

# National Comfort Products

539 Dunksferry Road • Bensalem, PA 19020 • (215) 244-1400 • 1-800-523-7138 • Fax: (215) 244-9579

## SPLIT-SYSTEM CONDENSING UNIT INSTALLATION INSTRUCTIONS 1000 | 3000 | 4000 | SERIES

### Before Installing Unit

1. Check all local codes and ordinances that could affect installation. The manufacturer assumes no responsibility for equipment installed in violation of any code requirements.
2. Be sure that the electrical data specified on the unit rating plate corresponds to what is available at the installation site and NEC for installation requirements.
3. Be sure that the electrical service provided to the building can handle the load imposed by the unit.
4. This unit should be installed in an outside wall for thru-the-wall installation ONLY.
5. NCP condensing units may be used with indoor evaporator coils utilizing various expansion devices (TXV, capillary tube, orifice piston). Self-equalizing components are required to reduce compressor starting problems. If self-equalizing components are not used, field installed hard start kits will be required.

Hard start kits must be compatible with Bristol compressors.

<u>Start Cap for Various Sizes</u>	<u>µFd/Volts</u>
18,000 BTU	161-193/250
24,000 BTU	145-175/250
30,000 BTU	189-227/330

**Start relays to be sized to µFd of capacitor used.**

6. The unit must be installed with the top level front to rear and left to right.

### Step 1 - Thru-the-Wall Installation

In thru-the-wall installation, due to the various types of wall construction, it is not possible to provide detailed instructions. The following is a list of general requirements and cautions for installing these units.

1. Masonry walls must have a lintel to support the wall.
2. Extend the unit approximately 3/4" beyond outside surface of the wall. Optional mounting angles can be purchased from the factory or field fabricated for locating and mounting the unit in the wall.
3. The wall opening across the top and bottom must be flashed. Bottom flashing to cover the full foot print of unit and extend up 2" on 3 sides. All openings around the top, sides and bottom must be caulked and sealed. Care must be taken not to plug the openings in the front of the base pan of the unit.

If the optional wall sleeve is used, caulk the spaces between the sleeve and the wall. Completely fill the clearance between the unit and the wall sleeve with a polyurethane foam sealant (Follow manufacturer's suggested application manual).

4. During periods of rain and wind the primary drainage path may not be adequate to handle the load. Secondary precautions may also be required but not limited to the following:
  - a. Seal flashing to unit
  - b. Floor drain
  - c. Additional field sealing of sheet metal joints
  - d. Sealing of unused access opening
5. Clearances to air inlets and outlets must be adequate to ensure no air flow obstructions or recirculation of condenser air flow.
6. Some architectural designs of buildings will require the unit to be mounted behind a decorative grille. The performance (capacity and efficiency) of the unit may be reduced with the use of these decorative grilles.

The less resistive these grilles are to air flow, the better the units performance will be.

Outdoor louvers provided by others must be approved by NCP to maintain unit performance and warranty. Care must be taken to locate coil intake side of unit away from loose debris that may clog intake.

7. If the unit is mounted behind a decorative grille, one or both of the following items must be done to eliminate recirculation of air to the unit:
  - a. The front of the unit must be mounted tight to the inside of the architectural grille
  - b. A barrier must be provided to prevent recirculation of air to the unit (mixing of inlet and outlet air) when the front of the unit is mounted back from the inside of the architectural grille
8. The unit must not be mounted in dead-end hallways or areas where there is no fresh outside air circulation. Cool fresh outside air must be provided for best unit operation. Thru-the-wall units may not be located where hot exhausts from clothes dryer vents, kitchen vents, steam vents or corrosive fumes could come in contact with coil side of unit.
9. 30" clearance is required for service accessibility on the inside. If more than one unit is to be installed in the same area a min. of 48" vertical must be maintained between units to minimize recirculation of condenser exhaust air.

**THE UNIT MUST NEVER BE PLACED ON ITS SIDE OR UPSIDE DOWN AS THE COMPRESSOR OIL WILL RUN IN THE COOLING CIRCUIT AND SERIOUSLY DAMAGE THE UNIT. BASE PAN MUST ALWAYS BE ON THE BOTTOM OF THE INSTALL.**

## Step 2 - Installing Refrigerant Lines

### Important:

The outdoor unit is fully charged at the factory for the recommended model of indoor unit. With other models of indoor units the charge must be adjusted. Be sure both service valves are closed during tubing installation and leak checking to avoid loss of charge. **For indoor units with a TXV, a liquid line filter drier must be installed (SPORLAN #083-S or similar).**

1. The unit has internally mounted service valves. Field tubing may be routed through the locations provided in either the top or rear flange. Care should be taken not to block access to internal components. Seal unused knockouts with high grade sealant. Gaskets are provided for liquid and suction lines.

**NOTE:** Always use refrigeration grade copper tubing that is internally clean and dry for refrigerant lines. Use clean hard drawn copper tubing if no appreciable amount of bending is necessary. If soft copper is used, avoid sharp bends which may cause a restriction. Always use heat sink materials during brazing to prevent damage to service valves (see Figure 1).

2. Run refrigerant lines as directly as possible. Field piping inside the condensing unit should not block access to major components. Refrigerant lines should not be in direct contact with the floor or ceiling joists. Use insulated or suspension type hangers. When refrigerant lines run through a wall, seal openings around the lines with a flexible material to avoid vibration to the structure.
3. Insulate the vapor line with a minimum 1/2" foam rubber or other type insulation having an adequate vapor barrier. **For indoor units with a TXV, a liquid line filter drier must be installed (SPORLAN #C-083-S or similar).**

**Caution:** Dry nitrogen should always be supplied through the tubing while it is being brazed, as the high temperature required for brazing will cause oxidation of the copper unless an inert atmosphere is provided. The flow of dry nitrogen should continue until the joints have cooled. Always use a pressure regulator and safety valve to ensure that only low pressure nitrogen is introduced into the tubing. Only a small flow is necessary to displace air and prevent oxidation.

4. Install the refrigerant lines using the following procedure (see also: Figure 1).
  - a. Remove the service port caps and Schrader Cores of the liquid line service valve and the vapor line service valve of the condensing unit. Connect low pressure dry nitrogen to the liquid line valve service port.
  - b. Provide a heat sink at the service valve such as wrapping a wet rag around it, to prevent damage during the brazing operation**
  - c. Braze the liquid line to the service valve. Allow the nitrogen to keep flowing when brazing the refrigerant line until all brazed joints are completed.

- d. Carefully remove the rubber plugs from the evaporator liquid and vapor connections. Use caution as the evaporator is pressurized.
  - e. Braze the liquid line to the evaporator liquid connection
  - f. Braze the vapor line to the evaporator vapor connection
  - g. Provide a heat sink to the vapor line service valve of the condensing unit**
  - h. Braze the vapor line to the service valve
5. When tubing installation is completed, seal openings around tubing where tubing enters the unit cabinet.
  6. Standard refrigeration piping practices must be employed when installing traps. When installing the condenser below the evaporator, the suction line must be trapped with an inverted trap the height of the evaporator coil. Consult the factory when total equivalent length of refrigerant lines exceed 50 ft.

## Step 3 - Leak Checking

### Leak checking of refrigerant line braze joints and evaporator unit using dry nitrogen.

1. Install service port cap of the vapor line service valve (cap was removed for brazing operations).
2. Connect dry nitrogen source to the service port of the liquid line service valve. Pressurize refrigerant lines and indoor coil to approximately 100 PSIG.
3. Check for leaks using a liquid soap solution. If any leaks are located, purge the nitrogen, repair the leak(s) and repeat the leak check procedure.

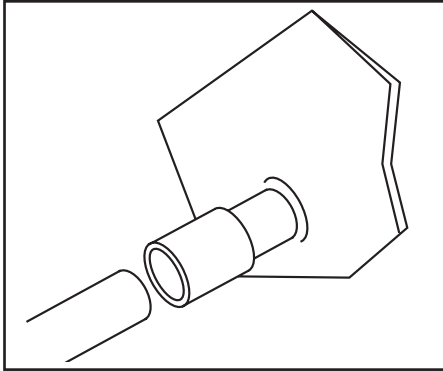
### Leak checking of refrigerant line braze joints and evaporator unit using R-22 refrigerant.

