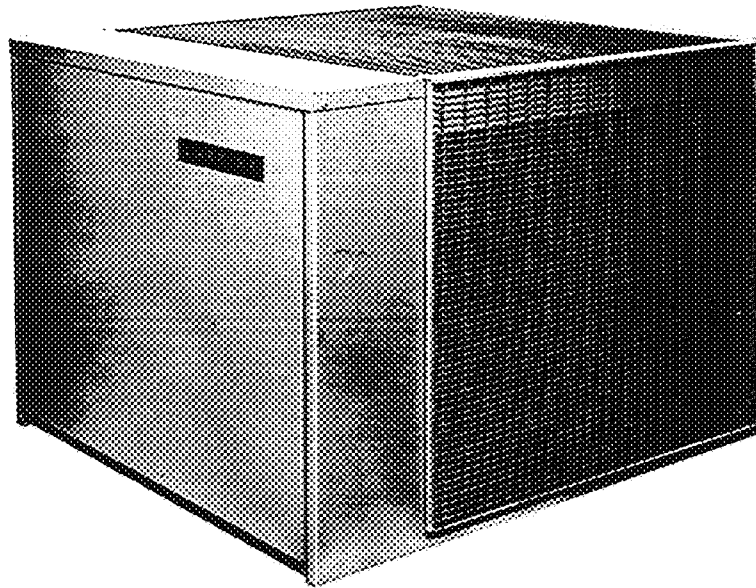




# Condensing Units

Air-Cooled — Remote  
Cooling 87,000 to 100,000 Btuh

## 38BA



38BA008,009

## DESCRIPTION

Two sizes of 38BA condensing units are available to meet the air conditioning requirements of an industrial installation, commercial shop, single floor of a large building, schoolhouse, or a suite of offices. Their durable construction ensures trouble-free operation.

These units are easily installed singly or in multiples on rooftops or other outdoor sites. They may be used with cooling coils added to an existing forced-air heating system or with fan-coil units to provide a separate cooling system.

## FEATURES

- **Thermostatic Expansion Valve** with Carrier patented flow-modulating feature automatically regulates refrigerant flow to ensure efficient, economical system operation.
- **Lasting Beauty and Protection** of Weather Armor Cabinet\* and cadmium-plated hardware — positive shields against rust and corrosion even in extremely high humidity areas. Cabinet is made from galvanized steel, bonderized and finished with baked enamel.
- **Low Operating Sound** permits flexibility of unit location. Extra large propeller fans discharge air upward to minimize sound level. Internally-insulated cabinet, to

absorb operating sound, spring-mounted compressor and specially designed fan motor mount reduce vibration.

- **Carrier 06D Compressor:** has spring isolators, internal motor protection, and a five year protection plan.
- **Long Unit Life** — Overload relays and internal thermostat protect compressor from excessive current and temperature. *Time Guard Circuit\** adds to compressor life by preventing short cycling. Other protective devices include crankcase heater, high- and low-pressure safety switches, moisture-indicating liquid line sight glass and filter-drier. Ball bearing fan motors are permanently lubricated and inherently protected.

