

Installation Instructions

Low Ambient Control

Foundation™ Packaged Rooftop Units 15 to 25 Tons

Model Number: BAYLOAM300*
Used With: E/GA*180-300

SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

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Warnings, Cautions, and Notices

Read this manual thoroughly before operating or servicing this unit. Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

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, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

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WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

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WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Inspection

Remove the contents of the kit from the shipping package. Check carefully for shipping damage. If any damage is found, report it immediately, and file a claim against the transportation company. Any missing parts should be immediately reported to your supplier and replaced with authorized parts only.

Introduction

This instruction covers installation of the low ambient kit on E/GA*180-300 units.

Parts List

Table 1. Parts list

Quantity	Description
1	Speed Controller
1	Temperature Sensor
2	Pressure Taps
4	Screws
1	Wire Harness
2	Pressure Transducers
13	Wire Ties
1	Grommet
1	Gasket
1	Airflow Sleeve
1	Installers Guide
1	Installed Accessory Label

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Installation

General

Table 2. Electrical, temperature and pressure ratings

Volts, AC	208, 240, 380, 415, 480, 600
Control Voltage	18-30 Vac
Frequency	50-60 Hz
Operating Temperature	-40°F + 140°F (-40°C to 60°C)
Full Load Amps	10 Amps
Transducer Pressure Control Range	0-500 psi

Controller

WARNING

Hazardous Voltage w/Capacitors!

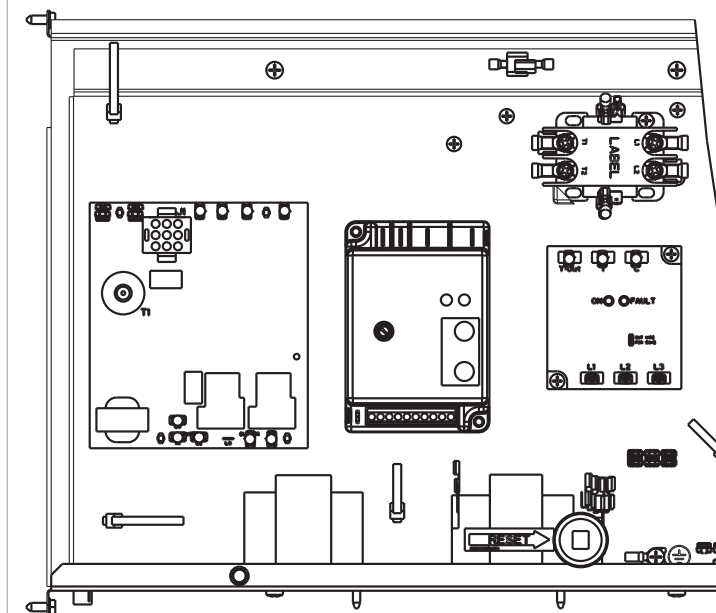
Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury. Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

1. Prepare the unit for installation.
 - a. Disconnect all power from the unit.
 - b. Remove the compressor and control box access panel(s).
 - c. Confirm that the capacitor has discharged stored voltage.
2. Refer to Figure 1 to determine the mounting location and position of the controller inside the unit.
3. Mount the controller in the appropriate position using two screws.
4. If airflow sleeve is not installed, install it with the gasket as shown in Figure 2. If airflow sleeve is installed then proceed to next step.

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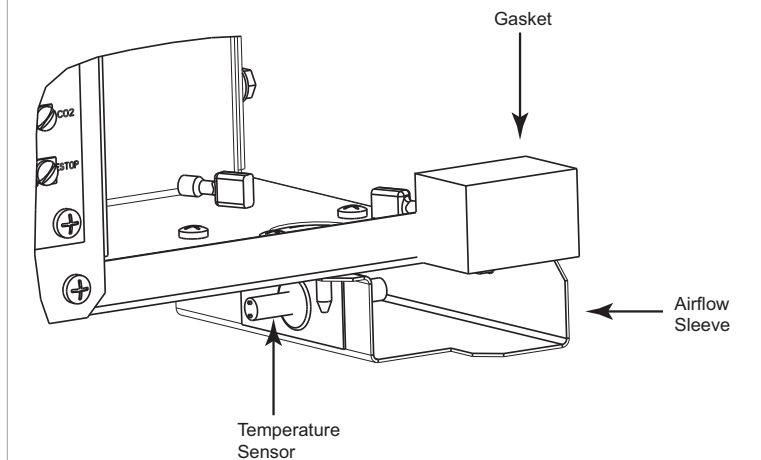
5. Install temperature sensor in airflow sleeve with grommet provided, as shown in Figure 2.

Figure 1. 15 to 25 ton unit control box



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Figure 2. Airflow sleeve and sensor location



Transducer and Tee

1. Remove cap nut from the units high pressure service port on the discharge lines that run from each compressor. See Figure 3.
2. Install the transducer onto the Tee port. See Figure 4.
3. Place the Tee flare nut with valve core depressor on the unit high pressure tap, where the cap nut was located.
4. Tighten flare nut securely to the high pressure service port and check for leaks.
5. Confirm that the transducer and tee do not come into contact with the access panel.

Figure 3. High pressure service port

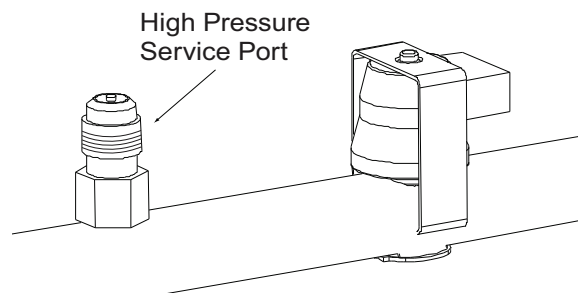


Figure 4. Transducer to Tee

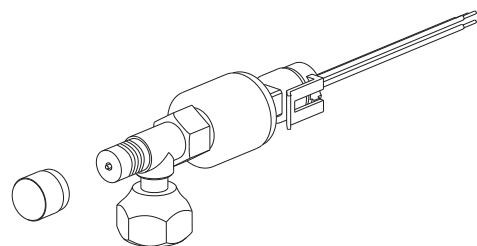
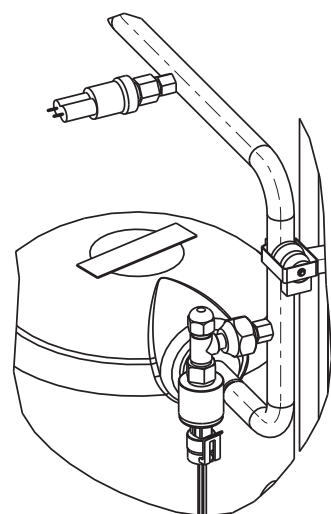


Figure 5. Tee and transducer installed on high pressure service port



Control Box Wiring

⚠ WARNING
Hazardous Voltage w/Capacitors!
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- Following the unit schematic, make all indicated connection in unit control box. See unit schematic located on compressor access panel.
 - Confirm the connections from the switch over valve to the heat pump terminals are on the controller.
 - Two transducers should be used with one controller—in which case the controller will respond to the transducer that senses the highest pressure.
 - Cut wire ties, if necessary, to properly route wires.
- Finish wiring installation
 - Using wire ties, bundle and dress any excess wires.
 - After the settings have been properly adjusted (see “Controller Settings”), reinstall the compressor and control box access panels and secure with screws that were removed.
 - Re-connect all power to the unit. Refer to troubleshooting guide, Table 3, if needed.

Controller Settings

For non-heat pump applications, the heat pump select jumper must be in the Default (N.O.) position, and the HP terminals must be left unconnected. See Figure 6.

Figure 6. Jumper position

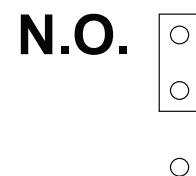
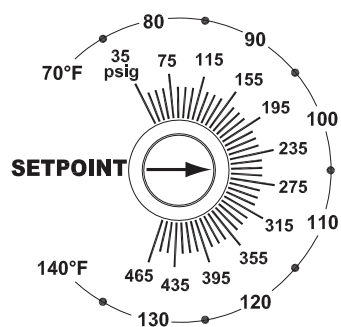


Figure 7. Pressure setpoint



Troubleshooting

Before leaving the installation, observe for correct operation through the desired pressure range. See Table 4.

Table 3. Troubleshooting guide

Problem	Possible Cause	Possible Solution
No fan operation	No 24 volt control voltage	Check for 24 Vac at control and verify correct wiring. If wired correctly, check voltage across the transformer.
	No line voltage	Check voltage across the black and purple OD motor wires. If no line voltage is present, verify all wiring is correct.
Improper fan operation	Heat pump jumper not configured correctly	Refer to the IOM or correct hook-up diagram and verify the heat pump jumper is configured correctly.

Table 3. Troubleshooting guide (continued)

Problem	Possible Cause	Possible Solution
	Control is not wired correctly	See wiring diagrams. Confirm that the 24 Vac power supply is connected in-phase with the motor power supply.
No fan modulation	No need to modulate the fan	If pressure is equal to or greater than the head pressure control setpoint, the fan will be operating at full speed.
	No input pressure to control	Check for proper transducer and Tee installation. Schrader valve depressor must depress Schrader valve enough to allow refrigerant into pressure transducer.
	Mis-wired	Check that the 24Vac signal and the transducer are wired up correctly into the controller.
Erratic fan operation	Control is not wired correctly	See wiring diagrams.
	Pressure transducer problem	Check for proper transducer and Tee installation. Schrader valve depressor must depress Schrader valve enough to allow refrigerant into pressure transducer.
Fan motor is cycling on thermal overload	Dirty or blocked condenser coil	Clean condenser coil.
	Wrong motor for fan speed control application	Verify new motor was installed. Replace with motor approved for fan speed control application.

Table 3. Troubleshooting guide (continued)

Problem	Possible Cause	Possible Solution
Unit fails to start	Incorrect/No voltage present	Using an AC voltmeter, measure the voltage between the 24Vac terminals. It should read approximately 24 volts. Measure the line voltage between LINE1 and LINE2 to confirm that line voltage is present.
	Transducer malfunction or not installed	If lights are flashing alternatively, then no probe is connected or the probe is malfunctioning. When using a pressure transducer, with power applied to the control, use a voltmeter to measure volts DC between COMM and P1 or P2, where the wire is connected. The reading should be according to Table 4 below.
The fuse is blown and/or signs of damage on the unit	Mis-wired	The unit has been mis-wired and may be permanently damaged

Controller Operation

This electronic control will be used on an air conditioner system to reach and maintain head pressure within an acceptable range when ambient temperature falls below 50°F. It reads discharge pressure from pressure transducers and accordingly turns on and off the outdoor fan motor to maintain discharge pressure at the selected setpoint.

For Constant Volume Units

Outdoor fan cycling will occur when the ambient temperature is below 50°F. Both outdoor fans with energize and cycle at the same time. Above 50°F, the outdoor fans will energize at the same time without cycling.

For Units Equipped with an Optional VFD

The outdoor fans are staged based on outdoor ambient temperature. In ambient temperatures below 50°F, only one fan will energize and cycle. When the ambient temperature reaches above 50°F, the controller will no longer cycle outdoor fans. The unit will stage the outdoor fans based on the unit temperature sensor. For ambients above 60°F +/-5°F, both outdoor fans should be energized. Below 60°F +/-5°F, single fan operation is normal.

Setting the Pressure Setpoint

When using pressure transducers, the control will maintain condenser pressure between 15psig above and 15psig below dialed pressure setpoint. The dial pressure setpoint range is 35psig to 465psig. The pressure setpoint should be adjusted to 250psig initially. Monitor the condenser discharge pressure and adjust the pressure setpoint so the condenser fan operates at full speed when the ambient temperature is greater than 50°F and modulates speed when the ambient temperature is below 50°F.

Note: There is no exact correlation between dial temperature and pressure scales on the control.

Table 4. Pressure vs. voltage

Pressure (psig)	Voltage (Vdc)
0	0.5
50	0.9
100	1.3
150	1.7
200	2.1
250	2.5
300	2.9
350	3.3
400	3.7
450	4.1
500	4.5

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