1. Connect R-22 source to the service port of the liquid line service valve. Use of a manifold gauge set will facilitate connecting and disconnecting of the refrigerant source for leak checking. Pressurize refrigerant lines and indoor coil with refrigerant gas.
2. Leak check with a electronic leak detector or liquid soap solution. If any leaks are detected, use a refrigerant recovery system to remove the refrigerant. Repair the leak(s) and repeat the leak check procedure.

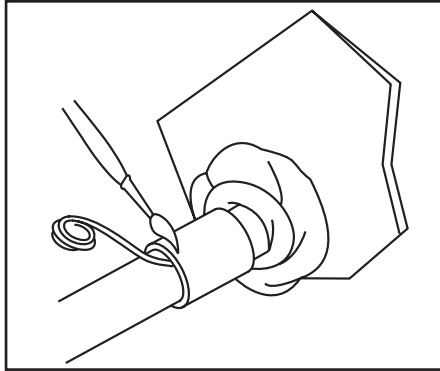
## Figure 1 - Installing Refrigerant Lines

### Field Installation:

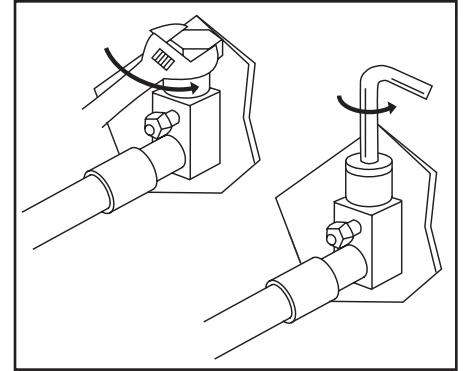
Install the outdoor and indoor units per the manufacturer's recommendations. Route the copper lines between the units.



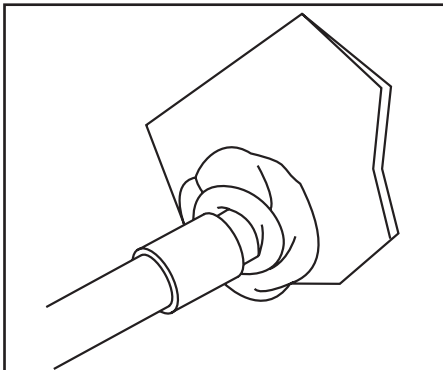
**Step 1:** The tubing should be cut square. Make sure it is round and free of burrs at the connecting ends. Clean the tubing to prevent contaminants from entering the system.



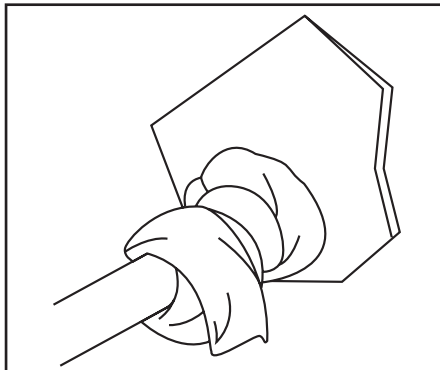
**Step 3:** Flux the copper tube and insert into the stub. Braze the joint. No flux is necessary if a low to zero-silver braze alloy is used.



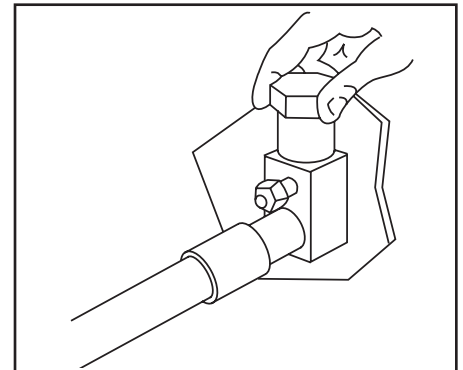
**Step 5:** This is not a back seating valve. To open the valve remove the valve cap with an adjustable wrench. Insert a 3/16" or 5/16" hex wrench into the stem. Back out counter-clockwise until the valve stem just touches the retaining ring.



**Step 2:** Wrap a wet rag around the copper stub before brazing.



**Step 4:** After brazing, quench with a wet rag to cool the joint and remove any flux residue. Evacuate, purge or charge the connecting lines per the unit manufacturer's instructions.



**Step 6:** Replace the valve cap finger tight then tighten an additional 1/12 turn or 1/2 hex flat. A metal-to-metal seal is now complete. Complete normal factory recommended procedures.

## Step 4 - Evacuation

1. Connect the vacuum pump to the service ports of the liquid line and the vapor line service valves. If the vacuum pump lines do not contain shut-off valves, hook up the vacuum pump through a manifold gauge set, as the vacuum pump lines must be closed for step 4 below.
  - a. If the evacuation is being performed on a new system installation, the condensing unit service valves should be kept in the closed position. The vacuum pump will then be able to evacuate the refrigerant lines and evaporator coil.
  - b. If the evacuation is being performed on an installation where the condensing unit factory charge has been lost, the service valves should be opened.
2. Following the vacuum pump manufacturer's instructions, allow the pump to operate until the system has been evacuated down to 300 microns.

**NOTE:** Check for leaks if unable to get to 300 microns

3. Allow the pump to continue running an additional 15 minutes. Turn off the pump and leave connections secured. After 10 minutes if system fails to hold 500 microns or less, check all connections for tight fit and repeat evacuation procedure.
4. Isolate the vacuum pump by closing the shut-off valves on vacuum pump lines or test gauge manifold.
5. Open the service valves. Opening the service valves will allow the refrigerant in the condensing unit to enter the refrigerant lines and evaporator coil. The vacuum pump can now be disconnected.

## Step 5 - Refrigerant Charging

The condensing unit comes from the factory pre-charged for the condensing unit, recommended evaporator coil, and the 10 feet of refrigerant lines. If the actual line length is greater or less than 10 feet, add or remove refrigerant at the rate of 0.7 ounces per foot.

If the condensing unit charge was lost for any reason, add factory refrigerant charge listed on condensing unit data plate, plus adjustments described above.

If the unit is operating during charge adjustment, the access panel must be in place to prevent high head pressure which would shut down the unit.

1. Connect the charging cylinder to the manifold gauge set. Open the charging cylinder valve and bleed air out of the charging hose at the manifold gauge set connection.
2. Tighten the manifold gauge set charging connection. Open the main manifold gauge set valve and introduce refrigerant into the system.

3. When the correct refrigerant charge level is obtained, remove the manifold gauge set.

4. Replace the gauge port caps.

Permanently stamp the unit data plate with the total amount of refrigerant in the system.

### ARI Rating Conditions

To obtain maximum performance, see chart on **page 6**.

## Step 6 - Electrical Connections

**NOTE: Make certain that the volts, hertz, and phase correspond to that specified on the unit rating plate, and that the service provided by the utility is sufficient to handle the additional load imposed by this equipment.**

Make all electrical connections in accordance with the National Electrical Code and any pertinent local codes or ordinances.

Use a separate branch electrical circuit for this unit. Locate a disconnecting means within sight of and readily accessible to the unit.

### A. Line Voltage Connections (see **Figure 2**)

- a. Connect the single phase power supply to unit contactor terminal L1 and L2
- b. Connect ground wire to lug

### B. Low Voltage Connections (see **Figure 3**)

Consult the indoor unit installation instructions for thermostat connections. Use a 2-wire thermostat cable between the outdoor and indoor units.

When locating the room thermostat, it should be in the natural circulating path of room air. Avoid locations where the thermostat would be exposed to cold air infiltration; drafts from windows, doors or other openings leading to the outside; exposure to air currents from warm-or-cold air registers or to exposure where the natural circulation of the air is cut off, such as behind doors, above or below mantels, shelves, etc.

## Sequence of Operations

On a "call for cooling", the thermostat "makes" circuits R-Y and R-G.

Circuit R-Y energizes the contactor starting the outdoor fan motor and compressor circuit. R-G energizes the indoor unit blower relay starting the indoor blower motor.