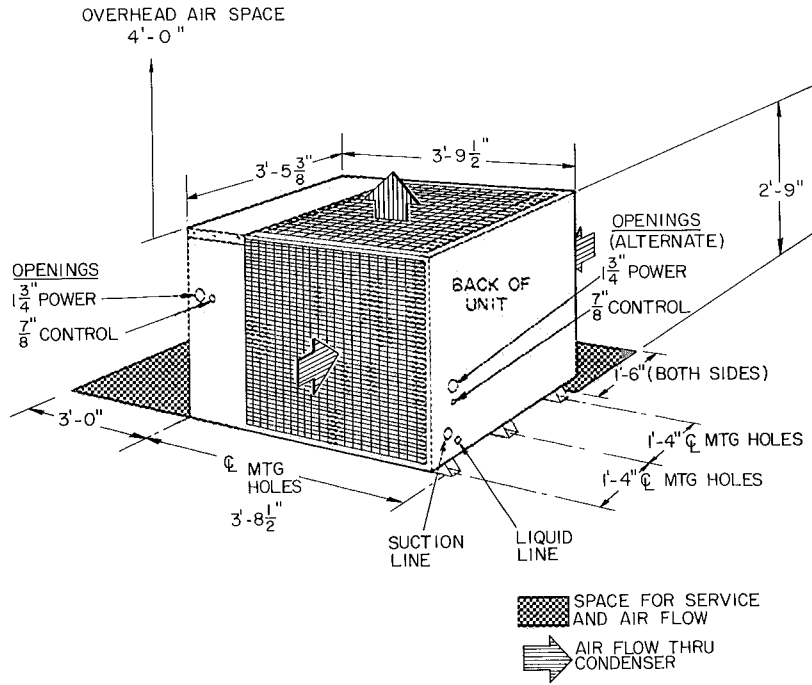
## ACCESSORIES

- **Remote Control Center and Switch Base** (24-volt) for thermostatic control of unit from conditioned space. Single-stage heating-cooling or two-stage heating, single-stage cooling models are available. Allows selection of heating and cooling, allows continuous or cycling operation of indoor fan.
- **32LM Motormaster® Head Pressure Control** (solid state) modulates fan motor speed to maintain proper condensing temperature at low outdoor temperatures.

- **Indoor Fan Relay** (24-volt) controls indoor unit fan motor. Single-pole, double-throw contact allows multispeed operations with two-speed indoor unit fan motors. Relay may be used as single-pole, single-throw where only one speed is required.

- **Evaporator Defrost Thermostat Package** — Used with winter start control. Contains thermostat, enclosure and necessary wiring and hardware.

## DIMENSIONS



## PHYSICAL DATA

UNIT MODEL	38BA	
	008	009
OPERATING WT (lb)	565	595
REFRIGERANT	22	
Operating Chg (lb)*	15.5	17
COMPRESSOR	06DA818	06DA824
Cylinders	4	6
Rpm (60-Hertz)	1750	1750
Oil Charge (pt)	7	10
CONDENSER FAN	Propeller Type, Direct Drive Vertical	
Air Discharge	Vertical	
Air Quantity (cfm)	5400	5400
Motor Hp	1/2	1/2
Motor Rpm	825	825
CONDENSER COILS	15 Fins per inch	
Face Area (sq ft)	12.46	12.46
Rows	3	3
CONNECTIONS (in.)		
Suction (ODM) Sweat	1 1/8	1 1/8
Liquid (ODM) Flare	1/2	5/8

\*Units are supplied with sufficient refrigerant for 25 ft of interconnecting piping and approximately one additional pound for purging.

NOTE: Maximum allowable vertical distance (liquid lift) from 38BA condensing units to evaporator section is 35 feet.

Certified dimension drawings are available on request

## SELECTION PROCEDURE (With Example)

I Determine required capacity, saturated suction temperature and temperature of air entering condenser.

Given:

Cooling Load . . . . . 80,000 Btuh  
 Saturated Suction Temperature . . . . . 40 F  
 Temperature Air Entering Condenser . . . . . 95 F

II Enter Cooling Capacities table at required suction temperature and temperature of air entering condenser for required capacity. Select a unit that will meet required conditions.

Unit 38BA008 has a cooling capacity of 83,700 Btuh at 40 F saturated suction temperature, 124 F saturated condensing temperature and 95 F entering air temperature at condenser. Compressor motor power input is 7.7 kw.

## PERFORMANCE DATA COOLING CAPACITIES

UNIT 38BA	SST (F)	TEMP AIR ENTERING COND (F)														
		85			95			100			105			115		
		Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw
008	30	74.2	110	6.5	69.0	119	7.0	66.2	124	7.2	63.5	128	7.4	58.1	137	7.9
	35	82.1	113	6.9	76.1	122	7.4	72.2	126	7.6	70.5	130	7.7	64.6	139	8.3
	40	90.0	115	7.4	83.7	124	7.7	80.6	128	8.0	77.5	132	8.2	71.2	142	8.9
	45	98.2	118	7.6	91.5	127	8.1	88.2	131	8.4	84.8	135	8.7	78.0	144	9.3
	50	107.0	121	7.9	99.5	129	8.5	95.9	134	8.9	92.4	138	9.2	85.2	147	9.8
009	30	87.5	117	9.0	80.8	125	9.5	77.8	129	9.7	74.5	133	9.9	68.0	142	10.3
	35	96.5	120	9.6	89.7	128	10.1	85.3	132	10.4	82.9	137	10.6	75.8	145	11.1
	40	106.0	122	10.1	98.7	131	10.7	95.0	135	11.0	91.4	139	11.2	83.8	148	11.8
	45	115.7	125	10.6	108.4	133	11.3	104.2	137	11.7	100.0	142	12.0	91.9	151	12.5
	50	126.5	129	11.3	118.8	138	12.1	113.3	142	12.4	109.5	146	12.7	100.4	154	13.2

