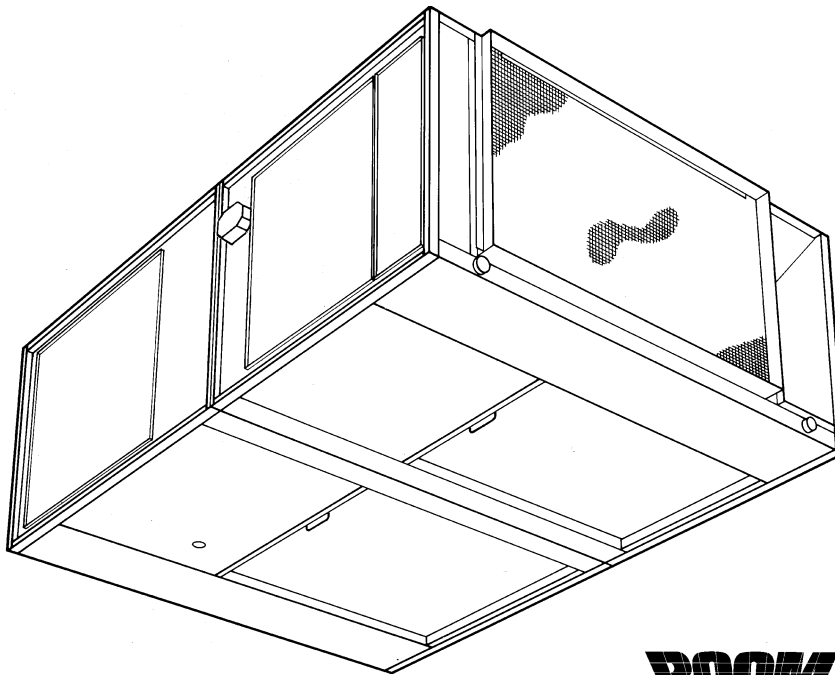




## Product Data

# 50AH Horizontal Indoor Single-Package Cooling Units

2 to 5 Nominal Tons



**ROOM  
TOP**

**ASHRAE  
90.1  
COMPLIANT**

Single Package Cooling Units  
Featuring:

- compact design
- flexibility
- easy maintenance
- high quality and reliability
- quiet and efficient scroll compressor technology

## Features/Benefits

**All in one package — high cooling efficiency, installation convenience, ease of accessibility for time-saving maintenance.**

### Space and cost saving design

Model 50AH is specifically designed to provide the building owner with truly out-of-sight cooling, because it installs inside the ceiling. That's why we call it the Carrier ROOMTOP® unit. The compact design and low silhouette enable it to fit easily and securely above the conditioned space. Single-package construction makes it easy to install with minimal time and cost.

### Application flexibility

If desired for particular applications, the unit can also be installed as a split system with the condenser section mounted horizontally. Centrifugal fans permit ducting of both evaporator and condenser air.

### Quiet operation

Commercial end users appreciate the extra comfort of quiet operation. Carrier engineers met the challenge by specifying heavy insulation, vibration-resistant construction and operating components that function at low noise levels, all of which keep system sound at a minimum level.

### Easy maintenance

When it comes to maintenance, the 50AH rates high in accessibility. Indoor



location is ideal for the maintenance technician, and five access panels, easily removed, provide quick and convenient access to all components when needed. As an added plus, all required service/maintenance access can be from one side allowing the unit to be located against a wall or ceiling plenum obstruction, an obvious space-saving idea.

### Carrier quality and reliability

The Carrier 50AH ROOMTOP® units have much to offer the cost- and efficiency-conscious commercial owner. Every unit is thoroughly run tested at the factory and equipped with safety controls designed to monitor and protect over the life of the unit.

### Scroll compressor technology

Scroll compressors are designed for high efficiency and are internally spring mounted to minimize vibration noise. Each compressor is hermetically sealed against contamination to promote longer life and dependable operation. Scroll compressors are standard on all units.

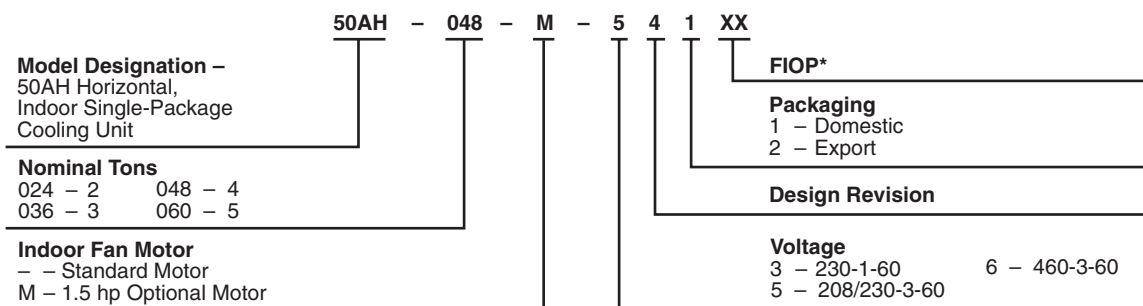
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### Quality Assurance



## Model number nomenclature



\*FIOP — Factory-Installed option, contact your Carrier representative for details.

## ARI\* capacity ratings

UNIT 50AH	V-PH-Hz	TOTAL kW	NET TOTAL COOLING CAP. (Btuh)	NOMINAL CFM	EER	SEER	SEER (with TDR)	SOUND RATING (dB)
024	230-1-60	2.56	24,800	800	—	—	10.50†	78
036	230-1-60	4.3	36,000	1200	—	10.00	10.00	82
	208/230-3-60				8.40	—		
	460-3-60				8.40	—		
048	230-1-60	5.63	49,500	1600	—	—	10.00†	82
	208/230-3-60				8.80	—		
	460-3-60				8.80	—		
060	230-1-60	6.9	58,500	2000	—	9.70	10.00	82
	208/230-3-60				8.50	—		
	460-3-60				8.50	—		

**LEGEND**  
**dB** — Decibels  
**EER** — Energy Efficiency Ratio  
**SEER** — Seasonal Energy Efficiency Ratio  
**TDR** — Time-Delay Relay

\*Air-conditioning and Refrigeration Institute.  
 †TDR is standard.

**NOTES:**  
 1. Ratings are at zero condenser air static and rated in accordance with ARI Standard 210.  
 2.  $EER = \frac{NET\ CAPACITY\ (Btuh)}{TOTAL\ WATTS}$