When the thermostat is satisfied, its contacts open, de-energizing the contactor and blower relay. Compressor and motors should stop.

## Step 7 - Maintenance

1. Annually clean the inside of the unit to keep the weep holes in the base pan and in the fan scrolls open to assure proper drainage of water from the unit.
2. Keep the condenser coil clean and free of anything that restricts free air flow. On sea coast applications the condenser coil should be washed periodically to remove salt accumulation.
3. Reduced indoor air flow through a duct system will cause indoor coil to ice up in cooling. If this condition is allowed to continue, premature system failure will result. Indoor air filters should be cleaned and changed regularly.
4. Annually check units mounting to structure to ensure integrity. Seal between cabinet and/or sleeve for air or water leakage. Check exposed surfaces for corrosion. Replace or paint part as required. This maintenance is critical to prevent stains and damage to exterior surface of building.
5. Inspect refrigerant piping for leaks and suction line insulation. Improper insulation can cause condensate water damage.
6. Pressure and temperature readings of high and low side of system should be checked for proper super heat and/or subcooling. Correct if required.
7. Inspect motor mount, amps to nameplate, hubs for tightness, balance, and rust or corrosion.
8. Inspect wire connection for evidence of arcing, overheating and deterioration.

## Sequence of Operations for Madison Avenue Option

The compressor crankcase heater will be energized as long as there is power to the unit. The high pressure switch (HPS) and low pressure switch (LPS) will be closed as long as refrigerant pressure in the condensing unit is normal.

Upon a call for cooling as indicated by 24-vac being applied to low voltage connections C and Y, Control Relay (CR) will be energized through the Delay on Break Timer (DOB). The contact of CR will close and provide power to the Fan Speed Control (FSC). Delay on Make Timer (DOM) will be energized, but the compressor will not start until the time period set on DOM is completed. After a few seconds of full voltage to start the Outdoor Blower Motor (3C), FSC will modulate the speed of 3C if the probe temperature on the condensing unit coil is between 70°F and 100°F, so that operation of 3C will reduce the refrigerant pressure in the condensing unit and the compressor will have less differential pressure to start against. After the time period set on DOM is completed, the compressor contractor (2A) will be energized and start the compressor (3J) to provide cooling. When the 24-vac is removed from low voltage connections C and Y, or either HPS or LPS opens, 2A, 4A, 3C, 3J, DOM, DOB, CR, and FSC will be de-energized.

If 24-vac power is applied to low voltage connections C and Y before the time period set on DOB is completed, the sequence described above will not occur until DOB completes the timing period.

# Fixed Orifice Fed Indoor Coil Charging by Superheat Table - Cooling Mode Only

Indoor			Outdoor Ambient										
WB	DB	& R/H	65	70	75	80	85	90	95	100	105	110	115
60	65	76	16	8	5	5	5	5	5	5	5	5	5
	70	57	17	9	5	5	5	5	5	5	5	5	5
	75	41	18	10	6	5	5	5	5	5	5	5	5
	80	30	19	12	8	5	5	5	5	5	5	5	5
	85	21	21	14	10	6	5	5	5	5	5	5	5
62	65	85	13	9	5	5	5	5	5	5	5	5	5
	70	64	16	12	8	5	5	5	5	5	5	5	5
	75	49	18	15	11	7	5	5	5	5	5	5	5
	80	36	19	15	12	8	5	5	5	5	5	5	5
	85	26	20	17	13	10	6	5	5	5	5	5	5
64	70	72	23	19	15	12	8	5	5	5	5	5	5
	75	56	24	21	17	14	10	7	5	5	5	5	5
	80	42	25	22	19	16	13	9	6	5	5	5	5
	85	31	26	23	20	17	13	10	7	5	5	5	5
	90	24	27	24	21	18	14	11	8	5	5	5	5
66	70	81	26	22	19	15	12	9	5	5	5	5	5
	75	63	26	23	20	16	13	10	7	5	5	5	5
	80	48	29	26	23	20	17	14	11	8	5	5	5
	85	36	29	26	23	20	17	14	11	8	5	5	5
	90	28	30	27	24	21	18	15	12	9	5	5	5
68	70	90	29	26	23	9	16	13	10	7	5	5	5
	75	70	30	26	23	20	17	14	11	8	5	5	5
	80	54	31	28	25	23	20	17	14	12	9	6	5
	85	42	32	30	27	24	21	18	15	13	10	7	5
	90	32	33	31	28	25	22	19	17	14	11	8	5
70	75	79	33	30	27	24	21	19	16	13	10	7	5
	80	62	33	31	28	26	23	21	18	16	13	11	8
	85	48	36	33	30	28	25	23	20	18	15	13	10
	90	38	37	34	32	29	27	24	21	19	16	14	11
	72	75	88	36	33	31	28	26	23	20	18	15	13
80		68	36	34	31	29	27	24	22	20	17	15	13
85		54	38	35	33	30	28	25	23	21	18	16	13
90		42	38	35	33	30	29	26	24	21	19	17	14
95		33	38	35	33	31	29	27	24	22	20	18	15
74	75	96	39	36	34	32	29	27	25	22	20	18	15
	80	76	39	37	35	32	30	28	26	24	22	19	18
	85	60	39	37	35	33	31	29	26	24	22	20	18
	90	48	40	38	35	33	31	29	26	24	22	20	18
	95	38	40	38	36	33	31	29	27	25	22	20	18
76	80	84	42	40	38	36	34	32	30	28	27	25	23
	85	67	42	41	39	37	35	33	31	29	27	25	23
	90	54	44	42	40	38	36	34	32	31	29	27	25
	95	43	45	43	41	40	38	36	34	32	31	29	27
	78	80	92	44	43	41	39	38	36	34	33	31	29
85		74	45	43	41	40	38	36	34	33	31	30	28
90		59	47	45	44	42	41	39	37	36	34	33	31
95		48	49	47	46	45	43	42	41	39	37	36	35
80		85	80	47	46	44	43	41	40	39	37	36	34
	90	65	48	47	46	44	43	41	40	39	37	36	34
	95	53	50	49	47	46	44	43	41	40	39	37	36

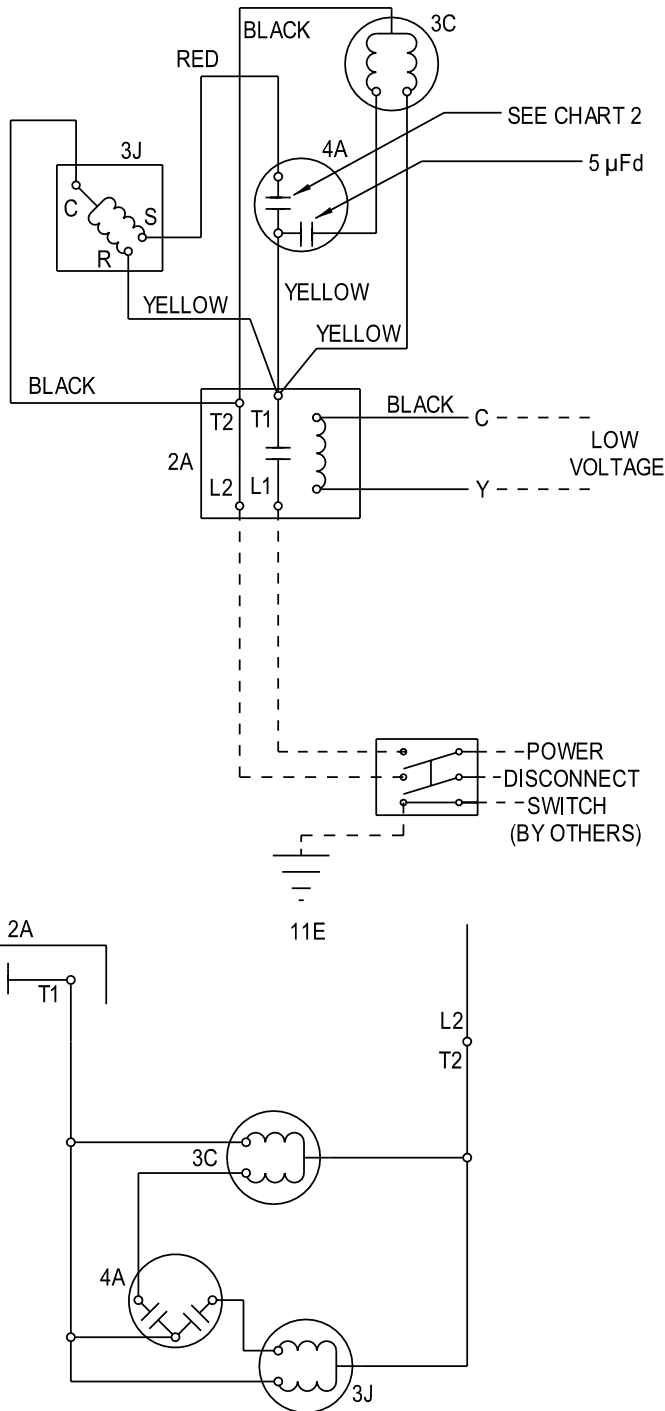
White area of the chart is optimum for charging  
 For coils equipped with TXV's charge to sub-cooling or 8 to 12°

