

Installation and Start-Up Instructions

SAFETY CONSIDERATIONS

Installing and servicing air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance, such as cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in literature and on tags and labels attached to unit.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions *thoroughly*. Consult local building codes and National Electrical Code (NEC) for special installation requirements.

⚠ WARNING

Before installing or servicing unit, turn off main power to system. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause personal injury.

INSTALLATION

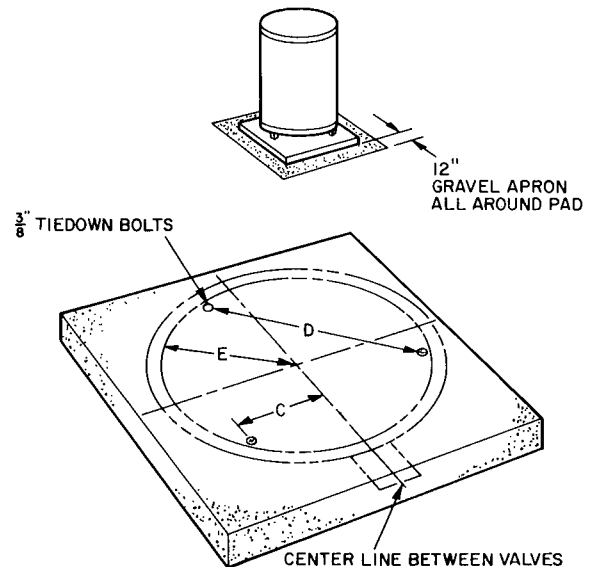
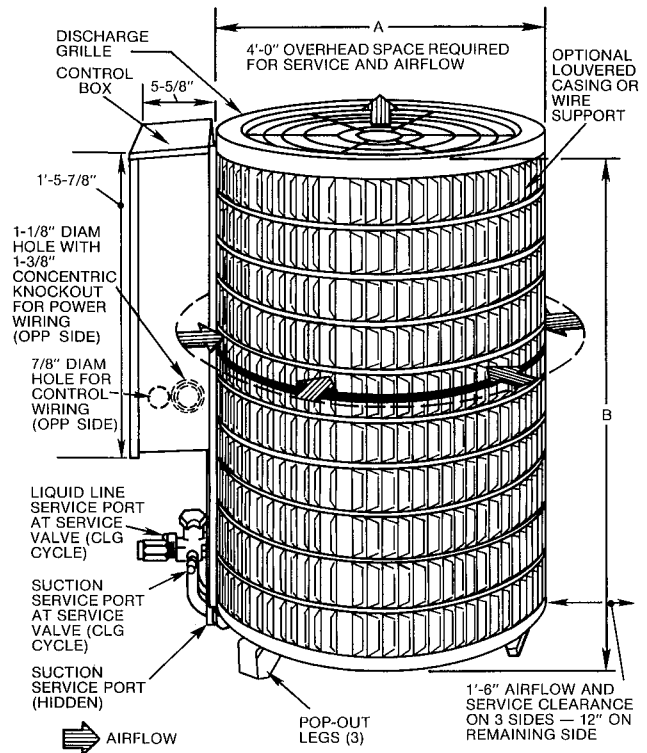
Step 1 — Check Equipment and Jobsite — Install on a solid, level mounting pad. It is recommended that unit be attached to pad using tiedown bolts. Fasten unit to pad using holes provided in unit mounting feet. See Fig. 1.

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping and servicing. Maintain a minimum of 4 ft clearance from obstructions above and 18 in. on 3 sides of unit (12 in. on fourth side). Maintain a distance of 24 in. between heat pumps. Position so water or ice from roof or eaves cannot fall directly on unit.

Step 2 — Replace AccuRater™ Refrigerant Control Piston in the indoor coil, *if required*, before connecting refrigerant lines. See AccuRater Selection Charts, Table 2.

Step 3 — Make Piping Connections — Outdoor units may be connected to indoor sections using Carrier accessory tubing package (refer to Service data) or field-supplied tubing of refrigerant grade, correct size and condition (Table 1). For tubing requirements beyond 50 ft, obtain information from local Carrier distributor.

Outdoor units connected to Carrier-approved indoor units contain correct system refrigerant charge for operation with indoor unit of the same size when connected by 25 ft of field-supplied or Carrier accessory tubing. Check refrigerant charge for maximum efficiency (refer to Table 5 and Service data).



NOTE Mounting pad may be square or circular

| MODEL 38QH | 015,018 | 024-048 | 060 |
|--------------------------------|---------------------------|-----------------------|--|
| DIAMETERS (ft-in.) | 1-9½ | 2-5¼ | 3-3 |
| SQUARES (Minimum) (in.) | 23 | 30 | 40 |
| TIEDOWN BOLT LOCATION (ft-in.) | C 0-6¼ D 1-4 E 0-9¼ | 0- 9½ 1-10½ 1-1 | 1-1 ¹⁵ / ₁₆ 2-7 1-5½ |

Fig. 1 — Dimensions, Connections and Mounting Pad (Refer to Table 1)

Table 1 — Physical Data

| MODEL 38QH | 015 | 018 | 024 | 030 | 036 | 042 | 048 | 060 |
|--|--|------|-------|------|-------|------|-------|-----|
| OPER WT (lb)* | 132 | 145 | 180 | 195 | 195 | 235 | 235 | 270 |
| REFRIGERANT Control | 22 AccuRater™ (Bypass Type) | | | | | | | |
| COND FAN Air Discharge Air Qty (Cfm) Mtr Rpm (60 Hz) | Propeller Type, Direct Drive Vertical | | | | | | | |
| | 1850 | | 3100 | | 4000 | | 5000 | |
| | 830 | | 850 | | 840 | | | |
| COND COIL (Fin/in.) Tube Diam Rows Refrig Ckts Face Area (sq ft) Outer Row Inner Row | 16 ½-in E-Coil | | | | | | | |
| | | 1 | | | | 2 | | |
| | | 2 | | | | 4 | | |
| | 12.37 | | 17.11 | | 17.11 | | 21.88 | |
| | — | | — | | 17.11 | | 21.88 | |
| DIMENSIONS (ft-in.) Diameter Height | Compatible Fitting (Suction) & Flare (Liquid) | | | | | | | |
| | A | 1-9½ | | 2-5¼ | | 3-2½ | | |
| | B | | | 2-7 | | | | |
| CONNECTIONS (in. ODF) Suction Liquid | ¾ | | | | | | | |
| | | ¾ | | ¾ | | ¾ | | |
| REFRIG LINES (in. ODF) Suction Liquid | ¾ | | | | | | | |
| | | ¾ | | ¾ | | 1½† | | |

*Add 10 lbs for louvered casing (if so equipped). Weight increases slightly with addition of any accessories.
†38QH042-060 require 1½-in. suction line for optimum performance. A ¾- x 1½-in. connection adapter accessory (Carrier Part No 28AU900061) is available. If a ¾-in. accessory tubing package is used, expect a 2½% capacity loss.

⚠ CAUTION

DO NOT BURY MORE THAN 3 FT OF REFRIGERANT TUBING IN GROUND. If any section of tubing is buried, there must be a 6-in. vertical rise to valve connections on outdoor unit. If more than the recommended length is buried, refrigerant may migrate to cooler buried section during extended periods of unit shutdown. This causes refrigerant slugging and possibly compressor damage at start-up.