# Physical data



UNIT 50AH	024	036	048	060
SHIPPING WEIGHT (lb)*	560	590	690	700
OPERATING WEIGHT (lb) Base Unit, Evaporator/Condenser Section	450, 193/256	480, 206/274	580, 250/330	590, 254/336
REFRIGERANT TYPE	R-22			
Operating Charge (lb)†	5.4	5.5	7.4	7.6
COMPRESSOR — TYPE	Scroll			
Quantity...Model	(1)...ZR23	(1)...ZR34	(1)...SR48	(1)...ZR57
Oil (oz)	24	42	70	54
HPS Setting (psig)				
Cutout	426 ± 7			
Reset	320 ± 20			
LPS Setting (psig)				
Cutout	27 ± 4			
Reset	67 ± 7			
CONDENSATE DRAIN CONNECTION	3/4...FPT			
CONDENSER COIL	Copper Tubes — Aluminum Fins			
Size (L x H) (in.)	40 x 15	40 x 16	40 x 22	
Number of Rows...Fins/in.	4...13.6	4...17	4...13.6	
CONDENSER FAN	Centrifugal — Direct Drive		Centrifugal — Belt Drive	
Nominal Cfm	1350	1350	2250	2450
Maximum Rpm	1100		1500	
Blower Size (in.)	12 x 6		12 x 9	
Pulley Pitch Diameter (in.)				
Blower	None	5.0	6.0	6.0
Motor (Variable)	None	2.4-3.4	1.9-2.9	2.4-3.4
Motor Hp	1/2	3/4	1	1 1/2
Motor Rpm	825	1725	1725	1725
EVAPORATOR COIL	Copper Tubes — Aluminum Fins			
Size (L x H) (in.)	34 x 15	34 x 16	34 x 22	
Number of Rows...Fins/in.	4...14.4	4...15	4...14.4	
EVAPORATOR AIR FAN (Standard)	Centrifugal — Direct Drive		Centrifugal Belt Drive	
Nominal Cfm	800	1200	1600	2000
Max Rpm	1100	1150	900/1050**	
Blower Size (in.)	10 x 5	10 x 6	10 x 6	
Motor Hp (Rpm)	1/6 (850)	1/2 (1075)	3/4 (1050)	
EVAPORATOR AIR FAN (Optional)	Not Available		Centrifugal Belt Drive	
Nominal Cfm			1600	2000
Max Rpm			1300	
Blower Size (in.)			10 x 8	
Motor Hp			1 1/2	
Motor Rpm			1725	
Pulley Pitch Diameter (in.)			4.2	
Blower			2.4-3.4	
Motor (Variable)				
INDOOR-AIR FILTERS	Factory-Supplied Cleanable Type			
Number...Size (in.)	1...14 x 34 x 1		1...21 x 34 x 1	
INTERCONNECTING TUBING SIZE (in.)††				
Hot Gas	1/2	1/2	1/2	1/2
Liquid	3/8	3/8	3/8	3/8

### LEGEND

- HPS — High-Pressure Switch
- LPS — Low-Pressure Switch

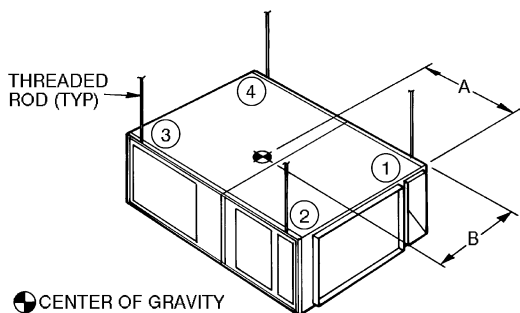
\*Shipping weights include base unit plus packaging.

†If components are to be split, additional refrigerant will be needed.

\*\*Two-speed motor.

††Use Type L copper only.

NOTE: If components are to be split, the maximum length of refrigerant tubing to be used is 50 equivalent ft, assuming components will be installed in same horizontal plane. If components are not to be installed in same horizontal plane, contact your Carrier representative for more information. For additional piping information, refer to Carrier System Design Manual, Part 3.



NOTE: Fasten threaded rods through holes in end frames. Use 2 rods on each side of unit for a total of 4.

### CAUTION

All panels must be in place when rigging.

### OPERATING WEIGHT DISTRIBUTION AND CENTER OF GRAVITY

UNIT 50AH	WEIGHT (lb/kg) OF CORNER				DIMENSIONS (ft-in./mm)	
	1	2	3	4	A	B
024	93/42	108/49	139/63	120/54	2-5 /737	2-15/8/651
036	95/43	113/51	148/67	124/56	2-43/4/730	2-2 /660
048	112/51	143/65	183/83	142/64	2-5 /737	2-3 /686
060	114/52	143/65	186/84	147/67	2-43/4/730	2-23/4/679

# Field-installed accessories



**Thermostat and subbase** — Attractive wall-mounted 24-v accessory provides precise temperature control. Automatic and Manual changeover models available. A thermostat subbase is available that works with Cycle-LOC™ circuitry. If a safety device trips, compressor locks out and subbase warning light (LK OUT) alerts occupant.

Three models available: One stage cool/two stage heat; two stage cool/two stage heat; one stage cool/one stage heat.

**Time Guard® II circuit (standard on single-phase units)** — Time Guard II device prevents short cycling of compressor if thermostat is rapidly changed; automatically prevents compressor from restarting for 5 minutes after shutdown.

**Electric heaters** — A wide range of models is available from 5 to 30 kW, 208-, 240- and 480-v, single- and 3-ph units. The heaters mount easily on 50AH discharge opening. The heater control box is accessible from the bottom of heater.

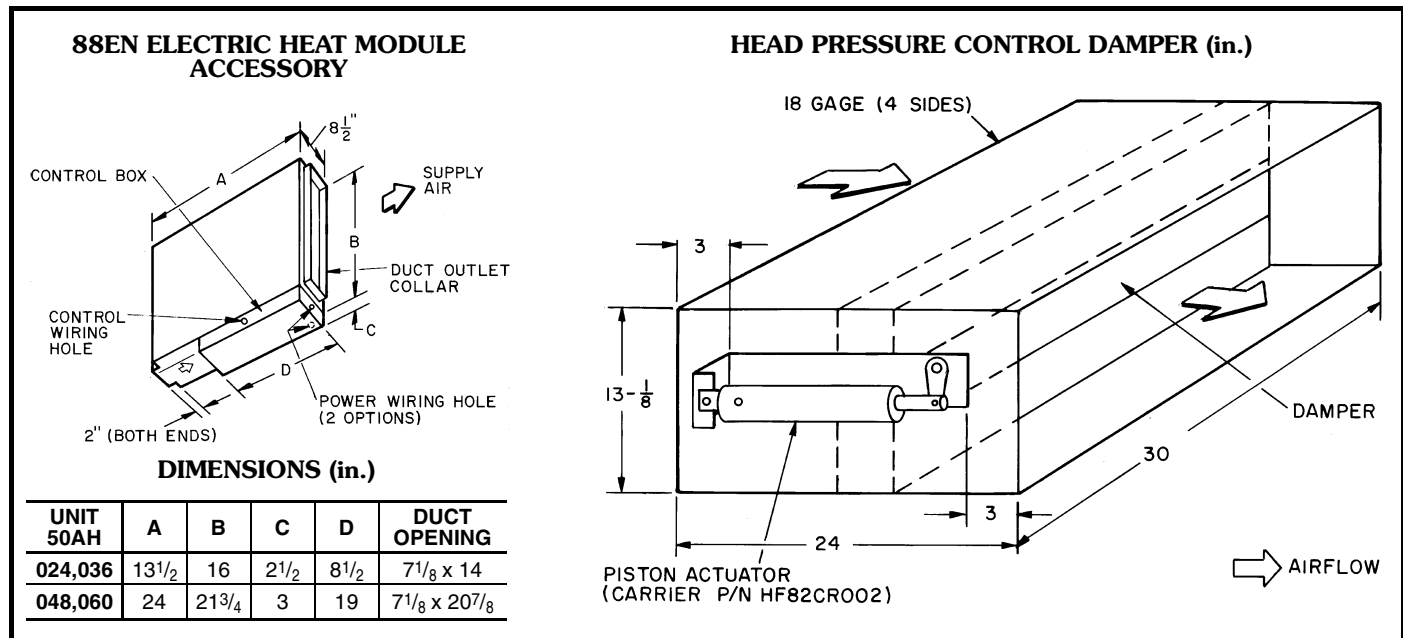
**Condensate pump** — The condensate pump is used when the distance and slope to the nearest drain is far enough to prevent the natural drainage of unit. The pump is mounted remotely from the unit and includes a signal light (field-installed) which illuminates when the reservoir rises beyond a certain level. The unit automatically shuts down when this reservoir level is achieved.