- Cap. - Capacity (1000 Btuh)
- SCT - Saturated Condensing Temperature
- Kw - Compressor Motor Power Input
- SST - Saturated Suction Temperatures shown correspond to the pressure at the compressor. Actual suction temp is higher due to superheat. Do not extrapolate. Interpolation is permissible.



These units rated in accordance with the latest ARI Standard 210 when used in combination with components specified by manufacturer. For ratings see 38BA Combination Rating Sheet.

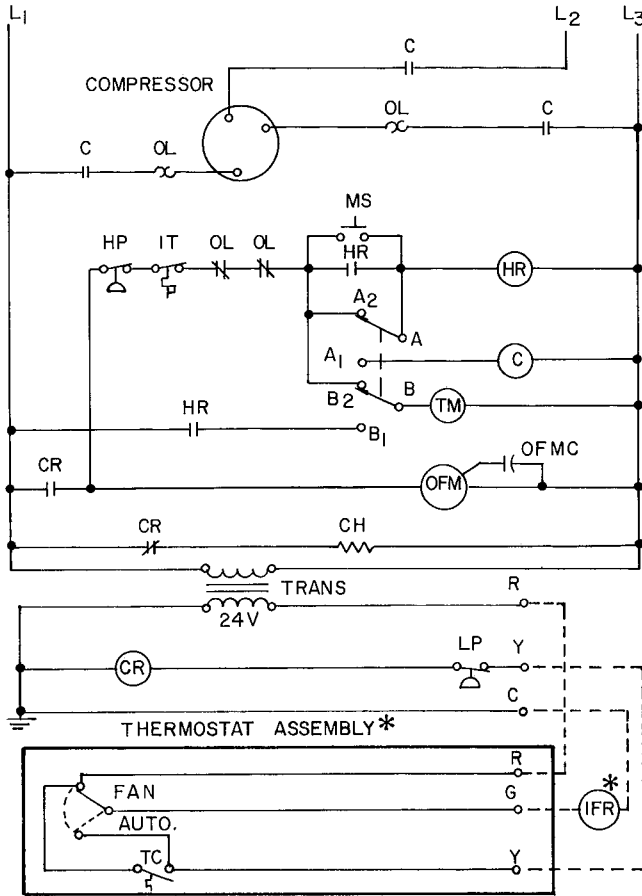
## MINIMUM OUTDOOR AIR OPERATING TEMPERATURE (F)

UNIT 38BA	WITHOUT ACCESSORY HEAD PRESSURE CONTROL	WITH ACCESSORY 32LM* HEAD PRESSURE CONTROL
008	55	-20
009	50	-20

\*For winter start, relocate the low pressurestat connection to the connection provided on the liquid line service valve. For evaporator freeze-up protection, add thermostat (Carrier Part 50BB900001) to the indoor coil. Field-fabricated wind baffles must be installed (see 32LM Installation Instructions).

# ELECTRICAL DATA

## TYPICAL SCHEMATIC



### LEGEND

- C** — Contactor
- CH** — Crankcase Heater
- CR** — Control Relay
- HR** — Holding Relay
- HP** — High-Pressure Switch
- IFR** — Indoor Fan Relay
- IT** — Internal Thermostat
- LP** — Low-Pressure Switch
- MS** — Momentary Switch
- OFM** — Outdoor Fan Motor
- OFMC** — Outdoor Fan Motor Capacitor
- OL** — Overload
- TC** — Cooling Thermostat
- TM** — Timer Motor
- Factory Wiring
- Field Wiring