**Notes:**

- All information based on 400 CFM/Ton
- Recommended minimum superheat is 5°F
- Superheat temperature measurements should be taken within 3 feet of the compressor suction line connection
- R/H - Approximate % of indoor relative humidity
- WB - Indoor wet bulb temperature °F
- DB - Indoor dry bulb temperature °F

\*\*\* When checking superheat at extreme high temperature, charge to minimum of 5° of super heat and re-check when temperature falls back into the white area of chart.

**Figure 2 - Wiring Schematic NCP**



- 2A CONTACTOR SPST (N.O.)
- 3C OUTDOOR BLOWER MOTOR
- 3J COMPRESSOR
- 4A DUAL RUN CAPACITOR
- 11E UNIT GROUND LUG

- 1) SINGLE POLE CONTACTOR USED
- 2) USE ONLY COPPER WIRE BETWEEN DISCONNECT SWITCH AND UNIT
- 3) LOW VOLTAGE CIRCUIT TO RECEIVE POWER FROM A 24 VAC, 60HZ NEC CLASS 2 CONTROL TRANSFORMER, OUTPUT 40VA MINIMUM
- 4) DOTTED LINES REPRESENT FIELD WIRING BY OTHERS

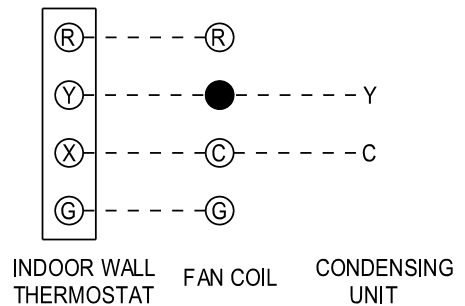
CHART 1

NOMINAL VOLTAGE	MINIMUM VOLTAGE	MAXIMUM VOLTAGE
208-230	197	253

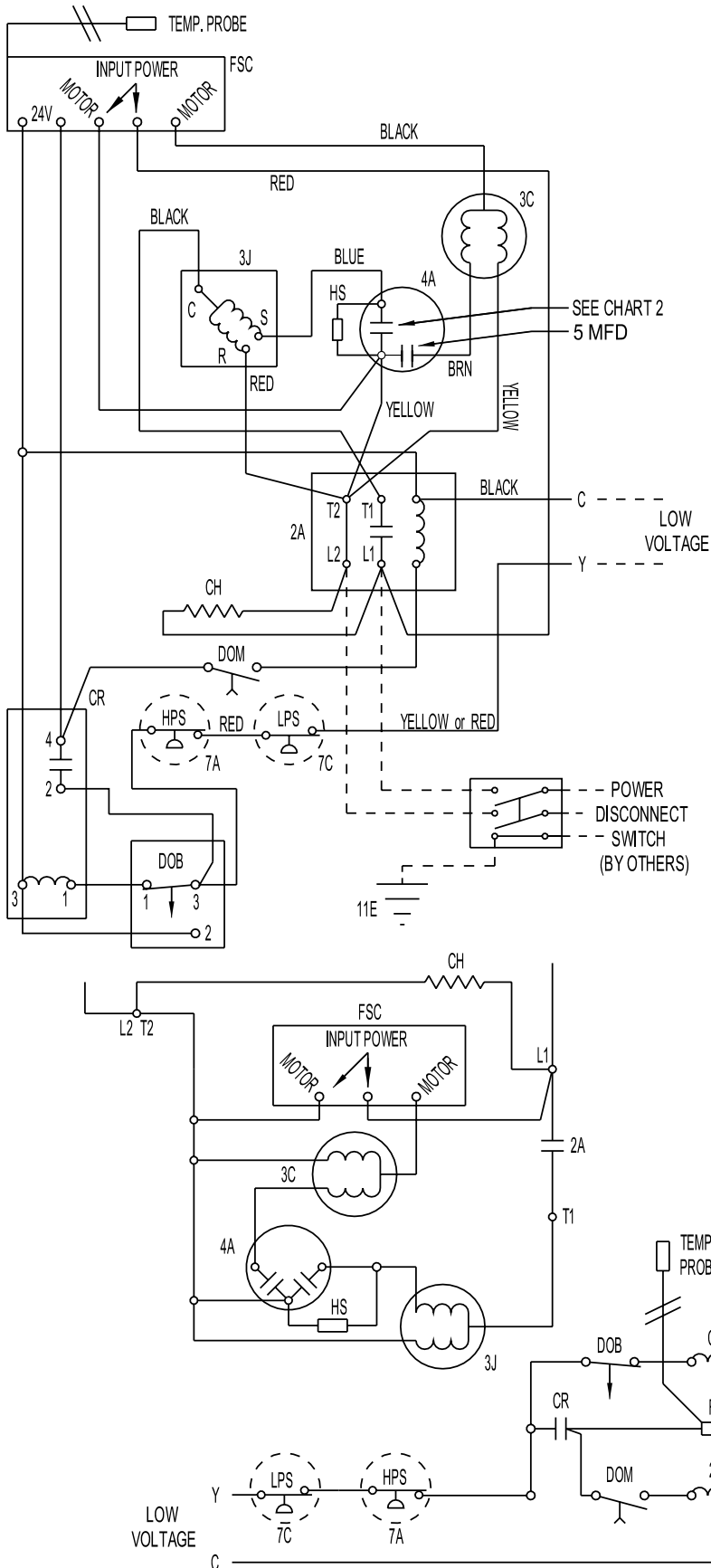
CHART 2

MODEL	CAPACITOR
NCP-018	30 μF <sub>d</sub>
NCP-024	35 μF <sub>d</sub>
NCP-030	40 μF <sub>d</sub>

**LOW VOLTAGE CONNECTION**



**Figure 3 - Wiring Schematic Madison Series**



- DOB DELAY ON BREAK TIMER
- DOM DELAY ON MAKE TIMER
- CR CONTROL RELAY
- CH CRANKCASE HEATER
- FSC FAN SPEED CONTROL
- 2A CONTACTOR SPST (N.O.)
- 3C OUTDOOR BLOWER MOTOR
- 3J COMPRESSOR
- 4A DUAL RUN CAPACITOR
- 7A HIGH PRESSURE SWITCH
- 7C LOW PRESSURE SWITCH
- 11E UNIT GROUND LUG
- HS HARD START DEVICE

- 1) SINGLE POLE CONTACTOR USED.
- 2) USE ONLY COPPER WIRE BETWEEN DISCONNECT SWITCH AND UNIT
- 3) LOW VOLTAGE CIRCUIT TO RECEIVE POWER FROM A 24 VAC, 60HZ NEC CLASS 2 CONTROL TRANSFORMER, OUTPUT 40VA MINIMUM
- 4) DOTTED LINES REPRESENT FIELD WIRING BY OTHERS