**Head pressure control damper** — This accessory is duct mounted and allows unit to mechanically cool down to 0° F.

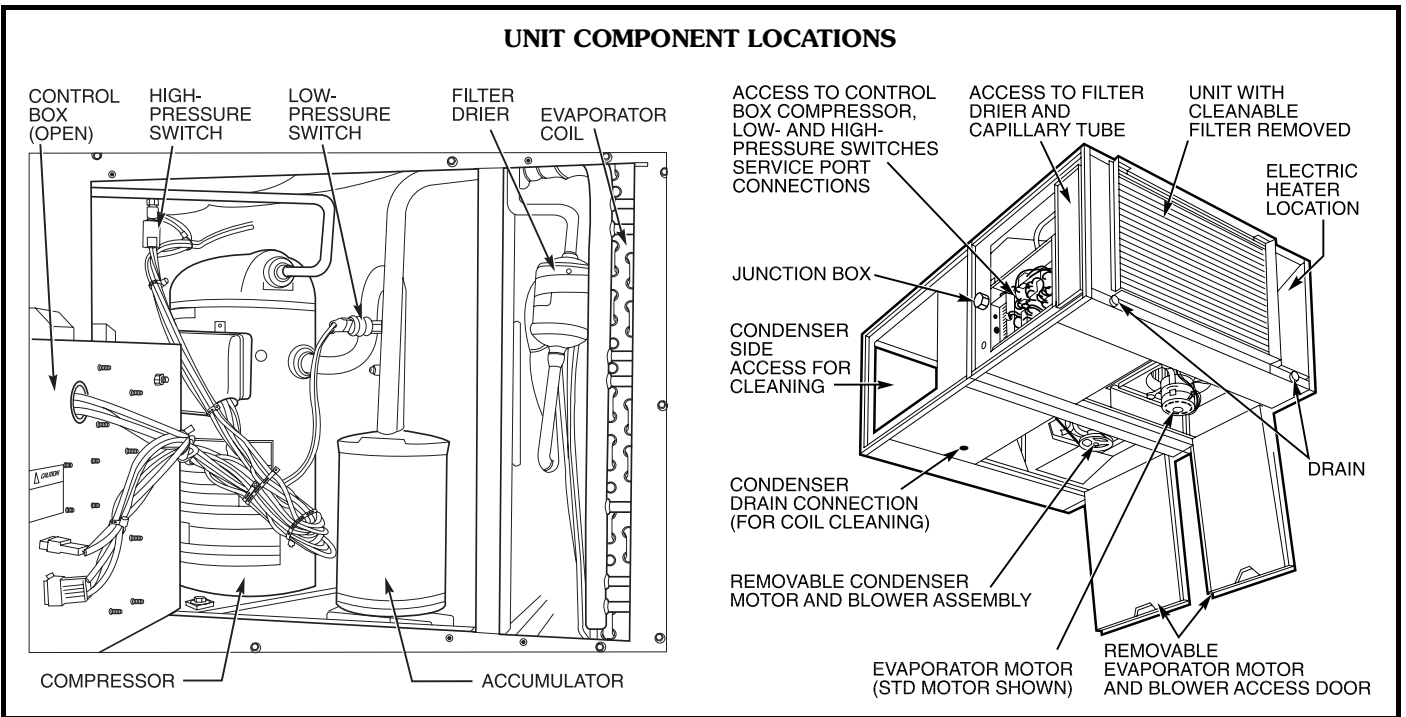
Damper dimensions fit 024, 036 sizes.

NOTE: For use with 048 and 060 size units, ductwork from unit to damper must be reduced in size to fit damper dimensions.

**Vibration isolators** — Package of four isolators used for dampening any unit vibration so that vibrating sounds are not transmitted to building structure. Isolators are spring, ceiling type.



# Base unit dimensions



# Selection procedure (with example)



## I Determine cooling requirements at design conditions.

Given:

Gross Cooling Capacity

Required (TC) . . . . . 39,000 Btuh

Sensible Heat Capacity (SHC) . . . . . 30,500 Btuh

Temperature of Air Entering Condenser . . . . . 95 F

Temperature of Air Entering

Evaporator . . . . . 80 F edb/67 F ewb

Evaporator Air Quantity . . . . . 1,200 cfm

External Static Pressure:

Condenser . . . . . 0.50 in. wg

Evaporator (includes static pressure drop of factory-supplied filter of 0.06 in. wg) . . . . . 0.20 in. wg

## II Select unit based upon required cooling capacity.

Enter cooling capacity table at temperature of air entering condenser of 95 F. The 50AH036 unit at

1200 cfm and 67 F ewb will provide a Total Capacity (TC) of 44,200 Btuh and a Sensible Heat Capacity (SHC) of 31,300 Btuh. Since the entering air is 80 F edb, an SHC correction is not required.

## III Determine evaporator fan performance.

Enter Evaporator Fan Performance table at 1200 cfm and 50AH036 data. The external static pressure shown (0.23 in. wg) will exceed the 0.20 in. wg required. The fan motor will require 0.52 kW.

## IV Determine condenser fan performance and motor pulley setting requirements.

Enter Condenser Fan Performance table at the selected cfm and required static pressure of 0.50 in. wg. The fan motor will require 0.73 kW and the motor pulley should be set at 2 turns open at 1350 cfm of condenser air required.

NOTE: Unit 50AH024 contains a direct-drive condenser fan assembly.

# Performance data

## GROSS COOLING CAPACITIES

50AH024										
Temp Air Ent Condenser (F)		Evaporator Air Quantity — Cfm/BF								
		600/0.02			800/0.03			1000/0.04		
		Evaporator Air Ewb Temp (F)								
		72	67	62	72	67	62	72	67	62
85	TC	27.1	25.3	23.0	27.7	26.4	24.6	27.8	26.9	25.8
	SHC	13.5	17.0	20.2	14.7	19.4	23.7	15.6	21.5	25.8
	kW	1.64	1.62	1.61	1.65	1.63	1.62	1.65	1.64	1.63
95	TC	26.6	24.5	20.8	27.4	25.8	22.9	28.0	26.5	25.2
	SHC	13.4	16.7	19.1	14.7	19.4	22.8	16.0	21.7	25.2
	kW	1.85	1.84	1.80	1.86	1.85	1.82	1.87	1.85	1.84
105	TC	25.8	22.3	18.4	27.1	24.5	21.2	27.7	25.6	23.6
	SHC	13.1	15.8	17.9	14.7	18.9	21.2	16.2	21.5	23.6
	kW	2.09	2.05	1.99	2.11	2.08	2.04	2.12	2.10	2.07
115	TC	24.6	19.9	16.5	26.1	22.0	19.8	26.8	23.6	22.3
	SHC	12.7	14.8	16.5	14.4	17.9	19.8	16.0	20.7	22.3
	kW	2.36	2.29	2.22	2.39	2.33	2.29	2.39	2.35	2.33

50AH036										
Temp Air Ent Condenser (F)		Evaporator Air Quantity — Cfm/BF								
		900/0.01			1050/0.01			1200/0.02		
		Evaporator Air Ewb Temp (F)								
		72	67	62	72	67	62	72	67	62
85	TC	45.0	41.1	37.3	45.8	42.3	38.6	46.5	43.4	39.8
	SHC	22.5	27.7	32.6	23.6	29.9	35.6	24.6	32.0	38.3
	kW	3.19	3.07	2.96	3.22	3.11	3.00	3.25	3.14	3.04
95	TC	43.0	38.8	34.3	44.1	40.1	35.8	45.0	44.2	37.4
	SHC	21.8	26.8	31.1	23.1	29.1	34.1	24.4	31.3	36.8
	kW	3.42	3.28	3.15	3.46	3.33	3.20	3.49	3.37	3.25
105	TC	40.4	35.8	29.6	41.6	37.1	31.3	42.6	38.2	33.2
	SHC	20.9	25.6	28.5	22.3	27.9	30.8	23.7	30.2	33.2
	kW	3.63	3.48	3.38	3.68	3.53	3.44	3.73	3.58	3.49
115	TC	37.7	30.6	25.8	38.7	31.6	27.8	39.7	32.8	29.7
	SHC	19.9	23.3	25.8	21.3	25.5	27.8	22.7	27.8	29.7
	kW	3.85	3.71	3.59	3.90	3.76	3.67	3.94	3.80	3.73

See Legend on page 7.