\*Accessory

## ELECTRICAL DATA (3-Ph, 60-Hz)

UNIT 38BA	VOLTAGE		UNIT WSA	COMPRESSOR		OFM*
	Nom	NDSV		LRA	FLA	
008	208	230	53.4	137	40.2	3.1
	230	208	47.0	124	35.1	3.1
	460	220-240	23.6	62	17.6	3.1
	575	550-600	18.8	50	14.1	3.1
009	208	208	64.6	170	49.3	3.1
	230	220-240	58.6	153	44.4	3.1
	460	440-480	29.3	77	22.2	3.1
	575	550-600	23.4	62	17.8	3.1

**FLA** — Full Load Amps

**LRA** — Locked Rotor Amps

**NDSV** — Nominal Distribution System Voltage (Application Range) Motors and controls will operate satisfactorily 10% above and 10% below NDSV

**OFM** — Outdoor Fan Motor

**WSA** — Wire Sizing Amps

\*Single-phase

## CONTROL SEQUENCE

When thermostat calls for cooling, control relay (CR), outdoor fan motor (OFM), indoor fan relay (IFR), indoor fan motor (not shown), timer motor (TM) and holding relay (HR) are energized.

Time Guard sequence begins with switches at A<sub>2</sub> and B<sub>2</sub> position. When HR is energized, crankcase heater (CH) is de-energized. Fifteen seconds after TM starts, timer shifts to A<sub>1</sub> and B<sub>1</sub> position. HR remains energized, TM stops, contactor (C) is energized and compressor starts.

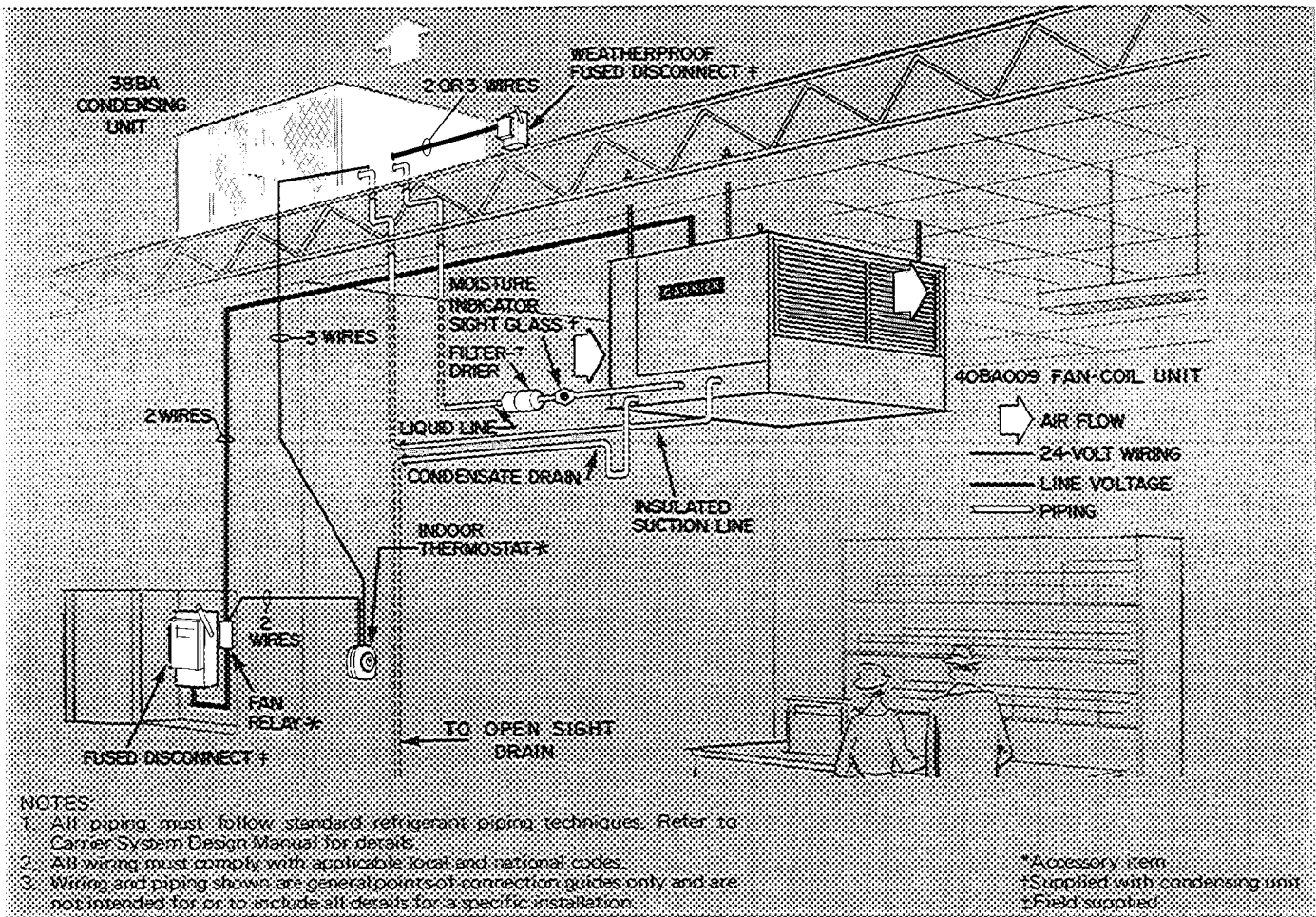
When thermostat or compressor safety device opens, C is de-energized, stopping compressor, turning on CH and starting TM. TM runs for 4 minutes, 45 seconds and then switches to the A<sub>2</sub> and B<sub>2</sub> position. Sequence will repeat when safety device or thermostat closes.

