SAFETY CONSIDERATIONS

The 50DL single-package cooling units are designed to provide safe and reliable service when operated within design specifications. However, due to system pressures, electrical components and equipment location, some aspects of installation, start-up and service can be hazardous.

Only trained, qualified installers and service mechanics should install, start-up and service this equipment.

When working on the equipment, observe all precautions on tags or labels attached to the unit, safety notes in the literature and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling, rigging and placing bulky equipment.

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NOTES

1. Compressors and/or fan motors are thermally protected. Three-phase motors are protected under primary single-phasing conditions.

2. Screw terminals of printed-circuit board are suitable for connection of NEC Class 2 control circuit, 24 volts.

3. For replacement wire, use Type 90C wire or equivalent.

4. Fuses must be supplied for field power supply.

5. All circuit breaker must-trip amps are equal to or less than 140% FLA.

6. Compressor no. 1 location is on unit right side, facing control box and bottom portion of indoor coil.

7. Transformers 1 and 2 are wired for 230 v on 380-v unit.
   Transformer 1 is wired to terminals marked as follows:
   380-v unit — wired to H3 (230-v) terminal.

8. TB4 terminals [9] and [10] are not used. TB4 terminals [6] and [8] are used only with energy management (night set-back) option.

9. Refer to label diagram on unit control box for cooling control circuit wiring, component connections and complete legend.

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**LEGEND (Fig. 1 — 15)**

- **ATS**: Air Temperature Switch
- **BS**: Bypass Switch
- **C**: Contactor, Compressor
- **Cap.**: Capacitor
- **CB**: Circuit Breaker, Compressor
- **CCB**: Circuit Breaker, Control
- **CCSV**: Capacity Control Solenoid Valve
- **CH**: Crankcase Heater
- **CK**: Clock
- **Clg**: Cooling
- **CO**: Convenience Outlet
- **Comp**: Compressor Motor
- **CR**: Control Relay
- **CS**: Centrifugal Switch
- **DM**: Damper Motor (Day Mode, Fig. 10-13)
- **DMAS**: Damper Motor Auxiliary Switch
- **DR**: Day Relay
- **DU**: Dummy Terminal
- **Econ**: Economizer
- **EMC**: Exhaust Motor Contactor
- **ENTH or EC**: Enthalpy Control
- **Equip Gnd**: Equipment Ground
- **Exh**: Exhaust
- **FL**: Fuse Link
- **FPT**: Freeze-Up Protection Thermostat
- **FTDR**: Fan Time-Delay Relay
- **Fu**: Fuse
- **HC**: Heater Contactor
- **HCB**: Heater Circuit Breaker
- **HPCT**: Head Pressure Control Thermostat
- **HPS**: High-Pressure Switch
- **HR**: Heater Relay
- **Htg**: Heating
- **HTR**: Heater
- **IFC**: Indoor Fan Contactor
- **IFCB**: Indoor Fan Circuit Breaker
- **IFM**: Indoor Fan Motor
- **IFR**: Indoor Fan Relay
- **IP**: Internal Protector
- **IR**: Interlock Relay
- **LAL**: Low Ambient Lockout
- **LPS**: Low-Pressure Switch
- **LS**: Limit Switch
- **MW**: Morning Warm-Up
- **NM**: Night Mode
- **NR**: Night Relay
- **OFC**: Outdoor Fan Contactor
- **OFM**: Outdoor Fan Motor
- **PCB**: Printed-Circuit Board
- **PER**: Power Exhaust Relay
- **PETC**: Power Exhaust Temperature Controller
- **Pl**: Plug
- **Pri**: Primary
- **QT**: Quad Terminal
- **Sec**: Secondary
- **SSM**: Set-up — Set-back Module
- **TB**: Terminal Board (Block)
- **TDR**: Time-Delay Relay
- **TM**: Timer Motor
- **TR**: Timer Relay
- **Tran**: Transformer, Potential
- **U**: Unloader
- **UR**: Unloader Relay
- **WR**: Warm-Up Relay

- **☐**: Terminal Block
- **○**: Terminal (unmarked)
- **△**: Terminal (marked)
- **■**: Terminal (circuit board, factory connected)
- **○**: Terminal (circuit board, field or accessory connected)

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**Factory Wiring**

- **Circuit Board Run**
- **Option Wiring**
- **Field Wiring**
  - **Splice**
  - **Splice (Marked)**

---

**To Indicate Common Potential Only; Not to represent wire**

- **Plug**
- **Receptacle**
### Table 1 — Electrical Data

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>VOLTAGE RANGE</th>
<th>COMP. NO. 1</th>
<th>COMP. NO. 2</th>
<th>OUTDOOR FAN MOTORS</th>
<th>INDOOR FAN MOTOR</th>
<th>EXHAUST FAN MOTOR</th>
<th>HEATERS</th>
<th>POWER SUPPLY</th>
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<td>342-418</td>
<td>40 191</td>
<td>40 191</td>
<td>15 254 3 5.6</td>
<td>15 254 3 5.6</td>
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<td>15 254 3 5.6</td>
<td>123 150</td>
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<tr>
<td>50DL054</td>
<td>342-418</td>
<td>63 280</td>
<td>40 191</td>
<td>20 32 7 3 5.6</td>
<td>20 32 7 3 5.6</td>
<td>20 32 7 3 5.6</td>
<td>20 32 7 3 5.6</td>
<td>167 225</td>
</tr>
</tbody>
</table>

|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 178 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 167 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 178 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 187 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 176 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 176 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 187 225      |
|          |              |             |             | 20 32 7 3 5.6     | 20 32 7 3 5.6   | 20 32 7 3 5.6   | 20 32 7 3 5.6 | 187 225      |

**LEGEN**
- **COMP** — Compressor
- **FLA** — Full Load Amps
- **HP** — Nominal Horsepower
- **kW** — Kilowatts
- **LRA** — Locked Rotor Amps
- **MCA** — Minimum Circuit Ampacity
- **MOCP** — Maximum Overcurrent Protection
- **RLA** — Rated Load Amps

*Fuse only

**NOTES**
1. All outdoor fan motors are single-phase motors.
2. Exhaust fan motors (Qty 2) are 380 V, 3 phase.
3. All heaters are 3-phase assemblies.

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### TMI AND 2

**Fig. 1 — Time Guard Control Sequence**
Fig. 2 — Label Diagram (38 kW Electric Heat); 50DL044; 380-3-60
Fig. 5 — Power Wiring Schematic; 50DL044; 380-3-60
Fig. 6 — Component Arrangement; 50DL044; 380-3-60
Fig. 7 — Power Wiring Schematic; 50DL054; 380-3-60
Fig. 8 — Component Arrangement; 50DL054: 380-3-60
NOTES
1. See page 2 for Legend.
2. Numbers indicate the line location of used contacts. A bracket over (2) numbers signifies a single pole, double throw contact.
3. Contacts are in the 115-v schematic.
4. Contacts are in the power schematic.
5. TDR = 60 seconds on, 25 seconds off.
6. Resistor between terminals 7 and 8 applies only to microprocessor style W7100A01046 (HH08A0200) for production units built prior to December 1961.
7. Resistor is / /4-watt, 200 Ohms for all models.
8. For units prior to April 1962, NR was wired to step 1 of the microphone.
NOTES
1 TB10 located in upper left corner of electric heat section
2 Resistor between terminals 7 and 8 applies only to microprocessor style W7100A1046 (HH09A2005) for production after May 1982. Resistor is 1/4 watt, 200 ohms for O24 size, and 1/4 watt, 600 ohms for all other models.

Fig. 11 — Label Diagram, Variable Air Volume, Panel and Remote Box Schematic
Fig. 12 — Label Diagram, Variable Air Volume, Component Arrangement
Fig. 13 — Label Diagram, Energy Management (Night Set-Back) Option
MOTORMASTER CONTROL WIRING

Use the following data, plus Installation Instructions packaged with Model 32LT Motormaster solid-state head pressure control, to apply Motormaster to 50DF or DL cooling units. Certain modifications must be made to the standard units:

1. **Outdoor Fan Motor**
   On 380-volt, 3-phase units, install special one-hp, 200-230-volt outdoor fan motor (Carrier Part No. HC52TE230) in place of factory-installed motor OFM1. Wire fan motor for 220-volt, one-phase, 60-Hz operation, the same as motor replaced.

2. **Run Capacitors**
   Install 30.0 MFD, 440-volt run capacitor (Carrier Part No. HC90BB030) in place of CAP. 1.

3. **Power Wiring** must be checked to ensure it is as specified and is in compliance with local and national code requirements. Wire Motormaster control in series with fan motor black lead. Use Motormaster unit (Carrier Part No. 32LT900300) for 200-230 volts.

   Figure 14 shows the Motormaster control wired into the condenser fan motor circuit for 200-230-volt, single-phase, 60-Hz power.

4. **Winter Start Control** is required on all 50DF/DL units. Jumper low-pressure switch to make it inactive. DO NOT RELOCATE. Install new liquid line low-pressure switch at liquid line service valve and reset it for 5 psig. (Low-pressure switch, Carrier Part No. HK02AB026, preset at 5 psig, is recommended.) When required by the application, install a defrost thermostat (Carrier Part No. 50BB900001 or HH22UA025) on evaporator coil to provide freeze-up protection lost by jumpering low-pressure switch. (See Fig. 15.)

5. **Locate Motormaster Control** as shown in Fig. 16 using the mounting template provided in the 32LT Installation Instructions.

6. **Locate Motormaster Control Sensor** as shown in Fig. 17. Route sensor wire from bottom of Motormaster control to bottom of control box, thru a connector in the bottom of the control box and across the partition to the specified sensor location. Connector is field supplied. If necessary, drill hole in control box for connector.

7. **Wind Baffles** are required for Motormaster control application to 50DF/DL units to prevent wind cross-currents from causing abnormal operation as fan speed control is modulated. Construct baffles as shown in Fig. 18.
Fig. 18 — Wind Baffles