# Performance data (cont)



## GROSS COOLING CAPACITIES (cont)

50AH048		Evaporator Air Quantity Cfm/BF											
Temp Air Ent Condenser (F)		1200/0.06				1600/0.08				2000/0.10			
		Evaporator Air Ewb Temp (F)											
		72	67	62	57	72	67	62	57	72	67	62	57
85	TC SHC	56.0	52.1	47.9	44.4	57.7	54.5	50.6	49.6	59.4	56.0	52.7	52.3
	kW	3.77	3.68	3.59	3.53	3.81	3.74	3.66	3.64	3.85	3.77	3.70	3.69
95	TC SHC	54.0	50.1	45.7	42.4	55.7	52.3	48.6	47.3	57.4	53.8	51.0	50.9
	kW	4.21	4.11	4.01	3.95	4.25	4.18	4.09	4.07	4.31	4.21	4.15	4.15
105	TC SHC	51.8	47.9	42.3	40.2	53.6	50.0	45.1	45.0	54.6	51.4	48.9	48.6
	kW	4.69	4.58	4.45	4.40	4.75	4.65	4.54	4.53	4.77	4.69	4.63	4.63
115	TC SHC	49.5	45.5	38.6	37.7	51.2	47.6	41.9	42.1	52.2	49.1	45.8	45.8
	kW	5.21	5.09	4.92	4.89	5.27	5.17	5.03	5.03	5.30	5.23	5.14	5.14

### LEGEND

- BF — Bypass Factor
- Ewb — Entering Wet-Bulb
- kW — Compressor Motor Power Input (kilowatts)
- SHC — Gross Sensible Heat Capacity (1000 Btuh)
- TC — Gross Total Cooling Capacity (1000 Btuh)

### NOTES:

- Performance based on nominal condenser airflow listed in physical data table on page 3.
- SHC is based on 80 F db temperature of air entering the coil.  
Below 80 F db, subtract (corr factor x cfm) from SHC.  
Above 80 F db, add (corr factor x cfm) to SHC.

BYPASS FACTOR (BF)	ENTERING AIR DRY-BULB TEMPERATURE (F)					
	79	78	77	76	75	Under 75
	81	82	83	84	85	Over 85
	Correction Factor					
.025	1.07	2.12	3.19	4.25	5.32	Use formula shown below
.05	1.04	2.07	3.11	4.14	5.18	
.10	.98	1.96	2.94	3.92	4.90	
.20	.87	1.74	2.62	3.49	4.36	
.30	.76	1.53	2.29	3.05	3.82	
.35	.71	1.42	2.13	2.83	3.54	

Correction Factor = 1.10 x (1 - BF) x db - 80)

50AH060		Evaporator Air Quantity — Cfm/BF								
Temp Air Ent Condenser (F)		1500/0.06			2000/0.09			2250/0.10		
		Evaporator Air Ewb Temp (F)								
		72	67	62	72	67	62	72	67	62
85	TC SHC	64.8	58.5	52.9	68.0	61.5	56.3	68.9	62.5	58.0
	kW	4.49	4.29	4.13	4.59	4.83	4.22	4.62	4.41	4.27
95	TC SHC	61.9	55.7	50.2	65.1	58.7	54.0	66.1	59.7	55.8
	kW	4.94	4.72	4.57	5.04	4.81	4.67	5.07	4.84	4.72
105	TC SHC	58.5	52.4	47.2	61.5	55.2	51.4	62.6	56.3	53.3
	kW	5.41	5.20	5.04	5.51	5.28	5.16	5.55	5.32	5.22
115	TC SHC	54.9	49.0	44.1	57.8	51.7	48.7	58.7	52.6	50.4
	kW	5.93	5.72	5.56	6.04	5.80	5.70	6.07	5.83	5.75

The following formulas may be used:

$$t_{db} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{wb} = \text{Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil } (h_{lwb})$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where:

$h_{ewb}$  = Enthalpy of air entering evaporator coil

## EVAPORATOR FAN PERFORMANCE

CFM	UNIT SIZE — 50AH							
	024		036		048*		060*	
	ESP	Fan kW	ESP	Fan kW	ESP	Fan kW	ESP	Fan kW
600	.60	.20	—	—	—	—	—	—
700	.54	.22	—	—	—	—	—	—
800	.43	.24	—	—	—	—	—	—
900	.29	.26	.69	.44	—	—	—	—
1000	.11	.29	.57	.46	—	—	—	—
1100	—	—	.42	.49	1.10	.45	1.11	.52
1200	—	—	.23	.52	1.01	.49	1.045	.55
1300	—	—	—	—	.90	.51	.97	.57
1400	—	—	—	—	.79	.55	.88	.59
1500	—	—	—	—	.67	.58	.78	.62
1600	—	—	—	—	.54	.61	.67	.64
1700	—	—	—	—	.39	.64	.53	.67
1800	—	—	—	—	.22	.67	.52	.70
1900	—	—	—	—	.03	.70	.40	.74
2000	—	—	—	—	—	—	.28	.78

### LEGEND

- ESP — External Static Pressure (in. wg)
- kW — Total Fan Motor Power Input (kilowatts)

\*Standard direct drive indoor (evaporator) fan motor (IFM). For optional belt drive IFM performance, see table on page 8.

### NOTES:

- Above fan performance is based on wet coil and deducted casing losses, and clean factory-installed permanent cleanable filter.

- Evaporator fans are direct drive (except 048, 060 special order evaporator-fan motor option). Refer to Belt Drive Evaporator Fan Performance table on page 8.
- Interpolation is permissible, do not extrapolate.
- For units installed with accessory electric heaters, see Electric Heater Static Pressure Drop table for additional performance losses.

# Performance data (cont)



## BELT DRIVE EVAPORATOR FAN PERFORMANCE (Special Order Only, Pricing and ordering on related price pages.)

CFM	UNIT SIZE — 50AH			
	048		060	
	ESP	Fan kW	ESP	Fan kW
1800	—	—	—	—
1850	—	—	—	—
1900	—	—	—	—
1950	.81	1.03	—	—
2000	.72	1.05	—	—
2050	.63	1.07	—	—
2100	.55	1.08	1.02	1.17
2150	.47	1.11	.93	1.21
2200	.42	1.14	.84	1.24
2250	.34	1.17	.75	1.27

### LEGEND

ESP — External Static Pressure (in. wg)  
kW — Total Fan Power Motor Input (kilowatts)

NOTE: Pulley setting must be adjusted to limit cfm to 450 cfm/ton maximum. Unit operation beyond that limit may result in blow-off and condensate problems.

