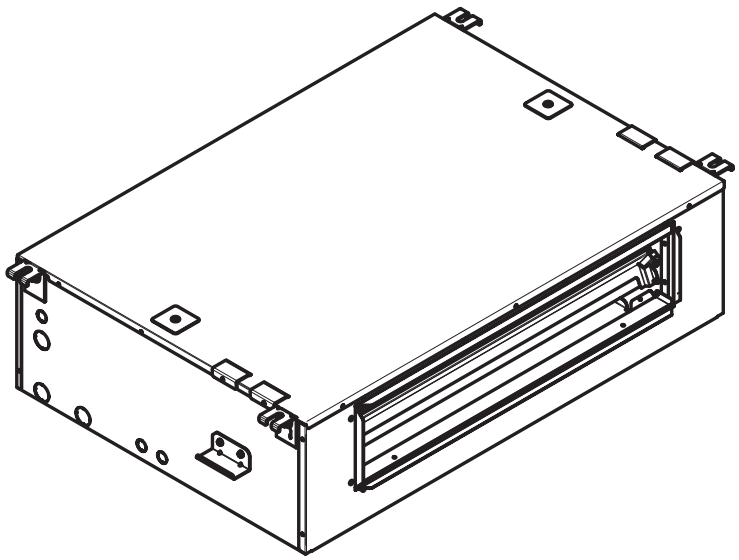
HEATING & A/C EQUIPMENT

Cooling Comfort for Multi-Family Construction

Installation Guide

High Efficiency Ceiling-Mount Air Handlers

2 & 3 Tons



NCPAH

Series:

24-P

36-P

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.

C ETL LISTED US
Intertek

Please read the entire installation guide before starting the installation.

National Comfort Products®

A Division of National Refrigeration & Air Conditioning Products, Inc.

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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.

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

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 with all installations. All phases of this installation must comply with NATIONAL, STATE and LOCAL CODES. If additional information is required please contact your local distributor

1.0 SAFETY

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.

WARNING

Disconnect all Power to unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause server personal injury or death.

WARNING

If removal of the blower assembly is required, all disconnect switches supplying Power to the equipment must be de-energized and locked (if not in sight of unit) so the field Power wires can be safely removed from the blower assembly. Failure to do so can cause electrical shock resulting in personal injuring or death.

WARNING

Because of possible damage to equipment or personal injury, installation, service, and maintenance should be performed by a trained, qualified service personnel. Consumer service is recommended only for filter cleaning / replacement. Never operate the unit with the access panels removed.

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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WARNING

PROPOSITION 65: This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the State of California to cause cancer.

All manufacturer products meet current Federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards.

California's Proposition 65 requires warnings for products sold in California that contain or produce any of over 600 listed chemicals known to the State of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural gas.

All "new equipment" shipped for sale in California will have labels stating that the product and /or produces Proposition contains 65 chemicals. Although we have not changed our processes, having the same label on all our produced facilitates manufacturing and shipping. We cannot always know "when, or if" products will be sold in the California market.

You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air-conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.

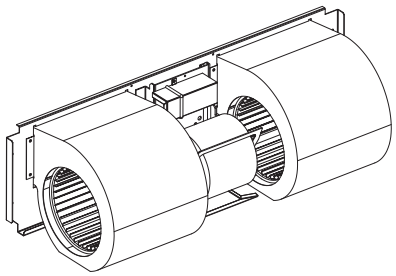
Glass Wool (Fiberglass) Insulation
Carbon Monoxide (CO).
Formaldehyde
Benzene

More details are available at the websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

WARNING

The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

WARNING



Make sure the blower motor support is tight then check to see if the wheels are secured to the motor shaft before operating unit.

WARNING

INSTALLATION PLACE

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The air outlet and the air inlet are not impeded, and the influence of unconditioned air is minimal.
- The air flow can reach throughout the room.
- The connecting pipe and drain pipe could be extracted out easily.
- There is no direct radiation from heaters.

⚠ WARNING

Location in the following places may cause malfunction of the machine. (If unavoidable, please consult your local dealer.)

a. Where petroleum is present.

b. Where salt air is surrounding (near the coast).

c. Where caustic gas (sulfide, for example) is existing in the air (near a hot spring).

d. Where voltage increases and decreases drastically (in factories).

e. In buses or cabinets.

f. Where strong electromagnetic waves exist.

g. Around flammable materials or gas.

h. Where acid or alkaline liquid evaporates.

i. Other special conditions.