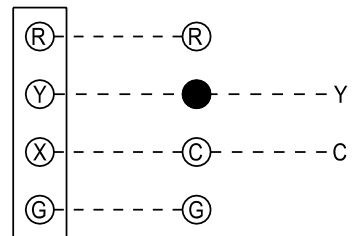
CHART 1

NOMINAL VOLTAGE	MINIMUM VOLTAGE	MAXIMUM VOLTAGE
208-230	197	253

CHART 2

MODEL	CAPACITOR
NCPC-018-1010/D	35 $\mu$ Fd
NCPC-018-3010/D	35 $\mu$ Fd
NCPC-018-4010/D	30 $\mu$ Fd
NCPC-024-1010/D	35 $\mu$ Fd
NCPC-024-3010/D	30 $\mu$ Fd
NCPC-024-4010/D	35 $\mu$ Fd

**LOW VOLTAGE CONNECTION**



INDOOR WALL THERMOSTAT      FAN COIL      CONDENSING UNIT

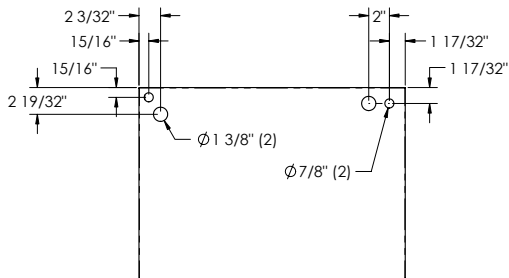


## SPECIFICATIONS CHART - 1000 SERIES

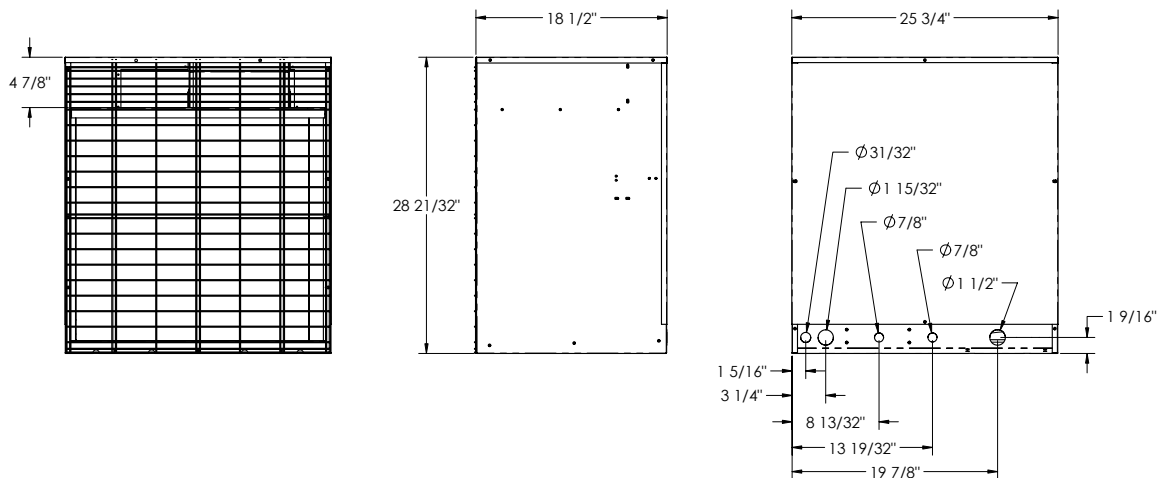
MODEL NO.	NCPC-018	NCPC-024	NCPC-030
<b>DIMENSIONS</b>			
Width	26"	26"	26"
Height	28 5/8"	28 5/8"	28 5/8"
Length	18 1/2"	18 1/2"	18 1/2"
Liquid Valve	3/8"	3/8"	3/8"
Vapor Valve	5/8"	3/4"	3/4"
<b>NOMINAL CAPACITY B/HR</b>			
	18,000	23,900	28,500
<b>ELECTRICAL</b>			
Volts	208/230	208/230	208/230
Hertz	60	60	60
Phase	1	1	1
Min. AWG Wire	14	12	12
Min. Cir. Ampacity	10.2	14.4	14.8
Max. Fuse	15	20	25
<b>COMPRESSOR</b>			
RLA (Amps)	7.2	8.0	11.1
LRA (Amps)	48	53.5	78
<b>FAN MOTOR</b>			
HP	0.25	0.25	0.25
RPM	1140	1140	1140
Amps (Full Load)	1.2	1.2	1.2
<b>COIL</b>			
Face Area	3.46	3.46	3.46
FPI	16	16	16

Service Clearance.....30"

## DIMENSIONAL DRAWING NCPC-018-1010, NCPC-024-1010, NCPC-030-1010



1000 SERIES

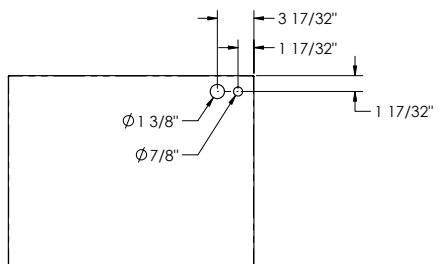


## SPECIFICATIONS CHART - 3000 SERIES

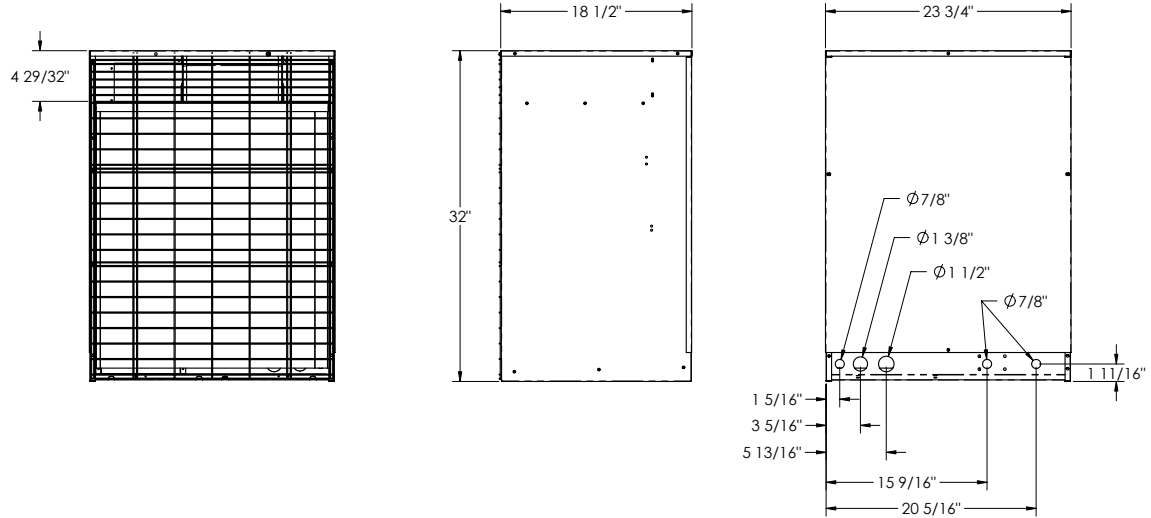
MODEL NO.	NCPC-018	NCPC-024	NCPC-030
<b>DIMENSIONS</b>			
Width	23 3/4"	23 3/4"	23 3/4"
Height	32"	32"	32"
Length	18 1/2"	18 1/2"	18 1/2"
Liquid Valve	3/8"	3/8"	3/8"
Vapor Valve	5/8"	3/4"	3/4"
<b>NOMINAL CAPACITY B/HR</b>			
	18,000	23,800	28,000
<b>ELECTRICAL</b>			
Volts	208/230	208/230	208/230
Hertz	60	60	60
Phase	1	1	1
Min. AWG Wire	14	12	12
Min. Cir. Ampacity	10.2	14.4	17.3
Max. Fuse	15	20	25
<b>COMPRESSOR</b>			
RLA (Amps)	7.2	9.9	11.1
LRA (Amps)	48	61	78
<b>FAN MOTOR</b>			
HP	0.25	0.25	0.25
RPM	1140	1140	1140
Amps (Full Load)	1.2	1.2	1.2
<b>COIL</b>			
Face Area	3.77	3.77	3.77
FPI	16	16	16