## CONDENSER FAN PERFORMANCE

UNIT 50AH	COND CFM	EXTERNAL STATIC PRESSURE (in. wg)													
		0.0		0.1		0.2		0.3		0.4		0.5		0.6	
		Turns	kW	Turns	kW	Turns	kW	Turns	kW	Turns	kW	Turns	kW	Turns	kW
024	1525	Note 4	.66	—	—	—	—	—	—	—	—	—	—	—	—
	1475	—	—	Note 4	.64	—	—	—	—	—	—	—	—	—	
	1400	—	—	—	—	Note 4	.63	—	—	—	—	—	—	—	
	1350	—	—	—	—	—	—	Note 4	.62	—	—	—	—	—	
	1300	—	—	—	—	—	—	—	—	Note 4	.62	—	—	—	
036	1650	2	.84	—	—	—	—	—	—	—	—	—	—	—	
	1600	—	—	2	.82	—	—	—	—	—	—	—	—	—	
	1550	—	—	—	—	2	.80	—	—	—	—	—	—	—	
	1500	3	.72	—	—	—	—	2	.78	1	.84	—	—	—	
	1450	4	.63	3	.70	—	—	—	—	2	.76	1	.83	—	
	1400	—	—	4	.61	3	.68	—	—	—	—	—	1	.81	
	1350	5	.51	—	—	—	—	3	.67	—	—	2	.73	—	
1300	—	—	5	.50	4	.57	—	—	3	.65	—	—	2	.71	
048	2700	2	.90	—	—	—	—	—	—	—	—	—	—	—	
	2600	—	—	2	.87	—	—	—	—	—	—	—	—	—	
	2550	3	.81	—	—	—	—	—	—	—	—	—	—	—	
	2450	—	—	3	.77	2	.83	1	.89	—	—	—	—	—	
	2350	—	—	—	—	—	—	2	.80	1	.86	—	—	—	
	2300	4	.68	—	—	3	.74	—	—	—	—	0	.90	—	
	2200	—	—	4	.66	—	—	—	—	2	.77	1	.82	0	.86
060	3100	3	1.34	—	—	—	—	—	—	—	—	—	—	—	
	3000	—	—	3	1.32	—	—	—	—	—	—	—	—	—	
	2900	—	—	—	—	—	—	2	1.39	—	—	—	—	—	
	2850	4	1.11	—	—	3	1.24	—	—	—	—	—	—	—	
	2750	—	—	4	1.07	—	—	—	—	2	1.32	—	—	—	
	2700	—	—	—	—	—	—	3	1.17	—	—	—	—	—	
	2650	—	—	—	—	—	—	—	—	—	—	—	1	1.37	
	2600	5	.95	—	—	4	1.01	—	—	—	—	2	1.26	—	
	2550	—	—	—	—	—	—	—	—	3	1.12	—	—	—	
	2500	—	—	5	.92	—	—	—	—	—	—	—	—	—	
	2450	—	—	—	—	—	—	4	.97	—	—	—	—	2	1.21
2400	—	—	—	—	5	.90	—	—	—	—	3	1.08	—		

### LEGEND

kW — Total Fan Motor Power Input (kilowatts)

### NOTES:

- Above fan performance is based upon coil and deducted casing losses only.
- External static pressure (ESP) is measured in inches water gage (in. wg).
- Interpolation is permissible. Do not extrapolate.
- Condenser fan on unit size 024 only, is direct drive.

- Minimum one turn open of motor pulley is required on unit sizes 036 and 060.
- Number of turns open applies to field setting of motor pulley.
- Factory setting as follows: 036, 4 turns open; 048, 2 turns open; 060, 5 turns open.
- Care should be taken when hoods and/or louvers are installed to avoid condenser air recirculation.





### ELECTRIC HEATER STATIC PRESSURE DROP (in. wg)

ELECTRIC HEATER UNIT 88EN	UNIT 50AH	MIN CFM	UNIT CFM								
			600	800	1000	1200	1400	1600	1800	2000	2200
0500CA01	024, 036 1-stage heat	400	.02	.04	.06	.10	—	—	—	—	—
0075CA01		510	.03	.06	.10	.16	—	—	—	—	—
0115CA01 0075EA01 1150EA01		620 320 720	.04	.08	.13	.19	—	—	—	—	—
0100EA01 0150EA01		970 1240	—	—	—	.04	.06	.08	.12	.15	.17
0200EA01 0300EA01 0300CA01	048, 060 2-stage heat	1350 1220 1220	—	—	—	.08	.11	.14	.18	.22	.26
0100FA01 0150FA01		1130 1360	—	—	—	.04	.06	.08	.12	.15	.17
0200FA01 0300FA01		1350 1270	—	—	—	.08	.11	.14	.18	.22	.26

NOTE: Above electric heaters are *not* UL (Underwriters' Laboratories) or CSA (Canadian Standards Association) listed for use with optional high-static evaporator-fan motor (048, 060 units only).

## Controls

### Operating sequence

**Cooling** — Thermostat calls for cooling. Indoor (evaporator) fan relay is energized and starts evaporator fan. Compressor contactor is energized to start compressor and condenser fan (up to a 5-minute delay on single-phase units). When room thermostat is satisfied, the evaporator fan, compressor, and condenser fan shut off.

**Continuous fan operation** — The thermostat can be set for continuous operation by setting the fan switch to ON.

## Electrical data

UNIT 50AH	V-PH (60 Hz)	VOLTAGE RANGE		COMPRESSOR		FAN MOTORS				POWER SUPPLY	
		Min	Max	RLA	LRA	Evaporator		Condenser		Min Ckt Amps	MOCP Amps
						Hp	FLA	Hp	FLA		
024	230-1	207	254	11.4	56	.17	1.10	.50	3.40	19.0	25
036	230-1	207	254	17.2	96	.50	3.20	.75	6.06	29.5	40
	208/230-3	187	254	10.3	77	.50	3.20	.75	3.93	19.9	25
	460-3	414	508	5.1	40	.50	1.50	.75	1.97	8.9	15
048	230-1	207	254	24.4	150	.75	4.00	1.0	8.35	42.9	60
	208/230-3	187	254	15.5	105	.75	4.00	1.0	3.93	27.3	35
	460-3	414	508	7.4	55	.75	2.15	1.0	1.97	13.4	20
048*	208/230-3	187	254	15.5	105	1.5	5.60	1.0	3.93	28.9	35
	460-3	414	508	7.4	55	1.5	2.80	1.0	1.97	16.3	20
060	230-1	207	254	28.8	169	.75	4.00	1.5	9.50	49.5	60
	208/230-3	187	254	17.3	123	.75	4.00	1.5	4.82	30.4	40
	460-3	414	508	9.0	62	.75	2.15	1.5	2.41	15.8	20
060*	208/230-3	187	254	17.3	123	1.5	5.60	1.5	4.82	32.0	40
	460-3	414	508	9.0	62	1.5	2.80	1.5	2.41	16.0	20

#### LEGEND

- HACR — Heating, Air Conditioning, and Refrigeration
- Hp — Horsepower
- FLA — Full Load Amps
- LRA — Locked Rotor Amps
- MOCP — Maximum Overcurrent Protection (HACR breaker)
- RLA — Rated Load Amps

\*Optional evaporator-fan motor nameplate data.

# Electrical data (cont)



## ELECTRIC HEATER DATA

ELECTRIC HEATER UNIT 88EN	USED WITH UNIT 50AH	V-PH (60 Hz)	CAP. (kW)	BRANCH CIRCUIT		
				Heater Amps	MCA	MOCP (Amps)
0050CA01 0075CA01 0115CA01	024, 036 1-Stage Heat	240-1	5.0	20.8	26.0	30
		240-1	7.5	31.3	39.1	40
		240-1	11.5	47.9	59.9	60
0075EA01		208-3	5.6	15.6	19.5	20
		240-3	7.6	18.0	22.6	25
1150EA01		208-3	11.3	31.2	39.0	40
	240-3	15.0	36.1	45.1	50	
0100EA01	048, 060 2-Stage Heat	208-3	7.5	20.8	26.0	30
		240-1*	10.0	41.7	52.1	60
		240-3	10.0	24.1	30.1	35
0150EA01		208-3	11.3	31.2	39.0	40
		240-1*	15.0	62.5	78.1	80
		240-3	15.0	36.1	45.1	50
0200EA01		208-3	15.0	41.7	52.1	60
		240-1*	20.0	83.3	104.2	110
		240-3	20.0	46.9	58.6	60
0300EA01		208-3	22.5	62.5	78.2	80
		240-3	30.0	72.2	90.2	100
0300CA01		240-1	30.0	124.0	155.0	175
0100FA01	480-3	10.0	12.0	15.0	15	
0150FA01	480-3	15.0	18.1	22.6	25	
0200FA01	480-3	20.0	24.1	30.1	35	
0300FA01	480-3	30.0	36.1	45.1	50	

### LEGEND

**MCA** — Minimum Circuit Ampacity  
**MOCP** — Maximum Overcurrent Circuit Protection  
(Fuses or Circuit Breaker)

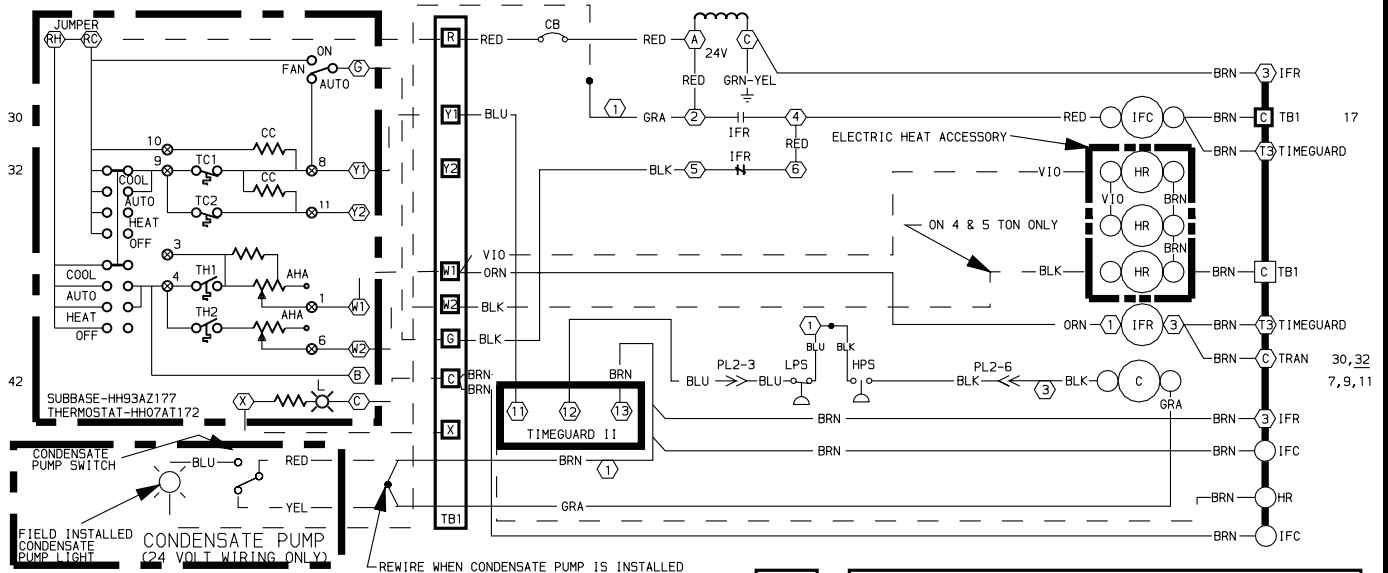
\*May be field converted to single-phase units, see electric heat installation instructions.

NOTE: Separate power source is required for all heaters. Control from base unit 50AH (24 v).

# Typical wiring schematic

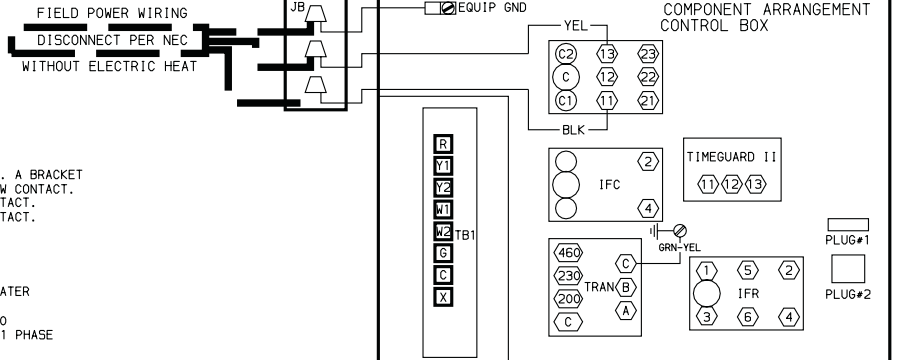


## 50AH048,060 — 230-1-60 UNITS



### NOTES

- IF ANY ORIGINAL WIRES FURNISHED MUST BE REPLACED, IT SHOULD BE REPLACED WITH 90 C OR ITS EQUIVALENT.
- NUMBERS INDICATES THE LINE LOCATION OF USED CONTACTS. A BRACKET OVER (2) NUMBERS SIGNIFIES A SINGLE POLE DOUBLE THROW CONTACT. AN UNDERLINED NUMBER SIGNIFIES A NORMALLY CLOSED CONTACT. PLAIN (NO LINE) NUMBER SIGNIFIES A NORMALLY OPEN CONTACT.
- MUST USE THERMOSTAT HH07AT170,172 OR 174 WITH SUBBASE HH93AZ176,177 OR 179.
- NEUTRAL FOR 240/416V SUPPLY (CANADA ONLY).
- SEPARATE FIELD POWER SUPPLY REQUIRED FOR ELECTRIC HEATER ACCESSORY.
- THE 10KW,15KW AND 20KW HEATER ASSYS FOR 50AH048 & 060 ARE WIRED FOR 3 PHASE. SEE HEATER LABEL DIAGRAM FOR 1 PHASE REWIRING PROCEDURE.



### LEGEND

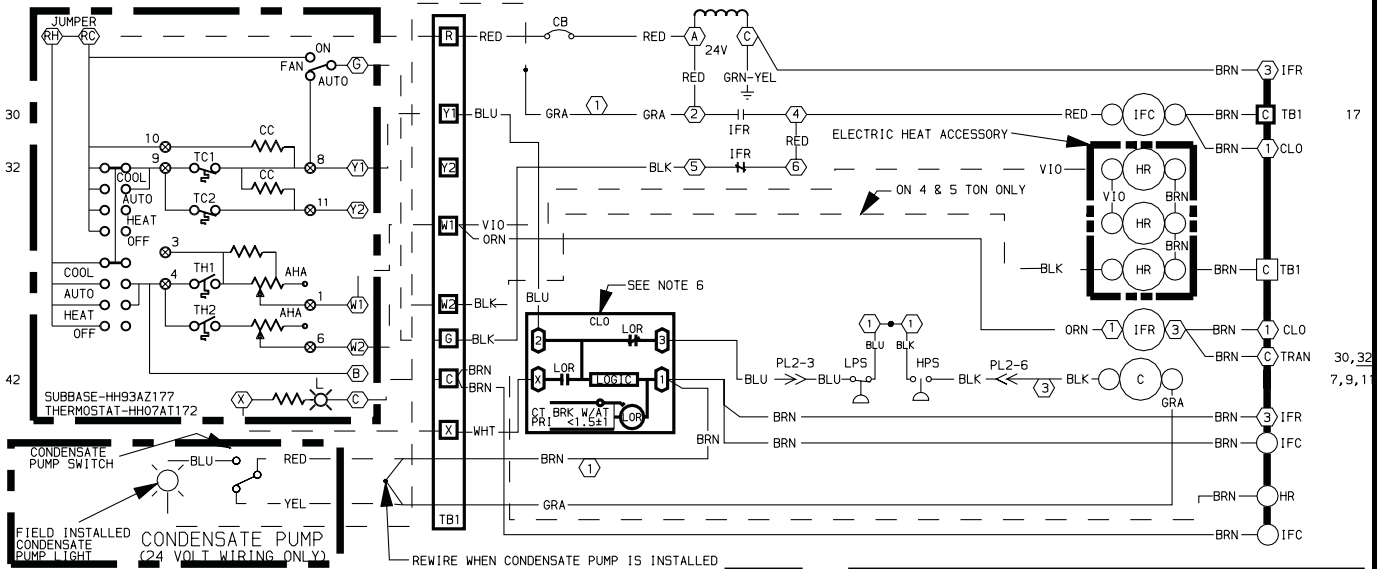
- AHA** — Adjustable Heat Anticipator
- C** — Contactor Compressor
- CB** — Circuit Breaker
- CC** — Cooling Compensator
- EQUIP GND** — Equipment Ground
- HPS** — High-Pressure Switch
- HR** — Heater Relay
- IFC** — Indoor (Evaporator) Fan Contactor
- IFR** — Indoor (Evaporator) Fan Relay
- JB** — Junction Box
- L** — Light
- LPS** — Low-Pressure Switch
- NEC** — National Electrical Code
- PL** — Plug Assembly
- TB** — Terminal Block
- TC** — Thermostat-Cooling
- TH** — Thermostat-Heating
- TRAN** — Transformer

- Marked Wire
- Denotes connection point between subbase and thermostat
- Terminal (Marked)
- Terminal (Unmarked)
- Terminal Block
- Field Splice
- Splice (Marked)
- Factory Splice
- Factory Wiring
- Accessory or Optional Wiring
- Field Control Wiring
- Field Power Wiring
- To indicate common potential only not to represent wiring

# Typical wiring schematic (cont)

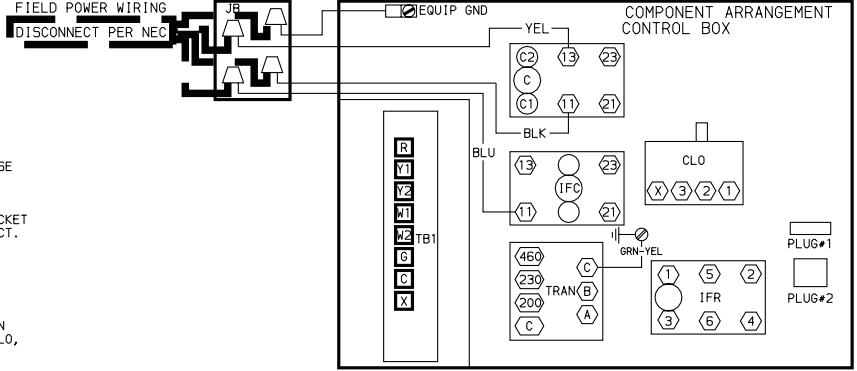


## 50AH036,048,060 — 208/230-3-60 UNITS



### NOTES

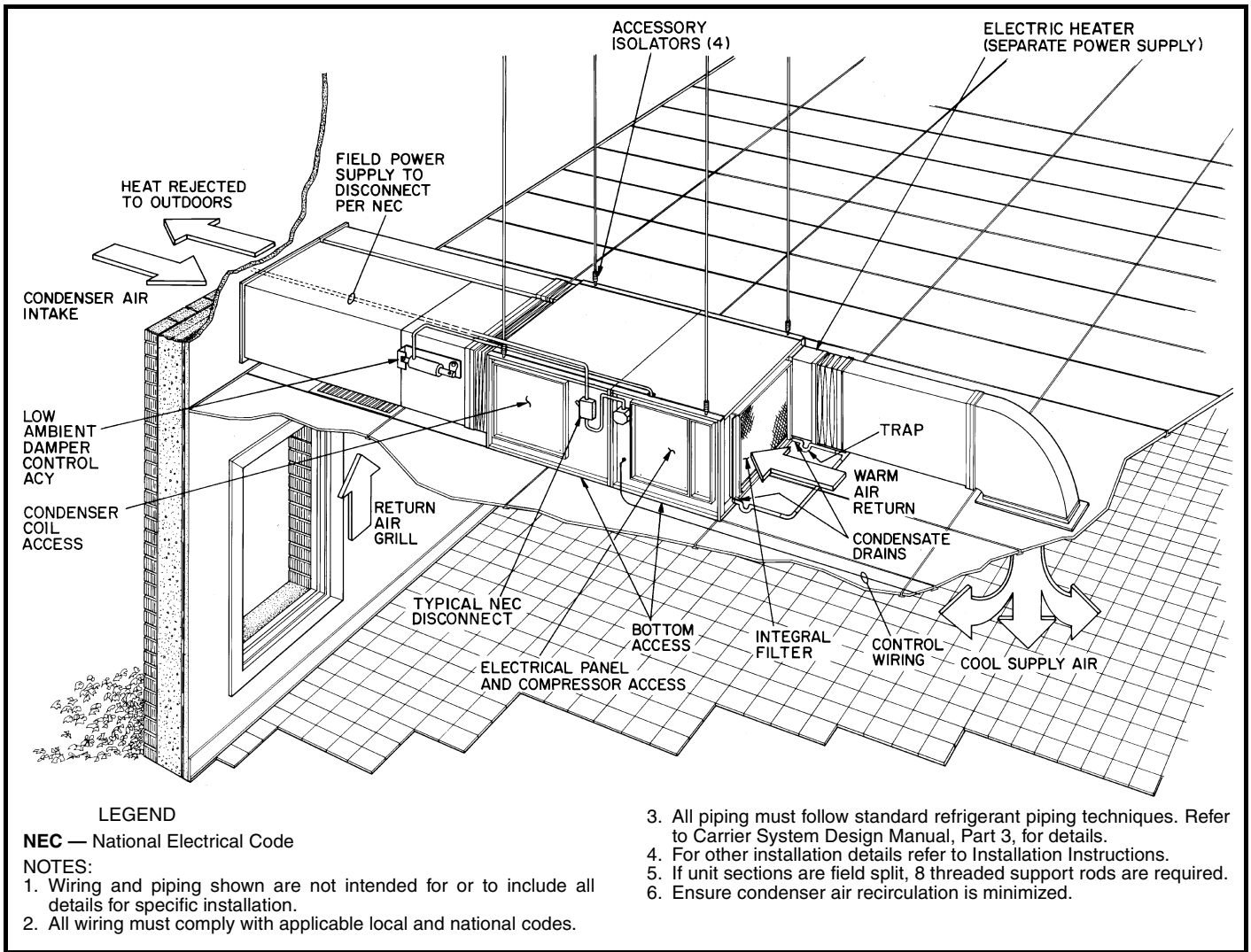
1. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED—THREE PHASE MOTORS PROTECTED AGAINST PRIMARY SINGLE PHASE CONDITIONS.
2. IF ANY ORIGINAL WIRES FURNISHED MUST BE REPLACED, IT SHOULD BE REPLACED WITH 90 C OR ITS EQUIVALENT.
3. NUMBERS INDICATES THE LINE LOCATION OF USED CONTACTS. A BRACKET OVER (2) NUMBERS SIGNIFIES A SINGLE POLE DOUBLE THROW CONTACT. AN UNDERLINED NUMBER SIGNIFIES A NORMALLY CLOSED CONTACT. PLAIN (NO LINE) NUMBER SIGNIFIES A NORMALLY OPEN CONTACT.
4. MUST USE THERMOSTAT HH07AT170,172 OR 174 WITH SUBBASE H93AZ176,177 OR 179.
5. SEPARATE FIELD POWER SUPPLY REQUIRED FOR ELECTRIC HEATER ACCESSORY.
6. THE CLO LOCKS OUT THE COMPRESSOR TO PREVENT SHORT CYCLING ON COMPRESSOR OVERLOADS AND SAFETY DEVICES; BEFORE REPLACING CLO, CHECK THESE DEVICES.