⚠ CAUTION

Mount with the lowest moving parts at least 8 ft. above floor or grade level.

2.0 GENERAL

2.1 UNIT DIMENSIONS

DIMENSIONAL DATA				
Model Size	**Dimensions** (inches)			
	A	**B**	**C**	**D**
24	39-3/4	30-3/8	28	43-3/8
36	51-3/4	42-3/8	40	55-3/8

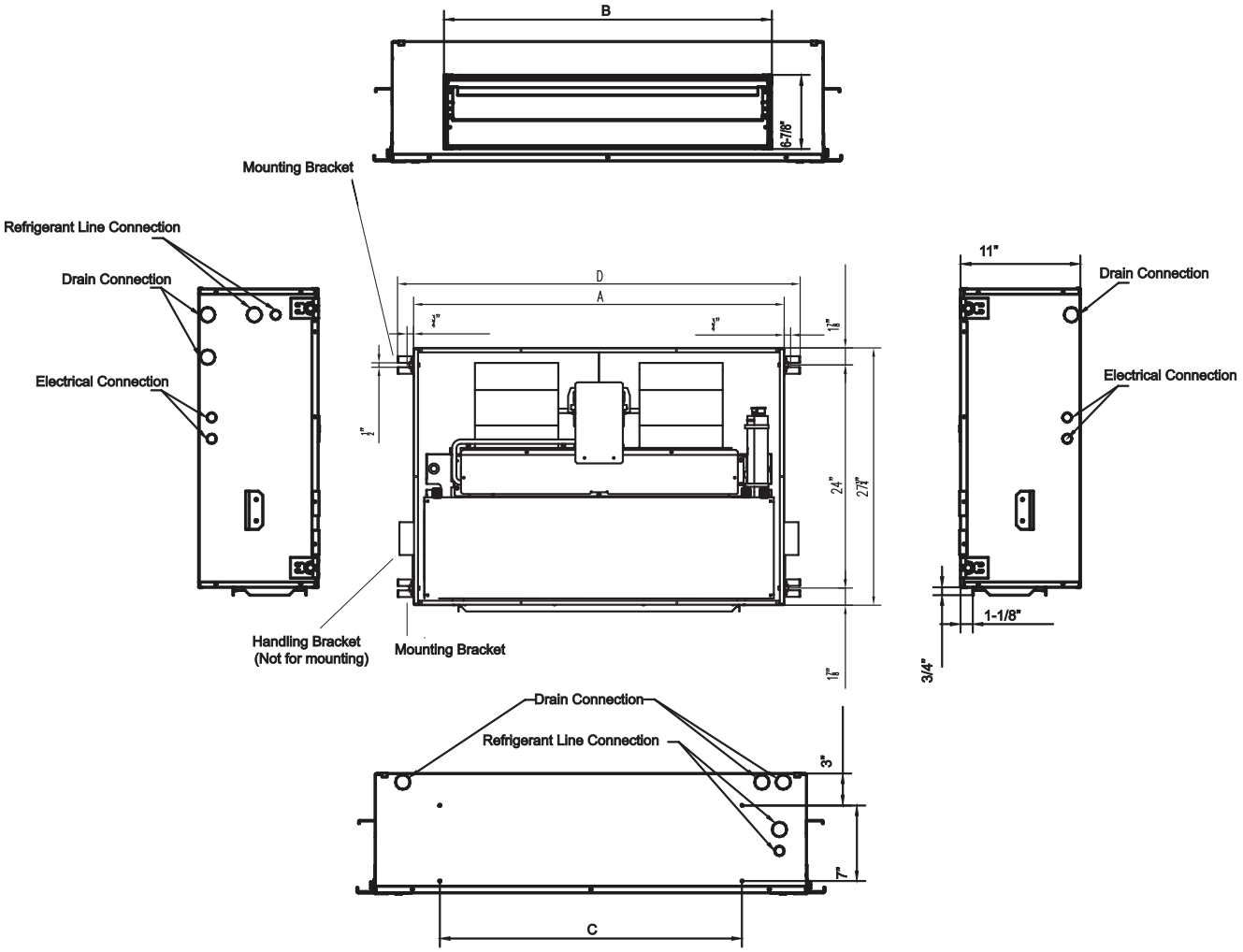


Fig.1 DIMENSIONS

3.0 INSTALLATION

Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier. Check the rating plate to assure model number and voltage, plus any kits match with what you ordered. The manufacturer should be notified within 5 days of any discrepancy or parts shortage.

The equipment is set up for bottom return. If converting to a horizontal return remove the back panel from the unit. Follow the pre marked dimples on the panel and cut the opening in the panel. Reinstall the panel to the unit and field install an insulated cover panel sealing the bottom return opening.

In order to mount the unit, four brackets are provided at the corners of the unit. When mounting the unit please make sure that both the supporting structure and field supplied mounting hardware are adequate for the weight of the unit. The unit must be plumb and level for proper operation.

4.0 REFRIGERANT CONNECTIONS

Keep the coil connections sealed until refrigerant connections are made. See the Installation Instructions for the outdoor unit for details on line sizing, tubing installation, and charging information.

Coil is shipped with “No charge”. Evacuate the system before charging with refrigerant.

Install refrigerant tubing so that it does not block service access to the front of the unit.

Nitrogen should flow through the refrigerant lines while brazing.

Use a brazing shield to protect the cabinet’s paint and a wet rag to protect the rubber grommet from being damaged by torch flames. After the refrigerant connections are made, seal the gap around the connections with pressure sensitive gasket.

5.0 DUCTWORK

Field ductwork must comply with the National Fire Protection Association NFPA 90A, NFPA 90B and any applicable local ordinance.

Sheet metal ductwork ran in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.

- Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return ductwork, grills, special filters, accessories, etc. are accounted for in total resistance. See airflow performance tables in this manual.
- Design the duct system in accordance with “ACCA” Manual “0” Design for Residential Winter and Summer Air Conditioning and Equipment Selection. Latest editions are available from: “ACCA” Air Conditioning Contractors of America, 1513 16th Street, N.W., Washington, D.C. 20036. If duct system incorporates flexible air duct, be sure pressure drop information (straight length plus all turns) shown in “ACCA” Manual “D” is accounted for in system.
- Supply plenum is attached to the 3/4” duct flanges supplied with the unit. Attach flanges around the blower outlet. **IMPORTANT:** If an elbow is included in the plenum close to the unit, it must not be smaller than the dimensions of the supply duct flange on the unit.
- **IMPORTANT**: The front flange on the return duct, if connected to the blower casing, must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage insulation on wires located inside unit.
- Secure the supply and return ductwork to the unit flanges, using proper fasteners for the type of duct used and tape the duct-to-unit joint as required to prevent air leaks.

WARNING

Do not, under any circumstances, connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

6.0 AIRFLOW PERFORMANCE

AIRFLOW PERFORMANCE DATA (for 240 Vac with dry coil and no filter in place)

The maximum static pressure in the outside of the unit is 0.3 Inches W.C.

Model Number	Motor Speed		CFM (Watts)							
			External Static Pressure-Inches W.C. (kPa)							
			0(0)	0.1(0.025)	0.15(0.0375)	0.2(0.050)	0.3(0.075)	0.4(0.100)	0.5(0.125)	0.6(0.150)
24	1	SCFM	714	641	604	548	476	407	324	259
		Power/W	63	69	74	76	82	88	91	96
		Current/A	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9
	2	SCFM	867	801	766	735	647	580	508	386
		Power/W	103	109	111	116	121	127	130	136
		Current/A	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.3
	3	SCFM	1067	1006	973	942	857	713	570	410
		Power/W	177	182	185	189	196	180	170	164
		Current/A	1.5	1.5	1.5	1.6	1.6	1.5	1.4	1.4
	4	SCFM	1192	1111	1068	1023	906	751	579	425
		Power/W	238	230	226	221	202	180	160	161
		Current/A	1.9	1.8	1.3	1.2	1.6	1.5	1.4	1.4
	5	SCFM	1266	1190	1147	1080	955	791	609	448
		Power/W	281	278	268	263	250	236	223	178
		Current/A	2.2	2.1	2.1	2.0	1.9	1.8	1.7	1.4
36	1	SCFM	893	755	683	627	505	392	316	232
		Watts	71	76	79	81	85	91	95	101
		Amps	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1.0
	2	SCFM	1097	980	915	866	751	634	524	379
		Watts	126	131	133	134	138	144	150	152
		Amps	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3
	3	SCFM	1184	1073	1015	979	872	764	648	543
		Watts	156	158	162	164	169	173	177	182
		Amps	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.5
	4	SCFM	1379	1288	1247	1159	1042	912	754	695
		Watts	228	235	236	227	214	209	190	172
		Amps	1.9	1.9	1.9	1.9	1.8	1.7	1.6	1.6
	5	SCFM	1404	1328	1279	1243	1150	1017	916	725
		Watts	260	251	263	264	272	279	259	178
		Amps	2.0	2.0	2.0	2.1	2.1	2.2	2.0	1.6

The air distribution system has the greatest effect on airflow. The duct system is totally controlled by the contractor. For this reason, the contractor should use only industry-recognized procedures.

Heat pump systems require a specified airflow. Each ton of cooling requires between 300 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.

Duct design and construction should be carefully done. System performance can be lowered dramatically through bad planning or workmanship.

Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver conditioned air along the perimeter of the space. If they are too small for their intended airflow, they become noisy. If they are not located properly, they cause drafts. Return air grilles must be properly sized to carry air back to the blower. If they are too small, they also cause noise.

The installers should balance the air distribution system to ensure proper quiet airflow to all rooms in the home. This ensures a comfortable living space.

An air velocity meter or airflow hood can give a reading of system CFM.

7.0 DRAINAGE

The unit is supplied with primary and auxiliary condensate drains that have 3/4" NPT connections. Both drains must be trapped outside the unit and piped in accordance with applicable building codes. Do not reduce the drain line size less than the connection size on the drain pan. All drain pipes must be PVC and all joints sealed with PVC adhesive. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1" per 10 feet of line to ensure proper drainage. Insulate the drain lines to prevent sweating where dew point temperatures may be met. (Insulation is optional depending on climate and application needs). If cleanout Tee is used, standpipe must be sealed/capped.

8.0 OPTIONAL ACCESSORIES

• Heater- 5/8/10kW (field installed)

Heater Installation

1. Remove control box cover
2. Remove control box assembly
3. Remove sealing plate from control box assembly
4. Install heater onto control box assembly
5. Re-install control box assembly back to unit
6. Re-install control box cover back to control box assembly

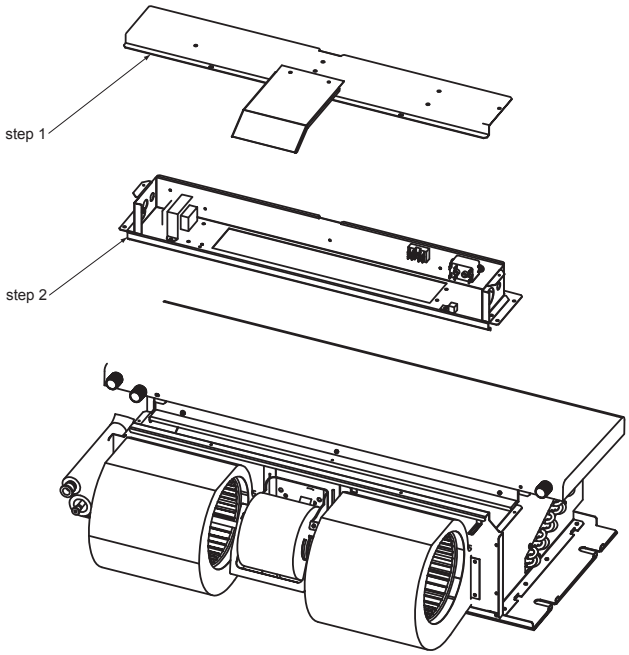


Fig.10

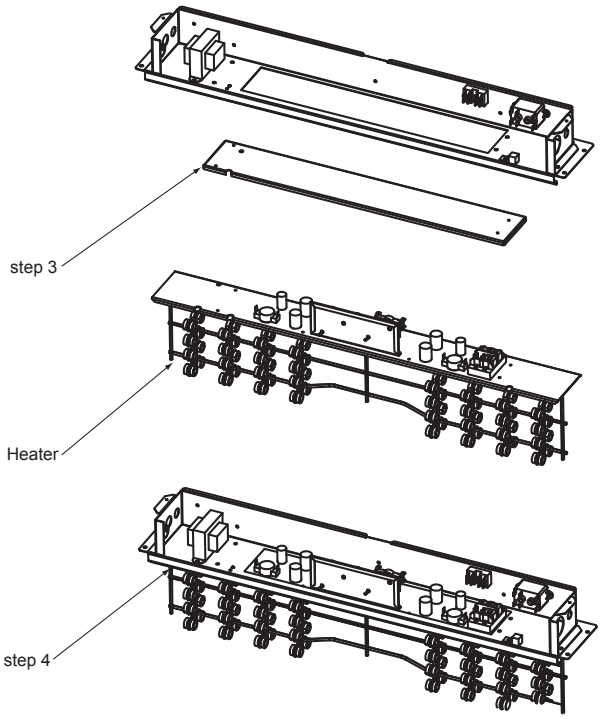
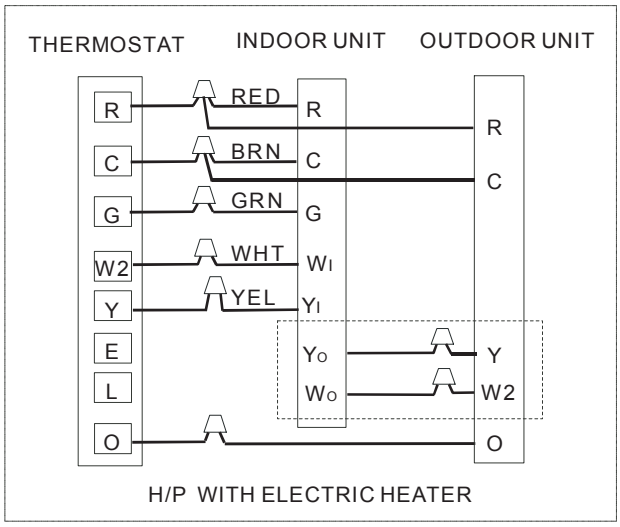


Fig.11

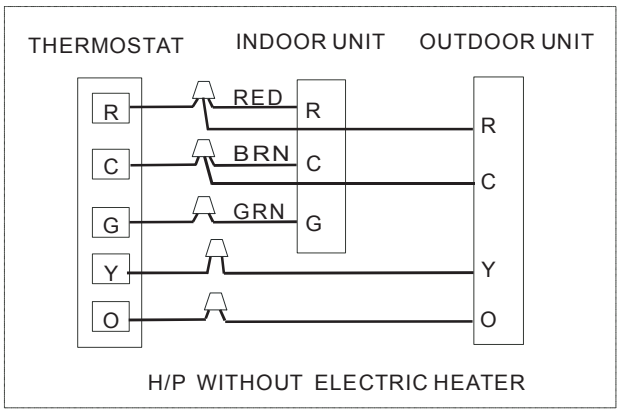
9.0 ELECTRICAL

To avoid the electrical shock, please connect the air conditioner ground lug. The main Power plug in the air conditioner has been joined with the ground wiring, please don't change it freely.

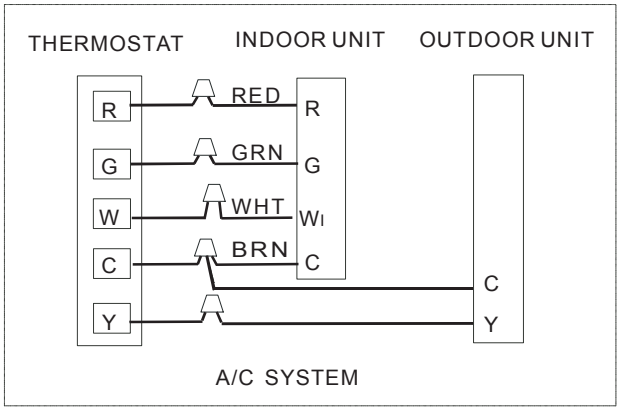
Field wiring must comply with the National Electric Code (C.E.C. in Canada) and any applicable local ordinance.



H/P WITH ELECTRIC HEATER



H/P WITHOUT ELECTRIC HEATER



A/C SYSTEM

WARNING

The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

- Grounding may be accomplished by grounding metal conduit when installed in accordance with electrical codes to the unit cabinet.
- Grounding may also be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.
- Use of multiple supply circuits require grounding of each circuit to lug(s) provided in unit.

SCHEMATIC DIAGRAM

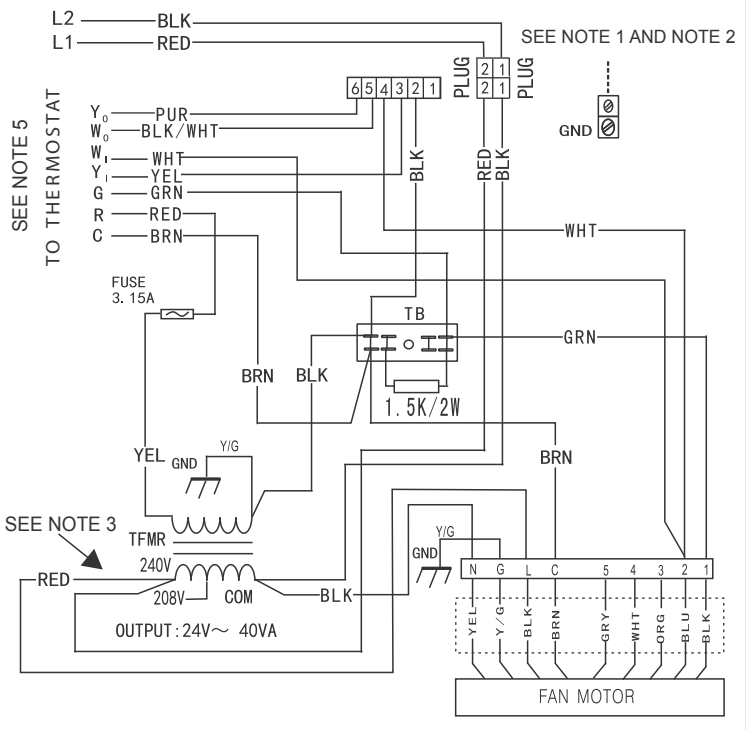
SEE RATING PLATE FOR VOLTS&HERTZ

FIELD POWER WIRING

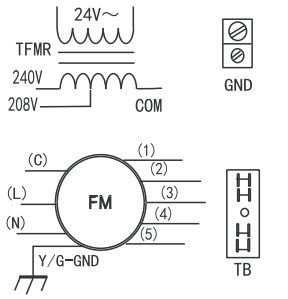
CAUTION:
NOT SUITABLE FOR USE ON SYSTEMS EXCEEDING 150V TO GROUND
ATTENTION:
NE CONVIENT PAS AUXINSTALLATIONS DE PLUS DE 150V ALA TERRE

ELECTRIC HEAT WIRING

CONNECTION (WHEN APPLIED)



COMPONENT ARRANGEMENT



SPEED TAP SELECTION

1	LOW
2	MEDIUM LOW
3	MEDIUM
4	MEDIUM HIGH
5	HIGH

SEE NOTE 6

TFMR	TRANSFORMER
TB	TERMINAL BLOCK
FM	FAN MOTOR
GND	GROUND

NOTES:

1: Use copper wire(75℃ min） only between disconnect switch and unit, To be wired in accordance with N.E.C. and local codes. Fan coils equipped with electric heater connect power supply to terminal block.Cooling controls wiring not used with electric heaters.

2: If any of the original wire as supplied must be replaced,use the same or equivalent type wire.

3: Remove the red lead from “240V” terminal and then connect the red lead to “208V” terminal on the transformer for 208 volts.

4: To Change Speed Tap,Move green Wire Desired Terminal.

5:Connect R to R, G to G, etc. See outdoor or indoor instructions for details.

6:See Airflow Tables For Tap Usage.

7:N.E.C.Class 2,24volts.

NOTES

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HEATING & A/C EQUIPMENT

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