CONNECT REFRIGERANT LINES to fittings on outdoor unit suction and liquid service valves (Fig. 1). Unit Compatible Fittings permit mechanical (quick-connect) or sweat connections.

Models 38QH042,048,060 — When using 1-1/8 in. field-supplied refrigerant suction line, sweat-connect suction line to 1-1/8 in. end of required connection adapter. Be sure to provide a heat sink at the service valve to prevent damage during sweating operation. Connect 3/4-in. end of adapter to unit suction line Compatible Fitting. Connect liquid refrigerant line to unit. When a 7/8-in. field-supplied suction line is used, provide a field-supplied 3/4-in. to 7/8-in. suction line adapter (not necessary if 38LS accessory tubing is used).

Mechanical Connection — Mate one set of connections at a time.

- Loosen nut on Compatible Fitting one turn. Do not remove.
- Remove plug and be sure O-ring is in the groove inside the Compatible Fitting.
- Cut tubing to correct length. Deburr and size as necessary.

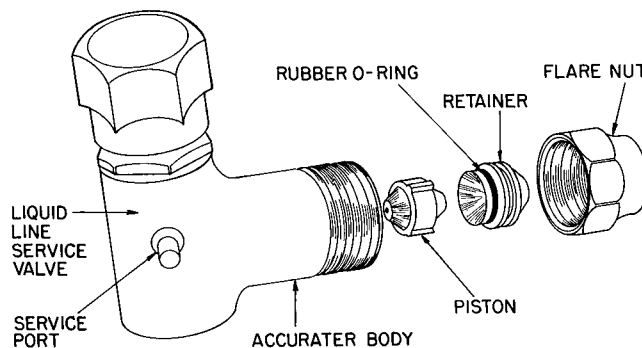


Fig. 2 — AccuRater (Bypass Type) Components

- Insert tube into Compatible Fitting until it bottoms. Tighten nut until it bottoms on shoulder of fitting or valve. Keep tube bottomed in Compatible Fitting while tightening nut.

⚠ CAUTION

If undersized, damaged or elliptically-shaped tubing is used when making Compatible Fitting, leaks may result.

Sweat Connection — Use refrigerant grade tubing.

- Remove locking nut, rubber O-ring and Schrader core and cap from valve service port.
- Cut tubing to correct length. Deburr and size as necessary.
- Insert tube in Compatible Fitting until it bottoms.

NOTE: Wrap top and bottom of service valves in wet cloth to prevent damage by heat. Solder with low-temperature 430 F silver alloy solder.

- Replace Schrader core and cap.
- Evacuate or purge system with field-supplied refrigerant.

Compatible Fitting Repair

MECHANICAL CONNECTION — Frontseat unit service valves. Relieve refrigerant pressure from tubing. Back off locknut from Compatible Fitting onto tube. Cut fitting between threads and O-ring. See Fig. 3. Remove tubing section remaining in threaded portion of fitting. Discard locknut.

Clean, flux and insert new tube end into remaining portion of Compatible Fitting. Wrap valve in wet rag to prevent damaging factory-made joints. Heat and apply low-temperature (430 F) solder.

SWEAT CONNECTION — Frontseat unit service valves. Relieve refrigerant pressure from tubing. Clean and flux around leak. Repair, using low-temperature (430 F) solder. Evacuate or purge evaporator coil and tubing system. Add refrigerant charge. Refer to Table 5.

Table 2 — AccuRater™ Selection Charts

| OUTDOOR UNIT 38QH | INDOOR UNIT | INDOOR PISTON | OUTDOOR UNIT 38QH | INDOOR UNIT | INDOOR PISTON |
|-------------------|---------------|---------------|-------------------|-----------------|---------------|
| 015 (35)† | 28AC015 | 49* | 042 (73)† | 28AC,AU042 | 80* |
| | 28AC,AU018 | 49* | | 28AC242 | 80* |
| | 28HQ,VQ024 | 49* | | 28AC,AU048 | 82* |
| | 40AQ018 | 46* | | 28AC248 | 82* |
| | 40AQ024 | 49* | | 28AM048 | 82 |
| | 40DQ014 | 46* | | 28HQ,VQ042 | 76 |
| | 40DQ018 | 46* | | 28HQ,VQ048 | 80* |
| 018 (42)† | 40DQ024 | 49 | 28HQ,VQ060 | 82* | |
| | 28AC,AU018 | 52* | 28SL042 | 76* | |
| | 28AC,AU,AM024 | 55* | 28SL048 | 80* | |
| | 28HQ,VQ024 | 52* | 28SL060 | 82* | |
| | 28HQ,VQ030 | 55* | 40QB042 | 80* | |
| | 40AQ018 | 49* | 40QB,QH048 | 82 | |
| | 40AQ024 | 52 | 048 (73)† | 28AC,AU048 | 84 |
| 40AQ030 | 55* | 28AC248 | | 84 | |
| 40DQ018 | 49* | 28AC,AU060 | | 86* | |
| 40DQ024 | 52* | 28AC260 | | 86* | |
| 40DQ030 | 55* | 28AM048 | | 84* | |
| 024 (52)† | 28AC,AU,AM024 | 61* | | 28HQ,VQ048 | 82* |
| | 28AC,AU030 | 63* | | 28HQ,VQ060 | 84* |
| | 28AM036 | 63* | 28SL048 | 82 | |
| | 28HQ,VQ024 | 59* | 28SL060 | 84* | |
| | 28HQ,VQ030 | 61* | 40QB048 | 84* | |
| | 28HQ,VQ036 | 63* | 40QB,QH060 | 86* | |
| | 40AQ024 | 59* | 40QB,QH062 | 86* | |
| 030 (59)† | 40AQ030 | 61* | 060331 (78)† | 28AC,AU060 | 101* |
| | 40AQ036 | 63* | | 28AC260 | 101* |
| | 40DQ024 | 59 | | 28HQ,VQ060 | 98* |
| | 40DQ030 | 61* | | 28SL060 | 98* |
| | 28AC,AU030 | 70* | | 40QB,QH060 | 101* |
| | 28AC,AU036 | 73 | | 40QB,QH062 | 101* |
| | 28AC236 | 73 | | 060341 (78)† | 28AC,AU060 |
| 28AM036 | 70* | 28AC260 | 93* | | |
| 28HQ,VQ030 | 67* | 28HQ,VQ060 | 90* | | |
| 28HQ,VQ036 | 70* | 28SL060 | 90* | | |
| 28HQ,VQ042 | 73* | 40QB,QH060 | 93 | | |
| 28SL030 | 67* | 40QB,QH062 | 93 | | |
| 28SL036 | 70* | 036 (61)† | 28AC,AU036 | | 73 |
| 28SL042 | 73* | | 28AC236 | 73 | |
| 40AQ030 | 67* | | 28AC,AU042 | 73* | |
| 40AQ036 | 70* | | 28AC242 | 73* | |
| 40DQ030 | 67* | | 28AM036 | 70* | |
| 28AC,AU036 | 73 | | 28HQ,VQ036 | 70* | |
| 28AC236 | 73 | | 28HQ,VQ042 | 73* | |
| 28AC,AU042 | 73* | 28HQ,VQ048 | 73* | | |
| 28AC242 | 73* | 28SL036 | 70* | | |
| 28AM036 | 70* | 28SL042 | 73* | | |
| 28HQ,VQ036 | 70* | 28SL048 | 73* | | |
| 28HQ,VQ042 | 73* | 28SL060 | 76* | | |
| 28HQ,VQ048 | 73* | 40AQ036 | 70* | | |
| 28SL036 | 70* | 40DQ030 | 67* | | |
| 28SL042 | 73* | | | | |
| 28SL048 | 73* | | | | |
| 40AQ036 | 70* | | | | |
| 40QB042 | 73* | | | | |

*Replace factory-installed piston with this piston size
†Required outdoor piston size

Step 4 — Make Electrical Connections — Be sure field wiring complies with local and national fire, safety and electrical codes, and voltage to system is within limits shown in Table 3. Contact local power company for correction of improper line voltage.

NOTE: Operation of unit on improper line voltage constitutes abuse and could affect Carrier warranty. See

COMPATIBLE FITTING
CUT HERE

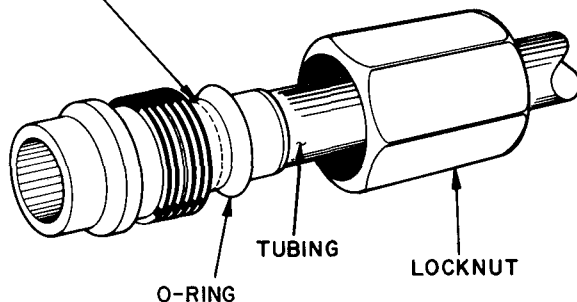


Fig. 3 — Compatible Fitting

Table 3. Do not install unit in system where voltage may fluctuate above or below permissible limits.

See Table 3 for recommended fuse sizes. When making electrical connections, provide clearance at unit for refrigerant piping connections.

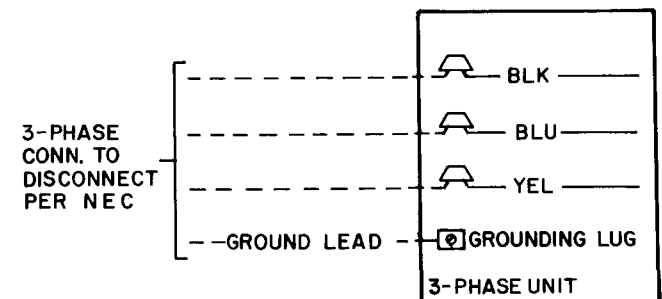
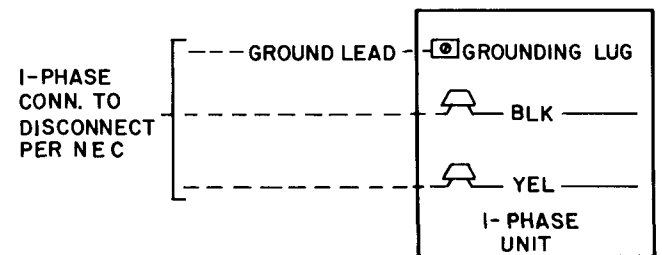
INSTALL BRANCH CIRCUIT DISCONNECT PER NEC of adequate size to handle unit starting current. Locate disconnect within sight from and readily accessible from unit, per Section 440-14 of National Electrical Code (NEC).

ROUTE LINE POWER LEADS — Extend leads from disconnect through power wiring hole provided (see Fig. 1) and into unit splice area. Remove control box cover to gain access to unit wiring.

CONNECT GROUND LEAD AND POWER WIRING — Connect ground lead to ground connection in control box for safety. Then connect power wiring. See Fig. 4. Splice line power leads to yellow and black pigtails. Use wire nuts and tape at each connection. Connect unit wiring to copper power wiring only.

CONNECT CONTROL POWER WIRING — Route 24-v control wires through control wiring hole and channel and connect leads to control wiring terminal board. See Fig. 1 and 5.

Use furnace or fan coil transformer as 24-v (40-v_a minimum) supply for system as shown in Fig. 5, or use accessory transformer (refer to Service data).



Splice Connections
Field Wiring
Factory Wiring

Fig. 4 — Line Power Connections

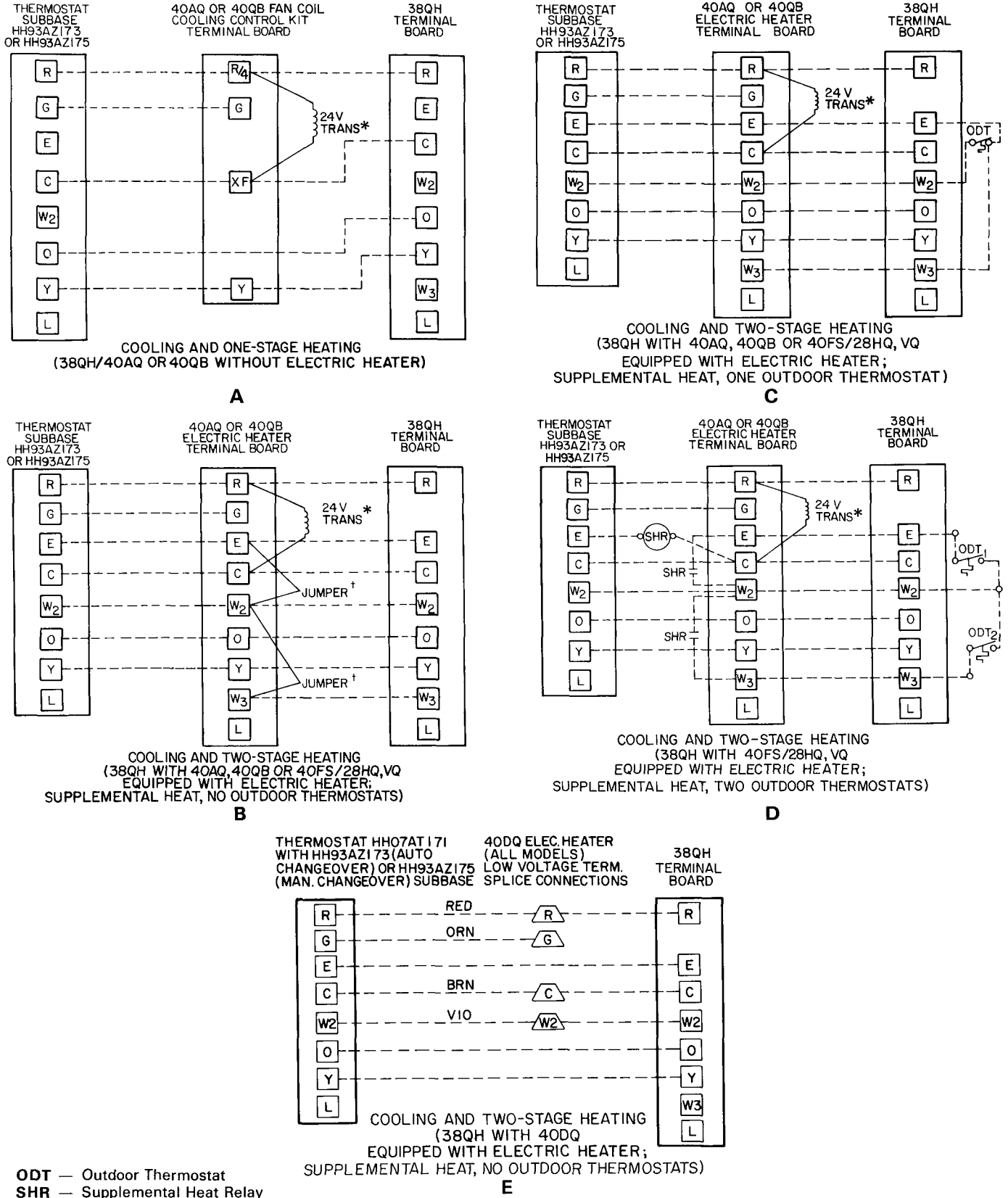


Fig. 5 — Control Circuit Connections

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

→ **Table 3 — Electrical Data (60 Hz)**
3-Phase Available with 030-060 Sizes (SM, DL Option Models)

| OUTDOOR UNIT 38QH | V/PH | OPER VOLTS* | | COMPR | | FAN FLA | BRANCH CIRCUIT | |
|-------------------|------------|-------------|-----|---------------|------|---------|----------------|-------------------------------------|
| | | Max | Min | LRA | RLA | | MCA | Max Fuse† or HACR Type Ckt Bkr Amps |
| 015301 | 208/230/1 | 254 | 187 | 35 | 7.1 | 7 | 8.6 | 15 |
| 018301 | | | | 50 | 8.0 | 7 | 12.3 | 20 |
| 024301 | | | | 54 | 12.9 | 9 | 15.3 | 25 |
| 030301 | | | | 78 | 14.5 | 9 | 20.3 | 35 |
| 036301 | | | | 86.7 | 14.9 | 9 | 21.3 | 35 |
| 042301 | | | | 107.4 | 18.3 | 1.9 | 27.3 | 45 |
| 048301 | | | | 110 | 20.4 | 1.9 | 29.9 | 50 |
| 060331 | | | | 130 | 25.9 | 1.9 | 34.3 | 60 |
| 060341 | | | | 142 | 31.2 | 1.9 | 40.9 | 60 |
| 030501 | 208-230/3‡ | 245 | 187 | 59.5 | 10.6 | .9 | 15.4 | 25 |
| 036501 | | | | 65 | 11.5 | .9 | 16.5 | 25 |
| 042501 | | | | 74 | 13.3 | 9 | 19.1 | 30 |
| 048501 | | | | 92 | 14.7 | 1.9 | 20.9 | 35 |
| 060531 | | | | Not Available | | | | |
| 036601 | 460/3‡ | 506 | 414 | 32.8 | 5.1 | 1.1 | 7.5 | 15 |
| 042601 | | | | 37 | 6.2 | 1.3 | 9.1 | 15 |
| 048601 | | | | 46 | 7.0 | 1.3 | 10.1 | 15 |
| 060631 | | | | Not Available | | | | |

FLA — Full Load Amps
HACR — Heating, Air Conditioning, Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
RLA — Rated Load Amps

*Permissible limits of the voltage range at which unit will operate satisfactorily
 †Time-delay fuse.
 ‡3-Phase available only with Deluxe and SM option units.
 NOTE: Control circuit is 24 v on all units and requires external power source.

⚠ WARNING

To avoid personal injury, be sure indoor blower has stopped before attempting service or maintenance.

Heat Anticipator Settings for Room Thermostat (HH01AT171) — Set anticipator for room thermostat according to Table 4. These settings may be changed slightly to provide a greater degree of comfort for a particular installation.

Accessory Outdoor Thermostat provides adjustable outdoor control of accessory electric heater. This thermostat makes contact when a drop in outdoor temperature occurs. It energizes a stage of electric heat when the outdoor temperature setting is reached, provided the room thermostat is on the second stage of heating. One outdoor thermostat is recommended for each stage of electric heat after the first stage. Set the outdoor thermostat(s) progressively lower for each stage. Refer to heat load of building and unit capacity to determine the correct outdoor thermostat settings.

The accessory supplemental heat relay is required when 2 outdoor thermostats are used. It is automatically energized by the manually operated supplemental heat switch in the indoor thermostat subbase. The thermostat locks out compressor and the relay bypasses the outdoor thermostats for electric heater operation during heat

pump shutdown. When one outdoor thermostat is used, a supplemental heat relay is not required. The supplemental heat switch in the indoor thermostat subbase bypasses outdoor thermostat, locks out compressor and activates electric heater.

MOUNT OUTDOOR THERMOSTAT in control box.

Attach brackets with short sheet metal screws to avoid contact with coil. Leave capillary tube coiled in control compartment making sure it is clear of all electrical connections and sharp metal edges.

MOUNT SUPPLEMENTAL HEAT RELAY in convenient location on indoor unit. Attach with sheet metal screw.

Table 4 — Thermostat Anticipator Settings

| UNIT 38QH | FIRST-STAGE ANTICIPATOR SETTING | INDOOR UNIT WITH ELECTRIC HEATER | HTR kW | SECOND-STAGE ANTICIPATOR SETTINGS |
|-----------|---------------------------------|---|--------|-----------------------------------|
| 015 | Fixed | 40DQ and 40AQ Fan Coil with 40AQ Htrs or 40QB Fan Coil with 40QB Htrs | 5.0 | 25 |
| 018 | | | 7.5 | |
| 024 | | | 10.0 | |
| 030 | | | 15.0 | 50 |
| 036 | | | 20.0 | |
| 042 | | | 25.0 | |
| 048 | | | 30.0 | 75 |
| 060 | | | 34.0 | |

Step 5 — Start-Up

1. Energize crankcase heater a minimum of 24 hours before starting unit. To energize heater only, set thermostat at OFF position and close electrical disconnect to outdoor unit.
2. Turn on main disconnect switch(es) to indoor and outdoor units.
3. Set fan switch as desired (ON or AUTO.).
4. Set thermostat dial at desired temperature.
5. Set selector switch at HEAT or COOL. Operate unit for 15 minutes.
6. Check system refrigerant charge. Refer to Table 5.

Motors and controls are designed to operate satisfactorily in the voltage range shown in Table 3. If necessary to use manifold gages for servicing, refer to Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants, Page 1-5, Fig. 8 for bypass method of returning charge to system. Removal of liquid line charging hose without following these precautions could result in some loss of charge.

→ Table 5 — Service Data

| MODEL 38QH | COMPR* | OIL CHG (oz) | | R-22 Chg* (lb) | OUTDOOR FAN RPM |
|---------------|---------------|--------------|----------|-------------------|--------------------|
| | | Initial | Recharge | | |
| 015 | REZ3-0125-PFV | 24 | 20 | 5.3 | 815 |
| 018 | H22B173ABCA | 40 | 37 | 5.5 | 815 |
| 024 | CRC2-0175-PFV | 55 | 52 | 7.8 | 850 |
| 030 | AV5532E | 54 | 50 | 7.8 | 850 |
| 036 | AV5535H | 54 | 50 | 7.9 | 850 |
| 042 | AV5542H | 54 | 50 | 11.0 | 840 |
| 048 | AV5546H | 54 | 50 | 12.5 | 840 |
| 060 | WD6000AA | 76 | 74 | 14.1 | 840 |
| 060341 | H23A563ABCA | 55 | 50 | 14.0 | 840 |
| 030 | AV5532E | 54 | 50 | 7.8 | 850 |
| 036 | AV5535E | 54 | 50 | 7.9 | 850 |
| 042 | AV5542E | 54 | 50 | 11.0 | 840 |
| 048 | AV5546E | 54 | 50 | 12.5 | 840 |
| 060 | WY6000AA | 76 | 74 | 14.1 | 840 |
| 036 | AV5535E | 54 | 50 | 7.9 | 850 |
| 042 | AV5542E | 54 | 50 | 11.0 | 840 |
| 048 | AV5546E | 54 | 50 | 12.5 | 840 |
| 060 | WH6000AA | 76 | 74 | 14.1 | 840 |

* Factory refrigerant charge is adequate when indoor unit and outdoor unit are the same size and are connected with 25 ft or less of field-tubing of recommended size or Carrier accessory tubing

Refrigerant Charging (See Fig. 6-21)

⚠ CAUTION

To prevent personal injury, wear safety glasses and gloves when handling refrigerant. Do not overcharge system. This can cause compressor flooding.

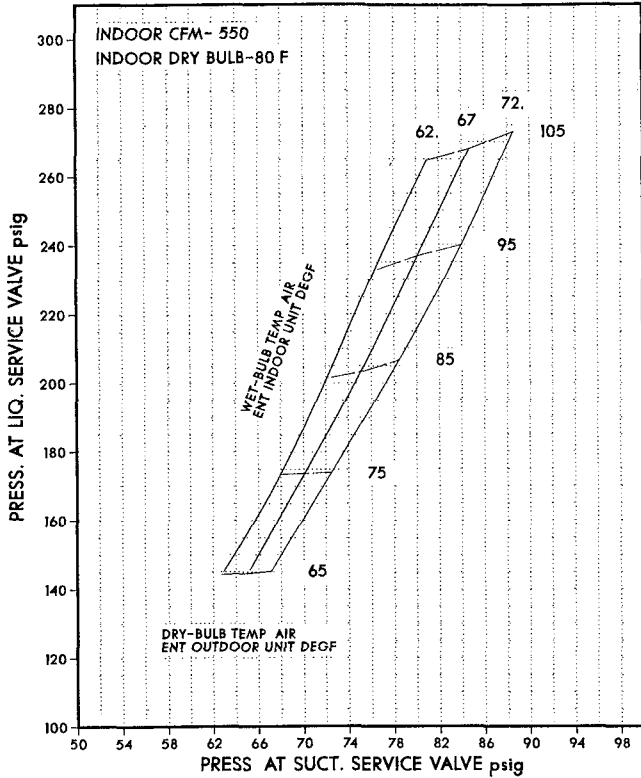


Fig. 6 — 38QH015 with Table 2 Combinations Cooling Cycle Charging Chart

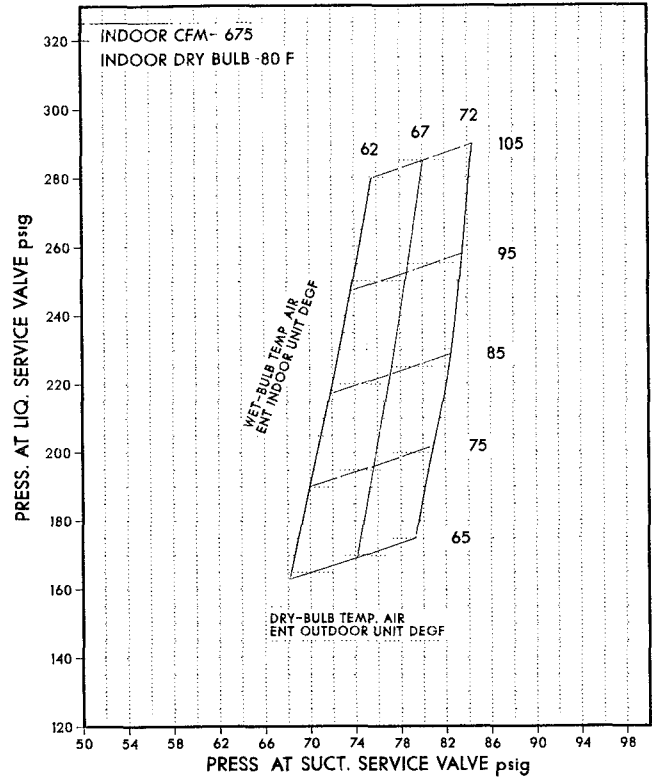


Fig. 8 — 38QH018 with Table 2 Combinations Cooling Cycle Charging Chart

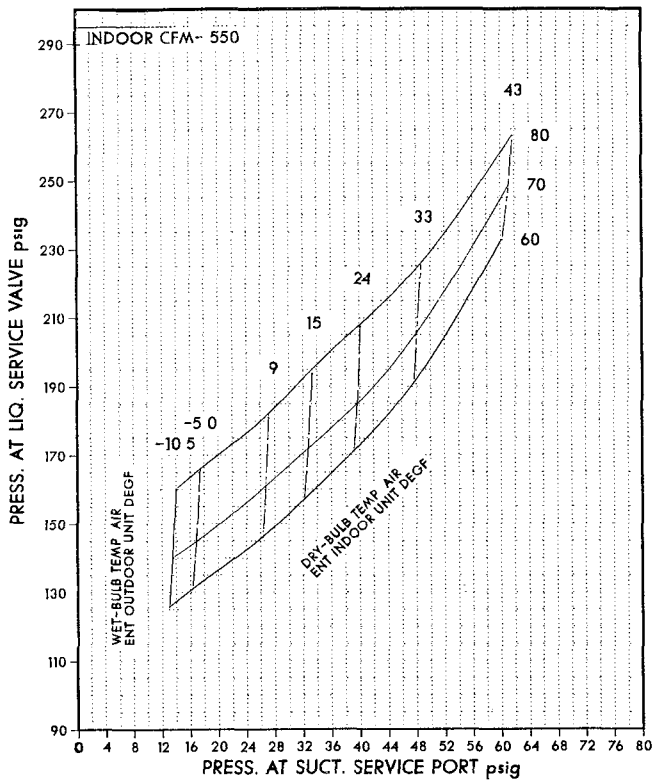


Fig. 7 — 38QH015 with Table 2 Combinations Heating Cycle Check Chart

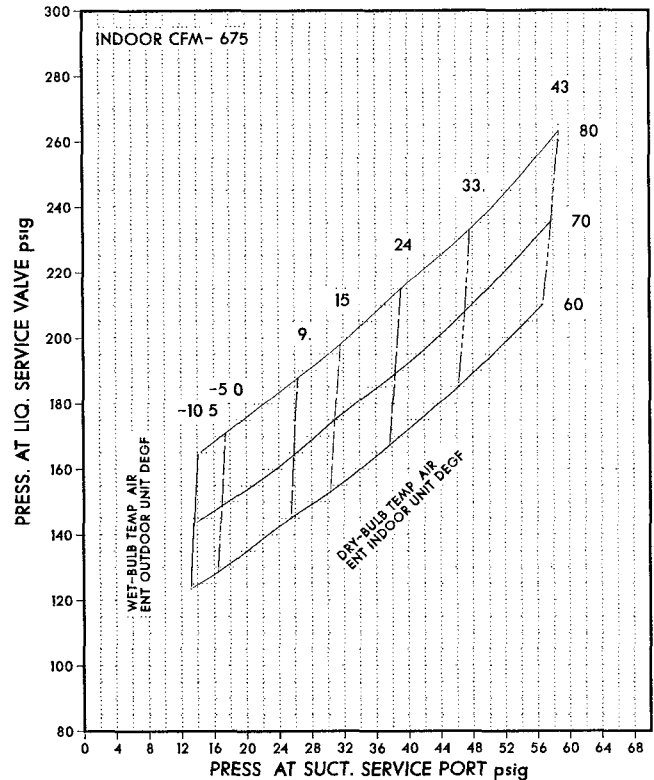


Fig. 9 — 38QH018 with Table 2 Combinations Heating Cycle Check Chart

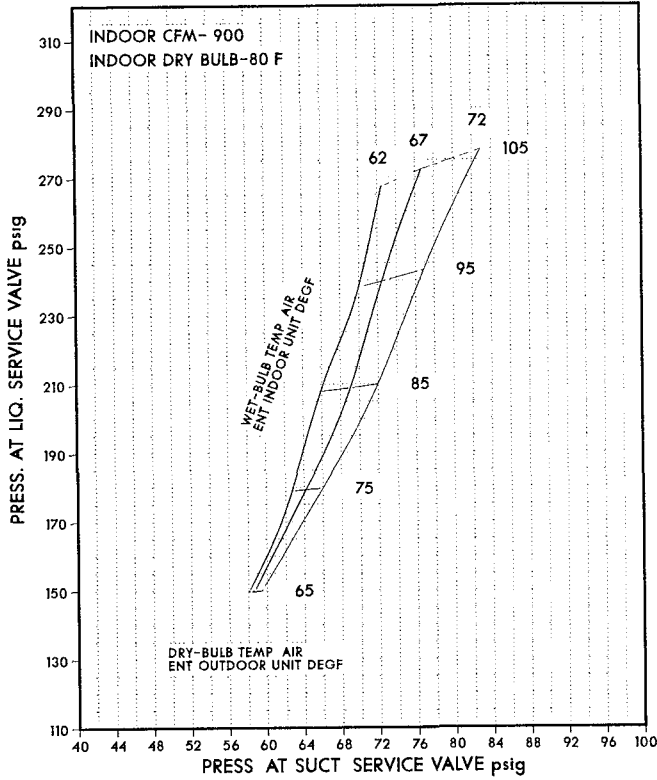


Fig. 10 — 38QH024 with Table 2 Combinations Cooling Cycle Charging Chart

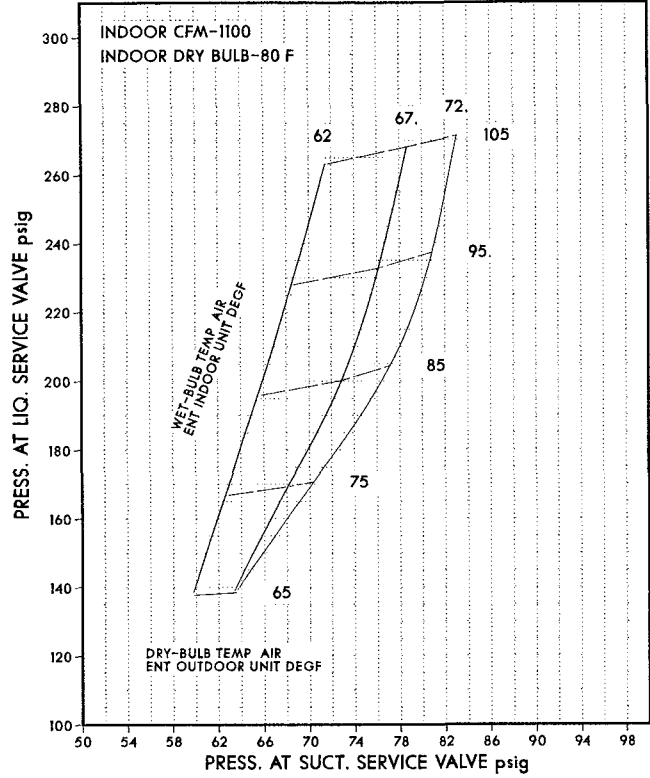


Fig. 12 — 38QH030 with Table 2 Combinations Cooling Cycle Charging Chart

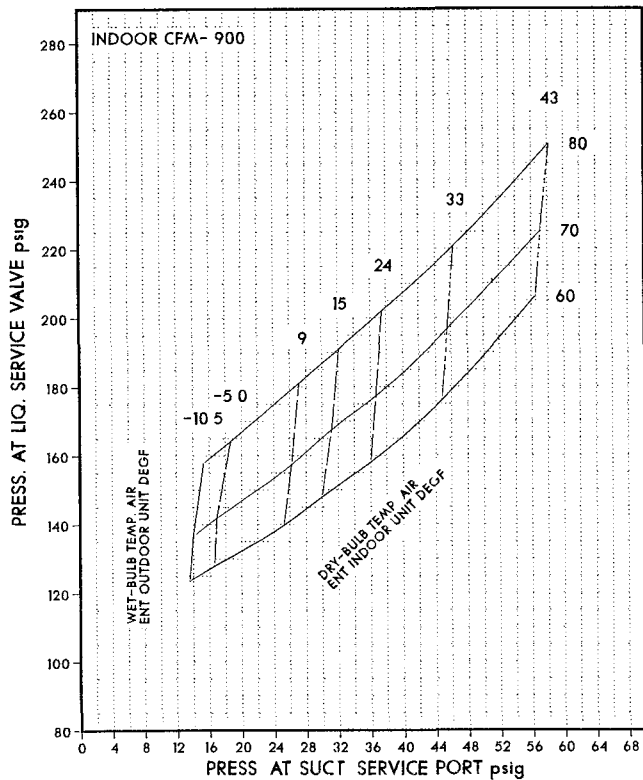


Fig. 11 — 38QH024 with Table 2 Combinations Heating Cycle Check Chart

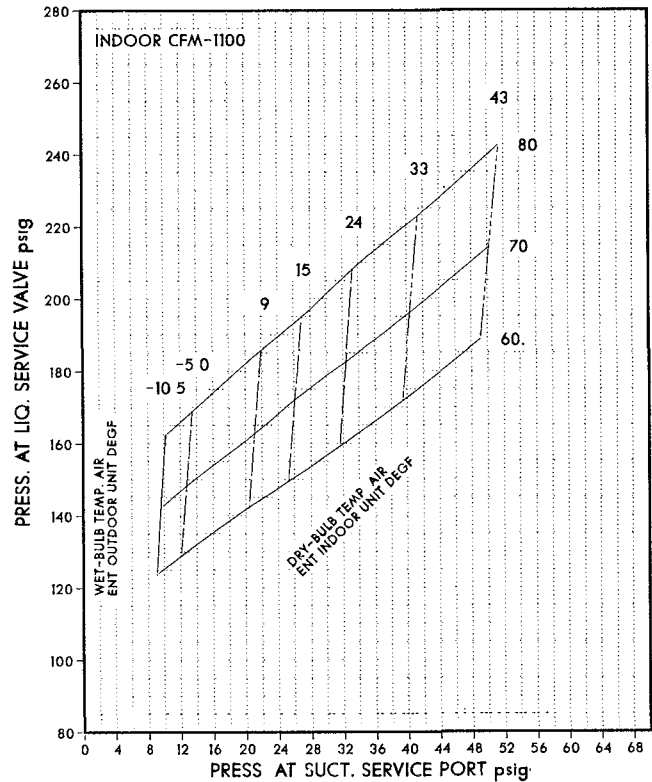


Fig. 13 — 38QH030 with Table 2 Combinations Heating Cycle Check Chart

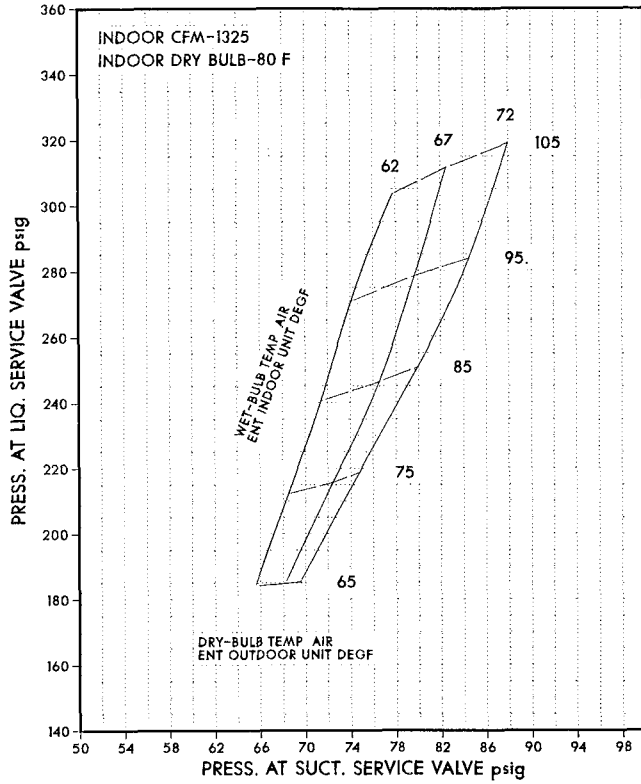


Fig. 14 — 38QH036 with Table 2 Combinations Cooling Cycle Charging Chart

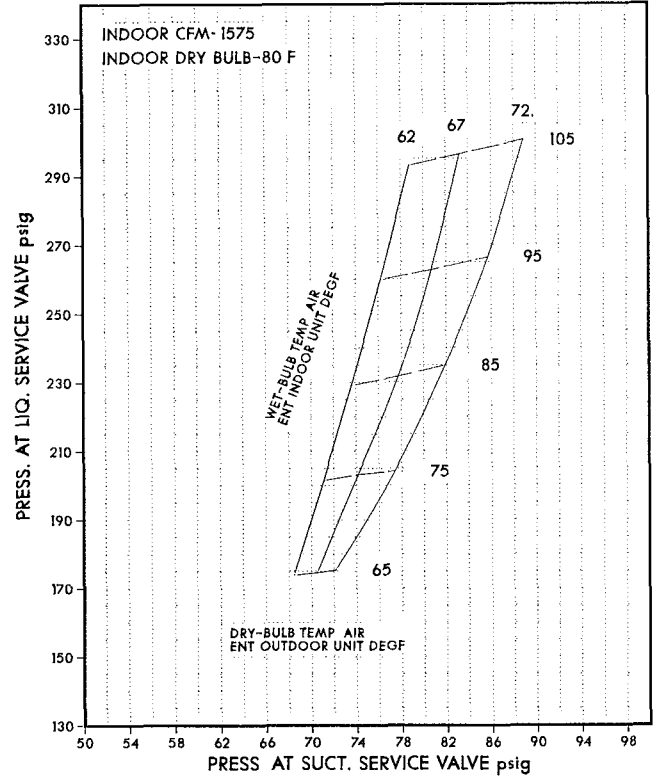


Fig. 16 — 38QH042 with Table 2 Combinations Cooling Cycle Charging Chart

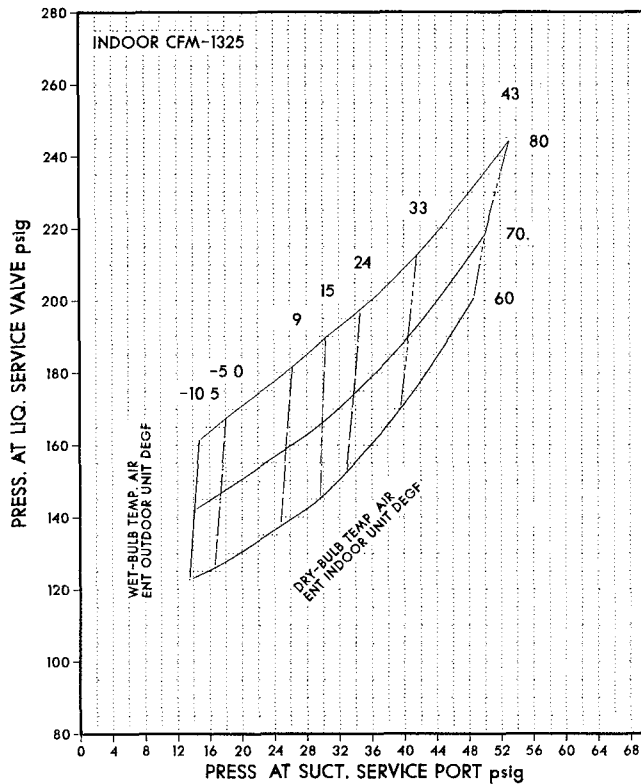


Fig. 15 — 38QH036 with Table 2 Combinations Heating Cycle Check Chart

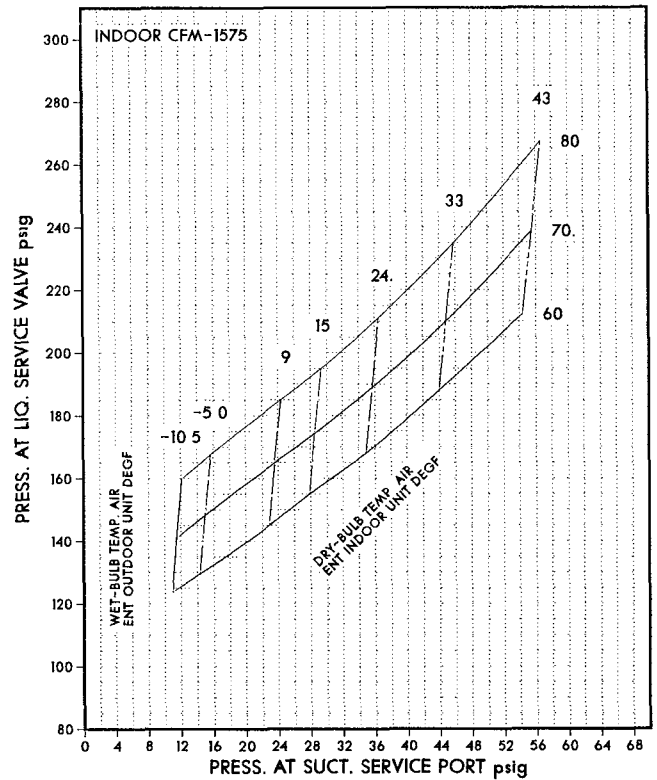


Fig. 17 — 38QH042 with Table 2 Combinations Heating Cycle Check Chart

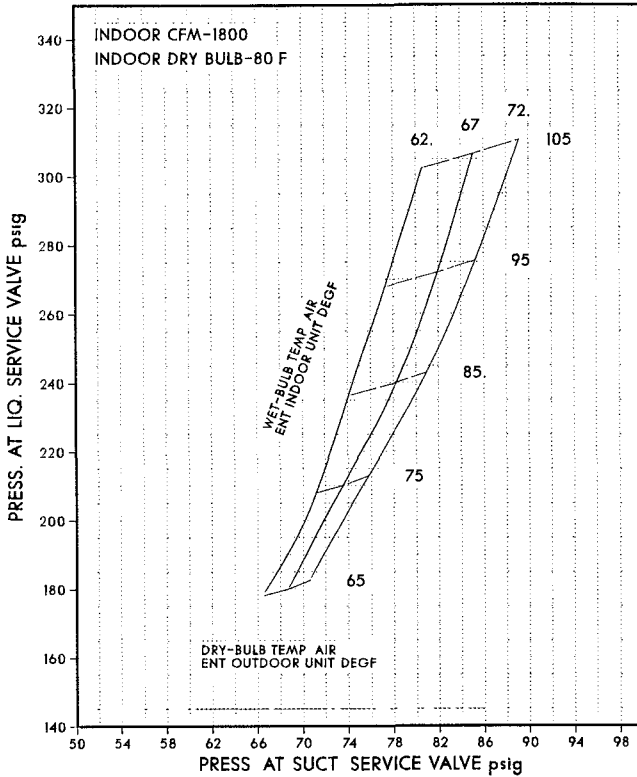


Fig. 18 — 38QH048 with Table 2 Combinations Cooling Cycle Charging Chart

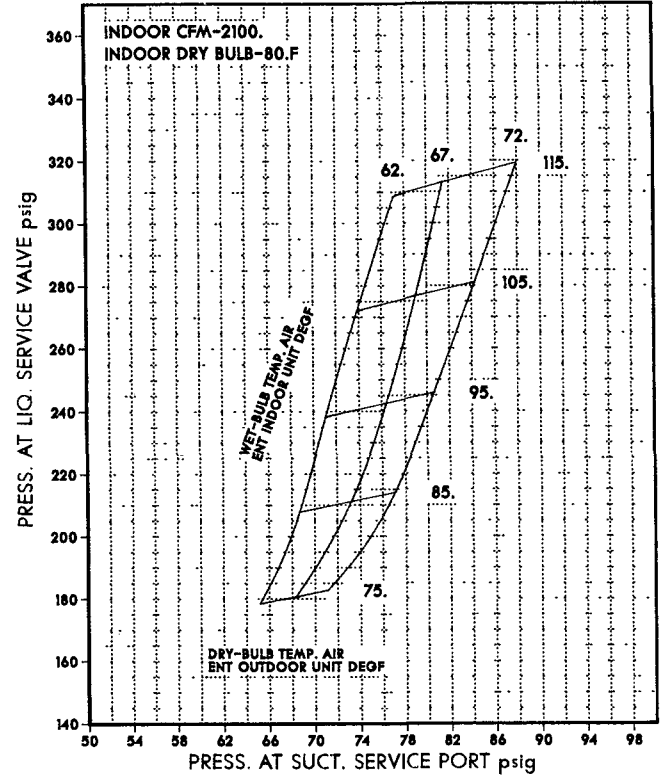


Fig. 20 — 38QH060 with Table 2 Combinations Cooling Cycle Charging Chart

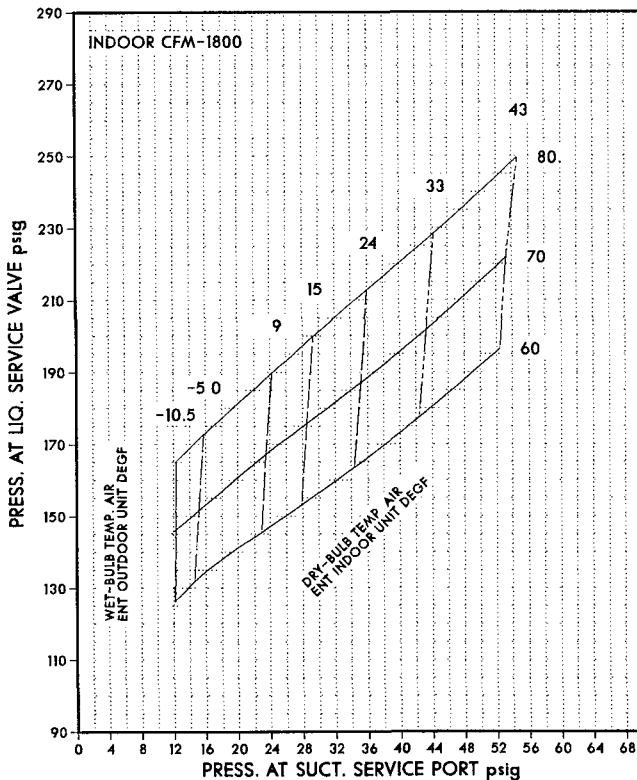


Fig. 19 — 38QH048 with Table 2 Combinations Heating Cycle Check Chart

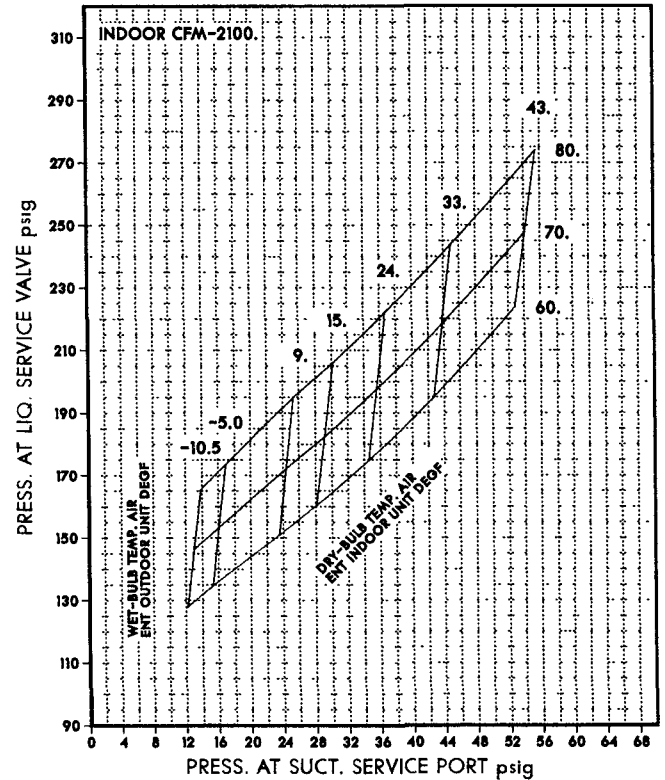


Fig. 21 — 38QH060 with Table 2 Combinations Heating Cycle Check Chart

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