### LEGEND

- |                  |                                     |  |   |
|------------------|-------------------------------------|--|---|
| <b>AHA</b>       | — Adjustable Heat Anticipator       |  | Marked Wire   |
| <b>C</b>         | — Contactor Compressor              |  | Denotes connection point between subbase and thermostat   |
| <b>CB</b>        | — Circuit Breaker                   |  | Terminal (Marked)   |
| <b>CC</b>        | — Cooling Compensator               |  | Terminal (Unmarked)                                       |
| <b>CLO</b>       | — Compressor Lockout                |  | Terminal Block  |
| <b>CT</b>        | — Current Transformer               |  | Field Splice  |
| <b>EQUIP GND</b> | — Equipment Ground                  |  | Splice (Marked)   |
| <b>HPS</b>       | — High-Pressure Switch              |  | Factory Splice  |
| <b>HR</b>        | — Heater Relay                      |  | Factory Wiring  |
| <b>IFC</b>       | — Indoor (Evaporator) Fan Contactor |  | Accessory or Optional Wiring                              |
| <b>IFR</b>       | — Indoor (Evaporator) Fan Relay     |  | Field Control Wiring                                      |
| <b>JB</b>        | — Junction Box                      |  | Field Power Wiring  |
| <b>L</b>         | — Light                             |  | To indicate common potential only not to represent wiring |
| <b>LOR</b>       | — Lockout Relay                     |  |   |
| <b>LPS</b>       | — Low-Pressure Switch               |  |   |
| <b>NEC</b>       | — National Electrical Code          |  |   |
| <b>PL</b>        | — Plug Assembly                     |  |   |
| <b>TB</b>        | — Terminal Block                    |  |   |
| <b>TC</b>        | — Thermostat-Cooling                |  |   |
| <b>TH</b>        | — Thermostat-Heating                |  |   |
| <b>TRAN</b>      | — Transformer                       |  |   |

# Typical piping and wiring



## Application data

### OUTDOOR-AIR TEMPERATURE OPERATING LIMITS (F)

UNIT 50AH		024	036	048	060
Without Head Pressure Control	Minimum	35	35	40	40
	Maximum	126	126	126	126
With Head Pressure Control	Minimum	0	0	0	0
	Maximum	126	126	126	126

**Field splitting instructions** — If components are split, maximum length of refrigerant tubing to be used is 50 ft, assuming components are installed in same horizontal plane. Condenser may be mounted up to 12 ft above evaporator. Liquid line tubing is 3/8-in. OD copper tubing, and discharge line is 1/2-in. OD copper tubing. For additional piping information, refer to Carrier System Design Manual, Part 3. Units should always be within line of sight from each other, or separate NEC (National Electrical Code)

disconnects will be required. Junction boxes should be installed in both the evaporator and condenser sections adjacent to D-shaped grommets, to provide a location to splice the outdoor-fan motor factory wiring (no. 16 AWG [American Wire Gage], 4/64-in. thick insulation). Field wiring should be a minimum of no. 16 AWG, 4/64-in. thick insulation. Check all applicable electrical codes to ensure proper compliance.

# Guide specifications



## Indoor Packaged Unit

### HVAC Guide Specifications — Section 15787

Size Range: **2 to 5 Tons, Nominal**

Carrier Model Number: **50AH**

#### Part 1 — General

##### 1.01 SYSTEM DESCRIPTION

Indoor mounted, electrically controlled packaged horizontal cooling unit utilizing a hermetic type scroll compressor.

##### 1.02 QUALITY ASSURANCE

- A. Unit shall be certified in accordance with ARI Standard 210.
- B. Unit shall be UL listed and carry a UL label.
- C. Unit shall be CSA approved (except 3 ton, 3-phase units).
- D. Unit shall be factory run-tested to ensure proper performance prior to delivery.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Unit shall be shipped completely assembled and ready to operate.
- B. Unit shall be shipped factory charged with refrigerant R-22.
- C. Unit shall be stored and handled in accordance with the unit manufacturer's instructions.

#### Part 2 — Products

##### 2.01 EQUIPMENT

###### A. General:

Factory assembled horizontal, single piece, air cooled, indoor, ceiling plenum mounted electric cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to start-up.

###### B. Unit Cabinet:

1. Constructed of galvanized steel.
2. Interior shall be insulated with 1/2-in. thick neoprene coated fiberglass. Insulation shall be bonded to interior surfaces by sprayed water reduceable adhesive.
3. Equipped with 3 same side access panels and 2 bottom hanging removable doors to facilitate ease of maintenance. Side panels allow access to the control box, refrigeration components, and condenser coil. Control box shall be hinged allowing access to the compressor and pressure switches. Bottom doors shall allow access to and easy removal of the condenser and evaporator motors and blower assemblies.
4. Equipped with two 3/4-in. threaded condensate drain connections below the evaporator coil and one 3/4-in. threaded connection for condenser coil wash down. Connections shall be factory plugged for field removal.

5. Field splittable through the removal of 4 bolts and extending refrigerant piping and wiring to allow remote horizontal or vertical condenser mounting.
6. Unit shall have an integral hanging bracket requiring only 4 threaded rods (8 if unit is split) run to the top flange of the unit for hanging, eliminating need for external hanger brackets.
7. Contains junction box for power connection and opening for routing of control wiring.

###### C. Fans:

###### 1. Evaporator:

- a. Blower shall be of the forward-curved, centrifugal, direct-drive type or belt drive (4 and 5 tons only).
- b. Motor shall have permanently lubricated bearings.
- c. Unit sizes 048, 060 shall be available with an optional 1.5 hp fan motor.

###### 2. Condenser:

- a. Blower shall be of the forward-curved, centrifugal, direct-driven type (024 only), or belt drive (036,048,060).
- b. Motor shall have permanently lubricated bearings.

###### D. Compressor:

1. Fully hermetic scroll type.
2. Mounted on suitable spring vibration isolators.
3. Equipped with internal line break protection.

###### E. Coils:

Evaporator and condenser coils shall be of non-ferrous construction with aluminum fins mechanically bonded to seamless copper tubes with all joints brazed.

###### F. Refrigerant Components:

Refrigerant components shall include:

1. Capillary tube feed system.
2. Refrigerant filter-drier.

###### G. Filter Section:

Filter section shall consist of factory-installed, permanent, cleanable air filter, removable from the same side as the access panels without the use of tools.

###### H. Controls and Safeties:

Control system shall include a high-pressure switch, a low-pressure switch, and a compressor lockout feature which upon tripping of any safety device shall prevent compressor from restarting until reset at the thermostat (on all 3-phase units and 036 single-phase units only).

Time Guard® II device (single-phase only) shall prevent the compressor from restarting for a minimum of 5 minutes after shutdown.



- I. Operating characteristics:
  - 1. Unit shall operate using refrigerant R-22.
  - 2. Unit shall be designed for indoor suspended horizontal mounting and operation.
- J. Electrical Requirements  
Unit shall have single point power connection to leads in terminal box.
- K. Special Features:  
Certain standard features are not applicable when the features designated by \* are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.
  - \* 1. Electric Heat Module:
    - a. Provides encased heater elements that shall attach directly to the base unit discharge.
    - b. Shall have bottom access.
    - c. UL listed.
  - 2. Thermostat Assembly:  
Provides cooling and fan control. Standard sub-base shall include "Compressor malfunction light" designed to illuminate if compressor lock-out is activated.
  - 3. Time Guard® II Device Compressor Cycle Delay:  
Prevents compressor from restarting for a minimum of 5 minutes after shutdown.
  - \* 4. Condensate Pump:  
Unit shall be equipped with remotely located condensate pump. A field-installed light shall illuminate when reservoir rises above a preset level. Unit shall shut down upon reservoir light illumination.
  - \* 5. Head Pressure Control Package:  
Allows unit to mechanically cool down to 0° F ambient temperature. Package shall include damper operating device and all necessary hardware.
  - 6. Vibration Isolation Package:  
Shall provide 4 spring hangers for ceiling mounted unit to damper vibration that may be transmitted to building structure.



**Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.**