## APPLICATION

### INDOOR INSTALLATIONS

- Unit may be installed indoors with ducted condenser air when suitable outdoor location is not available. Condenser fan may be operated against an external static pressure up to 0.2 in. wg. There will be approximately a 1% decrease in capacity at 0.1 in. wg and 3% decrease at 0.2 in. wg.
- Do not install unit indoors when air entering condenser will exceed 110 F.
- Standard installation procedures should be followed with regard to ductwork, insulation and vibration isolation. Ducts should be arranged to prevent recirculation of condenser air.

## TYPICAL PIPING AND WIRING



## GUIDE SPECIFICATIONS

**Scope** — The work to be included under this specification shall consist of furnishing all material and labor for the installation of an air-cooled condensing unit.

**Furnish and Install** an air-cooled condensing unit in the location and manner shown on the plan. The unit shall be properly assembled and tested at the factory. It shall be designed for use with Refrigerant 22.

Nominal unit electrical characteristics shall be \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ Hertz. The unit shall be capable of satisfactory operation within voltage limits of \_\_\_\_\_ volts to \_\_\_\_\_ volts.

**Performance** — Capacity shall be not less than \_\_\_\_\_ Btuh with air entering the condenser at \_\_\_\_\_ F, and a saturated suction temperature at the compressor of \_\_\_\_\_ F.

The unit shall operate down to \_\_\_\_\_ F outdoor air temperature entering condenser with standard controls and down to \_\_\_\_\_ F outdoor air temperature with addition of solid state head pressure controller (accessory). Winter start control shall be accomplished by relocating unit low pressurestat connection to connection provided on liquid line service valve.

Unit shall be capable of a liquid lift of \_\_\_\_\_ ft.

**Compressor** — The unit shall contain a serviceable hermetic compressor with (internal) external spring vibration isolators and automatically reversible oil pump. The maximum power input to the compressor motor shall be not more than \_\_\_\_\_ kw at the conditions specified.

**Controls** — The controls shall be factory wired and located in a section removed from condenser fan and coil. Safety devices shall consist of high and low pressurestats . . . compressor and condenser fan motor overload devices.

The unit wiring shall incorporate a positive acting timer device to prevent short cycling of the compressor if power is interrupted. Device shall prevent compressor from restarting for a five-minute period.

A 24-volt control circuit transformer shall be factory installed and wired. Unit shall be supplied with thermostatic expansion valve.

**Casing** — The unit shall be fully weatherproofed for outdoor installation.

The casing shall be of Galvanneal steel, bonderized and finished with baked enamel or an equivalent corrosion resistant surface. Openings shall be provided for power and refrigerant connections. Panels shall be removable to provide access for servicing. The compressor and control box shall be located in a compartment other than that which contains the condenser coil.

**Dimensions** — The entire assembly shall have a width of not more than \_\_\_\_\_ in., a depth of not more than \_\_\_\_\_ in., and an overall height of not more than \_\_\_\_\_ in.

**Accessories** shall include (solid state head pressure control) (thermostat and switch base) (indoor fan relay) (evaporator defrost thermostat)

Manufacturer reserves the right to change any product specifications without notice.

**CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK**