# Installers Guide

## Head Pressure Control

<table>
<thead>
<tr>
<th>Models:</th>
<th>Used With:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAYLOAM326A</td>
<td>TTA/TWA090A3</td>
</tr>
<tr>
<td>BAYLOAM327A</td>
<td>TTA/TWA120A3, TTA120B3, TTA120C3, TTA150B3</td>
</tr>
<tr>
<td>BAYLOAM328A</td>
<td>TTA/TWA240B3, CGA120B1, CGA120B3</td>
</tr>
<tr>
<td>BAYLOAM329A</td>
<td>TTA/TWA180B3, TTA180C3, CGA180B3</td>
</tr>
<tr>
<td>BAYLOAM425A</td>
<td>TTA/TWA090A4</td>
</tr>
<tr>
<td>BAYLOAM426A</td>
<td>TTA/TWA120A4, TTA120B4, TTA120C4, TTA150B4</td>
</tr>
<tr>
<td>BAYLOAM427B</td>
<td>TTA/TWA240B4, CGA120B4</td>
</tr>
<tr>
<td>BAYLOAM428A</td>
<td>TTA/TWA180B4, TTA180C4, CGA180B4</td>
</tr>
</tbody>
</table>

October 2004
Installation

NOTICE:
Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.

⚠️ WARNING – Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION – Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠️ CAUTION – Indicates a situation that may result in equipment or property-damage-only accidents.

Parts List
1 – Control Assembly
1 – Replacement Outdoor Motor and Slinger
1 – Pressure Tap Tee
1 – Connector
4 – Snap Bushing
4 – Screws
4 - Wire Ties

General
See Table 1 for match-up of Head Pressure Control (HPC) with unit size and voltage. Then refer to the instructions unique to each model.

Inspection
1. Unpack all components of the Low Ambient Control Kit.
2. Check carefully for any shipping damage. If any damage is found it must be reported immediately and a claim made against the transportation company.

Table 1 - Selection Chart

<table>
<thead>
<tr>
<th>Head Pressure Control - Unit Selection Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAYLOAM326A</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>TTA090A3 (1)</td>
</tr>
<tr>
<td>TWA090A3 (1)</td>
</tr>
<tr>
<td>TTA120C3 (1)</td>
</tr>
<tr>
<td>TTA150B3 (1)</td>
</tr>
<tr>
<td>TWA120A3 (1)</td>
</tr>
</tbody>
</table>

Note: Figures in parenthesis () indicate quantity of kits required.

Table 2 - Electronic Fan Speed Control

<table>
<thead>
<tr>
<th>Electronic Fan Speed Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Range</td>
<td>180 to 240 PSIG (1241 to 1655 kPa)</td>
</tr>
<tr>
<td>Effective Throttling</td>
<td>60 psi (414 kPa)</td>
</tr>
<tr>
<td>Range (ETR)</td>
<td></td>
</tr>
<tr>
<td>Maximum Overpressure</td>
<td>450 PSIG (3102 kPa)</td>
</tr>
<tr>
<td>Maximum Surge Pressure</td>
<td>600 PSIG (4137 kPa)</td>
</tr>
<tr>
<td>Control Voltage</td>
<td>24 VAC, 1 VA</td>
</tr>
<tr>
<td>Line Voltage Range</td>
<td>187 to 528 VAC</td>
</tr>
</tbody>
</table>

Table 3 - Electrical and Temperature Rating

<table>
<thead>
<tr>
<th>Electrical and Temperature Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts, AC</td>
</tr>
<tr>
<td>Full Load Amps</td>
</tr>
<tr>
<td>Locked Rotor Amps</td>
</tr>
<tr>
<td>Max. Ambient Temp.</td>
</tr>
<tr>
<td>Min. Ambient Temp.</td>
</tr>
</tbody>
</table>
Head Pressure Control Wiring Adjustments

All Applications! Before installation, remove HPC cover panel and make the following adjustment. (Refer to Figure 1 below.)

Note: TTA and CGA models: Remove and discard wire number 77 (OR) and wire number 78 (BL). Cut off terminals from ends of HPC black and white wires and apply a separate wire nut to each wire to prevent shorting. Do Not wire nut black and white wires together.

Installation

Figure 1 - Head Pressure Control Internal Wiring Diagram

Figure 2 - Capillary Tube Fitting
Installation for CGA100, CGA120

Important Notes:
Be sure wiring adjustments per page 3 have been made before proceeding.

Avoid use of separate power supply. Control-voltage must be in the same phase as power wiring and wired as shown in Figure 4.

1. Prepare Unit for Installation

**WARNING** OPEN AND LOCK UNIT DISCONNECT TO PREVENT INJURY OR DEATH FROM ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS.

- Disconnect all power from unit.
- Remove end panel(s) covering unit control box and compressor(s).
- Remove knockout in bottom flange of control box and insert bushing provided.
- Remove knockout located at side of unit below HPC mounting location and insert bushing. See Figure 3 for location.

2. Install Mounting Bracket and Control Unit

- Remove mounting bracket from HPC, then using the pre-drilled and tapped holes provide, secure it to the unit with screws provided.

*Note: Two of the holes will already be used. Remove existing screws first.*

- Mount Head Pressure Control onto mounting bracket and secure with original screws. Thread HPC wires and capillary tube through the bushing in the knockout hole. Take care to avoid crimping capillary tube during this step. (See Figure 3.)

3. Control Box Wiring

Locate fan terminal board (FTBA) in the center of the control box and remove the black (bk) jumper between terminal points C and D. (See unit connection diagram on inside of control box cover.) Using the wiring diagram in Figure 4 make all indicated connections in unit control box.

4. Connect Capillary Tube Fittings

Refer to Figure 2 on page 3. Remove bonnet (nut) from high pressure tap of unit and place on pressure tap (valve core) end of “T” from Head Pressure Control package. Place flare nut of head pressure control capillary tube on opposite end of “T” and tighten both the bonnet nut and flare nut securely to the “T”. Place “T” flare nut with valve core depressor on unit high pressure tap, where the bonnet nut was located. Tighten flare nut to unit high pressure tap and check all three connections for leaks.

*Note: CGA120B units have two compressors. The capillary tube from the HPC must always be connected to the compressor circuit being used as primary (first stage).*

5. Install New Fan Motor

- Remove the fan guard.
- Remove and discard the existing fan motor; retain fan.
- Install new fan motor making connections and fan attachment identical to the old one. Tighten hub set screws to 165 inch-pounds of torque.
- Reinstall the fan guard.

6. Finish Installation

- Using wire ties with bullet-nosed clips (provided), bundle and dress excess wires and capillary tube.
- Secure them up to the underside of control box panel.
- Apply the adhesive backed wiring diagram from accessory kit to inside of compressor access panel for future reference.
- Reinstall end panels and secure with screws that were removed.
- Re-connect all power to the unit, then refer to page 10.
Installation

Figure 3 - Head Pressure Control Installation for CGA100, CGA120

Figure 4 - Interconnecting Wiring Diagram for CGA100, CGA120

<table>
<thead>
<tr>
<th>UNIT MODEL NO.</th>
<th>HEAD PRESSURE CONTROL ACCESSORY MODEL NUMBER</th>
<th>VOLTAGE</th>
<th>HZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGA120B1/B3</td>
<td>BAYLOM328A</td>
<td>208/230V</td>
<td>60</td>
</tr>
<tr>
<td>CGA120B4</td>
<td>BAYLOM427A</td>
<td>460V</td>
<td>60</td>
</tr>
</tbody>
</table>
Installation for TTA/TWA090A, TTA/TWA120A, TTA120B, TTA120C, TTA150B

**Important Notes:**
Be sure wiring adjustments per page 2 have been made before proceeding.

Avoid use of separate power supply. Control voltage must be in the same phase as power wiring and wired as shown in Figure 6.

1. Prepare Unit for Installation
   - Disconnect all power from unit.

   **WARNING:** OPEN AND LOCK UNIT DISCONNECT TO PREVENT INJURY OR DEATH FROM ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS.

   Remove control box covers located across top center of the unit.
   Remove compressor access panels.

   Remove knockout in bottom flange of control box and insert bushing provided. (See Figure 5.)

2. Install Control Unit
   - Mount Head Pressure Control in the control box with screws provided. (See Figure 5.)

   **Caution:** Take care to avoid crimping capillary tube during the next step.

   - Thread capillary tube through bushing in the bottom of the control box.

3. Connect Capillary Tube Fittings
   - Refer to Figure 2 on page 3. Remove bonnet (nut) from high pressure tap of unit and place on pressure tap (valve core) end of “T” from Head Pressure Control package. Place flare nut of head pressure control capillary tube on opposite end of “T” and tighten both the bonnet nut and flare nut securely to the “T”. Place “T” flare nut with valve core depressor on unit high pressure tap, where the bonnet nut was located. Tighten flare nut to unit high pressure tap and check all three connections for leaks.

4. Control Box Wiring
   - Locate fan terminal board (FTB) in the center of the control box and remove the black (bk) jumper between terminal points C and D. (See unit connection diagram on inside of control box cover.) Using the wiring diagram in Figure 6 make all indicated connections in unit control box.

5. Install New Fan Motor
   - Remove the fan guard.

   - Remove and discard the existing fan motor; retain fan.

   - Install new fan motor making connections and fan attachment identical to the old one. Tighten hub set screws to 165 inch-pounds of torque.

   - Reinstall the fan guard.

6. Finish Installation
   - Using wire ties with bullet-nosed clips (provided), bundle and dress excess wires and capillary tube.

   - Secure them up to the underside of control box panel.

   - Select the appropriate adhesive backed wiring diagram from accessory kit and apply to inside of compressor access panel for future reference.

   - Reinstall end panels and secure with screws that were removed.

   - Re-connect all power to the unit, then refer to page 10.
Installation

Figure 5 - Head Pressure Control Installation for TTA/TWA090A, TTA/TWA120A, TTA120B, TTA120C, TTA150B

Figure 6 - Interconnecting Wiring Diagram for TTA/TWA090A, TTA/TWA120A, TTA120B, TTA120C, TTA150B

CAUTION
480V/208V/120V MUST BE CONNECTED TO FTBA-D AS SHOWN.

<table>
<thead>
<tr>
<th>UNIT MODEL NO.</th>
<th>MODEL NO.</th>
<th>VOLTAGE</th>
<th>HZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTA/TWA090A3</td>
<td>BAYLDM26A</td>
<td>208/230V</td>
<td>60</td>
</tr>
<tr>
<td>TTA/TWA090A4</td>
<td>BAYLDM25A</td>
<td>460V</td>
<td>60</td>
</tr>
<tr>
<td>TTA/TWA120A3</td>
<td>BAYLDM27A</td>
<td>208/230V</td>
<td>60</td>
</tr>
<tr>
<td>TTA/TWA120A4</td>
<td>BAYLDM26A</td>
<td>460V</td>
<td>60</td>
</tr>
<tr>
<td>TTA/TWA150B</td>
<td>BAYLDM27A</td>
<td>208/230V</td>
<td>60</td>
</tr>
<tr>
<td>TTA/TWA150B</td>
<td>BAYLDM26A</td>
<td>460V</td>
<td>60</td>
</tr>
</tbody>
</table>
Installation

Installation for TTA/TWA180B, TTA180C, TTA/TWA240B, CGA180B

Important Notes:
Be sure wiring adjustments per page 2 have been made before proceeding.

Be careful not to “cross circuits” during installation. The HPC for circuit “A” must sense pressure from compressor A or 1 and the HPC for circuit “B” must sense pressure from compressor B or 2. (See Figure 7 for circuit designation.)

1. Prepare Unit for Installation
• Disconnect all power from unit.

WARNING: OPEN AND LOCK UNIT DISCONNECT TO PREVENT INJURY OR DEATH FROM ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS.

• Remove control box covers located across top center of the unit. Remove compressor access panels. Find hole in compressor barrier wall and insert bushing from kit.

• Remove knockout in bottom flange of control box and insert bushing provided.

CAUTION: IT IS RECOMMENDED THAT THE CENTER PANEL BE REMOVED PRIOR TO THE NEXT STEP TO AVOID DAMAGING PARTS BEHIND IT.

• Remove the 2 knockouts from center panel at back of the unit and insert bushings provided. See Figure 7 for location.

2. Install Mounting Bracket and Control Unit
• Remove mounting bracket from HPCs, then using the pre-drilled and tapped holes provided, secure them to the unit with screws provided. See Figure 3 for location.

• Mount Head Pressure Control for circuit “A” onto upper bracket and the one for circuit “B” onto lower bracket and secure with original screws. Thread HPC wires and capillary tubes through the bushings in the knockout holes located below mounting brackets.

CAUTION: TAKE CARE TO AVOID CRIMPING CAPILLARY TUBE DURING THIS STEP. SEE FIGURE 7 FOR LOCATION.

• Inside unit, thread all HPC wires into the unit control box. Thread capillary tubes to high pressure tap on compressor’s discharge line. The capillary tube for circuit “A” must pass through hole in compressor barrier on all units except the TWA180B. see Figure 7 for hole locations where the capillary tubes are routed. Note that the holes may be covered with a foam gasket. Cut foam away from holes.

3. Control Box Wiring
• Locate fan terminal boards (FTBA and FTBB on TTA and TWA) units or (FTB1 and FTB2 on CGA units) in center of control box and remove black jumpers from both boards between terminal points C and D. (See wiring diagram inside control box cover.) Using the wiring diagram in Figure 8 make all indicated connections in unit control box. Note variations for CGA, TTA and TWA units.

4. Connect Capillary Tube Fittings
Note: This capillary tube installation must be repeated for each of the two circuits. Refer to Figure 2 on page 3. Remove bonnet (nut) from high pressure tap of unit and place on pressure tap (valve core) end of “T” from Head Pressure Control package. Place flare nut of head pressure control capillary tube on opposite end of “T” and tighten both the bonnet nut and flare nut securely to the “T”. Place “T” flare nut with valve core depressor on unit high pressure tap, where the bonnet nut was located. Tighten flare nut to unit high pressure tap and check all three connections for leaks.

5. Install New Fan Motor
• Remove the fan guards and fans.

Important Note: The fan in circuit “A” runs clockwise and the fan in circuit “B” runs counterclockwise. Each fan must go back in it’s original location.

• Remove and discard the existing fan motors.

Important Note: Do not swap fans during this step. They must be re-installed in their original location since each fan is unique to it’s circuit.

• Install new fan motors making connections and fan attachment identical to the old ones.

Important Note: The motor in the “B” circuit must be changed to run in a counterclockwise direction. This is accomplished by simply unplugging the polarity plug on the motor, rotating the plug 180°, then re-plugging it.

• Re-install the fans on the appropriate motor and tighten hub set screws to 165 inch-pounds.

• Reinstall the fan guards.

6. Finish Installation
• Using wire ties with bullet-nosed clips (provided), bundle and dress excess wires and capillary tube.

• Secure them up to the underside of control box panel.

• Select the appropriate adhesive backed wiring diagram from accessory kit and apply to inside of compressor access panel for future reference.

• Reinstall unit control box covers and compressor access panels and secure with screws that were removed.

• Re-connect all power to the unit, then refer to page 10.

---

Installation for TTA/TWA180B, TTA180C, TTA/TWA240B, CGA180B

Important Notes:
Be sure wiring adjustments per page 2 have been made before proceeding.

Be careful not to “cross circuits” during installation. The HPC for circuit “A” must sense pressure from compressor A or 1 and the HPC for circuit “B” must sense pressure from compressor B or 2. (See Figure 7 for circuit designation.)

1. Prepare Unit for Installation
• Disconnect all power from unit.

WARNING: OPEN AND LOCK UNIT DISCONNECT TO PREVENT INJURY OR DEATH FROM ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS.

• Remove control box covers located across top center of the unit. Remove compressor access panels. Find hole in compressor barrier wall and insert bushing from kit.

• Remove knockout in bottom flange of control box and insert bushing provided.

CAUTION: IT IS RECOMMENDED THAT THE CENTER PANEL BE REMOVED PRIOR TO THE NEXT STEP TO AVOID DAMAGING PARTS BEHIND IT.

• Remove the 2 knockouts from center panel at back of the unit and insert bushings provided. See Figure 7 for location.

2. Install Mounting Bracket and Control Unit
• Remove mounting bracket from HPCs, then using the pre-drilled and tapped holes provided, secure them to the unit with screws provided. See Figure 3 for location.

• Mount Head Pressure Control for circuit “A” onto upper bracket and the one for circuit “B” onto lower bracket and secure with original screws. Thread HPC wires and capillary tubes through the bushings in the knockout holes located below mounting brackets.

CAUTION: TAKE CARE TO AVOID CRIMPING CAPILLARY TUBE DURING THIS STEP. SEE FIGURE 7 FOR LOCATION.

• Inside unit, thread all HPC wires into the unit control box. Thread capillary tubes to high pressure tap on compressor’s discharge line. The capillary tube for circuit “A” must pass through hole in compressor barrier on all units except the TWA180B. see Figure 7 for hole locations where the capillary tubes are routed. Note that the holes may be covered with a foam gasket. Cut foam away from holes.

3. Control Box Wiring
• Locate fan terminal boards (FTBA and FTBB on TTA and TWA) units or (FTB1 and FTB2 on CGA units) in center of control box and remove black jumpers from both boards between terminal points C and D. (See wiring diagram inside control box cover.) Using the wiring diagram in Figure 8 make all indicated connections in unit control box. Note variations for CGA, TTA and TWA units.

4. Connect Capillary Tube Fittings
Note: This capillary tube installation must be repeated for each of the two circuits. Refer to Figure 2 on page 3. Remove bonnet (nut) from high pressure tap of unit and place on pressure tap (valve core) end of “T” from Head Pressure Control package. Place flare nut of head pressure control capillary tube on opposite end of “T” and tighten both the bonnet nut and flare nut securely to the “T”. Place “T” flare nut with valve core depressor on unit high pressure tap, where the bonnet nut was located. Tighten flare nut to unit high pressure tap and check all three connections for leaks.

5. Install New Fan Motor
• Remove the fan guards and fans.

Important Note: The fan in circuit “A” runs clockwise and the fan in circuit “B” runs counterclockwise. Each fan must go back in it’s original location.

• Remove and discard the existing fan motors.

Important Note: Do not swap fans during this step. They must be re-installed in their original location since each fan is unique to it’s circuit.

• Install new fan motors making connections and fan attachment identical to the old ones.

Important Note: The motor in the “B” circuit must be changed to run in a counterclockwise direction. This is accomplished by simply unplugging the polarity plug on the motor, rotating the plug 180°, then re-plugging it.

• Re-install the fans on the appropriate motor and tighten hub set screws to 165 inch-pounds.

• Reinstall the fan guards.

6. Finish Installation
• Using wire ties with bullet-nosed clips (provided), bundle and dress excess wires and capillary tube.

• Secure them up to the underside of control box panel.

• Select the appropriate adhesive backed wiring diagram from accessory kit and apply to inside of compressor access panel for future reference.

• Reinstall unit control box covers and compressor access panels and secure with screws that were removed.

• Re-connect all power to the unit, then refer to page 10.
Installation

Figure 7 - Head Pressure Control Installation for TTA/TWA180B, TTA180C, TTA/TWA240B, CGA180B

Figure 8 - Interconnecting Wiring Diagram for TTA/TWA180B, TTA180C, TTA/TWA240B, CGA180B
Checkout Procedure
Before leaving the installation, observe for correct operation through the desired pressure range. See the Operational Sequence.

Repairs and Replacement
Field repairs to the control unit must not be made. For a replacement control, contact your local parts distributor.

Figure 9 - Performance Curve

![Graph showing performance curve with pressure vs. motor voltage. Notations for ETR (Effective Throttling Range).]
### Table 4 - Operational Sequence

<table>
<thead>
<tr>
<th>Pressure Input</th>
<th>Motor voltage (VAC, true RMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure is below the low end of the Operating Range</td>
<td>0 to 5 volts</td>
</tr>
<tr>
<td>Pressure is at the low end of the Operating Range</td>
<td>Start Voltage (10% of line)</td>
</tr>
<tr>
<td>Pressure is in the Operating Range</td>
<td>Motor voltage varies directly with system pressure from start voltage to 90% of line voltage</td>
</tr>
<tr>
<td>Pressure is at the High End of Operating Range</td>
<td>Output voltage is 90% of line voltage</td>
</tr>
<tr>
<td>Pressure above the Operating Range</td>
<td>A further pressure increase of 20 to 30 PSI will increase motor voltage to at least 97% of the applied voltage</td>
</tr>
</tbody>
</table>

### Table 5 - Trouble Shooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Fan Operation</td>
<td>No 24 volt control voltage</td>
<td>Check for 24 VAC at round connector on top right side of control.</td>
</tr>
<tr>
<td></td>
<td>Input pressure is below operating range</td>
<td>No problem, normal operation.</td>
</tr>
<tr>
<td></td>
<td>No input pressure to control</td>
<td>Check for proper Schrader valve depressor alignment. Schrader valve depressor must depress Schrader valve enough to allow pressure into capillary.</td>
</tr>
<tr>
<td></td>
<td>Bad fan motor</td>
<td>Disconnect power. Place a jumper from L1 to M1 and connect power. If fan does not start, motor is bad and should be replaced.</td>
</tr>
<tr>
<td></td>
<td>Pressure transducer problem</td>
<td>Disconnect 6 pin connector from right side of control. Place a jumper wire between third pin from the top and the bottom pin on control, not the cable. If fan goes to full speed, check for input pressure (above). If there is adequate pressure, the transducer is bad and the control must be replaced.</td>
</tr>
<tr>
<td>Fan stops when pressure reaches high end of the operating range</td>
<td>Control is not wired correctly</td>
<td>See wiring diagrams.</td>
</tr>
<tr>
<td>No fan modulation (On-Off operation)</td>
<td>Control is not wired correctly</td>
<td>See wiring diagrams.</td>
</tr>
<tr>
<td>Fan starts at full speed</td>
<td>Control is not wired correctly</td>
<td>See wiring diagrams.</td>
</tr>
<tr>
<td>Erratic fan operation</td>
<td>Control is not wired correctly</td>
<td>See wiring diagrams.</td>
</tr>
<tr>
<td></td>
<td>Dirty or blocked condenser coil</td>
<td>Clean condenser coil.</td>
</tr>
<tr>
<td>Fan motor is cycling on thermal overload</td>
<td>Dirty or blocked condenser coil</td>
<td>Clean condenser coil.</td>
</tr>
<tr>
<td></td>
<td>Wrong motor for fan speed control application</td>
<td>Verify new motor was installed.</td>
</tr>
<tr>
<td>Improper refrigeration</td>
<td>Low charge or restriction</td>
<td>Disconnect power. Place a jumper from L1 to M1 and connect power. Restart unit, and diagnose refrigerant problem.</td>
</tr>
</tbody>
</table>
The manufacturer has a policy of continuous product and data improvement and reserves the right to change design and specifications without notice.