Service Clearance.....30"

## DIMENSIONAL DRAWING NCPC-018-3010, NCPC-024-3010, NCPC-030-3010



3000 SERIES

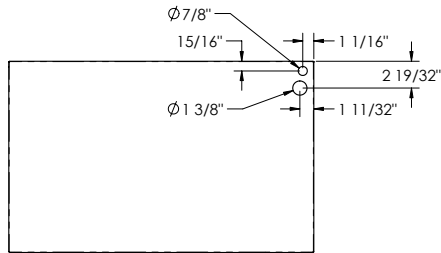


## SPECIFICATIONS CHART - 4000 SERIES

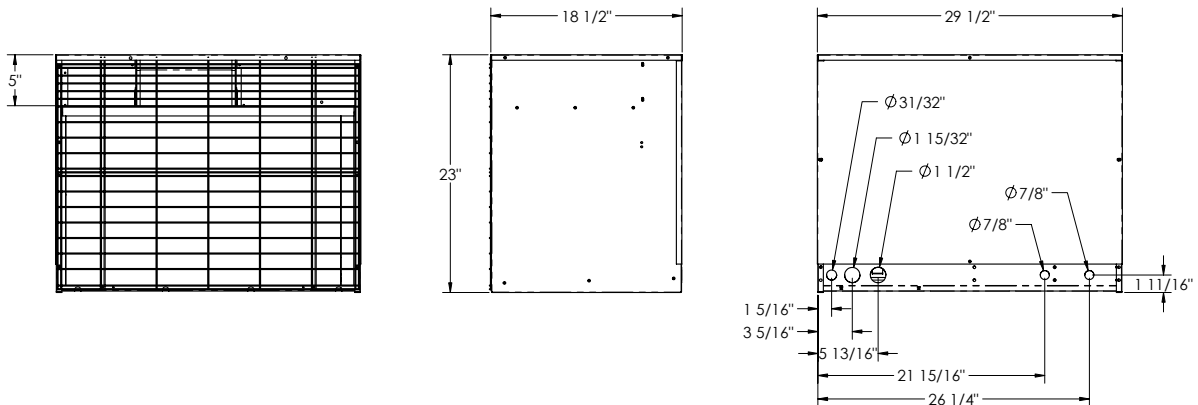
MODEL NO.	NCPC-018	NCPC-024	NCPC-030
<b>DIMENSIONS</b>			
Width	29 1/2"	29 1/2"	29 1/2"
Height	23"	23"	23"
Length	18 1/2"	18 1/2"	18 1/2"
Liquid Valve	3/8"	3/8"	3/8"
Vapor Valve	5/8"	3/4"	3/4"
<b>NOMINAL CAPACITY B/HR</b>			
	18,000	23,600	28,500
<b>ELECTRICAL</b>			
Volts	208/230	208/230	208/230
Hertz	60	60	60
Phase	1	1	1
Min. AWG Wire	14	12	12
Min. Cir. Ampacity	10.2	14.4	14.8
Max. Fuse	15	20	25
<b>COMPRESSOR</b>			
RLA (Amps)	7.2	8.0	11.1
LRA (Amps)	48	53.5	78
<b>FAN MOTOR</b>			
HP	0.25	0.25	0.25
RPM	1140	1140	1140
Amps (Full Load)	1.2	1.2	1.2
<b>COIL</b>			
Face Area	3.14	3.14	3.14
FPI	16	16	16

Service Clearance.....30"

## DIMENSIONAL DRAWING NCPC-018-4010, NCPC-024-4010, NCPC-030-4010



## 4000 SERIES

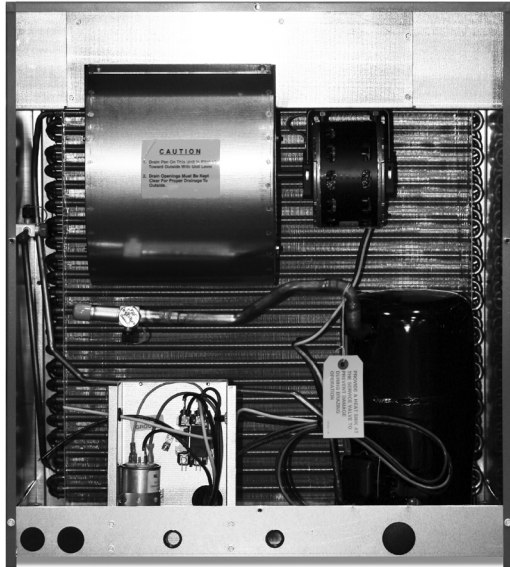


# National Comfort Products

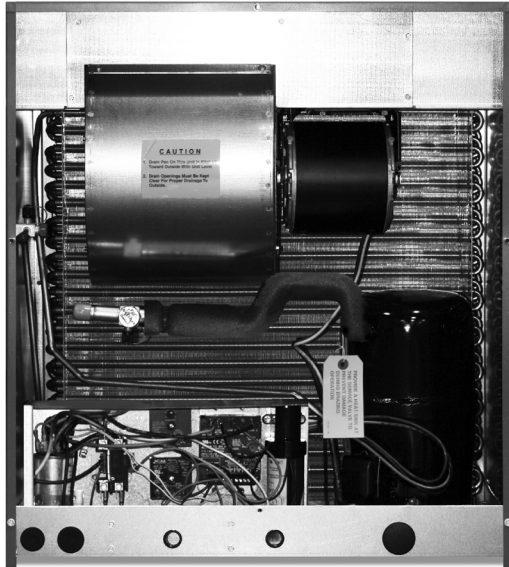
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## REPLACEMENT PARTS GUIDE

### NPC SERIES 1000 NCPC-018-1010, NCPC-024-1010, NCPC-030-1010



### MADISON SERIES 1000



\*\* MADISON SERIES ONLY

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
1	<b>Contactors</b>	14262082	14262082	14262082
2	<b>Dual Run Capacitor</b> 30-5 mFd / 370V 35-5 mFd / 370V 40-5 mFd / 370V	14225376 N/A N/A	N/A 14225375 N/A	N/A N/A 14225372
2a**	35-5 mFd / 370V 40-5 mFd / 370V	14225375 N/A	N/A 14225373	N/A 14225373
3	<b>Low Pressure Switch</b> (Optional)	14265020	14265020	14265020
4	<b>High Pressure Switch</b> (Optional)	14265021	14265021	14265021
5	<b>Compressor</b> H29B17UABC H21J20BABCA H21J27BABCA H21J17BDBCA	14210018 N/A N/A 1421009501	N/A 1421009601 N/A N/A	N/A N/A 14210098 N/A
5a**				
6	<b>Liquid Service Valve</b>	14258603A	14258603A	14258603A
7	<b>Vapor Service Valve</b>	14258605A	14258606A	14258606A
8	<b>Outdoor Coil</b>	14208031	14208031	14208032
9	<b>Blower Motor</b> (MADISON) 0.25 HP 1140 RPM	14270038 14270038	14270038 14270036	14270038 14270036
9a**				
10	<b>Blower Wheel</b> (7.6" OD x 8.0")	14267007	14267007	14267007
11	<b>Blower Housing</b>	14214013	14214013	14214013
12	<b>Inlet Ring</b> (2 req'd)	14214021	14214021	14214021

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
13	<b>Motor Blower Mount</b>	14256933X	14256933X	14256933X
14 <sup>‡</sup>	<b>Access Panel 1000</b>	14256936Y	14256936Y	14256936Y
15	<b>Top Panel 1000</b>	14256939S	14256939S	14256939S
16	<b>Right Side Panel</b>	14256938S	14256938S	14256938S
17	<b>Left Side Panel</b>	14256937S	14256937S	14256937S
18	<b>Wire Grille 1000</b>	14269001A	14269001A	14269001A
19	<b>Muffler</b> (MADISON)	N/A 14275639	14275639 N/A	14275639 N/A
19a**				
20	<b>Touch Up Paint</b>	14299630	14299630	14299630

#### ADDITIONAL PARTS - MADISON SERIES ONLY

ITEM	DESCRIPTION	1000 SERIES
21	<b>Time Relay on Make</b>	14262054
22	<b>Time Relay on Break</b>	14232053
23	<b>Crankcase Heater</b>	14206023
24	<b>Low Ambient Control</b>	14260017
25	<b>Hard Start Kit</b>	14216307
26	<b>Spring Mounted Comp</b>	14210030
27	<b>High Pressure Switch</b>	14265023
28	<b>Low Pressure Switch</b>	14265020
29	<b>Control Relay</b>	14262051

<sup>‡</sup> Not shown

# National Comfort Products

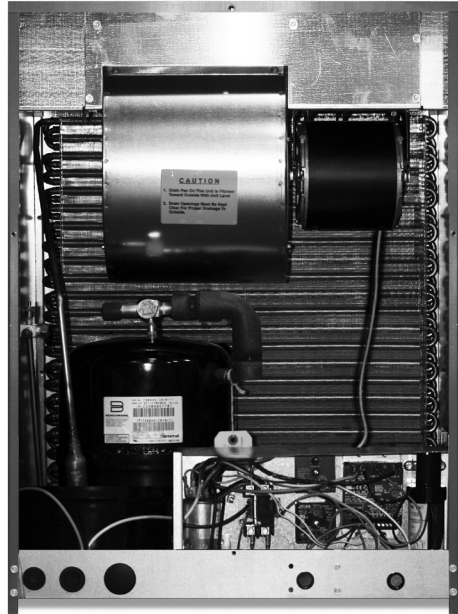
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## REPLACEMENT PARTS GUIDE

### NCPC SERIES 3000 NCPC-018-3010, NCPC-024-3010, NCPC-030-3010



### MADISON SERIES 3000



\*\* MADISON SERIES ONLY

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
1	<b>Contactor</b>	14262082	14262082	14262082
2	<b>Dual Run Capacitor</b>			
	30-5 mFd / 370V	14225376	14225376	N/A
	35-5 mFd / 370V	N/A	N/A	N/A
	40-5 mFd / 370V	N/A	N/A	14225372
2a**	35-5 mFd / 370V	14225375	N/A	N/A
	40-5 mFd / 370V	N/A	14225373	14225373
3	<b>Low Pressure Switch</b> (Optional)	14265020	14265020	14265020
4	<b>High Pressure Switch</b> (Optional)	14265021	14265021	14265021
5	<b>Compressor</b>			
	H29B17UABC	14210018	N/A	N/A
	H21J20BABCA	N/A	14210097	N/A
	H21J27BABCA	N/A	N/A	14210098
5a**	H21J17BDBCA	1421009501	N/A	N/A
6	<b>Liquid Service Valve</b>	14258603A	14258603A	14258603A
7	<b>Vapor Service Valve</b>	14258605A	14258606A	14258606A
8	<b>Outdoor Coil</b>	14208014	14208014	14208015
9	<b>Blower Motor</b>			
9a**	(MADISON)	14270038	14270038	14270038
	0.25 HP 1140 RPM	14270038	14270036	14270036
10	<b>Blower Wheel</b> (7.6" OD x 8.0")	14267007	14267007	14267007
11	<b>Blower Housing</b>	14214013	14214013	14214013
12	<b>Inlet Ring</b> (2 req'd)	14214021	14214021	14214021

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
13	<b>Motor Blower Mount</b>	14256933X	14256933X	14256933X
14 <sup>+</sup>	<b>Access Panel 3000</b>	14256969S	14256969S	14256969S
15	<b>Top Panel 3000</b>	14256967S	14256967S	14256967S
16	<b>Right Side Panel</b>	14256973S	14256973S	14256973S
17	<b>Left Side Panel</b>	14256974S	14256974S	14256974S
18	<b>Wire Grille 3000</b>	14269003A	14269003A	14269003A
19	<b>Muffler</b>	N/A	14275639	14275639
19a**	(MADISON)	14275639	N/A	N/A
20	<b>Touch Up Paint</b>	14299630	14299630	14299630

#### ADDITIONAL PARTS - MADISON SERIES ONLY

ITEM	DESCRIPTION	3000 SERIES
21	<b>Time Relay on Make</b>	14262054
22	<b>Time Relay on Break</b>	14232053
23	<b>Crankcase Heater</b>	14206023
24	<b>Low Ambient Control</b>	14260017
25	<b>Hard Start Kit</b>	14216307
26	<b>Spring Mounted Comp</b>	14210030
27	<b>High Pressure Switch</b>	14265023
28	<b>Low Pressure Switch</b>	14265020
29	<b>Control Relay</b>	14262051

<sup>+</sup> Not shown

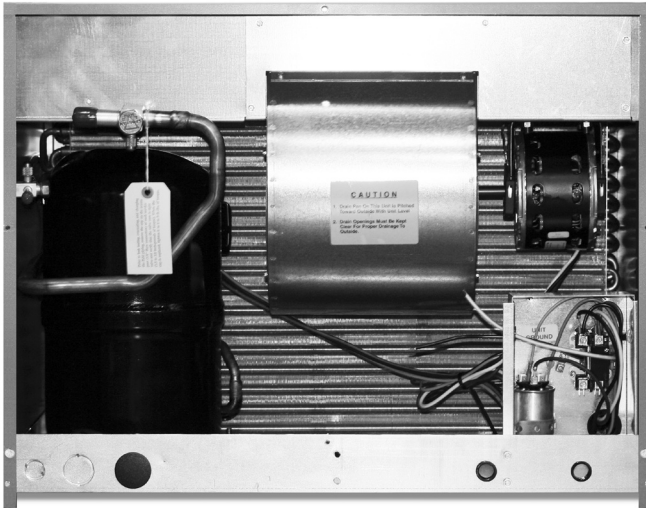
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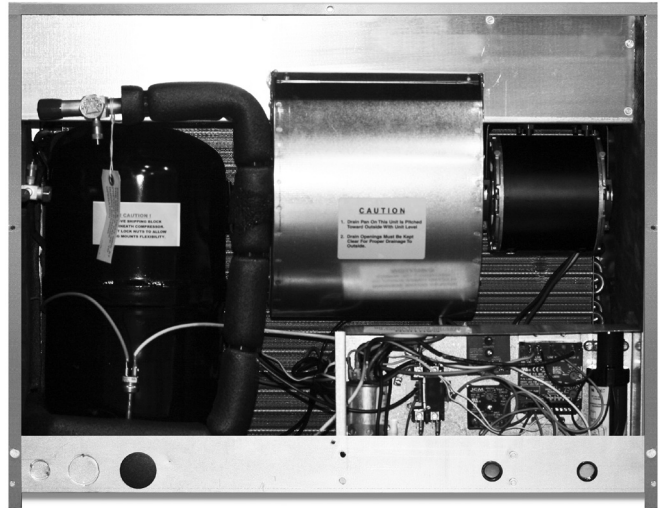
## REPLACEMENT PARTS GUIDE

### NCPC SERIES 4000

NCPC-018-4010, NCPC-024-4010, NCPC-030-4010



### MADISON SERIES 4000



\*\* MADISON SERIES ONLY

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
1	<b>Contactors</b>	14262082	14262082	14262082
2	<b>Dual Run Capacitor</b> 30-5 mFd / 370V 35-5 mFd / 370V 40-5 mFd / 370V	14225376 N/A N/A	N/A 14225375 N/A	N/A N/A 14225372
2a**	35-5 mFd / 370V 40-5 mFd / 370V	14225375 N/A	N/A 14225373	N/A 14225373
3	<b>Low Pressure Switch</b> (Optional)	14265020	14265020	14265020
4	<b>High Pressure Switch</b> (Optional)	14265021	14265021	14265021
5	<b>Compressor</b> H29B17UABC H21J20BABCA H21J27BABCA	14210018 N/A N/A	N/A 1421009601 N/A	N/A N/A 14210098
6	<b>Liquid Service Valve</b>	14258603A	14258603A	14258603A
7	<b>Vapor Service Valve</b>	14258605A	14258606A	14258606A
8	<b>Outdoor Coil</b>	14208016	14208016	14208017
9 9a**	<b>Blower Motor</b> (MADISON) 0.25 HP 1140 RPM	14270038 14270038	14270038 14270036	14270038 14270036
10	<b>Blower Wheel</b> (7.6" OD x 8.0")	14267007	14267007	14267007
11	<b>Blower Housing</b>	14214013	14214013	14214013
12	<b>Inlet Ring</b> (2 req'd)	14214021	14214021	14214021

ITEM	DESCRIPTION	NCPC-018	NCPC-024	NCPC-030
13	<b>Motor Blower Mount</b>	14256933X	14256933X	14256933X
14 <sup>‡</sup>	<b>Access Panel 4000</b>	14256970S	14256970S	14256970S
15	<b>Top Panel 4000</b>	14256968S	142569368S	14256968S
16	<b>Right Side Panel</b>	14256975S	14256975S	14256975S
17	<b>Left Side Panel</b>	14256976S	14256976S	14256976S
18	<b>Wire Grille 4000</b>	14269004A	14269004A	14269004A
19	<b>Muffler</b>	N/A	14275639	14275639
20	<b>Touch Up Paint</b>	14299630	14299630	14299630

### ADDITIONAL PARTS - MADISON SERIES ONLY

ITEM	DESCRIPTION	4000 SERIES
21	<b>Time Relay on Make</b>	14262054
22	<b>Time Relay on Break</b>	14232053
23	<b>Crankcase Heater</b>	14206023
24	<b>Low Ambient Control</b>	14260017
25	<b>Hard Start Kit</b>	14216307
26	<b>Spring Mounted Comp</b>	14210030
27	<b>High Pressure Switch</b>	14265023
28	<b>Low Pressure Switch</b>	14265020
29	<b>Control Relay</b>	14262051

<sup>‡</sup> Not shown

# National Comfort Products

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## LIMITED EXTENDED PROTECTION WARRANTY FOR NATIONAL COMFORT PRODUCTS (NCP) BENSALEM, PA SPLIT-SYSTEM CONDENSING UNITS

This NCP product is warranted to be free from all manufacturing defects, material or workmanship, for a period of one year from the date of installation (receipt required), whether or not actual use begins on this date, or one year from the date of manufacture if the date of installation cannot be verified. Immediate notice to NCP will (A) provide a new or remanufactured part to replace the defective part, without charge for the part itself, or (B) provide a replacement unit.

National Comfort Products will not be responsible for: local transportation, removing, related service, labor, diagnosis calls, refrigerant, costs incurred for returning defective parts, damage or repairs required due to faulty installation or improper application by others, damage as a result of fire, wind, floods, lightning, accidents, or corrosive atmosphere.

### EXTENDED 2ND THRU 5TH YEAR COMPRESSOR WARRANTY

If the compressor should fail because of a manufacturing defect, is in the original installation, has been operated under normal conditions, and is in the 2nd to 5th year following the above determined date, NCP will provide, at its option, a new or remanufactured replacement compressor.

Replacement parts are warranted for the remainder of the original product warranty, or for one year, whichever is longer. NCP may require that defective parts be returned to verify and identify the cause of the defect.

LIMITATION OF WARRANTIES — ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH EACH LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER. MATERIAL IS INSPECTED AT THE FACTORY AND RELEASED TO TRANSPORTATION AGENCY IN GOOD CONDITION. WHEN RECEIVED, VISUAL INSPECTION MUST BE MADE IMMEDIATELY. APPARENT SHIPPING DAMAGE SHOULD BE NOTED ON THE DELIVERY RECEIPT AND THE MATERIAL INSPECTED IN THE PRESENCE OF THE CARRIER'S REPRESENTATIVE. IF DAMAGE IS FOUND A CLAIM MUST BE FILED WITH THE CARRIER IMMEDIATELY.

FREIGHT DAMAGE IS NOT COVERED UNDER THIS WARRANTY.

WARNING: NO WARRANTY ON NEW UNITS INSTALLED BEHIND BRICK FACADES. IN YEARS PAST, IT WAS COMMON PRACTICE TO ADD A BRICK PATTERN FACADE (PIGEON HOLES) IN FRONT OF THE THRU-THE-WALL UNIT TO CHANGE THE EXTERIOR APPEARANCE OF THE BUILDING. ALL OBSTACLES ADDED TO IMPEDE AIR FLOW OF THE CONDENSING UNIT WILL DECREASE PERFORMANCE AND CAUSE PREMATURE EQUIPMENT FAILURE AND VOID ALL WARRANTIES. CONSULT FACTORY WITH ANY QUESTIONS.

This warranty gives you specific legal rights. You may also have rights which vary from state to state.

### NATIONAL COMFORT PRODUCTS, BENSALEM, PENNSYLVANIA

**NOTE:** All warranty parts and paper work must be submitted no later than 60 days after failure. Warranty requests submitted after 60 days of failure will not be processed.

# National Comfort Products

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## PROCEDURE FOR WARRANTY FAILURE

National Comfort Products are warranted for one year after the date of installation, or one year from the date of manufacture. The compressor carries an extended 5 year warranty after the date of installation. Use the following procedure for returning parts for warranty replacement.

### **COMPRESSORS**

The National Comfort Products use Bristol compressors. Bristol provides a 20 month warranty from date of compressor manufacture.

All failed compressors within this Bristol warranty period are to be returned to a Bristol wholesaler. Bristol wholesalers are located in all major cities.

The compressor serial number includes a date code. The first three numbers indicate the day of the year (059 = Feb. 28, 108 = April 18). The fourth and fifth numbers indicate the year (91 = 1991, 92 = 1992).

The Bristol wholesaler will honor the compressor warranty for 20 months after the date of compressor manufacture. This means you will not have to wait for a replacement compressor to be shipped from Bensalem, PA.

The situation may present itself where it is better for the compressor to be returned to National Comfort Products during the 20 month Bristol warranty period. NCP will also honor the Bristol 20 month warranty period.

All returned compressors must have the tubing connections closed with rubber plugs or brazed shut.

National Comfort Products will provide the extended warranty through the 5th year from date of installation of the unit for the compressor. All compressors returned to NCP for warranty are to follow the procedure listed below.

### **OTHER PARTS**

A Purchase Order Number is required to ship a replacement part to a customer. The failed part is to be returned to NCP with freight prepaid. Credit will be issued to the Purchase Order, if the part is found to be a warranty failure.

Items returned to NCP for warranty claim must have a Returned Goods Authorization Number assigned to and attached to the part. The Return Goods Authorization Number may be obtained by contacting the factory.

Call and notify the factory before a warranty part is returned. The failed part must be returned prepaid with the Return Goods Authorization Number on all parts and reference paperwork.



# National Comfort Products

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## ENGINEERING SPECIFICATION GUIDE

### THRU-THE-WALL SPLIT SYSTEM CONDENSING UNIT

**SAFETY APPROVAL** - Each unit shall be ETL listed for safety approval.

**GENERAL** - Each outdoor condensing unit shall be factory assembled and run tested.

**THRU-THE-WALL APPLICATION** - Each unit shall be designed for installation flexibility. Horizontal air inlet and outlet on the same side of the unit for thru-the-wall or conventional mounting.

**COILS** - Outdoor coils shall be fabricated of raised lance aluminum fins mechanically bonded to seamless rifled copper tubes.

**CABINET** - Unit cabinet shall be constructed of heavy-gauge galvanized or aluminized steel. The steel shall be treated by phosphate washes prior to electrostatically-applied and oven-baked paint.

**FACTORY CHARGED** - Each unit shall be charged with R-22, for proper operation with recommended indoor coil and 10 foot tubing.

**SERVICE VALVES** - Each unit shall be equipped with liquid and vapor shut off valves. The valves are to be constructed of brass. Silver-brazed connection is required for connection to refrigerant lines.

**COMPRESSOR** - Shall be welded hermetic type with internal vibration isolation and built-in thermal and electrical protective devices.

**P.S.C. BLOWER MOTOR** - Each unit shall have high efficiency Permanent Split Capacitor motor for low current and high efficiency unit operation.





